



FAMOUSLY HOT

# FORECASTS



## Spring/Summer 2018

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## Weatherfest 2018 Blows into Columbia

by Whitney Smith - Meteorologist

South Carolina Severe Weather Awareness Week culminated on March 10th with Weatherfest at EdVenture Children's Museum. With an attendance of over 1200, the event was an overwhelming success in its second year. Weatherfest was created by the National Weather Service in Columbia to bring the public and local meteorologists and emergency officials together for the region's premiere severe weather and preparedness event.

One of the main purposes of the event was to get people ready for severe weather season. Visitors had the

opportunity to learn how a variety of organizations increase community severe weather awareness, preparedness, and response. NWS staff members, local media and TV meteorologists, emergency officials and several public service organizations provided demonstrations and educational materials for adults and children. Children had the chance to meet local television meteorologists and try their hand at giving a weather broadcast in front of a green screen. Kids also created different types of clouds using cotton balls, took measurements of rain and snow, chatted with a hurricane chaser, and much, much more!

A special thanks to all of our partners that participated in Weatherfest: WIS, WLTX, WACH, HurricaneTrack.com, Red Cross, CoCoRaHS, Richland Co. Emergency Services, Midlands Weather, SC Forestry Commission, SC Emergency Management Division, Shaw AFB, Palmetto American Meteorological Society, and NWS Greenville-Spartanburg.



Isaac Jones poses with a 'When Thunder Roars, Go Indoors' lightning bolt hat

# Cooperative Weather Observing Program

by Doug Anderson - Hydro- Meteorological Technician

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 twofold:

1. To provide climatological records, usually consisting of daily high and low temperatures, snowfall and precipitation totals.
2. To supply observational meteorological data in near real-time to support forecast, warning and other public service programs (drought, agricultural, fire weather, etc.) of the National Weather Service.

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 standards to ensure uniformity. About 10,000 volunteers around the country from all walks of life provide this valuable service.

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

## 55 Year Benjamin Franklin Award - Mrs. Margaret Sease-Jayroe, Little Mountain, SC

Mrs. Margaret Sease-Jayroe was presented with the Benjamin Franklin Award and a commendation from SC Governor Henry McMaster for 55 years of service as an NWS Observer. She is the third observer to carry on the incredible Sease Family legacy of volunteer service. The Little Mountain station was established back in October 1893 by her grandfather, Dr. John Marion Sease. Dr. Sease passed the torch to Elberta Sease in

1923. Elberta served until 1962, when Margaret Jayroe, then a science teacher, agreed to take over. With a virtually unbroken observational record stretching back 124 years, her weather station is one of the select few included in the U.S. Historical Climate Network, which quantifies national-and-regional-scale climate changes.



Mrs. Margaret Sease-Jayroe accepts her prestigious Benjamin Franklin Award for 55 Years of service.

## COOP Program – Continued

### 30 Year Service Award - Mr. Edwin Riley, Saluda Public Works, Saluda, SC

A COOP station has been active in the city of Saluda since 1906, with the Saluda Public Works Department maintaining the station since 1969.

### 30 Year Service Award - Dr. Greg Carbone, University of SC, Columbia, SC

The staff of the USC Geography Department has been pivotal in keeping a downtown Columbia COOP weather station operational for over 63 years. Dr. Carbone has been involved as the COOP Focal Point for over 30 years.

### 25 Year Honored Institution Award - Batesburg-Leesville Water Treatment Plant, Batesburg, SC

The staff of the Batesburg-Leesville Water Treatment Plant recently accepted an Honored Institution Award for 25 years of service. Several of our COOP stations are located at hydroelectric facilities, water plants and county emergency management facilities.

### 15 Year Service Award - Mr. Jim Jenkins, WAGS Radio, Bishopville, SC

For the last 15 years, Jim Jenkins and WAGS Radio have served their community and our COOP Program with accurate weather and rainfall observations. Unfortunately, Jim closed the station in March and has been greatly missed.



James Jenkins of WAGS Radio in Bishopville, SC accepts his 15-year Length of Service Award.

**NWS Columbia has 36 COOP stations across 23 counties in the Midlands and CSRA, and we are always looking for more volunteers. Becoming a COOP observer requires the following:**

1. Commitment to long-term recordkeeping: minimum of 10 years at one location
2. Ability to learn and perform daily duties
3. Willingness to allow NWS to place measuring instruments on your property
4. Willingness to allow at least one visit per year from a NWS representative.
5. Ownership of a personal computer with Internet access

Unfortunately, not all who apply can be selected. If you are selected to become a COOP observer, we will provide you with the training and support needed. Volunteers are not paid but have the satisfaction of contributing in a valuable way. If you are interested in becoming a COOP observer, please send an email to [Douglas.Anderson@noaa.gov](mailto:Douglas.Anderson@noaa.gov).

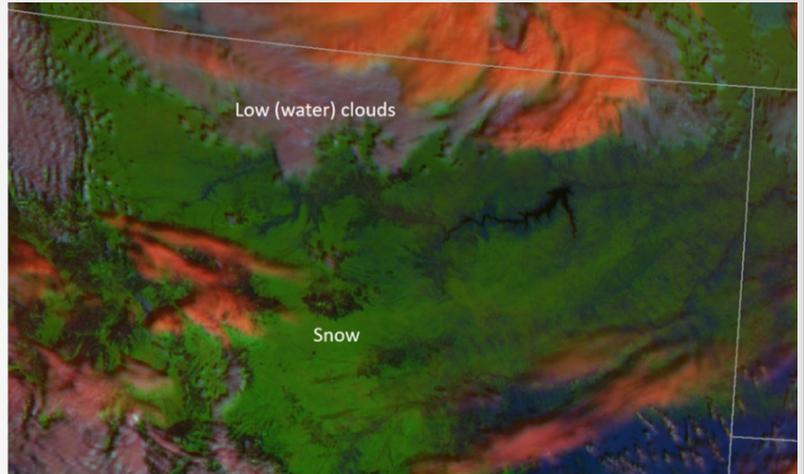
# Operational Benefits of GOES-16 Imagery

by Hunter Coleman - Meteorologist

In the Fall of 2016, the GOES-16 satellite was launched and became operational last December as it was moved into position to cover the eastern US. This next generation satellite will revolutionize weather forecasting, by providing forecasters with data that is four times better resolution, five times faster scanning, and will have three times as many spectral bands. These enhancements may provide improved hurricane tracking forecasts, earlier detection of lightning, improved flash flood recognition, and faster recognition and warnings of severe weather.

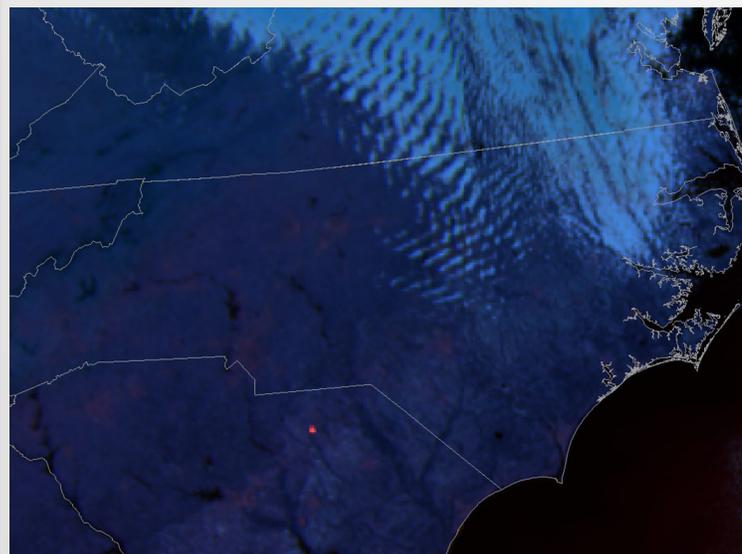
One of the main benefits of the additional spectral bands is the ability to create RGB composite images. This imagery combines 3 different bands to highlight certain meteorological or atmospheric features that help meteorologists more quickly identify important features which can help to improve warning and forecast operations.

In example 1 above, this Day Cloud Distinction product provides huge advantages over the traditional visible imagery. The combination of multiple bands, each of which highlight specific features, provides a colorful image allowing forecasters to easily see the



Ex. 1 GOES-16 Day Cloud Distinction RGB product. This allows forecasters to distinguish between cloud types.

difference between low level water based clouds, higher ice based clouds, and surface features like snow on the ground. The traditional visible image is a gray-scale image and difficult to identify different cloud layers and snow. In example 2 on the left, the Fire Temperature RGB product is a great tool to identify new ignitions of wildfires or observing prescribed burns from our partners.



Ex. 2 GOES-16 Fire Temperature RGB product highlighting active fires (red), prescribed or wild.

This new era of satellite imagery provide forecasters with an important tool, enhance the mission to save lives and property.

# Forecasters Observe a Prescribed Burn

by Whitney Smith - Meteorologist

Prescribed burn season is in full swing across South Carolina during late winter and spring which means forecasters at the National Weather Service are busy during the early morning hours this time of year preparing fire weather spot forecasts. Spot forecasts are highly detailed weather forecasts for a specific location with regards to multiple weather elements and are an imperative part of a safe and successful prescribed burn. On March 9th, I was one of two forecasters from the Columbia NWS office that observed a controlled burn at the Carolina Sandhills National Wildlife Refuge in



Forecasters pose with the helicopter pilot just before takeoff

McBee, South Carolina. The purpose was to better understand how prescribed burns are performed, examine the needs of our partners, and to find ways to refine fire weather forecasting techniques. Prescribed burns are performed at Carolina Sandhills to reduce combustible fuels, preserve wildlife habitat including that of the Red-cockaded woodpecker, and to promote the longleaf pine habitat.

Our work day began around 6:30 AM when we set off from the NWS office in West Columbia to make the drive up to McBee. We arrived just in time for the morning meeting with the burn boss and

his team to discuss burn operations for the day which included reading the NWS spot forecast. We also had a chance to talk to the burn boss one on one regarding weather forecasting concerns in general.

The Carolina Sandhills manager was our guide for the day and drove us around the refuge to observe burn operations. The first stop was the helicopter launch pad where the pilot and crew member were gearing up for takeoff. Helicopters are used to drop incendiary material over the burn area as part of the ignition process. Potassium permanganate powder is housed inside balls which closely resemble ping pong balls and is injected with glycol which causes a chemical reaction and an ignition about 30 seconds after reaching the ground.



Fire crew laying black lines along the fire perimeter

## Prescribed Burn – Continued

The next stop was the perimeter of the fire where the fire crew was busy laying black lines with handheld torches which help control the burn. Once the fire was in progress, we made our way to a couple of vantage points to get a better view of the smoke plume and mixing height.

Overall, the trip to Carolina Sandhills National Wildlife Refuge provided a hands-on learning experience that gave me a new perspective on fire weather forecasting. Upon returning to the office, I have applied that experience to my spot forecasts and passed along some of the takeaways to my fellow NWS office teammates.



View of the smoke plume from a distance

## South Carolina Brings the CoCoRaHS Cup to the Palmetto State

by Leonard Vaughan - Hydrologist

During the month of March, to coincide with college basketball's March Madness, the CoCoRaHS (Community Collaborative Rain, Hail and Snow Network), has the nationwide March Madness event. The winner of this contest gets to keep the CoCoRaHS Cup for the year. This is a friendly competition between all 50 states to see which state can sign up the most new CoCoRaHS observers. The CoCoRaHS Program is unique, non-profit, community based network of volunteer observers to measure rain, hail and snow. It is a great way to fill in the gaps of traditional observations all across the country. Because as we all know, the rain does not fall the same on all.



South Carolina State Climatologist, Hope Mizzell and NWS Hydrologist, Leonard Vaughan showing off the CoCoRaHS Cup trophy

## CoCoRaHS—Continued

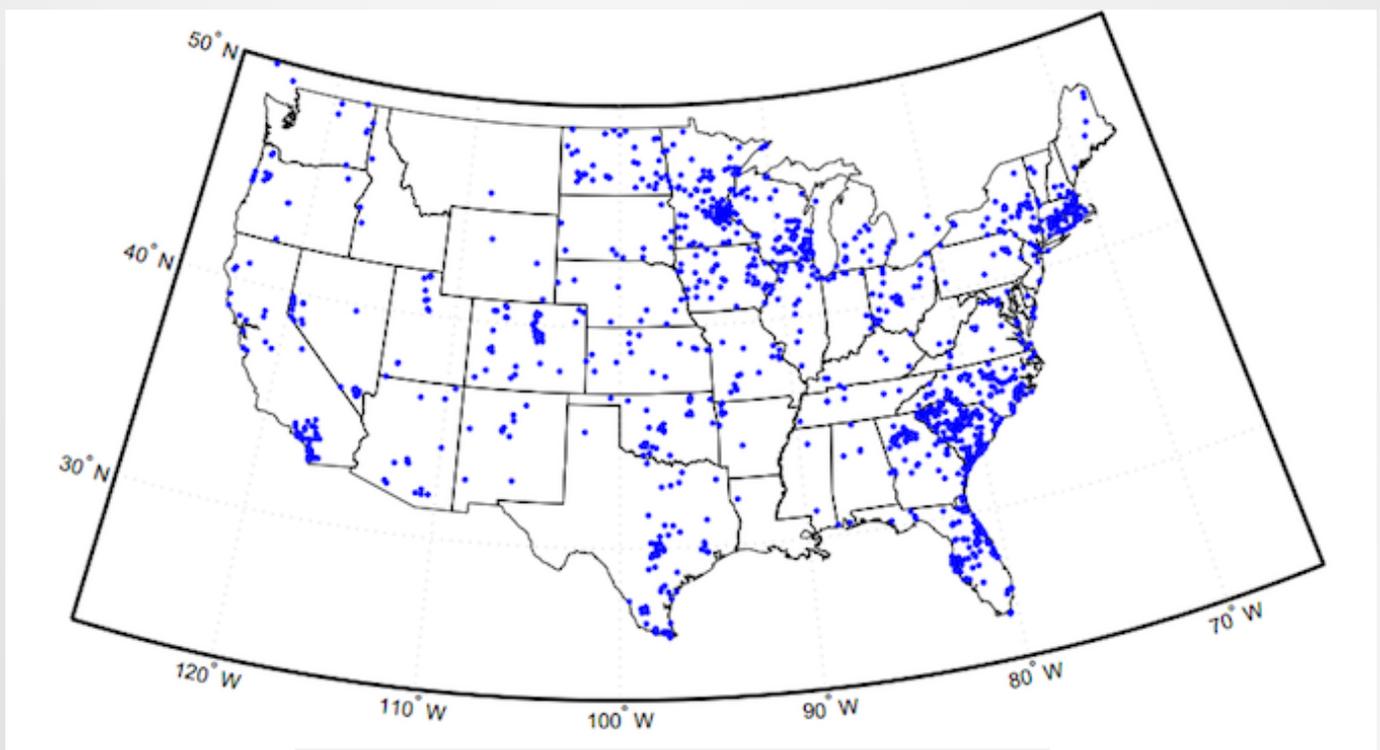
South Carolina won this year's March Madness competition. It was a collaborative effort with many groups coming together to help spread the word about the CoCoRaHS program. These groups included; the South Carolina State Climate Office; the local NWS offices located in Greer, Charleston and Wilmington; the Carolinas Integrated Sciences and Assessments group at USC; SC Department of Natural Resources and local media outlets.

### FINAL STANDINGS

#### Traditional Count Top Five

178	<b>South Carolina</b>
120	Florida
98	Minnesota
81	North Carolina
66	Texas, Wisconsin

At the end of the competition, South Carolina had signed up 178 new observers. Across the US, 1,302 new observers signed up to participate. This is the largest group of new observers since the contest began in 2006. South Carolina won the March Madness contest back in 2008, the first year the SC participated in CoCoRaHS.



2018 March Madness New CoCoRaHS Observers

***Want to become a volunteer?*** You can become a volunteer by signing up online at [www.cocorahs.org](http://www.cocorahs.org). Training materials are available, as well as links to purchase the official 4" rain gauges. You may also inquire about upcoming local training sessions in your area by contacting your local coordinator, Leonard Vaughan, at [Leonard.Vaughan@noaa.gov](mailto:Leonard.Vaughan@noaa.gov).

# Don't get Beat by the Heat

by Rachel Cobb - Meteorologist

**It's starting to heat up across the Midlands. Whether you are playing or working outdoors this summer, here are some tips to keep you safe from the heat.**

⇒ **Most people can safely work and play outdoors when the heat index is less than 91°F.**

- Make sure plenty of drinking water is available and avoid alcohol.
- Wear sunscreen, especially when exposed to direct sunlight.

⇒ **Moderate precautions should be taken when heat index is 91 to 103°F.**

- Drink small amounts of cool water often, before you become thirsty (4 cups/hour).
- Rest frequently in cool, shaded areas.
- Recognize signs and symptoms of heat-related illnesses.

- Acclimatize by gradually increasing activity to build up a tolerance to the heat over time.

⇒ **There is a High Risk of heat illness when heat index is greater than 103°F.**

- Increase rest periods in cool, shaded areas.
- Use personal cooling measures such as water-dampened clothing, cold packs, or cool mist stations.

⇒ **Extreme Risk when heat index greater than 115°F.**

- Consider rescheduling non-essential outdoor work for days with reduced heat index.
- Essential outdoor work should be moved to the coolest part of the shift, i.e. early morning, evenings, or nights.

HEAT EXHAUSTION	OR	HEAT STROKE
Faint or dizzy		Throbbing headache
Excessive sweating		No sweating
Cool, pale, clammy skin		Body temperature above 103° Red, hot, dry skin
Nausea or vomiting		Nausea or vomiting
Rapid, weak pulse		Rapid, strong pulse
Muscle cramps		May lose consciousness
<ul style="list-style-type: none"> <li>• Get to a cooler, air conditioned place</li> <li>• Drink water if fully conscious</li> <li>• Take a cool shower or use cold compresses</li> </ul>		<p style="font-size: 2em; font-weight: bold; color: white;">CALL 9-1-1</p> <ul style="list-style-type: none"> <li>• Take immediate action to cool the person until help arrives</li> </ul>

# Record Cold Streak to Start 2018

by Chris Rohrbach - Meteorologist

South Carolina and Georgia residents will remember the budding Bradford Pears and blooming azaleas that made an early entrance in 2017. The period from January through February of last year was the third warmest on record for Columbia, SC and had a total of 6 days above 80 degrees. In stark contrast, 2018 began with a record breaking cold snap. For six straight nights from January 2nd through January 7th overnight temperatures plummeted below 20 degrees. This marked the longest stretch of nights below 20 degrees since temperature records began for Columbia in 1887. Many areas of the United States would welcome wintertime temperatures above the teens, or even single digits. But the fact that Columbia typically drops below 20 degrees just four times during the course of a year shows the significance of this record. The stretch of bitterly cold nights and near freezing daytime temperatures took a toll on homes throughout the Palmetto State causing pipes to burst and driving up heating bills. The cold pattern also set the stage for the infamous "[bomb cyclone](#)" on January 3rd which brought coastal GA, SC and NC up to 7" of snow and freezing rain. There was not much relief during the remainder of the month. The average low temperature for SC during January was 28.4 degrees, the 12th coldest on record since 1895, according to the Climate Prediction Center.



An icy pond on the morning of January 7th at the Columbia Metro Airport, a rarity in South Carolina.

# Violent Tornado Damage Surveys

by Richard Okulski - Meteorologist in Charge

Only two percent of our nation's tornadoes receive the highest rating of EF-5 damage (200 miles per hour or greater). Very few National Weather Service meteorologists get to survey these violent tornado events. I became of those very few professionals on April 28, 2011 in Smithville, Mississippi one day after the most significant tornado outbreak in this century. This article will be a personal recollection nearly seven years after that grim day.

I departed the National Weather Service's office in Memphis, TN early that morning for the two and a half drive to Smithville. Shortly after our departure a State Emergency Management official called to ask me how it would take for me to arrive on site. This was the first and only time in five years as the office's Warning Coordination Meteorologist that I was urgently needed at a damage site. After a brief phone call, I realized we might have an EF-5 tornado damage situation.

The damage to Smithville, Mississippi proved to be catastrophic. The tornado demolished public buildings such as the police station and post office, removed bolted down homes from their foundations, scoured bared ground and asphalt roads, shredded appliances, and debarked trees. The most fantastic damage involved a Ford Explorer tossed one half mile into the town's water tower which caromed off and landed another one quarter mile away.

Sixteen people lost their lives that day with another forty people injured. The physical and emotional toll on emergency responders showed on their faces and body language during my survey. More than one responder smoked with the smell of propane from busted pipes in the air.

I saw one storm shelter within the area of total destruction. Everyone who entered the shelter survived the tornado. One woman with claustrophobia refused to enter the shelter with the tornado approaching. The survivors found her body after the tornado moved out of town. Quick decisions on personal safety matter on these rarest of tornado days.



Well-built and bolted down home destroyed by the tornado



Ford Explorer thrown by the tornado and caromed off a water tower

# Basic Boating Safety

by Rachel Cobb — Meteorologist

**Our region has many beautiful lakes and rivers. Before you set sail this summer, here are some essential boating safety tips.**

## ⇒ **What should you do before you go boating?**

- Take a safe boating course.
- Get a vessel safety check.

## ⇒ **What should you pack for your trip?**

- Life jackets.
- Visual distress signals and sound producing devices.
- A locator device (EPIRB or PLB)
- Fire extinguishers.
- Navigation lights.
- Water to stay hydrated.

## ⇒ **What's the danger of BUI (boating under the influence of alcohol or drugs)? BUI is involved in 1/3 of all recreational boating fatalities.**

- Impaired judgment and cognitive ability.
- Difficulty with balance and lack of coordination.
- Slow reaction time and decreased vision.

## ⇒ **Make sure to check the National Weather Service for the latest forecast before leaving shore and carefully observe changing weather.**



- Strong winds and large waves can capsize boats.
- Thunderstorms produce deadly lightning.
- Cold water can cause hypothermia.
- Extreme heat can ruin your day.

## ⇒ **Some final important reminders for recreational boaters:**

- Maintain awareness of your surroundings at all times (what you see and hear).
- Travel at a safe speed for environmental conditions.
- As a boater, you have a responsibility to all boaters – and all who enjoy the water.

*Source: National Safe Boating Council*

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

