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Storm Courier



A Newsletter for Emergency Management, Storm Spotters, Media and Government Agencies in the County Warning Area of the Charleston, SC National Weather Service Forecast Office. The Storm Courier is published three times a year. The current editor is James Brotherton.

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OPEN LETTER TO CHARLESTON'S WEATHER SPOTTERS BY JERRY HARRISON, WARNING COORD. METEOROLOGIST

With all the various types of weather that moved across Charleston's County Warning Area (CWA) during 2001, we would like to take this opportunity to thank all of our spotters, emergency managers, and law enforcement personnel for all of your assistance. Your eyes and ears in the field give us the "ground truth" we need to determine whether warnings and advisories are needed or whether they should be extended into the next county. Timely reports from you can be the difference between life and death. As 2001 comes to a close, we look back and can be thankful that it was a relatively quiet weather year for southeast Georgia and south coastal South Carolina. There were a few severe thunderstorms, several waterspouts, and tornadoes (especially the eight spawned by the remnants of Tropical Storm Allison in June). Citizens in Georgia and South Carolina have had to endure an ongoing drought that gave rise to numerous wild fires

during the course of the year. With 2002 now upon us, it is time to look ahead to the weather events that await us in the new year.

I am sure that when you first became a spotter in WFO Charleston's network, you were excited to become an ally of the NWS. We would like to work with each of you to keep that interest as high as possible by conducting refresher spotter training courses during the first quarter of 2002. We will only conduct spotter training classes during the months of January, February, and March.

If HAM groups, warning points, emergency managers, or any of our other spotters want to schedule a class, they should contact the Charleston office as soon as possible to get your date on the calendar for spotter training in 2002. We will accommodate as many groups as possible. Also, there will be a few sessions held at the Charleston WFO. These dates will be announced over NOAA Weather Radio and placed on our website.

The refresher classes will be for anyone who has not been to a spotter training class since January 1, 2000. Please take the time now and review your training needs. Do not delay! Begin making plans in your group to decide the most convenient time to schedule a class for maximum attendance. You may contact either John Cole or Jerry Harrison at 800-897-0823, or locally at 554-0197. Your cooperation in this matter will be greatly appreciated.

NOTE: Please let us know if your address or phone number has changed, so that we may keep our spotter list current. Also, if you know of any of WFO Charleston's spotters who have moved and are still in our County Warning Area, remind them to contact us by telephone, letter, or email to give us their latest address and telephone number.

Again, thanks for all that each of you do to help us be the best National Weather Service office that we can be!

2001 HURRICANE SEASON IN REVIEW FORECAST FOR THE 2002 HURRICANE SEASON BY JOHN COLE, SENIOR METEOROLOGIST

As Dr. William Gray predicted, the 2001 hurricane season was an active one with 15 named storms. Nine of these storms became hurricanes, with four of them becoming intense category three or higher on the Saffir/Simpson scale. Dr. Gray's August 2001 prediction called for 12 named storms. He expected seven hurricanes and three intense hurricanes. Long term averages call for 10 named storms, six hurricanes, and two intense hurricanes. Eleven named storms occurred during the last three months of the 2001 hurricane season, September through November.

This is the first year on record that three hurricanes formed in the month of November. For the second consecutive year there were no U.S. hurricane landfalls, although two landfalling tropical storms were near hurricane strength. The other tropical storm, Allison, was weaker in intensity, but caused disastrous flooding, resulting in 41 deaths and billions of dollars in damage. There were also two tropical depressions with winds of less than 39 mph.

Forecast for the 2002 Hurricane Season

Dr. Gray and his research team at Colorado State University issued a forecast in December for the upcoming 2002 Atlantic hurricane season. It appears that we may be in for yet another active hurricane season in 2002. Dr. Gray calls for 13 named storms, and expects eight of those will be hurricanes, with four reaching major hurricanes (category three or higher).

Factors which favor an active hurricane season are: a weak ENSO (El Nino/Southern Oscillation), a westerly QBO (Quasi-Biennial Oscillation), and warmer than normal sea surface temperatures.

Slightly warm to neutral sea surface temperatures, across the Eastern Pacific waters off of South and Central America, results in less shearing of the mid and upper level winds across the tropical storm genesis areas of the Atlantic hurricane basin. The westerly QBO refers to the direction of winds in the stratosphere between 30 and 50 millibars (a westerly direction favors more intense hurricanes). The Atlantic thermocline circulation will remain strong, which will continue to bring warmer than normal sea surface temperatures from the tropics and across a large expanse of the North Atlantic waters during the 2002 hurricane season.

With all of this in mind, people in the Low-country of South Carolina and Southeast Georgia should get prepared early, as we could all be in for a wild ride during the 2002 hurricane season. The 2002 hurricane season begins June 1 and ends November 30.



Photo courtesy B. Baldwin

LETTERS FROM OUR SPOTTERS



From Savannah, Georgia...

My name is Jason and I am 14 years old. I live in Savannah, Georgia, and am a Skywarn severe weather spotter for the National Weather Service. My favorite type of weather is severe thunderstorms and tornadoes. But living in Savannah does not let me see many tornadoes.

I first started to like weather when I was younger. I remember a very intense squall line coming through the area. A family friend from Charleston, South Carolina called when the leading edge came through, and said a funnel cloud had just gone over his house. Not too long after that the power went out and my mom got out the lantern. My family and I sat in the living room...waiting for the storm to pass. I remember thinking how cool it was to see the lightning streak across the sky. I think that is when I first got into weather, but I never did anything to learn more since I was only six years old at the time.

Even though I have only seen one tornado that was on the ground for a second, I still love them. I have seen everything on tornadoes and severe weather in general. I want to learn as much as I can about them to help me in storm observations.

I first started spotting in the summer of 2001. I have only made one severe weather report about a local church getting damage to the sanctuary, and its brick sign leveled by what is believed to have been a microburst.

I plan to go to the University of Oklahoma and study meteorology, and storm chase in my spare time.

This article was submitted by Jason Castine.

An Update on the Local Amateur Radio Operators Group...

Amateur Radio Operators are an important group within the weather spotter family. HAM Radio operators communicate with National Weather Service Charleston through VHF and HF Radio.

The National Weather Service Forecast Office in Charleston has fully equipped amateur radios for use in weather spotting and Skywarn operations. The office has an ICOM HF radio and two Kenwood VHF Radios (one for packet). The Forecast office includes HAM radio operators on its staff. Further, local HAM radio operators in Charleston are available to man the radios in the event of a severe weather outbreak.

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This is a photo from the SKYWARN "HAMFEST" event. Photo courtesy B. Baldwin.



KNOW YOUR METS!

Profile: Ron Stevens, Hydrometeorological Technician (HMT)

Hometown: Thomasville, GA

Family: Married with no children.

Hobbies: Landscape gardening, church work.



Career in NWS:

How long? 29 years

What different positions have you held? Forecaster's Aide, Meteorological Technician (Observer), Station Manager at Centreville, AL.

Best Weather Event during your NWS career? 1973 "Storm of the Century" in Alabama.

Future Aspirations: 23 months without getting into trouble.

Ron served for six years in the Air Force, beginning as a "Medic" in the Emergency Room and Delivery Room. While in the Air Force, Ron had a tour of duty in Guam as a Typhoon Duty Assistant. In addition to his time in the Air Force, Ron also worked in New York as an assistant weather briefer at a NORAD facility. Prior to his career serving his country, Ron worked as a radio station Disk Jockey.

Profile: Rich Thacker, Senior Meteorologist, B.S. from N. Arizona University in Atmospheric Physics

Hometown: Charlottesville, VA

Family: Married with no children.

Hobbies: weather 24/7, music, table tennis.



Career in NWS:

How long? 12 years

What different positions have you held? Meteorologist Intern at Savannah, GA; Meteorologist at Morehead City, NC; Senior Meteorologist at Charleston, SC.

Best Weather Event during your NWS career? Hurricanes Hugo, Bertha, Floyd, and Fran.

Future Aspirations: To work many more exciting weather events.

Rich's favorite part of his job is forecasting during severe weather. Rich has written several articles, which can be found on the Charleston website. His areas of concentration at the Charleston office include doppler radar, severe weather, and tropical weather.

AUTUMN CLIMATE SUMMARY AND DISCUSSION BY JAMES BROTHERTON, METEOROLOGIST INTERN

The Autumn season started off with temperatures below normal across the Lowcountry and Coastal Empire of Georgia. Temperatures at Charleston averaged 2.8 degrees below normal, and at Savannah temperatures were 2.4 degrees below normal. Although temperatures were below normal during the month of September, the Charleston Airport was still able to reach a maximum daily temperature of 88 degrees on three days out of the month. Likewise, the Savannah Airport reached a maximum daily temperature of 90 degrees on September 21. In November, temperatures rebounded and daily averages ran 5.2 degrees above normal for the month of November at Charleston, and at Savannah

3.9 degrees. However, the late autumn trend of above normal temperatures was generally not experienced across the rest of the U.S., as NOAA's National Climatic Data Center found that November was the second warmest November in 107 years for the entire U.S.

As autumn started, rainfall levels continued at a long-term deficit, and the autumn season continued this trend. Severe drought conditions were experienced in parts of the Lowcountry and Coastal Empire throughout the period.

ENSO (El Nino/Southern Oscillation) Update...

According to the National Weather Service's Climate Prediction Center, a transition stage continues toward a warm episode (El Nino) in the Tropical Pacific. Climate models indicate the possibility of an El Nino episode beginning this spring or summer, and the National Weather Service suggests this is the most logical result, given current trends (see attached chart of sea surface temperature anomalies). As discussed in the summer edition of the "Storm Courier", an El Nino generally impacts the southeast U.S. in the spring and summer with an increase in severe weather, given a greater influence of the jet stream in the deep south.

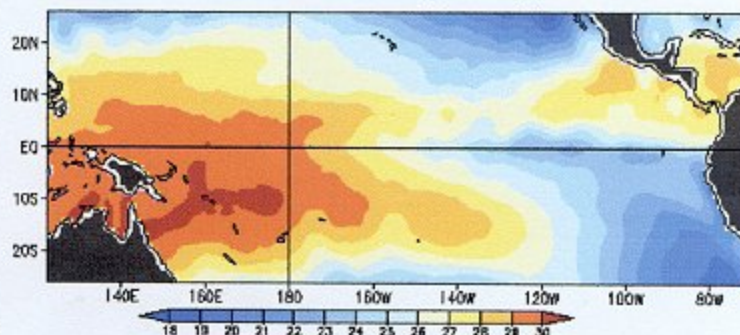
CHARLESTON AIRPORT

month	Average temperature	Departure	Max Temperature	Min Temperature	Total Precipitation	Departure
Sep	73.6 F	-2.8	88	49	4.90 inches	0.17
Oct	64.8	-2.0	88	34	0.65	-2.25
Nov	63.6	5.2	82	35	0.53	-1.96

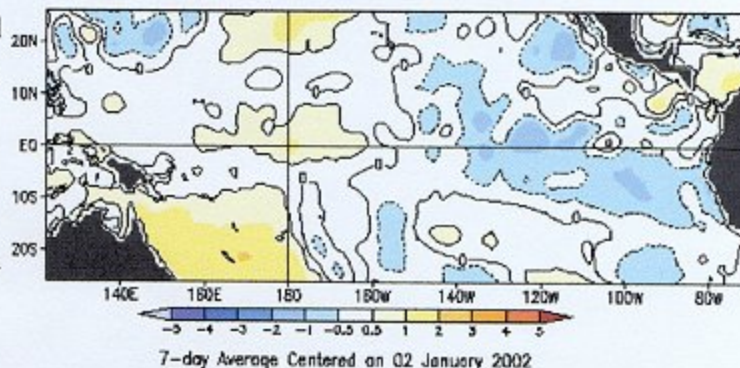
SAVANNAH AIRPORT

month	Average temperature	Departure	Max Temperature	Min Temperature	Total Precipitation	Departure
Sep	74.2 F	-2.4	90	50	4.72 inches	0.25
Oct	64.9	-2.4	87	33	0.16	-2.23
Nov	63.0	3.9	83	33	0.16	-2.03

Observed Sea Surface Temperature (°C)



Observed Sea Surface Temperature Anomalies (°C)



NEW GRAPHICAL DIGITAL FORECAST ON THE INTERNET BY STEPHANIE FAUVER, METEOROLOGIST

Have you seen the new look on our website? Check it out at: <http://wchs.csc.noaa.gov/>. This is the official website of the Charleston South Carolina National Weather Service office. Scroll down to the Experimental Graphical Digital Forecast and click on it. Next, click on your county.

The new Graphical Digital Forecast is in an easy to read chart format giving the minimum or maximum temperature and probability of precipitation, or "PoP" as it is called. It also gives the temperature, dew point, relative humidity, sky condition, wind speed and direction, and type of precipitation for four key times during the first few forecast periods. A less detailed forecast is given for day three through day seven as our forecast skill is not as good beyond 48 hours. The second portion of the forecast gives the maximum and minimum temperatures, probability of precipitation, sky cover and precipitation type. Much of the information is given in a graphical format using thermometers and cloud covered suns and moons as well as precipitating clouds and thunder bolts. We believe this is a much easier way to convey a large amount of data in a shorter period of time (If you prefer to read the actual forecast text, it is still available by clicking on your county from the main page of the website).

The digital forecast is a result of the new technology in the forecast office that was first discussed in the November 2000 edition of the Storm Courier Spotter Newsletter. We are now using the next phase of the Interactive Computer Worded Forecast (ICWF). This new phase is the Integrated Forecast Preparation System (IFPS). IFPS allows us to do more work on our forecast database and spend even less time worrying about the actual typing of the forecast.

If you are going to take a trip to another part of the country or just want to see what kind of weather your friends or relatives are experiencing in another state, you will eventually be able to get a similar forecast from any National Weather Service Office in the country. You can link to the websites of these other offices by clicking on the Weather Links button on the left side of our homepage. Select the Map of National Weather Service offices and click on the office located closest to the area in which you are interested. Their website will look different from ours but they will also have a link for their local forecast.

Since the graphical forecast is only experimental at this time, it may not be updated as timely as NOAA Weather Radio. Please be patient with us as we move towards this new phase of customer service. There will likely be additional changes in the forecast in the coming months as we experiment with new formats, but hopefully we will settle on a program that works for everyone. If you do not have a home computer, try your local library or school. They may have a computer connected to the internet that you can use. Take a look and let us know what you think.

REVISED DIGITAL FORECASTS...UPDATED

NATIONAL WEATHER SERVICE CHARLESTON SC

1011 PM EST WED JAN 9 2002

SCZ047>050-101030-

BEAUFORT-CHARLESTON-JASPER-SOUTHERN COLLETON-

INCLUDING THE CITIES OF...BEAUFORT...CHARLESTON...EDISTO BEACH...

RIDGELAND

1011 PM EST WED JAN 9 2002

	\ THU 01/10/02 \				\ FRI 01/11/02 \																			
EST	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06		
MN/MX					40				68				48				68					45		
TEMP	50	46	42	40	56	64	68	64	57	51	49	52	57	64	67									
DEWPT	37	30	31	33	35	38	41	45	47	45	44	42	41	38										
RH	61	53	65	76	45	38	37	50	69	80	86	74	57	43	34									
WIND DIR	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	W	W	SW									
WIND SPD	8	8	8	10	15	15	15	10	8	8	8	10	10	12	15	12	12	10	10					
WIND CHILL					34																			
CLOUDS	CL	CL	CL	CL	CL	CL	CL	CL	CL	SC	SC	SC	B1	B1	B1	B2	B2	B2	B2					
POP 12HR					0				0				10									20		
QPF 12HR					0				0				0									0		
SNOW 12HR					00-00				00-00				00-00											
RAIN SHMRS																					S	S	S	S

This is an example of the "Revised Digital Forecast", which is used to create the new graphical digital forecast.

HOW COLD WILL IT FEEL THIS WINTER? BY STEPHANIE FAUVER, METEOROLOGIST

Beginning this winter, the National Weather Service is using new wind chill values to determine when to issue advisories and warnings. Wind chill is defined as the cooling of the human body due to the motion of air. Moving air causes the body to transfer heat to the surrounding atmosphere more quickly than still air. Wind Chill is how cold the wind makes it feel to people and animals. It becomes more noticeable when temperatures are below 45 degrees Fahrenheit.

Wind Chill is calculated using a formula that incorporates temperature and wind speed. The new numbers are based on a study done by the Civil Institute of Environmental Medicine in Toronto, Canada this past summer, and in conjunction with the National Weather Service. Several men and women were exposed to wind and cool temperatures in a wind tunnel. Measurements were made on how fast the temperature of their exposed skin dropped. These values were incorporated into the new formula. This is the first time human subjects were used for such a test. The new values will not be as cold as calculations from the old formulas. With a temperature of 5 degrees and a wind of 30 mph, the old formula would have given a wind chill value of 40 degrees below zero, while the new formula would be 19 degrees below zero. This new value does not sound as scary, but these conditions are still dangerous. It will take a temperature of 15 degrees F with winds of 15 mph to get to a wind chill value of zero. A temperature of 20 degrees with winds of 35 mph will also give a wind chill value of zero degrees.

Based on the new research, the National Weather Service in Charleston, South Carolina will issue a Wind Chill Advisory for South Coastal South Carolina and portions of Southeast Georgia when wind chill values are expected to dip below zero degrees Fahrenheit. A Wind Chill Warning will be issued when the wind chill value is expected to be 15 degrees below zero or lower.

What will this mean for you? Everyone should dress appropriately when going outside in cool weather. Wear a hat and cover any exposed skin with a scarf and gloves. A Wind Chill value of 19 degrees below zero or colder means that frostbite can occur in 15 minutes or less. Of course these low wind chill values are unusual for the Coastal Empire and the Lowcountry, but even temperatures higher than this can cause frostbite if you are out in the elements for any length of time. Pay particular attention to NOAA Weather Radio or your local television station for Wind Chill Advisories or Warning issued by the National Weather Service. Do not wait until an advisory or warning is issued! Also, always carry a hat and gloves with you, particularly during the winter months, so that you are well prepared for dangerous conditions.



Wind Chill Chart



		Temperature (°F)																		
		Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind (mph)	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63	
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72	
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77	
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81	
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84	
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87	
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89	
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91	
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93	
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95	
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97	
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98		

Frostbite Times: 30 minutes 10 minutes 5 minutes

Wind Chill (°F) = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})
Where, T= Air Temperature (°F) V= Wind Speed (mph) Effective 11/01/01

<http://wchs.csc.noaa.gov>



NATIONAL WEATHER SERVICE

Charleston Weather Forecast Office
5777 S. Aviation Ave.
Charleston, SC 29406

Weatherline: (843)744-0303

Spotter Reports (toll-free): (800)897-0823

Local: (843)554-0197

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Additionally, an Automated Packet Radio Station (APRS) is set up to receive digital messages from spotters on 144.39mhz. Also, there is an email reflector on Yahoo Groups for NWS-Charleston weather spotters. If you want to receive email about weather spotting activities in the Charleston Forecast Office service area, please send an email to SkywarnCHS@yahogroups.com. In the subject area of the message please type: subscribe skywarnchs. In the body of the message, please place you spotter number. This same email reflector includes a calendar of weather spotter training and will automatically mail you information of interest regarding spotter training and VHF and Radio spotter practice radio nets.

If you are interested in training as an amateur radio operator, please email KE4KUR@ARRL.NET and we will seek to place you with a class in your community.

For those interested in the digital modes of communication, please look at the following web sites:
www.tapr.org; www.findu.com.

NOAA is using citizen's weather and amateur radio weather stations in their studies of weather. Take a look at www.frd.fsl.noaa.gov/mesonet.

Other sites of interest: Skywarn National Organization www.skywarn.org; National Hurricane Center www.nhc.noaa.gov.

This article was submitted by Bob Baldwin, a Charleston County Spotter, who is also very active in the amateur radio group for the Charleston NWS office.