

Characteristics of Historical Tsunami Events of Eastern Hokkaido, Japan, Revealed by Sedimentary Faces of the Tsunami Deposits

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Based on recent works on tsunami deposits, eastern Hokkaido was known to be affected by large tsunamis more than 10 times during the last 5000 years (Hirakawa et al. 2002, Nanayama et al., 2002). Most these tsunamis are thought to be caused by large earthquakes along the Kuril Trench. Earthquake recurrence along the trench has been estimated by dating these tsunami deposits. The sizes of the events were also estimated for the case if their invaded areas are well traced. Here, we investigated sedimentary characteristics of these tsunami deposits to consider whether these historical tsunamis are all similar or not. This consideration is necessary to re-evaluate the earthquake and tsunami recurrence along the Kuril trench. We found some fields where plural tsunami deposits lie between peat deposits and are traced inland by hand excavation. For example, near the mouth of Tokachi River, eastern Hokkaido, we could identify six tsunami layers in a ca. 1 meter thick peat deposit. We traced them along a small channel in a grass field up to 1500 meter inland from the beach. The tsunami deposits were identified as continuous sand layers that consist of very coarse to fine sand. The sand layers show the typical characteristics of reported tsunami deposits: thickness and mean grain size of the deposits decrease with the distance from the sea (Nishimura and Miyaji, 1995). However, grain size analyses of the sand deposits indicate that the size-decreasing patterns are significantly different among the tsunami deposits. We speculate that these sedimentary faces of the tsunami deposits are mostly linked to the wave height, wavelength and invaded direction of each tsunami, because there are no evidence for critical environmental change in the peat deposit.