

Historical and paleo-tsunami deposits on the Pacific Coast of Iwate Prefecture

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Iwate Prefecture is advancing examination for future tsunami hazard based on scientific knowledge such as historical records and tsunami deposits. As a result of the field survey, we identified tsunami-like layers at 13 sites along the Pacific Coast. Before 2011 Tohoku-oki tsunami, tsunami deposits were reported at several sites along Sanriku Coast, but the distribution and their correspondence with historical tsunamis were not clear. Recent studies including our survey provide several data about these assignments.

We identified tsunami-like layers at Harashinai site (Hirono Town), Noda lowland (Noda Village), Masaki site (Taro coast), Ohtahama site (Miyako Bay), Funakoshi lowland (Yamada Town), Kirikiri lowland (Otsuchu Town), Okirai Bay, Goishi Coast (Ofunato City), and several lowlands around the Hirota Peninsula. At most site, tsunami-like layers consist of well-sorted sand with erosional base and distributed in peat. Several layer shows laminae, rip-up mud clasts and grain size grading. At Masaki site, beach gravels are buried in talus deposits and soils.

Radiocarbon dating results suggest that the several layers are correlated with 1611 Keicho Oushu (Sanriku) tsunami and 869 Jogan tsunami. At Noda lowland and the Hirota Peninsula, a sand layer is deposited just below tephra layer that is identified as Baitoushan-Tomakomai tephra (B-Tm) that was deposited in early to middle 10th Century or Towada-a tephra (To-a) of AD915. The horizon of this sand is similar to the Jogan tsunami deposits reported in the Sendai Plane.

Our survey data probably contains the history of large (mega) tsunamis during last 4,000-6,000 years along the Pacific Coast of northeastern Japan.

Keywords: tsunami deposit, historical tsunami, Jogan tsunami, Keicho Oushu (Sanriku) tsunami, Iwate Prefecture