



Main factors influencing the damage due to high groundwater inundation

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The economic damage due to floods has dramatically increased during the last decades, which emphasizes the need to improve the flood risk management. One of its important components are flood risk analyses, including damage assessments. But research about flood damage is still an area which does not receive much attention and hardly any study investigates the damage due to inundations caused by a high groundwater level. The total damage of the flood in 2002 in Germany was estimated to be 11.8 billion EUR of which 8.6 billion EUR of damage occurred in Saxony. In Saxony, one third of the flood loss was due to high groundwater levels.

To improve the knowledge about flood losses and the loss-influencing factors, 1697 households affected by the Elbe and Danube flood in 2002 and 461 households affected by the Danube flood in 2005 or the Elbe flood in 2006 were interviewed. In the computer-aided telephone interviews details about the damage to buildings and contents as well as the characteristics of the hydrological impact, presence of contamination, early warning lead time and undertaken emergency measures, building characteristics, long-term precautionary measures, flood experience and socio-economic factors were retrieved. In our study after the 2002 flood, the mean damage ratios of buildings and contents where the water entered the building only from below (groundwater) was 5% and 13%, respectively. The mean damage ratios of buildings and contents where the water entered the building also via surface run off were significantly higher with 14% for buildings and 31% for contents.

We will highlight the influence of different factors on the flood damage of residential buildings and contents due to high groundwater levels. Finally, resulting implications for flood damage estimation models for high groundwater situations will be discussed.