

SEM036-14

Room:301B

Time:May 26 17:45-18:00

Matuyama-Brunhes polarity transition features from Sangiran, Java

Masayuki Hyodo^{1*}, Ikuko Kitaba¹, Shuji Matsu'ura², Yoshihiro Takeshita³, Megumi Kondo², Hisao Kumai⁴

¹Kobe University, ²Ochanomizu University, ³Shinshu University, ⁴Osaka City University

Detailed features of the Matuyama-Brunhes (M-B) polarity reversal transition are obtained from a 7-m thick section of fluvio-lacustrine sediments in Sangiran, Java. Besides the previously reported multiple short reversal episodes, relative paleointensity (RPI) was determined with magnetizations of sediments whose magnetic carriers are magnetite (titano-magnetite) and hematite. RPI was calculated with the same coercivity spectra of natural remanent magnetization (NRM) and normalizers. We used a component of NRM demagnetized in a peak alternating field (AF) of 30 mT subtracted by NRM demagnetized in a peak AF of 100 mT (NRM30-100). Two normalizers were used; one is anhysteretic remanent magnetization (ARM) demagnetized in a peak AF of 30 mT (ARM30), and the other is isothermal remanent magnetization (IRM) demagnetized in a peak AF of 30 mT (IRM30). ARM was imparted with a peak AF of 100 mT superimposed on a DC biased field of 50 ?T. IRM was imparted with a DC field of 100 mT. Therefore, not only NRM30-100 but also ARM30 and IRM30 are mainly carried by magnetite, and scarcely contributed by hematite whose remanent coercivity is higher than 100 mT. Magnetic data of 3 to 5 specimens per horizon were averaged. The horizon mean NRM30-100 value varies by 320 times. On the other hand, the horizon mean values of NRM30-100/ARM30 and NRM30-100/IRM30 (RPI proxies) vary by only 13 and 10 times, respectively, being consistent with the range of observed RPI variations across the polarity transition. The two RPI proxy curves quite well agree with each other, showing double minima. The first RPI minimum occurred between the first two short reversal episodes, and the second one in a broad range from the main polarity boundary to the third short episode, followed by a rapid increase in RPI. The RPI variation pattern is quite similar to that of the M-B transition record from rapidly deposited (50-60 cm/ka) sediments of Osaka Bay, Japan. Four excursions with VGP latitudes lower than 45 degrees were observed just before the main polarity boundary. The VGPs are distributed in the western south Pacific, overlapping the VGP cluster of the transitional fields from Hawaiian lavas Ar/Ar dated at 776 ka in average, and a Canary Island lava Ar/Ar dated at 780 ka. The base of the M-B transition lies about 5 m above the tektite horizon, which confirms the transition is distinct from the precursor event.

Keywords: geomagnetic polarity transition, Matuyama-Brunhes, relative paleointensity, Java, transitional VGP