# Carolina SkyWatcher

National Weather Service, Newport/Morehead City, NC

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Spring 2021 Edition

## Spring is Severe Weather Season

***By: Michael Lee, Meteorologist***

As we look forward to the warmer weather and blossoming flowers of Spring, people of eastern North Carolina must also turn their attention to the threat of severe weather. March through June is the peak of severe weather season, with April and May historically being the most active months for tornadoes. Two of the most noteworthy tornado outbreaks in recent eastern North Carolina history occurred on March 28, 1984 and April 16, 2011. The March 1984 outbreak produced 24 tornadoes across three states, including two EF-4 tornadoes in eastern North Carolina. In total, 16 deaths and over 300 injuries were recorded in our communities. The April 2011 outbreak was part of a prolonged three day tornado outbreak that produced 178 tornadoes across 16 states. Twelve of those tornadoes impacted eastern North Carolina, including two EF-3 tornadoes, damaging hundreds of homes, businesses, and schools across the region. Several injuries were reported that day, but astoundingly, no fatalities. Even more recently was the severe weather outbreak last year on April 13, 2020. A total of six tornadoes and numerous reports of wind damage from severe thunderstorms were confirmed that day with five EF-0 tornadoes and one EF-1 tornado.

Events like these remind us to have a plan of action should severe weather impact your neighborhood. Start preparing for severe weather season today by making an emergency plan for your household, ensuring you have multiple ways to receive life-saving severe weather warnings, and knowing where to go in the event of a severe weather event. Find more severe weather preparedness tips at weather.gov/mhx/tornadoes.

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*EF-1 tornado destroys hog farm in Haws Run on April 13, 2020. No injuries or fatalities; all pigs were accounted for.*

# Severe Weather Preparedness Week

***By Erik Heden, Warning Coordination Meteorologist***

*Harkers Island, NC. Picture Credit: Chuck Laughridge*

Severe weather preparedness week took place March 7th through March 13th. Topics discussed during the week included tornadoes, severe thunderstorms, flash flooding, and ways to get warning information. While the week is behind us, you should continue to practice preparedness as we head into the spring severe weather season. It is important to have multiple ways to receive warnings and ensure one of the ways will wake you up at night. For more tips on preparedness and what kind of severe weather is possible in Eastern North Carolina visit our website: www.weather.gov/moreheadcity/ tornadoes for more information. Here are a few helpful things to remember this upcoming severe weather season.

**Have A Plan/Know Where To Go**

Having a safe place to shelter is something you need to plan well ahead of time, so that you know where to go when severe weather strikes.

# Severe Weather Preparedness Week (*continued*)

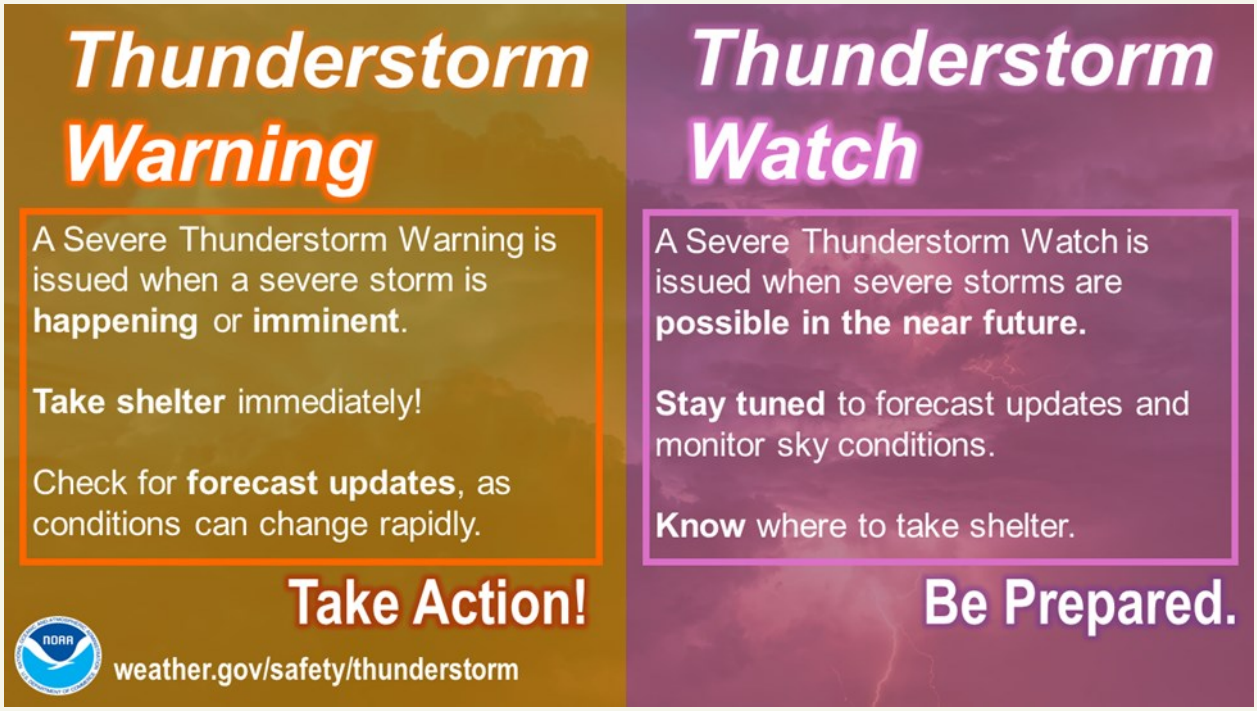
**Having Multiple Ways to Receive Warnings**

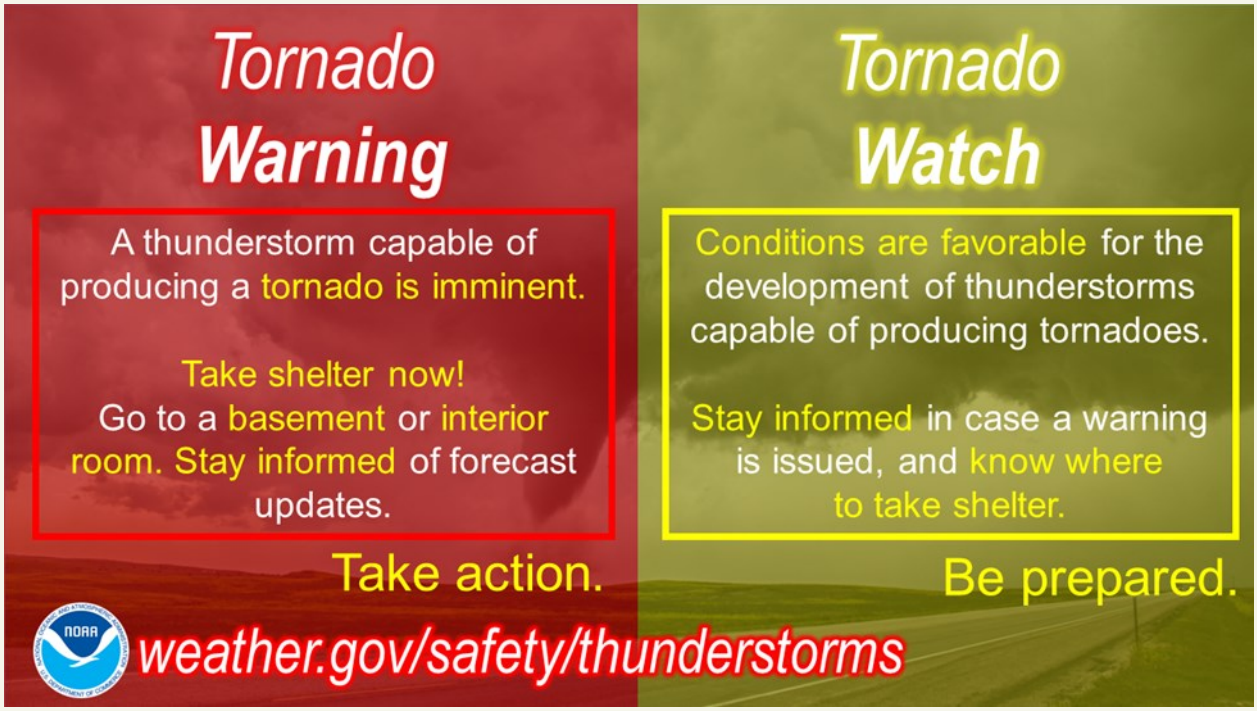
In order to be prepared for severe weather you must be able to receive weather alerts. When reviewing how you receive alerts, ensure you have at least two ways to receive warnings. A NOAA Weather Radio is an excellent way to receive alerts especially at night when you may be asleep. Remember you will not receive cell phone alerts if you leave your phone on do not disturb at night.

# Severe Weather Preparedness Week (*continued*)

**Know the Difference**

We issue both warnings and watches prior to and during severe weather. Do you know the different between the two?



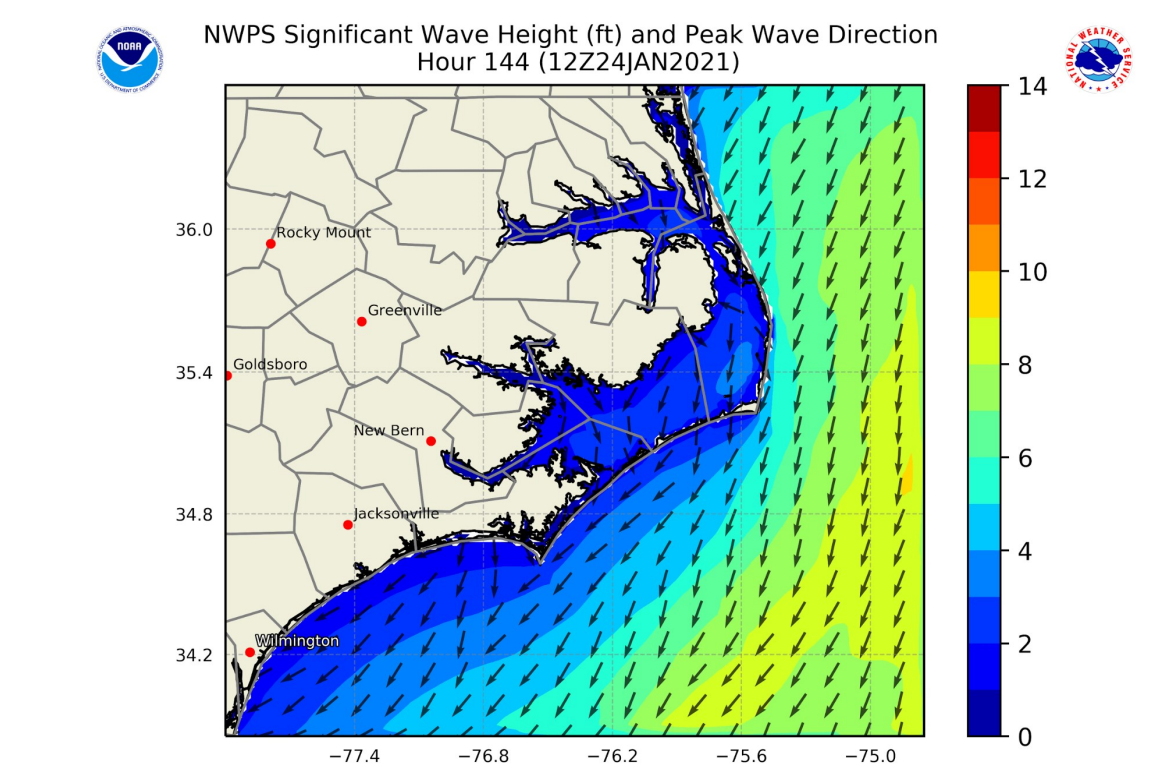
# NOAA Upgrades Nearshore Wave Prediction System

***By Chris Collins, Lead Meteorologist***

On February 3, NOAA's Nearshore Wave Prediction System (NWPS), which provides on-demand, high-resolution nearshore wave model guidance to U.S. coastal Weather Forecast Offices (WFOs), underwent significant upgrades.

As a part of this upgrade, the model will introduce the first-ever hourly probabilistic hazardous rip current guidance up to six days out for the U.S. East and Gulf Coasts, Puerto Rico, Hawaii, and Guam. This new guidance was developed in partnership with the U.S. Lifesaving Association and validated through lifeguard observations of rip currents. These enhancements will undoubtedly help save lives and protect property, as rip currents account for more than 100 deaths in the U.S. each year and 80 percent of rescues performed by beach lifeguards.

Version 1.3 will also introduce the first-ever hourly probabilistic erosion and overwash guidance for up to six days out for the U.S. East and Gulf Coasts. This is significant because coastal erosion is responsible for roughly $500 million in coastal property loss in the United States each year. Additionally, the upgrade includes an enhanced wave system identification method, an improved view of wave guidance along high-impact tracks, and a new modeling approach for 12 coastal WFO domains to allow better representation of coastal geography and nearshore wave growth and propagation.




*Predicted ocean wave field for the NC Coast from NWPS.*

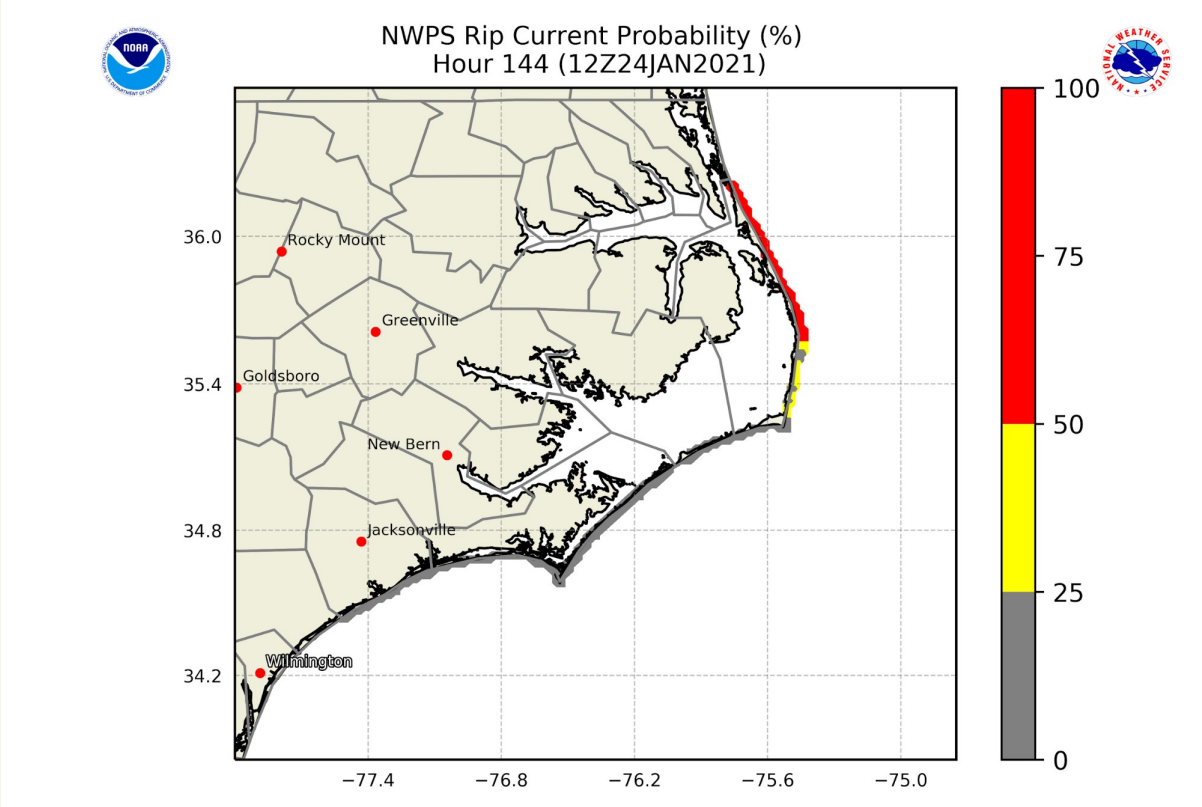
## NOAA Upgrades Nearshore Wave Prediction System (continued)

NWPS is developed and maintained by the National Center for Environmental Prediction's Environmental Modeling Center in collaboration with marine forecasters at the 36 coastal NWS WFOs, as well as partners at the Meteorological Development Laboratory, NOAA's National Ocean Service, and the United States Geological Survey. The model is driven by forecaster-developed wind grids produced in the Advanced Weather Interactive Processing System and boundary conditions from the operational WAVEWATCH III model.

***Rip currents account for more than 100 deaths in the U.S. each year and 80 percent of rescues performed by beach lifeguards.***

The forecasting improvements enabled by this upgrade to NWPS will make way for better protection of life and property at sea in the U.S. East and Gulf Coasts, Puerto Rico, Hawaii, and Guam. The next model version will include enhancements for the Western and Alaska Region coastal WFOs.

For more information about changes to the NWPS model, take a look at this Service Change Notice.




*Snapshot of a hazardous rip current prediction along the NC coast.*

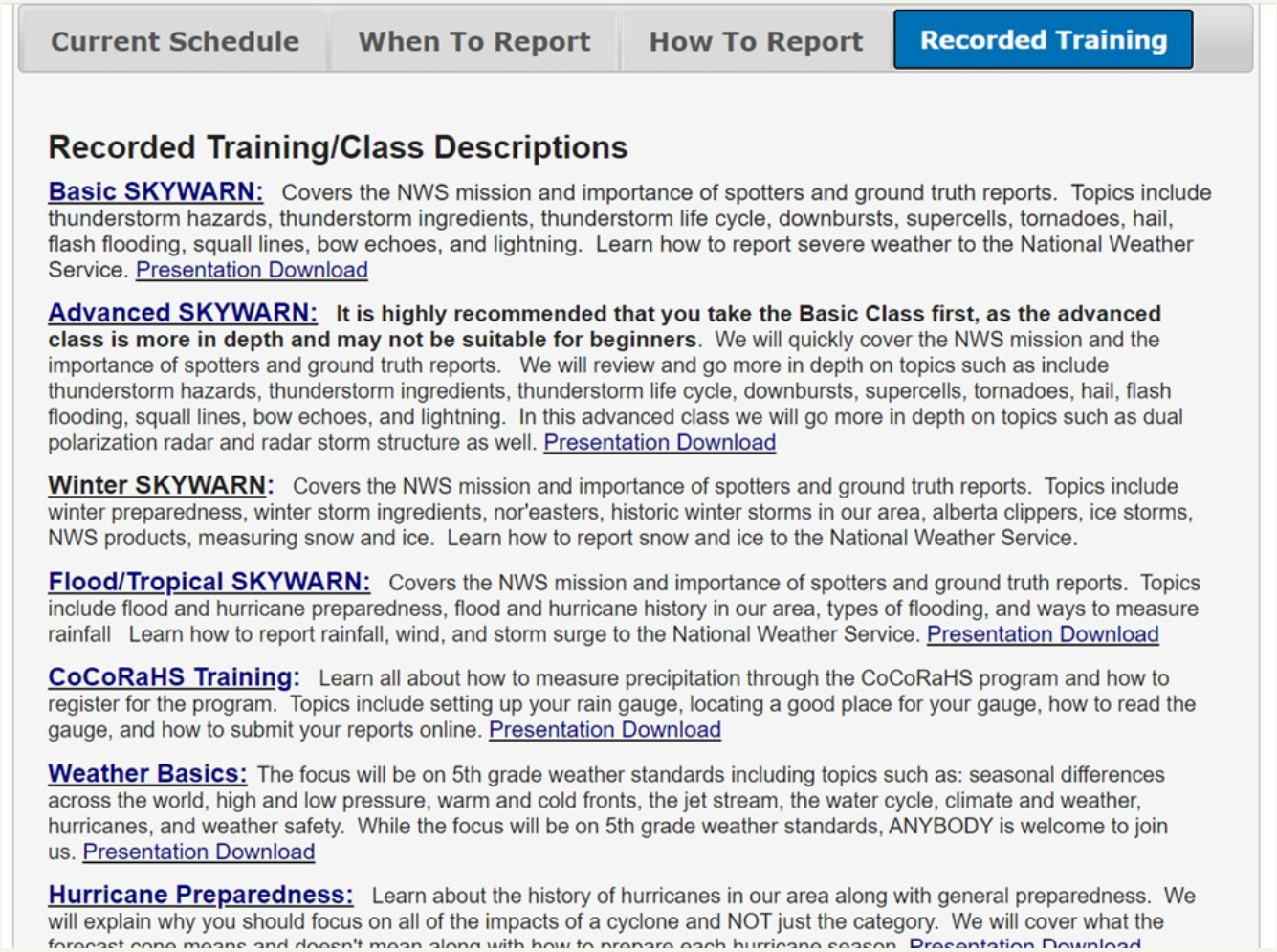
# Spring SKYWARN (Weather Spotter) Training

***By Erik Heden, Warning Coordination Meteorologist***

Spring is certainly in the air and that means that thunderstorms are just around the corner. We have begun to schedule new weather spotter classes for this season. These are open to all ages! All classes will be virtual this spring so you can take them from the comfort of your own home! We have classes scheduled through May, including the traditional Basic SKYWARN which covers severe thunderstorms, tornadoes, hail and high winds. In addition, we added advanced classes, that go more in depth with severe weather analysis and CoCoRaHS classes which highlight precipitation measurement. Visit https://www.weather.gov/mhx/MHXSkywarn to sign up for a class that works for you. For these online classes you will need internet access to view and hear the presentation. In less than an hour you can become an official trained spotter without having to leave your house!

*EF-1 tornado destroys farm in Haws Run on April 13, 2020.*

# Spring SKYWARN (Weather Spotter) Training (*continued*)




**YouTube Training**

Don't forget if you can't attend the current training we have planned or you want to start right now, you can always take our training via YouTube 24/7. Visit our SKYWARN page listed above and click on "Recorded Training". In addition to our classes from this spring, you will find past classes we have done including topics such as climate change, hurricane preparedness and more!

If you take an online SKYWARN training be sure to email Erik at erik.heden@noaa.gov so you can be entered into our spotter database and receive a certificate of completion. These trainings are also great as a refresher if you haven't been to a class in a few years. Remember that this page is also a great resource as a reminder on when and what to report. We appreciate all you do for our spotter program!

# Citizen Science Program Needs Your Help Observing the Weather!

***By North Carolina CoCoRaHS***

Have you ever wondered how much rain fell during a recent thunderstorm? How about snowfall during a winter storm? If so, an important volunteer weather observing program needs your help!

The Community Collaborative Rain, Hail, and Snow network, or CoCoRaHS, is looking for new volunteers across North Carolina. The grassroots effort is part of a growing national network of home-based and amateur weather spotters with a goal of providing a high density precipitation network across the country.

CoCoRaHS came about as a result of a devastating flash flood that hit Fort Collins, Colorado, in July 1997. A local severe thunderstorm dumped over a foot of rain in several hours while other portions of the city had only modest rainfall. The ensuing flood caught many by surprise and caused $200 million in damages. CoCoRaHS was born in 1998 with the intent of doing a better job of mapping and reporting intense storms. As more volunteers participated, rain, hail, and snow maps were produced for every storm showing fascinating local patterns that were of great interest to scientists and the public. 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.

*CoCoRaHS rain gauge.*

North Carolina became the twenty-first state to join the CoCoRaHS program in 2007, and by 2010, the CoCoRaHS network had reached all 50 states with nearly 10,000 daily observations. Through CoCoRaHS, thousands of volunteers, young and old, document the size, intensity, duration and patterns of rain, hail, and snow by taking simple measurements in their own backyards.

Volunteers may obtain an official rain gauge through the CoCoRaHS website (http:// www.cocorahs.org) for about $33 plus shipping. Besides the need for an official 4 inch plastic rain gauge, volunteers are asked to review simple training modules online and use the CoCoRaHS website to submit their reports. The process takes only five minutes a day, but the impact to the community is tenfold: by providing high quality, accurate measurements, the observers are able to supplement existing networks and provide useful data to scientists, resource managers, decision makers and others.

## Citizen Science Program Needs Your Help Observing the Weather! *(continued)*

"CoCoRaHS observers provided valuable data for both Hurricane Florence and Dorian," said Sean Heuser, CoCoRaHS State Co-Coordinator and Manager of the NC ECONet at the State Climate Office of NC. "For these high intensity events, whether they are tropical systems or afternoon thunderstorms, CoCoRaHS observers are able to fill in gaps and provide a clearer picture of where we see precipitation maximums. We also use CoCoRaHS Condition Monitoring reports every week to determine drought conditions across the state and give recommendations to the U.S. Drought Monitor authors."

***"We are in need of new observers across the entire state. We would like to emphasize rural locations, areas of higher terrain, and areas near the coast."***

"Monitoring weather and climate conditions in North Carolina is no easy feat," said Heather Aldridge, CoCoRaHS State Co-Coordinator. "CoCoRaHS volunteers help by painting a better picture of precipitation patterns across North Carolina, filling in data gaps where there are no nearby stations. Reporting rain, hail, snow, and drought conditions is a fun activity for all ages!"

"An additional benefit of the program for the National Weather Service is the ability to receive timely reports of significant weather such as hail, intense rainfall, or localized flooding from CoCoRaHS observers that can assist meteorologists in issuing and verifying warnings for severe thunderstorms," says David Glenn, CoCoRaHS State Co-Coordinator and meteorologist with the National Weather Service in Newport/Morehead City.

How does one become a CoCoRaHS observer? Go to the CoCoRaHS website and click on the "Join CoCoRaHS" emblem on the upper right side of the main website. After registering, take the simple online training, order your 4-inch rain gauge and start reporting!

"We are in need of new observers across the entire state. We would like to emphasize rural locations, areas of higher terrain, and areas near the coast," added Glenn.

North Carolina CoCoRaHS can also be reached on Facebook and through Twitter.


*CoCoRaHS holds a yearly recruiting campaign during the month of March.*

# NWS Newport/Morehead City Adapts to COVID-19

***By Ryan Ellis, Science and Operations Officer***

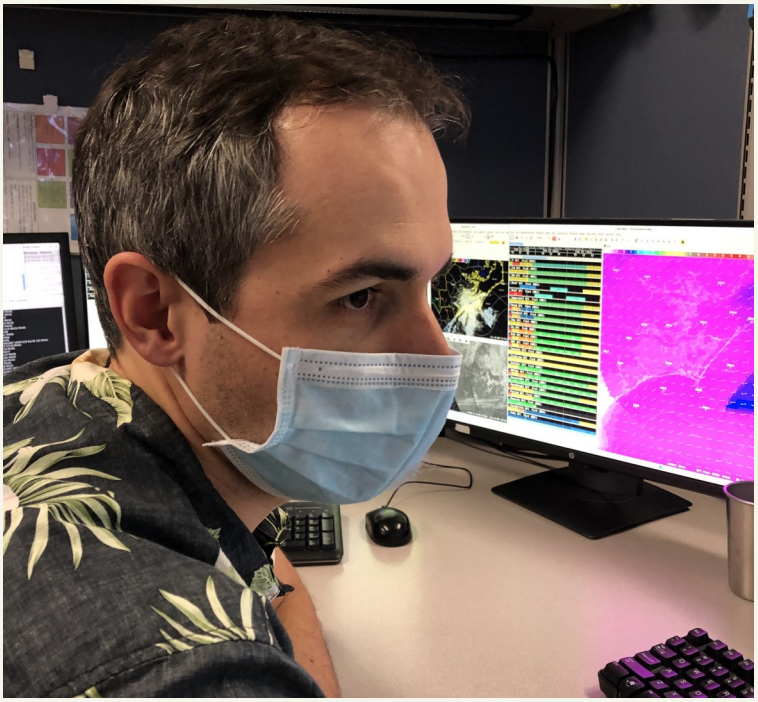
The pandemic has greatly affected the lives of people around the world since early last year. The NWS office in Newport is no exception to that. Much like families around eastern North Carolina, the NWS Newport also considers itself to be a family. A family with a mission to protect the lives and property of the citizens of eastern North Carolina. While we knew that the pandemic would greatly challenge our daily operations, we also knew that the mission had to continue to be carried out as the weather would not stop for COVID-19. Here are some of the ways the office has adapted its operations in the face of the pandemic in order to continue to serve the people of eastern North Carolina.

**Reduction of in Office Staff, But Not in Service**

As scientists, there are a lot of innovative thinkers on the staff here at NWS Newport. After the pandemic hit, it was clear that we could not keep our current daytime staffing model and keep people safe in the office while doing so. Therefore, we separated out duties that had to be in the office through our systems, and those that could be done from any personal computer. Those duties that could be done by staff members at home could do so. Those working the forecast desks would still rotate through their normal shifts but also have telework shifts available for the other tasks. Staff members have also been able to still be a part of operations from home through internal chat rooms and virtual technology in order to help out their staff members back at the office while remaining safe.

**PPE While in the Office**

NWS forecasters still need to rotate through their forecast shifts to supply eastern North Carolina with the forecast and warning services they need and are used to. While this continues, staff members in the office are supplied with personal protective equipment such as masks and hand sanitizer, and social distancing is observed between workstations. This allows the forecasters to continue to do their jobs in the safest environment possible.



*Carl Barnes, Lead Meteorologist at NWS Morehead City*

## NWS Newport/Morehead City Adapts to COVID-19 (continued)

**Increased Use of Virtual Technology**

NWS Newport was already using virtual technology for meetings and outreach long before the pandemic hit. Therefore this was a chance to continue to expand its use and utility in the office. Virtual meetings are now used for forecast briefings for the staff every morning to keep those at home on that particular day in the loop on what is going on with the weather. Forecasters are then able to determine whether they can help from home, or in extreme weather increase in office staff as necessary as forecast workload increases.

Another internal way we have used virtual technology is for office staff training days as well as open forums where employees have the opportunity to talk about whatever is relevant to the needs of the day in order to stay in touch. I mentioned earlier that NWS Newport considers itself a family and using virtual technology has helped us keep connected, including throwing a virtual baby shower for a staff member!


*Virtual Hurricane Community Forum hosted by NWS Morehead City*

Externally, we have used virtual technology to help maintain relationships with our core partners. We have held several Integrated Warning Team meetings with local emergency managers, media partners, and other local officials which help keep us in contact and better able to work together when tough weather strikes. In addition, we have held several virtual SKYWARN classes and other weather education sessions for the public that we have also recorded for folks to go back and watch at their convenience. For a list of these virtual recordings and any upcoming classes please visit: https://www.weather.gov/mhx/MHXSkywarn

## NWS Newport/Morehead City Adapts to COVID-19 (continued)

### Limitation of Travel

Unfortunately due to the pandemic we had to limit non-essential travel and in-person meetings which constitutes a big part of staying connected with our local community and with the science community as a whole. While we are still able to provide services needed to fix the essential forecasting and communications equipment needed to bring the forecast and warnings to the public, everything else has been halted for the time being. That includes some of the fun things we get to do to connect with the public, including things like setting up a booth at the seafood festival or hosting local SKYWARN classes. To mitigate this loss, we have used the virtual technology as listed above to meet with partners, connect with the community and also attend scientific conferences virtually, but it definitely is not the same as getting to see all your smiling faces out and about in the community. To see what we mean and since it's never too early to start preparing for hurricane season around here, you can check out our virtual Hurricane Community Forum from last year here: https://youtu.be/N0xuL0JWNgk and our Hurricane Preparedness webinar here: https://youtu.be/nSywzehzXVY.
Finally, despite all these limitations, we were still able to get the town of Cape Carteret signed on as a Storm Ready Community!


*The Town of Cape Carteret becomes a Storm Ready Community.*

### Thank You for All of Your Support

We would like to take this opportunity to thank you, the community, and all of our staunch supporters and core partners for continuing to work with us as we face this challenge together. We look forward to the future, when we can get back out there and interact with everyone again in person to bring you not only the best weather forecast and warning services available, but also the best in local science education and advancement.

## National Weather Service

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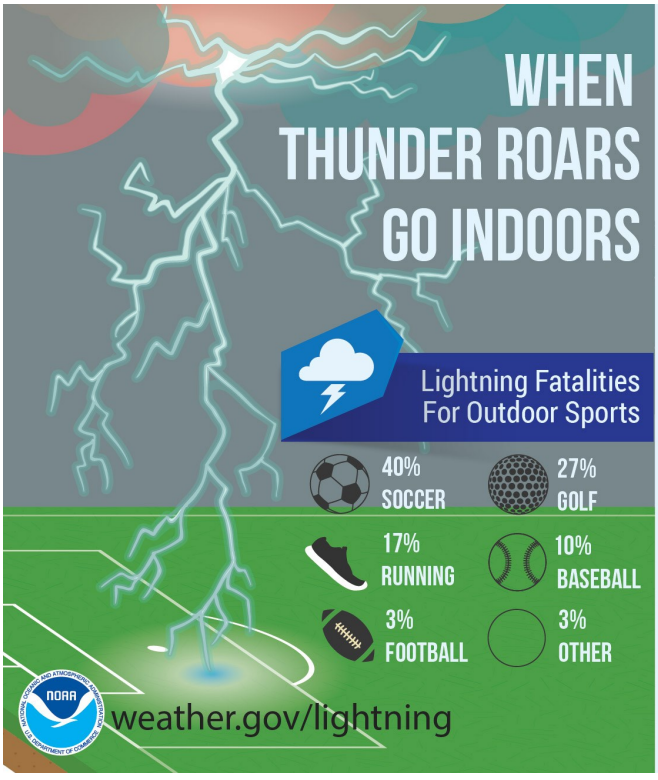



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