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Temporal change of the 2011 Tohoku-oki earthquake- and tsunami-related event beds at off Sanriku forearc region

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Wide distribution of the 2011 Tohoku-oki earthquake- and tsunami-related submarine event deposits has been reported. Some event beds were formed by the repeated generation of turbidity currents with its interval of more than a few - a few tens days. These facts indicate the formation of the 2011 event deposits was occurred in wide range both in spatially and temporally. Large friction velocity of the tsunami waves might contribute to generate sediment resuspension and redeposition at shallow waters, and strong ground motion of the earthquake might affect the sediment remobilization in deep waters. Radiological measurements of the event deposits suggest the remobilization of surface sediments. However, we still do not know exact image what happened by the 2011 Tohoku-oki earthquake and its related tsunami in the entire off Sanriku region. To clarify the recurrence of the great earthquakes from marine sediment records, evaluation of preservation potential of the event deposits is essential. Repeated examination of sedimentary structures of the event deposits indicates that high sedimentation rate and low benthos activities are important factor for the preservation. A terrace at the lower slope and the Japan Trench floor, where has high sedimentation rates and low benthos activities, and sediments at which contains many fine-grained turbidites, is a potential area for the turbidite paleoseismology along the northern Japan Trench.

Keywords: event deposit, marine sediment, temporal change, 2011 Tohoku-oki earthquake and tsunami