

Estimating Groundwater Recharge for the Gyeongan-Cheon Watershed in Korea with MIKE SHE Modeling System

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To estimate the groundwater recharge, the fully distributed parameter based model, MIKE SHE was applied to the Gyeongan-cheon watershed which is one of the tributaries of Han River Basin in Korea, and covers approximately 260 km² with about 49 km main stream length. To set up the model, spatial data such as topography, land use, soil, and meteorological data were compiled, and grid size of 200 m was applied considering computer ability and reliability of the results. The model was calibrated and validated using a split sample procedure against daily stream flow at the outlet of the watershed. Statistical criteria for the calibration and validation results indicated a good agreement between the simulated and observed stream flow. The annual recharges calculated from the model were compared with the values from the conventional water recession curve method, and the simulated groundwater levels were compared with the observed values. As a result, it was concluded that the model could reasonably simulate the groundwater level and recharge, and could be a useful tool for estimating spatially/temporally the groundwater recharges, and enhancing the analysis of the watershed water cycle.