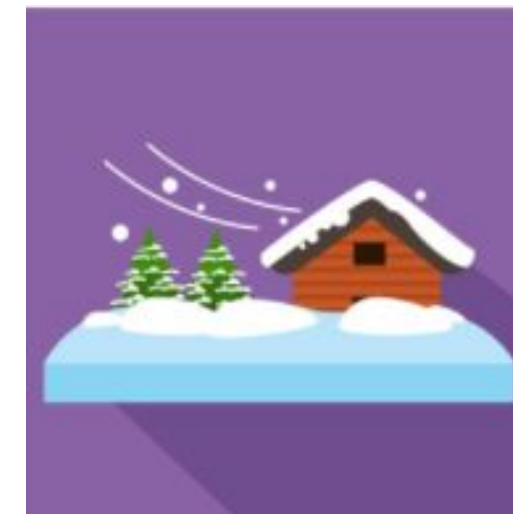
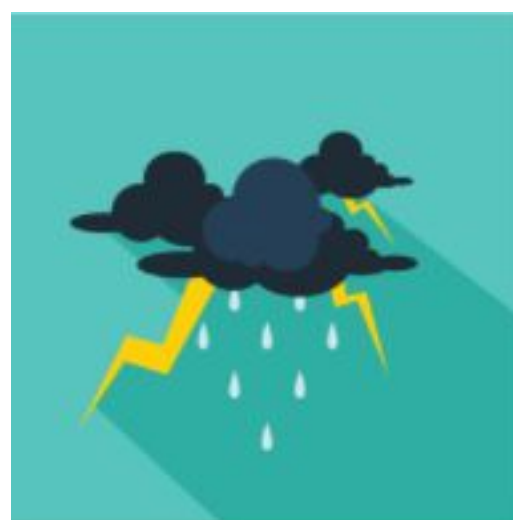


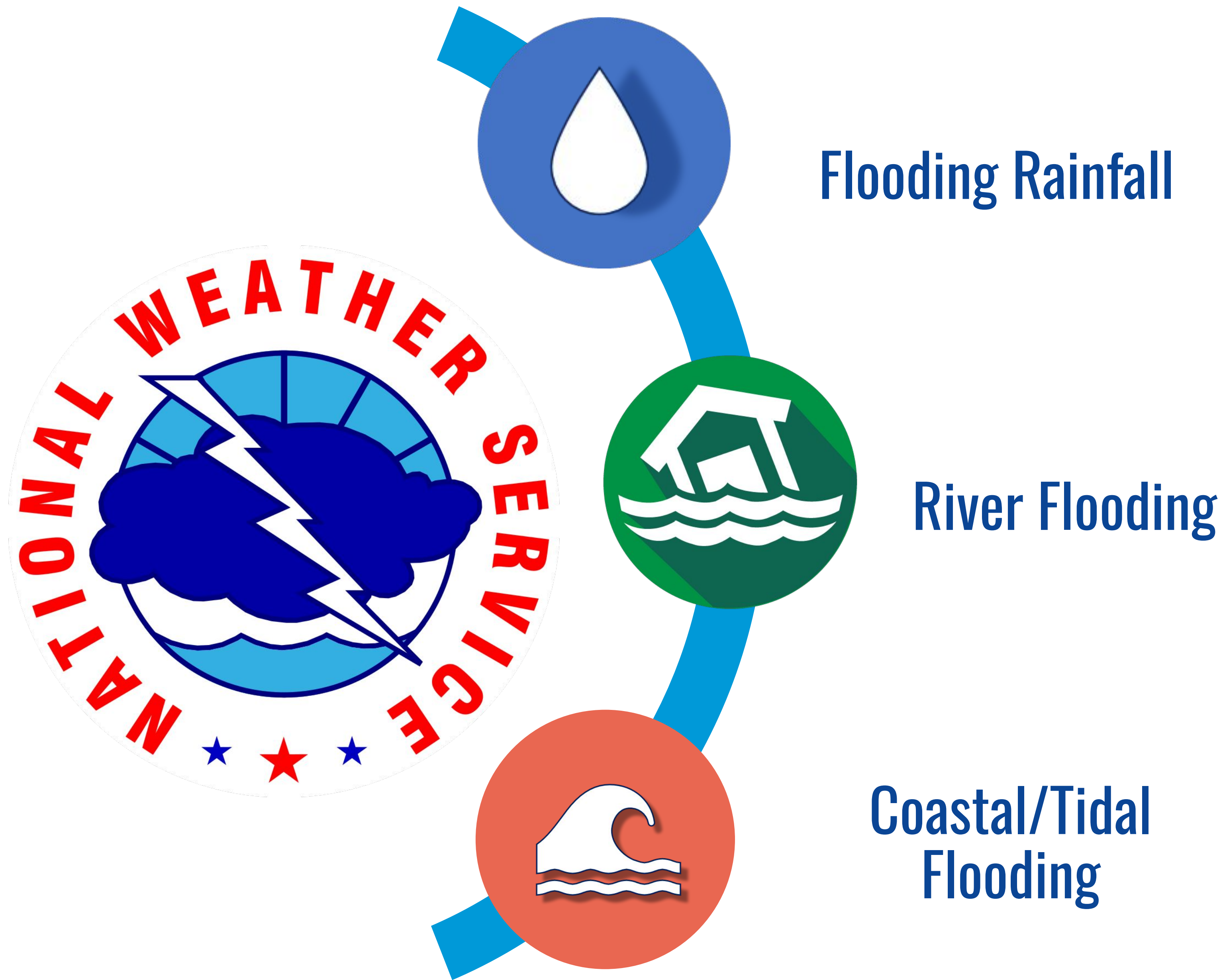


NWS JAX Lunch-and-Learn Series

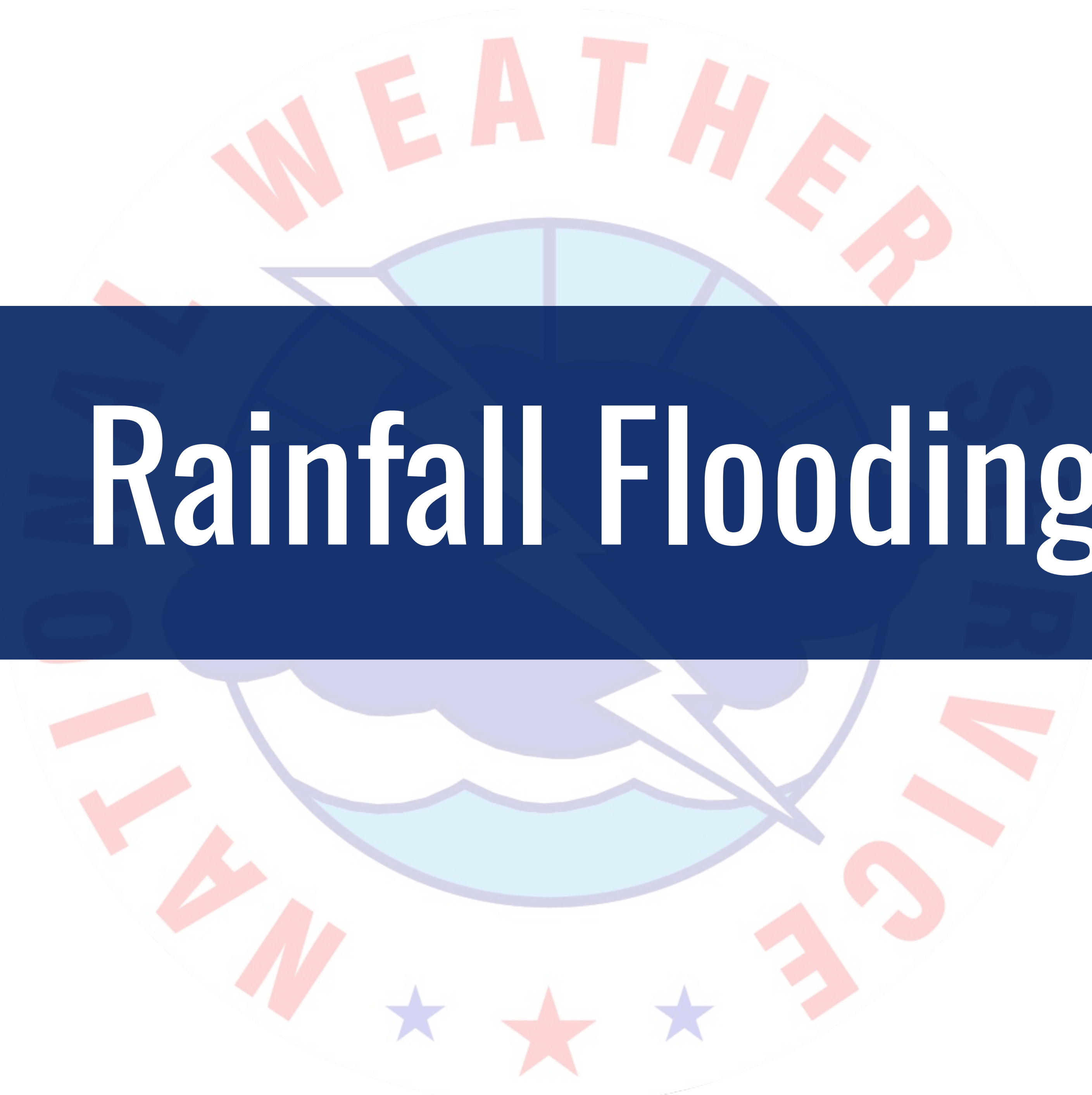
October 2025

Angie Enyedi
angela.enyedi@noaa.gov





2024 Debby Flooding Rain Impacts
Image c/o Jeff Davis EM



Rainfall Flooding

Flooding Rain Risk Assessment

Antecedent Conditions

Saturated Ground, More Flooding

Wind Fetch

Training Bands from Gulf or Atlantic

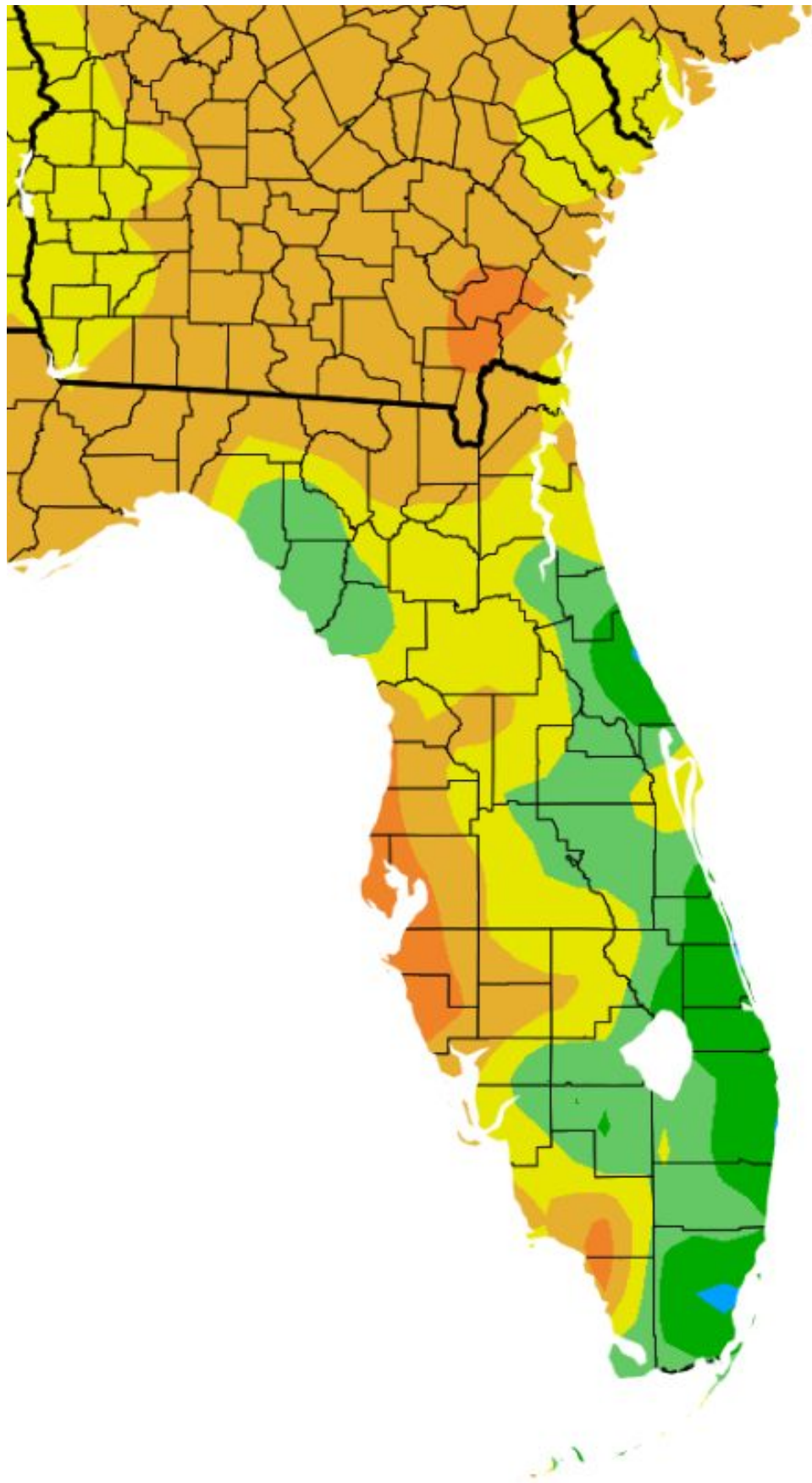
Surface Receiving Rainfall

Urban or rural? Clay or sandy soil?



Recent Rainfall

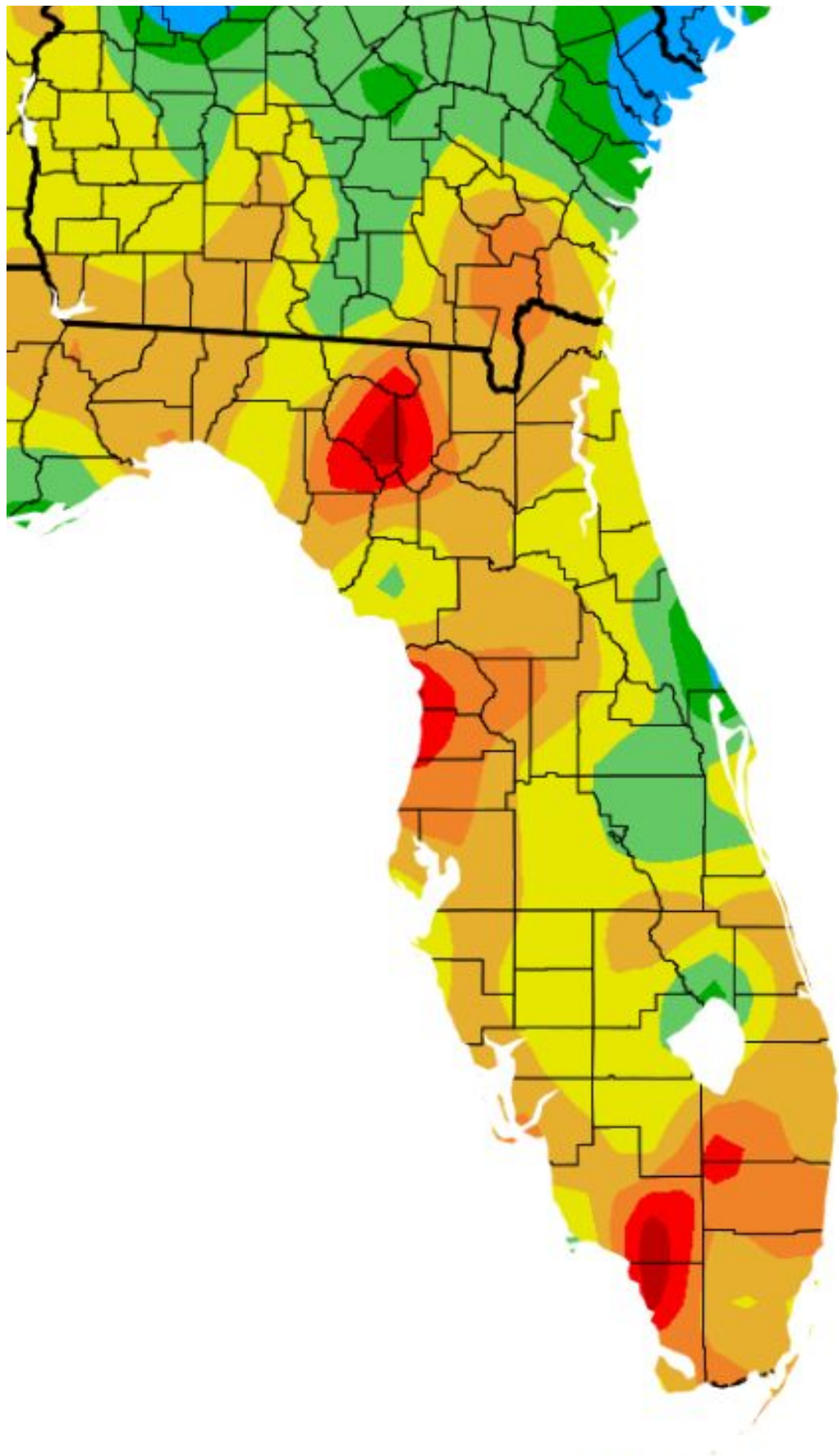
Past 30 days of Rainfall
as of 10/6/25 (inches)



<https://hprcc.unl.edu/maps.php?map=ACISClimateMaps>



Departure from Average Rainfall
Past 6 months as of 10/6/25



Tropical & Coastal Flooding Risk Assessment

Threat Regardless of Tropical Category

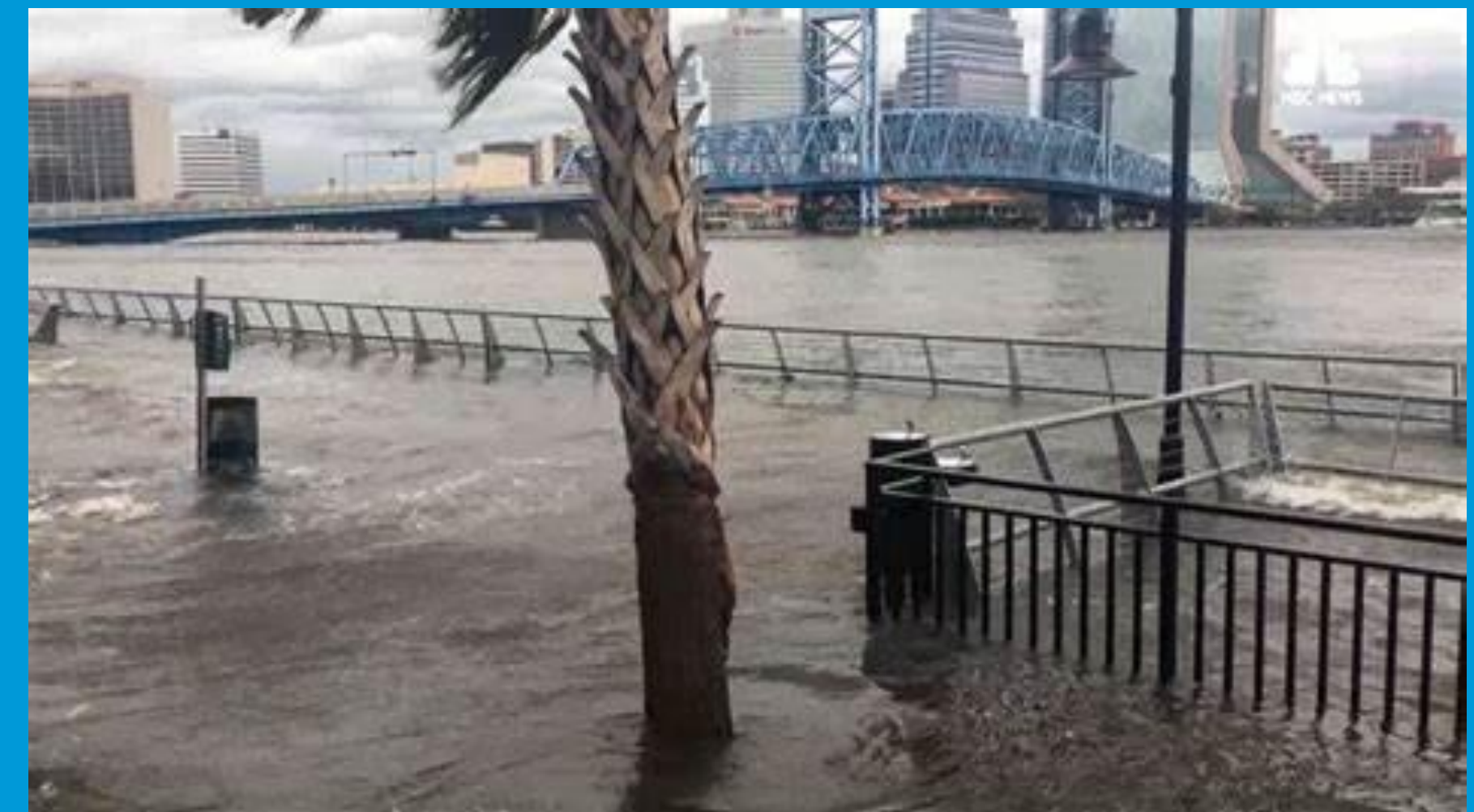
Slower storm, higher flood threat

Trapped Tides & High Tides

Drainage Inhibited

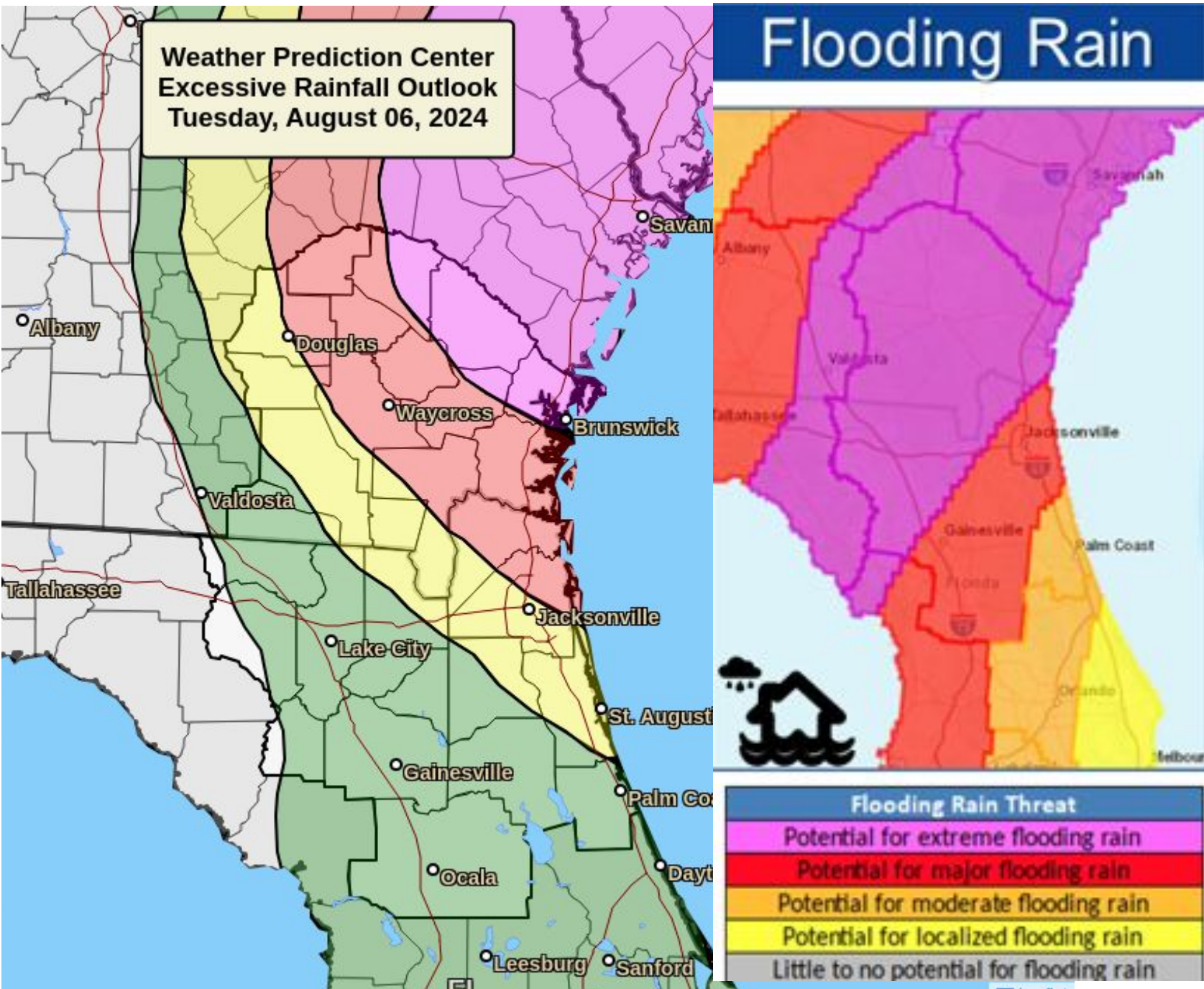
Interaction with Fronts

More lift = more rain

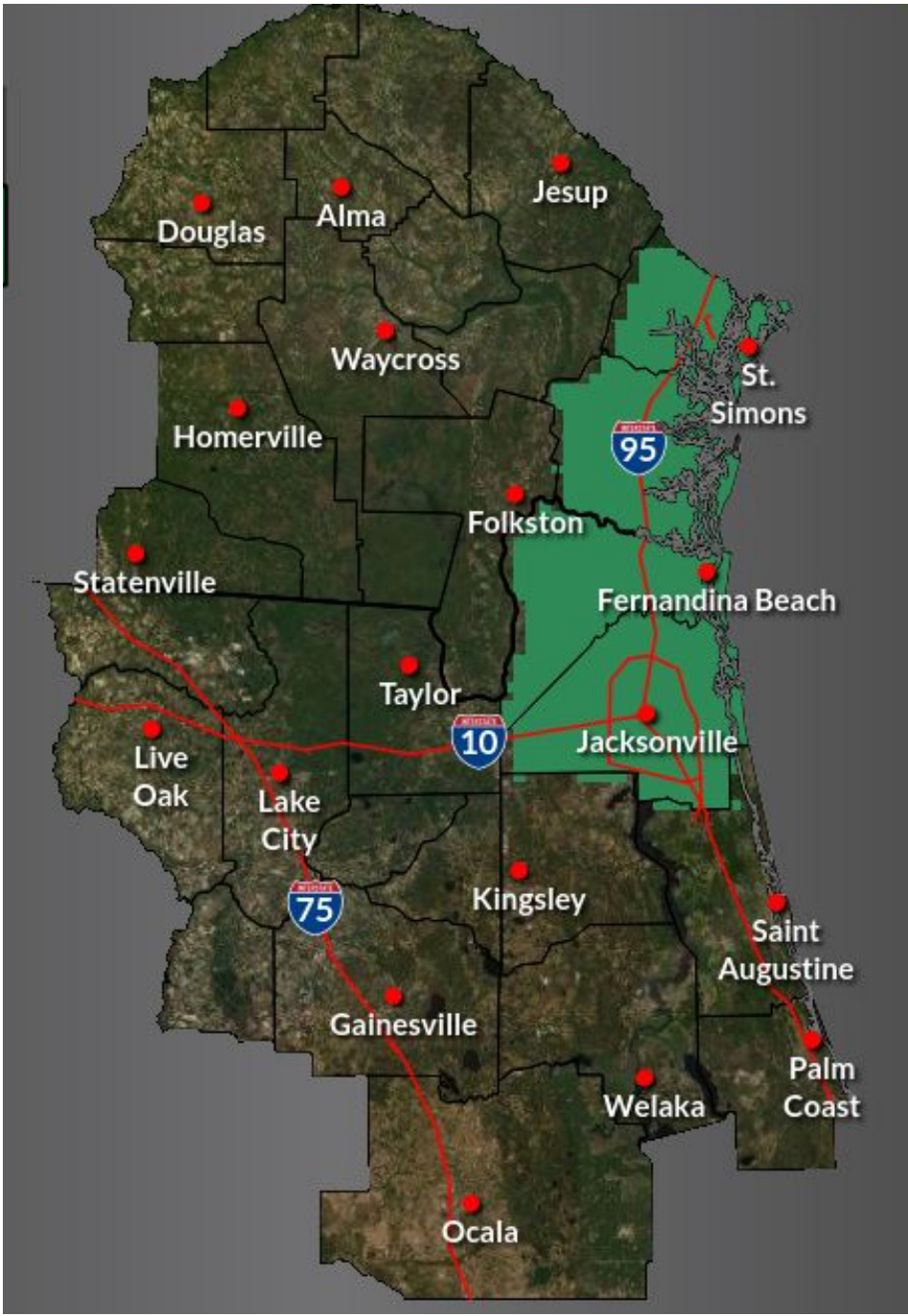


Communicating Flooding Rainfall Risk

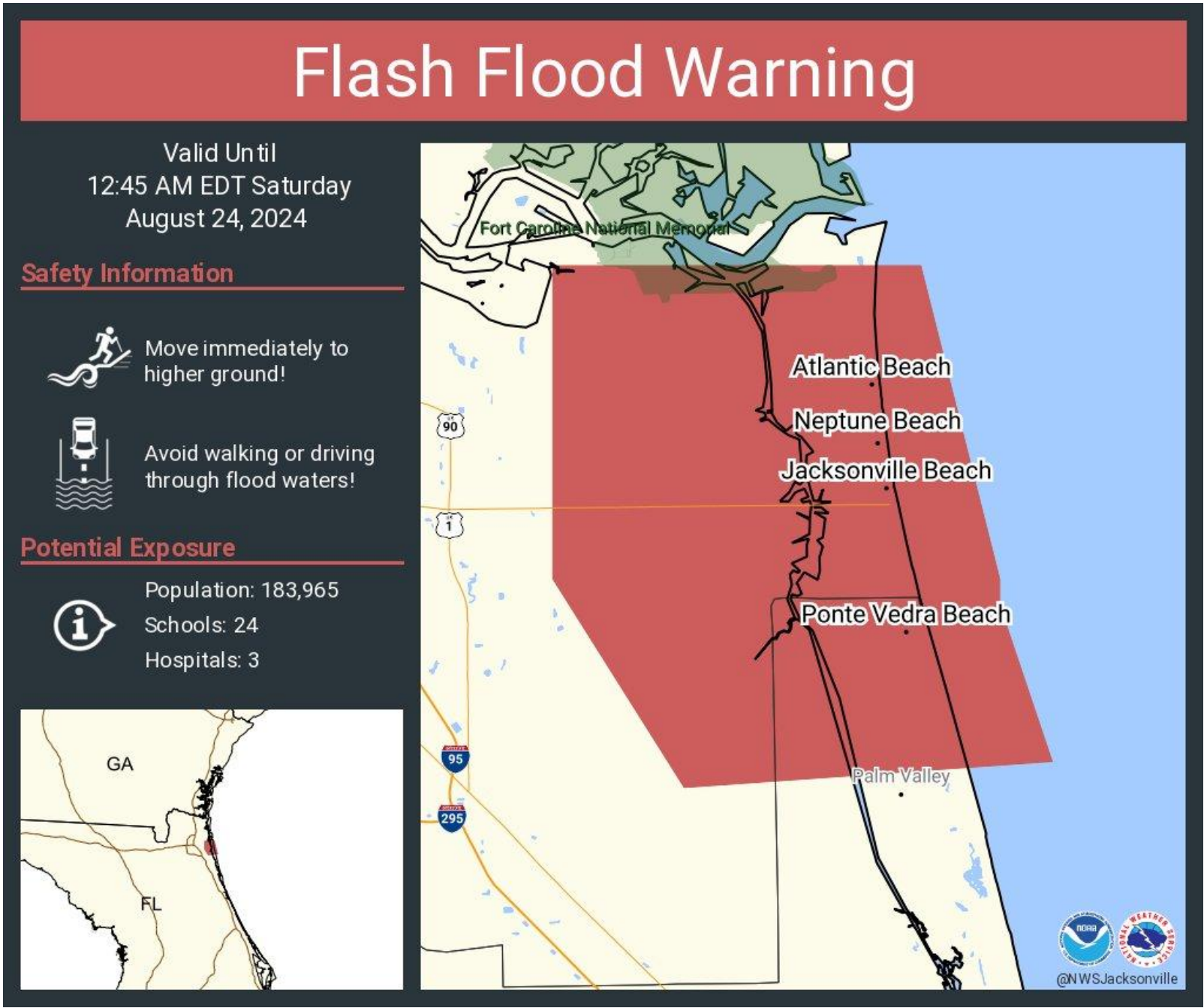
Days in Advance Excessive Rainfall Outlooks



Within 48 hrs Flood Watches



Imminent Flooding Flash Flood Warnings

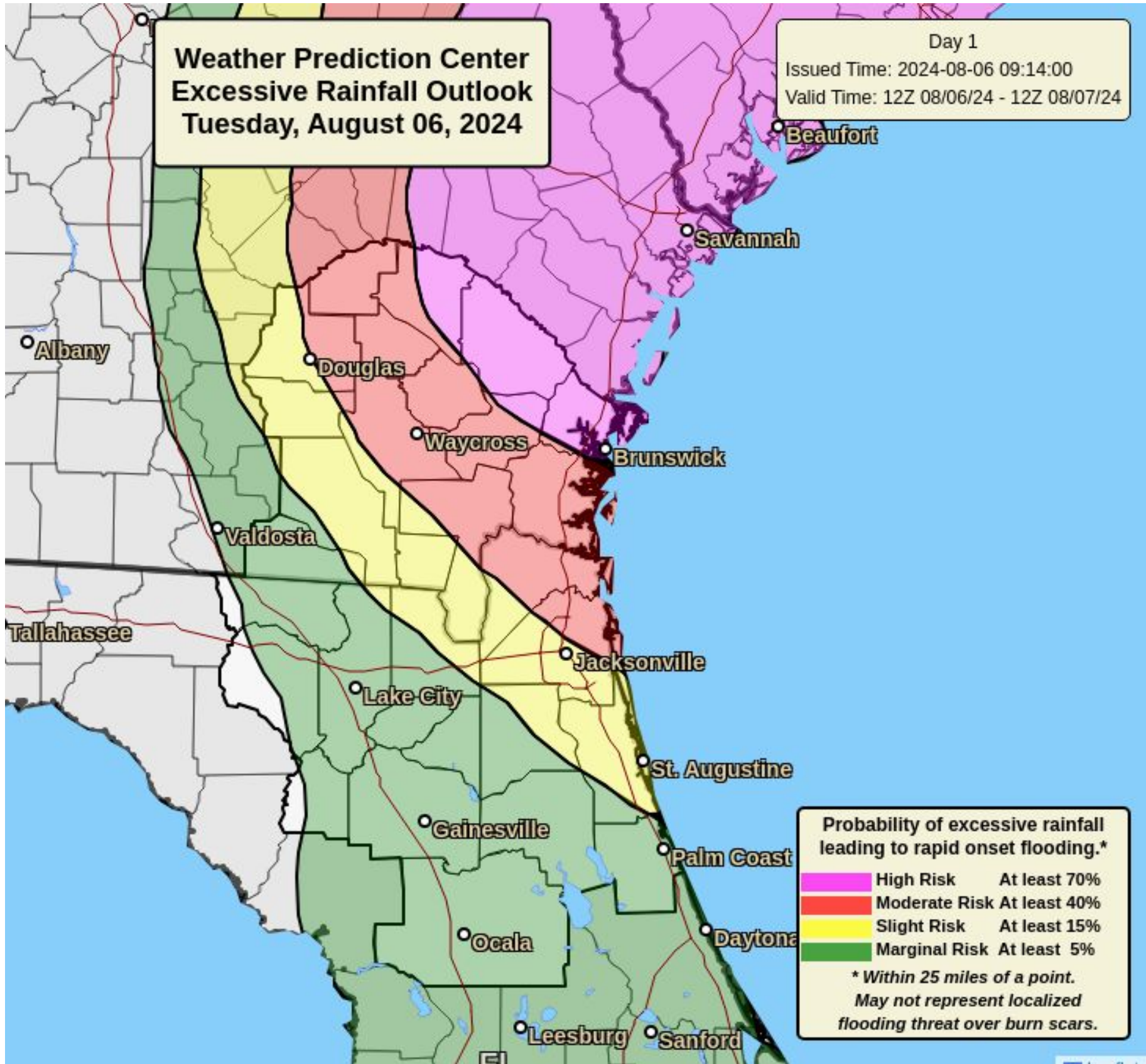
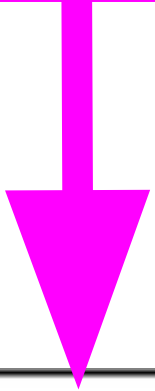
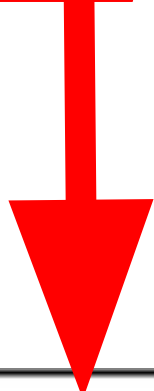


Excessive Rainfall Outlooks

<https://www.wpc.ncep.noaa.gov>

Issued 25 times for
NWS JAX since 2016

Issued 9 times for
NWS JAX since 2016



Understanding WPC Excessive Rainfall Risk Categories				
No Area/Label	MARGINAL (MRGL)	SLIGHT (SLGT)	MODERATE (MDT)	HIGH (HIGH)
Flash floods are generally not expected.	Isolated flash floods possible	Scattered flash floods possible	Numerous flash floods likely	Widespread flash floods expected
Localized and primarily affecting places that can experience rapid runoff with heavy rainfall.	Mainly localized. Most vulnerable are urban areas, roads, small streams and washes. Isolated significant flash floods possible.	Numerous flash flooding events with significant events possible. Many streams may flood, potentially affecting larger rivers.	Severe, widespread flash flooding. Areas that don't normally experience flash flooding, could. Lives and property in greater danger.	
www.wpc.ncep.noaa.gov @NWSWPC				
Flash flooding near me?	Flash Flooding			
	NO Flash Flooding			
  WEATHER PREDICTION CENTER				



Flash Flood Products

Product	Meaning & Issuance Timing	WEA Activation
Flash Flood Watch	• Elevated confidence of Flash Flood Guidance being exceeded • Issued hours to days in advance of threat – confidence driven	NO
Flash Flood Warning	• Fast accumulation of water that threatens life & property • Flooding imminent ☐ seek shelter immediately from flood water • Warning forecaster assigns ‘ranking’ which defines severity of flash flooding: BASE → CONSIDERABLE 1-2 Rescues → CATASTROPHIC Swift water rescues	YES FOR Considerable & Catastrophic Tags

Flash Flood Products

Flash Flood Warning

Valid Until
11:15 AM EDT Wednesday
September 4, 2024

Safety Information



Move immediately to higher ground!

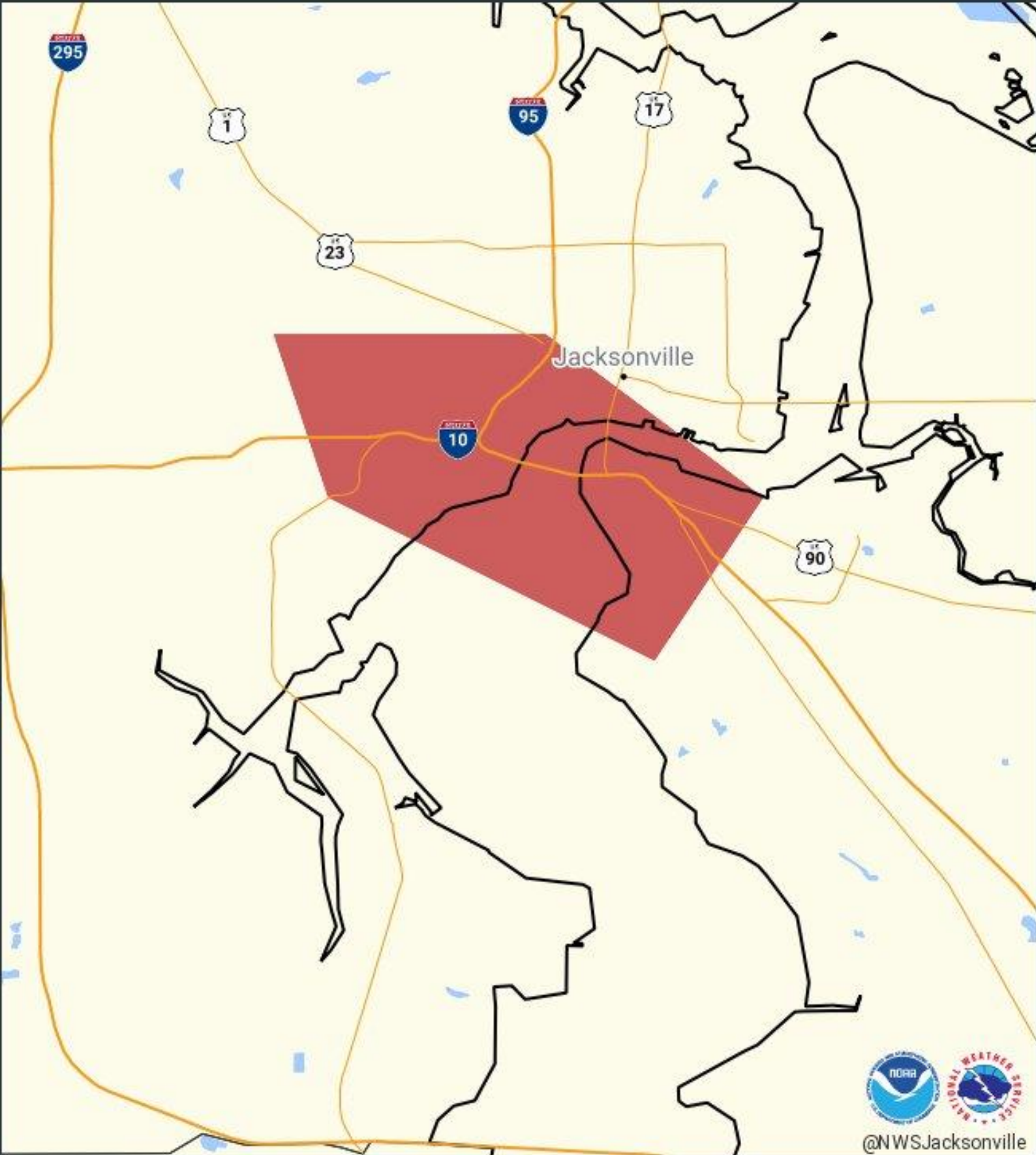


Avoid walking or driving through flood waters!

Potential Exposure



Population: 74,995
Schools: 17
Hospitals: 3





Flood Products

Product	Meaning & Issuance Timing	WEA Activation
Flood Advisory	- Elevated stream flow, ponding water, rainfall accumulation warrants public attention – nuisance flooding - Imminent hazard	NO
Flood Watch	- Elevated confidence of Flash Flood Guidance being exceeded - Issued hours to days in advance of threat – confidence driven	NO
Flood Warning	- Follow-up after Flash Flood Warning - Flooding imminent ☐ seek shelter immediately from flood water	NO



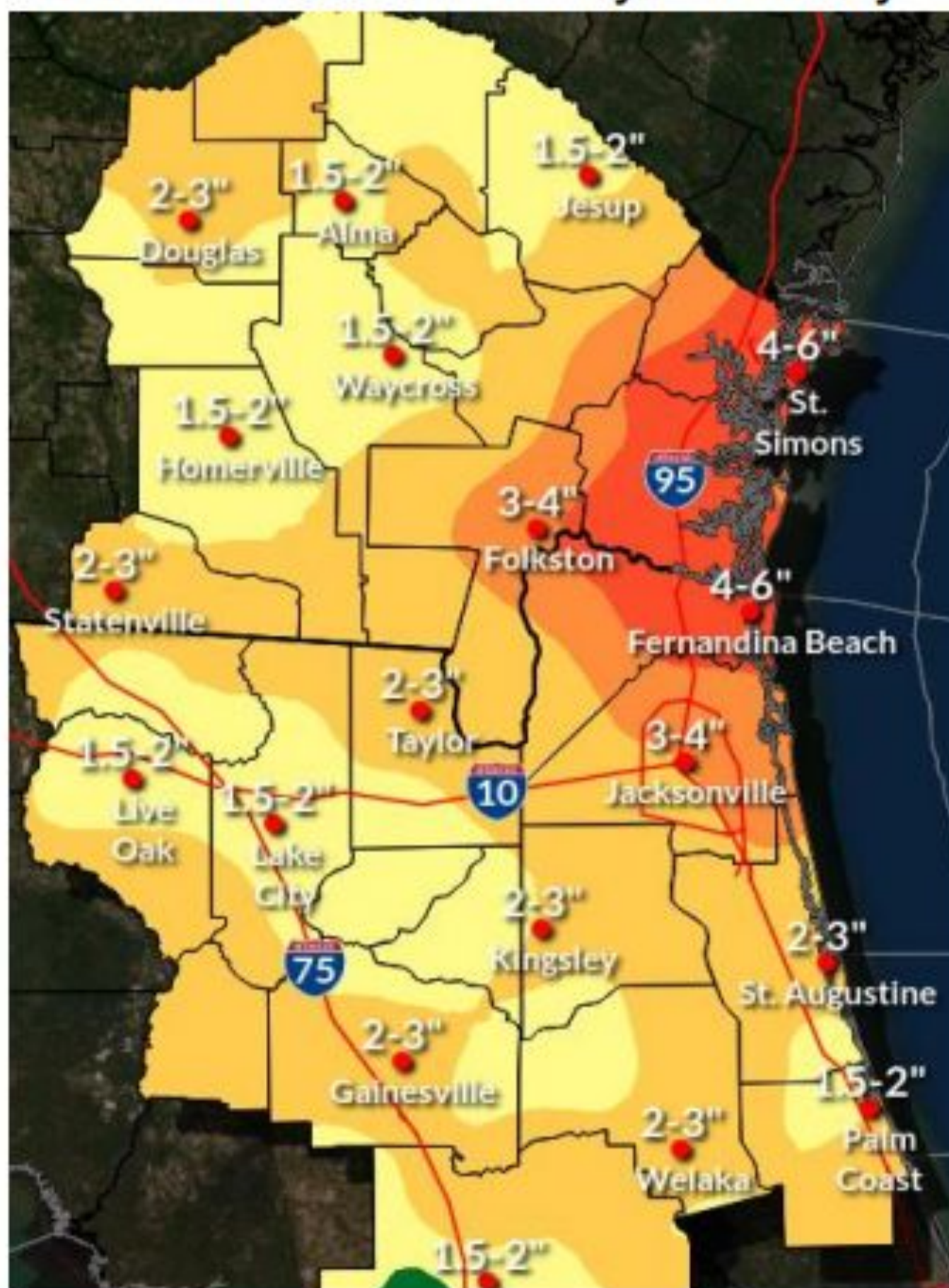
Flooding Rain Potential Through The Weekend



**NEVER DRIVE THROUGH FLOODED ROADS
MOVE OBJECTS TO HIGHER GROUND**

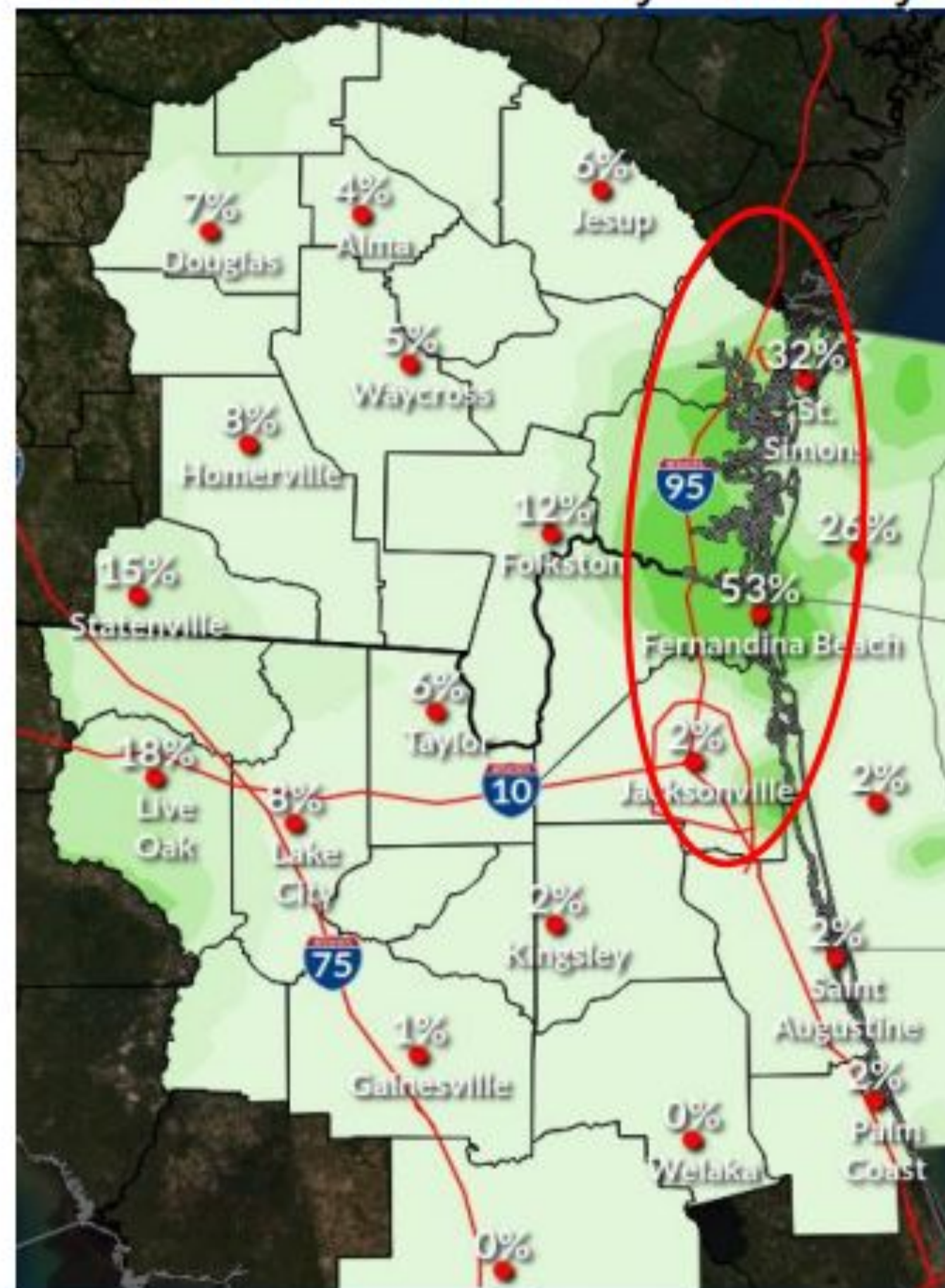
Official Rainfall Forecast

Total Rainfall Thursday - Sunday



% Chance of Rainfall > 4"

Total Rainfall Thursday - Sunday



Key Messages



- A slow moving front will bring several rounds of rainfall through Sunday
- Flood Watch for Duval, coastal Nassau, SE GA coast

Potential Impacts



- Flooding of low-lying & poor drainage areas, locations that already have received plenty of rainfall
- River Rises

Timing



- Flooding rain potential today through the weekend



NATIONAL WEATHER SERVICE
JACKSONVILLE, FL

ISSUED: Thursday, September 5, 2024 8:35 AM



River Flooding

NWS River Flooding Support Structure

National

Water Center

- National level rainfall & river flood risk tools & products

Regional

River Forecast Centers

- River Forecasts for specific locations

Local

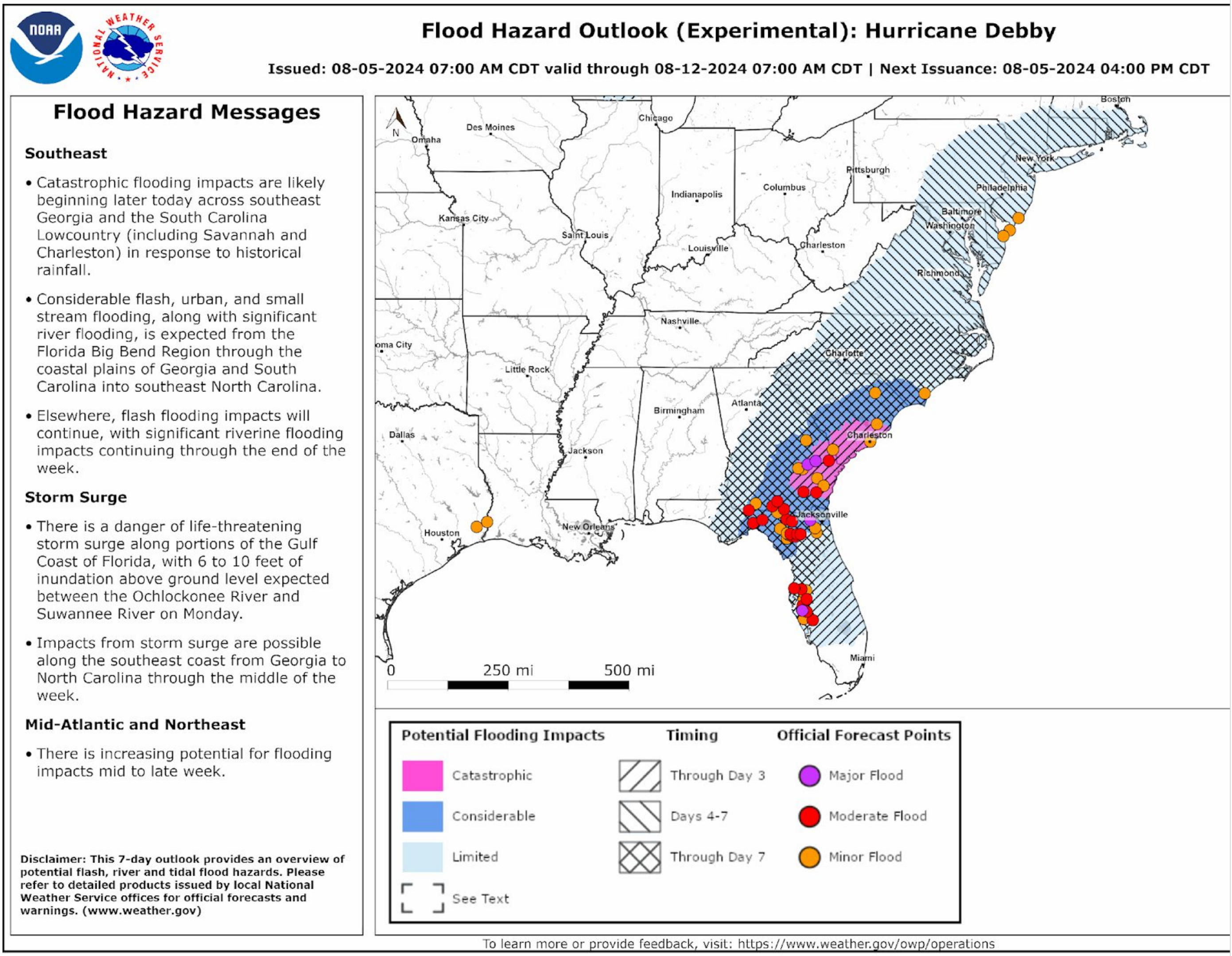
National Weather Service Offices

- Local Hydrologist: Kelly Godsey kelly.godsey@noaa.gov
- Local Hydrology Program Leader: Jason Hess jason.hess@noaa.gov

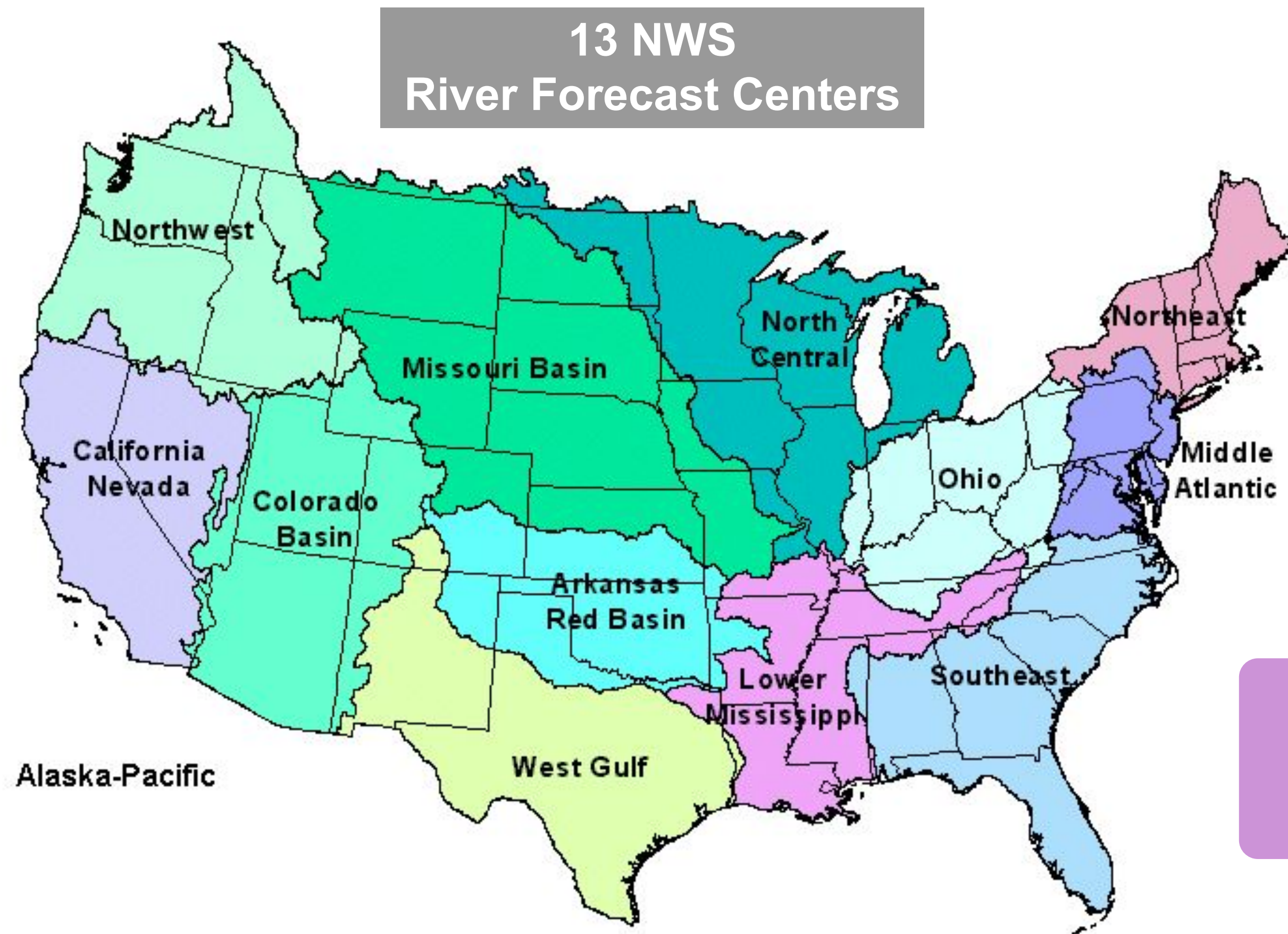
National Water Center - Flood Hazard Outlook



<https://water.noaa.gov/operations/fho>



Southeast River Forecast Center – River Forecasts



- River forecast center hydrologists provide river forecasts across the Southeast US
- Local NWS field offices coordinate river stages, river flood warnings & river flooding impacts to SERFC



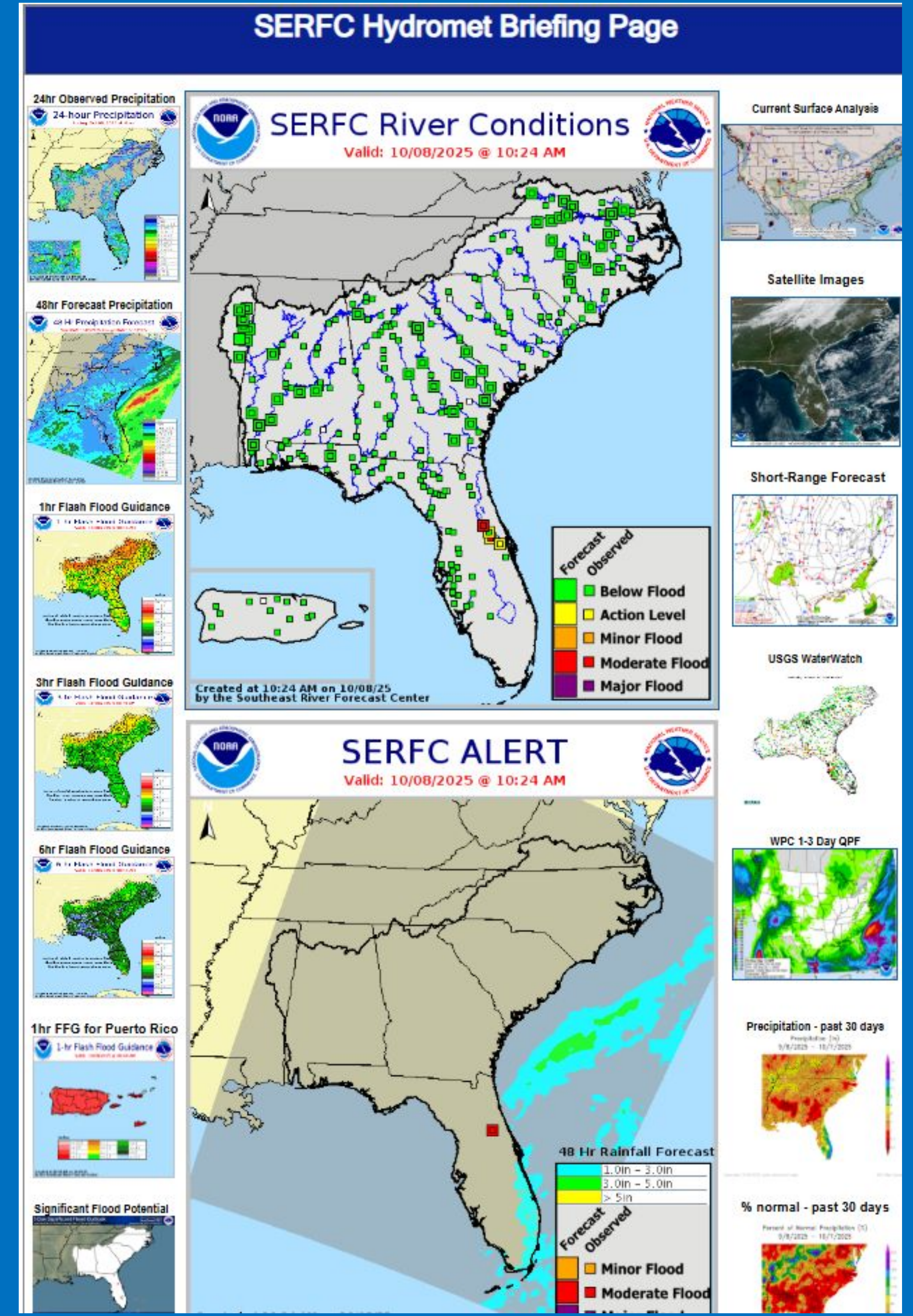
<https://www.weather.gov/serfc/>

River Forecast Center Quick Briefing

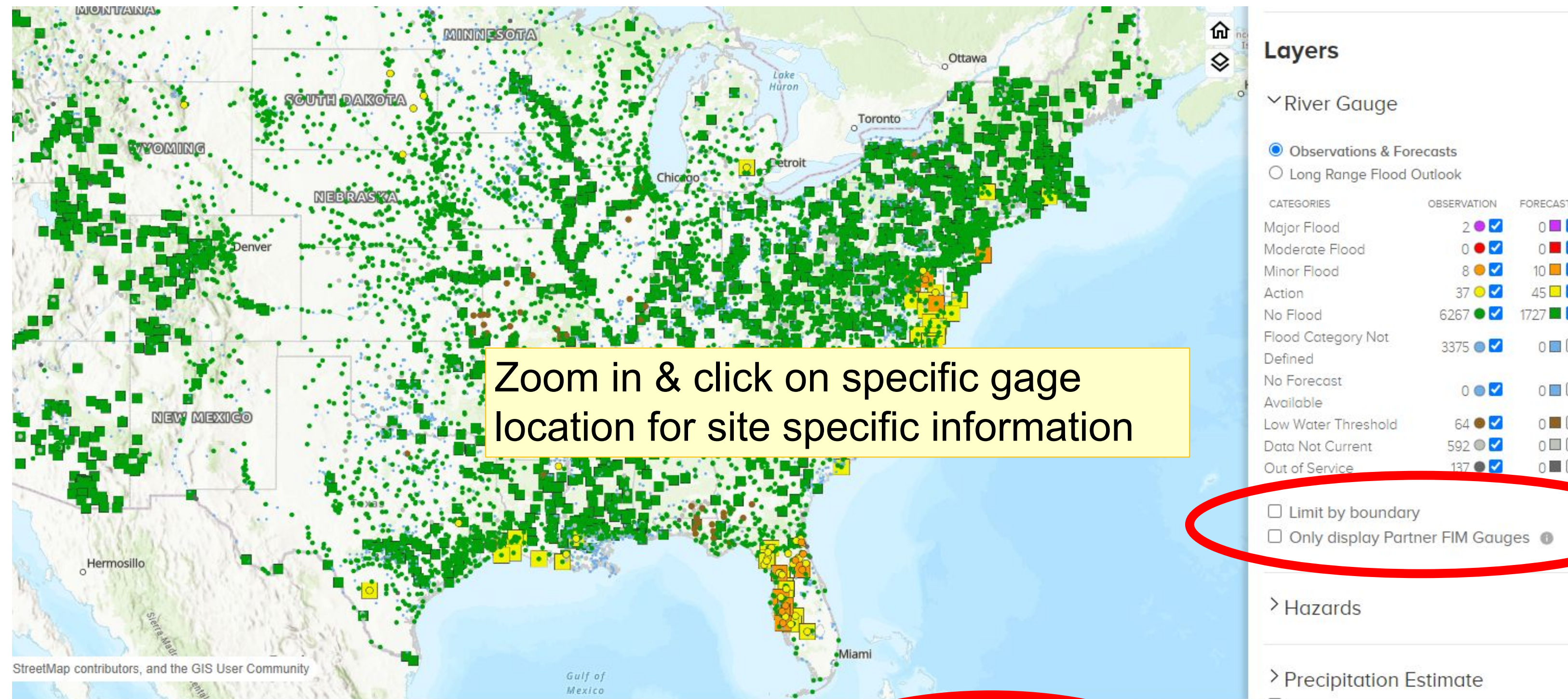


Southeast River Forecast Center

<https://www.weather.gov/serfc/quickbriefing>

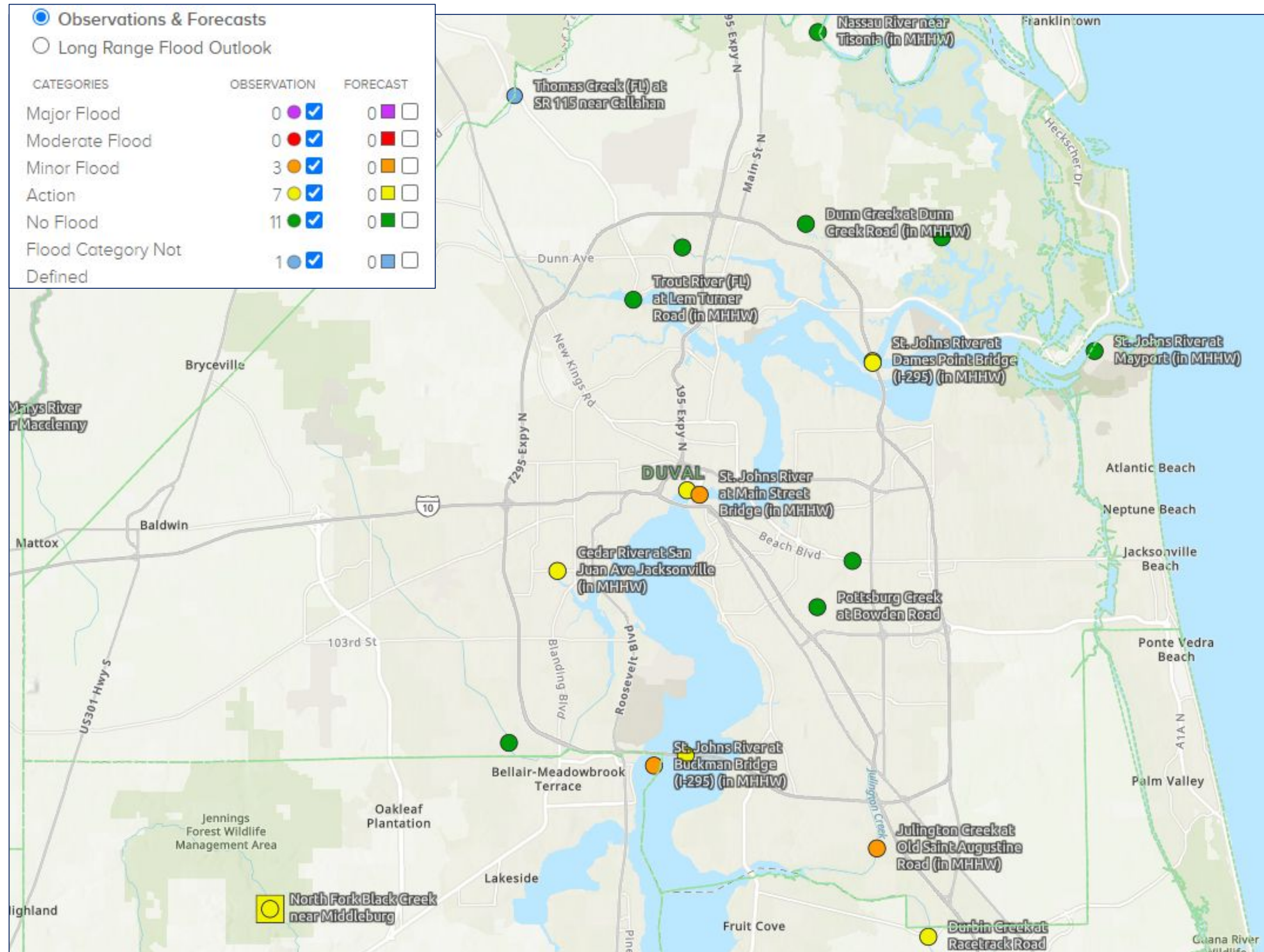


Accessing Hydrographs



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

Water Level Monitoring



Forecast are NOT done for tidal rivers
(St. Johns Main Stem in NE FL)

Only use to monitor current water levels
& past trends

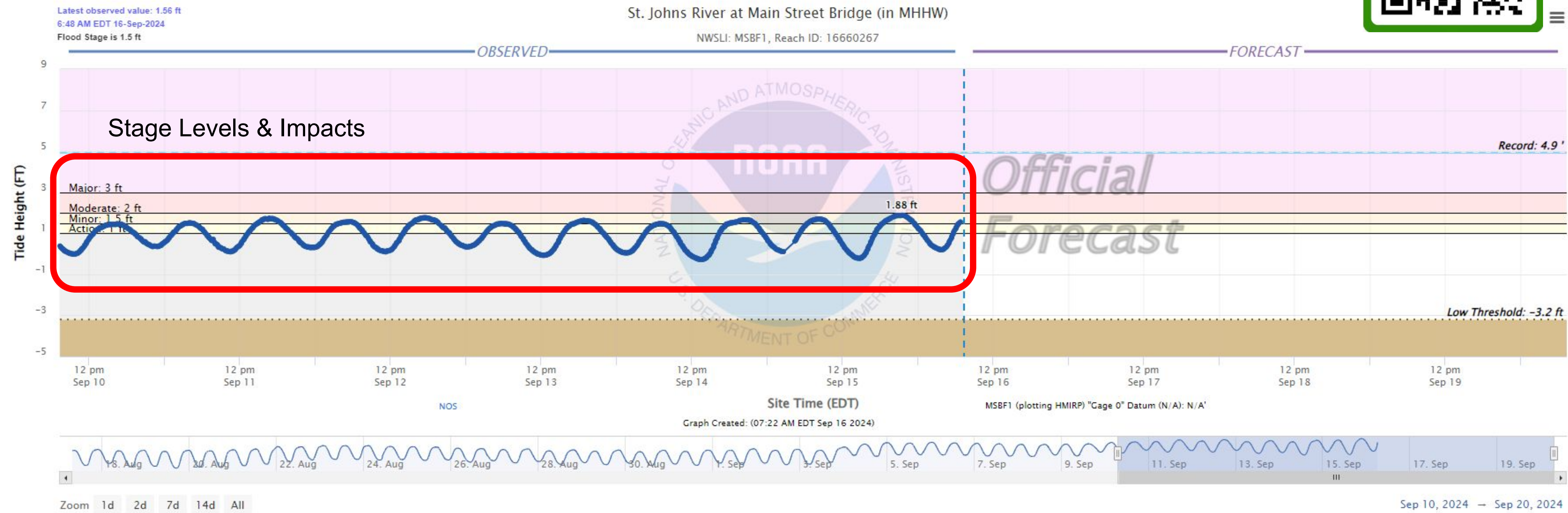
What can we do?

Use tide predictions + surge forecasts +
observed river levels to predict potential
inundation heights - More on this later!



NATIONAL WEATHER SERVICE

River Level Monitoring - Tidal Hydrographs



☐ Scale to Flood Categories ☒ Auto Refresh

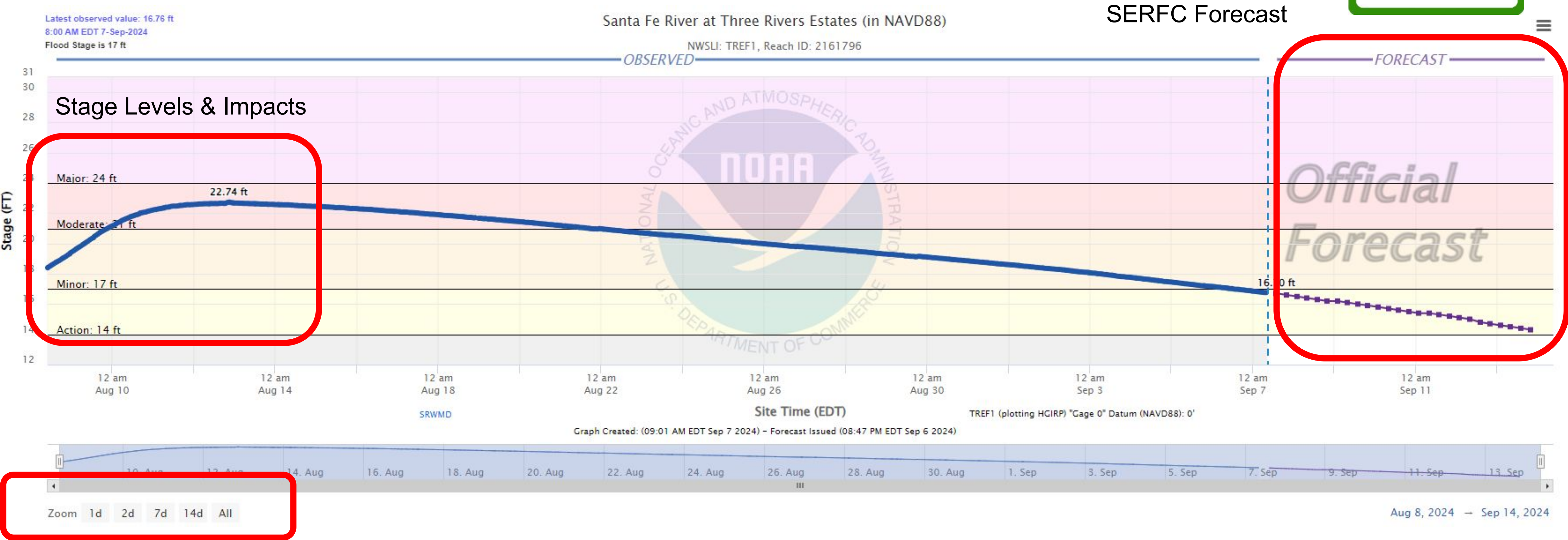
Traces and Thresholds Click to turn on/off display

- Observed (OBS) 09/16/2024 6:48 AM EDT
- Record: 4.9 ft
- Low Threshold: -3.2 ft

CATEGORY	STAGE
Major Flooding	3 ft
Moderate Flooding	2 ft
Minor Flooding	1.5 ft
Action	1 ft



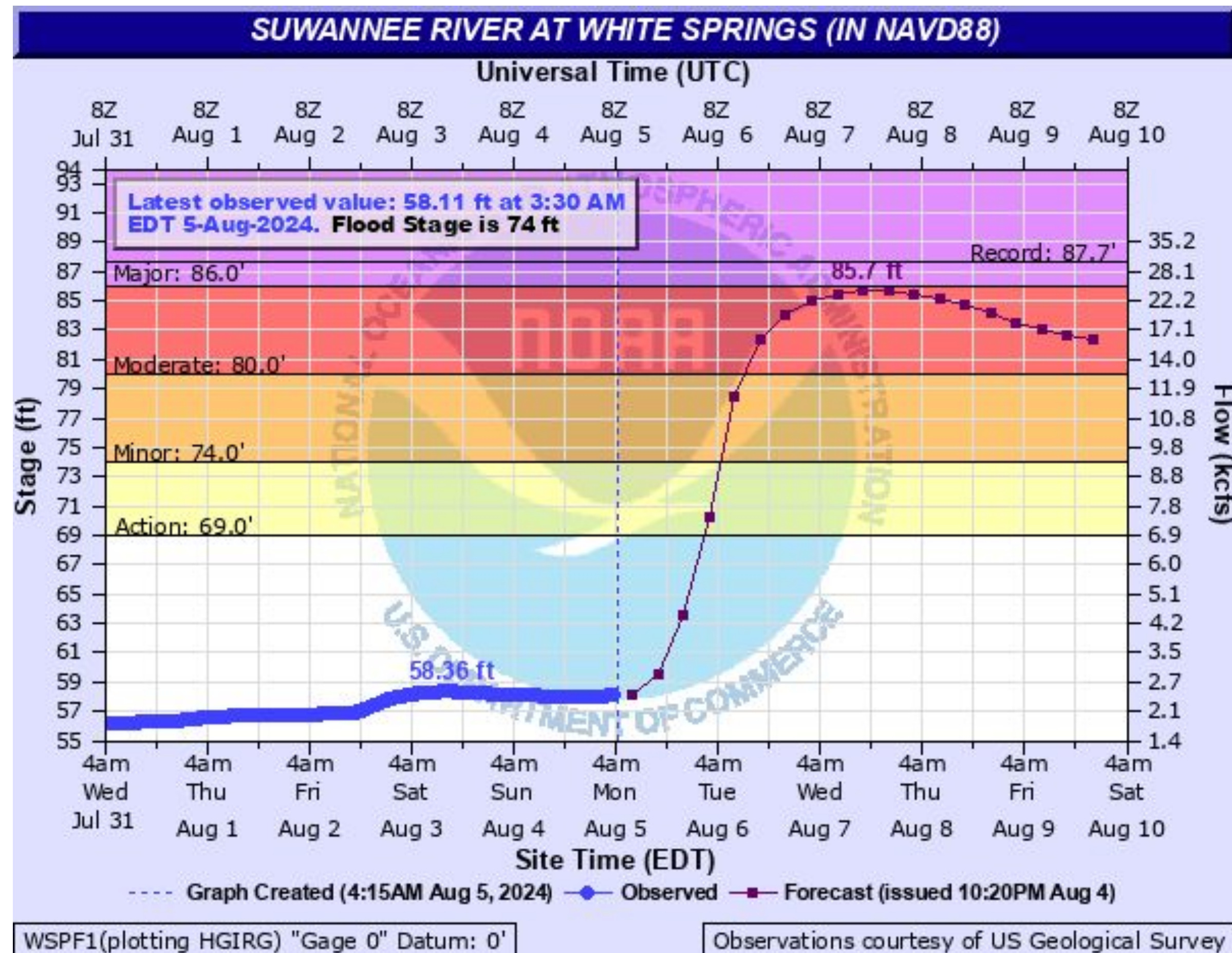
River Level Monitoring - Inland Rivers



Recent History



River Level Monitoring - Location Specific Hydrographs



- Hydrographs only have 48 hrs of forecast rainfall in the model
- Will NOT capture tropical rainfall event several days out

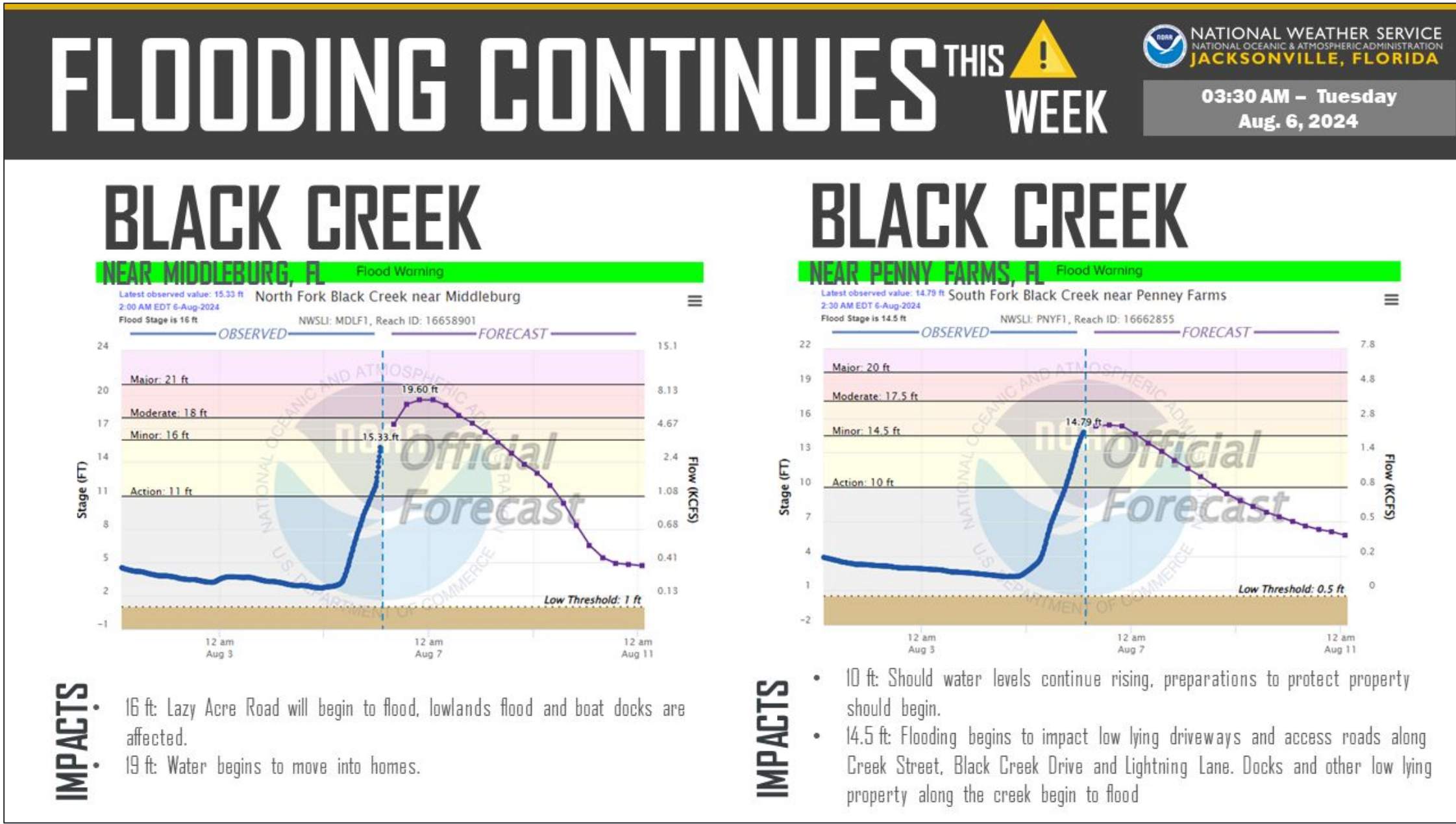
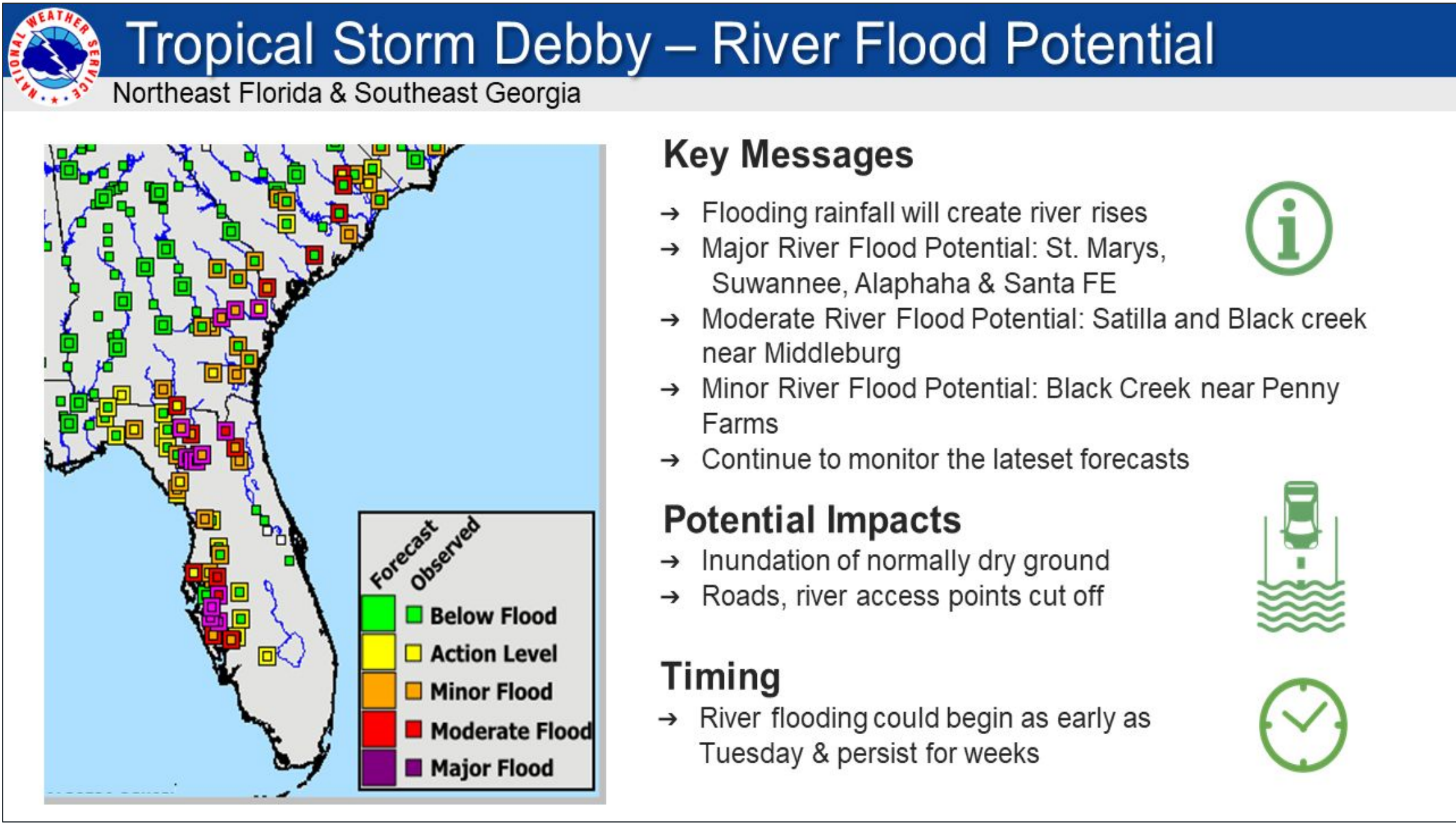
Communicating River Flooding Risk - PUBLIC

Days in Advance

National Water Center Outlooks, Local NWS Briefing

1-3 Days Imminent Flooding

River Flood Warnings – No WEA

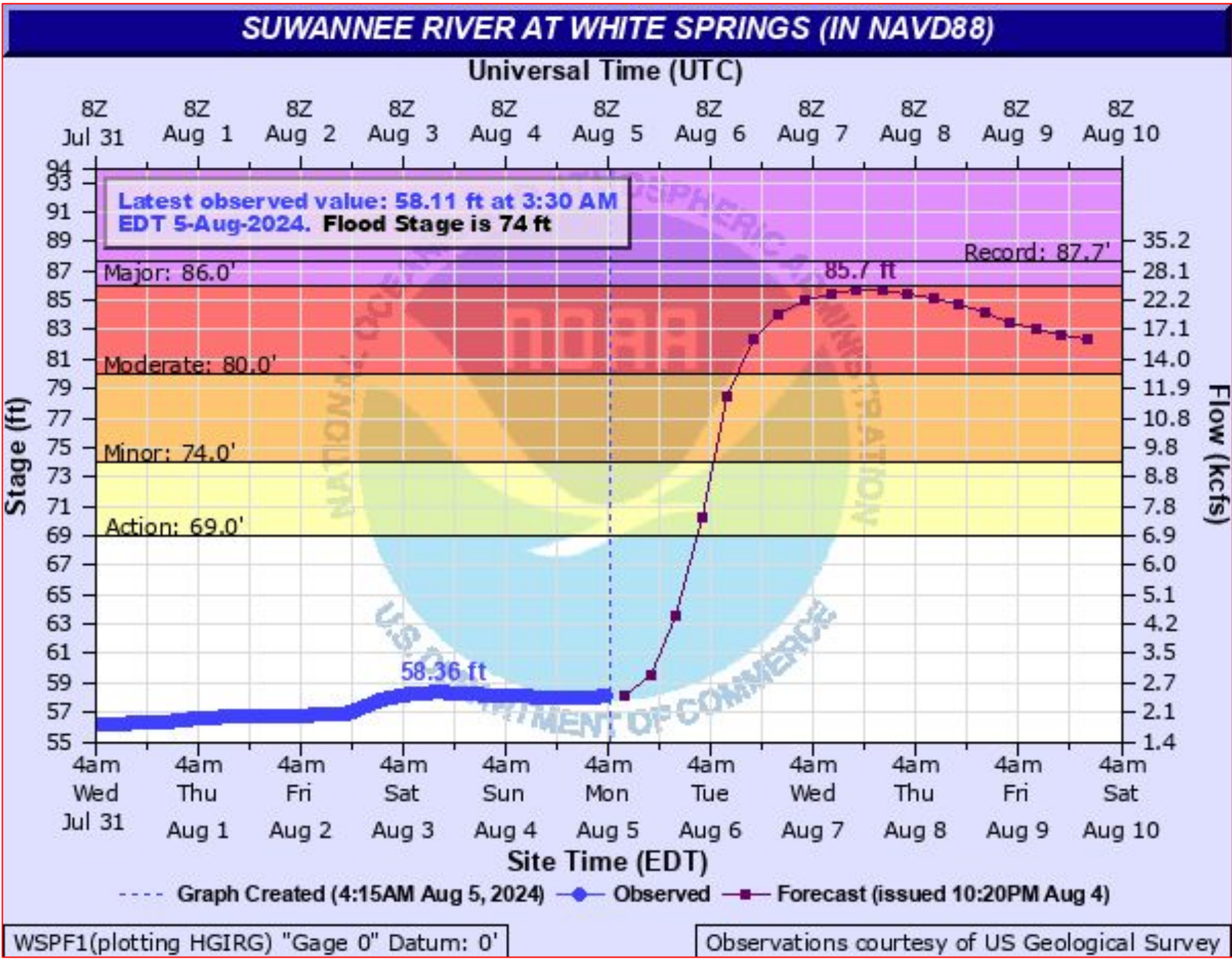


Communicating River Flooding Risk - EM

EXPECT

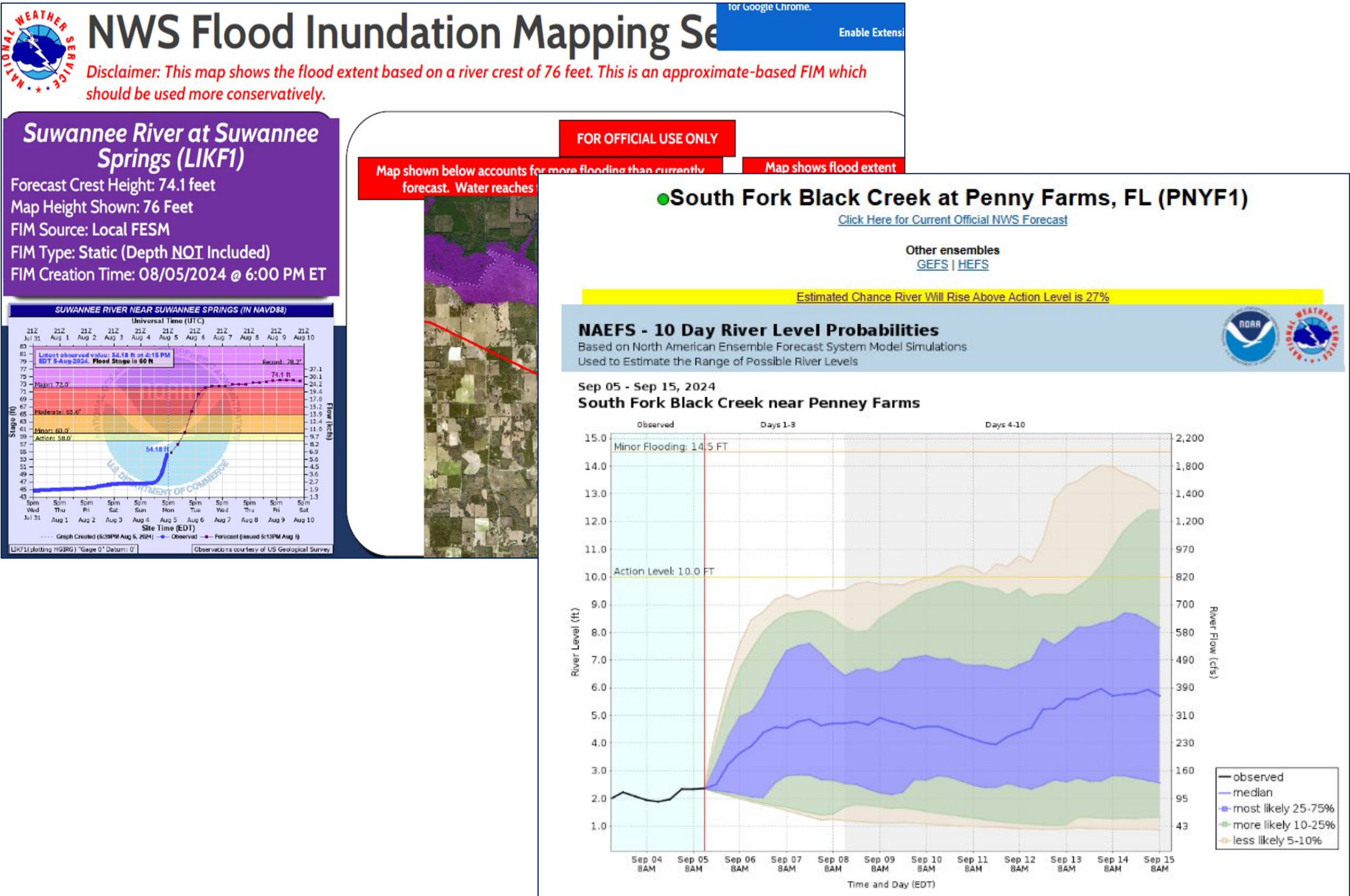
Hydrographs

CAUTION - ONLY 48 hrs of Rainfall!



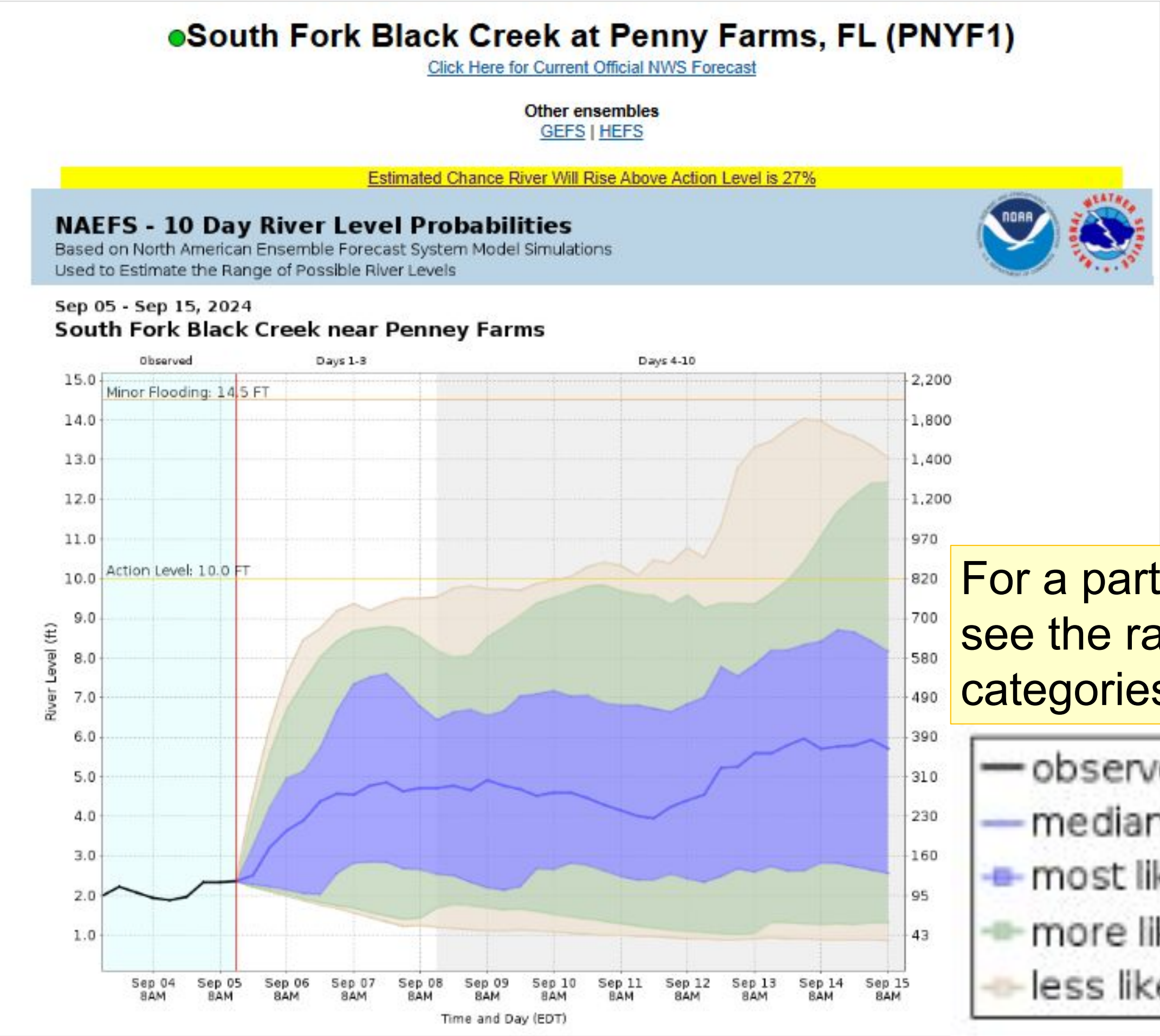
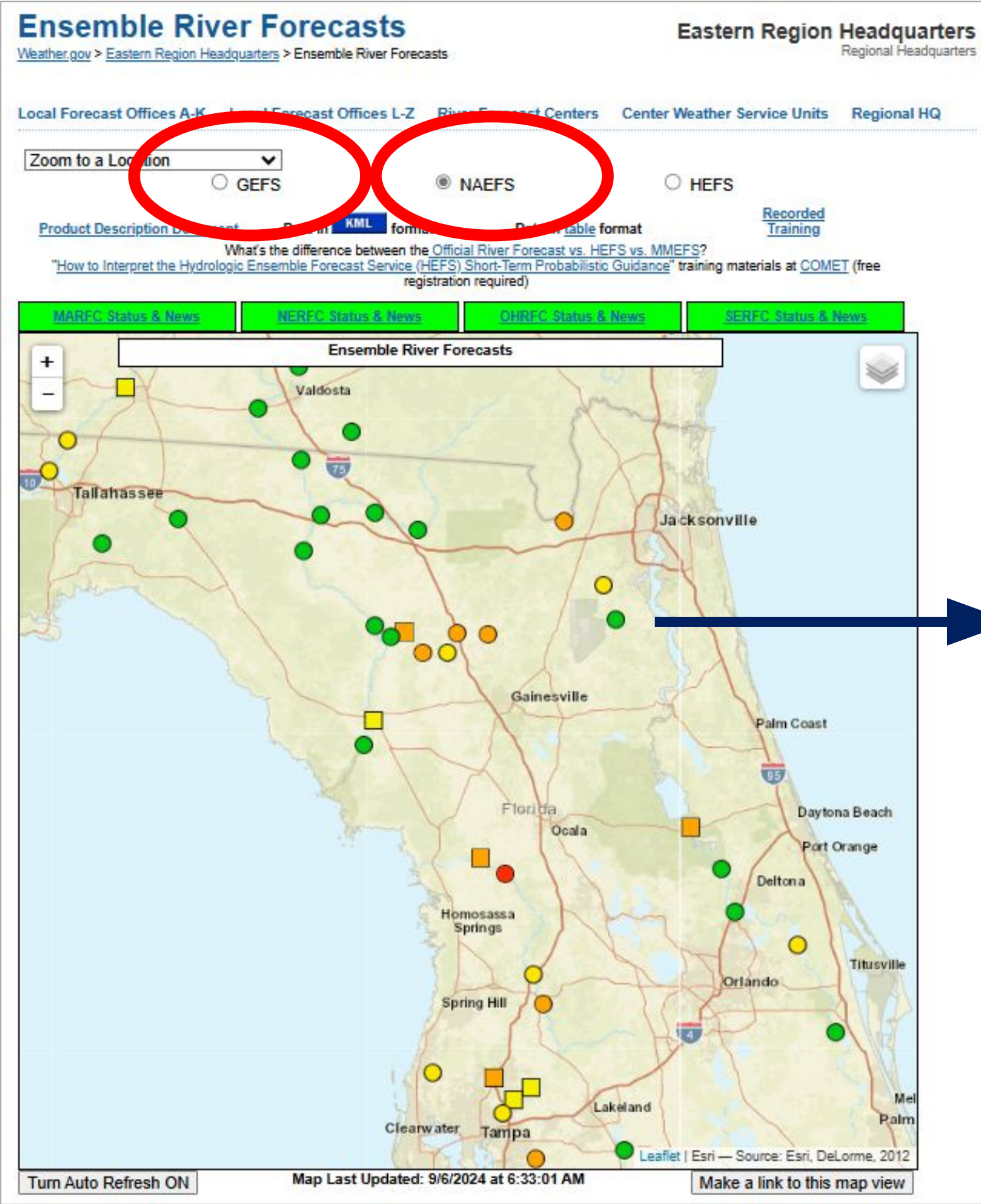
POTENTIAL

Request Flood Inundation Mapping & Refer to Ensembles



River Flooding Risk Potential - Ensembles

Ensemble Forecasts include varied amounts of basin rainfall for a particular event

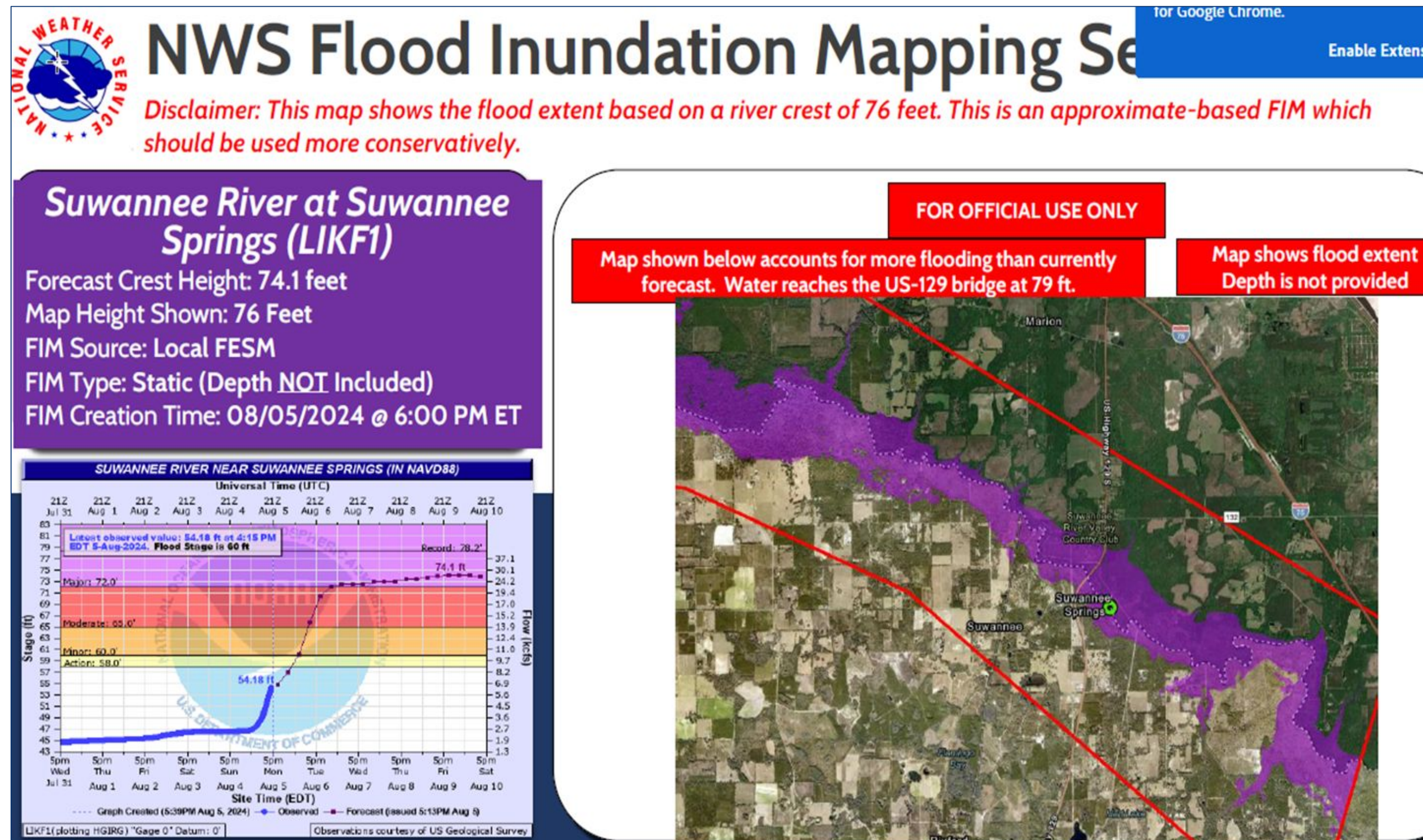


<https://tinyurl.com/42z4f2f4>

For a particular river gage, help see the range of potential flood categories - CONFIDENCE



Flood Inundation Map = Flood Water Footprint

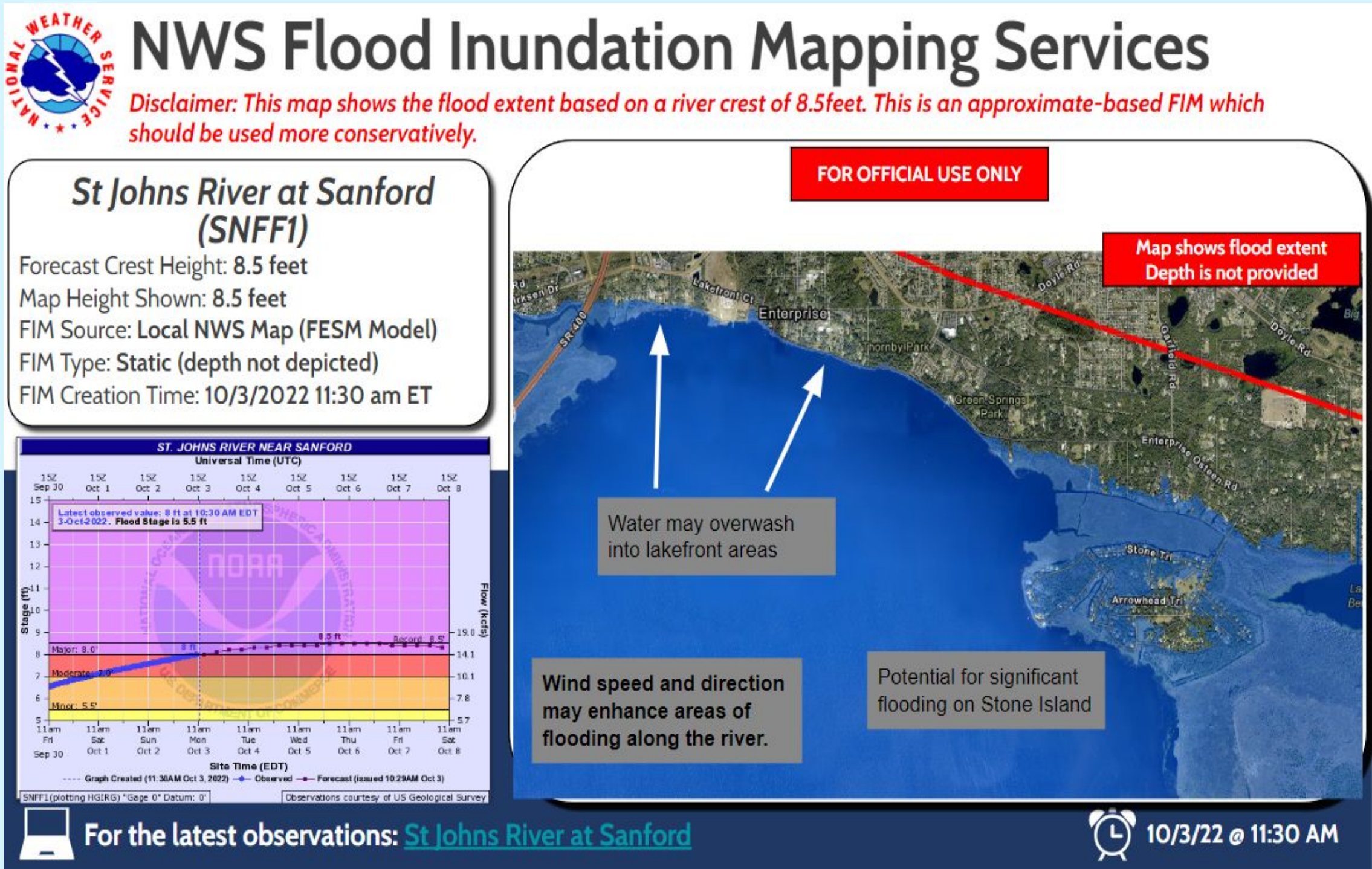


- EMs can request for specific river gage locations during potentially high impact flooding events
- Provides a footprint of wet locations given a specific river level at that gage site
- DOES NOT SHOW DEPTH

Static vs Dynamic Flood Inundation Map

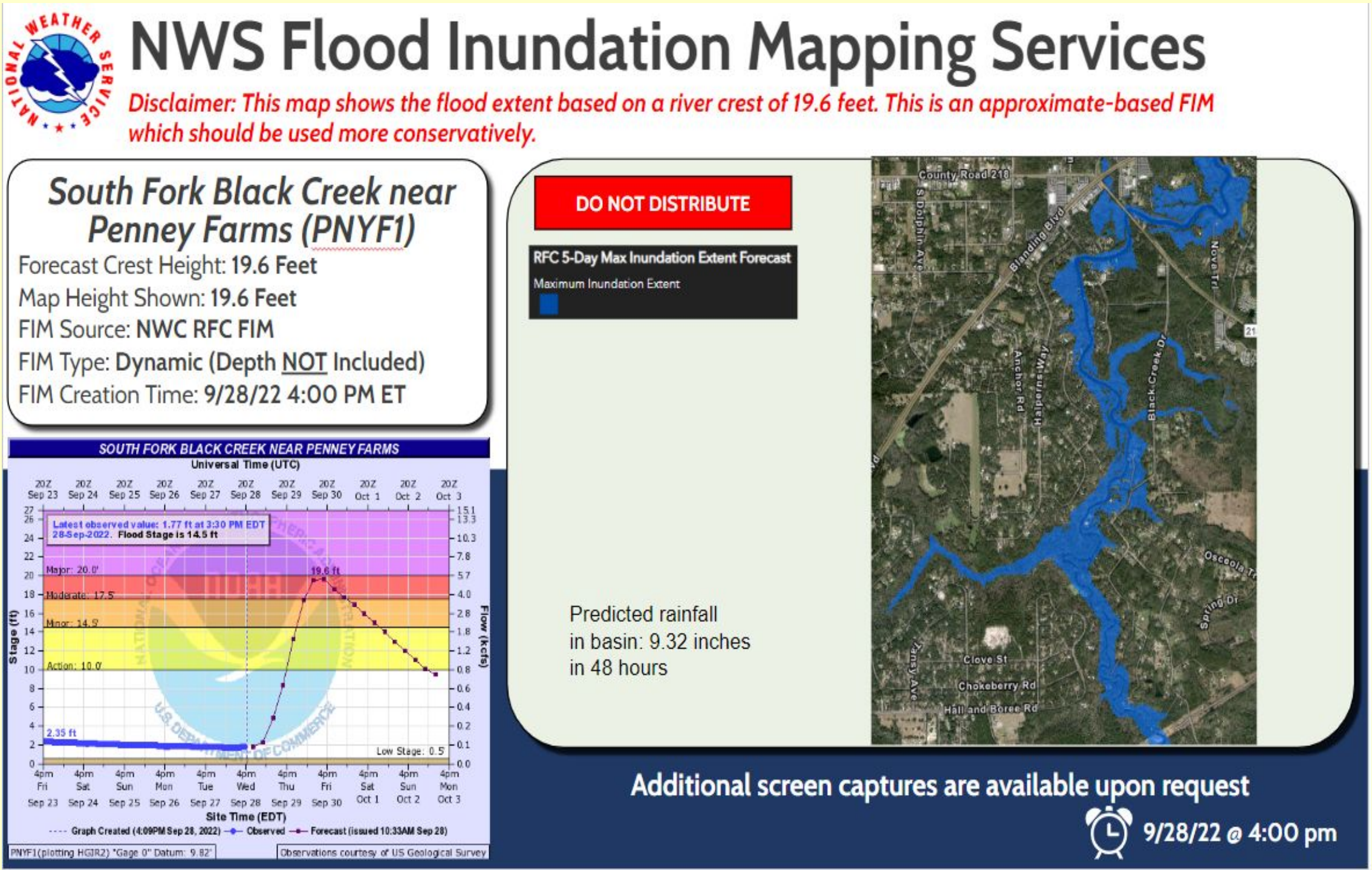
Static - FESM

- ✓ Built before an event with variety of river stages
- ✓ Does not consider current river stage recent, or forecast rain
- ✓ Mostly addresses bridge impacts



Dynamic

- ✓ Created during an event - built to a specific river stage
- ✓ Considers current conditions, recent & forecast rain
- ✓ Will show if a bridge floods

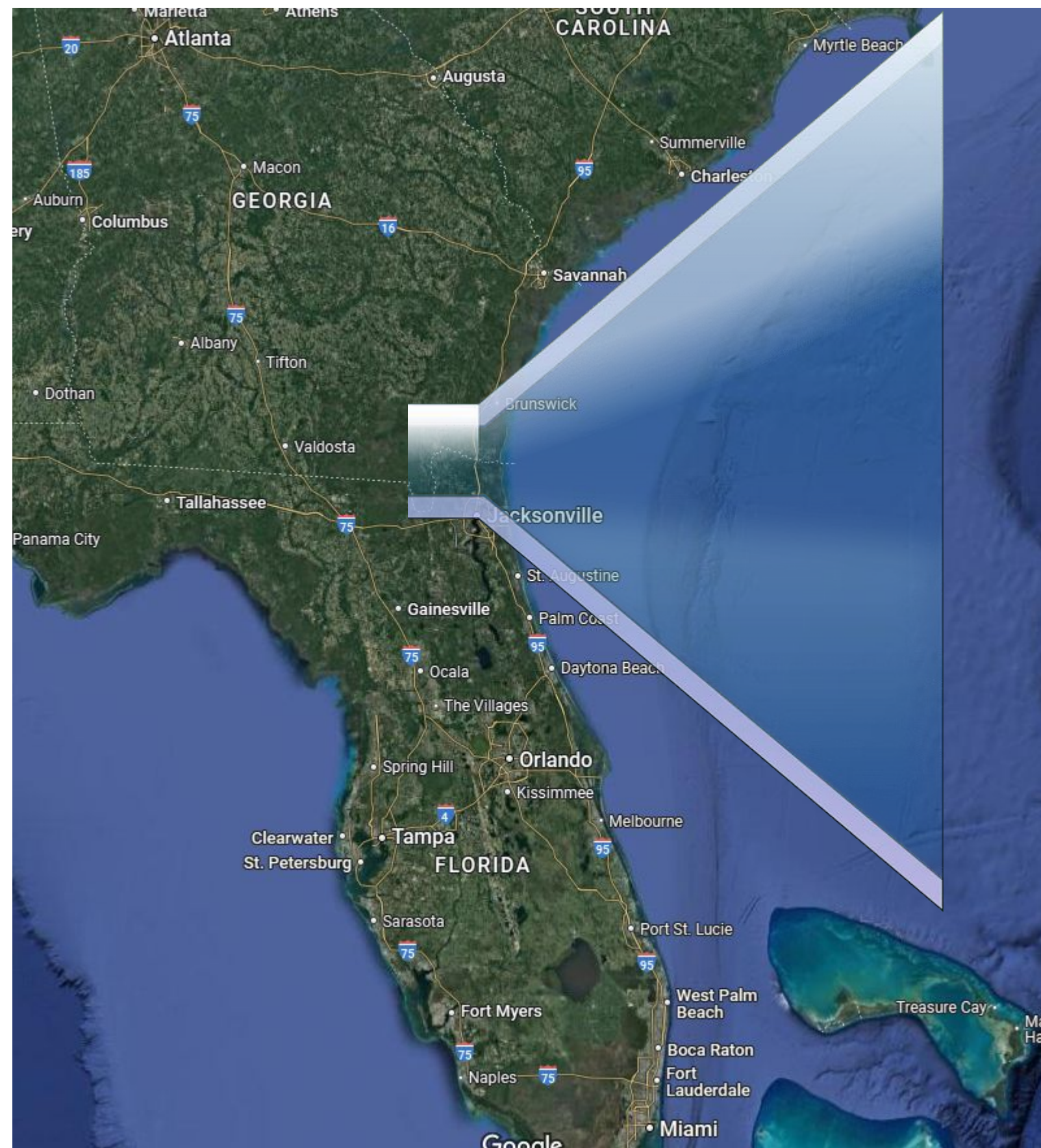




Coastal/Tidal Flooding

Local Geography

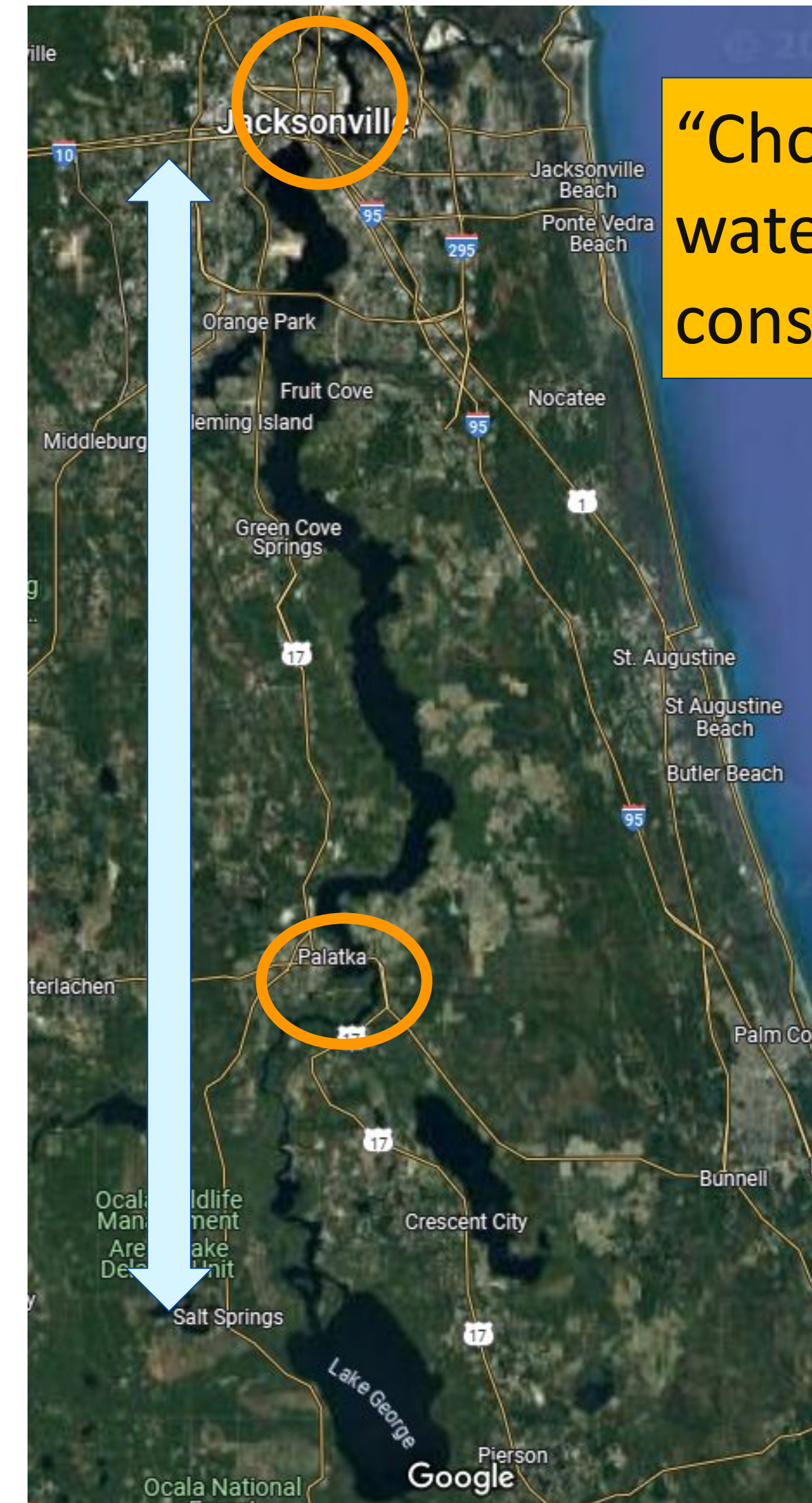
Coastal “Catchers Mitt” & Inland Funnel



Elevated trapped water will travel north to south with high tides in river - seiche effect

Called “Reverse Flow” event by SJRWMD

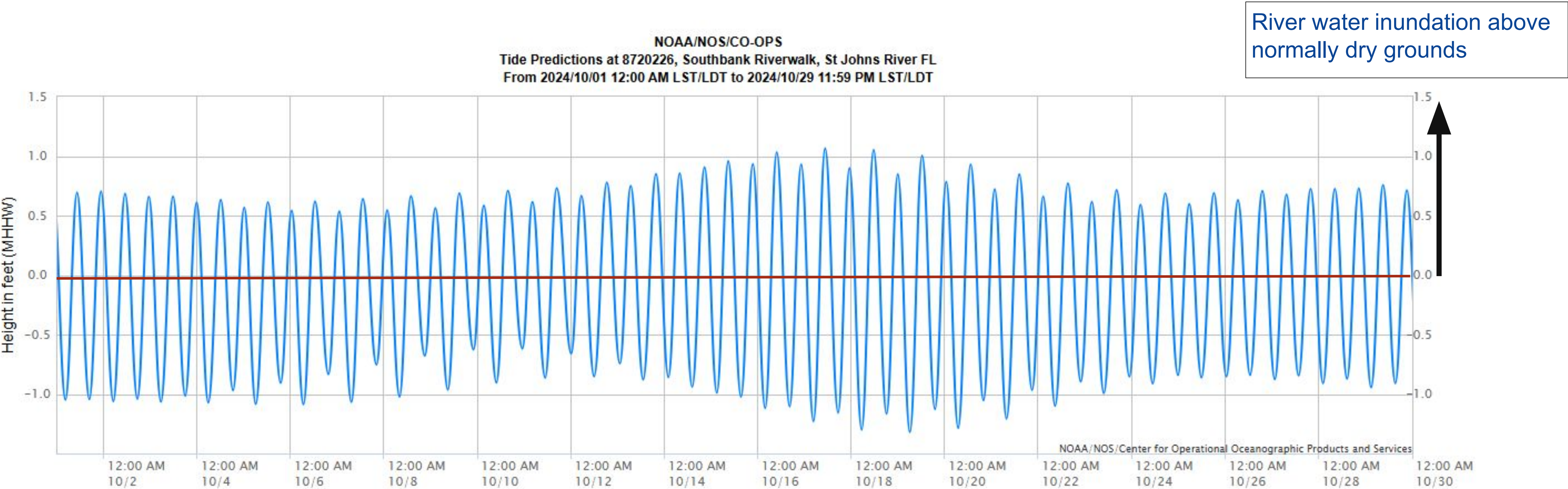
St. Johns “Bathtub” Tidal Seiche & “Choke Points”



“Choke Points” where water flow becomes constricted & overflows

Coastal/Tidal Flooding Climatology

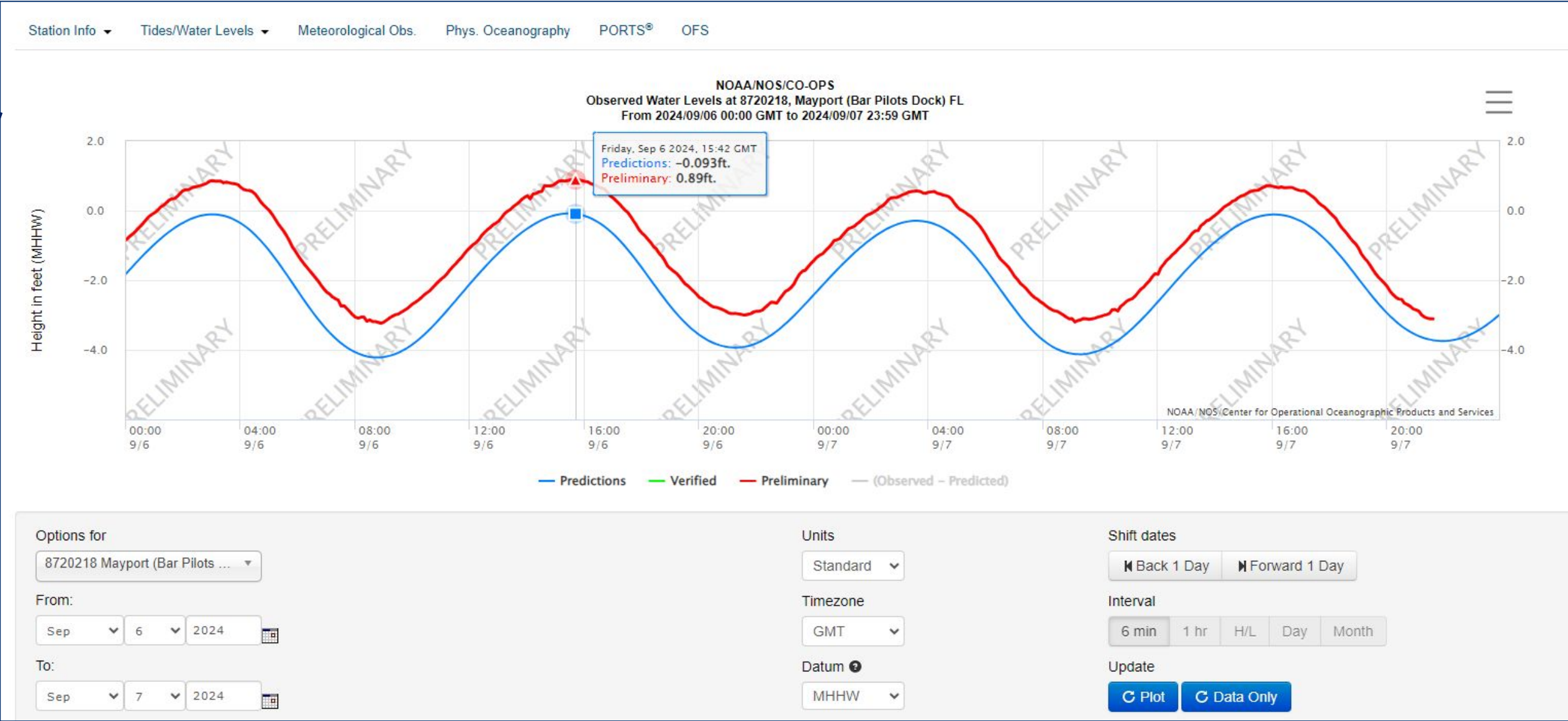
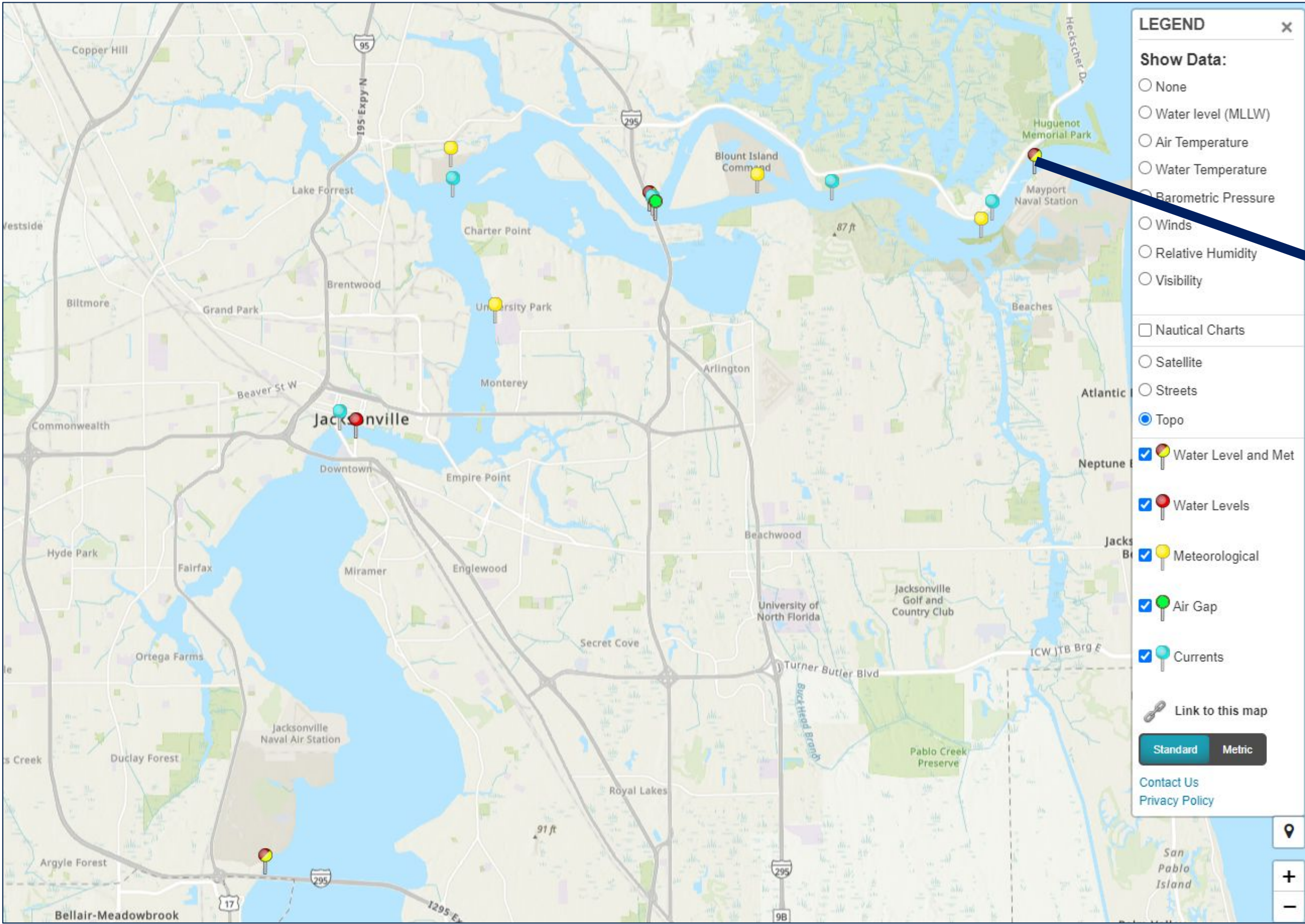
Our **HIGHEST** annual astronomical tides occur in September to November each year - Peak values mid-October
These are called **SPRING** or **NEAP TIDES** (technically not KING tides)



Water Level Predictions



<https://tidesandcurrents.noaa.gov/>

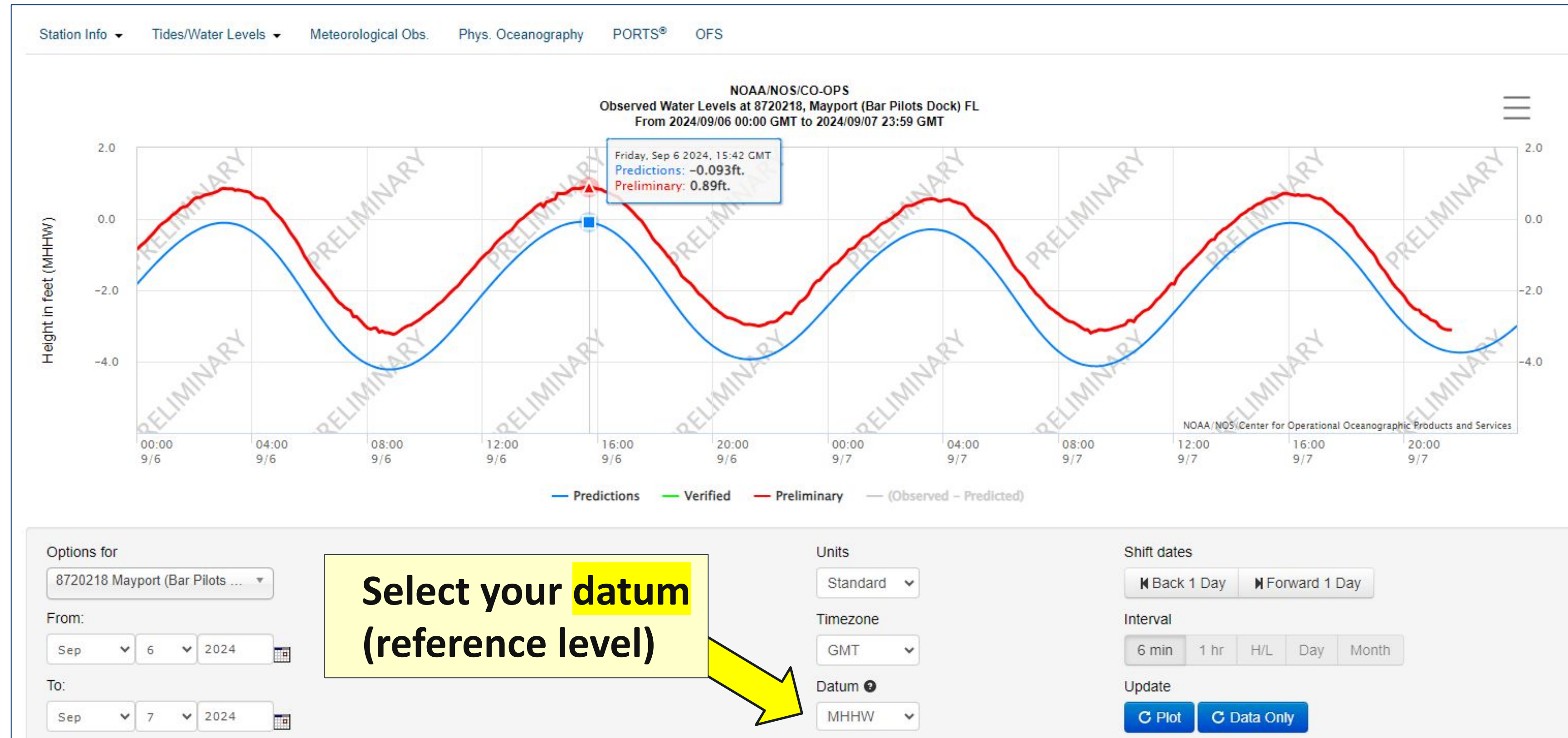


Astronomical High Tide Season 2025

Date Range	Moon Phase	Notes
August 20–23	— New Moon	First "fall" high tide setup (0.5 ft MHHW)
September 6–14	— Full Moon	Prolonged period of higher tides (1 ft MHHW)
October 5–13	Full Moon Oct 6th	Peak annual astronomical tides; up to +1.5 ft MHHW Does not account for weather system surge
November 3–9	Full Moon	Another strong high tide cycle

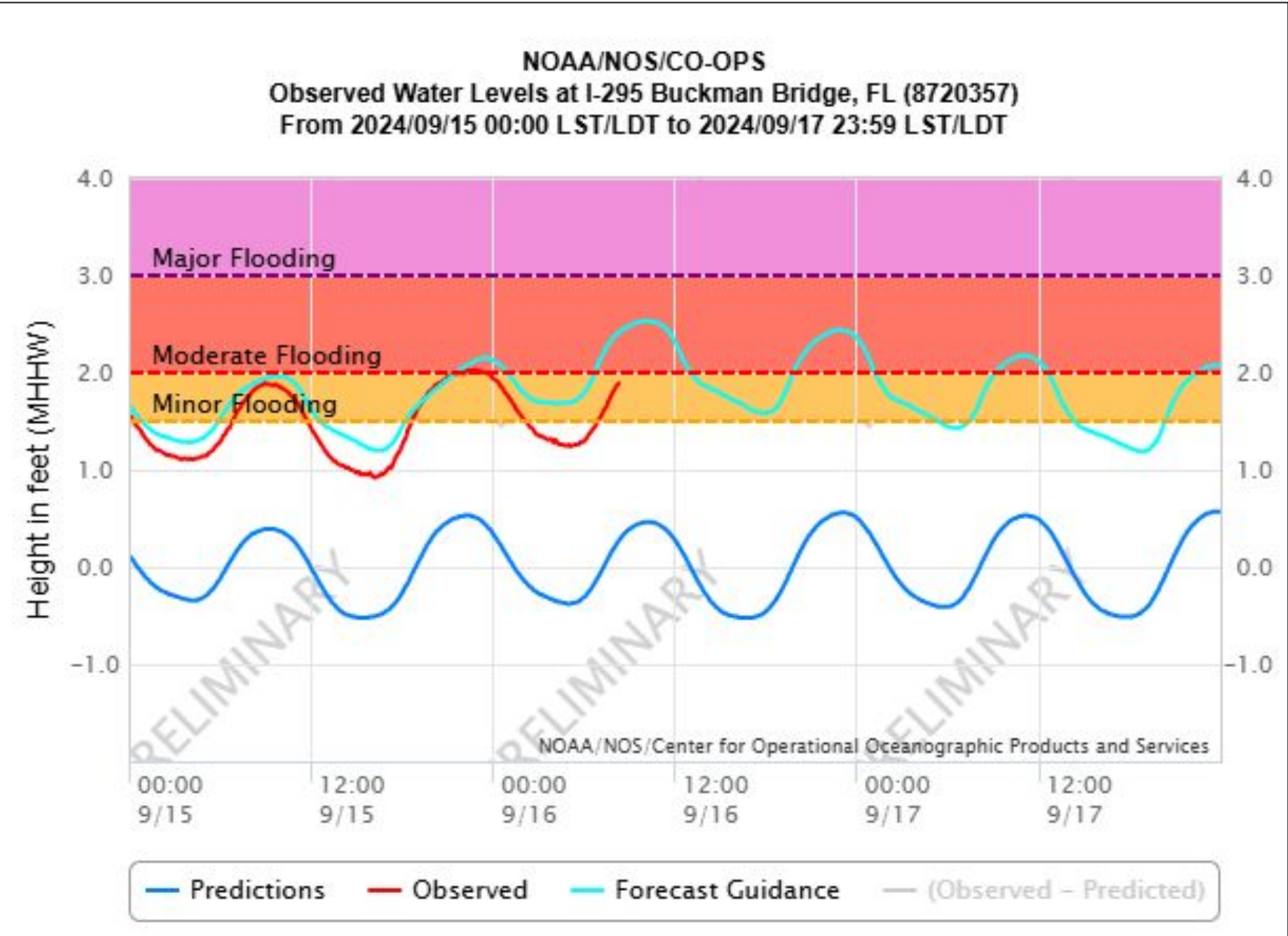
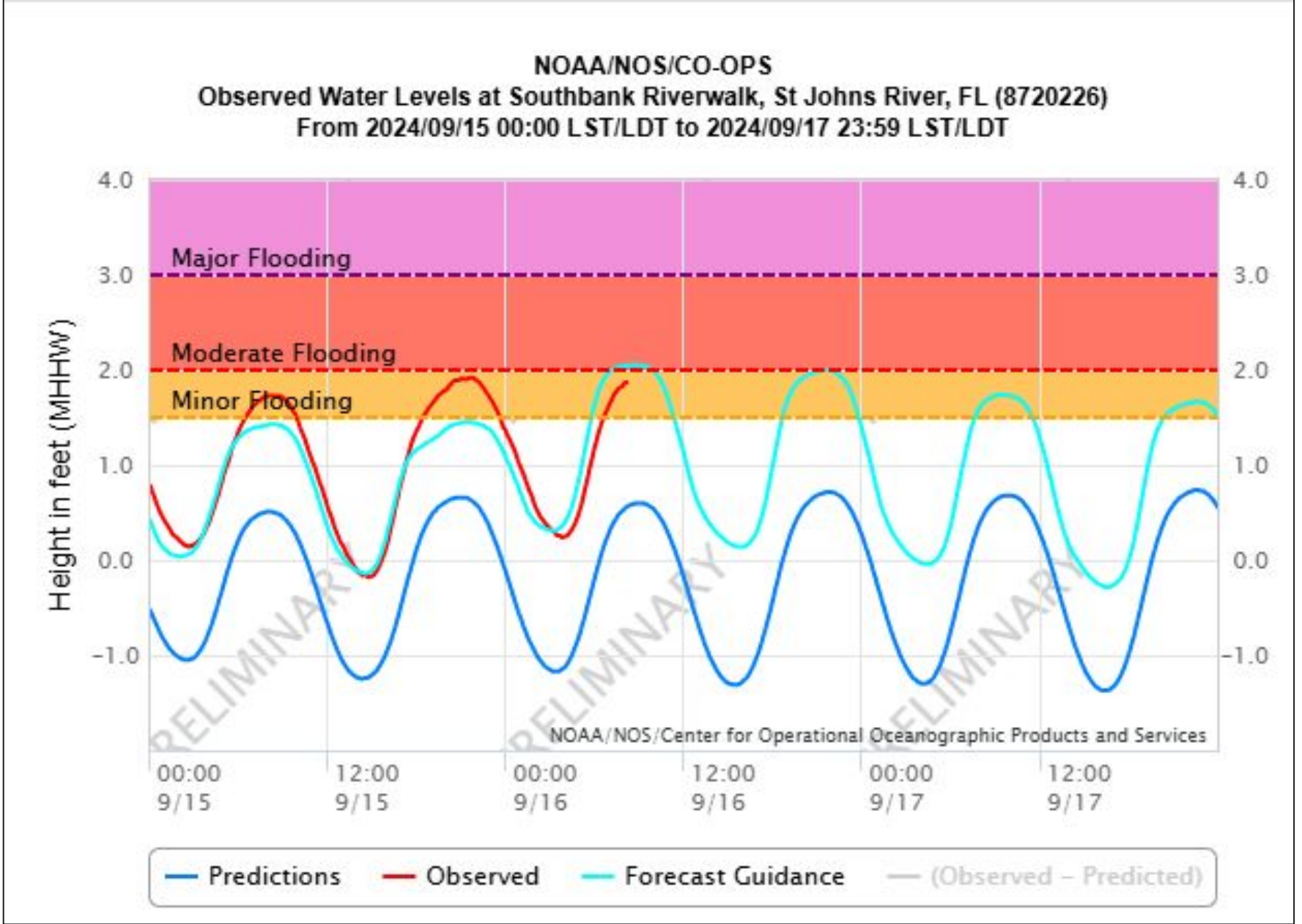
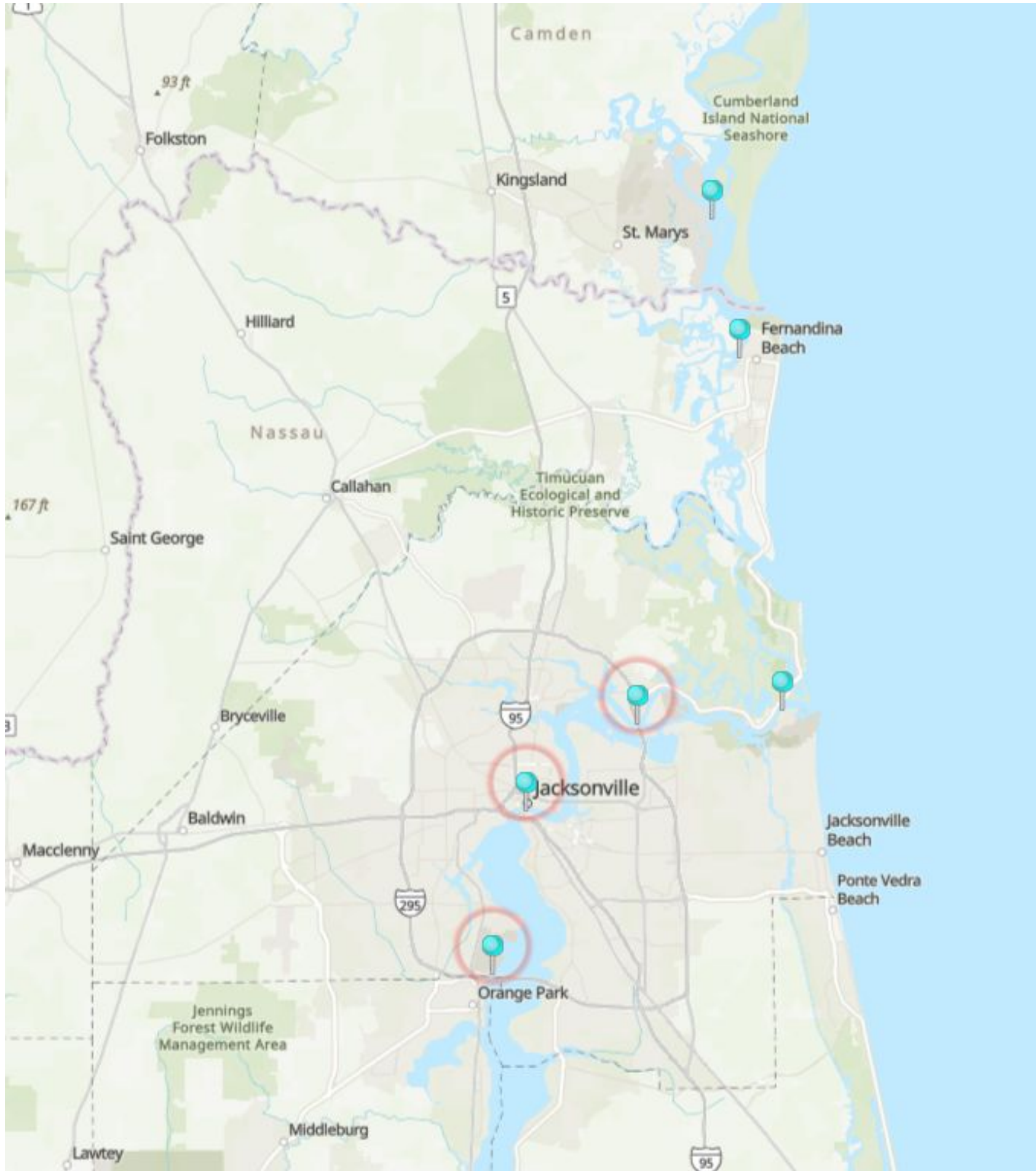
Water Level Monitoring

TIDES



- NWS coastal / tidal water level forecasts in Mean Higher High Water (MHHW) datum
- Height above normally dry ground (above the highest daily astronomical tide)

Coastal Inundation Dashboard

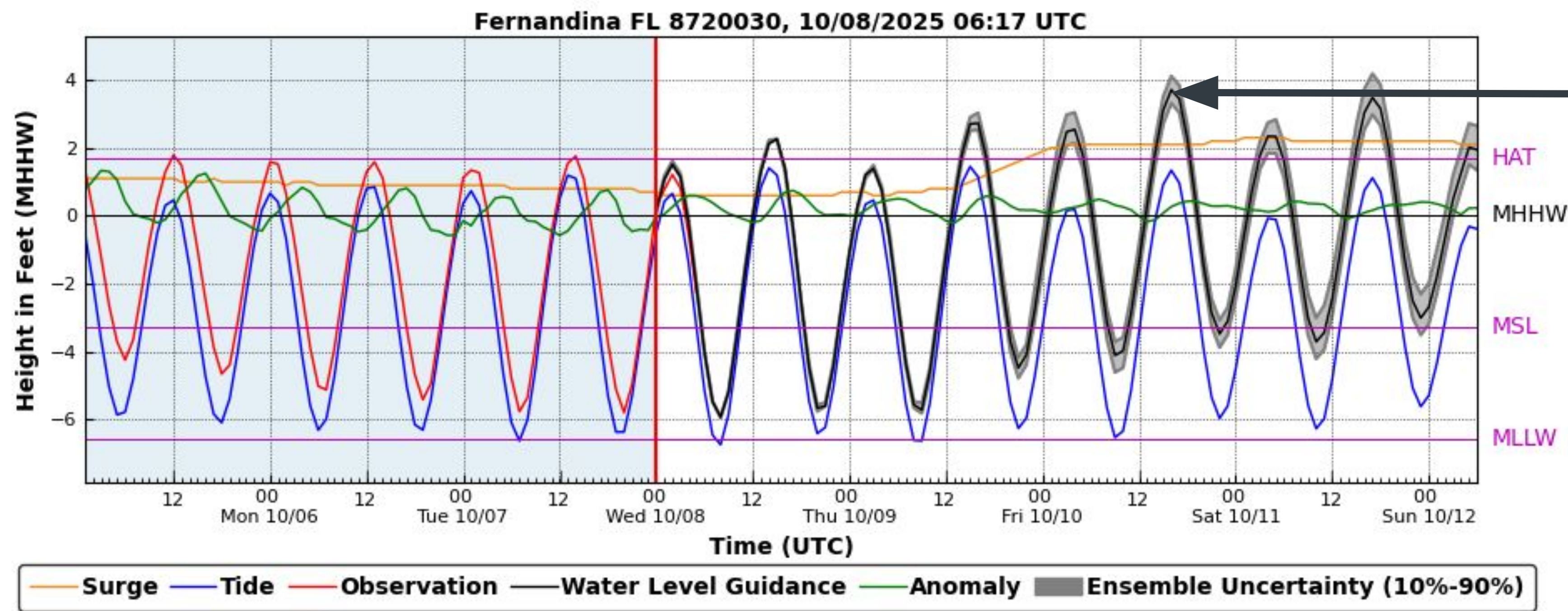


<https://tidesandcurrents.noaa.gov/inundationdb/>



NATIONAL WEATHER SERVICE

Probabilistic Coastal/Tidal Forecasts - DEMO



“Most Likely” forecast
(solid black line)

Probabilistic guidance
(shaded area)
Provides higher & lower bounds

What it means:

- ➔ Official forecast: 3.7 ft MHHW Saturday Morning (MAJOR)
- ➔ Potential for up to 4 ft with lower bound of 3 ft
- ➔ High confidence of MODERATE flood impacts at this location → potential for MAJOR

<https://tinyurl.com/4b7m27p8>



NWS JAX Tidbit -

This guidance can run with a high bias of up to 0.5 ft MHHW

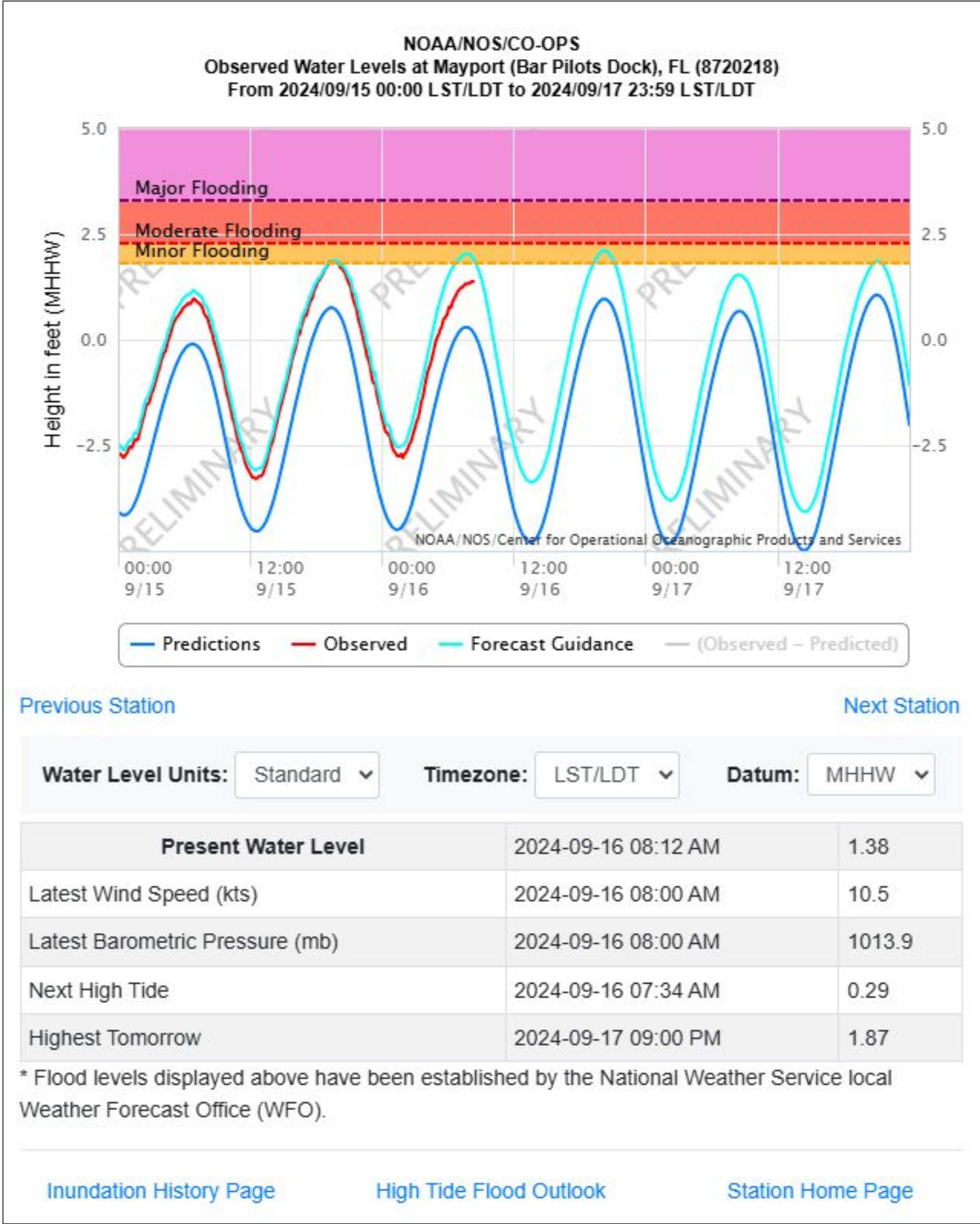
CATEGORY	STAGE
> Major Flooding	3.5 ft
> Moderate Flooding	2.5 ft
> Minor Flooding	2 ft
> Action	1.5 ft

Storm Surge Inundation Dashboard

- Forecast without human intervention
- Shows general trends of forecast peak inundation potential at specific locations
- One-stop-water monitoring shop (tides at bottom of page)

What does it do?

Using tide predictions + surge forecasts + observed river levels to predict potential inundation heights



Coastal/Tidal Flood Products

Product	Meaning & Issuance Timing	WEA Activation
Coastal Flood Advisory	- Highlights Minor tidal flooding is imminent or possible < 12 hrs - If confidence is > 50%, then may extend or begin within 24 hrs - Includes nuisance tidal flooding of low-lying areas	NO
Coastal Flood Watch For Tropical systems, Storm Surge Watch	- Highlights Moderate and Major flooding is possible - Issued hours to days in advance of threat – confidence driven - Includes tidal inundation that could threaten life & property	NO
Coastal Flood Warning For Tropical Systems, Storm Surge Warning	- Tidal inundation poses an immediate risk to life & property - Seek higher ground & protective property immediately	YES for Storm Surge Warning No for Coastal Flood Warning

Messaging Coastal / Tidal Flooding

Coastal Flooding

Continues this Week

Latest info at weather.gov/jax



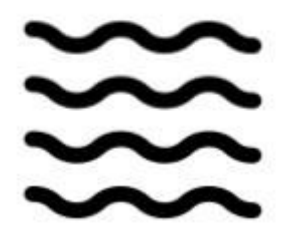


→ Flooding around times of high tide continues this week

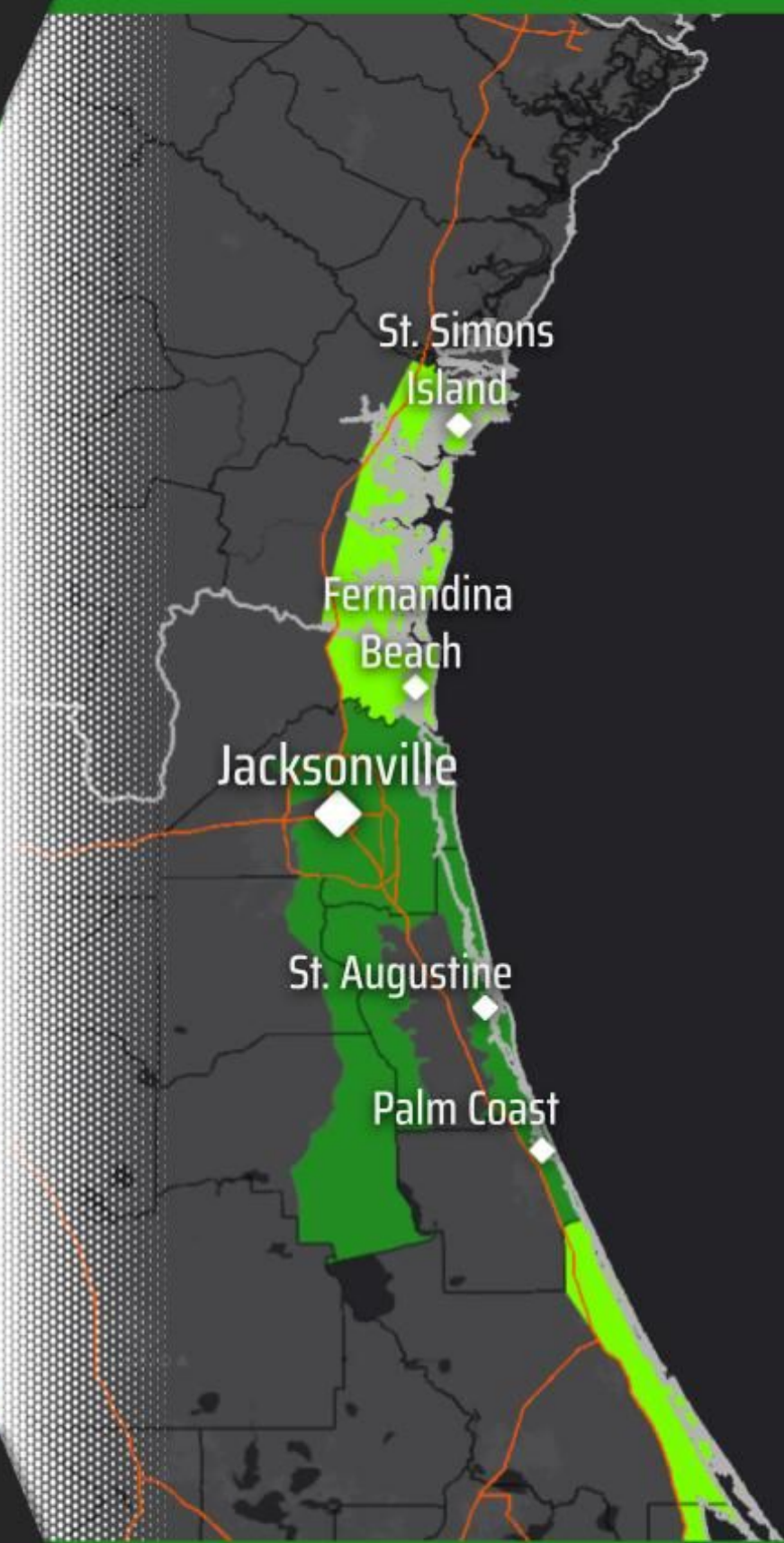


→ Coastal Flood Warning: Northeast FL Coast, Intracoastal Waterway & St. Johns River Basin

→ Coastal Flood Advisory: Southeast GA Coast & Coastal Nassau County



- Tidal inundation of 2 - 2.5 feet Above Normally Dry Ground
- Flooding of Roads & Vulnerable Structures
- Major Beach Erosion

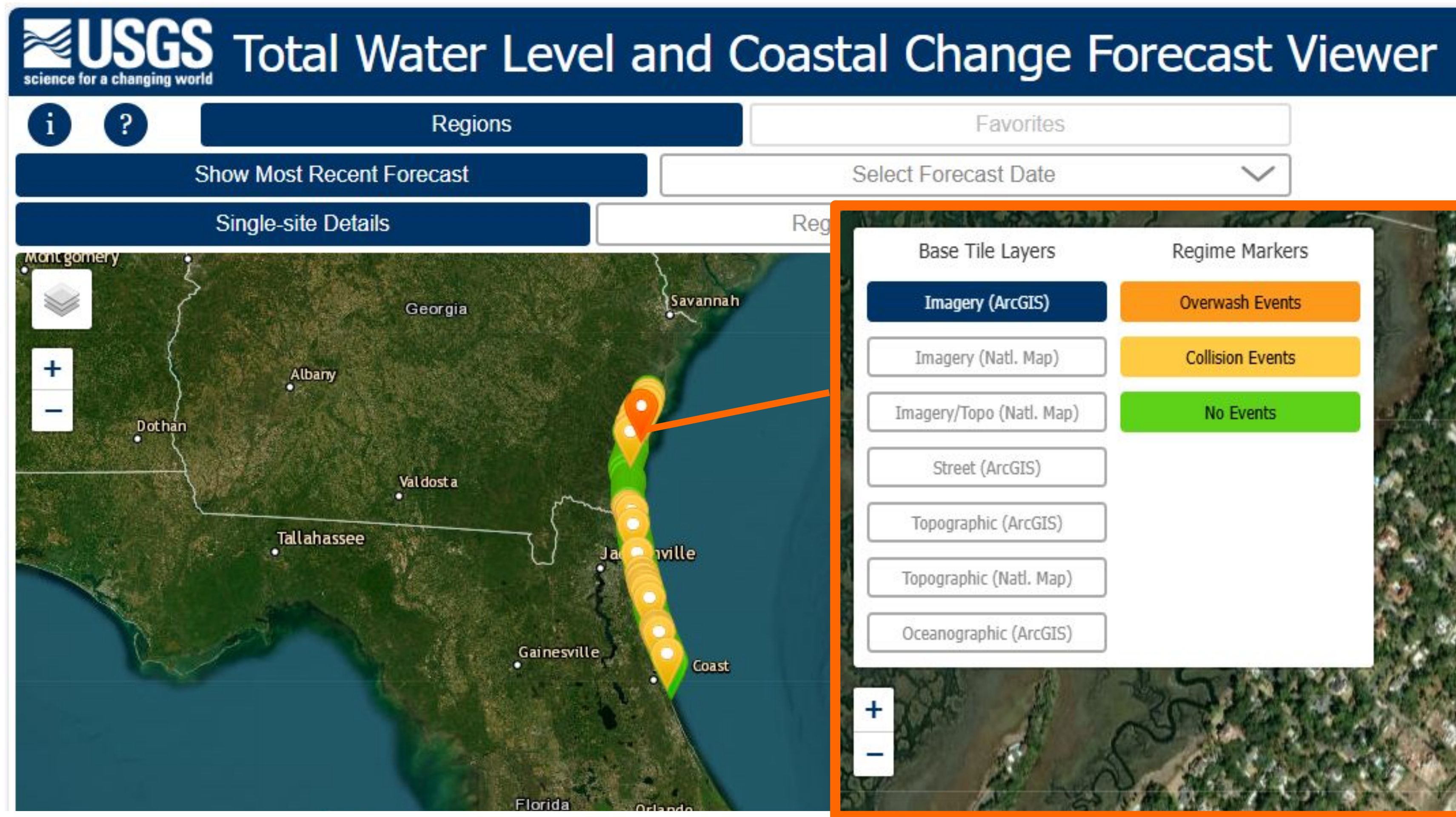




NATIONAL WEATHER SERVICE
Jacksonville  Florida

Issued: Sun, Oct 5, 2025 5:22 AM

Coastal Vulnerability Assessment Tool



<https://coastal.er.usgs.gov/development/gittens/hurricanes/research/twlviewer/>



NATIONAL WEATHER SERVICE

Working Together to Save Lives

NWS JAX HYDRO CONTACTS

Kelly.Godsey@noaa.gov

Jason.Hess@noaa.gov

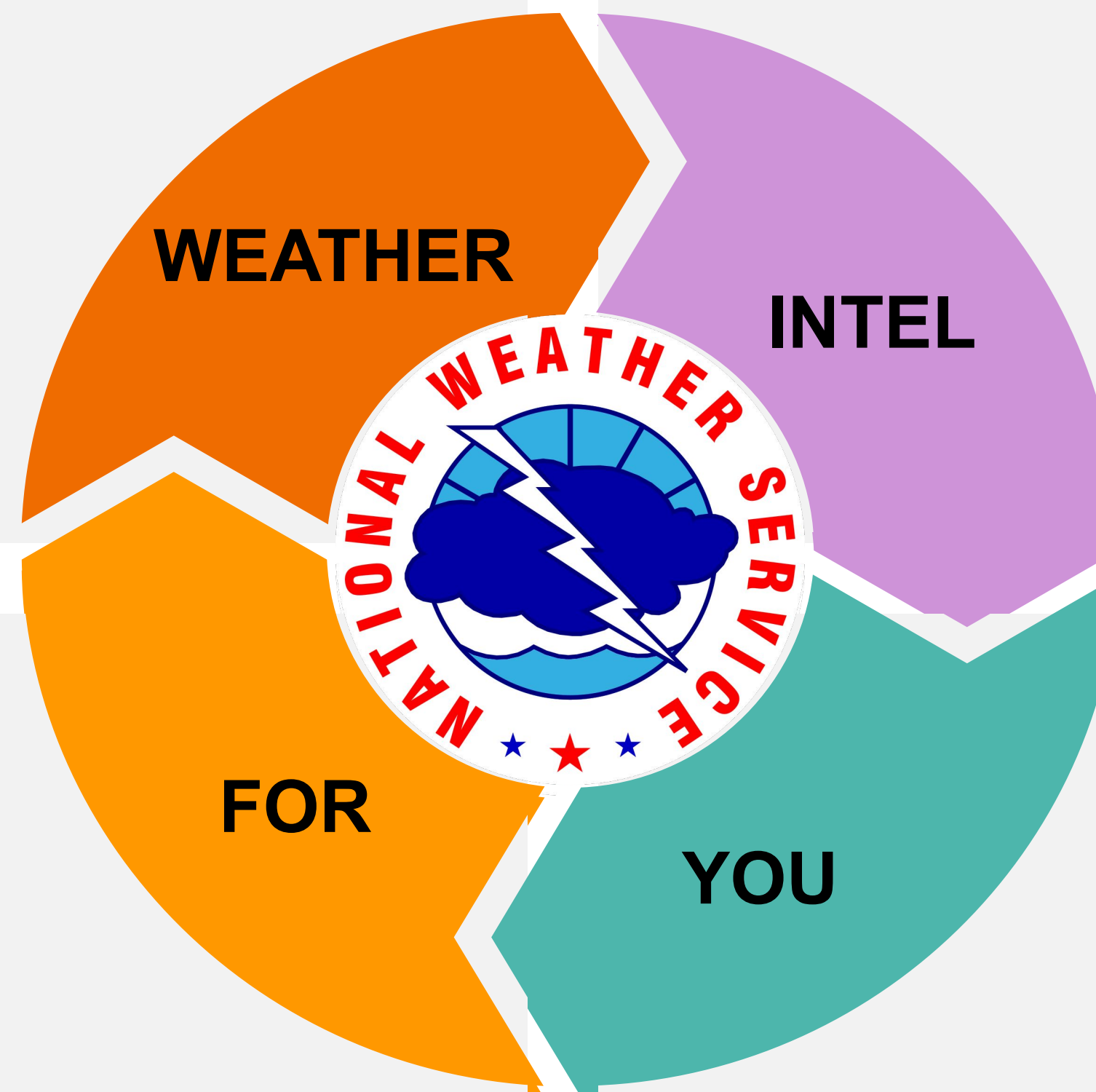
JACKSONVILLE NATIONAL WEATHER SERVICE

[US National Weather Service Jacksonville](#)

[@NWSJacksonville](#)

www.weather.gov/jax

WATER LEVEL MONITORING



**NWSChat 2.0
EM ONLY**