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3 lithostratigraphic units are present in the area. The Balingian Formation is overlain by the Begrih Formation with an angular unconformity. These two formations are in turn, unconformably overlain by the Quaternary deposits.

The Balingian Formation is of Upper Miocene (?) age and are characterised by the occurrence of rootlet dominated mudstone facies, lenticular bedding facies, nodular mudstone facies and trough and planar cross bedded sandstone facies. These are interpreted to be associated with alluvial meandering channels, levee deposits, overbanks deposits, tidal flat and marine channels.

The Begrih Formation is characterized by extraformational orthoconglomerate, pebbly sandstone facies, laminated shale facies, massive siltstone facies and trough cross-bedded sandstone facies. These facies are interpreted to be associated with alluvial braided channels, estuarines and pebbly to sandy beachface deposits. The microfossils of *Cyclogyra multiplex* found, indicated a Pliocene age to the Begrih Formation. Other microfauna found were *Triloculina* sp., *Amphisorus* sp., *Globigerina* sp., *Globobulimina* sp., *Sorites* sp. etc.

The evidence for tectonic activity at the end of the Miocene time is the presence of an angular unconformity and the sudden change in clastic sedimentary facies. Detailed study on the heavy minerals indicate an assortment of zircons, hornblende and tourmaline as the major heavies present and a variety of others in lesser amounts.

The variation in the distribution of the heavy minerals in the area is summarised below:

1. The Balingian Formation is characterized by minor amounts of zircons, pyrites and opaque minerals. Zircons are mainly anhedral and cloudy.
2. The Begrih Formation is characterized by much euhedral zircons with substantial amounts of subhedral to anhedral zircons (notably well-rounded ones), varied colours of the zircons (colourless, pink and yellow), hornblende, tourmaline, ilmenite, magnetite, pyrite and the opaques.
3. The Quaternary sediments are characterized by mainly euhedral zircons and minor amounts of subhedral and anhedral zircons. The zircons are usually clouded and are mainly pink and colourless. The most abundant heavy minerals are ilmenite, siderite, biotite and magnetite. Leucoxene, pyrite, goethite and copper occur in minor amounts.
4. There is very little variety and amount of heavy minerals in Late Miocene times. (Balingian Formation)
5. There is an increase in variety and abundance of heavy minerals in Early Pliocene times but later showed slight decrease. (Begrih Formation)

6. There is a sharp contrast in the heavy mineral assemblages of the Quaternary sediments.
7. There is an increase in the variety of mineral species from the Upper Miocene period to the Quaternary period.

#### Implication

The presence of the various heavy minerals in the area (and also the lack of it) reflect the various provenance of sediments and their structural relief at that time.

The lack of heavy minerals in the Balingian Formation suggests a subdued relief of the hinterland and this probably accounted for the peneplanation of the area.

The sudden appearance of heavy mineral varieties and abundance in the Begrih Formation indicate uplift and new source rocks in the hinterland. The heavy mineral assemblage suggests a provenance from the Lower Rajang areas, mainly the Pirong Hill areas and the adjacent formation, namely the Buan, Tatau, Belaga and the Nyalau Formation which had been gently to intensely folded due to the progressive tectonism in the area.

The global transgressive phase which occurred then had brought the shoreline rather close to the source areas and this accounted for the many euhedral zircons found.

The heavy mineral assemblage of the Quaternary sediments suggests that mainly erosional processes were operating in the area and had eroded much of the older Balingian and the Begrih sediments. This resulted in an increase in the heavy mineral varieties found within the Quaternary sediments.