

Paleomagnetic study of the IODP Site U1335 sediments in the eastern equatorial Pacific - relative paleointensity and inclination anomaly over the last 8 Myr

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Obtaining continuous records of relative paleointensity (RPI) and inclination anomaly (ΔI) is inevitable to understand the fundamentals of the geodynamo, but available records older than ~ 3 Ma are still very limited in time and space. We performed a paleomagnetic study of the Integrated Ocean Drilling Program (IODP) Site U1335 sediments in the eastern equatorial Pacific to obtain continuous RPI and ΔI records since ~ 8 Ma. Slow deposition, ~ 8.4 m/Myr or less, limits the resolution of the records but did allow for determination of long-term variations. Rock-magnetic measurements showed that biogenic magnetite dominates the magnetic mineral assemblages, and the proportion of biogenic to terrigenous magnetic minerals increases prior to ~ 4 Ma. The average paleointensity between ~ 4 and 8 Ma is approximately 30% lower than that from 0 to ~ 4 Ma. The apparent reduction of RPI at ~ 4 Ma reaches approximately $\sim 50\%$, but $\sim 20\%$ of this is estimated to be artificial, induced by the increase in the proportion of biogenic magnetite. No relation between paleointensity and polarity length is recognized for the last ~ 8 Myr. The magnitude of ΔI is slightly larger during reversed polarity chrons ($4.43^\circ \pm 1.47^\circ$) than normal polarity chrons ($0.69^\circ \pm 2.98^\circ$) over the last ~ 5 Myr, which agrees with the available TAF models of this time span. Prior to ~ 6 Ma, the sign of ΔI during the normal chrons might have switched to positive, and ΔI during reversed chrons might have been slightly larger than that after ~ 5 Ma.