

## Modern and possible paleotsunami deposits in Samenoura, Sanriku Coast, and their relation to tsunami source mechanisms

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Samenoura is situated in the bay head of a small inlet on the Pacific coast of Oshika Peninsula, one of the nearest places to the epicenter of the 2011 Tohoku-oki Earthquake. According to the Joint Survey Group, wave heights were measured at more than 20 m near the coastline. This area was severely damaged as a result of both co-seismic subsidence and tsunami inundation.

We carried out field surveys of the Tohoku-oki and paleotsunami deposits at Samenoura in March, May and October 2013. Sandy deposits laid down by the Tohoku-oki tsunami were up to 20 cm thick at locations with an elevation greater than 10 m, and were several cm thick within the forest higher up. The tsunami deposit also contained numerous shell fragments and foraminifera. Although some possible sources of the tsunami deposits can be attributed to narrow sandy beaches near the study area, the deposition of such a thick sandy deposit is more or less enigmatic, considering the steep Ria-type coastal topography.

Using a gouge auger and geoslicer, we found at least two sand layers intercalated within muddy sediments. A volcanic ash layer, which corresponds to the AD 915 Towada-a tephra, was also identified from a horizon between these sand layers. The underlying sand layer was most probably laid down by the 869 Jogan earthquake tsunami, one of the large-scale events known to have affected the region. Previous studies of the Jogan tsunami have proposed several possible source models that involve an interplate thrust earthquake. Given that the local bathymetry and topography of Samenoura Bay may be sensitive to the waveform of a large-scale tsunami, paleotsunami deposits found from this area may be the key to determining the source mechanisms of events on the Sanriku Coast.

In this presentation, the possible correlation of the sandy deposits with known paleotsunami events based on detailed radiocarbon dating is discussed. The hydrodynamic character and processes of tsunami sediment erosion and deposition in Samenoura Bay are analyzed using numerical modeling of both interplate and outer-rise earthquake scenarios.

Keywords: tsunami deposit, 2011 Tohoku-oki and 869 Jogan earthquake tsunamis