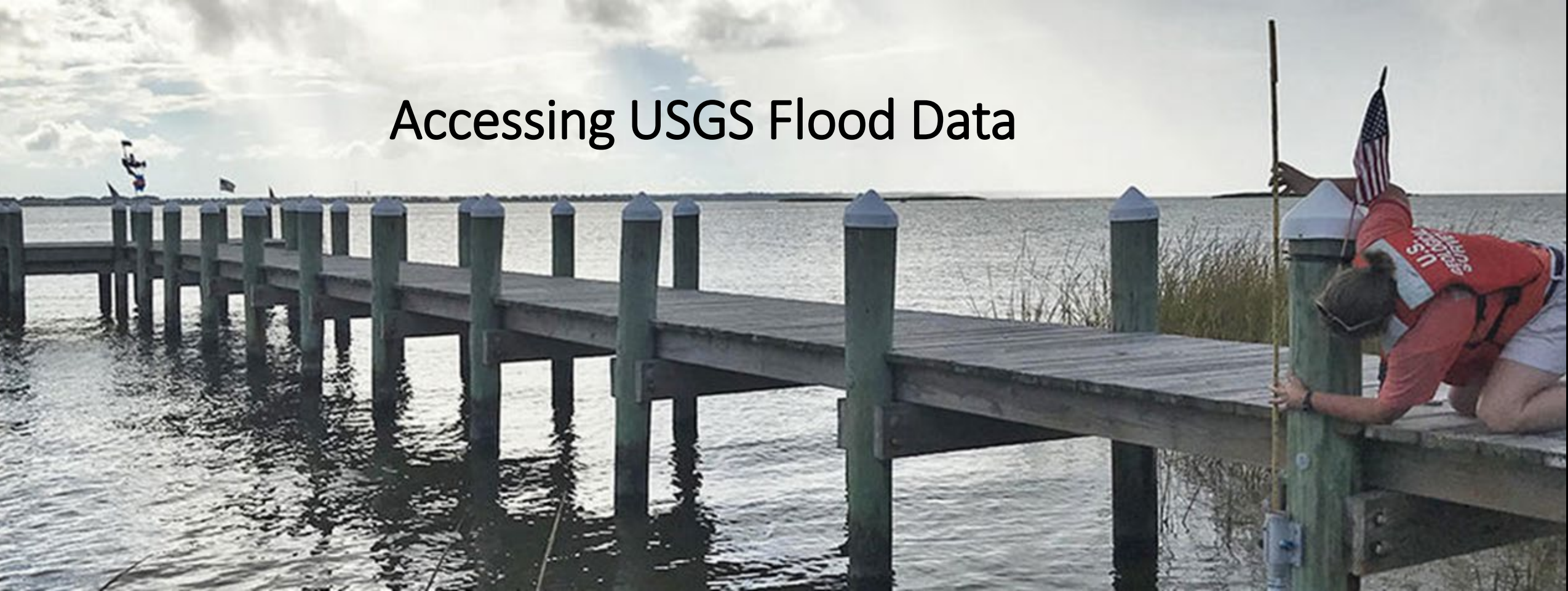


# Accessing USGS Flood Data



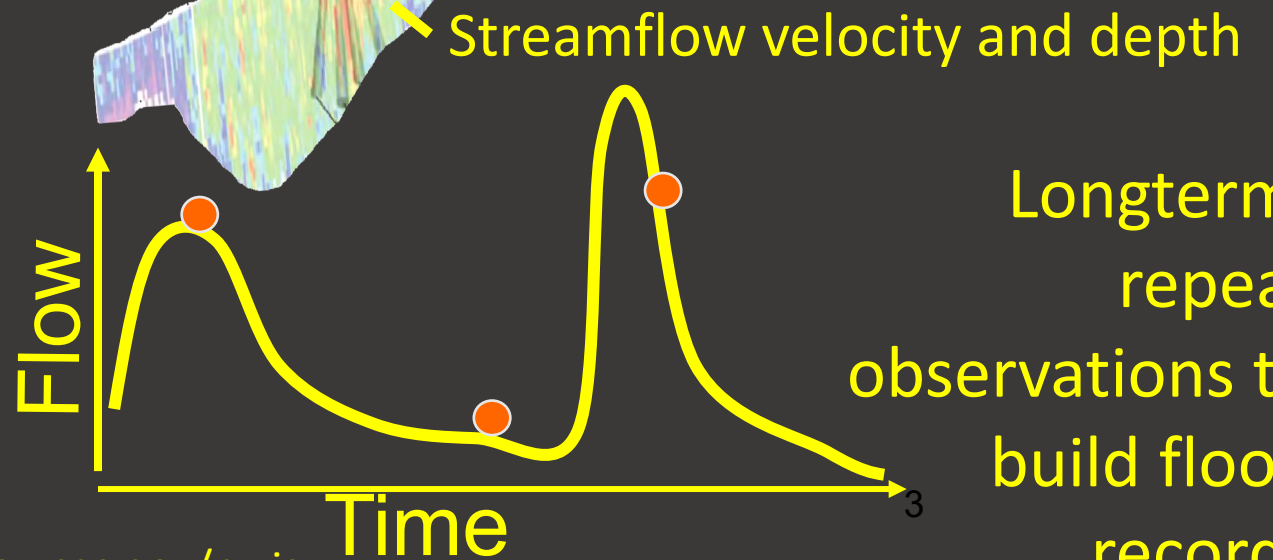
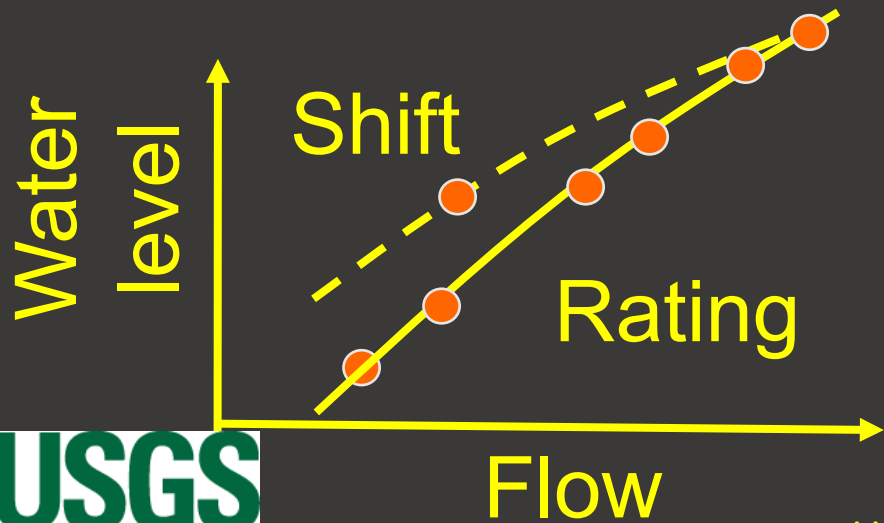
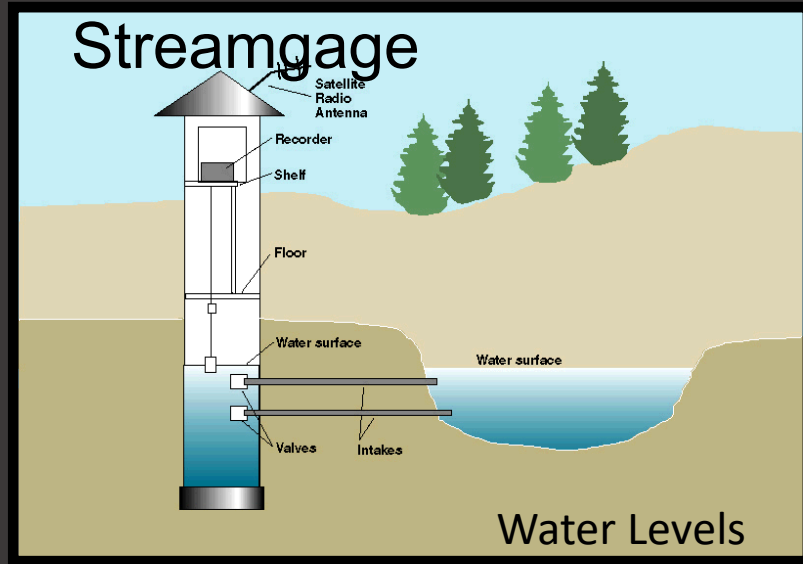
National Silver Jackets  
June 22, 2021

Brian McCallum  
Shawna Gregory  
Julia Prokopec  
Athena Clark, PE  
Robert Mason, PE

# Agenda

- Collecting Riverine Flood Data
  - Streamflow Gaging -Robert Mason
- Accessing Riverine Flood Data
  - USGS National Water Dashboard –Brian McCallum
  - USGS WaterAlert –Shawna Gregory
  - USGS dataRetrieval (R library) – Shawna Gregory
  - USGS Flood Inundation Maps –Julia Prokopec
- Collecting Coastal Flood/Storm-Tide Data
  - Storm-tide deployments –Athena Clark
  - USGS Flood Event Viewer –Athena Clark
- Using flood data (later?)
  - Flood-Frequency Analysis
  - Flood Geomorphology and Flood Forensics
  - Modeling Total Water Levels and Flood Inundation

# Streamflow Gaging

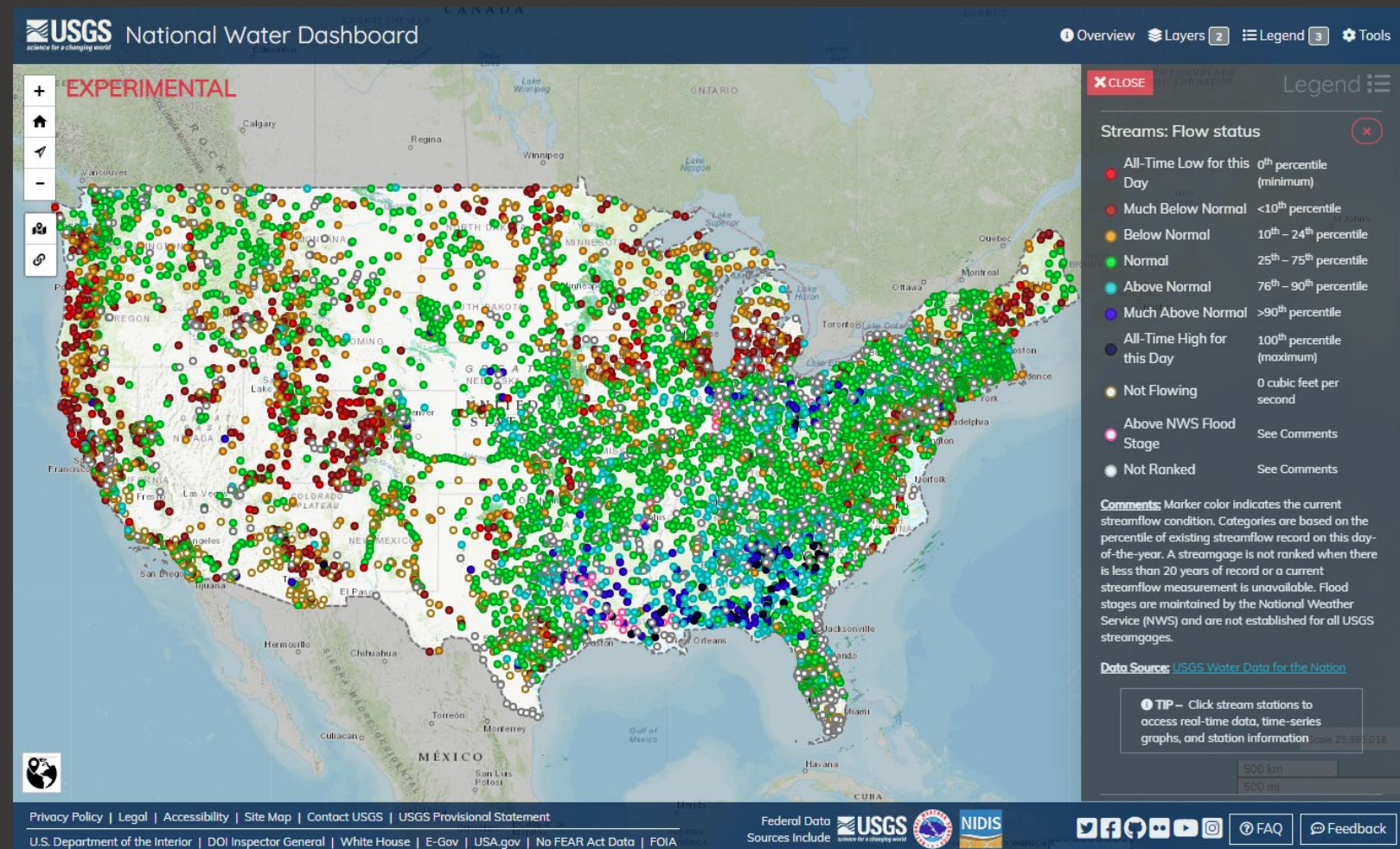


Longterm,  
repeat  
observations to  
build flood  
records

<https://waterdata.usgs.gov/nwis>

# Introducing the National Water Dashboard

- Major new product from USGS
- Origins from the Texas Water Dashboard
- Launched on October 30, 2020
- Brings together ALL USGS real-time data into one modern, mobile-friendly interface
- Adds warnings and weather hazard information from sister federal agencies
- Will be a central data access portal for USGS moving forward



<https://dashboard.waterdata.usgs.gov>

# National Water Dashboard

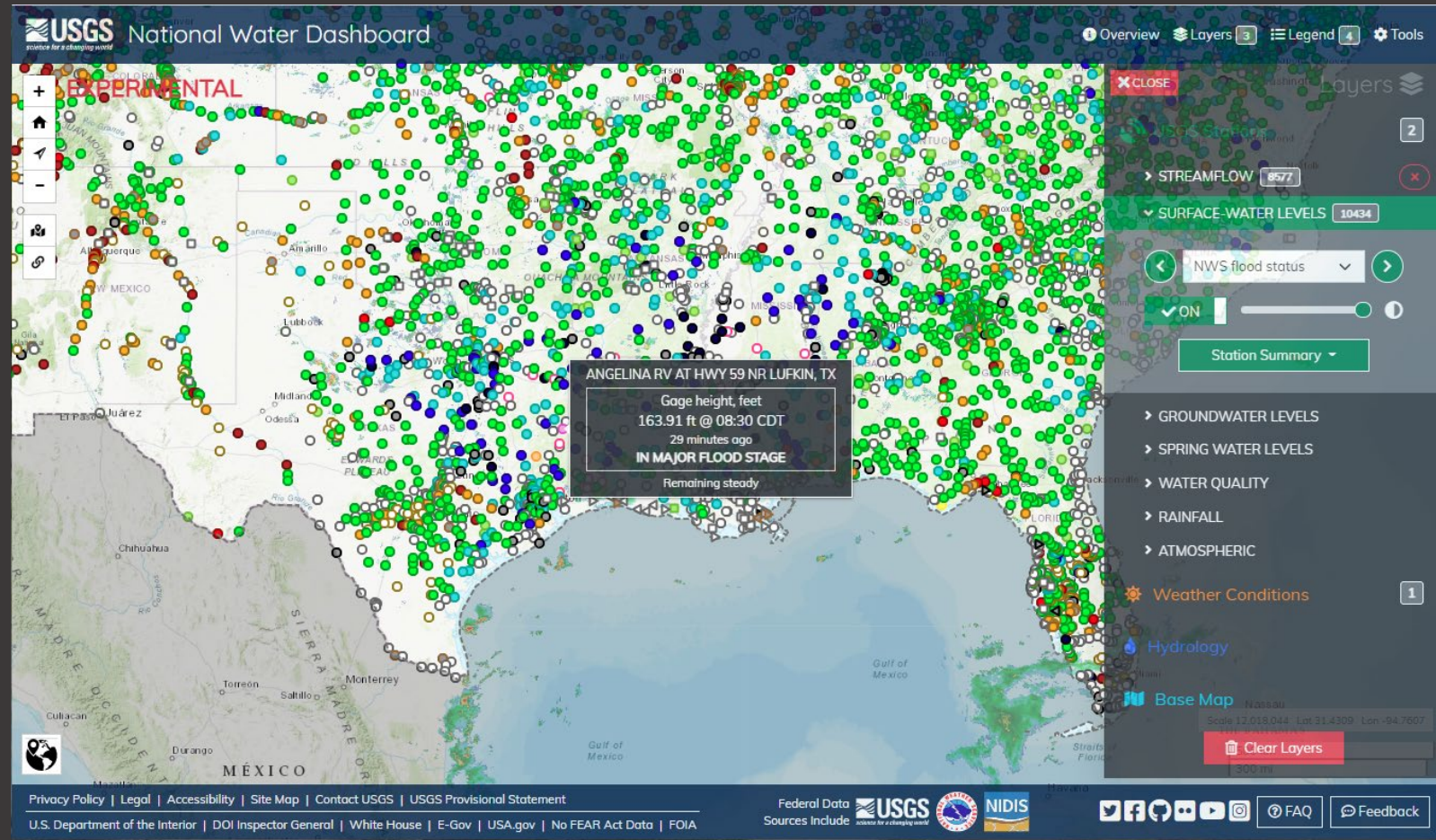
*Focus this FY*

Maturing it into a national product

- Fixing site exceptions
- Stage-Only layer
- Enhancing the Tidal Layer
- GW status
- Additional QW data layers
- Stat boxes for all layers
- Updated station boxes

Outreach

- YouTube video [link](#)
- Getting user feedback



<https://dashboard.waterdata.usgs.gov>

# National Water Dashboard

## *Longer term...*

More features and functionality will be added to NWD over time, such as:

Additional USGS information, including

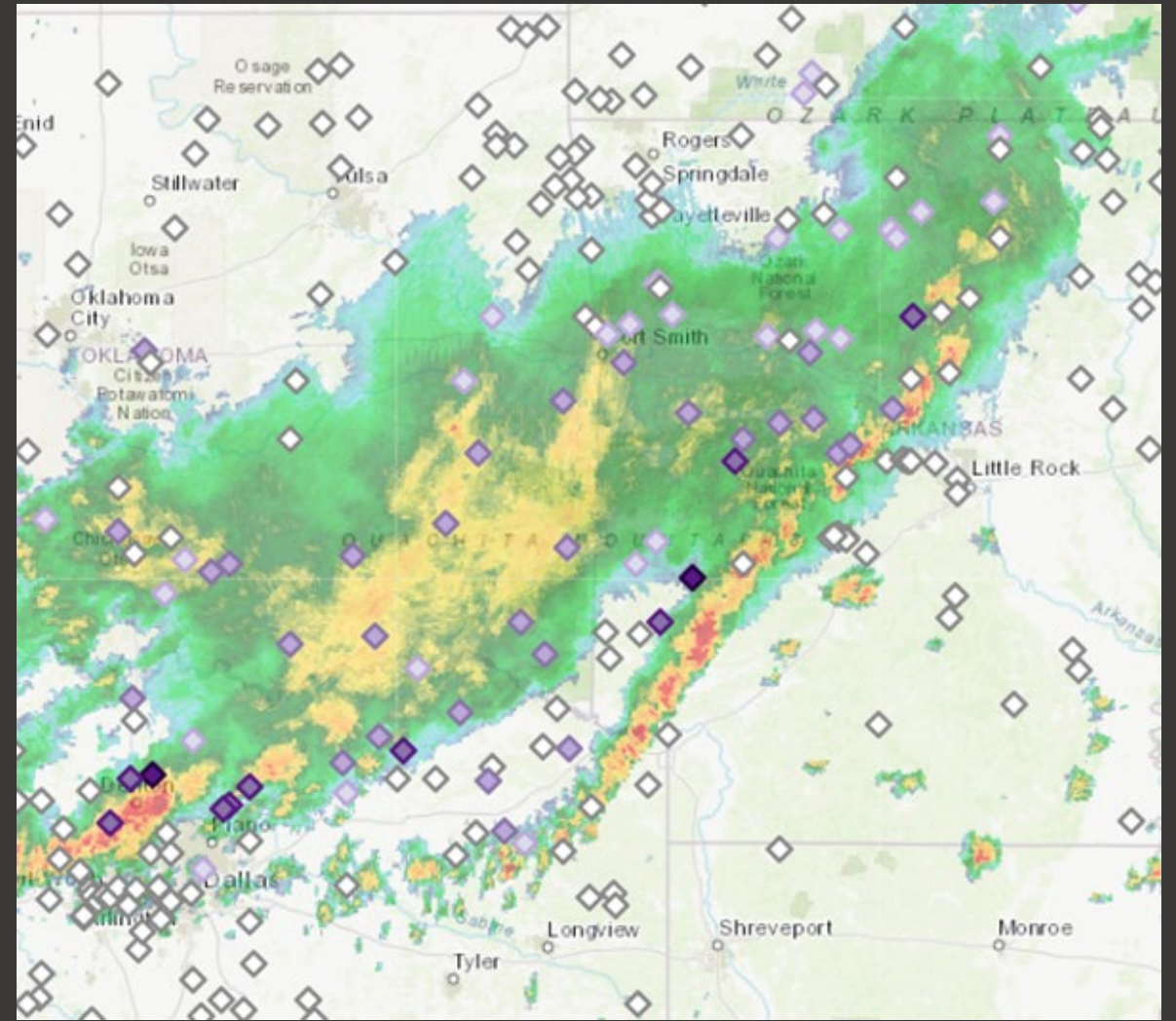
- Discrete monitoring locations
- USGS WaterWatch content
- Cooperator/funding types
- Telemetry status

New spatial filters, like:

- Major hydrologic basins
- Political boundaries

New info from other sources, like:

- Site-specific NWS river forecasts
- Wildfire information
- Hurricane forecasts



<https://dashboard.waterdata.usgs.gov>

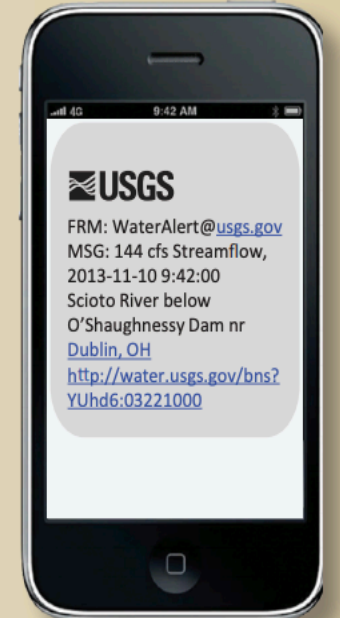
# WaterAlert

## USGS WaterAlert

<http://water.usgs.gov/wateralert/>

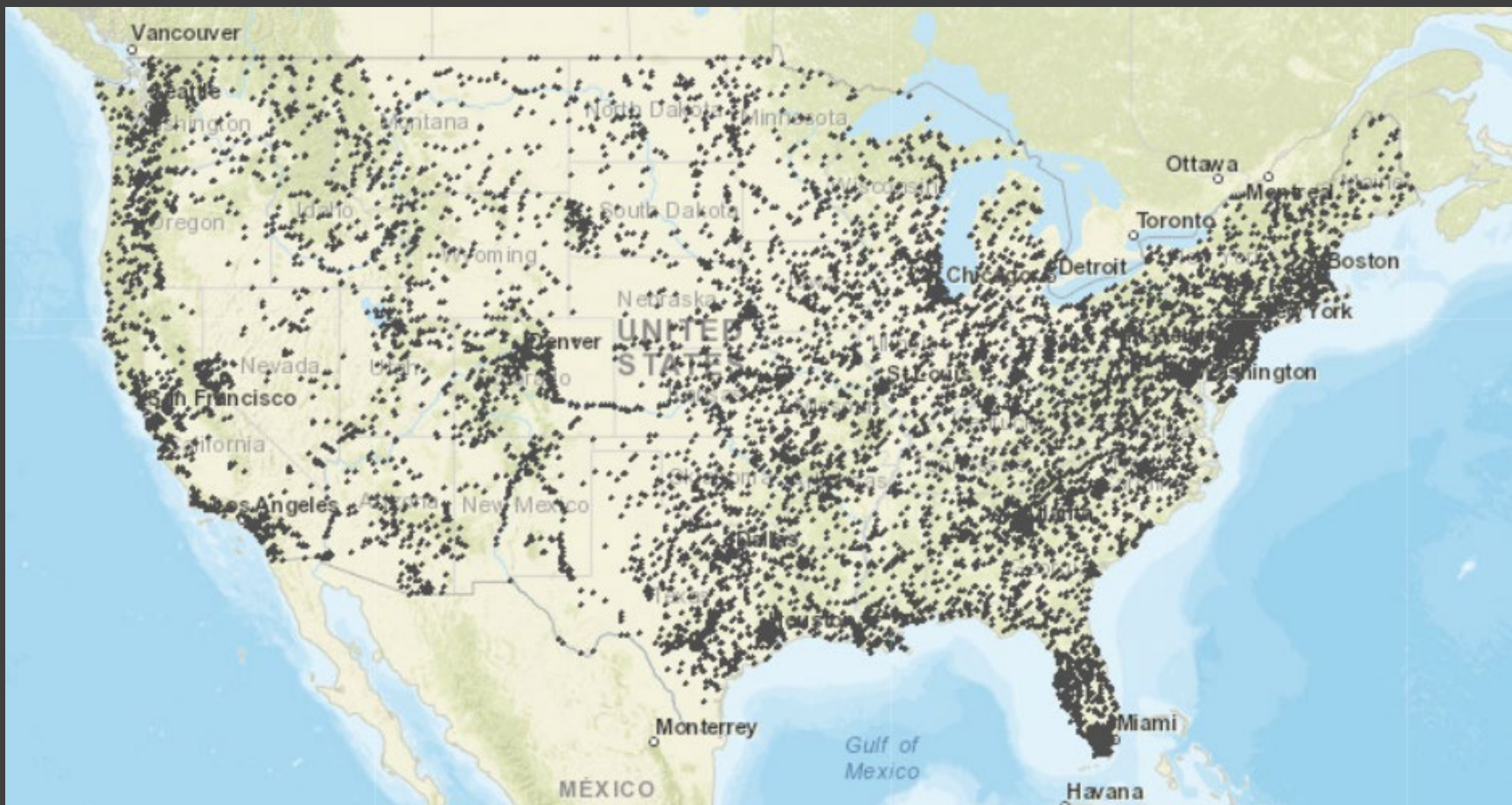


Is the river near you flooding? Is the water temperature of your favorite fishing stream above 25 degrees Celsius? You can get an email or text message sent to you when selected parameters exceed user-defined thresholds at a real-time station. (Real-time data, in most cases, are transmitted once every 1 to 4 hours.)



## WaterAlert

The USGS operates a near real-time, multi-purpose stream-gaging network of over **14,000** gages.





# WaterAlert

## How it works

Current conditions at selected gages are based on the most recent data from on-site automated recording equipment. Measurements are commonly recorded at a fixed interval of 15- to 60-minutes and transmitted to USGS every hour via satellite.



USGS surface-water data monitoring include stream levels, streamflow (discharge), reservoir and lake levels, water quality, and rainfall.

# WaterAlert

## Replacement coming soon

- Streamlined UI , mobile-friendly
- Easy to create multiple alerts for a monitoring location without resetting the form
- Easy access to the alerts currently setup including their status

The screenshot shows the USGS Water Alerts Subscription Service interface. At the top, the USGS logo and tagline "science for a changing world" are visible. A user is logged in as "asmith@usgs.gov" with a "Log out" button and "User Settings" link. The page title is "USGS Water Alerts Subscription Service". The selected monitoring location is "CHENEY RE NR CHENEY, KS". Under "My Alerts", it states "You have no alerts for this monitoring location". The "Create Alerts for This Monitoring Location" section is active, showing a "Discharge" alert with a current value of 46 ft3/s and a "peaks and statistics" button. The alert condition is set to "greater than" with a text input field. There are options for "I'd like to use a value range" and "While the alert conditions are true notify me" (Once per day selected). A "Summary" section says "Please enter an alert start value". The "Messages will be sent to" is "asmith@usgs.gov". There is a checkbox for "I have read and acknowledge the Provisional Data Statement and Privacy Statement". At the bottom, there is a dropdown menu for "Temperature, Degrees Celsius" and a "Questions or Comments" button.

The screenshot shows the USGS Water Alerts Subscription Service interface displaying alert status. At the top, the USGS logo and tagline "science for a changing world" are visible. A "MENU" button is in the top right. The selected monitoring location is "CHENEY RE NR CHENEY, KS". Under "My Alerts", there are links for "This location" and "All My Alerts". There are three alerts listed: 1) "Discharge is less than 12050 ft3/s and greater than 48 ft3/s - daily" (disabled), 2) "Discharge is greater than 200ft3/s - hourly" (enabled), and 3) "Temperature, Degrees Celsius is greater than 25 C - daily" (expired). The expired alert shows a status of "expired", current value of 21 C, and creation date of 10/04/2019. There are "Renew Now" and "Remove this Alert" buttons for the expired alert. Below the alerts, there is a "Create Alerts for This Monitoring Location" section with dropdown menus for "Discharge" and "Temperature, Degrees Celsius". At the bottom, there is a "Questions or Comments" button and a footer with links for "DOI Privacy Policy", "Legal", "Accessibility", "Site Map", "Contact USGS", and social media icons for Twitter, Facebook, YouTube, and Instagram. The footer also includes "U.S. Department of the Interior", "DOI Inspector General", "White House", "E-gov", "No Fear Act", and "FOIA".



# R codes for USGS Water Data

- dataRetrieval?

<https://owi.usgs.gov/R/dataRetrieval.html#1>

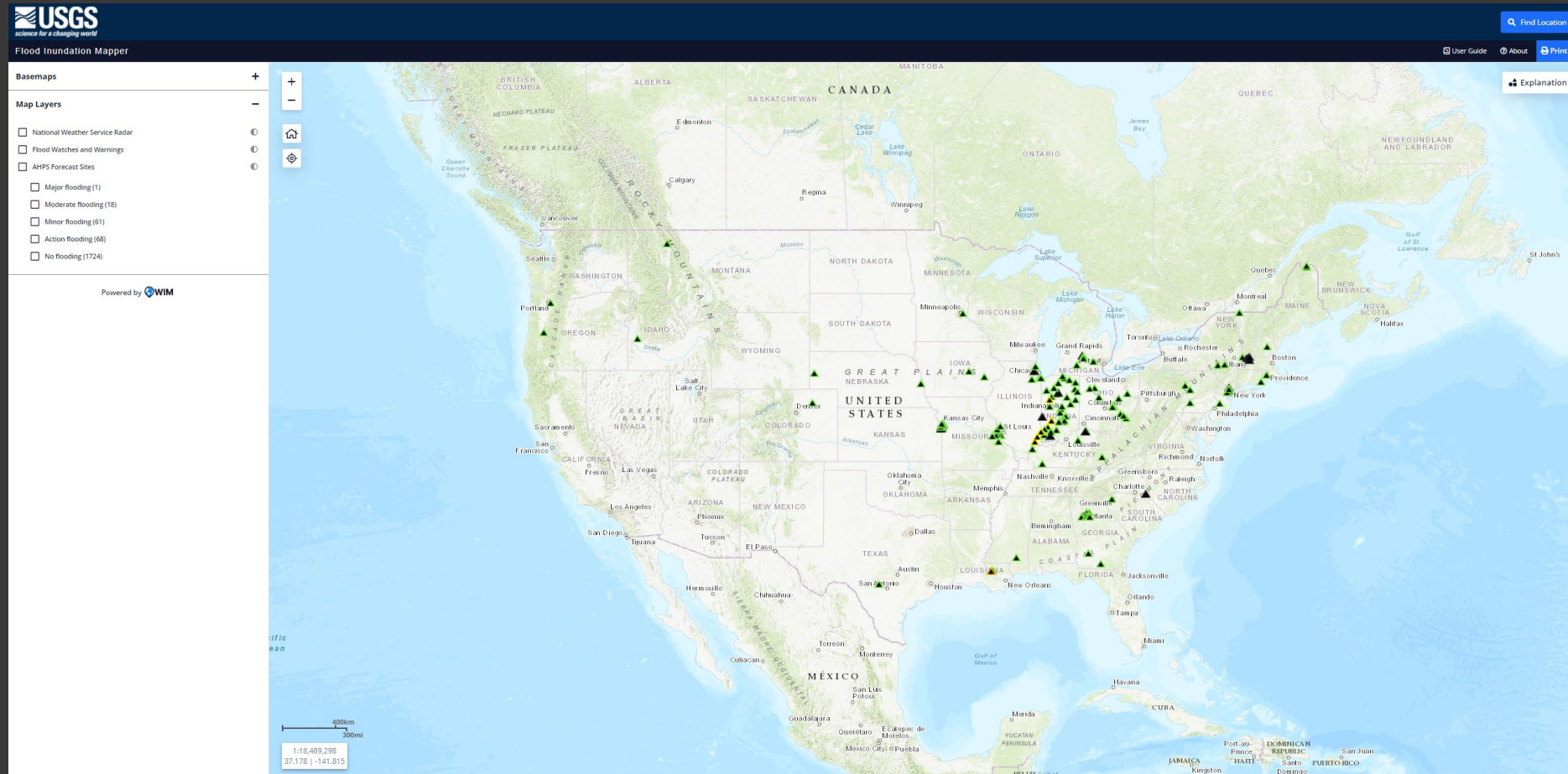
- readNWISuv -sub-daily
- readNWISdv -Daily means
- readNWISmeas -Discrete channel depths, widths, velocities
- readNWISpeak -Annual peak stage and flow
- readNWISrating -Current stage-discharge rating
- readNWISpcode -Parameter processing
- readNWISsite -Basin and site characteristics data
- And much, much more for geo-web processing...

<https://github.com/USGS-R>

# USGS Flood Inundation Mapping Program

Flood inundation map libraries paired with real-time streamgauge data and National Weather Service flood forecasts form a two-dimensional flood warning system.

Together, these products help communities estimate flood extent and identify at-risk areas in advance of floodwaters arriving.

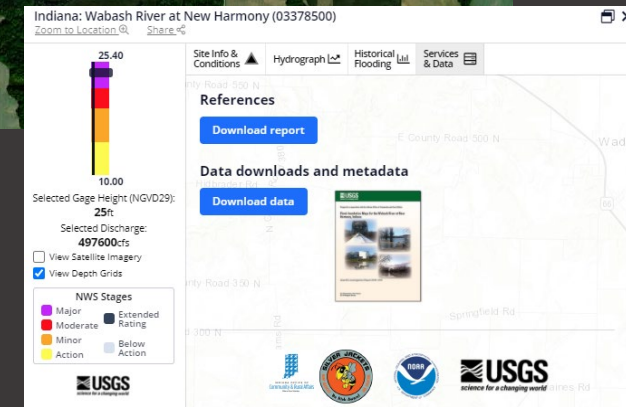
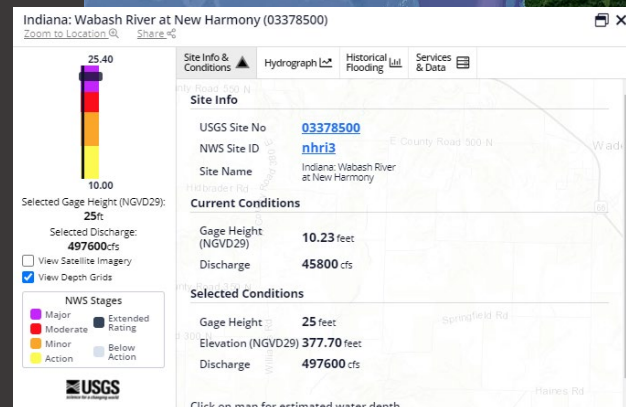
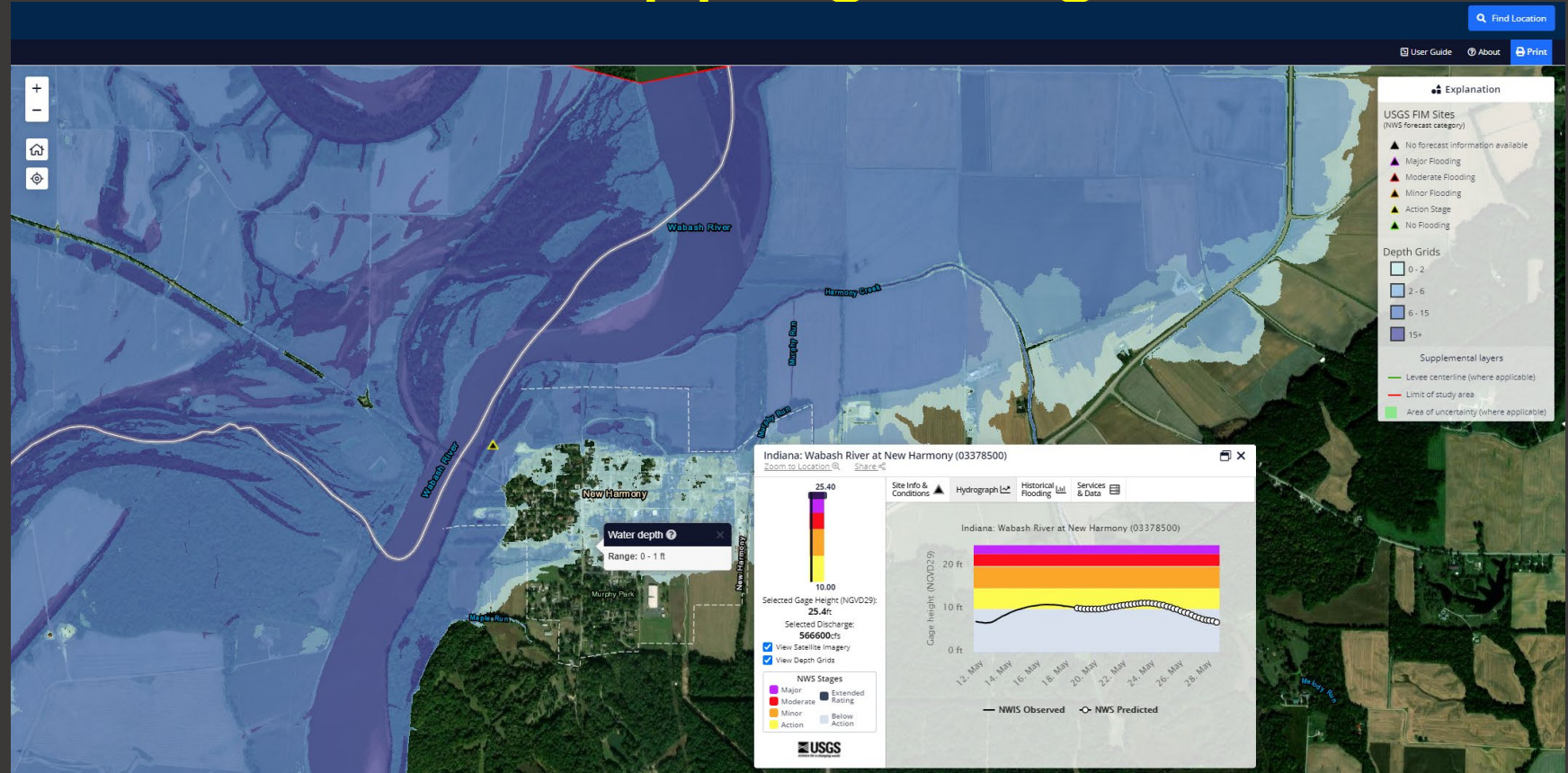


<https://fim.wim.usgs.gov/fim/>



# USGS Flood Inundation Mapping Program

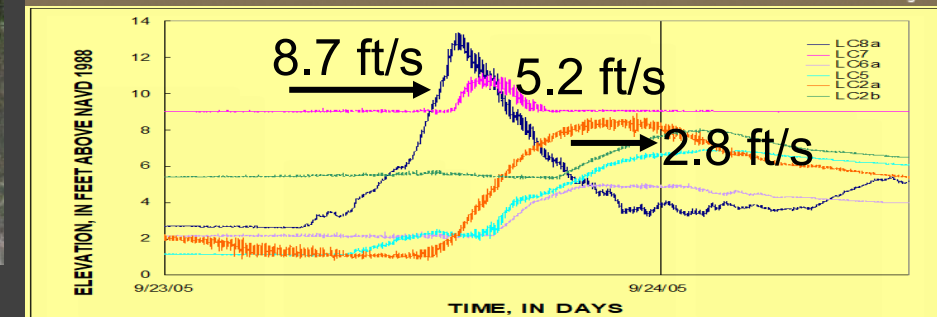
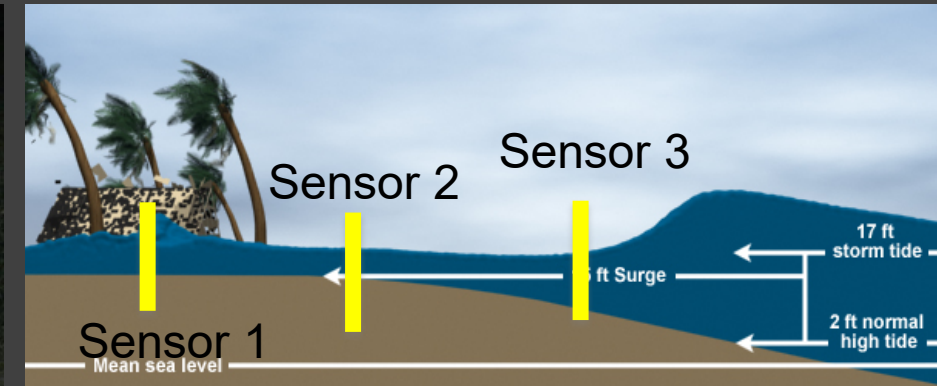
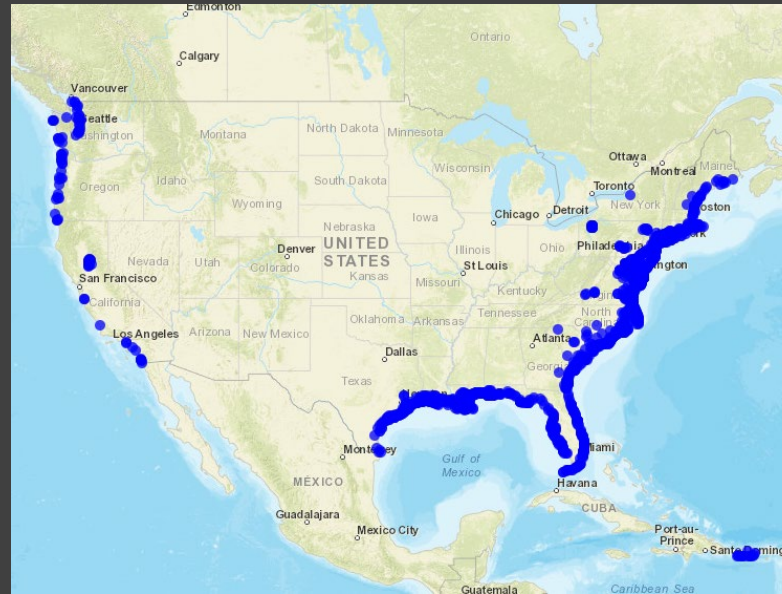
- Mobile friendly
- Partnered with FEMA to add Hazus loss estimate results this FY to all libraries
- Furnished FIMs accepted into mapper





# Storm-Tide Monitoring

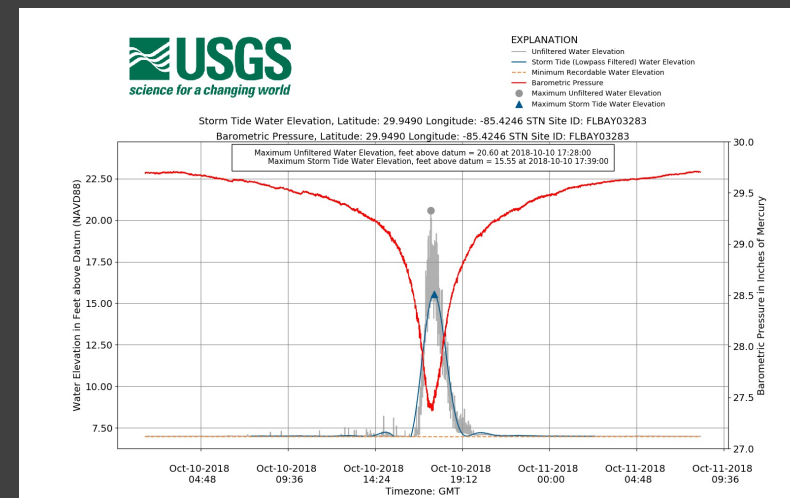
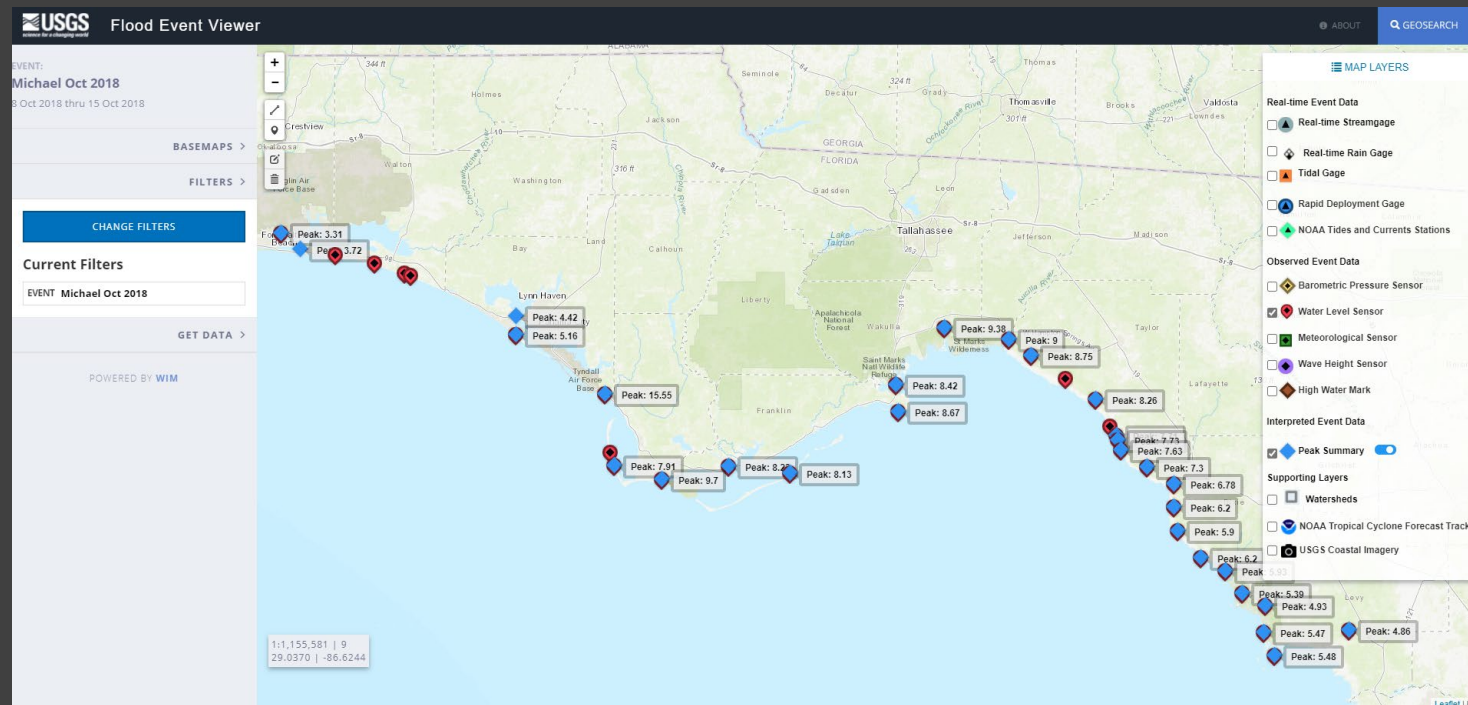
- Instruments deployed prior to storms to record timing and magnitude of storm-tide and waves
- Capture thousands of split-second “hydrodynamic snapshots” of water elevations across landfall area (30 sec – 16 Hz)
- Focused on temporary self-logging and some real-time instruments to supplement other networks
- Pre-identified sites for rapid, targeted deployments
- Support validation of coastal hydrodynamic models (NOAA & USGS), identifying storm impacts (FEMA), helping emergency responders



# Flood Event Viewer

<https://stn.wim.usgs.gov/fev/>

The USGS Flood Event Viewer or FEV was created by the USGS to provide public access to coordinated, snippets (lengths) of coastal and riverine water-level and highwater marks recorded corresponding to major storms or other short-term events.



# Summary of USGS Water Data Delivery Tools

- NWISweb – Streamgauge webpages
- Water Dashboard – mapped conditions
- WaterAlert – subscriber-based, threshold alerting
- USGS FIM –Flood-inundation map viewer
- USGS FEV -Flood Event Viewer
- R-Codes for Accessing USGS data
- NWISweb – Streamgauge webpages
- WaterNow –On demand data
- WaterServices – streamed data
- Peak-Flow File -Annual maximum peak flow rates for 29,000 sites
- StreamStats – Flood Statistics
- HDDSExplorer –Event-based remote sensing images

waterdata.usgs.gov/dc/nwis/uv/?site\_no=01648000&PARAMeter

**USGS**  
science for a changing world

National Water Information System: Web Interface

USGS Water Resources (District Access) Home Category: Current Conditions Geographic Area: Dist. of Columbia GO

Click to hide News Bulletins

- July 9, 2015 - The [NWIS Mapper](#) is back online
- Try our new [Mobile-friendly water data site](#) from your mobile device!
- [Full News](#)

Click to hide state-specific text

All data collected by the USGS Water Science Center for MD-DE-DC are reported in Eastern Standard Time (EST). To convert from EST to Eastern Daylight Time (EDT) add 1 hour.

**USGS 01648000 ROCK CREEK AT SHERRILL DRIVE WASHINGTON, DC**  
**PROVISIONAL DATA SUBJECT TO REVISION**

Available data for this site: Time-series: Current-Historical Observations GO

Click for station-specific text

This station managed by the MD-DE-DC Water Science Center, Baltimore office.

Available Parameters	Available Period	Output format	Days (?)
<input type="checkbox"/> All 3 Available Parameters for this site		<input checked="" type="radio"/> Graph	-- 0T --
<input checked="" type="checkbox"/> 00060 Discharge	2007-10-01 2015-08-17	<input type="radio"/> Graph w/ stats	Begin date
<input checked="" type="checkbox"/> 00065 Gage height	2015-04-19 2015-08-17	<input type="radio"/> Graph w/o stats	2015-08-10
<input type="checkbox"/> 70969 DCP battery voltage	2015-07-16 2015-08-17	<input type="radio"/> Graph w/ (up to 3) parms	End date
		<input type="radio"/> Table	2015-08-17
		<input type="radio"/> Tab-separated	

[Summary of all available data for this site](#)  
[Instantaneous-data availability statement](#)

Discharge, cubic feet per second  
Most recent instantaneous value: 28 08-17-2015 15:15 EST

USGS 01648000 ROCK CREEK AT SHERRILL DRIVE WASHINGTON, DC

Add up to 2 more sites or a subplot for "Discharge, cubic feet per second"

Add site numbers

Enter up to 2 site numbers separated by commas. A site number consists of 8 to 12 digits

FRM:WaterAlert@usgs.gov  
MSG:4.91 ft Gage height, 2015-08-17 15:15:00 South Fork Licking River at Heath OH  
<http://water.usgs.gov/>  
1303770102203143129