Carolina SkyWatcher

NWS Morehead City

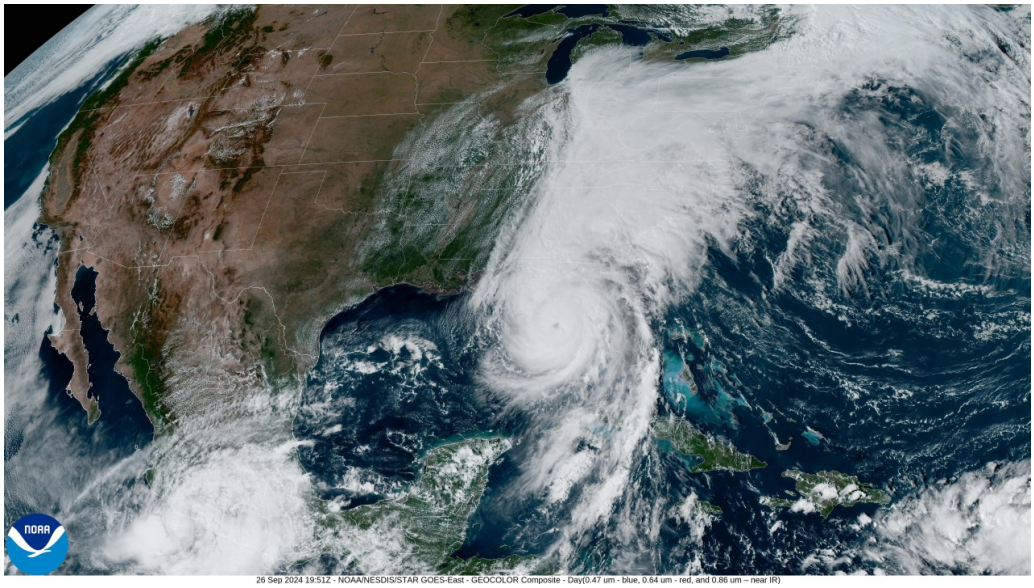
Winter Edition, 2025

In This Issue:

2024 Hurricane Season Recap: Quiet to the East, Devastating to the West

By: Ryan Ellis, Science & Operations Officer

The 2024 Hurricane Season, although quiet along much of the coast, will not soon be forgotten. Western North Carolina is not a location you typically think about being routinely impacted by Tropical Cyclones. We might remember storms like Hurricane Hugo impacting the Charlotte area, but typically our attention during hurricane season is focused more on points eastward.



Hurricane Helene as seen by GOES satellite on September 26, 2024, shortly before making landfall in Florida.

Hurricane Helene made landfall as a Category-4 storm on the Florida Gulf Coast on September 26. The storm caused catastrophic flooding across the southern Appalachians, widespread wind damage from the Gulf Coast to the North Carolina mountains and storm surge flooding along portions of western Florida. Preliminary data indicate that Helene was the deadliest hurricane to affect the continental U.S. since Katrina in 2005, with more than 150 direct fatalities, the majority of which occurred in North Carolina and South Carolina. Hurricane Helene marked the first time ever that NOAA's National Hurricane Center (NHC) forecasted a system to become a major hurricane before it became a tropical depression or tropical storm. NWS was forecasting extreme rainfall totals and rates over western North Carolina more than 48 hours in advance.

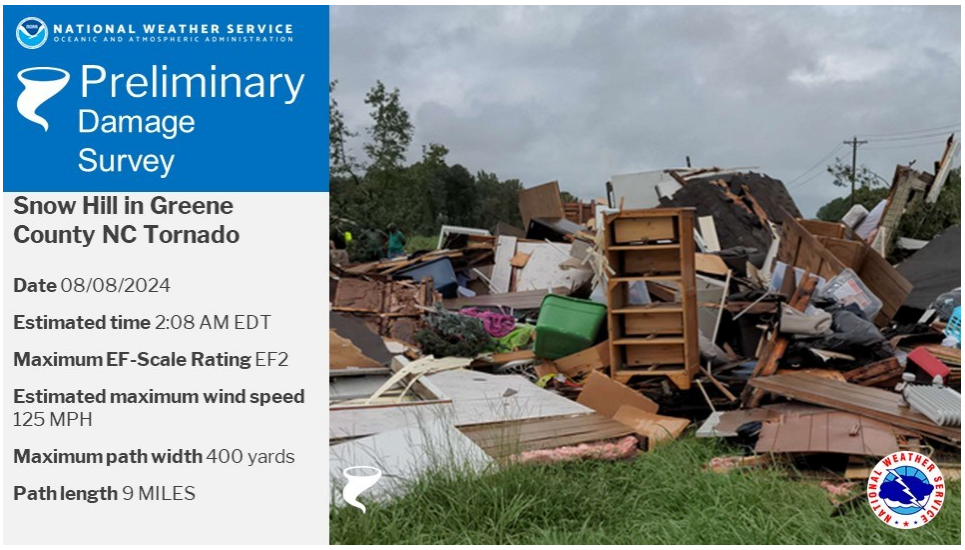
For those of us who have ties to Western NC, as many of us do, the aftermath was devastating and shocking and a reminder that the weather doesn't end with the forecast. The cleanup continues as we move into 2025 and will take years to get an area that we love back to a place of normalcy. The aftermath of Hurricane Helene also hits home because we know as residents of the coast that it just takes one storm and we have to continue to be resilient and plan for impacts

2024 Hurricane Season Recap: Quiet to the East, Devastating to the West

(continued)

from tropical cyclones as we move into 2025 and beyond.

As for 2025 in Eastern NC, we were really only affected by Tropical Storm Debby and Potential Tropical Cyclone 8 which never officially became a named storm but did present some impacts from heavy rain across the southern portions of our forecast area. Debby on the other hand brought significant impacts in the form of an EF-2 Tornado that was confirmed in Snow Hill in Greene County. This tornado had an estimated maximum wind speed of 125 mph and a path length of 9 miles long. [The full text of the public information statement detailing event can be found here.]



Damage survey summary of the EF-2 tornado in Snow Hill, NC associated with Tropical Storm Debby on August 8, 2024

While we were fortunate not to have any more impacts across eastern North Carolina, the season across the entirety of the Atlantic basin was still busy despite a long break in the middle of the season where the pattern remained non-conducive to tropical cyclones.

The Atlantic basin saw 18 named storms in 2024 (winds of 39 mph or greater). Eleven of those were hurricanes (winds of 74 mph or greater) and five intensified to major hurricanes (winds of 111 mph or greater). Five hurricanes made landfall in the continental U.S., with two storms making landfall as major hurricanes. The Atlantic seasonal activity fell within the predicted ranges for named storms and hurricanes issued by NOAA's Climate Prediction Center in the 2024 August Hurricane Season Outlook. An average season produces 14 named storms, seven hurricanes and three major hurricanes.

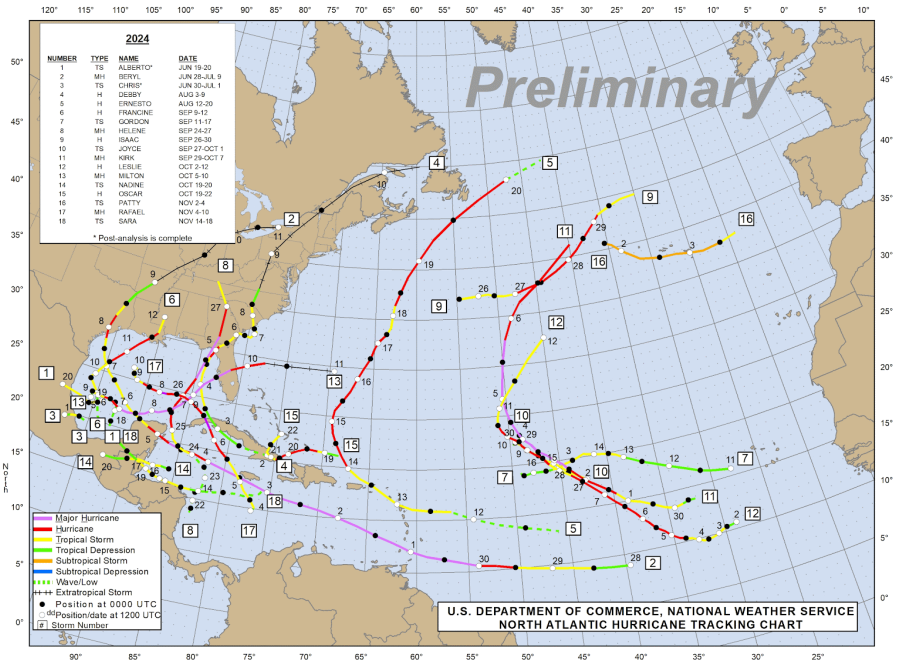
Twelve named storms formed after the climatological peak of the season in early September. Seven hurricanes formed in the Atlantic since September 25 — the most on record for this period.

2024 Hurricane Season Recap: Quiet to the East, Devastating to the West

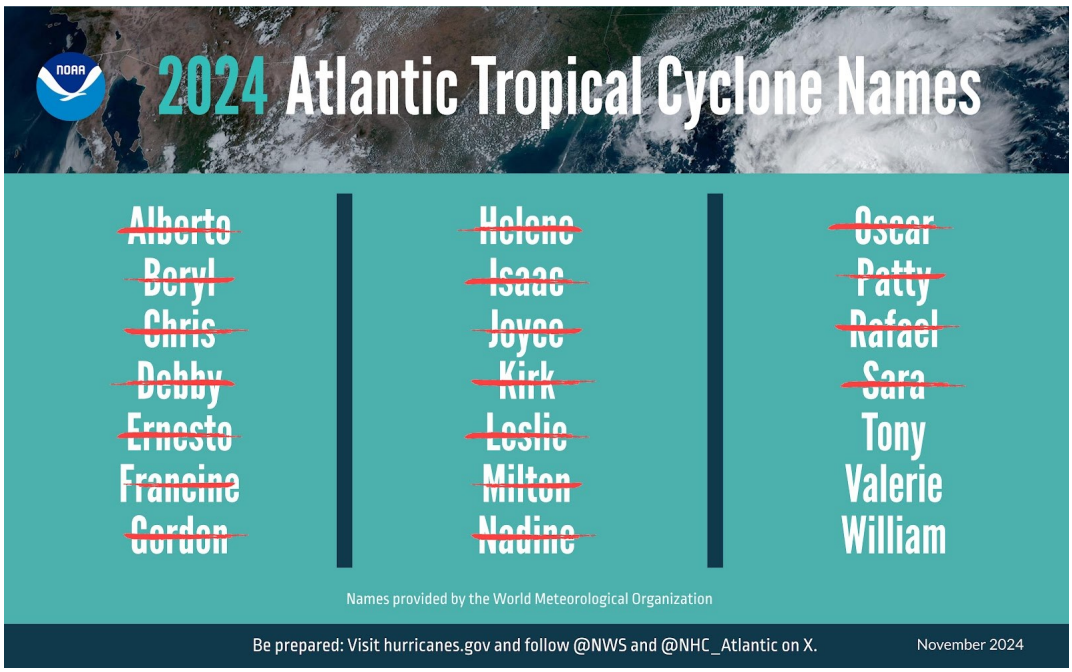
(continued)

Regardless of how many storms form during a hurricane season we across the entirety of North Carolina know that it only takes one for major impacts to be felt and its up to us to prepare ourselves ahead of time. The off season is a great time to restock your hurricane kits and look over the information on https://www.weather.gov/mhx/hurricaneprep and readync.gov.

Some of the content of this article was taken from the full NOAA Atlantic Hurricane Season Recap which can be found here in its entirety.



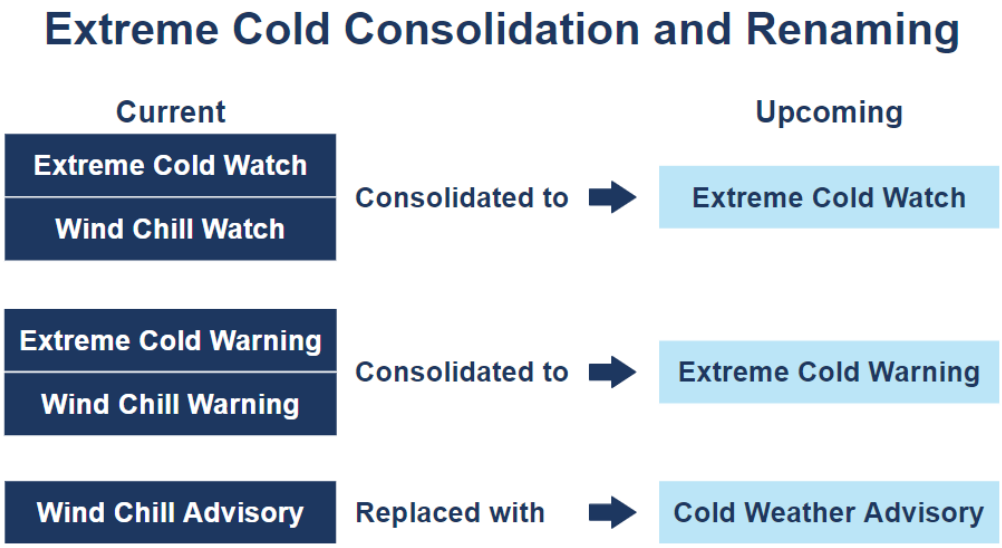
Preliminary tracking chart of the 2024 North Atlantic hurricane season, courtesy of the National Hurricane Center (NHC).

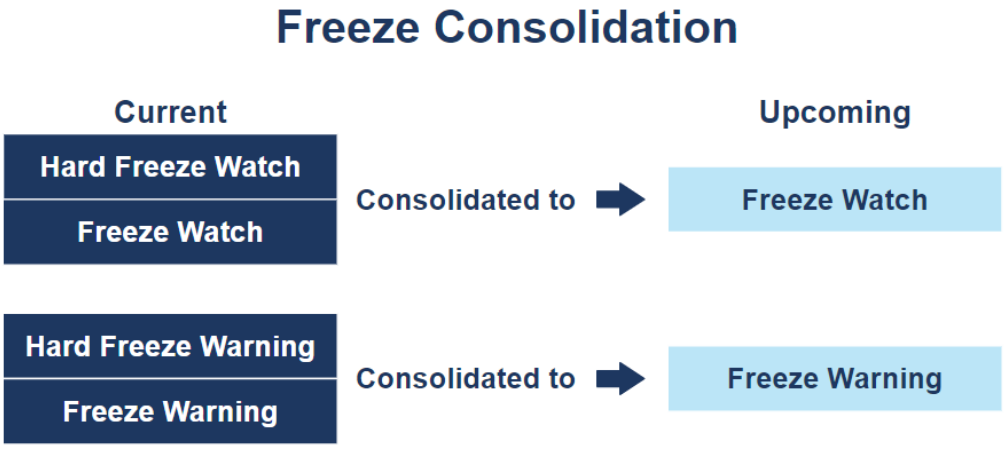


Cold Weather Headlines Undergo Simplification

By: Ryan Fucheck, Winter Weather Team Lead

While it hasn't felt like it the past few years, we occasionally get winter here in Eastern North Carolina and all that it brings. This includes wintry and cold weather across the area, and while each can be hazardous, each threat can bring different impacts. Because of this, the National Weather Service has simplified its suite of cold related products to help improve messaging for these hazards to the below:





Why is this all being done you might ask? Well, this change is being made to hammer home the message that cold is cold with or without wind! These products will also simplify our messaging across the NWS by taking the cold related products out of the winter weather suite. This in turn makes them their own products so we can not only enhance messaging for cold weather but also separate it to show that cold weather is a hazard as well in winter weather events. Finally, this new product will result in a new consistent guide for cold weather that is not only based on climatology but also adjusted for impacts specifically for Eastern North Carolina.

Now with the new products you may be thinking well what's going to happen to wind chill, is that going away? Worry not as the new Extreme Cold Watch/Warning and Cold Weather Advisory

Cold Weather Headlines Undergo Simplification

(continued)

products will be based on what's called apparent temperature which will account for both wind chill and air temperature. So again, we want to hammer home that no matter if it's windy or not, cold is cold and it can have the same impacts regardless! As a result, the Extreme Cold Warning and Watch product will be issued if dangerously cold air temperatures or wind chill values are either possible, expected, or occurring. Cold weather advisories will be issued when potentially dangerous cold air temperatures or wind chill values are expected or occurring. Given the new climatologically driven criteria, a cold weather advisory will be issued if there are widespread apparent temperatures at or below 15 F. While for the extreme cold watch or warning, this product will be issued if there is an expectation for widespread apparent temperatures at or below 5 F across ENC. While there isn't much change to the frost and freeze products we issue these have also been simplified as well and while the rot advisory hasn't changed at all the freeze and hard freeze advisories have been lumped together to account for the impact of freezing temperatures on agriculture and farms whether it's a hard freeze or not.

Overall this is just one of the ways we are simplifying the products we issue to focus more on impacts to our local communities while continuing to provide each resident in Eastern North Carolina with the information they need to protect themselves, their property, and their pets!

Breaking The Ice

Introducing Meteorologist Zachary Chalmers

In August, we had the pleasure to welcome a new member to our team: Zachary Chalmers. We took a moment to ask him a few questions so you can get to know eastern North Carolina's newest meteorologist.

Tell us a bit about where you are from.

I was originally born in southwest Florida but lived there for only three months before my parents moved to a small town of about 1,500 people just outside of Champaign, Illinois. I then lived just outside of Champaign until a couple of years ago when I moved down to Raleigh, North Carolina, for grad school, where I spent the last two years before making the short trip out to the coast!

What got you into the weather and how early did you know you wanted to be a meteorologist?

My interest in weather started when I was really young, so I don't even remember what it was exactly that first sparked my interest. My desire to be a meteorologist did continue to grow from watching summertime thunderstorms that we frequently experienced in Illinois. These storms fascinated me, and I knew that I wanted to learn everything that I could about them. I was always looking for ways to learn more about the weather, including taking "College for Kids" classes on meteorology when I was in elementary school and shadowing local meteorologists. I was fortunate that my parents encouraged me every step of the way and helped me find ways to learn more about the weather from a young age.

Where did you end up going to school and what was your favorite thing to study?

After high school, I stayed close to home for undergrad by pursuing my Bachelor of Science degree at the University of Illinois at Urbana-Champaign. I had known for a while that my biggest interests were centered around severe thunderstorms, so my favorite courses were classes on Convection and Mesoscale Meteorology as a large focus was placed on understanding thunderstorms and their hazards. I also loved having the opportunity to get out into the field, which I was able to do by going on two summer trips through the Field Studies of Convection course and working on two class projects that involved collecting data with the DOWs (mobile radar platforms). Outside of coursework, I also participated in a couple of research projects where I was able to apply my knowledge of weather and coding to help create new forecasting and observational tools.

Working on these projects while completing my undergrad degree at UIUC pushed me to pursue more opportunities in research, which led me to move to Raleigh, NC, for grad school at North Carolina State University. While at NCSU, I worked on a project focused on cool season thunderstorm environments across the Southeastern U.S. and participated in two deployments of the Propagation, Evolution, and Rotation in Linear Systems (PERiLS) field campaign. I then defended my Master's Thesis this past June before moving out here to join the NWS!

What is your favorite type of weather to forecast?

My favorite type of weather to forecast is severe thunderstorms as thunderstorm formation and hazards are influenced by a wide range of different factors, including the large-scale pattern, terrain influences, and other mesoscale factors. Forecasting a severe thunderstorm event also involves really digging into observations to analyze and nowcast the current weather as thunderstorm initiation and evolution can be impacted by many small-scale features and processes (such as outflow boundaries and neighboring

Breaking The Ice

Introducing Meteorologist Zachary Chalmers

storms). I really enjoy the challenges associated with this as it requires good situational awareness skills and a strong understanding of the current weather conditions.

What was your path on the road to NWS Newport?

Growing up in Illinois, my dad served as a volunteer firefighter in our small town. His dedication and passion for helping the people of our community inspired me to pursue a career in public service. This pushed me towards joining the National Weather Service as I could combine my passion for meteorology with my desire to serve the public.

During my time at UIUC, I then completed courses including Forecasting and Advanced Forecasting that showed me that I really enjoyed forecasting the weather, which is a big part of daily operations at a WFO. In addition to forecasting, I also built a strong passion for research as I found that I enjoyed tackling new challenges that can help meteorologists forecast and detect hazardous weather. Halfway through my undergraduate studies, I was selected as a 2020 NOAA Hollings Scholar and worked with the office here in Newport on a waterspout forecasting project. During this time, I was able to "see into" a forecast office and learn about daily operations and career opportunities within the NWS. I discovered that in addition to forecasting, the NWS also had many opportunities to continue to engage in research. Although the experience was virtual, this experience was all the confirmation I needed that I wanted to work for the NWS as I saw that the NWS was a great way to combine and engage both forecasting and research while helping to serve the public.

Following UIUC, I moved to Raleigh to work on my M.S. degree. Part of what drove me to NCSU was the opportunity to participate in an internship course with NWS Raleigh, where I was able to shadow forecasters and gain exposure to many of the programs and systems that are used daily at WFOs, which served as further confirmation that I wanted to join the NWS. Shortly after my experience with NWS Raleigh, I then applied to join the NWS as a full-time meteorologist and was selected to join the great team here at MHX!

What would you say is the most memorable weather event you've experienced?

The most memorable weather event that I've experienced was the Midwest tornado outbreak of November 17, 2013. I was already set on becoming a meteorologist by this time, but this event solidified my desire to work on research involving severe thunderstorms. I remember watching the local meteorologists on TV while looking at radar online (even though I didn't understand much about radar yet) as towns I was familiar with were impacted by tornadoes. Watching this event drove me to want to help improve our ability to forecast and detect hazardous weather, such as tornadoes.

Outside of work, what do you like to do in your free time?

Outside of work, I'm a big fan of both hockey and soccer. I also enjoy reading, playing video games, and spending time with friends and family. Finally, I recently picked up playing pickleball again for the first time since middle school and have been enjoying the challenge of trying to improve!