



Comparison of methods for estimation of rainfall-runoff model parameters in ungauged basins

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Methods for transferring model parameters from gauged to ungauged catchments are needed in water resources modelling studies in poorly gauged regions. Although a great deal of experience has been gained with parameter estimation methods for ungauged catchments, there is a continuing need to upgrade these methods and to test them against practical requirements, since the problem of regional parameter estimation still constitutes the largest obstacle to the successful application of models in ungauged catchments. The paper presents a modification of a common procedure and comparison of various methods used in model parameter estimation for ungauged basins. Firstly the concept was based on the subdivision of the region of interest to groups of similar gauged catchments using clustering in the first step, following parameters of a lumped rainfall - runoff model are estimated by calibration using a daily time step in catchment. Regional regression formulae for the estimation of rainfall-runoff parameters from catchment characteristics were developed separately for each pooling group. Following, methods based on spatial interpolation of model parameters as kriging and inverse distance methods were tested. Also a similarity method where the best set of model parameters was transferred from the gauged catchment to the most similar ungauged catchment according to selected group of catchment characteristic was applied. The Hron River basin located in Central Slovakia was selected as a pilot region. The applicability of the concept was tested in selected the 23 subcatchments of the basin. Model parameters of the rainfall - runoff model estimated by all these methods and estimated by the model calibration were used for modelling mean

daily discharges and the results were finally compared and discussed.