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The eastern Sundaland margin in the latest Cretaceous to Late Eocene: Sediment provenance and depositional setting of the Kuching and Sibuh Zones of Borneo

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Abstract

The Kuching Zone in Borneo comprises several large sedimentary basins of Late Cretaceous to Late Eocene age. In West Sarawak the Kayan Basin includes the Upper Cretaceous to Lower Eocene Kayan Group and further east in the Kuching Zone is the Ketungau Basin, consisting of the Middle to Upper Eocene Ketungau Group.

The Kayan Group is composed of the Kayan Sandstone and the Penrissen Sandstone. U-Pb detrital zircon ages and heavy minerals from the Kayan Sandstone suggest two major drainage systems: 1) Late Cretaceous to Paleocene rivers supplied sediment with abundant Cretaceous, Permian-Triassic and Precambrian zircons primarily from SW Borneo and East Malaya–Indochina and 2) Paleocene to Early Eocene rivers provided sediment containing almost entirely Cretaceous zircons from the Schwaner granites of SW Borneo. Differences in heavy minerals and zircon ages of the Lower Eocene Penrissen Sandstone support interpretations of an unconformity above Kayan Sandstone.

The Ketungau Group is interpreted to be unconformably above the Kayan Group, representing a new basin. The Ngili Sandstone, the oldest formation of the group, contains sediment derived from nearby sources, probably the Triassic Sadong and Kuching Formations. The Middle to Upper Eocene Bako-Mintu Sandstone, Silantek Formation and the probable Upper Eocene Tutoop Sandstone have similar sources to the Kayan Sandstone and have partly reworked the underlying sediments.

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