E135-P003 Room: Poster Session Hall Time: May 16

Sedimentary environmental change identified with magnetic analysis on a sediment core obtained from south area of Lake Tai-hu

Toshiaki Kawasaki[1]; Haruka Matsuoka[2]

[1] Geography, Tokyo Metropolitan Univ; [2] Gakushuin University Computer Center

A sediment core 98A was obtained from south area of Lake Tai-hu, eastern China, in a joint research between Nihon University and Eastern China Normal University, in Oct. 1998. So far, it is recognized that wide buried valley topographies are distributed around this area. It was formed in the period of past lower sea level and buried with the marine or lake sediments called soft clay deposited in the period of transgression, and ranges from the western part of the Lake Tai-hu to Hangzhou bay (Zheng et al., 1997). Based on diatom and foraminifer analyses in previous studies, it was clarified that twice transgressions entered into this valley from Hngzhou bay during the last tens of thousands of years (Endo et al., 1997). The coring site of core 98A (30 42’ 56.2 N, 120 11’ 31.0 E) situated in the middle the giant buried valley where the valley-filled deposits have greater thickness. In this study, some rock-magnetic experiments were made on these sediments. And the correlation between rock-magnetic properties derived from this study and results of foraminifer analyses in previous studies was discussed. The core is 22 m in length. Whole core sediments consist of soft clay with lamination or massive clay and silt. The core was split in half lengthwise and discrete samples for rock-magnetic experiments (measurement of magnetic susceptibility, stepwise acquisition and AF demagnetization of IRM) were obtained using plastic cubes of 7cc (562 cubes in total). Measurements of magnetic susceptibility were conducted on discrete samples using a Bartington MS2. After the measurements of susceptibility, stepwise acquisition of IRM and AF demagnetization of IRM were conducted on selected samples using an ASC IM10-30, Natsuhara-Giken SMD-88 magnetometer and DEM-8601 demagnetizer. The downcore variation of susceptibility is summarized as follows. At the upper part of the core except for the disturbed soil (between 2.2 and 7.6 m), susceptibility increases with depth to the peak value (37.6 E-5 vol.SI) at 7.6 m, and keeps high values until 10.3 m. But between 11.0 and 15.0 m, the value decreases to 11-12 E-5 vol.SI. And at the bottom of the core (Between 15.0 and 22 m), the value increases again same as the upper part. This change pattern is also seen in the downcore variation of IRM intensity inparted in field of 2.5 T. From the results of rock-magnetic experiments, two types of core sediments were regarded. In the upper and bottom parts of the core, which are characterized by comparatively higher susceptibility and IRM intensities, stepwise acquisition of IRM showed steep increasing until applied field of about 300mT and saturated. This behavior was observed in the pure magnetite sample. And IRM was demagnetized to half of the intensity in a peak alternating field of 20 mT. Thus, lower coercivity components are dominant in these intervals. On the other hand, in the brownish color horizon (between 11.0 and 15.0 m) which is characterized by lower susceptibility and IRM intensities, IRM gradually increased with applied field and never saturated at several hundreds mT, and was demagnetized only half of the intensity even in a peak alternating field of 100mT. This indicates there is relatively higher contribution of higher coercivity minerals (hematite, goethite) in this interval. Presence of these minerals indicates that this interval was deposited in more oxidized environment, such as an absence of sea water around this area. In previous foraminifer analyses, no foraminifer fossil was derived from this interval. Therefore, this interval has also been considered to be the period of no influence of sea between the earlier transgression (stage5) and Holocene transgression (Yoshida et al., 2000). Interpretation on paleoenvironmental changes of this area derived from rock-magnetic investigations is corresponds with results of previous studies.