# Transferability of hydrological model parameters between basins and global runoff simulation

Jiahu Wang, Li Li, and Zhenchun Hao

State Key Laboratory of Hydrology-Water Resources and Hydraulic Engineering, Hohai University, Nanjing, China, 210098(TigerLLy@126.com)

Hydrological models used for the runoff simulation are often calibrated only on the basis of data obtained at the catchment outlet. Besides data shortage of ungauged basins, it's still impossible to calibrate each of large numbers of mixed natural and artificialized catchments in the global simulation. Transferring of model parameters between basins is one of the possible solutions to this problem. This study uses the CREST (Coupled Routing and Excess STorage distributed model) for hydrological simulation and ARS (Adaptive Random Search algorithm) for deriving parameters automatically; assesses the feasibility of transferring parameter estimations derived from six basins in central Africa; evaluates the performance of global runoff simulation based on parameters transferred from twenty representative basins in six continents. Results indicate that the optimized parameters from six different basins in central Africa are similar especially five sensitive ones; the transferring of parameter between basins is feasible in each climate zone because most of the parameters in CREST are multipliers of characteristics of soil texture, land cover and terrain; the global runoff simulation is acceptable comparing to GCRF (Global Composite Runoff Fields) Climatology. It is recommended that performance of this global simulation should be improved for arid African and Middle Eastern regions.

Keywords: Hydrological modeling; Parameter transferability; CREST; Global