

Bioturbation structures in tsunami deposits

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Tsunami deposits provide important information on the magnitudes and recurrence intervals of the causative tsunami events. However, such deposits might be modified or obliterated by subsequent physical disturbances and/or bioturbation of the sediment (bioturbation). For a clear understanding of the post-depositional alteration of tsunami deposits, it is necessary to monitor changes in sedimentary structures of the deposits several years after a tsunami event. Thus, we conducted field survey in the 2011-tsunami affected sea bottoms in 2016, to investigate preservation potential of the event layer. We obtained sediment core samples from ria coasts, northeastern Japan: i.e., from Onagawa Bay (Miyagi Prefecture, Seike et al., 2016, 2017), Samenoura Bay (Miyagi Prefecture), Kamaishi Bay (Iwate Prefecture), Otsuchi Bay (Iwate Prefecture), and Funakoshi Bay (Iwate Prefecture). From the all-sampling sites, tsunami deposits (sandy layer with parallel laminations) were recognized. In contrast, upper part of the layers was heavily bioturbated and lacks any physical sedimentary structures; the original sedimentary structures (parallel laminations) produced by the 2011-tsunami were obliterated by bioturbation. On the other hand, tsunamigenic coarse-grained deposit can be distinguished from ordinary background deposits (mud) based mainly on textural differences among the sediments in the semi-enclosed bays. Thus, recognition of the effects of post-depositional alteration of ancient tsunami deposits is important for the identification of paleotsunami events in the geological record.

References

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