



Determination of avalanche risk for (private) access roads – evidence from Tyrol, Austria

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Determining the fatality risk due to avalanches on road networks provides an absolute figure for the values at risk. However, this methodology needs a sound number of statistical observations regarding the elements of the risk equation. This information normally is incomplete for minor roads and private access roads. While the number of vehicles and the number of persons at risk can be determined from statistically figures such as the attendance of tourist infrastructures, the long term hazard potential has to be ascertained applying established methods from natural sciences.

This study describes the GIS-based determination of avalanche risk for roads with an incomplete set of data. Hence, not the absolute value at risk but a relative value of risk is obtained, providing a range between proven and maximal risk. The proven risk level is based on available incident documentation (e.g., avalanche cadastre, chronicles), while the maximal risk level is based on field mapping and the analysis of aerial photographs.

It is shown, that the results of the approach show a wide range resulting from (a) the basis of event documentation (b) the available database and (c) the applied methodology. Thus, the limit of the societal accepted risk level could not necessarily be identified. As a consequence, the study shows the necessity of consistent event documentation on the one hand and the need for a definition of the range of accepted avalanche risk level on roads on the other hand. Furthermore, the results of the fatality risk for the whole evaluated street section as well as for the individual avalanche tracks serve as a decision basis for the implementation of mitigation measures.