

Title: **Assessment of Gridded Hydrological Modeling for NWS Flash Flood Operations**

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National Weather Service (NWS) forecasters at the River Forecast Centers (RFCs) and Weather Forecast Offices (WFOs) provide timely and reliable severe weather and hydrological forecast services. NWS flash flood operations may be improved through applying advances in distributed hydrological modeling (DHM). Our project extends on-going DHM research and development efforts within the NOAA Hydrometeorological Testbed (HMT) and NWS Office of Hydrologic Development (OHD) and National Water Center (NWC) to conduct a US Weather Research Program-sponsored assessment of the DHM for flash flood forecast and warning operations.

The HMT has worked with the OHD/NWC to implement the Research Distributed Hydrological Model (RDHM) to support research on the evaluation of various precipitation monitoring, data assimilation, and forecasting techniques. We applied the RDHM to the Russian-Napa Rivers (RR-N) basin to support assessment of model accuracy; that work has characterized the uncertainty of flood peak predictions and water budget. Gap-filling weather radars have been used together with the DHM to examine uncertainties of precipitation nowcasting and forecasting on the simulation of surface flows.

Most recently, the HMT-West and Riverside implemented RDHM in the CHPS-FEWS computing environment, which allows a streamlined, near-real time data ingest and simulation capability. The CHPS-FEWS instance has been configured to ingest multiple Quantitative Precipitation Estimations (QPE) and Quantitative Precipitation Forecasts (QPF) forcings, including radar-rainfall products generated by the MRMS system. The CHPS-FEWS setup supports visualizations of input datasets and DHM outputs including precipitation, surface runoff, and soil moisture grids as well as animations of these. Downstream applications use the FEWS output to identify at-risk road crossings. Remote access capabilities have been established so that interested users with the NWS and others can review and comment about the modeling environment and examine performance. The system is now ready to support an R2O assessment of the DHM approach for WFO flash flood operations.

For this workshop, we will show the prototype and illustrate flood threat information at local scales and at locations not currently served by RFC operations. We will describe case study storms and summarize feedback from forecasters. After receiving and summarizing feedback, the most highly rated products will be further developed. We will also spend time discussing the equally important intent to examine WFO flash flood operations concept-of-operations to include interactions between the WFO and RFC. This objective involves close coordination with the responsible offices.