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Towards dynamics in mountain hazard risk management

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Starting with an overview on losses due to mountain hazards in the Russian Federation and the European Alps the question is raised why a substantial number of events still is recorded – despite considerable efforts in hazard mitigation and risk reduction. The main reason for this paradox lies in a missing dynamic risk-based approach, and it is shown that these dynamics have different roots: Firstly, neglecting climate change and systems dynamics, the development of hazard scenarios is based on the static approach of design events. Secondly, due to economic development and population dynamics, the elements at risk exposed are subject to spatial and temporal changes. These issues are discussed with respect to temporal and spatial demands. As a result, it is shown how risk is dynamic on a long-term and short term scale, which has to be acknowledged in the risk concept if this concept is targeted at a sustainable development of mountain regions. A conceptual model is presented that can be used for dynamical risk assessment, and it is shown by different management strategies how this model may be converted into practice. Furthermore, the interconnectedness and interaction between hazard and risk are addressed in order to enhance prevention, the level of protection and the degree of preparedness.