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Physical properties, geologic age and magnetic fabrics of sediments collected from off Miura-Boso region

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Kanto, the capital region of Japan, is one of the large metropolitan areas in the world and is the central district of politics, economy and industry. We know great earthquakes will happen absolutely some day in the future and can imagine the extensive damage of the capital region.

The southeast of the Kanto located unique tectonic setting, the trench-trench-trench triple junction, which comprises the North America Plate, the Philippine Sea Plate and the Pacific Plate (Seno et al., 1987). The Philippine Sea Plate subducts beneath the North America Plate, moreover the Pacific Plate subducts beneath the Philippine Sea Plate (Seno et al., 1987). Thus, tectonic setting in the Kanto region is complicated, and large earthquakes occurred repeatedly a number of times in the past. During Japanese-French KAIKO project, various researchers obtained data of a lot of seismic prospecting, bathymetric surveys and piston cores so far in Sagami Bay and off Boso Peninsula (e.g. Nakamura et al., 1987), but we need to know more geological records of large earthquakes associated with such double plate subduction.

Many geologists, geophysicists and seismologists attempt to predict recurrent interval and magnitude of next large earthquakes by drilling from shallow to deep depths as an asperity horizon inducing large earthquakes. It is called as the Kanto Asperity Project. To know paleoseismic history in the Kanto region using shallow drilling cores is one of the main targets in this project.

In this study, we show physical properties, geologic ages and magnetic fabrics of deep-sea sediments collected from Sagami Bay and off Boso Peninsula, prior to drilling project to know whether paleoseismic records can decipher from the core sediments. 13 piston cores of about 4 m long were collected during JAMSTEC cruises KY07-14, KR09-10, and KT-10-10. The core sediments were mostly composed of hemipelagic clayey sediments interbedded with volcanic ash layers. Bathymetric surveys by seabeam mapping, sidescan SONAR investigation and subbottom profiling in the coring sites were also conducted during these cruises. Based on these data, we discuss sedimentation and erosional processes in Sagami Bay and off Boso Peninsula to decipher the paleoseismic records.

Keywords: Porosity, Shear strength, 14C, Volcanic ash layer, Anisotropy of magnetic susceptibility, Bathymetric map