Carolina SkyWatcher

National Weather Service, Newport/Morehead City, NC

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Fall /Winter 2016-17 Edition

Hurricane Matthew Causes Record Flooding, Surge, Winds in Eastern North Carolina

Hurricane Matthew brought devastating flooding, strong winds, and moderate to major storm surge to the coast of Eastern North Carolina during the afternoon and evening of October 8 through the early afternoon hours of October 9. The main legacy of Hurricane Matthew in Eastern NC will be the catastrophic flooding over the Coastal Plains. River flood levels not seen since Hurricane Floyd (1999) caused millions of dollars of damage and multiple deaths across the eastern third of North Carolina. The Neuse River at Kinston recorded a record crest of 28.6 feet. Sound-side storm surge levels were observed at 3.5 to 4.5 feet above ground in Hatteras, and 2 to 3 feet above ground in Ocracoke.

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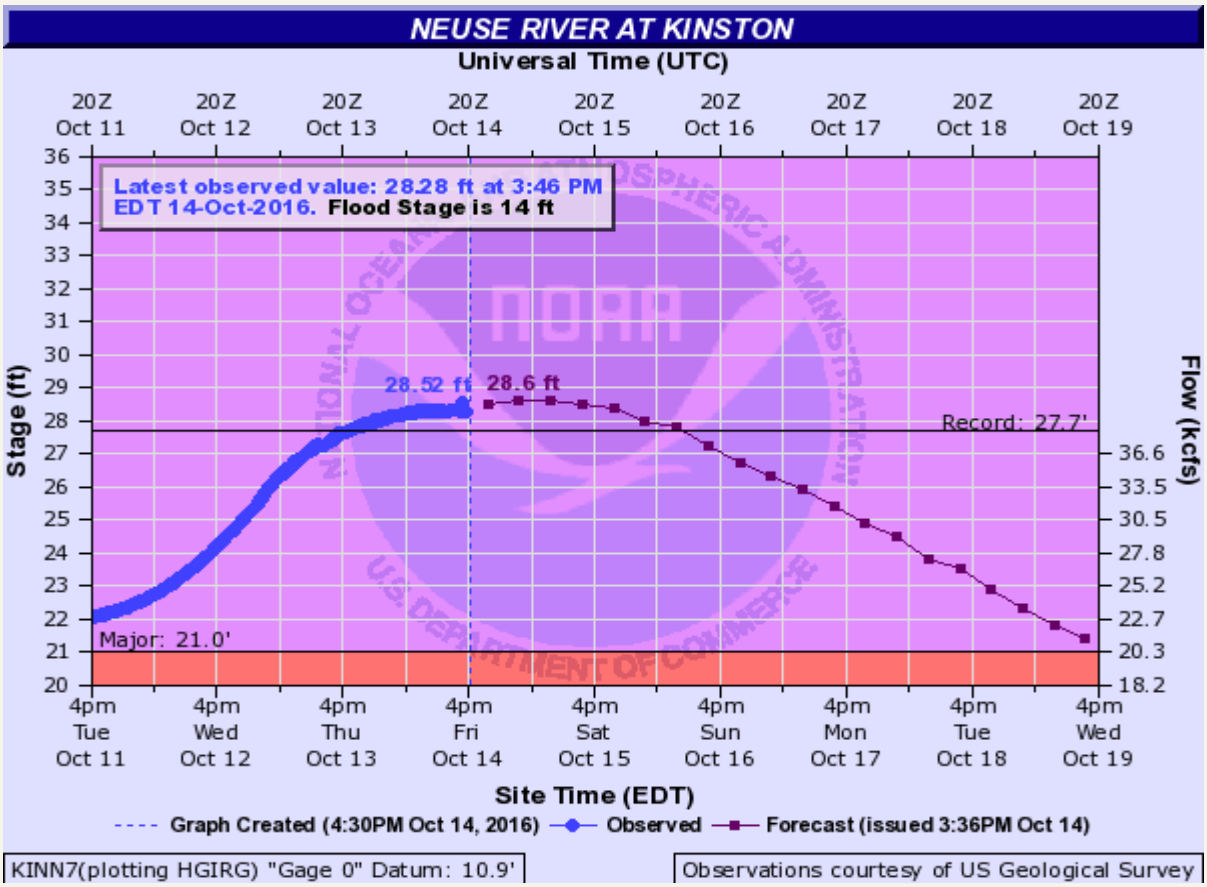
Satellite Image of Hurricane Matthew off the Georgia/South Carolina coast, October 7, 2016.

Hurricane Matthew (Continued)

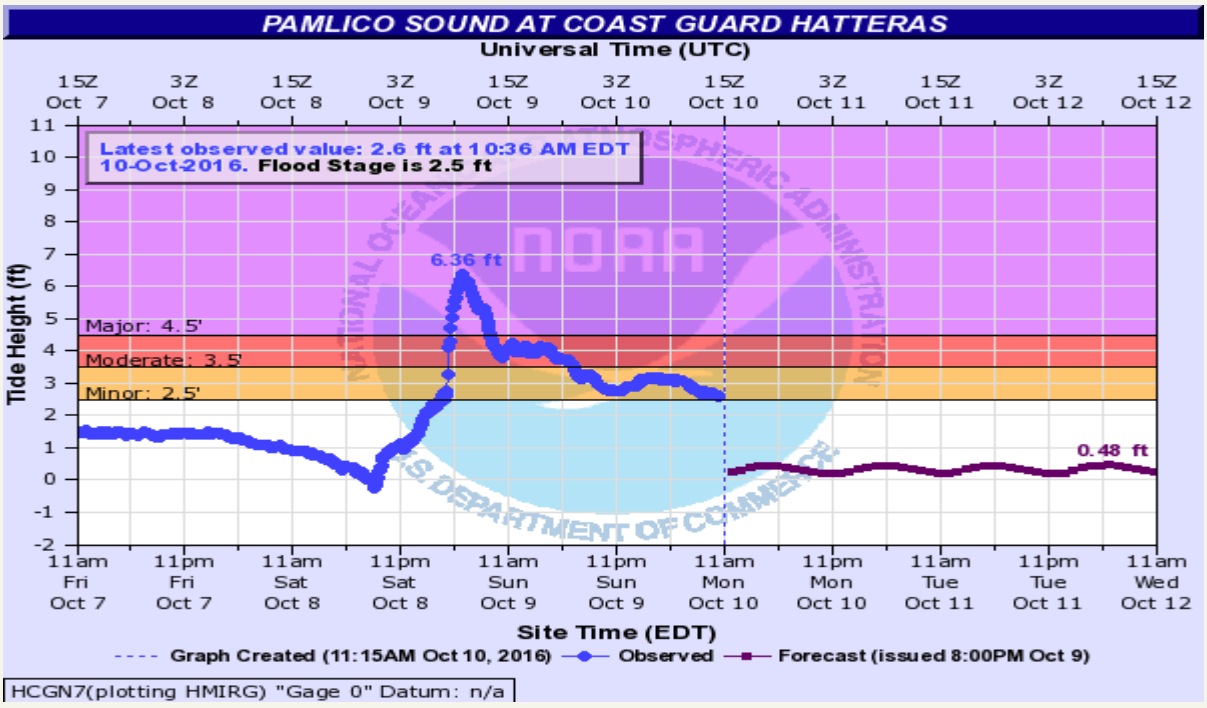
Flooding along the Neuse River in Kinston. A record crest of 28.6 feet was observed.

Flooding near the Pitt-Greenville Airport following Hurricane Matthew.

Hurricane Matthew (Continued)



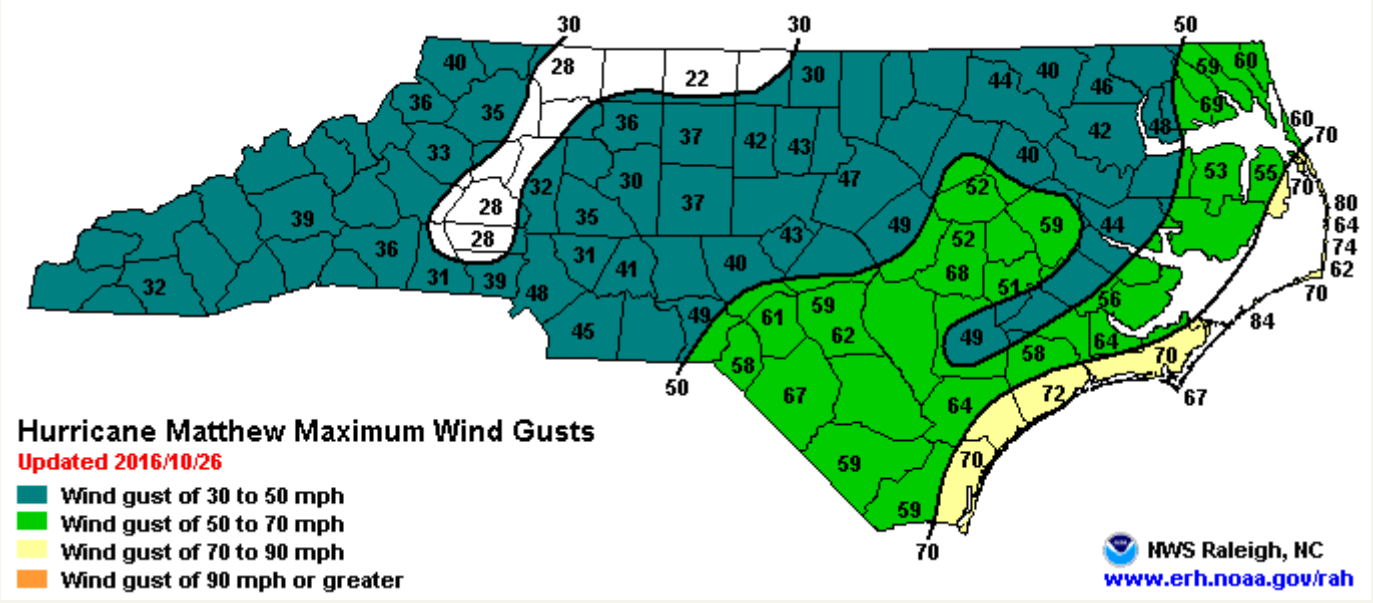
Hydrograph for the Neuse River at Kinston showing the Record Flood Stage on October 14, 2016.



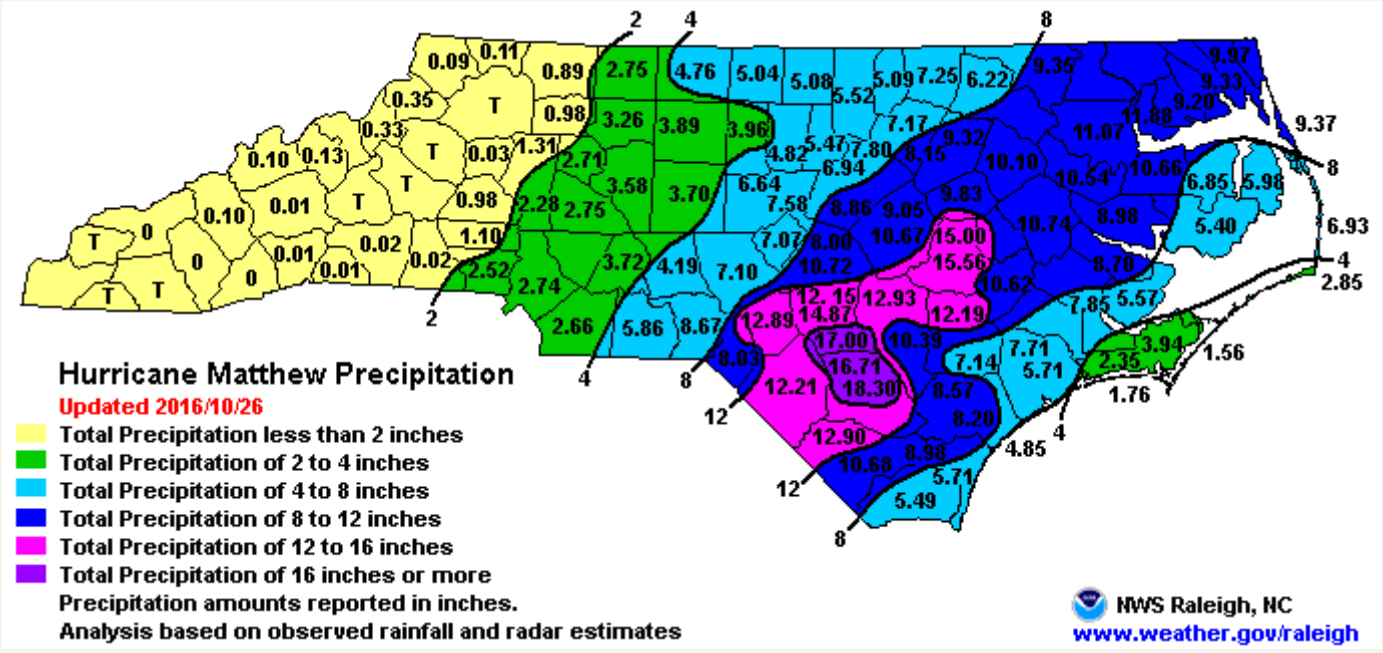
Tide Gauge at Cape Hatteras Coast Guard Station showing record surge values on Oct. 9, 2016

Hurricane Matthew (Continued)

Hurricane Matthew produced very heavy rainfall totals, especially over inland areas, along with strong gusty winds. Wind gusts in excess of 80 mph were reported along the Outer Banks. Rainfall totals of 12 to 18 inches were common over the southern Coastal Plains. Here are maps of the storm total rainfall amounts and peak gusts, courtesy NWS Raleigh.

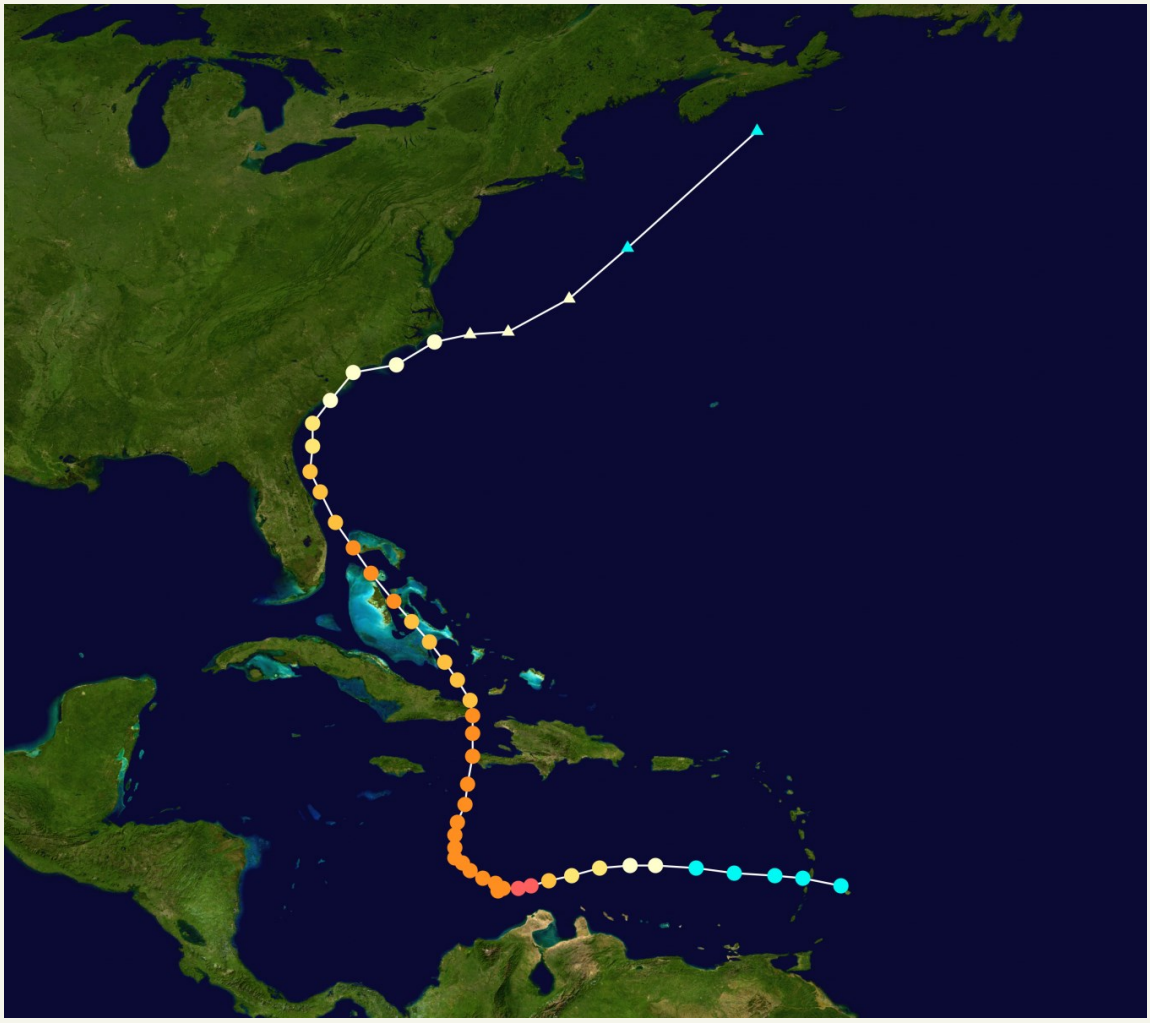


Peak Wind Gusts during Hurricane Matthew (Courtesy NWS Raleigh)



Rainfall Totals from Hurricane Matthew (Courtesy NWS Raleigh)

Hurricane Matthew (Continued)



Complete Track of Hurricane Matthew, Sept 28-Oct 10, 2016 (Courtesy WPC)

Washed out road in Greene County. This is why we urge folks when you see water covered roads to Turn Around, Don't Drown!

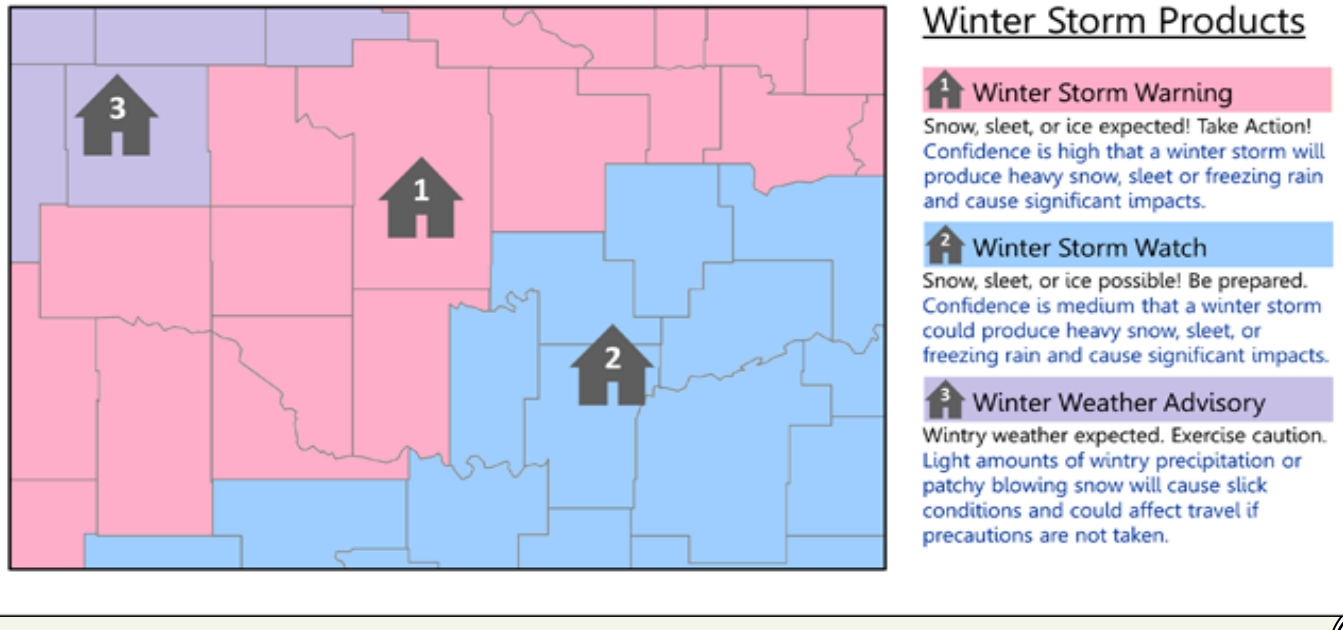
Winter Weather Watches, Warnings and Advisories

By Chris Collins, Meteorologist

Winter is approaching soon and while eastern North Carolina is noted for its normally mild climate, snow and ice can and do occur in our area. Winter weather related Warnings, Watches and Advisories are issued by your local National Weather Service office. Each office knows the local area and will issue Warnings, Watches or Advisories based on local criteria. For example, the amount of snow that triggers a "Winter Storm Warning" in the Northern Plains is typically much higher than the amount needed to trigger a "Winter Storm Warning" in the Southeast. Here in Eastern North Carolina, a Winter Weather Advisory is issued for expected snow totals of 1 to 2 inches in 12 hours, or any accretion of ice. A Winter Storm Warning is issued for expected snow amounts of 3 inches in 12 hours or 4 inches in 24 hours, or a forecast of 1/4 inch of ice or 1/2 inch of sleet.

Here are some more key terms to understand:

- **Freezing Rain:** Rain that freezes when it hits the ground; creating a coating of ice on roads, walkways, trees and power lines.
- **Sleet:** Rain that turns to ice pellets before reaching the ground. Sleet also causes moisture on roads to freeze and become slippery.
- **Wind Chill**: A measure of how cold people feel due to the combined effect of wind and cold temperatures; the Wind chill Index is based on the rate of heat loss from exposed skin. Both cold temperatures and wind remove heat from the body; as the wind speed increases during cold conditions, a body loses heat more quickly.

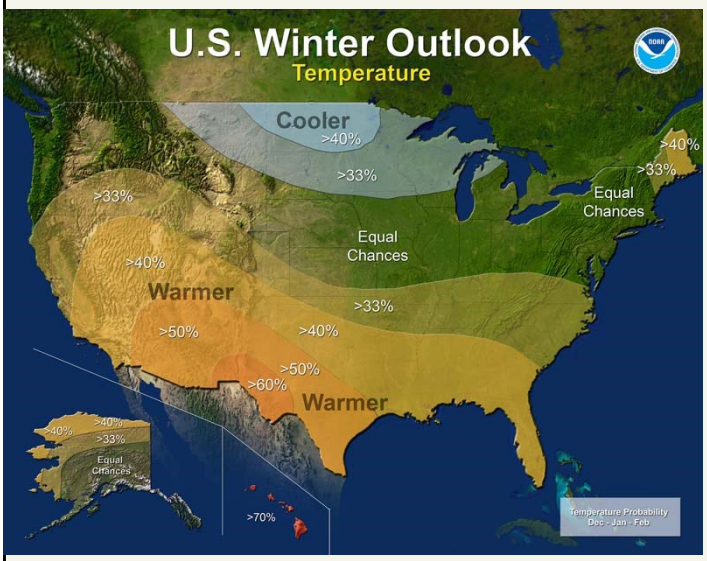


Winter Outlook Predicts Warm, Dry Winter for South

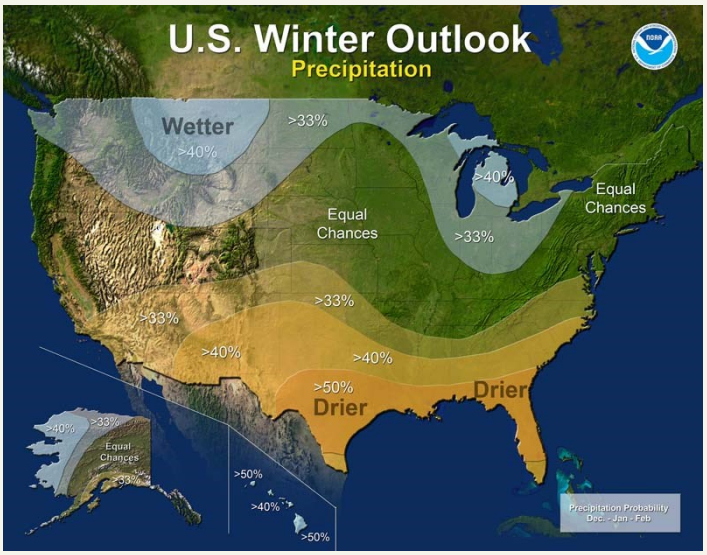
By Chris Collins, Meteorologist

Forecasters at NOAA's Climate Prediction Center issued the U.S. Winter Outlook, saying that La Nina is expected to influence winter conditions this year. The Climate Prediction Center issued a La Nina watch in early October, predicting the climate phenomenon is likely to develop in late fall or early winter. La Nina favors drier, warmer winters in the southern U.S and wetter, cooler conditions in the northern U.S. If La Nina conditions materialize, forecasters say it should be weak and potentially short-lived.

"This climate outlook provides the most likely outcome for the upcoming winter season, but it also provides the public with a good reminder that winter is just up ahead and it's a good time to prepare for typical winter hazards, such as extreme cold and snowstorms," said Mike Halpert, deputy director, NOAA's Climate Prediction Center. "Regardless of the outlook, there is always some chance for extreme winter weather, so prepare now for what might come later this winter."



Winter Temperature Outlook



Winter Precipitation Outlook

Weak Tornado Hits Bogue, NC on June 25, 2016

By Chris Collins, Meteorologist

A weak tornado touched down near the intersection of Red Barn Road and Everette Court in the Bogue area of western Carteret County during the early afternoon hours of June 25, 2016. The tornado then proceeded into the Goose Creek Landing neighborhood following closely down Snow Goose Lane before lifting as it moved into Goose Creek. Most of the damage was minor and included breaking small to medium limbs, lifting and tossing loose yard furniture and golf carts, which also caused some damage to homes and vehicles. Several boats on trailers were moved into a jack-knife position with minor damage to boats and attendant vehicles. Several mobile homes had damage to roofing material, siding and skirting, while two mobile homes had significant damage to their porch awnings which were lifted and tossed from 30 feet to over a block away. There was one minor injury to an individual as they attempted to prevent yard furniture from blowing away.

Developing tornado near Bogue, NC on June 25, 2016.

Tornado Damage near Bogue, NC on June 25, 2016.

Skywarn Recognition Day 2016

By Hal Austin, Meteorologist

Skywarn Recognition Day 2016 will be held from 7 pm Friday, December 2nd to 7 pm Saturday, December 3rd. Skywarn Recognition Day is an annual event begun in 1999 by the National Weather Service (NWS) and the American Radio Relay League (ARRL). It celebrates the contributions that volunteer Skywarn radio operators make to the National Weather Service. During the 24-hour event, ham radio operators come out to NWS offices and try to make as many contacts as possible with other NWS offices as well as other hams in general. All amateur radio bands are used. The NWS and the ARRL both recognize the importance that amateur radio provides during severe weather. Many NWS offices acquire real time weather information from amateur radio operators in the field. These operators, for example, may report the position of a tornado, the height of flood waters, or damaging wind speeds during hurricanes. All of this information is critical to the mission of the NWS which is to preserve life and property. The special event celebrates this special contribution by amateur radio operators.

In years past, many members of the Carteret County Amateur Radio Society as well as other amateur radio clubs in the area have come out to our office and took turns operating the NWS radios (call sign WX4MHX). At the same time, hams also operated their own radios from our conference room, as well as from a mobile station in a portable trailer parked outside next to the office and even their own personal vehicles. It has always been a busy but very fun day, and this year will be no different! For the latest information including operating procedures, participating NWS offices, as well as stats, pictures and news stories from past events, go to hamradio.noaa.gov.

Student Volunteer Summer 2016

By Casey Dail, Meteorologist

This summer our staff had the privilege of getting to know and working with college student Kyle Noel. Kyle is a senior at the University of North Carolina at Asheville, and is also the President of the local UNCA AMS chapter. This summer he worked on a wind gust climatology for Eastern NC. He analyzed copious amounts of wind gust data to determine trends on various time scales and compiled a climatology for the area. His analysis and results will be used to develop guidelines that our forecasters can utilize when creating wind gust forecasts. This will help to improve public, aviation and fire weather forecasts across Eastern North Carolina.

In addition to completing his research project, Kyle spent many hours shadowing the forecast staff in operations: from launching weather balloons to assisting with forecasts. This experience has reaffirmed Kyle's desire to pursue meteorology and possibly work for the National Weather Service. We would like to thank Kyle for his hard work and we wish him the best of luck with his future endeavors!

For additional information on or our volunteer program, please visit our webpage http://www.weather.gov/mhx/StudentInterns, or contact Casey.Dail@noaa.gov.

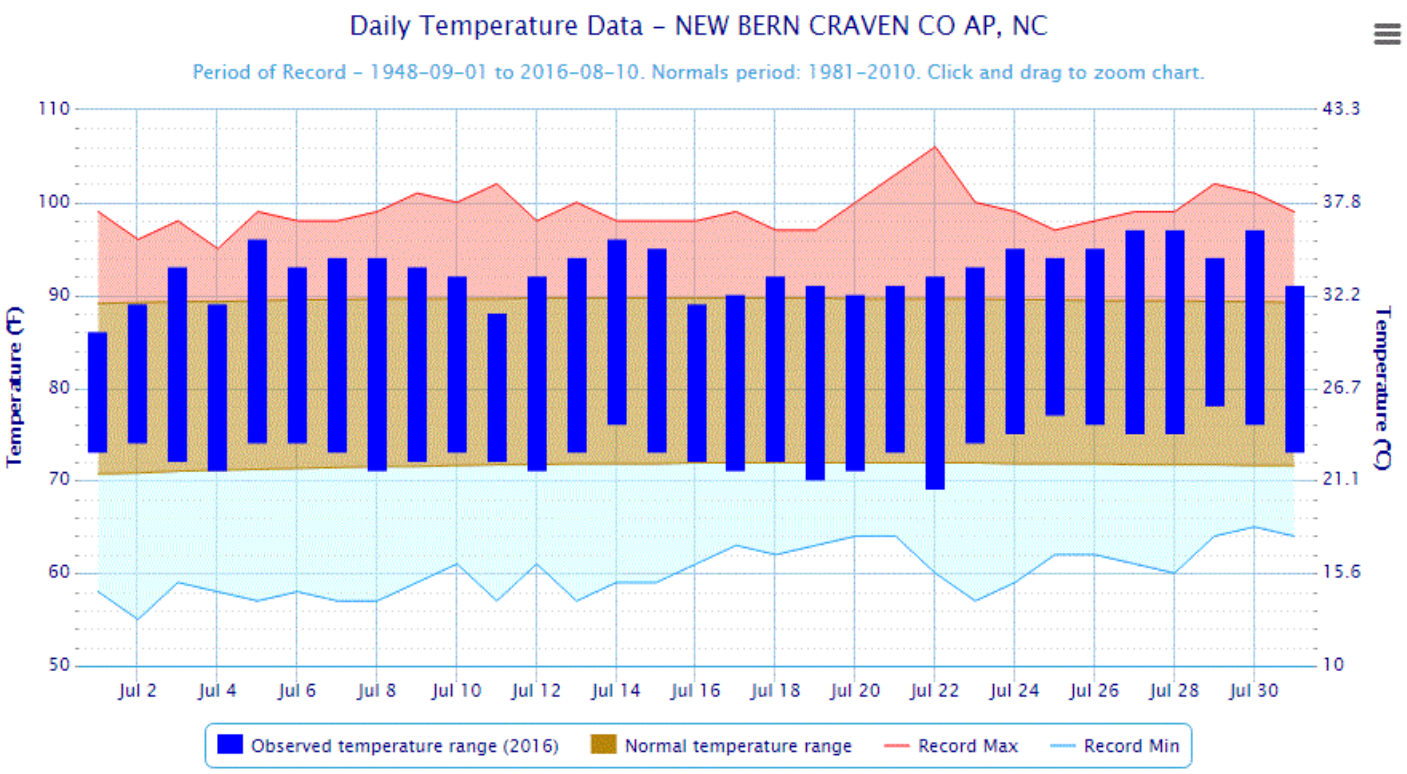
Student Volunteer Kyle Noel

Hot, Humid July in Eastern North Carolina

By Chris Collins, Meteorologist

The combination of a persistent ridge of high pressure producing hot temperatures and a warm southerly flow producing high humidity values led to a hot, humid July 2016 across eastern North Carolina. Heat index values were consistently greater than 105 degrees through the second half of the month and numerous Heat Advisories were issued for the region. Ironically, the last time we had so many Heat Advisories was also another hurricane landfall year (2011). Both the average maximum and minimum temperatures were about 2 degrees above normal for the area. Some of the hottest temperatures readings recorded through the month included 99 degrees in Greenville, 98 degrees in Kinston and Williamston and 97 degrees at New Bern and Plymouth. Here at the National Weather Service in Newport, it was the fourth warmest July on record.

While only a few high temperatures records were set during the month, the unusual aspect of this heat event were the unusually high minimum temperatures. July recorded a number of days where low temperatures never dropped below 80 degrees. These temperatures, coupled with above normal humidity levels, led to very uncomfortable conditions across eastern North Carolina during the second half of the month.



Only six days in the month of July 2016 recorded temperatures that were at or below normal in New Bern, NC.

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