Interreg

North-West Europe

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Institute of Hydraulic Engineering and Water Resources Management

RWTH AACHEN UNIVERSITY

FlashFloodBreaker

Climate and environment

Differentiation and characterization of flash flood endangered areas

FlashFloodBreaker
Integrated simulation of pluvial fluvial flood events

Real-time forecasting of flood and flashflood hazards: Differentiation and characterization of endangered areas using the Emscher catchment as an example

Motivation and methods:

- Flash floods and floods are the highest monetary natural disaster in Germany
- An increase of events in the future is to be expected

- Literature-based categorization of areas endangered through flash floods
- Sensitivity analysis and evaluation of endangered areas in a hydrodynamic model
- Results were contextualized towards the application of potential AI-usage

Source: https://img.welt.de/img/vermischtes/mobile155883099/9611355427-ci16x9-w1200/Hochwasser-in-Bayern.jpg

Fig. 1: Flood in Bavaria, Germany

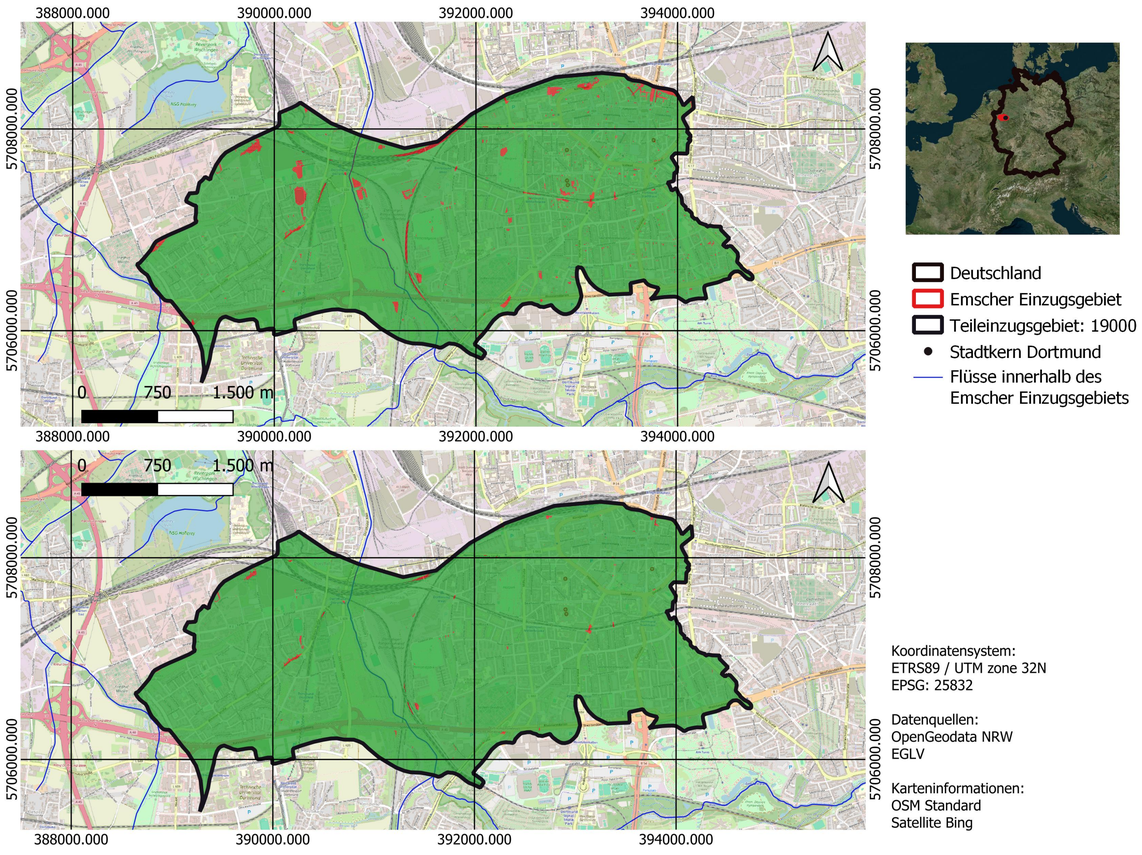

Fig. 2: Study area (sub-catchment 19000)

- The velocity and depth of the flood were chosen as parameters to identify endangered areas
- A velocity of 2,0 m/s and a depth of 0,5 m were defined as parameters of substantial danger
- High intensity rainfall events were simulated and the resulting surface runoff analysed
- For the events of the 14.07.2021 (Fig. 2, top) and the 16.07.2012 (Fig. 2, bottom) the area of the inner city of Dortmund was examined
- Red areas represent areas were at least one of the two criteria is fulfilled

- The evaluation of evolving weather conditions by an AI offer a huge potential for civilian safety
- Operational forces and civilians alike could avoid endangered areas

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