A comparative study of simulation results between IHMS-VSWSC and hybrid runoff model in Dianzi Watershed

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Abstract For the purpose of hydrological process simulation in arid and semi-arid areas, the authors developed the Integrated Hydrological Modelling System based on Various Spatial Water Storage Capacity (IHMS-VSWSC), based on the spatial distributed model of water storage capacity. IHMS-VSWSC included a canopy interception module, snow accumulation and melt module, evapotranspiration module and runoff generation and routing module. To verify the simulation result of IHMS-VSWSC, both IHMS-VSWSC and a hybrid runoff model were applied to the Dianzi watershed to simulate the daily runoff process in the period 1973–1979. After simulations, the authors found that the annual average Nash-Sutcliffe coefficient of IHMS-VSWSC reached 0.80; and the annual average Nash-Sutcliffe coefficient of the hybrid runoff model was only 0.67. Simulated results indicate that the annual Nash-Sutcliffe coefficient is acceptable, and this integrated hydrological modelling system is reasonable for arid and semi-arid area daily runoff simulation.

Key words IHMS-VSWSC; hybrid runoff model; various spatial water storage capacity; Dianzi watershed

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