

日本海溝堆積物中のタービダイトによる地震発生履歴の検討 Turbidite paleoseismology in the Japan Trench floor: Results from Sonne SO219A and Mirai MR12-E01 cruises

池原 研^{1*}, 金松 敏也², Strasser Michael³, Fink Hiske⁴, 長橋 良隆⁵, 宇佐見 和子¹, Wefer Gerold⁴, SO219A 乗船研究者¹, MR12-E01 乗船研究者¹

Ken Ikehara^{1*}, Toshiya Kanamatsu², Michael Strasser³, Hiske Fink⁴, Yoshitaka Nagahashi⁵, Kazuko Usami¹, Gerold Wefer⁴, SO219A shipboard party¹, MR12-E01 shipboard party¹

¹ 産業技術総合研究所地質情報研究部門, ² 海洋研究開発機構, ³ ETH, ⁴ ブレーメン大学, ⁵ 福島大学

¹ Geological Survey of Japan, AIST, ² IFREE, JAMSTEC, ³ ETH, ⁴ MARUM, University of Bremen, ⁵ Fukushima University

The large sea-floor displacement in the Japan Trench slope by the 2011 off the Pacific Coast of Tohoku earthquake was inferred from the repeated bathymetric surveys. Because the Japan Trench is a remarkable depression near the epicenter, the gravity flows generated by the earthquake and its related phenomena might be focused in the depression (more than 7500 m in water depth) and might form the gravity flow deposits like turbidites. Therefore, the Japan Trench is a target area to detect the past earthquake event deposits. To obtain the past earthquake records, we conducted two survey cruises; Sonne SO219A and Mirai MR12-E01 cruises. All of the cores obtained from the Japan Trench floor by two cruises (3 cores by Sonne and 4 cores by Mirai) showed the same lithostratigraphy. The 2011 event deposits, which were composed of thin sand at base and diatomaceous mud/ooze with multistoried upward fining grading structure, occurred at the uppermost part of the cores. Below the 2011 event deposit, at least three thick (several tens cm to a few meter thick) turbidite units were recognized. Third turbidite unit was very unique and was characterized by the calcareous nanno fossil bearing turbidite muds suggesting the transportation from upper-mid slope. A volcanic ash from the Towada volcano intercalated in hemipelagic mud between second and third turbidite units. Results on our tephra correlation using geochemical and petrographic properties suggest that the ash might be correlative to Towada-a ash, which occurred just above the Jogan tsunami deposits on the Sendai Plain. Radiocarbon dating using bulk organic carbon and radiolarian faunal assemblages suggested that the ash horizons are the Holocene deposits. Exact correlation of the ash layer is very important to connect the deep-sea event deposits in the Japan Trench and on-shore tsunami deposits on the Sendai Plain. The result indicates that turbidite along the Japan Trench might give us important information on the spatio-temporal occurrence of the past earthquakes.

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