

## Debris avalanches in Norway; comparison of geological setting and release mechanism

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Debris avalanches are a type of rapid gravitational process that widens along the flow path and therefore often becomes very destructive in the wide outrun area. This avalanche type is not common in Norway, but recent events have sparked the need to understand them better. One important aspect is the geological and climatic setting, affecting release mechanisms and enabling predictions of future events. We aim also to define release mechanisms and factors causing the widening avalanche path, thus pinpointing geologic characteristics that may be mapped over larger areas.

Four debris avalanches are investigated, situated in Møre and Romsdal county, North western Norway. We have focused on the meteorological preconditions, process of initiation and factors along the avalanche path that might contribute to the widening of the track.

Various topographic and meteorological analyses were used. Digital terrain models were analyzed for angle of slope, fluvial flow paths and convexity of slope, in several directions. We compared data on daily precipitation and rainfall intensity before and during the events.

Release is found to be linked to meteorological pattern in combination with geology at each release area. The stratigraphy often including layers of weathered bedrock or till cover, as well as denser, more finegrained units. The widening of the avalanche paths seems to be related to slope sections with shallow soils together with smooth and compact bedrock surfaces in the flow path and slightly convex slope profile.