



Floodplain mapping – different models to achieve a common purpose

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Nowadays floodplain mapping is an essential part of flood risk management concepts. The realisation in practice is often reduced to one- or two-dimensional steady flow simulation. The results show the maximum inundation of selected return periods. These maps are well qualified for a coarse estimation of the affected areas by flood to support the further land use and urban planning. But the extreme flood events in the last decade demonstrated the complex impact and run off of floods. Especially the missing knowledge about extreme flood events as well as the false estimation of flood protection measures, like in the Elbe catchment in 2002 (DKKV 2003), reflected the gaps in the flood prevention and risk management also as a result of the used techniques. Because of these facts the authors investigate a concept, which integrates different models for a sustainable floodplain mapping to improve the preventive and operational flood risk management. Furthermore, both the amendment of the German Water Resources Act and the EU-flood directive require appropriated techniques to draw potential inundated areas. The main objectives in the research are the consideration of the variability of the boundary conditions in the simulation of flooded areas and the socio-economic relevance of these areas. The 2D-hydrodynamic model TRIMR2D provides the basis for the floodplain mapping. In a first step the range and uncertainty of inflows are investigated by rainfall-runoff modelling with focus on extreme rainfall events and changing land use conditions in the catchment area. Then the interactions with the groundwater and sewage water networks are integrated in a model coupling

approach (BMBF research project 3ZM-GRIMEX, Germany) to improve the floodplain mapping especially in urban areas. Possible changes of the vulnerability were regarded in a last point by the integration of socio-economic model results, which define the recent and future residential attractiveness in the potential affected areas. All parts of the study are done in the Elbe catchment in Saxony (Germany). The approach presents the importance of the complexity of flood events, which also should draw in floodplain maps by appropriated techniques.