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The importance of prediction of streamflow or hydrological cycle in new town development project for ecosystem and human activity along the river front is gradually increasing in Korea. For the streamflow prediction of natural catchments, much kind of conceptual hydrologic models were developed and applied successfully with few parameters in gauged catchments [Perrin *et al.*, 2001] and much of papers are focused on the objective function and optimization method.

In the case of new town development, especially highly developed and ungauged area, the optimized parameters of the conceptual lumped model could not describe the changes of topography, land use, soil type and it is difficult to predict the streamflow changes.

Therefore, the authors use a distributed hydrologic model, WEP (Water and Energy transfer Process model, [Jia *et al.*, 2001] and WEP+ (Pre and Post Processor of WEP, [KICT, 2006]) for assessing surface and groundwater flow variations after new town development.

The water cycle before the construction was simulated and the new town development plan was made into modelling scenario which reflected changes of ground elevation (land filling and cutting), flow direction including urban drainage system, land use, surface soil, aquifer depths and etc.

The most of model parameters and inputs such as Manning's n (overland flow and channel flow), hydraulic conductivity of soil and aquifer were applied from the recommended value or filed investigation. The daily irrigation water supply for the paddy fields was surveyed and the aquifer depths were investigated by the boring wells and spatially interpolated over the catchment.

Simulation results for the scenarios were analysed with hydrographs, flow duration curves and annual water budgets. When comparing the water cycle before new town development, the peak flow is increased and base flow is decreased severely because a lot of pervious area is changed to impervious. The change of unconfined aquifer depth by the land filling and cutting has also significant role to water cycle after the new town development.

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