FLOODSITE – 2D WATER LEVEL MODELLING TO EVALUATE/ASSESS RETENTION CAPACITY AND DAMAGE POTENTIAL IN URBANISED FLOODPLAINS

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The European Integrated Project FLOODsite (http://www.floodsite.net) intends to contribute to minimise flood damages in form of supporting decisions of integrated flood risk management providing stakeholders with indicators and tools including information on awareness and preparedness. During the Elbe flood of August 2002 it became clear that many people in the Elbe river basin were not aware about the consequences of an extreme flood (Messner 2004).

For detecting areas of different natural flood risk a 2D-modelling had been carried out using the model TrimR2D by CASULLI and FULFORD. The objective was to generate water levels and retention times of water that give an idea of the risk dedicated to 2 urban floodplain areas for different recurrence intervals. Both selected floodplain areas (including a village and a town) within the Mulde catchment which were extremely affected by the flood 2002. For the calculation of water levels and retention capacity a digital terrain model (DTM) with a ground solution of 20x20 meters was utilised. As input data served further measured streamflow data at the main gauges in the catchments and information about the recurrence intervals. The results have been proved with measured data on water level extents derived form remote sensing data (aerial photography and satellite imagery, Haase et al. 2004) and locally measured water levels during the flood event.

The results show a very good spatial illustration of the recorded extreme floods of the last 50 years (1954, 1974 and 2002) for water extent and water levels. During the last floods the total floodplain extent had been partially reached. Water levels and extents for any other recurrence intervals thus could be calculated. As a second step the derivation of damage potentials (and damage potential curves) for different urban land uses have been carried out. This has to be combined with modelling results of the distribution of pollutants to assess the risk of water levels and retention times.

We plan to utilise of higher resoluted DTM and better differentiated land use data which let expect very good model results for a wide range of recurrence intervals. Therefrom risk maps will be derived. to evaluate flood risk as a "product" of economic, ecological and social issues to get a complex picture which really enables support in floodplain and wetland management.