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A Review of Vulnerability Assessment Methodologies for Alpine Hazards: The need for a new methodology

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Mountain hazards such as landslides, floods and avalanches pose a serious threat to human lives and development and can cause considerable damage to lifelines, critical infrastructure, agricultural lands, housing, public and private infrastructure and assets. The assessment of the vulnerability of the built environment to these hazards is a topic that is growing in importance due to climate change impacts. A proper understanding of vulnerability can lead to more effective emergency management and in the development of mitigation and preparedness activities all of which are designed to reduce the loss of life and economic costs. However, most studies regarding mountain hazards focus on hazard mapping, simulation, modeling and monitoring and only a limited number of studies concerning vulnerability have been carried out.

In this study we are reviewing existing methods for vulnerability assessment related to mountain hazards. We identify existing gaps and we analyse the applicability of existing approaches. Finally, we propose a new methodology for vulnerability assessment to mountain hazards (landslides, floods and avalanches), which takes into consideration their impact on the built environment and it is based on the construction of vulnerability curves for the specific mountain hazards. The methodology is being tested in South Tirol and some preliminary results are presented.