

Reconstruction of lake-level changes during the last glaciation based on fossil diatom record in Lake Biwa

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This is a report of a research for reconstruction of lake-level change history of Lake Biwa based on the transfer function of diatom assemblage into water depth. We have analyzed diatom assemblages, sand content, and C/N ratio in drilling core sample from the lake bottom of 23.45 m in depth and surface sediment samples from the lake bottom from 5 m to 30 m in depth off estuary of Echi River, Lake Biwa. The relative abundance of planktonic species in diatom assemblage from surface sediments can be changed into water depth. The transfer function applied to fossil diatom record in drilling core sample into lake-level change history during the last 50 ka.

We compared the record with Sanbao & Hulu cave stalagmites $\delta^{18}\text{O}$ records in China and NGRIP $\delta^{18}\text{O}$ record in Greenland from 50 ka to 10 ka. The result shows that the lake-level change history in Lake Biwa reflects East Asian winter monsoon intensity. Lake-level rose under relatively cold conditions or abrupt cooling like Heinrich Events and lake-level fell under relatively warm conditions. The lake-level response to climate conditions suggests that snowfall in winter depending on East Asian winter monsoon intensity mainly contributed to water balance of Lake Biwa during the last glacial period.

Keywords: Lake Biwa, Planktonic diatom, Transfer Function, Lake-level change, East Asian winter monsoon