



# **National Weather Service Overview and Marine Weather**

**Erik Heden**

NWS/Newport/Morehead City



# Our Mission



## The National Weather Service (NWS)

[Weather.gov](http://Weather.gov) > About the NWS

### About the NWS

National Program

#### About

Serving you in every community in the U.S. Check out who we are and what we do!

#### NWS Mission

Provide weather, water, and climate data, forecasts and warnings for the protection of life and property and enhancement of the national economy.

#### NWS Vision

A Weather-Ready Nation: Society is prepared for and responds to weather, water, and climate-dependent events.

#### Weather-Ready Nation Story

Accurate weather forecasts do not always result in a good outcome. The National Weather Service (NWS) learned this difficult... [Read more](#)

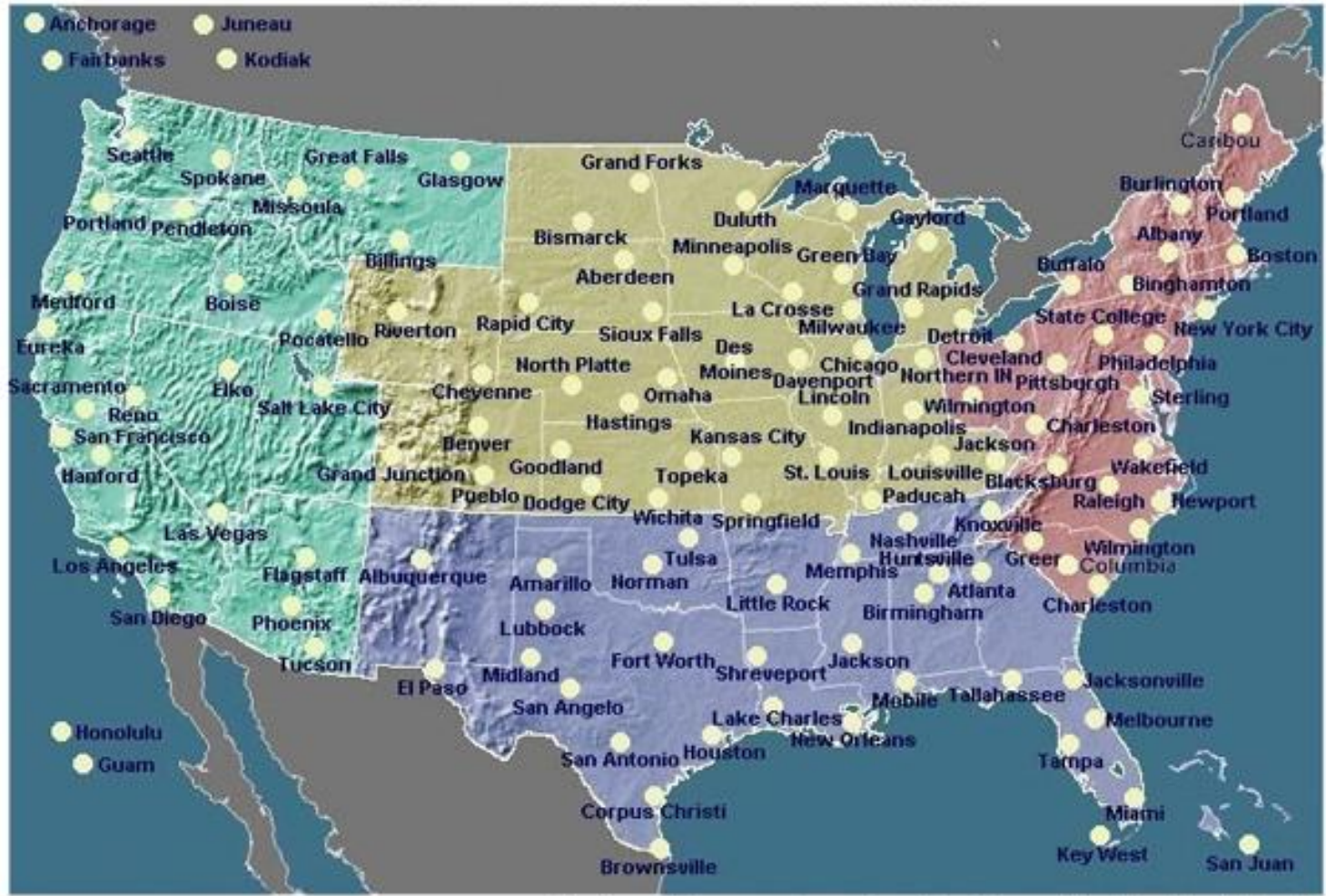


● *Begin  
Your  
NWS journey*



# Office Locations

National Weather Service Office Locations



Background topography courtesy Ray Stemer, Johns Hopkins University





# 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, etc)





# Work Hours



24 hours a day, 7 days a week, plus any overtime for severe weather...we never close!

Two to three forecasters per shift.

Shifts per day: midnight, day and evening.

Management team: 8 am to 5 pm Mon.-Fri. (they work shifts sometimes too!)

In total 21 people when fully staffed





# 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](#) (Green)
- [High Surf Advisory](#) (Purple)
- [Small Craft Advisory](#) (Pink)
- [Hazardous Weather Outlook](#) (Yellow)

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

**Tropical**

**Local Radar**

**Satellite**

11/19/19 16:46Z GOES-East

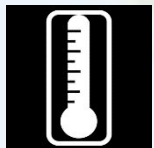


# 7- Day Forecast

[weather.gov/moreheadcity](http://weather.gov/moreheadcity)



Sky cover



High/low temperatures



Winds



Chance of precipitation

## Detailed Forecast

Today	Mostly cloudy, with a high near 54. Light northwest wind.
Tonight	Mostly cloudy, with a low around 38. West wind 5 to 7 mph.
Wednesday	Sunny, with a high near 60. Northwest wind 7 to 9 mph.
Wednesday Night	Mostly clear, with a low around 38. Light north wind.
Thursday	Sunny, with a high near 60. Light and variable wind becoming northwest around 5 mph.
Thursday Night	Partly cloudy, with a low around 44.
Friday	Mostly sunny, with a high near 67.
Friday Night	Mostly cloudy, with a low around 48.
Saturday	A chance of showers. Mostly cloudy, with a high near 64. Chance of precipitation is 50%.
Saturday Night	A chance of showers. Mostly cloudy, with a low around 44. Chance of precipitation is 50%.
Sunday	Partly sunny, with a high near 58.
Sunday Night	Mostly clear, with a low around 39.
Monday	Sunny, with a high near 60.

## Extended Forecast for New Bern NC

Today	Tonight	Wednesday	Wednesday Night	Thursday	Thursday Night	Friday	Friday Night	Saturday
Mostly Cloudy	Mostly Cloudy	Sunny	Mostly Clear	Sunny	Partly Cloudy	Mostly Sunny	Mostly Cloudy	Chance Showers
High: 54 °F	Low: 38 °F	High: 60 °F	Low: 38 °F	High: 60 °F	Low: 44 °F	High: 67 °F	Low: 48 °F	High: 64 °F





# Weather Briefings

weather.gov/moreheadcity



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, Newport/Morehead City, NC

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

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

**Customize Your Weather.gov**

City, ST

Enter Your City, ST or ZIP Code

Remember Me

**Get Weather**

[Privacy Policy](#)

Click a location below for detailed forecast.



Last Map Update: Thu, Mar. 22, 2018 at 11:05:21 am EDT

Watches, Warnings & Advisories

Zoom In / Zoom Out

<a href="#">Radar</a>	<a href="#">Current Weather</a>	<a href="#">Rivers &amp; Lakes</a>	<a href="#">Satellite</a>	<a href="#">Weather Inform Disp</a>	<a href="#">Forecast Maps</a>
<a href="#">Hour by Hour Forecast</a>	<a href="#">Winter Weather</a>	<a href="#">Map View</a>	<a href="#">Surf Forecast/Rip Currents</a>	<a href="#">Weather Hazard Briefing (when applicable)</a>	<a href="#">Local Self-Briefing Pages</a>
<a href="#">Forecaster Discussion</a>	<a href="#">Marine</a>	<a href="#">Text Products</a>	<a href="#">Tropical</a>	<a href="#">Skywarn</a>	<a href="#">Submit Storm Reports</a>



Created prior to bigger events of severe weather

Follow us on Twitter

Follow us on Facebook

MHX RSS Feed





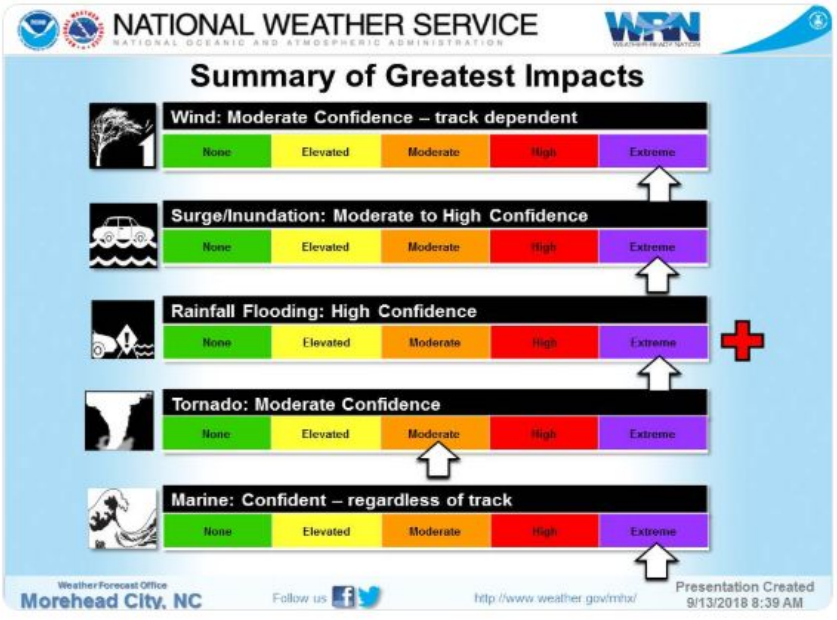
# Social Media

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

**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)

Hurricane Florence NWS Morehead City Wednesday 900 AM Briefing  
2,895 views | 13 likes | 0 comments

NWSMoreheadCity | Published on Sep 12, 2018 | SUBSCRIBE 199

# Hurricane Florence Lead Up



# Marine Products We Issue



[weather.gov/moreheadcity/marine](http://weather.gov/moreheadcity/marine)

## Special marine warning:

Thunderstorm winds greater or equal to 35 knots, hail greater or equal to 3/4" or waterspouts

## Marine Weather Statement:

Strong thunderstorms below warning criteria, lightning, sea fog

## Coastal Flood

## Watch/Warning/Advisory:

Coastal or sound side flooding, high surf

WHUS52 KMHX 250355  
SMWMMHX  
AMZ135-150-152-154-231-250445-  
/O.NEW.KMHX.MA.W.0179.201225T0355Z-201225T0445Z/

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
Special Marine Warning  
National Weather Service Newport/Morehead City NC  
1055 PM EST Thu Dec 24 2020

The National Weather Service in Newport has issued a

- \* Special Marine Warning for...  
Croatan and Roanoke Sounds...  
S of Currituck Beach Light NC to Oregon Inlet NC out to 20 nm...  
S of Cape Hatteras NC to Ocracoke Inlet NC out to 20 nm...  
Pamlico Sound...  
S of Oregon Inlet NC to Cape Hatteras NC out to 20 nm...

\* Until 1145 PM EST.

- \* At 1054 PM EST, a severe thunderstorm capable of producing waterspouts was located near Pamlico Sound, moving north at 80 knots.

HAZARD...Waterspouts and wind gusts to nearly 50 knots.

SOURCE...Radar.

IMPACT...Waterspouts can easily overturn boats and create locally hazardous seas. Small craft could be damaged in briefly higher winds and suddenly higher waves.

- \* Locations impacted include...  
Ar160, Hatteras Village, Oregon Inlet, Hatteras Inlet, Ar230, Ar220, The Center Of Croatan Sound, Ar225, Pamlico Sound, Pea Island National Wildlife Refuge and Rodanthe.





# Marine Terminology

[weather.gov/moreheadcity/marine](http://weather.gov/moreheadcity/marine)



## Small Craft Advisory:

Winds greater or equal to 25 knots  
and/or seas greater or equal to 6 feet



## Gale Warning:

Wind speeds greater or equal to 34  
knots



## Storm Warning:

Wind speeds greater or equal to 48  
knots



## \*\*Note\*\*

SCAs across the sounds  
(including Core and  
Bogue) are based solely  
on wind speeds or  
frequent gusts



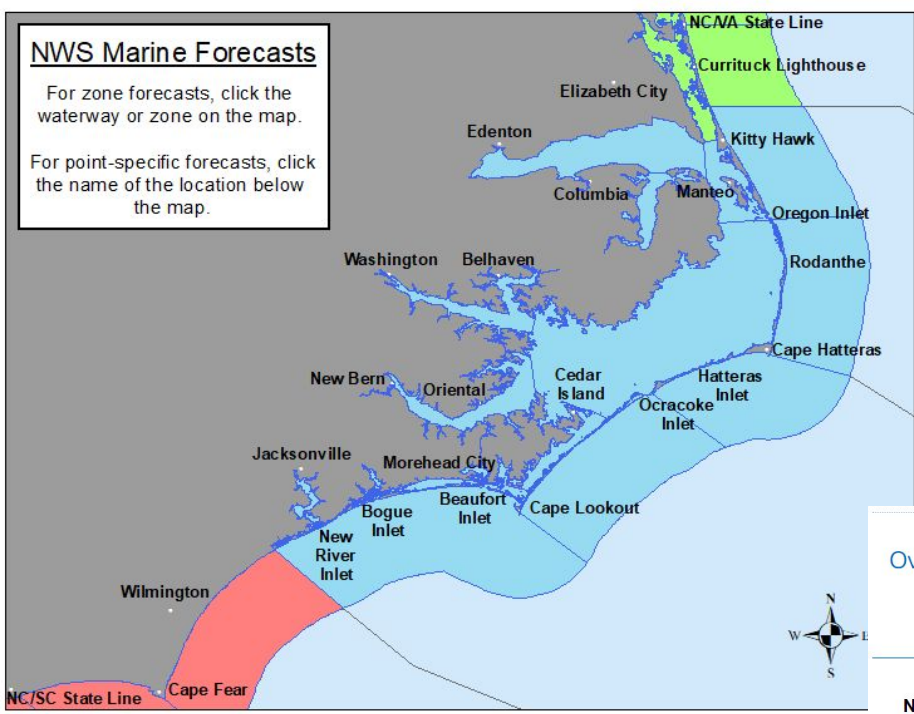
# 5-Day Marine Forecast



[weather.gov/moreheadcity/marine](http://weather.gov/moreheadcity/marine)

## NWS Marine Forecasts

For zone forecasts, click the waterway or zone on the map.  
For point-specific forecasts, click the name of the location below the map.



## Select Point Forecasts:

### Artificial Reefs:

<a href="#">145</a>	<a href="#">230</a>	<a href="#">255</a>	<a href="#">275</a>	<a href="#">285</a>	<a href="#">296</a>	<a href="#">315</a>	<a href="#">342</a>	<a href="#">345</a>	<a href="#">355</a>
---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------

### Other Locations:

<a href="#">Wimble Shoals</a>	<a href="#">Diamond Shoals</a>	<a href="#">Lookout Shoals</a>	<a href="#">Eastern Albemarle Sound (ICW)</a>	<a href="#">Mouth of Pungo River (ICW)</a>	<a href="#">Mouth of Neuse River (ICW)</a>
-------------------------------	--------------------------------	--------------------------------	---	--	--

[Overview](#)

[Latest Marine Hazard Message](#)

[Nearshore Waters Forecast](#)

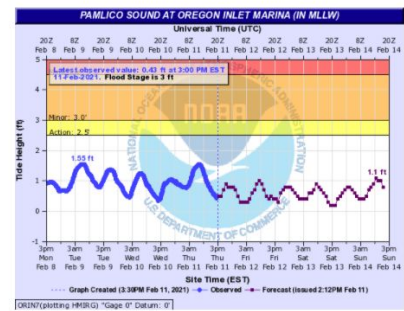
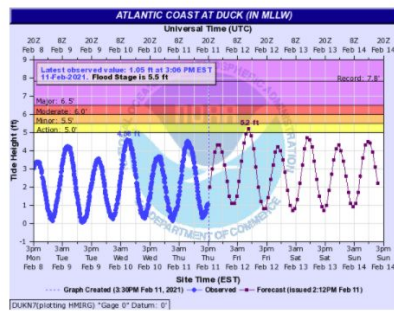
[Offshore Waters Forecast](#)

**[Tides and Water Temps](#)**

[Observations](#)

[Safety Info](#)

## NWS Tide Predictions:





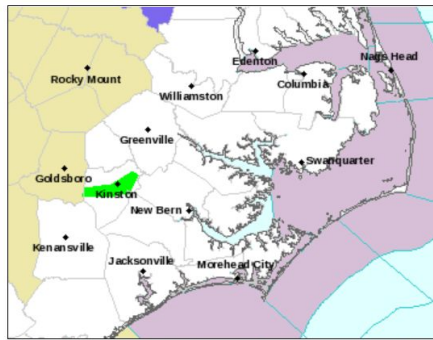


# 5-Day Marine Forecast

weather.gov/moreheadcity



Click a location below for detailed forecast.



Last Map Update: Thu, Feb. 11, 2021 at 3:16:22 pm EST

[Watches, Warnings & Advisories](#)

[Flood Warning](#) ■

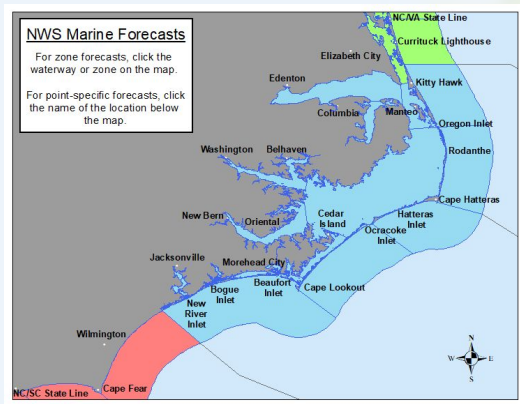
[Winter Weather Advisory](#) ■

[Small Craft Advisory](#) ■

[Hazardous Weather Outlook](#) ■

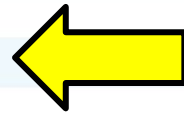
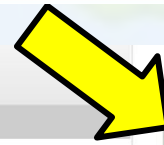
[Zoom Out](#)

[Zoom In](#)

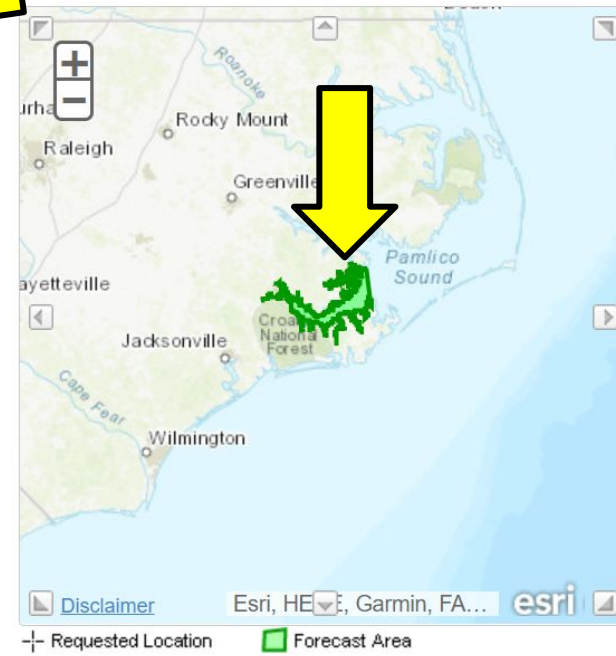


## Marine Zone Forecast

<b>Tonight</b>	NE winds 10 to 15 kt. Waves a moderate chop. Rain.
<b>Fri</b>	N winds 10 to 15 kt, increasing to 15 to 20 kt in the afternoon. Waves a moderate chop, increasing to choppy in the afternoon. Rain likely.
<b>Fri Night</b>	N winds 15 to 20 kt, diminishing to 10 to 15 kt after midnight. Waves choppy, diminishing to a moderate chop after midnight. A chance of showers in the evening, then rain likely after midnight.
<b>Sat</b>	N winds 10 to 15 kt. Waves a moderate chop. Rain.
<b>Sat Night</b>	N winds 10 to 15 kt. Waves a moderate chop. Rain likely.
<b>Sun</b>	N winds 10 to 15 kt. Waves a moderate chop. A chance of showers.
<b>Sun Night</b>	N winds 10 to 15 kt. Waves a moderate chop. A chance of showers.
<b>Mon</b>	NE winds 10 to 15 kt. Waves a moderate chop. A chance of showers.
<b>Tue</b>	SE winds 15 to 20 kt, becoming W 10 to 15 kt. Waves choppy, diminishing to a moderate chop. Rain likely, then a chance of showers.



Topographic   
Click Map For Detailed Forecast



## Additional Forecasts and Information



# 5-Day Marine Forecast

[weather.gov/moreheadcity](http://weather.gov/moreheadcity)



Where: Currituck Beach  
Light to Surf City out 20  
nautical miles

Also local sounds and  
rivers

What: Winds, wave  
heights, precip chances,  
obstructions to visibilities  
(rain, fog).

When: Every 3 hours.  
Available as text  
graphical, or audio  
(phone/radio).

## Marine Zone Forecast

...SMALL CRAFT ADVISORY IN EFFECT UNTIL 11 AM EST THIS MORNING...

**Synopsis:** AMZ100-192315- 1014 AM EST Tue Nov 19 2019 .Synopsis for Eastern North Carolina coastal waters... The region will remain between areas of low pressure offshore and high pressure to the west through mid week. Then, high pressure will build closer to Eastern NC through the end of the work week, with another storm system arriving this weekend. \$\$

<b>Rest Of Today</b>	N winds around 10 kt. Seas 4 to 6 ft. Dominant period 10 seconds. Adjacent sounds and rivers light chop.
<b>Tonight</b>	NW winds 10 to 15 kt, increasing to 15 to 20 kt after midnight. Seas 3 to 5 ft. Dominant period 10 seconds. Adjacent sounds and rivers a moderate chop, increasing to choppy after midnight.
<b>Wed</b>	NW winds 15 to 20 kt. Seas 3 to 5 ft. Dominant period 10 seconds. Adjacent sounds and rivers choppy.
<b>Wed Night</b>	N winds 15 to 20 kt. Seas 3 to 5 ft. Dominant period 9 seconds. Adjacent sounds and rivers choppy.
<b>Thu</b>	N winds 10 to 15 kt, becoming NW 5 to 10 kt in the afternoon. Seas 3 to 5 ft. Adjacent sounds and rivers a moderate chop, diminishing to light chop in the afternoon.
<b>Thu Night</b>	W winds 5 to 10 kt, increasing to 10 to 15 kt after midnight. Seas 2 to 3 ft. Adjacent sounds and rivers light chop, increasing to a moderate chop after midnight.
<b>Fri</b>	W winds 15 to 20 kt. Seas 4 to 6 ft. Adjacent sounds and rivers choppy.
<b>Sat</b>	SW winds 10 to 15 kt, becoming W 15 to 20 kt. Seas 4 to 6 ft. Adjacent sounds and rivers a moderate chop, increasing to choppy. A chance of showers.

Includes any Small Craft Advisories  
& Gale Warnings if needed





# 5-Day Marine Forecast

weather.gov/moreheadcity



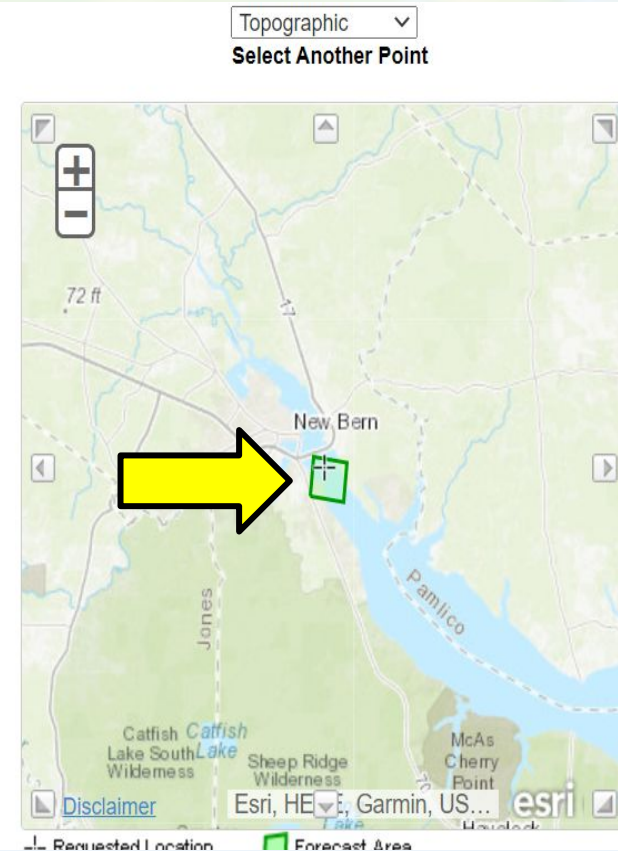
## Click again on map to “zoom” into your favorite aquaculture area

### Detailed Forecast

<b>Late Afternoon</b>	NNE wind around 9 kt. A chance of rain. Seas around 1 ft.
<b>Tonight</b>	NE wind around 12 kt. Rain, mainly after 7pm. Seas around 1 ft.
<b>Friday</b>	N wind 10 to 13 kt. Rain likely. Seas around 1 ft.
<b>Friday Night</b>	NNE wind 11 to 13 kt. Showers likely, mainly after 1am. Seas around 1 ft.
<b>Saturday</b>	NNE wind around 11 kt. Rain. Seas around 1 ft.
<b>Saturday Night</b>	NNW wind around 10 kt. Rain likely. Seas around 1 ft.
<b>Sunday</b>	NNE wind around 10 kt. A chance of showers. Seas around 1 ft.
<b>Sunday Night</b>	NNE wind around 12 kt. A chance of showers. Seas around 1 ft.
<b>Washington's Birthday</b>	NNE wind around 13 kt. A chance of showers. Seas around 1 ft.

### \*Notices:

1. This forecast is for a single location. For safety concerns, mariners should be aware of the weather over a larger area. Forecast





# Hourly Forecast

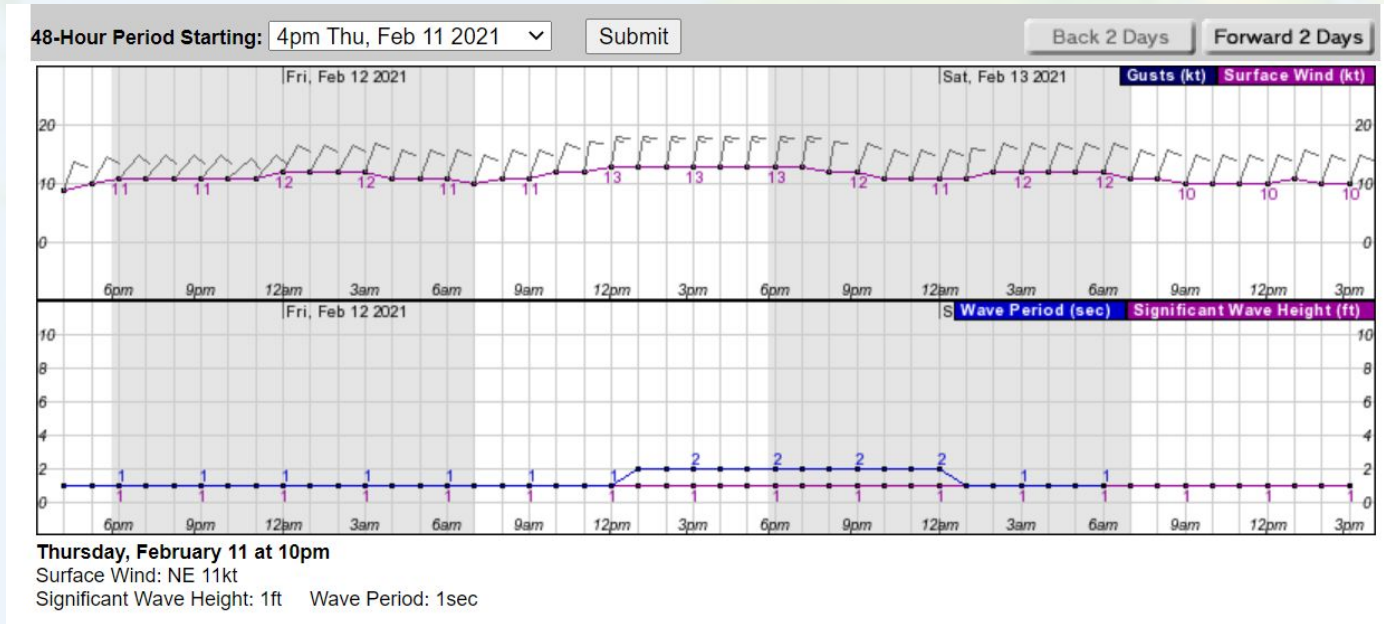
weather.gov/moreheadcity



Defaults to wind, wave heights

Can display other parameters (precip chance, sky cover, etc)

See trends in hourly increments out through 5 days



Digital readout available





# Graphical Forecast

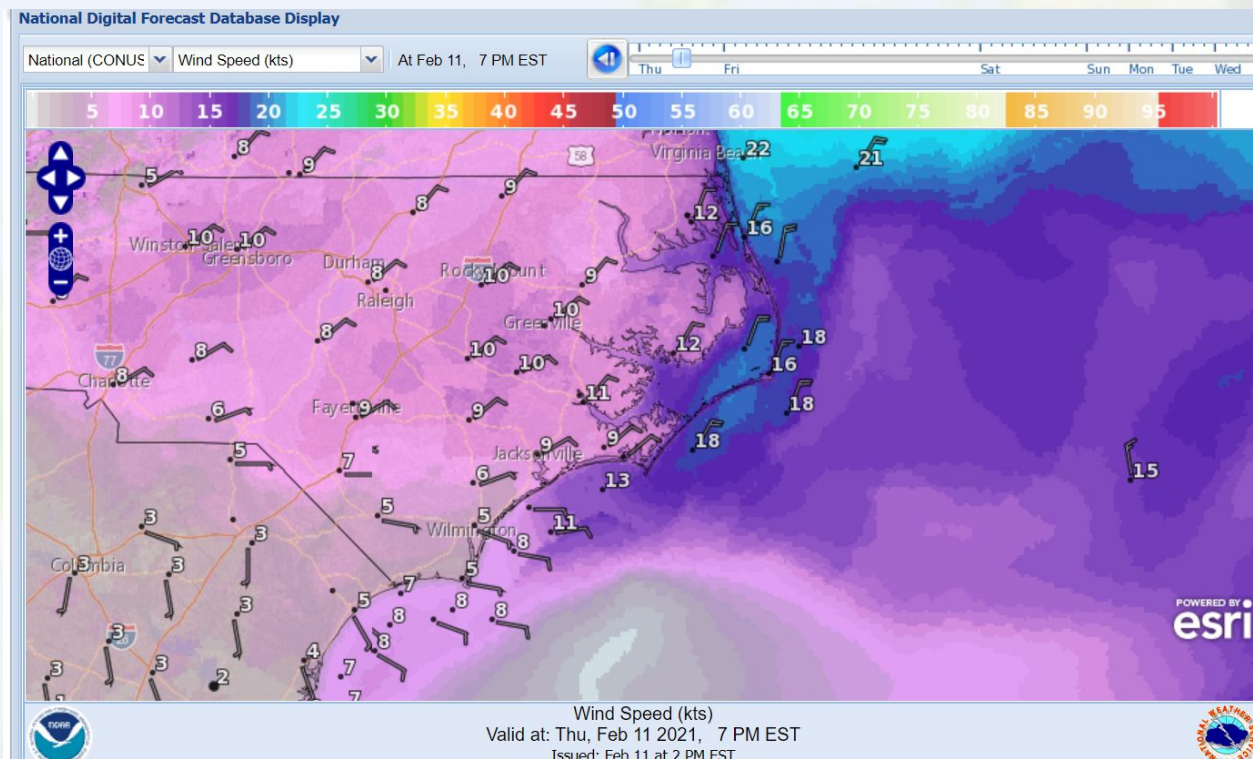
[weather.gov/moreheadcity](https://weather.gov/moreheadcity) or [digital.weather.gov](https://digital.weather.gov)



View forecasts on a map

Includes marine forecasts as well (winds, wave height)

Easily see the weather across all waters





# Offshore Forecast

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



Where: Near shore  
waters 20 nm to 250 nm

What: Winds, wave  
heights, precip chances,  
obstructions to visibilities  
(rain, fog).

When: Every 6 hours.  
From Ocean Prediction  
Center

ANZ833-120230-

Cape Hatteras to Cape Fear to 100 NM Offshore.-

1001 AM EST Thu Feb 11 2021

**TODAY**

W to NW winds 10 to 20 kt, becoming N to NW. Seas 4 to 8 ft. Scattered showers and tstms.

**TONIGHT**

E to NE winds 5 to 15 kt, becoming NE 15 to 25 kt. Seas 4 to 7 ft. Rain.

**FRI**

NE winds 15 to 25 kt. Seas 6 to 11 ft. Rain.

**FRI NIGHT**

N to NE winds 15 to 25 kt. Seas 6 to 11 ft. Showers likely and scattered tstms.

**SAT**

E winds 10 to 20 kt, becoming S to SE 15 to 25 kt. Seas 6 to 10 ft.

**SAT NIGHT**

S to SW winds 20 to 30 kt. Seas 6 to 10 ft.

Includes any Small Craft Advisories  
& Gale Warnings if needed





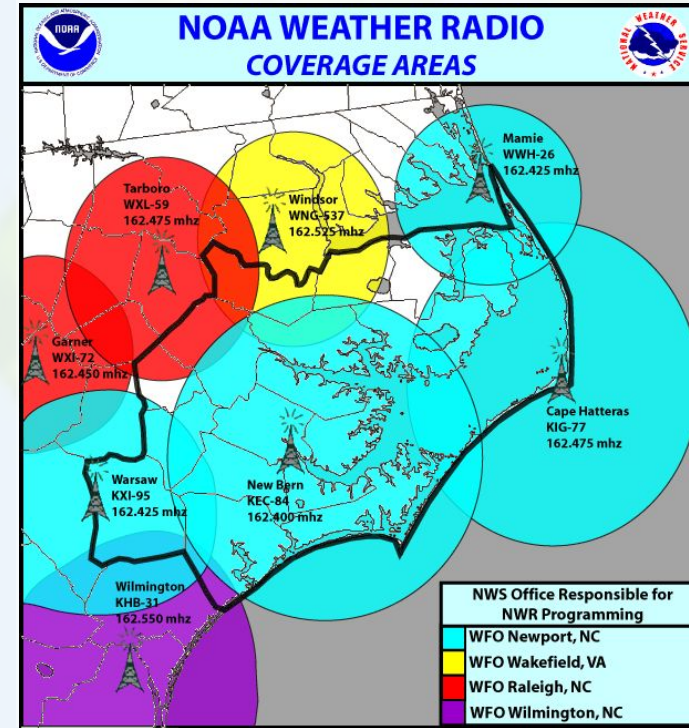
# NOAA Weather Radio



All hazards 24 hour radio

Requires special radio receiver

Marine products will play, including warnings





# Forecasts By Phone

252-223-5737



**\*\*\*Our website is FAR superior for the details you can get\*\*\***

**\*\*We ALWAYS answer the phones, 24/7\*\***

**1 – Local Forecast for Eastern NC (land based)**

**2 – Tides/Water Temperatures**

**3 – Offshore Waters Forecast**

**4 – Coastal Marine Forecast**

**5 – Tropical Weather Outlook**

**6- Talk to a forecaster**





# Water Level Forecasting



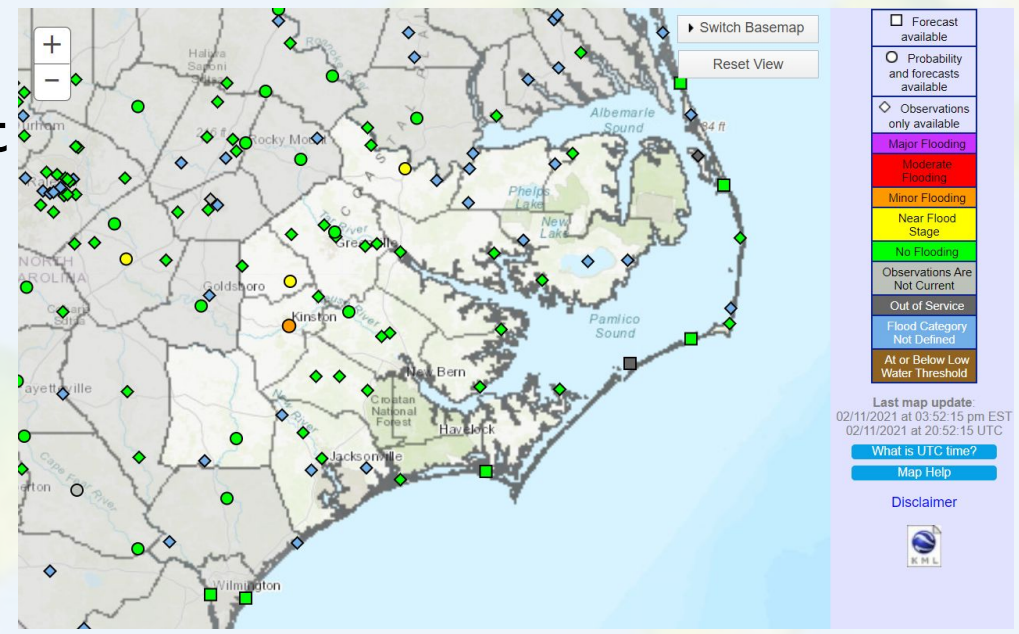
weather.gov/moreheadcity click on rivers/lakes

Current water levels for all sites

A few forecast sites for the coast

Duck, Oregon Inlet, Hatteras  
Ocracoke, and Beaufort have  
current and forecast water levels

Oriental, Washington, Belhaven,  
have current levels only





# Water Level Forecasting

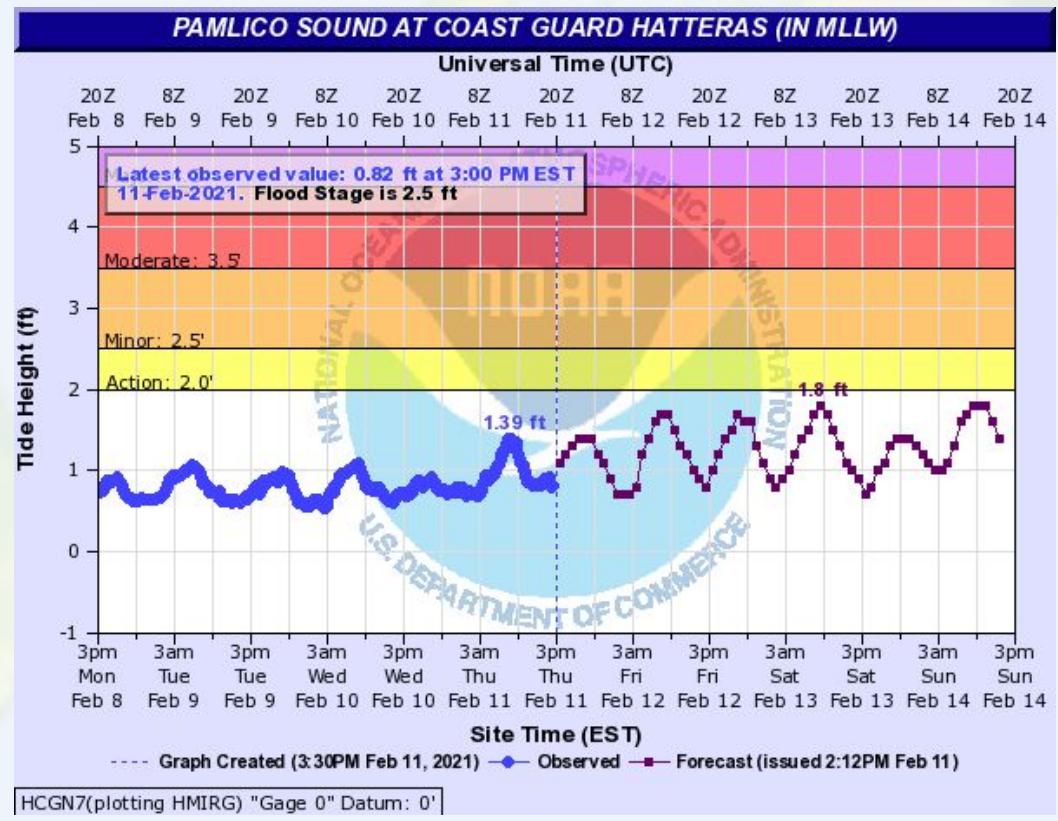


[weather.gov/moreheadcity](http://weather.gov/moreheadcity) click on rivers/lakes

Past water levels (in blue) along with latest observed value

If applicable (projected) water level in the future (purple line).

Coastal areas where tides have an influence are taken into account along with storm surge, water level trends.







# Marine Weather Hazards



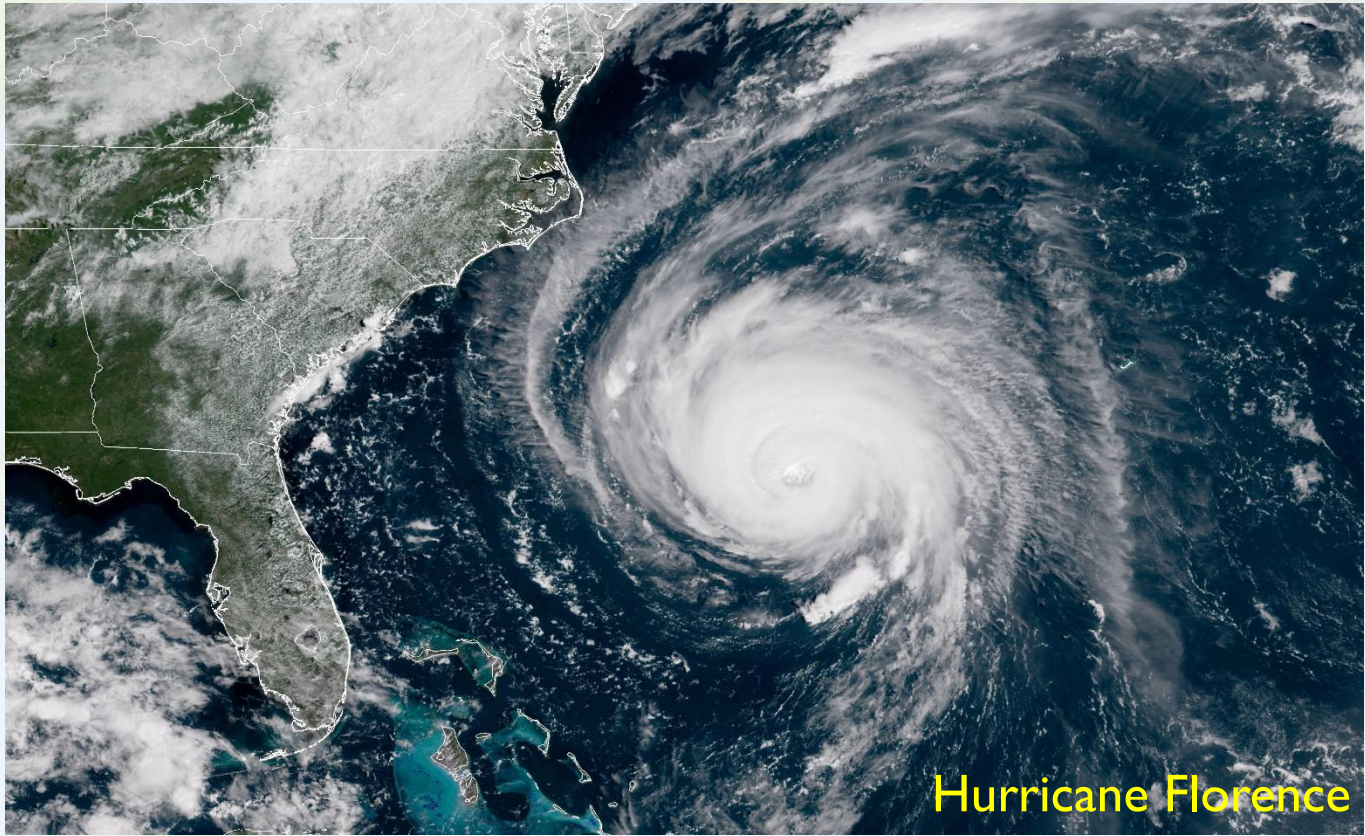
The Forecast and Monitoring The Weather Is Your Friend

Thunderstorms  
(lightning, high winds, abrupt wind shifts, hail)

Waterspouts

Tropical cyclones

Arctic cold fronts



Hurricane Florence



# Marine Weather Hazards



## Lightning

LISTEN to the forecast  
(NOAA Weather  
Radio/VHF Marine Band)

LEARN how to read the  
weather

WATCH and LISTEN for  
distant activity. Have an  
escape plan

Thunderstorms  
forecasted? Don't go  
out!

**SAFE FISHING**

UNDERSTAND THE DANGERS OF LIGHTNING

- There are no specific warnings or advisories for lightning but all thunderstorms produce lightning.
- A lightning strike to a vessel can be catastrophic, especially if it results in a fire or loss of electronics.
- Boaters should use extra caution when thunderstorm conditions exist and have a plan of escape.

WEATHER.GOV

The infographic features a silhouette of a fisherman on a boat, a large lightning bolt, and an underwater scene with a fish and coral. It includes the NOAA logo in the bottom right corner.

If you are out, get back to land.

If you can't get back to land, drop anchor  
and get as low as possible. Get below  
deck if you can.





# Marine Weather Hazards



## Waterspouts

Winds can reach 100 MPH

Watch the sky for certain types of clouds  
(cumulus, growing)

Never navigate through a spout.

Head at a 90 degree angle from the apparent  
motion of the waterspout

**\*\*Call 1-800-889-6889 To Report Waterspouts\*\***







# Marine Weather Hazards



## Arctic Cold Front/Wind Shifts

Primarily in the winter and spring

Gale force winds possible, sudden shifts in wind direction

Thunderstorms, hail

Quick jump in seas





# Marine Weather Hazards



## Tropical Cyclones

Since 1851, how many tropical cyclones have impacted our waters?

50, 100, 200?

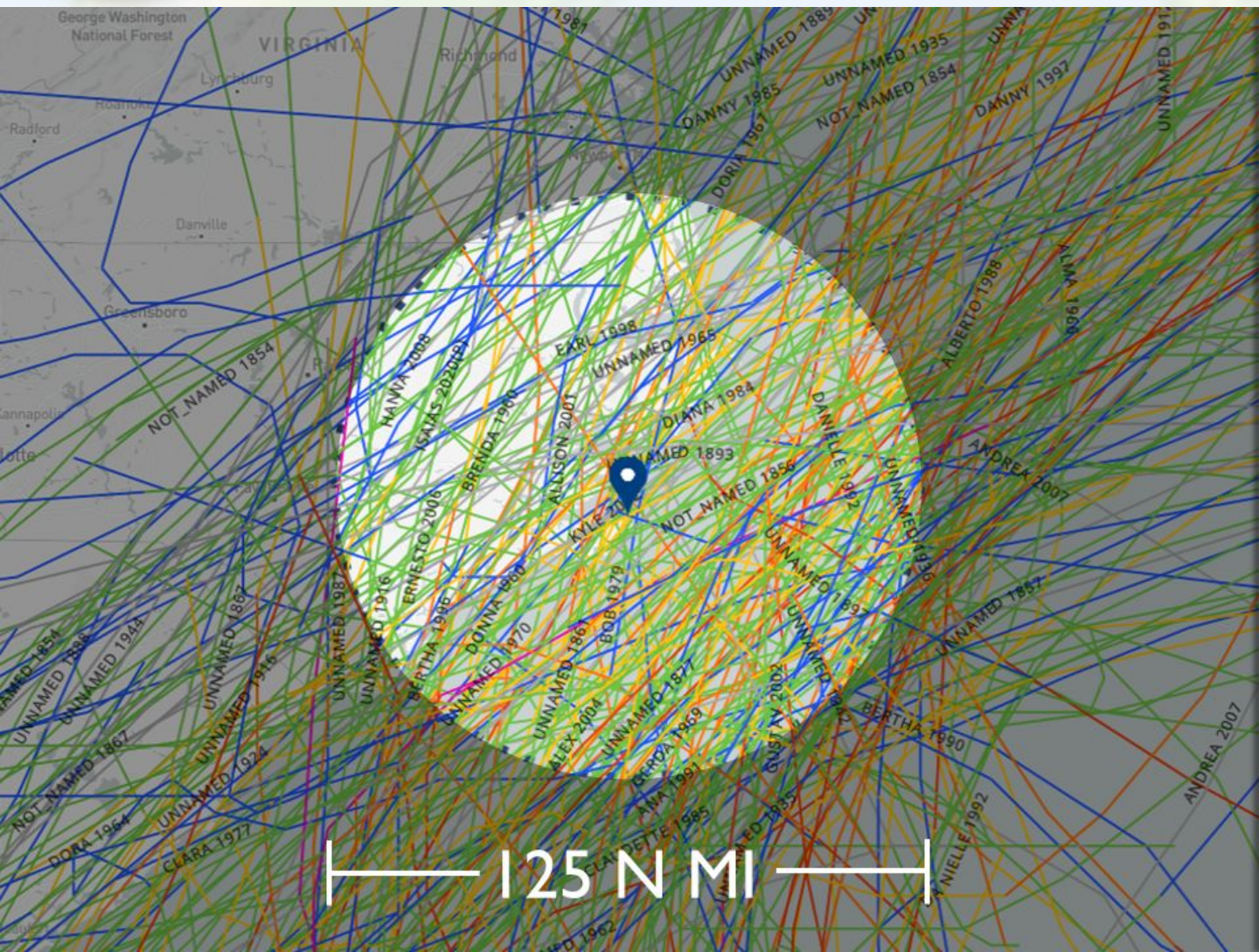




# Marine Weather Hazards



## Tropical Cyclones



Since  
1851...

**287**  
Tropical &  
Extratropical  
Systems

...in Eastern  
North  
Carolina





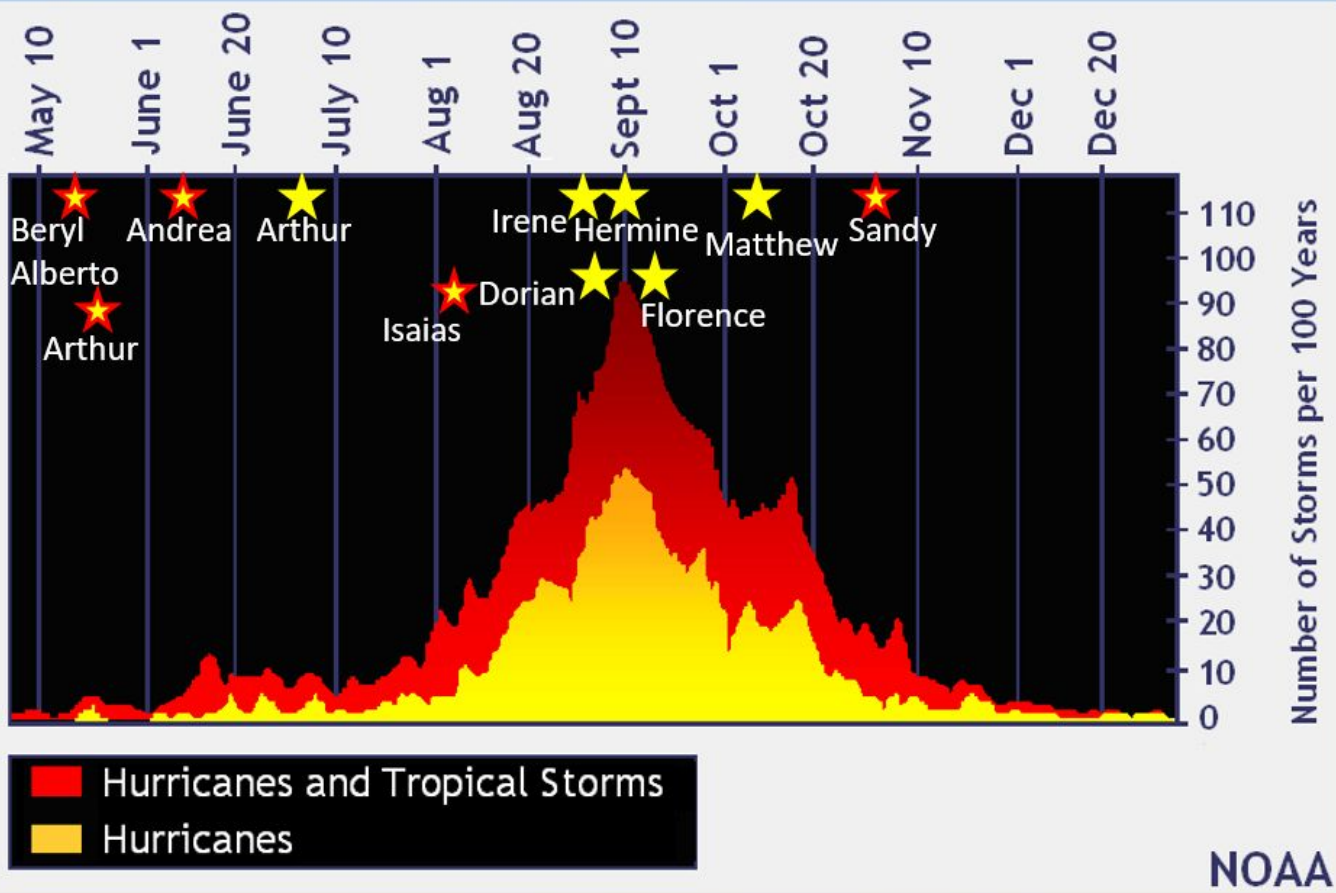


# Marine Weather Hazards



## Tropical Cyclones

# The Time To Prepare Is NOW



**Peak of the season is around September 10<sup>th</sup>**

**Tropical systems can occur from May through November**





# Marine Weather Hazards



## Tropical Cyclones

Strong winds, heavy rain

Large waves can occur well ahead  
or from distant storms

Enhance rip current threat

Water levels can remain high or  
rough for days







# Marine Weather Hazards



## Sea Fog

Warm moist air moving over cold water

Most common December through March

Very low visibility

Can began well out over the ocean and spread inland



# Thanks for Your Interest!



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

[www.weather.gov/moreheadcity](http://www.weather.gov/moreheadcity)