

DEVELOPMENT OF A MULTHAZARD AND MULTIRISK CONCEPT

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BACKGROUND

The global population is growing constantly, and is accordingly changing our natural surrounding in considerable pace and manner. People need places to live in, and the growing population pressure forces people in formerly inhabited or only seasonally utilized areas. At the same time, population density increases in many regions. Due to this development of our societies over time the overlapping areas of human spheres with natural spheres is increasing quickly as well and finds an expression in increasing numbers of damaging natural events. Natural processes such as snow avalanches, rock falls, debris flows, floods are occurring regularly and the natural system is well adapted to these processes: Generally, it recovers quickly and utilizes the benefits of these events, e.g. fertilized soils due to flooding. Living in a specific region, be it at a coast or in high mountains, means living with the site specific hazards. Only very few regions might be close to non-hazardous or only threatened by one potentially dangerous process. Mostly, people will have to live with a multitude of processes and hence encounter a multi-hazard situation.

SITE-SPECIFIC HAZARDS

Identifying all potentially dangerous processes of a specific region is especially crucial in spatial planning and emergency management. The site specific system has to be known to be able to act appropriately in any case of emergency. Otherwise local planning might end in a situation where people are being relocated from a rock fall area to an area with a high snow avalanche risk.

Analysing natural multi-hazards and risks includes typical natural processes such as snow avalanches, rock falls, flooding, and debris flows. Although characterized by varying occurrence in time and space, these processes cause a constant threat to people and infrastructure. Commonly, the respective processes are analysed and modelled individually which might lead to a misjudgement of the general natural risks in a specific area.

Analysing natural hazards and risks of a specific region therefore requires a shift from focussing on one or two potentially hazardous processes to focussing on the multi-hazard situation of a specific region, i.e. the sum of the hazards including their consequences for the respective social system on different spatial scales. To achieve an effective hazard and risk management a profound knowledge of the natural and social system on different scales is crucial.

Effective hazard and risk management can be seen as essential from several point of views, e.g. in terms of economy, sustainability and protection of lives. One step towards this efficiency is to include all known natural hazards and the resulting risks of a given place in the analysis.

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AIM

This study deals with the natural system on a regional scale and aims at developing a concept for research and practice in which a holistic systems approach is suggested in hazard and risk analysis. To achieve this goal in a first step former and present hazard and risk concepts from several countries (e.g. Australia, Austria, Germany, Great Britain, USA) and different hazards (e.g. flooding, rock fall, debris flows) are reviewed and discussed. The concept will then be developed and evaluated in a specific region. Evaluation will be done by means of process modelling and geomorphological mapping. Finally, the concept can be adopted to other regions and to a variety of process groups.