

Hydrological Analysis using WRF-Hydro Model for Puerto Rico

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Abstract

This study investigates the use of the Weather and Research Forecasting Hydrological modeling system (WRF-Hydro), which is the core of the National Water Model (NWM) being operated by National Water Center (NWC), in simulating several major flood events caused by heavy rainfall in Puerto Rico. Integration of satellite observations into models is crucial for future/proposed NWS operational flood forecast system. The main objective of this work is to develop an ensemble flood forecasting system coupling WRF-Hydro with satellite data (JPSS soil moisture product and GOES-R precipitation product) and NOAA numerical weather and climate models for Puerto Rico. Soil moisture and precipitation data will be assimilated into the WRF-Hydro modeling system and then used to simulate hydrograph features such as volume, peak, and timing of flood events, which will be compared with actual events. In this presentation initial test results of hydrologic analysis for the Río Grande de Añasco watershed using the Global Forecasting System dataset and NCAR dataset, a combination of Stage IV and NAAR.