

A high-speed photograph of water splashing, creating a dynamic, blue-toned background with many droplets and ripples.

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Using GIS to Collaboratively Evaluate National Water Model FIM in Real-Time

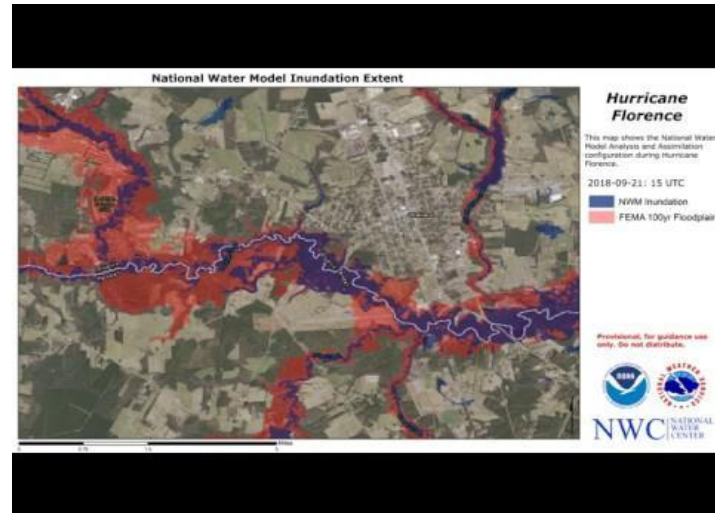
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Real-Time Flood Inundation Mapping (FIM)

- Critical need for real-time FIM at a continental scale
- National Water Center is leading a multi-agency effort to provide a contiguous best-available dataset



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National Water Model FIM

- NOAA/NWS National Water Model released in 2016
 - ◆ Hydraulic modeling framework providing observed and forecast streamflow for over 3.4 million waterway miles in the ConUS, Hawaii, and Puerto Rico
 - ◆ Compliments the ~4,000 official river forecast locations, providing valuable information to underserved locations
- Continental-scale FIM in real-time using NWM output
 - ◆ Hourly analysis
 - ◆ 18-hour maximum extent (updated hourly), forced by the HRRR
 - ◆ 3/5/10-day maximum extents (updated every 6 hours), forced by the GFS



NWS River Forecast Center FIM

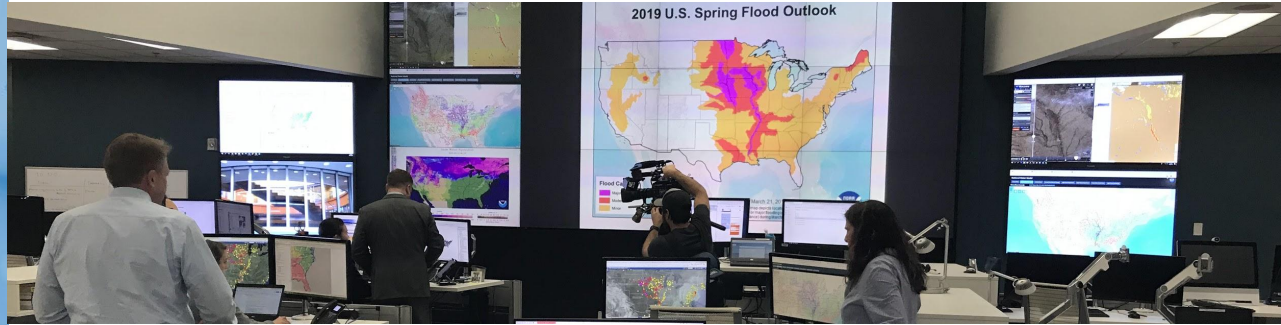
- Continental-scale FIM in real-time using the official RFC forecasts at gauged locations
 - ◆ 5-day maximum extent (updated hourly)
 - ◆ Only available downstream of gauged locations
- Utilizes the National Water Model physics to route flow between gauged locations



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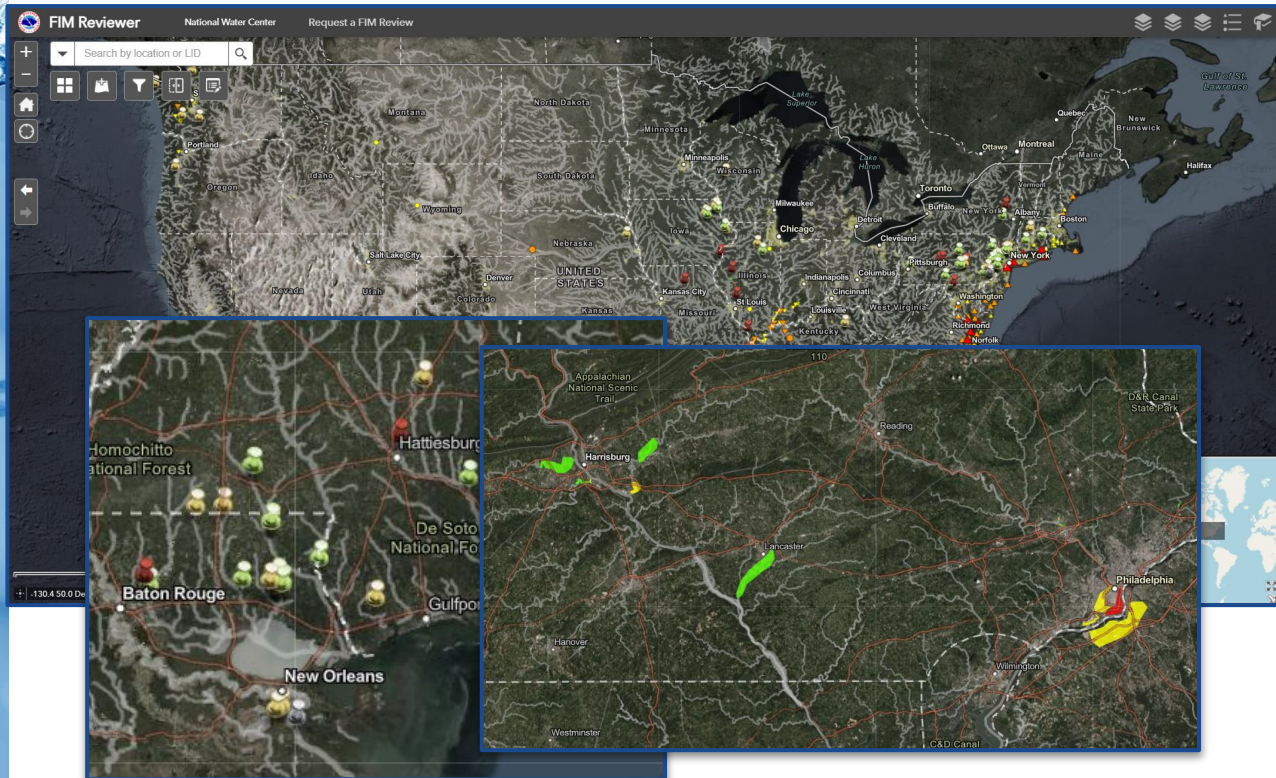
Feedback & Validation

- Accurate feedback is needed on the extent and timing of inundation forecasts from these new data services
 - ◆ Feedback from local experts informs our continuous development efforts
 - ◆ Feedback can be used to aid the forecasting process



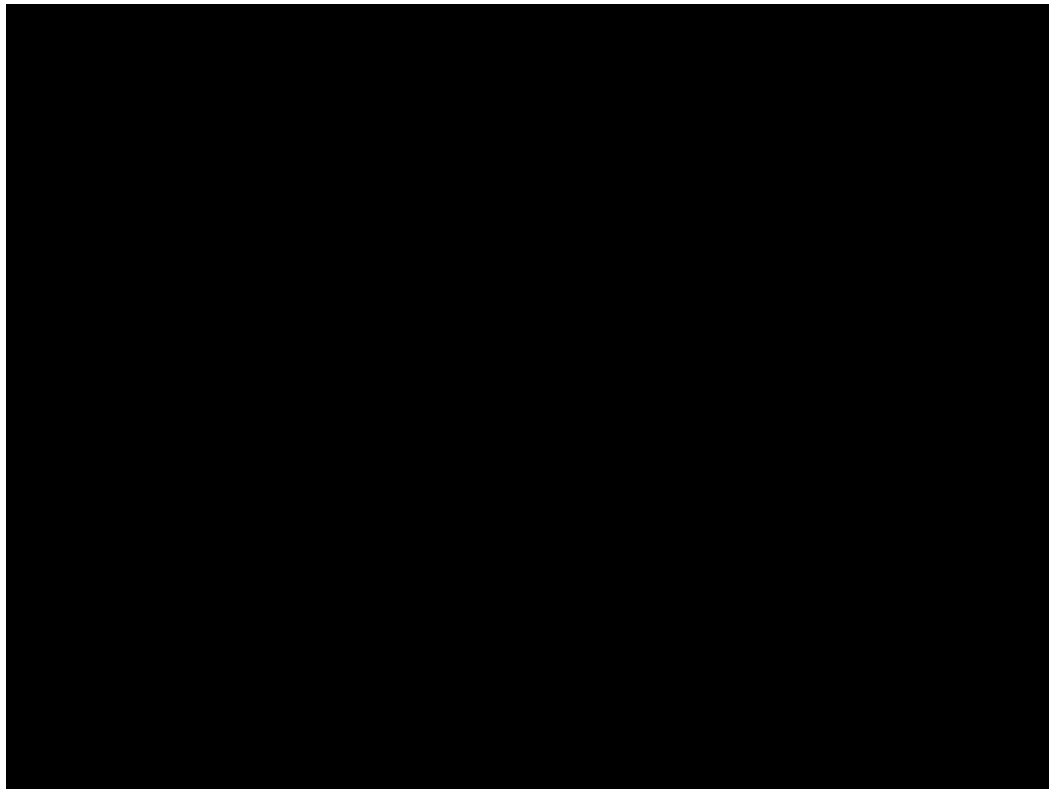
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FIM Reviewer



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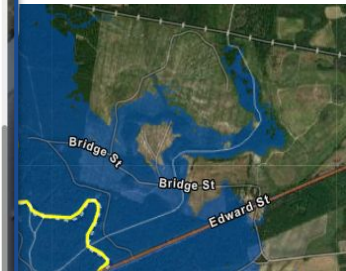
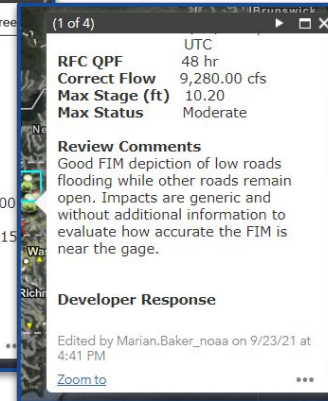
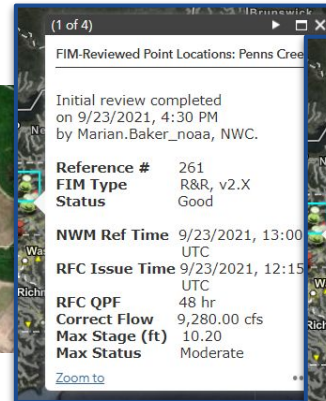
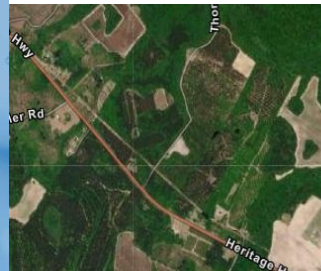
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Informing Future Development

- Feedback provides the NWC's FIM development team with a record of user observations on FIM forecast accuracy
- These observations expose source data issues and modeling errors, which are addressed through targeted calibration

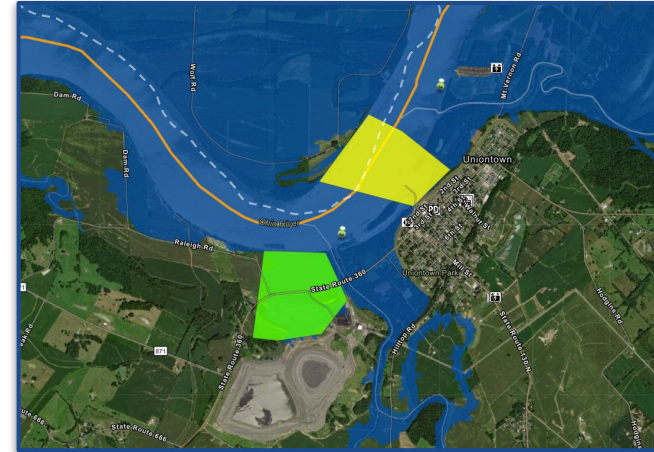


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Aiding the Forecasting Process

- Forecasters can view live inundation forecasts side-by-side with current and previous reviews
- FIM Reviewer allows forecasters to analyze FIM days in advance of a flood event



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