



# Carolina SkyWatcher



National Weather Service, Newport/Morehead City, NC

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Fall 2019 Edition



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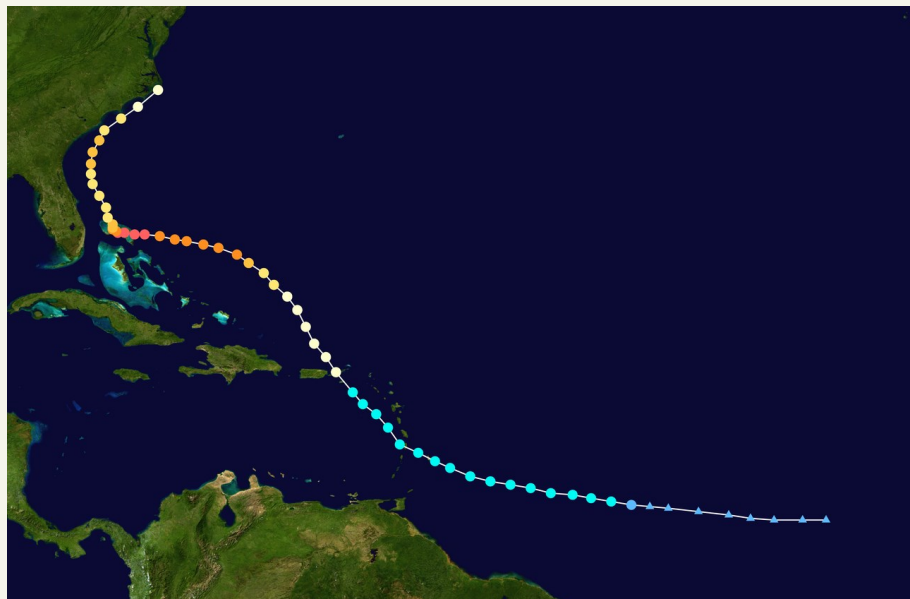
## Hurricane Dorian hits Eastern NC

*By Chris Collins, Meteorologist*

Hurricane Dorian was the fourth named storm, second hurricane, and first major hurricane of the 2019 Atlantic hurricane season. Dorian formed on August 24, 2019 from a tropical wave in the Central Atlantic and gradually strengthened as it moved toward the Lesser Antilles, becoming a hurricane on August 28. Rapid intensification occurred, and on August 31, Dorian became a Category 4 hurricane. On September 1, Dorian reached Category 5 intensity, with maximum sustained winds of 185 mph, and a minimum central pressure of 910 mb, while making landfall in Elbow Cay, Bahamas. The ridge of high pressure steering Dorian westward collapsed on September 2, causing Dorian to stall just north of Grand Bahama for about a day. It is the strongest known tropical system to impact the Bahamas. On the morning of September 3, Dorian began to move slowly towards the north-northwest. Dorian moved over warmer waters, regaining Category 3 intensity by midnight on September 5. In the early hours of September 6, Dorian weakened to Category 1 intensity as it picked up speed and turned northeast. Dorian would pick up speed and move northeast along the North Carolina coast September 6, moving just south of the Crystal Coast, clipping Cape Lookout and eventually making landfall at Cape Hatteras.

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Path of Hurricane Dorian, August 24-September 6, 2019.

## Hurricane Dorian (continued)

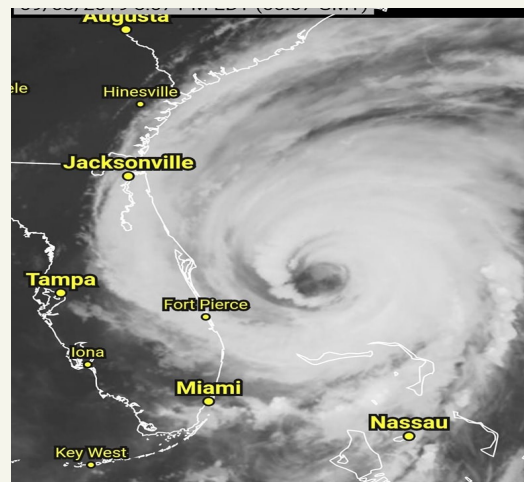
The initial impacts from Dorian actually occurred during the morning hours of September 5 when several tornadoes touched down in eastern North Carolina. The most damaging tornado occurred in Emerald Isle in Carteret County. The tornado touched down shortly after 9 AM and damaged numerous businesses and homes, including the Salty Pirate Water Park. The tornado was rated as an EF-2 on the [Enhanced Fujita Scale](#) with winds estimated at 115 mph. As the center of Dorian moved just south of the Crystal Coast, with the eye clipping Cape Lookout, peak wind gusts of 110 mph were recorded at the Cedar Island Ferry Terminal, 89 mph at Fort Macon, 85 mph at Beaufort and 82 mph at Cape Lookout. Rainfall totals of 5 up to 10 inches were common near the North Carolina coast. Storm surge flooding occurred in Cedar Island. The most severe storm surge flooding occurred on Ocracoke Island where several people were trapped in their attics by flooding from the 4-to-7-foot storm surge, requiring rescue by boats. People were airlifted off the island to shelters on the mainland while food and water were brought in to residents on the island. North Carolina Highway 12 along Ocracoke Island suffered damage from flooding. More than 190,000 North Carolina homes lost power during the storm.



Tornado Damage in Emerald Isle, September 5, 2019  
Courtesy: Carteret County News-Times



Aerial view of Ocracoke surge flooding.  
Courtesy: WITN-TV



Dorian as a Category 5 hurricane in the Bahamas

## Skywarn Recognition Day 2019

*By Erik Heden, Warning Coordination Meteorologist*

The 20th Annual Skywarn Recognition Day (SRD) Special Event will take place from 7pm Friday, December 6th, to 7pm Saturday, December 7, 2019 here at National Weather Service Newport.

Skywarn Recognition Day was developed in 1999 by the National Weather Service (NWS) and the American Radio Relay League (ARRL). It celebrates the contributions that volunteer Skywarn amateur radio operators make to the NWS. On SRD, Skywarn amateur radio operators visit NWS offices and contact other radio operators across the nation and around the world. In the past, NWS offices have contacted all 50 states and more than 40 countries during the 24 hour event.

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.

Here at NWS Newport, in previous years for SRD, operators from ham radio clubs in Carteret County, New Bern, Jacksonville, Oriental, Greenville and Kinston have participated. Some even bring their own equipment and set up a “special event” station and operate from our office! We typically operate on the 2 meter, 440 MHz, 20 meter, 40 meter, and 80 meter bands as well as PSK 31. Our callsign is WX4MHX. The amateur radio station here at NWS Newport has radios that operate on all these frequencies (except PSK 31).

On any given day, we have a pool of radio operators we can call on to come to our office and operate our radios to help gather reports during a weather event. They have been a big help to us in gathering reports during severe thunderstorm outbreaks, as well as “high impact” events like Hurricane Irene and the large tornado outbreak in April 2011. We very much appreciate them giving of their time to help us and the citizens here in central eastern North Carolina!

To learn more about SRD, go to <https://w2.weather.gov/marine/ham>



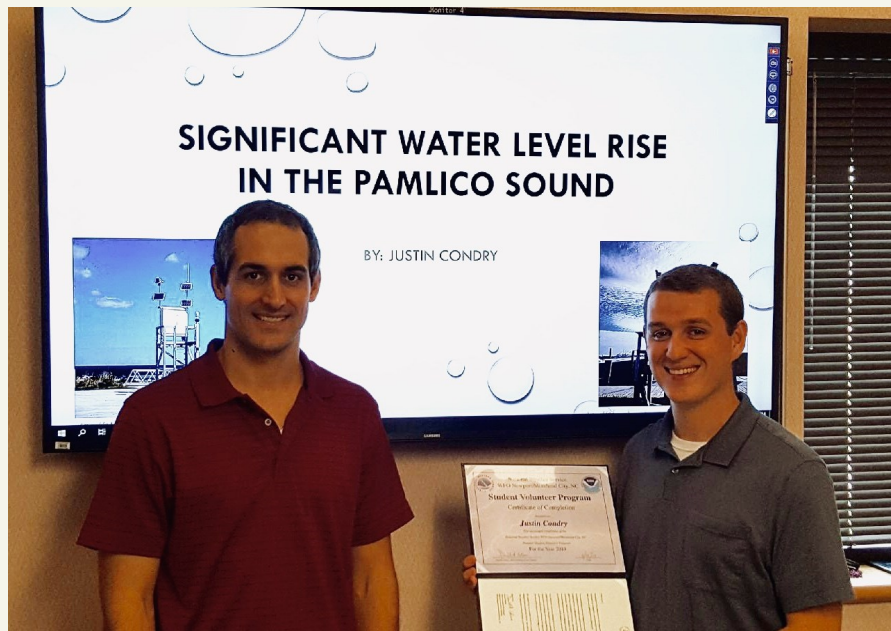
## 2019 Summer Student Volunteer Completes Program

*By Carl Barnes, Meteorologist*

Every year, NWS Morehead City welcomes currently enrolled college students to apply for the summerlong student volunteer experience. The application process is very competitive, as the experience serves as a great stepping stone toward a career with the National Weather Service. This year's volunteer, Justin Condry from Jacksonville, is a rising senior studying Atmospheric Sciences at UNC Asheville.

Justin worked hard this summer, completing a rigorous program consisting of over 140 hours of shadowing forecasters for operational experience, completing an extensive online curriculum, and conducting a research project to examine rapid water level rise events on the soundside of the Outer Banks, with a focus on non-tropical and meteotsunami events. He presented his research to forecasters in mid-August, and the results are being applied to help water level forecasts and increase coastal flood safety. Justin did exceptional work, and has gained valuable experience that will help him achieve his goal of employment with the National Weather Service after he graduates next year.

Do you know someone enrolled in a Meteorology, Atmospheric Science, or any other related program who would be interested in volunteering at the National Weather Service? The application typically opens around New Years, with a complete description available at <https://www.weather.gov/mhx/StudentInterns>.



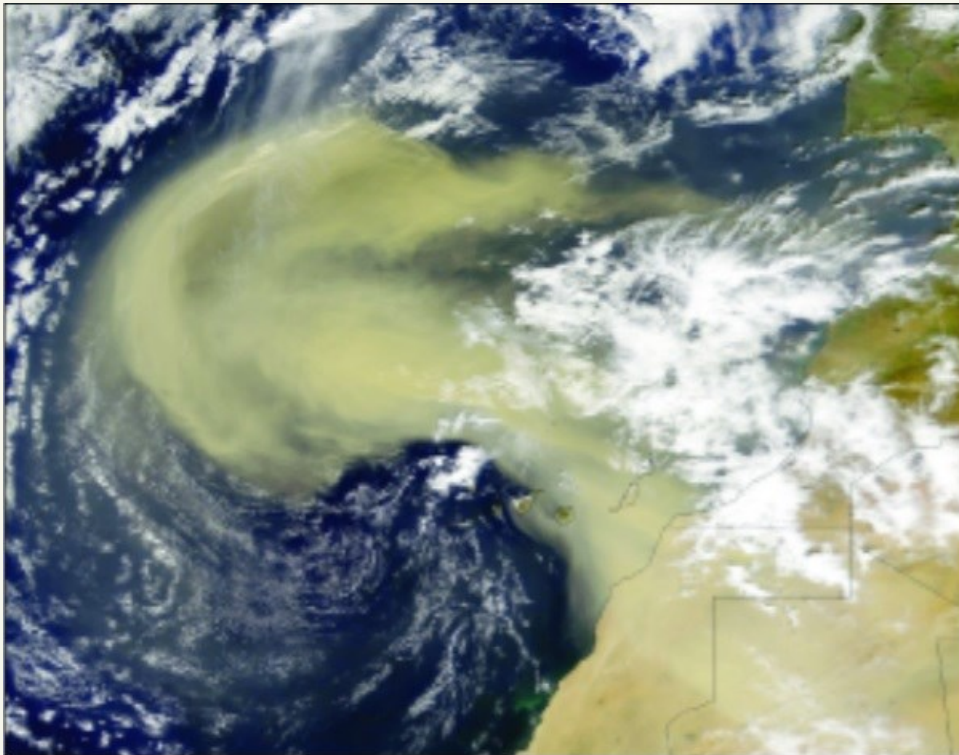
2019 Student Volunteer Justin Condry (right) and Student Volunteer Program Leader Carl Barnes (left) after Justin's end of summer research presentation.

## How Saharan Dust Impacts Tropical Cyclones

*By Chris Collins, Meteorologist*

In recent years, you may have heard Meteorologists mention Saharan dust in relationship to tropical cyclone development. The Saharan Air Layer, more commonly known as Saharan dust, is a layer of aerosols like sand, dirt and dust that occasionally push from east to west across the Tropical Atlantic during hurricane season. This Saharan dust sometimes gets embedded in easterly waves that move off the African Coast and push westward into the Atlantic Ocean. This dust usually resides between 5,000 and 15,000 feet above sea level. Since tropical cyclones need deep moisture for development, this dust often acts to inhibit tropical development. Once Saharan dust starts moving westward across the tropical oceans, it is fairly easy to observe and track using infrared satellite.

There are numerous factors that go into predicting the strength and track of tropical weather systems. In addition to wind shear, water temperature and steering currents, knowing whether or not a tropical cyclone will have Saharan dust in its vicinity is a factor that can determine the cyclone's potential to intensify.



This NASA satellite image shows a dust storm, hundreds of thousands of square miles in size, moving from the Saharan Air Layer over Africa into the eastern Atlantic Ocean.

## July Heat Wave

*By Chris Collins, Meteorologist*

A persistent ridge of high pressure dominated eastern North Carolina's weather in July 2019. This produced hot temperatures for our entire area and dry weather over all but northern portions of our County Warning Area (CWA). High temperatures reached 100 degrees in Greenville on July 3rd. Cape Hatteras, which is normally cooler due to the influence of nearby shelf waters, recorded 10 days at or above 90 degrees. Heat Advisories were issued on 10 consecutive days from July 13 through July 22, as heat index values were as high as 113 degrees. In addition to the heat, rainfall totals were well below normal along the southern coast from Carteret and Onslow Counties north and west into Jones and Duplin Counties.

	Max High	Date Obs.
<b>Beaufort</b>	94	1 <sup>st</sup>
<b>Hatteras</b>	92	16 <sup>th</sup> , 31 <sup>st</sup>
<b>New Bern</b>	97	21 <sup>st</sup>
<b>Greenville</b>	100	3 <sup>rd</sup>
<b>Kinston</b>	99	4 <sup>th</sup>
<b>Williamston</b>	95	4 <sup>th</sup>
<b>Plymouth</b>	96	3 <sup>rd</sup> , 22 <sup>nd</sup>
<b>Bayboro</b>	96	1 <sup>st</sup> , 22 <sup>nd</sup>





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