

Oxygen isotope stratigraphy in the lowest part of the Higashinagata Formation, Toyofusa Group, southernmost part of the Boso Peninsula

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The Kazusa, Inubo and Toyofusa Groups, distributed in the Chiba prefecture, are Lower –Middle Pleistocene marine successions. It is possible to reconstruct spatial paleo environmental variations during the Early-Middle Pleistocene period by comparing of those formations.

The present sea water off the Boso Peninsula area consist of the Mixed water of the Oyashio and Kuroshio currents. Therefore, this sea area is thought to be a sensitive region against the northern and southern shifts of the Kuroshio front responding to the climatic change.

The Toyofusa Group is distributed in the southernmost part of the Boso Peninsula. Magnetic stratigraphy and biostratigraphy of planktonic foraminifers were constructed at the Toyofusa Group (Kotake et al.,1995). Some tephra beds of the Toyofusa Group were correlated to those of the Kazusa Group (Kotake et al.,1996, Urabe,1997).

However, Oxygen isotope stratigraphy has not been constructed. The lowest part of the Higashinagata Formation, the lower most Formation of the Group, is especially important to investigate, because the Matuyama –Brunhes geomagnetic reversal boundary situated at the bottom of the Formation will provide a direct correlation with the Kazusa Group.

The purpose of this study is reconstruction of oxygen isotope stratigraphy in the lowest part of the Higashinagata Formation. In addition I reconstruct paleo environments based on the analysis using planktonic foraminiferal assemblages.

I carried out oxygen isotopic analyses by using benthic foraminiferas, *Uvigerina* spp. and planktic foraminiferas, *Globigerinoides ruber* and *Globorotalia inflata*. The resultant oxygen isotopic curve was correlated with that of Kokumoto Formation, Kazusa Group (Haneda et al.,2016). As a result, the age of this studied sequence was deduced to correspond to a period between 776ka and 756ka. At the correlation point, the Benthic foraminiferal oxygen isotopic ratio in the Higashinagata Formation was 0.49‰ heavier than that in the Kokumoto Formation. In terms of water temperature, the Higashinagata Formation was deposited under 2.0 °C lower than the Kokumoto Formation. This means that the paleo-depth of the Higashinagata Formation is deeper than that of the Kokumoto Formation. The average oxygen isotopic ratio of *Uvigerina* spp. is 4.23‰ heavier than that of *G.ruber* in the Higashinagata Formation, indicating that the bottom water temperature was 16.9°C lower than the surface water at the depositional time. Assuming that the past vertical structure of sea water temperature, when the Higashinagata Formation was deposited, was same with the current one, the paleo-depth can be estimated as about 1000m

I described planktonic foraminiferal assemblages, in which 18 species and 7 genera were recognized from the 7 samples. I reconstructed the sea surface temperature (SST) by using the assemblage data with the Transfer Function PFJ-125 (Takemoto and Oda, 1997, Niimura et al., 2006). The annual mean SST exhibits a fluctuation between 16.9°C and 20.5°C, which is slightly lower than the present water temperature around the Boso Peninsula. The reconstructed SST shows a decreasing at the horizon of 3m due to a Kuroshio weakening

As a future study, it is possible to reconstruct a spatial shift of the water masses by conducting similar studies in the Kazusa and Inubo Groups.

