



## **Real-time flash flood prediction system in the United States**

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This study describes the Flooded Locations and Simulated Hydrographs (FLASH) project in the U.S. that has been designed to develop, evaluate, and transition the latest rainfall-driven flash flood prediction tools to the National Weather Service (NWS). The FLASH system is based on radar-based rainfall estimates from the Multi-Radar Multi-Sensor (MRMS) system, providing mosaicked rainfall rates at 1-km/2-min resolution across the conterminous U.S. Products include rainfall average recurrence intervals (ARIs), ratios of rainfall to flash flood guidance (FFG) values, and simulated streamflow ARIs from a distributed hydrologic modeling framework. NWS forecasters evaluated each of these experimental tools during the inaugural Hazardous Weather Testbed Hydrology experiment (HWT-Hydro) in the summer of 2014.

In addition to a subjective evaluation from HWT-Hydro, we present findings from an objective evaluation of the distributed hydrologic modeling approaches that incorporate recent developments in a-priori parameter estimation, improvements in channel routing and model physics, model reanalysis leveraging datasets from the Multi-Year Reanalysis Of Remotely-Sensed Storms (MYRORSS) project, and error models developed for output products. FLASH skill is assessed using a very large dataset of observed flooding as measured by US Geologic Survey (USGS) stream gauges. In addition to the evaluation, this presentation will provide an overview of the latest advances in the FLASH project including forthcoming impact-specific products, probabilistic forecasts, and forcing from short-term precipitation forecasts.