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2023 November - Tennessee Monthly Climate Report

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November 2023 Tennessee State Climate Summary

Tennessee Climate Office * East Tennessee State University

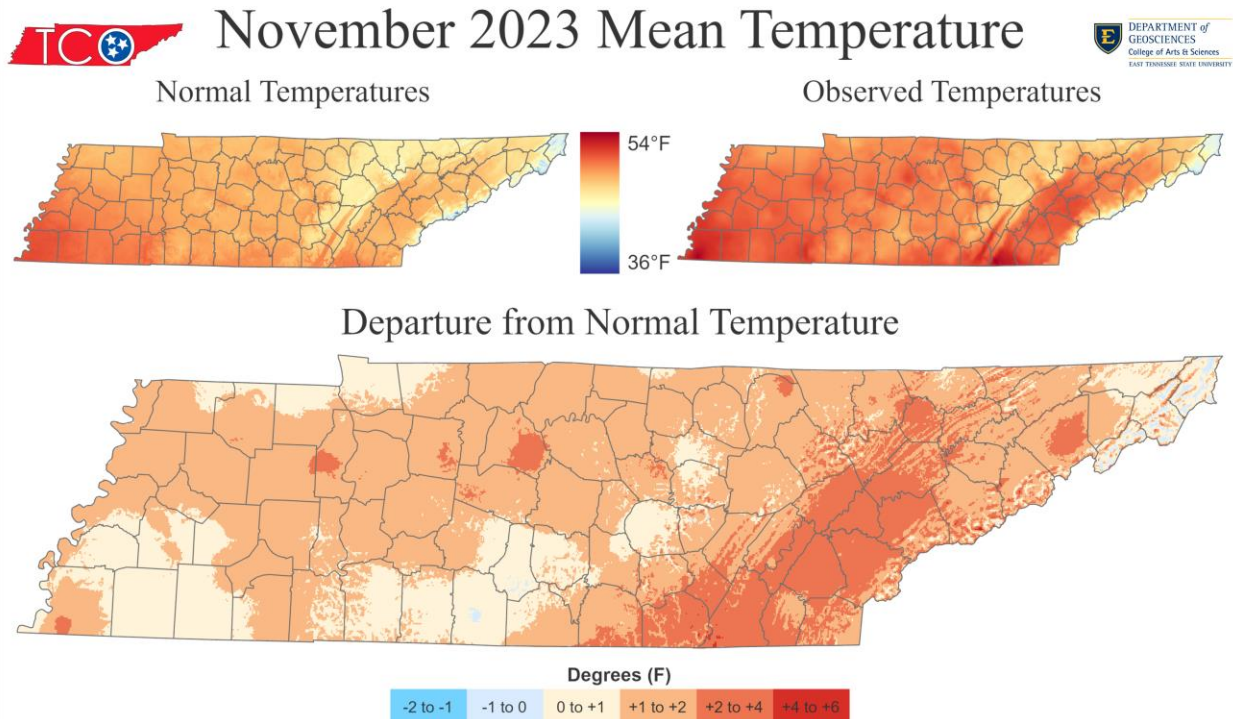
Prepared by William Tollefson and Dr. Andrew Joyner

With contributions by [Climate Data Representatives](#) across the state

Monthly Temperature Summary:

Most areas of Tennessee recorded above normal temperatures for the month of November 2023, although there were several warmer and cooler than normal periods within the month. November started on a cold note, with all areas of the state recording cooler than normal temperatures for the first week of the month, before flipping into well above normal second and third weeks of the month, then switching back to cooler than normal conditions for the last week of the month. Valley areas of East Tennessee recorded the most above normal temperatures for the month, averaging 2-4°F above the 1991-2020 climate normals for November.

There were 28 broken and 24 tied daily high temperature records set this month, including eight records set at weather stations with at least a 100-year reporting history. There were also 11 broken and 9 tied daily records for warmest low temperature set this month, including four records set at stations with at least a 100-year weather history. On the cold side of the record books there were 25 broken and 13 tied daily low temperature records set this month, including six at stations with over a 100-year weather history. There were also two daily records set for coolest high temperatures.



Stations with the highest mean temperature

Station Name	Station Type	Mean Temperature (F)
MEMPHIS INTERNATIONAL AP	WBAN	55.0
CHATTANOOGA AP	WBAN	54.2
SHILOH NMP TENNESSEE	RAWS	53.9
LEWISBURG TOWER TENNESSEE	RAWS	53.4
CHUCK SWAN SF TENNESSEE	RAWS	53.2

Map Data from PRISM Climate Group, Oregon State University, 1991-2020 Climate Normals Used. Station Data Retrieved From xmACIS2.

Stations with the lowest mean temperature

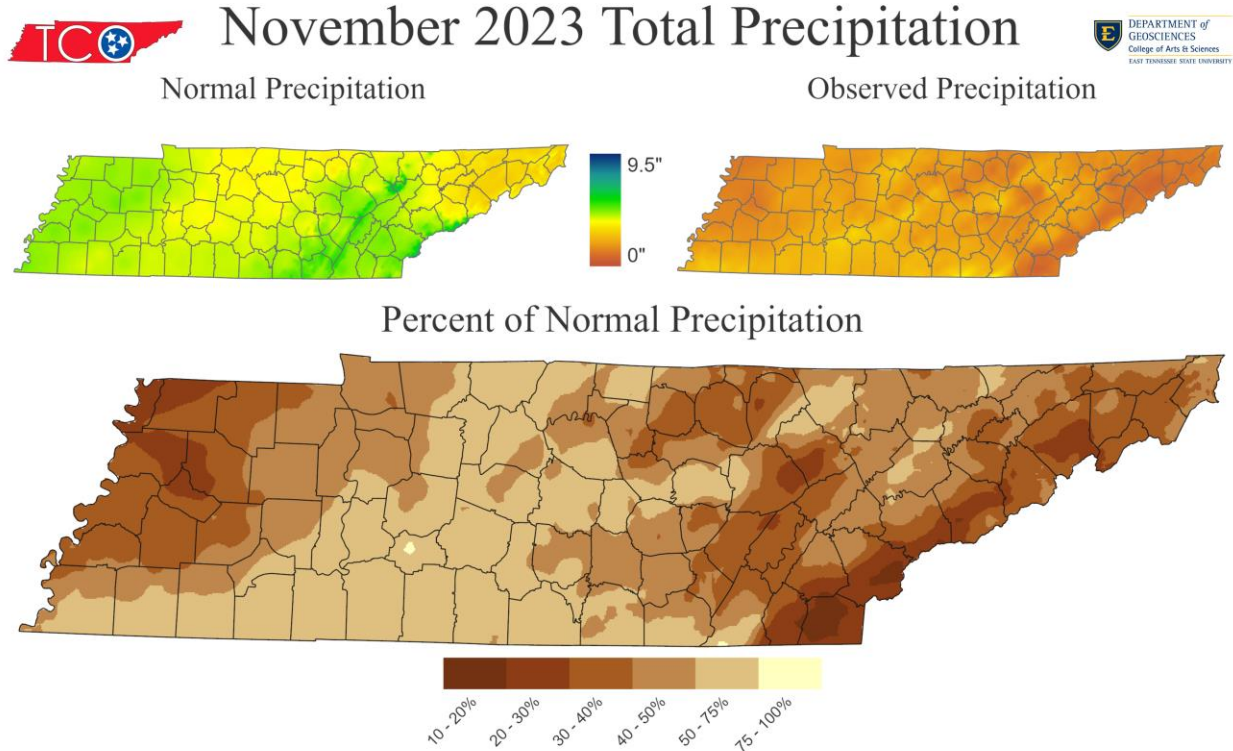
Station Name	Station Type	Mean Temperature (F)
MT LECONTE	COOP	37.3
NEWFOUND GAP	COOP	42.6
MOUNTAIN CITY 2	COOP	42.9
ROAN MOUNTAIN 3SW	COOP	44.0
COALMONT	COOP	45.9

Monthly Precipitation Summary:

November continued the drier than normal pattern that developed earlier this fall, with all areas of the state recording below normal precipitation. The southeast and northwest corners of the state recorded the most below normal precipitation, with less than 30% of their normal November precipitation amounts. Most of the rainfall that did occur came towards the end of the month. There was no precipitation across the state for the first week of November. The second week of the month brought widespread light rainfall, with only a few areas of southern middle Tennessee recording above normal totals for the week. The third week of the month brought above normal precipitation totals to most of the western half of the state, followed by another mostly dry week for the end of the month.

The continued dry pattern led to the expansion of drought conditions in Tennessee and numerous small-to medium-sized wildland fires. More details on these impacts can be found in the Drought and Story of the Month sections of this report. Despite the dry conditions, there were 6 daily records for highest rainfall totals set this month, all on November 21.

The only snowfall reported this month came on November 27, with 1-inch reported at the Mt LeConte COOP station and a Trace of snow (less than 0.1-inch) at the Newfound Gap COOP station, both in the Great Smoky Mountains National Park.



Stations with the most precipitation

Station Name	Station Type	Total Precipitation (in)
WAYNESBORO 7.3 N	CoCoRaHS	3.29
HOHENWALD 0.3 E	CoCoRaHS	3.26
HOHENWALD 2.2 SE	CoCoRaHS	3.18
EAST RIDGE 0.9 NW	CoCoRaHS	3.13
SHELBYVILLE WATER DEPT	COOP	3.12

Map Data from PRISM Climate Group,
Oregon State University.
1991-2020 Climate Normals Used.
Station Data Retrieved From xmACIS2

Stations with the least precipitation

Station Name	Station Type	Total Precipitation (in)
OLD HICKORY DAM	COOP	0.19
CLEVELAND 1.2 W	CoCoRaHS	0.4
OCOEE 3.3 ESE	CoCoRaHS	0.62
TOWNSEND 5S	COOP	0.62
GREENEVILLE 3.0 S	CoCoRaHS	0.69

Station Data and Top Tenn. (warmest/wettest, coldest/driest stations of the month):

Station data for airports across the state using WBAN weather stations, compared to 1991-2020 30-year climate normals for departure from mean temperature and total precipitation:

Station Name	Temperatures (°F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	%Norm
Memphis	65.4	44.6	55.0	+2.3	84	11/8	29	11/27	3.02	-1.67	64%
Jackson	63.5	36.4	50.0	+0.7	82	11/8	21	11/29	1.74	-2.59	40%
Clarksville	67.7	42.1	54.9*	+6.8*	84	11/8	27	11/1	1.62	-2.42	40%
Nashville	64.7	40.9	52.8	+2.5	83	11/8	22	11/29	1.54	-2.32	40%
Chattanooga	66.0	42.3	54.2	+3.0	83	11/7	23	11/29	2.86	-1.94	60%
Crossville	59.3	36.5	47.9	+1.9	76	11/8	17	11/29	1.86	-2.88	39%
Knoxville	64.0	40.4	52.2	+3.2	81	11/8	21	11/29	1.85	-2.36	44%
Bristol	62.5	33.4	48.0	+1.6	80	11/8	15	11/29	1.12	-2.02	36%

Departures and %Norm Key: **Warmer than Normal**, **Cooler than Normal**; **Wetter than Normal**, **Drier than Normal**

*Clarksville Airport was missing 8 days of temperature records this month, so this value is likely inaccurate.

Hottest Stations (highest maximum temperature)

Station Name	Station Type	Highest Temperature (F)	Date
CLARKSVILLE WWTP	COOP	85	7
SAVANNAH 6 SW	COOP	84	9
WAYNESBORO	COOP	84	9
JACKSON EXP STA	COOP	84	9
COOKEVILLE	COOP	84	9
MEMPHIS INTERNATIONAL AP	WBAN	84	8
CLARKSVILLE OUTLAW AP	WBAN	84	8
BROWNSVILLE	COOP	83	9
MURFREESBORO 5 N	COOP	83	9
CARTHAGE	COOP	83	9
OLD HICKORY WFO	COOP	83	9
GAINESBORO	COOP	83	9
NASHVILLE BERRY FIELD	COOP	83	9
DECATURVILLE	COOP	83	9
SHELBY BOTTOMS NATURE CENTER	COOP	83	9
CAMDEN TOWER TENNESSEE	RAWS	83	8
SHILOH NMP TENNESSEE	RAWS	83	8
CHATTANOOGA AP	WBAN	83	7
DYERSBURG MUNICIPAL AIRPORT	WBAN	83	8
NASHVILLE INTL AP	WBAN	83	8

Thirteen stations tied for the 8th hottest temperature (83°F)

Coldest Stations (lowest minimum temperature)

Station Name	Station Type	Lowest Temperature (F)	Date
SPARTA WASTEWATER PLANT	COOP	0	2
MT LECONTE	COOP	7	2
GAINESBORO	COOP	11	29
MOUNTAIN CITY 2	COOP	11	29
ROAN MOUNTAIN 3SW	COOP	12	29
TAZEWELL	COOP	13	30
CROSSVILLE 7 NW	WBAN	13	29
TELLICO PLAINS	COOP	14	29
MAYNARDVILLE	COOP	14	29
NEWFOUND GAP	COOP	14	29
BETHPAGE 1 S	COOP	14	29

Four stations tied for the 8th coldest temperature (14°F)

Warmest Stations (highest mean temperatures)

Station Name	Station Type	Mean Temperature (F)
MEMPHIS INTERNATIONAL AP	WBAN	55.0
CHATTANOOGA AP	WBAN	54.2
SHILOH NMP TENNESSEE	RAWS	53.9
LEWISBURG TOWER TENNESSEE	RAWS	53.4
CHUCK SWAN SF TENNESSEE	RAWS	53.2
INDIAN GRAVE TENNESSEE	RAWS	53.1
LENOIR CITY TENNESSEE	RAWS	53.1
AMES PLANTATION	COOP	52.9
NASHVILLE INTL AP	WBAN	52.8
CAMDEN TOWER TENNESSEE	RAWS	52.7

Coollest Stations (lowest mean temperatures)

Station Name	Station Type	Mean Temperature (F)
MT LECONTE	COOP	37.3
NEWFOUND GAP	COOP	42.6
MOUNTAIN CITY 2	COOP	42.9
ROAN MOUNTAIN 3SW	COOP	44.0
COALMONT	COOP	45.9
ONEIDA	COOP	46.2
NEWCOMB	COOP	46.2
TAZEWELL	COOP	46.3
CROSSVILLE 7 NW	WBAN	46.6
ERWIN 1 W	COOP	47.0
MAYNARDVILLE	COOP	47.0

Two stations tied for the 10th coolest mean temperature (47.0°F)

Wettest Stations (highest precipitation totals):

Station Name	Station Type	Total Precipitation (in)
WAYNESBORO 7.3 N	CoCoRaHS	3.29
HOHENWALD 0.3 E	CoCoRaHS	3.26
HOHENWALD 2.2 SE	CoCoRaHS	3.18
EAST RIDGE 0.9 NW	CoCoRaHS	3.13
SHELBYVILLE WATER DEPT	COOP	3.12
MEMPHIS 12.0 SE	CoCoRaHS	3.07
COLUMBIA 3 WNW	COOP	3.03
MEMPHIS INTERNATIONAL AP	WBAN	3.02
SPRINGFIELD 1.9 WSW	CoCoRaHS	2.97
WAYNESBORO	COOP	2.97

Driest Stations (lowest precipitation totals):

Station Name	Station Type	Total Precipitation (in)
OLD HICKORY DAM	COOP	0.19
CLEVELAND 1.2 W	CoCoRaHS	0.4
OCOEE 3.3 ESE	CoCoRaHS	0.62
TOWNSEND 5S	COOP	0.62
GREENEVILLE 3.0 S	CoCoRaHS	0.69
SOMERVILLE 1.7 N	CoCoRaHS	0.72
GREENEVILLE 2.8 N	CoCoRaHS	0.76
CLEVELAND 5.2 SE	CoCoRaHS	0.9
OAK GROVE 3.0 E	CoCoRaHS	0.95
JONESBOROUGH 2.5 SSW	CoCoRaHS	0.96
MIDWAY 2.3 SW	CoCoRaHS	0.96

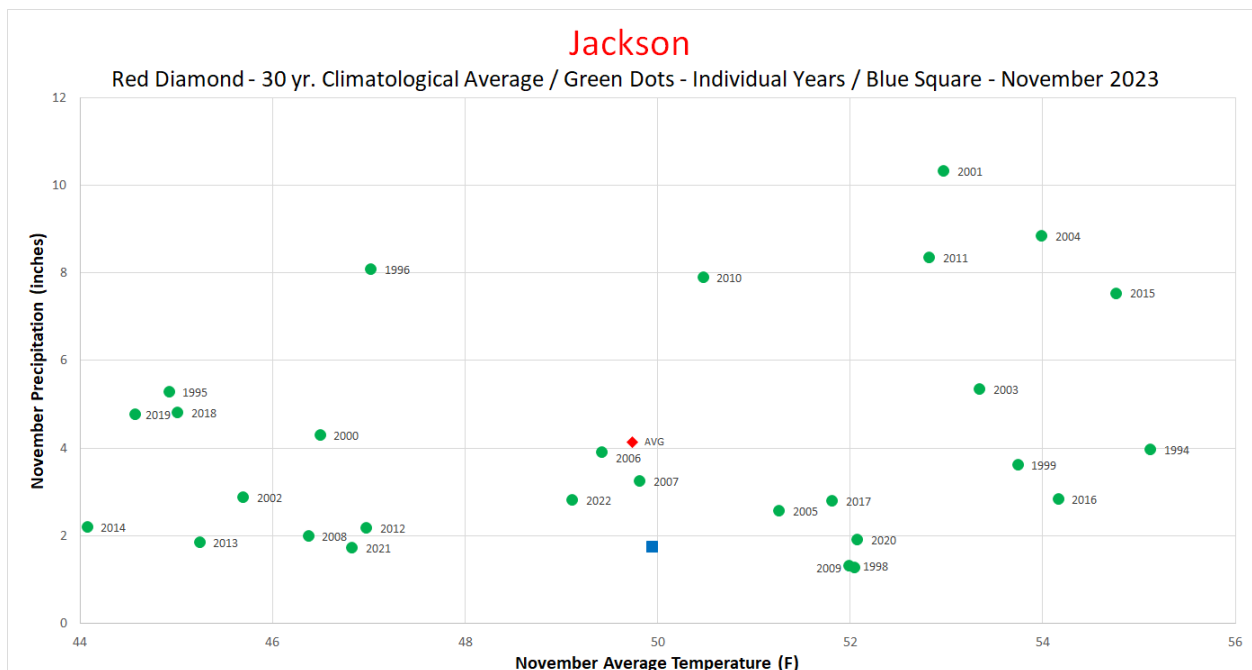
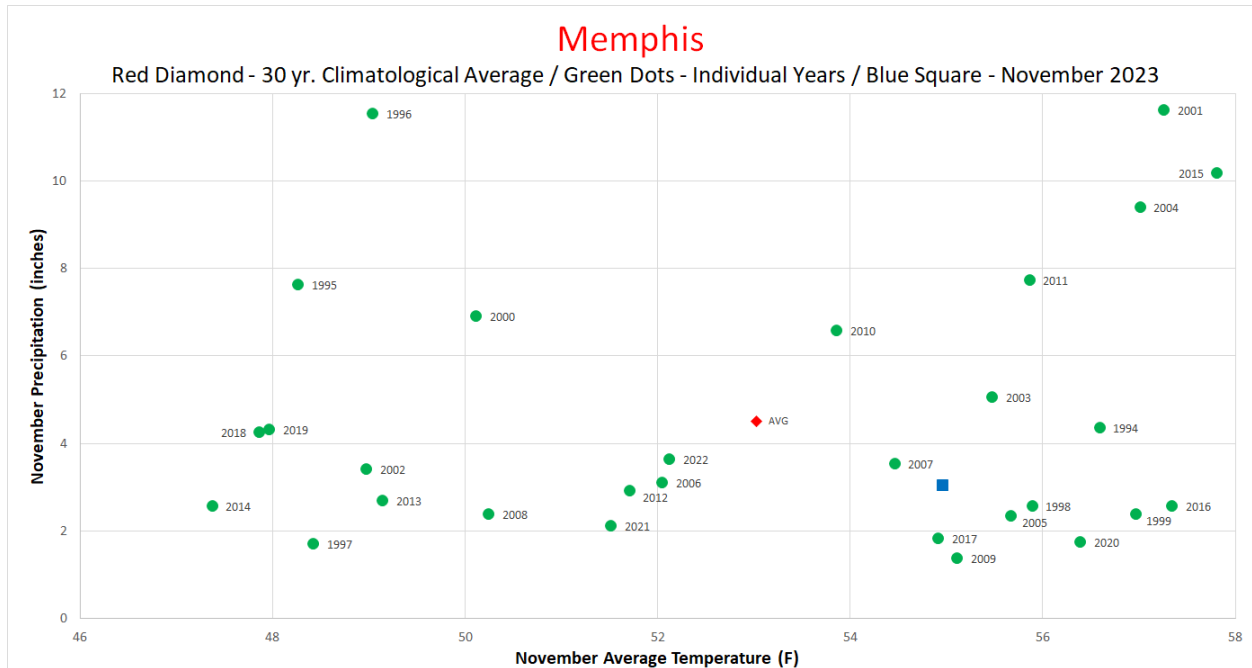
Two stations tied for the 10th lowest precipitation total (0.96-in)

Snowiest Stations (highest snowfall totals):

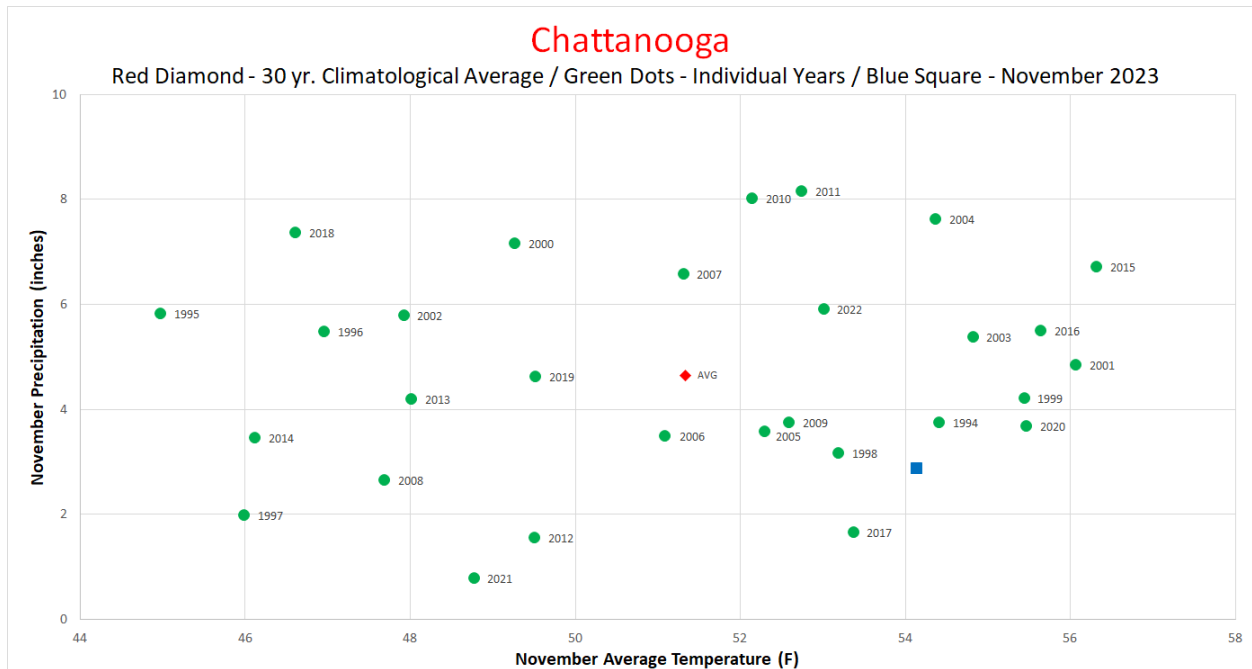
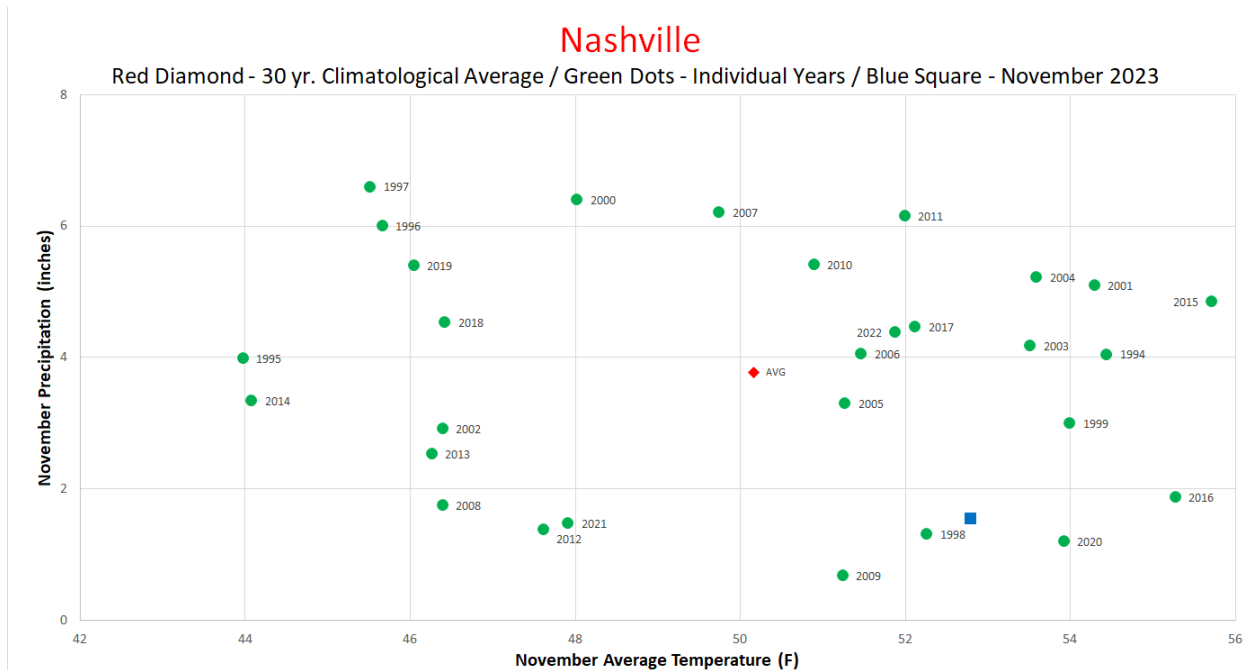
Station Name	Station Type	Total Snowfall (in)
MT LECONTE	COOP	1
NEWFOUND GAP	COOP	Trace

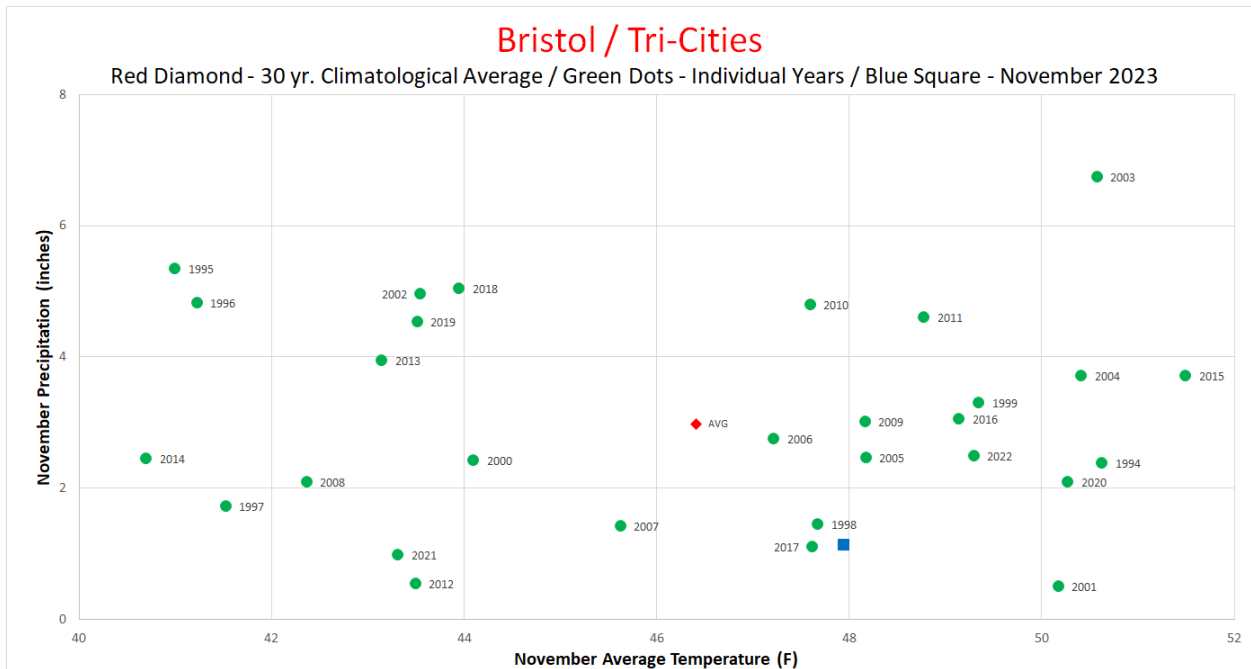
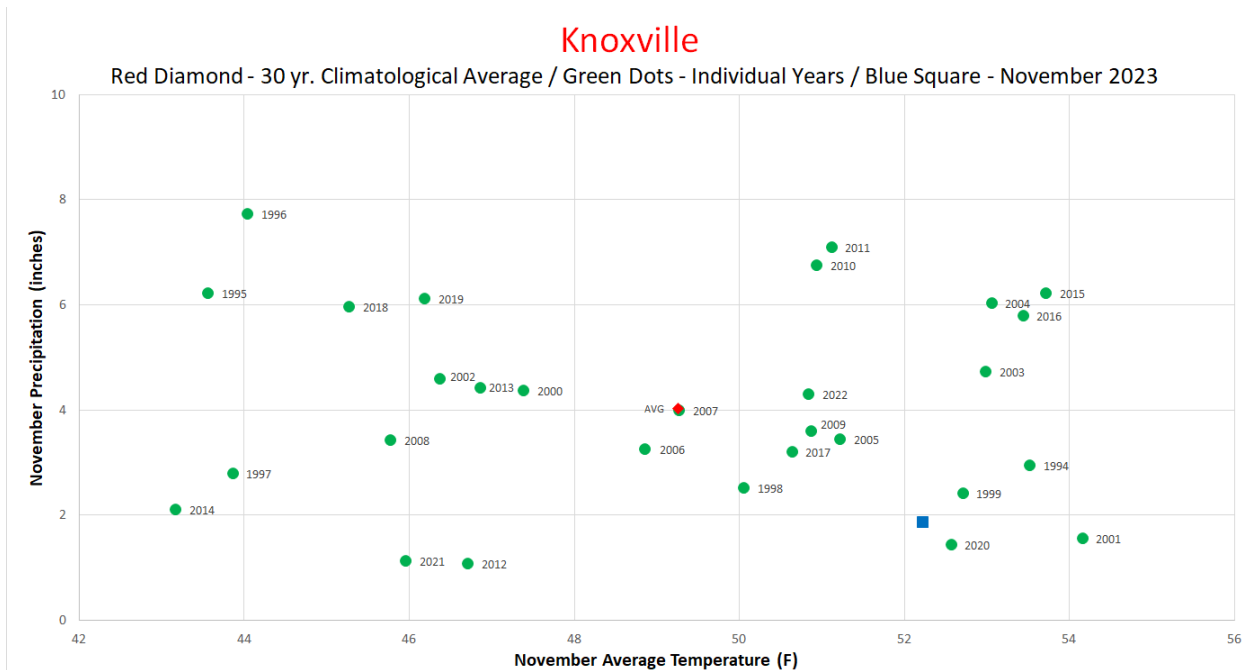
The Month in Comparison:

Comparing the mean temperature and total precipitation of this November to the conditions for November over the past 30 years at select automated weather stations across the state, this month was warmer and drier than average at all stations. However, this November was not a major outlier in terms of temperatures, but was the 4th driest of the past 30 years at Jackson and 5th driest at Knoxville and Tri-Cities. Looking at the longer-term climate records for these cities, it was the 6th driest November on record for Tri-Cities, with a 76-year weather record, the other stations did not have a top-10 driest November this month.



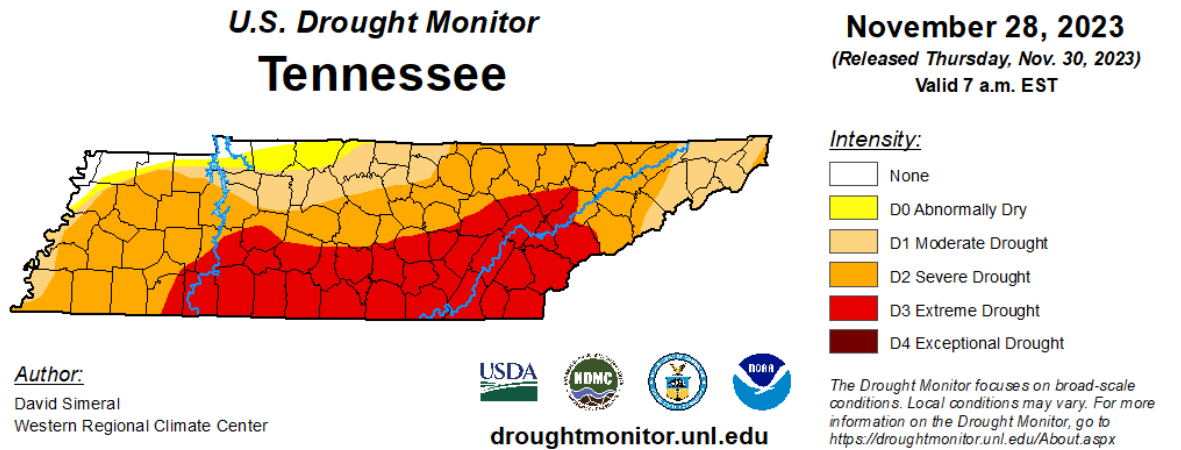
November 2023 Tennessee State Climate Summary





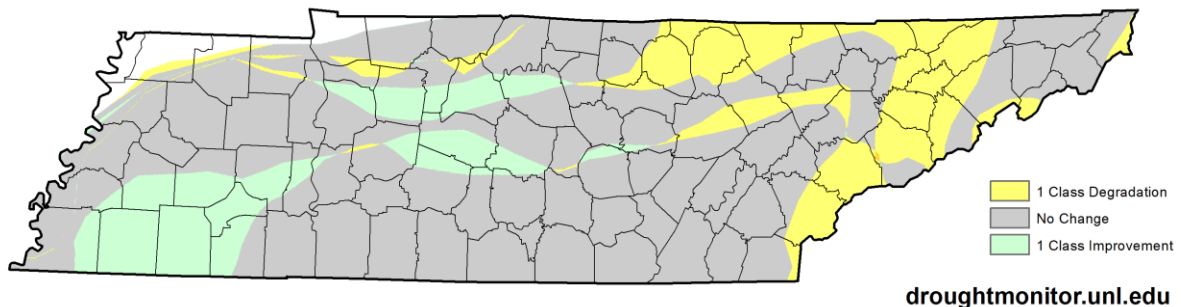
Drought Monitor:

Tennessee remained mostly in Moderate (D2) or worse drought conditions over the month of November; however, due to improvements in the last Drought Monitor release of the month, there was little change in drought conditions when comparing the last Drought Monitor map of October with the end of November map. Over the course of the month, there were 1-category improvements in southern West Tennessee and central Middle Tennessee, while there were 1-category degradations in parts of East Tennessee. In the last Drought Monitor release of November 96.95% of the state was shown with Abnormally Dry or Drought conditions, with 34.86% of the state in D3 (Extreme Drought), 42.5% of the state in D2 (Severe Drought), and 15.7% of the state in D1 (Moderate Drought).



November 28, 2023
compared to
October 31, 2023

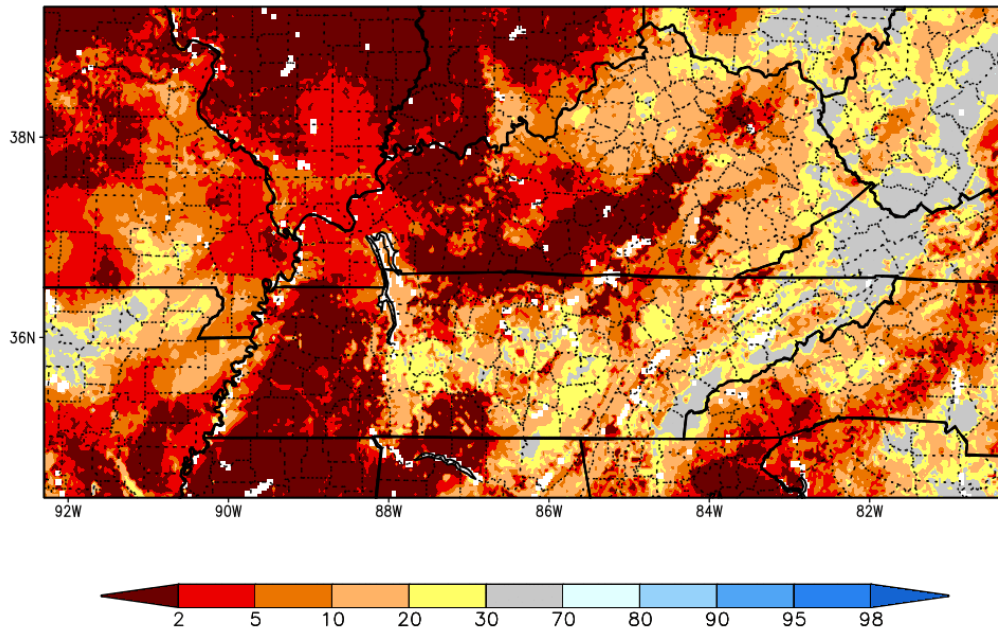
U.S. Drought Monitor Class Change - Tennessee 4 Week



Soil Moisture:

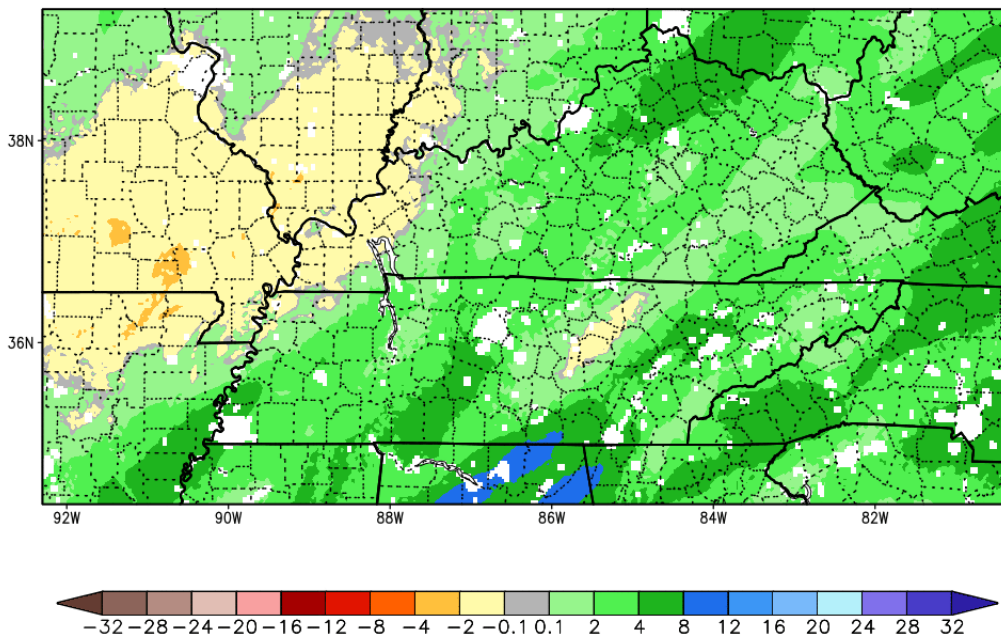
The NASA SPoRT Land Information System still shows that most of the state has well below normal soil moisture levels, however almost all areas showed some improvements during November, with parts of southern Middle and East Tennessee seeing soil moisture increases of 4-8 percentile during November. The USDA Crop Weather Report, released on November 27, rated topsoil moisture across Tennessee as 13% very short, 41% short, 45% adequate, and 1% surplus. The same report rated subsoil moisture as 19% very short, 38% short, and 43% adequate.

SPoRT-LIS 0-200 cm Soil Moisture percentile valid 30 Nov 2023



NOTE
Experimental

1-Month Difference in Column Relative Soil Moisture (%) valid 12z 30 Nov 2023



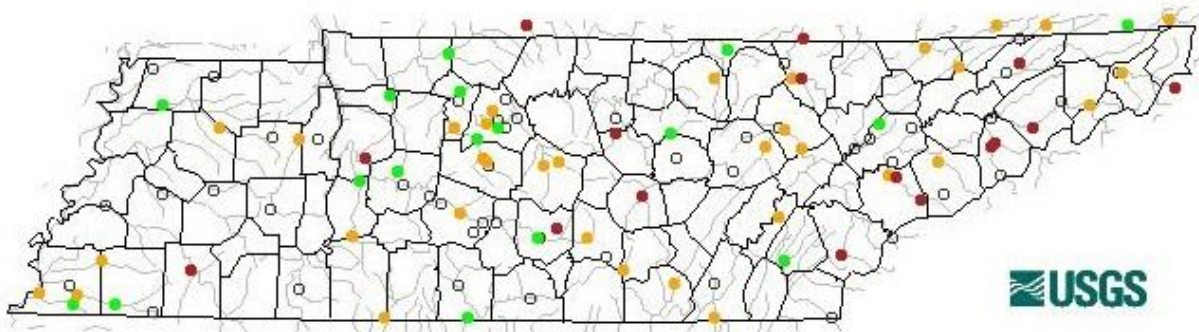
NOTE
Experimental

Streamflow:

As the fall drought continued into November, average streamflow ratings across Tennessee ranged from normal to much below normal with most stream gauges reporting much below normal flow located in the eastern half of Tennessee.

Map of monthly streamflow compared to historical streamflow for the month of the year (Tennessee)

November 2023



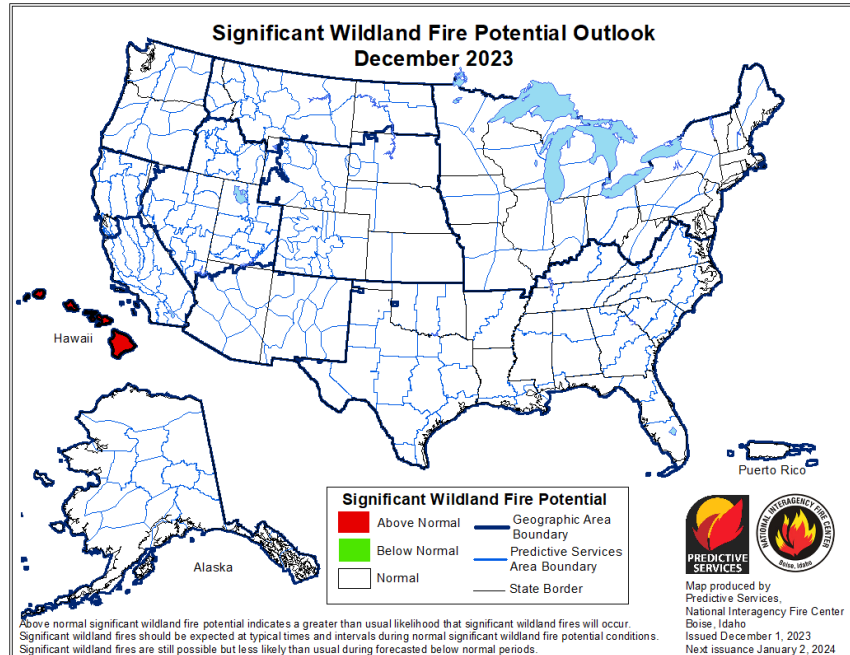
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Miscellaneous:

Crop Conditions from USDA: Some widespread rains in the latter parts of November have helped to improve conditions, and allow for winter wheat planting and germination, however pastures remain in rough shape, with 60% reported in poor or very poor condition at the end of November. Many cattle producers are feeding hay and hauling water to their herds as ponds and other watering sources remain low.

CROP PROGRESS					CONDITION					
Item	This Week	Last Week	2022	5 Year Avg.	Item	Very Poor	Poor	Fair	Good	Excellent
	Percent					Percent				
Corn – Harvested	99	98	100	100	Pasture	28	32	30	9	1
Cotton – Harvested	96	95	94	92	Winter Wheat	2	8	29	51	10
Soybeans – Harvested	97	93	96	91						
Winter Wheat – Planted	94	88	96	-						
Winter Wheat – Emerged	80	65	84	-						

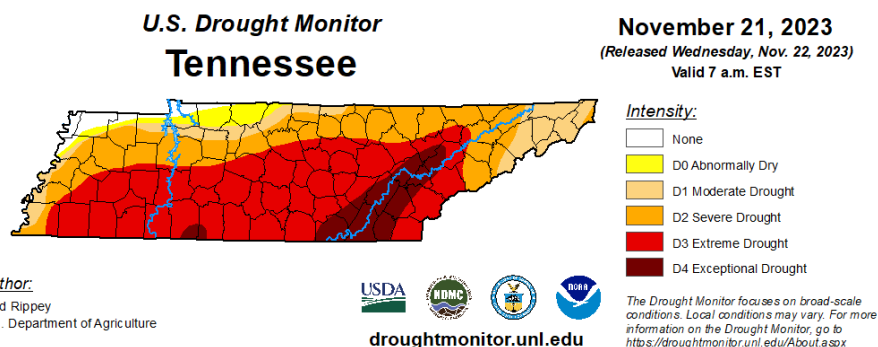
Fire Danger: The Interagency Fire Center shows that Tennessee and all other areas of the continental US will have normal potential for significant wildland fires in December.



Snowfall: The Mount LeConte COOP weather station in the Great Smoky Mountains National Park was the only weather station to report measurable snowfall in November, with 1-inch reported on November 27. The Newfound Gap COOP weather station also reported a trace (less than 0.1-inch) of snowfall on the 27th, but it was the only other station to report snowfall this month.

Story of the Month:

The major story of November continued to be the drought that has impacted the state over the past three months, and numerous small- to moderate-sized wildland fires. The fall drought hopefully peaked after the third week of November, with the November 21 release of the US Drought Monitor showing 9.04% of the state in Exceptional Drought (D4), mostly in the southern valley areas of East Tennessee stretching from the Chattanooga to Knoxville areas. There was also a small area of Exceptional Drought in southwest Middle Tennessee at the Alabama border. An additional 46.64% of the state was shown with Extreme Drought (D3), 26.72% of the state was shown with Severe Drought (D2), and 10.71% of the state was shown with Moderate Drought (D1). Just 3.84% of the state was free from drought or abnormally dry conditions, and that area was in the far northwest corner of the state. Rain at the end of the third week of the month and over the Thanksgiving holiday period led to some improvements by the end of November, and more rains in early December will likely lead to improved drought conditions over the next month.



Author:
Brad Rippey
U.S. Department of Agriculture

USDA NRMC NOAA
droughtmonitor.unl.edu

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

There were also several days of high fire weather potential as warm conditions allowed relative humidity levels to drop below 20% and high winds meant that any fires started could spread quickly. There were several small- to medium-sized fires reported across the state during the month, with the largest occurring in Scott County on the Cumberland Plateau. The fire on Arch Mountain in southern Scott County burned over 2,600 acres by November 16, according to the Independent Herald newspaper, with a final size of over 5,000 acres as reported by the National Interagency Fire Center after the fire was extinguished on December 4th. This was by far the largest fire reported in Tennessee this month, but there were numerous other fires that burned into the hundred-acre range, with a total of ~9,000 acres burned in wildland fires this month across the state. Luckily few structures were impacted by these fires.

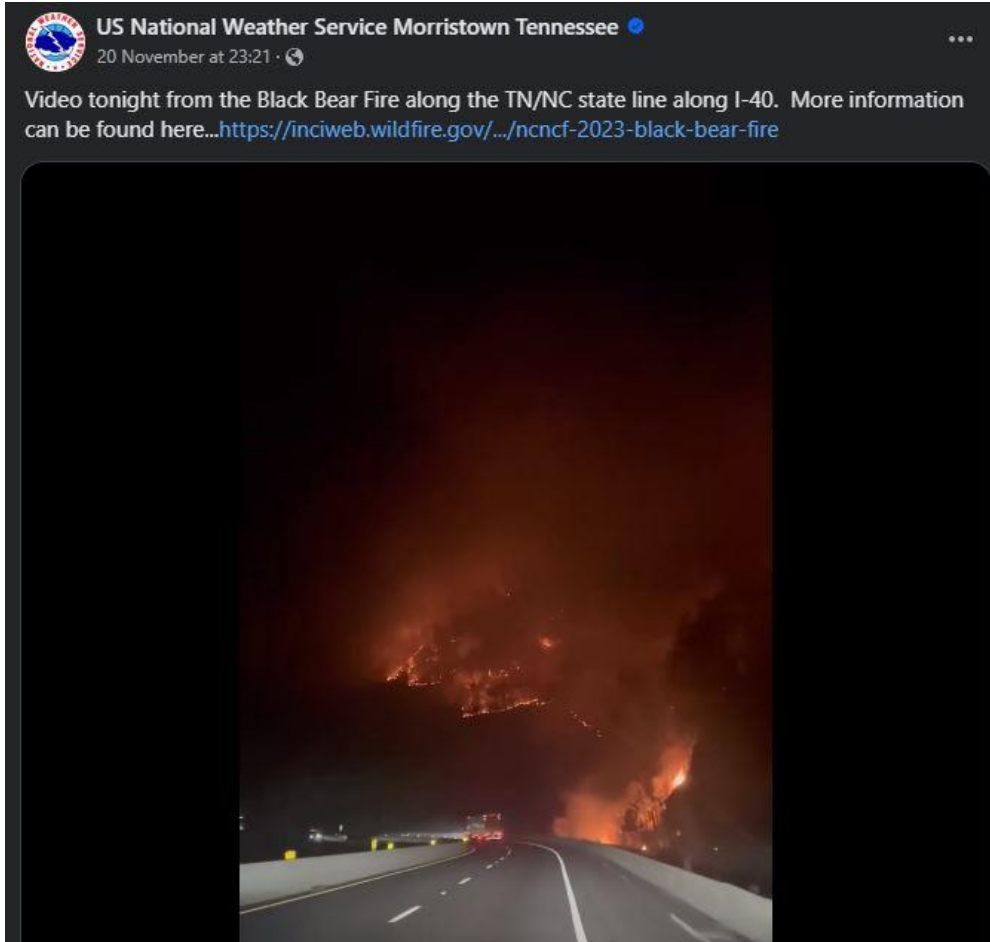


Aerial view of a brush fire near Forge Hideaway Road in Pigeon Forge, TN on Thursday, November 16, 2023.

[Randy Sartin/Special To The News Sentinel](#)



Brush fire in Williamson County grew to around 100 acres on November 20 [image via WSMV]



Black Bear fire along I-40 at the Tennessee and North Carolina State line on November 20

Storm Reports:

**Storm Reports are based on filtered NOAA Storm Prediction Center data or local NWS storm reports. Future quality control checks may change the official record of severe events, please see spc.noaa.gov for any updates.*

There were no days with severe storm reports in Tennessee during November 2023. This was the second month in a row with no severe storm reports in Tennessee, with the last severe storm report occurring on September 28.

CPC Outlooks for the Next Month:

The NOAA Climate Prediction Center outlooks for December show that all of Tennessee is leaning towards or will likely have above normal temperatures, with higher confidence in West and Middle Tennessee (50-60% likely). The precipitation outlook shows that most areas of Tennessee are leaning towards above normal precipitation, but northern portions of West and Middle Tennessee will have equal chances for above, below, or normal precipitation amounts.

