Probabilistic, multi-variable flood loss modelling

Heidi Kreibich, Kai Schröter, Stefan Lüdtke, Patric Kellermann, Fabio Brill, Viktor Rözer, Nivedita Sairam, Lukas Schoppa, Tobias Sieg, and Max Steinhausen

German Research Centre for Geosciences GFZ, Section Hydrology, Potsdam, Germany (heidi.kreibich@gfz-potsdam.de)

Flood risk analyses are an important decision-making basis for flood risk management and adaptation. However, such analyses are associated with significant uncertainty, even more if changes in risk due to global change are expected. Uncertainty analysis and probabilistic approaches have received increased attention during the last years, but they are not standard practice for flood risk assessments and loss modelling.

Novel probabilistic, multi-variable flood loss models have been developed and validated using machine learning approaches like Bayesian Networks on basis of an empirical flood loss database from Germany. This presentation will discuss how data from standardized surveys on flood affected private households and companies can help to gain more knowledge about the damage processes during floods. Furthermore, probabilistic, multi-variable flood loss models are developed, which have the significant advantage to inherently provide quantitative information about the uncertainty of the prediction. Validations show, that multi-variable models are better able to describe flood damage processes.