Assessment of Hydrologic Forecasts Generated Using Multi-Model and Multi-Precipitation Product Forcing

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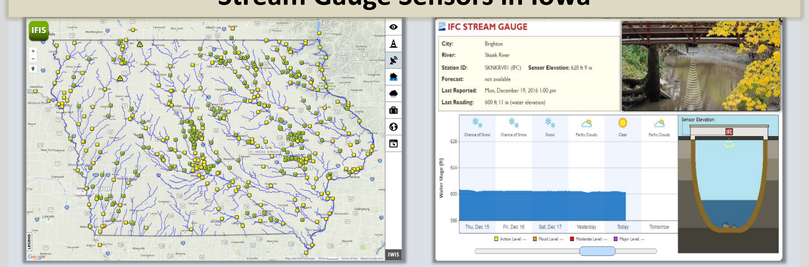
Background & Introduction

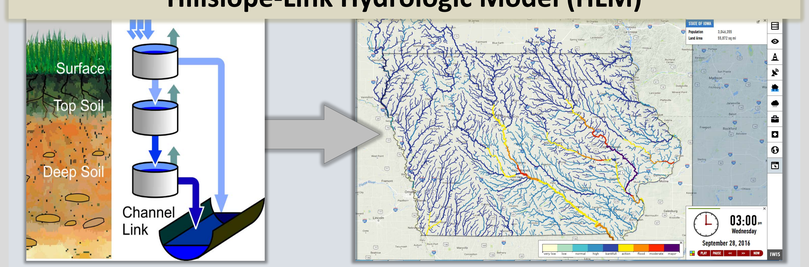
- The National Water Center has implemented and continues to run the National Water Model (NWM) in National Weather Service operations since 2016.
- The key features of forecast errors associated with model structure and individual routing components, basin scale, and uncertainty in precipitation forcing product have not been extensively examined while continental-scale retrospective simulations demonstrated an early success and potential for national-scale flood forecasting.
- This HMT project uses a *mix-and-match* approach and investigates forecast skill and uncertainty derived from various combinations of multiple models and precipitation forcing products over the Iowa domain.

Iowa Flood Information System

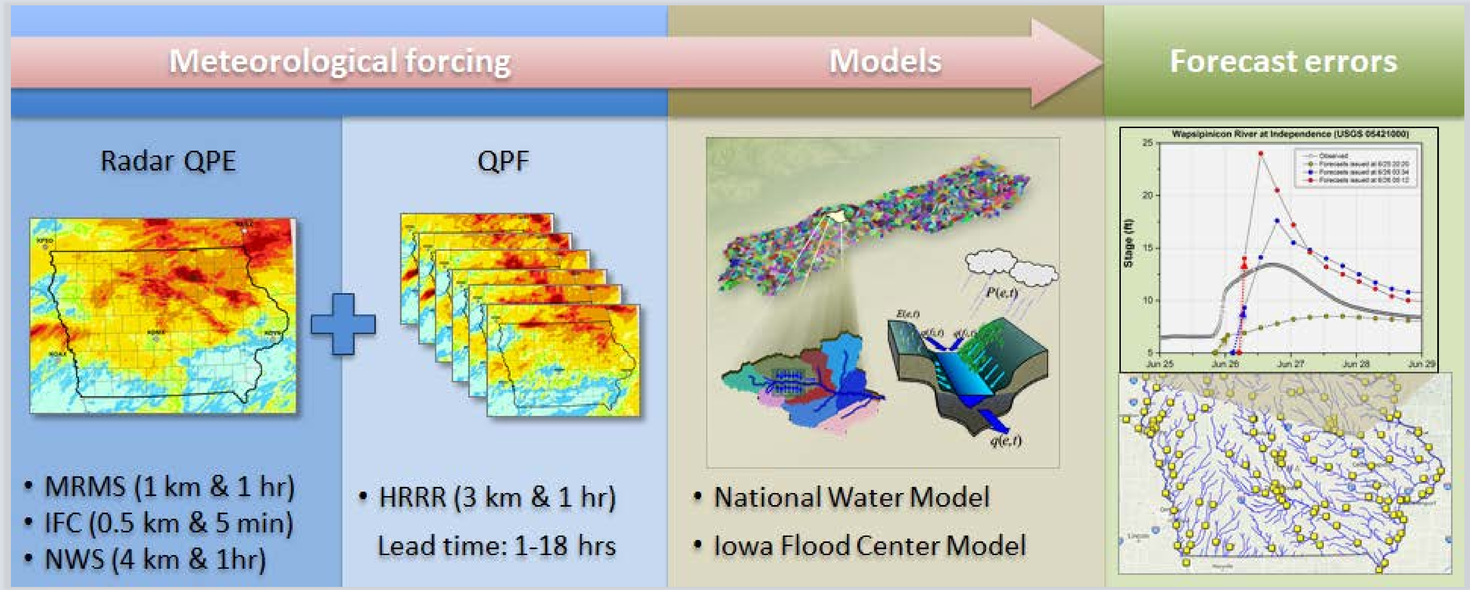
Stream Gauge Sensors in Iowa



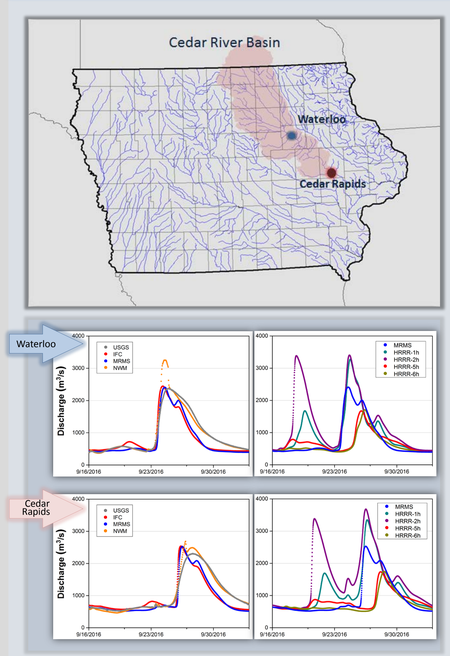
Hillslope-Link Hydrologic Model (HLM)



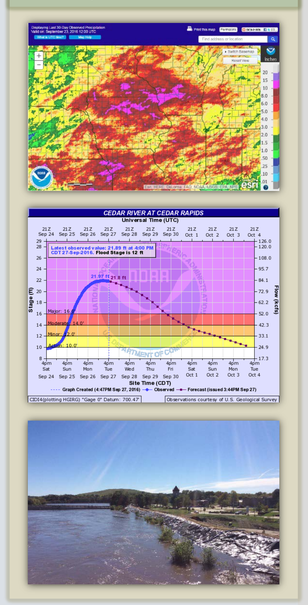
Conceptual Framework



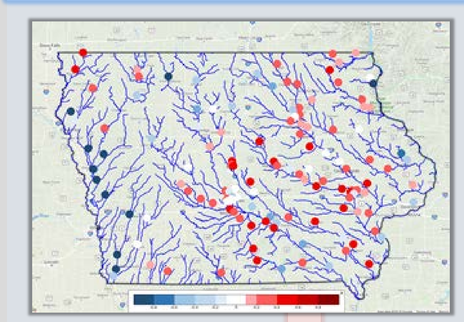
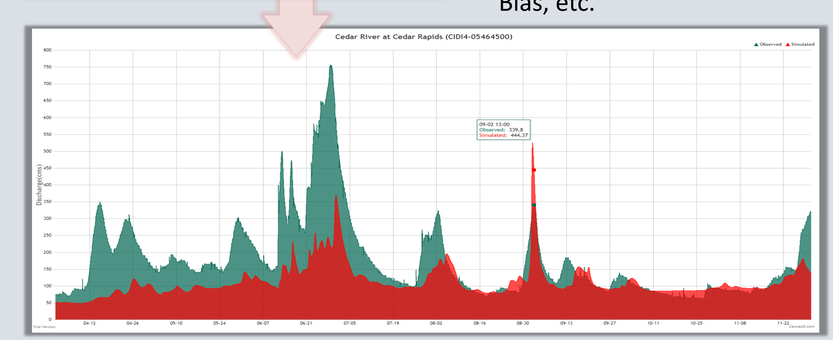
HRRR Evaluation



September 2016



Platform for Test and Transition



- Model Structure
  - IFC (HLM)
  - NWM (e.g. WRF-Hydro)
- Rainfall forcing product
  - MRMS
  - IFC
  - NWS polarimetric QPE
- Metrics: Nash Efficiency, Hit Rate, False Alarms, NRMSE, Bias, etc.