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Geological structures and active fault distributions in the Sagami Trough offshore Boso Peninsula

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Around the Boso Peninsula, the Philippine Sea Plate subducts beneath the Honshu Island at the Sagami Trough and the Pacific Plate subducts beneath the PHS Plate and the North American Plate at the Japan Trench. Especially, the offshore Boso Peninsula has very complicated geological histories by the influence of highly oblique convergence of the PHS Plate and collision of the Izu-Bonin Arcs from 15Ma. The geological body of this region is composed of the accretionary prism distributed in the Miura and the southern Boso peninsulas. Moreover, this area is the seismogenic zone in which the large-scale earthquakes called Kanto earthquake repeatedly occurred. The 1703 Genroku and 1923 Taisyo Kanto earthquakes have repeatedly occurred at intervals from about 200 to 300 years. Additionally, the tsunami and crustal movements occurred at the earthquake in this area, too. Tsunamis caused by earthquakes suggest that faults reach the seafloor. However, the distribution of active faults is unclear due to few studies. The objective of this study is to elucidate the subbottom structure and distribution of active faults offshore Boso area, especially Boso canyon (Boso escarpment), in the Sagami Trough using by the bathymetric map, IZANAGI backscattering image, and Multi-channel seismic (MCS) reflection profiles. MCS data using in this study was acquired by JAMSTEC during KR08-04 cruise in 2008 and bathymetric data was acquired by JAMSTEC and Japan Coast Guard.

Seismic reflection survey offshore Boso area provided very clear images of the upper Philippine Sea plate and the subbottom structures of trough fill sediments and the landward slope of the Sagami Trough. Some faults in the accretionary prism are recognized in this area. These faults interpreted as splay faults branched from the PHS plate boundary (Miura et al., 2010). Lineaments as fault topographies were recognized around the Boso canyon in high accuracy bathymetric map. The splay fault distribute under the Boso canyon by our bathymetric map and MCS profiles. This result suggests that the activity of the splay fault contributes to the development of the Boso canyon.

<Reference>

Miura, S., Yamashita, M., Takahashi, N., Nozaki, K., No, T., Kodaira, S., Kobayashi, R. (2010): Deep structural images off Boso region investigating with multichannel seismic reflection profiles. Japan Geoscience Union Meeting 2010, SSS023-05.

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