



## **Towards a new understanding of the Last Glacial Maximum (LGM) in NE Germany – Results from Optically Stimulated Luminescence (OSL) Dating and their implications**

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The initial aim of the project was to work out a chronology of the distinct Weichselian ice marginal positions in NE Germany because recent geochronological data were still absent. Samples of fluvioglacial sands have been taken from outwash plains (sandur) which have a clear connection to one of the distinct ice margins. To achieve the geochronological aim of the project Optically Stimulated Luminescence (OSL) dating techniques, primarily using techniques based on the single aliquot regeneration dose protocol (SAR) for the dating of quartz, have been applied.

Results of these OSL datings do not agree with the classification of the Weichselian Pleniglacial that had been based on morphostratigraphic interpretations during the last 130 years. The unambiguous geomorphological differentiation of the Brandenburg (W1B), Frankfurt (W1F) and Pomeranian Stages (W2) and their geochronological position turned out to be questionable.

The ice advance to the Brandenburg (W1B) ice marginal position has traditionally been ascribed to the LGM. The ages obtained from OSL measurements conducted within this project indicate that the ice advance might already have occurred in the early OIS 2. OSL results from the Luckenwalde outwash plain have shown that it is also likely that a considerable number of landforms attributed to the LGM are in fact of Saalian age, only partly overridden by the W1B glacier but not reshaped by this process. This implies a very thin, probably warm-based ice cover. A quick and short lived Weichselian ice advance adapted to a pronounced Saalian morphology.

The Pomeranian (W2) stage is the morphologically most prominent ice margin in north-eastern Germany, which was formed during a strong readvance of the inland ice from the depression of the Baltic Sea. The OSL dating results obtained within this project suggest that this ice advance occurred at around 23-20 ka BP.

In contrast, the Frankfurt (W1F) stage is considered to be a long-lasting marginal position during the downmelting of the glacier and is not classified as a readvance. Based on OSL measurement results, the landforms ascribed to the Frankfurt stage seem to be a patchwork of W1B and W2 landforms, rather than a contemporaneous formation. Some samples might even indicate that landforms of a potential mid-Weichselian ice advance (OIS 4) might have been preserved in the so called W1F ice marginal position.

Further dating results revealed a period of intensive periglacial reworking of cover sediments around 15 ka BP. This might be interpreted as an indicator for a cold phase probably coinciding with an ice advance north of the W2 ice marginal position.