



Late Quaternary landscape development at the margin of the Pomeranian phase (MIS 2) near Lake Wygonin (Northern Poland)

Florian Hirsch (1), Anna Schneider (1), Alexander Nicolay (1), Mirosław Błaszkiwicz (2), Jarosław Kordowski (2), Agnieszka M. Noryskiewicz (3), Sebastian Tyszkowski (2), Alexandra Raab (4), and Thomas Raab (1)

(1) Geopedology and Landscape Development, Brandenburg University of Technology Cottbus — Senftenberg, Konrad-Wachsmann-Allee 6, 03046 Cottbus, Germany, (2) Polish Academy of Sciences, Department of Environmental Resources and Geohazard, Institute of Geography, Kopernika 19, PL-87-100 Toruń, Poland, (3) Nicolaus Copernicus University, Institute of Archaeology, Szosa Bydgoska 44/48, PL-87-100 Toruń, Poland, (4) Research Centre Landscape Development and Mining Landscapes (FZLB), Brandenburg University of Technology Cottbus — Senftenberg, Konrad-Wachsmann-Allee 6, 03046 Cottbus, Germany

In Central Europe, Late Quaternary landscapes experienced multiple phases of geomorphologic activity. In this study, we used a combined geomorphological, pedological, sedimentological and palynological approach to characterize landscape development after the Last Glacial Maximum (LGM) near Lake Wygonin in Northern Poland. The pedostratigraphical findings from soil pits and drillings were extrapolated using ground-penetrating radar (GPR) and electric resistivity tomography (ERT). During the Pomeranian phase, glacial and fluvioglacial processes dominated the landscape near Lake Wygonin. At the end of the glacial period, periglacial processes became relevant and caused the formation of ventifacts and coversands containing coated sand grains. At approximately 15,290–14,800 cal yr BP, a small pond formed in a kettle hole (profile BWI2). The lacustrine sediments lack eolian sand components and therefore indicate the decline of eolian processes during that time. The increase of *Juniperus* and rock-rose (*Helianthemum*) in the pollen diagram is a prominent marker of the Younger Dryas. At the end of the Younger Dryas, a partial reshaping of the landscape is indicated by abundant charcoal fragments in disturbed lake sediments. No geomorphologic activity since the beginning of the Holocene is documented in the terrestrial and wetland archives. The anthropogenic impact is reflected in the pollen diagram by the occurrence of rye pollen grains (*Cerealia* type, *Secale cereale*) and translocated soil sediments dated to 1560–1410 cal yr BP, proving agricultural use of the immediate vicinity. With the onset of land use, gully incision and the accumulation of colluvial fans reshaped the landscape locally. Since 540–460 cal yr BP, further gully incision in the steep forest tracks has been associated with the intensification of forestry. Outside of the gully catchments, the weakly podzolized Rubic Brunic Arenosols show no features of Holocene soil erosion.

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