



Slope geomorphology and processes in four central Svalbard areas - first results of a comparative study relating geomorphological slope features to meteorology, geology and topography

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Detailed geomorphological mapping has been carried out combining three-dimensional aerial photography studies with detailed field mapping of periglacial slope landforms in selected part of central Svalbard in the Longyearbyen, Adventdalen and Vindodden areas. The focus of the research was on identifying slope processes and their resulting landforms and activity, the meteorological setting and the impact of slope processes on human transport and housing infrastructure of the study areas.

The Svalbard landscape has an arctic maritime climate with continuous permafrost and total lack of higher vegetation. The analysed and mapped four study areas range in size and setting concerning distance to the sea and large-scale topographical setting, but they all include slopes and different types of slope deposits. The general Tertiary and Triassic bedrock geology is similar between the areas and consists of almost horizontally laminated layers of sandstones, mudstones and shales.

Here we present results of the geomorphological mapping with focus on snow avalanches, debris flows and solifluction processes and sediments. We describe the variable activity and sub-types of the periglacial slope landforms and sediments in relation to meteorological, topographical and geological setting. The major factors constraining type and distribution of slope processes in the four compared areas are suggested to be a combination of bedrock geology of the back walls, location in relation to general wind direction and the sediment composition in the starting areas of debris flows and solifluction sheets.