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Deep structural images off Boso region investigating with multichannel seismic reflection profiles

Seiichi Miura^{1*}, Mikiya Yamashita¹, Narumi Takahashi¹, Kenji Nozaki², Tetsuo No¹,
Shuichi Kodaira¹, Reiji Kobayashi³

¹JAMSTEC, ²Chiba University, ³Kagoshima University

Off Boso is a complex plate convergence region forming the Boso Triple Junction since the Philippine Sea and the Pacific Plates are subducting beneath land plate. Associated with the plate convergence, varied seismic activities have been observed as small and large earthquakes. The 1703 Genroku Earthquake had a large rupture zone from Off Boso region to Kanagawa Prefecture. The 1923 Taisho-Kanto Earthquake ruptured in the western half of that of the 1703 event, followed by a largest aftershock Off Boso region. On the other hand, slow-slip events have been observed Off Boso region in every 5-7 years, of which moment magnitudes are larger than six. These varied seismicity are thought to be affected by the complex plate configuration and tectonic situations. One of effective way for understanding the plate configuration is a seismic structural imaging. In 2008 and 2009, Japan Agency for Marine-Earth Science and Technology (JAMSTEC) has been conducted multichannel seismic (MCS) reflection surveys using a tuned airgun array and a hydrophone streamer with dense group interval Off Boso region. Acquired MCS data shows that the top of Philippine Sea Plate is clearly observed in the whole of survey area. In a seismic line crossing the Boso Triple Junction with northwestward direction, the top of Philippine Sea Plate is observed from the Boso Triple Junction to 150-km landward point, of which depth is varied only from 6 to 10 km below sea level, indicating small dip angle excepting local unevenness. Several strong reflection events as splay faults branching from the top of Philippine Sea Plate are observed. In the presentation, we will show the configurations of the top of Philippine Sea Plate and remarkable reflection events with discussions about the structural characteristics and varied seismicity.

Keywords: MCS, Off Boso, earthquake, Philippine Sea Plate, slow slip