

Tracking past earthquakes in the sediment record along the Japan Trench using giant piston coring: IODP proposal 866

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After the 2011 Tohoku-oki earthquake and its destructive tsunami, it is very important to understand the recurrence pattern of large earthquakes along the particular subduction area. Although onshore tsunami deposits provide a good recurrence record of huge tsunamis, the tsunami deposits might also reflect large far-field earthquakes and/or submarine landslides, and are useful only for the past few thousand years due to paleogeographic changes. Deep-sea event deposits (turbidites) deposited by earthquake-induced turbidity currents are a potential tool in the study of subaqueous paleoseismology. Previous studies in the central Japan Trench using conventional piston coring covering the last ~1500 years reveal good correlation between the deep-sea turbidite and onshore tsunami deposit record and historical documents. Furthermore, these studies also clarified the importance of surface sediment remobilization to generate earthquake-induced turbidity currents. Because sedimentary sequences in deep-sea environments are deposited in more stable conditions, intercalated event-deposits have a potential for understanding the recurrence pattern over long time-scale. The stratigraphic record of small trench-fill and graben-fill basins in the Japan Trench has great potential to record the past earthquake-related events. IODP proposal 866 proposes to obtain the long-term and complete record of large earthquakes along the Japan Trench, and to understand the impact of large earthquakes to sediment and carbon flux to the deep-sea environments.

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