



## **TRMM satellite and gauge precipitation data fusion for flood monitoring over the Xiang River Basin, China**

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Hydrological models have become important tools for understanding hydrologic processes. Precipitation data is a key input for hydrological models in applications of flood forecasting and monitoring. Therefore, accurate precipitation inputs are essential for reliable hydrological simulation. The ground-based observations could provide accurate point precipitation information, but the density of precipitation gauges is still insufficient in most area and the spatial distribution is uneven. Many studies have proved that satellite precipitation products can offer a potential alternative to ground-based rainfall estimates, but the biases or errors in the satellite precipitation products can be propagated into hydrologic simulations. To improve the quality of precipitation products and get more accurate and reliable flood forecasting result, the work conducts a research on data fusion method for merging the satellite precipitation and station observations to simulate flood hydrograph by forcing the HEC-HMS (The Hydrologic Modeling System-Hydrologic Engineering Center) hydrologic model over the Xiang River Basin. The result shows that the satellite precipitation data have a good grasp of rainfall information at event scale proving to make sense of flood event hydrograph simulations. But there also exist some deviations in TRMM satellite data especially at smaller time scale. The merged results show that the TRMM satellite-gauge-blended data estimates have greatly improved in both consistency and the rainfall detection capability at the ground verification weather station. The runoff simulation results of merging rainfall data have a significant peak clipping effect on the flood peak, and the overestimation of TRMM satellite precipitation data is well controlled.