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Monitoring and modelling for flood-frequency estimation in an urban Swedish catchment.

Floods are extreme events that occur seldom, which means that there are relatively few data of weather and flow conditions during flooding episodes for characterisation of flood frequency. In addition, there are often practical difficulties associated with the measurement of discharge during floods. In this study we used a combination of monitoring and modelling to overcome the lack of reliable discharge data and be able to characterise the flooding problems in the highly urbanised Riseberga Creek catchment in eastern Malmö, Sweden. The study is part of a project, GreenClimeAdapt, in which local stakeholders and researchers work with finding and demonstrating solutions to the flooding problems in the catchment. A high-resolution acoustic doppler discharge gauge was installed in the creek and a hydrologic model was set up to extend this short record for estimation of flood frequency. Uncertainties in the discharge data and model parameterisation were considered in the model calibration. The model was first used to study the flow variability during the period with available climate input data. Then it was driven with long-term realisations from a statistical weather generator to estimate flood frequency through continuous simulation.