



FAMOUSLY HOT

# FORECASTS



## Fall/Winter 2018

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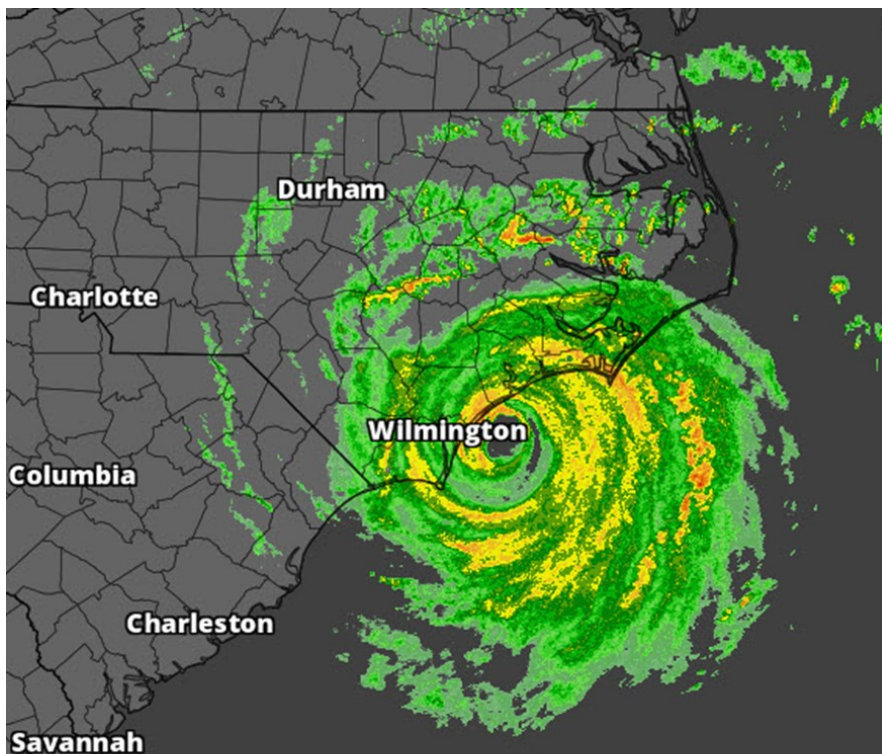
## Hurricane Florence Floods the Carolinas

*by Dan Miller - Meteorologist*

Hurricane Florence began as an area of disturbed weather that moved west off the African coast around August 29-30, 2018. It gradually developed into a tropical cyclone on August 31, 2018 while just south of the Cape Verde islands. The cyclone continued to move to the west-northwest across the Atlantic Ocean in the ensuing two weeks, while undergoing fluctuations in intensity. The cyclone reorganized and strengthened into a

category 4 hurricane on Monday, September 10th while centered around 1200 miles southeast of the coast of the Carolinas. High pressure located north of the cyclone steered the hurricane to the northwest. After undergoing some weakening due to

some upper level wind shear, Florence made landfall as a category 1 hurricane on the southern coast of North Carolina (NC), near Wilmington, Friday morning September 14th. The center of the cyclone then moved very slowly west across eastern and central South Carolina (SC) while weakening into a tropical storm through Saturday night September 15th. Florence further weakened into a tropical depression Sunday morning September 16th and began to turn to the north and accelerate, moving across the Upstate of SC and western NC through Sunday night.



Radar showing Hurricane Florence with the eye just offshore the southern coast of NC early Friday, Sept. 14, 2018.

# Hurricane Florence - Continued

The greatest impact to the region from Florence was flooding due to very heavy rainfall. The heaviest rain occurred on the north and east side of Florence, across much of NC, as well as over eastern and northeastern SC. As far as the National Weather Service Columbia SC office area of responsibility is concerned, major flooding was reported in Chesterfield County SC, where numerous roads and bridges were flooded and washed out. Significant flooding was also reported in Lancaster County, SC. Several reports of downed trees and power lines were received across the central and eastern Midlands due to strong wind gusts. A webpage was created to display graphics and tabular information regarding total rainfall amounts and peak wind gusts:

<https://www.weather.gov/cae/FlorenceRainWind>



Hwy 145 in Chesterfield County SC washed out. (Photo courtesy Chesterfield Co. Sheriff)

The highest rainfall total in our area of responsibility was in Cheraw, SC in Chesterfield County, where a total of 22.58 inches of rain was measured by our COOP observer at the Cheraw Water Plant. Here is a list of the top rainfall amounts (all in Chesterfield County):

Location	Amount	Provider
Cheraw Water Plant	22.58 in	COOP
Carolina Sandhills NWR	21.18 in	RAWS
Main St. Chesterfield	19.94 in	Public
3 E Chesterfield	17.09 in	COOP
Jefferson	16.84 in	Public
USGS Raingage near McBee	12.93 in	USGS
Black Creek Below Chesterfield	12.20 in	USGS
3 SE Pageland	10.48 in	USGS

# Hurricane Florence - Continued

The Great Pee Dee River at Cheraw experienced major flooding, peaking at 46.6 feet (flood stage 30.0 ft.) on Tuesday morning September 18<sup>th</sup>. This was the 3<sup>rd</sup> highest crest on record at that location, and the highest crest there since 1945! Our Service Hydrologist was able to join an aerial tour of the flooding via helicopter, conducted by the SC National Guard, on Tuesday September 18<sup>th</sup>.



Flooding of the Great Pee Dee River at Cheraw (US Hwy 1 bridge on the right) near time of peak crest. (Photo courtesy Leonard Vaughan)

Here is a list of the peak wind gust reports across the area:

Location	Speed	Time/Date
Shaw AFB near Sumter	54 MPH	1028 PM 09/14
McEntire ANGB Eastover	47 MPH	1219 AM 09/15
Sumter Municipal Airport	47 MPH	0935 PM 09/14
Camden Woodward Field	45 MPH	0935 PM 09/14
2 W Clarks Hill	45 MPH	0510 PM 09/15
Winnsboro	44 MPH	0715 AM 09/15
8 E Summerton	44 MPH	1135 PM 09/14
7 NW Camden	44 MPH	1020 PM 09/14
Newberry County Airport	43 MPH	0855 PM 09/15
6 E Jefferson	43 MPH	0914 PM 09/14
10 ENE Ridgeway	42 MPH	0749 PM 09/15
Orangeburg Municipal Airport	40 MPH	0621 PM 09/14

## Always be prepared!

2018 marks the fourth consecutive year that our region has been impacted by a tropical cyclone, or tropical moisture, resulting in significant to major impacts. This reminds us that we always need to be prepared for any impacts due to inclement weather, be it tropical-related, severe thunderstorms and tornadoes, winter weather, or other. Our goal at the National Weather Service is to accurately alert you to these threats, with as much lead time as possible, in order to assist you in your preparedness efforts. We welcome your feedback on our services. Please feel free to e-mail us at [caewx@noaa.gov](mailto:caewx@noaa.gov).

## Many Thanks to our Core Partners!

A word of appreciation and thanks is extended to the numerous local, state, and federal agencies and personnel who worked tirelessly during this event to help ensure public safety. Many thanks are also extended to our partners in the media for their hard work in relaying critical weather forecasts and information regarding the storm, and on reporting its impacts.



# Autumn Safety Tips

by Rachel Cobb - Meteorologist

Falling leaves and cooling temperatures come along with a host of hazards special to the season. Here are some tips of how to prevent injuries in autumn:

⇒ **Using ladders becomes more prevalent in the fall, whether clearing gutters or hanging holiday decorations:**

- Make sure ladders have secure footing and are held when needed.
- Don't use a stepladder as an extension ladder.
- Don't stand higher than the third rung from the top of stepladders.



- ⇒ **Replace batteries in smoke alarms and carbon monoxide detectors when you change the time on your clocks in November.**
- ⇒ **The end of daylight savings time is correlated with an increase in fatal vehicle incidents the following Monday. Be aware of the effects the time change may have regarding fatigue.**
- ⇒ **If using a space heater, make sure it has a tip-over switch and that manufacturer recommended clearances are maintained. Space heaters should be plugged directly into a wall outlet – do not use a power strip.**
- ⇒ **Rain and fallen leaves make driving and walking surfaces more slick than usual. Make sure you maintain a longer following distance and awareness in these conditions.**
- ⇒ **Flu season begins in the fall and spreads rapidly as children head back to school. Take steps to prevent against the flu by getting vaccinated and wash your hands often.**



⇒ **Autumn is the beginning of the holiday season. Food and drink are often center stage. Be sure to keep it safe by following basic food safety steps. And never drink and drive!**

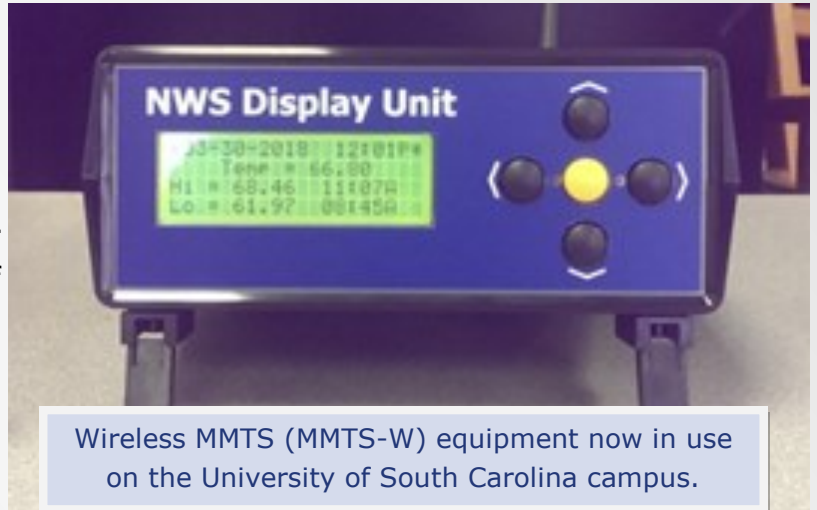
Additional weather safety tips can be found at the NWS Weather Safety Homepage: <https://www.weather.gov/safety/> **#FallSafety**

## COOP Corner

by Doug Anderson - Hydro- Meteorological Technician

Cooperative (COOP) stations are locations that take daily weather observations using NWS supplied equipment, filling in gaps between other types of observing stations such as airports, mesonets, etc. The equipment meets stringent standards and is installed in accordance with strict specifications to ensure uniformity. About 10,000 volunteers around the country from all walks of life provide this valuable service.

For many years, NWS's COOP Program has used the Maximum-Minimum Temperature System (MMTS). This system, installed at thousands of stations around the country serves as the benchmark for temperature climate records. One of the main limitations of these systems is that a coaxial cable must be installed between the sensor and the digital display.



Wireless MMTS (MMTS-W) equipment now in use on the University of South Carolina campus.

For the last several years a new MMTS system has been in development that is wireless, allowing much more flexibility in installing temperature equipment. Enhanced data storage and display as well as the ability to operate solely on solar energy are among other improvements.

We were excited when the COOP station on the campus of the University of South Carolina was selected earlier this year as the South Carolina test site for the Wireless MMTS (MMTS-W). Installed back in March, the system is now operational and providing test data. Once the test and evaluation phase is complete, these new MMTS-W systems are planned for installation nationwide.

We are always looking for new COOP observers with a sense of service and willing to take observations for many years. Observers are especially needed right now in Lincoln County, GA and Calhoun County, SC. Contact Doug Anderson at [douglas.anderson@noaa.gov](mailto:douglas.anderson@noaa.gov) for more information.



## COOP Corner - Continued

**Over the last several months, four of NWS Columbia's COOP stations earned recognition for service. We cannot say thank you enough for their dedication!**

### **Thomas Jefferson Award** - Mrs. Margaret Sease-Jayroe, *Little Mountain, SC*

Mrs. Margaret Jayroe, who recently completed 55 years of service as a Cooperative Weather Observer has been selected to receive the Thomas Jefferson Award. Named after our third President, this is the highest award for observers that NOAA can bestow for outstanding accomplishment in the field of meteorological observations. No more than 5 are given annually. Jefferson was a pioneer weather observer who bought his first thermometer while writing the Declaration of Independence and maintained an almost unbroken record of weather observations until 1816. Along the same lines, Mrs. Jayroe has carried on a family tradition of virtually unbroken weather observations from Little Mountain for over 125 years. The family will also receive a 125-Year Family Legacy Award later this year.

### **40 Year Service Award** - Mr. Darwin Morris, *Appling, GA*

Darwin began taking observations in 1977, taking over from Roy Tankersly who established the station in 1961.

### **10 Year Service Award** - Mr. Billy Thomas, *Bamberg, SC*

Mr. Thomas began taking observations in 2008, the latest in volunteer observers that have kept Bamberg active since its establishment in 1951.

### **10 Year Service Award** - WKDK Radio, *Newberry, SC*

Jimmie Coggins, Carole Murray and Powell Way of WKDK Radio re-established a COOP Station in Newberry back in 2008. Performing an essential community service, WKDK Radio restarted weather records for the Town of Newberry after a long break. The first in a long line of COOP stations started records for Newberry back in 1897, staying relatively active until 1982.



Darwin Morris (right) accepts the 40-year Length of Service Award.



Billy Thomas (right) accepts the 10-year Length of Service Award.



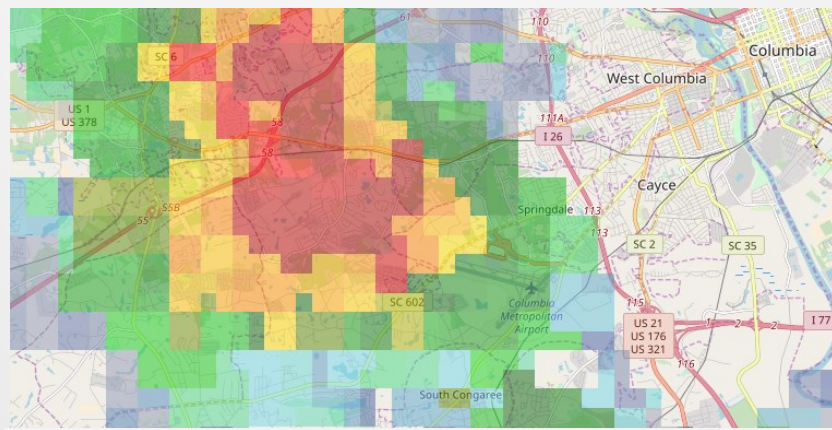
Jimmie Coggins (right) accepts the 10-year Length of Service Award on behalf of WKDK Radio Staff.

# Air Force One Delays Landing During Severe Weather at CAE

by Whitney Smith - Meteorologist

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atching radar and issuing warnings during a widespread severe weather outbreak can bring stress to even the most seasoned National Weather Service forecaster. Add in the fact that Air Force One carrying the President of the United States is scheduled to land during the outbreak, and the pressure to provide the most timely and accurate warning services is really on. Fortunately, forecasters train



Radar image from 25 June 2018 at 6:40 PM showing thunderstorms near the Columbia Metro Airport.

throughout the year to prepare for working various types of intense weather scenarios.

President Trump's rally in support of South Carolina Governor Henry McMaster's election bid in the GOP primary runoff took place in Cayce, SC on June 25th, 2018. Portions of the Carolinas were under the Storm Prediction Center's slight risk for severe weather that day with large hail and damaging winds as the

primary threats. The temperature peaked at 99 degrees at the Columbia Metropolitan Airport (CAE) during the afternoon contributing to the strong instability in place across the area. Convection began to fire across the Midlands by midday with NWS Columbia's first severe thunderstorm warning going out just before 3 PM. By 6 PM, 8 severe thunderstorm warnings had been issued by the Columbia office with a line of storms extending through the western Carolinas still poised to move through the forecast area later that evening. Air Force One was scheduled to land at CAE around 6:40 PM, but storms producing wind gusts up to 35 knots approached the airport around the same time. Two airport weather warnings (AWW) for CAE were issued which resulted in Air Force One having to circle CAE for one hour before it could safely land.

NWS Columbia ended up verifying 22 out of the 23 severe thunderstorm warnings that were issued that day and 2 out of the 3 airport weather warnings. Overall, it was a successful severe weather day for the office and shows how performing well under pressure is part of what forecasters are prepared to do on a daily basis.



Donald J. Trump  
@realDonaldTrump

Follow

Just landed in South Carolina - will be at the McMaster rally shortly! #MAGA

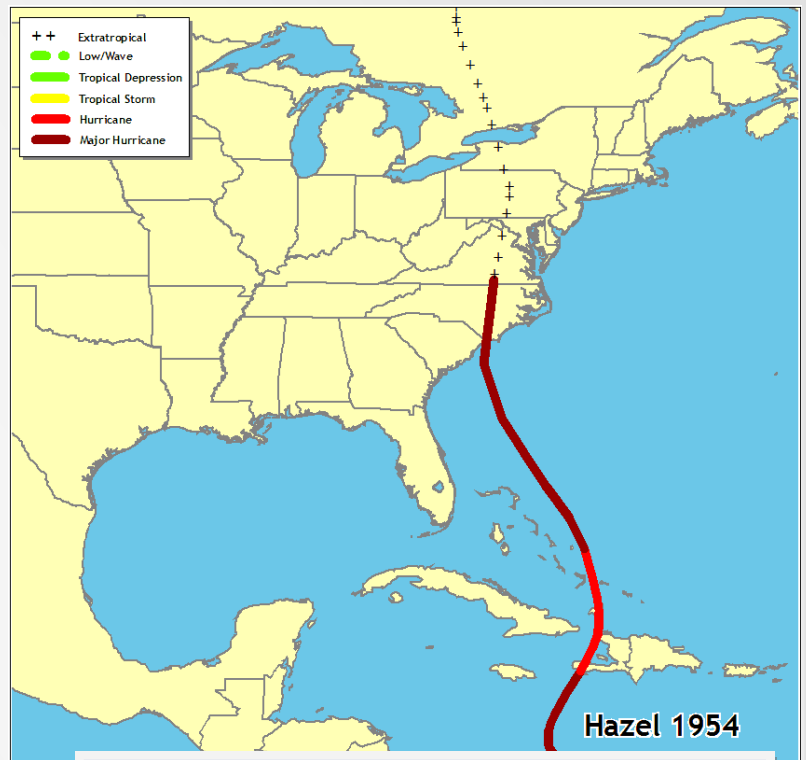
7:44 PM - 25 Jun 2018

# Hurricane Hazel— October 1954

by Richard Okulski - Meteorologist in Charge

**D**o you think that the South Carolina coast is safe from major hurricanes in below normal forecast seasons? The story of Hurricane Hazel (1954) should ensure citizens of The Palmetto State keep an eye to the sea throughout this fall.

Sea surface temperatures are below normal this year across what meteorologists define as “The Main Development Region” from the Cape Verde in the tropical Atlantic Ocean into the Caribbean Sea. Below normal sea surface temperatures make it tougher for hurricanes to form. Hurricane Hazel formed near the Windward Islands on October 5, 1954.



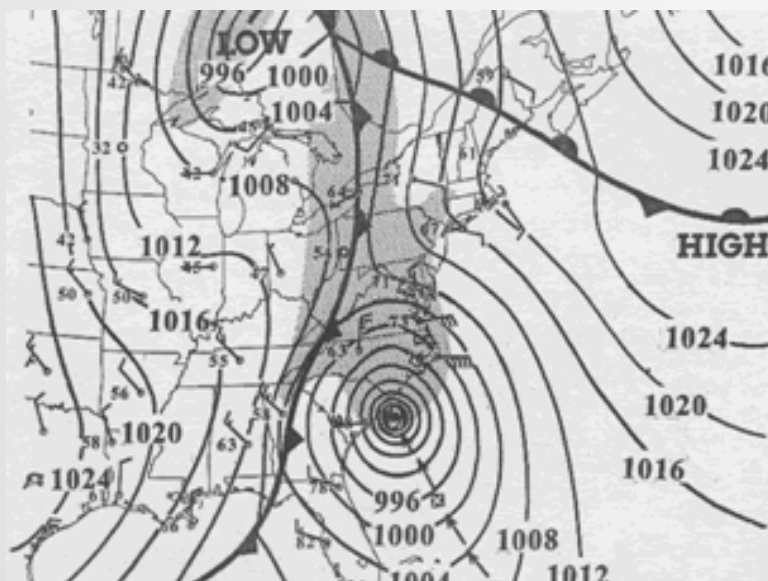
Map plotting the track and intensity of Hurricane Hazel in 1954.

“Hazel” moved through the eastern Caribbean Sea before turning sharply north over Haiti.

The storm then passed through the eastern Bahamas before making landfall near Myrtle Beach. This hurricane made landfall as a Category 4 with estimated wind speeds between 125 and 150 miles per hour.

Myrtle Beach reported a wind gust of 106 miles per hour. This storm also hit with the highest lunar tide of the year which resulted in a 12 to 18 foot storm surge between Myrtle Beach and Cape Fear, North Carolina.

“Hazel” killed 19 people and injured hundreds of others in North Carolina. The storm also destroyed 15,000 homes and damaged another 39,000. Hopefully a late season storm of this magnitude does not approach the South Carolina coastline anytime in the near future!



Weather Map of 1954 Hurricane Hazel at landfall created by Paul Kocin (NWS WPC).



# Winter Safety Tips

by Rachel Cobb - Meteorologist

Winter can bring freezing temperatures, snow, sleet, and freezing rain. Here are some tips on how to stay safe despite the elements this winter:

- ⇒ **Freezing temperatures (below 32°F) can affect crops and residential plants early in the season. Frost can also develop on clear, calm nights when temperatures range 33°F to 36°F, which can also damage plants. Know your plants' tolerance levels and take measures to protect them on cold nights.**
- ⇒ **Although extreme cold doesn't happen often in the Southeastern U.S., know how to avoid frostbite and hypothermia, and prepare for the worst before cold weather arrives.**
  - Avoid being outside during the coldest part of the day, typically early morning.
  - Dress for the outdoors even if you don't think you'll be out much.
  - Make sure your vehicle always has at least half a tank of gas so you can stay warm if you become stranded.
  - Update your winter car survival kit.
  - Protect pets and livestock by making sure they have plenty of food and water, and access to shelter.
  - Take precautions to ensure water pipes do not freeze.
- ⇒ **Snow, sleet, and freezing rain can make driving very hazardous. If possible, do not travel until roads have been cleared or treated. If you must go out, Slow Down! Even if roads just look wet they could still be slick.**



⇒ **Always stay up-to-date on the latest NWS forecasts by visiting <http://www.weather.gov/>, and know the difference between Winter Storm Advisories, Watches, and Warnings:**

- Advisories: Be Aware
- Watches: Be Prepared
- Warnings: Take Action!



Source: [National Weather Service Safety Homepage](http://www.weather.gov/safety)

# NWS Columbia Issues Tropical Products for the First Time

by Whitney Smith - Meteorologist

Forecasters from NWS Columbia sent a tropical storm warning for the very first time in the history of the office as Hurricane Florence approached the Carolina coast on September 12th. It was not that tropical storm conditions had never been met in our area of responsibility before, but this year our office expanded its product database to include tropical products. Previously, we could only issue wind advisories and high wind warnings for tropical events, which created inconsistent warnings from county to county and potentially led to message confusion when tropical storm or hurricane conditions were expected inland.

Hurricane threat and impact (HTI) graphics were also issued by NWS Columbia for the first time during Hurricane Florence to complement the watch and warning text products. They highlight the wind, flooding rain, and tornado threats allowing a coordinated graphic to be generated from across NWS forecast office boundaries for state and regional partners. These graphics can be found on our webpage at <https://www.weather.gov/cae/tropical> any-time tropical storm or hurricane watches and warnings have been issued.

NWS Columbia is one of four offices in eastern region that began issuing tropical storm and hurricane specific products in 2018. Others include: Greenville-Spartanburg, SC, Raleigh, NC, and Blacksburg, VA.

**NWS Columbia Tropical Page**  
 Columbia, SC  
 Weather Forecast Office

Current Hazards   Current Conditions   Radar   Forecasts   Rivers and Lakes   Climate and Past Weather   Local Programs

Outlook   Active Storms   **Threats and Impacts**   Local Products   Satellite   Radar   Social Media   Preparedness   Links

Hurricane Threats and Impacts Graphics FAQ

Map of Coastal Threats and Potential Impacts - What's This?   Latest Forecast - What's This?

Wind Threat   Storm Surge Threat   Flooding Rain Threat   Tornado Threat

For: Bulloch County  
 This product is not currently available for this location. Check their latest forecast

Threat Level - Potential for wind 39 to 57 mph  
 Potential Impacts Include:  
 \*Damage to porches, awnings, carports, sheds, and unanchored mobile homes. Unsecured lightweight objects

[Download KML]   [Download Image]

**Wind Threat**  
 Potential for wind greater than 110 mph  
 Potential for wind 74 to 110 mph  
 Potential for wind 58 to 73 mph  
 Potential for wind 39 to 57 mph

Example of hurricane threat and impact graphics on NWS Columbia's webpage during Hurricane Florence.



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[www.weather.gov/cae](http://www.weather.gov/cae)