

## Estimation of Change in Groundwater Recharge by Urbanization in a Granitic Mountain Catchment, Using SWAT Model

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River discharge is controlled by various functions, not only by different natural water cycles affected by topography, climate and land use but also by water used for domestic, agricultural and industrial purposes. Therefore, it is essential to confirm long-term variations of streamflow quantity and quality in their catchment in order to conserve and properly manage their watersheds. Increasing population growth with rapid changes of other aspects such as social and economy within the city of Higashi-Hiroshima has led to an increasing demand of settlement and agricultural area. Such changes in land use pattern has a profound impact on groundwater recharge. Higashi-Hiroshima city has the largest rice production of amongst 86 cities, towns and villages in the Chugoku region. To understand the hydrological and biogeochemical processes occurring within the Kurose river catchment, the Soil and Water Assessment Tool (SWAT) was used for water budget and groundwater recharge modelling to predict the impact of land management practice on water, and agricultural chemical yield with varying soils, land use, and management condition over an extended time frame (2006-2018). Meanwhile SWAT-CUP SUFI2 was used for model calibration and validation. The outputs of this current project will be information on the relationship between land use as a dynamic parameter in the catchment area and the output presented by hydrograph. The simulation model will be used as a basis for Integrated Watershed Management System.

Keywords: groundwater recharge, SWAT model, mountain catchment