

## Long-term secular variation in geomagnetic inclination during Brunhes Chron recorded in sediment cores from Ontong-Java Plateau

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A paleomagnetic study has been conducted on three gravity cores obtained from the Ontong-Java Plateau in the western equatorial Pacific in order to investigate long-term secular variations during the Brunhes Chron. The cores consist of nanofossil foraminiferal ooze, and covers the last 500 to 800 kyrs with average sedimentation rates of 6 to 9 m/m.y. Downcore changes of magnetic concentration represented by magnetic susceptibility are factor of six or less, and variations in magnetic grain size and mineralogy are estimated to be small from the hysteresis parameters, ratio of anhysteretic remanent magnetization (ARM) to saturation isothermal remanent magnetization (SIRM), and S ratio. These results indicate that the sediments are rock-magnetically homogeneous in general, and are hence suitable for relative paleointensity estimation. I chose SIRM as a normalizer for relative paleointensity. The three cores could be precisely correlated with each other using relative paleointensity variations. Depth-to-age conversion was carried out by tying to the Sint-800 paleointensity stack (Guyodo and Valet, 1999). The ages are consistent with the oxygen-isotope stratigraphy available for one of the three cores. Inclination variations were obtained after alternating-field demagnetization. Large inclination anomaly, about -7 deg in average, was observed, as is predicted in the western equatorial Pacific from the model of Johnson and Constable (1997) based on the compilation of paleodirectional data. The inclination records of the three cores were integrated into a single record based on the correlation by the relative paleointensity. Long-term inclination variations of the order of 10 to 100 kyrs were recognized. The inclinations tend to deflect toward negative when relative paleointensity is low.

We reported a continuous record of inclination and paleointensity during the last 2250 kyrs from a marine sediment core of 42m long taken in the West Caroline Basin, western equatorial Pacific (Yamazaki and Oda, 2001 (the last SGEPS meeting); 2002 (in press)). This record reveals the presence of 100-kyr periodicity in inclination as well as intensity, which suggests the geomagnetic field being modulated by the orbital eccentricity. Correlation between inclination and intensity shifted from anti-phase to in-phase corresponding to a geomagnetic polarity change from reversed to normal. We proposed a model to explain the observation; strength of the geocentric axial dipole field varies with 100-kyr periodicity, while persistent non-dipole components do not. The inclination variations obtained from the Ontong-Java Plateau are similar in general to the record from the West Caroline Basin. The two regions are separated about 2800 km. The inter-site consistency strongly suggests that the long-term inclination variations are of geomagnetic origin, and supports our model.