

Who is who in the glacial forefield: a macro fabric-based classification of glacial landforms

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Modern day glaciated areas pose as a sandbox model for the description and interpretation of glacigenic landforms, where cause and effect are well constrained and understood. The description of glacigenic landforms- or features are usually based on the lithofacies (e.g. diamicton, graded sand, etc.) or on sedimentological processes (e.g. meltout till, push moraine). Certainly, this procedure is well established and suitable when dealing with recent landforms. When it comes to ancient glacially associated deposits or former glaciated areas that are isolated or the general context is vague, interpretation can be difficult or ambiguous. Apart from lithofacies and sedimentological properties, the arrangement and orientation of clasts and glacial debris can be used to classify distinct morphotypes that occur in a glacial setting. For this purpose, we studied ice parallel-, orthogonal- and joint landforms as well as amalgamated deposits in the proximity and direct icecontact of the retreating Gepatsch glacier in Tyrol that were analyzed according to their clast macro fabric. Based on the spatial distribution and orientation of clasts that are extracted from virtual outcrop models, UAV surveys and classical fieldwork approaches, the analyzed features differ significantly according to their fabric patterns and allow a classification supporting the existing terminology that helps to provide an alternative for the understanding of glacigenic landforms.