



# Carolina SkyWatcher



National Weather Service, Newport/Morehead City, NC

<http://weather.gov/Newport> —> **Bookmark it!!**

Spring 2018 Edition

## Spring Severe Weather Season Arrives

*By Chris Collins, Meteorologist*



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Spring is just around the corner and so is severe weather season. Severe thunderstorms and tornadoes are most prevalent in eastern North Carolina during the spring and summer months, with March, April and May being the peak tornado months in our region. The National Weather Service is responsible for issuing severe weather watches, warnings and advisories to alert the public when dangerous weather conditions are expected. Here are some of the products issued by the NWS during severe weather:

**WATCH**— A weather watch means there is the potential or conditions exist for a dangerous weather event.

**WARNING** — A weather warning means that a dangerous weather event is imminent and immediate action should be taken to protect life and property.

**ADVISORY**— A weather advisory means weather conditions that are less serious than a warning are imminent. These events may cause a significant inconvenience, and if caution is not exercised, it could lead to a situation that could threaten life or property.

**SPECIAL WEATHER STATEMENT**— Provides the public with information concerning ongoing weather hazards, including strong storms that may become severe.

**HAZARDOUS WEATHER OUTLOOK** — Issued daily, highlights any significant weather conditions that may develop and is intended to provide information on the severe weather potential for the next week.

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## Spring SKYWARN Schedule to Include New Classes and Locations

*by Erik Heden, Warning Coordination Meteorologist*

With severe weather season just around the corner, we wanted to let you know that our weather spotter classes have now begun. For a class schedule you can always visit our website [www.weather.gov/mhx](http://www.weather.gov/mhx) and look at the top new headlines or visit the SKY-WARN page directly <http://www.weather.gov/mhx/MHXSkywarn>

We are offering more than 15 classes this year, some of which can be done online in the comfort of your own home! The majority of the classes are what we call Basic SKY-WARN. This class trains spotters about severe weather and what to report to the National Weather Service. Topics include severe thunderstorms, tornadoes, hail, lightning, and flooding. We are also offering three new classes this spring; Flood/Tropical SKY-WARN, Online Basic SKYWARN and Online CoCoRaHS. The online basic skywarn is a shorter version of the in person class while the CoCoRaHS class teaches you all about the CoCoRaHS program with regards to precipitation measurement. The tropical and flood skywarn will go over the history of flooding and tropical weather in our area while training you how to report high winds, flooding, and rainfall measurements to our office. More information on CoCoRaHS is available in the next article!

We were aggressive in planning our class schedule so you should be able to find one close to you. If you can't make any of our classes please visit us on YouTube for recorded training. You can find us here: <https://www.youtube.com/NWSMoreheadCity>



## Cocorahs— March Madness 2018

*by David Glenn, Meteorologist*

Residents of North Carolina are encouraged to participate as volunteer weather observers by measuring rain, snow, hail, and drought through the CoCoRaHS Program. We are in need of new observers across the region, and especially in the less populated counties of Greene, Jones, Hyde, Martin, Washington, Tyrrell, and Dare.

**So, what is CoCoRaHS?** CoCoRaHS stands for Community Collaborative Rain, Hail and Snow Network. CoCoRaHS began at the Colorado Climate Center at Colorado State University in 1998 in response to the damaging Fort Collins flood in 1997. North Carolina became the 21st state to join the CoCoRaHS network in September 2007. Roughly 350-450 volunteer observers consistently report their daily precipitation across North Carolina. The CoCoRaHS network is looking for enthusiastic volunteers to report rainfall, snowfall, hail, and drought information. Your data is shared with the National Weather Service, media, researchers, farmers, emergency managers and a wide range of other users, by joining the program. If you would like to contribute valuable precipitation information unique to your location, then this program is for you! Observers record precipitation information using the recommended 4 inch rain gauge and enter their observations into the CoCoRaHS webpage. This program will help a variety of users view and study the variability of precipitation across North Carolina. The accumulated precipitation data will be available to anyone using the web. Become a piece of the meteorological puzzle and join the other 10,000 plus volunteers from across the nation by becoming a CoCoRaHS observer. Recently, drought reporting has also become an important observation within the CoCoRaHS program across the nation. In fact, drought observations from CoCoRaHS are now being included in the National Integrated Drought Information System. Click on the banner below, for March Madness details!

Please visit the CoCoRaHS website at <http://www.cocorahs.org/> to learn more about the program. You can click on the "Join CoCoRaHS" link to become an observer. Then go through the on-line training to be on your way to become a part of the meteorological community. If you have any questions please contact David Glenn, North Carolina State Co-coordinator, or Bel Melendez , Eastern North Carolina Regional Coordinator by phone at (252) 223-5737, or by e-mail at [David.Glenn@noaa.gov](mailto:David.Glenn@noaa.gov), [Belkys.Melendez@noaa.gov](mailto:Belkys.Melendez@noaa.gov) or [Shane.Kearns@noaa.gov](mailto:Shane.Kearns@noaa.gov).



## Two Winter Storms Hit Eastern NC in January

*By Chris Collins, Meteorologist*

### January 3-4 Storm

A pair of significant winter storms hit eastern North Carolina during the month of January 2018. The first storm struck during the evening of January 3 through the early morning hours of January 4. The second storm was exactly two weeks later, on the evening of January 17 into the morning hours of January 18. A prolonged period of Arctic air initially moved into eastern North Carolina in late December, 2017 as a persistent long-wave trough kept cold air locked in across most of the eastern United States. Numerous record lows, and even a few all-time record lows were observed across the eastern United States from December 26 through January 8, 2018, and eastern North Carolina was no exception.

During the early morning hours of January 3, 2018, surface low pressure developed off the east coast of Florida, began to rapidly strengthen and move along the Gulf Stream off the Carolina coast during the late evening hours of January 3 and the morning hours of January 4. With the very cold air in place, and with rapid intensification of the low, precipitation developed quickly during the late afternoon hours of January 3. With some warm air aloft, the initial precipitation was in the form of sleet and freezing rain inland, and primarily rain along the coast, which was heavy at times with almost an inch of rain in some areas. As colder air wrapped around the developing low, precipitation became all snow by midnight and fell heavily at times into the early morning hours of January 4. Initial ice accumulation was up to 0.2 of an inch, while snowfall amounts ranged from about 2 inches along the coast, up to nearly 8 inches inland. The overall storm produced blizzard conditions up and down the East Coast from north Florida, where light snow, ice and sleet occurred, to Maine, where over 2 feet of snow occurred.

In the wake of the snow, radiational cooling under clear skies and calm winds, led to some very cold nights, capped off on the morning of Saturday January 6, when both Greenville and Washington recorded 0 degrees, then on Sunday January 7, when Greenville had a near all-time record low of -1 degrees and Washington had -2 degrees, while at the Newport/Morehead City National Weather Service office, the all-time record low of 8 degrees was tied. With a low of 9 degrees on Saturday January 6, it was the first time the Newport weather office has ever recorded back-to-back single digit low temperatures (records date to 1996). Newport also recorded 8 straight days with temperatures below 20 degrees, another record. With the prolonged cold air, snow and ice was very slow to melt off the roads, and schools and other businesses remained closed for several days. Very strong winds also accompanied this storm, as gusts of 78 mph were reported at the offshore Diamond Shoals buoy and 77 mph at the Kitty Hawk Kites resort in Kitty Hawk. This strong winds produced blowing and drifting of snow, along the Outer Banks.



## Two Winter Storms Hit Eastern NC in January (Continued)

### January 17-18 Storm



A frozen Taylor's Creek in Beaufort, NC,



Snowy Road in Pamlico County, January 4,

The combination of a strong Arctic cold front, an approaching mid-level disturbance, and low pressure developing rapidly off the Outer Banks, led to a snow event for much of eastern North Carolina on the evening of January 17, 2018 into the morning hours of January 18, 2018. Snow advanced from west to east across North Carolina during much of the day on January 17 behind a strong cold front. The snow diminished somewhat after crossing Interstate-95, but as a strong mid-level disturbance led to the formation of low pressure east of the Outer Banks, precipitation increased near the coast late in the evening of January 17. Before the night was over, locations such as Manteo and Kill Devil Hills on the northern Outer Banks would receive 8 to almost 10 inches of snow! Along the Crystal Coast, the precipitation began as a period of heavy sleet, causing roads to quickly become hazardous. Transition to all snow occurred by midnight in most areas, with the heaviest snowfall occurring in an enhanced band from Downeast Carteret County north across Hyde County and to the northern Outer Banks. Snow amounts were generally from 1 to as much as 6 inches east of Highway 17, higher on the northern Outer Banks, with lesser amounts to the west.



Up to 10 inches of snow fell in Manteo, Jan. 18, 2018



Icy snow-covered roads on Hatteras Island.



# Two Winter Storms Hit Eastern NC in January (Continued)

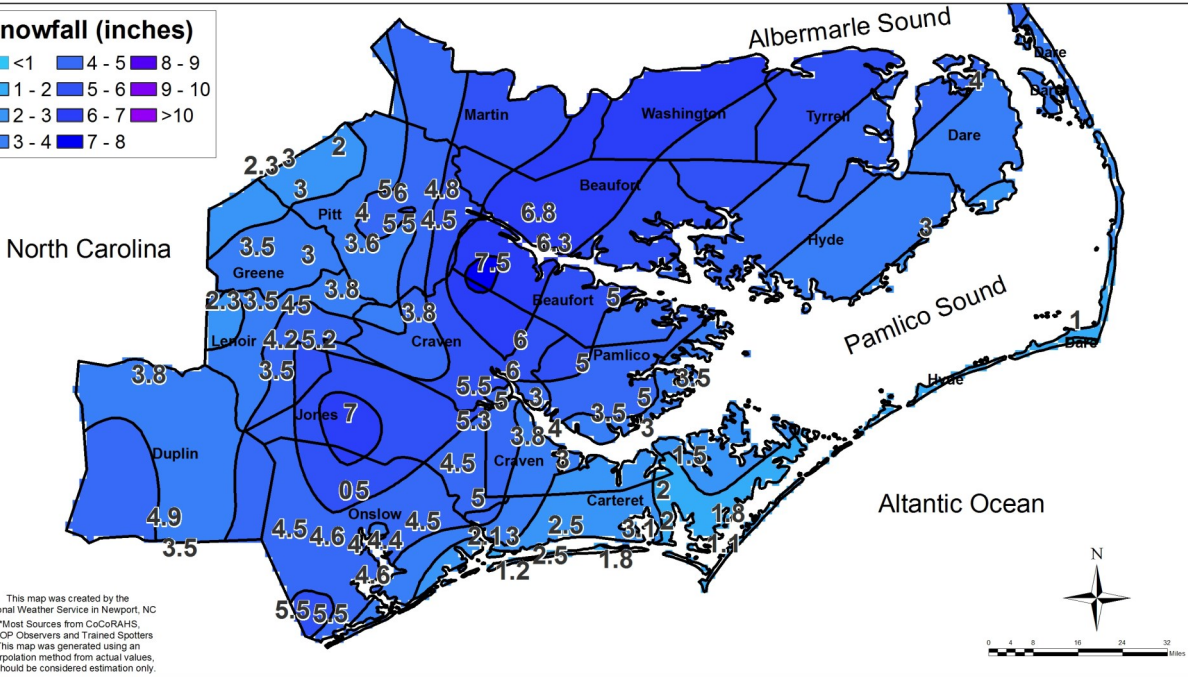


## National Weather Service Newport/Morehead City NC January 4, 2018



**Snowfall (inches)**

<1	4 - 5	8 - 9
1 - 2	5 - 6	9 - 10
2 - 3	6 - 7	>10
3 - 4	7 - 8	

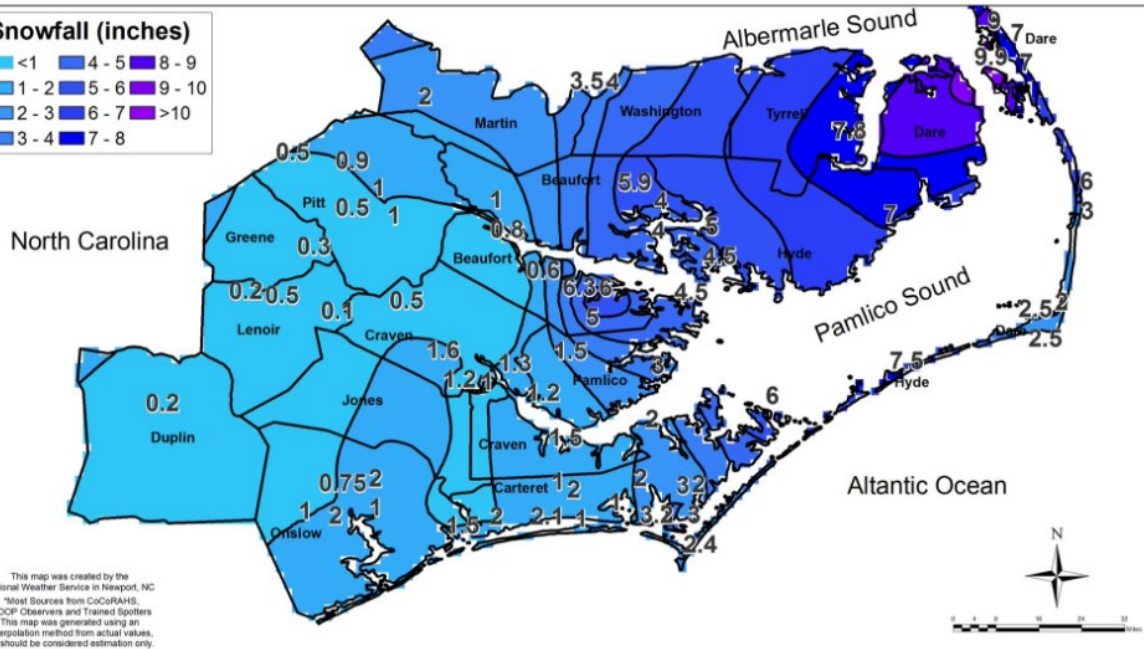


## National Weather Service Newport/Morehead City NC January 18, 2018



**Snowfall (inches)**

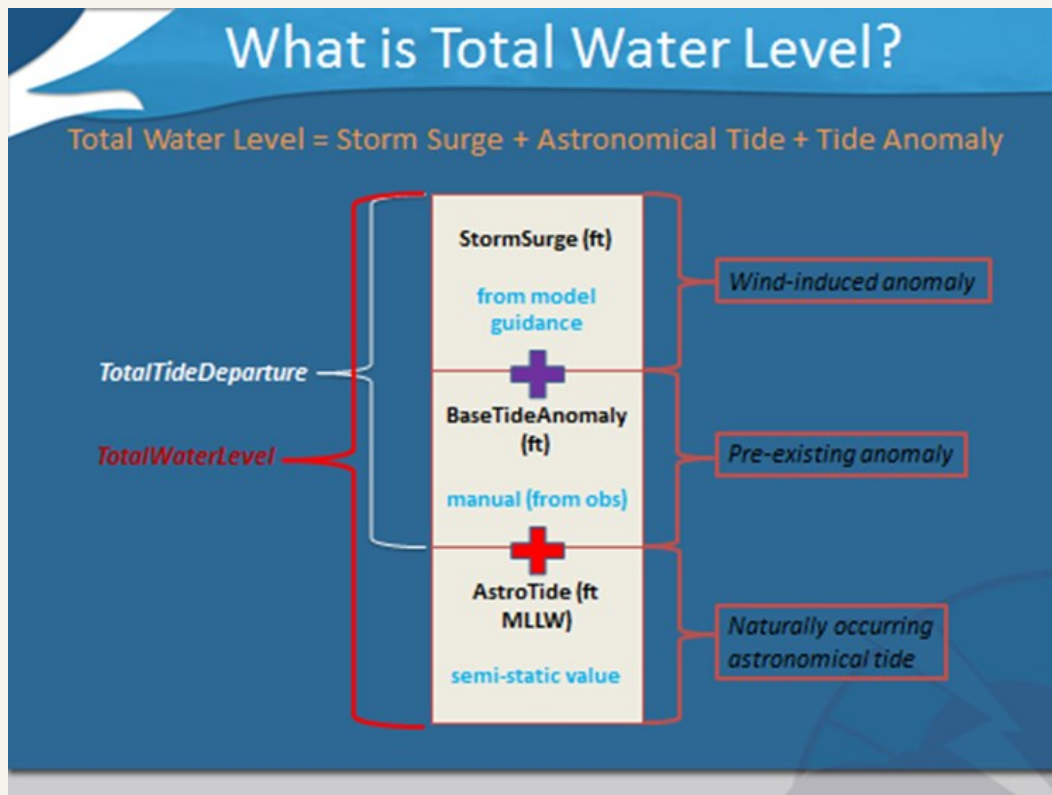
<1	4 - 5	8 - 9
1 - 2	5 - 6	9 - 10
2 - 3	6 - 7	>10
3 - 4	7 - 8	



## New! Total Water Level Forecasts

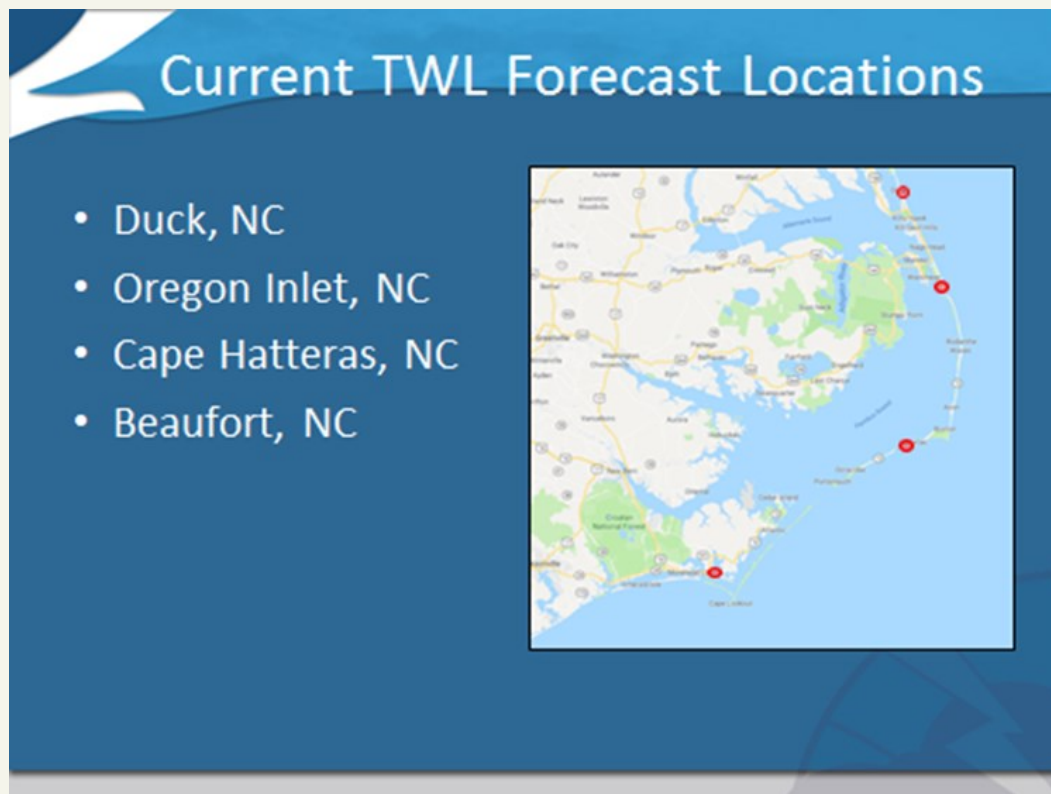
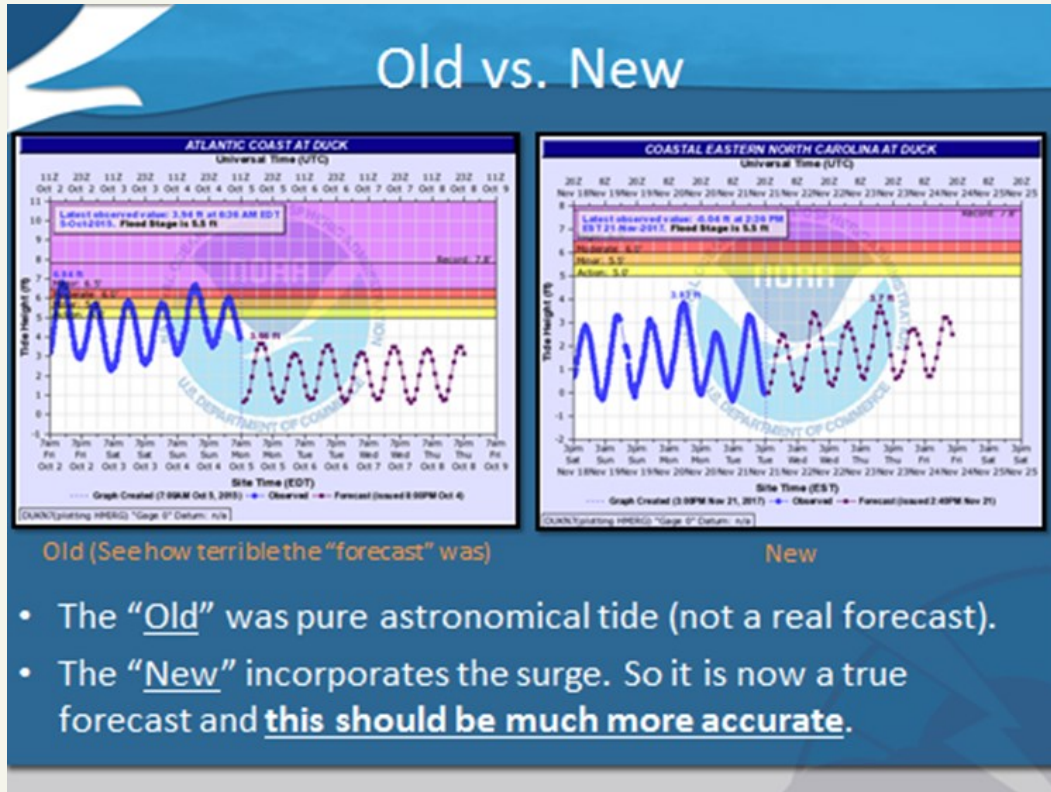
*by John Elardo, Meteorologist*

In the Fall of 2017, the National Weather Service Office in Newport/Morehead City, North Carolina began issuing Total Water Forecasts at least twice a day for four locations along the Eastern North Carolina coast. The purpose of these forecasts is to give the public a forecast water level and potential impacts for the coast several days in advance. Total Water Level is the Astronomical Tide + Storm Surge (wind induced anomaly) + Base Tide Anomaly. The Base Tide Anomaly is caused by oceanographic or meteorological effects such as water temperature changes or persistent wind flow that result in a departure in the forecast Astronomical tides.



In the recent past, we were only able to provide the Astronomical Tide forecast. Due to advancements in wind, wave, and circulation modeling, Storm Surge Forecasts have improved allowing the National Weather Service to issue water level forecasts for up to several days in advance.

## New! Total Water Level Forecasts (Continued)



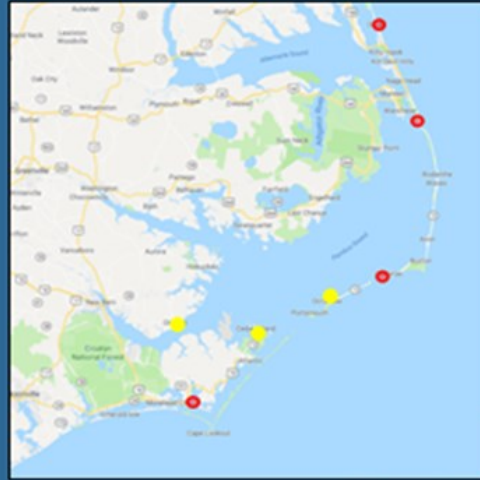


## New! Total Water Level Forecasts (Continued)

### Future TWL Forecast Locations

- Ocracoke, NC
- Cedar Island, NC
- Oriental, NC

We hope to have these sites “active” by the end of 2018.

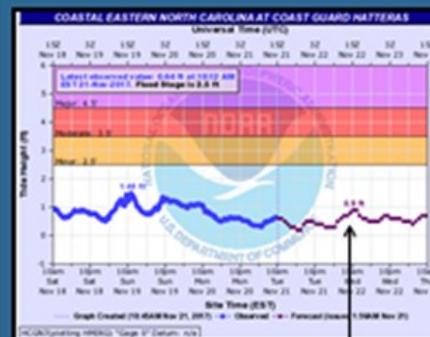


You can find this information on our Web Page (<https://www.weather.gov/mhx/>) in the Rivers and Lakes section by selecting River Observations (Map) which will take you to the [MHX Advanced Hydrologic Prediction Service \(AHPS\)](#) page.

### Where to find this data



### MHX AHPS page



Forecast

- We are updating these forecasts at least **two** times a day.
- It will be incorporated into any Coastal Flood Advisory or Warning product issued.

## New! Total Water Level Forecasts (Continued)

The new Coastal Flood products will now include Tables at the bottom with forecast water level at high tide, and expected flood impact category (none, minor, moderate, or major).

### Coastal Flood Table/Advisories

COASTAL HAZARD MESSAGE  
NATIONAL WEATHER SERVICE NEWPORT/FOREHEAD CITY NC  
400 AM EST WED NOV 8 2017

...MINOR COASTAL FLOODING EXPECTED ALONG THE COAST NORTH OF CAPE HATTERAS THROUGH THURSDAY...

...A SURGE OF NORTH TO NORTHEAST WINDS TODAY, COMBINED WITH ABOVE NORMAL TIDES WILL RESULT IN MINOR COASTAL FLOODING ALONG THE COAST NORTH OF CAPE HATTERAS. MINOR FLOODING COULD CONTINUE INTO THE HIGH TIDE CYCLE THURSDAY AS WELL.

NCZ103-082100-  
/O.EXT.KPHK.CF.Y.0014.171100T1200Z-171109T1900Z/  
OUTER BANKS DARE-  
400 AM EST WED NOV 8 2017

...COASTAL FLOOD ADVISORY NOW IN EFFECT FROM 7 AM THIS MORNING TO 2 PM EST THURSDAY...

\* LOCATIONS...NORTH OF CAPE HATTERAS.

\* TIDAL DEPARTURE...WATER LEVELS 2 TO 3 FEET ABOVE NORMAL OR ABOUT 1 TO 2 FEET ABOVE GROUND.

\* COASTAL FLOOD IMPACTS...BEACH EROSION AND OCEAN OVERWASH ALONG NC HIGHWAY 12 WILL BE POSSIBLE.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A COASTAL FLOOD ADVISORY INDICATES THAT ONSHORE WINDS AND TIDES WILL COMBINE TO GENERATE FLOODING OF LOW AREAS ALONG THE SHORE.

- Tables will be attached to the bottom of every Coastal Flood Advisory or Warning.
- Tables include forecast water level at high tide, and expected flood impact category.

TIME OF HIGH TOTAL TIDES ARE APPROXIMATE TO THE NEAREST HOUR.

DUCK NC  
PILLM CATEGORIES - MINOR 5.5 FT, MODERATE 6.0 FT, MAJOR 6.5 FT  
P996W CATEGORIES - MINOR 1.8 FT, MODERATE 2.3 FT, MAJOR 2.8 FT

DAY/TIME	TOTAL TIDE	TOTAL TIDE	DEPARTURE	WAVES	FLOOD IMPACT
	FT MLLW	FT P996W	FROM NORM FT		
08/10 AM	6.3	2.6	1.9	4.0	MODERATE
08/11 PM	5.3	1.6	1.9	5.0	NONE
09/11 AM	5.8	2.1	1.7	4.0	MINOR
10/12 AM	4.6	0.9	1.3	3.0	NONE
10/12 PM	5.4	1.7	1.5	4.0	NONE

While these forecasts are currently considered experimental, we are encouraging you to use them. If you have any questions, comments or feedback please let us know. We can be reached by [Wxobs.mhx@noaa.gov](mailto:Wxobs.mhx@noaa.gov) or (252) 223-5122.

## Record Warmth in February

*by Chris Collins, Meteorologist*

A persistent ridge of high pressure off the North Carolina coast led to a warm south to southwest wind flow across eastern North Carolina during much of February 2018. This led to a stretch of several days of record high temperatures for not only North Carolina, but much of the eastern United States. High temperatures of 82 degrees were recorded in New Bern, Washington and Kenansville on February 21, with even the normally cooler Cape Hatteras reaching 74 degrees. Many other days had high temperatures reach well into the 70s. Here's a summary for record high temperatures for February 21 recorded across the eastern United States.

 <b>HIGH TEMPERATURE RECORDS SET OR TIED</b> <b>Eastern US – Wednesday February 21, 2018</b> 					
Wednesday's Record Highs		Previous Feb 21 <sup>st</sup> Record	Wednesday's Record Highs		Previous Feb 21 <sup>st</sup> Record
Albany NY	73	65 in 1981	Morrisville VT	69	56 in 1997
Allentown PA	81*	67 in 1953	Mount Pocono PA	70*	60 in 1930
Altoona PA	76*	71 in 1997	Newark NJ	80*	69 in 1953
Atlantic City NJ	76	74 in 1930	New Bern NC	82	79 in 2011
Augusta GA	86*	80 in 2011	New Philadelphia OH	71	66 in 2017
Augusta ME	54	52 in 1981	NYC (Central Park)	78*	68 in 1930
Baltimore MD (BWI)	79	74 in 1930	NYC (J F Kennedy)	65	63 in 2002
Beckley WV	73	70 in 1916	NYC (LaGuardia)	78*	68 in 1953
Binghamton NY	69	61 in 1953	Norfolk VA	79	79 in 2014
Blacksburg VA	71	71 in 1986	Parkersburg WV	74	70 in 1997
Bluefield WV	74	65 in 1996	Philadelphia PA	77	72 in 1930
Boston MA	72	63 in 1906	Pittsburgh PA	73	73 in 1997
Bradford PA	66	64 in 1997	Portland ME	68*	59 in 1953
Bridgeport CT	63	59 in 2002	Poughkeepsie NY	76*	67 in 1953
Burlington VT	69	59 in 1981	Providence RI	64	63 in 1930
Caribou ME	51	50 in 1994	Raleigh NC	77	76 in 2011
Charlotte NC	80	75 in 2011	Reading PA	82*	71 in 1930
Columbia SC	83	81 in 1997	Richmond VA	80	75 in 1930
Concord NH	74*	64 in 1872	Roanoke VA	77	73 in 1930
Danville VA	79	75 in 2011	St. Johnsbury VT	63	62 in 1981
Dubois PA	69	60 in 1983	Salisbury MD	76	75 in 1943
Elkins WV	75	73 in 2017	Saranac Lake NY	63	45 in 2017
Elizabeth City NC	80	77 in 2014	Savannah GA	84	83 in 1991
Erie PA	70	70 in 1997	Springfield VT	70	51 in 2003
Fayetteville NC	81	80 in 1991	Syracuse NY	75*	65 in 1997
Florence SC	82	81 in 1997	Trenton NJ	78*	70 in 1930
Georgetown DE	77*	71 in 2014	Wallops Island VA	78	69 in 2002
Greensboro NC	78	74 in 2011	Washington DC (DCA)	82	75 in 1953
Greenville-Spartanburg SC	77	75 in 1917	Washington DC (IAD)	80*	70 in 1997
Harrisburg PA	79*	71 in 1997	Watertown NY	66	63 in 1997
Hartford (BDL) CT	74*	63 in 1930	Wheeling WV	70	68 in 1930
Huntington WV	77	75 in 2017	Wilkes-Barre/Scranton PA	76*	67 in 1953
Johnstown PA	71	68 in 1976	Williamsport PA	69	69 in 1930
Lynchburg VA	76	75 in 1930	Wilmington DE	78*	70 in 1953
Manchester NH	76*	60 in 1953	Wilmington NC	80	78 in 2014
Martinsburg WV	83*	72 in 1930	Worcester MA	71*	59 in 1930
Massena NY	63*	62 in 1953			
Montpelier VT	70*	57 in 1953			
Morgantown WV	75	75 in 1874			

**\* NEW RECORD HIGH FOR ANY DAY IN THE MONTH OF FEBRUARY SET OR TIED**





## National Weather Service

530 Roberts Road  
Newport, NC 28570

Phone: 252-223-5122

Fax: 252-223-3673

Website: <http://weather.gov/Newport>

Twitter: @NWSMoreheadCity

Facebook: [/www.facebook.com/NWSMoreheadCity](http://www.facebook.com/NWSMoreheadCity)



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## Know the Difference Between a **Watch** and **Warning**

### Watch

- Severe thunderstorms or tornadoes possible
- Be aware of weather conditions around you
- Know where to take shelter and what supplies to take with you
- Check for forecast updates
  - NWS Webpage - [weather.gov/ama](http://weather.gov/ama)
  - Facebook and Twitter
  - NOAA Weather Radio
  - Local Media

### Warning

- Severe weather ongoing
- Take shelter immediately
- Seek further information
- Check for forecast updates
  - NWS Webpage - [weather.gov/ama](http://weather.gov/ama)
  - Facebook and Twitter
  - NOAA Weather Radio
  - Local Media