



## **Modelling 1D/2D Cloudbursts in Urban Floods**

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The research is focused on the (intra-urban) flood hazard assessment for cloudbursts. This type of assessment involves 1D sewerage network representation and 2D overland flow simulation of water movement. There are different kinds of models for this purpose. In this case, the software Delft3D Flexible Mesh (Delft3D FM) is selected. It allows to use unstructured grid, and it is evolving to incorporate the function to simulate 1D sewerage network. This program can help to give a detailed representation of urban inundation.

The model is tested on a sewer district of the City of Dordrecht, considering a recent flood event that happened in August, 2015. It was a rainfall with 97 mm during 5 hours. At that time, it was classified as a once in a 1000 years event. During this cloudburst, the emergency call centers registered critical spots where people faced floods. This information plus some aerial images are used to validate the simulated flood extent.

The study is part of the Interreg North Sea Region project BEGIN, which incorporates initiatives to protect cities against floods. Moreover, it evaluates the performance of new software tools, not only for flood modelling but also for wider benefits assessment of flood risk management measures. This work presents an informal test case to assess the 1D sewerage network in Delft3D FM. Further development will be desirable to improve the performance of this model for (intra-urban) flooding from cloudbursts.

Keywords: Cloudburst; Urban flooding; 1D2D modelling; Hydrodynamic; Delft3D FM.