Catchment Routing using Kinematic Wave Approach

S. K. Mishra

ABSTRACT

Estimation of flood peak magnitude and their time of occurrence still remains a concern to the flood hydrologists. Various theories dealing with the catchment hydrology have come up with the time. Many of the distributed models like SHE (System Hydrologic European) model, HEC-1 etc. which are highly sophisticated in nature are available in literature. But the quantum of data and expertise required to handle such models, to a great extent, restrict their use in field.

The present study is concentrated to the simulation of major flood events observed at Kalagarh on Ramganga river in Himalaya region. The well established kinematic wave theory which is applicable to steep/hilly regions has been applied. Major observed floods including 50, 100, 500 and 1000 years and probable maximum flood have been simulated using this approach. The results fairly match with these observed/ derived flood events. The sensitivity of the model parameters/inputs indicate that the celerity in the channel plays most significant role in the establishment of peak flood magnitudes at the outlet (at Kalagarh) of the upper Ramganga basin.