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Landscape transformation under influence of melting buried ice blocks (North Poland)

Michał Słowiński (1,2), Mirosław Błaszkiewicz (2), Achim Brauer (1), Bożena Noryśkiewicz (3), Florian Ott (1), and Sebastian Tyszkowski (2)

(1) GFZ German Research Centre for Geosciences, Section 5.2–Climate Dynamics and Landscape Evolution, Potsdam, Germany (michal.slowinski@geopan.torun.pl), (2) Institute of Geography, Polish Academy of Sciences, Department of Environmental Resources and Geohazards, Toruń, Poland, (3) Institute of Geography, Nicholas Copernicus University, ul. Lwowska 1, 87-100 Toruń, Poland

The aim of the research was to decipher impacts, how dead ice melting can influence landscape transformation in the Lateglacial and early Holocene in Central Europe. Here, we present the paleoecological results from the middle section of the Wda river located in northern Poland (Central Europe), on the outwash plain formed during the Pomeranian phase of the last (Vistulian) glacial period ca 16,000 14C yrs BP. The Wda river has a typical polygenetic valley in young glacial areas of the northern central European lowlands.

We reconstructed environmental changes using biotic proxies (plant macrofossil and pollen analyses) and geomorphological investigations. Abrupt changes in lithology and sediment structures show rapid changes and threshold processes in environmental conditions. The AMS 14C dating of terrestrial plant remains reveals an age for the basal sediments of 11 223 $\pm$ 23 cal yr BP coinciding with the Preboreal biozone.

The results show the existence of buried ice blocks in northern Poland even at the beginning of the Holocene proving that locally discontinuous permafrost was still present at that time. Our study demonstrates a strong influence of melting buried ice blocks on the geomorphological development, hydrological changes in the catchment, and the biotic environment even in the early Holocene.

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