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Discrepancies between quartz and feldspar optical ages for glacifluvial deposits from the northern Alpine Foreland

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The northern Alpine Foreland is the classical region for Quaternary investigations. The origin of glacial research is located along the rivers Iller and Mindel around the village of Memmingen. In this region the system of four Quaternary glaciations was developed. Starting with the oldest glaciation they are called Günzian, Mindelian, Rissian and Würmian, named after rivers in the Alpine Foreland. Samples for luminescence dating presented here were taken from outcrops along the river Riss Valley, which is the key location for the penultimate glaciation.

Optically Stimulated Luminescence (OSL) allows the dating of terrestrial deposits beyond the limitations of radiocarbon dating. We investigated both coarse grain quartz and feldspar minerals using blue light and infrared stimulation, respectively. Results for both minerals vary significantly with feldspar ages being higher than quartz ages for the same sample. Since all investigated samples are of proglacial origin, partial bleaching could be one explanation for age overestimation. However, bleaching experiments executed for samples from the 'Münchener Schotterebene' and the river Würm valley revealed that quartz and feldspar minerals were completely reset within the same time. This does not support the idea that partially bleaching may explain the observed age discrepancy. As another possible reason for age overestimation we investigated whether feldspar samples could be infected by thermal transfer. Though, first results indicated that thermal transfer is of minor impact.