



## **Geomorphological mapping of the proglacial zone of the Gepatschferner glacier, Austria**

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In this case study, a geomorphological map of the proglacial zone (i.e. the area within the maximal glacier extent of the Little Ice Age) of the Gepatschferner glacier is presented. The map has been produced on the basis of a 'traditional' field survey, supported by aerial photo analysis and derivatives of a high-resolution digital elevation model (airborne LiDAR, 1x1 m raster). Glacigenic sediments exposed by the ongoing glacier retreat have since then been intensively reworked by paraglacial processes, including slope wash, linear erosion and debris flows. This is especially the case on steep lateral moraines that are subject to gully processes and debris flows, the amount of incision being related to the time of deglaciation. In addition, mass movements from rock slopes are contributing to the sediment budget of the proglacial area, both directly and indirectly (i.e. deposition onto the glacier).

The PROSA joint project aims at a quantification of proglacial sediment budget through measuring sediment fluxes in the field and through the detection and quantification of surface changes using multi-epoch LiDAR surveys (both airborne and ground-based). Geomorphological mapping, focusing on processes and sediment stores, forms an important basis for (a) identifying sediment stores and areas of recent process activity, (b) selecting plots for field measurements and terrestrial laser-scanning, (c) assessing lateral (hillslope-channel) and longitudinal (along the channel network) sediment connectivity, and (d) regionalizing the results of the measurements of sediment flux.