

Using SWAT Model for streamflow simulation in Burundi

Jean de Dieu Habimana*, Doan Thi Thu Ha**, Deg-Hyo Bae***

.....

Abstract

The main objective of this study was to setup model and evaluate the model performance for streamflow simulation in Burundi using Soil and Water Assessment Tool (SWAT) model. The total area of Burundi is 27,834 km². The elevation of Burundi ranges from 780 m to 2,700m. The West and East are low lands, while the Central part is high land. The topographic data (30 meters Digital Elevation Model) and land use and land cover data of Burundi were obtained respectively from Shuttle Radar Topography Mission (SRTM) and the Regional Centre for Mapping of Resources for Development (RCMRD). The soil data used was obtained from Food and Agriculture Organization (FAO). The local weather data and discharge data were provided by Burundi Hydro meteorological Service (IGEBU). Mean Areal Precipitation (MAP) and Mean Areal Temperature (MAT) were estimated. The streamflow simulation was done for the period 1980–2017. The calibration and validation of river discharge was performed at a daily time step from 2005 through 2011 as the calibration period and 2012 up to 2017 as the validation period. The findings show that streamflow decreases during Jun to September and increases during March to May and October to December.

Keywords : Burundi, SWAT Model, Rainfall-Runoff Model, African Basin

Acknowledgements

This work was supported by KOREA HYDRO & NUCLEAR POWER CO., LTD. (No. H18S023000)

* Member • Master student, Dept. of Civil and Environ. Eng., Sejong University • E-mail : kanajdedieu@gmail.com

** Member • PhD student, Dept. of Civil and Environ. Eng., Sejong University • E-mail : hadoanbk@gmail.com

*** Member • Professor, Dept. of Civil and Environ. Eng., Sejong University • E-mail : dhbae@sejong.ac.kr