

Paleoenvironmental changes during last interglacial and MIS 6 in Kuroshio region off Honshu based on planktic foraminif

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Introduction

The Kuroshio Current is the western boundary current, that is a part of the North Pacific subtropical gyre. The Kuroshio plays a main role in heat transport from the tropical ocean to the subarctic North Pacific. Paleoenvironmental changes in the Kuroshio region during the last glacial period to the Holocene were studied during several decades (e.g., Oda and Takemoto, 1992, Ujiie and Ujiie, 1999, Ikehara et al., 2009). Before the last glacial period, paleoenvironmental changes of the surface and intermediate waters in the Ryukyu Arc region were investigated based on planktic foraminiferal analyses (Ujiie and Ujiie, 2006). However, there are no many study examples for the Kuroshio variability before the last glacial period in the south of Japanese islands. Therefore we studied to reconstruct a paleoenvironmental changes during last interglacial and Marine Isotope Stage (MIS) 6 in the Kuroshio region.

Sample and Methods

A long piston core MD012422 (32°08.7'N, 133°51.8'E, water depth 2737m) was obtained from the continental slope off Shikoku and a piston core KR09-15 PC1 (33°17.7348N, 136°38.3966E, water depth 1951m) was also obtained from the Kumano Trough. In these cores, the planktic foraminiferal assemblage was analyzed for penultimate deglaciation (Termination II) from the glacial MIS 6 to the last interglacial period (MIS 5e) to reconstruct variation of the Kuroshio Current. The age model of MD012422 was built based on the oxygen isotope stratigraphy of *Globigerinoides ruber* (Ikehara et al., 2006). The age model of KR09-15 PC1 was also established based on the oxygen isotope stratigraphy of *Globorotalia inflata*. Each sample was washed through 63 μm opening sieve, prior to the drying procedure. After that each dried sample was again sieved through 125 μm opening sieve for planktic foraminifera faunal analysis.

Result and Discussion

A total of 36 planktic foraminiferal species were identified in this study in MD012422 off Shikoku. Twenty-six species were also identified in PC1 off Kumano. The obtained assemblage data are classified into four groups (Ujiie et al., 2003, Ujiie and Ujiie, 2006), which are related with surface water conditions. In this study, we focused on the Kuroshio species, which are composed of *Pulleniatina obliquiloculata* and *Neogloboquadrina dutertrei*. The abundance of Kuroshio species showed high in both sites for MIS 5e. But, their abundance decreased off Kumano for MIS 6. Therefore we interpreted that the Kumano Trough region was not influenced by a warm Kuroshio during the penultimate full glacial MIS 6. For the last interglacial MIS 5e, the Kuroshio was flowing through the similar position with modern.