

Paleomagnetic records around the Mammoth reversed subchron from the Mera Formation, Chikura Group, distributed in the southernmost part of the Boso Peninsula

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Introduction

The Chikura Group, which corresponds to the upper Pliocene to lower Pleistocene, is distributed in the southernmost part of the Boso Peninsula. The source of the sediments in the Chikura Group is thought to be the Izu-Bonin Arc, and volcanoclastic grains are known to maintain a stable palaeomagnetic signal. The Mera Formation of the Chikura Group is continuously exposed along the Mera Coast of Tateyama City, Chiba Prefecture. A detailed magnetostratigraphy corresponding to the C2An.3n to C2An.2n paleomagnetic chron, including the upper and lower reversal boundaries of the Mammoth reversed subchron, was constructed using a hybrid demagnetization method combining 250°C thermal demagnetization (ThD) and progressive alternating field demagnetization (pAFD) in a series of sections along the Mera coast (Tanimoto et al., 2022JpGU). However, the possibility that secondary magnetization was not removed and the influence of structural motion prevented a detailed discussion of the paleomagnetic variations. In this presentation, we report the results of paleomagnetic measurements on a sister specimen of Tanimoto et al. (2022JpGU) using the hybrid demagnetization method, in which pAFD is performed after ThD at 300°C. In addition, the paleomagnetic record obtained from the Mera coast is re-examined.

Paleomagnetic variation

The lower Mammoth boundary exhibits a minimum of paleointensity and a period of unstable intermediate polarity. In addition, the positive polarity orientation has a significantly shallower inclination, mostly consistent with the report by Haneda and Okada (2022).

The upper Mammoth boundary, there is no relative paleointensity minimum or unstable intermediate polarity periods. This indicates a lack of strata around the reversal boundary, and it is necessary to trace another outcrop of the contemporaneously deposited Mera Formation to reconstruct the paleomagnetic record in upper Mammoth boundary.

The intermediate polarity intervals do not necessarily correspond to the relative paleointensity minima, but in most of them the virtual geomagnetic pole is plotted over the North Pacific Ocean. This may indicate that non-axial dipole magnetic fields were dominant near the North Pacific, influencing geomagnetic excursions and other events.

References

Haneda, Y., Okada, M. (2022) A record of the lower Mammoth geomagnetic polarity reversal from a marine succession in the Boso Peninsula, central Japan. *Geophysical Journal International*, 228:1.
Tanimoto, A., Okada, M., Hayashi, R. (2022) Magnetostratigraphy of the Mera Formation, Chikura Group, southernmost part of the Boso Peninsula. Abstract of Japan Geoscience Union Meeting 2022.

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