



## **Using insurance data to learn more about damages to buildings caused by surface runoff**

Daniel Bernet (1), Veronika Roethlisberger (1), Volker Prasuhn (2), and Rolf Weingartner (1)

(1) Institute of Geography & Oeschger Centre for Climate Change Research & Mobiliar Lab for Natural Risks, University of Bern, Bern, Switzerland (daniel.bernet@giub.unibe.ch), (2) Agroscope, Institute for Sustainability Sciences ISS, Zurich, Switzerland

In Switzerland, almost forty percent of total insurance loss due to natural hazards in the last two decades was caused by flooding. Those flood damages occurred not only within known inundation zones of water courses. Practitioners expect that roughly half of all flood damages lie outside of known inundation zones. In urban areas such damages may simply be caused by drainage system overload for instance. However, as several case studies show, natural and agricultural land play a major role in surface runoff formation leading to damages in rural and peri-urban areas. Although many damages are caused by surface runoff, the whole process chain including surface runoff formation, propagation through the landscape and damages to buildings is not well understood. Therefore, within the framework of a project, we focus our research on this relevant process.

As such flash flood events have a very short response time and occur rather diffusely in the landscape, this process is very difficult to observe directly. Therefore indirect data sources with the potential to indicate spatial and temporal distributions of the process have to be used. For that matter, post-flood damage data may be a profitable source. Namely, insurance companies' damage claim records could provide a good picture about the spatial and temporal distributions of damages caused by surface runoff and, thus, about the process itself.

In our research we analyze insurance data records of flood damage claims systematically to infer main drivers and influencing factors of surface runoff causing damages to buildings. To demonstrate the potential and drawbacks of using data from insurance companies in relation to damages caused by surface runoff, a case study is presented. A well-documented event with data from a public as well as a private insurance company is selected. The case study focuses on the differences of the datasets as well as the associated problems and advantages respectively. Furthermore, the analysis of the data, especially the crucial identification of damages caused by surface runoff opposed to damages caused by other processes such as riverine flooding, drainage system surcharges etc. are discussed.