

Preliminary report on Antarctic lake and shallow marine sediments investigation using a new portable percussion piston corer

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Lake and shallow marine sediment cores were obtained from Soya Coast, Lützow-Holm Bay, East Antarctica, during November and December 2017 by a lake observation team as part of the 58/59th Japanese Antarctic Research Expedition (JARE). Along Soya Coast, there are ice-free oases (Syowa Oasis), which include numerous glacial lakes and lagoons. These lake sediments are thought to record sea level change due to glacial isostatic adjustment (GIA) and water environmental histories since the Last Glacial Maximum (LGM). The sea-level and water environmental changes during the mid-late Holocene in this area were reported based on soft organic clay and microbial sediments from these lakes obtained by a hand pushing piston corer. However, these changes since the beginning of lake formation are still unclear due to difficulties in obtaining the hard and sticky glacial silt and sandy layers underneath the soft sediments in these lakes. In this investigation, we developed a new portable percussion piston corer for obtaining these hard and sticky sediments. A total of 31 sediment cores from 23 lakes/shallow marines were obtained, and the majority of these cores reached down to the basement rock including the overlying thick glacial silt and/or marine sand layers with gathering shell and sea urchin layers. The newly obtained samples and developed percussion corer are reported in this presentation.

Keywords: Antarctic, Frozen lakes, Portable percussion piston corer