Study of Different Automatic Calibration for Hydrological Modeling

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Hydrological modeling is a method to simplify the reality that occurs in the nature to a mathematical form that can be calculated easily. The hydrological model needs parameters which give the simulation result as close as the reality or observed discharge. Automatic calibration is one of the method, how to get a best parameter for hydrological model, which can be used for different practical purpose like flood forecasting, watershed management etc. There are many of automatic optimization calibration that used in several hydrological modeling. The simulation result depends on how accurate the model parameters calibrated based on choosing the automatic calibration that indicated with the objective function. In this study, some of the Automatic Calibration strategy was investigated and a comparison was made to give better forecasting. The generally used optimization algorithm likes Shuffled complex evolution (SCE-UA), Simulated annealing (SA), Genetic Algorithm (GA) and newly developed Robust parameter estimation (ROPE) was used for calibration of a conceptual model HBV-IWS. The study was conducted on Upper Neckar catchment,located in south west of Germany. The result was analyzed to make a strategy for selecting an optimal optimization for conceptual model. It has been found that parameter obtained by different optimization algorithm given different parameter sets. Almost all optimization algorithms have given very similar result but ROPE algorithm is seem to be more robust. It is because ROPE gives a space of parameters after calibration of hydrological model, instead of single parameters set as in other optimization.