

## **A MODIFIED SCS-CN BASED MODEL FOR LONG TERM HYDROLOGIC SIMULATION**

**K. GEETHA<sup>1</sup>, S. K. MISHRA<sup>2</sup>, T. I. ELDHO<sup>3</sup> & SANGEETA VERMA<sup>4</sup>**

<sup>1</sup>Department of Civil Engineering, YTIET, Karjat, Maharashtra, India

<sup>2</sup>Water Resource Management and Development, IIT, Roorkee, Uttarakhand, India

<sup>3</sup>Department of Civil Engineering, IIT, Mumbai, Maharashtra, India

<sup>4</sup>Centre for Environmental Studies, National Institute of Industrial Engineering, Mumbai, Maharashtra, India

### **ABSTRACT**

Long term management of water resources in a catchment requires input from hydrological studies in the form of estimation or forecasting of the magnitude of hydrological variables. Such forecasts are useful in many ways, like warning of extreme floods or droughts, and help optimize the operation of systems, like reservoirs and power plants. This paper attempts to improve the original Soil Service Conservation Service Curve Number (SCS-CN) concept to perform long-term hydrologic analysis for a humid watershed, namely Hemavati, a tributary of River Cauvery in Karnataka State. Besides, the SCS-CN approach widely used as a simple method for predicting direct runoff volume for a given rainfall event has been evaluated for its applicability to humid catchment. The model inputs include daily rainfall, evaporation, and the model describes antecedent moisture (AM) by incorporating effect of antecedent rainfall without considering different antecedent moisture conditions (AMC). The model performs satisfactorily with efficiency of 87.51% and 88.71% in calibration and validation, respectively. The average relative error is of the order of 10%, which is tolerable.

**KEYWORDS:** Antecedent Moisture, Curve Number, Rainfall, Runoff Modelling, SCS-CN Method, Stream Flow