

Refined diatom biostratigraphy and paleoceanography in the ODP Leg 145 Hole 884B

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In this study, fossil diatom assemblages from the Ocean Drilling Program (ODP) Leg 145 Hole 884B were investigated to refine the diatom biostratigraphy in the northwestern Pacific Ocean. As the results, twenty-one diatom zones with the Neogene North Pacific Diatom zone codes (NPD) were defined and their high resolution datum ages (~10 kyr on average) were recalculated based on the geomagnetic polarity time scale in Hilgen et al. (2012) from the early Miocene to the Pleistocene. The refined diatom biostratigraphy is intended for practical use to determine the precise datums and correlation with other regions in the north Pacific. The analysis of paleoenvironmental indicators for an interval of 0-5 Ma was also carried out in this study. The cold-water indicators, which showed high abundances throughout the interval, suggest the cold environmental conditions throughout from the Pliocene to the Pleistocene. Relatively higher abundance of temperate-water species at ca. 2.8 Ma, appearance of sea-ice related species at ca. 2.7 Ma and a slight increase of neritic species observed at ca. 1.9 Ma may reflect a series of Northern Hemisphere Glaciation (NHG) events. The peak of cold-water species, like *Neodenticula seminae*, at ca. 0.9 Ma might be affected by the global cooling of the Middle Pleistocene Transition (MPT), which is characterized by a severe increase of glaciations which started at 1.25 Ma and completed at 0.7 Ma. The first occurrence of *N. seminae* (ca. 2.6 Ma) and the last ones of *N. kamtschatica* (ca. 2.6 Ma) and *N. koizumii* (ca. 0.9 Ma) also seem to correspond to the NHG or MPT events.

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