

Development of structural vulnerability curve associated with high magnitude torrent occurrences in Switzerland

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In mountain regions, high economic losses have increased significantly in the past decades due to severe hazard processes, in spite of notable investments in hazard management. Assessing the vulnerability of built structures to high magnitude torrent events is a part of consequence analysis, where hazard intensity is related to the degree of loss sustained. While vulnerability curves have been developed for different countries, the presented work contributes new data from Swiss-based case studies that address a known gap associated with the consequences of high magnitude events.

Data for this stage of the investigation communicates the degree of loss associated with affected structures and has been provided by local authorities dealing with natural hazards (e.g. Amt für Wald des Kantons Bern (KAWA) and cantonal insurance providers). Information used for the empirical quantification of vulnerability to torrent processes is derived from detailed post-event documentation and the loss database and verified with field visits. Building the initial database supports data sharing and the systematic inclusion of additional case studies as they become available.

The collection of this new data is fundamental to the development of a local vulnerability curve based on observed sediment deposition heights, a proxy for describing hazard intensity. The result will then be compared to curves derived from Austrian and Italian datasets.