

2nd International Conference on **Agricultural & Horticultural Sciences**

Radisson Blu Plaza Hotel, Hyderabad, India February 03-05, 2014

A comparative study of GIS based NRCS-CN and artificial neural network techniques for rainfall-runoff modeling

Mahesh K. Jat¹, Vaibhav Garg¹ and Vijay Shankar²

¹Malaviya National Institute of Technology, India

²National Institute of Technology Hamirpur, India

Runoff is one of the most important hydrologic phenomenon in hydrological cycle. Reliable prediction of quantity and rate of runoff is difficult and time consuming, especially for ungauged catchments, where sufficient data are not available. However, correct information of runoff is needed in dealing with many watershed development and management problems like soil erosion control, estimation of water availability, estimation of irrigation water demands etc. There are many methods, techniques, tools and mathematical models, which requires different level of data for modelling of rainfall-runoff phenomenon and estimation of runoff. However, different methods have diverse limitations and require extensive data for calibration and validation before use. The Natural Resource Conservation Services Curve Number (NRCS-CN) is widely used method of runoff estimation for rural catchments. Further, runoff estimation using NRCS curve number method can be improved by considering spatial variability of some important catchment characteristics using Geographical Information System (GIS). In recent past different artificial intelligence techniques are also being used for estimation of runoff, e.g., Artificial Neural Network (ANN). A comparative study of NRCS-CN and ANN methods for estimation of runoff has been carried out and presented here. Runoff has been estimated for a part of Satluj basin i.e., Rampur to Kasol, which is located in Himachal Pradesh (India), using both the methods. Further, results obtained from the above two techniques have been compared with observed runoff. Runoff estimated using Artificial Neural Network (ANN) technique have been found to be better as compared to NRCS-CN method.

Biography

Mahesh K. Jat completed Ph.D. from IIT Roorkee in 2007 and presently working as Associate Professor at Department of Civil Engineering, MNIT Jaipur. He has published more than 45 papers in reputed journals, and international and national conference proceedings.

maresh.mnit@gmail.com