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# IMPACT OF ANTECEDENT RUNOFF CONDITION ON CURVE NUMBER DETERMINATION AND PERFORMANCE OF SCS-CN MODEL FOROZAT CATCHMENT IN INDIA

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## ABSTRACT

The Soil Conservation Service Curve Number (SCS-CN) is a well-established technique among the engineers to estimate runoff. It combines watershed and climatic parameters in one entity curve number (CN).Much of the variability in CN has been attributed to antecedent runoff condition (ARC). The wetter soils have a higher CN, creating more runoff for a given amount of precipitation, than the drier soils.In the present study, an attempt has been made to determine the CN by three procedures, viz, the median, geometric mean and standard asymptotic fit using gauged rainfall and runoff and five days ARC with an objective to evaluate the influence of five days ARC on performance of SCS-CN method for Ozat catchment of India. All these methods were tested with initial abstraction ratios ($\lambda$=0.05, $\lambda$=0.1 and $\lambda$= 0.2). Refined Willmott's index ($d_r$) and mean absolute error (MAE) were used to assess the simulated performance of each method. The results indicate that the performance of SCS-CN method is improved on application of five days ARC. For the study area, the SCS-CN method with CNs determined by asymptotic fit method and five days ARC data set was judged to be more consistent with $d_r$=0.58 and MAE=0.93 mm.

**KEYWORDS:** Soil Conservation Service Curve Number (SCS-CN) Method, Curve Number, Antecedent Rainfall, Ozat Catchment