



Arctic hydroclimate variability during past 500 years reconstructed from varved sediments of Lake Kevojärvi, Northern Finland

Saija Saarni (1), Yu Fukumoto (2), Timo Saarinen (1), and Eeva Haltia (1)

(1) University of Turku, Geography and Geology, Turku, Finland (saitur@utu.fi), (2) Ritsumeikan University, Kyoto, Japan.

A varved lake record extending ca 500 years back in time was reconstructed from Arctic Fennoscandian Lake Kevojärvi (69°45'N 27° 00'E). The lake Kevojärvi is a fluvial lake, where the most prominent feature of an annual hydrological cycle is the accumulation of snow during the winter and the rapid release of water on spring during the melting of snow. The sediments of Lake Kevojärvi are of clastic-organic varve type. The clastic lamina consists of silt and sand particles deposited as a consequence of extensive flooding on spring during which the lake level is rising typically for about two meters. Biogenic lamina is formed of the allochthonous and autochthonous organic matter produced during growing season and preserved at the anoxic bottom waters during the winter stratification under the ice cover.

The hydrological cycle and synoptic weather conditions are monitored from the research station at the Lake Kevojärvi. The conditions at the water column is monitored continuously using temperature sensors throughout the water column and multiparameter sonde at the near bottom waters since spring 2017. The varve structure was investigated using microfacies analyses while the chemical composition was analyzed with seasonal resolution using micro-X-ray fluorescence. The detailed monitoring on the catchment and at the water column combined with high resolution varve and chemical records provides a great possibility to reconstruct and understand the past variability of local hydroclimatological conditions in detail. 500-year long Lake Kevojärvi varve record reveal changes in local hydroclimate and correspondence of local hydroclimate to large scale atmospheric circulation patterns.