

South Carolina Water Resources Monthly Summary

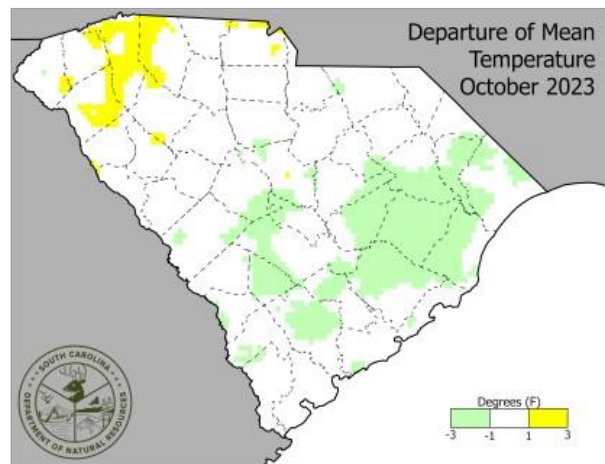
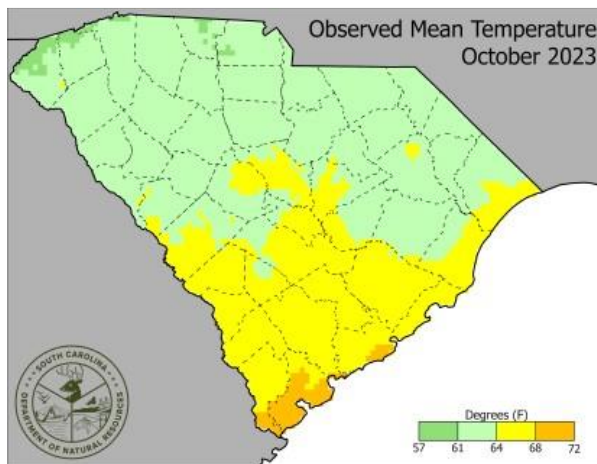
For October 2023

Provided by

The South Carolina Department of Natural Resources

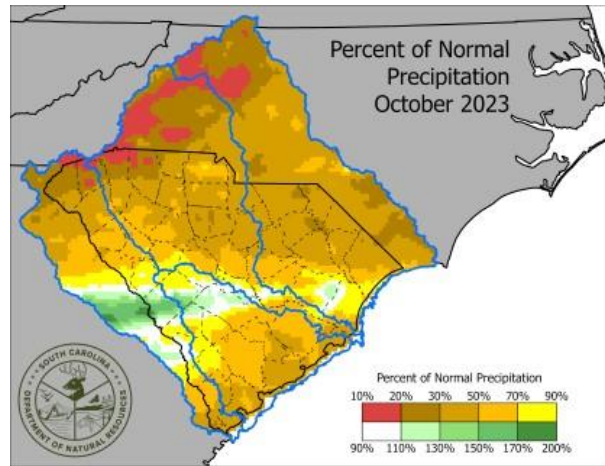
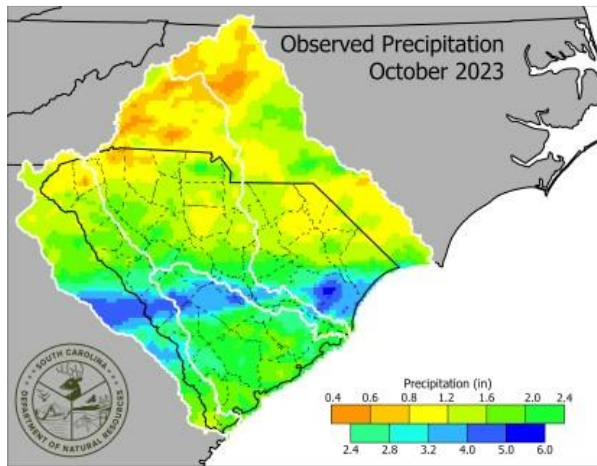
Temperature

Statewide, South Carolina had an average temperature of 63.9 degrees, 0.5 degrees above the long-term average (1895-2022) of 63.4 degrees for October. Most of the State had near normal average temperatures for October, while portions of the Coastal Plain had temperatures 1 to 3 degrees below normal and portions of the Upstate had temperatures 1 to 3 degrees above normal. The highest daily maximum temperature recorded in October was 91 degrees at the Holly Hill 1 SW NWS station in Orangeburg County. The lowest daily minimum temperature recorded in October was 32 degrees at two different stations on different days. The Jocassee 8 WNW NWS station in Oconee County recorded a minimum temperature of 32 degrees on October 17th and 18th, while the Union 8 S station in Union County recorded a minimum temperature on October 24th.



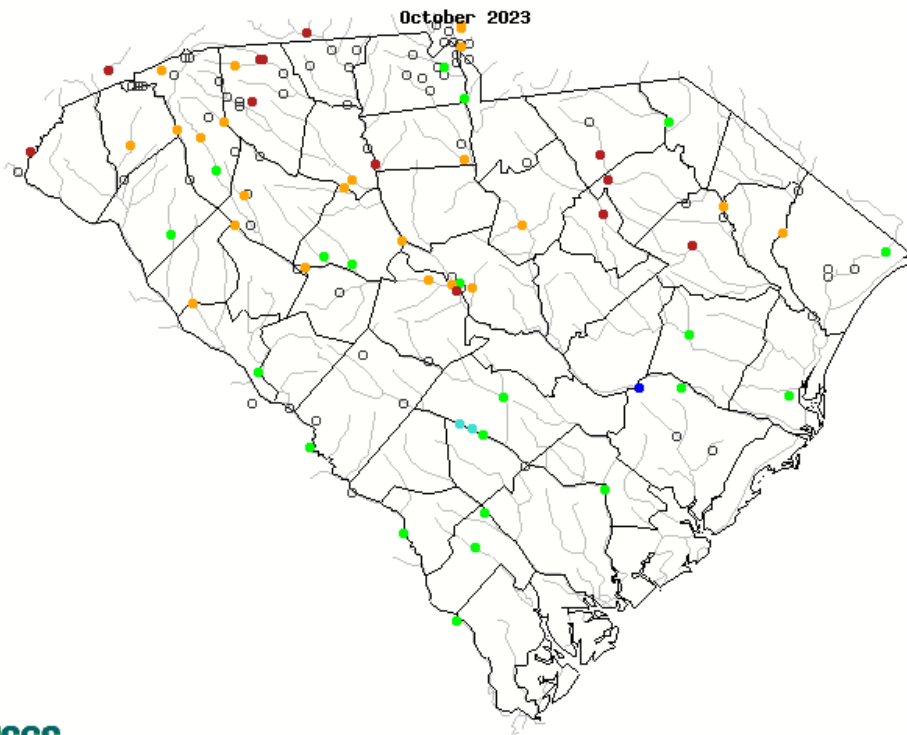
Precipitation

The statewide average precipitation for October 2023 was 1.98 inches, 1.10 inches below the long-term average for the month (1895-2022) of 3.08 inches. Other than a few isolated portions of the Coastal Plain, most of the state received less than 70% of normal precipitation. The driest portions of the state were in the Upstate, where some areas received between 10% to 30% of normal precipitation for October. The Pickens NWS station in Pickens County recorded only 0.30 inches of rain, which was the lowest recorded total at a station in the state for October. The Langly 0.2 SSW NWS Station in Aiken County recorded 6.65 inches of rain, which was the highest recorded total at a station in the state for October.



Streamflow

The USGS's monthly streamflow map compares the current monthly average streamflow to its historical monthly average streamflow conditions for the same month over the gage's period of record. Streamflows in the Upstate counties continued to drop due to the lack of rain in October. Several gages in Upper Savannah, Saluda, Broad, Catawba, and in the Pee Dee River basin have continued to record below-normal and much below-normal streamflow conditions. Although the upper part of the State remained dry, counties in the lower half of the state continued to have normal streamflow conditions in October.



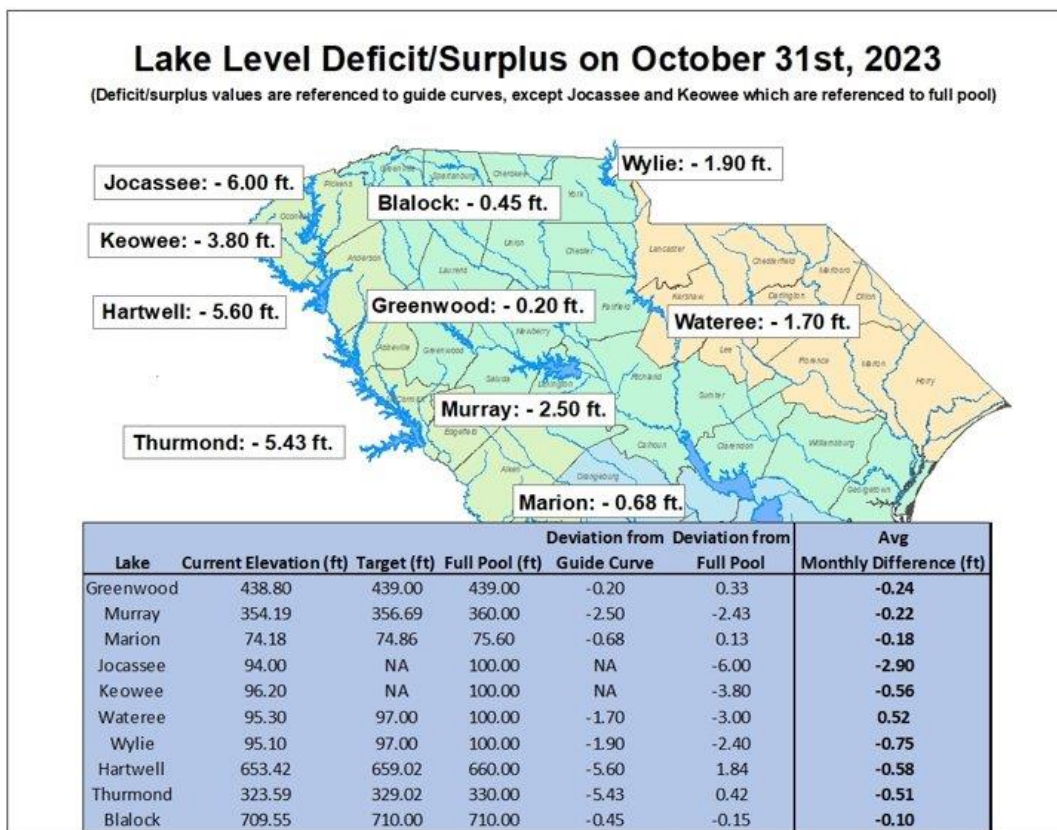
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		



Reservoirs

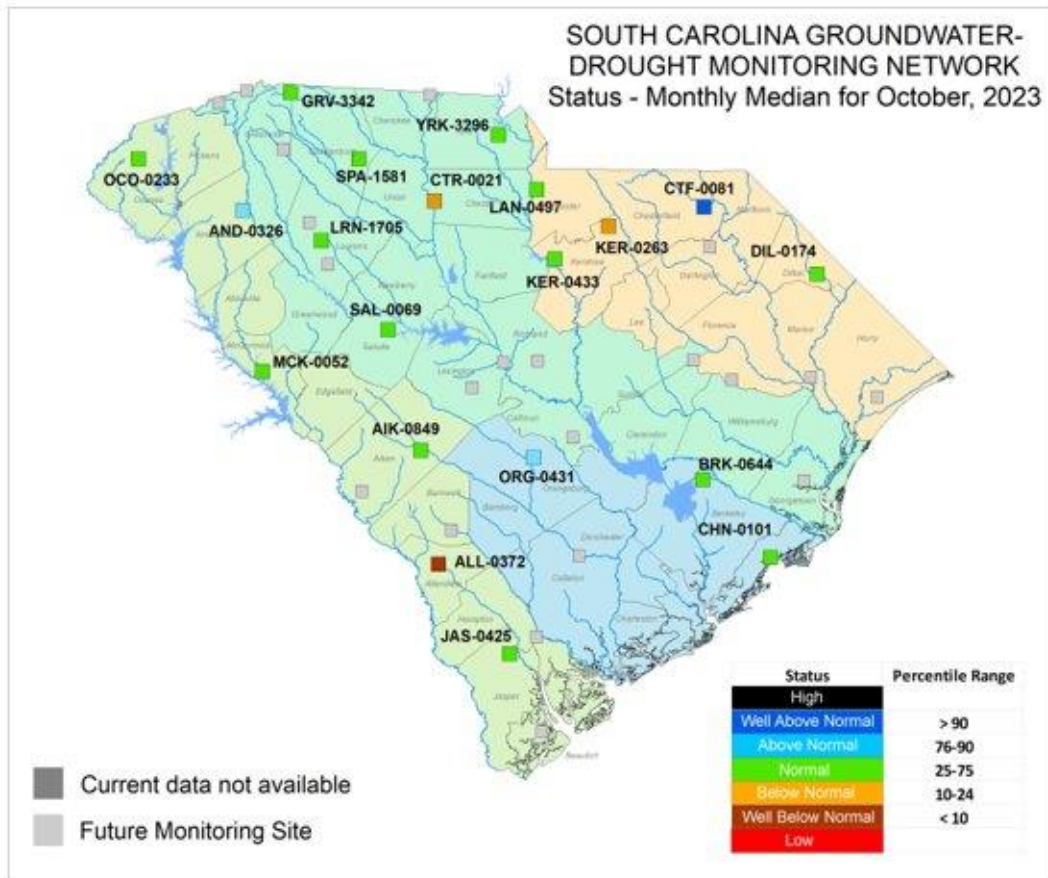
The map below shows a surplus or deficit from the guide curves or full-pool elevations for the major reservoirs in the State, based on conditions for October 31st. All ten reservoirs were below their target or full-pool elevations. Counties in the upper part of the State continued to remain dry in October. The past few months of dryness have caused Hartwell, Thurmond, Jocassee, and Keowee reservoir levels to drop. All three USACE reservoirs, Lake Hartwell, Russell, and Thurmond declared their first drought level on September 10th in response to the pool elevation at Thurmond Lake dipping below 326.0 feet above mean sea level (ft-msl). Lake Thurmond dipped below Drought Trigger Level 2 on October 29th. The USACE declared their first and second drought trigger levels within two months..

The Keowee-Toxaway project which includes Lake Jocassee and Lake Keowee under Duke Energy's management, declared their Low Inflow Protocol (LIP) Stage 2 on 6th November, in response to continued dryness in the Upper Savannah River basin and USACE lakes dropping to Drought Trigger Level 2. These lakes entered LIP Stage 0 on August 31st and LIP Stage 1 on October 1st. The dry conditions have extended into the Catawba Wateree basins and have caused the streamflows and lake storage for eleven reservoirs in the Catawba River basin to drop. The Catawba Wateree lakes are in LIP Stage 1 on November 1st, skipping LIP Stage 0. Lake Wateree and Wylie on the map, are two of the eleven reservoirs operated by Duke Energy in the Catawba Wateree river basin.



Groundwater

The groundwater condition map for October is based on the monthly medians for the data collected by the USGS and SCDNR. Seventeen of the twenty wells observed a drop in the monthly medians from September to October. The Upstate counties continued to remain dry which resulted in the gradual decline of groundwater levels. Groundwater levels at Chester and Kershaw wells gradually declined into Below-Normal status through October. Allendale well also continued to stay at much below normal conditions in October.



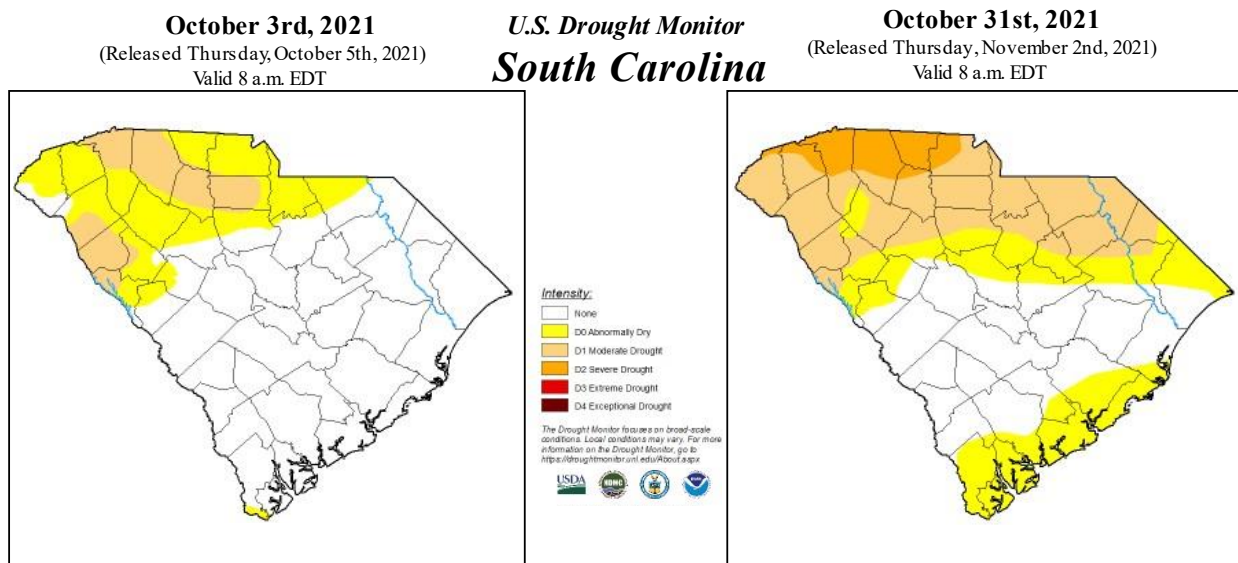
	USGS well sites											DNR Telemetry sites								
	MCK-0052	AND-326	OCO-233	KER-0433	SPA-1581	CTR-0021	YRK-3296	LAN-0497	JAS-0425	CHN-0101	DIL-0174	CTF-0081	GRV-3342	KER-0263	LRN-1705	SAL-0069	ORG-0431	AIK-0849	ALL-0372	BRK-0644
Sept 2023 Monthly median (ft, below land surface)	37.92	3.02	29.59	52.59	43.20	90.84	22.22	31.03	58.09	13.25	4.42	86.71	45.65	36.00	15.69	18.95	--	42.62	58.25	13.35
Oct 2023 Monthly median (ft, below land surface)	38.21	3.18	29.91	53.04	43.18	91.12	23.24	31.96	59.65	13.12	4.75	86.80	45.92	36.47	16.05	20.43	27.01	42.88	58.36	13.57
Difference in monthly median from past month (ft)	-0.29	-0.16	-0.32	-0.45	0.02	-0.28	-1.02	-0.93	-1.57	0.13	-0.33	-0.09	-0.27	-0.47	-0.35	-1.48	--	-0.26	-0.11	-0.22



Drought

For the first U.S. Drought Monitor (USDM) map of October (10/3), 20.83% of the state was classified in abnormally dry (D0) conditions and 10.08% was classified in moderate drought (D1) conditions. Throughout the month conditions only continued to deteriorate, leading to expansion of D0 and D1 conditions. By October 24th, the fourth map of the month, 23.82% of the state was in D0 conditions and 23.59% of the state was in D1 conditions. Also 2.43% of the state were put into severe drought (D2) conditions, which expanded across parts of Pickens, Greenville, Spartanburg, and Cherokee counties. On the last map for October (10/31), 26.22% of the state was in D0 conditions, 29.97% of the state was in D1 conditions, and 6.57% of the state was in D2 conditions. Throughout the month the expansion and intensification of dry and drought conditions were based on limited rainfall totals in September that continued through October. The below normal rainfall led to reductions in soil moisture and reductions to surface water (streamflows and reservoir levels). The agricultural community noted that the 2-month dry period had the most impact on pasture conditions.

The South Carolina Drought Response Committee (DRC) met on October 17th and put 23 counties in incipient drought status and left the other 23 counties in normal status. Generally, counties north of the Fall Line were put into incipient drought conditions, while counties south of the Fall Line were kept in normal status, except for a few counties in the Northern Pee Dee Region. The degradation for incipient drought status was due to the lack of rainfall that increased the potential for wildfire activity, as well as impacts to agriculture. More information can be found here: <http://scdrought.com/current.html#>.



Summary

Average temperature for most of the state was near normal, with a few areas experiencing slight above or below normal temperatures. For most of the state, precipitation was less than 70% of normal for October. After two months of below normal precipitation, dry conditions affect soil moisture, streamflows, reservoir levels, and elevated wildfire potential. Most streams and rivers north of the Fall Line, as well as in the Pee Dee Region experienced below normal flows for most of October. Multiple reservoirs continued to see water level declines that lead reservoir drought declarations. All these indicators and impacts were included in the U.S. Drought monitor, leading to expanding and intensifying dry and drought conditions throughout the State. It also led to the SC Drought Response Committee putting 23 counties in incipient drought status.

Looking Forward

As of November 8th, conditions have remained dry with many areas of the state receiving 0.00 inches of rain. Areas that have received rain have received less than 0.05 inches of rain. The dry conditions have allowed further decline in soil moisture, streamflows, and reservoir levels, as well as an increase in the potential for wildfire in the Upstate. The first map of the U.S. Drought Monitor (11/7) saw wide further expansion of dry and drought conditions, as well as further intensification of drought. The biggest changes on this map were the large expansion of severe drought (D2) conditions, covering 23.89% of the state, and the introduction of extreme drought (D3) conditions in the Upstate. The D3 covers 2.56% of the state, across Greenville, Spartanburg, Cherokee, and Union Counties.

The current forecast indicates our state will receive between 0.25 and 1.00 inches before Tuesday, November 14th. Through November 22nd, the climate outlooks indicate that precipitation totals will range from normal to above normal, while temperatures are favorable to above normal. If these forecasts verify, it may help to alleviate some of the dry conditions as well lessen the severity of the drought conditions. However, much more rain is needed to return conditions to normal.



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