



Comparing flood loss models of different complexity

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Any deliberation on flood risk requires the consideration of potential flood losses. In particular, reliable flood loss models are needed to evaluate cost-effectiveness of mitigation measures, to assess vulnerability, for comparative risk analysis and financial appraisal during and after floods. In recent years, considerable improvements have been made both concerning the data basis and the methodological approaches used for the development of flood loss models. Despite of that, flood loss models remain an important source of uncertainty. Likewise the temporal and spatial transferability of flood loss models is still limited.

This contribution investigates the predictive capability of different flood loss models in a split sample cross regional validation approach. For this purpose, flood loss models of different complexity, i.e. based on different numbers of explaining variables, are learned from a set of damage records that was obtained from a survey after the Elbe flood in 2002. The validation of model predictions is carried out for different flood events in the Elbe and Danube river basins in 2002, 2005 and 2006 for which damage records are available from surveys after the flood events. The models investigated are a stage-damage model, the rule based model FLEMOPs+r as well as novel model approaches which are derived using data mining techniques of regression trees and Bayesian networks. The Bayesian network approach to flood loss modelling provides attractive additional information concerning the probability distribution of both model predictions and explaining variables.