MID-TERTIARY PALYNNOLOGY
OF ONSHORE AND OFFSHORE THAILAND

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ABSTRACT

Mid-Tertiary palynological assemblages from fourteen stratigraphic sequences in nine basins in Thailand have been investigated. Special emphasis has been given to the spore-pollen record and its stratigraphic distribution. The basis for defining zonations in this study depends on first or last appearances of key species including Inaperturopollenites dubius, Alnipollenites verus and Echipheriporites cf. E. estelae, and for the first time correlation with the marine sequences is achieved. Two regional zones (SIAM-1 and SIAM-2) have been established. SIAM-1 Zone is characterized by assemblages comprising high frequencies of gymnosperm pollen, and is provisionally correlated with the planktonic foraminiferal N3-N4 zones of the Trang-1 Borehole, Andaman Sea indicating a Late Oligocene to early Early Miocene age. SIAM-2 Zone is characterized by influxes of tropical taxa and decreasing proportions of the temperate taxa and is correlated with planktonic foraminiferal N5-N8 zones of the Mergui-1 Borehole, Andaman Sea indicating a middle to late Early Miocene age. The results of the palynostratigraphic study can be successfully applied to hydrocarbon resources exploration and it is shown that the Nong Ya Plong coal seam (pre SIAM-1) is older than Li coal seams (SIAM-1), Fang oil-bearing intervals (SIAM-2) and Mae Moh coal seams (post SIAM-2) respectively.

High influxes of species preferring temperate climates (including Alnipollenites verus, Inaperturopollenites dubius, and Tsugaepollenites igniculus) appear in Thailand during SIAM-1 Zone. Species preferring tropical environments make their first appearances and become abundant in the SIAM-2 Zone (including Dipterocarpus sp. 780, Florschuetzia levipolii, Lanagiopollis nanggulanensis and Pandaniidites texus). These patterns suggest that the palaeoclimate of Thailand was temperate in Late Oligocene times, and warmed to more tropical conditions during the Early to Middle Miocene. Frequencies of Pediasstrum (algae) and spores, occurrences of mangrove pollen and dinoflagellates are useful for determination of palaeoenvironments in this study. High frequencies of Pediasstrum or spores suggest lacustrine or swamp environments respectively. The occurrences of mangrove pollen and dinoflagellates suggest coastal or marginal marine environments.

Eighty three species comprising the principal taxa in the palynofloras are listed, and thirty two taxa of these are described using conventional light (LM) and scanning electron microscopy (SEM). A novel method is proposed for routine examinations of palynomorphs by both SEM and LM.