

## Centennial-resolution terrestrial climatostratigraphy and Matuyama-Brunhes transition from a loess sequence in China

\*Masayuki Hyodo<sup>1</sup>, Kenta Banjo<sup>2</sup>, Tianshui Yang<sup>3</sup>, Shigehiro Katoh<sup>6</sup>, Shi Meinan<sup>3</sup>, Yuki Yasuda<sup>4</sup>, Jun-ichi Fukuda<sup>1</sup>, Masako Miki<sup>2</sup>, Balázs Bradák<sup>5</sup>

1. Research Center for Inland Seas, Kobe University, 2. Department of Planetology, Kobe University, 3. China University of Geosciences, 4. Institute of Seismology and Volcanology, Hokkaido University, 5. Department of Physics, EPS, University of Burgos, 6. Museum of Nature and Human Activities, Hyogo

Terrestrial records of the last geomagnetic reversal often have few age constraints. Chronostratigraphy using suborbital-scale paleoceanic events during marine isotope stage 19 may contribute to solving this problem. We applied the method to an 8-m-long, high-resolution paleomagnetic record from a loess sequence in China, and revealed millennial-to-sub-centennial scale features of the Matuyama-Brunhes (MB) transition. All samples were subjected to progressive thermal demagnetization with 14-15 steps up to 650-680°C. As a result, 96 % of the samples yielded a high-quality remanent magnetization. The MB transition terminated with a 75-cm-thick zone with nine polarity flips. The polarity flip zone, dated at about 779-777 ka, began between the warm events “I” and “J” and terminated at the end of the cooling event coincident with the lowest axial-dipole strength interval. Most polarity flips occurred within 70 years. The virtual geomagnetic poles (VGPs) in the upper polarity flip zone clustered in the SW Pacific region, where the MB transitional VGPs from lavas of the Hawaiian and Canary Islands and lacustrine deposits of Java also clustered. These sites were probably dominated by dipolar fields. The absence of transitional fields across polarity flips implies a short time span for averaging fields due to a thin loess-magnetization lock-in zone. The reverse-to-normal polarity reversal dated at about 778 ka in Lingtai occurred at the end of the SW Pacific VGP zone, an important key bed for MB transition stratigraphy. The reversal is a good candidate for the main MB boundary. We found an excursion at about 766 ka spanning about 1 ka.

Keywords: geomagnetic reversal, Calabrian-Chibanian boundary, East Asian monsoon, loess magnetism