



Evaluating and improving the stability predictions of the snow cover model SNOWPACK

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The snow cover model SNOWPACK simulates snow stratigraphy for the locations of automatic snow and weather stations. Based on the stratigraphy, snow stability is predicted by calculating three stability indices. During December 2004 and January 2005 periods of high avalanche activity, natural and skier triggered, were observed in the region of Davos (Eastern Swiss Alps). The model results were compared to the observed avalanche activity and the temporal and spatial evolution of the avalanche danger as forecasted by the Swiss avalanche warning service. Detailed comparisons gave rise to numerous improvements. These include the snow metamorphism and snow hardness parameterisation and rules to find the critical layers for which the stability indices are calculated. All these changes were evaluated compared to the previous formulation based on a set of detailed manual snow profiles. The improvements led to a better agreement between model results and observations. This suggests that the snow cover model SNOWPACK is suited as supporting tool for stability evaluation as done by the avalanche warning service.