



Floodwater Simulation

HWSIM 2

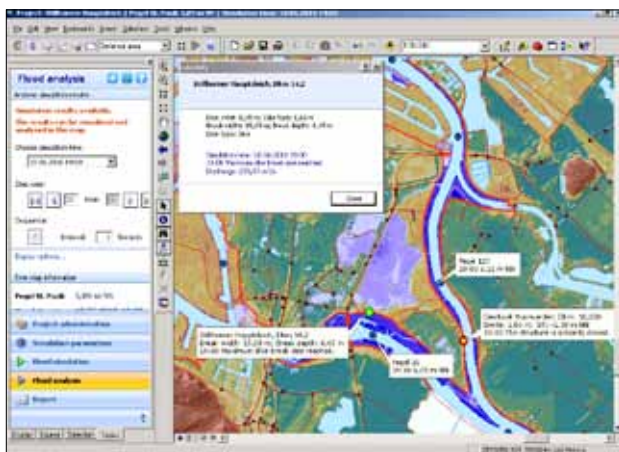
Floodwater decision support system

HWSIM is a user friendly floodwater decision support system for flood disaster control, which runs on the ESRI ArcGIS platform. It is designed as a real-time system as well as planning instrument for the development of disaster control plans and training.

In HWSIM the user can configure the following flood parameters

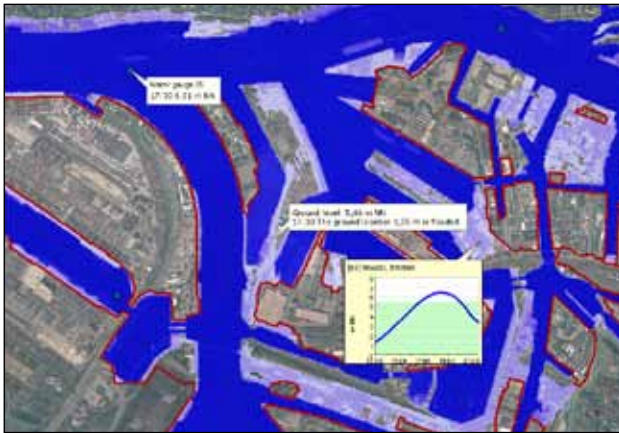
- The forecasted water level at the reference water gauges
- Dike breaks and
- Damage to dike structures (locks, floodgates)

The flooded areas can be visualized for each time step in an interactive map and published as OGC (Open Geospatial Consortium) web services.



Input data for the model design

- High resolution digital elevation model.
- Dike position and parameters (height, base, type ...).
- Dike structures (locks, floodgates ...) and geometry.
- Reference water gauges.



Water level calculation

- For water level calculation the area is divided into sinks.
- A sink is an area, which is separated by edges.
- The profile of each edge is calculated.
- The volume curve for each sink depending of water level is calculated.
- Depending on the flood curve of reference water gauges, the flood curves for each location along the river can be calculated.

Various application possibilities

- Real-time application during a flood.
- Simulation of scenarios for planning purposes.
- Training of disaster services in the context of protection exercises.
- Analysis of past floods.

User interface

The user interface depends on the selected user role. The user sees only the tasks that he needs to address its problems. The following is a description of the main tasks.

Task Project Management - Creates a new simulation project or open an existing one.

Task Simulation Parameters – Sets the water level time function for reference water gauges, the location and geometry of dike breaks and/or the selection of damaged dike structures (locks, flood gates).



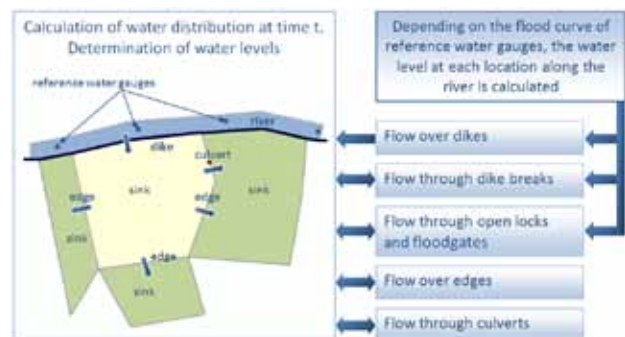
Foto: pixelio.de/traviadan

Task Flood Simulation - Sets the time step size.

This determines the frequency of the simulation results which are stored. Starts the calculation.

Task Flood Analysis –Supports visualisation and analysis of the flooded areas for each time step. The water depth can be displayed for the current time step as a text label or over all time steps as a chart.

Task Report – Creates Html-reports of the project metadata, simulation parameters and result. Results are discharge values and water levels for each time step. In addition, the flooded areas can be published as OGC (Open Geospatial Consortium) web services, as a WMS (Web Map Service), WFS (Web Feature Service) and/or WCS (Web Coverage Service).



HWSIM is compatible with the systems GeoFES and HWMobil of DHI-WASY GmbH.

Titelfoto: pixelio.de/Deterding