

## Paleo-environmental changes at coastal lakes along the Soya Coast, East Antarctica during the Holocene

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The East Antarctic Ice Sheet (EAIS) is the largest glacial system on Earth, and documenting its changes is important to understand and estimate its future behavior. Antarctic coastal lakes are invaluable archives of paleo-climate and paleo-environment changes caused by the retreat of Antarctic Ice Sheet. In Soya Kaigan (Coast) of Lutzow-Holm Bay region, many coastal lakes are located in ice-free areas. This study discussed the environmental change inferred from microscopic observation of fossil diatom assemblages in a sediment cores from coastal freshwater lakes, Lake Oyako-ike, Lake Maruwanminami-ike and Lake Maruwan-Oike, in Soya Coast along with biomarkers and microscopic observation of microalgae and cyanobacteria, sedimentary facies and AMS 14C dating.

Three lakes are considered as marine relict lakes resulted from the recession of glaciers and subsequent isostatic uplift. The Ok4C-01 core (length 135 cm) from Lake Oyako-ike was divided in 4 zones according to the diatom assemblage changes. This lake has changed from coastal marine to freshwater lake at ca. 1100 cal yr BP (core depth 60 cm). The MwS4C-01 core (length 147 cm) from Lake Maruwanminami-ike was also divided in 4 zones. The transition timing from marine to freshwater lake was ca. 2400 cal yr BP (core depth 65 cm). The Mw4C-01 core (length 226 cm) from Lake Maruwan-Oike was divided in 4 zones as well. This lake has changed at ca. 2800 cal yr BP (core depth 22 cm). Diatom assemblage changes in these sediment cores show similar pattern with other analyses results such as sediment facies and elemental analyses (TC, TS, TN contents).

Diatom assemblages in these sediment samples implied that more specific environmental changes not only transition from marine to freshwater but also an existence of sea-ice (*Fragilariopsis curta*, *F. cylindrus*), a desalination process (*Psammothidium papilio*) and an oligotrophication of lake water.

Keywords: Antarctica, Paleoenvironment, Lake sediment, Diatom assemblage