

Study Project/Master Thesis: Surface roughness in urban areas

Background and Scope

The increasing risk and damage potential of urban flood events create new challenges in the field of hydraulics and water resource management. For numerical simulation of these events, a special focus has to be laid on the surface roughness. Contrary to regular fluvial flood simulations, it is necessary to have functions for surface roughnesses depending on the water depth. A lot of research is already being conducted on this issue, yet not all software products have built-in functions for this problem.

The task in this student work is to test and discuss different implementations of water depth depending surface roughnesses within a hydraulic model. For the simulations the open-source software TELEMAC-2D will be used. For study projects, the scope of the task will be adapted, e.g. less implementations will be tested.

Research Question

How sensitive are hydrodynamic simulations in urban areas to surface roughnesses depending on the water depth?

Structure

- Literature research on hydrodynamic modelling in urban areas
- Adapting and testing implementations of surface models in TELEMAC-2D
- Run different simulations
- Compare and discuss results

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