

# New Data From the National Weather Service

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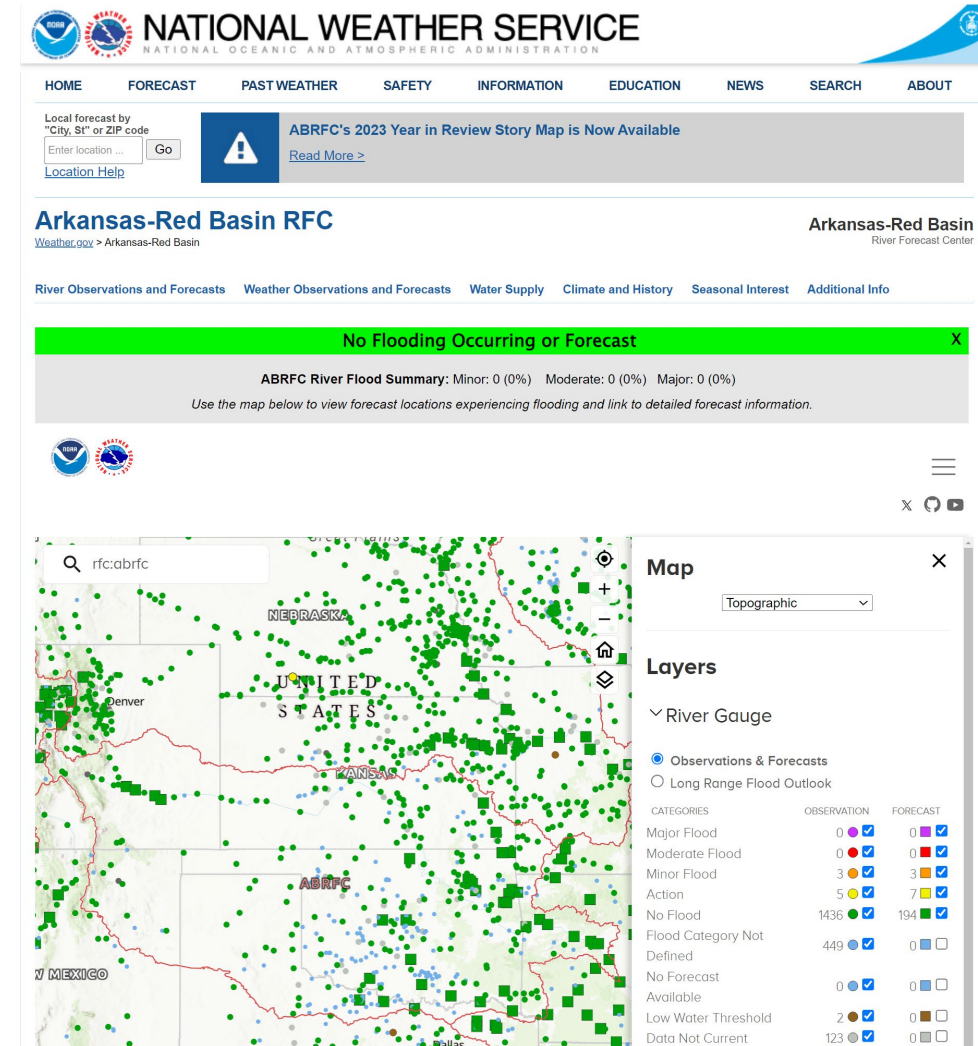
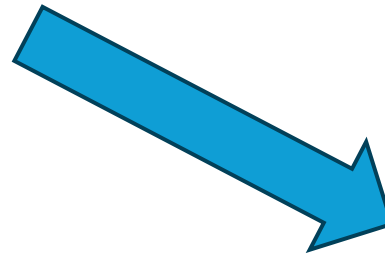
[rebecca.harjo@noaa.gov](mailto:rebecca.harjo@noaa.gov)



2024 OFMA  
Spring Technical Workshop  
9 April 2024

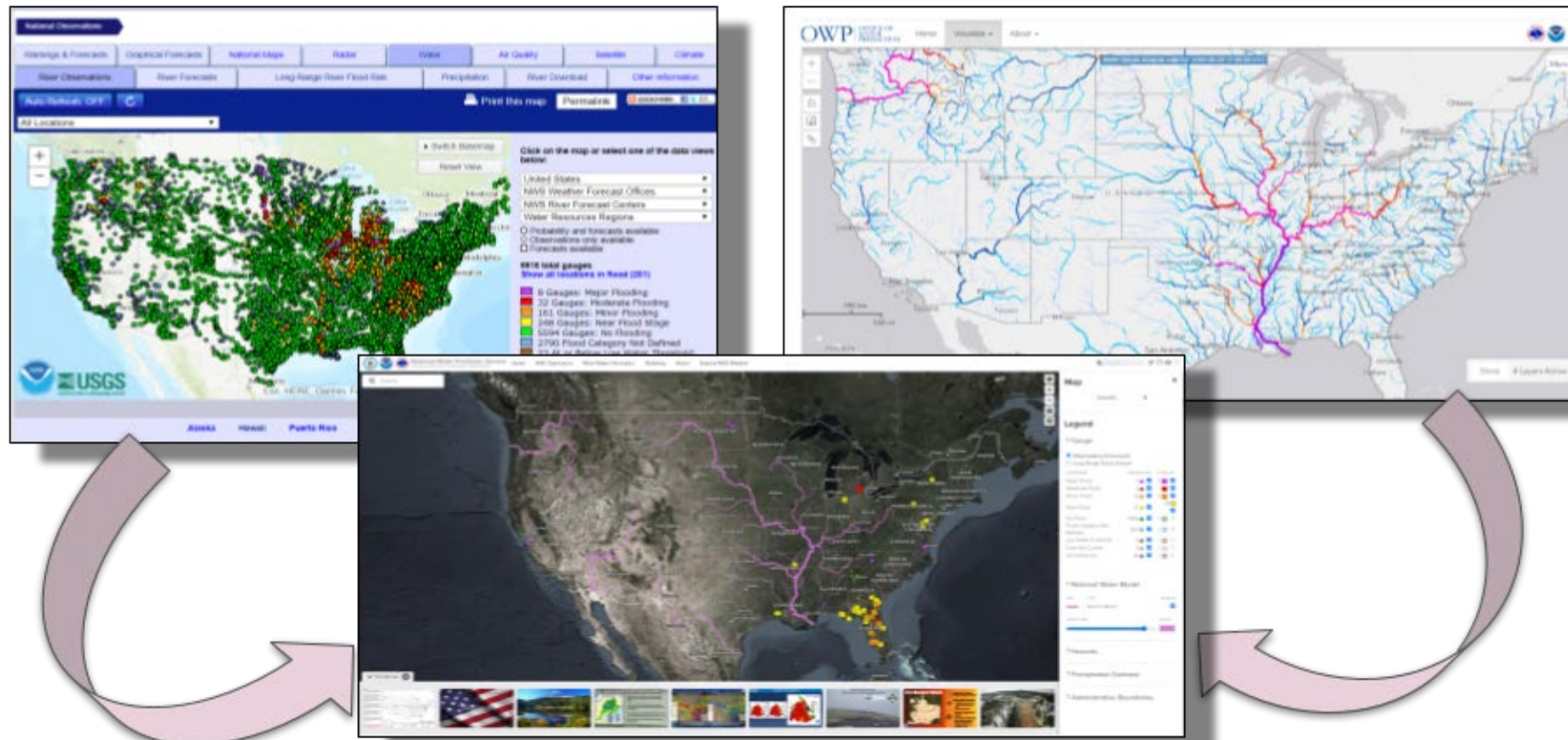
# National Water Prediction Service (NWPS)

- [www.water.noaa.gov](http://www.water.noaa.gov)
- Rolled out 27 March 2024 (still fixing issues)
- AHPS ([www.water.weather.gov](http://www.water.weather.gov)) being retired late May 2024
- NWPS being integrated into each NWS Office's webpage



# National Water Prediction Service (NWPS)

- Combines AHPS & National Water output to provide a one-stop shop for NWS hydrologic services
- Flood Inundation Mapping (FIM) services being included in national rollout





# National Water Prediction Service Maps

- NWPS website consists of one seamless map view
- Legacy AHPS hosted three static map views that required page reloads

**Legacy AHPS**

National Weather Service  
National Oceanic and Atmospheric Administration

Mississippi River at Baton Rouge, LA

202 total gauges • 22 gauges in flood

MISSISSIPPI RIVER AT BATON ROUGE, LA

Universal Time (UT)

Latest observed value: 25.97 ft on 03:00 AM EDT 19 Apr 2017. Flood Stage is 25.9 ft.

Hydrograph

Graph Created: 11:08 AM Apr 18, 2017

USA.gov

USGS

Map Overlays

Flood Categories (in feet): Minor Flood Stage: 20, Moderate Flood Stage: 25, Flood Stage: 30, Action Stage: 35

Recent Counts: 21: 47.28 ft on 05/16/1937, 21: 45.18 ft on 03/10/1933, 21: 45.18 ft on 04/26/1945, 21: 44.01 ft on 05/20/1917, 21: 44.00 ft on 04/19/1945

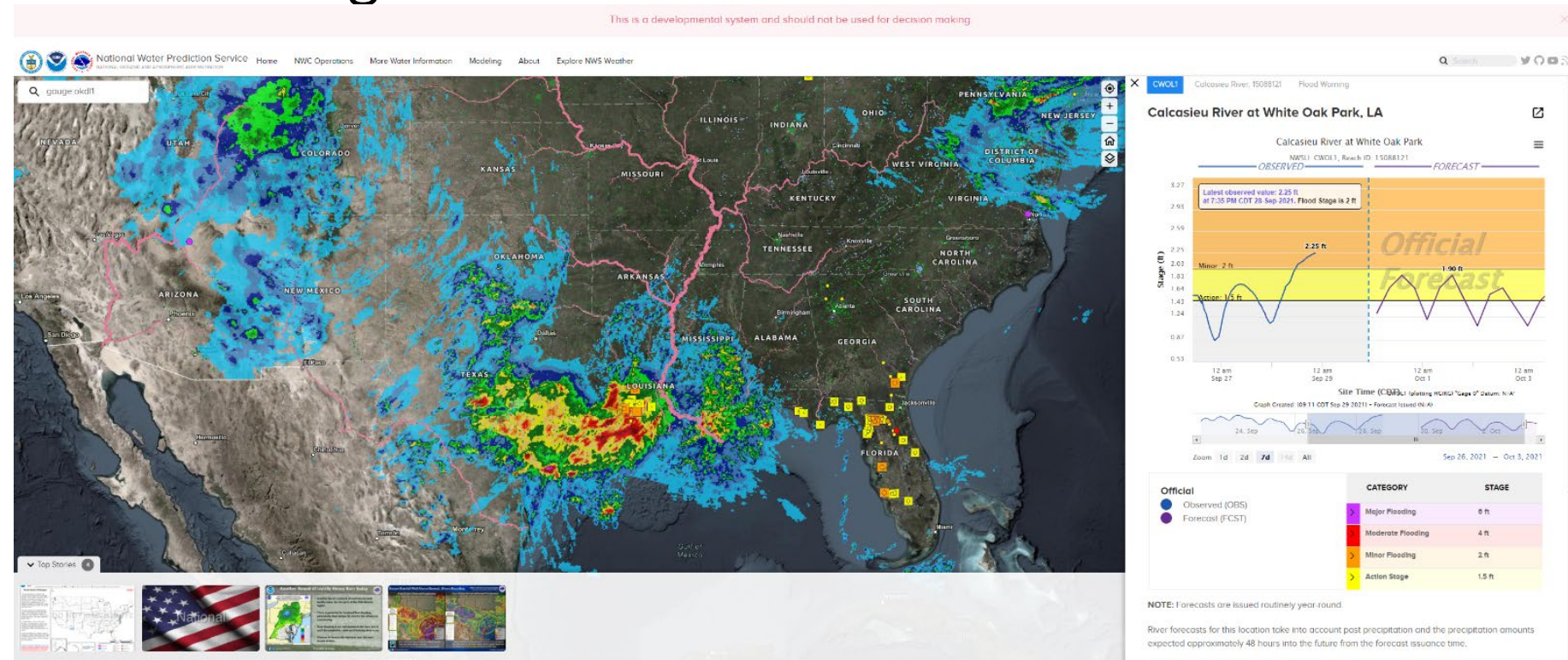
Low Water Records: 21: 9.07 ft on 11/14/1936, 21: 9.28 ft on 11/16/1935, 21: 8.28 ft on 01/09/1877, 21: 8.50 ft on 11/26/1887

USA.gov

- Near real-Time River Forecast and Probabilistic Information
- Static FIM libraries,
- Precipitation Estimates (QPE)
- Data download

# National Water Prediction Service Maps

- Incorporates National Water Model output into spatial display
- You can customize color & opacity of just about everything
- Direct URLs to specific areas (NWS offices or states)
- Right panel allows for configuration of location and zoom level

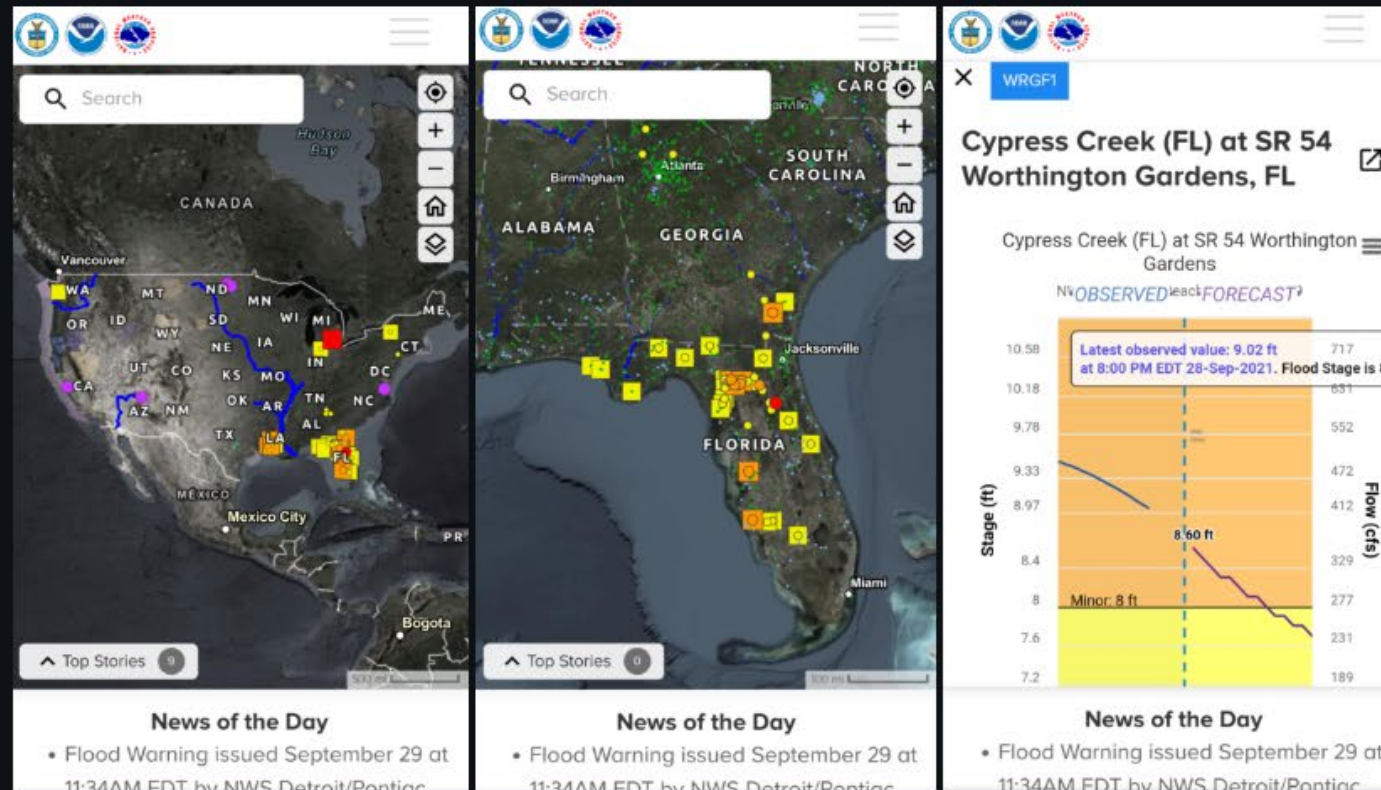




# What's New in NWPS

## Optimized Mobile Experience

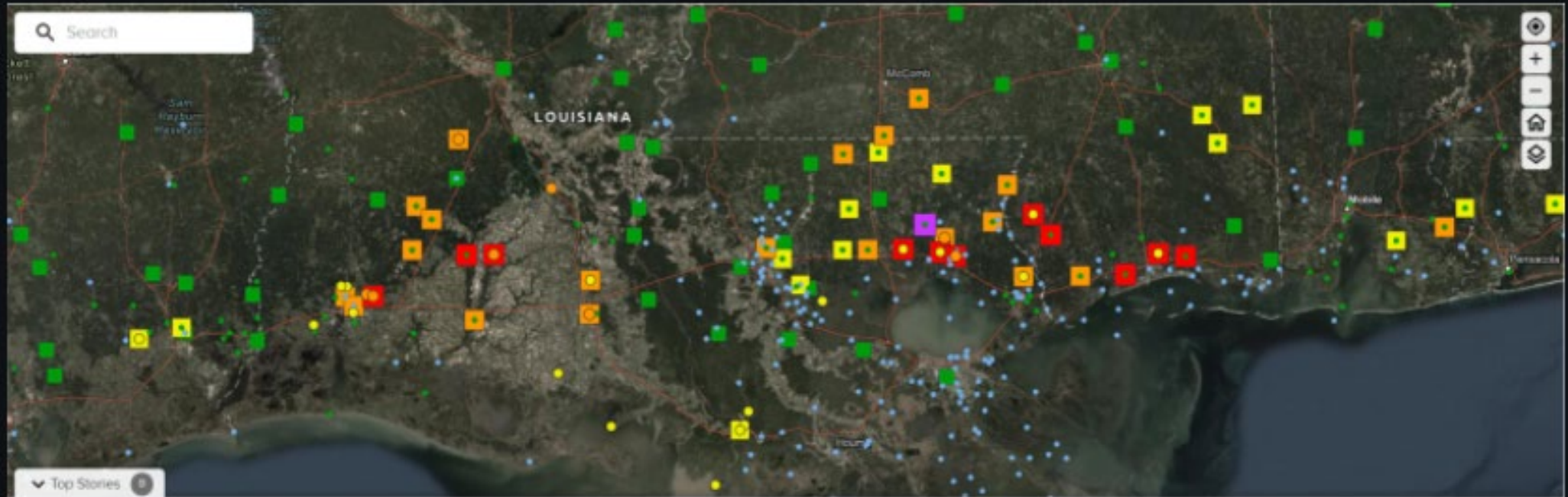
Depending on the mobile device used, the displayed visual experience may vary but all the functionality will be available, ensuring a consistent, reliable user experience.



NWPS display in mobile device (Android)

# New Symbology in NWPS

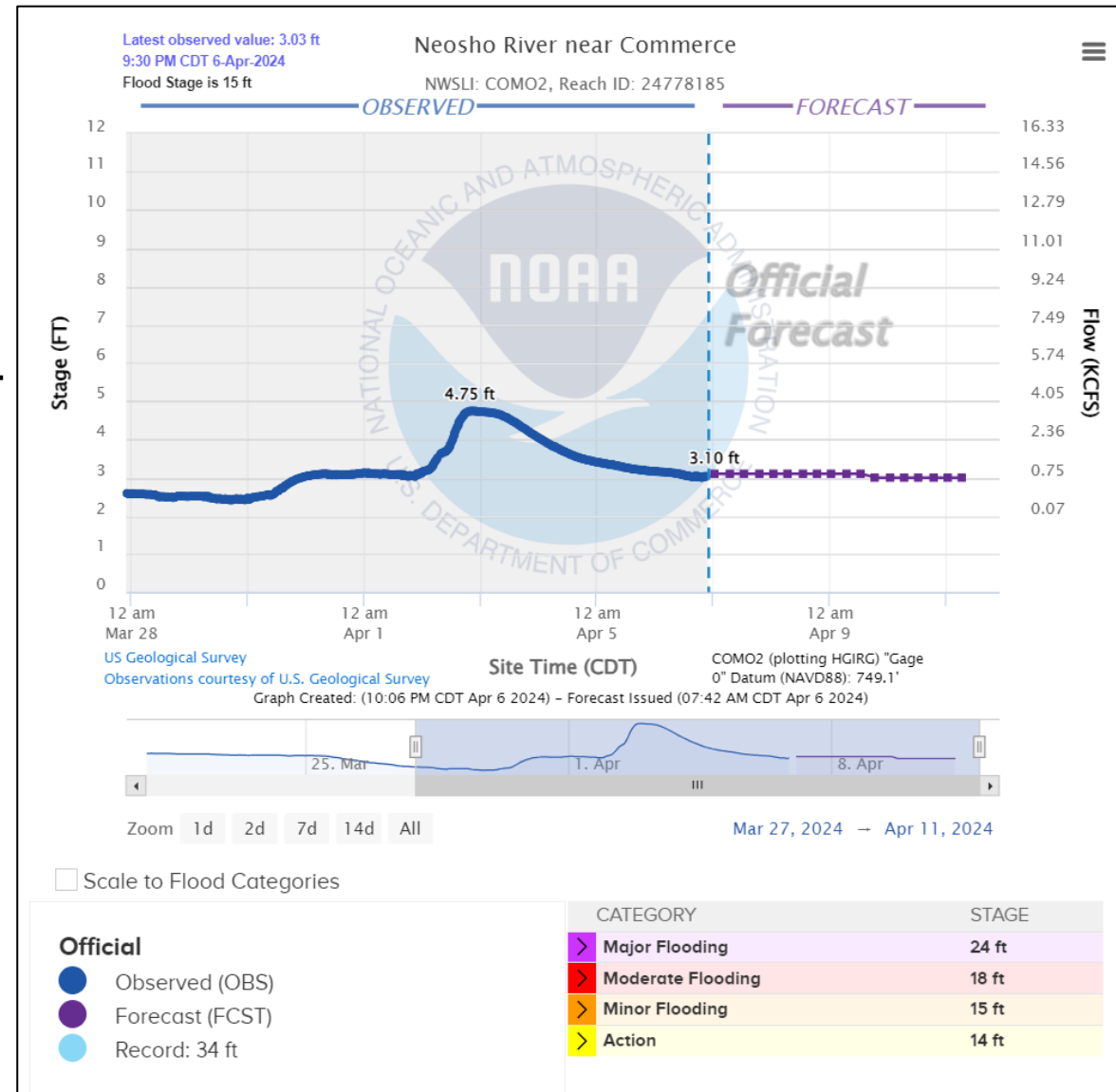
- Observations in circles
- Forecasts in squares



New combined observed (circle) and forecast (square) symbology. Color indicates flood category.

# What's New in NWPS

- Dynamic Hydrographs
- Plans for static hydrographs to still be available





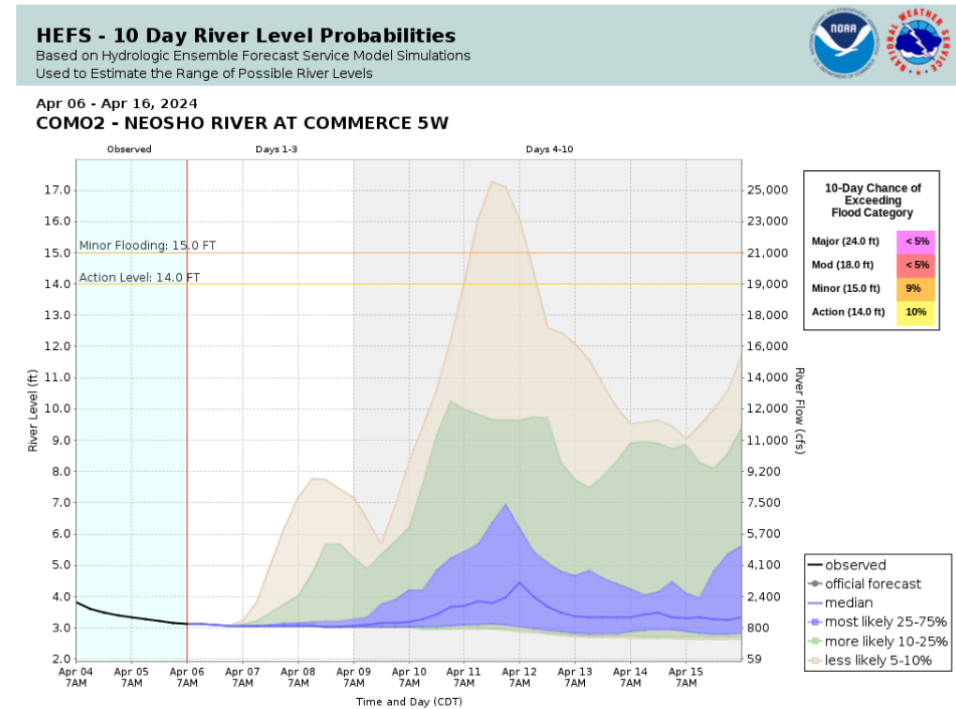
# Probabilistic river forecasts in new location on Gauge Pages

Probability Information

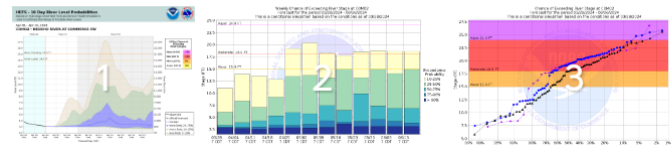
Short Range Forecast Uncertainty

[About this graph](#) | [Product Description Document](#)

- Scroll down to bottom of page
- HEFS (10-day prob river levels) is option 1
- Weekly chance of exceeding river stages is option 2
- Chance of exceeding river stages for entire 90-day period is option 3



Model runtime: 07:00 AM CDT Apr 06 2024  
Arkansas-Red Basin RFC



# New NWPS API Service

- All display, mapping, & hydrograph functionality by NWPS API services
- Everything publicly at <https://api.water.noaa.gov/nwps/v1/docs/>

OWP OFFICE OF WATER PREDICTION swagger.json Explore

## National Water Prediction Service API <sup>0.0.1</sup>

swagger.json

API for the National Water Prediction Service's hydrologic products.

[National Water Center - Website](#)  
[Send email to National Water Center](#)

Schemes: HTTPS Authorize

### Gauges

- GET /nwps/v1/gauges Gets a list of gauges.
- GET /nwps/v1/gauges/{identifier} Gets a gauge and it's metadata.
- GET /nwps/v1/gauges/{identifier}/ratings Get ratings for a gauge (sort is based off of STAGE data, limit defaults to 10,000 records, all defaults true)
- GET /nwps/v1/gauges/{identifier}/stageflow Gets observed and forecast stage/flow product data for a gauge.
- GET /nwps/v1/gauges/{identifier}/stageflow/{product} Gets observed or forecast stage/flow product data for a gauge.

### Reaches

- GET /nwps/v1/reaches/{reachId} Get metadata for a specific reach.
- GET /nwps/v1/reaches/{reachId}/streamflow Returns streamflow forecast values for a specific reach.

### Products

- GET /nwps/v1/products/stageflow/{identifier}/{pedts} Get Stage/Flow for a specific gauge.

### Health

- GET /nwps/v1/monitor NWPS internal monitoring and data status

## Products

GET /nwps/v1/products/stageflow/{identifier}/{pedts} Get Stage/Flow for a specific gauge. Try it out

Parameters

Name	Description
<b>identifier</b> * required string (path)	The gauge's unique identifier, LID or USGS ID. Example: ANAW1 or 13334300 <input type="text" value="identifier - The gauge's unique identifier, LID"/>
<b>pedts</b> * required string (path)	The Standard Hydrometeorological Exchange Format parameter codes for the product. Example: HGIRG <input type="text" value="pedts - The Standard Hydrometeorological E"/>

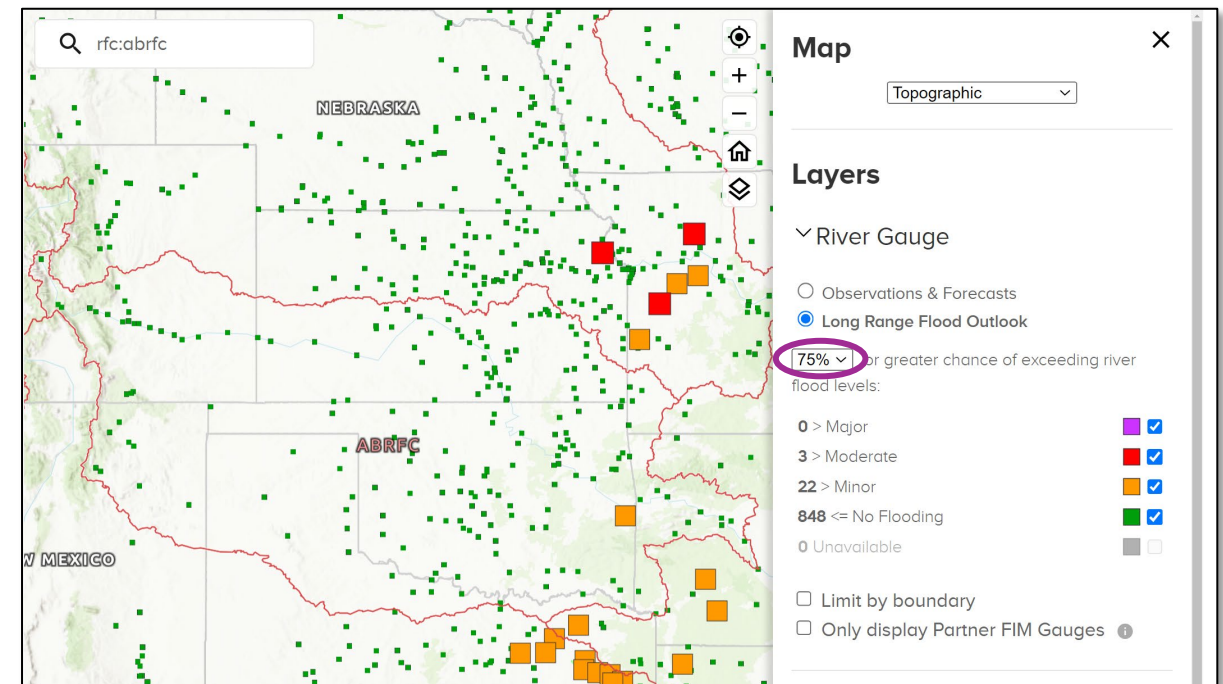
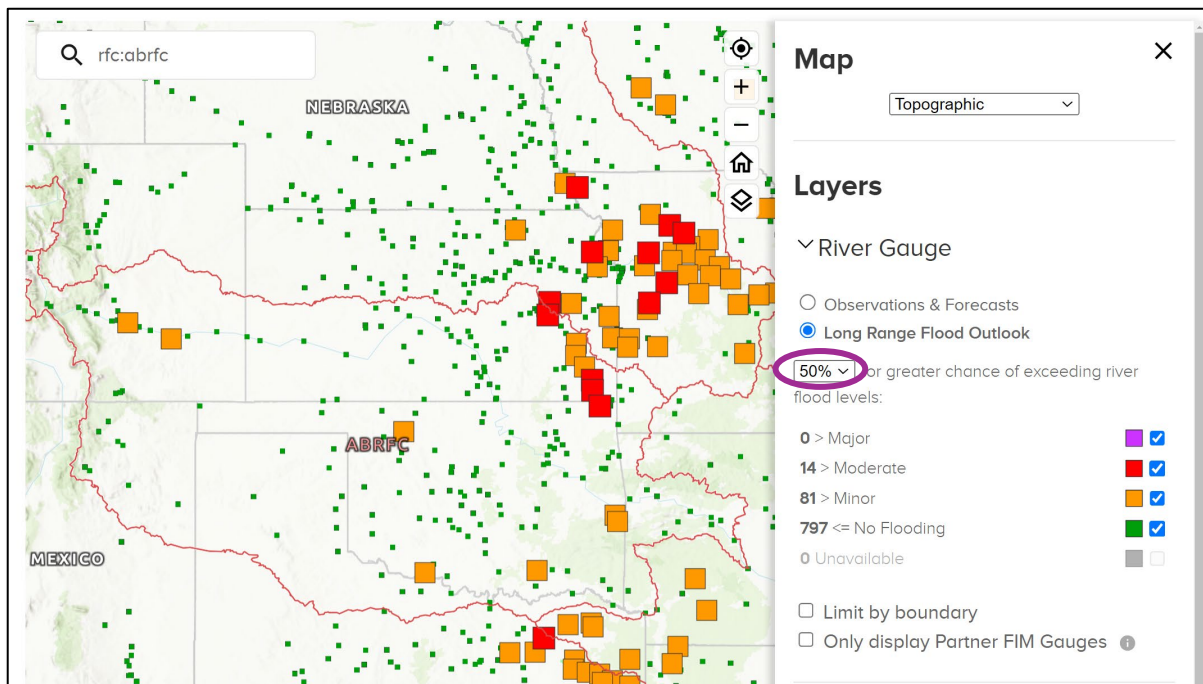
Responses

Response content type: application/json

Code	Description
200	A successful response. Example Value   Model <pre>{   "pedts": "string",   "issuedTime": "2024-04-07T03:24:46.744Z",   "wfo": "string",   "limZone": "string",   "primaryName": "string",   "primaryUnits": "string",   "secondaryName": "string",   "secondaryUnits": "string",   "data": [     {       "validTime": "2024-04-07T03:24:46.744Z",       "generatedTime": "2024-04-07T03:24:46.744Z",       "primary": 0,       "secondary": 0     }   ] }</pre>
default	An unexpected error response. Example Value   Model <pre>{   "code": 0,   "message": "string",   "details": [     {       "type": "string"     }   ] }</pre>

# More Options to View Long Range Outlooks

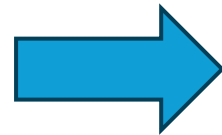
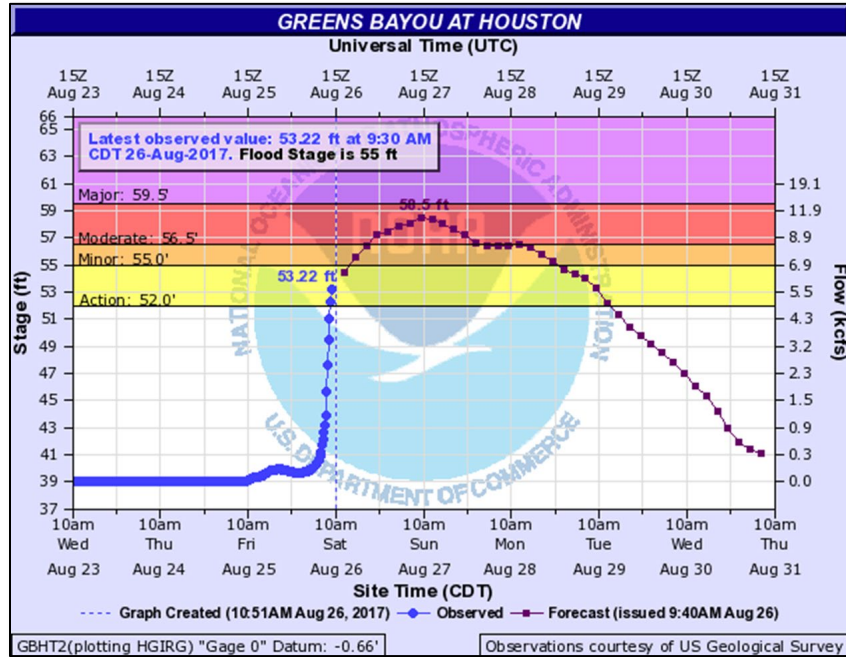
- LRO => Chance of reaching flood levels in the next 90 days







# FIM Goal: Improving How Flood Impacts Are Communicated (Putting Water on a Map)



## Flood Impacts & Photos

[Collapse](#)

If you notice any errors in the below information, please contact our Webmaster

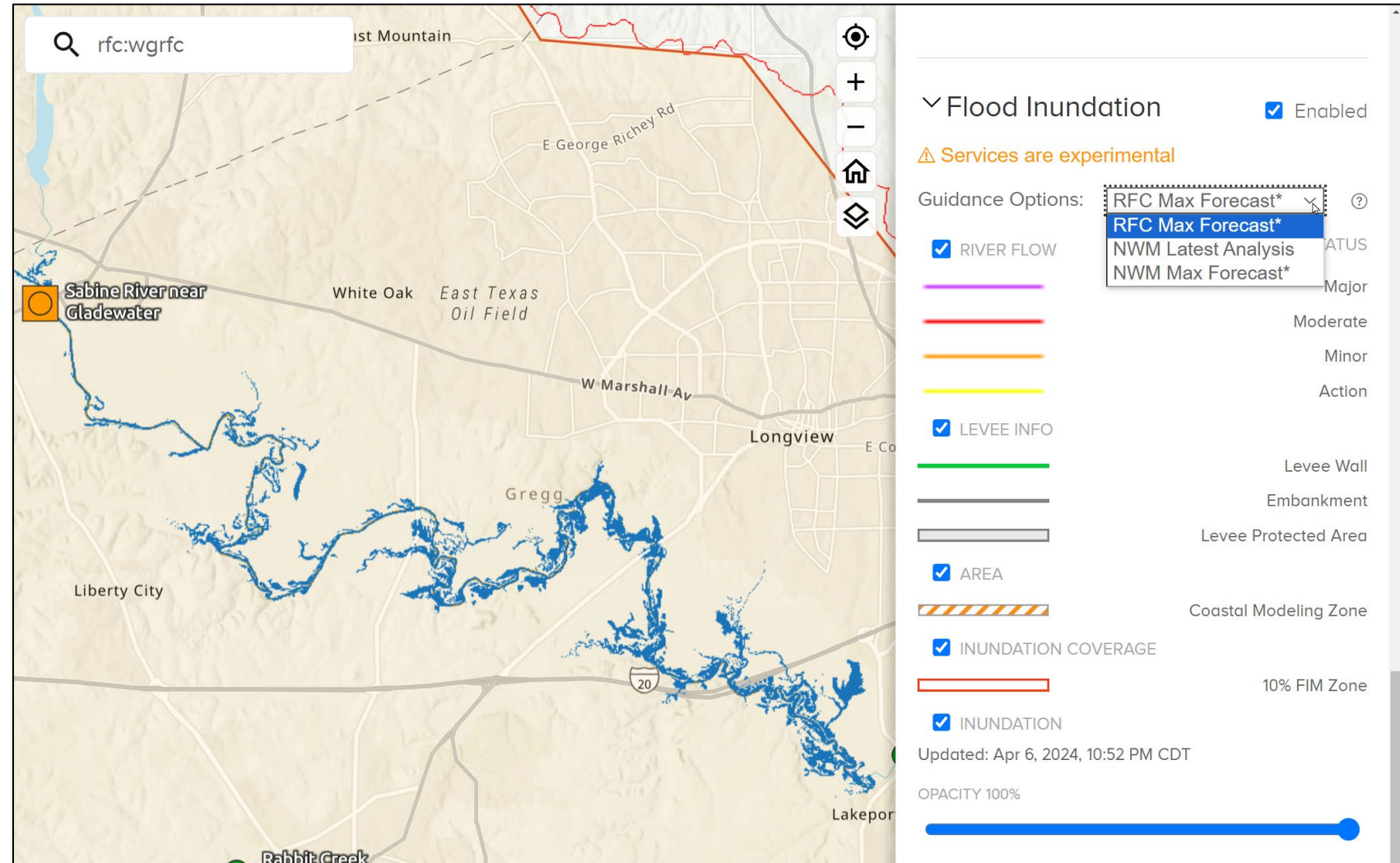
- 61 Major lowland flooding continues as homes on Sequoia Bend Drive begin flooding with widespread flooding of homes on McDermott Drive.
- 60 Major lowland flooding continues as homes on McDermott Drive begin flooding.
- 59.5 Major lowland flooding begins as home in Sequoia Estates subdivision begin flooding. Homestead Road south of the channel in inundated with one to two feet of water and water is several feet deep on the south bound feeder of U.S. Highway 59.
- 56.5 Moderate lowland flooding begins as streets in the Sequoia Estates subdivision and west of JFK Boulevard become inundated. The south bound feeder road of U.S Highway 59 is under close to one foot of water.
- 55 Minor lowland flooding begins as water escapes the north side of the upstream bank at U.S. Highway 59. Water is close to inundating the south bound feeder road south of the channel.



# FIM on NWPS

Options for FIM based on:

- RFC Max Forecast
- NWM Latest Analysis
- NWM Max Forecast



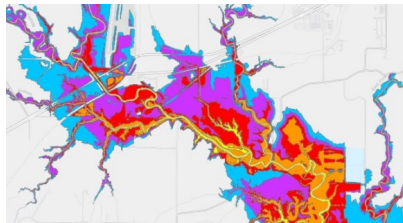


# NWS FIM Capabilities

Static

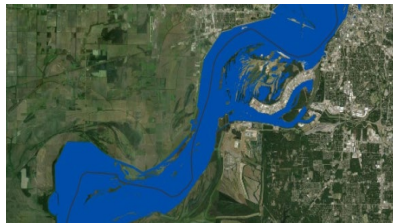


**AHPS FIM Libraries (AHPS FIM)** - Static maps at ~ 200 RFC forecast locations. Maps derived from engineering scale hydraulic models.



**NWS Flood Categorical HAND FIM Libraries (CatFIM)** - Static maps at ~3,000 RFC forecast locations. Maps derived from 10-m Height Above Nearest Drainage (HAND) solution. (Plans underway to be made public.)

Dynamic



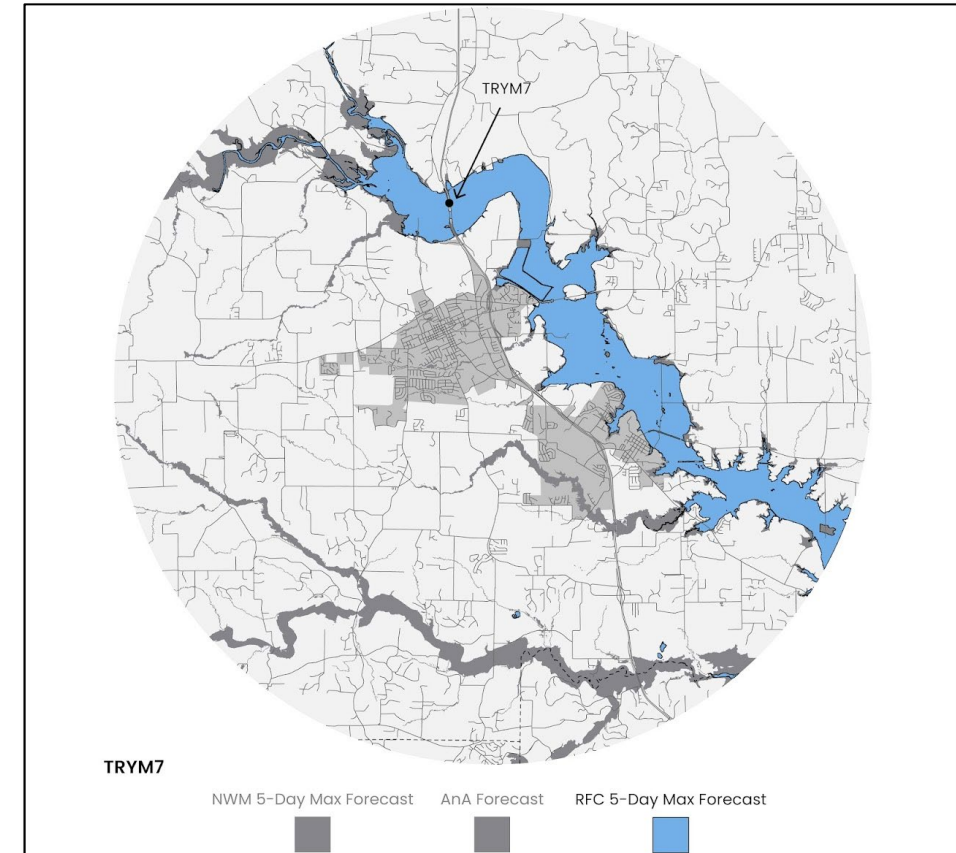
**Forecast River Forecast Center Flood Maps (RFC 5-Day Max Forecast)** - Dynamic maps downstream of ~ 3,600 RFC forecast locations. Maps derived from RFC forecast and 10-m Height Above Nearest Drainage (HAND) solution.



**Forecast National Water Model Flood Maps (NWM 5-Day Max Forecast)** - Dynamic maps along NHDPlus reach locations. Maps derived from NWM forecast and 10-m Height Above Nearest Drainage (HAND) solution. (Right now based on GFS precipitation, planned to use NBM in the future.)

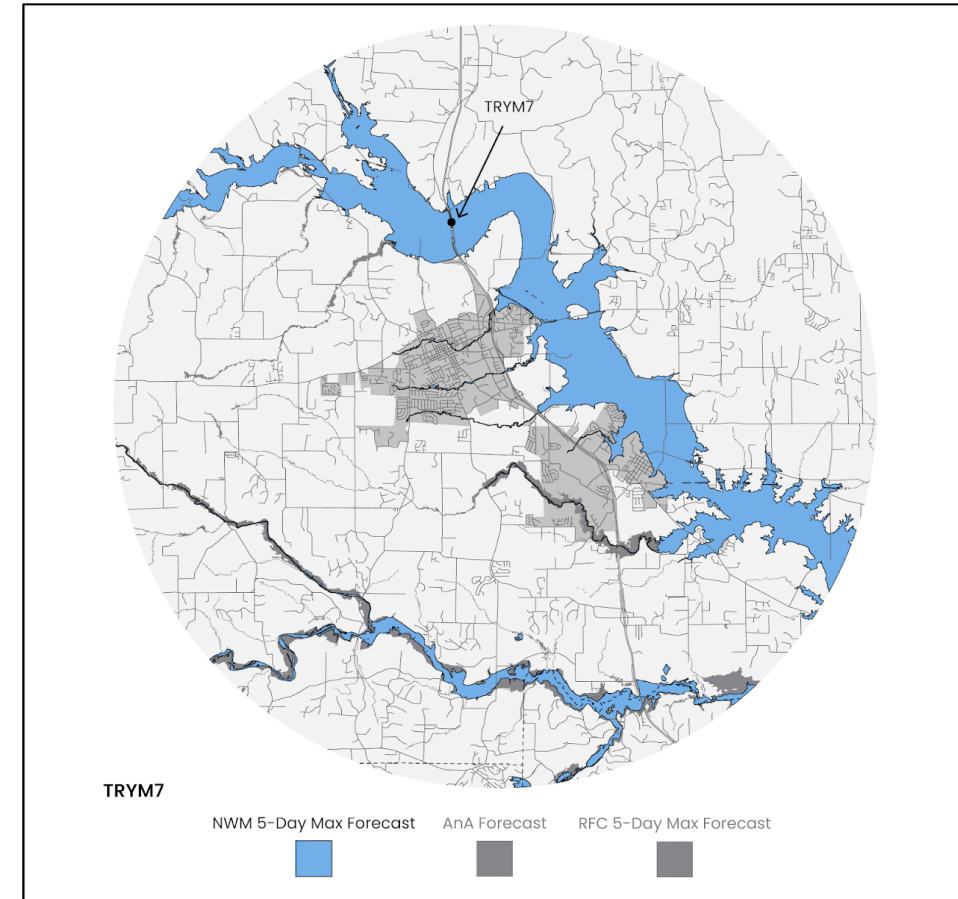
# RFC 5-Day Max Forecast FIMs

- Depicts the maximum inundation extent over the next 5 days derived from the official River Forecast Center (RFC) forecast
- Maximum streamflows are available downstream of RFC forecast points whose forecast reaches the Action-Stage or higher flow threshold categories.
- Limitation: only available downstream of AHPS forecast points



# NWM 5-Day Max Forecast FIMs

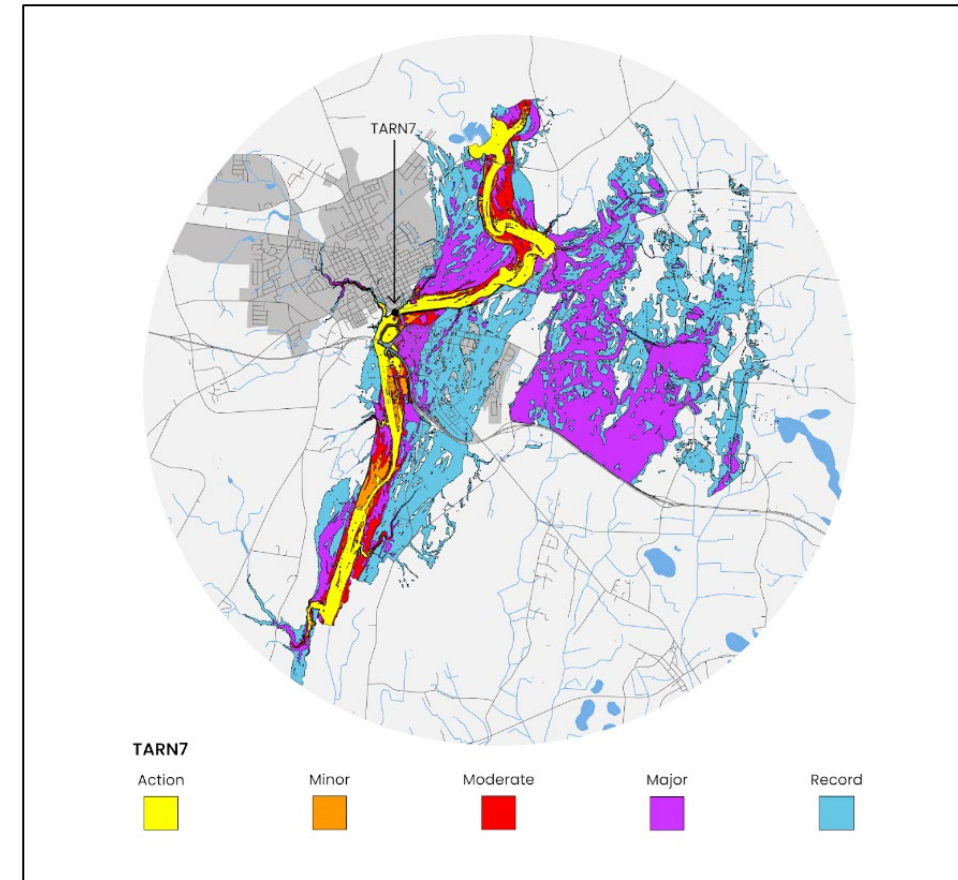
- Depicts the inundation extent of the peak National Water Model (NWM) streamflow forecast over the next 5 days where the NWM is producing flows that meet or exceed the high-water threshold for a given river reach
- High water thresholds vary by region
- Limitation: a Quality Control (QC) limitation exists because a forecaster is not involved in the decision-making process regarding the forecast





# CatFIMs

- Static inundation extent mapping library for the official NWS flood stage category thresholds (Action, Minor, Moderate, Major, and Record)
- This is an invaluable tool for emergency planning and informing best practices for anticipation of potential future flood events
- Limitation: only available at select AHPS sites

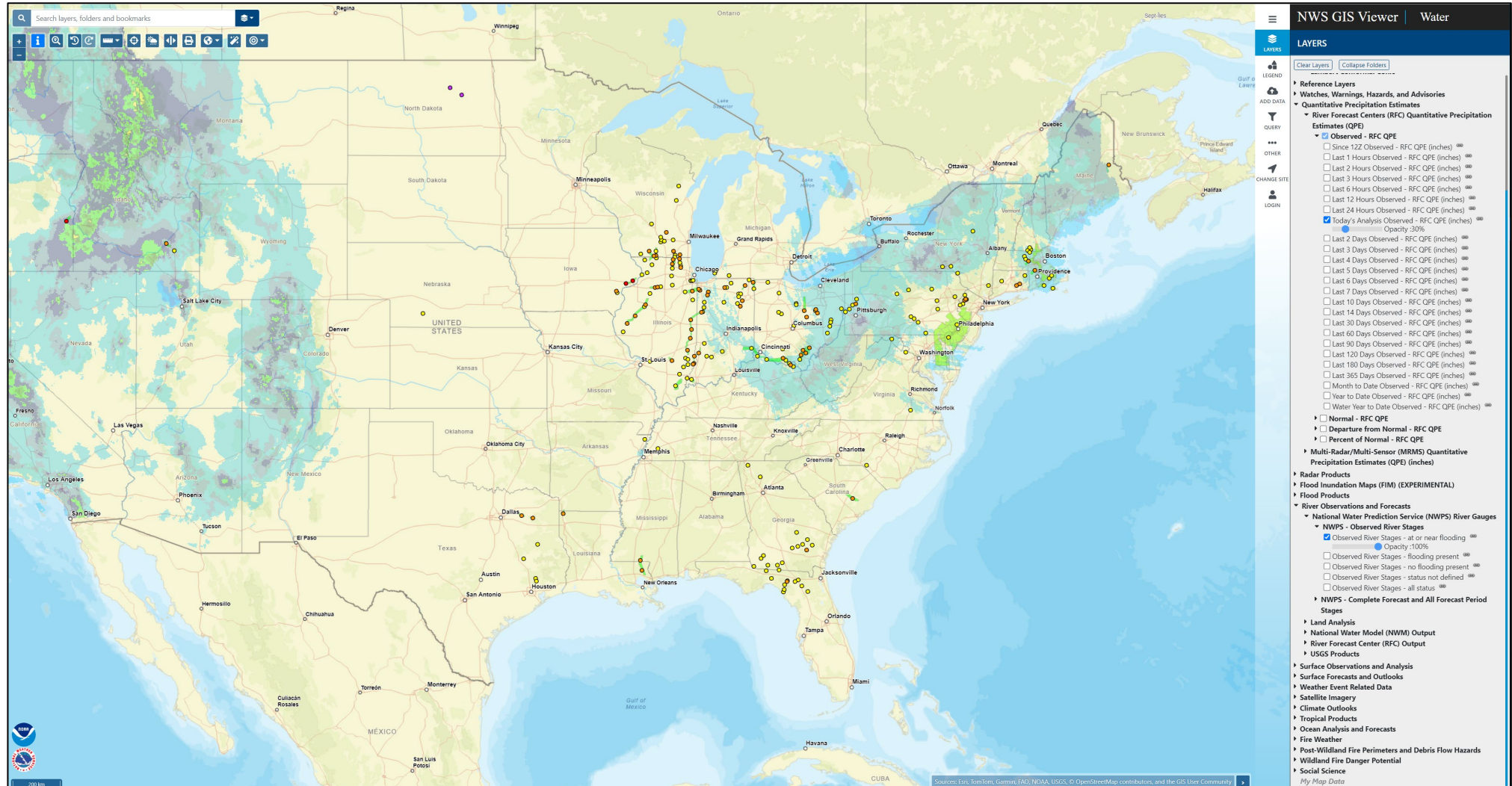


# FIM Limitations

- Flood Extent Only
  - If you want to know how deep the water will be, it's not currently part of National Water Center Flood Mapping (Sorry!)
- Not Editable
  - Adjusting an individual map either during an event or after because it's not accurate is not possible
  - However, adjusting the map through calibration is being developed and large-scale changes to the entire mapping process are possible
- Limited to 10m Digital Elevation Model
  - Can't see small physical features and their impact on FIM extent such small ridges or unofficial levees
- NWM Versions limited by future precipitation input
  - The rainfall creating the flow is currently only GFS, soon will include NBM as well as GFS
  - Can't adjust or manipulate the forecast rainfall going into the model
- NWM Versions flow has no human influence for the forecast
  - Similar to being unable to adjust the rainfall, the NWM version has no ability to adjust the flow generating the map
- Simplified physics
  - Equations describing the physics are simpler with more assumptions (as compared to Hydraulic Models like HEC-RAS, RES-SIM, or other models). This means dambreak scenarios and levee failures are not currently adequately modeled in FIM products.

# Access to FIMs on National GIS Viewer

<https://viewer.weather.noaa.gov/water>





# Detailed FIM info



- <https://www.weather.gov/owp/operations>

## **!NEW!** - Flood Inundation Mapping (FIM) Services - **!NEW!**

Experimental services depicting the extent of predicted inundation, as derived from River Forecast Center forecasts and National Water Model analyses and forecasts. Services are available via the “Viewer”, or directly via URLs hosted on the Hydrologic Visualization and Inundation Services (HydroVIS) cloud system. These services are currently only available for an area that includes 10% of the U.S. population but will be expanded later. Additional informational resources are available below.

[Public Notification Statement \(PNS\)](#)  
[FIM Fact Sheet](#)  
[Frequently Asked Questions \(FAQs\)](#)  
[FIM Service Description Document \(SDD\)](#)  
[Viewer Access Instructions](#)  
[API Access Instructions](#)

[CLICK HERE to Provide Feedback](#)

# Detailed NWPS info



- <https://www.weather.gov/owp/operations>

## **!NEW!** - National Water Prediction Service (NWPS) - **!NEW!**

In Spring 2024, the Advanced Hydrologic Prediction Service (AHPS) hosted at <https://water.weather.gov> will be replaced by the National Water Prediction Service (NWPS) at a repurposed <https://water.noaa.gov>. A service change notice (SCN) was issued on January 12, 2024 to announce implementation of NWPS and one on March 6, 2024 to announce a URL change.

[Service Change Notice \(SCN\)](#)  
[Public Notification Statement \(PNS\)](#)

[NWPS Flyer](#)  
[NWPS API Flyer](#)  
[NWPS Fact Sheet](#)  
[NWPS Overview \(Story Map\)](#)  
[NWPS Product and User Guide](#)  
[Recording of NWPS Partner Webinar](#)  
[Recording of NWPS API Webinar](#)  
[Service Description Document \(SDD\)](#)

**Contact:** [nwps.webmaster@noaa.gov](mailto:nwps.webmaster@noaa.gov)

# Questions?

## **Bekki Harjo**

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## **Nicole McGavock**

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**ABRFC: [www.weather.gov/abrfc](http://www.weather.gov/abrfc)**

**Panhandle: [www.weather.gov/ama](http://www.weather.gov/ama)**

**Western/Central: [www.weather.gov/oun](http://www.weather.gov/oun)**

**Eastern: [www.weather.gov/tsa](http://www.weather.gov/tsa)**

**McCurtain Co: [www.weather.gov/shv](http://www.weather.gov/shv)**

