Rock magnetic and Paleomagnetic studies of the IMAGES core (MD012398) from off the Ishigaki island, Japan

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In this study, we used a giant piston core of 34 meter long which was taken during the IMAGES VII/2001 cruise from off the Ishigaki Island along the Okanawa trough (Water depth: 2140 m). The core lithology is mainly calcareous clay intercalating many volcanic ash layers. Based on oxygen isotopic analysis, the recovered section is correlated to MIS (marine isotopic stage) 12 to the present. Specimens for rock magnetic and paleomagnetic measurements were taken continuously with 1-inch plastic cubes from center part of split halves.

To verify sedimentary fabrics of magnetic grains, we attempted AMS (anisotropy of magnetic susceptibility) measurements for all specimens. At the top 7 m of the core, prolate AMS ellipsoids with vertical maximum axes are dominant, as well as in other IMAGES giant piston cores, suggesting that the core was vertically stretched at the top 7 m interval probably due to coring process.

Intensities of NRM (natural remanent magnetization) and magnetic susceptibility suddenly drops at 6 (mbsf) meters below sea floor to ca. 1/100 magnitude compare to the upper section. Below 6 mbsf of the core, most specimens exhibit that pAFD (progressive alternating field demagnetization) results do not point to the origins and S-ratios are lager than -0.9, which is indicating that magnetites are dissolved due to reduction state in the sediments and iron sulfide minerals might be dominant magnetic carriers.