

December 2024 Tennessee State Climate Summary

Tennessee Climate Office * East Tennessee State University

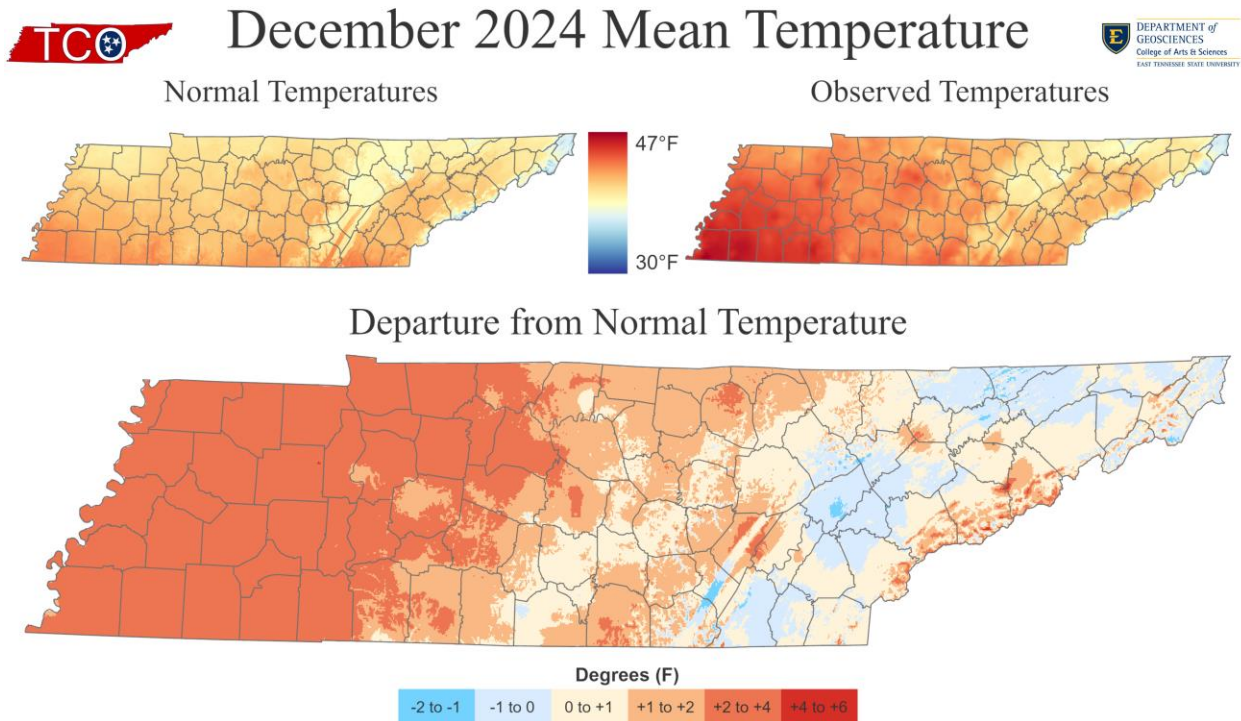
Prepared by William Tollefson and Dr. Andrew Joyner

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

Monthly Temperature Summary:

December 2024 was warmer than normal for the western half of the state, while the eastern half was closer to normal with most areas averaging $\pm 1^\circ\text{F}$ of normal for the month. The month started out with a strong blast of cold air that produced temperatures $5\text{-}10^\circ\text{F}$ cooler than normal in West Tennessee and $9\text{-}12^\circ\text{F}$ cooler than normal in the rest of the state. Temperatures then moderated in the second week of December, averaging $1\text{-}5^\circ\text{F}$ warmer than normal across the state. The third week of December then averaged $5\text{-}10^\circ\text{F}$ warmer than normal. In the fourth week of December temperatures were $7\text{-}11^\circ\text{F}$ warmer than normal in the western half of the state and still above normal in the eastern half but only in the $1\text{-}5^\circ\text{F}$ range.

Despite the warmer than normal conditions during most of the month, there were no daily record high temperatures set and only 1 tied daily high temperature record. However, there were 17 broken and 6 tied daily records for warmest low temperatures set this month. On the cool side of the record books there were 20 broken and 7 tied daily low temperature records this month, with all broken records occurring on December 5th or 6th. Additionally, there were 10 broken and 8 tied daily records for coolest high temperatures set this month, with all broken records set between December 3rd and 6th.



Stations with the highest mean temperature

Station Name	Station Type	Mean Temperature (F)
WAYNESBORO	COOP	51.4
MEMPHIS INTERNATIONAL AP	WBAN	47.7
SHILOH NMP TENNESSEE	RAWS	47
MEMPHIS WFO	WBAN	46.9
JACKSON MCKELLAR- SIPES AP	WBAN	46.5

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

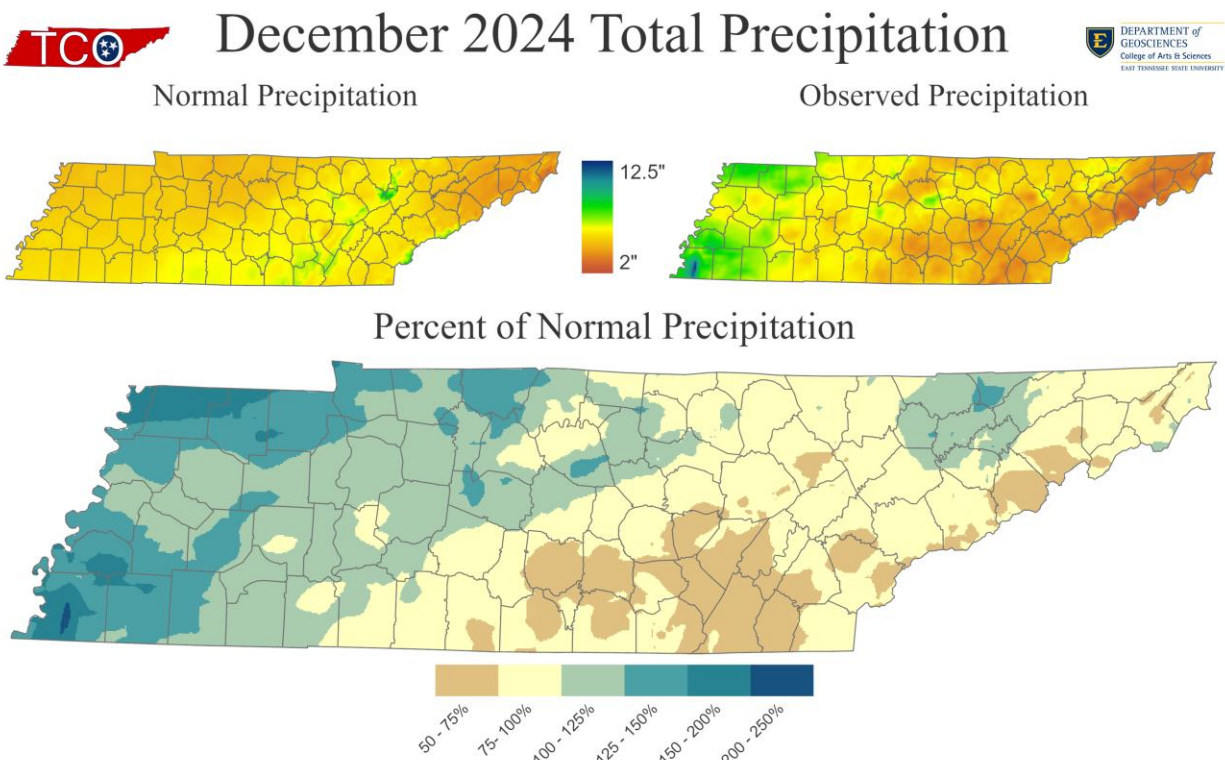
Stations with the lowest mean temperature

Station Name	Station Type	Mean Temperature (F)
MT LECONTE	COOP	28.4
NEWFOUND GAP	COOP	33.8
ROAN MOUNTAIN 3SW	COOP	36.2
MOUNTAIN CITY 2	COOP	36.5
MAYNARDVILLE	COOP	36.7

Monthly Precipitation Summary:

Total precipitation over December of 2024 shows a gradient from above normal in the west/northwest to below normal in the east/southeast of Tennessee. Some areas of West Tennessee recorded more than 200% of their normal December precipitation, while the southeastern portion of the state only recorded 50-75% of their normal December precipitation totals.

The month started out dry with some areas of Middle and East Tennessee recording light rain and snow that amounted to a dusting to up to 2-inches in parts of Middle Tennessee, the Cumberland Plateau, and the East Tennessee mountains. Heavier precipitation of 1-3-inches of rain fell on most areas of the state in the second week of December, however southeastern portions of the state and parts of the Cumberland Plateau missed out on this rainfall, recording less than 1-inch. Heavy rains returned to the northern and western portions of the state in the third week of December, with 2-4-inches in northern counties of West Tennessee, Middle Tennessee, and the Cumberland Plateau. Southern portions of Middle Tennessee and East Tennessee recorded lighter rains totaling 0.5-1.5-inches and continued to be drier than normal for this time of year. In the fourth week of December, heavy rains of 2-5-inches were recorded in West Tennessee, with parts of Shelby County reporting up to 6-inches of rain! A few other bands of heavy rain were observed in Middle and East Tennessee this week as well. There were 16 records for highest daily rainfall recorded across the state this month. Additionally, there were 3 broken and 2 tied records for highest daily snowfall set this month.



Stations with the most precipitation

Station Name	Station Type	Total Precipitation (in)
MEMPHIS INTERNATIONAL AP	WBAN	10.06
BARTLETT 2.5 SW	CoCoRaHS	9.62
BARTLETT 2.3 N	CoCoRaHS	9.32
AMES PLANTATION	COOP	9.32
BARTLETT 1.9 SSW	CoCoRaHS	9.24

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)
CLEVELAND 1.2 W	CoCoRaHS	1.06
GRAY 1.5 E	CoCoRaHS	1.89
OAK GROVE 3.0 E	CoCoRaHS	2.51
ROCKWOOD 2	COOP	2.53
KARNS 5.4 SE	CoCoRaHS	2.69

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	55.4	39.9	47.7	+2.9	68	12/16	21	12/6	10.06	+4.57	183%
Jackson	55.3	37.7	46.5	+4.7	67	12/28	18	12/6	7.46	+2.45	149%
Clarksville	53.2	35.3	44.3	+4.4	65	12/16	14	12/6	6.18	+1.82	142%
Nashville	54.7	36.7	45.7	+3.0	66	12/9	17	12/6	4.71	+0.28	106%
Chattanooga	55.2	36.2	45.7	+1.4	71	12/18	22	12/7	3.28	-1.97	62%
Crossville	49.1	32.0	40.5	+1.7	65	12/10	12	12/6	4.78	-0.56	90%
Knoxville	53.2	33.8	43.5	+1.6	71	12/10	17	12/6	5.58	+0.58	112%
Bristol	51.3	30.5	40.9	+1.6	68	12/28	13	12/6	3.02	-0.74	80%

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

Hottest Stations (highest maximum temperature)

Station Name	Station Type	Highest Temperature (F)	Date
WAYNESBORO	COOP	75	31
COOKEVILLE	COOP	72	11
FALL CREEK FALLS SP	COOP	72	20
CHATTANOOGA AP	WBAN	71	18
KNOXVILLE AP	WBAN	71	10
DAYTON 2SE	COOP	70	11
GATLINBURG 2 SW	COOP	70	19
NEWPORT 1 NW	COOP	70	18
GREENEVILLE EXP STA	COOP	70	11
MORRISTOWN RADIO WCRK	COOP	70	11
ELIZABETHTON	COOP	70	11

Six stations tied for the 6th hottest temperature (70°F)

Coldest Stations (lowest minimum temperature)

Station Name	Station Type	Lowest Temperature (F)	Date
MT LECONTE	COOP	3	6
MORRISTOWN RADIO WCRK	COOP	4	15
GAINESBORO	COOP	5	6
NEWFOUND GAP	COOP	5	6
ALAMO 1 N	COOP	5	14
MOUNTAIN CITY 2	COOP	7	6
SPARTA WASTEWATER PLANT	COOP	8	7
LEWISBURG EXP STA	COOP	9	6
TAZEWELL	COOP	9	7
ROAN MOUNTAIN 3SW	COOP	9	5
BIG SOUTH TENNESSEE	RAWS	9	6
CROSSVILLE AREA OFFICE TN	RAWS	9	6
CROSSVILLE 7 NW	WBAN	9	6

Six stations tied for the 8th coldest temperature (9°F)

Warmest Stations (highest mean temperatures)

Station Name	Station Type	Mean Temperature (F)
WAYNESBORO	COOP	51.4
MEMPHIS INTERNATIONAL AP	WBAN	47.7
SHILOH NMP TENNESSEE	RAWS	47.0
MEMPHIS WFO	WBAN	46.9
JACKSON MCKELLAR- SIPES AP	WBAN	46.5
CHATTANOOGA AP	WBAN	45.7
NASHVILLE INTL AP	WBAN	45.7
JACKSON EXP STA	COOP	45.6
MC MINNVILLE	COOP	45.5
CLARKSVILLE WWTP	COOP	45.4
CAMDEN TOWER TENNESSEE	RAWS	45.4

Two stations tied for the 10th warmest mean temperature (45.4°F)

Coollest Stations (lowest mean temperatures)

Station Name	Station Type	Mean Temperature (F)
MT LECONTE	COOP	28.4
NEWFOUND GAP	COOP	33.8
ROAN MOUNTAIN 3SW	COOP	36.2
MOUNTAIN CITY 2	COOP	36.5
MAYNARDVILLE	COOP	36.7
CROSSVILLE 7 NW	WBAN	37.6
NORRIS	COOP	38.1
TAZEWELL	COOP	38.2
ONEIDA	COOP	39.0
MONTEAGLE	WBAN	39.1

Wettest Stations (highest precipitation totals):

Station Name	Station Type	Total Precipitation (in)
MEMPHIS INTERNATIONAL AP	WBAN	10.06
BARTLETT 2.5 SW	CoCoRaHS	9.62
BARTLETT 2.3 N	CoCoRaHS	9.32
AMES PLANTATION	COOP	9.32
BARTLETT 1.9 SSW	CoCoRaHS	9.24
NEWFOUND GAP	COOP	8.89
ATOKA 3.2 ESE	CoCoRaHS	8.85
FAIRVIEW 1.9 ENE	CoCoRaHS	8.54
BARTLETT 3.1 NNE	CoCoRaHS	8.25
HOHENWALD 2.2 SE	CoCoRaHS	8.09
PARIS 3 ESE	COOP	8.09

Two stations tied for the 10th highest precipitation total (8.09")

Driest Stations (lowest precipitation totals):

Station Name	Station Type	Total Precipitation (in)
CLEVELAND 1.2 W	CoCoRaHS	1.06
GRAY 1.5 E	CoCoRaHS	1.89
OAK GROVE 3.0 E	CoCoRaHS	2.51
ROCKWOOD 2	COOP	2.53
KARNS 5.4 SE	CoCoRaHS	2.69
GREENEVILLE 3.0 S	CoCoRaHS	2.74
GATLINBURG 2 SW	COOP	2.82
GREENEVILLE 2.8 N	CoCoRaHS	2.84
WILLIAMSPORT 4.0 NE	CoCoRaHS	2.84
MIDWAY 2.3 SW	CoCoRaHS	2.89

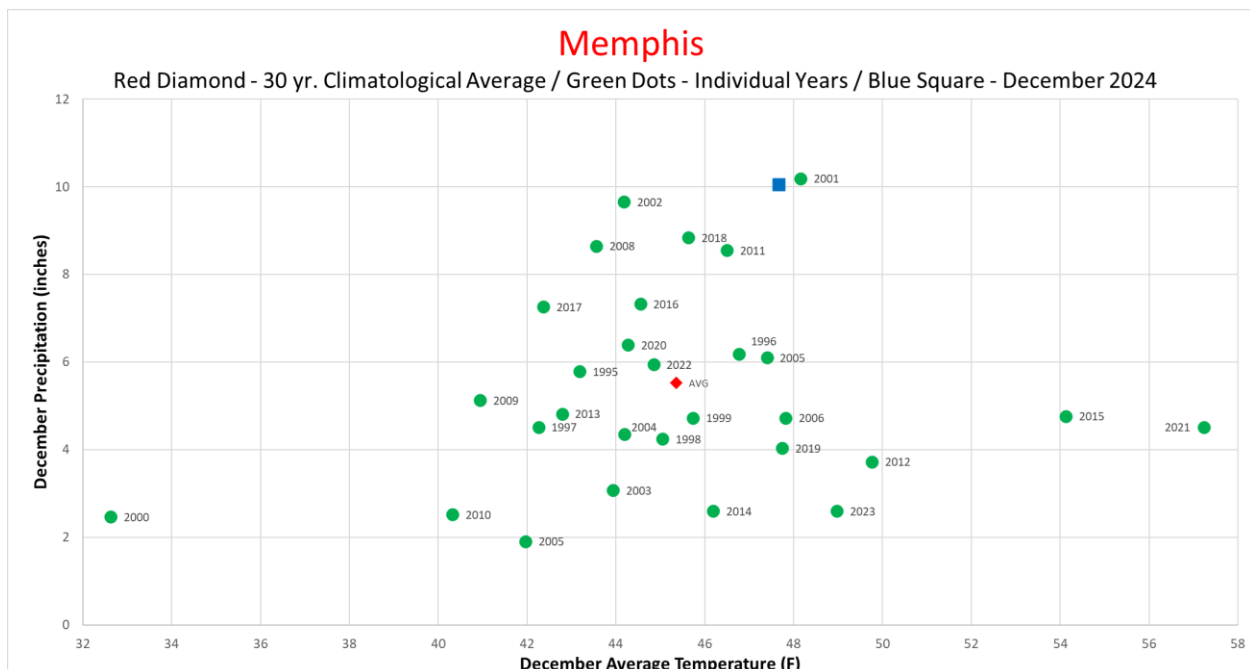
Snowiest Stations (highest snowfall totals):

Station Name	Station Type	Total Snowfall (in)
MT LECONTE	COOP	13
ROAN MOUNTAIN 3SW	COOP	5.1
JONESBOROUGH 2.5 SSW	CoCoRaHS	2.1
GREENEVILLE 10.1 S	CoCoRaHS	2
TEN MILE 2.2 NW	CoCoRaHS	2
JAMESTOWN 3.1 SE	CoCoRaHS	1.9
JAMESTOWN 12.9 S	CoCoRaHS	1.7
GRAY 1.5 E	CoCoRaHS	1.7
GRAY 1.3 S	CoCoRaHS	1.7
JONESBOROUGH 2.7 SSW	CoCoRaHS	1.7

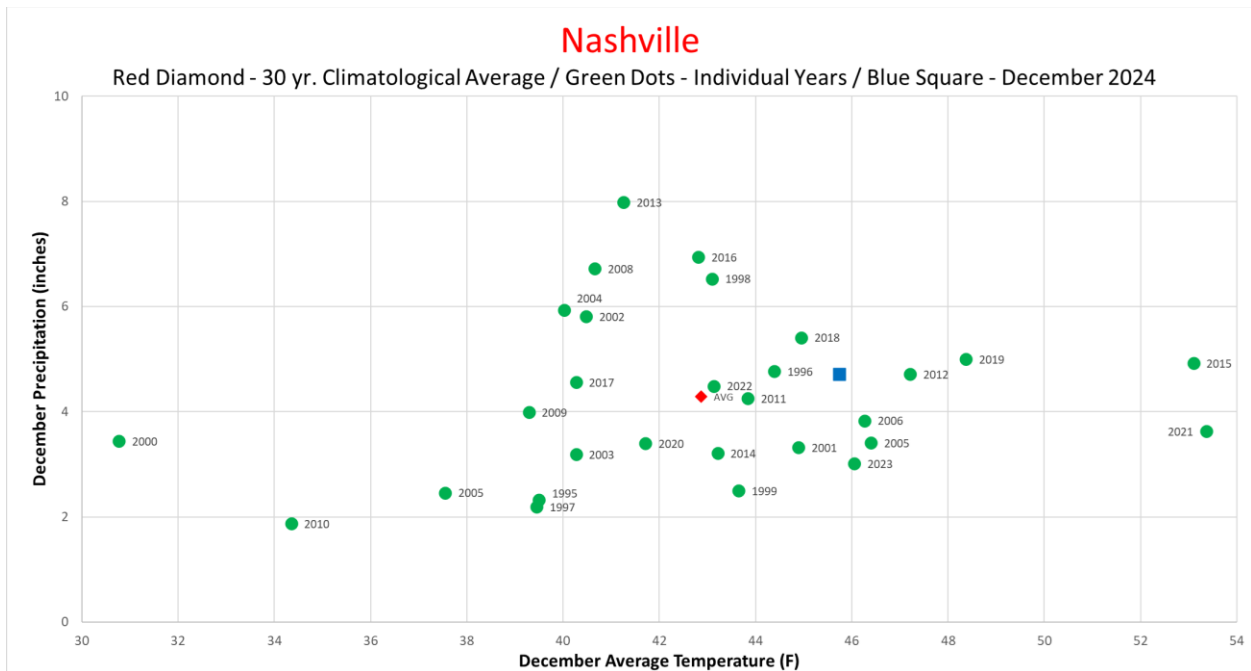
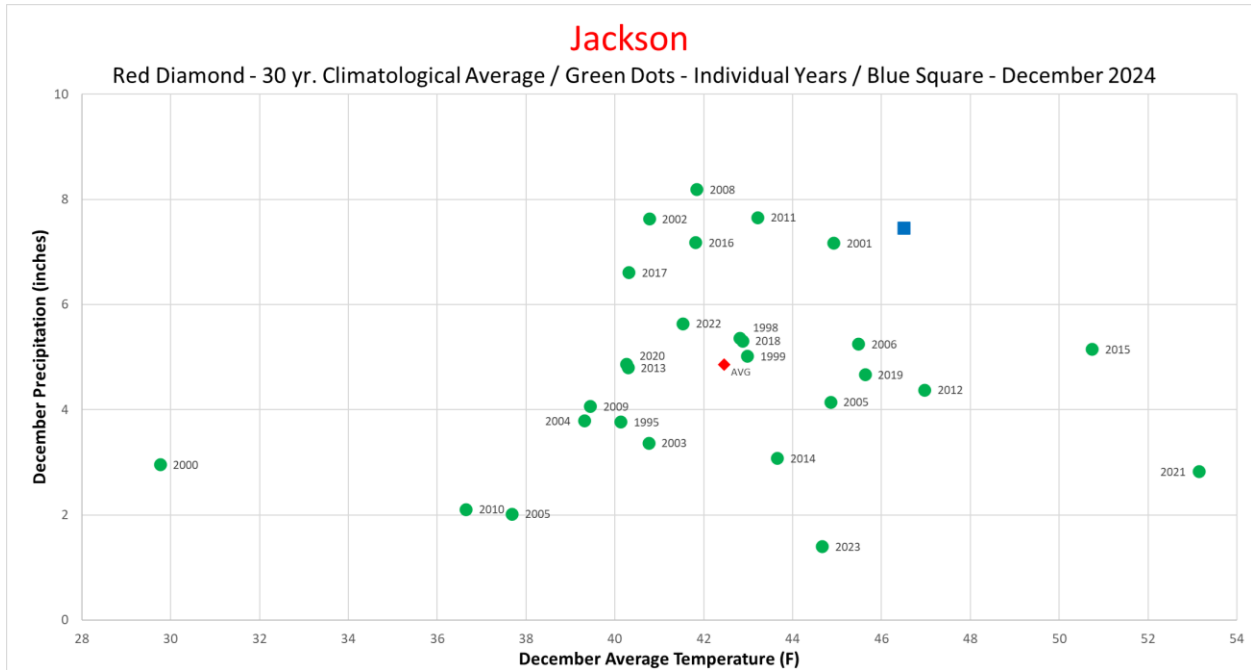
A total of 103 stations reported measurable snow and 23 others reported a Trace (<0.1")

The Month in Comparison:

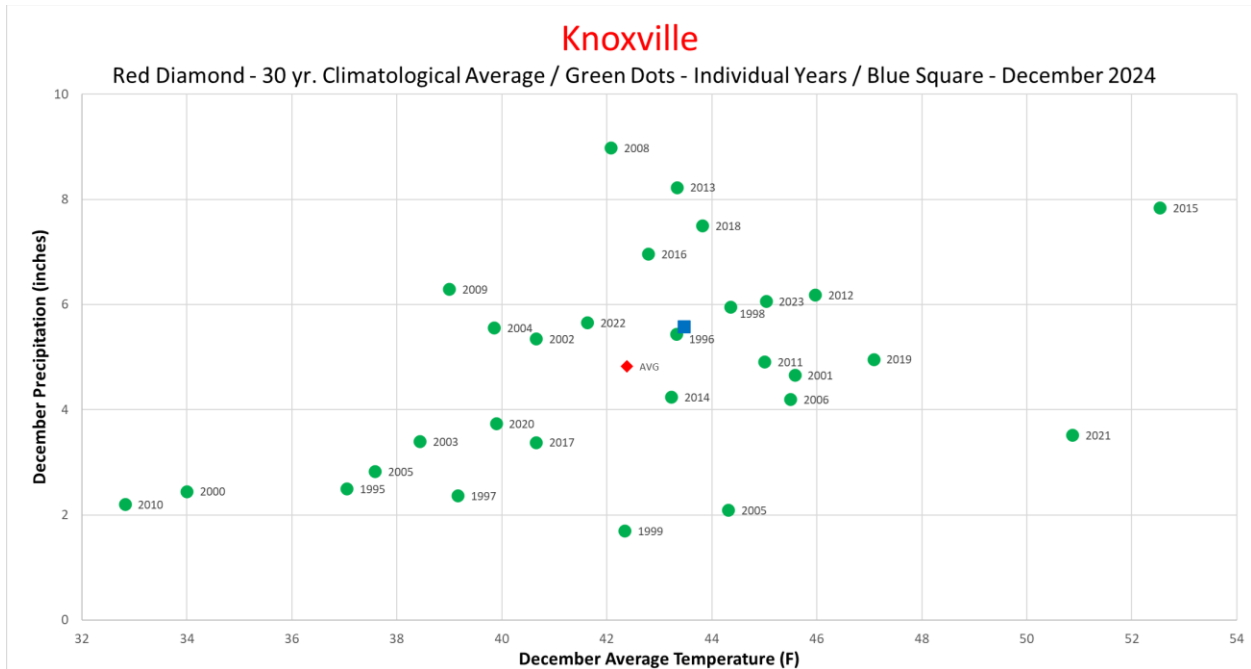
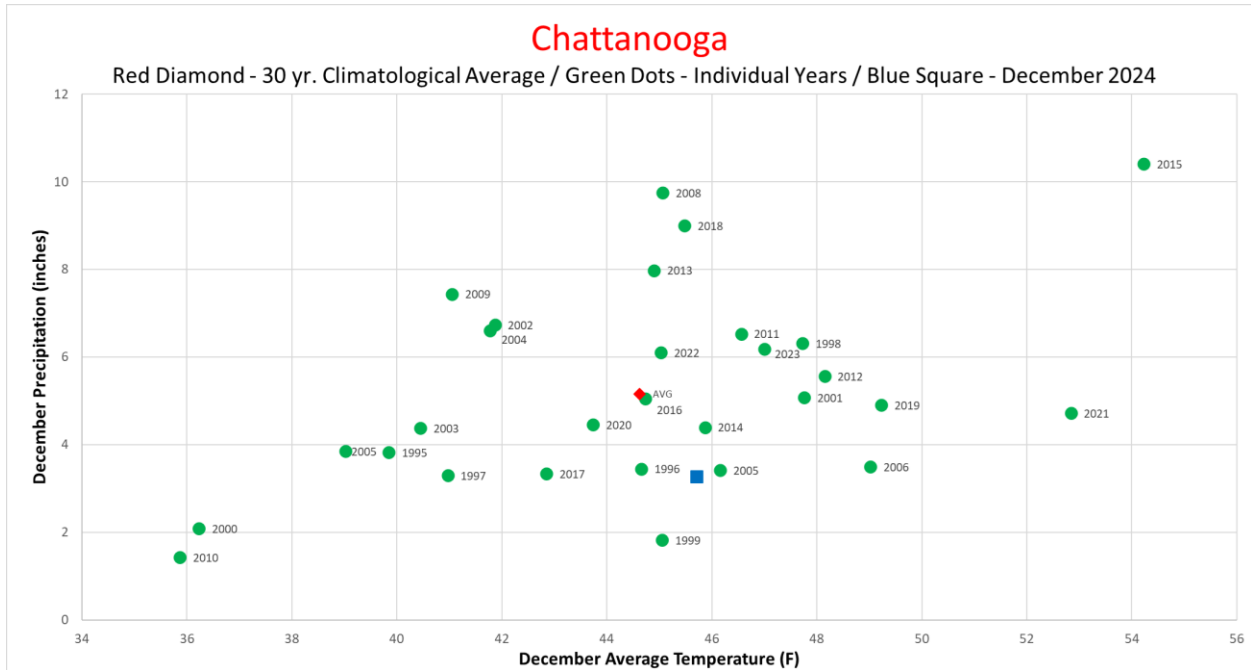
Comparing the mean temperature and total precipitation from December 2024 to Decembers over the past 30-years at automated stations at select airports across the state shows that temperatures were warmer than average at all stations and wetter than average at Memphis, Jackson, Nashville, and Knoxville but drier than average at Chattanooga and Bristol/Tri-Cities. The Memphis airport was an outlier in precipitation with just over 10-inches of rainfall, making December 2024 the second wettest December of the past 30-years, behind only December 2001. Looking at the longer-term climate records, December 2024 was not a top-10 warmest or coolest December at any of these cities. December 2024 was also not a top-10 wettest or driest December on record for any of these cities, however Memphis recorded the 11th wettest December in the city’s 147-year history.



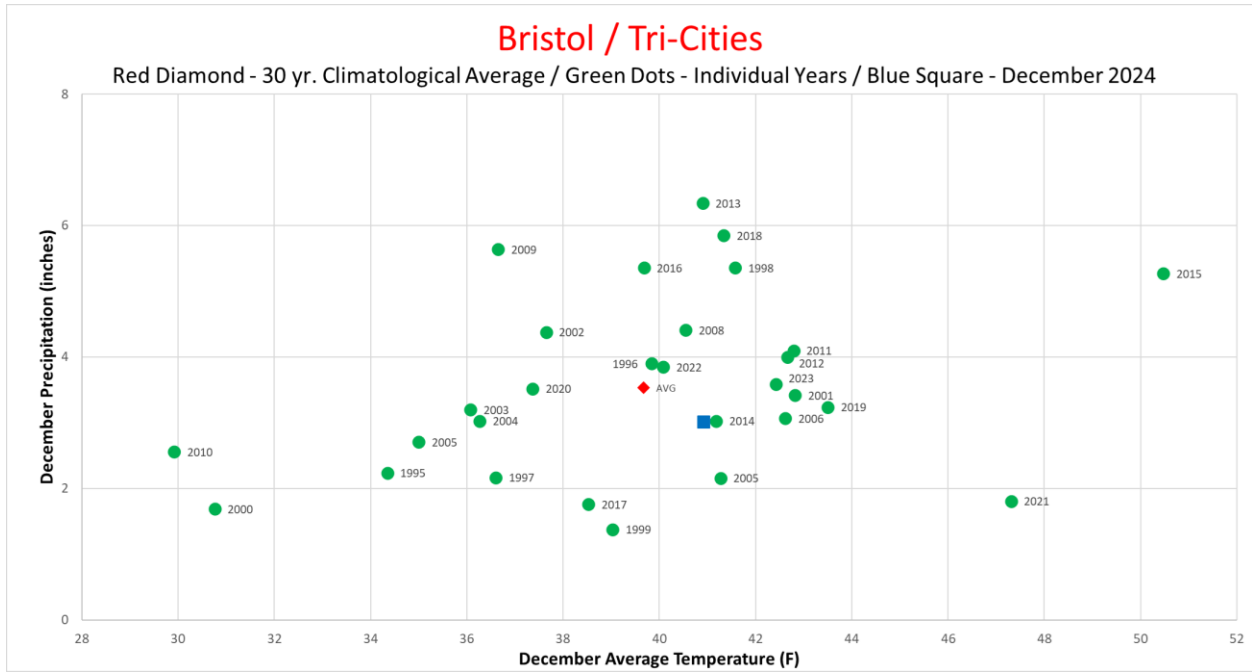
December 2024 Tennessee State Climate Summary



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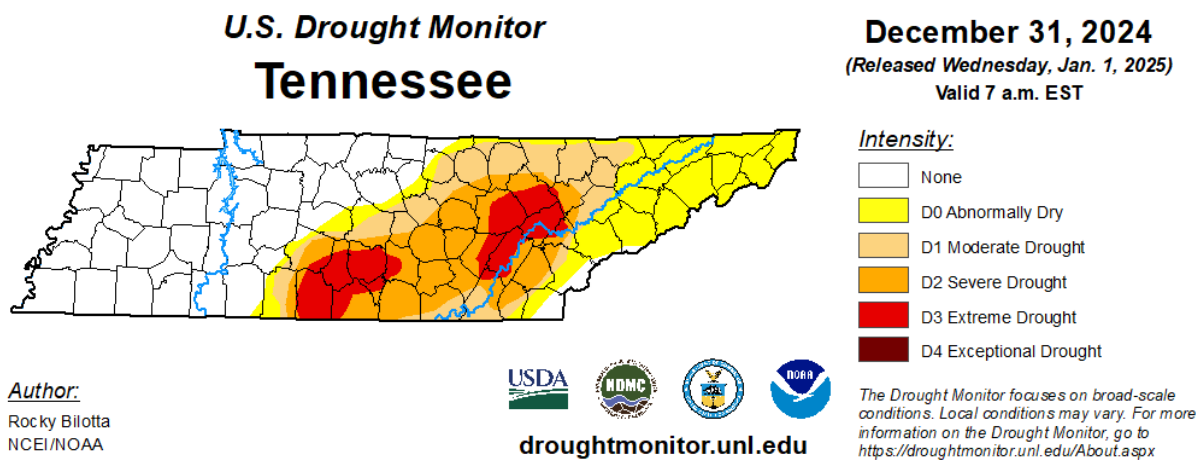
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Drought Monitor:

Tennessee ended December with two areas of Extreme Drought (D3), one in southeastern Middle Tennessee and a second in the central Cumberland Plateau and western portions of East Tennessee. A total of 8.8% of the state was shown with D3 conditions. A larger expanse around these two areas was shown with Severe Drought (D2) which covered 15.23% of the state’s area, and Moderate Drought (D1) covering 12.44% of the state’s area. Abnormally dry conditions extended through the rest of East Tennessee, 17.94% of the state’s area.

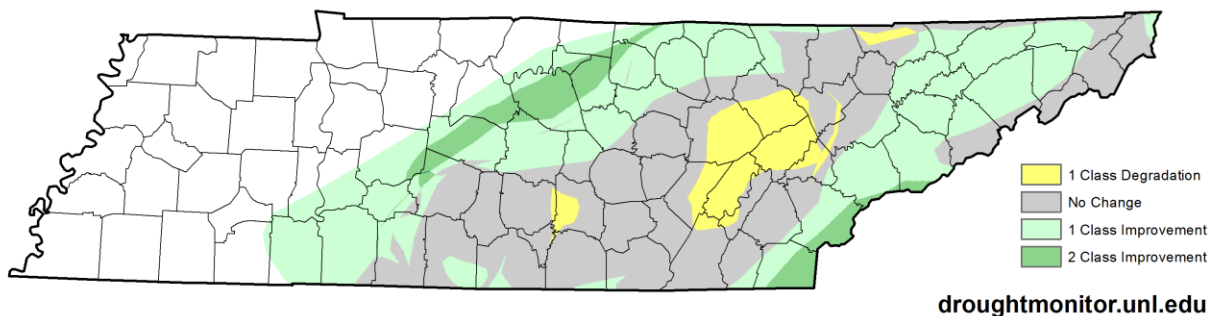
Some heavy rainfall in December led to improvements of drought conditions in southwestern and northern Middle Tennessee as well as northern parts of the Cumberland Plateau and some areas of East Tennessee. There were a few areas where drought conditions worsened during the month, mostly the eastern area of D3 in the Plateau and East Tennessee and a bit in Coffee County. Overall, the month started with 54.21% of the states area in some form of drought (D1-D4), but that was reduced to 36.47% by the end of the month.



December 31, 2024
compared to
December 3, 2024

U.S. Drought Monitor Class Change - Tennessee

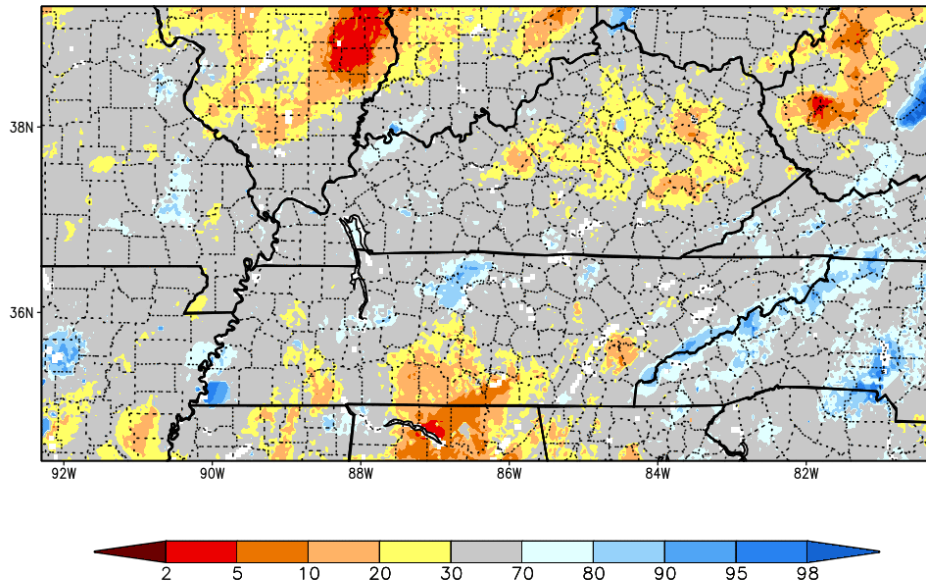
4 Week



Soil Moisture:

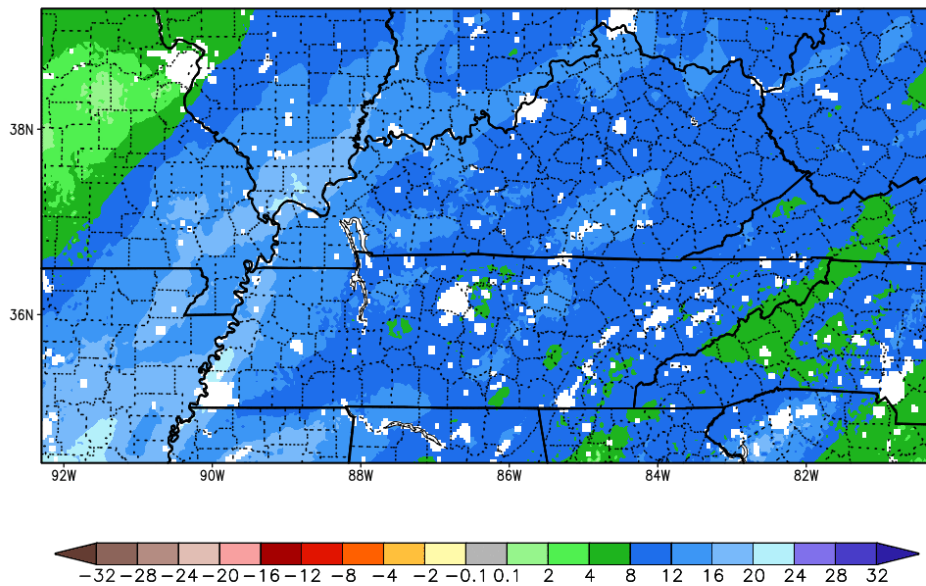
The NASA SPoRT Land Information System showed areas of southern Middle Tennessee and some scattered spots in West and East Tennessee with soil moisture levels in the below normal range for the full 2-meter soil profile, while a large portion of the state was shown in the normal range (30th-70th percentile). All areas of the state were shown with an increase in soil moisture levels over the month, mostly in the range of 8-16 percentile, thanks to heavier widespread rains later in December.

SPoRT-LIS 0-200 cm Soil Moisture percentile valid 31 Dec 2024



NOTE
Experimental

1-Month Difference in Column Relative Soil Moisture (%) valid 12z 31 Dec 2024



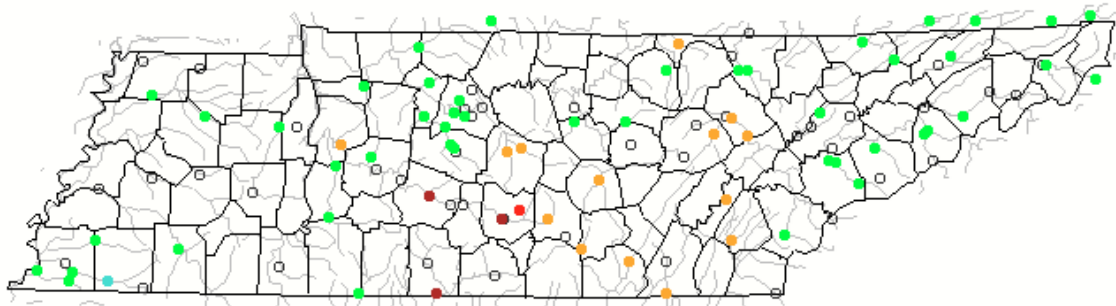
NOTE
Experimental

Streamflow:

Streamflow levels were below normal at most gauges in the southeastern quadrant of the state (southeastern Middle Tennessee and southern and central parts of the Cumberland Plateau, and southern and western parts of East Tennessee). Gauges in most other parts of the state averaged in the normal range (25-75th percentile) for the month.

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

December 2024

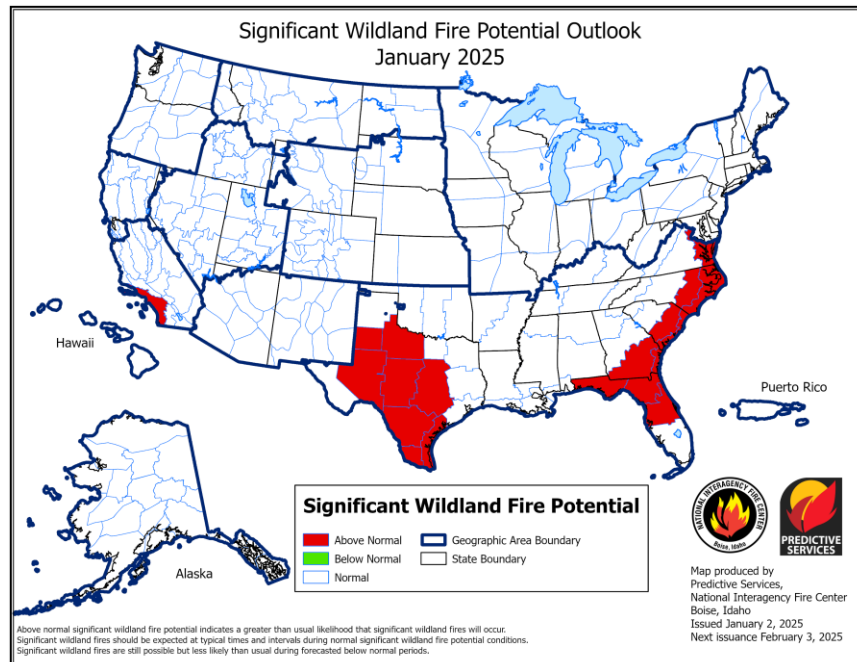


Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

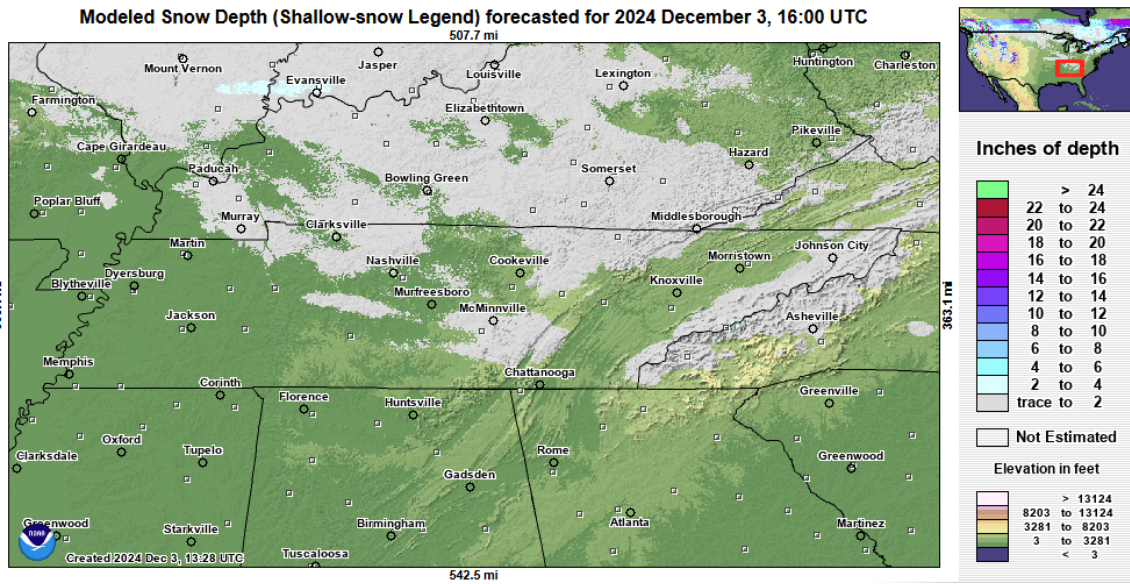


Miscellaneous:

Fire Danger: The Interagency Fire Center outlook for significant wildland fire potential shows that all of Tennessee and surrounding regions will have a normal fire potential for January 2025.



Snow: The most wide-spread snowfall this month occurred on December 3 when parts of Middle Tennessee, the Cumberland Plateau, and East Tennessee recorded measurable snowfall. Another round of snow came to parts of Middle Tennessee and the Cumberland Plateau and East Tennessee on December 11-12. A round of light snow occurred in the mountains of East Tennessee on December 21-22. Mt. LeConte in the Great Smoky Mountains National Park reported the most snow with a total of 13 inches this month, but a total of 103 weather stations (Airport Stations, COOP stations, and CoCoRaHS stations) reported measurable snowfall this month and 23 other stations reported a trace (less than 0.1-inch).




Stories of the Month:

The main weather and climate stories of December 2024 included the strong blast of cold air early in the month that led to widespread light snowfall and record cold temperatures from December 3-6, and two cold fronts that brought strong thunderstorms, localized flash flooding, some small hail, and strong winds to the state on December 18 and December 28-29.

December started out with a blast of cold air across the state and measurable light snow in parts of Middle and East Tennessee from December 2-6. There were 20 broken and 7 tied daily low temperature records this month, with all broken records occurring on December 5th or 6th. Additionally, there were 10 broken and 8 tied daily records for coolest high temperatures set this month, with all broken records set between December 3rd and 6th. This cold blast was accompanied by snow for some and there were 3 daily snowfall records set on December 3: Mt LeConte in Sevier County with 5-inches, Newcomb in Campbell County with 0.39-inches, and the Murfreesboro 5N weather station in Rutherford County with 0.12-inches. This was the first measurable snowfall reported on a December 3rd for the Murfreesboro and Newcomb weather stations, with 88- and 73-year weather histories, respectively.

Strong thunderstorms and heavy rains associated with cold fronts sweeping the state on December 18 and 29 led to localized flash flooding and reports of strong winds, and small hail. Although no hail crossed into the severe category (1-inch diameter or larger) there were some reports of severe thunderstorm wind damage in Lincoln County on December 28, this was the first report of severe weather in Tennessee since late September. Heavy rains on the 29th led to flash flooding and closure of roads and temporary bridges in parts of Carter County that were impacted by severe flooding in September from Helene.

 **Carter County Tennessee Sheriff's Office**
29 December 2024 at 16:25 · 🌐

Statement from Sheriff Fraley regarding flooding and bridge conditions in Poga:

"As of 4 pm today, we are monitoring the bridges in the Elk Mills/Poga area. Officers are advising that the lower bridge (Bridge 1) currently has water just over it, but are confident that they can cross if an emergency arises. The upper temporary bridge (Bridge 2) is still standing, however the road to it is washing out, causing concern to us if we need to reach citizens. Carter County Road Superintendent Shannon Burchett has been working with us to come up with a solution. We will make sure that all citizens are safe and have access to emergency services if needed. Updates will be given as soon as we can.
Thank you and continue praying for our dedicated officers."

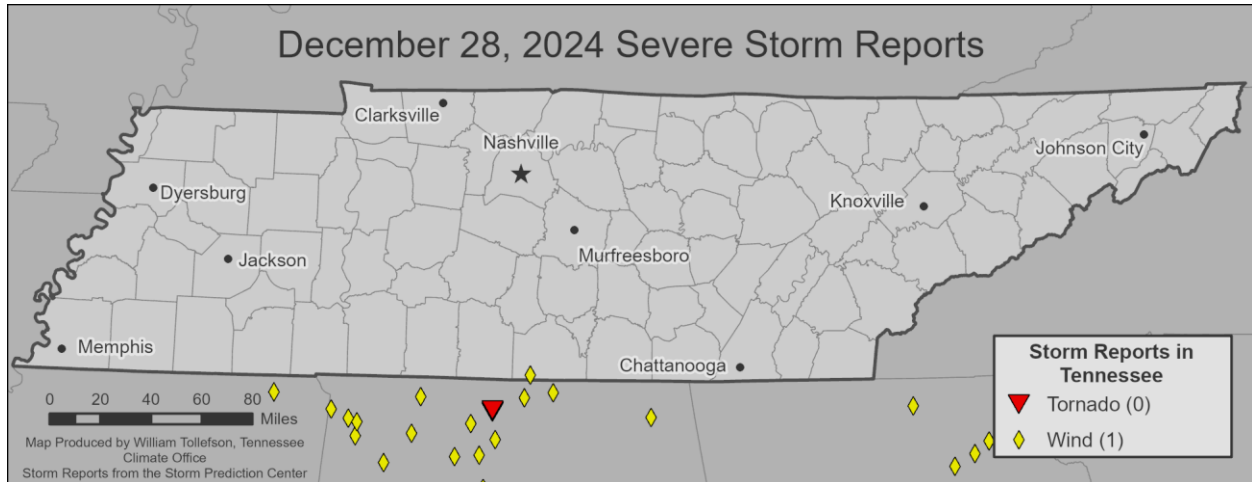


Storm Reports:

**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](https://www.spc.noaa.gov) for any updates.*

There was 1 day with a severe storm report in Tennessee this month, with 1 report of severe wind damage, no tornadoes, and no reports of severe hail.

December 28



Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
5:31	--	12 SW Fayetteville	Lincoln	35.02	-86.71	NWS Storm Survey found small to medium trees and branches snapped off of Pepper Road. Wind speed estimated between 70 to 75 mph. (HUN)

CPC Outlooks for the Next Month:

The NOAA Climate Prediction Center Outlooks for January show that all of Tennessee is leaning towards below normal temperatures, with higher confidence in the eastern half of the state. West Tennessee is shown leaning towards drier than normal conditions, but most of the state is shown with equal chances of normal, drier than normal, or wetter than normal conditions.

