

Middle Miocene planktonic foraminifera and their implications in the geology of Sabah

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Planktonic foraminifera flourished during Middle Miocene. They were recorded from the Ayer, Kuamut, Garinono mélanges, the Libong Tuffite, Tungku Formation, Tabanak Conglomerate, and Setap Shale Formation. Three assemblages of planktonic foraminifera were identified from the Libong Tuffite, the Garinono mélange, and the Setap Shale Formation. The assemblages indicate an age ranging from the early Middle Miocene *Globigerinoides sicanus-Globigerinatella insueta* Zone (N 8) to the middle Middle Miocene *Globorotalia fohsi fohsi* Zone (N12). The occurrence of the planktonic foraminifera suggests that a transgressive event caused the influx of the nutrient-rich water mass into the area. This event was probably related to the rifting of the Sulu Sea and the development of the eastern Sabah deep marine environment where the mélanges were deposited. The occurrence of tuff and tuffite indicates volcanic activity in the region. The age of the volcanic tuff is middle Middle Miocene as dated by planktonic foraminifera.