

Late Holocene record of tsunami events from coastal wetlands, Okushiri Island, off southwestern Hokkaido

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The 1993 off the southwest coast of Hokkaido Earthquake provided a cause of the tsunami that damaged on the Coast of Okushiri Island. Many offshore active faults are distributed along the eastern margin of the Japan Sea and some of them triggered large earthquakes. In the historical record at Hokkaido, the oldest tsunami hazard around the west coast of Hokkaido was induced by the volcanic avalanche of Oshima-Oshima in 1741AD. Hitherto known events in the sedimentary records are resulting from the investigation of submarine turbidite (Ikehara, 2000) and tsunami deposits on Holocene marine terrace (Kawakami et al., 2012; Hirakawa et al., 2012). The shallow CCD in the Japan Sea and slow sedimentation rate of terrace deposition have been complicated correct estimation the event occurrence age. We investigated event deposits formed by tsunami to reveal occurrence age, in coastal lowlands in the Okushiri Island.

Surface deposits were extracted at two coastal lowlands (Hatsumatsumae and Wasabiyachi-gawa) located behind the dunes over 10 m high in the south coast of Okushiri Island. The sediment of the lowland consists of peat and peat mud. Several sand beds are intercalated in the normal peaty sediment. There are three event layers in Hatsumatsumae lowland and five layers in Wasabiyachi-gawa lowland. The event layers indicate some typical features of formed by tsunami running over a coastal sand dune (Takashimizu, 2012). The features are decreasing bed thickness toward inland, massive or faint parallel lamina, erosional contact at the base and including rip-up clast. Therefore, we interpreted the event sand bed as tsunamiite. The ages estimated from ¹⁴C, of five events occurred are 11-13 centuries, 6-7 centuries, about 2,300 cal yBP, 2,600 or 2,700 cal yBP and 3,100 to 3,300 cal yBP, respectively. These tsunami events corresponded to the events deposits in the event on the Holocene marine terrace. The past tsunami events that we found occurred every about 300 through 1000 years. The calculated mean interval is approximately 650 years.

The event ages from the sedimentary record in the isolated island inside of the tectonic belt of the eastern margin of the Japan sea are important for correlations of another tsunami events in the nearby earthquake source area.

Keywords: tsunami deposit, eastern margin of Japan sea, coastal lowland, correlation