FACTSHEET RISK ASSESSMENT AND MAPPING ACTIVITIES

Heavy rain risk map for Umag river estuary

Where was it implemented?

Croatia, Istria, Umag

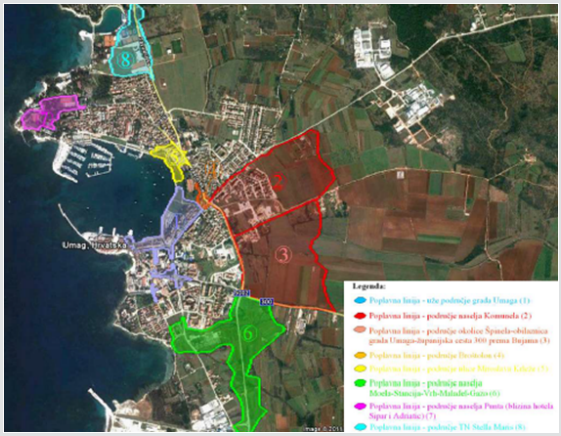
Problem/background

The last ten years have experienced more frequent events with extreme rainfall causing fluvial and pluvial floods in Croatia. During such events, material damage was recorded in the wider area of the town of Umag, so far with no casualties.

The Umaški potok basin was selected as a representative of the consequences of heavy rainfall events on specific torrential basins in the mostly rural as well as coastal region – with a (part of the) area in carbonate karst. Besides, the Umaški potok stream drains into the sea, so its capacity to receive high waters also depends on the backwater effect of the sea, which in the context of the present climate change and seawater level rise gives a special significance to the issue of protection from the consequences of heavy rain in the coastal regions.

The final objective is to develop hazard and risk maps for the selected parameters in the pilot area for floods caused by heavy short-lasting rainfall.

Map example:



Description of methodological background and outcomes

Testing hydrodynamical model

Area and event characterisation

Area type Semi-urban	**Topography** Lowland, hilly
Land cover/land use distribution 76 % agricultural, 15 % forest & seminatural, 8 % artificial	**Event** Observed event, synthetic/design event
Receptors Buildings, roads, built-up area	**Flood type** Flash flood

Specifications of method/measure and data demands and outputs

Level of complexity	3
Adressed SPRC element	Source, pathway, receptor
Method group	Process-based approach
Spatial scale(s) of application	Local
Time scale/resolution	Calculation timesteps: flexible/automatic

Input datasets (type and scale/resolution)	Weather station data (point, timeseries, 5 min) Design storms (point, timeseries, testing 5 to 30 min) Digital elevation Model (raster, 10 m) Boundary conditions (sea level) River geometry (vector: line/polygon) Hydraulic structures (vector: line/polygon, points) Land use data (vector: polygon) Buildings (vector: polygon/points) Traffic/technical infrastructure (vector: polygon/line)
Output datasets (type and scale/resolution)	Max. water levels (raster, 10 m) Max. flow velocity (raster, 10 m) Receptor & risk classes
Description if implementation	
Implementation • Start date/End date	**Users (reported/designated)** • Water management and local authorities
Initiator/responsible • Hrvatske vode	**Involved stakeholders** • GF Rijeka, DHMZ
Lessons-learned	
Main success factor: • testing	**Main challenge:** • Impact of the karst (underground saturation) and the sea (retarding effect) on discharge; quality of inputs; selecting the representative cell size.

Key message to others starting with a similar task	**Contact**
The implemented activities provide insight into the required steps as assistance in the application of the activities in other towns in Croatia to address similar problems in their respective areas. First of all, prior to the implementation of activities it is necessary to identify the key problems. Special attention needs to be paid to the preparation of inputs as results largely depend on their accuracy; the development of a quality terrain model; and the establishment of a hydraulic model (including model calibration and analysis of results). It is also important to select representative rainfall (design storm) and model dynamics, with continous model upgrades.	Hrvatske vode voda@voda.hr