Assessment of the FEH-ReFH Rainfall runoff model at the Miho catchment, Korea

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There are wide ranges of hydrological models from fully distributed model to simple rational methods. However, the choice of rainfall-runoff model for specific research or operational purpose has been an open question for hydrologists. Hydrological data is crucial for hydrological modeling; however, most of small-midsized catchments in Korea still remained as ungauged state. The regionalization of simple conceptual model is practical solution for ungauged catchment problem. The rainfall-runoff model of Flood Estimation Handbook (FEH-ReFH) is tested at sub-catchment of Miho River (FloodFreq-COST Action study catchment) for further regionalization application in Korea. Catchment characteristics of study catchments were derived and its hydrological similarity were analysed. Also, its results are compared with the results of HEC-HMS model, which is widely used in Korea. The hourly event based calibration and validation were employed in the period of 2003 to 2009. Antecedent rainfall and evapotranspiration, which are required in FEH-ReFH model, are estimated using the daily hydrological data. The application of FEH-ReFH is mixed success in model performance of the range of 0.41 to 0.99 in Nash Sutcliffe Efficiency (NSE), while the results of HEC-HMS have wide ranges of 0.15 to 0.8 in NSE. This study suggests that FEH-ReFH model is promising for the regionalization of rainfall-runoff model for ungauged catchment, Korea.