

Lithology and physical property of sediments covering horst-graben structures of the Japan Trench: Preliminary results of KS-15-3 sediment core analysis

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Large coseismic slip along the shallow portion of the plate boundary fault beneath the Japan Trench caused the catastrophic tsunami of the 2011 Tohoku Earthquake (e.g. Fujiwara et al., 2011; Ito et al., 2011; Kodaira et al., 2012). Researches on core samples taken by D/V Chikyu (IODP Expedition 343, JFAST) revealed that the plate boundary fault at the IODP Site C0019 of the Japan Trench is composed of pelagic clay layer which contains large fraction of smectite, and low coseismic friction of smectite would contributed to the coseismic slip propagation along the shallow portion of the plate boundary fault (Ujiie et al., 2013; Kameda et al., 2015; Moore et al., 2015). However, high-resolution seismic profiles indicate heterogeneous distribution of pelagic clay layer, and there are several portions where the thicknesses of the incoming sediments are very thin (less than 50 m). To reconcile the nature of the "thin" incoming sediments, we sampled seven piston cores from horst-graben structures of the Japan Trench during the KS-15-3 cruise (R/V Shinsei Maru, May 3-19, 2015).

Cores were taken from four different settings: PC01 from graben, PC02 and PC07 from graben edge, PC03 and PC04 from horst, PC05 and PC06 from seaward trench slope, respectively. We present preliminary results of core analysis including visual core descriptions, X-ray CT images and successive density and magnetic susceptibility values measured by multi-sensor core logger (MSCL), and discuss sedimentation process of horst-graben structures that causes the diversity of incoming sediments.