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Climate-landform effects on lateglacial vegetation pattern in northeastern Tuchola Pinewoods (northern Poland): multiproxy evidence from the Lake Czechowskie catchment, northern Poland.

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The study area is located in northern Poland in the northeastern part of Tuchola Pinewoods in a young glacially formed and diversified landscape. It comprises the entire lake catchment of Lake Czechowskie (19.76 km2), which comprises a second lake upstream as well as a palaeolake (Trzechowskie) located between the two present-day lakes. Biogenic sediments from eight cores were studied by multiproxy analyses to reconstruct the environmental changes and climate signals during the last Late Glacial and early Holocene. The cores were collected along a W-E transect from Głęboczek Lake to the Czechowskie Lake and were located in different topographic positions (deepest and shallow part of the lake, old lake-bed plains and paleolakes) with a maximum distance of 2.2 km.
Detailed and high resolution analyses (pollen, diatoms, cladocera, stable isotopes, geochemistry, varve chronology and radiocarbon dating) to identify the main stages in the development of the natural environment were made.
Palynological data indicate melting of the buried ice blocks and the following the onset of biogenic lacustrine sedimentation. The general pattern of vegetation changes in all profiles is similar and includes Late Glacial steppe-tundra plant communities at the onset of organic lake sedimentation. The palynological record of the most profiles shows a high participation of seabuckthorn (Hippophae) in the initial stadium of vegetation history. The lack of this succession in the most western core (Głęboczek Lake) indicates a later period of melt-out processes of the buried dead-ice blocks in the Głęboczek Lake basin.
The thickness and type of the accumulated sediments differ significantly during the Bolling-Alerod complex and Younger Dryas Period between our sites. These differences are also reflected in variations of plant species among the different sites.
The comparison of different profiles within one catchment allows us to distinguish site specific local responses to climate driven by local factors such as slope steepness and exposure and water depth.

This study is a contribution to the Virtual Institute of Integrated Climate and Landscape Evolution Analysis –ICLEA– of the Helmholtz Association