

Keystone Drought Events in South Carolina

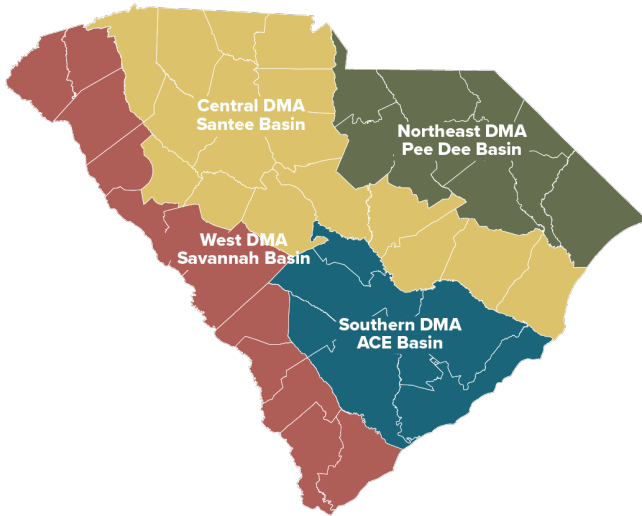


Prepared by
South Carolina State Climatology Office
Land, Water, and Conservation Division
South Carolina Department of Natural Resources



South Carolina Drought Response Committee (DRC)

SC Drought Management Areas



The DRC is the primary drought decision-making entity in the State. It is chaired and supported by the South Carolina Department of Natural Resources (SCDNR) and the State Climatology Office (SCO). Local members are organized according to four Drought Management Areas (DMAs). The statewide and local members report on conditions and impacts and evaluate drought indicators to determine drought status defined by the Drought Response Act and the actions needed to protect the State's water resources.

Drought Response Committee members determine drought designations at a county level. Formal plans and procedures help conserve, manage, and monitor the State's water resources.

Narratives, data, and images included in this document were provided by the National Centers for Environmental Information, the National Hurricane Center, the National Weather Service, the United States Geological Survey, the Army Corps of Engineers, the Southeast Regional Climate Center, the South Carolina State Climatology Office, the SCDNR Flood Mitigation Program, the South Carolina State Library, NewsBank, and the Richland County Library.

If you have any additional questions regarding the information provided in this document, please contact Hope Mizzell, Elliot Wickham, or Melissa Griffin at the State Climatology Office.

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A BRIEF HISTORY OF DROUGHTS

THIS TIMELINE SHOWS SOME OF THE MOST SIGNIFICANT DROUGHTS OBSERVED IN SOUTH CAROLINA SINCE 1900, AND IS NOT A COMPLETE LIST OF EVENTS.

1910-1911

Drought conditions prevailed in South Carolina from November 1910 - August 1911. May 1911 presented the most intense drought month during this period. Statewide average precipitation in May was 0.56 inches, which is 15.6% of normal precipitation (3.58 inches).

Five stations in the extreme southeastern portion of the state had no appreciable rainfall. River stages remained very low, especially in west, central, and coastal SC.

1930 - 1935

This prolonged drought diminished soil moisture for several ongoing years. The lack of soil moisture led to decreased crop germination and increased agricultural losses. 1931 and 1933 were record drought years, with the recurrence interval for a returning drought of the same intensity at more than 25 years.

At the time, 1931 became the driest year on record, with a statewide precipitation total of 35.37 inches.

1985 - 1986

Disaster areas were declared in 45 counties due to drought losses— \$219.9 million in agricultural losses, and \$8.1 million in forestry losses attributed to forest fires. The forest fires exceeded normal monthly averages by up to ten times of expected; over 19,000 acres were burned in January 1985 alone.

2007 - 2009

2007 was South Carolina's third driest year on record, with a statewide average annual precipitation of 34.90 inches, which was 12.99 inches below the normal yearly rainfall total. Drought affected water levels at some of the major lakes, such as Lake Hartwell, Lake Marion, and Lake Jocassee.

2015 - 2016

South Carolina experienced alternating wet and drought conditions. In June 2015, all counties were in an incipient or moderate drought, which was eased by rains in October 2016. By July 2016, lack of rainfall caused 32 counties to be recategorized as either incipient (28 counties) or moderate (4 counties) drought.

1925 - 1927

1925 was the most intense drought year on record (at the time) and is currently the fifth driest year on record, with a rainfall deficiency of 11.16 inches. The average annual rainfall for 1925 was 36.73 inches, 3.22 inches lower than the previous record from 1911. Every sector of the state was impacted — agriculture struggled, hydroelectric power was limited, and these limits impacted the textile mills and other industry.

1950 - 1957

Between 1950 and 1956, each year had below normal rainfall, with 1957 having below normal rainfall through October. 1954 set records for both dryness and heat leading to significantly impacts to agriculture. 1954 currently remains as the driest year in South Carolina history, with an average annual precipitation of 31.76 inches, which is 16.03 inches below the long-term average annual rainfall total of 47.79 inches.

1998 - 2002

This prolonged four-year drought had significant impacts to multiple sectors in the state, with agriculture and forestry likely feeling the most impacts. The SC Forestry Commission estimated the total state losses from the drought to be \$1.3 billion. In August of 2002, the state declared every county to be in extreme drought status.

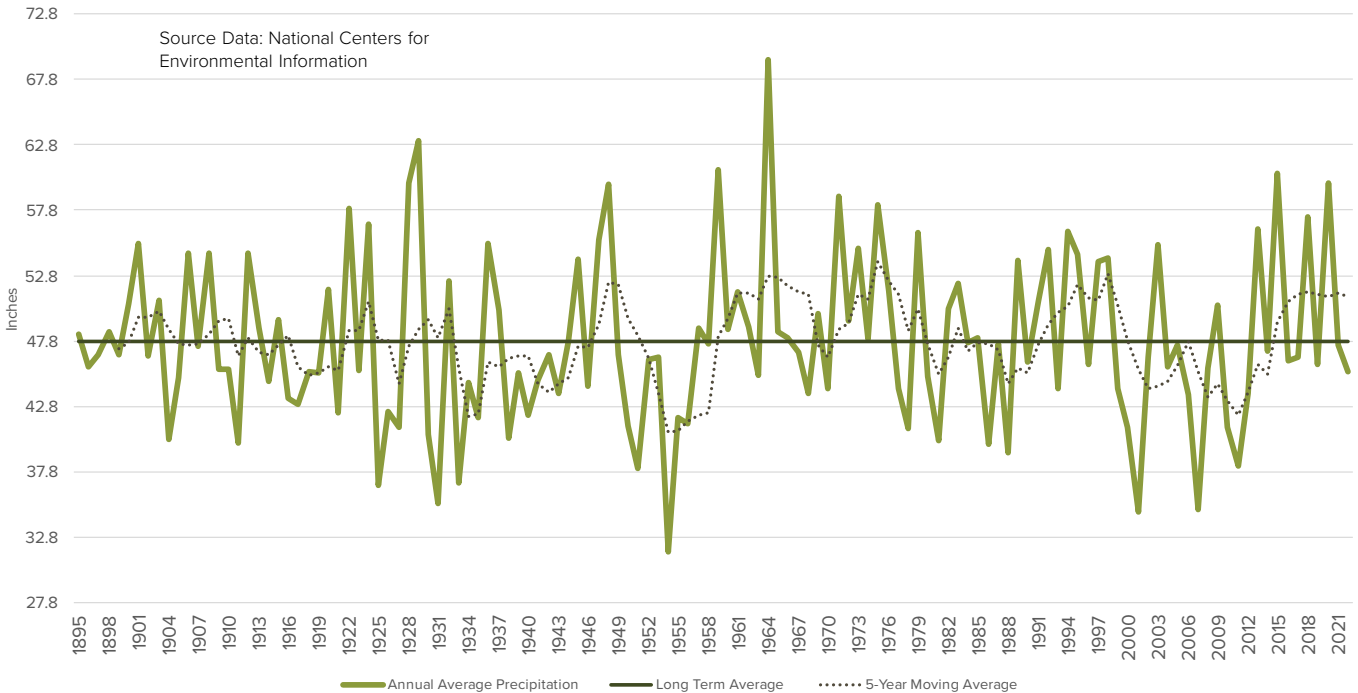
2010 - 2013

On the heels of the 2007-2009 drought, the Savannah Basin lakes were well below their target guide curves in March 2012. The inflows into Lake Thurmond for the following three-month period were the lowest recorded since 1954. The deteriorating hydrologic conditions reduced the amount of water stored in shallow and deep aquifers.

PRECIPITATION

The geography of the state has an impact on the observed precipitation. The statewide annual rainfall average from 1895 – 2022 is 47.80 inches (graph), though the rainfall is varied across South Carolina. Annual rainfall ranges from less than 40 inches in the Sandhills to over 80 inches in the higher elevations of the Appalachian Mountains in the western portion of the state. There is no distinct dry season, and the rainfall is highly variable throughout the year. Outside of the summer, precipitation falls due to the passage of cold fronts and low-pressure systems. Summer precipitation is driven by convective shower activity during the warm season, and some locations of the Coastal Plain experience higher rainfall totals due to sea-breeze thunderstorms. Tropical cyclones usually contribute to precipitation during the hurricane season, especially from August through October.

South Carolina Annual Average Precipitation (1895 - 2022)



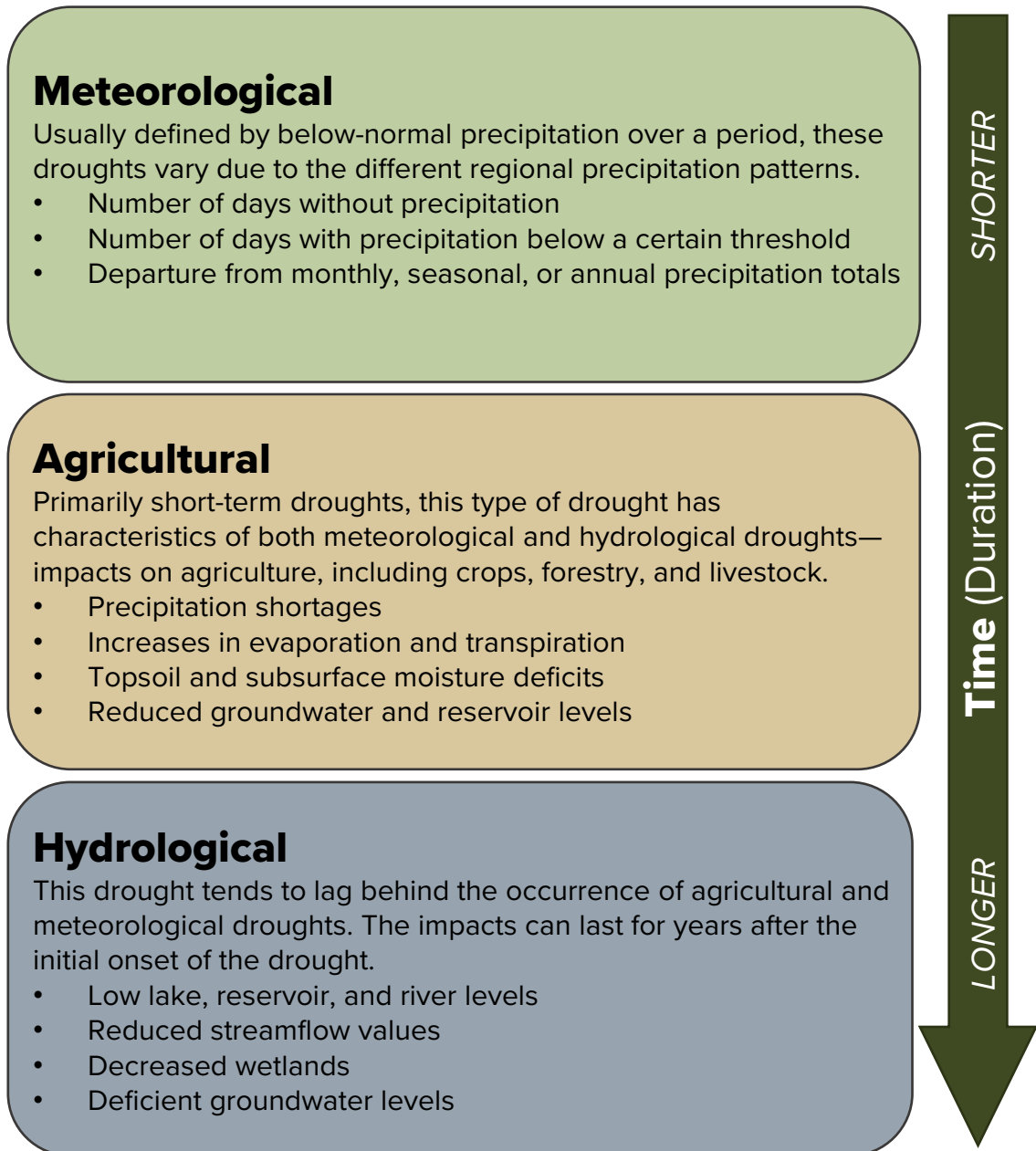
Tables of the top five statewide wettest and driest years on record based on average annual precipitation

Year	Statewide Average Precipitation Total	Departure from Long Term Average	Year	Statewide Average Precipitation Total	Departure from Long Term Average
1964	69.32"	21.52"	1954	31.72"	-16.08"
1929	63.14"	15.34"	2001	34.72"	-13.08"
1959	60.86"	13.06"	2007	34.90"	-12.90"
2015	60.66"	12.86"	1931	35.37"	-12.43"
1928	59.89"	12.09"	1925	36.37"	-11.07"

There is a great deal of variation in the annual precipitation totals; however, there are distinct periods of drier and wetter than normal conditions that can be seen in the overall pattern. Statewide precipitation totals were above-normal from the mid-1960s until the late 1990s, though a few dry years were noted. There was a shift in precipitation during the first part of the 21st century, and most of the 2000s and 2010s reported a decrease in the annual rainfall, leading to long-term drought conditions.

DROUGHT

Drought is a normal part of climate variability that occurs in every climate. Drought results from a lack of precipitation over an extended period, often resulting in a water shortage for some activity, sector, or the environment. In contrast to other environmental hazards, droughts develop slowly over weeks, months, or years. Three main categories physically define drought: meteorological, agricultural, and hydrological. These categories help determine the economic, ecological, and societal impacts of droughts in communities.



Although South Carolina typically receives adequate precipitation, droughts can occur at any time of the year and last for several months to several years, affecting multiple sectors at different time scales. Drought conditions can also contribute to diminished water and air quality, increased public health and safety risks, and reduced quality of life and social well-being.

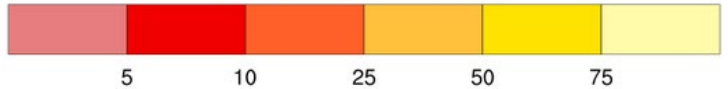
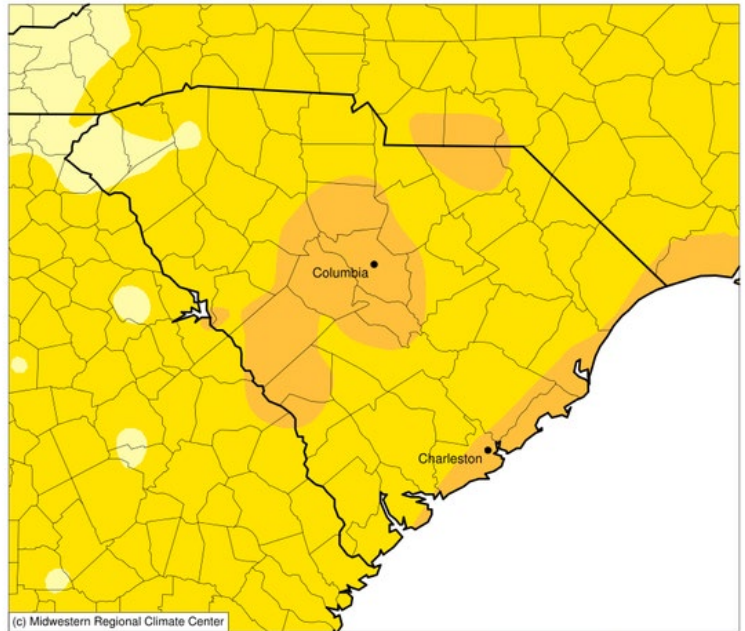
DROUGHT OF 1910 – 1911

Drought conditions prevailed in South Carolina from November 1910 – August 1911. May 1911 presented the most intense drought month during this period. Statewide average precipitation in May was 0.56 inches, 15.6% of normal precipitation (3.58 inches). Five stations in the extreme southeastern portion of the state had no appreciable rainfall. At the time, it was the driest May on record since 1787 in Charleston¹ and is currently the second driest May on record.

River stages remained very low, especially in west central, central, and coastal SC, until late in the fall and beginning of winter. These low river levels led to water use restrictions for citizens of South Carolina and decreased water use for power resources.

At the end of August 1911, a hurricane made landfall near Hilton Head, helping ease drought conditions. Precipitation in the latter half of 1911 brought the annual rainfall to 83 percent of average; however, the first seven months of the year only measured 57 percent of average rainfall.

Accumulated Precipitation (in): Percent of 1991-2020 Normals
November 01, 1910 to July 31, 1911



¹The record kept in Charleston dates to 1787, before the establishment of an official station, excludes 35 years in the 125-year period, but May of 1911 is still assumed to have been the driest since 1787.

LONG DROUGHT IN SALUDA.

Breaks Records Since 1870—Vegetation Practically Ruined.

Saluda, May 28.—Special: There has been no rain at this place since April 8, nearly seven weeks ago. It is the longest April-May drought since 1870. In that year, so the "oldest" citizens recall, there was no rain from about April 1 to May 28. Light showers fell in some sections of the county Wednesday afternoon, but none here.

Vegetation has been scorched by the hot sun of the past few days. Gardens are practically ruined.

Various newspaper articles about drought conditions from the Charleston News and Courier in May 1911.

DROUGHT HURTING FARMERS.

Dry Weather Disastrous to Truck Men—No Rain Yet in Sight.

"This is going to be the poorest season for truck that I have seen in many years," was the remark of a planter from the McClellanville section, who was in town yesterday. His remark is borne out by the assertions of planters from all of the truck-raising country in the vicinity of Charleston. It is the general opinion of all that the season will bring disastrous losses to many.

DROUGHT IN LEXINGTON.

Soil Suffering from Lack of Rain—Oat Crop a Failure.

Lexington, May 14.—Special: The continued drought is causing much unrest among farmers generally. In every section of the county rain is badly needed, and unless it comes soon the situation will be serious. Much of the cotton is

DROUGHT OF 1925 – 1927

1925 was the most intense drought year on record (at the time) and is currently the fifth driest year on record, with a rainfall deficiency of 11.16 inches. The average annual rainfall for 1925 was 36.73 inches, 3.22 inches lower than the previous record from 1911. Every state sector was impacted — agriculture struggled, hydroelectric power was limited, and these limits affected the textile mills and other industries. With over half of the state’s workers in the agriculture sector, nearly 16 percent of farms in South Carolina were abandoned, and a quarter-million people left the state for better opportunities elsewhere. Rainfall remained below normal through 1927, although 1925 was the year of the most severe drought. SC Department of Agriculture called 1925 the most severe drought experienced in forty years. Rainfall across the region was below average for the next couple of years. The cotton crop failure hit South Carolina hard since over half of the state’s workers worked in agriculture, and they almost exclusively worked in cotton. Streamflow values were reported to be at a record low, considerably reducing power generation and forcing slowdowns and mill closures.



Source: Lange, Dorothea, photographer. Oldest son of sharecropper family working in the cotton. Chesnee, South Carolina. Library of Congress, Prints & Photographs Division, FSA/OWI Collection, LC-DIG-fsa-8b32095.

Drought Causing Many Fish to Die in Sumter County

(Special to The Record)
SUMTER, S. C., Sept. 7.—Because of the low water in Black river swamp in Sumter county fish are dying by the thousands. The main stream in Black River swamp near the Plowden’s mill road is still flowing, but all the rest of the streams that usually flow are dry.

Source: Charleston News and Courier

(Special to The Record)
SUMTER, S. C., Sept. 1.—Woods’ fires are still reported as burning in the Black River section of the county. The fires have been raging for more than two weeks and many hundreds of acres of fine woodland have been destroyed. All the woods are parched and burn like tinder because of the long continued drought.

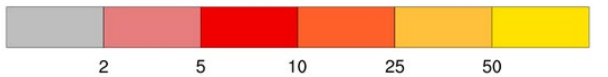
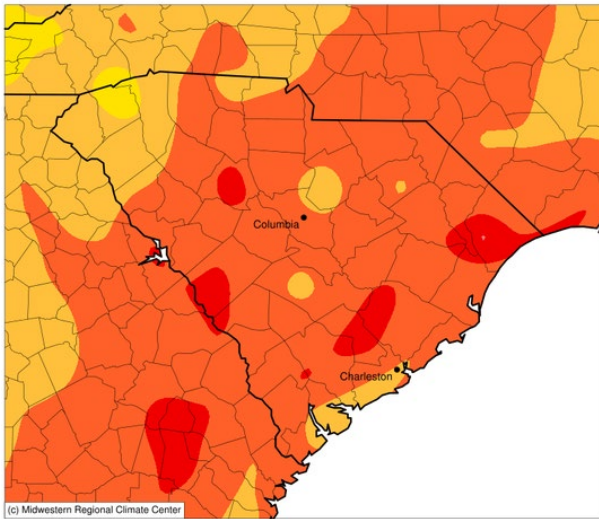
Month of 1925	Statewide Rainfall	Departure from Normal	Monthly Ranking
January	8.39"	4.70"	Wettest
February	1.72"	-2.18"	17 th Driest
March	1.55"	-2.61"	5 th Driest
April	2.18"	-1.18"	32 nd Driest
May	2.14"	-1.44"	20 th Driest
June	3.46"	-1.24"	36 th Driest
July	3.50"	-1.98"	13 th Driest
August	1.57"	-3.68"	Driest
September	1.90"	-2.28"	16 th Driest
October	2.70"	-0.38"	--
November	3.86"	1.15"	28 th Wettest
December	3.76"	0.15"	--

DROUGHT OF 1930 – 1935

The first half of the 1930s was known as the Dust Bowl Era. Multiple distinct drought events occurred during this time, and impacted areas did not have time to recover between events. Some areas were still recovering from the 1925 – 1927 drought. While parts of the Southeast United States did not experience the severity of the drought that affected the Plains, this prolonged drought period diminished soil moisture for several years. This lack of soil moisture led to decreased crop germination and increased agricultural losses in South Carolina.

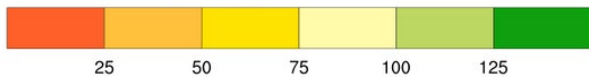
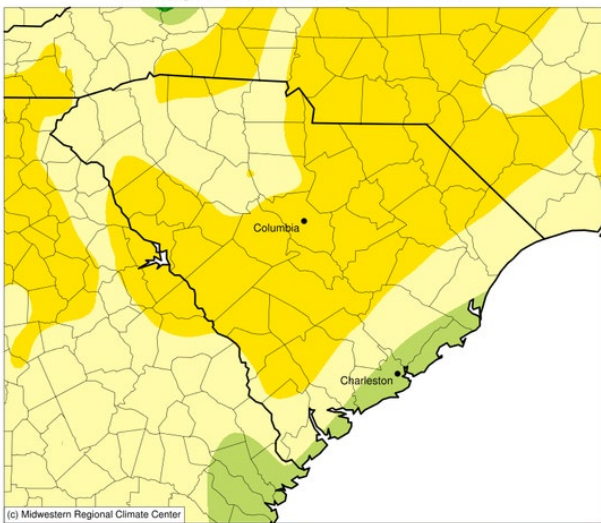
Accumulated Precipitation (in): Percent of 1991-2020 Normals

September 01, 1931 to November 30, 1931



Accumulated Precipitation (in): Percent of 1991-2020 Normals

January 01, 1933 to December 31, 1933



1931 is South Carolina's fourth driest year on record, with a statewide average annual precipitation of 35.37 inches. Below-normal rainfall totals led to the third driest September, and the driest November on record. The station in Newberry only reported a trace of rain in September 1931, while the stations in Eutawville and Garnett recorded 0.02 inches in November 1931. The fall of 1931 is currently the driest fall on record for the state.

MURRAY FALLS 17 FEET Columbia Power Lake Loses Water in Drought

Columbia, Oct. 31.—(P): The long drought has dealt sternly with Lake Murray, huge artificial lake near Columbia on the Saluda river. The lake has fallen 17 feet below the peak reached last spring. For nearly three months but occasional and light showers have fallen in the section.

Source: Charleston News and Courier

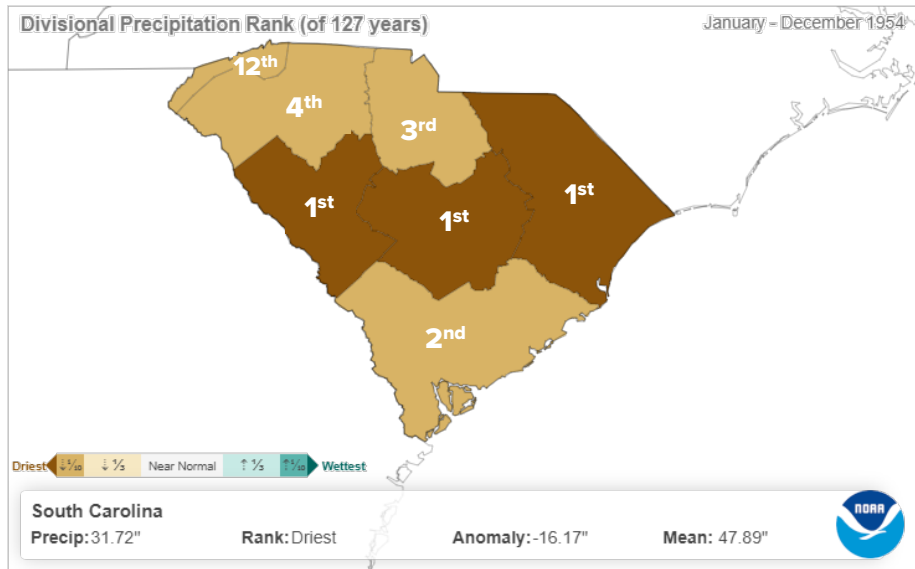
In 1933, considerable replanting was necessary for many portions of the state during the spring, particularly cotton. The statewide average annual precipitation total was 36.99 inches, making it the sixth driest year since 1895. Most Midlands stations reported between 50 and 75 percent of average annual rainfall totals. The station near Aiken recorded only 24.65 inches of rain during the year, 26.12 inches below normal.

Did You Know?

While South Carolina was one of the first states to establish Soil Conservation Districts under federal law in 1937, Mrs. Ploma Adams from Oconee County developed the first soil conservation plan approved in the nation in February 1938.

DROUGHT OF 1950 – 1957

One of the most prolonged drought episodes occurred between 1950 and 1957, covering at least 60% of the contiguous United States at its peak. During this period, each year had below-normal rainfall. However, 1954 remains the driest year in South Carolina's history, with an average annual precipitation of 31.72 inches and 16.08 inches below average yearly rainfall. Drier-than-normal conditions started in February and continued throughout the year, leading to significant impacts on agriculture. Even rain from Hurricane Hazel could not ease drought conditions across most of the state.



1954 Rainfall Totals	Departure from Normal	Station	County
20.73"	-22.79"	Rimini 2 SSW	Clarendon
24.14"	-25.46"	Pinopolis Dam	Berkeley
24.28"	-22.63"	Clarks Hill 1 W	McCormick
25.32"	-25.32"	Parr	Fairfield
25.42"	-25.06"	Orangeburg 2	Orangeburg
26.60"	-17.22"	Camden 3 W	Kershaw
27.38"	-17.86"	Columbia Metro	Lexington

Record Heat Again Sizzles Columbians

Columbians sizzled through their third straight day of record breaking heat yesterday as the mercury soared to 101 degrees in the late afternoon to set a new all time high for October heat.

And more of the same is promised today by the experts at the United States Weather Bureau office, at Columbia airport.

The high yesterday was four hot degrees above the previous high for October set only Monday. Before that the record was 96 degrees set Oct. 6, 1951. And Sunday's 93 degrees was the highest for an October 3 since records were begun in 1887.

The top mark was hit at 4 o'clock yesterday afternoon but at 7:30 last night the mercury was still way up there at 87 degrees. At 7:30 in the morning the reading was 74, which rose to 98 degrees at 1:30 and the high of 101 at 4 o'clock. As usual there was no rain recorded.

SC Drought Grows Worse In Piedmont

The Federal-State Crop Reporting Service said yesterday that the prolonged drought became more intense in the northern half of the state last week.

Extreme drought already has been reported to prevail there.

The Coastal Plains region has fared better than the Piedmont in recent weeks from local showers and some good rain but the drought still is unbroken in most of the state, the service said in its weekly crop review.

"Fall planting is being seriously delayed as most farmers are hopefully awaiting rain before risking seed in the dry ground even where it is possible to break land and dust in seed," the report continued. "Some grazing crops planted after mid-September showers are faring badly and may die out entirely unless rain comes soon."

Articles in The State Newspaper on October 6, 1954

Forest fires burned thousands of acres throughout the state, and streams and lakes had low stage levels. In 1954, small streams became dry, and more major rivers, such as the Black and Coosawhatchie, stopped flowing for extended periods. Water use in several cities and towns was decreased, as was the availability of power.

Cool-weather in May caused some cotton to be replanted in some areas. Conditions deteriorated progressively through the summer. Pastures were hit particularly hard, forcing the early sale of livestock across the Upstate. The South Carolina Crop Reporting Service estimated the 1954 crop valuation at \$80 million (1954 USD), or about 23% below 1953.

Farmers Get Nearly Five Million Pounds of Grain

One phase of drought disaster relief in South Carolina already is under full steam—633 state farmers have used purchase orders for 4,724,400 pounds of grain under the emergency seed program in its first 10 days of operation.

It was also announced yesterday that the State Agriculture Department is ready to receive reimbursement applications under the emergency hay program.

pounds of barley, oats, corn and grain sorghums, either separate or mixed.

Boatwright said he expected ASC committees to begin issuing approved purchase orders in all counties next week.

Under the hay program, the government pays farmers one-half their hay transportation costs, or \$10 a ton, whichever is smaller.

Farmers must apply to their county Farmers Home Administration

Source: The Columbia Record

DROUGHT OF 1985 – 1986

During the fall of 1985, above-normal precipitation helped ease hydrological drought conditions across the Southeastern United States. However, below-normal rainfall during the winter resulted in the redevelopment of hydrological drought across South Carolina. The winter of 1985 – 1986 stands as the 5th driest winter on record, with a statewide average of 5.55 inches of precipitation, nearly 5.71 inches below the seasonal average. Conditions continued to deteriorate during the spring and intensified during the first two months of the summer due to a continued lack of rainfall and above-normal temperatures.

Month	Statewide Rainfall	Departure from Normal	Monthly Rank
December 1985	1.97"	-1.64"	15 th Driest
January 1986	1.69"	-2.14"	10 th Driest
February 1986	2.29"	-1.61"	29 th Driest
March 1986	3.19"	-1.09"	41 st Driest
April 1986	0.78"	-2.56"	Driest
May 1986	2.94"	-0.64"	--
June 1986	2.42"	-2.26"	10 th Driest
July 1986	2.99"	-2.55"	7 th Driest
August 1986	8.93"	3.65"	8 th Wettest
September 1986	1.79"	-2.45"	13 th Driest

Group pushes cow 'adoption' as way to fight S.C. drought

Associated Press

CHARLESTON, S.C. — In a nation that adopted Cabbage Patch Kids and pet rocks, a group working to aid South Carolina's drought-stricken farmers hopes people will adopt cows.

Michael Rose, a Summerville attorney and businessman who founded the Farmers Assistance Relief Mission, said yesterday that the non-profit group wants to raise money from across the nation to save the state's starving livestock.

FARM is trying to get funds to bring more Midwestern hay and grain

to South Carolina, where crops have withered in the fields from what is likely to be the state's worst recorded drought.

"It costs \$140 to feed hay to a cow from August 1 to April 1, which is the remaining danger period," Rose said. "What we hope is that people and organizations will adopt a South Carolina cow, for which they will receive a certificate that they can proudly display on their wall."

Rose added: "I think that concept will have a lot of potential. There are 17 million people in New York City

living in concrete, many of whom have never seen a real cow. If they'll buy a pet rock, maybe they'll adopt a cow."

He said the group was also considering including pictures of the cows and was discussing how to allow the adopters to visit the adoptees down on the farm.

Rose said the group has set an initial goal of raising \$1 million to help keep shipments of hay moving into the state.

Here is the address for contributions: FARM, Capitol Station, Columbia, S.C. 29211-1000.

THE JOURNAL HERALD

Farmer's corn, profits drying up

South Carolina drought leaves little to salvage

By William Stracener
ASSOCIATED PRESS

BETHUNE, S.C. — Parched leaves, baked by the sun and brittle to the touch, crackled as Bill Tolbert brushed past a row of stalks in his cornfield decimated by drought.



The Indiana Hay Train crosses the Saluda River Bridge on Tuesday as it enters Columbia, S.C., with a load of feed.

Hay Train arrives with feed, hope

Disaster areas were declared in 45 counties due to drought losses-- \$219.9 million in agricultural losses and \$8.1 million in forestry losses attributed to forest fires. The forest fires exceeded regular monthly averages by up to ten times of typical seasons; over 19,000 acres were burned in January 1985 alone.

Tourism and recreation were affected due to the low reservoir levels. Still, groundwater helped to minimize impacts on public water supplies. There were approximately 29 drought-related deaths due to the intense heat.

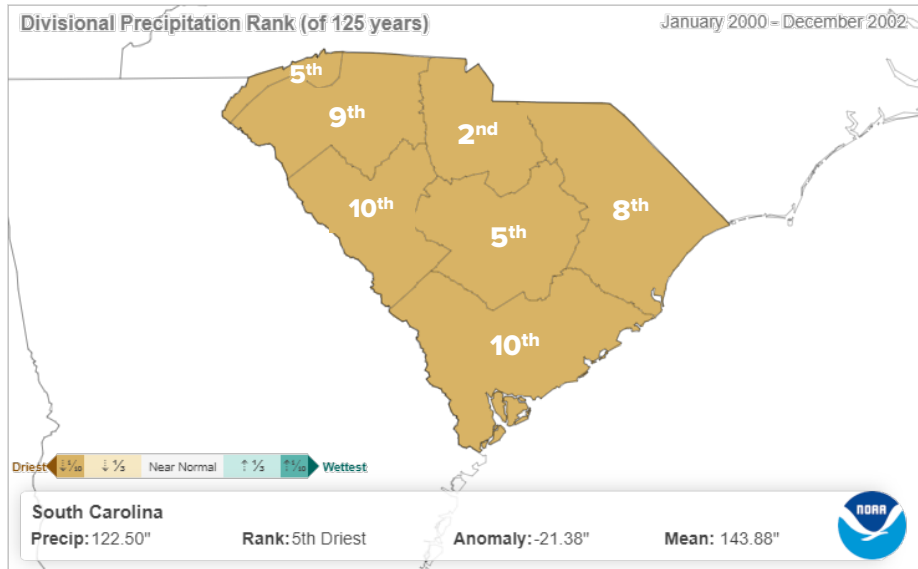
Did You Know?

The South Carolina Drought Response Act 1985 established the Drought Response Committee to address drought-related problems and coordinate responses throughout the state.

DROUGHT OF 1998 – 2002

Coming out of the second wettest winter on record, statewide precipitation for December 1997 to February 1998 was 20.52 inches, or 9.14 inches above normal. Conditions were also wetter than normal across the state during Spring 1998, with a statewide total of 15.19 inches, or 3.99 inches above normal. Summer was the 10th driest on record, with only 11.50 inches of rain and temperatures 2°F degrees above normal, nearly 3 degrees above normal in the fall. 2001 is the 2nd driest year on record, and October 2000 was the driest month on record, with statewide average precipitation of 0.02 inches.

The below-normal rainfall and lack of tropical cyclone activity caused water resources to steadily deteriorated during the four-year period. Mandatory conservation efforts were enforced, stream flows reached record lows, and groundwater levels and reservoir storage were greatly diminished. Coastal areas such as Georgetown, SC, felt the impacts of saltwater intrusion into the water systems. The South Carolina Forestry Commission (SCFC) imposed outdoor burn bans regularly from the summer of 1998 through 2002. Widespread forest fires were a persistent issue along with the disease-spreading southern pine beetle that caused an estimated \$210 billion in losses.



Year	Statewide Annual Rainfall	Departure from Normal	Yearly Ranking
1998	54.12"	6.23"	26 th Wettest
1999	44.14"	-3.75"	35 th Driest
2000	41.24"	-6.65"	18 th Driest
2001	34.72"	-13.17"	2 nd Driest
2002	46.54"	-1.35"	--

DROUGHT

FROM PAGE B1

in trouble, y'all," Vang said.

Drought is a normal part of South Carolina's climate. Since 1925, the seven-county Midlands portion of the state has been in some stage of drought about 47 percent of the time. But severe or extreme drought status has been in effect only 46 of the 895 months since 1925.

The current drought actually began in May 1998, Mizzell said. If not for a drenching rain from Tropical Storm Earl last September, the state would have been in a drought situation that entire 15 months.

Since July 1 of this year, most of the Midlands and Upstate are six to eight inches below normal. For the year, Greenville is about 14 inches and Columbia about 15 inches below normal.

With those numbers in mind, Vang recommended that local water providers take a good look at their reservoirs. Even if they are in good shape now, they could start running low during the traditionally dry months of fall and winter.

Dale Linvill, a climatologist at Clemson University, said the state would need 24 to 28 inches of rain

in the next three months to return to normal saturation. The normal precipitation for those months is about 9.5 inches.

"This calendar year, I don't see

"If we go out six more weeks without significant rainfall, we're in trouble, y'all."

— Freddie Vang
Department of Natural Resources

much relief for us other than some tropical systems," said state climatologist Mike Helfert. And the type of tropical systems most likely this season, coming straight off the Atlantic, "aren't the kinds you want," he said.

Larry Barr, a staff forester with the state Forestry Commission, said the dry conditions point to a busy fall fire season. Last week, the commission battled 152 fires that burned 774 acres. That was more than double the previous week, in part because winds picked up as Dennis passed by, he said.

Linvill, the Clemson climatologist, said the agricultural situation is way past serious and getting worse.

"We need rainfall now to get winter grain in," he said. "And the peach and apple trees need it now. Next year's crop grows on this year's wood."

The Department of Health and Environmental Control already has notified industrial discharge permit holders to monitor their discharge into rivers and streams that are at extraordinarily low levels. The amount of discharge allowed is based on historic water flow levels that can dilute the pollutants.

Many rivers are below those minimum flow levels. For instance, the Lynches River near Effingham is flowing at 169.66 cubic feet per second. Its minimum flow level is 212 cubic feet per second.

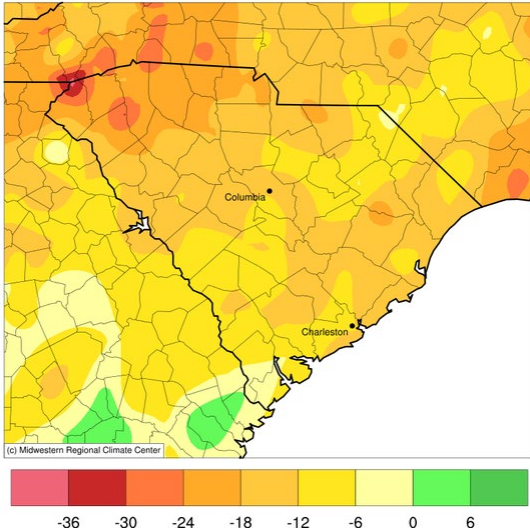
Mizzell said the real message of the severe drought declaration is that everybody, from major municipal and industrial users to families with their own wells, needs to start paying attention.

"We're going to be thoroughly encouraging those individuals depending on their own wells to monitor their wells and understand the severity of the drought," she said.

DROUGHT OF 2007 – 2009

2007 was South Carolina's third driest year on record, with a statewide average annual precipitation of 34.90 inches, 12.90 inches below the normal yearly rainfall total.

Accumulated Precipitation (in): Departure from 1991-2020 Normals
July 01, 2007 to July 31, 2008



2007 Rainfall Totals	Departure from Normal	Station	County
27.01"	-15.61"	Winthrop Univ.	York
27.51"	-15.65"	Lockhart	Union
28.24"	-19.57"	Gaston Shoals	Cherokee
29.42"	-16.55"	Little Mountain	Newberry
29.73"	-16.19"	Chester 1 SE	Chester
31.08"	-18.59"	Grnv'l-Spart Int AP	Spartanburg

9 Upstate counties join extreme drought list

By JOEY HOLLEMAN
jholleman@thestate.com

Extreme drought was declared Tuesday in nine more counties in the Upstate, while afternoon thunderstorms have kept the rest of the state from deteriorating this summer.

The state drought response committee added Anderson, Abbeville, McCormick, Edgefield, Saluda, Greenwood, Newberry, Laurens and Union counties to the worst level of drought in the state classification system — extreme. They join Oconee, Pickens, Greenville, Spartanburg and Cherokee, which were declared in extreme drought in early July.

severe status, 21 in moderate and four in incipient. Conditions improved so much along the coast that Charleston and Georgetown counties no longer are considered in a drought.

Richland and Lexington counties remain in moderate status, while Kershaw County is in severe.

Spotty afternoon thunderstorms hit much of the state, with most counties southeast of the I-20 corridor getting near normal or above normal rainfall in July.

The extreme classification prompts some water providers to begin mandatory water use restrictions, but each water company has different triggers to require restrictions. Most include factors

and only a few small reservoirs are at dangerously low levels, according to water providers on the committee.

The committee urged all water systems, businesses and individuals in severe drought counties to "implement aggressive conservation measures."

Major water providers in the Upstate argued against mandatory use restrictions because they have no shortage of water for their customers. Voluntary restrictions have cut use this summer, and most providers took measures to keep reservoirs as full as possible over winter and spring.

While Gov. Mark Sanford can

committee won't seek that action.

The drought's major impact on agriculture in the state is in the Upstate, where pastures have dried up, hay from early cutting is running out and some farmers are selling cattle early, according to Larry Boyleston of the S.C. Department of Agriculture.

The long-range forecast calls for slightly cooler than normal temperatures and near normal rainfall for most of the state in August and September. Committee members debated whether to change Newberry County's status to extreme.

They decided the northern section of the county is dry enough to merit that status, even if the south-

As the drought continued into 2008, it affected water levels at major lakes, such as Lake Hartwell, Lake Marion, and Lake Jocassee. These lakes experienced record low levels, which affected the local economy, and the drought impacted water supplies, irrigation capacity, and many water-related industries. Water restrictions were issued across the state to address water supply shortages.



MEMORIAL BRIDGE (Photo courtesy of Mr. Doug Young)

South Carolina's worst wildland-urban interface fire started on April 22, 2009, in Horry County. Due to extreme fire behavior (low humidity, high winds, flammable vegetation), the dangerous Highway 31 Fire had burned 19,130 acres, destroyed 76 homes, and damaged 97 others before being controlled. Shifting winds and abnormal nighttime weather conditions made the fire very unpredictable and dangerous. No lives were lost, and no injuries occurred during the wildfire.



Source: South Carolina Forestry Commission

DROUGHT OF 2010 – 2013

The 2010 – 2013 Southern United States drought was caused by a strong La Nina that developed in the Summer of 2010 and lingered into 2013, bringing multiple years of below-normal rainfall to the southern tier of the US.

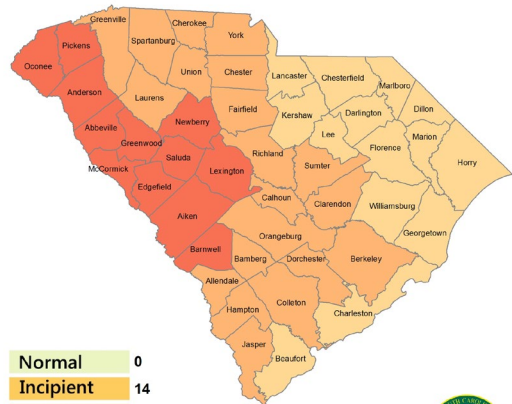


Lake Jocassee (2011) by Mr. Doug Young

On the heels of the 2007-2009 drought, the Savannah Basin lakes were well below their target guide curves in March 2012. The inflows into Lake Thurmond for the following three-month period were the lowest recorded since 1954. The deteriorating hydrologic conditions reduced the amount of water stored in shallow and deep aquifers. Volunteer weather observers throughout the state noted various severe impacts on their water bill, garden quality, and health due to the dry environment.

In December 2012, most counties along the Savannah watershed were upgraded to severe drought, receiving less than 50% of normal rainfall over the last 60 days resulting in deteriorating hydrologic conditions. The US Army Corps of Engineers operated under level 2 drought status starting in August 2011. They were designated in level 3 drought status at the end of 2012, with roughly 41% of their conservation storage remaining.

Drought Status: 12-11-2012



Normal 0
 Incipient 14
 Moderate 20
 Severe 12
 Extreme 0
 Number of counties in each category



SC Department of Natural Resources
 State Climate Office

STATE

[COLUMBIA]

Christmas rainfall hits just where needed — South Carolina received a Christmas present of rain, and the most fell where it was most sorely needed.

The fronts that blew through the state brought multiple slugs of rainfall Dec. 24-26. The highest totals were in the 12 counties considered in severe drought status — Abbeville, Aiken, Anderson, Barnwell, Edgefield, Greenwood, Lexington, McCormick, Newberry, Oconee, Pickens and Saluda counties.

National Weather Service co-op stations in that region reported 2.98 inches in Fountain Inn, 2.95 inches in Greenville, 2.73 at Lake Hartwell and 2.25 inches at Lake Russell. Two

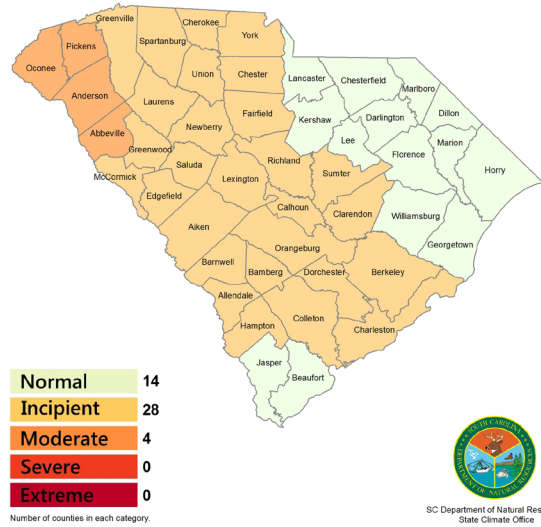
Year	Statewide Annual Rainfall	Departure from Normal	Yearly Ranking
2010	54.12"	6.23"	26 th Wettest
2011	44.14"	-3.75"	35 th Driest
2012	41.24"	-6.65"	18 th Driest
2013	34.72"	-13.17"	2 nd Driest

Above-normal rainfall during the Spring of 2013 alleviated drought conditions, with some locations recording between ten and fifteen inches of rain between February 24 and April 23, more than twice the normal amount. The precipitation recharged soil moisture levels, replenished reservoirs, and increased stream flow values.

DROUGHT OF 2015 – 2016

Drought Status: 07-08-2016

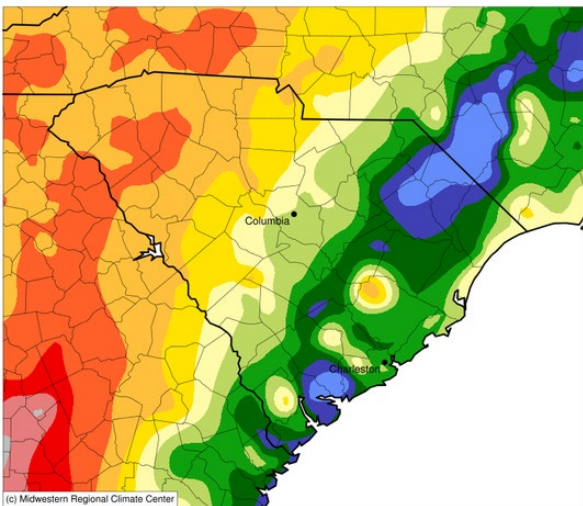
South Carolina experienced alternating wet and drought conditions during 2015 and 2016. In June 2015, all counties were designated as incipient or moderate drought, but above-normal precipitation in October, November, and December eased conditions. By July 2016, the lack of rainfall caused the SC Drought Response Committee to recategorize drought designations as either incipient (28 counties) or moderate (4 counties) drought.



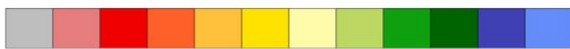
SC Department of Natural Resources
State Climate Office

Accumulated Precipitation (in): Percent of 1991-2020 Normals

October 01, 2016 to November 30, 2016



(c) Midwestern Regional Climate Center



2 5 10 25 50 75 100 125 150 175 200

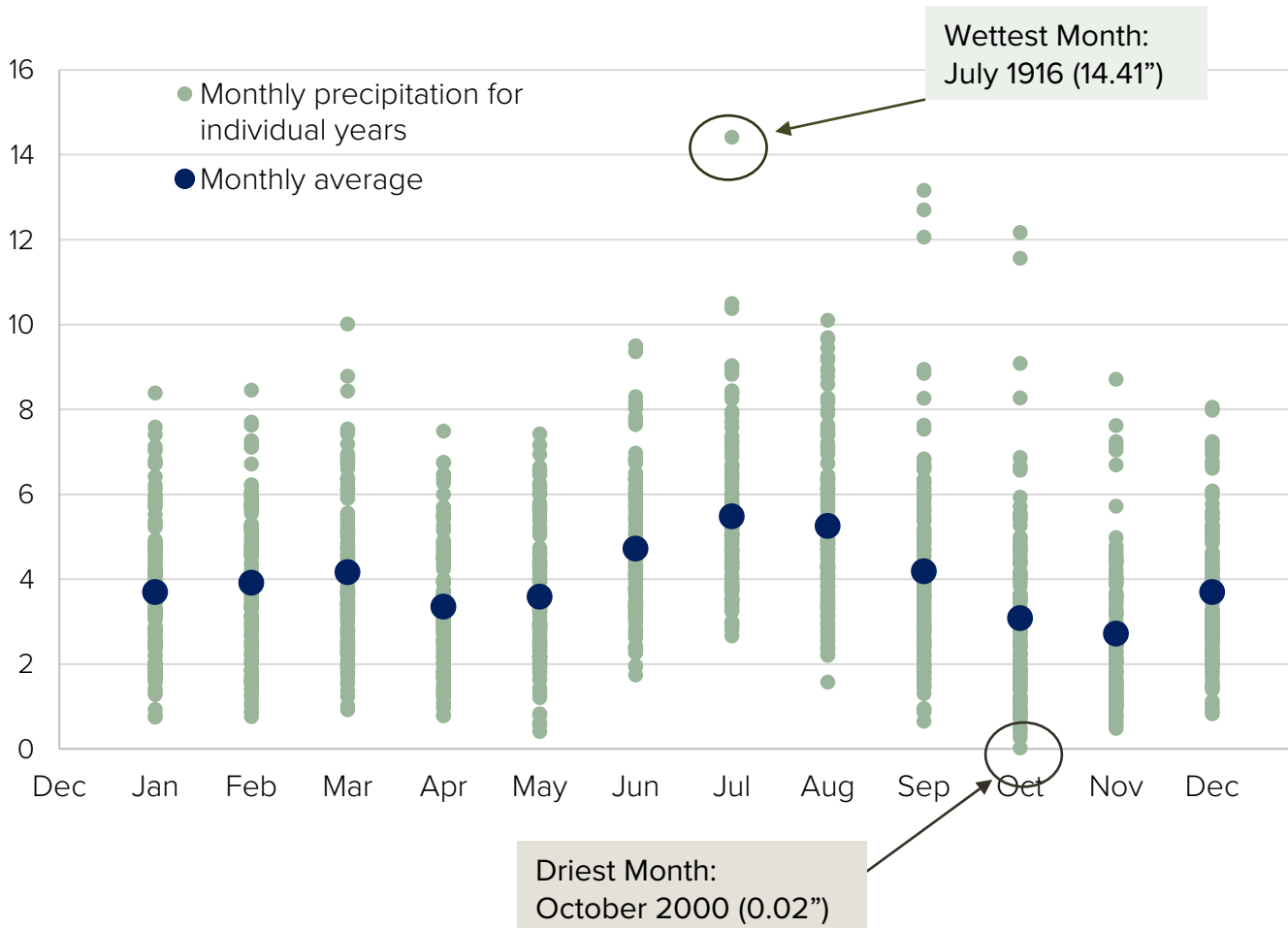
In October 2016, Hurricane Matthew brought heavy rains to the Coastal Plain but provided little to no rain in the Piedmont and Upstate. This event caused South Carolina to experience flooding and drought simultaneously on both sides of the hydrologic spectrum. While the Coastal Plain was dealing with flood damage to crops, the drought intensified in the Upstate due to deteriorating soil moisture, affecting crops and pastures. By the end of October, Anderson, Oconee, and Pickens Counties were declared in severe drought status. The worsening drought in the Upstate and Piedmont weighed heavily on livestock and crops. Yields on summer pasture, forages, and row crops were down by 50 to 70 percent, and reports by extension agents confirmed degradation of range and pasture conditions and minimal soil moisture.



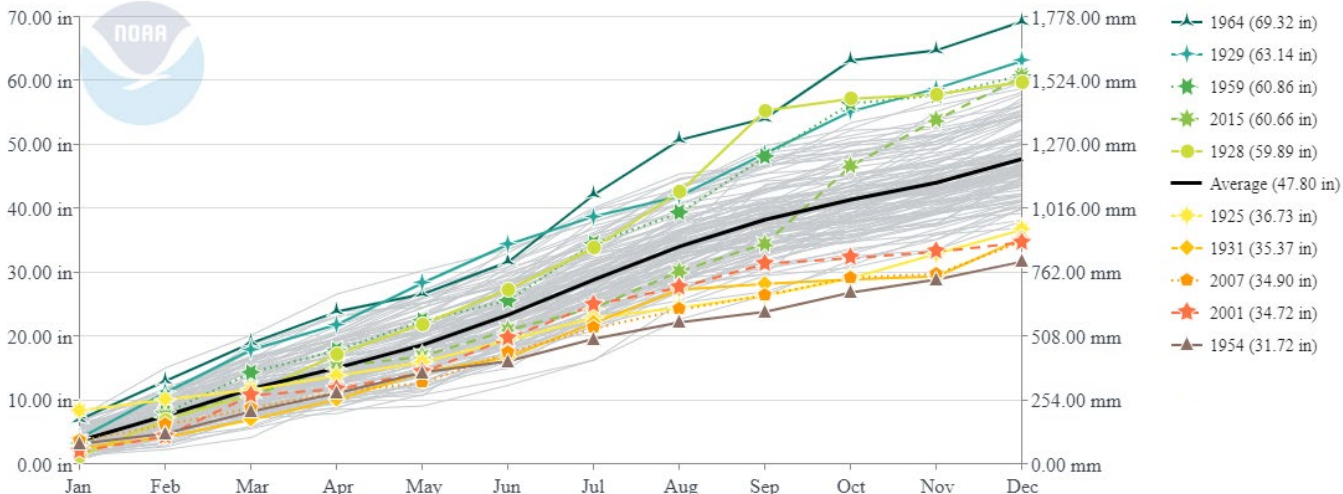
Source: South Carolina Forestry Commission

In November 2016, the Pinnacle Mountain Fire burned 10,623 acres. The fire spread aggressively through Table Rock State Park, the Greenville Watershed, and a Wildlife Management Area. To control the fire, multiple aircraft were used, along with hand crews and overhead personnel from several western states.

South Carolina Monthly Precipitation (1895 – 2022)



South Carolina Year-to-Date Precipitation





August 2023