



Anticipatory flood risk assessment under climate change scenarios: Hazard assessment for Austria

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Due to climate change, an increase in fluvial floods can be expected in some regions of Europe. Although the results of climate models are uncertain especially regarding the prediction of future changes in frequency and magnitude of floods, an enhanced impact assessment seems appropriate to learn about the vulnerability of different catchments to account for possible changes in runoff characteristics.

This contribution presents a flood based hazard assessment procedure under climate change conditions for the federal territory of Austria. First, on a macro-scale level, regions, where changes in runoff characteristics can be expected are identified on the basis of existing climate change impact studies. The maximum range of predicted changes is used to define a climate change allowance. Based on these findings, a climate factor is applied to the discharges of the existing HORA data set (Natural Hazard Overview & Risk Assessment Austria). The original data set indicates flood plains for recurrence intervals of 30, 100 and 200 years for the entire area of Austria for current climate conditions. To consider possible impacts of climate change on floods, revised inundation areas are generated by modifying the existing HORA data set. The modified HORA flood plains are compared with the current floodplains to detect and categorize regions with higher flood vulnerability.

Based on the macro-scale assessment, three case studies for areas with high sensitivity are analysed on a regional to local level. High resolution hydrodynamic models for these areas provide more accurate information for judging the quality of the macro-scale assessment. Furthermore, a detailed risk analysis is conducted to derive the incremental expected flood losses due to climate change.