

## Publication

### Lateglacial summer temperatures in the Northwest European lowlands: a chironomid record from Hijkermeer, the Netherlands

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Lateglacial environments at Hijkermeer, northwest Netherlands, were reconstructed by means of chironomid, diatom and pollen analyses. Diatom assemblages indicate that Hijkermeer was a shallow, oligo- to mesotrophic lake during this period. Pollen assemblages reflect the typical northwest European Lateglacial vegetation development and provide an age assessment for the record from the beginning of the Older Dryas (ca 14 000 calibrated C-14 yr BP) into the early Holocene (to ca 10 700 calibrated C-14 yr BP). The chironomid record is characterized by several abrupt shifts between assemblages typically found in mid-latitude subalpine to alpine lakes and assemblages typical for lowland environments. Based on the chironomid record, July air temperatures were reconstructed using a chironomid-temperature transfer-function from central Europe. Mean July air temperatures of ca 14.0-16.0 degrees C are inferred before the Older Dryas, of ca 16.0-16.5 degrees C during most of the Allerod, of ca 13.5-14.0 degrees C during the Younger Dryas, and of ca 15.5-16.0 degrees C during the early Holocene. Two centennial-scale decreases in July air temperature were reconstructed during the Lateglacial interstadial which are correlated with Greenland Interstadial events (GI)-1d and -1b. The results suggest that vegetation changes in the Netherlands may have been promoted by the cooler climate during GI-1d, immediately preceding the Older Dryas biozone, and GI-1b. The Hijkermeer chironomid-inferred temperature record shows a similar temperature development as the Greenland ice core oxygen isotope records for most of the Lateglacial and a good agreement with other temperature reconstructions available from the Netherlands. This suggests that chironomid-based temperature reconstruction can be successfully implemented in the Northwest European lowlands and that chironomids may provide a useful alternative to oxygen isotopes for correlating European lake sediment records during the Lateglacial.

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