Calcareous nannofossil biostratigraphy and paleoceanographic clues from the latest Pliocene-Pleistocene from IODP Expedition 349 Site U1431D, South China Sea

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Calcareous nannofossils were utilized to refine the initial biostratigraphic results from IODP Expedition 349 Site U1431D from the South China Sea and infer paleoceanographic clues, using preliminary sediment geochemistry and core physical properties. An additional nannofossil marker (FO *Gephyrocapsa* spp. >4μm) was found (10H-7W, 22–23cm; 87.32 mbsf), while the FO of *Gephyrocapsa* spp. >5.5μm was observed to occur much higher in the section than the LO of *Calcidiscus macintyrei*. This refinement of the calcareous nannofossil biostratigraphy was used to determine the timing of paleoceanographic events. *Florisphaera profunda* was the dominant calcareous nannofossil observed, suggesting an overall oligotrophic condition for Site U1431D from 2.65–0.01Ma. An apparent cyclical pattern occurred in nannofossil absolute abundances from 2.65–1.65Ma. However, Site U1431D was essentially barren of nannofossils from 1.65–0.6Ma, with only a few intermittent low-abundance spikes in calcareous nannofossils. The start of the barren interval coincides with a steady increase in density of the turbidite layers (Liu *et al*., 2016) and the onset of larger amplitudes in sea-level change (de Boer *et al*., 2014). Nannofossils increased in abundance at ~0.48Ma, when high-frequency oscillations between different calcareous nannofossil species were observed. This coincides with Marine Isotope Stage (MIS 12), one of the largest glacial episodes in the last 0.50Ma. Apparent ~150–200kyr cycles in abundances were observed at 0.46–0.01Ma, with a sudden decrease in L* reflectance (measure of lightness of sediments) and nannofossils at around 0.43Ma, which may correspond to the dissolution episode at the Mid-Bruhnes Event (MBE).

References

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