Geophysical Research Abstracts
Vol. 20, EGU2018-8949-1, 2018
EGU General Assembly 2018

Development of the probabilistic European flood loss model BN-FLEMO for residential buildings

Stefan Lüdtke (1), Kai Schröter (1), Max Steinhausen (1), Rui Figueiredo (2), Annegret Thieken (3), Holger Cammerer (4), and Heidi Kreibich (1)

(1) GFZ German Research Centre for Geosciences Section 5.4, Telegrafenberg 14473 Potsdam, Germany, (2) Scuola Universitaria Superiore IUSS Pavia, Pavia, Italy, (3) Institute of Earth and Environmental Science, University of Potsdam, Potsdam, Germany, (4) DEVK Rückversicherungs- und Beteiligungs-AG, Cologne, Germany

Flood loss estimation is an important component of flood risk assessment and management. A variety of flood loss models exists, but the majority of models was developed for certain regions based on local observations of flood losses after a particular flood event. These models often perform poorly if transferred in space due to regional differences, e.g. regarding building characteristics. Furthermore, using different flood loss models complicates the comparison of flood loss assessments across regions, and thus impedes a consistent assessment of flood loss at continental scale e.g. for Europe.
In this study, we develop the multi-variable meso-scale flood loss estimation model BN-FLEMO using Bayesian Networks and evaluate its performance to estimate direct losses to residential buildings. The flood loss model was derived based on empirical data from multiple flood events in Germany. To predict flood loss in Europe, a set of European wide available variables were used as input. Model performance was evaluated within three different case studies, comprising several communities in the Mulde catchment (Germany), a part of the Lech catchment (Austria) and the municipality Caldogno (Italy). In addition, local information that provide more detailed descriptions of flood damage processes in the case study area were incorporated to the model and the value of this added information was assessed. The results are satisfying when compared to the officially reported loss figures for each case study. Using local data to update the model improves model predictions.