Carolina SkyWatcher

National Weather Service, Newport/Morehead City, NC

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Spring 2014 Edition

Eastern NC Is Susceptible to Tornadoes

March 28, 1984, April 15, 1999 and April 16, 2011 are days that will always live in the memories of many residents of Eastern North Carolina. These are the three most recent major tornado outbreaks to affect the region. On the afternoon and evening of April 16, 2011, 12 tornadoes touched down across eastern North Carolina. Hundreds of homes were damaged or completely destroyed across the region. Many business and several schools received structural damage with some buildings totally destroyed, with many people left homeless. Scores of injuries also occurred with several injuries being categorized as critical.

On the evening of April 15, 1999, one of the most bizarre and unusual supercell thunderstorms ever observed roared across southeastern North Carolina. It produced several damaging tornadoes, one killer tornado, non-tornadic wind damage reports, and a measured wind gust to 165 mph. As it was producing a tornado across portions of Duplin County, the thunderstorm cluster assumed a hurricane-like shape, even forming an eye-like "hole".

On March 28, 1984, a strong outbreak of fast-moving tornadoes crossed all of eastern North Carolina, producing 3 total tornadoes (2 F4's, the other an F3). These tornadoes produced 16 deaths and over 300 injuries. For more details on this outbreak, see Page 5. These events highlight the need to have a plan of action should tornadoes and severe weather affect you. March through May is the peak season for tornadoes and severe weather in eastern North Carolina.

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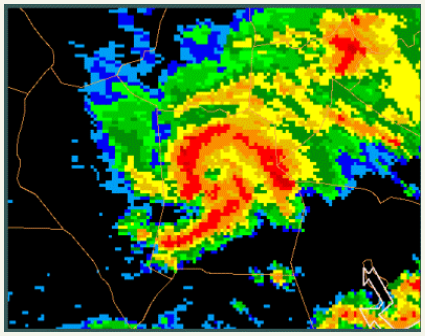


The Tornadocane, April 15, 1999

Tornado Damage from April 16, 2011

Be A Force of Nature

By John Cole, Warning Coordination Meteorologist

Each year many people are killed or seriously injured by severe weather, including tornadoes and other types of severe weather, despite advance warning. In 2012, tornadoes were reported in 46 states. Across the nation, there were 450+ weather-related fatalities, more than 2,600 injuries, and over $1.6 billion in damage. In North Carolina alone, there were 21 tornadoes which injured 22 people and resulted in over 19 million dollars in damage.

Because severe weather knows no boundaries and affects every individual, we're calling on people across the state and across the country to "be a force of nature" in their communities and prepare for severe weather. The first step in being a force of nature is to know your risk. Here are a few statistics about North Carolina's severe weather risks:

- North Carolina experiences about 40 to 50 thunderstorm days per year.
- While tornadoes can happen anywhere in the state, climate analysis suggests that more tornadoes occur in the southeast, south-central region, and eastern piedmont and coastal plain regions of North Carolina. A tornado outbreak on April 16th, 2011 resulted in 12 tornadoes across the NWS Newport County warning area. Four of these were classified as strong tornadoes. Fortunately, there were no fatalities, but there were serious injuries reported. See this link for the event review: http://www.erh.noaa.gov/mhx/EventReviews/20110416/20110416.php
- Severe gusts of wind from a thunderstorm called downbursts or straight line winds are a serious danger. On July 1st 2012, a Derecho resulted in widespread wind damage with wind gusts up to 100 mph. Tragically, there were 3 fatalities across the NWS Newport county warning area. See this link below for the event review: http://www.erh.noaa.gov/mhx/EventReviews/20120701/20120701.php
- Hail is a threat to life and property and has been responsible for millions of dollars' worth of damage in North Carolina.
- There have been 20 lightning fatalities in the state during the past 10 years.

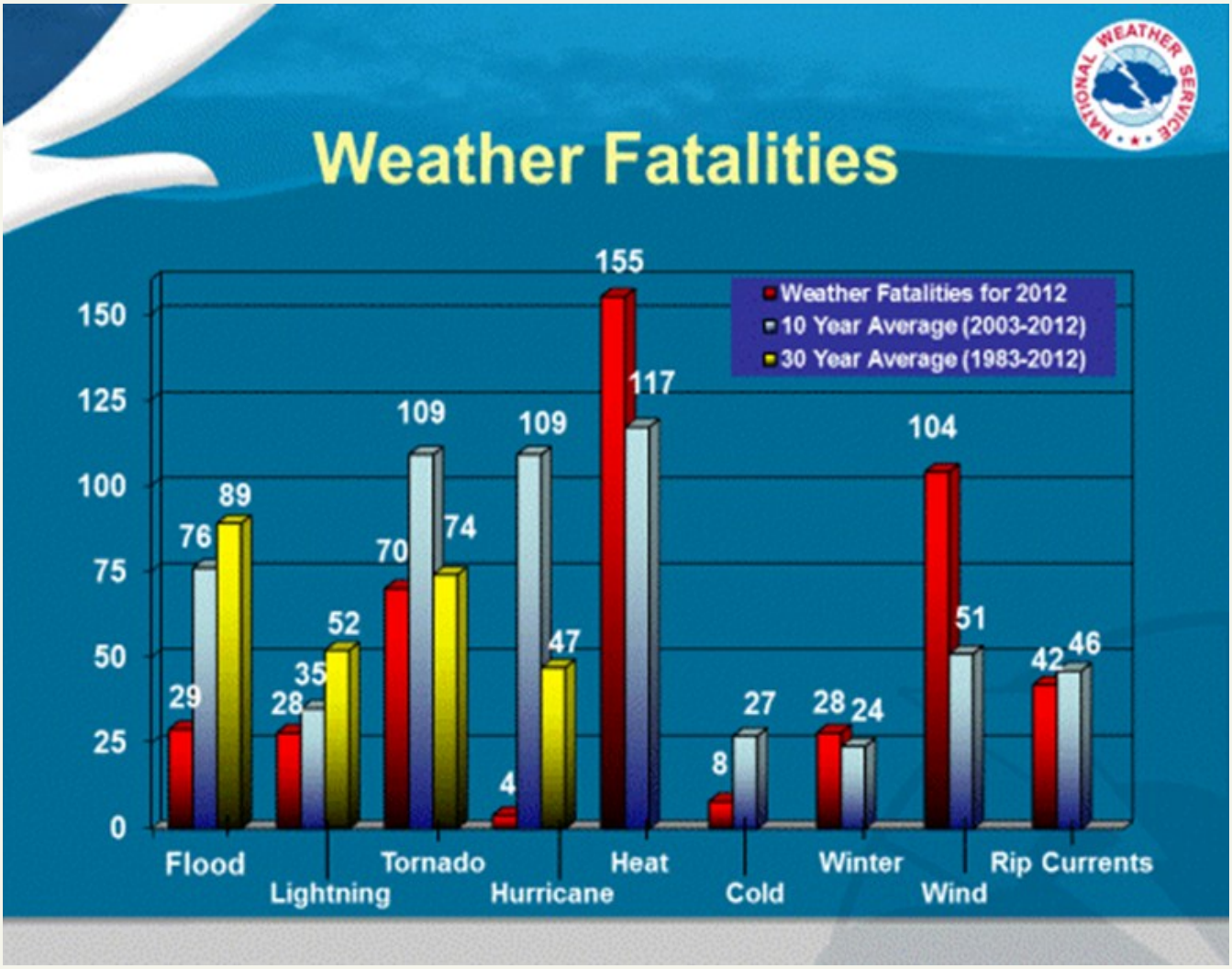
In addition, there are several great web sites, such as ready.gov/severe-weather, or readync.org, which provide information about what your community could expect to face this severe weather season. It is especially important to stay informed by having multiple sources for weather alerts, such as NOAA Weather Radio, NWS Weather Wire Service, the NWS web site at Weather.gov, and NWS alert subscription service at www.weather.gov/subscribe.

Be A Force of Nature (Continued)

Take a moment to see if your cell phone is equipped to receive Wireless Emergency Alerts (WEA), free messages sent directly to your cell phone from public safety officials such as the National Weather Service to warn you about imminent threats like severe weather, AMBER Alerts or Presidential alerts. For individuals with access and functional needs, there are adaptive NOAA weather radios available through North Carolina's Department of Health and Human Services.

Finally, encourage your friends, family, neighbors, and co-workers to do the same and learn about their severe weather risks. This is what is meant by being a force of nature.

Credits: NWS Raleigh, and NWS Office of Climate, Water, and Weather Services



When Thunder Roads, Go Indoors!

By Bob Frederick, Meteorologist

One of the greatest threats that thunderstorms produce is lightning. On average 50 to 60 people are killed by lightning strikes in the United States each year. The vast majority of these deaths occur outside…during the afternoon and evening in the summer. The following information from the NWS dispels some common myths associated with lightning.

Myth: Lightning never strikes the same place twice.
Fact: Lightning often strikes the same place repeatedly, especially if it's a tall, pointy, isolated object. The Empire State Building is hit nearly 100 times a year.

Myth: If it's not raining or there aren't clouds overhead, you're safe from lightning.
Fact: Lightning often strikes more than three miles from the center of the thunderstorm, far outside the rain or thunderstorm cloud. "Bolts from the blue" can strike 10-15 miles from the thunderstorm.

Myth: Rubber tires on a car protect you from lightning by insulating you from the ground.
Fact: Most cars are safe from lightning, but it is the metal roof and metal sides that protect you, NOT the rubber tires. Remember, convertibles, motorcycles, bicycles, open-shelled outdoor recreational vehicles and cars with fiberglass shells offer no protection from lightning. When lightning strikes a vehicle, it goes through the metal frame into the ground. Don't lean on doors during a thunderstorm.

Myth: A lightning victim is electrified. If you touch them, you'll be electrocuted.
Fact: The human body does not store electricity. It is perfectly safe to touch a lightning victim to give them first aid. This is the most chilling of lightning Myths. Imagine if someone died because people were afraid to give CPR!

Myth: If outside in a thunderstorm, you should seek shelter under a tree to stay dry.
Fact: Being underneath a tree is the second leading cause of lightning casualties. Better to get wet than fried!

Myth: If you are in a house, you are 100% safe from lightning.
Fact: A house is a safe place to be during a thunderstorm as long as you avoid anything that conducts electricity. This means staying off corded phones, electrical appliances, wires, TV cables, computers, plumbing, metal doors and windows. Windows are hazardous for two reasons: wind generated during a thunderstorm can blow objects into the window, breaking it and causing glass to shatter and second, in older homes, in rare instances, lightning can come in cracks in the sides of windows.

Myth: If thunderstorms threaten while you are outside playing a game, it is okay to finish it before seeking shelter.
Fact: Many lightning casualties occur because people do not seek shelter soon enough. No game is worth death or life-long injuries. Seek proper shelter immediately if you hear thunder. Adults are responsible for the safety of children.

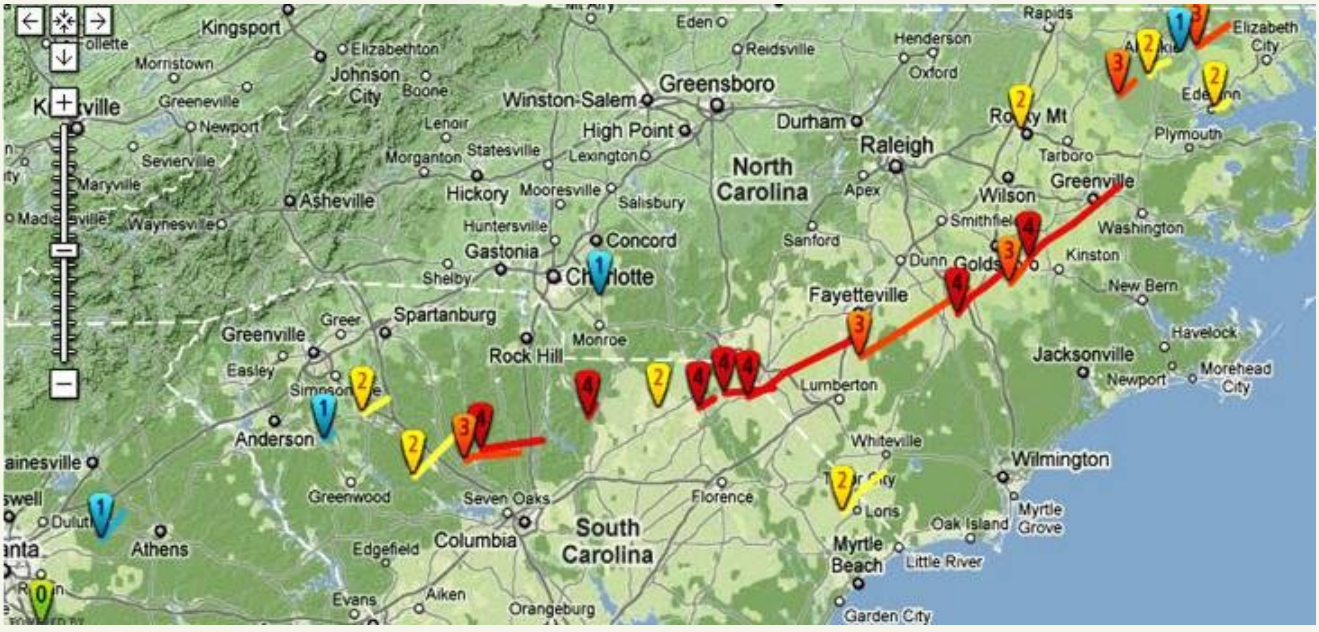
March 28, 1984 Tornado Outbreak

By Chris Collins, Meteorologist

The most destructive tornado outbreak to sweep through the Carolinas since the 1884 Enigma Outbreak occurred during the afternoon and evening hours of March 28, 1984. There were 24 confirmed tornadoes including 7 F4 tornadoes, 5 F3 tornadoes and 7 F2 tornadoes. The outbreak caused 57 deaths and 1248 injuries, with 37% of the deaths in mobile homes. The storms were moving as fast as 65 mph, crossing all of eastern North Carolina in about 4 hours. In the Newport/Morehead City County Warning Area, there were 3 total tornadoes, 2 were F4's, the other an F3. These 3 tornadoes produced 16 deaths and over 300 injuries. The counties affected in Eastern North Carolina included Pitt, Greene, Lenoir and Duplin with 9 deaths reported in Pitt County and 7 in Greene County. East Carolina University in Greenville sustained severe damage.

Timeline of Eastern North Carolina Tornadoes (times approximate)

- 815 pm – Tornado enters Duplin County from Sampson County producing extensive F4 damage in Faison and Calypso before hitting Mount Olive in Wayne County. The tornado travelled 21 miles and was as much as ¾ mile wide.
- 830 pm - F3 tornado touches down and moves through the southeastern portion of LaGrange in Lenoir County, injuring 81 but causing no deaths.
- 845 pm – the deadliest tornado of the entire outbreak caused 16 deaths and 153 injuries in Greene and Pitt County. The tornado was up to ¾ mile wide and caused extensive damage to the southeastern suburbs of Greenville including damage at East Carolina University. Nine fatalities occurred in Pitt County with seven in Greene County. The fatalities occurred in Greenville, Winterville, Ayden and Snow Hill.



Tornado Tracks during the March 28, 1984 Tornado Outbreak.

Spring Is Wildfire Season

By Jim Merrell, Meteorologist/Fire Weather Program Leader

Spring is here and that means warmer temperatures and people doing more outside activities. Unfortunately that can also mean an increased threat of wildfires in eastern North Carolina due to our large woodland areas. Here are some tips on outdoor fire safety from the N.C. Forest Service.

DEBRIS

- Check local laws on burning. Some communities allow burning only during specified hours while others forbid it entirely. Obtain a burning permit. Contact your local County Ranger for the names and locations of the nearest burning permit agent, or use NCDFR's Online Burning Permit Application. Permits are free.
- Check the weather; don't burn on dry, windy days.
- Consider the alternatives to burning. Some types of debris - such as leaves, grass and stubble - may be of more value if used for compost.

HOUSEHOLD TRASH IS ILLEGAL TO BURN

- Do not burn household trash. It is illegal and dangerous.

AGRICULTURAL RESIDUE AND FOREST LITTER

- Be sure you are fully prepared before burning off your field or garden spot. To control the fire, you will need a source of water, a bucket and a shovel for tossing dirt on the fire.
- If possible, a fire line should be plowed around the area to be burned. Large fields should be separated into small plots for burning one at a time. Be sure to stay with your fire until it is out.

Before doing any burning in a wooded area, contact your local Ranger. The Ranger will weigh all factors, explain them to you, and offer technical advice.

LANTERNS STOVES AND HEATERS

- Cool all lanterns, stoves and heaters before refueling. Place them on the ground in a cleared area and fill them. If fuel spills, move the appliance to a new clearing before lighting it.
- Recap and store flammable liquid containers in a safe place. Never light lanterns and stoves inside a tent, trailer or camper. If you use a lantern or stove inside a tent or trailer, be sure to have adequate ventilation.
- Always read and follow instructions provided by the manufacturer.

SPARK ARRESTERS

All types of Equipment and vehicles are required to have spark arresters. Chain saws, portable generators, cross country vehicles and trail bikes - to name a few - require spark arresters if used in or near grass, brush or a wooded area. To make sure that the spark arrester is functioning properly, check with the dealer or contact your local Forest Service office.

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Spring Is Wildfire Season (Continued)

SMOKING

- When smoking outdoors grind out your cigarette, cigar or pipe tobacco in the dirt. Never grind it on a stump or log.
- It is unsafe to smoke while walking or riding a horse or trail bike.
- Use your ashtray while in your car.

CHARCOAL BRIQUETTES

- After using the burning charcoal briquettes, douse them thoroughly with water. Don't just sprinkle a bit over the coals.
- When soaked; stir the coals and soak them again. Be sure they are out - cold!
- Carefully feel the coals with your bare hands to be sure they are extinguished.

BUILDING AND PUTTING OUT A CAMPFIRE

- Build campfires away from overhanging branches, steep slopes, rotten stumps, logs, dry grass and leaves. Pull any extra wood away from the fire.
- Keep plenty of water handy and have a shovel for throwing dirt on the fire if it gets out of control. *Start with dry twigs and small sticks. Then add larger sticks as the fire builds up. Put the largest pieces of wood on last, pointing them toward the center of the fire and gradually push them into the flames.
- Keep the campfire small. A good bed of coals or a small fire surrouned by rocks gives plenty of heat. Scrape away litter, duff and any burnable material within a 10-foot (3 meter) diameter circle. This will keep a small campfire from spreading.
- Be sure your match is out. Hold it until it is cold. Break it so you can feel the charred portion before discarding it.
- Never leave a campfire unattended. Even a small breeze could quickly cause the fire to spread.
- Drown the fire with water. Make sure all embers, coals and sticks are wet. Move rocks - there may be more burning embers underneath. Stir the remains, add more water, and stir again. Be sure all burned material has been extinguished and cooled. If you do not have water, use dirt. Mix enough soil or sand with the embers. Continue adding and stirring until all material is cooled.
- Feel all materials with your bare hand. Make sure that no roots are burning. Do not bury your coals - they can smolder and break out.

Since people cause most wildfires, we all have a part in preventing them. We can be more careful ourselves, and whoever we are and wherever we are, we can influence others to use more care with fires. Remember, a little extra care takes only a few minutes of your time. And it could prevent a wildfire.

Based on *Fire Safety Outdoors* (NASF-FP-5), a pamphlet produced by the National Association of State Foresters.

Large Wildfires in Eastern NC In The Past 20 Years

By Jim Merrell, Meteorologist/Fire Weather Program Leader

2014 marks the 20th anniversary of the opening of the NWS office in Newport. Here is a look back at the major wildfires that have occurred in our forecast area during the period.

1. Fish Day Fire – Croatan National Forest – 1994.

The Fish Day Fire started on May 23, 1994, as a result of arson (a local resident torched his automobile for insurance money – later prosecuted and convicted). A total of 24,600 acres were burned, all within the Croatan National Forest. The fire was fully controlled on July 16, 1994, but was not declared totally extinguished until November 30, 1994.

Fish Day Fire – active burning at night.

2. Evans Road Fire – Pocosin Lakes National Wildlife Refuge - 2008.

The Evans Road Fire began as a result of a lightning strike on private land south of Pocosin Lakes National Wildlife Refuge on June 1, 2008. The fire burned a total of 40,704 acres of land; 60% of the acreage was refuge property and the remaining was state or private land. Countless tons of peat were consumed by the fire, and suppression efforts cost just under $20 million. The fire was not officially declared total out until January 5, 2009.

Evans Road Fire - Peat was burned 5 feet deep.

Large Wildfires in Eastern NC In The Past 20 Years (Continued)

3. Pains Bay Fire – mainland Dare County – 2011.

A lightning strike from an isolated thunderstorm ignited the Pains Bay Fire on the afternoon of May 4, 2011. The fire began on the Alligator National Wildlife Refuge and eventually spread into the Dare County Bomb Range (U.S. Air Force and Navy Impact Areas). It was declared 100% contained on June 27, 2011 but was not declared totally extinguished until August 24, 2011. The fire burned 45,294 acres and suppression efforts cost $14.2 Million.

Pains Bay Fire – flaming front making a run.

4. Dad Fire – Croatan National Forest – 2012.

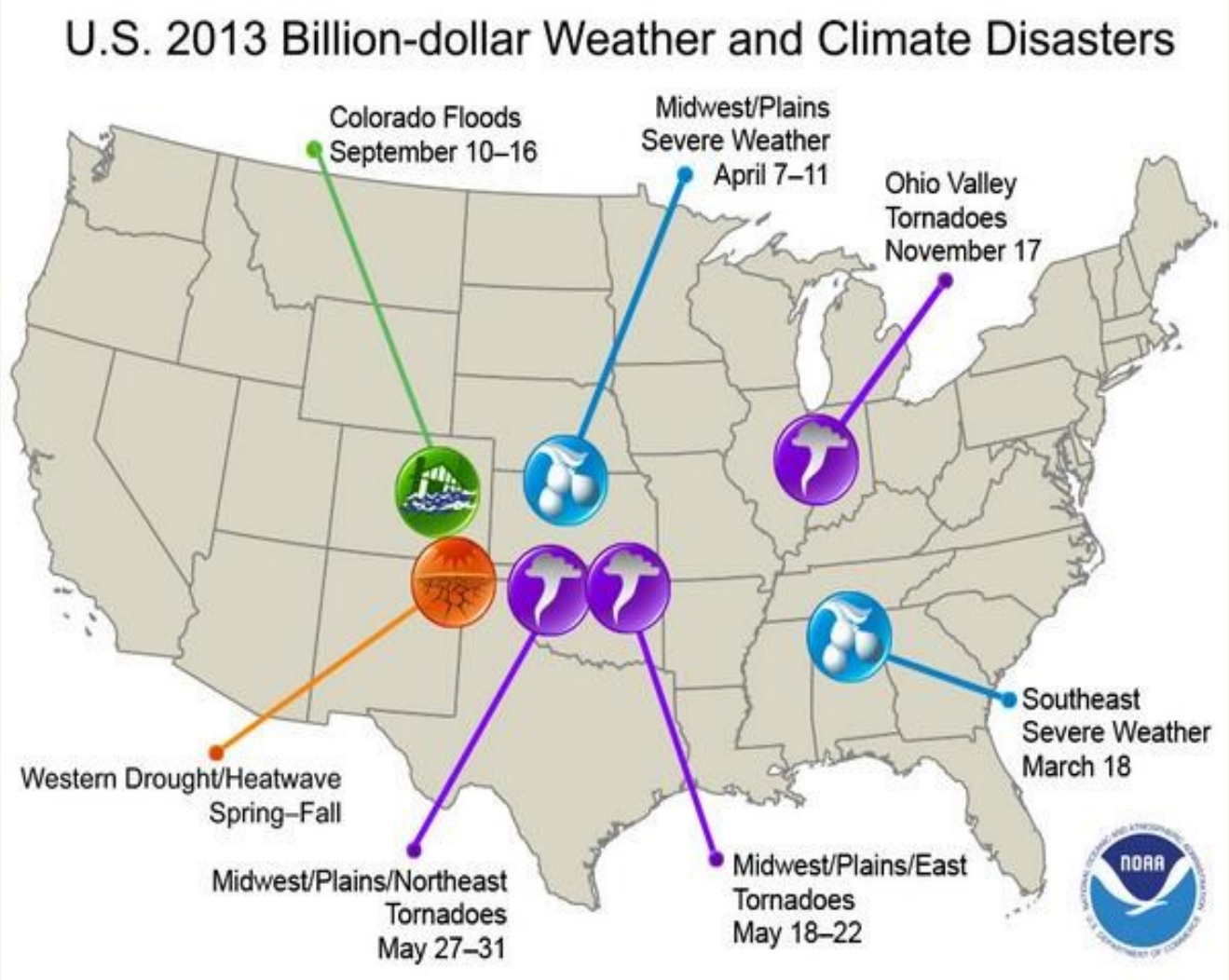
This fire started from an escaped prescribed burn on June 16, 2012. It burned 21,331 acres within the forest before being fully contained around July 6, 2012.

Smoke plume from the Dad Fire.

Review of 2013 Weather

By Chris Collins, Meteorologist

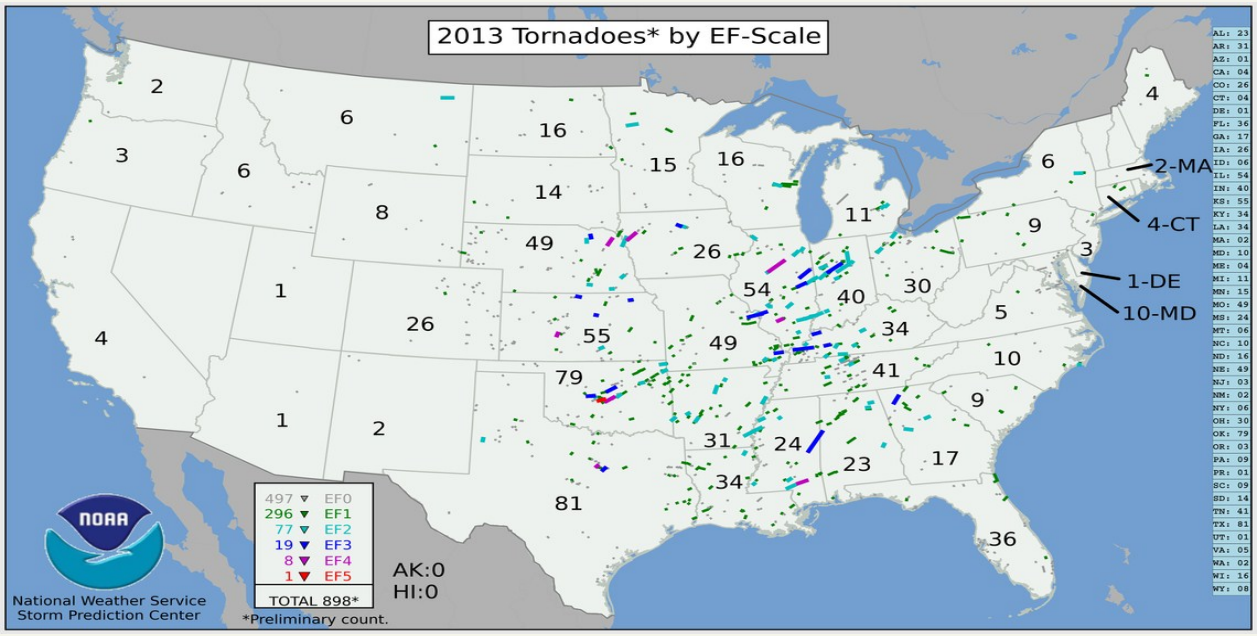
Significant severe weather and hurricane impacts were not felt across eastern North Carolina in 2013. Nationally, there were 7 weather and climate disaster events with losses exceeding $1 billion each across the United States. These events included five severe weather and tornado events, a major flood event, and the western drought / heat wave. Overall, these events killed 109 people and had significant economic effects on the areas impacted. No Billion-Dollar weather disasters occurred in North Carolina in 2013. The disaster with the closest proximity was when widespread wind damage was reported across much of Georgia and Alabama on March 18, 2013. There were also reports of hail varying in size from small to upward of 3 inches.



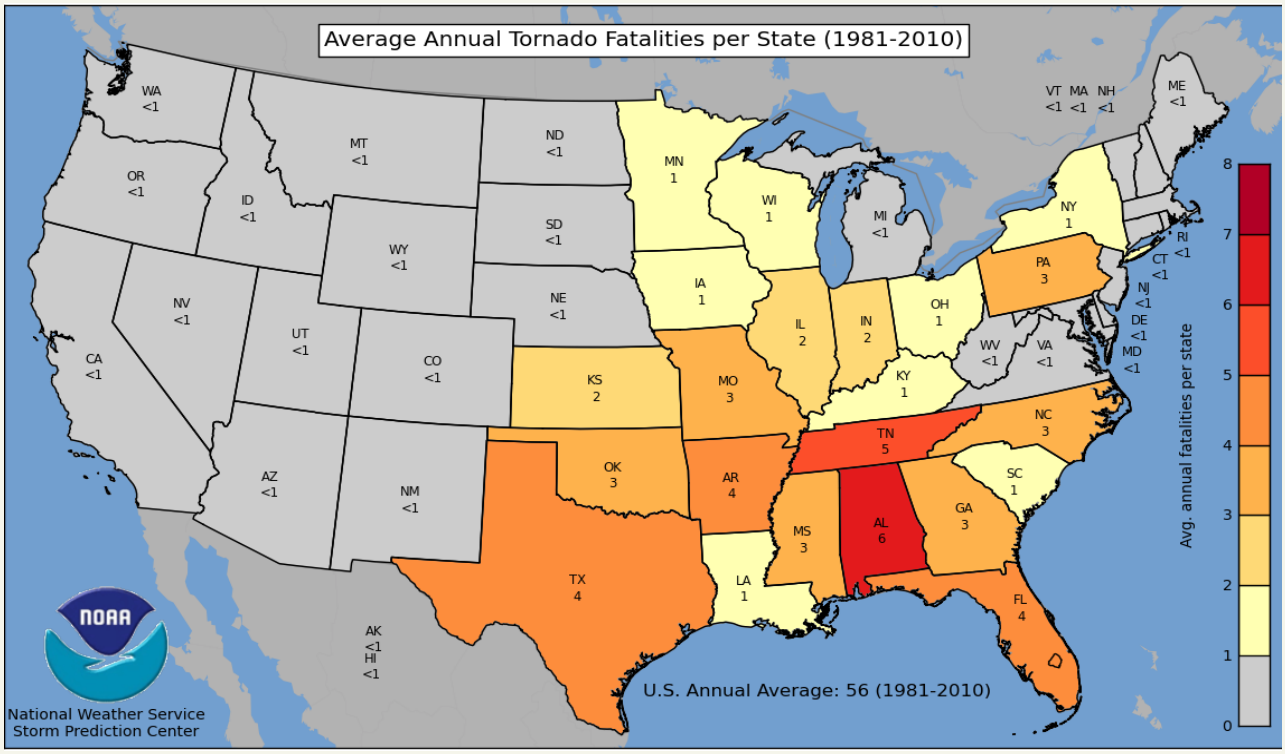
Map of 2013 Billion-Dollar Weather Disasters

Review of 2013 Weather (Continued)

Except for a stormy stretch in late May, which included a deadly EF5 tornado that devastated parts of suburban Oklahoma City, killing 24 people, the tornado year in 2013 overall was remarkably quiet. The year of 2012 was also a below-average season, as only 878 tornadoes had formed by this point in the year. Combined with the 2013 season, it's the quietest two-year period since the late 1980s. Based on a 30-year climatology from 1981-2010, North Carolina averages 3 tornado deaths per year.



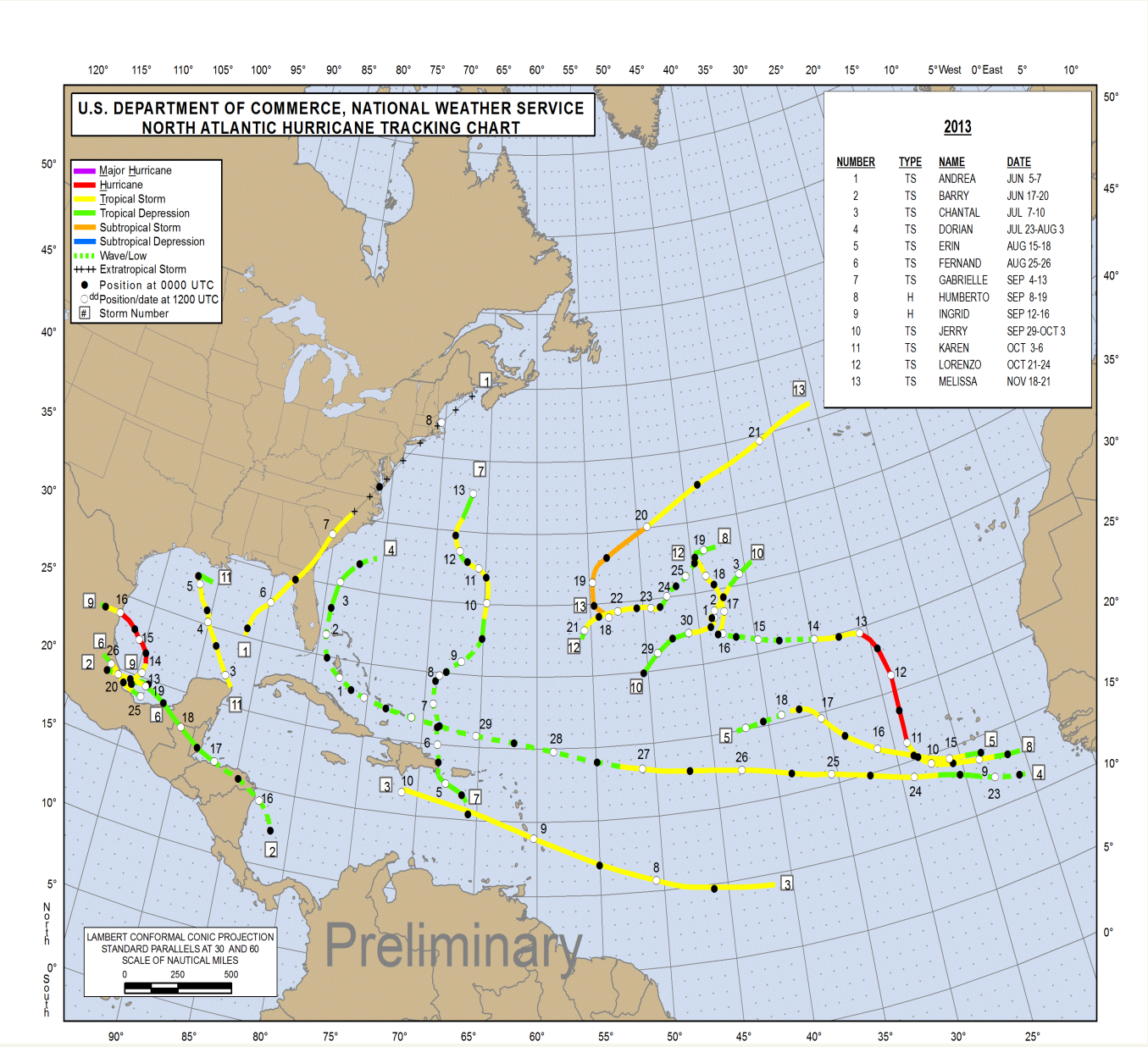
Tornadoes in 2013 per state. North Carolina recorded just 10 tornadoes. The normal annual number is 26.



Average tornado deaths per state for the period 1981-2010. North Carolina averages 3 deaths per year.

Review of 2013 Weather (Continued)

The 2013 Atlantic hurricane season was the first Atlantic hurricane season since 1994 to end with no major hurricanes. It was also the first year since 1968 to record no storms of at least category 2 intensity. The first storm of the season, Andrea, developed on June 5, while the final storm, Melissa, dissipated on November 22. Only two storms – Humberto and Ingrid – reached hurricane intensity; this was the lowest seasonal total since 1982.



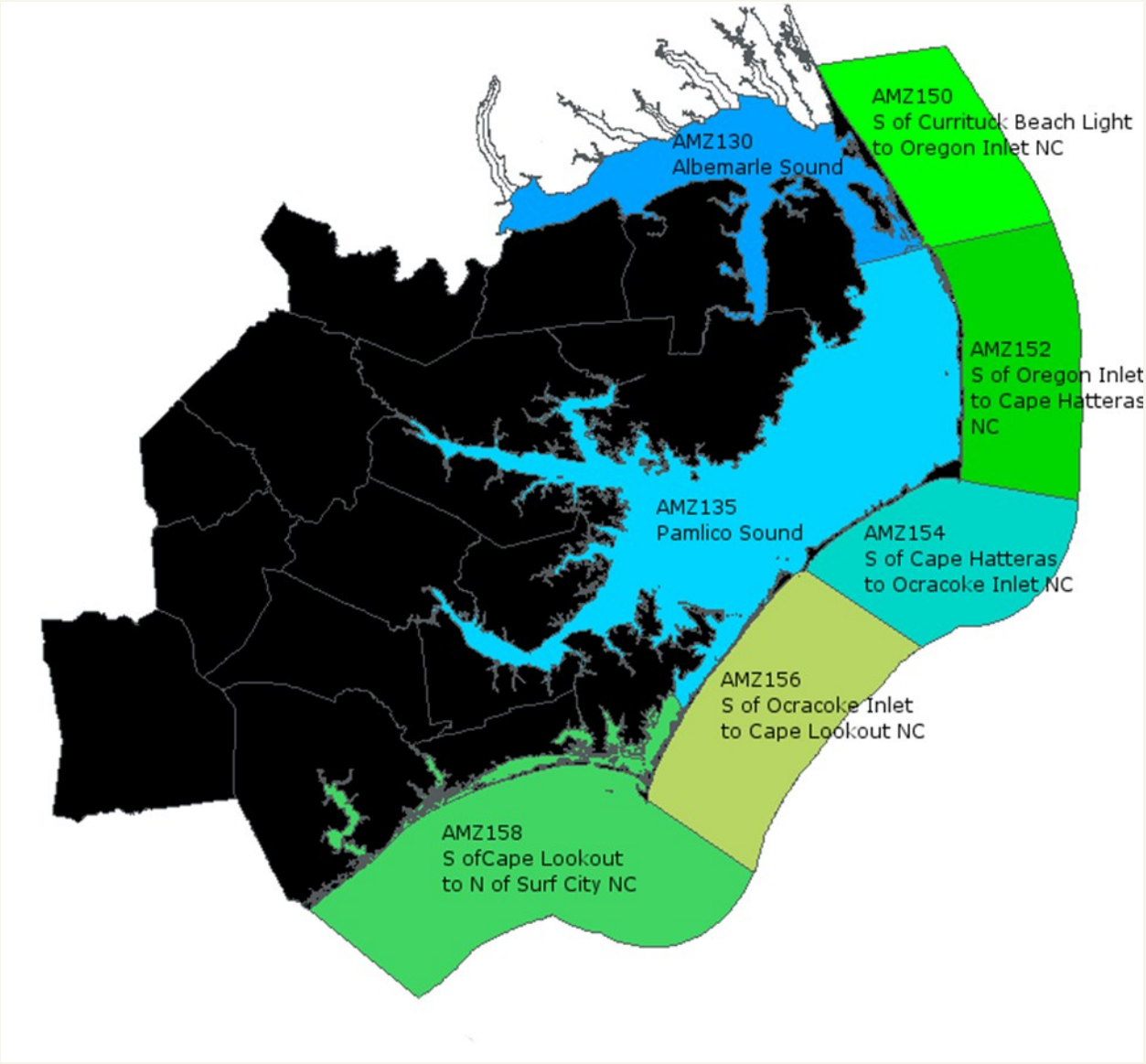
Tracks of 2013 Tropical Cyclones (Courtesy National Hurricane Center)

Marine Zone Changes Coming April 1

By John Elardo, Meteorologist

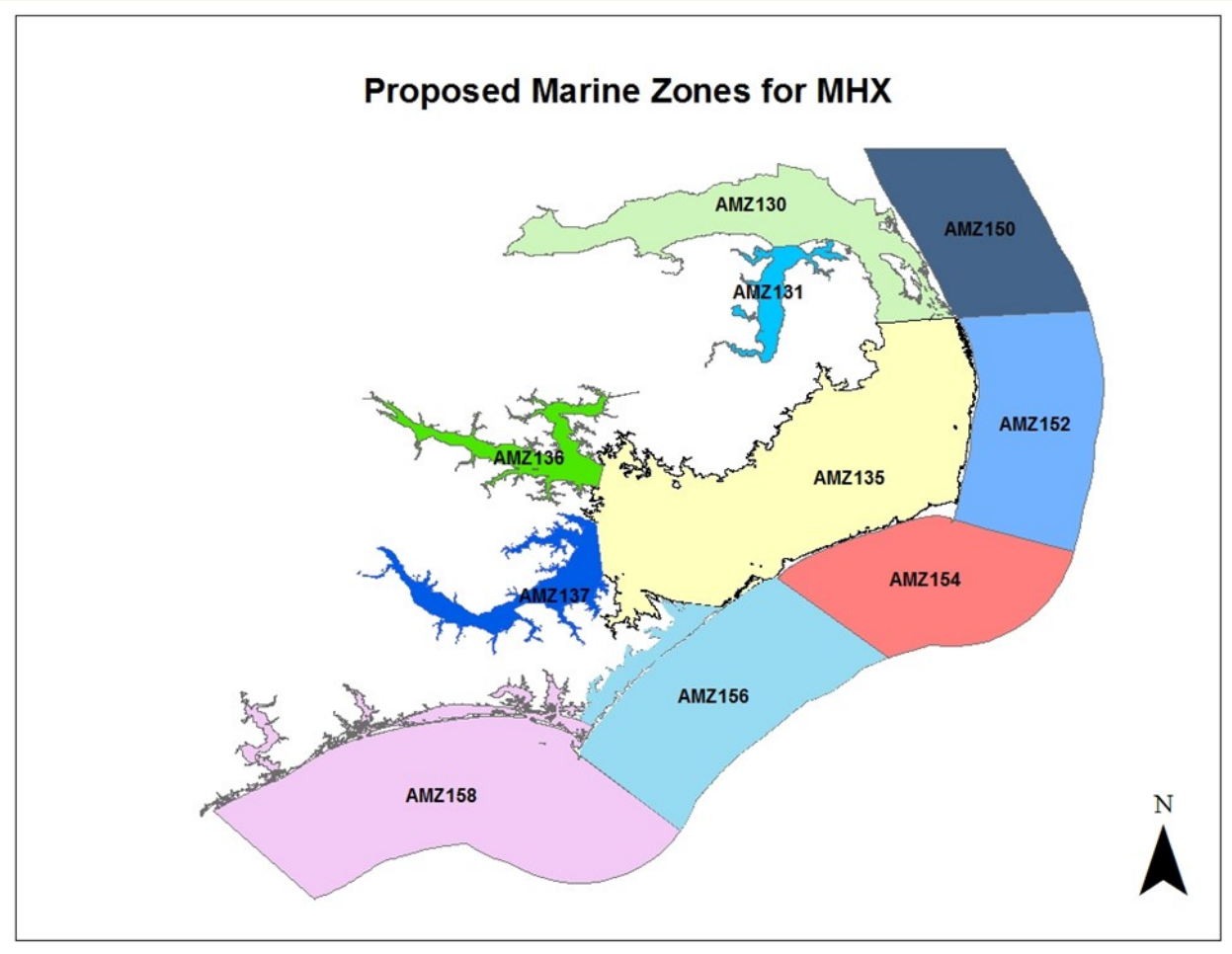
The National Weather Service in Newport/Morehead City, NC has created 3 new marine zones in Eastern North Carolina that will take effect on the afternoon of April 1, 2014. The new zones are the Alligator River, the Pungo and Pamlico Rivers, and the Neuse and Bay Rivers.

The Alligator River will be divided from the Albemarle Sound marine zone and the Pungo, Pamlico, Neuse and Bay Rivers will be divided from the Pamlico Sound marine zone. The new marine zones will allow the National Weather Service to better serve the safety and commercial interests of our marine users by providing more accurate marine forecasts and more concise warnings for hazardous marine weather for these frequently trafficked bodies of water.



Current NWS Newport/Morehead City Marine Zones with the Albemarle and Pamlico Sounds not divided.

Marine Zone Changes Coming April 1 (Continued)



The new Marine Zones which will take effect April 1, 2014: AMZ131 The Alligator River, AMZ136 The Pungo and Pamlico Rivers, and AMZ137 The Neuse and Bay Rivers.

Additionally on April 1, 2014, The Ocean Prediction Center will create new smaller Offshore Marine Zones for the waters from 20 nautical miles to 100 nautical miles offshore. These new zones are considerably smaller than the current zones which stretch from 20nm to 250nm off the coast and will provide mariners with more detailed marine forecasts. Off eastern North Carolina two new zones will be created: Currituck Beach Light to Cape Hatteras to 100nm Offshore and Cape Hatteras to Cape Fear to 100nm Offshore.

The National Weather Service is excited to implement these new marine zones as they should provide mariners more detailed, clear and concise marine forecasts and warnings.

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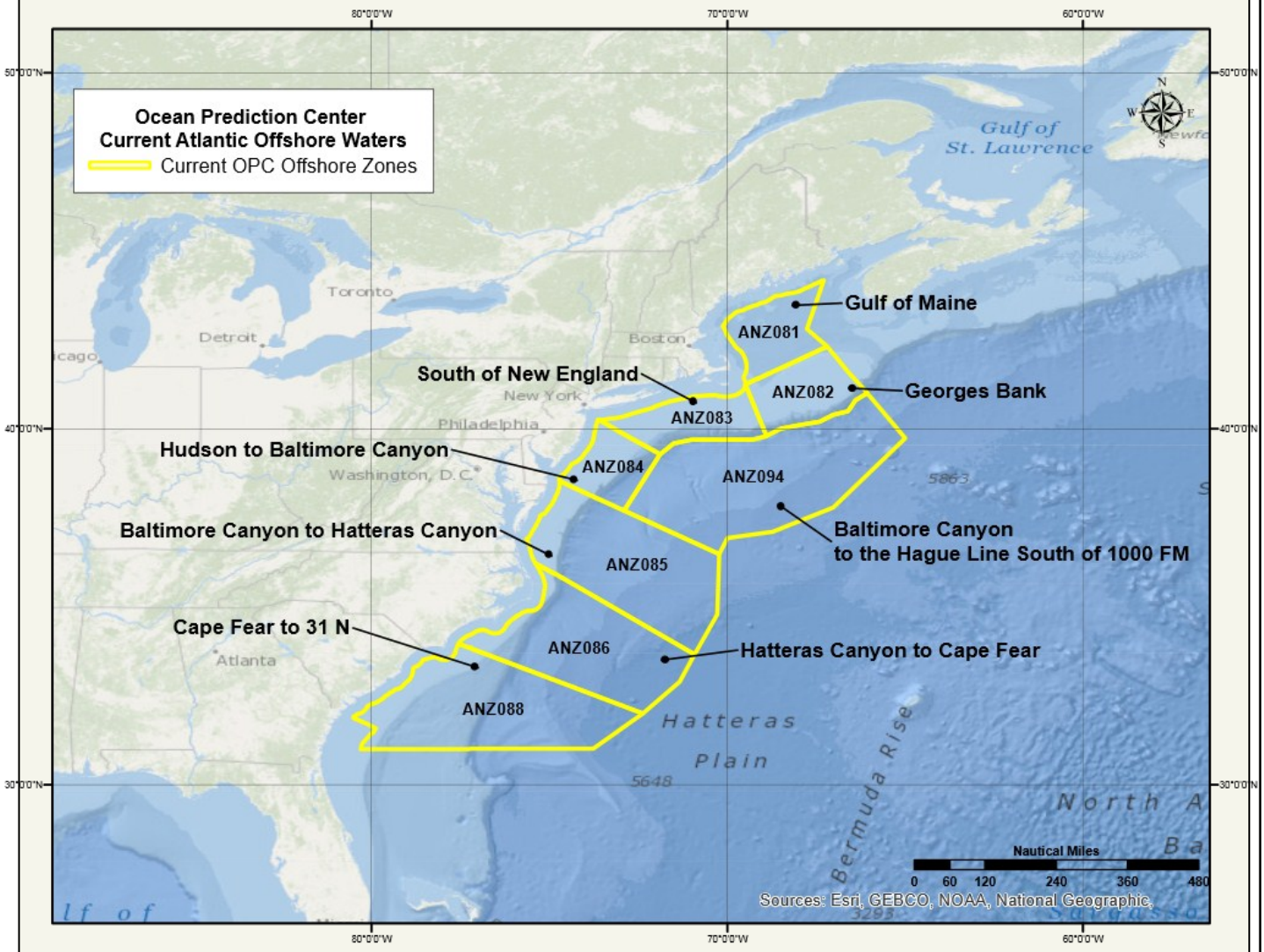
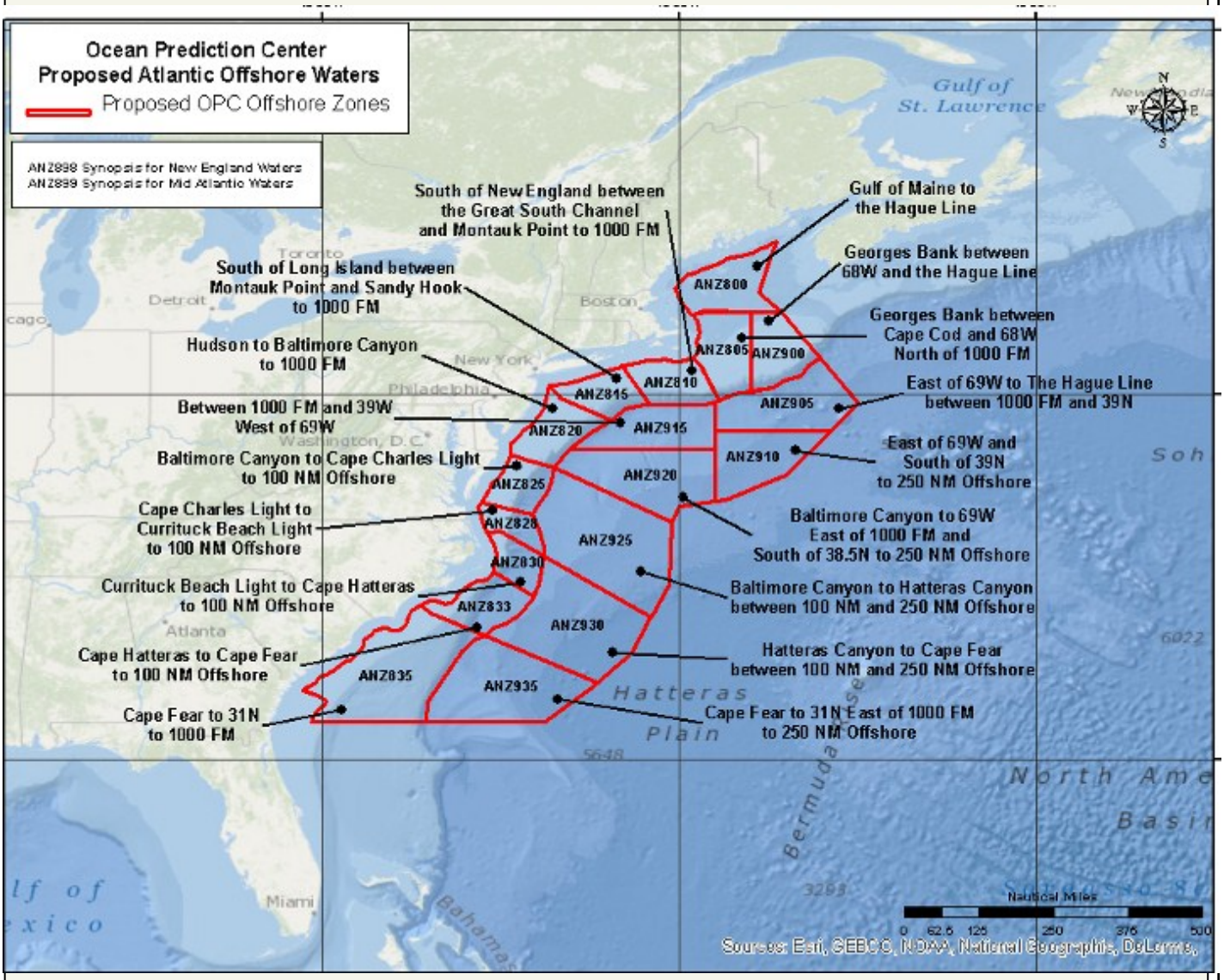
Marine Zone Changes Coming April 1 (Continued)



The current Offshore Marine Zones which indicate one very large Offshore Marine Zone covering most of the waters off of Eastern North Carolina from 20nm to 250nm offshore.

Marine Zone Changes Coming April 1 (Continued)



Much smaller Offshore Marine Zones ANZ830 Currituck Beach Light to Cape Hatteras and ANZ833 Cape Hatteras to Cape Fear. Both zones extend out 100 nautical miles.

Cocorahs Network

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 Mainland 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.
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 Coordinator, or Bel Melendez, Eastern North Carolina Regional Coordinators by phone at (252) 223-5737, or by e-mail at David.Glenn@noaa.gov , Belkys.Melendez@noaa.gov.

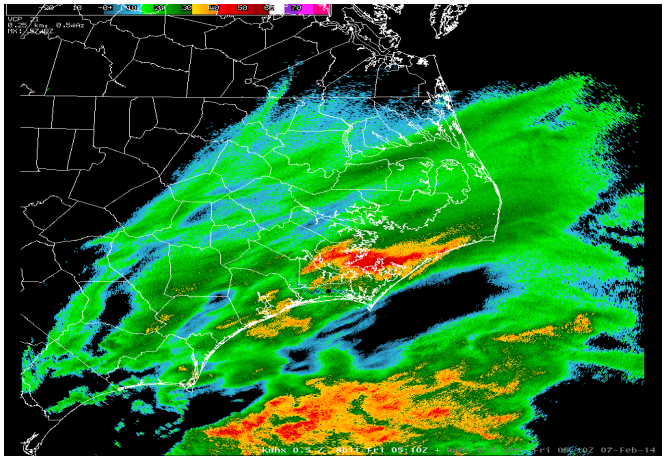
January, February Highlighted by Cold, Snow and Ice

By Chris Collins, Meteorologist

Unusual cold and four snow/ice events highlighted the weather across eastern North Carolina in the months of January and February. Despite a mild start to the month, average temperatures for January were between 1.5 and 5 degrees below normal across Eastern North Carolina. Low temperatures fell to as low as the single digits over northern and western portions of the region with Newport checking in at 10 degrees on January 25th and even Cape Hatteras reporting a low of 13 degrees on January 24th.

The first in a series of winter storms dropped one to two inches of snow across portions of Pitt, Martin, Washington and Tyrrell Counties during the evening hours of Tuesday January 21. As the precipitation continued east, up to 1 to 1.5 inches of snow was observed over the northern Outer Banks. Next was a highly unusual, prolonged winter weather beginning during the morning of January 28, 2014 and continued into the mid-morning hours of January 29. The precipitation began as several hours of freezing rain over coastal sections of Carteret and Onslow Counties. A few reports of up to 1/4 inch of ice were reported, especially in Carteret County. The freezing rain changed to sleet during the mid to late afternoon hours near the coast and started to work its way inland. By late afternoon, most areas were reporting a mix of sleet and freezing rain, before transitioning to snow over most inland areas as a surface low started to slowly gain strength and move well off the North Carolina coast. The precipitation continued as sleet over coastal sections through much of the night before transitioning to snow in the early morning hours of Wednesday, January 29. With an accretion of freezing rain, 1 to 2 inches of sleet and as much as 7 inches of snow inland, roads across eastern North Carolina became very hazardous. Numerous accidents were reported and most all schools were closed from Tuesday through Friday. On the evening of February 6, a fast moving, mid-level disturbance led to a quick one to two inches of snow across central portions of eastern North Carolina with some sleet reported near the coast. New Bern reported 1.5 inches of snow, while numerous locations in Craven, Onslow and Pamlico Counties reported over an inch, as did a couple of locations on the Outer Banks. Finally, low pressure formed offshore along a stalled frontal boundary during the evening of February 10 and tracked up off the North Carolina coast during the day Tuesday. With cold air in place, this led to snowfall over most inland areas, with primarily sleet and freezing rain along the coast. A burst of heavier snow led to accumulation of up to 10 inches in portions of Craven and Pamlico Counties during the afternoon hours on Tuesday. A stronger secondary low led to additional light wintry precipitation over inland areas on Wednesday February 12.

Snow/Ice in Morehead City, January 29, 2014



Band of Heavy Snow over Pamlico County, Feb. 7, 2014.

Skywarn Recognition Day Held in December

By Hal Austin, Meteorologist

The National Weather Service in Newport participated in the 15th annual Skywarn Recognition Day on December 6-7, 2013. Skywarn Recognition Day was begun by the Amateur Radio Relay League (ARRL) in 1999 as a joint celebration of the working relationship between the National Weather Service and amateur radio. Every year, ham radio operators provide valuable "ground truth" reports to NWS offices during severe weather, flooding, winter storms and tropical storms/ hurricanes. 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.

Many members of the Carteret County Amateur Radio Society came out to our office and took turns operating the NWS radios (callsign WX4MHX). At the same time, they also operated their own radio from our conference room, as well as their mobile station in their portable trailer parked outside next to the office! Pizzas and soft drinks were enjoyed by everyone for lunch on Saturday. Many office tours were given during the day to the ham radio operators and their families. It was a busy but very fun day!

A total of 19 NWS offices were contacted in 18 states. We can't wait to do it again this December!

National Weather Service

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Phone: 252-223-5122
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Website: http://weather.gov/Newport

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