



FAMOUSLY HOT

# FORECASTS



## Fall/Winter 2019

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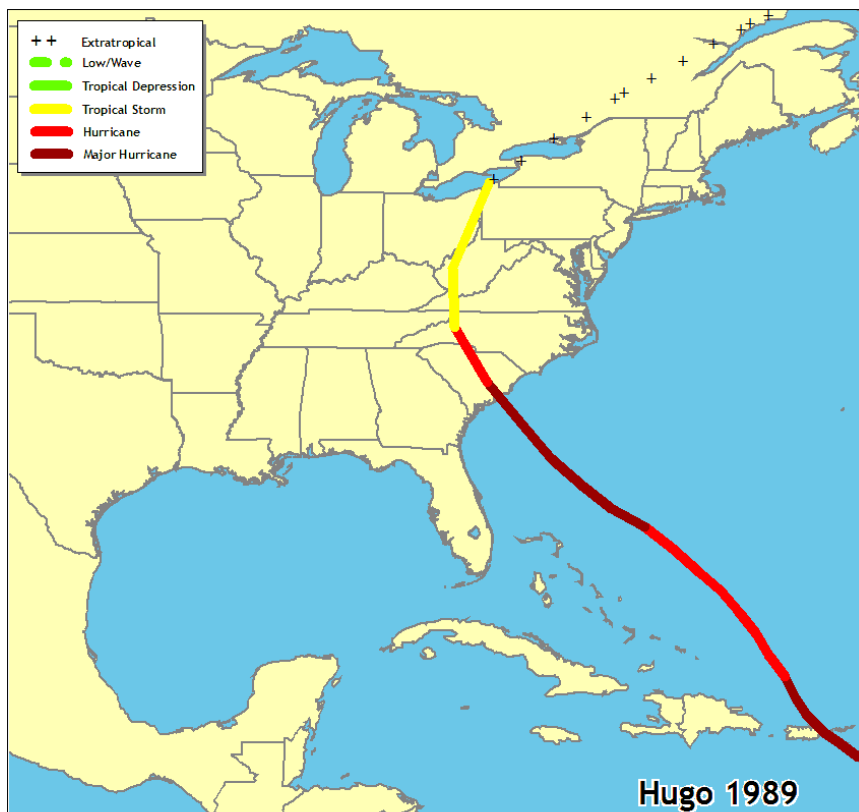
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## A Hurricane Hugo Professional Memory

by Richard Okulski - Meteorologist in Charge

NWS Columbia Meteorologist-In-Charge, Rich Okulski started his professional career during the summer of 1989 working for a private sector weather company called Compu-Weather in Flushing, New York. Rich's responsibilities included weather forecasts for clients from the Mississippi River to the East Coast. He also created taped forecasts for radio stations and conducted live interviews for big events. One of the radio stations was in Charlotte, North Carolina.

Hurricane Hugo made landfall just north of Charleston around midnight on September 22, 1989 as a Category 4 tropical cyclone with sustained winds of 140 mph. The Charlotte radio station asked Rich to do a live radio interview that night to discuss the forecast impacts to "The Queen City." He surprised the disc jockey by saying that Charlotte could expect minimal hurricane force sustained winds (75 mph) around sunrise. The disc jockey asked Rich if he was aware that the city was 200 miles inland. Rich received his Army officer commission at Fort Bragg, NC in 1988 and was familiar with the area. He told the disc jockey that Hurricane Hugo would weaken as it moved inland, but would retain hurricane status by daybreak. The forecast verified with widespread damage in the city.



National Hurricane Center map of 1989 Hurricane Hugo's track

# Operation Compassionate Care

by Rachel Cobb - Meteorologist

Operation Compassionate Care was a full scale exercise conducted by the U.S. Army with support from multiple federal, state, and local agencies and non-profit organizations. The National Weather Service provided Integrated Decision Support Services (IDSS) weather briefings between April 29 and May 7, 2019. The Columbia NWS office provided the briefings from April 29 through May 3 and then passed operations to NWS Greenville-Spartanburg for the remainder of the exercise.



NWS Columbia Forecasters, Chris Rohrbach and Rachel Cobb

In September 2017, the Columbia Federal Coordination Center, operated by the US Army Medical Department Activity Fort Jackson and conducted under the auspices of the National Disaster Medical System (NDMS), received medical evacuees at Columbia Metropolitan Airport (CAE) from the U.S. Virgin Islands and Puerto Rico after they had been affected by Hurricane Maria. This year's exercise simulated this scenario, except that after the patients arrived at CAE, severe thunderstorms in Columbia would then prompt evacuation to the Greenville-Spartanburg International Airport (GSP).

Staff from the Columbia and Greenville-Spartanburg NWS offices attended planning meetings ahead of the event. NWS Columbia then sent daily PowerPoint briefing packages to the Army coordinators April 29 through May 1, highlighting the fictional scenario weather, as well as the actual weather forecast for May 2 through 7. Onsite operations and briefings began at CAE on May 2, attended by Warning Coordination Meteorologist, John Quagliariello and forecasters Rachel Cobb and Chris Rohrbach. The South Carolina Forestry Commission was in charge of Incident Command and were given a briefing during their afternoon planning meeting, along with a written forecast for inclusion in the May 3 Incident Action Plan. Science and Operations Officer, Frank Alsheimer and forecaster, Mike Proud attended the exercise on May 3, and provided briefings that focused on the real threat of thunderstorms over the next several days.



NWS Greenville-Spartanburg Forecaster, Sandy LaCorte briefing the Incident Command Team

As operations at CAE packed up and transitioned to GSP, NWS Greenville-Spartanburg provided daily PowerPoint briefing packages over the weekend of May 4 and 5, along with real-time phone calls as severe weather moved into the area. On May 6, forecaster Sandy LaCorte provided onsite IDSS, briefing operational staff the concerns for both heat and isolated thunderstorms. On the last day of the event, lead forecaster, Justin Lane, provided onsite support through the day, before the exercise came to an end in the early afternoon hours.

# NWS Columbia Hosts Student Intern and Hollings Scholar

by Whitney Smith, Meteorologist and Tony Petrolito, Lead Forecaster

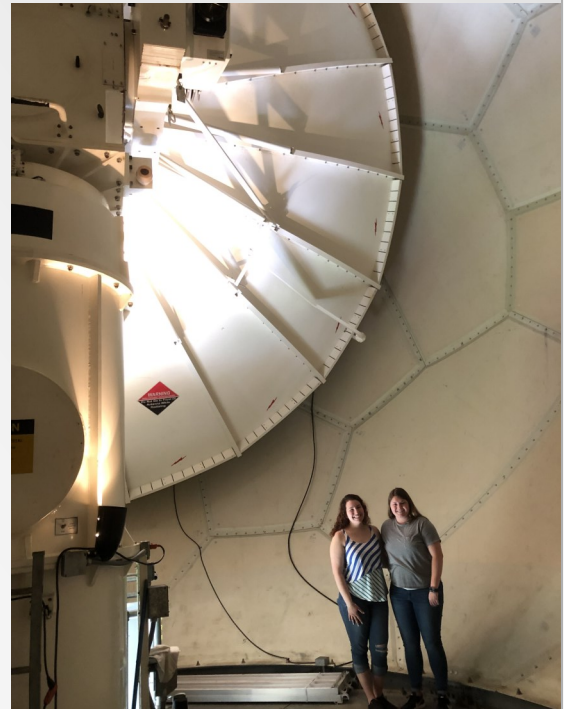
Each spring, NWS Columbia recruits college students pursuing degrees in meteorology and related science fields for its Student Internship Program. Interested students from across the country applied for the position this year and completed an interview before being selected. Alexis Highman, a junior in the meteorology program at Ohio State University was chosen. In addition to the student intern, our office also hosted a Hollings Scholar student over the summer: Jennifer D'Iorio, a senior at Penn State University. The goal of the student internship program is two-fold: to gain experience in operations and to complete a research project.



Jennifer repairs COOP equipment

During the internship, Alexis and Jennifer completed task sheets for different operational areas of focus,

which were chosen based on the forecast problem of the day and the expertise of the forecasters on shift. One operational accomplishment for both ladies was becoming proficient in issuing storm reports to verify severe thunderstorm and flash flood warnings. This process involved making/taking phone calls and scouring social media to identify locations that may have experienced severe weather or flooding. Once a credible report was found, they analyzed radar data to ensure consistency and to determine the time that the damage occurred. By the end of the summer, both ladies ranked their proficiency in issuing storm reports as a 5/5.



View from inside the KCAE radar

The internship also included professional development, core partner interactions, and multiple opportunities outside of the office. Alexis and Jennifer visited Cooperative Observer Program (COOP) sites to install and repair equipment. They also ventured inside the Doppler radar to gain a better understanding of how it works. The ladies also accompanied staff members on damage surveys and to outreach events. Both ladies suggested adding even more opportunities outside the office for student interns in the future. Next year, we hope to have our interns observe a weather balloon launch from the Charleston, SC forecast office and take a tour of the SC Emergency Operations Center.

## Hollings and Intern– Continued



Alexis and Jennifer display their NWS logo t-shirts that were gifted to them on their last day at the office

In addition to operational experience, both ladies were paired with NWS Columbia forecasters for research projects. Alexis' research focused on creating a South Carolina Apparent Temperature Climatology. She collected data for sites across South Carolina and applied calculations and statistics to the data. She displayed her findings in charts and ArcGIS maps, which will eventually be used by the SC emergency management community.

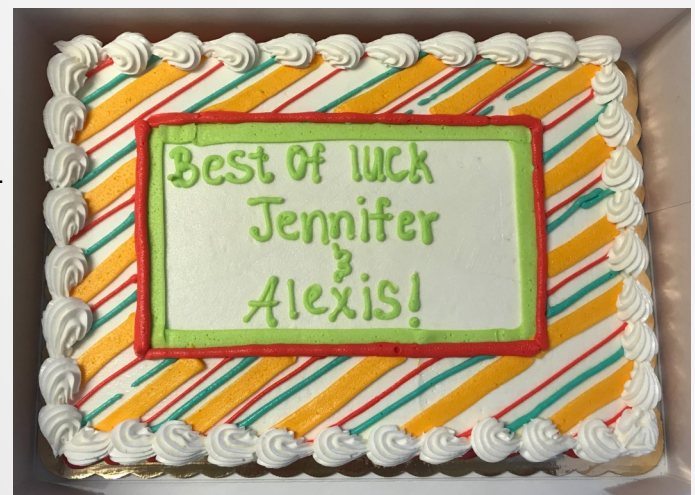
Jennifer contributed to a local statistical study of severe hail

across the Carolinas. Her focus was to compare two different types of radar products available to the NWS Columbia forecasters:

1. Multi-Radar/Multi-Sensor System (MRMS) Maximum Expected Size of Hail (MESH).
2. GR2Analyst Hail Algorithm Maximum Expected Hail Size (MEHS) derived from the National Weather Service Radar at Columbia Metro Airport (WSR-88D).

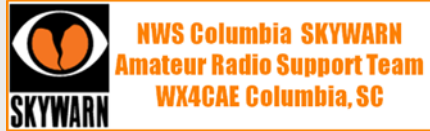
The purpose of the analysis was to determine which product was more successful in accurately predicting severe hail. Using a data set of hail producing storms across North Carolina and South Carolina, statistical skills scores were computed for both algorithms and various plots were produced. Jennifer presented the results at NOAA Headquarters in Silver Spring, Md. Based on the research, forecasters at the NWS office in Columbia will now be able to apply the biases of the algorithms in real time to better estimate hail size associated with thunderstorms. The research will prove useful to other severe weather forecasters particularly in the southeastern U.S and may also lead to improved severe weather warning lead times.

One of the ladies summed up her experience this summer by saying, "I LOVED every minute of my time at CAE and will never forget my experience! I couldn't be more thankful and have gained an even stronger understanding of operational meteorology!" We hope to have another great batch of volunteers next summer as passionate about the science and as eager to learn as Alexis and Jennifer were.

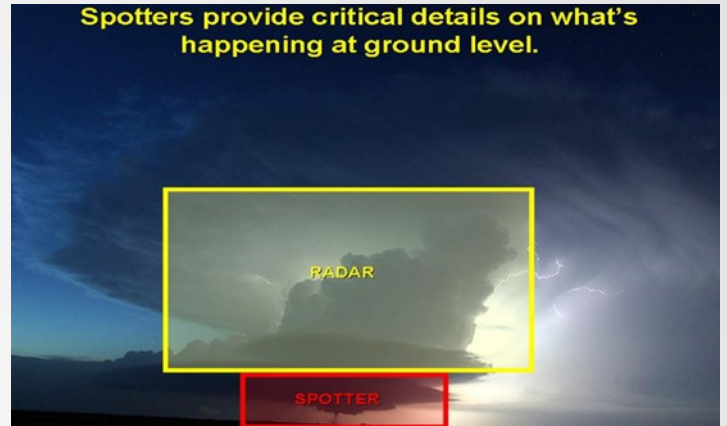


# Skywarn Volunteers Monitor the Airwaves During Dorian

by Doug Anderson - Hydro-Meteorological Technician

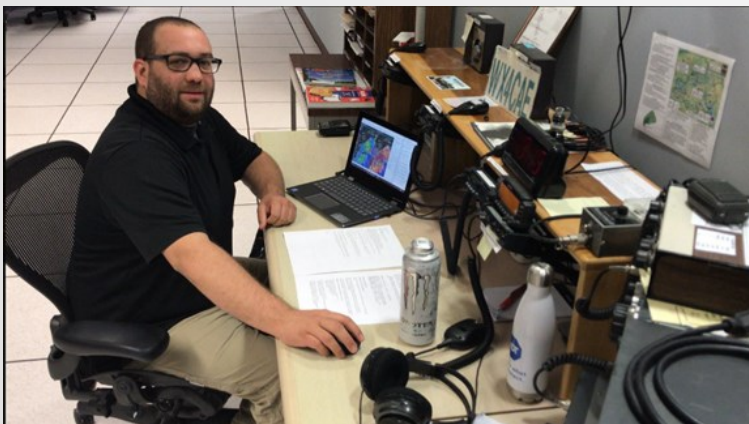


We were fortunate to have an excellent team of SKYWARN Amateur Radio Volunteers manning our radio station WX4CAE while Hurricane Dorian threatened the area. What is SKYWARN? We're glad you asked! SKYWARN is a volunteer program started in 1970 in which trained volunteers serve as our "eyes" during significant weather events. Many people think that radar tells us everything we need to know while evaluating whether storms are severe or not. In fact, radar does not see what's happening on the ground and doesn't see what's happening in the lower levels of storms when they are not close to the radar.



SKYWARN Spotter reports often give us the "ground truth" on what's happening with storms, providing an incredible service in helping us with accurate and timely weather warnings. Many spotters are also amateur (ham) radio operators, and relay reports from the field into our office using their radio equipment. During large-scale events such as hurricanes, volunteers will report to our office and collect incoming severe weather reports via ham radio. Many thanks to the following volunteers, who activated our amateur radio station WX4CAE and did an outstanding job during Hurricane Dorian's closest approach: Nat Smith (N2NAT), Hardy Plemmons (W4ABI), Ryan Headley (W4EAE), Bill McRoberts (N4UQY), Micheal Grimsley (KG4KOW), Aaron Buck (KE0HKS) and Bryan LaGrant (KN4FXL).

Are you interested in learning more about SKYWARN and becoming a certified SKYWARN Storm Spotter? You can attend a training session locally or take the class online. For more information, contact [John Quagliariello](#) or visit [NWS Columbia Skywarn Program](#).



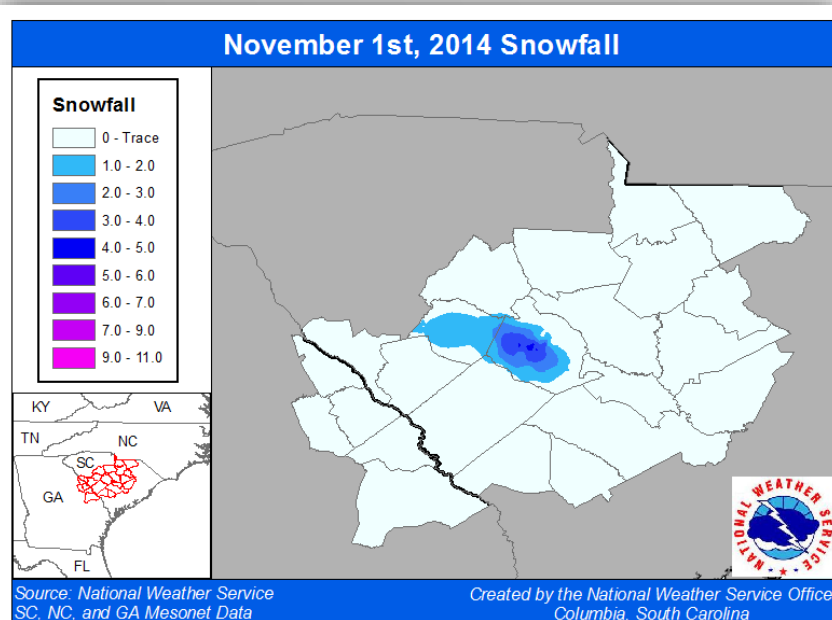
# 5 Year Anniversary of Columbia's Earliest Snowfall

by Chris Rohrbach - Meteorologist

Five years ago from this coming November, the greater Columbia area experienced its earliest snowfall on record. On November 1st 2014, up to 4.5 inches of snow fell across Lexington and Saluda Counties. The Columbia Metro Airport recorded a trace of snow which set the record for the earliest trace or more of snowfall at the climate site. Areas in central and western Lexington County received the most snowfall with Gilbert and Red Bank reporting amounts from 4.0 to 4.5 inches. A full list of reports is available [here](#). Since 1887, Columbia has only recorded two days of measurable snowfall in November. On November 28th 1912 the Columbia climate site measured one inch of snowfall and on November 19th 1901, 3.3 inches of snow fell. Interestingly, the week leading up to the 2014 event was particularly warm. The last week of October 2014 had several days with near-record highs and temperatures reaching into the mid to upper 80s. October 26th 2014 still holds the record warmest temperature of 87°F for that date.



Snowmen amongst the fall foliage in Lexington, SC on November 1st, 2014

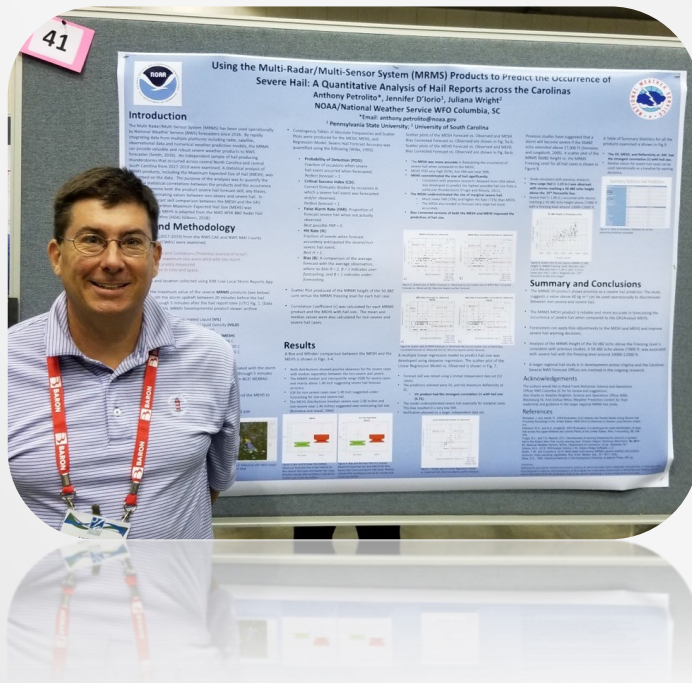


Snow falls on the morning of November 1st in Gilbert, SC

# NWS Columbia Research Presented at National Weather Association Conference

by Whitney Smith - Meteorologist

## Using the Multi-Radar Multi-Sensor System (MRMS) to Predict the Occurrence of Severe Hail: A Quantitative Analysis of Hail Reports Across the Carolinas



We are extremely proud of NWS Columbia lead forecaster, Tony Petrolito for his poster presentation at the National Weather Association Annual Conference in Huntsville, Alabama in September. Tony's research focused on comparing radar hail size algorithms. Forecasters will be able to apply the algorithm biases that he found to improve severe hail warning decisions. His work is part of a larger regional hail study in development across Virginia and the Carolinas.

## New Tropical Products for the Inland Carolinas during the 2018 Hurricane Season

Congratulations to NWS Columbia Science and Operations Officer (SOO), Frank Alsheimer for giving oral and poster presentations at the NWS Annual Meeting. For the first time during the 2018 tropical season, NWS forecast offices in the interior Carolinas were able to issue tropical cyclone specific products for users, which were previously restricted to coastal offices. Frank explained how the new products helped during Hurricanes Florence and Michael in 2018. Great work, Frank!



# Partnering with Emergency Managers in Support of the Masters and Women's Amateur Golf Tournaments

by Whitney Smith - Meteorologist

The threat of thunderstorms around Augusta, Georgia on Sunday, April 14th prompted the decision to adjust grouping, tees, and tee times for the final round of the 83rd Masters Tournament. Forecasters at NWS Columbia began alerting emergency management officials to the potential for thunderstorms to affect the Augusta area nearly a week in advance. Daily weather briefings and monitoring Augusta National for hazardous weather are major components of the integrated decision support services (IDSS) that WFO Columbia provides in support of public safety during Masters Week. NWS Columbia forecasters also provided weather support to emergency managers for the first ever Women's Amateur tournament which took place the week preceding the Masters.



Forecasters gearing up for severe weather with a watch in effect and a practice round in progress at Augusta National on April 8th

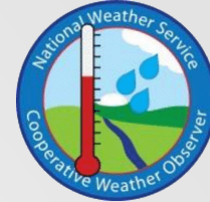
In addition to IDSS, NWS Columbia provides added support to its aviation customers during Masters Week as well. On a normal day, Augusta Bush Field Airport sees around 150 to 200 aircraft in its airspace, but during Masters Week that number skyrockets to 1100 to 1200 aircraft. Terminal aviation forecasts (TAFs) are amended on a 2-hour basis, rather than the typical 3, and the area forecast discussion (AFD) contains a separate aviation discussion just for the Augusta area airports.

With approximately 250,000 people visiting the Augusta area each year for the Masters, public safety is the utmost priority, and weather plays a critical role in keeping both the players and fans safe.



# COOP Corner

by Doug Anderson - Hydro-Meteorological Technician



## Cooperative Weather Stations Serve Our Nation

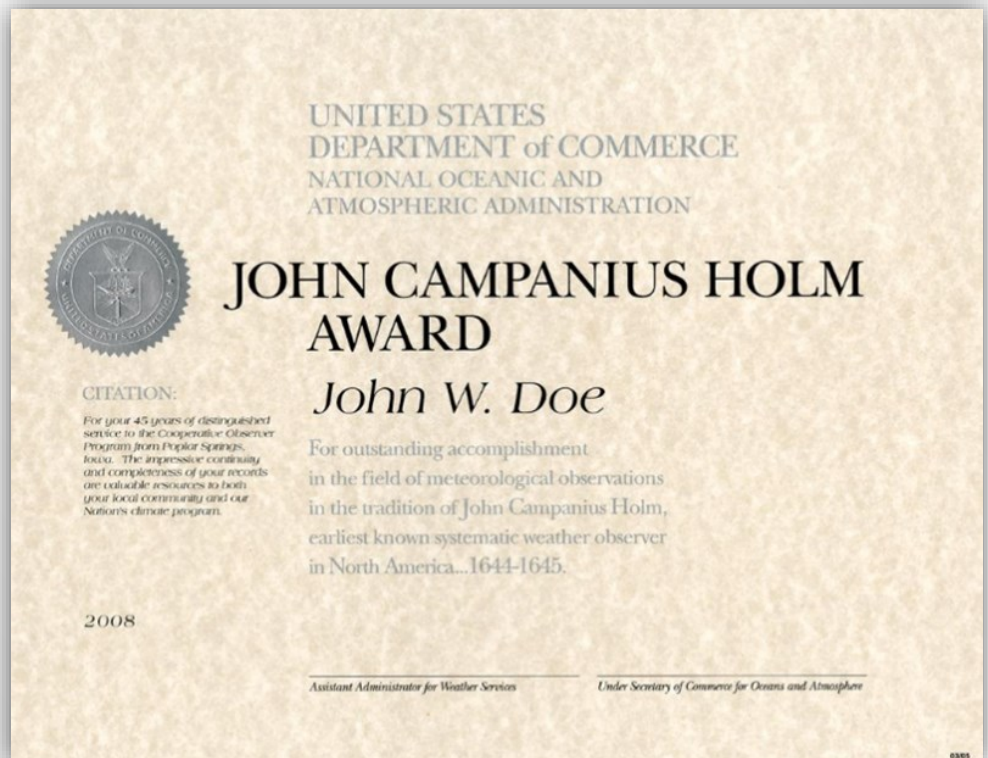
The Cooperative Weather Observing Program's roots can be traced back to 1797 when Thomas Jefferson envisioned a nationwide network of weather observers. The program itself was created in 1890 under the Organic Act passed by Congress. Its mission is two-fold:

1. To provide climatological records, usually consisting of daily high and low temperatures, snowfall and precipitation totals. This data is essential to defining U.S. Climate and measure long-term climate trends.
2. To supply observational meteorological data in near real-time to support forecast, warning and other public service programs (drought, agricultural, fire weather, etc.) programs of the NWS.

Cooperative stations (COOP) are locations at which volunteers 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 standards to ensure uniformity. About 10,000 volunteers around the country from all walks of life provide this valuable service. We are always looking for new observers to join the NWS CAE team and are willing to take observations over many years to come. Contact [Doug Anderson](#), for more information or visit the [NWS COOP web page](#).

## Two New Holm Award Winners

We are happy to report that two of our observers have been selected to receive the prestigious John Campanius Holm Award, which is the second highest NOAA can bestow. Darwin Morris of Appling, Georgia and Tom Jones of Chesterfield, SC will receive their awards soon, recognizing them for their outstanding public service in the provision of daily weather observations in support of the climate and weather programs of the National Weather Service. Mr. Morris began



# COOP Corner— Continued

observing in 1977, and Mr. Jones started recording weather observations for the program in 1989. No more than 25 Holm Awards are given by NOAA each year. The award is named after and is in the tradition of John Campanius Holm, a Lutheran minister who is the first person known to have taken systematic weather observations in the American Colonies (1644-1645). Congratulations to Darwin and Tom, and we look forward to presenting your well-earned awards! We can't thank you both enough for your faithful and outstanding service.

## Get ready to wish our current Sumter observer a Happy 90th birthday!

One of our stations is getting ready to celebrate a milestone. Since 1901, a Cooperative Weather Station has been sending in daily records from the City of Sumter. For 90 of the past 118 years the City of Sumter, specifically the Water Department has operated the weather station. As you can see, in October of 1929, the station was transferred from private citizens to what was then known as the "City of Sumter Water Works".

Although names of the focal points (observers acting to administer the station) have changed over the years, one thing has remained relatively constant: the daily measurements of temperature, rainfall and other weather elements from near the corner of Pine and Church Streets. In fact, the nearly continuous record of weather information from Sumter has earned it a place in one of the most select group of weather stations. This group is the U.S. Historical Climate Network (USHCN), which is a subset of only 1,218 stations across the country selected to analyze, detect and study long-term trends in climate. The data from the USHCN is also included in the Global Historical Climate Network. Visit the [Carbon Dioxide Information Analysis Center](#) to learn more.

Form No. 4029-Mis.

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**U. S. DEPARTMENT OF AGRICULTURE  
WEATHER BUREAU**

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**DESCRIPTION OF COOPERATIVE OBSERVER'S  
STATION AND INSTRUMENTS**

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Station, Sumter, S. C.

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Observer, Sumter Water Department

Form No. 4029-Mis.  
U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU

Description of Cooperative Observer's Station and Instruments

Station: Sumter; County: Sumter; State: S. C.  
 Latitude: 33° 56' North; Authority: U.S.G.S. Map, Index to  
 Longitude: 80° 19' West; Authority: Atlas Sheets  
 Elevation of ground above sea level: 159 Ft.; Authority: Bulletin No. 274, Dic-  
tionary of Altitudes,  
Gannett.

EQUIPMENT

Kind of thermometers in use: Standard Maximum and Minimum.  Belongs to  
 Kind of shelter in use: Standard C. R. Shelter.  City of Sumter Water  
 Kind of rain gage in use: Standard W. B. pattern.  Works.

Location of shelter [Describe position, whether over sod or cultivated ground, or upon a building, etc.; distance from nearest high objects; direction toward which door opens; height of floor above ground]:  
North of power plant, distant 54 feet from building 25 feet  
high; over sod; door opens north; bottom of shelter, 4.0 feet  
above ground.

Location of rain gage [On ground or building; distance from nearest high objects; height of top of gage above ground]:  
On ground, 15 feet west of shelter; top, 3.7 feet above  
ground or sod.

General description of station [Is country generally level, rolling, or mountainous; if forest or bodies of water in vicinity, give distance from shelter, approximately; if station is in town, give street and number of house; also give direction and distance to nearest post office]:  
Country generally level; Green Swamp about 1 mile west and  
Cowpen Swamp about 3 miles northeast; station in north edge of  
the city, about 1 mile from business district, at Water Works  
plant.  
 Date of establishment: October 16, 1929 (Re-establishment).  
 Time of observation [local]: About sunset.  
 Name of observer: Sumter Water Department.  
 Post-office address: Sumter, S. C.  
 Date: October 16, 1929.  
 (WB-1-16-29-2003 11)

# Weather Ready Nation Ambassadors

One of NOAA's missions is to save life and property by providing critical environmental intelligence, including weather forecasts and warnings, to our partners and the general public. NOAA wants everyone, from communities across the country, businesses, and the public at large to be ready, responsive, and resilient to extreme weather, water, and climate events. Weather-Ready Nation Ambassadors (WRN Ambassadors) are formally recognized by NOAA as organizations committed to collaborating with NOAA, sharing preparedness messaging in outreach to the public, and serving as examples themselves by implementing resilience best practices. [Apply to become an Ambassador here.](#)



## NWS Columbia would like to recognize all of our WRN Ambassadors:

- 28th Operational Weather Squadron Shaw AFB
- Aiken Co. Emergency Management Division
- Augusta-Richmond County EMA
- Bamberg County Emergency Services
- Barnwell County Emergency Management
- Buford Fire & Rescue
- Burke County EMA
- Carolinas Integrated Sciences & Assessments
- Challenger Learning Center of Richland One
- Chris Wolfe SC Weather
- City of Columbia Police Department
- City of Sumter
- Columbia County Emergency Management
- Columbia Metropolitan Airport
- CSRA Weather
- District Five of Lexington & Richland Counties
- Edgefield County EMA
- GA Dept. of Public Health - East Central District
- Gold Cross EMS
- Kershaw County Amateur Radio Club, Inc.
- Kershaw County Emergency Management
- Lady Starr Radio
- Lancaster County Emergency Management
- Lee County Emergency Management
- Livingston Insurance
- McCormick County Emergency Services
- McDuffie County Fire Rescue Service
- Michelin Tire North America - Lexington, SC
- @Midlands\_Wx
- Newberry County Emergency Services Alliance
- Orangeburg County Emergency Services
- Orangeburg County Fire District
- Palmetto Chapter of the AMS
- Pantagraph.online
- Pee Dee Ice & Fuel, Inc.
- Richland County Emergency Services
- Richland Library
- Robert Bryant & Son, Inc.
- SCANA
- Simply Flood LLC
- South Carolina Emergency Management Division
- South Carolina Farm Bureau Insurance
- South Carolina State Climatology Office
- The Times and Democrat
- University of SC Emergency Management
- USGS South Atlantic Water Science Center
- WAGT (Augusta, GA)
- Wilbur's Last Ride
- WFXG FOX 54 NEWS NOW (Augusta, GA)
- WJBF-TV (Augusta, GA)
- WLTX-TV (Columbia, SC)

National Weather Service  
Columbia Weather Forecast Office  
2909 Aviation Way West Columbia, SC 29170-2102



(803) 822-8135

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

