



Improving the transferability of hydrological model parameters under changing conditions

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Hydrological models are widely utilized to describe catchment behaviors with observed hydro-meteorological data. Hydrological process may be considered as non-stationary under the changing climate and land use conditions. An applicable hydrological model should be able to capture the essential features of the target catchment and therefore be transferable to different conditions. At present, many model applications based on the stationary assumptions are not sufficient for predicting further changes or time variability. The aim of this study is to explore new model calibration methods in order to improve the transferability of model parameters. To cope with the instability of model parameters calibrated on catchments in non-stationary conditions, we investigate the idea of simultaneously calibration on streamflow records for the period with dissimilar climate characteristics. In addition, a weather based weighting function is implemented to adjust the calibration period to future trends. For regions with limited data and ungauged basins, the common calibration was applied by using information from similar catchments. Result shows the model performance and transfer quantity could be well improved via common calibration. This model calibration approach will be used to enhance regional water management and flood forecasting capabilities.