



TROPICAL UPDATE



5:00 PM EDT

Sunday, August 15, 2021

Tropical Storm Fred, Tropical Depression Grace,
& Invest 96L (70%)

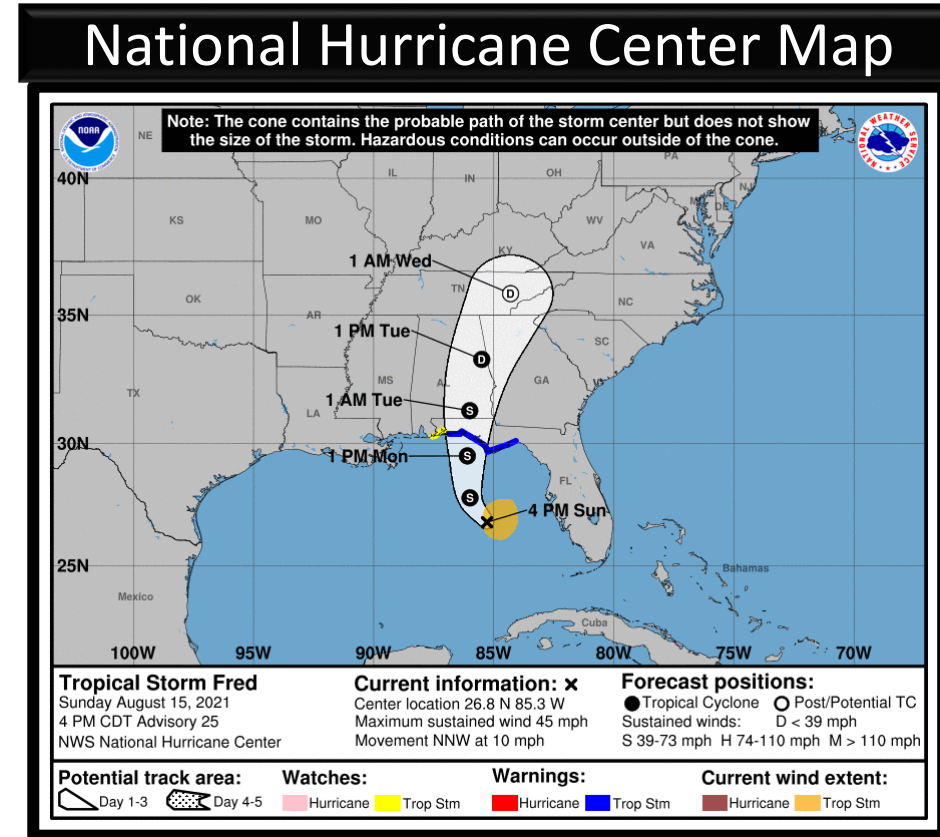
This update is intended for government and emergency response officials, and is provided for informational and situational awareness purposes only. Forecast conditions are subject to change based on a variety of environmental factors. For additional information, or for any life safety concerns with an active weather event please contact your County Emergency Management or Public Safety Office, local National Weather Service forecast office, or visit the National Hurricane Center website at www.hurricanes.gov.



Tropical Storm Fred

5 PM ET Sunday: Florida Threats & Changes Since Last Packet

	MINIMAL	LOW	MODERATE	HIGH	EXTREME
WINDS					
STORM SURGE					
FLASH FLOODING					
TORNADOES					
	LOW	MODERATE	HIGH		
RIP CURRENTS					



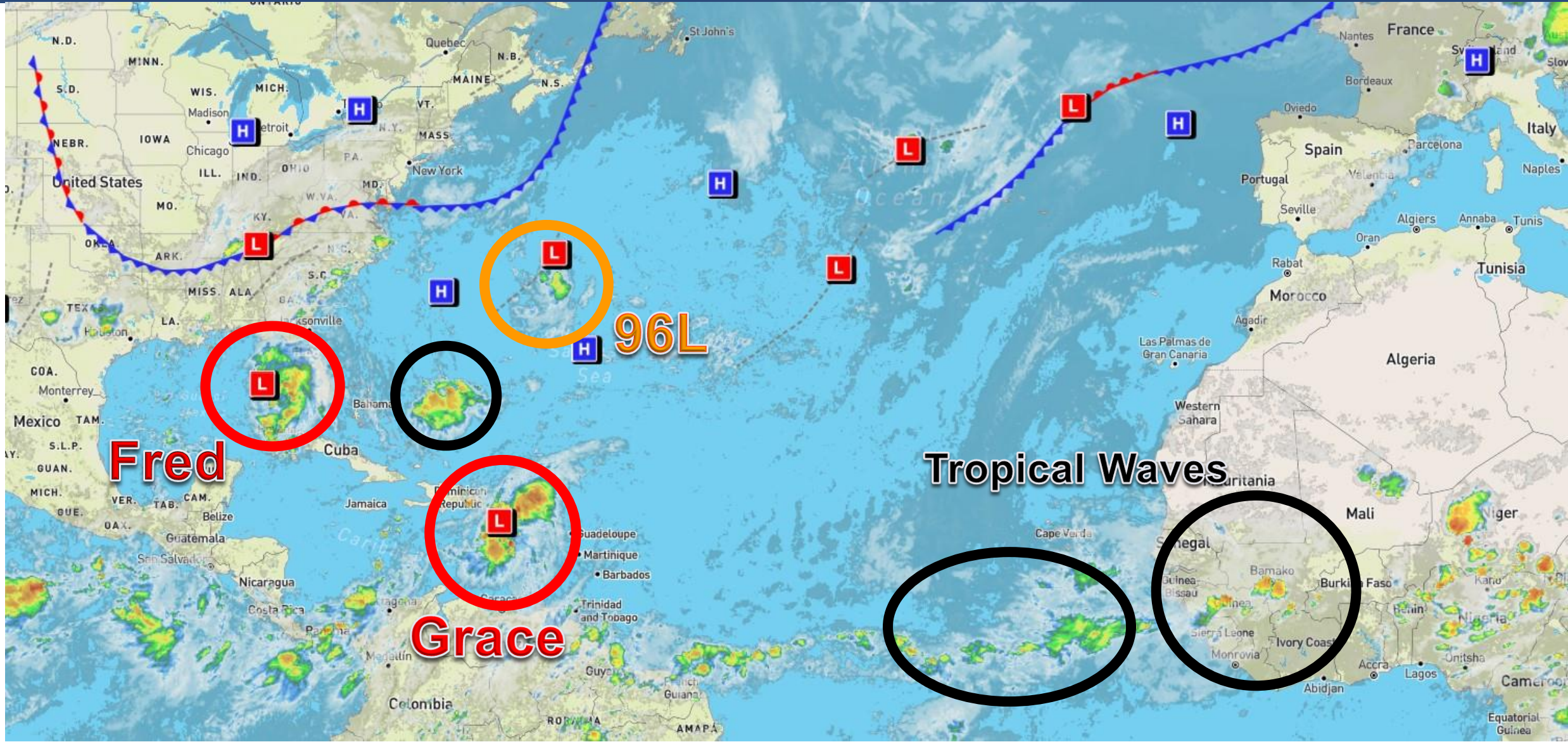
Overview/Recent Changes:

The flash flood threat has increased for the Panhandle and western Big Bend. ***IMPACTS EXTEND WELL EAST OF THE CONE***
Fred has begun to organize and gradually strength, with maximum sustained winds now around 45 mph.
Storm surge values have increased for Apalachee Bay to 3-5'.
Landfall intensity expected to be around 60 mph near the Panama City Beach area.



Atlantic Basin Satellite Image

Chance of development: — None — Low — Medium — High

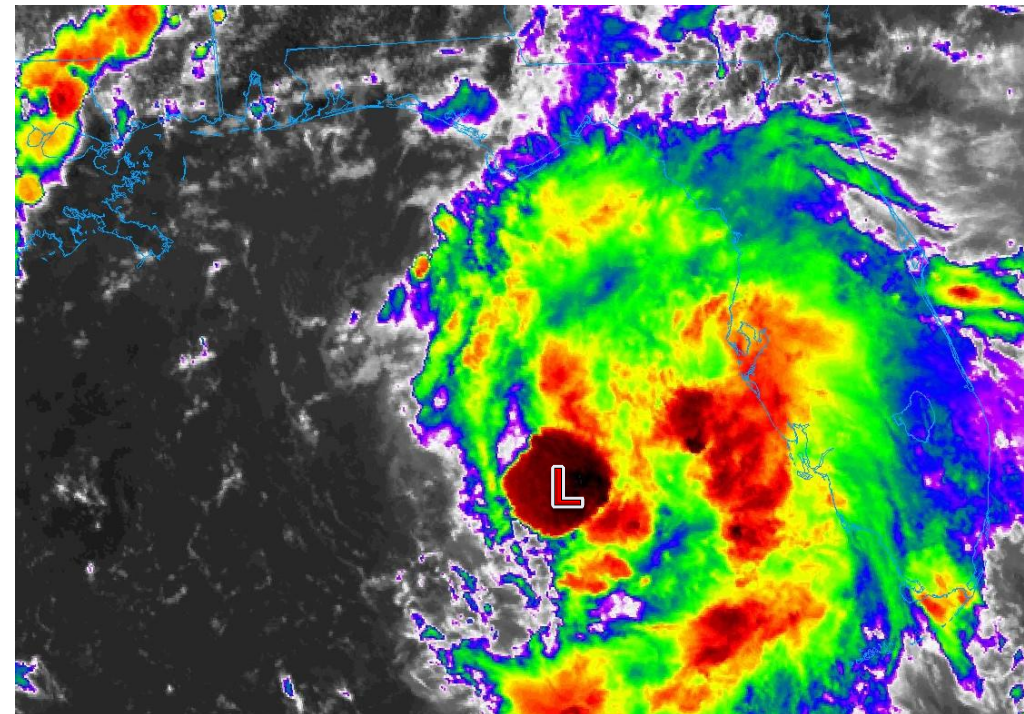
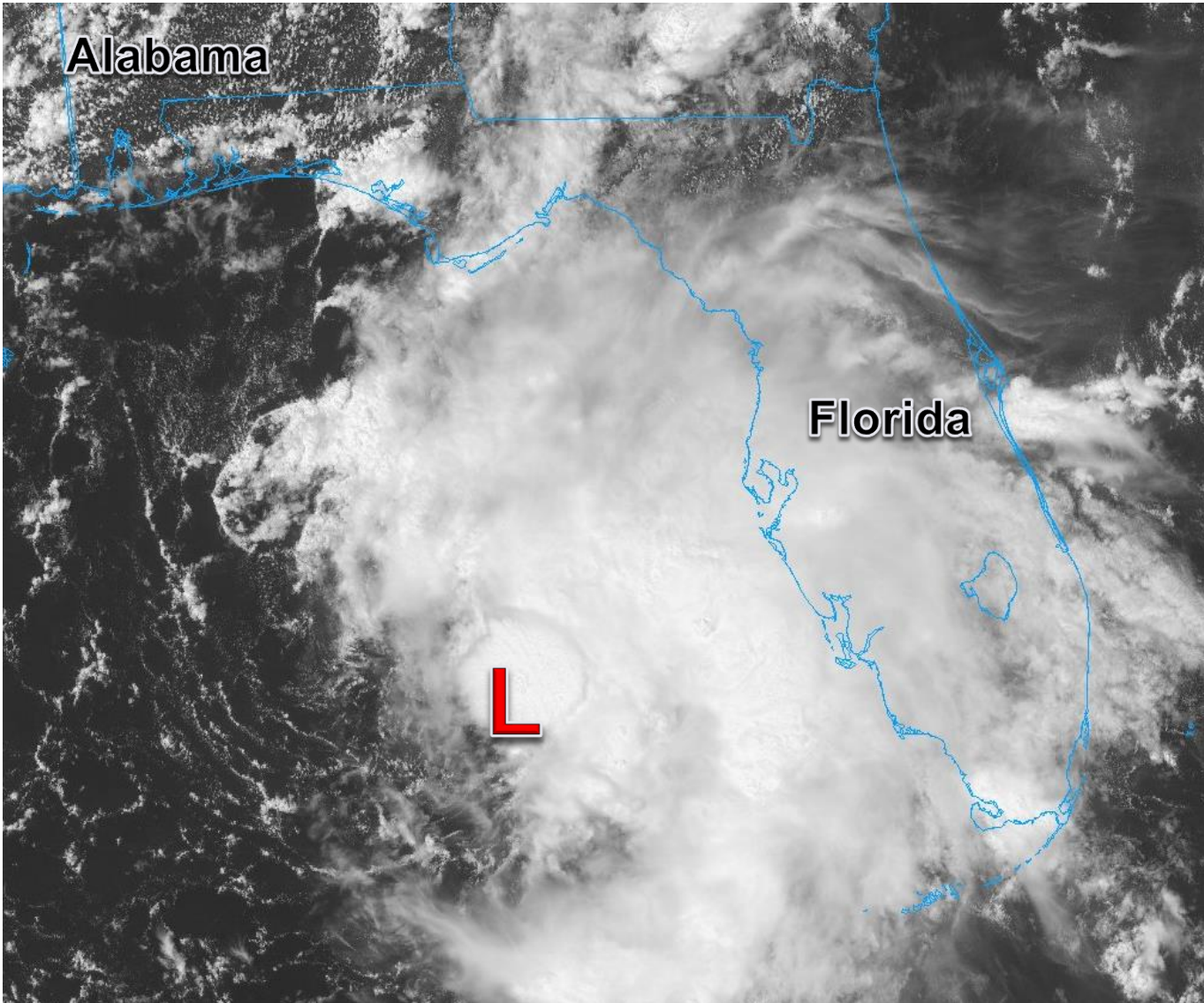




Satellite Imagery

Tropical Storm Fred

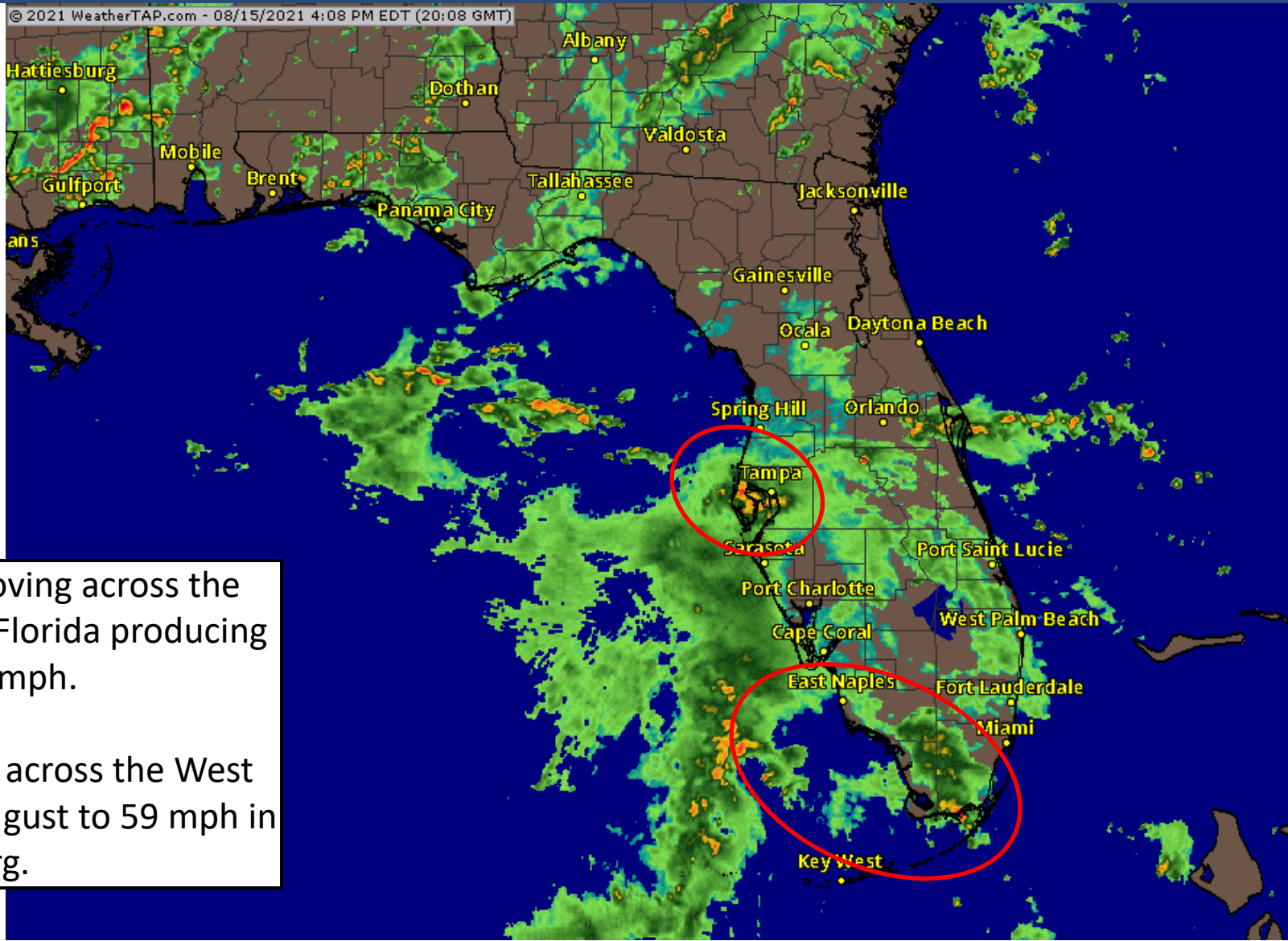
Fred once again has a well-defined center of circulation (marked by the 'L'). Due to wind shear, most of the thunderstorms/rain/wind are east of the center. It is expected to remain this way through landfall.





Current Florida Radar

As of 4:00 PM ET



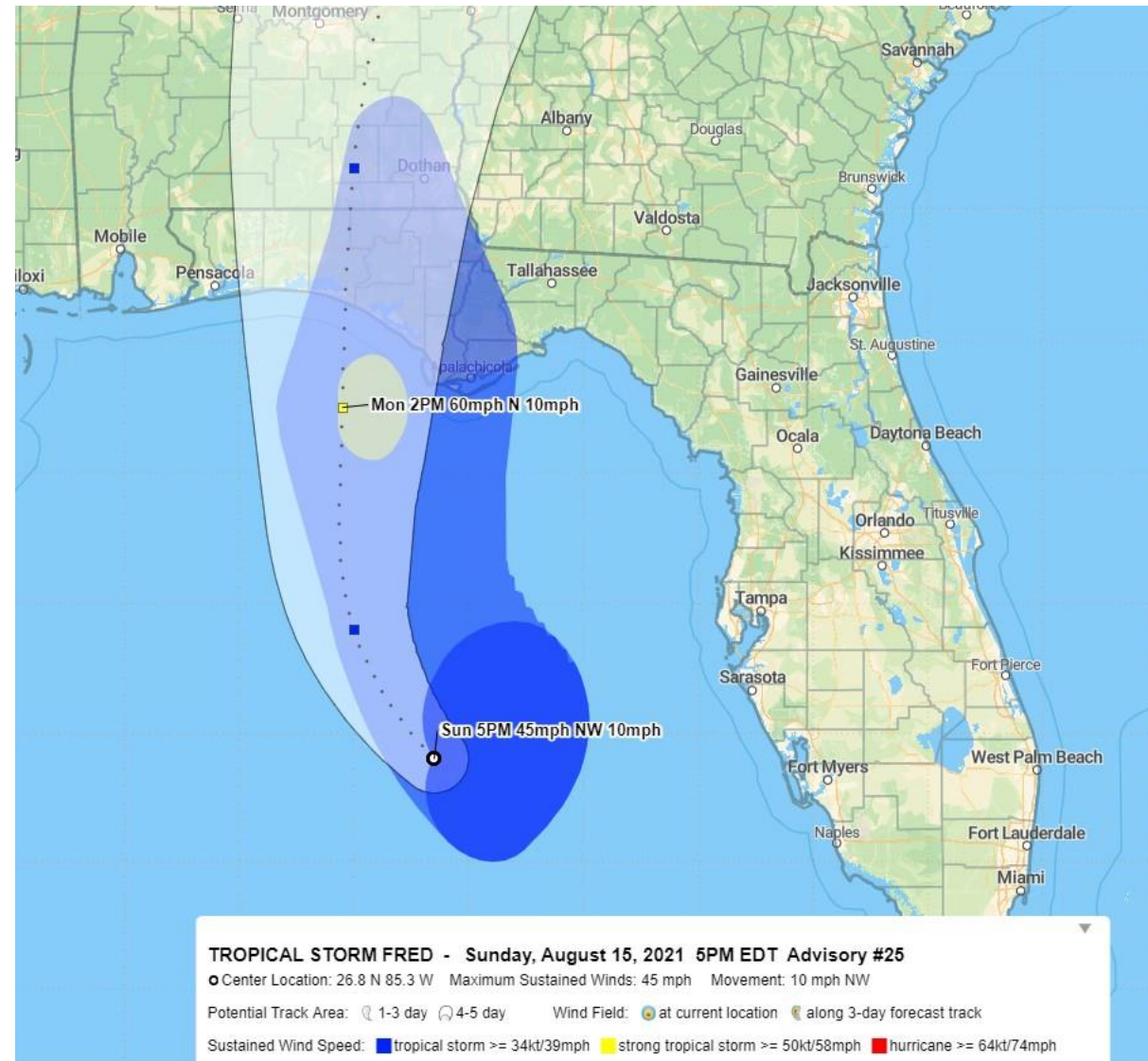
Occasional squalls are moving across the Florida Keys and far South Florida producing gusts of 35-50 mph.

Some squalls now moving across the West Coast as well, with a recent gust to 59 mph in St. Petesburg.



Official Forecast Track for Fred

From the National Hurricane Center



- The center of Fred is located about 235 miles south of Panama City, Florida.
- Maximum sustained winds are around 45 mph with higher gusts, and Fred is moving to the north-northwest at 10 mph.
- Fred will gradually gain strength as it moves northward over the next 24 hours. Fred will make landfall Monday evening in the Florida Panhandle with maximum sustained winds around 60 mph.
- The track has shifted east slightly this afternoon.
- Fred is lopsided, with most of the impacts (wind, rain, tornadoes, and surge) on the eastern side of the storm. **These impacts will extend well outside of the cone.**



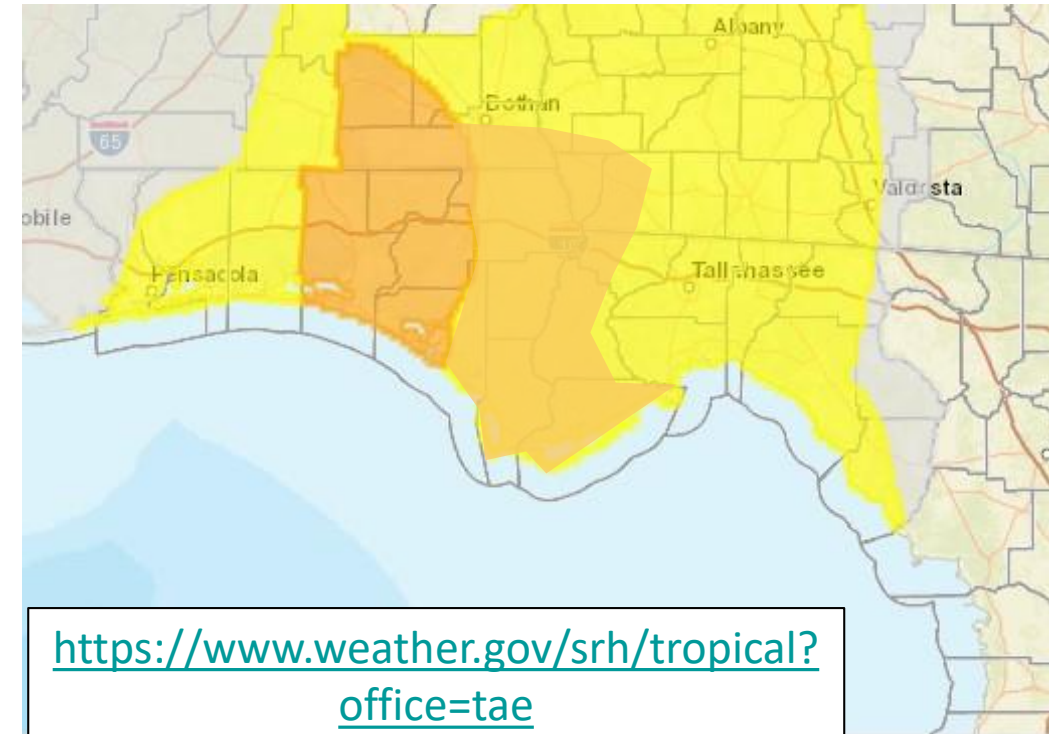
Damaging Wind Threat Overview

Tropical Storm Fred

The greatest wind threat is along the immediate coast of the Panhandle, but some winds will extend inland at and east of where the center makes landfall.

Sustained winds from 40-60 mph are possible in the orange area, with gusts as high as 70 mph.

Wind gusts from 40-50 mph are possible into the Big Bend in the yellow shaded area.



<https://www.weather.gov/srh/tropical?office=tae>

Click on "Threats and Impacts" Tab

Wind Threat	
Potential for wind greater than 110 mph	
Potential for wind 74 to 110 mph	
Potential for wind 58 to 73 mph	
Potential for wind 39 to 57 mph	
Wind less than 39 mph	

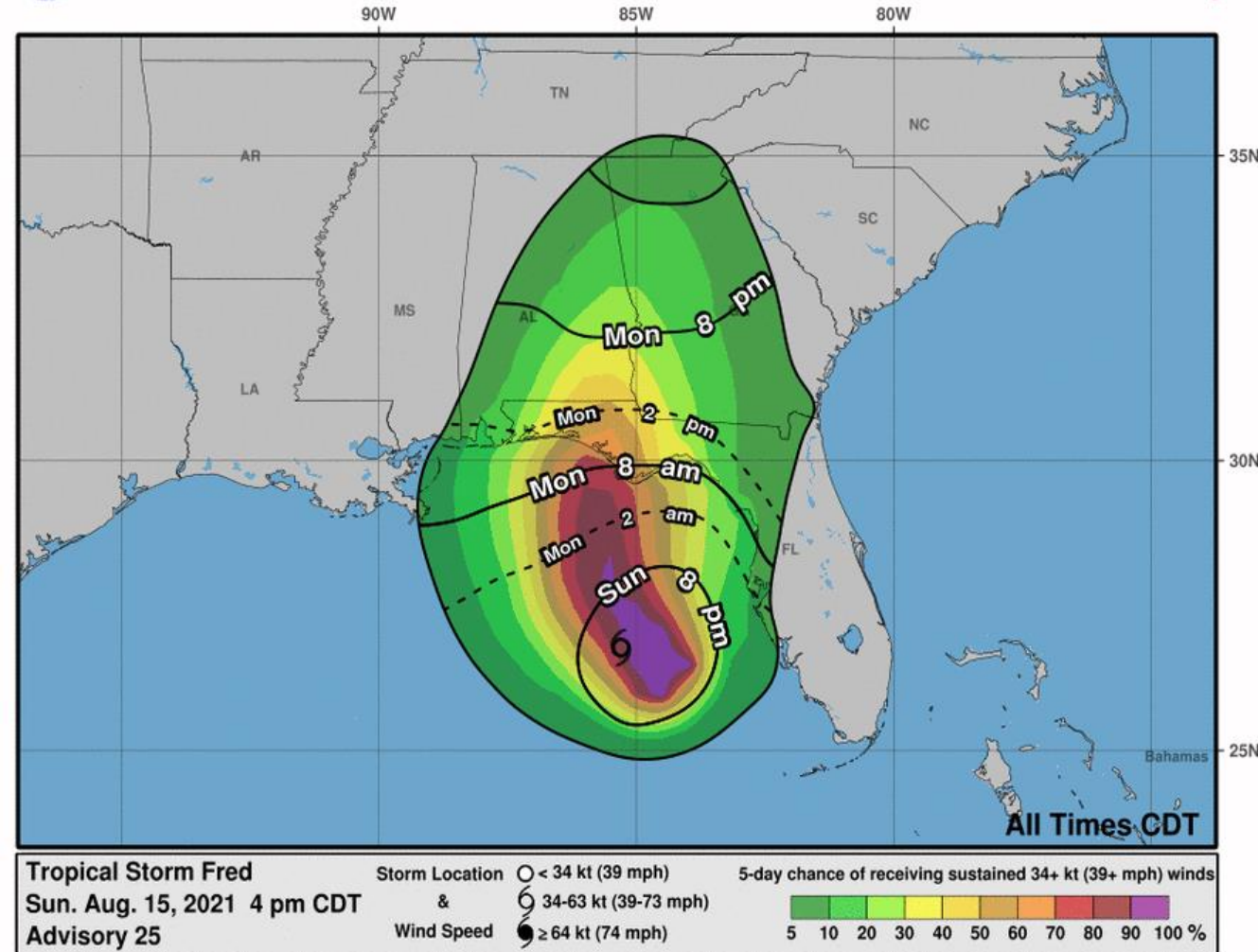


Time of Arrival & Wind Speed Probabilities

Most Likely Time of Arrival of Tropical Storm Force Winds (>39 mph)



Most Likely Arrival Time of Tropical-Storm-Force Winds



City	Chance for TS Winds	Changes Since Last Packet
Cedar Key	20%	+7%
Tallahassee	30%	+7%
Apalachicola	66%	+19%
Panama City	74%	+13%
Destin	47%	-7%
Pensacola	23%	-20%

The chance of tropical storm force winds has increased significantly across the eastern Panhandle! Odds are now almost 8 in 10!

All preparations should be completed by tonight as tropical storm force winds are most likely to arrive Monday morning.

The odds of strong tropical storm force winds (>58 mph) in these locations are generally 10-20% with the odds of hurricane force winds only 1-3%.



Active Tropical Watches/Warnings



WATCH

Tropical storm and/or hurricane conditions are POSSIBLE in the "watch area"

Issued up to 48 hours in advance of the onset of tropical storm force winds

WARNING

Tropical storm and/or hurricane conditions are EXPECTED in the "warning area"

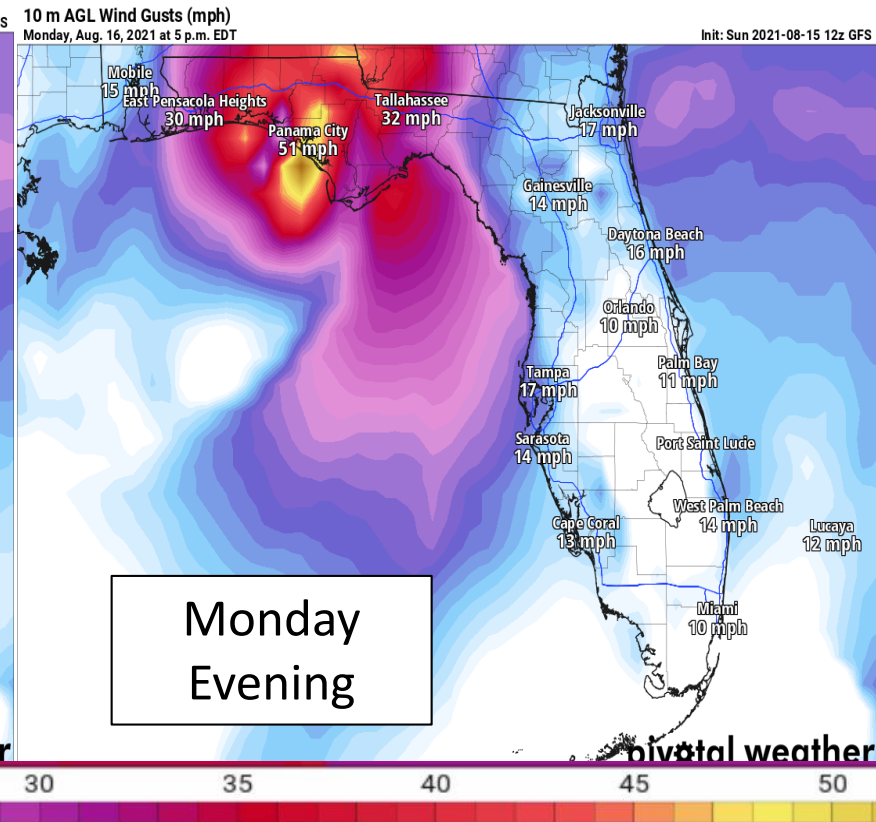
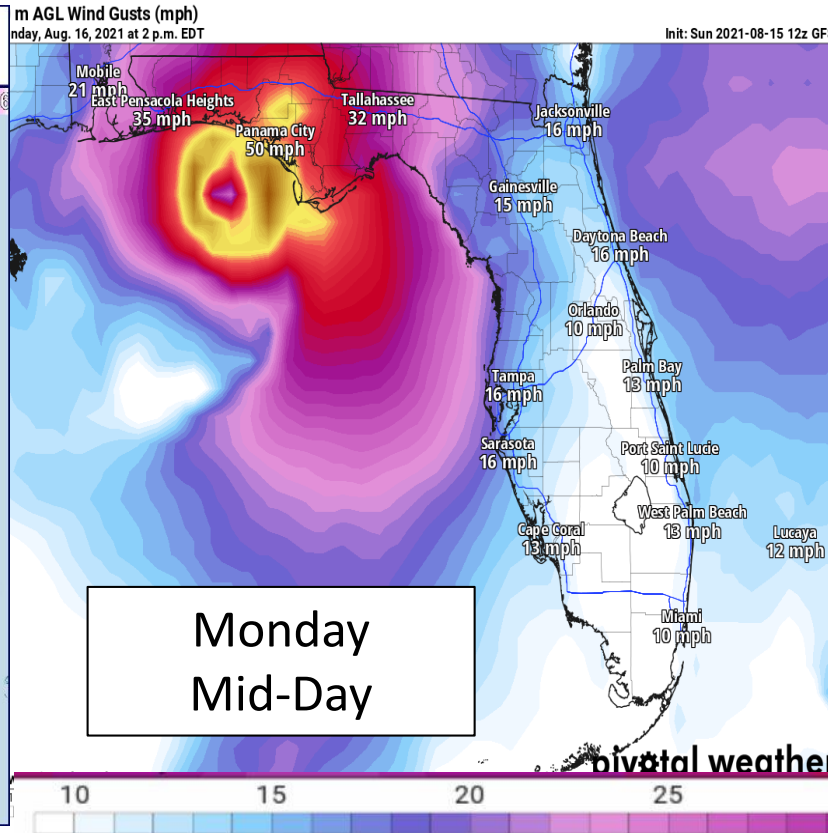
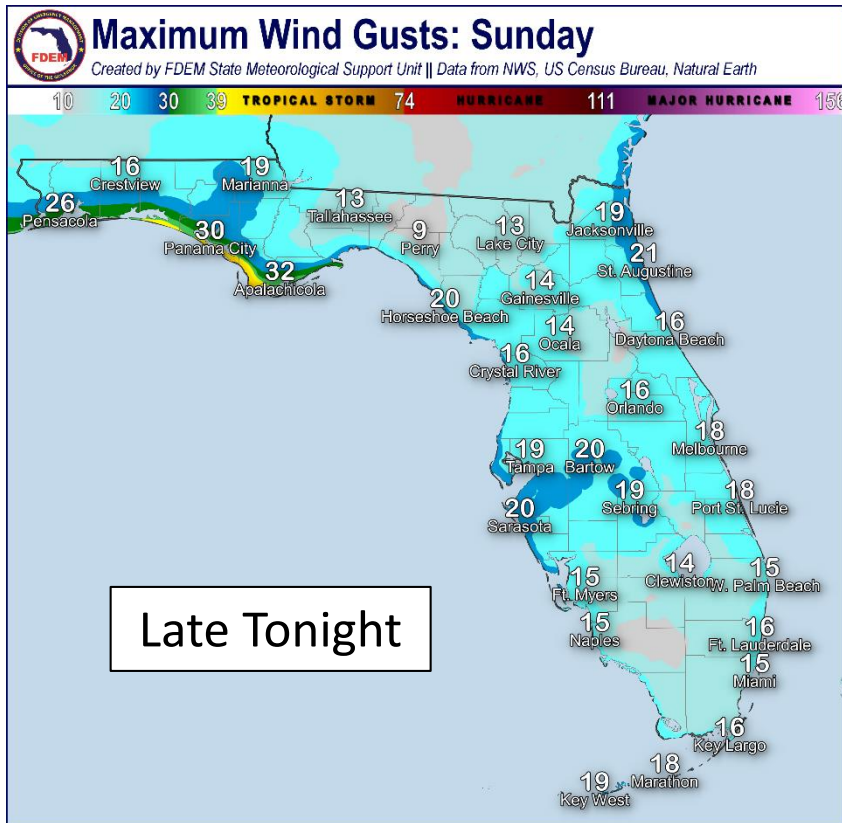
Issued up to 36 hours in advance of the onset of tropical storm force winds

- **Tropical Storm Warnings** are in effect for the Florida Panhandle and western Big Bend.
- Bay, Calhoun, Franklin, Gadsden, Gulf, Holmes, Jackson, Leon, Liberty, Okaloosa, Wakulla, Walton, and Washington
- **Tropical Storm Watches** continue for Escambia & Santa Rosa.



Forecast Wind Gusts

Exact wind gusts will vary in time, magnitude, and location



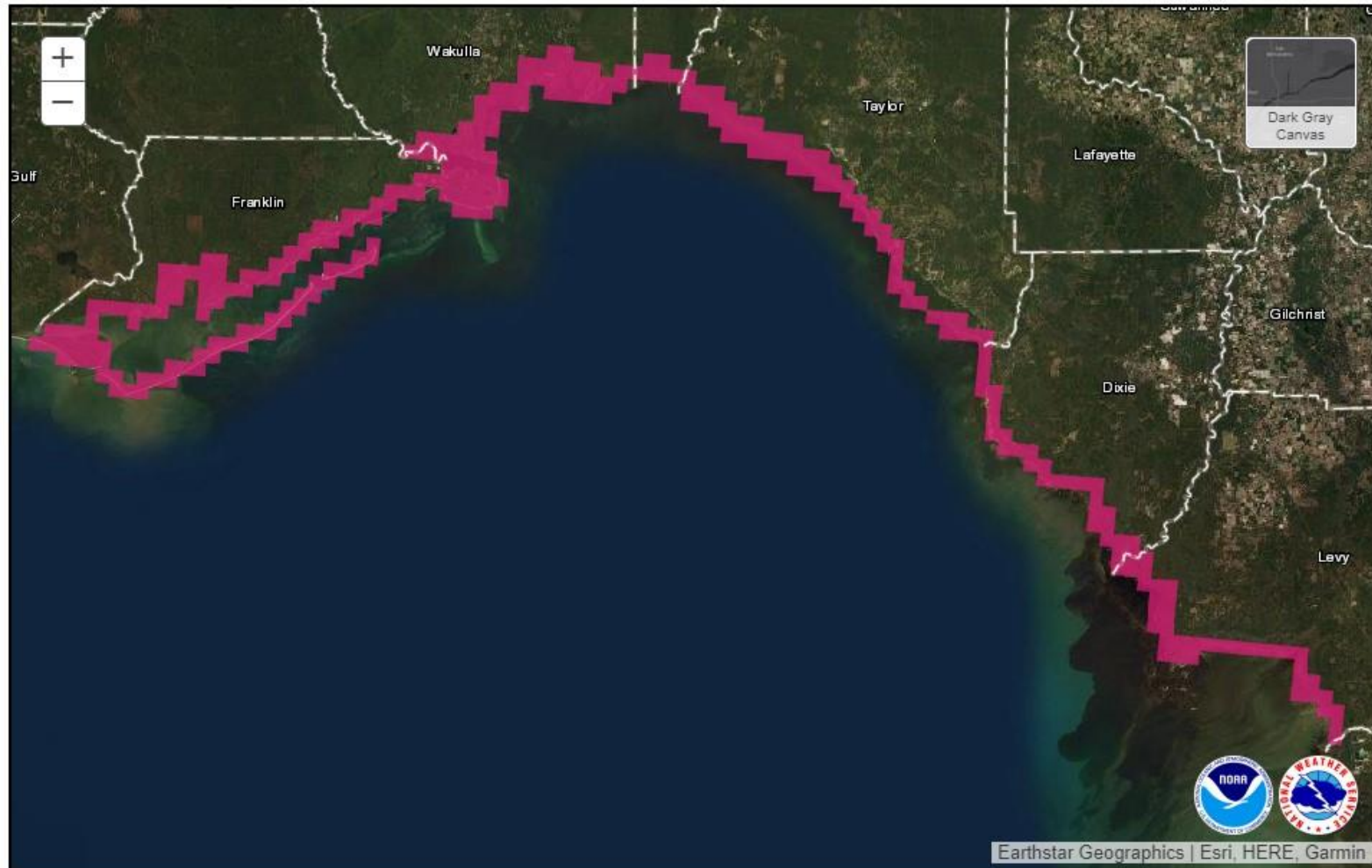
Breezy winds will continue across the Keys and Gulf Coast tonight. Winds will begin increasing Monday morning in the Panhandle, with gusts into tropical storm strength across Northwest Florida throughout the day. Higher gusts are possible in thunderstorms across the rest of the state.



Surge Watches and Warnings

In Effect Until Further Notice

Tropical Storm Fred
Advisory 025 Issued: 4:00 PM CDT Sun Aug 15



0 10 20mi
Storm Surge Warning
Storm Surge Watch

https://www.nhc.noaa.gov/refresh/graphics_at1+shtml/153159.shtml?inundation#contents

P-Surge Interactive Map

Storm Surge Warnings are in effect for the Big Bend, from Franklin County to Levy County (Indian Pass to Yankeetown).

Storm Surge Warning

There is a **danger of life-threatening inundation** from rising water moving inland from the shoreline generally **within 36 hours**.

Promptly follow evacuation and other instructions from local officials.

Storm Surge Watch

There is a **possibility of life-threatening inundation** from rising water moving inland from the shoreline generally **within 48 hours**.

Promptly follow evacuation and other instructions from local officials.





Storm Surge Threat Overview

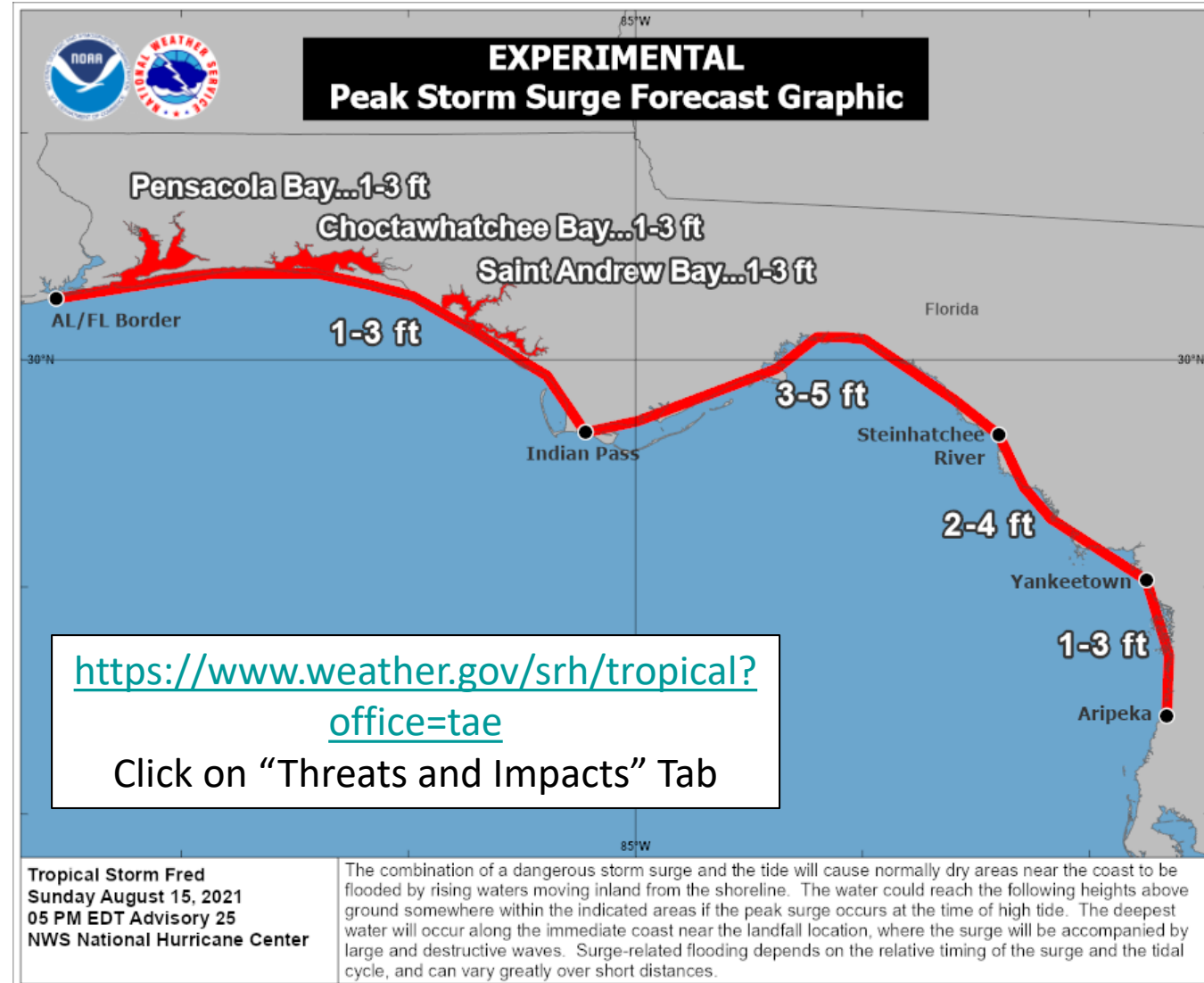
Tropical Storm Fred

Storm surge impacts are expected to be low in the Panhandle, with values less than 3' at this time.

Higher surge is now forecast in Apalachee Bay of 3-5' due to the eastward shift in track and a large wind field.

Surge values also increased further east, from the Steinhatchee River to Yankeetown where values of 2-4' are now expected.

1-3' is possible further south along the Nature Coast

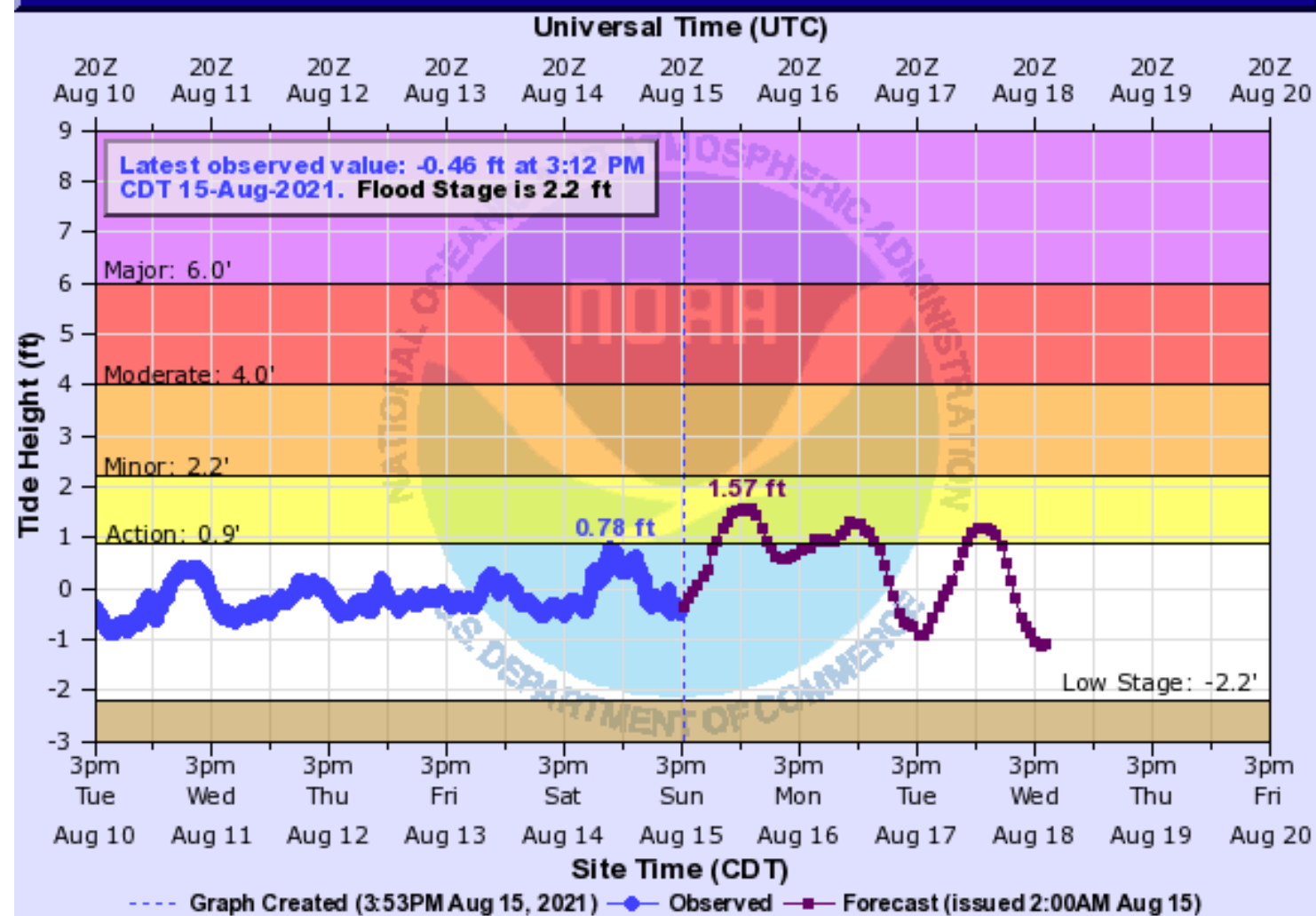




Gulf of Mexico at Panama City Beach

[Hydrograph Link](#)

GULF OF MEXICO TIDE GAUGE AT PANAMA CITY BEACH (IN MHHW)



3 Water begins to flood low lying areas in Camp Helen State Park and on south facing portions of Powell Lake in Bay County. Areas near beach access continue to flood. Erosion from wave action begins along the Bay County Beaches.

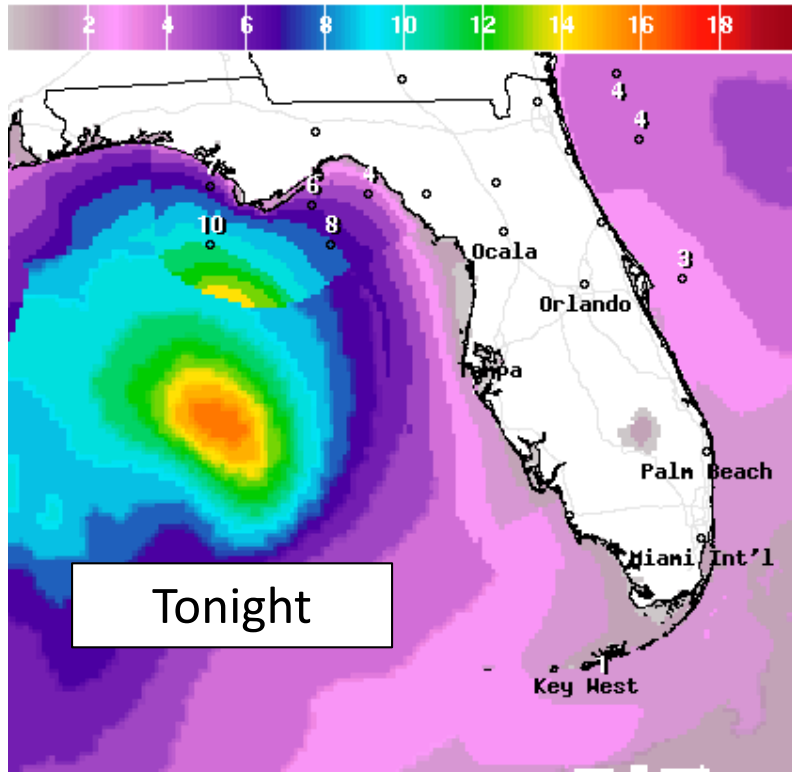
2.2 Where breaks in the dune line to beach access exist, water begins to flood access areas from Inlet Beach to St Andrews State Park in Panama City Beach.

1.7 Water reaches the dune line in several places along the Bay County Beaches.



Forecast Wave Heights

Early This Week

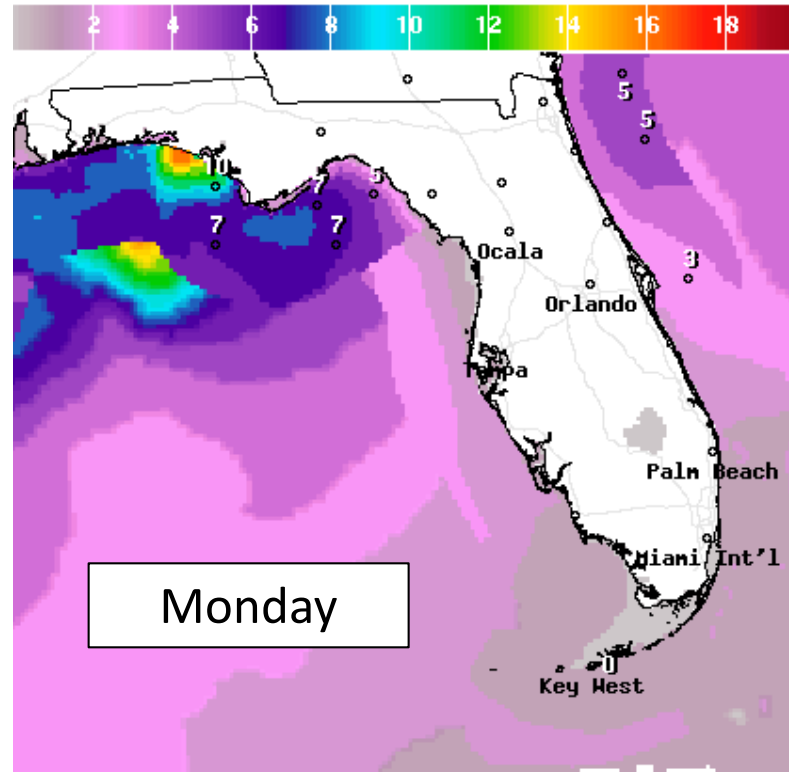


Wave Height(ft) Ending Mon Aug 16 2021 2AM EDT
(Mon Aug 16 2021 06Z)



National Digital Forecast Database

20z issuance Graphic created-Aug 15 4:22PM EDT

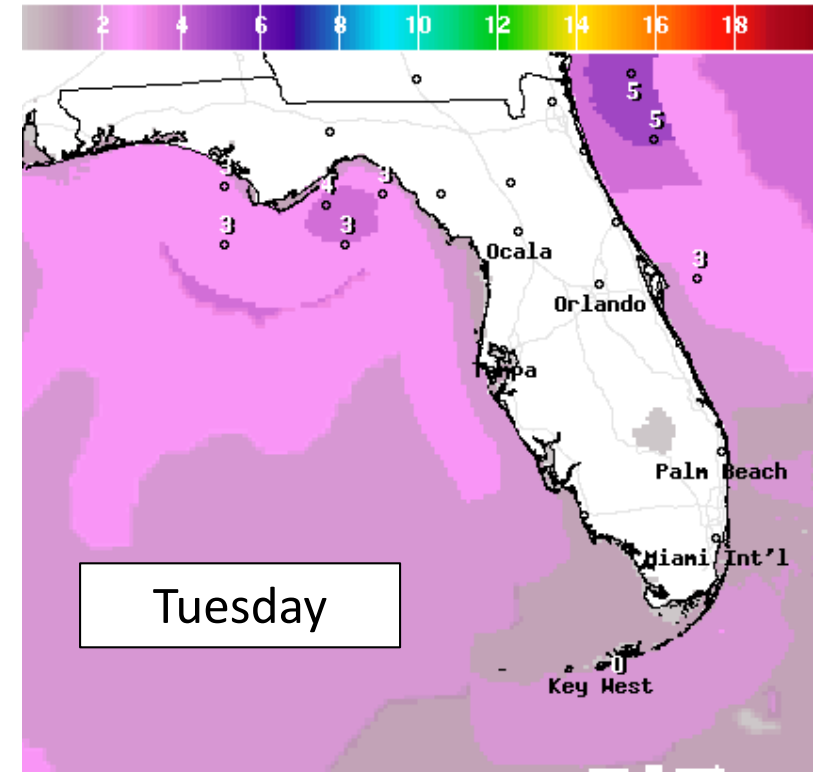


Wave Height(ft) Ending Mon Aug 16 2021 8PM EDT
(Tue Aug 17 2021 00Z)



National Digital Forecast Database

20z issuance Graphic created-Aug 15 4:22PM EDT



Wave Height(ft) Ending Tue Aug 17 2021 2PM EDT
(Tue Aug 17 2021 18Z)



National Digital Forecast Database

20z issuance Graphic created-Aug 15 4:23PM EDT

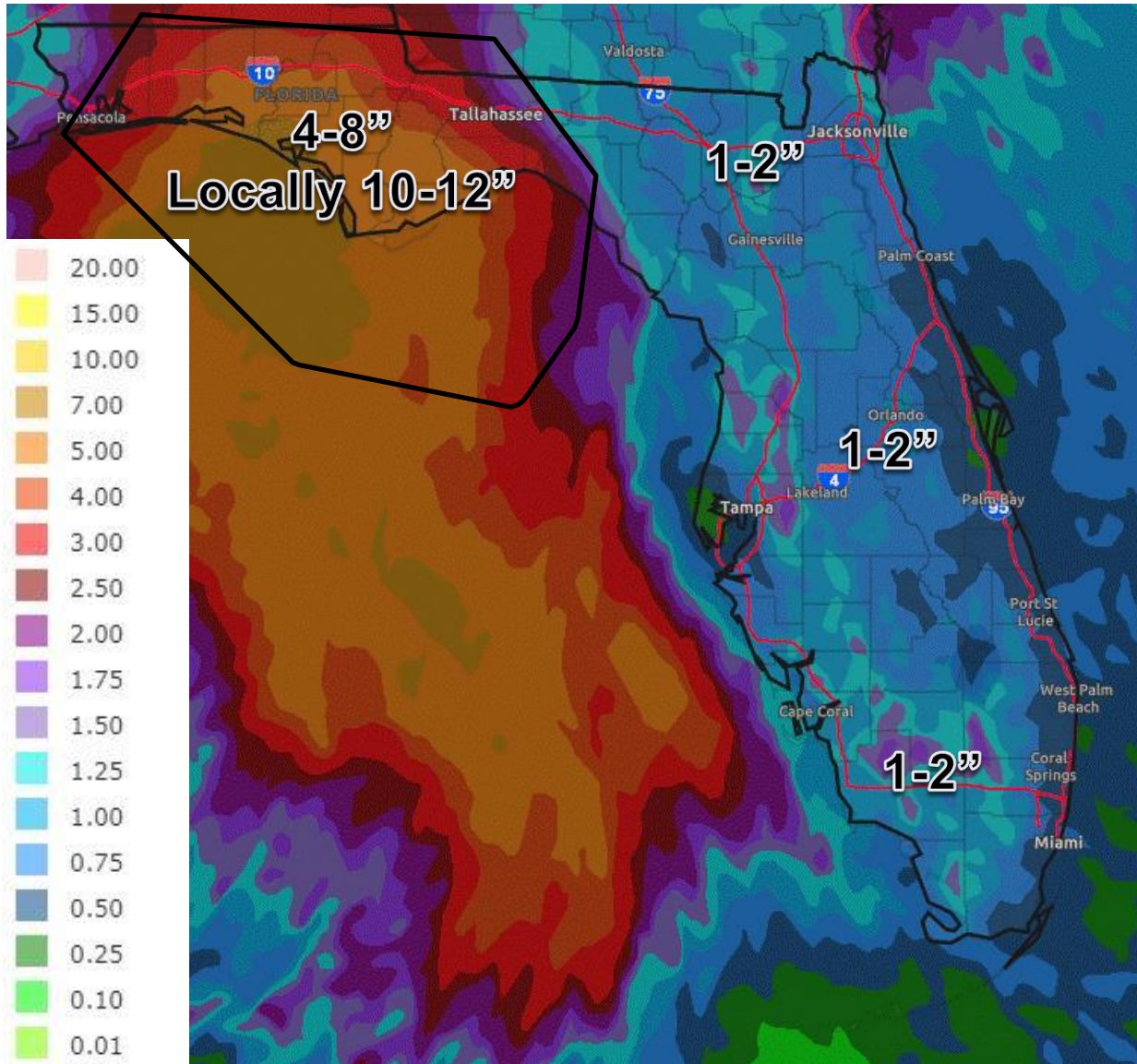


High surf of 8-12 feet is possible at Panhandle beaches with 2-4' feet along the rest of the Gulf Coast. A [High Surf Warning](#) is in effect for Escambia, Santa Rosa, Okaloosa, [Walton, and Bay County](#). This will result in dangerous rip currents and minor beach erosion (with a few spots of more significant erosion).



Rainfall Totals Next 48 Hours

Ending 8 PM ET Tuesday



The main threat to Florida from Fred will be heavy rainfall.

The heavy rain threat will move into the Panhandle and western Big Bend on late tonight and Monday.

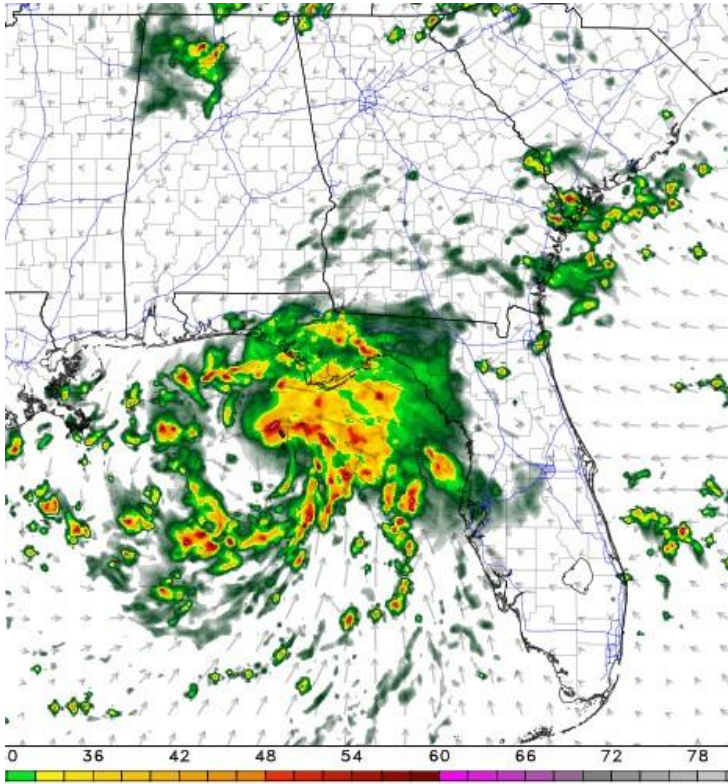
Isolated totals in the Panhandle could be as high as 12", with widespread totals of 4-8".

These amounts may lead to flash flooding, riverine flooding, and any gusty winds may allow for shallow-rooted or weak trees to fall.

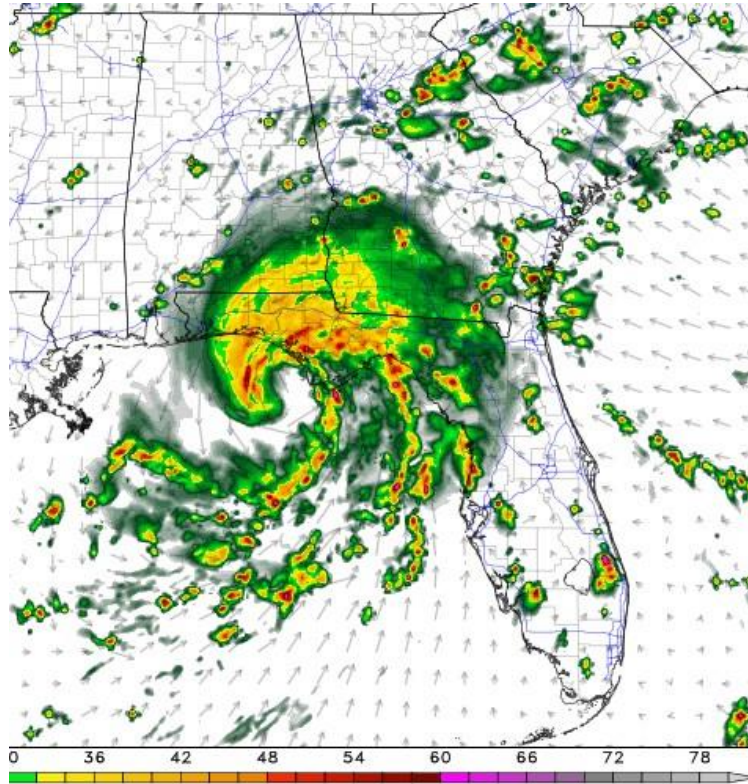


Model Forecast Radar

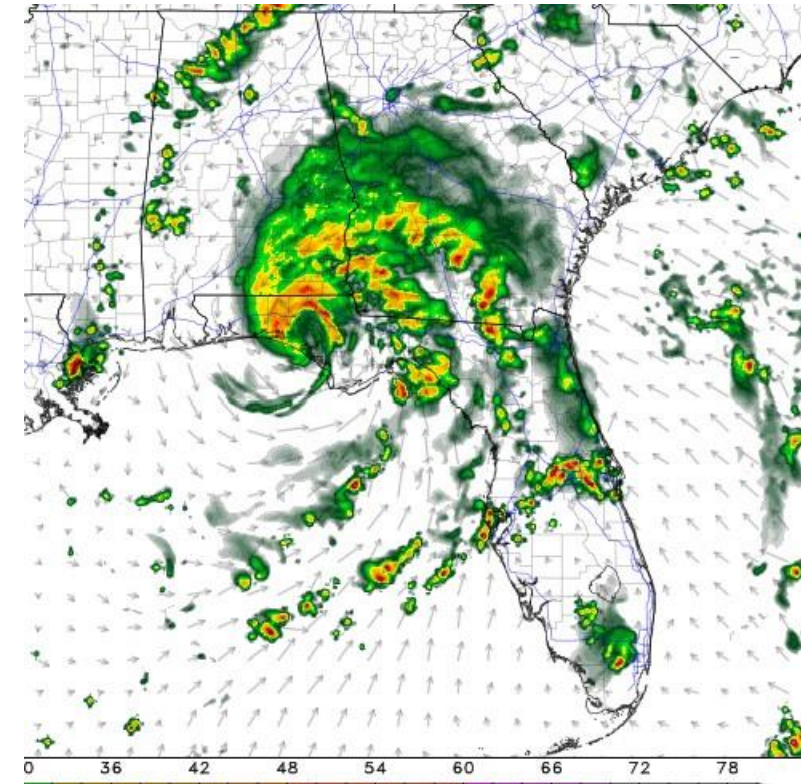
*****Only Model Guidance – Time & Position Will Vary*****



Monday Morning



Monday Afternoon

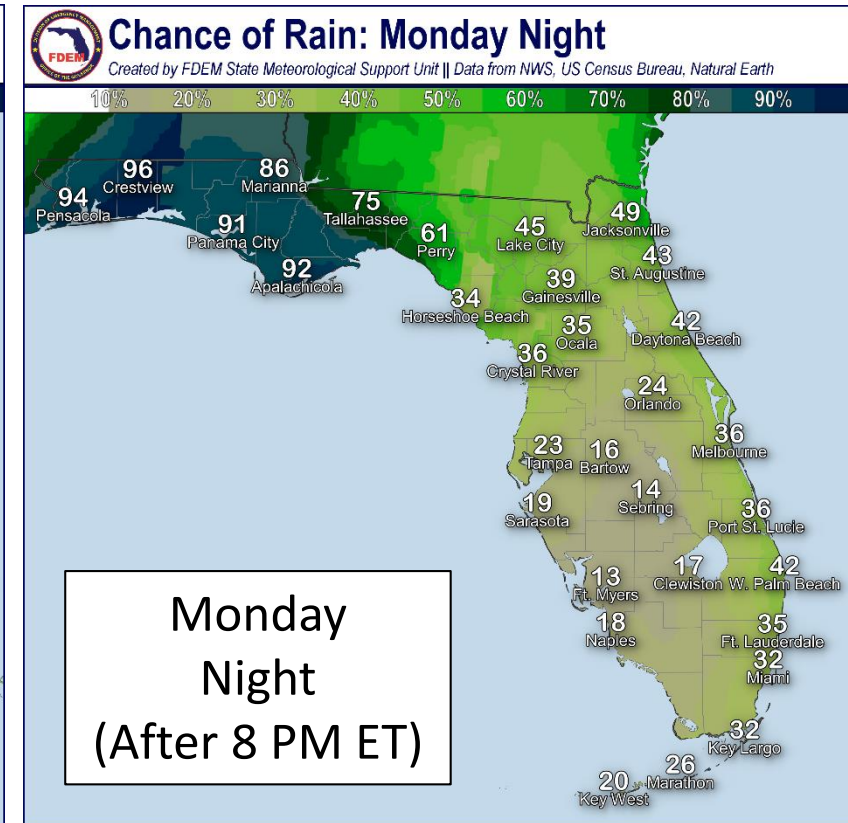
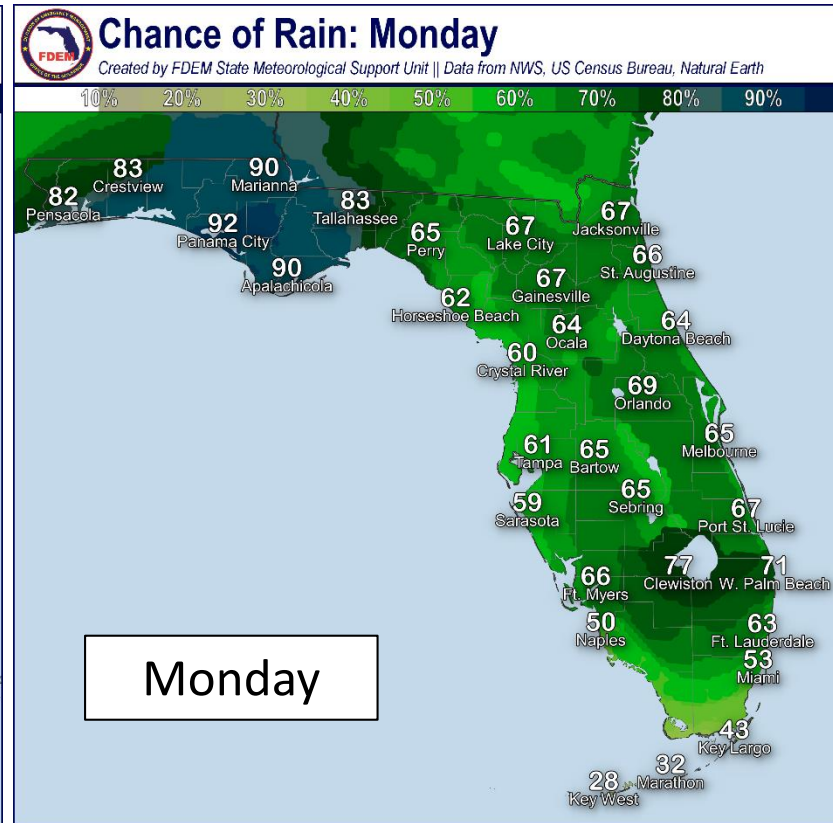
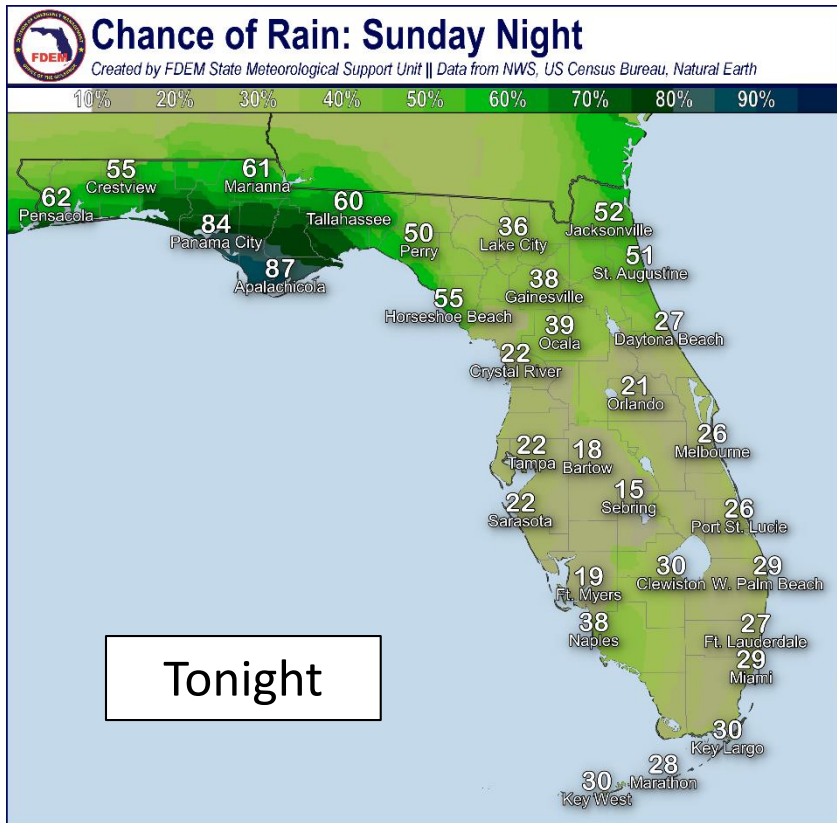


Monday Evening

Rain bands will begin to impact the Panhandle and Big Bend tonight with rainfall moving inland early Monday morning. Conditions will deteriorate Monday afternoon as Fred nears the coast. Tornadic rain bands may impact as far east as the Nature Coast/NE FL. Fred moves inland Monday night with improving conditions Tuesday morning.



Rain Chances from NWS

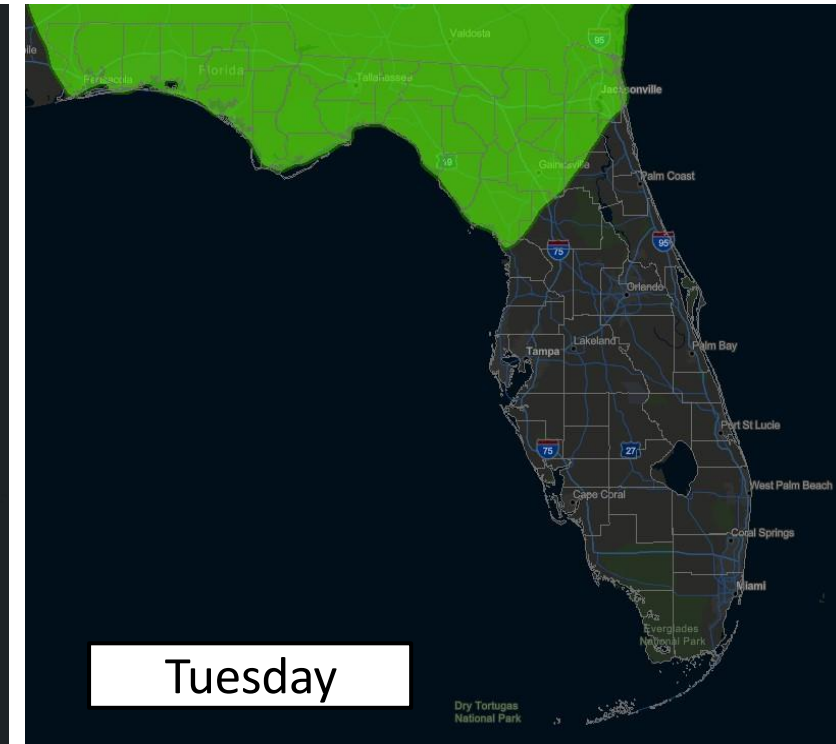
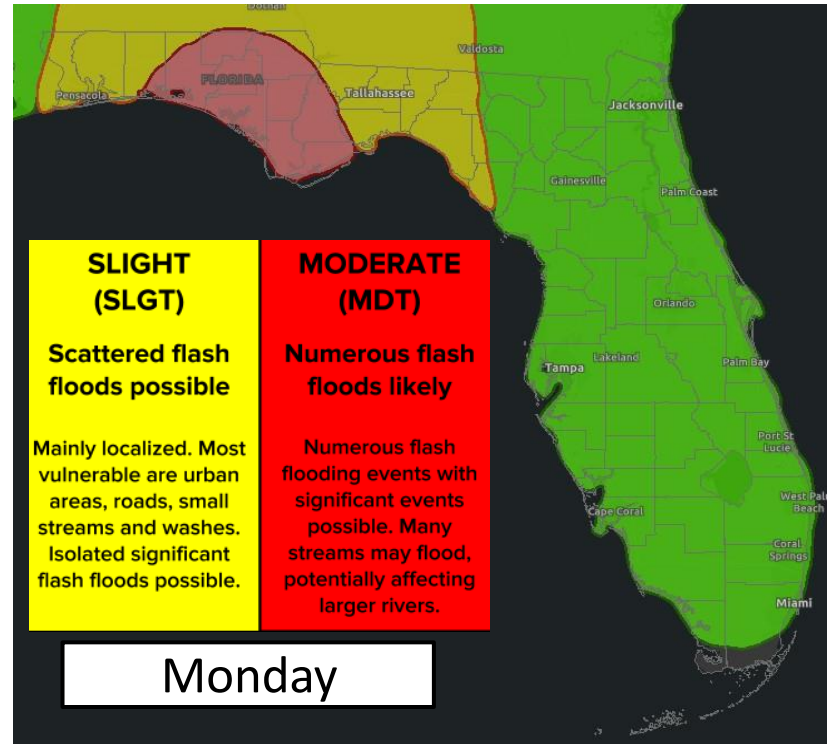
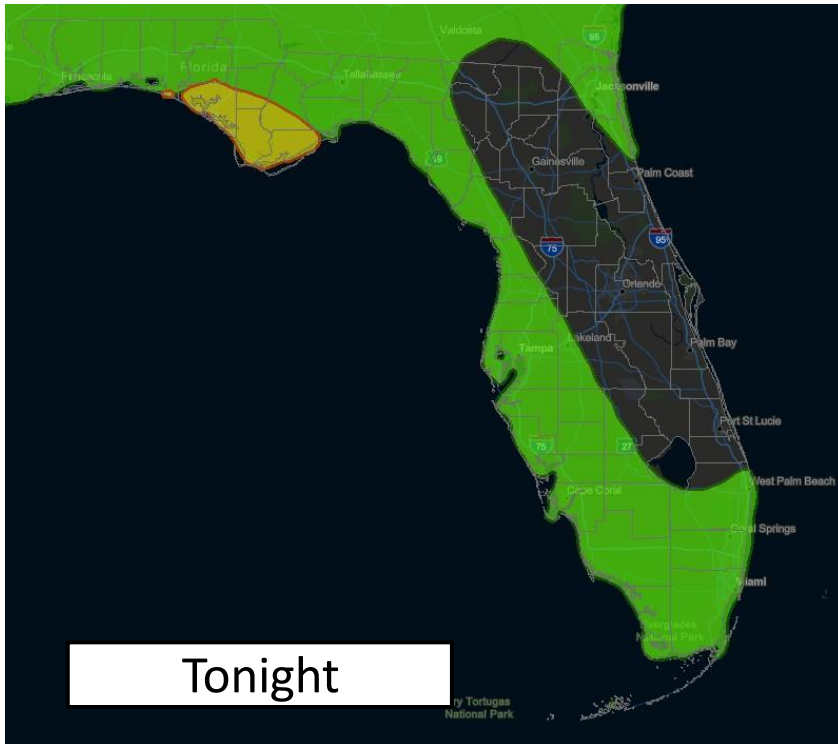


Rain bands will begin to move through the Panhandle tonight and continue to increase in frequency and intensity on Monday. Conditions will begin to improve into the early morning hours on Tuesday. Scattered summertime thunderstorms are expected across the Peninsula on Monday, some with gusty winds (especially along the West Coast and Northeast Florida).



Flash Flood Outlooks

From the Weather Prediction Center



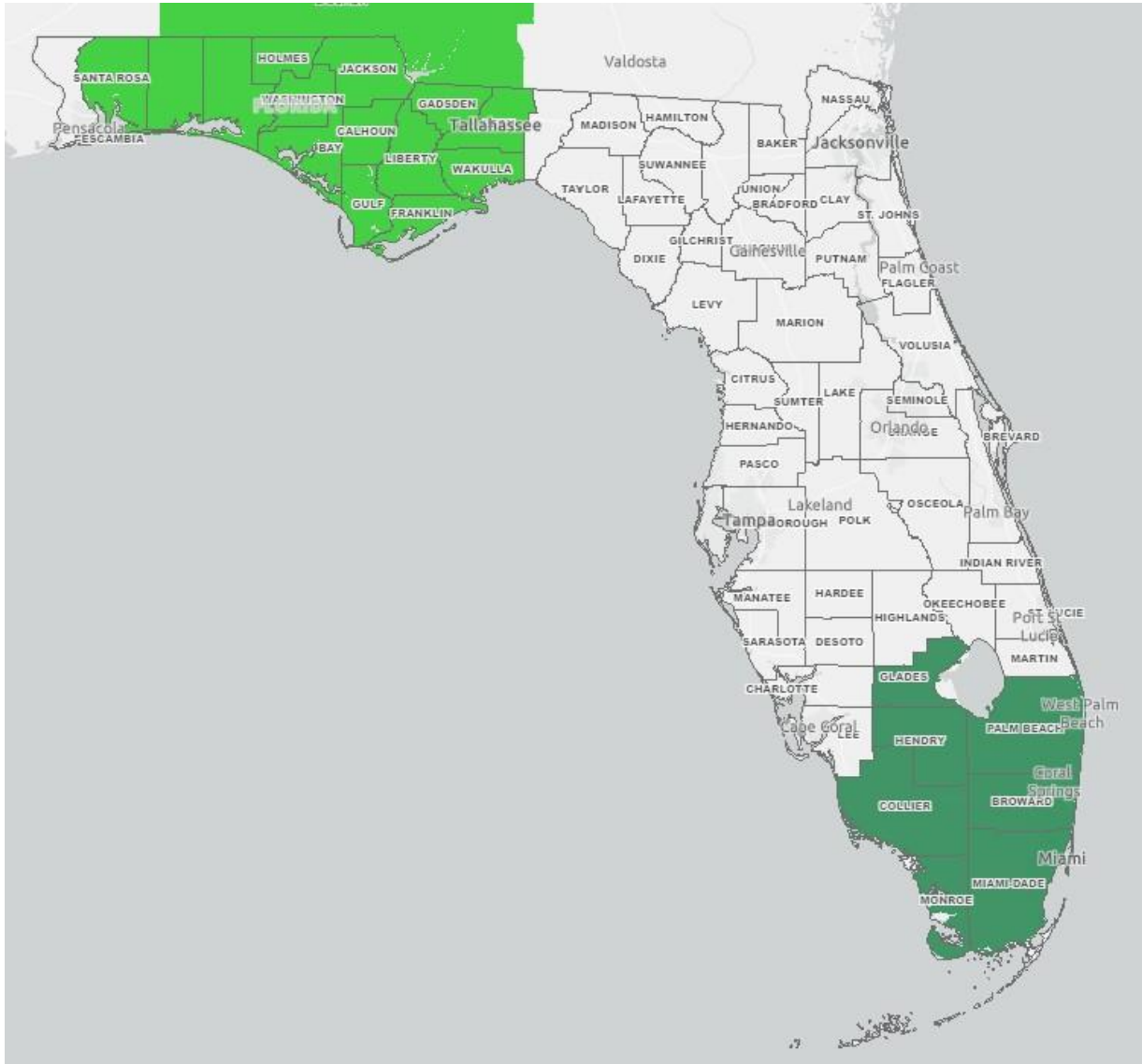
Risk of rainfall exceeding flash flood guidance within 25 miles of a point to the right of a line

HIGH: > 50%	SLGT: 10%-20%
MDT: 20%-50%	MRGL: 5%-10%

Rain bands will move into the Panhandle late tonight. Heavy rainfall will move into the Panhandle and Big Bend Monday morning and continue into the evening. This heavy rainfall may cause urban and flash flooding, along with river flooding. Some trailing rain bands will keep an isolated flash flood threat through Tuesday.



Active Flood Watches - NWS



- **Areal Flood Watch** continues until this evening in South Florida.
- **Flash Flood Watch** until Tuesday afternoon for the Panhandle.



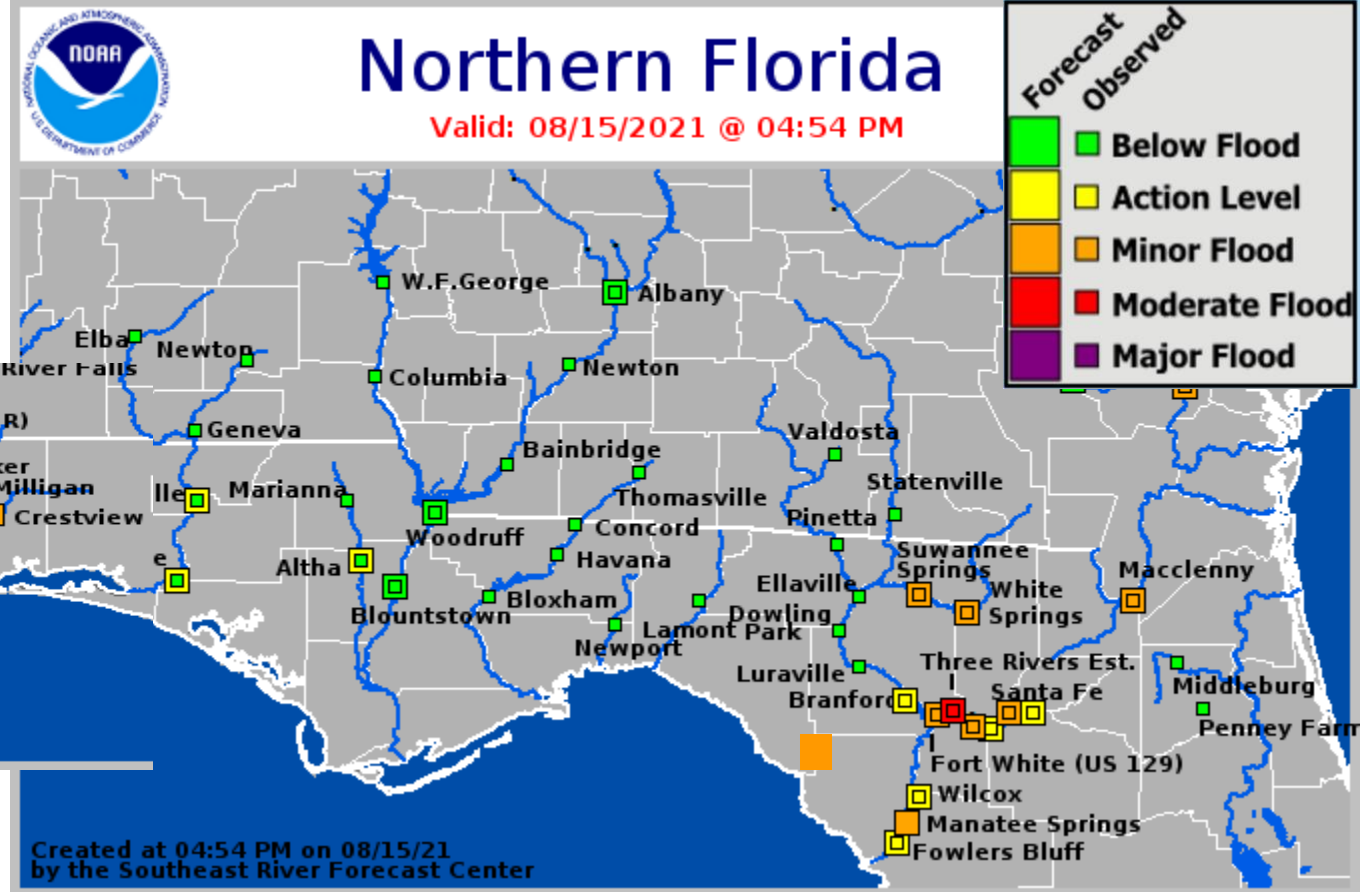
Current & Forecast River Flooding

Southeast River Forecast Center

Extensive river flooding will continue across Northeast Florida this week. Heavy rain could fall on rivers already in minor to moderate flood stage which could prolong or worsen flooding. Minor flooding is ongoing along the West Coast as well. **Minor flooding is also possible in the Panhandle, but rivers here are starting out lower than those in the rest of the state.**



Worst Case Scenario River Levels

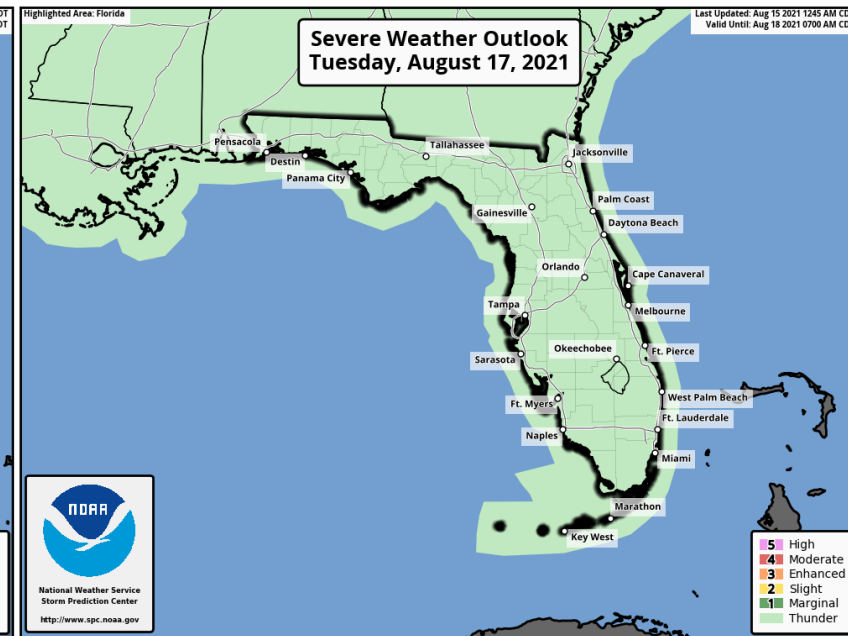
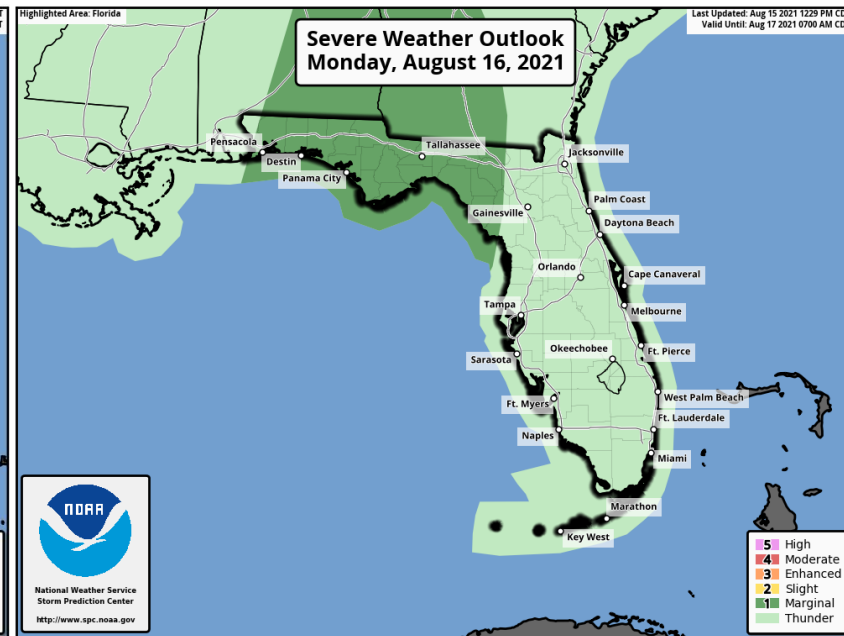
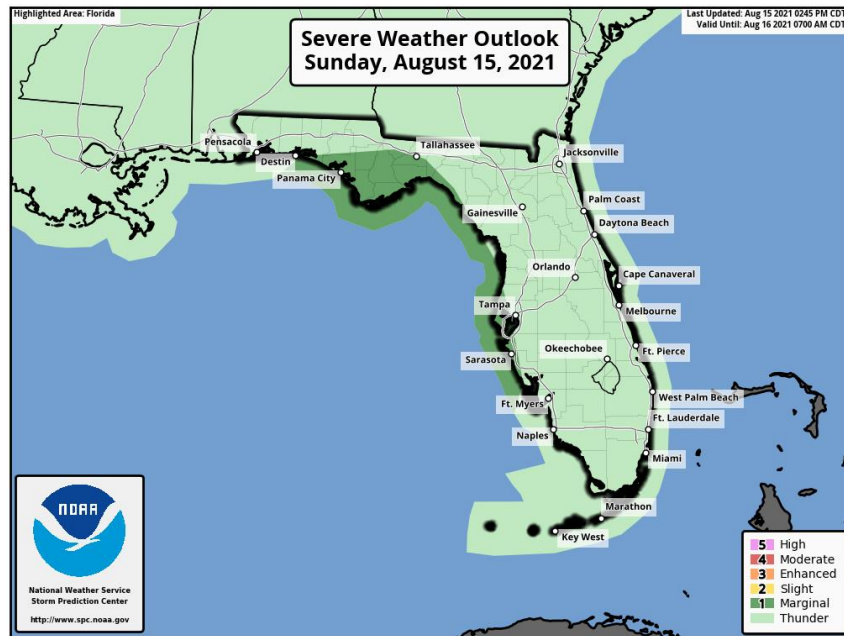


More details on river levels available at the [Southeast River Forecast Center website](https://www.southeastriverforecastcenter.com/).



Severe Weather Outlooks

From the Storm Prediction Center



Isolated tornadoes will be possible in the outer bands of Fred along the Gulf Coast today/tonight, and then in the Panhandle and western Big Bend Monday/Monday night.

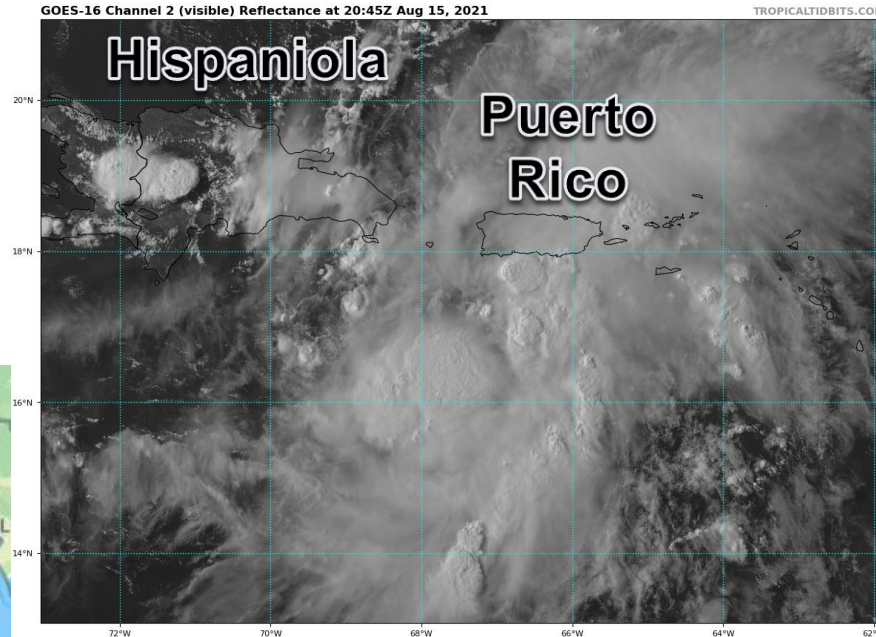
Understanding Severe Thunderstorm Risk Categories

THUNDERSTORMS (no label)	1 - MARGINAL (MRGL)	2 - SLIGHT (SLGT)	3 - ENHANCED (ENH)	4 - MODERATE (MDT)	5 - HIGH (HIGH)
No severe* thunderstorms expected	Isolated severe thunderstorms possible	Scattered severe storms possible	Numerous severe storms possible	Widespread severe storms likely	Widespread severe storms expected
Lightning/flooding threats exist with <u>all</u> thunderstorms	Limited in duration and/or coverage and/or intensity	Short-lived and/or not widespread, isolated intense storms possible	More persistent and/or widespread, a few intense	Long-lived, widespread and intense	Long-lived, very widespread and particularly intense



Official Forecast Track

From the National Hurricane Center



- Grace remains disorganized and has weakened to a tropical depression.
- The center of Grace is located about 75 miles south of Puerto Rico, or about 1,000 miles southeast of Key West, Florida
- Maximum sustained winds are around 35 mph and Grace is moving to the west at 15 mph.
- On the forecast track, the center is forecast to move over Hispaniola tomorrow, and then Cuba on Tuesday and Wednesday.
- Grace could approach the Florida Keys Wednesday night, but the track has shifted south and the Keys are now out of the forecast cone.
- Grace moves into the Gulf on Thursday. Land interaction, like with Fred, makes the exact track and intensity forecast difficult.

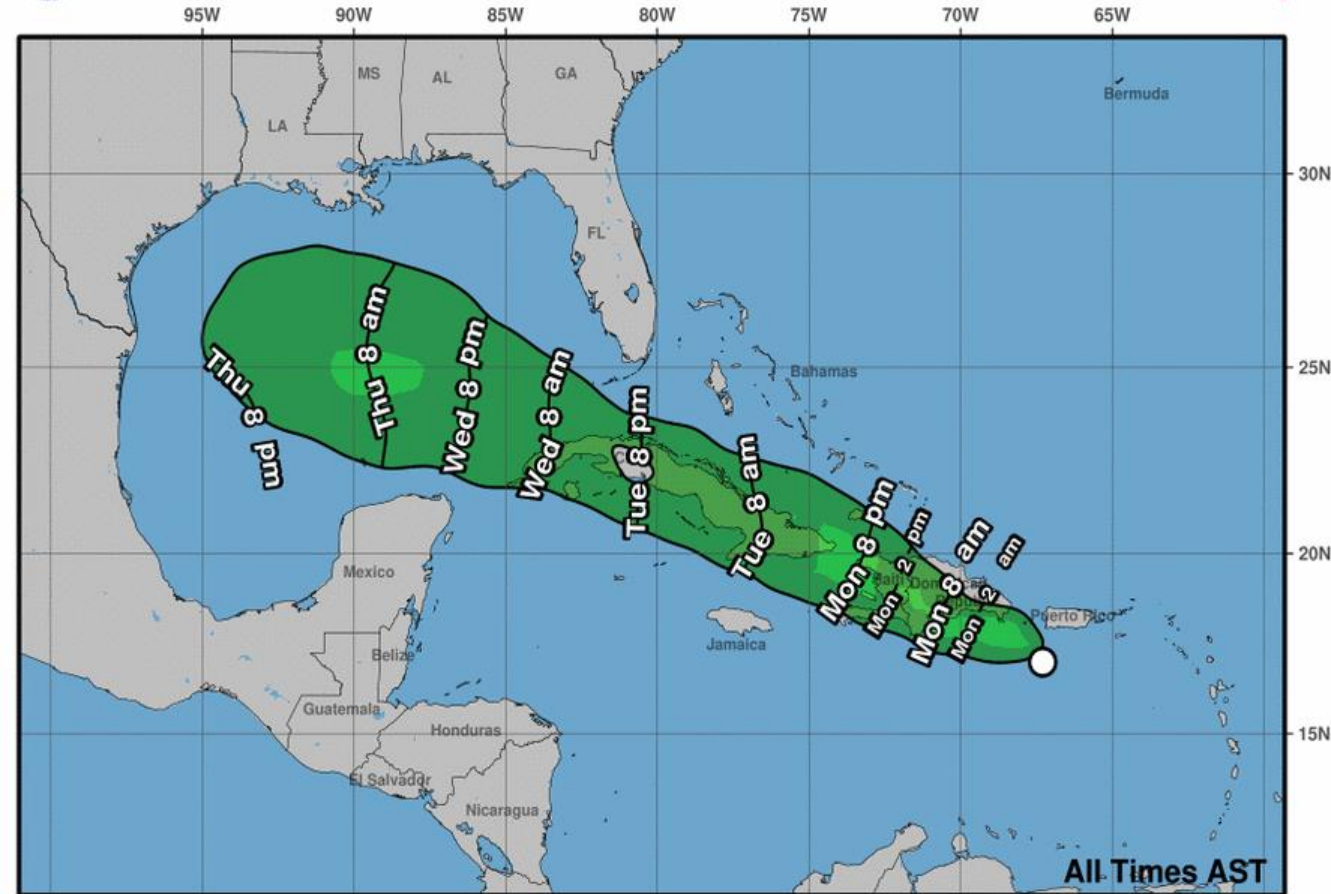


Time of Arrival & Wind Speed Probabilities

EARLIEST REASONABLE Time of Arrival of Tropical Storm Force Winds (>39 mph)



Earliest Reasonable Arrival Time of Tropical-Storm-Force Winds



Tropical Depression Grace
Sun. Aug. 15, 2021 5 pm AST
Advisory 10

Storm Location ○ < 34 kt (39 mph)
& ○ 34-63 kt (39-73 mph)
Wind Speed ● ≥ 64 kt (74 mph)

5-day chance of receiving sustained 34+ kt (39+ mph) winds

5 10 20 30 40 50 60 70 80 90 100 %

City

**Chance for
TS Winds**

**Changes Since
Last Packet**

Key West

4%

-8%

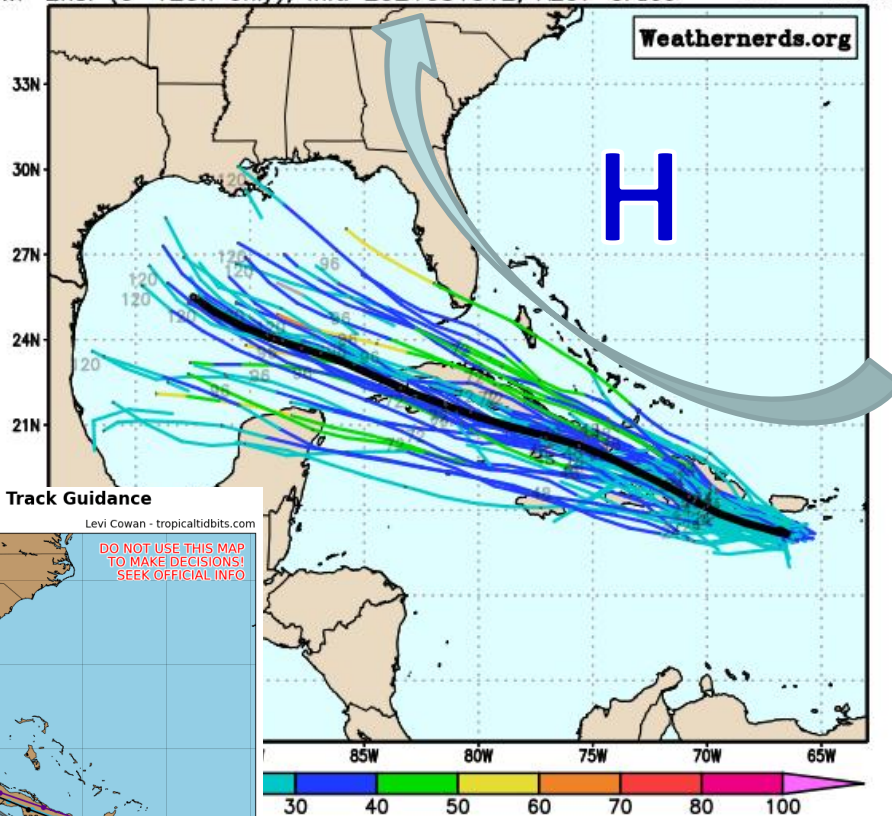
The odds of tropical storm force winds are now less than 5% in the Florida Keys.



Model Forecasts

Ensembles, Dynamical, and Statistical Models – Grace

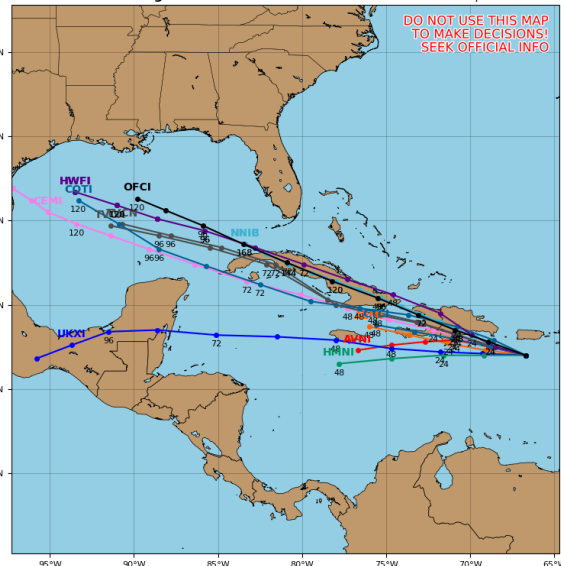
ECMWF Ens. (0–120h only), init: 2021081512, AL07 Grace color = max wind (kt)



Tropical Depression 07L Model Track Guidance

Initialized at 18z Aug 15 2021

Levi Cowan - tropicaltidbits.com



High pressure will move Grace west-northwest like Fred. However, the high pressure may get stronger after Fred moves through and keep pushing Grace west into the Gulf of Mexico,

With Grace forecast to move near the mountainous Greater Antilles, it once again makes the track and intensity forecast uncertain. The center could develop on either side of the islands and shift the track.

In general, land interaction and some wind shear will keep the system weak, but if it avoids land interaction a stronger storm is possible. If Grace survives to the Gulf of Mexico, the environment may be more favorable for intensification.



Key Messages

From the National Hurricane Center

Key Messages for Tropical Storm Fred Advisory 25: 4:00 PM CDT Sun Aug 15, 2021

1. Today through Tuesday, heavy rainfall could lead to flash, urban, small stream, and isolated river flooding impacts across portions of southern Florida, the Big Bend and Panhandle of Florida, southeast Alabama, portions of Georgia, and the western Carolinas. From Tuesday onward, heavy rain and flood impacts could continue into other portions of the Southeast and into the southern and central Appalachians and Piedmont as Fred interacts with a front in the area.

2. Dangerous storm surge inundation is possible along portions of the coast of the Florida Panhandle and the Florida Big Bend region, and a Storm Surge Warning is in effect for this area. Interests in these areas should follow any advice given by local officials.

3. Tropical storm conditions are expected in the Tropical Storm Warning area in the Florida Panhandle beginning on Monday.



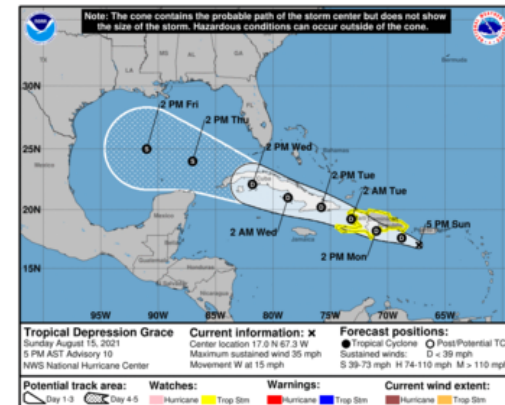
For more information go to hurricanes.gov

Key Messages for Tropical Depression Grace Advisory 10: 5:00 PM AST Sun Aug 15, 2021

1. Heavy rainfall could lead to flash and urban flooding over the Virgin Islands. Across Puerto Rico, the Dominican Republic and Haiti, heavy rainfall may lead to flash, urban and small stream flooding, along with the potential for mudslides.

2. Tropical storm conditions are possible over portions of Hispaniola Monday and Monday night.

3. There is a risk of some wind and rainfall impacts across the Turks and Caicos Islands, the Bahamas, Cuba, and Florida, but forecast uncertainty is much higher than usual. Interests in those areas should monitor the progress of Grace and updates to the forecast.

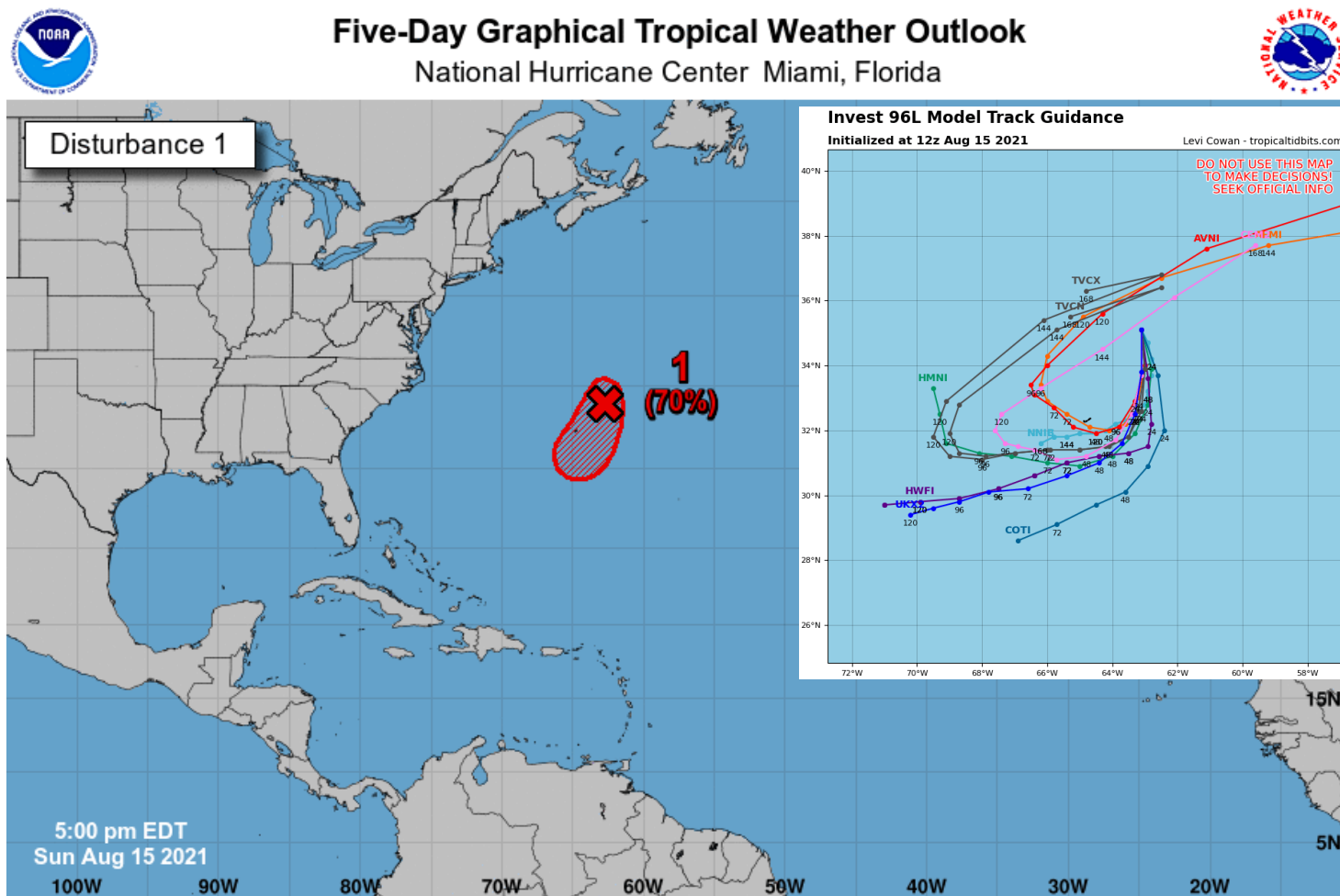


For more information go to hurricanes.gov



Tropical Weather Outlook

Possible Areas of Development During the Next 5 Days ([LINK](#)) – Invest 96L



Current Disturbances and Five-Day Cyclone Formation Chance: < 40% 40-60% > 60%

Tropical or Sub-Tropical Cyclone: Depression Storm Hurricane

Post-Tropical Cyclone or Remnants

Satellite imagery indicates that shower and thunderstorm activity has become better organized this afternoon in association with a small but well-defined area of low pressure located about 160 miles northeast of Bermuda. Environmental conditions appear conducive for continued development, and if these development trends continue, a tropical depression could form tonight while the low moves slowly to the south or south-southwest at about 5 mph, near or to the east of Bermuda. By Tuesday, upper-level winds are forecast to become less conducive for tropical cyclone formation.

This system poses no threat to Florida over the next 5 days. While it is likely to loop and head out to sea, it should still be monitored.

***Formation chance through 48 hrs...high...70%**
***Formation chance through 5 days...high...70%**



Overall Summary

Tropical Storm Fred:

- The center of Fred is located about 235 miles south of Panama City, Florida.
- Maximum sustained winds are around 45 mph with higher gusts, and Fred is moving to the north-northwest at 10 mph.
- Tropical Storm Force winds extend out 90 miles east of the center.
- Fred will gradually gain strength as it moves northward over the next 24 hours. Fred will make landfall Monday evening in the Florida Panhandle with maximum sustained winds around 60 mph.
- The track has shifted east slightly this afternoon.
- Fred is lopsided, with most of the impacts (wind, rain, tornadoes, and surge) on the eastern side of the storm. **These impacts will extend well outside of the cone.**

Florida Outlook:

- **Tropical Storm Warnings** have been issued for the Panhandle: Bay, Calhoun, Franklin, Gadsden, Gulf, Holmes, Jackson, Leon, Liberty, Okaloosa, Wakulla, Walton, and Washington County.
- **Tropical Storm Watches** remain in effect for Escambia and Santa Rosa County.
- Sustained winds of 40-60 mph are possible in the warning areas, with gusts from 60-70 mph Monday evening and Monday night as a worst case scenario.
- **Storm Surge Warnings** are now in effect for coastal portions of Dixie, Franklin, Jefferson, Levy, Taylor, and Wakulla. Storm surge of 3-5' is expected from Indian Pass to the Steinhatchee River, with 2-4' further east to Yankeetown. 1-3' is expected across the rest of the Florida Panhandle and Nature Coast.
- The main threat to Florida from Fred is heavy rainfall. A widespread 4-8" of rain with localized totals of 12" is anticipated across the Panhandle and western Big Bend. **Flash Flood Watches** are in effect for this region until Tuesday evening. Flood Watches continue until this evening in South Florida.
- Widespread minor to moderate river flooding will continue this week in Northeast Florida, and may develop in the Panhandle based on current forecasts.
- Isolated tornadoes are also possible along the Gulf Coast today/tonight and in the Panhandle, Big Bend, and Northeast Florida Monday/Monday night.
- High surf (8-12') in the Panhandle will cause beach erosion. Dangerous rip currents are expected at all Florida beaches today and Monday.
- It is too early to determine what, if any, impacts Florida may experience from Grace, but it should be monitored. The track has trended away from South Florida.
- Invest 96L near Bermuda poses no threat to Florida over the next 5 days, but should be monitored.



Overall Summary

Tropical Depression Grace:

- Grace remains disorganized and has weakened to a tropical depression.
- The center of Grace is located about 75 miles south of Puerto Rico, or about 1,000 miles southeast of Key West, Florida
- Maximum sustained winds are around 35 mph and Grace is moving to the west at 15 mph.
- On the forecast track, the center is forecast to move over Hispaniola tomorrow, and then Cuba on Tuesday and Wednesday.
- Grace could approach the Florida Keys Wednesday night, but the track has shifted south and the Keys are now out of the forecast cone.
- Grace moves into the Gulf on Thursday. Land interaction, like with Fred, makes the exact track and intensity forecast difficult.

Invest 96L Near Bermuda:

- Satellite imagery indicates that shower and thunderstorm activity has become better organized this afternoon in association with a small but well-defined area of low pressure located about 160 miles northeast of Bermuda.
- Environmental conditions appear conducive for continued development, and if these development trends continue, a tropical depression could form tonight while the low moves slowly to the south or south-southwest at about 5 mph, near or to the east of Bermuda.
- By Tuesday, upper-level winds are forecast to become less conducive for tropical cyclone formation.
- The National Hurricane Center gives this system a 70% (high) chance of development over the next 48 hours and 5 days.
- This system poses no threat to Florida over the next 5 days. While it is likely to loop and head out to sea, it should still be monitored.
- The next name on the list is Henri (ahn-REE).

Another briefing packet will be issued Monday morning with the 5 AM advisory. For the latest information on the tropics, please visit the National Hurricane Center website at www.hurricanes.gov.



TROPICAL UPDATE



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