

MODELLING RAINFALL-RUNOFF PROCESS FOR SUB CATCHMENT OF NARMADA RIVER BASIN AT HOSHANGABAD USING SEMI DISTRIBUTED MODEL HBV

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Abstract

In this study, the light version of Hydrologiska Byråns Vattenbalansavdelning hydrological model (HBV), has been used to synthesize river discharge and daily flow series for twelve years in the sub catchments of the Narmada river basin at Hoshangabad. The plain area of Narmada river basin at Hoshangabad is used for this study, with a drainage area of 10594 km² and co-ordinates lies between 22°46'N and 77°43'E. The model was run using twelve years data. Parametrization of parameters were obtained after warming, calibration and validating the results. There after the sensitivity analysis was done and acceptable range for each parametrized parameter was obtained. The Coefficient of Determination of observed and simulated discharge at the Hoshangabad was found to be 0.84. In Narmada River Basin at Hoshangabad hydrological modeling using the HBV model, MAXBAS is the most sensitive parameter. The sensitive parameters from high to low along with their slopes values are Maxbas: 0.23, Alpha: 0.018, Fc: 0.012, K1: 0.010, Beta: 0.008, K2: 0.005, Perc: 0.001 and Lp 0.001. The study shows that light version of the HBV model can be used to model the runoff of the sub catchment of the Narmada river basin at Hoshangabad.

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