Linking physical property record of Choshi Pleistocene sediments, Central Japan, to global climatic change

Moamen M.I. El-Masry[1], Saneatsu Saito[2]

[1] ORI, U-Tokyo, [2] JAMSTEC

We have studied the hemipelagic mudstone, at the margin of the tectonically active Kazusa forearc basin, to reconstruct paleoclimatic change using physical property record. For this study, a scientific drilling was conducted at Choshi area, and a 250-m core was recovered. The study involved a high resolution MST and downhole logging, with facies analysis of the core. The physical property record reveals the Milankovitch control on the sedimentation of Choshi sediments. It shows a major change at the boundary between Yokone Formation and the overlying Kurahashi formation.

Glacio-eustasy has been shown to be the prime control on the sediment accumulation of the Plio-Pleictocene Kazusa Group, a siliciclastic forearc basin fill exposed on the Boso Peninsula. This study involved a high-resolution physical property record and facies analysis for the high sedimentation hemipelagic mudstone succession of Inubo Group, which deposited at the northern margin of the Kazusa forearc basin, at Choshi, during the globally recognized glacial-interglacial cycles, which offers the opportunity to test the Milankovitch control on the sedimentation and on the physical property record of Inobu Group.

For this study, a scientific boring was conducted at Choshi, and 250-m core was recovered in September,1998.The physical properties involved downhole geophysical logging (natural gamma ray, electrical resistivity, density, and caliper logs (at 5-cm interval); Multi-sensor-track (MST), where GRAPE density, and magnetic susceptibility were measured at 2- cm intervals on the whole-round core. On the working halves of the core, color and index properties (e.g. bulk density) were measured. Sand fraction was microscopically studied for provenance.

Based on facies analysis of Choshi core, Katori, Kurahashi and yokone formations were identified and described.Three age control points were identified, based on paleomagnetism and nannoplankton. The physical property cyclicity shows a major change at the boundary between Yokone Formation and the overlying Kurahashi formation. The former exhibit high frequency low amplitude cycles, whereas the later exhibits high amplitude, very low frequency cycles.