

KAMCHATKA, EASTERN RUSSIA: FINDINGS FROM DIATOMS IN MID- TO LATE HOLOCENE LAKE SEDIMENTS

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The presented study comprises an investigation of fossil freshwater diatom assemblages, used as palaeoecological indicators of climate-related past terrestrial environmental changes from faunal and floral remains in lake sediments during the Holocene. A combination of taxonomical and geochemical (stable oxygen isotope composition of the siliceous diatom cell walls ($\delta^{18}\text{O}_{\text{diatom}}$)) methods was applied for the first time on lake-sediment records from Kamchatka, Eastern Russia.

The studied lakes were selected to cover different environmental boundary conditions. They comprised a hydrologically closed seepage lake (innominate) at a moderate elevation of about 280 m above sea level next to an open through-flow lake (Two-Yurts Lake) in central Kamchatka and an open through-flow lake at an elevation of almost 500 m above sea level (Lake Sokoch) in south Kamchatka.

The composition of the diatom assemblages differs between the three studied lakes, dependent on several parameters, such as water temperature and the geochemical character of the host water, stratification of the water column, turbulence, trophy, or the amount of available nutrients.

The closed innominate seepage lake situated on the eastern slope of the Central Kamchatka Mountain Chain reveals lowest numbers of diatoms per gram sediment (biological productivity) most likely due to its lacking inflows. Diatom assemblages document changes in palaeolimnology related to ontogenetic changes of the depositional environment.

Two-Yurts Lake reveals highest biological productivity (diatoms), due to a steady input of nutrients and diluted silica by its inflows, additionally supported by frequent occurring strong turbulences, enabling for a reworking and hence recycling of deposited nutrients/silica from the lake bottom surface sediments.

Lake Sokoch shows less intense biological productivity, most likely caused by minor nutrient and diluted silica input into the lake and a geographical setting which is less exposed to fall winds than Two-Yurts Lake is.