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MIDDLE PALEOCENE TO EARLY MIOCENE CALCAREOUS NANNOFOSSIL AND PALYNOMORPHS BIOSTRATIGRAPHY, MANNAR BASIN, SRI LANKA

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Present study deals with the record of calcareous nannofossils and palynomorphs from the carbonate rich deep sea sediments. These sediments were recovered as drill cuttings from CLPL-Barracuda G1/1 Petroleum Exploration Well at Mannar Basin. The well is located at 68 km off the western coastline of Sri Lanka (latitude 08° 20' 34.460" N and longitude 79° 09' 39.378" E). A total of 20 samples were studied ranging in depth from 2,145 m to 3,405 m for nannofossils and 2,145 m – 2,705 m for palynomorphs. Each sample contained 10 m deep succession of sediments. The studies were carried out at Birbal Sahni Institute of Palaeobotany, Lucknow, India.

A significant assemblage of nannofossils comprising of 75 species belonging to 30 genera and 20 families were recorded. Overall, the nannofossil assemblage was found to be well preserved and highly productive in terms of both diversity and abundance of species. Some significant nannofossil taxa are *Calcidiscus bicircus, Calciosolenia aperta, Chiasmolithus consuetus, Chiasmolithus expanses, Chiasmolithus nitidus, Cyclicargolithus abisectus , Ellipsolithus bollii*, *Fasciculithus tympaniformis*, *Helicosphaera euphratis, Holodiscolithus solidus, Orthozygus arcus, Reticulofenestra reticulata, Sphenolithus anarrhopus*, *Toweius eminens*, *Toweius serotinus* and *Zeugrhabdotus sigmoides.* Palynomorphs consisted of a few species of pollen, spores and dinoflagellates. Both, the number of palynomorphs and their preservation conditions appeared to be very poor.

Based on the occurrence of zonal marker taxa and the presence of other age-diagnostic species, the 1,260 m thick well section has been dated as Middle Paleocene to Early Miocene. The absence of pentaliths (*Pemma, Micrantholithus* and *Braarudosphaera*) indicates the open marine depositional setting during Middle Paleocene to Early Miocene. The collision between Indian and Eurasian lithospheric plates during the Eocene period caused upliftment of Himalayas and resulted in episodic intra-plate deformation which triggered separate episodes of erosion and rapid deposition of terrigenous sediments in the Bay of Bengal. This deposition had resulted in an unexpected influx of terrigenous sediments into other depocentres close to the Indian landmass, Cauvery and Mannar Basins. This could have been the reason for the significant reduction in the diversity of nannofossils recorded for the depth interval of 2,795 m – 3,405 m. The less abundance of palynomorphs throughout the studied section indicates the poor supply of terrestrial biogenic sediments to the Mannar Basin.