Bibliography of Indonesian Geology

BIBLIOGRAPHY OF THE GEOLOGY OF INDONESIA AND SURROUNDING AREAS

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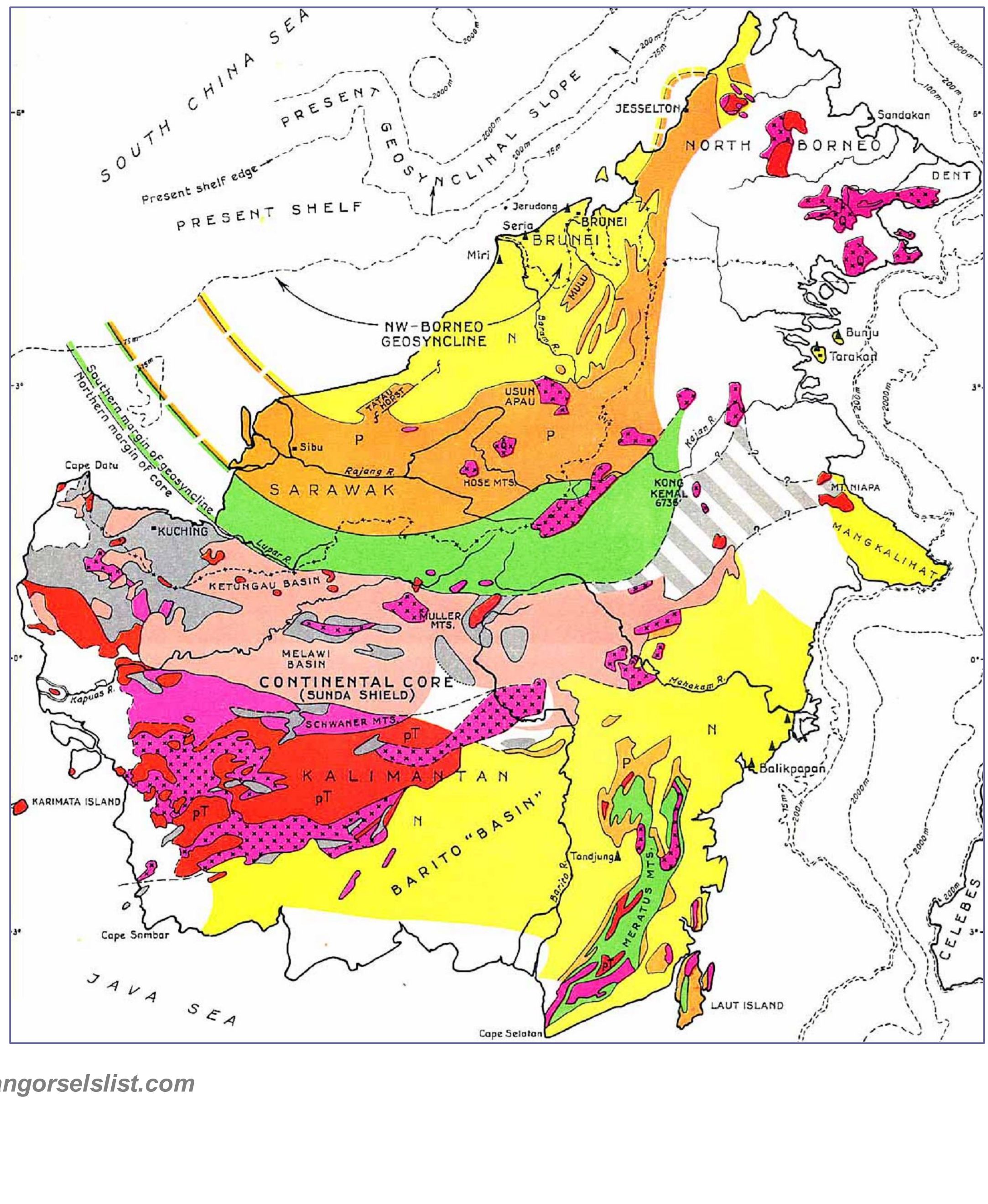
J.T. VAN GORSEL

IV. BORNEO (incl. Makassar Straits)



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IV. BORNEO (Kalimantan, North Borneo, Makassar Straits)

IV. INTRODUCTION

This chapter IV of the Bibliography 7.0 contains 331 pages with 2463 titles on the geology of the Borneo region, >1400 of which are from the Indonesian part of Borneo island (Kalimantan). It is subdivided in four sub-chapters: IV.1. Kalimantan and Borneo General (619 papers), IV.2. East Kalimantan Cenozoic Basins, (bio-)stratigraphy (787 papers), IV.3. North Borneo (Sarawak, Sabah, Brunei) (930 papers) and IV.4. Makassar Straits (128 papers)

Politically, the large island of Borneo is divided among three nations: in the south is Indonesian Kalimantan, in the north are the Nation of Brunei and the Sarawak and Sabah provinces of East Malaysia.

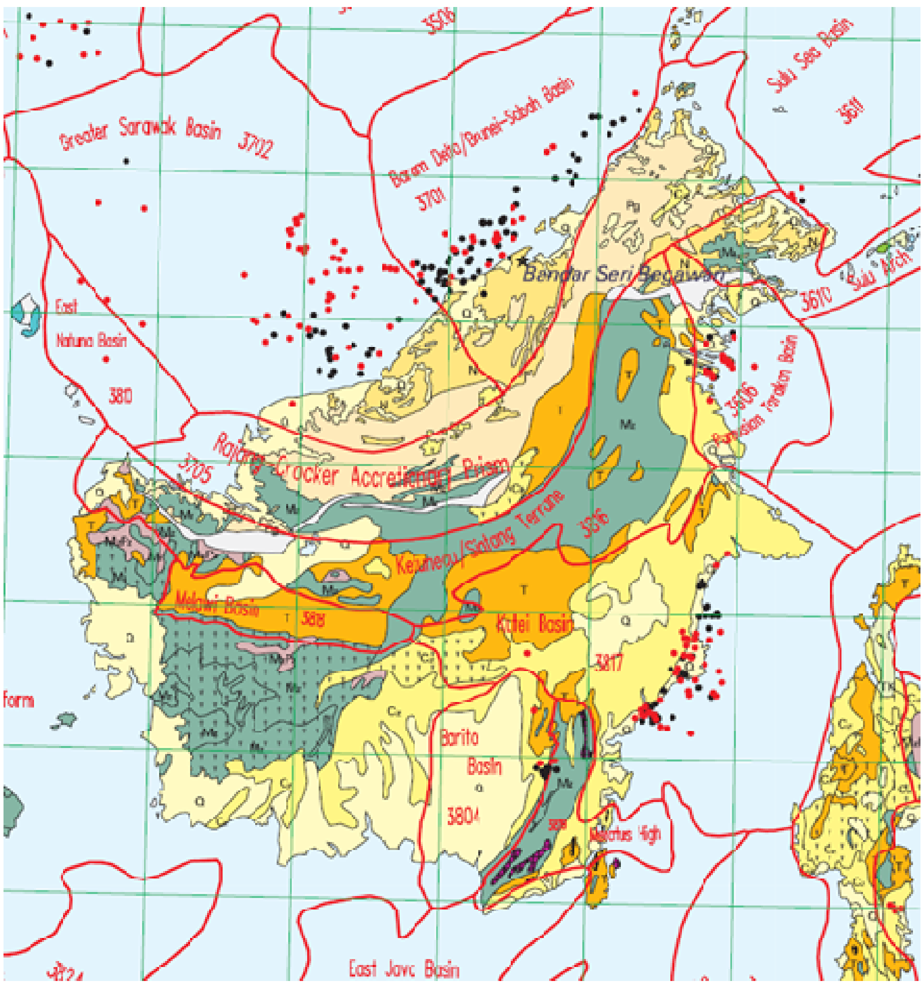

Figure IV.1.1. Geologic provinces and basins of Borneo (Steinshouer et al. 1997, USGS).

Although the virtual absence of present-day earthquakes and volcanism may suggest Borneo is a stable, cratonic block, its Late Paleozoic- Pliocene history is one of intense tectonic and igneous activity, with spectacular subsidence and uplift episodes, that is not compatible with the perception of it being a stable, old continental landmass (Rutten, 1925).

IV.1 and IV.2. Kalimantan

Kalimantan basement complexes

Borneo island consists of an uplifted and deeply eroded Pretertiary core of Mesozoic or older metamorphic rocks and mainly Cretaceous-age granitoid intrusives in the SW part of the island (Figure IV.1.1). This core is surrounded by Cenozoic accretionary complexes in the North and SE, and by several Cenozoic sedimentary basins.

Until recently the 'SW Borneo' core of the island was either viewed as part of the 'Sundaland' complex of Gondwana-derived plates that, together with the South China, Indochina, East Malaya and Sibumasu plates, had been part of Eurasia since the Triassic (e.g. Figure IV.1.2; Hartono and Tjokrosapoetro 1986, Metcalfe 1987), or as a separate plate that was derived from the Indochina magin (e.g. Metcalfe 1987?).

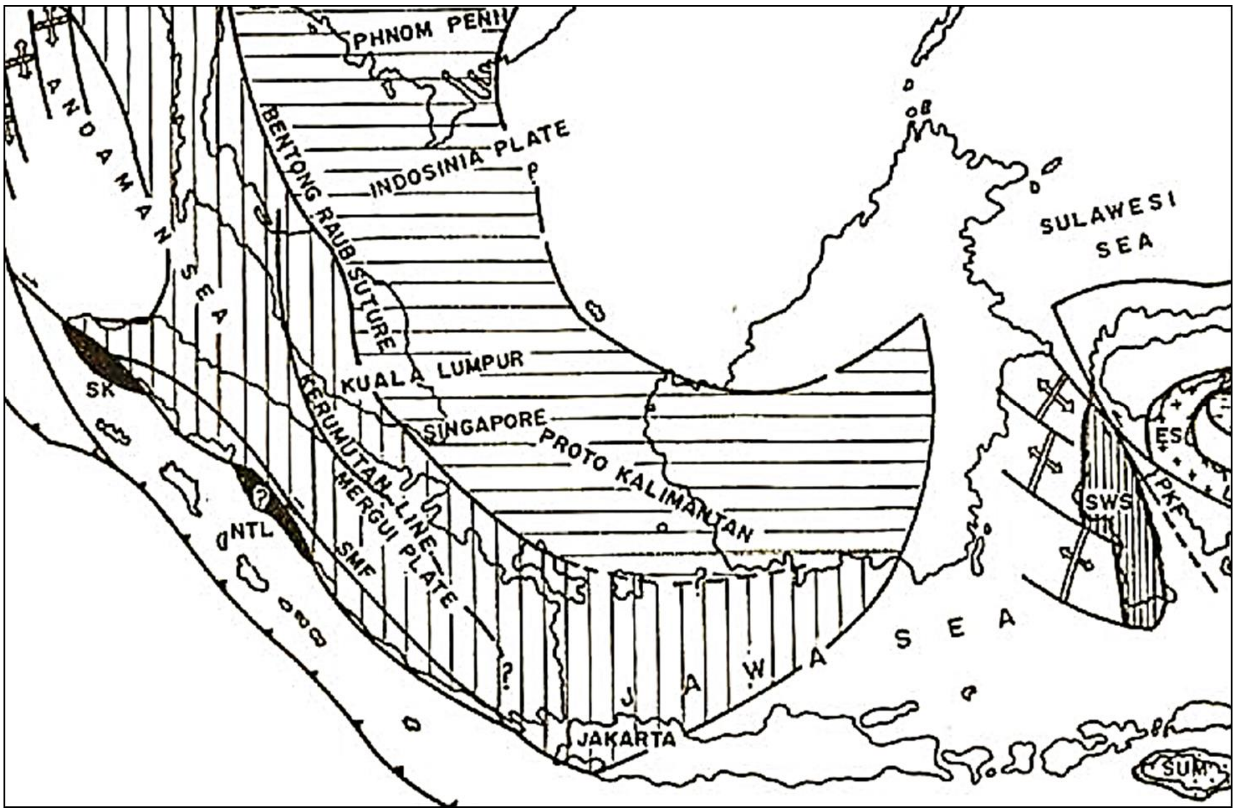

Figure IV.1.2. Geologic setting of Borneo island (Hartono and Tjokrosapoetro 1986). In this 'traditional' model, the core of Borneo is part of Triassic Sundaland, an an extension of the Indochina plate, possibly also Sibumasu (diamond source?).

More recently SW Borneo was proposed to be a separate microplate that broke off the NW Australia margin as late as Jurassic ('Argoland'; Hall et al. 2009, Metcalfe 2010). This requires that the NW part of Kalimantan is a separate microplate (Semitau Block of Metcalfe (2010), because its geology and Late Carboniferous- Jurassic faunas clearly belong in the 'Cathaysian' realm, not Gondwana. Debate on this will undoubtedly continue.

Paleomagnetic data suggest SW Borneo has been near the equator at least since the Jurassic, and rotated counterclockwise by about 90° since the Jurassic, about 50° since the Cretaceous. These results have been consistent between three generations of independent academic groups and appear rather compelling.

Cretaceous- Tertiary magmatic arc granites

The SW Borneo continental terrane is dominated by the belt of late Early Cretaceous (Aptian- Albian) Schwaner Mts granite batholiths (~100-130 Ma; Williams et al. 1989), which are generally interpreted as the exhumed roots of a volcanic arc system that formed above a South-dipping subduction of Paleo-Pacific or 'Proto-China Sea' oceanic plate. This belt probably continues NW to Tambelan and Anambas islands (Williams et al. 1988, Hutchison 2005), then onto the SE Vietnam Dalat zone granitoids, the northern South China Sea and the 'Yanshanian' magmatic arc of SE China.

A parallel, younger magmatic arc systems is the Late Cretaceous (Campanian; ~75-80 Ma) belt of smaller, felsic granitoid plutons in the Kalimantan- Sarawak border area (Figure IV.1.3). This belt continues to NW, towards tie Natuna Islands.

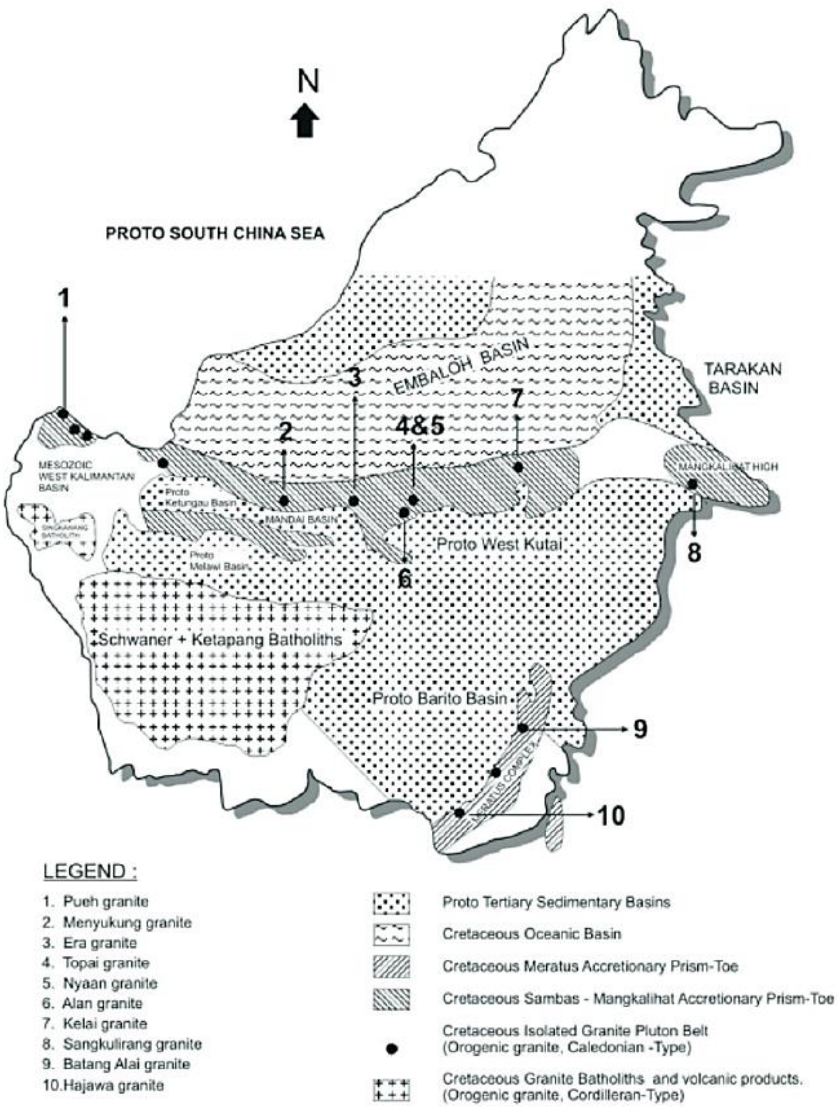

Figure IV.1.3. Cretaceous tectonic setting of Borneo (Amiruddiddin 2009). Showing locations of two E-W trending granitoid belts: (1) mid-Cretaceous Schwaner- Ketapang batholith complex (incl. Meratus?) in south and (2) Late Cretaceous belt of isolated granitoids in North (1-7), intruding older Cretaceous Sambas-Mangkalihat accretionary complex.

Cenozoic arc volcanic systems include the Middle Eocene Nyaan Volcanics and the well-defined belt Sintang belt of Late Oligocene- Early Miocene (~30-16 Ma) arc volcanics and intrusives, which is associated with several gold mines (Harahap 1987, Van Leeuwen et al. 1990, Hartono 2006, Zaw et al. 2011).

Cretaceous- Tertiary accretionary complexes

The North side of the SW Borneo continental core is a series of Cretaceous-Miocene accretionary complexes, that become progressivey younger in northern direction. The oldest of these is the (Late Jurassic?-) Early Cretaceous melange of radiolarian cherts, red siliceous shales and ultrabasic rocks ('Danau Fm' of Molengraaff, 1910; Figure IV.1.4), also called Semitau/ Selangkai/ Boyan Melange, Kapuas Complex, Telen-Kelinjau melange, etc.) (see also next chapter on N Borneo).

This oldest melange belt may continue East as far as the Mangkalihat Peninsula (Amiruddin 2009), which is often portrayed as a microcontinental block, but nearest Pre-Tertiary outcrops and well penetrations do look more like 'Danau melange'.

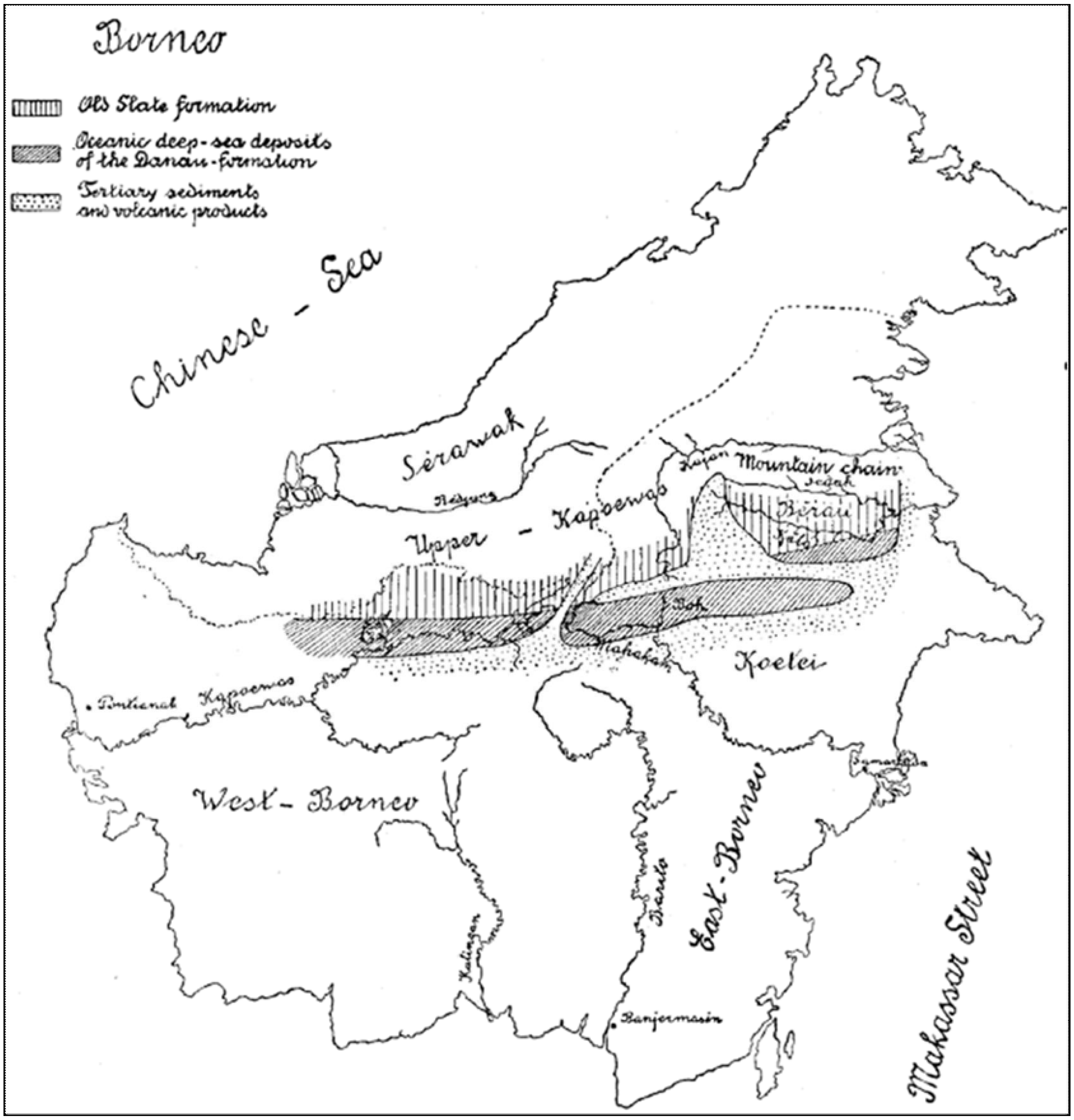

Figure IV.1.4. Historic geologic sketch map of Borneo, first describing the distribution of Mesozoic 'Danau Formation' with oceanic deposits by Molengraaff (1909), now known as an Jurassic- Early Cretaceous accretionary complex.

Farther North is the Rajang-Embaluh accretionary prism.

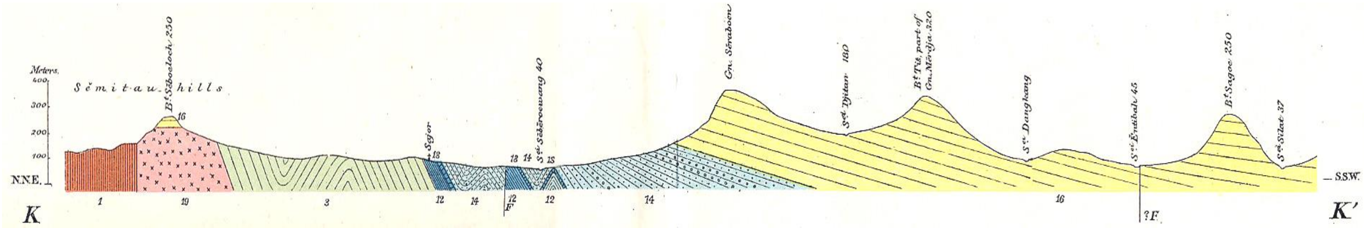

Figure IV.1.5. Historic N-S cross-section Semitau area, NW Kalimantan (Molengraaf 1902).

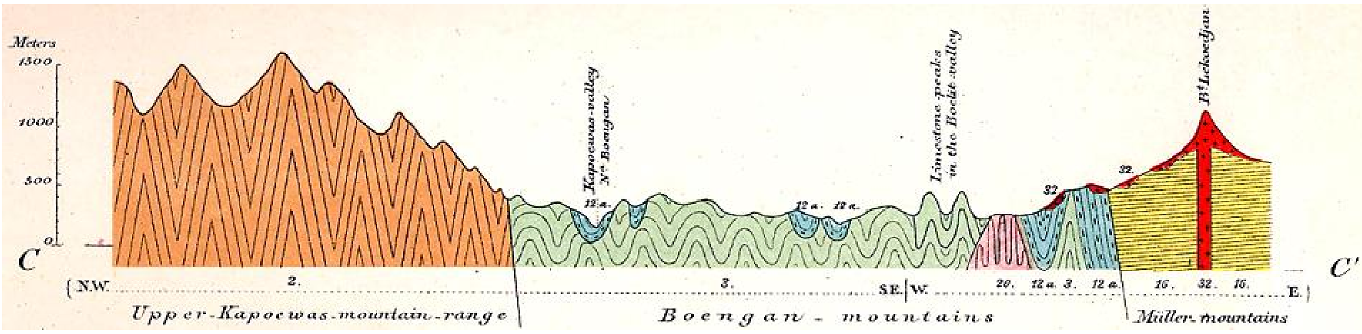

Figure IV.1.6. Historic N-S cross-section Sarawak-N Kalimantan border area (Molengraaff 1902). From left: intensely deformed 'Old Slate Fm' of Upper Kapuas Mts (2), folded Mesozoic Danau Fm (3), unconformably overlain by Cretaceous claystone (12a) and Tertiary sandstone Fm (16), overlain by young volcanics (32).

The Meratus Mountains in SE Kalimantan, with its outcrops of melange and serpentinites and associated oceanic crust rocks, have long been regarded as a suture zone between colliding continental blocks at the SE edge of Sundaland. There is indeed evidence of mid-Cretaceous age (~90 Ma) ophiolite obduction, with a blueschist-grade metamorphic sole, but the ophiolite sheet is nearly flat and it is not clear (1) whether the subduction zone was NW or SE dipping, and (2) what collided here (e.g. Wakita). The present relief of the Meratus Mountains is not the result of of mid-Cretaceous obduction, but represents post-Middle Miocene uplift (transpression?), that does not necessarily parallel the Cretaceous basement grain.

The melange below the ophiolite contains radiolarian cherts, varying in age from early Middle Jurassic to late Early Cretaceous, representing the ages of the pelagic cover scraped off during subduction. This suggests the age of subducted oceanic crust was at least partly older than M Jurassic ('Meso-Tethys' oceanic plate?). Ophiolite obduction in the Meratus Mountains was followed by a period of Late Cretaceous arc volcanism, mainly in a marine environment.

Northwest Borneo Late Carboniferous- Cretaceous of SE Asian affinity

'Traditionally' the Pretertiary basement core of Borneo has been viewed as part of Sundaland, which amalgamated in Triassic time, or as one or two blocks derived from South China- Indochina after Cretaceous opening of the Proto-China Sea (e.g. Metcalfe 1996, 2002).

This view changed in more recent plate constructions (Metcalfe 2008 and later, Hall 2009 and later), when the SW Borneo plate started to be identified as the probable missing 'Argoland', the block that rifted off the NW Australia margin in Late Jurassic time and amalgamated with Sundaland in Early Cretaceous time. However, there is no pre-Cretaceous stratigraphy in the SW Borneo block to support a link with the Paleozoic- Jurassic of NW Australia, although it could be argued that this was all destroyed by Cretaceous plutonism and younger uplift and erosion after docking with Sundaland. Terranes like Buton in SE Sulawesi are probably better candidates for missing 'Argoland'.

The possibility of a Mesozoic separation from the NW Australian margin can definitely be excluded for the NW Kalimantan- SW Sarawak area, which has outcrops of Late Paleozoic- Early Cretaceous sediments with faunas-floras that are clearly low-latitude Eurasian, with no Gondwanan affinities at this time:

1. The Terbat Limestone contains a diverse Late Carboniferous- Early Permian fusulinid foram fauna with 29 species that can be correlated to low-latitide East Tethys faunas from Thailand, S China, Japan (Krekeler 1932, 1933, Cummings 1955, Sanderson 1966, Metcalfe 1985, Fontaine 1990, 2002, Vachard 1990, Sakamoto and Ishibashi 2002, etc.)

2. Permian Cathaysian-affinity flora with *Gigantopteris, Pecopteris, Calamites*? (Jongmans in Zeylmans van Emmichoven 1938, 1939);
3. Late Triassic Krusin flora, with affinities to Indochina (Vietnam) *Dictyophyllum- Clathropteris* flora (Kon'no 1972, Vozenin-Serra 1983, Kimura 1984);
4. Tethyan Early Cretaceous larger foraminifera *Orbitolina* at numerous localities across Kalimantan (Martin 1889, Zeijlmans van Emmichoven 1936, Hashimoto and Matsumaru 1974)

These Asian faunal-floral affinities of NW Borneo have long been recognized, and this forced Metcalfe and Hall to separate this area as a separate Semitau Terrane, derived from However:
1. there is no clear tectonic suture zone between Semitau and the rest of Kalimantan is not obvious from historic geologic maps;
2. No Mesozoic or older sediments are preserved on the SW Borneo block to either support or negate a Gondwanan or Eurasian affinity before Cretaceous time.

Meratus Mountains

The rock associations of the Meratus Mountains represent part of a continental margin collisional zone, with obduction of a relatively flat-lying ophiolite nappe over the Borneo/ Sundaland margin (e.g. Priyomarsono 1986, Sikumbang 1986, 1990, Yuwono et al. 1988, Pubellier et al. 2005, Wakita et al. 1998, 2000, Satyana 2010) (Figures IV.1.7, IV.1.8). This collisional deformation is of mid-Cretaceous age, but its present-day topography, with mountains up to 1900m in elevation, is the result of post-Middle Miocene uplift (possibly a remote response to the Banggai-Sula collision; Pubellier et al. 1999).

The Meratus Range probably represents part of the Meso-Tethys Ocean suture zone, but is not entirely clear what, if anything, collided with the Sundaland margin at that time to cause this event. This suture zone probably extends SW into the Java Sea (Karimunjawa and Bawean arches), then into Central Java (Karangsambung), SW Java (Ciletuh) and the Woyla Terranes of West Sumatra.

The collision zone is overlain by deposits of a Late Cretaceous volcanic arc system (Manunggul/ Pitap Formations), with radiometric ages around 70-90 Ma (Yuwono et al. 1998) or 66-83 Ma (Hartono 2012). Most of the volcanics are marine turbiditic volcanoclastics, suggesting an island arc system in marine setting.

The ophiolitic serpentinized peridotites and gabbros form the highest mountains in the Meratus- Bobaris mountains. Geologic relations and lack of any significant gravity-magnetic expression for an ophiolite root (Situmorang 1987) suggest these probably represent remnants of a relatively flat-lying, allochthonous nappe of oceanic crust and mantle.

Reported ages of the ophiolites are variable. A latest Triassic- earliest Jurassic age was suggested by ~200 Ma Pt-Os dates by Coggon et al. (2010), which would fit with Middle Jurassic- late Early Cretaceous ages of overlying(?) pelagic radiolarian cherts (Wakita 2000). Plagiogranites in the ophiolite complex suggest younger K/Ar ages: 112 Ma (Dirk 1995; too young?) or 155± 16 Ma (Heryanto and Hartono 2003). Permanadewi et al. (1997) reported a 131±13 Ma age for gabbro.

The ultramafic rocks are underlain by a metamorphic sole (Hauran schist), that is relatively quartz-rich and includes high pressure- low temperature glaucophane schists (Retgers 1893), which presumably formed at depths between 50-60 km in a subduction zone environment (Setiawan et al. 2014). Radiometric ages of the metamorphics is around the Aptian-Albian boundary (110-119 Ma) (Sikumbang and Heryanto 1994, 2009, Wakita et al. 1998).

Below the metamorphic sole is a likely accretionary prism complex of oceanic sediments. It was named Alino Formation by Hooze (1983), Retgers (1891) and Koolhoven (1935) and represent ?Jurassic deep sea sediments with red radiolarian cherts and basalts. Rutten (1926) already pointed out the remarkable resemblance with his Danau Formation from Central Kalimantan, which is another (or the same) Cretaceous accretionary prism complex. (NB: the name Alino Formation is sometimes, erroneously, used for Late Cretaceous arc volcanics above the ophiolite)

The collisional complex is overlain by a Cenomanian? conglomerate mainly composed of schist and also peridotite and limestones with Aptian *Orbitolina lenticularis*. The overlying sediments contain Upper Cretaceous fossils including Turonian ammonoids and *Inoceramus* (Verbeek 1875, Hooze 1893, Martin 1889, Krol 1920, Koolhoven 1935, Hashimoto and Koike 1973, 1974, Kobayashi 1973, Hashimoto and Matsumaru

1974), The Aptian-Albian limestones with *Orbitolina* may be olistolith in Upper Cretaceous (Maryanto et al. 2014)

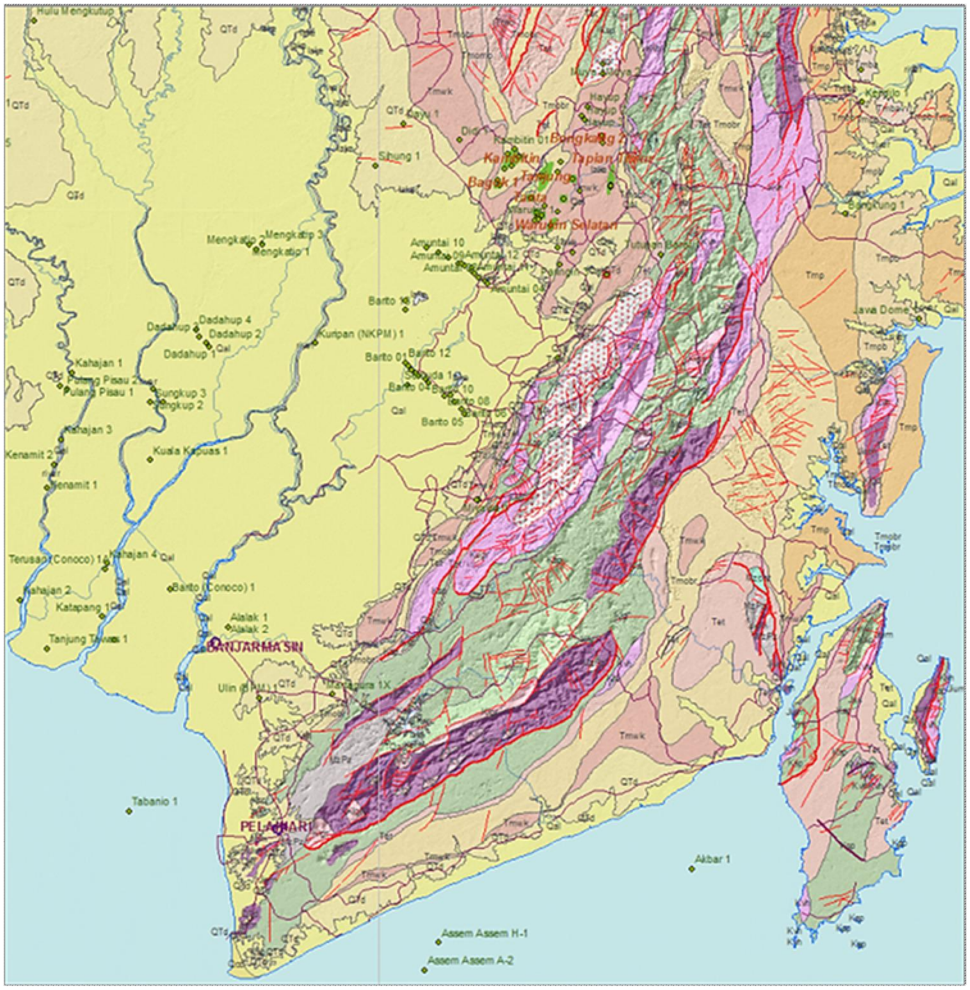

Figure IV.1.7. Meratus Mountains: a mid-Cretaceous collision complex with ophiolites, metamorphics and Late Creceous arc volcanics

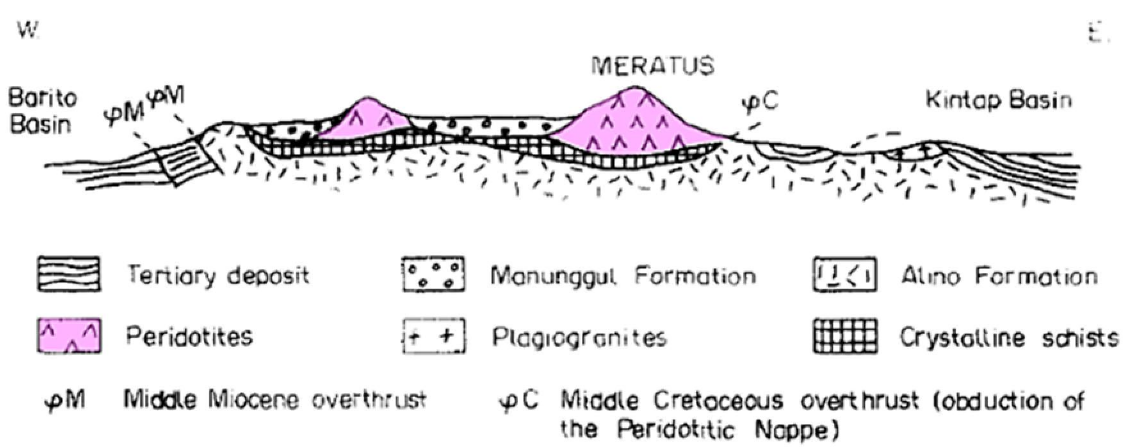

Figure IV.1.8. Meratus Mountains schematic W-E cross-section, showing relatively flat-lying obducted ophiolite nappe over a metamorphic sole of crystalline schists and Jurassic? Alino Formation sediments and volcanics (Yuwono et al. 1988, after Priyomarsonono 1985).

Tertiary basins

Kalimantan/ Borneo is home to a number of major sedimentary basins (Figure IV.1.9). There are essentially two groups of basins: (1) interior rift basins (Melawi, Ketungau, Barito, upper Kutai?) and (2) deltaic-submarine fan systems along the continental margin in North and East (Kutai, Tarakan, Sandakan, Baram, West Luconia). They have different tectonic histories and different hydrocarbon distributions.

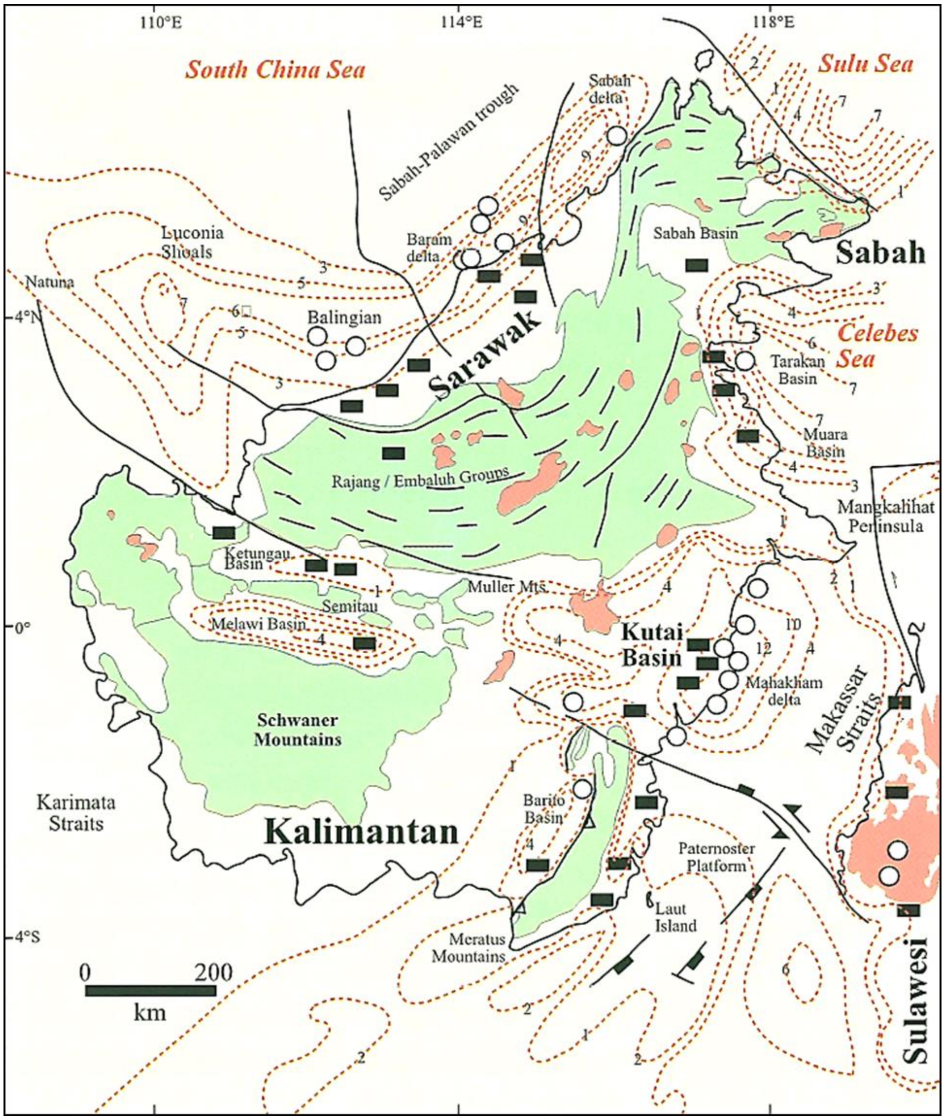

Figure IV.1.9. Simplified geological map of Borneo, showing Cenozoic sedimentary thicknesses (dashed lines), peat/ coal and hydrocarbon accumulations; (Chambers and Moss 1999).

The E-W trending Melawi and Ketungau sedimentary basins formed across Central Kalimantan, probably mainly in the Late Eocene- Oligocene time (Heryanto and Jones 1996), and may connect with the Upper (West) Kutai basin. The Melawi Basin may be slightly older than the Ketungau Basin. Both basins may have formed a single basin before separation by uplift of the Semitau Ridge, a Neogene high with a core of Late Cretaceous 'Boyan melange' (Figure IV.1.10) (Heryanto et al. 1993, 1996).

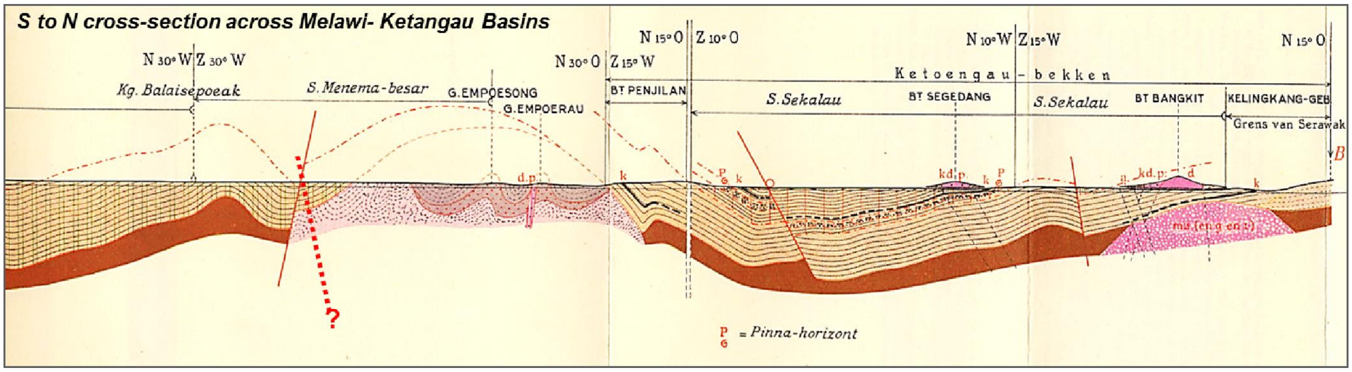

Figure IV.1.10. Historic S-N cross-section from Northern Melawi Basin- Semitau Ridge and Ketungau Basin, NW Kalimantan (Zeijlmans van Emmichoven, 1939). The Semitau Ridge is clearly a relatively young uplift.

Heryanto (1991) interpreted these as forearc basins between North-migrating uplifted accretionary prisms, filled with clastics derived from these uplifting Boyan and Lubuk Antu accretionary complexes in the North. Thick sandstones and non-marine and brackish-water facies make dating difficult.

The Kutai Basin of East Kalimantan probably has the thickest sediment fill (7-14 km) of all Indonesian basins (Rose and Hartono 1978; Chambers and Moss 1999; Figure IV.1.9). Due to its unusual thickess, and with Middle Eocene-Oligocene in bathyal marine facies, it has been suggested that parts of the Kutai may be underlain by (Eocene) oceanic crust (Weimer 1975, Wain and Berod,1989, Moss 1998), a possible triple junction of the Celebes Sea- Makassar Straits marginal basin/ rift system.

Likewise, the Tarakan Basin is essentially a Miocene- Pliocene delta system that progrades East-ward over oceanic crust of the Eocene Celebes Sea- Makassar Straits marginal basin system (Weimer 1975). One of the few radiometrically dated basement penetrations in the Tarakan Basin is the Bangkudulis-1 well, which penetrated basalt of Middle Eocene age (43.9 +/- 1.30 Ma; Heriyanto and Wahyudin (1994)).

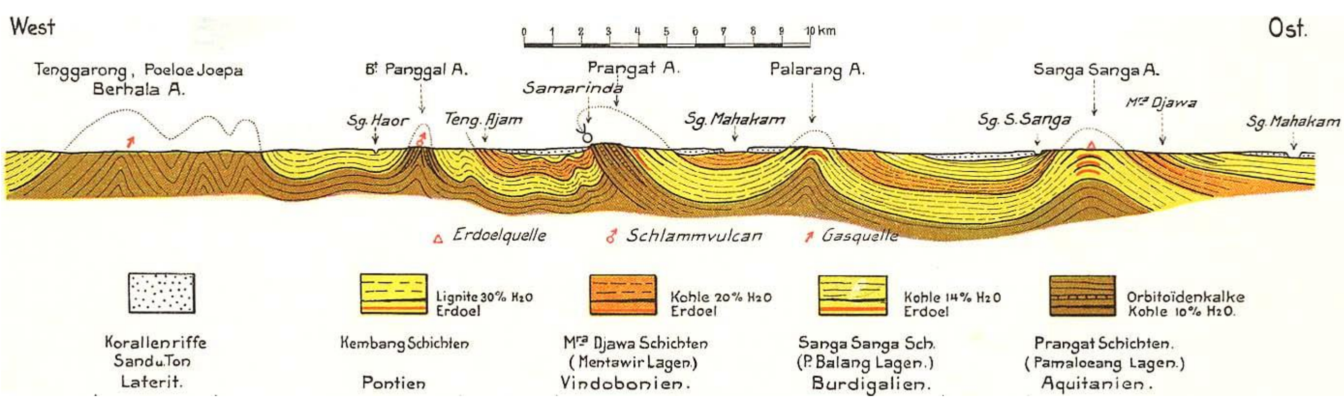

Figure IV.1.11. Historic W-E cross-section Kutai Basin showing Middle Miocene and later folding of pre-Middle Miocene deltaic sediments near Samarinda town and the Sanga-Sanga oilfield (Jezler, 1916).

Significant angular unconformities have been reported from the Kutai and Tarakan basins in the late Middle Eocene and around the Early- Middle Miocene boundary (Achmad and Samuel 1984, Moss 1998, etc.). These two uplift/ early inversion events have been linked to continental blocks collisions (Luconia and Dangerous Grounds/ Palawan) at the N margin of Borneo.

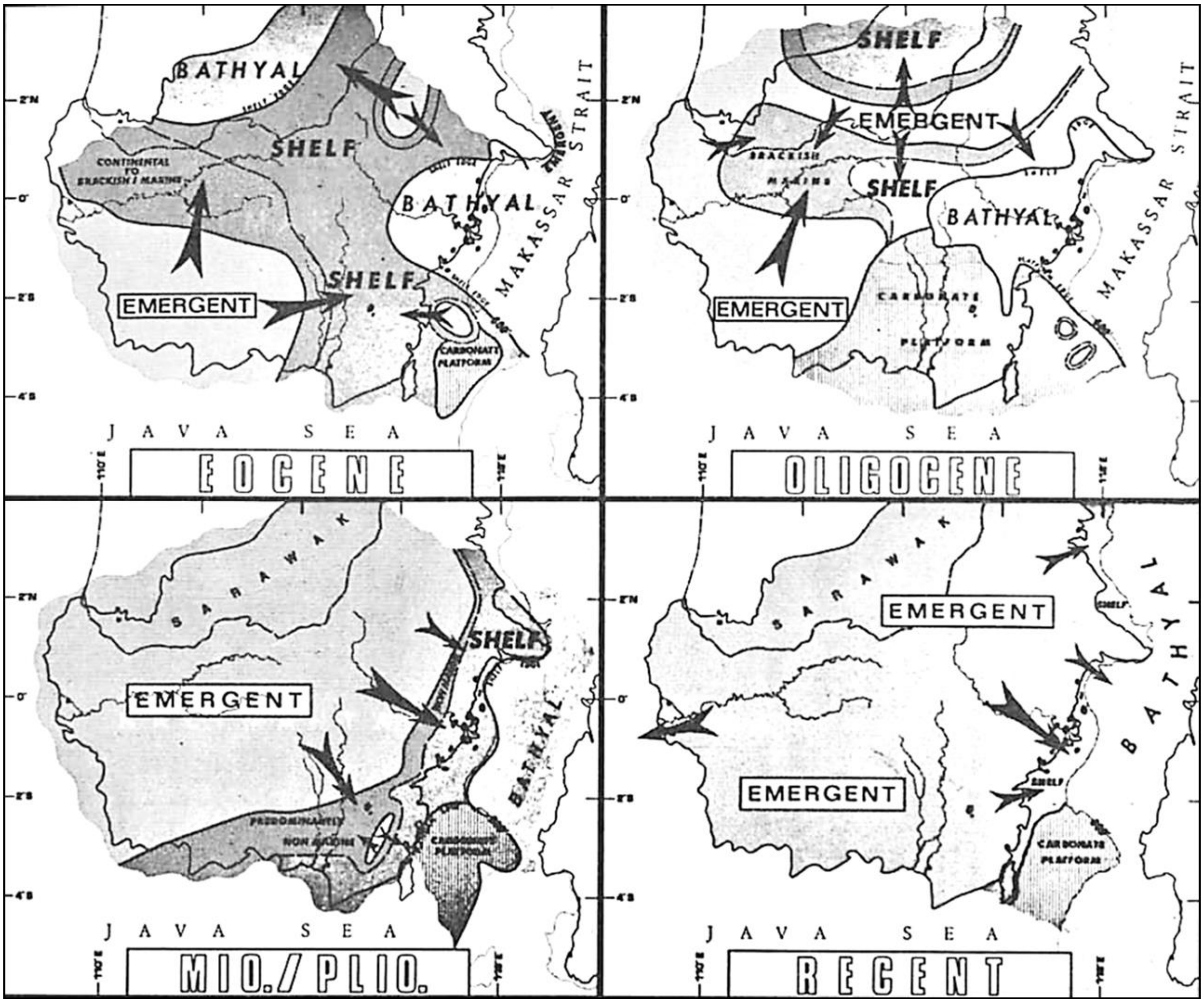

Figure IV.1.12. Cenozoic paleogeographic evolution of Kalimantan. (1) Eocene- Oligocene with bathyal facies in Kutai Basin and connected to non-marine Melawai- Ketapang basin to West. (2) Large Oligocene Berai Fm carbonate province in SE (Barito- Paternoster); (3) Middle Miocene and younger uplift of most of present-day Kalimantan pushed sedimentation depocenters further outboard and 'recycled' Paleogene and older sediments to N,E and S (Rose and Hartono 1978).

Figure IV.1.12 illustrates some of the main patterns in the evolution of Cenozoic sedimentation, including showing the deep marine nature of the Kutai basin in Eocene- Oligocene time and the emergence of much of Borneo in Miocene time (from Rose and Hartono 1978).

Barito Basin and Meratus Range uplift

The Barito Basin in SE Kalimantan is often viewed as a foreland basin, due to its asymmetrical profile view, showing gradual thickening of Eocene- Miocene basin fill towards the present-day Meratus Mountains thrust front in the East (Figure IV.1.13). However, there is no evidence that the Meratus Range was a basin margin when the Eocene- Miocene sediments of the Barito basin were deposited. Instead, it looks like a post-Miocene uplift that segmented the previously combined Barito- Asem Asem basins, so the Barito basin is probably not a foreland basin.

Provenance and current direction studies of present Meratus Range was not a sediment source for Eocene-Middle Miocene sediments in the Barito Basin. Outcrops adjacent to the Pretertiary ophiolites, metamorphics and arc volcanics of the Meratus show:

1. Paleocurrent directions for Eocene Tanjung Formation and Middle Miocene Warukin Formations (Heryanto and Panggabean 2004 and personal observations) systematically show flow directions of fluvial and deltaic streams directed towards the area of present-day Meratus, not away from the Meratus;

2. Eocene and Middle Miocene sandstones have remarkably low feldspar content (Heryanto and Panngabean 2004). This suggests that Upper Cretaceous arc volcanics, which are widespread in Meratus Mountains outcrops today, were not being eroded at that time;
3. Eocene- Miocene sediments are systematically and steeply dipping away from the Meratus Range, suggesting Meratus Range uplift post-dated these sediments.

The exact age of the Meratus Range uplift is still somewhat debated, due to the difficulty in age dating of the first Meratus-derived sediments, the (Dahor Formation 'molasse'; Witts et al. 2014).

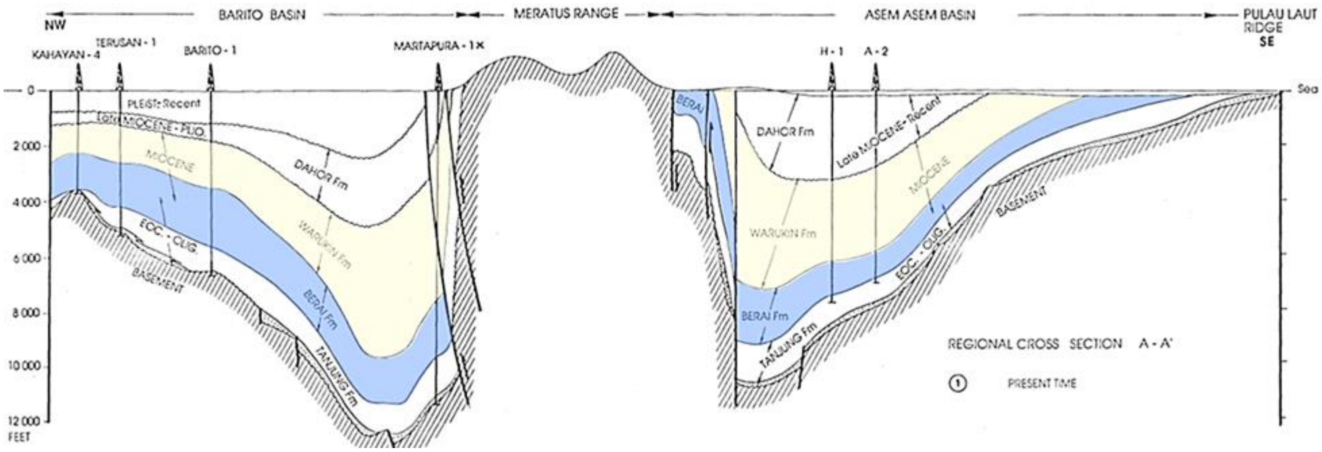

Figure IV.1.13. NW-SE cross-section of Barito and Asem Asem basin in SE Kalimantan. Both look like asymmetrical foreland basins, but have identical Eocene-Miocene stratigraphy and were more likely a single Eocene- Miocene rift basin, segmented by Late Miocene and later uplift of the Meratus Range.

Uplift(s) of Central Borneo

Most of Borneo island shows evidence of kilometers of young uplift. The Cretaceous Schwaner Mountains granite plutons formed at >6 km depth, and are now in outcrop. Maturation and diagenesis of Early Tertiary sediments in the West Kutai basin, etc., suggest up to 5 km of erosion. The Mount Kinabalu granite rose over 6 km in the last 7 million years. Some of this uplift was early, around the Early -Middle Miocene boundary, but much of it is of Pliocene and younger age.

Major delta systems

Borneo island is home to a number of major rivers and associated delta systems (Figure IV.1.14):
- along the East coast are the Mahakam and Sangatta delta (Makassar Straits);
- in the NE the Tarakan delta (Celebes Sea);
- in the NE the Sandakan Delta (Sulu Sea);
- along the NW coast the Sarawak, Baram and Rajang deltas;
- in the SE is the Barito River delta (Java Sea);
- in West is the Kapuas delta (Sunda Shelf).

All these present-day deltas overlie much larger Middle Miocene- Pleistocene deltaic systems that prograded further basinward than the modern deltas. Most of these are prolific hydrocarbon-bearing systems.

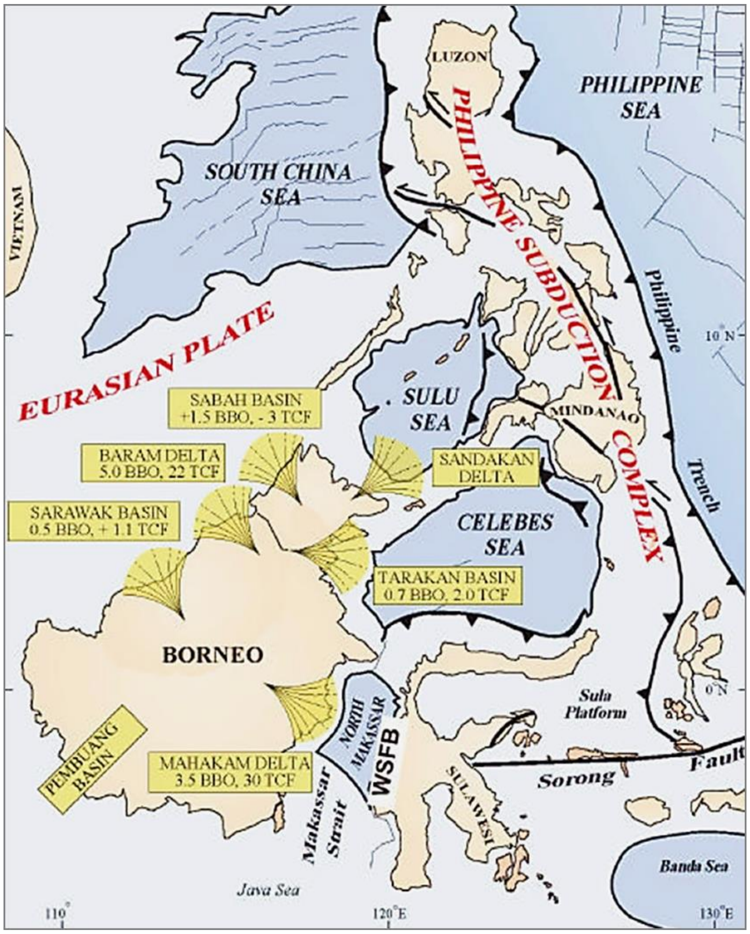

Figure IV.1.14. Diagrammatic map showing locations of major present-day delta systems around Borneo (Baillie et al. 2004, after after Graves and Swauger, 1997).

Linked extensional- compressional systems

Several of the Borneo deltas (Tarakan, Baram, West Luconia) exhibit large coupled extensional-compressional deformation systems, which formed by ongoing gravity sliding driven by updip sediment loading along a deep water margin. Basinward-dipping normal growth faults in the updip domain are linked to a belt of downdip 'toe thrusts' near the base-of-the slope. The extensional and compressional domains are linked via one or more major, low angle detachment surfaces (Figure IV.1.15). Such paired extensional-compressional systems are common worldwide in large deltas flanking deep basins.

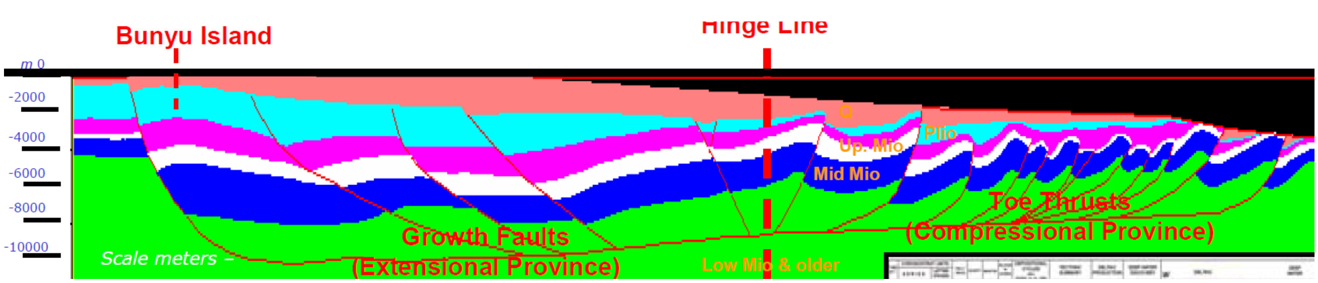

Figure IV.1.15. Example of imbricated toe thrusts in deep water outboard of delta and linked to with gravity-driven growth faults (offshore Tarakan, NE Kalimantan; Hidayati et al. 2007). This delta builds out over Eocene oceanic crust of the Celebes Sea.

Examples of linked extensional-compressional systems in and in front of major deltas of Borneo include:

1. Rajang/ West Luconia Delta/ Bunguran fold-thrust belt off W Sarawak (Jong et al. 2014, Idris et al. 2010, 2015);

2. Baram/ Champion Deltas and corresponding toe thrusts off Brunei (Ingram et al. 2004, Morley et al. 2011);
3. Sabah Delta off NW Sabah (Sulu Sea margin);
4. Sandakan Deltas off NE Sabah (Ismail et al. 1995, Ingram et al. 2004, Hesse et al. 2009, Morley 2009, Sapin et al. 2013; some debate whether there is also a tectonic component here);
5. Tarakan Delta and fold-thrust belt (Hidayati et al. 2007, Jong et al. 2010, 2015);
6. offshore Kutai Basin/ Mahakam Delta (Guritno et al. 2003, Baillie et al. 1999, 2004).

Oil and Gas fields

Numerous oil and gas fields have been discovered in the Cenozoic basins and delta systems of East Kalimantan and North Borneo since the discovery of Sanga Sanga field in 1897. Numerous references on these fields and their play elements can be found in the Bibliography. A thorough review of the petroleum geology of the Tarakan Basin is Wight et al. (1993).

Most of the oil and gas fields in Kalimantan are along the Eastern margin, in the Mahakam and Tarakan delta complexes that prograde into the deep basins of North Makassar Straits and the Celebes Sea. Oil and gas in the deeper horizons are sourced from thermally mature organic-rich deltaic source rocks, while biogenic gas may be present in shallow horizons, sourced from sandstones rich in plant material.

Reservoirs in Borneo delta systems are predominantly fluvial and delta plain/ delta front sandstone. More recent discoveries include biogenic gas in deep-water slope channel and submarine fan deposits along the margin of the North Makassar Straits basin (Seno, etc. fields) (Figure IV.1.16).

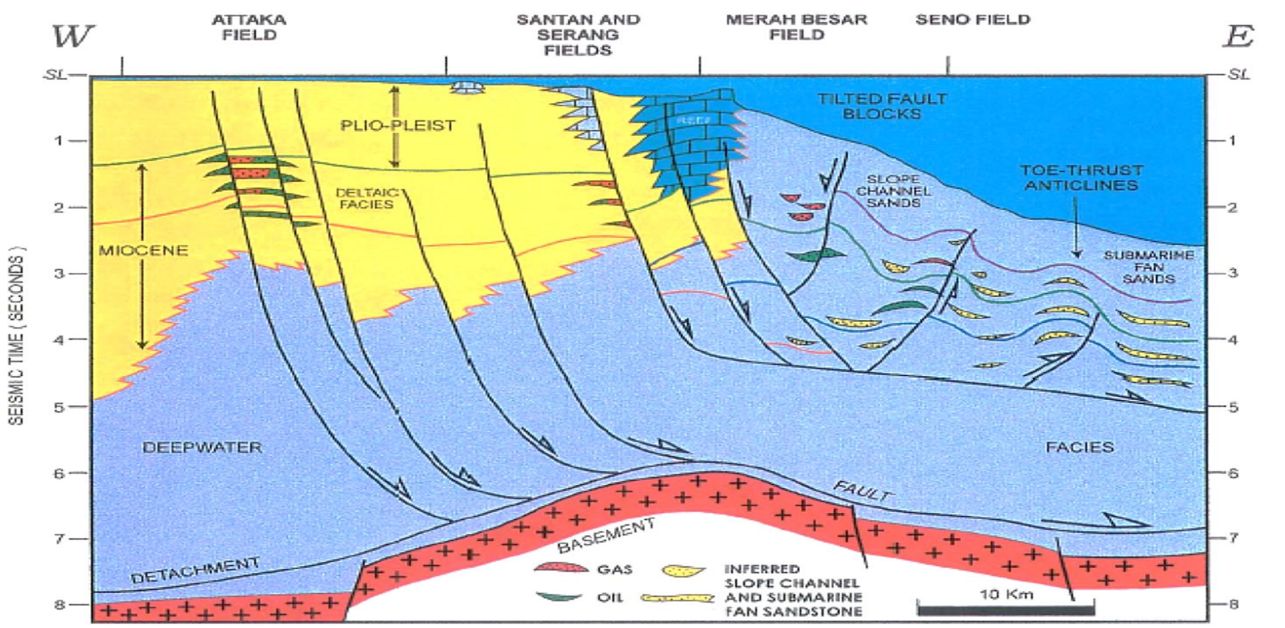

Figure IV.1.16. Diagrammatic W-E section across Mahakam Delta sytem, showing setting of oil-gas fields (from Murphy and Longley presentation, 2005).

The Tanjung field in the Barito basin is one of the few fields on Borneo that is producing from Late Eocene sandstone reservoirs. Oil and gas shows have also been found in the Eocene of the NE Kutai Basin, but are uneconomic so far.

Eocene and Oligo-Miocene carbonates are present in all East Kalimantan basins, but, with the exception of the small Kerendan gas field in the upper Kutai basin, these have not yielded any commercial hydrocarbons.

Kalimantan Diamonds

The name Kalimantan reportedly is derived from 'Kali mas intan', meaning 'Rivers of gold and diamonds'. Diamonds have been mined here for centuries, from several areas across all of Kalimantan of SE, South and West Kalimantan and West Sarawak (Figure IV.1.17), always by small-scale local operators.

Figure IV.1.17. Alluvial diamond fields of West, South and SE Borneo (Posewitz 1885?)

All exploitation is from Quaternary alluvial deposits, but diamonds have also been observed in Cretaceous and Eocene conglomerates (Hovig 1930). Apparently mining and associated cutting activity already went in decline by 1900, presumably partly due to larger diamond discoveries in South Africa.

A series of papers have speculated on their origin, but no definitive answers have been presented yet (e.g. Van Leeuwen 2014). A commonly suggested origin from ultramafic rocks of the Meratus Mountains is not supported by any other observations. Also, the widespread distribution of diamonds across all of Kalimantan, with drainage divides between the Meratus Mountains and diamond-bearing regions of West Kalimantan, etc. also makes such a connection rather unlikely.

Some diamonds yielded Archean ages (3.1 Ga; Smith et al. 2009) and somehow probably came from an uplifted and eroded North Australian/ Gondwanan terrane. Tay et al. (2005) observed abundant percussion scars on SE Kalimantan diamonds, indicating mechanical reworking and possibly multiple cycles of erosion and deposition.

Potentially equivalent alluvial diamond occurrences are known from West Thailand, Myanmar and Sumatra, although there are no reports of any mining of these. In Thailand they have been tied to erosion of detrital diamonds observed in the Carboniferous- Early Permian Phuket Series glacial deposits of the Sibumasu terrane (Ridd 1971, Wathanakul et al. 1998, Griffin et al. 2001, Win et al. 2001).

The spatial association with Sibumasu Carboniferous-Permian glacial pebbly mudstones has also been observed for Myanmar and Sumatra by Van Leeuwen (2014). This begs the question of the possible presence of Sibumasu terrane sediments in the source area of the diamond-bearing clastics of Borneo.

Figure IV.1.18. Traditional diamond mining operations, Cempaka area, S of Banjarbaru, SE Kalimantan.

Some suggested reading- Kalimantan *(not a complete listing of all relevant papers)*

General, Tectonics	*Molengraaff 1910, Haile 1974, Hartono 1984, 1985, Doutch 1992, Van de Weerd and Armin 1992, Simanjuntak 1999, Tate 2001, Hennig et al. 2017*
Paleomagnetic rotations:	*Haile et al. 1977, Untung et al. 1987, Schmidtke et al. 1990, Fuller et al. 1991, 1999, Sunata and Wahyono 1991, 1998*
Tertiary Stratigraphy:	*Leupold and Van der Vlerk 1931, Baumann 1972, Samuel and Muchsin 1975 Achmad and Samuel 1984, Pieters et al. 1987, Tate 1991, Heryanto 1993, 2000*
Paleozoic- Mesozoic faunas:	*Martin 1888, 1889, 1898, Krekeler 1932, Von Koenigswald 1939, Rutten 1943, 1947, Schairer and Zeiss 1992*
Igneous complexes, Minerals:	*Williams and Harahap 1986, Williams et al. 1984-1990, Simmons and Brown 1990, Van Leeuwen et al. 1990, Harahap 1993, 1996, Suparka 1995, Abidin and Sukardi 1997, Hartono et al. 1999, Soeria-Atmadja et al.1999, Amiruddin 2009, Prouteau et al. 1996, 2001, Davies et al. 2004, 2008, Hartono 2003, 2006, Robinson et al. 2013*
West Kalimantan:	*Molengraaff 1902, Wing Easton 1904, Loth 1920, Ter Bruggen 1935, Zeijlmans van Emmichoven 1939, Williams et al. 1986, 1990*
Melawi-Ketungau basins:	*Martin 1898, Rose and Hartono 1978, Williams et al. 1984, Heryanto 1991-1996, Panggabean 2005, Yulihanto et al. 2006, Passe et al. 2008, Badaruddin et al. 2018ab*
Tarakan Basin:	*Samuel 1980, Achmad and Samuel 1984, Wight et al. 1993, Biantoro et al. 1996, Lentini and Darman 1996, Darman 1999, Noon et al.2003, Subroto et al. 2005, Sukanta et al. 2009, Sudarmono et al. 2017, Saputra et al. 2018*
Kutei Basin:	*Ubaghs 1936, Samuel and Muchsin 1975, Panigoro 1983, Nuay et al. 1985, Land and Jones 1987, Ott 1987, Van de Weerd et al. 1987, Moss 1988, Sunaryo et al, 1988, Wain and Berod 1989, Biantoro et al. 1992, 1994,*

*Saller et al. 1992, 1993, Sardjono and Rotinsulu 1992,
Chambers and Daley 1995,1997, Bates 1996, Stuart et al. 1996,
Tanean et al. 1996, Paterson et al. 1997, Endharto 1997,
Ferguson and Clay 1997, Paterson et al. 1997, Cloke et al. 1997, 1999,
Moss 1998, Moss and Finch 1998, Guritno and Chambers 1999, Moss and Chambers 1999, Chambers and Moss 1999, Feriansyah et al. 1999,
Saller and Vijaya 2002, Chambers et al. 2004, Camp et al. 2009,
Lubis and Djaelani 2016, Marshall 2016, Werdaya et al. 2017,
Suandhi et al. 2017-2018*

Mahakam Delta: *Gerard and Oesterle 1973, Allen et al. 1976, 1979, Loiret and Mugniot 1982, Carbonel and Moyes 1987, Allen and Chambers 1998, Allen and Mercier 1988, Duval et al. 1998, Sidi et al. 1998, Peters et al. 1999 McClay et al. 2000, Nummedal et al. 2000, Peters et al. 2000, Snedden et al. 2001,Lambert et al. 2003, Roberts and Sydow 2003, Subroto et al. 2006, Cibaj et al. 2007- 2010, Lambiase et al. 2017*

Barito basin: *Hooze 1893, Verbeek 1875, Krol 1920 1925, Siregar and Sunaryo 1980 Campbell and Ardhana 1988, Kusuma and Darin 1989, Mason et al. 1993, Rotinsulu et al. 1993, Satyana et al. 1993-2002, Bon et al. 1996, Heryanto and Panggabean, 2004, Heryanto 2010, Witts 2011, 2013, Witts et al. 2014, Kristyarin et al. 2016*

Meratus Mts: *Martin 1889, Retgers 1893, Krol 1920, Rutten 1926, Priyomarsono 1986, Sikumbang 1986, 1990, Situmorang 1987, Yuwono et al. 1988, Hardjadinata 1995, Dirk 1995, 1997, 2000, Zulkarnain et al. 1995, 1996, Robinson et al. 1996, Wakita et al. 1997, 1998, 2000, Koji et al. 1998, Parkinson et al. 1998, Monnier et al. 1999, Pubellier et al. 1999, Hartono et al. 1999, Heryanto 2000,Hartono 2000, Abidin and Hakim 2001, Heryanto et al. 2001, 2003, Heryanto and Hartono 2003, Setyanta and Setiadi 2006, Satyana and Armandita 2008, Satyana 2010, Heryanto and Panggabean 2010, Hartono 2012, Soesilo et al. 2012, Setiawan et al. 2014*

Oil and gas fields: *Courteney et al. 1991 and too many others to include here; see bibliography*

Diamonds: *Posewitz 1885, Wing Easton 1894, 1933, Doorman 1906, Krol 1922, Hovig 1930, Witkamp 1932, Koolhoven 1933, 1935 Ubaghs 1941, Bergman et al. 1987, 1988, Taylor et al. 1990, Spencer et al. 1988, Burgath and Mohr 1991, Tay et al. 2005, Aziz 2007, 2014, Smith et al. 2009, Van Leeuwen 2014, Kueter et al. 2016, White et al. 2016, Shen et al. 2017*

IV.3. North Borneo (Sarawak, Sabah, Brunei)

The sub-chapter IV.3 contains 930 references on the geology of Sarawak, Sabah and Brunei. Many papers discuss oil and gas fields, deepwater and deltaic sedimentology, ophiolites, micropaleontology, etc..

Except for SW Sarawak, which is a continental area with Late Paleozoic and Mesozoic sediments of Indochina affinity, the geology of onshore North Borneo is dominated by a series of W-E to SW-NE trending accretionary complexes and large younger delta systems that are home to many oil and gas fields.

The accretionary complexes are composed of intensely folded, predominantly South-dipping, imbricated deep water sediments of Cretaceous to Middle Miocene age, with fragments of ophiolitic rocks. These demonstrate that the North Borneo margin was a long-lived active margin, with subduction of 'Proto-South China Sea' oceanic crust to the South, under Kalimantan/ Sundaland, creating E-W trending volcanic arc systems in Kalimantan. This subduction zone may be traced Westward towards the Natuna- Anambas islands, and possibly links to the N Vietnam- SE China ' Yenshanian' magmatic arc.

The long duration of subduction suggests subduction of a large oceanic plate. The presence of latest Jurassic and Early Cretaceous age radiolarian chert blocks in the accretionary prism (Jasin 1996, 2000) suggest the subducting ocean crust was of Late Jurassic or older age. It was therefore probably not a South China Sea-type marginal basin, but may have been part of an early Pacific Ocean sea floor (Aitchison 1994, Honza et al. 2000).

Multiple accretionary complexes have been distinguished and named, younging in N direction. The oldest complex is mainly in North Kalimantan and was called the Danau Formation by Molengraaff (1910), who already recognized these folded radiolarian cherts, red siliceous shales and ultrabasic rocks as oceanic deposits. It is of (latest Jurassic?-) Early Cretaceous age. In the North Kutai Basin this is known as Telen-Kelinjau melange.

Further North, straddling the Kalimantan- Sarawak border, is the Late Cretaceous (Santonian) - Early Eocene Rajang- East Crocker Belt (Embaluh Group in Kalimantan). It is unconformably succeeded in onshore Sarawak and Sabah by the Late Eocene- Early Miocene West Crocker Belt (Figure IV.3.1).

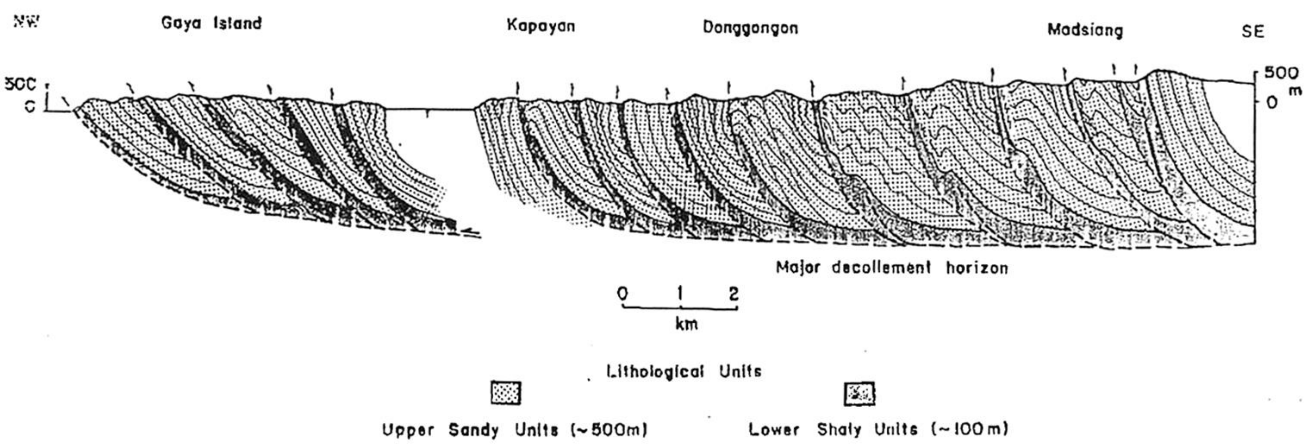

Figure IV.3.1. .Diagrammatic NW-SE cross-section of part of West Crocker Belt accretionary prism in Kota Kinabalu area (Tongkul, 1989). Showing imbricated ESE-dipping thrust slices of Eocene-Oligocene turbiditic clastics, each 200-600m thick and repeating every 1-2km, formed during subduction/ accretion against Borneo in Late Oligocene- E Miocene

The closing of the ocean basin was probably diachronous, and was punctuated by microplate collisions, like the Luconia/ Miri Block collision, which caused a Middle-Late Eocene uplift event in onshore N Borneo ('Sarawak Orogeny').

Subduction and arc volcanism ceased completely by the end of the Early Miocene (~16 Ma), after collision of the Dangerous Grounds-Palawan Block ('Sabah orogeny'). This also stopped the opening of the South China Sea and caused uplift across much of N Borneo- Kalimantan, leading to major acceleration of progradation of deltas around the E-M Miocene boundary in Sarawak and the Tarakan, Kutai and Barito basins in Kalimantan.

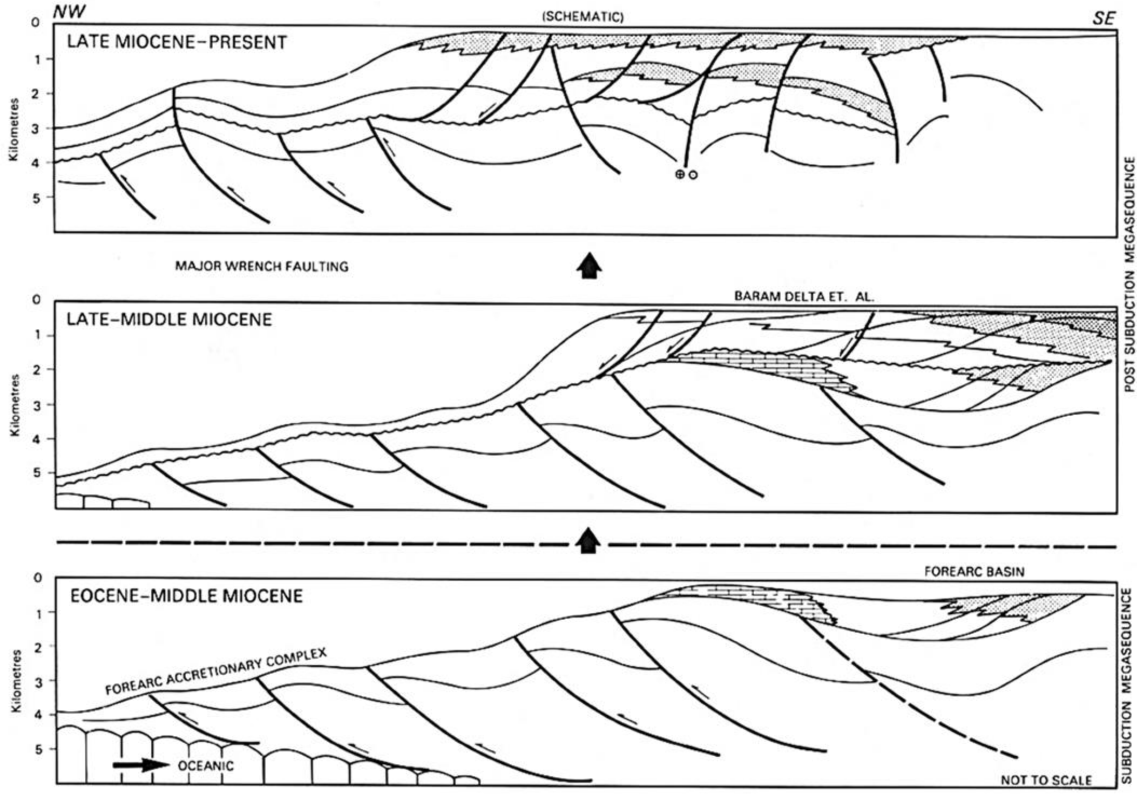

Figure IV.3.2. . Major hydrocarbon-bearing delta complexes along the 'failed active margin' of North Borneo prograded over pre-Middel Miocene accretionary complex (Roberts 1988).

Except for the large and shallow Miri oil field of North Sarawak, discovered in 1910, all North Borneo oil and gas discoveries are offshore.

Useful recent summaries of North Borneo hydrocarbon provinces are in Sandal et al. (1996) and Petronas (1999). Two main hydrocarbon play areas may be distinguished:
- the oil-prone Middle Miocene- Early Pliocene Baram Delta system in the East (off Brunei- Sabah)
- the gas-prone Central Luconia Province in the West (off W Sarawak), with Oligocene sandstone and Middle-Late Miocene carbonate reservoirs.

Some suggested reading- North Borneo *(not a complete listing of all relevant papers)*

Text Books:	*Liechti et al. 1960, Sandal et al. 1996, Hutchison 2005*
Tectonics, Regional	*Kirk 1968, Haile 1969, McManus and Tate 1983, Levell 1987, Hutchison 1988-2010, Tjia 1988, Hinz et al. 1989, Rangin et al. 1990, Tongkul 1990-2006, Tate 1992, Hazebroek and Tan 1993, Tongkul 1994, Omang 1994, 1995, 1996, Swauger et al. 1995, 2000, Omang and Barber 1996, Clenell 1996, Milsom et al. 1997, Ismail 1999, Leong 1999, Balaguru et al. 2003, Morley et al. 2003, Tingay et al. 2005, 2009, Morley and Back 2008, Balaguru and Hall 2009, Cottam et al. 2010, Cullen 2010, King et al. 2010, Hall 2015, Wang et al. 2016, Lunt and Madon 2017ab, Rahim et al. 2017, Tongkul 2017*
SW Sarawak Paleozoic- Mesozoic:	*Cummings 1961, Bayliss 1966, Sanderson 1966, Kon'no 1972, Tamura and Hon 1977, Fontaine 1990, Beauvais and Fontaine 1990, Vachard 1990, Jasin and Said 1999, Jasin 2000, Takuya and Takeshi 2002, Sakamoto and Ishibashi 2002, Breitfeld et al. 2017, 2018, Breitfeld and Hall 2018*
Accretionary complexes:	*Molengraaff 1910 (Danau Fm), Stauffer 1967, Tan 1982, Benard et al. 1990, Aitchison 1994, Hutchison 1994, 1996, Tongkul 1987-2006, Harahap 1995 (Boyan), Moss 1998 (Embaluh), Honza et al. 2000, Crevello 2001, Van Hattum et al. 2003, 2006, Lambiase et al. 2008, Galin et al. 2017*
Hydrocarbons- Mio-Pliocene clastics:	*Redfield 1922, Wilford 1961, Schaar 1976, Rijks 1981, Johnson et al. 1989, Ismail et al. 1995, Koopman and Schreurs 1996, Carter et al. 1997, Mat-Zin and Swarbrick 1997, Schreurs 1997, Graves and Swauger 1997, Tan et al. 1999, Bait 2003, Darman and Damit 2003, Saller and Blake 2003, Ingram et al. 2004, Jong et al. 2017, Kessler and Jong 2017, 2018*
Hydrocarbons- Luconia carbonate play:	*Ho Kiam Fui 1978, Epting 1980, 1989, Doust 1981, Ho 1990, Madon and Hassan 1999, Vahrenkamp et al. 1998, 2004, Ho et al. 2003, Bracco et al. 2004, Zampetti et al. 2004, Kob and Ali 2008, Chung and Ghosh 2017, Clark et al. 2017, Janjuhah et al. 2017*
Mt Kinabalu granite	*Collenette 1958, 1964, Roe 1964, Jacobson 1970, Kasama et al. 1970, Vogt and Flower 1989, Hoppe 1990, Hall et al. 2008, Sperber 2009, Swauger et al. 2000, Cottam et al. 2010, 2013, Burton-Johnson et al. 2013, 2017*

IV.4. Makassar Straits

This sub-chapter IV.4 of Bibliography 7.0 contains 128 references to papers on the geology of the Makassar Straits area.

Makassar Straits represents an Eocene rift system between East Kalimantan and West Sulawesi, which formed at the eastern margin of Sundaland, and in the process probably separated a continental sliver terrane from this margin that is now West (and part of North?) Sulawesi.

The deep water Makassar Straits basin today is a major faunal dividing line (Wallace's Line) in SE Asia, separating predominantly Asian flora and fauna to the West and Australian-type dominated fauna and flora in the East. With water depths locally over 2000m, it is also the main pathway of deep waters flowing from the West Pacific Ocean to the NE Indian Ocean ('Indonesian Throughflow; see also Volume I).

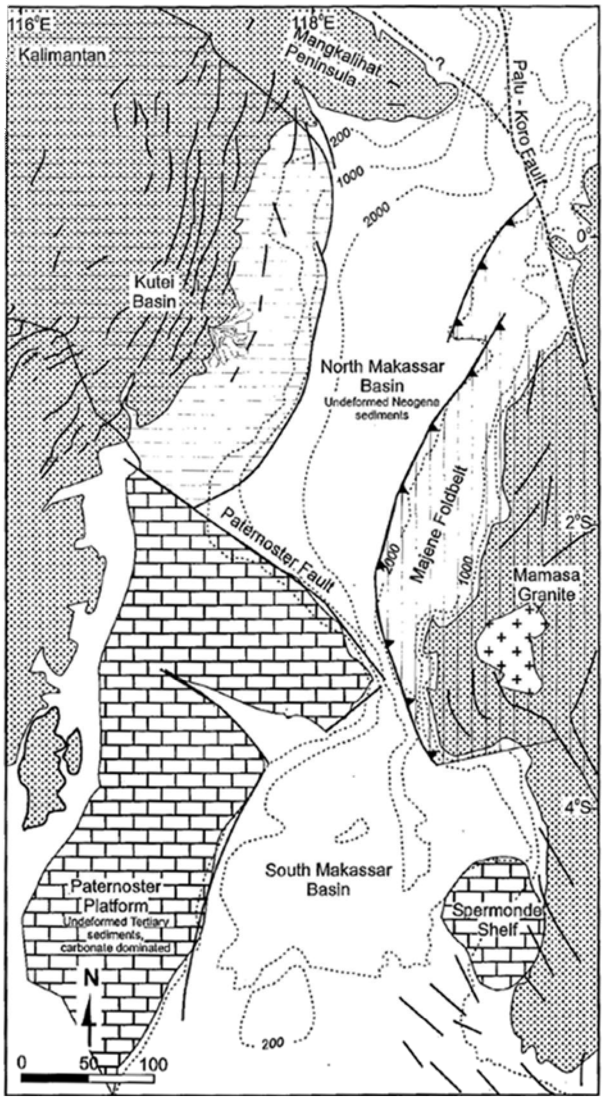

Figure IV.4.1. Regional tectonic map of Makassar Straits basins (Guntoro, in Darman and Sidi, 2000).

Rift sub-basins and transform faults

The Makassar Straits represents an Eocene rift system and consists of two main sub-basins, North and South Makassar basins. The two main basins are separated by a major transform fault zone, the Paternoster or Adang Fault (Figure IV.4.1). In addition, two likely rift transform fault zone separate the North Makassar Basin from the Celebes Sea: the Sangkulirang fault at the South side the Mangkalihat Peninsula and the Mangkalihat Fault along the North side of the Mangkalihat Peninsula.

Several authors continue these Makassar Straits transforms across much or all of Borneo island (e.g. Fraser and Ichram 1999, etc.), but since these are rift transform faults there is no reason for them to continue into Kalimantan beyond the margin of the rifted zone.

Two diagrammatic cross-sections of the South and North Makassar basins are shown in Figures IV.4.2 and IV.4.3.

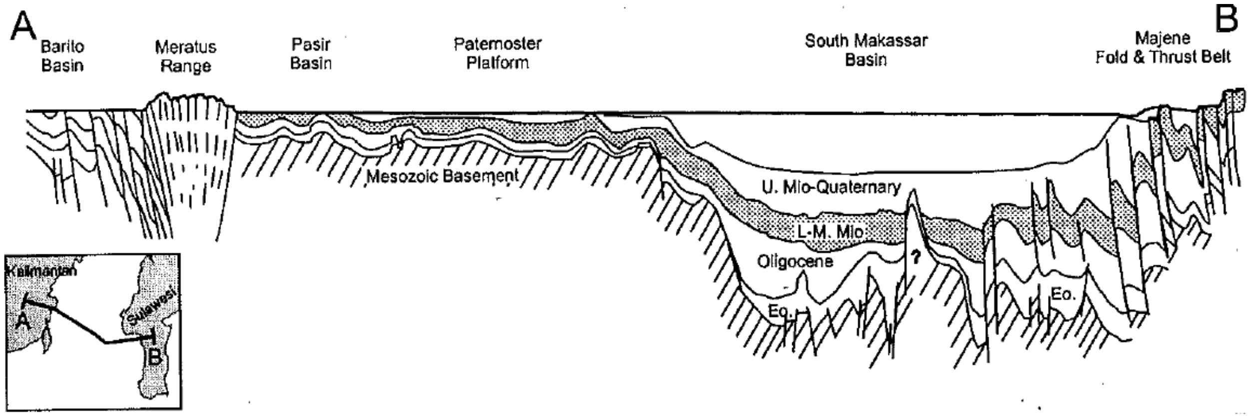

Figure IV.4.2. Regional W-E cross-section of South Makassar Straits, from SE Kalimantan (Meratus Range- Paternoster Platform) to the West Sulawesi Majene fold and thrust belt (Guntoro, in Darman and Sidi 2000).

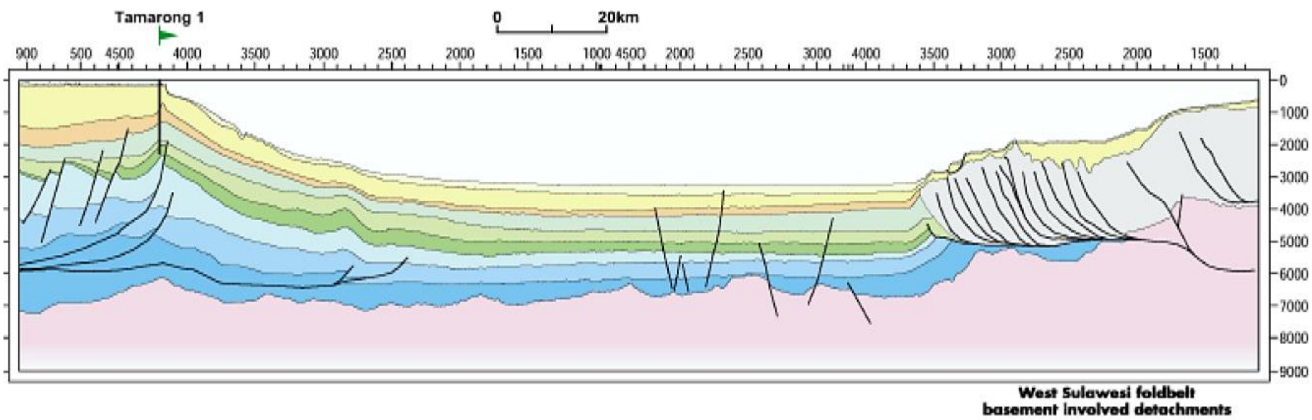

Figure IV.4.3. W-E cross-section across North Makassar Straits basin from the Mahakam Delta area to the West Sulawesi foldbelt-(Fraser et al: 2003). (Note: despite significant Plio-Pleistocene compressional deformation at both sides of basin, there is no compression/ inversion in North Makassar basin basement, attesting to the structural rigidity; highly unusual if rifted accretionary crust).

Tectonic evolution of the Paleogene Makassar Straits rift system

The Makassar Straits does not represent a tectonic suture, but it originated as a late Middle-Late Eocene rift basin, probably within Early Cretaceous-age accretionary-collisional crust at the SE margin of Borneo/ Sundaland. The Makassar Straits basins are probably underlain by highly extended Cretaceous accretionary crust, possibly with continental and Late Cretaceous magmatic arc components, while the North Makassar Basin may also include Eocene oceanic crust in the central parts.

To the North the North Makassar Straits continues into the Celebes Sea, where late Middle Eocene oceanic crust was cored in the ODP 767 and 770 wells (Rangin and Silver 1991). The identical timing of rifting/ spreading and the geographic continuity of Makassar Strait and Celebes Sea make it extremely likely that these two basins had a common origin (e.g. Figure IV.4.4).

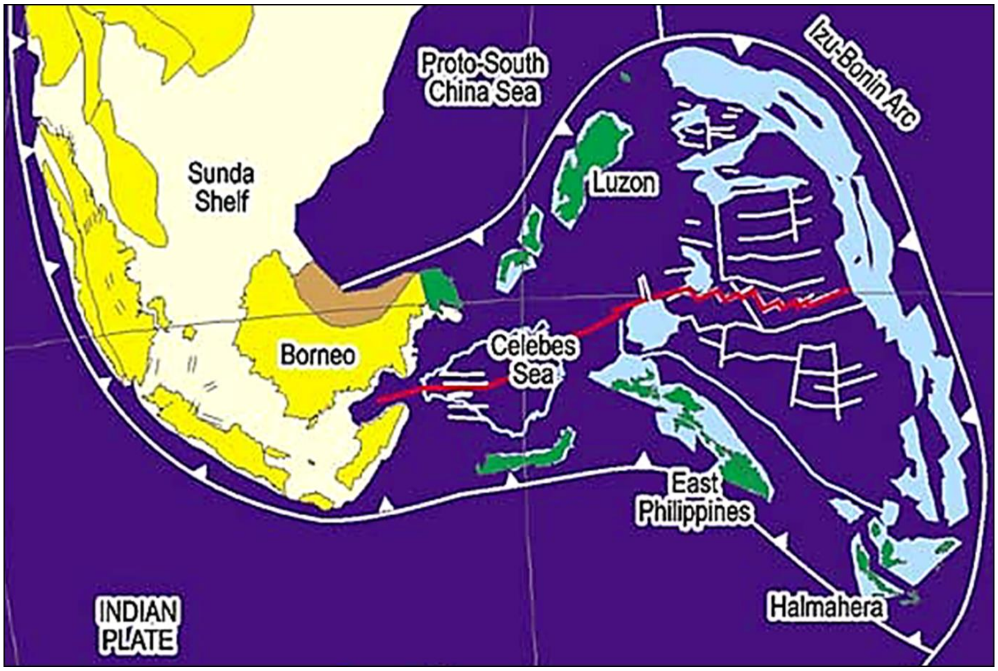

Figure IV.4.4. Part of Middle Eocene (40 Ma) plate reconstruction of Hall (1998, 2002), showing North Makassar Straits opening as westward continuation of the Celebes Sea- Philippine Sea 'back-arc' spreading system, behind the Indian Ocean Plate subduction zone (post-2008 R. Hall reconstructions no longer show Makassar Straits as part of Celebes Sea spreading).

Makassar Straits and Celebes Sea therefore most likely represent a single Middle Eocene backarc extensional system behind a receding West Sulawesi continental margin magmatic arc, presumably during a period of subduction zone rollback. This scenario was probably similar to those depicted in the 40 Ma plate reconstruction of Hall (1998, 2002; Figure IV.4.4) (not Hall 2008, 2009, 2012 and the 46 Ma reconstruction of Harris (2011; Figure IV.4.5).

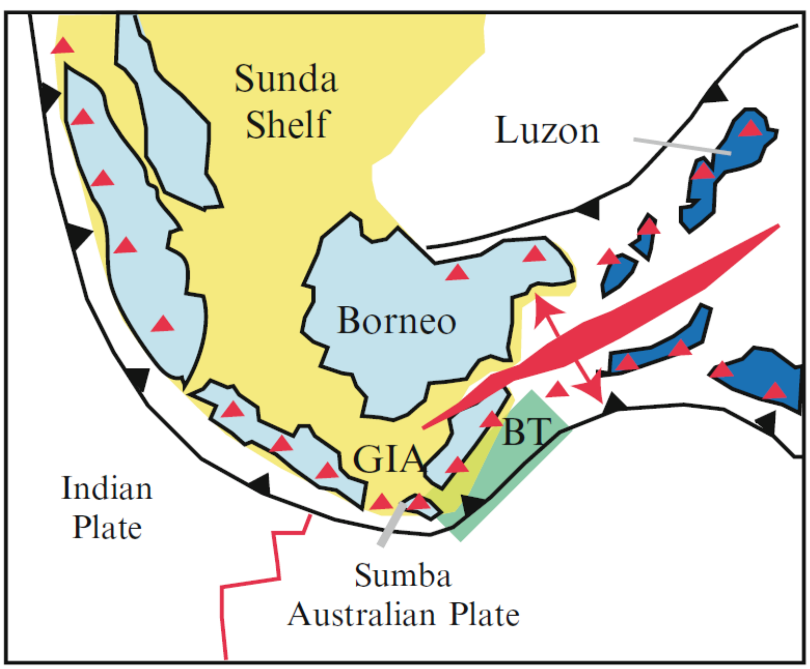

Figure IV.4.5. Diagrammatic reconstruction of Sundaland margin in Middle Eocene (46 Ma) (Harris 2011). Showing Makassar Straits- Celebes Sea opening behind the Great Indonesian Arc (Indian Ocean/ Cenotethys subduction zone). Sumba and West Sulawesi are parts of the Arc, the Banda Terrane of Timor (BT) mainly part of the forearc.

However, these scenarios do not show the possibility of a wider North and South Makassar Straits oceanic basin, and do not honor paleomagnetic data that suggest ~40°of counterclockwise rotation of SW Sulawesi since Middle Miocene (Sasajima et al. 1978, 1980, 1981, Van Leeuwen 1981, Panjaitan 2009; still continuing today at ~1.4°/Myr CCW; Socquet et al. 2006), which would support an originally wider Middle-Late Eocene oceanic basin that is now partially closed.
The West Sulawesi Middle Eocene arc was part of the 'Great Indonesian Arc' of Harris (2006, 2011), that formed a continental margin arc along the margin of Sundaland before mid-Eocene rollback, and continued East into Eocene arc terranes, the remnants of which are now in the East Philippines and possibly farther East in New Guinea/ SW Pacific.

Analogous to the process opening of other marginal basins during subduction rollback, this process started with 'arc-splitting', and separated the forearc of the Great Indonesian Arc from the East Sundaland/Borneo margin. This then formed a sliver terrane that is now West Sulawesi (e.g. Murphy 1976), and probably also the Sumba block and the Banda Terrane of Timor (Harris 2011).

Neogene closing of the Makassar Straits rift basin?

The width of the Eocene-Oligocene Makassar Straits deep rift basin has probably been reduced by:

1. Eastward progradation of the East Kalimantan (Kutai Basin) delta systems. Some authors have argued that part of the Mahakam Delta system overlies Makassar Straits oceanic crust (or a failed arm of a triple junction in the Makassar Straits rift system);
2. West-directed thrusting of the Majene fold-thrust belt system along the West Sulawesi margin (Figures IV.4.2 and 3). Offshore seismic data suggest significant shortening in accretionary prism-style imbrication, possibly reflecting young, short-lived Eastward subduction of Makassar Straits crust under West Sulawesi (e.g. Sukamto 1978, Pubellier et al. 2005; Figures IV.4.6 and 7).
3. Left lateral motion along the Palu Kuro fault of NW Sulawesi in the northern part of Makassar Straits is rotating the NW and North Arms of Sulawesi to the NW, modifying the NE margin of the North Makassar Straits basin, as well as the southern margin of the adjacent Celebes Sea (where >400km of recent subduction is generally accepted).

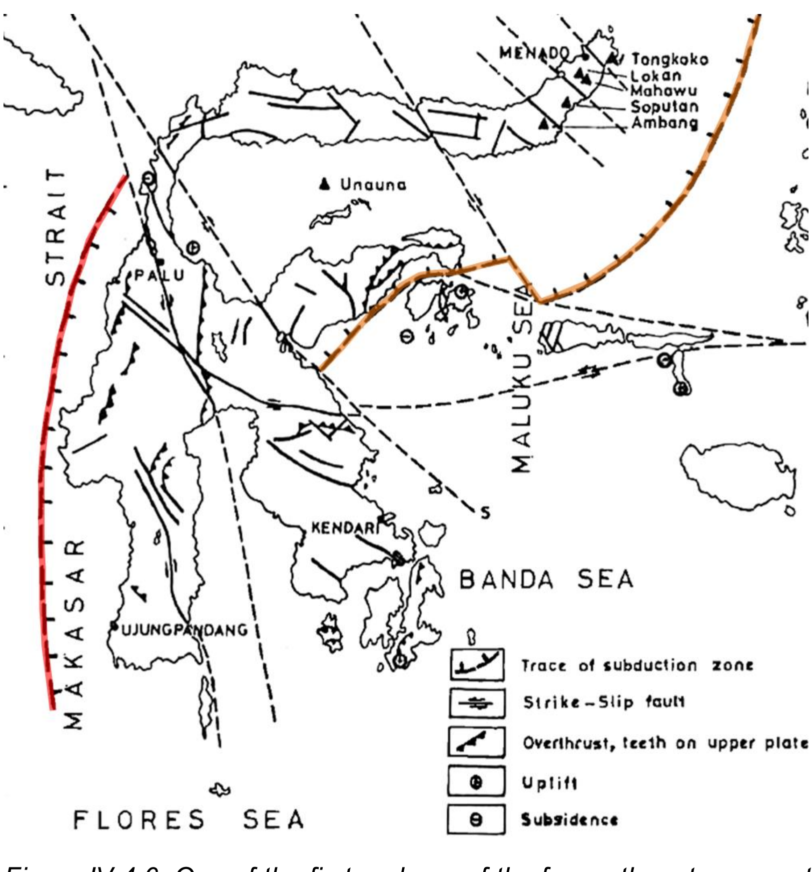

Figure IV.4.6. One of the first and one of the few authors to suggest a young, East dipping subduction zone in eastern Makassar Straits was Sukamto (1978).

An interesting exercise by Pubellier et al. (2005) showed that if today's measured GPS convergence rates between West Sulawesi and Borneo have been constant for the last 10 million years, half of the original North Makassar Straits basin has already been consumed under the West Sulawesi foldbelt (Figure IV.4.7).

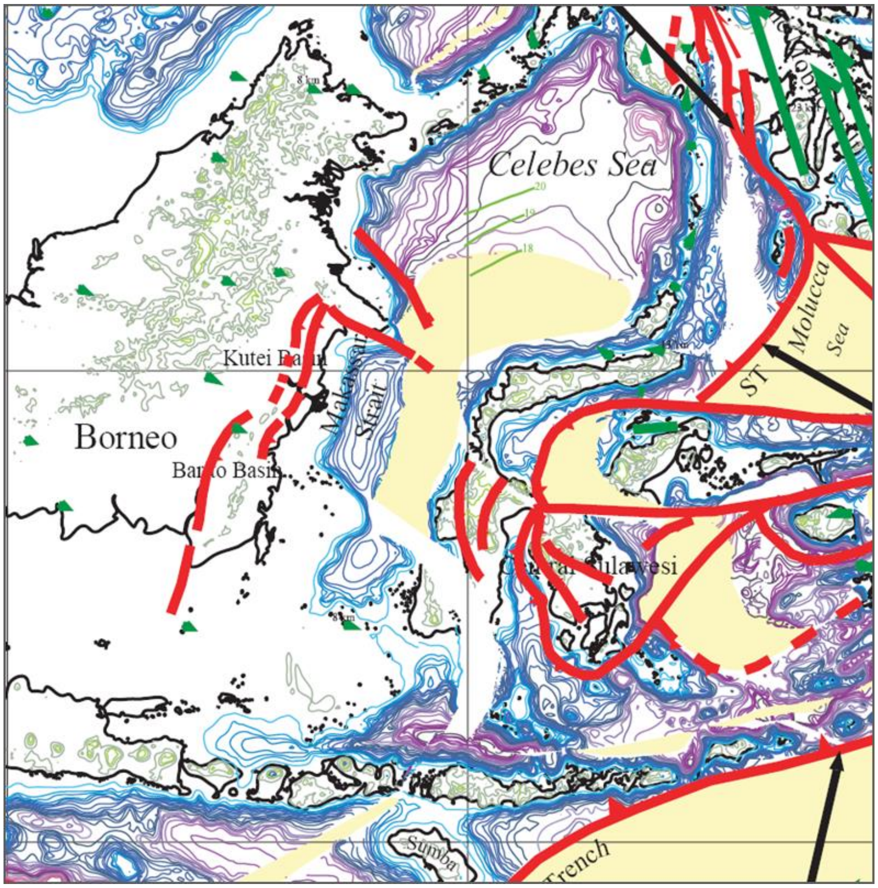

Figure IV.4.7. Plate position restoration of Sulawesi area at 10 Ma (LateMiocene) from 'backtracking' present-day GPS plate motions (Pubellier et al. 2005; DOTSEA project), suggesting the North Makassar Straits basin was twice the width of today. Yellow = areas of consumed (oceanic?) crust.

Oceanic versus extended continental crust in North Makassar Basin

There is ongoing debate on whether and how much of Makassar Straits is underlain by oceanic crust versus highly extended continental crust (e.g. discussions in Hall et al. 2009, Satyana 2015):

1. Extended continental crust: in the South Makassar Straits basin seismic and well data clearly support an underlying Sundaland continental crust with major rifting in Middle Eocene- Oligocene time for much or all of South Makassar Straits Basin
   - seismic data show large rotated fault blocks, some with young inversion of Eocene normal faults
   - many wells penetrated locally thick non-marine Eocene rift sediments in lows and Late Eocene- Oligocene reefal limestones buildups on highs;
   - analysis of basin subsidence was supposed to indicate that the South Makassar Basin is underlain by substantially thinned continental crust (average thickness ~15 km; Situmorang 1982); (however, Situmorang (1989) modeled a zone of low gravity in the center of South Makassar basin East of the Paternoster Platform as a trough with crustal thickness of ~8-9 km, which is remarkably close to oceanic crustal thickness.
2. Oceanic crust: in the North Makassar Straits basement was suggested to be oceanic crust by Katili (1978), Hamilton (1979), Hall (1995, 1998) and others. This is supported by:
   - gravity data modeling and flexural backstripping in the Mahakam Delta area/ North Makassar Straits suggest crust of high flexural rigidity and at depths corresponding best to oceanic crust of Middle Eocene age (Schwartz et al. 1973, Cloke 1997, Cloke et al. 1999, Guntoro 1999, Calvert 2000).

After drilling the only basement penetration in the northern part of North Makassar Straits (Rangkong 1 well, 2009) some consensus appeared to be emerging that this part of the basin still represented thinned continental crust (Bacheller et al. 2011, Satyana 2015). However, despite some unpublished igneous and organic geochemical data that supposedly argue against oceanic crust (Bacheller et al. 2011), the Rangkong 1 well has all the characteristics of an oceanic seamount formed in deep water prior to latest Middle Eocene. It penetrated a hydrothermally altered volcanic section of zeolite-rich basalts, directly overlain by a thin series of late Middle Eocene- Recent bathyal sediments, identical to ODP Site 767 to the NE in the Celebes Sea, which cored undisputed marginal basin oceanic crust and pelagic sediments of the same age (Rangin et al. 1990).

The Paleogene stratigraphic succession of Rangkong 1 is very different from wells further South, most of which are on undisputed extended continental crust, and that exhibit the typical deepening-upward continental rift-basin stratigraphic succession (weathered pre- Middle Eocene basement, overlain by fluvial-lacustrine deposits, followed by shallow marine transgression which locally includes reefal carbonates, and finally deep marine deposits).

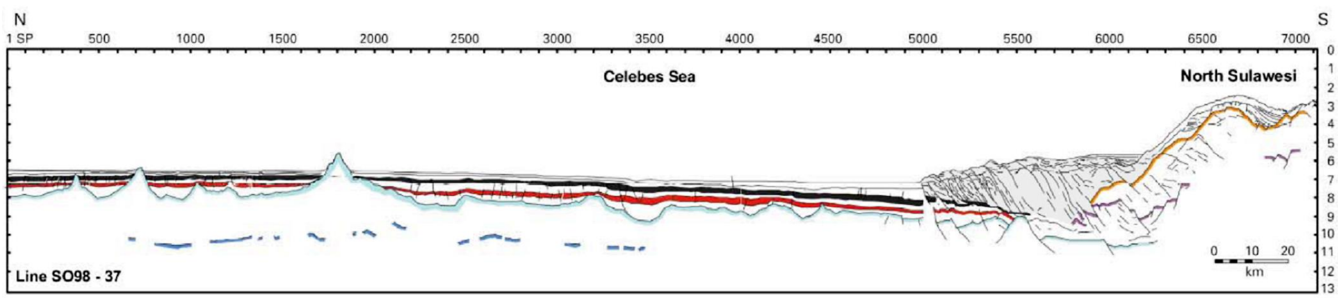

Figure IV.4.8. N-S cross-section of the Celebes Sea basin North of North Sulawesi (Schluter et al., 2001),showing Middle Eocene basaltic oceanic crust with volcanic seamounts, ridges and hints of rotated fault blocks/ half-grabens. A well-developed accretionary prism formed during subduction of Celebes Sea crust under the North Arm of Sulawesi (seismic tomography suggest >400 km of Celebes Sea crust was already subducted). All very similar to North Makassar Straits.

The Rangkong 1 well may still be interpreted as an Eocene volcanic edificed formed on marginal basin oceanic crust, that is overlain by continuous deep marine Late Eocene- Recent sediment succession. This would make the North Makassar Basin a continuation of the Eocene oceanic marginal basin of the Celebes Sea.

The original Makassar Straits- Celebes Sea (- Philippine Sea?) rift and oceanic spreading system widened in NE (originally E?) direction, and may have looked similar to the South China Sea today, before it was partly closed on three sides by later subduction..

Makassar Straits Oil and Gas

The three main hydrocarbon plays in and along the Makassar Straits are, in order of importance:

1. Miocene- Pliocene delta systems in the North Makassar Basin along the East Kalimantan margin (Mahakam-Kutai, Tarakan Basins): with numerous large onshore and offshore discoveries, mainly in young anticlines in Miocene- Pliocene fluvial-deltaic deposits;
2. Plio-Pleistocene deep water submarine fans and slope channels sandstone reservoirs off the East Kalimantan margin. These are relatively small discoveries of biogenic gas, sourced from sandstones rich in delta-derived plant material. Until now this play is limited to the western slope and basin margin of the North Makassar Straits basin, in front of the East Kalimantan delta systems. Fields include West Seno, Ganal, Merah Besar, Gendalo and Ranggas. (Dunham 2016);
3. The 'traditional' Sundaland Paleogene rift-basin plays in South Makassar Straits, in Oligo-Miocene post-rift fluvio-deltaic clastics and overlying carbonate buildups. Several relatively small oil and gas fields (Makassar Straits/ Takatuka gas field)

Some suggested reading- Makassar Straits *(not a complete listing of all relevant papers)*

Tectonics*:*	*Hamilton 1979, Burollet and Salle 1981, Situmorang 1977, 1982, 1989, Untung et al. 1985, Cloke 1997, Cloke et al. 1999, Fraser and Ichram 1999, Guntoro 1999, 2000, Wijaya and Kusnida 2009, Moss et al. 2000, Fraser et al. 2003, Lin et al 2005, Nur'Aini et al. 2005, Puspita et al. 2005, Hall et al. 2009, Courel et al. 2011, Baillie and Decker 2012, Satyana et al. 2012, Lunt and Van Gorsel 2013, Satyana 2015, Bernando et al. 2017*
Deep-water oil-gas exploration:	*Lumadyo 1999, Musgrove et al. 1999, Saller et al. 2000, Guritno et al. 2003, McKee and Dunham 2006, Sawada et al. 2007, Sugiaman et al. 2007, Heri et al. 2009, Siregar et al. 2010, Bacheller et al. 2011, Satyana 2015, Dunham 2016.*

IV. REFERENCE LISTS

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(Muyup gold prospect in NE part of SW-NE trending Miocene East-Central Kalimantan Volcanic belt)

Abidin, H.Z. (1996)- Petrology and geochemistry of volcanic and subvolcanic rocks from the Muyup gold prospect: implications for the tectonic development of the east Central Kalimantan volcanic belt. J. Geologi Sumberdaya Mineral 6, 57, p. 2-9.
(Muyup gold prospect in Latest Oligocene- M Miocene Muyup Volcanics at W margin Kutai Basin. Tied to SE-ward subduction of Proto-South China Sea plate under Borneo. Rel. high K content, and classified as shoshonitic and basaltic members of island arc calk-alkaline suite)

Abidin, H.Z. (1998)- The tectonic history and mineral deposits of the east-Central Kalimantan volcanic belt, Indonesia; a comparative study of the Kelian, Muyup and Masa Ria gold deposits. Ph.D. Thesis University of Adelaide, p. 1-286.
(online at: https://digital.library.adelaide.edu.au/dspace/handle/2440/19144)
(East-Central Kalimantan Early Miocene volcanic belt as result of subduction of South China Sea plate below Kalimantan. Andesitic and dacitic volcanics host several gold deposits in Kutai Basin (Kelian, Muyup) and Barito basin (Masupa Ria), all low sulphidation epithermal types)

Abidin, H.Z. (1998)- Mineralization and alteration of the Kelian gold deposit, East Kalimantan. J. Geologi Sumberdaya Mineral 8, 76, p. 2-10.
(Kelian gold deposit in E-C Kalimantan Volcanic Belt is low sulphidation epithermal gold deposit, genetically associated with Miocene volcanic and subvolcanic rocks. Mineralization consists of disseminations and stockworks, with minor sulphide veins. Mineralization generally at contact between andesite intrusives and (Eocene) pyroclastics. Several types of wallrock alteration)

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(Muyup small low sulphidation gold deposit discovered in mid-1980's in W part of Kutai Basin, hosted in Eocene Pamaluan Fm clastics. Associated with Muyup Volcanics of latest Oligocene- E Miocene East-Central Kalimantan Volcanic belt)

Abidin, H.Z. (1998)- Mineralization and alteration of the Masupa Ria gold prospect, East Kalimantan. J. Geologi Sumberdaya Mineral 9, 88, p. 16-27.
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(Gold prospect in S Meratus Mts)

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(Kukusan area, E of Meratus Mts, SE Kalimantan, dismembered ophiolite complex with ultramafic rocks, chert and volcanic flows. Ultramafic rocks dominate and consist of dunite, serpentinite, harzburgite. Reddish chert

outcrops in N area, formed in deep sea environment and structural contact with ultramafics. Origin of Kukusan ophiolite complex still controversial (obduction or plutonic intrusion, may be result of Oligocene W-ward obduction of E Sulawesi ophiolite and Miocene- Pliocene collision of Sula micro continents)

Abidin, H.Z. & B.H. Harahap (1996)- Geochemistry of young volcanic rocks from the Kelian gold prospect, East Kalimantan. J. Geologi Sumberdaya Mineral 6, 60, p. 2-8.
(Kelian area in W Kutai basin in E Kalimantan, with Oligocene-Miocene volcanics of volcanic arc character and Pleistocene volcanics of non-orogenic character, similar to Oceanic Island Basalt but probably related to period of uplift and continental rifting volcanism within Sundaland)

Abidin, H.Z., P.E. Pieters & D. Sudana (1993)- Geology of the Long Pahangai Sheet, 1716, Kalimantan 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(C Kalimantan map sheet, showing Permo-Triassic(?) Busang Complex granite-gabbro and metamorphic rocks, overlain by folded Cretaceous Selangkai Gp sediments, unconformably overlain by near-horizontal Late Eocene sediments. In N Embaluh melange composed of imbricated Late Cretaceous- Paleocene-Eocene sediments and some Danau ultramafics. Late Oligocene- E Miocene Sintang andesite intrusives, etc.)

Abidin, H.Z. & E. Rusmana (1997)- Petrology and geochemistry of the Tertiary volcanic/sub volcanic rock from the Masupa Ria Gold prospect, East Kalimantan. Proc. 26th Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, p. 237-253.
(Masupa Ria gold prospect in E-C Kalimantan volcanic belt. Volcanics High-K calk-alkaline island arc volcanism as result of subduction of S China Sea plate under Kalimantan in Late Oligocene (~24.4 Ma))

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(NE-SW trending, ~400 km long belt of calk-alkaline volcanics with gold mineralization across C and E Kalimantan. K-Ar ages of andesites at Kelian, Muyup and Masupa Ria gold prospects from ~14.2- 24.6 Ma (E-M Miocene). Quaternary basalt and dacite at Kelian 1.53- 0.97 Ma (Pleistocene). Late Oligocene-Miocene volcanism related to subduction of S China Sea plate under N Borneo margin of Sundaland basement complex)

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(Study of samples collected by Witkamp 1922-1925 from NW edge of Kutai Basin and adjacent Pretertiary basement outcrops. Oldest rocks 'Old Slates' (?Devonian and younger), overlain by Danau Fm (Permo-Carboniferous and U Triassic). Unconformably overlain by Lower Tertiary clastics with Eocene limestones with Pellatispira, Biplanispira and Nummulites. Illustrations of deep marine trace fossils Helminthoida, Palaeodictyon spp., etc. from E Tertiary platy marls at L. Atan)

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(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/203/194)
(Two types of Cretaceous granite belts in Kalimantan: (1) Schwaner-Ketapang 'Cordilleran-type' large batholiths, tied to 'mid'-Cretaceous subduction of oceanic crust below continent, emplaced from 86- 129 Ma and (2) two belts of 'Caledonian-type' 'post-collisional' Late Cretaceous (75-81 Ma= Campanian) isolated plutons, the E-W trending Sambas- Mangkalihat belt and Meratus in SE (see also companion paper of Hartono (2012))

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(Review of widespread Cretaceous granitoids in Kalimantan.Two groups: (1) large, massive E-M Cretaceous batholiths in SW and W (Schwaner, Singkawang, Ketapang, Sanggau) and (2) Late Cretaceous isolated plutonic belts (Sambas- Mangkalihat small plutons in accretionary system all along N border of Kalimantan, W Meratus in SE Kalimantan). Radiometric ages of granitoids from 80-129 Ma)

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(Small, poorly studied epithermal gold prospect hosted in Huaran Metamorphics in S part of Meratus Mts of SE Kalimantan (Tempurung River, Pelaihari District)

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(Basement outcrops in Siung Malopot area in N part of Barito basin (277km NE of Palangkaraya) Cretaceous? low-metamorphic andesite and granodiorite. Also boulders of Early Tertiary limestone and presumably reworked latest Carboniferous - E Permian fusulinid foraminifera (Schwagerina))

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(online at: http://ejournal.mgi.esdm.go.id/index.php/bomg/article/view/51/52)
(Granitoid along Bajau Cape coast near Singkawang, ~145 km N of Pontianak, NW Kalimantan. Rocks porphyric texture, with biotite. Classified as alkali feldspar granite, syeno-granite and quartz monzonite (part of Oligo-Miocene Sintang Intrusives or Cretaceous Mensibau/ Singkawang Group?)

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Atmawinata, S., N. Ratman & Baharuddin (1995)- Geological map of the Muara Ancalong Quadrangle 1816, Kalimantan, 1: 250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(Geologic map of N side of Kutai Basin. Oldest rocks in NW corner Telen-Kelinjau Melange and Telen Fm metasediments, associated with Cretaceous Tebang Melange with blocks of Orbitolina limestone, gabbro, ultramafics, chert, etc.. Unconformably overlain by Eocene and younger clastics and limestones (with Nummulites, Pellatispira, etc.))

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(Samarinda area outcrop section description of 200m of M Miocene (N9-N14) tide-influenced delta plain-delta front facies)

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(M Eocene- Oligocene Melawi Basin in NW Kalimantan 300km long and 100km wide and formerly classifiied as intra-continental rift, sag basin and strike slip basin. Sedimentation thicker in N, as result of thrust fault-controlled sediment deposition. N of basin subduction and collision-related rocks include M Eocene Piyabung arc volcanics and Boyan and Lubok Antu melanges. Further N lies Sarawak Basin, classified as Eocene-Oligocene foreland basin. Oil seeps around Kedukul-1 well, gas shows in Kayan-1 and Kedukul-1 wells. Melawi basin is retroarc foreland basin, with hydrocarbon migration pathways from foredeep in N to forebulge area in S part of basin)

Badaruddin, D.F., Suyono, M. Nurhidayat, P. Asmoro & R.Y. Saragih (2018)- Post-mortem analysis of drilling failure of Kayan-1 and Kedukul-1 wells in Melawi Basin, West Kalimantan. Proc. 42nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA18-189-G, 15p.
(Melawi Basin in NW Kalimantan with oil seeps at surface, but two wells (Kayan 1, Elf 1986 and Kedukul 1, CanadianOxy 1995) only gas shows. Both wells E Oligocene beds at surface. In Kayan-1 E Miocene Sintang intrusions intruded Eocene Ingar and Dangkan Fms; Kedukul-1 TD in Sintang Intrusion. Reservoir sandstones poor porosity (av. 8-10%). Oil maturation window at surface in E Melawi basin due to Miocene regional uplift)

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(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/278/249)
('Petrology and geochemistry of Metulang volcanic rocks in the Long Bia area, East Kalimantan: its tectonic implications'. Plio-Pleistocene porphyric basaltic Metulang Volcanics petrology and geochemistry indicate island arc volcanics, related to Borneo- Palawan subduction)

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(Schwaner Mts Cretaceous volcanics (Matan Volcanic Complex/ Kerabai Volcanics) range from basaltic to rhyolitic, subvolcanics diorite to gabbro and dolerite. Composition of magma me-high K calk-alkaline)

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('Petrology and geochemistry of Tertiary Jelai volcanic rocks in the Malinau area, NE Kalimantan: its tectonic implications'. Jelai Volcanics of NE Kalimantan W of Tarakan Basin, calc-alkaline basaltic andesites of island arc affinity, with M Miocene K-Ar ages between ~14.7- 16.1 Ma)

Baharuddin (2011)- Petrologi dan geokimia batuan gunung api Tersier Jelai di daerah Malinau, Kalimantan Timur: implikasi tektoniknya. J. Sumber Daya Geologi 21, 4, p. 2013-211.
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(Bobaris ophiolite complex along W flank of Meratus Mts, SE Kalimantan, is dismembered ophiolite sequence emplaced in Maastrichtian, Late Cretaceous)

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Baharuddin & R. Heryanto (2001)- Cretaceous Selangkai Formation of West Kalimantan and its tectonic implications. In: A. Setiawan et al. (eds.) Deep-water sedimentation of Southeast Asia, Proc. 2nd Regional Seminar Indonesian Sedimentologists Forum (FOSI), Jakarta 2001, 3p. *(Extended Abstract)*
(Early to Late Cretaceous Selangkai Fm deformed flysch type series in Sintang Quadrangle, N of Melawi and S of Ketungau Basins. Deposited in submarine fan environment, >3000m thick. With Embaluh Group in E region and Boyan Melange possibly parts of accretionary complex of SW-dipping (restores to W-dipping in Cretaceous) Pacific Ocean subduction zone, which ties to Cretaceous Schwaner magmatic belt)

Baharuddin, R. Heryanto & H. Panggabean (2002)- Cretaceous Selangkai Formation of West Kalimantan and its tectonic implication. J. Geologi Sumberdaya Mineral 12, 123, p. 2-9.
(Cretaceous Selangkai Fm well exposed on Sintang Quadrangle, NW Kalimantan, mainly between Melawi and Ketungau-Manda Tertiary basins). Deformed flysch- type deposit accumulated in submarine fan environment. Thickness >3000m. Fossils indicate E-Late Cretaceous ages. With Embaluh Complex and Boyan Melange are part of accretionary prism complex at (present-day) S-dipping Late Cretaceous subduction zone, which is tied to Cretaceous Schwaner magmatic belt and reflect W-dipping subduction of Pacific Ocean crust)

Baharuddin, P.E. Pieters, D. Sudana & S. Andi-Mangga (1993)- Geology of the Long Nawan sheet 1717 area, Kalimantan. 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(C-E Kalimantan-Sarawak border area map, dominated by intensely folded Late Cretaceous-Paleogene Embaluh Gp metasediments, intruded by Late Cretaceous Topai granite. Locally overlain by M Eocene Nyaan volcanics and Pliocene Metulang Fm volcanics)

Baharuddin & E. Rusmana (2007)- Geochemical characteristics of the youngest volcanic rocks from Mount Acau, West Kutai Regency, East Kalimantan. J. Sumber Daya Geologi 17, Spec. Issue (163), p. 47-56.
(Quaternary Metulang Volcanics at Mount Acau with K/Ar ages of 0.93-0.01 Ma are basalt and basaltic andesite of low-K tholeitic and medium-K calk-alkaline types. Show characteristic intraplate magmatism, possibly due to backarc extension)

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(Schwaner Mts Domain in W Kalimantan dominated by E-W belt of I-type granitoids, ~200 km wide and 500 km long, including mainly E Cretaceous (130-100 Ma)tonalites and granodiorites, probably rotated extension of continental E Asia belt. Some evidence that granitoids in Schwaner Mts domain become younger from N (124 Ma) to S (74 Ma). Late Cretaceous 'Kerabai Volcanics' range from basalt to rhyolite, subvolcanic rocks diorite to gabbro and dolerite, comprising calc-alkaline orogenic association, probably subduction-related magma associated with slow, low-angle subduction)

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(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/288/259)
('Structural control on zig-zag pattern of the Kayan River in Peso, East Kalimantan'. Peso area downstream of Kayan River, mainly occupied by flysch-type deposits of Cretaceous Rajang-Embaluh Group, unconformably overlain by Tertiary sediments and intruded by Tertiary-Quaternary magmatics. Zig-zag pattern of Kayan River in area closely related to major NE- SW and NW-SE-trending faults)

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(Comparisons of nine fold-thrust belts (FTB) that fringe E Sundaland around NW and W Borneo margins: Bunguran, W Baram Delta, E Baram Delta, N NW Sabah Trough, Sandakan, Tarakan and Kutai-W Sulawesi. Almost all are 'thin-skinned' and in at least four belts frontal thrusting can be linked to proximal extensional growth faults (Bunguran/Rajang Delta, Sandakan, Tarakan, Kutai))

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(Similar diamonds in Cenozoic placers in E Australia and in SE Kalimantan. Copeton- Bingara diamonds ultrahigh pressure macrodiamonds, formed during termination of subduction by continental collision)

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(Boueina pacifica Ishijima 1978 described from Aptian shallow-water carbonates at Seberuang, W. Kalimantan, originally ascribed to Halimeda-group algae, but is orbitolinid foraminifer. Type specimens no diagnostic features to identify genus or species of orbitolinids)

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(online at: https://drive.google.com/file/d/0B7j8bPm9Cse0bW5rd1U5UFlVZnc/view)
(Disagrees with Thorp et al. 1990 correlation and age assignments of Pleistocene lithostratigraphic units in W Malaysia and Indonesian Tin Islands, which they correlated with 'NW Kalimantan Late Pleistocene Alluvials')

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(online at: http://rruff.info/doclib/cm/vol26/CM26_23.pdf)
(Linhaisai minette dykes from C Kalimantan, just E of Muller Mts dated at ~7.8 Ma. Primitive nature and probably of mantle origin. Do not contain diamonds; Borneo alluvial diamonds must derive from elsewhere. Stratigraphy of area: Late Paleozoic metamorphics overlain by marine Cretaceous, overlain by Oligocene(?) Plateau sandstone, intruded by Neogene igneous rocks))

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('List of a collection of rocks from the Kelei River in Berau, E Kalimantan'. Summary petrographic descriptions of descriptions of Tertiary limmestones with Lepidocyclina, shales and greywacke sandstones collected from the Kelei tributary of the Berau River by Spaan)

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(Report on Central- East Borneo Expedition April- December 1925, sponsored by 'Indies Committee for Scientific Research'. Primarily a botanical study, with brief summary of geology by H. Witkamp (p. 105-116). (See also descriptions of rock samples from this expedition by Rutten, 1947))

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(Organic geochemistry of Miocene Belait and Setap Shales from Klias Peninsula, SW Sabah. Setap Shale TOC 0.6-1.54% with a mean hydrogen index (HI) of 60.1 mg/g. Belait Fm TOC 0.36 - 0.61 wt% with mean HI of 38.2 mg/g. Not enough hydrogen-rich organic matter to be considered good quality source rocks. Maturation level varies from peak oil in Setap Shale to overmature in Belait Fm)

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(Platinum-group mineral from alpine-type chromitites and placer deposits in SE Kalimantan typically small and occur mainly as Ru-rich and Os and Ir-rich laurites. PGM obtained from placers are Ag- and Cu-bearing Pt-Fe alloys (up to >1 mm), rutheniridosmine containing Au and Cu, and Cu-bearing osmiridium. Ru-lr-Os phases in placers could have come from Meratus-Bobaris ophiolite chromitites)

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(Pamali Breccia at SE flank of Bobaris Ophiolite Range, E of Martapura, Meratus Mts, is sedimentary ultramafic breccia-conglomerate, with ultramafics lacking typical kimberlite elements. Pamali Breccia not diamond-bearing diatreme as suggested by Koolhoven (1935). Diamond-bearing gravels in Martapura area have remarkably few ultrabasic components and may mainly be material reworked from U Cretaceous Lower Manunggul Fm diamond-bearing conglomerates, which lacks ultramafic components. Local miners note common assiation of diamonds and corundum-diaspore rocks)

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(E Miocene (~24-18 Ma) rocks in Kutei Basin E-W trend of intrusive rocks belonging to Sintang suite that extends E-W across Kalimantan. Youngest stages of Sintang episode overlap with eruptive volcanism in SE Sabah and precede intrusion of Kinabalu pluton in M Miocene. This period of igneous activity in NW Borneo is coeval with opening of Sulu Sea. Late Plio-Pleistocene volcanics of Borneo NE-SW trend)

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('Lead ore of Samarayak in upper Kandawangan, West Kalimantan'. Summary of chemical analysis of sample of lead ore from Kandawangan area, W Kalimantan: lead 54.9%, zinc 22.0%, sulfur 19.0%, etc.)

Croockewit, J.H. (1852)- De diamantgronden van Koesan. Natuurkundig Tijdschrift Nederlandsch-Indie 3, 3, p. 316-321
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(Kelian is breccia- and vein-hosted low sulfidation epithermal gold-silver deposit in structural inlier of felsic volcaniclastic rocks (Kelian Volcanics) surrounded by Eocene terrestrial and shallow marine sedimentary rocks of Kutai Basin. Intersection of two regional lineaments was focus of rhyolite-andesite intrusions in Lower Miocene (~19.5- 19.8 Ma), associated with intense brecciation)

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(E Miocene volcanism with maar-diatreme breccia complex preceded main-stage epithermal gold mineralization at Kelian gold mine. Prior to brecciation, andesite intrusions (19.7 Ma) emplaced into felsic volcaniclastics and overlying carbonaceous sandstones and mudstones)

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Davies, L.B. (2013)- SW Borneo basement: age, origin and character of igneous and metamorphic rocks from the Schwaner mountains. Ph.D. Thesis Royal Holloway, University of London, p. 1-391. *(Unpublished)*
(Granitoids in Schwaner Mountains of SW Borneo: (1) In S within-plate granitoids, with zircon ages of ~186 and 76 Ma; (1) In North I-type, arc-related granitoids, typically tonalites and granodiorites, with zircon age populations of 112, 98, 84, and 76 Ma. Pinoh Metamorphics of metamorphosed pelites, quartzites and basalts. Zircon dating shows metamorphic protoliths of PMG younger than 130 Ma. Ar-Ar geochronology indicates peak regional metamorphism at ~110 Ma. Later shearing at 25 Ma)

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(Pinoh Metamorphic Group along N edge of Schwaner granitoid complex of SW Borneo low P- high T metamorphic rocks contain abundant Cretaceous zircons, with age distribution suggesting detrital origin, and chemistry suggesting significant reworked volcanic material. Volcanic rocks erupted in E Cretaceous (~130 Ma), reworked into sediments, buried and metamorphosed during extension probably associated with emplacement of Schwaner batholith later in E Cretaceous (120-80 Ma). Jurassic granites in S Schwaner Mountains(~187Ma) interpreted to be product of rifting of blocks from NW Australia)

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(online at: www.searchanddiscovery.com/abstracts/pdf/2015/90236apr/abstracts/ndx_davies.pdf)
(Summary of thesis work. Pinoh Metamorphic Group of Schwaner Mts deposited as volcanogenic sediments in Lower Cretaceous (~130 Ma). Ar-Ar ages record onset of low-P metamorphism (~116 Ma), peak thermal metamorphism (~110 Ma), and later shearing event (~25 Ma) which may indicate age of exhumation in Schwaner Mts.)

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('Report on the Borneo coals and its suitability as fuel')

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(online at: www.ga.gov.au/corporate_data/81323/Jou1992_v13_n3_p251.pdf)
(Thorough review of geological survey work in W Kalimantan from early 1800's- 1990 First journeys by Europeans into interior between 1816 and 1850. After 1850 establishment of Mines Department Everwijn

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De Kroes, J. (1926)- Uitkomsten van het mijnbouwkundig onderzoek van goudhoudende terreinen in de zoogenaamde Chineesche districten van de residentie Westerafdeeling van Borneo. Verslagen Mededelingen lndische Delfstoffen en Hare Toepassingen, Dienst Mijnbouw Nederlandsch Indie, Weltevreden, 19, p. 1-27.
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(online at: www.dwc.knaw.nl/DL/publications/PU00018414.pdf)
(Short note on tectonic breccia in E Kalimantan in Kajan River, downstream of confluence with Sungei Kat. Surrounding region mainly constituted by dynamo-metamorphic slates, arkoses, and sandstones, covered by younger volcanic rocks. Rock formed by intensive movements along fault zone)

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('Plagiogranite from the Meratus Mountains, S Kalimantan'. Plagiogranite from area of ultrabasic rocks in Meratus Mts ranges from tonalite to trondhjemite. K2O and SiO2 content place it in oceanic plagiogranite/ ophiolitic trondhjemite field. Similar to Troodos plagiogranite on Cyprus. Probably differentiation product of basic/ ultrabasic magma. K/Ar age 112 Ma (Albian, mid-Cretaceous; Permanadewi 1995))

Dirk, M.H.J. (1997)- Batuan subvolkanik kapur akhir di Pegunungan Meratus, Kalimantan Selatan. J. Geologi Sumberdaya Mineral 7, 66, p. 11-17.
('Upper Cretaceous sub-volcanic rocks near the Meratus Mountains, S Kalimantan'. Late Cretaceous andesitic-dioritic inrusives from Meratus Mts with SiO2% 50.6-57.3%, with calk-alkaline to tholeiitic affinities. Formed in volcanic arc above subduction zone.)

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(Cretaceous plutonic rock series of diorite-tonalite/ granite/trondhjemite of calc-alkaline affinity in Meratus Mts Formed from dioritic- tonalitic magma in continental environment at <60 km depth. K-Ar ages of two samples 118 and 100 Ma (~Aptian-Albian))

Dirk, M.H.J. (2002)- Petrogenesa dan lingkungan tektonik granit Lumo, Propinsi Kalimantan Tengah. J. Geologi Sumberdaya Mineral 12, 125, p. 8-18.
('Petrogenesis and tectonic environment of the Lumo granite, C Kalimantan province'. Lumo granite outcrops W of N end Meratus Range, C Kalimantan, is holocrystalline porphyritic granite with cordierite, biotite, etc., formed from partial melting of crust, possibly greywacke in syn-orogenic or post orogenic setting (K-Ar ages age Permian (260 ±1.7 M)a and-Carboniferous (319 ± 1.7 Ma);S-type collisional granite; Dirk 2002, 2003)

Dirk, M.H.J. (2002)- Petrologi granit-kordirit Lumo- Kalimantan Tengah. J. Geologi Sumberdaya Mineral 12, 126, p. 13-21.
(Porphyritic Lumo granite with cordierite and K-feldspar crystallized from partial melting of pelitic-sedimentary source, probably at ~22km depth. K-Ar age of muscovite ~319 Ma, biotite ~260 Ma. S-type/ ilmenite series granite (= tin-bearing granite type))

Dirk, M.H.J. (2003)- Geodinamika dan model pembentukan granit Lumo, Propinsi Kalimantan Tengah: suatu tafsiran. J. Geologi Sumberdaya Mineral 13, 142, p. 48-58.
('Geodynamics and model of formation of the Lumo granite, C Kalimantan province; an interpretation'. Lumo granite of Lumo River, at W side of N Meratus Range, SE Kalimantan, with K-Ar ages of ~319 and 260 Ma. Formed from partial melting of greywacke during crustal thickening associated with collision, although also characteristics of volcanic arc granites)

Dirk, M.H.J. (2002)- Indikasi petrologi, petrogenesa dan lingkungan tektonik berdasarkan susunan geokimia-granit Palangkaraya, Propinsi Kalimantan Tengah. J. Geologi Sumberdaya Mineral 12, 131, p. 19-27.
('Petrology, petrogenesis and tectonic environment based on the geochemical composition of the Palangkaraya, granite, Central Kalimantan Province'. Several granite outcrops NW of Palangkaraya. Calk-alkaline, peraluminous, 'monzogranite', probably syn-collisional (no age information))

Dirk, M.H.J. & Amiruddin (2000)- Batuan granitoid. In: U. Hartono et al. (eds.) (2000)- Evolusi magmatik Kalimantan Selatan, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 23, p. 37-51.
(Review of SW Meratus Mountains granitoids. M Jurassic Puruidalam 'plagiogranite' associated with ophiolites with K-Ar age 155 ±16 Ma). Lower Cretaceous volcanic arc-type Belawayan granite with ~101-131 Ma K-Ar ages)

Djamal, B., D. Sudana, Sutrisno, Baharudin & K. Hasan (1995)- Geological map of the Tanjung Mangkaliat sheet, Kalimantan, scale 1:250,000, Quad 2017. Geol. Res. Dev. Centre (GRDC), Bandung.
(Geologic map of E end of Mangkalihat Peninsula. Mainly Eocene- Miocene marine clastics and limestones. Oldest rocks exposed in small area at N coast are Cretaceous? 'ophiolite' (gabbro, basalt, chert) associated with Cretaceous sandy limestone with Orbitolina. Unconformably overlain by Eocene Kuaro Fm shallow marine clastics and limestone)

Djokolelono, S. & E. Agoes (1988)- Uranium occurrences in the volcanic rocks of upper Mahakam, East Kalimantan. In: Proc. Conf. Uranium deposits in Asia and the Pacific; geology and exploration, Jakarta 1985, Int. Atomic Energy Agency (IAEA), Vienna, IAEA-TC-543/8, p. 109-120.
(Uranium survey by BATAN in Kawat River area in Upper Mahakam region. Kawat area tectonic depression with uranium occurrences in young volcanic facies, usually in aphanitic rhyolite. Mineralization consists of pitchblende, with molybdenite and pyrite. Oldest rocks in area folded, steeply dipping, ~E-W trending U Jurassic quartzite, ophiolitic rock and radiolarite and E-M Cretaceous black shale with quartzite and radiolarite. Unconformably overlain by U Cretaceous- Eocene clastics, with regional dip to SSE)

Doorman, J.G. (1906)- De diamantwinning in Landak. Tijdschrift Nijverheid Landbouw 73, p. 542-557.

('The exploitation of diamonds in Landak'. Brief review of traditional alluvial diamond mining industry of West Kalimantan)

Elliott, P.J. (2004)- Results from induced polarisation surveys over the Beruang copper-gold deposit in central Kalimantan, Indonesia. In: Proc. PACRIM 2004 Conf., Adelaide, Australasian Inst. of Mining and Metallurgy (AusIMM), Parkville, p. 307-316.
(Beruang copper-gold deposit near centre of Kalimantan is dacitic tuff hosted deposit. Extensive Induced Polarisation coverage obtained over deposit and surrounding area. Drilling of targets derived from inversion modelling resulted in some significant copper-gold intersections)

Erzagian, E., L.D. Setijadji & I.W. Warmada (2016)- Studi karakteristik dan petrogenesis batuan beku di daerah Singkawang dan sekitarnya, Provinsi Kalimantan Barat. In: R. Hidayat et al. (eds.) Proc. 9th Seminar Nasional Kebumian, Dept. Teknik Geologi, Gadjah Mada University, Yogyakarta, p. 421-432.
(online at: https://repository.ugm.ac.id/137902/1/MOB-03.pdf)
('Study of the characteristics and petrogenesis of Beku rocks in the regions of Singkawang and surroundings, W Kalimantan Province'. On NW Kalimantan volcanic and intrusive rocks: (1) Permo- Triassic calk- alkaline subduction- and collision-related series with intrusions of S-type granite (2) Cretaceous calk-alkali to high-K subduction and collision series with I- and S-type granites; (3) Eocene-Miocene calk-alkaline subduction series with I-type granitoids and (4) Pliocene tholeitic series formed in continental rift zones)

Escher, B.G. (1920)- Gesteenten van de Kelei (Berouw, Oost-Borneo). Natuurkundig Tijdschrift Nederlandsch-Indie 80, 1, p. 29-36.
(‘Rocks from the Kelei River, Berau Region, E Kalimantan’. Pebbles collected by Beucker Andreae in 1918. Some Oligo-Miocene foram limestones from this collection described by Rutten 1926. Includes quartz sst, slate, quartz-tourmaline rock, porphyrite, granite, breccias, radiolarian chert. Not overly useful)

Escher, B.G. (1933)- Uranium mineralen op Borneo? Geologie en Mijnbouw 12, 1, p. 5-6.
(online at: https://drive.google.com/file/d/1yodQJMRB_hYelv7qHS0yOy0seiM1mUyE/view)
('Uranium minerals on Borneo?'. Questions reported presence of uranium mineral broggerite from SE Kalimantan, as suggested by Tschernik (1909, 1910) (but uranium since proven to be present;JTvG))

Esenwein, P. (1932)- Petrologische beschouwingen omtrent de korund-diaspoorrots rolsteenen (leboer steenen) uit de diamantstreken van West en Zuidoost Borneo. Wetenschappelijke Mededeelingen Dienst Mijnbouw Nederlandsch-Indie 22, p. 1-29.
('Petrologic observations on the korund- diaspore rock pebbles ('leboer'/ 'lebur rocks') from the diamond areas of W and SE Kalimantan'. 'Lebur' black pebbles composed of corundum diaspore, a bauxite-like Al2O3 mineral, considered by local miners as indication of diamond-bearing alluvial deposits. Origin not clear, possibly formed from contact-metamorphism of bauxite (formed from basaltic rock?), with reduction of water content. Association leboer- diamond probably result of river transport, not common origin)

Everwijn, R. (1854)- Voorlopig onderzoek naar kolen in de landschappen Salimbauw, Djongkong en Boenoet in de Res. Westerafdeeling van Borneo. Natuurkundig Tijdschrift Nederlandsch-Indie 7, p. 379-387.
('Preliminary investigation of coal in the areas of Salimbau, Jongkong and Bunut, W Kalimantan'. First of series of short reports on mineral exploration work by privately funded explorer Everwijn. Mentions 'Nummulites-marl' at Seberuang tributary of Kapuas River, but forams subsequently described as Patellina by Von Fritsch (1878), now known as mid-Cretaceous Orbitolina concava. Not much detail, no maps)

Everwijn, R. (1855)- Onderzoek naar tinerts in de landschappen Soekadana, Simpang and Matam, en naar antimoniumerts op de Karimata-eilanden. Natuurkundig Tijdschrift Nederlandsch-Indie 9, p. 58-64.
('Investigation of tin ore in the areas of Sukadana, Simpang and Matam and of antimony ore on the Karimata islands'. No tin found associated with granitic rocks at Sukadana, Simpang and Matam, Kalimantan. Karimata island W of Kalimantan mountainous, mainly composed of granite, with some metamorphic rocks at NE coast. Some iron ore, but no tin. No maps, figures)

Everwijn, R. (1858)- Wester Afdeeling van Borneo. Natuurkundig Tijdschrift Nederlandsch-Indie 17, p. 284-316.
('Western Division of Kalimantan'. Summary of Everwijn's prospecting activities for gold and other minerals, in W half of Kalimantan. Also mention of coal in Kapuas- Bunut Rivers area near Sintang. Not much detail, no maps)

Everwijn, R. (1862)- Verslag van de onderzoekingen naar kopererts in het gebied van Mandhor, Westerafdeeling van Borneo. Natuurkundig Tijdschrift Nederlandsch-Indie 24, p. 403-428. *(also in Jaarboek Mijnwezen NOI 1878, 2, p. 117-143)*
('Report on investigations of copper ore in the area of Mandor, W Kalimantan'. Investigation of small CuS2 veins at Wang-phin-san, near Tampie Mountains, 3 hours from Mandhor, W Kalimantan. Associated with granite. Believed to be too small for exploitation)

Everwijn, R. (1873)- De groote diamant, of 'Danau Radja' van Matam, Westerafdeeling van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 1873, 1, p. 197-203.
('The big diamond, or 'Danau Raja' from Matam, W Kalimantan'. Rumors of existence of a 375 carat diamond in Kalimantan could not be confirmed. Other large stones in area believed to be diamonds proved to be quartz))

Everwijn, R. (1878)- Verslag van de onderzoekingen naar kopererts in het gebied van Mandhor, gelegen in de Westerafdeeling van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 7 (1878), 2, p. 117-143.
('Report on investigations of copper ore in the area of Mandor, W Kalimantan'. Same as Everwijn 1862)

Everwijn, R. (1879)- Overzicht van de mijnbouwkundige onderzoekingen in de Westerafdeeling van Borneo verricht. Jaarboek Mijnwezen Nederlandsch Oost-Indie 8 (1879), 1, p. 3-116.
('Overview of mining investigations in W Kalimantan'. Summary of previous papers on prospecting surveys in W Kalimantan by mining-engineer Everwijn)

Fahruddin, S. Widyantoro, A.D. Nugraha & Afnimar (2017)- Search for mantle seismic discontinuities beneath northern Kalimantan, central Indonesia: a preliminary result of employing SS precursors. Int. J. Tomography Simulation 30, 1, p.
(Kalimantan located far from active subduction zones with few seismic stations. SS precursors show discontinuity at ~690 km depth and weaker discontinuity at ~290 km depth)

Fahir, S.L.N. & L.D. Setijadji (2011)- Studi evolusi batuan granitik di Kalimantan Barat. Yogyakarta, 52p.
('Study of the evolution of granitic rocks in West Kalimantan')

Fehn, H. (1930)- Die Insel Borneo (Bausteine zu einer Landeskunde). Mitteilungen Geogr. Ges. Munchen 23, 2, 80p.
('The island of Borneo- building stones for geography')

Fehn, H. (1933)- Die Oberflachenformen der Insel Borneo. Ein Uberblick. Mitteilungen Geogr. Gesellschaft Munchen 26, 1, p. 1-53.
('The surface features of the island of Borneo- an overview'. Old geomorphologic description of Borneo)

Ferguson, K.J. (1986)- The Kelian gold prospect, Kalimantan, Indonesia. In: Proc. Int. Volcanological Congress, Symposium 5: Volcanism, hydrothermal systems & related mineralisation, p. 41-46.

Frijling, H., Loth, J.E. & J.W.H. Adam (1920)- Bijdrage tot de geologie van het Landschap Kotawaringin en de afdeeling Ketapang resp. geleegen in de Residenties Zuider- en Ooster en Westerafdeeling van Borneo. Jaarboek Mijnwezen Nederlandsch-Indie 47 (1918), Verhandelingen 1, p. 210-223.
('Contributions to the geology of the Kotawarin and Ketapang districts, etc.', SW corner of Kalimantan. Mainly granites, overlain by folded ?Mesozoic and rel. undeformed Tertiary sediments. Intruded and overlain by younger porphyrites and andesites. With 1:1 million geological sketch map)

Fuller, M., J.R. Ali, S.J. Moss, G.M. Frost, B. Richter & A. Mahfi (1999)- Paleomagnetism of Borneo. J. Asian Earth Sci. 17, p. 3-24.
(online at: http://searg.rhul.ac.uk/pubs/fuller_etal_1999%20Paleomagnetism%20Borneo.pdf)
(Paleomagnetic data support counterclockwise rotation of Borneo since Cretaceous. Mesozoic rocks older than 80 Ma in Kalimantan- Sarawak almost 90° CCW rotation. NW Borneo Late Cretaceous- Eocene Silantek Fm 41° CCW rotation, Oligo-Miocene rocks generally weak CCW rotations. Bulk of paleomagnetic data suggests up to ~50° CCW rotation of Borneo between 25-10 Ma)

Fuller, M., R. Haston, J. Lin, B. Richter, E. Schmidtke & J. Almasco (1991)- Tertiary paleomagnetism of regions around the South China Sea. J. Southeast Asian Earth Sci. 6, p. 161-184.
(Tertiary CCW rotation in Sarawak, and Sabah. Conflicting results from Kalimantan, some show no rotation with respect to Eurasia, others give CCW rotations)

Gaol, K.L., H. Permana & N.D. Hananto (2003)- Aplikasi model 2-D anomali gravitasi pada komplek akresi Pegunungan Bobaris- Meratus, Kalimantan Selatan. Jurnal Teknologi Indonesia 26, p. 25-33.
('Application of 2-D gravity model of the accretionary complex of the Bobaris- Meratus Mountains, S Kalimantan'. Preliminary modeling results suggest Bobaris-Meratus complin near-Equatorial position since the Jurassc. ex represents accretionary complex)

Gaol, K.L., H. Permana, A. Kadarusman, N.D. Hananto, D.D. Wardana & Y. Sudrajat (2005)- Model gayaberat pegunungan Bobaris- Meratus, Kalimantan Selatan, dan implikasi tektoniknya. Jurnal Geofisika 2005, 2, p. 2-9.
('Gravity model of Bobaris- Meratus Mountains and its tectonic implications'. Bobaris-Meratus mountains with ultramafic rocks flower structure?)

Gascuel, L. (1901)- Les gisements diamantiferes de la region sud-est de l'ile de Borneo. Annales des Mines (9), 20, p. 2-23.
('The diamond-bearing formations of the SE Borneo region'. Diamond-bearing deposits worked by locals for centuries in two main areas (but 'moribund since 1886'): (1) Landak in W Kalimantan near Pontianak and (2) Martapura near Banjarmasin, SE Kalimantan. Diamonds in Quaternary fluvial gravel deposits around Banyu-Irang River, which contain pebbles of white quartz, micaceous quartzites, porphyritic rocks, shelly limestones, chert, but no basic igneous rocks)

Geiger, M., D. Prasetyo & T. Leach (2002)- Porphyry copper-gold systems in Central Kalimantan. Annual Convention, Prospectors and Developers Association of Canada, Technical Paper, 8p.
(Exploration over past 15 years by Kalimantan Gold Corporation identified >30 copper and/or gold prospects. Porphyry copper-gold systems are viable exploration targets in central regions of Kalimantan)

Geiger, M., T. Leach & D. Prasetyo (2010)- Porphyry copper gold systems in Central Kalimantan. In: N.I. Basuki & S. Prihatmoko (eds.) Proc. Kalimantan coal and mineral resources, MGEI-IAGI Seminar, Balikpapan 2010, p. 73-89.
(Oligocene and Miocene volcanic arc(s) across Kalimantan hosts several epithermal gold deposits, postulated to be near-surface manifestations of porphyry copper systems. Deeper exploration identified 30 copper-gold prospects)

Geinitz, H.B. (1883)- Uber Kreide-Petrefakten von West-Borneo. Zeitschrift Deutschen Geol. Gesellschaft , Berlin, 35, p. 205.
(online at: https://www.biodiversitylibrary.org/item/148375#page/217/mode/1up)
('On Cretaceous fossils from W Kalimantan'. Brief note on 42 fossils sent to Geinitz by Verbeek (collected by Van Schelle?), incl. molluscs (Pholadomya, Trigonia, Vola, Gervillea, etc.) and Upper Cretaceous Hemiaster spp. echinoid. First record of Mesozoic rocks in Kalimantan. No figures)

Gisolf, W.F. (1924)- Bijdrage tot de kennis van de waarschijnlijke genese der ijzerertsen van het Koekoesan gebergte (Zuid- en Oost-Afdeeling van Borneo). Jaarboek Mijnwezen Nederlandsch Oost-Indie 50 (1921), Verhandelingen 1, p. 296-303.

('Contribution to the knowledge of the likely genesis of iron ores of the Kukasan Mountains, SE Kalimantan'. Layer of iron ores above hartzburgite-serpentinite body probably initially concentration of magnetite/ hematite in final stage of magmatic cooling processes, then further concentrated during surface weathering)

Gisolf, W.F. (1928)- On the origin of some iron ores and serpentinite in the Dutch East Indies. Proc. 3rd Pan Pacific Science Congress, Tokyo 1926, 2, p. 1729-1732.
(In tropical climates serpentine not formed by weathering of olivine, because olivine preferentially weathers to limonite. Primary serpentine is present in peridotite. Serpentine may form from high pressure with access to water. Formation of serpentine and chlorite in SE Kalimantan peridotites caused by auto-metamorphism)

Gollner, E.R.D. (1924)- Verslag over de uitkomsten van mijnbouwkundig- geologische onderzoekingen op Poeloe Laoet. Jaarboek Mijnwezen Nederlandsch Oost-Indie 50 (1921), Verhandelingen 1, p. 4-55.
(Geological survey of Laut Island, SE Kalimantan, with focus on Eocene coal occurrences. Coal mined by NEI government on Pulau Laut since 1914. Two main coal horizons in ~160m basal quartz sandstone member, each 2-3m thick. Overlying Late Eocene marl member ~85m thick. Upper Eocene limestones common in other parts of SE Kalimantan, but missing on Pulau Laut. With 1:50,000 scale geologic map of N part of island)

Graham, I., T. Grieve, L. Spencer & S. Hager (2014)- Source of PGM and gold from the Cempaka palaeoplacer deposit, SE Kalimantan, Indonesia. In: E.V. Anikina et al. (eds.) 12th Int. Platinum Symposium, Inst. Geology and Geochemistry UB RAS, Yekaterinburg, p. 173-174. *(Abstract)*
(online at: http://conf.uran.ru/12IPS/12%20IPS%20ABSTRACTS.pdf)
(Cempaka palaeoplacer diamond deposit ~40 km SE of Banjarmasin. Host sediments for diamonds, Platinum Group Minerals and gold are upper unit of alluvial coarse gravels, sandy gravels and gravelly sands. PGM and gold appear transported and probably recycled several times. PGM mineralogy suggests derivation from bimodal source: ophiolites (Meratus or Bobaris ophiolites) and as yet undiscovered Alaskan-type complexes. Chemistry of gold suggests epithermal gold mineralization; closest source within Sumatra-Meratus Arc.)

Graham, I., L. Spencer, L.M. Barron & G. Yaxley (2006)- Nature and possible origin of the Cempaka diamond deposit, Southeastern Kalimantan, Indonesia. IAGOD Meeting, Moscow, 6p.

Graham, I.T., L. Spencer, G. Yaxley & L. Barron (2007)- The use of zircon in diamond exploration- a preliminary case study from the Cempaka deposit, SE Kalimantan, Indonesia. 2nd Conf. Specialist Group in Geochemistry, Mineralogy and Petrology, Dunedin 2007, Geol. Soc. Australia, Abstracts, 86, p. 32-35. *(Abstract only)*

Gunawan, R. & C.B.C. Valk (1972)- Notes on the geology of aluminous laterites of West Kalimantan. Bull. Nat. Inst. Geology and Mining (NIGM) 4, 1, p. 29-36.
(Large 300 km long and 50-100 km wide, NNW-SSE trending bauxite belt in W Kalimantan, explored by PT Alcoa. Bauxitic laterites formed on uplifted and dissected peneplain, mainly related to weathering of quartz-poor intrusives and best developed at margins of intrusives. Previously Bintan island, SE Sumatra, was main bauxite occurrence in Indonesia)

Gunter, B. (2010)- The geology, alteration and mineralization at the Jelai gold prospect, East Kalimantan. In: N.I. Basuki & S. Prihatmoko (eds.) Proc. MGEI-IAGI Seminar Kalimantan coal and mineral resources, Balikpapan 2010, p. 91-106.
(Jelai prospect in NE Kalimantan 45 km W of Tarakan. Low sulphidation epithermal quartz veins associated with andesitic volcanics, dacites and intrusives. Oldest granitoids in region Late Cretaceous. Mineralizatons and volcanics in area dated as 22, 16 and 7-9.4 Ma)

Gunter, B. (2010)- The exploration history, geology and exploitation of the Buduk Gold Mine, West Kalimantan: an example of a small gold mine operation in Kalimantan. In: N.I. Basuki & S. Prihatmoko (eds.) Proc. MGEI-IAGI Seminar Kalimantan coal and mineral resources, Balikpapan 2010, p. 129-144.
(Buduk area of NW Kalimantan, ~100km N of Pontianak, has been alluvial gold mining area since Chinese operations started in 1771 and Dutch-operated Sambas Gold Mines between 1936-1940. Several areas of gold

mineralization. Mine within area of sub-horizontal sediments with minor volcanics of Late Triassic- E Jurassic Bengkayang Group, intruded by Miocene Sintang Intrusive suite, associated with skarn-type gold mineralization)

Gunter, B. (2011)- Sejarah eksplorasi, geologi, dan eksploitasi pertambangan emas Buduk, Kalimantan Barat: contoh sebuah operasi pertambangan emas kecil di Kalimantan. Majalah Geologi Indonesia 26, 3, p. 173-190.
(online at: www.bgl.esdm.go.id/publication/index.php/dir/article_detail/761)
('The exploration history, geology, and exploitation of the Buduk gold mine, W Kalimantan: an example of a small gold mining operation in Kalimantan'. Same paper as Gunther 2010)

Haile, N.S. (ed.) (1955)- Geological accounts of West Borneo- translated from the Dutch. Geological Survey Dept., British Territories in Borneo, Bull. 2, p. 1-285.
(Translations of papers on geology of W Kalimantan and adjacent areas of Sarawak by Dutch geologists (Krekeler, Krol, Ter Bruggen, Zeylmans van Emmichoven and Ubaghs), originally published in 1925-1939. Age of Danau Fm in Sarawak is Cretaceous, not Permo-Triassic as suggested by Zeijlmans (1939) for Kalimantan)

Haile, N.S. (1961)- Notes on Mesozoic orogeny in West Borneo. Proc. 9th Pacific Science Congress, Bangkok 1957, Geol. Geoph. 12, p. 117-120. *(Extended Abstract)*
(online at: http://archive.org/details/geologyandgeophy032600mbp)
(Also in 'Annual Report Geological Survey Dept., British Territories in Borneo, 1957, p. 17-23) Moderately folded U Triassic-Cretaceous of W Kalimantan and W Sarawak unconformable on highly deformed Permian or Carboniferous age rocks. This and synchronous granite intrusions indicate folding in Late Permian or E Triassic and in E Jurassic. No evidence of orogenic activity in Cretaceous)

Haile, N.S. (1973)- West Borneo microplate younger than supposed? Nature 242, p. 28-29.
(Short note suggesting W Borneo possibly not part of Sunda shield and extension of continental SE Asia, but younger. Partly supported by occurrence of steeply dipping 'Ketapang Complex' unmetamorphosed grey shale in Pawan River, W Kalimantan, with Albian- Cenomanian pollen (Caytonopollenites zone of Muller). Flanked by massive volcanic rocks of Matan Complex. Area may be built chiefly of Late Cretaceous and younger rocks)

Haile, N.S. (1974)- Borneo. In: A.W. Spencer (ed.) Mesozoic-Cainozoic orogenic belts; data for orogenic studies. Geol. Soc., London, Spec. Publ. 4, p. 333-347.
(Late Mesozoic- Tertiary orogeny affected N part of Borneo, over 900 km from Makassar Straits to S China Sea. Four zones recognized, in direction of increasing age of main periods of mobility from N to S: Miri (youngest deformation), Sibu (greatest mobility; thick deformed Late Cretaceous-Eocene flysch), Kuching (deformed Mesozoic marine sediments) and W Borneo Paleozoic metamorphic basement with Late Paleozoic-Mesozoic sediments)

Haile, N.S. (1979)- Rotation of Borneo microplate completed by Miocene: palaeomagnetic evidence. Warta Geologi (Newsletter Geol. Soc. Malaysia) 5, 2, p. 19-22.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1979002.pdf)
(Samples from latest Oligocene- E Miocene U Silantek Beds show reversed magnetism close to present-day field, indicating 50° CCW rotation of Borneo since Cretaceous was completed by time of deposition of U Silantek Beds)

Haile, N.S., M.W. McElhinny & I. McDougall (1977)- Palaeomagnetic data and radiometric ages from the Cretaceous of West Kalimantan (Borneo), and their significance in interpreting regional structure. J. Geol. Soc. London 133, 2, p. 133-144.
(W Kalimantan complex history of magmatism and cooling from M Jurassic- Late Cretaceous. Well-defined granitic magmatic event in Schwaner zone at ~79-86 Ma, also recognized in Sarawak, S China Sea islands, Malay Peninsula, S Sumatra, and Java Sea. Paleomagnetism of Late Cretaceous samples yield mean paleomagnetic pole at 21°E, 41°N, and 0° paleolatitude for W Kalimantan. Paleomagnetic pole not significantly different from Cretaceous pole estimated for Malay Peninsula. Since M Cretaceous W Kalimantan and Malay Peninsula behaved as one unit, have remained in present latitude, but rotated anticlockwise ~50°)

Haile, N.S. & E. Urquhart (1995)- Dating Mesozoic melange and other problematic formations in Southeast Asia. In: Proc. Int. Symposium Geology of SE Asia and adjacent areas, J. Geology, Geol. Survey Vietnam, Hanoi, 5-6, p. 308-309. *(Abstract only)*
(Mesozoic melange in Borneo in discontinuous belt from NW tip to E coast (= Danau Fm of Molengraaff; JTvG). Over part of length it forms S limit of U Cretaceous- U Eocene flysch/ accretionary prism of N Borneo. Fossils in blocks in melange include Lw Cretaceous radiolaria in cherts, U Cretaceous forams in sediment blocks and rare Eocene nannofossils in matrix. Overlain by undisrupted Plateau Gp with U Eocene forams and pollen)

Halewijn, M.J. (1838)- Borneo- Eenige reizen in de binnenlanden van dit eiland, Beschrijving der diamantmijnen te Soengi Roentie in Bandjermasin in 1824. Tijdschrift Nederl. Indie 1, 2, p. 81-84.
('Travels in the interior of Borneo- Description of the diamond mines at Sungei Runti in Banjarmasin in 1824'. One of first descriptions of open pit alluvial diamond mines in SE Kalimantan. Diamond-bearing beds 'lead-colored stone' ('batu tima') at ~12 feet depth)

Hall, R. & G.J. Nichols (2002)- Cenozoic sedimentation and tectonics in Borneo: climatic influences on orogenesis. In: S.J. Jones & L. Frostick (eds.) Sediment flux to basins: causes, controls and consequences. Geol. Soc. London, Spec. Publ. 191, p. 5-22.
(Sediment volume in basins around Borneo indicates >6 km removed by Neogene erosion. Implied tectonic uplift not reflected in high mountains on island. High weathering and erosion rates in tropical climate likely factor governing formation of relief. Rapid removal of material by erosion prevented tectonic denudation by faulting: around Borneo there was no lithospheric flexure due to thrust loading and no true foreland basins developed. Sediment deposited adjacent to orogenic belt in older, deep oceanic basins. Sediment yield of Borneo mountains comparable to Alps or Himalayas)

Hall, R., M.W.A. van Hattum & W. Spakman (2008)- Impact of India-Asia collision on SE Asia: the record in Borneo. Tectonophysics 451, p. 366-389.
(History of Borneo not consistent with island forming part of large block extruded from Asia. Clockwise rotations predicted by indentor model for Borneo incompatible with paleomagnetic evidence. Great thicknesses of Cenozoic sediments in Borneo and circum-Borneo basins derived from local sources and not from distant sources in Asia. Cenozoic geological history of Borneo records subduction of proto-S China Sea and Miocene collision after this ocean lithosphere was eliminated, and effects from long-term subduction beneath SE Asia)

Harahap, B.H. (1987)- The petrology of some young subvolcanic and volcanic rocks from West Kalimantan, Indonesia. M.Sc. Thesis, University of Tasmania, 234p.
(online at: https://eprints.utas.edu.au/19986/1/whole_HarahapBhaktiHamonangan1988_thesis.pdf)
(Petrography and chemistry of Tertiary volcanic rocks from C and W West Kalimantan (mainly subduction-related arc volcanics) and Quaternary basaltic andesites from Mt. Niut (intra-plate volcanism not related to subduction). K-Ar ages of intrusions near Sintang: in South 23.0-30.4 Ma, in North 16.4-17.9 Ma (similar to intrusives in nearby Sarawak))

Harahap, B.H. (1990)- Magmatism in West Kalimantan. J. Indon Assoc. Geol. (IAGI) 13, 1, p. 63-90.

Harahap, B.H. (1993)- Geochemical investigation of Tertiary magmatic rocks from central West Kalimantan. Proc. 22nd Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung, 1, p. 304-326.
(Tertiary magmatic rocks in W Kalimantan mainly dacites, some rhyolites, basalts, andesites. Basalts in N province different source from S province. Volcanics in S intrude Cretaceous granodiorites, are most siliceous. Chemistry typical island arc, may be related to SE subduction under Sarawak accretionary prism)

Harahap, B.H. (1994)- Petrology of the Cretaceous subvolcanic and volcanic rocks from Singkawang area, West Kalimantan. J. Geologi Sumberdaya Mineral 4, 35, p. 15-24.
(Mid-Cretaceous volcanics from Singkawang area of W Kalimantan (W of Schwaner batholith) range from basalt to dacite, porphyritic, low-metamorphic, etc., with geochemistry typical of island arc lavas. One sample

from Damar Island dated as 106 Ma. Probably response to subduction from N, which may have been ancestral Pacific Ocean)

Harahap, B.H. (1994)- Petrology and geochemistry of Mount Niut Volcano, West Kalimantan. Bull. Geol. Res. Dev. Centre 17, p. 1-12.
(Pliocene basic volcanics)

Harahap, B.H. (1995)- The Boyan melange of West Kalimantan origin and tectonic development. Bull. Geol. Res. Dev. Centre (GRDC), Bandung, 18, p. 1-21.
(Boyan melange E-W trending belt in W Kalimantan, composed of km-size blocks of clastics, limestone (with Cenomanian Orbitolina), radiolarian chert, greenschist, large blocks (6 x 40 km) of sheared serpentinite, also granite (one 320 Ma K/Ar age), basalt, etc., in sheared chloritized dark 'scaly' shale. Common boudinage structures. Bounded to N and S by Selangkai Fm Turonian turbidites, with gradational contacts. Overall dips of beds/ cleavage to South. Interpreted as Late Cretaceous S-dipping subduction complex. Intruded by Miocene 'Sintang' dacitic rocks, one dated at 16.4 Ma)

Harahap, B.H. (1995)- Petrography and mineral chemistry of the Tertiary subducted related mafic subvolcanic rocks from West Kalimantan. J. Geologi Sumberdaya Mineral 5, 47, p. 2-15.
(Description of W-C Kalimantan basaltic- andesitic dykes and plugs in Nangapinoh and Sintang map sheets. (not clear what age; somewhere between Cretaceous- Miocene; JTvG))

Harahap, B.H. (1996)- Petrological characteristics of the Upper Miocene to Plio-Pleistocene volcanism in Kalimantan. J. Geologi Sumberdaya Mineral 6, 62, p. 21-31.
(Cretaceous- M Miocene volcanism in Kalimantan produced silica-rich calc-alkaline volcanic series in subduction-related volcanic arc systems. Upper Miocene- Plio-Pleistocene volcanics tholeiitic and alkaline and associated with ENE structural trend along highest points of Kalimantan. Basaltic lavas similar to intraplate continental basalts, not related to subduction)

Harahap, B.H. (1996)- Petrography and mineral chemistry of the Tertiary silicic subvolcanic rocks of the Sundaland of West Kalimantan. Bull. Geol. Res. Dev. Centre (GRDC), Bandung, 19, p. 75-95.
(95% of subvolcanic rocks of W Kalimantan are silica-rich dacites and rhyolites)

Harahap, B.H. (2012)- Regional geology and tectonics. In: U. Hartono (ed.) Magmatism in Kalimantan, Centre for Geological Survey, Geological Agency (Bandung), Spec. Publ., p. 13-26.
(Review of regional geology of Kalimantan. Borneo result of Mesozoic amalgamation of ophiolitic, island arc and microcontinental fragments of S China and Gondwana origin. Today far from active margins and stabilized in Late Miocene, after which extensional processes common. Most of Kalimantan continental crust. W region is part of Sundaland Craton, with Schwaner Mts E Cretaceous granites (continuation of E Asian Magmatic Arc). NW Kalimantan domain Late Carboniferous sediments flanked by metamorphics, intruded by Permian- M-L Triassic biotite granites, unconformably overlain by Late Triassic Serian Volcanics and Jurassic- Cretaceous marine sediments. Oldest igneous rock Late Carboniferous- E Permian Lumo Granite in N Meratus Mts. Etc.)

Hardjadinata, K. (1995)- Studi ofiolit Pegunungan Meratus-Bobaris, Kalimantan tengara. J. Geologi Sumberdaya Mineral, 5, 40, p. 10-18.
('Study of ophiolite of the Meratus- Bobaris Mountains, SE Kalimantan'. Meratus- Bobaris Mts association of pillow basalts, gabbro, dunite, pyroxenite peroditite and plagiogranite represents incomplete ophiolite assemblage. Chemistry suggests formation in island-arc environment. M Cretaceous (116-95 Ma; Aptian- Cenomanian) radiometric ages of plagiogranite and metadiabase. Ophiolite emplacement result of collision of Eurasian and Pacific Ocean plates)

Harrison, T. (1975)- Tektites as "date markers" in Borneo and elsewhere. Asian Perspectives 18, 1, p. 61-63.
(The only place in North Borneo with tektites is NW coastal region 20 miles from Brunei city, at base of Jerudong Beds, and K-Ar dated as 730,000 BP by Zahringer (1963). However, associated wood much younger, so tektites may be reworked)

Harting, A. (1925)- Bijdrage tot de geologie van Beraoe (met een geologisch schetskaartje van Beraoe 1:750,000). Verhandelingen Geologisch-Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie 8 (Verbeek volume), p. 205-212.
('Contribution to the geology of Berau, with a geological sketch-map, 1:750 000'. S Tarakan Basin, E Kalimantan. Brief review of upper Berau River area. Pre-Tertiary steeply-dipping phyllites and quartzites with reddish radiolarian cherts and granites and diabase-like rocks, similar to Molengraaff's Danau Formation. Strike mainly E-W trending, more SW-NE in W part of area. Unconformably overlain by Eocene Nummulites-bearing clastics and carbonates, Oligo-Miocene Lepidocyclina limestones, overlain by Globigerina marls, then coal-rich beds, unconformably overlain by Plio-Pleistocene Sadjau and Bunyu beds. Gas seep on Rantau Panjang anticline)

Harting, A. (1930)- Enkele geologische waarnemingen langs de S. Kajan. De Mijningenieur 11, p. 176-179.
(Some geologic observations along the Kajan River'. On the direction of Pre-Tertiary at Brem-Brem falls near Bulungan and unconformably overlying, horizontal Eocene limestone)

Hartmann, M.A. (1937)- Der Batoe Mesangat in Nord-Koetai, eine imposante Vulkanruine in Borneo. Natuurkundig Tijdschrift Nederlandsch-Indie 97, 4, p. 214-225.
(online at: http://62.41.28.253/cgi-bin/...)
('The Batu Mesangat in N Kutai, an imposing volcano ruin in Borneo'. Mesangat massif between Telen and Belayan Rivers and between Poh and Atan mountains in N Kutai, about 1500m high. In area of Pre-Tertiary rocks, from S to N: folded Danau Fm (mainly E-W, occ. WSW-ENE trending sandstones- shales- radiolarites and limestone/marble lenses and dynamometamorphically altered diorite, serpentinite, peridotite and diabase). Locally younger volcanics (basalt, andesite) and Mesozoic intrusions of quartz porphyry, dacite, liparite. To N widespread black, red and green shales-schists, mainly SW-NE trending, possibly Late Paleozoic age, unconformable over Danau Fm, and thrusted over Danau Fm against Kutai Basin. Batu Mesangat is quartz porphyry intrusive complex of possible Mesozoic age)

Hartono, H.M.S. (1984)- Tectonic development of Kalimantan and adjacent areas. Bull. Geol. Res. Dev. Centre (GRDC) 9, p. 1-13.
(Kalimantan tectonic history: Permian- Carboniferous volcanic arc, with subduction from N/ NE. Late Triassic collision, a continuation of Burmese- W Malayan microcontinent collision with Indochina. Late Cretaceous melange in E Kalimantan and volcanics in SW Kalimantan are part of arc system extending SW towards Java-Sumatra. Tertiary subduction/ accretion from N/NW)

Hartono, H.M.S. (1985)- Summary of tectonic development of Kalimantan and adjacent area. In: Proc. Second EAPI/CCOP Workshop, Energy 10, p. 341-352.
(Review of tectonic development of Kalimantan. Pre-Late Triassic rocks present, but history not clear. Carboniferous-Permian arc postulated. Kalimantan cratonized and stabilized by collision tectonics in Late Triassic, correlating with Indo-Sinian orogeny in peninsular Malaysia and Thailand. Late Cretaceous-Early Tertiary arc development with granitic plutons in SW Kalimantan. Post-Late Triassic deposition either platform cover or active marginal accretion)

Hartono, U. (1997)- Tertiary basalts and microgabbros from Pulau Laut, South Kalimantan: a primitive magma in island arcs. J. Geologi Sumberdaya Mineral 7, 71, p. 2-8.
(Paleogene basalts and microgabbros at Gunung Jembangan high-MgO primitive magma, derived from depleted mantle source, possibly 20% melting of spinel lherzolite, probably in subduction setting)

Hartono, U. (2000)- The origin of Tertiary basaltic and low-Y andesitic volcanic rocks from the Meratus Range, South Kalimantan. J. Geologi Sumberdaya Mineral, 10, 103, p. 23-32.
Small dikes and plugs of Tertiary basaltic, andesitic and dacitic volcanic rocks in Meratus Range and Pulau Laut, associated with strike-slip faults. K-Ar ages 62-23 Ma (Paleocene- E Miocene). High MgO and low-Y primitive magma source)

Hartono, U. (2000)- Batuan kerak samudera. In: U. Hartono, R. Sukamto et al. (eds.) (2000)- Evolusi magmatik Kalimantan Selatan, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 23, p. 25-36.
('Oceanic crust rocks'. Review of SW Meratus Mountains ophiolites)

Hartono, U. (2003)- A geochemical study on the Plio-Pleistocene magmas from Kalimantan; their influence to the Tertiary mineralization system in Kalimantan. Majalah Geologi Indonesia 18, 2, p. 168-174.
(Plio-Pleistocene volcanics common along Kalimantan- Sarawak border. Matulang Fm basalts and basaltic andesites previously interpreted as intraplate magmatism. Geochemistry suggest mixing of deep mantle source and arc magma. Probably produced during extensional tectonism after Late Miocene collision of Miri-Luconia microcontinent with Kalimantan/Sundaland in NW Sarawak)

Hartono, U. (2003)- The role of South Kalimantan Tertiary volcanics in gold mineralisation. Prosiding Forum Litbang ESDM, 2003, p. 175-186.
(Widespread alluvial gold, but no economic primary gold deposits in S Kalimantan. Tertiary volcanics on Pulau Laut (Late Paleocene basalt and basaltic andesite + Eocene- E Miocene andesite) with rel. low gold mineralization. Geochemically look like subduction-related volcanics, but no subduction here in Tertiary?)

Hartono, U. (2006)- Petrogenesis of the Sintang Intrusives and its implications for mineralization in Northwest Kalimantan. J. Sumber Daya Geologi 16, 4 (154), p. 210-219.
(Late Oligocene- E Miocene Sintang intrusives of NW Kalimantan part of belt formed along N margin of Sundaland, can be followed from NW Kalimantan to Upper Tarakan/Mangkalihat, and is associated with gold mineralization. Mainly of granodiorites of adakite-type, probably derived from melting of subducted South China Sea oceanic crust, following M-L Oligocene compressional event in Kalimantan. Commonly with gold mineralization)

Hartono, U. (ed.) (2012)- Magmatism in Kalimantan. Centre for Geological Survey, Geological Agency, Bandung, Spec. Publ., p. 1-199.
(With chapters by Amiruddin, B. Harahap, I.G.B.E. Sutjipta, S, Bronto and U. Hartono. Major review of distribution of Cretaceous- Recent volcanic and plutonic rocks in Kalimantan, tectonic history and associated mineral deposits (see more detail under chapters))

Hartono, U. (2012)- Cretaceous arc magmatism. In: U. Hartono (ed.) Magmatism in Kalimantan, Centre for Geological Survey, Geological Agency, Bandung, Spec. Publ., p. 67-114.
(Review of Cretaceous volcanic and sub-volcanic rocks in SE (U Cretaceous/ ~83-66 Ma Haruyan Fm arc volcanics of Meratus Mts), SW (U Cretaceous/ ~88-65 Ma Kerabai Volcanics SW of Schwaner Mts; probably consanguineous with 91-86 Ma Sukadana granite) and NW Kalimantan (Lower Cretaceous/106 Ma Raya Volcanics))

Hartono, U. (2012)- Pliocene- Pleistocene magmatism. In: U. Hartono (ed.) Magmatism in Kalimantan, Centre for Geological Survey, Geological Agency, Bandung, Spec. Publ., p. 153-162.
(Review of Plio-Pleistocene (5.8- 1.7 Ma) Metulang and Niut volcanics of East-Central and NW Kalimantan. Differ from Tertiary volcanics, possibly 'non-orogenic' magmatism)

Hartono, U. (2012)- Tectono-magmatic evolution. In: U. Hartono (ed.) Magmatism in Kalimantan, Centre for Geological Survey, Geological Agency, Bandung, Spec. Publ., p. 191-199.
(Most of magmatic activity in Kalimantan related to subduction processes. Not much information on pre-Cretaceous magmatic activity. E Cretaceous Schwaner and Singkawang batholiths may form continuation of E Asian magmatic arc and result from subduction of Paleo-Pacific Plate (from present-day North) along E Asia. Subduction continues to Late Cretaceous (Kerabai Volcanics, Sukadana granite). Also Cretaceous accretionary/ subduction complex in SE Kalimantan, tied to subduction of Indian Plate at S side of Sundaland (Batang Alai granite, Haruyan Volcanics), terminating in Paleocene with Paternoster Plate collision. Eocene to Oligocene or M Miocene subduction of proto-S China Sea oceanic crust under N Kalimantan, creating Rajang accretionary prism and Muller, Piyabung, Sintang, Nyaan and Serantak volcanics. Etc.)

Hartono, U. H.Z. Abidin & I.G.B.E. Sutjipta (2012)- Mineralization. In: U. Hartono (ed.) Magmatism in Kalimantan, Centre for Geological Survey, Geological Agency, Bandung, Spec. Publ., p. 163-190.
(Review of metallic mineral deposits in Kalimantan, all associated with magmatic belts. Kalimantan long history of alluvial gold mining. During 'gold rush' of 1980's-1990's several epithermal gold deposits discovered: E Kalimantan (Kelian, Muyup, Tasan, Busang, Seruyung, Jelai), C Kalimantan (Masupa Ria, Mt. Moro, Gunung Emas) and W Kalimantan (Sebuduk, Pandung, Salakaen, Bukit Timah) Most of these associated with Sintang Intrusives of Late Oligocene- M Miocene C Kalimantan magmatic arc. Small gold prospects also in S Kalimantan/ Meratus Mts (Miing, Pantain Bancah, Gunung Belanda), presumably also associated with Tertiary intrusives)

Hartono, U. & S. Bronto (2012)- Tertiary arc magmatism. In: U. Hartono (ed.) Magmatism in Kalimantan, Centre for Geological Survey, Geological Agency (Bandung), Spec. Publ., p. 115-152.
(Mineral deposits of Kalimantan mainly associated with Tertiary magmatism. Four main groups of Tertiary volcanics: (1) Eocene (~50 Ma) Piyabong/ Muller/ Nyaan volcanics in N-C Kalimantan (possibly arc volcanics from proto-S China Sea Plate subduction); (2) rel. widespread Oligocene- M Miocene (30-16 Ma) intermediate Sintang intrusives(>150) and Malasan volcanics in central parts (incl. common 'adakitic' rocks) (arc magmatism, also tied to S China Sea subduction); (3) M Miocene- Pliocene Jelai volcanics of NE Kalimantan; (4) Plio-Pleistocene Metulang/ Niut volcanics widespread along N border of Kalimantan)

Hartono, U., M.H.J. Dirk, P. Sanyoto & S. Permanadewi (1999)- Geochemistry and K/Ar results of the Mesozoic-Cenozoic plutonic and volcanic rocks from the Meratus Range, South Kalimantan. In: G.H. Teh (ed.) Proc. 9th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA ô98), Kuala Lumpur 1998, Bull. Geol. Soc. Malaysia 43, p. 49-61.
(online at: www.gsm.org.my/products/702001-100834-PDF.pdf)
(Three main periods of magmatic activity in Meratus Mts: (1) E Cretaceous (131-103 Ma; Barremian-Albian) subduction-related granitoids (mainly island arc?; e.g Batangalai granite), (2) Late Cretaceous (82-66 Ma; Campanian- Maastrichtian) Haruyan Fm submarine island arc basalt-andesite and granitoids and (3) Tertiary (62-19.5 Ma) andesitic-basaltic volcanics and granitoids (limited distribution; on Palau Laut along strike-slip faults). Microdiorite at G. Kukusan K-Ar age 19.6 Ma. Parts of U Cretaceous- Tertiary andesites high-MgO, probably formed by reaction between ascending melts and mantle peridotite)

Hartono, U. & D. Djumhana (2000)- Batuan malihan. In: U. Hartono, R. Sukamto et al. (eds.) (2000)- Evolusi magmatik Kalimantan Selatan, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 23, p. 75-84.
(Review of mid-Cretaceous metamorphic rocks of SW Meratus Mountains, SE Kalimantan)

Hartono, U. & S. Permanadewi (2000)- Batuan volkanik. In: U. Hartono, R. Sukamto et al. (eds.) (2000)- Evolusi magmatik Kalimantan Selatan, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 23, p. 53-74.
(Review of volcanic rocks, Meratus Mts, SE Kalimantan)

Hartono, U., S. Permanadewi & M.H.J. Dirk (1997)- Petrology and geochemistry of the Tertiary volcanic and subvolcanic rocks, South Kalimantan. Proc. 26th Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, p. 419-427.
(Reprinted in Bronto & Surono 2014. Tertiary volcanics of Pulau Laut and Meratus Range associated with strike-slip faults. Most volcanics high MgO content. K-Ar ages of plagioclase from Pulau Laut andesite and micro-gabbro 57.5 Ma and 62.5 Ma, hornblende 32.5- 19.5 Ma. Probably originated from U Cretaceous-Lower Tertiary subduction, but magma produced accumulated in lower crust- upper mantle before rising to surface in E-M Tertiary))

Hartono, U. & I. Saefudin (2000)- Evolusi magmatik. In: U. Hartono, R. Sukamto et al. (eds.) (2000)- Evolusi magmatik Kalimantan Selatan, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 23, p. 119-135.
(Review of magmatic evolution Meratus Mts, SE Kalimantan)

Hartono, U., P. Sanyoto, H.Z. Abidin, S. Permanadewi, W. Sunata, M.H.J. Dirk & I. Saefudun (1997)- Geochemical characteristics of the Cretaceous and Tertiary volcanics, South Kalimantan: implications for the tectono magnetic evolution. J. Geologi Sumberdaya Mineral 7, 66, p. 2-10.

(Cretaceous volcanics of Haruyan Fm in Meratus Mts and in Pulau Laut mostly porphyritic andesites, characteristic of subduction arc volcanism. Paleogene basaltic rocks along strike-slip faults on Pulau Laut MgO rich and characteristic of primitive magma (not shown on Rustandi et al. 1995 Pulau Laut geologic map?; Hartono 2003))

Hartono, U., R. Sukamto, Surono & H. Panggabean (eds.) (2000)- Evolusi magmatik Kalimantan Selatan. Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 23, p. 1-140.
('The magmatic evolution of South Kalimantan'. Collection of papers published earlier)

Hartono, U. & Sulistyawan (2010)- Origin of Cretaceous high magnesian andesites from southeast Kalimantan- geochemistry. J. Sumber Daya Geologi 20, 5, p. 261-276.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/177/173)
(Anomalously high MgO content of some andesites ('boninites') found with normal volcanic arc andesites of U Cretaceous Haruyan Fm in Meratus Range and on Pulau Laut. Both originated from subduction zone-type magma. Two possible origins of high-Mg andesites: (1) melting of mantle wedge above slab; (2) reaction between silicic magma and hot mantle peridotite (boninites typically form in fore-arc environments during early stages of subduction?; JTvG))

Hartono, U. & Suyono (2006)- Identification of adakite from Sintang intrusives in West Kalimantan. J. Sumber Daya Geologi 16, 3 (153), p. 173-178.
(U Oligocene- E Miocene Sintang high-level intrusives widely exposed in W Kalimantan. Consist of microdiorite, granite/ microgranite, quartz diorite, dacite, andesite and minor rhyolite and rhyodacite. K-Ar analyses 30.4- 23.0 Ma in Melawai Basin, 17.9- 16.4 in Ketangau Basin. Published geochemical data suggest most rocks adakites. Products of arc magmatism, probably from melting of subducted S China Sea oceanic crust beneath Kalimantan. Subduction started in Late Oligocene when crust was still young)

Hashimoto, W. & T. Koike (1973)- A geological reconnaissance of the reservoir area of the Riam Kanan dam, East of Martapura, Kalimantan Selatan (South Borneo), Indonesia. In: T. Kobayashi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 13, p. 163-184.
(Description of Cretaceous (Aptian-Senonian)- Lower Tertiary stratigraphy of area of Riam Kanan dam at Aranio, 40 km E of Banjarmasin, SW Meratus Mts. Area now mainly flooded by water reservoir. Review of works of Verbeek (1875), Hooze (1893), Martin (1889), Krol (1920) and Koolhoven (1935), with additional observations. Oldest rocks crystalline schist, bounded by Bobaris Peridotite. Basal Cretaceous (Cenomanian?) conglomerate mainly composed of schist, also peridotite. Overlying marine sediments with volcanics. Orbitolina from limestone farther North not O. concavata, but older form of O. scutum type, in Japan associated with Upper Aptian ammonites. Latest Cretaceous non-marine shales with estheriids)

Hashimoto, W. & T. Koike (1974)- On the Martapura Cretaceous system of Southeast Kalimantan, Borneo, Indonesia (Geology along the upper stream of the Riam Kanan River). Chigaku Zasshi = J. Geography, Tokyo, 83, 1, p. 1-18. *(in Japanese)*
(online at: www.journalarchive.jst.go.jp/...)
(1972 survey of Meratus Mts Upper Cretaceous sediments at upper Riam Kanan River, E and Riam Kiwa W of Bobaris Mts. Basal conglomerates, sandstones and siltstones, unconformable over schist, with Turonian ammonoids and Inoceramus. Overlying Benuariam/Atiin Fm porphyritic lavas, agglomerates and tuffs, and conglomerates, Tabatan Fm sandstones and conglomerates with Aptian-Albian Orbitolina in limestone pebbles and reworked Benuariam Fm. Overlying Rantaulajon Fm fissile shale rich in estheriids, indicating non-marine facies, probably Senonian. Includes record of mid-Cretaceous Orbitolina in Meratus Mts at Hantakan, E of Barabai. Study of Eocene- Miocene suggests Early Oligocene Td stage is absent in area)

Hashimoto, W. & K. Matsumaru (1974)- *Orbitolina* from the Seberuang Cretaceous, Kalimantan Barat (West Borneo), Indonesia. In: T. Kobayashi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 14, p. 89-99.
(Multiple localities of Selangkai Fm clastics at Seberuang River, U Kapuas, W Central Kalimantan with lenses of coral-bearing limestones rich in Orbitolina lenticularis. Fossils first described by Von Fritsch (1883), Martin

(1899), Molengraaff (1900) and Zeijlmans (1939). Seberuang Orbitolina is Orbitolina lenticularis of Hofker (1966) groups II (within E Aptian) and I-II (Late Aptian). With map of all Orbitolina localities in W Indonesia)

Hattori, K., K.P. Burgath & S.R. Hart (1992)- Os-isotope study of platinum-group minerals in chromitites in alpine-type ultramafic intrusions and the associated placers in Borneo. Mineralogical Magazine 56, p. 156-164.
(online at: www.minersoc.org/pages/Archive-MM/Volume_56/56-383-157.pdf)
(187Os/ l86 Os ratios of ~1.04 in laurite grains in mid-Cretaceous (~110 Ma) chromitites from Bobaris and Meratus Mts, SE Kalimantan (and platinum group minerals in associated alluvial placers derived from ultramafics) suggest derivation from mantle, with no significant contribution of crustal 187Os. Also low ratio (1.06) in nugget from SE Sabah 40 Ma Darvel Bay ophiolite)

Hattori, K.H., L.J. Cabri, B. Johanson & M.L. Zientek (2004)- Origin of placer laurite from Borneo: Se and As contents, and S isotopic compositions. Mineralogical Magazine 68, 2, p. 353-368.
(Platinum-group mineral laurite (RuS2) from Pontyn River sediments, Tanah Laut, SE Borneo, derived from Meratus ophiolite. Formation of laurite in residual mantle or in magma generated from refractory mantle, followed by erosion after obduction of host ultramafic rocks)

Hattori, K. & S.R. Hart (1991)- Osmium-isotope ratios of platinum-group minerals associated with ultramafic intrusions: Os-isotopic evolution of the oceanic mantle. Earth Planetary Sci. Letters 107, p. 499-514.
(Includes Os-isotope data on Cretaceous Meratus ophiolite (two dismembered ophiolite bodies, obducted during subduction of Sundaland Plate at ~114 Ma; Pamali, Sungei Kalaan, Sungai Besar; SE Kalimantan) and Tertiary Darvel Bay (Sungei Edam, Sabah) ophiolites (extends N to ophiolite complex on Palawan Island, with Ar-age of metamorphic minerals of 36 Ma, in Miocene-age host rock stratigraphy))

Hendratno, A. & R. Al Furqon (2006)- Petrologi granit kordierit (studi kasis daerah Sungai Lumo- Kalimantan Tengah). Teknik Geologi Universitas Gajah Mada, p.
('Petrology of cordierite granite (study of Lumo River area, C Kalimantan))

Hennig, J., H.T. Breitfeld, R. Hall & A.M. Surya Nugraha (2017)- The Mesozoic tectono-magmatic evolution at the Paleo-Pacific subduction zone in West Borneo. Gondwana Research 48, p. 292-310.
(online at: http://searg.rhul.ac.uk/pubs/hennig_etal_2017%20Paleo-Pacific%20margin%20West%20Borneo.pdf)
(Metamorphic and magmatic rocks in NW part of Schwaner Mountains of W Kalimantan with mainly Cretaceous U-Pb zircon ages (~80-130 Ma). Triassic metatonalite near Pontianak with Triassic and Jurassic zircons formed at Paleo-Pacific margin of subduction under Indochina- E Malaya block. Geochemically similar Triassic rocks in Embuoi Complex to N and Jagoi Granodiorite in W Sarawak formed part of SE margin of Triassic Sundaland. One S-type granitoid (118.6 Ma) with inherited Carboniferous, Triassic and Jurassic zircons, indicating Sundaland basement. Two I-type granitoids with Cretaceous ages of 101.5 and 81.1 Ma. All three record Cretaceous magmatism at Paleo-Pacific subduction margin. Cretaceous zircons of metamorphic origin indicate recrystallisation at ~90 Ma, possibly related to collision of Argo block with Sundaland. Subduction ceased at that time, followed by post-collisional magmatism in Pueh (77.2 Ma) and Gading Intrusions (80 Ma) of W Sarawak (NB: West Borneo here viewed as part of Triassic Sundaland, extending to NW Schwaner zone and possibly further South; not SW Borneo block as previously assigned by Hall, etc.))

Herman, D.Z. (2007)- Kemungkinan sebaran zirkon pada endapan placer di Pulau Kalimantan. J. Geologi Indonesia 2, 2, p. 87-96.
(online at: www.bgl.esdm.go.id/publication/index.php/dir/article_detail/187)
('Possible zircon deposits in placer sediments in Kalimantan'. On hypothetical zircon placers from granites)

Hermanto, B., S. Bachri & S. Atmawinata (1994)- Geological map of the Pankalanbuun Quadrangle, Kalimantan, 1: 250,000, Quad. 1515. Geol. Res. Dev. Centre (GRDC), Bandung.
(S Kalimantan geologic map. S margin of Schwaner Mts. Oldest rocks ?Triassic Kuayan Fm andesitic volcanics, intruded by Cretaceous Mandahan granites, unconformably overlain by Late Miocene- Pliocene Dahor Fm)

Heryanto, R. (1991)- Sedimentology of the Melawi and Ketungau basins, West Kalimantan, Indonesia. Ph.D. Thesis University of Wollongong, vol. p. 1-255, vol. 2 Figures.
(online at: http://ro.uow.edu.au/theses/1405)
(Melawi and Ketungau 'forearc' basins in W Kalimantan formed between E Tertiary Lubuk Antu subduction zone in N and Semitau High to S. Semitau High part of Late Cretaceous Boyan Melange subduction complex (with up to km-size blocks, incl. Cretaceous Orbitolina Limestone, ultramafics, Permian granitoid and metamorphic microcontinental fragments). Up to 7500m of Late Eocene- Oligocene shallow marine- terrestrial deposits in Melawi and Ketungau Basins. Three unconformities in Melawi Basin. Melawi Group and Alat Sst can be correlated with Kantu Fm and Tutoop Sst in Ketungau Basin. Sand provenance from N, from uplifted melanges. Both basins with coal seams. Uplift of Semitau High (Boyan Melange) along backthrusts during Paleocene- E Eocene produced accretionary prism flanked to S by forearc Melawi Basin. N-ward migration of Benioff Zone in Late Eocene created forearc Ketungau Basin between old and new (Lubok Antu Melange) outer arc ridges. With palynology analyses by B. Porthault. Oligo-Miocene Sintang intrusives ~23-31 Ma in S, ~16-18 Ma in N)

Heryanto, R. (1996)- Diagenesis of the Melawi Basin sandstone, West Kalimantan, Indonesia. Bull. Geol. Res. Dev. Centre 20, p. 67-84.
(Diagenesis of >7 km thick Eocene and Oligocene fluvial, lacustrine and shallow marine sandstones of Melawi Basin. Generally characteristic of deeper burial)

Heryanto, R. (1996)- Sedimentology of the Ingar Formation. J. Geologi Sumberdaya Mineral 6, 53, p. 9-16.
(Ingar Fm Eocene mudstones and minor fine sandstones are oldest formation of Melawi Basin sequence in W Kalimantan. ~2000m thick outer shelf- upper slope deposits. With slump folds, ball-and-pillow structures and allochthonous limestone blocks. Classified as lithic arkose- feldspathic litharenite with 9-21% quartz and 12-40% lithics (mainly volcanics), derived from Schwaner Mountains volcanic arc rocks (entire Melawi Basin Eo-Oligocene section almost 8000m thick ?))

Heryanto, R. (1996)- Sedimentology of the Dangkan sandstone. J. Geologi Sumberdaya Mineral 6, 58, p. 6-16.
(Eocene Dangkan Sst in Melawi Basin of W Kalimantan. Unconformably overlies Selangkai Sst in N and Ingar Fm in S and is conformably overlain by Eocene Silat Shale. Polymict basal conglomerate with clasts derived from Semitau High N of basin. Deposited in fluvial environment (Eocene in Melawi basin >5-6 km thick))

Heryanto, R. (1999)- Petrografi batupasir Formasi Manunggul di daerah Alimukim, Kalimantan Selatan. J. Geologi Sumberdaya Mineral 9, 93, p. 16-26.
('Petrography of the Manunggul Fm sandstone in the Alimukim area, S Kalimantan'. Sandstones of U Cretaceous Manunggul Fm in Alimukim area, Meratus Mts, are feldspathic litharenites: quartz generally 1-8%, andesitic lithics 20-40%, basalt 10-19% and plagioclase 8-15%. Provenance 'undissected' andesitic magmatic arc (from Paau Volcanics). Also contributions from granite, ultramafics, metamorphics and sedimentary rock, incl. radiolarian chert)

Heryanto, R. (1999)- Diagenesa batupasir Formasi Manunggul di daerah Alimukim, Kalimantan Selatan. J. Geologi Sumberdaya Mineral 9, 98, p. 16-26.
('Diagenesis of Manunggul Fm sandstone in the Alimukin area, S Kalimantan'. Diagenesis of Upper Cretaceous volcanoclastics overlying Meratus ophiolite complex includes compaction, quartz, laumontite and calcite cement and secondary porosity from dissolution of feldspar and volcanic fragments)

Heryanto, R. (2000)- Pengendapan batuan sedimen kelompok Pitap di bagian selatan Pegunungan Meratus, Kalimantan Selatan. J. Geologi Sumberdaya Mineral 10, 109, p. 2-19.
('Deposition of rocks of the Pitap Group in the southern part of the Meratus Mountains, S Kalimantan'. U Cretaceous Pitap Gp volcanoclastics in S Meratus Mts overlies basement of Batugamping Fm (Orbitolina Lst; ~100-300m thick?), E Cretaceous Paniungan mudstones (Berriasian-Barremian?) and ultramafic and granitic rocks. Composed of interfingering Pudak and Keramaian Fms. Lower Pudak Fm is olistostrome with blocks of Orbitolina limestone and volcanic rocks, deposited on continental slope, upper part submarine fan deposits)

Heryanto, R. (2000)- Tataan stratigraphy. In: U. Hartono et al. (eds.) Evolusi magmatik Kalimantan Selatan, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 23, p. 7-24.
(Stratigraphy chapter in 'Magmatic evolution of South Kalimantan' book)

Heryanto, R. (2011)- Stratigrafi bagian barat dan tenggara Kalimantan: implikasinya terhadap keterdapatan sumber daya energi fosil. Geol. Survey Indonesia (PSG), Bandung, p. 1-63.
(Stratigraphy of West and SE Kalimantan: implications for fossil energy resources')

Heryanto, R. & H.Z. Abidin (1995)- Geological map of the Longbia (Napaku) Quadrangle 1818, Kalimantan, scale 1: 250.000. Geol. Res. Dev. Center (GRDC), Bandung.
(Map inboard of Tarakan Basin. Oldest rocks Jurassic-Cretaceous Telen Fm sheared black and red slate, chert and metasandstone. Unconformably overlain by thick U Cretaceous- Paleocene Embaluh Gp mainly flysch-type clastics with SW-NE trending folds, unconformably overlain by M-L Eocene clastics and limestones. Oligo-Miocene Jelai Fm basaltic-andesitic volcanics, Etc.)

Heryanto, R., B.H. Harahap, P.R. Williams & P.E. Pieters (1993)- Geology of the Sintang sheet area, Kalimantan, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(C Kalimantan map sheet, showing occurrences of Jurassic- Early Cretaceous Danau Mafic Complex (probably oceanic crust in Cretaceous Boyan accretionary melange), Semitau Metamorphics, thick Eocene sediments of Melawi and Ketungau basins, widespread Late Oligocene- E Miocene Sintang andesite intrusives, etc.)

Heryanto, R. & U. Hartono (2003)- Stratigraphy of the Meratus Mountains, South Kalimantan. J. Geologi Sumberdaya Mineral 13, 133, p. 2-24.
(Meratus Mts with Paleozoic Lumo continental granite NW of range and M Jurassic Puruidalam oceanic plagiogranite (155± 16 Ma) in ophiolite complex. Meratus stratigraphy three groups: (1) Jurassic- E Cretaceous imbricated ultramafics (120-155 Ma), chert, Aptian- Albian (110-199 Ma) metamorphic Hauran schist and Pelaihari phyllite, sediments (incl. pre-Aptian E Cretaceous Paniungan Fm mudstone and Barremian Batununggal Orbitolina Lst; should be Aptian?) and melange; (2) Late Cretaceous- Paleocene Pitap Gp volcanics and deep water Manunggul Fm volcanoclastics and island arc type Hawaja Granite (~70-87 Ma); (3) Eocene- Miocene sediments of Barito basin margin. Also Belawayan arc-type granite (K-Ar ages 101-131 Ma), U Cretaceous Pudak Fm olistostrome of volcanoclastics and limestone blocks in Pudak River)

Heryanto, R. & B.G. Jones (1996)- Tectonic development of Melawi and Ketangau basins, Western Kalimantan, Indonesia. Bull. Geol. Res. Dev. Centre (GRDC), Bandung, 19, p. 151-179.
(In Late Cretaceous most of W Kalimantan Melawi/ Ketangau basins was area of marine shelf, flysch and pelagic deposition. Early Tertiary S-directed thrusting created Melawi foreland basin with Eocene lacustrine, fluvial and marginal marine sediments. In latest Eocene new thrust zone further North, producing second foreland basin (Ketangau))

Heryanto, R. & H. Panggabean (2010)- Characteristics and depositional environment on Jurassic-Cretaceous rock sequences in Meratus Mountains, South Kalimantan. Proc. Symp. Paleoclimates in Asia during the Cretaceous, IGCP Project 507, Yogyakarta 2010, p. 53-56. *(Abstract only)*
(Summary of Meratus Mts rocks, ages and tectonic development. Permo-Carboniferous S-type Lumo granite (319-260 Ma), represents continental Sundaland. M Jurassic metamorphic rocks (165-180 Ma). Mid-Cretaceous subduction suggested by arc-type Belawayan Granite (101-131 Ma) and metamorphic rocks (110-119 Ma). Belawayan granite overlain by Aptian-Albian Batununggal Lst. Palynomorphs from Paniungan Mudstone indicate Berriasian-Barremian age)

Heryanto, R. & P. Sanyoto (1994)- Geological map of the Amuntai Quadrangle 1713, Kalimantan, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(Geologic map of NW part of Barito Basin and part of NW Meratus Range)

Heryanto, R., P. Sanyoto & H. Panggabean (2003)- Depositional setting of the sedimentary rocks of Pitap Group in the northern Meratus High (Amandit, Alimukim and Paramasan Areas), Southeast Kalimantan. J. Geologi Sumberdaya Mineral 13, 141, p. 2-21.
(Pitap Group in Meratus Range all U Cretaceous- Paleocene clastic- volcanoclastic deep marine slope to submarine fan deposits. Three formations, Pudak Fm (post Aptian-Albian Orbitolina Lst), Karamaian Fm (with Valanginian- Cenomanian radiolarian cherts (?), maybe also younger) and Manunggul Fm)

Heryanto, R., P. Sanyoto, H. Panggabean & K. Hasan (2001)- Depositional environment of the Late Cretaceous Pitap Group, Meratus Mountain, Southeast Kalimantan. In: A. Setiawan et al. (eds.) Proc. Deep-water sedimentation of Southeast Asia, FOSI (Indon. Sedim. Forum) 2nd Reg. Seminar, Jakarta, 1p. *(Abstract only)*
(Pitap Group in Meratus Mts divided into interfingering Pudak, Keramaian and Manunggul Formations. Lower Pudak Fm is olistostrome with olistoliths, including Orbitolina Limestone and volcanics in volcanic sandstone matrix. U Pudak Fm volcanic sandstone interbedded with conglomerate/ breccia, deposited as upper submarine fan. Keramaian Fm and Manunggul Fms submarine fan conglomerate, sandstone and mudstone. Volcanic activity produced age-equivalent Late Cretaceous volcanic rocks of Haruyan Group, deposited directly above basement (imbricated Lower Cretaceous Batununggal Lst, Paniungan Mudstone, ultramafics, metamorphic and granitic rocks). Tertiary sediments unconformably overlie both Pitap and Haruyan Groups)

Heryanto, R., S. Supriatna, E. Rustandi & Baharuddin (1994)- Geological map of the Sampanahan Quadrangle, Kalimantan, Quad. 1813, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(Includes NE part of Meratus Range. With in SW part of Range Batanglai granite (K/Ar age 115 Ma) overlain by Aptian Batununggal Fm Orbitolina limestone, Late Cretaceous Haruyan Fm basaltic lavas and >2000m thick Pitap Fm volcanoclasic flysch with common Kintap Orbitolina limestone olistoliths. Ultrabasic rocks in East)

Heryanto, R., Sutrisno, Sukardi & D. Agustianto (1998)- Geologic map Belimbing sheet, South Kalimantan, scale 1: 100.000. Geol. Res. Dev. Centre (GRDC), Bandung.

Hidayat, S., Amiruddin & D. Satrianas (1995)- Geological map of the Tarakan and Sebatik sheet, Kalimantan, Quad 1919, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(Map sheet of Tarakan Basin in NE corner of Kalimantan, with NW-SE trending anticlines of folded Miocene and younger sediments. Older outcrops in SW of sheet, with folded Mesozoic Bengara Fm clastics and tuffs, unconformably overlain by Eocene Sembakung Fm clastics and Nummulites- Fasciolites limestone, unconformably overlain by Oligocene-Miocene Naintupo Fm clastics with limestone intercalations (with Eulepidina, Spiroclypeus, etc. E-M Miocene Jelai Fm volcanics and associated granitoids)

Hidayat, S. & I. Umar (1994)- Geological map of the Balikpapan sheet, Kalimantan. Geol. Res. Dev. Centre (GRDC), Bandung.

Hinde, G.J. (1900)- Description of fossil radiolaria from the rocks of Central Borneo. In: G.A.F. Molengraaff, Borneo-expedition. Geological explorations in Central Borneo (1893-94), Brill, Leiden, Appendix I, p. 1-57.
(Several localities of radiolarian chert in C Borneo, sampled by Molengraaff. Two kinds: intensely folded folded red radiolarian cherts in Danau Fm of Upper Kapuas River area, and radiolarian tuffs and marls S of Semitau Hills, both below M Cretaceous clastics with Orbitolina. Radiolarians of E Cretaceous or Late Jurassic age (called E Cretaceous by Sanfilippo and Riedel 1985 (Stichocapsa cribata Hinde limited to Valanginian in W Pacific ODP sites; Matsuoka (1992); Stylatractus ovatus n.sp. = Sphaerostylus lanceola= Tithonian-Aptian; Sanfilippo and Riedel 1989))

Hirano, H., S. Ichihara, Y. Sunarya, N. Nakajima, I. Obata & M. Futakami (1981)- Lower Jurassic ammonites from Bengkayang, West Kalimantan Province, Indonesia. Bull. Geol. Res. Dev. Centre (GRDC), Bandung, 4, p. 21-26.
(Two species of Toarcian (upper Lower Jurassic) ammonites (Harpoceras sp. and Dactylioceras sp.) from uppermost part of >3000m thick Upper Triassic- Jurassic Bengkayang Gp (Sungaibetung Fm) at Mt Bawang,

Bengkayang area, W Kalimantan, in beds previously mapped as U Triassic. Formation intruded by E Cretaceous (~104 Ma) Mt. Raya granodiorite and Tertiary tonalite of 29-19 Ma age)

Hirschi, H. (1908)- Vorlaufiger Bericht uber einen geologischen Streifzug in centraal-Borneo- Oberlauf Moeroeng (Barito). Tijdschrift Kon. Nederlands Aardrijkskundig Genootschap (2), 25, p. 777-806.
(Early geological survey of the upper Murung tributary of the Barito River, N of Banjarmasin, C Kalimantan. Includes first report of diamonds and gold in alluvial deposits at Babuat River in headlands of Barito River, C Kalimantan)

Hollmann, F. (2000)- Felsmechanische und mikrostrukturelle Untersuchungen an Serpentinit-Proben aus SE-Kalimantan, Indonesien. M.Sc. Thesis; Institute of Geology, Ruhr-University, Bochum, Germany, p.
('Rock mechanics and micro-structural investigations on serpentinite samples from SE-Kalimantan, Indonesia'. Study of mechanical properties of brecciated serpentinite ('bimrock') for Kusan-3 Hydropower dam foundation in Meratus Mts. Original ultramafic rocks undergone complete serpentinization and fractured into fault breccia. Blocks re-cemented by precipitated serpentinite minerals forming block-in-matrix structure)

Hollmann, F.S., H.K. Kutter & U. Glawe (2001)- Felsmechanische und mikrostrukturelle Untersuchungen an Serpentinit-Kataklasiten aus SE-Kalimantan, Indonesien. In: 13th Nat. Tagung fur Ingenieurgeologie, Karlsruhe, Geotechnik 2001, Suppl., p. 203-204. *(Abstract only)*
('Rock mechanic and microstructural investigations of serpentinite-kataklasites from SE Kalimantan, Indonesia'. Summary of Hollmann (2000) thesis work)

Hooze, J.A. (1893)- Topographische, geologische en mijnbouwkundige beschrijving der afd. Martapoera, residentie Zuider- en Oosterafdeling van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 22 (1893), p. 1-431.
('Topographic, geologic and mining description of the Martapura District, S and E Kalimantan'. Extensive description of Martapura region geology and economic minerals, mainly coal and diamonds)

Hovig, P. (1930)- De oorsprong van de Borneo diamanten. Geologie en Mijnbouw 8, 12, p. 157-161.
(online at: https://drive.google.com/file/d/1IsA9sp2MEHaeqL_IHPOyMvlLVrkM08Tm/view)
('The origin of the Borneo diamonds'. Brief review, largely based on Krol (1922). Quaternary diamond placers probably formed through multiple stages, from primary deposits (here believed to be contact zones of acid intrusions) into Lower Cenomanian clastics, then reworked into progressively younger sediments. No figures)

Hutchison, C.S. (1986)- Formation of marginal seas in S.E. Asia by rifting of the Chinese and Australian continental margins and implications for the Borneo region. In: G.H. Teh & S. Paramananthan (eds.) Proc. 5th Reg. Congress Geol. Min. Energy Res. SE Asia (GEOSEA V), Kuala Lumpur 1984, 2, Bull. Geol. Soc. Malaysia 20, p. 201-220.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1986b11.pdf)
(SE Asian marginal basins formed by processes other than back-arc extension. Andaman Sea is Miocene leaky transform system. W Philippine Sea, Banda Sea, Celebes Sea and Sulu Basins are remnants of former Cretaceous- Eocene oceans, now trapped behind younger arc-trench systems, Etc. (many of the assumptions used here to build tectonic model differ from current interpretations; JTvG))

Hutchison, C.S. (1987)- Stratigraphic-tectonic model for Eastern Borneo. GEOSEA 6 Conference, Jakarta, p.

Hutchison, C.S. (1988)- Stratigraphic-tectonic model for Eastern Borneo. Bull. Geol. Soc. Malaysia 22, p. 135-151.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1988007.pdf)
(E Borneo nucleated since Late Cretaceous time around Miri Zone, whose basement may be microcontinent rifted from shelf of Vietnam and S China. E margin of Miri Zone interpreted as Atlantic-type margin, with down-faulted continental crust giving way E-wards to Late Cretaceous-Eocene oceanic lithosphere ('Chert-Spilite Fm' and underlying 'Crystalline Basement') of same age as ocean floor of adjacent Celebes Sea. Rajang

Gp deposited as Late Cretaceous-Paleogene turbidite fan directly on Chert-Spilite Fm. E-wards subduction of this oceanic basement resulted in W and N Sulawesi volcanic arc. Etc.)

Hutubessy, S. & S. Panjaitan (2003)- Penelitian geomagnetik di cekungan Amuntai, Kabupaten Amuntai, Kalimantan Selatan. Proc. 32nd Ann. Conv. IAGI and 28th Ann. Conv. HAGI, Jakarta, 7p.
(Magnetic survey and model in Amuntai (NE Barito) basin, SE Kalimantan)

Ichihara, S., Y. Sunarya & N. Nakajima (1984)- Cretaceous and Tertiary granitic rocks, West Kalimantan (G. Bawang- Bengkayang- Darit- Pahuman area and G. Ibu area). Bull. Direct. Mineral Res. Indonesia 2, 15, p. 1-28.
(Descriptions of Cretaceous granodiorite plutons of Singkawang batholith, NW Kalimantan, etc.)

Icke, H. & K. Martin (1906)- Die Silatgruppe, Brack- und Susswasser-Bildungen der Oberen Kreide von Borneo. Sammlungen Geol. Reichs-Museums Leiden, Ser. 1, 8, p. 106-144.
(online at: www.repository.naturalis.nl/document/552415)
('The Silat Group brackish and freshwater deposits of the Upper Cretaceous of Kalimantan'. Description of fresh and brackish water molluscs) from Melawi Basin E of Sintang, collected by Wing Easton. Mainly gastropods (Faunus eastoni, Paludinopsis silatiensis, Melania krausei) and some bivalves (Corbula silatiensis). Martin suggests most likely Late Cretaceous age (but palynology in Sutjipto (1991) believed to be Eocene))

Idrus, A., L.D. Setijadji & F. Thamba (2011)- Geology and characteristics of Pb-Zn-Cu-Ag skarn deposit at Ruwai, Lamandau Regency, Central Kalimantan. J. Geologi Indonesia 6, 4, p. 191-201.
(online at: https://ijog.geologi.esdm.go.id/index.php/IJOG/article/download/126/126)
(Geology of skarn Pb-Zn-Cu-Ag deposit at Ruwai mine, Lamandau Regency, SW Kalimantan. Ruwai skarn associated with Late Cretaceous dyke/stock, intruding into Triassic-M Cretaceous Ketapang volcanics and sediments, including limestone. Controlled by NNE-SSW-trending strike- slip faults and N70E-trending thrust fault)

Idrus, A., L.D. Setijadji & F. Tamba & F. Anggara (2011)- Geology and characteristics of Pb-Zn-Cu-Ag skarn deposit at Ruwai, Lamandau Regency, Central Kalimantan. J. Southeast Asian Applied Geol. (UGM) 3, 1, p. 54-63.
(online at: http://geologic-risk.ft.ugm.ac.id/fresh/jsaag/vol-3/no-1/jsaag-v3n1p054.pdf)
(Same as or similar to Idrus et al. 2011, above)

Ilyas, S. (2003)- Inventarisasi batubara bersistem di daerah Muara Wahau dan sekitarnya, Kabupaten Kutai Timur, Provinsi Kalimantan Timur. Kolokium Hasil Kegiatan Inventarisasi Sumber Daya Mineral, DIM, TA, p. 22-1- 22.10.
(online at: www.dim.esdm.go.id/kolokium%202003/batubara/Makalah%20Wahau%20Kaltim.pdf)
('Systematic investigation of coal in the Muara Wahau area, Kutai Regency, E Kalimantan Province'. Six main coal seams, 6- 45m thick, in Upper Wahau Fm (E Miocene?) in NE corner Kutai Basin. Ash content < 4%, sulphur 0.15%, mean vitrinite reflectance Rv mean 0.27%)

Ismail, Y. (1998)- Alterasi hidrotermal pada intrusi andesit G. Otje, Banjarmasin, Kalimantan Selatan. Proc. 27th Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 1(Sumberdaya Mineral Energi), p. 200-211.
('Hydrothermal alteration at the Gunung Otje andesite intrusion, Banjarmasin, SE Kalimantan')

Jong, J., S. Barker & F.L. Kessler (2015)- A comparison of fold-thrust belts in Eastern Sundaland: structural commonalities and differences on the Circum-Borneo Margin. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-138, 21p.
(Comparison structural commonalities of Neogene fold-thrust belts of E Sundaland margin in NW and E Circum-Borneo: Bunguran, W Baram Delta, E Baram Delta, C and N NWSabah Trough, Sandakan, Tarakan, Kutai and W Sulawesi foldbelts. Belts along E Borneo margin of Sulu, Tarakan, Kutai and W Sulawesi are induced by crustal subduction; compressive ('failed subduction') NW margin exhibits stretched continental crust

of S China Sea, deformed by strike-slip tectonics, contractional block uplift, gravitational gliding and thrusting, inversion tectonics and clay diapirism)

Kadarusman, A. (2010)- The origin of Borneo (Kalimantan) diamond: a summary. Proc. 39th Ann. Conv. Indon. Assoc. Geol. (IAGI), Lombok 2010, 5p.
(Review of literature on Kalimantan diamonds. Primary host for diamonds still not identified. Kalimantan diamonds likely related to Kimberlite Clan rocks that originated in cratonic environment)

Kamiludin, U. & Y. Darlan (2005)-Keterdapatan emas letakan dan ikutannya di perairan Delta Kapuas, Pontianak, Kalimantan Barat. J. Geologi Kelautan 2, 3, p. 1-8.
(online at: http://ejournal.mgi.esdm.go.id/index.php/jgk/article/viewFile/123/113)
('Presence of gold placers in the waters of the Kapuas Delta, Pontianak, West Kalimantan'. Presence of gold placers, associated with Ag, Cu, Pb, Zn and Sn in offshore sediments originating from Kapuas River. Primary source probably Sintang intrusives)

Kamiludin, U., Y. Darlan & H. Kurnio (2008)- Sebaran endapan kuarsa di perairan Delta Kapuas, Pontianak, Kalimantan Barat. J. Geologi Kelautan 6, 3, p. 135-145.
(online at: http://ejournal.mgi.esdm.go.id/index.php/jgk/article/view/157/147)
('Distribution of quartz deposits in the waters of the Kapuas Delta, Pontianak, West Kalimantan'. Study of recent sands of Kapuas delta with high % quartz)

Kamiludin, U., I Wayan Lurga & S. Hakim (2003)- Sedimen permukaan dan kandungan mineralnya di perairan Pontianak, Kalimantan Barat. J. Geologi Sumberdaya Mineral 13, 143, p. 57-66.
('Surface sediment and mineral content in the waters of Pontianak, West Kalimantan'. Recent sediments off Pontianak dominated by quartz (from Sukadana granite and Kempari Sst Fm?). Heavy minerals include magnetite, hematite, cassiterite, pyrite, etc.)

Karyono H.S. (1988)- Typologie de structures mineralisees du Bassin de Kalan, Kalimantan de l'Ouest, Indonesie; aspect tectonique et controle structural de mineralisations d'uranium. Doct. Thesis, Universite Louis Pasteur de Strasbourg, p. 1-202. *(Unpublished)*
('Mineralized structures of the Kalan Basin, W Kalimantan; tectonic aspects and structural control on uranium mineralizations')

Karyono H.S. (1991)- Analisis kontrol tektonik pada vein mineralisasi di Bukit Eko, Kalan, Kalimantan Barat. Proc. 20th Ann. Conv. Indon. Assoc. Geol. (IAGI), Energy Min. Res., p. 115-128.
('Analysis of tectonic control on vein mineralization at Bukit Eko, Kalan, W Kalimantan')

Karyono, H.S. & M. Ruhland (1990)- Use of multiscalar processing of remotely sensed data in Kalan fracturation networks West Kalimantan, Indonesie for future mineralization research. ISPRS J. Photogrammetry and Remote Sensing 45, p. 428-441.
(Kalan area in C Kalimantan N of Schwaner Mts with 3000-4000m thick Permo-Carboniferous (younger?; JTvG) low metamorphic sediments, surrounded by Cretaceous tonalitic intrusives. Two periods of tectonic deformation (1) plastic deformation, forming schistosity in metapelite, fracture cleavage in metasilt and regional folding (N70°E average axial direction; bedding planes av. strike N50°E, dip 50°S). With uranium mineralisation in fractures and schistosity; (2) brittle deformation that did not cause any extensive bed sliding, fracturing, etc. Fracture patterns may be result of large 'Kalan alignment' NE-SW sinistral strike-slip fault)

Kemmerling, G.L.L. (1915)- Topographische en geologische beschrijving van het stroomgebied van de Barito, in hoofdzaak wat de Doesoenlanden betreft. Tijdschrift Kon. Nederlands Aardrijkskundig Genootschap 2, 32, p. 575-641 and p. 717-772.
('Topographic and geological description of the Barito drainage area, in particular the Dusun lands'. Mainly geographic description. With 1:750,000 scale geologic map)

Kim, I.J. (2005)- Occurrence of gold deposits of the Tumbang Lapan area of the Middle Kalimantan, Indonesia. Korean Soc. Econ. Environm. Geol. 38, 3, p. 347-353. *(In Korean, with English summary)*
(C Kalimantan Tumbang Lapan area (along tributary of Kahajan River) with Permian- Carboniferous Pinoh Metamorphic rocks, Cretaceous granites. Faults with gold-bearing hydrothermal quartz veins)

Kim, I.J. (2006)- Geochemical exploration for the stream sediments of the Tumbang Mirih in the Middle Kalimantan, Indonesia. Korean Soc. Econ. Environm. Geol. 39, 3, p. 301-328. *(In Korean, with English summary)*
(Common gold in Quaternary stream samples in Tumbang Mirih area in C Kalimantan)

Kim, I.J., W.S. Kee, K.Y. Song, B.G. Kim, S.R. Lee & G.H. Lee (2004)- Geology of the Kualkulun in the Middle Kalimantan, Indonesia: I. Stratigraphy and structure. Korean Soc. Econ. Environm. Geol. 37, 6, p. 437-457. *(In Korean, with English summary)*
(C Kalimantan Kualakulun area (area Kahayan River near Tewah, N of Palangkaraya) with Permian-Carboniferous Pinoh Metamorphic rocks (mica-schists, etc.), and Cretaceous Sepauk plutonics of Sunda shield, ovelain by Late Eocene Tanjung Fm (fluvio-delta plain deposits of S-ward flowing system, some coal, pebbles in conglomerate mainly vein quartz, changing upward into shallow marine environment), Oligocene Malasan Volcanics and Oligocene- E Miocene Sintang volcanics. Four main deformational phases)

Kim, I.J., G.H. Lee, D.L. Cho, S.R. Lee & S.R. Lee (2004)- Geology of the Kualkulun in the Middle Kalimantan, Indonesia: II. Mineralogy and geochemistry. Korean Soc. Econ. Environm. Geol. 37, 6, p. 459-475. *(In Korean, with English summary)*
(C Kalimantan Cretaceous Sepauk plutonic rocks calk-alkaline S-type granites, with K-Ar ages of biotite granite 100.5- 106.5 (Albian), med-grained granitoids 91.9- 102.6 Ma. Oligocene Malasan Volcanics intermediate dacitic pyroclastics and minor lavas of subalkaline series with K-Ar ages 31.5- 36.8 Ma. Oligocene- E Miocene Sintang intrusives are basic-intermediate basalts and trachyandesite with K-Ar ages 24.6-34.5 Ma)

Kleibacker, D., R. Tasrianto & A. Saripudin (2015)- Long distance migration in Central Kalimantan: a solution to the Barito dilemma? Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-085, 13p.
(Previous basin models concluded that 80 GBO and >100 TCF of gas (ConocoPhillips: ~66 GBO and ~70 TCF gas from Eocene Tanjung coals) should have been generated in Barito foreland basin, but only 200 MMBOE EUR discovered so far, in Tanjung Field and satellites. Apparent discrepancy coined 'Barito Dilemma' Possibility of long distance secondary oil migration (~100km) out of latest Miocene to Plio-Pleistocene S Barito fore-deep towards C Kalimantan Palangkaraya PSC suggested by oil seep(s))

Kloos, J.H. (1866)- Vorkommen und Gewinnung des Goldes auf der Insel Borneo. Tijdschrift Nederl. Indie 28, p. 207-216.
('Occurrence and exploitation of gold on the island of Borneo'. Brief review, observing gold present across much of Borneo, but mainly at W coast (Kapus area) and Sarawak. No maps or figures)

Kobayashi, T. (1973)- On the history and classification of the fossil Conchostraca and the discovery of Estheriids in the Cretaceous of Borneo. In: T. Kobayashi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia 13, Tokyo University Press, p. 47-72.
(Upper Cretaceous small fresh-water crustacean shells from shales near Rantaulajung, Riam Kanan River, Meratus Mts front, E of Martapura, SE Kalimantan. Mainly of species Pseudocyclograpta hashimotoi n.sp.)

Koolhoven, W.C.B. (1933)- Het primaire voorkomen van den Zuid-Borneo diamant (voorlopige mededeeling). De Mijningenieur 14, 8, p. 138-144.
('The primary occurrence of the South Borneo diamonds (prelininary communication)'. Diamonds have been mined in SE Borneo for centuries. Base of widespread M Cretaceous Manunggul Fm (locally with Orbitolina) unconformable over all older formations, with transgressive basal conglomerates containing older rocks and also detrital diamonds. (but Cretaceous basal conglomerates directly on Meratus peridotites lack diamonds).

Eocene conglomerates also diamond-bearing. Peridotitic 'Pamali Breccia' with small diamonds proposed as primary diamond source. With map of diamond-bearing areas along NW side Meratus Mts, from Krol (1920))

Koolhoven, W.C.B. (1935)- Het primaire voorkomen van den Zuid-Borneo diamant. Verhandelingen Geologisch-Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie 11, p. 189-232.
('The primary occurrence of the South Borneo diamonds'. Discussion of SE Borneo diamond occurrences, mainly in Upper Cretaceous and younger clastics at NW side of Meratus Mts. Thought thought to be derived from peridotitic 'Pamali Breccia'. Conclusion disputed in later literature)

Kraeff, A. (1955)- A contribution to the petrology of the young extrusive and intrusive rocks of the river basin of S.Kajan (NE Borneo). Publ. Keilmuan, Bandung, Seri Petrologi 29, p. 11-19.

Krause, P.G. (1899)- Uber Lias von Borneo. Sammlungen Geol. Reichs-Museums Leiden, ser. 1, 5, p. 154-168.
(online at: www.repository.naturalis.nl/document/552379)
(also in Jaarboek Mijnwezen Nederlandsch Oost-Indie 25, Wetenschappelijk Gedeelte, p. 28-42).
('On the Liassic of Borneo'. Upper Liassic macrofossils from slightly bituminous dark shales interbedded with lighter sandstones in Sambas region, NW Kalimantan, collected by Wing Easton. With ammonites of Harpoceras radians group and possible Inoceramus)

Krause, P.G. (1899)- Uber Tertiare, Cretaceische und altere Ablagerungen aus West-Borneo. Sammlungen Geol. Reichs-Museums Leiden, E.J. Brill, ser. 1, 5, p. 169-218.
(online at: www.repository.naturalis.nl/document/552412)
('On Tertiary, Cretaceous and older deposits from West Borneo'. Brief, early description of W Borneo Mesozoic and Tertiary rocks and fossils from Molengraaff collection. Includes discussion of Cretaceous limestones with Orbitolina concava, as first reported by Von Fritsch (1875). No locality maps. Also in Jaarboek Mijnwezen Nederlandsch Oost-Indie 1899, Wetenschappelijk Gedeelte, 2, p. 1-52)

Krause, P.G. (1904)- Die Fauna der Kreide von Temojoh in West-Borneo, 1 Teil. Die Ammoniten. Sammlungen Geol. Reichs-Museums Leiden, E.J. Brill, ser. 1, 7, p. 1-28.
(online at: www.repository.naturalis.nl/document/552403)
('The Cretaceous fauna from Temojoh, W Borneo'. Cretaceous ammonites from slightly bituminous dark grey limestone at Temojoh village on the Landak River, collected by Koperberg in 1895. Associated with rel. small and thin-shelled gastropods, bivalves, plant remains and crustacean remnants. Ammonites mainly Knemoceras pinax n.sp., also Schloenbachia sp. (Knemoceras pinax assigned to genus Engoceras, a Late Albian- E Cenomanian genus that lived in rel. shallow shelfal marine facies in Tethys region (Bujitor 2010); JTvG))

Krause, P.G. (1911)- Uber unteren Lias von Borneo. Sammlungen Geol. Reichs-Museums Leiden, E.J. Brill, ser. 1, 9, 1, p. 77-83.
(online at: www.repository.naturalis.nl/document/552428)
('On Lower Liassic from Borneo'. Jurassic faunas reported earlier from W Borneo were mainly of Late Liassic M and U Jurassic ages (Martin, Vogel, Bullen Newton). New discovery of Early Jurassic ammonite in concretion collected by Van Dijk in float in area mapped by Wing Easton (1904) as mainly Paleozoic- Triassic outcrop, between Gunung Bentok, G, Sanggan and G, Melangsar. Ammonite most similar to E Liassic Aegoceras ziphus, but here described as Aegoceras borneense n.sp.)

Krekeler, F. (1932)- Over een nieuw voorkomen van fossielhoudend Palaeozoikum in Midden-West Borneo (voorlopige mededeeling). De Mijningenieur 13, p. 167-172.
('A new occurrence of fossiliferous Paleozoic in the central part of West Borneo (provisional report)'. See also English translation in Haile (1955). First description of fusulinids and brachiopods in W Kalimantan- W Sarawak border area, S of Kuching. Limestones associated with volcanic rocks and suggestive of Late Carboniferous age. Strike of folded, steeply dipping Late Paleozoic- Triassic rocks predominantly N-S. Overlain by Triassic volcanoclastics with Monotis salinaria (Fusulinid limestone subsequently named Terbat Lst by Haile (1954), and its fusulinids identified as E Permian by Cummings (1955))

Krekeler, F. (1933)- Aanvullende mededeelingen omtrent het voorkomen van fossielhoudend Palaeozoikum in West Borneo. De Mijningenieur 14, 11, p. 191-192.
(‘Supplementary report on the occurrence of fossiliferous Paleozoic in West Borneo’. See also English translation in Haile (1955). Brachiopod-bearing beds from dark claystone in volcanic series in Lower Sadong R area previously interpreted as Paleozoic also contains Halobia and now believed to be Triassic in age. Fusulinid beds from marly limestones in core of same anticline examined by Tan Sin Hok and provisionally identified Staffella sp., believed to be same species (and same volcanoclastic facies) as U Carboniferous-Permian of Jambi, Sumatra (= E Permian?; JTvG))

Krekeler, F. (1955)- A new occurrence of fossiliferous Paleozoic rocks in the central part of West Borneo (provisional report). In: N.S. Haile (ed.) Geological accounts of West Borneo, Geological Survey Dept., British Territories in Borneo, Kuching, Bull. 2, p. 7-14.
(English translation of Krekeler (1932) original Dutch paper above)

Krekeler, F. (1955)- Supplementary report on the occurrence of fossiliferous Paleozoic in West Borneo. In: N.S. Haile (ed.) Geological accounts of West Borneo, Geological Survey Dept., British Territories in Borneo, Kuching, Bull. 2, p. 15-16.
(English translation of Krekeler (1933) original Dutch paper above)

Krokel, F. (1923)- Gesteine aus dem Gebiet des Boelangan-Flusses in Nordoestlichen Borneo. Sammlungen Geol. Reichs-Museums Leiden, ser. 1, 10, 3, p. 141-182.
(online at: www.repository.naturalis.nl/document/552377)
('Rocks from the area of the Bulungan River in NE Kalimantan'. Description of rocks collected by Herbordt of BPM in 1910. Includes biotite granite, quartz-diorite, dacite, augite-andesite, andesite tuff, breccia, conglomerate, sandstone, siliceous shale)

Krol, L.H. (1916)- Korte beschrijving van enkele 'groote' diamanten, in den laatste tijd gevonden bij Tjampaka, afd. Martapoera, Residentie Zuider- en Oosterafdeling van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 44 (1915), Verhandelingen 1, p. 13-17.
('Brief description of some 'large' diamonds found recently near Cempaka, Martapura'. In 1912-1915 stones of 12, 17 and 24 carats found at Danau Pumpung, S of Cempaka. Yellowish color, octohedral shape)

Krol, L.H. (1919)- De Borneo diamant, haar voorkomen, winning en bewerking. De Ingenieur 1919, September, p. 707-709.
('The diamonds of Borneo, its occurrences, exploitation and processing'. Summary of presentation)

Krol, L.H. (1920)- Over de geologie van een gedeelte van de Zuider- en Oosterafdeling van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 47 (1918), Verhandelingen 1, p. 281-367.
(Geology of SE Borneo, E of Banjarmasin, including Meratus- Bobaris Mountains. Cenomanian folding episode with ‘intrusions’ of peridotites and metamorphism. With 1:100,000 geologic map on 6 sheets)

Krol, L.H. (1922)- Bijdrage tot de kennis van den oorsprong en de verspreiding der diamant-houdende afzettingen in Zuidoost-Borneo en van de opsporing en winning van den diamant. Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 49 (1920), Verhandelingen 1, p. 250-304.
('Contribution to the knowledge of the origin and the distribution of diamond-bearing deposits in SE Kalimantan and its exploitation'. Diamonds found in much of Kalimantan: W (Landak River. Kajan area), SE (Martapura), Upper Barito, etc. Mainly found in Quaternary river terraces and source rock still unclear. Mid-Cretaceous Cenomanian peridotites/ serpentinites are most likely diamond source, but not all rivers draining serpentinite terrains are diamond-bearing)

Krol, L.H. (1927)- On the occurrence of the Danau formation in Martapura (S. E. Borneo). Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam, 30, 3, p. 338-340.
(online at: www.dwc.knaw.nl/DL/publications/PU00015449.pdf)

(Critique of Rutten (1926) paper of same title. In Meratus Mts Alino and Waringin layers (including limestones with Orbitolina) affected by contact metamorphism by 'intra-Cenomanian intrusives' and may also have affected (Triassic-Jurassic?) Danau Fm radiolarites)

Krol, L.H. (1929)- Over het voorkomen der Danau-formatie in Martapoera (Z.O. Borneo). Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam, 35, p. 988-990.
('On the occurrence of the Danau Fm in Martapura, SE Kalimantan'. Dutch version paper above)

Krol, L.H. (1929)- Plooiingsrichtingen in het Mesozoicum van West- (Centraal en Zuid-Oost?) Borneo. De Mijningenieur 10, 9, p. 200-202.
('Folding directions in the Mesozoic of West (Central and Southeast? Kalimantan'. In upper reaches of Sekayam River, Sarawak border area, strike directions of sediments with Triassic fossils around N 20° W, while Cretaceous beds strike N 60°(E?). Triassic with Monotis salinaria, M. inaequivalvis, Pseudomonotis ochotica, Steinmannites. Lower Cretaceous with Orbitolina, Vola, Micrabacia, Arca cenomanensis, Ur Cretaceous with Discorbina canaliculata (or Rosalina linnei= Globotruncana). Jurassic limestone of Bau, Sarawak at N 60° W (Krol's data questioned by Wing Easton (1929), Mijningenieur 10, 12, p. 271-272))

Krol, L.H. (1929)- Radiolarienhoudende gesteenten van Borneo. De Mijningenieur 10, 11, p. 243-248.
('Radiolarian-bearing rocks of Borneo'. Radiolarian-bearing rocks known from various parts of Kalimantan and Sarawak, probably of Triassic, Jurassic and Cretaceous ages. Three groups: (1) with 'normal' clastic sediments and limestones; (2) as siliceous rocks (cherts, jaspis, radiolarites), (3) conglomerates with clasts of older radiolarites. With appendix by Tan Sin Hok on radiolaria identifications (not very specific))

Krol, L.H. (1930)- De Mesozoische plooiingen op Borneo, Nederlandsch-Indie en omgeving en hunne waarde voor het kaarteren van onbekende, fossiellooze gebieden. De Mijningenieur 11, 4, p. 68-89.
('The Mesozoic folding in Borneo, Netherlands Indies and surrounding areas and its value for mapping unexplored non-fossiliferous areas'. English translation in Haile (1955, p. 17-38). Krol proposes controversial tectonic model, in which directions of folding are used to date ages of Mesozoic folding in unfossiliferous regions: Triassic N20°W, Cretaceous N60°E and Jurassic N60°W)

Krol, L.H. (1931)- Mijnbouwkundig-geologisch onderzoek in West-Borneo. Jaarboek Mijnwezen Nederlandsch-Indie 59 (1930), p. 48-54.
('Mining-geological survey in W Borneo'. Status report of West Kalimantan mapping by geological survey)

Kueter, N., J. Soesilo, Y. Fedortchouk, F. Nestola, L. Belluco, J. Troch, M. Walle, M. Guillong, A. Von Quadt & T. Driesner (2016)- Tracing the depositional history of Kalimantan diamonds by zircon provenance and diamond morphology studies. Lithos 265, p. 159-196.
(Diamonds in alluvial deposits in Kalimantan not accompanied by kimberlite or lamproite indicator minerals. Meratus Mts 'headless' diamond deposits. Provenance analysis of diamond-bearing 'Dahor Fm' Pleistocene river channel material and from outcrops of diamond-bearing Campanian-Maastrichtian Manunggul Fm. Diamonds from Meratus and Sanggau area look like classical kimberlite-type diamonds. Inclusions of olivine, coesite, garnet suggest P at formation 4.8-6.0 GPa and T of 930-1250°C. Zircons only small subset of kimberlitic affinity. Trace elements (U, Th and Eu) suggest eclogitic source for zircons. Data support model for Kalimantan diamonds of emplacement in N Australian Craton, then spread passively through SE Asia by terrane migration during Gondwana breakup. Diamond-bearing lithologies metamorphosed by terrane amalgamation events, destroying indicative mineral content. Orogenic uplift liberated diamond-content into new, autochthonous placer deposits)

Kusnaeny, K. (1968)- Die Manganerzvorkommen in West-Kalimantan (Indonesien) und Orissa (Indien). Geol. Jahrbuch 86, p. 655-692.
('The manganese ore occurrences in W Kalimantan (Indonesia) and Orissa (India)'. On mineralogy of manganese ores of W Kalimantan. Mineralization tied to veins with rhodonite and piemontite in volcanic rocks, subsequently enriched by lateritic weathering. Very little on geological setting)

Leach, T.M. (2002)- Alteration and mineralisation in the Busang gold prospect, East Kalimantan, Indonesia. In: Proc. AusIMM New Zealand Branch Annual Conf., 150 Years of Mining, 2002, 6p.

Le Bel, L., J.L. Nagel, P. Lecomte & A. Muchsin (1985)- CTA39A, Follow-up work in the Longlaai area, NE Kalimantan (The Longlaai Project)), Phase I. Bureau Rech. Geol. Minieres (BRGM) Report 86, p. 1-107. *(Unpublished) (Long Laai gold prospect associated with E Miocene (22.6 Ma) adamellite)*

Lefevre, J.C., J. Collart, M. Joubert, J.L. Nagel & A. Paupy (1982)- Geological mapping and mineral exploration in North-East Kalimantan 1979-1982; Final Report. Bureau Rech. Geol. Minieres (BRGM) and Direktorat Jend. Pertambangan Umum, BRGM Report 82RDM007AO, p. 1-120.
(Unpublished survey report, available in Geological Survey library, Bandung. Geological mapping and geochemical sampling program in area W of Tarakan Basin. Area dominated by tightly folded and faulted Cretaceous- E Eocene flysch-type sediments, unconformably overlain by subhorizontal, rel. thin M-U Eocene transgressive clastics series with reefal limestones, etc. Important volcanic phase in Miocene)

LeRoy, L.F. & G.O. Croes (1880)- Verslag van een onderzoek der lood en zinkertsafzettingaan de Kandawangan Rivier, in de Westerafdeeling van Borneo. (Met een naschrift van C.J. van Schelle). Jaarboek Mijnwezen Nederl. Oost-lndie 1880, 2, p. 3-13
('Report on the lead and zinc ore deposit on the Kandawangan River in West Kalimantan. With a postscript by van Schelle'. Early report on lead and zinc ore occurrence in SW Kalimantan, where high grade ore was found by locals near Marouw on Kandawangan River, 14 km S of Ketapang border at Tanjung. Presence of ore confirmed in this paper at two sites, but not in situ as lode or vein (see also Cretier 1879))

Li, S., X. Yang & W. Sun (2015)- The Lamandau IOCG deposit, southwestern Kalimantan Island, Indonesia: evidence for its formation from geochronology, mineralogy, and petrogenesis of igneous host rocks. Ore Geology Reviews 68, p. 43-58.
(Lamandau Fe-Cu-Au deposit in SW Kalimantan related to Late Cretaceous diorite porphyries with zircon U-Pb ages of ~79 and 82 Ma. These arc-related igneous rocks may be tied to Pacific Plate subduction, but in extensional environment, related to rollback of Pacific plate. Magnetite compositions of low REE and high Cu-Au indicate possible Iron oxide copper-gold (IOCG) mineralization system

Loth, J.E. (1920)- Verslag over de resultaten van geologisch- mijnbouwkundige verkenningen en opsporingen in de residentie Wester-Afdeeling van Borneo. Jaarboek Mijnwezen Nederlandsch-Indie (1918), Verhandelingen 1, p. 224-280.
('Results of geological- mining reconnaissance in the West Borneo Residency' With 1:500,000 geological map and cross-sections on 2 sheets. Most of area, from Schwaner Mts in S, with granites overlain by rel. undeformed Cretaceous- Eocene sediments. In N WNW-ESE trending Semitau hills with folded deep-water Danau Fm shales with radiolarian cherts, unconformably overlain by less deformed, sandy Cretaceous (Cenomanian with Orbitolina and Senonian brackish-water Melawi Group). In far North near Sarawak border folded slates of unknown age. Rel. common Tertiary intrusives and volcanics)

Lumadyo, E., R. McCabe, S. Harder & T. Lee (1993)- Borneo: a stable part of the Eurasian margin since the Eocene. In: B.K. Tan et al. (eds.) 7th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA VII), Bangkok 1991, J. Southeast Asian Earth Sci. 8, p. 225-232.
(Paleomagnetic studies suggest SE Borneo has been at present position since Eocene, and no large Tertiary counterclockwise rotation was observed)

Macke, C.A.F. (1921)- Het voorkomen van ijzererts op de eilanden van de Poeloe Laoet groep en op de tegenoverliggende kuststreek van Borneo. Verslagen Mededelingen Dienst Mijnwezen 9, p.
('The occurrence of iron ore on the islands of the Pulu Laut group and the adjacent coastal area of Borneo')

Macke, C.A.F. (1924)- Resultaten van het geologisch-mijnbouwkundig onderzoek in Zuidoost Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie, 50 (1921), Verhandelingen 1, p. 269-303.

(Early geological-mining survey of area in SE Borneo: Pulau Laut, P. Sebuku and the Tanah Bumbu adjacent mainland of SE Kalimantan. Oldest rocks include serpentinized peridotites, gabbros and quartz-diorites)

MacKinnon, K., G. Hatta, H. Halim & A. Mangalik (1996)- The ecology of Kalimantan. The ecology of Indonesia Series, vol. III, Periplus Editions, Singapore (also Oxford University Press), p. 1-870.

Margono, U., Sutrisno & E. Susanto (1997)- Geologic map Kandangan sheet, Kalimantan, 1: 250.000. Geol. Res. Dev. Centre (GRDC), Bandung.

Martin, K. (1882)- Begeleidende woorden bij een geologische kaart van Borneo, geteekend door Von Gaffron. Tijdschrift Kon. Nederlands Aardrijkskundig Genootschap 7, p. 16-22. *(also in Jaarboek Mijnwezen 1882, Wetenschappelijk Gedeelte, p.)*
('Text accompanying a previously unpublished geological map of Borneo made by Von Gaffron'. S Kalimantan map showing traverses made between 1843-1848; focused on mineral occurrences)

Martin, K. (1888)- Ueber das Vorkommen einer Rudisten fuehrenden Kreideformation im suedoestlichen Borneo. Sammlungen Geol. Reichs-Museums Leiden, ser. 1, 4, 4, p. 117-125.
(online at: www.repository.naturalis.nl/document/552380)
('On the occurrence of a rudist-bearing Cretaceous formation in SE Borneo'. Rel. poorly preserved molds of Cretaceous rudists, collected by Van Schelle in 'Patellina (=Orbitolina) marl' at Sebaruang River, a left tributary of Kapuas River (Danau Kloenten, Sungei Pangaringan, Sg. Limau Gulung, Sg. Djarikan). Identified as Sphaerulites and Radiolites (age interpreted by Martin to be Senonian, but Umbgrove (1938) considered this to be Cenomanian; JTvG)

Martin, K. (1888)- Ueber das Vorkommen einer Rudisten fuhrenden Kreideformation im sudostlichen Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 1888, Wetenschappelijk Gedeelte, p. 72-80.
('On the occurrence of a rudist-bearing Cretaceous formation in SE Borneo'. Reprint of Martin (1888))

Martin, K. (1889)- Die Fauna der Kreideformation von Martapoera. Sammlungen Geol. Reichs-Museums Leiden, ser. 1, 4, p. 126-194.
(online at: www.repository.naturalis.nl/document/552423)
('The fauna of the Cretaceous formation of Martapura', SE Kalimantan. Marl-dominated U Cretaceous section with sandstones and conglomerates. With poorly preserved ammonites (Acanthoceras), common oysters (Ostrea martapuriensis, Ostrea ostracina), rudists (Sphaerulites, Radiolites), gastropods (incl. 8 species of Nerinea), brachiopods (Terebratula spp.), bivalves (Trigonia limbata, Vola, Cardium). Age probably Upper Cretaceous/ Senonian. With 7 plates)

Martin, K. (1889)- Die Fauna der Kreideformation von Martapoera. Jaarboek Mijnwezen Nederlandsch Oost-Indie 18, Wetenschappelijk Gedeelte, p. 1-74.
('The fauna of the Cretaceous formation of Martapura', SE Kalimantan. Reprint of Martin (1889) above)

Martin, K. (1889)- Versteinerungen der sogenanten alten Schieferformation von West Borneo. Sammlungen Geol. Reichs-Museums Leiden, Ser. 1, 4, p. 198-208.
(online at: www.repository.naturalis.nl/document/552432)
('Fossils from the so-called Old Slate Formation of West Borneo'. Rare molluscs collected from shales by Van Schelle in 'Chinese districts' of W Borneo. Presence of Gervillia borneensis n.sp. and Corbula sp. probably indicate Cretaceous age (but Martin (1898) deemed these to be E Jurassic in age. See also Newton 1903, Vogel). With 2 plates)

Martin, K. (1889)- Versteinerungen der sogenanten alten Schieferformation von West Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 18 (1889), Wetenschappelijk Gedeelte, p. 75-85.
('Fossils from the so-called Old Slate Formation of West Borneo'. Reprint of Martin (1889)

Martin, K. (1889)- Untersuchungen uber den Bau von *Orbitolina* (*Patellina* auct.) von Borneo. Sammlungen Geol. Reichs-Museums Leiden, Ser. 1, 4, p. 209-231.
(online at: www.repository.naturalis.nl/document/552418)
('Remarks on the construction of Orbitolina (= Patellina of earlier authors) from Borneo'. Early paper on mid-Cretaceous larger foram Orbitolina concava, called Patellina in earlier papers. Collected by Van Schelle on Seberuang River, a tributary of Kapuas River, Central Kalimantan)

Martin, K. (1889)- Untersuchungen uber der Bau von *Orbitolina* (*Patellina* auct.) von Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 18 (1889), Wetenschappelijk Gedeelte p. 86-108.
('Remarks on the construction of Orbitolina...'. Reprint of Martin (1889))

Martin, K. (1898)- Notiz uber den Lias von Borneo. Sammlungen Geol. Reichs-Museums Leiden, ser. 1, 5, p. 253-256.
(online at: www.repository.naturalis.nl/document/552398)
('Note on the Lias of Borneo'. Follow-up on Krause (1897) discovery of Liassic rocks of W Kalimantan. New material collected by Wing Easton from shales-sands at Sungei Kerassiek near Sepang in Sambas not only contained poorly preserved ammonite Harpoceras radians, but also bivalve Gervillia borneensis (already described by Martin (1889), possibly from same area). No figures)

Martin, K. (1898)- Notiz uber den Lias von Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 27 (1898), Wetenschappelijk Gedeelte p. 33-36.
('Note on the Lias of Borneo'. Same as Martin (1899))

Martin, K. (1898)- Die Fauna der Melawi-Gruppe, einer Tertiaren (Eocanen?) Brackwasser-ablagerung aus dem innern von Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 27 (1898), Wetenschappelijk Gedeelte, p. 37-96.
('The fauna of the Melawi Group, a Tertiary (Eocene?) brackish-water deposit from the interior of Borneo'. Same as Martin, 1899)

Martin, K. (1899)- Die Fauna der Melawi-Gruppe, einer Tertiaren (Eocanen?) Brackwasser-ablagerung aus dem innern von Borneo. Sammlungen Geol. Reichs-Museums Leiden, ser. 1, 5, p. 257-316.
(online at: www.repository.naturalis.nl/document/552430)
('The fauna of the Melawi Group, a Tertiary (Eocene?) brackish-water deposit from the interior of Borneo'. Descriptions of probably Late Eocene-age brackish-fresh water molluscs from Melawi and Kajan Rivers area, NW Kalimantan, collected by Wing Easton. Mainly species of bivalves Corbula (C. dajacensis), Cyrena (C. subrotundata, C. melaviensis) and gastropods Melania and Paludomus (P. gracilis, P. crassa); less common Arca melaviensis n.sp. Age indeterminate. With 2 plates)

Martin, K. (1899)- On brackish water-deposits of the Melawi in the interior of Borneo. Proc. Kon. Akademie Wetenschappen, Amsterdam, 1, p. 245-248.
(online at: www.dwc.knaw.nl/DL/publications/PU00014557.pdf)
(Molluscs collected by Wing Easton and Molengraaff in sediments of Melawi River area, Upper Kapuas, C Kalimantan, mainly fresh (Melania, Paludomus) or brackish water (Cyrena, Corbula), but also some shallow marine species. Age Tertiary, possibly Eocene)

Maryanto, S., Jamal & K.D. Kusumah (2014)- Mikrofasies batugamping Formasi Butanunggal di daerah Binuang, Kalimantan Selatan. J. Geologi Sumberdaya Mineral 15, 4 (203), p. 195-204.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/58/60)
'Limestone microfacies of the Batunungal Fm in the Binuang area, S Kalimantan'. Microfacies of Early Cretaceous reefal limestone with Orbitolina (identified as Aptian-Albian Orbitolina oculata and O. primitiva) in Meratus Mts. Limestones occuring as olistoliths in Late Cretaceous- Paleocene Keramaian Fm (?))

Masdja, M. & S. Sastrawiharjo (1988)- Geochemical exploration for uranium deposits in the Kalan area, Kalimantan. In: Technical committee meeting on Uranium deposits in Asia and the Pacific: Geology and exploration; Jakarta 1985, Panel Proceedings Series, Int. Atomic Energy Agency, Vienna, p. 229-238.
(On 1971-1976 uranium exploration work in C Kalimantan by Indonesian (BATAN)/French (CEA) teams, identifying some mineralized outcrops and boulders in Kalan area)

Mazur, S., C. Green, M. Stewart, R. Bouatmani & P. Markwick (2011)- Rotation of Borneo revisited- new inferences from gravity data and plate reconstructions. In: Petrol. Geol. Conf. Exhib. (PGCE 2011), Kuala Lumpur, Warta Geologi 37, 1, p. 52. *(Abstract only; no figures)*
(online at: https://gsmpubl.files.wordpress.com/2014/09/warta37_1.pdf)
(Paleomagnetic data of 50+40° CCW rotation of Borneo since 80 Ma disputed. Large gravity lineaments running E-W through Kalimantan and into Sea of Kalimantan(?) as well as ENE-WSW gravity anomalies across Java Sea and into Sumatra are evidence of crustal continuity that is hard to reconcile with rotation model of Hall (2002). Alternative plate model predicts 12-13° of CW rotation for Kalimantan and Sarawak relative to S China since 30 Ma. N Sabah is separated from Sarawak and Kalimantan by plate boundary which implies common tectonic history for N Sabah and S Palawan and separate evolution until M Miocene docking of Palawan Block to N margin of Borneo and Cagayan Ridge)

McManus, J. & R.B. Tate (1976)- Volcanic control of structures in North and West Borneo. Proc. SEAPEX Offshore SE Asia Conf., Singapore 1976, 5, p. 1-14.
(Volcanic and epiclastic rocks rel. widespread in N and W Borneo, and relationship between volcanism, fracture patterns and sedimentation)

Milsom J. (1997)- The gravity field of Borneo and its region. Bull. Geol. Soc. Malaysia 40, p. 21-36.
(https://gsmpubl.files.wordpress.com/2014/09/bgsm1997003.pdf)
(Review of gravity data on and around Borneo. Gravity data tends to support thin (<15km), probably oceanic crust under Makassar Straits (and Kutai Basin?). Isostatic effects dominate gravity field in Borneo region, with crust showing ability to support loads for short periods only and even then only in relatively small areas such as Darvel Bay)

Mohler, W.A. (1946)- Uber das Vorkommen von *Trocholina* Paalzow in der Unterkreide von West-Borneo. Eclogae Geol. Helvetiae 39, 2, p. 300-302.
(online at: https://www.e-periodica.ch/digbib/view?pid=egh-001:1946:39#327)
('On the occurrence of Trocholina Paalzow in the Lower Cretaceous of Borneo'. First report of small benthic foram Trocholina in SE Asia, from Lower Cretaceous of Seberuang River, Kapuas drainage basin, W Kalimantan. Associated ammonites described by Von Koenigswald 1939. Material collected by Zeijlmans 1939, who noted similarities of this material with Dusun Pobungo Cretaceous of Jambi, Sumatra)

Molengraaff, G.A.F. (1895)- De Nederlandsche expeditie naar Centraal-Borneo in 1894. Handelingen 5e Nederlandsch Natuur- Geneeskundig Congres, 4, p. 1-9.
(First summary report on 1894 Central Kalimantan geological expedition)

Molengraaff, G.A.F. (1900)- Geologische verkenningstochten in Centraal-Borneo. Maatschappij ter bevordering van het natuurkundig onderzoek der Nederlandsche kolonien, Brill, Leiden, p. 1-529 + Appendix 56p. + Atlas 22 plates.
(Text volume online at: http://openlibrary.org/works/OL7839000W/Borneo-expeditie)
('Geological reconnaissance trips in Central Borneo'. Classic early work on first geologic reconnaissance of C Kalimantan, with traverses along Kapuas, Mandai, Embaluh, Seberuang, etc. rivers. Oldest rocks Crystalline Schist and Old Slate Formations. First descriptions of E-W belt of Late Jurassic - E Cretaceous Danau Fm (E-W trending, steeply dipping deep marine 'diabase tuff' deposits with radiolarian cherts), unconformably overlain by less-deformed M-U Cretaceous marine sandy clastics and marls with Orbitolina concava and plant debris. Overlain by widespread rel. flat-lying but clearly variously uplifted non-marine Tertiary clastics. Eocene Nummulites- Discocyclina limestones found only as float. Also various types of intrusive granitoids and volcanic, small peridotite massif on Upper Kapuas, glaucophane amphibolite on Sebilit River, etc.)

Molengraaff, G.A.F. (1902)- Borneo-expedition. Geological explorations in Central Borneo (1893-94). English revised edition. Brill, Leiden, 2 vols., p. 1-529 + Appendix 56p. + Atlas 22 plates.
(English version of Molengraaff (1900) above)

Molengraaff, G.A.F. (1909)- On oceanic deep-sea deposits of Central Borneo. Proc. Kon. Nederl. Akademie Wetenschappen Amsterdam, 12, p. 141-147.
(online at: www.dwc.knaw.nl/DL/publications/PU00013423.pdf)
(Radiolarian cherts common in intensely folded Danau Fm (S of 'Old Slates' of U Kapuas mountain range near Kalimantan-Sarawak border), in ~60km wide belt stretching E-W over distance of 650 km across N Central Borneo from Upper Kapuas to Upper Mahakam Basin. Radiolarites often red in color and 97% silica) Interpreted as deep oceanic deposits, similar to those forming at depths below 5000m at equatorial latitudes today. (Age of Danau Fm oceanic assemblage is Jurassic- E Cretaceous according to Hinde (1900) and Heryanto et al. 1993))

Molengraaff, G.A.F. (1909)- Iets over de rivieren van het eiland Borneo in verband met zijn geologische gesteldheid. Handelingen Nederlandsch Natuur- Geneeskundig Congres 12, Utrecht, p. 700-712.
('About the rivers on the island of Borneo in relation to its geological condition'. In S half of Borneo all rivers drain from N to S, to Java Sea, in N half of island rivers drain W to E or E to W. Related to E-W striking fold trends in N Borneo, generally of Cretaceous age, while in S mostly granites, schists and Tertiary sandstones with no preferential strike directions)

Molengraaff, G.A.F. (1914)- Hoofdtrekken der geologie van Oost Borneo naar aanleiding der reizen van prof. dr. A.W. Nieuwenhuis en anderen. Verslagen Geologisch Mijnbouwkundig Genootschap, Geol. Sectie, 1, p. 175-179.
('Main points of the geology of East Kalimantan, after voyages of Prof. A.W. Nieuwenhuis and others')

Monnier, C., M. Polve, J. Girardeau, M. Pubellier, R.C. Maury, H. Bellon & H. Permana (1999)- Extensional to compressive Mesozoic magmatism at the SE Eurasia margin as recorded from the Meratus ophiolite (SE Borneo, Indonesia). Geodinamica Acta 12, 1, p. 43-55.
(Meratus ophiolitic series records (1) Jurassic continental rifting episode along Paleo-Eurasian margin followed by ?Cretaceous backarc opening, as seen in peridotites and (2) M-Late Cretaceous subduction-related calc-alkaline magmatism. Ophiolitic series ultramafics (lherzolites and pyroxenites) with minor metavolcanics, typically enriched MORB to normal MORB types. Meratus peridotites fragment of subcontinental lithospheric mantle. Back-arc basin basalts also in metamorphic soles of peridotites, formed in back-arc basin now accreted to E margin of Eurasia and partly covered by calc-alkaline magmatism (Alino Fm). Ophiolitic series crosscut by Late Turonian-Senonian Manunggul Fm calc-alkaline melts)

Moss, S.J. & M.E.J. Wilson (1998)- Biogeographic implications from the Tertiary palaeogeographic evolution of Sulawesi and Borneo. In: R. Hall & J.D. Holloway (eds.) Biogeography and geological evolution of SE Asia. Backhuys Publ., Leiden, p. 133-155.
(online at: http://searg.rhul.ac.uk/searg_uploads/2016/01/Moss_Wilson.pdf)
(Series of paleogeographic maps of Borneo- Sulawesi region, from 50- 4 Ma. W Sulawesi accreted onto Borneo by Late Cretaceous, then separated in M-Late Eocene. E Sulawesi collided with W Sulawesi in M-L Oligocene. Late Miocene accretion of Australia-derived microcontinents onto E Sulawesi)

Moyle, A.J., K. Bishoff, K.R. Alexander & H. Hoogvliet (1996)- Mt Muro gold deposit, Indonesia. In: Proc. Conf. Porphyry related copper and gold deposits of the Asia Pacific Region, Cairns 1996, Australian Mineral Found., Adelaide, p. 7.1-7.9.
(On Mt Muro gold deposit in C Kalimantan)

Muhammad, A.G. & B. Soetopo (2016)- Pemodelan dan estimasi sumber daya uranium di sektor Lembah Hitam, Kalan, Kalimantan Barat. Eksplorium 37, 1, p. 1-12.
(online at: http://jurnal.batan.go.id/index.php/eksplorium/article/view/2668/pdf)

('Uranium resources modeling and estimation in Lembah Hitam sector, Kalan, West Kalimantan'. Lembah Hitam Sector part of Schwaner Mts and Kalan Basin. Uranium mineralization in Permo-Triassic Pinoh Metamorphics metasiltstone and metapelites (intruded by Cretaceous Sepauk Tonalite/ Sukadana Granite))

Muller, J. (1966)- Montane pollen from the Tertiary of NW Borneo. Blumea 14, 1, p. 231-235.
(online at: http://dare.uva.nl/cgi/arno/show.cgi?fid=565151)
(Majority of spores-pollen in Oligocene- Pliocene sediments of NW Borneo derived from various types of tropical lowland vegetation such as mangrove, peat swamp forest and mixed Dipterocarp forest. Some pollen types reflect montane vegetation: (1) Podocarpus imbricatus and Phyllocladus (only since Late Pliocene; migrated from New Guinea?); (2) Pinus, Picea, Tsuga, Ephedra an Alnus (abundant in Oligocene- E Miocene; gradually decreasing in frequency during Miocene). Many of these 'Asiatic montane' pollen are all mainland Asia types that do not occur in Borneo mountains today. Suggestive of rel. nearby Late Eocene uplift phase)

Murphy, R.W. (2002)- Throwaway lines on the petroleum geology of Borneo. SEAPEX Press 5, 2, p. 38-44.
(Series of statements on geology of North Borneo, incl. SW Borneo is underlain by Sunda cratonic continental crust that amalgamated in Late Triassic time, N Borneo underlain by stacked sequences of oceanic crust, dominantly of Late Jurassic- E Cretacous age, controversy exists about postulated Tertiary CCW rotations of Borneo, etc.)

Murphy, R.W. (2002)- Crustal evolution of Borneo. SEAPEX Press 5, 6, p. 28-30.
(Series of cartoons depicting tectonic evolution of Borneo from Late Triassic- Recent)

Murphy, R.W. & A.A. Morado (1998)- The structure of Borneo (7 crustal cross-sections). SEAPEX, p.

Nagel, J.L. (1990)- CTA 39A. Exploration of the Long Laai Zn-Pb-Ag skarn mineralisation in the Tahling Basin, Kalimantan Timur (Indonesia). Bureau Rech. Geol. Minieres (BRGM) Report R-30433, DEX-DAM-90 p.. *(Unpublished)*

Newton, R. Bullen (1903)- Notes on some Jurassic shells from Borneo, including a new species of *Trigonia*. Proc. Malacological Soc. London, 5, 6, p. 403-409.
(Jurassic rocks with molluscs known only from West of Borneo: Sultanate of Sambas and W Sarawak. Initially described as Cretaceous by Martin (1890), subsequently determined to be Liassic. Description of new Jurassic fossils from Boedak (Buduk), W Kalimantan, collected by McCarthy, incl. Trigonia molengraaffi n.sp., Protocardia, Corbula, Pseudomonotis, Exelissa, etc.. Most likely age 'Lower Oolitic' (= ~Bajocian, M Jurassic) (Trigonia molengraaffi considered to be species of Myophorella (Haidaia) by Kobayashi (1957) and is common in Upper Jurassic of Japan (Hayami 1984))

Newton, R.B. & R. Holland (1899)- On some Tertiary foraminifera from Borneo collected by Professor Molengraaff and the late Mr. A.H. Everett and their comparison with similar forms from Sumatra. Ann. Mag. Natural History ser. 7, 3, p. 245-264.
(Occurrences of Eocene Nummulites- Discocyclina limestones from Kalimantan- Sarawak/ Brunei border area, and from Gomanton hill, Kinabatang district)

Nila, E.S., E. Rustandi & R. Heryanto (1995)- Geological map of the Palangkaraya Quadrangle, 1: 250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
('Peta geologi lembar Palangkaraya, Kalimantan'. Southern C Kalimantan map sheet E and S of palngkaraya town. Mainly Young Tertiary sediments with rel. small outcrop areas of Cretaceous granite and E Triassic(?) quartzite and Triassic(?) volcanics)

Nixon, P.H. & S.C. Bergman (1987)- Anomalous occurrences of diamonds. Indiaqua 47, p. 21-27.
(Includes suggestion Borneo diamonds are associated with ultramafic rocks of obducted ophiolite)

Panggabean, H. (2005)- The occurrence of methane gas seepages in the Upper Ketungau area, West Kalimantan. Indonesian Mining J. 8, 1, p. 1-8.

(online at: http://jurnal.tekmira.esdm.go.id/index.php/imj/article/view/205/122)
(Flammable methane gas seepages at Peturau River, N of Upper Ketungau River, Ketungau Basin, N of Semitau High (Boyan Melange), NW Kalimantan. Near outcrop of Sekalau coal seam and probably coalbed methane gas, leaking through NW-SE trending faults. Coals present in Eocene Kantu (Silantek) Fm and Miocene Late Oligocene-Miocene(?) Ketungau Fm (Sekalau and Malintang seams, 0.10- 0.95m thick, vitrinite Ro 0.66-0.70%). Kantu Fm coal vitrinite Ro 0.68-0.82%)

Panjaitan, S. (2015)- Dinamika dan evolusi cekungan Ketungau Kalimantan Barat berdasarkan metode gayaberat. J. Geologi Sumberdaya Mineral 16, 2, p. 103-114.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/45/46)
('Dynamics and evolution of the Ketungau basin, West Kalimantan, by gravity method'. Oil-gas seeps in Sinaning River and upper Puturau and Ara Rivers along S margin of Ketungau Basin. Gravity anomalies 2 areas: 16-58 mGal anomaly over Semitau high and 8-16 mGal over sedimentary basin. Ketungau Basin controlled by reverse and normal faults; formed as foreland basin when Kalimantan underwent 60º Oligocene-Miocene rotation to left. Basement interpreted as ophiolite or oceanic rocks, deformed by block faulting, Cretaceous- Tertiary sediment thickness Ketungau Basin up to ~4km)

Parkinson, C.D., K. Miyazaki, K. Wakita, A.J. Barber & D.A. Carswell (1998)- An overview and tectonic synthesis of the pre-Tertiary very-high pressure metamorphic and associated rocks of Java, Sulawesi and Kalimantan, Indonesia. Island Arc 7, p. 184-200.
(High-P metamorphic rocks common in Cretaceous accretionary complexes of Java, Sulawesi, SE Kalimantan. Many occur as imbricate slices of carbonate, quartzose and pelitic schists of shallow marine or continental margin parentage, interthrust with subordinate basic schists and serpentinite. Predominantly low-intermediate metamorphic grade, with K-Ar ages of 110-120 Ma. Metamorphic rocks from greater depths (>60 km) sporadically exposed, usually as tectonic blocks. Metamorphic rocks probably recrystallized in N-dipping subduction zone at Sundaland craton margin in Early Cretaceous. Exhumation may have been facilitated by collision of Gondwanan continental fragment with Sundaland margin at ~120-115 Ma)

Permanadewi, S., M.H.J. Dirk & U. Hartono (1997)- Penarikhan Kalium-Argon batuan granitik daerah Kalimantan selatan. J. Geologi Sumberdaya Mineral 7, 74, p. 25-32.
(K-Ar analyses of granitic rocks in the S Kalimantan area'. New analyses of Cretaceous granites from Meratus Range E of Kandangan and Barabai. Two groups of granitic rocks (1) E Cretaceous group (121-103 Ma; calc-alkaline, I-type, subduction-related volcanic arc granites) and (2) Late Cretaceous tonalite and diorite (71-70 Ma; unknown genesis). Also 131.1 ± 12.8 Ma age for gabbro)

Permanadewi, S., U. Hartono & I. Saifudin (1996)- Hasil pentarikhan Kalium- Argon dan jejak belah batuan gunungapi Pulau Laut: implikasinya terhadap evolusi magma Kalimantan Selatan. J. Geologi Sumberdaya Mineral 6, 63, p. 10-16.
('Results of K-Ar and trace elements of volcanic rocks from Pulau Laut; implications for the magmatic evolution of S Kalimantan'. K-Ar and fission track ages of volcanics of Laut Island off SE Kalimantan. K-Ar ages of Cretaceous Haruyan Fm andesitic volcanics 82 Ma (E Campanian) and 69.6 Ma; Paleocene andesite and microgabbro, Oligocene andesite of 32.5 Ma. Apatite Fission track ages of G. Peltin diorite at E side of island 7.6- 8.3 Ma)

Pieters, P.E. & S. Supriatna (1990)- Late Cretaceous- Early Tertiary continent- continent collision in Borneo. In: T.J. Wiley et al. (eds.) Terrane analysis of China and the Pacific Rim, Circum-Pacific Council Energy and Mineral Resources, Earth Science Series, 13, p. 193-194.

Pieters, P.E. & S. Supriatna (1990)- Geological map of the West, Central and East Kalimantan Area, 1: 1000,000. Geol. Res. Dev. Centre (GRDC), Bandung, Indonesia.
(Includes 91-80 Ma radiometric age for Sukadana Granite)

Pieters, P.E., Surono & Y. Noya (1993)- Geological map of the Nangaobat Sheet area, Kalimantan 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.

Pieters, P.E., Surono & Y. Noya (1993)- Geology of the Putussibau Sheet, Kalimantan 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(C Kalimantan map sheet, showing Permo-Triassic Busang Complex igneous and metamorphic rocks, overlain by folded Cretaceous Selangkai Gp sediments, unconformably overlain by near-horizontal Late Eocene sediments. In North Kapuas and Embaluh melange with Danua ultramafics. Numerous Late Oligocene- E Miocene Sintang andesite intrusives, etc.)

Posewitz, T.A.K. (1883)- Geologische Notizen aus Central-Borneo (das Tertiare Hugelland bei Teweh). Natuurkundig Tijdschrift Nederlandsch-Indie 43, p. 169-175.
('Geologic notes from Central Borneo- the Tertiary hill country near Teweh'. Brief description of surface geology of upper Kutei basin near Muara Teweh. Common rel. hard sandstones, locally with plant fragments, overlain by marls and ~40m thick Nummulites- orbitoid limestone. Stratigraphy appears similar to Eocene of Pengaron (Barito basin). No figures/ maps)

Posewitz, T. (1882)- Unsere geologische Kenntnisse von Borneo. Mitteilungen Jahrbuch Konigl. Ungarischen Geologischen Anstalt, Budapest, 6, p. 136-162.
('Our geological knowledge of Borneo')

Posewitz, T. (1883)- Das Goldvorkommen in Borneo. Mitteilungen Jahrbuch Konigl. Ungarischen Geologischen Anstalt, Budapest, 6, p. 176-190.
('Gold occurrences of Borneo'. Early report on distribution of gold in Kalimantan. Many of the alluvial and fluvial gold occurrences already mined by locals. Less common gold disseminated in metamorphic rocks, granites and quartz veins)

Posewitz, T. (1884)- Geologische Mitteilungen uber Borneo. 1. Das Kohlenvorkommen in Borneo. 2. Geologische Notizen aus Central-Borneo. Mitteilungen Jahrbuch Konigl. Ungarischen Geologischen Anstalt, Budapest, 6, p. 318-350.
('Geological notes from Borneo: 1. Coal occurrences in Borneo, 2. Geological notes from Central Borneo')

Posewitz, T. (1885)- Das Diamantvorkommen in Borneo. Mitteilungen Jahrbuch Konigl. Ungarischen Geologischen Anstalt 7, p. 183-192.
('The occurrence of diamonds in Borneo'. Appendix to Geology of Bangka paper. Review of 1800's Dutch literature on diamond occurrences on Kalimantan, which had been exploited by Chinese miners since 1700's, mainly in West Kalimantan (Landak). Also present in SE Kalimantan (mainly at Martapura and Cempaka and also E of Meratus Range in Pagattan and Kusan areas). All diamonds from alluvial deposits)

Posewitz, T. (1889)- Borneo: Entdeckungsreisen und Untersuchungen; gegenwartiger Stand der geologischen Kenntnisse, Verbreitung der nutzbaren Mineralen. Friedlander, Berlin, p. 1-385.
(online at: https://archive.org/details/borneoentdeckun00posegoog)
('Borneo: discovery journeys an investigations; present state of geological knowledge, distribution of economic minerals'. Early textbook with overview of exploration, geology, mineral occurrences of all of Borneo Island, with first geological map. Few illustrations)

Posewitz, T. & F.H. Hatch (1892)- Borneo: its geology and mineral resources. Edward Stanford, London, p. 1-495.
(online at: http://archive.org/details/cu31924009555594)
(English translation of German original. First non-Dutch overview of late 1800's state of knowledge of Borneo geology, coal and minerals)

Priadi, B (2010)- Kalimantan magmatic system. In: N.I. Basuki & S. Prihatmoko (eds.) Proc. MGEI-IAGI Seminar Kalimantan coal and mineral resources, Balikpapan 2010, p. 187-190.
(Eocene-Miocene magmatic products in Kalimantan calc-alkaline, subduction-related magmatism, correlated to subduction of S China Sea Plate, indicating time of collision of Luconia continental plate to NW Kalimantan.

Miocene-Pliocene magmatism of potassic calc-alkaline affinity, indicating development of present subduction system. Tholeiitc within-plate magmatism characterizes of Pliocene- Recent magmatism)

Priyomarsono, Sumarso (1985)- Contribution a lœtude geologique du Sud-est de Borneo, Indonesia: geologie structurale de la partie meridionale de la chaine des Meratus. Thesis, Universite de Savoie, Chambery, Trav. Dept. Sciences de la. Terre 5, p. 1-198. *(Unpublished)*
(*Abstract at: http://edytem.univ-savoie.fr/archives/lgham/priyomarsono-r-fr.html*)
('Contribution to the study of SE Borneo: structural geology of the southern part of the Meratus chain'. Oldest rocks M Cretaceous Alino Fm volcanic arc deposits (Pulau Laut and W Sulawesi transitional arc-forearc rocks). Radiolarians and Orbitolina gave M Albian- Cenomanian age; interbedded lavas K/Ar age ~92 Ma, granite ~97Ma. Cenomanian obduction of peridotites with metamorphic sole dated at ~145 Ma, possibly due to collision of unknown microcontinent. Unconformably overlain by Turonian- Senonian Manunggul Fm molasse with calc-alkaline volcanics dated between 87-72 Ma. Eocene (and older?) extensional grabens with paralic, then marine deposits of Tanjung Fm. Middle Miocene compression, tied to Sula-Sulawesi collision, formed most folding and uplift along E border of Meratus Mts. Neotectonic uplift phase caused additional, recent uplift)

Priyomarsono, S. (1986)- Evolusi tektonik daerah Meratus dan sekitarnya, Kalimantan Tenggara. Proc. Ann. Conv. Indon. Assoc. Geol. (IAGI), p.
('Tectonic evolution of the Meratus and surrounding areas, Kalimantan'. Summary of thesis above)

Priyomarsono, S. & A. Sumarsono (1996)- Kontrol tektonik pada sedimentasi progading delta di cekungan Kutai, Kalimantan Timur. Proc. 25th Ann. Conv. Indon. Assoc. Geol. (IAGI), 2, p. 104-119.
('Tectonic control on prograding delta sedimentation in the Kutai Basin, E Kalimantan')

Pubellier, M., J. Girardeau & I. Tjashuri (1999)- Accretion history of Borneo inferred from the polyphase structural features in the Meratus Mountains. In: I. Metcalfe (ed.) Gondwana dispersion and Asian accretion, IGCP 321 Final results volume, A.A.Balkema, Rotterdam, p. 141-160.
(Meratus Mountains area of Mid-Cretaceous ophiolite obduction (oblique, N-S directed collision) and separates Eocene Barito and Asem-Asem basins. W front high-angle thrust, E flank gentle East dip. Main Meratus uplift around E-M Miocene boundary(remote response to Banggai-Sula collision). Two phases of Paleogene extension: N110E in Barito (Paleocene?) and N20E (Eocene; tied to Makassar Straits opening))

Pubellier, M. & D. Menier (2013)- The ups-and-downs of Borneo. In: 3rd Int. Conf. Palaeontology of South-East Asia (ICPSEA3), Malaysia, p. 42. *(Abstract only)*
(online at: www.senckenberg.de/files/content/forschung/projekte/igcp-596/igcp_596_malaysia_2013_abstrvol.pdf)

Purwanto, H.S. (2009)- Mineralisasi lead- zinc daerah Riamkusik, Kecamatan Marau, Kabupaten Ketapang, Propinsi Kalimantan Barat. J. Ilmiah Magister Teknik Geologi (UPN) 2, 2, 15p.
(online at: http://jurnal.upnyk.ac.id/index.php/mtg/article/view/190)
('Lead- Zinc mineralization in the Riamkusik area, District Marau, Ketapang, W Kalimantan Province'. Massive sulphide mineralisation in SW Kalimantan with galena, magnetite, sphalerite, pyrite, stibnite, hematite, chalcopyrite, also some Au and Ag. In fault zone in Cretaceous volcanics/ andesitic intrusions (?))

Purwanto, H.S. & H. Riswandi (2010)- Jenis deposit ñmassive sulphideò Pb-Zn di dearah Riam Kusik, Kecamatan Ketapang, propinsi Kalimantan Barat. J. Ilmiah Magister Teknik Geologi (UPN) 3, 2, 12p.
(online at: http://jurnal.upnyk.ac.id/index.php/mtg/article/view/209)
('Type of "massive sulphide" Pb-Zn deposit in Riam Kusik, Ketapang District, West Kalimantan'. Massive sulphide mineralization with galena, chalcopyrite, sphalerite, etc., following E-W structural grain)

Retgers, J.W. (1891)- Mikroskopisch onderzoek eener verzameling gesteenten uit de afdeeling Martapura, Zuid- en Oost Afd. van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 1891, Wetenschappelijk Gedeelte, p. 5-212.

('Microscopic study of a collection of rocks from the department Martapura, SE Kalimantan'. Petrographic description of rocks collected by Hooze in 1883-1888. Mainly various schists, including glaucophane schist, all presumed to be of Precambrian age (more likely mid-Cretaceous; JTvG). No location maps)

Retgers, J.W. (1893)- Uber kristallinische Schiefer, insbesondere Glaukophanschiefer, und Eruptivgesteine im sudlichen Borneo. Neues Jahrbuch Mineral. Geol. Palaont. 1893, 1, p. 39-43.
('On crystalline schists, particularly glaucophane schists, and volcanic rocks in southern Kalimantan'. First record of high P- low T glaucophane schists from Meratus Mountains at Pengaron and further north, collected by Hooze. Also peridotites-serpentinites. Little or no granite and true gneiss)

Retgers, J.W. (1895)- Mikroskopisch onderzoek van gesteenten van de Oostkust van Borneo, verzameld door J.A. Hooze. Jaarboek Mijnwezen Nederlandsch Oost-Indie 1895, Wetenschappelijk Gedeelte, p. 78-98.
('Microscopic study of rocks from the east coast of Kalimantan, collected by J.A. Hooze'. Brief petrographic descriptions, many from Pulau Laut, of a.o. quartz sandstones from Kutai, porphyrite/ diabase, diorite, and serpentinite from Palau Laut, limestone from Laut straits, etc.)

Robinson, G., N. Ratman & P. Senyaja (1996)- The accreted Meratus terranes Southeast Kalimantan. Bull. Geol. Res. Dev. Centre (GRDC), Bandung, 20, p. 35-56.
(At least 3 terranes accreted to SE Kalimantan from E between Barremian-Aptian and end-Paleocene. Meratus Mts consists of number of W-dipping partly subducted slabs of pre-Aptian oceanic crust, with granite and marine sediments. Stratigraphy includes Aptian-Paleocene arc volcanics, Barremian-Aptian granite, Aptian-Paleocene marine sediments and slivers of high P-low T metamorphic equivalents of these rocks. Meratus Mts uplifted and partly eroded at end-Paleocene, followed by deposition of Eocene- Pleistocene sediments (much of this is unlikely to be correct; JTvG))

Robinson, G.P., A.Y.S. Wah, B.T. Setiabudi, D.N. Sunuhadi, J.M. Hammarstrom, S. Ludington, A.A. Bookstrom, S.A. Yenie & M.L. Zientek (2013)- Porphyry copper assessment for Tract 142pCu7019, Central Kalimantan-Indonesia and Sabah and Sarawak, Malaysia. In: J.M. Hammarstrom et al., Porphyry copper assessment of Southeast Asia and Melanesia, U.S. Geol. Survey, Scient. Invest. Rep. 2010-5090-D, Appendix I, p. 149-163.
(online at: http://pubs.usgs.gov/sir/2010/5090/d/sir2010-5090d_text.pdf)
(Assessment of porphyry copper deposits in C Kalimantan- N Borneo dispersed belt of late Oligocene- Pliocene intermediate intrusives and volcanics. Relation of these intrusive rocks to subduction unclear, and tectonic setting for porphyry copper deposits in this tract likely post-subduction. All porphyry copper prospects likely of Miocene-Pliocene age. Only one known porphyry copper deposit: Mamut (Sabah; 1966))

Robinson, K. (1987)- Palinspastic thickness map of the Paleogene sequence of the Circum-Borneo region, Southeast Asia. Open-File Report U.S. Geol. Survey (USGS), Reston, OF 87-495-B.
(online at: http://pubs.usgs.gov/of/1987/0495b/plate-1.pd)
(Paleogene isopach map of circum-Borneo region)

Robinson, K. (1987)- Palinspastic paleogeographic map of the Paleogene sequence of the Circum-Borneo region, Southeast Asia. U.S. Geol. Survey (USGS), Reston, Open-File Report OF 87-495-C.
(online at: http://pubs.usgs.gov/of/1987/0495c/plate-1.pdf)
(Broad Paleogene paleogeography map of Borneo)

Robinson, K. (1987)- Palinspastic thickness map of the Neogene sequence of the Circum-Borneo region, Southeast Asia. Open-File Report U.S. Geol. Survey (USGS), Reston, OF 87-495-D.
(online at: http://pubs.usgs.gov/of/1987/0495d/plate-1.pd)
(Neogene isopach map of circum-Borneo region)

Robinson, K. (1987)- Palinspastic paleogeographic map of the Neogene sequence of the Circum-Borneo region, Southeast Asia. Open-File Report U.S. Geol. Survey (USGS), Reston, OF 87-495-E.
(online at: http://pubs.usgs.gov/of/1987/0495e/plate-1.pdf)

(Broad Neogene paleogeography map of Borneo)

Robinson, K. (1987)- Location map of major Tertiary sedimentary provinces and structural elements of the Circum-Borneo region, Southeast Asia. Open-File Report U.S. Geol. Survey (USGS), OF87-495-F.
(online at: http://pubs.usgs.gov/of/1987/0495f/plate-1.pdf)
(Simple Tertiary basins of Borneo area outlines map)

Robinson, K. & E.P. DuBois (1987)- Thickness map of the petroliferous Tertiary sequence of the Circum-Borneo region, Southeast Asia. Open-File Report U.S. Geol. Survey (USGS), Reston, OF 87-495-A.
(online at: http://pubs.usgs.gov/of/1987/0495a/plate-1.pdf)
(Tertiary isopach map of circum-Borneo region. Part of structure, isopach, paleogeographic maps series)

Rodenburg, J.K. (1984)- Geology, genesis and bauxite reserves of West Kalimantan, Indonesia. In: L. Jacob (ed.) Bauxite, Proc. Bauxite symposium Los Angeles 1984, Am. Inst. Min. Metall. Petrol. Eng., New York, p. 603-618.
(Major bauxite belt evaluated from 1969 to 1974 by PT Alcoa in W Kalimantan, Indonesia. Bauxite occurs as capping of low hills, formed during post-Paleogene peneplanation stage. Deposits formed by in situ weathering of predominantly acidic and basic intrusive rocks)

Rusmana, E. & P. Pieters (1993)- Geology of the Sambas/Siluas sheet area, Kalimantan, Quads 1317-1417, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(Geologic map of NW tip of Kalimantan. Includes in North Late Jurassic- E Cretaceous Serabang melange complex with ultramafics, intruded by Upper Cretaceous Pueh granite. In S typical 'NW Kalimantan Domain' stratigraphy: Paleozoic-Triassic? metamorphics, overlain by very thick (>1500m) Late Triassic-Jurassic Bengkayang Gp clastics, overlain by Cretaceous Pedawan Fm, unconformably overlain by Paleogene Kayan Sst, intruded by numerous Late Oligocene-E Miocene Sintang intrusives and also Pliocene Niut Volcanics)

Rustandi, E., E.S. Nila, P. Sanyoto & U. Margono (1995)- Geological map of the Kotabaru Sheet, Kalimantan. 1:250,000, Quad 1812. Geol. Res. Dev. Centre (GRDC), Bandung.
(Map sheet of SE-most Meratus Mts, Asem Asem Basin and Pulau Laut and Sebuku islands. All areas with folded succession of ultramafic rocks (in E Meratus associated with 'amphibolite-garnet schist' and mid Cretaceous Kintap Orbitolina limestone olistoliths; on Pulau Laut overlain by basalt, silicified sandstones and radiolarian cherts), overlain by Upper Cretaceous Pitap Fm polymict clastics and Eocene clastics with coals. Oligocene Berai Lst covers much of Asem Asem basin. Overlain by Warukin Fm. Folding post-dates Miocene Warukin Fm deposition)

Rutten, L. (1926)- Over het voorkomen der Danau-formatie in Martapoera (Z.O. Borneo). Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam, 35, p. 31-35.
('On the occurrence of the Danau Fm in Martapura, SE Kalimantan'. See English version below)

Rutten, L. (1926)- On the occurrence of the Danau-formation in Martapura (S.E. Borneo). Proc. Kon. Akademie Wetenschappen, Amsterdam, 29, 4, p. 524-528.
(online at: www.dwc.knaw.nl/DL/publications/PU00015300.pdf)
(Many rocks described by Hooze (1893) as Cretaceous Waringin and Alino claystones are radiolarites and may be considered as equivalents of Molengraaff's Danau Fm Mesozoic radiolarian-rich deep water deposits from C Kalimantan. Conclusion questioned by Krol (1926))

Rutten, L.M.R. (1927)- Chapters 13-21 on the geology of Borneo. In: L.M.R. Rutten (1927) Voordrachten over de geologie van Nederlandsch Indie, Wolters, Groningen, p. 191-310.
(Review of geology of Borneo in Rutten's classic lecture series)

Rutten, L. & C.J. Rutten-Pekelharing (1911)- De omgeving der Balikpapan-Baai. Tijdschrift Kon. Nederlands Aardrijkskundig Genootschap (2) 28, p. 579-601.
('The Balikpapan Bay area'. Brief geolographic- geologic description of area on E Kalimantan coast)

Rutten, M.G. (1940)- On Devonian limestones with *Clathrodictyon* cf *spatiosum* and *Heliolites porosus* from Eastern Borneo. Proc. Kon. Nederl. Akademie Wetenschappen 43, 8, p. 1061-1064.
(online at: www.dwc.knaw.nl/DL/publications/PU00017492.pdf)
(E-M Devonian coral Heliolites porosus and possibly Silurian stromatoporoid Clathrodictyon cf spatiosum in dark recrystallized limestone, collected by Witkamp along Telen River (tributary of Mahakam R.), above confluence of Long Hoet, NE Kalimantan, in folded, low-metamorphic 'Old Slates', with nearby andesites. (NB: appear to be blocks in melange) (Both taxa also reported from M-L Devonian of Laos and NE Thailand (Fontaine 1954, 1993). and may also be similar to Australian Mid-Devonian limestones from Canning Basin, Tamworth Belt, etc.; JTvG))

Rutten, M.G. (1943)- Over enkele Devonische fossielen uit Midden Oost-Borneo. Handelingen XXIX Nederlandsch Natuur- Geneeskundig Congres, Amsterdam 1943, p. 58-59.
('On some Devonian fossils from Central E Borneo'. Brief note on Devonian coral and sponge fossils in Utrecht collection, collected by Witkamp (1927) in Telen River area, NE Kalimantan, in large area of 'Old Slates'. Rutten suggests Witkamp rocks are from 'Danau Fm', composed of isoclinally folded cherts, radiolarites, quartzitites (in other parts of C Kalimantan with Triassic Halobia and Monotis; Zeijlmans 1938), and greywackes, spilitic diabase and diabase porphyrites associated with (Permian) fusulinids. Telen location is ~200km NNW of Samarinda. Rocks part of N/E margin of 'Borneo continental core- SW Borneo Terrane', as exposed in NW Kalimantan- W Sarawak, or part of Panthalassan accreted arc terrane?; JTvG)

Rutten, M.G. (1947)- De gesteenten der Midden Oost-Borneo Expeditie 1925. Geogr. Geol. Meded., Rijksuniversiteit Utrecht, Physiogr.-Geol. Reeks II, 9, p. 1-51.
('The rocks of the Central East Borneo Expedition'. Geological results of 1925 geographic expedition and descriptions of rocks collected by Witkamp, now at Utrecht University. Gently folded Tertiary sediments in S part, isoclinally folded, radiolarian-rich pre-Tertiary Danau Fm in North. Diorites emplaced in Danau Fm. Local Late Tertiary volcanics. With descriptions of Devonian coral and stromatoporoid, Eocene (Ta) Nummulites- alveolinid limestones, also rare Pellatispira, Miocene larger foraminifera, etc.)

Sambas Exploration Co. Ltd (1890)- Gold in Borneo. London, p. 1-39.

Santy, L.D. (2014)- Diagenesis batupasir Eosen di Cekungan Ketungau dan Melawi, Kalimantan Barat. J. Geologi Sumberdaya Mineral 15, 3, p. 117-131.
('Diagenesis of Eocene sandstones of Ketungau and Melawi basins, W Kalimantan'. Eocene sandstones outcropping around Semitau High in NW Kalimantan show 'mesogenetic mature B' stage, indicating former burial between 2700-4000m in Melawi Basin. Eocene sands in Ketungau Basin 'mesogenetic semi-mature', i.e. burial depth of ~1500-2000m (less than Melawi Basin because of uplift with Semitau High in Oligocene))

Santy, L.D. & H. Panggabean (2013)- The potential of Ketungau and Silat shales in Ketungau and Melawi Basins, West Kalimantan: for oil shale and shale gas exploration. J. Geologi Indonesia 8, 1, p. 39-53.
(online at: http://ijog.bgl.esdm.go.id/index.php/IJOG/article/view/154/154)
(Ketungau and Melawi Paleogene intramontane basin, in NW Kalimantan have potential for oil shale and shale gas. Ketungau shale dominated by type III, immature, and gas prone kerogen. Silat shale in Melawi Basin dominated by type II, immature- early mature, mixed gas, and oil prone kerogen. Both formations widespread and typically 900-1000m thick)

Sanyoto, P. (1992)- The stratigraphy and structure in the Semitau area; evidence for compressional tectonics in the Late Oligocene- Early Miocene. In: 29th Int. Geological Congress, Kyoto 1992, Abstracts, p. 433.

Sanyoto, P. (1993)- Regional tectonics of West Kalimantan. Proc. 22nd Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung, 1, p. 136. *(Abstract only)*

Sanyoto, P. & P.E. Pieters (1993)- Geological map of the Pontianak/Nangataman Sheet area, Kalimantan, 1314/1315, 1:250,000, Geol. Res. Dev. Centre (GRDC), Bandung.

(W Kalimantan map sheet with oldest rocks pre-Cretaceous Pinoh Metamorphics, Cretaceous granitoids and volcanics. In Kapuas River area in N overlain by E Oligocene clastics of Melawi Basin. Youngest rocks Oligo-Miocene Sintang Intrusives)

Sanyoto, P. & R. Sukamto (2000)- Perkembangan tektonik. In: U. Hartono, R. Sukamto et al. (eds.) (2000)- Evolusi magmatik Kalimantan Selatan, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 23, p. 85-117.
(Review of Meratus Mountains tectonics, in 'Magmatic evolution of S Kalimantan' book. Lower Cretaceous amalgamation of ophiolite/ Jurassic metamorphics and Sundaland margin, etc.)

Sarbini, S.A. & W. Wirakusumah (1988)- Uranium deposit model for estimation of ore reserves in the Remaja area, West Kalimantan. In: Proc. Conf. Uranium deposits in Asia and the Pacific; geology and exploration, Jakarta 1985, Int. Atomic Energy Agency (IAEA), Vienna, IAEA-TC-543/11, p. 155-166.
(On 1974-1978 uranium exploration work in W-C Kalimantan, identifying some mineralization in Kalan Prospect in N-dipping fault breccias in SE-dipping metasediments in Remaja area)

Sardjono (2000)- Evolusi kerak Lajur Meratus dan implikasi terhadap aspek mineralisasi. Majah Mineral & Energi (EDSM) 2, 2, p. 16-19.
('Crustal evolution of the Meratus Mts and implications of aspects of mineralization')

Sarmili, L. (1997)- Indikasi mineral kasiterit dan mineral berat lainnya di perairan Kalimantan Barat dan sekitarnya. Proc. 26th Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, Sumber Daya Min. Energi, p. 254-262.
('Indications of cassiterite and other heavy minerals in waters of West Kalimantan'. Presence of cassiterite in seafloor sediments off SW Kalimantan suggests presence in source area of granites with same properties as granites around Bangka- Belitung)

Sarmili, L. (1998)- Surficial cassiterite deposits dispersal in southwest Kalimantan waters. Bull. Marine Geol. Inst. (MGI), Bandung, 13, 2, p. 1-8.
(Similar to Sarmili (1999) paper below. High anomaly cassiterite deposit in SW Kalimantan waters indicates tin deposits not only adjacent to Bangka and Belitung Islands, but also further E near Kalimantan. Extension of anomalies supported by shallow seismic andmagnetic data indicating occurrence of granitic basement close to sea bed. Granitic basement may be different from basement of Bangka-Belitung (main granitic of tin belt), but may belong to Anambas-Natuna granitic belt)

Sarmili, L. (1999)- Submarine cassiterite in southwest Kalimantan waters. In: Proc. 35th Sess. Sess. Co-ord. Comm. Coastal Offshore Geosc. Programs E and SE Asia (CCOP), Subic Bay 1998, 2, Techn. Repts, p. 93-102.
(Discovery of cassiterite anomalies in W Kalimantan waters, indicating tin placers may form not only near Banka and Belitung islands but also off Kalimantan. Shallow seismic data and strong magnetic anomalies indicate granitic intrusions close to surface, interpreted as source of cassiterite. Granites of Bangka-Belitung are part of Main granite tin belt whereas W Kalimantan intrusions belong to Anambas-Natuna granitic belt)

Sastratenaya, A.S. (1991)- Deformation et mobilite du megaprisme tectonique de Pinoh-Sayan, Kalimantan, Indonesie. Doct. Thesis, Universite Louis Pasteur de Strasbourg, p. 1-188. *(Unpublished)*
('Deformation and mobility of the Pinoh-Sayan tectonic mega-prism, Kalimantan'. Kalan sector of Pinoh-Sayan uranium exploration area on N side of Schwaner Mts. Basement Permo-Carboniferous metasediments, intruded by E Cretaceous tonalite and Late Cretaceous monzogranites, unconformably overlain by Tertiary Melawi Fm continental deposits. Tectonic phases: (1) Triassic folding and schistosity development; (2) Jurassic-U Cretaceous 65° CCW rotation of pre-existing structures along major NE-SW Kalan lineament, characterized by folding of schistosity and development of large sinistral WSW-ENE shear zone; (3) End-Cretaceous- Miocene reactivation of above two main features, causing lateral expulsion of 'tectonic megaprism' formed by these features, while fore-land cover is folded)

Satyana, A.H. (1994)- The northern massifs of the Meratus Mountains, South Kalimantan: nature, evolution, and tectonic implications to the Barito structures. Proc. 23rd Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, 1, p. 457-470.

(Basement outcrops N of main Meratus Range contain similar Cretaceous subduction complex rocks and granodiorite. Form series of E-vergent thrusts, i.e. opposite direction of W-vergent main Meratus Range)

Satyana, A.H. (1996)- Adang-Lupar Fault, Kalimantan: controversies and new observations on the Trans-Kalimantan megashear. Proc. 25th Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung, 3, p. 124-143.
(Adang and Lupar faults are probably connected and form major WNW-ESE trans-Kalimantan left-lateral mega-shear fault zone, from Natuna to Makassar Straits, along which transpressional and transtensional deformation occurred)

Satyana, A.H. & C. Armandita (2008)- On the origin of the Meratus Uplift, Southeast Kalimantan- tectonic and gravity constraints: a model for exhumation of collisional orogen in Indonesia. Proc. 33rd Ann. Conv. Indon. Assoc. Geophys. (HAGI), Bandung 2008, 4p.
(Meratus Mts is collisional suture marking E-M Cretaceous collision of Schwaner and Paternoster continents. Presently, mountains are basement uplift separating Barito from Asem-Asem and Pasir Basins. Lack of gravity and magnetic expression of ultramafics suggests Meratus Mts are 'rootless', composed of thin allochthonous oceanic slab, exhumed in Late Cretaceous due to buoyancy of thick subducted Paternoster continent after oceanic front broke off. Lack of deformation on seismic data from S Makassar Strait and Paternoster terrane oppose common view that micro-continents colliding with E Sulawesi propagated their tectonic forces W-wards and uplifted Meratus Mts)

Satyana, A.H. & H. Darman (2000)- Kalimantan. In: H. Darman & F.H.Sidi (eds.) Outline of the geology of Indonesia, Chapter 5, Indonesian Association of Geologists (IAGI), Jakarta, p. 69-90.

Schairer, G. & A. Zeiss (1992)- First record of Callovian ammonites from West Kalimantan (Middle Jurassic, Kalimantan Barat, Borneo, Indonesia). BMR J. Australian Geol. Geophysics 13, 3, p. 229-236.
(online at: www.ga.gov.au/corporate_data/49556/Jou1992_v13_n3.pdf)
(New ammonite fauna of probable Callovian age from Brandung Fm dark limestones and shales in W Kalimantan, 40 km NW of Sanggau With Hectioceras spp., Reineckia and Indosphinctes, Kalimantanites n.gen., Borneoceras sanggauense n.gen. n.sp., etc. Many endemic elements, but main affinities with Iran and Europe (fauna different from Macrocephalites-dominated Callovian assemblages of E Indonesia/ New Guinea; JTvG))

Scheele, E. (1908)- Uber Einige Erdoele aus Borneo. Dissertation, Universitat Basel, p. 1-64.
(online at: http://books.googleusercontent.com/books/...)
('On some oils from Borneo'. Old chemical analyses of 15 crude oil samples from Sanga Sanga and Louise fields, E Kalimantan))

Schelmann, W. (1966)- Die lateritische Verwitterung eines marine Tons in Sudost-Kalimantan. Geol. Jahrbuch 84, p. 163-188.
('The lateritic weathering of a marine claystone in SE Kalimantan'. Study of 3m lateritic iron ore profile above Eocene marine clay which overlies serpentinite at SW flank of Kukusan Mountains, SE Kalimantan)

Schmutzer, J. (1908)- Bijdrage tot de kennis der oude eruptiefgesteenten en amphiboolschisten aan de Rivieren Sebilit en Tebaoeng in Centraal-Borneo. Verhandelingen Kon. Akademie Wetenschappen, Amsterdam (2), 14, 3, p. 1-48.
('Contribution to the knowledge of old volcanic rocks and amphibole schists along the Sebilit and Tebaung Rivers in Central Kalimantan'. Petrographic descriptions of gabbros, diorite, peridotite-serpentinite and amphibolite from Molengraaff collection from steeply dipping section in Semitau Hills. Most rocks float in Tebaung River)

Schmutzer, J. (1909)- The mineralogic and chemical composition of some rocks from Central Borneo. Proc. Kon. Akademie Wetenschappen, Amsterdam, 11, p. 398-415.
(online at: www.dwc.knaw.nl/DL/publications/PU00013553.pdf)
(Petrographic descriptions and chemical analyses of 4 igneous rocks collected along Sebilit and Tebaung Rivers in Central Borneo' by Molengraaff from C Kalimantan: amphibole dacite, andesite and micrograníte)

Schmutzer, J.I.J.M. (1910)- Bijdrage tot de kennis der postcenomane hypoabyssische en effusieve gesteenten van het Westelijke Muller gebergte in Centraal Borneo, Doctoral Thesis Delft, Amsterdam, p. 1-214.
(online at: http://repository.tudelft.nl/islandora/object/uuid:6853c248-904d-476d-8d7f-1688bf4e2606?collection=research)
('Contribution to the knowledge of the post-Cenomanian hypabyssal and eruptive rocks of the western Muller Mountains in Central Borneo'. Descriptions of igneous and volcanic rocks of the Muller Range, collected by Molengraaff. Post-Cenomanian, possibly Early Tertiary age. Of limited use for regional geology?)

Schmutzer, J. (1911)- Die vulkanischen Gesteine des westlichen Mullergebirges in Zentral-Borneo. Centralblatt Mineralogie Geologie Palaont. 1911, p. 321-327.
(online at: www.biodiversitylibrary.org/item/192769#page/345/mode/1up)
('The volcanic rocks of the western Muller Mountains in Central Kalimantan'. Summary description of volcanic rocks of Muller Range, described in more detail in Schmutzer (1910). No figures)

Schultz, J.F.H. (1843)- Iets over de diamantmijnen in Landak, Westerafdeeling van Borneo. Tijdschrift Nederl. Indie, new series, 6, 2, p. 454-465.
('Note on the diamond mines at Landak, western province of Borneo')

Schwaner, C. (1853)- Borneo. Beschrijving van het stroomgebied van den Barito en reizen langs eenige voorname rivieren van het Zuid-Oostelijke gedeelte van dat eiland op last van het Gouvernement van Nederlandsch-Indie, gedaan in de jaren 1843-1847. Van Kampen, Amsterdam, 2 vols., p. 1-234.
('Borneo: description of the drainage area of the Barito and travels along some important rivers of the SE part of that island undertaken by order of the Netherlands Indies government in 1843-1847'. First geologic-geographic/ anthropological survey work in S Kalimantan during overland journey from Banjarmasin to Pontianak. Includes discovery of coal in 1844 at Riam Kiwa, SE Kalimantan)

Seavoy, R.E. (1975)- Placer diamond mining in Kalimantan, Indonesia. Indonesia (Southeast Asia Program Publications at Cornell University) 19, p. 79-84.
(Diamonds, gold and platinum in river and terrace gravels in Martapura and Pleihari regions, SE Kalimantan. Most placer gold from nearby Bobaris Mts. Platinum from weathering of layered ultrabasic rocks that form cores of Bobaris and Meratus Mts. Diamonds from kimberlite pipes associated with ultrabasic rocks of Bobaris Mts. Only small-scale mining by villagers)

Seeley, J.B. & T.J. Senden (1994)- Alluvial gold in Kalimantan, Indonesia: a colloidal origin? J. Geochemical Exploration 50, 1-3, p. 457-478.
(Placer gold deposits in Quaternary paleochannels and Pleistocene terraces in Ampalit and Cempaga Buang drainage basins near Kasongan, C Kalimantan. Nearby in N and NW basement outcrops (Permo-Triassic metamorphics and large Jurassic-Cretaceous granodioritic plutons, with NE structural trend throughout basement) and Oligo-Miocene volcanics-intrusives associated with epithermal gold deposits. Morphology of gold grains (common spherical grains) from Ampalit indicates gold grains possibly of colloidal origin, not mechanically transported to present domain, but transported via ground water to zone of aggregation)

Sendjaja, P., M.E. Suparka & E. Sucipta (2009)- Adakites rocks from Sintang, West Kalimantan and Una-Una Island, Central Sulawesi, Indonesia: evidence of slab melting of subducted young oceanic crust. In: 11th Reg. Congress Geology, mineral and energy resources of Southeast Asia (GEOSEA 2009), Kuala Lumpur, p. 42-43.
(Abstract) (online at: www.gsm.org.my/products/702001-101669-PDF.pdf)
(Adakites refer to group of silicic arc igneous-volcanic rocks primarily produced by direct melting of basaltic portion of subducted young (<25 ma) oceanic crust. Geochemical characteristic high silica (SiO2 >56%), high Al2O3 (>15%), low MgO (<3%), high Sr, low Y. M Miocene adakitic granodiorite from Sintang, W Kalimantan and Quarternary adakites volcanic rocks from UnaUna Island, C Sulawesi similar patterns of LREE-enriched signature of island arc, confirming rocks produced in convergent margin environment)

Setiabudi, B.T. (2001)- Geochemistry and geochronology of the igneous suite associated with the Kelian epithermal gold deposit, Indonesia. Ph.D. Thesis, Australian National University (ANU), Canberra, p. 1-203. *(online at: https://digitalcollections.anu.edu.au/handle/1885/12888)*
(Kelian large gold mine ~250 km W of Samarinda, C Kalimantan.E Miocene intrusive-related low sulphidation system in C Kalimantan Continental Arc. Miocence calc-alkaline suites from Kalimantan volcanic arc two trends (1) 'productive' igneous suites at Kelian, Muyup and Ritan, typical calc-alkaline series;(2) Magerang-Imang and Nakan suites with high MgO. Zircon ages of Magerang hornblende andesite 19.4 Ma and 19.6 Ma, Nakan andesite 20.0 Ma. Central Andesite porphyry at Kelian 3 age populations: 21.2, 20.5 and 19.7 Ma, with youngest date (Burdigalian) interpreted as emplacement age. Runcing Rhyolite porphyry 3 age populations between 19.3- 20.8 Ma. Kelian and Magerang andesites short interval of emplacement (0.5- 1 Ma))

Setiabudi, B.T. (2002)- Nested cannibalistic intrusions associated with the Kelian gold deposit, Indonesia: zircon U-Pb dating by Excimer laser ablation ICP-MS. Proc. 31st Ann. Conv. Indon. Assoc. Geol. (IAGI), Surabaya, 2, p. 894-911.
(Kelian and Magerang andesites 250km W of Samarinda, with short age range. Magmatism and mineralization within 0.5- 1.0 Myrs around 19.4 Ma (E Miocene). Produced two types of eithermal deposits. Detrital zircons in nearby rivers Tertiary populations of 1.7-2.8 Ma and 15.8-21.7 Ma; large Cretaceous peak at ~105 Ma))

Setiabudi, B.T. (2002)-Geochemistry of the igneous suite of the Kelian region, East Kalimantan, Indonesia: implications for the gensis of the Kelian deposit. Proc. 31st Ann. Conv. Indon. Assoc. Geol. (IAGI), Surabaya, 2, p. 912-933.
(E Miocene calk-alkaline arc volcanics of Kelian region two magmatic differentiation trends. Part of Central Kalimantan continental arc of andesitic- trachyandesitic rocks)

Setiabudi, B.T., I.H. Campbell, C.E. Martin & C.M. Allen (2007)- Platinum group element geochemistry of andesite intrusions of the Kelian region, East Kalimantan, Indonesia; implications of gold depletion in the intrusions associated with the Kelian gold deposit. Econ. Geol. and Bull. Soc. Econ. Geol. 102, 1, p. 95-108.
(Gold mineralization at Kelian mine younger than associated C and E andesite intrusions (~19-20 Ma) considered to be related to S-dipping subduction zone in NW Sarawak. Gold probably derived from slightly younger intrusions. Parallel Cu-Au-PGE patterns due to mixing between mafic and more felsic magma)

Setiawan, B. (1993)- Les lignees granitiques et les skarns mineralisees en Zn de Longlaai, Est-Kalimantan (Borneo, Indonesie). Thesis Ecole Nat. Sup. Mines de Paris, p. 1-481. *(Documents du BRGM no. 227)*
(‘The granitic suites and Zn-mineralized skarns from Longlaai, E Kalimantan’)

Setiawan, B. (1993)- Studi kasus 3 tubuh granitik terkontaminasi di daerah Longlaai, Kabupaten Berau, Kalimantan-Timur. Proc. 22nd Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung, 1, p. 258-270.
('Case study of three contaminated granitic bodies in the Longlaai area, Berau district, East-Kalimantan'. E Miocene Mamak, Gupak and Segah granitoids in NE Kalimantan with 'calcic' contamination)

Setiawan, B. & M. Fonteilles (1998)- Granitic magmas in individual massifs as liquids derived from a single andesite parental melt- two examples from N.E. Kalimantan, Indonesia. J. Geologi Sumberdaya Mineral 8, 77, p. 12-26.
(Two groups of E Miocene leucogranitic intrusions in Longlaai area in NE Kalimantan, Upper Segah and Longlaai, separated by 15km zone without intrusives. Intruded into Lower Eocene Geh Fm, Sr isotope age 22 ± 2 Ma. Interpreted to be formed by fractional crystallization processes from single deep seated andesitic magma chamber, resulting in 'normal' group and 'shoshonitic' type)

Setiawan, B. & L.M. Le Bel (1987)- Discovery of a new tin province, Long Laai area, East Kalimantan, Indonesia. In: C.S. Hutchison (ed.) Tin and Tungsten granites, Proc. IGCP Project 220 Mtg, Ipoh 1986, Techn. Bull. 6, p. 61-82.
(Tin-bearing adamellites in small intrusions in Long Laai area, NE Kalimantan. Radiometric age 26 Ma)

Setiawan, N.I., Y. Osanai, N. Nakano, T. Adachi & A. Asyȏari (2014)- Metamorphic evolution of garnet-bearing epidote barroisite schist from Meratus complex in South Kalimantan, Indonesia. Proc. 43rd Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, PIT IAGI 2014-106, 18p.
(First report on metamorphic evolution of garnet-bearing epidote-barroisite schist from Aranio River, etc. in Meratus Complex. P-T path of garnet-bearing epidote-barroisite schist and epidote-glaucophane schist: (1) first stage may be glaucophane - epidote assemblage (1.7-1.0 GPa, T 300-550 °C; maximum pressure limit of prograde stage); (2) peak P-T condition based on garnet rim, barroisite, phengite, epidote and quartz (550-690 °C, 1.1-1.5 GPa; albite epidote amphibolite-facies corresponding to depth of 50-60 km); (3) retrograde stage shows changing composition of amphiboles from Si-rich barroisite to actinolite (~0.5 GPa at 350 °C). Metamorphic rocks from Meratus Complex may have experienced high-P condition in epidote-blueschist facies before peak metamorphism in epidote-amphibolite facies. Garnet-bearing epidote-barroisite schist suggest higher geothermal gradient in Meratus Complex than in SW Sulawesi and C Java metamorphic terranes)

Setiawan, N.I., Y. Osanai, N. Nakano, T. Adachi & A. Asyȏari (2015)- Metamorphic evolution of garnet-bearing epidote-barroisite schist from the Meratus complex in South Kalimantan, Indonesia. Indonesian J. Geoscience 2, 3, p. 139-156.
(online at: www.bgl.esdm.go.id/publication/index.php/dir/article_detail/833)
(Same paper as Setiawan et al. (2014) above)

Setiawan, N.I., Y. Osanai, N. Nakano, T. Adachi, L.D. Setiadji & J. Wahyudiono (2013)- Late Triassic metatonalite from the Schwaner Mountains in West Kalimantan and its contribution to sedimentary provenance in the Sundaland. Berita Sedimentologi 28, p. 4-12.
(online at: www.iagi.or.id/fosi/berita-sedimentologi-no-28-borneo.html)
(Metatonalites in W Schwaner Mountains of W Kalimantan have calc-alkaline affinities and derived from subduction-related arc tectonic environment (proto-S China Sea subduction?). Some have adakite signature. Zircon dating shows magmatic age at 233± 3 Ma (~Carnian, Late Triassic), older than accepted ages for granitoids in Schwaner Mountains and oldest recorded here. Schwaner Mountains therefore sediment source not only from Cretaceous age granites, but also from Triassic age granites)

Setiawan, R. & I. Nurdiana (2007)- Petrologi batupasir Formasi Mentarang kelompok Embaluh, di daerah Longbia, Kalimantan Timur. In: Geologi Indonesia: dinamika dan produknya, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 33, 2, p. 193-205.
(Petrology of deep marine Late Cretaceous -E Eocene Mentarang Fm sandstone of Embaluh Group in Longbia district, E Kalimantan. Partly low-metamorphic interbedded sandstones, siltstone, and slaty mudstone. Mainly litharenites, recycled orogen. Sandstones provenance Semitau Ridge and Schwaner Mts in SW Kalimantan, probably also Embuoi and Busang Complex in S. Andesitic-basaltic rock fragments more common than sedimentary and metamorphic rocks. Volcanism probably related to tectonics in N Kalimantan)

Setijadji, L.D. (2009)- Alluvial gold in Central Kalimantan: its mode of occurrence, source and consequences for primary deposits. Proc. 38th Ann. Conv. Indon. Assoc. Geol. (IAGI), Semarang, 1p. *(Abstract only)*
(Alluvial gold deposits extensively distributed in C Kalimantan. Most deposits worked as small-scale traditional operations. Only large-scale dredging operation at Ampalit drainage basin near Kasongan in 1988-1992. Many alluvial gold deposits associated with muddy gravelly rocks. Much of gold may not be derived from Tertiary epithermal systems but from Mesozoic granite-related quartz veins)

Setijadji, L.D., N.I. Basuki & S. Prihatmoko (2010)- Kalimantan mineral resources: an update on exploration and mining trends, synthesis on magmatism history and proposed models for metallic mineralization. Proc. 39th Ann. Conv. Indon. Assoc. Geol. (IAGI), Lombok 2010, 14p.
(Kalimantan magmatic arcs Cretaceous and younger events. Subduction magmatism may ended after Late Cretaceous in much of island, followed by syn- and post-collision magmatism. Metallic mineralization in two main periods (1) Cretaceous or older, dominated by granitoid-related skarn iron and base metals in Schwaner and Meratus Mountains; (2) M-L Miocene gold and base metals mineralization associated with Sintang Intrusions. Miocene gold-bearing intrusions not products of ordinary subduction-zone magmatism, but derived from basalts source during major tectonic events following subduction)

Setijadji, L.D., N.R. Nabawi & I.W.Warmada (2014)- Tin occurrences in western Kalimantan island, Indonesia and implications on the new interpretation of the SE Asia tin-bearing granite belts. Proc. 4th Asia Africa Mineral Resources Conf., Algiers, p. *(Abstract ony)*
(Discovery of tin mineralization in Ketapang and Singkawang districts, W Kalimantan, suggests presence of S-type Triassic-Jurassic granites in Ketapang area, whose distribution is not well constrained due to overlapping of Cretaceous granitoids in Schwaner Mts, which are not known to produce tin. This suggests SW Kalimantan was already connected to Sumatra and Tin islands since at least Triassic-Jurassic)

Setijadji, L.D., F. Tamba & A. Idrus (2010)- Geology of the Ruwai iron and Zn-Pb-Ag skarn deposits Lamandau District, Central Kalimantan. In: N.I. Basuki & S. Prihatmoko (eds.) Proc. MGEI-IAGI Seminar Kalimantan coal and mineral resources, Balikpapan 2010, p. 175-185.
((also in Majalah Geologi Indonesia 2011, 26, 3, p. 143-154; online at:
www.bgl.esdm.go.id/publication/index.php/dir/article_detail/759)
(Fe and Zn-Pb-Ag skarn mineralization in Ruwai District, Schwaner Mountains, C Kalimantan, result of Late Cretaceous- E Tertiary granitoids intrusions. Initially reported by Frijling et al (1920). Oldest rocks in area Permo-Carboniferous Pinoh Metamorphics, Late Triassic- Mid Cretaceous Ketapang Complex limestone-sandstone- siltstone and Kuatan/ Metan andesitic-rhyolitic volcanics, all intruded by E and Late Cretaceous Schwaner Arc (Sukadana batholiths))

Setyadi, H., W, Yudanto, D. Kristanto, T.R. Setiawan, D. Iswanto, B. Santoso, I. Hardjana & A. Ismanto (2015)- Discovery, characteristic and inventory of Seruyung deposit, Nunukan District, North Kalimantan Province, Indonesia. In: N.I. Basuki (ed.) Proc. Indonesian Soc. Econ. Geol. (MGEI) 7th Ann. Conv., Balikpapan, p. 85-100.
(On Seruyung marginally economic gold deposit in NE Kalimantan, NW of Tarakan, dicovered in 1998. In Neogene andesitic volcanics, part of Miocene- Recent volcanic arc, built on Tidung Basin M Eocene-Miocene sediments, formed due to SE-ward subduction of Sulu Sea Plate. High sulphidation epithermal gold deposit, with mineralization mainly in vuggy quartz core zone with hydrothermal breccia hosted by volcanic breccia)

Setyanta, B. (2016)- Konfigurasi geologi bawah permukaan cekungan sedimen daerah Longbia-Muarawahau, Kalimantan Timur, berdasarkan analisa gayaberat. J. Geologi Sumberdaya Mineral 17, 4, p. 217-229.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/15/13)
('Configuration of basement of geological sedimentary basin area of Longbia-Muarawahau, East Kalimantan, based on gravity analysis'. Bouguer anomalies in NE Kutai basin suggest basement composed of granitic and ophiolitic fragments)

Setyanta, B. & I. Setiadi (2006)- Kompleks batuan ultramafik Meratus sebagai bagian dari ofiolit kerak samudra ditinjau dari aspek geomatik dan gaya berat. J. Sumber Daya Geologi 16, 6 (156), p. 355-348.
('Meratus ultramafic rocks complex as part of ophiolite oceanic crust from geomatics and gravity aspects'. Geomagnetic and gravity analysis in Banjarmasin Quadrangle at SW end of Meratus Range shows high geomagnetic anomaly values in S, generally low in N. Ophiolitic rock interpreted to overlie less magnetized granitic crust. Bobaris and Manjam ophiolite belts represent oceanic crust thrusted over granitic crust)

Setyanta, B., I. Setiadi & W.H. Sinamora (2008)- Model geologi bawah permukaan daerah Muara Wahau hasil analisis anomali gaya berat berdasarkan estimasi kedalaman dengan metode analisis spektral. J. Sumber Daya Geologi 18, 6, p. 379-390.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/258/238)
('Subsurface geology model of the Muara Wahau area from gravity anomaly analysis and depth estimation with the spectral analysis method')

Setyanta, B., B.S. Widijono & D.Z. Hayat (2002)- Kelurusan struktur geologi dan implikasinya terhadap evolusi tektonik daerah Samarinda-Sangatta, Kalimantan Timur berdasarkan analisis anomali gayaberat. J. Geologi Sumberdaya Mineral 12, 128, p. 14-23.

('Lineaments of geological structures and implications for the tectonic evolution of the Samarinda-Sangatta area, East Kalimantan, based on analysis of the gravity anomalies'. Kutai Basin regional WNW-ESE lineaments associated with top basement step faulting)

Setyanto, A. & M. Surachman (2017)- The occurences of heavy mineral placer at Kendawangan and its surrounding, West Kalimantan Province. Bull. Marine Geol. 32, 1, p. 33-40.
(online at: http://ejournal.mgi.esdm.go.id/index.php/bomg/article/view/319/288)
(Study of heavy mineral placers of Kendawangan coastal and adjacent offshore area, W Kalimantan. Cassiterite (0.3-15%) and zircon (1-26%) found at all locations and have potential to be further developed. High content of cassiterite (Sn) generally linked to sediment of Kendawangan River)

Shen, A.H., Tay Thye Sun, Ye Luo, J.T. van Gorsel, M. Rosana Fatimah, Tay Kunming & W. Deng (2017)- Kalimantan diamonds from Landak: gemmological characteristics, FTIR and photoluminescence spectroscopy. Proc. 35th Int. Gemmological Conf. (IGC) 2017, Windhoek, Namibia, p. 57-61.
(online at: www.igc-gemmology.org/)
(Diamonds found in 4 main areas of Kalimantan (Landak, Puruk Cahu, Martapura, Kelian), mainly in Quaternary alluvial deposits, some in Cretaceous and Eocene conglomerates. Landak diamond deposits along lower terrace of Landak river)

Shimazaki, Y. & K. Isono (1964)- Mineralogy of some laterite ores from Sebuku Island, Indonesia. Bull. Geol. Survey Japan 15, 8, p. 447-465.
(online at: https://www.gsj.jp/data/bull-gsj/15-08_01.pdf)
(Main minerals in laterite ores from Sebuku goethite, gibbsite, magnetite, chromite, spinel, hematite, quartz. No location data or geologic background info))

Sikumbang, N. (1986)- Geology and tectonics of pre-Tertiary rocks in the Meratus Mountains, South-East Kalimantan, Indonesia. Ph.D. Thesis, University of London, p. 1-313. *(Unpublished)*
(Meratus metamorphics two groups: widespread Hauran schists (K-Ar ages 108-119 Ma) and lower grade Pelahari phyllites, etc.. Orbitolina limestones in three tectonic settings. In N of study area limestones with granodiorite and granite detritus in basal part and deposited unconformably on Sunda continental basement at NW edge of Meratus Range. In SE area parautochthonous Orbitolina limestone in thrust sheets. Species identified by Schroeder as Palorbitolina lenticularis and Orbitolina (Mesorbitolina) parva, indicating early Late Aptian age. Also Barremian ammonites below Orbitolina limestone and intruded by Sg. Kintap granite with K/Ar age of 95.3 Ma (Cenomanian). Aptian and older rocks unconformably overlain by Albian-and younger Alino Gp, with basal Pudak Fm submarine volcanoclastics with Orbitolina limestone blocks (olistostrome?). Tabatan Fm polymict conglomerates above erosional surface, probably of Campanian age, overlain by ?lacustrine Rantaulajang Fm black clay with estherids)

Sikumbang, N. (1990)- The geology and tectonics of the Meratus Mountains, South Kalimantan, Indonesia. Geologi Indonesia (J. Indonesian Assoc. Geol., IAGI) 13, 2, p. 1-31.
(Meratus Mts highly deformed E Cretaceous- Paleocene ophiolitic and metamorphic rocks and sediments and island arc volcanics. Oldest rocks Berriasian- Aptian shelf-slope sediments, juxtaposed with ophiolite/ oceanic crust by strike-slip faulting shortly after deposition. Volcanic arc collided with Sundaland in Cenomanian. Absence of Paleocene- Lower Eocene suggests uplift. Late M Miocene and Plio-Pleistocene uplift events)

Sikumbang, N. & R. Heryanto (1994)- Geologic map of the Banjarmasin Quadrangle, Kalimantan, Quadrant 1712 (1:250,000). Geol. Res. Dev. Centre (GRDC), Bandung. *(also 2nd ed., 2009)*
(Geologic map, including SW part of Meratus Range)

Simandjuntak, H.R.W., U. Kuntjara, S. Simandjuntak, K.P. Burgath & M. Klimainsky (1986)- Investigations of chromite occurrences in the Bobaris ophiolite, S.E. Kalimantan, Indonesia. Report, Direktorat Sumberdaya Mineral, Bandung, p. 1-73. *(Unpublished)*

Simmons, S.F. & P.R.L. Browne (1990)- Mineralogic, alteration and fluid-inclusion studies of epithermal gold-bearing veins at the Mt. Muro Prospect, Central Kalimantan (Borneo), Indonesia. J. Geochemical Exploration 35, p. 63-103.
(Mt. Muro prospect in Upper Kutai basin numerous steeply dipping, epithermal gold-bearing quartz veins, formed during Oligo-Miocene calc-alkaline volcanism of C Kalimantan. Probably short-lived subduction andesitic volcanic event above S-dipping subduction zone)

Simmons, S.F. & P.R.L. Browne (1992)- Mineralogic, alteration and fluid-inclusion studies of epithermal gold-bearing veins at the Mt. Muro Prospect, Central Kalimantan (Borneo), Indonesia. In: Epithermal gold in Asia and the Pacific, mineral concentrations and hydrocarbon accumulations in the ESCAP Region series, UN ESCAP, 6, p. 60-64.
(Abbreviated version of paper above)

Sinamora, W.H. & I. Budiman (2000)- Penafsiran data gayaberat Kalimantan menggunakan teknik pengolahan dan penyajian citra warna dan citra relief bayangan. Geol. Res. Dev. Centre (GRDC), Geophys. Ser. 1, p. 35-46.
(On gravity anomaly trends across W Kalimantan)

Situmorang, B. (1987)- Emplacement of the Meratus ultrabasic massif: a gravity interpretation. Lemigas Scientific Contr. 11, 2, p. 61-72.
(SE of Banjarmasin Late Miocene sediemnts unconformable over Pretertiary, suggesting pre-Late Miocene uplift. Two dimensional gravity modeling suggests Meratus ophiolites are rel. thin (~300-350m; thicker if serpentinized) allochthonous sheets of Mesozoic ultrabasic rocks, emplaced in mid-Cretaceous, and probably underlain by ~26 km thick continental crust. Meratus massif part of larger oceanic crustal segment emplaced during M Cretaceous obduction (incl. diabase/gabbro at base Taka Talu 2 well, Paternoster Platform?))

Situmorang, R.L. & G. Burhan (1995)- Geological map of the Tanjung Redeb Quadrangle 1918, Kalimantan, scale 1 : 250.000. Geol. Res. Dev. Center, Bandung.
(Map of part of Tarakan Basin. Four tectonic events, oldest in or before Late Cretaceous. Oldest formation is folded, low metamorphic Cretaceous Bangara Fm (= Bengara? flysch with radiolaria, in SE. Unconformably overlain by Eocene Sembakung Fm, with clastics in lower part, limestone (with Nummulites, Discocyclina) and tuff in upper part. Thick Late Oligocene- E Miocene limestone, Jelai Volcanics, Etc.)

Smith, C.B, G.P. Bulanova, S.C. Kohn, H.J. Milledge, A.E. Hall, B.J. Griffin & D.G. Pearson (2009)- Nature and genesis of Kalimantan diamonds. Proc. 9th Int. Kimberlite Conf., Lithos 112, Suppl. 2, p. 822-832.
(Alluvial diamonds from four main diamond mining districts in Kalimantan colourless or yellow- pale brown, with features indicative of fluvial transport and crustal recycling. Inclusions 68% peridotitic and 32% eclogitic. Re/Os dating of sulphide inclusion from one peridotitic diamond gave Archean age of 3.1 Ga ± 0.2. Kalimantan diamonds resemble those from kimberlite or lamproite from subcontinental lithospheric mantle. Five genetic groups recognized, but mixed occurrences due to long history of sedimentary recycling)

Smit Sibinga, G.L. (1932)- The interference of meridional and transversal stress in the southeastern part of Borneo. Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam, 35, 8, p. 1090-1096.
(online at: www.dwc.knaw.nl/DL/publications/PU00016325.pdf)
(Two main trends of Tertiary folds in Kalimantan:'transverse' (E-W; parallel to Pretertiary nucleus of island) and 'meridional' (N-S). Mangkalihat Peninsula separates NW-SW trending folds in N from N-S trending folds in S)

Smit Sibinga, G.L. (1953)- On the origin of the drainage system of Borneo. Geologie en Mijnbouw N.S. 15, p. 121-136.
(Present river system of Borneo originated on initial relief in Early Neogene time. Early Neogene main divides were Schwaner Mts and Semitau-Kuching Ridge. Plio-Pleistocene diastrophism created present main Kinabalu-Schwaner-Karimata divide)

Smit Sibinga, G.L. (1953)- Pleistocene eustasy and glacial chronology in Borneo. Geologie en Mijnbouw 15, 11, p. 365-383.
(online at: https://drive.google.com/file/d/0B7j8bPm9Cse0YV9fZXR4WGVTOG8/view)
(Terraces in more stable part of Borneo similar to those in Java and Sumatra and can be correlated to glacial-interglacial chronology)

Soeria-Atmadja, R., D. Noeradi & B. Priadi (1999)- Cenozoic magmatism in Kalimantan and its related geodynamic evolution. J. Asian Earth Sci. 17, p. 25-45.
(NE-SW Tertiary magmatic belt of C Kalimantan two periods of subduction: Eocene-Oligocene and Late Oligocene-Miocene. Younger magmatic belt on earlier belt; limited exposures of Eocene volcanics. Belt known as `gold belt' of C W Kalimantan, with Neogene epithermal mineralization at relatively shallow depths. Earliest known subduction-related magmatism in Eocene-E Oligocene with calc-alkaline silicic pyroclastics, followed by continental collision. Subsequent subduction-related magmatism from Late Oligocene-Pleistocene magma evolution from calc-alkaline to potassic calc-alkaline. Plio-Pleistocene magmatism with basalt flows)

Soesilo, J., Amiruddin, V. Schenk, E. Suparka & C.I. Abdullah (2012)- Plutonism and contact metamorphism in the Meratus Complex, Southeast Kalimantan. Proc. 41st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 2012-GD-33, p. 28. *(Abstract only; no figures)*
(Plutonic rocks in Meratus Complex, SE Kalimantan, include Late Carboniferous- E Permian granite of Lumo, near Buntok (K-Ar ages of micas 319 and 260 Ma). To E, small outcrop of Late Jurassic Purui Dalam oceanic trondhjemite overlain by Late Cretaceous turbidites and volcanics. Mid-oceanic plagio-granite K-Ar age 155 Ma (Late Jurassic). Further SE mid-Cretaceous volcanic arc granitoids in main body of Meratus Complex: Riam Andungan trondhjemite 92±2 Ma; Hajawa granitoid 87 and 71 Ma; Batangalai 119 and 101 Ma. Common Cretaceous high-T contact metamorphism. U-Pb zircon dating of diorite and metapelite hornfels yield 115 Ma and 118.3 Ma (Aptian))

Soesilo, J., E. Suparka, V. Schenk & C.I. Abdullah (2012)- Glaucophanitic and its retrograded metamorphic rocks in the Southern Meratus Complex, Southeast Kalimantan. Proc. 41st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 2012-M-27, 1p. *(Abstract only)*
(Three metamorphic terrains in Meratus Complex, SE Kalimantan. High-P metamorphics represented by quartz-rich Aranio (or Hauran) schist with glaucophane-crossite in southern terrain, with outcrops at Hauran, Apukan and Riam Kanan Rivers. Amphibole exhibits retrograde path toward greenschist. Wakita et al. (1998) ages for high pressure metapelite schist 180-165 Ma (E-M Jurassic; now believed to be age of peak glaucophane metamorphism), to 112-108 Ma (Albian/Cretaceous; probably age of retrograding greenschist))

Soesilo, J., V. Schenk, E. Suparka, C.I. Abdullah and Amiruddin (2014)- The K-Ar and U-Pb SHRIMP zircon age dating of the Batangalai Pluton, Central Meratus, Southeast Kalimantan. Proc. Seminar Nasional Geologi Nuklir dan Sumber Daya Tambang, BATAN, Jakarta, p. 1-16.

Soetarno, D. (1992)- Mineralisation uranifere dans le bassin de la Kalan, Kalimantan (Indonesie); geologie et geochronologie. Doct. Thesis Universite de Nancy, p. 1-167. *(Unpublished)*
(Uranium mineralization in Kalan Basin, N flank Schwaner Mountains, N part of W Kalimantan Province, in schistose metapelites that underwent regional and contact metamorphism. Uraninites of Remaja emplaced at 151 Ma, Rirang at 140 Ma. Uranium mineralization corresponds with start of Yenshanian orogeny, manifested by granite intrusions around Jurassic- Cretaceous boundary)

Soetarno, D. (1992)- Geokronologi U-Pb pada mineralisasi uranium di Eko dan Rirang, Kalan, Kalimantan Barat. Proc. 21st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 1, p. 257-264.
('U-Pb geochronology of uranium mineralization in Eko and Rirang, Kalan, West Kalimantan'. U-mineralization in NW Kalimantan in fine-grained metasediments. Age of uranite at Eko tunnel 150 Ma. Age of uranite associated with monazite in Rirang 140 Ma. U mineralization in area not genetically related with formation of Schwaner granitoids)

Soetarno, D. (1993)- Karakter dan umur kimia mineralisasi uranium di Remaja dan Tanah Merah, Kalan, Kalimantan. Proc. 22nd Ann. Conv. Indon. Assoc. Geologists (IAGI), Bandung, 2, p. 724-735.
('Character and chemical age of uranium mineralization in Remaja and Tanah Merah, Kalan, Kalimantan'. Uranium mineralization in Kalan area, N margin of Schwaner Mts, NW Kalimantan. In Remaja mainly uraninite and branerite; in Tanah Merah mainly uraninite and monazite. Chemical ages of Remaja 145-150 Ma (or 125-130 Ma); Tanah Merah 145-150 Ma (or 135-145 Ma))

Soetrisno, S. Supriatna, E. Rustandi & K. Hasan (1994)- Geological map of the Buntok Quadrangle, 1: 250,000, Quad 1714, Geol. Res. Dev. Centre (GRDC), Bandung.
(Geologic map of N part Barito Basin, with Meratus Mountain front in East (folded Cretaceous granite, overlain by Late Cretaceous clastics and volcanics, Eocene Tanjung Fm, Oligocene Berai Limestone and Montalat Fm marls, Miocene Warukin Fm clastics, etc.)

Spencer, L.K., S.D. Dikinis, P.C. Keller & R.E. Kane (1988)- The diamond deposits of Kalimantan, Borneo. Gems Gemology 24, 2, p. 67-79.
(Borneo diamonds are in alluvial deposits from unknown source. Do not believe in nearby ophiolite source)

Stauffer, P.H. (1983)- Phantom tektite localities of Borneo. Meteoritics 18, 1, p. 9-13.
(The only authentic Pleistocene tektite finds in Kalimantan are from around Martapura, SE Kalimantan (Pelaihari, Sungai Riam, etc. First reported by S. Muller in 1836. SW Kalimantan localities shown on maps in Lacroix and others are probably misinterpretations of older literature)

Stumpfl, E.F. & A.M. Clark (1966)- Electron-probe microanalysis of gold platinoid concentrates from southeast Borneo. Trans. Inst. Mining Metallurgy 74, p. 933-946.

Subagio & T. Patmawidjaja (2013)- Pola anomali Bouguer dan anomali magnet dan kaitannya dengan prospek sumber daya mineral dan energi di Pulau Laut, Pulau Sebuku dan Selat Sebuku, Kalimantan Selatan. J. Geologi Kelautan 11, 3, p. 115-129.
(online at: http://ejournal.mgi.esdm.go.id/index.php/jgk/article/view/236/226)
('Bouguer anomaly patterns and magnetic anomalies and their relation with mineral and energy prospects of Pulau Laut, Sebuku Island and Sebuku Strait, South Kalimantan'. Circular pattern of Bouguer gravity anomalies of 45-64 mGals reflect ultramafic rocks close to surface; exposed ultrabasic rocks indicated by high magnetic anomalies. Parallel Bouguer patterns reflect thrust and normal faults)

Subagio, B.S. Widijono & Sardjono (2000)- Model kerak lajur Meratus berdasarkan analisis data gayaberat dan magnet, implikasi terhadap potensi mineral ekonomi. Geol. Res. Dev. Centre (GRDC), Bandung, Geoph. Ser. 1, p. 47-67.
(Crustal models of two traverses across Meratus Mts (Kandahan and Martapura), based on gravity-magnetic data. Data can be interpreted with various models, one of them (fig. 8) with relatively thin obducted ultramafic slab over granite)

Subandrio, A.S. & A. Kuswanto (2010)- Geological investigation and geolectric tomography study on iron ore deposit of Kendawangan- West Kalimantan and their possible genetic significance. In: N.I. Basuki & S. Prihatmoko (eds.) Proc. Kalimantan coal and mineral resources, MGEI-IAGI Seminar, Balikpapan 2010, p. 117-128.
(Kendawangan iron ore deposits in Triassic-Cretaceous in two areas of W Kalimantan, 400km S of Pontianak: (1) Bukit Besi area areally restricted, thick-bedded-massive hematite ores in lower part of Cretaceous magmatic complex (produced by submarine volcanism) and (2) Birai area metamorphosed, folded specularite ores within Triassic Pinoh Fm meta-sedimentary belt. Some mineralization smilar to Banded Iron Ore Fm)

Subiantoro, L., P. Widito & A. Marzuki (2003)- Sintesis geologi mineralisasi uranium di sektor Tanah Merah dan sekitarnya Kalimantan Barat. In: Kumpulan Laporan hasil penelitian Tahun 2003, Pusat Pengembangan Geologi Nuklir-Batan, p. 452-471.

(online at: http://digilib.batan.go.id/e-prosiding/File%20Prosiding/Geologi/Laporan_Pen._2004-2006_PPGN_berkas_A/artikel/lilik_s_452.pdf
('Synthesis of geology of uranium mineralization in the Tanah Merah area and surroundings, Kalan Basin, West Kalimantan'. Uranium in veins WNW -ESE trending fractures in Permian Nanga Pinoh Metamorphics. Uranium process tied to late-magmatic Sukadana granite of Cretaceous age?)

Sudradjat, S.A. (1976)- Geological map of the Tewah Quadrangle, Central Kalimantan (scale 1 : 250,000). Geol. Survey Indonesia, Bandung.

Sugiaman, F. & L. Andria (1999)- Devonian carbonate of Telen River, East Kalimantan. Berita Sedimentologi 10, p. 18-19.
(Devonian black limestones with Heliolites porosus coral, first reported by Witkamp (1925) and Rutten (1940, 1943) from melange complex at N margin Kutai basin (blocks floating in black slate and turbiditic sandstones). May be blocks in Permian sandstone. Telen River sst also with Permian Neoschwagerid fusulinids (Darman & Sidi, 2000, Geology of Indonesia, p. 86))

Sugiaman, F., L. Andria, A.Y. Arief, Nurcahyo W.H., Meizarwin, S. Mujiyanto, A. Budianto & F.A. Wisanggono (2016)- Devonian Expedition 1989, Telen River area, Muara Wahau District, Kutei region, East Kalimantan. Geology Student Association 'GEA', Institut Teknologi Bandung (ITB), p. 1-141.
(English edition of 1989 report on expedition to study Devonian limestone/fossils(oldest known rocks from W Indonesia), initially reported by Witkamp (1925) and Rutten (1940) in area of Telen River (tributary of Mahakam Delta). Oldest unit pre-Permian? dark schist. Overlain by ?Permian turbiditic metasandstones of Telen Unit, with black Devonian limestone boulders with Heliolites corals (up to 10's of m; debris flows?) and with common Permian fusulinid foraminifera (Neoschwagerinidae; similar to fusulinids from Danau Kapuas regions?; Krekeler 1932, 1933) in calcareous sandstone matrix. Sediments are thrusted toward East, but no evidence of 'melange'. Mesozoic and older metasediments unconformably overlain by Eocene quartz sandstones. With reverse faults and post-Eocene diorite intrusions.)

Sukardi, B. Djamal, S. Supriatna & S. Santosa (1995)- Geological map of the Muaralasan quadrangle, Kalimantan, scale 1:250,000. Sheet.1917, Geol. Res. Dev. Centre (GRDC), Bandung.
(Geologic map of W part of Mangkalihat Peninsula and area to W. Oldest rocks ophiolites (peridotite, gabbro, basalt) and thick, folded Telen Fm Low metasediments of Late Jurassic- E Cretaceous age in NW corner of sheet. Overlain by U Cretaceous Kelay Fm deep marine clastics with tuff, Eocene litoral Marah Fm clastics and marine Tabalar Fm clastics and limestones with Nummulites, Discocyclina, Biplanispira, etc.(in other papers Taballar Lst called Late Oligocene- E Miocene; JTvG). Also young volcanics)

Sukardi & R. Heryanto (1997)- Petrografi batupasir Formasi Pitap di Sungai Amandit, Kalimantan Selatan. J. Geologi Sumberdaya Mineral 7, 75, p. 19-30.
('Petrography of the Pitap Fm sandstones at Amandit River, S Kalimantan'. Upper Cretaceous Pitap Fm, in Kandangan and Amuntai map sheets of Meratus Range are well-bedded sandstones and siltstones. Composition arkose- litharenite, derived from magmatic arc: quartz 2-74%, feldspar 22-88% and lithics 7-77%. Depositional environment deep marine turbiditic sediments)

Sukardi, N. Sikumbang, I. Umar & R. Sunaryo (1995)- Geological map of the Sangatta Quadrangle, Kalimantan, Quad 1916, scale 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(Map sheet of NE Kutai Basin, North of Samarinda sheet. Oligocene and younger clastic sediments with thin limestones, folded in N-S trending anticlines))

Sulistyawan, R.I.H., Baharuddin & U. Hartono (2013)- Geochemistry of the Jelai Volcanics from Mount Rian, East Kalimantan. J. Sumber Daya Geologi 23, 3, p. 133-141.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/86/80)
(M Miocene- Pliocene calc-alkaline Jelai Volcanics exposed at Mt Rian, NE corner of Kalimantan. Most K-Ar ages ~15-17 Ma. Consist of porphyritic basaltic andesitic lavas and pyroclastics. Subduction-related magmas, possibly part of Rajang- Cagayan volcanic belt of Soeria-Admadja et al. 1999))

Sumantri (1992)- Sebaran akumulasi Uranium pada tipe jalur mineralisasi di Eko-Remaja, Kalan, Kalimantan Barat. Proc. 21st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta,1, p. 251-256.
('Dispersion of uranium accumulation on mineralized zone type at Eko-Remaja, Kalan, West Kalimantan'. Four mineralization types: intraschistose veins and boudinages, tectonic breccias, fractures, etc.))

Sumartadipura, A.S. & U. Margono (1996)- Geological map of the Tewah (Kualakurun) quadrangle, Central Kalimantan, Quad 1614, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(Geological map with in NW Schwaner Mts 'basement' rocks (Sepauk granitoids, Pinoh metamorphics with NE-SW foliation, Metan Complex ?Triassic low-metamorphic andesitic volcanics dipping SE 60°, Sintang Intrusives, Malasan Oligocene andesitic volcanics), In E Barito basin Tertiary sediments. Eocene Tanjung Fm (sands, shales and limestones with Pellatispira-Discocyclina) and Oligocene Montalat Fm marine marls only in NE corner; farther south Warukin Fm directly on Pre-Tertiary. 76 ± 8.7 Ma apatite and zircon fission track ages Batuan Pluton of Schwaner Mts)

Sunata, W. & S. Permanadewi (1995)- Data magnet purba dan penarikhan Kalium-Argon dari batuan mikrodiorit Gunung Kukusan utara, daerah Batulicin, Kalimantan Selatan. In: Proc. Seminar Hasil pemetaan geologi dan geofisika, Puslitbang Geologi, Bandung 1995, p. 260-268.
('Paleomagetic data and K/Ar ages of North Gunung Kukusan microdiorite, Batulucin area, S Kalimantan'. E Miocene (19.6 Ma) microdiorite paleomagnetism suggest weak CCW rotation; Fuller 1999)

Sunata, W. & H. Wahyono (1991)- VI. Palaeomagnetism. In: C.S. Hutchison (ed.) Studies in East Asian tectonics and resources (SEATAR): Crustal Transect VII Java-Kalimantan-Sarawak-South China Sea. CCOP, TP 26, p. 43-51.
(Paleomag results from W Kalimantan document CCW rotation between Jurassic- Miocene: (1) Triassic Gunung Bawan basalts (Serian volc.-equiv.) and shales with Monotis 73° CCW rotation and paleolatitude 17.2°; (2) Late Triassic Suti Semarang Kalung Fm black shales with Monotis 81.5° CCW rotation and paleolatitude 10.8°N or S; (3) Jurassic Tenguwe area black ammonite-mudstone 93° CCW rotation and paleolatitude 2.9° S; (4) Late Cretaceous Ketapang area igneous rocks 50° CCW rotation, no latitudinal displacement; (4) Oligo-Miocene basalt sills at Mandai River unrotated)

Sunata, W. & H. Wahyono (1998)- Data magnet purba teruji untuk formasi Tanjung, daerah Batulicin, Kalimantan Selatan; dan aplikasinya untuk menentukan waktu terjadinya rotasi. Pusat Penelitian dan Pengembangan Geologi, Bandung.
('Paleomagetic data of the Tanjung Formation in the Batulicin area, S Kalimantan'. Weak CCW rotation of Late Eocene Tanjung Fm sandstone; Fuller 1999)

Suparka, E. (1995)- Occurrence of adakites in Sintang area, West Kalimantan: a Neogene post-subduction volcanism phenomena. In: S. Nishimura & R. Tsuchi (eds.) Proc. Oji Seminar on Neogene evolution of Pacific Ocean Gateways, Kyoto, IGCP-355, p. 34-44.

Supiandi, S. (1988)- Studies on peat in the coastal plains of Sumatra and Borneo, I: Physiography and geomorphology of the coastal plains. Southeast Asian Studies (Kyoto) 26, 3, p. 308-335.
(online at: http://repository.kulib.kyoto-u.ac.jp/dspace/bitstream/2433/56338/1/KJ00000131463.pdf)

Supiandi, S. & B. Sumawinata (1989)- Studies on peat in the coastal plains of Sumatra and Borneo, II: The clay mineralogical composition of sediments in coastal plains of Jambi and South Kalimantan. Southeast Asian Studies (Kyoto) 27, 1, p. 35-54.

Supriatna, S. (1989)- Data baru mengenai geologi Pegunungan Meratus, Kalimantan Selatan. Bull. Geol. Res. Dev. Center 13, p. 30-38.
('New data on the geology of the Meratus Mountains, SE Kalimantan'. Including presence of Pre-Tertiary melange)

Supriatna, S. & Abidin (1995)- Geology of the Muara Wahau sheet area, Kalimantan, Quad 1817, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(NE Kalimantan map sheet, N of Kutai Basin. Oldest rocks Telen Fm sheared and brecciated ?Jurassic- Early Cretaceous metasediments (mainly NW-dipping?), associated with Jurassic? ultramafic rocks and Kelinjau melange (with blocks of Devonian reefal limestone (= Danau Fm of Molengraaff (1902)?). Mesozoic rocks intruded by Late Cretaceous Kelai biotite- hornblende granite (part of E-W Sambas- Mangkaliat accretionary prism belt with ~75-81 Ma age granitoids of Amiruddin 2000). Overlain by U Cretaceous Embaluh Gp low metamorphic sediments, unconformably overlain by Late Eocene conglomerates grading upward into marine Eo-Oligocene clastics and limestones. Oligo-Miocene Sintang intrusives)

Supriatna, S., U. Margono, Sutrisno, F. de Keyser, R.P. Langford & D.S. Trail (1993)- Geology of the Sanggau sheet area, Kalimantan Quadrangle 1617, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(NW Kalimantan map sheet which includes Kemajan Mts/ Mengkiang area with intensely folded Permo-Carboniferous Pinoh metamorphics and Balaisebut Group metasediments, intruded by Triassic Embuoi granites (K-Ar ages initial crystallisation 230-263 Ma, later recrystallization at 201-214 Ma). Unconformably overlain by Late Triassic andesitic Serian Volcanics and Sadong Fm clastics and by Cretaceous Pedawan Fm marine sediments, unconformably overlain by non-marine Lower Tertiary Kajan/ Plateau sandstone, etc. Includes Nuit volcano, with basalts with K/Ar date of 4.92 Ma)

Supriatna, S., A. Sudradjat & H.Z. Abidin (1995)- Geology of the Muara Tewe sheet area, Kalimantan Quadrangle 1715, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(C Kalimantan map sheet. In NW folded Upper Cretaceous Selangkai group, unconformably overlain by Late Eocene, intruded by Sintang volcanics. In SE Upper Kutai Basin with folded Oligocene sediments)

Supriatna, S., R. Sukardi & E. Rustandi (1996)- Geology of the Samarinda sheet area, Kalimantan, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.

Surata, M. (2005)- Challenges to develop the Tayan lateritic bauxite- West Kalimantan. In: S. Prihatmoko et al. (eds.) Indonesian mineral and coal siscoveries, IAGI Spec. Issues 2005, p. 106-117.
(Bauxite deposits in Tayan, E of Pontianak, W Kalimantan, formed by lateritization of E Cretaceous gabbro (high-iron type) and Late Cretaceous diorite (high-silica type))

Surata, M., O. Suksianto, M. Pratomo & Supriyadi (2010)- Discovery and its genetic relatonship of bauxite deposit in Mempawah and Landak Regency, West Kalimantan Province. In: N.I. Basuki & S. Prihatmoko (eds.) Proc. Kalimantan coal and mineral resources, MGEI-IAGI Seminar, Balikpapan 2010, p. 107-116.
(W Kalimantan NNW-SSE trending lateritic bauxite belt parallel to West coast, geologically on Schwaner block. Rel. low grade. SiO2 bauxite type derived from Cretaceous Mensibao diorite, Fe2O3-type from Cretaceous Gunungapi Raya Mb andesite and gabbro)

Surjono, S.S., H.D.K. Wijanti & Irawan (2012)- The influence of volcanism in sedimentary rock of Upper Kutai Basin. Proc. 41st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 2012-SS-40, 6p.
(Influence of volcanic activity during sedimentation in Upper Kutai Basin shown by volcanic material in Late Eocene Batu Ayau and Late Oligocene- E Miocene Marah Fms along Belayan and Ritan Rivers)

Suryono, N., S. Supriatna & D. Satria (1994)- Geologi rinci dan prospeksi mineral berharga di dearah Muara Luhung (Permata Intan), lembar Muara-Tewe, Kalimantan Tengah. Geol. Res. Dev. Centre (GRDC), Bandung, Bull. 17, p. 40-55.
('Detailed geology and economic mineral prospecting in Muara Luhung (Permata Intan) area, Muara-Tewe sheet, Central Kalimantan')

Suwarna, N. & T. Apandi (1994)- Geological map of the Longiram Quadrangle, East Kalimantan, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.

Suwarna, N. & R.P. Langford (1993)- Geological map of the Singkawang Sheet area, West Kalimantan, Quad. 1316, 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung.
(NW coast Kalimantan. With thick Bengkayang Gp U Triassic- Lw Jurassic clastics, subdivided into Triassic Banan Fm clastics with acid tuffs near base (~1000m) and E Jurassic Sungaibetung Fm clastics (1500m). Intruded and overlain by large Early Cretaceous Mensibau granite intrusives and volcanics. Also numerous Late Oligocene- E Miocene Sintang intrusives)

Suyono (2013)- Stratigraphy and tectonics of the East Ketungau Basin, West Kalimantan during Palaeogene. J. Geologi Indonesia 8, 4, p. 205-214.
(online at: http://ijog.bgl.esdm.go.id/index.php/IJOG/article/view/170/170)
(East Ketungau Basin (=Mandai Basin) interpreted as Late Cretaceous- E Tertiary fore arc basin between Schwaner Arc /Boyan melange in S and Sarawak Accretionary Prism in N. Two phases of sedimentation: (1) Late Cretaceous marine Selangkai Fm fore-arc basin fill; (2) Eocene? marginal marine- non-marine Mandai Gp unconformably over Selangkai Fm, following 50° CCW rotation of Kalimantan. Stratigraphic succession of E Ketungau Basin similar to W Ketungau Basin and Melawi Basin in S)

Suyono & M.H. Hermiyanto (2010)- Study characteristic biostratigraphy and Rock Eval pyrolisis of Eocene mudstone in the Mandai Basin, West Kalimantan. Proc. 39th Conv. Indon. Assoc. Geol. (IAGI), Lombok, PIT-IAGI-2010-186, 5p.
(Mandai Basin Paleogene frontier basin in W Kalimantan, 60 km S of Putussibau, Kapuas Hulu District. It is bounded by Semitau High/ Melawi basin in S, Lubuk Antu melange in N, Ketungau basin in W. Late Eocene Mandai Gp intertidal- shallow marine clastics unconformably overlie Selangkai Gp and other basement. Eocene mudstones analyzed by Rock Eval pyrolysis: TOC 0.3- 5.2% and classified as poor-fair gas source)

Swamidharma, Y.C.A. (2016)- Magmatic Fe-Ni-Cu sulphides occurence in Sebuku Island. Proc. 8th Ann. Conv. Indonesian Soc. Economic Geol. (MGEI), Bandung, p. 106-108.
(Fe-Ni-Cu sulphides, Co, Au and Platinum Group Elements minerals, associated with cumulus ultramafic zone of Late Triassic- E Cretaceous ophiolite complex in Sebuku Island)

Swamidharma, Y.C.A., Khoirrurozikin, A. Cahyadi, Y. Krisnanto & D. Herkusuma (2015)- Mineral resource and potentials in ultramafic cumulate complex of Sebuku Island. In: N.I. Basuki (ed.) Proc. Indonesian Soc. Econ. Geol. (MGEI) 7th Ann. Conv., Balikpapan, p. 131-135.
(On exploration of lateritic iron ores from ultramafic complex of Sebuku Island, SE Kalimantan near Meratus Range. Also potential for nickel and other ferrous minerals at various places within cumulate complex. Some microdiamonds present in stream sediment samples near cumulate)

Tan Sin Hok (1936)- Vindplaatsen van *Globotruncana* Cushman in West-Borneo. Natuurkundig Tijdschrift Nederlandsch-Indie 96, 1, p. 14-18.
(online at: http://62.41.28.253/cgi-bin/...)
('Localities with Upper Cretaceous planktonic foraminifer Globotruncana in W Kalimantan'. Upper Cretaceous Globotruncana from 3 areas in W Kalimantan, Sungei Silat, Sg. Landak and Sg. Kajan, collected by Ehrat and Zeylmans)

Tarring, H. & G.D. Bellows (1952)- Mineral deposits of Northwest Borneo: a reconnaissance. Geol. Res. Dev. Centre (GRDC), Bandung, Unpublished Report F52-1, p.

Tate, R.B. (1991)- Cross-border correlation of geological formations in Sarawak and Kalimantan. Bull. Geol. Soc. Malaysia 28, p. 63-95.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1991004.pdf)
(Regional correlation between S and W Sarawak stratigraphy and new C and NW Kalimantan stratigraphy. Oldest rocks pre-Late Carboniferous metamorphics (meta-oceanic?; no ancient continental basement on Borneo). Permo-Triassic igneous metamorphic complex in Sanggau Quad, with two crystallization events with K-Ar ages 263-230 Ma (Late Permian-E Triassic), and 214-201 Ma (Late Triassic-E Jurassic). Late Carboniferous- Permian with rare fusulinids in both NE Kalimantan/ W Sarawak and Kuching area. Also in

both areas unconformably overlying Late Triassic- (E Jurassic?) Serian Fm andesitic arc volcanics, associated with thick Late Triassic-E Jurassic Sadong and Bengkayang Fm shallow marine sediments (with Krusin Flora). Unconformably overlain by thick Late Jurassic-Cretaceous Bau/Kedadom/ Pedawan/Selangkai Fms marine sediments. Widespread (Lower) Cretaceous granitoids and arc volcanics in Kalimantan. Two E-W trending melange zones: (1) BoyanMelange (U Cretaceous?)in S and Lubuk Antu-Kapuas (Eocene) in N)

Tate, R.B. (1996)- The geological evolution of Borneo Island. M.Sc. Thesis University of Malaya, Kuala Lumpur, p. 1-393.
(online at: http://studentsrepo.um.edu.my/774/)
(Extensive review of geology of Borneo island: (1) nature and origin of Late Paleozoic Basement; (2) stratigraphy of Mesozoic sediments and associated igneous and metamorphic rocks; (3) Cretaceous igneous-volcanic arc rocks and oceanic crustal rocks and associated deepwater sediments and melange zones; (4) Cenozoic rifting of Mesozoic landmass and development of basins and associated igneous activity)

Tate, R.B. (compiler) (2001)- The geology of Borneo Island. Geol. Soc. Malaysia, CD-ROM Publication.

Tate, R.B. (2002)- Geological map of Borneo Island, 1: 1,500,000. Geol. Soc. Malaysia.
(online at: http://geology.um.edu.my/gsmpublic/borneo.swf)
(New geologic map of Borneo island compiled from published geologic maps of Geological Survey of Malaysia (Sarawak and Sabah), Geological Research and Development Centre in Bandung (Kalimantan), Brunei Museum/ Shell maps and other sources. With 12p. accompanying notes. Oldest 'in-situ' rocks of Pinoh Metamorphics in W and SW Kalimantan, assumed to be of 'Pre-Carboniferous' age. Oldest in-situ fossiliferous rocks ?Carboniferous-Permian metasediments of Balaisebut/ Terbat Group in NW Kalimantan and W Sarawak)

Tate, R.B. (2002)- Notes to accompany the Geological map of Borneo. Geol. Soc. Malaysia, p. 1-12.
(Brief summary of geology and stratigraphy of Kalimantan and North Borneo. With 1:500,000 scale geological map, mainly compiled from published geological maps and publications. Not clear if Borneo is part of Triassic and older Malay Peninsula/ SE Asia craton. Oldest fossiliferous rock Devonian limestone in tectonic melange of probable Lower Cretaceous age in NE Kalimantan. Oldest in-situ rocks 'pre-Carboniferous' Pinoh Metamorphics. Followed by Permian-Triassic igneous and metamorphic rocks, U Triassic volcanics, Triassic-Jurassic- Cretaceous sediments, widespread Cretaceous granites, etc.)

Tay, T.S., P. Wathanakul, W. Atichat, L.H. Moh, L.K. Kem & R. Hermanto (2005)- Kalimantan diamond-morphology, surface features and some spectroscopic approaches. Australian Gemmologist 22, 5, p. 186-195.
(Cempaka diamonds abundant percussion scars, suggesting mechanical reworking. Deformation marks similar to those reported on diamonds from dredge waters off Phuket, Thailand. Zircon and olivine inclusions in diamonds suggest possibility of peridotitic source)

Taylor, W.R., A.L. Jaques & M. Ridd (1990)- Nitrogen-defect aggregation characteristics of some Australasian diamonds: time-temperature constraints on the source regions of pipe and alluvial diamonds. American Mineralogist 75, p. 1290-1310.
(online at: www.minsocam.org/ammin/am75/am75_1290.pdf)
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('The Eocene phyllite formation in C Borneo'. See also English translation in Haile (1955, p. 39-124). Phyllites in NW Kalimantan/ S Sarawak Embaluh Complex contain zone Ta Assilina, Nummulites and Discocyclina, and

transgressed by non-metamorphosed Late Eocene (zone Tb) clastics zone, suggesting Late Eocene or later low-grade metamorphism. Conclusions harshly criticized by Zeijlmans van Emmichoven & Ubaghs, 1936)

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(‘Geology of an area in N Kutai (E Kalimantan), characterized by Spiroclypeus-bearing Eocene’. N margin of Kutei Basin with outcrops of intensely folded Pre-Tertiary (low metamorphic 'Danau Fm chert, marble, red phyllite and basic volcanics, overlain by less metamorphic ?Cretaceous thin-bedded sands-shales. Unconformably overlain by ~270m basal Tertiary conglomerates (incl. pebbles with Permian fusulinids?; De Neve 1961) and deltaic sandstones. Overlain by Eocene limestone bed with Nummulites, Discocyclina, and Pellatispira, followed by 1000’s of m thick marly-sandy series with thin Eocene- Oligocene limestones)

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alteration and mineralization around 20 Ma. Four stages of alteration/ mineralization. Magmatic-hydrothermal event followed by >900m uplift and erosion in M-L Miocene and basaltic volcanism in Plio-Pleistocene. Second cycle of erosion in Pleistocene removed most of young volcanic cover, exposing deposit as known today. Mine closed in 2003)

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('Description of the coal deposit near Napan on the Boyan River, in the Bunut area')

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('The geological-mining investigation of part of Borneo's West coast No. 6: Investigation into cinnaber and antimonium in the upper reaches of the Sikajam River'. Sarawak- Sanggouw border area is area of Chinese alluvial gold and diamond mines. In N part of area mainly folded shales, generally striking NE-SW dipping 30-50° to SE. In S gabbro. Some minor cinnaber only in Kajan gold mining area.)

Van Schelle, C.J. (1884)- De geologische opneming van een gedeelte van Borneo's Westkust. Verslag No. 7. Over een onderzoek naar goudaderen en stroomgoud in het Skadouw-gebergte. Jaarboek Mijnwezen Nederlandsch Oost-Indie 13 (1884), Technisch Admin. Ged., p. 219-260.
('The geological- mining investigation of part of Borneo's West coast No. 7: Investigation into gold veins and alluvial gold in the Skadouw Mountains'. Presence of some minor gold-bearing veins. Not much on geology)

Van Schelle, C.J. (1884)- De geologische opneming van een gedeelte van Borneo's Westkust. Verslag No. 8. Voorlopige onderzoekingen naar cinnaber in de Residentie Westerafdeeling van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 13 (1884), Technisch Admin. Ged., p. 260-276.
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('The geological-mining investigation of part of Borneo's West coast No. 9: Investigation of gold veins near Melassan'. Report on 1884 survey of area formerly mined for gold by Chinese kongsi's, now abandoned. Presence of quartz vein(s) in weathered 'old clay-shales' with pyrite and minor amounts of gold (0.0005%). Further exploitation deemed uneconomic)

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('Communication on the geological-mining investigation of part of the Residency of Western Borneo (continuation)'. Continuation of Van Schelle (1884) on geology of N / NW Kalimantan. Oldest rocks are slates and thin quartzites, believed to be of Devonian age, but fossils too poorly preserved for identication. Steeply dipping, mainly E-W trending, also SE-NW. At two localities with trunks of silicified wood. Igneous rocks include granite and younger porphyry diabase, gabbro, etc.. Overlain by U Cretaceous marls, Eocene? sandstones and post-Eocene clastics. Occurrences of diamonds (Landak), gold,)

Van Schelle, C.J. (1887)- De geologische opneming van een gedeelte van Borneoȍs westkust. Verslag No. 10: Onderzoek naar goudaderen bij Sikarim. Jaarboek Mijnwezen Nederlandsch Oost-Indie 16 (1887), Technisch Admin. Ged., p. 95-128.
('The geological-mining investigation of part of Borneo's West coast No. 10: Investigations of gold veins near Sikarim')

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('On the occurrence of Cretaceous rocks in W Borneo')

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(Geochemical analysis of soils in NW Kalimantan found anomalies of Cu, Mo, Au and Bi. Explained by porphyry-type mineralization of mainly chalcopyrite and molybdenite in quartz-enriched granodiorite. Possibility of belt of porphyry-type mineralization in W Kalimantan)

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('Molluscs from the Jurassic of Borneo'. Molluscs collected by Wing Easton and Bosscha. Mollusc breccia of Sungei Perdajun in Kendai area, Buduk in Sambas, etc. Occ. Corbula borneensis n.sp., Protocardia crassicostata n.sp., P. tenuicostata n.sp., Exelissa septemcostata n. sp.)

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('New molluscs from the Jurassic of Borneo'. Additional Upper Jurassic mollusc material from NW Kalimantan (Sungai Pasi, Sungai Riong, etc.). Common bivalve molluscs (Astarte spp., Protocardia, Corbula, etc.) and gastropods)

Vogel, F. (1904)- Beitrage zur Kenntnis der mesozoischen Formationen in Borneo, 1: Der Nerineensandstein von Bana. Sammlungen Geol. Reichs-Museums Leiden, ser. 1, 7, p. 208-217.
(online at: www.repository.naturalis.nl/document/552427)

('Contributions to the knowledge of the Mesozoic formatons of Borneo, 1. The Nerinea sandstone of Bana'. Cretaceous molluscs from the Bana, Landak River, W Kalimantan (Itieria scalaris n.sp., Nerinea sp., Exogyra sp., Mytilus arrialoorensis, Arca, Astarte, Lucina, Tellina, Corbula)

Vogel, F. (1904)- Beitrage zur Kenntnis der mesozoischen Formationen in Borneo, 2: Trias in Borneo. Sammlungen Geol. Reichs-Museums Leiden, ser. 1, 7, p. 217-220.
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('Contributions to the knowledge of the Mesozoic formatons of Borneo, 2. Triassic in Borneo'. Upper Triassic shale rich in Monotis salinaria, probably from SE of Kendai)

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('Pulau Laut island near SE Borneo as example of uplift through a mass eruption'. Main mountains of E half of Pulau Laut island up to 700m high and composed of Post-Eocene porphyrites. Eruptions thought to have uplifted Eocene sediments)

Von Fritsch, K. (1878)- Patellinen von der Westseite von von Borneo. Palaeontographica, Suppl. 3, 1, p. 144-146.
('Patellinids from the West side of Borneo'. Descriptions of Patellina scutum and P. trochus from Seberuang River, left tributary of Kapuas River, W Kalimantan (re-assigned to mid-Cretaceous Orbitolina concava by Martin 1890; JTvG))

Von Gaffron, H. (1853)- Mededeeling aangaande den ijzererts gevonden ten Noorden van Kampong Tambaga in Tanah-Laut (Z.O. kust van Borneo). Natuurkundig Tijdschrift Nederlandsch-Indie 5, p. 225-232.
('Note on the iron ore found N of Tambaga village in Tanah Laut (SE coast of Kalimantan)'. Iron ore occurrence on slope of Poattion Dammar hill. Not much detail, no maps)

Von Gaffron, H. (1854)- Geognostische tabel der rotssoorten van den berg Pengaron. Natuurkundig Tijdschrift Nederlandsch-Indie 1, 6, p. 145-150.
('Geognostic table of the the rock types of the Pengaron hill'. Early cross section of Pengaron hill, Meratus Mts front, site of late 1800's mining of Eocene coal in SE Kalimantan)

Von Gaffron, H. (1857)- Verslag over de goudmijnen van Tanah Lawut (eiland Borneo). Natuurkundig Tijdschrift Nederlandsch-Indie 1, 9?, p. 30-40.
(Early report on alluvial gold mining by Chinese and dayaks in 'Tanah Laut' area, S Kalimantan)

Von Koenigswald, G.H.R. (1939)- Uber einige Ammoniten und Aptychen aus der Unteren Kreide von Borneo. Jaarboek Mijnwezen Nederlandsch-Indie 68, Verhandelingen, p. 162-171.
('On some ammonites and aptychs from the Lower Cretaceous of Borneo'. Lower Cretaceous ammonites collected by Zeijlmans in Seberuang area, W Kalimantan, in beds previously ascribed to Upper Cretaceous. Similarities with Jambi, Sumatra, Valanginian noted. Lower Bedungan Fm (unconformable on Permo-Carboniferous Bojan Fm meta-sediments and volcanics) with Valanginian Pecten, Hoplites neocomiensis, etc.)

Von Koenigswald, G.H.R. (1961)- Tektites in Borneo and elsewhere. J. Sarawak Museum 10, p. 319-324.

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(Unusual leucite-bearing potassic basalts named kajanite (initially described by Brouwer 1910) from E Kalimantan, with affinities to minettes and lamproites)

Wahyudiono, J. (2017)- Karakteristik petrologi dan geokimia batuan gunungapi berumur Oligosen Akhir-Miosen di daerah Gunung Muro, Kalimantan Tengah. J. Geologi Sumberdaya Mineral 18, 2, p. 105-115.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/266/283)

('Petrology and geochemistry characteristics of the Late Oligocene - Miocene volcanic rocks in the Gunung Muro Region, C Kalimantan'. Mt Muro calc-alkaline magmatic (part of Sintang Arc volcanics))

Wake, B.A. (1991)- Gold mineralization at the Muyup prospect, East Kalimantan, Indonesia.In: Proc. World Gold ó91- Gold forum on technology and practice, Cairns, Australasian Inst. of Mining and Metallurgy (AusIMM), Parkville, p. 271-278.

Wakita, K. (2002)- Secrets of lost diamonds- a geological trip Cretaceous accretionary complex in South Kalimantan, Indonesia. Chishitsu News, Geol. Survey Japan, 574, p. 53-67. *(in Japanese)*

Wakita, K. (2002)- Hard kiss of mosquito on the Equator- a geological trip Cretaceous accretionary complex in West Kalimantan. Chishitsu News 576, p. 44-59.
(in Japanese; online at: www.gsj.jp/Pub/News/pdf/2002/08/02_08_09.pdf)

Wakita, K., K. Miyazaki, I. Zulkarnain, J. Sopaluwakan & P. Sanyoto (1998)- Tectonic implications of new age data for the Meratus complex of South Kalimantan, Indonesia. The Island Arc 7, p. 202-222.
(Meratus Cretaceous subduction complex melange with chert (with early M Jurassic- M Cretaceous radiolarians), shale, limestone, basalt, ultramafic rocks and schist. Unconformably covered by Late Cretaceous island arc volcanics and submarine volcanoclastics (Pitap Fm with Cenomanian or older radiolarians). Constraints on tectonic setting: (1) melange caused by subduction of oceanic plate covered by early M Jurassic to late E Cretaceous radiolarian cherts; (2) Aptian-Albian (110-119 Ma) Haruyan Schist, high P-low T metamorphism caused by plate subduction. M Jurassic (165, 180 Ma) intermediate-P metamorphic rocks along N margin; (3) Haruyan Fm, submarine volcanism in immature island arc setting, locally contemporaneous with Meratus Complex melange)

Watters, R.A., G.B.H. Tucker & B. Soesila (1991)- Reconnaissance and follow-up exploration for gold in Central Kalimantan, Indonesia. J. Geochemical Exploration 41, 1-2, p. 103-123.
(Geochemical reconnaissance survey for gold in C Kalimantan delineated seven anomalies, associated with Cretaceous Sepauk Tonalite)

White, L., I. Graham, R. Armstrong & R. Hall (2014)- Tracing the Source of Borneoôs Cempaka diamond deposit. American Geophys. Union (AGU), Fall Mtg., San Francisco, EP21D-3565, 1p. *(Abstract only)*
(Detrital zircon ages from Cempaka alluvial diamond deposit in SE Kalimantan: 75-110 Ma (2/3; M-U Cretaceous), 223 Ma, 314-319 Ma, 353-367 Ma, 402-414 Ma, 474 Ma, 521 Ma, 549 Ma, 1135-1176 Ma, 1535 Ma and 2716 Ma. Cretaceous zircons euhedral with minor evidence of mechanical abrasion, likely derived from nearby Schwaner Mts granites. Triassic and older grains rounded and likely derived from Australia before Borneo rifted from Gondwana. Some ages resemble those of Merlin and Argyle diamond deposits of Australia. Geochemical data from diamonds implies association with lamproite intrusions)

White, L.T., I. Graham, D. Tanner, R. Hall, R.A. Armstrong, G. Yaxley, L. Barron, L. Spencer & T.M. van Leeuwen (2016)- The provenance of Borneo's enigmatic alluvial diamonds: a case study from Cempaka, SE Kalimantan. Gondwana Research 38, p. 251-272.
(Diamonds in alluvial deposits across C and S Borneo of unknown primary igneous source. Cempaka diamonds likely derived from at least two sources, one relatively local and/or involved little reworking, and other more distal with several periods of reworking. Distal diamond source interpreted to be recycled from diamond-bearing pipes of block that rifted from NW Australia. Local source possibly diamondiferous diatremes associated with eroded Miocene high-K alkaline intrusions N of Barito Basin, or from ophiolitic rocks exposed in nearby Meratus Mountains. Associated zicons mainly 75-110Ma, similar to many other Borneo Tertiary sediments, others Triassic and older)

Williams, P.R. & B.H. Harahap (1986)- Geochemistry, age and origin of post subduction intrusive rocks in West Kalimantan and Sarawak. Bull. Geol. Res. Dev. Centre (GRDC), Bandung 12, p. 43-54.

(Major phase of Late Oligocene- E Miocene igneous activity in NW Kalimantan and Sarawak. Mainly I-type granodiorites. Concentrated in thickest parts of Late Cretaceous- Early Tertiary Melawi and Ketungau sedimentary basin and probably represents deep crustal remelting in passive, post-subduction environment)

Williams, P.R. & B.H. Harahap (1987)- Preliminary geochemical and age data from postsubduction intrusive rocks, northwest Borneo. Australian J. Earth Sci. 34, p. 405-415.
(Major phase of Late Oligocene- E Miocene igneous activity in W Kalimantan and Sarawak, NW Borneo, mainly associated with thickest parts of Late Cretaceous- E Tertiary Melawi and Ketungau sedimentary basins. Majority is granodiorite, similar to I-type granitoids. K/Ar ages 23-30.4 Ma from S part of region (Melawi Basin), 16.4- 17.9 in N part (Ketungau basin). Age of magmatism, tectonic position and geochemistry suggest it is related to deep crustal re-melting and intrusion in passive, post-subduction environment (Hartono 2006 suggests these are subduction-related adakites; JTvG))

Williams, P.R. & R. Heryanto (1986)- Geological data record, Sintang 1:250,000. Geol. Res. Dev. Centre (GRDC), Bandung, p. *(Unpublished)*
(Tate 1995: incl. tin occurrence in Lower Cretaceous Menyukung Granite in W Kalimantan)

Williams, P.R., C.R. Johnston, R.A. Almond & W.H. Simamora (1988)- Late Cretaceous to Early Tertiary structural elements of West Kalimantan. Tectonophysics 148, p. 279-298.
(Three W Kalimantan domains after E Cretaceous-Eocene convergent tectonics: (1) Schwaner Mountains, E-W across S and C West Kalimantan with subduction granitoids intruded into low-grade metamorphic rocks in E Cretaceous; (2) NW Kalimantan Late Carboniferous- Cretaceous sediments and volcanics; (3) NW Kalimantan Cretaceous flysch accretionary complex, a S continuation of mainly Tertiary Sarawak accretionary wedge. Boundary between Cretaceous accretionary domain and NW Kalimantan domain is transform fault marking W limit of Late Cretaceous S-dipping subduction. Growth of accretionary complex resulted in uplift of melange and flysch, on which extensional half graben formed with lacustrine deposits. Sedimentary basin formed between continental rocks to S and emergent accretionary complex to N, in forearc basin position. As accretion proceeded, locus of underthrusting migrated N and second melange ridge and sedimentary basin developed farther N. S-dipping subduction in E part of W Kalimantan in Late Cretaceous- Early Tertiary)

Williams, P.R., S. Supriatna & B. Harahap (1986)- Cretaceous melange in West Kalimantan and its tectonic implications. In: G.H. Teh & S. Paramananthan (eds.) Proc. 5th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA V), Kuala Lumpur 1984, 1, Bull. Geol. Soc. Malaysia 19, p. 69-78.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1986006.pdf)
(Same as Williams et al. (1990) below. Boyan melange of Semitau zone of NW Kalimantan, which separates Cretaceous- E Tertiary Ketungau and Melawi basins, is chaotic mixture of blocks (several m to several km) of greenschist, serpentinite, granite, limestone (incl. mid-Cretaceous Orbitolina Lst), quartzite and radiolarian chert in sheared argilitic matrix (generally steep S-dipping cleavage). Glaucophane schist reported by Zeijlmans (1939) not seen, Also 15km long/ 3 km wide slab of ultramafic rocks. Unlikely that melange is tectonic shear zone related to transcurrent faulting, but may be S part of Late Cretaceous- Paleogene subduction complex of Sarawak)

Williams, P.R., S. Supriatna & B. Harahap (1990)- Cretaceous melange in West Kalimantan and its tectonic implications. Bull. Geol. Res. Dev. Centre (GRDC), Bandung, 14, p. 29-37.
(Extensive Boyan tectonic melange in W Kalimantan implies existence of WNW trending suture zone just S of Semitau on Kapuas River. Chaotic sheared argillite with blocks of metamorphics and ultramafics, now recognized as Late Cretaceous melange, not coherent Jurassic as suggested in 1939. Melange bordered by highly deformed Cenomanian- Turonian turbiditic Selangkai Fm, with blocks of shallow detritus, including Orbitolina sandstone. Characteristics of subduction zone, but no known igneous activity of this age)

Williams, P.R., S. Supriatna, C.R. Johnston, R.A. Almond & W.H. Simamora (1989)- A Late Cretaceous to Early Tertiary accretionary complex in West Kalimantan. Bull. Geol. Res. Dev. Centre (GRDC), Bandung, 13, p. 9-29. *(Much the same as Williams et al. 1988)*

Williams, P.R., S. Supriatna, D.S. Trail & R. Heryanto (1984)- Tertiary basins of West Kalimantan, associated igneous activity and structural setting. Proc. 13th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 151-160.

Wing Easton, N. (1879)- Overzicht van de mijnbouwkundige onderzoekingen welke tot nu toe door den Dienst van het Mijnwezen in de Westerafdeeling van Borneo werden verricht met eene overzichtskaart. Jaarboek Mijnwezen Nederlandsch Oost-Indie 1879, 1, p. 3-116.
(‘Overview of investigations by the Department of Mines in the West Borneo region, with overview map’)

Wing Easton, N. (1894)- Geologisch-mijnbouwkundige opneming van een gedeelte der Westerafdeeling van Borneo, Verslag 11, Het diamantvoorkomen in Landak. Jaarboek Mijnwezen Nederlandsch Oost-Indie 23 (1894), Technisch Admin. Ged., p. 94-130.
('Geological-mining survey of West Kalimantan, Report 11, The diamond occurrence in Landak'. Description of alluvial diamond occurrences and exploitation by local and Chinese miners. Most operations already depleted and abandoned. Diamond occurrences almost all in immediate vicinity of Landak River)

Wing Easton, N. (1895)- Diamanten in Landak, hun voorkomen en ontginbaarheid. Javasche Courant, Batavia, 8 March 1895, p.
('Diamonds in Landak, their occurrence and exploitability'. Diamonds present along main Landak River only, not in tributaries and none in Sambas River. Present in shallow gravelly alluvial deposits, often directly on steeply dipping slates. Generally associated with 'leboer'. No European exploration recommended)

Wing Easton, N. (1899)- Geologisch-mijnbouwkundige opneming van een gedeelte der Westerafdeeling van Borneo, Verslag 12, Het voorkomen van kopererts en in den omtrek van Mandor. Jaarboek Mijnwezen Nederlandsch Oost-Indie 28 (1899), Wetenschappelijk Gedeelte 1, p. 143-167.
('Geological-mining survey of West Kalimantan, Report 12, The occurrence of copper ores in the area of Mandor'. Small veins with copper minerals present, but not deemed economically significant)

Wing Easton, N. (1899)- Voorloopige mededeeling over de geologie van het stroomgebied der Kapoeas-Rivier in de Westerafdeeling van Borneo. Tijdschrift Kon. Nederlands Aardrijkskundig Genootschap 16, p. 245-258.
('Preliminary communication on the geology of the drainage area of the Kapuas River, W Kalimantan'. Presence of mid-Cretaceous marly limestones with Orbitolina, E Jurassic with ammonites, Late Jurassic, etc.. Not much detail)

Wing Easton, N. (1904)- Geologie eines Teiles von West Borneo nebst einen kritischen Uebersicht des dortigen Ertzvorkommens. Jaarboek Mijnwezen Nederlandsch Oost-Indie 33 (1904), Wetenschappelijk Gedeelte, p. 1-542 + Atlas.
(Text online at: http://books.google.com/books/download/Jaarboek_van_het_mijnwegen_in_Nederlands…etc.)
('Geology of a part of W Borneo with a critical overview of its ore deposits'. Final report of years of W Kalimantan geological survey. With paleontology chapters by Martin, Krause and Vogel. Oldest rocks of W Kalimantan highly folded clay-slates (= 'old schists' of Molengraaff?). Overlain by U Triassic micaceous shale and sandstone with Monotis salinaria, E-M Jurassic clastics and marls limestones with ammonites (Harpoceras, Perisphinctes) and bivalves (Exelissa, Corbula, etc.), Cretaceous sandstones, etc.)

Wing Easton, N., C.J. Van Schelle, M. Koperberg & A.L.E. Gaston (1904)- Geologische Karte der Sultanate Pontianak und Sambras und der Panembahanate Mempawah und Landak in West-Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 33 (1904), Wetenschappelijk Gedeelte, p.
(‘Geological map of the Pontianak and Sambras sultanates and Mempwah and Landak districts in West Borneo’. With Atlas with ten 1:100,000 scale maps, one geologic overview map 1:500,000, one plate of index fossils, one plate of cross-sections)

Wing Easton, N. (1914)- Geologisch overzicht van West Borneo; verschil en overeenkomst met Centraal en Zuidoost Borneo. Verslagen Geol. Sectie Geologisch Mijnbouwkundig Genootschap Nederland Kol. 1, p. 179-189.

('Geological overview of W Borneo; differences and similarities with C and SE Borneo'; Verbeek ref. 2802)

Wing Easton, N. (1917)- Had Borneo vroeger een woestijnklimaat? Tijdschrift Kon. Nederlands Aardrijkskundig Genootschap 34, 5, p. 680-695.
('Did Borneo have a desert climate in the past?'. Thick, massive unfossiliferous, unfolded, Eocene(?) 'Plateau sandstone' of W Kalimantan does not look like marine or fluvio-deltaic deposit, and is believed to be eolian deposit, possible E-W trending dunes. This would imply much drier climate than today. 'Plateau sandstones' are rel. unconsolidated sands, erosional product of granites ('quartz porphyry'), up to 1000m thick. Also called Kajan Sst)

Wing Easton, N. (1919)- Kristallijne schisten in West Borneo. Verhandelingen Geologisch-Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie 4, p. 315-318.
('Crystalline schists in West Borneo'. Rocks originally described from W Kalimantan by Wing Easton in 1904 as diabase, quartz porhytites etc., should probably be regarded as metamorphic rocks (epidote-chlorite schists, quartzites and amphibolites). Metamorphism must be Early Triassic or older age)

Wing Easton, N. (1933)- De natuurlijke minerale koolstof en haar ontstaansmogelijkheden. Toepassing op de Borneo-diamanten. De Mijningenieur 14, 4, p. 60-74.
('The natural carbon mineral and it possible origins; applications to Borneo diamonds'. Data and speculations on origin and distribution of diamonds of Kalimantan. Believed to originate from not-yet-located kimberlites)

Wing Easton, N. (1933)- De oorsprong der Borneo diamanten. Geologie en Mijnbouw 20, p. 202-204.
(online at: https://drive.google.com/file/d/1_iQfWDMYohAXgpp83ZllzSnGpMo2NI7R/view)
('The origin of the Borneo diamonds'. Brief discussion suggesting 'Pamali Breccia' in Meratus Mts may be kimberlitic-type source of Kalimantan diamonds, an idea further elaborated by Koolhoven (1935) (but rejected by Burgath & Mohr 1991). (No figures, nothing new))

Witkamp, H. (1925)- Bij een voorlopige schets der Klindjau en Atan (Borneo). Tijdschrift Kon. Nederlands Aardrijkskundig Genootschap 42, p.
('Preliminary sketch of the Klindjau and Atan rivers' Upper Kutai Basin geological-geographic survey. (For more detailed map and descriptions of rocks collected see Albrecht (1946); JTvG))

Witkamp, H. (1927)- Beknopt overzicht van de geologische resultaten der Midden-Oost Borneo expeditie 1925. In: D.W. Buijs et al., Midden-Oost Borneo Expeditie 1925, Weltevreden, p. 105-116.
('Brief overview of geological results of the Central- East Borneo expedition 1925. Summary of geological observations made during geographic expedition. U Telen River area with 'Old Slate Formation', similar to that of W and C Borneo. Intensely folded, steeply dipping, striking E-W in W part of area of investigation (and like in W-C Borneo), farther East strike SSW-NNE, parallel to Tertiary folding directions. Relationship between Old Slate and Danau Fm not clear. Granitic massives present. Early Tertiary sandstones with abundant petrified wood and limestone unconformable over and probably 'deposited against a wall of Old Slates' (now at 1800m above sea level))

Witkamp, H. (1928)- De Kedang Rantau (O. Borneo). Tijdschrift Kon. Nederlands Aardrijkskundig Genootschap 45, p. 34-61.

Witkamp, H. (1928)- Een tocht naar den Goenoeng Ketam (Borneo). Tijdschrift Kon. Nederlands Aardrijkskundig Genootschap 45, p. 412-439.
('A trip to the Ketam mountain, Kalimantan'. Mainly geographic description)

Witkamp, H. (1932)- Diamantafzettingen van Landak. De Mijningenieur 13, 3, p. 43-55.
('Diamond deposits of Landak'. Summary of Witkamp report by Van Bemmelen. Diamonds only at gravely base and in lowest alluvial deposits, especially where directly on bedrock, and always associated with 'leboer' rock (lebur = black rounded pebbles, probably mainly corundum?). Diamonds probably reworked from 'Plateau Sandstone' conglomerates; primary igneous source unknown. Little or no remaining potential for diamond

exploitation in lower Landak area, as all visible gravel deposits have been thoroughly worked by Chinese and local Malay and Dayak prospectors)

Witkamp, H. (1932)- Langs de Mahakam. Tijdschrift Kon. Nederlands Aardrijkskundig Genootschap 49, p. 30-56.
('Along the Mahakam'. Travel report of 1930 river trip up to Mamahak, with some geological observations)

Wohler, F. (1866)- Ueber ein neues Mineral von Borneo: Laurit. Konigl. Ges. Wissensch. Gottingen, Nachrichten, p. 155-160.
('On a new mineral from Borneo: Laurite'. Platinum-group mineral Laurite (RuS2) from Pontyn River, Meratus Range, SE Kalimantan (probably derived from Meratus Mts ultrabasic rock))

Wurst, A. (2004)- Geology and genesis of the Permata-Batu Badingding-Hulubai and Kerikil Au-Ag low sulfidation epithermal deposits, Mt. Muro, Kalimantan, Indonesia. Ph. D. Thesis, University of Tasmania, p. 1-423.
(online at: http://eprints.utas.edu.au/15789/1/1Wurst_whole_thesis.pdf)
(Permata-Batu Badinding-Hulubai vein and Kerikil breccia-hosted deposits of Mt Muro, Kalimantan, represent two styles of Au-Ag, low sulfidation epithermal deposit. Andesitic-basaltic host rocks correlated with E Miocene Sintang volcanism and Pliocene Metalung volcanism. PBH and Kerikil similar structural trends and NNW dilational settings that are result of NNW-directed compression and dextral movement on major NW striking basement structures)

Yang, Mu & S.L. Peng (2004)- Geodynamical features and geotectonic evolution of Kalimantan and adjacent areas. J. Central South University of Technology, China, 11, 3, p. 312-315.
(Brief overview of Kalimantan tectonic provinces. No new data, poor English)

Yuwono, Y.S., S. Priyomarsono, R.C. Maury, J.P. Rampnoux, A.R. Soeria-Atmadja, H. Bellon & P. Chotin (1988)- Petrology of the Cretaceous magmatic rocks from Meratus Range, Southeast Kalimantan. J. Southeast Asian Earth Sci. 2, 1, p. 15-22.
(With exception of Riam Andungan plagiogranites (part of Peridotitic Nappe) all volcanic and plutonic rocks of Aptian-Senonian Manunggul Fm, and plutonic rocks intruding peridotitic nappe, in Meratus Mts are of island-arc calc-alkaline affinity. Subduction-related tectonic environment proposed for Middle- Late Cretaceous of Meratus Range both before (U Aptian- Cenomanian Alino Fm) and after obduction of peridotitic nappe (U Turonian- Senonian Manunggul Fm))

Zaw, K.L., L.D. Setijadji, W. Warmada & K. Watanabe (2011)- Petrogenetic interpretation of granitoid rocks using multicationic parameters in the Sanggau Area, Kalimantan Island, Indonesia. J. Southeast Asian Applied Geol. (UGM) 3, 1, p. 45-53.
(online at: http://geologic-risk.ft.ugm.ac.id/fresh/jsaag/vol-3/no-1/jsaag-v3n1p045.pdf)
(Semitau Ridge is most important structural feature in Sanggau area, NW corner of Kalimantan. It is E-SE trending ridge spanning outcrops of Permo-Triassic foliated igneous rocks of Busang Complex (=Late Triassic?; JTvG) in E and Embuoi Complex in Sanggau. Granitoid rocks range from diorite to granite, products of calc-alkaline island arc affinity, segment of island arc. Sintang Intrusion post subduction or syn-collision tectonic setting(?) (no mention of ages; JTvG))

Zaw, K.L., L.D. Setijadji, W. Warmada & K. Watanabe (2011)- Petrochemistry of granitoid rocks from the Singkawang Region, Kalimantan Island, Indonesia. In: Int. Symp. on Earth Science and Technology, Fukuoka 2010, p. 20-23.

Zaw, K.L., L.D. Setijadji, W. Warmada & K. Watanabe (2011)- Geochemical characteristics of Mesozoic granitoid rocks and associated mineralization from the Western Kalimantan Island, Indonesia. In: Proc. Int. Symposium on Earth Science and Technology 2011, p. 321-324.

Zaw, K.L., L.D. Setijadji, W. Warmada & K. Watanabe (2011)- Implications for adakite petrogenesis from the West Kalimantan. Proc. 36th HAGI and 40th IAGI Ann. Conv., Makassar, JCM2011-022, 8p.
(Samples from Sintang Intrusive rocks are within adakite field. Sintang Intrusives supposedly post-collision magmatic event, with K-Ar ages of 23.0- 30.4 Ma in Melawi Basin, 16.4- 17.9 Ma in N; and 16.5±4- 19±5 Ma in Sarawak adjacent to Sintang. Some samples within adakite field, but not entirely typical. Magmatic products of ~28.1 Ma chemical characters of adakitic magmatism. Sintang adakites may tie to Luconia Block collision instead of subducted young oceanic plate)

Zeijlmans van Emmichoven, C.P.A. (1935)- Bijdragen tot de geologie van Borneo. 2. Het Eoceen ten Z. van S. Kerijau in het O. deel van het centrale Mullergebergte (Wester-afdeeling van Borneo). De Ingenieur in Nederlandsch-Indie (IV) 2, 11, p. 102-105.
('The Eocene S of S Kerijau in the E part of the central Muller Range.' See also English translation in Haile (1955, p. 279-285). First report of non-metamorphic Upper Eocene in W Kalimantan: non-marine clastics and shallow marine limestones with Nummulites/alveolinids/ discocyclinids in E part of Muller Mountains. Unconformable over intensely folded Cretaceous and 'Danau Fm' and overlain by volcanics of uncertain age)

Zeijlmans van Emmichoven, C.P.A. (1936)- On the supposed Lower Cretaceous age of Orbitolinidae of Japan and the Netherlands Indies. De Ingenieur in Nederlandsch-Indie (IV), 2, p. 24-29.
(Another harsh and probably unfair 6-page critique by Zeijlmans on sentence in Yabe & Hanzawa (1931), suggesting Orbitolina from Kalimantan should be assigned to Orbitolina scutum and signify Late Aptian age. ZvE thinks it should be 'Middle Cretaceous' (whatever that means) (Orbitolinid specialist Schroeder in Sikumbang (1986) also identified the Meratus Mts Orbitolina as Late Aptian species, validating Yabe & Hanzawa (1931) conclusions; JTvG)

Zeijlmans van Emmichoven, C.P.A. (1938)- Korte schets van de geologie van Centraal Borneo. De Ingenieur in Nederlandsch-Indie (IV) 5, 9, p. 135-149.
('Brief sketch of the geology of Central Borneo'. Important overview of poorly known Kalimantan-Sarawak border area from Kuching/S China Sea in W to upper reaches of Mahakam River in E. Three E-W trending tectonostratigraphic zones. Oldest rocks crystalline schists, as exposed in Schwaner Mts. Overlain by intensely folded Permo-Carboniferous (dominantly phyllitic abyssal rocks, locally with fusulinids, and basic volcanics; also plants identified by Jongmans (1940) as Pecopteris cf. arborescens and Calamites ex gr. leioderma (p. 138; =Cathaysian Permian; JTvG), Upper Triassic flysch (with Monotis, Halobia and acid volcanic complexes) and folded Cretaceous (locally with Orbitolina). Tertiary mainly represented by Paleogene, locally deformed and metamorphosed)

Zeijlmans van Emmichoven, C.P.A. (1939)- Pretertiary geology of the island of Borneo. Proc. 6th Pacific Science Congress, San Francisco, p.

Zeijlmans van Emmichoven, C.P.A. (1939)- De geologie van het Centrale en Oostelijk deel van de Westerafdeling van Borneo. Jaarboek Mijnwezen Nederlandsch-Indie 68, Verhandelingen, p. 1-186.
('The geology of the Central and Eastern part of the Western District of Borneo' (see also English translation in Haile (1955, p. 159-272). Overview of work of geological survey in NW Kalimantan and parts of adjacent Sarawak. WNW-ESE trending belt of crystalline schists in W Kalimantan near Sarawak border, overlain by folded Permo-Carboniferous with fusulinid foraminifera, Pecopteris and basic volcanics (no conglomerates). Unconformably overlain by Upper Triassic marine fine clastics with Monotis and Halobia and acid volcanics. Unconformably overlain by relatively complete marine Cretaceous section in Sebaruang area, with Orbitolina at several levels. Upper Cretaceous folding event. Tertiary includes brackish-water Melawi fauna. In Upper Kapuas area intense post-Paleogene folding and metamorphism event. Geology of W and S part of W Kalimantan described by Van Bemmelen in same volume)

Zeijlmans van Emmichoven, C.P.A. (1940)- Het Schwanergebergte (westerafdeeling van Borneo). De Ingenieur in Nederlandsch-Indie (IV), 7, 7, p. 79-100.

('The Schwaner Mountains (W Borneo) '. Description of geology and petrology of Schwaner mountains- part 1. First of 2-part somewhat chaotic descriptions of (Permo-Triassic?) tonalite intrusions, 'pre-tonalite' mica schist, 'post-tonalite' sediments (U Triassic?), granodiorite, ?Tertiary volcanics, etc.. No maps, cross-sections)

Zeijlmans van Emmichoven, C.P.A. (1940)- Het Schwanergebergte (westerafdeeling van Borneo)- vervolg. De Ingenieur in Nederlandsch-Indie (IV), 7, 8, p. 103-122.
('The Schwaner Mountains (W Borneo)- continuation'. Description of geology and petrology of Schwaner mountains. Includes description of probably non-commercial Keraroe iron ore occurrence. Stratigraphy: (1) pre-Carboniferous crystalline schists, (2) Permian- Triassic tonalitic plutons, (3) Upper Triassic post-tonalitic sediments, affected by dynamo-metamorphism by younger, but pre-Cretaceous orogenesis, (4) Mid-Cretaceous? E-M Triasic and Jurassic absent)

Zeijlmans van Emmichoven, C.P.A. (1955)- The geology of the Central and Western division of Borneo. In: N.S. Haile (ed.) Geological accounts of West Borneo, Geological Survey Dept., British Territories in Borneo, Kuching, Bull. 2, p. 159-272.
(English translation of Zeijlmans (1939) original Dutch paper)

Zeijlmans van Emmichoven, C.P.A. & G. Ter Bruggen (1935)- Bijdragen tot de geologie van Borneo. 1. Voorlopige mededeeeling over het Tertiair ten W van het Merengebied in de Wester-afdeeling van Borneo. De Ingenieur in Nederlandsch-Indie (IV), 2, 11, p. 99-102.
('Contributions to the geology of Borneo 1: Provisional report on the Tertiary West of the Lakes district in the Western Division of Borneo'. See also English translation in Haile (1955, p. 273-277). Brackish-water Kantoe Beds clastics with thin coals can be correlated with Melawi Fm and Eocene zone Ta of Pengaron, Barito Basin. In SW overlain by 'Plateau- sandstone')

Zeijlmans van Emmichoven, C.P.A. & J.G.H. Ubaghs (1936)- Bijdragen tot de geologie van Borneo. 3. Beschouwingen over den veronderstelden eoceenen ouderdom van de gehele 'Oude lei formatie' in Centraal Borneo. De Ingenieur in Nederlandsch-Indie (IV), 3 3, p. 37-45.
('Contributions to the geology of Borneo 3: A discussion of the supposed Eocene age of the entire 'Old Slate Formation' in Central Borneo'. See also English translation in Haile (1955, p. 125-138). An unnecessarily harsh critique of Ter Bruggen's (1935) conclusion on Eocene age of Central Borneo phyllite formation, which does contain some Eocene/ zone Ta larger forams. Z & U believe some metamorphics are Pre-Tertiary)

Zientek, M.L., B. Pardiarto, H.R.W. Simandjuntak, A. Wikrama, R.L. Oscarson, A.L. Meier & R.R. Carlson (1992)- Placer and lode platinum-group minerals in South Kalimantan, Indonesia: evidence for derivation from Alaskan-type ultramafic intrusions. Australian J. Earth Sci. 39, p. 405-417.
(Platinum-group minerals (PGM) in placer deposits in several localities in S Kalimantan. Alluvial PGM found along Sungai Tambanio in part derived from chromitite schlieren in dunitic bodies intruded into clinopyroxene cumulates. Chromitite schlieren in serpentinite from one dunitic body with 'M'-shaped pattern typical of mineralization associated with Alaskan-type ultramafic complexes (see also Hattori et al. 2004))

Zulkarnain, I. (2003)- Quartz-chloritoid rocks from Bobaris Range, South Kalimantan, Indonesia.J. Riset Geologi Pertambangan (LIPI) 13, 1, p. 27-38.
(Quartz-chloritoid rocks in river on SW flank of Betagah Hill, S of Martapura, in Bobaris Range, S Kalimantan (as pebbles in contact zone between ultramafic and metamorphic rocks). Other pebbles of mica and glaucophane schists found nearby. Bobaris chloritoid classified as Fe-chloritoid, formed under medium pressure. Associated with quartz and muscovite. Absence of other pelitic- derived metamorphic minerals indicates source rocks probably clean sandstone with some clay impurities. Formed in accretionary complex)

Zulkarnain, I., J. Sopaheluwakan & S. Indarto (1995)- Geologi 'Komplek Akresi Kapur' Pegunungan Meratus-Bobaris, Kalimantan Selatan; sebuah tinjauan awal berdasarkan lintasan Pegunungan Bobaris. In: Proc. Seminar Sehari Geoteknologi dalam indistrialisasi, Puslitbang Geoteknologi LIPI, Bandung, p. 7-24.
(online at: http://pustaka.geotek.lipi.go.id/wp-content/uploads/2016/01/prosiding-1995.pdf)

('Geology of the 'Cretaceous accretionary complex' of the Meratus- Bobaris Mountains, South Kalimantan; a preliminary review of the Bobaris Mountains transect')

Zulkarnain, I., J. Sopaheluwakan, K. Miyazaki & K. Wakita (1996)- Chemistry and radiometric age data of metamorphic rocks from Meratus accretionary complex, South Kalimantan, and its tectonic implication. In: Sampurno et al. (eds.) Pros. Seminar Nasional Geoteknologi III, Puslitbang Geoteknologi (LIPI), Bandung, p. 687-696.
(online at: http://pustaka.geotek.lipi.go.id/index.php/2016/04/07/prosiding-1996/)
(No direct genetic connection between metamorphic rocks and ultramafic body of Meratus Range. Chemistry of metamorphic rocks variable from basaltic (48% SiO2), granodioritic (65% SiO2), clastic sediments (87% SiO2) and pelitic rock (25% Al2O3). Two different radiometric ages of mica schist (180 Ma and 116 Ma), suggesting metamorphic rocks derived from different periods and environments, tectonically mixed during exhumation)

IV.2. East Kalimantan Cenozoic Basins, (bio-)stratigraphy

Abidin, H.Z. (2003)- Occurrence of coal seams within the Lower Tanjung Formation, Astambul District, South Kalimantan. J. Geologi Sumberdaya Mineral 13, 139, p. 2-15.
(Several 0.5-2.75 m thick coal beds in Eocene Lower Tanjung Fm of Astambul District, 75km NE of Martapura (Barito Basin). Dipping 12-30° toNW and SE)

Achmad, Z. & L. Samuel (1984)- Stratigraphy and depositional cycles in NE Kalimantan basins. Proc. 13th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 109-120.
(Stratigraphy of NE Kalimantan Basin can be grouped into five major depositional cycles)

Addison, R., R.K. Harrison, D.H. Land & B.R. Young (1983)- Volcanogenic tonsteins from Tertiary coal measures, East Kalimantan, Indonesia. Int. J. Coal Geology 3, 1, p. 1-30.
(Laterally persistent tonsteins (kaolinite-mudstones of wide stratigraphical extent), up to 30cm thick, in coal seams and associated sediments in Miocene SSW of Samarinda. Probably of volcanogenic origin)

Ade, W.C., I.T. McMahon & W. Suwarlan (1988)- Seismic lithology (AVO) interpretation at the Badak and Nilam fields in the Sanga Sanga Block, Kalimantan. Proc. 17th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 325-358.
(Badak and Nilam gas-oil fields of onshore E Kalimantan Kutai Basin contain 7.4 and 6.0 TCF original gas in place. Seismic amplitude responses can be used to detect gas sands)

Ade, W.C. & W. Suwarlan (1989)- Integrated interpretation of C-8 and G-61 sandstones at Badak and Nilam fields in Sanga-Sanga block of East Kalimantan, Indonesia. AAPG Ann. Conv., San Antonio 1989. *(Abstract only)*

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(online at: http://psdg.bgl.esdm.go.id/buletin_pdf_file/Bul%20Vol7%20no.%202%20thn%202012/..)

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Akuanbatin, H. & T. Rosandi (1983)- Lingkungan pengendapan Formasi Tabul dan Formasi Tarakan serta hubungannya dengan potensi hidrokarbon di Pulau Bunyu. Proc. 12th Ann. Conv. Indon. Assoc. Geol. (IAGI), p. 9-20.
('Depositional environment of the Tabul and Tarakan Formations and relations with hydrocorarbons on Bunyu Island')

Akuanbatin, H., T. Rosandi & L. Samuel (1984)- Depositional environment of the hydrocarbon bearing Tabul, Santul and Tarakan Formations at Bunyu Island, NE Kalimantan. Proc. 13th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 425-441.
(Bunyu Island up to 80 hydrocarbon-bearing reservoir zones between 500-2500m in M Miocene- Pleistocene deltaic deposits. Overall shallowing-upward series, progradation from W and SW)

Alam, F., Y. Sebayang, W. Djunarjanto & P.E. Prijanto (2010)- Coal stratigraphy of Separi, East Kalimantan, Indonesia. In: N.I. Basuki & S. Prihatmoko (eds.) Proc. MGEI-IAGI Seminar Kalimantan coal and mineral resources, Balikpapan 2010, p. 13-26.
(Separi area 40 km NE of Samarinda with extensive coal mining. Seven coal-bearing zones in ~1000m thick section of M-L Miocene Balikpapan Fm clastics on Samarinda anticlinorium. Coal seams 0.3- 9.5m thick, labeled A-H. Kutai basin tectoncs (1) M Eocene extension, same time as Makassar Straits; (2) Late Oligocene extension along NW-SE faults; (3) M Miocene inversions mainly on E facing half grabens)

Alam, H., D.W. Paterson, N. Syarifuddin, I. Busono & S.G. Corbin (1999)- Reservoir potential of carbonate rocks in the Kutai Basin region, East Kalimantan, Indonesia. J. Asian Earth Sci. 17, 1-2, p. 203-214.
(Kutai Basin few carbonate reservoirs: Oligocene (Bebulu Lst)- Late Miocene (Dian Lst). Build-ups composed of platy-corals, encrusting red algae and larger foraminifera. Generally isolated mounds, up to 1000' thick. Primary porosity preservation generally poor, due to calcite cementation. Secondary porosity sevelopment limited, due to retardation of subsurface fluid flow by non-permeable layers, and absence of subaerial exposure dissolution and karstification. Porosity mainly vugs, best in coarse-grained shelf-margin facies, not filled by calcite cement. Early hydrocarbon migration may retard diagenesis and preserve porosity)

Alam, S. (2001)- Seismic sequence stratigraphy and depositional history of the Pliocene -Pleistocene fans in the Ganal Block, offshore Kutai Basin, Indonesia. Ph.D. Thesis Texas A&M University, College Station, p. 1-143.
(Seismic stratigraphy study of Pliocene- Pleistocene deep water clastics at Kutai Basin slope and basin floor of Makassar Straits. Six sequences identified, with lowstand features submarine canyons, channels and fan lobes)

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Allen, G.P. (1996)- Sedimentary facies and reservoir geometry in a mixed fluvial and tidal delta system- the Mahakam Delta, Indonesia. Petroleum Expl. Soc. Australia (PESA) Journal 24, p. 140-155.
(Review of sedimentological characteristics of modem Mahakam delta, E Kalimantan. Dominated by mixture of fluvial and tidal processes, with wave energy practically zero. Modern delta dates from post-Holocene eustatic stillstand and presently depositing 50-70m thick regressive highstand system which downlaps older transgressive Holocene and Late Pleistocene deltaic lowstand deposits)

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(Brief overview tectonic history and stratigraphy Kutei basin)

Allen, G.P., D. Laurier & J.M. Thouvenin (1976)- Sediment distribution patterns in the modern Mahakam Delta. Proc. 5th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 159-178.
(First of many G. Allen studies on modern Mahakam Delta deposits, E Kalimantan)

Allen, G.P., D. Laurier & J. Thouvenin (1979)- Etude sedimentologique du delta de la Mahakam. TOTAL Comp. Francaise Petroles, Notes et Memoires 15, p. 1-156.
('Sedimentological study of the Mahakam Delta'. Comprehensive study of sedimentology of modern Mahakam Delta, a mixed tide- and fluvial-dominated delta in humid equatorial climate)

Allen, G.P. & F. Mercier (1988)- Subsurface sedimentology of deltaic systems. Petroleum Expl. Soc. Australia (PESA) Journal 12, p. 30-44.
(Review of Mahakam Delta depositional system and depositional cycles)

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(Fault seal analysis of fields in S Mahakam offshore, with Jempang-Metulang, Mandu and Stupa gas fields along N side of Sepinggan Fault (parallel to Adang FZ). Gas reservoirs in M Miocene Sepinggan deltaic sands. High shale content leads to shale smear and high seal capacity of all faults)

Amarullah, D., U. Margani, S.N. Priatna, Priono & Sudiro (2002)- Inventarisasi dan evaluasi endapan batubara Kapubaten Barito Selatan dan Barito Utara, Provinsi Kalimantan Tengah. Kolokium Direktorat Inventarisasi Sumber Daya Mineral (DIM) 2002, p. 20/1- 20/19.
(Inventory and evaluation of coal deposits in South and North Barito Districts, Kalimantan)

Amarullah, D. & D.P. Simatupang (2009)- Coal bed methane potential of Tanjung Formation in Tanah Bumbu, South Kalimantan. In: 11th Reg. Congress Geology, Mineral and Energy Resources of Southeast Asia (GEOSEA 2009), Kuala Lumpur, p. 35. *(Abstract only)*
(CSAT-1 well drilled in 2008 in Asem-asem Basin of SE Kalimantan found 12 coal seams in Eocene Tanjung Fm. Three main seams: E (212.34-213.30m), I (261.93-264.20m), and J (270.20-275.35m). (see also Simatupang & Amarullah 2010))

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(online at: www.searchanddiscovery.com/documents/2012/50746amiarsa/ndx_amiarsa.pdf)
(Summary of fieldwork study of Tendehhantu Fm limestone at Gunung Sekerat in N Kutai Basin, S of Mangkalihat Ridge and 300km N of Samarinda. Age M Miocene (Miogypina, Orbulina, etc.) Interpreted to be atoll with diameter of ~30 km, with E side more forereef bioclastic carbonate and W side backreef lagoonal environment (see also Suessli, 1976))

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(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/333/295)
(Coalbed methane CBM evaluation of two Indonesian coals, Sambaliung (Berau/Tarakan, NE Kalimantan, E-M Miocene Latih Fm) and Sawahlunto, (W Sumatra, Late Oligocene Lower Ombilin Fm). Gas storage capacity of Sambaliung 113-269 scf/ton; Sawahlunto coals 486-561 scf/ton. Adsorption capacity related to coal rank: low at Sambaliung area (vitrinite Rr ~0.38%) and higher at Sawahlunto (Rr ~0.72%))

Anggayana, K., B. Rahmad, H.H.A. Naftali & A.H. Widayat (2014)- Limnic condition in ombrotrophic peat type as the origin of Muara Wahau Coal, Kutei Basin, Indonesia. J. Geol. Soc. India 83, p. 555-562.
(Maceral petrography of E (M?) Miocene upper Muara Wahau Fm coal from three drill cores. Two main seams 8-40m thick. Huminite macerals 73- 88%.. Liptinite 0.7-6.7%, inertinite 4.3-34%.. Coal developed from herbaceous plants in ombrotrophic type of peat. Preservation low and peat relatively wet or limnic)

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(http://ijog.bgl.esdm.go.id/index.php/IJOG/article/view/183/180)
(Petrography of 30m section through E Miocene Wahau Fm coal)

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(Palynofacies study of M-L Miocene in wells from Louise Field, Sanga-Sanga anticlinorium, Kutai Basin)

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(Successful CBM exploration program in coals in Balikpapan Fm of Sangatta II block)

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(Balikpapan Fm. Miocene age coal outcrops three domains of face cleat strike: E-W in Bengalon area; NNW-SSE in N Pinang and NE-SW in S Pinang area. Higher calorific value and low ash content correspond to high cleat densities. Higher total sulphur corresponded to lower cleat density. Permeability much higher in outcrops (200-5000 md) than in core samples from 260m depth (0.1-19 md))

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(Mahoni field produced 11 MBO oil since 2001. Peak production of 10,000 BOD in 2002-2003, declining to <900 BOD in 2009. Field consists of multiple fault compartments and reservoirs. M Miocene Upper and Lower Yakin reservoirs produced almost 4.4 MMBO)

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(Modern Mahakam Delta ichnological characteristics of four deltaic environments: (1) distributary channel: low diversity with Psilonichnus, Skolithos, Ophiomorpha, Monocraterion, Teichichnus, Arenicolites, Planolites, Thallasinoides, escaping traces and Glossifungites ichnofacies; (2) estuarine tidal bar: balanced diversity with Psilonichnus, Ophiomorpha, Arenicolites, Skolithos, Siponichnus, Monocraterion, Paleophycus, Helminthopsis, Teichichnus, Planolites, Chondrites, Paleodictyon, crawling traces, and vertebrate tracks; (3) interdistributary area: medium diversity/ high bioturbation with Arenicolites, Ophiomorpha, Conichnus, Skolithos, Scaubcylindrichnus, Diplocraterion, Rosselia, Teichichnus, Chondrites; (4) mouth bar: with Ophiomorpha, Planolites, grazing traces, crawling traces, fecal casting, and abundant Skolithos-like dwelling tubes)

Arifullah, E., Y. Zaim, Aswan & Djuhaeni (2016)- Ichnofabric for stratigraphic analysis: an outcrop study in Samarinda area, Kutai Basin, Indonesia. Proc. GEOSEA XIV and 45th Ann. Conv. Indon. Assoc. Geologists (IAGI) (GIC 2016), Bandung, p. 565-572.

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(online at: http://journal.akprind.ac.id/index.php/snast/article/view/756/483)
('Ancient volcano of Nunukan Island, Nunukan district, N Kalimantan'. Several andesite-basalt volcanoes on Mio-Pliocene deltaic clastic deposits of Nunukan Island)

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(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/308/267)
('Secondary diamond potential along the Landak River, West Kalimantan'. Three terraces and alluvial deposits. Quaternary diamond deposits reworked multiple times. Largest diamonds from Terrace 3)

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(Diamond placer deposits in paleochannels at Martapura/ Cempaka, SE Kalimantan, believed transported from Meratus Mountains by Riam Kanan and Riam Kiwa Rivers. In Pelaihari area, S of Cempaka, no diamond-bearing gravel layers found)

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('Sequence stratigraphic framework and character of Early Miocene source rocks in the Lower Kutai Basin, East Kalimantan'))

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(Re-evaluation of source rock and hydrocarbon potential Late Eocene syn-rift coaly-brackish sediments from W Sangatta area outcrops, near surface and hydrocarbon seeps. Two oil seeps derived from mixed organic matter Type I and terrestrial higher plants of Type II/III. Most sandstones in Paleogene tight)

Bachtiar, A., E. Kurniawan & Y. Purwanti (1998)- Geological data acquisition during 3D seismic operation in Mutiara field area, Kalimantan, Indonesia. Proc. 26th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 85-104.
(Sedimentology of outcrop and seismic shotholes over Mutiara field, Sanga Sanga anticline, onshore Kutei basin, SW of Mahakam delta. M-U Miocene Balikpapan- Kampung Baru Fm sediments of paleo-Mahakam Delta. 30 shallow reservoir sands mapped (73% channels, others bar sandstones). Channel width- thickness ratio around 50. Example of M Miocene paleogeography map showing S-ward prograding delta plain-front)

Bachtiar, A., Y.S. Purnama, P.A. Suandhi, A. Krisyunianto, M. Rozali, D.H.H. Nugroho & A. Suleiman (2013)- The Tertiary paleogeography of the Kutai Basins and its unexplored hydrocarbon plays. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-126, p. 1-37.
(New regional paleogeography of Kutai Basin. Kutai- N Makassar basins underlain by NE Schwaner Complex in W, N Meratus accreted continental-oceanic terrane in middle, N Makassar micro-continent in E, and Mangkalihat micro-continent in NE. Initial rifting of Kutai Basin mostly results of slab rollback of 3 subduction zones. Onset of rifting possibly Paleocene (60 Ma), not later than M Eocene (45 Ma). Five NE-SW trending highs and lows bounded by NW-SE strike-slip faults. Paleogeography of Upper and Lower Kutai Sub-basins radically reshaped during latest Oligocene- E Miocene. Several unexplored hydrocarbon plays. With seven M Eocene- Miocene paleogeography maps)

Bachtiar, A., P.T. Setyobudi, M. Rozalli, E. Guritno, A. Subekti, P.A. Suandhi & A. Kriyunianto (2015)- Integrated study of the depositional environment, structural geology, diagenesis and petroleum system of the Tertiary at the southern border of the Upper Kutai Basin. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-173, 17p.
(S part of U Kutai basin with only one gas discovery (Kerendan). Pre-Tertiary mica-schists overlain by (1)M-L Eocenefluvial-deltaic rift sediments, (2) Oligocene marine post-rift sediments with platform carbonates in S, (3) inversion in E to Late Miocene dominated by deltaic sediments and change in paleo-shoreline orientation from E-W to N-S, (4) Plio-Pleistocene NE-SW thrust faulting)

Bachtiar, A., J. Wiyono, Liyanto, M. Syaiful, Y.S. Purnama, M. Rozalli, A. Krisyunianto & A.S. Purnama (2010)- The dynamics of Mahakam Delta- Indonesia, based on spatial and temporal variations of grab samples, cores, and salinity. AAPG Int. Conf. Exhibition 2010, 58p. *(Abstract + Presentation)*
(online at: www.searchanddiscovery.com/documents/2010/50363bachtiar/ndx_bachtiar.pdf)

Baillie, P., H. Darman & T.H. Fraser (2004)- Deformation of Cenozoic basins of Borneo and Sulawesi. In: R.A. Noble et al. (eds.) Proc. Deepwater and frontier exploration in Asia and Australasia Symposium, Jakarta 2004, Indon. Petroleum Assoc. (IPA), p. 443-461.
(Geological evolution since Oligocene result of two opposing forces; opening of S China Sea which started in Oligocene and W-directed compression as micro-continental material from Australian Plate moved W since Miocene. Overall sinistral wrenching produced zones of deformation extending through Borneo that are loci of Neogene delta systems. Neogene compression produced W Sulawesi Fold Belt)

Bassoulet, P. (1984)- Study of hydrosedimentological processes within Barito Estuary, Delta Pulau Petak, Kalimantan Indonesia. IFREMER Centre de Brest, 82p.
(Barito estuary studied in 1983 for 40km from mouth. Upsteam limit of saline water in 1983 dry season 38 km from mouth)

Bassoulet, P., R. Djuwansah, D. Gouleau & C. Marius (1986)- Hydrosedimentological processes and soils of the Barito estuary. Oceanologica Acta 9, 3, p. 217-226.
(Barito estuary studied for 40km from mouth. Controlled by tidal currents)

Bates, J. (1996)- Overpressuring in the Kutai Basin: distribution, origin and implications for the petroleum system. Proc. 25th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 93-115.
(Overpressuring ubiquitous in Kutei Basin. Sequences affected by overpressuring younger from W to E, consistent with easterly progradation. Primary mechanism for overpressure is Disequilibrium Compaction, and is pervasive in sand-poor distal and deeper marine clastics. Three pressure zones: hydrostatic, transition and hard overpressure. Large percentage of reserves in Transition Zone; commercially productive hydrocarbon reservoirs not encountered in Hard Overpressure Zone in Sanga-Sanga PSC. Seal capacity of shales in Transition Zone enhanced relative to Hydrostatic Zone and results in larger hydrocarbon columns)

Baumann, P. (1972)- Les faunes de foraminiferes de lŒEocene superieur a la base du Miocene dans le basin de Pasir, Sud de Kalimantan. Revue Inst. Francais Petrole (IFP) 27, 6, p. 817-829.

('The foraminifera of the Late Eocene to the base of the Miocene in the Pasir Basin, S Kalimanta' Planktonic foraminifera faunas and zonation in open marine Eocene- Oligocene section of Pasir Basin, SE Kalimantan. No illustrations of fossils)

Bazin, B., E. Brosse & F. Sommer (1997)- Chemistry of oil-field brines in relation to diagenesis of reservoirs 1. Use of mineral stability fields to reconstruct in situ water composition. Example of the Mahakam Basin. Marine Petroleum Geol. 14, 5, p. 481-495.

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(Conventional seismic with average wave length of 100m not adequate to differentiate 20m thick sandstone reservoirs)

Beets, C. (1941)- Eine Jungmiocane Mollusken-Fauna von der Halbinsel Mangkalihat, Ost-Borneo (nebst Bermerkungen uber andere Faunen von Ost-Borneo; die Leitfossilien-Frage). Verhandelingen Geologisch-Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie13, p. 1-282.
('A Late Miocene mollusc fauna from the Mangkalihat Peninsula, E Kalimantan'. 160 well-preserved mollusc species from one locality 114 at N side of Mangkalihat Peninsula, collected by Leupold))

Beets, C. (1947)- Note on fossil Echinoidea and Gastropoda from Sarawak and Kutei, Borneo. Geologie en Mijnbouw, N.S., 9, p. 40-42.
(online at: https://drive.google.com/file/d/0B7j8bPm9Cse0VUZ3ZVhhdTBYZ28/view)
(Brief note on Miocene fossils of poor preservation collected by BPM personnel in Sarawak and E Kalimantan)

Beets, C. (1947)- On probably Pliocene fossils from the Mahakkam Delta region, East Borneo and from dessah Garoeng (Lamongan), Java. Geologie en Mijnbouw 9, 10, p. 200-203.
(online at: https://drive.google.com/file/d/0B7j8bPm9Cse0aFZqX0Vzbi1tM3c/view)
(Brief report on Late Miocene-Pliocene molluscs from BPM well in Mahakam Delta and from outcrop near Garung in Lamongan District, E Java, collected by Rutten. No illustrations)

Beets, C. (1950)- On Quaternary Mollusca from the Islands of Boenjoe and Tarakan, E. Borneo. Leidsche Geol. Mededelingen 15, p. 241-264.
(online at: http://repository.naturalis.nl/document/549600)
(Quaternary marine molluscs collected by BPM personnel from Bunyu (40 species) and Tarakan (9species))

Beets, C. (1950)- On probably Young Miocene fossils from the coal concession Batoe Panggal near Tenggarong (Samarinda), Eastern Borneo. Leidsche Geol. Mededelingen 15, p. 265-281.
(online at: www.repository.naturalis.nl/document/549420)
(Study of Late Miocene molluscs collected in 1902 in shallow marine clays in coal quarries along Mahakam River near Batu Panggal, SW of Samarinda. ~40-46% Recent species. Associated with shallow marine forams, inc. Lepidocyclina epigona)

Beets, C. (1950)- On fossil Mollusca from the island of Mandul, East-Borneo. Leidsche Geol. Mededelingen 15, p. 291-304.
(online at: www.repository.naturalis.nl/document/549676)
(Molluscs from Mandul island, N of Tarakan, collected by Dr. Van Holst Pellekaan (BPM). 75 species, probably mixed Pliocene and Quaternary taxa. No locality information)

Beets, C. (1950)- Pliocene Mollusca from a coral limestone of a hill near Sekoerau, E. Borneo. Leidsche Geol. Mededelingen 15, p. 305-318.
(online at: www.repository.naturalis.nl/document/549454)
(15 species of Pliocene molluscs, collected by M. Schmidt in coral limestone hill near Sekurau, Sangkulirang area. 67% living species. Corals from same locality described by Gerth 1923)

Beets, C. (1981)- Note on Mollusca from the Lower Mentawir Beds, Balikpapan Bay area, Kalimantan (East Borneo). Scripta Geologica, Leiden, 59, p. 1-12.
(Mentawir Beds NE of Balikpapan originally assigned to M Miocene Tf2 (Miogypsina, Lepidocyclina), but molluscs suggest probably Late Miocene/Tf3 age)

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(online at: http://dare.uva.nl/cgi/arno/show.cgi?fid=148716)
Molluscs from two localities around Sangkulirang Bay, E Kalimantan, collected by Schmidt in 1902 and Rutten in 1912. Mainly gastropods of Preangerian age, incl. Cerithium kobunense n.sp., Carditella witkampi n.sp.))

Beets, C. (1983)- Miocene (Preangerian) molluscs from Kari Orang, northern Kutai, East Borneo. Scripta Geologica 67, p. 23-47.
(online at: www.repository.naturalis.nl/document/148759)
(Molluscs collected by Witkamp in 1908 on N flank Kari Orang anticline 27 species are of Preangerian age (Late Miocene; Tf3). Associated corals described by Felix 1921 and Gerth 1923)

Beets, C. (1983)- Preangerian (Miocene) Mollusca from the Lower Sangkulirang Marl Formation, Kari Orang, Kalimantan (East Borneo). Scripta Geologica 67, p. 49-67.
(online at: www.repository.naturalis.nl/document/148713)
(Molluscs collected by Rutten in Lower Sangkulirang Marls Preangerian, Tf3 (Late Miocene) age, not Early Miocene (Tf2) as originally interpreted. Twenty molluscan species (very few bivalves), including 4 new ones: (Polinices? orangensis, Nihonia witkampi, Conus kutaiensis, and Laevicardium rutteni)

Beets, C. (1984)- Mollusca from Preangerian deposits of Mandul island, Northeastern Kalimantan (East Borneo). Scripta Geologica 74, p. 49-80.
(online at: www.repository.naturalis.nl/document/148808)
(Molluscs collected in 1916 by BPM from Mandul Island, Tarakan basin. First examined by K Martin in 1916: 22 species, and age 'uppermost Old Miocene' or 'Upper Miocene'. Restudy identified 42 species, suggesting mixed faunas and Miocene age)

Beets, C. (1986)- Preangerian (Late Miocene) Mollusca from a hill near Sekurau, northern Kutai, Kalimantan Timur (East Borneo). Scripta Geologica 74, p. 1-37.
(online at: www.repository.naturalis.nl/document/148710)
(Molluscs fossils collected Schmidt in 1902 from hill near Sekurau, N Kutai, in Late Miocene clays with limestones and sandstones, overlain by Pliocene coral limestones. Sixty species suggesting Preangerian age (Tf3) and shallow marine conditions)

Beets, C. (1986)- Molluscan fauna of the Lower Gelingseh Beds s.str., Sangulirang area, Kalimantan Timur (East Borneo). Scripta Geologica 82, p. 1-82.
(online at: www.repository.naturalis.nl/document/148740)
(Compilation of investigations of molluscs collected Rutten from Late Miocene Gelingseh Beds, E Kalimantan)

Bellet, J. (1987)- Le sondage Misedor- Palynofacies et analyse elementaire de la matiere organique. In: A. Combaz (ed.) Geochimie organique des sediments plio-quaternaires du delta de la Mahakam (Indonesie)- le sondage Misedor, Editions TECHNIP, Paris, p. 183-195.
('The Misedor well: palynofacies and elemental analysis of organic matter'. Organic matter in Mahakam Delta sediments mainly of humic origin, from land plants. No evidence of marine organics. Kerogens mainly Type III)

Bellorini, J.P., T. Debertrand & M. Iskandar Umar (1989)- Handil Field development- example of geological reservoir study. Proc. 18th Ann. Conv. Indon. Petroleum Assoc. (IPA), 1, p. 91-106.
(Handil Field in Mahakam Delta 1974 discovery in Mio-Pliocene deltaic sandstones, with 330 wells in 1989. Complex reservoir geometries)

Bianchi, N., G. Aplin, C. Davies, E. Guritno, W. Darmawan, A. Subekti & G. Airlangga (2016)- Revealing the natural fracture network of the Berai Carbonate, Kerendan Field Complex, Indonesia. AAPG Geoscience Techn. Workshop Characterization of Asian hydrocarbon reservoirs, Bangkok, Search and Discovery Art. 20356, 5p. *(Extended Abstract)*
(online at: www.searchanddiscovery.com/documents/2016/20356bianchi/ndx_bianchi.pdf
(Kerendan mid-sized gas field in C Kalimantan, producing from Late Oligocene Berai Lst reservoir. Intervals with fractures. Image logs show two types of fractures, related to faulting)

Biantoro, E., M.I. Kusuma & L.F. Rotinsulu (1996)- Tarakan Sub-basin growth faults, northeast Kalimantan: their roles in hydrocarbon entrapment. Proc. 25th Ann. Conv. Indon. Petroleum Assoc. 1, p. 175-189.
(Tarakan sub-basin 5 provinces separated by normal faults, controlled by Oligocene to Pliocene growth fault systems. Fault development in three periods: Late Oligocene-E Miocene rift faulting, M-L Miocene growth faulting, and Mio-Pliocene growth faulting. Miocene faults rejuvenation of previous faults, coinciding with change from transgression to regression. Hydrocarbons trapped by growth faults: four way dip, roll-over against fault, fault traps, and unconformity closures)

Biantoro, E., B.P. Muritno & J.M.B. Mamuaya (1992)- Inversion faults as the major structural control in the northern part of the Kutai Basin, East Kalimantan. Proc. 21st Ann. Conv. Indon. Petroleum Assoc., 1, p. 45-59.
(Kutai Basin deepest Tertiary basin in Indonesia with >10 km sediments. Structural pattern is anticlinorium trending almost N-S, gradually changing to E-W at N edge. Compressional faults in N Kutai Basin are inversion faults, rejuvenating Eocene-Pliocene extensional faults. Late compression by coupling between Paternoster and Sangkulirang dextral strike slip faults in Plio-Pleistocene)

Biantoro, E., T.S. Priantono & J.M.B. Mamuaya (1994)- Potensi reservoir Eosen daerah Bungalun Barat, Cekungan Kutai Utara: prediksi dari interpretasi seismik. In: Proc. 19th Ann. Conv. Indon. Assoc. Geophys. (HAGI), p. 355-373.
(‘Eocene reservoir potential in the W Bangulan area, N Kutai basin: prediction from seismic interpretation’)

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('Identification of diapyric features and its relation with hydrocarbon in the Sangatta field and surroundings'. Cores of Sangatta and surrounding anticlines may be cored by Late Miocene- Pleistocene diapyric shale flow)

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(First Late Miocene- Recent biozonation based on rotaliid benthic foraminifera for use in deltaic sediments where planktonics and larger forams are usually absent)

Bishop, W.P. (1980)- Structure, stratigraphy and hydrocarbons offshore southern Kalimantan, Indonesia. American Assoc. Petrol. Geol. (AAPG) Bull. 64, p. 37-58.
(Java Sea S of Kalimantan stratigraphy)

Bleekrode S.A. (1858)- Eene beschouwing over de koolformatie van Borneo, naar aanleiding van XVIII en XIX der Bijdragen tot de geologische en mineralogische kennis van Nederlandsch Indie. Tijdschrift voor Nederlandsch-Indie 17, 10p.
('A discussion of the coal formation of Borneo…')

Bleekrode S.A. (1859)- Platinerz von Goenoeng Lawack auf Borneo. Annalen der Physik 183, 5, p. 189-191.

('Platinum ore from Gunung Lawack on Borneo'. Brief note on chemistry of magnetic platinum ore, which contains ~75% Platinum, also ~8% each of Iridium and Osmium, 1% Palladium/ Rhodium. (No locality details, but presumably from Meratus-Bobaris Mountains region))

Boettger, O. (1875)- Die fossilen Mollusken der Eocanformation auf der Insel Borneo. In: R.D.M. Verbeek et al., Die Eocanformation von Borneo und ihre Versteinerungen, Palaeontographica Suppl. 3, 1, p. 9-59.
('The fossil molluscs of the Eocene of Borneo'. Includes descriptions of molluscs from Eocene Tanjung Fm near Pengaron, Meratus Mts. 18 species of gastropods and many more bivalves, most of them marine, but the lowest clay beds associated with coals have mainly large fresh-brackish water Cyrena species)

Boettger, O. (1877)- Die fossilen Mollusken der Eocanformation auf der Insel Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 6 (1877), 2, p. 16-110.
('The fossil molluscs of the Eocene of Borneo'. Same paper as Palaeontographica (1875) paper above)

Bois, M., Y. Grosjean & L. de Pazzis (1994)- Shale compaction and abnormal pressure evaluation application to the Offshore Mahakam. Proc. 23rd Annual Convention Indon. Petroleum Assoc. 1, p. 245-259.

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(Barito Basin ~5000m Cretaceous- Tertiary clastics with minor carbonates. M-Late Miocene compression divided basin along 'Tanjung Line': to N deformed zone with reverse faulted anticlines; to S virtually undisturbed sediments dipping down to axis of asymmetrical basin. Discoveries restricted to inverted area N of "Tanjung Line". Tanjung Fm in undisturbed S Barito Basin shows Paleocene and Cretaceous sediments in Lower Tanjung Fm (previously assigned to Lower Eocene). Primary reservoir basal transgressive sand (63 Ma), equivalent to Z860 sandstone in Tanjung Field. Principal source rocks are coals and coaly claystone with Type III kerogens. Claystones associated with flooding surfaces of sequence-4 seal in Tanjung Field and also expected to provide seals in study area)

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(Description of larger foram family Miogypsinidae and evolution of Miogypsinodella n. gen. in Te-Tf (Late Oligocene- M Miocene) in NE Borneo. New species Miogypsina sabahensis)

Boudagher-Fadel, M.K., J.J. Noad & A.R. Lord (2000)- Larger foraminifera from Late Oligocene- earliest Miocene reefal limestones of North East Borneo. Revista Espanola Micropal. 32, 3, p. 341-362.
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Boudagher-Fadel, M.K. & M. Wilson (2000)- A revision of some larger foraminifera of the Miocene of Southeast Kalimantan. Micropaleontology 46, 2, p. 153-165.
(Burdigalian- Serravallian Tf1-Tf2 larger foram assemblages from Batu Putih limestone patch reefs inland from Mahakam Delta. With Lepidocyclina praedelicata n. sp.)

Brahmantio, R., C.M. Adam, A. Laffaure, E. Chavanne & N. Syarifuddin (2008)- Structural uncertainty study: an example from Sisi-Nubi Fields. Proc. 32nd Ann. Conv. Indon. Petroleum Assoc., Jakarta, IPA08-G-097, 9p.
(Sisi and Nubi gas fields, off Mahakam delta, faulted anticlinal structures, compartmentalized by major NNE-SSW faults, creating 6 main compartments; 4 in Nubi, 2 in Sisi)

Budiartha, K. & I. Hartono (1999)- Applications of hydraulic fracturing to increase oil production in Tanjung Field, Kalimantan, Indonesia: Proc. 27th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 147-154.

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(Attaka Field 1970 discovery in anticlinal structure in NE part Mahakam Delta. Stacked reservoirs in Early Pliocene deltaic sands)

Burrus, J., E. Brosse, G. Choppin de Janvry, Y. Grosjean & J.L. Oudin (1992)- Basin modelling in the Mahakam Delta based on the integrated 2D model TEMISPACK. Proc. 21st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 23-43.
(Coal-rich, normally pressured delta-plain facies in synclines most effective source rock, not deep overpressured marine shales. Migration mostly parallel to bedding/ updip along structure flanks rather than vertically across bedding)

Burrus, J., E. Brosse, J. De Choppin & Y. Grosjean (1994)- Interactions between tectonism, thermal history, and paleohydrology in the Mahakam Delta, Indonesia: model results, petroleum consequences. AAPG Int. Conf. Exh., Kuala Lumpur 1994, American Assoc. Petrol. Geol. (AAPG) Bull. 78, 7, p. 1186. *(Abstract only)*
(Mahakam Delta 2-d maturity models along 70-km-long transects confirm fluid inclusions evidence that region cooled by up to 25°C in recent time. Cooling caused by topography-driven circulation in Late Miocene Fresh Water Sands, charged along 600-m-high Pliocene coastal uplift. Best-fit age of uplift ~3 Ma. Most of flow system has disappeared due to erosion. Discharge of meteoric waters along listric normal faults at periphery of present-day delta. Observed temperatures and paleotemperatures agree with hypothesis that opening of N Makassar basin was Paleogene rather than Oligocene- E Miocene age sometimes proposed)

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(Burial depth, temperature and related maturation of carbonaceous material and pressure major controls on diagenesis of sandstones)

Butterworth, P.J., P. Cook, R.A. Ripple, M. Drummond et al. (2001)- Reservoir architecture of an incised-valley fill from the Nilam Field, Kutai Basin, Indonesia. Proc. 28th Ann. Conv. Indon. Petroleum Assoc., p. 537-555.
(Thick, multi-storey M Miocene G053B reservoir with 180 BCF OGIP interpreted as incised valley fill (IVF) back-stepping sequence, deposited during relative sea level rise. IVF interpretation, rather than highstand distributary channel model based on clear incision and basinward shift in facies, coeval sediment-starved interfluves, and abnormal aspect ratio (3 km wide, 40m thick))

Camp, W.K., E.E. Guritno, D. Drajat & M.E.J. Wilson (2009)- Middle-Lower Eocene turbidites: a new deepwater play concept, Kutei Basin, East Kalimantan, Indonesia. Proc. 33rd Ann. Conv. Indon. Petroleum Assoc., Jakarta, IPA09-G-001, 15p.
(E-M Eocene turbidite deposits penetrated by a few wells and also exposed onshore along uplifted area S of Mangkalihat Peninsula, NE Kalimantan)

Campbell, K. & D. Wayan Ardhana (1988)- Post Convention Field Trip 1988: Barito Basin, South Kalimantan, Guide Book. Indon. Petroleum Assoc. (IPA), p. 1-54.

Caratini, C. & C. Tissot (1987)- Le sondage Misedor- Etude palynologique. In: A. Combaz (ed.) Geochimie organique des sediments plio-quaternaires du delta de la Mahakam (Indonesie)- le sondage Misedor, Editions TECHNIP, Paris, p. 137-171.
(Palynogical study of 638.6 m deep Misedor core hole on Handil Anticline, SW Mahakam delta. TD in Upper Pliocene, continous deltaic facies. Stratigraphic markers Phyllocadus hypophyllus (Pleistocene- Recent), Podocarpus imbricatus and Stenochlaena laurifolia (latest Miocene- E Pleistocene) help locate Plio-Pleistocene boundary at sequence boundary at ~400m. Several short-lived peaks of Graminae (grass) pollen

coincide with relative sea level lowstands and probably reflect development of savannas in drainage area during colder climates)

Caratini, C. & C. Tissot (1988)- Paleogeographical evolution of the Mahakam delta in Kalimantan, Indonesia, during the Quaternary and Late Pliocene. Review Palaeobotany Palynology 55, p. 217-228.
(Mahakam delta MISEDOR well (638.5m) reaches U Pliocene. Palynology markers Phyllocladus hypophyllus, Podocarpus imbricatus and Stenochlaena laurifolia helped locate Plio-Pleistocene boundary at ~400m. Uniform paleogeographical features below this depth and great variability of conditions above it. Indications of climatic changes in several periods of low sea level with rise of detritus and high frequencies of grass pollen, due to savanna development in response to colder climatic conditions)

Carbonel, P., C. Caratini & J. Gayet (1987)- Le sondage Misedor- Synthese des etudes geologiques. In: A. Combaz (ed.) Geochimie organique des sediments plio-quaternaires du delta de la Mahakam (Indonesie)- le sondage Misedor, Editions TECHNIP, Paris, p. 173-181.
('The Misedor well- synthesis of geologic studies'. Misedor shallow cored well in Handil Field area of Mahakam Delta penetraded Quaternary (0-400m) and Late Pliocene clastic sediments (400- 638.6m). Four transgressive- regressive sequences in deltaic setting)

Carbonel, P. & T. Hoibian (1988)- The impact of organic matter on ostracods from an equatorial deltaic area, the Mahakam Delta, Southeastern Kalimantan. In: T. Hanai et al. (eds.) Evolutionary biology of Ostracoda, its fundamentals and applications. Proc. 9th Int. Symposium Ostracoda, Shizuoka, Elsevier Developments in Paleontology and Stratigraphy 11, p. 353-366.
(On ostracod fauna in Mahakam delta area. In front of delta mouth number of species decreases, Hemicytheridea reticulata relatively common, and ornamentation of polymorphic species decreases. Between delta mouths ornamentation increases, probably due to less degradation of organic matter here)

Carbonel, P., T. Hoibian & J. Moyes (1987)- Ecosystemes et paleoenvironnements de la zone deltaique de la Mahakam depuis la fin du Neogene. In: A. Combaz (ed.) Geochimie organique des sediments plio-quaternaires du delta de la Mahakam (Indonesie)- le sondage Misedor, Editions TECHNIP, Paris, p. 85-135.
('Ecosystems and paleoenvironments of the Mahakam Delta zone since the end of the Neogene'. Comprehensive overview of delta plain environments and geographic distribution of benthic foraminifera (4 assemblages) and ostracodes (5 assemblages). With data from Misedor core hole on Handil Anticline)

Carbonel, P. & J. Moyes (1987)- Late Quaternary paleoenvironments of the Mahakam Delta (Kalimantan, Indonesia). Palaeogeogr. Palaeoclim. Palaeoecology 61, 3-4, p. 265-284.
(Paleoenvironments in deltas can be defined by biological tracers, mainly benthic foraminifera and ostracods. In 200m of core these biomarkers show four transgressive marine sequences since 125,000 yr B.P., with sharp asymmetry in a transgression/progradation cycle)

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(Sequence stratigraphic subdivision of >5000m of Early Miocene sediment in onshore Kutai Basin establishing 'high-resolution' palynology zonation between 20-16 Ma)

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(Unpublished Shell report. Hutchison 1996: Embaluh Group of the Upper Mahakam and Boh rivers of Kalimantan yielded M Eocene planktonic foraminifera)

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(S Kalimantan Offshore Area altered pre-Tertiary, overlain separated unconformably by Eocene-Recent sediments. Karimundjawa Ridge separates main basins to E from Billiton Basin in W. Billiton Basin Oligocene-earliest Miocene in continental facies, more marine conditions in E with variable amounts of limestone)

Cavanna, G.R. E. Caselgrandi, E. Corti, A. Amato del Monte, M. Fervari, M. Bello, J. Aruan and C. Golding (2012)- Integrating the geophysical characterization of seismic thin beds with stochastic reservoir modeling: a case study from the Kutei Basin (Offshore Kalimantan, Indonesia). In: Proc. Int. Petrol. Techn. Conf. (IPTC), Bangkok 2012, IPTC 14570, 17p.

Chambers, J.L.C., I. Carter, I.R. Cloke, J. Craig, S.J. Moss & D.W. Paterson (2004)- Thin-skinned and thick-skinned inversion-related thrusting- a structural model for the Kutai Basin, Kalimantan, Indonesia. In: K.R. McClay (ed.) Thrust tectonics and hydrocarbon systems, American Assoc. Petrol. Geol. (AAPG), Mem. 82, p. 614-634.
(Regional compression reactivated basement extensional faults, inverting Paleogene depocenters as anticlines often flanked on one side by basement thrusts. Neogene section detached near top overpressured zone and deformed as thin-skinned fold-thrust belt. Response to inversion of Paleogene rift section controlled in part by heterogeneity in shallow section: syndepositional loading, delta progradation, normal faults, facies changes)

Chambers, J.L.C. & T. Daley (1995)- A tectonic model for the onshore Kutai Basin, East Kalimantan, based on an integrated geological and geophysical interpretation. Proc. 24th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 111-130.
(Models for Samarinda Anticlinorium included gravity slumping, shale diapirism and thrusting. Structures in Runtu Block are rigid deltaic- shelf sediments deformed into box-folds above folded shaly prodelta- bathyal sediments. Detachment at top or within over-pressured shales at base of Lower Miocene deltaics. Gravity data suggests semi-regional uplifts of over-pressured strata. Basement not visible on seismic, but gravity and aeromagnetics show it between 7-14 km. Models imply small amounts of shortening across near-surface structures and relatively large uplift. C Kutai Basin inversion of deep Paleogene rift basin gave rise to broad regional folding of shale-rich over-pressured section. Closer spaced folding in near surface, normally pressured, less ductile deltaic -shelf section of Samarinda Anticlinorium result of same inversion)

Chambers, J.L.C. & T.E. Daley (1997)- A tectonic model for the onshore Kutai Basin, East Kalimantan. In: A.J. Fraser, S.J. Matthews & R.W. Murphy (eds.) Petroleum Geology of Southeast Asia. Geol. Soc. London, Spec. Publ. 126, p. 375-393.
(Similar to above paper)

Chambers, J.L.C. & S. Moss (1999)- Depositional modelling of rift episodes and inversion of the Kutei Basin, Kalimantan, Indonesia. Petroleum Expl. Soc. Australia (PESA) Journal, 27, p. 9-24.
(Tertiary facies distributions in Kutai Basin re-interpreted and used to build models of tectonic basin evolution and depositional environments arrangements in relationship to major basin phases. Rift-related depocentres may offer alternative exploration target to proven Miocene systems. New understanding of basin development is important for appreciation of resource distribution in this and similar rift basins of Borneo and SE Asia)

Christensen, A.N., C. Jones, L.B. Kocijan, H. Booth, S. Rouxel & B. Kunjan (2018)- Airborne gravity gradiometer survey over the Pelarang Anticline, onshore Kutai Basin, Indonesia. In: Proc. Australian Exploration Geoscience Conf. (AEGC 2018), Sydney, p. 1-6. *(Extended Abstract)*
(online at: http://www.publish.csiro.au/ex/pdf/ASEG2018abT7_3B)
(Pelarang Anticline part of NNE-SSW-trending Samarinda Anticlinorium in detached fold-thrust belt of onshore Kutai basin. Detachment fold, ~30km long, with steeply dipping flanks. Airborne gravity shows anticline associated with strong positive gravity anomaly, possibly from ~2000m high, high-pressured shale core. Two commercial hydrocarbon accumulations, Sambutan and Mutiara)

Christensen, K., A. Nurhono, R.U. Zahar, S. Chipchase, Marwoto, D. Mochtar & B. Simmonds (1998)- The Sepinggan Field: reducing field modelling and reserve calculation cycle time. Proc. 26th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 329-339.

(Sepinggan Field off E Kalimantan complexly faulted deltaic sandstone, shales, and minor carbonates. In deltaic section only mappable units are coals. Over 100 M-L Miocene reservoir zones over more than 5,000')

Cibaj, I. (2009)- A fluvial series in the Middle Miocene of Kutei Basin: a major shift from Proto-Mahakam shallow marine to the continental environment. In: Variations in fluvial-deltaic and coastal reservoirs deposited in tropical environments, AAPG Hedberg Conf., Jakarta 2009, 11p. *(online at: www.searchanddiscovery.com:16080/abstracts/pdf/2010/hedberg_indonesia/abstracts/ndx_cibaj.pdf)*
(In Proto-Mahakam delta outcrops early M Miocene fluvial sand-rich interval, ~700-800m thick, above deeper water marine facies, and overlain by more marine deltaic series)

Cibaj, I. (2010)- Fluvial channel complexes in the Middle Miocene of Lower Kutei Basin, East Kalimantan- the stacking pattern of sediments. Proc. 34th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA10-G-053, 13p.
(600m thick M Miocene(N9-N13) section exposed near Samarinda. Basal Batu Putih reefal carbonates (called 10.5 Ma_mfs, but on Fig 1 shown as NN4-NN5= 14-18 Ma; called N8 by Allen & Chambers 1998) abruptly overlain by fluvial channel sands, flood plain shales and 1-3m thick coals. Stacked fluvial parasequences, each 40-50m thick. Transition to fluvial deposits interpreted as SB 10.2 Ma (likely older?; JTvG), with influx of coarse-grained sediment tied to tectonic uplift in hinterland)

Cibaj, I. (2011)- Channel-levee complexes in the slope turbidites of Lower Kutei Basin, East Kalimantan. Proc. 35th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA11 G-078, 18p.
(Description of geometry of sandstone reservoirs in slope turbidite channel- levee complexes in outcrop near Samarinda)

Cibaj, I. (2011)- Channel-levee facies and sea floor fan lobes in the turbidites of Lower Kutei Basin, East Kalimantan. Berita Sedimentogi 21, FOSI- IAGI, p. 15-21.
(Online at: www.iagi.or.id/fosi/files/2011/06/FOSI_BeritaSedimentologi_BS-21_June2011_Final.pdf)
(New outcrops of late Early- Middle Miocne (NN4-NN5) clastics and Batu Putih limestones on Samarinda Anticlinorium NW of Samarinda. Channel-levee complexes/ slope turbidites and debris flows below Batu Putih carbonates, which are thought to represent shelf break environment. Similar to paper above)

Cibaj, I. (2013)- Miocene stratigraphy and paleogeography of Lower Kutei Basin, East Kalimantan- a synthesis. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-090, p. 1-24.
(Review of 3500m thick Miocene section exposed in Samarinda area, Lower Kutei basin, at E flank of Separi anticline. Ranging in age from Late Burdigalian (zone NN4, ~17 Ma) to E Tortonian (~10 Ma). Overall regressive stacking pattern of deposits from slope turbidites of Hutunan village section, through shallow marine and deltaic deposits to fluvial deposits of Harapan Baru section at top.

Cibaj, I., U. Ashari, J.A. Dal, V. Mazingue & M. Bueno (2015)- Sedimentology and stratigraphic stacking patterns of the Sisi-Nubi Field Producing Interval, Lower Kutei Basin, East Kalimantan, Indonesia. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-245, 33p.
(Sisi-Nubi field in shallow marine area off Mahakam Delta. Four third-order Genetic Sequences orders (in lower regressive and upper overall transgressive stacking mode) and numerous 5th order parasequences recognized in ~1800-2000m thick U Miocene (~7-5 Ma) Producing interval. Fresh-water sands throughout. In Upper Fresh Water Interval locally small (2-5 km wide) patch reefal carbonate buildups)

Cibaj, I., F. Lafont, E. Chavanne & G. de Tonnac (2006)- Upper Miocene fluvial deposits offshore modern Mahakam Delta. Proc. Jakarta 2006 Int. Geosc. Conf. Exhib., Indon. Petroleum Assoc., Jakarta, 06-PG-29, 4p.
(Producing Upper Miocene (Messinian) Fresh Water Sands Fm offshore Mahakam Delta in Sisi-Nubi Field previously interpreted as deltaic sequence. Recent 3D seismic shows meandering features, evidence of fluvial deposit 30 km offshore from modern delta and <10 km from present shelf break)

Cibaj, I., B. Lambert, U. Ashari, B. Giriansyah, L. Schulbaum, P. Imbert & P. Cordelier (2014)- Sedimentology and stratigraphic stacking patterns of the Peciko Field Main Zone, Lower Kutei Basin, East Kalimantan, Indonesia. Proc. 38th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA14-G-141, 22p.
(Four different orders of stratigraphic stacking pattern in Main Zone of offshore Kutei basin Peciko gas field. Main Zone is 2000m thick M-L Miocene (11-7 Ma) second order Genetic Sequence, subdivided into six ~300m thick third order sequences, subdivided into numerous individual deltaic cycles)

Cibaj, I., B. Lambert, P. Zaugg, U. Ashari, J.A. Dal & P. Imbert (2014)- Stratigraphic stacking patterns of the Mahakam Area, Lower Kutei Basin, East Kalimantan, Indonesia. Proc. 38th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA14-G-145, 27p.
(M Miocene- Recent Mahakam Delta system in Lower Kutei Basin subdivided into four main 2nd order cycles, with boundaries (defined as Base Max. Flooding surfaces) at 15, 11, 7 and 5 Ma. Correspond to major E-ward (basinward) shifts of shelf break/ depocenters thickness)

Cibaj, I., N. Syarifuddin, U. Ashari, A. Wiweko & K.A. Maryunani (2007)- Stratigraphic interpretation of Middle Miocene Mahakam Delta deposits: implications for reservoir distribution and quality. Proc. 31st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA07-G-116, p. 1-11.
(Samarinda area outcrops of 450m M Miocene deltaic deposits studied. Overall thickening-upward sequences interpreted as indicating regressive evolution of deltaic parasequences)

Cibaj, I. & A. Wiweko (2008)- Recognition of progradational shelf deposits in the Middle Miocene of Kutai Basin. Proc. 32nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA08-G-171, p. 1-14.
(Outcrop study of M Miocene progradational deltaic deposits NW of Samarinda. Upward transition from a slope-basin environment to slope and from slope to shelf. No documentation of age control)

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(Serang field N of Attaka field, N Mahakam, E Kalimantan, evolved from non-commercial discovery in 1973 to a field with proven reserves of 35 MBO and 275 GCF in Late Miocene deltaic sands)

Clark, T., M. Turk, J. Hadiwijoto & Y. Partono (1999)- Serang Field- discovery within a seismic "fault shadow". Proc. 27th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 323-341.
(Serang field off E Kalimantan. Structure for long time hidden in shadow under large listric normal fault. Main reservoir Upper Miocene fluvio-deltaic channel sands. Reefal carbonates preferentially developed on upthrown block in M Miocene- early late Miocene (reservoir quality rel. poor) and in Pliocene (very porous))

Clauer, N., T. Rinckenbach, F. Weber, F. Sommer, S. Chaudhuri & J.R. O'Neil (1999)- Diagenetic evolution of clay minerals in oil-bearing Neogene sandstones and associated shales, Mahakam delta basin, Kalimantan, Indonesia. American Assoc. Petrol. Geol. (AAPG) Bull. 83, 1, p. 62-87.
(Study of clays in Handil and Tunu fields. Cllay fraction of Mahakam Delta Basin mixed-layer illite/smectite, kaolinite/dickite, detrital illite, and chlorite. Hydrocarbon generation took place in deeper synclinal zones and that oil migrated upward with brines, probably inducing most of illitization in upper sequence)

Cloke, I.R. (1997)- Structural controls on the basin evolution of the Kutai Basin and Makassar Straits. Ph.D. Thesis, University of London, p. 1-376. *(Unpublished)*
(Flexural modelling of Neogene load of Mahakam Delta suggests sediments 20 km landward of present day shelf-break loaded lithosphere with high elastic thickness, corresponding to oceanic lithosphere of 47 Ma. Landward of this point, the elastic thickness is less and suggesting stretched continental crust.)

Cloke, I.R., J. Craig & D.J. Blundell (1999)- Structural controls on the hydrocarbon and mineral deposits within the Kutai Basin, East Kalimantan. In: K.J.W. McCaffrey et al. (eds.) Fractures, fluid flow and mineralization, Geol. Soc., London, Spec. Publ. 155, p. 213-232.

(Deep Kutai Basin formed in M Eocene extension, linked to opening of Philippines Sea, Celebes Sea and Makassar Straits. Seismic profiles across N Kutai Basin show M Eocene NNE-SSW and N-S half-graben. Late Oligocene extension on NW-SE trending faults, reactivating basement structures. Syn-rift coals sufficiently deeply buried to generate hydrocarbons prior to inversion. Shortening since E Miocene resulted in breaching of traps and generation of new traps. M Eocene, Late Oligocene- E Miocene and Plio-Pleistocene volcanic activity set up several mineral deposits. Reactivation of NW-SE and NE-SW trending basement structures controlled location of hydrocarbon and mineral deposits)

Cloke, I.R., J. Milsom & D.J.B. Blundell (1999)- Implications of gravity data from East Kalimantan and the Makassar Straits: a solution to the origin of the Makassar Straits? J. Asian Earth Sci. 17, 1-2, p. 61-78.
(Gravity modeling and flexural backstripping suggest N Makassar basin underlain by M Eocene oceanic crust)

Cloke, I.R., S.J. Moss & J. Craig (1997)- The influence of basement reactivation on the extensional and inversional history of the Kutai Basin, Eastern Kalimantan. J. Geol. Soc. London 154, p. 157-161.
(Kutai basins formed in M- Late Eocene above Late Cretaceous/Early Tertiary orogenic complex. Basement fabrics influenced extension and inversion. Basement fabric on margins and Tertiary cover dominated by NE-SW, NW-SE and NNE-SSW-trending structures. Larger scale NW-SE narrow linear gravity lows cut NNE-SSW highs on gravity data within basin. NNE-SSW basin-bounding faults overlap in right stepping en-echelon manner. Opposing antithetic and synthetic half-grabens linked by oblique NW-SE transfer faults. Inversion utilized extensional faults as reverse faults; however, NW-SE-oriented structures were reactivated as zones of lateral offset along fold-thrust belt, whilst fault kinks oriented NE-SW reactivated as oblique-slip reverse faults)

Cloke, I.R., S.J. Moss & J. Craig (1999)- Structural controls on the evolution of the Kutai Basin, East Kalimantan. J. Asian Earth Sci. 17, p. 137-156.
(Kutai Basin formed in M Eocene by extension linked to opening of Makassar Straits. N margin inverted NNE-SSW trending Eocene half-grabens. Late Oligocene extension on NW-SE trending en-echelon faults under different stress regime, indicating rotation of extension direction between 45-90°. Early Miocene N6-N8 inversion along E-facing half-grabens on N and S margins. WNW-vergent thrusts indicate compression from ESE. Miocene collisions with N and E Sundaland triggered punctuated basin inversion. Inversion concentrated in weak continental crust below Kutai Basin and various Sulawesi basins, while stronger oceanic crust or attenuated continental crust of Makassar Straits acted as passive conduit for compressional stresses)

Combaz, A. & M. de Matharel (1978)- Organic sedimentation and genesis of petroleum in Mahakam Delta, Borneo. American Assoc. Petrol. Geol. (AAPG) Bull. 62, 9, p. 1684-1695.
(Mahakam delta organic material in source rocks generally continental and vegetal origin. Oils paraffinic, increase in gravity with depth, and very low sulfur content. Accumulations probably not far from source rocks, but originate at greater depths. Hydrocarbons could have migrated vertically about 3000m along faults)

Core Laboratories (1996)- Regional sequence stratigraphic and geochemical study of the Tarakan Basin, Northeast Kalimantan., p. *(Unpublished Multi-client study)*

Core Laboratories (2006)- Deep water reservoirs, Asia- a regional evaluation, Phase I- Indonesia and The Philippines. p. *(Unpublished Multi-client study)*
(Study of deep water wells from Makassar Straits, Sulu Sea, S China Sea)

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(Introduction to Kalimantan geology and summary of oil and gas fields. Oil seeps first described from E Kalimantan in 1865, first oil production in 1899 on Tarakan Island by BPM predecessor)

Crumeyrolle, P. (2003)- Two contrasting styles of Lowstand Deltaic wedges: the Roda Sandstone (Spain) as seen from outcrops and the Late Pleistocene Mahakam Delta (Indonesia) as imaged from 3D and 2D Hr Seismic profiles. In: H.H. Roberts et al. (eds.) Shelf margin deltas and linked down slope petroleum systems- Global

significance and future exploration potential, 23rd Ann. Gulf Coast SEPM Found. Perkins Conf., Houston, p. 639-645.
(During period of continuous sea level fall Mahakan Delta distributary channels converted into incised valleys with adjacent dendritic tributary channels. Main incised valleys reached shelf break, transporting sediments beyond shelf break. During sea levelrise incised valleys flood and remain largely underfilled)

Crumeyrolle, P. & I. Renaud (2003)- Quaternary incised valleys and low stand deltas imaged with 3D seismic and 2D HR Profiles, Mahakam Delta,Indonesia. AAPG Int. Conference, Barcelona 2003, Search and Discovery Art. 90017, 8p.
(online at: www.searchanddiscovery.com/abstracts/pdf/2003/intl/extend/ndx_82692.pdf)
(Review of Late Pleistocene- Holocene of Mahakam Delta , showing complete cycle of lowstand (incised valleys and prograding lowstand delta)- transgressive (up to 40m thick Halimeda carbonate buildups on interfluves of incised valleys on shelf)- highstand sequence tracts (prograding clastics of modern delta))

Crumeyrolle, P., I. Renaud & J. Suiter (2007)- The use of two- and three-dimensional seismic to understand sediment transfer from fluvial to deepwater via sinuous channels: example from the Mahakam shelf and comparison with outcrop data (South Central Pyrenees). In: R.J. Davies et al. (eds.) Seismic geomorphology: applications to hydrocarbon exploration and production, Geol. Soc., London, Spec. Publ. 277, p. 85-103.
(Stratigraphy and depositional environments of Pleistocene Mahakam delta lowstand delta/ fans, as mapped from seismic, used to interpret outcrops of Sobrarbe delta deposits in Pyrenees)

Curiale, J.A., J. Decker, R. Lin & R.J. Morley (2006)- Oils and oil-prone coals of the Kutei Basin, Indonesia. Abstract AAPG Int. Conf. Exh., Perth 2006, American Assoc. Petrol. Geol. (AAPG) Bull. 90 Program Abstracts.
(Kutei Basin Miocene and Eocene coals have oil-prone source rock potential. Nine Miocene and Eocene coals (15- 36 Ma) on Borneo compared with oils from same basin. Several coals qualify as oil-prone potential source rocks, but no single coal correlatable with any single oil)

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(Thirty-two oils from Miocene sands of Kutei Basin examined. Isotopic data discriminate single megafamily of oils dominated by angiosperm debris. Separable into two sub-families: onshore and continental shelf oils (low lupanoid ratio) and continental slope oils (high lupanoid ratio))

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('Biogenic gas and mineral elements in Kapuas delta sediments, West Kalimantan'. Bacterial-origin biogenic gas in Quaternary clastic sediments of shallow boreholes in Kapuas Delta)

Darman, H. (1998)- Carbonate slope deposit of Bengalun River, East Kalimantan. Berita Sedimentologi (Indon. Sediment. Forum, FOSI) 10, p. 4-6.
(Bengalon River near NE margin Kutei Basin exposes thick Paleogene and Neogene deep marine to fluvio-marine sediments. E Miocene (zone N4) bathyal marine calcareous shales with bioclastic calci-turbidites. Presence of carbonate sediments suggests nearby carbonate-producing shelf)

Darman, H. (1999)- Extracting flow pattern and point-bar characteristics of a modern river: a case study from the Wahau River, East Kalimantan. Proc. 27th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 403-414.
(Study of modern Wahau River deposition)

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(Tarakan Basin initiated simultaneously with formation of Celebes Sea in M-L Eocene until end of E Miocene. Deltaic sedimentation from W in M Miocene- Pliocene, with significant growth faulting. Latest tectonic phase latest Pliocene- Recent transform movement along 3 major (Semporna, Maratua, N Mangkalihat) and several smaller sinistral wrench faults crossing Makassar Straits, causing up to 1000m of local inversion uplift)

Darman, H. (2003)- Seismic expression of shelf breaks: examples from Borneo/Kalimantan basins. Berita Sedimentologi (Indon. Sediment. Forum FOSI) 18, p. 8-13.
(Examples of shelf breaks/clinoforms on previously published seismic examples from offshore Kutai, Tarakan, Sandakan, and NW Borneo)

Darman, H. (2017)- The Paleogene of East Borneo and its facies distribution. Berita Sedimentologi (Indon. Sediment. Forum, FOSI- IAGI) 37, p. 5-13.
(online at: www.iagi.or.id/fosi/files/2017/03/BS37-03032017.pdf)
(Review of East Kalimantan Barito, Kutei and Tarakan basins, all with M Eocene - U Oligocene Paleogene sediments. M Eocene dominated by fluvial settings, U Eocene common coastal to shallow shelf deposits. Carbonates developed in Oligocene in N and S; in Kutei Basin mainly shelf to bathyal clastics)

Darman, H. & K. Handoyo (2006)- "Deltaicò reservoir characteristics of giant fields of the Kutei and Baram Basins, Borneo. AAPG 2006 Int. Conf. Exhibition, Perth 2006, Search and Discovery Art. 20191 (2013), 6p. *(Abstract and Presentation)*
(online at: www.searchanddiscovery.com/documents/2013/20191darman/ndx_darman.pdf)
(Giant fields in two basins surrounding Borneo, Baram and Kutei, producing oil and gas from Miocene deltaic-shallow marine sandstones. Sandstones generally quartz dominated and derived from central part of Borneo. Structures of fields in Kutei Basin generally larger, but reservoirs less continuous (distributary mouth bars, interconnected by channel cuts))

Darman, H. & K. Handoyo (2008)- Deltaic reservoir characteristics of Kutei and Baram giant fields. In: J.A. Katili et al. (eds.) Tectonics and resources of Central and Southeast Asia (Halbouty volume), Pusat Survei Geol., Bandung, Spec. Publ. 34, p. 109-123.
(Kutei and Baram giant oil-gas fields both produce mainly from Miocene deltaic- shallow marine sandstones. These are part of progradational sequences, formed after large amounts of generally quartz-rich sediments began to pour from C Kalimantan into deep basins to N, W and E of Borneo in Early Miocene. Sands in Kutei basin structures generally larger, but deltaic reservoirs discontinuous. Baram coastal and shallow marine sandstones generally more continuous, but structures smaller)

Darman, H. & Y. Zaim (1994)- Sedimentologi endapan konglomerat batubara pada facies sungai, di daerah Samarinda, Kalimantan Timur. Buletin Geologi (ITB) 24, 1-2, p. *(also in Berita Sedimentologi 17, 2002)*
('Sedimentology of coal conglomerate deposits within channel facies in Samarinda Region, East Kalimantan'. Conglomerates with rounded-subrounded coal fragments in channel deposits of fluvial-deltaic Balikpapan Fm in Samarinda Region. Coal fragments may be transported wood or reworked fragments from older coal seam)

Darmawan, W., A. Subekti, E. Guritno, J. Smart, H. Mustapha, B. Nugroho & A. Bachtiar (2015)- Structural and stratigraphic evolution and implications for Paleogene syn rift exploration in North East Bangkanai, Upper Kutai Basin, Indonesia. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-112, 15p.
(NE Bangkanai PSC in NW onshore Upper Kutai Basin underwent M-L Eocene rifting (deltaic and shallow marine clastics overlain by Nummulites limestones) and NW-SE strike-slip fault reactivation and E Miocene E-W directed compression, which formed NE-SW and N-S trending inversion structures. Regional uplift in E Miocene triggered start of regressive system and deposited fluvio-deltaic to marine sediments of M Miocene Balikpapan Fm. Latest tectonism in Borneo in Pliocene- Recent. Syn-rift exploration play)

Daulay, B. (1994)- Tertiary coal belt in Eastern Kalimantan, Indonesia: the influence of coal quality on coal utilization. Ph.D. Thesis, Wollongong University, Australia, p. 1-326.
(online at: http://ro.uow.edu.au/theses/1413/)
(E Kalimantan second largest coal resources in Indonesia after Sumatra coalfields (Bukit Asam, Ombilin), but currently has highest coal production. Coal in Kutei, Barito, Asem Asem and Tarakan Basins, which developed as result of rifting in the Makassar Strait in mid-Tertiary. Economic coal deposits of Miocene age in all basins; economic Eocene coals only in Barito and Asem Asem Basins. Evaluation of lateral and vertical variations in coal thickness and chemical and physical properties, with discussion of economic uses of E Kalimantan coals. Vitrinite and liptinite dominant macerals in both Eocene and Miocene coals. Inertinite is minor component, but higher in Miocene coals. Mineral content low in most coals except in some Eocene coals. Rank of Miocene coals soft brown coal to high volatile bituminous, Eocene coals subbituminous- high volatile bituminous. Miocene coals in Sangatta area locally altered to semi-anthracite by igneous intrusion.)

Daulay, B. & H. Panggabean (2001)- Batubara sebagai sumber hidrokarbon: studi kasus cekungan Kutai dan Barito. J. Geologi Sumberdaya Mineral 11, 118, p. 1-17.
('Coal as a source of hydrocarbons: a case study in the Kutai and Barito Basins'. Coals good potential petroleum source rocks)

Debec, P. & G.P. Allen (1996)- Late Quaternary glacio-eustatic sequences and stratal patterns in the Mahakam delta. In: C.A. Caughey et al. (eds.) Proc. Int. Symp. on Sequence Stratigraphy in SE Asia, Jakarta 1995, Indonesian Petroleum Association IPA), p. 381. *(Abstract only)*
(Late Quaternary eustatic cycles formed small-scale depositional sequences in Mahakam delta. High frequency and asymmetry of Pleistocene eustatic cycles and rapid rates of sea-level rise and fall led to differences from published sequence stratigraphic models. 3D seismic maps show narrow, incised fluvial valleys dissected by dendritic erosion pattern (= converted highstand delta distributary channels). Incised valleys same size as deltaic distributaries, relatively straight channels, 1-1.5 km wide and up to 30m of incision. Due to rapid sea-level rise and low tide range transgressive deposits thin and do not fill incised valleys (remain as prominent valley systems on transgressed shelf). During highstand delta progradation shelf valleys fill with prodelta mud. Each depositional sequence two episodes of deltaic progradation: early lowstand, and highstand systems tract)

De Man, E., A. Gantyno, S. Huang, K. Petersen, E. Saferi, R. Widiarti, S. Wertanen & S. Rahardjanto (2012)- CBM operational lessons learned- Barito Basin. Proc. 36th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA12-E-194, p. 1-20.

De Matharel, M., G. Klein & T. Oki (1976)- Case history of the Bekapai Field. Proc. 5th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 69-93.
(1972 Bekapai oil field off Mahakam Delta on NNE trending anticline. Two main phases of delta progradation, separated by ?E Pliocene? marine transgression. Hydrocarbons in delta front sands of lower delta)

De Matharel, M., P. Lehman & T. Oki (1980)- Geology of the Bekapai Field. In: M.T. Halbouty (ed.) Giant oil and gas fields of the decade 1968-1978, American Assoc. Petrol. Geol. (AAPG), Mem. 30, p. 459-470.
(Bekapai Field 1972 discovery 15 km off Mahakam Delta. Large faulted anticline, multiple stacked deltaic reservoir sands between 1300-1600m)

De Neve, G.A. (1947)- A new *Archaias* species from East Borneo. Bull. Bureau of Mines and Geological Survey of Indonesia 1, 1, p. 13-16.
(New larger foraminifer species Archaias vandervlerki from Miocene Poelobalang beds, Bengalan river region, E Kalimantan. (May be same asPseudotaberina malabarica, Burdigalian (Banner & Highton 1989))

Demchuk, T.D & T.A. Moore (1993)- Palynofloral and organic characteristics of Miocene bog-forest, Kalimantan, Indonesia. Organic Geochem. 20, 2, p. 119-134.
(20m-thick Miocene Warukin Fm Sarongga lignite from SE Kalimantan distinct vertical variations in palynofloras. Three palynofloral zones of bog-forest and mangrove affinity. Palynofloras and low sulphur content suggest predominantly freshwater deposition. Plant material in Miocene lignite mainly derived from

arborescent angiosperms Increasing abundances of mangrove pollen suggests encroachment of mangrove swamp toward bog-forest. Little variation in organic characteristics within seam)

Denney, D. (2008)- Reviving the mature Handil Field; from integrated reservoir study to field application. J. Petroleum Technology 60, 1, p. 63-65.
(Summary of Herwin et al. (2007) paper. Mahakam Delta 1974 Handil field production declined from 200,000 BOPD in late 1970s to 12,500 BOPD in 2003. Infill drilling and optimization of enhanced-oil-recovery increased production to 23,000 BOPD)

De Sitter, L.U. (1932)- Nota betreffende de foraminiferenfauna van het Neogeen van Koetai. Jaarboek Mijnwezen Nederlandsch-Indie 59 (1930), Verhandelingen 3, p. 122-125.
('Note on the foraminiferal fauna of the Neogene of Kutai'. Summary of foraminifera distribution and BPM stratigraphy of Kutai Basin, E Kalimantan. Boundary between Beboeloe and Poeloe Balang stage characterized by extinction of Eulepidina. Alveolinella (=Flosculinella) bontangensis restricted to Poeloe Balang stage. With detailed Neogene foraminifera range chart)

De Sitter, L.U. (1948)- Het Quartair in het kustgebied van Koetei ten N van de Mahakam rivier. Geologie en Mijnbouw 10, 9, p. 177-183.
(online at: https://drive.google.com/file/d/0B7j8bPm9Cse0Y2VnbkxZMHp5eFE/view)
('The Quaternary in the coastal region of Kutai, North of the Mahakam River'. Description of Quaternary coastal terraces and drainage pattern, influenced by peneplain uplift)

Dharmasamadhi, I.N.W. & S.W. Reksalegora (2009)- Using pressure data to build a stratigraphic framework in the deepwater Ranggas Field, Kutai Basin- East Kalimantan. Proc. 33rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA09-G-181, 19p.
(Ranggas field 2001 oil-gas discovery mainly in Late Miocene slope channels in 1585m water depth. Pressure analysis indicates four laterally-continuous pressure sealing shales that can be used for correlation. Numerous thin shales, less than 100' thick, have potential to seal over an extensive area)

Di Martino, E. & P.D. Taylor (2012)- Systematics and life history of *Antoniettella exigua*, a new genus and species of cribrimorph bryozoan from the Miocene of East Kalimantan (Indonesia). Boll. Soc. Paleontologica Italiana 51, 2, p. 99-108.
(online at: http://paleoitalia.org/media/u/archives/03.DiMartinoTaylor_2012_BSPI_512.pdf)
(New cheilostome bryozoan from rocks around Burdigalian-Langhian boundary near Bontang, Kutai Basin. Colonies encrust undersides of platy scleractinian corals that formed patch reefs in turbid shallow waters)

Di Martino, E. & P.D. Taylor (2012)- Morphology and palaeobiogeography of *Retelepralia*, a distinctive cheilostome bryozoan new to the fossil record. Neues Jahrbuch Geol. Palaont. Abhandl. 263, p., 67-74.
(New species of bryozoan, Retelepralia macmonagleae, from, Late Oligocene W of Sukau, E Sabah)

Di Martino, E. & P.D. Taylor (2014)- Miocene bryozoa from East Kalimantan, Indonesia. Part I: Cyclostomata and óAnascanô Cheilostomata. Scripta Geologica 146, p. 17-126.
(online at: www.scriptageologica.nl/cgi/t/text/get-pdf?c=scripta;idno=15146a02)
(Descriptions of 51 Miocene (late Burdigalian-Messinian) bryozoan species from 17 sections near Samarinda, Bontang and Sangkulirang in Kutai Basin. Eleven new species of Microeciella, Pseudidmonea, Cranosina, Parellisina, Vincularia and Canda. Bryozoans found mainly encrusting undersides of corals)

Di Martino, E. & P.D. Taylor (2015)- Miocene bryozoa from East Kalimantan, Indonesia. Part II: 'Ascophoran' Cheilostomata. Scripta Geologica 1486, p. 1-142.
(online at: www.scriptageologica.nl/cgi/t/text/get-pdf?c=scripta;idno=17148a01)
(Descriptions of 72 Miocene ascophoran-grade cheilostome bryozoa ((late Burdigalian-to Messinian) from 17 sections in E Kalimantan, Indonesian Borneo. Two new genera and 20 new species)

Di Martino, E., P.D. Taylor & K.G. Johnson (2015)- Bryozoan diversity in the Miocene of the Kutai Basin, East Kalimantan, Indonesia. Palaios 30, p. 109-115.
(123 species of bryozoans identified in Miocene (17.5- 6.1 Ma) limestones of E Kalimantan. Mainly encrusting species associated with plate-like scleractinian corals)

Di Martino, E., P.D. Taylor, V. Novak, N. Santodomingo, A. Rosler, J.C. Braga, K. Johnson & W. Renema (2012)- Bryozoans from a Langhian patch reef in East Kalimantan (Indonesia). In: Indo-Pacific Ancient Ecosystems Group (IPAEG) Conf., Catania 2012, Giornate Paleont. 12, 1p. *(Abstract only)*
(online at: http://ipaeg.org/content/bryozoans-langhian-patch-reef-east-kalimantan-indonesia)
(Langhian patch reef exposed near Bontang, E Kalimanta, with 61 species of bryozoans, almost double number of species (31) previously reported from Cenozoic of Indonesian Archipelago)

Djamas, Y.S. & E. Marks (1978)- Early Neogene foraminiferal biohorizons in E. Kalimantan, Indonesia. In: S. Wiryosujono & E. Marks (eds.) Proc. 2nd Working Group Mtg. Biostratigraphic datum-planes of the Pacific Neogene IGCP Project 114, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 1, p. 111-124.
(S Mangkalihat- N Kutai material allows some larger and planktonic foram zone calibrations:Late Oligocene N2-N3 correlates with Te1-4, Early Miocene N4-N5 zones correlate with Te5)

Djamil, A.H. & S.O. Bany (2005)- Exploration geology of Sebuku Block, offshore Kalimantan, Indonesia. Proc. 2005 SE Asia Petrol. Expl. Society (SEAPEX) Exploration Conf., Singapore, 21p. *(Abstract + Presentation)*
(Sebuku Block on Paternoster Platform. Makassar Graben kitchen with Eocene source rocks (Lower Tanjung lacustrine shales and fluvio-deltaic shales and coals). Lacustrine shale amorphous organic material (TOC 4-6%, Type II oil prone kerogen) and significant fresh water algae Pediastrum and Botryococcus. Fluvio-deltaic shale TOC 0.7- 2.54%, low HI, moderate gas potential. Coals TOC 20- 43% and HI 181-293, gas prone kerogen. Slicks from leaking gas-condensate and light oil in traps confirm Eocene source. Main reservoir Berai Lst, with gas in Makassar Straits-1 well. Carbonate deposited in basinal setting, with displaced material from adjacent reef/ platform margin. Fractured basement oil test in Pangkat-1. Berai Fm and U Warukin Fm reefal build-ups form exploration targets as well as clastic reservoirs of Lower Tanjung Fm in Makassar graben)

Doeglas, D.J. (1931)- Ostrakoden von N.O.-Borneo. Wetenschappelijke Mededeelingen Dienst Mijnbouw Nederlandsch-Indie, Bandung, 17, p. 25-54.
('Ostracodes from NE Borneo'. 16 species of Oligocene- U Miocene ostracodes from 43 localities in NE Kalimantan, sampled by Leupold. Includes 14 new species, 11 of genus Nesidea, one of Cythere, Cytheridea and Cythereis)

Dory, D.M. (1997)- Evolution of structures in the NE Kalimantan Basin, Indonesia. M.Sc. Thesis, University of London, 40p. *(Unpublished)*

Doutch, H.F. (1992)- Aspects of the structural histories of the Tertiary sedimentary basins of East, Central and West Kalimantan and their margins. BMR J. Australian Geol. Geophysics 13, 3, p. 237-250.
(online at: www.ga.gov.au/corporate_data/49556/Jou1992_v13_n3.pdf)
(Semitau ridge is ESE trending structural ridge spanning outcrops of Permo-Triassic foliated igneous rocks of Busang Complex in E and Embuoi Complex in Sanggau. Age of Plateau Sandstone in Ketangau Basin Late Eocene, possibly extending into Early Oligocene)

Douville, H. (1905)- Les Foraminiferes dans le Tertiaire de Borneo. Bull. Soc. Geologique France, ser. 4, 5, p. 435-464.
(online at: www.biodiversitylibrary.org/item/97249#page/487/mode/1up)
('The foraminifera in the Tertiary of Borneo'. M Eocene- Miocene larger forams from SE Kalimantan, collected by Buxtorf. Description of Spiroclypeus new genus and two new species S. orbioideus and S. pleurocentralis. No locality maps, but according to Verbeek (1908, p. 481) from Meratus Mts front between Rantau and Barabai)

Durand, B., A.Y. Huc & J.L. Oudin (1987)- Oil saturation and primary migration observation in shales and coals from the Kerbau wells, Mahakam Delta, Indonesia. Revue Inst. Francais Petrole (IFP) 45, p. 173-195.

Durand, B. & J.L. Oudin (1980)- Exemple de migration des hydrocarbures dans une serie deltaique: Le delta de la Mahakam, Kalimantan, Indonesie. Proc. 10th World Petroleum Congress, Colchester, UK, 2, p. 3-11.
('Example of hydrocarbon migration in a deltaic series: the Mahakam Delta, Kalimantan')

Dutrieux, E. (1991)- Study of the ecological functioning of the Mahakam delta (East Kalimantan, Indonesia). Estuarine, Coastal Shelf Science 32, 4, p. 415-420.
(Ecological functioning of Mahakam delta controlled by balance between influx of seawater during high tides and influx of continental water. Marine populations pronounced upstream to downstream zonation. Intermediate zones poor; richest near river mouth. Controlled mainly by physical factors, like salinity)

Duval, B. (2012)- Creative thinking led to 40 years of success in Mahakam, Indonesia. AAPG Int. Conf. Exhib., Singapore 2012, Search and Discovery Art. 20185, p. 1-41. *(Presentation)*
(online at: www.searchanddiscovery.com/documents/2012/20185duval/ndx_duval.pdf)
(Review of discovery of oil-gas fields in Mahakam delta since early 1970's)

Duval, B.C., C. Cassaigneau, G. Choppin de Janvry, B. Loiret & L.M. Alibi (1998)- Technology and exploration efficiency in the Mahakam delta province, Indonesia. Proc. 15th World Petroleum Congress, Beijing 1997, 2, p. 187-200.

Duval, B.C., G. Choppin de Janvry & B. Loiret (1992)- Detailed geoscience reinterpretation of Indonesia's Mahakam Delta scores. Oil and Gas J., August 10, 1992, p. 67-72.
(Brief review of Mahakam Delta petroleum geology/ petroleum system, based on OTC presentation)

Duval, B.C., G. Choppin de Janvry & B. Loiret (1992)- The Mahakam delta province: an ever changing picture and a bright future. Proc. 24th Ann. Offshore Technology Conf. (OTC), Houston, OTC 6855, p. 393-404.
(Mahakam Delta oil exploration started in 1888, with field geological investigations near oil and gas seepages. First oil discoveries at Sanga Sanga (1897) and Samboja (1909) in uplifted M Miocene sands. In 1970's several giant gas-oil fields discovered offshore. By 1985, proven and probable initial reserves ~2.6 GBO and 20-30 TCF gas.)

Duval, B.C., C. Cassaigneau, G. Choppin de Janvry, B. Loiret, M. Leo, Alibi & Y. Grosjean (1998)- Impact of the petroleum system approach to exploration and appraisal efficiency in the Mahakam Delta. Proc. 26th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 277-290.
(New petroleum system model to identify stratigraphic targets near identified kitchens. Peciko recognized as new giant gas- condensate field. Understanding trapping model and hydrodynamic component key factor. Sedimentological studies with pressure measurements greatly contributed to field model. Thin sand reservoirs more continuous than expected. Peciko model applied to Tunu field lead to spectacular reserve additions)

Dwiantoro, M., S. Notosiswoyo, K. Anggayana & A.H. Widayat (2013)- Paleoenvironmental interpretation based on lithotype and macerals variation from Ritan's lignite, Upper Kutai Basin, East Kalimantan. Procedia Earth Planetary Sci. 6, p. 155-162.
(Composition of Miocene lignites from Ritan area, Upper Kutai Basin, E Kalimantan. Dominant maceral group huminite (28-79%), liptinite (20-31.5%), inertinite group (6.5- 12%). Vitrinite Reflectance of huminite 0.23-0.35% (transition stage from peat to lignite))

Edwards, T. (2000)- Redevelopment of the Sembakung oilfield- NE Kalimantan. SEAPEX Press 5, 6, p. 30-38.
(Redevelopment of N Tarakan basin oil field)

Edwards, T. & R. Walia (2002)- Reinterpretation of the Sembakung oilfield, Kalimantan, Indonesia utilizing modern 3D seismic data. In: Canadian Soc. Expl. Geophysicists (CSEG) 2002 Geophysics Conv., 6p. *(Extended Abstract). (online at:*

https://cseg.ca/assets/files/resources/abstracts/2002/Walia_R_Reinterpretation_of_the_Sembakung_CAS-1.pdf)
(Sembakung field 1975 ARCO discovery onshore Tarakan (Tidung) basin, 80km N of Tarakan island, NE Kalimantan. 19 wells drilled until recent redevelopment. Producing since 1977 from stacked Miocene- Pliocene deltaic sands of Tabul Fm, in structurally controlled traps)

Ellen, H., M.M. Husni, U. Sukanta, R. Abimanyu, Feriyanto & T. Herdiyan (2008)- Middle Miocene Meliat Formation in the Tarakan Island, regional implications for deep exploration opportunity. Proc. 32nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA08-G-048, 20p.
(Most hydrocarbon exploration in Tarakan Basin focused on shallow Upper Miocene-Pliocene deltaics of Tarakan and Santul Fms. In Bangkudulis and Sembakung Fields hydrocarbons in M Miocene Meliat Fm fluvial-deltaic clastics, 630m thick in Barat 1, and likely associated with sand-bearing slope fan facies overlying early lowstand basin floor fan E of island. Base Meliat Fm blocky sand above 16.5 Ma SB, tied to uplift event. Top is transgressive limestone (Kapal Lst))

Emata, W.M., C. Irawan, Y.R. Sinulingga, B. Irawan & Cue Kalimantan (2016)- Challenge and hydrocarbon potential of SN structure on Kutai Basin of East Kalimantan. In: Soc. Petroleum Eng. (SPE) Ann. Caspian Techn. Conf., Astana, SPE-182539-MS, p. 1-11.

Endharto, M.A.C. (1997)- Reservoir characteristic of sandstones in Kutai Basin and its tectonic setting of East Kalimantan. Geol. Res. Dev. Centre Bull. 21, p. 127-149.
(Three sandstone types in Miocene- Recent of Sanga-Sanga PSC in Kutai Basin: (1) E Miocene moderate quartz and lithics; (2) late E Miocene- early M Miocene (lateN7- early N10) volcanogenic, reflecting increase in volcanic activity in W Kalimantan 17- 14.5 Ma; (3) M and Late Miocene (mid N10- N18) high-quartz main reservoirs, reflecting sediment recycling after basin inversion event at 14.5 Ma)

Endharto, M. & A. Bachtiar (1993)- Tipe provenansi dan proses diagenesa batupasir Miosen Awal, Cekungan Kutai, Kalimantan Timur. Proc. 22nd Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung. 2, p. 1044-1060.
('Provenance type and diagenetic processes of Lower Miocene sandstone, Kutei Basin, E Kalimantan'. QFL diagramssuggest 'Recycled orogen'-type provenance for Bebulu and Pemaluan sandstones)

Erriyantoro, E.S., N.I. Basuki, R. Heryanto, L.D. Santy (2011)- Provenance of the Kantu Formation Sandstones, Nanga Kantu Area, Ketungau Basin, West Kalimantan. Proc. 35th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA11-SG-038, p.
(Provenance of Kantu Fm sandstones in Nanga Kantu area, Ketungau Basin, W Kalimantan, most likely from Late Jurassic- E Cretaceous Kapuas Complex/ Lubok Antu Melange and E Cretaceous- M Eocene Rajang Group located N-NE of Ketungau Basin, which were deformed and uplifted by end- Eocene Sarawak Orogeny)

Fardiansyah, I., A. Budiman & C. Prasetyadi (2010)- Identifying rock compressibilities influenced on delta facies at Simpang Pasir Area, Samarinda Seberang, Kutei Basin and its related to reservoir characterization. Proc. 34th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA10-SG-011, 18p.

Febriadi, E. (2010)- PT Arutmin discovery of South Kalimantan coal. In: N.I. Basuki & S. Prihatmoko (eds.) Proc. MGEI-IAGI Seminar Kalimantan coal and mineral resources, Balikpapan 2010, p. 27-48.
(Description of coal exploration by PT Arutmin and geology of Eocene and M-L Miocene of Asem Asem and Pulau Laut sub-basins. Company started as affiliate of ARCO/ Utah in 1981, sold to BHP in 1987. Senakin coal mine exploited since 1988. Apparently mainly based on unpublished report of Friederich (1985))

Febrian W.A. & B. Sapiie (2013)- Tectonic inversion impact to coal cleat characteristics of Tanjung Formation, Karangintan Area, Barito Basin, South Kalimantan. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-SG-049, p. 1-18.

Felix, J. (1921)- Fossile Anthozoen von Borneo. Palaontologie von Timor, Schweizerbart, Stuttgart, 9, 15, p. 1-61.

('Fossil corals from Borneo'. Miocene corals from outcrops in four areas of Kutai Basin, collected by BPM geologists)

Ferguson, A.J. (2016)- Kutai Basin exploration: past and future, an example of the use of simpe play types and serendipity for successful exploration and develoment. Proc. IPA 2016 Technical Symposium, Indonesia exploration: where from- where to, Indon. Petroleum Assoc. (IPA), Jakarta, 32-TS-16, p. 1-17.
(Kutai Basin mature basin, with high success rates drilling on surface anticlines, many of which are inversions of growth faults in delta systems. Two main remaining play types are stratigraphic traps along flanks of structural highs (e.g. Tunu) and drilling for isolated pressure compartments in overpressure zone)

Ferguson, A. & K. McClay (1997)- Structural modelling within the Sanga Sanga PSC, Kutei Basin, Kalimantan: its implication to paleochannel orientation studies and timing of hydrocarbon entrapment. In: J.V.C. Howes & R.A. Noble (eds.) Proc. Int. Conf. Petroleum Systems of SE Asia and Australia, Indon. Petroleum Assoc. (IPA), Jakarta, p. 727-743.
(Sanga Sanga PSC four large fields in M and U Miocene deltaic sandstones in NNE-trending structures of Mahakam fold belt. Gravity glide and strike-slip models do not simulate observed structures; thrusting, inverted extensional faults and differential load models only partially simulate structures. Preferred combined tectonic model for Mahakam fold belt is inversion of delta growth faults to form inverted graben structures, termed inverted delta growth fault model. Change from overall extension to contraction started at 14.0 Ma. Structures trending NNE are close to perpendicular to applied stress and become inverted)

Feriansyah, L.T., J.L.C. Chambers, S.H. Dewantohadi, M. Syaiful, Priantono & D.N. Imanhardjo (1999)- Structural and stratigraphic framework of the Palaeogene in the northern Kutei Basin East Kalimantan. Proc. 27th Ann. Conv. Indon. Petr. Assoc. (IPA), Jakarta, p. 443-455.
(Kutei basin 4 phases: (1) M-L Eocene extension; (2) L Eocene- Oligocene sag; (3) L Oligocene- E Miocene renewed extension/ subsidence; (4) E Miocene- Recent delta progradation coincident with older depocentres inversion; axis of deformation moves progressively E with time. Rapid facies variations in small extensional depocentres (~20 km wide, up to 70 km long). Intrabasinal highs with thin clastics or limestones. More regional depocentre in post-rift phase, beginning end-Late Eocene. Inversion process created two deformation styles: (1) inversion anticlines in Paleogene;(2) detached tight anticlines in thick Neogene. Detached section same amount of shortening (10-15%) as deeper inverted section)

Fernandes, H. & Djuhaeni (2018)- Analisis stratigrafi sikuen interval Pliosen pada lapangan Bunyu Tapa, Kalimantan Utara. Bulletin of Geology (ITB) 2, 1, p. 175-196.
(online at: https://buletingeologi.com/index.php/buletin-geologi/issue/view/4/Paper-4%20vol.%202%20no.%201)
('Sequence stratigraphy analysis of the Pliocene interval at Bunyu Tapa field, North Kalimantan'. Pliocene Tarakan Fm in Bunyu Tapa oil field in N Kalimantan can be subdivided in 5 delta plain-dominated sequences)

Fitriadi, Z., D. Nugroho & N.I. Basuki (2017)- Studi tipe batuan dan pemodelannya di Blok X, Cekungan Barito. Bulletin of Geology (ITB) 1, 1, p. 65-76.
(online at: http://buletingeologi.com/index.php/buletin-geologi/issue/view/2/09_BG201621)
('Study of rock types and modeling in Block X, Barito Basin'. Interpretation of fluvial depositional facies of (Eocene) Lower Tanjung Fm in wells of Tanjung Field, Barito Basin, SE Kalimantan. Highest porosity-permeability in channel and point bar sands)

Friederich, M.C., T.A. Moore, M.S.W. Lin & R.P. Langford (1995)- Constraints on coal formation in Southeast Kalimantan, Indonesia. Proc. 6th New Zealand Coal Conf., Wellington, 1, p. 137-149.
(SE Kalimantan Eocene coal significantly different from Miocene coal. Eocene coals thinner, laterally continuous, formed from palm/fern vegetation in transgressive setting, creating near-coastal peats as water table rose, and were terminated as sea transgressed over peat. Miocene coals formed in freshwater sequence, locally thick, sudden lateral thickness changes and very low ash and sulphur. Miocene coal component of decay-resistant woody vegetation, Eocene palm/fern coal more susceptible to decay. Miocene coal beds formed as domed peats, which contributed to erratic thickness changes and locally thick coal)

Fukasawa, H., R. Sunaryo, & R.H. Napitupulu (1987)- Hydrocarbon generation and migration in the Sangatta area, Kutei Basin. Proc. 16th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 123-139.
(Sangatta field 1939 BPM discovery N of Mahakam delta. Oils tied to M Miocene Balikpapan Fm shales)

Furlan, S., S. Chaudhuri, N. Clauer & F. Sommer (1995)- Geochemistry of formation waters and hydrodynamic evolution of a young and restricted sedimentary basin (Mahakam Delta Basin, Indonesia). Basin Research 7, 1, p. 9-20.
(Chemical and isotopic data on formation waters of oil-fields from Mahakam Delta provide information about mass transfers in sedimentary sequence. Depletions in Ca, Sr and K, etc., in waters related to illitization of smectite, precipitation of carbonate minerals and dissolution of K-feldspar and precipitation of albite)

Furlan, S., N. Clauer, S. Chaudhuri & F. Sommer (1996)- K transfer during burial diagenesis in the Mahakam Delta basin (Kalimantan, Indonesia). Clays & Clay Min. 44, 2, p. 157-169.
(In Mahakam delta basin Potassium necessary for illitization of illite/smectite mixed-layer minerals mainly from K-feldspar alteration in sandstones and from mica in shales. Most of K-feldspar alteration outside main zone of illitization, which is restricted to upper 2000m. Feldspar grains were altered below this depth, so illitization requires open sedimentary system)

Gangui, A., T. Rosaz, B. Lambert & D. Roy (2000)- Tectonic evolution of the South Mahakam area and its petroleum implications. AAPG Int. Conf. Exhib. Abstracts, American Assoc. Petrol. Geol. (AAPG) Bull. 84, 9, p. 1428. *(Abstract only)*
(SE part of offshore Mahakam PSC influenced by extension, with E Eocene- early Late Miocene development of NW-SE (transtensional?) normal faults (Maruat, Sesumpu, Sepinggan faults), separating Kutei basin from Paternoster Platform. Associated E-W faults probably related to strike-slip component. Metulang Field is in M Miocene tilted (growth-) fault block. Late Miocene-Pliocene compression (N150-170) caused dextral strike-slip reactivation of main normal faults, causing fault block reactivation (Mandu structure) and "en-echelon" folds (Jumelai Field). Most hydrocarbon accumulations are along major fault migration pathways)

Gany, M.U.A., D. Suyadi & Widodo (1994)- Pengaruh karbonisasi terhadap kualitas batubara, Kotabangun-Kalimantan Timur. Proc. 23rd Ann. Conv. Indon. Assoc. Geol. (IAGI), p. 1153-1159.
('Influence of carbonization on coal quality, Kotabagun, E Kalimantan')

Garrigues, P., M.L. Angelin, R. De Sury, J.L. Oudin, M. Ewald (1985)- Etude de la distribution des monomethylphenanthrenes dans une serie de roches meres du delta de Mahakam (Indonesie). Comptes Rendus Academie Sciences, Paris, Ser. 2, 300, 15, p. 747-750.
('Study of distribution of monomethylphenanthrenes in a series of source rocks in the Mahakam Delta')

Garrigues, P., J. Bellocq, P. Albrecht, A. Saliot & M. Ewald (1987)- Etude des marqueurs biogeochimiques tri-, tetra-, et pentaaromatiques dans les sediments quaternaires et Pliocene superieur du delta de la Mahakam (Indonesie). In: A. Combaz (ed.) Geochimie organique des sediments plio-quaternaires du delta de la Mahakam (Indonesie)- le sondage Misedor, Editions TECHNIP, Paris, p. 317-342.
('Study of tri-, tetra-, et pentaaromatic biogeochemical markers in Quaternary and Upper Pliocene sediments of the Mahakam Delta'. High levels of aromatic derivatives of higher plant constituents. No clear diagenetic evolution)

Garrigues, P., R. De Sury, M.L. Angelin, J. Bellocq, J.L. Oudin & M. Ewald (1988)- Relation of the methylated aromatic hydrocarbon distribution pattern to the maturity of organic matter in ancient sediments from the Mahakam Delta. Geochimica Cosmochimica Acta, 52, 2, p. 375-384.
(New maturation indices based on methyl-anthracenes,-chrysenes and -pyrenes presented, based on experiments on immature coal samples from well in Handil Field, Mahakam delta)

Garrigues, P., A. Saptorahardjo, C. Gonzalez, P. Wehrung, P. Albrecht, A. Saliot & M. Ewald (1986)- Biogeochemical markers in the sediments from Mahakam Delta. Organic Geochem. 10, p. 959-964.

(Analysis of the tri-, tetra- and pentaaromatic hydrocarbon fractions of sediments from well W of Handil field, Mahakam Delta, indicate predominance of biogeneic polycyclic aromatic hydrocarbons (PAH) diagenetically related to triterpenoid natural precursors (mainly from terrestrial land plant material))

Gastaldi, C., J.P. Biguenet & L. de Pazzis (1997)- A reservoir characterization from seismic attributes. An example from the Peciko Field (Indonesia). The Leading Edge 16, 3, p. 263-266.
(Seismic attributes used to map gas sand distribution in Peciko Field, 20 km S of Mahakam Delta, Reservoirs are Late Miocene (~10 Ma) distributary mouth bars deposited in distal delta front environment)

Gastaldo, R.A., G.P. Allen & A. Huc (1995)- The tidal character of fluvial sediments of the modern Mahakam River delta, Kalimantan, Indonesia. In: B.W. Flemming & A. Bartholoma (eds.) Tidal signatures in modern and ancient sediments, Int. Assoc. Sedimentologists (IAS), Spec. Publ. 24, Blackwell, Oxford, p. 171-181.
(Brief sedimentological description of low wave-energy, mixed tide- and fluvially controlled Mahakam delta complex. Medium- to fine-grained terrestrial sediment originates from 75 000 km2 drainage area. Two active distributary systems, with interdistributary area of tidal channels and former fluvial distributary channels which today are no longer connected to fluvial regime)

Gastaldo, R.A. & A.Y. Huc (1992)- Sediment facies, depositional environments, and distribution of phytoclasts in the recent Mahakam Delta, Kalimantan, Indonesia. Palaios 7, 6, p. 574-590.
(Overview of distribution of sediments, vegetation and plant detritus in modern Mahakam delta)

Gautama, A.B. (1989)- Abnormal pressure behaviour with special emphasis on transition zone, Handil Field, East Kalimantan. Proc. 18th Ann. Conv. Indon. Assoc. Geol. (IAGI), p. 135-160.

Gayet, J. & P. Legigan (1987)- Etude sedimentologique du sondage Misedor (delta de la Mahakam, Kalimantan, Indonesie). In: A. Combaz (ed.) Geochimie organique des sediments plio-quaternaires du delta de la Mahakam (Indonesie)- le sondage Misedor, Editions TECHNIP, Paris, p. p. 23-71.
('Sedimentological study of the Misedor well (Mahakam delta)')

Gerard, J. & H. Oesterle (1973)- Facies study of the offshore Mahakam area. Proc. 2nd Ann. Conv. Indon. Petroleum Assoc., p. 187-194.
(First Miocene- Pliocene facies maps of Mahakam Delta. Mahakan Delta prograded E since M Miocene and reached maximum extent in Late Miocene- E Pliocene. Delta was bordered to S and N by carbonate sediments and limited to open sea by barrier reefs. Descriptions of deltaic subfacies and associated fauna)

Gerth, H. (1923)- Die Anthozoenfauna des Jungtertiars von Borneo. Sammlungen Geol, Reichs-Museums Leiden, ser. 1, 10, 3, p. 37-136.
(online at: www.repository.naturalis.nl/document/552385)
('The coral fauna of the Late Tertiary of Borneo'. Descriptions of ~120 species of Miocene- Pliocene coral from 52 localities in E Kalimantan and Sabah, from museum collections in Leiden, Utrecht, Basel, etc.)

Geyler, H.Th. (1877)- Ueber fossile Pflanzen von Borneo. Palaeontographica Suppl. 3, 1, 2, p. 61-84.
('On fossil plants from Borneo'. 13 new species of moderately well preserved Eocene flora collected by Verbeek from claystones associated with coal-bearing Tanjung Fm near Pengaron, SE Kalimantan. Eocene floras comparable to present-day tropical vegetation. Incl. Phyllites spp., Nephelium, Entoneuron, Carpites)

Geyler, H.Th. (1879)- Die Eocanformation von Borneo und ihre Versteinerungen. III. Ueber fossile Pflanzen von Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 8 (1879), 2, p. 3-54.
('The Eocene formation of Borneo. On fossil plants from the Eocene of Borneo'. Mainly on material collected by Verbeek from Tanjung Fm near Pengaron. Reprint of Geyler (1877) Palaeontographica paper)

Goulty, N.R. & A.M. Ramdhan (2010)- Overpressure in the Kutai Basin- a radical reappraisal. In: 72nd EAGE Conf. & Exhib., Barcelona 2010, F043, 5p. *(Extended Abstract)*

(Kutai Basin/ Mahakam Delta overpressure encountered in U Miocene at depths of 3-4 km in shelf area. Main mechanism of overpressure generation was thought to be disequilibrium compaction. Mudrocks in area may not be undercompacted, but overcompacted.)

Granier B., J.M. Villain & R. Boichard (1997)- Biohermes holocenes a *Halimeda* au large du delta de la Mahakam, Kalimantan (Indonesie)- Le concept de "section condensee dilatee". In: F.G. Bourroulh-Le Jan (ed.) Carbonates intertropicaux, Mem. Soc. Geologique France, n.s., 169, p. 225-230.
('Holocene Halimeda bioherms in front of the Mahakam Delta, Kalimantan- The concept of dilated condensed section')

Grosjean, Y., G.C. De Janvry & B.C. Duval (1994)- Discovery of a giant in a mature deltaic province: Peciko, Indonesia. Proc. 14th World Petroleum Congress, Stavanger, 2, p. 157-160.

Grosjean, Y., P. Zaugg & J.M. Gaulier (2009)- Burial hydrodynamics and subtle hydrocarbon trap evaluation: from the Mahakam Delta to the South Caspian Sea. Int. Petrol. Techn. Conf. (IPTC), Doha, IPTC 13962, 12p.
(On 'Burial Hydrodynamic Trapping' of hydrocarbons in Mahakam Delta (examples Peciko and West TunuField). Water expulsion from thick shale section during burial created tilted gas-oil-water contacts, and offsets core of accumulation from anticlinal crest)

Grundy, R. J., D.W. Paterson & F.H. Sidi (1996)- Uplift measurements in Tertiary sediments of the Kutei Basin, East Kalimantan, Indonesia, as it relates to VICO Indonesiaǿs PSC and the surrounding area. Int. Geoph. Conf., Soc. Expl. Geoph. (SEG), Jakarta 1996, Expanded abstracts, p. 81-85.

Guritno, E.E. & J. Chambers (1999)- North Runtu PSC: the first proven Eocene petroleum play in the Kutai Basin. Proc. 27th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 1-20.
(Paleogene hydrocarbon system proven recently in onshore NE Kutai basin PSC, but uneconomic so far. Prospective areas exist in parts of Paleogene play fairway that have not suffered extensive uplift. System appears limited by reservoir quality in Eocene syn-rift section)

Gwinn, J.W., H.M. Helmig & L. Witoelar Kartaadipoetra (1974)- Geology of the Badak field, East Kalimantan, Indonesia. Proc. 3rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 311-331.
(Badak large 1972 gas-oil discovery N of Mahakam Delta. Broad anticline with multiple stacked Late Miocene-Pliocene deltaic sandstones between 4500'- 11,000'. Estimated EUR 6 TCF gas, 50 MBO)

Handoyo, K. (2003)- Sequence stratigraphy and reservoir heterogeneity of the Serang Field, Kutei Basin, Indonesia. M.Sc. Thesis, Colorado School of Mines, Golden, p. 1-175.
(online at: https://dspace.library.colostate.edu/bitstream/handle/11124/170544/T5727.pdf?sequence=1)
(Late Miocene sandstone reservoirs of offshore Unocal Serang Field (1973), NE of Mahakam Delta, with 10 facies associations. Sequence stratigraphic analysis showed three intermediate-term cycles, divided in short-term cycles. Overall landward-stepping, representing long-term base-level rise. Main reservoirs incised valley fills. Sediment sourced from paleo-Mahakam Delta. Younger cycles greater reservoir heterogeneity. Because of seaward-increasing mud content and bioturbation, rank of sediment bodies that act as reservoir in decreasing order: (1) fluvial/distributary channels, (2) distributary channels and (3) delta front bars)

Harahap, D. (1975)- Notes on log evaluation in the Badak Field, East Kalimantan, Indonesia. Geologi Indonesia (IAGI) 2, 2, p. 39-44.
(Badak Field reservoir rocks are sands deposited in deltaic environment. Shaliness common in pay sands and resistivity of formation waters varies from bed to bed)

Hartono A. & I. Saputra (2014)- Identifying carbonate play potential in Simenggaris Block, Tarakan Basin. Proc. 39th Ann. Conv. Indon. Assoc, Geophys. (HAGI), Solo, PIT2014-1174, 5p.
(Hydrocarbon plays in Tarakan Basin generally in M Miocene-Pliocene deltaic sandstones, but potential for carbonate play in Simenggaris Block, as shown by 2000' of carbonate penetrated by PF1 well (1979))

Harun, M.R., R.T. Putra & B.N. Ardhiansyah (2017)- Analog play concept and geophysical study at Warukin field, unlocking hidden potential in mature field. Proc. Joint Conv. HAGI-IAGI-IAFMI-IATMI, Malang 2017, 4p.
(Warukin Field in Barito basin small oil field SE of Tanjung field, producing from M-L Miocene M Warukin Fm since 1965. Remaining potential in deeper zone, and in prospects between existing fields)

Hashimoto, W. (1973)- An unconformity discovered on the Tandjung anticline in the eastern rim of the Barito Basin, Kalimo Kalimantan Selatan, Indonesia. In: T. Kobayashi & R. Toriyama (eds.) Geology and palaeontology of Southeast Asia, University of Tokyo Press, 12, p. 179-188.
(NE Barito Tanjung anticline with 1200m thick Tanjung Fm (500m Eocene basal conglomerates, overlain by clastics, then Late Eocene/Tb limestones). Unconformity between Eocene Tb and Lower Oligocene Tc, characterized by basal Tc sand with thin coal and reworked Tab fauna on Tanjung anticline. In Kahajan wells Eocene/Tb directly overlain by Late Oligocene/Te. Tcd 295m thick in Tanjung area, thickening in Upper Mahakam region to 1800m. Berai Lst 650m thick and mostly Lower Te/ Late Oligocene)

Hashimoto, W. (1974)- Supplementary notes to 'The oil geology of East Kalimantan' by K. Masatani. J. Japanese Assoc. Petroleum Technologists 39, 2, p. 79-94. *(in Japanese)*
(online at: www.jstage.jst.go.jp/article/japt1933/39/2/39_2_79/_pdf)
(Supplement to Masatani (1967) paper on oil geology of E Kalimantan, focusing on geologic development of Meratus Range and E margin of Barito Basin. Cretaceous Manunggul Gp begins with basal conglomerate. Orbitolina identified as Aptian O. lenticularis and overlain by Turonian fossil-bearing formation. Several unconformities in Tertiary of Tanjung oilfield and Meratus front. Kahajan well (W margin Barito basin) Te limestone directly on Eocene Tab, so 'Tcd' reduced thickness to absent S, but thickening to N (1800m in Upper Mahakam region))

Hashimoto, W., K. Kurihara & F. Masuda (1973)- A study on some reticulate *Nummulites* from Kalimantan Selatan, Indonesia. In: T. Kobayashi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 13, p. 73-90.
(Biometric study of E Oligocene Nummulites (N. fichteli, N. intermedia) from two zone Tc localities in SE Kalimantan: (1) 'Masoekoe Limestone' near kampong Masukou on N flank of Tandjung oil field anticline and (2) kampong Tunggul Baru, right bank of Riam Kawa River, S of Pengaron. Large microspheric forms previously described as N. intermedius, megalospheric forms are of Nummulites fichteli type)

Hashimoto, W. & K. Matsumaru (1973)- *Nephrolepidina parva* Oppenoorth from the Dahor area, Tandjung, Kalimantan Selatan, Indonesia. In: T. Kobayashi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 11, p. 129-136.

Hayashi, Y., T. Inage, I. Suzuki & H. Nagura (1996)- Exploration history and trapping mechanism of Peciko gas field, East Kalimantan, Indonesia. J. Japanese Assoc. Petroleum Technologists 61, 1, p. 25-34.
(online at: https://www.jstage.jst.go.jp/article/japt1933/61/1/61_1_25/_pdf)
(In Japanese with English summary. Peciko gas field in offshore S Mahakam delta. Distribution of gas zones not controlled by distribution of sandstone layers, but by hydrodynamic trapping mechanism related to expulsion of compaction water in prodelta muddy facies E and S of Peciko gas field)

Hehanussa, P.E. (1981)- Basic data from Barito delta, south Kalimantan, Indonesia. LGPN-LIPI, Bandung, 21p.

Hemmes, K., H. Darman, L. Suffendy & Meizarwin (2000)- Depositional systems of the deep-water Tarakan Basin, Indonesia. Proc. 2000 AAPG Int. Conf. Exhib., Bali 2000, 1p. *(Abstract only)*
(Tarakan Basin passive continental margin with Late Eocene-Recent sediments on continental to oceanic crust, created during M-L Eocene opening of Celebes Sea. M Miocene uplift of Borneo hinterland uplift triggered massive influx of turbidites in deep-water area, deposited as fans in front of Tarakan delta and buried by rapidly prograding Plio-Pleistocene Tarakan Delta slope deposits. Potential reservoir systems in deepwater unconfined toe of slope fans, confined intra-slope fans and intra-slope channel-levee systems)

Hemmes, K., H. Darman, L. Suffendy & Meizarwin (2001)- Depositional systems of the deep-water Tarakan Basin, Indonesia. In: A. Setiawan et al. (eds.) Deep-water sedimentation of Southeast Asia, Proc. 2nd Regional Seminar Indonesian Sedimentologists Forum (FOSI), Jakarta, 4p. *(Extended Abstract)*
(Tarakan Basin passive continental margin with Late Eocene-Recent sediments on continental to oceanic crust, created during M-L Eocene opening of Celebes Sea. Rifting ceased in E Oligocene with quiet marine conditions until M Miocene when uplift of Borneo hinterland triggered massive influx of turbidites in deep-marine area, deposited as unconfined toe of slope fans ahead of prograding Tarakan delta. In Plio-Pleistocene deep water fans buried by rapidly prograding delta-slope deposits, which triggered gravity-driven toe thrusting. Small intra-slope basins formed between thrust ridges. In S part of delta, W-dipping normal faults limited progradation, resulting in excessive thickening of Pliocene-Pleistocene deltaic sequence and limiting sediment influx into deep-water area. Several potential deep-water reservoir systems: (1) unconfined toe of slope fans, (2) confined intra-slope fans, and (3) intra-slope channel-levee systems)

Hendrawan, A. Bachtiar, D. Apriadi, E. Kurniawan & Y. Bachtiar (1998)- Pemelajaran sedimentologi dari Singkapan batuan Miosen di Cekungan Kutai, Kalimantan Timur. Proc. 27th Ann. Conv. Indon. Assoc. Geol. (IAGI), Sedimentology, Paleont. Stratigr., p. 1-15.
('Sedimentological study of Singkapan Miocene rocks in the Kutai Basin')

Heo, W., W. Lee and D.S. Lee (2015)- Hydraulic fracturing design for coalbed methane in Barito Basin, Indonesia. Geosystem Engineering 18, 3, p. 151-162.

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Heriawan, M.N. (2007)- Spatial characterization and geological modelingof heterogeneous resource quality in a multiplayer coal deposit. Ph.D. Thesis Kumamoto University, p. 1-121.
(online at: http://reposit.lib.kumamoto-u.ac.jp/bitstream/2298/9145/1/21-157.pdf)
(Geologic modeling of distribution and quality of multi-layer coal deposit from Lati Coal Mine, Tanjung Redeub, S part of Tarakan Basin (Berau), NE Kalimantan). Coal horizons in ~1800m thick M Miocene Berau (Latih) Fm, dominantly delta plain facies, overall progradational series. In Lati area 19 coal seams, individual thickness generally 0.5- 3 m, max. 5.8m. Comparison work on Barito Basin Eocene Tanjung Fm coal)

Heriawan, M.N. & K. Koike (2008)- Identifying spatial heterogeneity of coal resource quality in a multiplayer coal deposit by multivariate geostatistics. Int. J. Coal Geology 73, 3-4, p. 307-330.
(Geostatistical characterization of geometry and quality of multilayer coal deposit in E Kalimantan)

Heriawan, M.N. & K. Koike (2008)- Uncertainty assessment of coal tonnage by spatial modeling of seam distribution and coal quality. Int. J. Coal Geology 76, 3, p. 217-226.
(On spatial modeling of coal seam distribution and coal quality at multiplayer coal deposit in E Kalimantan)

Heriawan, M.N., J. Rivoirard & Syafrizal (2004)- Resources estimation of a coal deposit using ordinary block kriging. Proc. 13th Int. Symp. Mine Planning and Equipment Selection, Wroclaw, Poland, p. 37-43.
(On Tarakan Basin Eocene coal)

Heriyanto, N., A. Nawawi, A.D.M. Mason, F.T. Ingram, D.E. Pedersen & R.C. Davis (1996)- Exploratory update in the North Tanjung Block, South Kalimantan. Proc. 25th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 55-68.
(Results of Permin Tracer 1993-1995 exploration in N Tanjung Block, NE Barito basin. Wells Patas 1 and Ngurit 1 with oil and gas shows. Muya 1 well high-wax oil that can not be produced. Exploration success depends on early formed structures that remained intact after subsequent episodes of structuring)

Heriyanto, N., W. Satoto & S. Sardjono (1991)- Pematangan hidrokarbon dan hipotesa migrasi di Pulau Bunyu, cekungan Tarakan. Proc. 20th Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, p. 261-280.

(Maturation of hydrocarbons and hypothesis of migration in Bunyu Island, Tarakan Basin'. Similar to Heriyanto et al. 1992. With map of Top oil window of Tarakan subbasin, wells correlations, etc.)

Heriyanto, N., W. Satoto & S. Sardjono (1992)- An overview of hydrocarbon maturity and its migration aspects in Bunyu Island, Tarakan Basin. Proc. 21st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 1-22.
(Geochemical data in Bunyu Island show gentle rise on top oil window from Bunyu field in SE to Tapa Field in NW. Water-washing of oil in Bunyu field (largest oil field). At Tapa major gas field, hydrocarbon altered by fractionation. Bunyu hydrocarbon from fluvio-deltaic source rocks; Tapa gas from shallow lacustrine-estuarine source. Differences of hydrocarbon type controlled by T gradient, higher in NW than SE. Hydrocarbon migration controlled by tectonic framework and position during Mio-Pliocene tectonism. Basement called Danau Fm. M Miocene regressive deltaics unconformably over E Miocene marine Naintupo Fm, formed after E Miocene tectonism (~N9-N10 unc.?))

Heriyanto, N. & M. Wahyudin (1994)- Reflectance gradient and shale compaction, their relationship to basin configuration during Early Neogene: a NE Kalimantan basin reassesment. Proc. 23rd Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, 2, p. 927-943.
(In Indonesian. Relationships between thermal history, shale compaction and seismic shale velocity in Tarakan Basin. Thermal history in platform area dominated by Neogene intrusions, within main depocenters controlled mainly by sediment burial. Basement at Bangkudulis-1 well M Eocene basalt (43.9 +/- 1.30 Ma)

Herwin, H., E. Cassou & H. Yusuf (2007)- Reviving the mature Handil Field: from integrated reservoir study to field application. SPE Asia Pacific Oil & Gas Conf. Exhib., Jakarta 2007, SPE-11082, 7p.
(Giant Handil field in Mahakam Delta was developed by more than 350 wells in 555 accumulations. Field production declining from 200,000 BOPD in late '70s to 12,500 BOPD in 2003. Workover campaigns and horizontal development wells increased production to 23,000 BOPD today)

Heryanto, R. (1993)- Neogene stratigraphy of Kalimantan. Bull. Geol. Res. Dev. Centre, p. 82-91.

Heryanto, R. (2008)- Paleogeografi Cekungan Tersier Barito, Kalimantan. Proc. 37th Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung, 1, p. 238-257.
('Paleogeography of the Tertiary Barito Basin, Kalimantan'. Overview of Barito basin Tertiary stratigraphy and sketches of Barito Basin paleogeography in Eocene, Oligocene, Miocene and Plio-Pleistocene)

Heryanto, R. (2009)- Karakteristik dan lingkungan pengendapan batubara Formasi Tanjung di daerah Binuang dan sekitarnya, Kalimantan Selatan. J. Geologi Indonesia 4, 4, p. 239-252.
(online at: www.bgl.esdm.go.id/dmdocuments/jurnal20090402.pdf)
('Characteristics and depositional environments of Tanjung Fm coal in the Binuang area, S Kalimantan'. Eocene Tanjung Fm at E margin Barito Basin unconformably overlain by Plio-Pleistocene Dahor Fm. Coarse sst- conglomerate in lower part, mudstone with coals and sandstone in middle, and mainly mudstone in upper parts. Coal seams 50-350cm thick, with common vitrinite in all zones, inertinite highest in E Zone (14-16%). Vitrinite reflectance of coal in W and Middle Zones ~0.45%, in E Zone is 0.45-0.50%, all subbituminous B rank. Depositional environment of coals in W and Middle Zones was delta plain back mangrove- fresh water swamp, in E Zone flood plain wet fresh water swamp)

Heryanto, R. (2010)- Geologi Cekungan Barito. Geol. Survey Indonesia (Badan Geologi), Bandung, Spec. Publ., p. 1-139.
('Geology of the Barito Basin'. Major review of Barito Basin stratigraphy, tectonics, hydrocarbons, coal, etc. Oldest rock in Meratus region is Permo-Carboniferous Lumo granite (319, 260 Ma). Also Jurassic and Cretaeous granites, Jurassic-Cretaceous metamorphic and ophiolitic rocks and Cretaceous sediments in Meratus Mts. Schwaner Mts: Pinoh Metamorphics with E Jurassic K-Ar age (189 Ma; biotite, C. Mouret 1987), Sepauk Tonalite 104-123 Ma (Aptian-Albian). Barito Basin widespread Tertiary deposits start with M-L Eocene coal-bearing Tanjung Fm rift deposits with sandstones ~75-85% quartz (mainly metamorphic provenance). Overlain by ~75-95m thick Berai Lst with Heterostegina borneensis, Miogypsinoides complanata, Spiroclypeus,

etc. (= Lower Te, latest Oligocene). M-L Miocene coal-bearing Warukin Fm, followed by Late Miocene onset of Meratus Mts uplift. Etc.))

Heryanto, R. (2014)- Batubara Formasi Tanjung sebagai batuan sumber hidrokarbon di Cekungan Barito. J. Geologi Sumberdaya Mineral 15, 3, p. 105-111.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/51/53)
('The Tanjung Formation coal as a hydrocarbon source rock in the Barito Basin'. Coal seams in Eocene M Tanjung Fm in Kualakurun area 50-150 cm thick and are potential oil and gas source rocks. Most coal samples humic and composed mainly of vitrinite (80-90%) with some exinite and inertinite and gas-prone. Some samples sapropelic, dominated by exinite (74%) and vitrinite (17%) and potential oil-prone source rock)

Heryanto, R. & U. Margono (2008)- The provenance and diagenesis of sandstone of the Eocene Tanjung Formation in the Kualakurun area, Central Kalimantan. J. Sumber Daya Geologi 18, 5, p. 291-298.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/249/229)
(Kualakurun area in W margin of Barito Basin. Eocene Tanjung Fm sandstone subarkose, sublitharenite and felspathic litharenite. Grains dominantly quartz with some lithics and feldspar. Derived from Craton Interior and Recycled Orogen, from Pre- Tertiary of Schwaner Mts W of area. Diagenesis indicates paleo-temperature of 80- 95° C and burial depth of 2-3 km)

Heryanto, R. & H. Panggabean (2004)- Fasies dan sedimentologi Formasi Tanjung di bagian barat, tengah dan timur tinggian Meratus, Kalimantan Selatan. J. Sumber Daya Geologi 14, 3 (147), p. 78-93.
('Facies and sedimentology of the Tanjung Formation in western, central and eastern Meratus Mountains, South Kalimantan'. Lower and Middle parts of Eocene Tanjung Fm in fluvial facies, upper part in deltaic sandy facies and lagoonal claystone facies. Sandstones quartzose 'Recycled Orogen' provenance. Lithics include volcanics, metamorphics and chert. Paleocurrents from WNW to ESE, probably from Schwaner Mts or Sundaland (Remarkably little feldspar suggesting Meratus Late Cretaceous arc volcanics not source for Tanjung?; JTvG).)

Heryanto, R. & H. Panggabean (2011)- Provenance dan diagenesis batupasir Paleogen di daerah Purukcahu-Muarateweh, Kalimantan Tengah. J. Sumber Daya Geologi 21, 6, p. 335-347.
(Provenance and diagenesis of the Paleogene sandstones in the Purukcahu- Muarateweh area, Central Kalimantan'. Area between Barito and W Kutai Basins. Eocene sandstones of Tanjung, Haloq and Batuayau Fms litharenites of recycled orogen provenance from Schwaner High Permo-Trias metamorphics and Cretaceous granites. Diagenesis suggests paleotemperature of 80-95°C, from depth of 2000- 3000m. Oligo-Miocene sst of Purukcahu and Karamuan Fms feldsphatic litharkose and litharenite, derived from magmatic arc of Malasan Volcanics and recycled orogenics of Schwaner High)

Heryanto, R. & H. Panggabean (2013)- Lingkungan pengendapan Formasi pembawa batubara Warukin di daerah Kandangan dan sekitarnya, Kalimantan Selatan. J. Sumber Daya Geologi 23, 2, p. 93-103.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/93/87)
('Depositional environment of the coal-bearing Warukin Formation in the Kandangan area and surroundings, South Kalimantan'. Miocene Warukin Fm coals in Barito Basin 0.5- 12m thick (some up to 50m thick; JTvG). Macerals mainly vitrinite, less exinite/ liptinite and inertinite. Classified as wet forest swamp deposits)

Hettinga Tromp, H. (1933)- De ouderdom en geaardheid der koollagen in het kusttertiair ten zuiden van de Mahakam (O. Borneo) en de mogelijkheid van aardolieaccumulaties. De Mijningenieur 14, 9, p. 150-151.
('The age and nature of coal beds in the coastal Tertiary South of the Mahakam (E Borneo) and the possibility of oil accumulations'. Brief note on presence of low-moisture coal in Te (Late Oligocene- E Miocene) of Benau Baru anticline, which may point to sapropelic coal with potential to generate oil. No figures, tbales)

Hickman, R.G., C. Stuart & T.P. Seeley (2000)- Evolution of the Kutei Basin, East Kalimantan, Indonesia. AAPG Int. Conf. Exhib. Abstracts, American Assoc. Petrol. Geol. (AAPG) Bull. 84, 9, p. 1437-1438. *(Abstract only)*

(Kutei basin sedimentation linked to tectonism. Eo- Oligocene rift basins on Cretaceous accretionary prism from E. Kalimantan to S. Sulawesi. Late Oligocene- earliest Miocene carbonate banks and reefs along shale-prone basins. In late E Miocene regional compression and formation of opposing thrust belts in Borneo and Sulawesi and Paleogene rifts were inverted. Uplifts supplied sediment to deltas prograding to present coast by early M Miocene. Continued shortening caused E-ward folding of Miocene deltaics. In Mahakam depocenter large, low relief detached folds at former shelf breaks. N and S of depocenter linked growth faults and toe thrusts. Right-lateral Sangkulirang Bay fault accommodates shortening between Borneo and Sulawesi)

Hidayat, S. (1995)- Mud volcanoes as an indication of geological structure in East Kalimantan, Indonesia. In: J. Ringis (ed.) Proc. 31st Sess. Comm. Co-ord. Joint Prospecting Mineral Resources in Asian Offshore Areas (CCOP), Kuala Lumpur 1994, 2, p. 267-281.
(Mud volcanoes on Samarinda anticlinorium (onshore of Mahakam delta). Mud samples with E Miocene (zone N6) planktonic forams, adjacent outcrops M Miocene age (zone N8). Probably caused by overpressure of shale by overthrusting)

Hidayati, S., E. Guritno, A. Argenton, W. Ziza & I. Del Campana (2007)- Re-visited structural framework of the Tarakan sub-basin Northeast Kalimantan- Indonesia. Proc. 31st Ann. Conv. Indon. Petroleum Assoc., IPA07-G-109, 18p.
(Tarakan sub-basin affected by E Eocene rifting creating stretched continental or transitional oceanic crust under main basin?), E Oligocene uplift, early M Miocene uplift (start of major deltaic deposition), Late Miocene growth faulting, Late Pliocene- Pleistocene compression. Stable area in W separated from Tarakan Basin depocenter by one major regional normal fault. Major growth fault nearshore linked to toe thrusts in deep water. NW-SE left lateral strike slip faults in basin believed to be continuation of Palu Koro fault system from Sulawesi, and has been active since Pliocene (~5 Ma). Major anticlines that set up Bunyu and Tarakan islands aligned in NW-SE direction, possibly formed above sinistral strike slip zones)

Hoibian, T. (1984)- La microfaune benthique traceur de l'evolution d'un systeme deltaique sous le climat equatorial: le delta de la Mahakam (Kalimantan). Thesis 3e Cycle, Universite de Bordeaux I, p. 1-219.
('Benthic microfaunal markers in the evolution of an equatorial delta system: the Mahakam Delta (Kalimantan)'. Study of Recent foraminifera and ostracodes in Mahakam Delta (see also Carbonel et al. 1986))

Honda, H. (2013)- Evaluation of average flow rate of subsurface fluid based on an inclined gas/water contact in the Peciko gas field, Mahakam Delta Province, east Kalimantan, Indonesia. Chigaku Zasshi (= J. of Geography) 122, Issue p. 34-68.
(online at: www.jstage.jst.go.jp/article/jgeography/122/1/122_122.34/_pdf
(In Japanese with English summary. Peciko gas field in Mahakam Delta with tilted gas-water contact, caused by hydraulic gradient between adjacent hydrostatic domain and highly overpressured domain. Average flow rate in gas zone is slow, estimated at 3.1 mm/year)

Honda, H., H. Kobayashi & H. Banjarnahor (2011)- Towards a new exploration opportunity: an inclined gas/ water contact, pressure gradients and an overpressured domain in and around the Peciko area, Mahakam Delta Province, East Kalimantan. Proc. 35th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA11 G-103, p. 1-16.
(NWP-1 wildcat drilled in Mahakam Delta Province in 1992 confirmed N-dipping gas-water contact downdip from Peciko 1 and PGH 1 wells, suggesting partial hydrodynamic entrapment in Peciko anticlinal closure)

Hook, J.A., P.J. Butterworth & A. Ferguson (2002)- Contrasting Miocene fluvio-deltaic channel types from Perjuangan Quarry, East Kalimantan, Indonesia: implications for subsurface reservoir correlation. Proc. 28th Ann. Conv. Indon. Petroleum Assoc., Jakarta, 1, p. 617-632.
(Outcrop of distributary channels and mouth bar sandstones near Samarinda)

Hook, J. & M.E.J. Wilson (2003)- Stratigraphic relationships of a Miocene mixed carbonate- siliciclastic interval in the Badak field, East Kalimantan, Indonesia. Proc. 29th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 147-161.

(Badak Field in Sanga Sanga PSC, Kutai basin, with 7 TCF gas. Upper G interval transgressive systems tract with generally thin (up to 50'), poor-quality limestone reservoirs interbedded with Miocene clastics. Typically overlie flooding surfaces)

Hooze, J.A. (1886)- Onderzoek naar kolen in de Berausche Landen ter Oostkust van Bomeo. Kolenterrein van Goenoeng Sawar, idem over Poeloe Sepinang en dat van Goenoeng Taboer. Jaarboek Mijnwezen Nederlandsch Oost-Indie 15 (1886), Verhandelingen, p. 5-105.
('Investigation of coal in the Berau region, Borneo East coast: coalfields of Gunung Sawar, Pulau Sepinang and Gunung Tabur'. Report on survey work of coal deposits in 1882-1883 in 'Berau lands' of NE Kalimantan (SW part of Tarakan Basin. Gunung Sawar ~14 km SW of Sambaliung on Kaleh River with 11 coal beds in quartz sandstones, with total coal thickness of ~22m. Coalfield across Pulau Sepinang in Berau River also 11 coal beds, but coal closer to lignite and of poor quality. Gunung Tabur area 5 coal beds, total thickness ~7m)

Hooze, J.A. (1887)- Onderzoek naar kolen in het Rijk van Koetai ter Oostkust van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 16 (1887), Verhandelingen 2, p. 5-94.
('Investigation of coal in the Kingdom of Kutai, East Kalimantan'. Report on coal terrains along Mahakam River above Samarinda, mainly near Batu Panggal. Several areas with 10-18 coal beds with cumulative thickness of 9-23 m)

Hooze, J.A. (1888)- Nadere gegevens betreffende enkele kolenterreinen in Koetai en onderzoek eener aardoliebron aldaar. Jaarboek Mijnwezen Nederlandsch Oost-Indie 17 (1888), Verhandelingen 2, p. 325-336.
('Additional data on coal terrains in Kutai and investigation of an oil seep there'. Asphalt and burning gas seep at Sanga-Sanga)

Hooze, J.A. (1888)- Onderzoek naar kolen in de Straat Laut en aangrenzende landstreken. Jaarboek Mijnwezen Nederlandsch Oost-Indie 17 (1888), 2, p. 337-429.
('Investigation of coal in Laut straits and adjacent areas')

Hooze, J.A. (1888)- Kolen aan de oostkust van Borneo, van de St Lucia- tot aan de Pamoekan-Baai. Jaarboek Mijnwezen Nederlandsch Oost-Indie 17 (1888), Technisch Admin. Ged., p. 431-470.
('Coal along the East coast of Borneo, from the St Lucia to the Pamukan Bay'. Four coal-bearing horizons: Eocene (Palau Laut, Martapura), Middle Miocene (Sanga-Sanga, Samarinda), Upper Miocene (Samarinda), Lower Pliocene (Balikpapan Bay))

Hotz, W. & L. Rutten (1917)- Geographisch-geologische Beschreibung des Kustengebietes von Koetei zwischen Bontang und dem Santan Fluss (Ost Borneo). Verhandelingen Geologisch-Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie 2, p. 243-248.
(online at: https://ia601301.us.archive.org/1/items/verhandelingenva2191geol/verhandelingenva2191geol.pdf)
('Geographical-geological description of the coastal area of Kutai between Bontang and the Santan River, E Borneo'. Early geological survey, reporting traverses-cross-sections of folded Miocene-Pliocene sediments)

Huffington, R.M. & H.M. Helmig (1980)- Discovery and development of the Badak field, East Kalimantan, Indonesia. In: M.T. Halbouty (ed.) Giant oil and gas fields of the decade 1968-1978. American Assoc. Petrol. Geol. (AAPG), Mem. 30, p. 441-458.

Huffington, R.M. & H.M. Helmig (1990)- Badak Field- Indonesia. In: AAPG Treatise on petroleum geology 17, Structural traps III: Tectonic fold and fault traps, American Assoc. Petrol. Geol. (AAPG), p. 265-308.
(Badak field anticlinal structure with multiple Miocene deltaic reservoirs, estimated reserves 6.5 TCF gas, 96 MB condensate and 47 MB Oil)

Husein, S. (2017)- Lithostratigraphy of Tabul Formation and onshore geology of Nunukan Island, North Kalimantan. J. Applied Geology (UGM) 2, 1, p. 25-35.
(online at: https://jurnal.ugm.ac.id/jag/article/view/30255/18265)

(Nunukan Island, in Tidung sub-basin N of Tarakan, built mainly by Late Miocene Tabul Fm clastics, deposited in transitional environment. Apparent coarsening upward sequence (but biostrat suggesting inverted section?; JTvG). E coast Pliocene Tarakan Fm fluvio-deltaic conglomerates unconformable over Tabul Fm clastics, suggesting Pliocene and younger deformation/ uplift of paleo-Simengaris Delta (sinistral movement of NW-SE Semporna Fault?), contemporaneous with common basaltic volcanism over NE Borneo, including basaltic intrusions in N Nunukan)

Idris, R., E. Nurjadi, Z. Azzaino, A. Mardianza & W.L. Ambarwati (2015)- Evaluation of Paleogene potential play in frontier area: Tanjung Area II Block, northern part of Barito Basin. Proc. Joint Conv. HAGI-IAGI-IAFMI-IATMI, Balikpapan, JCB2015-389, 3p. *(Extended Abstract)*
(Burial history modelling of 2 wells in NE Barito Basin shows Eocene Tanjung Fm already reached oil window in E Miocene time, and is in gas window in Lower Tanjung Fm)

Idris, R., E. Nurjadi, Z. Azzaino, A. Mardianza & W.L. Ambarwati (2015)- Revisit evaluation in Sangatta-Bungalun block: a new hope for non-focus exploration area. Proc. Joint Conv. HAGI-IAGI-IAFMI-IATMI, Balikpapan, JCB2015-390, 4p. *(Extended Abstract)*
(Evaluation of reservoir prospectivity of Sangatta-Bungalun Block from basin modelling and petrophysics of wells Kariorang 1, Sembulu 1, Sekurau 1 and Batuhidup 1)

Idris, R. & T.S. Priantono (1994)- Perkembangan submarine fan Eosen- Oligosen pada daerah Benderang-Tapian Langsat, Cekungan Kutai, Kalimantan Timur. Proc. 23rd Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, 1, p. 208-218.
('Development of Eocene- Oligocene submarine fans in the Benderang-Tapian Langsat area, Kutai Basin, East Kalimantan'. In Bungalun area of NE part of Kutai Basin Eocene-Oligocene Beriun Fm in bathyal marine facies with submarine fan sandstones)

Imanhardjo, D.N. & T.W. Kunto (1993)- Pemetaan parasekuen-set: suatu cara penyesuaian resolusi model geologi guna interpretasi seismik stratigrafi sedimen deltaik. Proc. 22nd Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung, 2, p. 1130-1140.
('Mapping of parasequence sets: a way of adjusting the resolution of geological models using seismic stratigraphy interpretation of deltaic sediments'. With examples and facies maps of Sangatta field, E Kalimantan)

Inaray, J.C., Y.H. Setiawan, R. Schneider, J.T. Noah & E. Lumadyo (2001)- Merah Besar and West Seno Field discoveries: examples of exploration success on the slope environment, confined turbidity channel sand, deep-water Kutei Basin, Indonesia. In: A. Setiawan et al. (eds.) Proc. Deep-Water Sedimentation of Southeast Asia, FOSI 2nd Reg. Seminar, Jakarta 2001, p. 10-15. *(Extended Abstract?)*

Irawan, D. & D.H. Amijaya (2012)- Studi provenance batupasir Formasi Batu Ayau Cekungan Kutai di daerah Ritanbaru, Kutai Kartanegara, Kalimantan Timur. J. Teknik Geologi (UGM) 1, 2, 5p.
(online at: http://lib.geologi.ugm.ac.id/ojs/index.php/geo/article/view/10)
('Sandstone provenance of the Batu Ayau Fm of the Kutai Basin in the Ritanbaru area, E Kalimantan'. Batu Ayau Fm M Eocene syn rift deposit sandstone exposed in Ritanbar area. Provenance study shows sandstone dominated by volcanics, some metamorphic material and less chert. Provenance type is recycled orogen that changed to magmatic arc)

Iroe, H.D. (1981)- Evaluation of shaly sands Sepinggan Field, Indonesia. M.Sc. Thesis Colorado School of Mines, T2510, p. 1-298. *(Unpublished)*

Ito, Y. & T. Taguchi (1990)- Petroleum geology and hydrocarbon source rocks in Mahakam Delta, East Kalimantan, Indonesia. In: Symp. Application of geochemistry to petroleum exploration, J. Japanese Assoc. Petroleum Technologists (Sekiyu Gijutsu Kyokaishi) 55, 1, p. 54-65.
(online at: www.journalarchive.jst.go.jp...)

(In Japanese, with English abstract) (Coals, lignites and shales in M- Late Miocene deltaic sediments are recognized as potential oil source rocks in Mahakam Delta. Kerogens mainly type III)

Jacobs, S.J. & N.D. Meyer (2001)- Direct hydrocarbon response technique: application and opportunity in Barito-Kutai interbasinal high. Proc. 28th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 249-260.
(Paper suggesting subsurface hydrocarbons can be detected with 'Direct Hydrocarbon Response Technique' tool, utilizing spectral anomalies over outcrops)

Jacques, J., P. Poluan, A.H. Satyana & P. Jacques (2011)- Tectonic and structural framework of the Sebatik and Nunukan islands- implications on hydrocarbon prospectivity. Proc. Joint Conv. Makassar IAGI-HAGI, Ujung Pandang 2011, JCM2011-479, 2p. *(Extended Abstract)*
(Sebatik and Nunukan Islands in NE part of Tarakan Basin explored but no discoveries. Oil and gas accumulations on Tarakan and Bunyu Islands first identified by seeps, with main traps NW-SE trending anticlines that run through the centre of each island and plunge to the SE. Sebatik Island also dominated by major NW-SE anticlinal fold with high-angle reverse faults. Broader, more open fold may exist on Nunukan. At SE Sebatik Island, several oil seeps, most likely from source area offshore)

Jaffe, P.R., P. Albrecht & J.L. Oudin (1988)- Carboxylic acids as indicator of oil migration; II. Case of the Mahakam Delta, Indonesia. Geochimica Cosmochimica Acta 52, 11, p. 2599-2607.
(Organic matter of Neogene Mahakam Delta sediments principally derived from terrestrial sources. Changes in acidic biomarker distributions during oil migration may help determine migration distances of oils)

Jamas, J. & D. Luwarno (1982)- Hubungan antara *Sigmoilina personata* dengan Foraminifera Eosen di Kalimantan Selatan. Geologi Indonesia 9, 2, p. 32-44.
('Association of Sigmoilina personata with Eocene foraminifera in S Kalimantan'. Good Eocene Discocyclina-Pellatispira larger foram assemblages in Tanjung Fm from wells in Barito Basin. Associated with small benthic foram Sigmoilina personata, a potential Eocene marker species as first proposed by Mohler (1946))

Jauhari, U., R. Permana, A. Wijanarko & A. Soenoro (2012)- Hydrodynamic trapping, tilted contacts and new opportunities in mature onshore Kutei Basin, East Kalimantan, Indonesia. AAPG Int. Conv. Exhib., Singapore 2012, Search and Discovery Art. 41060, p. 1-12.
(online at: www.searchanddiscovery.com/documents/2012/41060jauhari/ndx_jauhari.pdf)
(Onshore Kutei Basin field with tilted gas-water contacts in most deep zone G reservoirs, connected to overpressured shales. Higher pressure gradient of water legs in flank provides hydrodynamic force to push GWC higher in one flank. Shallow E reservoirs unconnected to overpressured shales and have flat GWC)

Jeannot, J.P. (1981)- Haute resolution sismique dans le delta de la Mahakam. Petrole et Techniques (Assoc. Francaise Techniciens du Petrole) 283, p. 144-147.
('High-resolution seismic in the Mahakam Delta'. Conventional seismic not adequate to study reservoir or stratigraphic traps in Mahakam Delta. High-resolution seismic techniques used successfully in marine environments, but more difficult in terrestrial environments)

Jefferies, K.G. (1980)- The Sanga Sanga Field. Proc. 9th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 401-416.
(Sanga-Sanga field in onshore Mahakam delta 1898 discovery. Produced >255 million barrels of oil. NNE-SSW trending narrow, asymmetrical anticline, 32 x 1 km, 911 wells. Many producing horizons between 250'-5700')

Jezler, H. (1916)- Das Olfeld Sanga Sanga in Koetei (Niederl. Ost-Borneo). Zeitschrift f. Prakt. Geol. 24, p. 77-85 and p. 113-125.
('The Sanga-Sanga oilfield in Kutai, E Kalimantan'. Early, detailed description of Sanga Sanga oil field, onshore Mahakam Delta. Discovered in 1898 by mining engineer Menten and exploited by Shell predecessor company. Producing from Tertiary sandstones in large anticline with surface oil seeps. About 100 wells between 1901-1906, almost all <500m deep. Shallow oils rel. heavy)

Kadar, A.P., D.W. Paterson & Hudianto (1996)- Successful techniques and pitfalls in utilizing biostratigraphic data in structurally complex terrain: VICO Indonesia's Kutei Basin experience. Proc. 25th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 313-331.
(Review of Oligocene-Pliocene stratigraphy/ biostratigraphy of East Kutai Basin)

Kiel, S., S. Reich, W. Renema, J.D. Taylor, F.P. Wesseling & J.A. Todd (2016)- A Late Miocene methane-seep fauna from Kalimantan, Indonesia. Proc. 1st Int. Workshop Ancient hydrocarbon seep and cognate communities, Warsaw 2016, 1p. *(Abstract only)*
(online at: http://seep.paleo.pan.pl/AHS_5.html)
(Late Miocene methane-seep deposit and associated fauna in Kutai Basin. Dominated by large, globular lucinid bivalve Meganodontia sp. nov. (up to 12.4 cm), and elongate bathymodiolin mussel, Gigantidas sp. nov.(up to 8.7 cm long). Also common small lucinid Cardiolucina aff. quadrata and Isorropodon sp., rare lucinid Lucinoma sp. and gastropods Bathybembix, Naticarius, Profundinassa, etc. Probably upper bathyal environment (400-500m). Close affinities to Recent tropical W Pacific seep faunas)

Klaus, S., S. Selvandran, J.W. Goh, D. Wowor, D. Brandis, P. Koller et al. (2013)- Out of Borneo: Neogene diversification of Sundaic freshwater crabs (Crustacea: Brachyura: Gecarcinucidae: Parathelphusa). J. Biogeography 40, p. 63-74.
(online at: http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2699.2012.02771.x/pdf)

Kloos, J.H. (1863)- Geologische opmerkingen over de kolen van Borneo. Tijdschrift Nederl. Indie 25, p. 294-316.
('Geological remarks on the coal of Borneo'. Brief, early literature review on coal and geology of SE Kalimantan, where 'Oranje Nassau' mine near Pengaron, Martapura, had been operational since 1854. Also mention of coal at Pulau Laut, Samarinda (E Kalimantan) and Labuan (N Borneo). No maps or figures)

Koch, R.E. (1926)- Mitteltertiare Foraminiferen aus Bulongan, Ost-Borneo. Eclogae Geol. Helvetiae 19, 3, p. 722-751.
(online at: http://retro.seals.ch/cntmng?type=pdf&rid=egh-001:1925-1926:19::987&subp=hires)
('Middle Tertiary foraminifera from Bulongan, NE Kalimantan'. Listing of 255 deeper marine foram species, mainly from Late Oligocene marls in Sajau and Binai rivers drainage, SE Bulongan. First descriptions of planktonic foram marker species like Globigerina binaiensis and G. tripartita)

Koeshidayatullah, A. & B. Al-Ghamdi (2013)- Carbonate depositional model and facies distribution on the transpression zone, East Kalimantan. In: 75th EAGE Conference & Exhibition incorporating SPE EUROPEC 2013, p. *(Extended Abstract)*
(Depositional model of latest E- earliest M Miocene Tendehantu Fm reef- forereef carbonate microfacies at Antu Mountain, Mangkalihat Peninsula, NE Kalimantan)

Krausel, R. (1923)- *Nipadites borneensis* n. sp. eine fossil Palmenfrucht aus Borneo. Senckenbergiana 5, p. 77-81.
(On a new species of fossil fruit of Nypa-type mangrove palm from Eocene of Borneo)

Kristanto, R.B. & H. Murti (1992)- Potensi hidrokarbon daerah Sihung cekungan Barito, Kalimantan Selatan-Pendekatan tektionik dan geohirokarbon daerah Tanjung Raya. Proc. 21st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 1, p. 113-130.
('Hydrocarbon potential in the Sihung Area, Barito Basin, South Kalimantan- An exploration concept using a combined tectonic and geohydrocarbon approach in the Tanjung Area'. Hydrocarbons in Tanjung Raya area in different formations:Pretertiary- Eocene Tanjung Fm (Tanjung Field), Berai Fm (Tanta), Berai and Lower Warukin (South Dahor), in Warukin Fm in Warukin and Tapian Timur fields. At structural highs hydrocarbons trapped in older rocks)

Kristyarin, D.A., A.T. Rahardjo & Bambang P. (2016)- Paleoecology and paleoclimate of Tanjung Formation deposition, based on palynological data from Siung Malopot, Central Borneo. In: Proc. Int. Symposium on Geophysical Issues, Padjadjaran University, Bandung 2015, IOP Conf. Series, Earth Environm. Science 29, 012022, p. 1-10.
(online at: http://iopscience.iop.org/article/10.1088/1755-1315/29/1/012022/pdf)
(Outcrops in Siung Malopot area in N part of Barito basin (277km NE of Palangkaraya) show Late Cretaceous basement of Pitap Fm andesites and granites, unconformably overlain by M-L Eocene Tanjung Fm clastics with intercalations of coal and thin limestones. Palynomorphs Proxapertites cursus, Meyeripollis naharkotensis, Cicatricosisporites eocenicus, C. dorogensis and Palmaepollenites kutchensis indicate Late Eocene Proxapertites operculatus zone. Increasingly more humid climate with age. Depositional environment mainly back-mangrove (abundant Acrosticum auerum), with increasing marine influx in upper parts of Tanjung Fm)

Krol, L.H. (1925)- Eenige cijfers uit de 3 etages van het Eoceen en uit het Jong-Tertiair in de omgeving van Martapoera- Zuid-Oost Borneo. Verhandelingen Geologisch-Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie 8 (Verbeek volume), p. 343-356.
('Some numerical data on the three stages of the Eocene in the Martapura area, SE Borneo'. Detailed stratigraphic thickness data of Eocene and young-Tertiary near Martapura. Little change from Verbeek 1875, except minor age interpretation changes. Total Eocene thickness 856m (= much thicker than Verbeek's estimates; JTvG))

Kurniawan, E., A. Bachtiar, Safarudin & B. Mulyanto (2001)- Paleosols in deltaic sediment: a case study in Semberah Field, Mahakam Delta, Kutai Basin. Proc. 30th Ann. Conv. Indon. Assoc. Geol. (IAGI) & 10th GEOSEA Regional Congress, Yogyakarta, p.

Kurniawan; E., A. Bachtiar & S. Martodjojo (2011)- Paleosols as an alternative method to define sequence boundary in fluvial system: a case study in Semberah Field, Kutei Basin. Berita Sedimentologi 21, FOSI- IAGI, p. 26-39.
(Online at: www.iagi.or.id/fosi/files/2011/06/FOSI_BeritaSedimentologi_BS-21_June2011_Final.pdf)
(Paleosols used to identify sequence boundaries in Late Miocene Balikpapan/ Kampung Baru Fm fluvial-deltaic sequences in outcrops at Semberah field, N part of Samarinda Anticlinorium, Kutai Basin. Total of 52 paleosols, grouped in 6 types, observed in 21 outcrops. Paleosols well developed in Highstand Sequence Tract, in Lowstand ST. Absent or rare in Transgressive ST)

Kurniawan, T., B. Prasetiyo & D. Tangkalalo (2010)- Subsurface surveillance in low permeability oil reservoir at Tanjung Field, Barito Basin, South Kalimantan. Proc. 34th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA10-G-176, 13p.
(Tanjung Field low perm zones in Eocene Lower Tanjung Fm A and B main reservoirs caused by clays smectite and kaolinite. Lowermost Tanjung Fm ~200m of alluvial fan deposits with volcanic conglomerates)

Kusnama (2008)- Batubara Formasi Warukin di daerah Sampit dan sekitarnya, Kalimantan Tengah. J. Geologi Indonesia 3, 1, p. 11-22.
(online at: www.bgl.esdm.go.id/dmdocuments/jurnal20080102.pdf)
('Warukin Fm coal in the Sampit area, C Kalimantan'. Miocene Warukin Fm in Sampit area, W Barito Basin, ~700m thick. Two main coal seams, A and B, 80- 200cm thick, generally banded brittle to friable, claystone partings, subbituminous C- A rank, and deposited in wet-forest swamp with by high plants and shrubs)

Kusnida, D. & L. Arifin (2008)- Karakteristik akustik dan fenomena geologi endapan sedimen Kuarter Delta Mahakam- Kalimantan Timur. J. Geologi Kelautan 6, 3, p. 167-173.
(online at: http://ejournal.mgi.esdm.go.id/index.php/jgk/article/view/160/150)
('Acoustic characteristics and geological phenomena of Quaternary sedimentary deposits of the Mahakam Delta -East Kalimantan'. Mahakam delta offshore shallow seismic profiles indicate at least four acoustic intervals (depositional sequences), separated by unconformities)

Kusuma, I. & T. Darin (1989)- The hydrocarbon potential of the Lower Tanjung Formation, Barito Basin, SE Kalimantan. Proc. 18th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta), p. 107-138.
(Tanjung Oil Field 1939 discovery in Eocene, but limited success since. Paleocene-E Eocene rifting gave rise to NW-SE horsts- grabens across Barito basin. E Tertiary structural elements overprinted by Neogene- Recent compression, producing left-lateral reactivation of earlier normal faults. Thickness and facies changes with four distinct stages of deposition in Tanjung Fm, primarily from topography produced by E Tertiary rifting. Terrestrial coals and organic- rich shales of Lower Tanjung Fm prolific hydrocarbon source rocks. At least five E Tertiary rifts identified, each separate self-contained depocenter)

Kusuma, M.I. & A.N. Nafi (1985)- Prospek hidrokarbon Formasi Warukin di cekungan Barito, Kalimantan. Proc. 14th Ann. Conv. Indon. Assoc. Geol. (IAGI), p. 105-124.
('Hydrocarbon prospects of the Warukin Fm in the Barito Basin, Kalimantan')

Kusworo, A., S. Reich, F.P Wesselingh, N. Santodomingo, K.G. Johnson, J.A. Todd & W. Renema (2015)- Diversity and paleoecology of Miocene coral-associated molluscs from East Kalimantan (Indonesia). Palaios 30, 1, p. 116-127.
(Diverse Tortonian mollusc assemblage from coral carpet environment at Bontang, dominated by predatory snails)

Laffaure, A, P. Dupouy, N. Syarifuddin (2008)- The Sisi-Nubi case history: reservoir characterisation in a challenging geological setting. Proc. 32nd Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA08-G-096, 8p.
(Sisi (1986) and Nubi (1992) gas fields 25 km offshore Mahakam delta in 60-70m of water. Reservoirs Upper Miocene deltaic sands between 1900-3800m, divided into upper 'Fresh Water Sands' and lower overpressured 'Sisi Main Zone'. Deltaic cycles with average thickness of 25m. Fluids mainly gas, with columns from 20-100m for FWS. Anticlinal structures with several compartments. All channel sands >12m could be identified on seismic, but no channels thinner than 5m could be seen on seismic)

Laggoun-Defarge, F., B. Pradier, E. Brosse, S. Belin & J.L. Oudin (1995)- Analyse microtexturale des sediments organiques du delta de la Mahakam (Indonesie); relations avec les environnements de depot. Comptes Rendus Academie Sciences, Paris, II, 320, 11, p. 1055-1061.
('Microtextural analysis of the organic sediments of the Mahakam Delta; relations with environments of deposition'. Petroleum quality of humic organic matter of Mahakam delta is variable and not only correlated to organic composition, but also to relations of organic and mineral constituents. Characteristic organo-mineral microtextures identified in each depositional environment of delta)

Lalouel, P. (1979)- Log interpretation in deltaic sequences. Proc. 8th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 247-290.
(Examples of log interpretation in Miocene deltaic deposits of Handil Field, Mahakam Delta)

Lambert, B. (2003)- Micropaleontological investigations in the modern Mahakam delta, East Kalimantan (Indonesia). Carnets de Geologie/Notebooks on Geology, 2003/02, p. 1-21.
(online at: http://paleopolis.rediris.es/cg/CG2003_A02_BL)
(Distribution of benthic foraminifera in Mahakam Delta system controlled by three main parameters: fluvial input of fresh water and sediment, tides, and north to south drift current. Delta front environmments and characteristic forams are: (1a)mud flats with Trochammina, Ammotium salsum, Arenoparrella mexicana, Miliammina fusca; (1b) tidal flats (0-2m) with Trochammina, Ammobaculites agglutinans, Eggerelloides scabrum, Ammonia beccarii; (2) internal delta front and river mouth bars with Ammonia beccarii, Elphidium; (3) external delta front (1-5m) with Asterorotalia trispinosa; (4) prodelta (>5m) with Operculina gaymardi, Pseudorotalia conoides, Ammonia annectens)

Lambert, B., B.C. Duval, Y. Grosjean, I.M. Umar & P. Zaugg (2003)- The Peciko case history: impact of an evolving geologic model on the dramatic increase of gas reserves in the Mahakam Delta. In: M.T. Halbouty (ed.) Giant oil and gas fields of the decade 1990-1999, American Assoc. Petrol. Geol. (AAPG), Mem. 78, p. 297-320.

(>6 TCG gas in Late Miocene deltaics. Trap stratigraphic-hydrodynamic at flank of structure)

Lambert, B. & C. Laporte-Galaa (2005)- *Discoaster* zonation of the Miocene of the Kutei Basin, East Kalimantan, Indonesia (Mahakam Delta Offshore). Carnets de Geologie, Mem. 2005/01, p. 1-63.
(Online at: http://paleopolis.rediris.es/cg/CG2005_M01)
(Commonly used chronostratigraphic markers (foraminifera, spores and pollen) are rare or absent in most of the Kutei Basin. Calcareous nannofossils present in prodelta shales, but also poor and dominated by Discoasters. Propose modified Miocene nannofossil zonation of 13 zones for Outer Kutei basin, based on Discoasters only)

Lambiase, J.J. & Salahuddin Husein (2015)- The modern Mahakam Delta: an analogue for transgressive-phase deltaic sandstone reservoirs on low energy coastlines. AAPG Workshop Modern depositional systems as analogues for Petroleum System', Search and Discovery Art. 51108, 38p. *(Abstract + Presentation)*
(online at: www.searchanddiscovery.com/documents/2015/51108lambiase/ndx_lambiase.pdf)
(Mahakam Delta currently in transgressive phase))

Lambiase, J.J., D. Remus & Salahuddin Husein (2010)- Transgressive successions of the Mahakam Delta province, Indonesia. AAPG Hedberg Conference, Jakarta 2009, Search and Discovery Art. 50257, 5p. *(Abstract)*
(online at: www.searchanddiscovery.com/documents/2010/50257lambiase/ndx_lambiase.pdf)
(Transgressive successions important component of M Miocene and younger stratigraphy of Mahakam Delta province and have considerable reservoir potential)

Lambiase, J.J., R.S. Riadi, N. Nirsal & Salahuddin Husein (2014)-The Mahakam Delta, Indonesia: a case study for the deposition and preservation of transgressive deltaic successions. Int. Petroleum Techn. Conf., Kuala Lumpur, IPTC-17867-MS, 4p.

Lambiase, J.J., R.S. Riadi, N. Nirsal & Salahuddin Husein (2017)- Transgressive successions of the Mahakam Delta Province, Indonesia. In: G.J. Hampson et al. (eds.) Sedimentology of paralic reservoirs: recent advances, Geol. Soc., London, Spec. Publ. 444, p. 335-348.
(Significant portion of Paleo-Mahakam Delta succession deposited during transgressive phases, either from extensive major transgressions or short-lived transgressions within maintly progradational phases. Sandstone facies with significant reservoir potential in transgressive successions: (1) backfilled distributary sandstones (coastline-perpendicular 10-20 m thick sand bodies, fining-upward channel sands, becoming more marine upwards; (2) shoreline-parallel, transgressive shoreline sandstones)

Land, D.H. & C.M. Jones (1987)- Coal geology and exploration of part of the Kutei Basin in East Kalimantan, Indonesia. In: A.C. Scott (ed.) Coal and coal-bearing strata: recent advances, Geol. Soc. London, Spec. Publ. 32, p. 235-255.
(Survey of ~700 km2 of Miocene coal-bearing strata near Samarinda identified 1000 Mt of recoverable coal, ranking from lignite A to high-volatile C bituminous, in 43 seams 1.5- 13 m thick. Environments of deposition paralic. Section >3000m thick, divided into four formations, Loa Duri, Loa Kulu, Prangat and Kamboja Fms. Coals low ash, high moisture and generally low sulphur)

Larasati, D., S. Ardi, G. Widiyanto, F.M. Fiqih, D.S. Widarto & A. Guntoro (2016)- Integrated study of regional tectonics, geologic structures, and paleogeography reconstruction to develop CBM cleat model in Tanjung II Block, South Borneo. Proc. 40th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA16-55-G, 15p.
(Coal cleat measurements in Warukin and Tanjung Fms of Barito Basin near Tanjung, tied to regional structure maps. Dominant structural lineament in study area E-SW, while cleat strike lines mainly E-W)

Larasati, D., F.M. Fiqih, R. Idris, D.S. Widarto & B. Sapiie (2015)- Fracture shale gas study of Tanjung Formation, Barito Basin, South Kalimantan. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-113, 21p.

(Fractures present in Eocene Tanjung Fm shale, with higher intensity near folds and faults ?)

Larrouquet, F., A. Gautama & L. Moinard (2003)- Identification of initial gas net-pay in deltaic reservoirs using wireline acoustic measurements. Proc. SPE Asia Pacific Oil and Gas Conf. Exh., Jakarta 2003, 80545-MS, 13p.
(Acoustic method to distinguish gas from liquid in Mahakam Delta sand reservoirs)

Latouche, C. & N. Maillet (1987)- Etude des corteges argileux dans les formations deltaiques de la Mahakam (Kalimantan, Indonesie), Essais d'interpretation paleogeographique et paleoclimatique. In: A. Combaz (ed.) Geochimie organique des sediments plio-quaternaires du delta de la Mahakam (Indonesie)- le sondage Misedor, Editions TECHNIP, Paris, p. 73-84.
('Study of clay assemblages in deltaic deposits of the Mahakam delta (Kalimantan), attempts of paleogeographic and paleoclimatic interpretation'. Clay minerals in Misedor well 3 assemblages: (1) base to 400m (Late Pliocene): kaolinite dominant; (2) 365-189m (E Pleistocene): smectite dominant; and (3) 189-37m: kaolinite dominant. Smectite presumably derived from erosion of lowlands, during rel. dry period of sealevel lowstand)

Laya, K.P., B. Nugroho, N. Hadiyanto & W. Tolioe (2013)- Paleogeographic reconstruction of Upper Kutei Basin: implications for petroleum systems and exploration play concepts. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-106, p. 1-16.
(Review of onshore U Kutei Basin, where 1985 Kerendan gas field proves presence of petroleum system. E-M Eocene NNE-SSW trending isolated half-grabens formed on U Cretaceous- Paleocene metasediments and Jurassic- U Cretaceous ophiolitic crust. With 7 E Eocene- M Miocene paleogeographic maps)

Laya, K.P., A. Prasetya, Y. Rizal, E. Guritno, D. Stokes & J. Smart (2014)- Sand fairway and play frameworks on the deepwater slope area of North Kutei Province. Proc. 38th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA14-G-142, 11p.
(On Neogene deepwater slope play in Bontang and SE Sangatta PSC areas, off E Kalimantan. Neogene strata in N Kutai basin deposited in relatively narrow shelf associated with significant hinterland uplift and erosion. Shelf area characterized by extensional listric growth. Neogene deltas in Kalimantan primary sediment source for deepwater sand reservoirs in offshore Lower Kutai Basin. Productive turbidite sandstones with excellent quality on slope as confined canyon/channel-fill systems. Sand deposition strongly controlled by syn-kinematic lows, whereas intra-basinal highs commonly dominated by more silty and muddy deposits)

Laya, K.P., A. Subekti, S. Goesmiyarso & J. Warren (2017)- From isolation to inclusion: the application of isotope analysis to unravel the influences of depositional style and diagenesis in Berai carbonates, Central Kalimantan. Proc. 41st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA17-362-G, 13p.
(Gas well W Kerendan-1 (2013) core and log analysis shows Oligocene carbonate reservoir of interlayered reservoir-quality grainstone and wacke-packstone units. Persistent presence of clastic materials suggest land-attached setting. Diagenetic events generated secondary porosity during intermediate-deep burial and uplift)

Lefort, J.J., J.P. Thiriet, P. Le Quellec & J.B. Bailey (2000)- Sequence stratigraphy of the offshore Tarakan. AAPG Int. Conf. and Exhib., Bali 2000, 8p. *(Extended Abstract)*
(Regressive Upper Miocene- Recent series, with major sequence boundaries and tectonically enhanced angular unconformities. From W to E fluvial sediments pass into deltaic and shelfal deposits. Late Miocene rapid subsidence and active N-S growth faulting trapped deltaic sediments in downthrown paleo-troughs in W, whilst E part comprised sediment starved paleo-highs with marine shales and limestones. In latest Miocene W part tilted and truncated. Pliocene subsidence slower and growth faulting less active. In Bunyu area, delta was able to prograde E far towards paleo shelf-edge, since N-S trending paleohighs no longer present. Pleistocene subsidence rate high and NW-SE arches set-up by reactivation of old lineaments)

Lelono, E.B. (2003)- Stratigraphic interpretation of the Middle Miocene deltaic sediment in the Sangatta area, based on quantitative palynological data. Lemigas Scientific Contr. 2003, 2, p.

(Palynology study of M Miocene in 3 wells in Sangatta area, E Kalimantan. High abundance of mangrove pollen indicates deltaic sediments. Wells correlated using abundances of mangrove pollen Zonocostites ramonae and freshwater swamp pollen Ilexpollenites sp.)

Lelono, E.B. & C.A. Setyaningsih (2014)- Miocene palynology of the Barito Basin, South Kalimantan. Lemigas Scientific Contr. Petrol. Sci. Techn. 37, 1, p. 45-56.
(Rich palynomorph assemblages in Miocene of Barito Basin. Identified last occurrence of Florschuetzia trilobata (M-Late Miocene boundary) and first occurrence of F. meridionalis (E-M Miocene boundary). Other Miocene markers include Stenochlaenidites papuanus (Late Miocene) and Scolocyamus magnus (E-M Miocene). Brackish mangrove palynomorphs indicate marine influence during deposition)

Lemoy, C., A. Wahyudi & J. Luccioni (1988)- Detailed geological modeling and structural mapping in Bekapai Field: influence on the understanding of fluid movements and implications on oil recovery. Proc. 17th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 33-47.
(Bekapai field, offshore SE Mahakam Delta 1972 discovery, producing since 1974. Anticlinal structure with oil-gas in Late Miocene- Pliocene deltaics)

Lentini, M.R. & H. Darman (1996)- Aspects of the Neogene tectonic history and hydrocarbon geology of the Tarakan Basin. Proc. 25th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 168-172.
(Tarakan Basin one of three major Kalimantan Tertiary deltaic depocentres. Most production on dip oriented arches in mostly non-marine depositional environment. Forced regressions caused deposition of deltaic reservoirs far downdip in present day deep water. Tarakan Basin initiated simultaneously with formation of Celebes Sea by rifting between M-L Eocene and E Miocene on E-hading en echelon block faults. Increase in accommodation in M Miocene- Pliocene combination of subsidence and gravity-induced listric faulting. Dip-oriented arches formed during latest Pliocene- Recent transpression on wrench faults crossing Makassar Strait)

LeRoy, L.W. (1941)- Small foraminifera from the Late Tertiary of the Netherlands East Indies. 1. Small foraminifera from the Late Tertiary of the Sangkulirang Bay area, East Borneo. Quarterly Colorado School Mines 36, 1, p. 1-62.

Leupold, W. (1927?)- Geological description of Northeastern Borneo: landscapes of Bulungan and Berau. ~600p.
(Unpublished, pioneering report on geological survey and micropaleontology of large parts of NE Kalimantan. Copy of typescript reportedly in archive of Netherlands Centrum for Biodiversiteit (Naturalis), Leiden, as 'Verslag Boeloengan-Beraoe, Arch. 55 30031 (larger foraminifera from Leupold NE Kalimantan collection described in several papers by Van der Vlerk (1925, 1929))

Loiret, B. & J.F. Mugniot (1982)- Seismic sequences interpretation, a contribution to the stratigraphical framework of the Mahakam Area. Proc.11th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 323-334.

Lubis, M.I. & S. Djaelani (2016)- Petroleum systems in the southern margin of the Kutei Basin. Proc. IPA 2016 Technical Symposium, Indonesia exploration: where from- where to, Indon. Petroleum Assoc. (IPA), Jakarta, 24-TS-16, p. 1-12.
(South Sesulu Block at S margin of offshore Kutai Basin, with structural traps formed during end-Early Miocene inversion along left-lateral faults of Adang flexure zone. SIS-A1 well (2015) penetrated good quality M-L Miocene deltaic and upper slope sandstones and tested dry gas from Late Miocene sandstone. Late Oligocene-Miocene coals and shales in S Sesulu area good source rock potential)

Lubis, T., D. Kurniawan & H. Ellen (2011)- Facies modeling of fluvial reservoirs in "M" Field, Tarakan PSC Block. Proc. 36th HAGI and 40th IAGI Ann. Conv., Makassar, JCM2011-156, 16p.
(Mamburungan Field on SE Tarakan Island, NE Kalimantan, discovered in 1985; 30 wells drilled since. At least 80 stacked sandstone reservoirs in Late Miocene- Pliocene Tarakan Fm, fluvial-dominated in upper part, delta-dominated in lower part. Facies analysis of sands from log suggest N-S channel orientations)

Madden, R.H.C. & M.E.J. Wilson (2012)- Diagenesis of Neogene delta-front patch reefs: alteration of coastal, siliciclastic-influenced carbonates from humid Equatorial regions. J. Sedimentary Res. 82, 11, p. 871-888.
(On diagenetic alteration of E Miocene patch reef of Samarinda area, Kutai Basin, E Borneo, that formed coevally with siliciclastic influx, in humid equatorial setting. No marine cements; dominant diagenetic feature is pervasive neomorphic stabilization and cementation of aragonite reef components to calcite. Meteoric aquifer flow from adjacent landmass main diagenetic fluid. Late-stage fracturing, cementation, and chemical compaction relatively minor features. Continental groundwater flow resulted in pervasive stabilization and calcitization, features rare in arid or temperate counterparts)

Madden, R.H.C. & M.E.J. Wilson (2013)- Diagenesis of a SE Asian Cenozoic carbonate platform margin and its adjacent basinal deposits. Sedimentary Geology 286-287, p. 39-57.
(Study of diagenesis of Kedango Carbonate Platform of Kutai Basin during Eocene- Miocene. Most prevalent and pervasive diagenetic feature is neomorphic alteration and replacement of metastable bioclasts and micritic matrix, together with calcitisation of pore spaces. Burial fluids with marine character inferred as parent diagenetic fluid, since stable-isotope compositions for neomorphic spar consistent with precipitation from SE Asian Oligocene-Miocene seawater in burial environment)

Magnier, P., T. Oki & L.Witoelar Kartaadiputra (1975)- The Mahakam Delta, Kalimantan, Indonesia. Proc. 9th World Petroleum Congress, p. 239-250.

Magnier, P. & B. Samsu (1975)- The Handil oil field in East Kalimantan. Proc. 4th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 2, p. 41-61.
(1974 discovery in S edge of Mahakam Delta. 11x4 km NNW-SSE trending anticline. Multiple stacked reservoirs, mainly tidal delta plain sands, now between 1400-2300m)

Majesta, C., D. Cook, P. Cardola, D. Kurniawan, I. Buldani, G. Aquillina & F. Prasetia (2016)- Formation evaluation in thin bed reservoirs, a case study from the Kutei Basin, Indonesia. Proc. 40th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA16-G-615, 13p.
(Log analysis case study of Jangkrik Field off E Kalimantan, in Pliocene gas-bearing deepwater canyon-fill turbiditic and debrite reservoir sands)

Mamuaya, J.M.B., E. Biantoro & R. Gir (1995)- The trace of sandstone distribution of Q layers using seismic amplitude and inversion: a case study in Sangatta Field, East Kalimantan. Proc. 24th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 2, p. 425-441.
(Seismic interpretation of distributary channels in Q-zone in Sangatta Field)

Marbun, A. (1992)- Hydrocarbon source rocks in the Balikpapan Bay area, East Kalimantan, Indonesia. M.Sc. Thesis, University of Wollongong, p. 1-428. *(Unpublished)*

Marino & N. Sunarya (1992)- Aplikasi metoda geofisika pada studi Cekungan pembawa batubara Ketungau, Kalimantan Barat. J. Geologi Sumberdaya Mineral 2, 4, p. 9-20.
('Application of geophysical methods to the study of the Ketungau Basin coal, Ketungau, W Kalimantan'. Gravity and seismic refraction work in Ketungau Basin, NW Kalimantan)

Marheni, L., R. Aditiyo, A.E. Putra & E. Anggraeni (2009)- Tertiary tectonic of Barito Basin, South East Kalimantan, and implication for petroleum system. Proc. 38th Ann. Conv. Indon. Assoc. Geol. (IAGI), Semarang, PITIAGI2009-183, 15p.
(Literature review; no new data. Barito basin Eocene rifting, Late-Miocene- Pliocene inversion. Largest oil field is the Tanjung (1938), with highly paraffinic oil in Eocene Tanjung Fm and fractured basement. Warukin and Tapian Timur Fields produce more asphalitic oil from Miocene regressive Warukin Fm)

Marks, E., Sujatmiko, L. Samuel, H. Dhanutirto, T. Ismoyowati & B.B. Sidik (1982)- Cenozoic stratigraphic nomenclature in East Kutei basin, Kalimantan. Proc. 11^{th} Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 147-179.

(E Kutai Basin five deposystems: Pleistocene- Recent Mahakam Group (deltaic Handil Dua Fm to W, marine Attaka Formation to E); M Miocene- Pliocene Kampong Baru Group (deltaic Tanjung Batu Fm to W, marine Sepinggan Fm to E); M Miocene Balikpapan Group (uppermost carbonate to marine clastic Klandasan Tongue of Gelingseh Fm and paralic-deltaic Mentawir Fm); E-M Miocene Bebulu Group (carbonate Maruat Fm and deeper water clastic and carbonate Pulau Balang Fm) and Late Oligocene- E Miocene Pamaluan Fm)

Marshall, A.J. & H.O. Schumann (1981)- Stratigraphy and hydrocarbon potential of the Klandasan beds in the Kutei Basin, East Kalimantan, Indonesia. Proc. 10th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 285-295.
(Thick M Miocene (N9-N12) Klandasan Beds predominantly quartz sands, deposited at S margin of Kutei Basin. Interval 2310'-7574' in Bongkaran No. 1 selected as type section of Klandasan Beds)

Marshall, N. (2016)- Improving the age control of Eastern Borneoôs Miocene sedimentary record. Ph.D. Thesis University of Utrecht, Utrecht Studies in Earth Sciences 109, p. 1-214.
(online at: https://dspace.library.uu.nl/bitstream/1874/334448/1/Marshall.pdf)
(Collection of studies on Miocene of E Kalimantan (paleoenvironmental reconstruction, magnetostratigraphy, strontium isotope stratigraphy, cyclostratigraphy and paleomagnetic rotations). Mahakam Delta cyclic sediment alternations match Earth's orbital oscillations (20, 40 and 100 kyr cyclicity in M Miocene, 15-11Ma). Paleomag work on Eocene- Miocene sediments indicates Borneo island probably did not rotate drastically since at least ~40 Ma, Late Eocene, but data from Cretaceous basalts do suggest ~40° CCW rotation)

Marshall, N., V. Novak, I. Cibaj, W. Krijgsman, W. Renema, J. Young, N. Fraser, A. Limbong & R. Morley (2015)- Dating Borneoôs deltaic deluge: Middle Miocene progradation of the Mahakam Delta. Palaios 30, p. 7-25.
(Stratigraphic age model for 4km thick late E Miocene- early Late Miocene section of Samarinda region, E Kalimantan, using magnetostratigraphy, sequence stratigraphy and biostratigraphy. Two thin reef complexes at Samarinda dated at ~15 Ma (Batu Putih; 16m; early zone Tf2 with Lepidosemicyclina polymorpha and Nephrolepidina ferreroi) and 11.6 Ma (Stadion section, 10m; late Tf2 with Lepidosemicyclina and Cycloclypeus annulatus). Mahakam Delta went through major phase of buildout and progradation during M and earliest Late Miocene, during which time progradation across former shelf break took place in Samarinda area)

Marshall, N., C. Zeeden, F. Hilgen & W. Krijgsman (2017)- Milankovitch cycles in an equatorial delta from the Miocene of Borneo. Earth Planetary Sci. Letters 472, p. 229-240.
(Paleo-Mahakam delta of E Kalimantan, Borneo developed during globally warm M Miocene in equatorial setting. Statistical analysis of sandstone/shale alternations show distinct pattern of cycles with thicknesses of ~90, ~30, and ~17m, translating into periods of ~100, 40, and 20 kyr, matching orbital eccentricity, obliquity and precession cycles. Proximal paleo-Mahakam sedimentation dominantly controlled by allogenic orbital forcing, probably as consequence of glacioeustasy (also in Marshall 2016 thesis))

Martin, K. (1914)- Miocane Gastropoden von Ost-Borneo. Sammlungen Geol. Reichs-Museums Leiden, ser. 1, 9, 1, p. 326-336.
(online at: www.repository.naturalis.nl/document/552439)
('Miocene gastropods from E Kalimantan'. Fossiliferous marls of NE Kutai Basin collected by Rutten. Localities Sungei Gelingseh, Sg. Bungalun and Bontang. With molluscs already known from Java and mainly pointing to Late Miocene ages. With locality map but no other figures)

Maryanto, S. (1996)- Neoformisma bioklastika batugamping Bebulu daerah Tenggarong, Kalimantan Timur. J. Geologi Sumberdaya Mineral 6, 62, p. 2-7.
('Neomorphism of bioclasts in the Bebulu Limestone of the Tenggarong area, E Kalimantan'. Diagenesis of Late Oligocene- earliest Miocene limestone in outcrops off Mahakam River, Kutai Basin)

Maryanto, S. (2009)- Diagenesis dan batuan sumber batupasir Formasi Lati di Daerah Berau, Kalimantan Timur, berdasarkan data petrografi. Bull. Scientific Contr. (UNPAD) 7, 2, p. 109-126.
(online at: http://jurnal.unpad.ac.id/bsc/article/view/8237/3785)

('Diagenesis and source of sandstone of the Lati formation in the Berau Region, East Kalimantan, based on petrographic data'. MMiocene Lati Fm sandstones of NE Kalimantan classified as litharenites and wackes. Provenance mainly from granitic rocks, with transport to SE (see also Maryanto 2013))

Maryanto, S. (2011)- Stratigrafi dan keterdapatan batubara pada Formasi Lati di daerah Berau, Kalimantan Timur. Bul. Sumber Daya Geologi 6, 2, p. 97-110.
(online at: www.bgl.esdm.go.id/publication/index.php/dir/article_detail/455)
('Stratigraphy and occurrence of coal of Lati Formation in the Berau area, E Kalimantan'. M Miocene Lati Fm up to 400m thick and deposited in delta plain- fluvial swamps. Coal seams locally developed in middle part of formation, more common in upper part. Coal seams intensively cleated, subconchoidal fractured, moderate density, sometimes with very fine siliciclastics partings and up to 6.5m thick)

Maryanto, S. (2013)- Diagenesis and provenance of Lati Sandstones in the Berau Area, East Kalimantan Province, based on petrography data. J. Geologi Indonesia 7, 3, p. 137-144.
(online at: http://jgi.bgl.esdm.go.id/index.php/JGI/article/view/31/23)
(M Miocene deltaic sandstones of Lati Fm, Berau Area, SW Tarakan Basin, NE Kalimantan, classified as litharenite, feldspathic litharenite, etc.. Provenance 'recycled orogenic', dominated by granitic rocks, sediments and metamorphics. Transport directions to S and E)

Maryanto, S. (2016)- Sedimentologi batugamping Formasi Berai gunung talikur dan sekitarnya kabupaten Tapin, Kalimantan Selatan, berdasarkan data petrografi. J. Geologi Sumberdaya Mineral 17, 2, p. 85-98.
(online at: http://kiosk.geology.esdm.go.id/artikel/pdf/sedimentologi...)
('Limestone sedimentology of the Berai Formation at the Talikur Mountain and its surrounding area, Tapin Regency, South Kalimantan based on petrographic data'. Late Oligocene- E Miocene Berai Fm in NW foothills of Meratus Range ~75m thick with several reefal environments in overall transgressive situation (with pictures of Borelis pygmaeus, Heterostegina borneensis)

Maryanto, S., Rachmansjah & T. Sihombing (2005)- Mekanisme pengendapan batuan sedimen Tersier awal di daerah Tewah, Gunung Mas, Kalimantan Tengah: kaitannya dengan keterdapatan batubara. J. Sumber Daya Geologi 15, 1 (148), p. 38-56.
('The mechanism of deposition of Tertiary sedimentary rocks early in the Tewah area, Gunung Mas, Central Kalimantan: relation with coal formation'. Study of Late Eocene Tanjung Fm in C Kalimantan with basal alluvial fan deposits grading upward into fluvial flood plain with 10-80cm thick coal seams in upper part)

Maryanto, S., Rachmansjah & T. Sihombing (2005)- Lingkungan pengendapan batuan pembawa batubara Formasi Warukin di lintasan Kuala Kurun- Hulu Sungai Manyangan, Gunung Mas, Kalimantan Tengah. J. Sumber Daya Geologi 15, 4 (150), p. 64-81.
('Depositional environment of coal-bearing Warukin formation in the Kuala Kurun- Hulu Manyangan, River section, Gunung Mas, Central Kalimantan'. On 500m thick M-L Miocene coal-bearing deposits in C Kalimantan. At least 8 seams, coals subbituminous with vitrinite reflectance 0.52-0.55% (=~2km of sediment removed?; JTvG), 9-11% water, etc. Associated with quartz-rich sandstones)

Maryanto, S., Rachmansjah, T. Sihombing & S.Wiryosujono (2005)- Sedimentologi batuan pembawa batubara Formasi Lati di lintasan Lati, Berau, Kalimantan Timur. J. Sumber Daya Geologi 15, 4 (150), p. 33-48.
('Sedimentology of rocks below the coals of the (M Miocene) Lati Fm in the Lati section, Berau, E Kalimantan'. Deposition of tide-dominated delta in E-M Miocene)

Maryanto, S. & T. Sihombing (2001)- Stratigrafi Paleogen daerah Kalimantan Selatan: kaitannya dengan keterdapatan batubara. Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 26, p. 29-51.
('Paleogene stratigraphy of S Kalimantan'. Study of End-Eocene coal-bearing Tanjung Fm in SE Kalimantan. Max. thickness of coal seams in Middle Tanjung Fm is 340 cm, deposited in fluvial- delta plain facies)

Mason, A.D.M., J.C. Haebig & R.L. McAdoo (1993)- A fresh look at the North Barito Basin, Kalimantan. Proc. 22nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 589-606.

(New opinions on Barito basin. Tanjung Field structure not young thrust fold, but long-lived anticlinal structure, first folding and initial trap formation in Early Oligocene and again in late M Miocene. Also Plio-Pleistocene tectonic pulse associated with Meratus Mts uplift, with opposing sets of thrust faults)

Masatani, K. (1967)- Oil geology of East Kalimantan. J. Japanese Assoc. Petroleum Technologists 32, 4, p. 228-240. (*in Japanese)*
(online at: https://www.jstage.jst.go.jp/article/japt1933/32/4/32_4_228/_pdf)

Maubeuge, F. & I. Lerche (1993)- A north Indonesian basin: geo, thermal and hydrocarbon generation histories. Marine Petroleum Geol. 10, 3, p. 231-245.
(Elf-Aquitaine basin modelling study of unnamed basin, 'offshore north of Kalimantan'. (Location unknown, so who cares; JTvG))

Maubeuge, F. & I. Lerche (1994)- Geopressure evolution and hydrocarbon generation in a North Indonesian basin: two-dimensional quantitative modelling. Marine Petroleum Geol. 11, 1, p. 105-115.
(Elf-Aquitaine study of unnamed basin 'offshore north of Kalimantan', in young deltaic environment (more information from mystery basin; JTvG))

Maulin, H.B., U.A. Saefullah, A. Wicaksono, A. Direzza, M. Purnama & I. Setiawan (2017)- Neogene unconformity surfaces as evidence to tectonic re-activation- case study in Tarakan sub-basin. Proc. Joint Conv. HAGI-IAGI-IAFMI-IATMI, Balikpapan, JCB2015-390, 5p.
(Tarakan basin overall E-ward prograding delta system complicated by (1) sourcing by multiple feeder rivers (proto-Sesayap, Sesanip and others) and (2) angular unconformities within delta deposits caused by several tectonic cycles. Late Oligocene uplift of Kucing High, Late Miocene uplift E of Kucing High (Simenggaris area, etc.; creating angular unconformity between Santul and Tarakan Fms), and Pleistocene renewed uplift in same area and folding of present day Bunyu, Tarakan and Ahus structures)

McClay, K., T. Dooley, A. Ferguson & J. Poblet (2000)- Tectonic evolution of the Sanga Sanga Block, Mahakam Delta, Kalimantan, Indonesia. American Assoc. Petrol. Geol. (AAPG) Bull. 84, p. 765-786.
(online at: http://www.searchanddiscovery.com/documents/mcclay/images/00_0765.pdf)
(Sanga Sanga Block four large fields in M-U Miocene deltaic sandstones, in NE-trending Mahakam fold belt, characterized by long, tight, faulted anticlines and broad synclines. Anticlines cored by overpressured shales and formed by reactivation of early delta-top extensional growth faults. Change from gravity-driven extension to contraction at ~14 Ma (Calvert 2003: ~10.5 Ma inversion event in Kutei basin tied to collision of Banggai-Sula microcontinent with E Sulawesi, but had already started in E Miocene)

Milligan, E.N., M.C. Friederich & Meng Sze Wu Lim (1996)- Coal exploration and development in Southeastern Kalimantan, Indonesia. In: G.P. & A.C. Salisbury (eds.) Trans. 5th Circum-Pacific Energy and Mineral Resources Conference, Honolulu 1990, Gulf Publishing, Houston, p. 221-230.
(Early 1980's exploration and development by BHP of Eocene coal in Pasir (Asem Asem) basin, E of Meratus Mts. Eocene coal measures remarkably uniform over area of 20,000 km2. Coal in one major interval in lower part of Tanjung Fm, total thickness ~13m, with thin bands of claystone. One thin (0.5-1.5m) but persistent coal horizon 50-100m above main horizon. One thin (1-6m) limestone bed rich in Discocyclina, 100+m above coal measures, could be traced over >100km in N-S direction)

Moge, M. & F. Febvre (2001)- Integrated study of a complex deltaic sand reservoir. Soc. Petrol. Engineers (SPE) Paper 68659, p.

Mohler, W. (1943)- Palaeontology and stratigraphy of the Tertiary of SE Borneo. Chishitsuchosajo (Geol. Survey, Bandung) Report, 12p. *(Unpublished)*

Mohler, W.A. (1946)- *Sigmoilina personata* n.sp., eine Leitform aus dem Eocen von Sudost Borneo und Java. Eclogae Geol. Helvetiae 39, 2, p. 298-300.
(online at: https://www.e-periodica.ch/digbib/view?pid=egh-001:1946:39#325)

('Sigmoilina personata n.sp., an index species from the Eocene of SE Borneo and Java'. Description of new small miliolid Sigmoilina personata, an index species for Upper Eocene in SE Kalimantan (Asem Asem and many other E Kalimantan localities) and C Java (Nanggulan))

Mohler, W.A. (1946)- *Lepidocyclina crucifera* n.sp. aus dem Burdigalien von Ost-Borneo. Eclogae Geol. Helvetiae 39, p. 302-309.
(online at: http://retro.seals.ch/digbib/view?pid=egh-001:1946:39::329)
('Lepidocyclina crucifera new species from the Burdigalian of E Kalimantan'. Stellate and advanced nephrolepidine Lepidocyclina with four rays from Sungai Mandai, Berau area. Associated larger foram assemblage includes Miogypsina and Miogypsinoides and suggests zone Tf1, Burdigalian)

Mohler, W.A. (1948)- Uber das Vorkommen von *Alveolina* und *Neoalveolina* in Borneo. Eclogae Geol. Helvetiae 41, 2, p. 321-329.
(online at: https://www.e-periodica.ch/digbib/view?pid=egh-001:1948:41#335)
('On the occurrence of Alveolina and Neoalveolina in Kalimantan'. Eocene Alveolina rel. common in NE Kalimantan, but not S of Sangkulirang Bay. Also common in Lutetian, M Eocene (Ta), but not in Priabonian. Neoalveolina (N. pygmaeus group= Borelis; JTvG) first occurs at base of Tc/ Oligocene, commonly associated with Nummulites fichteli)

Mohler, W.A. (1949)- *Flosculinella reicheli* n.sp. aus dem Tertiar e5 von Borneo. Eclogae Geol. Helvetiae 42, 2, p. 521-527.
(online at: https://www.e-periodica.ch/digbib/view?pid=egh-001:1949:42#540)
Flosculinella reicheli, a new species of globular flosculinellid from foram-rich marl of Te5/Burdigalian age, in Hajup rubber plantation N of Tanjung, Hulu-Sungei area, N Barito basin, E Kalimantan)

Monthioux, M., P. Landais & J.C. Monin (1985)- Comparison between natural and artificial maturation series of humic coals from the Mahakam delta, Indonesia. Organic Geochem. 8, 4, p. 275-292.
(Laboratory simulation of in-situ hydrocarbon formation from kerogen, comparing Type III-humic organic matter from Mahakam delta to artificial and natural coal series. Natural maturation simulated better when pyrolysis performed under confined conditions)

Monthioux, M., P. Landais & B. Durand (1986)- Comparison between extracts from natural and artificial maturation series of Mahakam delta coals. Organic Geochem. 10, p. 299-311.

Moore, T.A. (1990)- An alternative method for sampling and petrographically characterizing an Eocene coal bed, Southeast Kalimantan, Indonesia. Ph.D. Thesis. University of Kentucky, Lexington, p. 1-240.

Moore, T.A., M. Bowe & C. Nas (2014)- High heat flow effects on a coalbed methane reservoir, East Kalimantan (Borneo), Indonesia. Int. J. Coal Geology 131, p. 7-31.
(Miocene Balikpapan Fm in Sangatta, E Kalimantan, >1500m thick with common coal seams, <1- >5m thick, and distributed throughout section. Measured gas <1- 13 m3/t, increasing downhole in cores. Sangatta area higher geothermal gradient (50 °C/km) than most of E Kalimantan, especially near Pinang Dome in SW. Gas in higher rank area could be thermogenic, while gas isotopes from well away from Pinang Dome indicate biogenic origin)

Moore, T.A. & J.C. Ferm (1988)- A modification of procedures for petrographic analysis of Tertiary Indonesian coals. J. Southeast Asian Earth Sci. 2, 3-4, p. 175-183.
(Plant parts and tissues in SE Kalimantan Eocene coals classified on basis of morphology and degree of degradation. Highest concentration and best preservation of plant parts and tissues in banded coal)

Moore, T.A. & J.C. Ferm (1992)- Composition and grain size of an Eocene coal bed in southeastern Kalimantan, Indonesia. Int. J. Coal Geology 21, 1-2, p. 1-30.
(Eocene coal in SE Kalimantan (Asem Asem) composed of plant parts and tissues in matrix of fine-grained particulate and amorphous material. Plant parts consists of stems, roots and leaves. Amorphous matrix consists

of unstructured humic gels and bitumen. Bright banded coal types contain greatest proportion of well-preserved plant parts. Absence of large (>2mm) plant material and roots in Eocene coal different from Miocene lignite and Holocene peat. Eocene coal formed from palms and ferns which are easily degraded, younger lignite and peat formed from woody angiosperms more resistant to decay)

Moore, T.A., J.C. Ferm & G.A. Weisenfluh (1990)- Relationship of megascopic coal types to quality variation within Eocene-age, Indonesian coal beds. Int. J. Coal Geology 16, p. 147-149. *(Abstract)*
(Mineable deposits (>1 m) of Eocene subbituminous-A rank coal in SE Kalimantan variable quality. Occur in podlike bodies ~3×3 km in areal extent. Four major types. Bright coal types low in ash (6-14%). Bright, banded coal types composed of well-preserved plant tissues (20-35%) and moderately high HGI (35-38). Bright, non-banded coal lower of preserved plant structures (<15%) and lower HGI (30-35). Dull coal types higher ash (15-35%) and HGI (35-40). Sulfur content highest at top of coal beds, associated with overlying marine and brackish water sediments. Thicker, unsplit portions of seams composed of bright, low-ash coal. Dull, high-ash coal types occur in thinner, split benches of coal body)

Moore, T.A. & M.C. Friederich (2010)- A probabilistic approach to estimation of coalbed methane gas-in-place for Kalimantan, Indonesia. In: N.I. Basuki & S. Prihatmoko (eds.) Proc. Kalimantan coal and mineral resources, MGEI-IAGI Seminar, Balikpapan 2010, p. 61-71.
(Preliminary study of Eocene and Miocene coal in Asem-Asem area indicates 253 BCF gas in place (P50))

Moore, T.A. & R.E. Hilbert (1992)- Petrographic and anatomical characteristics of plant material from two peat deposits of Holocene and Miocene age, Kalimantan, Indonesia. Review Palaeobotany Palynology 72, p. 199-227.
(Kalimantan Holocene and Miocene peats two types of organic material: plant organs/tissues and fine-grained matrix (cell walls and fillings, fungal remains, spores-pollen, resin). Some matrix material amorphous)

Moore, T.A., J.C. Shearer & S.L. Miller (1996)- Fungal origin of oxidised plant material in the Palangkaraya peat deposit, Kalimantan Tengah, Indonesia: implications for 'inertinite' formation in coal. Int. J. Coal Geology 30, p. 1-23.
(Palangkaraya extensive surface peat layer 0-6 m thick. Common oxidised plant material formed from fungal alteration)

Morley, R.J., J. Decker, H.P. Morley & S. Smith (2006)- Development of high resolution biostratigraphic framework for Kutei Basin. Proc. Int. IPA Geosci. Conf. Exhib., Jakarta 2006, PG 27, 6p.
(28 sequences identified in M Miocene- Pleistocene of W Makassar Straits)

Morley, R.J. & H.P. Morley (2010)- Neogene climate history of the Makassar Straits, with emphasis on the the Attaka region, East Kalimantan, Indonesia. Proc. 34^{th} Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA10-G-208, 17p.
(Reconstruction of M Miocene- Recent Neogene climate history of E Kalimantan, based on Quaternary Makassar Straits cores and Attaka field well samples, and compared to Natuna and Malay basins. Everwet tropical climate since Late Miocene. Some intervals with evidence for 100 ka eccentricity cycles)

Moss, S.J. (1998)- Embaluh Group turbidites in Kalimantan- evolution of a remnant oceanic basin in Borneo during the Late Cretaceous to Paleogene. J. Geol. Soc. London 195, p. 509-524.
(Turbidites outcrops in NW Borneo: Embaluh Group in Kalimantan and Rajang Group in Sarawak. Previous interpretation of Late Cretaceous- Paleogene deep marine deposition and deformation in accretionary prism implies S-dipping thrusts, N-ward stratigraphic younging, existence of arc- trench system and deformation and metamorphism of turbidites. New fieldwork established S-ward stratigraphic younging in Kalimantan, no evidence for S-dipping thrusts, metamorphism and accretionary complex-related deformation. Bulk of Rajang-Embaluh Gp postdates inboard subduction-related magmatism. Rajang-Embaluh Group turbidites formed in post-collisional foreland basin or remnant ocean basin. Lack of identifiable mountain belt and linked thrust system, and probable oceanic affinity of crust beneath Rajang-Embaluh Group basin favor latter)

Moss, S.J., A. Carter, S. Baker & A.J. Hurford (1998)- A Late Oligocene tectono-volcanic event in East Kalimantan and the implications for tectonics and sedimentation in Borneo. J. Geol. Soc. London 155, 1, p. 177-192.
N Kutai Basin rapid Late Oligocene (~25 Ma) cooling of Late Cretaceous sandstone, E Miocene arc volcanism at 23-18 Ma, E-ward shift of W basin margin and inception of delta deposition along new basin margins. Elsewhere in Borneo also major Late Oligocene-E Miocene thrust imbrication and volcanic arc activity, possibly caused by Australia-Philippine Sea Plate collision, Neogene counterclockwise rotation of Borneo or initial impingement of blocks of S China origin with N Borneo- S Palawan)

Moss, S.J. & J.L.C. Chambers (1999)- Tertiary facies architecture in the Kutai Basin, Kalimantan, Indonesia. J. Asian Earth Sci. 17, p. 157-181.
(Kutai Basin Jurassic- Cretaceous basement ophiolitic units overlain by Cretaceous turbidite fan. Basin initiated in M Eocene, with rifting and likely sea floor spreading in Makassar Straits, producing fault-bounded depocentres, followed by sag phase sedimentation. Eocene depocentres variable sedimentary fills depending on position. More uniform sedimentation in later Eocene and Oligocene. Tectonic uplift along S and N basin margins and related subsidence of Lower Kutai Basin in Late Oligocene. Subsidence associated with high-level andesitic-dacitic intrusives and associated volcanics. Miocene, basin fill overall regressive style of sedimentation, interrupted by periods of tectonic inversion throughout Miocene to Pliocene)

Moss, S.J. & J.L.C. Chambers (1999)- Depositional modeling and facies architecture of rift and inversion episodes in the Kutai Basin, Kalimantan, Indonesia. Proc. 27th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 1-22.
(Kutai basin initiated in M Eocene in conjunction with rifting/ sea-floor spreading in N Makassar Straits. Sedimentary fill of Eocene N-S/NE-SW trending, fault-bounded depocentres varies with position relative to sediment source, paleo-water depths and half-graben geometry. This contrasts with uniform sedimentary styles in Late Eocene and Oligocene. Late Oligocene ~N3 unconformity reflects uplift of C Kalimantan and extension Lower Kutai Sub-basin is associated with andesitic-dacitic intrusives and volcanics. Volcanism and basin margin erosion supplied large volumes of material E-wards, along with material from inverted Paleogene depocentres. Miocene regressive sedimentation, interrupted by Miocene- Pliocene tectonic inversions)

Moss, S.J., J. Chambers, I. Cloke, D. Satria, J.R. Ali, S. Baker, J. Milsom & A. Carter (1997)- New observations on the sedimentary and tectonic evolution of the Tertiary Kutai Basin, East Kalimantan. In: A.J. Fraser, S.J. Matthews & R.W. Murphy (eds.) Petroleum Geology of Southeast Asia, Geol. Soc. London, Spec. Publ. 126, p. 395-416.
(Kutai Basin opened in M-L Eocene in Borneo. Extensional faulting in foreland setting S of Late Cretaceous/ Paleogene C Kalimantan fold belt with U Cretaceous granites. Paleogene stratigraphy basal conglomerates, shallow marine clastics and thick bathyal marine shales. Neogene stratigraphy dominated by deltaic clastics and carbonate platforms. Three Tertiary suites of igneous activity, variously interpreted as melting of orogenic root, extensional driven melting and/or subduction related melting. New model relates formation of Kutai Basin to opening of Celebes Sea and collapse of uplifted Late Cretaceous/Paleogene orogenic belt)

Moss, S.J. & E.M. Finch (1998)- Geological implications of new biostratigraphic data from East and West Kalimantan, Indonesia. J. Asian Earth Sci. 15, p. 489-506.
(New biostrat data from Cretaceous- Miocene of various parts of Kalimantan)

Munniks de Jong, W.D. (1915)- Aantekeningen over de Tidoengsche landen (Res. Z en O. afd. Van Borneo) bewerkt naar het rapport van W.D. Munninks de Jongh. Jaarboek Mijnwezen Nederlandsch Oost-Indie 42 (1913), Verhandelingen, p. 22-35.
(Summary of reconnaissance survey report by Munniks de Jongh in 'Tidung lands' (NE Kalimantan- Sabah border area). Occurrences of steep hills of Eocene Nummulites limestone (some also with Pellatispira; Rutten 1915a, b). Older 'Sembakoeng beds' are intensely folded shales and sands with bands of red radiolarite rock, similar to Cretaceous Alino-Waringin beds of SE Kalimantan Meratus Mountains. Rutten (1915) found fragments of this radiolarite in Eocene limestone)

Nagasaka, M. (1978)- Exploration of the Mahakam Delta, East Kalimantan, Indonesia. J. Japanese Assoc. Petroleum Technologists 43, 6, p. 407-415.
(online at: www.journalarchive.jst.go.jp/..)
(In Japanese, with English summary. In response to rising Kuching High, large amount of paralic sediments deposited to East. Mahakam Delta at least two paleo-deltas in M Miocene-Pliocene. All oil-gas production from paralic sediments, 90% or more are from deltaic sediments. With generalized paleogeographic maps)

Nainggolan, D.A., T. Padmawidjaja & W.H. Simamora (2004)- Interpretasi gayaberat terhadap Cekungan Kutai Barat, dan struktur-struktur lain di Lembar Long Pahangai dan Long Nawan, Kalimantan Timur. J. Sumber Daya Geologi 14, 3 (147), p. 181-195.
('Interpretation of gravity of the W Kutai Basin and structures in the Longpahangai and Longnawan sheets, E Kalimantan')

Nandang, H. & Wahyudin, M. (1994)- Reflectance gradient and shale compaction, their relationship to basin configuration during Early Neogene: a NE Kalimantan Basin reassessment. Proc. 23rd Ann. Conv. Indon. Assoc. Geol. (IAGI), p. 927-942.

Napitupulu, H. & I.B. Sosrowidjojo (2002)- The Warukin Formation: an alternative source rock in the Barito Basin. Proc. 31st Ann. Conv. Indon. Assoc. Geol. (IAGI), Surabaya, 1, p. 138-155.
(M Miocene coal-bearing Warukin Fm good-excellent hydrocarbon source rocks. Vitrinite reflectance in wells 0.3-0.68% (slightly suppressed?) ,suggesting lower part of formation could be fully mature in 2 depocenters. Onset oil generation in Bangkau depocenter at ~4 Ma (top oil window 2250m), in Tapian Deep at ~6 Ma (top oil window ~2900m. Modelling suggests oil expulsion of ~2000 MMBO in last few Myrs)

Napitupulu, H. & Yulian B. (1987)- Kematangan batuan induk di lapangan Tapa- Pulau Bunyu. Proc. 16th Ann. Conv. Indon. Assoc. Geol. (IAGI), p.
('Maturation of source rocks in the Tapa field, Bunyu Island')

Nas, C. (1994)- Spatial variation in thickness and coal quality of the Sangatta seam, Kutei Basin, Kalimantan, Indonesia. Ph.D. Thesis, University of Wollongong, Wollongong, NSW, Australia, p. 1-324. *(Unpublished)*
(online at: http://ro.uow.edu.au/cgi/viewcontent.cgi?article=2409&context=theses)
(Late M Miocene Sagatta coal seam is most important seam in Balikpapan Fm of Sangatta coalfield, N Kutai Basin, E Kalimantan. Formed as raised peat bog in floodplain of mixed load fluvial-deltaic system. Average coal thickness 6m. High vitrinite (av. 91%). Low liptinite (av. 3%), inertinite (av. 3%), mineral matter (av. 2%) and sulfur (av. 0.4%))

Netherwood, R. & A. Wight (1992)- Structurally-controlled, linear reefs in a Pliocene delta front setting, Tarakan Basin, Northeast Kalimantan. In: C.T. Siemers, M.W. Longman et al. (eds.) Carbonate rocks and reservoirs of Indonesia, Indonesian Petroleum Assoc. (IPA), Core Workshop Notes 1, Ch. 3, p. 1-36.
(Sceptre Vanda-1 targeted 90m clean but cemented and partly shaly Pliocene? limestone. Four depositional facies: coral framestone, coral rudstone, argillaceous coral floatstone-rudstone and laminated silty claystone. Four cleaning-up cycles, representing sequences of reef-growth and progradation. None of cored limestones good reservoir potential)

Nikijuluw, R., Z.A. Suwito, M.A. Arianto & D.A. Anggraini (2005)- Integrated reservoir assessment: a way to identify "overlooked" multi-layered reservoirs. Soc. Petrol. Engineers (SPE) Asia Pacific Oil and Gas Conference and Exhibition, Jakarta, Paper 93198-MS, 10p. *(Extended Abstract)*
(VICO Semberah field 1974 oil-gas discovery in onshore Mahakam Delta, E Kalimantan, in complex multi-layer M-U Miocene fluvio-deltaic sandstone reservoirs. New assessment of previously overlooked thin-bedded Fxx sand series)

Nirsal, N. (2010)- Facies distribution and stratigraphic development in the paleo-Mahakam Delta, Indonesia M.Sc. Thesis, Chulalongkorn University, Bangkok, p. 1-83. *(Unpublished)*

Nirsal, N.B. (2010)- Facies distribution and stratigraphic development in the Palaeo-Mahakam Delta, Indonesia. Bull. Earth Sci. Thailand (BEST) 3, 2, p. 25-27.
(online at: www.cupetrogeoscience.com/BEST_Nadia%20Binti%20Nirsal%20%20.pdf)
(Brief summary of facies in 200m outcrop sectionS of Samarinda, E Kalimantan. Transgressive marine beds)

Noeradi, D., B.P. Muritno, Sukowitono, E.A. Subroto & Djuhaeni (2005)- Petroleum system and hydrocarbon prospectivity of the Simenggaris Block and its surrounding areas, Tarakan Basin, East Kalimantan, Indonesia: a new approach by using sequence stratigraphy. In: AAPG Int. Conf. Exh., Paris 2005, 6p *(extended abstract)*
(Eight sequences/ sequence boundaries of Late Oligocene/ Early Miocene-Pliocene age identified in W, onshore part of Tarakan basin)

Noon, S.W., J. Harrington & H. Darman (2003)- The Tarakan Basin, East Kalimantan: proven fluviodeltaic, prospective deep-water and Paleogene plays in a regional stratigraphic context. Proc. 29th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 417-430.
(Tarakan basin four sub-basins Tidung, Tarakan, Berau and Muaras. Rift sedimentation underway by 43 Ma (M Eocene) and may have begun in Cretaceous. Rifting continued until tectonic event near Eocene-Oligocene boundary. Basin sag and eustasy controlled sedimentation until M Miocene. Episodic compression, punctuated by eustatic events, characterizes M Miocene- Recent. Neogene source rocks mostly coals and 'fluvio-deltaic, paralic' organic-rich shales. Reservoired oils in shelf settings point to mature Miocene source. Evidence for hydrocarbons from Eocene or older organic matter. Paleogene or older lacustrine, brackish and marine, syn-rift sediments)

Novak, V. & W. Renema (2015)- Larger foraminifera as environmental discriminators in Miocene mixed carbonate-siliciclastic systems. Palaios 30, p. 40-52.
(Larger foraminifera from late E-M Miocene mixed carbonate-siliciclastics near Samarinda and Bontang, E Kalimantan, suggest Batu Putih section paleoenvironments ranged from delta front to shelf edge reefs, Bontang and Stadion sections formed in more restricted environments, under higher terrigenous inputt settings)

Novak, V., N. Santodomingo, A. Rosler, E. Di Martino, J.C. Braga, P.D. Taylor, K.G. Johnson & W. Renema (2013)- Environmental reconstruction of a late Burdigalian (Miocene) patch reef in deltaic deposits (East Kalimantan, Indonesia). Palaeogeogr. Palaeoclim. Palaeoecology 374, p. 110-122.
(Paleoenvironment and biodiversity of Late Burdigalian (Tf1 with Miogypsina cf. globulina, Lepidosemicyclina polymorpha, Flosculinella bontangensis, etc.) patch reef developed in mixed carbonate- siliciclastic system. Outcrop at NE margin of Kutai Basin near Bontang. Five facies types distinguished: foraminiferal packstone (FP), bioclastic packstone with foralgal communities (BP), thin-platy coral sheetstone (CS), platy-tabular coral platestone (CP), and shales (S). Assemblages and growth forms of coralline algae no major differences between facies types and dominated by melobesioids and Sporolithon)

Noventiyanto, A. & I. Wahyudi (2011)- How geochemical analysis led to a discovery: South Sebuku-1 case, Bengara I PSC, North East Kalimantan. Proc. 36th HAGI and 40th IAGI Ann. Conv., Makassar, JCM2011-360, 7p.
(Sebuku-1, drilled by ARCO in 1976, had many hydrocarbon shows in Tabul and Meliat Fms. Heptane content in gas higher than many dry holes in other areas, suggesting leakage from nearby oil or condensate accumulation could be source of light hydrocarbons. Sebuku-1 well was drilled down-dip of N flank of S Sebuku structure. S Sebuku-1 well discovered deltaic reservoirs with gas-condensate in Tabul and Meliat Fms in 2009)

Novian, M.I. & H.D.K. Wijayanti (2012)- Paleogeography and sedimentation dynamics of Ujoh Bilang-Batubelah Limestone Member, upstream Mahakam River, Ujoh Bilang Area, East Kalimantan Province. J. Southeast Asian Applied Geol. (UGM) 4, 2, p. 99-107.
(online at: http://geologic-risk.ft.ugm.ac.id/fresh/jsaag/vol-4/no-2/jsaag04-art05-IndraNovian.pdf)
(Upstream Mahakam River area with M-L Eocene rift deposits, overlain by Oligocene sag phase marine claystones- sandstones with two carbonate members: Ujoh Bilang Fm (Early Oligocene, with Nummulites, Eulepidina) and Batu Belah Lst (Late Oligocene, with Austrotrillina, Miogypsinoides, etc.)

Novita, D. & K.D. Kusumah (2016)- Karakteristik dan lingkungan pengendapan batubara Formasi Warukin di Desa Kalumpang, Binuang, Kalimantan Selatan. J. Geologi Sumberdaya Mineral 17, 3, p. 139-152.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/12/5)
('Characteristics and depositional environment of the Warukin coal formation in Kalumpang village, Binuang, South Kalimantan'. Warukin Fm coal near Kulumpung deposited in upper delta plain and floodplain environments. Vitrinite reflectance (Vr) 0.29- 0.49% (lignite- subbituminous = immature- earliest mature))

Nuay, E.S., A.M. Astarita & K. Edwards (1985)- Early Middle Miocene deltaic progradation in the southern Kutai Basin. Proc. 14th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 63-81.
(Eastward prograding M Miocene delta system in Balikpapan area, driven by early M Miocene uplift. Source for well-sorted and rounded quartz-rich sediments probably sandstones of earlier progradational cycle derived directly from granitic Sunda shield. Age of base sandy series ("Omega' horizon) near zone N8-N9 boundary. (Equivalent of E Java Ngrayong sst ?; JTvG))

Nuay, E.S. & A.P. Kadar (1994)- Neogene bioevents in the Kutai basin, Sanga-Sanga contract area, East Kalimantan, Indonesia. In: R. Tsuchi (ed.) Pacific Neogene events in time and space, Contributions to the West Pacific. IGCP-246, Shizuoka University, Japan, p. 87-100.

Nugraha, R.H.C. & N.I. Basuki (2012)- Evidence of backstepping carbonate platform during Oligo-Pliocene in Landas Area, eastern tip Mangkalihat Peninsula, Eastern Borneo, Indonesia. Proc. 36th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA12-G-016, p. 1-15.

Nugroho, B., E. Guritno, H. Mustapha, W. Darmawan, A. Subekti & C. Davis (2016)- Post rift Oligocene marine source rock, a new petroleum system in Greater Bangkanai, Upper Kutai, Indonesia. In: Int. Petroleum Technology Conf. (IPTC), Bangkok, IPTC-18922-MS, 15p.
(Kerendan Gas Field in Bangkanai PSC, onshore Kutai Basin, is Oligocene carbonate gas producer. Gas previously postulated to be generated from Eocene terrestrial source rocks, but recent C isotope data suggest gas generation from marine source rock, not terrestrial in origin)

Nugroho, S.B. & D. Mandhiri (1993)- Reservoir modeling in the Bunyu Tapa gas field- an integrated study. Proc. 22nd Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung, 2, p. 617-626.
(Bunyu Tapa gas field in N Tarakan basin with >84 mappable fluvio-deltaic sand bodies, with thickness of <1->30m. Same paper as Ramli, Nugroho et al. 1993, published by IPA)

Nugroho, S.B., B.S. Murti & B.M. Toha (2004)- Implementation of volume interpretation in revealing upside potential in a mature field, the Sangatta oilfield: a case study. In: ASEG 17th Geophysical Conference, Sydney 2004, p. 1-5. *(Extended Abstract)*
(Seismic 3D volume interpretation revealed deeper play potential below mature Sangatta oil field, onshore E Kalimantan)

Nummedal, D., Y.J. Partono, L. Greene, M. Boehm et al. (2000)- High-frequency sequence architecture in upper Miocene and Quaternary strata on the Mahakam Shelf, East Kalimantan, Indonesia. AAPG Int. Conf. Exhib., Bali, Abstracts, American Assoc. Petrol. Geol. (AAPG) Bull. 84, 9, p. 1470-1471. *(Abstract only)*
(online at: www.searchanddiscovery.com/abstracts/html/2000/intl/abstracts/297.htm)
(U Miocene productive interval in typical Attaka well ~1325 m thick, subdivided in ~35 sequences, averaging ~38 m thick. Age of succession 10.7- 7.3 Ma (3.4 My), suggesting sequences may be Milankovitch 100 ky climate cycles. Sequences stacked in progradinging pattern. In some sequences, predominantly in lower part of sampled interval, clinoforms downlap onto TST and HST carbonates. 100 ky climate cycles also dominated Late Quaternary sedimentation on Mahakam shelf. Last Quaternary cycle average 40 m thick, with erosional basal sequence boundary deeply incised by paleovalleys)

Nursanto, E., A. Idrus, H. Amijaya & S. Pramumijoyo (2013)- Characteristics and liquefaction of coal from Warukin Formation, Tabalong area, South Kalimantan, Indonesia. J. Southeast Asian Applied Geol. (UGM) 5, 2, p. 99-104.

(online at: https://journal.ugm.ac.id/jag/article/view/7211)

Nurwono, P.T. (1978)- Producing gas-condensate and oil rim reservoirs from channel sands of the Badak field. Proc. 7th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 383-398.

Oppenoorth, W.F.F. (1930)- Verslag der diepboringen op het eiland Boenjoe. Jaarboek Mijnwezen Nederlandsch Oost-Indie 58 (1929), p. 158-186.
('Report of deep drilling on Bunyu Island' Two 'deep' (500, 342m) wells drilled in 1923-1925 by geological survey on anticlinal structure with small gas seeps on S Bunyu, NE Kalimantan. Drilled with purpose of finding oil, and oil and gas shows were encountered, but stopped short of target. Also 7 shallow (125-235m) reconnaissance wells. Detailed well lithology columns show numerous coal beds)

Orange, D.L., P.A. Teas, J. Decker, P. Baillie & T. Johnstone (2009)- Using SeaSeep surveys to identify and sample natural hydrocarbon seeps in offshore frontier basins. Proc. 33rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 21p.
(High resolution bathymetry and backscatter surveys help identify seafloor hydrocarbon seepage)

Ott, H.L. (1987)- The Kutei Basin- a unique structural history. Proc. 16th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 307-317.
(Structural model, combining tectonic, gravitational and isostatic forces to produce present day structures)

Oudin, J.L. (1987)- Diagenese de la matiere organique dans le bassin de la Mahakam. In: Geologie de la matiere organique, Mem. Soc. Geologique France, N.S., 151, p. 107-114.
('Diagenesis of organic matter in the Mahakam Basin')

Oudin, J.L, B. Durand & M. Shoell (1985)- Migration of oil and gas in the Mahakam Delta, Kalimantan; evidence and quantitative estimate from isotope and biomarker studies. Proc. 14th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 2, p. 49-56.

Oudin, J.L. & P.F. Picard (1982)- Genesis of hydrocarbons in the Mahakam Delta and the relationship between their distribution and the overpressured zones. Proc. 11th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 181-202.
(Oil- gas fields in Mio-Pliocene deltaics with high % of organic material. Though mainly vegetal, good source potential for gas and oil. Oils from different reservoirs in Handil field similar composition, but lighter oils in shallower reservoirs. Distribution of oil and gas fields primarily depends on kinetics of hydrocarbon expulsion)

Page, S.E., R.A.J. Wust, D. Weiss, J.O. Rieley, W. Shotyk & S.H. Limin (2004)- A record of Late Pleistocene and Holocene carbon accumulation and climate change from an equatorial peat bog (Kalimantan, Indonesia): implications for past, present and future carbon dynamics. J. Quaternary Science 19, 7, p. 625-635.
(A 9.5m core from inland peatland in Kalimantan reveals organic matter accumulation started around 26,000 ky, providing oldest reported initiation date for lowland ombrotrophic peat formation in SE Asia)

Palar, S., J.F. Bowen, A. Elim, K.P. Leger, B. Simmonds, G.C. Fryns, M. Hursey & Marwoto (1999)- Sepinggan Field development: a cross-functional team effort to develop bypassed attic oil. SPE Asia Pacific Oil and Gas Conf. Exh. Jakarta, 1999, 12p.

Panggabean, H. (1991)- Tertiary source rocks, coals and reservoir potential in the Asem-Asem and Barito basins, Southeastern Kalimantan, Indonesia. Ph.D. Thesis, University of Wollongong, p. 1-224.
(online at: http://ro.uow.edu.au/theses/2113/)
(Late Paleocene- E Eocene rifting in SE Borneo created the originally contiguous Barito, Asem-Asem and Kutei basins. Meratus uplift started in Late Miocene. Eocene and Miocene coals)

Panggabean, H. (1999)- Paleogene sedimentary rocks and paleogeography in Northeast Kalimantan basins. J. Geologi Sumberdaya Mineral 9, 96, p. 2-20.

(Review of Eocene-Oligocene stratigraphy and paleogeography of Tidung, Berau, Muara and Tarakan sub-basins, NE Kalimantan. Initiation of basis probably back-arc extension. Paleogene rocks starts with Eocene basal conglomerates, unconformable on tectonized Cretaceous Danau and Embaluh Fms. Paleogene coals rel. limited. Late Eocene- E Oligocene and early M-Late Miocene (Sabah Orogeny) deformation/ uplift events. Rel. widespread Oligocene limestones. With paleogeographic maps for Late Cretaceous, Eocene and Oligocene)

Panggabean, H. & R. Heryanto (2014)- Karakteristik mikroskopis dan fasies batubara di daerah Kualakurun dan sekitarnya, Kalimantan Tengah. Majalah Geologi Indonesia (IAGI) 29, 3, p. 127-141.
('The microscopic characteristics and coal facies in Kualakurun and surrounding area'. Eocene Tanjung Fm coals at Kahayan River area, W side of Barito Basin, C Kalimantan. Coal bed 0.3-3.0m thick, deposited in delta plain environment. Vitinite 80-92%, liptinite 0.4-5.0%, inertinite 0-10%. Vitrinite reflectance (Rv) 0.48-0.62% (= immature- early mature; = >2km of overburden removed?; JTvG))

Panigoro, H. (1983)- Petrographic characteristics of Badak and Nilam field sandstone reservoirs. Proc. 12th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 191-206.
(E Kalimantan Badak and Nilam fields 140 reservoir sands between 4000'- 13000'. Sandstones quartz arenites and felspathic are main cementing agents, some carbonate and ferruginous cement also observed)

Panigoro, H. (1989)- Exploration implications of porosity and permeability preservation by early migration of hydrocarbon in the Kutei Basin, East Kalimantan, Indonesia. Proc. 18th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 1-15.
(Wet sands generally tighter than hydrocarbon bearing ones, suggesting presence of hydrocarbons inhibited porosity-permeability reduction by diagenesis)

Panjaitan, B., D. Pakpahan & S. Sirait (2014)- Potensi CBM berdasarkan data analisa kimia batubara dan studi geologi regional pada Formasi Warukin dan Formasi Tanjung, cekungan Barito bagian utara, Kalimantan Tengah dan Selatan. Proc. 43rd Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, PIT IAGI 2014-040, 5p.
('CBM potential based on chemical analysis data of coal and regional geological study on the Warukin and Tanjung Fms in N part of the Barito basin, C and S Kalimantan'. Miocene Warukin Fm coal with moisture 3-14%, volatile matter 35-50%, ash 4-20%, sulfur 0.4- 4%, calories 5000-6000 ca /g (sub-bituminous coal quality B A). Eocene Tanjung Fm coal moisture 3-6%, volatile matter 30-50%, 3% ash, sulfur 0.2- 2%, calories 6000-7000 cal/g (bituminous A). Presence of face and butt cleats support potential of CBM)

Panuju, I. Prayitno, G. Rahmat, I. Firdaus & G. Sunardyanto (2007)- Revision of the Late Miocene nannoplankton biostratigraphy for Kutei Basin. Proc. Joint Conv. 32nd HAGI, 36th IAGI and 29th IATMI, Bali 2007, JCB2007-098, p. 629-646.
(Higher resolution Late Miocene calcareous nannoplankton zonation, based on samples from 23 unidentified wells in Kutai Basin. Seven zones subdividing Martini zones NN9- NN12 zones, based on, from base to top: FO (Base) Discoaster quinqueramus, LO (Top) Minilitha convalis, FO Amaurolithus primus, FO Reticulofenestra rotaria, LO Discoaster berggrenii, LO Reticulofenestra rotaria and LO Discoaster quinqueramus)

Partono, Y.J. (1992)- Low-resistive sandstone reservoirs in the Attaka Field. Proc. 21st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 2, p. 21-34.
(Giant Attaka oil field in E Kalimantan reservoirs are M- L Miocene multi-layered deltaic- shallow marine sandstones. Both high-resistive and low-resistive hydrocarbon-bearing sandstone layers are present)

Passe, W.B.B., H.R.E. Nugraha, M.A. Wijaya, L. Sitio & Y. Febriyeni (2008)- Hydrocarbon play in Ketungau-Melawi basins. Proc. 32nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IP08-SG-082, 9p.
(Ketungau- Melawi intra-continental basins of W Kalimantan separated by Semitau Ridge. Semitau Complex ?Triassic metamorphic basement unconformably overlain by Cretaceous marine Pedawan Fm clastics, possible source rocks. Tertiary terrigeneous and marine clastics. Source rock in (Eocene?) Silat and Sekayak Fms. Reservoir rocks in deltaic sandstone of E-M Miocene (should be Eocene; JTvG) Haloq Fm. Paleocurrent and provenance analysis indicate clastic source from N, from uplift of Boyan melange and Lubok Antu melange)

Paterson, D.W., A. Bachtiar, J.A. Bates, J.A. Moon & R.C. Surdam (1997)- Petroleum systems of the Kutai Basin, Kalimantan, Indonesia. In: J.V.C. Howes & R.A. Noble (eds.) Proc. Int. Conf. Petroleum systems of SE Asia and Australasia, Jakarta 1997, Indon. Petroleum Assoc. (IPA), p. 709-726.
(M- Late Miocene delta plain- delta front coals and carbonaceous shales are source for Lower Kutei Basin oil and gas fields)

Payenberg, T.B., S.C. Lang, G.P. Allen & R. Koch (1999)- Orientations of deltaic and alluvial channels in the Middle Miocene onshore part of the Kutai Basin, East Kalimantan and their potential as hydrocarbon reservoirs. In: H. Darman & F.H. Sidi (eds.) Tectonics and sedimentation of Indonesia, FOSI-IAGI-ITB Regional Seminar to commemorate 50th anniversary of Van Bemmelen's Geology of Indonesia, Bandung 1999, p. 64-66.
(Paleocurrents in M Miocene deltaic sandstones of Mutiara Field, S of Mahakam Delta. Smaller, isolated fluvial-dominated delta distributary channels oriented generally N-S; Amalgamated alluvial channels (incised valleys) orientation mainly WSW-ENE)

Payenberg, T.H.D. & A.D. Miall (2001)- A new geochemical sequence stratigraphic model for the Mahakam Delta and Makassar Slope, Kalimantan, Indonesia: Discussion. American Assoc. Petrol. Geol. (AAPG) Bull. 85, 6, p. 1098-1101.
(Discussion of Peters et al. 2000 paper, taking issue with using outdated cycle chart and undocumented sequence ages)

Payenberg, T.B., F.H. Sidi & S.C. Lang (2003)- Paleocurrents and reservoir orientation of Middle Miocene channel deposits in Mutiara field, Kutei Basin, East Kalimantan. In: F.H. Sidi, D. Nummedal et al. (eds.) Tropical deltas of Southeast Asia- sedimentology, stratigraphy and petroleum geology, Society for Sedimentary Geology (SEPM) Spec. Publ. 76, p. 255-266.
(Mutiara field producing from M Miocene fluvio-deltaics. Main reservoirs channelized sandstones. Single-story channels overall flow direction to S, parallel to strike of anticlines, probably response to M Miocene tectonic activity. Multi-story incised valley(s) E-W orientation)

Pelton, P.J. (1974)- Exploration of the South Barito Basin reef tract, Kalimantan, Indonesia. Proc. 3rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 153-169.
(Barito basin exploration started in 1937 with unsuccessful NKPM Kahajan and Kuripan wells. Conoco 1971 drilled four more dry wells, targeting Upper Berai Fm carbonate buildups)

Pertamina BPPKA (H. Darman et al.) (1996)- Petroleum geology of Indonesian basins. V: Tarakan basin, Northeast Kalimantan. Petroleum geology of Indonesian basins: principles, methods, and application, Jakarta, p. 1-36.

Pertamina BPPKA (A. Bachtiar et al.) (1996)- Petroleum geology of Indonesian basins, XI: Kutai Basin. Petroleum geology of Indonesian basins: principles, methods, and application, Jakarta, p. 1-

Peters, K.E., J.W. Snedden, A. Sulaeman, J.F. Sarg & R.J. Enrico (1999)- New deepwater geochemical model for the Mahakam delta and Makassar slope, Kalimantan. Proc. 27th Ann. Conv. Indon. Petr. Assoc. (IPA), Jakarta, p. 381-395.
(New source model: (1) waxy highstand oils onshore from M-U Miocene coals and shales deposited in coastal plain highstand kitchens; (2) less waxy lowstand-1 oils offshore from M-U Miocene coaly source rocks in deepwater lowstand kitchens. Most lowstand-2 oils higher maturity than lowstand-1 oils and originated from L-M Miocene coaly source rocks. (3) low-maturity, nonwaxy transgressive oils onshore from M Miocene marine shales deposited near maximum flooding surfaces)

Peters, K.E., J.W. Snedden, A. Sulaeman, J.F. Sarg & R.J. Enrico (2000)- A new geochemical sequence stratigraphic model for the Mahakam Delta and Makassar Slope, Kalimantan, Indonesia. American Assoc. Petrol. Geol. (AAPG) Bull. 84, 1, p. 12-44.
(Generally accepted geochemical-stratigraphic model for Mahakam-Makassar Straits fails to explain recent discoveries. Revised model upgrades potential of outer shelf. M Miocene source rock interval within oil window

based on seismic reinterpretation and source specific kerogen kinetics. Two major and two minor petroleum systems recognized, dominated by terrigenous type III organic matter)

Pieters, P.E., D.S. Trail & S. Supriatna (1987)- Correlation of Early Tertiary rocks across Kalimantan. Proc. 16th Ann. Conv. Indon. Petr. Assoc. (IPA), Jakarta, p. 291-306.
(Major unconformity at base Tertiary across Kalimantan. Basal Tertiary sandstone, dominantly terrestrial and dated as Late Eocene, overlain by mudstone, then sandstone/mudstone unit. Second unconformity truncates this sequence in W Kalimantan and is succeeded by overlapping terrestrial sandstone and Oligocene mudstone. Third unconformity confined to E Kalimantan is overlain by Miocene deltaic sediments. Elongate, W-trending basin filled by Early Tertiary sediments is folded and overthrust along N contact with orogenic complex by N-dipping thrusts. With 3 paleogeographic maps)

Polhaupessy, A.A. (1998)- Palynology of Tanjung Formation, Rantau, South Kalimantan. In: Proc. 34th Sess. Sess. Co-ord. Comm. Coastal Offshore Geosc. Programs E and SE Asia (CCOP), Taejon, Korea 1997, 2, Techn. Repts, p. 35-39.
(Palynology of two sections of Tanjung Fm at Linuh and Miyawa, E of Rantau, Barito basin. Contain Late Eocene-Oligocene assemblages of Florschuetzia trilobata, Retistephanocolpites williamsi, Meyeripollis naharkotensis and Verracutosporites usmensis. Depositional environment intertidal backmangrove vegetation system, in transgressive system)

Polhaupessy, A.A. (2007)- Palynocycles of Late Eocene Formation: a case study in Tanjung Formation, South Kalimantan. In: Geologi Indonesia: dinamika dan produknya, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 33, 2, p. 149-165.
(Quantitative palynological study of Late Eocene Tanjung Fm in Asem-Asem basin, S Kalimantan, to determine cyclic patterns. Tropical assemblages. Diversity maximum at cycle boundaries, minimum in middle cycle)

Posthumus, O. (1929)- Vischotolieten van N.O. Borneo. Wetenschappelijke Mededeelingen Dienst Mijnbouw Nederlandsch-Indie 9, p. 87-108.
('Fish otoliths of NE Borneo'. Description of fish otoliths from Miocene- Pliocene samples collected in NE Kalimantan Bulungan and Berau areas by Leupold)

Pramudhita, B.A.B., S.A. Siregar, H. Tanjung, M. Faris, R. Indrajaya, Satrio & Y. Kambu (2009)- Palynology analysis and coal characterization: a preliminary study for CBM prospectivity of Balikpapan Fm., Kutei Basin. Proc. 23rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA09-SG-040, p. 1-11.
(Palynogy analysis of outcrops of M Miocene Balikpapan Fm delta plain deposits in Kutai Basin shows four facies-controlled assemblages. Coal 70-95% vitrinite and early mature for thermogenic gas generation, but at peak for biogenic gas generation)

Prasetya, A., K.P. Laya, A. Subekti, Y. Rizal, J. Boast & J.D.C. Smart (2013)- The dynamics of sediment-source catchment areas in North Kutei Basin: implications for deepwater plays prospectivity. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-108, p. 1-14.
(Pleistocene-Recent river drainage systems in N Kutei Basin- slope characterized by sediment-starved conditions, but active sediment source into N Kutei Basin in Late Miocene-Pliocene, probably derived from Beriun Massifs, ~100 km to NW)

Prasetyo, B. (2003)- Facies mapping and reservoir potential of the G58 interval using 3D seismic data in Nilam Field, Sanga-Sanga PSC, Indonesia. M.Sc. Thesis, Universiti Brunei Darussalam, Bandar Seri Begawan, p. 1-101. *(Unpublished)*

Prasongko, B.K., S. Notosiswoyo, K. Anggayana & C.I. Abdullah (2007)- Cleat distribution controls on the sulphur content of the Miocene coal seam in the Palaran and Busui areas, East Kalimantan. Jurnal Teknologi Mineral (ITB) 14, 3, p. 145-155.
(online at: www.fttm.itb.ac.id/galeri/Cleat.pdf)

(Correlation between cleat frequency and sulphur content in M-Lt Miocene coal of Busui area, Pasir basin, and Palaran Anticline, Kutai basin. Highest sulphur near fault zones. Coal seams associated with lower delta plain sandstones)

Pratama, D.A.P. & D.H. Amijaya (2015)- Lingkungan pengendapan batubara Formasi Warukin berdasarkan analisis petrografi organik di daerah Paringin, Cekungan Barito, Kalimantan Selatan. Proc. 8th Seminar Nasional Kebumian, Dept. Teknik Geologi, Gadjah Mada University, Yogyakarta, p. 582-593.
(online at: https://repository.ugm.ac.id/135493/1/GEO95%20LINGKUNGAN%20PENGEND etc.
('Depositional environment of Warukin Formation coal based on organic petrographic analysis in the Paringin area, Barito Basin, S Kalimantan'. Macerals in Miocene Warukin coals suggest deposition in telmatic environment in transition between lower and upper delta plain environment, as paleomire in wet forest swamp)

Pretkovic, V., J.C. Braga, V. Novak, A. Rosler & W. Renema (2016)- Microbial domes and megaoncoids in Miocene reefs in the Mahakam Delta in East Kalimantan, Indonesia. Palaeogeogr. Palaeoclim. Palaeoecology 449, 1, p. 236-245.
(Coral patch reefs in Miocene Mahakam delta in E Kalimantan developed in shallow marine turbid waters, in delta front- prodelta environment. Langhian patch reefs in limestone quarries of Air Putih area near Samarinda with two types of microbial carbonates: low-relief domes and large nodules ('megaoncoids') around nuclei of coral fragments. Slope of patch reef flank favored falling and rolling of encrusted corals, with continued growth of microbial crusts on all sides of nodules. Both types near base of reef slope)

Priantono, T.S. & Raden Idris (1994)- Perkembangan submarine fan Eosen-Oligosen pada daerah Benderang-Tapian Langsat, Cekungan Kutai, Kalimantan Timur. Proc. 23rd Ann. Conv. Indon. Assoc. Geol. (IAGI), 1, p. 208-218.
('Eocene- Oligocene submarine fan deposits in Benderang- Tapian Langsat area, Kutai Basin, E Kalimantan')

Priyantoro, A., E. Kusmana & A. Ruswandi (2010)- Facies characteristics of formation from the Upper Kutei sub-basin, East Kalimantan. Proc. 39th Ann. Conv. Indon. Assoc. Geol. (IAGI), Lombok, PIT-IAGI-2010-189, 11p.
(On thick uplifted and exposed Upper Cretaceous- Paleogene section of Upper Kutai Basin. Fluvial Cretaceous- E Eocene, fluvial-deltaic to shallow marine M-L Eocene and shallow marine Oligocene deposits. Sandstones mainly quartz, but also feldspar and rel. common metamorphic rock lithics)

Provale, I. (1908)- Di alcune Nummulitine e Orbitoidine dellóIsola di Borneo. Rivista Italiana Paleont. 14, p. 55-80.
('On some nummulitids and orbitoidal foraminifera from the island of Borneo'. Late Eocene Nummulites, Discocyclina (called Orthophragmina) and Pellatispira (here called Assilina) from 'Oudjou Halang' in C Borneo, collected by Bonarelli. No locality maps or stratigraphy)

Provale, I. (1909)- Di alcune Nummulitine e Orbitoidine dellóIsola di Borneo (parte seconda). Rivista Italiana Paleont. 15, p. 1-34.
(Second part of Provale (1908) paper. Late Eocene- E Miocene LBF from SE, E and NE Kalimantan. No locality maps or stratigraphy)

Purnomo, E. & R. Kadir (1992)- Konsep eksplorasi hidrokarbon di Pulau Bunyu, Kabupaten Bulungan, Propinsi Kalimantan Timur. Proc. 21st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 1, p. 147-159.
('A new concept for hydrocarbon exploration in Bunyu Island, Bulungan District, North East Kalimantan'. Bunyu island in Tarakan Basin petroleum exploration by BPM and NKPM since 1930. 14 wells, two producing fields (Tapa, Nibung- Bunyu Lama). Anticlinal structures in blocks at downthrown side of N-S trending growth faults)

Purwanto, T., R. Haryoko, S. Martodjojo & Djuhaeni (1998)- Analisa sekuen stratigrafi resolusi tinggi daerah Sangatta Kalimantan Timur. Proc. 27th Ann. Conv. Indon. Assoc. Geol. (IAGI), 2 (Sed. Pal. Strat.), Yogyakarta, p. 78-90.

('High-resolution sequence stratigraphy analysis in the Sangatta area, E Kalimantan'. Sequence stratigraphic interpretation and correlation of two wells in Sangatta oilfield. Productive zone with 14 sequences and 96 fluvial-deltaic sandstone reservoirs in M Miocene- Recent interval)

Putra, P.I., R. Ranjani, Z. Yahya, R.S. Afifah & Widodo (2015)- Determination of turbidite facies and 3D model based on outcrops and petrographic description in Mahakam area and implication as hydrocarbon source rock in Kutai Basin. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-109, 16p.
(Study of marine slope and lobe fan turbidite deposits of Late Oligocene- E Miocene Pamaluan Fm in outcrop of Separi Anticline in W Samarinda area, E Kalimantan. Babulu Limestone deposited conformably above it)

Putra, P.R., Tasiyat, B. Sapiie & A.M. Ramdhan (2017)- Pore-pressure prediction and its relationship to structural style in offshore Tarakan Basin, Northeast Kalimantan. Proc. 41st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA17-523-G, 14p.
(Two main structural styles in offshore Tarakan sub-basin: (1) proximal-shelf deformation dominated by normal-growth faults and (2) distal-slope deformation dominated by toe-thrusts, both result of gravitational sliding on upper E Miocene shale detachment surface. Top overpressure created by fluid expulsion predicted at depth of 2000-3500m TVDss in M-L Miocene shale. Decrease of overpressure in distal direction)

Raguwanti, R., A. Naskawan, D. Tangkalalo & T. Kurniawan (2007)- Innovation technology using acoustic impedance modeling for reservoir characterization at Tanjung oil field, Barito Basin, Southeast Kalimantan, Indonesia. Proc. Joint Conv. 32nd HAGI, 36th IAGI and 29th IATMI, Bali 2007, p. 494-503.
(Modeling of six producing sandstone layers and dolerite sill in E-M Eocene Lower Tanjung Fm reservoir interval in Tanjung Field)

Radke, M., P. Garrigues & H. Willsch (1990)- Methylated dicyclic and tricyclic aromatic hydrocarbons in crude oils from the Handil Field, Indonesia. Organic Geochem. 15, p. 17-34.
(Organic compounds suggest high maturities of Mahakam Delta Handil field oils. Methylphenanthrene Index indicates origin from source rocks at present depth of >3400m, deeper than previously assumed)

Rahmad, B., K. Anggayana, S. Notosiswoyo, S. Widodo & A.H. Widayat (2013)- Occurrence of long-chain n-alkanes in Muara Wahau coal, Upper Kutai Basin, Indonesia. Int. Symp. Earth Science and Technology, CINEST 2012, Procedia Earth Planetary Sci. 6, p. 38-41.
(online at: http://ww.sciencedirect.com/science/article/pii/S1878522013000064)
(E Miocene Muara Wahau coal of Upper Kutai Basin 8-66m thick. With bimodal distribution of n-alkanes at n-C16 and n-C31. n-C31 may be derived from higher plants, as is unusual high n-C38 in some Kalimantan coals)

Ramdhan, A.M. (2010)- Overpressure and compaction in the Lower Kutai Basin, Indonesia. Doct. Thesis Durham University, p. 1-300.
(online at: http://core.ac.uk/download/pdf/85553.pdf)

Ramdhan, A.M. & N.R. Goulty (2010)- Overpressure generating mechanisms in the Peciko field, Lower Kutai Basin, Indonesia. Petroleum Geoscience 16, 4, p. 367-376.
(Peciko Field gas in multiple Miocene deltaic reservoirs. In deeper reservoirs gas trapped hydrodynamically by high lateral overpressure gradients. Top of overpressure below 3 km burial depth, below depth range for smectite to mixed-layer illite/smectite transformation. Gas generation and chemical compaction responsible for overpressure generation, contradicting previous interpretation of disequilibrium compaction)

Ramdhan, A.M. & N.R. Goulty (2011)- Overpressure and mudrock compaction in the Lower Kutai Basin, Indonesia: a radical reappraisal. American Assoc. Petrol. Geol. (AAPG) Bull. 95, 10, p. 1725-1744.
(Overpressure at depths below ~3 km in Lower Kutai Basin generally attributed to disequilibrium compaction, but more likely to be controlled by chemical compaction/ cementation of mudrocks)

Ramdhan, A.M. & N.R. Goulty (2014)- Overpressure in the shelfal area of the Lower Kutai Basin. Proc. 38th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA14-G-357, 13p.

(Overpressure in shelfal area of Lower Kutai Basin commonly believed to be due to disequilibrium compaction. but more likely caused by unloading mechanisms. Top of hard overpressure at T just >130°C, indicating gas generation may be principal process of overpressure generation, with probable additional contribution from clay diagenesis, especially illitization of kaolinite)

Ramdhan, A.M. & N.R. Goulty (2018)- Two-step wireline log analysis of overpressure in the Bekapai Field, Lower Kutai Basin, Indonesia. Petroleum Geoscience 24, 2, p. 208-217.
(online at: http://pg.geoscienceworld.org/content/petgeo/early/2017/08/17/petgeo2017-045.full.pdf)
(Interpretation of overpressure from sonic and density wireline logs in oil-gas field off Mahakam Delta)

Ramli, R., S.B. Nugroho, J. Bradfield & S. Hansen (1993)- Reservoir modelling in the Bunyu Tapa gas field- an integrated study. Proc. 22nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 225-251.
(Bunyu Tapa 1975 gas field on Bunyu Island, NE Kalimantan, reservoir sands deposited as distributary channel sands. Wells on W edge are on E flank of N-S trending anticline, close to gas-water contact, and separated from eastern wells by N-S trending normal faults)

Ranawijaya, D.A.S., E. Usman, Y. Noviadi & K.T. Dewi (2004)- Paleoclimatology and sea-level changes of Mahakam delta, East Kalimantan, interpreted from integrated geological and geophysical integrated data. In: Q. He et al. (eds.) Proc. 41st CCOP Ann. Sess., Tsukuba 2004, p. 35-44.
(online at: www.ccop.or.th/download/pub/41as_ii.pdf)
(On evolution of Mahakam Delta in Late Quaternary. Four climatic events controlled sedimentation)

Ranawijaya, D.A.S., E. Usman, Y. Noviadi & K.T. Dewi (2004)- Paleoclimatology and sea-level changes of Mahakam delta, East Kalimantan, based on geological and geophysical integrated data. Bull. Marine Geol. (MGI, Bandung), 19, 2, p. 41-58.
(Same paper as above)

Reksalegora, S.W., M.J. Hursey, N. Nurdiansyah, Sukerim et al. (2002)- Development strategy for a highly compartmentalized reservoir in the Middle Miocene Yakin Sandstone, East Kalimantan. Proc. 28th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 671-680.

Renaud, G.P.A. (1874)- Verslag van de kolenmijn Oranje-Nassau te Pengaron, Zuider en Ooster Afdeeling van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 3 (1874), 2, p. 85-117.
('Report on the Oranje Nassau coal mine at Pengaron, SE Borneo'. Mostly mining technical description and history)

Renema, W., V. Warter, V. Novak, J.R. Young, N. Marshall & F. Hasibuan (2015)- Ages of Miocene fossil localities in the Northern Kutai Basin: (East Kalimantan, Indonesia). Palaios 30, p. 26-39.
(Documentation of ages of 12 Miocene (Late Burdigalian- Messinian; ~16- 5 Ma) short-lived reefal limestone localities in siliciclastics-dominated section of NE Kutai Basin)

Rengifo, R., W. Priyantono, S. Perrier, A.I. Julius & R. Phasadaon (2012)- Tunu Main Zone, an innovative approach to integrate massive static and dynamic data into a Live 3D geological model. Proc. 36th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA12-G-019, p. 1-12.
(Reservoir model of Tunu giant gas-condensate field off Mahakam Delta, 75x15 km in size, with >800 wells. Few 1000 stacked independent gas reservoirs. Main zone reservoirs stacked fluvio-deltaic Miocene sands between 2000-5000m subsea. Best reservoirs channel sandstones, mainly E-W oriented)

Rengifo, R., T. Yoga & I. Cibaj (2012)- Tunu shallow gas combine traps, from drilling hazard to massive successful development. Proc. 36th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA12-G-020, p. 1-12.
(Tunu giant gas-condensate field in front of Mahakam Delta, E Kalimantan, with 800 wells drilled so far. Shallow Pliocene reservoirs above 2500m previously viewed as drilling risk, but recently identified as new production horizons. Two domains: W flank region mainly stratigraphic traps in local structures and sharp lateral boundaries and E crest area with more extensive reservoirs controlled by structure)

Reza, M., I.P. Pratama & A.Y. Pratama (2016)- A new insight to define a chronostratigraphy with sequence stratigraphy and cyclostratigraphy- INPEFA log integrated approach: Miocene Mahakam outcrop study case. Proc. GEOSEA XIV and 45th Ann. Conv. Indon. Assoc. Geologists (IAGI) (GIC 2016), Bandung, p. 130-133.
(Example of cyclostratigraphy interpretation of outcrops of Miocene near Samarinda area, E Kalimantan)

Riadi, R.S. (2013)- Depositional environments and stratigraphic development of the Grand Taman Sari circuit outcrop: an analogue for transgressive Mahakam Delta successions. Bull. Earth Sci. Thailand (BEST) 6, 2, p. 115-121
(online at: www.geo.sc.chula.ac.th/BEST/volume6/number2/BEST-13Ridha%20Santika%20Riadi-Vol6No2-pp115-121.pdf)

Riadi, R.S. & J. Lambiase (2015)- Outcrop analogues for subsurface sand body geometries in regressive and transgressive Mahakam Delta successions. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-100, 14p.

Rizka, W. Gunawan, A. Kadir, S. Alawiyah & E.J. Wahyudi (2011)- Studi identifikasi struktur dan prospek hidrokarbon berdasarkan metode gaya berat pada cekungan Kutai, Kalimantan Timur. Jurnal Teknologi Mineral (ITB) 18, 4, p. 221-236.
(online at: http://idci.dikti.go.id/pdf/JURNAL/JTM/JTM%20XVIII%202011%20No.4/paper%205.pdf)
(Based on gravity anomalies Kutei Basin has faults/folds of almost NE-SW orientation) and structures are reverse faults and wrench faults. Two sub-basins (1) Upper Kutei with continental basement and (2) Lower Kutei with oceanic basement. Kutei Basin has deep top basement, with up to ~9.4 km of sediment)

Roberts, H.H. & J. Sydow (1996)- The offshore Mahakam delta: stratigraphic response of late Pleistocene-to-modern sea level cycle. Proc. 25th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 147-161.
(Late Pleistocene-to-modern stratigraphy of Mahakam Delta records a progradational continuum from falling stage in sea level, through initial rise, to modern highstand deposition. These results contrast with popular sequence stratigraphic concepts which predict that large, rapid sea level drops, typical of latest Pleistocene, should result in sedimentary bypass of entire shelf)

Roberts, H.H. & J. Sydow (1997)- Siliciclastic- carbonate interactions in a tropical deltaic setting: Mahakam delta of East Kalimantan (Indonesia). Proc. 8th Int. Coral Reef Symposium, Panama, 2, p. 1773-1778.
(Holocene Mahakam Delta prograded across narrow shelf with carbonate buildups. Size of buildups from 25m mud mounds in inner-middle shelf to 80m at shelf edge. Both types rich in aragonitic Halimeda green alga flakes, probably related to flooding of shelf with nutrient-rich Pacific Intermediate water that flows through Makassar Straits. Clinoforms of lowstand delta downlap and encase carbonate buildups))

Roberts, H.H. & J. Sydow (2003)- Late Quaternary structure and sedimentology of the offshore Mahakam delta, East Kalimantan (Indonesia). In: F.H. Sidi, D. Nummedal et al. (eds.) Tropical deltas of Southeast Asia- sedimentology, stratigraphy and petroleum geology, SEPM Spec. Publ. 76, p. 125-145.
(Alternating clastic deltaics and shelf carbonates reflect high-frequency cyclic sea level changes. Halimeda bioherms on ravinement surface during Early Holocene transgression. Below ravinement surface are falling-stage and lowstand fluvial- delta plain- incised valley deposits)

Roberts, H.H., J. Sydow, R. Fillon & B. Kohl (2002)- Stratigraphic architecture and fundamental sedimentology of two Late Pleistocene deltas: Gulf of Mexico and Indonesia. In: Sequence stratigraphic models for exploration and production: evolving methodology, emerging models, and application histories, 22nd Annual Gulf Coast Sect. SEPM (GCSSEPM) Foundation Bob F. Perkins Research Conf. 22, p. p. 289-301.
(Sequence architectures of two Late Pleistocene deltas, built during falling to-lowstand relative sea-levels (Mahakam River Delta of E Kalimantan and Mobile River Delta in Gulf of Mexico), differ significantly. Lowstand progradation of Mobile River's Lagniappe delta in numerous lobes incised by complex channel network, and clinoforms downlap outer shelf shale above interglacial condensed section. Mahakam Delta

lowstand clinoforms downlap irregular surface of transgressive carbonate bioherms. Both depocenters are multilobate)

Roberts, H.H., J. Sydow, R. Fillon & B. Kohl (2003)- Late Quaternary shelf-edge deltas from Northeastern Gulf of Mexico and Eastern Borneo (Indonesia): a comparison. In: Shelf margin deltas and linked down slope petroleum systems, In: Proc. 23rd Annual Gulf Coast Sect. SEPM (GCSSEPM) Foundation Bob F. Perkins Research Conf., p. 843-847.
(Shorter version of paper above)

Roberts, H.H., J. Sydow, J. Robalin & R. Fillon (2000)- A comparison of two Late Pleistocene shelf-edge deltas (Indonesia and Gulf of Mexico)- stratigraphic architecture, systems tracts, bounding surfaces, and reservoir potential. Trans. Gulf Coast Assoc. Geol. Soc. (GCAGS) 50, p. 361-367.
(Comparison of N Gulf of Mexico (Mobile River) and E Borneo shelf (Mahakam River) Late Pleistocene shelf-edge deltas. Both deltas constructed by falling-to-lowstand deposition associated with latest Pleistocene glacial maximum. Mahakam shelf falling-to-lowstand clinoforms downlap irregular surface of isolated carbonate bioherms built above transgressive surface formed during preceding sea level rise. NE Gulf of Mexico dominated by siliciclastic sedimentation)

Rohmana, R.C., I. Fardiansyah, L. Taufani, A. Budiman & A. Gunawan (2016)- Digital Outcrop Model (DOM) and high-resolution sedimentology of Balikpapan deltaic sandstone: perspective of heterogeneities in thin-bed reservoir. Proc. 40th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA16-243-G, 14p.
(3-D description of outcrop of M Miocene deltaic Balikpapan Fm sands-shales)

Rosary, D., A.B. Nicaksana & J.K. Wilkinson (2014)- A correlation of climate stratigraphy with biostratigraphy to confirm stratigraphic units in the Sebatik Area. Proc. 38th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA14-G-258, 17p.
(Review of N Tarakan Basin petroleum geology around Sebatik PSC blocks. 16 stratigraphic packages recognized and correlated in Eocene- Recent interval, using log-derived transform curves considered to reflect climate stratigraphy curves (no indication that actual climate or biostratigraphy data was used; JTvG))

Rosary, D., E. Sunardi, Yuniyanto & A. Krisna (2003)- Facies analysis of the Lower DR Sands, based on core and wireline log interpretation, Attaka Field. Proc. 29th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 1-11.
(Attaka Field 125 km NE of Balikpapan. Lower DR Sand in overpressure sequence at 10050- 10130'. Core and log data from 20 wells show deltaic depositional system, which could be divided into 5 coarsening upward units. Depositional environment interpreted as delta front and prodelta. Sand bars SW-NE orientation)

Rose, R. & P. Hartono (1978)- Geological evolution of the Tertiary Kutai- Melawi Basin, Kalimantan, Indonesia. Proc. 7th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 225-252.
(Kutei basin and Melawi-Ketungau areas connected in Paleogene, with Melawi-Ketungau area open to NW Borneo basin. Schwaner Block of SW Kalimantan and Kuching Arch of C Borneo yielded sediments throughout Tertiary. Paleogene deposition transgressive except in Melawi-Ketungau area where it was regressive. Greatest Kalimantan Paleogene carbonate development on Barito and Paternoster platforms. Isopach maps suggest Meratus range was Tertiary depocenter. Meratus graben Eocene- M Miocene sediments uplifted, folded and faulted in M-L Neogene. Obduction in Sabah area accompanied NW rotation which uplifted Kuching High and resulted in deposition of second generation regressive sediments to N and S and provided impetus for gravitational folds. Counter-clockwise rotation accomplished by M Tertiary. Late Neogene obduction of oceanic crust onto E Sulawesi partially closed Meratus graben)

Rosler, A., V. Pretovic, V. Novak, W. Renema & J.C. Braga (2015)- Coralline algae from the Miocene Mahakam Delta (East Kalimantan, Southeast Asia). Palaios 30, p. 83-93.
(Study of 31 species of crustose coralline algae from 6 localities of E-M Miocene (Burdigalian- Serravallian) reefal limestone in E Kalimantan. Two main assemblages: (1) S: shallow-water, dominated by Neogoniolithon,

thick crusts of Spongites and Hydrolithon; (2) D: darker water, with mainly thin crusts of Lithothamnion, Mesophyllum and Sporolithon)

Rotinsulu, L.F., S. Sardjono & N. Heriyanto (1993)- The hydrocarbon generation and trapping mechanism within the northern part of Barito basin, South Kalimantan. Proc. 22nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 607-633.
(Barito Basin two types of source rocks: Tanjung and Lower Warukin Formations shales and coals)

Rowley, K.G. (1973)- Rehabilitation and development of Tarakan Island. Proc. 2nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 217-220.
(Pamusian Field discovered in 1905, cum. production 181 MBO from ~1100 wells, from reservoirs between 180'- 7000'. With history of Tarakan Island oil production)

Rullie, S. (1982)- Pengembangan batubara didaerah Kalimantan Timur dan Selatan. Proc. 11th Ann. Conv. Indon. Assoc. Geol. (IAGI), p. 129-142.
('Coal in the area of E and S Kalimantan')

Ruppert, L.F. & T.A. Moore (1993)- Differentiation of volcanic ash-fall and water-borne detrital layers in the Eocene Senakin coal bed, Tanjung Formation, Indonesia. Organic Geochem. 20, 2, p. 233-247.
(Thin interbeds in Eocene Senakin coal bed, SE Kalimantan, are volcanic ash-falls and mixed volcanics-clastics, possibly related to volcanism between Kalimantan and Sulawesi)

Rutten, L. (1911)- On *Orbitoides* of the Balikpapan Bay, East coast of Borneo. Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam, 15, p. 1122-1139.
(online at: www.dwc.knaw.nl/DL/publications/PU00013345.pdf)
(Miocene lepidocyclinids (called Orbitoides here) from Balikpapan Bay area: star-shaped L. radiata/ L. martini, small L. sumatrensis and large species. Several new species proposed: L. acuta, L. flexuosa, L. polygona. Also new subgenus of E-M Miocene miogypsinids Lepidosemicyclina, with new species L. thecidaeformis and L. polymorpha. Locality map, but no good foram illustrations)

Rutten, L. (1912)- Studien uber Foraminiferen aus Ost-Asien, 1. Uber *Miogypsina* von Ost-Borneo. Sammlungen Geol. Reichs-Museums Leiden (1), 9, p. 201-213.
(online at:
('Studies on foraminifera from East Asia, 1. On Miogypsina from East Kalimantan'. E-M Miocene Miogypsina from Balikpapan Bay and Bontang areas, incl. Miogypsina bifida n.sp., M. (Lepidosemicyclina) polymorpha)

Rutten, L. (1912)- Studien uber Foraminiferen aus Ost-Asien, 2. Uber Foraminiferen aus dem Gebiet des oberen Kapoewas-Moeroeng, Sud-Borneo. Sammlungen Geol. Reichs-Museums Leiden (1), 9, p. 213-217.
('Studies on foraminifera from East Asia, 2. Foraminifera from the Upper Kapuas- Murung area, South Kalimantan'. Early Miocene foram limestones from Sg, Mahanjong with large Lepicyclina formosa and Cycloclypeus communis)

Rutten, L. (1912)- Studien uber Foraminiferen aus Ost-Asien, 3. Eine neue *Alveolinella* von Ost-Borneo. Sammlungen Geol. Reichs-Museums Leiden (1), 9, p. 219-224.
('Studies on foraminifera from East Asia, 3. A new Alveolinella from East Kalimantan'. Alveolinella bontangensis n. sp. from Miocene marl with Miogypsina 20 km W of Bontang. Now assigned to Flosculinella)

Rutten, L. (1914)- Studien uber Foraminiferen aus Ost-Asien, 4. Neue Fundstellen von Tertiaren Foraminiferen in Ost-Borneo. Sammlungen Geol. Reichs-Museums Leiden (1), 9, p. 281-307.
(online at: www.repository.naturalis.nl/document/552393)
('Studies on foraminifera from East Asia, 4. New localities of Tertiary foraminifera in E Kalimantan'. Mainly on Miocene Lepidocyclina spp. near Balikpapan, Bontang and other localities)

Rutten, L. (1914)- Studien uber Foraminiferen aus Ost-Asien, 6. Lepidocyclinenkalke von Batoe Poetih bei Poeroek Tjahoe, Sud- Borneo. Sammlungen Geol. Reichs-Museums Leiden (1), 9, p. 320-322.
(online at: www.repository.naturalis.nl/document/552393)
('Studies on foraminifera from East Asia, 6. Lepidocyclina limestones of Btau Putih near Puruk Cahu, South Kalimantan'. Coralline nummulitid limestones described by Hirschi from Batu Putih rich in large Lepidocyclina formosa (= Eulepidina), therefore not Eocene, but Oligocene or E Miocene age)

Rutten, L. (1915)- Studien uber Foraminiferen aus Ost-Asien, 8. Vier Eozanvorkommen aus Ost-Borneo. Sammlungen Geol. Reichs-Museums Leiden (1), 10, p. 3-10.
(online at: www.repository.naturalis.nl/document/552375)
('Studies on foraminifera from East Asia, 8. Four Eocene localities in East Kalimantan'. (1) Eocene at Sg Bungalun with Pellatispira (but here called Calcarina), Nummulites and Discocyclina (here called Orthophragmina), (2) Tanjung Mangkalihat (Discocyclina, Nummulites), (3) Tanjung Seilor (Kayan River; Alveolina; also with N. fichteli= E Oligocene ?) and (4) black Nummulites limestone from Sebuku River)

Rutten, L. (1915)- Eocene orbitoiden en nummulieten van Paloe Laoet. Jaarboek Mijnwezen Nederl-Indie 43 (1914), Verhandelingen 2, p. 74-77.
(Orthophragmina (=Discocyclina) omphalus and Nummulites bagelensis demonstrate Eocene age of marl formation above sandstone- coal beds on Pulau Laut, SE Borneo)

Rutten, L. (1916)- Foraminiferen-kalksteenen uit de Tidoengsche landen (Noord-Oost Borneo). Jaarboek Mijnwezen Nederlandsch-Indie 44, p. 29-32.
('Foraminiferal limestones from the Tidung Lands, NE Kalimantan'. Follow-up of Rutten (1915) description of Eocene limestones collected by Munniks de Jongh (1913) in upper Tarakan basin. With Nummulites bagelensis, N. javanus, Discocyclina dispansa, Alveolina. Sample from Sungai Apat also rich in Pellatispira, previously described as Calcarina)

Rutten, L. (1916)- Veranderingen in de facies van het Tertiair van Oost Koetei. Verslagen Akademie Wetenschappen, Amsterdam 25, p. 700-709.
(Original Dutch version of Rutten (1917) 'Modifications of the facies...' below)

Rutten, L. (1917)- Modifications of the facies in the Tertiary Formation of East-Kutei (Borneo). Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam, 19, 1, p. 728-736.
(online at: www.dwc.knaw.nl/DL/publications/PU00012397.pdf)
(Observations on Miocene stratigraphy in East Kutei basin outcrops)

Rutten, L. (1920)- Over het voorkomen van *Halimeda* in Oudmiocene kustriffen van Oost Borneo. Verslagen Kon. Nederl. Akademie Wetenschappen, Amsterdam, 28, p. 1124-1126.
('On the occurrence of Halimeda in Old-Miocene coast reefs of East Borneo'. Calcareous algae Halimeda rel. common in modern coastal reefs in E Indonesia, but rel. uncommon in Miocene limestones. Several E Miocene limestones from E Kalimantan have Halimeda, probably same as recent species H. opuntia)

Rutten, L. (1921)- On the occurrence of *Halimeda* in Old-Miocene coast reefs of East Borneo. Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam, 23, 1, p. 506-508.
(online at: www.dwc.knaw.nl/DL/publications/PU00014672.pdf)
(English version of Dutch paper above))

Rutten, L. (1925)- Tertiaire gesteenten uit noordwestelijk Britsch Borneo en uit Beraoe (O. Borneo). Verslagen Kon. Akademie Wetenschappen, Amsterdam 34, 6, p. 579-583.
('Tertiary rocks from British Borneo and from Berau, E Borneo'. Dutch version of Rutten (1925), below)

Rutten, L. (1925)- Tertiary rocks from Northwestern Borneo and from Berau (E. Borneo). Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam 28, 7, p. 640-644.
(online at: www.dwc.knaw.nl/DL/publications/PU00015203.pdf)

(Rocks from British Borneo include clastics derived from 'old rocks', with relatively rare limestones (described in more detail in Rutten (1925)). Berau rocks collected by Weber from N Sangkulirang from thick Early Oligocene- Miocene marl-limestone dominated section, with larger forams at several levels and with Old Neogene volcanics (described in more detail in Rutten (1926)). Many Tertiary rocks in Berau and British N Borneo have pebbles or sandy grains of ?Mesozoic radiolarite. No maps, illustrations)

Rutten, L. (1925)- Borneo, geologisch-geografisch bekeken. Zesde Koloniale Vacantiecursus voor Geografen, Amsterdam 1925, Comite voor Indische Lezingen en Leergangen, p. 2-7.
('Geologic- geographic view of Borneo'. Lecture notes of review of Borneo geology. Netherlands Borneo relatively better known than British Borneo, through surveys of 'Mijnwezen' and scientific expeditions. Borneo is aseismic, has no active volcanoes and is commonly viewed as 'old continent'. However, no rocks proven older than Triassic and locally very thick Tertiary deposits, common young deformation, etc. not compatible with 'old landmass'. Two widespread Mesozoic deposits: (1) Danau Fm (Triassic- Jurassic?) red radiolarites and basic volcanics and (2) Cenomanian Orbitolina-bearing shallow marine sediments. No figures)

Rutten, L. (1926)- Over Tertiaire, foraminiferenhoudende gesteenten uit Beraoe (Oost Borneo). Verhandelingen Kon. Nederl. Geologisch Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie 7, 4, p. 297-328.
('On Tertiary foraminifera-bearing rocks from Berau, E Kalimantan'. Oligocene and Miocene larger forams Lepidocyclina, Miogypsina, reticulate Nummulites, etc. from widespread limestones in Berau region, NE Kalimantan, collected by Weber (NKPM) and Beucker Andreae. Most Tertiary clastic sediments contain rounded fragments of Mesozoic radiolarite, suggesting significant Pre-Tertiary uplift)

Rutten, M.G. (1948)- On the contemporaneous occurrence of *Lepidocyclina* and *Discocyclina* in Northern Borneo. Geologie en Mijnbouw 10, 8, p. 170-172.
(online at: https://drive.google.com/file/d/0B7j8bPm9Cse0M2FZWEhucTVNLTA/view)
(Unusual co-occurrence of (Eocene) Discocyclina/ Biplanispira and Lepidocyclina (Nephrolepidina and Eulepidina) in sample from N Borneo; possibly Neogene age with reworked Eocene)

Rutten, M.G. (1950)- Comparison of *Lepidocyclina zeijlmansi* Tan from Borneo with *Lepidocyclina birmanica* Rao from Burmah. Proc. Kon. Nederl. Akademie Wetenschappen 53, 2, p. 196-198.
(online at: www.dwc.knaw.nl/DL/publications/PU00018769.pdf)
(Larger foram genus Lepidocyclina very rare in Eocene of SE Asia. First and only occurrence is Lepidocyclina zeijlmansi Tan Sin Hok 1936 from northern Central Borneo. L. birmanica Rao 1942 from Eocene of Burma is distinct, but closely related species. Both belong in subgenus Polylepidina)

Sadirsan, W.S., D.N. Imanhardjo & T.W. Kunto (1994)- The ancient Sangatta delta: new insight to the Middle Miocene Northern Kutai Basin deltaic systems, East Kalimantan. Proc. 23rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 45-55.
(M Miocene deltaics in Sangatta Field suggest Sangatta delta system separate from Mahakam Delta to S)

Safarudin & M.H. Manulang (1989)- Trapping mechanism in Mutiara Field, Kutei Basin, East Kalimantan. Proc. 18th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 2, p. 399-421.
(Huffco Mutiara field combination structural- stratigraphic trap of N-S trending M-L Miocene delta sandstones draped over NE-SW trending anticline)

Saib, M.D. & B.H. Suwandi (1991)- Interpretation of overpressured zone in Tunu field using Eaton formula and sonic log data. Proc. 20th Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, p. 61-85.
(Most wells in Tunu field offshore Mahakam Delta encountered overpressure, probably tied to undercompaction of shales below ~2000m-3000m)

Saib, M.D. & B.H. Suwandi (1992)- Penggunaan metoda D'Exponent untuk mendeteksi tekanan lapisan batuan pada pemboran sumur eksplorasi di daerah kerja Total Indonesia, Delta Mahakam, Kalimantan Timur. Proc. 21st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 1, p. 147-159.

('D-Exponent method usage to detect formation pressure in exploration drilling in Total Indonesie contract area, Mahakam Delta, East Kalimantan')

Saito, K., R.D. Nurim & T. Uchiyama (1988)- Sedimentological and geometrical analysis of sandstones in Pamaguan Field, Kutei Basin- case study Indonesia. World Oil, July 1987, p. 43-46.

Sallee, J.E. & B.R.Wood (1984)- Use of microresistivity from the dipmeter to improve formation evaluation in thin sands, Northeast Kalimantan, Indonesia. J. Petroleum Technology 36, 9, p. 1535-1544.
(On evaluation of U-M Miocene thin-bedded oil sands in Tarakan Basin, which were commonly overlooked in reserves calculations, using dipmeter microresistivity curve processing)

Saller, A., R. Armin, L.O. Ichram & C. Glenn-Sullivan (1992)- Sequence stratigraphy of Upper Eocene and Oligocene limestones, Teweh area, Central Kalimantan. Proc. 21st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 69-92.
(Four major latest Eocene- Oligocene depositional sequences in Teweh area, straddling Barito Platform- Kutai basin. Each sequence 200-500m thick. During sequences 2-4 carbonate shelf in S part Teweh area, basinal shales to N. Overall deepening- backstepping of facies (to S or interior of platform). No evidence for 'global' 29-30 Ma mid-Oligocene Haq et al. 1987 sea level drop, which must either be of less magnitude, or different time. Looks like solid biostratigraphic and Sr-isotope age control, but little supporting data included)

Saller, A., R. Armin, L.O. Ichram & C. Glenn-Sullivan (1993)- Sequence stratigraphy of aggrading and backstepping carbonate shelves, Oligocene, Central Kalimantan, Indonesia. In: R.G. Loucks & J.F. Sarg (eds.) Carbonate sequence stratigraphy: recent developments and applications. Mem. American Assoc. Petrol. Geol. (AAPG) 57, p. 267-290.
(Teweh area of C Kalimantan with four major Oligocene carbonate sequences, each 200-500 m thick, with carbonare shelves developed in S part of Teweh area)

Saller, A.H., J.T. Noah, J.C. Waugaman & A.P. Ruzuar (2003)- Sequence stratigraphy of isolated carbonate buildups in a deltaic province, Kutei Basin, east Kalimantan, Indonesia. AAPG Ann. Conv., Houston 2002, Search and Discovery Art. 30014, 9p. *(Extended Abstract)*
(online at: www.searchanddiscovery.com/documents/2003/saller/images/saller)
(Kutei basin dominated by clastic deposition, but isolated carbonate buildups also common in Lower Oligocene- Holocene. Buildups accumulated during transgressions, preferentially on structural highs and margins of lowstand deltas. Pliocene outer shelf buildups that grew during single seismic-scale sequence typically 100m thick, 5 km long, 1 km wide. Thicker buildups consist of stacked sequences. Carbonate buildups drowned due to rapidly rising sea level and/or nutrient poisoning associated with approaching deltas)

Saller, A., S.W. Reksalegora & P. Bassant (2010)- Sequence stratigraphy and growth of shelfal carbonates in a deltaic province, Kutai Basin, Offshore East Kalimantan. In: W.A. Morgan, A.D. George et al. (eds.) Cenozoic carbonate systems of Australasia, Soc. Sedimentary Geology (SEPM), Spec. Publ. 95, p. 147-174.
(Kutai Basin Neogene dominated by deltaics, but carbonates also common. Carbonate-siliciclastic interactions studied in U Pleistocene and U Miocene-Pliocene off N Mahakam delta. U Pleistocene carbonates on siliciclastic shelf margins during ~110 kyr eustatic cycles. Carbonates also in two sequences in uppermost Miocene and lower Pliocene. Mio-Pliocene carbonate buildups on shelf margin ~255 m thick, 5 km long, 1 km wide and composed largely of bioclastic packstone and grainstone. Most Mio-Pliocene shelf-margin buildups filled with water, probably because overlying siliciclastics do not seal)

Saller, A. & S. Vijaya (2002)- Depositional and diagenetic history of the Kerendan carbonate platform, Oligocene, central Kalimantan, Indonesia. J. Petroleum Geol. 25, p. 123-150.
(Kerendan Berai Lst platform 11x16 km in W Kutei Basin. Aggradation during Oligocene transgression, contemporaneous with aggradation- backstepping of Barito shelf margin. ~1000m thick, three aggrading seismic sequences. Carbonate deposition started in Late Eocene, ended by drowning in Late Oligocene (~28.6 Ma). Three areas (1) platform interior/ lagoon wackestone-packstones with porosities <5%; (2) raised platform rim, 1-2 km wide, with wacke-, pack-, grain- and boundstones, with grainstones increasing toward platform

margin. Greater porosity (5-13%) than platform interior because more grainstone and more dissolution by acidic waters from compacting basinal shales near platform margin; (3) platform margin and slope)

Samson, P., T.D. Rochette & M. Lescoeur (2005)- Peciko geological modelling: optimizing fluid distribution and model resolution of a giant gas field in a shale-dominated deltaic environment. Proc. Asia-Pacific Oil and Gas Conf. Exh., Jakarta 2005, SPE 93253, p. 1-10.
(Geologic model of Peciko field, SE part of Mahakam Delta. Reservoir sands mainly distributary mouth bars, triangular in outline, and limited extent (1.5- 4.5 km wide, 1-3m thick). Diagrams of distributary mouth bars. See also below)

Samson, P., T.D. Rochette, M. Lescoeur & P. Cordelier (2005)- Peciko geological modelling: possible and relevant scales for modelling a complex giant gas field in a mudstone dominated deltaic environment. Proc. 30th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 345-354.
(Geologic model of large (250 km2) Peciko field, SE of Mahakam Delta. Complex geology, mud- dominated deltaic reservoir section with 2000m of gross gas column in tens of reservoirs. Total of 96 deltaic cycles)

Samuel, L. (1980)- Relation of depth to hydrocarbon distribution in Bunyu. Island, N.E. Kalimantan. Proc. 9th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 417-432.
(Geothermal gradients on Bunyu Island average 4.3°/100m, ranges 3.7- 5.3°C/100m. Maturation studies indicate present subsurface temperatures maximal in history of deltaic Late Miocene- Pleistocene sediments)

Samuel, L. & S. Muchsin (1975)- Stratigraphy and sedimention in the Kutai Basin, East Kalimantan. Proc. 4th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 2, p. 27-39.

Santodomingo Aguilar, N. (2014)- Miocene reef-coral diversity of Indonesia: unlocking the murky origins of the Coral Triangle. Ph.D. Thesis University of Utrecht, Utrecht Studies in Earth Sciences 63, p. 1-340.
(online at: https://dspace.library.uu.nl/handle/1874/300545)
(Study of Miocene corals from patch reefs in E Kalimantan; collection of manuscripts. Incl. revision of fossil record of Acropora (31 species) and Isopora in Indo-Pacific. Platy coral assemblages common up to M Miocene (Serravallian), branching coral assemblages become dominant in Late Miocene (Tortonian) and first occurrence of entirely massive coral assemblage (similar to modern) in Messinian)

Santodomingo, N., V. Novak, V. Pretkovic, N. Marshall, E. Di Martino, E.L.G.Capelli, A.Rosler et al. (2015)- A diverse patch reef from turbid habitats in the Middle Miocene (East Kalimantan, Indonesia). Palaios 30, p. 128-149.
(Faunas and facies of small 8-10m thick M Miocene 'Stadion section' patch reef in Mahakan Delta system near Samarinda, E Kalimantan. 69 species of corals, 28 bryozoan and coralline algae (Neogoniolithon, Spongites, Lithoporella, etc.). Key larger foraminifera incl. Nephrolepidina martini, Cycloclypeus annulatus and Lepidosemicyclina bifida. Seven facies types)

Santodomingo, N., W. Renema & K.G. Johnson (2016)- Understanding the murky history of the Coral Triangle: Miocene corals and reef habitats in East Kalimantan (Indonesia). Coral Reefs 35, 3, p. 765-
(Corals from E Kalimantan outcrops contain 79 genera and 234 species. Three different coral assemblages in small patch reefs, developed under influence of high siliciclastic input from Mahakam Delta. Platy coral assemblages(Porites, Leptoseris, etc.) common until Serravallian, branching corals became dominant in Tortonian. By Late Tortonian massive coral assemblages dominated, similar to modern-style coral framework)

Santodomingo, N., C.C. Wallace & K.G. Johnson (2015)- Fossils reveal a high diversity of the staghorn coral genera *Acropora* and *Isopora* (Scleractinia: Acroporidae) in the Neogene of Indonesia. Zoological J. Linnean Society 175, 4, p. 677-763.
(online at: https://academic.oup.com/zoolinnean/article/175/4/677/2449809)
(Extensive collections of Miocene corals from E Kalimantan, Indonesia, with 31 species of Acropora and 2 of Isopora, in E Miocene (max. age 18-20 Ma). 12 extant species already present in E Miocene. Most corals associated with shallow turbid habitats)

Santoso, B. (2009)- Geologic factors controlling mineral content in selected Tertiary coals- southern Kalimantan. Indonesian Mining J. 12, 2, p. 67-74.
(online at: http://jurnal.tekmira.esdm.go.id/index.php/imj/article/view/565/427)
(In Asem-Asem basin average mineral content of Miocene coals (3.9%) lower than Eocene coals (6.7%). Miocene coals bright lithotypes/ vitrinite-rich coal with fewer clay partings; Eocene coals dull lithotypes/vitrinite-poor)

Santoso, B. (2011)- Geologic aspects controlling maceral and mineral matter content of Satui coals- South Kalimantan. Indonesian Mining J. 14, 2, p. 63-73.
(online at: http://jurnal.tekmira.esdm.go.id/index.php/imj/article/view/494/358)
(Coals in Asem-Asem Basin, SE Kalimantan, in Eocene Tanjung and M Miocene Warukin Fms. Eocene(?) coals from Satui area dominated by bright-banded and banded types. Vitrinite and liptinite dominant macerals, minor inertinite Mineral content relatively high. Brighter coal more vitrinite-rich. Vitrinite reflectance 0.48-0.54%)

Santoso, B. (2011)- Organic petrology of selected coal samples of Eocene Kuaro Formation from Pasir- East Kalimantan. Indonesian Mining J. 14, 3, p. 146-153.
(online at: http://jurnal.tekmira.esdm.go.id/index.php/imj/article/view/485/349)
(Coals from Eocene Kuaro Fm in Pasir area in S-most Kutai Basin. Maceral composition similar to most SE Kalimantancoals. Presence of common pyrite and calcite reflects marine incursion. Vitrinite reflectance (Rvmax%) 0.53-0.71% (subbituminous A- high volatile bituminous C))

Santoso, B. & B. Daulay (2004)- Organic petrology of selected Tertiary Kalimantan coals. Proc. 33rd Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung, p. 104-114.
(E and S Kalimantan Eocene and Miocene coals dominated by vitrinite, common exinite and rare inertinite. Paleogene coals sub-bituminous to high volatile bituminous rank (Rv max. 0.53-0.67%), Miocene coals brown to sub-bituminous rank (Rv max 0.30-0.57%)

Santoso, B. & B. Daulay (2005)- Type and rank of selected Tertiary Kalimantan coals. Indonesian Mining J. 8, 2, p. 1-12.

Santoso, B. & B. Daulay (2006)- Geologic influence on quality of selected Tertiary Barito coals. Indonesian Mining J. 9, 2, p. 14-22.
(online at: http://jurnal.tekmira.esdm.go.id/index.php/imj/article/view/647/508)
(Petrography of Eocene coals of Tanjung Fm, Barito basin, SE Kalimantan. Coals mainly vitrinite (av. 83%), liptinite (av. 12%), rare inertinite and mineral matter Resinite, cutinite and sporinite are dominant liptinite macerals. Mineral matter mainly clay and pyrite. Vitrinite reflectance of Eocene coal 0.53- 0.64% (sub-bituminous- high-volatile bituminous); Neogene coals 0.30- 0.47% (brown coal- subbituminous)

Santoso, B. & B. Daulay (2006)- Geologic influence on type and rank of selected Tertiary Barito coal, South Kalimantan, Indonesia. In: C. Chou et al. (eds.) Abstracts 23rd Ann. Mtg. Soc. Organic Petrology, Beijing 2006, p. 214-216. *(Extended Abstract)*

Santoso, B. & B. Daulay (2008)- Importance of organic petrology to type and rank of Miocene Asem-Asem coal- South Kalimantan. Indonesian Mining J. 11, 3, p. 1-10.
(online at: http://jurnal.tekmira.esdm.go.id/index.php/imj/article/view/580/442)
(Coal petrography of 34 samples from Miocene Warukin Fm. Coals composed mainly of vitrinite with subordinate liptinite, low inertinite, and very low mineral content. Vitrinite reflectance Rv 0.25-0.46% (brown coal- sub-bituminous rank))

Santoso, B. & B. Daulay (2009)- Geologic and petrographic aspects for coal exploration in Sangatta- East Kalimantan. Indonesian Mining J. 12, 1, p. 10-22.
(online at: http://jurnal.tekmira.esdm.go.id/index.php/imj/article/view/572/434)

(Miocene coals in folded Balikpapan Fm of Sangatta area, Kutai Basin. Mean vitrinite reflectance Rv 0.48-0.63% (brown coal- subbituminous rank), locally altered by intrusives to semi-anthracite (Rv 1.87%). Coal rank increases from E to W towards Meratus Range and Kuching Highs due to increase in sediment cover in W. Coals composed mainly of vitrinite, with subordinate liptinite, low inertinite and mineral matter, indicative of humid tropical forest vegetation without significant dry season)

Santoso, B. & N.S. Ningrum (2010)- Characteristics of selected Mangkalihat coals according to petrographic and proximate analyses. Indonesian Mining J. 13, 3, p. 128-134.
(online at: http://jurnal.tekmira.esdm.go.id/index.php/imj/article/view/519/383)
(Coals in Eocene Kuaro Fm in Manggkalihat area of E Kalimantan, below Oligocene and younger limestone section. Three seam,s 1.5-4.0m thick. Coals with very thin claystone-sandstone laminae and rel. common pyrite, suggesting marine influence during deposition. High moisture (15-19%). Vitrinite reflectance 0.46-0.49% (subbituminous A and B rank))

Santy, L.D. & R. Heryanto (2015)- Endapan kipas bawah laut Kapur Akhir di Kalimantan. J. Sumber Daya Geologi 16, 4, p. 195-211.
(online at: http://kiosk.geology.esdm.go.id/artikel/pdf/endapan-kipas-bawah-laut-kapur-akhir-di-kalimantan)
('Late Cretaceous submarine fan deposits in Kalimantan'. In two places: (1) Semitau High, W Kalimantan (Selangkai Fm and Belikai Conglomerate), and (2) Meratus High, SE Kalimantan (Pitap Group))

Sapiie, B., A. Pamumpuni & M. Hadiana (2008)- Balancing cross-section and sandbox modeling of Satui fold-thrust-belt, Asem-Asem Basin, South Kalimantan. Proc. 32nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA08-G-151, 19p.
(NW-SE directed shortening in Asem-Asem basin at SE side of Meratus Range. Late Miocene deformation of Eocene coal-bearing sediments related to major uplift of Meratus Mountains. >24% shortening in mine area)

Sapiie, B. & A. Rifiyanto (2017)- Tectonics and geological factors controlling cleat development in the Barito Basin, Indonesia. J. Engineering Technol. Sci. (ITB), 49, 3, p. 322-339.
(online at: http://journals.itb.ac.id/index.php/jets/article/view/3510/2961)
(Late Eocene Tanjung Fm and E-M Miocene Warukin Fm coals in Barito Basin with cleats (micro-fractures) predominantly oriented in WNW-ESE and NNE-SSW directions. Cleat density increases with structural position like fold hinges and fault zones. Cleats form during coalification (shrinkage), and are superimposed by later processes like fluid pressure and tectonic stresses and also affected by composition of the coal)

Sapiie, B., A. Rifiyanto & L.A. Perdana (2014)- Cleats analysis and CBM potential of the Barito Basin, South Kalimantan, Indonesia. AAPG Int. Conf. & Exh., Istanbul 2014, Search and Discovery Art. 10653, 19p. *(Extended Abstract)*
(Cleat distribution and orientations in coal in Barito Basin 3 major trends: WNW-ESE, NNW-SSE and NE-SW. Cleat formation in Eocene Tanjung Fm may be related to NW-SE trending rifting, in Miocene Warukin Fm to transpression along Meratus Range which produced NW-SE compressive stress Cleat spacing varies with coal type and ash content. Decreasing cleat spacing from low to high coal rank. Cleat density higher with low ash content. Some coals of Barito Basin have permeability of 20-2000 md)

Saputra, I. & A.Y. Prasetya (2017)- Pulse of depositional environment change in Tarakan Basin: some perspective from onshore Simenggaris Area. Proc. Joint Conv. HAGI-IAGI-IAFMI-IATMI, Malang 2017, 4p.
(In Tarakan Basin much of Eocene- E Miocene in marine facies. Common Oligocene limestones. Late M Miocene huge sediment influx came in into Tarakan basin and deltaic sedimentation began)

Saputra, I. & T. Wibisono (2016)- Strike-slip fault geometry and its significance for petroleum play in Tarakan Basin: a perspective from onshore Simenggaris area. Proc. 40th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA16-488-G, 8p.
(Tarakan Basin with NE-SW trending folds of gravitational fault system related to deltaic sedimentation. Also major NW-SE high-dip faults with flower structures in Bunyu, Tarakan, Ahus and Sebatik Arches, interpreted as younger, transpressional strike-slip faults. Several oil fields near NW-SE trend (Bunyu, Tarakan, Sembakung,

Pamusian, etc.). Onshore Tarakan Basin mainly transpressional deformation, offshore mainly affected by gravitational fault system)

Saputra, I., T. Wibisono & A.Y. Prasetya (2018)- Middle Miocene depositional environment shift in the Tarakan Basin: some perspectives from the onshore Simenggaris area. Berita Sedimentologi 40, p. 45-54.
(online at: http://www.iagi.or.id/fosi/berita-sedimentologi-no-40.html)
(Stratigraphic succession in onshore Tarakan Basin two major depositional environments: Eocene-E Miocene marine and upper M Miocene-Pliocene deltaic depositional environment)

Sardjono (1999)- Gravity field and structure of the crust beneath the Kutei Basin, East Kalimantan, Indonesia. In: H. Darman & F.H. Sidi (eds.) Tectonics and sedimentation of Indonesia, FOSI-IAGI-ITB Regional Seminar to commemorate 50th anniversary of Van Bemmelen's Geology of Indonesia, Bandung 1999, p. 62. *(Abstract only)*
(Summary of gravity field of Kutei Basin and surrounding areas. Onshore Bouguer anomalies generally from +10 to +50 mGal; in Balikpapan area depocenter ~75 mGal. Assuming 9000m of sediment and underlying continental crust, anomalies here should be ~ -115 mGal. One possible explanation is rise in Moho)

Sardjono, S. & L. Rotinsulu (1992)- The hydrocarbon generation and trapping mechanism within the northern part of Barito Basin, South Kalimantan. Proc. 21st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 1, p. 131-145.
(In NE Barito basin hydrocarbons sourced from two intervals: Eocene Tanjung Fm (lacustrine oil type) and Miocene Lower Warukin Fm (fluviodeltaic oil type). First hydrocarbon generation in M Miocene from Tanjung source; from Warukin source in Plio-Pleistocene)

Satyana, A.H. (1995)- Paleogene unconformities in the Barito Basin, Southeast Kalimantan: a concept for the solution of the "Barito dilemma" and a key to the search for Paleogene structures. Proc. 24th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 263-275.
(Barito basin only 4 commercial discoveries, all in NE part of basin. Multiple unconformities and young inversion. Suggests fields are preserved paleo-traps not affected by young structuring)

Satyana, A.H. (2010)- Geodynamic origins of Kalimantan sedimentary basins. Proc. 39th Ann. Conv. Indon. Assoc. Geol. (IAGI), Lombok 2010, 8p.
(Sedimentary basins of Kalimantan prolific for petroleum and coal deposits. Paleogene geologic evolution of SE Asia strongly controlled by escape tectonics due to collision of India to Eurasia in M Eocene. Trans-Kalimantan Lupar-Adang-Paternoster strike slip fault, opening of Makassar Strait and opening of S China Sea responsible for formation of sedimentary basins in Kalimantan-Borneo)

Satyana, A.H. & E. Biantoro (1996)- Seismic stratigraphy of Eocene Beriun sands of West Bungalun, East Kalimantan, Indonesia: a contribution to the Palaeogene stratigraphical knowledge of the Kutai Basin. In: C.A. Caughey et al. (eds.) Proc. Int. Symp. Sequence Stratigraphy in SE Asia, Jakarta 1995, Indon. Petroleum Assoc. (IPA), p. 383-393.
(Kutei Basin up to 12,000m of sediments. E Eocene- E Oligocene generally transgressive sequences. Eocene NE Kutei W Bungalun area Beriun reservoir-quality sands equivalent to hydrocarbon-bearing Tanjung sands of Banto Basin. At least three seismic stratigraphic sequences. Deposition affected by growth faulting. Interpreted as fan delta deposits in extensional tectonic regime)

Satyana, A.H. & R. Idris (1996)- Chronology and intensity of Barito uplifts, Southeast Kalimantan: a geochemical constraint and windows of opportunity. Proc. 25th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 207. *(Poster Abstract)*
(Barito Basin Paleogene mainly extensional deformation. Uplift and inversion of extensional structures starting in Miocene and continuous today. Five uplift events in Tertiary: M Eocene, E-M Oligocene, late Oligocene- E Miocene, M Miocene and Late Miocene- Pleistocene. First two uplift episodes interrupted Paleogene extension. Late Miocene- Pleistocene major uplift event (~1200m). Oligo- Miocene uplift relatively minor (~50m))

Satyana A.H., D. Nugroho & I. Surantoko (1999)- Tectonic controls on the hydrocarbon habitats of the Barito, Kutei and Tarakan Basins, Eastern Kalimantan, Indonesia: major dissimilarities in adjoining basins. J. Asian Earth Sci. 17, 1-2, p. 99-122.
(Barito, Kutei, and Tarakan Basins different Tertiary tectonic styles. Barito Basin initial transtension followed by transpression. NE structures increasingly imbricated towards Meratus Mts and involve basement. W and SE Barito Basin weakly deformed. Kutei Basin dominantly tight NNE-SSW trending anticlines, forming Samarinda Anticlinorium in E. Deformation less intense offshore. M Miocene- Recent growth suggested by thinning over structures. W basin area uplifted. Tarakan Basin NNE-SSW normal faults, formed on older NW-SE trending folds and normal to direction of sedimentary thickening, suggesting growth-faults. Onshore older N-S trending folds from collision of Central Range terranes to W of basin. Barito Basin fields in W-verging faulted anticlines. Tarakan Basin NW-SE anticlines with main producing pools in downthrown blocks of faults)

Satyana, A.H., M.E.M. Purwaningsih & M. Imron (2002)- Coal seams within Eocene Tanjung Formation of the Barito Basin, Southeast Kalimantan: sequence stratigraphic framework and geochemical constraints for source potential. Berita Sedimentologi (Indon. Forum Sedimentologi, FOSI) 17, p. 14-21, 26.
(Barito Basin M Eocene synrift- postrift Lower Tanjung Fm clastics 7 sequences. Coals in three sequences of postrift phase. Mostwidespread and thickest coal seams in transition between synrift- postrift phases. Coals deposited in paralic to upper deltaic settings in various systems tracts. Coals TOC 44-73%, hydrogen index (HI) 285-567 mgHC/gTOC and hydrogen to carbon ratio (H/C) of 0.87-1.18, showing coals are liptinitic and can generate oil. Carbon isotopes and biomarkers show Tanjung Fm coals sourced Tanjung field oil)

Satyana, A.H. & P.D. Silitonga (1993)- Thin-skinned tectonics and fault-propagation folds: new insights to the tectonic origin of Barito folds, South Kalimantan. Proc. 22nd Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung, p. 282-291.
(Barito Basin foredeep at Meratus front with closely spaced folds-thrusts, formed in M Miocene and Plio-Pleistocene, all with high-angle reverse faults. Become increasingly imbricate towards Meratus Range. Strike slip faults cut older structures. Hydrocarbons known only from folds and paleo-highs in N end of foredeep.

Satyana, A.H. & P.D. Silitonga (1994)- Tectonic reversal in East Barito Basin, South Kalimantan: consideration of the types of inversion structures and petroleum system significance. Proc. 23rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 57-74.
(E Barito basin Tertiary structural history characterized by tectonic reversal. Paleogene rifting with NW- SE trending horsts and grabens followed by WNW to ESE Neogene compression with inversion of Paleogene structures. Rift sedimentation resulted in E-M Eocene Lower Tanjung source rocks and reservoir sandstones. Late Eocene- E Oligocene U Tanjung Fm postrift shales effective seal. Inversion started in E-M Miocene (N Kalimantan and E Sulawesi collisions). Plio-Pleistocene inversion might create new traps or destroy previous accumulations and remigrate hydrocarbons. Tanjung Raya fields ideal hydrocarbon-trapping conditions)

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(online at: www.jstage.jst.go.jp/article/japt/72/1/98/_pdf)
(In Japanese with English summary. Sadewa Field 2002 gas discovery on slope in 1000-2800' water off Mahakam delta. Cores of Sadewa reservoir exhibit episodic turbiditic deposition of reworked delta sediments. Slope channel sandstone reservoirs of Sadewa field detected as high-amplitude anomalies in 3D seismic data)

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(online at: www.repository.naturalis.nl/document/552434)

('Note on a new Lepidocyclina from Borneo'. Lepidocyclina formosa n.sp. from Teweh, upper Barito area, SE Kalimantan. Associated with Heterostegina margaritata (= large Eulepidina and Spiroclypeus of latest Oligocene- E Miocene Miocene age, zone Te4-5; JTvG))

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(Oils of Nilam field derived from humic organic matter at ~3500-4000m. Gases mature-overmature, formed between ~5000-6000m)

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(online at: edepot.wur.nl/136042)
('The drainage area of the Barito River; agricultural characterization')

Schurmann, H.M.E. (1925)- Over jong-Tertiaire bruinkolen in Oost Borneo. Verhandelingen Geologisch-Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie 8 (Verbeek memorial volume), p. 429-440.
('On Young Tertiary lignites in East Kalimantan'. Mainly discussion on relationship between water content and age of lignite/ coal of Neogene of Kutei basin)

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('On Young Tertiary lignites in East Kalimantan'. Short version of above 1925 paper in German)

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(Attaka first commercial offshore field in Kalimantan in 1970. NNW trending structure. Late Miocene- Pliocene fluvial-deltaic reservoirs between 600'- 7800', with oil produced from 34 sands between 2000-3400'. Structure young anticline, but thinning of sands over crest of structure suggest Late Miocene- Pliocene early growth. Strong positive gravity anomalies under Kutai Basin and Makasar Straits suggestive of oceanic crust basement)

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(Reservoir model of >4 TCF Tunu gas field, Mahakam Delta. Multiple distal deltaic reservoir sands, mainly rel. thin (1.5-2 m average) channel mouth bars, with occasional distributary channels. Gas in Tunu Main Zone, immediately below Fresh water sands, from 2200- 4100m deep)

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(Fluvio-deltaic sands of Balikpapan Group in Sanga-Sanga Field prolific hydrocarbon reservoirs, with cumulative production of ~360 MMBO. Most of past oil production from structural traps in Sanga-sanga anticline. New pools expected in stratigraphic traps in distributary and tidal channel-fills, etc.)

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('Palynological Study of the Mentawir Formation, Lower Kutai subbasin, E Kalimantan'. Palynology of interval 100'-4140' in well 'X' of 'DNA' field. Age mainly M Miocene (F. trilobata zone), 100-850' Late Miocene)

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(E-W trending delta distributary channels in M Miocene 'E' sequences of Balikpapan Fm in Nilam giant gas field, discovered in early 1970's by Huffington/ VICO in onshore Mahakan Delta area)

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(Review of M Eocene- Miocene paleogeography and coal distribution in Kutai Basin. Highest potential for coal development in fluvial-delta plain facies of M-L Eocene (Tanjung Fm equivalent), Late Oligocene- E Miocene (Pamaluan Fm equiv.) and multiple delta systems in M-L Miocene (Balikpapan Fm equiv.))

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('Gravity anomaly in relation to the coal-bearing formation in Banjarmasin and surrounding areas, South Kalimantan'.Gravity anomalies grouped into 3 parts: high gravity anomaly of 45-75 mGal tied to Meratus High, anomalies of 20 -45 mGal tied Pretertiary and Tertiary rocks, (3) low gravity anomalies of -15 to 20 mGal reflecting Tertiary sedimentary basins)

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('Geological structure of the Sanga-Sanga area, E Kalimantan')

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(Badak and Nilam fields in M Miocene paleo-Mahakam fluvio-deltaic system. Productive horizons numerous isolated mouth bar and distributary channel sandstone reservoirs in basin with high subsidence rates and high sediment influx. High degree of cyclicity at three scales: (1) smallest (100-150') represent delta lobes, parasequences produced by autocyclic processes (2) Intermediate (800-1200') regressive-transgressive parasequence sets; (3) largest (6000-8000') associated with major basin-fill patterns due to progradation of

shelf and slope. Larger-scale maximum flooding events cut across regional stratigraphic markers, indicating they are diachronous along depositional strike. Lateral variations in stacking patterns, controlled by migration of zones of sediment influx. Local tectonic effects tend to blur eustatic signatures in basin)

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(Siderite layers 20-30cm thick in Miocene coal-bearing series reflect reprecitation of iron in (brackish) coastal plain zone)

Siemers, C.T., S. Sutiyono & S.K. Wiman (1992)- Description and reservoir characterization of a Late Miocene, delta-front coral-reef buildup, Serang Field, Offshore East Kalimantan, Indonesia. In: Carbonate rocks and reservoirs of Indonesia: a core workshop, Indon. Petroleum Assoc. (IPA), p. 5-1-5-27.
(Late Miocene in Serang Field dominated by fluvial/deltaic and shallow-marine siliciclastics. Also numerous carbonate units indicative of coral reef growth in delta-front, marine-shelf setting. The 80-6 Limestone (67'), includes 'Lower reef' (25'; platy corals in argillaceous matrix grading up to massive and branching coral fragments in mud matrix) and 'Upper reef' (42'; platy-coral-bearing wackestone, overlain by argillaceous coral rubble, porous 10' reef-core type coral rubble and 13' of non-porous, reworked mix). Reef overlain by shallow shelf- delta-front calcareous, shelly, silty shale. 80-6 Limestone represents cluster of buildups with lateral extent of >2.5 km and possibly up to10's of kms. Post-depositional degradation of reservoir quality. Extensive recrystallization of skeletal fragments (especially corals, molluscs) and carbonate mud matrix).

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('Geological investigations of the Sungup-Selaro Region in the Northern Part of Pulau Laut (SE Kalimantan'). Geologic reconnaissance in coal-bearing Sungup-Selaro region in N part of Laut island. Five seams in Eocene coal measures, one with reserves of economic importance)

Sigit, S. (1963)- Penjelidikan geologi terhadap endapan batubara di Pulau Sebuku (Kalimantan Tenggara). Djawatan Geologi Indonesia, Publ.Teknik, Seri Geol. Ekon. 5, 41p.
('Geological investigations of the coal deposits of Pulau Sebuku (SE Kalimantan)'. Reconnaissance in S part of Sebuku island, E of Palau Laut, showed Eocene coal only in W part of widespread Eocene formations. Only one seam, formed mainly from allochthonous material)

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(Late Eocene- E Oligocene coal-bearing formation in W Kutai Basin)

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(Neogene orogeny in Kalimantan mainly characterized by extensional triplejunction, associated with Neogene non-arc volcanics)

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(online at: www.bgl.esdm.go.id/publication/index.php/dir/article_detail/427)

(On CBM resources and deep coal potential of Eocene Tanjung Fm coals in Tanah Bumbu Area, Asem-Asem Basin, SE Kalimantan. CSAT-1 well drilled 10 coal seams with 3 main seams (E, I, J) between 212- 275m depth, 1-5m thick. High rank coal. Coal resources between 300- 1000m depth 112.7 M tons, giving potential methane resources estimate of ~430 MSCF, with methane content 1.2- 6.6 ft3/ton of coal)

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(Coals from outcrops in Tarakan basin high concentration of huminite (telohuminite), low concentrations of liptinite and inertinite macerals. Coals originated under telmatic condition. Predominance of wood derived tissues. High subsidence rates prevailed. Alternating phases of oxic and anoxic moor conditions)

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(Eocene Tanjung Fm producing oil since 1960's. Lower member terrestrial-paralic clastics, middle member maine-deltaic clastics, upper member marine shales and thin limestones. Plio-Pleistocene uplift of Meratus Block and NNE-SSW trending anticlines)

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(3D seismic offshore Sangatta field, N Kutei basin, shows Late Miocene- E Pliocene slope channel play)

Situmorang, B., C.D. Dwiyoga, A. Kustamsi (2006)- The untapped 'unconventional' gas: CBM resources of Kutai Basin with reference to the North Kutai Lama Field, Sangasanga Area, East Kalimantan. Proc. Jakarta 2006 Int. Geosc. Conf. Exhib., Indon. Petroleum Assoc. (IPA), 06-OT-07, 11p.
(Eleven onshore coal basins of Indonesia contain 453 Tcf coalbed methane resources, of which 80.4 Tcf in Kutai Basin (ARI, 2003). N Kutai Lama (NKL) field main targets for CBM development are M Miocene Prangat and Late Miocene Kamboja Fms and uppermost E Miocene Loa Kulu Fm. Results from two wells between 700-1400m indicate in-place CBM resources of NKL field 147 BCF)

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(Kutei and Sarawak basins two petroleum producing provinces where tectonics greatly impacted formation of stratigraphic sequences. Sequence bounding unconformities can be used in tectonically active areas to provide chronostratigraphic correlations across several paleoenvironments)

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(Offshore Kutai and Sarawak basins sequence stratigraphy interpretation)

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(Semberah Field small 1973 oil discovery in N Mahakam area, 140 km N of Balikpapan, producing since 1991. Paper mainly engineering history of marginal oil field)

Stankiewicz, B.A., M.A. Kruge & M. Mastalerz (1996)- A geochemical study of macerals from a Miocene lignite and an Eocene bituminous coal, Indonesia. Organic Geochem. 24, 5, p. 531-545.
(Study of macerals from Miocene Warukin Fm lignite and Eocene Tanjung Fm high-volatile bituminous C coal from SE Kalimantan. Most Indonesian lignites and low rank coals liptinite-rich (~10%) with low inertinite and high vitrinite. Tropical angiosperm vegetation (Dipterocarpaceae), dominant in swamps of Kalimantan, are prolific resin producers. Suberins from corkified plant cell walls form maceral suberinite in Indonesian lignites. Resins in Eocene coal chemically and botanically different from Miocene and younger dammars)

Storms, J.E.A., R.M. Hoogendoorn, M.A.C. Dam, A.J.F. Hoitink & S.B. Kroonenberg (2005)- Late-Holocene evolution of the Mahakam delta, East Kalimantan, Indonesia. Sedimentary Geology 180, p. 149-166.
(Late Holocene Mahakam Delta example of mixed tide-fluvial dominated delta system. Delta prograded ~60 km in past 5000 years. Natural levees, crevasse splays and avulsions absent in delta plain. Sand content decreases significantly from fluvial to tidal-dominated areas. Progradational delta system evolved under conditions of slowly rising sea level. Present day sediment load of Mahakam River insufficient to explain sediment volume of subaerial and subaqueous Mahakam delta, suggesting hydraulic conditions in past may have been different)

Stromer, E. (1931)- Die ersten Alt-Tertiaren Saugetier-Reste aus den Sunda-Inseln. Wetenschappelijke Mededeelingen Dienst Mijnbouw Nederlandsch-Indie, Bandung, 17, p. 11-14.
('The first Early Tertiary mammal remains from the Sunda islands'. Two teeth from probable Eocene beds at Gunung Sebumban Ulu, Sedona River, Sanggau area, W Kalimantan, are first record of E Tertiary mammals in Indonesia. Probably belong to small anthracocerid Artiodactylus, a family rel. common in M-U Eocene of mainland SE Asia and Europe)

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(Summary paper on Miocene Lower Kutei basin Unocal Miocene stratigraphy work)

Suandhi, P.A., A. Bachtiar, P.T. Setyobudi, E. Nurjadi, A. Mardianza, B.D. Harisasmita, M. Arifai & D. Hendro H.N. (2017)- Sangatta delta evolution with an updated Miocene paleogeography. Berita Sedimentologi 39, p. 25-36.
(online at: www.iagi.or.id/fosi/files/2017/12/FOSI_BeritaSedimentologi_No39_Dec2017.pdf)
(Discussion of Miocene-age Sangatta Delta system (Balikpapan and Kampung Baru Fms) in NE Kutai Basin. Development controlled by Rantau Pulung- Mangkupa paleohigh, bound by NE-SW and N-S strike slip faults that represent Neogene reactivations of old basement faults. Delta development started with small proto-Sangatta Delta in E Miocene and became larger during M-L Miocene after inversion/ uplift at Kuching High to W. More than 10 stacked, E-ward prograding fluvial-deltaic parasequence sets)

Suandhi, P., A. Bachtiar, P.T. Setyobudi, M. Rozalli & Y.S. Purnama (2013)- Paleogen facies model of North Barito Area, comprehensive study of sedimentology, stratigraphy and potential reservoir. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-149, p. 1-13.
(N Barito basin outcrop study, from Pre-Tertiary metamorphics, M-L Eocene syn-rift clastics, Oligocene post-rift clastics and carbonate, Miocene deltaics, etc.))

Suandhi, P.A. P.T. Setyobudi, A. Bachtiar, E. Nurjadi, A. Mardianza, B.D. Harisasmita, M. Arifai & D. Hendro H.N. (2018)- Sangatta delta evolution with an updated Miocene paleogeography. Proc. 42nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA18-166-G, 12p.
(N Kutai Sangatta delta (Balikpapan and Kampung Baru Fms) development started in E Miocene with at least two fluvial-deltaic parasequence sets prograding to E. Delta became larger in M-L Late Miocene as regional inversion and uplift took place at Kuching High to W of delta. >10 stacked fluvial- deltaic parasequence sets identified, all showing progradation to E)

Subekti, A., K.P. Laya, E Guritno & M.N. Krisnayadi (2017)- Greater Bangkanai prospectivity: the application of full-tensor gravity and magnetic survey, onshore Central Kalimantan. Proc. 41st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA17-361-G, 17p.
(Gravity mag survey in upper Kutai Basin, in area with Kerendan and West Kerendan gas fields in Oligocene carbonates. NE-SW trending surface anticlines are mainly (M Miocene?) inversions of M-L Eocene extensional structures)

Subekti, A., H. Mustapha, E. Guritno, J. Smart, A. Susilo, B. Nugroho, W. Darmawan & M. Wilson (2015)- New insights into the Kerendan Field carbonate morphology Upper Kutai Basin, Central- East Kalimantan. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-118, 16p.
(Late Oligocene Berai carbonate play in Upper Kutai Basin underexplored; Kerendan discovered by Unocal in 1982 is only hydrocarbon accumulation, in carbonate platform with two culminations with common gas-water contact. Oligocene carbonate built on NNE-SSW trending Paleogene horsts. Kerendan High created by inversion of rift faults. Kerendan Carbonate system not an atoll rim carbonate with interior lagoon as previously interpreted, but complex of open platform carbonate with partially developed rim in which platform, coral reefal buildups and carbonate sand aprons developed. Most porosity secondary, diagenetic)

Subroto, E.A. (2015)- The role of coaly materials as source rocks (conventional and unconventional) in the Kutai Basin, Indonesia. In: Hydrocarbons in the tropics: on the edge, Abstracts 32nd Ann. Mtg. Soc. Organic Petrology, Yogyakarta 2015, p. 123-128. *(Extended Abstract)*
(Five proven and potential types of petroleum source rocks identified in Kutai basin. Most oils tied to deltaic coaly shales. Coaly materials significant role in hydrocarbon generation, conventional and unconventional)

Subroto, E., A. Bachtiar & B. Istadi (2006)- Source rock characterisation in the Kutai Basin, East Kalimantan, Indonesia, based on biomarkers. Proc. Jakarta 2006 Int. Geosc. Conf. Exhib., Indon. Petroleum Assoc. (IPA), Jakarta06-PG-28, 4p.
(Analyses 73 crude oils and 86 rock samples from Kutai Basin. Based on biomarkers five source types: deltaic coaly shales, marine shales, mixed deltaic and marine shales, marine calcareous shales, and immature deltaic coaly sediments. 62 oils correlate to deltaic coaly shales, remaining 11 correlate to marine shales. No mixed sources detected in crude oils. Vitrinite reflectance data for some sediments appear to be suppressed)

Subroto, E.A., B.P. Muritno, Sukowitono, D. Noeradi & Djuhaeni (2005)- Petroleum geochemistry study in sequence stratigraphic framework in the Simenggaris Block, Tarakan basin, East Kalimantan, Indonesia. Proc. 30th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, IPA05-G-159, p. 421-432.
(Tarakan Basin Simenggaris Block 8 Oligocene-Pliocene sequences, with shales TOC between 0.65- 7%, indicating several may be hydrocarbon source. Almost all sequences contain some coals or carbonaceous materials. Only SB-2 and SB-1 (Naintupo Fm and older) reached optimal maturity. In deeper areas SB-5 to SB-3 (Meliat Fm) are in middle mature stage)

Sudarmono, A. Direza, H.B. Maulin & A. Wicaksono (2017)- Some new insights to tectonic and stratigraphic evolution of the Tarakan sub-basin, North East Kalimantan, Indonesia. Proc. 41st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA17-722-G, 22p.
(Tarakan Basin with E-ward prograding fluvio-deltaic sedimentation since E Miocene, sourced from multiple feeder rivers (Sesayap, Sesanip and others). Deltaics at and E of Bunyu Island deposited on oceanic crust of Celebes Sea. Tarakan sub-basin bounded by left-lateral strike slip faults Sampoerna (in N; Celebes Sea transform fault?) and Maratua and Mangkalihat FZs (in S; continuation of Palu-Koro fault of Sulawesi?).

Major tectonic event at end of Late Miocene (end of Santul Fm), which uplifted part of area E of Kucing High. Second major tectonic event in Pleistocene, forming present-day Bunyu, Tarakan and Ahus structures)

Sudradjat A. & A.H. Hamdani (2015)- The tectonic control on the formation of cleats in the coalbeds of Sajau Formation, Berau Basin, Northeast Kalimantan. The 2nd. Int. Conf. and 1st Joint Conf. Faculty Geology Univ. Padjadjaran Univ. Malaysia Sabah (IGC 2015), p. 187-192.
(online at: http://seminar.ftgeologi.unpad.ac.id/wp-content/uploads/2016/02/The-Tectonic-Control-on-the-Formation-of-Cleats-in-the-Coalbeds-of.pdf)
(Distributions of cleat orientation, spacing, and aperture in Pliocene Sajau Fm lignite seams controlled by main tectonic structures in area)

Suessli, P. (1978)- The Tendeh Hantu atoll- a Lower Miocene carbonate build-up in Mangkalihat Peninsula, East Kalimantan. In: Proc. Carbonate Seminar, Jakarta 1976, Indon. Petroleum Assoc. (IPA), p. 121-122. *(Abstract only)*
(Narrow E-W trending high with steep N and S flanks formed in M Oligocene tectonic event, persisted through Mio-Pliocene and developed into Mangkalihat Peninsula. Lower Miocene carbonate buildup outcrops, including Tendeh Hantu 'atoll' sub-circular platform, ~30 km across. Overlain by Pliocene sediments. Coralline sediments of edge dip at 30-50° towards interior of 'atoll'. Most limestones in interior slightly dolomitized packstones. Larger foraminifera Flosculinella globulosa, F. reicheli and Austrotrillina howchini suggest early M Miocene (Lower Tf), age, age-equivalent of nearby zone N9 calciturbidites)

Suggate, R.P. & J.P. Boudou (1996)- Revision of the Mahakam coal series: Rock-Eval and rank(s) relations. J. Petroleum Geol. 19, 4, p. 407-423.

Sugiaman, F., A. Cebastiant, K. Werner, A. Saller, D. Glenn & R. May (2007)- Reservoir characterization and modeling of an Upper Miocene deepwater fan reservoir, Gendalo Field, Kutai Basin, Offshore East Kalimantan. Proc. 31st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA07-G-056, 18p.
(Gendalo Field largest deepwater gas discovery off E Kalimantan. Primary reservoir U Miocene thin-bedded turbidites (average sand bed thickness 15 cm), deposited at base-of-slope as unconfined fan. Three internal units mapped based on 3D seismic data and four wells)

Suiter, J.S. (1996)- Shallow 3-D seismic analysis of Late Pleistocene lowstand deltas (Mahakam, Indonesia). Proc. 25th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 347-351.
(Shallow 3D seismic facies analysis of Late Pleistocene Mahakam Delta)

Sujatmiko, A.Salim & B.S. Irawan (1984)- Geology of the Tunu gas field. Proc. 13th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 341-363.

Sukanta, U., Y. Kusnandar, S. Hidayati, H.I. Priyonggo, A. Siravoet al. (2009)- Understanding hydrocarbon-bearing reservoirs and their critical factors for deep water exploration in the Tarakan Basin, North East Kalimantan (Indonesia). Proc. 33rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA09-G-155, 3p.
(Short paper suggesting series of rapid sea level drops in M Miocene- Pliocene lead to deposition of sand-rich turbiditic deposits along slope and basin floor in eastern deep offshore Tarakan basin)

Suleiman, A., D.A. Wulandari & A. Bachtiar (1998)- Identifikasi fosil rombakan di lapisan Miosen Cekungan Kutai dan implikasi geologinya. Proc. 27th Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, p. 2.16- 2.26.
('Identification of reworked fossils in Miocene sediments of the Kutai Basin and its geological implications'. Locally common reworked bathyal foraminifera in Miocene deltaic deposits of Kutai Basin (incl. agglutinants Cyclammina, Bathysiphon, Ammodiscus, large Haplophragmoides))

Sulistyo, Z.R., A. Sutanto & H. Sukhendra (2012)- Preliminary study of CBM potential in Jorong-Kintap area, Asem-Asem Basin, South Kalimantan. Proc. 41st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 2012-E-05, 7p.

(also as PITHAGI2012-002) (Asem-Asem Basin good Coal Bed Methane potential. Main coal bearing formations of Jorong-Kintap area are Miocene Warukin Fm (49 m) and Eocene Tanjung Fm (6.1m). Coals of Warukin Fm total moisture 27%, ash 2.9%, volatile matter 41%, macerals dominated vitrinite (83%), classified as lignite. Eocene coals of Tanjung Fm total moisture 6.1%, ash 11.5%, volatile matter 43%, Ro 0.46%, macerals dominated by vitrinite (78.4%), classified as sub-bituminous B)

Sumawinata, B. (1998)- Sediments of the lower Barito basin in South Kalimantan: fossil pollen composition. J. Southeast Asian Studies, Kyoto, 36, 3, p. 293-316.
(online at: https://kyoto-seas.org/pdf/36/3/360302.pdf)
(Palynology/ environments of Holocene sediments from Lower Barito and Martapura Rivers shallow cores)

Sunardi, E., V. Isnaniawardhani, I. Cibaj, Amiruddin & I. Haryanto (2014)- The lithological succession in East Kutai Basin, East Kalimantan, Indonesia: revisited in a new data on litho-biostratigraphic. Int. Journal of Science and Research (IJSR) 3, 4, p. 707-713.
(online at: https://www.ijsr.net/archive/v3i4/MDIwMTMxNTcy.pdf)
(Brief review. Kutai Basin basement slickensided serpentinites (Kuaro, Muru River) and deep marine turbiditic metasediments with polymict conglomerate, and pelagic sediments (Tewe River), interpreted as Jurassic ultramafic complex. Overlain by E Miocene(?) and younger beds with numerous repetitions of prograding patterns (fluvial-deltaic and shallow marine facies, with transgressive carbonate build ups). In Late Miocene retrograding patterns and progressively deeper facies)

Sunaryo, R., S. Martodjojo & A. Wahab (1988)- Detailed geological evaluation of the possible hydrocarbon prospects in the Bungalun area, East Kalimantan. Proc. 17th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 423-446.
(Bungalun Area on SW side Mangkalihat Peninsula. Shallow wells between 1900-1941 with oil shows in thin Late Miocene-Pliocene sands. Underlain by oceanic basalt or melange (Late Cretaceous Danau Fm). Overlain by Eocene Mangkupa- Beriun deepwater? clastics in W and tuffs-dominated Sembulu Fm in E. Oligocene-E Miocene to younger sequences two facies. Peripheral zones mainly limestones, younging to SE: Oligocene Kedango Lst (700m), E Miocene Tabalar Lst (500m) and M Miocene Sekerat Lst (200-300m). Deeper parts of basin mainly fine clastics. Bungalun Basin N-S structural grain, similar to Kutai basin, except E-W direction near Sangkulirang Bay. Change of trend caused by rotation effect of Palu-Koro Fault further E)

Sunoto (1990)- Hubungan jendela minyak dan zone bertekanan lua (dengan sebaran hidrokarbon di Pulau Bunyu). Geologi Indonesia, p. 49-60.
('Relationship between oil window and overpressure zone (with distribution of hydrocarbons in Bunyu Island)')

Sulaeman, Teteh S. (1997)- Late Tertiary palynology of the Handil Field, Kutei Basin, East Kalimantan, Indonesia. Ph.D. Thesis, University of Queensland, p. 1-228. *(Unpublished)*
(Palynostratigraphic study on core samples from Miocene reservoirs 28- 4 in 22 wells in Handil Field, Mahakam Delta. Palynoflora composition: 224 species of fungal spores, 88 species of pollen grains and 14 species of spores. Four E Miocene- E Pliocene informal stratigraphic assemblages distinguished, based on subzones of Florschuetzia meridionalis Zone)

Susianto, A., E.R. Esomar, R. Rahadi & M.N. Ardhie (2012)- The characteristics of the Sepinggan strike slip fault zone and its role in forming structural traps the Southeast Kutei Basin. Proc. 36th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA12-G-062, p. 1-23.
(Sepinggan Fault is SE-NW trending right-lateral strike-slip fault, extending >70 km from offshore SE Balikpapan to onshore S Penajam area. It is part of Adang fault zone. Initially formed as transform during Eocene rifting, reactivated as strike slip in Miocene compression. Several significant hydrocarbon traps formed along fault (Yakin, Sepinggan, Mahoni))

Sutha, N., I.M.A., R. Adi & Z. Arifin S. (2008)- Evaluating hydrocarbon potential at attic position in deltaic multi complex reservoirs case study: ñA100ò reservoir, Semberah Field. Proc. 37th Conv. Indon. Assoc. Geol. (IAGI), Bandung, 1, p. 544-556.

(Semberah field in N part of Sanga-Sanga Block, E Kalimantan, part of ancient Mahakam delta complex, with multi layer M-U Miocene reservoirs. Paleo-environment transition fluvio-tidal delta, dominated by delta plain and delta front sedimentation. Search for additional reserves by evaluating hydrocarbon potential at 'attic position', focused on evaluating channel facies in updip position of wet wells)

Sutiyono, S. (1995)- Magnetic resonance image log use in evaluation of low resistivity pay in the Attaka Field. Proc. 24th Ann. Conv. Indon. Petr. Assoc. (IPA), Jakarta, 1, p. 167-179.

Sutjipto, R. Heryanto (1991)- Sedimentology of the Melawi and Ketungau basins, West Kalimantan, Indonesia. Ph.D. Thesis, University of Wollongong, p. 1-255. *(Unpublished)*
(online at: http://ro.uow.edu.au/theses/1405/)
(Melawi and Ketungau similar basins, separated by Paleocene-E Eocene Semitau High (composed of highly deformed turbiditic Selangkai Fm and U Cretaceous 'Boyan melange' tectonic breccia). Melawi Basin fill up to 7500m thick Eocene- Oligocene, gently folded, in 4 main units: (1) ?Late Eocene Ingar Fm outer shelf mudstone (typical Eocene palynomorphs, also common reworked U Cretaceous marine forams), sandstones derived from magmatic ar detritus from Schwaner Mts in S; (2) Late Eocene fluvial and marine Suwang Gp (Dangkan Sst, Silat Shale), with increasing quartz and decreasing volcanics of recycled orogen-type provenance;(3) Melawi Gp fluvial- lagoonal with Late Eocene Payak Fm/ Sepauk Sst and E Oligocene Tebidah Fm; (4) Oligocene fluvial Kapuas Gp, unconformably over Melawi Gp after E Oligocene minor folding. With Late Oligocene- E Miocene Sintang intrusives. Provenance from S and W in Ingar Fm, mainly from melange/ subduction complex in N in Suwang and Melawi Groups (recycled orogenic material from uplifted Late Cretaceous Boyan and Eocene Lubok Antu melanges?). With palynology analyses by B. Porthault of Elf-Aquitaine (later papers by Sutjipto under name Heryanto; JTvG))

Suwardji, A. Buhari, K. Kukuh & R. Prayitno (1994)- Low resistivity reservoir study: Sangatta field, Kalimantan. Proc. 23rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 2, p. 119-130.
(Identification of previously unrecognized low-resistivity oil reservoirs in Sangatta Field (1936 BPM discovery, developed by Pertamina in 1970's))

Suwarna, N. & B. Hermanto (2007)- Berau coal in East Kalimantan; its petrographics characteristics and depositional environment. J. Geologi Indonesia 2, 4, p. 191-206.
(online at: http://oaji.net/articles/2014/1150-1407911582.pdf)
(E-M Miocene Berau coal in Berau Basin. M Miocene Lati Fm coal high in vitrinite (66-96%), mainly vitrinite B, followed by inertinite (14-27%), exinite (1-7%) and mineral matter (0.4- 10.6%). Vitrinite reflectance 0.40-0.58%. Depositional environment peat swamp in upper delta plain/ alluvial plain. Original vegetation mainly cellulose rich, shrub-like plants, tree ferns, herbaceous plant communities, with minor amount of trees)

Suwarna, N., B. Hermanto, T. Sihombing & K.D. Kusumah (2006)- Coalbed methane potential and coal characteristics in the Lati Region, Berau Basin, East Kalimantan. J. Geologi Indonesia 1, 1, p. 19-30.
(online at: www.bgl.esdm.go.id/publication/index.php/dir/article_detail/161)
(Miocene coalbed methane potential and coal characteristics in Lati region, Berau basin, E Kalimantan. Volatile matter of Lati coal 32-39.6%, sulfur 0.35-3.0%, ash 2.8-14.5% and moisture 12-20%. Vitrinite reflectance (Rv) 0.42-0.57%, indicating sub-bituminous B- high volatile bituminous C coal rank. Low ash content. Thermally immature- early mature, suggesting gas is biogenic)

Suwarna, N., H. Panggabean, M.H. Hermiyanto & A.K. Permana (2007)- Characterization of unconventional fossil fuels in selected areas of Sumatera and Kalimantan, using organic petrography and geochemistry. Proc. 31st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA07-G079, 15p.
(Studies of oil shales and coalbed methane in Sumatra and Kalimantan)

Suwondo, D.H.H. Nugroho, A. Krisyunianto, A. Bachtiar, A. Suleiman & W. Utomo (2015)- Surface study for subsurface analogue model for hydrocarbon potential evaluation in Pulaulaut Island, Asem-Asem Sub-basin. Proc. Joint Conv. HAGI-IAGI-IAFMI-IATMI, Balikpapan, JCB2015-290, 6p.
(Outcrop study of Pulau Laut, SE Kalimantan. Synrift Eocene rocks with source potential in lacustrine shales)

Syarifuddin, N., M. Azhar, C.M. Adam, A. Wiweko, P. Dupouy et al. (2008)- South Mahakam exploration and development: synergies that make it happen. Proc. 32nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA08-G-098, 9p.
(Most of S Mahakam delta fields discovered years ago, but of marginal size and none developed. Fields mainly gas-condensate, incl. Jumelai (1975), Jempang (1990), Stupa (1996) and Metulang (1998). Most gas in M-U Miocene Sepinggan deltaic series at 2850-3700m subsea, except for Jumelai reservoir, which is in M Miocene Jumelai sands. Recent revival of exploration and development)

Syarifuddin, N. & I. Busono (1999)- Regional stress alignments in the Kutai Basin, East Kalimantan, Indonesia: a contribution from a borehole breakout study. J. Asian Earth Sci. 17, p. 123-135.
(Borehole breakout data from 134 wells in Kutai Basin indicate maximum regional stress direction NW-SE, which deviates from anticlinorium trends and from strike of thrust-faults in region. Patterns influenced by reactivation of weak zones related to sediment loading (structural inversion))

Syarifuddin, N. & S. Masitah (2010)- Sisi-Nubi Field Development: Sand control strategy and implementation. Proc. 34th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA10-E-015, 11p.
(Sisi-Nubi 1986-1992 gas discoveries 25 km offshore Mahakam Delta in 60-90m water depth. Reservoirs multi-layered Upper Miocene deltaic deposits between 1900-3800m SS interval. Poorly consolidated fresh-water bearing sands in upper part and relatively poor to tight, partly overpressured sands in deeper part.

Syarifuddin, N., W. Susanto, M. Bueno & E. Siawira (2010)- Optimized well placement and design to maximize recovery in Sisi-Nubi field development. Proc. 34th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA10-G-016, 8p.

Sydow, J. (1996)- Holocene to Late Pleistocene stratigraphy of the Mahakam Delta, Kalimantan, Indonesia. Ph.D. Thesis Louisiana State University, Baton Rouge, p. 1-170.
(online at: https://digitalcommons.lsu.edu/cgi/viewcontent.cgi?article=7163&context=gradschool_disstheses)
(Late Pleistocene depositional cycles of Mahakam shelf stratal geometries indicating progradational continuum from falling sea level stage to initial rise (no Late Pleistocene sediment bypass of entire shelf). Extensive, thick Halimeda carbonate buildups during transgression and highstand flooding of shelf.

Taieb, R. & M.F. Sheppard (1993)- Les eaux de formation du Delta de Mahakam (Indonesie); evidences pour une infiltration d'eaux meteoriques dans les champs a hydrocarbures. Comptes Rendus Academie Sciences, Paris, Ser. 2, 317, 5, p. 623-628.
(Evidence for infiltration of meteoric waters into formation waters from the Mahakam Delta oil fields)

Tanean, H., D.W. Paterson & M. Endharto (1996)- Source provenance interpretation of Kutei Basin sandstones and the implications for the tectono-stratigraphic evolution of Kalimantan. Proc. 25th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 333-345.
(Three Miocene- Recent sandstone types, all 'recycled orogenic' provenance. E Miocene (23-17 Ma) and Pliocene- Recent sandstones moderately quartzose with lithics from Cretaceous Rajang metasediments. Volcanic lithics record continuous volcanic activity. End-E- earliest M Miocene sandstones volcanogenic, recording increase in W Kalimantan volcanic activity between 17-14.5 Ma. High-quartz M -L Miocene sandstones form reservoirs in oil and gas fields along coast and offshore, and are recycled products of basin inversion events that advanced from W to E. Onset of basin inversion at zone N10 (14.5 Ma). No associated volcanic activity recorded in sediment)

Tan Sin Hok (1936)- *Lepidocyclina zeijlmansi* n.sp., eine neue *Polylepidina* von Zentral Borneo, nebst Bemerkungen uber die verschiedenen Entstehungsweisen der Lepidocyclinen. De Ingenieur in Nederlandsch-Indie (IV, Mijnbouw en Geol.), 3, 1, p. 7-14.
('Lepidocyclina zeijlmansi n.sp., a new Polylepidina from Central Borneo, with remarks on the various origins of the Lepidocyclinids'. New, primitive species of Lepidocyclina from Eocene in Tjihan River, tributary of

Mahakam River, C Kalimantan. Possibly close to Lep. boetonensis from Eocene(?) of Buton. First (and only?) record of Eocene lepidocyclinid from Indonesia)

Tan Sin Hok (1937)- On the genus *Spiroclypeus* Douville with a description of the Eocene *Spiroclypeus vermicularis* nov. sp. from Koetai in East Borneo. De Ingenieur in Nederlandsch-Indie (IV), 4, 10, p. 177-193.
(Review of larger foram genus Spiroclypeus. Stratigraphic range Late Oligocene- E Miocene (zone Te) and also in Late Eocene (Tb). On p. 179: mention of Biplanispira in Wani series of Buton)

Thalmann, H.E. (1942)- *Hantkenina* in the Eocene of East Borneo. Stanford University Publ., Geol. Sci. 3, 1, p. 5-24.
(Occurrences of Late Eocene planktonic foram marker genus Hantkenina in marls from (1) Sangkulirang area (Karangan and Batolepo Rivers; associated with thin limestones rich in Asterocyclina, Discocyclina, Nummulites) and Tanjung Selor regions, E Kalimantan)

Thamrin, M. & Prayitno (1985)- Terrestrial heat flow in East Kalimantan (Barito, Kutei, Tarakan Basins). Proc. 21st Sess. Comm. Co-ord. Joint Prospecting Mineral Resources in Asian Offshore Areas (CCOP), Bandung, 2, p. 110-121.
(E Kalimantan basins average T gradient in 90 wells 3.22°C/ 100m. Normal heat flow values in basins: Barito with 1.80 HFU, Kutei 1.59 HFU and Tarakan-Bunyu with 1.68 HFU)

Thore, P. & P. Spindler (2013)- Breaking the limit of seismic resolution; a synthetic example based on Tunu shallow gas development. The Leading Edge 32, 11, p. 1318-1326
(Seismic resolution commonly assumed to be limited to 1/4th of seismic bandwidth, often too coarse to resolve thin layering inside reservoir zones. New seismic inversion application in U Miocene- Pliocene shallow gas zone of Tunu field, offshore E Kalimantan, could retrieve layers as thin as 1/20th of seismic bandwidth)

Tiwar, S. & J. Tasuno P.H. (1980)- The Tanjung (South Kalimantan) and Sei Teras fields (South Sumatra): a case history of petroleum in Pre-Tertiary basement. Proc. 16th Sess. CCOP, Bandung 1979, p. 238-249.
(Part of oil production in Tanjung field, Barito basin, is from Pre-Tertiary weathered and fractured porphyritic volcanics and tuffaceous sandstones. Cumulative production about 21 MB oil and 14 GCF gas)

Tjia, H.D. (1963)- Large deltas in Kalimantan. Contr. Dept. Geology, Inst. Technology Bandung 53 (Th.H.F. Klompe Memorial Volume), p. 73-90.

Tjia, H.D. (1970)- Eocene directional indicators near Tandjung, Southeast Kalimantan. Bull. Nat. Inst. Geology and Mining (NIGM), Bandung 3, 1, p. 29-32.
(Pebble orientation and imbrication, ripple marks, etc. in basal member of Eocene Tanjung Fm in foothills of Meratus Mts suggest dominant current to NNE- NE)

Tobler, A. (1926)- *Miogypsina* im untersten Neogen von Trinitad und Ost Borneo. Eclogae Geol. Helvetiae 19, 3, p. 719-721.
(online at: http://retro.seals.ch/digbib/view?pid=egh-001:1925-1926:19::729)
('Miogypsina in the basal Neogene of Trinidad and East Borneo'. Brief paper on occurrence of Miogypsina with Spiroclypeus in Tabalong section, E Kalimantan, collected by Buxtorf. Not much new)

Tobler, A. (1927)- *Maeandropsina* im Tertiar von Ost-Borneo. Eclogae Geol. Helvetiae 20, 2, p. 321-323.
(online at: https://www.e-periodica.ch/digbib/view?pid=egh-001:1926-1927:20#335)
('Meandropsina in the Tertiary of East Borneo'. Larger foram Meandropsina from marly limestone of Samui near Balikpapan, E Kalimantan, from donated collection in Basel. Assigned to Zone Tertiary 3y of Van der Vlerk. May be Pseudotaberina (NB: Meandropsina s.s. is Upper Cretaceous genus; JTvG))

Tokita K., K. Tsukada, T. Akutsu & H. Honda (2005)- History and functions of petroleum system concepts in the Mahakam Delta province; a view in the history of petroleum production. In: Oil and gas from the Cenozoic

non-marine source rocks in East Asia; a point of contact between petroleum system and Earth system, Sekiyu Gijutsu Kyokaishi (J. Japanese Assoc. Petroleum Technologists), Tokyo, 70, 1, p. 66-73.
(Tertiary Mahakam Delta Province produced >3 GBO-equivalent. Origin of oil and gas believed to be non-marine. Produced oils mostly waxy, heavy- medium oil. Exploration concept assumed non-marine origin of oil and gas, and reverse faults for oil and gas migration. Exploration targets in deepwater areas need significant supply of coal and coaly mud from delta to deepwater areas in periods of lowstand)

Tosin, S. & R. Kadir (1996)- Tipe reservoir sedimen Miosen Tengah di sub-cekungan Tarakan, Cekungan Tarakan, Kalimantan Timur. Proc. 25th Ann. Conv. Indon. Assoc. Geol. (IAGI), 2, p. 495-512.
('Middle Miocene reservoir types in sub-basin Tarakan, E Kalimantan')

Tosin, S. & T.S. Priantono (1994)- Pengaruh deformasi intra Miosen pada perkembangan biostratigrafi daerah Tanjung, Cekungan Barito, Kalimantan Selatan. Proc. 23rd Ann. Conv. Indon. Assoc. Geol. (IAGI), 1, p. 219-227.
('Influence of intra-Miocene deformation on biostratigraphic development in the Tanjung area, Barito Basin, S Kalimantan')

Trevena, A.S., S. Mahadi, S.A. Martinez, Marwoto et al. (1993)- Characterization of Upper Miocene deltaic reservoirs at Attaka field, offshore East Kalimantan, Indonesia. In: C.D. Atkinson et al. (eds.) Clastic rocks and reservoirs of Indonesia; a core workshop, Indon. Petroleum Assoc. (IPA), Jakarta 1993, p. 91-116.
(Attaka reservoirs fluvial and distributary channels and delta-front bars in series of Upper Miocene sequences. Mean porosity/ permeability for fluvial sandstone cores are 30%/1040 mD; distributary sandstones, 27%/ 390 mD; high-energy, delta-front sandstones, 18%/ 21.5 mD. Shallow sandstones at Attaka field abundant volcanic rock fragments and lower porosity- permeability than underlying more quartz-rich sandstones)

Trevena, A.S., Y.J. Partono & T. Clark (2003)- Reservoir heterogeneity of Miocene- Pliocene deltaic sandstones at Attaka and Serang fields, Kutei Basin, Offshore East Kalimantan, Indonesia. In: F.H. Sidi, D. Nummedal et al. (eds.) Tropical deltas of Southeast Asia- sedimentology, stratigraphy and petroleum geology, Soc. Econ. Paleontol. Mineral. (SEPM) Spec. Publ. 76, p. 235-254.
(Attaka and Serang fields M-Late Miocene sandstone reservoirs are delta front bars and distributary channels. Delta-front bars burrowed- laminated, fine-grained sandstones, up to 5m thick, and several km wide. Channel sandstones cross-stratified, coarse- to fine-grained, 3-17 m thick and < 1.5 km wide). Coarsest grained and thickest sandstones typically in lowstand deposits)

Ubaghs, J.G.H. (1929)- De geologie van Koetai (Z.O. Borneo). Dienst Mijnbouw Nederlandsch-Indie, Indon. Geological Survey, Bandung, Open File Report F29-03, p. 1-158.
('The geology of Kutai, E Kalimantan')

Ubaghs, J.G.H. (1934)- The geology of the area bordered by the Boengaloen River, Mahakam River and Makassar Strait. Indon. Geol. Survey, Bandung, Open File Report S 37-3, p. 1-54.
(Unpublished; original in Dutch)

Ubaghs, J.G.H. & C.P.A. Zeijlmans van Emmichoven (1936)- Beschouwingen over het Palaeogeen van Borneo. De Ingenieur in Nederlandsch-Indie, IV, 3, 9, p. 164-172.
(Critical review of 'confusing' Borneo chapter in Badings (1936) paper 'Paleogene of Indies Archipelago')

Ucok, H., C. Landeck, K. O'Donnell, D. Staples, W. de Boer & B. Antariksa (1995)- Small field development offshore East Kalimantan. Proc. 24th Ann. Conv. Indon. Petr. Assoc. (IPA), Jakarta, 2, p. 343-360.
(Description of undeveloped 1971 Unocal Santan discovery, 10 miles E of Attaka, in Late Miocene reservoirs)

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('Hydrocarbon prospects in sandstones of the Beriun Formation in the Sangatta- Bungalun area, Kutai Basin')

Umbgrove, J.H.F. (1927)- Neogene foraminiferen van de Soengei Beboeloe, Pasir (Zuid Oost Borneo). Wetenschappelijke Mededeelingen, Dienst Mijnbouw Nederlandsch-Indie 5, p. 28-41.
(?Middle Miocene 'Upper Tf' larger foraminifera from Bebulu River, Pasir, SE Borneo)

Umbgrove, J.H.F. (1929)- Anthozoa van Noord-Oost Borneo. Wetenschappelijke Mededeelingen, Dienst Mijnbouw Nederlandsch-Indie 9, p. 45-76.
('Anthozoans from NE Borneo'. Low diversity coral assemblages from Late Miocene- Pliocene Menkrawit, Antjang and Domaring beds, collected by Leupold in NE Kalimantan)

Umbgrove, J.H.F. (1936)- *Heterospira*: a new foraminiferal genus from the Tertiary of Borneo. Leidsche Geol. Mededelingen 8, p. 155-157.
(online at: www.repository.naturalis.nl/document/549681)
(Description of Late Eocene larger foram Heterospira mirabilis n. gen., n.sp. from several localities in E Kalimantan. Genus renamed Biplanispira in 1937, Leidsche Geol. Mededelingen 8, p. 309)

Umbgrove, J.H.F. (1938)- A second species of *Biplanispira* from the Eocene of Borneo. Leidsche Geol. Mededelingen 10, p. 82-89.
(online at: www.repository.naturalis.nl/document/549462)
(Biplanispira absurda n.sp. from Eocene of Sungei Sangajam, Tanah Bumbu, SE Kalimantan, with double arrangement of chambers on both sides of a median plane. Considered to be aberrant specimens of Pellatispira madaraszi or Pellatispira mirabilis by Cole (1970))

Usna, I. (1983)- The geological analysis of diamond-bearing gravels in Cempaka- Banyuirang area, S.E. Kalimantan. M.Sc. Thesis, Kensington University, p. 1-107. *(Unpublished)*

Vallet, J. (1983)- Seismic facies study in the Sepasu area of East Kalimantan. Proc. 12th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 359-373.
(Sepasu area on NE margin Kutai basin three major sequences: (1) Phase of M Miocene delta construction; (2) early Late Miocene transgression phase with extensive carbonate deposition; (3) E-ward basin tilting and regression with deltaic deposition in Late Miocene- Pliocene)

Van de Weerd, A.A., R.A. Armin, S. Mahadi & P.L.S. Ware (1987)- Geological setting of the Kerendan gas and condensate discovery, Tertiary sedimentation and paleogeography of the northwestern part of the Kutai Basin, Kalimantan, Indonesia. Proc. 16th Ann. Conv Indon. Petr. Assoc. (IPA), Jakarta, p. 317-338.
(Four phases of Tertiary sedimentation in NW Kutei Basin. (1) E-M Eocene Tanjung Fm basal coarse clastics grade upwards into shallow-marine clastics, up to 1000m thick, onlap stable Barito Shelf. Syndepositional faults in basal sequence. Oil-productive near Tanjung. E Eocene subsidence synchronous with renewed or accelerated subduction beneath N-NW margin of Borneo; (2) Late Eocene-E Oligocene claystones in deep basins, flanked by shallow marine clastics and carbonates. Phase terminated by minor compressional event, with uplift and erosional truncation of some basement blocks; (3) Late Oligocene transgression, with platform carbonates (Berai Fm) over Barito Shelf and Kutei Basin basement highs and slope carbonates and deep-marine shales (Bongan Fm) in basin. Kerendan 1 gas discovery in isolated Oligocene carbonate platform on basement high in W Kutei Basin. (4) thick uppermost Oligocene-Miocene deltaic and non-marine deposits. Introduction of deltaics probably from areas undergoing inversion and uplift in N part of Kutei Basin and S China Sea area. Inversion and uplift of this part of Kutei Basin probably in Late Miocene)

Van de Weerd, A.A. & R.A. Armin (1992)- Origin and evolution of the Tertiary hydrocarbon-bearing basins in Kalimantan (Borneo), Indonesia. American Assoc. Petrol. Geol. (AAPG) Bull. 76, 11, p. 1778-1803.
(M Eocene formation of Kalimantan extensional basins. Transgressive M Eocene and E Oligocene non-marine and shallow marine clastics, carbonates and deep marine clastics, followed by regressive Late Oligocene-Miocene. Oligocene uplift, erosion, and structural segmentation into smaller basins. Deltaic sedimentation in latest Oligocene in upper Kutei basin, prograding E. By end E Miocene deltas near present Kutei coast. Lower(?)- M Miocene deltaic sediments also in Barito, Asem Asem and Pasir basins, probably contiguous with Kutei. Separate Miocene deltaic depocenter in Tarakan basin. Carbonate sedimentation in shallow areas

between deltas. M Oligocene tectonism and magmatism. Inversion of upper Kutei basin and Meratus Mts uplift started in early M Miocene, related to third major plate readjustment in SE Asia. Regionally synchronous Miocene-Pliocene tectonic phases probably related to collisions of microcontinents along Sulawesi)

Vandenbroucke, M., Y. Debyser, M. Fabre, M. Montacer, P. Pillon, L. Jocteur-Monrozier & P. Jeanson (1987)- Geochemie de la matiere organique du sondage Misedor. In: A. Combaz (ed.) Geochimie organique des sediments plio-quaternaires du delta de la Mahakam (Indonesie)- le sondage Misedor, Editions TECHNIP, Paris, p. 257-292.
('Geochemistry of the organic matter of the Misedor well'. Geochemical analyses of organic matter in Late Pliocene- Recent sediments of interval 0-640m in the Misedor well, SW Mahakam Delta. Organic matter all Type III, and derived from same higher land plants as organic matter in deeper water deltaic sediments)

Van der Vlerk, I.M. (1923)- Een nieuwe *Cycloclypeus* soort van Oost-Borneo. Sammlungen Geol. Reichs-Museums Leiden 10, 3, p. 137-140.
(online at: www.repository.naturalis.nl/document/552419)
('A new Cycloclypeus species from East Borneo'. Sample from Gunung Mlendong near Kari Orang, Kutai basin (no map or stratigraphy info) rich in ?M Miocene larger forams. Contains Cycloclypeus martini n.sp., which looks like and is associated with C. annulatus with concentric rings, but is smaller and has somewhat different embryon. Associated with Cycloclypeus annulatus, Flosculinella bontangensis, Lepidocyclina spp., etc.)

Van der Vlerk, I.M. (1925)- A study of Tertiary Foraminifera from the "Tidoengsche landen" (E. Borneo). Wetenschappelijke Mededeelingen Dienst Mijnbouw Nederlandsch-Indie 3, p. 13-32.
(Late Oligocene- Early Miocene larger forams from 5 localities in Naintoepo and Tempilan beds, upper tributaries of Sebuku River, NE Kalimantan, collected by Leupold. With Lepidocyclina spp., Cycloclypeus, three new species of Spiroclypeus (S. tidoenganensis, S. yabei, S. wolfgangi). Little or no location info)

Van der Vlerk, I.M. (1925)- *Lepidocyclina mediocolumnata* nov. spec. de Pasir (SE-Borneo). Eclogae Geol. Helvetiae 19, p. 267-269.
(online at: https://www.e-periodica.ch/digbib/view?pid=egh-001:1925-1926:19#281)
(New species of Lepidocyclina (Eulepidina) from Sungei Telakai, Pasir, SE Kalimantan. Associated with Lepidocyclina (Eulepidina) formosa and Spiroclypeus, suggesting Late Oligocene- E Miocene age)

Van der Vlerk, I.M. (1929)- Groote foraminiferen van N.O. Borneo. Wetenschappelijke Mededeelingen Dienst Mijnbouw Nederlandsch-Indie, 9, p. 3-44.
('Larger foraminifera from NE Borneo'. NE Borneo Late Eocene-Miocene larger forams collected by Leupold from Tidungsche Landen (Sebuku area), Bulungan and Mangkalihat Peninsula/ Sangkulirang Bay, NE Kalimantan. With stratigraphic table; no maps)

Van de Velde, J. (1925)- De steenkolen-concessies van de N.V. Steenkolen Maatschappij "Parapattan' te Beraoe. Verhandelingen Geologisch-Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie 8 (Verbeek volume), p. 553-559.
('The coal concessions of the Parapattan coal company at Berau'. On KPM-owned Miocene coal concessions with Rantau Panjang and Mary mines in Berau River area, N Kutai basin, E Kalimantan. Coal outcrops part of N-S trending Rantau-Panjang anticline. ~70 coal horizons, 20cm- 5m thick; total coal thickness 111m in 1275m thick unfossiliferous stratigraphic section)

Van Dijk, P. (1882)- Onderzoek naar de ontginbaarheid van steenkolen aan de Riam Kanan, in de Zuider- en Oosterafeeling van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 1881, 2, p. 213-237.
('Investigation into the exploitability of coal at the Riam-Kanan river, SE Kalimantan')

Van Gorsel, J.T. (2016)- A photographic journey through the Cretaceous-Tertiary stratigraphy of the Meratus Mountains-Barito Basin margin, SE Kalimantan. Berita Sedimentologi 34, p. 26-34.
(online at: www.iagi.or.id/fosi/files/2016/01/BS34-01142016_FINAL.pdf)

Van Straelen, V. (1923)- Description des Crustaces decapodes nouveaux des terrains tertiares de Borneo. Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam, 26, 5-6, p. 489-492.
(online at: www.dwc.knaw.nl/DL/publications/PU00014967.pdf)
('Description of new crabs from the Tertiary of Borneo'. Decapod crab fossils collected by Kemmerling in Barito Basin described as Ranina (Lophoranina) kemmerlingi (probably from Oligocene) and Calappilia borneoensis (from Eocene marls W of Lemoe village))

Van Straelen, V. (1923)- Description de Raniniens nouveaux des terrains tertiaires de Borneo. Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam, 26, 9-10, p. 777-782.
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('Description of new raninian crabs from the Tertiary of Borneo'. Decapod crab fossils collected by Lohr in Tuhup River valley, Barito Basin, described as Ranina (Hela) molengraaffi, Ranina toehoepae, etc.))

Verbeek, R.D.M. (1871)- Die Nummuliten des Borneo-Kalksteines. Neues Jahrbuch Mineral. Geol. Palaont. B9, p. 1-14.
('The Nummulites of the Borneo limestone'. First descriptions of Eocene Nummulites from SE Borneo (and Indonesia), incl. Nummulites pengaronensis n.sp.)

Verbeek, R.D.M. (1874)- De Nummulieten uit den Eoceenen kalksteen van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 3 (1874), 2, p. 133-161.
('The Nummulites from the Eocene limestone of Borneo'. Dutch version of 1871 paper on Eocene Nummulites from SE Borneo. New Nummulites species from Pengaron area, Barito basin margin, SE Kalimantan)

Verbeek, R.D.M. (1875)- Geologische beschrijving der districten Riam-Kawa en -Kanan in de Zuider- en Ooster-afdeeling van Borneo. Jaarboek Mijnwezen Nederlandsch Oost-Indie 4 (1875), 2, p. 3-130.
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Verbeek, R.D.M. (1875)- Ueber die Gliederung der Eocanformation auf der Insel Borneo (Die Eocanformation von Borneo und ihre Versteinerungen). Palaeontographica, Suppl. 3, 1, p. 1-8.
('On the subdivision of the Eocene formation on Borneo Island'. Review of geology of Eocene formations of Pengaron- Martapura area, SE Kalimantan, as introduction to series of paleontological by Boettger, Geyler and Von Fritsch. With rel. detailed cross-section of Pengaron area. Eocene subdivided into 3 stages, from bottom to top: (a) Sandstone, shale and coal, (b) soft claystone and marls, (c) limestones with Nummulites))

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(Handil Field 1974 oil discovery in Mahakam Delta distributary plain. Broad anticlinal structure with 150 Middle-Late Miocene reservoir sands between 450-2900m. More than 70 lignite/coal marker beds used for correlation of fluvial-deltaic sand bodies)

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(Same as above)

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('On the Tertiary flora of Borneo')

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('The echinoids from the Nummulites beds of Borneo'. Description of rel. poor echinoid assemblage of 6 species, all new, collected by Verbeek)

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('Fossil corals from the Nummulites beds of Borneo' Description of well-preserved coral assemblage from Eocene limestone collected by Verbeek in Pengaron area, SE Kalimantan. Mainly new species)

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('Some crustacean remnants from the Eocene formations of Borneo'. Crab fossils from concretions in blue-gray Eocene shale from SE Kalimantan)

Von Fritsch, K. (1877)- Einige Eocane Foraminiferen von Borneo. Palaeontographica, Suppl. 3, 1, 3, p. 139-143.
('Some Eocene foraminifera from Borneo'. Descriptions of Nummulites and Discocyclina ('Orbitoides papyracea, O. dispansa, O. epihippum, O. decipiens and O. omphalus) from Pengaron area, SE Kalimantan. Also descriptions of (mid-Cretaceous) orbitolinids 'Patellina scutum' and 'Patellina trochus' from Seberuang River, left tributary of Kapuas River, W Borneo (both assigned to Orbitolina concava by Martin 1889)) (Same material already described by Verbeek (1871); JTvG))

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(Upper Kutei Basin at intersection of two tectonic trends: NW-SE (Adang- Cross Barito) and NNE-SSW (Meratus). Meratus trend reflected by deep magnetic anomalies which divide Upper Kutei into two domains. Surface strata believed to represent Cretaceous imbricated subduction complex with forearc, arc and backarc elements. NNW-SSE Meratus trend Paleogene basin precursor. NW-SE Adang Cross Barito High trend interpreted as part of Trans-Kalimantan tectonic zone linking Paternoster Platform with Lupar fault zone. Upper Kutei lower Paleogene Basins opened NW parallel to this trend. At end Paleogene this basin closed and SE-ward opening Kutei Basin was established. NW-SE trend activity overprinted NNE-SSW Meratus trend and culminated in Late Miocene-Pliocene with major basin inversion and back-thrusting orthogonal to Adang-Cross Barito trend. NW limit of this back thrusting corresponds to interpreted Cretaceous volcanic arc)

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(Water salinities in Mahakam delta fields similar to range of connate water (fresh water in fluvial channels to sea water in marine mouth bars). However, analyses show present-day composition results from mixing of original connate waters with compaction water expelled from overpressured shales)

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(New 3D seismic over 1975 ARCO oil discovery 80 km NW of Tarakan 35 stacked Mio-Pliocene deltaics in structural trap)

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(Late Miocene Tridacna shells show alternating dark and light growth bands. Lighter 18O values in dark growth bands indicate growth during warm seasons. 18O variations suggest seasonal sea-surface temperature) variability of 4.6 1.7 °C)

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Weimer, R.J. (1975)- Impressions of the geology of the Mahakam delta complex and petroleum exploration. Majalah Geologi Indonesia (IAGI) 2, 2, p. 45-47.
(Mahakam Delta Complex may be small scale aulacogen showing associated delta depocenters. Sedimentary prism underlain by oceanic crust. Interplay of basin development, deltaic sedimentation and intrabasin deformation displayed in E Kalimantan favors large petroleum prospects)

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(E Miocene deltaic-shelfal clastic play in onshore Upper Kutai basin only partly explored. Sandstone reservoir quality linked to deep burial main risk. QFL plots show E Miocene sandstone sub-litharenite to litharenite, with lithics mainly metamorphic and sediment fragments (less quartz than M Miocene sandstones))

Werdaya, A., M. Wulansari & I. Billing (2013)- Gross depositional environment model of the Berai carbonate formation and its implication for reservoir prospectivity in the Barito Basin, South Kalimantan, Indonesia. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-001, p. 1-21.
(Depositional environment map of Late Oligocene- E Miocene Berai Limestone in Barito- Asem Asem Basin. Most of Barito Basin part of extensive carbonate platform that continues into Asem Asem and Java Sea. Meratus Uplift is younger feature and no influence of facies. Patch reef facies highest porosity (15-21%))

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(online at: https://buletingeologi.com/index.php/buletin-geologi/issue/view/4/Paper-2%20vol.%202%20no.%201)
('Relationship of coal ranking to Coal Methane Gas content of Middle Warukin Formation at Well BSCBM-01, Paser Regency, East Kalimantan Province'. M Warukin Fm coals from 116-389m in N Barito basin well subbituminous, Type II kerogen, with total biogenic gas content 3-121 scf/ton, percentage methane 12-96%)

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(S Sembakung field, Tarakan Basin, 72 sandstone reservoirs 10'-60' thick, deposited in tidal deltaic setting and E-W trending channel facies)

Wibowo, A., J. Towart, J. Dirstein & M. Maklad (1999)- Seismic spectral signatures of the Badak oil and gas field, onshore Kutei Basin, Kalimantan: an example of seismic reservoir imaging and characterization. In: C.A. Caughey & J.V.C. Howes (eds.) Proc. Conf. Gas habitats of SE Asia and Australasia, Jakarta 1998, Indon. Petroleum Assoc. (IPA), p. 187-203.

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(Tanjung mature field with 170 wells in Eocene and Miocene sandstones of N Barito Basin. Producing since 1950, peaking at 50k BOD in 1961, but now mostly depleted with plans for secondary recovery. Initial oil gravity 41°API)

Widiarti, R. & Dardji Noeradi (2008)- Reservoir modeling of shallow zone in Handil Field, Mahakam Delta, East Kalimantan. Proc. 32nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA08-SG-081, 11p.
(Handil Field one of largest fields in Mahakam Delta, producing oil and gas since 1975. Six Miocene reservoir zones. Sequence stratigraphy of Shallow Zone shows 4 reservoir intervals. One reservoir sand trends from NNW in one main channel then splitting into three distributary channels in SSE)

Widiyanto, D.W., D.S. Djohor, H. Pramudito & Untung (2014)- Studi penentuan fasies lingkungan pengendapan batubara dalam pemanfaatan potensi gas metana batubara di daerah Balikpapan, Kalimantan Timur berdasarkan analisis proximate dan petrografi. MINDAGI 8, 2, p. 23-36.
(online at: http://www.trijurnal.lemlit.trisakti.ac.id/index.php/mindagi/article/view/96/96)
('Study of depositional facies of coal in utilization of coalbed methane gas potential in the Balikpapan, East Kalimantan area, based on proximate analysis and petrography'. Core from 130m deep EPL 01 well in Miocene Balikpapan Fm in Penajam area. 11 coal layers 0.2-3.1m thick, lignite- sub bituminous rank (Rv 0.28-0.38%), up to 84% vitrinite. Environment wet forest swamp, dominated by woody plants, in lower delta plain)

Widodo, S., A. Bechtel, K. Anggayana & W. Puttmann (2009)- Reconstruction of floral changes during deposition of the Miocene Embalut coal from Kutai Basin, Mahakam Delta, East Kalimantan, Indonesia by use of aromatic hydrocarbon composition and stable carbon isotope ratios of organic matter. Organic Geochem. 40, 2, p. 206-218.
(Coals from M Miocene Pulau Balang and Late Miocene Balikpapan Fms in Embalut mine near Mahakam River with common cadene. Miocene climate of Mahakam Delta not uniformly moist and cooler than present day climate, favoring growth of conifers, especially in montane forests)

Widodo, S., W. Oschmann, A. Bechtel, R.F. Sachsenhofer, K. Anggayana & W. Puettmann (2010)- Distribution of sulfur and pyrite in coal seams from Kutai Basin (East Kalimantan, Indonesia): implications for paleoenvironmental conditions. Int. J. Coal Geology 81, 3, p. 151-162.
(Rich ash, sulfur and pyrite (up to 1.4%) contents in Kutai Basin coals (especially C Busang and Sebulu mines) related to Tertiary volcanic activity (Nyaan volcanics), with eolian transport to mire during or after peatification)

Wight, A.W.R., L.H. Hare & J.R. Reynolds (1993)- Tarakan Basin, NE Kalimantan, Indonesia: a century of exploration and future hydrocarbon potential. In: G.H. Teh (ed.) Proc. Symposium on tectonic framework and energy resources of the Western margin of the Pacific Basin, Kuala Lumpur 1992, Bull. Geol. Soc. Malaysia 33, p. 263-288.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1993019.pdf)
(Tarakan Basin with four major oil (Pamusian, Bunyu, Sembakung, Juata), one large gas (Bunyu Tapa) and five minor oil fields, in NW-SE trending anticlinal structures, mainly on Tarakan and Bunyu islands. Cum. production >320 MMBO. Reserves mainly in stacked fluvial Pliocene-Pleistocene sandstone reservoirs, but also in 90 Upper Miocene- Pliocene shallow marine reservoirs. Bunyu and Tarakan islands Late Miocene-Pliocene depocenters, inverted in Late Pleistocene. Unlike Kutai, major fold axes sub-parallel to sand fairways, leading to rel. small closures. Oils generated from lacustrine and fluvial sources, at rel. low maturities. Tarakan Basin underlain by metamorphosed Cretaceous island arc spilites of Danau Fm)

Wijaya, P. H., D. Noeradi, Djuhaeni & A.K. Permadi (2010)- Reservoir distribution and quality of Pliocene deposits in Eastern offshore area, its implication to deepwater exploration of Tarakan Basin, East Kalimantan. Proc. 34th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA10-G-128, 15p.

Wijaja, P.H., D. Noeradi, A.K. Permadi, E. Usman & S. Rusl (2011)- Sand distribution modeling of Middle Miocene reservoir of "East Tarakan A Field" in eastern part of Tarakan Island, East Kalimantan. Bull. Marine Geol. (MGI, Bandung) 26, 2, p. 119-134.
(online at: http://ejournal.mgi.esdm.go.id/index.php/bomg/article/view/39/40)
('E Tarakan A-1' 2007 well encountered gas in M Miocene Meliat Fm deltaic sands, which also produces hydrocarbons in other onshore Tarakan fields. Sand distribution models suggest E-W trending distributary channel reservoirs)

Wijaya, P.H., D. Noeradi, A.K. Permadi, E. Usman & A.W. Djaja (2012)- Potensi migas berdasarkan integrasi data sumur dan penampang seismik di wilayah offshore cekungan Tarakan, Kalimantan Timur. J. Geologi Kelautan 10, 3, p. 117-131.
(online at: http://ejournal.mgi.esdm.go.id/index.php/jgk/article/view/221/211)
('Oil and gas potential based on well and seismic data integration in offshore Tarakan basin, East Kalimantan')

Wijayanti, H.D.K., S.S. Surjono & Soedarmono (2014)- The paleogeography of Berau sub basin, NE Kalimantan. Proc. 43rd Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, PIT IAGI 2014-161, 6p.
(M Eocene- Pleistocene facies distribution study of Berau Sub-basin, S-most onshore depocenter of Tarakan Basin. Basin located on passive margin, initiated with formation of Sulawesi Sea by rifting of N Sulawesi from E Kalimantan in M Eocene. M Eocene- E Oligocene transgressive succession to marine conditions. Regression related to regional uplift of W basin margin began in Late Oligocene, followed by transgression. M Miocene uplift created newly emergent area to W and formed W to E prograding delta. Late Miocene tectonic event

produced folds and reverse faults, mainly strike slip reactivation on older NE-SW and NW-SE basement fractures. Regressive sedimentation continued until Pleistocene. Tectonic uplift in Pleistocene)

Wilson, M.E.J. (2005)- Development of equatorial delta-front patch reefs during the Neogene, Borneo. J. Sedimentary Res. 75, 1, p. 114-133.
(Early and Middle Miocene patch reefs formed in turbid waters associated with high siliciclastic input at Mahakam Delta margin. Reefs initiated on unstable substrates on local low-relief bathymetric highs associated with delta-front channels or distributary mouthbars in process of abandonment. Patch reefs developed only in shallow waters, formed low-relief buildups, lacked rigid frameworks, and had gently sloping margins)

Wilson, M.E.J., W. Camp & M.J. Evans (2010)- Paleogene clastics, Mangkalihat, Borneo: implications for petroleum systems. AAPG Conv., New Orleans 2010, Presentation, 25p.
(online at: www.searchanddiscovery.net/documents/2010/10251wilson/ndx_wilson.pdf)
(Outcrops of Eocene siliciclastics investigated at Mangkalihat Peninsula, NE Kalimantan. M Eocene deep marine Malio Mudstone with interbedded basalts underlain by E-M Eocene marginal marine Sembakung Fm with coals, sandstones, claystones and sandy carbonates, grading upward into carbonate-clastic shelf deposits. Late Eocene Sujau Fm quartz arenites, coals and sandy limestone (picture showing Pellatispira). Clastics in W derived from volcanic and low-grade metamorphic terrain, in E from higher grade metamorphic source with some cherts. Eocene block and basin development influenced environments and sediment pathways)

Wilson, M.E.J., J.L.C. Chambers, M.J. Evans, S.J. Moss & D.S. Nas (1999)- Cenozoic carbonates in Borneo: case studies from northeast Kalimantan. J. Asian Earth Sci. 17, p. 183-201.
(M Eocene- Plio-Pleistocene carbonates in N Kutai Basin and Mangkalihat Peninsula, NE Kalimantan)

Wilson, M.E.J., J.L.C. Chambers, C. Manning & D.S. Nas (2012)- Spatio-temporal evolution of a Tertiary carbonate platform margin and adjacent basinal deposits. Sedimentary Geology 271-272, p. 1-27.
(Evolution of carbonate platform margin of little known Late Eocene- E Miocene Kedango Limestone that developed in semi-enclosed marine embayment at Bengalon area, NE margin of Kutai Basin. Eleven carbonate facies in 30km long W margin of >600m thick platform and adjacent slope and basinal deposits)

Wilson, M.E.J. & M.J. Evans (2002)- Sedimentology and diagenesis of Tertiary carbonates on the Mangkalihat Peninsula, Borneo: implications for subsurface reservoir quality. Marine Petroleum Geol. 19, p. 873-900.
(Mixed carbonate-siliciclastic shelf with intervening deeper water areas on E part of Mangkalihat Peninsula in the Late Eocene- Oligocene. During Oligo-Miocene shallow-water platform carbonates accumulated over much of Mangkalihat Peninsula. Platform steep, reef-rimmed N margin with marine cements. Platform interior low energy area, affected by leaching of aragonitic bioclasts. Best reservoir quality on platform in grainstones and packstones, towards platform interior from platform margin, with primary and secondary mouldic porosity)

Wilson, M.E.J., M.J. Evans, N.H. Oxtoby, D.S. Nas et al. (2007)- Reservoir quality, textural evolution, and origin of fault-associated dolomites. American Assoc. Petrol. Geol. (AAPG) Bull. 91, 9, p. 1247-1272.
(Origin of dolomite near faults in Late Oligocene-E Miocene Taballar Lst of Mangkalihat Peninsuls, NE Borneo. Sr isotope signature suggestive of remobilization of fluids from older limestone)

Wilson, M.E.J. & S.J. Moss (1999)- Cenozoic palaeogeographic evolution of Sulawesi and Borneo. Palaeogeogr. Palaeoclim. Palaeoecology 145, p. 303-337.
(Early Eocene- Pliocene paleogeographic maps on plate tectonic reconstructions illustrate evolution of Borneo and Sulawesi in Tertiary. Progressive accretion of continental and oceanic material from E onto E margin of Sundaland, with resultant development of volcanic arcs. Large tracts of W Sulawesi, E Borneo, E Java Sea and Makassar Straits formed extensive basinal area through much of Tertiary)

Wiman, S.K., A.W.R. Wight & S. Courteney (1995)- Geologic summary of Eastern Kalimantan. In: Seismic Atlas of Indonesian Oil and Gas Fields, II: Java, Kalimantan, Natuna, Irian Jaya, Indon. Petroleum Assoc. (IPA), Jakarta, p. KAL-1-KAL-19.
(Brief overviews of Kutei, Tarakan, Barito basins)

Win, C.T., D.H. Amijaya, S.S. Surjono, S. Husein & K. Watanabe (2014)- A comparison of maceral and microlithotype indices for interpretation of coals in the Samarinda area, Lower Kutai Basin, Indonesia. Advances in Geology 2014, Art. 571895, 17 p.
(online at: https://www.hindawi.com/journals/ageo/2014/571895/)
(Coals from 250m of M Miocene (Seravallian) Balikpapan Fm exposed in section near Samarinda. Coals degraded humodetrinite-rich group, deposited from terrestrial into telmatic condition of peat formation, with vegetation of degraded woody forest type. These formed with intermittent moderate- high flooding as paleopeat environment shifted from mesotrophic to ombrotrophic)

Win, C.T., S.S. Surjono, D.H. Amijaya, S. Husein, A. Aihara & K. Watanabe (2013)- Distribution of pyrite and mineral matter in coal seams from Samarinda area, Lower Kutai Basin, Indonesia. In: ASEAN Forum on clean coal technology, 11th Int. Conf. Mining Material and Petrol. Engineering, Chiang Mai 2013, p. 17-24.
(online at: http://mining.eng.cmu.ac.th/wp-content/uploads/2013/11/Clean-Coal-Technology_4_PaperID-35.pdf)
(Samples of coal from Balikpapan Fm near Samarinda with both epigenetic and syngenetic pyrite. Tied to influence of marine conditions, more prominent in lower part of studied section. Epigenetic pyrite and minerals may originate from erosion of E Tertiary marine sediments of C Kalimantan ridge)

Winantris, I., H. Hamdani & E. Harlia (2017)- Paleoenvironment of Tanjung Formation Barito Basin- Central Kalimantan. J. Geoscience Engineering Environm. Technol. 2, 2, p. 110-116.
(online at: http://journal.uir.ac.id/index.php/JGEET/article/download/305/126)
(Late Eocene coals in Tanjung Fm inMuara Teweh area, N Barito Basin, formed in, in upper delta plain swamp environment with marine influence. Palynomorphs grouped into six types: fresh water and lowland (42%), brackish water swamp (30%), peat and freshwater swamp (18%), marine (8%), backmangrove (1.5%) and upland (1%). Palmae pollen dominant (Dicolcopollis, Proxapertites cursus, P. operculatus, Longapertites and Palmaepollenites kutchensis). Also with Magnastriatites howardi Verrucatosporites usmensis, Retistephanocolpites and Ixonantes, indicative of Late Eocene age)

Winantris, I. Syafri & R. Rinawan (2006)- Kandungan mikrofosil dalam formasi pembawa batubara dari daerah Perian, Kecamatan Muntai, Kabupaten Kutai Kartanegara, Kalimantan Timur. Bull. Scientific Contr. (UNPAD) 4, 1, p. 7-17.
(online at: http://jurnal.unpad.ac.id/bsc/article/view/8109/3686)
('Microfossils in the coal-bearing formation in the Perian region, Muntai District, Kutai Regency, East Kalimantan'. Palynomorphs from 4 samples from Perian River in Kutai Basin include Stenochlaenidites papuanus, Florschuetzia meridionalis and F. levipoli, suggesting most likely M Miocene age. Foraminifera rare Miocene forms only. Mainly mangrove and swamp environments)

Witts, D. (2011)- Stratigraphy and sedimentology of the Barito Basin, Southeast Kalimantan, Indonesia. Ph.D. Thesis, Royal Holloway, University of London, p. *(Unpublished)*

Witts, D. (2011)- Recognising sediment source areas of a transgressive coastal plain: the Barito Basin, Southeast Kalimantan, Indonesia. In: Conf. Sediment provenance studies in hydrocarbon exploration & production, Geol. Soc., London, 2011, p. 24-25. *(Abstract only)*
(late M Eocene- E Oligocene Tanjung Fm at base of Tertiary Barito Basin section deposited in tidally-influenced coastal plain setting, undergoing transgression. Paleocurrent data indicate sediment transport into coastal plain by river system flowing to N. Sediment derived from Schwaner Complex in W and Karimunjawa Arch in SW, as indicated by provenance work. Sandstones texturally immature, but compositionally mature, due to tropical weathering processes removing unstable minerals and lithic grains. Karimunjawa Arch was elevated during Eocene and acting as barrier to transport from inland areas of Sundaland))

Witts, D. (2013)- Palaeocurrents and provenance: uplift history of the Meratus Complex, SE Kalimantan. Berita Sedimentologi 28, p. 25-30.
(online at: www.iagi.or.id/fosi/berita-sedimentologi-no-28-borneo.html)

(Paleocurrent and provenance data from W flank of Meratus Mountains. Paleocurrents and sandstone provenance of Kiwa Member suggest N part of Meratus was uplifting in E Miocene. Paleocurrents from M-L Miocene Warukin Fm two distinct trends, first to ESE (present-day Meratus), second to WNW (i.e. away from Meratus; in channel sandstones in uppermost ~500m of formation. Switch in paleocurrents interpreted as recording Late Miocene early stage of uplift of S Meratus Mts)

Witts, D., L. Davies & R. Morley (2014)- Uplift of the Meratus Complex: sedimentology, biostratigraphy, provenance and structure. Proc. 38th Ann. Conv., Indon. Petroleum Assoc. (IPA), Jakarta, IPA14-G-082, 21p.
(SE Kalimantan Meratus Mts emerged diachronously in E Miocene in N, earlier than previously suggested, but in Late Miocene further S. Paleocurrents from Warukin Formation directed towards ESE (i.e. towards present-day Meratus) in lower part, to WNW (i.e. away from Meratus) in upper ~500m of formation (M-U Miocene Tapin Mb). Paleocurrents in E Miocene Kiwa Mb of Montalat Fm indicate sediment transport to NW (zircons age populations same as in Eocene Tanjung Fm, suggesting reworked Tanjung Fm from Meratus High?). Meratus Range probably elongate positive flower structure)

Witts, D., L. Davies, R.J. Morley & L. Anderson (2015)- Neogene deformation of East Kalimantan: a regional perspective. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-246, 22p.
(Review of Adang Line, etc.)

Witts, D., R. Hall, R.J. Morley & M.K. BouDagher-Fadel (2011)- Stratigraphy and sediment provenance, Barito basin. Proc. 35th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA11-G-054, 18p.
(Revised Eocene- Miocene stratigraphy and depositional model for Barito basin surface sediments. M Eocene-E Oligocene Tanjung Fm clastics, minor limestones and coal deposited in fluvio-tidal coastal plain to marginal marine setting, sediment sourced from W and SW and mainly derived from metamorphic rocks. M-L Miocene Warukin Fm marginal marine to fluviodeltaic, sediment was being transported from W for oldest part, mainly derived from Schwaner Complex, lesser extent Rajang-Crocker Gp, partly from E for younger coal-bearing sequences (=Meratus Mts uplift?))

Witts, D., R. Hall, G. Nichols & R. Morley (2012)- A new depositional and provenance model for the Tanjung Formation, Barito Basin, SE Kalimantan, Indonesia. J. Asian Earth Sci. 56, p. 77-104.
(Tanjung Fm of Barito Basin deposited from late M Eocene- late Early Oligocene. Most of formation deposited in tidally-influenced coastal plain and estuarine setting, and sediment was transported by rivers flowing to N (NB: Witts et al. 2011 suggest Tanjung Fm from W and SW?; Heryanto & Panggabean 2004 suggested mainly from WNW; JTvG). Heavy minerals and zircon geochronology identified Schwaner Complex W Borneo, Karimunjawa Arch and S continuation of Meratus Complex in Java Sea as main sediment sources)

Wiroyudo, G.K. (1982)- Exploration review of the Bunyu PSC Area. CCOP Tech. Publ. 11, p. 141-154.

Wiweko, A. (1998)- Sedimentary facies and depositional geometry of distributary mouth bars in Tunu Field, Miocene Kutei Basin and comparison with modern Mahakam Delta. Ph.D. Thesis Queensland University of Technology, p.

Wiweko, A. & B. Giriansyah (2000)- Sedimentary facies of the Mahakam Delta: comparison between the Modern and the Miocene. Berita Sedimentologi (Indon. Sediment. Forum FOSI) 12, p. 6-9.
(Modern Mahakam Delta developed in last 5000 years, after decline in rate of Holocene transgression. Deposition dominated by fluvial and tidal processes. U Miocene Paleo-Mahakam Delta sediments often slightly coarser grain size, more high-energy flood events, higher sand % and less tidal influence)

Wulandari, T., A. Sukapradja, A. Krisnaputra & J. Clark (2016)- An integrated reservoir characterization to determine remaining potential in Sisi Nubi Field. Proc. GEOSEA XIV and 45th Ann. Conv. Indon. Assoc. Geologists (IAGI) (GIC 2016), Bandung, p. 485-494.
(Sisi -Nubi gas fields, 25 km offshore Mahakam delta, discovered in 1986 and 1992 and cumulative production >1 TCF gas, and 26 MMbbl condensates. With 4 main producing intervals, 69 geological layers and >300 fluvial- deltaic reservoir units)

Yabe, H. (1921)- Notes on some Eocene foraminifera, II. Notes on two foraminiferal limestones from E.D. Borneo. Science Reports Tohoku Imperial University, 2nd ser. (Geol.), 5, p. 100-106.
(online at: http:// ir.library.tohoku.ac.jp/re/bitstream/10097/30174/1/KJ00004176256.pdf)
(Eocene Nummulites subbrongniart, N. pengaronensis, Discocyclina javana, Assilina orientalis, etc. in limestone from Marah, Bulungan, NE Kalimantan)

Yabe, H. & S. Hanzawa (1924)- A *Lepidocyclina* limestone from Sangkoelirang, Dutch E. Borneo. Japanese J. Geology Geography Trans. Abstr. 3, 2, p. 71-76.
(M Miocene limestone with Miogypsina polymorpha, Cycloclypeus annulatus, Lepidocyclina angulosa, etc. from Maloewi Anticline, Sangkulirang, E Kalimantan)

Yoga, T.Y, F. Panggabean & Z. Abidin (2009)- Slump scar reconstruction and distribution in Tunu area and its impacts on field development strategy. Proc. 33rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA-G-093, 13p.
(Tunu giant gas field located at E limit of present Mahakam delta. Reservoirs mainly lower M Miocene deltaics between 7.3 Ma regional flooding surface and regional unconformity at 10.5 Ma. Local collapse of edge of deposited sediments during M Miocene produced large slump scars parallel to strike of Tunu anticline)

Yoga, T.Y & F. Tampilang (2016)- Mahakam Delta core workshop: TM-62 core synthesis a tight G zone reservoir, Tambora Field, East Kalimantan. Proc. IPA 2016 Technical Symposium, Indonesia exploration: where from- where to, Indon. Petroleum Assoc. (IPA), Jakarta, 47-TS-16, p. 1-13.
(Core description of delta distributary channel and mouth bar sand of M-U Miocene G-zone reservoir in Tambora Field, Mahakam Delta)

Yuh, S., A. Anshariy, S. Ariawan, H. Khairy & C.M. Adam (2015)- Application of AVO seismofacies technique to detect undrained prospects in Handil Shallow and Upper Zones, Mahakam Delta, East Kalimantan. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-083, 14p.
(Handil field in Mahakam Delta >550 hydrocarbon accumulations between 230-3000m depth in 4-way dip structure. Over 400 wells drilled. AVO analyses of 2011 3D seismic survey helps identify un-drained areas)

Yulihanto, B., B. Wijayanto, Sulistiyono & T. Junaedi (2006)- Hydrocarbon system of the Paleogene sediment of the Melawi Basin, West Kalimantan, Indonesia. Proc. Jakarta 2006 Int. Geosc. Conf. Exhib., Indon. Petroleum Assoc. (IPA), Jakarta06-PG-11, 4p.
(Melawi Basin intracontinental basin, surrounded by Triassic-Jurassic basement highs composed of granites and schists. Thick Early Cretaceous- Oligocene sediments. Main source rock kerogens of lacustrine-deltaic origin in Cretaceous and Late Eocene-Early Oligocene)

Yuniardi, Y. (2006)- Potensi dan kualitas batubara daerah Lipon Gedang, Kecamatan Sungai Durian, Kabupaten Kotabaru, Kalimantan Selatan. Bull. Scientific Contr. (UNPAD) 4, 1, p. 41-51.
(online at: http://jurnal.unpad.ac.id/bsc/article/view/8113/3689)
(On Eocene Tanjung Fm coal potential in Lipon-Gendang area, Sungai Durian District, E of Kandangan Meratus Mts front, SE Kalimantan. Four outcropping coal seams mapped, 0.2- 3m thick. Predicted resources 1,403,550 ton with average caloric value of ~5400 cal/gr and average sulfur 1.47%)

Yuniardi, Y., R. Fakhrudin & L. Jurnaliah (2010)- Zonasi paleontologi Cekungan Kutai Bagian Bawah, daerah Balikpapan dan sekitarnya, Provinsi Kalimantan Timur. Bull. Scientific Contr. (UNPAD) 8, 2, p. 123-129.
(online at: http://jurnal.unpad.ac.id/bsc/article/view/8250/3798)
(Paleontological zonation of the Lower Kutai Basin, Balikpapan and surrounding area, East Kalimantan'. Brief general discussion of Miocene- Recent foraminifera, calcareous nannoplankton and palynology biozonations. No details on Kutai Basin)

Yuniardi, Y., B. Muljana & R. Fakhrudin (2012)- Kronostratigrafi Cekungan Kutai bagian bawah, daerah Balikpapan dan sekitarnya, Kalimantan Timur. Bull. Scientific Contr. (UNPAD) 10, 1, p. 41-57.

(online at: http://jurnal.unpad.ac.id/bsc/article/view/8277/3824)
('Chronostratigraphy of the lower Kutai Basin in Balikpapan and surrounding area, East Kalimantan'. Brief review of latest Oligocene- Pliocene biozones in outcrops of Kutai basin. Little location/stratigraphy detail)

Zagalai, B.M. (1994)- A deterministic approach to modeling a giant field with numerous stacked reservoirs. Proc. 23rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 2, p. 51-64.
(Reservoir model of Attaka Field (2 GBO and 3 TCF gas in place), N of Mahakam Delta. Producing reservoirs stacked over 10,000' of Miocene deltaics)

Zahra, K.A., A.H. Hamdani & R.T. Rosmalina (2015)- Paleoenvironmental implications from biomarker investigations on the Pliocene Lower Sajau lignite seam in Kasai Area, Berau Basin, Northeast Kalimantan, Indonesia. J. Geoscience and Environment Protection 3, 5, p. 140-152.
(online at: http://file.scirp.org/pdf/GEP_2015080611180523.pdf)
(Pliocene age lignites from Lower Sajau seam in borehole in Kasai Coal Field, Berau Basin. Lignite-grade coal with abundant terpenoid biomarkers including lupane and oleanane indicate angiosperm-dominated vegetation. Also hopanoid biomarkers indicating acidic depositional environment)

Zajuli, M.H.H. (2013)- Batuan sedimen halus kelompok Mandai berdasarkan analisis scanning electron microscope (SEM). J. Sumber Daya Geologi 23, 3, p. 121-127.
('Fine-grained sedimentary rocks of the Mandai group, based on scanning electron microscope analysis'. In E part of Ketungau Basin (also called Mandai Basin) of NW Kalimantan E Tertiary mudstones of Mandai Gp consist of illite, smectite and kaolinite. Also Botryococcus algae. Diagenesis suggest burial to 2500-4000m)

Zajuli, M.H.H. & Suyono (2011)- Organic geochemistry and Rock-Eval pyrolysis of Eocene fine sediments, East Ketungau Basin, West Kalimantan. J. Geologi Indonesia 6, 2, p. 95-104.
(online at: www.bgl.esdm.go.id/publication/index.php/dir/publisher_detail/4)
(Geochemistry of Eocene Mandai Gp mudstones of E Ketungau Basin, NW Kalimantan, suggest poor to fair, gas- prone source rock potential)

Zajuli, M.H.H. & J. Wahyudiono (2018)- Rock-Eval pyrolysis of the Oligocene fine-grained sedimentary rocks from the Pamaluan Formation, Gunung Bayan Area, West Kutai Basin, East Kalimantan : implication for hydrocarbon source rock potential. J. Geologi Sumberdaya Mineral 19, 2, p. 73-82.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/343/338)
(?Late Oligocene shales of coal-bearing Pamaluan Fm in Gunung Bayan area of upper/NW Kutai Basin poor-good quality source rock with gas-prone Type III kerogen. Maturity level mainly immature)

Zhang, Z. & C.S. Wright (2017)- Quantitative interpretations and assessments of a fractured gas hydrate reservoir using three-dimensional seismic and LWD data in Kutei basin, East Kalimantan, offshore Indonesia. Marine Petroleum Geol. 84, p. 257-273.
(Description of fractured gas hydrate reservoir over 500 km region from seismic data in offshore Kutei basin)

Zuffardi-Comerci, R. (1928)- Di alcuni foraminiferi terziari dellôisola di Borneo. Bol. Soc. Geol. Italiana 47, p. 127-148.
('On some Tertiary foraminifera from the island of Borneo'. Includes descriptions of 'new' E Miocene larger foram species from Bintut-Amuntai area (= Berai Lst, Barito Basin?). Proposed new species names (Miogypsina verrucosa, M. cupulaeformis, Lepidocyclina amoentai, L. fovelata, etc.) never used; JTvG)

Zulmi, I., R. Ramadian, F. Fabian, M. Momen & U. Sukanta (2014)- Stratigrafi sikuen resolusi tinggi untuk memahami distribusi reservoir di lapangan Semberah, Cekungan Kutai bagian bawah. Proc. 43rd Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, PIT IAGI 2014-180, 11p.
('High-resolution sequence stratigraphy to understand reservoir distribution in the Semberah Field, Lower Kutai basin'. Detailed correlations of M-L Miocene deltaic sands, shales and minor coals and limestones in Mentawir Fm (Balikpapan Mb) (palynozones Florschuetzia levipoli from 100'- 850', Florschuetzia trilobata from 850'- 4140'). At least 6 sequences)

IV.3. North Borneo (Sarawak, Sabah, Brunei)

Abdul Hadi & T.R. Astin (1995)- Genesis of siderite in the Upper Miocene offshore Sarawak: constraints on pore fluid chemistry and diagenetic history. In: G.H. Teh (ed.) Proc. AAPG-GSM Int. Conf. 1994, Southeast Asian basins; oil and gas for the 21st century, Bull. Geol. Soc. Malaysia 37, p. 395-413.
(Authigenic siderite common inshelfal and tidal Upper Miocene reservoir sandstone of Baram field. Siderite cemented zones up to 2m thick. Siderite cement in five different sandstone types and four different crystal morphologies. Rhombic siderite, common in bioturbated and heterogeneous sandstone, has most adverse effect on reservoir characteristics of sandstones, reducing porosity to 10% and permeability to 2 md. Oxygen isotopes compatible with precipitation at shallow burial depth from unaltered seawater)

Abdul Hadi, A.R., K. Xainey, M.S. Ismail & N. Mazshurraiezal (2017)- Sedimentology of the Lambir Formation (Late Miocene), northern Sarawak, Malaysia. In: M. Awang et al. (eds.) Proc. Int. Conf. Integrated Petroleum Engineering and Geosciences (ICIPEG2016), Kuala Lumpur 2016, Springer Verlag, p. 569-580.

Abdul Manaf, M. & R.H.F. Wong (1995)- Seismic sequence stratigraphy of the Tertiary sediments, offshore Sarawak deepwater area, Malaysia. Bull. Geol. Soc. Malaysia 37, p. 345-361.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1995a26.pdf)
(Sarawak deepwater area with eight seismic horizons representing tops of depositional sequences. Six upper horizons (Late Oligocene- Pleistocene) tied to wells and dated based on paleontologic data. Older horizons dated by correlation to global sea-level chart. With seismic facies maps)

Abd. Rahman, A.H.A., D. Menier & M Y. Mansor (2014)- Sequence stratigraphic modelling and reservoir architecture of the shallow marine successions of Baram field, West Baram Delta, offshore Sarawak, East Malaysia. Marine Petroleum Geol. 58B, p. 687-703
(Sequence stratigraphic study of Late Miocene Baram field, a medium-sized oilfield located in NE Baram Delta Oil Province, off Sarawak)

Abdullah, N.S. & Harminzar M. (2013)- North Baram & North East Luconia play analysis. In: Petroleum Geoscience Conf. Exhib. (PGCE 2013), Kuala Lumpur, P43, 4p. *(Extended Abstract)*
(North Baram and NE Luconia three major play types: (1) Pre-Mid-Miocene Unconformity (Late Oligocene- E Miocene Cycle I-II) play at NE Luconia, (2) Post-MMU play (Upper Cycle V-VI) at N Baram Delta and (3) M-Late Miocene Carbonate buildup play in C Luconia province

Abdullah, Nuraiteng T. & A. Kushairi (1987)- Pedawan Formation of the Penrissen area, Sarawak: a revision of its upper age limit. Warta Geologi (Newsl. Geol. Soc. Malaysia) 13, 2, p. 43-50.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1987002.pdf)
(Youngest Globotruncana species at top of Pedawan Fm in Penrissen area (S of Kuching) Marginotruncana coronata, Marginotruncana angusticarinata and Dicarinella carinata, signifying U Santonian age)

Abdullah, Nuraiteng T. & C.Y. Yaw (1993)- Distribution of foraminiferal assemblages in the Upper Eocene Batu Gading Limestone, Sarawak. In: T. Thanasuthipitak (ed.) Int. Symposium Biostratigraphy of mainland Southeast Asia: facies and paleontology (BIOSEA), Chiang Mai 1993, 1, p. 231-242.
(online at: http://library.dmr.go.th/Document/Proceedings-Yearbooks/M_1/1993/..)
(In Batu Gading are off Baram River, Sarawak, S of Brunei, , massive U Eocene limestone, disconformably overlain by Late Oligocene limestone breccia with mixed Late Eocene and Late Oligocene taxa, suggesting post-Late Eocene emergence. With abundant Eocene larger foraminifera, incl. Nummulites javanus, N. pengaronensis, Discocyclina, Asterocyclina. Limestones overlain by deep marine beds with earliest Miocene Globigerina sellii- G. binaiensis planktonic foraminifera)

Abdullah, W.H. (1997)- Common liptinitic constituents of Tertiary coals from the Bintulu and Merit Pila coalfields, Sarawak, and their relation to oil generation from coal. Petroleum Geology Conference '96, Kuala Lumpur, Bull. Geol. Soc. Malaysia, 41, p. 85-94.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1997026.pdf)

(Oligocene and Lower Miocene onshore and offshore sequences of Sarawak contain numerous coal seams. Oil possibly sourced from these coals. Study of coals from Bintulu area and Merit-Pila coalfield shows liptinitic constituents commonly considered to indicate oil generation and expulsion from coals)

Abdullah, W.H. (1997)- Evidence of early generation of liquid hydrocarbon from suberinite as visible under the microscope. Organic Geochem. 27, 7/8, p. 591-596.
(Example of early generation of liquid hydrocarbons from suberinite in coal sample from Merit-Pila coal field, C Sarawak. As observed under microscope, generation of oil-like material, mainly as exsudatinite, from maceral suberinite occurs at maturity level of ~0.4% vitrinite reflectance)

Abdullah, W.H. (1999)- Oil-generating potential of Tertiary coals and other organic-rich sediments of the Nyalau Formation, offshore Sarawak. J. Asian Earth Sci. 17, p. 255-267.
(Coals and organic-rich clastics from Late Oligocene- E Miocene Nyalau Fm believed to be major source rock. Coals dominated by vitrinite, with moderate- low exinite and inertinite. Samples vitrinite reflectance 0.42-0.72%. Good oil-generating potential anticipated)

Abdullah, W.H. (1999)- Petrographic features of oil-prone coals from the Brunei-Muara District, Negara Brunei Darussalam. In: G.H. Teh (ed.) Proc. 9th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA ô98), Kuala Lumpur 1998, Bull. Geol. Soc. Malaysia 43, p. 621-627.
(online at: www.gsm.org.my/products/702001-100779-PDF.pdf)
(M Miocene Belait Fm coals from Brunei-Muara District possess characteristics of oil-prone coals, like: high abundance of hydrogen-rich macerals such as suberinite and liptodetrinite, presence of exsudatinite, oil globules, oil haze and changes in fluorescence intensity. Expulsion of hydrocarbons may start at relatively low thermal maturity level of 0.42 to 0.49%Ro)

Abdullah, W.H. (2002)- Oil staining in the onshore Togopi Formation, Dent Peninsula, NE Sabah Basin. Warta Geologi 28, 4, p. 153-156.
(www.gsm.org.my/products/702001-100440-PDF.pdf
(Extensive dark oil staining in white Late Pliocene- Pleistocene Togopi Fm limestone in remote outcrop of, Dent Peninsula, NE Sabah)

Abdullah, W.H. (2002)- Organic petrological characteristics of limnic and paralic coals of Sarawak. In: G.H. Teh (ed.) GSM Annual Geological Conference, Kota Bharu 2002, Bull. Geol. Soc. Malaysia 45, p. 65-69.
(www.gsm.org.my/products/702001-100741-PDF.pdf)
(Study of Tertiary coals from Merit-Pila and the Mukah-Balingian coalfields of Sarawak. Coals deposited in two distinct depositional settings: Mukah-Balingian coals in paralic, lower coastal plain setting, Merit-Pila coals were deposited inland in lacustrine setting)

Abdullah, W.H. (2003)- Coaly source rocks of NW Borneo: role of suberinite and bituminite in oil generation and expulsion. In: G.H. Teh (ed.) Petroleum Geol. Conf. Exhib. 2002, Bull. Geol. Soc. Malaysia 47, p. 153-163.
(online at: www.gsm.org.my/products/702001-100602-PDF.pdf)
(Organic petrography suggests suberinite and some others identified as the most oil-prone macerals in NW Borneo coals. Oil-prone macerals most likely fom bark and root tissues of mangrove plants and other suberin-bearing plant species)

Abdullah, W.H., M.H. Hakimi, I.E. Shushan & A.H.B. Rahman (2017)- Petroleum source rock characteristics of marine versus coastal settings: A comparative study between Madbi Formation of Masila Basin, Yemen and Nyalau Formation of Sarawak, Malaysia. Bull. Geol. Soc. Malaysia 63 (Geol. Soc. Malaysia 50th Anniversary Issue 1), p. 103-115.
(online at: www.gsm.org.my/products/702001-101706-PDF.pdf)
(Comparison of two completely different oil source rocks, Jurassic of Yemen and Oligo-Miocene of Sarawak)

Abdullah, W.H., M.J. Hoesni & P. Abolins (1995)- Aspects of oil generation from coals: a Sarawak case study. The importance of exsudatinite and variations in organic facies characteristics. Geol. Soc. Malaysia Petroleum Geology Conf. 1995, Warta Geologi 21, 6, p. 403-406. *(Abstract only)*
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1995006.pdf)
(Brief report on petrographic/ geochemical study of Tertiary coals from Sarawak, from Nyalau Fm in Bintulu area and Balingian Province. Two main oil types can be tied to two coal types: oleanane-rich oils from Balingian sourced from exsudatinite-rich coals and oleanane-poor oils from exsudatinite-poor coals)

Abdullah, W.H., V. Kiselev, Y.M. Makeen, T.S. Olayinka & K.A. Mustapha (2014)- Direct liquefaction on low rank Batu Arang coals of Malaysia: influence of petrographic composition. Bull. Geol. Soc. Malaysia 60 (C.S. Hutchison Memorial Issue), p. 95-98.
(https://gsmpubl.files.wordpress.com/2015/04/bgsm2014010.pdf)

Abdullah, W.H. & C.P. Lee (2002)- Hydrocarbon-bearing fissure in the limestone of the Togopi Formation, Dent Peninsula, Sabah. Warta Geologi 28, 5, p. 193-196.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm2002005.pdf)
(Geochemistry of dark stained fissure in outcrop, believed to be migrated oil)

Abdullah, W.H., C.P. Lee, P. Gou, M.K. Shuib, T.F. Ng, A.A. Albaghdady, M.F. Mislan & K.A. Mustapha (2013)- Coal-bearing strata of Labuan: mode of occurrences, organic petrographic characteristics and stratigraphic associations. J. Asian Earth Sci. 76, p. 334-345.
(Four Cenozoic units with coal-bearing sediments recognized on Labuan, Sabah. From youngest, immature Belait Fm to Setap Shale and Temburong Fm, to oldest W Crocker Fm, with vitrinite reflectance 0.8-0.9%. Analysed coals mainly mangrove-derived and considered to be oil-prone as suggested by common occurrences of oil haze, suberinite, bituminite, exsudatinite and perhydrous vitrinite)

Abdullah, W.H., S.Y. Lee, M.K. Shuib & M.H.A. Hakimi (2011)- Organic-rich sequences of the Miri Formation, Sarawak : implication for oil generating potential. Proc. 24th Ann. National Geoscience Conference 2011 (NGC2011), Johor Baru, B13, p. 52-53. *(Extended Abstract)*
(online at: http://geology.um.edu.my/gsmpublic/NGC2011/NGC2011_Proceedings.pdf)
(Organic facies in outcrops around Miri, Sarawak. M Miocene Miri Fm with organic-rich sandstone intervals with coal clasts and carbonaceous laminae. Early mature (Vitrinite reflectance Ro 0.35- 0.50%))

Abdullah, W.H., O.S. Togunwa, Y.M. Makeen, M.H. Hakimi, K.A. Mustapha, M.H. Baharuddin, S.G. Sia & F. Tongkul (2017)- Hydrocarbon source potential of Eocene-Miocene sequence of Western Sabah, Malaysia. Marine Petroleum Geol. 83, p. 345-361.
(Organic matter present in all formations studied mainly of terrigenous origin and gas prone (Type III and Type III-IV kerogen), except for minor occurrence of mixed oil-gas prone Type II-III kerogen in Miocene Belait Fm and in slump mass transport deposits of West Crocker Fm)

Abubaker, T., W.H. Abdullah & A.H. Abd. Rahman (2004)- Biomarkers as palaeoenvironment and thermal maturity indicators of the Sandakan Formation (Late Miocene) East Sabah, Malaysia. Malaysian J. Science 23, 2, p. 165-174.
(Biomarker distributions and their application as thermal maturity and paleoenvironmental indicators for Late Miocene Sandakan Fm. Samples analysed thermally immature for oil generation)

Abu Bakar, Z.A., M. Madon & A. Jalil Muhamad (2007)- Deep-marine sedimentary facies in the Belaga Formation (Cretaceous-Eocene), Sarawak: observations from new outcrops in the Sibu and Tatau areas. Bull. Geol. Soc. Malaysia 53, p. 35-45.
(online at: www.gsm.org.my/products/702001-100506-PDF.pdf)
(Description of submarine fan facies in folded, flysch-type deep-marine rocks of Cretaceous- Eocene Belaga Fm of Rajang Group)

Adams, C.G. (1959)- Foraminifera from limestone and shale in the Batu Gading area, Middle Baram, East Sarawak. Annual Report Geol. Survey Dept. British Borneo 1958, p. 73-85.
(Eocene larger foraminifera from Sarawak; see also Adams and Haak, 1962)

Adams, C.G. (1960)- Eocene and Miocene foraminifera from limestone and shale in the middle Baram Valley, Sarawak. British Borneo Geol. Survey Annual Report 1959, p. 64-67.
(Occ. Eocene larger forams, incl. Discocyclina javana, Eorupertia, Halkyardia, Nummulites javanus, etc.)

Adams, C.G. (1964)- The age and foraminiferal fauna of the Bukit Sarang limestone, Sarawak, Malaysia. Geol. Survey Borneo Region, Annual Report 1963, p. 152-162.
(Bukit Sarang Limestone of Sarawak, 20km SE of Tatau, Bintulu, rel. thin (~90m). With Tc/ Early Oligocene species only: Borelis pygmaeus, Dictyoconus melinauensis n.sp., Halkyardia, Nummulites fichteli, etc.)

Adams, C.G. (1965)- The foraminifera and stratigraphy of the Melinau Limestone, Sarawak, and its importance in Tertiary correlation. Quart. J. Geol. Soc. London 121, p. 283-338.
(Melinau Lst in NE Sarawak up to 7000' thick. Age based on larger foraminifera Late Eocene- E Miocene. One new genus, Wilfordia, three new species: Dictyoconus melinauensis, Neoalveolina inflata, and Wilfordia sarawakensis. Dictyoconus recorded for first time from Oligocene-age strata)

Adams, C.G. & R. Haak (1962)- The stratigraphical succession in the Batu Gading area, Middle Baram, North Sarawak. In: N.S. Haile, The geology and mineral resources of the Suai-Baram Area, North Sarawak, British Borneo Geol. Survey Memoir 13, p. 141-150.
(Along Middle Baram River in NE Sarawak ~120' N-dipping massive Late Eocene limestone unconformably on folded Late Cretaceous Kelalan/ Rajang Fm. Late Eocene with Tb larger forams Pellatispira, Discocyclina, Aktinocyclina, Nummulites javanus, etc. Overlain (with erosional surface/ E Oligocene hiatus) by 40' thick limestone breccia and bedded limestone with reworked Eocene larger forams and Heterostegina borneensis, Spiroclypeus, Eulepidina, Borelis pygmaeus and Miogypsinoides (Te1-4; interpreted as E Miocene, but should be latest Oligocene; JTvG). Overlain by earliest Miocene (N4-N5) calcareous shales with Globigerinoides, Globigerina binaiensis, G. dissimilis, G. ciperoensis)

Adams, C.G. & H.J.C. Kirk (1962)- The Madai-Baturong Limestone member of the chert- spilite formations, North Borneo. Geol. Magazine 99, 4, p. 289-303.
(Madai-Baturong limestone of Semporna Peninsula, SE Sabah, forms important marker horizon in 'oceanic' Chert-Spilite Fm. Steeply NE-dipping, up to 2000' thick at Mt Madai. At Mt Madurong with oolite beds. In lower part with Lower? Cretaceous shallow marine algae (Lithocodium, Cayeuxia, Hensonella) and Dictyoconus foram. Upper part and breccias with U Cretaceous deep marine planktonic foraminifera (Campanian Globotruncana, Heterohelix, Praeglobotruncana). Chert-Spilite Fm uplifted against Upper Tertiary sediments along thrust fault. (Interpreted as seamount deposit on oceanic crust high by Lee (2003))

Adams, C.G. & H.J.C. Kirk (1963)- The Madai-Baturong Limestone member of the chert- spilite formations, North Borneo. In: F.H. Fitch (ed.) Proc. British Borneo Geological Conference 1961, Kuching, Geol. Survey Dept., British Territories in Borneo, Bull. 4, Kuching, p. 79-86.
(Same paper as Adams & Kirk 1962)

Adams, C.G. & G.E. Wilford (1972)- On the age and origin of the Keramit and Selidong Limestones, Sarawak, East Malaysia. Geol. Survey Malaysia, Geological Papers 1, p. 28-42.
(Keramit and Selidong limestones deposited in moderately deep water; Eocene and Oligocene shales with pelagic foraminifera interbedded with calcarenites with Late Oligocene (Lower Te) larger foraminifera)

Adams, E.W., R.E. Besems & S.J. Gough (2012)- ñPre-MMUò carbonates and the influence of age and tectonic regimes on their growth styles, Sarawak, Malaysia. In: Petroleum Geoscience Conf. Exhibition (PGCE 2012), Kuala Lumpur, Warta Geologi 38, 2, p. 120-121.
(online at: https://gsmpubl.files.wordpress.com/2014/09/warta38_21.pdf)

(Extended Abstract. 'Traditional' offshore Sarawak carbonate exploration is in M-Late Miocene Luconia Province carbonates, above 'M Miocene unconformity (MMU)', when many of the Luconia Province carbonates initiated during major M Miocene flooding. Carbonates also in 'pre-MMU' section. U Eocene-Lw Oligocene carbonates onshore Sarawak, developed speculatively as isolated thrust-top platforms, in front of Rajang accretionary wedge as result of Luconia Block docking against Borneo. Late Oligocene relatively stable, regionally extensive shelf system. Shift from foram-and-algal to coral-dominated carbonate deposition at Oligocene-Miocene boundary)

Adams, E.W, P.F.M. Janssen, S. Ghani, S.J. Gough & P. Winefield (2013)- The Lower Miocene Great Barrier Reef of Sarawak, Malaysia: the exploration potential of Cycle II and III carbonates. In: Petroleum Geoscience Conf. Exhib. (PGCE 2013), Kuala Lumpur, O25, 3p. *(Extended Abstract)*
(E Miocene (~20 Ma) widespread passive shelf-margin carbonate deposition in distal part of NW-SE trending paleo-Sarawak shelf, from northern C Luconia in NW to onshore Sarawak in SE. High-relief carbonate platform margin developed, and in some locations continued into M-Late Miocene Luconia Province carbonates. Vast parts of Lower Miocene Cycle II and III carbonates have poor primary reservoir properties)

Agostinelli, E., M. Raisuddin, E. Antoinelli & M. Aris (1990)- Miocene- Pliocene palaeogeographic evolution of a tract of Sarawak offshore between Bintulu and Miri. In: G.H. Teh (ed.) 13th Petroleum Geology Seminar, Bull. Geol. Soc. Malaysia 27, p. 117-135.
(online at: www.gsm.org.my/products/702001-101080-PDF.pdf)
(Six Mio-Pliocene paleogeographic maps offshore Sarawak show progressive shift of paleo-shoreline. W Baram line paleo-escarpment evident at least since M Miocene. NE of escarpment filled mainly in Late Miocene-Pliocene by deposits associated with prograding paleo-Baram Delta)

Aitchison, J.C. (1994)- Early Cretaceous (pre-Albian) radiolarians from blocks in Ayer Complex melange, eastern Sabah, Malaysia, with comments on their regional tectonic significance and the origins of enveloping melanges. J. Southeast Asian Earth Sci. 9, 3, p. 255-262.
(Red ribbon-bedded chert blocks in Miocene mudstone matrix melange in E Sabah with E Cretaceous radiolarian fauna (pre-Albian?; no diagnostic species), older than age of oceanic basement rocks in Sulu and Celebes Seas. Chert-Spilite Fm of E Sabah, from which blocks probably derived, may represent fragments of early Pacific Ocean seafloor. Blocks incorporated into mud-matrix melange developed during E Miocene NW-directed collision and overthrusting of Sulu volcanic arc onto thinned continental crust rifted from S China)

Akiyama, Y. (1984)- A case history- exploration, evaluation and development of the Mamut porphyry copper deposit. Bull. Geol. Soc. Malaysia 17, p. 237-255
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1984012.pdf)
(Mamut deposit in NW Sabah higher associated gold-silver than normal porphyry copper deposits. Minralization tied to Late Miocene adamellite intrusions into Eocene- Miocene Trusmadi Fm)

Albaghdady, A., W.H. Abdullah & Lee Chai Peng (2003)- An organic geochemical study of the Miocene sedimentary sequence of Labuan Island, offshore western Sabah, East Malaysia. Bull. Geol. Soc. Malaysia 46, p. 455-460.
(online at: www.gsm.org.my/products/702001-100618-PDF.pdf)
(Labuan island off W coast of Sabah with outcrops of E-M Miocene Temburong, Setap Shale and Belait Fms. Thermal maturity is early mature to mid mature for oil generation)

Alexander, J.B. (1956)- British Borneo. In: Lexique stratigraphique international, Stratigraphic Comm., Int. Geol. Congress, Paris, III (Asie), 7, p. 1-313.
(First edition of North Borneo stratigraphic lexicon; see also second edition by Fitch (1961))

Algar, S., C. Milton, H. Upshall, J. Roestenburg & P. Crevello (2011)- Mass-transport deposits of the deepwater Northwestern Borneo margin- characterization from seismic-reflection, borehole, and core data with implications for hydrocarbon exploration and exploitation. In: R.C. Shipp et al. (eds.) Mass-transport deposits in deepwater settings, Soc. Sedimentary Geology (SEPM) Spec. Publ. 96, p. 351-366.

(In Late Miocene to Recent deep water thrust belt off NW Borneo up to 50% of sediments large-scale remobilized mass-transport deposits. MTD's 10-200m thick, composed mainly of claystone. Intercalated with turbidites, which form sandstone reservoirs of petroleum discoveries. Thickest sands often immediately overlying MTDs. MTD lithofacies continuum from debritic claystones to more simply folded claystones)

Algar, S. (2012)- Big oil from ñgas-proneò source rocks and leaking traps: Northwest Borneo. AAPG Int. Conf. Exhib., Singapore 2012, Search and Discovery Art. 10465, p. 1-40. *(Abstract and Presentation)*
(online at: www.searchanddiscovery.com/documents/2012/10465algar/ndx_algar.pdf)
(Murphy 2002 Kikeh Field oil discovery in offshore Sabah deepwater (>400 MMBO) in deepwater sands in thrust structure. Oil source material M Miocene terrestrial plant material, present mainly in sandstones. Most oil fields on Sabah shelf have abundant crestal faulting; presence of oil fields in 'gas province' probably due to gas leakage via faults)

Ali, A.M. & E. Padmanabhan (2014)- Quartz surface morphology of Tertiary rocks from North East Sarawak, Malaysia: implications for paleo-depositional environment and reservoir rock quality predictions. Petroleum Expl. Development 41, 6, p. 761-770.
(Study of surface damage of quartz crystals from weathering and diagenesis in Miocene outcrop sandstones from Sarawak. Belait conglomerates with euhedral quartz crystals with mechanical weathering defects, and higher porosity than. Lambir sandstones with more chemical weathering features. Coatings of authigenic clay and iron oxides inhibit or delay cementation, consequently preserving porosity

Ali, M.Y. (1992)- Carbonate cement stratigraphy and timing of hydrocarbon migration: an example from Tigapapan Unit, offshore Sabah. Bull. Geol. Soc. Malaysia 32, p. 185-211.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1992022.pdf)
(Late Miocene Tigapapan Unit one of several hydrocarbon-bearing reservoirs in offshore NW Sabah Basin. Consists of bioclast-rich, clastics, interpreted as progradation storm shoal deposits. Cathodoluminescence, geochemical and isotopic studies indicate 9 stages of carbonate cementation, formed from near surface to 2 km depth. Sr isotope dating of dolomites indicates two events, 10.5 Ma and 8.9 Ma))

Ali, M.Y. (1995)- Carbonate cement stratigraphy and timing of diagenesis in a Miocene mixed carbonate-clastic sequence, offshore Sabah, Malaysia: Constraints from cathodoluminescence, geochemistry, and isotope studies. Sedimentary Geology 99, p. 191-214.
(Similar paper to Ali (1992) on carbonate cementation history in Middle-Late Miocene sandstone reservoir offshore NW Sabah)

Ali, M.Y. (2014)- An integrated analysis of the depositional control, sedimentology and diagenesis of Cenozoic carbonates from the Sarawak Basin, East Malaysia. Ph.D. Thesis Imperial College, University of London, p. 1-467.
(online at: https://spiral.imperial.ac.uk/handle/10044/1/29605)
(Comprehensive analysis of Cenozoic carbonates from Sarawak Basin, both onshore (4 Late Eocene -E Miocene units) and offshore (4 M-L Miocene build-ups in offshore C Luconia). Carbonate growth mainly controlled by paleo-basement structures: some carbonates on flat rift blocks show flat-top morphology; on tilted sub-blocks often conical shapes. Eustacy probably main controlling mechanism for carbonate growth. Late Eocene Lower Batu Gading Lst massive nummulitic facies with Pellatispira; E Miocene U Batu Gading Lst on disconformity and composed of finely bedded and brecciated limestones. Suai Lst (Te5?) fining-upward parasequences of larger foraminifera dominated by large Eulepidina spp. E Miocene Subis Lst (Te5) rich in corals, foraminifera and algae. Bekenu Lst laminated marls-shale calci-turbidites). Luconia offshore carbonates greater similarity in facies and sequences. Ten stages of calcite cementation/ dolomitisation. Presence of high T minerals indicate late stage corrosive fluids of hydrothermal origin, responsible for porosity- permeability enhancement of reservoirs)

Alias, F.L. (2014)- Organic petrological and organic geochemical of tertiary coals within the west middle block of the Pinangah coal field, Sabah, Malaysia. Masters Thesis, University of Malaya, p. 1-140.
(online at: http://studentsrepo.um.edu.my/4870/)

(Coals of E-M Miocene Tanjong Fm in Pinangah coalfield, Maliau Basin, S Sabah, excellent hydrocarbon-generative potential. Coals humic and dominated by vitrinite, >15% liptinite and low inertinite macerals. Bitumen yields 57,300-140,000 ppm. High hydrogen index up to 300 mg HC/g TOC, consistent with Type II and mixed Type II-III kerogen. Vitrinite reflectance 0.42%-0.66 Ro% (immature- early mature). With Rhizophora, Casuriana, Dactylocdalus and Podocarpus pollen. Deposition on lower delta plain)

Alias, F.L., W.H. Abdullah, M.H. Hakimi, M.H. Azhar & R.L. Kugler (2012)- Organic geochemical characteristics and depositional environment of the Tertiary Tanjong Formation coals in the Pinangah area, onshore Sabah, Malaysia. Int. J. Coal Geology 104, p. 9-21.
(Tertiary Tanjong Fm coals in Pinangah Coalfield, S Sabah, are humic, dominated by vitrinite, with significant liptinite and low inertinite macerals. Total organic carbon 51-78%, with bitumen values 57,300-140,000 ppm, therefore source rock with good hydrocarbon-generative potential. Good liquid hydrocarbons generation potential can also be expected from significant liptinitic content (>15%). Vitrinite reflectance Ro 0.42- 0.66%, indicating immature- early mature stage for hydrocarbon generation)

Allen, A.W. (1951)- The geology of the Lundu-Sematon-Tanjong Datu area of the first division of Sarawak. M.Sc. Thesis Durham University, p. 1-170.
(online at: http://etheses.dur.ac.uk/10289/1/10289_7083.PDF?UkUDh:CyT)

Allman-Ward, P. (1998)- Subsurface deepwater challenges in Brunei. Proc. 12th Offshore SE Asia Conf. 1998 (OSEA 98), Singapore, SE Asia Petroleum Expl. Soc. (SEAPEX), p. 219-233.
(Offshore Brunei deepwater play in marine turbidites with variable reservoir development. Only sizeable deepwater finds to date: Brunei Shell Merpati (1992) gas/condensate field and Elf Perdana oil discovery)

Almond, J., P. Vincent & L.R. Williams (1990)- The application of detailed reservoir geological studies in the D18 Field, Balingian Province, offshore Sarawak. Bull. Geol. Soc. Malaysia 27, p. 137-159.
(online at: www.gsm.org.my/products/702001-101079-PDF.pdf)
(Reservoir study of 1981 D18 Field discovery, 56 miles NW of Bintulu, Balingian province, off Sarawak. Productive reservoirs E Miocene (Cycle II) lower coastal plain and delta plain deposits. Geological model with NW to NE progradation and abandonment of small delta lobes in river-dominated lower delta plain setting)

Alshebani, K.A., W.H. Abdullah & A.H. Abd. Rahman (2003)- Biomarker characterization and thermal maturity evaluation of Ganduman Formation, Sahabat area, Dent Peninsula, E Sabah, Malaysia. Bull. Geol. Soc. Malaysia 46, p. 461-466.
(online at: www.gsm.org.my/products/702001-100617-PDF.pdf)
(Pliocene sediments fluvio-deltaic/ lacustrine Ganduman Fm in Sahabat area of Dent Peninsula, E Sabah, still immature for hydrocarbon generation. Extract of one immature sandstone sample thermally mature, suggesting migrated hydrocarbons)

Anderson, J.A.R. & J. Muller (1975)- Palynological study of a Holocene peat and a Miocene coal deposit from NW Borneo. Review Palaeobotany Palynology 19, p. 291-351.
(Palynology study of Holocene raised peat bog near Marudi (Sarawak) and Miocene coal near Berakas (Brunei) and compared with present-day swamp vegetation along NW Borneo coast. 76 pollen and spore types recognized. Floristic composition of mixed swamp forest stage in both bogs closely comparable. Only one spore type, Stenochlaena areolaris became extinct in Borneo)

Anuar, A., P. Abolins, P. Crevello & W.H. Abdullah (2003)- A geochemical evaluation of the west Crocker Formation- clues to deepwater source rock facies. Warta Geologi 29, 6, p. 267-268. *(Abstract only)*
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm2003006.pdf)
(Geochemistry of outcrop samples from deep water facies of West Crocker Fm around Kota Kinabalu. Pelagic basin floor shales with low organic content (TOC <0.5%) and unlikely source facies. Biomarkers mainly marine signature (even C27, C28, C29 sterane, presence of C30 steranes, absence of higher plant indicators oleanane and bicadinanes and low Tm/ Ts and Pr/Ph ratios). Fine turbiditic shales (levee/overbank deposits or fine tails of turbidity currents with variable TOC (0.11-2.5%); possible source facies. Shales associated with

slumps and debris flows with TOC of 0.42- 2.75%. Debris flows can be very carbonaceous, with TOC up to 69%, with biomarkers with strong terrigenous, higher plant signature (marked C29 preference, lack of C30 steranes, high 18a(H) oleanane), suggesting promising source rock facies. Vitrinite reflectance shows variable maturity of West Crocker Fm (Ro 0.65- >2.0%))

Anuar, A. & R.R.F. Kinghorn (1995)- Sterane and iriterpane biomarker characteristics from oils and sediment extracts of the Middle-Upper Miocene sequences, Northern Sabah basin. In: G.H. Teh (ed.) Proc. AAPG-GSM Int. Conf. 1994, SE Asian basins; oil and gas for the 21st century. Bull. Geol. Soc. Malaysia 37, p. 415-436.
(www.gsm.org.my/products/702001-100937-PDF.pdf)
(Biomarker studies on oils and sediments from N Sabah Basin wells show dominantly terrigenous organic matter source for hydrocarbons: high triterpane/sterane ratios, compounds diagnostic of land-derived plant organic matter such as oleanane and resins W, T and R, and predominance of C 29 regular steranes over C27 and C28. Majority of extracted sediments immature (first authors to suggest landplants as main hydrocarbon source in deep marine enviroments around Borneo?; JTvG))

Anuar, A. & A.J. Muhamad (1997)- A comparison of source rock facies and hydrocarbon types of the Middle Miocene sequence, Offshore NW Sabah Basin, Malaysia. In: Proc. Int. Conf. Petroleum Systems of SE Asia and Australasia, Jakarta 1997, p. 773-786.
(Potential source rocks in NW Sabah Basin in three broad paleoenvironments: 1) coastal-lower coastal plain; 2) fluviomarine and 3) continental shelf-deep marine areas. Preservation of organic matter seems related to high productivity, high sediment accumulation rates and resistant nature of Type I11 higher land plant waxes to oxidation and biodegradation. Anoxic depositional conditions not essential for organic matter preservation. Oils discovered in each of these settings similar biomarkers: large oleanane peak, common bicadinanes, and C2q-tetracyclic terpane, but only a small portion of source extracts correlates positively with Sabah oils)

Asis, J., M.N.I. Abdul Rahman, B. Jasin & S. Tahir (2015)- Late Oligocene and Early Miocene planktic foraminifera from the Temburong Formation, Tenom, Sabah. Bull. Geol. Soc. Malaysia 61, p. 43-47.
(online at: www.gsm.org.my/products/702001-101677-PDF.pdf)
(Temburong Fm at Paal River, Tenom district, SW Sabah, fine-grained flysch deposits of distal part of deep-sea fan. Two shale samples with planktonic foraminifera: (1) Globorotalia ciperoensis Zone (P22; Chattian) and (2) Catapsydrax dissimilis-Praeorbulina sicana Zone (N7; late Burdigalian))

Asis, J. & Basir Jasin (2010)- Radiolaria Kapur dalam kompleks ofiolit Teluk Darvel di Sungai Sipit Lahundai, Kunak, Sabah. Borneo Science 27, p. 1-4.
(online at: http://borneoscience.ums.edu.my/wp-content/uploads/2010/09/)
('Cretaceous radiolaria in the Darvel Bay Ophiolite Complex at the Sipit Lahunday River, Kunak, Sabah'. Darvel Bay Ophiolite Complex consists of mafic-ultramafic association, overlain by bedded chert. Bedded chert has abundant radiolarians and is exposed at Sipit Lahundai River, 22 km from Kunak. Three Aptian- Turonian assemblages)

Asis, J. & Basir Jasin (2011)- Some Cretaceous radiolaria from Darvel Bay Ophiolite complex, Kunak, Sabah. Proc. 24th Ann. National Geoscience Conference 2011 (NGC2011), Johor Baru, B13, p. 82. *(Abstract)*
(online at: http://geology.um.edu.my/gsmpublic/NGC2011/NGC2011_Proceedings.pdf)
(Darvel Bay Ophiolite Complex of SE Sabah withperidotite, gabbro, pillow basalt and reddish-brown chert. Cherts along Kunak-Semporna road with 56 species of radiolaria, of 3 assemblages: I: Aptian-Albian, with Sticomitra simplex, Crucella bossoensis, etc.; II: Albian-Cenomanian, with Xitus mclauglini, Pseudoaulophacus sculptus, Dictyomitra gracilis, etc.; III: Turonian, with Pseudotheocampe tina, Crucella cahensis, Dictyomitra multicostata, etc.. Bedded chert with abundant radiolarians indicates high plankton productivity, possibly related to upwelling. Absence of limestone suggests deposition below CCD depth)

Asis, J. & Basir Jasin (2012)- Some Cretaceous radiolaria from Kuamut Melange, Kunak, Sabah. Geol. Soc. Malaysia, Nat. Geoscience Conf., Kuching 2012, Paper A2, p. 9-10.

(E Miocene Kuamut melange with broken Paleogene rock formations and dismembered ophiolite blocks embedded in shale matrix. Chert interbedded with folded siliceous shale and contains Aptian- Turonian radiolaria; slightly longer version below)

Asis, J. & Basir Jasin (2012)- Aptian to Turonian radiolaria from the Darvel Bay Ophiolite Complex, Kunak, Sabah. Bull. Geol. Soc. Malaysia 58, p. 89-96.
(online at: https://gsmpubl.files.wordpress.com/2014/08/bgsm2012013.pdf)
(Darvel Bay Ophiolite Complex (formerly known as Chert-Spilite Fm) of E Sabah composed of ultramafics, basalts, etc., capped by red radiolarian chert. Folded bedded cherts with 56 species of Aptian-Turonian radiolarians in three assemblages. I (Aptian-Albian) with Sticomitra simplex, Crucella bossoensis, Xitus clava, Dictyomitra communis, etc.; II (Albian-Cenomanian)with Xitus mclaughlini, Pseudoaulophacus sculptus, Dictyomitra gracilis, etc.; III (Turonian) with Pseudotheocampe tina, Ultranapora cretacea, Alievium superbum, Crucella cachensis, etc.. Abundance of radiolarians reflects high planktonic productivity. Absence of limestone indicates deposition below Calcite Compensation Depth)

Asis, J. & Basir Jasin (2013)- Aptian to Turonian radiolarians from chert blocks in the Kuamut Melange, Sabah, Malaysia. Sains Malaysiana 42, 5, p. 561-570.
(online at: www.ukm.edu.my/jsm/pdf_files/SM-PDF-42-5-2013/02%20Junaidi.pdf)
(Miocene Kuamut Melange in Kunak district, SE Sabah, probably unconformably overlies Darvel Bay Ophiolite Complex. Consists of broken Paleogene formations and dismembered ophiolite blocks embedded in shale with chert matrix. Fourteen samples from 1-2.5m thick chert-siliceous shale section on pillow basalt, with 45 species of radiolaria. Three assemblages: I (Aptian-Albian), II (Albian-Cenomanian) and III (Turonian). Cherts deposited on floor of marginal ocean basin in Cretaceous and tectonically deformed in melange in M Miocene)

Asis, J. & Basir Jasin (2013)- Miocene larger benthic foraminifera from the Kalumpang Formation, Tawau, Sabah: preliminary interpretation. In: Proc. Nat. Geoscience Conf., Ipoh 2013, Geol. Soc. Malaysia, p. 66-68. *(Extended Abstract only)*
(online at: http://geology.um.edu.my/gsmpublic/NGC2013/…)
(Miocene larger foraminifera from Spit Lst unit of Kalumpang Fm in Teck Guan Quarry, Tawau, SE Sabah, with 14 species of larger foraminifera, incl. Lepidocyclina (Nephrolepidina) spp., Lepidocyclina (Eulepidina), Miogypsina, Cycloclypeus (Katacycloclypeus) annulatus, Flosculinella bontangensis, etc. (most likely age Middle Miocene; Langhian; JTvG). See also Asis and Jasin 2015))

Asis, J. & Basir Jasin (2015)- Miocene larger benthic foraminifera from the Kalumpang Formation in Tawau, Sabah. Sains Malaysiana 44, 10, p. 1397-1405.
(online at: www.ukm.my/jsm/pdf_files/SM-PDF-44-10-2015/04%20Junaidi%20Asis.pdf)
(Samples of Kalumpang Fm/ Sipit Mb reefal limestone in 46m thick section at Teck Guan Quarry, 50km E of Tawau, SE Sabah. Formation faulted and thrusted against Cretaceous Darvel Bay Ophiolite Complex at Darvel Bay area. 17 species of larger foraminifera, in two assemblages: (1) Lepidocyclina (N) parva, L. (Eulepidina) formosa (Te5, Aquitanian-Burdigalian; E Miocene); (2) Lepidocyclina (N) sumatrensis, Lepidocyclina (N) angulosa, Lepidocyclina spp., Miogypsina sp., Katacycloclypeus annulatus, Cycloclypeus spp., Flosculinella bontangensis, etc. (Tf1-2; M Miocene))

Atkinson, C.D., M.J.B.G. Goesten, A. Speksnijder & W. van der Vlugt (1986)- Storm-generated sandstone in the Miocene Miri Formation, Seria Field, Brunei (NW Borneo). In: R.J. Knight & R.J. McClean (eds.) Shelf sands and sandstones, Canadian Soc. Petroleum Geol. Memoir 11, p. 213-240.
(Cores from 20-25m thick reservoir interval in U Miocene Miri Fm, Seria field of Baram Delta Basin composed predominantly of silty-sandy shales interspersed with numerous sandstone beds. Sands two main types: (1) thin (0.1-1.5m), fining-upward units with patchy, sheet-like geometry and lateral extent of 100- 1500m (single storm events); and (2) thicker (1.5- 3m), more extensive (>2 km) amalgamated sands (stacked storm sands of the lower-middle shoreface. Overall shelf regression and shoaling, followed by transgression and deepening)

Aziz bin Ali, Che (1993)- Sedimentology and diagenesis of the E11 carbonate buildup and the Subis Limestone (Miocene), Sarawak, Malaysia. Ph.D. Thesis, University of Reading, p. 1-. *(Unpublished)*

Bachir, O. (1998)- Asymmetrical deformation, thrusts and microscale fracturation of the Nyalau Formation at Bintulu. Bull. Geol. Soc. Malaysia 42, p. 55-62.
(online at: www.gsm.org.my/products/702001-100856-PDF.pdf)
(Oligo-Miocene Nyalau Fm deltaic sandstones and shales. Episode of deformation in Bintulu area of Sarawak creating ENE-WSW oriented folds-thrusts, with vergence to S. Tied to Late E- M Miocene collision of Luconia block with Borneo)

Back, S., C.K. Morley, M.D. Simmons & J.J. Lambiase (2001)- Depositional environment and sequence stratigraphy of Miocene deltaic cycles exposed along the Jerudong Anticline, Brunei Darussalam. J. Sedimentary Res. 71, 6, p. 913-921.
(Km-scale prograding delta clinoforms in outcrop. Large clinoforms at base of Miocene Belait delta represent three major sand-shale sequences. Accumulation most likely during relative sea-level lowstand. Overlying 1-1.5 km thick shale unit interpreted as transgressive and early highstand conditions. Rapid progradation of thick sand-dominated shoreface deposits characterizes late highstand. All sediments formed in shoreface to shelfal setting in front of mud-rich delta, not continental-slope to deep-marine environment)

Back, S., F. Strozyk, P.A. Kukla & J.J. Lambiase (2008)- Three-dimensional restoration of original sedimentary geometries in deformed basin fill, onshore Brunei Darussalam, NW Borneo. Basin Research 20, p. 99-117.
(W flank of Jerudong Anticline, onshore Brunei, exposes base of majorMiocene mud-rich delta, including km-scale prograding clinoforms, delta-front turbidites and large- scale syndepositional faults. Lateral continuation of system in subsurface of Belait Syncline is documented on 2D seismic data and wireline logs)

Back, S., H.J. Tioe, T.X. Thang & C.K. Morley (2005)- Stratigraphic development of synkinematic deposits in a large growth-fault system, onshore Brunei Darussalam. J. Geol. Soc., London, 162, p. 243-257.
(Km-scale syn-sedimentary fault in outcrop in M Miocene deltaics along Jerudong Anticline, onshore Brunei Darussalam)

Baioumy, H., A.M. A. Salim, M.H. Arifin, M.N.A. Anuar & A.A. Musa (2018)- Geochemical characteristics of the Paleogene-Neogene coals and black shales from Malaysia: implications for their origin and hydrocarbon potential. J. Natural Gas Science Engineering 51, p. 73-88.
(On Cenozoic coals and associated black shales in Peninsular Malaysia (Eocene- Oligocene coals in small basins on West coast), Sarawak (Late Oligocene- Miocene coals in Nyalau, Liang, Begrih and Balingian Fms) and S Sabah (M Miocene coals in Tanjong Fm). All have mixed Type II-III kerogens and hydrogen index suggesting potential for gas and oil generation. Coals and black shales from M Miocene Tanjong Fm formed under wetter climate conditions than others)

Bait, B. (2003)- Geology of Kinabalu field and its water-injection scheme. In: G.H. Teh (ed.) Petroleum Geology Conference and Exhibition 2002, Bull. Geol. Soc. Malaysia 47, p. 165-179.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm2003a12.pdf)
(Geology and development of Late Miocene shallow marine 'L sandstone' reservoir in 1989 Kinabalu oil discovery, offshore Sabah shelf. Hydrocarbons in >30 reservoirs, trapped against Kinabalu growth fault)

Balaguru, A. (1997)- Sedimentologi dan stratigrafi batuan sedimen Miosen di Lembangan Malibau, Sabah. Bull. Geol. Soc. Malaysia 40, p. 177-105.

Balaguru, A. (2001)- Tectonic evolution and sedimentation of the southern Sabah Basin, Malaysia. Ph.D. Thesis, University of London, p. 1-420. *(Unpublished)*

Balaguru, A. (2008)- Tectonic evolution, sedimentation and chronostratigraphic chart of Sabah, Malaysia. Petroleum Geology Conf. Exhib. (PGCE), Kuala Lumpur 2008, 2p. *(Abstract only)*
(At least three major episodes linked to NW-SE compression coinciding with subduction of Proto-South China Sea: (1) Late Eocene (Sarawak Orogeny; collision of Luconia Continental Block; onshore Sarawak only); (2) middle E Miocene (22-20Ma; Sabah Orogeny-BMU-Base Miocene Unc.; collision of Dangerous Ground

continental block to NW Borneo and referred as 'Sabah Orogeny') and (3) early M Miocene (15.5Ma, MMU-M Miocene Unc./DRU-Deep Regional Unc.; collision in N Borneo between Cagayan Arc and Palawan micro continental block. Late Miocene major folding-uplift event of Shallow Regional Unconformity (SRU, 8.6Ma) probably caused by NW-SE trending strike-slip faulting and transpressional fault movement. Transpression along major strike-slip faults in region probably continued during Late Pliocene and possibly related to propagation of deformation from Sulawesi towards NW Sabah)

Balaguru, A. (2009)- Basin evolution, stratigraphy and petroleum system of the NE Sabah Basin: based on integrated onshore and offshore studies. In: Proc. Petrol. Geol. Conf. Exh., Kuala Lumpur 2009, 4p.
(At least 3 major tectonic phases in Mio-Pliocene in NE Sabah basin: pre-rift forearc, rift and post-rift inversion. Regional intra-E Miocene unconformity as consequence of collision of Dangerous Ground Block with NW Borneo. End of rifting related to 15.5 Ma collision of Palawan microcontinent and Cagayan arc, producing inversion and M Miocene unconformity. Late Miocene unconformity uplift and erosion related to 8.6 Ma collision of Philippine Block and SE margin of SE Asia)

Balaguru, A. & R. Hall (2009)- Tectonic evolution and sedimentation of Sabah, North Borneo, Malaysia. Extended Abstract AAPG Int. Conf. Exhibition, Cape Town 2008, 15p.
(online at: www.searchanddiscovery.net/documents/2009/30084balaguru/images/balaguru.pdf)
(At least 3 major episodes of NW-SE compression coinciding with ongoing subduction of proto-South China Sea during Late Eocene, E Miocene and M Miocene)

Balaguru, A. & T. Lukie (2012)- Tectono-stratigraphy and development of the Miocene delta systems on an active margin of Northwest Borneo, Malaysia. Petrol. Geosc. Conf. Exh. (PGCE 2012), Kuala Lumpur, Warta Geologi 38, 2, p. 127-129.
(online at: https://gsmpubl.files.wordpress.com/2014/09/warta38_21.pdf)
(Extended Abstract. Miocene- Recent regressive fluvio-deltaic systems progressively deformed and overlie Oligocene low-metamorphic Crocker accretionary complexes. Three deltaic complexes, generally younging from E to W: (1) mid E Miocene - early M Miocene Meligan Delta is separated by M Miocene unconformity (= Deep Regional unconformity) from (2) M-L Miocene Champion Delta; separated by Late Miocene Shallow Regional Unconformity from (3) Baram Delta)

Balaguru, A. & G. Nichols (2004)- Tertiary stratigraphy and basin evolution, Southern Sabah (Malaysian Borneo). J. Asian Earth Sci. 23, p. 537-554.
(Stratigraphy revision, with recognition of late E Miocene regional unconformity around 22-19 Ma, earlier than generally accepted age of ~17 Ma. Cretaceous? ophiolitic basement overlain by Eocene accretionary complex and Oligocene deep marine forearc sediments. Late Oligocene- E. Miocene melange formation, etc.)

Balaguru, A., G.J. Nichols & R. Hall (2003)- The origin of the 'circular basins' of Sabah, Malaysia. Bull. Geol. Soc. Malaysia 46, p. 335-351.
(Sub-circular basins' of Meliau, Malibau and Tidung areas are structurally controlled synclines, interpreted as remnants of single large basin, deformed in NW-SE trending transpressional zones. Recognition in field of E Miocene regional unconformity, possibly equivalent to Deep Regional Unconformity offshore. Below unconformity deposits of Eocene accretionary complex over ophiolitic basement and Oligocene Labang/ Kuamut Fms deep water succession formed in forearc basin, and underwent syn-depositional deformation. Above unconformity is Tanjung Fm of Late E Miocene to M Miocene (NN3-NN5))

Balaguru, A., G.J. Nichols & R. Hall (2003)- Tertiary stratigraphy and basin evolution of Southern Sabah: implications for the tectono-stratigraphic evolution of Sabah, Malaysia. In: G.H. Teh (ed.) Petroleum Geology Conf. 2002, Bull. Geol. Soc. Malaysia 47, p. 27-49.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm2003a03.pdf)
(Revised stratigraphy and tectonic evolution of S Sabah. E Miocene (Burdigalian; ~22-19 Ma) uplift/erosion event in outcrop, probably equivalent to Deep Regional Unconformity offshore (but usually placed at 17 Ma). Eocene accretionary complex over ophiolitic basement and Late Paleogene deep water forearc basin series, including extensive melange. Localised limestone deposition during E Miocene uplift followed by up to 6000m

of M Miocene deltaic clastics in two coarsening-upward successions. E Miocene unconformity result of deformation and uplift following underthrusting of S China Sea continental crust, which terminated Paleogene subduction beneath N Borneo. Renewed subsidence related to rifting in Sulu Sea. Transpressional deformation in Late Pliocene, possibly related to propagation of deformation from Sulawesi towards NW Sabah)

Banda, R.M. (1994)- Planktonic foraminiferal biostratigraphy of Miri-Tinjar road section, North Sarawak, Malaysia. In: F. Chand (conv.) Proc. 25th Geol. Conf., Techn. Papers, 6, Geol. Survey Malaysia, p. 77-116.

Banda, R.M. (1998)- The geology and planktic foraminiferal stratigraphy of the Northwest Borneo basin, Sarawak, Malaysia. Ph.D. Thesis, University of Tsukuba, Japan, p. 1-145.
(online at: www.tulips.tsukuba.ac.jp/limedio/dlam/B14/B1451308/....)
(Overview of NW Borneo/ West Sarawak geology, mainly reflecting Early Cretaceous- Eocene period of S-directed subduction, creating accretionary complexes, which ceased after Late Eocene Luconia Block collision. Followed by study of planktonic foraminifera from overlying Late Oligocene-Pliocene basin)

Banda, R.M. (2000)- The planktic foraminiferal biostratigraphy of the Miri-Gunong Subis area, Sarawak, Malaysia. Techn. Papers Min.Geosc. Dept. Malaysia 1, p. 89-131.
(Miri-Gunong Subis area four lithostratigraphic unit: Suai Fm metamorphosed shale (Ga binaiensis Zone; early Early Miocene), Sibuti mudstone (Gs sicanus Zone; Mid Early Miocene), Lambir sandy alternations (Orbulina suturalis-Gr peripheronda Zone; early Mid Miocene) and Miri Fm (barren) sandy alternations)

Banda, R.M. & A.U. Ambun (1997)- Major geological events since Cretaceous in Sarawak, Malaysia. In: M.P.J. Militante (ed.) Third Int. Symp. Int. Geol. Correl. Program (IGCP) Project 350, Cretaceous environmental change in East and South Asia. J. Geol. Soc. Philippines 52, p. 198-215.
(Sarawak and NE Kalimantan 5 tectonostratigraphic units 1) Borneo Basement of Carboniferous-Triassic volcanics and metamorphics in NW and C Kalimantan; 2) E Cretaceous melange, widespread in Sarawak and Kalimantan, slices of W Sarawak Block, shallow to deep marine sediments and underlying ophiolitic rocks; 3) Folded Rajang Group, 5000' of Early Cretaceous- Paleocene sediments in accretionary prism formed in response to S- directed subduction of oceanic lithosphere from E Cretaceous- Late Eocene; 4) Isolated Basin clastics, and 5) Peripheral Neogene basin clastics. Late Eocene regional deformation and uplift, termed Sarawak Orogen, with development of major faults like Lupar, Sebangkoi and Mersing)

Banda, R.M., Amiruddin, W. Gunawan, A. Yan, Y. Ramli, D. Badang, T. Galina & R. Banjar (2012)- Progress report- Malaysian-Indonesian geological correlation program in the border area Sintang-Silantek area. Geol. Soc. Malaysia, Nat. Geoscience Conf., Kuching 2012, Paper A20, p. 36-38.
(In Sintang-Silantek area same geological formations are stretching NW-SE across Sarawak- Kalimantan border but names and stratigraphic nomenclatures differ: (1) in NE tightly folded turbiditic sediments (Kapuas Complex, Lupar Fm) in fault contact with: (2) Lubok Antu= Keriau melange/ Kapuas Complex belt of broken formation, ophiolitic rocks and Jurassic-Cretaceous cherts in sheared shale matrix (Danau Complex, Pakong mafic complex), possibly as young as Paleocene?; (3) in SW sandstone basins of Kantu (= Silantek Fm; Late Eocene?), Tutoop (= Plateau Sst) and Ketangau Fms. Widespread mainly Miocene intrusives in Sintang and Silantek area, named Sintang Intrusives)

Banda, R.M. & E. Honza (1996)- Miocene stratigraphy of northwest Borneo Basin. Warta Geologi (Newsl. Geol. Soc. Malaysia). 22, 3, p. 242-243. *(Brief abstract only)*
(Regional Mapping Programme of Geological Survey of Malaysia in NW Sarawak defined four formations in Miocene of area: Miri Fm (Mid to Late Miocene), Lambir Fm (early M Miocene), Sibuti Fm in mid E Miocene and Suai Fm from early E Miocene. Additional member ise Subis Limestone Mb in the lower part of Sibuti Fm)

Banda, R.M., D. Lakkui, P. Chung & N. Lian (2009)- Lithostratigraphic and biostratigraphic correlations of Miocene sediments in the Pinangah coal basin and surrounding areas, Sabah. In: 11th Reg. Congress Geology, Mineral and Energy Resources of Southeast Asia (GEOSEA 2009), Kuala Lumpur, p. 50. *(Abstract only)*
(Summary of mapping coal in outcrops of M Miocene Tanjong Fm, central South Sabah)

Barckhausen, U., D. Franke, D. Behain & H. Meyer (2002)- New insight into the crustal structure of the continental margin offshore NW Sabah/Borneo. EGS 27th General Assembly, Nice, EOS Transactions, American Geophys. Union (AGU) 83 (47, Suppl.), p. 1291-1292. *(Abstract only)*
(Continental margin offshore NW Sabah looks like typical accretionary margin, formed during subduction of proto-S China Sea. Presently inactive. Seaward of Sabah Trough extended continental lithosphere, with rotated fault blocks, half grabens and E Oligocene- E Miocene carbonate platform. Continental crust also under Sabah Trough and adjacent continental slope. Dangerous Grounds' extended continental crust can be traced landward of Sabah Trough beneath sediments of upper plate. Magnetic signatures of young volcanic features continue under continental slope. Tectonic scenario for NW Sabah continental margin: Seafloor spreading in S China Sea from ~30 Ma separated Dangerous Grounds area from SE Asia and ceased in late E Miocene when oceanic crust of proto-S China Sea was fully subducted. In E and/or M Miocene, Borneo rotated CCW and was thrusted onto edge of Dangerous Grounds block. Subducted oceanic crust of proto S China Sea today below E Sabah, not along present NW Sabah Trough)

Barker, S.M., J. Jong, Q.T. Tran, K. Ogawa & S. Noon (2017)- A high resolution bio-sequence stratigraphic interpretation of quaternary geology- a case study from deepwater Sarawak area. Asia Petroleum Geoscience Conf. Exhib. (APGCE 2017), Kuala Lumpur, 43205, p. 29-37. *(Extended Abstract)*
(Bunguran Trough is intra-continental pull-apart basin in deepwater offshore Sarawak, and distal part of Rajang Delta system. Discussion of Messinian-Holocene sequence/ biostratigraphy in area based on new JX Nippon 'T-1' exploration well, with ~770m thick M Pleistocene and almost 1000m Late Pleistocene- Holocene. New Late Pleistocene- Holocene cycle (cycle IX) proposed for Shell 'NW Borneo cycle scheme')

Bayliss, D.D. (1966)- Foraminifera from the Bau Limestone Formation, Sarawak, Malaysia. Geol. Survey Borneo region Malaysia, Annual Report 1965, p. 173-195.
(Bau Limestone in W Sarawak with rel. low diversity Late Jurassic foraminifera assemblages, mainly Nautiloculina oolithica, Pseudocyclammina lituus (forma alpha) and Torinosuella peneropliformis (see also Wilford & Kho 1965))

Beattie, D. (1986)- Gravity modeling of a mafic-ultramafic association, Darvel Bay, Sabah, Northern Borneo. B.Sc. Thesis Dalhousie University, Halifax, p. 1-56.
(online at: www.earthsciences.dal.ca/aboutus/publications/theses/BSc/ES_1986_BSc_Beattie_Dwayne.pdf)
(Pre-Tertiary mafic-ultramafic rocks at Darvel Bay, E Sabah, form ophiolite suite and provide evidence for M Tertiary island arc-continent collision zone from SE to NW Sabah. Gravity survey shows positive anomaly of 70 mgal associated with outcropping mafic and ultramafic rocks (see also Ryall & Beattie 1996))

Beauvais, L. & H. Fontaine (1990)- Corals from the Bau limestone formation, Jurassic of Sarawak, Malaysia. In: H. Fontaine (ed.) Ten years of CCOP research on the Pre-Tertiary of East Asia, CCOP Techn. Publ. 20, p. 209-239.
(Well-preserved coral fauna of Late Jurassic (Kimmeridgean- Tithonian, possibly extending into earliest Cretaceous) age from Bau Lst, W Sarawak, incl. Cladophyllia ramaea, Cuneiphyllia, Latiphyllia, Litharaeopsis, etc.. Corals belong to species of North Tethys, no species as known from S Tethys. (Limestone similar to some limestones from Sumatra and N Palawan Block, with common species stromatoporoid Cladocoropsis, foram Pseudocyclammina lituus, algae Salpingoporella, etc. JTvG))

Beets, C. (1943)- *Brechites venustulus*, ein neuer Fund aus dem Miocan der Landschaft Serawak, N.W. Borneo. Leidsche Geol. Mededelingen 13, p. 329-333.
(On a new species of tube-shaped pelecypod of genus Brechites from Miocene of Sarawak)

Behain, D. (2005)- Gas hydrate offshore NW Sabah: morpho-tectonic influence of gas hydrate and estimation of concentration of gas hydrate above and free gas below the gas hydrate stability zone. Doct. Thesis Technische Universitat Clausthal, p. 1-153.
(online at: www.gbv.de/dms/clausthal/E_DISS/2005/db107866.pdf)

(In offshore NW Sabah gas hydrates, with Bottom-Simulating Reflector on seismic, mainly in zone of coast-parallel ridges (top of imbricated thrust anticlines). Minimum water depth for BSR 600m, and 250-350m below seafloor)

Benard, F., C. Muller, J. Letouzey, C. Rangin & S. Tahir (1990)- Evidence of multiphase deformation in the Rajang-Crocker Range (northern Borneo) from Landsat imagery interpretation: geodynamic implications. Tectonophysics 183, p. 321-339.
(Sarawak structural trends essentially E-W, with first deformation in E-M Eocene. Second event marked by N-ward thrusting of Eocene over Oligocene, prior to deposition of M Miocene. In Crocker Belt of Sabah two oblique generations of structures before deposition of U-M Miocene. Tight folds, trending N-S in Brunei, N60E in N Sabah, bending to N130°E in Sandakan area. This pattern affected by late N60E-trending normal faults in C Sabah) (see also Comments by (1) Hutchison, Tectonophysics 204, p. 175-177 and (2) Haile, Tectonophysics 204, p. 178-180))

Ben-Awuah, J. & E. Padmanabhan (2014)- Porosity and permeability modifications by diagenetic processes in fossiliferous sandstones of the West Baram Delta, Offshore Sarawak. Int. J. Petroleum Geoscience Engineering (IJPGE) 2, 2, p. 151-170.
(online at: www.aropub.org/wp-content/uploads/2014/07/AROPUB-IJPGE-14-61.pdf)
((Productive units of M-U Miocene cycles V and VI in Baram Delta have enhanced porosity-permeability from dissolution of fossils. Similar to 2015 paper below)

Ben-Awuah, J. & E. Padmanabhan (2015)- Porosity and permeability modification by diagenetic processes in fossiliferous sandstones of the Baram Delta, Sarawak Basin, Malaysia. In: M. Awang et al. (eds.) 3rd Int. Conf. Integrated Petroleum Engineering and Geosciences (ICIPEG2014), Kuala Lumpur 2014, Springer Verlag, p. 47-57.
(Productive units of M-U Miocene cycles V and VI in Baram Delta have enhanced porosity-permeability from dissolution of fossils)

Ben-Awuah, J. & E. Padmanabhan (2015)- Effect of bioturbation on reservoir rock quality of sandstones: a case from the Baram Delta, offshore Sarawak, Malaysia. Petroleum Exploration Development 42, 2, p. 223-231.
(Depending on type of burrow, porosity- permeability of sandstone reservoirs in M-U Miocene of offshore Baram Delta either enhanced (Ophiomorpha burrows with clean sand fill) or reduced (Diplocraterion burrows with clays and organic matter in burrow fills) by bioturbation)

Ben-Awuah, J. & E. Padmanabhan (2017)- Heterogeneity in hydrocarbon and organic matter distribution in the offshore West Baram Delta, Sarawak Basin. In: M. Awang et al. (eds.) Proc. Int. Conf. Integrated Petroleum Engineering and Geosciences (ICIPEG2016), Kuala Lumpur 2016, Springer Verlag, p. 373-384.

Ben-Awuah, J., E. Padmanabhan, S. Andriamihaja, P.O. Amponsah & Y. Ibrahim (2016)- Petrophysical and reservoir characteristics of sedimentary rocks from offshore west Baram Delta, Sarawak Basin, Malaysia. Petroleum and Coal 58, 4, p. 414-429.
(online at: www.vurup.sk/wp-content/uploads/dlm_uploads/2017/07/pc_4_2016_awuah_444.pdf)
(Reservoir quality of M-U Miocene sandstones on offshore W Baram Delta wells. Average porosity 25 %, permeability 1911 mD for coarse grained sandstones, 5.7 % and 1.4 mD for very fine grained sandstones, 16.5% and 23 mD for bioturbated sandstone, etc. Excellent reservoir rock quality in coarse sandstones attributed to lack of cement between grains, good intergranular porosity and pore connectivity)

Ben-Awuah, J., E. Padmanabhan & R. Sokkalingam (2017)- Geochemistry of Miocene sedimentary rocks from offshore West Baram Delta, Sarawak Basin, Malaysia, South China Sea: implications for weathering, provenance, tectonic setting, paleoclimate and paleoenvironment of deposition. Geosciences J. 21, 2, p. 167-185.
(Geochemistry, provenance, tectonic setting, etc., of offshore Miocene clastics in W Baram Delta Sandstones provenance mainly felsic-intermediate igneous with minor mafic contribution. Passive margin tectonic setting

after continental collision and rifting stages of foreland basin. Paleoclimate warm and humid, enhancing chemical weathering)

Bergman, S.C., C.S. Hutchison, D.A. Swauger & J.E. Graves (2000)- K:Ar ages and geochemistry of the Sabah Cenozoic volcanic rocks. Bull. Geol. Soc. Malaysia 44, p. 165-171.
(online at: http://gsmpubl.files.wordpress.com/2014/09/bgsm2000021.pdf)
(M Miocene (~14-19 Ma) K-Ar dates of volcanic rocks of S Dent Peninsula and Semporna Peninsula. Pliocene rift-related, low K tholeiite series subaerial basalts of Kunak area. Miocene volcanics of Semporna and S Dent Peninsulas calc-alkaline affinities with geochemistry indicating subduction related genesis)

Bernard, B.B. (2005)- Proof of an active petroleum system in the Bunguran delta front, deepwater Sarawak, East Malaysia. Proc. 2005 SE Asia Petroleum Expl. Soc. (SEAPEX) Conf., Singapore, 36p. *(Abstract + Presentation)*
(Geochemical indications of thermogenic gas and non-biodegraded oil seepage in 6 of 10 piston cores from Amerada Hess Block F, off Sarawak)

Besems, R.E. (1993)- Dinoflagellate cyst biostratigraphy of Tertiary and Quaternary deposits of offshore NW Borneo. In: G.H. Teh (ed.) Proc. Symp. Tectonic framework and energy resources of the western margin of the Pacific Basin, Kuala Lumpur 1992, Bull. Geol. Soc. Malaysia 33, p. 65-93.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1993006.pdf)
(Most extensive review of Cenozoic dinoflagellates in SE Asia. Paleogene- Recent dinoflagellate zonation, based on analysis of 56 wells off NW Borneo and regional data)

Bidgood, M.D., M.D. Simmons & C.G.C, Thomas (2000)- Agglutinated foraminifera from Miocene sediments of northwest Borneo. In: M.B. Hart et al. (eds.) Proc. 5 Int. Workshop on Agglutinated foraminifera, Plymouth 1997, Grzybowski Foundation Spec. Publ. 7, p. 41-58.
(online at: www.gf.tmsoc.org/Documents/IWAF-5/Bidgood+Simmons+Thomas-IWAF5-1997.pdf)
(34 taxa of agglutinated forams in Miocene of Brunei and Sarawak and paleoenvironmental interpretation)

Bundesanstalt Geowissenschaften und Rohstoffe (1990)- Mineral resources investigation in Sabah, East Malaysia, 1980-1984. Geol. Jahrbuch B74, p. 1-135.
(Collection of papers on mineral exploration activities in Sabah by Malaysian-German co-op, 1980-1984)

Bol, A.J. & B. van Hoorn (1980)- Structural styles in western Sabah offshore. Bull. Geol. Soc. Malaysia 12, p. 1-16.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1980001.pdf)
(Two structural provinces in Neogene basin W of Sabah mainland. In S and C Sabah (between Labuan-Mangalum) Late Miocene main tectonic phase creating steep, narrow, basement-involved anticlines. U Miocene foldbelt separated by important fault zones from province with similar, but Pliocene-age structures (between Mangalum and Kudat))

Bowen, J.M. & J.A. Wright (1957)- Geology of Crocker Range and adjoining areas. Shell Geologic Report 747, p. *(Unpublished)*
(Geology/ stratigraphy of Crocker Range in unpublished oil company report. Much of information captured in Liechti (1960))

Bracco Gartner, G.L., W. Schlager & E.W. Adams (2004)- Seismic expression of the boundaries of a Miocene carbonate platform, Sarawak, Malaysia. In: G.P. Eberli et al. (eds.) Seismic imaging of carbonate reservoirs and systems, American Assoc. Petrol. Geol. (AAPG), Memoir 81, p. 351-365.
(Miocene carbonate platform slope angles 2-25° and 250-300m relief. S slope characterized by bypass or erosion throughout aggrading phase of platform development and buried by shale with onlapping beds transported from S. On N flank, shale started to pile up during platform aggradation. Phases of erosional or bypass conditions were short and alternated with two phases formed when platform debris interfingered with shale. Asymmetry of platform architecture and distribution of sediments most likely due to paleowinds)

Breitfeld, H.T. (2015)- Provenance, stratigraphy and tectonic history of Mesozoic to Cenozoic sedimentary rocks of West and Central Sarawak, Malaysia. Ph.D. Thesis, Royal Holloway, University of London, p. 1-808. *(Unpublished)*

Breitfeld, H.T., T. Galin & R. Hall (2014)- U-Pb detrital zircon ages from Sarawak: changes in provenance reflecting the tectonic evolution of Southeast Asia. American Geophys. Union (AGU), Fall Mtg., San Francisco, V43D-4921, 1p. *(Poster Abstract)*
(Sarawak five Triassic- Cenozoic sedimentary basins. Zircons from Triassic of Sadong-Kuching Basin sourced by Carnian- Norian (mainly ~220-260 Ma) volcanic arc and from Cathaysian rocks with Paleoproterozoic zircons (peak at ~1800-1900 Ma). U Jurassic- E Cretaceous sands of Bau-Pedawan Basin (Pedawan Fm) indicate initiation of subduction below W Sarawak in Late Jurassic, but still with common inherited Cathaysian zircons. Subduction beneath Schwaner Mountains in early Late Cretaceous. After uplift forming Pedawan-Kayan unconformity two episodes of extension: (1) Kayan Basin in latest Cretaceous- E Paleocene (Kayan Sst zircons mainly M Cretaceous and Triassic), and (2) Ketungau Basin and Penrissen Sst in M-Late Eocene. Zircons indicate nearby volcanic activity throughout E Cenozoic in NW Borneo. Inherited zircon ages indicate alternation between Borneo and Tin Belt source rocks)

Breitfeld, H.T., T. Galin, R. Hall, I. Sevastjanova, M.A. Forster & G.S. Lister (2015)- Provenance and age of Mesozoic to Cenozoic sedimentary successions and tectonic history of West and Central Sarawak. Asia Petrol. Geoscience Conf. Exhib. (APGCE), Kuala Lumpur, 25853, 5p. *(Extended Abstract)*
(Provenance study in Triassic-Cenozoic basins of Kuching (W Sarawak) and Sibu Zones (C Sarawak deep marine Rajang Gp) (separated by 'Lupar Line'). Ar-Ar ages of micas from metamorphic rocks in W Sarawak indicate Late Triassic collisional event. Widespread Triassic volcanic and volcaniclastic rocks associated with subduction; Triassic U-Pb magmatic ages from zircons in Jagoi Granodiorite. Triassic Sadong Fm and deep marine equivalent (Kuching Fm), sourced by Triassic (Carnian-Norian) volcanic arc. Pedawan-Kayan regional unconformity marks end of subduction beneath Sarawak and indicates Late Cretaceous collision. Fluvial Kayan Gp divided into Kayan Sst Fm and Penrissen Sst. Kayan Sst U-Pb detrital zircon ages indicate maximum depositional ages of Undan Mb 71 Ma (Maastrichtian; with Cretaceous and Permo-Triassic zircons), Bungo Mb 62 Ma (Danian; dominated by Cretaceous zircons) and Penrissen Sst 47-51 Ma (Late Ypresian- Lutetian). Ketungau Gp records second episode of terrestrial sedimentation in W Sarawak. Basal Silantek Fm no older than 42 Ma (Lutetian), unconformably on Cretaceous accretionary complex, Tutoop Sst (=Late Eocene- E Oligocene Plateau Sst) and Ketungau Fm. Bako-Mintu Sst in upper part no older than 40 Ma (Bartonian). Kuching and Sibu Zones connected with SW Borneo and Sundaland since Cretaceous)

Breitfeld, H.T., T. Galin, R. Hall, I. Sevastjanova, M. Forster & G. Lister (2015)- Proto-South China Sea and South China Sea early history: a view from Sarawak. AAPG Asia Pacific Workshop Tectonic evolution and sedimentation of South China Sea Region, Kota Kinabalu, Search and Discovery Art. 90236, 4p.
(online at: http://www.searchanddiscovery.com/abstracts/pdf/2015/90236apr/abstracts/ndx_breitfeld.pdf)
(Extended Abstract. New Ar-Ar dating of white micas from supposed basement schists in W Sarawak yielded Triassic ages. Triassic volcanic and volcaniclastic rocks widespread in W Sarawak. Triassic U-Pb magmatic ages from zircons in Jagoi granodiorite, W of Bau. Metamorphism associated with contemporaneous volcanic arc magmatism, recording Triassic subduction and collision)

Breitfeld, H.T. & R. Hall (2018)- The eastern Sundaland margin in the latest Cretaceous to Late Eocene: Sediment provenance and depositional setting of the Kuching and Sibu Zones of Borneo. Gondwana Research 63, p. 34-64.
(Kuching Zone in Borneo several large sedimentary basins of Late Cretaceous- Late Eocene age. W Sarawak Kayan Basin with U Cretaceous- Lower Eocene Kayan and Penrissen Sandstones (Late Cretaceous- Paleocene with abundant Cretaceous, Permian-Triassic and Precambrian zircons; Paleocene- E Eocene mainly Cretaceous zircons from Schwaner granites of SW Borneo). In Kuching Zone Ketungau Basin with unconformably overlying M-U Eocene Ketungau Group, with oldest sediments derived from nearby sources, probably Triassic Sadong and Kuching Fms. Kuching sediments can be correlated with deep marine Rajang Gp. Some magmatism but scarcity of contemporaneous zircons indicates it was very minor)

Breitfeld, H.T., R. Hall, T. Galin, M.A. Forster & M.K. BouDagher-Fadel (2017)- A Triassic to Cretaceous Sundaland- Pacific subduction margin in West Sarawak, Borneo. Tectonophysics 694, p. 35-56.
(online at: http://searg.rhul.ac.uk/pubs/breitfeld_etal_2017%20Triassic-Cretaceous%20Sarawak%20subduction%20margin.pdf)
(Metamorphic rocks in W Sarawak previously assumed to be pre-Carboniferous basement but new Ar/Ar ages from quartz-mica schists show Late Triassic metamorphism (~216-220 Ma; Norian). Metamorphics associated with Triassic acid and basic igneous rocks. Late Triassic Sadong Fm with youngest zircon ages of ~205, 212 Ma and inherited age peaks of 240-270 Ma and 1.8 Ga. Zircon ages from Jagoi Granodiorite ~208 Ma with inherited ages of 240 Ma, reflecting M-L Triassic subduction in W Sarawak (most likely W-directed Paleo-Pacific subduction). W Sarawak and NW Kalimantan underlain by continental crust that was already part of Sundaland in Triassic. Detrital zircon ages in Cretaceous volcanoclastic Pedawan Fm with major peaks 110-120, 150-160, 220-240, 250-260 Ma, 1.8-1.9 Ga), similar to ages of Schwaner granites of SW Kalimantan plus additional sources; interpreted as Cretaceous forearc basin with material eroded from magmatic arc that extended from Vietnam to W Borneo. Youngest ages from zircons in tuff layer from uppermost Pedawan Fm indicate end of volcanic activity/ subduction at ~86-88 Ma. Cretaceous metamorphism of Serabang, Sejingkat, Sebangan Fms and Lubok Antu- Kapuas (and Boyan?) melange associated with Cretaceous subduction zone. Results of study cast doubt on existence of separate 'Semitau block')

Breitfeld, H.T., R. Hall, T. Galin, M.A. Forster & M.K. BouDagher-Fadel (2018)- Unravelling the stratigraphy and sedimentation history of the uppermost Cretaceous to Eocene sediments of the Kuching Zone in West Sarawak (Malaysia), Borneo. J. Asian Earth Sciences 160, p. 200-223
(online at: http://searg.rhul.ac.uk/pubs/breitfeld_etal_2018%20Kuching%20provenance.pdf)
(Kuching Zone in W Sarawak two sedimentary basins (Kayan, Ketungau) that extend into Kalimantan. Uppermost Cretaceous (Maastrichtian)- Lower Eocene Kayan Gp above Pedawan Unconformity, marking end of Paleo-Pacific subduction-related magmatism (above Cretaceous Pedawan Fm forearc sediments). Kayan and Penrissen Sst mainly fluvial- alluvial fan deposits. In late E or early M Eocene, sedimentation in basin ceased and Ketungau Basin developed to E. Change marked by Kayan Unconformity. Sedimentation resumed in M Eocene (Lutetian) with marginal marine Ngili Sst and fluvial Silantek Fm. Top of Ketungau Gp fluvial-dominated Tutoop Sst. Paleocurrent measurements show dominant southern source, suggesting uplift of S Borneo in region of Schwaner Mountains from latest Cretaceous onwards. Ketungau Gp also with reworked Kayan Gp. Kuching Supergroup predominantly horizontal or low dips, with steep dips restricted to faults)

Breitfeld, H.T., J. Hennig, M.K. BouDagher-Fadel & R. Hall (2017)- The Rajang unconformity: major provenance change between the Eocene and Oligo-Miocene sequences in NW Borneo. American Geophys. Union (AGU) Fall Meeting, New Orleans, EP21A-1829, 1p. *(Poster Presentation)*
(online at: https://agu.confex.com/agu/fm17/meetingapp.cgi/Paper/223716)
(Detrital zircon age distributions suggest major change in provenance at unconformity between E-M Eocene deepwater Belaga- Bawang Fms and fluvio-deltaic Oligo-Miocene Tatau-Nyalau Fms. Unconformity previously interpreted as Late Eocene orogeny, but no evidence for subduction or collision event at this time in Sarawak; possibly marks late M Eocene plate reorganisation. Borneo main source of Cretaceous (~120-150 Ma peak?) zircons (Schwaner Mts, W Sarawak). Dominant Triassic (~220-240 Ma peak?) zircon age population in Nyalau Fm indicates either provenance from Malay Peninsula tin belt or Indochina (SE Vietnam). (or unidentified Triassic granites on Borneo? Persistent ~1800 Ma age peak; HvG))

Brondijk, J.F. (1963)- Sedimentation in Northwest Borneo. In: F.H. Fitch (ed.) Proc. British Borneo Geological Conference 1961, Kuching, Geol. Survey Dept., British Territories in Borneo, Bull. 4, Kuching, p. 19-30.
(Brief note about 'geosynclinal' settings of 32 formations described from U Cretaceous- Late Tertiary in NW Borneo by Liechti et al. 1960. Early recognition of some of Miocene sediments as turbidites)

Brondijk, J.F. (1963)- A reclassification of a part of the Setap Shale Formation as the Temburong Formation. British Borneo Geol. Survey Annual Report 1962, p. 56-60.
(Oligocene Temburong Fm introduced for more folded lower part of Tetap Shale (now limited to E Miocene))

Brondijk, J.F. (1963)- Sedimentological investigation in North Borneo and northern Sarawak. British Borneo Geol. Survey Annual Report 1962, p. 61-74.

Brondijk, J.F. (1964)- The Danau Formation in NW Borneo. Geol. Survey, Borneo Region, Malaysia, Annual Report 1963, p. 167-178.
(Danau Fm with folded radiolarian cherts first described by Molengraaf in area of the great lakes of N-C Kalimantan, in ~650 km E-W trending zone with average width of 60 km from W Borneo almost to E coast. Proposal to reinstate name Danau Fm in Sarawak and Sabah for similar deposits like Lupar- Engkilili Fm and Chert-Spilite- Wariu Fms)

Brown, K.M. (1987)- Structural and physical processes in accretionary complexes: the role of fluids in convergent margin development. Ph.D. Thesis, Durham University, p. 1-500.
(online at: http://etheses.dur.ac.uk/7186/1/7186_4368.PDF)
(General study on accretionary prisms and mud volcanoes, with chapter on North Borneo Crocker Range)

Burgan A.M. & C. Aziz Ali (2009)- An organic geochemical investigation on organic rich sediments from two Neogene formations in the Klias Peninsula area, West Sabah, Malaysia. Chinese J. Geochem. 28, 3, p. 264-270.
(Belait and Setap Shale Fms in Klias Peninsula area, W Sabah. Setap Fm TOC from 0.6 -1.54 wt% with mean hydrogen index 60.1 mg/g, Belait Fm TOC values 0.36-0.61 wt% with mean HI 38.2 mg/g. Not good quality source rocks. Maturation levels early peak oil in Setap Shale Fm and overmature in Belait Fm)

Burgan A.M. & C.A. Ali (2009)- Characterization of the Black Shales of the Temburong Formation in West Sabah, East Malaysia. European J. Scientific Res. 30, 1, p. 79-98.
(online at: www.eurojournals.com/ejsr_30_1_07.pdf)
(Miocene Temburong Fm at Tenom Pangi Dam site, W Sabah, steeply dipping, turbiditic deep water sediments. TOC's less than 0.5%. Organic matter mostly marine, with land plant contribution)

Burgan A.M. & C. Aziz Ali & S. Tahir (2008)- Chemical composition of the Tertiary black shales of West Sabah, East Malaysia. Chinese J. Geochem. 27, 1, p. 28-35.
(Chemical analyses of various shales from W Sabah)

Burhannudinnur, M. & C.K. Morley (1997)- Anatomy of growth fault zones in poorly lithified sandstones and shales: implications for reservoir studies and seismic interpretation: part 1, outcrop study. Petroleum Geoscience 3, p. 211-224.
(Outcrop study of normal faults in poorly lithified Miocene-Pliocene deposits of Miri Fm in NE Brunei (see also Part 2: Morley and Burhaniddunur 1997, Seismic reflection geometries))

Burton-Johnson, A. (2013)- Origin, emplacement and tectonic relevance of the Mt. Kinabalu granite pluton of Sabah, Borneo. Ph.D. Thesis Durham University, p. 1-262.
(online at: http://etheses.dur.ac.uk/9450/1/Complete_Thesis_-_Post-Viva_-_Mt_Kinabalu_-_Alex_Burton-Johnson_2013.pdf)
(Ophiolitic basement of Sabah not underlain by felsic crust. Sabah Ophiolite emplacement in E Jurassic (~200Ma; similar to Meratus, and older than generally accepted). Emplacement of Mt Kinabalu granite during regional NW-SE extension in SE Asia. Felsic magma of Mt Kinabalu derived by low degree melting of incompatible element enriched basaltic melts (from fertile mantle source))

Burton-Johnson, A., C.G. Macpherson & R. Hall (2017)- Internal structure and emplacement mechanism of composite plutons: evidence from Mt Kinabalu, Borneo. J. Geol. Soc., London, 174, p. 180-191.
(manuscript online at: http://dro.dur.ac.uk/19338/1/19338.pdf?DDD15+dgl0cm+d700tmt)
(Composite granitic intrusion of Mt Kinabalu in Sabah emplaced in upper-middle crust in Late Miocene over 0.8 Myrs, at contact between ultramafic basement and sedimentary cover. Emplacement during regional NNW-SSE-oriented extension. Six major units, oldest tonalite/granodiorite and two final porphyritic granites. Preferential emplacement of successive units along granite-country rock contact of previous units rather than basement-cover rock contact exploited by initial units)

Carrillat, A., T. Basu, R. Tsaccis, J. Hall, A. Mansor & M. Brewer (2008)- Integrated geological and geophysical analysis by hierarchical classification: combining seismic stratigraphic and AVO attributes. Petroleum Geosciences 14, 4, p. 339-354.
(Seismic attribute interpretation applied to Greater Samarang sub-block, E Baram Delta, offshore Sabah)

Carter, R.R., J.L.W. van Gils, W. Walton & K.F. Yap (1997)- Application of a new high resolution sequence stratigraphy for reservoir modeling studies of the Upper Miocene deltaic reservoirs of Champion field, offshore Brunei Darussalam. In: K.W. Shanley & B.F. Perkins (eds.) Shallow marine and non-marine reservoirs, Gulf Coast SEPM Found. 18th Ann. Research Conf., p. 67-97.

Casson, N., M. Wannier, J. Lobao & P. George (1998)- Modern morphology- ancient analogue: insights into deep water sedimentation on the active tectonic margin of West Sabah. In: G.H. Teh (ed.) Proc. GEOSEA ô98, Kuala Lumpur 1998, Bull. Geol. Soc. Malaysia 43, p. 399-405.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1999040.pdf)
Hydrocarbon potential offshore W Sabah margin heavily dependent on success of deep water M-L Miocene-Pliocene turbidite play. Main prospects in water depths >900m. Analogues other 'turbidite provinces' may not be applicable due to exceptionally large height differential of 7km, over relatively short distance of 200 km between sedimentary hinterland and base of continental slope)

Challis, M., C. Curtis, N.L. Mahadzir, J. Mennie & S.B. Zainal (2015)- The Kebabangan gas field, Malaysia: a 20 year journey continues. Proc. SE Asia Petroleum Expl. Soc. (SEAPEX) Conf., Singapore 2015, 6.2, 3p. *(Abstract)*
(Kebabangan gas field off NW Sabah started gas production in 2014, 20 years since drilling KBB-1 by Shell/ Petronas. Long believed to be stranded gas resource)

Chiang, K.K. (2002)- Geochemistry of the Cenozoic igneous rocks of Borneo and tectonic implications. Ph.D. Thesis, Royal Holloway University of London, p. 1-364. *(Unpublished)*
(Cenozoic arc-like magmatism in Borneo thought to be due to subduction of proto-S China Sea beneath NW Borneo. SE Sabah igneous rocks are extension of subduction of Sulu Sea in SE direction along Sulu trench. Wide range of basaltic to rhyolitic igneous rocks in Kalimantan with 5 phases of igneous activity: Paleocene, Eocene, late Oligocene- E Miocene, late Miocene -Pliocene and Plio-Pleistocene (similar phases of igneous activity in Sabah and Sarawak). SE Sabah igneous rocks divided into three groups. Oligo-Miocene andesites and dacites, Late Miocene-Pliocene andesites and dacites, and Plio-Pleistocene basaltic lavas. Cenozoic igneous rocks of Sarawak 4 phases of activity, coinciding with Phases II-V of Kalimantan and Sabah)

Chen, S.P. (1986)- Coal potential and exploration in Sarawak. In: G.H. Teh & S. Paramananthan (eds.) Proc. 5th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA V), Kuala Lumpur 1984, 2, Bull. Geol. Soc. Malaysia 20, p. 649-665.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1986b31.pdf)
(Several coal deposits in Sarawak may be of economic importance. Silantek is Eocene coal in Ketungau basin at Kalimantan border. Three others Mio-Pliocene. Quality variable, grade from lignite to bituminous)

Chen, S.P. & J.W.E. Lau (1978)- Malaysia, onshore sedimentary basins of Malaysia. 2. Sarawak. In: Stratigraphic correlation between sedimentary basins of the ESCAP region, V, Min. Res. Dev. Ser. 44, p. 20-26.

Chiu, S.K. (1990)- The use of SAR imagery for hydrocarbon exploration in Sarawak. In: GSM Petroleum Geology Seminar 1989, Bull. Geol. Soc. Malaysia 27, p. 161-182.
(online at: www.gsm.org.my/products/702001-101078-PDF.pdf)
(SAR survey of Block SK-12 onshore Sarawak allowed more detailed geological and cultural interpretation)

Chung, E., Ting King King & O. Al Jaaidi (2012)- Karst modeling of a Miocene carbonate build-up in Central Luconia, SE Asia: challenges in seismic characterisation and geological model building. In: Int. Petroleum Technology Conference (IPTC), Bangkok 2012, 2, IPTC 14539, p. 1023-1028.

(Alpha field one of best imaged isolated carbonate platforms in C Luconia. Dendritic features, interpreted as karst dissolution during sub-aerial exposure. Exploration well encountered total losses while drilling into karst (common in Central Luconia carbonates). Wells nearer to karst more likely to water out quicker)

Chung, K.W., A.H.A. Rahman & C.W. Sum (2012)- Sedimentology stratigraphy and microfossils of mid-Late Tertiary clastic, Sandakan Formation in NE Borneo. In: ICIPEG 2012Conf., Kuala Lumpur 2012, p.
(Extended Abstract. Sandakan Fm of Segama Group exposed across Sandakan Peninsula, E Sabah. U Miocene part of Segama Group three lithofacies: 1) brackish mudstone, 2) shallow marine sandstone and mudstone and 3) cross-bedded estuarine sandstone)

Chung, K.W., C.W. Sum & A.H.A. Rahman (2015)- Stratigraphic succession and depositional framework of the Sandakan Formation, Sabah. Sains Malaysiana 44, 7, p. 931-940.
(online at: www.ukm.my/jsm/pdf_files/SM-PDF-44-7-2015/03%20Khor%20Wei%20Chung.pdf)
(Sedimentology of Late Miocene Sandakan Fm, exposed across Sandakan Peninsula in E Sabah. Unconformably overlies Garinono Fm. Seven lithofacies in estuary and shallow marine facies)

Chung, W.K. & D. Ghosh (2017)- Growth timing of Southern Field High carbonates, Central Luconia Province. In: M. Awang et al. (eds.) Proc. Int. Conf. Integrated Petroleum Engineering and Geosciences (ICIPEG2016), Kuala Lumpur 2016, Springer Verlag, p. 491-497.
(Growth timing of studied Miocene carbonate platform at C Luconia Province ~ 4 Myrs, governed by third-order sea-level fluctuations and syndepositional tectonics. First karstification during Burdigalian sea-level drop, over complex horst- graben setting, configured by seafloor expansion of S China Sea, before carbonate initiation. Second major subaerial exposure/ karstification in Langhian. Third subaerial exposure minor karstification. Final drowning in Serravallian without subaerial exposure)

Chung, W.K., D. Menier, S.N.F. Jamaludin & D. Ghosh (2016)- Geomorphology and karstification of the Southern Field High carbonates in Central Luconia Province. Proc. Offshore Technology Conference Asia, Kuala Lumpur 2016, OTC-26650-MS, 16p.
(Miocene carbonate platform development of Southern Field High of C Luconia Province. Initial patchy growth during Burdigalian, followed by build-out and backstepping. Four 3rd order Burdigalian-Serravallian eustatic cycles prior to platform drowning and rapid proto-Borneo clastic influx. With extensive karst development by sub-aerial exposure and re-submergence of carbonate platforms. Karstification mainly along fractures and faults. Final drowning correlated to surge of sea level rise in Serravallian)

Church, J. & Bong Poh Yuk (2012)- The Seria Field, Brunei...80 years on...near field exploration going strong! Int. Petrol. Techn. Conf. (IPTC), Bangkok 2012, 3, IPTC 15199, p. 2849-2852.
(Seria oil field in onshore discovered in 1929 and produced >1.1 billion BO. Production peaked 120,000 BOD in 1956. Field still has undeveloped hydrocarbon resources on N flank under shallow surf zone, to be targeted by onshore 'fish-hook wells')

Clark, J. (2017)- Neogene tectonics of Northern Borneo: a simple model to explain complex structures within Miocene-Recent deltaic-deepwater sediments both onshore and offshore. In: SEAPEX Exploration Conference 2017, Singapore, Session 7, 26p. *(Extended Abstract + Presentation)*
(All Neogene deformation across N Borneo is result of uplift and erosion of detached, gravity-driven collapse system and shale diapyrism, not product of multi-phase basement tectonics. Deep Regional Unconformity may not be unconformity, rather diachronous mechanical boundary of different responses of overpressured shale and more competent sandy sediments to gravity-driven collapse)

Clark, J., P. Owen, S. OøBrien & B. Dawe (2015)- Central Luconia carbonates- óShooting fish in a barrelö: insights into success and failure mechanisms in a mature gas province. Proc. 2015 SE Asia Petroleum Expl. Soc. (SEAPEX) Conference, Singapore, 5.3, p. 1-4. *(Extended Abstract)*
(>110 wells drilled in C Luconia area since 1968, offshore Sarawak, discovering 50 TCF gas-in-place, mainly in Late Miocene carbonate buildups. Lack of charge (migration focus) principal cause of failure in carbonate structures, with preasence of seal (presence or absence of 'thief beds') over buildups a secondary factor)

Clark, J., P. Owen, S. OôBrien, B. Dawe (2017)- Central Luconia carbonate exploration- an update after three more SK408 wildcats, has the story changed? In: SEAPEX Exploration Conference 2017, Singapore, Session 7, 3p. *(Extended Abstract + Presentation)*
(In C Luconia province off Sarawak 60 TCF gas in-place discovered, majority in Late Miocene carbonate buildups play. Many carbonate buildups underfilled, probably due to 'thief beds'. Since 2015 paper two more discoveries made in SK408 PSC, including accumulation with gas column height >900m)

Clennell, B. (1991)- The origin and tectonic significance of melanges in Eastern Sabah, Malaysia. J. Southeast Asian Earth Sci. 6, 3-4, p. 407-429.
(E Sabah melanges composed mainly of deep water clastics, deposited in C Sabah Basin, mixed with exotic ophiolitic material. Melanges not metamorphosed; vitrinite reflectance data suggest maximum temperature of <120°C in matrix. Ophiolitic blocks commonly have tectonic shearing fabrics associated with low temperature metamorphism and interpreted as inherited from shear in ocean floor environment (e.g. fracture zones) or associated with ophiolite obduction. All melanges of E Sabah formed in series of related events in late E Miocene and earliest M Miocene time. These events, which triggered sedimentary, diapiric and tectonic melange-forming processes, are related to coeval onset of extension and sea floor spreading in SE Sulu Sea)

Clennell, M.B. (1992)- The melanges of Sabah, Malaysia. Ph.D. Thesis, University of London, p. 1-404. *(Unpublished)*

Clennell, M.B. (1996)- Far-field and gravity tectonics in Miocene basins of Sabah, Malaysia. In: R. Hall & D.J. Blundell (eds.) Tectonic evolution of SE Asia, Geol. Soc. London, Spec. Publ. 106, p. 307-320.
(Oceanic spreading ceased in S China Sea at ~17 Ma, after start of collisions of Asian mainland continental blocks and NW Borneo and Palawan, causing uplift, erosion and 'Deep Regional Unconformity' in NW Sabah. During compression at S margin of S China Sea, Sulu Sea underwent extension, with rifting in NW and oceanic spreading in SE. E Sabah changed from deep marine clastic depositional environment in Oligocene- E Miocene, to shallow marine and terrestrial sedimentation in M-L Miocene, with melange formation at time of the Deep Regional Unconformity. Inversion of Miocene in E Sabah limited to edges of basement blocks, which moved by far-field tectonic stresses. Post M Miocene basin evolution Sabah and Sandakan Basin influenced by mud diapirism and sagging of progradational sand-rich sediments into underlying muds and melange units)

Collenette, P. (1955)- The coal deposits and a summary of the geology of the Silimpopon area, Tawau District, colony of North Borneo. Geol. Survey Department British Territories in Borneo, p. 1-74.
(Coal seams of Silimpopon area in gently dipping Miocene strata. Pre-upper Eocene sediments (probably Upper Cretaceous-Lower Eocene) in N. Local igneous masses. Only one seam of economic significance)

Collenette, P. (1958)- The geology and mineral resources of the Jesselton- Kinabalu area, North Borneo. Geol. Survey Department British Territories in Borneo, Memoir 6, p. 1-194.
(Geology of area of NW Sabah, mainly dominated by thick series of Eocene- M Miocene sediments, severely folded in M Miocene time, incl. Late Cretaceous- E Eocene Chert-spilite Fm (interbedded spilite-basalt and chert-rich sediments; = Danau Fm of Molengraaff?), Eocene 'flysch-type' deep marine Trusmadi and Crocker Fms, associated with peridotites. Unmetamorphosed facies of Trusmadi dettrital limestone interbeds with M-L Eocene larger forams (Aktinocyclina, Pellatispira, Nummulites). Also Late Miocene Mt Kinabalu granodiorite, Trusmadi Mts phyllites and ultrabasic rocks. With 1:125,000 scale geologic map)

Collenette, P. (1960)- Pensiangan and Upper Kinabatang area. Annual ReportBritish Borneo Geol. Survey, 1960, p. 99-106.
('Preview' of Memoir 12, S Sabah (Collenette 1965))

Collenette, P. (1963)- The Miocene backdeep in Borneo. In: F.H. Fitch (ed.) Proc. British Borneo Geological Conference 1961, Kuching, Geol. Survey Dept., British Territories in Borneo, Bull. 4, Kuching, p. 47-60.
(In C-E Sabah NNE-SSW trending Miocene basinal basinal area, here called a 'backdeep', behind (East of) a N-S 'geanticlinal ridge. Latest Oligocene (Te1-4) and E Miocene (Te5) sediments unconformable on

Cretaceous- Eocene deep water sediments of chert-spilite and Crocker Fms. Upper Miocene unconformably oversteps Lower Miocene. Possibly >30,000' of sediments, possibly related to rifting and possible ties with 'Plateau Sandstone' of C Kalimantan (see also Balaguru et al. 2003; Meliau- Tikung 'circular basins'; on trend with Tarakan Basin?; JTvG)

Collenette, P. (1964)- A short account of the geology and geological history of Mt Kinabalu. Proc. Royal Society (London), B, 161, 982, p. 56-63.
(Mt Kinabalu is E Pliocene circular granodiorite body, intruded into highly folded Eocene- Miocene sediments and associated ultrabasic and basic igneous rocks. Present landform considered to be mid-Pliocene peneplain, arched and deeply dissected, through which Kinabalu granodiorite has risen in isostatic adjustment)

Collenette, P. (1965)- The geology and mineral resources of the Pensiangan and Upper Kinabatangan area, Sabah. Borneo Region Malaysia Geological Survey, Memoir 12, p. 1-150.
(Geologic map and description of S Sabah, at NE Kalimantan border. Mainly deep-water ('eugeosynclinal') U Cretaceous- U Eocene Rajang Gp sedimentary rocks in NE trending thrust faults of accretionary complex, which have locally undergone metamorphism. Overlain unconformably by shallower facies Oligocene-Miocene Kinabatang Gp, some folded in large 'circular basins' like Meliau and Malibau. Associated with U Cretaceous-Lower Eocene basalt and spilite, Oligocene? gabbro and peridotite and younger basalt and spilite)

Collenette, P. (1966)- The Gerinono Formation, Sabah, Malaysia. Borneo Region Malaysia, Geological Survey Annual Report for 1965, Kuching, p. 161-167.

Collins, D.S., H.D. Johnson & P.A. Allison (2015)- Mixed-energy, coupled storm-flood depositional model: application to Miocene successions in the Baram Delta Province, NW Borneo. AAPG Search and Discovery Art. 51133, 33p. *(Abstract + Presentation)*
(online at: www.searchanddiscovery.com/documents/2015/51133collins/ndx_collins.pdf)

Collins, D.S., H.D. Johnson, P.A. Allison & A.R. Damit (2018)- Mixed process, humid-tropical, shoreline-shelf deposition and preservation: Middle Miocene- modern Baram Delta Province, Northwest Borneo. J. Sedimentary Res. 88, 4, p. 399-430.
(Comparision of outcrop analyses of facies and stratigraphic architecture in M Miocene Belait Fm with process-based geomorphological and sedimentological analyses of coastal-deltaic depositional environments in present-day Baram Delta Province)

Collins, D.S., H.D. Johnson, P.A. Allison, P. Guilpain & A.R. Damit (2017)- Coupled óstorm-floodô depositional model: application to the Miocene- modern Baram Delta Province, north-west Borneo. Sedimentology 64, 5, p. 1203-1235.
(manuscript online at: https://core.ac.uk/download/pdf/77017250.pdf)
(Miocene -Recent Baram Delta Province 9-12 km of coastal-deltaic to shelf sediments over past 15 Myr. Facies analysis of outcrops suggests 'storm-flood' depositional model, with two distinct periods: (1) fair-weather periods dominated by longshore sediment reworking and coastal sand accumulation; and (2) monsoon-driven storm periods characterised by increased wave energy and offshore-directed downwelling storm flow that occur simultaneously with peak fluvial discharge caused by 'storm-floods')

Collins, J.S.H., C. Lee & J. Noad (2003)- Miocene and Pleistocene crabs (Crustacea, Decapoda) from Sabah and Sarawak. J. Systematic Palaeontology 1, 3, p. 187-226.
(Three new genera and 20 new species of Miocene and Pleistocene fossil crabs described from area SW of Miri, Sarawak and Sandakan Peninsula of E Sabah. See also Morris & Collins 1991)

Cottam, M., R. Hall, C. Sperber & R. Armstrong (2010)- Pulsed emplacement of the Mount Kinabalu granite, northern Borneo. J. Geol. Soc., London, 167, 1, p. 49-60.
(Sabah Mt. Kinabalu pluton at least four discrete pulses of intrusion. Concentric growth zones in zircons indicate crystallization between 7.85- 7.22 Ma, and show pluton was emplaced in <800 ka. Oldest ages coincide with highest elevations. Inherited zircon ages indicate Upper Unit derived from S China margin

attenuated continental crust, subducted beneath Sabah. Middle Unit sourced from melting of crystalline basement in Sabah)

Cottam, M., R. Hall, C. Sperber, B.P. Kohn, M.A. Forster & G.E. Batt (2013)- Neogene rock uplift and erosion in Northern Borneo: evidence from the Kinabalu granite, Mount Kinabalu. J. Geol. Soc., London, 170, 5, p. 805-816.
(*Kinabalu granite emplaced between ~7.2-7.8 Ma. Late Miocene- E Pliocene rapid exhumation and uplift of granite demonstrated by radiometric ages of (1) biotite (40Ar/39Ar; 7.3-7.6 Ma), (2) zircon fission-track (6.6-5.8 Ma) and (3) apatite (~5.5 Ma). Emplacement and exhumation of Kinabalu granite not related to Sabah orogeny (terminated in E Miocene), but caused by extension related to subduction rollback of Sulu Arc)*

Cotton, L.J., P.N. Pearson & W. Renema (2014)- Stable isotope stratigraphy and larger benthic foraminiferal extinctions in the Melinau Limestone, Sarawak. J. Asian Earth Sci. 79A, p. 65-71.
(Major extinction of larger foraminifera close to Eocene-Oligocene boundary in Melinau Limestone already recognized by G. Adams. Isotope analyses (δ13C and δ18O) of rock samples studied by Adams show that end-Eocene LBF extinction event in Melinau Limestone occurs below isotope excursion)

Couzens-Schultz, B.A. & K. Azbel (2014)- Predicting pore pressure in active fold-thrust systems: an empirical model for the deepwater Sabah foldbelt. J. Structural Geol. 69B, p. 465-480.
(Deepwater Sabah well data used for empirical model for predicting pore pressure in active fold-thrust belt)

Cox, L.R. (1948)- Neogene Mollusca from the Dent Peninsula, British North Borneo. Schweizer. Palaeontol. Abhandlungen 66, 2, p. 3-70.
(Molluscs from Late Miocene- Pliocene sandy marls and clays near E tip of Dent Peninsula. Discusses proportion of living species, geologic ranges and index species).

Crevello, P.D. (2001)- The great Crocker submarine fan: a world-class foredeep turbidite system. Proc. 28th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 378-407.
(Major Late Eocene-Early Miocene submarine fan complex off N Borneo, covering >25,000 km2)

Crevello, P.D., H.D. Johnson, F. Tongkul & M.R. Wells (2008)- Mixed braided and leveed-channel turbidites, West Crocker Fan system, Northwest Borneo. In: T.H. Nielsen et al. (eds.) Atlas of deep-water outcrops, American Assoc. Petrol. Geol. (AAPG), Studies in Geology 56, p. 50-72.
(Chapters 13-19 on examples of turbidite facies of outcrops in NW Borneo)

Crevello, P., C. Morley, J. Lambiase & M. Simmons (1997)- The interaction of tectonics and depositional systems on the stratigraphy of the active Tertiary shelf margin of Brunei Darussalam. In: J.V.C. Howes & R.A. Noble (eds.) Proc. Int. Conf. Petroleum Systems of SE Asia and Australasia., Jakarta, Indon. Petroleum Assoc. (IPA), p. 767-772.
(M Miocene-Recent stratigraphy of Brunei Darussalam series of seaward younging basins. More than 15 km of deltaic marine sandstone and shale deposited in migrating depocenters. Sediments derived from nearby uplifted Crocker-Rajang accretionary range. Region dominated by at least three delta complexes)

Cullen, A.B. (2010)- The Klias Peninsula and Padas River: NW Borneo, an example of drainage capture in an active tropical foreland basin. AAPG Conv. 2010, New Orleans, Search and Discovery Art. 50294, 7p.

Cullen, A.B. (2010)- Transverse segmentation of the Baram-Balabac Basin, NW Borneo: refining the model. Petroleum Geoscience 16, p. 3-29.
(W Baram Line separates two petroleum systems: (1) SW: Oligocene sst- Lower Miocene carbonate reservoirs of gas-prone Luconia system; (2) NE: oil-rich Baram-Balabac Basin in M Miocene- E Pliocene sst deposited in foreland basin. Baram-Balabac Basin four structural domains, with NW-SE trending boundaries similar to strike of W Baram Line. Domain boundaries probably deep structures in underlying rifted continental crust. Basin post-dates Sarawak Orogeny Eocene-E Oligocene collision of Dangerous Grounds-Reed Bank with Sabah and Palawan. Minimal Oligo-Miocene subduction of oceanic crust under NW Borneo. Sabah Orogeny

and younger inversion events related to underthrusting of Dangerous Grounds driven by S China Sea opening and NW-directed subduction beneath SE Sabah)

Cullen, A. (2011)- Influence of hinterland bedrock lithologies on aspect of Borneo's deepwater fold and thrust belt. Berita Sedimentologi 21, FOSI- IAGI, p. 9-14.
(Online at: www.iagi.or.id/fosi/files/2011/06/FOSI_BeritaSedimentologi_BS-21_June2011_Final.pdf)
(Catchment areas of Borneo's major river systems different bedrock lithologies, affecting provenance type and potential reservoir quality. U Cretaceous-Paleogene deepwater Rajang-Embaluh Gp clastics main source of reworked quartzose sands shed into Kutei, Tarakan and Baram Basins. Much of Baram basin mud-dominated source, influencing development of raised peat mires, and structural style of deep water fold- thrust belt)

Cullen, A. (2012)- Nature and significance of the West Baram Line, NW Borneo. AAPG Int. Conv. Exhib., Singapore 2012, Search and Discovery Art. 30252, 12p.
(online at: www.searchanddiscovery.com/documents/2012/30252cullen/ndx_cullen.pdf)
(Boundary between Luconia-Balingian carbonate province in SW and Baram clastics-dominated basin in NE placed along W Baram and Tinjar Lines. This is is not large-scale E Miocene transform fault, but ancient crustal discontinuity that was persistently re-activated in Cenozoic)

Cullen, A. (2014)- Nature and significance of the West Baram and Tinjar Lines, NW Borneo. Marine Petroleum Geol. 51, p. 197-209.
(West Baram- Tinjar Line not transform boundary between Luconia and Dangerous Grounds, but boundary between domains of continental crust that underwent differential extension in Eocene. Baram Basin underlain by hyperextended continental crust on NE side of Baram Line, with Luconia in SW more rigid block)

Cullen, A., C. Macpherson, N.I. Taib, A. Burton-Johnson, D. Geist, T. Spell & R.M. Banda (2013)- Age and petrology of the Usun Apau and Linau Balui volcanics: windows to central Borneoὸs interior. J. Asian Earth Sci. 76, p. 372-388.
(Usun Apau plateau in Sarawak along Tinjar Line, which defines onshore part of suture between Luconia and Dangerous Grounds blocks. Plateau made of dacite and andesite erupted between 3.9- 4.1 Ma, and minor basaltic dikes and flows (~2.1 Ma) represening younger episode of volcanism, similar in age and character to Linau Balui basalts 100 km SE of plateau. Volcanics too young to be linked to subduction beneath Borneo. Isotope ratios indicate assimilation of old, possibly Precambrian, continental crust, and similar to Pliocene volcanics of South China Sea and Sulu Arc)

Cullen, A., M.S. Zechmeister, R.D. Elmore & S.J. Pannalal (2012)- Paleomagnetism of the Crocker Formation, northwest Borneo: implications for late Cenozoic tectonics. Geosphere 8, 5, p. 1146-1169.
(Paleomagnetic study of Eocene- E Miocene sandstones from NW Sabah Crocker Fm. Sandstones pervasively remagnetized. Mean ChRM directions for 7 locations between Kota Kinabalu and Keningau indicate minor CW rotation, two locations near Tenom record CCW rotation. Remagnetization between 35-15 Ma. Probably early episode of regional CCW rotation before 35 Ma, overprinted by CW rotation of crustal blocks during opening of S China Sea (32-23 Ma), and also locally by CCW rotation after 10 Ma)

Cummings, R.H. (1955)- A preliminary account of foraminifera from the Carbo-Permian, West Sarawak. Annual Report Geological Survey Dept., British Territories in Borneo, 1955, p. 79.

Cummings, R.H. (1962)- Limestones of the Terbat Formation, West Sarawak. Annual Report Geological Survey Dept., British Territories in Borneo, 1961, p. 36-48.
(Terbat Limestone Fm in W Sarawak with fusulinid foraminifera assigned to Early Permian (Wolfcampian; = (Asselian- Artinskian?) Pseudoschwagerina zone (Pseudoschwagerina heritschi, P. uber, Paraschwagerina, Schwagerina). Associated small foraminifera suggest local correlation with Sumatra and Malaya (incl. Nummolostegina cf. velebitana, Pseudotextularia sumatrensis, Cribrogenerina sumatrana, Climacammina elegans (= similar to Bigenerina/ Cribrostomum elegans from Permian of Sumatra) (For Davydov et al. 2013 these forms signify broad latest Carboniferous- E Permian age. See also Fontaine 1990; JTvG))

Curiale, J., J. Morelos & W. Mueller (2000)- Molecular and isotopic compositional characteristics of Brunei oils; implications for source rock depositional setting. AAPG Ann. Mtg., Abstracts, p. A28. *(Abstract only)*
(Brunei oils highly paraffinic, enriched in pristane relative to phytane, rich in oleanane and bicadinanes, enriched in C29 steranes relative to C27 and C28, and relatively depleted in extended homohopanes, consistent with presence of angiospermous organic matter and probably implying origin from coals or coaly shales)

Curiale, J., J. Morelos, J. Lambiase & W. Mueller (2000)- Brunei Darussalam- characteristics of selected petroleums and source rocks. Organic Geochem. 31, p. 1475-1493.
(Three Tertiary deltaic complexes deposited up to 10 km of sediments. Strong correlations between certain molecular maturity indicators and present-day temperature of reservoirs. Liquid hydrocarbon source potential in tidal and coastal embayment facies, and greatest in Miocene coals)

Darman, H. & A.R. Damit (2003)- Structural control on sediment distribution in offshore Brunei Darussalam, South China Sea. Proc. 29th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 347-353.
(Brunei offshore Neogene clastics compartmentalized by faults controlled by gravitational gliding and tectonics. Two types of fault systems, NW dipping down-to-basin faults and SE dipping, counter-regional faults)

Darman, H., A. Sabli, A. Ang, S. Daud, H. Dejong, Bong Poh Yuk, A.R. Damit, M. Tajuddin (2007)- The depositional model of the Upper Miocene section of the eastern offshore Area of Brunei Darussalam. Proc. 31st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA07-G-086, 7p.
(Study of Upper Miocene sandstone reservoir distribution on area of Champion, Iron Duke Field and Bugan fields, ~30 km NW of Bandar Seri Begawan. Sediment distribution controlled by structural events)

De Coo, J.C.M. & J.W.E. Lau (1977)- Recognition of reef facies in the Bau limestone (Upper Jurassic- Lower Cretaceous), Sarawak. Geol. Survey Malaysia, Geological Papers 2, p. 72-78.
(Brief survey of facies in Late Jurassic- Early Cretaceous Bau Limestone S of Kuching, W Sarawak. Deposited in reefal setting, mostly oncolite- algal and pelletal back-reef facies. Reef facies rudist-gastropod boundstone and coralgal boundstone. No facies maps)

Dedeche, A.R., B. Pierson & A. Hunter (2013)- Outcrop analogs to the offshore Sarawak Miocene fields, how effective can they be? The Subis limestone as an example. Proc. Petroleum Geoscience Conf. Exhib. (PGCE), Kuala Lumpur 2013, 30p. *(Presentation only)*
(online at: https://seacarledu.files.wordpress.com/2016/06/2015_12_10_dedeche_niah_outcrop-analogs.pdf)
(Gunung Subis large flat-topped limestone hill in Sarawak still represents shape of original E Miocene backstepping isolated carbonate platform. Similar to S China Sea/ Luconia carbonate buildups in terms of growth history, but different diagenetic history)

Dedeche, A.R., B. Pierson & A. Hunter (2013)- Growth history and facies evolution of the Subis Limestone- a carbonate platform exposed onshore Borneo Island, Malaysia. Proc. 75th EAGE Conf. Exhib., Carbonate depositional environments and diagenesis, London, 1, TuP15 08, p. 55-57.
(presentation online at: https://seacarledu.files.wordpress.com/2016/06/2015_12_10_dedeche_niah_outcrop-analogs.pdf)
(Subis Limestone onshore Sarawak (with Niah cave) 2 main sequences: (1) U Oligocene lower sequence, deep marine; (2) Lower Miocene upper sequence; reefal, and forming spectacular limestone hill that reflects original carbonate platform. Good analogue to Sarawak offshore carbonate platforms)

De Heer, P.E. & H.I. Thio (1998)- South Furious Field, the evolution of an interpretation: subsurface model based on latest drilling results. In: Proc. Offshore South East Asia Conference 1998 (OFFSEA 98), Singapore, SE Asia Petroleum Expl. Soc. (SEAPEX), p. 125-139.
(S Furious oil field off N Sabah, NE of Labuan Island, 1974 discovery in M Miocene sands in complex compressional wrench structure)

De Kroes, J. (1926)- Uitkomsten van het mijnbouwkundig onderzoek van goudhoudende terreinen in de zoogenaamde Chineesche districten van de residentie Westerafdeeling van Borneo. Dienst van den Mijnbouw in Nederl.-Indie, Verslagen Mededelingen Indische delfstoffen en hare toepassingen 19, p. 1-27.
('Results of mining investigations of gold-bearing terrains in the so-called Chinese Districts of the Residency of West Borneo'. Area extensively exploited for alluvial gold by Chinese 'kongsi's' in mid-1800's. Large number of 5-10-m deep shallow drillholes revealed only sub-economic quantities of gold. Not much on geology of area)

Demyttenaere, R., J.P. Tromp, A. Ibrahim, P. Allman-Ward & T. Meckel (2000)- Brunei deep water exploration: from sea floor images and shallow seismic analogues to depositional models in a slope turbidite setting. In: P. Weimer et al. (eds.) Deep-water reservoirs of the world, GCSSEPM Found. 20th Ann. Res. Conf, p. 304-317.

De Silva, S. (1986)- Stratigraphy of the South Mukah- Balingian region, Sarawak. Warta Geologi (Newsl. Geol. Soc. Malaysia), 12, 5, p. 215-220.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1986005.pdf)
(Onshore W Sarawak S Mukah- Balingian region with intensely folded Eocene Belaga Fm unconformably overlain by gently folded Late Miocene- Pliocene Balingian and younger formations)

Dhonau, T.J. & C.S. Hutchison (1966)- The Darvel Bay area, East Sabah, Malaysia. Malaysia Geol. Survey, Borneo Region, Annual Report 1965, p. 141-160.

Dieseldorff, A. (1906)- Neue Manganerz-Vorkommen in Britisch Nord-Borneo. Zeitschrift Praktische Geologie, Berlin, 14, p. 10-11.
('New manganese ore occurrences in British North Borneo'. Brief report on Maruda Bay area occurrences. Little or no geology)

Dill, H.G. & E.E. Horn (1996)- The origin of a hypogene sarabauite-calcite mineralization at the Lucky Hill Au-Sb mine Sarawak, Malaysia. J. Southeast Asian Earth Sci. 14, p. 29-35.
(M Miocene? gold-bearing hypogene Sb mineralization from Lucky Mill Mine in Bau mining district, Sarawak, contains sarabauite and calcite as major constituents. Mineralization two stages, I: wollastonite, diopside and epidote in Bau Limestone at T >400°C; II, sarabauite with gold at T above 377°C)

Doust, H. (1977)- Geology and exploration history of offshore Central Sarawak. Proc. First ASCOPE Conf. Jakarta, p. 279-302.
(Same as Doust 1981)

Doust, H. (1981)- Geology and exploration history of offshore Central Sarawak. In: M. Halbouty (ed.) Energy Resources of the Pacific Region, American Assoc. Petrol. Geol. (AAPG), Studies in Geology 12, p. 117-132.
(Central part of offshore Sarawak is ~300 km wide continental shelf that forms E-most part of N Sunda shelf. Geologically, it includes NW Borneo basin with Oligocene-Holocene coastal-plain to deeper marine sediments, developed in 8 depositional cycles. Deformation most severe in nearshore part or Balingian Province. Outer shelf (Luconia Province) characterized by an extensive Miocene reefal carbonates. Exploration of shelf area during last 15 years resulted in one oil field and several gas discoveries)

Dronamraju, S.V.C., J. Finol, A.M. Koraini & A.A. Zakaria (2005)- Constraining geological heterogeneity in complex reservoirs: implications for stochastic modeling and reservoir management. In: SPE Asia Pacific Oil and Gas Conference and Exhibition, Jakarta 2005, 93853-MS, p. 1-11.
(Depositional model of Lower Miocene fluvial and deltaic reservoir bodies in D18 field, 20km offshore Bintulu, Sarawak. 80% of production from distributary channels and mouth bars of middle Cycle 2)

Edwards, M.B. (2002)- Sequence stratigraphic responses to shoreline-perpendicular growth faulting in shallow marine reservoirs of the Champion field, offshore Brunei Darussalam, South China Sea: Discussion. American Assoc. Petrol. Geol. (AAPG) Bull. 86, 5, p. 919-921.
(Critical discussion of Hodgetts, Imber et al. (2001) paper, followed by Reply)

Elliott, G.F. (1972)- *Trinocladus exoticus*, a new dasycladacean alga from the Upper Cretaceous of Borneo. Palaeontology 15, 4, p. 619-622.
(online at: http://palaeontology.palass-pubs.org/pdf/Vol%2015/Pages%20619-622.pdf)
(New algal fossil from Upper Cretaceous Chert-Spilite Fm, Sabah. Signifies warm, shallow marine water)

Epting, M. (1980)- Sedimentology of Miocene carbonate buildups, Central Luconia, Offshore Sarawak. Bull. Geol. Soc. Malaysia 12, p. 17-30.
(https://gsmpubl.files.wordpress.com/2014/09/bgsm1980002.pdf)
(Central Luconia Miocene carbonate province with >200 buildups seismically mapped, 43 drilled, leading to 20 gas discoveries. Majority with excellent secondary porosity from fresh-water leaching and dolomitization. Four basic facies types)

Epting, M. (1989)- The Miocene carbonate buildups of Central Luconia, offshore Sarawak. In: A.W. Bally (ed.) Atlas of seismic stratigraphy, American Assoc. Petrol. Geol. (AAPG), Studies in Geology 27, p. 168-173.
(Over 60 M-L Miocene carbonate buildups tested in C Luconia province shelf area since 1967. Seven giant gas fields >1 Tcf and >20 smaller gas accumulations. Size and distribution of buildups structurally controlled. Large platform-type buildups on highs, pinnacle-type buildups in areas of stronger subsidence, and closer to the source of clastic material. SW-NE alignment of buildups probably reflects rift-induced structural trends. Most buildups now covered by 1000-2000m of progradational deltaic clastics)

Everett, A.H. (1878)- Notes on the distribution of the useful minerals in Sarawak. J. Straits Branch Royal Asiatic Society 1, p. 13-30.
(Early note on occurrences of gold, coal, diamonds, etc., in Sarawak. No maps)

Faisal, M.M., S.A.K. Omang & S.H. Tahir (1995)- Geology of Kota Kinabalu and its implications to groundwater potential. Bull. Geol. Soc. Malaysia 38, p. 11-20.
(online at: www.gsm.org.my/products/702001-100929-PDF.pdf)
(Kota Kinabalu, Sabah, area underlain by complexly folded and often steeply dipping Late Eocene-Lower Miocene Crocker Fm sands-shales, deformed during middle Late Miocene 2-phase folding with older N-S trend followed by broad NE-SW orientation (Crocker Thrust). Superimposed are Late Miocene E-W trending gentle folds. Only Crocker Fm sandstone units and overlying Quaternary alluvium significant groundwater reservoirs)

Farrant, A.R., P.L. Smart, F.F. Whitaker & D.H. Tarling (1995)- Long-term Quaternary uplift rates inferred from limestone caves in Sarawak, Malaysia. Geology 23, p. 357-360.
(Long-term base-level lowering measured in Mulu limestone caves in Sarawak is ~19cm/ ky, and has remained constant over at least last 700 ka. Base-level lowering occurs in response to epeirogenic uplift of more resistant limestones due to regional denudation of softer shales, and flexural isostasy associated with high rates of offshore sedimentation)

Ferdous, N. & A.H. Farazi (2016)- Geochemistry of Tertiary sandstones from southwest Sarawak, Malaysia: implications for provenance and tectonic setting. Acta Geochimica 35, 3, p. 294-308.
(online at: http://english.gyig.cas.cn/pu/papers_CJG/201608/P020160809534849297876.pdf)
(Paleocene- Miocene sandstones from SW Sarawak (Kayan Sst, Plateau Sst, Silantek Fm) sublitharenites, dominantly composed of quartz with minor mica, feldspar and volcanic fragments. Derived from quartz-rich recycled orogenic sources. Felsic igneous source suggested by a low TiO2 compared to CIA, etc.)

Ferguson, A., A. Bouma, L.D. Santy & S. Suliaman (2004)- Control of regional and local structural development on the depositional stacking patterns of deepwater sediments in Offshore Brunei Darussalam. In: R.A. Noble et al. (eds.) Proc. Deepwater and frontier exploration in Asia & Australasia symposium, Jakarta 2004, Indon. Petroleum Assoc. (IPA), p. 113-125.

Fiah, N.M. & J.J. Lambiase (2014)- Ichnology of shallow marine clastic facies in the Belait Formation, Brunei Darussalam. Bull. Geol. Soc. Malaysia 60 (C.S. Hutchison Memorial Volume), p. 55-63.

(online at: https://gsmpubl.files.wordpress.com/2015/04/bgsm2014006.pdf)
(M-L Miocene Belait Fm in Brunei outcrops with pervasive Cruziana and Skolithos trace fossil assemblages in shallow marine setting. Tidal channel sandstones have low energy Skolithos ichnofacies, sandy and muddy tidal flats have Cruziana ichnofacies. Upper shoreface sandstones have low energy Skolithos ichnofacies, lower shoreface sandstones have Cruziana ichnofacies)

Fitch, F.H. (1955)- The geology and mineral resources of part of the Segama Valley and Darvel Bay area, Colony of North Borneo. Geological Survey Dept., British Territories in Borneo, Memoir 4, p. 1-142.
(Mapping of Segama valley- Darvel Bay area, E Sabah. Pre-Late Eocene peridotites asscociated with Late Cretaceous- E Eocene deep marine sediments and volcanics (Chert-spilite formation), deformed into N-dipping thrust sheets. Rare metamorphics, including glaucophane schist. After 'Middle' Eocene folding-uplift locally overlain by Eocene and Miocene formations, with reworked ophiolite debris at base of Tertiary. Period of andesitic volcanism in Early Miocene (Aquitanian). Folding episode between E Miocene (Td-Te1-4; = Oligocene;JTvG) and rel. undeformed Late Miocene (Te5-Tf; = E-M Miocene; JTvG). With 1:125k scale geologic map, with remarkable lack of faults)

Fitch, F.H. (1956)- Problems of stratigraphy and geotectonics in North Borneo. Proc. 8th Pacific Science Congress, Philippines 1953, 2, p. 537-551.
(Status of geologic research in N Borneo, with special reference to age of pre-Tertiary and lower Tertiary sedimentary and intrusive rocks and close tectonic relationship of N Borneo with Philippines)

Fitch, F.H. (1958)- The geology and mineral resources of the Sandakan area and parts of the Kinabatangan and Labuk valleys, North Borneo. Geol. Survey Dept., British Territories in Borneo, Memoir 9, p. 1-189.
(Area with sedimentary, extrusive, intrusive, and metamorphic rocks of upper Cretaceous-Tertiary age. W quarter of area ultrabasic intrusives of Tingka-Meliau mountains and flanking basalts surrounded by sediments of Eocene Kulapis and Crocker Fms. Flatter country of remainder of area Kulapis Fm, with Aquitanian strata, and Upper Miocene beds that form circular basins. Copper deposits in Sandakan area)

Fitch, F.H. (1961)- Oil in Sarawak, 1910-1960. Geol. Survey Department British Territories in Borneo, Annual Report 1960, p. 22-31.
(Summary of Shell commemorative volume of same title. Main event was Miri oilfield discovery by Royal Dutch/Shell subsidiary in 1910. Miri 1 producing mainly from ~1000' depth)

Fitch, F.H. (1961)- British Borneo. In: Lexique stratigraphique international, 2nd Edition, Stratigraphic Comm., Int. Geol. Congress, Paris, III, Asie, 7b, p. 1-126.
(Second edition of North Borneo stratigraphic lexicon (first edition by Alexander (1956))

Fitch, F.H. (1961)- Geological map of Sarawak and part of Brunei, scale 1:2,000,000. Geological Survey, Federation of Malaysia, 1961.

Fitch, F.H. (ed.) (1963)- Proceedings of the British Borneo Geological Conference 1961, Kuching, Geol. Survey Dept., British Territories in Borneo, Bull. 4, Kuching, p. 1-184.
(Collection of 11 papers by Haile, Brondijk, Fitch, Collenette, Wilson, Adams, Wolfenden, Keij, etc.)

Fitch, F.H. (1963)- Possible role of continental core movements in the geological evolution of British Borneo. In: F.H. Fitch (ed.) Proc. British Borneo Geological Conference 1961, Kuching, Geol. Survey Dept., British Territories in Borneo, Bull. 4, Kuching, p. 31-46.
(Structure of Borneo Island explained as continuous N/ NW-ward movement of its continental core from Late Cretaceous to present, with short pauses in Late Eocene and Middle Miocene, 'underthrusting the floor of the geosyncline'. North Borneo is >100 mile wide belt of steeply dipping deep-water sediments. Mainly thrusting and imbrication, less isoclinal folding. Driving mechanism not clear)

Fitch, F.H. (1963)- Geological relationship between the Philippines and Borneo. Philippine Geologist (J. Geol. Soc. Philippines) 17, 2, p. 41-47.

Fontaine, H. (1990)- The Terbat Formation of Sarawak (Malaysia): a very peculiar limestone. In: H. Fontaine (ed.) Ten years of CCOP research on the Pre-Tertiary of East Asia, CCOP Techn. Publ. 20, p. 173-181.
(W Sarawak Terbat Fm dark grey limestone with fusulid foraminifera and little or no corals, described earlier by Krekeler (1932), Cummings (1961) and Sanderson (1966). Locally up to 600m thick. Unlike earlier papers here believed to be mainly of M-U Carboniferous age, ranging up into earliest Permian (Moscovian- E Asselian). Warm water limestones with some similarities to limestones of E Malay Peninsula, E Thailand and Vietnam, but very different from age-equivalent rocks of W Malay Peninsula- Peninsular Thailand ('Sibumasu'). Pebbles of possibly related fusulinid limestone found in conglomerates of Triassic (Sadong Fm), Jurassic (Kedadom Fm) and Cretaceous (Pedawan Fm) ages (also reworked in Paleogene of NW Kutai Basin; JTvG))

Fontaine, H. & W.K. Ho (1989)- Note on the Madai-Baturong limestone, Sabah, East Malaysia; discovery of Caprinidae (Rudists). CCOP Newsletter, Bangkok, 14, 3-4, p. 27-32.
(Isolated limestone occurrence with Upper (Lower?) Cretaceous caprinid rudists at Gunung at Madai and Baturong hills SE of Lahad Datu, SE Sabah. (probably deposited on seamount in oceanic setting; Lee 2003))

Foo Yuan Han (2010)- Biostratigraphy correlation of the Subis Limestone with equivalent limestone bodies in offshore Balingian province, Sarawak and Prupuh limestones in Java. In: Proc. ICIPEG 2010, Int. Conf. Integr. Petroleum Engineering and Geosciences, Kuala Lumpur 2010, p. 31-32. *(Abstract only)*
(Subis Lst is member of Tangap Fm at Niah. Larger foraminifera include Miogypsina, Nephrolepidina, probably E Miocene age. Similar age limestone in wells in Balingian province, offshore Sarawak and NE Java)

Forrest, J.K. (2009)- Samarang Field- seismic to simulation redevelopment evaluation brings new life to an old oilfield, Offshore Sabah, Malaysia. Int. Petroleum Technology Conf. (IPTC), Doha, IPTC13162, p. 1-16.
(online at: https://www.slb.com/~/media/Files/technical_papers/130/13162.pdf)
(Samarang field 35 year-old oilfield in E part of Baram Delta. Initially developed by Shell in 1975. Petronas currently operating and reducing production decline rates Large rollover anticline, producing from Late Miocene- E Pliocene deltaic- marine sandstones. Not much on geology)

Franke, D., U. Barckhausen, I. Heyde, M. Tingay & N. Ramli (2008)- Seismic images of a collision zone offshore NW Sabah/ Borneo. Marine Petroleum Geol. 25, p. 606-624.
(BGR seismic data from S South China Sea, used for investigation of Miocene- Recent compressional sedimentary structures of continental margin off NW Borneo. Closing of Proto-S China Sea began at ~44Ma)

Galin, T. (2013)- Provenance of the deep marine Belaga Formation in the Sibu Zone north of the Lupar Line, Sarawak, Malaysia. M.Sc. Thesis, Royal Holloway, University of London, p. 1-161. *(Unpublished)*

Galin, T., H.T. Breitfeld, R. Hall & I. Sevastjanova (2017)- Provenance of the Cretaceous-Eocene Rajang Group submarine fan, Sarawak, Malaysia from light and heavy mineral assemblages and U-Pb zircon geochronology. Gondwana Research 51, p. 209-233.
(online at: http://searg.rhul.ac.uk/pubs/galin_etal_2017%20Rajang%20provenance%20Sarawak.pdf)
(Rajang Gp clastics in N Borneo thick, large deep-water submarine fan complex. In Sarawak Lupar and Belaga Fms deposited fom latest Cretaceous (Maastrichtian)- late M Eocene. Borneo one of the few places in SE Asia with sediments of this age preserved. Main source regions Schwaner Mts in SW Borneo, and W Borneo/Malay Tin Belt. Heavy mineral assemblages and detrital zircon U-Pb dating show 3 units: (1) Late Cretaceous- E Eocene age zircon-tourmaline-dominated (2) Early to M Eocene zircon-dominated, abundant Cretaceous zircons and few Precambrian zircons derived primarily from Schwaner Mts; (3)M Eocene zircon-tourmaline-dominated. Limited contemporaneous magmatism during Rajang Gp deposition, inconsistent with subduction/ arc setting. Rajang Gp deposited N of shelf edge formed by Lupar Line strike-slip fault)

Gartrell, A., J. Torres & N.M. Hoggmascall (2012)- A regional approach to understanding basin evolution and play systematics in Brunei- unearthing new opportunities in a mature basin. Int. Petroleum Technology Conference (IPTC), Bangkok 2012, IPTC 15171, p. 2802-2806. *(Extended Abstract)*

(Summary of Shell Brunei integrated geologic study of deepwater Brunei acreage. Deltaic sediments derived from uplifted and eroding hinterland (Crocker Ranges) built out over pre-existing and intermittently active foreland fold-thrust belt. Series of basinward younging extensional growth faults formed due to differential loading in paleo-outer shelf locations. Major anticlinal structures on shelf previously interpreted as shale diapirism now reinterpretated as inversion structures. Etc.)

Gartrell, A., J. Torres & N. Hoggmascall (2012)- A regional approach to understanding basin evolution and play systematics in Brunei- unearthing new opportunities in a mature basin. AAPG Int. Conv. Exhib., Singapore 2012, Search and Discovery Art. 10467, p. 1-14.
(online at: www.searchanddiscovery.com/documents/2012/10467gartrell/ndx_gartrell.pdf)
(Presentation. Pretty regional cross-sections, etc., with little or no explanation)

Ganesan, B.M.S. (1997)- Geology and hydrocarbon potential of the offshore western Sarawak shelfal area. Proc. ASCOPE 97 Conf., 2, p. 131-148.

Gassim M.B., S.H. Tahir & S. Sadikun (1995)- Structural geology of the Crocker Formation and its tectonic control, Sabah, Malaysia. Proc. Int. Symp. Geology of Southeast Asia and adjacent areas, Hanoi 1995, J. of Geol. Hanoi, B, 1995, 5-6, p. 181-196.
(Late Eocene- Early Miocene Crocker Fm turbiditic sediments of W coast Sabah subjected to at least two tectonic events: (1) Early-Middle Miocene folding due to N-S and NW-SE directed compression and (2) Pliocene NE-SW compression, less pronounced than (1))

Gassim, M.B. & S.H. Tahir (1995)- Canggaan bertindan dalam Formasi Crocker di kawasan Tamparuli.Bull. Geol. Soc. Malaysia 38, p. 49-61.
('Superposed deformation in the Crocker Formation of the Tamparuli region'. Measured section of Crocker Fm sandstone-shale along Tuaran-Tamparuli road. Sedimentary structures show beds are inverted. Deformation in two events: early M Miocene folding along NE-SW trend, followed by deformation along NW-SE trend)

Gassim, M.B., S. Tahira & D.A. Brunotte (1993)- Tectonic evolution of Marudu Bay, Sabah. In: B.K. Tan et al. (eds.) 7th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA VII), Bangkok 1991, J. Southeast Asian Earth Sci. 8, p. 513-527.
(Marudu Bay, N Sabah, stratigraphic sequences in ascending order: Chert-Spilite Fm, Crocker Fm, Kudat Fm, S Banggi Fm and Timohing Fm. Igneous rocks, especially serpentinite, also randomly distributed. Several episodes of deformation. Marudu Bay has undergone rifting due to clockwise rotation since M Miocene)

Gastony, G.J. (1969)- Sporangial fragments referred to *Dictophyllum* in Triassic chert from Sarawak. American J. Botany 56, 10, p. 1181-1186.
(Sporangial fragments of Mesozoic ferns in Late Triassic (Norian) black chert interbedded with trachytic volcanic rocks of Serian Volcanic Fm, Penrissen Region, W Sarawak. Referred to Dictyophyllum exile)

Gebregergis, T.M. & W.I.W. Yukoff (2010)- Burial and thermal history model to evaluate source rock, in Tatau Province, offshore Sarawak Basin, Malaysia. AAPG Int. Conf. Exh., Calgary 2010, Search and Discovery Art. 40706, 10p.
(online at: www.searchanddiscovery.com/documents/2011/40706gebregergis/ndx_gebregergis.pdf)

Gee, M.J.R., H.S. Uy, J. Warren, C.K. Morley & J.J. Lambiase (2007)- The Brunei slide: a giant submarine landslide on the North West Borneo margin revealed by 3D seismic data. Marine Geology 246, p. 9-23.
(3D seismic data offshore Brunei show giant landslide with volume of 1200 km3, area of ~5300 km2 and average thickness of ~240m. It extends for >120 km from Baram Canyon in ~200m water depth to deep basin floor of NW Borneo Trough. Complex deposit, involving chaotic debris flow matrix, with blocks 500-1000m wide and up to 250m thick. Imaging of basal sliding surface reveals striations ~30-120 km long, and ~10-30m deep with significant basal erosion. Also older landslides buried several 100m below basin floor)

Geiger, M.E. (1963)- Paleogeography of Late Cretaceous- Eocene geosyncline in the Northwest Borneo. Geol. Sutvey Malaysia Annual Report 1963, Kuching, p, 179-187.
(Paleogeography of 'Geosynclinal' Late Cretaceous- Eocene in Sarawak and Sabah. Geosynclinal phase ended with Late Eocene orogeny. (not clear what is lumped together where; not overly useful?; JTvG))

Geikie, J.S. (1905)- The occurrence of gold in Upper Sarawak. Trans. Inst. Mining and Metallurgy 15, p. 63-79.
(Early description of gold deposits near Bau and Bidi, 15m SW of Kuching. Ore bodies in Jurassic limestone, close to porphyry dike)

Gendang, R., A.S. Hashim & D. Johari (2006)- Limestone resources in the Baram Area. Miri Division, North Sarawak, Minerals Geoscience Dept. Malaysia, IMP 3/2005, p. 1-151.

Gerritsen, S., F. Ernst, C. Field, Y. Abdullah, D.N.P.H. Daud & I. Nizkous (2016)- Velocity model building challenges and solutions in a SE Asian basin: beyond reflection tomography. First Break 34, 10, p. 91-97.
(Examples of seismic velocity building technologies to generate accurate models for imaging and depth conversion in offshore Brunei)

Ghaheri, S. & M. Suhaili Bin Ismail (2017)- Review of tectonic evolution of Sabah, Malaysia. In: M. Awang et al. (eds.) Proc. Int. Conf. Integrated Petroleum Engineering and Geosciences (ICIPEG2016), Kuala Lumpur 2016, Springer Verlag, p. 597-604.
(Sabah structure and tectonic history dominated by Late Oligocene- M Miocene S China Sea seafloor spreading and Sulu Sea subduction. Sabah tectonics started in E Cretaceous. S China Sea subducted under N Borneo margin, forming M Eocene- E Miocene basin sediments. Celebes Sea subducting N-ward under Dent Peninsula in Late Oligocene. Circular basins in E part of Sabah formed in E-M Miocene, thought to be related to SE Sulu Sea Basin rifting. Volcanic arc in Dent Peninsula also formed during this time, due to S-ward subduction of Sulu Sea. In Late Miocene SE Sulu Sea Basin rifting ceased)

Goesten, M.J.B.G. & P.J. Ealey (1986)- Storm generated sandstones and their depositional geometry in a Miocene reservoir from the north coast of Borneo. In: R.J. Knight & R.J. McClean (eds.) Shelf sands and sandstones, Canadian Soc. Petrol. Geol. Memoir 11, p. 339-340.

Gou, P. (2014)- Organic petrographic characteristics of the Crocker Formation, NW Sabah, Malaysia. Bull. Geol. Soc. Malaysia 60 (C.S. Hutchison Memorial Issue), p. 65-75.
(online at: www.gsm.org.my/products/702001-101647-PDF.pdf)
(Average vitrinite reflectance in deep marine Crocker Fm in NW Sabah is 0.82% Ro, indicating average burial depths of 4.1 km. Crocker Fm poor petroleum source rock because of low phytoclast content (<2%) and lack of oil-prone liptinitic macerals)

Gower, R.J.W. (1990)- Early Tertiary plate reconstructions for the South China Sea region: constraints from NW Borneo. J. Southeast Asian Earth Sci. 4, 1, p. 29-35.
(Subduction of oceanic crust beneath NW Borneo in Late Cretaceous- E Tertiary, associated with development of major 'Crocker-Rajang' accretionary complex. Contemporaneous outer arc basin sedimentation in W Sarawak and E Kalimantan consistent with SE-dipping subduction zone. Initiation of major clastic depocenter in Baram-Belait area in E Miocene (Brondijk 1963) indicates major change in sedimentation and deformational style at NW Borneo continental margin)

Grant, C.J. (2003)- The Pink Fan: a classic deep-marine canyon-fill complex, Block G, NW Sabah. In: G.H. Teh (ed.) Petroleum Geology Conference and Exhibition 2002, Bull. Geol. Soc. Malaysia 47, p. 85-94.
(3D-seismic and well data for deep water NW Sabah sand-prone fan systems. Four major Middle-Upper Miocene fan depositional cycles between ~12 and 6 Ma. Pink Fan is youngest, furthest outboard, still connected to its feeder systems, and with two unnamed wells. Four or more separate feeder-fan apron systems)

Grant, C.J. (2004)- The Upper Miocene deepwater fans of Northwest Borneo. In: R.A. Noble et al. (eds.) Deepwater and frontier exploration Symposium, IPA-AAPG Jakarta 2004, p. 421-428.

(Offshore NW Borneo 1992 Shell discovery of large gas volumes in turbidite reservoirs beneath shelf edge, proving existence of large deepwater sand-rich fan systems offshore NW Borneo)

Grant, C.J. (2005)- Sequence boundary mapping and paleogeographic reconstruction: the keys to understanding deepwater fan deposition across the NW Borneo active margin. Proc. 2005 SE Asian Petrol. Expl. Soc. (SEAPEX) Exploration Conf., Singapore 2005, 1p. *(Abstract only)*

Graves, J.E., C.S. Hutchison, S.C. Bergman & D.A. Swauger (2000)- Age and MORB geochemistry of the Sabah ophiolite basement. Bull. Geol. Soc. Malaysia 44, p. 151-158.
(online at: http://gsmpubl.files.wordpress.com/2014/09/bgsm2000019.pdf)
(Late Jurassic- E Cretaceous (Neocomian) age most likely for ophiolite basement of Sabah, consistent with Barremian-Aptian age of overlying ribbon cherts. K-Ar dates unreliable. Ophiolite suite of Labuk and Segama Highlands of low-K tholeiitic affinity, with geochemistry indicating MORB characteristics. Before uplift, Sabah ophiolitic basement formed part of either W Pacific or E Indian Ocean, still extant as ocean floor W of Australia. Oceanic lithosphere of Sabah not 'proto South China Sea'; no genetic relationship to present day South China Sea. N.S. Haile suggested more appropriate term 'Danau Sea')

Graves, J.E. & D.A. Swauger (1997)- Petroleum systems of the Sandakan Basin, Philippines. In: J.V.C. Howes & R.A. Noble (eds.) Proc. Conf. Petroleum Systems of SE Asia and Australasia, Indon. Petroleum Assoc. (IPA), p. 799-813.
(Offshore Sandakan basin (Sulu Sea) up to 16 km of Mio-Pliocene sediment, eroded mainly from Eocene-Oligocene Crocker Fm in Sabah, after extensive Miocene uplift. 17 wells drilled, 7 with hydrocarbon tests or shows. Probable Mid-Miocene mixed oil-gas prone source rock. Sandakan basin history: Early Miocene intra-arc rifting accompanied by widespread volcanic activity, M- L Miocene delta aggradation, latest Miocene growth faulting, Pliocene delta progradation, Plio-Pleistocene carbonate deposition)

Grissemann, C., H. Henning & A. Yan (1990)- Geophysical contribution to prospecting for massive sulfide deposits in the Bidu Bidu Hills in Sabah, Malaysia. Geol. Jahrbuch B74, p. 31-63.
(On exploration of massive sulfide ores in areas of chert-spilite formations in E Sabah)

Haak, R. (1955)- A study of the Miocene Gunong Subis Limestone complex. Shell Group Report, 25948, p. 1-30. *(Unpublished)*
(Haile 1962: Subis Lst member of Setap Shale is isolated reefal carbonate platform dated as latest Oligocene (Te1-4 in Subis 2 well; with Heterostegina borneensis, Miogypsinoides ubaghsi), continuing into basal Miocene (Te5; with Miogypsinoides dehaartii, Sproclypeus spp., Austrotrillina howchini, etc.) at Bukit Subis outcrop. Thickness 5900' in Subis 2 well, more commonly ~3000' thick. Locally common corals)

Hadley, D.F., E. Arochukwu, K. Nishi, M. Sarginson, H. Salleh & M. Omar (2006)- Depositional modelling of Champion Field, Brunei: assessing the impact of reservoir architecture on secondary recovery. In: Proc. SPE Asia Pacific Oil Gas Conf., Adelaide 2006, 30p.
(Champion field multi-billion bbl STOIIP oilfield off Brunei, producing since 1972 from >250 wells. Production to date is <20% of original oil in place. Two main reservoir types: (1) stacked shoreface parasequences (majority of reservoirs); (2) tide-dominated sediments channel fill or bar complexes)

Hageman, H. (1987)- Palaeobathymetrical changes in NW Sarawak during Oligocene to Pliocene. Bull. Geol. Soc. Malaysia 21, p. 91-102.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1987005.pdf)
(Comparison of NW Sarawak Oligocene-Pliocene paleobathymetric history with global curve suggest Middle Miocene- Pliocene changes largely controlled by eustacy, but Late Oligocene- E Miocene global changes masked by tectonic movements)

Haile, N.S. (1952)- The coal deposits and geology of part of the Klingkang Range, West Sarawak, with a detailed account of the Silantek and Abok seams. Geol. Survey Dept., British Territories in Borneo, 30p.

(Tertiary (probably Eocene) coal-bearing beds outcrop along N scarp of Klingkang Range over ~18 miles. Several seams, interbedded with Tertiary estuarine deposits. Coal high-grade bituminous in rank, may be due to metamorphism caused by emplacement of nearby igneous intrusions)

Haile, N.S. (1954)- The geology and mineral resources of the Strap and Sadong Valleys, West Sarawak, including the Klingkang Range Coal. British Territories in Borneo Region Geol. Survey, Memoir 1, p. 1-150.
(W Sarawak Strap-Sadong valley area with intensely folded Carboniferous-Permian (grey Terbat Lst with fusulinids, white chert and shale) and U Triassic (clastics with Monotis and Halobia, becoming more sandy to S and E). Unconformably overlain by thick E Tertiary non-marine Silantek Fm shale-dominated series with thin coals and brackish water molluscs and >1000m of Plateau Sandstone. Igneous rocks: pre-Triassic granite, Triassic lavas and tuffs and Tertiary shallow igneous stocks and sills. Workable quantities of probably Eocene-age coal, small amounts of gold, diamonds, bauxite, etc.)

Haile, N.S. (1956)- Limestone reserves in the Batu Gading area on the Baram River. British Borneo Geol. Survey Ann. Report, Kuching, p. 30-38.

Haile, N.S. (1957)- The geology and mineral resources of the Lupar and Saribas Valleys, West Sarawak. Malaysia Geol. Survey Borneo Region, Memoir 5, p. 1-123 + 125,000 scale map.
(Lupar-Saribas valley region complex geology, between two different tectono-stratigraphic regions: to W U Paleozoic- Mesozoic, to NE U Cretaceous- Tertiary sediments. With isoclinally folded, steeply (dominantly S-?) dipping deep marine 'flysch-type' U Cretaceous- Lower Eocene Rajang group geosynclinal sediments and volcanics (in slaty facies in N, pelagic 'Danau/Engkilili' calcareous facies with radiolarian chert in S) (= Lubok Antu melange= Paleo-Eocene melange complex with Cretaceous radiolaria, Orbitolina Lst, Assilina, etc.?; see Tan 1979, Haile 1996; JTvG). Unconformably overlain by 'molasse-type' Upper Eocene- Miocene estuarine and continental beds of Plateau series. Late Tertiary intrusive granitic stocks and laccoliths and dolerite sills. Thin-bedded coals in Plateau series and gold-bearing placers exploited on small scale (Marup))

Haile, N.S. (1957)- New evidence of the age of the Plateau Series in West Sarawak. Annual Report Geological Survey Dept., British Territories in Borneo, 1957, p. 77.
(Brief note on presence of Late Eocene (Tb) larger foraminifera Aktinocyclina and Nummulites at base of Kantu Beds (lowest part of Plateau Series), proving Late Eocene or older age of 'Plateau Series transgression' over Pretertiary- Lower Eocene rocks)

Haile, N.S. (1962)- The geology and mineral resources of the Suai-Baram area, North Sarawak. British Borneo Geol. Survey Memoir 13, p. 1-176.
(Suai-Baram area of N Sarawak part of 'North Borneo geosyncline', S of Miri/ Brunei. With >45,000' thick U Cretaceous -Recent sandstones and shales (but U Cretaceous only in one outcrop). Sediments derived from central granitic part of Borneo and later from recycled Cretaceous and Eocene sediments. Pre-Pliocene strata moderately to highly folded. Regional strike N to NE. Major unconformity between Miocene and U Pliocene (E Pliocene folding) (?). Paleocene limestones. Disconformity between U Eocene and Miocene (should be latest Oligocene?; JTvG)(local angular unconformity below base Setap Shale (latest Oligocene; Te1-4) (basal conglomerate with reworked Cretaceous radiolarian chert), missing E Oligocene in Melinau Lst and Batu Gading Lst. Batu Gading Lst 120m of Late Eocene overlain with hiatus by 40m of latest Oligocene (Te1-4) limestone. Subis Lst Mb of Setap shale with Te5/ E Miocene Miogypsinoides dehaarti/ Spiroclypeus (with appendices by Adams & Haak on Batu Gading Lst and Johnson on calcareous algae))

Haile, N.S. (1963)- The Cretaceous- Cenozoic Northwest Borneo geosyncline. In: F.H. Fitch (ed.) Proc. British Borneo Geological Conference 1961, Kuching, Geol. Survey Dept., British Territories in Borneo, Bull. 4, Kuching, p. 1-18.
(NW Borneo Geosyncline with thick Upper Cretaceous- Recent sediments in 500 mile long, 200-250 mile wide belt from Lupar Valley in West Sarawak, all of Brunei, to W part of Sabah. Thirty-two formations distinguished (Liechti et al. 1960), grouped here in 4 lithostratigraphic groups: (1) Rajang Gp (U Cretaceous- Oligocene Te 1-4, C Sarawak- N Kalimantan- W Sabah, foredeep eugeosynclinal grading upward to miogeosynclinal, common flysch, also radiolarian cherts and spilite in Lupar and Danau Fms, intensely folded, up to 50,000'

thick?); (2) Baram Gp (U Eocene- U Miocene, miogeosynclinal, unconformable over Rajang Gp, 28,000' thick); (3) Plateau Gp (U Eocene- ?Miocene 'molasse-type' sediments in 'backdeep' after Late Eocene folding; Melawi- Ketungau basins; up to 30,000' thick?) (should be foredeep?) and (4) Brunei Gp (U Miocene- Pliocene in coastal areas of Brunei- NE Sarawak; late geosynclinal isolated basins, ~30,000' thick?))

Haile, N.S. (1968)- The Northwest Borneo geosyncline in its geotectonic setting. Bull. Geol. Soc. Malaysia 1, p. 59. *(Abstract only)*
(Summary of Haile (1969) paper. One of last tectonics papers of SE Asia to use geosynclinal theory)

Haile, N.S. (1969)- Geosynclinal theory and the organizational pattern of the North-West Borneo geosyncline. Quart. J. Geol. Soc., London, 124, 2, p. 171-188.
(NW Borneo geosyncline of Sarawak, Brunei and W Sabah, ~800 km in NE-SW direction. Thick Late Cretaceous- late Cenozoic sequence, classified into 4 groups: (1) Rajang Gp (Late Cretaceous- E Miocene): thick, folded flysch with chert-ophiolite at base; (2) Baram Gp (Late Eocene- Late Miocene): mainly argillaceous, with sandstones and limestones; (3) Plateau Gp (Late Cretaceous to? Miocene): thick molasse-type continental deposits in S; (4) Brunei Gp (Oligocene to Recent): estuarine and marine deposits with molasse affinities in N. Migration of flysch deposition, orogeny, and molasse deposition, from S to N)

Haile N.S. (1992)- Evidence of multiphase deformation in the Rajang-Crocker Range (northern Borneo) from Landsat imagery interpretation: geodynamic implications- Comment (2). Tectonophysics 204, p. 178-180.
(Critical review of Benard et al. 1990 paper)

Haile, N.S. (1996)- Note on the Engkilili Formation and the age of the Lubok Antu Melange, West Sarawak, Malaysia. Warta Geologi (Newsl. Geol. Soc. Malaysia) 22, 2, p. 67-70.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1996002.pdf)
(Lupar Valley of W Sarawak is junction of Rajang Group accretionary prism to N and more continental part of W Sarawak to S. Engkilili Fm fossiliferous calcareous shales with Paleocene-E Eocene limestone blocks mapped by Haile as 'lower Eocene calcareous facies', distinct from the main 'cherty' facies, now known as Lubuk Antu melange, to N. Most likely age of melange ~mid-Eocene; Engkilili Beds possibly slightly older)

Haile, N.S., S.K. Lam & R.M. Banda (1994)- Relationship of gabbro and pillow lavas in the Lupar Formation, West Sarawak; implications for interpretation of the Lubok Antu Melange and the Lupar Line. In: G.H. Teh (ed.) GSM Petroleum Geology Seminar VIII, 1991, Bull. Geol. Soc. Malaysia. 36, p. 1-9.
(online at: www.gsm.org.my/products/702001-100981-PDF.pdf)
(Lupar Line regarded by many as major suture, but uncertainties regarding relationship of various belts and rock types. Outcrops for Hydroelectric Project show gabbro in U Cretaceous Lupar Fm bedded flysch is intrusive and pillow lavas interbedded (not older oceanic crust emplaced tectonically as faulted slices). Junctions between Lubok Antu Melange and Lupar Fm, and between Lupar and Layar Fm, may be major sutures, whereas Lupar Valley may only be fault zone in broad melange belt)

Haile, N.S. & N.P.Y. Wong (1965)- The geology and mineral resources of the Dent Peninsula, Sabah. British Borneo Geol. Survey Memoir 16, p. 1-199.

Hakimi, M.H. & W.H. Abdullah (2013)- Liquid hydrocarbon generation potential from Tertiary Nyalau Formation coals in the onshore Sarawak, Eastern Malaysia. Int. J. Earth Sciences (Geol. Rundschau) 102, p. 333-348.
(Oligocene- E Miocene coals of Nyalau Fm exposed in N-C onshore Sarawak with TOC of 58-81%, hydrogen index values of 282-510 mg HC/g TOC, Type II and mixed Type II–III kerogens. Vitrinite reflectance 0.47-0.67% Ro, indicating initial oil window maturity. Coals are humic and generally dominated by vitrinite, with significant amounts of liptinite and low amounts of inertinite. Good liquid hydrocarbons generation potential)

Hakimi, M.H., W.H. Abdullah, F.L. Alias, M.H. Azhar & Y.M. Makeen (2013)- Organic petrographic characteristics of Tertiary (Oligocene-Miocene) coals from eastern Malaysia: rank and evidence for petroleum generation. Int. J. Coal Geology 120, p. 71-81.

(Coal samples from Tanjung Fm of Pinangah coalfield (E-M Miocene, Sabah) and Nyalau Fm of Bintulu coal fields (Oligocene- E Miocene, C Sarawak) from N Borneo relatively high hydrogen index values (282 and 516 mg HC/g TOC), indicating coals dominated by Type II to mixed Type II–III kerogens, and considered to generate mainly oil. This is supported byhigh amounts (11-31%) of oil-prone liptinite macerals, incl. suberinite)

Hakimi, M.H., W.H. Abdullah, S.G. Sia & Y.M. Makeen (2013)- Organic geochemical and petrographic characteristics of Tertiary coals in the northwest Sarawak, Malaysia: implications for palaeoenvironmental conditions and hydrocarbon generation potential. Marine Petroleum Geol. 48, p. 31-46.
(Tertiary coals from Mukah and Balingian coalfields in W Sarawak good source rock potential. Dominated by Type III kerogen and mixed Type II/III kerogens with HI values of 90-289 mg HC/g TOC. C coals thermally immature (lignite to sub-bituminous C rank), with huminite reflectance of 0.26-0.39%)

Halim, M.F.A. (1994)- Geothermics of the Malaysian sedimentary basins. Bull. Geol. Soc. Malaysia 36, p. 163-174.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1994031.pdf)
(Geothermal gradient database from well and temperature data of wells in Malay basin (101 wells, av. 51.8 °C/km), Sarawak basin (88 wells; av. 43.3 °C/km) and Sabah basin (54 wells; av. 30.5°C/km))

Hall, R. (2013)- Contraction and extension in northern Borneo driven by subduction rollback. J. Asian Earth Sci. 76, p. 399-411.
(online at: http://searg.rhul.ac.uk/pubs/hall_2013%20Borneo%20extension-rollback.pdf)
(Paleogene subduction of Proto-South China Sea ended with E Miocene collision of Dangerous Grounds/Reed Bank/N Palawan block and Sabah-Cagayan Arc. Much of N Borneo then became emergent, forming Top Crocker Unconformity. N-ward subduction of Celebes Sea initiated formation of Sulu Sea backarc basin, followed by subduction rollback to SE. This formed volcanic arc, which emerged briefly above sea level and collapsed in M Miocene. Rollback drove extension in N Borneo and Palawan. Two main extensional episodes (1) ~16 Ma, marked by Deep Regional Unconformity; (2) ~10 Ma, Shallow Regional Unconformity. Both episodes caused exhumation of deep crust, probably on low angle detachments, followed by granite magmatism. NW Borneo-Palawan Trough interpreted as flexural response to gravity-driven deformation of sediment wedge, caused by uplift on land that resulted from extension, with contribution of deep crustal flow)

Hall, R. (2015)- Trenches, troughs and unconformities; collision, contraction and extension: South China Sea, Borneo-Palawan and Sulu Sea. Geoscience Techn. Workshop, Tectonic evolution and sedimentation of South China Sea Region, Kota Kinabalu 2015, AAPG Search and Discovery Art. 90236, 3p. *(Extended Abstract)*
(online at: www.searchanddiscovery.com/pdfz/abstracts/pdf/2015/90236apr/abstracts/ndx_hall.pdf.html)
(Mainly summary of Hall (2013))

Hall, R., M.A. Cottam, S. Suggate, F. Tongkul, C. Sperber & G.E. Batt (2008)- The geology of Mount Kinabalu. Sabah Parks Publ. 13, p. 1-77.
(online at: http://searg.rhul.ac.uk/pubs/Kinabalu/Kinabalu_handbook_cs3.pdf)
(Mt Kinabalu 4100m high and highest mountain in SE Asia between E Himalayas and New Guinea. Composed mainly of granite that formed at ~7-8 Ma. Partly underlain by serpentinised peridotites and by subducted crust of S China margin)

Harper, G.C. (1975)- The discovery and development of the Seria oilfield. Brunei Museum, Penerbitan Khas Bil. 10, p. 1-99.

Hasegawa, S., R. Sorkhabi, S. Iwanaga, N. Sakuyama, M. Naofumi & O.A. Mahmud (2005)- Fault-seal analysis in the Temana Field, offshore Sarawak, Malaysia. In: R.Sorkhabi & Y.Tsuji (eds.) Faults, fluid flow, and petroleum traps, American Assoc. Petrol. Geol. (AAPG), Mem. 85, p. 43-58.
(Fault-seal assessment of normal fault in Tertiary clastics in Temana field, Balingian, offshore Sarawak. Shale smear factor values <6 and clay content ratio >30% on fault surface indicate across-fault sealing of reservoir rocks on sand-sand interfaces)

Hashimoto, W. (1973)- *Sarawakia ellipsactinoides*, gen. et sp., nov., an *Elipsactinia*-like fossil from the Bau Limestone Formation, Sarawak, Malaysia. In: T. Kobayasi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press,12, p. 207-215.
(New stromatoporoid species from Late Jurassic Bau Limestone, S of Kuching, W Sarawak)

Hashimoto, W. (1982)- Preliminary notes on fossil records of East Malaysia and Brunei. In: T. Kobayasi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 23, p. 137-175.

Hashimoto, W. & K. Matsumaru (1977)- *Orbitolina* from West Sarawak, East Malaysia. In: T. Kobayashi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 18, p. 49-57.
(Lower Cretaceous Orbitolina from Pedawan Fm, W Sarawak (?))

Hashimoto, W. & K. Matsumaru (1981)- Larger foraminifera from Sabah, Malaysia, part 1: Larger foraminifera from the Kudat Peninsula, the Gomantan area and the Semporna Peninsula. In: T. Kobayashi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 22, p. 49-54.

Hashimoto, W. & M.Tamura (1968)- Report of geological and palaeontological reconnaissance of Malaysia. Mem. Faculty of Education, Kumamoto University 17, p. 34-50.
(Kakizaki et al. 2013: Pedawan Fm above Bau Limestone of SW Sarawak yields ammonoids of Late Tithonian-E Cretaceous age (e.g. Berriasella or Micracanthoceras sp.))

Hay, A.K. (2000)- Overview of the Baram Delta province, Brunei Darussalam. Berita Sedimentologi (Indon. Sediment. Forum FOSI) 12, p.

Hazebroek, H.P. & D.N.K. Tan (1993)- Tertiary tectonic evolution of the NW Sabah continental margin. In: G.H. Teh (ed.) Proc. Symposium on tectonic framework and energy resources of the Western margin of the Pacific Basin, Kuala Lumpur 1992, Bull. Geol. Soc. Malaysia 33, p. 195-210.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1993015.pdf)
(NW Sabah continental margin 6 tectono-stratigraphic provinces. Two main phases of Tertiary basin development: (1) pre-early M Miocene deep-marine clastic sedimentation; (2) post-early M Miocene clastic shelf/ slope deposition, prograding NW over unconformably underlying sediment wedge. NW Sabah Trough young feature, not Paleogene trench (Baram Delta prism masks Paleogene trench). Tectonic evolution: (1) Late Eocene-early M Miocene oblique subduction of S China Sea oceanic crust beneath NW Sabah; (2) Diachronous collision of S China Sea attenuated continental crust with Sabah and cessation of ocean-floor spreading in early M Miocene, led to uplift and erosion of accretionary prism (Deep Regional Unconformity); (3) Resumption of convergence between Borneo and NW Sabah Platform in middle Late Miocene, with formation of Shallow Regional Unconformity. E Sabah ophiolite complex continues into Palawan)

Hazebroek, H. P., D.N.K. Tan & J. M. Lamy (1992)- Tectonic evolution of the Northwest Sabah continental margin since Late Eocene. AAPG Int. Conf., Sydney 1992, Search and Discovery Art. 91015, p.
(Abstract only; see also Tan and Lamy 1990) (Four-stage tectonic evolution model of NW Sabah shelf (1) Late Eocene - early M Miocene subduction of S China Sea oceanic crust beneath Borneo, with creation of accretionary prism, (2) collision of S China Sea attenuated continental crust with Borneo in early M Miocene, leading to uplift and erosion of accretionary prism and creation of 'Deep regional unconformity', followed by M Miocene- early Late Miocene NW progradation over inboard belt;. (3) Cessation of active subduction in middle Late Miocene accompanied by major tectonic activity, with compressional deformation of Inboard Belt, creating 'Shallow Regional Unconformity';(4) In Outboard Belt and East Baram Delta, thick prograding wedge built out to NW from Late Miocene- Holocene. Late Pliocene deformation mainly in Outboard Belt and E Baram Delta)

Heller, J., D. Basuki, M. Choo, S. O ́Connor & R. Swarbrick (2014)- Using simple loading models to predict crestal pore pressures in Miocene carbonate exploration targets, Luconia, Sarawak. Proc. 38th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA14-G-169, 9p.

(C Luconia province in offshore Sarawak Basin with numerous Miocene- Recent carbonate build-ups, many with commercial hydrocarbons. Key risk for tall (up to 1km relief) buildups traps is mechanical seal failure, where pore pressure at crest of structure exceeds fracture strength of seal. Overpressure prediction model proposed based on sedimentation rates and stratigraphic ages)

Heng, Y.E, S.S. Keong & D.K. Tan (1992)- Geological map of Sarawak, 2nd Ed., Geological Survey of Malaysia, p.

Hesse, S. (2010)- The tectonic evolution of NW Borneo. Dokt. Thesis Rheinisch-Westfalischen Technischen Hochschule, Aachen, p. 1-95.
(online at: http://publications.rwth-aachen.de/record/64045/files/3524.pdf)
(Thesis on seismic interpretation of structure of NW Borneo deepwater fold-thrust belt, composed of three papers, published earlier (Hesse et al. 2009, 2010). Pliocene-Recent gravity-driven shortening decreases from S to N, total shortening increases slightly to N, suggesting basement-driven compression along NW Borneo increases to N. Main thrust activity in Late Pliocene-Holocene. Maximum shortening in C part of study area)

Hesse, S., S. Back & D. Franke (2009)- The deep-water fold-and-thrust belt offshore NW Borneo: gravity-driven versus basement-driven shortening. Geol. Soc. America (GSA) Bull. 121, p. 939-953.
(Tectonic restorations of NW Borneo fold-and-thrust belt comparing amount of deep-water shortening compared to extension across shelf suggests gravity-driven shortening decreases from S to N, while total amount of shortening increases slightly to N. Basement-driven compression inferred to increase to N. Most of shortening Late Pliocene and younger, ongoing)

Hesse, S., S. Back & D. Franke (2010)- The structural evolution of folds in a deepwater fold and thrust belt- a case study from the Sabah continental margin offshore NW Borneo, SE Asia. Marine Petroleum Geol. 27, 2, p. 442-454.
(2D regional seismic interpretation of deepwater fold and thrust belt offshore Sabah, NW Borneo)

Hesse, S., S. Back & D. Franke (2010)- Deepwater folding and thrusting offshore NW Borneo, SE Asia. In: G.P. Goffey et al. (eds.) Hydrocarbons in contractional belts, Geol. Soc., London, Spec. Publ. 348, p. 169-185.
(2D seismic data shows extensive series of folds at leading edges of imbricate thrusts in deepwater offshore NW Borneo. Widest and youngest anticlines near present-day thrust front, narrowest and oldest folds in most landward parts of fold-thrust belt. Main thrust activity Pliocene- Holocene age)

Hinz, K., J. Fritsch, E.H. Kempter, A.M. Mohamed, J. Meyer, D. Mohamed, H. Vosberg, J. Weber & J. Benavidez (1989)- Thrust tectonics along the north-western continental margin of Sabah, NW Borneo. Geol. Rundschau 78, 3, p. 705-730.
(Plate tectonic models suggest inactive subduction zone along NW continental margin of Sabah. BGR seismic data show autochthonous continental terrane with Oligocene- E Miocene carbonate platform, progressively overthrust by allochthonous rock complex)

Hiscott, R.N. (2001)- Depositional sequences controlled by high rates of sediment supply, sea-level variations and growth faulting: the Quaternary Baram Delta of northwestern Borneo. Marine Geology 175, p. 67-102.
(Shelf off Baram Delta is 50-70 km wide, underlain by 8-9 km of post-Eocene upper slope to estuarine deposits. Shelf break is fault scarp at ~130m below sea level. Outer-shelf Quaternary locally >1 km thick. Uppermost Quaternary thickens 2-5x across en echelon shelf-edge growth faults. Five widespread 'key' reflectors, on high-res seismic profiles (downlap surfaces beneath clinoforms, two directly overlying fluvial channels. Widespread 4th-order lowstand- bypass sequence developed during 120-10 ka sea-level cycle, up to 400m thick)

Hiscott, R.N. (2003)- Latest Quaternary Baram prodelta, Northwestern Borneo. In: F.H. Sidi, D. Nummedal et al. (eds.) Tropical deltas of Southeast Asia- sedimentology, stratigraphy and petroleum geology, Soc. Sedimentary Geologyogy (SEPM) Spec. Publ. 76, p. 89-107.
(Quaternary Baram Delta >1 km thick on outer continental shelf of Brunei, with mud-prone highstand delta lobes, sand-prone lowstand shelf-edge deltas, incised-valley fills and transgressive sheet-like deposits on wave-

cut ravinement surfaces. Shelf break defined by prominent fault scarp ~130m below sea level. Rugged slope relief due to growth faulting, mud diapirism, submarine canyons, sediment sliding, levees along turbidity-current channels that head in region of shelf-edge deltas, ETC.)

Hitam, R. & M. Scherer (1993)- Distribution and maturity of source rocks in Brunei Darussalam. Proc. 5th Asian Council on Petroleum Conference and Exhibition (ASCOPE), Bangkok 1993, 5135, p. 1-12.

Ho, F., G. Jaeger & P. Lambregts (2003)- Seismic interpretation of carbonate turbidites in Central Luconia. In: G.H. Teh (ed.) Petroleum Geology Conf. Exhibition 2002, Bull. Geol. Soc. Malaysia 47, p. 77-83.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm2003a06.pdf)
(C Luconia offshore carbonate buildups mainly Middle-Late Miocene age. Growth initiated on highs formed during Late Oligocene rifting. Seismic evidence for carbonate turbidite deposits between buildups)

Ho, Wan Kin (1990)- Central Luconia Middle Miocene carbonate play, Sarawak Basin, Malaysia. CCOP Techn. Publ. 23, p. 67-85.
(Play description of hydrocarbons in widespread Middle Miocene cabonate play of Luconia, offshore Sarawak)

Hodgetts, D., J. Imber, C. Childs, S. Flint, J. Howell, J. Kavanagh, P. Nell & J. Walsh (2001)- Sequence stratigraphic responses to shoreline-perpendicular growth faulting in shallow marine reservoirs of the Champion field, offshore Brunei Darussalam, South China Sea. American Assoc. Petrol. Geol. (AAPG) Bull. 85, 3, p. 433-457.
(Champion field, off Brunei, thick M-U Miocene shallow marine sediments associated with major growth fault systems and deposited as part of paleo-Baram delta. Growth faults strike perpendicular to paleo-shoreline orientation. Depositional responses to growth faulting layer thickening and addition of layers in hanging wall. See also Discussion by Edwards 2002)

Hoesni, M.J. & M.N.C Mood (1995)- History of hydrocarbon generation in the Tembungo field, offshore northwest Sabah. In: G.H. Teh (ed.) Southeast Asian basins: oil and gas for the 21st century, Proc. AAPG-GSM Int. Conf. 1994, Bull. Geol. Soc. Malaysia 37, p. 309-320.
(online at: www.gsm.org.my/products/702001-100945-PDF.pdf)
(Tembungo field off Sabah producing oil from Upper Miocene turbidite reservoirs. Oils low sulphur and wax contents and API gravity 38-40°, derived from marginal marine source with significant land plant input. High sedimentation rates in M-L Miocene. Tembungo structure began to grow in Late Miocene (7.2 Ma), with accelerated growth in Early Pliocene. Faults sealing; barrier faults contributed to overpressure. Hydrocarbon generation began at ~9.0 Ma and oil began to be trapped in Tembungo structure in Late Miocene-E Pliocene. Oils most likely sourced from M Miocene sediments)

Hoffmann-Rothe, J. (1994)- Brunei/ Brunei. In: H. Kulke (ed.) Regional petroleum geology of the world, I, Borntraeger, Berlin, p. 739-746.
(Brief review of oil-gas basin and fields of Brunei; in German)

Hoggmascall, N., C. Gibson, D. Blades & J. Torres (2012)- Source to sink modelling in NW Borneo: improving understanding of the deepwater slope delivery system and utilising DEM and shallow analogues for deeper prospectivity. AAPG Int. Conv. Exhib., Singapore 2012, Search and Discovery Art. 50755, p. 1-12.
(online at: www.searchanddiscovery.com/documents/2012/50755hoggmascall/ndx_hoggmascall.pdf)
(Summary of integration work on offshore Brunei floodplain to basin floor for intervals in last 12 million years)

Ho Kiam Fui (1976)- Morphogenetic trend of *Lepidocyclina* and its application in time stratigraphy. Geologie en Mijnbouw 55, 3-4, p. 147-158.
(online at: https://drive.google.com/file/d/0B7j8bPm9Cse0ZlpZYlRsbzN6b1U/view)
(Correlation between Lepidocyclina degree of curvature and planktonic foram zonation in E-M Miocene of C Luconia wells, Sarawak)

Ho Kiam Fui (1978)- Stratigraphic framework for oil exploration in Sarawak. Bull. Geol. Soc. Malaysia 10, p. 1-13.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1978001.pdf)
(Upper Eocene- Pleistocene sequence in Sarawak subdivided into 8 sedimentary cycles, separated by rapid and widespread transgressions. With overview of biozonatons used)

Ho Wan Kin (1990)- Central Luconia Middle Miocene carbonate play, Sarawak Basin, Malaysia. In: CCOP/WRGA Play modelling exercise 1989-1990, CCOP Techn. Publ. 23, p. 67-85.
(Description and hydrocarbon assessment of M-L Miocene carbonate play play, offshore Sarawak. With schematic Late Oligocene- Recent paleogeographic maps and 'Cycle V/VI carbonate buildup distribution map)

Hon, V. (1976)- Some analyses of the Serian Volcanics of the Kuap area. Annual Report Malaysia Geol. Survey for 1975, p. 212-220.
(Late Triassic intermediate-basic Serian Volcanics from Kuap area, S of Kuching, W Sarawak, show affinity to tholeiitic series)

Hon, V. (1981)- Physical controls of mineralization in the Bau town area, west Sarawak, Malaysia. Sarawak Mining Bull. 1, p. 43-54.

Hon, V. & S.K. Lam (1992)- Geological Map of Sarawak, 2nd Edition, scale 1:500 000. Geol. Survey Malaysia.

Honza, E., J. John & R.M. Banda (2000)- An imbrication model for the Rajang accretionary complex in Sarawak, Borneo. J. Asian Earth Sci. 18, 6, p. 751-759.
(Rajang accretionary complex generally S- dipping and younging N-ward. Interpreted as thrust slices, each 10-15 km wide, formed by accretion at subduction trench. Accretion of Late Jurassic- Cretaceous oceanic crust from Pacific (E) in Late Cretaceous, forming part of arc along E Asia margin from Japan to Kalimantan. E Tertiary bending of S end of arc in Borneo changed direction of subduction to accretion from N)

Hood, F.H. & S. Tahir (2011)- Lithostratigraphy of the Late Neogene sedimentary sequence in Sandakan Peninsula. Proc. 24th Ann. National Geoscience Conference 2011 (NGC2011), Johor Baru, P1-27, p. 107-109. *(Extended Abstract)*
(online at: http://geology.um.edu.my/gsmpublic/NGC2011/NGC2011_Proceedings.pdf)
(Sandakan Peninsula outcrops. Oldest exposed unit is M Miocene Garinono Fm, widely distributed in E Sabah, with lower sequence of sedimentary melange/olistostrome and volcanics-dominated upper sequence, part of M Miocene Cagayan Volcanic Arc. Volcanic facies andesite- dacite and tuff- tuffaceous sandstone. Unconformity between volcanics and base of overlying Sandakan Fm also M Miocene age (Globorotalia fohsi fohsi). Sandakan Fm 12km thick mudstones and cross-bedded sandstones. Common lignite seams, fossilized wood and consolidated quartz pebble lenses)

Hoppe, P. (1990)- Photogeological investigations in the area of Mt. Kinabalu and adjacent parts of Sabah, East Malaysia. Geol. Jahrbuch B74, p. 115-135.
(Photogeologic interpretation of parts of Sabah to obtain improved regional structure information. Area around Mt Kinabalu is where two subduction zones merge, with 90° bend in folds of Crocker Fm Miocene accretionary complex, etc.)

Houtz, R.E. & D.E. Hayes (1984)- Seismic refraction data from Sunda Shelf. American Assoc. Petrol. Geol. (AAPG) Bull. 68, p. 1870-1878.
(Velocity changes in disturbed sediments on W edge Sarawak basin support claim Borneo subduction melange (accretionary prism) extends into Sarawak basin. Zone of thickened subduction melange sediments may extend N to shelf edge. Basement salient in E part West Natuna basin requires ~45 km shift in W boundary of Cretaceous subduction melange. Crust below Sarawak basin oceanic, implying shelf edge advanced ~300 km N over oceanic crust as result of post-Eocene progradation. Pre-Oligocene sediments thin in Sarawak basin)

Hutchison, C.S. (1968)- Tectogene hypothesis applied to the Pre-Tertiary of Sabah and The Philippines. Bull. Geol. Soc. Malaysia 1, p. 65-79.
(online at: https://gsmpubl.files.wordpress.com/2014/08/bgsm1967008.pdf)
(Sabah correlated with Philippines in Pre-Tertiary arcuate tectogene-geosyncline system (pre-plate tectonics paper))

Hutchison, C.S. (1971)- An alpine association of metabasites and ultrabasic rocks in Darvel Bay, East Sabah, Borneo. Overseas Geology and Mineral Resources 10, 4, p. 289-308.

Hutchison, C.S. (1972)- Alpine-type chromite in North Borneo, with special reference to Darvel Bay. American Mineralogist 57, 5-6, p. 835-856.
(Chromite layers and pods in dunite and serpentinite lenses in peridotite outcrops of Sabah. Association of chromite-bearing ultramafic rocks with gabbro bodies and high-metamorphic tholeitic metabasalts (generally as amphibolite, occasionally hornblende granulite) have formed in oceanic spreading zone)

Hutchison, C.S. (1978)- Ophiolite metamorphism in northeast Borneo. Lithos 11, p. 195-208.
(Darvel Bay ophiolite sequence of mantle harzburgite, gabbro(2 km thick), basalt and associated Late Cretaceous (subsequent work has shown Early Cretaceous age; JTvG)- Eocene chert-spilite and Miocene melange and olistostrome deposits. Ophiolite is extension into Borneo of Sulu Archipelago non-volcanic arc (opiniion revised in Hutchison, 2000). Parts of ophiolite metamorphosed to gneiss, amphibolite, etc.)

Hutchison, C.S. (1982)- Pre-Tertiary basement of Borneo: what and where? Warta Geologi (Newsl. Geol. Soc. Malaysia) 8, p. 295-297. *(Abstract only)*
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1982006.pdf)
(Brief discussion of poorly known sialic basement terranes of Borneo. No maps)

Hutchison, C.S. (1988)- Stratigraphic-tectonic model for eastern Borneo. Bull. Geol. Soc. Malaysia 22, p. 135-151. *(also in Proc. GEOSEA 6 Conf., Jakarta 1987)*
(NE Borneo nucleated since late Cretaceous around N Borneo Miri zone microcontinent that rifted off Vietnam/ S China. E margin passive, and grades into oceanic lithosphere of 'chert-spilite zone'. Early Miocene collision of Miri microcontinent, causing folding-thrusting of Rajang group (suggests collision with Sulawesi, followed by Makassar Straits opening, but this had already opened in Eocene; JTvG))

Hutchison, C.S. (1991)- Neogene arc-continent collision in Sabah, Northern Borneo (Malaysia)- Comment. Tectonophysics 200, p. 325-329.
(Critical discussion of Rangin et al. (1990) paper. Palawan-N Borneo Trench not active subduction or collision zone, and quite a few other 'incorrect' details. Miri Zone and Dangerous Grounds are singe continental block and were both foreland in ?Miocene)

Hutchison, C.S. (1992)- Evidence of multiphase deformation in the Rajang-Crocker Range (northern Borneo) from Landsat imagery interpretation: geodynamic implications- Comment (1). Tectonophysics 204, p. 175-177.
(Critical discussion of Benard et al. (1990) paper; see also Haile (1992))

Hutchison, C.S. (1992)- The Southeast Sulu Sea, a Neogene marginal basin with outcropping extensions in Sabah. Bull. Geol. Soc. Malaysia 32, p. 89-108.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1992017.pdf)
(Sulu Sea marginal basin resulting from E Miocene intra-arc rifting. Early stages with explosive volcanic activity and rifting resulting in extensive Ayer, etc. olistostromes, corresponding to Ayer, Tungku and Kuamat, Garinono Fms. Uplift of Crocker Fm to W provide source for major quartz sands in SabahTanjong Fm and major NE flowing delta near Sandakan fed turbidites of deep Sulu Sea. Sabah ophiolite complex predates late early Miocene opening of Sulu Sea basin and represents Lower Cretaceous ocean floor on which arc was built. Rare metabasite with glaucophane)

Hutchison, C.S. (1994)- Melange on the Jerudong Line, Brunei Darussalam, and its regional significance. In: G.H. Teh (ed.) Petroleum geology Conf. 8, Bull. Geol. Soc. Malaysia 36, p. 157-161.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1994030.pdf)
(Large olistostrome deposit S along Jerudong Line, with sandstone blocks up to 3m diameter embedded in Setap Shale. Jerudong Line was Late Miocene submarine continental slope down which unconsolidated sands slumped W into deeper water part of Baram Delta)

Hutchison, C.S. (1996)- The ôRajang accretionary prismô and Lupar Lineô problems of Borneo. In: R.Hall & D. Blundell (eds.) Tectonic evolution of Southeast Asia, Geol. Soc., London, Spec. Publ. 106, p. 247-261.
(Rajang Group in Sarawak (and Embaluh Group in Kalimantan and equivalent rocks in Sabah, E Kalimantan) N-facing accretionary prism, composed of Cretaceous- Late Eocene turbiditic sediments, younging N-ward. Compressed into steeply S-dipping phyllite-quartzite complex (= M-Late Eocene Sarawak orogeny; collision between Schwaner Mts Zone and Luconia-Balingian-Miri microcontinent). Unconformably overlain in N and S by M-U Eocene continental- neritic clastics. Sabah W Crocker Fm Oligocene turbidites more shaly in N, and nearshore in S. Several Miocene folding-uplift pulses. Provenance from uplifted U Cretaceous-Eocene of NE Kalimantan and E Sarawak. M-Late Miocene Crocker Fm uplift ('Sabah orogeny' = E-M Miocene;JTvG). Uplift ceased in Late Miocene. Paleocurrents show Upper Eocene basal sandstones provenance from metamorphosed Sibu Zone. Kalimantan Melawi and Mandai basins unconformably over flysch-belt. Basins not forearc, but formed after transformation of accretionary prism to collision complex landmass)

Hutchison, C.S. (2001)- Sundaland half-grabens of Sarawak; implications. Abstracts Petrol. Geol. Conf. Exhib. 2001, Paper 12, Warta Geologi (Newsl. Geol. Soc. Malaysia) 27, 5, p. 228-230. *(Abstract only)*
(Sundaland large continental peninsular landmass with half-grabens rifting from Late Eocene-Oligocene. Sarawak W of West Balingian Line (Tatau or Mukah Province) integral part of this landmass, with NW-SE Late Eocene- pre M Miocene grabens with up to 5km non-marine fill; marine inundation only after M Miocene sag. Similar half grabens simultaneously developed on uplifted Rajang Group of Sibu Zone (Rajang had become part of Sundaland after Late Eocene Sarawak Orogeny. Ketungau Basin of Kalimantan not unique. Sundaland Late Eocene half-grabens are intermontane basins, like Basin and Range province of W North America)

Hutchison, C.S. (2002)- Did the northwest Borneo Trough terminate at the West Baram line; what do the Miocene adakites/diorites indicate? Warta Geologi (Newsl. Geol. Soc. Malaysia) 28, 5, p. 250-251.
(NW Borneo Trough represents extinct plate margin and was active trench during spreading of S China Sea marginal basin, from anomalies 11 (31 Ma) to 5c (16 Ma)).

Hutchison, C.S. (2005)- Geology of North-West Borneo- Sarawak, Brunei and Sabah. Elsevier, Amsterdam, p. 1-421.
(Extensive review of Sarawak, Brunei, Sabah and N Kalimantan geology and stratigraphy)

Hutchison, C.S. (2010)- The North-West Borneo Trough. Marine Geology 271, 1-2, p. 32-43.
(NW Borneo Trough in deepwater Brunei-Sabah with melange wedge along SE margin, best explained as fossil trench-accretionary prism, preserved when subduction ceased in M Miocene with arrival of thinned continental crust at Benioff Zone, choking subduction and causing isostatic uplift of W Cordillera of Sabah. Overlain by undeformed Upper Miocene- Holocene drape. Alternative interpretation was a SW major NW-directed thrust Sheet System over autochthonous Dangerous Grounds terrane of attenuated continental crust of S China Sea passive margin. Enigmas remain in Palawan area, where trough position is bathymetrically obscure in places and position makes it impossible to derive Calamian micro-continent from continental Asia as required from its stratigraphy. In SW Trough terminates abruptly at W Baram Line. Trough contains several spectacular edifices, formerly suggested to be volcanoes or mud volcanoes but are drowned carbonate build-ups)

Hutchison, C.S. (2010)- Oroclines and paleomagnetism in Borneo and South-East Asia. Tectonophysics 496, p. 53-67.
(Oroclinal bending of Borneo is result of indentation and collision by continental Miri Zone- C Luconia Block in Eocene. Collision caused strong compression and uplift of Sibu Zone U Cretaceous- Eocene Rajang-Embaluh Gp turbidite basin, which is floored by oceanic crust of Proto South China Sea. No paleomagetic work

on oroclinally bent Sibu Zone rocks in NW limb. Limited paleomagnetic support for required CCW rotation in NE limb. Previous syntheses emphasised CCW rotation or stable non-rotation of Borneo region as coherent entity, without internal deformation, ignoring oroclinal shape defined by geology of island)

Hutchison, C.S. (2011)- Oroclines and paleomagnetism in Borneo and South-East Asia. In: Petrol. Geol. Conf. Exhib. (PGCE 2011), Kuala Lumpur, Warta Geologi 37, 1, p. 39. *(Abstract only)*
(online at: https://gsmpubl.files.wordpress.com/2014/09/warta37_1.pdf)
(Oroclinal bending of Borneo resulted from indentation and collision of Miri Zone- C Luconia continental block of N Sundaland into S Sundaland (= Late Eocene 'Sarawak Orogeny'))

Hutchison, C.S., S.C. Bergman, D.A. Swauger & J.E. Graves (2000)- A Miocene collisional belt in north Borneo: uplift mechanism and isostatic adjustment quantified by thermochronology. J. Geol. Soc. London 157, p. 783-793.
(Subduction followed by underthrusting of continental lithosphere, driven by Oligocene-Miocene spreading in S China Sea, account for Sabah tectonic features. Isostatic rebound caused Late Miocene uplift of W Cordillera. Strata buried to 4-8 km, then rapidly exhumed and cooled at ~0.6mm/year. Rapid erosion supplied abundant clastics to Baram Delta, E lowlands and Sulu Sea. E Lowlands affected by Miocene Sulu Sea rifting)

Hutchison, C.S. & T.J. Dhonau (1969)- Deformation of an alpine ultramafic association in Darvel Bay, East Sabah, Malaysia. Geologie en Mijnbouw 48, 5, p. 481-494.
(online at: https://drive.google.com/file/d/0B7j8bPm9Cse0NjFyMklsVGpMdlE/view)
(Early description of Late Mesozoic ophiolites of Darvel Bay, E Sabah. Serpentinized peridotites (folded, with boudinage), associated with gneiss, amphibolite chert-spilite formation, etc.))

Hutchison, C.S. & T.J. Dhonau (1971)- An alpine association of metabasites and ultrabasic rocks in Darvel Bay, East Sabah, Malaysia. Overseas Geol. Miner. Res. 10, p. 289-308.
(Includes 140 Ma (basal Cretaceous) K-Ar age for meta-basalt from Sabah ophiolite)

Hutchison, C.S. & T. Surat (1991)- Sabah serpentinite sandstone and conglomerate. Warta Geologi (Newsl. Geol. Soc. Malaysia) 17, 2, p. 59-64.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1991002.pdf)
(Serpentinite conglomerate and sandstone (grit) in Labuk Valley, NE Sabah W of Sandakan. Eroded from uplifted peridotite and/or gabbroic layer of ophiolite. Age unknown. but possibly part of contiguous Oligocene Kulapis Fm or Kamansi Beds)

Ibbotson, R. (2007)- Silimpopon- a Borneo coal mine. Opus Publications, Kota Kinabalu, p. 1-199.
(History of exploitation of Silimpopon coal mine, operating from 1905-1932 in Sabah, upriver from Tawau)

Ibrahim, C.A., L. Light, J. Ngu-Chee Kong & J. Mennie (2012)- Foresee the unforeseen: modeling West Baram Delta overpressure, Offshore Sarawak. AAPG Search and Discovery Art. 41109, p.
(online at: www.searchanddiscovery.com/documents/2012/41109ibrahim/ndx_ibrahim.pdf)
(Data from 62 W Baram Delta wells indicates onset of overpressure occurs at different depths, controlled structurally and stratigraphically. Under-compaction overpressure, driven by rapid sedimentation, predominant overpressure mechanism)

Ibrahim, N.A. (2003)- Deposition of the Tembungo deep-water sands. In: G.H. Teh (ed.) Petroleum Geology Conference and Exhibition 2002, Bull. Geol. Soc. Malaysia 47, p. 105-126.
(Core and seismic study of several 100m thick Late Miocene deep-water sands in Tembungo field off Sabah, above the 'Shallow Regional Unconformity' (= ~9 Ma))

Idris, H.A.B.M., J. Jong, D.A. Nuraini B.A.B. & N.F.B.Salim (2015)- Jemuduk-1ST1 post well analysis: implications on hydrocarbon charge and sedimentary fairway development of the Rajang Delta. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-017, 20p.

(Jemuduk-1ST1 exploration well off Sarawak tested anticlinal structure (toe thrust) in Bunguran Trough fold-thrust belt, linked to growth faults in Rajang Delta (= W Luconia Delta). Non-economic gas shows throughout Pliocene Cycles VI-VIII clastic reservoirs. Total 350m gross sandy interval, with porosity 16-25%)

Idris, H.A.B.M., A.B. Mustapha, N.F.B. Salim, D.A.N.B.A.Bakar, J. Jong & T. Murray (2015)- ñJ-1ST1ò post well analysis: implications on hydrocarbon charge and sedimentary fairway development of the West Luconia Delta. Proc. SE Asia Petroleum Expl. Soc. (SEAPEX) Conf., Singapore 2015, 5.1, 42p. *(Extended Abstract + Presentation)*
(Similar to Idris et al. 2015. J1ST1 well tested Plio-Pleistocene sands of West Luconia/ Rajang Delta shelf)

Idris, M.B. (1989)- Fossil crabs of Sabah. Warta Geologi 15, 5, p. 207-213.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1989005.pdf)
(Six localities of Late Miocene- Quaternary age in Sabah with crab fossils, incl. Macropthalmus, Scylla, Euphylax and Martinaarcinus)

Idris, M.B. (1992)- CO_2 and N_2 contamination in J32-1, SW Luconia, offshore Sarawak. Bull. Geol. Soc. Malaysia 32, p. 239-246.
(https://gsmpubl.files.wordpress.com/2014/09/bgsm1992025.pdf)
(SW Luconia area offshore Sarawak prone to high CO_2 (>60%; especially high in carbonate) and N_2 contamination. Recent exploration well J32-1 five gas-bearing reservoirs in Neogene sands and limestones. with CO_2 from 2-76% and N_2 from 1-12%). Contaminants commonly thought to be basement derived, but possible other causes)

Idris, M.B. & K.H. Kok (1990)- Stratigraphy of the Mantanani Islands, Sabah. Bull. Geol. Soc. Malaysia 26, p. 35-46.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1990004.pdf)
(Mantanani islands off N Sabah M Miocene bioclastic limestones and calcarenites with Lepidocyclina, overlain by massive conglomerates)

Imai, A. (1994)- Sulfide globules associated with a felsite intrusion in the Mount Kinabalu quartz monzonite, Sabah, East Malaysia: sulfide melt immiscibility in a highly silicic melt. Economic Geology 89, p. 181-185.

Imai, A. (2000)- Genesis of the Mamut porphyry copper deposit, Sabah, East Malaysia. Resource Geology, Tokyo, 50, p. 1-23.
(Sabah Mamut porphyry type Cu-Au deposit ~10 km SE of Mt Kinabalu genetically related to quartz monzonite ('adamellite') porphyry stock of latest Miocene age (~7 Ma), associated with Late Miocene Mt Kinabalu plutonism)

Imai, A. & K. Ozawa (1991)- Tectonic implications of the hydrated garnet peridotites near Mt Kinabalu, Sabah, East Malaysia. J. Southeast Asian Earth Sci. 6, p. 431-445.
(Garnetiferous peridotites part of ultramafic complex in Mt Kinabalu area. Associated with abundant spinel lherzolites and in fault contact with surrounding Tertiary strata. High T peridotite mineral assemblages overprinted by lowerT hydrous assemblages with abundant hornblende. Garnet peridotites part of sub-crustal mantle under Kalimantan, metasomatized during ascent due to tectonism)

Ingram, G.M., T.J. Chisholm, C.J. Grant, C.A. Hedlund et al. (2004)- Deepwater North West Borneo: hydrocarbon accumulation in an active fold and thrust belt. Marine Petroleum Geol. 21, p. 879-887.
(Deepwater acreage of NW Borneo active fold- thrust belt with hydrocarbon accumulations. Typical trapping geometries hanging-wall anticlines, foreland folds and ridges and sub-thrust footwall cut-offs. Drilling targets in deformed Miocene-Pliocene clastics, charged from active petroleum system. Major challenge is to avoid drilling traps that expelled hydrocarbons during periods of active deformation)

Ishibashi, T. (1982)- Upper Jurassic and Lower Cretaceous ammonites from Sarawak, Borneo, East Malaysia. In: T. Kobayashi et al. (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 23, p. 65-75.
(Ammonites from Lower Pedawan Fm of W Sarawak. Paraboliceras jubar, Virgatosphinctes sp. and Phanerostephanus sp. indicate latest Jurassic (Tithonian) age). Also Early Cretaceous Neocomites, Limaites, Phylloceras, Thurmanniceras from Pedawan Fm)

Ismail, M.I.B. (1999)- Petroleum resources, Sabah. In: Petronas (1999) The petroleum geology and resources of Malaysia, p. 593-602.
(On petroleum resources in 3 Neogene basins: Sabah, NE Sabah (Sandakan) and SE Sabah. Main basin is Sabah Basin off NW Sabah, Discovered recoverable oil 1.2 BB Oil, 7.0 TCF gas in 23 oil and 28 gas fields)

Ismail, M.I., A.R. Eusoff, A.M. Mohamad, S.A. Aziz & B. Mahendran (1995)- The geology of Sarawak deepwater and surrounding areas. In: G.H. Teh (ed.) Southeast Asian Basins, oil and gas for the 21st century, Proc. AAPG-GSM Int. Conf., Kuala Lumpur 1994, Bull. Geol. Soc. Malaysia 37, p. 165-178.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1995a12.pdf)
(Study of 1989 Sarawak deepwater seismic transects. Two tectonostratigraphic provinces. North Luconia 7-8 km of Tertiary sediments, NNE-SSW trending extensional faults, buried hills and local forced folds. On E boundary NNE-SSW fault separates it from NW Sabah Platform with NE-SW trending rifts with only 2-4 km sediment. West Luconia Province up to 13 km of sediments, very thick post M Miocene, with E-W trending growth faults and slumps/ toe thrusts formed by gravity gliding. These overlie normal-faulted section at mid Miocene unconformity. Five sub-megasequences recognised)

Ismail, M.I. & R.B.A. Hassan (1999)- Tinjar province. In: Petronas (1999) The petroleum geology and resources of Malaysia, Chapter 16, p. 395-409.
(Geology and hydrocarbon of area onshore Sarawak with U Eocene- U Miocene sediments, uplifted and folded at end Early Miocene and Late Miocene. No discoveries so far)

Ismail, W.N.W, S.H. Tahir & Basir Jasin (2014)- Barremian-Aptian radiolaria from Chert-Spilite Formation, Kudat, Sabah. Warta Geologi 40, 3-4, p. 59-61.
(online at: www.gsm.org.my/products/702001-101643-PDF.pdf)
(Radiolarian chert in siliceous shale in ophiolitic rocks at Bukit Pangaraban, Kudat, E Sabah, with radiolarians dominated by Thanaria pacifica, Dictyomitra communis, Pseudoeucyrtis hanni and Podobursa typica, suggesting Barremian-Aptian (E Cretaceous) age. Radiolarian chert is from basalt association. Low CaO content suggests deposition below calcite compensation depth. Chert deposited on E Cretaceous oceanic crust and represent oldest rocks in Sabah)

Iyer, S.R., Ong Swee Keong, N. Asmah, F. Nazihah & Satyanarayana (2010)- An insight into the tectonic framework and structural evolution of a frontier area in Sarawak Offshore Basin, Malaysia. Petrol. Geosc. Conf. Exhib. (PGCE) 2010, Kuala Lumpur, p. 178-181. *(Extended Abstract)*
(Structural fabric off Sarawak characterized by strong overprint of NW-SE to N-S reactivated basement trend, over the older, less distinct, NE-SW trend. Post MMU tectonic setting: quiescent W half, separated by West Balingian zone, from an active wrench- tectonics-dominated E half. Timing of wrench movement shifted from Late Miocene in W to Recent in E)

Iyer, S.R., Ong Swee Keong, F. Nazihah & S.A. Abdullah (2012)- New perspective on evolution of northern provinces of offshore Sarawak Basin, Malaysia. AAPG Int. Conf. Exhib., Singapore 2012, Search and Discovery Art. 10482 (2013), 19p. *(Presentation package)*
(online at: www.searchanddiscovery.com/documents/2013/10482iyer/ndx_iyer.pdf)
(Basins offshore Sarawak initiated as Late Cretaceous (?)- Late Eocene intra-cratonic rifts on continental crust on foreland bulge (Phase I), creating N-S and NE-SW-trending half-grabens, dipping to E and SE. Gravity modeling results suggest 15-20 km thick attenuated continental crust. Extension continued, with opening of S China Sea in E Oligocene (Phase II), and subsequent drift phase up to early M Miocene. Well results suggest non-marine to transitional environment for Cycle I -Lower Cycle II, and outer neritic to bathyal for Cycle III.

Regional uplift in late E Miocene- M Miocene, resulted in regional Middle Miocene Unconformity. Age of MMU younger towards E. Major NW-SE transtension close to MMU time along SW Luconia fault zone resulted in formation of W Luconia Trough. Late Miocene-Recent NE sag of basin led to a deep-water setting)

Iyer, S.R., H. Rosidah & A.S. Amar (2012)- Maturation of a new play concept in Northern Provinces of Offshore Sarawak Basin, Malaysia. Petrol. Geosc. Conf. Exh. (PGCE 2012), Warta Geologi 38, 2, p. 125-126.
(online at: http://geology.um.edu.my/gsmpublic/warta/Warta38_2_draft.pdf)
('Sequence-A play concept' is based on seismic evidence: postulated lacustrine sediments ?Lat Cretaceous-Eocene early half- graben fill in first phase of extension)

Jackson, C.A.L. & H.D. Johnson (2009)- Sustained turbidity currents and their interaction with debrite-related topography: Labuan Island, offshore NW Borneo, Malaysia. Sedimentary Geology 219. p. 77-96.
(E Miocene Temburong Fm at Labuan Island off NW Borneo, deposited in a lower slope- proximal basin-floor setting. Two gravity-flow facies: slump-derived debrites and turbidites deposited by sustained turbidity currents. Routing of turbidity currents influenced by topographic relief at top of underlying debrite)

Jackson, C.A.L., A.A. Zakaria, H.D. Johnson, F. Tongkul & P.D. Crevello (2009)- Sedimentology, stratigraphic occurrence and origin of linked debrites in the West Crocker Formation (Oligo-Miocene), Sabah, NW Borneo. Marine Petroleum Geol. 26, 10, p. 1957-1973.
(Oligocene-E Miocene W Crocker Fm of N Borneo large submarine fan, part of accretionary complex. Range of gravity-flow deposits observed (see also Zakaria et al. 2013)

Jacobson, G. (1970)- Gunung Kinabalu area, Sabah, Malaysia. Malaysia Geol. Survey Rept. 8, p. 1-111.

Jamaludin, S.N.F. & M. Pubellier (2013)- Interpretations on seismic volume over two Miocene carbonate platforms in Central Luconia. In: Proc. Nat. Geoscience Conf., Ipoh (NGC2013), Geol. Soc. Malaysia, B07, p. 76-78. *(Extended Abstract)*
(online at: www.gsm.org.my/products/702001-101658-PDF.pdf)

Jamaludin, S.N.F., M. Pubellier & D. Menier (2014)- Relationship between syn-depositional faulting and carbonate growth in Central Luconia Province, Malaysia. Bull. Geol. Soc. Malaysia 60 (C.S. Hutchison Memorial Volume), p. 77-83.
(online at: https://gsmpubl.files.wordpress.com/2015/04/bgsm2014008.pdf)
(Seismic interpretation of Miocene carbonate platforms EX and FY in C Luconia Province shows carbonate buildups affected by syndepositional faulting. Faults formed during or just after final rifting of S China Sea)

Jamaludin, S.N.F., M. Pubellier & D. Menier (2017)- Structural restoration of carbonate platform in the southern part of Central Luconia, Malaysia. J. of Earth Science (China) 29, 1, p. 155-168.
(Tectonic events affected growth of Miocene carbonates in C Luconia. Three stages: pre-carbonate (Late Oligocene- E Miocene), syn-carbonate (M-L Miocene) and post-carbonate (Pliocene). Rifting of S China Sea and subduction of proto-South China Sea responsible for pre-carbonate faulting; movement of ancient Baram Line controls strike directions of normal faults in syn-carbonate stage. Subsidence and compaction due to overburden of clastics from prograding deltas main reason for gravitational tectonics in post-carbonate stage)

Jamaluddin, T.A. (1989)- Struktur sedimen dalam Formasi Crocker di kawasan Tamparulih, Sabah. Bull. Geol. Soc. Malaysia 24, p. 135-157.
(online at: www.gsm.org.my/products/702001-101307-PDF.pdf)
('Sedimentary structures of the Crocker Formation in the Tamparuli region, Sabah')

Janjuhah, H.T., A.M.A. Salim, M.Y. Ali, D.P. Ghosh & Meor H.A. Hassan (2017)- Development of carbonate buildups and reservoir architecture of Miocene carbonate platforms, Central Luconia, Offshore Sarawak, Malaysia. In: SPE/IATMI Asia Pacific Oil Gas Conf. Exhib, Jakarta, SPE-186979-MS, p. 1-12.
(online at: https://umexpert.um.edu.my/file/publication/00006513_154787_66167.pdf)

Janjuhah, H.T., A.M.A. Salim & D.P. Ghosh (2017)- Sedimentology and reservoir geometry of the Miocene carbonate deposits in Central Luconia, Offshore, Sarawak, Malaysia. J. Applied Sciences 17, 4, p. 153-170.
(online at: http://scialert.net/qredirect.php?doi=jas.2017.153.170&linkid=pdf)
(Eight carbonate facies in M-L Miocene reefal buildups of offshore C Luconia province))

Janjuhah, H.T., A.M.A. Salim, D.P. Ghosh & A. Wahid (2017)- Diagenetic process and their effect on reservoir quality in Miocene carbonate reservoir, offshore, Sarawak, Malaysia. In: M. Awang et al. (eds.) Proc. Int. Conf. Integrated Petroleum Engineering and Geosciences (ICIPEG2016), Kuala Lumpur 2016, Springer Verlag, p. 545-558.

Janjuhah, H.T., J.A.G. Vintaned, A.M.A. Salim, I. Faye, M.M. Shah & D.P. Ghosh (2017)- Microfacies and depositional environments of Miocene isolated carbonate platforms from Central Luconia, offshore Sarawak, Malaysia. Acta Geologica Sinica (English Ed.) 91, 5, p. 1778-1796.
(13 microfacies identified in core samples from well in C Luconia M-U Miocene reef complex)

James, D.M.D. (ed.) (1984)- The geology and hydrocarbon resources of Negara Brunei Darussalam. Muzium Brunei, p. 1-164.

Jamil, A.S.A., M. Anwar & E.S.P. Kiang (1991)- Geochemistry of selected crude oils from Sabah and Sarawak. Bull. Geol. Soc. Malaysia 28, p. 123-149.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1991007.pdf)
(35 crude oils from 15 offshore Sabah and Sarawak oil fields analyzed. Three oil types: (1) normal, non-waxy, (2) waxy and (3) biodegraded. Oils derived from landplant-derived organic matter)

Jasin, Basir (1991)- Some larger foraminifera and radiolaria from Telupid olistostrome, Sabah. Warta Geologi 17, 5, p. 225-230.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1991005.pdf)
(Telupid Olistostrome overlies Chert-Spilite Formation and ultramafic rocks, and probably result of submarine sliding. Large limestone boulder with Late Eocene Pellatispira, Biplanispira, Nummulites, Spiroclypeus, Discocyclina, Asterocyclina)

Jasin, Basir (1991)- The Sabah Complex- a lithodemic unit (a new name for the Chert Spilite Formation and its ultramafic association). Warta Geologi 17, 6, p. 253-259.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1991006.pdf)
(Propose to replace name Chert-Spilite Fm with Sabah Complex, including its ultramafic association. Scattered across Sabah. Early Cretaceous radiolaria in chert (Valanginian-Barremian; many Tan Sin Hok species; JTvG); mafic-ultramafic volcanic rocks must be older probably Late Jurassic)

Jasin, Basir (1992)- Significance of radiolarian cherts from the Chert-Spilite formation, Telupid, Sabah. Bull. Geol. Soc. Malaysia 31, p. 67-83.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1992005.pdf)
(Thin-bedded, reddish chert-shale in Telupid area, Sabah, overlying Late Jurassic or earliest Cretaceous ocean floor basalt, pillow lava and peridotite. No pelagic limestones. Dismembered ophiolite sequence exposed by obduction or thrusted during Late Cretaceous-Early Paleogene. Chert composed mainly of radiolaria: Early Cretaceous assemblage with Archaeodictyomitra brouweri, A. pseudoscalaris, Pseudodictyomitra lilyae, Hemicryptocapsa pseudopilula, etc. (many Tan Sin Hok species), most likely age Late Valanginian-Barremian. Nearby (overlying?) olistostrome with M Eocene limestone blocks)

Jasin, Basir (1993)- Early Cretaceous radiolarians from the chert pebbles in the Lupar Formation, Sarawak. Sains Malaysiana 23, 1, p. 71-79.

Jasin, Basir (1996)- Late Jurassic to Early Cretaceous radiolarian from chert blocks in the Lubok Antu melange, Sarawak, Malaysia. J. Southeast Asian Earth Sci. 13, 1, p. 1-11.

(Lubok Antu melange with blocks of mudstone, sandstone, chert, limestone, hornfels, basalt, gabbro and serpentinite in sheared, chloritised mudstone matrix (with Early Eocene nannofossils; Hutchison 2005). Common chert blocks in melange, with radiolarians of Late Tithonian, M Valanginian- Barremian and Late Albian- Cenomanian ages (suggesting subducted 'proto-South China Sea' oceanic crust older than this?; = equivalent of Danau Fm of Molengraaff 1902? JTvG))

Jasin, Basir (2000)- Geological significance of radiolarian chert in Sabah. Bull. Geol. Soc. Malaysia 44, p. 35-43.
(online at: http://gsmpubl.files.wordpress.com/2014/09/bgsm2000005.pdf)
(Sabah radiolarian cherts associated with ophiolitic rocks in Chert Spillite Fm and as blocks in chaotic deposits. Ophiolitic chert association from Bukit Pengaraban quarry near Kudat with 17 radiolarian taxa of Barremian-Aptian age (with many 'Tan Sin Hok species'; JTvG). Chert samples from Wariu Complex suggests Albian age. Radiolarian chert originally deposited on oceanic crust close to spreading center.Ophiolitic chert association is oldest rock in Sabah)

Jasin, Basir (2000)- Significance of Mesozoic radiolarian chert in Sabah and Sarawak. In: G.H. Teh et al. (eds.) Proc. Geol. Soc. Malaysia Ann. Geol. Conf. 2000, Pulau Pinang, p. 123-130.
(online at: https://gsmpubl.files.wordpress.com/2014/10/agc2000_17.pdf)
(Mesozoic cherts exposed in W Sarawak and Sabah dated by radiolarian faunas. Oldest chert with E Jurassic (Pliensbachian- E Toarcian Canoptum spp, Parasuum spp., etc.) in dacitic tuff of Binong Pass, overlying Serian Volcanics basalts-andesites. Chert sequence at base of Pedawan Fm with Late Tithonian-Berriasian radiolarians of Tethyan affinity. Lubok Antu melange with chert blocks of three ages: (1) late Tithonian with Parvicingula excelsa and Ristola altissima, (2) M Valanginian- Barremian with Cerops septemporata and (3) late Albian-Cenomanian. Radiolarian chert pebbles from Lupar Fm with Hauterivian-Barremian radiolaria. Chert from Sabah ophiolitic and melange associations Valanginian-Cenomanian. Cherts deep-marine and related to high plankton productivity in E Jurassic and Early to early Late Cretaceous)

Jasin, Basir (2002)- Middle Miocene planktonic Foraminifera and their implications in the geology of Sabah. Geol. Soc. Malaysia Ann. Geol. Conf. 2002, Kota Bharu, Bull. Geol. Soc. Malaysia 45, p. 157-162.
(online at: www.gsm.org.my/products/702001-100727-PDF.pdf)
(Planktonic foraminifera from M Miocene of Sabah. Garinono Fm melange in Bidu-Bidu area with early M. Miocene Gs. sicanus zone (N 8); overlying tuffaceous mudstone with early M Miocene zone N10 (Orbulina, Globorotalia peripheroacuta). Libong Tuffite Fm on Dent Peninsula with middle M Miocene Gr. fohsi fohsi Zone (N12) assemblages. Setap Shale Fm at Kampung Sungai Berdaun, Labuan, with N8 assemblages a.a.)

Jasin, Basir, A. Jantan, Lim P.S. & M.N. Abd. Rahman (1989)- Some microfossils from the Wariu Formation. Sains Malaysiana 18, 1, p. 57-75.

Jasin, Basir, I. Komoo & A. A.F. Abdullah (1993)- Some planktic foraminifera from the Setap Shale, Wilayah Persekutuan Labuan. Sains Malaysiana 22, 1, p. 35-45.
(Early Middle Miocene (N8) planktonics; see also B. Jasin 2002))

Jasin, Basir & A. Madun (1996)- Some Lower Cretaceous radiolaria from the Serabang Complex, Sarawak. Warta Geologi (Newsl. Geol. Soc. Malaysia) 22, 2, p. 61-65.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1996002.pdf)
(Serabang Complex of Sarawak, W of Kuching, not W continuation of Lubok Antu melange but older. Slaty shale with 11 species of radiolaria: Hemicryptocapsa spp., Archaeodictyomitra lacrimula, Pseudodictyomitra puga, Thanaria conica, T. pulchra, Parvicingula sp. and Xitus sp., indicating Valanginian- M Aptian age)

Jasin, Basir & U. Said (1999)- Significance of Early Jurassic radiolaria from West Sarawak. In: G.H. Teh (ed.) Proc. 9th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA ô98), Kuala Lumpur 1998, Bull. Geol. Soc. Malaysia 43, p. 491-502.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1999050.pdf)

(Pliensbachian (-E Toarcian) radiolarian chert in dacitic tuff-chert series, above Upper Triassic Serian Volcanic/ Sadong Fm, but unconformably? under Late Jurassic Kedadom/ Bau Fm. With Parahsuum simplum, P. directiporatum, Praecocaryomma media, P. decora, etc., suggest Parahsuum directiporatum Zone. Cherts deposited in deep marine marginal basin environment very close to (Serian?) island arc)

Jasin, Basir & U. Said (1999)- Some Late Jurassic- Early Cretaceous radiolarian faunas from the Pedawan Formation, Sarawak. In: G.H. Teh (ed.) Proc. 9th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA ô98), Kuala Lumpur 1998, Bull. Geol. Soc. Malaysia 43, p. 611-620.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1999060.pdf)
(Deepwater Late Tithonian- Berriasian radiolarian chert in basal part of 4500m thick latest Jurassic-Cretaceous Pedawan Fm, above Bau Limestone in Bau and Tubeh areas, Sarawak. With Loopus primitivus in lower part, Artocapsa(?) amphorella and Hsuum raricostatum in upper part of ~5m thick chert sequence)

Jasin, Basir, U. Said & A.D. Woei (1996)- Discovery of Early Jurassic radiolaria from the tuff sequence, near Piching, West Sarawak. Warta Geologi (Newsl. Geol. Soc. Malaysia) 22, 5, p. 343-347.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1996005.pdf)
(17 species of Early Jurassic (Late Pliensbachian- E Toarcian) radiolaria in >50m thick siliceous tuff sequence in Sarawak- Kalimantan border area S of Kuching. Sequence dips ~50° to SW. Overlies Serian Volcanics and probably basal part of Kedadom Fm. Key species Praeconocaryomma media, P. decora, Pantanellium sanrafaelense, Canutus indomitus, Canoptum anulatum and C. rugosum)

Jasin, Basir & Sanudin Tahir (1978)- Middle Miocene planktonic Foraminifera from the Libong Tuffite Formation, Sabah. Sains Malaysiana 16, 1, p. 85-95.
(see also Jasin 2002. Zone N10-N12 planktonic foraminifera in tuffaceous marine sediments)

Jasin, Basir & Sanudin Tahir (1988)- Barremian radiolaria from Chert-Spilite Formation, Kudat, Sabah. Sains Malaysiana 17, 1, p. 67-79.

Jasin, Basir, H. Sanudin Tahir & R.H.S. Abdul (1985)- Lower Cretaceous radiolaria from the Chert-Spilite Formation, Kudat, Sabah. Warta Geologi 11, 4, p. 161-162.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1985004.pdf)
(Brief paper on Lower Cretaceous radiolaria from chert above pillow lava in in Chert-Spilite Fm of N Sabah (ocean floor sediments). First paper to conclusively demonstrate Barremian age of basal radiolarites above ophiolite. Including several Tan Sin Hok 1927 species like Conosphaera tuberosa, Hemiaryptocapsa pseudopilula, Stiahocapsa pseudodecora and Archaeodictyomitra pseudoscalaris, suggesting possible Barremian- E Albian age)

Jasin, Basir, Sanudin Tahir & Z. Harun (1995)- Some Miocene planktonic foraminifera from Bidu-Bidu area, Sabah. Warta Geologi 21, 4, p. 241-246.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1995004.pdf)
(Garinono Fm in Bidu-Bidu area, C Sabah with chaotic melange/ debris flow deposits. Planktonic foraminiferal assemblage from melange mudstone matrix include Globigerinoides bisphericus and Praeorbulina sicana (N8, late E Miocene). Overlain by well bedded tuffaceous mudstone-sandstone sequence with Orbulina universa, O. suturalis and Globorotalia fohsi peripheroacuta (N10; early M Miocene). During M Miocene intense volcanic activity with widespread tuffaceous material in E Sabah)

Jasin, Basir, H.T. Sanudin & F.F. Tating (1991)- Late Eocene planktonic foraminifera from the Crocker Formation, Pun Batu, Sabah. Warta Geologi 17, 4, p. 187-191.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1991004.pdf)
(Red mudstone from Crocker Fm near Pun Batu, SW Sabah, rich in latest Eocene planktonic foraminifera, incl. Turborotalia cerroazulensis, Hantkenina alabamensis, Cribrokantkenina inflata, etc.)

Jasin, Basir & Selvarajah (1988)- Paleogene planktonic Foraminifera from Pulau Kalampunian Kecil, Sabah. Sains Malaysiana 17, 1, p. 99-113.

Jasin, Basir & Taj Madira Taj Ahmad (1995)- Some Paleogene planktonic foraminifera from the Lubok Antu melange, Sarawak, Malaysia. Warta Geologi 21, 3, p. 147-151.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1995003.pdf)
(13 species of planktonic foraminifera from mudstone matrix of Lubok Antu Melange of Lupar Valley, W Sarawak. Two assemblages:(1) early M Paleocene with Subbotina triloculinoides, S. velascoensis, Morozovella uncinata, M. trinidadensis, etc.; (2) M Eocene with Morozovella aragonensis, Acarinina bulbrooki, etc.. Blocks in melange include common Late Jurassic- Cretaceous radiolarian cherts)

Jasin, Basir & F. Tongkul (2000)- Fosil radiolaria daripada jujukan ofiolit Lembah Baliojong, Tandek, Sabah. In: Ibrahim Komoo & H.D. Tjia (eds.) Warisan Geologi Malaysia 3, LESTARI, UKM, p. 219-230.
('Radiolarian fossils in the ophiolite sequence in Baliojong Valley, Tandek, Sabah')

Jasin, Basir & F. Tongkul (2013)- Cretaceous radiolarians from Baliojong ophiolite sequence, Sabah, Malaysia. J. Asian Earth Sci. 76, p. 258-265.
(Baliojong ophiolite sequence Baliojong River in N Sabah consists of basalts, overlain by well-bedded cherts, mudstones and sandstones. Ophiolite sequence occurs as steeply-dipping, N-S oriented, overturned thrust slices in Cenozoic sediments. Two radiolarian assemblage zones in cherts: (1) Dictyomitra communis Zone (Barremian-Aptian) including Dictyomitra pseudoscalaris (Tan) and Pantanellium squinaboli (Tan) and (2) Pseudodictyomitra pseudomacrocephala Zone (Albian-Cenomanian). Cherts probably first sediment deposited on newly formed Cretaceous oceanic crust, intensely folded before deposition of Paleogene Crocker Fm)

Jennings, A.V. (1888)- Notes on the orbitoidal limestone of North Borneo. Geol. Magazine 5, 12, p. 529-532.
(Limestones of uncertain location, probably Silungen in Soubis and from Batu Gading, collected by Burls contains Discocyclina spp. and Asterocyclina, probably Eocene in age)

Johansson, M. (1999)- Facies analysis of the Plateau Sandstone (Eocene to Early Miocene?), Bako National Park, Sarawak, Malaysia. J. Asian Earth Sci. 17, p. 233-246.
(Sandstones near Kuching, W Sarawak, known as 'Plateau Sandstones', of possible Eocene- E Miocene age. Anomalous kerogen compositions, proximity of onlap surface and paleocurrent direction to NNE, suggest Bako Peninsula sands unrelated to Plateau Sst Fm in Klingang Range on Kalimantan border. New name Bako Sst. Very thick-bedded sst with lenses of conglomerates and sandy mudstones, formed in braided channel environment)

Johnson, H.D., J.W. Chapman & J. Ranggon (1989)- Structural and stratigraphic configuration of the Late Miocene Stage IVC reservoirs in the St. Joseph field, offshore Sabah, NW Borneo. Bull. Geol. Soc. Malaysia 25, p. 79-118.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1989c06.pdf)
(Large, structurally complex field along Lower Pliocene wrench fault zone. Main reservoir Late Miocene marine sands)

Johnson, H.D., T. Kuud & A. Dundang (1989)- Sedimentology and reservoir geology of the Betty field, Baram Delta province, offshore Sarawak, NW Borneo. Bull. Geol. Soc. Malaysia 25, p. 119-161.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1989c07.pdf)
(Moderate size oil field in Baram Delta Province. Structure combination E-W trending delta-related growth faulting and later Pliocene NE-SW trending folding. Reservoirs stacked Miocene shallow marine sandstones)

Johnson, H.D., S. Levell & A.H. Mohamad (1987)- Depositonal controls of reservoir thickness and quality distribution in Upper Miocene shallow marine sandstones (Stage IVD) of the Erb West Field, offshore Sabah. Bull. Geol. Soc. Malaysia 21, p. 195-220.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1987011.pdf)
(Erb West field off W Sabah NE-SW trending anticline, with hydrocarbons in 800' Late Miocene section with shallow marine sandstones. Five main sandstone facies)

Johnson, J.H. (1966)- Calcareous algae from Sarawak. In: N.S.Haile, The geology and mineral resources of the Suai-Baram area, North Sarawak, British Borneo Geol. Survey Mem. 13, p. 151-168.
(Descriptions of Late Eocene and E Miocene coralline algae from Bukit Besungai and Batu Gading, E Sarawak. Incl. Lithophyllum borneoense n.sp. and L. besalotos n.sp, Archaeolithothamnium spp., etc.)

Johnson, J.H. (1966)- Tertiary red algae from Borneo. Bull. British Museum (Natural History), Geology, 11, 6, p. 255-280.
(online at: http://archive.org/details/bulletinofbritis11brit)
(41 species of red calcareous algae from Eocene-E Miocene limestones of Melinau Gorge and Paleocene localities of upper Baram and Belukan River regions)

Johnston, J.C. & P.J. Walls (1975)- Geology of the Telupid area, Sabah. Geol. Survey Malaysia, Annual Rept. for 1973, p. 213-220.
(Incl. glaucophane-bearing metabasalts from Telupid area, possibly part of Chert-Spilite Fm of Sabah)

Jones, M., S. Burley, N. Sharp & N. Wilson (2016)- Pushing the boundaries of exploration in East Malaysia: building on early success. AAPG Int. Conf. Exhibition, Melbourne 2015, Search and Discovery Art.110226, 28p. *(Abstract + Presentation)*
(online at: www.searchanddiscovery.com/documents/2016/110226jones/ndx_jones.pdf)
(On Tertiary deep-water sandstones exploration by Murphy Oil in deep water region off NW Sabah, with Kikeh, etc. oil fields)

Jones, R., P. Restrepo-Pace, C. Goulder, Yee Ah Chim & C. Russell (2011)- The romance of NE Sabahǒs shelf-SB303 exploration potential. Proc. 2011 SE Asia Petroleum Expl. Soc. (SEAPEX) Conference, Singapore, 18, 26p. *(Abstract + Presentation)*
(Multiple hydrocarbon play types in Miocene carbonate buildups and clastics in Lundin blocks off NW Sabah)

Jong, J., S.A. Abdullah, S.M. Barker & T. Yoshiyama (2015)- Structural restoration and deformation history of the Bunguran and Sabah fold-thrust belts, NW Borneo. In: Asia Petroleum Geosc. Conf. Exh. (APGCE), Kuala Lumpur, 25992, p. 355-359. *(Extended Abstract)*
(Bunguran (= deepwater Rajang Delta) and Sabah (= deepwater Baram Delta) Fold-thrust belts result from complex interplay between gravity-driven deformation and episodic regional thin-skinned compression driven by South China Sea tectonics along margin)

Jong, J., P. Barber, L.H. Chim, Q.T. Tran, H. Kusaka, K. Muramoto & R. Uchimura (2013)- The petroleum systems of onshore West Baram Delta, Northern Sarawak, Malaysia. In: Petroleum Geoscience Conf. Exhib. (PGCE 2013), Kuala Lumpur, O2, 4p. *(Extended Abstract)*
(Onshore part of W Baram Delta petroleum province in N Sarawak with two distinct petroleum system: (1) southern overmature gas system, sourced from deeply buried Eo-Oligocene basinal shales, charging wrench-induced traps like Engkabang Anticline; (2) permit-wide oil and gas system sourced from peak mature Mid-Late Miocene carbonaceous shales-coals in synclines, charging inversion and compressional fold structures. Expulsion and charge of traps started in Late Miocene and continues to present-day)

Jong, J., P. Barber, Q.T. Tran & R. Uchimura (2015)- The petroleum systems of onshore West Baram Delta, Northern Sarawak, Malaysia. Proc. SE Asia Petroleum Expl. Soc. (SEAPEX) Conf., Singapore 2015, 5.2, 4p. *(Extended Abstract + Presentation)*
(Onshore W Baram Delta petroleum province in N Sarawak with Eocene-Recent sediment succession, affected by three main deformation episodes: (1) late Cretaceous- Eocene (80-36 Ma) block faulting, with Eocene (rel. tight) platform carbonates on local highs (2) late Oligocene- M Miocene (30-20.5 Ma) wrench movement along West Baram-Tinjar Line, (3) M Pliocene- Recent (4.0-0 Ma) uplift and compression/inversion (e.g. Miri Anticline). With 2014 Adong Kecil West-1 discovery near Miri. Source rocks: (1) southern gas system from overmature Eo-Oligocene basinal shales, (2) northern oil-gas system from mature M-L Miocene carbonaceous shales/ coals in synclinal areas)

Jong, J. & S. Barker (2015)- Sequence stratigraphy, deformation history and gross deposition environmental study of deepwater Block 2F. In: Asia Petroleum Geoscience Conf. Exhib. (APGCE 2015), Kuala Lumpur, p. 323-327.
(Block 2F in Bunguran Trough, deepwater Rajang Delta area, off Sarawak in S China Sea. Trough evolved as tectonically-induced sag basin. Oldest known rocks shelfal clastics of E Miocene Cycles I/II, now buried >6000m. Late Miocene Cycle V ~3000m of slope and toe-of-slope deposits, overlain by Plio-Pleistocene sediments with turbiditic fairways forming main objectives in current exploration campaign)

Jong, J., S. Barker, F.L. Kessler & T.Q. Tan (2014)- The Sarawak Bunguran fold belt: structural development in the context of South China Sea tectonics. In: Proc. 8th Int. Petrol. Techn. Conf. (IPTC), Kuala Lumpur, 18197-MS, 30p.
(Bunguran Trough in offshore Sarawak Deepwater Block 2F with folded Neogene anticlines with reverse faults and thrusts in cores. Bunguran Fold Belt is deepwater setting of Rajang Delta/ W Luconia Delta, for which gravity sliding was advocated as mechanism of deformation. However, steep folds in anticline cores with mainly reverse faults and anticlines in zones of thicker sediment, suggest inversions of sediment depocentres by compressional tectonics. Foldbelt deformation driven by both gravity and regional compression)

Jong, J., S. Barker, F.L. Kessler & T.Q. Tan (2015)- One basin with several sediment sources: stratigraphic records of the Bunguran Trough, Central South China Sea. In: Tectonic evolution and sedimentation of South China Sea region, AAPG Workshop Kota Kinabalu, Search and Discovery Art. 30405, 7p. *(Ext. Abstract)*
(online at: www.searchanddiscovery.com/documents/2015/30405jong/ndx_jong.pdf)
(Bunguran Trough intra-continental deepwater basin in W Luconia Province, off Sarawak in S China Sea. Sag basin, where two major lineaments crossed. Oldest known rocks E Miocene shelfal clastics, now buried at >6000m, overlain by U Miocene Cycle V 3000m of slope and toe-of-slope deposits, overlain by distal muddy sediments of Muda Fm equivalent. All Pleistocene and older units underwent multiple deformations. Main Neogene sediment supply shifted from Natuna High to Rajang Delta, then back to Natuna area in Pliocene)

Jong, J., S. Barker, F.L. Kessler & T.Q. Tan (2017)- Basin with multiple sediment sources: tectonic evolution, stratigraphic record and preservation potential of the Bunguran Trough, South China Sea. Berita Sedimentologi 38, p. 5-48.
(online at: https://drive.google.com/file/d/0B35lLH-Cki2NV01LNEVCcGl2Z2M/view)
(Deepwater Bunguran Trough off Sarawak is intra-continental pull-apart basin in deepwater Rajang/West Luconia Delta province. Oldest stratigraphy shelf clastic deposits Late Oligocene Cycle I (= Gabus Fm of Natuna Basin), now buried to >7000m. Sediments sourced from: (1) Natuna Arch in Oligocene- E Miocene and Late Pliocene- Pleistocene (feldspatic and quartz-rich turbidites); (2) Rajang/ W Luconia Delta (Neogene) and (3) minor contributions from Dangerous Grounds/ N Luconia and C Luconia Platform areas to N and E)

Jong, J., H.A.B.M. Idris, P. Barber, F.L. Kessler, Tran Q. Tan & R. Uchimura (2017)- Exploration history and petroleum systems of the onshore Baram Delta, northern Sarawak, Malaysia. Bull. Geol. Soc. Malaysia 63 (Geol. Soc. Malaysia 50th Anniversary Issue 1), p. 117-143.
(online at: www.gsm.org.my/products/702001-101705-PDF.pdf)
(Review of onshore Baram Delta province in N Sarawak, with M Eocene- Holocene succession and 1910 Miri oilfield discovery. Three episodes of deformation: (1) Late Cretaceous- Eocene (79.5-36 Ma) block faulting, (2) Late Oligocene- M Miocene (30-20.5 Ma) wrench movement and folding; (3) M Pliocene (4 Ma)- Holocene uplift and compressional folding. Two major anticlinal trends: Engkabang-Karap in S, Miri-Asam Paya in N. Two distinct petroleum systems: (1) overmature gas in S, sourced from deep Eo-Oligocene basinal shales with reworked terrestrial organic matter. Earlier oil charge probably in Oligocene before late basin reversal; (2) oil and gas system from peak-mature M-L Miocene carbonaceous shales and coals in synclines, charging inversion compressional structures along N Miri-Asam Paya anticlinal trend, and Miocene at Engkabang-Karap Anticline. Expulsion and charge started in Late Miocene and is continuing to present-day. Exploration results of Eo-Oligocene carbonate play disappointing. Onshore Baram Delta still contains attractive plays)

Jong, J., K.L. Kessler, S. Noon & T.Q. Tan (2016)- Structural development, depositional model and petroleum system of Paleogene carbonate of the Engkabang-Karap Anticline, onshore Sarawak. Berita Sedimentologi 34, p. 5-25.
(online at: www.iagi.or.id/fosi/files/2016/01/BS34-01142016_FINAL.pdf)
(400 km2 large Eocene- Oligocene carbonate body of Engkabang-Karap Anticline, onshore Sarawak (equivalent of Melinau Lst). Tight reservoir facies encountered in two Engkabang wells)

Jong, J., M.A. Khamis, W.M. Z.W. Embong, T. Yoshiyama & D. Gillies (2016)- A sequence stratigraphic case study of an exploration permit in Deepwater Sabah: comparison and lessons learned from pre- versus post-drill evaluations. Proc. 40th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA16-51-G, 24p.
(Deepwater Sabah basin with discontinuous Miocene submarine fan reservoir sands)

Jong, J., D.A. Nuraini & M.A. Khamis (2014)- Basin modeling study of deepwater Block R (DWR) offshore Sabah and its correlation with surface geochemical analyses. Int. Petroleum Technology Conference (IPTC), Kuala Lumpur, IPTC-18186-MS, p. 1-11.

Kaeng, G.C., S. Sausan & Z. Simatupang (2016)- Overpressure mechanisms in compressional tectonic of Borneo deepwater fold-thrust belt. Proc. 40th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA16-496-G, 9p.
(Review of mechanisms that caused high overpressure in N Borneo deep-water fold-thrust belts. Active deposition over ongoing lateral compression results in complex sediment compaction mechanism)

Kakizaki, Y., T. Ishikawa, J. Matsuoka & A. Kano (2010)- Lithostratigraphy and Sr-isotope ages of the Bau Limestone Formation of Northwestern Borneo. Japan Geoscience Union Mtg. 2010, Makahari, Chiba 1010, p.
(Abstract only)
(Bau Limestone from two quarries (Marup, SSF; Gunung Panga) 30 km SW of Kuching, W Sarawak. Massive reefal limestone locally rich in corals and rudists. Bunkit Akut quarry 40 km SW of Kuching well-bedded, deeper water equivalent. Sr-isotopes suggest Late Oxfordian- E Kimmeridgean ages)

Kakizaki, Y. & A. Kano (2009)- Lithology and reefal fauna of the Bau Limestone Formation in Northwestern Borneo, Malaysia. J. Geological Soc. Japan 15, p. 13-14.
(Brief report, in Japanese).

Kakizaki, Y., H. Weissert, T. Hasegawa, T. Ishikawa, J. Matsuoka & A. Kano (2013)- Strontium and carbon isotope stratigraphy of the Late Jurassic shallow marine limestone in western Palaeo-Pacific, northwest Borneo. J. Asian Earth Sci. 73, p. 57-67.
(Sr and C isotope stratigraphy of 202m thick shallow marine carbonate section of Late Jurassic Bau Lst at SSF quarry, SW Sarawak, which was deposited in W Paleo-Pacific. Sr ratios of rudists suggest age of section is latest Oxfordian (155.95 Ma)- Late Kimmeridgian (152.7 Ma), consistent with previous biostratigraphy. δ13C values of Bau Limestone generally ~1‰ lower than Tethyan values)

Kamis, A.M. & W.R. van der Vlugt (1988)- The impact of modern seismic in an old field. Proc. SE Asia Petroleum Expl. Soc. (SEAPEX) Conf. 8, p. 17-27.
(On the use of seimic in resolving structural complexity on Seria Field, Brunei. Field doiscovered in 1928, 769 wells drilled, Oil-in-place ~2.8 billion barrels. ENE-WSW- trending faulted anticline, with Mio-Pliocene deltaic reservoir sandstones)

Kanno, S. (1978)- Brackish molluscan fauna (Upper Eocene) from the Silantek Formation in West Sarawak, Malaysia. In: T. Kobayashi et al. (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 19, p. 103-112.
(Descriptions of brackish water bivalves Corbula dajacensis Martin, Taeniodomus gracilis Kruse, Geloina hashimoto n.sp. and gastropod Paludomos)

Karimi, S.B.S, J.J. Lobao & M.M. Wannier (1997)- Seismic identification of depositional processes in a turbidite fan environment, Deepwater Block SB-G, NW Sabah. Bull. Geol. Soc. Malaysia 41, p. 13-29.
(online at: www.gsm.org.my/products/702001-100873-PDF.pdf)
(Seismic interpretation of Late Miocene- E Pliocene Upper Lingan Fan Unit in deepwater Sabah area, 120 km NW of Kota Kinabalu. With examples of seismic facies of slope channels, leveed channels, mounded facies, etc. (see also Mohamad & Lobao 1997))

Kasama, T., H. Akimoto, S. Hada & G. Jacobson (1970)- Geology of the Mt. Kinabalu area, Sabah, Malaysia. J. Geosciences Osaka City University 13, p. 113-148.
(http://dlisv03.media.osaka-cu.ac.jp/infolib/user_contents/kiyo/DBe0130006.pdf)
(Reconnaissance study of Mt Kinabalu area, at junction of Borneo and Sulu tectonic arcs. Mt Kinabalu 4000m high and composed of granite- granodiorite with K-Ar ages between 7.6- 9.0 Ma. A few younger isotope ages of 1.3 and 1.7 Ma may represent time of rapid uplift. Surrounded by Tertiary sediments of Crocker Fm and Tenumpok Fms, with 1km or more wide metamorphic aureole with hornfels and gneiss. Crocker Fm isoclinally folded, mainly in E-M Miocene (~19-20 Ma), mainly S dipping. E-W belt of ultrabasic rocks S of Mt. Kinabalu.)

Kayes, A.D. (2012)- Synthetic seismic validation of reservoir models of the carbonate gas fields in offshore Sarawak, Malaysia. AAPG Int. Conv. Exhib., Singapore 2012, Search and Discovery Art. 41087, p. 1-29.
(online at: www.searchanddiscovery.com/documents/2012/41087kayes/ndx_kayes.pdf)
(Shell Sarawak Gas Asset 20 producing gas fields with >40 Tcf of gas in place. Seismic modeling constrains geological models of Miocene carbonate reservoirs)

Keij, A.J. (1964)- Upper Palaeocene *Distichoplax* Limestones of Kudat Peninsula and Pulau Banggi, Sabah. Geol. Survey Borneo Region of Malaysia, Annual Report 1963, p. 153-154.
(Suangpai quarry in Tajau area of N Kudat Peninsula has basal marl with Late Paleocene planktonic forams, overlain by dense white limestone with Discocyclina, Aktinocyclina, Asterocyclina (Ta zone) and the algae Distichoplax biserialis, restricted to Paleocene- E Eocene in other areas of the Tethys. No maps or other stratigraphy info)

Keij, A.J. (1964)- *Distichoplax* from Kudat Peninsula and Banggi island, Sabah, Borneo. Revue Micropaleontologie 7, 2, p. 115-118.
(Well-illustrated account of Paleocene- E Eocene ?algae Distichoplax biserialis, commonly found in thin limestones across Sarawak and W Sabah with Linderina, Opertorbitolites. In Suangpai Lst of N Kudat Peninsula, with common Discocyclina, Aktinocyclina, Nummulites and Alveolina and nearby marls with Late Paleocene planktonic forams)

Keij, A.J. (1964)- Late Cretaceous and Palaeogene arenaceous foraminifera from flysch deposits in northwestern Borneo. Malaysia Geol. Survey Annual Report 1964, p. 155-158.
(Late Cretaceous- Paleogene flysch deposits across >550 mile belt from Sarawak to Sabah (Crocker Range). Forams dominated by monotonous bathyal arenaceous 'Bathysiphon-Cyclammina-Trochammina' assemblages, with rare calcareous benthics and planktonic foraminifera. Subtle varations between relative abundances probably reflect environmental factors like oxygenation)

Keij, A.J. (1964)- Neogene to Recent species of *Cytherelloidea* (Ostracoda) from northwestern Borneo. Micropaleontology 10, 4, p. 415-430.
(Cytherelloidea common in Neogene-Recent ostracode assemblages of N Borneo. Fifteen species, ten new)

Kessler, F.L. (2009)- Observations on sediments and deformation characteristics, Sarawak Foreland, Borneo Island. Warta Geologi 35, 1, p. 1-10.
(online at: https://gsmpubl.files.wordpress.com/2014/09/warta35_1.pdf)

Kessler, F.L. (2009)- The Baram Line in Sarawak: comments on its anatomy, history and implications for potential non-conventional gas deposits. Warta Geologi 35, 3, p. 105-110.
(online at: https://gsmpubl.files.wordpress.com/2014/09/warta35_3.pdf)

(NW-SE trending Baram Line is tectonic discontinuity between stable Luconia Block and mobile Baram Delta Block, acting as boundary for extension and compression in Baram Delta and Sabah. Originated in E-M Miocene, when Baram-Sabah Foredeep opened. Potential for non-conventional gas in Setap Shale recognized)

Kessler, F.L. (2012)- The Jokut Quarry observations on an intensely folded carbonate sequence North-West of Mulu, Sarawak. Warta Geologi 38, 1, p. 1-3.
(online at: https://gsmpubl.files.wordpress.com/2014/09/warta38_1.pdf)
(Jokut Quarry almost depleted limestone quarry NE of Mulu Massif. Probably N-most known occurrence of carbonates in this part of Sarawak. Exposed U Oligocene (Lower Te) Selidong Fm carbonates steeply dipping, intensely folded and fractured, floating in intensely folded shales and slates. Carbonates mainly mudstones to packstones, with mounded features)

Kessler, F.L. (2013)- The Batu Gading, Bukit Besungai Hollystone Quarry- observations on an tectonically isolated carbonate sequence northeast of Long Lama, Sarawak. Warta Geologi 39, 1, p. 1-4.
(online at: https://gsmpubl.files.wordpress.com/2014/09/warta-39_1.pdf)
(Batu Gading Hollystone Quarry ENE of Long Lama, one of several isolated carbonate blocks, tectonically confined by regional faults, the nature of which remains uncertain. Carbonates in quarry ~50m thick and of Late Eocene and E Miocene (should be Late Oligocene?; JTvG) ages (E Oligocene missing), predominantly reefal, deposited on wave-cut shelf formed by Rajang Gp deep marine clastics. Carbonate body at least three unconformities, second one angular (forams studied by Adams & Haak, 1962))

Kessler, F.L. & J. Jong (2014)- Habitat and C-14 ages of lignitic terrace deposits along the northern Sarawak coastline. Bull. Geol. Soc. Malaysia 60 (C.S. Hutchison Memorial Issue), p. 27-34.
(online at: https://gsmpubl.files.wordpress.com/2015/04/bgsm2014003.pdf)
(Quaternary lignitic transgressive terrace deposits in coastal locations in Miri area (C-14 ages 28.6- 8.2 ka; Late Pleistocene- E Holocene), unconformably over Pliocene sediments. Thickness 1.5- 7.5 m. Now at different elevations (14-38m altitude) and appear to be block-faulted, implying tectonic movements in Holocene)

Kessler, F.L. & J. Jong (2014)- The origin of Canada Hill- a result of strike-slip deformation and hydraulically powered uplift at the Pleistocene/Holocene border? Bull. Geol. Soc. Malaysia 60 (C.S. Hutchison Memorial Issue), p. 35-44.
(online at: https://gsmpubl.files.wordpress.com/2015/04/bgsm20140041.pdf)
(Canada Hill in centre of Miri, Sarawak, roofed by Pleistocene/Holocene terrace deposits, implying very young uplift of complex anticline. Structure explained by strike-slip deformation, in conjunction with diapyric pillow of Setap Fm clay)

Kessler, F.L. & J. Jong (2015)- Incision of rivers in Pleistocene gravel and conglomeratic terraces: further circumstantial evidence for the uplift of Borneo during the Neogene and Quaternary. Bull. Geol. Soc. Malaysia 61, p. 49-57.
(online at: www.gsm.org.my/products/702001-101676-PDF.pdf)
(Incised Pleistocene gravel beds and conglomerates common feature of Baram, Limbang and Temburong drainage systems in NW Sarawak and Brunei. Incision from 9-76 m likely result of strong precipitation, combined with ongoing uplift. Conglomerates almost exclusively from Lower Miocene Meligan Sst, and deposited in nested fluvial terraces. Uplift may be ongoing present day)

Kessler, F.L. & J. Jong (2015)- Tertiary uplift and the Miocene evolution of the NW Borneo shelf margin. Berita Sedimentologi 33, p. 21-46.
(online at: www.iagi.or.id/fosi/files/2015/09/BS33-Marine-Geology-of-Indonesia-II-R1.pdf)
(In NW Borneo transition from muddy M Miocene shelf to unusually sandy one attributed to (1) rise of Borneo part of Sundaland in M-L Miocene, caused by tectonic compression and (2) availability, through erosion of Rajang/Crocker sand source. E-M Miocene Cycle III 'Setap Shale' in Baram Delta rel. lean in sand. First massive regional sand pulse in Baram Delta and Sabah during Cycle IV (Serravallian), post-MMU/DRU times. Continued sand supply established shelf edge that remained almost stationary throughout Mid Cycle V)

Kessler, F.L. & J. Jong (2016)- Northwest Sarawak: a complete geologic profile from the Lower Miocene to the Pliocene covering the Upper Setap Shale, Lambir and Tukau Formations. Warta Geologi 41, 3-4, p. 45-51.
(online at: https://gsmpubl.files.wordpress.com/2016/03/warta41_3-4.pdf)
(~1000m thick outcrop section along 3-4 km of new Miri- Long Lama road (NW Sarawak), with two major regional unconformities: (1) M Miocene Unconformity (MMU) between U Setap Shale and Lambir Fm, and (2) Mio-Pliocene angular unconformity between folded Lambir rocks and unfolded Tukau Fm)

Kessler, F.L. & J. Jong (2016)- Paleogeography and carbonate facies evolution in NW Sarawak from the Late Eocene to the Middle Miocene. Warta Geologi 42, 1-2, p. 1-9.
(online at: https://gsmpubl.files.wordpress.com/2016/08/warta42_1_2.pdf)
(After Paleocene-E Eocene Sarawak Orogeny (~40-36 Ma) shallow shelf developed in NW Sarawak, which included Luconia/Tinjar terranes and rimmed recently emerged Rajang Gp hinterlands. Late Eocene benthic foraminiferal limestone banks and ramps developed on sheltered shoals. By E-M Oligocene carbonate deposition slowed. Second episode of carbonate deposition in E-M Miocene, with small coral-algal bioherms)

Kessler, F.L. & J. Jong (2017)- Examples of fault architecture and clay gouging in Neogene clastics of the Miri area, Sarawak. Warta Geologi 43, 1, p. 15-20.
(online at: www.gsm.org.my/products/702001-101701-PDF.pdf)
(Good correlation between normal fault throw and fault gouge thickness)

Kessler, F.L. & J. Jong (2017)- Carbonate banks and ramps on the northern shore of Palaeogene and Early Neogene Borneo: observations and implications on stratigraphy and tectonic evolution. Bull. Geol. Soc. Malaysia 63 (Geol. Soc. Malaysia 50th Anniversary Issue 1), p. 1-26.
(online at: www.gsm.org.my/products/702001-101710-PDF.pdf)
(In NW Sarawak two independent carbonate systems: Late Eocene-Oligocene foraminiferal limestone banks and E-M Miocene coral-algal buildups. No outcrop or well shows continuity of carbonate deposits from Late Eocene to M Miocene. Eo-Oligocene carbonate system formed during deepening of NW Borneo foredeep after Paleocene- E Eocene Sarawak Orogeny; E-M Miocene carbonates originated as foredeep shallowed and eventually disappeared with establishment of shallow, clastic shelf)

Kessler, F.L. & J. Jong (2017)- The roles and implications of several prominent unconformities in Neogene sediments of the greater Miri area, NW Sarawak. Warta Geologi 43, 4, p. 1ï 8.
(Neogene sequence of greater Miri area in NW Sarawak with up to four Neogene unconformities: well-established Mid-Miocene Unconformity (MMU; ~15.5 Ma?) and less well-defined Shallow Regional Unconformity (SRU; ~10 Ma), Intra-Pliocene Unconformity (IPU; 3.6 Ma) and Lower Pleistocene Unconformity (LPU; ~1.6-1.8 Ma). Timings yet-to-be fully established)

Kessler, F.L. & J. Jong (2017)- A study of Neogene sedimentary outcrops of the Greater Miri area- can clay gouging be calibrated in outcrops and shallow subsurface boreholes? Berita Sedimentologi 39, p. 5-24.
(online at: www.iagi.or.id/fosi/files/2017/12/FOSI_BeritaSedimentologi_No39_Dec2017.pdf)
(Fault zones with clay gouge in outcrops and shallow boreholes of Late Miocene- E Pliocene deltaic clastics show no fault sealing capability. Probably due to weathering)

Kessler, F.L. & J. Jong (2018)- Hydrocarbon retention in clastic reservoirs of NW Borneo- examples of hydrocarbon trap, reservoir, seal and implications on hydrocarbon column length. Berita Sedimentologi 40, p. 6-44.
(online at: http://www.iagi.or.id/fosi/berita-sedimentologi-no-40.html)
(Hydrocarbon column length offshore Sarawak, Brunei and NW Sabah mainly controlled by effective and laterally continuous top seal. Seal capacity affected by mineralogy, grain size, diagenesis and lateral continuity. Hydrocarbon columns tend to be longer in clay-prone environments, like outer shelf and deepwater turbidite environments (av. ~250m), and shorter in sand rich shallow marine- deltaic settings (av. 30m))

Khan, A.A., W.H. Abdullah, Meor H. Hassan & K. Iskandar (2017)- Tectonics and sedimentation of SW Sarawak basin, Malaysia, NW Borneo. J. Geol. Soc. India 89, 2, p. 197-208.

(SW Sarawak basin S-ward sloping basement characterized by passive margin tectonics: Triassic extension, Cretaceous transpression and Oligo-Miocene compression. Deeper basin zone between Schwaner Mts block to S and SW Sarawak basin to N. E-W trending Cretaceous carbonate platform in SW Sarawak basin signify shelf zone where shallow marine sedimentation progressed during Cretaceous transpression. Late Cretaceous- E Eocene Kayan Sst unconformable on Cretaceous Pedawan Fm. NW-SE trending Oligo-Miocene continental volcanic arc. Back-arc extension prevailed in Oligo-Miocene. SW Sarawak basin two sub-basins (Senibong in W, Kuching in E), with wide range of transpressive features. Sri Aman marginal sea-basin characterized by oceanic assemblages, ophiolite, serpentinite and pillow basalt)

Kho, C.H. (1968)- Bintulu Area, Central Sarawak, East Malaysia. Explanation of sheet 3/113/13. Geol. Survey Malaysia, Borneo region, Report 5, p. 1-83.
(1:50,000 scale geologic map of area around Bintulu town, C Sarawak, with primary purpose evaluation of Miocene coal beds. Oldest beds up to 14,000' thick Nyalau Fm marine-paralic clastics with zone Te4- Te5 (latest Oligocene- E Miocene) foraminifera limestones with Miogypsinoides and Heterostegina borneensis and Lepidocyclina (Eulepidina), etc. Overlain by E Miocene Setap Shale Fm (or lateral equivalent of Nyalau Fm.; Hutchison 2005). Folded in E Pliocene)

King, R.C., G. Backe, C.K. Morley, R.R. Hillis & M.R.P. Tingay (2010)- Balancing deformation in NW Borneo: quantifying plate-scale vs. gravitational tectonics in a delta and deepwater fold-thrust belt system. Marine Petroleum Geol. 27, 1, p. 238-246.
(GPS show 4-6 mm/yr of NW Borneo plate-scale shortening, not accommodated by plate-scale structures. Total shortening observed in Baram delta toes does not balance against active extension in delta top; additional shortening therefore attributed to plate-scale shortening across NW Borneo produced by far-field compression)

King, R.C., R.R. Hillis, M.R.P. Tingay & A.R. Damit (2010)- Present-day stresses in Brunei, NW Borneo: superposition of deltaic and active margin tectonics. Basin Research 22, 2, p. 236-247.
(Two present-day stress provinces previously identified across Baram Delta System: (1) inner shelf inverted province with margin-normal (NW-SE) max. horizontal stress orientation and (2) outer shelf extension province with margin-parallel (NE-SW) max. horizontal stress. Borehole breakouts from 12 petroleum wells confirm margin-normal max. horizontal stress orientations of inverted province (mean max. hor. stress orientation of ~117°). NW Borneo continental margin currently tectonically quiescent)

King, R.C., R.R. Hillis, M.R.P. Tingay & C.K.Morley (2009)- Present-day stress and neotectonic provinces of the Baram Delta and deepwater fold-thrust belt. J. Geol. Soc., London, 166, p. 197-200.
(Present-day stress orientation measurements across Baram delta and deepwater delta toe fold-thrust belt)

King, R.C., M.R.P. Tingay, R.R. Hillis, C.K. Morley & J. Clark (2010)- Present-day stress orientations and tectonic provinces of the NW Borneo collisional margin. J. Geophysical Research 115, B10415, p. 1-15.
(online at: http://onlinelibrary.wiley.com/doi/10.1029/2009JB006997/epdf)
(Borehole deformation of 55 petroleum wells across NW Borneo collisional margin combined with seismic and outcrop data, define seven tectonic provinces. Baram Delta- Deepwater Fold-Thrust Belt deltaic gravitational tectonics with 3 provinces (inner shelf inverted province, outer shelf extension province and slope to basin floor compression province). Shale and minibasin provinces offshore Sabah. In Balingian province, sH is ESE-WNW, reflecting ESE absolute Sunda plate motions due to absence of thick detachment seen elsewhere in NW Borneo. C Luconia province poorly constrained orientations)

Kirk, H.J.C. (1957)- The geology and mineral resources of the Upper Rajang and adjacent areas. Geological Survey Dept., British Territories in Borneo, Kuching, Memoir 8, p. 1-181.

Kirk, H.J.C. (1961)- A preliminary account of Cretaceous to Recent volcanic activity in relation to the geological structure of British Borneo. Proc. 9th Pacific Science Congress, Bangkok 1957, 12, p. 192-197.
(Also in 'Annual Report Geological Survey Dept., British Territories in Borneo, 1957, p. 23-29)
(Two main periods of volcanic activity in North Borneo (Sabah): basalt-spilite interbedded with Cretaceous-Eocene sediments and widespread Upper Tertiary- Quaternary basalt- andesite-dacite association eruptions)

Kirk, H.J.C. (1962)- The geology and mineral resources of the Semporna Peninsula, North Borneo. Geological Survey Dept., British Territories in Borneo, Kuching, Memoir 14, p. 1-178.
(Also summary in British Borneo Geol. Survey Ann. Rept. 1960, p. 106-123). Semporna Peninsula of SE Sabah, S of Darvel Bay, with four main rocks units: (1) intensely folded- thrusted Cretaceous-Eocene Chert-Spilite Fm of greywacke with basalts, chert, Madai-Baturong Lst (Cretaceous seamount) and some gabbro, serpentinite; (2) Oligo-Miocene (Td-Tf) Kalumpang Fm folded clastics, limestones and volcanics (with serpentinite 'intrusions'); (3) Pliocene-Quaternary andesites and basalts; (4) Quaternary sediments. Abundant intrusives of different ages and composition. Most fertile soils on outcrops of younger volcanics, particularly olivine basalts)

Kirk, H.J.C. (1963)- Pliocene and Quaternary volcanic activity in British Borneo. In: F.H. Fitch (ed.) Proc. British Borneo Geological Conference 1961, Kuching, Geological Survey Dept., British Territories in Borneo, Bull. 4, Kuching, p. 137-142.
(Two groups of Pliocene and Quaternary volcanism: (1) Upper Rajang area of E Sarawak and (2) Semporna Peninsula of SE Sabah (continuation of Sulu Arc). Mainly explosive eruptions of andesite, dacite and rhyolite in Pliocene, followed by extensive olivine basalts in Quaternary)

Kirk, H.J.C. (1966)- The mineralogy of Pinanduan copper deposit, Sabah, Malaysia. Geol. Survey Malaysia, Borneo Region, Annual Report 1965, p. 196-204.

Kirk, H.J.C. (1967)- The igneous rocks of Sarawak and Sabah. Geol. Survey Malaysia, Borneo Region, Kuching, Bull. 5, p. 1-210.
(see also 'preview' in Borneo Region Malaysia Geol. Survey, Annual Report 1963, p. 82-94. Incl. M Jurassic K-Ar date forbiotite in hornfels in Segama Valley, Sabah, suggesting pre-Cretaceous metamorphic basement?)

Kirk, H.J.C. (1967)- The Mamut copper prospect, Kinabaluh, Sabah. Geol. Survey Malaysia, Borneo Region, Kuching, Bull. 8, p. 68-80.

Kivior, I., S. Markham, S. Damte, S. Randle, M. Shimada, J. Jong, H. Kusaka & TranN Quoc Tan (2011)- Mapping regional sedimentary horizons in the onshore Baram Delta, Sarawak, from magnetic and gravity data using Energy Spectral Analysis. In: Proc. Petroleum Geology Conference and Exhibition (PGCE), Kuala Lumpur, Malaysia, p.

Kob, M.R.C. & M.Y. Ali (2008)- Regional controls on the development of carbonates in East Natuna Basin and Luconia area. Proc. 32nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA-08-G-078, 6p.
(E Natuna basin- Luconia platforms off NW Borneo between areas of subsidence/ faulting in N and compressional tectonics in S. Extensive development of carbonates in Early -Late Miocene. Late Oligocene- E Miocene extension in Luconia and nearby areas, followed by episodic compression in M Miocene. Areas near main uplifted region in E and SW dominated by clastics, carbonates thrived on rifted margin in W. Similar setting in E Natuna. Subsequent compression resulted in inversion and folding, with uplift of parts of E Natuna-Luconia region. Folds formed sites for latest M-Late Miocene carbonate growth. Sea level rise at base Pliocene drowned most of carbonate in region except few buildups in NW, which still thrive today)

Kob, M.R.C. & M. Mohamed (1995)- Chronostratigraphy of Miocene turbiditic sequence of Sabah Basin from nannofossil assemblages. In: G.H. Teh (ed.) Proc. AAPG-GSM Int. Conf. Southeast Asian basins: oil and gas for the 21st century, Kuala Lumpur 1994, Bull. Geol. Soc. Malaysia, p. 143-163.
(online at: www.gsm.org.my/products/702001-100955-PDF.pdf)
(Offshore Sabah Basin is Neogene trench-associated basin filled with progradational cycles of marine and coastal sediments. Age-determinations of M-L Miocene strata through quantitative nannofossil analysis more reliable than foraminifera due to floods of reworked forms. Dominant indigenous assemblages differentiated from reworked assemblages through quantitative analysis)

Kob, M.R.C., J. Norazlina, A.H. Samsudin & A. Mansor (2015)- Tectono-stratigraphic evolution and hydrocarbon prospectivity of the North Tarakan Basin, Onshore Sabah. In: Asia Petrol. Geoscience Conf. Exhib. (APGCE), Kuala Lumpur, 26151, 5p. *(Extended Abstract)*
(SE Sabah N Tarakan basin Paleogene-Neogene sediments evolved as foreland basin in relation to thrusting of Rajang fold-thrust belt (accretionary complex). Basin uplifted and eroded in stages in E Miocene-Pliocene. E-M Miocene Tanjong, Kapilit and Kalabakan Fms potential oil and gas resources. Conventional traps due to thrust and wrench tectonics. Late Eocene unconformity between Sapulut and Labang Fms= 'Sarawak Orogeny')

Kocsis, L., A. Briguglio, A. Roslim, H. Razak, S. Coric & G. Frijia (2018)- Stratigraphy and age estimate of Neogene shallow marine fossiliferous deposits in Brunei Darussalam (Ambug Hill, Tutong district). J. Asian Earth Sci. 158, p. 200-209.
(Outcrops of sandstones-clays at Ambug Hill in NE Brunei with layers rich in marine fossils. Calcareous nannoplankton of Late Tortonian- E Messinian (NN11) age, confirmed by Sr-isotope age from bivalves (8.3- 6.2 Ma). Overlain by emersion surface, possibly tied to Me1 (7.25 My) or Me2 (5.73 My) sequence boundary)

Kon'no, E. (1968)- Some Upper Triassic species of Dipteridaceae from Japan and Borneo. J. Linnean Soc. London, Botany, 61, 384, p. 93-105.
(Description of Cuxthropteris (=Clathropteris) meniscoides from near SW border of Sarawak, southernmost occurrence of Dipteridaceae flora of SE Asia in Borneo in Upper Triassic)

Konôno, E. (1972)- Some Late Triassic plants from the Southwestern border of Sarawak, East Malaysia. In:T. Kobayashi & R. Toriyama (eds.) Geology and palaeontology of Southeast Asia, University of Tokyo Press, 10, p. 125-178.
(Plants from beds near basal conglomerates of Halobia-bearing coaly series near Krusin, SW Sarawak. Probably Late Carnian age. 15 species from Sadong Fm, now called'Krusin flora'. With Neocalamites, Clathropteris miniscoides, Dictyophyllum cf. nilssoni, Cladophlebis spp., Todites, etc. Belongs to Dictyophyllum-Clathropteris floral province of E Asia/ SW Pacific, without any European or North Asian floral elements, and similar to Norian Tonkin Flora of N Vietnam. No stratigraphy details (Hutchison 2005: associated in same formation Carnian-Norian bivalves Halobia and Monotis salinaria and sands derived from Serian Volcanics) (Krusin flora classified as Carnian age, and 'East Asian floristic zone', similar to 'Yamaguti Flora' of Japan, by Dobruskina 1994))

Koopman, A. (1996)- Regional geological setting. In: S.T. Sandal (ed.) The geology and hydrocarbon resources of Negara Brunei Darussalam (2nd ed.), Spec. Publ. Muzium Brunei and Brunei Shell Petroleum Company Berhad, Syabas, Bandar Seri Begawan, p. 49-60.

Koopman, A. & J. Schreurs (1996)- The coastal and offshore oil and gas fields. In: S.T. Sandal (ed.) The geology and hydrocarbon resources of Negara Brunei Darussalam (2nd ed.), Spec. Publ. Muzium Brunei and Brunei Shell Petroleum Company Berhad, Syabas, Bandar Seri Begawan, p. 155-192.

Koopman, A. & J. Schreurs (1996)- The inland hydrocarbon accumulations. In: S.T. Sandal (ed.) The geology and hydrocarbon resources of Negara Brunei Darussalam (2nd ed.), Spec. Publ. Muzium Brunei and Brunei Shell Petroleum Co. Berhad, Syabas, Bandar Seri Begawan, p. 193-198.

Koopmans, B.N. (1967)- Deformation of the metamorphic rocks and the Chert-Spilite formation in the southern part of the Darvel Bay area, Sabah. In: Geological papers 1966, Geol. Survey of Malaysia, Borneo Region, Bull. 8, p. 14-24.

Koopmans, B.N. & P.H. Stauffer (1968)- Glacial phenomena on Mount Kinabalu, Sabah. In: Geological papers 1966, Malaysian Geol. Survey, Borneo region, Bull. 8, p. 25-35.
(Evidence of Pleistocene glacial erosion above 12,000' at on Mt. Kinabalu (elev. 4100m/ 13,455'). Glaciated, with ice cap of ~5.4 km2 in Pleistocene until about 10,000 years ago. Two Pleistocene glaciations, but no clear moraines)

Kosa, E. (2012)- Pore-pressure and subsurface-plumbing patterns in Central Luconia; Offshore Sarawak, Malaysia. In: Delivering value: realising exploration & development potential, Proc. Petrol. Geosc. Conf. Exh. (PGCE 2012), Kuala Lumpur, 4p. *(Extended Abstract)*
(Hydraulically blown traps and overpressure-related operational issues still encountered in C Luconia carbonate buildup play. Predictive pressure model proposed based on identification of five principal pressure domains, characterised by different drainage mechanisms)

Kosa, E. (2013)- The rivers of Luconia: the effects of sea-level lowstands on the stratigraphy of a mixed carbonate/clastics province; Miocene- Present, Offshore Sarawak, NW Borneo. In: Proc. Petrol. Geosc. Conf. Exh. (PGCE 2013), Kuala Lumpur, 5p. *(Extended Abstract)*
(C Luconia gas-producing province with ~250 carbonate build-ups, now mostly covered by clastics. Clastics historically interpreted as marine, pro-delta sediments deposited over drowned carbonates, but re-interpreted as stacked delta lobes with paleo-coastlines extending basinward of most Luconia build-ups. This study suggests evidence for fluvial and other erosional geomorphology and links this to hydrocarbon habitats, carbonate-clastic interactions and reservoir/seal distribution. Fluvial processes exerted major control on carbonate inception inM Miocene, and on hydrocarbon-retention capacity of clastic overburden)

Kosa, E. (2013)- Wings, mushrooms and Christmas trees: insights from carbonate seismic geomorphology into the evolution of Central Luconia. AAPG Int. Conv. Exhib., Singapore 2012, Search and Discovery Art. 50783, 51p. *(Presentation and Abstract; see also full paper Kosa et al. (2015))*
(online at: www.searchanddiscovery.com/documents/2013/50783kosa/ndx_kosa.pdf)
(C Luconia gas province off Sarawak, NW Borneo with >200 Miocene-Recent carbonate build-ups identified. Interpretation of carbonate geomorphology from seismic varied through time. Prevalent model of evolution of C Luconia infers 'maximum transgression' initiating carbonate growth in M Miocene, followed by progressive burial of province under Borneo-sourced clastic deltas in Late Miocene. Hydrocarbon columns in C Luconia tend to be short and terminate at intersections of carbonate edifices with clastic sequence boundaries. New model of clastic stratigraphy proposed, of stacked delta-lobes punctuated by exposure and/or flooding surfaces and evolving contemporaneously with carbonates)

Kosa, E. (2015)- Sea-level changes, shoreline journeys, and the seismic stratigraphy of Central Luconia, Miocene-present, offshore Sarawak, NW Borneo. Marine Petroleum Geol. 59, p. 35-55.
(C Luconia province of Sarawak Basin with>200 M Miocene- Recent carbonate build-ups. Clastic sediments around/ between carbonate build-ups interpreted as stacked low-relief deltas, which frequently prograded beyond area of carbonate build-ups. Deltaic topsets juxtaposed against carbonate build-ups hydrocarbon migration routes. Most carbonate reservoirs underfilled; hydrocarbon columns limited to youngest onlapping sequence)

Kosa, E., A. Hafrez, K. Boey, A. Azhar & G. Wee (2012)- Sequence stratigraphy of clastic overburden of the Miocene carbonate gas province in Central Luconia, Offshore Sarawak, NW Borneo: implications for hydrocarbon-retention capacity. In: Int. Petrol. Techn. Conf. (IPTC), Bangkok 2012, IPTC 14578, p. 1208-1213.
(C Luconia, off NW Borneo, mature gas province with >45TCF gas discovered in Miocene carbonate build-ups. Most commercial discoveries in carbonate platforms, but remaining prospectivity mostly in pinnacle-shape carbonates, where commercial volumes require long hydrocarbon columns)

Kosa, E., G.M.D. Warrlich & G. Loftus (2015)- Wings, mushrooms, and Christmas trees: the carbonate seismic geomorphology of Central Luconia, Miocene-present, offshore Sarawak, Northwest Borneo. American Assoc. Petrol. Geol. (AAPG) Bull. 99, 11, p. 2043-2075.
(see also Kosa (2013). C Luconia province of Sarawak Basin off NW Borneowith extensive Miocene-Holocene carbonate buildupse up to 2km thick and with complex seismic geomorphologies. Intermittent carbonate and siliciclastic deposition governed by oscillating sea level and variable siliciclastic input. Location of buildups with respect to deltaic facies and seismic expressions of marginal carbonate strata, locally known as wings, used here to classify carbonate seismic geomorphologies)

Kosaka, H. & K. Wakita (1975)- Geology and mineralization of the Mamut mine, Sabah, Malaysia. Mining Geology 25, 132, p. 303-320. *(In Japanese, with English summary)*
(online at: https://www.jstage.jst.go.jp/article/shigenchishitsu1951/25/132/25_132_303/_pdf)
(Mamut mine in NW Sabah, ~65 km E of Kota Kinabalu, is first porphyry copper mine in Borneo. Commercial operation started in 1975. Ore reserves ~178 Mtons of 0.476 percent copper. Area occupied by U Cretaceous and Tertiary flysch type sediments and igneous rocks. In mineralized area sedimentary rocks mainly Paleocene-Eocene sandstone, with serpentinized ultrabasic rocks and adamellite porphyry intrusions, possibly parts of large batholith under area, represented by Mt. Kinabalu. Late Miocene- E Pliocene K-Ar ages. Size of main adamellite porphyry intrusive ~800x 300m. Ore zone max. width 450m, length 800m and depth 200m)

Kosaka, H. & K. Wakita (1978)- Some geologic features of the Mamut porphyry copper deposit, Sabah, Malaysia. Economic Geology 73, 5, p. 618-627.
(Mamut porphyry copper-gold deposit of Paleocene- Upper Miocene age one of many mineralized centers in NW-SE trending tectonic zone in Sabah, N Borneo. Copper mineralization associated with K-rich adamellite porphyry intrusion. Wall rocks consist of serpentinite and clastic sediments. See also Imai (2000))

Kosters, M., P.F. Hague, R.A. Hofmann &d B.L. Hughes (2008)- Integrated modeling of karstification of a Central Luconia Field, Sarawak. In: Int. Petroleum Techn. Conf. (IPTC 2008), Kuala Lumpur, IPTC 12327, 9p.
(Some carbonate fields in C Luconia gas province karstified, as demonstrated by severe drilling losses. Largest gas field (1969 discovery, ~175km NNW of Bintulu, producing since 1987) is elongate Miocene buildup. Seismic study suggests extensive dendritic karst network in zones 3 and 4, mainly in C and E parts of field. Overlying zone 2.3 part of transgressive systems tract with rel. poor porosities and form field-wide baffle)

Krebs, W.N. (2011)- Upper Tertiary chronosequence stratigraphy of offshore Sabah and Sarawak, NW Borneo, Malaysia: a unified scheme based on graphic correlation. Bull. Geol. Soc. Malaysia 57, p. 39-46.
(online at: http://geology.um.edu.my/gsmpublic/BGSM/bgsm57/bgsm2011006.pdf)

Krebs, W.N. & A. van Vliet (2009)- The Middle Miocene Unconformity (MMU): neither Middle Miocene nor unconformity? In: Programme and abstracts Petroleum Geology Conf. Exh., Kuala Lumpur 2009, Geol. Soc. Malaysia, Paper 16. *(Abstract only)*
(online at: http://geology.um.edu.my/gsmpublic/PGCE2009/Draft/Old/Geology%20Papers%20v.0.1.pdf)
(Middle Miocene Unconformity of N Borneo/ S China Sea not true unconformity, but end of late E Miocene extension around 'oceanic' core of S China Sea. Crests of fault-blocks experienced minor submarine erosion. Bako-1 and Mulu-1 wells drilled on paleo-highs, reveal age of MMU is late E Miocene)

Krol, L.H. (1927)- Palaeozoicum (?) in Sarawak en Britsch-Noord Borneo. De Mijningenieur 8, p. 113-115.
(On the age of coal-bearing rocks from Sarawak: initially believed to be of Late Paleozoic age (Tennison Woods, 1885, based on presumed presence of Vertebraria and Phyllotheca), but more likely of Tertiary age)

Lam, K.S. (1988)- Sibu Area, Central Sarawak Malaysia, Explanation Sheet 2/111/12. Geol. Survey Rept., Geol. Survey Malaysia, Sarawak, p. 1-151.

Lam, K.S. (1983)- Tektite found in Sarawak. Warta Geologi 9, 6, p. 273-275.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1983006.pdf)
(First record of tektite in Sarawak, from Bukit Nanas Quaternary gravel terrace deposit SW of Limbang. With brilliant black lustre, spherical in shape, diameter 25mm, weight 35g. Limbang tektite may be correlated to nearby finds of tektites in Brunei (Tate 1970) and Kalimantan (Von Koenigswald?) (probably part of Pleistocene (~0.77 Ma) Australasian strewn field))

Lambiase, J. & A. Cullen (2012)- Sediment supply systems of the Champion "Delta" of NW Borneo: implications for the distribution and reservoir quality of associated deepwater sandstones. AAPG Int. Conf. Exh., Singapore 2012, Search and Discovery Art. 50775, p. *(Presentation)*
(online at: www.searchanddiscovery.com/documents/2012/50775lambiase/ndx_lambiase.pdf)

(M Miocene- Pliocene sedimentation on NW Borneo margin not product of one large Champion deltaic system, but several structurally active sub-basins segregated Champion shallow marine strata into thick, wave-dominant and tide-dominant successions)

Lambiase, J. & A. Cullen (2013)- Sediment supply systems of the Champion ñDeltaò of NW Borneo: implications for deepwater reservoir sandstones. J. Asian Earth Sci. 76, p. 356-371.
(M Miocene- Pliocene 'Champion Delta' sedimentation on NW Borneo margin not one simple, large delta. Multiple sand sources from Padas, Limbang and Trusan Rivers)

Lambiase, J.J., A.R. Damit, M.D. Simmons, R. Abdoerrias & A.A. Hussin (2003)- A depositional model and the stratigraphic development of modern and ancient tide-dominated deltas in NW Borneo. In: F.H. Sidi et al. (eds.) Tropical deltas of Southeast Asia; sedimentology, stratigraphy and petroleum geology. Soc. Sedimentary Geology (SEPM) Spec. Publ. 76, p. 109-123.
(Modern deltas of NW Borneo may be wave-dominated (Baram River) or tide-dominated (deltas within Brunei Bay). Details on Trusan River Delta, outcrops of M-Miocene and younger Belait Fm, etc.)

Lambiase, J.J., A.A.A. Rahim & C. Yaw Peng (2002)- Facies distribution and sedimentary processes on the modern Baram Delta: implications for the reservoir sandstones of NW Borneo. Marine Petroleum Geol. 19, 1, p. 69-78.
(Present-day Baram Delta wave-tide dominated. Tertiary shoreface reservoir sandstones wave-dominant, tidal signatures absent. Modern Baram Delta not appropriate analogue for most shoreface reservoir sands)

Lambiase, J.J. & S. Tulot (2013)- Low energy, low latitude wave-dominated shallow marine depositional systems: examples from northern Borneo. Marine Geophysical Res. 34, 3-4, p. 367-377.
(Depositional environments of wave-dominant successions in M-L Miocene Belait and Sandakan Fms in Brunei and NE Sabah)

Lambiase, J.J., T.Y. Tzong, A.G. William, M.D. Bidgood, P. Brenac & A.B. Cullen (2008)- The West Crocker formation of northwest Borneo: a Paleogene accretionary prism. In: A.E. Draut et al. (eds.) Formation and applications of the sedimentary record in arc collision zones, Geol. Soc. America (GSA), Spec. Paper 436, p. 171-184.
(West Crocker Fm in NW Borneo interpreted as accretionary prism. Two episodes of syndepositional folding-thrusting. Probable Eocene age differs from accepted Oligocene- E Miocene age and consistent with deposition of W Crocker Fm during phase of NW Borneo margin tectonism. Sandstones in W Crocker deposited by high-density turbidity currents that constructed progradational lobes in ~1000m or more water. Sandstones with abundant feldspars and lithics suggests first-cycle product of eroded orogenic belt and short transport distance)

Lasman, M.R. (1998)- Channel chasing in the D35 field offshore Sarawak. In: G.H. Teh (ed.) Petroleum geology Conference 1997, Bull. Geol. Soc. Malaysia 42, p. 39-45.
(online at: www.gsm.org.my/products/702001-100858-PDF.pdf)
(D35 oilfield offshore Sarawak in Balingian Province 1983 discovery in E-M Miocene 'Cycle III' delta plain channel deposits. Seismic ampitudes help identify channel sand thickness)

Latiff, A.H A., S.N.F. Jamaludin & M.N.A. Zakariah (2015)- Post-stack seismic data enhancement of thrust-belt area, Sabah Basin. PowerMEMS 2015, IOP Conf. Ser., Earth Environm. Science 30, 012006, p. 1-6.
(online at: http://iopscience.iop.org/article/10.1088/1755-1315/30/1/012006/pdf)
(Seismic processing offshore NW Sabah))

Lau, J.W.E. (1974)- The 'rediscovery' of rudist with its associated fauna in the Bau Limestone and its palaeobiogeographic significance in circumglobal correlation and plate tectonic studies. Malaysia Geol. Survey, Borneo Region, Annual Report for 1973, p. 188-197.
(Description of macrofauna of Late Jurassic- Early Cretaceous Bau Limestone at Paku Mine E of Bau, W Sarawak. Mainly primitive diceratid rudists, incl. Heterodiceras aff. luci (= Epidiceras speciosum of Skelton

1985?; JTvG) and diverse gastropods with Discotectus, Pileolus, etc., and rare corals (Cladophyllia, Stylina, Actinastraea))

Lau, J.W.E. (1977)- Stratigraphic correlation of Tertiary basins in offshore Malaysia, South China Sea. ASCOPE, 30p.

Lee, C.P. (2003)- The Madai-Baturong Limestone in eastern Sabah and its new interpretation as a seamount. Bull. Geol. Soc. Malaysia 46, p. 161-165.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm2003027.pdf)
(Isolated shallow marine limestone bodies up to 300m-600m thick and 2.5-3.5 km wide, surrounded by deepwater deposits of Rajang/ 'Chert-Spilite' formation probably Cretaceous seamount deposits. Algae, Hensonella and small simple Dictyoconus suggest Early Cretaceous age. Jasin (1991) suggested Madai-Baturong Limestone was deposited on horst while Valanginian-Barremian chert of Chert-spilite Fm was deposited in surrounding deep waters)

Lee, D.T.C. (1968)- The Sandakan Formation, East Sabah. Bull. Geol. Survey Malaysia, Borneo Region, 9, p. 43-50.

Lee, D.C. (1970)- Sandakan Peninsula, Eastern Sabah, East Malaysia, explanation of sheet 6/117/16, 6/118/13, 5/117/4 and 5/118/1. Geol. Survey East Malaysia, Rept. 6, 75p.

Lee, D.T.C. (1990)- Formation of Pulau Batu Hairan and other islands around Pulau Banggi, Northern Sabah. Bull. Geol. Soc. Malaysia 26, p. 71-76.
(online at: www.gsm.org.my/products/702001-101094-PDF.pdf)
(New island emerged from sea E of Pulau Banggi, N Sabah in 1988. Grey muds and red mudstones with blocks up to several m diameter of sandstone (from Crocker Fm?), chert, and rare ultrabasic rocks (from Chert-spilite formation). With prominent 10m long radial tensional fractures. Formed by diapyric action, but no gas or mud cones. >40 other small island E and SE of Pulau Banggi probably similar origin)

Lee, D.T.C. & H.S. Weber (1986)- Base metal exploration in Sabah. In: G.H. Teh & S. Paramananthan (eds.) Proc. GEOSEA V Conf., Kuala Lumpur 1984, 1, Bull. Geol. Soc. Malaysia 19, p. 405-419.
(Base metal explation program since 1980 initially focused on anomalies associated with Late Tertiary volcanics and copper-zinc anomalies related to pillow-lava stage of C Sabah ophiolite assemblages. Follow-up work lead to discovery of Cyprus-type massive sulphide occurrences related to volcanics of Chert-Spilite Formation in Bidu-Bidu hills, NE Sabah)

Legrand, X., S. Sherkati & M.L. Lee (2015)- Evolution of deformation-sedimentation interaction in NW Offshore Sabah: implication for hydrocarbon exploration. Asia Petrol. Geosc. Conf. Exhib. (APGCE 2015), Kuala Lumpur, 4p. *(Extended Abstract)*
(Offshore Sabah subjected to tectonic and gravity deformation since E Tertiary. E Miocene event led to crustal overthickening and uplift of former deep marine thick shale (Setap Fm) to shallow water environment. Relief prepared initial conditionsfor delta-related sequence in M Miocene time. Differential loading triggered mobile shale, forming mini-basins and shale ridges. Late Miocene more shale-prone prograding system. Gravity faults with rollovers and associated outboard, Late Miocene- Pliocene toe-thrusts, linked along shallow detachment. Further offshore imbricate thrust system rooted in deeper detachment)

Leong, K.M. (1972)- The occurrences of *Orbitolina*-bearing limestone in Sabah, Malaysia. In: N.S. Haile (ed.) Regional Conference on the Geology of Southeast Asia, Kuala Lumpur, Abstracts of papers, Geol. Soc. Malaysia, p. 38. *(Abstract only)*
(Hutchison (2005), p. 226-229: Brecciated, probably Aptian-Albian age limestone with Orbitolina lenticularis and Hedbergella in Segama Highlands. Possibly related to Madai-Baturong Lst and part of Eastern Rajang Group, which has been interpreted as seamount deposit in oceanic environment)

Leong, K.M. (1974)- The geology and mineral resources of the Upper Segama Valley and Darvel Bay area, Sabah, Malaysia. Geol. Survey. Malaysia, Kuching, Memoir 4, p. 1-354.
(Revision of Fitch (1955) monograph on same area of SE part of Sabah. Includes 210 Ma age for granite (dismissed by Hutchison (1988), but validated by Graves et al. 2000?))

Leong, K.M. (1975)- New ages from radiolarian cherts of the Chert-Spilite Formation, Sabah. Warta Geologi 1, 5, p. 96-98.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1975005.pdf)
(First Lower Cretaceous (Valanginian- Barremian) age date obtained from sample J7250 of radiolarian chert of Chert-Spilite Fm by W. Riedel, based on Staurosphaera septemporata, Sphaerostylus lanceola and probably Dictyomitra boesii, etc. Previously believed to be mainly Upper Cretaceous age. Same as Leong (1977))

Leong, K.M. (1976)- Miocene chaotic deposits in eastern Sabah: characteristics, origin, and petroleum prospects. Malaysia Geol. Survey, Borneo Region, Annual Report 1975, p. 238.

Leong, K.M. (1977)- New ages from radiolarian cherts of the Chert-Spilite Formation of Sabah. Bull. Geol. Soc. Malaysia 8, p. 109-111.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1977007.pdf)
(Lower Cretaceous age for radiolarians from cherts, Sabah, identified by W. Riedel. Valanginian- Barremian species Staurosphaera septemporata, Sphaerostylus lanceolata, etc., in one sample suggest Chert-spilite Fm (= cover of Sabah obducted oceanic crust) older than previously assumed by Geological Survey reports. Other samples with U Cretaceous radiolaria. Same paper as Leong (1975))

Leong, K.M. (1978)- óThe Sabah Blueschist Beltô- a preliminary note. Warta Geologi 4, 2, p. 45-51.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1978002.pdf)
(Proposed 'Sabah blueschist belt' is partly shear zone and partly sedimentary melange. Belt, with blocks of serpentinite, glaucophane schist, amphibolite, etc. in Miocene Ayar Fm, extends across C Sabah, trending NW from Dent Peninsula. Probably related to S-dipping subduction zone related to SW movement of Sulu Sea plate during Miocene)

Leong, K.M. (1998)- Sabah crystalline basement; óspuriousô radiometric ages? Continental? Warta Geologi 24, 1, p. 5-8.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1998001.pdf)
(Sabah Upper Segama area with metamorphic (amphibolite) and igneous rocks (granite, granodiorite, diorite, tonalite), some with Jurassic radiometric ages of 150, 160 and 200 Ma. Suggesting possible pre-Cretaceous igneous-metamorphic continental crustal material below Cretaceous 'new oceanic basement' known as Chert-Spilite Formation. Age and composition of Crystalline Basement debated)

Leong K.M. (1999)- Geological setting of Sabah. In: The petroleum geology and resources of Malaysia, Petronas, Kuala Lumpur, Chapter 21, p. 473-497.
(Review of Sabah geology, mainly based on Tongkul (1991). Paleogene and Neogene basins. Common mud volcanoes in E Sabah)

Leong, K.M. (2009)- A discussion on the paper- óAge and MORB geochemistry of the Sabah ophiolite basement by Graves et al. (2000)ô. Warta Geologi 35, 1, p. 11-13.
(online at: www.gsm.org.my/products/702001-100403-PDF.pdf)
(Jurassic radiometric ages in Graves et al. (2000) vindicate oldest K-Ar radiometric age (210±3 Ma) from Sabah determined by Leong (1974) from granitoid in Kawag Gibong river, but never accepted by Hutchison (1988, 1989). (NB: 210 Ma= Late Triassic JTvG))

Leong, K.M. (2016)- Discussion on omission of Sabah Pre-Cretaceous geology and geochronology data in Tate (2002), Balaguru et al. (2003), Lee et al. (2004) and Wan Nursaiedah Wan Ismail et al. (2014). Warta Geologi 42, 1-2, p. 10-11.
(online at: https://gsmpubl.files.wordpress.com/2016/08/warta42_1_2.pdf)

(Oldest fossiliferous rocks of Sabah are E Cretaceous limestone and chert, but older metamorphic rocks and granite and tonalite (minimum age E Jurassic or Triassic) also present)

Leong, K.M. (2017)- Review of 50-years (1966-2016) debate on age of Sabah crystalline basement granitic rocks: are the granitic rocks in Upper Segama Sabah fragments of supercontinent Pangaea? Proc. 30th Nat. Geosc. Conf. Exhib. (NGC 2017), Kuala Lumpur, DRG29-116, Warta Geologi 43, 3, p. 223-224. *(Extended Abstract)*
(online at: https://gsmpubl.files.wordpress.com/2017/09/ngsm2017_032.pdf)
(Sabah granites often viewed in literature as Cretaceous in age and related to ophiolites, but radiometric ages of 210 and 185 Ma suggest it predates ophiolites and more likely represents Pre-Cretaceous continental basement that originated from continental margin of E Asia during creation of Proto-South China Sea Basin)

Leong, K.M. & A. Anuar (1999)- Northeast Sabah Basin. In: Petronas (1999) The petroleum geology and resources of Malaysia, Kuala Lumpur, p. 543-569.

Leong, K.M. & A. Anuar (1999)- Southeast Sabah Basin. In: Petronas (1999) The petroleum geology and resources of Malaysia, Kuala Lumpur, p. 573-589.

Levell, B.K. (1987)- The nature and significance of regional unconformities in the hydrocarbon-bearing Neogene sequences offshore West Sabah. Bull. Geol. Soc. Malaysia 21, p. 55-90.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1987004.pdf)
(W Sabah Tertiary trench-associated basin with up to 12 km of mainly siliciclastic sediments. Two phases: (1) pre-M Miocene deep marine, imbricated sediments related to S/ SE ward subduction; (2) M Miocene and later NW-prograding shelf-slope sequences, after cessation of subduction. Boundary is 'Deep Regional Unconformity', marking end of subduction in early M Miocene. Additional unconformities in younger sequence. NW Sabah underlain by six separate basement blocks)

Levell, B.K. & A. Kasumajaya (1985)- Slumping in the Late Miocene shelf-edge offshore west Sabah: a view of a turbidite basin margin. Bull. Geol. Soc. Malaysia 18, p. 1-29.
(online at: www.gsm.org.my/products/702001-101146-PDF.pdf)
(Series of elongate spoon-shaped unconformities mapped along 150km of 250km long Late Miocene shelf edge offshore W Sabah. Interpreted as slump scars, formed by retrogressive submarine slumping. Relief between neighbouring slumpscars, overlain by slope clays, may provide stratigraphic trap potential. Slump scar-rich unconformities point to redeposited, sand-prone turbidites downslope)

Liechti, P., F.W. Roe & N.S. Haile (1960)- The geology of Sarawak, Brunei and the western part of North Borneo. British Territories of Borneo, Geological Survey Dept., Bull. 3, p. 1-360.
(Comprehensive 1960 compilation of North Borneo geology by Shell geologists. With chapter on igneous rocks by Kirk. Region composed mainly of Upper Cretaceous- Miocene geosynclinal formations and Upper Eocene-Pleistocene strata deposited in isolated basins. Igneous activity in Late Paleozoic-Early Mesozoic and Upper Cretaceous-Quaternary. Three pre-Tertiary and four Tertiary phases of folding)

Liechti, P. (1967)- Uber synsedimentare Tektonik und ihre olgeologische Bedeutung. Freiberger Forschungshefte, ser. C, 229, p. 31-63.
('On syn-sedimentary tectonics and their significance for oil geology'. With examples of melange deposits of North Borneo)

Light, M.P.R. D.J. Bird, G.A. Posehn & M.A.A Hudi (1994)- Complex transtensional structures and the hydrocarbon potential of the Greater Sarawak Basin as defined by Synthetic Aperture Radar. Bull. Geol. Soc. Malaysia 36, p. 145-156.
(online at: www.gsm.org.my/products/702001-100969-PDF.pdf)
(SAR and other data over onshore Greater Sarawak Basin reveal complex tectonostratigraphic history. West Sarawak Basin and NE Borneo underwent complex transtensional deformation in Tertiary related to strike-slip motion caused by indentation of India against Asia. Sinistral strike-slip zones well developed as Sabah Shear,

W Baram-Tinjar Lines and Lupar Line-Paternoster Fault. Onshore extension of seismically defined transverse faults in S China Sea likely controlled migration and accumulation of hydrocarbons in Sarawak. Borneo under compression in M Miocene. Fold interference produced by Cenozoic strike-slip faults and N-advance of Rajang Accretionary Prism well displayed on SAR)

Lim, P.S. (1980)- The evaluation, assessment and calculation of ore reserves of the Mamut Mine- a case history. Geol. Survey Malaysia, Geological Papers 3, p. 114-125.
(Mamut mine at SE slopes of Mt Kinabalu is the only porphyry copper mine in Sabah)

Lim, P.S. & Y.E. Heng (1985)- Geological map of Sabah, 1: 500,000, 3rd Ed.. Geological Survey of Malaysia.

Lim, P.S. & S. Tunggah (1989)- Geology and coal potential of the northeastern Meliau Basin, Sabah. Proc. 20th Geological Conf. 1989, Techn. Papers 1, Geol. Survey Malaysia, p.

Lim, W.Y., L.C. Peng & N.T. Abdullah (2012)- Sediment and fauna of the Arip Limestone of the Tatau Formation, Sarawak, Malaysia. Geol. Soc. Malaysia, Nat. Geoscience Conf., Kuching 2012, Paper P1-10, p. 105. *(Abstract only)*
(Occurrence of M-U Eocene Arip limestone of Tatua Fm in SW Tatau area. With Nummulites, Discocyclina, Pellatispira and planktonic foraminifera)

Lindsay, R.O. & R.K. Foster (2002)- Correcting a false assumption-offshore Brunei. The Leading Edge 21, p. 536.
(Classic AVO/ inversion seismic-analysis procedures failed in deepwater offshore Brunei. No geology)

Lu Hongbo & R.C. Shipp (2011)- Impact of a large mass-transport deposit on a field development in the upper slope of southwestern Sabah, Malaysia, offshore northwest Borneo. In: R.C. Shipp et al. (eds.) Mass-transport deposits in deepwater settings, Soc. Sedimentary Geol. (SEPM) Spec. Publ. 96, p. 199-220.
(Description of large submarine mass failures on upper continental slope. One of features fan-like outline in plan view, up to 10 km wide, up to 40 km dip extent and thickness up to176 m)

Lubis, L.A., S. Bashah & D.P. Ghosh (2015)- Comparison of different rock physics models to evaluate the impact of pore types on velocity-porosity relationship in carbonates of Central Luconia Sarawak. In: M. Awang et al. (eds.) Third Int. Conf. Integrated Petroleum Engineering and Geosciences (ICIPEG2014), Kuala Lumpur 2014, Springer Verlag, p. 387-393.

Lukie, T. & A. Balaguru (2012)- Sequence stratigraphic, sedimentologic and petrographic insights of the Miocene (Stage IVA) outcrops of the Klias Peninsula and Labuan Island, Sabah, Malaysia, Borneo. AAPG Int. Conf. Exhib., Singapore 2012, Search and Discovery Art. 10468, 37p. *(Presentation)*
(online at: www.searchanddiscovery.com/documents/2012/10468lukie/ndx_lukie.pdf)
(Outcrop study of fluvial and deltaic sediments in Sabah))

Lunt, P. (2014)- A review of the foraminiferal biostratigraphy of the Melinau Limestone, Sarawak. Berita Sedimentologi 29, p. 41-50.
(online at: www.iagi.or.id/fosi/files/2014/04/BS29-Biostratigraphy_SEAsia_S.pdf)
(Study of Melinau limestone, Sarawak shows age range from late M Eocene (Letter Stage Ta) to E Miocene (Te5, ~20.3 Ma). Strontium dating and biostratigraphy shows significant change in sedimentary rates or preserved thickness during mid-Oligocene (latest Tc or intra-Td times). Termination of Melinau limestone with initial event near Oligocene-Miocene boundary (Te4-Te5 boundary) and youngest limestones dated as Te5)

Lunt, P. & J.H.M. Jais (2015)- Correlating Borneo outcrop to offshore geology; a regional perspective. AAPG Geoscience Techn. Workshop, Tectonic evolution and sedimentation of South China Sea region, Kota Kinabalu, Sabah, Malaysia, AAPG Search and Discovery Art. 90236, 3p.
(online at: www.searchanddiscovery.com/abstracts/pdf/2015/90236apr/abstracts/ndx_lunt.pdf)

(Extended Abstract; no figures. Many mismatches in stratigraphic correlations between E Natuna, Sarawak, Kalimantan, Sabah and Palawan. Three main unconformities: (1) M Miocene Unconformity (MMU) peaks in NN4 (= late E Miocene); (2) Top Crocker (TCU) at ~Oligo-Miocene boundary; (3) Deep Regional Unc. (DRU) compressional event in W Sabah and Palawan starting in latest E Miocene and ending in mid M Miocene, leaving angular contact once sedimentation renewed (tied to end of subduction off E Sabah, terminating activity of Sulu volcanic arc). Old plate tectonic model of NW-ward subduction with trench on E side of Sabah (e.g. Rangin 1989) preferred over current model of S-ward subduction of Mesozoic oceanic crust under Sabah and Sulu Sea)

Lunt, P. & M. Madon (2017)- A review of the Sarawak cycles: history and modern application. Bull. Geol. Soc. Malaysia 63 (Geol. Soc. Malaysia 50th Anniversary Issue 1), p. 77-101.
(online at: www.gsm.org.my/products/702001-101707-PDF.pdf)
(Major review of Late Eocene-Pleistocene depositional cycles I-VIII, used by Shell since 1960's for Sarawak/ Brunei Tertiary. Cycles originally defined by initial transgression changing to regression, and probably reflect interplays between tectonic and eustatic events. Initial (unpublished) definitions updated through time, but most biostrat support data unpublished. Cycles I-III, seem to be linked to regional extension and subsidence. Cycle I-II boundary close to Oligocene- Miocene boundary, coinciding with Top Crocker Unconformity in Sabah and onset of seafloor spreading in W South China Sea. Base Cycle IV transgression at ~15.5 Ma called 'break-up unconformity' by Hutchison (2004), based on strongly rifted topography called 'M Miocene Unconformity' (MMU); followed by accelerated sediment supply. Base Cycle V at ~12-13 Ma. Etc.)

Lunt, P. & M. Madon (2017)- Onshore to offshore correlation of northern Borneo; a regional perspective. Bull. Geol. Soc. Malaysia 64 (Geol. Soc. Malaysia 50th Anniversary Issue 2), p. 101-122.
(online at: www.gsm.org.my/products/702001-101714-PDF.pdf)
(Review of Oligocene - Pleistocene stratigraphy of N Borneo, with emphasis on dating regional unconformities: Top Crocker Unconformity (TCU; Oligo-Miocene boundary, ~23 Ma); Deep Regional Unconformity (DRU, late M Miocene, ~12 Ma; 'Sabah Orogeny' (around E-M Miocene boundary, with uplift in C Borneo and accelerated progradation of deltic deposits to N))

Macpherson, C.G., K.K. Chiang, R. Hall, G.M. Nowell, P.R. Castillo & M.F. Thirlwall (2010)- Plio-Pleistocene intra-plate magmatism from the southern Sulu Arc, Semporna Peninsula, Sabah, Borneo: implications for high-Nb basalt in subduction zones. J. Volcanology Geothermal Res. 190, 1-2, p. 25-38.
(Chemistry of Plio-Pleistocene high-Nb basalts/ basaltic andesites from Semporna Peninsula at S end of Sulu Arc. Semporna basalts not associated with adakitic magmatism, which is frequent in some subduction zones)

Madden, R.H.C., M.E.J. Wilson, M. Mihaljevic, J.M. Pandolfi & K. Welsh (2017)- Unravelling the depositional origins and diagenetic alteration of carbonate breccias. Sedimentary Geology 357, p. 33-52.
(Batu Gading Limestone isolated outcrops along Baram River, ~80 km SE of Miri, Sarawak, and part of Melinau Limestone Fm. Unconformably overlies Cretaceous turbiditic Kelalan Fm. Basal transgressive sequence 40m thick with Late Eocene larger foraminifera Pellatispira, Discocyclina and Nummulites (probably deepening-upward series), overlain by 10m thick limestone breccia with mixed clasts of Late Eocene and Late Oligocene age (Te1-4; with Heterostegina borneensis and Miogypsinoides), overlain by deep marine Miocene beds. Breccia formation probably in submarine slope setting)

Madon, M. (1994)- The stratigraphy of northern Labuan, NW Sabah Basin, East Malaysia. In: G.H. Teh (ed.) Petroleum Geology Conf. VIII, Bull. Geol. Soc. Malaysia 36, p. 19-30.
(online at: www.gsm.org.my/products/702001-100979-PDF.pdf)
(Labuan Island Neogene basin with >12 km of sediments. 'Basement' of basin Paleocene-Eocene Rajang Gp foldbelt, consisting of highly deformed deepwater deposits (accretionary wedge s formed during Late Eocene-M Miocene subduction under Sabah), underlain by ?Jurassic-Lower Cretaceous complex of ultramafic intrusive rocks, radiolarian chert, and spilite. M Miocene regional uplift at end of subduction caused erosion of Rajang foldbelt and regional DRU unconformity. On Labuan deformed argillaceous strata under Belait conglomerate ridge near Layang-Layangan typical of Temburong Fm, suggesting Setap Shale Fm is absent)

Madon, M. (1997)- Sedimentological aspects of the Temburong and Belait formations, Labuan (offshore west Sabah). In: G.H. Teh (ed.) Petroleum Geology Conference '96, Kuala Lumpur, Bull. Geol. Soc. Malaysia 41, p. 61-84.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1997025.pdf)
(E-M Miocene Temburong Fm (= lower Setap Shale)- Belait Fm of Labuan Island off W Sabah overall shallowing-upward sequence from relatively deep water and unstable slopes to shallow nearshore facies)

Madon, M. (1999)- North Luconia Province. In: The petroleum geology and resources of Malaysia, Chapter 19, Petronas, Kuala Lumpur, p. 443-454.
(Review of deepwater offshore N Sarawak N Luconia province. Hydrocarbon exploraton unsuccessful so far)

Madon, M.B. (1999)- Geological setting of Sarawak. In: The petroleum geology and resources of Malaysia, Petronas, Kuala Lumpur, Chapter 12, p. 275-290.
(Review of Sarawak geology. Petroleum produced mainly from Neogene of offshore Sarawak basin. Kuching zone in W-most Sarawak is part of W Borneo/ Sundaland continental basement core, which extends S into Kalimantan, with oldest rocks pre-U Carboniferous Kerait Fm metamorphics, U Carboniferous- Triassic limestones with Late Triassic intermediate volcanics, overlain by Jurassic-Cretaceous siliciclastics, etc.. Sibu zone intensely deformed Late Cretaceous-Eocene turbidites of Rajang accretionary prism, equivalent of Selangkai Fm in Kalimantan. Miri zone less deformed U Eocene- Recent sediments. Sarawak Basin originated as Oligocene- E Miocene foreland basin after collision of Luconia Block with W Borneo Basement)

Madon, M. & P. Abolins (1999)- Balingian Province. In: The petroleum geology and resources of Malaysia, Chapter 14, Petronas, Kuala Lumpur, p. 345-367.
(Review of offshore Sarawak hydrocarbon province, with 4 main fields (Temana, Bayan, D18, D35) in Late Oligocene- E Miocene deltaic clastics)

Madon, M., Cheng L.Kim & R. Wong (2013)- The structure and stratigraphy of deepwater Sarawak, Malaysia: Implications for tectonic evolution. J. Asian Earth Sci. 76, p. 312-333.
(History of N Luconia Province, Sarawak deepwater area, related to tectonic history of S China Sea. Sarawak Basin initiated as foreland basin as result of collision of Luconia block with Sarawak (Sarawak Orogeny), with deep foreland basin ('flysch') phase in Late Eocene-Oligocene, followed by 'molasse' phase of shallow marine shelf progradation to present day. E Miocene Unconformity caused by relative uplift and submarine erosion between ~19-17 Ma, with 500-2600m of missing section, equivalent to 8-10 My time gap. EMU extends over entire NW Borneo margin and related to Sabah Orogeny which marks cessation of sea-floor spreading in S China Sea and collision of Dangerous Grounds block with Sabah. Sarawak basin part of remnant ocean basin that closed by oblique collision along NW Borneo margin. Closure started in Late Eocene in Sarawak and moved progressively NE into Sabah until M Miocene)

Madon, M. & A. Hadi Abd Rahman (2007)- Penecontemporaneous deformation in the Nyalau Formation (Oligo-Miocene), Central Sarawak. Bull. Geol. Soc. Malaysia 53, p. 67-73.
(online at: www.gsm.org.my/products/702001-100502-PDF.pdf)
(Outcrops of Late Oligocene- E Miocene Nyalau Fm in Tg. Similajau and Bintulu areas show common penecontemporaneous deformation (thrusts/ folds, slumps, etc.), indicating tectonic controls on sedimentation in Sarawak foreland basin)

Madon, M. & R.B.A. Hassan (1999)- Tatau Province. In: The petroleum geology and resources of Malaysia, Chapter 17, Petronas, Kuala Lumpur, p. 413-426.
(Review of offshore Sarawak Tatau hydrocarbon province, with gas-oil fields in non-marine U Oligocene- Lw Miocene clastics and M-U Miocene carbonates. Characterized by NNW trending E Miocene normal faults)

Madon, M. & R.B.A. Hassan (1999)- West Luconia Province. In: The petroleum geology and resources of Malaysia, Chapter 18, Petronas, Kuala Lumpur, p. 428-439.

(W Luconia Province in W part of Sarawak continental shelf. Major Oligocene- Miocene West Luconia Delta system developed between C Luconia carbonate platform in E and Natuna Platform in W. Underexplored area, with hydrocarbon shows in U Miocene)

Madon, M., K.M. Leong & Azlina Anuar (1999)- Sabah Basin. In: The petroleum geology and resources of Malaysia, Chapter 22, Petronas, Kuala Lumpur, p. 501-542.
(NW Sabah Basin mainly offshore with >12km of early M Miocene and younger sedimentary basin, formed after uplift and exhumation of underlying Oligocene- E Miocene and older unmetamorphosed turbidites of 'Crocker fold-thrust belt', with upper and lower Rajang units separated by major Late Eocene unconformity. Pre-and post lower M Miocene sediments separated by 'Deep Regional Unconformity'. Basin includes Baram Delta complex, which extends west into Sarawak and Brunei. Several oil-gas fields, incl. Tembungo, Barton, Erb South, Ketam, etc.)

Madon, M., J. Norazlina, A. Ayub, K.S.M. Nor, S.M. Najmi, I.A. Zamzamie & A. Yusof (2015)- Structural evolution of the NW Sabah deepwater fold and thrust belts and its implication for hydrocarbon prospectivity. Asia Petrol. Geosc. Conf. Exhib. (APGCE), Kuala Lumpur, p. 317-321. *(Extended Abstract)*
(NW Sabah deepwater fold-thrust belt may be viewed as deformed sedimentary fill of Sabah Trough foreland basin. Deformation along margin appears diachronous, increasing N-wards. Mainly forward/seaward-breaking thrusts, while landward-verging backthrusts in N resulted in complex interference fold-thrust structures)

Mahmud, O.A.B. (1999)- Petroleum resources, Sarawak. In: The petroleum geology and resources of Malaysia, Petronas, Kuala Lumpur, p. 457-472.

Mahmud, O.A., H.D. Tjia & M.I. Ismail (2001)- Interpretation of newly acquired aerogravity data enhances the prospectivity of the Tinjar Province, onshore Sarawak. In: G.H. Teh et al. (eds.) Proc. Geol. Soc. Malaysia, Annual Geol. Conf. 2001, Pangkor, p. 19-26.
(online at: https://gsmpubl.files.wordpress.com/2014/10/agc2001_04.pdf)
(No commercial discoveries in onshore Sarawak since 1910 Miri field. Tinjar Province of onshore N-C Sarawak underexplored, due to assumption of shallow basement after Oligo-Miocene uplift and erosion. Shallow basement not supported by seismic or gravity-magnetic data. New aerogravity and magnetic data showed up to 5000m sediment in Tinjar Province and surrounding area, with series of highs and lows)

Majid, M.F.A., M.S. Ismail, A.H.A. Rahman & M.A. Mohamed (2017)- Facies distribution and petrophysical properties of shoreface- offshore transition environment in Sandakan Formation, NE Sabah Basin. In: Proc. 5th Int. AeroEarth Conf., Kuta 2017, IOP Conf. Series, Earth Environm. Science 88, 012023, p. 1-8.
(online at: http://iopscience.iop.org/article/10.1088/1755-1315/88/1/012023/pdf)
(Outcrop study in Sandakan, NE Sabah, of Miocene shallow marine sandstone of Sandakan Fm. Shoreface to offshore transitional environments, with common Hummocky Cross Stratified sandstone)

Mansor, H.E., J.Asis & Meor H.A. Hassan (2017)- Oligocene-Miocene large benthic foraminifera from the Tajau Sandstone Member, Kudat Formation, Sabah. Proc. 30th Nat. Geosc. Conf. Exhib. (NGC 2017), Kuala Lumpur, DRG29-112, Warta Geologi 43, 3, p. 220-221. *(Extended Abstract)*
(online at: https://gsmpubl.files.wordpress.com/2017/09/ngsm2017_032.pdf)
(Tajau Sst Member of Kudat Peninsula, Sabah, gently folded thick pebbly coarse sandstones with Late Oligocene (Te1-4) larger foram assemblage (Heterostegina borneensis, Eulepidina, etc.))

Mansor, M.Y., J.W. Snedden, J.F. Sarg, B.S. Smith, T. Kolich & M. Carter (1999)- Pre-drill predictions versus post-drill results: use of sequence stratigraphic methods in reduction of exploration risk, Sarawak deep-water blocks, Malaysia. J. Asian Earth Sci. 17, 1-2, p. 247-254.
(Sequence stratigraphic methods used to assess reservoir, source and seal distribution in Mobil-operated deep-water blocks of Sarawak. Wells Mulu-1 and Bako-1 penetrated high-quality shallow marine sandstone reservoirs in E-M Miocene. Lack of hydrocarbon charge may be due to position relative to coaly source. Wit small paleogeographic maps of E Miocene)

Mantaring, A., F. Matsuda & M. Okamoto (1995)- Analysis of overpressure zones at the southern margin of the Baram Delta Province and their implications to hydrocarbon expulsion, migration and entrapment. In: G.H. Teh (ed.) Proc.AAPG-GSM Int. Conf. Southeast Asian basins; oil and gas for the 21st century, Kuala Lumpur 1994, Bull. Geol. Soc. Malaysia 37, p. 179-190.
(online at: www.gsm.org.my/products/702001-100953-PDF.pdf)
(Baram Delta province, on- and offshore N Sarawak, Malaysia, Brunei, with thick, rapidly deposited Late Eocene- Pleistocene marine- deltaic sediments, leading to common overpressure. Overpressure zones normally in thick marine claystones below or at base of major oil and gas accumulation. Onshore Sarawak, S of Baram Delta Province thick Late Eocene- Miocene uplifted after latest Miocene, with abnormal pressure zones in three different settings)

Mathew, M.J. (2016)- Geomorphology and morphotectonic analysis of North Borneo. Doct. Thesis, Universite de Bretagne Loire, p. 1-140.
(online at: www.theses.fr/2016LORIS408.pdf)
(Collection of papers on geomorphology and morphotectonic analysis of Rajang and Baram drainage basins of Sarawak. Characterized by high denudation rates since Miocene. At end of Miocene rapid uplift of possibly whole Interior Highlands and coastal areas of Sarawak. Enhanced post 5 Ma erosion rates led to rapid progradation of deltas and Plio-Quaternary sediments that reach thicknesses of >6 km)

Mathew, M.J., D. Menier, A.H. Abdul Rahman, N.A. Siddiqui, M. Pubellier & M. Hassaan (2014)- Tertiary Sarawak Basin origin: a small step in demystifying the ambiguity. AAPG Int. Conf. & Exhib., Istanbul 2014, Search and Discovery Art. 10642, 9p. *(Extended Abstract)*
(online at: www.searchanddiscovery.com/documents/2014/10642mathew/ndx_mathew.pdf)
(Oligocene- Recent tectonic subsidence plots from 7 offshore wells show rapid initial subsidence and gradual decrease in subsidence rate with time, indicative of rift origin following McKenzie model)

Mathew, M.J., D. Menier, N.A. Siddiqui, S.G. Kumar & C. Authemayou (2016)- Active tectonic deformation along rejuvenated faults in tropical Borneo: inferences obtained from tectono-geomorphic evaluation. Geomorphology 267, p. 1-15.

Mathew, M.J., D. Menier, N.A. Siddiqui, M. Ramkumar, M. Santosh, S. Kumar & M. Hassaan (2016)- Drainage basin and topographic analysis of a tropical landscape: insights into surface and tectonic processes in northern Borneo. J. Asian Earth Sci. 124, p. 14-27.
(Geomorphic analysis of Rajang and Baram drainage basins, N Borneo. Landscape of N Borneo experienced rapid uplift after 5 Ma and undergoing active folding of Rajang Group thrust belts today)

Mat Zin, Ismail C. (1992)- Regional seismostratigraphic study of the Tembungo area, offshore West Sabah. Bull. Bull. Geol. Soc. Malaysia 32, p. 109-134.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1992018.pdf)
(Seismic stratigraphic study of Late Miocene hydrocarbon-bearing Stage IVD turbidite sequence around Tembungo field, offshore W Sabah. Turbidite sequence, characterised by oblique seismic reflection pattern, deposited in sedimentary bypass system tract as result of wrench-related uplift of Bunbury-St. Joseph area)

Mat Zin, Ismail C. (1994)- Dent Group and its equivalent in the offshore Kinabatangan area, East Sabah. In: G.H. Teh (ed.) Petroleum Geology Conf. VIII, Bull. Geol. Soc. Malaysia 36, p. 127-143.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1994028.pd)
(Dent Peninsula in E Sabah with thick Miocene deltaics (Dent Group), unconformably overlying Oligocene - E Miocene (and older?) Segama Gp conglomeratic rocks with ultrabasic, etc. boulders. Onshore Dent Peninsula Togopi Fm mainly marls, Ganduman Fm delta plain deposits grading to shallow marine deltaic and marine eastward, argillaceous Sabahat Fm marine deposit) Three major uplifts of regional significance occurred in E Miocene (deformation of Segama Gp), Late Miocene and Late Pliocene times)

Mat Zin, Ismail C. (1996)- Tertiary tectonics and sedimentation history of the Sarawak basin, East Malaysia. Ph.D. Thesis Durham University, p. 1-277.

(online at: http://etheses.dur.ac.uk/5198/1/5198_2651.PDF)
(Seismic stratigraphic study of offshore Sarawak Basin. Seven regional unconformities in Tertiary sedimentary succession of Sarawak Basin, some related to eustatic sea-level falls; others probably tectonic in origin. Sarawak Basin best explained as result of NW-SE trending right lateral fault movement in Oligocene- Pliocene. Rapid subsidence in early stage of basin formation. Tectonism in region combination of strike-slip movements and counter-clockwise rotation of Borneo in Oligo-Miocene. Five major dextral strike-slip lineaments: Igan-Oya Line, Mukah Line, W Balingian Line, Tinjar Line and W Baram Line)

Mat Zin, Ismail C. (1997)- Tectonics evolution and sedimentation history of the Sarawak Basin. In: G.H. Teh (ed.) Petroleum Geology Conference '96, Kuala Lumpur, Bull. Geol. Soc. Malaysia 41, p. 41-52.
(online at: www.gsm.org.my/products/702001-100871-PDF.pdf)
(Seismic stratigraphy of offshore Sarawak Basin shows 7 unconformities in Tertiary section. Development of basin started in late Oligocene, with deposition along coastline in NW-SE direction (along ~W Balingian Line; parallel to major structural lineaments) and became oriented to present day NE-SW direction in Late Miocene. Basin formed as result of NW-SE trending right-lateral fault movement in Late Oligocene-Miocene. Deposition and preservation of coastal plain and shallow marine sediments continued in E, while W area remained as high until Late Miocene)

Mat Zin, Ismail C. (1997)- Subsidence history of Sarawak Basin. In: Proc. ASCOPE 97 Conf. Challenges and opportunities in the 21st century, 1, p. 107-127.

Mat Zin, Ismail C. (1998)- Subsidence nature of a strike-slip related basin: an example learned from the Sarawak Basin. In: G.H. Teh (ed.) Petroleum geology conference 1997, Bull. Geol. Soc. Malaysia 42, p. 63-83.
(online at: www.gsm.org.my/products/702001-100855-PDF.pdf)
(Subsidence profile of Sarawak Basin suggests basin formed by strike-slip tectonism, not foreland lithospheric flexure by subduction of S China Sea oceanic crust beneath NW Sarawak. Burial history curves for wells show rapid early subsidence followed by later phase of slower subsidence, indicative of rift-type tectonic origin. These are followed by compressional basin inversion events or continued with thermal subsidence similar to rift basin profile. Stretching factors and heat-flow show consistent with strike-slip tectonics)

Mat Zin, Ismail C. (1999)- Tertiary tectonic model of North-West Borneo. In: G.H. Teh (ed.) Proc. 9th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA ô98), Kuala Lumpur 1998, Bull. Geol. Soc. Malaysia 43, p. 417-432.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1999042.pdf)
(Sarawak Basin dominated by NE-SW strike-slip tectonism. Onshore Lupar Melange Lupar Melange in SW Sarawak ~20 km wide, composed of blocks in sheared pelitic matrix with Lower Eocene microfauna; chert blocks with E-M Cretaceous radiolaria. Commonly interpreted as subduction melange, but may beformed by strike-slip tectonics. Eight other NW-SE trending strike slip zones identified on- and offshore Sarawak)

Mat Zin, Ismail C. (2000)- Stratigraphic position of the Rangsi Conglomerate in Sarawak. In: G.H. Teh et al. (ed.) Geol. Soc. Malaysia Ann. Conf. 2000, Pulau Pinang, p. 131-136.
(online at: https://gsmpubl.files.wordpress.com/2014/10/agc2000_18.pdf)
(Rangsi conglomerate that outcropping in Tatau Horst area in Sarawak long regarded as (Late Eocene) basal unit of Tatau Fm. Seismic stratigraphic suggests Rangsi conglomerate much younger than Tatau Fm, possibly equivalent to Balingian Fm of Late Miocene age. 'Tatau Horst' not extensional horst, but positive flower structure, formed as result of Miocene transpressional strike-slip episode)

Mat Zin, Ismail C. & J. Sipan (1994)- Application of sequence stratigraphic techniques on the non-marine sequences: an example from the Balingian Province, Sarawak. Bull. Geol. Soc. Malaysia 36, p. 105-117.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1994026.pdf)
(Sequence stratigraphic interpretation of non-marine lower coastal plain deposits of late Oligocene- E Miocene sediments Cycle I and II in onshore Balingian Province, onshore C Sarawak)

Mat Zin, Ismail C. & R.E. Swarbrick (1997)- The tectonic evolution and associated sedimentation history of Sarawak Basin, eastern Malaysia: a guide for future hydrocarbon exploration. In: A.J. Fraser, S.J. Matthews & R.W. Murphy (eds.) Petroleum Geology of Southeast Asia. Geol. Soc. Spec. Publ. 126, p. 237-245.
(Seismic-stratigraphy of offshore Sarawak shows seven unconformities in Tertiary sediments, Development of Sarawak Basin started in Late Oligocene with deposition along NW-SE coastline, perpendicular to present-day coastline. Coastline oriented to present-day NE-SW in Late Miocene. Oils generated from land plant dominated source rocks. Basin formed as result of Late Oligocene- Miocene NW-SE trending right-lateral fault movement. Movement progressive younging in E-ward direction)

Mat Zin, Ismail C. & M.E. Tucker (1999)- An alternative stratigraphic scheme for the Sarawak Basin. J. Asian Earth Sci. 17, 1-2, p. 215-232.
(Sequence stratigraphic model of Sarawak basin. Eight major sequences in mid-Oligocene- Pleistocene, separated by seven regional unconformities. Oldest unconformity between basement (Belaga Fm) and overlying Late Oligocene sediments. New sequences named T1S- T7S. Sequences probably tectonically induced, rather than related to global eustatic sea-level falls.)

Maulana, H. & H.S. Hakimi (2013)- Mass Transport Complex (MTC) control on the basin floor stratigraphic succession and sand deposition: an observation from deepwater Brunei. Berita Sedimentologi 28, p. 41-44.
(online at: www.iagi.or.id/fosi/berita-sedimentologi-no-28-borneo.html)
(Description of large, Recent Brunei Mega mass transport complex, sourced from Baram Canyon)

McGilvery, T.A. & D.L. Cook (2003)- The influence of local gradients on accommodation space and linked depositional elements across a stepped slope profile, offshore Brunei. In: H.R. Roberts et al. (eds.) Shelf margin deltas and linked down slope petroleum systems: global significance and future exploration potential, Bob F. Perkins Research Conf., Gulf Coast Section SEPM (GCSSEPM), p. 387-419.

McGilvery, T.A. & D.L. Cook (2004)- Depositional elements of the slope/basin depositional system Offshore Brunei. In: R.A. Noble et al. (eds.) Proc. Deepwater and Frontier Exploration in Asia & Australia Symposium, Jakarta, Indon. Petroleum Assoc. (IPA), DFE04-OR-019, 13p.
(Modern continental slope deposition off Brunei. 'Stepped slope' resulting from basinward thrusting and deltaic sediment loading. Elongate, structurally controlled mini-basins 2-10 km wide, 20-60 kmlong. Primary elements: 1) Sediment dispersal fairways 2-5 km wide; 2) Distributary channel/lobe complexes of sheet deposits and low relief channels; 3) Mass wasting features; 4) Submarine canyons developed by mass wasting along forelimbs of thrust structures)

McGilvery, T.A. & D.L.Cook (2004)- Flow paths and water bottom gradients across a stepped slope profile, Offshore Brunei. In: R.A. Noble et al. (eds.) Proc. Deepwater and Frontier Exploration in Asia & Australia Symposium, Jakarta, Indon. Petroleum Assoc. (IPA), DFE04-PO-020, 7p.

McGilvery, T.A., G. Haddad & D.L.Cook (2004)- Seafloor and shallow subsurface examples of mass transport complexes, Offshore Brunei. Proc. Offshore Technology Conf. (OTC), Houston, 16780, p. *(Extended Abstract)*

McGiveron, S. & J. Jong (2016)- Morphological description of a mud volcano caldera from deepwater Sabah- general implications for hydrocarbon exploration. Warta Geologi 42, 3-4, p. 69-79.
(online at: www.gsm.org.my/products/702001-101686-PDF.pdf)
(Seismic profiles and maps description of 500m diameter mud volcano caldera at 1100m water depth offshore Sabah. Mud volcano overlies toe-thrust anticline and has well-defined caldera)

McManus, J. & R.B. Tate (1983)- Obduction in Sabah. Proc. SE Asia Petroleum Expl. Soc. (SEAPEX) 6, p. 58-65.
(Part of Sulu Sea floor (Late Cretaceous-Eocene 'chert-spilite Fm' of Darvel Bay and associated ultrabasic rocks) obducted in Early Miocene(?) onto N margin of Borneo microcontinent. Intensely sheared and imbricated. Resting on partly metamorphosed sediments of Eocene- Oligocene age (Ta- Te1-4))

McManus, J. & R.B. Tate (1986)- Mud volcanoes and the origin of certain chaotic deposits in Sabah, East Malaysia. In: G.H. Teh & S. Paramananthan (eds.) Proc. 5th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA V), Kuala Lumpur 1984, 1, Bull. Geol. Soc. Malaysia 19, p. 193-205.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1986016.pdf)
(Chaotic deposits common in post-Eocene in Sabah and mapped as slump breccias, but probably products of mud volcanism (Garinono, Wariu, Kuamut, Ayer Fms). Mud volcanism linked to M Miocene collisional event)

Menier, D., M. Mathew, M. Pubellier, F. Sapin, B. Delcaillau, N. Siddiqui, M. Ramkumar & M. Santosh (2017)- Landscape response to progressive tectonic and climatic forcing in NW Borneo: implications for geological and geomorphic controls on flood hazard. Nature Scientific Reports 7, 457, p. 1-18.
(online at: https://www.nature.com/articles/s41598-017-00620-y.pdf)
(On consequences of uplift and orographic-precipitation on evolution of orogens and landscapes of NW Sabah)

Menier, D., B. Pierson, A. Chalabi, K.K. Ting & M. Pubellier (2014)- Morphological indicators of structural control, relative sea-level fluctuations and platform drowning on present-day and Miocene carbonate platforms. Marine Petroleum Geol. 58, B, p. 776-788.
(online at: https://seacarledu.files.wordpress.com/2016/06/menier-and-others-2014.pdf)
(Analysis of seismic morphologies of M-L Miocene carbonate platforms of C Luconia Platform off Sarawak (mainly 'Mega-Platform') and satellite images of possible Recent analogues in Tun Sakaran Marine Park, S Sulu Sea, off Sabah)

Meor, H.Hassan, H.D. Johnson, P.A. Allison & Wan H. Abdullah (2013)- Sedimentology and stratigraphic development of the upper Nyalau Formation (Early Miocene), Sarawak, Malaysia: a mixed wave- and tide-influenced coastal system. J. Asian Earth Sci. 76, p. 301-311.
(online at: https://umexpert.um.edu.my/file/publication/00004125_92877.pdf)
(Facies analysis of Lower Miocene U Nyalau Fm, exposed around Bintulu, Sarawak. Wave- and tide-dominated coastal system (shoreface, fluvio-tidal channels, bay and mangrove facies associations))

Meor, H.Hassan, H.D. Johnson, P.A. Allison & Wan H. Abdullah (2017)- Sedimentology and stratigraphic architecture of a Miocene retrogradational, tide-dominated delta system: Balingian Province, offshore Sarawak, Malaysia. In: G.J. Hampson et al. (eds.) Sedimentology of paralic reservoirs: recent advances, Geol. Soc., London, Spec. Publ. 444, p. 215-250.
(Balingian Province of NW Borneo with oil production mainly from Early Miocene (cycle II) coastal plain deposits. Four types of vertical facies successions. Cycle II tide-dominated delta system, partly analogous to modern Rajang Delta and Lupar Embayment of S Sarawak. Fluvio-tidal channel and tide-dominated delta successions represent periods of progradation; wave-dominated shoreface and barrier lagoon successions during transgression and/or delta lobe abandonment. Several high-order sequences stacked into two lower-order, ~100-300m thick fining-upwards megasequences)

Metcalfe, I. (1985)- Lower Permian conodonts from the Terbat Formation. Warta Geologi (Geol. Soc. Malaysia), 11, 1, p. 1-4.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1985001.pdf)
(Sparse uppermost Carboniferous- early Lower Permian conodont assemblage from Terbat Lst at Gunung Selabor near Indonesian border SSE of Kuching. First record of conodonts from N Borneo, incl. Anahignathodus and Streptognathodus elongatus. Color Alteration Index of 4 suggests heating to 190-300°C)

Mihaljevic, M., W. Renema, K. Welsh & J.M. Pandolfi (2014)- Eocene- Miocene shallow-water carbonate platforms and increased habitat diversity in Sarawak, Malaysia. Palaios 29, 7, p. 378-391.
(online at: http://marinepalaeoecology.org/wp-content/uploads/2011/09/Mihaljevic-et-al-2014-PALAIOS.pdf)
(Indo-Pacific marine biodiversity hotspot originated between Late Eocene and E Miocene, coinciding with increase in availability of shallow-marine habitats driven by opening of S China Sea and collision of Australia with Pacific arcs and SE Asian margin. Carbonate platform environments in Sarawak (ramp-like late M Eocene- E Miocene Melinau carbonate platform and unattached basal Miocene Subis carbonate platform)

suggest increase in habitat diversity from Eocene to Miocene. Corals first appear in Oligocene, but true reef facies not observed until Miocene)

Milroy, W.V. (1953)- Geology of West Sarawak with notes on the palaeontology of west Sarawak by W.E. Crew and comments on the geology of W Sarawak by P. Liechti. Report GR602, Royal Dutch Shell, p. *(Unpublished) (Hashimoto et al. 1975, p. 286: incl. occ. Maastrichtian larger foram Lepidorbitoides cf blanfoldi in Engkilili Fm)*

Milsom, J., R.A. Holt, C.S. Hutchison, S.C. Bergman, D.A. Swauger & J.E. Graves (2001)- Discussion of a Miocene collisional belt in North Borneo: uplift mechanism and isostatic adjustment quantified by thermochronology. J. Geol. Soc. London 158, p. 396-400.
(Milsom & Holt critique of Hutchison et al. (2000) paper 'Miocene collisional belt N Borneo', and reply by Hutchison. Hutchison et al. interpretations of deep structure of Sabah incompatible with Holt (1998) data on gravity field)

Milsom, J., R. Holt, D.B. Ayub & R. Smail (1997)- Gravity anomalies and deep structural controls at the Sabah-Palawan margin, South China Sea. In: A.J. Fraser, S.J. Matthews & R.W. Murphy (eds.) Petroleum Geology of Southeast Asia, Geol. Soc., London, Spec. Publ. 126, p. 417-427.
(SE margin of S China Sea divided into segments with differing gravity patterns by NE-SW lineaments (W Baram-Tinjar Line, Balabac Line). Sabah Trough gravity low is foreland basin on extended continental crust of terrane derived from Eurasian margin (with Palawan), which collided with Sabah margin in E-M Miocene)

Mohamad, M. & J.J. Lobao (1997)- The Lingan Fan: Late Miocene-Early Pliocene turbidite fan complex, North West Sabah. In: J.V.C. Howes & R.A. Noble (eds.) Proc. Int. Conf. Petroleum Systems of SE Asia & Australia, Jakarta, Indon Petrol. Assoc. (IPA), p. 787-798.
(Seismic facies study of Late Miocene/Early Pliocene Lingan Fan complex of turbidite fans offshore NW Sabah. Fan system divided into 4 seismic sequences. Turbidite systems first pond into higher, more proximal basins and reach more distal basins by successive fill and spill processes. Four seismic facies identified)

Mohamed, A., A.H. Abd Rahman and M. S. Ismail (2015)- Sedimentary facies of the West Crocker Formation North Kota Kinabalu-Tuaran Area, Sabah, Malaysia. Journal of Physics, Conference Series 660, 012004, IOP Publishing, p. 1-6.
(online at: http://iopscience.iop.org/article/10.1088/1755-1315/30/1/012004/pdf)
(Sedimentology study of new outcrops in W Crocker Fm in Sabah suggests deposition in sand-rich submarine fan setting, with inner fan channel-levee complex, mid-fan channelised lobes, and outer fan facies)

Mohamed, Idris & O.C Meng (1992)- Sequence stratigraphy of Tertiary sediments offshore Sarawak (Balingian and Luconia provinces). In: Symposium on the Tectonic framework and energy resources of the western margin of the Pacific Basin. Warta Geologi 18, 6, p. 277-278.

Mohammad, A.M. & R.H.F. Wong (1995)- Seismic sequence stratigraphy of the Tertiary sediments, offshore Sarawak deepwater area, Malaysia. In: G.H. Teh (ed.) Proc. AAPG-GSM Int. Conf. 1994, Southeast Asian basins; oil and gas for the 21st century, Bull. Geol. Soc. Malaysia 37, p. 345-361.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1995a26.pdf)
(Sarawak deepwater seismic sequence stratigrapy study identified eight sequences, grouped into four supersequences A, B, C and D, tied to regional tectonic events of S China Sea. Higher order sequences also interpreted from paleontologic, lithologic, paleofacies data and GR-logs from four wells. Four main seismic facies, ranging from non-marine to deepmarine. Seismic facies maps for Oligocene-Lower Miocene Ss C indicate all four facies, overall transgressive stacking, and NW-SE trending paleoshoreline. M Miocene-Recent Ss D suggests mainly outer shelf- deep marine facies and E-W trending paleoshoreline)

Mohammad, Y.b. Ali. & P. Abolins (1999)- Central Luconia Province. In: Petronas (1999) The petroleum geology and resources of Malaysia, p. 371-391.

McMonagle, L.B. (2008)- Scleractinian reef-coral diversity in the Oligocene of Sabah, Borneo. *(http://londonevolutionarynetwork.files.wordpress.com/2010/02/2008conferencebook.pdf)*
(Abstract only. Modern Indo-W Pacific characterised by highest global species diversity in reef corals. Reef-coral fauna collected from Oligocene patch-reef facies in Gomantong Fm of Sabah, Malaysia (late Early to early Late Oligocene) doubled number of coral species previously known from Oligocene of Borneo, and suggests apparent paucity of Paleogene corals from SE Asia could be result of sampling bias. Coral diversification had occurred by Early Oligocene, rather than at Oligocene/Miocene boundary)

McMonagle, L.B., P. Lunt, M.E.J. Wilson, K.G. Johnson, C. Manning & J. Young (2011)- A re-assessment of age dating of fossiliferous limestones in eastern Sabah, Borneo: implications for understanding the origins of the Indo-Pacific marine biodiversity hotspot. Palaeogeogr. Palaeoclim. Palaeoecology 305, p. 28-42.
(Shallow marine limestones rel. rare onshore N Borneo and show punctuated development, in area underlain by oceanic crust and dominated by deep marine sedimentation. Re-dating of limestones in E Sabah: (1) Lower Kinabatangan Lst mid-Oligocene (coral-rich, larger foram zone Te1, nannofossil zone NP24, Sr isotope ages 28.8-27.6 Ma); (2) Gomantong Lst Early Miocene (LBF zone Te5/earliest Tf1, Sr age 21.0 Ma); (3) Togopi Limestone with Alveolinella quoyi and abraded Calcarina (Pliocene-Pleistocene; Sr age 1.72 Ma)

Morgan, A.B. (1974)- Chemistry and mineralogy of garnet pyroxenites from Sabah, Malaysia. Contrib. Mineralogy Petrology 48, p. 301-314.
(Garnet pyroxenites ('eclogites') and corundum-garnet amphibolites from Dent Peninsula of E Sabah occur as exotic blocks in Late Miocene slump breccia deposit of Segama Gp. Bulk composition and mineralogy similar to garnet pyroxenite lenses within ultramafic rocks. Estimated T and P for pyroxenites ~850° C and ~19 kbar (= mantle depth, ~65km?)

Morley, C.K. (2003)- Outcrop examples of mudstone intrusions from the Jerudong anticline, Brunei Darussalam and inferences for hydrocarbon reservoirs. In: P. van Rensbergen et al. (eds.) Subsurface sediment mobilization, Geol. Soc., London, Spec. Publ. 216, p. 381-394.
(Mudstone intrusions in Jerudong area represent natural hydraulic fractures developed above mobile mudstone diapir sourced from M Miocene Setap Fm. Intrusion geometries influenced by pre-existing normal faults)

Morley, C.K. (2007)- Interaction between critical wedge geometry and sediment supply in a deep-water fold belt. Geology 35, 2, p. 139-142.
(On low angle dips of surface and basal detachment faults of Late Miocene–Holocene deep-water fold-and-thrust belt of offshore NW Borneo)

Morley, C.K. (2009)- Geometry of an oblique thrust fault zone in a deepwater fold belt from 3D seismic data. J. Structural Geol. 31, 12, p. 1540-1555.
(Late Pliocene-Recent growth of 12 km long, deepwater anticline at distal margin of Baram Delta Province)

Morley, C.K. (2009)- Growth of folds in a deep-water setting. Geosphere 5, 2, p. 59-89.
(Seismic data of deep-water area off NW Borneo provide picture of interaction between sedimentary processes on continental slope and growth of major folds over time period of ~3.5-5 Ma)

Morley, C.K. & S. Back (2008)- Estimating hinterland exhumation from late orogenic basin volume, NW Borneo. J. Geol. Soc., London, 165, 1, p. 353-366.
(Miocene- recent sediment volumes for Baram Deltaic Province estimated. Volume restoration onto sediment source area determined exhumation of ~5 km from 17 Ma- Recent. Denudation for M Miocene, Late Miocene and Pliocene- Recent proceeded at similar rates. Initial uplift of central Borneo attributed to buoyancy of thinned continental crust that jammed subduction zone under NW Borneo in E Miocene. Absence of decay in erosion rates from M Miocene-Recent suggests additional uplift possibly related to slab detachment)

Morley, C.K., S. Back, P. van Rensbergen, P. Crevello & J.J. Lambiase (2003)- Characteristics of repeated, detached, Miocene-Pliocene tectonic inversion events in a large delta province on an active margin, Brunei Darussalam, Borneo. J. Structural Geol. 25, p. 1147-1169.

(Baram Delta province evolved in M Miocene- present day from foreland basin to shelf margin. Episodic folding events caused uplift of hinterland, delta progradation and inversion of gravity-related faults. Region best understood as development of W-verging thrust belt in M Miocene foreland basin with major folds forming in M Miocene. Onshore thrust and inversion features dominantly N-S-trending and began activity in M Miocene. In Late Miocene (7.5 Ma) NE-SW inversion folds developed. Continuation of deformation into Pliocene largely confined to offshore; onshore N-S structures not reactivated in Pliocene)

Morley, C.K. & M. Burhannudinnur (1997)- Anatomy of growth fault zones in poorly lithified sandstones and shales: implications for reservoir studies and seismic interpretation: part 2, Seismic reflection geometries. Petroleum Geoscience 3, 3, p. 225-231.
(Seismic reflection data across growth faults off NW Borneo show many of small-scale fault geometries recognized in outcrop can also be interpreted on seismic data. Some fault zones single fault plane; others up to 1km wide bundles of overlapping fault planes connected by hard and soft linkage geometries)

Morley, C.K., P. Crevello & Z.H. Ahmad (1998)- Shale tectonics and deformation associated with active diapirism: the Jerudong Anticline, Brunei Darussalam. J. Geol. Soc., London, 155, p. 475-490.
(Jerudong anticline of Brunei outcrop example of multiple phases of diapir growth and interaction with country rock. N-S-trending anticline overlies high-angle transpressional basement fault zone. Deformation history: (1) M Miocene E-W to NE-SW-trending growth faulting and shale-diapir growth; (2) Late Miocene- E Pliocene transpression. Continued uplift and erosion elevated overpressured horizons to where hydraulic fracturing reached surface and Holocene-age mud volcanoes developed)

Morley, C.K., R. King, R. Hillis, M. Tingay & G. Backe (2011)- Deepwater fold and thrust belt classification, tectonics, structure and hydrocarbon prospectivity: a review. Earth-Science Reviews 104, p. 41-91.
(Includes examples from NW Borneo, Seram)

Morley, C.K., M. Tingay, J. Warren, P. Boonyasaknanon & A. Julapour (2014)- Comparison of modern fluid distribution, pressure and flow in sediments associated with anticlines growing in deepwater (Brunei) and continental environments (Iran). Marine Petroleum Geol. 51, p. 210-229.
(On structural development, overpressure generation and fluid type/migration in deep-water offshore Brunei and outcrops in Central Basin of Iran)

Morley, R.J. (1998)- Palynological evidence for Tertiary plant dispersals in the SE Asian region in relation to plate tectonics and climate. In: R. Hall & J.D. Holloway (eds.) Biogeography and geological evolution of SE Asia, Backhuys Publ., Leiden, p. 211-234.
(online at; http://searg.rhul.ac.uk/publications/books/biogeography/biogeog_pdfs/Morley.pdf)
(Includes re-evaluation of Muller (1968) conclusions on palynological ages of Pedawan Fm (most likely Albian- Santonian) and Kayan/ Plateau sandstone (more likely Paleocene than Late Cretaceous-Eocene))

Morris, S.F. & J.S.H. Collins (1991)- Neogene crabs from Brunei, Sabah and Sarawak. Bull. British Museum (Natural History), Geology, 47, p. 1-33.
(online at: www.biodiversitylibrary.org/)
(Descriptions of 36 species of Mio-Pliocene crab fossils from 17 localities in NW Borneo. Abnormally high proportion of leucosiids)

Morrison, K. & W.C. Lee (2003)- Sequence stratigraphic framework of Northwest Borneo. In: G.H. Teh (ed.) Petroleum Geology Conf. Exh. 2002, Bull. Geol. Soc. Malaysia 47, p. 127-138.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm2003a09.pdf)
(Eocene- Recent depositional sequences of Sarawak, Sabah and Brunei, tied to Haq et al. (1988) global cycle chart. Major regional unconformities (mostly tectonic events): near Base Miocene/22.2 Ma; Deep Regional Unconformity/ 15.5 Ma; late Middle Miocene/12.1 Ma/uplift event; early Late Miocene/10.6 Ma/eustatic, Shallow regional Unconformity/Late Miocene/8.5 Ma; latest Miocene/5.6 Ma/ eustatic; latest Pliocene/~2 Ma/compression)

Muda, J. (2010)- Oil seepages at Kampung Minyak, Kudat Peninsula, Northern Sabah: potential for geotourism development. Bull. Geol. Soc. Malaysia 54, p. 49-52.
(online at: http://geology.um.edu.my/gsmpublic/BGSM/bgsm56/bgsm2010007.pdf)
(On oil seeps in NW Sabah, known since late 1800's, emanating E Miocene from Kudat Fm clastics, and its tourism potential)

Muda, J. & F. Tongkul (2008)- Geoheritage resources of the Baliajong River: Potential for geotourism development. Bull. Geol. Soc. Malaysia 54, p. 139-145.
(online at: http://geology.um.edu.my/gsmpublic/BGSM/bgsm54/bgsm2008021.pdf)
(Baliajong River ~3 km NE of Tandek, E of Marudu Bay, N Sabah, with outcrop of Lower Cretaceous-Paleocene oceanic crust (formerly 'Chert-spilite Fm'), comprising N-S trending imbricated gabbro and interbedded pillow basalts and red, bedded radiolarian cherts, forming basement rock of N Sabah. Deformed basement overlain by Miocene (22-15 Ma) Crocker Fm clastics, which were folded at 15 Ma. Failed manganese mining operation in 1903-1908. Area promoted as geotourism destination)

Mueller, F.P. (1915)- Tektite from British Borneo. Geol. Magazine, ser. 6, 2, 5, p. 206-211.
(Four black lustrous tektites 1.5-3 cm in diameter, found in 1913 near Tutong Station, SW of Brunei town, washed out of white quartz sand 1-2' below surface, in terrace deposit ~40' above sea level. With first map of distribution of billitonite/ tektite of Malaysia- Indonesian region?)

Muff, R. (1990)- Geological, geochemical, and ore microscopic investigations of the massive, cupriferous sulfide occurrences at West Sualog in the Bidu Bidu Ophiolite Complex, Sabah, East Malaysia. Geol. Jahrbuch B74, p. 65-95.
(On stratabound copper-bearing massive sulphides in upper part of basic volcanic sequence of ophiolite complex in U Cretaceous- Eocene Sabah Melange Complex, overlain by fine-clastic sedimentary rocks)

Muhamad, Abdul J. & M.J. Hoesni (1992)- Possible source for the Tembungo oils: evidence from biomarker fingerprints. Bull. Geol. Soc. Malaysia 32, p. 213-232.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1992023.pdf)
(Tembungo field off NW Sabah faulted anticline, with similar oils in Late Miocene sandstones in different fault blocks: paraffinic, low sulfur and waxy. Biomarkers suggest terrigenous source rocks with abundant land plant organic matter)

Muller, J. (1964)- Palynological contributions to the history of Tertiary vegetation in N.W. Borneo. In: D. Murchison & T.S. Westoll (eds.) Coal and coal-bearing strata, Elsevier, p. 39-40.

Muller, J. (1964)- A palynological contribution to the history of mangrove vegetation in Borneo. In: L.M. Cranwell (ed.) Ancient Pacific floras, the pollen story, University of Hawaii Press, Honolulu, p. 33-42.

Muller, J. (1968)- Palynology of the Pedawan and Plateau sandstone formation (Cretaceous- Eocene) in Sarawak, Malaysia. Micropaleontology 14, 1, p. 1-37.
(online at: www.micropress.org/micropen2/articles/1/4/58391_articles_article_file_1406.pdf)
(Pioneering study of palynology of U Cretaceous- Eocene section of Sarawak. Pedawan Fm is Cenomanian-Turonian age, Plateau Sandstone is of Senonian- Eocene age (Senonian age of basal Plateau Sst supported by Said et al. (1996) but Plateau Sst mainly viewed as Paleocene- E Eocene by Morley (1998), Hutchison (2005))

Murtaza, M., A.H. Abdul Rahman & C.W. Sum (2015)- The shallow marine succession of Begrih Formation (Pliocene), Mukah Area, Sarawak: facies, stratigraphic characteristics, and paleoenvironmental interpretation. In: M. Awang et al. (eds.) 3rd Int. Conf. Integrated Petroleum Engineering and Geosciences (ICIPEG2014), Kuala Lumpur 2014, Springer Verlag, p. 337-362.
(Facies analysis of Pliocene Begrih Fm exposed along Mukah-Selangau road, NW Sarawak. 15 facies deposited in shallow marine setting with pronounced storms, wave, fluvial, and tidal influence)

Murtaza, M., A.H.A. Rahman, C.W. Sum & Z. Konjing (2018)- Facies associations, depositional environments and stratigraphic framework of the Early Miocene-Pleistocene successions of the Mukah-Balingian area, Sarawak, Malaysia. J. Asian Earth Sci. 152, p. 23-38.
(Outcrop sections along Mukah-Selangau road dominated by fluvial, floodplain and estuarine related coal-bearing deposits.(E-M Miocene Balingian, Late Miocene Begrih and M Pliocene- Pleistocene Liang Fms). Multiple regressive-transgressive cycles, with sediments derived from uplifted Penian high and Rajang Gp)

Mustafar, M.A., W.J.F. Simons, K.M. Omar & B.A.C. Ambrosius (2014)- Monitoring of local deformations in North Borneo. In: 25th Congress Int. Federation Surveyors (FIG), Kuala Lumpur, TS11, 12p.
(online at: www.fig.net/resources/proceedings/fig_proceedings/fig2014/papers/ts11a/)

Mustafar, M.A., W.J.F. Simons, F. Tongkul, C. Satirapod, K.M. Omar & P.N.A.M. Visser (2017)- Quantifying deformation in North Borneo with GPS. J. Geodesy, p. 1-19.
(online at: https://link.springer.com/content/pdf/10.1007%2Fs00190-017-1024-z.pdf)
(GPS survey results indicates extension along coastal regions of Sarawak and Brunei (5-9 mm/ year W-directed movement) but strain rate tensors in Sabah reveal only insignificant extension, while compression occurs throughout NW Borneo. CW (microblock) rotation of N part of North Borneo. Low subsidence rates along W coast of Sabah, but inconsistent trends between Crocker and Trusmadi Mts. Unable to confirm hypothesis of gravity sliding as main driving force. Ongoing Sundaland- Philippine Sea plate convergence may still play role in present-day deformation)

Mustapha, K.A. & W.H. Abdullah (2013)- Petroleum source rock evaluation of the Sebahat and Ganduman Formations, Dent Peninsula, Eastern Sabah, Malaysia. J. Asian Earth Sci. 76, p. 346-355.
(Evaluation of petroleum potential of M Miocene- E Pliocene Sebahat Fm and Pliocene Ganduman Fm. Thermally immature onshore, but continue into Sandakan sub-basin of S Sulu Sea)

Mustapha, K.A., W.H. Abdullah, Z. Konjing, S.S. Gee & A.M. Koraini (2017)- Organic geochemistry and palynology of coals and coal-bearing mangrove sediments of the Neogene Sandakan Formation, Northeast Sabah, Malaysia. Catena 158, p. 30-45.
(Coals in mangrove sediments of Sandakan Fm of Sandakan Peninsulawith vitrinite reflectance (Ro) 0.31-0.49%, indicating immature- very early mature for hydrocarbon generation. Dominated by Type III kerogen, with some Type II/III. Presence of dinoflagellate cysts and offshore mudstones consistent with rel. high sulphur content from marine inundations. Palynomorphs with abundant mangrove and freshwater pollen Presence of Florschuetzia levipoli, F. meridionalis and F. semilobata suggests E-M Miocene age)

Mustard, H.M. (1997)- The Bau gold district- East Malaysia. In: Proc. World Gold Conf. '97, Singapore 1997, Australasian Inst. of Mining and Metallurgy (AusIMM), Parkville, 2, p. 67-80.
(Gold and platinum in Miocene fault-controlled veins and replacements in U Jurassic- Lower Cretaceous Bau Limestone in SW Sarawak. Mined since 1820)

Myers, L.C. (1977)- Weathering profile developed on ultrabasic rocks at Telupid, Sabah. Geol. Survey Malaysia, Geol. Papers 2, p. 66-71.

Mylius, H.G. (1990)- The geological setting of a cupfiferous sulfide mineralization in the Kiabau area of the Bidu Bidu Hills, Sabah, East Malaysia. Geol. Jahrbuch B74, p. 97-114.
(Massive copper-bearing pyrite mineralization in sequence of altered basalt and mudstone close to contact with ultrabasic rocks)

Nagano, K., S. Takenouchi, H. Imai & T. Shoji (1977)- Fluid inclusion study of the Mamut porphyry copper deposit, Sabah, Malaysia. Mining Geology 27, 143, p. 201-212.
(online at: www.journalarchive.jst.go.jp...)

Nagarajan, R., J.S. Armstrong-Altrin, F.L. Kessler, E.L. Hidalgo-Moral, D. Dodge-Wan & N.I. Taib (2015)- Provenance and tectonic setting of Miocene siliciclastic sediments, Sibuti Formation, northwestern Borneo. Arabian J. Geosciences 8, 10, p. 8549-8565.
(Provenance study of Miocene Sibuti Fm clastics, Sarawak, suggests recycled continental nature, mainly from metasedimentary source (Rajang Fm) in collision zone)

Nagarajan, R., J.S. Armstrong-Altrin, F.L. Kessler & J. Jong (2017)- Petrological and geochemical constraints on provenance, paleoweathering, and tectonic setting of clastic sediments from the Neogene Lambir and Sibuti Formations, Northwest Borneo. In: R. Mazumder (ed.) Sediment provenance: influences on compositional change from source to sink, Chapter 7, Elsevier, Amsterdam, p.123-153.
(Petrography and geochemistry suggest Miocene Lambir and Sibuti Fms clastics derived from recycled sedimentary/metasedimentary sources in an evolving passive-to-active continental margin setting)

Nagarajan, R., J. Jong & F.L. Kessler (2017)- Provenance of the Neogene sedimentary rocks from the Tukau and Belait Formations, Northeastern Borneo by mineralogy and geochemistry. Warta Geologi 43, 2, p. 10-16.
(online at: https://gsmpubl.files.wordpress.com/2017/09/ngsm2017_02.pdf)
(Miocene quartz-rich clastics of Tukau and Belait Fms sourced from area comparable to Rajang-Crocker mountain belt in Borneo hinterland. Tukau Fm supplied from moderately-weathered continental hinterland composed of acidic igneous and/or metamorphic lithologies, and older sediments. Miocene Belait Fm reflects stronger weathering and significant input of mafic minerals (i.e. biotite, Mg-chromites))

Nagarajan, R., P.D. Roy, M.P. Jonathan, R. Lozano, F.L. Kessler & M.V. Prasanna (2014)- Geochemistry of Neogene sedimentary rocks from Borneo Basin, East Malaysia: paleo-weathering, provenance and tectonic setting. Chemie der Erde- Geochemistry 74, p. 139-146.
(Neogene sediments of Sarawak classified as extremely weathered sandstones, with post-depositional K-metasomatism and zircon enrichment through sediment recycling. Geochemical characteristics suggest mixed-nature provenance. Enriched Cr in quartz arenite and Fe-sandstone related to contribution from ophiolite or fractionation of Cr-bearing minerals)

Nagarajan, R., P.D. Roy, F.L. Kessler, J. Jong, V. Dayong & M.P. Jonathan (2017)- An integrated study of geochemistry and mineralogy of the Upper Tukau Formation, Borneo Island (East Malaysia): sediment provenance, depositional setting and tectonic implications. J. Asian Earth Sci. 143, p. 77-94.
(Late Miocene or younger ((~10–2.6 Ma) Tukau Fm of Sarawak formation unconfomably overlies M Miocene Lambir Fm. Clastics highly mature and recycled from weathered sedimentary- metasedimentary sources, with granitoids and mafic-ultramafic rocks. Cretaceous and Triassic-age detrital zircons from felsic rock, tie to granitoids of Schwaner Mts (Kalimantan) and Tin Belt granites, but probably recycled via Rajang Group, uplifted and eroded in Neogene. Chromian spinels indicate minor influence of mafic- ultramafic rocks. Deposited in passive margin with passive collisional and rift settings)

Nagtegaal, P.J.C. (1989)- A century of petroleum exploration in Sarawak and Sabah. ASEAN Council on Petroleum, p. 29-36.

Nakai, I., H. Adachi, S. Matsubara, A. Kato, K. Masutomi, T. Fujiwara & K. Nagashima (1978)- Sarabauite, a new oxide sulfide mineral from the Sarabau Mine, Sarawak, Malaysia. American Mineralogist 63, 7-8, p. 715-719.
(online at: https://rruff-2.geo.arizona.edu/uploads/AM63_715.pdf)
(New realgar-like red mineral in hydrothermal ore deposits in U Jurassic- Cretaceous of Sarabau Au-Ag mine near Bau, SW of Kuching)

Nakamura, T., T. Miyake, N. Kanao & N. Tomizawa (1970)- Exploration and prospecting in Mamut Mine, Sabah, Malaysia. Mining Geology 20, 100, p. 106-113.
(online at: www.journalarchive.jst.go.jp...) (In Japanese, with English abstract)

(Mamut mine 7 miles N of Ranau on E flank of Mt. Kinabalu. Originally located during 1965 geochemical survey. Ore deposit of Mamut-2 mine is low grade gold-bearing 'porphyry copper'. Pyrite, chalcopyrite and chalcocite form bulk of sulphides, associated with minor molybdenite and bornite)

Newton, R. Bullen (1897)- On a Jurassic Lamellibranch and some other associated fossils from the Sarawak River Limestones of Borneo; with a sketch of the Mesozoic fauna of that island. Geol. Magazine IV, 4, p. 407-415.
(Review of Jurassic- Cretaceous macrofossils known from Borneo, and description of M Jurassic bivalve Alectryonia amor in British Museum collection, probably from Sarawak River, with distinct European affinity.)

Newton-Smith, J. (1967)- Bidu-Bidu Hills area, Sabah, East Malaysia. Geol. Survey Malaysia Borneo Region, Report 4, Kuching, p. 1-109.
(Mapping of Bidu-Bidu area in C Sabah. Area consists of Chert-spilite Formation, ultrabasic rocks, basic rocks, Miocene Garinono Fm melange and and Kamansi Beds tuffaceous sediments)

Newton-Smith, J. (1977)- Geology and mineralization at the Mamut copper prospect. Sabah. Geol. Survey Malaysia, Geol. Papers 2, p. 55-65.
(Additional observations on Tertiary porphyry copper type ore body on SE slope of Mt Kinabalu, first described by Kirk (1967))

Ng, P.K.L. & Earl of Cranbrook (2014)- Fossil brachyuran crabs from the Jambusan Caves (Bau, Sarawak), collected by A.H. Everett in 1878-1879. In: R.H.B. Fraaije et al. (eds.) Proc. 5th Symp. Mesozoic and Cenozoic Decapod Crustaceans, Krakow 2013, Scripta Geologica 147, p. 289-307.
(online at: http://dpc.uba.uva.nl/cgi/t/text/get-pdf?c=scripta;idno=16147a21)
(Crustacean fossils from Jambusan Caves in Bau (Sarawak) assigned to two species of potamid freshwater crabs (Brachyura) that are still extant in area, Isolapotamon bauense and I. consobrinum. Two species were probably collected for food by early human inhabitants of Sarawak)

Ng, T.S. & M. Mohamad (1996)- A quantitative analysis of seismic reflection in a gas-bearing carbonate buildup, offshore Malaysia. In: P. Weimer & T.L. Davis (eds.) Applications of 3-D seismic data to exploration and production, American Assoc. Petrol. Geol. (AAPG), Studies in Geology 42, p. 219-244.
(Some 200 Miocene carbonate buildups mapped in Luconia Province, offshore Sarawak. Vertical and lateral porosity variations in carbonate reservoirs can be calibrated to seismic amplitude and acoustic impedance)

Nijman, M., S. Paris & J. Boyd-Gorst (2012)- New opportunities through reservoir performance reviews and facies based dynamic modelling of a mature oil field under waterflood. Int. Petroleum Techn. Conf. (IPTC), Bangkok 2012, 11p.
(Champion Field in Brunei Darussalam, producing since 1972. Field geologically complex, with >500 stacked sandstones reservoirs, heavily faulted, at depths from 200-1500m subsea. Primary and secondary recovery from pattern waterflood since 1984. Reservoir modeling effort is part of ongoing Champion Waterflood project, which aims to increase the recoverable reserves and production capacity from this mature field)

Noad, J.J. (1999)- The sedimentary evolution of the Tertiary of Eastern Sabah, Northern Borneo. Ph.D. Thesis, University of London, p. 1-456. *(Unpublished)*

Noad, J. (2001)- The Gomantong Limestone of eastern Borneo: a sedimentological comparison with the near-contemporaneous Luconia Province. Palaeogeogr. Palaeoclim. Palaeoecology 175, p. 273-302.
(C Sabah basin was Eocene-Miocene E-W trending foreland basin, with carbonates in E. Late Oligocene-earliest Miocene (Te5) Gomantong Lst outcrops in E. Sabah interpreted as shelf with fringing and patch reefs. Carbonate deposition ended with 'rejuvenation of C Sabah basin' around E-M Miocene boundary, ~16 Ma)

Noad, J. (2013)- The power of palaeocurrents: reconstructing the palaeogeography and sediment flux patterns of the Miocene Sandakan Formation in eastern Sabah. Berita Sedimentologi 28, p. 31-40.
(online at: www.iagi.or.id/fosi/berita-sedimentologi-no-28-borneo.html)

(Outcrop study on Miocene Sandakan Fm on Sandakan Peninsulla, E Sabah showed five facies belts, from mangrove deposits through shoreface sediments to open marine. Paleocurrent data show sediment dispersion across paleo-Sandakan Basin, from N-directed flow through mangrove channels into longshore drift on shallow marine, coastal shelf to a belt of tempestite deposits cut by N-directed rip current channels)

Noad, J. & R. Preece (2014)- Making sense of mud: the use of benthic foraminifera in mudstone sedimentology, Sabah, North Borneo. Berita Sedimentologi 29, p. 53-65.
(online at: www.iagi.or.id/fosi)
(On use of benthic foraminifera in interpretation of depositional environments of mudstone samples from five formations outcropping in E Sabah, NE Borneo, ranging in age from Eocene- Pliocene)

Nordin, A.F. H. Jamil, M.N. Isa, A. Mohamed, S.H. Tahir, B. Musta, R. Forsberg, A. Olesen et al. (2016)- Geological mapping of Sabah, Malaysia, using airborne gravity survey. Borneo Science 37, 2, p. 14-27.
(online at: http://borneoscience.ums.edu.my/wp-content/uploads/2016/09/)
(Airborne gravity survey database for land and marine areas compiled to update geological map of Sabah)

Nugraheni, R.D., W.S. Chow, A.H.A. Rahman, S.N.M. Nazor & M.F. Abdullah (2014)- Tertiary coal-bearing heterolithic packages as low permeability reservoir rocks in the Balingian Sub-basin, Sarawak, Malaysia. Bull. Geol. Soc. Malaysia 60 (C.S. Hutchison Memorial Issue), p. 85-93.
(online at: https://gsmpubl.files.wordpress.com/2015/04/bgsm2014009.pdf)

Nuttall, C.P. (1961)- Gastropoda from the Miri and Seria Formations, Tutong Road, Brunei. In: G.E. Wilford, The geology and mineral resources of Brunei and adjacent parts of Sarawak, British Borneo Geol. Survey Memoir 10, p. 73-87.
((Miocene?-)Pliocene gastropods from Brunei. Living species 65-80%. No figures)

Nuttall, C.P. (1961)- Mollusca from the Togopi Formation (Upper Cenozoic) of North Borneo. Malaysia. British Borneo Geol. Survey, Borneo, Annual Report 1960, p. 83-96.
(Late Miocene-Pliocene molluscs collected by Collenette from Topogi Fm at E Dent Peninsula of Sabah. Living species ~75-83%. Mainly shallow marine taxa. No figures)

Nuttall, C.P. (1964)- Report on Mollusca from the Sebahat Formation, Tunku River, Dent Peninsula, Sabah. Geol. Survey, Borneo Region, Malaysia, Annual Report 1963, p. 165-166.
(Brief note on small collection of likely Late Miocene- Pliocene molluscs from Tungku River near Lung Sangai)

Nuttall, C.P. (1965)- Report on the Haile collection of fossil Mollusca from the Plio-Pleistocene Togopi Formation, Dent Peninsula, Sabah, Malaysia. Geol. Survey Borneo Region, Malaysia, Memoir 16, p. 155-192.

Nuttall, C.P. & K.M. Leong (1972)- Occurrence of *Acteonella* (Opistobranch gastropod) in the Cretaceous of Sabah. Geol. Survey Malaysia, Geol. Papers 1, p. 1-8.

Ogawa, K. & J. Jong (2016)- A leaking hydrocarbon charge system in deepwater Sabah- evidence from reservoir fluid geochemistry and mud-gas isotope analysis. Proc. 40th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA16-57-G, 26p.
(Distribution of oils in Miocene Kamunsu and Kinarut turbiditic reservoirs in Bestari-1 well, offshore Sabah)

Ogawa, K. & J. Jong (2017)- A unique Post-MMU hydrocarbon charge system in the Bunguran Trough: a case study from deepwater Sarawak and implications for petroleum exploration. In: SEAPEX Exploration Conference 2017, Singapore, Session 7, 3p. *(Extended Abstract)*
(Bunguran Trough intra-continental basin in deepwater setting of Rajang Delta, off Sarawak. Characterised by deepwater clastic deposition of post-M Miocene Unconformity sediments. Pre-MMU sediments now buried to >6000m One potential source rock intervals currently mature for hydrocarbon generation in post-MMU sequences is Lower Pliocene section)

Oke, B., J. Keall, P. Carroll, R. Noble & T. Setzer (2004)- Zebra Prospect- reading between the stripes. In: R.A. Noble et al. (eds.) Proc. Deepwater and Frontier Exploration in Asia and Australasia Symposium, Jakarta, Indon. Petroleum Assoc. (IPA), p. 429-441.
(Pliocene amplitude anomaly drilled by Unocal in Philippines part of Sandakan Basin off Sabah encountered numerous thin, uneconomic gas zones)

Olave-Hoces, S. (2006)- Controls on isolated carbonate platform evolution and demise, Central Luconia province, South China Sea. M.Sc. Thesis Texas A&M University, College Station, p. 1-85.
(online at: http://repository.tamu.edu/bitstream/handle/1969.1/ETD-TAMU-1795/OLAVE-HOCES-THESIS.pdf)
(Many isolated carbonate platforms in C Luconia in M-Late Miocene. Flooding at ~16.5 Ma initiated near-simultaneous carbonate sedimentation. Five growth stages. SE C Luconia platforms thicker and larger, reflecting greater subsidence to SE. First platforms drowned in E at ~12.5-9.7 Ma, affected by siliciclastic sediments and high local subsidence. Platforms drowned later (~6.3-5.5 Ma) caused by rapid sea-level rise and local subsidence. C Luconia carbonate platforms drowned earlier (latest Late Miocene) than E Natuna platforms (E Pliocene))

Omang, S.A.K. (1993)- Petrology, geochemistry and structural geology of the Darvel Bay Ophiolite, Sabah, Malaysia. Ph.D. Thesis Royal Holloway, University of London, p. *(Unpublished)*

Omang, S.A.K. (1995)- Petrology and geochemistry of the mantle-sequence peridotite of the Darvel Bay Ophiolite, Sabah, Malaysia. Bull. Geol. Soc. Malaysia 38, p. 31-48.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1995004.pdf)
(Mantle-sequence peridotites of Darvel Bay Ophiolite mainly depleted harzburgites. Less depleted (refractory) mantle than harzburgites of Oman, Papuan and Halmahera ophiolites and represent supra-subduction zone (SSZ) ophiolite type)

Omang, S.A.K. (1996)- Sub-ophiolite metamorphic rocks in the Tungku area, Lahad Datu, eastern Sabah, Malaysia; origin and tectonic significance. In: G.H. Teh (ed.) Petroleum geology conference, Kuala Lumpur 1995, Bull. Geol. Soc. Malaysia 39, p. 51-64.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1996006.pdf)
(Sub-ophiolite metamorphic garnet amphibolites (clasts in late E Miocene- M Miocene melange) formed at high P-T and interpreted as derived from metamorphic sole below Darvel Bay Ophiolite Complex, formed during subduction of ocean crust and emplacement of ophiolite complex. Garnet amphibolites were oceanic crust MORB tholeiites, metamorphosed in upper mantle and deformed and recrystallised with mylonitic textures in amphibolite facies. K/Ar age of 76± 21 Ma (Cretaceous- Eocene!) coincides with Late Cretaceous-Paleogene age of subduction beneath Darvel Bay Ophiolite inferred from stratigraphic evidence)

Omang, S.A.K. (1996)- Petrology and geochemistry of the volcanic rocks associated with the Darvel Bay Ophiolite, Lahad Datu, eastern Sabah, Malaysia. In: G.H. Teh (ed.) Petroleum geology conference, Kuala Lumpur 1995, Bull. Geol. Soc. Malaysia 39, p. 65-80.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1996007.pdf)
(At least three unrelated volcanic rock groups in ophiolitic terrain of Darvel Bay area. Group I and II may be related to oceanic crust formation, Group III to M Miocene volcanic arc activity of Dent Peninsula)

Omang, S.A.K. & A.J. Barber (1996)- Origin and tectonic significance of the metamorphic rocks associated with the Darvel Bay Ophiolite, Sabah, Malaysia. In: R. Hall & D.J. Blundell (eds.) Tectonic evolution of SE Asia, Geol. Soc. London, Spec. Publ. 106, p. 263-279.
(Banded hornblende gneiss, amphibolite and schists form lenses in 8 km wide belt in Darvel Bay Ophiolite Complex, representing gabbros, plagiogranites, basaltic dykes, basaltic volcanics and cherts formed at spreading ridge in supra-subduction zone environment, deformed at high T- low P along transform fault. Garnet pyroxenites and amphibolites found as clasts in Miocene volcanic agglomerates formed at high-P, and derived from metamorphic sole formed during ocean crust subduction and emplacement of ophiolite complex)

Omang, S.A.K., M.M. Faisal & S.H. Tahir (1994)- The Kudat Ophiolite Complex, northern Sabah, Malaysia- field description and discussion. Warta Geologi (Newsl. Geol. Soc. Malaysia) 20, 5, p. 337-346.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1994005.pdf)
(Scattered M Jurassic- E Cretaceous ophiolitic rocks in Kudat Fault Zone, N-most Sabah, here named Kudat Ophiolite Complex. Represents dismembered ophiolite sequence, with most components of ophiolite present: sheared and brecciated serpentinite, plagiogranite, doleritic to basaltic dykes and submarine pillow basalt overlain by radiolarian chert with Lower Cretaceous radiolaria (Basir Jasin et al. 1985). May represent supra-subduction zone ophiolite type (= Kinabalu Suture of Tjia 1988))

Omang, S.A.K., W.A.W. Mohamed & S.H. Tahir & S.A. Rahim (1992)- The Darvel Bay ophiolite complex, SE Sabah, Malaysia- preliminary interpretations. Warta Geologi 18, 3, p. 81-88.
(Darvel Bay ophiolite complex of E Sabah consists of ultramafic (mantle peridotite and ultramafic cumulate), gabbro (gabbroic rocks, amphibolites and plagiogranites) and volcanic-sedimentary units (basaltic lavas and Cretaceous radiolarian cherts). Complex bounded by E-M Miocen melanges to N and S, with blocks of ophiolite. Complex interpreted as part of the oceanic crust segment which lay between Sundaland craton and the Philippines archipelago and was obducted onto Sabah in Late Paleogene to Neogene time)

Omang, S.A.K. & S.H. Tahir (1995)- Cretaceous and Neogene lavas of Sabah; origin and tectonic significance. Bull. Geol. Soc. Malaysia 38, p. 21-30.
(online as: www.gsm.org.my/products/702001-100928-PDF.pdf)
(Cretaceous Telupid basalt low-K tholeiitic lava or "boninitic suite", formed in response to intra-oceanic subduction. As subduction proceeded, magma composition changed to calc-alkaline suite (high-K Neogene Tungku and Tanjung Batu andesites). Volcanics evolution starts with oceanic island arc, where supra-subduction zone extension led to genesis of tholeiitic/ boninitic lava (Telupid basalt), followed by volcanic arc (Tungku andesite), followed by arc-splitting, as extension continued, Sulu Sea marginal basin formed. Partial closing of Sulu Sea caused S-ward subduction beneath older arc and formation of Tanjung Batu andesite)

Ooi Phey Chee, M. Poppelreiter, D. Ghosh & R. Lazar (2017)- Study of Central Luconia Miocene carbonate buildup: integration of geological, modern carbonates and 3D seismic characterization Proc. 30th Nat. Geosc. Conf. Exhib. (NGC 2017), Kuala Lumpur, PDPT16-107, Warta Geologi 43, 3, p. 290-291. *(Extended Abstract)*
(online at: https://gsmpubl.files.wordpress.com/2017/09/ngsm2017_032.pdf)
(Brief review of geologic model of 3x5km M-L Miocene carbonate buildup of TX Field, 170km N of Bintulu, offshore Sarawak)

Osmaston, H. (1980)- Patterns in trees, rivers and rocks in the Mulu Park, Sarawak. The Geographical J. 146, p. 33-50.
(Study of geomorphology and geological control in Mulu Park karst terrain)

Ovinda & J.J. Lambiase (2017)- Lateral facies and permeability changes in upper shoreface sandstones, Berakas Syncline, Brunei Darussalam. Indonesian J. Geoscience 4, 1, p. 11-20.
(online at: https://ijog.geologi.esdm.go.id/index.php/IJOG/article/view/333/228)
(Facies and permeability changes in outcrops of M Miocene Belait Fm in Berakas Syncline, Brunei)

Pierson, B.J. (2010)- Contrasting dolomite textures of Miocene carbonate platforms in Central Luconia, Sarawak, Malaysia. Petrol. Geosc. Conf. Exhib., Kuala Lumpur 2010, p. *(Extended Abstract)*

Percival, T.J. & A.H. Hofstra (2002)- Bau, Malaysia; SRHDG deposit associated with Miocene magmatism. Geol. Soc. America, 2002 Ann. Mtg., Abstracts with Programs 34, 6, p. 142. *(Abstract only)*
(Bau district, NW Borneo, produced 37.3 t gold. It is in thrust sheet comprised of Late Jurassic- M Cretaceous limestone and clastics and Late Triassic island arc volcanics that is overthrust by L Jurassic- L Cretaceous siliciclastic turbidites. M Miocene magmatism due to SE subduction of Proto- S China Sea under Borneo. Numerous 10-13 Ma, I-type, intermediate to felsic porphyry stocks intrude >30 km long NNE transtensional fault zone. Au deposits at intersection of NNE fault system and ENE-striking anticline)

Percival, T.J., A.S. Radtke & W.C. Bagby (1990)- Relationships among carbonate-replacement gold deposits, gold skarns, and intrusive rocks, Bau Mining District, Sarawak, Malaysia. Mining Geology 40, 1, p. 1-16.
(online at: www.jstage.jst.go.jp/article/shigenchishitsu1951/40/219/40_219_1/_pdf)
(Three distinct styles of gold mineralization in U Jurassic Bau Limestone, associated with M Miocene calk-alkaline micro-granodiorite porphyry stocks in Bau mining district, 24 km SW of Kuching. Most gold produced from 'Carlin-type' carbonate-replacement deposits. Common gold deposits along Tai Parit fault suggest major conduit for hydrothermal fluids)

Petronas (1999)- The petroleum geology and resources of Malaysia. Petronas, Kuala Lumpur, p. 1-665.
(Most comprehensive overview of Malaysia (incl. N Borneo) geology and oil and gas fields)

Pilz, R. (1913)- Geologische Studien in Britisch Nordborneo. Jahresberichte Freiburger Geol. Gesellschaft 6, p. 12-39.
('Geological studies in British North Borneo'. Early reconnaissance survey of Sabah by German mining engineer Pilz for British North Borneo Company. First to recognize (1) presence of Jurassic-Cretaceous deep marine sediments with radiolaria (Danau Fm of Molengraaff), overlain by Tertiary clastics and carbonates and (2) young age of Kinabalu volcanics and pluton (see also Wannier 2017))

Pimm, A.C. (1965)- Serian Area, West Sarawak, East Malaysia. Geol. Survey Borneo Region Malaysia, Report 3, p. 1-92.
(Serian area in W Sarawak- W Kalimantan border area, SE of Kuching. Pre-Upper Carboniferous Kerait schists, similar to 'NW Kalimantan Domain'. Overlain by steeply-dipping, NW striking, brecciated Late Carboniferous- E Permian Terbat Fm interbedded fusulinid limestone, chert and shale, at least 3000' thick. Unconformably overlain by Late Triassic (late Carnian-Norian) Sadong Fm clastics and tuffs with Halobia and late Norian? Serian Fm andesitic-basaltic volcanics. Sadong-Serian Fms folded before deposition of Late Jurassic Bau Limestone. Unconformably overlain by ?Eocene Silantek Fm clastics. Intrusives dated as M Miocene in S part of area, continuing into Kalimantan. With 1:50,000 scale geologic map)

Pimm, A.C. (1967)- Bau Mining District, West Sarawak, Malaysia. Part II- Krokong. Geol. Survey Borneo Region Malaysia, Bull. 7, 2, p. 1-97.

Pimm, A.C. (1968)- Triassic volcanic rocks in East and West Malaysia. Geol. Survey Borneo Region Malaysia, Bull. 8, p. 36-40.

Pour, A.B. (2014)- Remote sensing aspects of Bau Gold District, Serawak, Malaysia. In: I. Basuki & A.Z. Dahlius (eds.) Sundaland Resources, Proc. Indon. Soc. Econ. Geol. (MGEI) Ann. Conv., Palembang, p. 393-413.
(Lithological-structural mapping with remote sensing of mineralized zones in Bau gold field in W Sarawak with Carlin style gold deposits. Late Triassic Serian Volcanics overlain by Late Jurassic- Cretaceous sediments. E Jurassic deformation event, with 190 Ma Jagoi granodiorite. M Miocene Bau Trend porphyritic granodiorites with porphyry-copper style mineralization, skarn, limestone polymetallic replacement, epithermal precious metal, disseminated gold, and Ba-Hg deposits)

Pour, A.B. & M. Hashim (2014)- Structural geology mapping using PALSAR data in the Bau gold mining district, Sarawak, Malaysia. Advances in Space Research 54, p. 644-654.
(Synthetic Aperture Radar data useful in remote sensing of tropical/sub-tropical regions. Bau gold mining district in W Sarawak similar to Carlin style gold deposits, but mineralization more structurally controlled. Most quartz-gold bearing veins in high-angle faults, fractures and joints in massive units of Bau Limestone. Four deformation events in district: (D1) ENE trending parallel faults, pre- E Jurassic, associated with E Jurassic Jagoi Granodiorite? (= Late Triassic; Breitfeld et al. 2017); (D2) SW-NE oriented compressional tight folds, (D3) E-W to NW-SE trending folds, folding Tertiary molasse; (D4) NNE trending lineaments along which M Miocene microgranodiorites emplaced, probably right-lateral transcurrent faults)

Pour, A.B., M. Hashim & J. van Genderen (2013)- Detection of hydrothermal alteration zones in a tropical region using satellite remote sensing data: Bau goldfield, Sarawak, Malaysia. Ore Geology Reviews 54, p. 181-196.

Prasetyo, T., A. Firth & M.R. Lasman (2007)- A relationship of overpressure, diagenesis and hydrocarbon accumulation, East Balingian Basin, Offshore Sarawak- Malaysia. Proc. 31st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA07-G-070, 15p.
(E Balingian Basin oil-gas fields in large NE-SW trending folds, resulting from episodic inversion events which started in late M Miocene (11.7 Ma). Deeper reservoirs of East Balingian generally overpressured and of low quality (quartz overgrowths, dolomite cement), even where hydrocarbon-bearing. Top overpressure varies between different stratigraphic units, but all in thick shale-prone sequences)

Prosser, D.J. & R.R. Carter (1997)- Permeability heterogeneity within the Jerudong Formation: an outcrop analogue for subsurface Miocene reservoirs in Brunei. In: A.J. Fraser et al. (eds.) Petroleum geology of Southeast Asia, Geol. Soc. London, Spec. Publ. 126, p. 195-235.
(Permeability measurements on outcrop of 56m of Late Miocene (E Tortonian) Jerudong Fm at Punyit Beach, Brunei, show large variations)

Prouteau, G., R.C. Maury, C. Rangin, E. Suparka, H. Bellon, M. Pubellier & J. Cotten (1996)- Les adakites miocenes du NW de Borneo, temoins de la fermeture de la proto-mer de Chine. Comptes Rendus Academie Sciences, Paris 323, ser. IIa, 11, p. 925-932.
('The Miocene adakites of NW Borneo, witnesses of the closing of the proto-South China Sea'. Early Miocene Sintang granodiorite intrusives aged 18.3 and 19.2 Ma, with characteristics of oceanic slab melts (adakites). Youngest rocks (16.5, 16.7 Ma) are calc-alkaline dacites. Sintang adakites coeval with subduction of Proto South China Sea Basin which may have started at ~20 Ma)

Prouteau, G., R.C. Maury, F.G. Sajona, M. Pubellier, J. Cotton & H. Bellon (2001)- Le magmatisme post-collisionnel du Nord-Ouest de Borneo, produit de la fusion d'un fragment de croute oceanique ancre dans le manteau superieur. Bull. Soc. Geologique France 172, 3, p. 319-332.
('The post-collisional magmatism of NW Borneo: product of melting of a fragment of oceanic crust in the upper mantle'. Magmas in Sarawak formed by melting of subducted oceanic crust in upper mantle, as evidenced by Miocene adakites. Two kinds of intrusions: High-medium K calc-alkaline diorites in N of study area (Lower Miocene; 22.3-23.7 Ma); microtonalites and dacites near Kuching and S Sarawak (M-U Miocene, 14.6- 6.4 Ma). Lower Miocene diorites characteristic of subduction-related magmas. M-U Miocene microtonalites and dacites also adakitic features: SiO2-rich (65-70%) and sodic; rare pyroxenes, etc.)

Rahim, A.R., Z. Konjing, J. Asis, N. Jalil, A.J. Muhamad, N. Ibrahim, A.M. Koraini, R.C. Kob, H. Mazlan & H.D. Tjia (2017)- Tectonostratigraphic terranes of Kudat Peninsula, Sabah. Bull. Geol. Soc. Malaysia 64 (Geol. Soc. Malaysia 50th Anniversary Issue 2), p. 123-139.
(online at: www.gsm.org.my/products/702001-101713-PDF.pdf)
(Four geological terranes make up Kudat Peninsula: (1) N Sabah exotic Terrane (Eocene sandstones with M-L Eocene Suang Pai Lst with Discocyclina, Pellatispira, etc.), separated by (2) Kudat Fault Zone (up to 6 km wide horst with E Cretaceous ophiolite and oceanic crust) from (3) Slump Terrane (wide area from Sikuati to Kota Marudu, consisting of mainly lower slope turbidites with slump intervals). S-most terrane is (4) Mengaris Duplex (latest Eocene to Oligocene West Crocker Fm turbidites)

Rahman, M.H., B.J. Pierson & W.I.W. Yusoff (2012)- Classification of microporosity in carbonates: examples from Miocene carbonate reservoirs of Central Luconia, Offshore Sarawak, Malaysia. In: Proc. Int. Petrol. Techn. Conf. (IPTC), Bangkok 2012, IPTC 14583, 12p. *(Extended Abstract)*
(Five types of microtextures in C Luconia Miocene carbonates: a) chalky moldic limestone, b) argillaceous tight limestone, c) moldic limestone, d) Moldic dolomitic limestone and e) chalky limestone)

Rahman, Z.A. (1999)- Structural pattern of the Crocker Formation in southern part of Beaufort area, Sabah. Borneo Science 6, p. 11-20.

(online at: http://borneoscience.ums.edu.my/wp-content/uploads/2011/08/2.-Structural-Pattern-Of-The-Crocker-Formation-In-Southern-Part-Of-Beaufort-Area-Sabah.pdf)
(Oligocene- E Miocene deep marine Crocker Fm in SW Sabah deformed by M Miocene faulting-folding, under NW-SE compression)

Ramkumar, M., M. Santosh, R. Nagarajan, S.S. Li, M. Mathew, D. Menier, N. Siddiqui, J. Rai, A. Sharma et al. (2017)- Late Middle Miocene volcanism in Northwest Borneo, Southeast Asia: implications for tectonics, paleoclimate and stratigraphic marker. Palaeogeogr. Palaeoclim. Palaeoecology 490, p. 141-162.
(Zircon dating of 6cm thick tephra layer in thick coal near Mukah, Sarawak, suggests latest M Miocene volcanic event (main zircon age group ~11.4- 11.8 Ma). Also older inherited zircons)

Ramli, M.N. & Ho Kiam Fui (1984)- Depositional environments and diagenesis of the F6 reef complex, central Luconia province, offshore Sarawak, Malaysia. In: Proc. Joint ASCOPE/ CCOP Workshop on hydrocarbon occurrences in carbonate rocks, Surabaya 1982, ASCOPE Techn. Paper 2, Jakarta, p. 269-292.

Ramli, M.Y. (1992)- Paranchangan fault zone; the southern sector, Sabah. In: Y.E. Heng (ed.) Proc. 23rd Geol. Conf. Techn. Paper, Geol. Survey Malaysia, p. 131-140.

Rangin, C. (1991)- Neogene arc-continent collision in Sabah, northern Borneo (Malaysia)- Reply. Tectonophysics 200, p. 330-332.
(Reply to Hutchison (1991) critique of Rangin (1990) paper)

Rangin, C., H. Bellon, F. Benard, J. Letouzey, C. Muller & S. Tahir (1990)- Neogene arc-continent collision in Sabah, N. Borneo (Malaysia). Tectonophysics 183, p. 305-319.
(Sabah arc-continent collision in early M Miocene, followed by intraplate shortening, still active today. Late Oligocene-M Miocene volcanic arc imbricated with melanges and thrust NW-ward on polyphase-deformed Late Cretaceous-M Miocene turbiditic sequence (Crocker Range). Intraplate shortening seen in thrusting- folding offshore Sabah along Palawan-N Borneo Trench and broad folds and strike-slip faulting in previously sutured terranes. Collision result of final stage of S-ward subduction of Proto-S China Sea or back thrusting of Sulu volcanic arc during Celebes Sea subduction to N. K-Ar age of 137 Ma for gabbro of Sabah oceanic crust basement, 6 Ma cooling age for Kinabalu granodiorite) (see also comments and reply by Hutchison (1991))

Redfield, A.H. (1922)- Petroleum in Borneo. Economic Geology 17, 5, p. 313-349.
(Early review of petroleum discoveries on Borneo, including Tarakan, Sanga Sanga in E Kalimantan and Miri district of Brunei)

Reinhard, M. (1922)- Contributions to the physiography and geology of the South-East Coast of British North Borneo. The Geographical J. 63, 2, p. 121-134.
(One of earliest geologic maps and descriptions of Sabah, surveyed in 1913-1914 for 'Nederlandsche Koloniale Petroleum Maatschappij')

Reinhard, M. & E. Wenk (1951)- Geology of the colony of North Borneo. Bull. Geological Survey Dept., British Territories in Borneo, 1, p. 1-160.
(Early compilation of North Borneo geology, commissioned by Shell. Cretaceous? Pre-Eocene Danau Fm of flysch, radiolarian chert, ophiolitic rocks (serpentinite, gabbro) and manganese ore, always intensely folded/ imbricated. Slate Formation probably older than Danau Fm, both often hard to distinguish from Danau Fm. Etc.)

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(online at: www.gsm.org.my/products/702001-101064-PDF.pdf)
(Biostratigraphy and seismic stratigraphy used in Miocene-Pliocene in offshore NW Sabah to define paleo-shelf edges/ paleo-coastlines and 4 seismic facies. Offshore Sabah pre-early M Miocene deposition of deep marine

Stage III sediments. Post-early M Miocene deposition of Stage IV shelf/slope deposits, punctuated by major erosional events reflecting periods of tectonism (7 regional unconformities). With 10 paleoenvironmental maps)

Rijks, E.J.H. (1981)- Baram Delta geology and hydrocarbon occurrence. Bull. Geol. Soc. Malaysia 14, p. 1-18.
(online at: www.gsm.org.my/products/702001-101200-PDF.pdf)
(Baram Delta thoroughly explored, classic delta province, containing bulk of Sarawak oil reserves. With 11 oil fields, 2 gas fields, one onshore (Miri, 1910). Delta depocenter developed in Late Eocene and from early M Miocene onward characterized by multiple regressive phases of sedimentation. Tectonic interaction of N-hading growth faults and NE-SW trending latest Miocene folds)

Robinson, K. (1984)- Assessment of undiscovered recoverable petroleum resources in Tertiary sedimentary basins of Malaysia and Brunei. U.S. Geol. Survey (USGS), Open File Rept. 84-328, p. 1-19.
(online at: http://pubs.usgs.gov/of/1984/0328/report.pdf)
(In W Malaysia, commercial discoveries of oil and gas only in Malay Basin. Geothermal gradients moderate to high (3.5°F/100' in N of basin in Thai waters, to 2°F/100' at S end of basin in Malaysian waters). N part of basin tends to be gas prone, S part both oil and gas prone. In E Malaysia and Brunei discoveries in Balingian, C Luconia, and Baram Delta Provinces of Sarawak Basin, and in Sabah Basin. Balingian, Baram Delta and Sabah Basin primarily oil prone. Geothermal gradients from rel. high 2.3°F/100' in Balingian Province to low 1.4°F/100' and 1.75°F/100' in Baram Delta and Sabah Basin. C Luconia essentially gas prone, with geothermal gradient 2.4°F/100'. Gas contained in carbonate platform build-ups and large pinnacle structures)

Robinson, K. (1985)- Assessment of undiscovered conventionally recoverable petroleum resources in Tertiary sedimentary basins of Malaysia and Brunei. Bull. Geol. Soc. Malaysia 18, p. 119-131.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1985005.pdf)
(Modified from Robinson (1984). Undiscovered petroleum resources assessment suggests mean 8 billion B Oil and 80 TCF gas remaining to be discovered in Malaysia and Brunei)

Robinson, K., P. Baltensperger, A. Thomas & S. Noon (2009)- The Middle Miocene unconformity (MMU) and globigerinid sands in deepwater Sarawak. In: Programme and abstracts Petroleum Geology Conf. Exh., Kuala Lumpur 2009, Geol. Soc. Malaysia, Paper 17, 3p. *(Abstract only)*
(online at: http://geology.um.edu.my/gsmpublic/PGCE2009/Draft/Old/Geology%20Papers%20v.0.1.pdf)
(Talang 1 well gas in planktonic foraminifera sands of early M Miocene age (N8, 16.1- 16.3 Ma Sr age), immediately above 'Mid-Miocene angular unconformity', on flank of rotated fault block. Underlying "Mid Miocene unconformity" dated as Early Miocene (zone N6) in age with Sr Isotope age of 18.5-19.0 Ma)

Roe, F.W. (1954)- Outline of the geology of British Borneo. Annual Report Geological Survey Dept., British Territories in Borneo, 1954, Kuching, p. 6-22.

Roe, F.W. (1955)- Radioactive age determinations of West Sarawak igneous rocks. Geol. Survey Dept., British Territories in Borneo, Kuching, Annual Report 1955, p. 76-77.
(Klompe 1962: Granites from NW Borneo radiometrically dated as 185 and 210 Ma, although Roe and Haile believed these granites were emplaced in late Permian- E Triassic and E Permian - late Carboniferous)

Roe, F.W. (1957)- Sketch map showing the geology of Borneo, scale 1:2000,000. Geol. Survey Dept., British Territories in Borneo, Kuching, Annual Report 1957.

Roe, F.W. (1964)- The geological relationship between Mt Kinabalu and neighbouring regions. Proc. Royal Society (London), B, 161, 982, p. 49-56.
(Mt Kinabalu in Sabah 13,455' high. Main peaks granodiorite, intruded across two areas of ultrabasic rocks. Recent radiometric dates by Snelling on biotite 9 ± 2 Ma and 1.3 ± 0.7 Ma. Sundaland rocks may extend into Sabah: biotite hornfels in Segama Valley dated as 160 ± 8 Ma (E Jurassic) age of metamorphism)

Ronghe, S. & S. Pambayuning (2002)- Depth-induced impedance variations in reservoir sands; implications for predicting lithology and fluid distributions offshore Brunei Darussalam. The Leading Edge 21, p. 388-393.

(On the use of seismic impedance to delineate extent of hydrocarbon-bearing sand reservoirs)

Roohi, G. (1994)- Biostratigraphy and palaeoecology of the Subis limestone, Sarawak, East Malaysia. M.Sc Thesis University of Malaya, Kuala Lumpur, p. 1-168. *(Unpublished)*
(Early Miocene Subis Limestone of Sarawak. With Niah caves, 65 km SW of Miri)

Roohi, G. (1998)- Biostratigraphy and paleoecology of the Subis Limestone (Early Miocene) Sarawak, East Malaysia and correlation with the Neogene of the Indus Basin, Pakistan. Pakistan J. Hydrocarbon Research 10, p. 81-104.

Rutten, L. (1915)- Studien uber Foraminiferen aus Ost-Asien, 9. Tertiare Foraminiferen von den Inseln Balambangan und Banguey, nordlich von Borneo. Sammlungen Geol. Reichs-Museums Leiden 10, p. 11-18.
(online at: www.repository.naturalis.nl/document/552375)
('Studies on foraminifera from East Asia, 9. Miocene and Eocene larger forams from Balambangan and Banguey islands, North of British Borneo'. M Miocene marls with Lepidocyclina angulosa, Cycloclypeus annulatus, Oligocene with Nummulies fichteli, Eocene with Orthophragmina (= Discocyclina), etc., collected by Hotz from two islands N of Sabah, Balambangan and Banguey (= Banggi))

Rutten, L. (1921)- Over den ouderdom der Tertiaire oliehoudende afzeetingen van Klias-schiereiland en Poeloe Laboean (Noordwest Borneo). Verslagen Kon. Akademie Wetenschappen, Amsterdam, 29, p. 1140-1149.
('On the age of the Tertiary oil-bearing deposits of the peninsula of Klias and Pulu Labuan'. Dutch version of Rutten (1921) below)

Rutten, L. (1921)- On the age of the Tertiary oil-bearing deposits of the peninsula of Klias and Pulu Labuan (N.W. Borneo). Proc. Kon. Nederl. Akademie Wetenschappen, Amsterdam, 23, 2, p. 1142-1150.
(online at: www.dwc.knaw.nl/DL/publications/PU00014767.pdf)
(Samples from Klias Peninsula and Klias island off N Borneo with E-M Miocene larger forams. Recognizes 'stupendous uplift' of Central Borneo, generating huge volumes of Neogene clastics in E, SE and NW. In Sangkulirang area, E Borneo, Neogene deposits more pelagic to East, 'pointing to an old marine territory in Makassar Strait'. Oil-producing beds of Tarakan island field are of Tertiary h age (Plio-Pleistocene))

Rutten, L. (1925)- Over fossielhoudende Tertiaire kalksteenen uit Britsch Noord Borneo. Verhandelingen Geologisch-Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie 8 (Verbeek Memorial Volume), p. 415-428.
('On fossiliferous Tertiary limestones from British North Borneo'. Kudat Peninsula N of Kinabalu Eocene limestones with Discocyclina, Spiroclypeus and Pellatispira, but some samples with younger Lepidocyclina)

Ryall, P.J.C. & D. Beattie (1996)- A gravity high in Darvel Bay. In: G.H. Teh (ed.) Petroleum geology conference, Kuala Lumpur 1995, Bull. Geol. Soc. Malaysia 39, p. 113-122.
(online at: www.gsm.org.my/products/702001-100902-PDF.pdf)
(Gravity survey along coastlines and on islands of Darvel Bay shows broad WNW-striking gravity high of 60 mgal, with maximum on S coast of Pulau Sakar, suggesting extensive ultramafic body beneath Darvel Bay)

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Said, U., M.R. Umor & A. Jantan (1996)- On the lowermost palynomorphs assemblage in the Kayan Sandstone from Gunung Senggi, Bau, Sarawak. Warta Geologi (Newsl. Geol. Soc. Malaysia). 22, 3, p. 244.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1996003.pdf)
(Abstract only. Kayan Sst overlies Cretaceous Pedawan Fm with slight angular unconformity in area N of Bau, W Sarawak. At Gunung Senggi basal rocks are N and NW-dipping shale and sandstone of Pedawan Fm. Towards top arenaceous rocks of Kayan Sst dip in opposite direction and contain well-preserved palynomorphs dominated by Balmeisporites holodictyus, Dictyophyllidites equiexinus, Alisporites similis, also Araucariacites australis, Polypodiaceoisporites retirugatus, Reticolpites sarawakensis, etc. Assemblage assignable to Senonian

Rugubivesiculites zone of Muller (1968). Palynomorphs from Gunung Senggi considered to be lowermost palynological zone of Kayan Sst)

Sakamoto, T. & T. Ishibashi (2002)- Paleontological study of fusulinoidean fossils from the Terbat Formation, Sarawak, East Malaysia. Mem. Fac. Science, Kyushu University, Ser. D, Earth Planetary Sci. 31, 2, p. 29-57.
(U Carboniferous- basal Permian Terbat Fm limestone, chert and shale, S of Kuching, W Sarawak, with diverse fusulinid foram assemblage of M Moscovian (lower U Carboniferous)- Asselian (basal Permian) age. (29 species, 18 genera: Millerella, Ozawainella, Pseudostaffella, Fusiella, Schubertella, Boultonia, Profusulinella, Fusulinella, Beedeina, Fusulina, Quasifusulina, Darvasites, Chusenella, Rugosofusulina, Paraschwagerina Triticites, Sphaeroschwagerina). Correlates with faunas from E Tethys, including Thailand, S China, Japan)

Salim, N.F.B., H.A.B.M. Idris, D.A.N.B.A. Bakar, K. Ogawa, T.Q. Tan & J. Jong (2015)- Jelawat-1ST1 post-well analysis revisited & the main reason for failure in finding effective hydrocarbon accumulation. In: Asia Petroleum Geosc. Conf. Exh. (APGCE), Kuala Lumpur, 25867, 5p. *(Extended Abstract)*
(Jelawat-1ST1 2004 wildcat tested anticline in Bunguran Trough fold-thrust belt, deepwater Rajang Delta. Late Miocene Cycle V turbidites with high amplitude anomalies deepest objective, but only tight reservoirs with minor gas shows. No other effective reservoirs in overlying section. Modelling suggests adequate hydrocarbon generation and migration, but ineffective regional top seal)

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(Shales and coals of M Miocene Kapilit Fm, Maliau Basin, SE Sabah, good- very good hydrocarbon generating potential. Vitrinite Reflectance of most samples 0.57- 0.70%, indicating early oil generation stage)

Saller, A. & G. Blake (2003)- Sequence stratigraphy and syndepositional tectonics of Upper Miocene and Pliocene deltaic sediments, Offshore Brunei Darussalam. In: F.H. Sidi, D. Nummedal et al. (eds.) Tropical deltas of Southeast Asia-sedimentology, stratigraphy and petroleum geology, SEPM Spec. Publ. 76, p. 219-234.
(Two main Late Miocene-Pleistocene delta systems on Brunei shelf, Champion and Baram. 'Fourth-order' sequences of 100-200k years average duration, probably close to 100 ky Milankovich frequency)

Sandal, S.T. (ed.) (1996)- The geology and hydrocarbon resources of Negara Brunei Darussalam, 1996 Revision. Brunei Shell Petroleum Co. and Brunei Museum, Bandar Seri Begawan, Syabas, p. 1-243.
(summary online at: www.bsp.com.bn/panagaclub/pnhs_old/geology/web/...)
(Standard work on geology and oil-gas of Brunei, mainly by Brunei Shell geologists. This is updated version of James et al. (1984) book)

Sanderson, G.A. (1966)- Presence of Carboniferous in West Sarawak. American Assoc. Petrol. Geol. (AAPG) Bull. 50, 3, p. 578-580.
(Preliminary note on Terbat Limestone Fm, Upper Sadong valley, W Sarawak. With three different fusulinid assemblages, probably Late Carboniferous and Early Permian in age. Not much detail)

Sanudin, H.T. & T.H. Tan (1986)- The Sabah Melange- a stratigraphic unit? Warta Geologi 12, 2, p. 58-59.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1986002.pdf)
(Outcrops of "Chert-Spilite Formation" in Sabah invariably associated with sheared ophiolitic rocks and olistholiths. Outcrops of chert and spilite in melanges are broken blocks of ophiolite suites. Sedimentary formations with chert and spilite, all having features of melange, should be grouped as one mappable body and named 'Sabah Melange')

Sanudin, H.T., B.G. Muhammad, J.J. Pereira & C.J. Quek (1992)- Occurrence of melange in the Bengkoka Peninsula, Sabah. Warta Geologi 18, 1, p. 1-7.
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(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1991007.pdf)
(Oils from 15 offshore Sabah and Sarawak fields three different types (waxy, normal non-waxy and biodegraded). Biomarkers show sourced from landplant-derived organic matter. High pristine/phytane ratio over 3.0 suggests source rocks probably from peat swamp environments)

Sapin, F. (2010)- Impact du couple erosion/sedimentation sur la structuration dôun prisme dôaccretion: lôexemple du prisme NO Borneo: approche geologique, sismique et thermique. Ph.D. Thesis Universite Paris 6, p. 1-254. *(Unpublished)*
('Impact of erosion / sedimentation on the structural configuration of an accretionary wedge: example of the NW Borneo Wedge; geological, seismic and thermal approach')

Sapin, F., I. Hermawan, M. Pubellier, C. Vigny & J.C. Ringenbach (2013)- The recent convergence on the NW Borneo Wedge- a crustal-scale gravity gliding evidenced from GPS. Geophysical J. Int. 193, 2, p. 549-556.
(online at: https://gji.oxfordjournals.org/content/193/2/549.full.pdf+html)
(Frontal fold-and-thrust belt in deep water NW Borneo Wedge ('toe-thrusts') traditionally considered as inactive and attributed to thin-skin gravity-driven Baram and Champion deltas. However, some evidence of convergence and compression from GPS velocities and stress field from borehole analysis between NW Borneo and Sunda Plate (Dangerous Grounds). Recent compression on frontal FTB is result of orogenic collapse of NW Borneo in Sabah- N Sarawak since 1.9 Ma, after lithospheric convergence ceased at 3.6 Ma)

Sapin, F., M. Pubellier, A. Lahfid, D. Janots, C. Aubourg & J.C. Ringenbach (2011)- Onshore record of the subduction of a crustal salient: example of the NW Borneo wedge. Terra Nova 23, 4, p. 232-240.
(Subducted horst in NW Borneo Wedge evidenced by strong bend of structural trend of Rajang-Crocker Belt and area with 'hummocky', texture representing dismantled packages of sediments, also some large back and out-of-sequence thrusts in internal zones and complex folds rooted on shear structures in accretionary wedge)

Sapin, F., M. Pubellier, J.C. Ringenbach & T. Rives (2011)- The Brunei fold-and-thrust belt: tectonically- or gravity-driven? AAPG Hedberg Conf., Tirrenia 2009, 6p. *(Extended Abstract)*
(online at: www.searchanddiscovery.com/abstracts/pdf/2011/2009hedberg-italy/abstracts/ndx_sapin.pdf)
(NW Borneo Margin commonly considered as inactive because of absence of seismicity, but recent GPS studies (Socquet 2003, Simons et al. 2007) show relative motion between NW Borneo coastline and fixed Sunda Plate of 6 mm/yr, attributed to convergence in NW Borneo Trench. Champion deltaic province prograded over active fold-thrust belt. Brunei deepwater fold-and-thrust belt active since M Miocene, but mainly gravity-driven since Late Miocene, with lithospheric convergence accommodated in Brunei onshore area)

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(On 'counterregional normal faults' on seismic data from Tertiary Niger delta and Brunei Champion- Baram Basin delta system. Faults initiated on apex of early folds, as shelf-break propagated seaward)

Sarkar, S.S. (1973)- The extension of Tethyan Lower Cretaceous to Sarawak, East Malaysia. Geol. Soc. Malaysia Newsl. 45, p. 4-5.
(online at: www.gsm.org.my/products/702001-101595-PDF.pdf)
(U Tithonian- Lower Valanginian ammonites Berriasiella, Micracanthoceras and Turmanniceras from basal Pedawan Fm shales (overlying Bau Lst). Tethyan-affinity assemblage. No illustrations. Locality clarified in Hashimoto et al. (1975) as 19 mile marker on Serian Road)

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Schaub, H.P. & A. Jackson (1958)- The northwestern oil basin of Borneo. In: L.G. Weeks (ed.) Habitat of Oil, American Assoc. Petrol. Geol. (AAPG), Spec. Publ. 18, p. 1330-1336.
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Scherer, F.C. (1980)- Exploration in East Malaysia over the past decade. In: M.T. Halbouty (ed.) Giant oil and gas fields of the decade 1968-1978, American Assoc. Petrol. Geol. (AAPG), Mem. 30, p. 423-440.
(N Borneo exploration resulted in discovery of 2 large oil fields, 6 large gas fields and several smaller oil fields. Descriptions of giant fields Baronia (1967- Baram Delta), Samarang (1972- S Sabah) and Central Luconia gas fields (1968-1975, C Sarawak, mainly in M-L Miocene carbonates))

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('Giant amber from Sarawak'. Large (up to 3.5m long, >10cm thick)slabs of fossil resin (amber), associated with coaly beds in Miocene Nyala Fm)

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(Paleomagnetic data from 231 samples of W Sarawak U Jurassic-Miocene show increasing CCW declination deflection with age. Samples from mid-Cretaceous Orbitolina limestone near Pedawan ~90° CCW rotation. Oligo-Miocene intrusions CCW rotations of 52° (26 Ma) and 22° (17 Ma). Sites in U Eocene- Oligocene Silantek Fm ~41° CCW rotation. CCW rotation extends into Malay Peninsula, suggesting W Borneo and Malay Peninsula stable block in latest Cretaceous-Cenozoic, with up to 108° CCW rotation. Cenozoic rotation also possibly between Indochina and Borneo. Sense of rotation does not support 'propagating extrusion tectonics' model of Tapponnier et al. (1982, 1986) for Cenozoic of Sundaland)

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(Summary of Brunei petroleum geology)

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(Summary of Sandal et al. (1996) Shell book on geology and hydrocarbons of Brunei. Brunei in Neogene Baram Delta Province. Three main delta phases in overall regressive system: (1) Meligan Delta (Proto-Champion, early Baram Delta), pre-M Miocene, only preserved as erosional remnants in uplifted hinterland; (2) Champion Delta (E Baram Delta), axis of progradation along Brunei- Sabah border, M-Late Miocene (14.2-7.4 Ma); (3) Baram Delta, main axis in Brunei's W Offshore, E Pliocene (5.2 Ma) - Recent)

Schuh, W.D. (1993)- Geology, geochemistry, and ore deposits of the Bau gold mining district, Sarawak, Malaysia. Ph.D. Thesis University of Arizona, p. 1-395.
(online at: http://arizona.openrepository.com/arizona/handle/10150/187561)
(Study of ore deposits and structural- tectonic setting of Bau area, W Sarawak. In Late Triassic, Bau was in island arc- back-arc basin environment (Serian andesitic volcanics). E Jurassic deformation and uplift followed by active margin development with subduction of W Pacific oceanic plate under NW Kalimantan block. Erosion of Serian Volcanics produced turbidites of Latest Jurassic- Late Cretaceous Pedawan Fm. Coeval development of rudist patch reefs on unstable shelf edge of overriding plate until Cenomanian. Early Tertiary molasse deposition ended with M Eocene event. Crustal-scale dextral strike-slip fault system (Bau Trend) developed during M Miocene post-subduction regional extension. Principal gold mineralization in M-L Miocene (12-10 Ma), when I-type, calc-alkaline granodiorites intruded along Bau Trend and intersection with ENE fracture zones. Central Bau underlain by ENE trending plutonic body at depth)

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(Paper addressing management of contact uncertainty in Champion field, with common thin, multi-layered, intensely faulted sandstone reservoirs with complex fluid fill distributions)

Schwing, H.F., S. Algar, P. Crevello & J. Roestenburg (2005)- Mass transport complexes of the Northwest Sabah deepwater: characterisation from seismic and borehole data. Proc. 2005 SE Asia Petroleum Expl. Soc. (SEAPEX) Conf., Singapore. 1p. *(Abstract only)*
(Mass transport complexes make up significant part of sediments in deepwater Sabah Trough off NW Borneo. MTCs vary in scale from 100s of m wide/ 10s of m thick to amalgamated bodies of 100s of km2 with thicknesses of 100s of m. Both debritic facies and coherent slump facies recognised)

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(online at: www.searchanddiscovery.com/documents/2007/07040shoup/images/shoup.pdf)
(Study of Temana Field, Balingian Province, offshore Sarawak, with >100 Oligo-Miocene deltaic reservoir compartments. Channel sandstone reservoirs in estuarine settings where connected laminated overbank deposits provide aquifer support have recovery efficiencies up to 50%. Channel sands without connected overbank deposits have recovery efficiency of 30%.)

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(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm2003a13.pdf)
(Miri Field structure result of interplay between compression and tensional wrenching (NNE-trending dextral strike-slip))

Siddiqui, N.A., A.H.A. Rahman, C.W. Sum, M.J. Mathew & D. Menier (2014)- Facies characteristics and static reservoir connectivity of some siliciclastic Tertiary outcrop successions in Bintulu and Miri, Sarawak, East Malaysia. AAPG Int. Conf. & Exhib., Istanbul 2014, Search and Discovery Art. 51035, 21p. *(Extended Abstract)*
(online at: www.searchanddiscovery.com/documents/2014/51035siddiqui/ndx_siddiqui.pdf)
(Outcrop analysis and characterization of sandstones in Miocene Nyalau and Miri Fms marginal- shallow marine succession in Bintulu and Miri area, Sarawak)

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(Sedimentology of shallow marine sandstones of Nyalau Fm (Oligocene-M Miocene) outcrops, Bintulu area)

Siddiqui, N.A., A.H.A. Rahman, C.W. Sum & M. Murtaza (2017)- Sandstone facies reservoir properties and 2D-connectivity of siliciclastic Miri Formation, Borneo. In: M. Awang et al. (eds.) Proc. Int. Conf. Integrated Petroleum Engineering and Geosciences (ICIPEG2016), Kuala Lumpur 2016, Springer Verlag, p. 581-595.

Siddiqui, N.A., M. Ramkumar, A.H.A. Rahman, M.J. Mathew, M. Santosh, C.W. Sum & D.Menier (2018)- High resolution facies architecture and digital outcrop modeling of the Sandakan Formation sandstone reservoir, Borneo: implications for reservoir characterization and flow simulation. Geoscience Frontiers, p. *(in press)*
(online at: www.sciencedirect.com/science/article/pii/S1674987118301087)
(Digital imaging and reservoir quality analysis of 750m outcrop of Late Miocene or younger, shallow marine-deltaic Sandakan Fm, Sabah)

Sidek, A, U. Hamzah & R. Junin (2015)- Seismic facies analysis and structural interpretation of deepwater NW Sabah. Jurnal Teknologi (UTM, Sciences & Engineering) 75, 1, p. 115-125.
(online at: www.jurnalteknologi.utm.my/index.php/jurnalteknologi/article/view/3677/3373)

Sim, D. & G. Jaeger (2004)- Tectonostratigraphy and trap styles of the half-graben sub-province in West Luconia, offshore Sarawak. In: Petroleum Geology Conf. Exhib. (PGCE) 2003, Kuala Lumpur, Bull. Geol. Soc. Malaysia 49, p. 107-110.
(online at: http://geology.um.edu.my/gsmpublic/v49/Pages%20107-110.pdf)
(Half-Graben sub-province in W Luconia, offshore Sarawak, characterised by NNW trending, SW-dipping extensional faults, creating sub-basins within half-grabens during M Miocene. Syn-rift carbonates at base of half-graben drowned as result of rapid graben subsidence and influx of clastics. M Miocene fluviomarine sediments filled half-grabens. Rifting ended at start of Late Miocene. Post-rift sediments two main hiatuses: U Miocene (~10.6 Ma) and Lower Pliocene (~5.6 Ma). Miocene-Pliocene boundary last major deformation, with faulted anticlinal structures in NW area, attributed to wrench related inversion of extensional faults)

Sia, S.G. & W.H. Abdullah (2011)- Concentration and association of minor and trace elements in Mukah coal from Sarawak, Malaysia, with emphasis on the potentially hazardous trace elements. Int. J. Coal Geology 88, 4, p. 179-193.
(On hazardous elements in coal from Mukah field, which is enriched in As, Cr, Cu, Pb, Sb, Th, and Zn. Field with 12 coal seams in U Miocene Balingian Fm (E Miocene?; see Sia et al. 2014), which is unconformably overlain by E Pliocene Begrih Fm. Balingian Fm with brackish water forams Ammodiscus, Glomospira, Haplophragmoides, Trochammina)

Sia, S.G. & W.H. Abdullah (2012)- Geochemical and petrographical characteristics of low-rank Balingian coal from Sarawak, Malaysia: its implications on depositional conditions and thermal maturity. Int. J. Coal Geology 96-97, p. 22-38.
(Geochemical and coal petrographical analyses of low-rank U Pliocene Balingian coal from Sarawak. Characterised by high moisture, low ash and low sulphur contents. Low ash and sulphur content, together with lack of epiclastic partings indicate coal deposition in ombrotrophic raised bogs)

Sia, S.G. & W.H. Abdullah (2012)- Enrichment of arsenic, lead, and antimony in Balingian coal from Sarawak, Malaysia: modes of occurrence, origin, and partitioning behaviour during coal combustion. Int. J. Coal Geology 101, p. 1-15.
(Balingian Coal from U Pliocene Liang Fm in Sarawak highly enriched in As, Pb and Sb and vaporized and released into atmosphere during coal combustion. Enrichment may be related to nearby Sb-As mineralization. Liang Fm unconformably overlies Lower Pliocene Begrih Fm in N and Eocene Belaga Fm in S)

Sia, S.G., W.H. Abdullah, Z. Konjing & A.M. Koraini (2014)- The age, palaeoclimate, palaeovegetation, coal seam architecture/mire types, paleodepositional environments and thermal maturity of syn-collision paralic coal from Mukah, Sarawak, Malaysia. J. Asian Earth Sci. 81, p. 1-19.
(online at: https://umexpert.um.edu.my/file/publication/00004125_105774.pdf)
(Mukah coal in Balingian Fm previously assigned Late Miocene age, but abundance of Casuarina pollen associated with Dacrydium, Stenochlaena palustris, Florschuetzia levipoli and Stenochlaena areolaris indicate palynozone PR9, Early Miocene, i.e. during collision between Luconia- Dangerous Grounds Block with Borneo. Coal with common detrohuminite without enrichment of liptinite group macerals. Low sulphur content and evidence from palynomorphs in seams show coal was deposited in freshwater mires with little or no marine influence. Fauna present in host rock formation suggests brackish-water deposition)

Sidek, A., U. Hamzah & R. Junin (2015)- Seismic facies analysis and structural interpretation of deepwater Sabah. Jurnal Teknologi (Sciences & Engineering) 75, 1, p. 115-125.
(online at: www.jurnalteknologi.utm.my/index.php/jurnalteknologi/article/view/3677/3373)
(Deepwater NW Sabah and Sabah Trough seismic shows 8 Paleocene- Recent seismic stratigraphic units, 6 seismic facies and 5 sequence boundaries)

Sidek, A., U. Hamzah, A.R. Samsudin, M.H. Arifin & R. Junin (2015)- Deep crustal profile across NW Sabah Basin: integrated potential field data and seismic reflection. ARPN J. Engineering Applied Sciences 11, 3, p. 1401-1411.

(online at: www.arpnjournals.org/jeas/research_papers/rp_2016/jeas_0216_3513.pdf)
(Crustal profile model across Deepwater Fold and Thrust Belt, Sabah Trough, Dangerous Grounds Province and Thrust Sheet Zone. Formation of half-grabens and normal faults in Dangerous Grounds which subducted beneath Sabah Trough. Moho depth (top upper mantle) range 26-33km)

Simmons, M.D., M.D. Bidgood, P. Brenac, P.D. Crevello, J.J. Lambiase & C.K. Morley (1999)- Microfossil assemblages as proxies for precise palaeoenvironmental determination- an example from Miocene sediments from north-west Borneo. In: R.W. Jones & M.D. Simmons (eds.) Biostratigraphy in production and development geology, Geol. Soc., London, Spec. Publ. 152, p. 219-241.
(Palynomorphs and foraminifera allow distinction of paleoenvironments where core is absent in Miocene deltaic-marine clastics formations of Brunei-Sabah)

Simon, Khor, M. Hakif & M.P.J. Barbeito (2014)- Sedimentology and stratigraphy of the Miocene Kampung Opak limestone (Sibuti Formation), Bekenu, Sarawak. Bull. Geol. Soc. Malaysia 60 (C.S. Hutchison Memorial Issue), p. 45-53.
(online at: https://gsmpubl.files.wordpress.com/2015/04/bgsm2014005.pdf)
(Kampung Opak Limestone in Sibuti Fm, onshore Sarawak, 44m thick wackestone-mudstones with Miogypsina and marls with M Miocene (N9- N13) planktonic foraminifera, probably representing distal margins of carbonate platform)

Sleumer, B.H.G. (1978)- The Subis Limestone Complex- Sarawak, Malaysia. In: Proc. Carbonate Seminar, Indon. Petroleum Assoc., Jakarta 1976, p. 120-121. *(Abstract only)*
(Subis Lst, 100 km S of Miri, ~1000' thick isolated carbonate buildup with caves in Sarawak. Age early E Miocene (larger foram zone Te5; Eulepidina+ Miogypsina). Contemporaneous Setap Fm shales belong to G. binaiensis planktonic foram zone)

Sorkhabi, R. (2010)- History of oil- Miri 1910. GeoExpro 7, 2, p. 44-49.
(1910 oil discovery in U Miocene Miri Fm of N Sarawak by Anglo-Saxon Petroleum (Royal Dutch/Shell Group) in area of oil seeps. Peak production reached 15,211 BOPD in 1929. Total production by end-1940 ~7 MBO; 597 wells had been drilled in the field. Field closed in 1972)

Sorkhabi, R. (2011)- Kota Kinabalu, Sabah; a turbidite paradise. GEO ExPro, 8, 5, p. 52-56.

Sorkhabi, R. & S. Hasegawa (2005)- Fault zone architecture and permeability distribution in the Neogene clastics of Northern Sarawak (Miri Airport road outcrop), Malaysia. In: R. Sorkhabi & Y. Tsuji (eds.) Faults, fluid flow and petroleum traps, American Assoc. Petrol. Geol. (AAPG), Mem. 85, p. 139-151.

Sperber, C.M. (2009)- The thermotectonic development of Mount Kinabalu, Sabah, Malaysia. Ph.D. Thesis Royal Holloway, University of London, p. *(Unpublished)*
(Mount Kinabalu is 4095m high post-orogenic granitic intrusion, emplaced far from active plate boundaries at ~8 Ma. Thermochronological study suggests exhumation rates of ~0.40 mm/yr for central zone and ~0.60 mm/yr for marginal zone of igneous body)

Staub, J.R., H.L. Among & R.A. Gastaldo (2000)- Seasonal sediment transport and deposition in the Rajang River delta, Sarawak, East Malaysia. Sedimentary Geology 133, p. 249-264.
(Description of sedimentary processes in Rajang Delta, NW Borneo, and variations in deposition between wet and dry seasons)

Staub, J.R. & J.S. Esterle (1993)- Provenance and sediment dispersal in the Rajang River delta/ coastal plain system, Sarawak, East Malaysia. Sedimentary Geology 85, p. 191-201.
(Rajang delta in embayment formed by folded Mesozoic and Cenozoic sediments of C Borneo Massif. Alluvial valley floodplain, abandoned tidally flushed delta plain and actively accreting rectilinear delta/coastal plain. 50-80% of surface area covered by peat 1-20m thick. Margins of thick, domed peat deposits interfinger with and are overlain by root-penetrated siliciclastic sediments)

Staub, J.R. & J.S. Esterle (1994)- Peat-accumulating depositional systems of Sarawak, East Malaysia. Sedimentary Geology 89, p. 91-106.
(Prograding coastal depositional systems of Sarawak contain domed peat-accumulating environments in which low-ash, low-sulfur peats are being deposited in areas of clastic sedimentation. Depositional systems are as large as 11,400 km2, individual peat deposits >20m thick and 1000 km2 in area. Basal high-ash, high-sulfur, degraded peats overlain by low-ash, low-sulfur, well preserved peats)

Staub, J.R. & R.A. Gastaldo (2003)- Late Quaternary sedimentation and peat development in the Rajang River Delta, Sarawak, East Malaysia. In: F.H. Sidi et al. (eds.) Tropical deltas of Southeast Asia; sedimentology, stratigraphy, and petroleum geology. Soc. Sedimentary Geology (SEPM), Spec. Publ. 76, p. 71-87.
(Thick, domed peat deposits on Rajang delta tide-influenced alluvial valley and coastal plain. NE-striking shoreline terrace sands along landward margin of delta and coastal plain and gravel outcrops in alluvial valley expression of VIIa/ 125 ka highstand surface. Lignite near present coast at 80m depth represents IIIb highstand surface, indicating 40m of subsidence in last 40 ka. Gravel dominates base of incised-valley fill 10km wide- 45m thick and overlain by fining-upward succession with tidally influenced upper part. Interfluve areas in landward half of NE delta plain and adjacent coastal plain with >10m Recent peat deposits on Pleistocene began accumulating between 7.3- 5.8 ka as rate of sea-level rise slowed. Seaward half of NE delta plain, delta front, and prodelta up to 40m thick seaward-thickening wedge, accumulated in last 5 ka, with basal gravel lag over rooted alluvial soil, overlain by delta-front and prodelta clays- silts, delta-front distributary-mouth sands and shoreline sands. Young (<5 ka), thin (<10m) peat on top of wedge in this part of delta plain)

Stauffer, P.H. (1967)- Studies in the Crocker Formation, Sabah. Bull. Geol. Survey Borneo Region 8, p. 1-13.
('The most significant paper on the Crocker Fm'; Hutchison 2005. Paleocene- E Miocene deformed submarine fan system)

Stauffer, P.H. & D.T.C. Lee (1972)- Sedimentology of the Sandakan formation, East Sabah. Geol. Survey of Malaysia, Geol. Papers 1, p. 10-17.

Stephens, E.A. (1956)- The manganese deposits of North Borneo. In: J. G. Reyna (ed.) Symposium sobre yacimientos de manganeso, 4, Asia y Oceanica, Reports 20th Sess. Int. Geological Congress, Mexico, 4, p. 297-312.
(Manganese mineralization in N Borneo associated with radiolarian chert in Paleocene- Lower Eocene cherts and spilites, capped by M Eocene- Miocene sandstone, shale, and limestone. Ore mainly psilomelane and pyrolusite. Manganese probably introduced simultaneously with extrusion of basic lavas, contemporaneous with silicification. Tropical weathering subsequently concentrated manganese)

Stephens, E.A. (1958)- The geology and mineral resources of the Kota Belud and Kudat area, North Borneo, with an account of Taritipan manganese deposits. Geological Survey Dept., British Territories in Borneo, Mem. 5, p. 1-137.
(Kota Belud Kudat region with Chert-Spilite Fm Cretaceous- Early Eocene cherts (with manganese ores in Taritipan district), spilites and related geosynclinal deposits, with intermediate-ultrabasic igneous intrusives. Thick Eocene sands-shales and (mainly N of Kudat) Miocene shallow marine sediments and andesites. Oil seeps near Sikuati)

Stinton, F.C. (1963)- Teleostian otoliths from the Upper Tertiary strata of Sarawak, Brunei and North Borneo. British Borneo Geol. Survey, Annual Report 1962, p. 75-92.
(18 species (14 new) of marine fish otoliths from M-U Miocene- E Pliocene Miri and Seria Fms of Brunei and Sarawak and Togopi Fm of E Sabah)

Straub, K.M. & D. Mohrig (2009)- Constructional canyons built by sheet-like turbidity currents: observations from offshore Brunei Darussalam. J. Sedimentary Res. 79, 1, p. 24-39.
(Seismic examples of Quaternary canyons in 900m of water off Brunei, not formed by erosion, but in net deposition conditions)

Straub, K.M., D. Mohrig & C.Pirmez (2012)- Architecture of an aggradational tributary submarine channel network on the continental slope offshore Brunei Darussalam. In: E. Bradford et al. (eds.) Application of the principles of seismic geomorphology to continental slope and base-of-slope systems: case studies from seafloor and near-seafloor analogues, Soc. Sedimentary Geol. (SEPM) Spec. Publ. 99, p. 13-30.

Suggate, S. (2011)- Provenance of Neogene sandstones of Sabah, Northern Borneo. Ph.D. Thesis, Royal Holloway, University of London, p. 1-441. *(Unpublished)*

Suggate, S. (2011)- Provenance of Neogene sandstones, Sabah, Northern Borneo. In: Conf. Sediment provenance studies in hydrocarbon exploration & production, Geol. Soc., London 2011, p. 32. *(Abstract only)*
(E Miocene Sabah Orogeny deformed/ exposed pre-Neogene rocks in N Borneo (Top Crocker Unconformity) Most Neogene sands compositionally and texturally mature, and recycled from pre-Neogene sediments, ultimately derived from Schwaner Mts and Malay-Thai Tin Belt Granites, with some input from N Borneo ophiolitic basement, and Cenozoic volcanic rocks. Exception is oldest member of E Miocene Kudat Fm, which is immature, with granites and metamorphic rocks of Palawan Microcontinental Block contributing significant amounts of sediment. Jurassic zircon populations indicate S China source. Also garnet composition supports derivation of garnets from Palawan)

Suggate, S.M., M.A. Cottam, R. Hall, I. Sevastjanova, M.A. Forster, L.T. White, R.A. Armstrong, A. Carter & E. Mojares (2014)- South China continental margin signature for sandstones and granites from Palawan, Philippines. Gondwana Research 26, 2, p. 699-718.
(online at: http://searg.rhul.ac.uk/pubs/suggate_etal_2014%20Palawan.pdf)
(Heavy mineral analysis and U-Pb dating of detrital zircons from metasediments and Cenozoic sandstones and U-Pb dating of zircons from Cenozoic granites of N Palawan Continental Terrane and S Palawan Terrane. NPCT metasediments zircons maximum Late Cretaceous depositional age, derived from sediments deposited on S China margin before rifting/ opening of South China Sea. Miocene SPT sandstones with similar heavy mineral assemblages. Palawan Terrane sandstones similar to Lower Miocene Kudat Fm of N Borneo (and different from other Borneo sandstones), suggesting sediment transport from Palawan to Borneo in E Miocene following arc-continent collision. C Palawan granite Eocene age (42Ma). Capoas granite age 13.8-13.5 Ma, with inherited zircon ages implying melting of S China-derived continental crust with Cenozoic rift-related and arc material)

Suggate, S.M. & R. Hall (2013)- Using detrital garnet compositions to determine provenance: a new compositional database and procedure. In: R.A. Scott et al. (eds.) Sediment provenance studies in hydrocarbon exploration and production, Geol. Soc., London, Spec. Publ. 386, p. 373-371.
(Detrital garnet compositions suggest Neogene sandstones of N Sabah, Borneo, derived from metamorphic and igneous garnets from Palawan Block in E Miocene)

Sulaiman, N.B. (2017)- Controls on the geometry and evolution of deep-water fold thrust belt of the NW Borneo. Ph.D. Thesis University of Leeds, p. 1-163.
(online at: http://etheses.whiterose.ac.uk/18877/1/Sulaiman_NB_%20Earth%20and%20Environment_PhD_2017.pdf)
(On the offshore NW Sabah gravity-driven extensional-compressional system. Pulses of M Miocene- Recent proximal uplift started in E (now onshore) part of NW Borneo and increased slope elevation and sediment supply to basin. Shortening resulted in response to gravity spreading of uplifted continental interior)

Swauger, D.A., S.C. Bergman, A.P. Marillo, E.S. Pagado & T. Surat (1995)- Tertiary stratigraphy and tectonic framework of Sabah, Malaysia: a field and laboratory study. In: 8th Regional Conf. Geology Minerals, and Energy Resources of SE Asia (GEOSEA 95), Manila 1995, p. 35-36.

Swauger, D.A., C.S. Hutchison, S.C. Bergman & J.E. Graves (2000)- Age and emplacement of the Mount Kinabalu pluton. Bull. Geol. Soc. Malaysia 44, p. 159-163.
(online at: www.gsm.org.my/products/702001-100753-PDF.pdf)

(Radiometric dates of Mt Kinabalu pluton reflect Middle-Late Miocene igneous cooling history: hornblende 13.7 Ma, biotite 10.3 Ma and zircon 8.8 Ma)

Swinburn, P.M. (1993)- Tectonic styles of the Balingian Province. Warta Geologi 19, 6, p. 269-270. *(Abstract only)*
(Balingian Province off Sarawak bounded to N by more stable C Luconia Province. To W and E are W Balingian and W Baram Lines, both major NW-SE trending lineations, and may represent old transform faults. Deformation in Tertiary times related to periodic movement along major bounding transform faults and opening of S China Sea. Balingian Province 3 sub-provinces: (1) E Balingian, with strong, late Miocene to Pliocene wrench-related deformation; (2) SW Balingian, with Oligocene- E Miocene wrench-related deformation; (3) NW Balingian several phases of strong deformation from Oligocene- Pliocene)

Syazwani, N., B.J. Pierson & A.W. Hunter (2013)- Diagenetic responses to sea level changes on Pleistocene-Holocene carbonates in the Celebes Sea, East Sabah, Malaysia. Proc. 75th EAGE Conf. Exhib., Carbonate depositional environments and diagenesis, London, 1, TuP15 07, p. 52-54.
(On diagenesis of elevated Quaternary reef limestone in Celebes Sea, E of Sabah)

Tahir, S.H. & A. Jantan (1994)- Stratigraphy of the Middle Miocene volcanic facies, Dent Peninsula, Sabah. Warta Geologi (Newsl. Geol. Soc. Malaysia) 20, 3, p. 225-227. *(Abstract)*
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1994003.pdf)
(M Miocene volcanic facies of Dent Peninsula, E Sabah, here named Silabukan Fm, 2000m thick and with 3 members. Probably submarine island arc volcanics and part of Sulu Arc. Uncormably over Dent melange/ Crocker Fm accretionary complex. Major phase of uplift coincident with early pulse of volcanic activity in early M Miocene (base planktonic foram zone N10))

Tahir, S.H., B. Musta & I.A. Rahim (2010)- Geological heritage features of Tawau volcanic sequence, Sabah. Geol. Soc. Malaysia 56, p. 79-85.
(online at: www.gsm.org.my/products/702001-100383-PDF.pdf)
(Description of Early Cretaceous oceanic crust/ Neogene volcanic arc terrane of Semporna Peninsula, SE Sabah near Kalimantan border. Oldest rocks fragmented oceanic crust material (Chert-Spilite Fm), emplaced in Albian-Cenomanian (similar age as Meratus Mts?). Overlain by thick, folded M Miocene volcanic island arc deposits, overlain by Plio-Pleistocene volcanics. Sabah deformation phases in M Eocene, M Miocene and Plio-Pleistocene. Two volcanic arc phases: (1) related to closing of Celebes and Sulu marginal basins in M Miocene and (2) related to S Philippine Sea Plate in Plio-Pleistocene)

Tahir, S.H., S.A.K. Omang & M.M. Faisal (1995)- Middle Miocene volcanic sequence in Eastern Sabah. Borneo Science 1, 1, p. 9-27.
(online at: wwwsst.ums.edu.my/data/file/NMXJD058e7Up.pdf)
(M Miocene calc-alkaline volcanic arc deposits of Segama Gp in Dent Peninsula and Kalumpang Fm in Semporna Peninsula, E Sabah are parts of volcanic arc. Remnants of volcanic arc extend N-ward into Sulu Ridge and volcanism ended in late M Miocene. Arc assemblage overlies late E- early M Miocene melange. Probably submarine stratovolcano, with mainly pyroclastics, breccias, some lava flows, lenses of shallow marine carbonates and open marine tuffaceous shales with common planktonic foraminifera, incl. Orbulina, Globorotalia praefohsi, Gr. fohsi and Gr. fohsi robusta (= zones N11-N12, ~12-14 Ma)).

Taib, N.E. (2012)- Plio-Pleistocene volcanism in the Upper Rajang Valley- a window into the crust under the Rajang Group. Geol. Soc. Malaysia, Nat. Geoscience Conf., Kuching 2012, Paper A15, p. 28. *(Abstract only)*
(Plio-Pleistocene bimodal volcanic edifices in upper Rajang valley (Niewenhuis Mts, Usun Apau, Hose Mts, Linau-Balui volcanics and others in N Kalimantan). Ar/Ar ages of Usun Apau dacites 4 Ma, Usun Apau and Linau-Balui basalts 2-2.5 Ma. Usun Basalts reminiscent of Oceanic Island Basalts (OIB), associated with mantle plumes and rifting/extension. Bimodal volcanism also associated with rifting and extension. Similarities to basalts from S Sulu Arc on Semporna pensinsula, interpreted earlier as contamination of mantle melts with radiogenic component from Paleozoic lower crust)

Taira, K. & W. Hashimoto (1971)- C-14 age calculated for raised coral reef limestones near Semporna, Sabah, North Borneo, Malaysia. In: T. Kobayashi & R. Toriyama (eds.) Geology and palaeontology of Southeast Asia, University of Tokyo Press, 9, p. 161-164.
(C-14 dating of oyster in raised coral limestone on Sipangao island 21' above high tide ~28,000 BP or older. On Danawan island coral cliffs >40' high)

Tamura, M. (1973)- Two species of lower Cretaceous *Parvamussium* from Kyushu, Japan, and Sarawak, Borneo. In: T. Kobayashi & R. Toriyama (eds.) Geology and palaeontology of Southeast Asia, University of Tokyo Press, 11, p. 119-124.
(Lower Cretaceous pectinid bivalve from Sarawak, S of Kuching. Also report perisphinctid ammonite from Bau series black shale, probably Berriasella or Microanthoceras indicating Tithonian-Berriasian age)

Tamura, M. & C. Hon (1977)- *Monotis subcircularis* Gabb from Sarawak, East Malaysia. In: T. Kobayashi et al. (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 18, p. 29-31.
(Late Triassic thin-shelled bivalve Monotis subcircularis found at Kuap, Sarawak. Identified as M. subcircularis, but more likely Monotis (Eomonotis) according to Silberling (1985))

Tamura, M. & C. Hon (1977)- Upper Jurassic bivalves from the Kedadom formation of Sarawak, Malaysia. In: T. Kobayashi & R. Toriyama (eds.) Geology and palaeontology of Southeast Asia, University of Tokyo Press, 18, p. 33-47.
(Kedadom Limestone Fm of W Sarawak rich in bivalves (Nuculana, Grammatodon, Somapecten, Lucina, Neoburmesia, etc.) show Callovian or Kimmeridgean to Berriasian age and related to Torinosu fauna on Pacific side of Japan (Kobayashi 1978, Hayami 1984) (similar to Vogel (1896, 1900) faunas from W Kalimantan?; also viewed as 'Torinosu-type fauna' by Tamura 1959; JTvG))

Tan, D.N.K. (1975)- Preliminary notes on the melange in the Lupar Valley. Annual Report Geol. Survey of Malaysia 1974, p. 219-228.

Tan, D.N.K. (1978)- Lower Cretaceous age for the chert in the Lupar Valley, West Sarawak. Warta Geologi 4, 6, p. 173-176.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1978006.pdf)
(Radiolaria assemblages identified by Pessagno from 5 exotic chert blocks in Lubok Antu melange of Lupar Valley, W Sarawak. Believed to be same as radiolaria studied by Hinde in Molengraaff (1902) from cherts in adjoining Upper Kapuas Valley in NW Kalimantan. Radiolaria studied by Pessagno indicate Early Cretaceous age, most likely Valanginian-Barremian (incl. Thanaria conica, Parvacingula spp., Pantanellium spp, Archaeodictyomitra, etc.)

Tan, D.N.K. (1979)- Lupar Valley, West Sarawak; Explanation of sheets 1-111-14, 1-111-15, and 1-111-16. Geol. Survey Malaysia Report 13, p. 1-159.
(Hutchison 2005: Lupar Line complex composed of imbricated U Cretaceous flysch with paleocurrents SW to NE (Lupar Fm), chaotic melange (Lubok Antu melange with E-M Eocene microfauna in matrix) and ophiolitic rocks (Pakong mafic complex: gabbro and pillow basalts))

Tan, D.N.K. (1982)- The Lubok Antu melange, Lupar Valley, West Sarawak: a Lower Tertiary subduction complex. Bull. Geol. Soc. Malaysia 15, p. 31-46.
(online at: www.gsm.org.my/products/702001-101188-PDF.pdf)
(Lower Tertiary Lubok Antu melange in W Sarawak 10.5 km wide in Lupar Valley, extending SE into Kalimantan. S of melange is U Cretaceous Lupar Formation = Danau Complex of Molengraaff (1902), with turbidite flow directions to NE. N of melange is Pakong mafic complex with overturned pillow lavas dipping steeply to NE. Melange contains of blocks of Lower Cretaceous (Valanginian-Barremian) radiolarian chert, mid-Cretaceous Orbitolina limestone, U Cretaceous greywacke and slate, Paleo-Eocene limestone with Distichoplax, Discocyclina and Nummulites, calcareous shale, mudstone, sandstone, basalt, spilite, gabbro and serpentinite in pervasively sheared pelitic matrix, locally with E Eocene foraminifera and nannofossils. Also

recognition of low-grade prehnite-pumpellyite facies metamorphics. Geotectonic setting is Late Cretaceous- E Tertiary SW-dipping subduction of oceanic crust under West Borneo continental basement)

Tan, D.N.K. (1983)- Nomenclature of the Upper Cretaceous-Tertiary molasse deposits of West Sarawak. Annual Report Geol. Survey of Malaysia 1981, p. 348-355.
(Introduction of name Plateau Sandstone, used earlier in Kalimantan, to massive molasse deposits in W Sarawak by Liechti et al. (1961) caused much confusion. Some sands assigned to this should be 'Kayan Sst')

Tan, D.N.K. (1984)- Palaeocurrents in the Tertiary sedimentary deposits in western Sarawak. Bull. Geol. Soc. Malaysia 17, p. 258-264.
(https://gsmpubl.files.wordpress.com/2014/09/bgsm1984013.pdf)
Tertiary fluvial-deltaic sediments from 7 localities in W Sarawak investigated for paleocurrent indicators. Local mean directions to NW, N, NE, NNE and ESE suggest provenance of these rocks is Carboniferous-Permian and Mesozoic sedimentary, igneous and metamorphic rocks of present Bau-Kuching-Serian area)

Tan, D.N.K. (1986)- Palaeogeographic development of West Sarawak. In: G.H. Teh & S. Paramananthan (eds.) Proc. 5th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA V), Kuala Lumpur 1984, 1, Bull. Geol. Soc. Malaysia 19, p. 39-49.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1986004.pdf)
(Four paleogeographic maps of W Sarawak: Carbo-Permian, Triassic, Jurassic-Cretaceous and Lower Tertiary. Carbo-Permian data limited. M-L Triassic Sadong Fm mixed continental- shallow marine deposits and Serian Volcanics. Early Jurassic orogeny/ uplift, feeding Late Jurassic-Cretaceous Kedadom and Pedawan Fms, and offshore deep-sea pelagic deposits. By Early Tertiary most of W Sarawak uplifted; intermontane basins with Silantek Fm, Kayan Sst and Plateau Sst)

Tan, D.N.K., B.A.R. Abdul Hadi, A. Azlina, B. Boniface & K.T. Chow (1999)- West Baram Delta. In: Petronas (1999) The petroleum geology and resources of Malaysia, Ch. 13, p. 293-341.
(Baram Delta is NW prograding delta system since M Miocene. Onshore Brunei exploration resulted in discovery of one large field (Miri,1910) and 27 unsuccessful wells. Offshore Brunei and Sabah 11 oil-gas discoveries by Shell between 1955-1988. Additional fields discovered in 1990's. Structures dominated by gravity tectonics (rotated fault blocks with growth faults. Oils generally light, low sulfur, derived from landplant material)

Tan, D.N.K. & J.M. Lamy (1990)- Tectonic evolution of the NW Sabah continental margin since the Late Eocene. Bull. Geol. Soc. Malaysia 27, p. 241-260.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1990027.pdf)
(NW Sabah Shelf tectono-stratigraphic provinces. Four tectonic stages: (1) Late Eocene- early M Miocene subduction of proto-S China Sea oceanic crust under Borneo; (2) early M Miocene collison of S China Sea continental crust with Borneo, with uplift and erosion of accretionary prism and 'Deep Regional Unconformity'; (3) cessation of subduction in M-L Miocene accompanied by compressional deformation associated with deep-seated N-S shear zones in inboard belt (4) Late Miocene-Holocene: inboard belt stable and eroding, outboard belt E Baram Delta, prograding to NW)

Tate, R.B. (1970)- Tektites in Brunei. Brunei Museum J. 2, 2, p. 253-259.
(Tektites from Jerudong Fm near Brunei coast dated as ~730,000 yrs old. Originated from large M Pleistocene Australasian tektite shower (but assoociated with 30,000 year old wood, so tektites possibly reworked into younger younger terrace deposits?))

Tate, R.B. (1976)- Palaeo-environmental studies in Brunei. Proc. SE Asia Petroleum Expl. Soc. (SEAPEX), Singapore, 3, p. 102-124.
(Measured sections of Brunei Neogene deltaic deposits with interpretations of paleoenvironments)

Tate, R.B. (1991)- Cross-border correlation of geological formations in Sarawak and Kalimantan. Bull. Geol. Soc. Malaysia 28, p. 63-95.

(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1991004.pdf)
(Correlation charts to reconcile new stratigraphy established by Kalimantan Australian- Indonesian mapping team and Sarawak)

Tate, R.B. (1992)- The Mulu Shear Zone- a major structural feature of NW Borneo. Bull. Geol. Soc. Malaysia 31, p. 51-65.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1992004.pdf)
(Major regional NE-SW trending shear zone from NE Sarawak- Brunei to Sabah. Affects basal Melinau Limestone. Oldest movements probably post-Eocene, youngest sediments·affected by NE shears probably Pliocene or even younger in offshore areas. Possibly tied to oblique subduction, but transcurrent movement continues after end of subduction in M Miocene?)

Tate, R.B. (1994)- The sedimentology and tectonics of the Temburong Formation- deformation of early Cenozoic deltaic sequences in NW Borneo. Bull. Geol. Soc. Malaysia, p. 97-112.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1994010.pdf)
(Oligocene?-age Temburong Fm in E Brunei deposited mostly in shallow water, subsaline embayment or lower alluvial floodplain. Rocks metamorphosed to sericite grade. Deformation probably between U Oligocene-Lower Miocene)

Tate, R.B. (1995)- The Balingian shear zone, West Balingian and West Baram lines, Sarawak, and their importance in the early Cenozoic evolution of NW Borneo. Bull. Geol. Soc. Malaysia 38, p. 141-151.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1995013.pdf)
(Major zone of WNW- trending intense deformation near Sg. Balingian between Sibu and Bintulu, probably continuing offshore along gravity lineament. W Balingian and W Baram Lines mark boundaries of offshore hydrocarbon provinces and together with new shear zone, form fundamental tectonic framework for this part of NW Borneo. Distribution of heat flow, igneous rocks, Oligocene deltas and Oligocene-Miocene carbonates across N Sarawak and N Kalimantan appear to be related to framework which extends across C Borneo)

Tate, R.B. & V. Hon (1991)- The oldest rocks in Borneo; a note on the Tuang Formation, West Sarawak and its importance in relation to the presence of a "Basement" in West Borneo. Warta Geologi (Newsl. Geol. Soc. Malaysia) 17, 5, p. 221-224.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1991005.pdf)
(Oldest rocks in W Sarawak are Tuang and Kerait schists, possibly equivalent units and possibly correlative with Pinoh Metamorphics of C Kalimantan. Low grade (greenschist) metamorphic rocks, presumably of pre-Late Carboniferous age. Tuang Fm probably meta-turbidites and ultrabasic rocks, possibly Permian-Carboniferous ocean floor)

Teoh Ying Jia (2009)- Characteristics of sedimentary facies and reservoir properties of some Tertiary sandstones in Sabah And Sarawak, East Malaysia. M.Sc. Thesis Universiti Sains Malaysia, p. 1-115.
(partly online at: http://eprints.usm.my/8935/)

Teoh Ying Jia & A.H. Abd Rahman (2009)- Comparative analysis of facies and reservoir characteristics of Miri Formation (Miri) and Nyalau Formation (Bintulu), Sarawak. Bull. Geol. Soc. Malaysia 55, p. 39-45.
(Outcrop study of sandstones of tidal- shallow marine M Miocene Miri and Nyalau Fms in Sarawak)

Thies, K., M. Ahmad, H. Mohamad, R. Bischke, J. Boyer & D.Tearpock (2006)- Structural and stratigraphic development of extensional basins: a case study offshore deepwater Sarawak and Northwest Sabah, Malaysia. AAPG Ann. Conv. 2005, Search and Discovery Art. 10103, 6p.
(online at: www.searchanddiscovery.net/documents/2006/06026thies/images/thies.pdf)
(Half-grabens of deepwater Sarawak and Sabah two or more regressive cycles of rift fill, related to early rifting from ~43-30 Ma and S China Sea seafloor spreading between 30-16 Ma, separating Dangerous Grounds-Luconia microplates from Eurasia. Collision of Luconia Block with Kalimantan Block in M Oligocene and Dangerous Grounds block in M Miocene, terminating half-grabens extension. Lower part of rift-fill cycles predominantly bathyal facies; upper parts more sand prone inner neritic to fluvio-marine)

Ting, Ching Soon (1992)- Jurassic-Cretaceous palaeogeography of the Jagoi-Serikin area as indicated by the Bau Limestone Formation. Bull. Geol. Soc. Malaysia 31, p. 21-38.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1992002.pdf)
(Bau Lst near Kuching, W Sarawak, is Late Jurassic- E Cretaceous fringing reef complex, deposited on and around basement high of Jagoi granodiorite , with earliest Jurassic ~195 Ma radiometric age (but Late Triassic 208 Ma, according to Breitfeld et al. 2017). Back-reef facies closest to landmass (Jagoi granodiorite, Gunung Kisam) at edge of basin with Pedawan Fm deposition)

Ting, K.K., B.J. Pierson, O.S. Al-Jaaidi & P.F. Hague (2012)- Effects of syn-depositional tectonics on platform geometry and reservoir characters in Miocene carbonate platforms of Central Luconia, Sarawak. Int. Petrol. Techn. Conf. IPTC, Bangkok 2012, IPTC 14247, p. 245-261.
(Evidence of syn-depositional tectonic movements in 'Mega Platform', a 30x50km large and 1.2km thick carbonate Miocene carbonate platform (cluster of 6 buildups) in N part of C Luconia Basin. In Luconia Province carbonate reefs started to grow during Miocene on uplifted half graben footwalls)

Tingay, M.R.P. (2003)- In situ stress and overpressures of Brunei Darussalam. Ph.D. Thesis, Adelaide University, Australia, p. 1-271.
(online at: https://digital.library.adelaide.edu.au/dspace/handle/2440/508180)
(Study of stress and overpressure from 157 wells in 61 fields in Brunei. Overpressure observed in 54 fields in underlying prodelta shales and inner shelf deltaic sequences)

Tingay, M.R.P., R.R. Hillis, C.K. Morley, R.C. King, R.E. Swarbrick & A.R. Damit (2009)- Present-day stress and neotectonics of Brunei: implications for petroleum exploration and production. American Assoc. Petrol. Geol. (AAPG) Bull. 93, 1, p. 75-100.
(Present-day stress in Tertiary Baram Delta exhibits range of values that reflect NW Borneo active margin (situated underneath the basin) and local stresses generated within delta)

Tingay, M.R.P., R.R. Hillis, C.K. Morley, R.E. Swarbrick & S.J. Drake (2005)- Present-day stress orientation in Brunei: a snapshot of prograding tectonics in a Tertiary delta. J. Geol. Soc. London 162, p. 39-49.
(Baram Delta on active margin. Structures margin-parallel gravity tectonics and margin-normal transpressive tectonics associated with active margin. Maximum horizontal stress margin-normal (NW-SE) in proximal parts of basin and margin-parallel (NE-SW) in outer shelf. Rotations result of 'deltaic' and 'basement-associated' tectonic regimes that 'prograde' basinwards. Proximity of active margin resulted in uplift and inversion of hinterland that forced delta system to prograde rapidly. Zone of active deltaic growth faulting 'prograded' as delta rapidly prograded across shelf. After uplift and delta progradation, old growth faults of inner shelf ceased being active and successively reactivated by similarly 'prograding' margin-normal inversion front)

Tingay, M.R.P., R.R. Hillis, C.K. Morley, R.E. Swarbrick & S.J. Drake (2005)- ôProgradingô tectonics in Brunei: regional implications for fault sealing. In: Alaska Rocks 2005, The 40th U.S. Symp. Rock Mechanics (USRMS): Rock mechanics for energy, mineral and infrastructure development in the Northern Region, Anchorage, ARMA/USRMS 05-785, 14p.
(online at: www.asprg.adelaide.edu.au/asm/papers/tingay2005b.pdf)
(Baram Delta province of Brunei built on active margin. Structures are result of both margin-parallel gravity-driven deltaic tectonics and margin-normal transpressive tectonics associated with active margin. Breakouts and DITFs observed in 19 wells suggest maximum horizontal stress oriented margin-normal (NW-SE) in proximal parts of basin and margin-parallel (NE-SW) in distal region. Margin-normal σHmax direction perpendicular to strike of Miocene-Pliocene normal growth faults, suggesting ~90° rotation over time. All major fields located in inner shelf region of Brunei where faults not optimally aligned for present-day reactivation and seal breach)

Tingay, M.R.P., R.R. Hillis, C.K. Morley, R.E. Swarbrick & E.C. Okpere (2003)- Pore pressure/ stress coupling in Brunei Darussalam; implications for shale injection. In: P. van Rensbergen et al. (eds.) Subsurface sediment mobilization, Geological Soc., London, Spec. Publ. 216, p. 369-379.

(Shale dykes, diapirs and mud volcanoes common in Brunei. Outcrop examples show shale intruded along faults and tensile fractures. Changes in pore pressure are coupled with changes in total minimum horizontal stress, so rocks can sustain greater pore pressure prior to failure than predicted)

Tingay, M.R.P., R.R. Hillis, C.K. Morley, R.E. Swarbrick & E.C. Okpere (2003)- Variation in vertical stress in the Baram Basin, Brunei: tectonic and geomechanical implications. Marine Petroleum Geol. 20, p. 1201-1212.
(Vertical stress determined in 24 fields in Baram Basin, using density log and checkshot velocity data. Basin shows variation in vertical stress gradient between 18.3 and 24.3 MPa/km at 1500m depth below surface. Variation caused by bulk rock density change of 2.48-2.07 g/cm3 from hinterland to delta front. Differential uplift of hinterland and undercompaction caused density and hence vertical stress variation)

Tingay, M.R.P., R.R. Hillis, R.E. Swarbrick & C.K. Morley (2005)- Origin and petrophysical log response of overpressures in the Baram Delta Province, Brunei. Proc. 30th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 381-390.

Tingay, M.R.P., R.R. Hillis, R.E. Swarbrick, C.K. Morley & A.R. Damit (2007)- óVertically transferredô overpressures in Brunei: evidence for a new mechanism for the formation of high-magnitude overpressure. Geology 35, 11, p. 1023-1026.
(Pore pressure data from 61 fields across Baram Delta province reveal two types of overpressure: basal pro-delta shales overpressures generated by disequilibrium compaction, overlying sand/shale deltaic sequence overpressures generated by fluid expansion. Fluid expansion overpressures in fields that were inverted during Pliocene, which resulted in large-scale fluid migration from prodelta shales into deltaic sequences)

Tingay, M.R.P., R.R. Hillis, R.E. Swarbrick, C.K. Morley & A.R. Damit (2009)- Origin of overpressure and pore-pressure prediction in the Baram Delta province, Brunei. American Assoc. Petrol. Geol. (AAPG) Bull. 93, 1, p. 51-74.
(Baram Delta overpressures in inner shelf deltaic sequences and prodelta shales, generated by disequilibrium compaction in prodelta shales and by fluid expansion in inner-shelf deltaic sequences. Overpressures in inner-shelf deltaics vertically transferred into reservoir units via faults from prodelta shales. Sediments overpressured by disequilibrium compaction different physical properties to those overpressured by vertical transfer)

Tjia, H.D. (1970)- Transcurrent faulting in the Sarawak-Kiri region, Sarawak, East Malaysia. Geol. Magazine 107, 3, p. 217-224.
(Left-lateral, NNW-SSE trending transcurrent fault in Sarawak-kiri valley, W Sarawak. Belongs to important fracture zone that extends into Kalimantan, and continues in N direction along edge of Sunda Shelf beneath S China Sea. Continental part of SE Asia rotated counter-clockwise up to Lower Paleogene)

Tjia, H.D. (1972)- Structural pattern of Bau Limestone Formation, Sarawak. Sains Malaysiana (Malaysian J. Science) 1, B, p. 173-182.
(Abrupt change in trend from SSW-NNE to NW-SE, compression directions reflected in topography, etc.)

Tjia, H.D. (1974)- Sense of tectonic transport in intensely deformed Trusmadi and Crocker sediments, Ranua-Tenompok area, Sabah. Sains Malaysiana 3, 2, p. 129-161.

Tjia, H.D. (1983)- Quarternary tectonics of Sabah and Sarawak, East Malaysia. Sains Malaysiana 12, p. 191-215.

Tjia, H.D. (1988)- Accretion tectonics in Sabah: Kinabalu Suture and East Sabah accreted terrane. Bull. Geol. Soc. Malaysia 22, p. 237-251.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1988012.pdf)
(Kinabalu suture zone 80 km wide belt with Triassic- M Miocene rocks across Sabah from Darvel Bay- Telupid-Marudu Bay to Banggi and Balambangan islands. Three collisional rock assemblages: (1) Cretaceous-Paleocene chert-spilite Fms, (2) Paleocene- Oligocene turbiditic Trusmadi Fm and Crocker Fms and (3)

Oligocene-M Miocene Garinono-Kalabakan olistostromes. W Sabah is continental piece from Asian continent, E Sabah is oceanic basin. By end M Miocene Sabah terrane welded to mainland Borneo)

Tjia, H.D. (1998)- The Dulit Triangle in Sarawak: a most striking example of detachment tectonics. In: G.H. Teh (ed.) Petroleum geology Conference 1997, Bull. Geol. Soc. Malaysia 42, p. 95-100.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1998009.pdf)
(Dulit triangle conspicuous kink in NE and ENE structural trendlines of C and N Sarawak. Structures of triangle comprise open synclines of Neogene Belait Fm and tight folds in U Oligocene-Lw Miocene Nyalau Fm that were bent about vertical axes into NE and SE trending structures)

Tjia, H.D. (2003)- Northwest Sabah overthrust system. Proc. Ann. Geol. Conf. 2003, Bull. Geol. Soc. Malaysia 46, p. 5-10.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm2003002.pdf)
(Study of folding/ thrusting in outcrops of Crocker and Trusmadi Fm turbidites of Sabah and their regional context. Suggest major 300km wide NW-verging overhrust sheet formed around E-M Miocene boundary and producing Deep Regional Unconformity (DMU))

Tjia, H.D. (2007)- Kundasang (Sabah) at the intersection of regional fault zones of Quaternary age. Bull. Geol. Soc. Malaysia 53, p. 59-66.
(online at: www.gsm.org.my/products/702001-100503-PDF.pdf)

Tjia, H.D. (2012)- The paleo-orientations of Northwestern Borneo and adjacent to South China Sea Basins. J. Geologi Indonesia 7, 2, p. 67-76.
(online at: www.bgl.esdm.go.id/publication/index.php/dir/article_detail/400)
(Limited paleomagnetic data from W. Kalimantan and SW Sarawak indicate CCW rotation of >50° during Cenozoic. However, region consists of mosaic-like assemblage of diverse tectono-stratigraphic terranes, each with separate tectonic development. Stress fields changed in different ways in different terranes and indicate that regional, progressive CCW rotation of Borneo not possible)

Tjia, H.D. (2015)- Sole markings of extraordinary size and variety in Crocker sandstones of Sabah. Bull. Geol. Soc. Malaysia 61, p. 11-21.
(online at: www.gsm.org.my/products/702001-101680-PDF.pdf)
(Eocene- E Miocene Crocker Fm of Sabah with large sole markings near Kaung Village on mid-slope of Mount Kinabalu, incl. >10m long groove casts. Effects of turbulent flow. Nereites-Zoophycos ichnofacies with Paleodictyon confirm bathyal-abyssal depth of deposition. In other localities of Crocker Fm in Sabah, paleocurrents ran N-ward, exception near Kaung Village where S-directed)

Tjia, H.D. (2016)- Temburong and Setap in Northwestern Borneo: equivalent or different formations? Berita Sedimentologi 35, p. 65-72.
(online at: www.iagi.or.id/fosi/berita-sedimentologi-no-35-palaeogene-of-the-eastern-margin-of-sundaland-part-1.html)
(On marine Oligocene- E Miocene Temburong Fm and mainly late Early- M Miocene Setap Fm in NW Borneo)

Tjia, H.D. & M.I. Ismail (1994)- Tectonic implications of well-bore breakouts in Malaysian basins. Bull. Geol. Soc. Malaysia 36, p. 175-186.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1994032.pdf)
(Over 100 well-bore breakout directions in Malay, Sarawak, Sabah and Sandakan basins show consistent correlation with current and past tectonic stress fields. Younger layers of Malay Basin (above 5500') breakouts oriented NE, consistent with shallow-focus earthquake stress trajectories associated with subduction of Indian Ocean Plate W of Sumatra. In older layers breakouts responded to N-S regional compression. Etc.)

Tjia, H.D., M.I. Ismail & O.A. Mahmud (1998)- The Tubau Lineament (Sarawak) is a strike-slip fault zone. Warta Geologi 24, 3, p. 129-132.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1998003.pdf)

(N-S Tubau Lineament 25-km left-stepping change of Bukit Mersing Line, 25-km of linear Tubau river valley, and as long axis of Ulu Suai Dome which adds ~30 km to lineament. Tubau Lineament originated as pre-Upper Miocene time left-lateral strike slip fault zone with ~25 km displacement)

Tjia, H.D., I. Komoo, P.S. Lim & Tungah Surat (1991)- The Maliau Basin, Sabah: geology and tectonic setting. Bull. Geol. Soc. Malaysia 27, p. 261-292.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1990028.pdf)
(Circular E Maliau Basin, Sabah, is landward extension of Tarakan Basin. Fieldwork found good quality coal seams in E-M Miocene Tanjung Fm. Majority of current indicators to NE. Miocene rocks uplifted to 1600m above SL)

Tjia, H.D., I. Komoo, C.A. Ali & S.H. Tahir (1992)- Geology of Taman Bukit Tawau, Semporna Peninsula, Sabah. Bull. Geol. Soc. Malaysia 31, p. 113-131.
(online at: www.gsm.org.my/products/702001-101046-PDF.pdf)
(Volcanic mountains in SE Sabah up to 1320m high are Quaternary dacitic, andesitic and basaltic volcanics)

Tjia, H.D., B. Sidi & C.L. Teoh (1987)- Superimposed deformation and vergence of lower Tertiary sediments near Tatau, Sarawak. Bull. Geol. Soc. Malaysia, 21, p. 251-271.
(online at:https://gsmpubl.files.wordpress.com/2014/09/bgsm1987013.pdf)
(Outcrops along trunk road near Tatau, C Sarawak, include Late Eocene- E Oligocene turbidites(associated with explosive volcanics), unconformably overlain by less deformed M Oligocene- M Miocene neritic- littoral sediments. Two tectonic vergences:earlier N-ward vergence with large recumbent folds and later W-vergence with smaller overturned folds. E Tertiary deposition in fore-arc basin on ocean side of magmatic arc)

Togunwa, O.S., W.H. Abdullah, M.H. Hakimi & P.J. Barbeito (2015)- Organic geochemical and petrographic characteristics of Neogene organic-rich sediments from the onshore West Baram Delta Province, Sarawak Basin: implications for source rocks and hydrocarbon generation potential. Marine Petroleum Geol. 63, p. 115-126.
(M-L Miocene outcrop samples in W Baram Province S of Miri, Sarawak Basin, generally organic rich (TOC 1-11%), but mainly gas-prone Type III kerogen (hydrogen Index <105 mg HC/g). Vitrinite reflectance Ro of 0.39-0.48% indicates immature- very early mature kerogens. Offshore equivalents buried deeper and could be effective petroleum (gas) source rock)

Tokuyama, A. & S Yoshida (1974)- Kinabalu fault, a large strike-slip fault in Sabah, East Malaysia. In: T. Kobayashi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia 14, University of Tokyo Press, p. 171-188.
(Series of NW-SE trending left-lateral strike-slip fault zones with possible 300km of displacement across Sabah-Kinabulu, supposedly linking up with Palu-Koru fault of Sulawesi)

Tongkul, F. (1987)- Sedimentology and structure of the Crocker Formation in the Kota Kinabalu area, Sabah, East Malaysia. Ph.D. Thesis University of London, p. 1-318. *(Unpublished)*

Tongkul, F. (1989)- Sedimentology and structure of the Crocker Formation in the Kota Kinabalu area, Sabah, East Malaysia. In: B. Situmorang (ed.) Proc. 6th Regional Conf. Geology mineral hydrocarbon resources of Southeast Asia (GEOSEA VI), Jakarta 1987, IAGI, p. 135-156.
(Crocker Fm Eocene- E Miocene flysch-type outcrops in NW Sabah composed of lower shaly unit, upper sandy sequence, interpreted as large N-prograding Eocene-Oligocene submarine fan system. Deposition of coarse sediment peaked in Oligocene. Sediment source Borneo/Sunda Shelf to SW (quartz-rich continental, current directions generally to N). Fan sediments imbricated into series of E-dipping thrust slices, 200-600m thick, with resistant ridges repeating every 1-2km, formed during subduction/ accretion against Borneo in Late Oligocene-E Miocene. Termination of deformation followed by major uplift of Crocker complex in M-L Miocene, after collision of Dangerous Grounds microcontinent)

Tongkul, F. (1989)- Geological control on the birth of the Pulau Batu Hairan mud volcano, Kudat, Sabah. Warta Geologi 14, 4, p. 153-165.
(online at: https://gsmpubl.files.wordpress.com/2014/09/ngsm1988004.pdf)
(Birth of the new island E of Pulau Banggi in N Sabah, due to mud volcanism related to N-S trending fractures and N-S compression in overpressured muds. Rock fragments in mud are sandstone, siltstone, limestone, chert, basalt/spilite and serpentinite)

Tongkul, F. (1990)- Structural styles and tectonics of Western and Northern Sabah. Bull. Geol. Soc. Malaysia 27, p. 227-240.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1990026.pdf)
(Deformational episodes of W and N Sabah E Cretaceous-Pliocene igneous and sedimentary rocks: (1) Late Cretaceous- E Eocene basement (chert-spilite oceanic formation) deformation/ uplift; (2) M Miocene NW-SE and N-S directed thrusting of M Eocene- E Miocene Crocker- Kudat sediments (3) gentle deformation of U Miocene- Pliocene sediments)

Tongkul, F. (1991)- Basin development and deposition of the Bongaya Formation in the Pitas area, northern Sabah. Bull. Geol. Soc. Malaysia 29, p. 183-193.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1991016.pdf)
(Small basin in Bengkoka Peninsula of N Sabah with Late Miocene Bongaya sediments controlled by earlier faults trending NE-SW, N-S and NW-SE on underlying, uplifted Crocker and Chert-Spilite Fms. Nearly circular basin sediments sourced from older uplifted rocks to E, S and SE by overlapping fluvio-deltaic fan lobes)

Tongkul, F. (1991)- Tectonic evolution of Sabah, Malaysia. J. Southeast Asian Earth Sci. 6, p. 395-406.
(SE-ward subduction in front of rifted continental block of S China under emergent oceanic basement in E Sabah controlled development of NE-SW trending basin with M Eocene-E Miocene sediments. Opening of S China Sea Basin in M Oligocene-M Miocene caused further subduction and narrowing of basin. M Eocene-E Miocene sediments compressed into fold-thrust belt trending ~NE-SW in W Sabah and NW-SE in N and E Sabah. Subduction accompanied by volcanic activity in E Sabah in E-M Miocene. Deformed sedimentary pile and underlying oceanic basement then subjected to NW-SE extension related to E-M Miocene opening of Sulu Sea Basin. This resulted in development of extensive chaotic deposits in E and C Sabah and also controlled development of circular basins for deposition of thick, Early- Late Miocene sediments. Continued extension resulted in further SE-ward subduction in SE Sabah, producing Late Miocene-Quaternary volcanics)

Tongkul, F. (1993)- Tectonic control on the development of the Neogene basins in Sabah, East Malaysia. In: G.H. Teh (ed.) Proc. Symp. Tectonic framework and energy resources of the Western Margin of the Pacific Basin, Kuala Lumpur 1992, Bull. Geol. Soc. Malaysia 33, p. 95-103.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1993007.pdf)
(Two structural trends, NE-SW and NW-SE, controlled Miocene basin evolution in Sabah)

Tongkul, F. (1994)- The geology of northern Sabah: its relationship to the opening of the South China Sea. Tectonophysics 235, p. 131-137.
(N Sabah E Cretaceous-Pliocene sedimentary and igneous rocks. Three deformation episodes associated with NW-SE and N-S oriented compression: (1) Late Cretaceous- E Eocene uplifted oceanic basement, site for deposition of M Eocene- E Miocene Crocker and Kudat Fms, sourced from continental basement in SW; (2) Latest Oligocene and early M Miocene N-S directed imbricate thrusting, controlling E-W trending basins development filled with U Miocene S Banggi and Bongaya Fms; (3) Minor continuation of N-S compressional deformation. Deformation episodes related to S-ward movements of continental blocks separated from S margin of China during opening of S China Sea subbasins)

Tongkul, F. (1995)- The Paleogene basins of Sabah, East Malaysia. In: G.H. Teh (ed.) Proc. AAPG-GSM Int. Conf. Southeast Asian Basins: oil and gas for the 21st century, Kuala Lumpur, Bull. Geol. Soc. Malaysia 37, p. 301-308.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1995a20.pdf)

(Paleogene basins of Sabah developed in two stages: (1) latest Mesozoic? wide NE-SW trending basin, with continental block to NW and emergent oceanic basement to SE. Paleogene mainly deep water clastic sediments, with limestone lenses; (2) M Eocene? deformation divided basin into two parallel basins, also NE-SW. Basins independently filled by shallow to deep water late Paleogene sediments derived axially from SW and laterally from NW and SE. Basins finally closed in E Miocene, with Paleogene fold-thrust belt of Sabah)

Tongkul, F. (1997)- An ancient oceanic crust in Tandek, Sabah - a unique geological heritage. Sabah Society J. 14, p. 1-10.
(Outcrop of Cretaceous oceanic crust and ocean floor ('chert-spilite'). See also Muda and Tongkul, 2008)

Tongkul, F. (1997)- Sedimentation and tectonics of Paleogene sediments in central Sarawak. Bull. Geol. Soc. Malaysia 40, p. 135-155.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1997011.pdf)
(Deposition of Paleogene sediments in C Sarawak occurred in four stages, with depocentres generally advancing and younging to NE in response to progressive SWt subduction-accretion of Mesozoic oceanic lithosphere under W Sarawak)

Tongkul, F. (1997)- Polyphase deformation in the Telupid Area, Sabah, Malaysia. J. Asian Earth Sci. 15, p. 175-184.
(Telupid area in C Sabah Mesozoic ophiolitic basement, overlain by Cretaceous- Oligocene sediments. At least three deformation phases: (1) M Eocene folding- thrusting of basement and older Paleogene sediments trending N70E, (2) early Lower Miocene imbrication of basement rock and overlying sediments to NE; (3) early M Miocene thrusting of deformed basement rock and overlying sediments to NW)

Tongkul, F. (1999)- Batuan kerak lautan kuno Sungai Baliojong, Tandek, Kota Marudu, Sabah. In: I. Komoo & M.S. Leman (eds.) Warisan Geologi Malaysia 2, LESTARI, UKM, p. 299-328.
('Ancient oceanic crust in the Baliojong River, Tandek, Kota Marudu, Sabah')

Tongkul, F. (1999)- Regional geological correlation of Paleogene sedimentary rocks between Sabah and Sarawak, Malaysia. In: G.H. Teh (ed.) Proc. 9th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA ô98), Kuala Lumpur 1998, Bull. Geol. Soc. Malaysia 43, p. 31-39.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1999004.pdf)
Three groups of Paleogene sedimentary rock units can be correlated regionally between Sabah and Sarawak: (1) intensely deformed, Paleocene- E Eocene turbiditic clastic sediments, partly metamorphosed to slate and metasandstone; (2) 'E Crocker' steeply dipping late Lower Eocene- early U Eocene submarine fan sandstone-shale with thrust transport directions generally to N and NW, and (3) 'W Crocker' U Eocene- U Oligocene sandstone- shale, with local conglomerate, limestone and marl, with deformation similar to Unit 2. Paleogene sediments deposited in large basin along NW Borneo. Deposition and deformation of sediments in successive stages: younger sediments were deposited on top or in front of older accreted sediments in response to NW-SE closure of elongate basin)

Tongkul, F. (2006)- The structural style of Lower Miocene sedimentary rocks, Kudat Peninsula, Malaysia. In: Petroleum Geol. Conf. & Exh. 2003, Kuala Lumpur, Bull. Geol. Soc. Malaysia 49, p. 119-124.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm2004019.pdf)
(Kudat Peninsula mostly Lower Miocene sediments, deformed into large-scale folds on three major WNW-ESE trending imbricate thrust slices. Deformation probably caused by progressive N-S transpression related to M Miocene collision of Dangerous Ground/ Reed Bank with NW Sabah along NW Borneo Trough)

Tongkul, F. (2017)- Active tectonics in Sabah- seismicity and active faults. Bull. Geol. Soc. Malaysia 64 (Geol. Soc. Malaysia 50th Anniversary Issue 2), p. 27-36.
(online at: http://www.gsm.org.my/products/702001-101721-PDF.pdf)
(Sabah under WNW-ESE compressive stress due W-ward movements of Philippine-Pacific plate against SE-moving Eurasian plate, causing NE-SW trending active thrust faults and NW-SE trending strike-slip faults. Resultant regional folding/ warping of upper crust produced uplifted NE-SW belt in W Sabah (Crocker-

Trusmadi Range) and is thought to be driving extensional tectonics, creating 6 elongate Quaternary graben-like basins (Tenom, Keningau, Tambunan, Ranau, Timbua and Marak-Parak))

Tongkul, F. & F.K. Chang (2003)- Structural geology of the Tertiary Maliau Basin, Sabah. In: G.H. Teh (ed.) Petroleum Geology Conf. Exhib. 2002, Bull. Geol. Soc. Malaysia 47, p. 51-61.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm2003a04.pdf)
(Maliau Basin saucer-shaped basin in C and S Sabah. 7500m thick clastics section, mainly M Miocene age and deltaic- coastal facies)

Torres, J., A. Gartrell & N. Hoggmascall (2011)- Redefining a sequence stratigraphic framework for the Miocene to Present in Brunei Darussalam: roles of local tectonics, eustacy and sediment supply. Int. Petrol. Techn. Conf. (IPTC), Bangkok 2011, IPTC 15167, p. 2790-2801.
(Summary of Brunei Shell work on M Miocene- Recent deltaic sequences of Baram-Balbac Basin. Previous studies used global sequence framework and underestimated local autocyclic forcing. Revised tectono-stratigraphic framework established ten 3rd order Late Miocene- Present sequences. Some can be tied to regional compressional pulses, two sequence boundaries now calibrated to two major global eustatic falls (11.7 and 5.73 Ma). 11.7 Ma event shows ~15 km basinward shift of shelf edge, but no sub-aerial erosion on emerged shelf. The 5.73 Ma event (near Top Discoaster quinqueramus) shows modest basinward shift of shelf edge, widespread canyon incision along margin and major incision of fluvial system feeding Champion Delta)

Ujie, H. (1970)- Miocene foraminiferal faunas from the Sandakan Formation, North Borneo. In: T. Kobayasi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 8, p. 165-185.
(Sandakan Fm on Sandakan Peninsula, NE Sabah, >4500m thick clastic series, mostly barren, 3 samples with M Miocene planktonic forams (Gr. fohsi zone))

Ujie, H. (1977)- New species and subspecies of benthonic foraminifera from the Miocene Sandakan Formation, North Borneo. In: T. Kobayasi & R. Toriyama (eds.) Geology and Palaeontology. Southeast Asia, University of Tokyo Press, 18, p. 87-102.
(Descriptions of marine benthic forams from Middle Miocene Sandakan Fm. New species of Bolivina, Ammonia, Pseudorotalia borneensis, Gyroidina, etc. No stratigraphy or biozonations)

Ulfa, Y., N. Sapari & Z.Z.T. Harith (2011)- Combined tide and storm influence on facies sedimentation of Miocene Miri Formation, Sarawak.Eksplorium 32, 2, p. 77-89.
(online at: jurnal.batan.go.id/index.php/eksplorium/article/download/2814/2586)
(Outcrop facies study of M-L Miri Fm in Miri Field area, Sarawak. Two main facies associations: (1) tide-dominated estuary; and (2) wave and storm- dominated facies)

Unjah, T., Basir Jasin & Uyop Said (2000)- Aspek paleontologi Formasi Pedawan Kawasan Batu Kitang- Bau, Sarawak. In: G.H. Teh et al. (eds.) Proc. Geol. Soc. Malaysia Ann. Geol. Conf. 2000, Pulau Pinang, p. 159-163.
(online at: https://gsmpubl.files.wordpress.com/2014/10/agc2000_22.pdf)
('Paleontological aspects of the Pedawan Formation at Batu Kitang- Bau, Sarawak'. Brief discussion of palynomorphs and macrofaunas in Cretaceous Pedawan Fm, SW Sarawak)

Vachard, D. (1990)- A new biozonation of the limestones from Terbat area, Sarawak, Malaysia. In: H. Fontaine (ed.) Ten years of CCOP research on the Pre-Tertiary of East Asia, CCOP Techn. Publ. 20, p. 183-208.
(Terbat Lst of W Sarawak- NW Kalimantan border area with 7 diverse M Carboniferous- earliest Permian fusulinid assemblages: M Carboniferous with (1) Profusulinella- Goksuella and (2) Beedeina- Komia; (3) latest Carboniferous with (3) Dutkevichites and (4) Pseudofusulina-Ozawainella; (5) earliest Permian (lower Asselian) with Occidentoschwagerina fusulinoides, Ozawainella (=Nummulostegina velebitana of Cummings); (6) M-U Asselian with Ozawaiella angulata, Schwagerina, Boultonia willsi, Tricitites and (7) U Artinskian with Langella ex. gr. perforata (= Padangia perforata Lange 1925) and common Permocalculus. Sarawak assemblages most similar to S and N China and Alps)

Vahrenkamp, V.C. (1998)- Miocene carbonates of the Luconian Province, Offshore Sarawak: implications for regional geology and reservoir properties from Strontium-isotope stratigraphy. In: G.H. Teh (ed.) Geol. Soc. Malaysia Petrol. Geol. Conf., Kuala Lumpur 1997, Bull. Geol. Soc. Malaysia 42, p. 1-13.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1998001.pdf)
(Luconia province E-M Miocene carbonate platforms growth and demise correlated with 2nd-order eustatic sea-level cycle. Sr isotopes suggest late E Miocene- Middle/Late Miocene boundary ages. Major karst horizons, flooding, aggradation and progradation packages linked to 3rd order eustatic sea-level fluctuations. Simultaneous with 2nd order sea-level drop (late M Miocene) influx of siliciclastics split province into S part with low relief carbonate banks and N part with high relief platforms. All growth terminated at end M Miocene. Low relief banks buried, high relief platforms karstified prior to drowning (Late Miocene-Pliocene). Porosity-permeability distribution linked to duration of exposure and burial diagenesis)

Vahrenkamp, V.C., F. David, P. Duijndam, M. Newall & P. Crevello (2004)- Growth architecture, faulting, and karstification of a Middle Miocene carbonate platform, Luconia Province, Offshore Sarawak, Malaysia. In: G.P. Eberli et al. (eds.) Seismic imaging of carbonate reservoirs and systems, American Assoc. Petrol. Geol. (AAPG), Mem. 81, p. 329-350.
(Mega Platform is 30x50-km large and 1.2-km-thick carbonate platform, originating in late Early- early M Miocene on structural high. First aggraded, then backstepped in M Miocene. Several transgressive, aggradational, and progradational cycles overprinted by karst events. Demise of platform either drowning from combined subsidence- eustatic sea level rise, or much-later drowning, preceded by period of exposure resulting from second-order sea level fall and decrease in subsidence caused by onset of Late Miocene tectonism in Borneo. Hiatus of ~5 m.y. before platform was buried by deep-marine siliciclastics prograding from large NW Borneo deltas. Growth architecture, faulting and karstification key to exploiting hydrocarbon reservoirs)

Vahrenkamp, V.C., Y. Kamari & S.A. Rahman (1998)- Three dimensional reservoir geological model and multiple scenario volumetrics of the F23 Miocene carbonate build-up, Luconia Province, offshore Sarawak. Bull. Geol. Soc. Malaysia 42, p. 15-26.
(online at: www.gsm.org.my/products/702001-100860-PDF.pdf)
(Gas reservoirs in M Miocene carbonate builups of C Luconia with complex internal reservoir architecture influenced by paleo-wind pattern and sea level fluctuations, with backstepping, progradational and aggradational growth phases. Transgressive systems dense argillaceous limestones, possibly isolating gas volumes. During repeated periods of flooding platform backstepped up-wind, then prograded down-wind again during sea level high stands. Most likely gas volume in F23 field 3.98 Tcf)

Van Borren, L.K., A. Koopman & A.J. Schreurs (1996)- Stratigraphy. In: S.T.Sandal (ed.) The geology and hydrocarbon resources of Negara Brunei Darussalam (2nd ed.), Spec. Publ. Muzium Brunei and Brunei Shell Petroleum Company Berhad, Syabas, Bandar Seri Begawan, p. 81-128.
(Includes review of biostratigraphy in Brunei region (p. 81-96))

Van den Brink, H. (2001)- Neogene dinoflagellate cysts from a deep water well, offshore Sabah, northern Borneo. Berita Sedimentologi 16, p. 22-25.
(Study of marine dinoflagellate cysts in U Miocene- Pliocene of deep water well offshore Sabah. Potential useful 'tops' in Pliocene: Hystrichokolpoma rigaudiae, H. okinawinum, Dapsilidinium pastielsi, Lingulodinium pycnospinosum. For U Miocene: Selenopemphix brevispinosa and Systematophora placacantha)

Van den Brink, H. (2002)- Neogene dinoflagellate cysts from a deep water well, offshore Sabah, northern Borneo. Proc. 34th Ann. Mtg. American Assoc. Stratigr. Palynologists (AASP), p. 278-279. *(Abstract only)*
(Attempt to establish dinoflagellate cyst biozonation for Late Miocene- Recent in deep-water wells off Sabah and Brunei. Palynological assemblages dominated by land plant material; marine elements (dinoflagellate cysts, acritarchs, algae) only 2-5% of microflora. Dinoflagellate cyst assemblages similar to open oceanic assemblages from E Indian Ocean and NE Australian margin)

Van der Zee, W. & J.L. Urai (2005)- Processes of normal fault evolution in a siliciclastic sequence: a case study from Miri, Sarawak, Malaysia. J. Structural Geol. 27, 12, p. 2281-2300.

(Outcrop observations of normal faults formed at shallow depth in deltaic sand-clay sequence near Miri used to study early stages of fault development)

Van Ditzhuijzen, P.J.D. & J.A. de Waal (1984)- Reservoir compaction and surface subsidence in the Central Luconia gas bearing carbonates, offshore Sarawak. Proc. 5th Offshore South East Asia Conf., SE Asia Expl. Soc. (SEAPEX), Singapore, p. 27-40.
(Pores in carbonates with common moldic porosity may collapse as reservoirs are depleted, and cause subsidence)

Van Hattum, M.W.A. (2005)- Provenance of Cenozoic sedimentary rocks in Northern Borneo. Ph.D. Thesis Royal Holloway College, University of London, p. 1-467. *(Unpublished)*

Van Hattum, M., R. Hall & G.J. Nichols (2003)- Provenance of northern Borneo sediments. Proc. 29th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 305-319.
(Upper Cretaceous- Eocene sediments mature quartzose, possibly derived from mainland SE Asia/Indochina. In Eocene shift to relatively immature recycled orogenic sands. Eo- Oligocene Crocker Fm mainly derived from granites; ultimate source probably S Borneo Schwaner Mountains)

Van Hattum, M.W.A., R. Hall, A.L. Pickard & G.J. Nichols (2006)- Southeast Asian sediments not from Asia: provenance and geochronology of North Borneo sandstones. Geology 34, 7, p. 589-592.
(Eocene- Lower Miocene Crocker turbidite sst of N Borneo derived from Borneo and SE Asia, not from Asian sources after India-Eurasia collision. Compositionally mature due to tropical weathering, but mostly first-cycle sandstones from granitic and subordinate metamorphic, sedimentary and ophiolitic rocks. Detrital zircons Archean- Eocene ages, mostly Mesozoic. Main source Cretaceous granites of Schwaner Mts in SW Borneo in Eocene, Permo-Triassic granites and Proterozoic basement of Malay-Thai Tin Belt in Oligocene)

Van Hattum, M.W.A., R. Hall, A.L. Pickard & G.J. Nichols (2013)- Provenance and geochronology of Cenozoic sandstones of northern Borneo. J. Asian Earth Sci. 76, p. 266-282.
(Crocker Fan of Sabah deposited during subduction of Proto-South China Sea in Eocene- E Miocene. Collision of microcontinental blocks with N Borneo in E Miocene terminated deep water sedimentation and resulted in regional Top Crocker Unconformity, followed by sedimentation of fluvio-deltaic- shallow marine facies in late E Miocene. Crocker Fan sandstones derived from sources in Borneo and nearby SE Asia. Sandstones mostly from granitic sources, with some metamorphic, sedimentary and ophiolitic material. In Eocene sands mainly Cretaceous zircons (~90-130 Ma; from granites of Schwaner Mts). In Oligocene sands more common zircons from Permian-Triassic granites (~213-268 Ma) and Paleoproterozoic (~1850 Ma) from basement of Malay Tin Belt. Miocene fluvio-deltaics mostly recycled from deformed Crocker Fan. Lower Miocene Tajau Sst of Kudat Fm in N Sabah derived mainly from granitic and high-grade metamorphic source rock, probably from N, from continental crust from S China and subduction-related metamorphic rocks)

Van Heck, S.E. (2001)- Calcareous nannoplankton and planktonic foraminifera from the Neogene offshore Northwest Borneo. Berita Sedimentologi 16, p. 14-21.
(Summary of sequence of M Miocene and younger foram and nannoplankton biostratigraphic events recognized in deepwater NW Borneo wells)

Vannucchi, P., A. Maltman, G. Bettelli & B. Clennell (2003)- On the nature of scaly fabric and scaly clay. J. Structural Geol. 25, 5, p. 673-688.
(On scaly clay fabric, including chapter on scaly clay in E-M Miocene East Sabah melange)

Van Rensbergen, P. & C.K. Morley (2000)- 3D seismic study of a shale expulsion syncline at the base of the Champion delta, offshore Brunei and its implication for the early structural evolution of large delta systems. Marine Petroleum Geol. 17, p. 861-872.
(Example of Late Miocene expulsion rollover syncline related to mobile shale, described from 3D seismic)

Van Rensbergen, P., C.K. Morley, D.W. Ang, T.Q. Hoan & N.T. Lam (1999)- Structural evolution of shale diapirs from reactive rise to mud volcanism: 3D seismic data from the Baram Delta, offshore Brunei Darussalam. J. Geol. Soc. London 156, p. 633-650.
(Two areas of shale diapyrism in Baram Delta)

Van Rensbergen, P. & C.K. Morley (2003)- Re-evaluation of mobile shale occurrences on seismic sections of the Champion and Baram Deltas, offshore Brunei. In: P. Van Rensbergen et al. (eds.) Subsurface sediment mobilization, Geol. Soc. London, Spec. Publ. 216, p. 395-409.
(3D seismic data in Baram and Champion delta provinces show chaotic areas, conventionally interpreted as shale diapers, have dimmed but coherent reflectivity. Dimming attributed to sediment intrusive complexes, overpressured fluids, gas clouds or processing artefacts. M Miocene-Recent Champion and Baram deltaic provinces characterized by gravity tectonics-related structures, also affected by episodic contraction, with inversion of some growth faults. Emplacement of shale pipes, gas clouds and intrusive complexes generally later (Pliocene) than underlying reactive diapirs (Late Miocene))

Van Vliet, A. & W.N. Krebs (2009)- The Middle Miocene Unconformity (MMU) in North Luconia, deepwater Sarawak: how unconformable is the unconformity? Warta Geologi 35, 3, p. 131-133.
(online at: https://gsmpubl.files.wordpress.com/2014/09/warta35_4.pdf)
(M Miocene Unconformity (MMU) of S China Sea in most places neither M Miocene age, nor true widespread break in stratigraphic record. Crustal extension in late E Miocene resulted in listric faulting, fault-block rotation and accelerated subsidence around 'oceanic' core of S China Sea. Crests of fault-blocks experienced minor (mainly submarine) erosion)

Van Vliet, A. & M.M. Schwander (1989)- Stratigraphic interpretation of a regional seismic section across the Labuan Syncline and its flank structures, Sabah, North Borneo. In: A.W. Bally (ed.) Atlas of seismic stratigraphy, American Assoc. Petrol. Geol. (AAPG), Studies in Geology 27, p. 163-167.

Vijayan, V.R., C. Foss & H. Stagg (2013)- Crustal character and thickness over the Dangerous Grounds and beneath the Northwest Borneo Trough. J. Asian Earth Sci. 76, p. 389-398.
(Crustal thickness across Luconia Province and Dangerous Grounds is 25-30 km. NW Borneo/ Sabah Trough is underlain by thinned crust (25-20 km total crustal thickness), without tectonic discontinuity)

Vogt, E.T. & M.F.J. Flower (1989)- Genesis of the Kinabalu (Sabah) granitoids at a subduction-collisional junction. Contrib. Mineralogy Petrology 103, 4, p. 493-509.
(Kinabalu batholith is Late Neogene granitoid in NW Sabah, where subducted S China Sea lithosphere of extinct Borneo-Palawan subduction zone interacted with collisionally thickened crust of N Sabah collision suture. Intruded into melange lithologies of Trusmadi and Crocker Fms. Exposed batholith with small core of biotite-quartz monzodiorite grading to hornblende-quartz monzonite. Unusual zonation from inner low-K to outer high-K compositions)

Wahab, M.H., A. Asraff, J.J. Ismail & C.A. Ibrahim (2013)- Significant hydrocarbon accumulation in deep overpressured play of West Baram Delta: a breakthrough. In: Petroleum Geoscience Conf. Exhib. (PGCE 2013), Kuala Lumpur, 3p. *(Extended Abstract)*
(Two recent HPHT wells successfully tested deep overpressured play in W Baram Delta, offshore Miri, with discoveries of gas and condensate at >4500m below mudline. Reservoir pressure ~14,000 psi. 200m net gas sand penetrated with all gas bearing reservoirs filled to structural spill (~650m of vertical gas colum). No maps, well names, etc.)

Wakita, K. (1981)- The alteration and mineralization of serpentinite of the Mamut porphyry copper deposit. Mining Geology 31, 5, p. 351-365.
(online at: www.journalarchive.jst.go.jp/..)
(Mamut porphyry copper deposit associated with Upper Miocene adamellite porphyry intrusion. Localized in intrusion and in serpentinite and clastic sediments wall rocks. Four types of serpentinite alteration)

Walker, T. (1993)- Sandakan Basin prospects rise following modern reappraisal. Oil and Gas J., 10 May, p. 43-47.

Wang, P.C., S.Z. Li, L.L. Guo, S.H. Jiang, I.D. Somerville, S.J. Zhao, B.D. Zhu, J. Chen, L.M. Dai, Y.H. Suo & B. Han (2016)- Mesozoic and Cenozoic accretionary orogenic processes in Borneo and their mechanisms. In: Evolution of West Pacific Ocean, South China Sea and Indian Ocean, Geological J. 51, Suppl. S1, p. 464-489.
(Borneo Accretionary Orogen Mesozoic- Cenozoic accretionary orogeny, with intensely deformed Rajang-Crocker Gp Accretionary prism, ophiolites and calc-alkaline igneous rocks. Four episodes of Sabah deformation: (D1) displacement foliation (S1) and NNE-trending thrusts (Sabah Orogeny; 23-16 Ma); (D2) WNW- or NW-striking thrusts (formation of Deep Regional Uncomformity at 16 Ma), followed by NNW-SSE-trending thrusts and folds; (D3) Shallow Regional Uncomformity at 10 Ma; (D4) NNE-trending sinistral strike-slip faults and WNW-trending dextral faults (NW-SE-trending extension after multi-stage collisional events). Accretionary orogen related to evolution of Proto-S China Sea, which continuously subducted under Borneo Block and closed in Late Eocene- E Miocene. BAO still active, as thrusting and subduction of Dangerous Grounds under Borneo Block. NNE-trending faults considered as transform faults, rotating to present-day NW-trending faults due to CCW rotation of entire Borneo Block. Previous NNE-trending Tinjar Fault major boundary, with Oligocene- E Miocene strata and igneous rocks to NE, and Cretaceous-Late Eocene to SW)

Wanner, J. (1922)- Beitrage zur Geologie und Geographie von Nordost-Borneo. Ergebnisse einer von Dr. Stamm in den 1913 und 1914 ausgefuhrten Reise nach Borneo. Neues Jahrbuch Geol. Palaont., Beilage Band 45, 1921, p. 149-213.
('Contributions to the geology and geography of NE Borneo'. Summary of results of field survey in N Borneo in areas of Darvel Bay, Siagau River and Sandakan Bay by K. Stamm for NKPM in 1913-1914)

Wannier, M. (2009)- Carbonate platforms in wedge-top basins: an example from the Gunung Mulu National Park, Northern Sarawak (Malaysia). Marine Petroleum Geol. 26, 2, p. 177-207.
(Melinau carbonate platform of NE Sarawak initiated in M Eocene on rotating slice of Rajang accretionary prism. Differential loading enhanced rotation of mobile substratum and created asymmetrical wedge-top basin. Extensional S margin of basin ~2200m thick Eocene-Oligocene carbonates. Backstepping and dismemberment of carbonate system started in latest Oligocene; deep-marine sedimentation prevalent in E Miocene)

Wannier, M., P. Lesslar, C. Lee, H. Raven R. Sorkhabi & A. Ibrahim (2011)- Geological excursions around Miri, Sarawak, 1910-2010, Celebrating the 100th anniversary of the discovery of the Miri oil field. Belle's Bookshop, Ecomedia, Miri, Sarawak, p. 1-279.
(Shell geologists review of geology of Miri oilfield, Sarawak (discovered 1910, peak production 1929) and outcrop descriptions of Miocene- Quaternary deltaic sediments and faults around Miri anticline, Niah National Park with caves in E-M Miocene Subis Lst, Mulu National Park with caves in Late Eocene- Oligocene Melinau Lst, etc.. With notes on fossils, mud volcanoes, tektites)

Warrlich, G.M.D., E.W. Adams, T.C.F. Tam, E. Kosa, K.K. Ting & A.D. Kayes (2013)- The value of regional correlation and analogues in managing a mature asset: examples from the Central Luconia gas fields. Petroleum Geoscience Conf. Exhib. (PGCE 2013), Kuala Lumpar, 5p. *(Extended Abstract)*
(Consistent, sequence-stratigraphic correlation framework in C Luconia gas fields and use of modern-day and fossil outcrop analogues aid in planning development wells, predicting recovery factors and optimizing recovery. Gas recovery depends on presence or absence of argillaceous tight layers formed during flooding events in reservoir, as well as their relative position to GWC)

Warrlich, G.M.D., D. Palm, H. van Alebeek, D. Volchkov, S.C. Hong, E.W. Adams, A. Ryba et al. (2014)- Scenario-based pore pressure prediction to reduce drilling risks, examples from the Sarawak Asset, North West Borneo, Malaysia: Int. Petrol. Techn. Conf. (IPTC), Kuala Lumpur, Paper 17952, 13p.

Watanabe, Y., H. Natori & G. Lingkai (1995)- Geochemical characteristics of the Tertiary argillaceous rocks from central-Northeast Sarawak, Malaysia. J. Sediment. Soc. Japan 41, p. 3-15.
(online at: www.journalarchive.jst.go.jp/..)

(Geochemical analyses of Lower Neogene marine argillaceous rocks from outcrops in C NE Sarawak shows derivaion mostly from granitic provenance without mafic- ultramafic components. Higher horizons more enriched in exposed weathered materials from uplift of hinterland. Hydrocarbon source potential poor due to post-depositional oxidation)

Watters, D.G., R.C. Maskall, I.M. Warrilow & V. Liew (1999)- A sleeping giant awakened: further development of the Seria Field, Brunei Darussalam, after almost 70 years of production. Petroleum Geoscience 5, 2, p. 147-159.
(Seria Field 1929 discovery in large WSW-ENE trending anticline. Produced 164 Mm3 (>1 billion barrels)of oil from 778 wells by 1996 (34% of in-place volumes). 3D seismic used to identify undrilled closures and areas of unswept oil in field)

Weber, H.S. & D.T.C. Lee (1990)- Mineral resources investigation in Sabah, East Malaysia, 1980-1984; selected results and conclusions. Geol. Jahrbuch B74, p. 3-29.
(Results of German mineral resources survey in Sabah. Focused on lead-zinc-copper anomalies associated with Late Tertiary volcanic belt of Semporna Peninsula and copper-zinc anomalies associated with Late Cretaceous-E Tertiary ophiolites of C Sabah)

Weng, H.C., E. Rollett, K. Maguire, G. Stone, S. Hayon & L.B. Leong (2011)- Identification, significance and correlation of Mass Transport Complexes in Malaysian deepwater fields. Int. Petroleum Technology Conference (IPTC) 2011, Bangkok, IPTC-14781-MS, p. 1851-1864.
(Distribution of Mass Transport Complexes in deepwater Sabah strong control on distribution of reservoir and seal. MTCs typically exhibiting high angle chaotic dips, are denser than overlying and underlying sediments, and generate strong seismic markers)

Whittaker, J.E. & R.L. Hodgkinson (1979)- Foraminifera of the Togopi Formation, eastern Sabah, Malaysia. Bull. British Museum (Natural History), Geology, 31, p. 1-120.
(online at: www31.us.archive.org/details/bulletinofbritis31brit)
(125 species of foraminifera described from Late Miocene Togopi River section. Species names Ammonia togopiensis n.sp. introduced for Billman et al (1980) marker speciesAmmonia ikebei; Asterorotalia pulchra for more commonly used name Asterorotalia trispinosa)

Whittle, A.P. & G.A. Short (1978)- The petroleum geology of the Tembungo Field, East Malaysia offshore. Proc.SE Asia Petroleum Expl. Soc. (SEAPEX) Offshore SE Asia Conf. 6, Singapore, 11p.
(Tembungo 1971 first oil and gas discovery offshore Sabah in anticlinal structure with Late Miocene turbidite reservoir sands. Reserves ~15 MBO)

Wicker, J.J. & J.E.F Stearn (1999)- Baram Field- the 3D marine re-processing challenge. In: G.H. Teh (ed.) Proc. 9th Reg. Congress Geology, Mineral and Energy Resources of SE Asia (GEOSEA ô98), Kuala Lumpur 1998, Bull. Geol. Soc. Malaysia 43, p. 439-450.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm1999044.pdf)
(Baram Field 1963 Shell discovery offshore Sarawak is largest field in Baram Delta Province (EUR 283 MMBO). Complex structure and stratigraphy, with >746 hydrocarbon-bearing reservoirs identified. Re-processing of 1988 seismic survey improved interpretation)

Wilford, G.E. (1955)- The geology and mineral resources of the Kuching-Lundu area, West Sarawak, including the Bau mining district. Geological Survey Dept., British Territories in Borneo, Memoir 3, p. 1-254.
(Kuching-Lundu area is westernmost part of Sarawak. N Borneo composed of sedimentary rocks from probably Devonian to Quaternary age and variety of volcanic and intrusive igneous rocks. Structurally part of Sunda shelf, an extension of continental Asia. Gold and diamonds mined in early 19th century. Gold, antimony, and mercury ores genetically associated with Tertiary acid intrusions. With 1:125,000 geologic map of study area and 1:50,000 map of Bau gold mining district)

Wilford, G.E. (1957)- Geology of Brunei and adjoining areas of Sarawak- Tektites. Annual Report Geological Survey Dept., British Territories in Borneo, 1957, p. 121-124.
(Black, glossy rounded pebbles from Quaternary alluvial sands and gravels in Brunei, interpreted as tektites/ glassy meteorites)

Wilford, G.E. (1961)- The geology and mineral resources of Brunei and adjacent parts of Sarawak with descriptions of Seria and Miri oilfields. British Borneo Geol. Survey Dept., Memoir 10, p. 1-319.
(Major review of Brunei geology. Area part of centre of 'NW Borneo geosyncline', with great thicknesses of Paleocene- Recent sediments (possibly >100,000'). Presence of (reworked?). Pleistocene tektites in gravel pits in young terrace deposits (K-Ar date of tektite from Pentuan Hill 730,000 years))

Wilford, G.E. (1964)- The geology of Sarawak and Sabah caves. Geol. Survey Borneo Region, Malaysia, Bull. 6, p. 1-181.
(Caves in all larger limestone outcrops of North Borneo. Mainly Permian (Terbat Fm), Jurassic and Cretaceous (Bau Fm) ages in W Sarawak, mainly Eocene- Miocene ages (Melinau Lst, Tangap Fm) in E Sarawak, Cretaceous (Madai-Baturong Lst) and Miocene (Gomantong Lst) in Sabah. Most limestones fine-grained and very low porosity. One 'lava tunnel' in basalt near Darvel Bay, E Sabah. Limited geology info)

Wilford, G.E. (1967)- The effects of late Tertiary and Quaternary tectonic movements on the geomorphological evolution of Brunei and adjacent parts of Sarawak. J. Tropical Geography, Singapore, 24, p. 50-56.

Wilford, G.E. (1968)- Notes on the geomorphology of Sabah. In: P. Collenette & J. Goh (eds.) Geological Papers 1967, Geological Survey of Borneo Region, Malaysia, Bull. 9, p. 1-22.

Wilford, G.E. & C.H. Kho (1965)- The geology and mineral resources of the Penrissen area, West Sarawak, Malaysia. Malaysia Geol. Survey Borneo Region, Rept. 2, p. 1-195.
(Description of geology and 1:50,000 scale geologic map of area S of Kuching along NW Kalimantan border. Named after 4350' high Penrissen Peak, which is on border, composed of Plateau Sandstone. Oldest rock U Triassic Sadong Fm (with U Triassic bivalves Halobia, Grammatodon, Monotis salinaria, etc.) and Serian Volcanics. Triassic unconformably overlain by Kedadom Fm with Kimmeridgian ammonoids Lithacoceras and Subplanites sp. Conformably overlain by Bau Lst with latest Jurassic- E Cretaceous algae (Cladocoropsis, Clypeina, Salpingoporella, Thaumatoporella, etc.) and foraminifera (Pseudocyclammina lituus, Nautiloculina oolithica). Widespread Cretaceous Pedawan Fm with radiolaria, Etc..)

William, A.G., J.J. Lambiase, S. Back & M.K. Jamiran (2003)- Sedimentology of the Jalan Selaiman and Bukit Melinsung outcrops, western Sabah: is the West Crocker Formation an analogue for Neogene turbidites offshore? In: G.H. Teh (ed.) Petroleum Geology Conf. Exhib. 2002, Bull. Geol. Soc. Malaysia 47, p. 63-75.
(online at: www.gsm.org.my/products/702001-100608-PDF.pdf)
(Outcrop study of~500m of Oligocene- E Miocene West Crocker Fm turbidites, W Sabah. Texturally immature sands. Paleocurrent directions consistently to N, oblique to NE-SW marginal basin, possibly derived from uplifted Rajang accretionary prism)

Wilson, M.E.J., E. Chang Ee Wah, S. Dorobek & P. Lunt (2013)- Onshore to offshore trends in carbonate sequence development, diagenesis and reservoir quality across a land-attached shelf in SE Asia. Marine Petroleum Geol. 45, p. 349-376.
(online at: http://searg.rhul.ac.uk/pubs/wilson_etal_2013%20Offshore%20Borneo%20carbonate%20trends.pdf)
(Onshore to offshore trends in carbonate development and reservoir quality assessed across Late Oligocene-Miocene of NW Borneo (Sarawak) shelf from outcrops and wells. Carbonates developed as localised build-ups and more continuous sheet-like deposits in near-coast to shelf margin positions. Most samples show evidence for marine micritisation and in shelf margin positions isopachous cements. Burial diagenesis predominates (compaction, neomorphism, fracturing, late leaching, dolomitisation). Some early, probable meteoric leaching affected inner shelf deposits prior to pervasive calcite cement formation, probably reflecting alteration from terrestrial groundwaters in meteoric aquifers derived from humid landmass of Borneo. Best porosity (20-35%)

in outer shelf- shelf margin high energy grainstones and rudstones that experienced minimal clastic influx, most commonly from backstepping to aggradational carbonate sequences)

Wilson, R.A.M. (1961)- The geology and mineral resources of the Banggi island and Sugut River area, North Borneo. Geol. Survey Dept., British Territories in Borneo, Memoir 15, p. 1-143.
(Geology of NE Borneo Banggi and Balamban Islands off N tip of Sabah and mainland Sugut river area. Thick Late Eocene-Miocene Crocker Fm geosynclinal sequence on mainland, mainly S/ SW dipping. On islands imbricated, sheared (strike N, shearing towards W), Chert-Spilite Fm of Upper Cretaceous or Lower Eocene pillow lavas, basaltic intrusions and chert beds, brecciated and intruded by serpentinite sheets and younger ultrabasic plutonics. S Banggi Fm with E Miocene (Te5) limestones, some with reworked Eocene Discocyclina and ?Pellatispira). M Miocene (lower Tf) Balambangan Lst with Miogypsina, Katacycloclypeus annulatus)

Wilson, R.A.M. (1963)- The Chert-Spilite Formation of North Borneo. In: F.H. Fitch (ed.) Proc. British Borneo Geological Conference 1961, Kuching, Bull. Geol. Survey Dept., British Territories in Borneo, 4, Kuching, p. 61-78.
('Chert-spilite Fm sediments form NE/NNE trending discontinuous 'ophiolitic' belt across C-E Sabah, from Sempurna Peninsula in SE to Kota Belud in NW and Balambangan- Banggi Islands in N. Mainly deep marine radiolarian cherts, basaltic volcanics (pillow lavas), graywacke sandstones and serpentinite sheets of Cretaceous- Eocene age. All strongly imbricated and often look like slickensided breccias. Also breccias with boulders in clay matrix. Relationships with underlying and overlying formations not clear. Most of tectonic activity predates Crocker and Kulapis Fm)

Wilson, R.A.M. (1964)- The geology and mineral resources of the Labuan and Padas Valley area, Sabah, Malaysia. Geol. Survey Borneo Region, Malaysia, Memoir 17, p. 1-150.

Wolfenden, E.B. (1960)- The geology and mineral resources of the lower Rajang Valley and adjoining areas, Sarawak. Geol. Survey Dept., British Territories in Borneo, Memoir 11, p. 1-167.
(Area of C Sarawak with mainly Upper Cretaceous- Recent sediments and rare Tertiary intrusive and extrusive igneous rocks. Thick Upper Cretaceous- Upper Eocene deep water Rajang Fm series of mildly dynamically metamorphosed argillaceous rocks, sandstone, and conglomerate, intensely folded in Late Eocene. Oldest rocks Upper Cretaceous (with Globotrunca, Orbitolina)- U Eocene Belaga Fm (incl. Pellatispira, Discocyclina, planktonics). Tatau Fm with rich Eocene- Oligocene foraminifera. In NE thick Upper Eocene- Pliocene sandstones and shales with thin Late Eocene limestones and volcanics. Upper Eocene- Pliocene rocks folded)

Wolfenden, E.B. (1961)- Molluscs from the Bau Formation of the Tebakang area, First Division. Geol. Survey Department British Territories in Borneo, Annual Report 1960, p. 47-
(Brief note on Late Jurassic fauna in conglomeratic shale of Bau Lst Fm of W Sarawak: ammonites (Lithacoceras or Subplanites), bivalves (Nuculana, Cucullaea, Astare, Corbula). No figures)

Wolfenden, E.B. (1961)- Bauxite in Sarawak. Economic Geology 56, 5, p. 972-981.
(Tropical weathering of basic and intermediate igneous rocks generated bauxite (= >40% alumina) deposits of W Sarawak, W of Lupar River. Highest-grade material (Munggu Belian) formed from pyroxene andesite; other parent materials gabbro, diorite, plagioclase amphibolite and altered andesites and basalts. Bauxite consists mainly of gibbsite. In Sarawak local local company Sematan Bauxite Ltd started mining bauxite in 1957 at Munggu Belian and Bukit Gebong near, Sematan)

Wolfenden, E.B. (1963)- Sematan and Lundu area, West Sarawak. British Borneo Geol. Survey Report 1, p. 1-159.
(Includes detailed descriptions of bauxite occurrences)

Wolfenden, E.B. (1963)- Bauxite in West Sarawak. In: F.H. Fitch (ed.) Proc. British Borneo Geological Conference 1961, Kuching, Bull. Geol. Survey Dept., British Territories in Borneo, 4, p. 119-136.

(Bauxite deposits (= rocks with >40% alumina) in W Sarawak only W of Lupar River (rel. old 'Continental core' of Borneo). Possibly commercial deposits near Sematan. Formed from tropical weathering of intermediate-basic igneous rocks (andesite, gabbro and altered dolerite))

Wolfenden, E.B. (1965)- Geochemical behaviour of trace elements during bauxite formation in Sarawak, Malaysia. Geochimica Cosmochimica Acta 29, 9, p. 1051-1062.
(Bauxite and kaolinitic clay formed by weathering of andesite lava under humid tropical conditions in W Sarawak. At Sematan bauxite is ~10' thick on hills and extends under surrounding alluvial sand and clay where composition secondarily modified (swamp bauxite). During formation of hill bauxite, Cr, Zr and Ga are concentrated, Ni, Co, P, Mn, Sr and Y are depleted. No geology details)

Wolfenden, E.B. (1965)- Bau mining district, West Sarawak, Malaysia, Part 1: Bau. Geol. Survey Borneo Region, Malaysia, Bull. 7, 1, p. 1-147.
(Geologic map of part of W Sarawak, SW of Kuching, an area with long history of gold-siver mining. Includes description of >1800' thick, massive Upper Jurassic Bau Limestone with foram Pseudocyclammina lituus, algae Thaumatoporella parvovesiculifera, stromatoporoid Cladocoropsis mirabilis and also Calpionella. Locally with sandstone- pebbly sandstones with abundant igneous rock fragments at base, unconformable on U Triassic basaltic Serian volcanics. Conformably overlain by >10,000' of marine Cretaceous Pedawan Fm, now mostly eroded in Bau region. Upper Cretaceous folding phase, strongest NW of Bau, rel. minor to SE, followed by deposition of Plateau Sandstone. Also probably M Miocene folding phase. Acidic igneous intrusions of probably M Miocene age.)

Wolfenden, E.B. & N.S. Haile (1963)- Sematan and Lundu Area, West Sarawak. Explanation of sheets 1-109-3, 1-109-4, 1-109-7, 1-109-8 and 2-109-15. Geol. Survey Dept., British Territories in Borneo, Kuching, Report 1, p. 1-159.
(Geologic maps at 1:50,000 scale of W-most part of Sarawak, W of Kuching, bordering W Kalimantan. Oldest rocks thick, intensely folded and locally metamorphosed Jurassic- Cretaceous Serabang Fm flysch, radiolarian chert and ultrabasics (mainly gabbro-dolerite). Interpreted as 'geosynclinal' series (Hamilton 1979 and Hutchison 2005 suggest this is Lower Cretaceous melange, similar to Lubuk Antu/ 'Lupar Line' further East; it is accretionary prism formed during Early Cretaceous subduction of Proto China Sea from N. Unconformably overlain by gently-dipping Paleogene? Plateau Sandstone)

Wolfenden, E.B. & H.J.C. Kirk (1967)- Bauxite and laterite in British Territories in Borneo. The Philippine Geologist (J. Geol. Soc. Philippines) 21, 3, p. 102-116.
(Bauxite was found at Sematan in W Sarawak in 1949. Further prospecting in Sarawak and N Borneo from 1950-1952 not successful. In Sarawak some laterite associated with bauxite, but not economic. Bauxite and laterite present in N Borneo, but extent little known)

Wong, R.H.F. (1993)- Sequence stratigraphy of the Middle Miocene-Pliocene Southern offshore Sandakan Basin, East Sabah. In: G.H. Teh (ed.) Proc. Symposium on the Tectonic framework and energy resources of the western margin of the Pacific Basin, Kuala Lumpur 1992, Bull. Geol. Soc. Malaysia 33, p. 129-142.
(Offshore Sandakan Basin sequence stratigraphic study based on seismic and 8 wells. Three main units: (1) M Miocene- early U Miocene (moderate progradation; five 3rd order sequences); (2) middle U Miocene (high progradation, low aggradation; three 3rd order sequences); (3) late U Miocene- Pliocene (high aggradation, low progradation; five 3rd order sequences. Shelf edges mainly N-S trending and prograding East)

Wong, R. (1996)- Seismic sequence stratigraphic interpretation enhances remaining hydrocarbon potential of the SE Collins Field. In: G.H. Teh (ed.) Petroleum Geology Conf. 1995, Bull. Geol. Soc. Malaysia 39, p. 223-240.
(online at: www.gsm.org.my/products/702001-100895-PDF.pdf)
(SE Collins field 1972 marginal oil field discovery in complexly faulted central portion of the Inboard Belt of NW Sabah Basin. Elongated, N-S anticlinal structure with reverse faults on N, W and S. Main reservoirs M Miocene sands. New sequence stratigraphic study lead to doubling of reserves estimate)

Wong, R.H.F. (1997)- Sequence stratigraphy of the Upper Miocene Stage IVC in the Labuan-Paisley Syncline, NW Sabah Basin. Bull. Geol. Soc. Malaysia 41, p. 53-60.
(online at: www.gsm.org.my/products/702001-100870-PDF.pdf)
(Sequence stratigraphic study of U Miocene Stage IVe in Labuan-Paisley Syncline, NW Sabah Basin)

Wong, Y.L. (2012)- Stratigraphy of the Ransi Member of the Middle Eocene to Oligocene Tatau Formation in the Tatau-Bintulu area, Sarawak, East Malaysia. M.Sc. Thesis, University Malaya, Kuala Lumpur, p. 1-256.
(online at: http://studentsrepo.um.edu.my/3871/)
(Ransi conglomerate-sandstone originally dated as U Miocene-Pliocene, but basal part of U Eocene- Oligocene Tatau Fm. Separated from underlying more tightly folded Belaga Fm by angular unconformity. Conglomerate mainly angular- subangular clasts of chert, quartz, igneous and metamorphic fragments. Igneous clasts rhyolite similar to M Eocene igneous intrusion at Bukit Piring in Tatau Area. Source of Ransi beds mainly from chert and metamorphic rocks of older Rajang Gp to S, as indicated by paleocurrent determinations. Volcanic clasts suggest volcanic source in hinterland during deposition. Arip Lst (equivalent to or younger than Ransi Mb) in Tatau Formation to SW with M-L Eocene microfossils such as Discocyclina, Nummulites, Pellatispira)

Woods, J., G.R. Gaafar & Shin Ni Chai (2012)- Chemostratigraphic correlation of Miocene turbidite sequences Offshore Sabah, Malaysia. Proc. 36th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA12-G-076, p.
(Brief review of use of geochemical rock data for sand correlations)

Wu, J.E. (2010)- 4D evolution of deepwater fold and thrust belt, NW Borneo, South China Sea. Ph.D. Thesis University of London, p. 1-616. *(Unpublished)*

Xue, F.J., G. Sen, M.A. Beg & H.H.B. Abu Bakar (2016)- Effective karst modelling for carbonate build-ups in Central Luconia, Offshore Malaysia. In: 3rd EAGE Integrated Reservoir Modelling Conference, Kuala Lumpur, 4p. *(Extended Abstract)*
(On mapping karst features on 3D seismic over large offshore Miocene carbonate buildup in C Luconia)

Yabe, H. (1918)- Notes on a *Carpenteria* Limestone from B.N. Borneo. Science Reports Tohoku Imperial University, Sendai, Japan, Ser. 2 (Geol.), 5, p. 15-30.
(Three limestone samples from Kinatabang River, British N Borneo, with Cycloclypeus annulatus and common Carpenteria (interpreted by Yabe to be Oligocene, but more likely M Miocene?; JTvG))

Yabe, H. & S. Hanzawa (1925)- A *Lepidocyclina* limestone from Klias Peninsula, B.N. Borneo. Verhandelingen Geologisch-Mijnbouwkundig Genootschap Nederland Kol., Geol. Serie 8 (Verbeek volume), p. 617-632.
(Early Miocene limestone with Lepidocyclina, Miogypsina, Spiroclypeus from Klias Peninsula)

Yabe, H. & S. Hanzawa (1926)- A foraminiferous limestone, with a questionable fauna, from Klias Peninsula, British North Borneo. Science Repts. Tohoku Imp. University, Sendai, Japan, Ser. 2 (Geol.), 9, 1, p. 1-7.
(online at: http://ir.library.tohoku.ac.jp/re/bitstream/10097/30195/1/KJ00004178169.pdf)
(Discusssion of Rutten (1925) and description of another example of limestone with mixed Eocene (Pellatispira, Discocyclina, Nummulites) and Late Oligocene-E Miocene (Spiroclypeus, Lepidocyclina) larger forams)

Yan, A.S.W. (1991)- Features of volcanic-hosted epithermal gold mineralization in the Nagos and Mantri areas, Sabah. Proc. 22nd Geological Conference, Geol. Survey Malaysia, Kuala Lumpur, Techn. Paper 3, p. 1-16.

Yanagida, J. & J. Lau (1978)- The Upper Jurassic and Middle Cretaceous Terebratulidae from the Bau Limestone formation in West Sarawak, Malaysia. In: T. Kobayashi & R. Toriyama (eds.) Geology and Palaeontology of Southeast Asia, University of Tokyo Press, 19, p. 35-47.
(Bau Limestone E of Paku, 4 km E of Bau, SW Sarawak, contains Oxfordian- lower Kimmeridgean terebratulid brachiopods, incl. Neumayrithyris torinosuensis (originally described from Jurassic Torinosu series in Japan) and Ornatothyris bauensis n.sp.)

Yin, E.H. (1985)- Geological map of Sabah, East Malaysia, 3rd edition. Geol. Survey of Malaysia.

Yin, E.H. (1992)- Regional geology- Sarawak. Malaysia Geol. Survey Annual Report 1991, p. 58-74.

Yin, E.H. (1992)- Regional geology- Sabah. Malaysia Geol. Survey Annual Report 1991, p. 74-82.

Yokoyama, K., Y. Tsutsumi & W.S.K. Bong (2015)- Age distributions of monazites in the Late Cretaceous to Late Eocene turbidite from northwestern Borneo and its tectonic setting. Bull. Natl. Museum Nat. Sci., Tokyo, C 41, p. 29-43.
(online at: www.kahaku.go.jp/research/publication/geology/download/41/L_BNMNS_C41_29-43.pdf)
(Late Cretaceous- Late Eocene turbidites of Rajang Gp widely distributed in NW part of Borneo. Three main peaks in monazite age distributions of recent sands in 4 rivers: 200-300 (~240?) Ma, 400-500 (~440) Ma and 1850-1900 Ma, and weak cluster at 700-1100 Ma. Age distributions suggest detrital grains not from Indochina Peninsula, but from S China Craton.)

Zaiauri, W.M., W. Embong, H. Mohamad & K. Mansor (2008)- New perspective on exploration prospect analysis: a case study on the Central Luconia carbonates, Sarawak, East Malaysia. In: Int. Petroleum Techn. Conf. (IPTC), Kuala Lumpur 2008, 12792-MS, p. 1-3 *(Extended Abstract)*
(>70% of major gas discoveries in Malaysia in M-L Miocen carbonate reservoirs of C Luconia Province. Many remaining carbonate structures (pinnacles) believed to be (1) too small, (2) severely overpressured and therefore capable of holding only short gas columns; (3) contain high CO2 and H2S, and (3) likely leak through thief beds in overburden. Recent gas discoveries include Petronas PC4-1 which found 640m gas column at normal pressure and with minimal H2S and CO2)

Zakaria, A.A., H.D. Johnson, C.A.L. Jackson & F. Tongkul (2013)- Sedimentary facies analysis and depositional model of the Palaeogene West Crocker submarine fan system, NW Borneo. J. Asian Earth Sci. 76, p. 283-300.
(Sedimentological analysis of Paleogene W Crocker Fm around Kota Kinabalu, SW Sabah. Large submarine fan system at tectonically active margin of NW Borneo, interpreted as multiple-sourced, shelf-fed, Type II, low-efficiency, sand-rich depositional system)

Zakaria, A.A., H.D. Johnson, C.A.L. Jackson & F. Tongkul (2013)- Sedimentology of the major W Crocker submarine fan system; analogue to the younger productive fans, NW Sabah Basin. In: Petroleum Geoscience Conf. Exhib. (PGCE 2013), Kuala Lumpur, P13, 5p. *(Extended Abstract)*
(W Crocker Formation outcrops in NW Sabah near Kota Kinabalu. Represents large (25,000 km2), Oligocene - E Miocene sand-dominated basin-floor submarine fan, deposited in accretionary foredeep basin. One of largest Cenozoic basin floor fan systems in SE Asia. Five facies associations. Multiple-sourced, shelf-fed, Type II, low-efficiency and sand-rich system.Probably comprised of several small lobes. Fan built out N-ward with sediment supply from SW. Fan system later accreted, uplifted and imbricated into series of thrust slices (see also Tongkul 1987, Crevello 2001, Jackson et al. 2009))

Zakaria, A.A., H.D. Johnson, C.A.L. Jackson & M.N.M. Yusoff (2013)- Mass Transport Complex (MTC) on NW Borneo Slope; influence of thrust related folding on its stratigraphic development. In: Petroleum Geoscience Conf. Exhib. (PGCE 2013), Kuala Lumpur, P37, 5p. *(Extended Abstract)*
(Lingan fan system on steep (2-4°) NW Borneo margin off Sabah, located in a toe-thrust foldbelt area in front of E Baram Delta. With mass transport complexes in channelised fan systems

Zampetti, V. (2004)- Interdependence of seismic imaging and sedimentology (Miocene carbonate platforms, South China Sea). Doct. Thesis Vrije Universiteit, Amsterdam, p. 1-134. *(Unpublished)*

Zampetti, V. (2010)- Controlling factors of a Miocene carbonate platform: implications for platform architecture and off-platform reservoirs (Luconia Province, Malaysia). In: W.A. Morgan, A.D. George et al. (eds.) Cenozoic carbonate systems of Australasia, Soc. Sedimentary Geology (SEPM), Spec. Publ. 95, p. 129-145.

(Growth of Luconia Province carbonate platform began in Late Oligocene- Early Miocene by coalescence of isolated patch reefs, and includes phases of progradation, backstepping and occasional collapse of platform flanks, terminated by gradual drowning. Platform margins asymmetry related to ocean currents rather than wind. Platform affected by strike-slip deformation during sedimentation. Platform material also deposited as slide masses in adjacent basin floor, passing into debris-flow and turbidites and can extend many km's across basin floor. Much secondary porosity dissolution during deep burial)

Zampetti, V., W. Schlager, J.H. van Konijnenburg & A.J. Everts (2003)- Depositional history and origin of porosity in a Miocene carbonate platform of Central Luconia, offshore Sarawak. In: G.H. Teh (ed.) Petroleum Geology Conf. Exhib. 2002, Bull. Geol. Soc. Malaysia 47, p. 139-152.
(online at: https://gsmpubl.files.wordpress.com/2014/09/bgsm2003a10.pdf)
(Seismic and core study of unidentified M-Late Miocene carbonate platform in Luconia province. Buildup growth primarily vertical aggradtion, with flat top, with backstepping of margin. Two phases of progradation, youngest steep and with segments of slope collapsing in large landslides. Porosity very heterogeneous, mostly secondary and related to dissolution under deep burial conditions)

Zampetti, V., W. Schlager, J.H. van Konijnenburg & A.J. Everts (2004)- Architecture and growth history of a Miocene carbonate platform from 3D seismic reflection data; Luconia province, offshore Sarawak, Malaysia. Marine Petroleum Geol. 21, 5, p. 517-534.
(online at: http://www.personal.kent.edu/~jortiz/carbonates/seismic1.pdf)
(Luconia carbonate platform growth started in Late Oligocene-E Miocene by coalescence of isolated patch reefs. Growth history includes phases of progradation, backstepping and collapse of platform flanks. Most pronounced seismic reflections correspond to flooding events. Subaerial exposure demonstrated in only one case. Platform growth terminated by gradual drowningin Late Miocene)

Zampetti, V., W. Schlager, J.H. van Konijnenburg & A.J. Everts (2004)- 3-D Seismic characterization of submarine landslides on a Miocene carbonate platform (Luconia Province, Malaysia). J. Sedimentary Res. 74, 6, p. 817-830.
(Submarine landslides on flanks of Miocene carbonate platform. Chaotic deposits basinward of slide scar widen in transport direction and end in indistinct lobes. Slide masses extend for 1.5 km into basin, with130m maximum thickness. Slide deposit on W flank two events, separated by smooth reflection interpreted as hemipelagic mud between carbonate-rich slide masses. Syndepositional faulting affects geometry of platform margins, particularly at time of slope failure)

Zheng, Q.L., S.Z. Li, Y.H. Suo, X.Y. Li, L.L. Guo, P.C. Wang, Y. Zhang, Y.B. Zang, S.H. Jiang & I.D. Somerville (2016)- Structures around the Tinjar-West Baram Line in northern Kalimantan and seafloor spreading in the Proto South China Sea. Geological J. 51, Suppl. S1, p. 513-523.
(Tinjar-West Baram Line is NW-trending trans-lithospheric fault in N Borneo; its NW extension into S China Sea is W Baram Line. Originated as NE/NNE-trending transform fault during spreading of Proto-South China Sea before 35 Ma and before NW trending strike-slip movement since Oligocene)

Zielinski, G.W., M. Bjoroy, R.L.B. Zielinski & I.L. Ferriday (2007)- Heat flow and surface hydrocarbons on the Brunei continental margin. American Assoc. Petrol. Geol. (AAPG) Bull. 91, 7, p. 1053-1080.
(Brunei margin thermogenic hydrocarbons in landward half of study area (heat flow 83.7 ± 66.5 mW/m2). Seaward, mean heat flow is 59.0 ± 22.6 mW/m2, and surface thermogenic hydrocarbons largely absent. Low-heat-flow zone coincides with Palawan Trough paleosubduction zone. High-heat-flow zone of seepage coincides with land-derived Baram delta sediments, constituting a pseudo-accretionary prism)

IV.4. Makassar Straits

Aini, S.N., R. Hall & C.F. Elders (2005)- Basement architecture and sedimentary fill of the North Makassar Basin. Proc. 30th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 483-497.
(N Makassar Basin probably underlain by extended continental crust rather than oceanic crust. Age of rifting M-L Eocene. Mainly thin, deepwater sediment. Becomes foreland basin in E Pliocene with W-ward propagation of W Sulawesi fold-thrust belt, resulting in increase in sediment supply from E)

Argakoesoemah, R.M.I. (2017)- Middle Eocene palaeogeography of the greater Makassar Straits region, Indonesia: a review of Eocene source rock distribution. Proc. 41st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA17-247-G, 22p.
(Review of E-M Eocene synrift sediments of Makassar Straits wells and proto-Barito and Kutai and W Sulawesi basins, areas with similar Eocene stratigraphies. Non-marine syn-rift deposition likely initiated M Eocene, in peripheral foreland basin, with widespread marine shales by Late Eocene. Area of well-developed lacustrine M Eocene in E part of S Makassar Basin)

Argakoesoemah, R.M.I., H.B. Nainggolan, I. Wahyudi, A. Hidayat & M.F. Shahab (2016)- Fluvial-to-deepwater stratigraphy and structural development of southern part of North Makassar Basin, Indonesia. Proc. 40th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA16-728-G, 23p.
(Review of Eocene- Recent stratigraphy of S part of N Makassar Basin. E Eocene non-marine synrift sequences overlain by Late Eocene late rift and Oligocene-younger post rift deepwater deposits across basin, exception for Paternoster Platform area. Late Early Eocene (~47 Ma) seafloor spreading initiated in Celebes Sea and was believed to extend to SW into N Makassar Basin, but still controversial. Major inversion-uplift of Paternoster Platform in M Miocene)

Ariyono, D., J. Kupecz, I. Sayers, C. Tanos & A. Hilman (2013)- Source rock and thermal calibration for timing of generation and expulsion in the South Makassar Basin, Indonesia. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-160, p. 1-20.
(Hydrocarbons in wells in S Makassar Basin area (Ruby Field gas, Pangkat-1 oil, Sultan-1 gas) confirm presence of working petroleum system. Geochemical analyses from Kelara-1, Makassar Straits-1, Martaban-1 and Pangkat-1 suggest main source in M Eocene coals and lacustrine shales. Late Eocene little or no source potential. Hydrocarbon generation started at ~20 Ma in S Makassar Basin and 12 Ma in Pangkat Graben. Timing of hydrocarbon generation relative to seal emplacement is critical risk for pinnacle reefs like Sultan-1)

Armandita, C. (2014)- The geometry and origin of gravity-controlled structures: mass transport complex (giant slump) in South Makassar Strait basin. Proc. 43rd Ann. Conv. Indon. Assoc. Geol. (IAGI), Jakarta, PIT IAGI 2014-048, 6p.
(Large, but rel. coherent Pliocene Mass Transport Complex (deep water gravity slump) identified in S Makassar Strait Basin, with area >9000 km2 and volume of 2438 km3. Derived from NW)

Armandita, C., C.K. Morley & P. Rowell (2015)- Origin, structural geometry, and development of a giant coherent slide: The South Makassar Strait mass transport complex. Geosphere 11, 2, p. 376-403.
(S Makassar Strait Mass Transport Complex with extensional headwall region in upper slope of Paternoster Platform. Area of >9000 km2, volume 2438 km3, core region thickness ~1.7km. Composed of shale-dominated sediments. With relatively coherent internal stratigraphy. Toe region deformed into thrust-related structures. Probably caused by caused by ~2° seaward rotation of Paternoster platform in Pliocene. ~6-7 km of shortening in toe region of MTC occurred at slow strain rate)

Azidin, N.F.N., A. Balaguru & N. Ahmad (2011)- Structural styles of the North West Sabah and West Sulawesi fold thrust belt regions and its implication to the petroleum system- a comparison. In: Petroleum Geology Conference and Exhibition 2011, Kuala Lumpur, Poster 23, p. 173-176. *(Extended Abstract)*
(Brief comparison of offshore NW Sabah foldbelt (toe thrust of delta system) and W Sulawesi foldbelt in Makassar Straits)

Bacheller, J., S.P. Buck, A.B. Cahyono, S.R. Polis, C.E. Helsing, Zulfitriadi, E.M. de Man, P.M. Hillock, A.S. Ruf & J.K. Toxey (2011)- Early deepwater drilling results from a new exploration play, Offshore West Sulawesi, Indonesia. Proc. 35th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA11-G-243, p. 1-15.
(Four wildcat wells in N and S Makassar Straits proved some hydrocarbon system elements for Eocene-Oligocene carbonate play. 102m gas column in Oligocene carbonate in Sultan 1 well, S Makassar)

Bachri, S. (2012)- Fase kompresi di Selat Makassar berdasarkan data geologi daratan, seismic laut dan citra satelit. J. Sumber Daya Geologi 22, 3, p. 137-144.
(online at: http://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/113/105)
('Compressional phase in Makassar Straits based on geological land data, marine seismic and satellite imagery'. Last deformation phase in Makassar Strait is compressional, unlike older extensional phase that formed Makassar Strait. Seismic data from E part of Makassar Strait and outcrop geology in W Sulawesi show W-verging fold-thrust system that is still active today. Thrust-fold structures in onshore E Kalimantan and offshore W Makassar Straits show vergence to E)

Baillie, P. & J. Decker (2011)- The Makassar Straits new thoughts on an old area. Proc. 2011 SE Asia Petroleum Expl. Soc. (SEAPEX) Conference, Singapore, 35p. *(Abstract + Presentation)*
(Makassar Straits formed by M Eocene extension, typical Sundaland, grabens and half-grabens. With top syn-rift unconformity of Late Eocene (38-40 Ma) age. Basement is stretched continental crust. Deepwater sediments deposited in response to tectonic events in adjacent Borneo and Sulawesi in Late Eocene- Neogene. M Miocene pulse of E-directed quartzose turbidites deposited in deepwater. All petroleum system elements present)

Baillie, P. & J. Decker (2012)- Geological development of the Straits of Makassar, Indonesia. AAPG Int. Conv. Exhib., Singapore 2012, Search and Discovery Art. 30251, p. 1-4. *(Extended Abstract)*
(online at: www.searchanddiscovery.com/documents/2012/30251baillie/ndx_baillie.pdf)
(Makassar Straits resulted from M Eocene (42 Ma) extension, creating grabens and half-grabens in continental or marginal marine setting. In central part of Strait up to 4km of deep marine sediment above Late Eocene (~36 Ma) top syn-rift unconformity. Turbidite sediments both W- and E-directed (major Borneo-derived pulse in E-M Miocene; sediments from Sulawesi in latest Miocene-Pliocene. While classic turbidite sedimentation has occurred, hyperpycnal flow from tropical river floods contributed substantially to fill of Makassar Strait)

Baillie, P., P. Gilleran, W. Clark, S.J. Moss, A. Stein, E. Hermantoro & S. Oemar (1999)- New insights into the geological development of the deepwater Mahakam delta and Makassar Straits. Proc. 27th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta 1999, p. 397-402.
(New non-exclusive 2D seismic survey revealed new insights into geological evolution and prospectivity of N Makassar Straits. Neogene deepwater basin floor fans and channel complexes identified in Neogene. Near present-day shelf edge of Mahakam Delta area discontinuous NNE-trending, E-verging imbricate fold-thrust system, with folding age younging to E. M Eocene-Oligocene shales acted as regional decollement. Thrusts primarily gravitational deformation of delta toe and can often be linked to extensional slope graben and regional growth faults updip)

Baillie, P., P.A. Teas, J. Decker, D. Orange & Widjanarko (2008)- Contrasting deepwater sediment feeder systems, Sulawesi, Indonesia. AAPG Hedberg Conference, Ushuaia-Patagonia, Argentina, Search and Discovery Art. 90079, p. *(Extended Abstract)*
(Present-day deepwater depositional channel systems which drain W Sulawesi, imaged on multibeam bathymetry: (1) high-sinuosity system draining NW into Makassar Strait from Palu Bay, and (2) low-sinuosity system draining S into Bone Bay and E Java Sea)

Berendson, E., A. Cebastiant, D. Glenn, F. Hariyannugraha, K. Kirschner, R. May, R. Schneinder et al. (2005)- Geocellular modelling and uncertainty qualification of reservoir properties: a deepwater laminated-sand reservoir, Gendalo Field, Kutei Basin, Indonesia. Proc. 30th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 499-504.
(Makassar Strait Gendalo field ~60 km SE of Mahakam Delta in 2500'-5200' of water. Miocene basin floor fan sands primary pay. Broad, anticline, formed as result of Late Pliocene compression. Reservoir thin-bedded

sand (most sands <3 cm) and shale sequences. Depositional environment ranges from channelized sequences to unconfined fan lobes)

Bernando N., H., I. Wahyudi & R.M.I. Argakoesoemah (2017)- Structural style of the southern province of West Sulawesi fault thrust belt, and its implication for hydrocarbon exploration, Makassar Strait, Indonesia. Proc. 41st Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA17-387-G, 14p.

Burollet, P.F., R. Boichard, B. Lambert & J.M. Villain (1986)- Sedimentation and ecology of the Pater Noster carbonate platform. Proc. 15th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 155-169.
(Pater Noster Platform broad shallow platform off SE Kalimantan. Recents sediments m-c grained carbonate sand. Reef islands and vicinity sands composed of coral fragments, red algae, molluscs and foraminifera. Some sheltered lows up to 80% Halimeda algae. Open marine area sands mainly forams, often larger ones. On E slope and medium deep terraces of Massa Lima, sediments rich in planktonic foraminifera and coccoliths; glauconite may be abundant)

Burollet, P.F. & C. Salle (1981)- Seismic reflection profiles in Makassar Strait. In: A.J. Barber & S. Wiryosujono (eds.) The geology and tectonics of Eastern Indonesia, Proc. CCOP-IOC SEATAR Working Group Mtg., Bandung 1979, Geol. Res. Dev. Centre (GRDC), Bandung, Spec. Publ. 2, p. 273-276.
(Brief discussion of old 1974 IFP/ Total/ Elf seismic survey across Makassar Straits)

Chudanov, D. A., A. Terry, Y. Partono & J. Inaray (2004)- Field Overview of West Seno. In: Offshore Technology Conf. (OTC), Houston 2004, OTC-16520-MS, 8p.
(West Seno in Makassar Strait PSC in 2400- 3400' of water on slope of N Mahakam Delta discovered in 1998 and is Indonesia's first deepwater oil-gas field. First production in 2003. U Miocene reservoir sands series of deepwater amalgamated channel and channel-levee deposits (see also Redhead et al. 2000))

Cloke, I.R., J. Milsom & D.J.B. Blundell (1999)- Implications of gravity data from East Kalimantan and the Makassar Straits: a solution to the origin of the Makassar Straits? J. Asian Earth Sci. 17, p. 61-78.
(Gravity modeling and flexural backstripping suggest North Makassar basin underlain by M Eocene oceanic crust)

Courel, R., G. Hollomon, M. Kim, D. Richert, C. Tiranda & P. Tognini (2011)- A re-evaluation of the South Makassar Basin using an integrated multi-discipline approach. SEAPEX Expl. Conf., Singapore 2011, Presentation 21, p. 1-43.
(S Makassar basin off Sulawesi in water depths averaging 2000m. Basin along SE margin of Sundaland province and thought to be composed of extended continental crust. Initiated during early Middle-Late Eocene back-arc rifting, creating tilted basement blocks topography, followed by Late Eocene- Oligo-Miocene carbonate deposition. New data led to revision of age of rifting and of Neogene megasequences. Heat flow from BSR overall higher in S Makassar Basin than in N Makassar. Bouguer gravity differences between N and S Makassar basins may suggest presence of oceanic basement in N Makassar Strait)

Damayanti, S. & J.A. Paju (2012)- New findings and updating of petroleum systems in Makassar Strait area. Proc. 41st Ann. Conv. Indon. Assoc. Geol. (IAGI), Yogyakarta, 2012-E-08, p.
(Hydrocarbon exploration in deepwater Makassar Straits in last 6 years has not come up positive results, but cannot yet be conclusively condemned)

Decker, J., P.A. Teas, J.A. Curiale, E.A.E. Johnson & D.L. Orange (2004)- Multibeam exploration in the Makassar Strait. In: R.A. Noble et al. (eds.) Proc. Deepwater and Frontier Exploration in Asia & Australia Symposium, Jakarta, Indon. Petroleum Assoc. (IPA), Jakarta, DFE.04-0R-043, p. 11-30.
(Unocal multibeam bathymetry surveys over 3 PSC blocks in Makassar Straits. Papalang and Popodi blocks off E Kalimantan numerous anomalous seafloor bathymetry features, many characterized by gas seeps, and few oil seeps. Sangkarang PSC off SW Sulawesi no indications of thermogenic hydrocarbons in 109 samples from 33 cores; Lombosang 1 well confirmed lack of charge in one portion of that basin)

Decker, J., P.A. Teas, R.D. Schneider, A.H. Saller & D.L. Orange (2004)- Modern deep sea sedimentation in the Makassar Strait: insights from high-resolution multibeam bathymetry and backscatter, sub-bottom profiles, and USBL-navigated cores. In: R.A. Noble et al. (eds.) Proc. Deepwater and Frontier Exploration in Asia & Australia Symposium, Jakarta, Indon. Petroleum Assoc. (IPA), p. 377-387.
(Makassar Strait Papalang block multibeam bathymetry shows modern large basin floor fan (65 km long, area 2500 km2, only 2m maximum relief) in water depth >2000m. Incised feeder channel flows from S to N. Upslope migrating deep sea sediment waves, 1-3 km long and 10-30m high, composed of interbedded fine sand-mud)

Del Negro, R., P. Castellano, A. Kuhfuss, L. Mattioni, J. Moss & M. Vialla (2013)- Structural styles and petroleum system modelling of the North Makassar Straits, Indonesia. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-077, p. 1-20.
(N Makassar Basin initiated with rifting in M Eocene- E Oligocene, resulting in development of NNW-SSE-oriented en-echelon basement faults. At same time, protodelta of Mahakam River developed S of present-day location. NW-SE trending compression started in M Miocene and continued until today. 2D basin modeling indicates M Miocene source rocks in dry gas zone (Ro~2.0) in W to early mature (0.6<Ro<1.2) in E)

De Man, E., F. Ashby, J. Bacheller, A. Cahyono, Suriamin, J. Corthay, P. Hillock & S. Wilmot (2011)- Deep-water site investigation- Makassar Straits (Indonesia). Proc. 35th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA11-G-198, 14p.
(On pre-drill site investigation for potential geohazards at ExxonMobil exploration wells in deepwater Makassar Strait (Rangkong, Sultan, Kris))

De Vera, J. & K. McClay (2011)- Structural styles of the West Sulawesi deep-water fold and thrust belt, Makassar Straits, Indonesia. Berita Sedimentologi 22, p. 15. *(Abstract only)*
(online at: www.iagi.or.id/fosi/files/2011/11/FOSI_BeritaSedimentologi_BS-22_October2011.pdf)
(Active, Late Miocene/E Pliocene- Recent NE-SW-trending and NW-verging deepwater fold and thrust belt offshore West Sulawesi in E Makassar Straits, ~250km long and as up to 75 km wide. Five structural domains ondip sections, from NW to SE: abyssal plain, deformation front, folded domain, thrust domain and inversion domain. Styles of deformation front controlled by inversion of Pliocene-Pleistocene extensional faults (large anticlines resulting from reactivation of Paleocene rift structures))

Dinkelman, M.G., J. Granath, D. Bird, J. Helwig, N. Kumar & P. Emmet (2009)- Predicting the Brittle-Ductile (B-D) transition in continental crust through deep, long offset, prestack depth migrated (PSDM), 2D seismic data. AAPG Int. Conf. Rio de Janeiro 2009, 6p. *(Extended Abstract)*
(Online at: www.searchanddiscovery.net/documents/2010/40511dinkelman/ndx_dinkelman.pdf)
(Deep seismic imaging allows interpretation of features in crystalline basement. Example of stretched continental crust for S Makassar Basin, showing supracrustal faults sole out near top of seismic transparent zone, possibility brittle-ductile transition in lower continental crust)

Dunham, J., R. Lin, A. Saller, J. Decker & T. Nicholson (2003)- Transportation and concentration of oil- and gas-prone kerogen into deep water sediments of the Kutei Basin, East Kalimantan, Indonesia. Indon. Petroleum Assoc. (IPA) Newsl., June 2003, p. 26-30.

Dunham, J.B. & L.D. McKee (2001)- Hydrocarbon discoveries in Upper Miocene unconfined submarine fan facies, deep-water Kutei Basin, Indonesia. Proc. 2nd Reg. Seminar Indon. Sedim. Forum (FOSI), p. 50.

Dunham, J. & Unocal Expl. Team (2016)- Deepwater discoveries in turbidite sands of the Makassar Straits, East Kalimantan, Indonesia. Proc. IPA 2016 Technical Symposium, Indonesia exploration: where from- where to, Indon. Petroleum Assoc. (IPA), Jakarta, 8-TS-16, p. 1-18.
(Review of Mio-Pliocene deep-water slope channel exploration in Kutai Basin side of Makassar Straits. First oil and gas discoveries in Merah Besar (1996) and West Seno (1998) fields, followed by deeper water Gendalo (2000) and Ranggas (2002) discoveries. Deepest prospect in >6000' of water and >15,000' feet deep was Gehem (2003), reaching M Miocene fan-sands with significant gas column. Substantial exploration potential remains in M Miocene base-of-slope fan plays)

Effendi, L. (1993)- Selat Makasar merupakan wilayah kompleks antara perairan bagian barat dan timur. Proc. 22nd Ann. Conv. Indon. Assoc. Geol. (IAGI), Bandung, 2, p. 950-961.
('Makassar Straits constitutes a complex region between eastern and western areas')

Eisma, D. (1990)- Dispersal of Mahakam River suspended sediment in Makassar Strait, Indonesia. In: V. Ittekkot et al. (eds.) Facets of modern biogeochemistry, Springer, Berlin, p. 127-146.

Faugeres, J.C., J. Gayet & E. Gonthier (1989)- Microphysiographie des depots Quaternaires dans le detroit de Makassar (Ocean Indien); opposition entre une marge stable (Borneo, Kalimantan) et une marge active (Celebes, Sulawesi). Bull. Soc. Geologique France, Ser. 8, 5, 4, p. 807-818.
('Micro-physiography of Makassar Straits Quaternary deposits, between stable Borneo and active Sulawesi margin'. Seabeam profiles of N Makassar Straits show passive Borneo margin with high clastic influx and active Celebes margin with narrow shelf and less terrigenous influx)

Faugeres, J.C., J. Gayet, E. Gonthier, C.Latouche & N. Maillet (1990)- Variation des sources de sediments dans le detroit de Makassar (Indonesie) au Quatemaire recent: role des facteurs morphostructuraux et eustatiques. Oceanologica Acta 1990, Spec. Vol. 10, Actes du Colloque Tour du Monde Jean Charcot 1989, p. 295-306.
(online at: http://archimer.ifremer.fr/doc/00268/37924/36005.pdf)
('Variations in sediment sources in Makassar Straits (Indonesia) in the late Quaternary: the role of morphostructural and eustatic factors'. Mineralogy of sediments from Makassar Straits show differences between sediments supplied from Kalimantan in W and Sulawesi in E. Kalimantan source quartzitic sand, with rare feldspars. Heavy minerals mainly pyroxene (hypersthene) and amphibole, clays mainly illite-kaolinite. Sulawesi source abundant feldspars, lithoclasts and micas, with amphibole and pyroxene (augite) and illite-chlorite clay mineraIs. During Late-Pleistocene of sealevel lowstand Mahakam River discharged directly on shelf edge, dominating sediment supply. Rising sealevel in Holocene trapped river sediments in delta, so most sediment supplied to Makassar Straits from steep Sulawesi margin)

Fowler, J.N., E. Guritno, P. Sherwood & M.J. Smith (2001)- Depositional architectures of Recent deep water deposits in the Kutai Basin, East Kalimantan. Proc. 28th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 409-422.
(Seismic facies and depositional models of Recent slope channel and basin floor fan system in NW Makassar Straits)

Fowler, J.N., E. Guritno, P. Sherwood, M.J. Smith, S. Algar et al. (2004)- Depositional architectures of Recent deepwater deposits in the Kutei Basin, East Kalimantan. In: R.J. Davies et al. (eds.) 3D seismic technology: application to the exploration of sedimentary basins. Geol. Soc., London, Mem. 29, p. 25-33.
(Seismic examples of slope channes and basin floor fans. Large depocentres occur where gradients are low and system switches from confined to unconfined. Erosionally confined channels feed basin floor fans at toe-of-slope, while channels confined by levees feed fans on 'distal' basin floor)

Fraser, T.H. & L.A. Ichram (1999)- Significance of Celebes Sea spreading centre to the Paleogene petroleum systems of the SE Sunda Margin, Central Indonesia. Proc. 27th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 431-441.
(Celebes Sea is Eocene spreading centre active until ~37 Ma, same time as Sarawak Orogeny. About 300 km of Paleogene Celebes oceanic crust now partly consumed by Minahasa Trench. Makassar Straits is continuation of Celebes Sea extension. Paleogene clastics much thicker in SW Sulawesi than in Barito Basin. Source of clastics in Sangkarang Graben proposed to be craton of west C Kalimantan. Development of S Makassar Straits ruptured proto-Barito fluvial system which previously flowed from Kalimantan into Flores Sea)

Fraser, T.H., B.A. Jackson, P.M. Barber, P. Baillie & K. Myers (2003)- The West Sulawesi foldbelt and other new plays within the North Makassar Straits- a prospectivity review. Proc. 29th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, G-171, p. 429-450.

(Makassar Straits started in Eocene in response to extension propagating SW from Celebes Sea spreading centre. After initial opening of Straits, Eocene horst- graben terrains overlain by Oligocene-Miocene basinal sag sediments. Following Neogene uplift of Borneo and outbuilding of Mahakam Delta, considerable amounts of sediment redeposited as turbidite facies in N Makassar Basin. Plio-Pleistocene inversion of extensional areas as successive micro-continental fragments from Australian Plate collided with SE margin of Sundaland. This collision assembled Sulawesi into K-shape and formed W Sulawesi Fold Belt, which obscures E part of original Makassar Straits Eocene rift. Traps in foldbelt compressional folds over thin-skinned detachment in probably overpressured Late Eocene- E Miocene mudrocks. Neogene turbidite reservoirs postulated charged from Paleogene and Neogene source rocks)

Fraser, T.H., B.A. Jackson, P.M. Barber, P. Baillie & K. Myers (2003)- The West Sulawesi Foldbelt- a new exploration play in the Makassar Straits, Indonesia. SEAPEX Press 6, p. 27-38.
(Similar to paper above. Makassar Straits formed by Paleogene rifting- sea floor spreading. Onset of compression in Miocene, resulting in development of W Sulawesi foldbelt in Pliocene)

Gallup, D.L., P.C. Smith, J.F. Star & S. Hamilton (2005)- West Seno deepwater development case history- production chemistry. Int. Symposium on oilfield chemistry 2005, Soc. Petrol. Engineers (SPE), SPE 92969, p. 1-13.

Gartrell, A., C. Hudson & B. Evans (2005)- The influence of basement faults during extension and oblique inversion of the Makassar Straits rift system; insights from analog models. American Assoc. Petrol. Geol. (AAPG) Bull. 89, 4, p. 495-506.
(Analog models used to investigate influence of cross-trending basement faults on inverted rift systems like Makassar Straits)

Gayet, J., P. Carbonel, J. Duprat, L. Labeyrie, J.C. Faugeres, E. Gonthier & J. Moyes (1990)- Impact de la transgression holocene sur la sedimentation dans le detroit de Makassar. Oceanologica Acta, Spec. Vol. 10, p. 321-327.
(online at: http://archimer.ifremer.fr/doc/00268/37898/35979.pdf)
('Impact of the Holocene transgression on sedimentation in Makassar Straits'. During glacial maximum/sea-level low sediments deposited by turbidity currents from Kalimantan. During deglaciation/ rise of sea-level, sediment from Kalimantan contributed to Mahakam delta or dispersed over shelf, circulation in straits slowed down and stratification became more marked, reflecting present day monsoon system. Sulawesi input less abundant and mineralogically different from Kalimantan material)

Gayet, J., J.C. Faugeres & E. Gonthier (1990)- La sedimentation quaternaire recente dans le detroit de Makassar. Oceanologica Acta, Spec. Vol, 10, p. 307-320.
('Quaternary sedimentation in Makasar Straits'. Kullenberg drop cores 1.8-10m of Quaternary sediments from 50-2440m water depth in N and S Makassar Straits)

Gunawan, B.K. & S. Damayanti (2010)- New insight: basin development mechanism and tectono-stratigraphy of Makassar Basin. Proc. HAGI-SEG Int. Geosciences Conf., Bali 2010, IGCE10-OP-138, 23p.
(Makassar Straits basin result of transtensional pull-apart tectonics, with WNW- ESE regional strike-slip faults: Sangkulirang-Palu Koro, Adang-Lupar and S Makassar Strait faults. New tectono-stratigraphic basin fill nomenclature proposed like 'syn-transtensional' and 'foreland'. Horsts and grabens formed in multiple periods from M Eocene- Late Miocene, not only in M Eocene- E Oligocene: Syn-transtension 1- M Eocene- U Oligocene, Syn-transtension 2- E Miocene- upper M Miocene, Syn-transtension 3- U Miocene)

Guntoro, A. (1999)- The formation of the Makassar Strait and the separation between SE Kalimantan and SW Sulawesi. J. Asian Earth Sci. 17, p. 79-98.
(SE Kalimantan and W Sulawesi separated due to Eocene opening of Makassar Strait. Seismic refraction and gravity modeling support Eocene extension and Eocene-Oligocene oceanic crust in central parts of Makassar Straits. Makassar Strait formed by backarc spreading/ trench roll-back of Cretaceous accretionary crust,

related to subduction east of W Sulawesi. Subduction polarity changed after Banggai-Sula collision in Miocene caused partial subduction of oceanic crust of E part Makassar Strait beneath W Sulawesi)

Guntoro, A. (2000)- Makassar Strait. In: H. Darman & F.H.Sidi (eds.) Outline of the geology of Indonesia, Chapter 6, Indonesian Association of Geologists (IAGI), Jakarta, p. 90-96.
(Makassar Straits basement characterized by strong posive isostatic gravity anomaly, suggesting oceanic marginal basin)

Guritno, E., L. Salvadori, M. Syaiful, I. Busono, A. Mortimer, S. Hakim, J. Dunham, J. Decker & S. Algar (2003)- Deep-water Kutei Basin: a new petroleum province. Proc. 29th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 519-540.
(Deep-water Kutei Basin Merah Besar and West Seno discoveries in toe-thrust anticlines. Development of toe-thrust anticlines influenced deposition of reservoir, source, maturity, migration routes and traps. Mildly structured Upper Miocene in C Province is gas prone, N Province contains oil and gas)

Hall, R., I.R. Cloke, S. Nurĉaini, S.D. Puspita, S.J. Calvert & C.F. Elders (2009)- The Makassar Straits: what lies beneath? Petroleum Geoscience 15, 2, p. 147-158.
(online at: http://searg.rhul.ac.uk/pubs/hall_etal_2009_N%20Makassar%20Straits.pdf)
(Makassar Straits formed by rifting, starting in M Eocene. Structures beneath Late Eocene unconformity may be carbonate build-ups on tilted fault blocks or volcanic edifices. Authors of this paper can not agree on whether basement beneath straits is oceanic or extended continental)

Harjono, H. (1981)- Selat Makassar: hasil awal penelitian geologi dan geofisika marin SO-16C. J. Riset Geologi Pertambangan (LIPI) 4, 1, p. 14-19.
(online at: http://pustaka.geotek.lipi.go.id/wp-content/uploads/2016/02/Riset-Vol.4-No.1-2-.pdf)
('Makassar Strait: preliminary results of marine geological and geophysical studies SO-16C'. Geophysical survey in S Makassar Basin suggests similarities to N Makassar Basin. Oceanic basement seems to be present in center of S Makassar Basin)

Heri, T., R. Mathers & R.A. McCarty (2009)- West Seno; the first deepwater field in Indonesia a strategy to optimize reserves. Proc. 33rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA09-E-192, 15p.
(West Seno gas-oil field off E Kalimantan in 2400- 3400' of water. Reservoirs ~50 independent compartments in mainly Upper Miocene amalgamated deepwater channel-levee sands)

Hidayat, R., S. Husein & S.S. Surjono (2012)- Regional depositional model of South Makassar Basin depocenter, Makassar Strait, based on seismic facies. J. Southeast Asian Applied Geol. (UGM) 4, 1, p. 42-52.
(online at: http://geologic-risk.ft.ugm.ac.id/fresh/jsaag/vol-4/no-1/jsaag04-art06-RahmadiHidayat.pdf)
(Seismic facies maps of synrift Eocene to post-rift Berai Lst to Miocene Warukin Fm in block off SW Sulawesi)

ISIS Petroleum Consultants/ TGS-NOPEC (2003)- CM-01 MC2D Seismic survey- Hydrocarbon potential of the deep water Makassar Straits, Indonesia. Unpubl. Multi-client study, p.
(More detailed version of Fraser et al. (2003) papers. N Makassar Basin on Cretaceous accretionary crust, followed by E-M Eocene (50-42) Ma rifting, 42 Ma breakup, Late Eocene/ 42-38 Ma sea floor spreading with volcanic centers along spreading axes/ transfer faults, Oligocene (38-20.5 Ma) sag phase)

Isnawati, D. Sunarjanto, Julikah & S. Munadi (2006)- Optimistic view for hydrocarbon exploration in South Makassar Basin. Proc. Int. Geosc. Conf. Exhib., Jakarta 2006, Indon. Petroleum Assoc. (IPA), 06-PG-06, 4p.
(Paleogene rifting between Kalimantan and Sulawesi created conditions for generation of hydrocarbons)

Jackson, B.A. (2004)- Seismic evidence for gas hydrates in the North Makassar basin, Indonesia. Petroleum Geoscience 10, p. 227-238.
(Gas hydrates suggested by bottom simulating reflectors (BSR), primarily in offshore extension of W Sulawesi Fold Belt. Turbidites in fold belt mini-basins provide reservoir and source of organic material for production of biogenic methane gas. Geothermal gradients from BSR database av 4.7°C/100m)

Jackson, B.A. (2004)- Gas hydrates in the North Makassar Basin, Indonesia. In: R.A. Noble et al. (eds.) Deepwater and Frontier Exploration in Asia Symposium, Indon. Petroleum Assoc. (IPA), Jakarta, p. 373-375.
(Gas hydrate in deep-water N Makassar Straits. Sediments in West Sulawesi Fold Belt sourced from Mahakam Delta until Late Pliocene, when tectonic event in Sulawesi reversed direction of sediment transport. Sulawesi fold-belt numerous thrust sheets, creating long anticlinal structures and intervening mini-basins. Most BSR anomalies concentrated on E side of study area in vicinity of WSFB ~300 ms below seafloor. No figures)

Johansen, K., S. Maingarm & A. Pichard (2007)- Hydrocarbon potential of the South Makassar Basin, Indonesia. Proc. SE Asia Petroleum Expl. Soc. (SEAPEX) Conf. 2007, Singapore, 43p. *(Abstract + Presentation)*
(S Makassar Basin unexplored area in 1000-2000m water. Sulawesi Fold Belt to E, Paternoster Platform to W and E Java Sea/Doang Platform to S. Separated from N Makassar Basin by Adang strike slip Fault Zone. S Makassar rift basins part of Eocene extensional phase from C Java to onshore S Sulawesi. Half graben syn-rift fill two seismic facies: lower main rift non marine clastics, upper sequence late syn-rift or early post rift marine clastics. Syn-rift fill >2 km thick and potential source rock. DHI's and gas anomalies indicate active petroleum system. Structural plays mainly defined by Eocene rift phase. Main reservoirs Oligocene carbonates and Eocene- E Oligocene clastics over basement highs. Platform carbonates and pinnacle type reefs may have better reservoirs. Oligocene-E Miocene turbidities possible secondary play. Post-rift thermal subsidence resulted in 3-4 km of mudstone- shales. Late Miocene-Pliocene compressional tectonics resulted in minor deformation of S Makassar Basin, resulting in N-S trending folds and thrusts along Sulawesi Fold Belt)

Kacewicz, M., J. Decker, R. Lin, C. Stuart, P. Taylor & E. Johnson (2002)- A new regional heat flow and hydrocarbon migration model for the Kutei Basin and Central Makassar Straits. AAPG Ann. Mtg., Houston, Texas *(Abstract)*.
(New heat flow model based on crustal stretching in deepwater Kutei basin and C Makassar Straits. Heat flow varies from 32-44mW/m2 in shallow water to 45- 52 mW/m2 in deepwater at present. No significant difference between deepwater heat flow N and S of Mahakam delta and no basinward cooling)

Kapid, R., K.T. Dewi & A. Muller (2004)- New biostratigraphic sub-biozonation for Indonesia, derived from calcareous nannoplankton and ostracode assemblage in Makassar Strait. 5th Int. Conf. Asean Marine Geology, Bangkok 2004, p.

Kirschner, K. & S.F. Walden (2004)- A case study: gas in place sensitivities from geocellular modeling of the Gendalo Field, Ganal PSC. In: R.A. Noble et al. (eds.) Proc. Deepwater and frontier exploration in Asia & Australia Symposium, Jakarta, Indon. Petroleum Assoc. (IPA), Jakarta, DFE04-PO-054, 5p.
(Modeling of Gendalo Field deepwater gas field off Mahakam Delta. Water depths 3500'-5000'. Two deep water turbiditic sand intervals)

Kupecz, J., I. Sayers, P. Tognini, A. Hilman, C. Tanos & D. Ariyono (2013)- New insights into the tectono-stratigraphic evolution of the South Makassar Basin. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-158, p. 1-41.
(Updated regional tectono-stratigraphic model for S Makassar Basin. Four mega-sequences in M Eocene- M Miocene: (1) M Eocene (45-37 Ma) extension, creating half-grabens with NW-SE orientation, such as Pangkat-1 area; (2) more widespread extension in Late Eocene- E Oligocene (37-28 Ma; possibly to 20 Ma), evidenced by NNE-SSW trending Taka Talu Graben, etc.; (3) drop in relative sea-level at start of E Oligocene, with erosion of carbonate platform deposits from Paternoster Platform and re-deposition in bathyal Pangkat Graben as debris flows (Ruby Field); (4) second major lowstand occurred from E-M Miocene (20-12 Ma), coinciding with demise of carbonates in area. Pro-delta sediments prograded from NW to SE, filling Pangkat Graben, backstepping onto Paternoster platform, and prograding into S Makassar Basin)

Lelono, E. B. (2007)- Palinomorf Eosen dari Selat Makasar. Lembaran Publikasi Lemigas 41, 2, p. 1-10.
('Eocene palynomorphs from C Makassar Straits'. Interval 8100'-11850' of 'Well O' in Makassar Straits with Eocene age palynomorphs, incl. Proxapertites operculatus, P. cursus, Palmaepollenites kutchensis,

Cicatricosisporites eocenicus, etc. Lower abundance/diversity than in Nanggulan Fm of C Java, probably due to Late Eocene age. Appearance of moderate Restioniidites punctulosus pollen indicates dry climate)

Lin, R., A. Saller, J. Dunham, P. Teas, J. Curiale, M. Kacewicz & J. Decker (2005)- Source, generation, migration and critical controls on oil vs. gas in the deepwater Kutei petroleum systems. Proc. 30th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 447-466.
(Kutei Basin deep water geochemical analyses indicate that allochthonous land-plant organic matter is source of hydrocarbons. TOC 1%- >50% with hydrogen indices between 100- 400. Overall kerogen assemblages type III and subordinate type II, consistent with gas condensate to gas volatile oil system. No marine algal remains evident. Gases mainly thermogenic; mixing of 'biogenic' methane and CO2 in some shallow Pliocene reservoirs. Generation of oil and gas mostly at 'oil window' maturities)

Lumadyo, E. (1999)- Deep-water exploration in the Kutei Basin, East Kalimantan. In: C.A. Caughey & J.V.C. Howes (eds.) Proc. Conf. Gas habitats of SE Asia and Australasia, Jakarta 1998, Indon. Petroleum Assoc. (IPA), p. 205-209.
(Summary of Unocal deep water Makassar Straits evaluation)

Lunt, P. & J.T. van Gorsel (2013)- Geohistory analysis of South Makassar. Berita Sedimentologi 28, p. 14-24.
(online at: www.iagi.or.id/fosi/berita-sedimentologi-no-28-borneo.html)
(S Makassar Straits Basin after initial rifting of grabens there were four major unconformities that affected sedimentation, and all thought to be controlled by tectonism: (1) ~39 Ma (late M Eocene) with accelerated rifting on distal margins of Sundaland; (2) 36 Ma (early Late Eocene) with rapid localized subsidence in S Makassar Straits basin; (3) 34 Ma (near Eocene- Oligocene boundary), with onset of Berai Limestone in W and strongly reduced rates of deep-water sedimentation throughout Makassar- Spermonde area; and (4) ~24 Ma (near Oligocene-Miocene boundary), with start of new clastic phase with high rates of sedimentation.)

Malecek, S.J. & P. Lunt (1996)- Sequence stratigraphic interpretation of Middle-Late Miocene lowstand sands in the Makassar Strait, offshore east Kalimantan, Indonesia. In: C.A. Caughey, D.C. Carter et al. (eds.) Proc. Int. Symp. Sequence stratigraphy in Southeast Asia, Jakarta 1995, Indon. Petroleum Assoc. (IPA), p. 369-379.
(Lowstand deepwater sands reservoirs in M-L Miocene of Makassar Straits off Kalimantan. Depositional patterns and correlations on slope and basin floor modified by compressional folding and faulting, most evident in M Miocene and older sections. Also deformed by growth faulting and shale diapirism in much of Late Miocene and younger section. With Teritis- Perintis wells correlation)

Malecek, S.J., C.M. Reaves, W.S. Atmaja & K.O.Widiantara (1993)- Seismic stratigraphy of Miocene and Pliocene age outer shelf and slope sedimentation in the Makassar PSC, Offshore Kutei Basin. Proc. 22nd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 345-371.
(Sequence stratigraphic framework for Miocene-Pliocene age outer shelf, slope and basin floor sediments in Makassar PSC. No detailed stratigraphy)

McKee, D. & J. Dunham (2004)- Does 2D seismic still have a role in frontier exploration? A perspective from the deepwater Kutei Basin. In: R.A. Noble et al. (eds.) Proc. Symp. Deepwater and frontier exploration in Asia and Australasia, Jakarta, Indon. Petroleum Assoc. (IPA), p. 59-69.
(Deepwater Makassar Straits 2D seismic identified 11 prospects, 10 drilled, 5 successful)

Morley, R.J., J. Decker, H.P. Morley & S. Smith (2006)- Development of high resolution biostratigraphic framework for Kutei Basin. Proc. Jakarta 2006 Int. Geosci. Conf. Exh., Indon. Petroleum Assoc., PG 27, 6p.
(28 sequences identified in M Miocene- Pleistocene of Makassar Straits)

Morley, R.J. & H.P. Morley (2011)- Neogene climate history of the Makassar Straits, Indonesia. In: R. Hall, M.A. Cottam & M.E.J. Wilson (eds.) The SE Asian gateway: history and tectonics of Australia-Asia collision, Geol. Soc. London, Spec. Publ. 355, p. 319-332.
(Neogene climate history of Makassar Straits from palynological studies of Late Quaternary cores from ocean floor and petroleum exploration wells penetrating E Pleistocene- M Miocene section. Distinctly seasonal

climate during last glacial maximum. Equatorial climate has been everwet since M Miocene, but at subequatorial latitudes seasonal climates became established from Late Pliocene onward)

Morley, R.J., H.P. Morley, A.A.H. Wonders, Sukarno & S. van der Kaars (2004)- Biostratigraphy of modern (Holocene and Late Pleistocene) sediment cores from Makassar Straits. In: R.A. Noble et al. (eds.) Proc. Deepwater and frontier exploration in Asia and Australasia, Indon. Petrol Assoc. (IPA), Jakarta 2004, 11p.
(Palynology and foraminifera from two shallow Late Pleistocene- Holocene cores from Makassar Straits and offshore SW Sulawesi)

Moss, S.J., W. Clark, P.W. Baillie, I. Cloke, A.E. Hermantoro & S. Oemar (2000)- Tectono-stratigraphic evolution of the North Makassar Basin, Indonesia. AAPG Int. Conf. Bali 2000, p. A-63, 3p. *(Extended abstract)*
(New seismic in Makassar Straits indicates M Eocene extension and sufficient rifting to generate seafloor spreading in deeper parts of N Makassar Straits. Evidence for oceanic crust underlying parts of N Makassar Straits includes rugose nature of top basement and volcanic topography (seamounts). N Makassar Basin is M Eocene marginal oceanic basin formed with extension of W Philippines Sea- Celebes Sea spreading ridge into E Borneo/W Sulawesi margin. Interpretation in line with plate tectonic, gravity modeling and paleogeographic reconstructions. Four prominent seismic stratigraphic markers in N Makassar represent major phases of basin development from early extension to present-day contractional tectonics)

Musgrove, F.W., R. Avianto & R. Schneider (1999)- Construction and destruction at a deepwater slope seabed: implications for reservoir models in the Makassar Strait, offshore East Kalimantan. Proc. 27th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 415-429.
(High frequency data of present-day deepwater sea bed useful for models of deepwater deposition)

Nainggolan, H.B., R.M.I. Argakoesoemah, I. Wahyudi, A. Hidayat & M.F. Shahab (2015)- Structural description of Adang Fault, Makasar Strait, Indonesia. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-157, 11p.
(Adang Fault along N flank of Paternoster Platform, S part of N Makassar Basin, is high-angle, NW-SE trending transtensional dextral strike-slip fault. Many of fault splays reach sea floor, suggesting recent activity. After syn-rift deposition in Late Eocene inversion/uplift of Peternoster Platform starting in E Miocene, resulting in Oligocene carbonate debris partially flushed towards deepwater basin; uplift peaked in M Miocene)

Nicolini E., D. Spinelli, F. Paone, A. Marceglia, A. Mashedi A, F. Paoni, R. Canever, F. Felappi & C. Monti (2012)- A wide detailed geophysical survey of offshore Makassar Strait. Proc. 36th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA12-G-127, p. 1-14.
(Shallow seabed seismic surveyand bathymetry around new Jangkrik field on upper slope in ~150-450m water depth, 605km offshore in Makassar Strait, SE of Mahakam delta, E Kalimantan)

Nur' Aini, S., R. Hall & C.F. Elders (2005)- Basement architecture and sedimentary fill of the North Makassar Straits basin. Proc. 30th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 483-497.
(2D seismic, gravity and well data over N Makassar Strait extensional basin shown-echelon faults bounding disconnected NNW-SSE trending half-graben and graben depocentres, most likely produced by oblique rifting. Principal extension direction E-W. Rifting M- Late Eocene. Crust beneath N MS interpreted to be continental. Three postrift megasequences: (1) Late Eocene- Oligocene, (2) E-M Miocene prograding delta after uplift of Kalimantan, (3) Late Miocene with turbidite interval in central part of basin. E Pliocene increase sediment supply from E as result of W-ward propagation of W Sulawesi fold- thrust belt)

Nurusman, S. (1986)- Etude geothermique des bassins profonds du detroit de Makassar (Indonesie). Implications geodynamiques. Doct. Thesis, Universite de Bretagne Occidentale, Brest, p. 1-175. *(Unpublished)*
(Geothermal study of Makassar Straits and geodynamic implications. Yuwono et al. 1988: Makassar Straits rifting caused thinning of continental crust without significant opening)

Nurusman, S. (1990)- Heatflow measurements in the deep basins of the Makassar Strait (Indonesia). In: B. Elishewitz (ed.) Proc. CCOP Heat Flow Workshop III, Bangkok 1988, CCOP Techn. Publ. 21, p. 27-38.

(35 surface heatflow measurements along two profiles: NW-SE across N Makassar Basin, E-W across S Makassar Basin. Heatflow values rather uniform, around 63-64 mW/m2/sec, lower than average heatflows of adjacent Barito (75.3), Kutai (66) and Tarakan-Bunyu (70.2) basins, but still classified as 'normal')

Panjaitan, S. (2003)- Kemungkinan adanya minyak dan gas alam dari data gayaberat bagian Timur cekungan Selat Makassar Utara daerah Pasangkayu, Sulawesi Selatan. J. Geologi Sumberdaya Mineral 13, 137, p. 18-30.
('Oil and gas possibilities from gravity data in the eastern part of the North Makassar Straits basin, Pasangkayu area, S Sulawesi')

Pireno, G.E. (2014)- Perkembangan porositas dan permeabilitas batugamping fragmental endapan laut dalam di daerah Paparan Paternoster, Cekungan Makassar Selatan. Ph.D. Dissertation Inst. Teknologi Bandung (ITB), p. 1- . *(Unpublished)*
('The development of porosity and permeability of deep marine detrital limestones marine sediment in the area of the Paternoster Platform, South Makassar Basin')

Pireno, G.E., C. Cook, D. Yuliong & S. Lestari (2009)- Berai Carbonate debris flow as reservoir in the Ruby Field, Sebuku Block, Makassar Straits: a new exploration play in Indonesia. Proc. 33rd Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA09-G-005, 19p.
(Ruby Field, originally discovered in 1974 with Makassar Straits 1 well. Located in NW-SE trending W Makassar Graben, at S side of Paternoster Platform. Inversion structure? in NW-SE trending W Makassar Graben. Reservoir Upper Berai Fm Late Oligocene- earliest Miocene re-deposited carbonate, derived from Paternoster Platform in NE)

Pireno, G.E. & D.N. Darussalam (2010)- Petroleum system overview of the Sebuku Block and the surrounding area: potential as a new oil and gas province in South Makassar Basin, Makassar Straits. Proc. 34th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA10-G-169, p. 673-688.
(Overview of SW Makassar Straits petroleum system. Source rocks Eocene Lw Tanjung Fm lacustrine shale (Pangkat 1) and fluvio-deltaic coaly beds (Martaban 1). Potential reservoir rocks Lw Tanjung Fm sandstones, Berai Fm carbonates (reefal facies, Berlian-1; carbonate debris, Ruby Field) and U Warukin Fm carbonates)

Pireno, G.E., E. Suparka, D. Noeradi & A. Ascaria (2015)- Porosity and permeability development of the deep-water Late-Oligocene carbonate debris reservoir in the surroundings of the Paternoster Platform, South Makassar Basin, Indonesia. J. Engineering Technol. Sci. (ITB), 47, 6, p. 640-657.
(online at: http://journals.itb.ac.id/index.php/jets/article/view/746/1096)
(Ruby Field gas discovery in Late Oligocene Berai Fm deep marine, re-deposited carbonate debris reservoir near Paternoster Platform. Limestone clasts range from pebble-size to boulders in matrix of micrite and fine bioclasts. Matrix-supported facies better porosity- permeability than clast-supported facies. Porosity generally moldic and vuggy, resulting from dissolution, and controlled by deep-burial diagenesis by dewatering of underlying Lower Berai Fm bathyal shales and overlying Lower Warukin shales during burial)

Posamentier, H.W., P.S.W. Meizarwin & T. Plawman (2000)- Deep-water depositional systems ultra-deep Makassar Strait, Indonesia. In: P. Weimer, R.M. Slatt et al. (eds.) Deep-water reservoirs of the world, Gulf Coast Section SEPM Found. (GCSSEPM), Proc. Annual Bob F. Perkins Research Conf. 20, p. 806-816.
(Deep water environment in Makassar Strait characterized by abundant turbidite, debrite and sediment wave deposits. Depositional elements deposited in deep-water depositional sequences as: 1) debris flow sheets/lobes at base, 2) distributary channels or frontal splays, 3) leveed channels, capped by 4) less widespread debris flow sheets or lobes. Miocene- Pleistocene leveed channels common in >2000m water depth, and characterized by moderate-high sinuosity and range in width from <250m- 1 km, and are associated with overbank wedges with abundant sediment waves, best developed on outer bends of channel meanders. Leveed channels feed and overlie distributary channel complexes (= submarine fans; JTvG), which can be >10 km wide and >80m thick. Amalgamated debris flow sheets up to 150m thick and >20 km wide)

Prasetya, G.S, W.P. De Lange & T.R. Healy (2001)- The Makassar Strait tsunamigenic region, Indonesia. Natural Hazards 24, 3, p. 295-307.

(Makassar Strait region highest frequency of historical tsunami events for Indonesia. Seismic activity due to convergence of four tectonic plates. Main tsunamigenic features are Palu-Koro and Pasternoster transform fault zones. Earthquakes from both fault zones appear to cause subsidence of W coast of Sulawesi)

Prelat, A., J.A. Covault, D.M. Hodgson, A. Fildani & S.S. Flint (2010)- Intrinsic controls on the range of volumes, morphologies, and dimensions of submarine lobes. Sedimentary Geology 232, p. 66-76.
(Comparisons of submarine fan lobe dimensions from six different systems, including Pleistocene fan of Kutai basin/ W Makassar Straits (mainly from data in Saller et al. 2004, 2008). Pleistocene basin floor fan 22x22 km across, deposited during period of low sea level that ended at ~240 ka, fed by paleo-Santan River, N of Mahakam river. Main depocentre of fan located where seabed gradient decreases from 2.1° (slope) to 0.3° (basin floor), basinward of toe-trust belt)

Przywara, M., J. McArdle & A. Sola (2016)- New insights into the North Makassar Basin: revitalizing the data brings new prospectivity. Proc. 40th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA16-523-G, 4p.
(Mainly PGS brochure for reprocessed seismic dataset in deepwater N Makassar Straits off NE Kalimantan)

Redhead, R.B., E. Lumadyo, A. Saller, J.T. Noah, T.J. Brown, Y. Yusri, J. Inaray et al. (2000)- West Seno field discovery, Makassar Straits, East Kalimantan, Indonesia. In: P. Weimer et al. (eds.) Deep-water reservoirs of the world, Gulf Coast Section SEPM 20th Ann. Res. Conf., p. 862-876.
(West Seno 1998 Unocal discovery in 730-975m water depth, NE of Mahakam Delta. W Seno 2 discovery well encountered>59m of oil-bearing sandstones, W Seno-1 well >113 m of oil and gas bearing sandstones in adjacent downthrown fault block. Reservoirs M-U Miocene turbiditic channel sandstones, associated with interbedded, levee-overbank sand/shale sequences, deposited in mid-slope position. Fault and stratigraphically trapped in an updip position. Porosity 22-32%, permeability 150-1500 mD. Oil and gas derived from mainly terrestrial plant organic material. Oils API gravity 35-46°)

Rousseau, M., V. Guerin, F. Sapin, D. Restiadi, C. Malla-Meidianna & J.M. Gaulier (2015)- South Makassar Basin: 3D thermal modeling- implication for future exploration. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-262, p. 1-15.
(S Makassar Basin is rift basin initiated in Eocene, subsequently inverted since E Miocene (incl. M Miocene uplift/ inversion in Paternoster High. Three exploration wells found mainly gas, suggesting S Makassar Basin essentially gas prone, but 3D thermal model suggest significant oil rim may exist in periphery of basin)

Ruzuar, A.P., R. Schneider, A.H. Saller & J.T. Noah (2005)- Linked lowstand delta to basin-floor fan deposition, Offshore East Kalimantan: an analogue for deepwater reservoir systems. Proc. 30th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 467-482.

Saller, A. (2013)- Pleistocene shelf-to-basin depositional systems, offshore East Kalimantan, Indonesia: insights into deep-water slope channels and fans. AAPG Distinguished Lecture, 2012-2013 Lecture Series, Search and Discovery Art. 50847, 52p. *(Abstract + Presentation)*
(online at: www.searchanddiscovery.com/documents/2013/50847saller/ndx_saller.pdf)
(3D seismic data y of Pleistocene shelf margin, slope and basin offshore E Kalimantan/ Makassar Straits. Clastic sequences on shelf dominated by progradational packages deposited during highstands and falling eustatic sea level. During last two sealevel lowstands (~18 and ~130 ka), coarse lastics generally not deposited in deep-water because lowstand deltas did not prograde over underlying shelf margin. During lowstand of ~240 ka, deltas prograded over previous shelf edge, and sand-rich sediments spilled onto slope. Channel-levee complexes on slopes where deltaic sediment supply was large (paleo-Mahakam River); incised valleys/canyons on slopes with limited clastic input. Basin floor deposits dominated by mass-transport complexes, suggesting slope valleys and canyons formed by mass failures of slope, not erosion associated with turbidite sands)

Saller, A. (2017)- Mixed carbonates and siliciclastics North of the Mahakam Delta, Offshore East Kalimantan, Indonesia. AAPG Ann. Conv. Exhib., Houston 2017, Poster, Search and Discovery Art. 1393, 5p. *(Abstract + Poster presentation)*
(online at: www.searchanddiscovery.com/documents/2017/51393saller/ndx_saller.pdf)

(For last 7 My carbonates mixed with siliciclastics N of Mahakam delta. Modern carbonates deposited locally N of delta while large amounts of clastics coming out of delta. Late Pleistocene carbonate mounds(on upthrown side of faults) and shelf margin carbonates (on underlying shelf margins) repeatedly grew during transgressions. During sea level highstands siliciclastics prograded across shelf, covering many carbonates. During last 7 My shelf margins generally backstepping landward N of Mahakam delta. Shales covering carbonates are downlapping packages, generally not effective seals)

Saller, A.H., T. Brown, R.B. Redhead, H.F. Schwing & J. Inaray (2000)- Deepwater depositional facies and their reservoir characteristics, West Seno Field, offshore East Kalimantan, Indonesia. AAPG Int. Conf. Abstracts, American Assoc. Petrol. Geol. (AAPG) Bull. 84, 9, p. 1484-1485. *(Abstract only)*
(Upper Miocene deepwater strata between 7500-8800' in West Seno Field about 27% sand, f-vf-grained and poorly sorted, deposited in middle- upper slope channel-levee complexes. Massive sands best reservoirs (av. porosity 29.3%, perm 630 mD), deposited as channel-fills or splay deposits. 'High resistivity-terrigenous' shales with thin silt and sand laminae interpreted as lowstand overbank deposits. Massive to burrowed, 'low-resistivity-hemipelagic' shales widespread and interpreted as transgressive and highstand deposits. Very thin sheets of coaly fragments locally abundant immediately above and within sand beds)
Saller, A. & I.N.W. Dharmasamadhi (2012)- Controls on the development of valleys, canyons, and unconfined channel-levee complexes on the Pleistocene slope of East Kalimantan. Marine Petroleum Geol. 29, 1, p. 15-34.
(Contrasting depositional patterns on Pleistocene deepwater slopes of offshore E Kalimantan: (1) in N dominated by deep valleys and canyons (relatively 'starved' for siliciclastic sediment); (2) central slope dominated by unconfined channel-levee complexes (large amounts of sediments from Mahakam Delta during Pleistocene lowstands)

Saller, A., I.N.W. Dharmasamadhi, T. Lilburn & R. Earley (2010)- Seismic geomorphology of submarine slopes; channel-levee complexes versus slope valleys and canyons, Pleistocene, East Kalimantan, Indonesia. In: L.J. Wood, T.T. Simo & N.C. Rosen (eds.) Seismic imaging of depositional and geomorphic systems, Gulf Coast Sect. SEPM, Ann. Perkins Research Conf. 30, Houston, p. 433-471
(3-D seismic images of Pleistocene deepwater slope channels E of Mahakam Delta. Channel-levee complexes developed where sediment supply was high; erosional channels where siliciclastic input rel. low)

Saller, A., R. Lin & J. Dunham (2006)- Leaves in turbidite sands: the main source of oil and gas in the deep-water Kutei Basin, Indonesia. American Assoc. Petrol. Geol. (AAPG) Bull. 90, 10, p. 1585-1608.
(Hydrocarbons in Kutei basin derived from land-plant source material. Leaf fragments in turbidite sandstones look like main source of deep-water oil and gas)

Saller, A. & J. Noah (2005)- Sequence stratigraphy of a linked shelf to basin floor system, Pleistocene, north Kutei Basin, East Kalimantan, Indonesia. Proc. Soc. Econ. Geoph. (SEG) 2005 Conv., Houston, 4p. *(Extended abstract)*
(Pleistocene lowstand delta-canyon- basin-floor fan system, 240 ka old. The 18 and 130 ka lowstand deltas did not reach slope)

Saller, A., J.T. Noah, A.P. Ruzuar & R. Schneider (2004)- Linked lowstand delta to basin-floor fan deposition, offshore Indonesia; an analog for deep-water reservoir systems. American Assoc. Petrol. Geol. (AAPG) Bull. 88, 1, p. 21-46.
(3D seismic study of Pleistocene lowstand delta to basin floor deposition offshore E Kalimantan. Reflectors traced downslope from lowstand delta to basin-floor fan in last three Pleistocene cycles (each 110 k.y. in duration). During sea level lowstand at ~240 ka, delta prograded over previous shelf edge and sand-rich sediments spilled onto slope. Slope canyon connects 240-ka lowstand delta to coeval basin-floor fan. Canyon fill lower amalgamated channel complex and upper channel-levee complex. Lower part of basin-floor fan broad lobes with relatively continuous reflectors. Higher part sinuous channel-levee complex that prograded over lower fan and fed sheetlike lobes on outermost fan. Lowstand strata do not onlap slope but extend from last clinoforms of lowstand deltas)

Saller, A., J.T. Noah, R. Schneider & A.P. Ruzuar (2003)- Lowstand deltas and a basin-floor fan, Pleistocene, Offshore East Kalimantan, Indonesia. In: H.R. Roberts et al. (eds.) Shelf margin deltas and linked down slope petroleum systems, Proc. 23rd Annual Gulf Coast Chapter SEPM Bob F. Perkins Research Conf., p. 421-439.
(U Pleistocene N of Mahakam delta three cycles between ~18 and ~370 ka, defined on shelf by progradational packages, separated by parallel reflectors with carbonate buildups. During lowest of three cycles (~270-370 ka), lowstand delta prograded over underlying shelf margin, and sand-rich sediment spilled downslope, feeding slope-channel complex and basin-floor fan. Pleistocene cycles different from sequences/ systems tracts models defined in 1980s. Lowstand systems no onlap of slope, but generally parallel reflectors. Cycles best separated at tops of prograding packages (transgressive surfaces))

Saller, A., K. Werner, F. Sugiaman, A. Cebastiant, R. May, D. Glenn & C. Barker (2008)- Characteristics of Pleistocene deep-water fan lobes and their application to an upper Miocene reservoir model, offshore East Kalimantan, Indonesia. American Assoc. Petrol. Geol. (AAPG) Bull. 92, 7, p. 919-949.
(Late Pleistocene basin-floor fan seismic study to provide analog for deep-water fields off E Kalimantan. Pleistocene basin-floor fan ~170m thick, 22 km across, and with 18 lobes. Average lobe size 3.8x 7.2 km and 34m thick. Lobes contain sheetlike splays, distributary channels and younger incised channels. U Miocene Gendalo 1020 reservoir composed of turbidite sands draped over anticline. Gross reservoir interval 50-150m thick thin-bedded turbidite sands with net-to-gross ~50%)

Sardjono (1999)- Crustal structure of the Makassar Strait implication for geodynamics processes. Proc. 24th Ann. Conv. Indon. Assoc. Geophys. (HAGI), Surabaya, p. 3-10.

Sardjono (2000)- Gravity field and structure of the crust beneath the Makassar Strait, Central Indonesia. AAPG Int. Conf. Exhib., Bali. *(Abstract only)*
(Basement of Makassar Strait attenuated continental crustal rocks and probably also parts of upper mantle. Basins with up to 15,000m sediment and water depth of 2000-3000m. SEASAT data show trends and structure of crust, indicating stretching of continental crust in or before Miocene but tectonic polarity changed, probably in Late Miocene. Buckling-up of lower crustal rocks, suggests regional stretching ceased and regional compression prevailing until today. No figures)

Sassen, R. & J.A. Curiale (2006)- Microbial methane and ethane from gas hydrate nodules of the Makassar Strait, Indonesia. Organic Geochem. 37, 8, p. 977-980.
(White gas hydrate nodules in piston cores from Borneo side of deep water Makassar Strait. Hydrocarbon 99.9% methane and traces of microbial ethane, relatively depleted in 13C. Detrital higher-plant material likely source of microbial methane-ethane, formed by in-situ reduction of CO2 by extremophile bacteria adapted to high pressure. Hydrate several 100m above base of gas hydrate stability zone. Nodular hydrate associated with seafloor authigenic carbonate and chemosynthetic clams characteristic of deep cold vent sites)

Satyana, A.H. (2015)- Rifting history of the Makassar Straits: new constraints from wells penetrating the Basement and oils discovered in Eocene section- implications for further exploration of West Sulawesi Offshore. Proc. 39th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA15-G-104, p. 1-35.
(New basement penetrations in N Makassar Straits by wells: Rangkong-1 and Kaluku-1 suggest basement of Makassar Straits is Paternoster-W Sulawesi microcontinent, thinned due to rifting from E-M Eocene to E Miocene, as response to back-arc rifting related to subduction roll back in SE Sundaland. Eocene rifted grabens and horsts were sites for shallow lacustrine sources, sandstone reservoirs, and traps)

Schwing, H.F. (1999)- Deep-water exploration in the Kutei basin, East Kalimantan, Indonesia. In: Palawan 99 Int. Conf., p.

Sebayang, D., E. Guritno & B. September (2004)- Seismofacies comparison of deepwater sequences: Pleistocene to Recent Examples from Offshore North Sumatra and Kutei Basins, Indonesia. In: R.A. Noble et al. (eds.) Proc. Deepwater and frontier exploration in Asia and Australasia symposium, Jakarta 2004, Indon. Petroleum Assoc. (IPA), p. 349-360.
(Basic paper on deep water channel-levee complexes)

Teas, P.A., J. Decker, A. Nurhono & A. Isnain (2004)- Exploration significance of high resolution bathymetry in the Makassar Straits. In: R.A. Noble et al. (eds.) Proc. Deepwater and frontier exploration in Asia and Australasia symposium, Jakarta 2004, Indon. Petroleum Assoc. (IPA), p. 389-397.
(Bathymetric map of Makassar Strait illustrates compression across basin, dominant over past ~15Ma, with surface anticlines on both sides of strait. High resolution resolves slumping of over-steepened forelimb and re-direction of depositional systems. Focused views show areas of active extensional faulting and folding, and submarine mud-volcanoes defining areas of active fluid venting. Tectonic lineaments expressed by changes in slope angle and degree of canyonization. Evidence for recent rapid uplift at N margin of Makassar Strait vs. aggrading canyon systems on W margin)

Sherwood, P., S. Algar, G. Goffey, I. Busono, J.N. Fowler, J. Francois, M.J. Smith & A. Strong (2001)- Comparison of recent and Mio-Pliocene deep water deposits in the Kutei Basin, East Kalimantan. Proc. 28th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, 1, p. 423-438.
(Deepwater Kutei Basin (Makassar Straits) seismic examples of slope and basin floor sediments)

Siringoringo, L.P. & D. Noeradi (2016)- The Paleogene tectonostratigraphy of northern part Masalima Trench Basin. J. Geoscience Engineering Environm. Technol. (JGEET) 1, 1, p. 7-24.
(online at: http://journal.uir.ac.id/index.php/JGEET/article/view/2/2)
(N part of Masalima Trench Basin in S end of Makassar Straits and extends to NE part of Java Sea. N part of Masalima Trench Basin formed by NE-SW normal faults with early syn rift sediment (M Eocene), deep marine late syn rift (Late Eocene- E Oligocene) and deep marine post rift (E Oligocene- E Miocene). Basement in 'Alpha well' red radiolaria chert, presumably tectonic melange, in 'Beta well' (on high) metasediments with K-Ar age of 131 +/- 7 Ma (Lower Cretaceous))

Situmorang, B. (1977)- The Makassar Trough regional geology and hydrocarbon prospects. Lemigas Scientific Contr. 1, 1, p. 3-20.
(N and S Makassar basins originated as continental rift in triple-junction rift-system. Classified as marginal sea, flanked in W by Asian continental margin and by volcanic arc of Sulawesi in E. Strongly positive gravity anomalies suggest it is underlain by oceanic crust. Melawi-Ketungau basins of Kalimantan possible third arm of triple junction rift system. Possible presence of turbiditic reservoir rocks, and favorable conditions for accumulation of organic matter during initial rifting stage of seafloor spreading suggest Makassar basins may be highly prospective)

Situmorang, B. (1982)- The formation and evolution of the Makassar Basin, Indonesia. Ph.D. Thesis Chelsea College, University of London, p. 1-313. *(Unpublished)*

Situmorang, B. (1982)- The formation of the Makassar Basin as determined from subsidence curves. Proc. 11th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 83-107.
(Subsidence of Makassar Basin compatible with McKenzie stretching model. Basin formation started with rifting in E-M Eocene or earlier, continuing until E Miocene. Rifting ceased by end of E Miocene, and since then >6 km of sediments deposited across basin without significant deformation. Oceanic crust will occur at stretching factor of 2.9, corresponding to present water depth of >3.2 km. No such water depths, so basin underlain by thinned continental crust (but includes sediment thickness?; JTvG))

Situmorang, B. (1984)- Formation, evolution, and hydrocarbon prospects of the Makassar Basin, Indonesia. In: S.T. Wilson (ed.) Trans. Third Circum-Pacific Energy and Mineral Resources Conference, Honolulu 1982, American Assoc. Petrol. Geol. (AAPG), p. 227-232.
(Makassar Straits subsidence explained by stretching of continental crust by factor of 2.0- 2.9. Initially fault-controlled subsidence started in E-M Eocene, or possibly earlier. Active crustal stretching lasted until end of E Miocene; thermally controlled subsidence since M Miocene. Predicted crustal thickness in central part of basin 15 km. Assuming heatflow of 1.6 HFU Pre-Lower Miocene reached maturity for hydrocarbon generation. With seismic profile 605)

Situmorang, B. (1987)- Seismic stratigraphy of the Makassar Basin. Lemigas Scientific Contr. Petrol. Science Techn. 11, 1, p. 3-38.
(Three main discontinuity surfaces in Cenozoic sediments of seismic lines across N and S Makassar Straits basin. Rel. poor data)

Situmorang, B. (1989)- Crustal structure of the Makassar basin as interpreted from gravity anomalies: implications for basin origin and evolution. Lemigas Scientific Contr. 13, 1, p. 10-24.
(Gravity, well subsidence data and seismic data of (South) Makassar Basin interpreted to suggest it is underlain by highly attenuated continental crust with average thickness of 15km (but central zones of line A-A' in South Makassar basin E of Paternoster Platform modeled as ~8-9 km crustal thickness= oceanic crust thickness?; JTvG). Continental rifting during M Eocene- E Miocene, followed by thermal subsidence)

South, D., G. Toxopeus & B. Myhren (2013)- Karama PSC well results-a lesson learned on provenance and seismic imaging of deepwater systems. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-070, p. 1-7.
(Karama block off W Sulawesi in N Makassar Strait multiple prospects (bright seismic amplitudes in Late Miocene- E Pliocene section in young foldbelt structures). Sediments sourced from Sulawesi hinterland, with deep-water fans and debris flow identified from 3D seismic data. Three wells drilled on interpreted sand fairways showed bright seismic amplitudes not sand but siltstones, greywacke sandstones with no to poor reservoir properties)

Subroto, E. A., D. Noeradi A. Priyono, H.E. Wahono, E. Hermanto & M. Syaifuddin (2007)- Preliminary study on Paleozoic and Mesozoic source rocks in the frontier offshore South Makassar basin, Indonesia. In: Y. Wang & T.D. Bullen (eds.) Proc. 12th Int. Symposium on Water-rock interaction, Kunming 2007, Taylor and Francis, London, 2, Chapter 188, p. 905-908.
(Oil and and gas known from onshore and offshore S Makassar Basin, but source rocks not established yet. Most likely source in basin Eocene- Oligocene sediments and, possibly also Miocene. Samples from exploration wells suggest most samples have not reached oil window. Basin modeling suggest Eocene sediments mature from peak oil to dry gas window, Miocene sediments range from barely mature to peak of oil generation (Misleading title?; JTvG))

Tanos, C.A. (2011)- Diagenetic effects on reservoir properties in a carbonate debris deposit: case study in the Berai Limestone, ñMò Field, Makassar Strait, Indonesia. Bull. Earth Sci. Thailand 4, 2, p. 17-24.
(online at: www.geo.sc.chula.ac.th/BEST/volume4/number2/3_Chrisna_Asmiati_Tanos_BEST_4_2_p%2017-24.pdf)
(S Makassar Straits 'M' gas field (= Ruby/ Makassar Straits) developed in Oligocene- E Miocene Berai Fm carbonate slope debris reservoirs. With multistage diagenetic and tectonic evolution, incl. phase of late deep burial leaching)

Tanos, C.A., J. Kupecz, A.S. Hilman, D. Ariyono & I.L. Sayers (2013)- Diagenesis of carbonate debris deposits from the Sebuku Block, Makassar Strait, Indonesia. Proc. 37th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, IPA13-G-159, p. 1-18.
(Ruby Field, SW Makassar Strait, will be developed from Late Oligocene carbonate debris flow reservoirs. Reservoir facies mainly matrix- and clast-supported breccias. Debris deposits correspond to two global sea level lowstands (Chattian-1; 28 Ma) and Burdigalian-1; 20 Ma). Adjacent feature (NW Ruby-1) unexpectedly dry, and, unlike Ruby Field, did not undergo extensive late dissolution, and may also have been isolated from lateral hydrocarbon migration)

Tanos, C.A., J. Kupecz, S. Lestari, J.K. Warren & A. Baki (2012)- Depositional and diagenetic effects on reservoir properties in carbonate debris deposits: comparison of two debris flows within the Berai Formation, Makassar Strait, Indonesia. AAPG Int. Conf. Exhib., Singapore 2012, Search and Discovery Art. 50768, p. (*Presentation*)
(online at: www.searchanddiscovery.com/documents/2012/50768tanos/ndx_tanos.pdf)

(After successful gas discovery and appraisal of Makassar Straits field (= Ruby) in Late Oligocene Upper Berai Fm bathyal debris flow carbonate reservoir in Pangkat Graben, S Makassar Basin, a subsequent exploration well in adjacent NW-1 feature was unexpectedly dry. Differences in post-depositional diagenesis explain better reservoir quality in Ruby field)

Teague, R., J.T. Noah, R. Redhead, M. Swanson, T. Brown & N. Briedis (1999)- Merah Besar and West Seno Field discoveries, Makassar Strait, East Kalimantan, Indonesia. AAPG Int. Conf. Exh. Abstracts, American Assoc. Petrol. Geol. (AAPG) Bull. 83, 8, p. 1343.
(First Indonesia deep water discoveries by Unocal in 1996 and 1998 in toe-thrust anticlines with stratigraphic trapping components. Merah Besar in 1700' - 2700' of water, 40 km2, productive reservoirs between 4000-9500' TVD in Pliocene and Upper Miocene upper to mid-slope turbidite channel-levee sandstones. West Seno in 2400- 3200' of water, ~70 km2, with hydrocarbons between 7000' -9500' TVD, where Upper and M Miocene sandstones are faulted and stratigraphically trapped in updip position. Sandstones rel. continous and interpreted as amalgamated turbidite channels capped by hemipelagic shales. Porosity 24-32%, permeability 150-1500 md. Sandstones quartzose and mainly fine grained. Miocene oils and Pliocene and Miocene gases derived from similar source facies of land plant-dominated organic material. Oils API gravity 35-46 degrees)

Thompson, P., J.J. Hartman, M.A.A. Anandito, D. Kumar et al. (2009)- Distinguishing gas sand from shale/brine sand using elastic impedance data and the determination of the lateral extent of channel reservoirs using amplitude data for a channelized deepwater gas field in Indonesia. The Leading Edge 28, 3, p. 312-317.
(Chevron Sadewa Field 2002 discovery in Makassar Straits NE of Mahakam Delta, ~5 km from Kalimantan shelf edge in water depths of 1500-2500'. Reservoirs Late Miocene deep water channel sandstones. Nine wells drilled. Very expensive development. Propose using elastic impedance data for distinguishing gas sands)

Untung, M., J. Taruno, A. Maulana, P. Kridoharto & S. Sukardi (1985)- Explanatory note on preliminary aeromagnetic map of the Makassar Strait. Proc. 20th Sess. Comm. Co-ord. Joint Prospecting Mineral Resources in Asian Offshore Areas (CCOP), Kuala Lumpur 1983, 2, Tech. Repts., p. 199-209.
(Aeromagnetic map over Makassar Straits shows two areas of different character, separated by Paternoster Arch: (1) high anomalies of quiet magnetization in North Makassar Basin (interpreted to be oceanic crust) and (2) low to high anomalies of noisy character in South Makassar Basin)

Van Gorsel, J.T. & E.C. Helsing (2014)- A Late Oligocene drowned pinnacle reef in deepwater Makassar Straits. Berita Sedimentologi 29, p. 116-122.
(online at: www.iagi.or.id/fosi)
(Carbonate seamount with 320-350m of relief in 2050m deep water of S Makassar Straits is Late Oligocene-age pinnacle reef, which drowned in latest Oligocene time, based on presence of Miogypsinoides cf. bantamensis near crest and Spiroclypeus and Neorotalia mecatepecensis deeper in section. Carbonate buildup with ferro-manganese cement, representing >20 Million years of deep water seafloor exposure and non-deposition)

Visser, K., R. Thunell & M.A. Goni (2004)- Glacial- interglacial organic carbon record from the Makassar Strait, Indonesia: implications for regional changes in continental vegetation. Quaternary Science Reviews 23, 1-2, p. 17-27.
(Climate in W Pacific Warm Pool 3-4°C colder during glacial periods. Core MD9821-62 from Makassar Strait suggests vegetation on Borneo and other islands did not significantly change from tropical rainforest during last two glacial periods. This supports hypothesis that winter monsoon increased in strength during glacial periods, allowing Indonesia to maintain high rainfall despite cooler conditions. Organic matter mixed marine-terrestrial; higher TOC during glacials due to enhanced erosion of continental shelves)

Wijaya, P.H. & D. Kusnida (2009)- Tinjauan geotektonik Selat Makassar Utara, implikasinya terhadap potensi hidrokarbon laut dalam cekungan Kutai, Kalimantan Timur. J. Geologi Kelautan 7, 3, p. 109-121.
(online at: http://ejournal.mgi.esdm.go.id/index.php/jgk/article/view/176/166)
('The geotectonic views of the North Makassar Straits, its implications for the potential of marine hydrocarbons in the Kutai basin, East Kalimantan'. Literature review of geotectonic evolution of Makassar Straits and potential for hydrocarbons in deepwater Makassar Straits in toe thrusts around Mahakam Delta. Seismic

character, water depths, gravity modeling, etc. suggest much of Makassar Straits, including Mahakam Delta, underlain by oceanic crust, as continuation of Eocene spreading in Celebes Sea)

Willacy, C., S. Oemar, A.E. Hermantoro & P. Gilleran (2000)- Prestack depth imaging within Makassar Straits, Eastern Kalimantan. Proc. 27th Ann. Conv. Indon. Petroleum Assoc. (IPA), Jakarta, p. 457-466.
(Prestack depth migration of deepwater E Kalimantan seismic line with complex overthrusting)

Wissman, G. (1984)- Makassar Strait- Celebes Sea Survey- data compilation and interpretation of cruises VALDIVIA 16/1977 and SONNE 16/1981. In: Bundesanstalt Geowissenschaften Rohstoffe (BGR), Techn. Report 97210, Hannover, p. 1-210. *(Unpublished)*
(BGR 1977 and 1981 seismic surveys in Makassar Straits and Celebes Sea, part of SEATAR campaign)

Wissmann, G. (1984)- Is Sulawesi colliding with the Paleogene rifted margin of eastern Kalimantan? A hypothesis deduced from seismic reflection profiles in the Makassar Straits- Celebes Sea. In: Bundesanstalt Geowissenschaften Rohstoffe (BGR), Techn. Report 97210, Data compilation and interpretation of cruises, Valdivia, 16/1977 and Sonne 16/1981, p. . *(Unpublished)*