



# TROPICAL UPDATE



8:00 AM EDT

Sunday, August 15, 2021

Remnants of Fred, Tropical Storm Grace,  
& Invest 96L (30%)

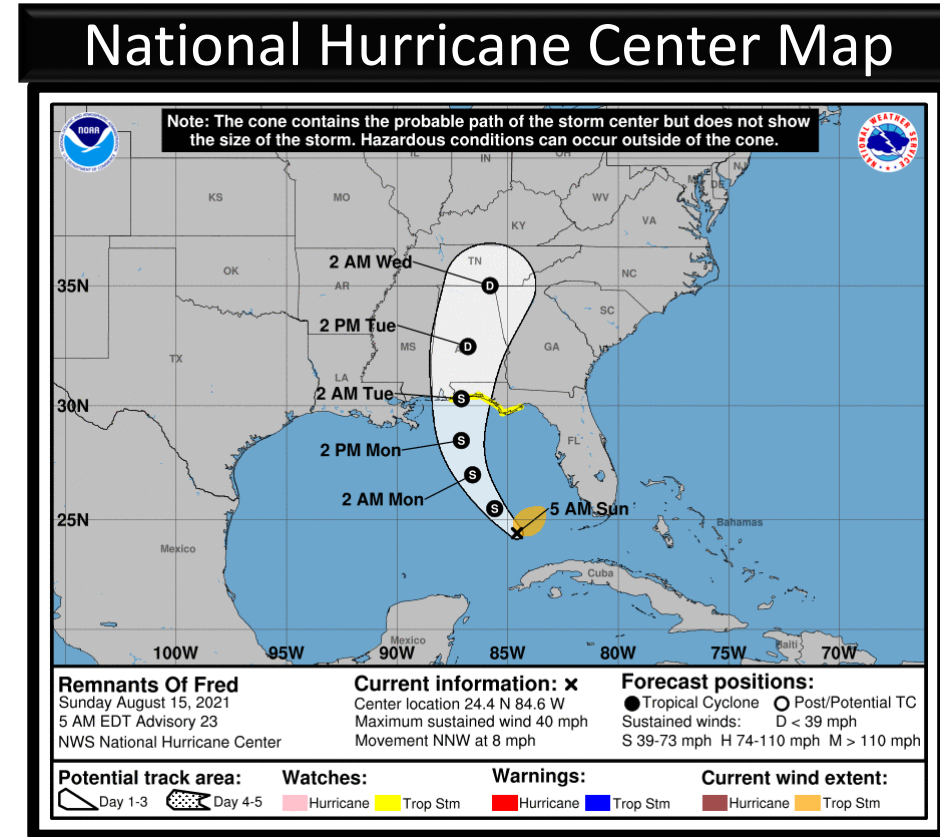
This update is intended for government and emergency response officials, and is provided for informational and situational awareness purposes only. Forecast conditions are subject to change based on a variety of environmental factors. For additional information, or for any life safety concerns with an 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](http://www.hurricanes.gov).



# Remnants of Fred

8 AM 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:

Fred is redeveloping and will become a tropical storm later today.

Tropical Storm Watches have been issued for the Florida Panhandle.

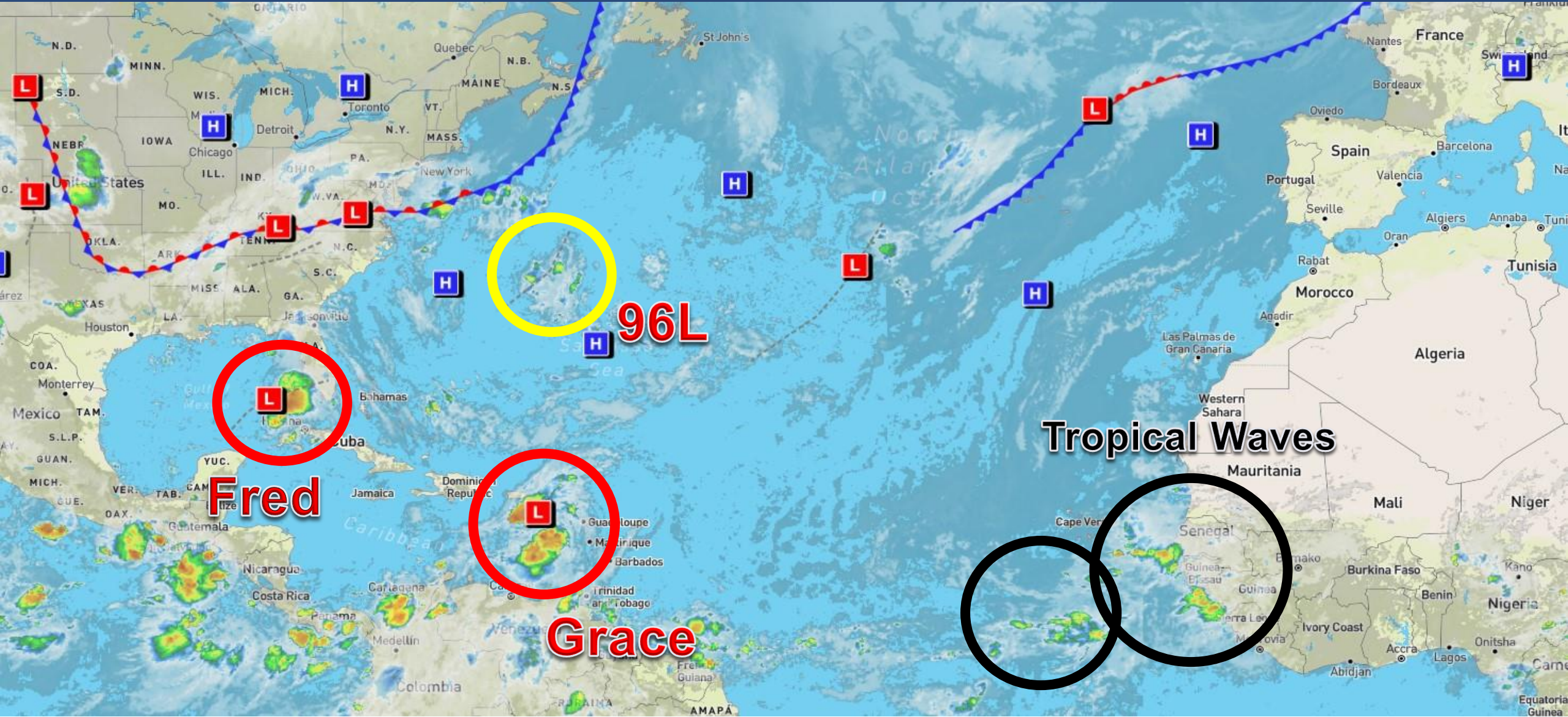
The track has shifted east due to where the new center of Fred is forming, and additional shifts east are possible.





# Atlantic Basin Satellite Image

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

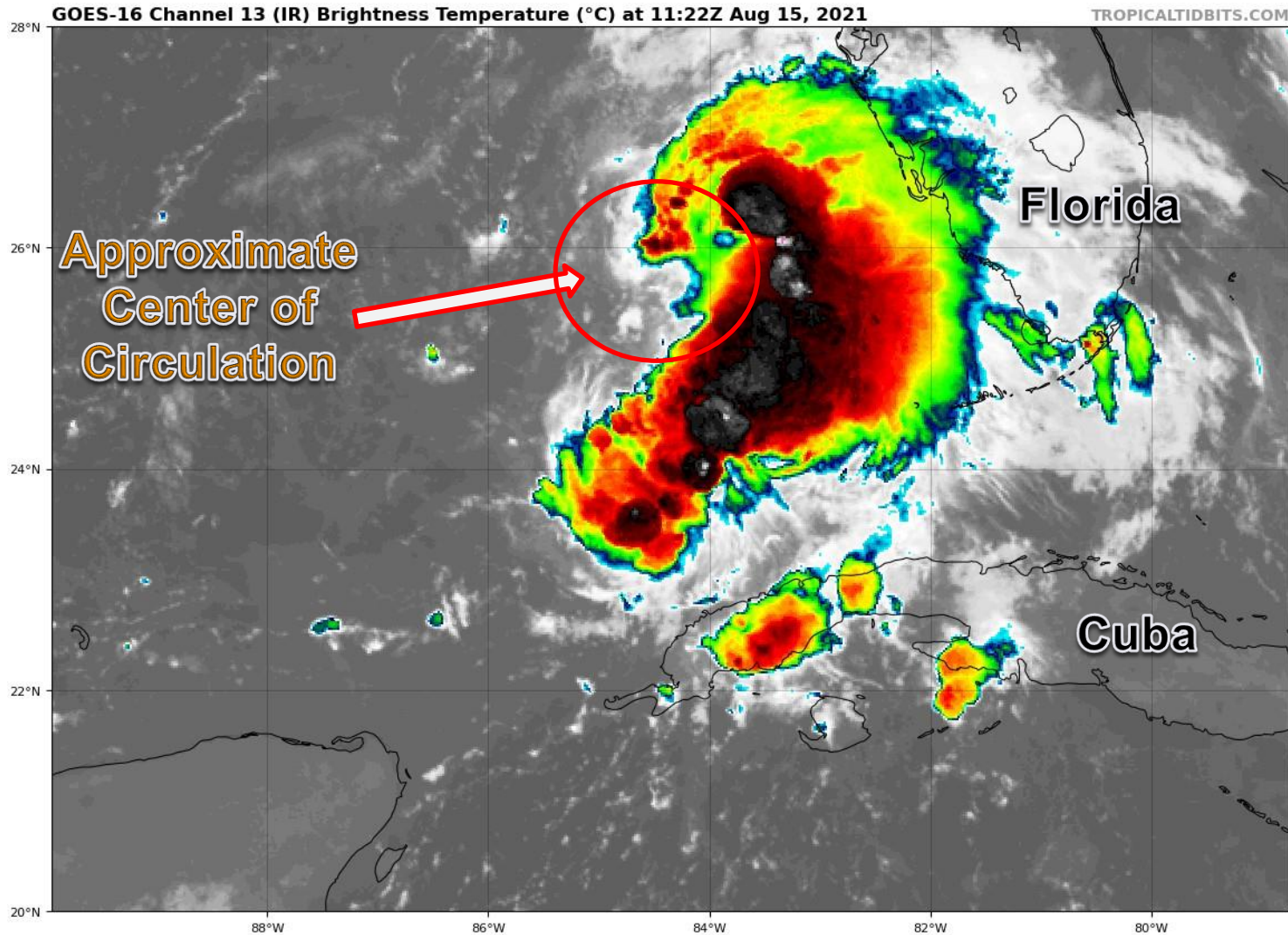




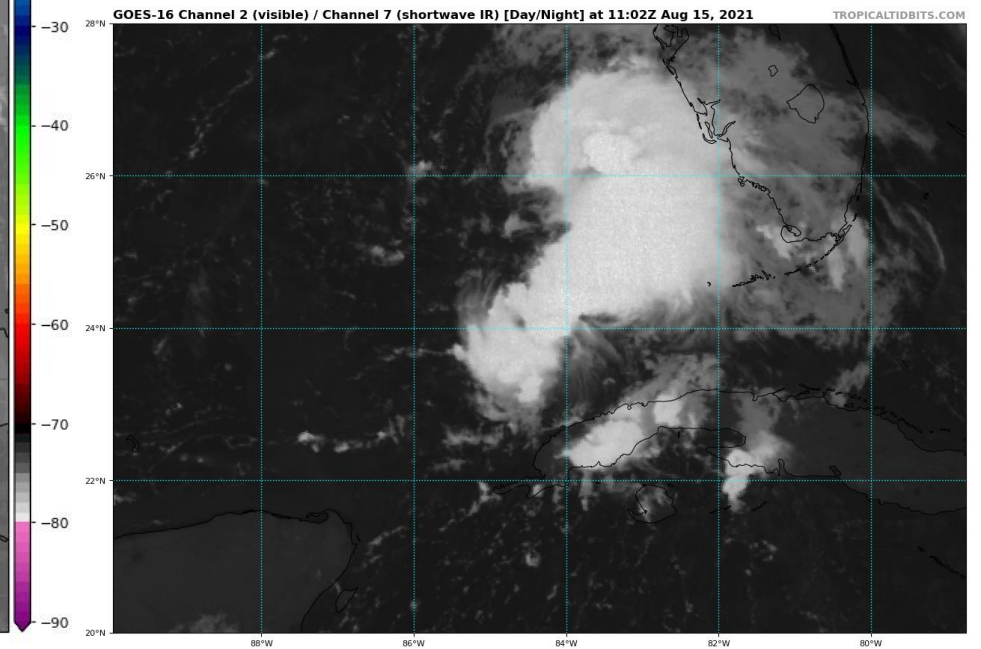


# Satellite Imagery

## Remnants of Fred



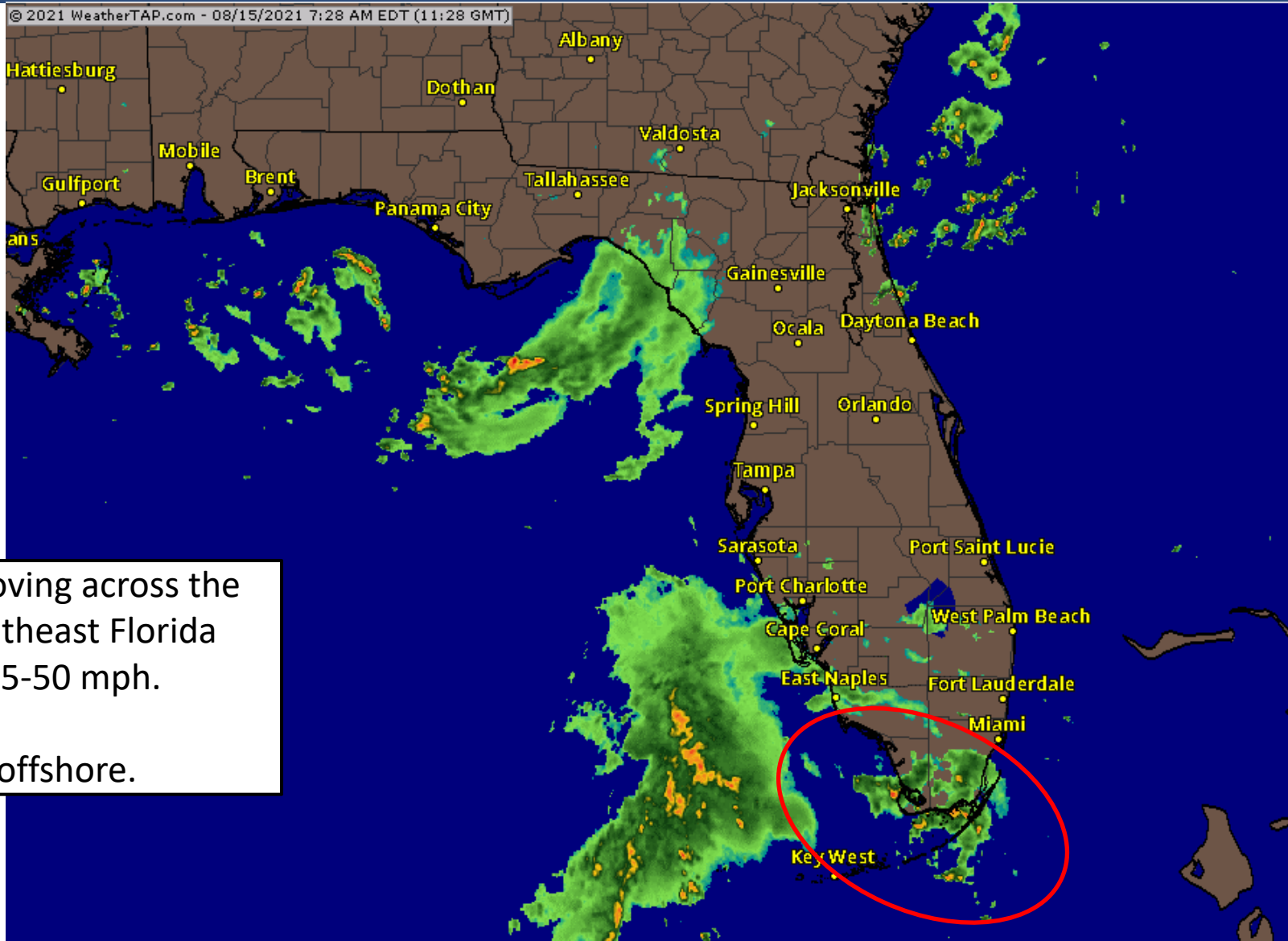
Fred is redeveloping a center of circulation this morning off the coast of Southwest Florida. Due to wind shear, most of the thunderstorms/rain/wind are east of the center.





# Current Florida Radar

As of 7:30 AM ET



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

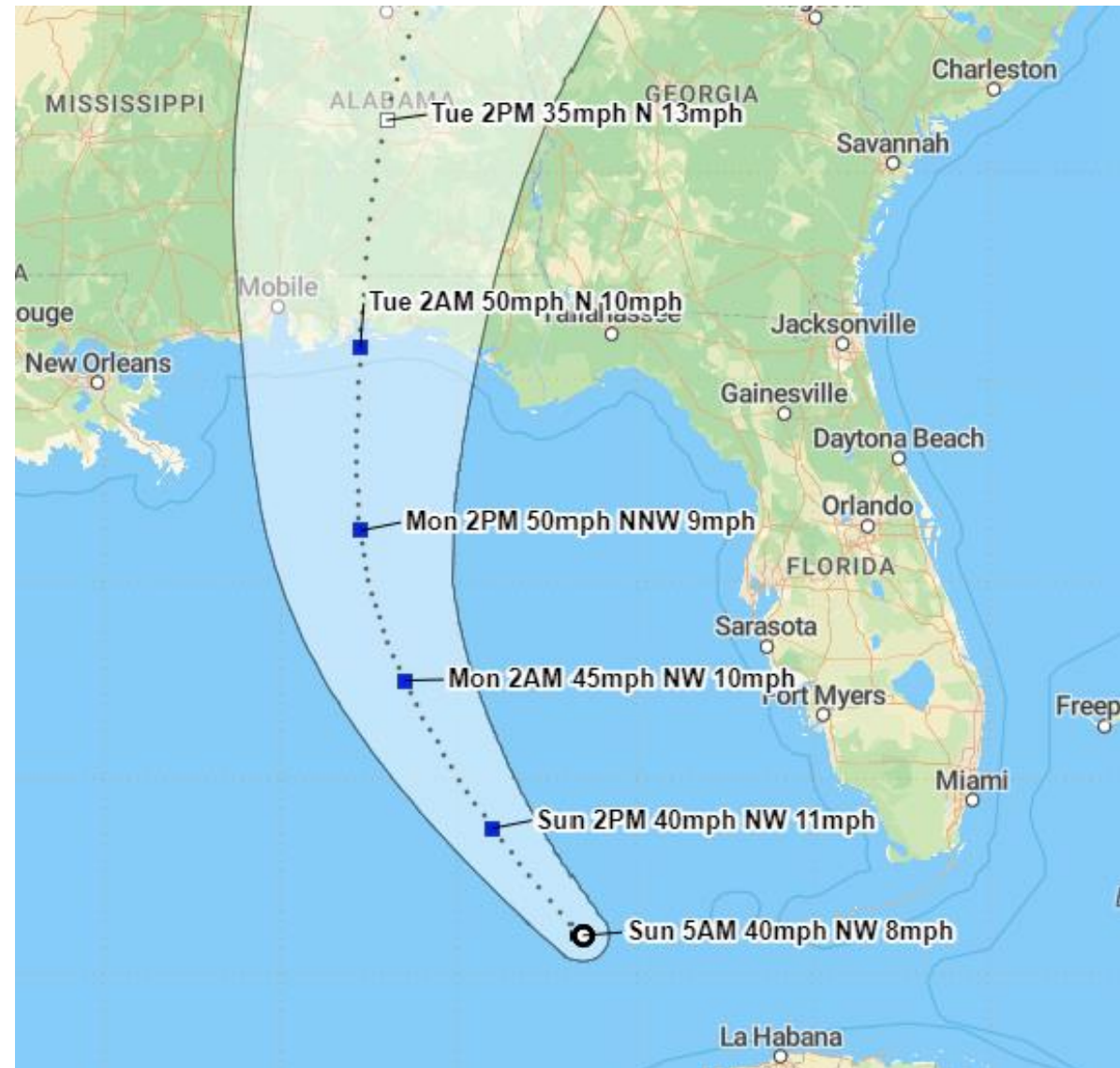
The rest of Fred is offshore.





# Official Forecast Track

From the National Hurricane Center



- The “center” of Fred is located about 100 miles west of the Dry Tortugas, or 400 miles south of Panama City, Florida.
- Maximum sustained winds are around 40 mph and Fred is moving to the north-northwest at 8 mph.
- Hurricane Hunters are enroute to Fred to determine if a closed circulation has redeveloped. If it has, Fred will become a Tropical Storm once again.
- Fred will gradually gain strength as it moves northward over the next 36 hours. Fred will make landfall Monday night or early Tuesday morning with winds around 50 mph.
- The track has shifted east overnight due to where the new circulation is forming. Additional shifts east are possible today.
- Fred is lopsided, with most of the impacts on the eastern side of the storm, which will extend well outside of the cone.



# Damaging Wind Threat Overview

Fred

The greatest wind threat is along the immediate coast of the Panhandle, but some winds will extend inland.

Wind gusts from 40-60 mph are possible generally along and west of the Apalachicola River.

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

Click on “Threats and Impacts” Tab



[Download KML]

[Download Image]

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

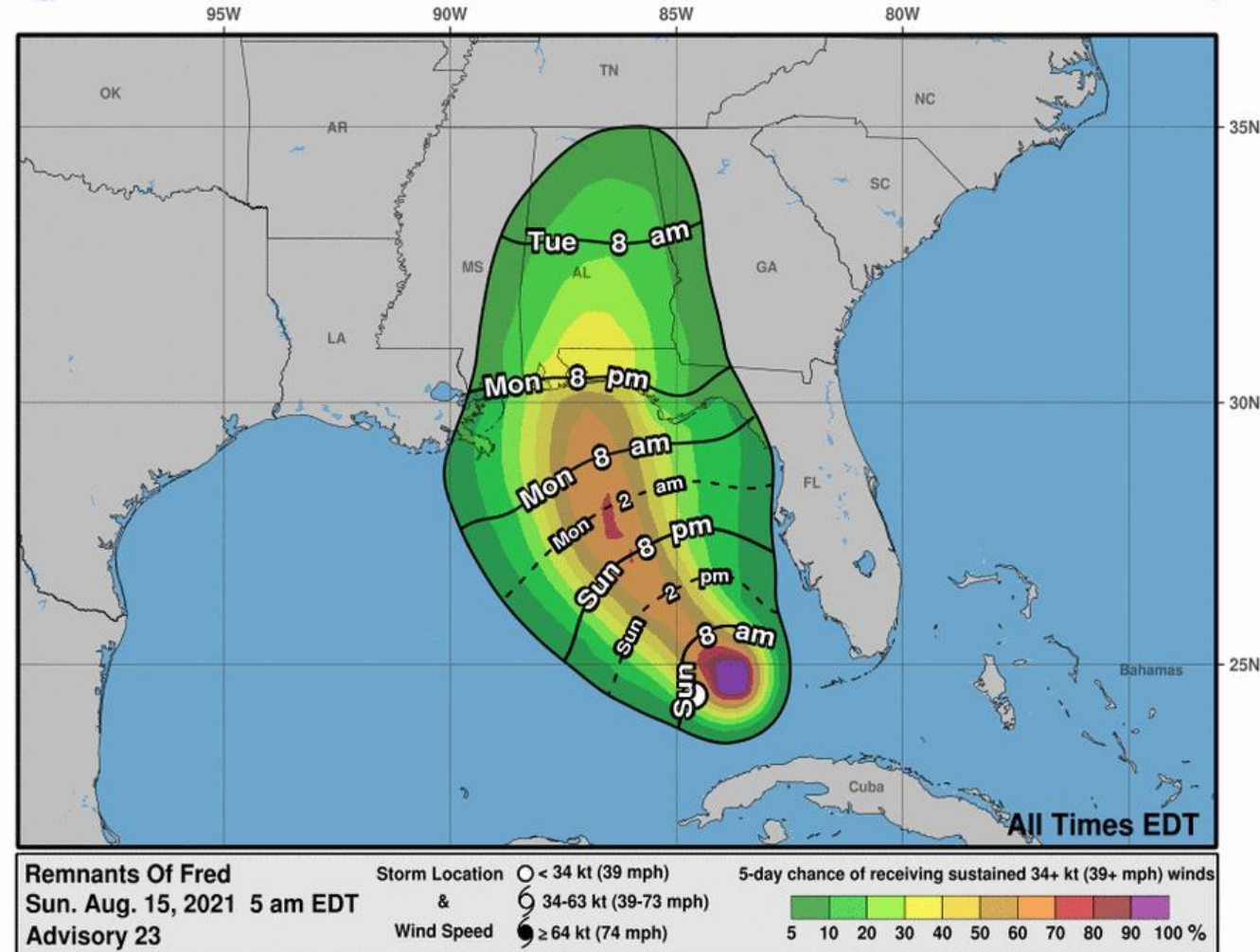


# Time of Arrival & Wind Speed Probabilities

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
Tallahassee	7%	+4%
Apalachicola	26%	+16%
Panama City	37%	+24%
Destin	34%	+14%
Pensacola	33%	+11%

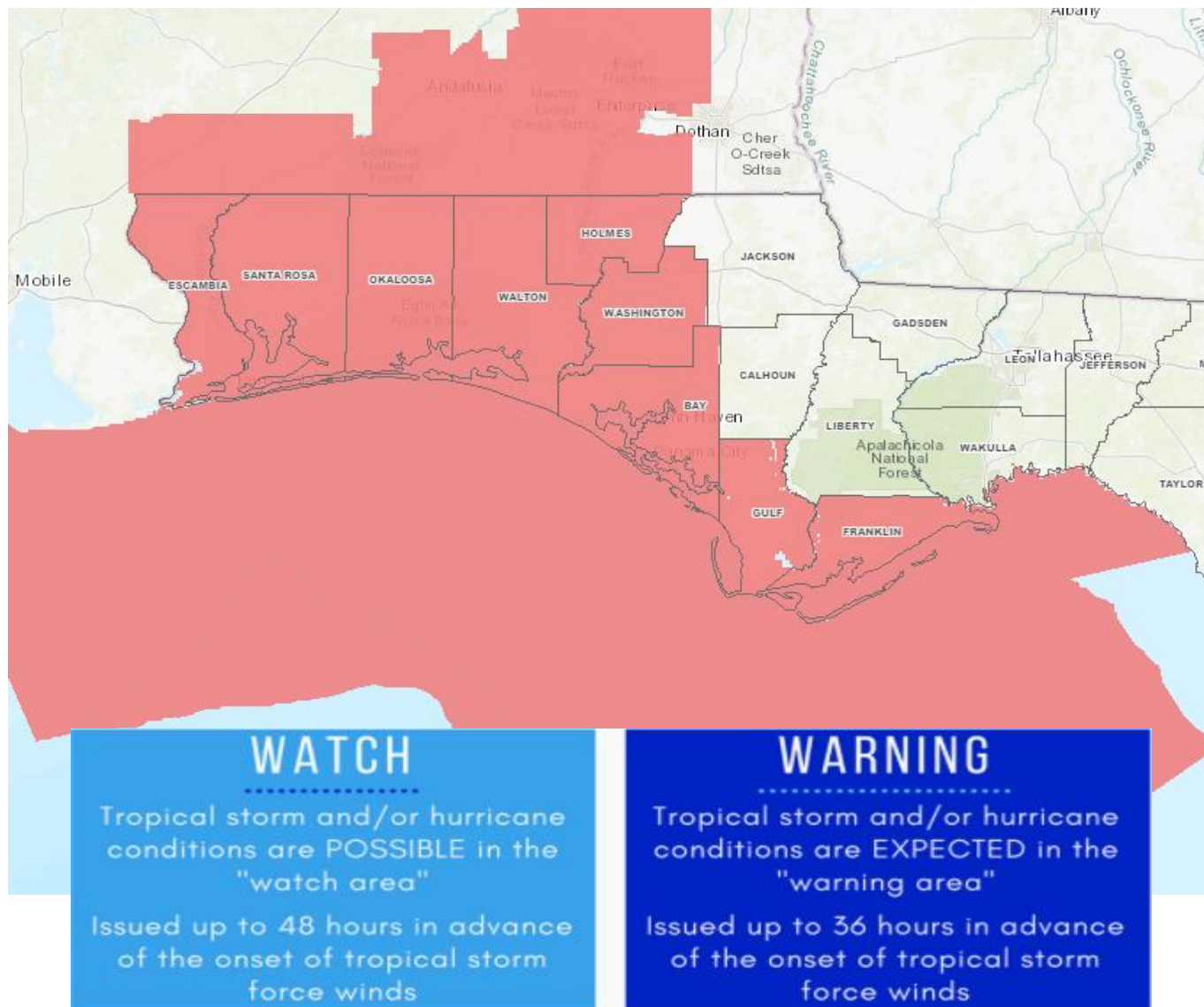
The chances of tropical storm force winds has increased across the Panhandle! Odds are now around 1 in 3 along the Emerald Coast.

All preparations should be completed by Monday afternoon as tropical storm force winds are most likely to arrive around sundown on Monday.





# Active Tropical Watches/Warnings

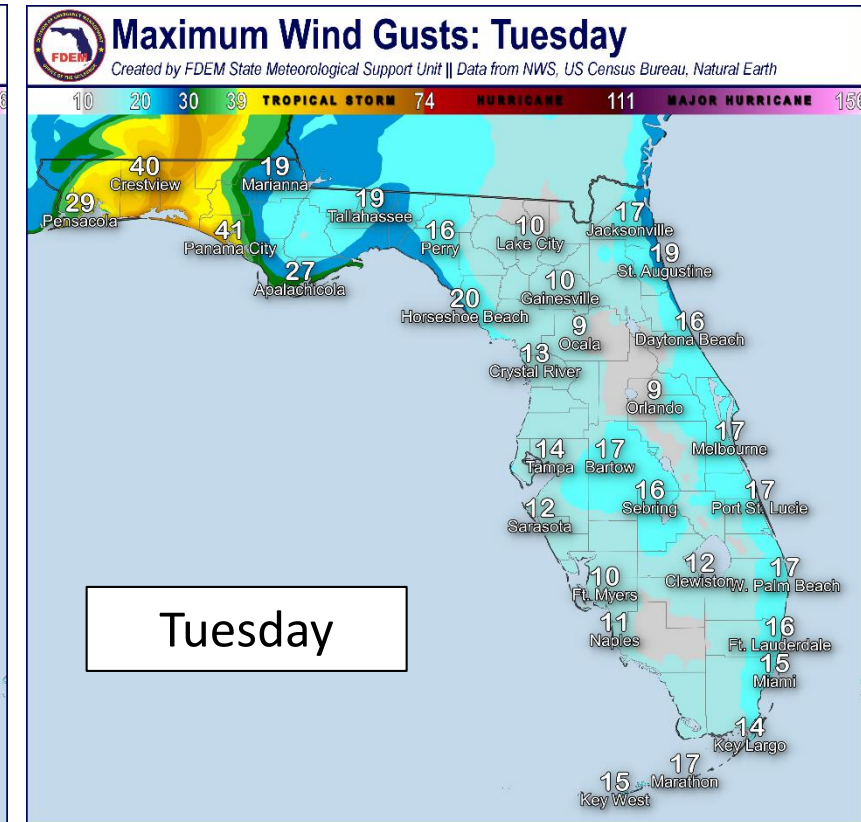
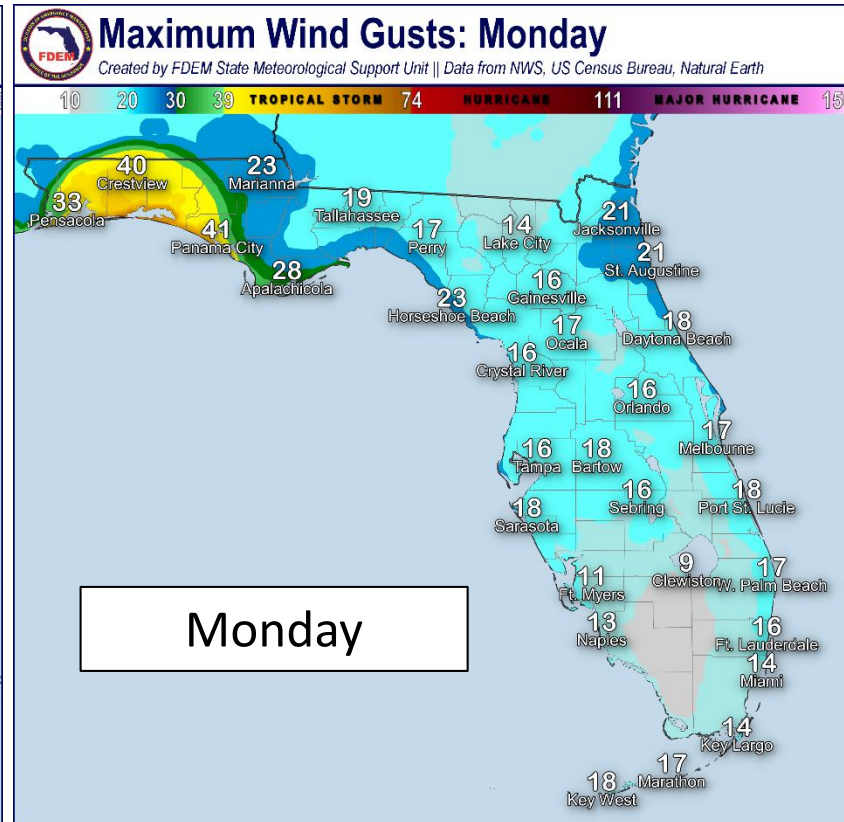
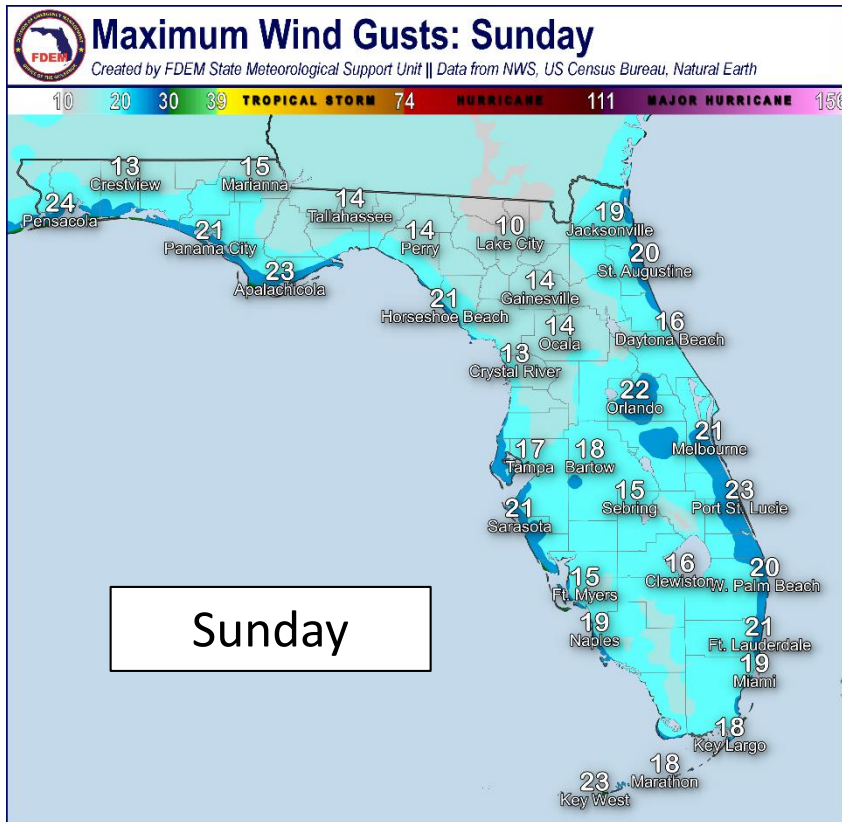


- **Tropical Storm Watches** have been issued for the Florida Panhandle.
- Bay, Escambia, Franklin, Gulf, Holmes, Okaloosa, Santa Rosa, Walton, and Washington
- These watches will be upgraded to warnings later today.



# Forecast Wind Gusts from NWS

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



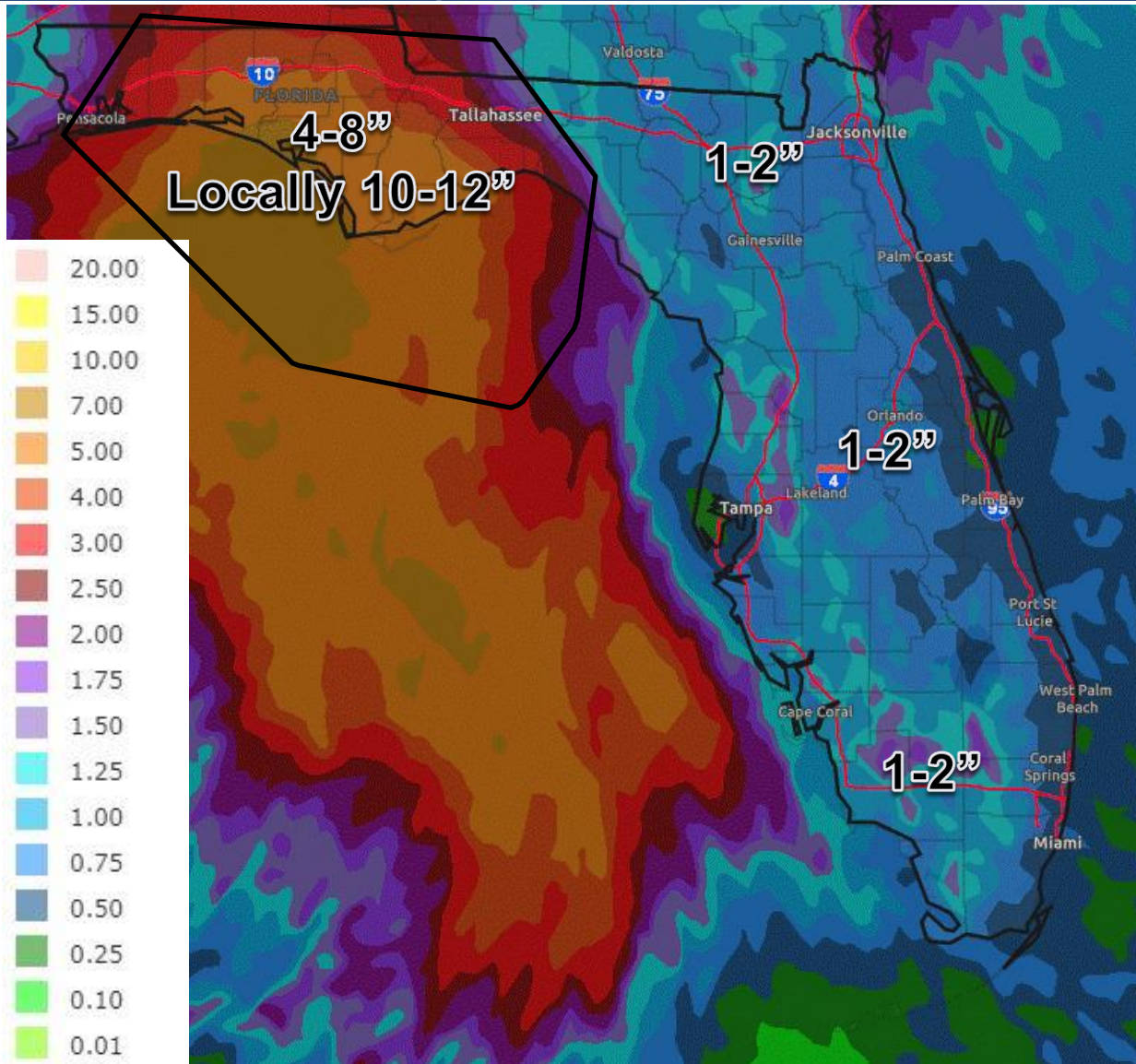
Breezy winds will continue across the Keys today, with some gusty winds expected along the West Coast. Winds will begin increasing on Monday in the Panhandle, with gusts into tropical storm strength expected. Sustained winds will be lower. Higher gusts are possible in thunderstorms across the rest of the state.





# Rainfall Totals Next 72 Hours

Ending 8 AM ET Wednesday



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

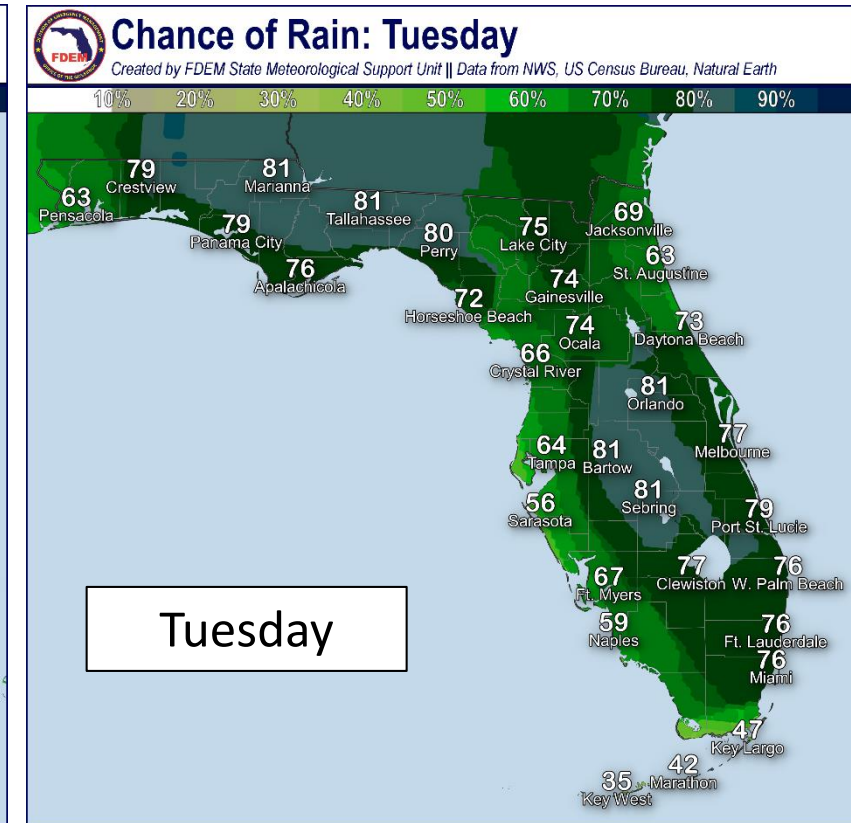
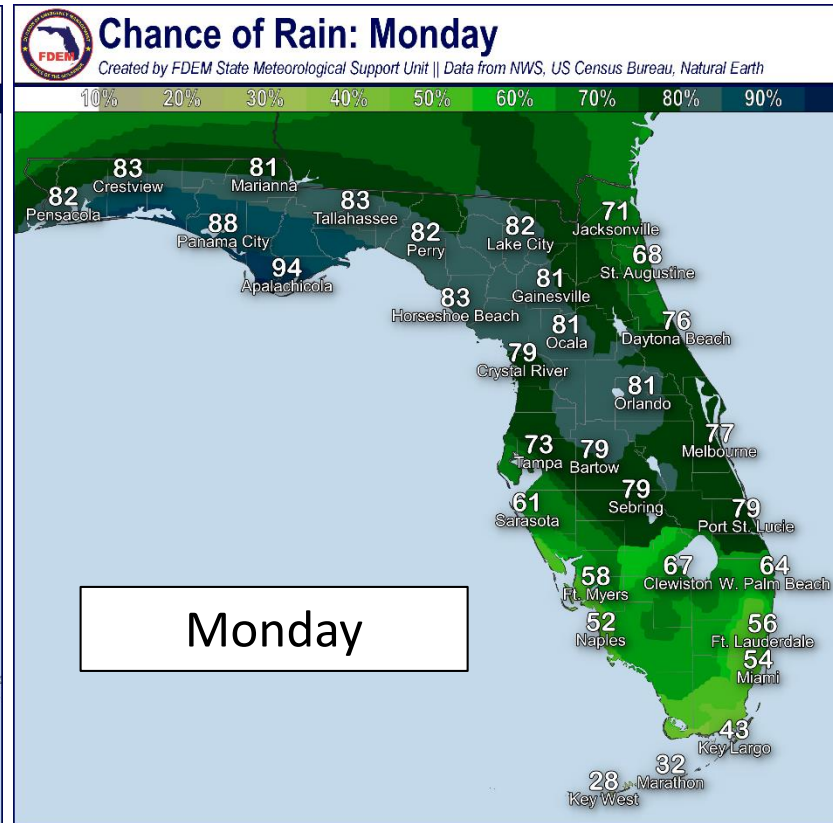
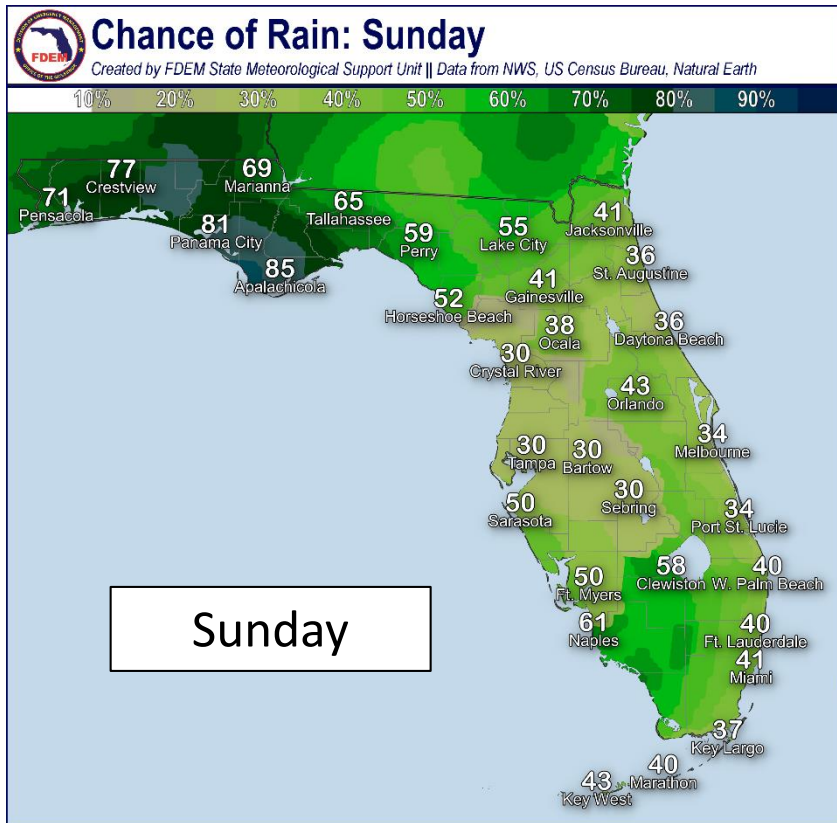
The heavy rain threat will move into the Panhandle and western Big Bend on Sunday and Monday.

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.



# Rain Chances from NWS



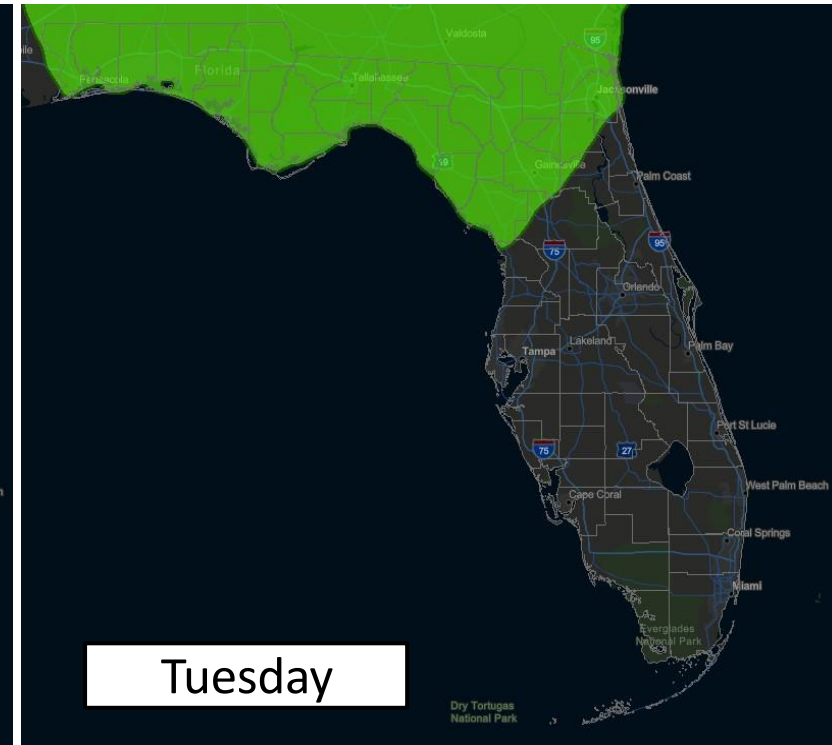
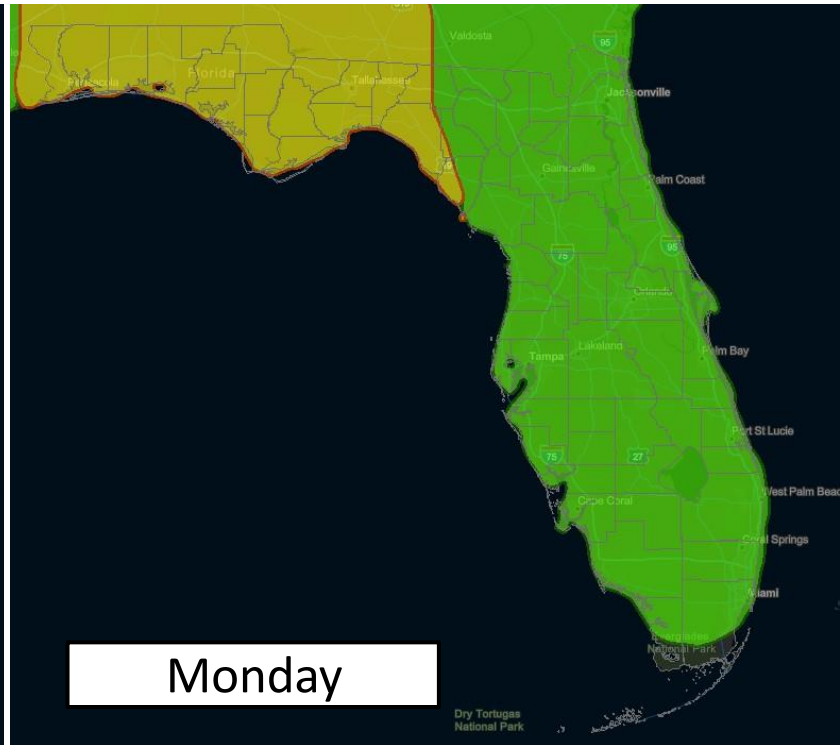
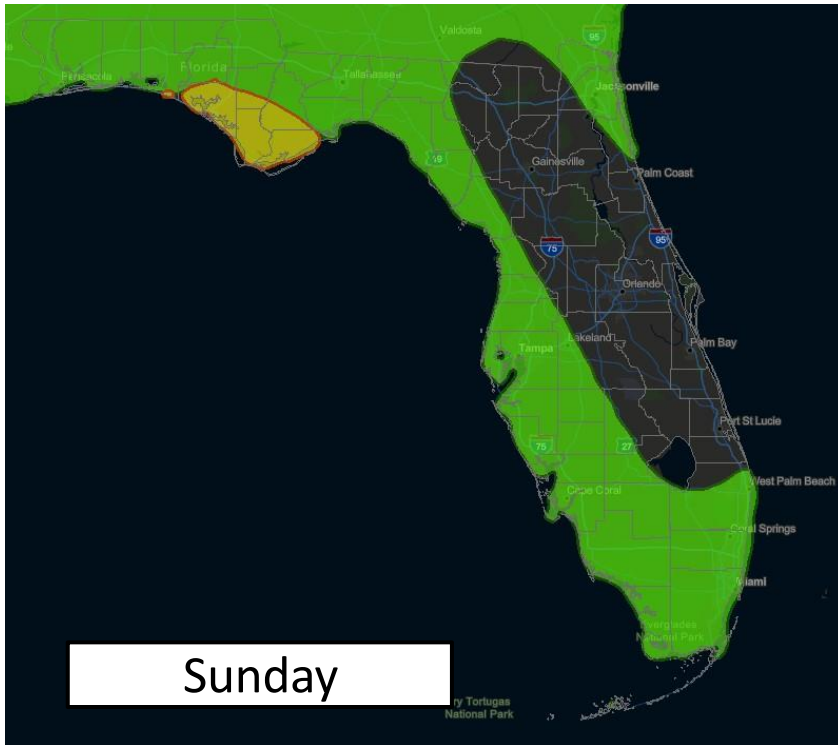
Breezy winds will continue across the Keys today, with some gusty winds expected along the West Coast. Winds will begin increasing on Monday in the Panhandle, with gusts into tropical storm strength expected. Sustained winds will be lower. Higher gusts are possible in thunderstorms across the rest of the state.





# 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%**

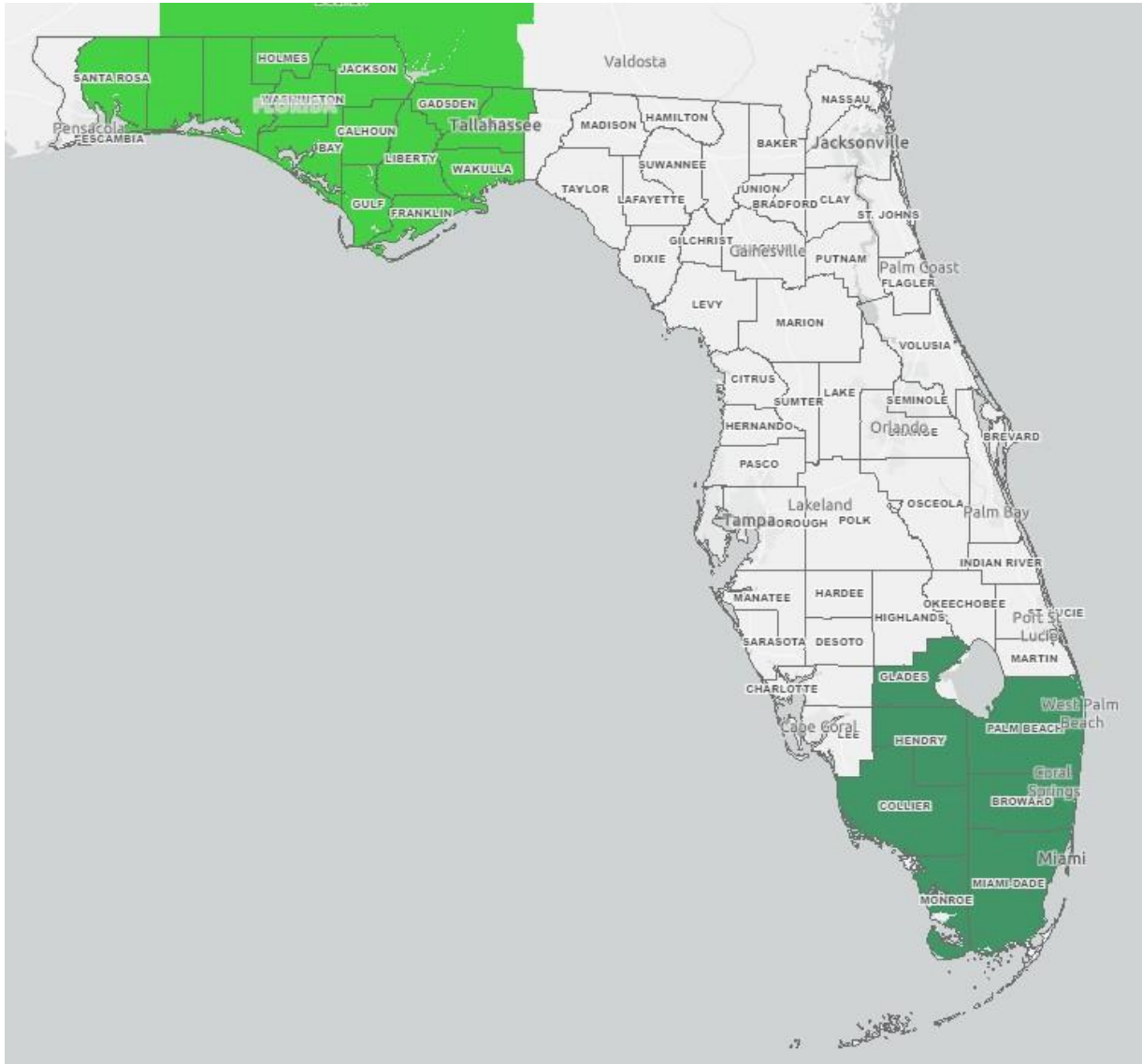
**MDT: 20%-50%**

**MRGL: 5%-10%**

Rain bands will continue in South Florida today. Isolated flash flooding will be possible, especially in urban and low-lying areas. Heavy rain will begin to move into the Panhandle tonight, with the greatest flood threat Monday and Monday night.



# 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

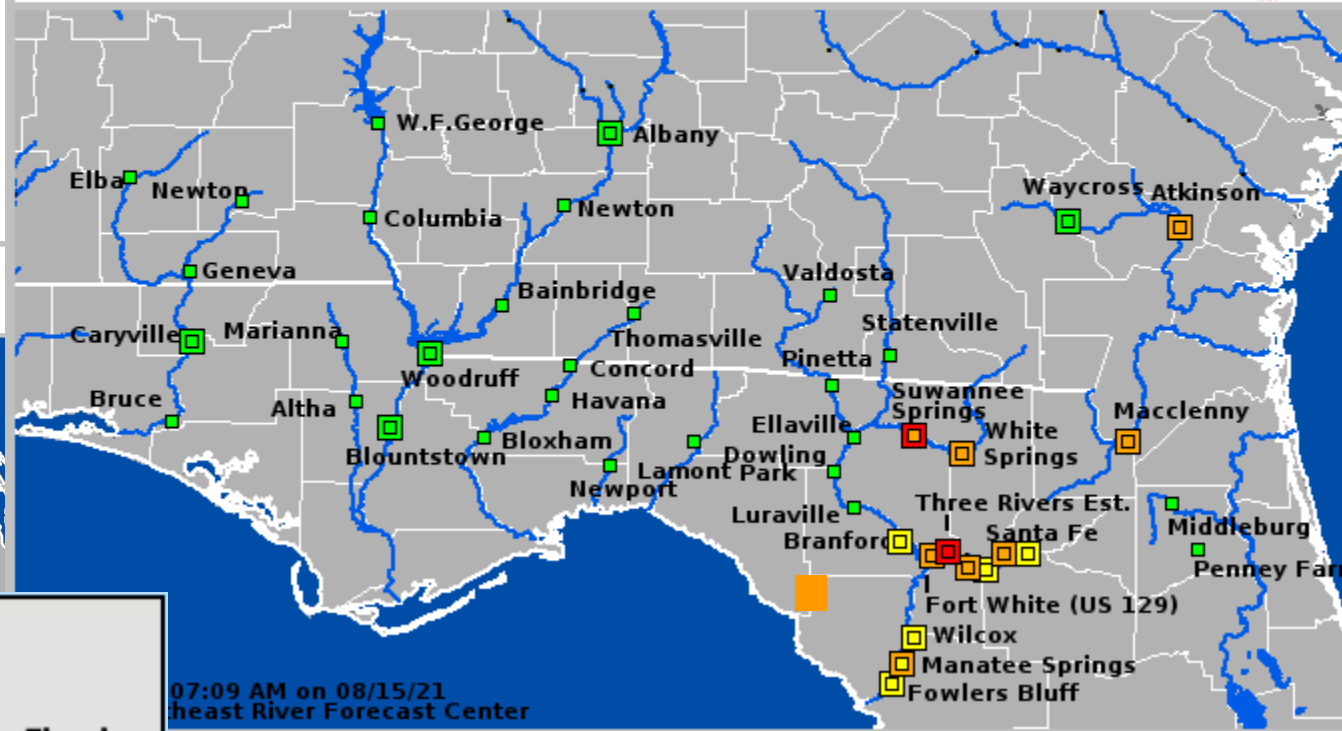
## Southeast River Forecast Center

Extensive river flooding will continue across Northeast Florida this week. Heavy rain could fall on rivers already in moderate flood stage which could prolong flooding. Minor flooding is ongoing along the West Coast as well. **Minor flooding is also possible in the Panhandle. River forecasts will be issued later today.**



### Northern Florida

Valid: 08/15/2021 @ 07:09 AM



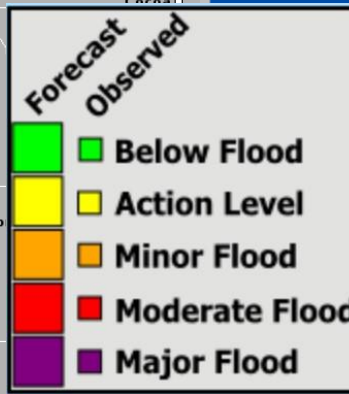
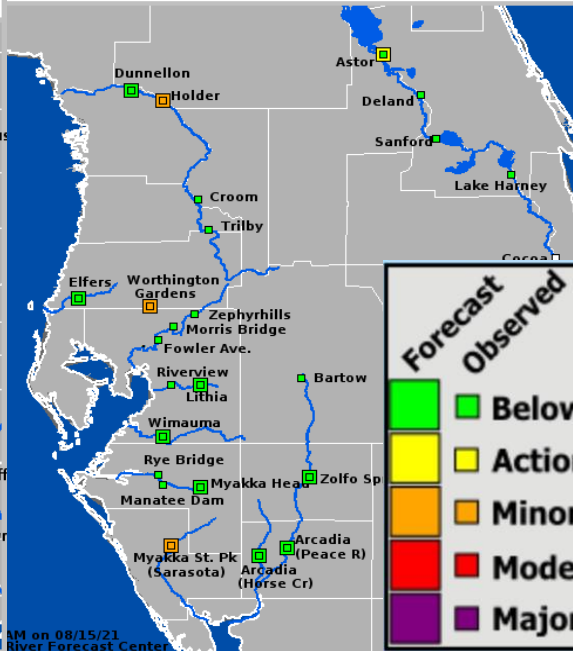
### Southern Alabama

Valid: 08/15/2021 @ 07:39 AM



### Central Florida

Valid: 08/15/2021 @ 07:09 AM



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



# Storm Surge Threat Overview

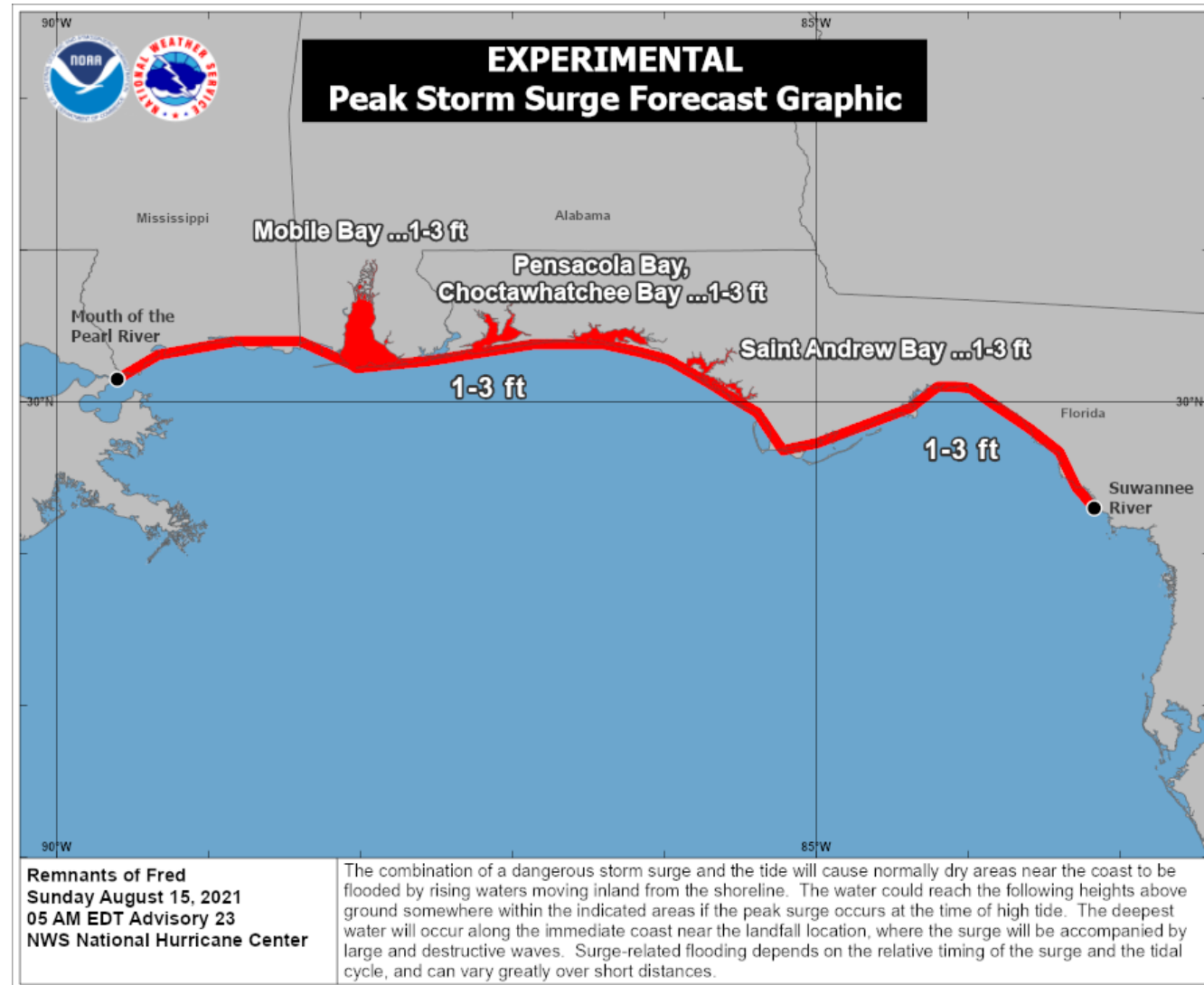
Fred

Storm surge impacts are expected to be low, with values less than 3' at this time, and expected to be 1-2'.

Building swells and beach erosion in the Panhandle will still be possible tomorrow and Monday.

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

Click on "Threats and Impacts" Tab



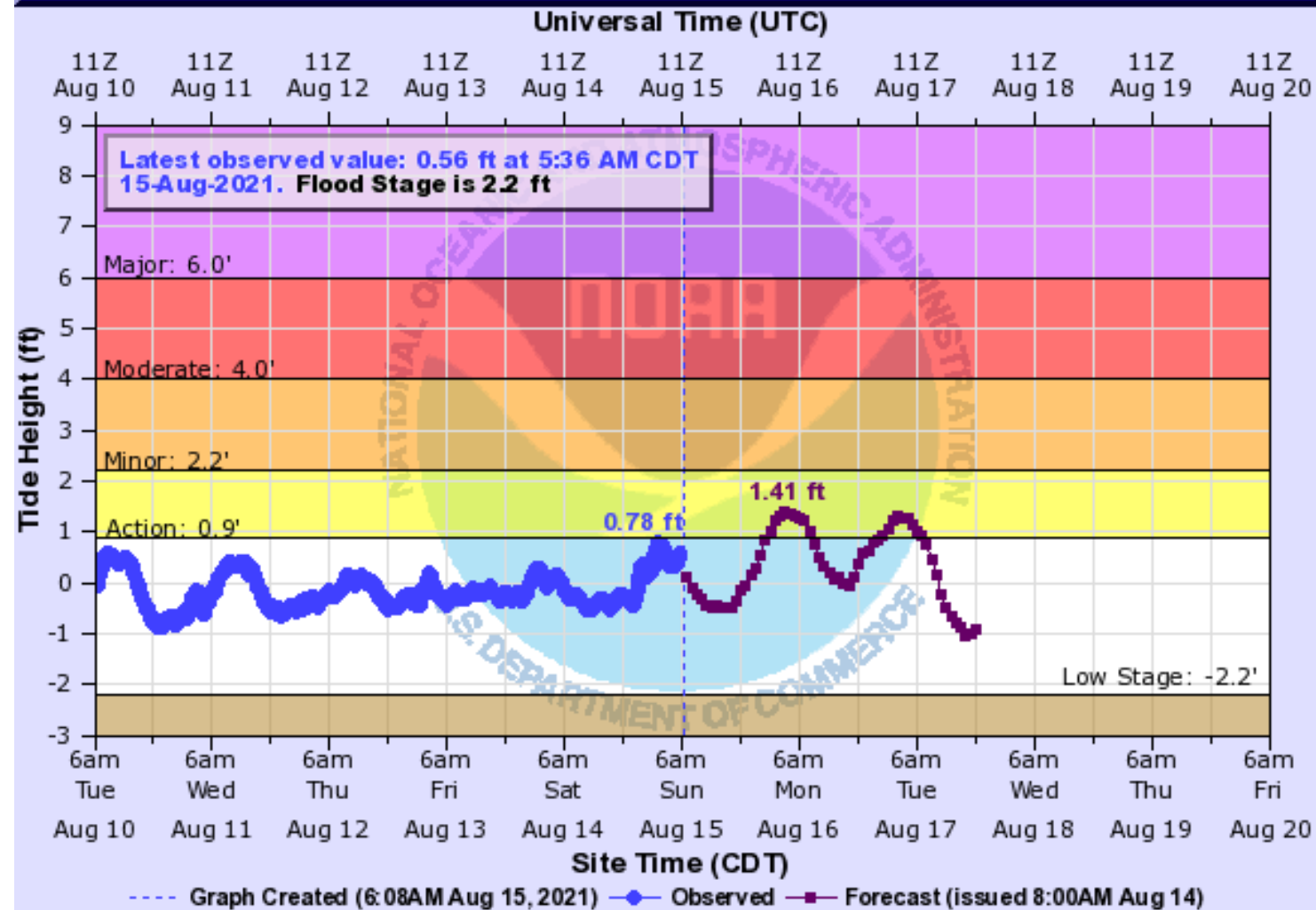




# Gulf of Mexico at Panama City Beach

[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.

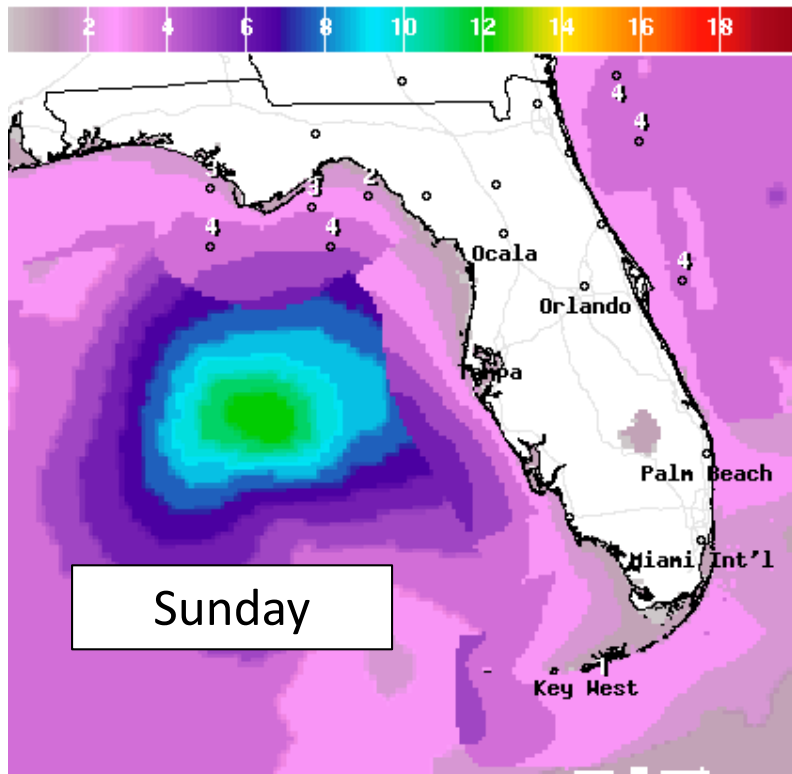
2.2 Where breaks in the dune line to beach access exist, water begins to flood access areas from Inlet Beach to St Andrews State Park in Panama City Beach.

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



# Forecast Wave Heights

## Early This Week

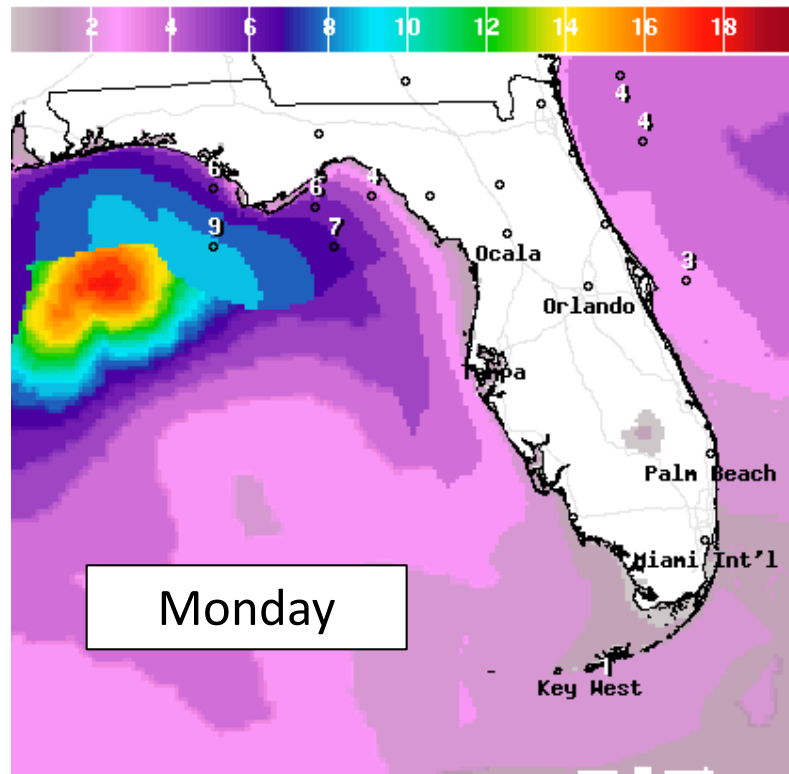


Wave Height(ft) Ending Sun Aug 15 2021 2PM EDT  
(Sun Aug 15 2021 18Z)



National Digital Forecast Database

10z issuance Graphic created-Aug 15 6:29AM EDT

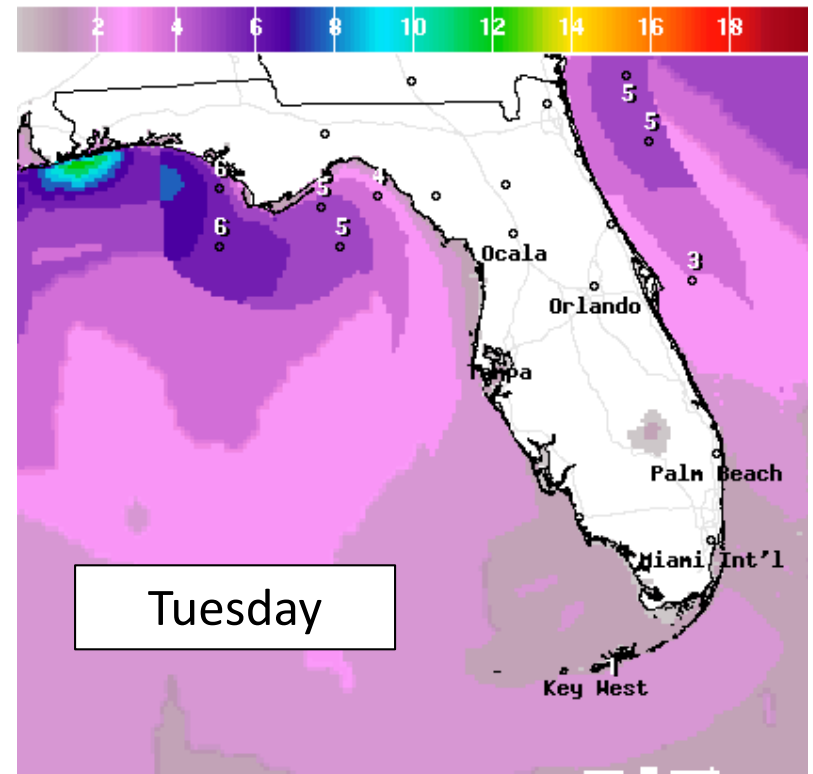


Wave Height(ft) Ending Mon Aug 16 2021 8AM EDT  
(Mon Aug 16 2021 12Z)



National Digital Forecast Database

10z issuance Graphic created-Aug 15 6:30AM EDT



Wave Height(ft) Ending Tue Aug 17 2021 2AM EDT  
(Tue Aug 17 2021 06Z)



National Digital Forecast Database

10z issuance Graphic created-Aug 15 6:30AM EDT

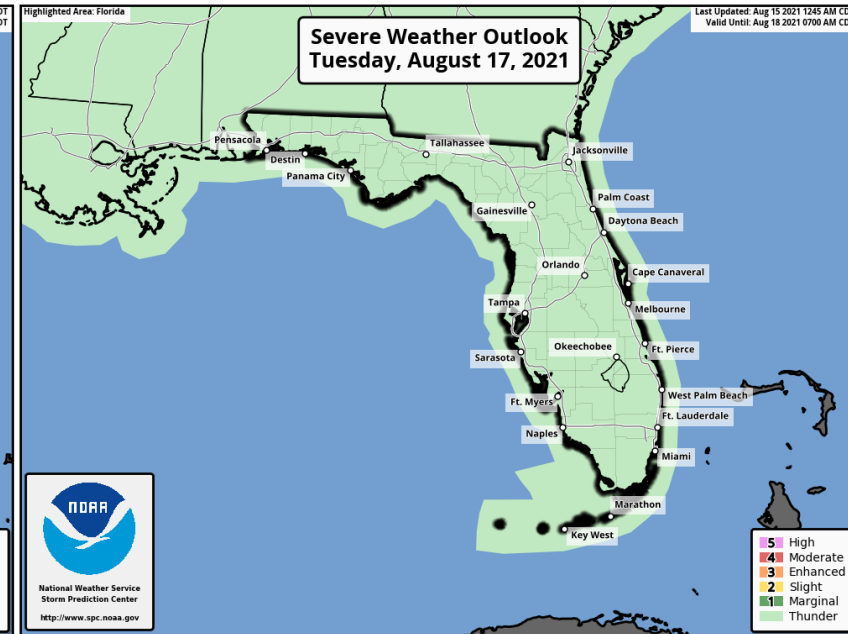
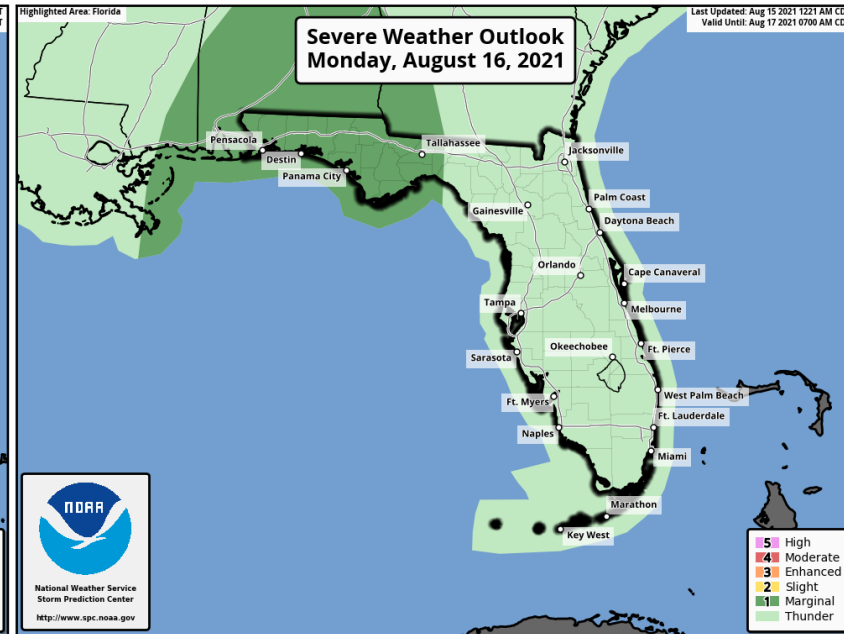
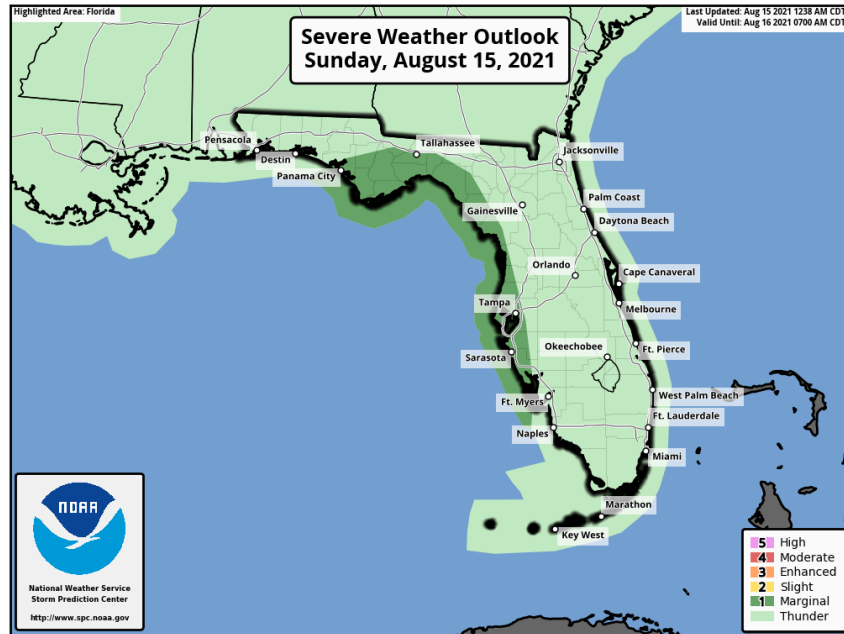


High surf of 6-10 feet is possible at Panhandle beaches with 2-4' feet along the rest of the Gulf Coast. A [High Surf Warning](#) is in effect for Escambia, Santa Rosa, and Okaloosa County. This will result in dangerous rip currents and minor beach erosion (with a few spots of more significant erosion).



# 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

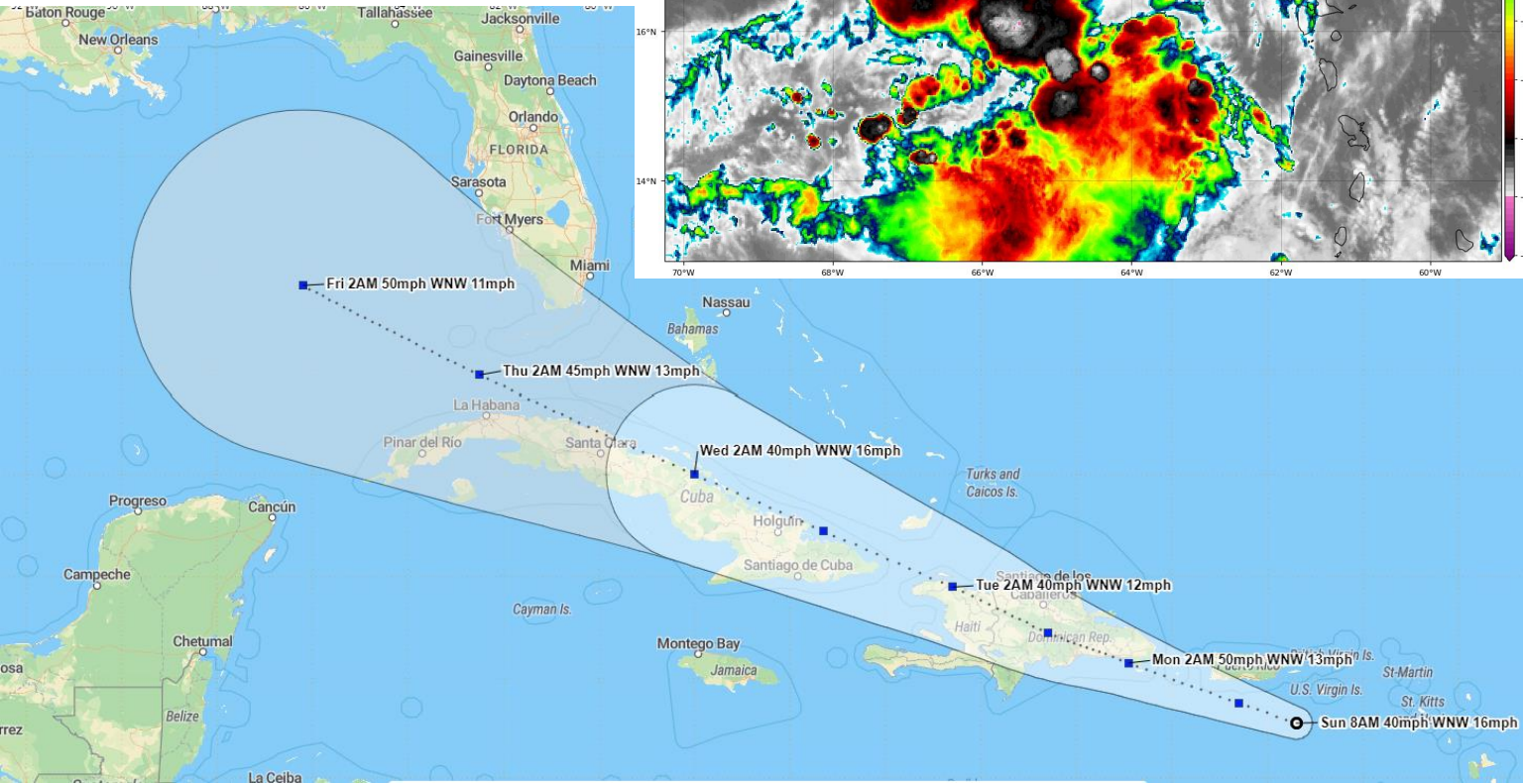
THUNDERSTORMS (no label)	1 - MARGINAL (MRGL)	2 - SLIGHT (SLGT)	3 - ENHANCED (ENH)	4 - MODERATE (MDT)	5 - HIGH (HIGH)
No severe* thunderstorms expected	Isolated severe thunderstorms possible	Scattered severe storms possible	Numerous severe storms possible	Widespread severe storms likely	Widespread severe 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 remained disorganized overnight.
- The center of Grace is located about 100 miles south of Puerto Rico, or about 1,100 miles southeast of Miami, Florida.
- Maximum sustained winds are around 40 mph. Little change in strength is forecast before it reaches Hispaniola tonight.
- Tropical Storm Grace is moving toward the west-northwest at 16 mph- Grace has finally slowed down.
- On the forecast track, the center is forecast to move over Hispaniola tonight, and then Cuba on Tuesday and Wednesday.
- Grace could approach the Florida Keys Wednesday night, but the track has shifted south. Grace moves into the Gulf on Thursday.
- **Land Interaction makes the forecast uncertain!!**

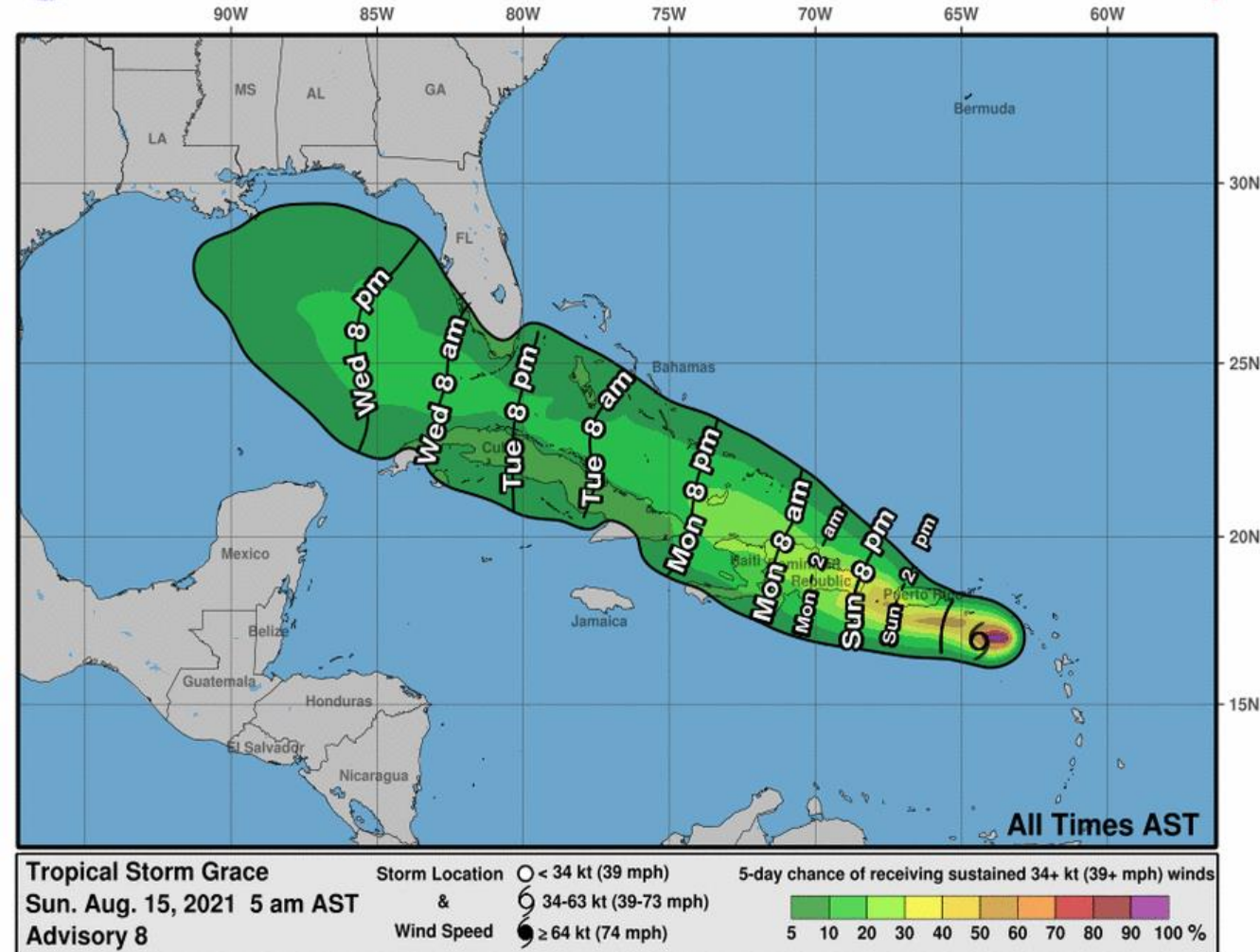


# Time of Arrival & Wind Speed Probabilities

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



**Earliest Reasonable Arrival Time of Tropical-Storm-Force Winds**



**City**

**Chance for  
TS Winds**

**Changes Since  
Last Packet**

**West Palm Beach**

**3%**

**-2%**

**Ft. Lauderdale**

**4%**

**-3%**

**Miami**

**3%**

**-1%**

**Marathon**

**11%**

**-3%**

**Key West**

**12%**

**-5%**

**Naples**

**8%**

**-1%**

**Ft. Myers**

**4%**

**+/-0%**

There is a 1 in 10 chance of tropical storm force winds across the Florida Keys mid-week.

If they were to occur, they could arrive as early as Tuesday night, but most likely during the afternoon on Wednesday.

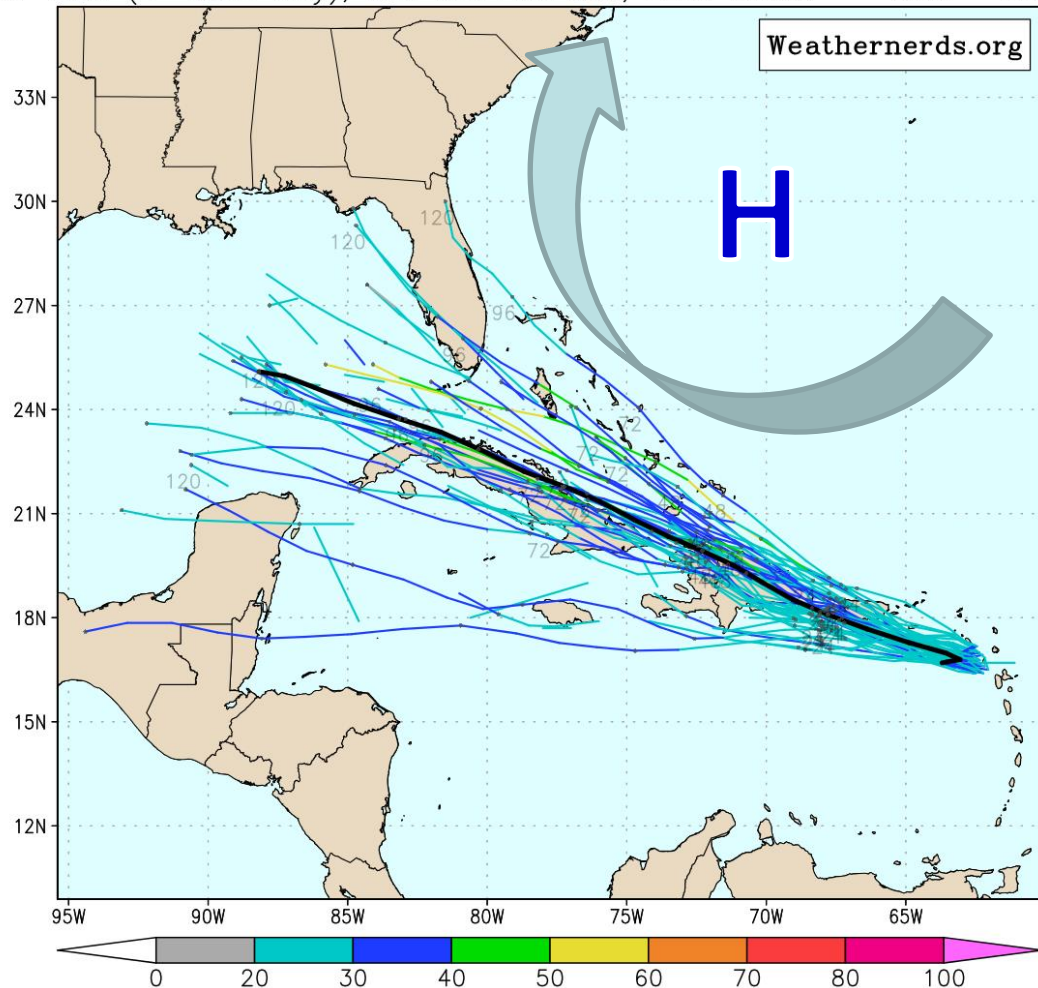




# Model Forecasts

## Ensembles, Dynamical, and Statistical Models – Grace

ECMWF Ens. (0–120h only), init: 2021081500, AL07 Grace color = max wind (kt)



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.

With Grace forecast to move near the mountainous Greater Antilles, it once again makes the intensity forecast uncertain.

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. But there is a wide spread in possibilities of track AND intensity!

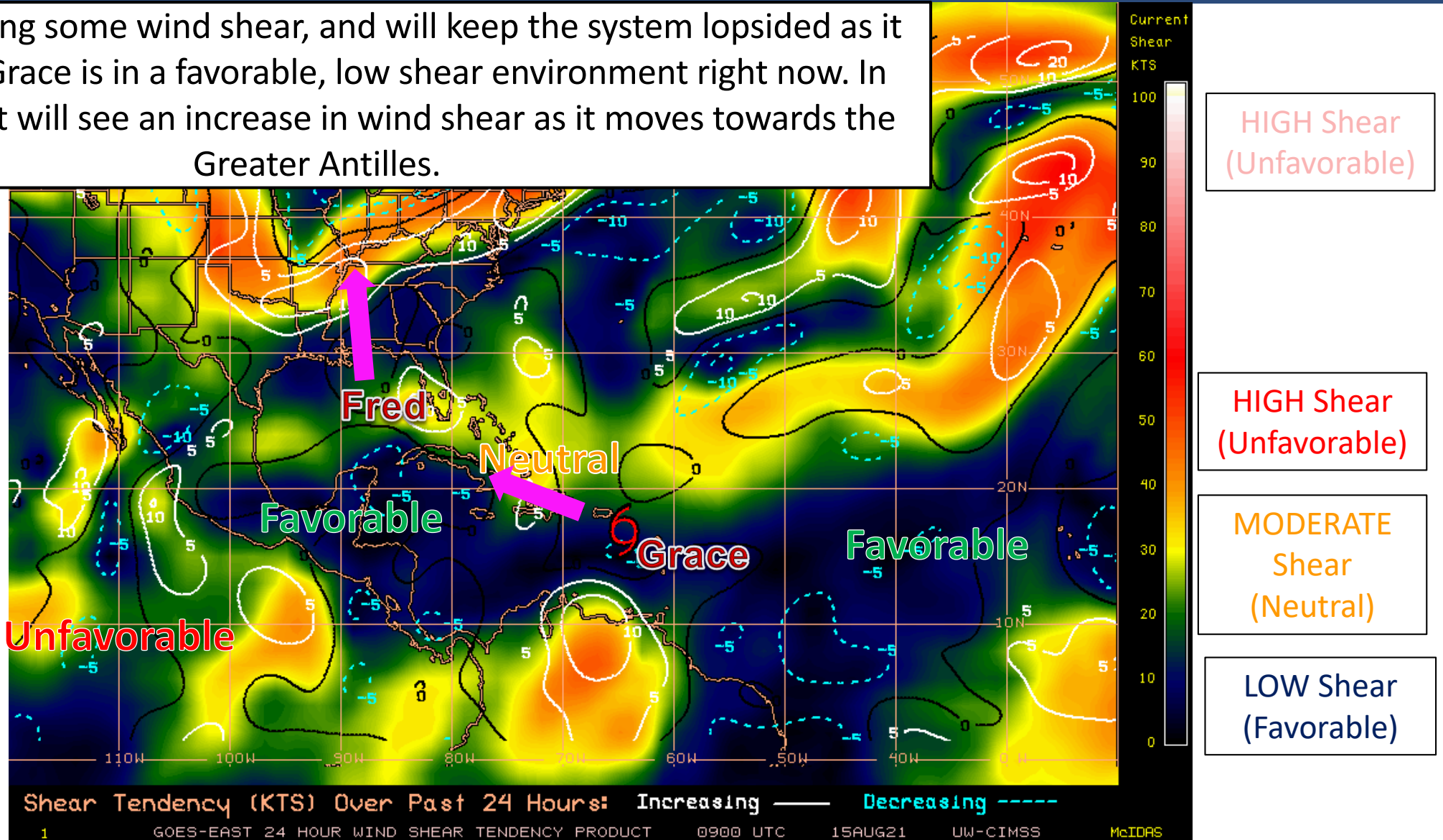


# Wind Shear

Is the environment favorable for the system?

Color denotes the amount of wind shear and the lines denote how it have changed over the last 24 hours (dotted lines show decreasing shear and solid lines show increasing).

Fred is experiencing some wind shear, and will keep the system lopsided as it makes landfall. Grace is in a favorable, low shear environment right now. In about 24 hours, it will see an increase in wind shear as it moves towards the Greater Antilles.



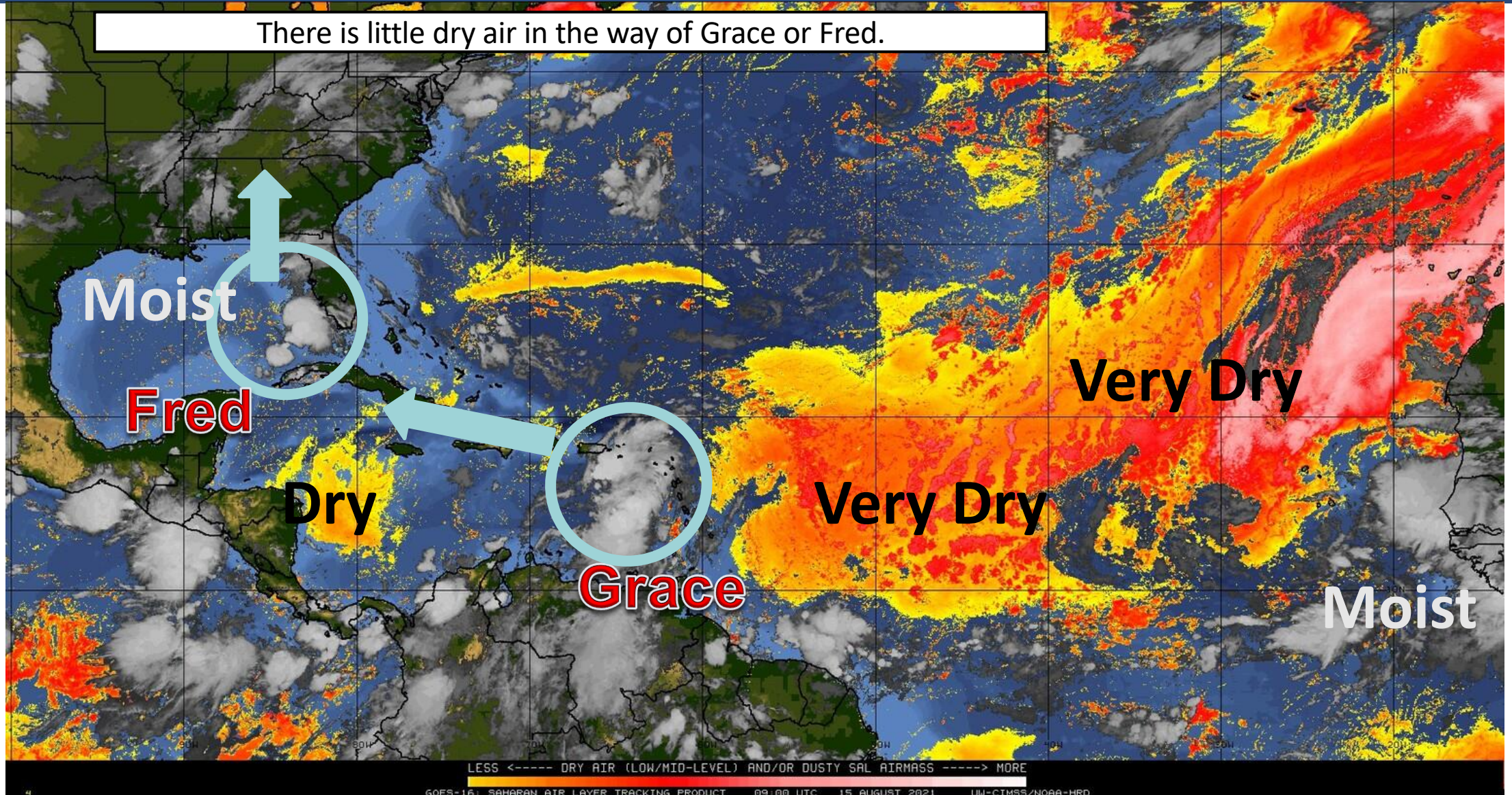




# Dry Air & Saharan Dust

Is the environment favorable for the system?

Color denotes concentration of Saharan Dust or dry, stable air.







# Sea Surface Temperatures & Anomalies

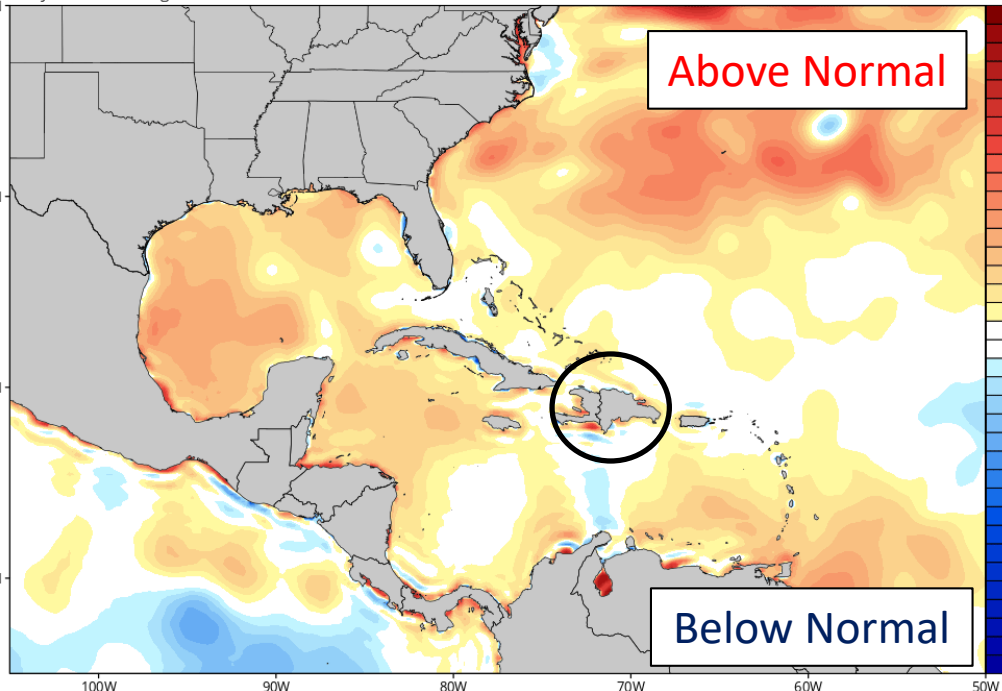
Is the ocean favorable for the system?

Water temperatures across much of the Caribbean, southwest Atlantic, and Gulf of Mexico are above normal and will easily support development. Water temperatures will become more favorable as Grace moves west/northwest.

CDAS Sea Surface Temperature Anomaly (°C) (based on CFSR 1981-2010 Climatology)

Analysis Time: 00z Aug 15 2021

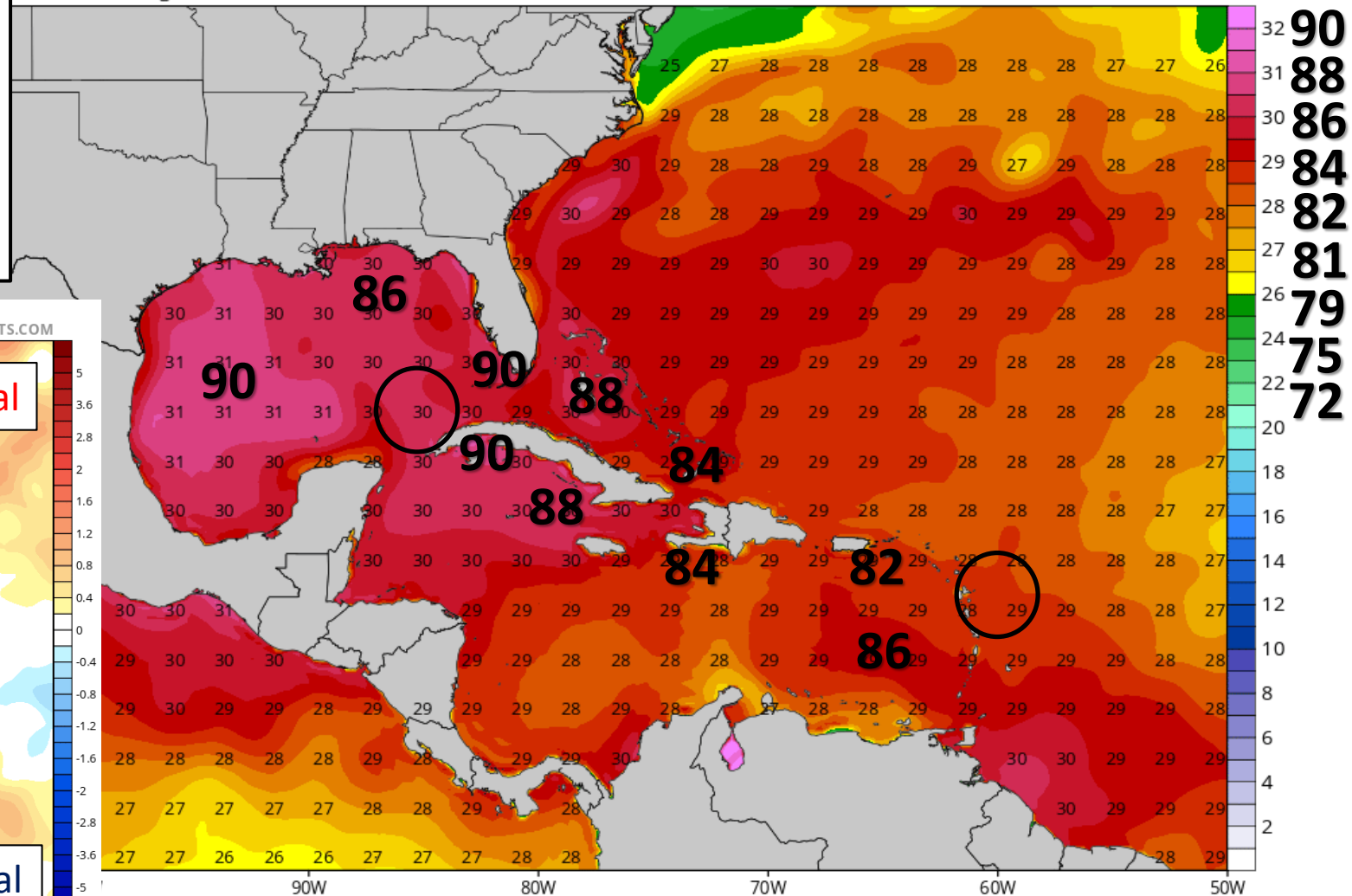
TROPICALTIDBITS.COM



Sea Surface Temperature (°C)

Analysis Time: 00z Aug 15 2021

TROPICALTIDBITS.COM





# Key Messages

## From the National Hurricane Center

### Key Messages for Remnants Of Fred

Advisory 23: 5:00 AM EDT Sun Aug 15, 2021

1. Today through Monday, heavy rainfall could lead to areal, urban, and small stream flooding impacts, and cause new and renewed river flooding across southern Florida, the Big Bend, and Panhandle. From Monday onward, heavy rain and flood impacts could extend 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. Fred is forecast to regenerate as a tropical cyclone over the Gulf of Mexico later today, and bring a risk of tropical storm conditions to portions of the northern Gulf coast, especially from coastal Mississippi to the Florida Panhandle beginning Monday night. A Tropical Storm Warning will likely be required for a portion of this area later this morning.



For more information go to [hurricanes.gov](https://hurricanes.gov)

### Key Messages for Tropical Storm Grace

Advisory 8: 5:00 AM AST Sun Aug 15, 2021

1. Tropical storm conditions are expected over portions of the Leewards Islands this morning and the Virgin Islands and Puerto Rico today. Tropical storm conditions are expected over eastern parts of the Dominican Republic tonight and Monday. Tropical storm conditions are possible over western portions of the Dominican Republic and Haiti Monday and Monday night.

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

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



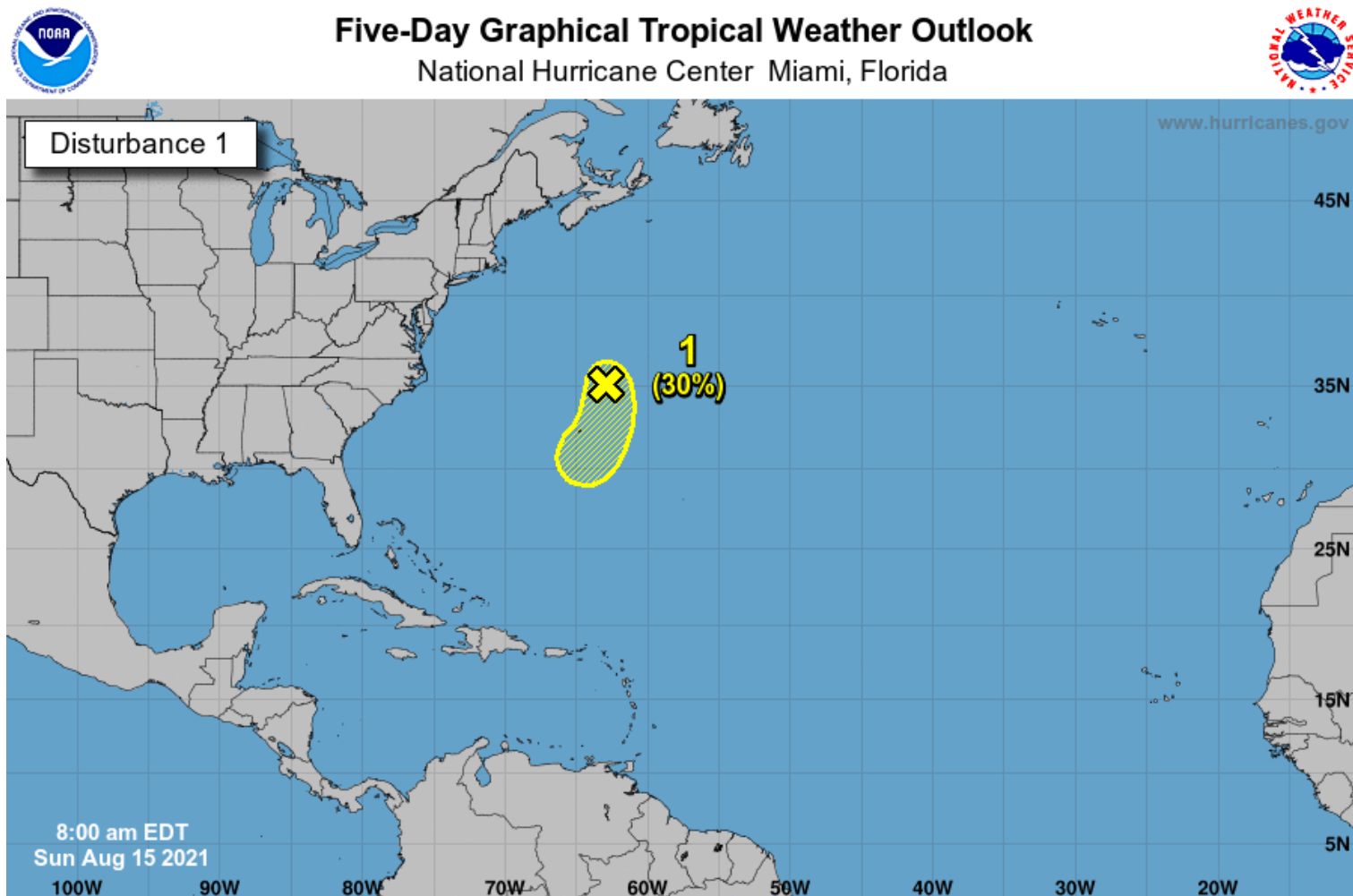
For more information go to [hurricanes.gov](https://hurricanes.gov)





# Tropical Weather Outlook

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



Current Disturbances and Five-Day Cyclone Formation Chance:   
 Tropical or Sub-Tropical Cyclone:   
    < 40%    40-60%    > 60%   
    Depression    Storm    Hurricane   
    Post-Tropical Cyclone or Remnants

A small but well-defined low pressure system located about 200 miles north-northeast of Bermuda is producing disorganized showers and thunderstorms mainly to the south of the center. Some gradual development is possible over the next couple of days while the system moves slowly to the south or south-southwest at about 5 mph, near or to the east of Bermuda. By Tuesday, however, environmental conditions are forecast to become less conducive for tropical cyclone formation.

**\*Formation chance through 48 hrs...low...30%**

**\*Formation chance through 5 days...low...30%**



# Overall Summary

## Remnants of Fred:

- The “center” of Fred is located about 100 miles west of the Dry Tortugas, or 400 miles south of Panama City, Florida.
- Maximum sustained winds are around 40 mph and Fred is moving to the north-northwest at 8 mph.
- Hurricane Hunters are enroute to Fred to determine if a closed circulation has redeveloped. If it has, Fred will become a Tropical Storm once again.
- Fred will gradually gain strength as it moves northward over the next 36 hours. Fred will make landfall Monday night or early Tuesday morning with winds around 50 mph.
- **The track has shifted east overnight due to where the new circulation is forming. Additional shifts east are possible today.**
- Fred is lopsided, with most of the impacts on the eastern side of the storm, which will extend well outside of the cone.

## Tropical Storm Grace:

- Grace remained disorganized overnight. The center of Grace is located about 100 miles south of Puerto Rico, or about 1,100 miles southeast of Miami, Florida.
- Maximum sustained winds are around 40 mph. Little change in strength is forecast before it reaches Hispaniola tonight.
- Tropical Storm Grace is moving toward the west-northwest at 16 mph- Grace has finally slowed down.
- On the forecast track, the center is forecast to move over Hispaniola tonight, and then Cuba on Tuesday and Wednesday.
- Grace could approach the Florida Keys Wednesday night, but the track has shifted south. Grace moves into the Gulf on Thursday.
- Land Interaction makes the forecast uncertain!!

## Florida Outlook:

- **Tropical Storm Watches** have been issued for the Panhandle: Bay, Escambia, Franklin, Gulf, Holmes, Okaloosa, Santa Rosa, Walton, and Washington
- 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 and Big Bend Monday/Monday night.
- The storm surge threat is minor, with surge values of 1-3’. High surf (4-10’) in the Panhandle will cause beach erosion and rip currents.
- It is too early to determine what, if any, impacts Florida may experience from Grace, but it should be monitored.
- Invest 96L near Bermuda poses no threat to Florida and only has a 30% (low) chance of development over the next few days.

Another briefing packet will be issued this afternoon with the 5 PM advisory. For the latest information on the tropics, please visit the National Hurricane Center website at [www.hurricanes.gov](http://www.hurricanes.gov).



# TROPICAL UPDATE



Created by:

Michael Spagnolo, Deputy State Meteorologist

[Michael.Spagnolo@em.myflorida.com](mailto:Michael.Spagnolo@em.myflorida.com)

State Meteorological Support Unit

Florida Division of Emergency Management

Users wishing to subscribe (approval pending) to this distribution list, register at:

[https://public.govdelivery.com/accounts/FLDEM/subscriber/new?topic\\_id=SERT\\_Met\\_Tropics](https://public.govdelivery.com/accounts/FLDEM/subscriber/new?topic_id=SERT_Met_Tropics).

Other reports available for subscription are available at:

<https://public.govdelivery.com/accounts/FLDEM/subscriber/new?preferences=true>