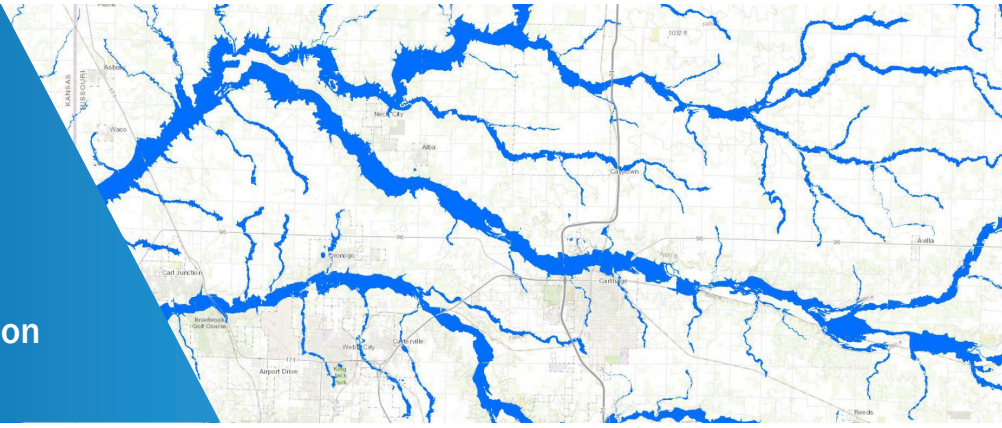
NEIGHBORHOOD LEVEL FLOOD INUNDATION MAPS:

Transforming NWS Water Prediction Across the U.S.



The longstanding demand for event-driven flood inundation mapping (FIM) has increased dramatically in recent years as a high value source of actionable information for emergency and water resource managers to prepare, mitigate, and respond to flood impacts. In response, the National Water Center of the National Weather Service (NWS), in coordination with NWS River Forecast Centers (RFC) and Weather Forecast Offices (WFO) along with Federal and other partners, has developed and demonstrated high-resolution inundation modeling capabilities which complement and expand upon existing static FIM libraries providing geo-referenced visualizations of forecast flooding extent at the continental scale.

New inundation mapping capabilities translate analysis and forecasts of streamflow into operational maps that communicate impact by showing where flooding may occur.

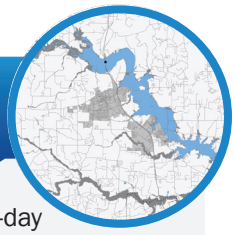
Flood inundation mapping will be provided based on the RFC streamflow forecasts as well as from the National Water Model (NWM) streamflow analysis and forecasts. RFC-based inundation mapping will be provided at and downstream of official RFC forecast locations and will provide a forecast of maximum inundation extent over the next 5 days.

> **"Had I had this tool in 2011, we would have had a larger evacuation area established earlier, would have moved emergency assets out of the flood zone, pre-positioned support resources and been able to provide better information to the residents of the affected area."**
>
> *New York state emergency manager from 2021 tabletop exercise*

NWM Latest Analysis

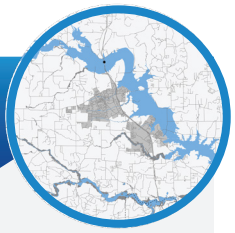
- Observation-based
- Available everywhere FIM is
- To be used as a snapshot of the most recent modeled flooding
- Generated only where the NWM analysis indicates flooding may be occurring.

RFC 5-Day Max Forecast



- Based on up-to-5-day RFC forecasts
- Available downstream of Advanced Hydrologic Prediction Service (AHPS) forecast points
- To be used where and when an RFC forecast is available
- Generated when RFC forecast reaches "action stage."

NWM 5-Day Max Forecast



- Based on 5-day weather forecast
- Available everywhere
- To be used for rivers and streams not covered by a RFC forecast
- Generated only where NWM forecasts indicate flooding may occur.

Scan the QR codes above to view Fact Sheets

Where Will These Services Be Accessible?

Beginning **September 2023**, services for the first 10% will be available from:

- The NWC Operations Page at National Water Center Products and Services
- The NWS National GIS Viewer
- Directly via URLs hosted on the Hydrologic Visualization and Inundation Services (HydroVIS) cloud system
- The National Water Prediction Service (NWPS)

Service Delivery Timeline

2023

Operational FIM for 10% of the U.S. population

- Begin delivery of FIM services and Impact-based Decision Support Services (IDSS) on September 26th, 2023 for portions of Texas, the Mid-Atlantic, and Northeast
- Leverage cloud-based solution.

2024-26

Operational FIM for nearly 100% of the U.S. population

- Incrementally expand services across the U.S., Puerto Rico and the U.S. Virgin Islands, Hawaii, and a portion of Alaska
- Introduce Total Water Level FIM forecasts along the coast.

Scan the QR codes for more information on our services

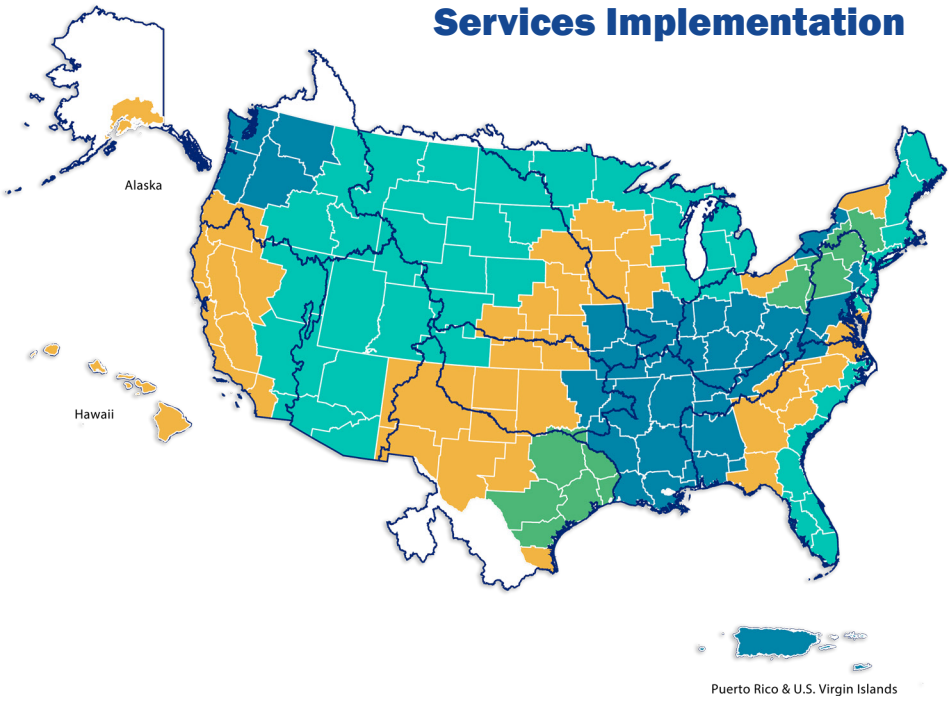
NWC Operations Page

NWS National GIS Viewer

HydroVIS Cloud System

NWPS

NWS Flood Inundation Mapping Services Implementation



Map Legend

- 10% Population served by October 2023.
- 30% Population served by October 2024.
- 60% Population served by October 2025.
- 100% Population served by October 2026.
- NWS County Warning Areas
- NWS River Forecast Center Boundaries

*100% is approximate. Does not include all parts of Alaska, American Samoa, and Guam Implementation areas are subject to change

Website: *https://water.noaa.gov* Email: *nws.nwc@noaa.gov* Locations: *Tuscaloosa, AL – Silver Spring, MD – Chanhassen, MN*