



Exploring the Variability of Short-term Precipitation and Hydrological Response of Small Czech Watersheds

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The short-term rainfall temporal distribution is known to have a significant effect on the small watersheds' hydrological response. In Czech Republic there are limited publicly available data on rainfall patterns of short-term precipitation. On one side there are catalogues of very short-term synthetic rainfalls used in urban drainage planning and on the other side hourly distribution of daily totals of rainfalls with long return period for larger catchments analyses. This contribution introduces the preliminary outcomes of a running three years' project, which should bridge this gap and provide such data and methodology to the community of scientists, state administration as well as design planners. Six generalized 6-hours hyetographs with 1 minute resolution were derived from 10 years of radar and gauging stations data. These hyetographs are accompanied with information concerning the region of occurrence as well as their frequency related to the rainfall amount. In the next step these hyetographs are used in a complex sensitivity analysis focused on a rainfall-runoff response of small watersheds. This analysis takes into account the uncertainty related to type of the hydrological model, watershed characteristics and main model routines parameterization. Five models with different methods and structure are considered and each model is applied on 5 characteristic watersheds selected from a classification of 7700 small Czech watersheds. For each combination of model and watershed 30, rainfall scenarios were simulated and other scenarios will be used to address the parameters uncertainty. In the last step the variability of outputs will be assessed in the context of economic impacts on design of landscape water structures or mitigation measures. The research is supported by the grant QJ1520265 of the Czech Ministry of Agriculture, rainfall data were provided by the Czech Hydrometeorological Institute.