

Palynological assemblages and ca. 400-1000 ka climate changes for a 250 m core (CHOSHI-1) from the Boso Peninsula, central Japan

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The Choshi Core (CHOSHI-1), which was drilled in 1998 at Choshi city, Chiba by the Ocean Research Institute, Univ. of Tokyo, is 250 m long consisting of nearly homogeneous hemipelagic olive grey (sandy) muds except for the uppermost interval (Fig.1). Grain size, total organic carbon, magnetic susceptibility, resistivity, oxygen isotope, carbon isotope, etc have been analyzed for the core materials (e.g., El-Masry, 2002). Detailed sediment description and tephra analysis have shown that the Choshi Core ranges from the Umegase Group (MIS 21~23) to the Jizodo Group (MIS 11). The Brunhes/Matuyama boundary is recognized around 165 m in depth and many marker tephras (J4, Ks11, Ks22, Ku1, Ku6c, etc) provide detailed tephrochronology.

We note that the Kazusa/Shimoso Group is provided an exceptionally good age control whereas many Early-Middle Pleistocene strata in the world suffer from the lack of reliable timescale (e.g., Okuda et al., 2002a). Its marine origin allows a direct comparison with the astronomical cycles based on oxygen isotope analyses or so, and its high sedimentation rate can potentially enable detection and intercontinental correlation of millennial-order climate changes in the Early-Middle Pleistocene. The marine origin could frequently result in a low influx level of terrestrial microfossils, but we have confirmed that many muddy parts of the Shimoso Group contain a sufficient amount of fossil pollen, based on our preliminary analysis at Sakata, Kimitsu to the south of Chiba city (Okuda et al., 2002b).

Here we provide the initial report of our detailed palynological investigation for the Choshi Core. 240 of sediment samples are subsampled every 1 m from the major core log with the exception of the uppermost 10 m. Both the relative and absolute analyses have been made. Results show a general alternation of subarctic conifers (*Picea*, etc) and temperate conifers (*Cryptomeria*, etc), depicting ca. 100-ky climate cycles that are consistent with a parallel oxygen isotope dataset. The Chonan and Kongochi Group are characterized by dominant *Picea* pollen as a consequence of typical full-glacials. By contrast, *Cryptomeria* values are higher in the lower part of the Kasamori Group, suggesting the warmer interglacial conditions. *Fagus* is also abundant but *Castanopsis* and *Cyclobalanopsis* are not common even in interglacial phases, probably due to the hemipelagic sedimentary environments. In the lower part of the core, relatively smaller-sized *Taxodiaceae* pollen occurs suggesting the persistence of Tertiary-type forest with extinct *Metasequoia*.

References

[1] El-Masry, M.M.I. (2002). Sedimentation and physical property variability of hemipelagic mudstone in response to the Pleistocene glacial and interglacial cycles. Ph.D. Dissertation, University of Tokyo, 316 pp.

[2] Okuda, M., van Vugt, N., Nakagawa, T., Ikeya, M., Hayashida, A., Yasuda, Y. and Setoguchi, T. (2002a). Palynological evidence for the astronomical origin of lignite-detritus sequence in the Middle Pleistocene Marathousa Member, Megalopolis, SW Greece. *Earth Planet. Sci. Lett.* 201, 143-157.

[3] Okuda, M., Okazaki, H. and Sato, H. (2002b). Middle Pleistocene pollen assemblages and their implications for the Yabu Formation, Boso Peninsula, central Japan. *The Quat. Res. (Daiyonki-Kenkyu)* 41, 403-412.

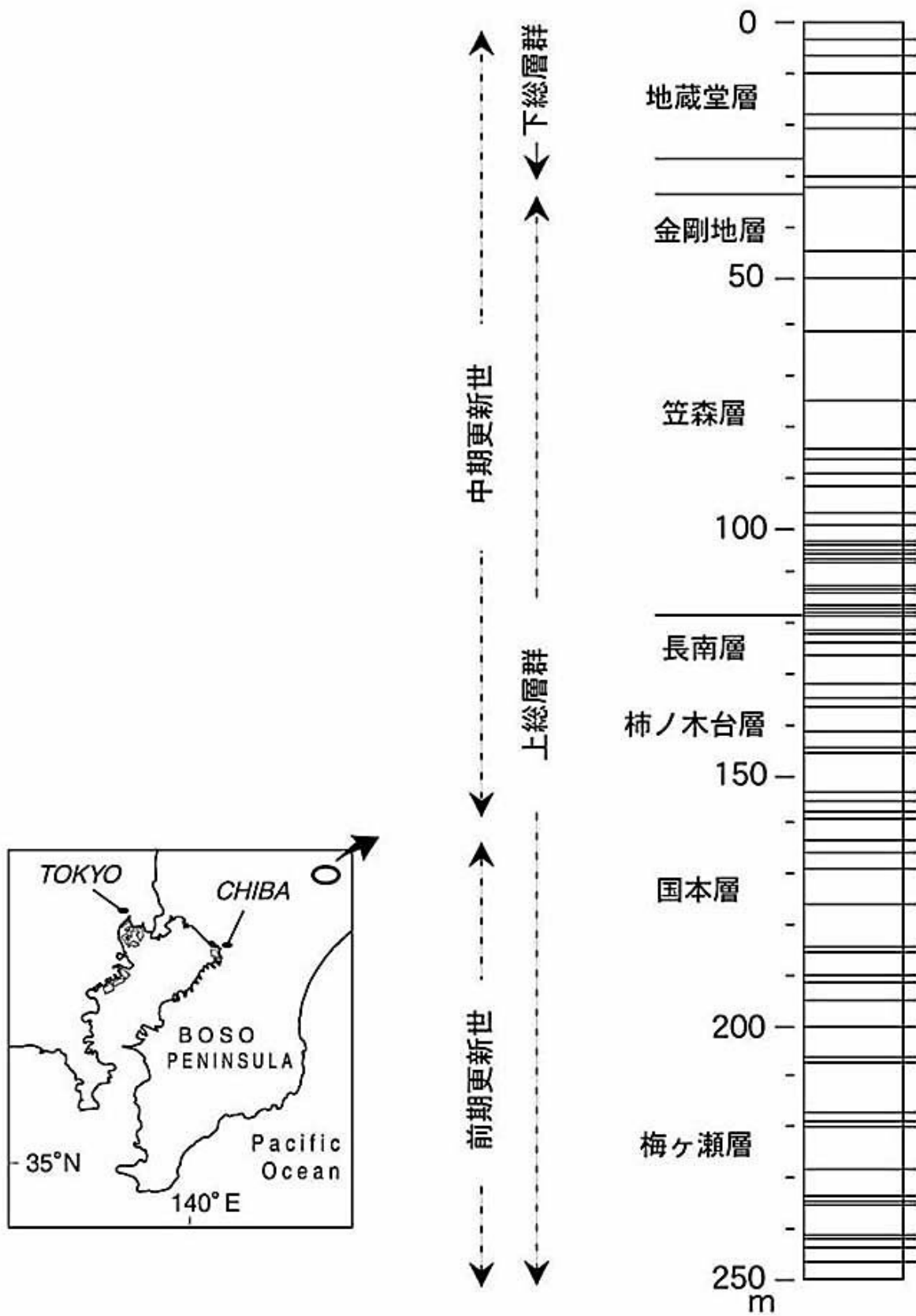


図1. 銚子コア (CHOSHI-1) の地点と層序