Geophysical Research Abstracts, Vol. 7, 04045, 2005 SRef-ID: 1607-7962/gra/EGU05-A-04045 © European Geosciences Union 2005



Modelling the system behaviour of wet snow avalanches using an expert system approach for risk management on high alpine traffic roads

A. Zischg (1), M. Keiler (2) and S. Fuchs (3)

(1) Geo Information Management, Gargazzone, Italy (a.zischg@geo-im.com), (2) Department of Geography and Regional Research, University of Vienna, Austria, (3) alpS Centre for Natural Hazard Management, Innsbruck, Austria

The approach describes a preliminary model of a rule-based expert system calculating the time-variable release disposition for wet snow avalanches, using the assumption of triggering without the loading of new snow. The knowledge base of the model is created using investigations on the system behaviour of wet snow avalanches in the Italian Ortles Alps and represented by a fuzzy logic rule-base. Input parameters of the expert system are numerical and linguistic variables, measurable meteorological and topographical factors and observable characteristics of the snow cover.

Output of the model is a determined membership of the considered time interval to the fuzzy sets of "disposition for wet snow avalanches" and "no disposition for wet snow avalanches", using the inference method. In combination with topological parameters, the spatial interpolation of the calculated disposition leads to a dynamically generated hazard map. In intersection with the damage potential, the daily variable wet snow avalanche risk on the road can be calculated. As a consequence, the spatial and temporal variability of avalanche risk can be determined on the basis of a short-term risk assessment approach.