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 ~50%, but ~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 chron (4.43° ±1.47°) than normal polarity chron (0.69° ± 2.98°) 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 chron might have switched to positive, and ΔI during reversed chron might have been slightly larger than that after ~5 Ma.