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Structural characteristics associated with seismogenesis Off Boso region investigating from MCS profiles

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Off Boso is located in the southeastern coast of Kanto region, subducted by the Philippine Sea and the Pacific Plates at the plate boundaries as Sagami Trough and the Japan Trench, respectively. Associated with the subductions, magnitude eight-class great earthquakes (e.g. 1703 Genroku, 1923 Taisho-Kanto events) had provided serious damages in this region. Moreover, slow-slip events have been observed off Boso region every 5-7 years since 1996, of which moment magnitude were equivalent to six (e.g. Ozawa et al., 2007). Slow-slip events are important for understanding the seismogenic cycles. Therefore, Off Boso is one of best region for the seismogenic study. Japan Agency for Marine-Earth Science and Technology (JAMSTEC) has conducted multi-channel seismic reflection (MCS) survey using R/V Kairei since 2008. The acquired MCS data is also contribute for site characterization of IODP proposal: Kanto Asperity Project. We reported the existences of seamounts at the plate boundary and splay faults connecting to major deep-sea channel from the MCS profiles along and across to the plate motion of the Philippine Sea Plate. Large amplitude and reverse polarity of reflection event at the plate boundary were also discovered in the slow-slip event area. We will report the structural characteristics around the slow-slip events especially for the seaward limit of the slow-slip events and northeastern edge of the Philippine Sea Plate using A5 line MCS data acquired in 2010. From A5 line data combined with previously acquired data, large amplitude reflection of the Philippine Sea Plate is distributed coincident with the slow-slip region. Landward trench slope of the A5 line data show that surface sediments and basement are not deformed near the trench axis but these are deformed landward region. The later can be caused by slumps of the trench slopes. These deformations may indicate the existence of deformation boundary as horst-graben structure of the Pacific Plate or northeastern edge of the Philippine Sea Plate. In this presentation, we will discuss tectonics and seismogenesis from the structural characteristics from MCS profiles.

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