

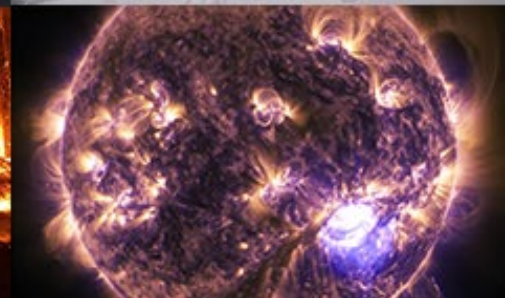
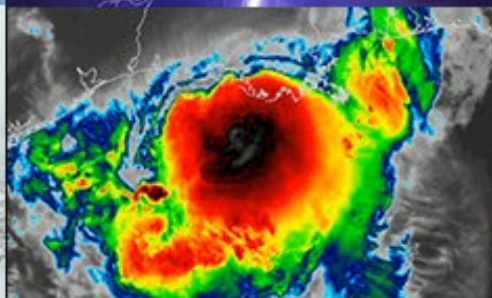


**NATIONAL  
WEATHER  
SERVICE**

# National Weather Service Overview

September 13<sup>th</sup>, 2022

Erik Heden, Warning Coordination Meteorologist NWS Morehead City, NC





# Our Local Office



Eastern part of North  
Carolina

Includes: Land areas, inland  
rivers, sounds, and adjacent  
ocean

Other parts of the state  
covered by other local offices  
(Raleigh, Wilmington,  
Wakefield etc)







# Our Website

weather.gov/moreheadcity



Weather information from past events, current weather, and forecast

Explore the website and bookmark or save what you like

Go in depth as much as you need

**NATIONAL WEATHER SERVICE**  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH ABOUT

Local forecast by "City, St" or ZIP code  
Enter location ...   
[Location Help](#)

**News Headlines**

- [The Fall 2019 Edition Of Our Newsletter, Carolina Skywatcher, Is Now Online!](#)

**MY FORECAST**  
Morehead City NC

Overcast  
**49°F**  
9°C [Get Detailed Info](#)

**Today**  
Partly Sunny  
High: 55°F

**Tonight**  
Mostly Cloudy  
Low: 43°F  
[change location](#)

**NWS Forecast Office Newport/Morehead City, Newport/Morehead City, NC**  
Weather Forecast Office

[Weather.gov](#) > Newport/Morehead City, NC

[Current Hazards](#) [Current Conditions](#) [Radar](#) [Forecasts](#) [Rivers and Lakes](#) [Climate and Past Weather](#) [Local Programs](#)

Click a location below for detailed forecast.

Watches, Warnings & Advisories

- [Coastal Flood Advisory](#)
- [High Surf Advisory](#)
- [Small Craft Advisory](#)
- [Hazardous Weather Outlook](#)

Last Map Update: Tue, Nov. 19, 2019 at 11:58:19 am EST

**Tropical** **Local Radar** **Satellite**



# Weather Briefings

weather.gov/moreheadcity



**NATIONAL WEATHER SERVICE**  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH ABOUT

Local forecast by "City, ST" or ZIP code  
Enter location ... Go  
[Location Help](#)

**News Headlines**

- [Here's the Updated Skywarn Training Schedule!](#)
- [Here's a Summary on the March 2-5, 2018 Wind/Coastal Flood/Low Water Event.](#)
- [Summary on the Minor Winter Weather Event, March 12-13, 2018](#)

**NWS Forecast Office Newport/Morehead City, NC**  
Weather Forecast Office

[Weather.gov](#) > Newport/Morehead City, NC

Current Hazards Current Conditions Radar Forecasts Rivers and Lakes Climate and Past Weather Local Programs

Click a location below for detailed forecast.

Watches Warnings & Advisories  
Small Craft Advisory  
Freeze Watch  
Hazardous Weather Outlook

City, ST  
Enter Your City, ST or ZIP Code  
☐ Remember Me  
**Get Weather**  
Privacy Policy

Rocky Mount Williamston Columbia Raleigh  
Greenville  
Goldsboro Kinston New Bern  
Hatteras

[Radar](#) [Current Weather](#) [Rivers & Lakes](#) [Satellite](#) [Weather Info Display](#) [Forecast Maps](#)

[Hour by Hour Forecast](#) [Winter Weather](#) [Map View](#) [Surf Forecast/Rip Currents](#) [Weather Hazard Briefing \(when applicable\)](#) [Local Self-Briefing Pages](#)

[Forecaster Discussion](#) [Marine](#) [Text Products](#) [Tropical](#) [Skywarn](#) [Submit Storm Reports](#)

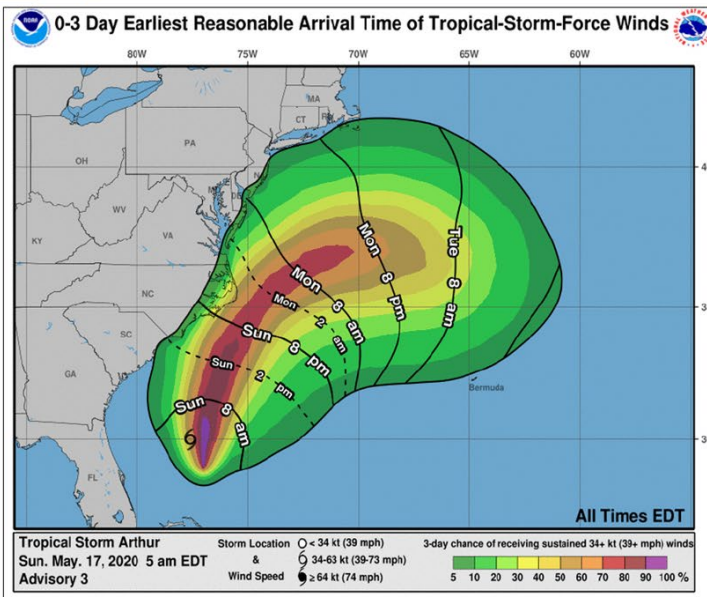
Follow us on Twitter Follow us on Facebook MHX RSS Feed

## Earliest Reasonable Time of Arrival

Tropical Storm Arthur



Morehead City, NC  
WEATHER FORECAST OFFICE



5/17/2020 6:24 AM

www.weather.gov/MoreheadCity

- The earliest reasonable time of arrival of Tropical Storm Force Winds for Eastern North Carolina would be sometime tonight.
- However, the most likely time this area could see Tropical Storm Force Winds will be during the day on Monday.





# Social Media

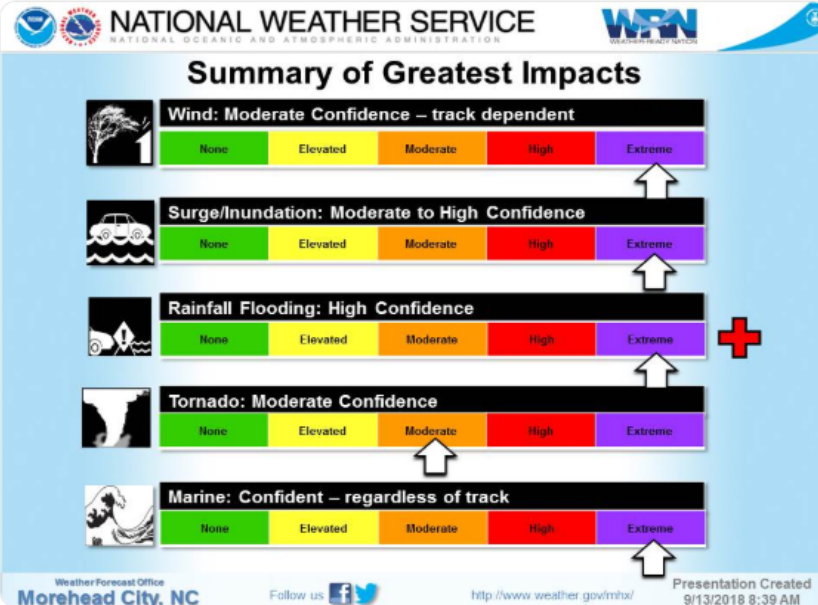
Search NWS Morehead City



NWS Newport/Morehead

@NWSMoreheadCity

Category of the storm is only related to wind, it does not tell you about all of the impacts with a [#hurricane](#) like [#florence](#). Our impacts have not changed with storm surge and catastrophic flooding. Do not let your guard down. [weather.gov/media/mhx/Late...](http://weather.gov/media/mhx/Late...)



8:44 AM - 13 Sep 2018

765 Retweets 1,078 Likes



40 765 1.1K

YouTube

Search

**NATIONAL WEATHER SERVICE**

**Hurricane Florence Briefing #15**

As of: 630 AM  
Wednesday, September 12<sup>th</sup> 2018

**What has Changed?**

- Track has shifted a bit further south and west, and has slowed significantly near the coast
- Extreme rainfall amounts now are expected across southern coastal counties
- Major River Flooding Likely

Disclaimer: Do not use after 5 PM Wednesday 9/12/18

Next Briefing: By 600 PM Wednesday (9/12/18)

0:19 / 15:25

Morehead City, NC

Hurricane Florence NWS Morehead City Wednesday 900 AM Briefing

2,895 views

13 0 SHARE SAVE



NWSMoreheadCity

Published on Sep 12, 2018

SUBSCRIBE 199

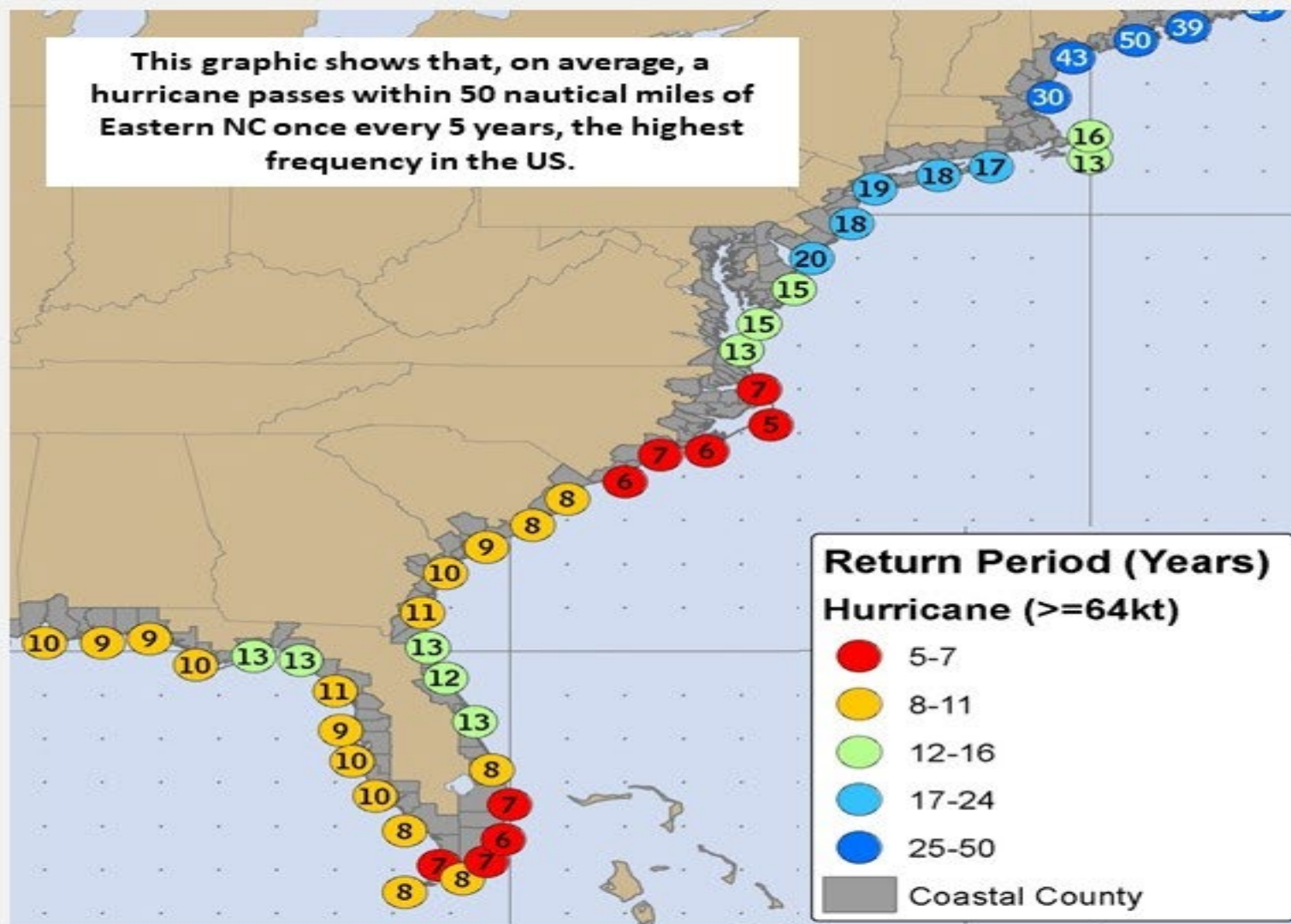
## Hurricane Florence Lead Up

# Tropical Cyclone Frequency

Eastern North Carolina is the most frequently impacted stretch of coastline by tropical systems in the US.

...

**NOW** is the time to prepare. Resources will be much more limited if you wait until a storm is approaching to prepare.



National Weather Service

National Oceanic and Atmospheric Administration

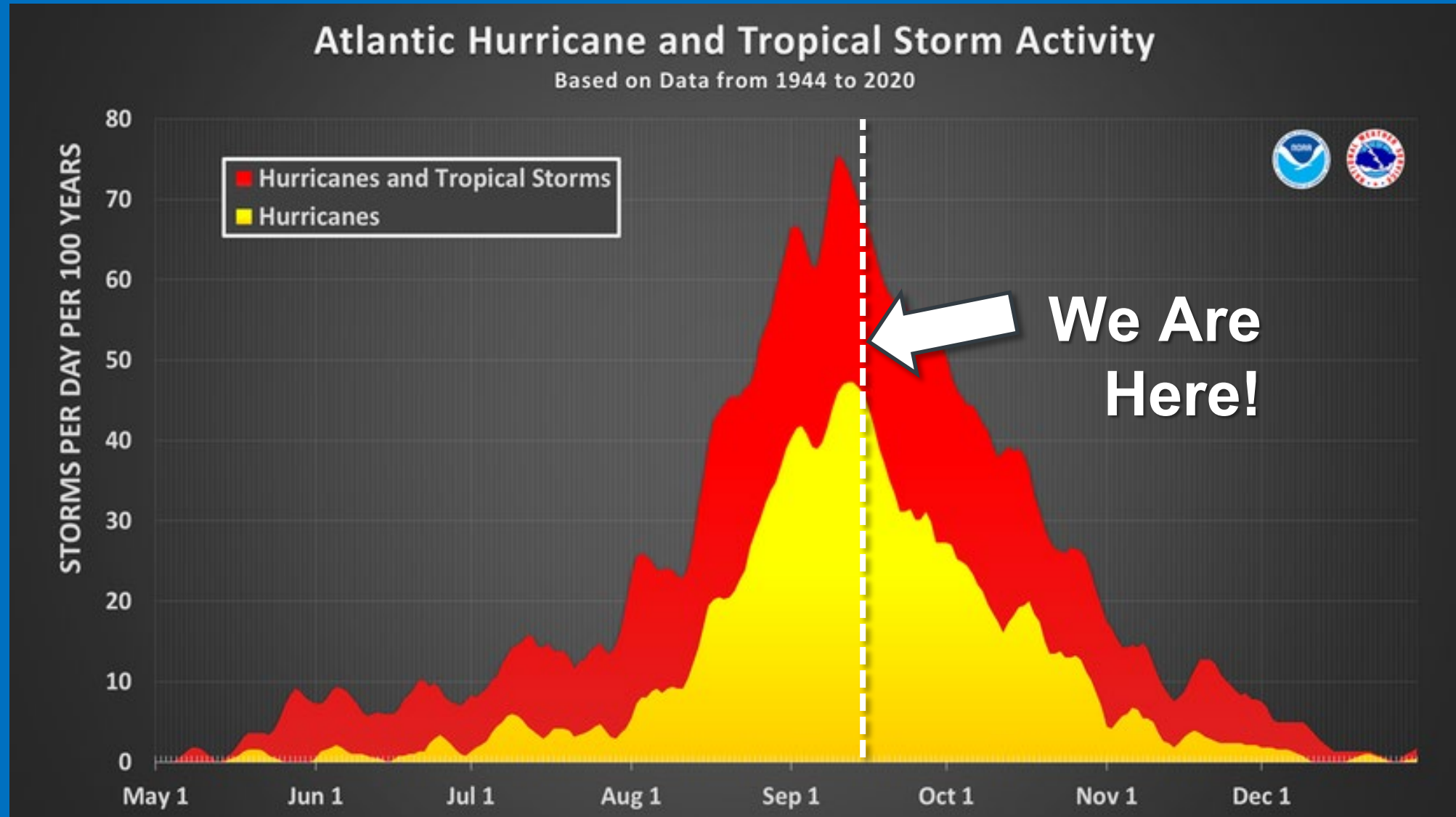


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# Atlantic Activity Climatology



# Trusted Sources Are Important!

**Daily Mail** News

Share 2.1k shares

US braces for a battering by THREE potential hurricanes in September - including one that could spoil Labor Day for millions - after boiling August which saw no named storms for only the third time in 60 years

By Harriet Alexander For Dailymail.com  
19:07 EDT 29 Aug 2022 , updated 10:35 EDT 30 Aug 2022



+33 View gallery

Share 2.1k shares

ADVERTISEMENT

**Daily Mail** News

Share 27 shares

'Storm of the season' threatens US coast: Tropical storm forming in Atlantic has 80% chance of turning into hurricane by Labor Day - after Saharan dust suppressed severe weather over the Atlantic

By Joseph Michalitsianos For Dailymail.Com  
13:53 EDT 30 Aug 2022 , updated 14:01 EDT 30 Aug 2022



+6 View gallery

Share 27 shares

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**Carteret County News-Times** 2h · 🌐

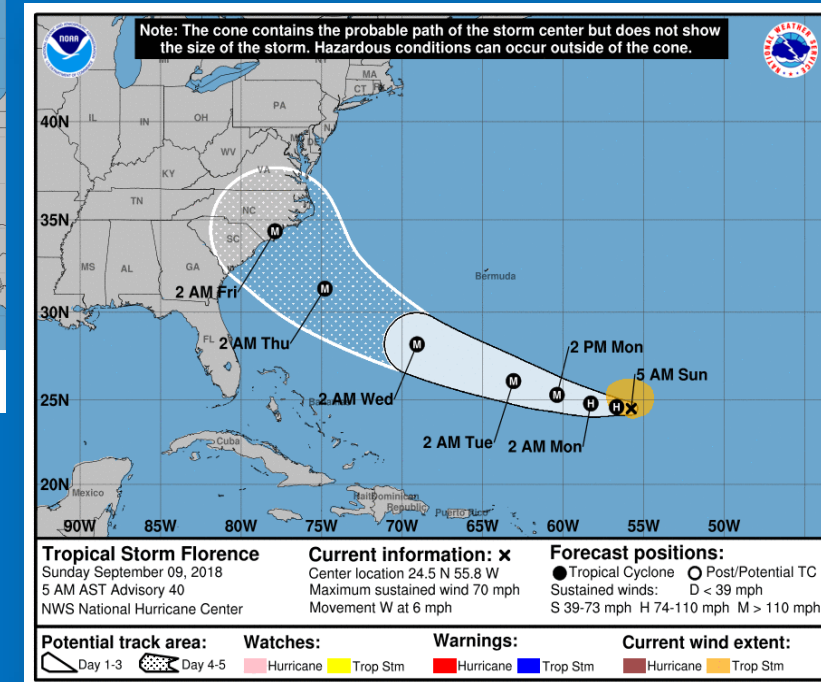
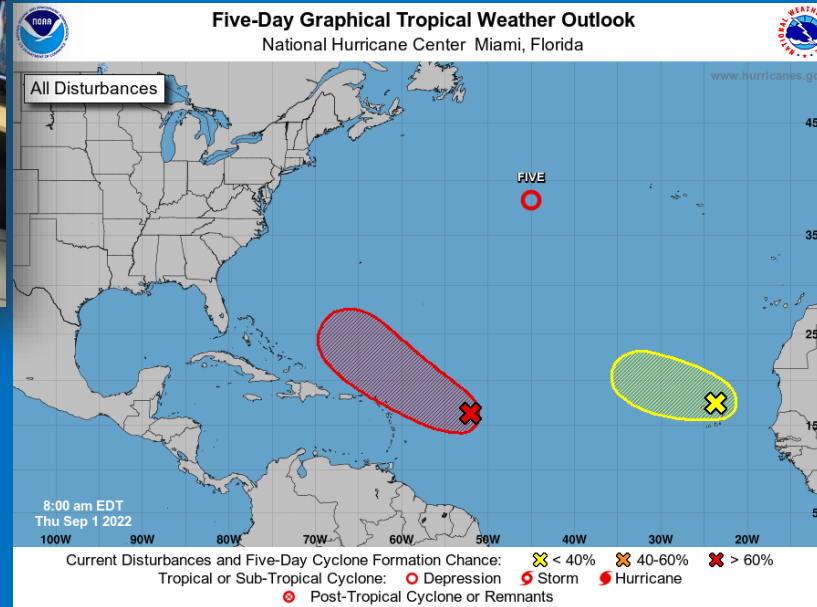
Tropical Depression #5 has formed in the northern Atlantic Ocean. The storm will likely become Danielle in the next 24 hours a... See more



26 15 comments · 21 shares



# Trusted Sources Are Important!



[weather.gov/moreheadcity/tropical](https://weather.gov/moreheadcity/tropical)



NATIONAL WEATHER SERVICE

Building a Weather-Ready Nation // 9

# Our Website

[weather.gov/moreheadcity/hurricaneprep](https://weather.gov/moreheadcity/hurricaneprep)



Hurricane Preparedness

## ASSEMBLE DISASTER SUPPLIES



Make a list of supplies and assemble them before hurricane season begins. Have enough food and water for each person for at least three days. Fill your prescriptions and have medicine on hand. Radios, batteries and phone chargers are also must-haves. Gas up your vehicle and have cash on hand.



Food & water



Medicine & prescriptions



Keep gas tank full



Radio, batteries, phone chargers



Cash on hand

[weather.gov/hurricane](https://weather.gov/hurricane)



Modeled after hurricane awareness week

Graphics and information on how to prepare

Graphics and information on ALL impacts from a tropical cyclone

NC Flood Maps



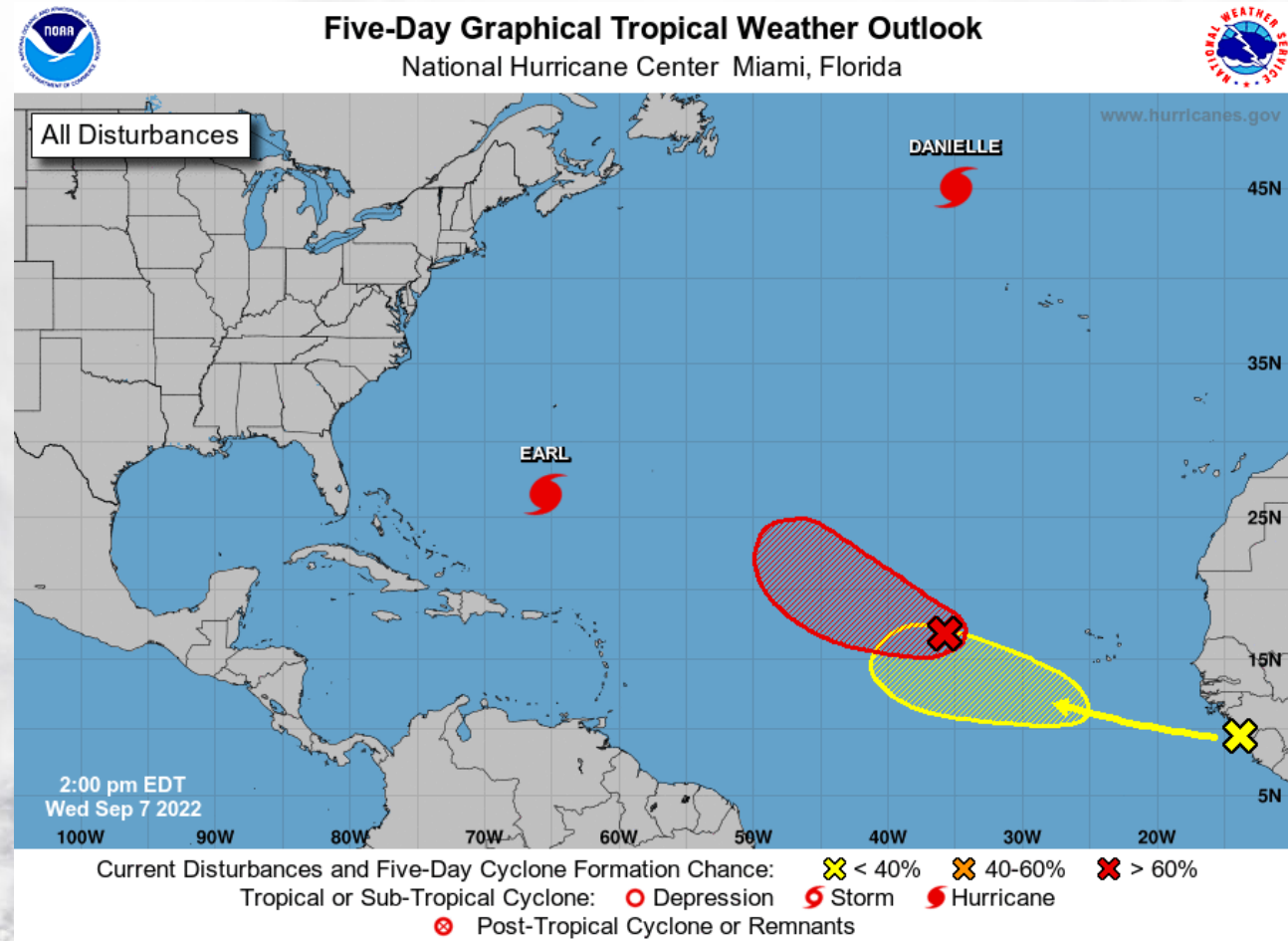
# National Hurricane Center

Hurricanes.gov or weather.gov/moreheadcity/tropical



## Tropical Weather Outlook

- Issued 4 times a day
- 8 and 2 AM/PM EDT
- Tropical cyclone formation potential for next 5 days
- Does not give information beyond 5 days!

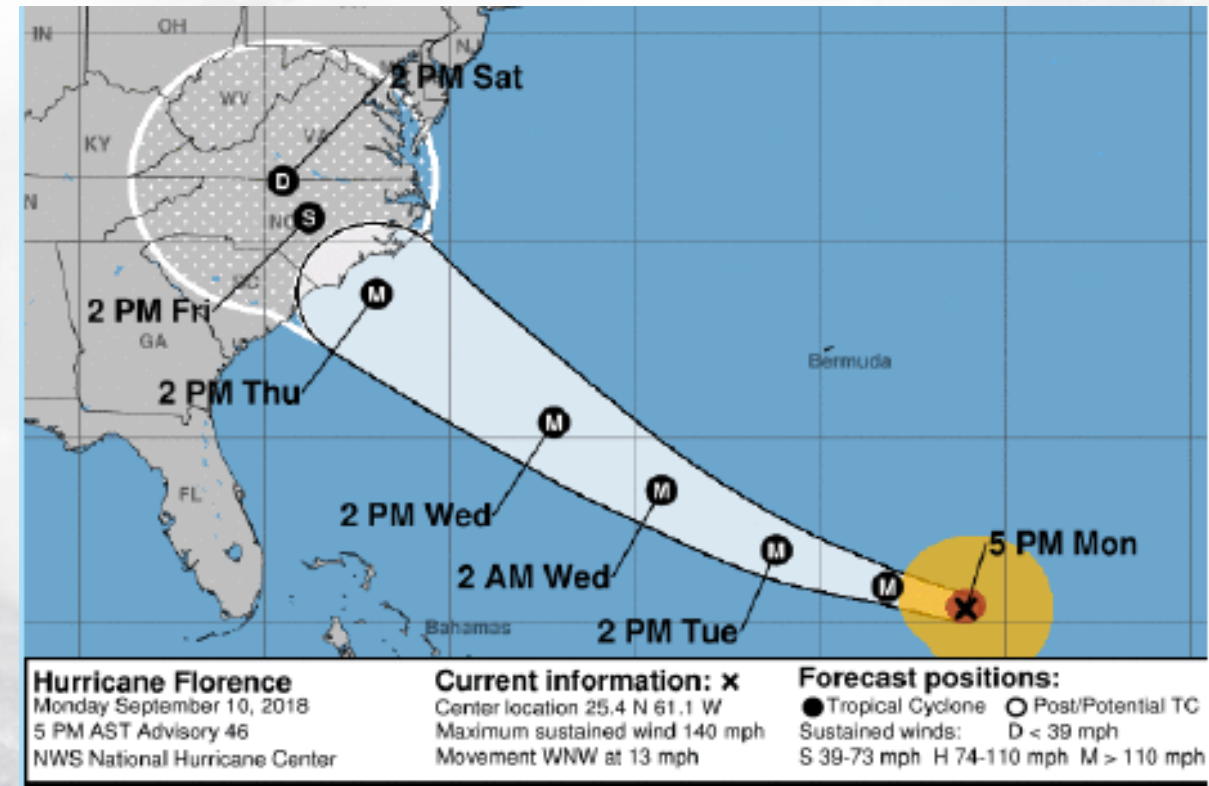


# National Hurricane Center



## Tropical Cyclone Track Forecast Cone Watches/Warnings Initial Wind Field

- Cone represents probable path of the **CENTER** of the storm
- The cone does **NOT** show impacts
- Impacts can occur **HUNDREDS** of miles from the center of the storm
- The center of the storm passes within the cone roughly of the time





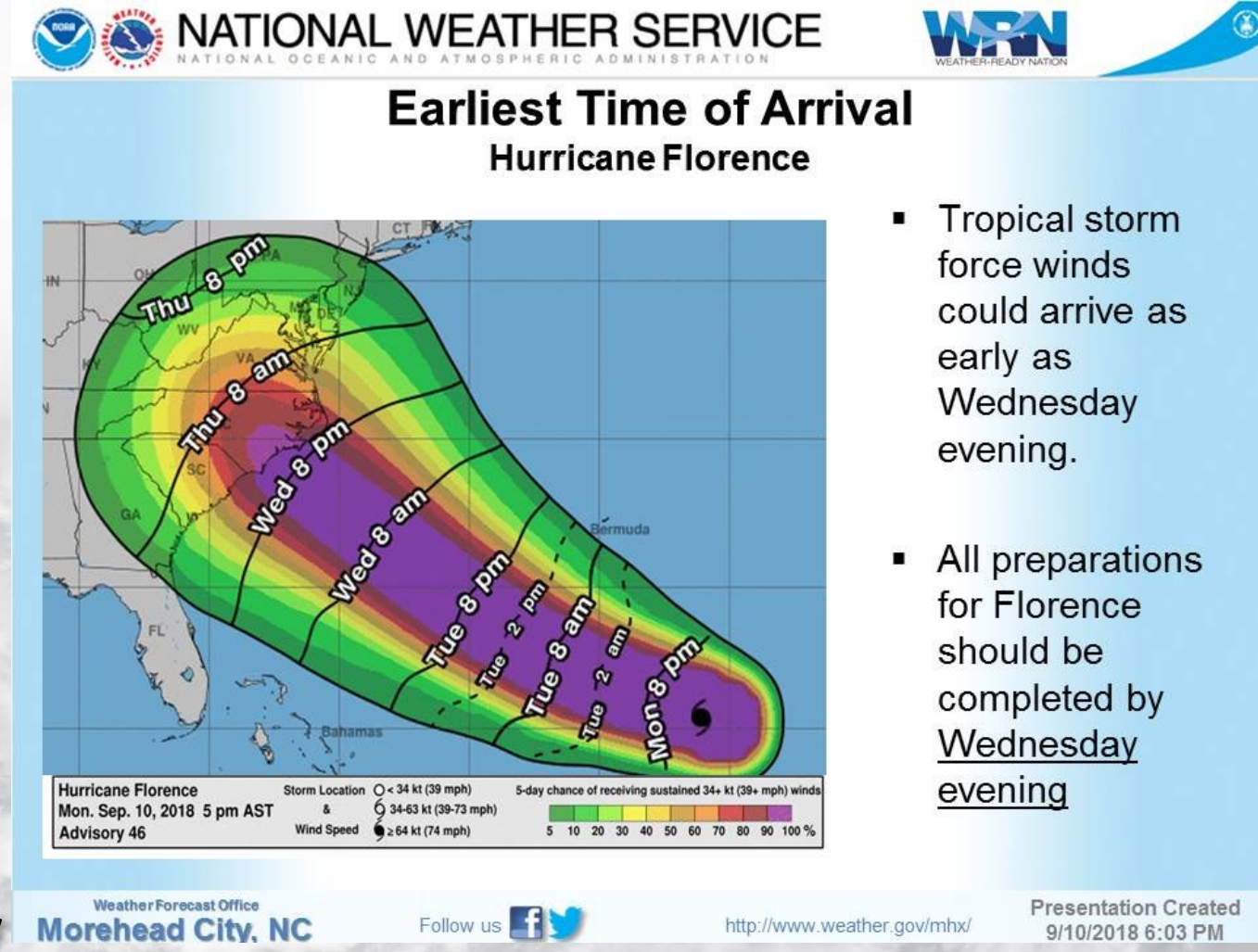
# National Hurricane Center

Hurricanes.gov or weather.gov/moreheadcity/tropical



## Earliest Reasonable Arrival Time Tropical Storm Force Winds

- Reasonable worse case scenario
- Identifies a window when preparations should be made by
- While times are given, especially farther out, focus in more general terms
- For example instead of Wednesday 8 PM or Thursday 8 AM



Sometime late Wednesday or early Thursday

# National Hurricane Center

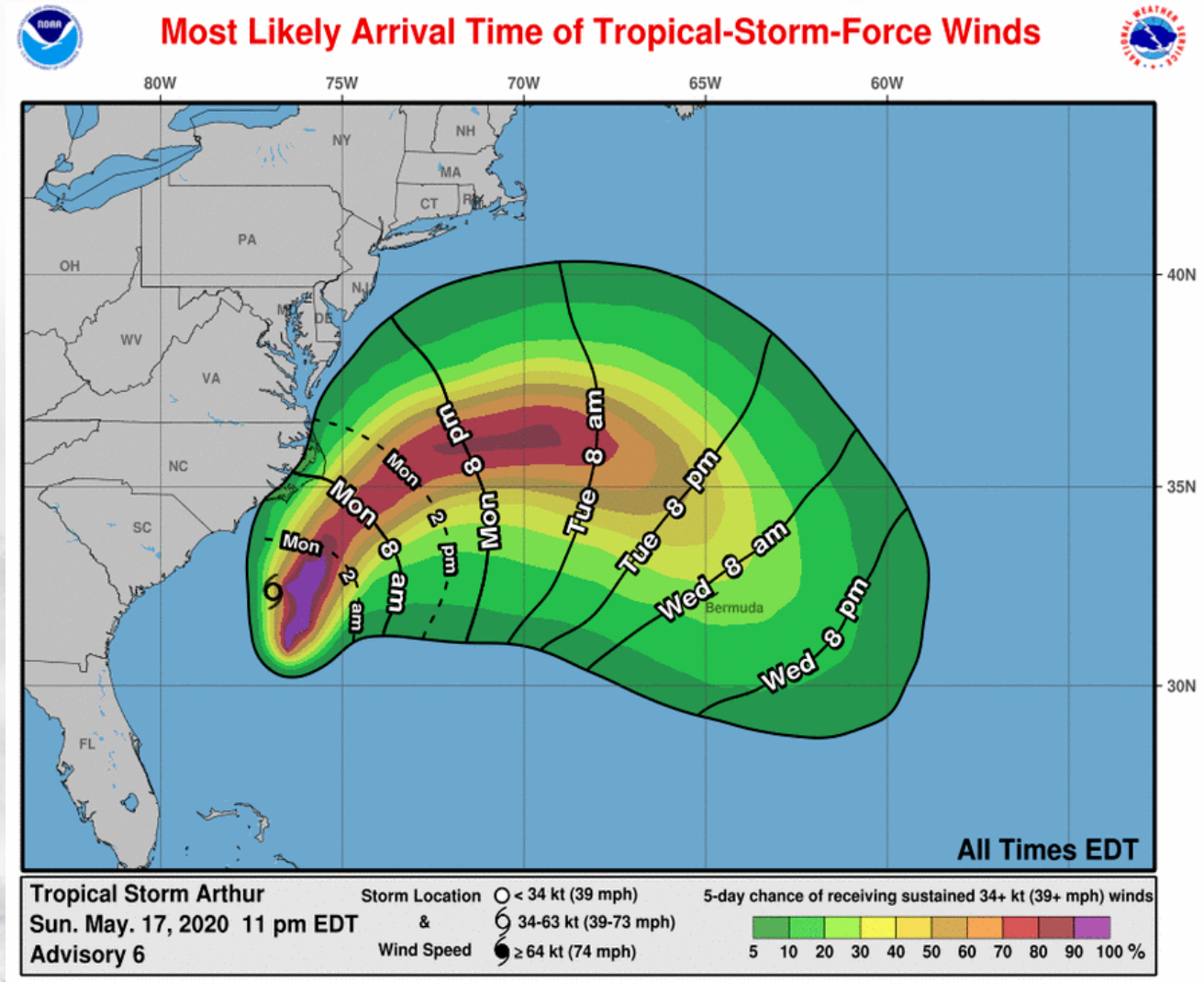
Hurricanes.gov or weather.gov/moreheadcity/tropical



## Most Likely Arrival Time Tropical Storm Force Winds

- Most likely scenario
- Identifies a window when we expect tropical storm force winds to arrive
- While times are given, especially farther out, focus in more general terms
- For example instead of Monday 8 AM

Sometime Monday Morning





# It's About the Impacts



**2010 – 2019  
in the U.S., Category 1  
hurricanes\***

**175 direct deaths  
\$105 billion**

**\*Irene, Isaac, Sandy, Hermine, Matthew, Nate, Florence, Barry, Dorian**

# **Tropical Cyclones Produce More Than Just Wind**

**Rainfall Flooding  
Storm Surge  
Rip Currents  
Wind  
Tornadoes**



# Flash Flooding

Heavy rainfall is common in tropical cyclones.

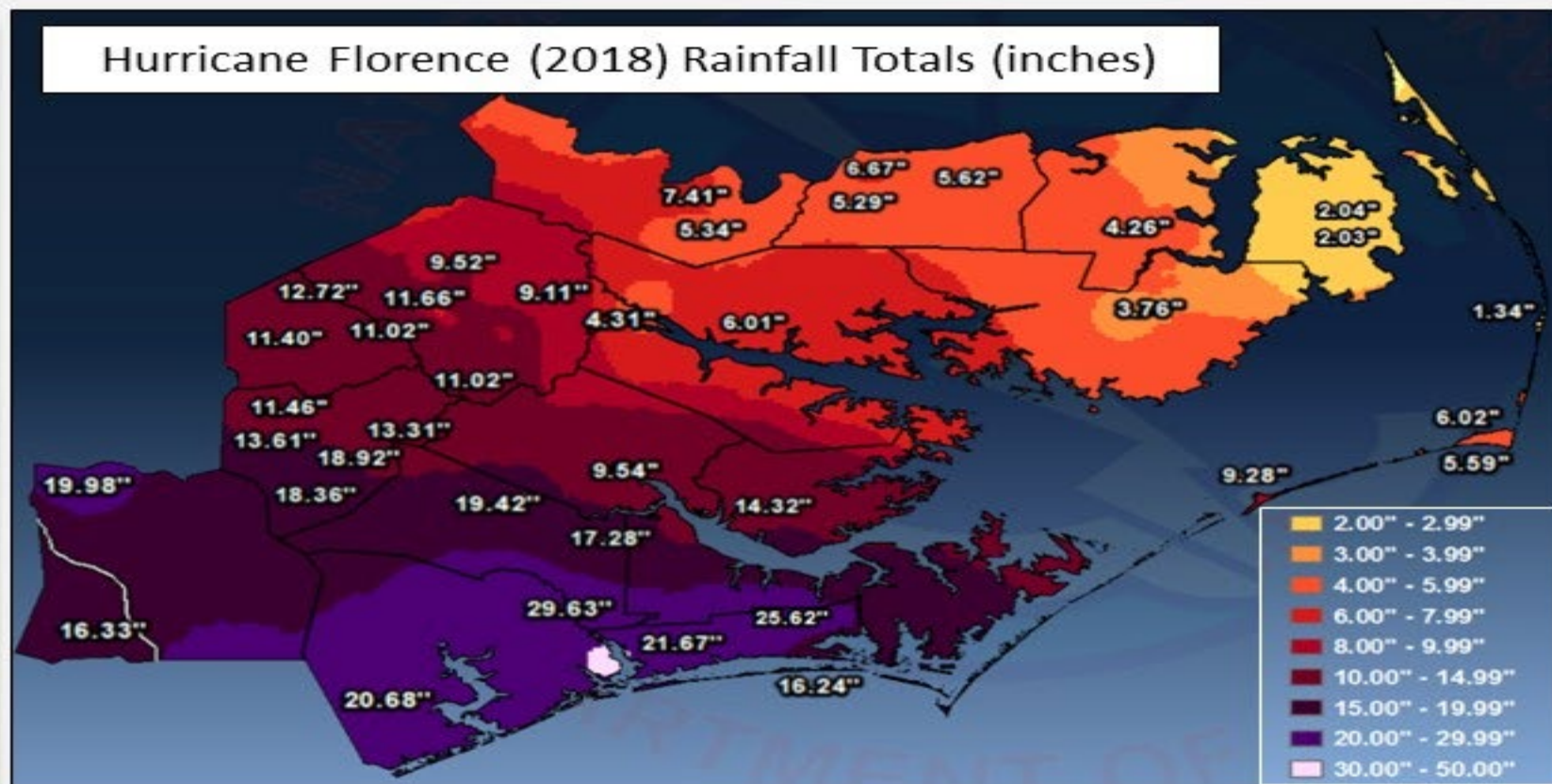
...

NWS Morehead City will issue Flash Flood Warnings as needed during a hurricane, so make sure you have a way to receive warnings, such as a NOAA Weather Radio.

...

A hurricane's category is **not** an indication of the amount of rainfall it will bring. More important is the movement and size of the storm.

Hurricane Florence (2018) Rainfall Totals (inches)



Very slow-moving Hurricane Florence (2018) brought nearly 3 ft of rainfall to portions of eastern NC, resulting in catastrophic flash flooding that destroyed infrastructure and made travel impossible.



National Weather Service

National Oceanic and Atmospheric Administration



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Find more info at [weather.gov/moreheadcity](https://weather.gov/moreheadcity)



# River Flooding

River flooding can last for weeks to months after a hurricane, impacting travel and inundating communities.

...

Inland areas not vulnerable to storm surge could still be vulnerable to river flooding.

...

River flooding in our area is partially dependent on local rainfall, but more so on rainfall further inland.



Hurricane Matthew Flooding: Tar River near Grimesland



Hurricane Matthew Flooding: Trent River in Jones County

Hurricane Matthew (2016) brought devastating flooding to much of eastern NC despite the highest rainfall totals falling inland of our area. River levels peaked almost a week after the storm, with many major roadways closed and business and residences inundated.



National Weather Service

National Oceanic and Atmospheric Administration



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Find more info at [weather.gov/moreheadcity](https://weather.gov/moreheadcity)



# Storm Surge

Much of eastern North Carolina is vulnerable to Storm Surge.

...

Do not assess your storm surge vulnerability based on previous storms. Know your elevation and monitor the forecast when a storm approaches.

...

Wave action can add to the damage done by storm surge.

Approximate Storm Surge Inundation from Hurricane Florence (2018)



Hurricane Florence produced the highest storm surge on record in some locations. Some people in locations like New Bern were skeptical of forecasts because they had never witnessed that level of storm surge before.



National Weather Service

National Oceanic and Atmospheric Administration



NWSMoreheadCity

Find more info at [weather.gov/moreheadcity](https://weather.gov/moreheadcity)

# Rip Currents and Dangerous Surf

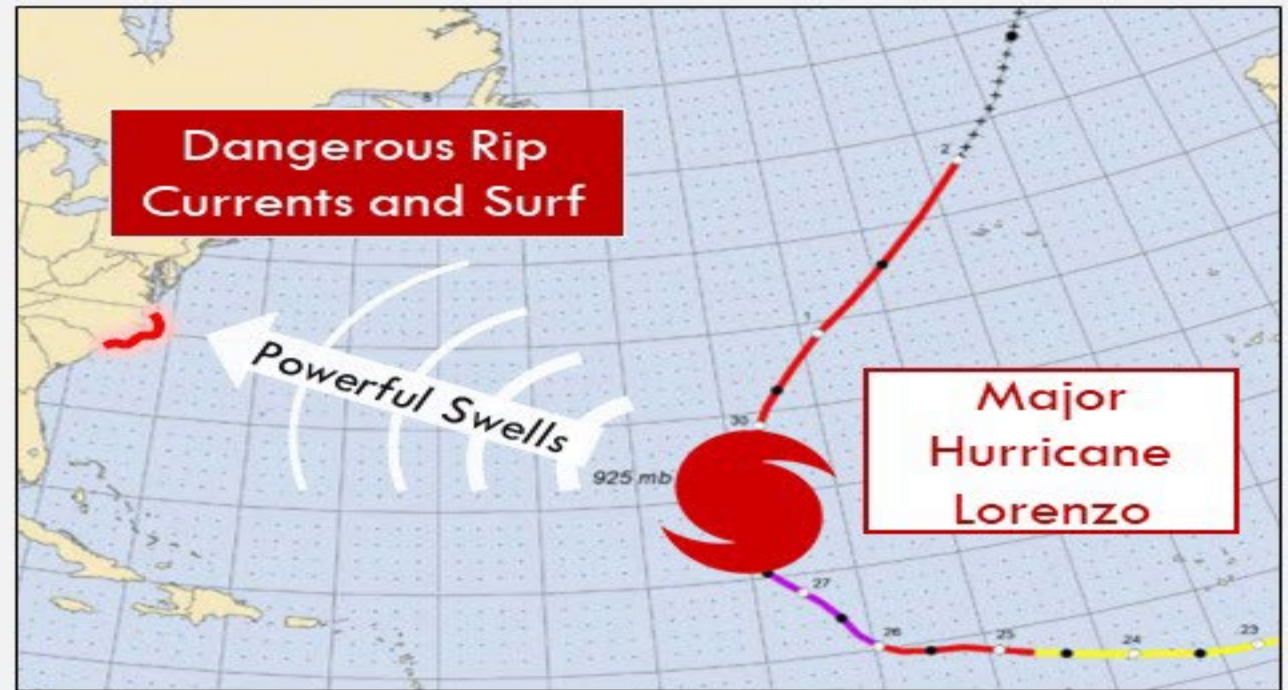
Distant hurricanes produce strong swells, bringing dangerous rip currents to local beaches on otherwise nice weather days.

...

Always check the forecast before you head to the beach, obey beach flags, and swim near a lifeguard.

## IF CAUGHT IN A RIP CURRENT

- ◆ Relax, rip currents don't pull you under.
- ◆ Don't swim against the current.
- ◆ Swim out of the current, then to shore.
- ◆ If you can't escape, float or tread water.
- ◆ If you need help, yell or wave for assistance.



Major Hurricane Lorenzo (2019) passed well out to sea, but sent powerful swell to the Carolinas creating strong rip currents and dangerous surf conditions along our beaches. There were 8 total Lorenzo-related surf deaths on the east coast, including 4 in the Carolinas.



National Weather Service

National Oceanic and Atmospheric Administration



NWSMoreheadCity

Find more info at [weather.gov/moreheadcity](https://weather.gov/moreheadcity)



# Tornadoes

Can Occur Well BEFORE A Storm Arrives (First Rain Bands)

Tornadoes can bring localized areas of much more extensive damage during (and ahead of) hurricanes.

...

NWS Morehead City will issue Tornado Warnings as needed during a hurricane, so make sure you have a way to receive warnings, such as a NOAA Weather Radio.



A tornado (seen coming onshore as a waterspout via Surfline Camera, top) caused extensive damage on Emerald Isle ahead of the main core of Hurricane Dorian (2019). A Tornado Warning was issued and no injuries were reported.



National Weather Service

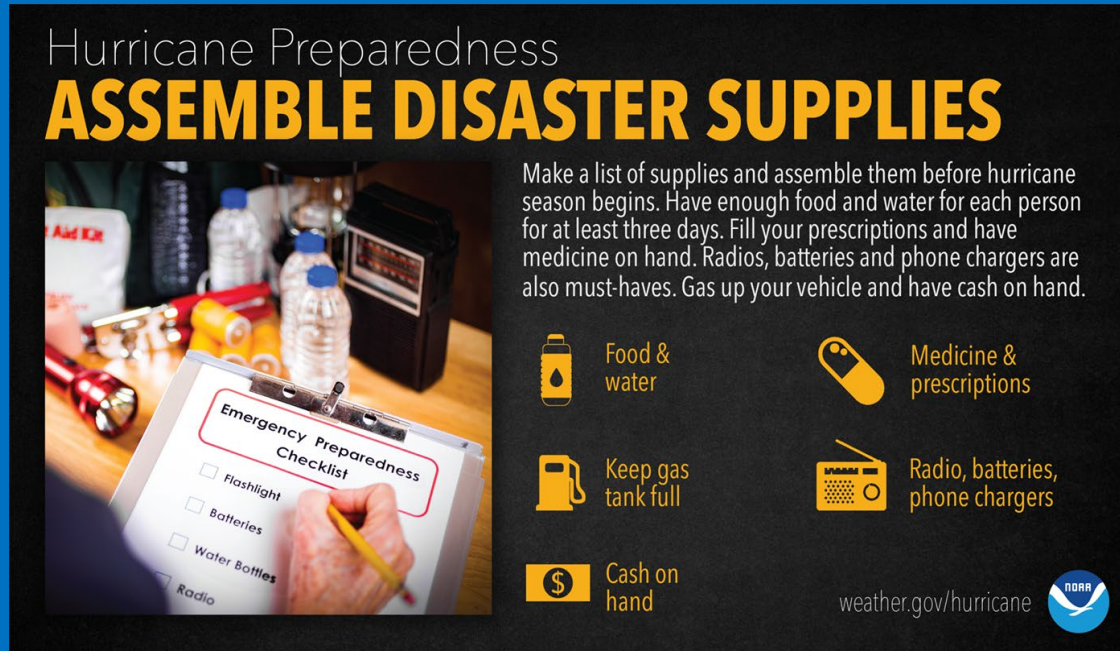
National Oceanic and Atmospheric Administration



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Find more info at [weather.gov/moreheadcity](https://weather.gov/moreheadcity)

# What Can You Do Now?



[weather.gov/moreheadcity/hurricaneprep](https://weather.gov/moreheadcity/hurricaneprep)

- Complete hurricane kit
- Don't make your decisions just on the Category!!
- Impacts can occur well outside of the forecast cone!!
- Focus on ALL impacts (flooding, surge, rip currents, wind, tornadoes)
- Don't forget about after the storm



# Questions?



Erik Heden

[erik.heden@noaa.gov](mailto:erik.heden@noaa.gov)

Warning Coordination Meteorologist  
Morehead City, NC

Encourage you to visit  
[youtube.com/nwsmoreheadcity](https://youtube.com/nwsmoreheadcity)