Avalanche Characterization for Regional Forecasting

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In the Sunnmøre and Romsdal road districts in Western Norway, the local road authorities have compiled a register of more than 300 sites where avalanches encounter principal roads in the area. The area covered is about 5 000 km^2. The local climate varies substantially throughout the area, mainly due to elevation ranging from sea level to 1500 m, and to highly varying proximity to the coast. To conduct avalanche hazard evaluation and warning for the roads in the region, a database was constructed based on the compiled register. In addition, each avalanche path was characterized by it's sensibility to different wind directions (based on starting zone aspect and shape), starting zone height and area, local climate, steepness and the road segment's situation relative to the run out potential of the avalanche. Using this data, the road segments were grouped to identify segments exposed to avalanches that run under similar conditions. This allowed an operational probability assessment of which road segments are more likely to have an avalanche reaching the road in given weather conditions. The method can be easily implemented in a GIS application and thus give decision makers a fast overview of the anticipated situation in the road district during a given weather situation.