

The Weichselian phases of the Scandinavian Ice Sheet in northeast Germany revisited

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Recent progress in the dating of glacial and glaciofluvial sediments is about to considerably change the existing geochronological model of the Weichselian Brandenburg, Frankfurt, and Pomeranian phases in northeast Germany.

Several studies were carried out with the aim to obtain depositional ages of glaciofluvial deposits with the Optically Stimulated Luminescence (OSL) dating method. Sediments deposited during the advance of the inland ice were dated with OSL as well as sediments that were deposited during the succeeding down wasting phase. Additionally, cosmogenic nuclide surface exposure ages of glacial boulders were compiled from literature, which indicate the landscape stabilization after the down wasting of the ice. These ages were recalibrated with a recent ^{10}Be production rate. In combination, the results from both methods provide a consistent geochronological database.

Our results show that the ice advance of the Weichselian Brandenburg phase took place already in late Marine Isotope Stage 3, and does not correlate to the global last glacial maximum (in terms of ice volume), which was previously assumed. This is peculiarly interesting because the Brandenburg ice marginal position is representative of the largest Weichselian ice extent in northeast Germany. The ice advance of the Brandenburg phase seems to correlate with the Klintholm advance in Denmark.

The Frankfurt phase represents the succeeding down wasting phase, during which a succession of ice marginal fans was formed on the Barnim plateau in middle Brandenburg. Evidence of a single ice marginal position representative of the Frankfurt phase has so far not been found.

The ice advance during the last global glacial maximum occurred during the Pomeranian phase and thus does not represent the Weichselian maximum advance in Brandenburg but the MIS 2.

Key references:

Hardt, J., Lüthgens, C., Hebenstreit, R., Böse, M., 2016: Geochronological (OSL) and geomorphological investigations at the presumed Frankfurt ice marginal position in northeast Germany. *Quaternary Science Reviews* 154, 85-99.

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