

**Fuchs, S., Bründl, M. & Stötter, J.** (2004): Development of avalanche risk between 1950 and 2000 in the Municipality of Davos, Switzerland. *Natural Hazards and Earth System Sciences*, 4, 263-275.

### **Abstract**

In recent years, risk assessment has become increasingly important for the protection of settlements against natural hazards because the public authorities have to economise their budgets and therefore to legitimate their investments. To quantify risk, information is needed on both, recurrence intervals of the potentially damaging natural processes and on the associated damage potential. In the past, high efforts were undertaken to assess the former, while the latter was almost ignored. The aim of this study was to determine the development of the avalanche risk in the inhabited areas of the municipality of Davos, canton of Grisons, Switzerland, for the period between 1950 and 2000. The extent of avalanche prone areas was quantified using the numerical avalanche model AVAL-1D and the current legal hazard maps. The damage potential was quantified by the number and reinstatement values of buildings and by the number of persons per building. It has been demonstrated that, contrary to the frequently expressed statement that the vulnerability of communities has increased, the risk for this settlement in fact decreased substantially. This can mainly be attributed to the realisation of mitigation measures, such as defence structures in avalanche starting zones. The only exception regarding the development of risk was in the category of residential buildings, where an increase in risk was already detectable at medium recurrence intervals. This is remarkable because methods of land use planning, such as hazard mapping, are intended to protect residential buildings from the impact of hazardous processes. However, general statements referring to a larger area (region, country) might be difficult to make, since small-scale disparities have a very important influence on the diversification of risk and risk management. Furthermore, it has to be emphasized that the results are highly dependent on the assumptions made in this study.