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Regionalization of hydrologic model parameters vs. regionalization of discharge dependence and statistics

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Hydrologic model parameters can be transferred to ungauged catchments using regionalization. These procedures relate the model parameters to catchment characteristics via function fitting. However the identification of the model parameters for gauged catchments is an ill posed problem, thus a multitude of parameters might correspond to very similar model results. In order to find corresponding parameter sets the multivariate relationships between observed discharge series is compared to the multivariate relationships of the simulated discharge series. By maximizing the similarity between these relationships one can find corresponding parameter sets which then can be further restricted by regionalized discharge characteristics such as mean discharges or flow duration curves. The suggested methodology is illustrated using two rainfall runoff models applied to selected catchments is South-West Germany.