

Planktonic foraminiferal faunal changes around the Matuyama–Brunhes boundary in the northwestern Pacific and its paleoceanographic implications

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This study conducts a paleoceanographic reconstruction of the convergence area between Kuroshio and Oyashio currents around the Matuyama–Brunhes boundary by means of planktonic foraminiferal assemblages. In our previous paper (Shikoku et al., JpGU2017), we carried out a faunal analysis of planktonic foraminifera from the sediment core TB2 obtained near the Chiba section, which has been focused as a candidate site of GSSP for the early–middle Pleistocene. As a result, warm species such as *Globocanella inflata* sharply increased at approximately 0.76 Ma in Marine Isotope Stage (MIS) 19. It suggests that the faunal change might be caused by a latitudinal migration of the Kuroshio front at this horizon. However, such faunal change might also be caused by some of local factors such as tectonic barriers of water mass. It requires additional datasets of other sections in and around Japan to reconstruct the time-space distribution of the faunal change.

In this study, we used core samples of Integrated Ocean Drilling Program (IODP) Site C0001 drilled off the Kii Peninsula and Ocean Drilling Program (ODP) Site 1150 off the Sanriku district. The present oceanographic setting at Site C0001 is nearby the northern edge of the Kuroshio domain associated constantly with cold eddies. In turn, Site 1150 is much affected by the Oyashio current than the TB2 core. A total of 103 samples were collected for this study from Site C0001 cores 6H-2 to 5H-6 at an interval of 10 cm (about 1.7 kyr in time resolution) and Site 1150 cores 9H-4 to 8H-2 at an interval of 20 cm (about 3.5 kyr in time resolution). Age of each sample was determined by the oxygen isotope stratigraphy.

According to the Site C0001 results, 49 species belonging to 15 genera of planktonic foraminifera were recognized from the sediment samples. The planktonic foraminiferal assemblage of Site C0001 consists of warm temperate species *Globigerinoides ruber*, *Globigerinita glutinata* and *G. inflata*, mixed water species *Neogloboquadrina incompta*, and dextral coiling *Neogloboquadrina pachyderma*. On the other hand, 38 species belonging to 13 genera of planktonic foraminifera were detected from the Site 1150 samples. The planktonic foraminiferal assemblage of Site 1150 consists of cold temperate species sinistral coiling *N. pachyderma*, mixed water species *N. incompta*, and dextral coiling *N. pachyderma*.

As a result of correlating our results with previous foraminiferal data, namely, TB2 and CHOSHI-1 cores in Chiba Prefecture, the Kuroshio and mixed-water (transitional) components occurred dominantly at Site C0001, TB2 and CHOSHI-1 through that period. In Site 1150, the assemblage was predominated by the Oyashio components at all horizons except for the uppermost part which was associated with abundant occurrence of the mixed-water (transitional) components. Consequently, we divided the paleoceanographic evolution of the surrounding area from MIS21 to 18 into eight stages based on the correlation.

Keywords: planktonic foraminifera, paleoceanography, IODP, ODP, Pleistocene

