The Wilmington Wave

National Weather Service, Wilmington, NC

VOLUME III, ISSUE II SPRING 2014

Wildland Fire and Superfog

- Josh Weiss

Dense fog is something that nearly all of us have experienced at some time. Dense fog, defined as fog producing visibility of ¼ mile or less, is a dangerous travel hazard which forces drivers to travel with extreme caution. If ¼ mile visibility makes travel so dangerous, what would happen if visibility dropped to 100 feet? Or 10 feet? What if visibility became so low that the front of your vehicle was not even visible? This would be akin to a "whiteout" in a snowstorm, and travel would no longer just be difficult, but impossible. Can fog create such drastically reduced visibility? A specific type of fog has this ability – and it is known as superfog.

¼ mile visibility in fog. Picture: Josh Weiss

Superfog occurs only under very specific conditions, and is caused when smoke from smoldering wildland fire combines with radiation fog. The term superfog was coined by Gary Achtemeier, a USDA meteorologist, and is defined as a combination of smoke and fog that reduces visibility to less than 10 feet, and frequently less than 3 feet. Unfortunately, when superfog drifts across a transportation corridor it creates a situation in which travel becomes impossible, leading to severe traffic accidents like the infamous 2008 Interstate-4 tragedy in Florida which involved 70 vehicles. There are many accident reports from superfog events which contain quotes from affected motorists such as:

"I just heard a woman yelling, can't find her anywhere. Visibility less than 5 feet."

"…it was a wall of smoke and fog."

"…one was on the shoulder trying to get away when [they] were struck by vehicles coming up behind them."

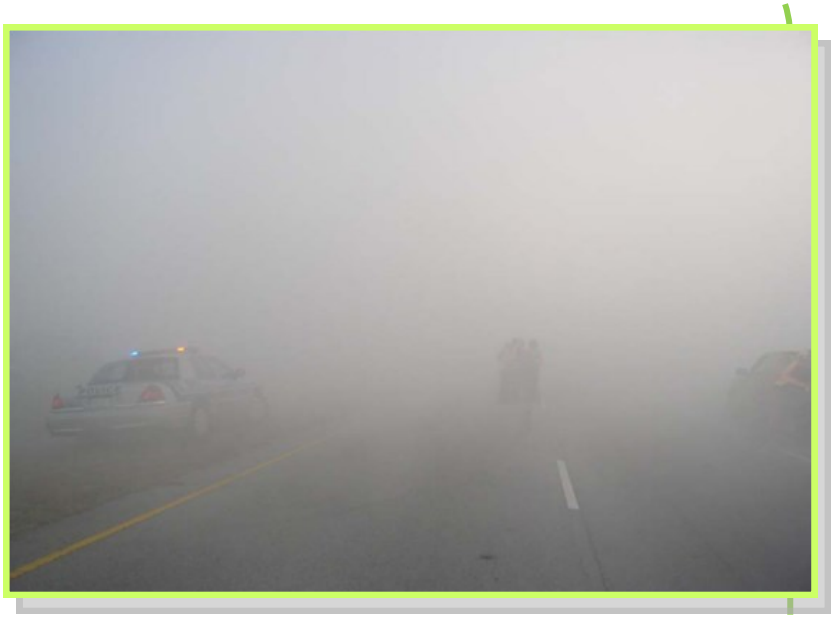
It is clear then, that the only way to guarantee the safety of motorists and first responders during a superfog event is to close the roadway; typical measures such as slowing down and using headlights are not sufficient.

…Continued on Page 2

INSIDE THIS ISSUE:

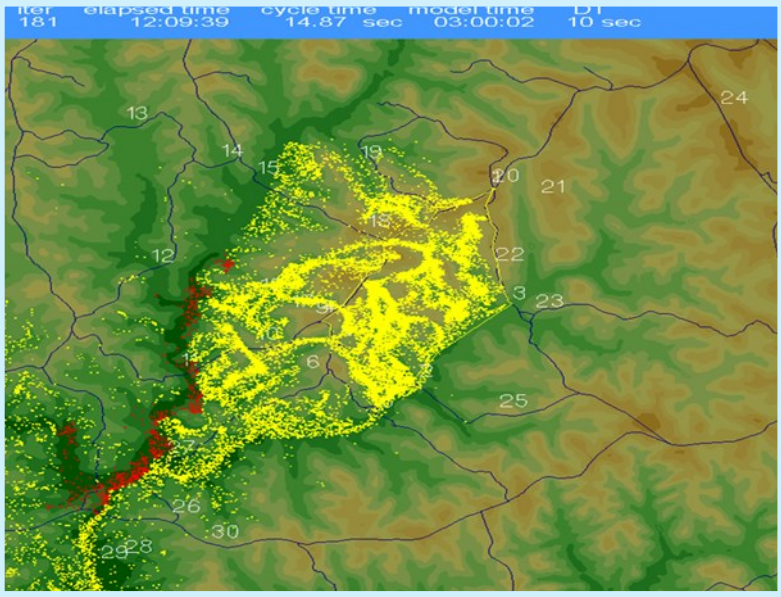
...Continued from Page 2

Although superfog is not a frequent hazard, it is the most dangerous of all southeastern United States weather-related transportation corridor safety concerns. It exceeds that even of snow and ice on roadways, primarily because superfog is exceedingly difficult to accurately predict. In fact, while the total number of weather-related accidents across the United States has declined, the number of accidents related to fog has remained about the same, thus creating a larger percentage of the total crashes. This is likely due to the infrequency, and thus unfamiliarity, of motorists driving in extremely dense fog situations, as well as the variability of fog density over a given area. Clearly, understanding when and where superfog will develop is crucial to ensuring public safety.

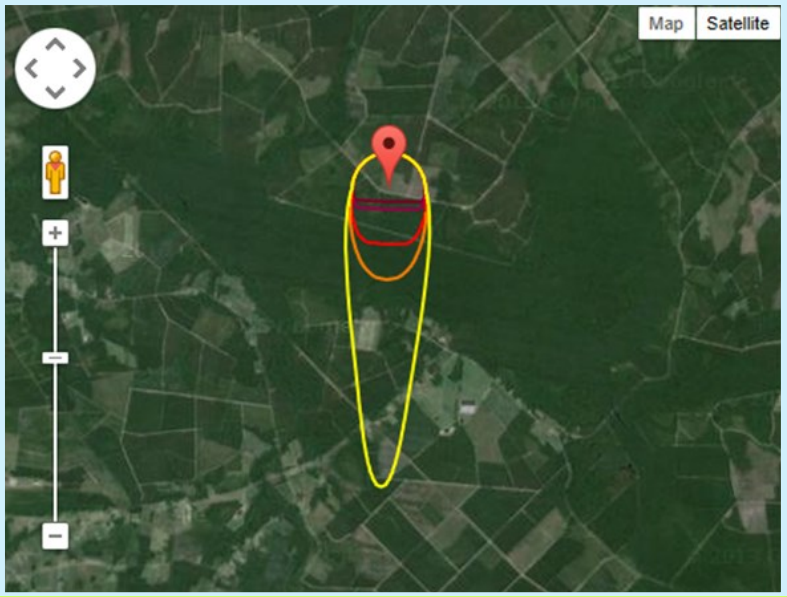


10 FT visibility in superfog (NIOSH Investigation Report, F2008-17)

Fortunately, through collaboration of the National Weather Service and several partnering agencies, new forecast tools are being developed to improve smoke management techniques. These include the Smoke Dispersion Matrix (Superfog Risk Tool), several smoke-modeling tools (PB-Piedmont, BlueSky, VSmoke), and the Superfog Index Model. Some of these tools are still in their initial stages of development, but all are used specifically to address smoke management and help improve superfog forecasts.



Example of Pb-Piedmont smoke trajectories (SHRMC/UGA)

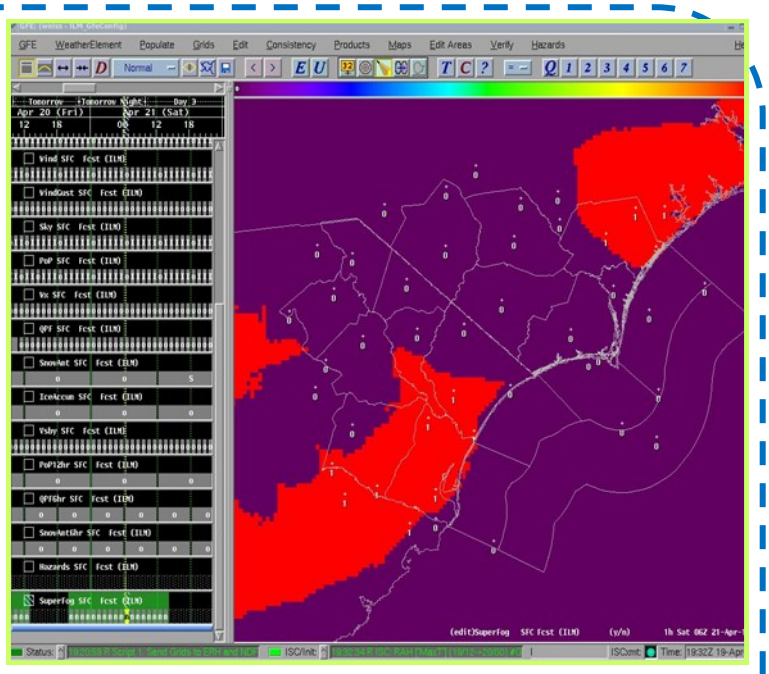


Example of VSmoke (Web) smoke concentrations (SHRMC/UGA)

A common question made after a superfog event is whether we can mitigate the risk by reducing the amount of wildland fire. This would actually have the reverse effect. While it is true that superfog is caused only when smoke interacts with fog, wildland fire, especially that from a prescribed burn, is actually the best way to limit the risk of superfog. Prescribed fires, which burn hundreds of thousands of acres across the southeast every year, are used for hazard reduction to limit wildfire risk. These fires are planned, lit, and extinguished on a specific schedule by forest agencies when conditions are conducive to safe burning. Usually these do not produce superfog. Instead, it is a wildfire, which can burn tens of thousands of acres and last for weeks or longer, that is more apt to create superfog. Prescribed fire will never eliminate wildfires, but the more acreage that can be consumed through planned burns, the less chance for wildfire-driven superfog events.

...Continued on Page 3

Smoke management is currently at the forefront of wildland fire science, led by improving the understanding of how to reduce the risk of superfog. With total acreage burned annually due to prescribed fire expected to continue to increase, and new fire-weather and smoke forecast tools being developed, public safety will continue to improve. The hope is that superfog disasters, like the I-4 tragedy, will soon be a risk of the past.



Example of NWS Superfog Risk Tool output.

Rip Currents in the Carolinas

- Brad Reinhart

The warmer temperatures of spring and summer attract many local and out of town visitors to the Cape Fear and Grand Strand beaches. Unfortunately, many beachgoers still do not fully understand the dangers that rip currents can pose to even the most experienced swimmers.

In 2013, there were 9 confirmed rip current fatalities in South Carolina and 8 in North Carolina. These numbers rank second and third nationally behind only Florida (25 fatalities). In fact, over 27% of the reported rip current drownings in the United States during 2013 occurred in the Carolinas. Tragically, 6 rip current fatalities occurred within our forecast area on July 3-4, 2013 – 4 in Brunswick County, NC and 2 in Horry County, SC.

What are rip currents?

Rip currents are narrow, rapid flows of water directed away from shore that develop at beaches with breaking waves. As the waves create a build-up of excess water near the shoreline, rip currents may develop in channels between sandbars (Figure 1). Rip currents are fairly common at our local beaches, and some days they are too weak to pose a significant hazard. However, strong rip currents can travel at speeds over 5 mph – which is faster than an Olympic swimmer!

Image of rip current.

...Continued on Page 4

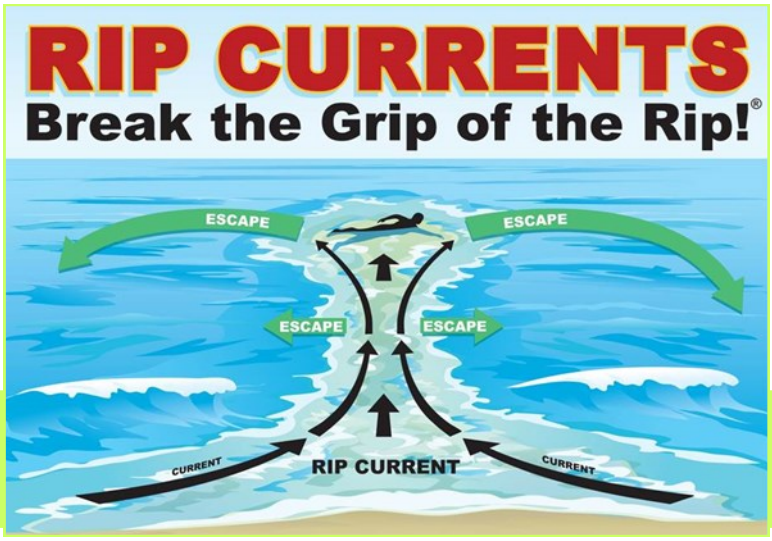
...Continued from Page 3

What should I do if I'm caught in a rip current?

Do NOT try to swim against the rip current – this will only exhaust you. Instead, swim parallel to the shoreline in order to escape the narrow current (Figure 2). Once you escape the rip, swim back to shore at an angle away from the current. If you become exhausted, tread water and wave/yell to get the attention of people onshore.

What if someone else at the beach gets caught in a rip current?

The best course of action is to immediately notify a lifeguard, as they are trained and equipped to rescue swimmers in distress. Sadly, some rip current victims end up being good citizens who try to rescue others without taking proper floatation devices to ensure their own safety. This highlights the importance of swimming in areas monitored by lifeguards.



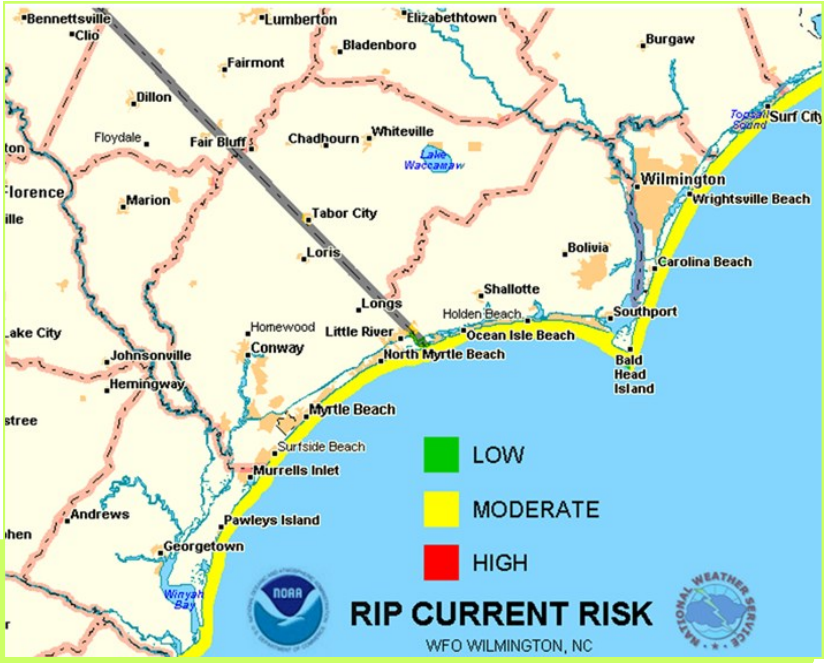
Swim parallel to shore (green arrows) in order to escape the narrow rip current.

How can I swim safely at the beach?

Remember to NEVER swim alone at the beach. Always try to swim in areas monitored by a lifeguard. Heed the warning flags, signs, and verbal commands of lifeguards and local law enforcement. Avoid swimming near jetties and piers, as rip currents commonly develop near these structures. Don't swim in the ocean at night.

Where can I find beach and rip current forecasts?

The National Weather Service in Wilmington, NC provides daily surf zone and rip current forecasts for our North and South Carolina beaches beginning in April. This includes a daily rip current risk forecast of "low", "moderate", or "high" (Figure 3). All beachgoers should know the risk of rip currents before they get into the water. Please visit our Beach and Rip Current website http://www.weather.gov/ilm/BeachRip for the daily forecast and additional information.



An example rip current risk forecast graphic issued daily by the NWS Wilmington NC office.

Wilmington Historic Snow and Ice Storms

- Tim Armstrong

When most folks think of the climate of eastern North and South Carolina, warm summer evenings and refreshing seabreezes first come to mind. Heat waves, droughts and floods occasionally occur, and who can forget some of the region's notable hurricanes? One often overlooked aspect of our climate is winter weather, specifically snow and ice storms.

The National Weather Service in Wilmington maintains a climate archive for the Port City dating back 140 years. Searching through this rich database shows a surprising number of snow and ice events, some of which would make even a northerner pause.

Since the year 1870 Wilmington has recorded 57 snowstorms where 1 inch or more of snow fell. The largest single snowstorm on record occurred just before Christmas of 1989 when an amazing 15.3 inches accumulated! One-third of all snowfall events occur in January, with another one-third occurring in February. December and March make up most of the rest, although measurable snow has fallen three times in November as well. The snowiest decade in Wilmington's history was the 1980s where over 35 inches fell, almost half of it in that historic Christmas 1989 storm. This was followed in the 1990s by only 2.5 inches over a 10-year stretch, the least snowy decade on record.

Snowstorms in Wilmington typically occur when low pressure crosses central Florida and moves offshore through the western Atlantic Ocean at least a few hundred miles off the South Carolina coast. Any closer and too much warm air wraps back onshore changing precipitation to rain or ice.

Ice storms have also inflicted significant pain to the Wilmington area over the years. This was very apparent earlier this year a significant ice storm struck February 11th and 12th producing widespread damage to trees and power lines. A precise measurement of 0.56 inch ice thickness was taken at the Wilmington airport, making this the second largest ice storm since records began in 1947.

The largest ice storm on record for Wilmington struck over a four day period from January 7 through January 10, 1973 with storm-total ice accumulation around three-quarters of an inch. The bulk of the ice occurred on January 7th and 8th and was periodically mixed with sleet and snow which itself amounted to almost two inches. Reports from the Wilmington Star-News suggest impacts to the community were at least as severe as were experienced during this February's storm with large numbers of downed trees and power lines.

	Begin Date	End Date	Snow Total
1	December 22, 1989	December 24, 1989	15.3
2	February 9, 1973	February 11, 1973	12.5
3	February 17, 1896	February 18, 1896	12.1
4	February 10, 1912	February 11, 1912	9.8
5	February 23, 1901	February 26, 1901	9.0
6	January 13, 1912	January 15, 1912	8.6
7	February 24, 1942	February 25, 1942	8.0
8	December 20, 1915	December 21, 1915	7.5
9	March 1, 1980	March 3, 1980	6.6
10	January 30, 1936	January 30, 1936	6.5

	Begin Date	End Date	Ice Accum
1	January 7, 1973	January 10, 1973	0.75"
2	February 11, 2014	February 12, 2014	0.56"
3	January 28, 1948	February 1, 1948	0.36"
4	February 9, 1948	February 9, 1948	0.34"
5	January 26, 1961	January 27, 1961	0.30"
6	January 10, 1962	January 12, 1962	0.29"
7	January 10, 2011	January 11, 2011	0.20"
8	January 31, 1980	January 31, 1980	0.18"
9	February 16, 1987	February 16, 1987	0.14"
10	January 2, 2002	January 3, 2002	0.12"

...Continued on Page 6

...Continued from Page 4

Like snowstorms, ice storms show a marked preference for occurring in January and February. Freezing rain has occurred as early as December 2, 2002 and as late as March 12, 1960.

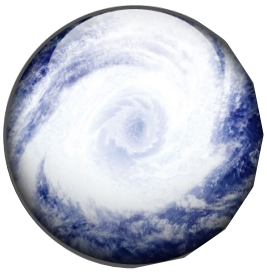
During freezing rain events in Wilmington weather maps typically show low pressure moving along the Gulf Coast and northern Florida before passing a couple hundred miles off the South and North Carolina coast. Warmer air from the ocean melts snowflakes as they fall from thousands of feet aloft, but a layer of colder air at the ground is necessary to re-freeze the raindrops into ice as they strike elevated objects like trees and power lines.

To read more on Wilmington's winter weather history, visit these two links:

Wilmington's Historic Snowstorms: http://www.weather.gov/ilm/ILMsnowfallDatabase
Wilmington's Historic Ice Storms: http://www.weather.gov/ilm/ILMiceDatabase

The 2013 Hurricane Season

- Michael Caropolo



The 2013 Hurricane season came to an official end on November 30th, 2013 and will be remembered for the fewest number of hurricanes across the Atlantic basin since 1982 with only two named hurricanes. Officially the season recorded 14 tropical and subtropical storms as an unnamed subtropical storm that developed south of the Azores in early December and was added to the list. As mentioned only two storms developed into hurricanes; Ingrid and Humberto, neither of which became a major hurricane. The 2013 season was only the third below-normal season in the last 19 years according to the NHC. The 14 tropical systems was above the long term average of 12 named storms, but only Tropical Storm Andrea made landfall in the United States this past season. According to the NHC this past season is expected to rank as the 10th least-active Atlantic hurricane season since 1950.

With the preseason estimates of yet another above normal season forecasted many people are wondering what happened. Several conditions existed resulting in the below normal hurricane season, mainly unfavorable atmospheric conditions across the entire basin. The dry upper-level air throughout the tropical Atlantic Ocean was a result of above average Saharan dust blowing off of Africa and the continued drought conditions in Brazil. The dust coming off Africa was transported into the upper levels of the atmosphere across the tropical Atlantic, when a storm tried to develop it didn't have the moist atmosphere it needs to feed off and continue to develop. This dry and stable air mass in the atmosphere leads to sinking air motion and an increase in vertical wind shear across the main development area of the tropical Atlantic. The continued drought in Brazil contributed to the dryness across the main development area as well. Additionally, cooler waters moved into the Atlantic during the spring which also decreases the ability of systems to form. The combination of these atmospheric and oceanic conditions lead to the unusual quiet hurricane season.

We also use the term ACE, which is the Accumulated Cyclone Energy index to measure the individual and entire tropical storm strength for the season. ACE is computed by summing the squares of the estimated maximum sustained wind speed of every tropical storm every six hours; these numbers are then totaled for the entire season. The ACE index for the 2013 season was about 67 percent below the 1981-2010 average and was the lowest number since the 1994 season. The highest ACE ever recorded for an individual storm was 82 for Hurricane Ioke in 2006 in the Pacific basin. In the Atlantic basin the record belongs to the Hurricane of 1899 which measured an estimated ACE of 73.6, Hurricane Ivan in 2004 was second with an ACE of 70.4

In 2013, Wilmington and the surrounding areas only experienced two threats from Tropical Storm Andrea in early June which past across our extreme western counties and Dorian which lasted from July 23rd until it dissipated off the SC coast on Aug 3rd. Andrea had the greatest impact across our area producing 2.43 inches of rain at the NWS office in Wilmington, 3.33 inches at North Myrtle Beach, 1.69 inches at Lumberton and 1.59 inches at Florence. Dorian did result in heavy rains across the region as well with a swath of 1 to 3.5 inches of rain across mainly the coastal counties.

The 2013 Hurricane season once again got off to a quiet start just like 2012, only two storms developed in June and only one formed in July. August produced just 3 storms and September produced 4 storms, with the only 2 hurricanes forming in mid-September. As October came and much cooler weather arrived only 2 storms formed with one additional storm in mid-November. The season came to an end when a sub-tropical storm formed off the Azores in early December.

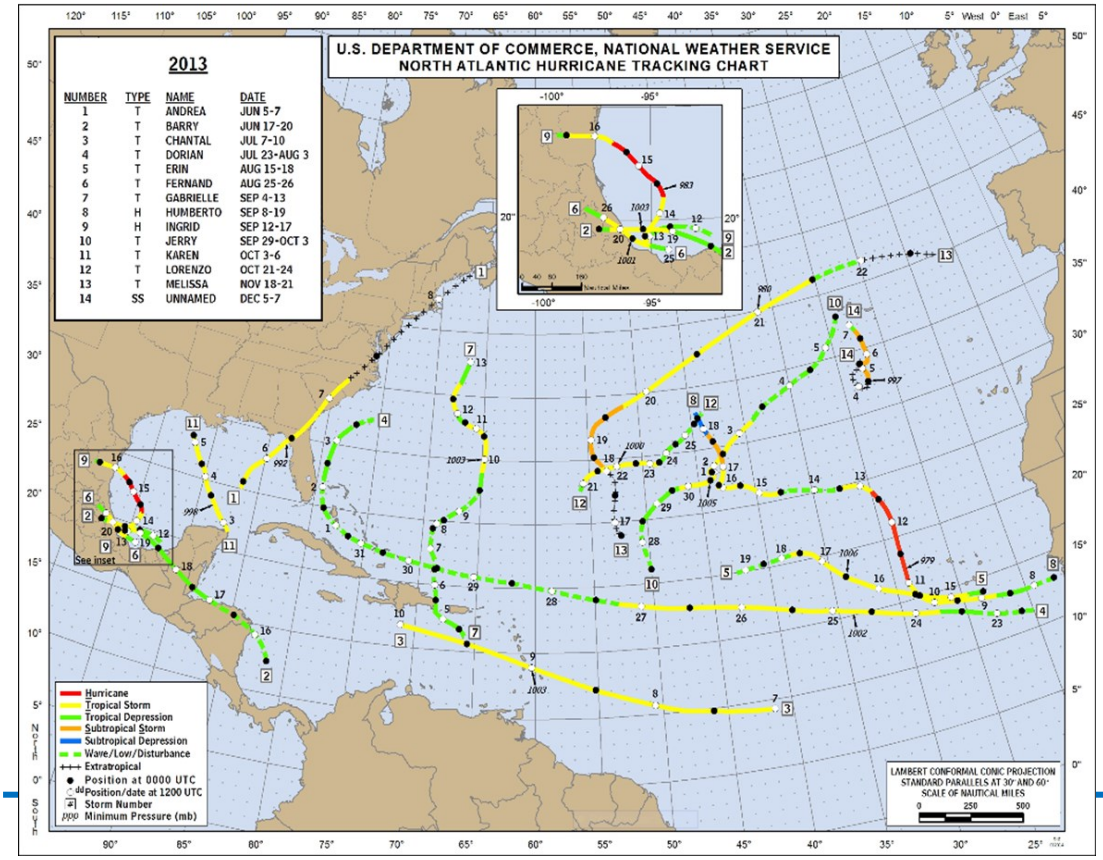
Fun fact #1: Hurricane Wilma in 2005 holds the record for the Atlantic basin for the lowest pressure ever recorded at 882 mb, however Typhoo Tip holds the world record with a pressure of 870 mb set back in 1979 in the NW Pacific Ocean.

Fun fact #2: In 2010, the World Meteorological Organization announced that Tropical Cyclone Olivia which struck Australia back in 1996 had a measured wind speed of 253 mph!, this exceeded the previous record holder for surface wind speed which was held by the Mt. Washington Observatory back in 1934.

Fun fact #3: Hurricane Allen, 1980, holds the record in the Atlantic basin for the longest duration at a CAT 5 status for wind speed (>155 mph) at 3 days. The record belongs to Typhoon Nancy in 1961 across the West Pacific at 5.5 days.

Fun Fact #4: Faith, 1966, holds the record in the Atlantic basin for the longest path as a tropical system covering 6850 nm, the record is 7165 nm for John in the East/Central Pacific back in 1994.

Type/Cat	Name	Dates	Max Wind (mph)
TS	Andrea	June 5-7	65
TS	Barry	June 17-20	45
TS	Chantal	July 7-10	64
TS	Dorian	July 23 - Aug 3	50
TS	Erin	Aug 15-18	45
TS	Fernand	Aug 25-26	60
TS	Gabrielle	Sep 4-13	60
H1	Humberto	Sep 8-19	85
H1	Ingrid	Sep 12-17	85
TS	Jerry	Sep 29 - Oct 3	50
TS	Karen	Oct 3-6	65
TS	Lorenzo	Oct 21-24	50
TS	Melissa	Nov 18-21	65
SS	Unnamed	Dec 5-7	45



NWS Wilmington, NC

Lightning

…what you should know and best practices to stay safe!

Lightning occurs with all thunderstorms and is what defines a thunderstorm. Over the course of one year, the earth will be struck by lightning nearly 20 million times. Every year an average 58 people are killed by lightning strikes which is more than those killed by tornadoes. Unfortunately this number is likely lower than the actual numbers of lightning deaths per year. The Carolinas face dangers from lightning throughout spring and summer. To avoid becoming a lightning statistic just remember - **when thunder roars, go indoors**.

What causes lightning and thunder?

Lightning results from the buildup and discharge of electrical energy between positively and negatively charged ice particles within the storm cloud. A thunderstorm generates a huge static electrical charge as ice particles inside the storm collide and through friction generate a static charge. These particles of suspended ice in the thunderstorm collide as they are carried around by the storm's updraft and downdraft. Once the static electrical charge is strong enough to travel from the cloud to the ground, a lightning bolt is created.

It should be noted that the National Weather Service does not issue warnings for lightning and given the deadly nature of lightning, you should always be aware of the lightning danger anytime a thunderstorm is nearby. A good rule of thumb to live by is:

When Thunder Roars, Go Indoors.

A lightning bolt contains as much current as three hundred thousand amperes and around three hundred million volts. The intense electrical current heats the air around the lightning strike instantly to 50,000 degrees. This is five times hotter than the surface of the sun. The instantaneous heating of air around the lightning strike causes the air molecules to explosively expand. This expansion occurs so rapidly it compresses the air forming a shock wave similar to a sonic boom. The shock wave travels through the atmosphere, resulting in thunder. The acoustic shockwave near the lightning strike is strong enough to rupture the eardrums of those standing nearby.

Since light travels faster than sound, you can use thunder to gage the distance of a lightning strike. You merely count the number of seconds between the moment you see the flash of lightning and hear the clap of thunder. Once you see lightning...start counting seconds. For every 5 seconds that go by before you hear the clap of thunder...that's one mile. Keep in mind this technique only tells you how far away that one lightning strike was from your location. The next one could be a lot closer. Lightning can travel 10 to 12 miles from a thunderstorm. This is often farther than the sound of thunder travels. That means that if you can hear thunder you are close enough to a storm to be in danger of being struck by lightning. When thunder roars go indoors.

Lightning

NWS Wilmington, NC

Safety Tips

Know your sources for up-to-date weather information.
- NOAA Weather Radio
- National Weather Service website (www.weather.gov)
- Local TV broadcast

If caught outdoors:
- Seek shelter immediately in the closest building or vehicle when you first hear thunder, or see lightning.
- Stay inside for at least 30 minutes after the last sound of thunder.
- Do NOT take shelter under trees.
- Avoid contact with golf clubs, bicycles, farm equipment, etc.

If you are at the beach or lake:
- If there are no shelters nearby, seek shelter immediately in your car.
- Stay away from the water.

If you are in a building:
- Avoid contact with any electrical equipment.
- Unplug appliances, including computers.
- Stay away from windows.

For more safety and preparedness information, as well as what you should do after the storm, follow the following links from Ready.gov - http://www.ready.gov/

Thunderstorms and Lightning: http://www.ready.gov/thunderstorms-lightning

NWS Wilmington, NC

Severe Thunderstorms

Are you ready for severe weather? The best way to be prepared is to stay weather aware, especially when severe weather is expected. Make sure you know the terminology, have a plan and know your surroundings. Do you know the difference between a Watch and a Warning? What are the best sources for important weather information? Where should you take shelter if you're at home, school, or work?

What is a Severe Thunderstorm?

The National Weather Service defines a thunderstorm as severe when it produces a tornado, wind gust of 58 mph or greater, and/or hail that is one inch in diameter (quarter sized) or larger. Prior to 2010, the definition of severe hail was three quarters of an inch in diameter. The decision to raise this value to one inch was made in order to greatly decrease the number of warnings issued. Recent studies have also shown that hail smaller than quarter size does generally not pose a threat to life and property.

It should be noted that the National Weather Service does not issue warnings for lightning and given the deadly nature of lightning, you should always be aware of the lightning danger anytime a thunderstorm is nearby. A good rule of thumb to live by is:

When Thunder Roars, Go Indoors.

What is the Difference between a 'Watch' and a 'Warning'?

"A Severe Thunderstorm Watch has been issued for your area…". The words WATCH and WARNING have significant meanings when it comes to severe weather, but which is which? It is vital that you know the difference between the two.

WATCH: Conditions are favorable for severe weather development within the watch box over the next several hours. Stay weather aware!

WARNING: Severe weather is imminent or occurring! Take action immediately!

Severe Thunderstorms

NWS Wilmington, NC

Safety Tips

Before the Storm

Know your sources for up-to-date weather information.

- NOAA Weather Radio
- National Weather Service website (www.weather.gov)
- Local TV broadcast

Purchase a NOAA Weather Radio.

- If you already have one, refresh the batteries every time you replace the batteries in your smoke detector and CO detector. Always make sure your radio is correctly programmed.
- For any questions or assistance for programming your weather radio, contact your local National Weather Service office.
- Have an emergency/communication plan & emergency kit prepared for you & your family.
- Flashlight and batteries, bicycle helmet(s), out of town contact(s), and much more!
  http://www.ready.gov/sites/default/files/documents/files/checklist_1.pdf

During the Storm

- Stay Weather Aware!
  - Whether it's a NOAA Weather Radio or local media, always pay attention to new information as weather conditions are quickly changing.

- Do not rely on outdoor sirens!
  - Many locations do not have outdoor sirens, or have sirens that are not operational. Sirens were initially intended to sound for those caught outside in severe weather. If you are in a building or your home, you will likely not hear them. Do not wait to hear a siren to take shelter!

- Pay attention to Severe Thunderstorm Warnings
  - Damaging winds and large hail can be extremely dangerous.
  - They are capable of quickly evolving into a Tornado Warning.

- Always wear closed-toed shoes, and have your emergency plan and kit with you at all times.

For more safety and preparedness information, as well as what you should do after the storm, follow the following links from Ready.gov - http://www.ready.gov/

Thunderstorms and Lightning: http://www.ready.gov/thunderstorms-lightning

NWS Wilmington, NC

Tornadoes

Tornadoes are one of nature's most violent phenomena. The peak tornado season in the Carolinas occurs in the months of March, April and May, with a secondary peak in September associated with tropical-influenced tornadoes. However, tornadoes have touched down across the region in all 12 months.

The greatest danger faced by residents of the Carolinas is nocturnal, or nighttime, tornadoes. A recent survey found that most people acquire weather information by watching local or national television stations or via the internet. These sources generally do not provide a mechanism or assistance to alert users of approaching tornadoes during the overnight period. Conversely, most NOAA Weather radios are programmable and will turn on in the event of a tornado warning any time day or night. This distinguishes NOAA weather radio as one of the few ways to alert people who are sleeping of

What is the Difference between a 'Watch' and a 'Warning'?

"A Tornado Warning has been issued for your area…". The words WATCH and WARNING have significant meanings when it comes to severe weather, but which is which? It is vital that you know the difference between the two.

WATCH: Conditions are favorable for severe weather development within the watch box over the next several hours. Stay weather aware!

WARNING: Severe weather is imminent or occurring!

Take action immediately!

What is the Difference between a funnel cloud and a tornado?

*A **funnel cloud** is a rotating column of air that extends from the base of a storm cloud that does not make contact with the ground.*

*A **tornado** is a violently rotating column of air that extends from the base of a storm cloud and makes contact with the ground.*

Tornadoes

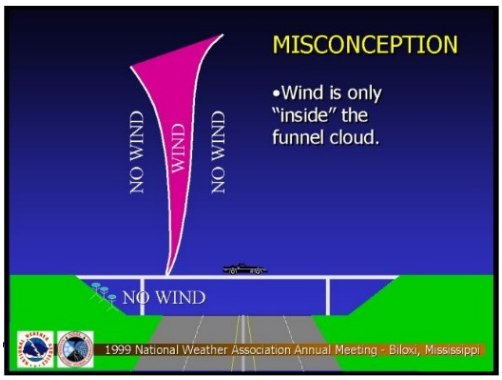
NWS Wilmington, NC

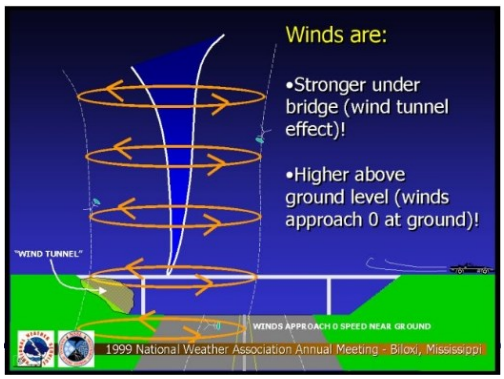
Safety Tips

- Know your sources for up-to-date weather information.
  - NOAA Weather Radio
  - National Weather Service website (www.weather.gov)
  - Local TV broadcast

When a tornado warning is issued for your area or if you spot a tornado, seek shelter immediately!

- If you are caught outdoors:
  - Seek shelter in a low spot like a ditch or culvert. You want to get as low as possible to protect yourself from the flying debris in a tornado. The debris within the tornado is what causes nearly all of the injuries and deaths.
  - Do not get under an overpass or bridge - wind speeds can increase up to 25%.





- If you are in a car:
  - Abandon your vehicle and seek shelter in a substantial structure or in a ditch. Never try to outrun a tornado in a vehicle. Tornadoes do not travel in straight lines and it can be very difficult to determine what direction the tornado is moving.
- If you are in a building (home, school, hospital, nursing home, etc):
  - Go to a safe room, basement, lowest level in the building.
  - If there is not a basement, the safest place is in an interior bathroom or closet. Put as many walls between you and the outside as possible. Stay away from windows as debris picked up by a tornado can easily shatter a window and enter your home.
  - Do not open windows.
- If you are in a mobile home:
  - Mobile homes and trailers are not safe. Evacuate immediately and seek shelter in a sturdy building.

For more safety and preparedness information, as well as what you should do after the storm, follow the following links from Ready.gov - http://www.ready.gov/

Tornadoes: http://www.ready.gov/tornadoes

NWS Wilmington, NC

Flooding

…what you should know and best practices to stay safe!

Nationwide, flooding causes more fatalities than any other type of severe weather. Several factors contribute to flooding. The two main factors are the intensity of rainfall and how long rain occurs over any given location. Urbanization, topography, soil type, and soil moisture also play roles in the severity of flood conditions.

Flooding in the Carolinas can result from several different weather situations. Slow moving thunderstorms can dump heavy rain over the same location resulting in rapid flash flooding, or days of steady rain can cause creeks and rivers to flood over large areas. Lastly, any thunderstorm moving across metropolitan or urbanized areas can cause flash flooding due to the amount of runoff generated by highly developed areas. Tropical storms and hurricanes can also be prolific flood producers.

Rushing water in the form of a flash flood can quickly become deadly. Running water that is deep enough to cover just half of an automobile's tires is usually enough to make the vehicle begin to float or pushed off the road, and be carried by the current. Most flood deaths occur in automobiles.

Flooding is dangerous any time of day, but most dangerous at night when it is difficult to observe. Limited visibility at night makes it not only more difficult to see flood waters, but also nearly impossible to gage water depth and whether is standing or flowing. In many cases drivers who enter the water severely misjudge the depth and strength of the flood waters.

When flooding is possible, the National Weather Service will issue a Flood Watch. This tells you to remain alert to the possibility of heavy rain and flooding within the next six to twelve hours. Once a flood warning is issued, then it is time to take action. When a warning is issued for your area, it means that flooding has been reported or is imminent. This is the time to closely monitor the situation and move quickly if flood waters threaten. One of the best practices to observe during flooding is avoiding unnecessary travel.

Photo Source: WBTW-TV

When approaching water flowing over the road, turn around and go the other way – it's dangerous.

Turn Around, Don't Drown!

National Weather Service
Weather Forecast Office
Wilmington, North Carolina

2015 Gardner Drive
Wilmington, NC 28405
Phone: (910) 762-4289
www.weather.gov/ilm

Webmaster's Email: ILM.webmaster@noaa.gov

The Wilmington Wave
Volume II, Issue II

Contributors:
Timothy Armstrong
Michael Caropolo
Brad Reinhart
Josh Weiss

Editor-in-Chief:
Sandy LaCorte
Sandy.LaCorte@noaa.gov

Meteorologist-in-Charge:
Michael Caropolo

We need your Storm Reports!!

Events of tornadoes, hail, damaging winds, and flooding are very important to us.

Please call: 1-800-697-3901

Storm reports **ONLY**

New number!

Follow Us on Social Media

US National Weather Service
Wilmington, NC

@NWSWilmingtonNC

Where we share adverse weather information and historical weather events, and you share storm reports and any weather questions you might have!