Rainfall-Runoff Analysis using SURR Model in Imjin River Basin

Trinh Ha Linh*, Deg-Hyo Bae**

....

Abstract

The temporal and spatial relationship of the weather elements such as rainfall and temperature is closely linked to the streamflow simulation, especially, to the flood forecasting problems. For the study area, Imjin river basin, which has the specific characteristics in geography with river cross operation between North and South Korea, the meteorological information in the northern area is totally deficiency, lead to the inaccuracy of streamflow estimation. In the paper, this problem is solved by using the combination of global (such as soil moisture content, land use) and local hydrologic components data such as weather data (precipitation, evapotranspiration, humidity, etc.) for the model-driven runoff (surface flow, lateral flow and groundwater flow) data in each subbasin. To compute the streamflow in Imjin river basin, this study is applied the hydrologic model SURR (Sejong Univ. Rainfall-Runoff) which is the continuous rainfall-runoff model used physical foundations, originally based on Storage Function Model (SFM) to simulate the intercourse of the soil properties, weather factors and flow value. The result indicates the spatial variation in the runoff response of the different subbasins influenced by the input data. The dependancy of runoff simulation accuracy depending on the qualities of input data and model parameters is suggested in this study. The southern region with the dense of gauges and the adequate data shows the good results of the simulated discharge. Eventually, the application of SURR model in Imjin riverbasin gives the accurate consequence in simulation, and become the subsequent runoff for prediction in the future process.

Acknowledgement

Keyword: Rainfall-runoff analysis, SURR model, parameter estimation

* Master student · Dept. of Civil and Environ. Engineering, Sejong University · E-mail : trinhhalinh.kirum@gmail.com
** Corresponding Author, Professor · Dept. of Civil and Environ. Engineering, Sejong University · E-mail : dhbae@sejong.ac.kr