

Evaluation of changes in deficit volumes: support for protection of localities suitable for construction of reservoirs

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Abstract Climate change scenarios for the Czech Republic indicate an increase in frequency of deficit events and volume of deficit discharges. The Czech water management legislation considers a number of protected areas potentially suitable for construction of reservoirs for flood protection and/or improving the water balance in the drought periods. In the present study we use hydrological modelling to quantify the volume of the deficit discharges as projected by an ensemble of transient regional climate model simulations. The changes in the deficit volumes are assessed using a simple statistical model considering the generalized extreme value distribution for the deficit volumes. Derived deficits are subsequently compared to the potential volume of the considered reservoirs. It is concluded that for many regional climate model simulations the changes in deficits are comparable or larger than the available volume of water in the reservoirs. The uncertainty is, however, large.

Key words deficit volumes; statistical model; regional climate model simulations