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Stratigraphy and complex fluvial geomorphology in a Middle and Late Pleistocene endmoraine setting of the European Alpine Foreland

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The Alpine Foreland was repeatedly covered by massive Piedmont glaciers during Quaternary peak glacial periods. Glacial and associated glaciofluvial landforms are especially well preserved in the area of the former Salzach Piedmont glacier (Austria/Germany), where remnants of at least 4 glacial maxima, minor anthropogenic overprint and comprehensive geological and topographic data provide a unique opportunity to study glacial and glaciofluvial sediment/landform associations.
In this presentation we focus on a local setting containing deposits from the last ("Würm"; MIS 2) and penultimate ("Riß"; MIS 6) glacial maximum. Foreland glacier area, typically representing sediment/landform associations at the glacial lobe terminus. Specifically, we investigate the transition from the endmoraine system to the glaciofluvial outwash in order to make statements on the internal built up, the timing and the subsequent degradation associated with glaciofluvial reorganization during deglaciation.
Investigations were carried out using outcrop information, drillcore logs, near-surface geophysics (ground penetrating radar and seismic refraction), as well as luminescence dating of selected sand-sized samples. The geometry and lateral extension of remnants of a thick interglacial paleosol were investigated using core log information and terrestrial lascerscan data. Detailed topographical information benefitted from high resolution airborne laserscan imagery.
We identify two main glaciofluvial depositional systems for the LGM: (i) sheet flow dominated landforms (i.e. alluvial fans) broadly attached to the end moraine system and (ii) braided river deposits from meltwater streams initiating at distinct meltwater outlets. Our first results point to a very short period of active deposition. With the onset of deglaciation and ice meltdown back into the tongue basin, partial degradation of deposits started, leading to multiple terrace level formation along the meltwater pathways. Where sheet flow of the LGM dominates, it overlies MIS6-deposits almost without any unconformity well preserving thick and laterally extensive paleosol deposits.