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Recent flood events in Germany – revealing damage influencing factors on residential property

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The trend of increasing damages due to floods can only be counteracted with effective flood management, based on reliable flood risk analysis. Better knowledge about the connections between flood losses and damage determining factors is necessary to improve damage estimation models.
Thus extensive data about flood losses were collected at affected properties in Germany in the aftermath of floods in August 2002, August 2005 and April 2006. The data set contains more than 2100 residential damage cases. The data for the residential sector include information about building and content damages, evacuation, locations of the objects, people living at the sites and their socioeconomic situation, flood experience, precautionary measures undertaken before and during the event as well as flood information like maximum water level, flood duration, and flow velocity at the affected buildings. As first analyses showed significantly higher average damages caused by the extreme event in 2002 than by the 2005 and 2006 events the data sets were amended by adding site specific information about the recurrence interval of the event. Therefore, an estimation of the flood annuality was done for more than 120 gauges in the affected areas. The results were assigned to each damaged object to be able to analyze the influence of the magnitude on the flood damage. Thus, the data set enables a comparative analysis of multiple events of different severity that occurred over a couple of years in the same regions.
Variables that contribute most to the explanation of damages are identified by multi-criteria analyses using data mining techniques and software, namely the WEKA-tool. In applying this routine to subsets (divided by region, by recurrence interval, by event) main differences in the contribution of single factors can be identified.
The aim is to use the results for the improvement of existing flood damage estimation models.