



Expert judgment or event data? A comparison of different concepts for assessing flood vulnerability of building structures

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Flood loss estimation models link information on the extent and intensity of floods with data on the location and vulnerability of assets. In terms of direct flood damages to buildings, the model component 'vulnerability' is a key uncertainty driver. Our contribution compares four different approaches for assessing flood damages on building structures at local to regional scales. All four approaches base on relationships between flood depth at the building level and the degree of damage. However, the relationships differ in the methodological approach, in their underlying data and their complexity. The first two approaches are driven by data of past flood events: (1) review of vulnerability functions from international literature and transfer of these functions to the study area; (2) elaboration of regional vulnerability function by analysing insurance claims data in Switzerland. The other two approaches are based on expert judgments: (3) Swiss national guidelines to appraise flood risk; (4) targeted heuristics based on on-site inspections of selected representative buildings. We apply the four vulnerability assessment methods in the Aare River basin upstream of Bern (Switzerland) for different extreme flood scenarios based on probable maximum precipitation events. We analyse differences and similarities of the four approaches' results and investigate the influence of the aggregation level, i.e. from the damages at single house level up to an aggregation at municipality or river basin level. We compare the advantages and disadvantages of the different approaches with respect to (data) requirements, robustness and transferability.