

Comparison of Calibrations using Modified SWAT Auto-calibration Tool with Various Efficiency Criteria

다양한 검증 지수를 이용한 SWAT 자동 보정 비교 평가

Hyunwoo Kang*, Jichul Ryu**, Nam Won Kim***, Seong-Joon Kim****,
Bernard A. Engel*****, Kyoung Jae Lim*****
강현우*, 류지철**, 김남원***, 김성준****, Bernard A. Engel*****, 임경재*****

.....

Abstract

The appraisals of hydrology model behavior for flow and water quality are generally performed through comparison of simulated data with observed ones. To perform appraisal of hydrology model, some criteria are often used, such as coefficient of determination (R^2), Nash and Sutcliffe model efficiency coefficient (NSE), index of agreement (d), modified forms of NSE and d , and relative efficiency criteria NSE and d . These criteria are used not only for hydrology model estimations also for various comparisons of two data sets; This NSE has been often used for SWAT calibration. However, it has been known that the NSE value has some limitations in evaluating hydrology at watersheds under monsoon climate because this statistic is largely affected by higher values in the data set. To overcome these limitations, the SWAT auto-calibration module was enhanced with K-means clustering and direct runoff/baseflow modules. However the NSE is still being used in this module to evaluate model performance. Therefore, the SWAT Auto-calibration module was modified to incorporate alternative efficiency criteria into the SWAT K-means/direct runoff-baseflow auto-calibration module. It is expected that this enhanced SWAT auto-calibration module will provide better calibration capability of SWAT model for all flow regime.

핵심용어 : SWAT Auto-calibration, NSE, Index of agreement (d), efficiency criteria

* 정회원-강원대학교 지역건설공학과-E-mail : kangbari@nate.com
** 정회원-강원대학교 지역건설공학과-E-mail : swatremm@gmail.com
*** 정회원-한국건설기술연구원-E-mail : nwkim@kict.re.kr
**** 정회원-건국대학교 사회환경시스템공학과-E-mail : kimsj@konkuk.ac.kr
***** 비회원-Ag. & Bio. Engineering, Purdue University-E-mail : engelb@purdue.edu
***** 정회원-강원대학교 지역건설공학과-E-mail : kjlim@kangwon.ac.kr