

ASSESSMENT WATER DISCHARGE UNDER THE IMPACTS OF CLIMATE CHANGE IN MEKONG RIVER BASIN USING SWAT MODEL

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ABSTRACT

The water resources of Mekong River Basin play an important role in the sustainable development, socio-economic stability of countries and regions in Mekong Basin, as well as the protection and consolidation of related ecosystems. At present, climate change poses many threats to the sustainability and security of water resources in this basin. By applying the SWAT model and GIS techniques, we assessed the impacts of climate change on the hydrology of Mekong River Basin and compared it with the scenarios results. In comparison with the observed data, the simulated data demonstrated an overall good model of streamflow in the research area through results at 8 gauge stations along with the Nash-Sutcliffe efficiency (NSE) > 0.6 and R^2 > 0.9 for the calibration period (1983-1988) and $NSE > 0.64$, $R^2 > 0.89$ for validation period (1989-2005). Thereby, the spatial distribution of water resources indicated that the amount of water is mainly concentrated in Myanmar and 3S River Basin in Viet Nam. However, the evaporation map showed the reversed distribution, which mainly concentrated at the downstream in Thailand, Cambodia, and Viet Nam. Climate change scenarios under the RCP4.5 and RCP8.5 emission scenarios were computed based on streamflow simulated data and regional climate model, which belongs to the Coordinated Regional Climate Change Downscaling Experiment (CORDEX) project in East Asia. Under the impact of climate change on a short-term period (2015-2040), changes in annual river discharge increase from 0.79% to 16.35%.

LANDSAT IMAGE PROCESSING APPLICATION FOR EVALUATING THE LAND COVER CHANGE IN LAI GIANG RIVER CATCHMENT, VIET NAM

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ABSTRACT

Lai Giang, which covers an area up to 1.466 km², is second largest river of Binh Dinh province. Its stream flow play an important role for local socio economic development. Due to socio economic developed requirement, land cover of Lai Giang catchment has varied significantly in recent years. The change has affected seriously on many aspects of locality, such as drought and flood disasters, landslide or green house gas emission increasing. This study is to provide an overview of land cover change in Lai Giang river catchment. By processing the Landsat satellite image, the study demonstrates the variation of land cover since 1970s. The result is expected to be a basic for forest management, land cover change impact assessment on natural disasters in the catchment.