

The Past, Present, and Future of Flash Flood Prediction

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Flash floods are rapid surface water responses to intense rainfall and have significant impacts on transportation, infrastructure, and human safety. While scientists have significantly advanced our comprehension of synoptic and mesoscale environments conducive to intense rainfall, our ability to forecast the hydrologic response, location, timing, and magnitude of the social impact has not progressed commensurately. First, I will present the benchmark skill of existing tools for forecasting flash floods, including flash flood guidance and the newer, gridded approaches that have emerged amongst the River Forecast Centers. Then, the presentation will introduce the Flooded Locations And Simulated Hydrographs (FLASH) project (<http://www.nssl.noaa.gov/projects/flash/>). This prototype system relies on precipitation forcing from the NMQ/Q2 system (<http://nmq.ou.edu>) and is presently providing flash flood demonstration products over the CONUS at 1-km/5-min resolution in real-time. Recent project funding will enable us to improve the model grid cell resolution to 250 m and to include probabilistic outputs through ensemble simulations. Current FLASH research activities, such as exploring the use of stormscale ensemble QPFs as inputs and development of products that are impact-focused, will be discussed.