

14-layered large tsunami traces in Fureshima marsh: The research of tsunami traces along Nemuro coastal zone (Preliminary report 2)

Yuji Soeda[1]; Futoshi Nanayama[2]; Kiyoyuki Shigeno[3]; Masayuki Ishii[4]; Shigeto Inokuma[5]; Tsuneto Nagatomo[6]; Ryuta Furukawa[7]; Takuya Suzuki[1]; Hiroshi Ushiro[1]; Goro Yamada[1]

[1] Historical Museum of Hokkaido; [2] GSJ/AIST; [3] Meiji C; [4] Meicon Hokkaido; [5] The Introduction of Nemuro City Museum of History; [6] Nara University of Education; [7] AIST

<http://www.hmh.pref.hokkaido.jp/>

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 marshland (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, our team carried out a survey of tsunami traces along Fureshima (Bettouga) marsh located on the edge of southwestern Nemuro. Here, the survey will be outlined with new findings. In this research, the team dug a large and deep trench (2.5m wide, 4.0m long and 3.1m deep), which is found about 860m inland from the shoreline with an altitude of 5.9m (within the property of Sato Farm). The survey team made the trench wall surface flat for detailed observation and took photos, peal and columnar section. The survey found the formation of about 3.5m-thick peat layer in its deepest zone within the subject area. In the peat layer of the trench, 4-layered volcanic ashes and 14-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), 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 14-layered sand layers (Tb1 to Tb 14) are very well sorted fine sand. Many of the sand layers are characterized by their obvious grading and erosion bases, and some of the bases include pebble few centimeters in diameter. The layer thickness ranges from a few centimeters to tens of centimeters, with the maximum level of 30cm. The survey team unearthed one stone tool of the late Jomon Period in the tsunami deposits, which were located about 70cm beneath the volcanic ashes layer (believed to be Ta-c2). From the above observations and a comparison of this research and the conventional research on the Pacific coastal zone of eastern Hokkaido (Nanayama et al., 2000; report by Nanayama et al., 2003; report by Soeda et al., 2004), these 15-layered sand layers probably show an obvious indication of large tsunami traces which were generated during the past thousands of years. This survey found an 7-layered large tsunami trace between the Ta-c2 and Ko-c2 strata. In fact, this trace involves 1 more layers than other large tsunami traces extending from the Tokachi coast to Kiritappu marsh. The number of the strata found in the survey corresponds to that of Gakkara Coast in southwestern Nemuro and the Nanbutou marsh near Nemuros urban district in a subsequent report. 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.