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Runoff Simulation by Using WetSpa Model in Garmabrood Watershed of Mazandaran Province, Iran

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Abstract : Hydrological models are applied to simulation and prediction floods in watersheds. WetSpa is a distributed, continuous and physically model with daily or hourly time step that explains of precipitation, runoff and evapotranspiration processes for both simple and complex contexts. This model uses a modified rational method for runoff calculation. In this model, runoff is routed along the flow path using Diffusion-Wave Equation which depend on the slope, velocity and flow route characteristics. Garmabrood watershed located in Mazandaran province in Iran and passing over coordinates 53° 10´ 55" to 53° 38´ 20" E and 36° 06´ 45" to 36° 25´ 30"N. The area of the catchment is about 1133 km2 and elevations in the catchment range from 213 to 3136 m at the outlet, with average slope of 25.77 %. Results of the simulations show a good agreement between calculated and measured hydrographs at the outlet of the basin. Drawing upon Nash-Sutcliffe Model Efficiency Coefficient for calibration periodic model estimated daily hydrographs and maximum flow rate with an accuracy up to 61% and 83.17 % respectively.

Keywords : watershed simulation, WetSpa, runoff, flood prediction
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