



Summer temperature shifts during the Late Glacial in Northeastern Europe

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In the past decade climate change has received considerable attention on the political, economical, and social agendas across the globe. With its high amplitude of temperature change the Late Glacial (15,000 – 11,500 cal. yrs BP) can be used as a geological analog to the present global warming. Fossil chironomid records have been used to study summer temperature change during this period. However, most of these studies examine temperature change in Western and Northern Europe, and only few have been conducted along the eastern margin of the European continent. We have developed a new chironomid - based July temperature reconstruction from Lake Nakri, southern Estonia (Northeastern Europe). A lake sediment record has been obtained from Lake Nakri extending back to ca. 14,000 cal. yrs BP. A total of 38 samples within this record were studied for fossil chironomid assemblages. Chironomid taxa found include a range of typical cold indicating taxa such as *Paracladius* and *Monodiamesa* as well as a number of chironomids with a wider distribution in respect to temperature such as *Ablabesmyia* and *Microtendipes* and some chironomids which are typically abundant in warmer lakes in temperate climates, such as *Tanytarsus pallidicornis*-type and *Polypedilum nubeculosum*-type. At the beginning of the record chironomids point to July temperatures of about 12 °C. (ca. 14,000 cal. yrs BP). Surprisingly, the warming during the Allerød started much later (ca. 13,700 cal. yrs BP) than expected and the inferred temperatures were about 13 °C. During the Younger Dryas a major drop in the July temperature was recorded to an average temperature of 10.7 °C. At the Younger Dryas - Holocene transition (ca. 11,700 cal. yr BP) the July temperature increased again to between 12.1 and 14.8 °C. The amplitudes of temperature shifts at Older Dryas – Allerød – Younger Dryas – Preboreal were about 0.7 °C to 3-4 °C.