Coastal landform changes and Washover deposits due to high waves generated by anatmospheric low-pressure system in June 2016 at Horokayanto, Hokkaido, Japan

*Takashi Chiba[1], Yuichi Nishimura[2]

1. Faculty of Bioresource Sciences, Akita Prefectural University, 2. Graduate School of Science, Hokkaido University

The lake bottom of Horokayanto, one of the lagoons in eastern Hokkaido, Japan, was partly exposed as a result of sandbar breaching during severe weather in June 2016. The mean lake level fell from approximately 3.1 to 1.2 m above TP, which is equivalent to the height of the MHHTL in the Tokachi area by the breached sandbar. Some erosion forms were recognized in the southwestern breached point of the sandbar. However, the washover fan formed by the high waves from the seaward to the lakeward sides was recognized in the northeastern part of the sandbar. Moreover, characteristic diatom assemblages resulting from coastal environmental changes were also recognized around the lake. The high-tide-level indicator *Pseudopodosira kosugii* was recognized in the emerged lake bottom assemblage together with freshwater–brackish and brackish–marine species. Water pressure or moisture changes caused by either the emergence, the changes in light quantum density and ultraviolet rays, the changes in water quality such as salinity and pH, or a mixture of these factors, may have influenced the increase in *P. kosugii*. Reworked Neogene marine diatoms such as *Denticulopsis* spp. that were presumably derived from nearby Neogene basement rocks were also detected–albeit infrequently–in the modern assemblages. The fossil diatoms were eroded by current inflows into the lake during the severe weather. During the period of emergence, seawater may have been transported into Horokayanto Lagoon by high waves generated by an atmospheric low-pressure system. However, the height of the waves was below that of the central part of the sandbar.

Keywords: washover deposit, sandbar breach, emerged lake bottom, diatom assemblage, Horokayanto