

formation of the paleo-incised valley at the eastern trough of Central Myanmar Basin bordered by the Mogok Belt lies east of Sagaing Fault, and the Shan-Thai block to the far east.

Model analysis of the Lower Miocene sandstones of the Baronga Islands, Rakhine Coastal Ranges and Yamethin West of Pegu Yoma documents that they are rich in both monocrystalline and polycrystalline quartz, sub-angular to sub-rounded feldspars and lithic fragments containing metamorphic rock fragments with minor basaltic rock fragments suggesting onset of uplift and erosional unroofing in the Eastern Himalayas and Indo-Myanmar Ranges, formed as twin gulfs separated by Indo-Myanmar Ranges. In the east, basement uplifting in the Mogok Belt and Gangaw Ranges of upper Irrawaddy basin in the western part of Asia Plate, and initiation of river systems supplying orogenic detritus to the south since Early Miocene. Middle Miocene sandstones from the both areas are rich in sub-angular monocrystalline quartz, Chert and argillite with little amounts of feldspar and metamorphic lithic fragments, relatively suggesting low supply from the Himalayas and associated with the widespread marine transgression occurred in early Middle Miocene (16Ma).

Post-early Miocene dextral displacement along the western part of Asia Plate possibly contributed the subsidence led to subsequent movement relative to sea-level rise and accumulation of thick Middle Miocene sequences in these areas. Sandstones of the Upper Miocene contain abundant metamorphic lithic fragments and fresh feldspars (both orthoclase and plagioclase) with volcanic rock fragments suggesting continued orogenic unroofing in the source areas, and exhumation of younger granitic from the Eastern Himalayas and the Myanmar Arc.

**Keywords:** Provenance, Neogene, Unroofing, Himalaya, Orogenic, Arc, Myanmar.

### Sedimentology and Stratigraphy Paper 3

#### New Evidence for Carboniferous Age of the Taungnyo Group Exposed in the Loikaw Area, Kayah State

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New Carboniferous faunas from the Taungnyo Group, Loikaw area are reported. These include two new Late Tournaisian/early Visean (Lower Carboniferous/Mississippian) trilobite species, *Liobole loikawensis*, *Crassibole karenniensis* and conodont faunas representative of the late Tournaisian *Scaliognathous anchoralis* and *Gnathodus typicus-Protognathodus* cordiformis conodonts zone. The age of the Taungnyo Group, Loikaw area is confirmed as Lower Carboniferous (Mississippian) for the sampled part of this stratigraphic unit. The presence of Carboniferous in the Shan Plateau Region of Myanmar is confirmed. The trilobites are most closely related to species from deep water facies of late Tournaisian and Visean age from central and Western Europe. Biogeographic links between upper Tournaisian and early Visean conodonts

on the Sibumasu Terrane and Laurentia and Eastern Australian Gondwana support a NW Australian Gondwana margin position for Sibumasu in the Late Paleozoic.

**Keywords:** Carboniferous, Trilobites, conodonts, Myanmar, Sibumasu

## Sedimentology and Stratigraphy Paper 4

### Coastal morphology and Holocene mollusk fossils of Khao Sam Roi Yot area south central Thailand: Implication for sea-level change

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Coastal morphology in Khao Sam Roi Yot area of southern Thailand has been mapped using field and remote-sensing investigations. Essential morphological features including beaches, tidal flats, mangrove swamps, barriers and lagoons, flood/alluvial plains and hill-slope plains, are well-defined. Sea notches discovered in limestone terrains lead us to believe that the study area has been subject to marine action in the past. Four sites around the south of Khao Sam Roi Yot have been selected for systematic paleontological and geochronological investigations. Detailed taxonomy allows us to identify two types of mollusks (>1071 pieces) including gastropoda (668 pieces) and bivalvia (403 pieces). We have recognized 17 and 18 families, 26 and 29 genera and 31 and 44 species of gastropods and bivalves, respectively. Mollusks have been also classification into 3 types based on types of consumed living things, viz. carnivorous (up to 84%), herbivorous (13%) and omnivorous (3%) types. All of these mollusks have been paleontologically assigned as Holocene in age. The most common Holocene gastropod is Cerithidea (Cerithideopsilla) cingulata (about 56%) which have been found in mud flats of mangrove swamps. The secondmost common gastropod is Natica tigrina (about 10%) which have been found abundantly in mud-flat, intertidal and shallow subtidal areas. The third one is Nassarius pullus (about 5%) which can survive in any kind of environments. The most common bivalvia is Placamen chloroticum (about 21%) which has been discovered in sand/gravel beds of intertidal-zones up to 100 m. The secondmost common bivalvia is Placuna placenta (about 14%) which has been found in mud/sand in mangrove swamps and intertidal (up to 20 m) area. The third one is Marcia hiantina (about 12%) which has been observed in mud/sand layers of the intertidal zone (up to 20 m). We also dated 8 selected mollusk samples by using C-14 and ESR methods. The age-dating result can be grouped into 4 age events. The oldest event belongs to the age of 7,360-7,820 years BP and has been found in the notches and former tidal flats. The second event took place in notches and former barriers, and the ages obtained are in the range of 5,500-4,000 years BP. The third event has been found in the former