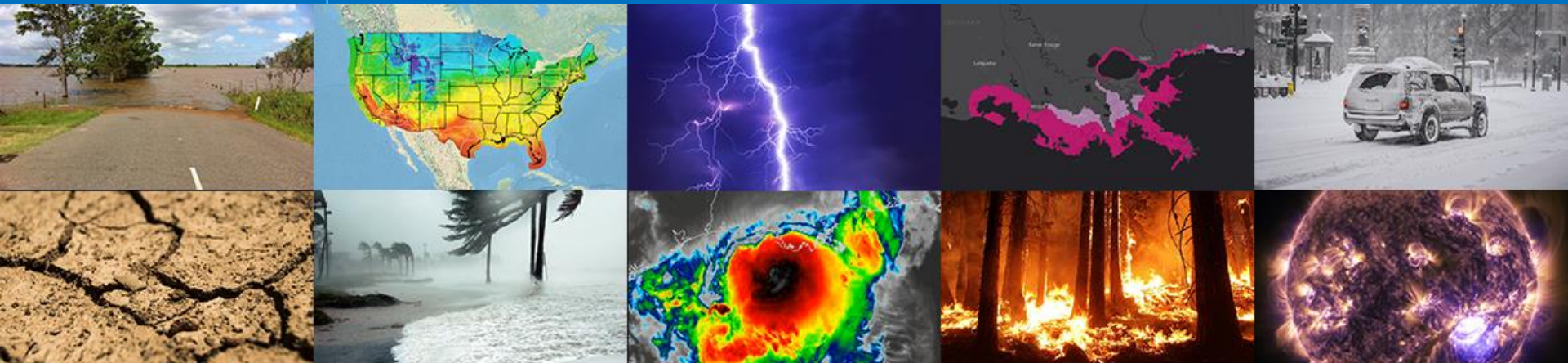
NATIONAL WEATHER SERVICE

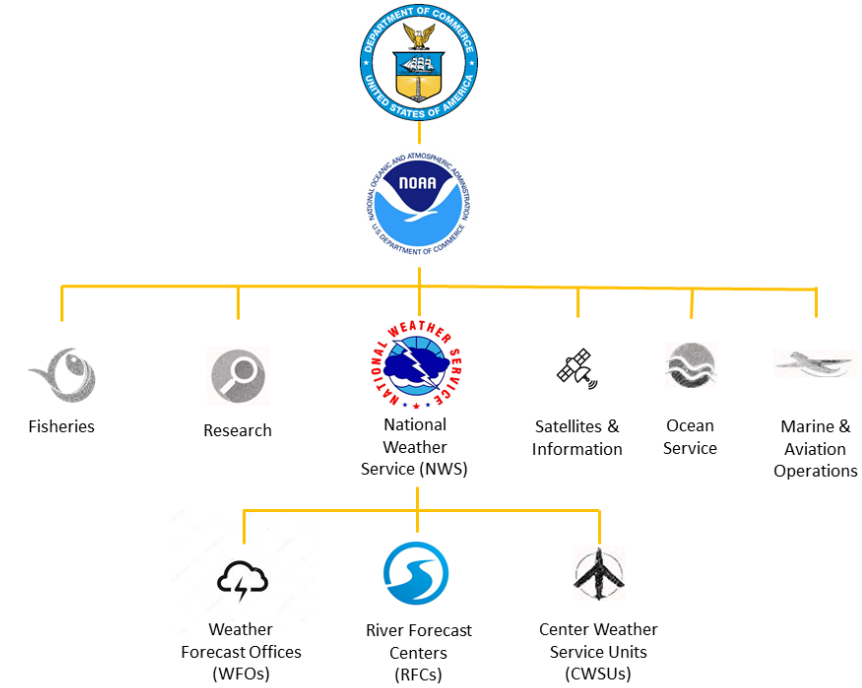
NWS MARFC Collaboration and Partner Support Before, During, and After Significant Flood Events

JANUARY 14, 2025

John Kirk, NWS Middle Atlantic River Forecast Center

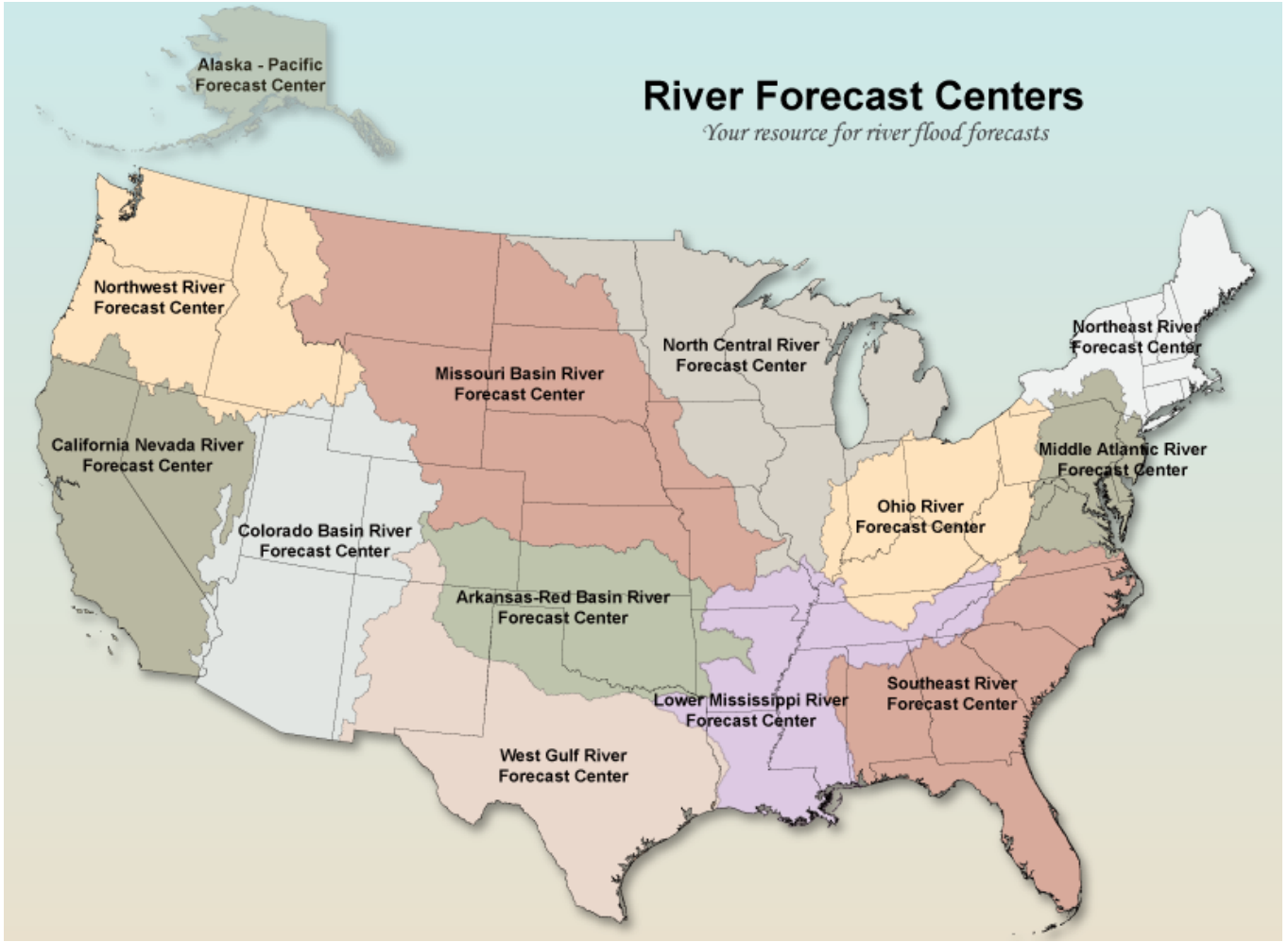


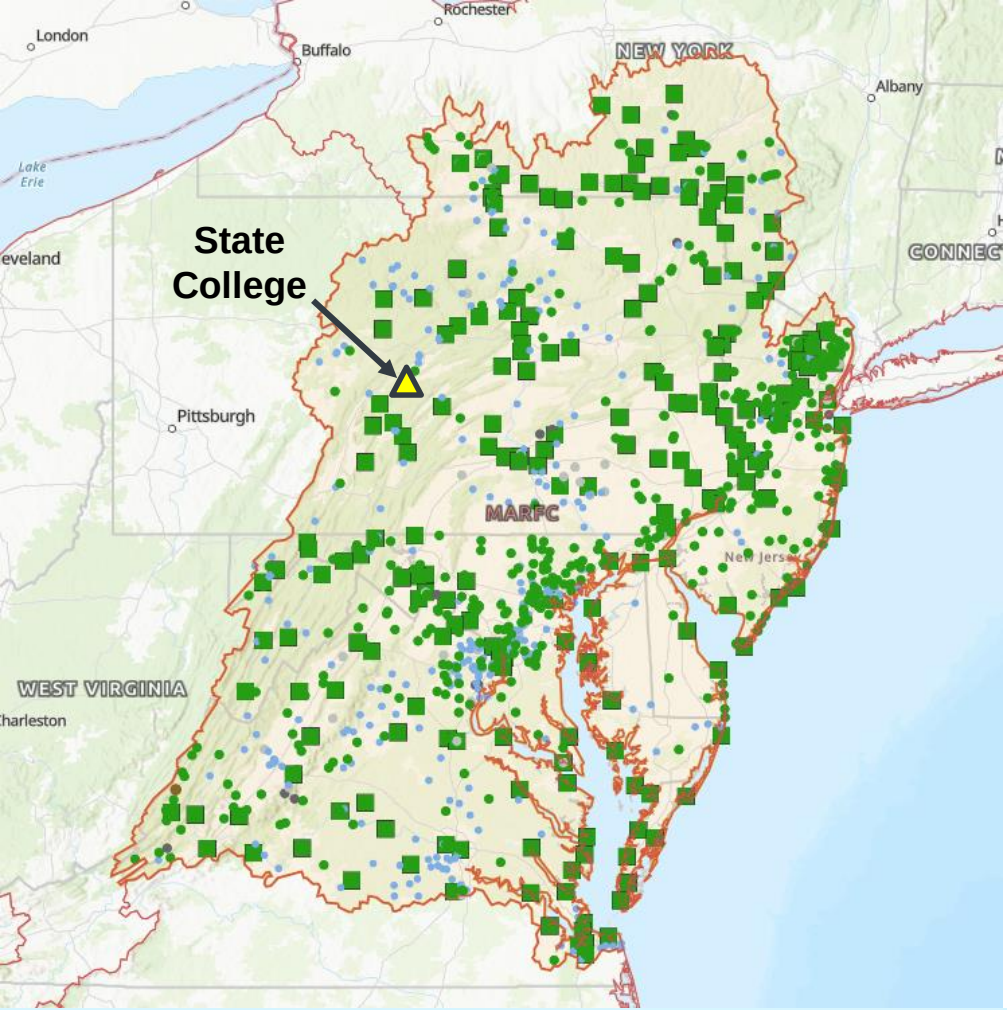
NWS River Forecast Centers



RFC Mission:

Provide **actionable**, impact-based **decision support services** to regional stakeholders related to **regional hydroclimatology** for the nation's environmental and economic well-being.


River Forecast Centers
Your resource for river flood forecasts
Alaska - Pacific Forecast Center
Northwest River Forecast Center
Missouri Basin River Forecast Center
North Central River Forecast Center
Northeast River Forecast Center
California Nevada River Forecast Center
Colorado Basin River Forecast Center
Ohio River Forecast Center
Middle Atlantic River Forecast Center
Arkansas-Red Basin River Forecast Center
Lower Mississippi River Forecast Center
Southeast River Forecast Center
West Gulf River Forecast Center



MARFC

Middle Atlantic River Forecast Center
State College, PA

Service Area:

- 7 States + Washington DC
- 7 NWS WFOs

Watersheds:

Chesapeake and Delaware Bays

- Susquehanna River
- Delaware River
- Potomac River
- James River

MARFC Core Partners

FEMA

US Army Corps of Engineers®

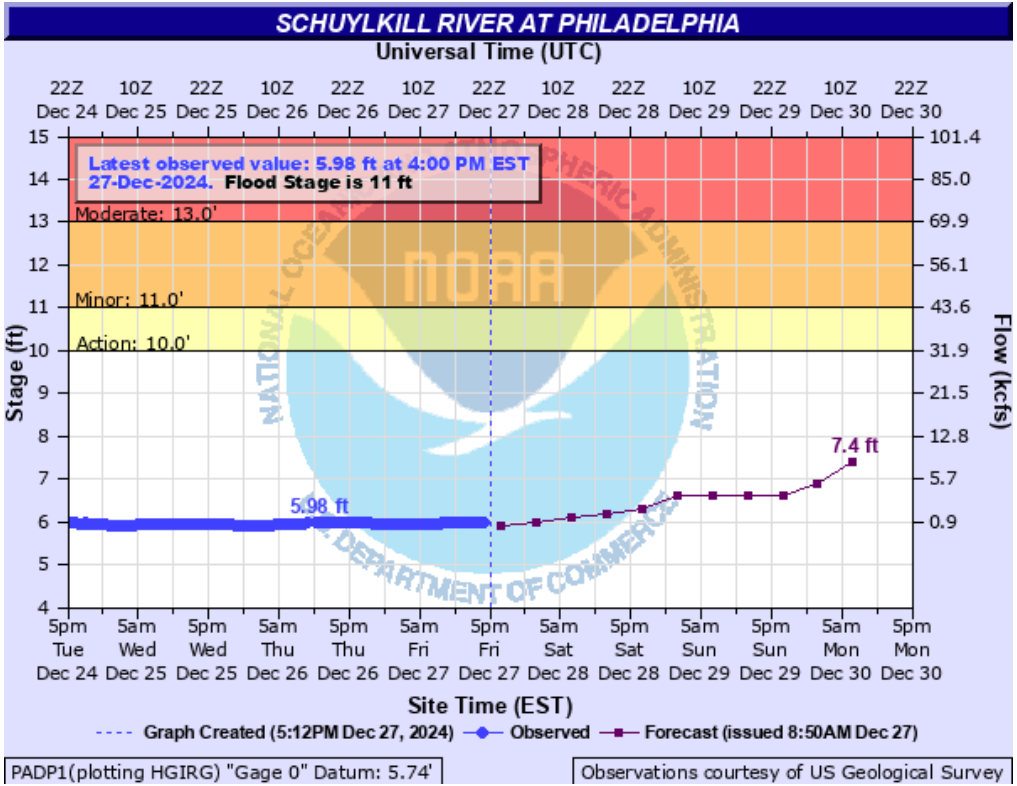
USGS science for a changing world

NYC Environmental Protection

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

SRBC
SUSQUEHANNA RIVER BASIN COMMISSION
NY ■ PA ■ MD ■ USA

Among others (e.g. other NWS offices, academia, social scientists, media, public)

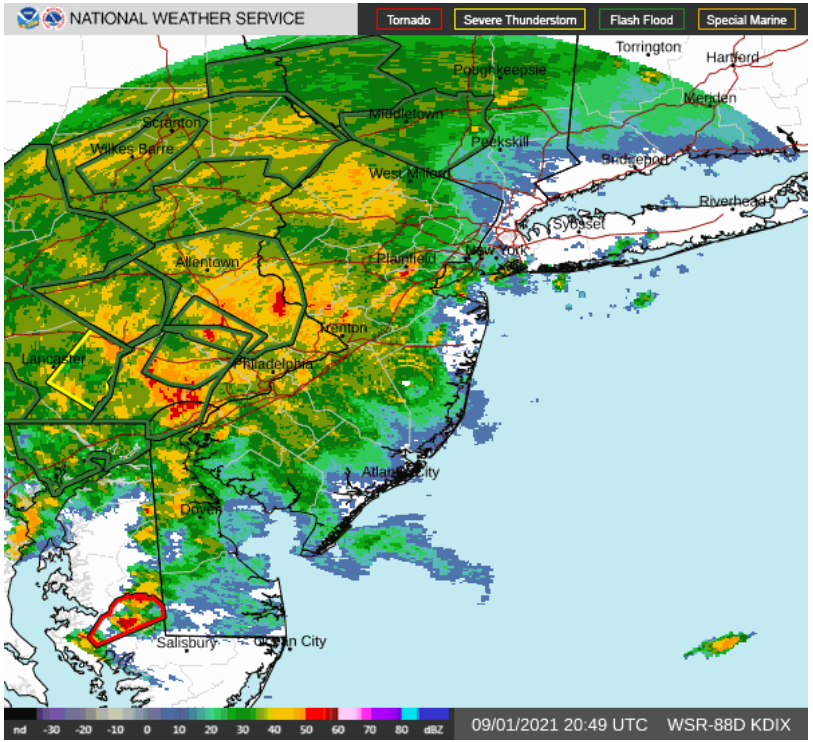


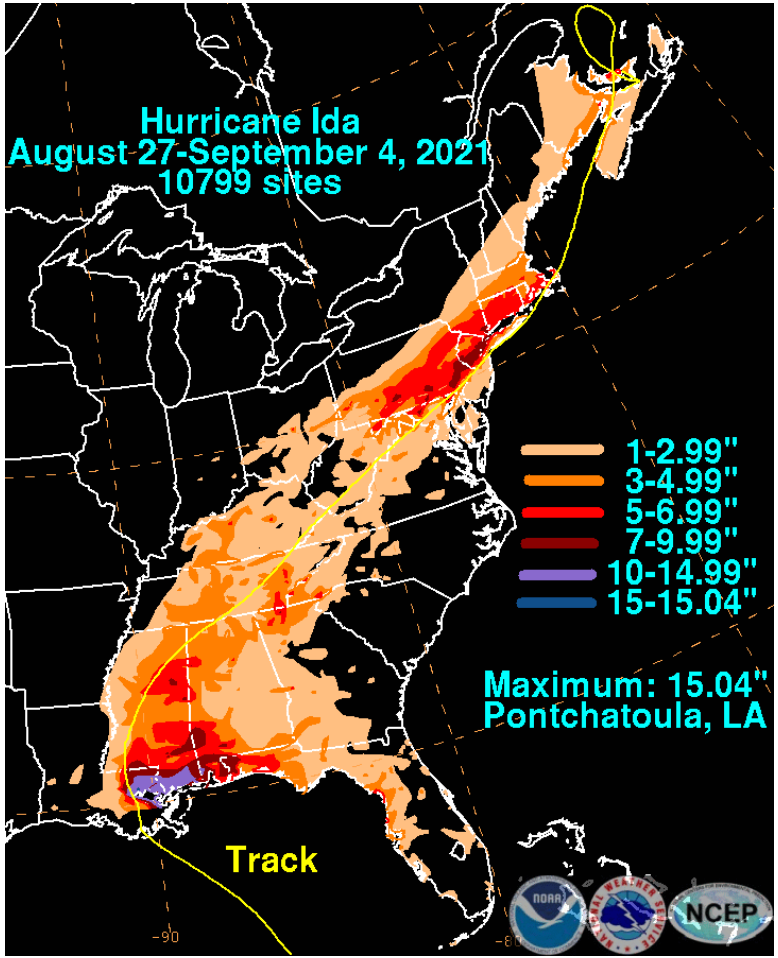
River Forecast Hydrograph

water.noaa.gov

National Water Prediction Service
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Hurricane Ida



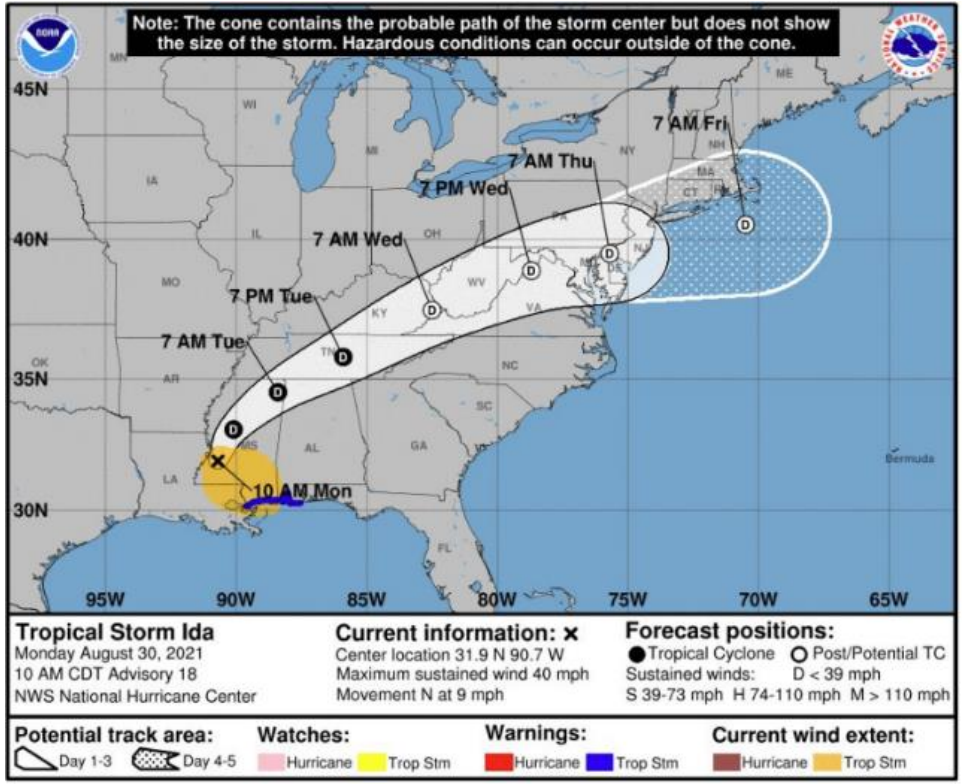


Pre-Flood

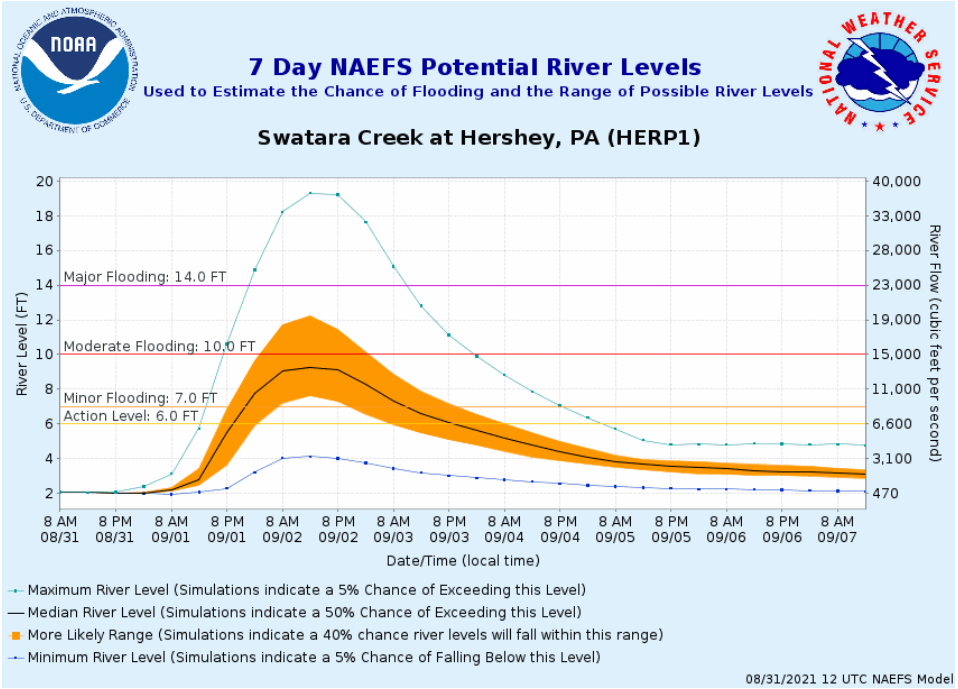
Early Warning:
Model guidance, ensemble outlooks, situational awareness

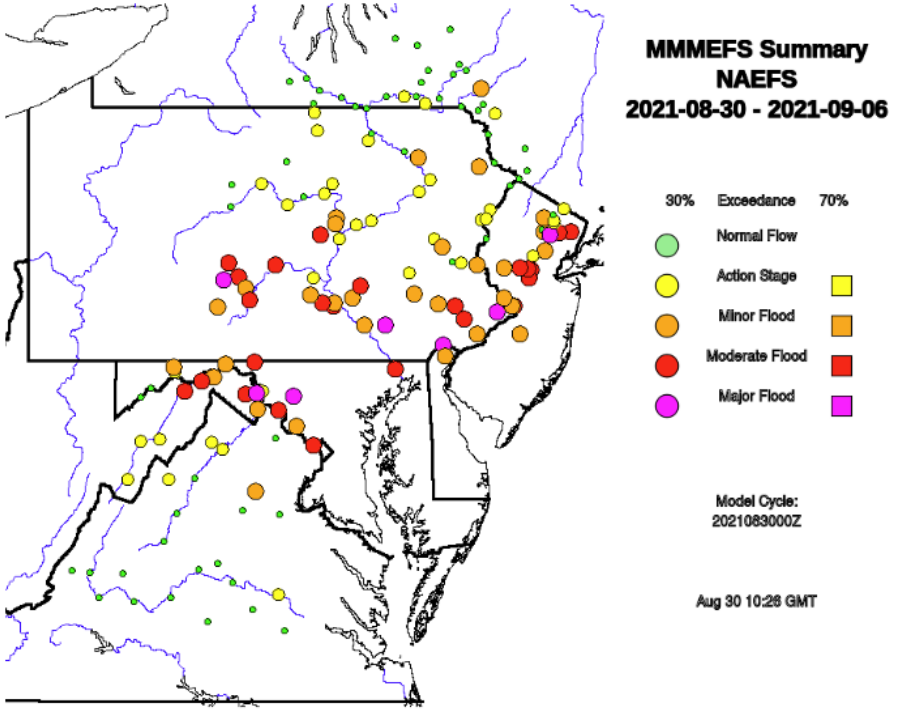
Messaging:
Send event briefing slides to partners, emphasis on probabilistic guidance

Coordination:
Communicate with other NWS offices (WFOs, NWC, RFCs) and partners, including emergency managers and reservoir operators



Pre-Flood Messaging



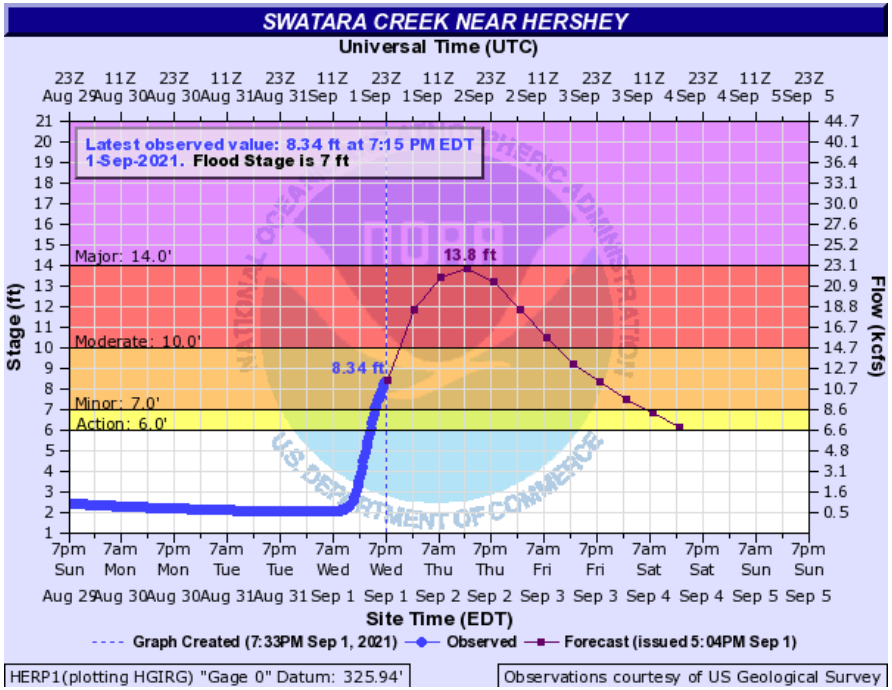


Flood

Updated Forecasts:
Issue updated river forecasts each synoptic hour (or as needed)

Messaging:
Focus turns towards deterministic guidance (QPF, river forecasts, etc.)

Coordination:
Maintain communication with affected WFOs. Coordinate messaging with NWC, Regional HQ.



Flood Coordination

Reservoir Operators:
Multiple conference calls during Ida with USACE to assist with their reservoir operation plans (release schedules, downstream targets, etc.)

WFOs:
MARFC hosted a call with our WFOs to coordinate the forecast and expected flood impacts across the basins

Other Questions:
Provide info to Media, EMs, public

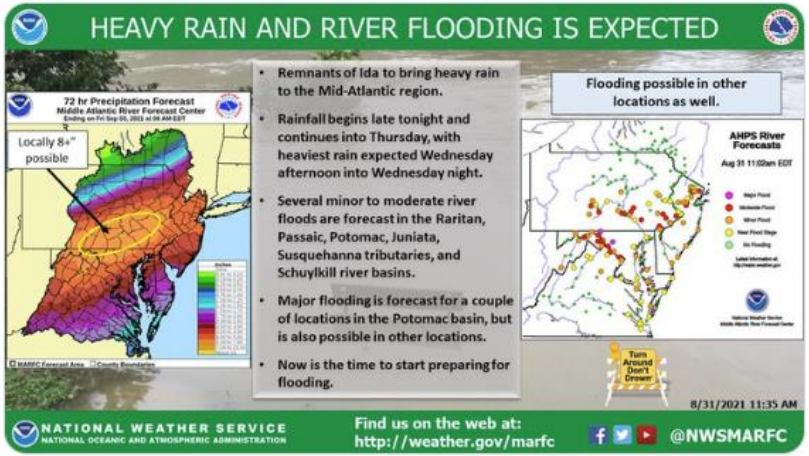


Flood Messaging

Governor Larry Hogan
@GovLarryHogan

As the remnants of Ida arrive in the region, there is a significant chance of heavy rain and flooding tomorrow and Thursday.

I urge Marylanders to be prepared, heed warnings from local authorities, and use common sense. Remember: turn around, don't drown.

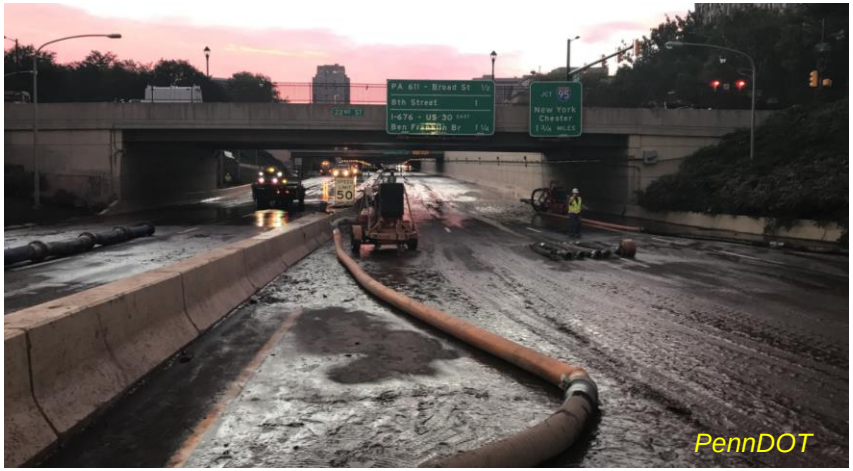


6:00 PM · Aug 31, 2021



Post-Flood

After-Action Review:
Staff meeting to review the event, discuss challenges, strategies and best practices moving forward. Later interviewed as part of NWS Service Assessment.



Partner Feedback:
Met with partners to discuss coordination before and during the event. Identified successes and areas for improvement.



Partner Feedback

FEMA

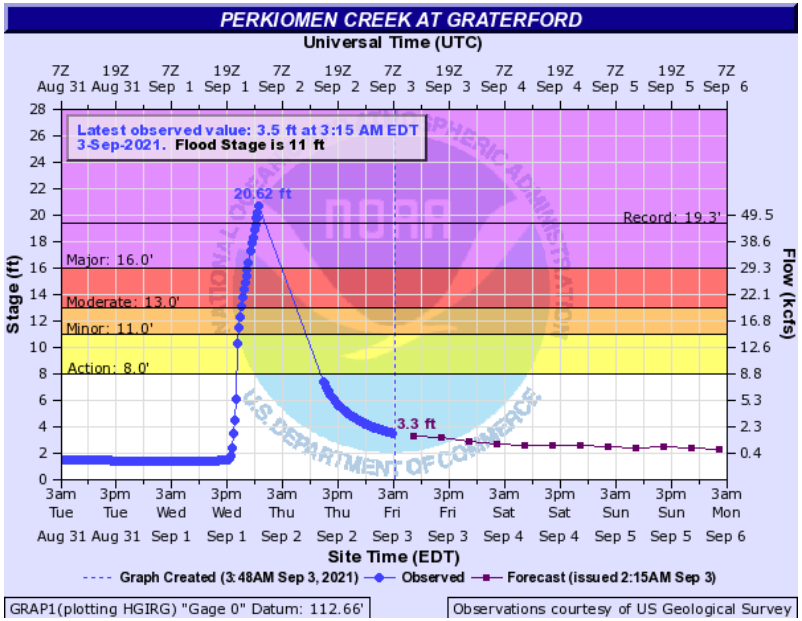


"It was MARFC's phone call on Friday, August 27 that got FEMA Region 3 formally spun up for Ida. That was 6 days prior to Ida's remnants moving into the Mid-Atlantic."

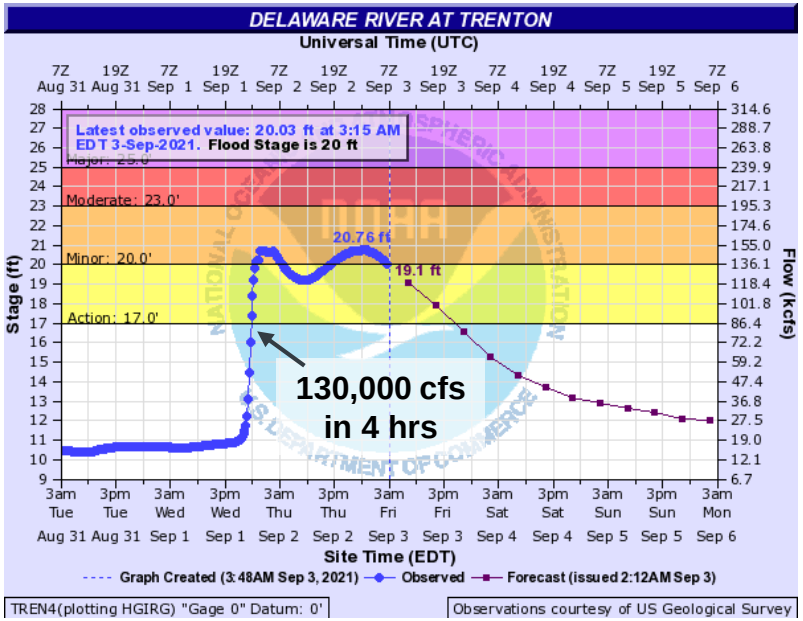
*"The **coordination** with MARFC, as well as other parts of the weather service, was **critical** for our **successful response**."*

Challenges

Gage Outages



"Flash River Flooding"



Future Strategies

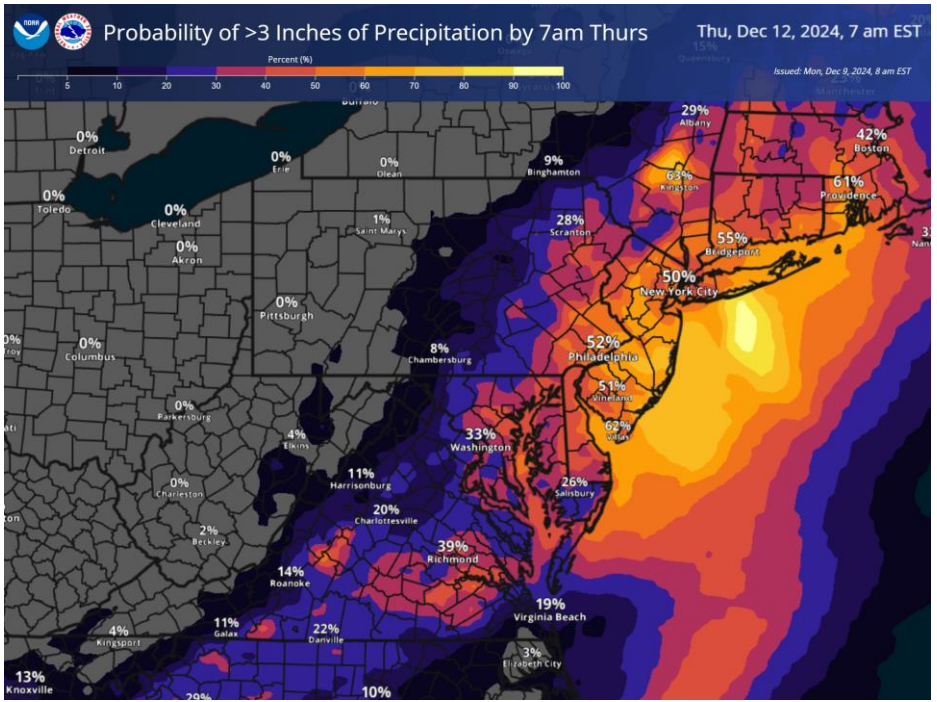
ProbIDSS:

NWS-wide initiative to improve proficiency with ensemble and other probabilistic forecasts and messaging.

Refine messaging with ranges of probability (and “most likely” / “reasonable worst case” scenarios) to inform customer decision making.

Example DSS Ensemble Graphic

(NBM v4.2 Total Precipitation ~100 members)



Future Strategies

Flood Inundation Maps (FIM): Visualizations of river flooding, based on dynamic river forecasts or static flood stages.

RFCs can work with WFOs to use FIM as a tool for local IDSS.

RFC FIM = flood maps that correspond to RFC river forecasts (one of many FIM types available)



Thank you!

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johnathan.kirk@noaa.gov

