

# Invaded area, direction, and run-up height of a paleo-tsunami at eastern Hokkaido as revealed by tracing 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., 2003). 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 are estimated for the case if their invaded areas are well traced.

We investigated tsunami deposits at wetland near Seika-numa, eastern Hokkaido, to reveal invaded area, direction, and run-up height of the historical tsunami event in the 17th century. The tsunami deposits were identified as continuous sand layers that consist of very coarse to fine sand. We observed sedimentary characteristics of the deposits along the artificial channels at the wetland and traced them inland up to the run-up limits by hand excavation. 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).

The maximum run-up at the site is about 14 m at the eastern slope of the valley and 12 m at the western slope. Relatively coarse sands distributed on the eastern slope than on the western slope. They infer that the tsunami invaded there from southwest. Imbrication pattern of gravels in the tsunami deposits and distribution of materials eroded by the tsunami show that the tsunami withdrew along the valley.