

Evaluation of tsunami inundation limits from distribution of event deposits along the Kuril subduction zone, eastern Hokkaido

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Large earthquakes in the Kuril subduction zone have caused tsunami damage along the Pacific coast of eastern Hokkaido, between Nemuro and Tokachi. We have reported 21 postulated tsunami deposits (named Ts1 through Ts21) in peat layers at Nemuro and Kiritappu Marsh and in lacustrine deposits at Lake Harutori-ko and Lake Tokotan-numa.

In this study, we estimated inundation distances of historical and prehistorical tsunami deposits along the Pacific coast of the eastern Hokkaido. Four tsunami deposit layers are identified in these sites and we correlate them to Ts1 through Ts4 based on key tephra layers such as Ta-a(1739AD), Ko-c2 (1694AD), Ta-b (1667AD), Us-b (1663AD), B-Tm (ca. 9th century) and Ma-b (ca. 9th century?).

The Ts1 event may correspond to the 1960 Chilean tsunami (Mt 8.5), however Ts1 deposit is only distributed Kiritappu marsh.

The Ts2 event may correspond to the 1843 Hokkaido-toho-oki tsunami (Mt 8.0), and these deposits are distributed between Onbetsu and Nemuro. The inundation distance of Ts3 (17th century) and Ts4 (13th century) events are longer than that of Ts1 and Ts2 events. In addition, the Ts3 distance is larger than Ts4 in the west, while opposite in the east. These suggest that earthquakes caused Ts3 and Ts4 events were larger in size than Ts2, and the source of Ts3 was located west of the Ts4 source.