

Calcareous nannofossil biostratigraphy and oxygen isotope stratigraphy of the lower part of the Pleistocene formation distributed in the central part of the Pacific side of Japan

*桑野 太輔¹、久保田 好美²、万徳 佳菜子²、亀尾 浩司³

*Daisuke Kuwano¹, Yoshimi Kubota², Kanako Mantoku², Koji Kameo³

1. 千葉大学融合理工学府地球環境科学専攻、2. 国立科学博物館、3. 千葉大学理学研究院地球科学研究部門

1. Division of Earth and Environmental Sciences, Graduate School of Science and Engineering, Chiba University, 2. National Museum of Nature and Science, 3. Department of Earth Sciences, faculty of Science, Chiba University

Calcareous nannofossils, tiny calcite shells produced by calcareous nanoplankton, have been utilized to correlate marine strata and to determine their geologic ages. In the Quaternary, traceable sixteen nannofossil biohorizons were recognized (e.g., Sato et al., 1991) and some chronological studies have been done in order to test whether they were synchronous events or not based on comparative studies with astronomically tuned timescale in the equatorial Atlantic, the equatorial Pacific and the Mediterranean (e.g., Gradstein et al., 2012). This study aims at establishing the early Pleistocene age model based on oxygen isotopes in the central part of the Pacific side of Japan and evaluating synchrony of the early Pleistocene nannofossil biohorizons detected by Kuwano et al. (2019). We analyzed stable oxygen isotopes of a planktonic foraminifera, *Globorotalia inflata* from the upper part of Kiwada Formation in the Kazusa Group, a lower Pleistocene formation in the Pacific side of Japan. Isotopic measurements were performed by MAT253 Isotope mass spectrometer coupled with a Kiel IV carbonate device in the National Museum of Nature and Science.

An oxygen isotope curve obtained from 44 samples was correlated with the LR04 stack curve (Lisiecki and Raymo, 2005) and Marine Isotope Stages (MIS) 40 to 36 were recognized in the formation. Two calcareous nannofossil biohorizons, the last occurrences (LO) of large forms of *Gephyrocapsa* (>5.5 μm) and *Helicosphaera sellii* coincide with MIS 37/38 boundary and MIS 40, respectively. The LO of large forms of *Gephyrocapsa* is slightly older than those in other areas because this biohorizon is mostly situated in the early part of MIS 37 (Raffi et al., 2006). On the other hand, the LO of *Helicosphaera sellii* is found in MIS 38 in the northeastern Atlantic (Sato et al., 2009) and MIS 42 in the eastern equatorial Pacific (Wei, 1993). This biohorizon is possibly diachronous bioevent due to sporadic occurrences of this species.

Reference

Kuwano et al, 2019, Micropaleontological Reference Center Meeting 2019, O-4., Gradstein et al., 2012, The Geologic Time Scale 2012. Boston, USA, Elsevier, 1083-1127., Lisiecki and Raymo, 2005, Paleocyanography, 20, PA1003., Raffi et al., 2006, Quaternary Science Reviews, 25, 3113-3137., Sato et al., 1991, Scientific Results, ODP, 117, 37-54., Sato et al., 2009, Data Report, IODP, 303/306., Wei, 1993, Paleocyanography, 8, 85-99.

キーワード：石灰質ナノ化石、化石基準面、第四紀、酸素同位体層序

Keywords: Calcareous nannofossil, Biohorizon, Quaternary, Oxygen isotope stratigraphy

