

Two paleotsunami layers in Kushiro Wetlands and their wide correlation in eastern Hokkaido

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Two paleotsunami sand layers, Ks-TS1 and Ks-TS2, were identified in peatland in Kushiro, eastern Hokkaido. Ks-TS1 occurs several cm beneath Ko-c2 (AD 1694) and Ta-b (AD 1667) tephtras, and Ks-TS2 occurs 10 cm above B-Tm tephra (ca. 1000 yBP). Thicknesses of these layers are less than 1-3 mm. Particle size of Ks-TS1 is around 2 phi and Ks-TS2 is around 4 phi. They can be identified by their particle size distribution in the precision of 1/16 phi using Morphologi G3. Ks-TS1 is found at the site located about 2120 m from the modern coastline, 5.9 m above the mean sea level, and Ks-TS2 about 1810 m from the modern coastline, 5.7 m above the mean sea level. The actual run-up limit of paleotsunami may exceed these deposition areas.

At present analytical method is not available to correlate paleotsunami layers across distant regions. However, the tsunami layers in Kushiro are likely correlated with paleotsunami layers in other regions in eastern Hokkaido (Urahoro, Kinashibetsu, Onbetsu, Akkeshi, and Nemuro) on the basis of the stratigraphic relationships between the paleotsunami layers, marker tephtras, and peat layers. In Kushiro region, thickness of the peat layer between Ta-b and Ks-TS1 is 16 % of the total peat thickness between Ta-b and B-Tm, and thickness between Ta-b and Ks-TS2 is 81 %. These ratios are similar between Kushiro and other regions, although 10-20 % difference can be seen. According to previous researches, up to eight paleo-tsunami layers in the last 3000 years were identified in eastern Hokkaido. The paleo-tsunami layers in Kushiro are correlated with the last two events and presumed to be the greatest events in the last 3000 years.

Keywords: Paleotsunami deposit, correlation, Precise grain size analysis, Morphologi G3, Hokkaido