

**A deep marine origin for the Tajau sandstone member of the Kudat formation,
Kudat Peninsula, Sabah: evidence from facies analysis and ichnology**

ABSTRACT

There have been many disagreements regarding the depositional environment of the Oligocene Tajau Sandstone Member of the Kudat Formation, Northern Sabah. We present here, the first detailed sedimentary facies analysis for the Tajau Sandstone Member, exposed on the Kudat Peninsula. The identified facies are interpreted as the deposits of subaqueous sediment density flows, which are common processes in deep marine depositional settings. These include debrites, hyperconcentrated density flow deposits, and turbidites. Several of the turbidite facies display evidence for hydraulic jumps, which are also common processes in deepwater settings and probably indicate changes in slope topography or loss of flow confinement. Trace fossils characteristic of the Nereites ichnofacies are also diagnostic of a deep marine depositional environment. Facies previously identified by previous workers as hummocky cross-stratification in the Tajau Sandstone Member, which was used to support a shallow marine interpretation, is better interpreted as supercritical antidunes developed in high density turbidites, based on the coarse-grained texture, spaced layering and association with other subaqueous density flow deposits.