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Possibilities of runoff forecast by black-box models in ungauged basins

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Hydrological modelling is very important tool for the water resources management at the present time. For modelling, the high quality input data are essentially, nevertheless this data are not always available. We can assume, that the catchments with similar characteristics have a similar hydrological behaviour and so they can be modelled by the same model parameters. This contribution is concerned with possibility of using and transmission parameters of black-box models from one catchment to the other catchments. Two black-box models were used for the analysis. The first used model was artificial neural network model (ANN), the second one was model based on linear regression method (LR). The main aim of this study was to test the simulation ability of these models in regime of short term forecast. Methodology is based on transition of parameters, which were calibrated on one catchment, to ungauged basin with similar catchment characteristics. Input data in the form of rainfall-runoff time series with one-hour resolution were used for this analysis. Testing data were collected in the three small experimental catchments belong to Department of Water Resources and Environmental Modelling. This small mountain catchments are situated in the south of Czech republic, in the mountain region ©umava. The outputs of models were runoff time series of one-hour ahead forecast. Obtained outputs were compared with measured data by Nash-Sutcliffe efficiency coefficient. The results indicate, that the transfer of parameters by using of linear regression model is in especial cases practicable. Artificial neural network offered worse results then LR model and by this point we can judge on highly sensitivity of ANN model to input data. This fact bound the possibility of use ANN models in frame of derived method.