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Stratigraphic Succession for Large Tsunami Traces in Nemuro Coastal Zone Along the Kuril Subduction Zone

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Along the Pacific coastal zone of Eastern Hokkaido, research tsunami deposits in lake deposits and peat layers in the Holocene, have been increasingly conducted since the first report by Nanayama and Shigeno (1998). It is thus believed that this growing academic interest contributed to the establishment of stratigraphy for the large tsunami traces extending from Tokachi coast to Kiritappu marsh(Nanayama et al., 2003). Meanwhile, the stratigraphy for large tsunami traces along the Nemuro coastal zone has not been fully explained in detail. In the middle of last October, in the southern marsh near Nemuro's urban district, a trench survey for giant tsunami traces was conducted and put on public view for Nemuro citizens. This research was carried out in the Nanbutou marsh area according to the following processes. In the beginning, an estimated direction of tsunami run-up was considered, and a course of traverse was determined to traverse the marshland perpendicularly to the current shoreline. The distance from the shoreline was measured and differential leveling was performed. And using heavy equipment, a survey team dug trenches at seven points, up to 2.7m wide, 14.4m long and 2.7m deep. The most seaside trench was dug about 490m from the shoreline, while the most inland trench was made approx.970m from the shoreline. The survey found the formation of about 2.2m-thick peat layer in its deepest zone within the subject area. In this area, 6-layered volcanic ashes and 15-layered sand layers were confirmed. With silt- to granule-sized in particular, the volcanic ashes consist of strata, such as Ta-a from Mt. Tarumai in 1739, Ko-c2 from Mt. Komagatake in 1694, Ma-b from Mt. Mashu in the 10th century, B-Tm from Mt. Baitousan in the 10th century, Ta-c2 from Mt. Tarumai in ca.2.5 ka and Ma-d from Mt. Mashu in ca.4.3 ka according to macroscopic examination and the stratigraphy on existing volcanic ashes in surrounding areas. A major component of the 15-layered sand layers(Tn1 to Tn 15) is very well sorted fine sand, and some of the sand layers include granule 2 to 3 mm in diameter. The layer thickness ranges from a few centimeters to tens of centimeters, with the maximum level of 95 cm. The sand layers are characterized by their obvious grading and erosion bases. Also, the deposits showed accreting structures generated by flowing water such as plane bed and current ripple. This survey found an 8-layered giant tsunami trace between the Ta-c2 and

Ko-c2 strata. In fact, this trace involves 2 more layers than other large tsunami traces extending from the Tokachi coast to Kiritappu marshland. The number of the strata found in the survey corresponds to that of Gakkara Coast and the Furesfima (Bettouga) marsh in southwestern Nemuro. And these sand layer distribution areas surpass the submerged land areas caused in Off-Nemuro earthquakes and tsunamis in 1894 and 1973. In these fact, It has been concluded that it is necessary to estimate other tsunami sources off the Habomai and Shikotan islands as well, other than tsunami sources caused by multi-segment interplate earthquake Tokachi and Nemuro. ReferencesNanayama and Shigeno, 1998, Chikyu, no.15, 177-182; Nanayama et al., 2003, Nature, 424, 660-663.