



# 2021

# South Carolina Weather and Climate Annual Review

## South Carolina State Climatology Office



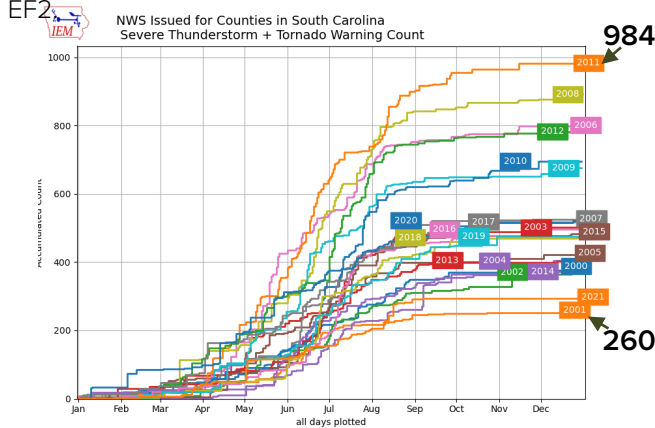
Detailed information from the [Weekly Weather and Climate Reports](#) from the South Carolina State Climatology Office was used to compile this comprehensive report.



# Impactful Weather Events in 2021

## General Overview of Severe Weather

2021 was the second-lowest year for the number of severe thunderstorm and tornado warnings issued in the state (298) since 2000. Even with the decrease in issued warnings, multiple events impacted the state with high winds, hail, and tornadoes. Per preliminary data from the Storm Prediction Center and National Weather Service surveys, there were twenty-one (21) tornadoes: eight (8) EF0, twelve (12) EF1, and one (1) EF2.



## Mild Maximum Temperatures

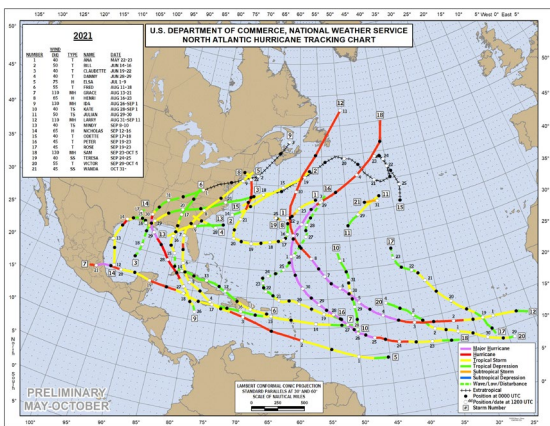
Like 2020, the statewide average maximum temperature from May to October was cooler than normal. During the warm season, many stations reported between 30 and 40 fewer days than normal with high temperatures at or above 90°F. The only station to report a high temperature at or above 100°F was the NWS station located on the Columbia campus of the University of South Carolina on May 24, 2021.

	Charleston		Columbia		Florence		Greenville	
	2020	2021	2020	2021	2020	2021	2020	2021
May	5	6	3	6	3	7	0	5
June	11	7	15	16	16	12	9	6
July	27	13	26	22	26	24	25	20
August	21	17	16	23	13	23	16	17
September	8	2	6	3	6	10	5	0
October	0	0	0	0	0	1	0	0
	72	45	66	70	64	77	55	48
Avg. Max (°F)	86.0	85.1	85.7	86.0	85.3	86.8	82.5	83.5
Avg. Temp (°F)	77.3	76.2	76.0	75.6	76.0	76.2	72.3	72.8
Avg. Min (°F)	68.7	67.3	66.3	65.1	66.7	65.7	62.0	62.0

Number of Days TMAX >= 90°F

## 2021 Hurricane Season

Overall, the 2021 Atlantic Hurricane Season featured above-normal activity. There were twenty-one (21) named storms, with seven (7) hurricanes and four (4) major hurricanes. In August, Hurricane Ida, a Category 4 hurricane, became the strongest hurricane to landfall along the U.S. coast during the 2021 season. For the third year in a row, a tropical storm (Ana) formed at the end of May before the season's official start. Tropical Storm Danny made landfall near Pritchards Island on June 28. In addition, a few tropical systems, including Claudette, Elsa, Fred, and Mindy, made landfall elsewhere along the coast.



## Coastal Flooding

During 2021, the tidal gauge at the Charleston Harbor reported 41 coastal flooding events (tides reported more than 7.0 ft), ranking eighth in the top ten years for total events. The November 2021 King Tide event produced four straight days of major flooding in low-lying portions of the South Carolina coast. The Charleston Harbor tidal gauge recorded tides at or above 8 feet mean low lower water (MLLW) from November 5-8. The crest of 8.51 ft MLLW on November 7 is the tenth highest crest on record at the gauge.

### Top 10 Total Event Counts (Years)

1. 89 (2019)
2. 68 (2020)
3. 58 (2015)
4. 55 (2016)
5. 46 (2017)
6. 42 (2014, 2018)
- 8. 41 (2021)**
9. 36 (2009)
10. 35 (1999)

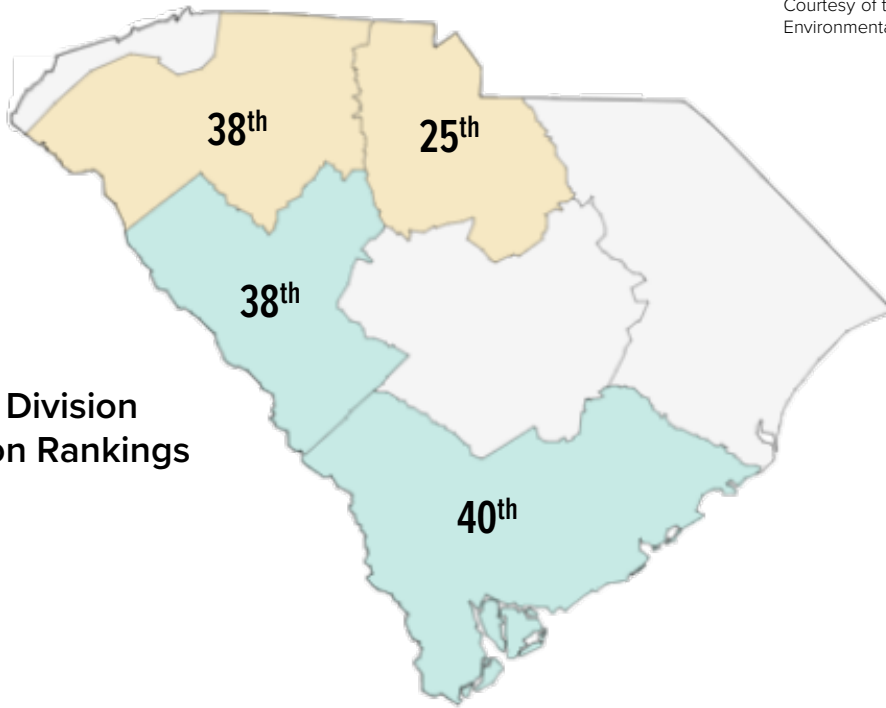
### Charleston Harbor High Tides (2020 – 2021)

- (1) 8.26 ft on 11/08/2021
- (2) 8.51 ft on 11/07/2021
- (3) 8.44 ft on 11/06/2021
- (4) 8.00 ft on 11/05/2021
- (5) 8.02 ft on 12/16/2020
- (6) 8.13 ft on 11/15/2020
- (7) 8.19 ft on 10/18/2020
- (8) 8.03 ft on 09/21/2020
- (9) 8.12 ft on 09/20/2020
- (10) 8.07 ft on 09/19/2020



# Statewide Precipitation Data 2021

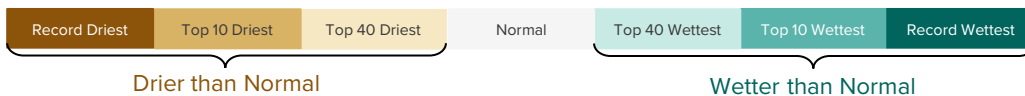
Courtesy of the National Centers for Environmental Information



## Climate Division Precipitation Rankings

### 2021 Statewide Precipitation Totals, Departures and Rankings

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total	4.66"	6.27"	3.26"	1.67"	2.55"	6.08"	6.61"	5.48"	4.26"	2.63"	0.90"	2.97"
Depart	0.83"	2.37"	-1.02"	-1.67"	-1.03"	1.40"	1.07"	0.20"	0.02"	-0.36"	-1.71"	-0.64"
Rank	32 <sup>nd</sup>	8 <sup>th</sup>	--	17 <sup>th</sup>	37 <sup>th</sup>	27 <sup>th</sup>	31 <sup>st</sup>	--	--	--	8 <sup>th</sup>	--



The statewide precipitation total for 2021 was 47.37", which was 0.55" below the long-term normal. However, precipitation totals were variable across the state during the year.

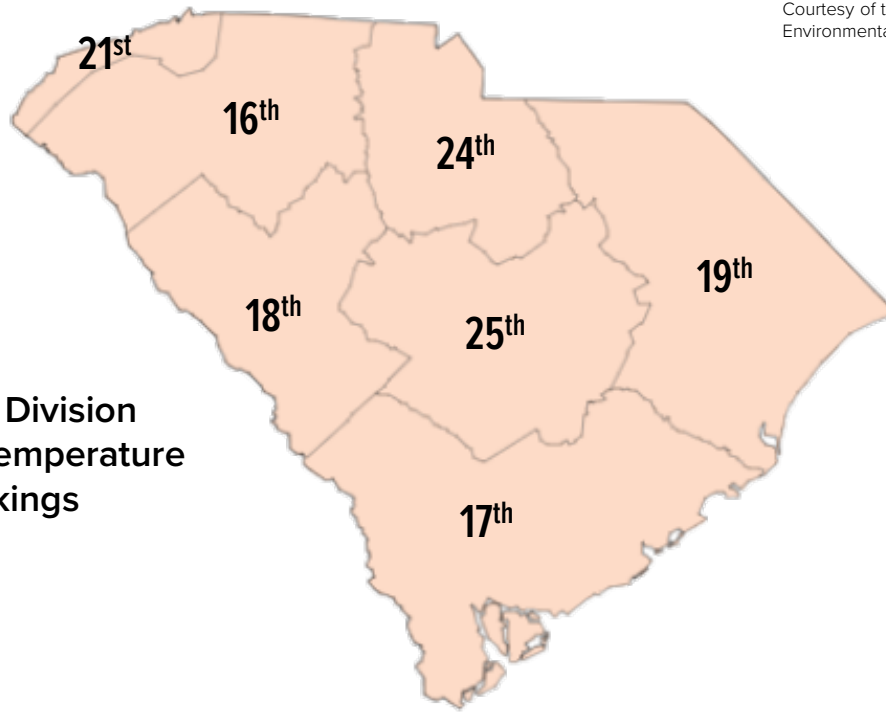
Annual rainfall in portions of the Piedmont was less than 40 inches, with some locations reporting less than 35 inches during 2021. Multiple CoCoRaHS observers in the Fort Mill area measured between 30 and 34 inches of rainfall. The National Weather Service COOP station in Fort Mill recorded 34.17 inches for 2021, which was 11.38 inches below the 1991-2020 normal value. Additional stations in Cherokee, Chester, Union, and York counties reported annual totals more than ten inches below normal.

Above-normal precipitation was reported at some locations in the Upstate mountains, the Central Savannah River Area, and the Lowcountry. The NWS station near Jocassee reported 96.29 inches, and additional stations in Oconee and Pickens measured over 70 inches of precipitation in 2021. CoCoRaHS observers in Beaufort, Charleston, and Colleton counties measured more than 60 inches of rainfall, and those in Abbeville, Aiken, Edgefield, and McCormick counties recorded over 50 inches.



# Statewide Temperature Data 2021

Courtesy of the National Centers for Environmental Information



## Climate Division Average Temperature Rankings

## 2021 Statewide Average Temperatures, Departures and Rankings

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total	45.9°F	47.2°F	57.5°F	61.9°F	69.0°F	76.7°F	79.4°F	80.1°F	73.6°F	66.8°F	51.7°F	54.7°F
Depart	1.3°F	0.4°F	3.6°F	0.0°F	-1.3°F	-0.3°F	-0.5°F	1.4°F	-0.1°F	3.6°F	-1.4°F	9.1°F
Rank	--	--	22 <sup>nd</sup>	--	35 <sup>th</sup>	--	--	24 <sup>th</sup>	--	12 <sup>th</sup>	--	2 <sup>nd</sup>
	Record Coldest		Top 10 Coldest		Top 40 Coldest		Normal	Top 40 Warmest		Top 10 Warmest		Record Warmest
	Colder than Normal					Warmer than Normal						

The statewide average temperature for 2021 was 63.7°F, which was 1.3°F above average, making it the 19th warmest year on record (since 1895) for South Carolina. While average temperatures were cooler than normal in May, the driving force behind the warmer than an average year was the number of record-breaking high minimum temperatures. Eighty-five daily high minimum records were tied during the year, and 126 daily high minimum records were broken.

During the warm season (May to October), maximum temperatures were 84.6°F, -0.5°F below the long-term average. However, also during the warm season, the statewide minimum temperature average was 63.8°F, which is 1.3°F above normal.

Overall, the annual minimum temperature average of 52.6°F for 2021 was the 11th warmest on record, 1.8°F above the long-term mean. One of the biggest stories related to temperatures in the Palmetto State is the record warmth observed in December, which is covered in more detail later in this report.

# January 2021

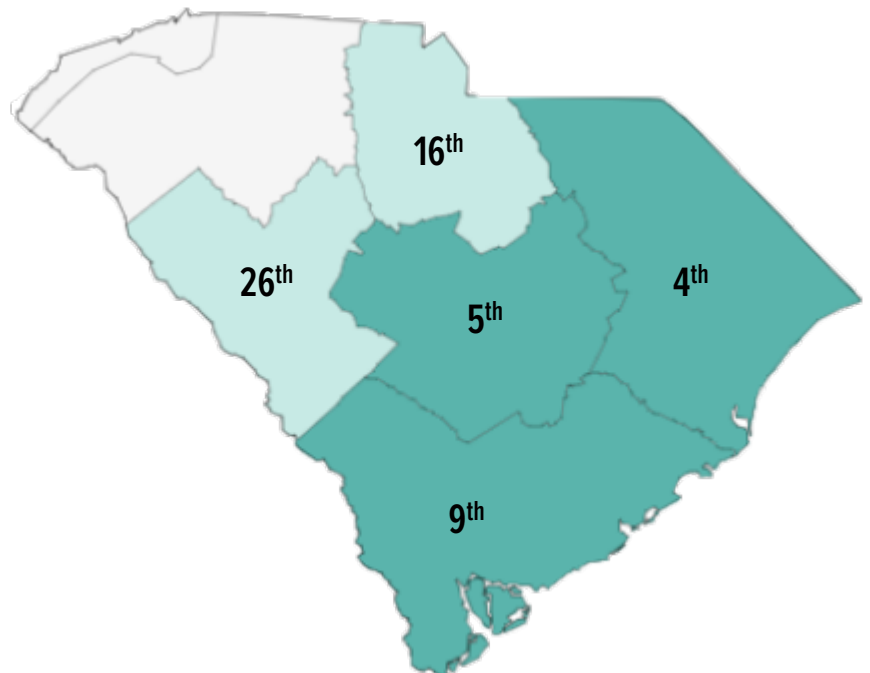


At the beginning of January, a winter weather event produced snowfall totals in the Upstate from a trace up to two inches at the station in Caesars Head. Behind the storm, some snow mixed with rain, and there were reports of a dusting of snow on elevated surfaces in the Midlands. The month was also marked by multiple days with dense fog, including three days with visibility less than a quarter-mile. Unfortunately, a small engine plane crashed into a neighborhood in Columbia while trying to land at Columbia Owens Downtown Airport. The airport reported dense fog, with visibility near zero, and low cloud ceiling heights around the time of the crash.

## February 2021

February 2021 was the eighth wettest February on record, with a statewide average precipitation of 6.27 inches. Multiple stations across the state measured more than 150 percent of their average winter rainfall, including those sites at Bamberg (21.29 inches), Cades (19.87 inches), Jocassee (19.12 inches), and Cheraw (17.91 inches). Despite the above-normal rainfall and increased streamflow values across the Pee Dee and lower Santee river basins, low-lying areas did not report the same level of flooding that impacted the region during February 2020.

### Climate Division Precipitation Rankings February 2021



# March 2021

Station	Number of Days Max $\geq 80^{\circ}\text{F}$	Number of Days Min $\leq 32^{\circ}\text{F}$
Charleston	8	0
Columbia	5	3
Florence	5	2
Blackville	4	2
Greer	3	2
Anderson	2	3
North Myrtle Beach	1	2

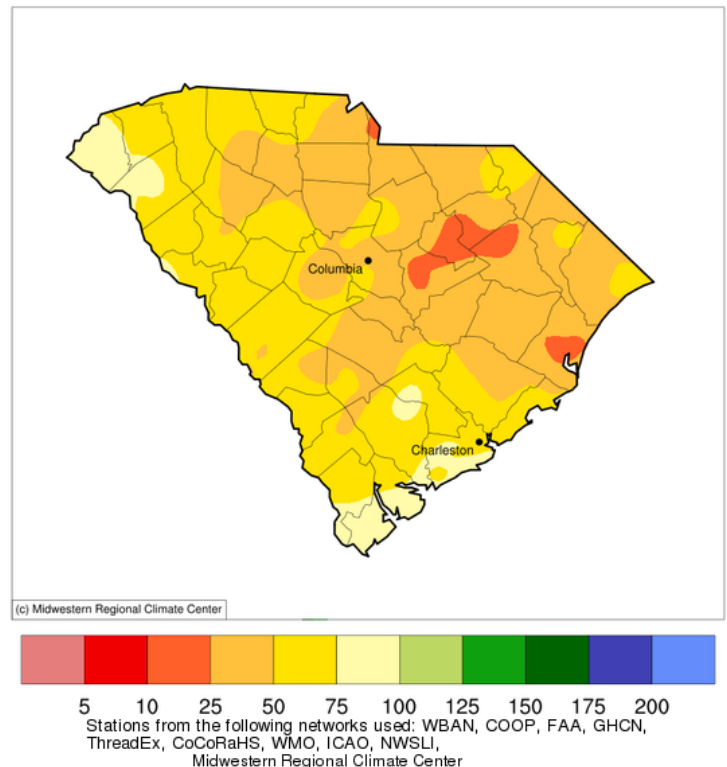
Record Type	Tied	Broken
Highest Maximum Temperature	9	15
Highest Minimum Temperature	10	30

Despite the chilly start of the month, the weather pattern quickly flipped to produce a relatively warm March. Across the state, stations recorded average temperatures between two and four degrees above normal. Some locations observed more days with maximum temperatures at or above 80 degrees and less below freezing. At the end of the month, Temperatures reached the upper 80s, with the National Weather Service (NWS) stations near Cades and Moncks Corner reaching a high of 90 degrees. Numerous daily record maximum and high minimum temperatures were either tied or broken during the latter part of March.

# April 2021

At the beginning of the month, a late-season cold front caused subfreezing temperatures to reach as far south as the coast. The NWS stations at the Charleston International Airport and the Georgetown County Airport reported low temperatures of 31 degrees on the 3rd. The freeze stalled corn planting and caused minor damage to summer pastures. Strong storms produced 93-mph straight-line winds and a few tornadoes in the Upstate during the middle of the month. Overall statewide, April was the 17th driest April on record since 1895, with portions of the Catawba and Pee Dee regions recording rainfall totals of less than half of normal for the month.

**Accumulated Precipitation (in): Percent of 1991-2020 Normals**  
April 01, 2021 to April 30, 2021



# May 2021

Courtesy of NWS Greer



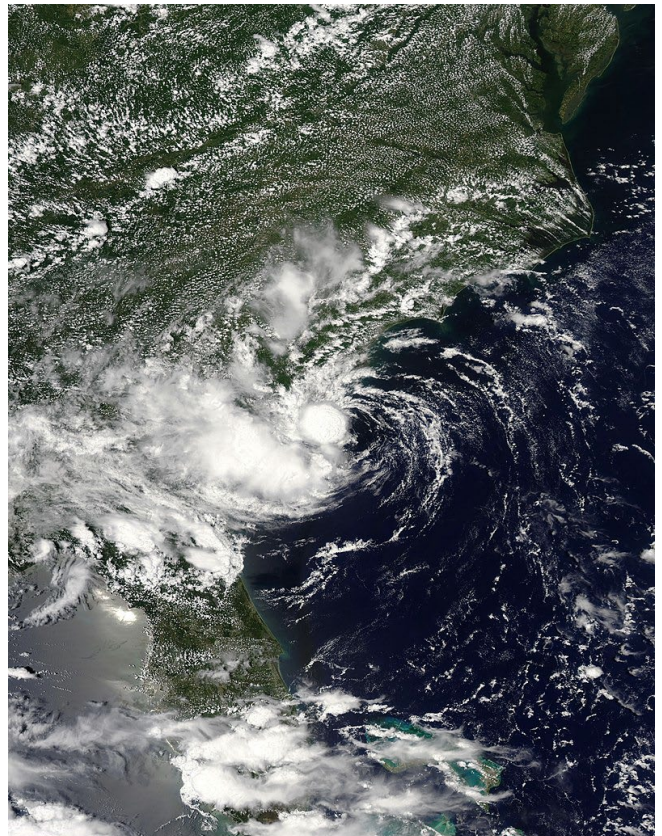
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During the afternoon and late evening hours of May 3, a line of storms moved through the state, producing strong winds, heavy rain, and hail, including golf-ball-sized hail in Florence, Lexington, and Saluda counties. An EF2 tornado, with winds up to 125 mph, caused significant tree damage and damage to a few homes along its 30-mile path from Lowndesville in Abbeville County to near Greenwood. A short-lived EF1 tornado destroyed a farm and outbuildings near Smyrna in York County. An EF1 tornado touched down in Fairfield County on May 4, near the towns of Rion and Winnsboro, snapped and uprooted numerous trees, caused damage to aircraft and a hanger at the Fairfield County Airport, and damaged a couple of homes.

## June 2021

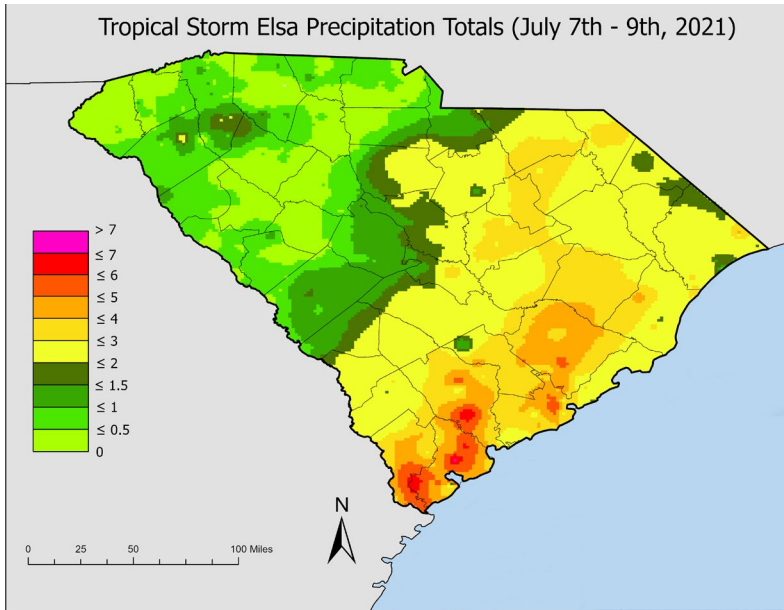
On Monday, June 28, Tropical Depression four strengthened into Tropical Storm Danny shortly before making landfall over Pritchards Island, north of Hilton Head Island. Tropical-storm-force wind gusts, up to 50 mph, were observed from Forest Beach to the Isle of Palms, and torrential rainfall impacted portions of the Lowcountry. As the storm pushed inland, the outer bands of Tropical Storm Danny produced gusty winds, and locally heavy rain was reported in parts of the Midlands and Pee Dee. By Tuesday morning, 24-hour rainfall totals from Danny exceeded three inches in Beaufort and Jasper counties, and a CoCoRaHS observer near Bluffton measured 6.22 inches of rainfall.



# July 2021

Tropical Storm Elsa made landfall near Steinhatchee, Florida, on July 7 and drifted slowly northeastward through northern Florida and southern Georgia. Elsa began to affect South Carolina late on July 7 as it accelerated northeastward. The storm's center entered South Carolina during the early morning of July 8. Elsa's most significant impact to South Carolina was heavy rainfall. The Lowcountry saw the heaviest rainfall, with parts of Beaufort, Charleston, and Colleton counties receiving more than six inches of rain.

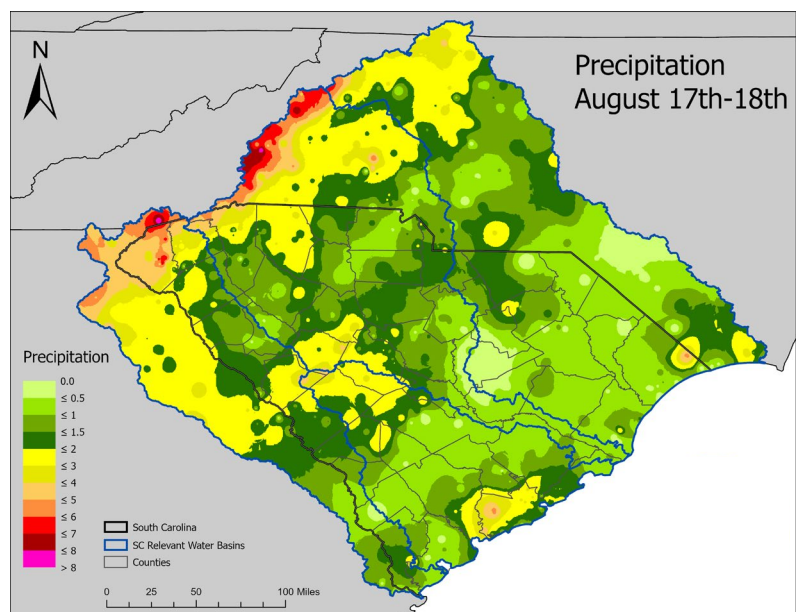
More details are available via our [Event Report](#).



## August 2021

On Monday, August 16, Tropical Storm Fred made landfall near Apalachicola, Florida, and passed by just to the west of South Carolina the following day on a north-northeastward track. The direct impacts on South Carolina from Fred were heavy rainfall and tornadoes. Rainfall impacts in the Upstate were exacerbated by heavy rain in the days leading up to Fred's passage through the southeastern United States. Fred spawned a total of ten tornadoes across South Carolina; five of them were rated EF-1, and five were rated EF-0.

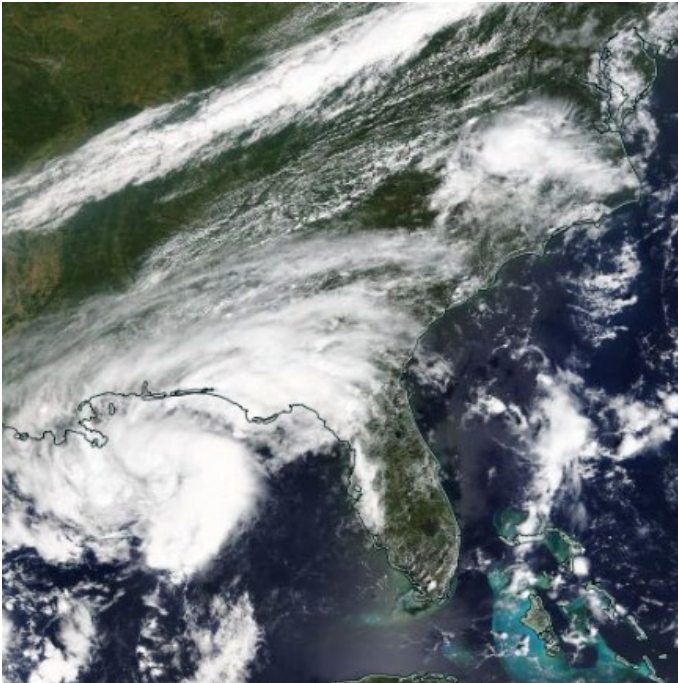
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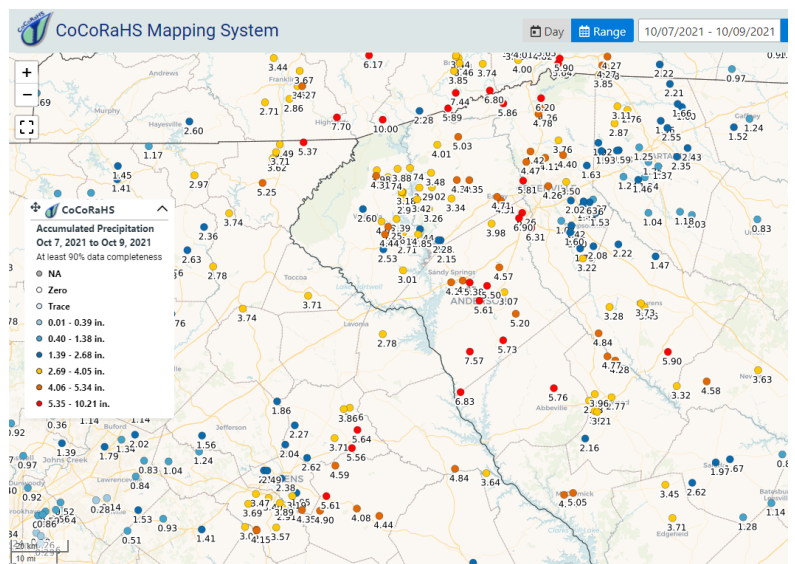
# September 2021

On Wednesday, September 8, Tropical Storm Mindy formed in the northeastern Gulf of Mexico and made landfall near St. Vincent Island, Florida. Thunderstorms associated with Mindy produced wind gusts up to 45 mph, and lightning sparked a fire that damaged two structures in Beaufort. The storm moved across the Florida Panhandle into southeastern Georgia, bringing heavy rain to portions of the Lowcountry overnight. Observers in Beaufort County reported the highest 24-hour rainfall totals from Mindy, with amounts between three and five inches. As Mindy moved off the southeast coast and into the Atlantic Ocean, an additional two to four inches of rain fell over coastal Beaufort, Charleston, and Colleton counties. The torrential rain combined with a high tide of 7.23 ft. MLLW, causing flooding in downtown Charleston and low-lying areas.



# October 2021

A complex weather pattern provided anomalously high moisture across the region at the beginning of October. The National Weather Service station at the Charleston International Airport recorded a 24-hour rainfall total on October 5 of 2.43 inches, breaking the previous daily record of 1.79 inches set back in 1964. With locally heavy amounts, widespread rain was reported across the Midlands, Piedmont, and Upstate, with multiple reports of flash flooding in Abbeville and Anderson counties, where over six inches of rain fell. Other locations reported minor street flooding, such as Berea in Greenville County and Newberry.



Outside of this rain event, most locations reported below normal rainfall for October, especially portions of the Pee Dee, which recorded between 25 and 50 percent of the average monthly rainfall. Above-normal maximum and minimum temperatures led to a statewide average temperature of 66.8°F, making it the 12th warmest October on record.

# November 2021

## Top Five Driest November Rainfall Totals

Charleston (1937-2021)	Columbia (1887-2021)	Florence (1948-2021)	Greenville (1884-2021)
0.03" (2007)	0.10" (1919)	0.23" (2007)	0.05" (1890)
0.11" (2016)	0.21" (1928)	0.40" (2001)	0.30" (1910)
0.16" (1998)	<b>0.28"</b> <b>(2021)</b>	0.44" (1958)	0.42" (1939)
0.30" (2010)	0.40" (1933)	<b>0.45"</b> <b>(2021)</b>	0.48" (1922)
0.48" (1966)	0.41" (1973)	0.46" (1973)	0.54" (1960)

Statewide, November 2021 was the eighth driest November on record since 1895, with an average 0.90 inches of precipitation, below the normal monthly total of 2.61 inches. The Columbia area recorded its third driest November on record since 1887. The fall of 2021 was also extremely dry in portions of the Pee Dee. The Florence Regional Airport reported its fourth driest November since 1948 and its second driest September to November period on record since 1948.

In addition to the dry conditions, the November 2021 King Tide event produced four straight days of major flooding in low-lying portions of the South Carolina coast. The Charleston Harbor tidal gauge recorded tides at or above 8 feet mean low lower water (MLLW) from November 5-8. The crest of 8.51 ft MLLW on November 7 is the tenth highest crest on record at the gauge.

## December 2021

Statewide, South Carolina had a preliminary average temperature of 53.7 degrees, 8.1 degrees above the long-term average (1895-2020) of 45.6 degrees, becoming the fourth warmest December on record for the state. December 2021 was the second warmest December on record in Charleston (since 1937) and Greenville (since 1962); it was the third warmest in Florence (since 1948); and the fourth warmest at Columbia (since 1948). The NWS station in Charleston did not report any low temperatures at or below freezing (32 degrees) for the month. The Columbia station recorded only six days; the normal for December is twelve days. Similarly, the NWS Greenville station was less than 32 degrees nine days in December, below the normal fourteen days.

### Climate Division Average Temperature Rankings December 2021

