

# Simplify hydraulic network models for fast urban flood



Urban flooding is commonly simulated in 1D-2D simulations. For testing design strategies, as well as for online warning systems, we need fast simulation tools. The purpose of this project is to simplify the pipe network description of a MIKE Urban model (starting from a rather detailed description), to compare simulation results for different levels of detail and to identify systematics for which parts of the network can be simplified, without adversely impacting flood simulations. Ideally, an existing simplification routine in Python will be developed further. Tool: MIKE Flood, Python for simplifying the pipe network structure (starting from existing scripts)

Tasks:

- simplify pipe network by merging pipes based on length and diameter criteria
- compare flood simulation results for full and reduced model
- from the comparison, identify which parts of the network cannot be removed and why
- modify the simplification script to account for those characteristics

## Project type

Topic is suitable for MSc

## Pre-requisite

general understanding of flooding + urban drainage, some experience with MIKE Flood (course), interest in learning to work with Python

## Group size

1 student

## Department of supervisors

Main supervisor: DTU Environment

Co-supervisor: DTU Environment

## Contact person

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