

A paleomagnetic record of the upper Olduvai polarity transition from the Hata Formation, Chikura Group, in the southernmost part of the Boso Peninsula

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The Chikura Group, located at the southern tip of the Boso Peninsula, is an Upper Pliocene to Lower Pleistocene marine succession. The Chikura Group bears strong and stable paleomagnetic signals because one of the sediment sources is thought to be the Izu-Ogasawara volcanic arc. It is also suitable for biostratigraphic and paleoceanographic studies because it produces abundant microfossils such as foraminifera and calcareous nannofossils.

In the upper Chikura Group, an oxygen isotope stratigraphy established using benthic foraminifera, indicated that the upper part of the Hata Formation was corresponded between 1.59 Ma and 1.82 Ma (MIS55 ~ MIS64) including the upper Olduvai boundary (Okada & Furukawa, 2013). However, detailed paleomagnetic records have not been obtained in the upper part of the Hata Formation. Therefore, the purpose of this study is to conduct paleomagnetic studies in the top section of the Hata Formation in the Chikura Group to restore detailed geomagnetic variations across the upper Olduvai boundary.

In the section of the layer thickness of 14 m in the Hata formation thought to include the upper Olduvai boundary, samples for palaeomagnetic measurements were collected basically at every 1 m stratigraphic interval, but at every 0.1 m between 3 and 6.5 m, from a total of 41 horizons.

In this study, a hybrid demagnetization method consisting of a thermal demagnetization at 250 °C and a progressive alternating field demagnetization sequence. A relative paleointensity (RPI) was deduced from a hybrid demagnetization of an anhysteretic remanent magnetization (ARM). The measurements were carried out at Center for Advanced Marine Core Research, Kochi University. The variation of the VGP latitudes indicates that the upper Olduvai boundary is situated between 3.3 m and 4.2 m. On the other hand, since the RPIs exhibit low values in the normal polarity interval below the boundary, a further study has to be done in the lower succession to discuss the starting process of the upper Olduvai reversal.

Reference

Furukawa & Okada, 2013, "Oxygen isotope stratigraphy at the top section of the Hata formation, the Chikura group in the southern part of the Boso Peninsula", the Geological Society of Japan The 120th Annual Meeting

Keywords: Olduvai, polarity transition, Boso Peninsula