

Taphonomical process of sandy tsunami deposit based on field observations at 1 year after the 2011 Tohoku-oki tsunami

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Deposited tsunami sediment immediately begins to experience the effects of physical, chemical weathering, and bioturbation, and is altered into the *fossil* tsunami deposit. This study discusses alteration and preservation process (i.e. taphonomy) of tsunami deposit on the basis of field observation of facies, thickness, distribution, and covering layer of the 2011 Tohoku-oki tsunami deposit one year after the tsunami event. The 2011 Tohoku-oki tsunami caused severe damage to the coastal regions of eastern Japan and left a sediment veneer over affected areas. The tsunami deposit thickness tapers landward from 56 cm to few millimeters across a gentle slope lowland. At 1 year after the event, thin tsunami deposit around the run-up limit is hardly distinguishable because it has been eroded or mixed with humic soil. On the other hand, the relatively thick deposit, more than 2 cm in general, has preserved original depositional structures and thickness. In the forest, the tsunami deposit has been covered with organic debris or partially decomposed organic debris layer. The tsunami deposit beneath the covering layer seems to be well preserved. Because the thin tsunami deposit has been lost in one year after the event, the area where the 2011 deposit can be observed has become smaller than the tsunami inundation area. Therefore, inundation area and flow height which have been estimated from distribution of paleo-tsunami deposit is tend to be underestimate. Knowledge on the alteration process on tsunami deposits, tsunami-taphonomy, increases the potential precision for paleo-tsunami researches.

Keywords: Tsunami deposit, Taphonomical process, Weathering, 2011 Tohoku-oki tsunami