

## Open data and open tools in high-resolution urban rainfall-runoff modelling

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Urban catchments are often characterized with a rapid response to rainfall events, high surface runoff, and poor runoff water quality. Exciting opportunities to study issues related to urban environments are provided by the constantly increasing availability of open environmental data and computational models. A Finnish Academy project URCA (Quality and Quantity of Runoff Water in Relation to Land Use in Urbanized Catchments) was an interdisciplinary project between Aalto University and the University of Helsinki that studied the linkages between precipitation, runoff, stormwater quality, and land use in urbanized areas. Aalto University developed model descriptions for the Helsinki research catchments using the openly available Stormwater Management Model (SWMM). In addition, possibilities of open tools and open data in facilitating high-resolution urban rainfall-runoff assessments were explored. The developed openly available tool for automated SWMM model construction considerably accelerates stormwater modelling studies with SWMM. For the open gauge data to be useful, the measurement point should be very close to the studied urban catchment. Otherwise, it may be better to resort to openly available weather radar data, whose quality can be improved using gauge correction and advection interpolation.