



Multi-proxy evidence for delayed early Holocene warming in Northeastern Poland from Lake Hańcza sediments

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Within the ESF EuroCLIMATE project DecLakes, the sediment record of Lake Hańcza (Northeastern Poland) has been investigated, focussing on climate change at the Last Glacial–Interglacial transition. A multi-proxy approach including sediment microfacies analysis, pollen analysis, high-resolution μ -XRF scanning, stable isotope measurements and geochemical analyses has been adopted to identify major climatic fluctuations during this period. The Lateglacial / Holocene transition at about 11.600 cal. years BP is characterised by decreasing input of allochthonous siliciclastics, the decline of Lateglacial shrub vegetation (e.g. *Juniperus* and *Artemisia*) and the onset of endogenic calcite precipitation. Nevertheless, significant warming with the spread of temperate forests in Northeastern Poland is delayed for about 2000 years after the beginning of the Holocene. This late major climate shift is further reflected by increased lake productivity and an abrupt rise of the oxygen isotope ratio. Exceptional long persistence of relatively cold and dry climate in Northeastern Poland compared to Central Europe and Greenland might be attributed to a specific East European circulation pattern with a high pressure cell over the retreating Scandinavian Ice Sheet. The related anticyclonic circulation (Yu & Harrison, 1995; Harrison et al., 1996) engen-

dered strong Easterlies, which substantially blocked the influence of warm westerly winds and delayed early Holocene warming in the Hańcza region until the final decay of the ice sheet.

Yu, G. & Harrison, S. P., 1995. Holocene changes in atmospheric circulation pattern as shown by lake status changes in Northern Europe. *Boreas* 24 (3), 260-268.

Harrison, S. P., Yu, G., Tarasov, P.E., 1996. Late Quaternary lake-level record from Northern Eurasia. *Quaternary Research* 45 (2), 138-159.

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