

High resolution paleomagnetic secular variation records from Lake Biwa and its implications on core dynamics

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We have conducted measurements on one of the three piston cores taken from Lake Biwa off Takashima (BWK12-2; length 1633 cm). Sediment comprises of clay intercalated with at least 13 ash layers. Thirteen horizons were dated with ¹⁴C using plant pieces giving a maximum age estimate of more than 40 ka. Paleomagnetic cube specimens, u-channel samples and LLchannel samples were taken from the core. Paleomagnetic cube specimens were measured with a SQUID Rock Magnetometer at AF demagnetization steps of 0-80 mT. Results of inclination from the cube samples show an agreement with the paleosecular variation reported by Ali et al. (1999). For example, Inclination show a minimum of ~40 ° at 2600 year BP and a maximum of ~58 ° at 3400 year BP, both of which can be correlated with a minimum 'h' at 2400 year BP and a maximum 'i' at 2900 year BP presented by Ali et al. (1999), respectively. There are reports on "geomagnetic spikes" or "archeomagnetic jerk" from the Near East ca. 980 BC and 890 BC (Ben-Yosef et al., 2009; Shaar et al., 2011). Further, relative paleointensity is estimated from NRM and ARM measurements using discrete and u-channel measurements. Rapid change of paleomagnetic direction and intensity will be discussed in association with the global compilation of paleomagnetic records.

Keywords: archeomagnetic jerk, relative paleointensity, core dynamics