

# Dynamics of the last ice sheet along the Gardno moraines (northern Poland): reconstruction inferred from landforms analysis and <sup>10</sup>Be dating

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Geomorphological record of the past ice margin positions is a robust proxy for reconstructing palaeo-ice sheets dynamics and their reaction to climate warming at the Last Glacial Termination. Coupling geomorphological traces of the palaeo-ice sheets to a time-scale enables our better understanding of timing and dynamics of deglaciation. It usually shows complex behavior of the palaeo-ice sheet's fringes with episodes of ice margin stillstands, local re-advances and/or extensive retreat. After the Last Glacial Maximum the southern margin of the last Fennoscandian Ice Sheet (FIS) receded gradually, leaving glacial landforms clearly visible in the landscape. However, this general ice sheet retreat was discontinuous and asynchronous, often punctuated by the ice margin stillstand or local re-advances (Marks 2012, Lüthgens et al. 2020, Tylmann et al. 2022). Here we present a new results of glacial landforms mapping based on high-resolution LiDAR Digital Elevation Model and <sup>10</sup>Be surface exposure dating of erratic boulders at the northern fringe of Poland.

The study area covers a part of the Polish middle-coast region with conspicuous ice-marginal moraines. The Gardno moraines are the end moraine ridges recording the ice margin position after a local ice sheet re-advance, which is recently correlated with the phase of deglaciation dated at 16.8–16.6 cal ka BP or  $16.5 \pm 0.5$  ka (Marks et al. 2016, Tylmann & Uścińowicz 2022). However, our new results show that the geomorphological record of palaeo-ice margin positions in this area suggests highly dynamic oscillations of the ice front which may be chronologically constrained with a new <sup>10</sup>Be surface exposure dating.

## References

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