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Nonstationarities in Catchment Response According to Basin and Rainfall Characteristics: Application to Korean Watershed

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ABSTRACT

It must be acknowledged that application of rainfall-runoff models to simulate rainfall-runoff processes are successful in gauged watershed. However, there still remain some issues that will need to be further discussed. In particular, the quantitive representation of nonstationarity issue in basin response (e.g. concentration time, storage coefficient and roughness) along with ungauged watershed needs to be studied. In this regard, this study aims to investigate nonstationarity in basin response so as to potentially provide useful information in simulating runoff processes in ungauged watershed. For this purpose, HEC-1 rainfall-runoff model was mainly utilized. In addition, this study combined HEC-1 model with Bayesian statistical model to estimate uncertainty of the parameters which is called Bayesian HEC-1 (BHEC-1). The proposed rainfall-runofall model is applied to various catchments along with various rainfall patterns to understand nonstationarities in catchment response. Further discussion about the nonstationarity in catchment response and possible regionalization of the parameters for ungauged watershed are discussed.

KEYWORDS: Nonstationary, Catchment response, Uncertainty, Bayesian

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