

DEVELOPMENT OF COMBINED WATERSHED AND GROUNDWATER MODEL

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Abstract

The combined watershed (SWAT) and groundwater model (MODFLOW) is developed by using the type of embedment MODFLOW in SWAT. Since SWAT model has semi distributed features, its groundwater component hardly considers distributed parameters such as hydraulic conductivity, storage coefficient and spatially variable natures such as distribution of groundwater heads and pumping rate and so forth. The main purpose of this study is to overcome these limitations. This linkage is completed considering the interaction between stream network and aquifer to reflect boundary flow. To match HRU in SWAT to grid in MODFLOW, HRU-GRID conversion tool using DEM is newly suggested. Since combined model considers the spatially varied daily recharge rate and generate the distribution of groundwater heads with time, surface-subsurface flow modeling would be greatly advanced. River-aquifer interaction is well established in the combined model considering two-way interactions. Consequently, the reliability of groundwater discharge and total runoff of watershed would be greatly enhanced when combined model is used.

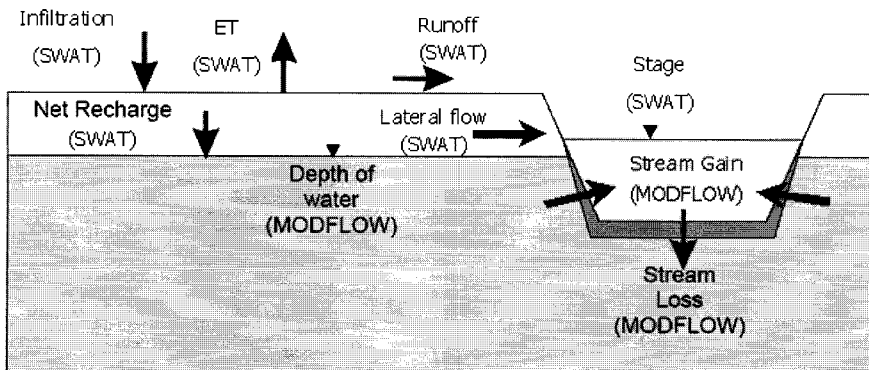


Fig. 1 Schematic diagram of combined surface water and groundwater model.

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