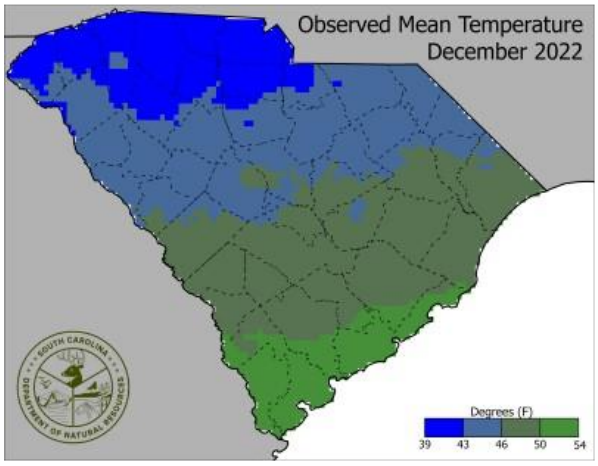
South Carolina Water Resources Monthly Summary For December 2022

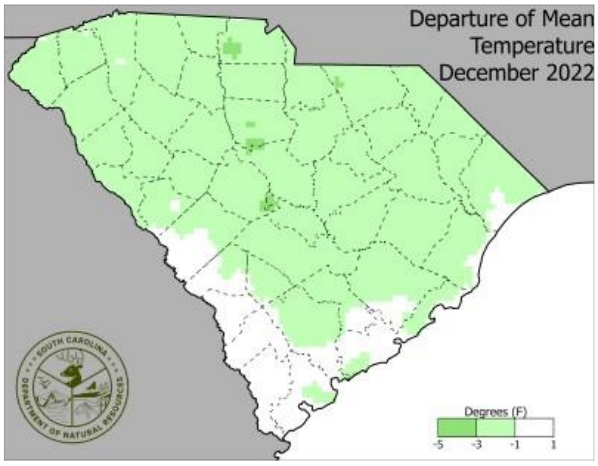
Provided by

The South Carolina Department of Natural Resources

Temperature

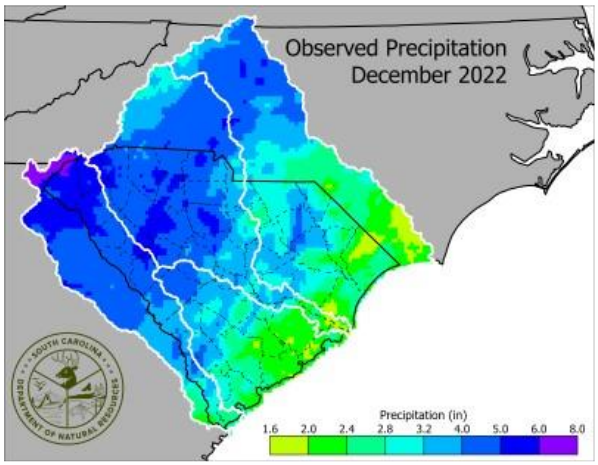
Statewide, South Carolina had a average temperature of 46.1 degrees, the exact same as the long-term average (1895-2021) of 46.1 degrees for December. Besides the Lower Savannah and southern Coast, much of the state had a monthly average temperature 1 to 3 degrees below the current climate normal (1991-2020). This means that the average temperature for December matched the climatic record (1895-2021) but was slightly cooler than the last 30-year average (climate normal 1991-2020). The highest temperature for the month was 83 degrees, observed on September 22 at the National Weather Service (NWS) station at the Yemassee. During the extreme cold on Christmas eve (12/24), the NWS station at Caesar's Head recorded the lowest minimum temperature and lowest maximum temperature across the state for the month of December, of -3 degrees and 18 degrees, respectively.

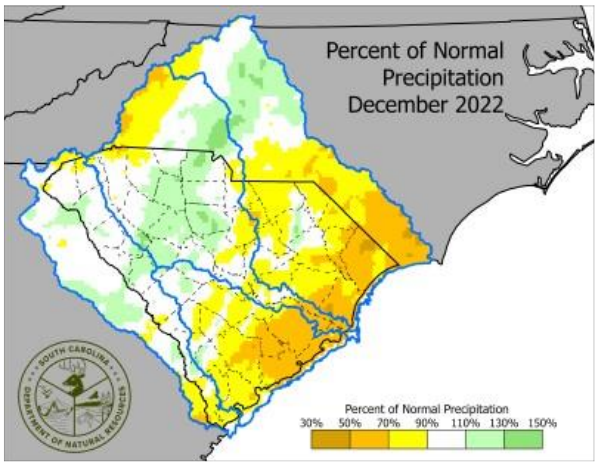




Precipitation

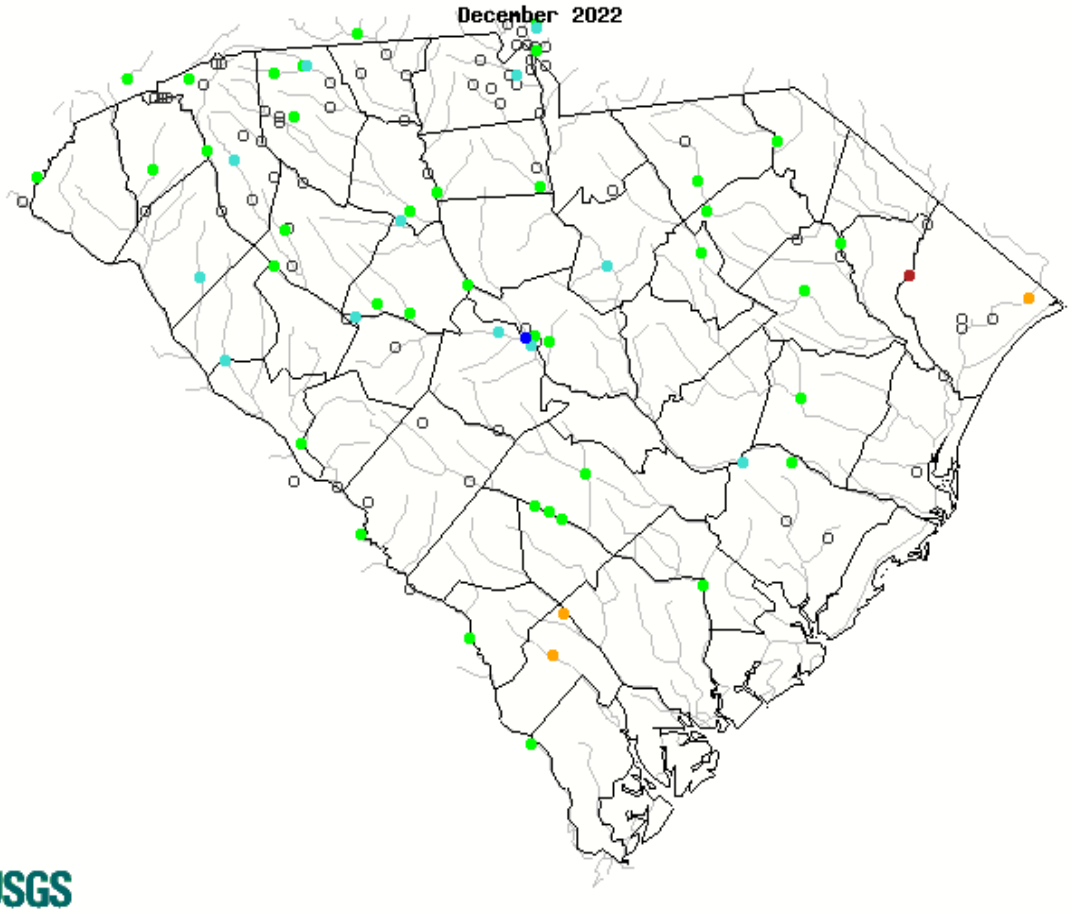
The statewide average precipitation for December 2022 was 3.24 inches, 0.45 inches below the long-term average for the month (1895-2021) of 3.69 inches. Generally, precipitation totals were above or near normal north of the Fall Line; while below the Fall line, precipitation was below normal. The Newberry NWS station recorded the highest totals in South Carolina in December of 5.64 inches, which is 1.46 inches above normal. The Downtown Charleston NWS station recorded the lowest precipitation in the state for December of 1.60 inches, which is 1.46 below normal. Please note, while other stations in the state recorded both higher and lower precipitation amounts for December, these stations were not used for reference as they had less than 30 years of data, which is needed for "normal" data.





Streamflow

The USGS's monthly streamflow map compares the current monthly average streamflow at each gage for a given month to each gage's historical monthly average streamflow for the same month over the gage's period of record. The map for December shows improvement in streamflow in most of the State from the rain received and cooler temperatures in the month. However, there are some pockets of regions in the Horry and Hampton counties where the gages are still measuring below normal streamflow conditions.



Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Reservoirs

The map below shows a surplus or deficit from the guide curves or full-pool elevations for the major reservoirs in the State, based on conditions for December 31st. Eight out of ten reservoirs were below their target or full-pool elevations.

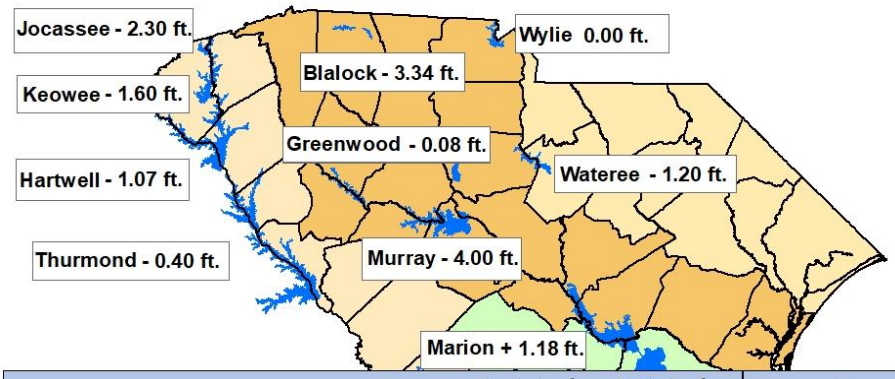
The Duke Energy lakes in the Catawba-Wateree River basin are still in Stage 0 of the Low Inflow Protocol (LIP) based on the storage index triggers. Due to the below normal rainfall conditions in the past several months and the current pumping operations, the LIP status continues to be in Stage 0. The LIP gets initiated when any two of the three triggers (Storage Index, U.S.Drought Monitor, and Streamflow) support Stage 0 or higher status. The U.S.Drought monitor and Streamflow triggers are long-term indicators based on more than one month of data. The lakes will be able to return to normal status, provided there's enough support from all three triggers. The USACE declared drought trigger level 1 on August 28th in response to reservoir levels at Thurmond dropping below 326 ft MSL. However, the lake levels at Hartwell and Thurmond improved in the first week of December and continued to stay above Level 1 through December. As of December 21st, their lakes are no longer in drought operations.

As of the end of December, the monthly average lake elevations of five out of the ten lakes dropped from the last month. Improvements in lake elevation could be a result of rain received in December as well as the target levels declining in October in anticipation of higher inflows in winter months.

Lake Level Deficit/Surplus on December 31, 2022

(Deficit/surplus values are referenced to guide curves, except Jocassee and Keowee which are referenced to full pool)

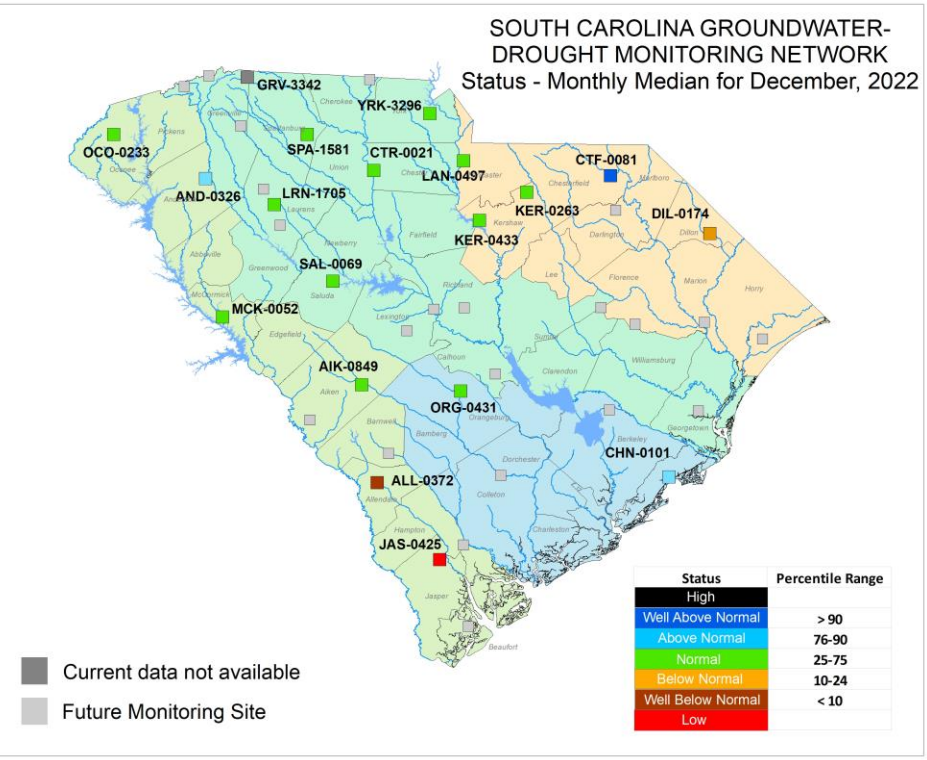
Key: Lake Name, Current lake level deviation from GC/FP



Lake	Current Elevation (ft)	Target (ft)	Full Pool (ft)	Deviation from Guide Curve	Deviation from Full Pool	Avg Monthly Difference (ft)
Greenwood	435.31	435.39	439.00	-0.08	0.33	**-1.21**
Murray	350.06	354.06	360.00	-4.00	-2.43	**-2.55**
Marion	73.68	72.50	75.60	1.18	0.13	**-0.23**
Jocassee	97.70	NA	100.00	NA	-2.30	**3.17**
Keowee	98.40	NA	100.00	NA	-1.60	**4.34**
Wateree	93.80	95.00	100.00	-1.20	-3.00	**-0.17**
Wylie	97.00	97.00	100.00	0.00	-2.40	**1.00**
Hartwell	655.98	657.05	660.00	-1.07	1.84	**1.30**
Thurmond	326.65	327.05	330.00	-0.40	0.42	**1.92**
Blalock	706.66	710.00	710.00	-3.34	-0.15	**-2.05**

Groundwater

The groundwater condition map for December is based on the monthly medians for the data collected by the USGS and SCDNR. Although most of the wells are at Normal status, eight of the seventeen wells observed a drop in the monthly medians from November to December. The York well dropped below normal levels since June and finally recovered in December. Water levels at the Jasper well dropped below historical low values in November reflecting the dry conditions in the Lower Savannah region. Although, water levels at the well improved in the last week of December, the median value was low. Similarly, water levels at the Allendale well dropped below normal conditions in May and continued to drop gradually, currently in well below normal conditions. Water levels at Dillion well dropped below normal as well. Although, the levels improved slightly in the last week of December but continued to maintain below normal status throughout the month. Similar to the Streamflow conditions map, the groundwater map for December reflects the dry spots observed in Horry County and Lower Savannah.

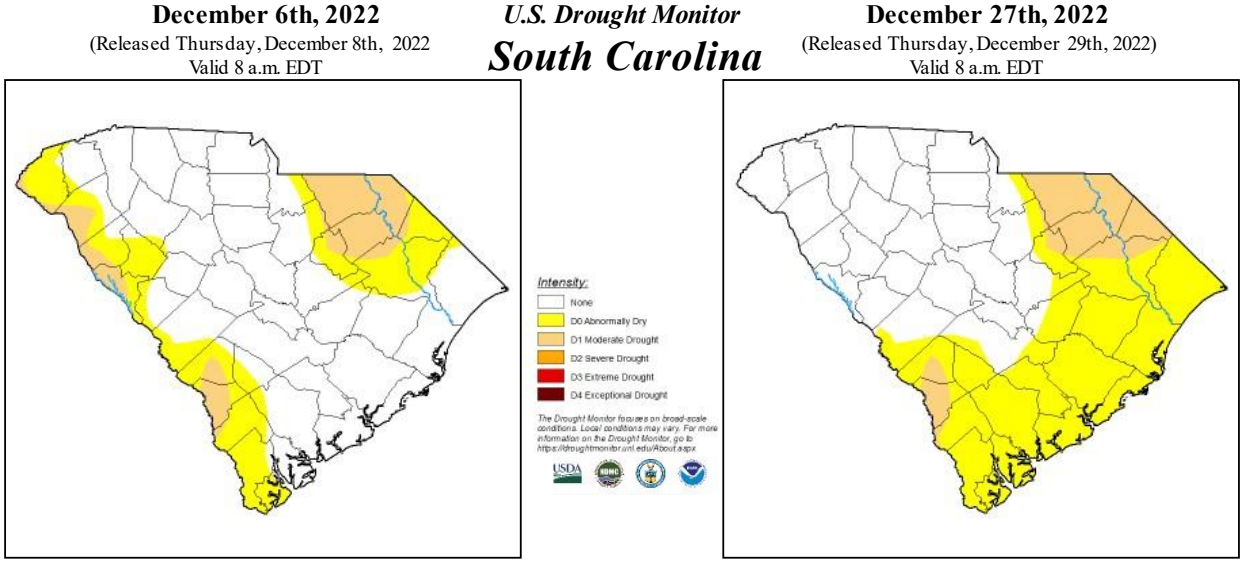


	USGS well sites											DNR Telemetry sites							
	MCK-0052	AND-326	OCO-233	KER-0433	SPA-1581	CTR-0021	YRK-3295	LAN-0497	JAS-0425	CHN-0101	DIL-0174	CTF-0081	GRV-3342	KER-0263	LRN-1705	SAL-0069	ORG-0431	AIK-0849	ALL-0372
Nov 2022 Monthly median (ft, below land surface)	39.88	3.29	29.60	53.47	43.01	89.19	24.84	33.87	66.02	13.11	4.95	86.84	--	36.10	16.37	24.45	28.40	42.73	56.36
Dec 2022 Monthly median (ft, below land surface)	40.19	3.00	29.27	53.71	43.20	89.31	22.70	32.65	65.14	13.11	5.20	86.73	45.46	36.35	15.09	18.67	28.57	42.43	56.65
Difference in monthly median from past month (ft)	-0.31	0.29	0.33	-0.24	-0.20	-0.12	2.14	1.22	0.88	0.00	-0.25	0.11	--	-0.25	1.28	5.78	-0.17	0.30	-0.29

Drought

The first U.S. Drought Monitor (USDM) in December (12/6) had 20.90% of the state in abnormally dry (D0) conditions and 10.98% of the state in moderate drought (D1) conditions. Over the month of December, conditions improved in the Upstate and degraded in in the Coastal Plain. This was due to above normal rainfall in the Upstate and below normal rainfall in the Coastal Plain and northern Pee Dee Region. Unfortunately, the below normal precipitation also allowed for some soil moisture and streamflow deficits to occur. By December 20th, the Upstate was free of all D0 and D1 conditions, while the Coastal Plain and northern Pee Dee region were entirely covered in D0 or D1 conditions. Some rain on December 23rd help to remove some of the D0 conditions in Orangeburg, Calhoun, and Sumter Counties for the final map of December (12/27). On this map 39.89% of the state was in D0 conditions and 10.67% of the state was in D1 conditions.

The South Carolina Drought Response Committee (DRC) met on December 7th. Prior to this meeting 28 counties were in incipient drought, 5 counties were in moderate drought, and 13 counties were in normal conditions. These designations were based on the DRC meeting from November 9th. During the December 7th meeting, many counties were improved by one category, leaving 17 counties in incipient drought and 29 counties in normal conditions. Chesterfield, Marlboro, Darlington, Dillon, Florence, Marion, Horry (all in the Northeast Drought Management Area (DMA)), Barnwell, Allendale, Hampton, Jasper, and Beaufort (in the Western DMA) were all left in incipient drought status; while Laurens, Union, York, Chester, and Lancaster Counties were improved from moderate drought to incipient status. The changes between the November 9th and December 7th meeting were primarily based on improvements to precipitation and soil moisture deficits. More information for DRC meetings and changes to the county-level drought designations can be found at www.scdrought.com.



Summary

For most of the state, average temperature for December was 1 to 3 degrees below normal, while portions of the Lower Savannah and southern Coast saw near normal temperatures. However, precipitation was mix for the state, with the Upstate generally receiving above normal precipitation and the Coastal Plain and northern Pee Dee region receiving below normal precipitation. These rain totals reflected changes in the U.S. Drought Monitor, with Improvements taking place in the Upstate and degradations taking place in the Coastal Plain and northern Pee Dee region.

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