

Lower Pleistocene calcareous nannofossil biostratigraphy in the Boso Peninsula and the Choshi district and estimated sea surface environments

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In the northwestern Pacific region, off the coast of Japanese Islands, the two major currents, warm Kuroshio and cold Oyashio currents, have affected the distributions of both recent calcareous planktons and microfossils (Tanaka, 1999; Takemoto and Oda, 1997; Igarashi, 1994). The principal components analysis of fossil assemblages of planktonic foraminifera (Igarashi, 1994) obtained from the Kazusa Group, distributed in the Boso Peninsula, suggests that the intensities of both the currents have repeatedly changed during the early Pleistocene. In this study, the Umegase Formation, Kazusa Group, and the Yokone and the Obama Formations, Inubo Group, in the Choshi core, which was obtained by the Ocean Research Institute, The University of Tokyo in 1998, were examined in order to clarify correlating ages of calcareous nannofossil datums and to reconstruct changes in sea surface environment during the early Pleistocene in the Northwestern Pacific. As a result of many chronostratigraphic investigations (e.g., Sato et al., 1988), it is known that the Kazusa Group is correlated with the Inubo Group. Based on the correlation with oxygen isotope stratigraphy (Kameo et al., 2006; Pickering et al., 1999), the stratigraphic interval of this study corresponds to 0.83–0.91Ma, and the top of *Reticulofenestra asanoi*, an important calcareous nannofossil datum during the Pleistocene, is located near MIS 21/22 boundary in both regions.

Calcareous nannofossil assemblages in both Groups were characterized by abundant occurrences of *Gephyrocapsa*, *Reticulofenestra*, and *Pseudoemiliana*. Because *Coccolithus pelagicus*, an Oyashio water index, and *Umbilicosphaera sibogae*, a Kuroshio water index (Tanaka, 1991), were very few, this study examined the number of these specimens in a gram of dry sediment. The number of *U. sibogae* was much larger than those of *C. pelagicus* in all samples, and thus, the Kuroshio current dominated during the investigated interval. In particular, the sudden increases of this species near 0.87Ma clearly demonstrates temporary intensification of the Kuroshio current. The intensity of Kuroshio current was estimated to strengthen and weaken repeatedly in this region during the early Pleistocene, because stratigraphic changes of this species show similar patterns through the studied interval.

Reference

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