



Avalanche risk assessment – a temporal approach

M. Keiler (1), R. Sailer (2), C. Weber (3), A. Zischg (4), S. Fuchs (5) and S. Sauermoser (6)

(1) Department of Geography and Regional Research, University of Vienna, Austria (margreth.keiler@univie.ac.at), (2) Federal Research and Training Centre for Forests, Natural Hazards and Landscape (BFW), Department of Natural Hazards and Alpine Timberline, Innsbruck, Austria, (3) Federal Service for Torrent, Erosion and Avalanche Control, District Office Imst and Landeck, Austria, (4) Department of Geography, University of Innsbruck, Austria, (5) alpS Centre for Natural Hazard Management, Innsbruck, Austria, (6) Federal Service for Torrent, Erosion and Avalanche Control, Section Tyrol, Innsbruck, Austria

Snow avalanches pose a threat to settlements and infrastructure in alpine environments. Due to the catastrophic events, the public is more aware of this phenomenon. In the past, alpine settlements have always been confronted with natural hazards since they have been populated. Nevertheless, changes in land use and in dealing with avalanche hazards lead to an altering perception of this threat. In this study, a multi-temporal risk assessment is presented for the municipality of Galtür (Austria). Changes in avalanche risk between 1950 and 2000 are quantified.

In the area of natural hazards, risk is defined as a function of the probability of occurrence and the corresponding extent of damage. Extent of damage is constituted by the two factors damage potential (value at risk) and vulnerability. Since the mid-twentieth century, both of these factors changed over time and consequentially influenced the development of avalanche risk in the settlement. For each avalanche track different scenarios were calculated according to the development of mitigation measures. The resulting run out zones were intersected with the affected damage potential. The decrease of hazard potential is overlain by an increase in damage potential caused by an expansion of buildings and infrastructure in endangered areas. Therefore, the risk reduction due to mitigation measures since 1950 is followed by a re-increase of the avalanche risk in 2000.

This study leads to a better understanding of the development of avalanche risk and

the risk influencing factors. It also provides useful data of the actual risk, allowing a comparison between risk situations of different avalanche tracks. This provides the basis for further studies on cost-benefit analyses of future risk reduction measures.