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Relative geomagnetic paleointensity estimation from the IODP Site U1331 and U1332 sediments for Eocene and Oligocene

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Integrated Ocean Drilling Program (IODP) Expeditions 320 and 321 recovered sediment cores from equatorial Pacific. Cores taken from Sites U1331 and U1332 covered Eocene and Oligocene (Expedition 320/321 Scientists, 2010). Although many efforts have been made to reveal relative geomagnetic paleointensity variations in geologic time, those prior to ca. 3 m.y. have been not yet reported except a few studies.

This study concentrates on paleomagnetic and rock magnetic measurements on the Site U1331 and U1332 sediment cores. The measurements include stepwise alternating field demagnetization of the natural remanent magnetization (NRM), the anhysteretic remanent magnetization (ARM) and the isothermal remanent magnetization (IRM). The magnetostrartigraphy constructed from the NRM data show that the sedimentary section extends from 29.166 to 41.358 Ma for U1331 (10-90 mcd), and from 23.030 to 41.358 Ma for U1332 (20-125 mcd).

Intensity variation of ARM and IRM is within about a factor of six throughout the core. Ratio of ARM to IRM (ARM/IRM), that is index parameter for degree of magnetostatic interactions and/or proxy of magnetic grain size, differs between Eocene and Oligocene. These suggest that we should divide the cores into Eocene and Oligocene intervals in order to try relative paleointensity (RPI) estimation. RPI estimates have been done by using ARM and IRM as normalizers for NRM. RPIs by ARM and IRM generally show consistent variations. However, several experimental results imply that RPI by IRM may be more preferable. We will report the RPI estimates from the U1331 and U1332 cores and compare these estimates.