

Changes in cold-water planktic foraminiferal species in the subpolar North Atlantic during the intensification of the Northern Hemisphere glaciation in late Pliocene

Miki Muranaka¹, *Yusuke Okazaki¹, Katsunori Kimoto³, Tatsuya Hayashi²

1. Department of Earth and Planetary Sciences, Graduate School of Science, Kyushu University, 2. Department of Environmental Changes, Faculty of Social and Cultural Studies, Kyushu University, 3. Earth Surface System Research Center, JAMSTEC

We investigated planktic foraminiferal assemblage in sediment samples from the North Atlantic during the intensification of the Northern Hemisphere glaciation between 2.5 and 2.7 Ma. Sediment cores used for this study were obtained at Site U1314 (56°21.9'N, 27°53.3'W, water depth 2820 m) in the southern Gardar Drift, subpolar North Atlantic by the Integrated Ocean Drilling Program (IODP) Expeditions 303/306. We picked up planktic foraminiferal specimens from >150 μm aliquots of the sediment samples. *Neogloboquadrina pachyderma* sinistral and *Neogloboquadrina atlantica* sinistral were the representative cold water species in the Pliocene North Atlantic. Relative abundances of the two cold-water species during 2.5-2.7 Ma were about 80% in glacials and 40% in interglacials, respectively. These planktic foraminiferal cold water species abundances showed almost consistent with benthic foraminiferal oxygen isotopes and ice-rafted debris at Site U1314. However, from the late marine isotope stage (MIS) 104 to 103 (~2.6 Ma), the lowest relative abundances of the cold water species were found at Site U1314 during the studied period. Considerable contribution of warm water species such as *Neogloboquadrina pachyderma* dextral and *Neogloboquadrina atlantica* dextral increased in the late MIS 104. Because the timing of the warm water species increasing was soon after the short-term IRD event, we speculate the event responding to the resumption of Atlantic meridional overturning circulation inferred by paleomagnetic properties and alkenone sea-surface temperature.

Keywords: Planktic foraminifera, North Atlantic, Pliocene Northern Hemisphere Glaciation