



## **The role of initial hydrologic conditions on observed floods in Godavari Basin, India.**

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Floods are the most frequent natural calamity in India and the Godavari River Basin has witnessed several floods in the past 50 years. The observed flood records show the downstream part of the basin is prone to floods because of its topography. Here we evaluated the role of initial hydrologic conditions (IHCs) and extreme precipitation on floods. We calibrated the Variable Infiltration Capacity (VIC) model at four stations for daily streamflow. Nash–Sutcliffe Efficiency (NSE) for the calibration period 1970-1979 for stations Sirpur, Tekra, Perur and Polavaram was obtained as 0.72, 0.82, 0.82 and 0.84, respectively. The VIC model performed well for annual streamflow peaks with the coefficient of determination ( $R^2$ ) of 0.67, 0.75, 0.73 and 0.68 for Sirpur, Tekra, Perur and Polavaram, respectively. After selecting independent flood events (above the 99th percentile daily streamflow), the role of IHCs was for all the stations. Our results show that two-day and three-day prior soil moisture and extreme precipitation is highly linked with the flood events.