Magnetic properties of piston core samples from the Oki Ridge (MD01-2407) and off Akita (MD01-2408): a progress report

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During Images VII cruise in 2001, two giant piston cores were recovered from Japan Sea; Core MD01-2407 (55.28 m in length) was recovered at the Oki Ridge in a water depth of 932 m, and Core MD01-2408 (33.38 m in length) from 806 m water in depth off Akita. Both cores consists mainly of alternating layers of homogeneous light colored silty clay and laminated or bioturbated dark colored silty clay, occasionally intercalating volcanic ash layers. The upper 12.3 m of Core MD01-2407 was assigned to oxygen isotope stage 5 and younger based on tephrostratigraphic and lithologic correlation with C-3 Core previously obtained from the Oki Ridge. Age of Core MD01-2408 off Akita is estimated from correlation of color reflectance data with Core MD01-2407.

We are now investigating magnetic properties of both cores in attempting to obtain high-resolution records of past geomagnetic field and paleoenvironmental changes. U-channel samples, typically 1.5 m in length with a 2 x 2 cm square cross section, were collected from the entire sequences and subjected to path-through measurements of low-field magnetic susceptibility (k) and natural remanent magnetization (NRM). Preliminary results suggest that magnetic mineral content seems to decrease around horizons of dark colored laminations at both sites. Furthermore, both of k and NRM intensity are significantly reduced below 11.5 m in Core MD01-2408 off Akita. It is suggested that these intervals have undergone reductive diagenesis and dissolution of magnetic minerals under anoxic conditions, resulting decreased values of the magnetic concentration parameters.