A chironomid-based reconstruction of late glacial summer temperatures in the southern Carpathians (Romania)

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Late glacial and early Holocene summer temperatures were reconstructed based on fossil chironomid assemblages at Lake Brazi (Retezat Mountains) with a joint Norwegian-Swiss transfer function, providing an important addition to the late glacial quantitative climate reconstructions from Europe. The pattern of the late glacial temperature changes in Lake Brazi show both similarities and some differences from the NGRIP 5180 record and other European chironomid-based reconstructions. Our reconstruction indicates that at Lake Brazi (1740 m a.s.l.) summer air temperature increased by similar to 2.8 degrees C at the Oldest Dryas/Bolling transition (GS-2/GI-1) and reached 8.1-8.7 degrees C during the late glacial interstade. The onset of the Younger Dryas (GS-1) was characterized by a weak (<1 degrees C) decrease in chironomid-inferred temperatures. Similarly, at the GS-1/Holocene transition no major changes in summer temperature were recorded. In the early Holocene. summer temperature increased in two steps and reached -12.0-13.3 degrees C during the Preboreal. Two short-term cold events were detected during the early Holocene between 11,480-11,390 and 10,350-10,190 cal yr BP. The first cooling coincides with the Preboreal oscillation and shows a weak (0.7 degrees C) temperature decrease, while the second is characterized by 1 C cooling. Both cold events coincide with cooling events in the Greenland ice core records and other European temperature reconstructions.
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