

# Characteristics of the Natural Remanent Magnetization (NRM) of a Core Collected from offshore Wilkes Land, East Antarctica

# Haruka Matsuoka[1]; Takaharu Sato[2]; Minoru Funaki[1]

[1] NIPR; [2] Faculty of Integrated Arts and Sci., Hiroshima Univ

Paleomagnetic and rockmagnetic studies were carried out in order to investigate the characteristics of natural remanent magnetization (NRM) of deep-sea sediments cored from offshore Wilkes Land, East Antarctica. The core is 540 cm long. The sediment material was siliceous silt of brownish gray color. Abundant foraminiferal skeletons in good preservation were observed throughout the core. Paleoclimatically induced lithological variations were not observed. Alternating-field (AF) demagnetization experiments using a stepwise AF field from 5 to 100 mT were conducted on all of the samples. The NRM intensities are 10-100 times higher than those commonly obtained from different localities. In the upper 460 cm of the core, most samples had stable single component magnetization, and remarkable high-stability components which survived up to 100 mT were observed. In the lower section of the core, in contrast, many samples showed more unstable (zigzag) demagnetization curves and secondary acquired magnetizations. The optimum AF demagnetization field intensity was assumed to be 30 mT, because the secondary magnetizations of every sample seemed to be completely demagnetized at that AF field. The down core NRM variation after demagnetization by the optimum field revealed that the core contains 3 polarity intervals. By using smaller cubic samples of 1 cc volume, the time resolution of the paleomagnetic record was much improved. Anhysteretic remanent magnetization (ARM) experiments were also conducted on all of the samples. The results of the AF demagnetization of ARM imply that the samples showing only soft NRM component possibly acquired their magnetization under a weak geomagnetic field. We also performed thermomagnetic analysis (applied fields: 1.0 T) in vacuum. Most of the samples from upper and lower of the core showed characteristic irreversible changes in the heating-cooling cycle. The conspicuous depressions between 200 and 220 degree centigrade, and humps between 220 and 350 degree centigrade were detected in Jr-T, Hc-T and Hrc-T curves. The values of Js and Jr after cooling are three times higher than before heating. In the second heating-cooling cycles in vacuum, the thermomagnetic curves became reversible. For further study, X-ray analysis and observations of magnetic minerals with TEM was carried out. Their results imply that the strong remanences of the sediments are carried by maghemite.