

관측자료로 추정된 강우유출모형을
기후변화 영향평가에 그대로 활용하여도 되는가?
Is it suitable to Use Rainfall Runoff Model with Observed Data
for Climate Change Impact Assessment?

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Abstract

Rainfall-runoff models are calibrated and validated by using a same data set such as observations. The past climate change effects the present rainfall pattern and also will effect on the future. To predict rainfall-runoff more preciously we have to consider the climate change pattern in the past, present and the future time. Thus, in this study, the climate change represents changes in mean precipitation and standard deviation in different patterns. In some river basins, there is no enough length of data for the analysis. Therefore, we have to generate the synthetic data using proper distribution for calculation of precipitation based on the observed data. In this study, Kajiyama model is used to analyze the runoff in the dry and the wet period, separately. Mean and standard deviation are used for generating precipitation from the gamma distribution. Twenty hypothetical scenarios are considered to show the climate change conditions. The mean precipitation are changed by -20%, -10%, 0%, +10% and +20% for the data generation with keeping the standard deviation constant in the wet and the dry period respectively. Similarly, the standard deviations of precipitation are changed by -20%, -10%, 0%, +10% and +20% keeping the mean value of precipitation constant for the wet and the dry period sequentially. In the wet period, when the standard deviation value varies then the mean NSE ratio is more fluctuate rather than the dry period. On the other hand, the mean NSE ratio in some extent is more fluctuate in the wet period and sometimes in the dry period, if the mean value of precipitation varies while keeping the standard deviation constant.

Key words: Rainfall runoff Model, Synthetic data generation, Dry period, Wet period, NSE ratio, Climate change

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