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Tennessee Climate Office Monthly Report

3-1-2022

2022 March - Tennessee Monthly Climate Report

Tennessee Climate Office, East Tennessee State University

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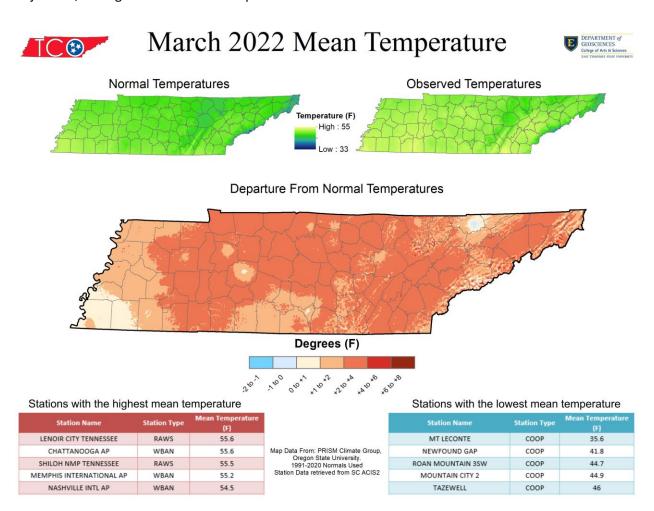
March 2022 Tennessee State Climate Summary

Tennessee Climate Office * East Tennessee State University
Prepared by William Tollefson and Dr. Andrew Joyner
With contributions by <u>Climate Data Representatives</u> across the state

Monthly Temperature Summary:

The mean temperature for March 2022 was above average for most areas of Tennessee, with the majority of the state running 2-4°F above the 1991-2020 30-year climate normals. Despite the above normal mean temperatures, there were major swings in temperature during the month, which is common for springtime in Tennessee. Temperatures recorded during the month ranged from -4°F at Mt LeConte (in Great Smoky Mountains National Park) on March 13 to 85°F at Shiloh National Military Park (Hardin County) on March 4 and at Tennessee Ridge (Houston County) on March 5.

Another sign of the wide range of temperatures for the month was that a large number of daily records were set for both warm and cold temperatures during March. At stations with at least a 30-year reporting history, there were 43 broken and 23 tied record-warm daily high temperatures. There were 26 broken and 7 tied record-warm daily low temperatures. On the flip side, there were 15 broken and 5 tied record-cold daily minimum temperatures, and 27 broken and 1 tied record-cold daily high temperatures. Mt LeConte shattered its previous daily record-cold high temperature on March 13 with a high temperature of just 9°F, 16 degrees colder than the previous record for the date set in 1998.



Monthly Precipitation Summary:

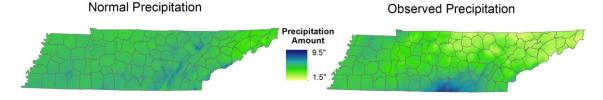
Precipitation totals for March 2022 were below the 1991-2020 30-year climate normals for most of the state, with the northeastern quadrant of the state being the driest, with most areas recording less than 75% of their normal March precipitation including some locations recording less than 40% of their normal March precipitation. Some areas in northwest Tennessee, and southern counties in East and Middle Tennessee did record above normal precipitation, with southeastern Lincoln County recording over 150% of their normal March precipitation. Despite the drier than normal total precipitation, there were 15 weather stations that recorded daily records for highest precipitation during March 2022.

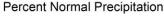
A large snowstorm impacted the state from March 11-12, generating the most significant March snowfall in Tennessee since the blizzard of 1993. From Middle to East Tennessee there were widespread reports of 2 to 5-inches of snow with higher amounts of around 7-inches locally. With this event, there were 31 broken and 2 tied daily records for daily snowfall totals, including 7 broken records at stations with at least a 100-year reporting history. Of those records, 3 stations broke and 1 station tied their monthly record for March snowfall; all of these snowfall records were measured on March 12.

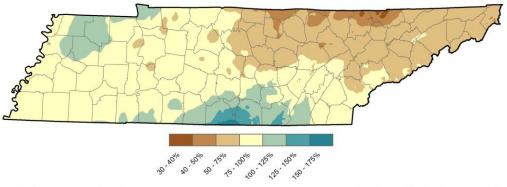


March 2022 Precipitation









Stations with the most precipitation

Stations with the least precipitation

Station Name	Station Type	Total Precipitation (in)		Station Name	Station Type	Total Precipitati (in)
SHELBYVILLE WATER DEPT	COOP	8.86		BYRDSTOWN	COOP	2.03
CLEVELAND 4.1 NNE	CoCoRaHS	8.47	Map Data From: PRISM Climate Group,	CELINA 0.3 NNE	CoCoRaHS	2.06
FAYETTEVILLE 8.6 S	CoCoRaHS	8.07	Oregon State University. 1991-2020 Normals Used Station Data retrieved from SC ACIS2	GREENEVILLE 10.1 S	CoCoRaHS	2.21
FAYETTEVILLE 0.6 SSW	CoCoRaHS	7.97		LEBANON	COOP	2.26
AYETTEVILLE WATER PLANT	COOP	7.63		NASHVILLE 5.0 NE	CoCoRaHS	2.29

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:

					Precipitation (inches)						
Station Name	Averages					Extre	mes		Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	%Norm
Memphis	66.7	43.7	55.2	1.0	81	3/30	25	3/12	5.64	-0.10	98%
Jackson	65.3	39.3	52.1	1.2	80	3/6	20	3/13	2.98	-2.57	54%
Clarksville	64.5	40.2	52.4	3.5	81	3/30	20	3/12	3.88	-0.44	90%
Nashville	66.3	42.7	54.5	3.0	83	3/30	20	3/13	3.80	-0.72	84%
Chattanooga	68.1	43.1	55.6	2.4	83	3/30	22	3/13	5.91	0.57	111%
Crossville	60.7	37.5	49.1	3.1	74	3/4	11	3/13	3.93	-1.51	72%
Knoxville	66.2	41.2	53.7	3.1	83	3/30	18	3/13	3.69	-1.20	75%
Bristol	65.0	36.7	50.9	3.5	80	3/30	14	3/13	2.57	-1.39	65%

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
TENNESSEE RIDGE	СООР	85	5
SHILOH NMP TENNESSEE	RAWS	85	4
GAINESBORO	COOP	84	31
CELINA	СООР	84	31
WOODBURY 1 WNW	СООР	83	5
NEWPORT 1 NW	СООР	83	30
MOUSETAIL LANDING STATE PARK	COOP	83	31
NASHVILLE BERRY FIELD	COOP	83	31
FAIRVIEW BOWIE NATURE CENTER	СООР	83	31
HAMBLEN CO HQ TENNESSEE	RAWS	83	30
LENOIR CITY TENNESSEE	RAWS	83	30
CHATTANOOGA AP	WBAN	83	30
NASHVILLE INTL AP	WBAN	83	30
KNOXVILLE AP	WBAN	83	30

Ten stations tied for the 5th hottest temperature (83°F)

Coldest Stations (lowest minimum temperature)

Station Name	Station Type	Lowest Temperature (F)	Date
MT LECONTE	COOP	-4	13
NEWFOUND GAP	СООР	4	13
ROAN MOUNTAIN 3SW	COOP	6	14
TAZEWELL	COOP	7	14
ONEIDA	СООР	8	14
TOWNSEND 5S	СООР	8	13
CROSSVILLE EXP STN	СООР	9	13
GAINESBORO	СООР	9	14
CHEROKEE TENNESSEE	RAWS	9	13
CROSSVILLE 7 NW	WBAN	9	13

Warmest Stations (highest mean temperatures)

Station Name	Station Type	Mean Temperature (F)
LENOIR CITY TENNESSEE	RAWS	55.6
CHATTANOOGA AP	WBAN	55.6
SHILOH NMP TENNESSEE	RAWS	55.5
MEMPHIS INTERNATIONAL AP	WBAN	55.2
NASHVILLE INTL AP	WBAN	54.5
DICKSON	СООР	54.4
DECATURVILLE	СООР	54.4
MOUSETAIL LANDING STATE PARK	СООР	54
BURNS TENNESSEE	RAWS	54
CHUCK SWAN SF TENNESSEE	RAWS	54

Coolest Stations (lowest mean temperatures)

Station Name	Station Type	Mean Temperature (F)
MT LECONTE	СООР	35.6
NEWFOUND GAP	СООР	41.8
ROAN MOUNTAIN 3SW	СООР	44.7
MOUNTAIN CITY 2	СООР	44.9
TAZEWELL	СООР	46
COALMONT	СООР	47.1
ONEIDA	СООР	47.2
MAYNARDVILLE	СООР	47.6
CROSSVILLE 7 NW	WBAN	47.9
NEWCOMB	COOP	48

Wettest Stations (highest precipitation totals):

Station Name	Station Type	Total Precipitation (in)
SHELBYVILLE WATER DEPT	СООР	8.86
CLEVELAND 4.1 NNE	CoCoRaHS	8.47
FAYETTEVILLE 8.6 S	CoCoRaHS	8.07
FAYETTEVILLE 0.6 SSW	CoCoRaHS	7.97
FAYETTEVILLE WATER PLANT	COOP	7.63
CHRISTIANA 5W	COOP	7.61
MILAN EXP STN	СООР	7.58
LOOKOUT MTN-POINT PARK	COOP	7.49
LYNCHBURG 0.7WNW	CoCoRaHS	7.35
FRANKEWING 4.0 ENE	CoCoRaHS	7.29

Driest Stations (lowest precipitation totals):

Station Name	Station Type	Total Precipitation (in)
BYRDSTOWN	СООР	2.03
CELINA 0.3 NNE	CoCoRaHS	2.06
GREENEVILLE 10.1 S	CoCoRaHS	2.21
LEBANON	СООР	2.26
NASHVILLE 5.0 NE	CoCoRaHS	2.29
BAILEYTON 1.0 NW	CoCoRaHS	2.38
ELIZABETHTON	СООР	2.4
RED BOILING SPRINGS 6.7 NNE	CoCoRaHS	2.42
GREENEVILLE 3.0 S	CoCoRaHS	2.46
MAYNARDVILLE	СООР	2.49

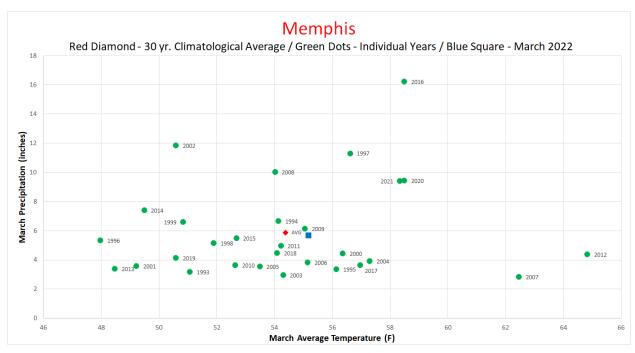
Snowiest Stations (highest snowfall accumulations)

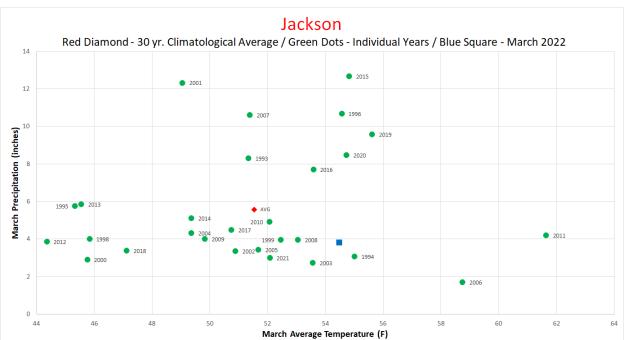
Name	Station Type	Total Snowfall (in)
MT LECONTE	COOP	10.8
CLARKSVILLE WWTP	COOP	8
ONEIDA	СООР	7.5
KYLES FORD 1.0 N	CoCoRaHS	7.2
OAK RIDGE 5.7 NE	CoCoRaHS	7
JAMESTOWN 3.1 SE	CoCoRaHS	7
KNOXVILLE 5.5 W	CoCoRaHS	7
NORRIS 0.6 NW	CoCoRaHS	6.8
LENOIR CITY	COOP	6.5
KNOXVILLE EXP STA	СООР	6.5
KNOXVILLE AP	WBAN	6.5

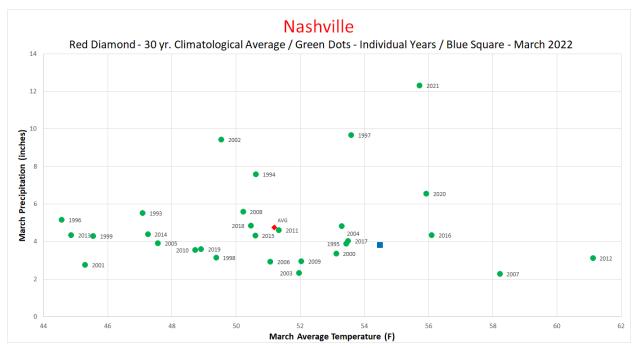
Three weather stations tied for the 9th highest snowfall total (6.5")
A total of 107 stations reported measurable snowfall during March 2022

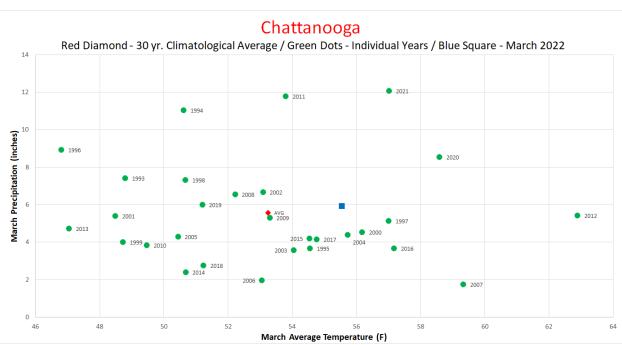
The Month in Comparison:

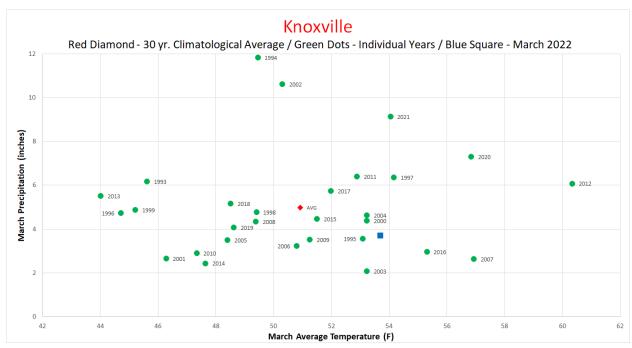
Looking at select automated weather stations at airports across the state, temperatures were above normal at all locations, but compared to the mean monthly temperatures for March over the past 30-years, it was not a major outlier at any weather station. Similarly, precipitation totals were below normal for each station, except Chattanooga, but it was not an outlier year compared to March precipitation over the past 30 years.

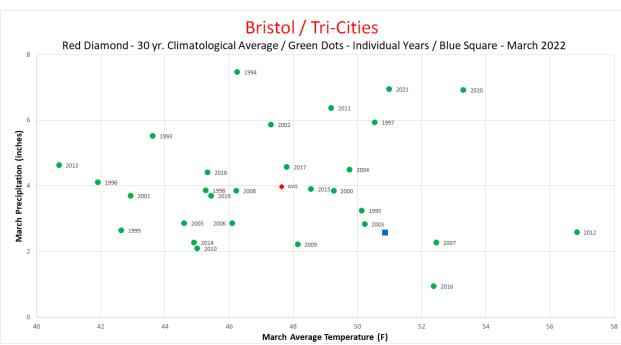






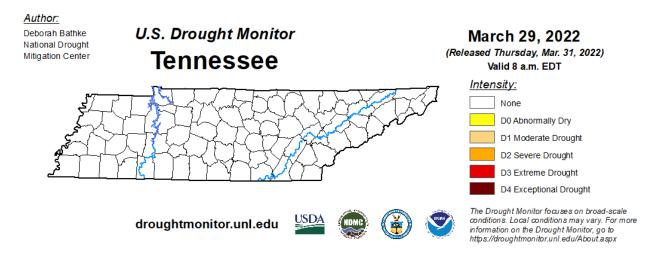






Drought Monitor:

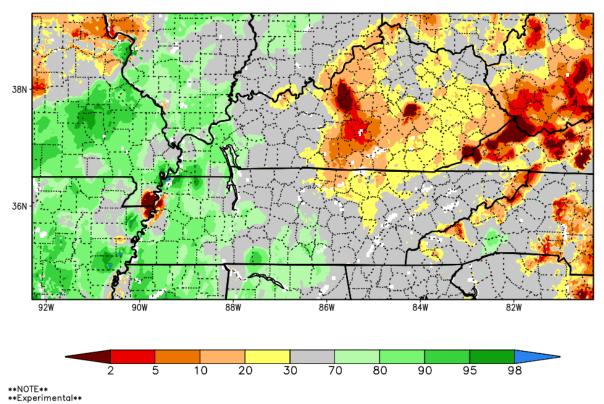
Despite the drier and warmer than normal conditions in most of the state, Tennessee remained free of drought or abnormally dry conditions on the US Drought Monitor for the month of March 2022.



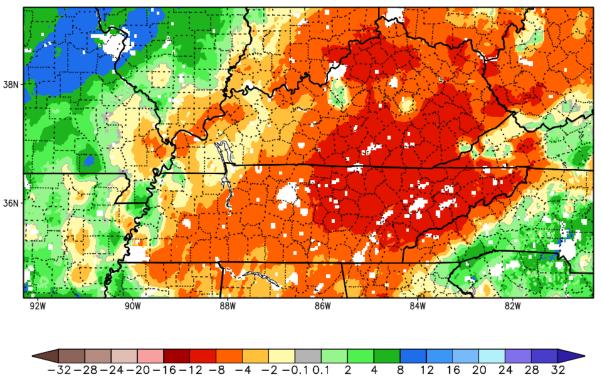
Soil Moisture:

The USDA Crop Progress report released March 29 rated topsoil moisture as 4% short, 72% adequate, and 24% surplus; and rated subsoil moisture as 4% short, 78% adequate, and 18% surplus across Tennessee. Looking at the NASA SPORT Land Information System soil moisture products, most areas of the state were near or above normal for soil moisture from the surface down to 2 meters depth, although areas along the mountains and northern portions of the Cumberland Plateau were running below normal for this time of year. Looking at monthly changes in soil moisture, all areas except the western-most counties in the state saw drops in soil moisture percentiles. However, there had been a large increase in soil moisture during February, so these drops brought the soil moisture percentiles closer to the normal range for this time of year.

SPoRT-LIS 0-200 cm Soil Moisture percentile valid 31 Mar 2022



1-Month Difference in Column Relative Soil Moisture (%) valid 12z 31 Mar 2022

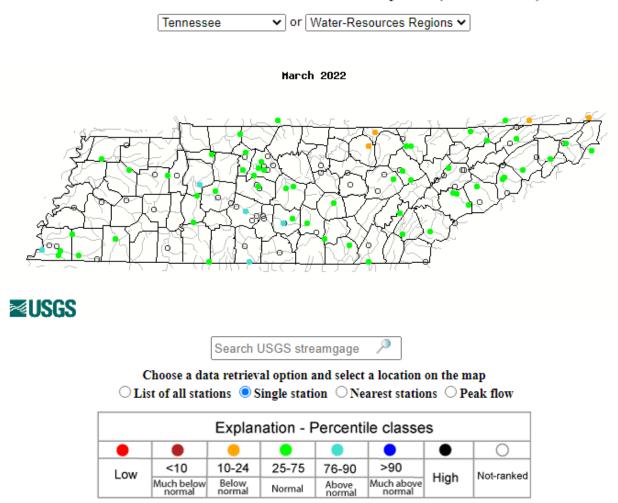


NOTE **Experimental**

Streamflow:

Averaged throughout the month, most stream gauges in Tennessee reported normal streamflow levels, with a few streams in Middle and southwest Tennessee reporting above normal streamflow and a few streams in northeast Tennessee and on the northern Cumberland Plateau recording below normal streamflow. As a dry pattern set up in northeast Tennessee throughout March, there were more streams in that area reporting below normal streamflow by the end of the month.

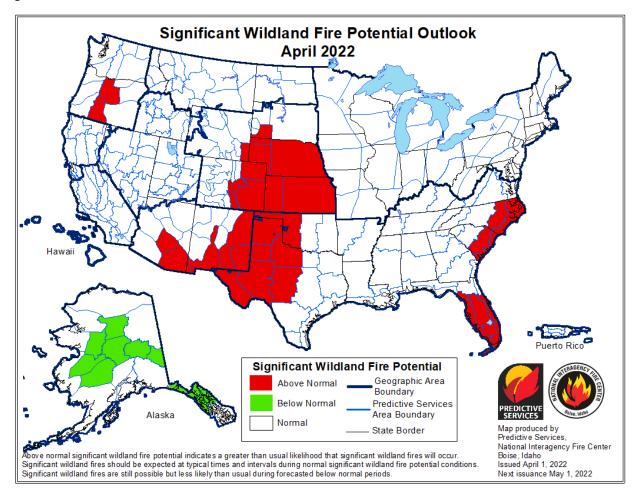
Map of monthly streamflow compared to historical streamflow for the month of the year (Tennessee)



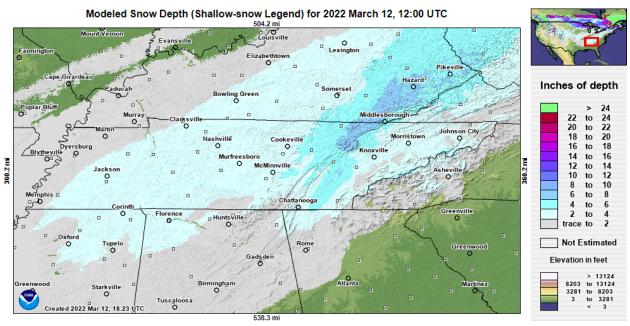
Miscellaneous:

Crop Conditions from USDA: Tennessee experienced varied precipitation and temperatures in March. Some areas reported wet conditions and cold temperatures, with a few reports indicated flooding in low areas. Fieldwork is gearing up for the growing season. Corn planting preparations are starting as conditions allow. Pastures are reported as mostly fair. Winter wheat is reported as mostly good with little disease. Hay and roughage supplies appear adequate for the rest of the winter season. Supplies have lasted longer than expected despite the impacts on pastures from wet weather. Late freezes may have impacted pastures and hay, and cold and dry conditions in East Tennessee were a concern for winter wheat in the region.

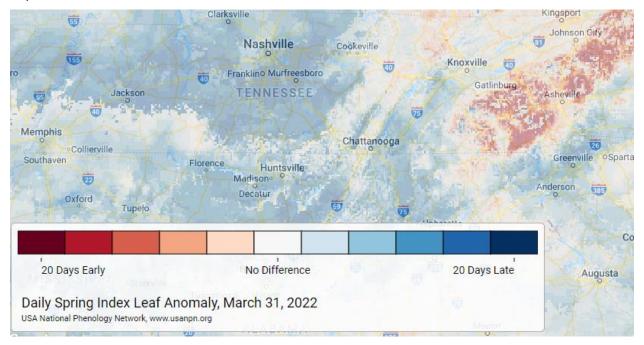
Fire Danger: The Interagency Fire Center significant wildland fire potential outlook for April shows that all of Tennessee, along with surrounding regions of neighboring states will have normal potential for significant wildland fires.



Snow: There was one significant snowfall event in March, with widespread accumulation across the state from March 11-12. Northern portions of the Cumberland Plateau reported the highest snow totals, but for many areas in East Tennessee this was the largest snowfall event since the Blizzard of 1993. A total of 107 weather stations (including CoCoRaHS gauges) reported measurable snowfall during March 2022.



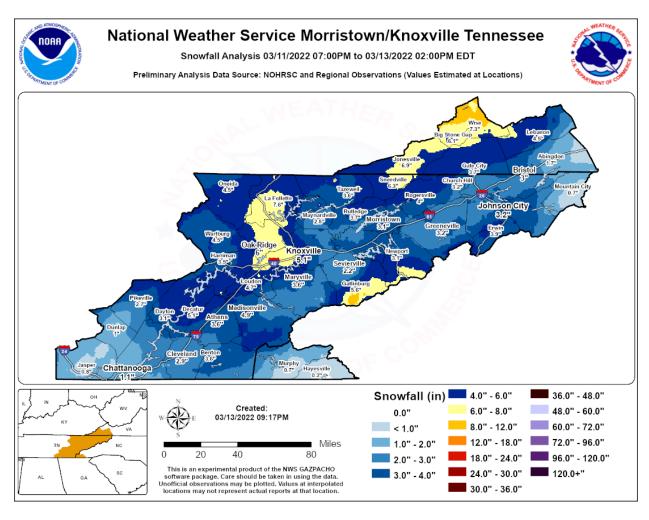
Spring Greenup: Maps from the US Phenology Network showing the First-leaf anomaly indicate that most of Tennessee saw the spring greenup delayed by about a week due to cold spells in early/mid-March, although warm weather in East Tennessee in February and March did lead to a greenup that was a few days earlier than normal.

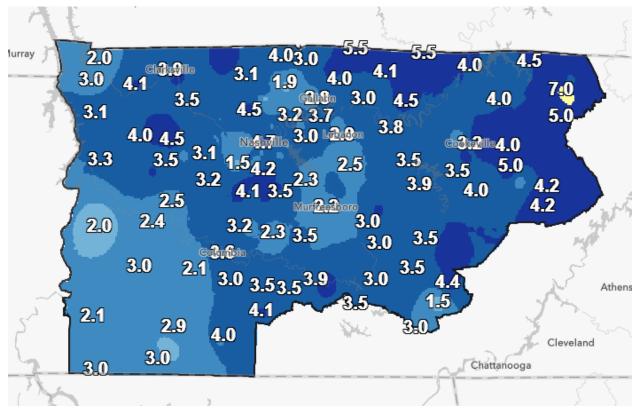


Story of the Month:

The major stories of March 2022 were the snowstorm of March 11-12 and the high winds and wildfires that occurred at the end of the month.

A strong cold front swept the state from March 11 to 12, bringing widespread snow accumulation across the state, with northern portions of the Cumberland Plateau reporting the highest snow totals. For many areas in East Tennessee this was the largest March snowfall event since the Blizzard of 1993, including Knoxville where there were numerous reports of over 6" of snow.

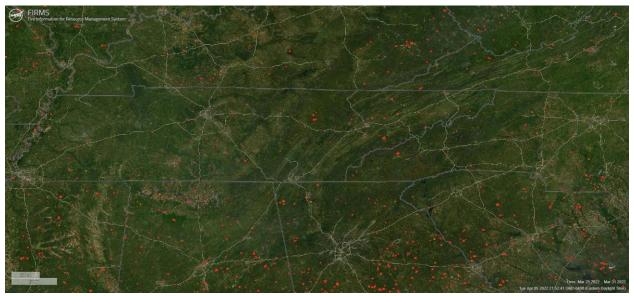




March 12 snow accumulation reports from the NWS Nashville Forecast Office.

There were numerous small wildland fires reported across the state at the end of the month as a few weeks of dry weather, low humidity, and gusty winds brought dangerous fire weather conditions to portions of the state.

In Sevier County, two large wildfires broke out and were responsible for burning more than 3,000 acres over several days beginning March 30th. The Sevier County fires were located in the Wears Valley and Chilhowee Mountain areas of the county, west of Gatlinburg/Pigeon Forge. The larger of the two fires, named the Hatcher Mountain/Indigo Lane Fire, caused the evacuation of over 11,000 homes. Additionally, schools in the area were closed and students were bussed to an evacuation center so their parents could pick them up. There were over 200 people from 70 agencies dispatched to help fight the fires. 219 structures were impacted by the fires, some sustaining just minor damage while others were completely destroyed. Luckily, no fatalities were reported due to the fires, but two firefighters and a civilian were injured while fighting the fires.



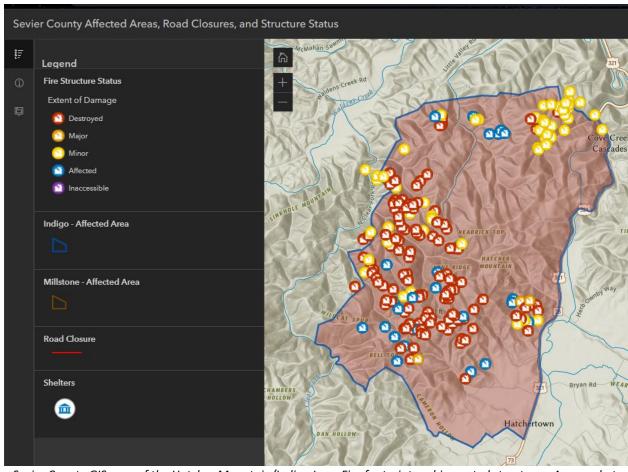
Satellite-derived potential fire hotspots across Tennessee and surrounding regions for the week ending March 31.

Image from the NASA FIRMS (Fire Information for Resource Management System):

https://earthdata.nasa.gov/earth-observation-data/near-real-time/firms/about-firms



Image of the Hatcher Mountain wildfire from TEMA



Sevier County GIS map of the Hatcher Mountain/Indigo Lane Fire footprint and impacted structures. Accessed at: https://arcq.is/0DWDzr

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 3 days with severe storms reported in Tennessee with a total of 3 tornados, 27 severe wind damage reports, and no severe hail reports.

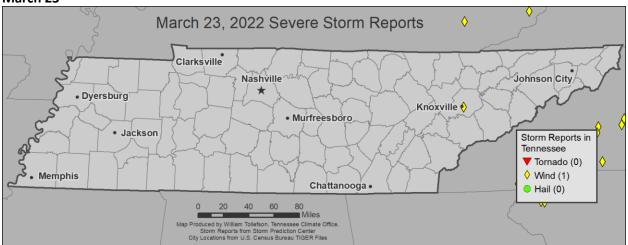
March 22



Wind:

Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
22:07		3 NW COLLINWOOD	WAYNE	35.21	-87.79	TENNESSEE VALLEY WEATHER AND FACEBOOK REPORTS INDICATED SEVERAL TREES WERE BLOWN DOWN WITH MINOR DAMAGE TO OUTBUILDINGS AND POWER OUTAGES BETWEEN COLLINWOOD AND WAYNESB (OHX)
22:55		5 NW MINOR HILL	LAWRENCE	35.09	-87.22	TREE DOWN ON POWER LINE. (OHX)

March 23



Wind:

Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
18:00		1 ESE	KNOX	35.96	-83.93	SOCIAL MEDIA PHOTO OF A REVOLVING DOOR DAMAGED AT A BUSINESS IN DOWNTOWN
	KNOXVILLE	KNOXVILLE KNOX 3				KNOXVILLE. TIME IS ESTIMATED FROM RADAR. (MRX)

March 30



Tornadoes:

Time (UTC)	Strength	Location	County	Lat	Lon	Comments
23:19	EF1	4 NNW JACKSON	MADISON	35.68	- 88.86	A SURVEY OF THE DAMAGE FROM WEDNESDAY EVENINGS THUNDERSTORMS RESULTED IN THREE CONFIRMED TORNADOES IN WEST TENNESSEE. THESE TORNADOES AFFECTED AREAS IN MADISON GIBSO (MEG)
23:31	EF1	4 ESE FAIRVIEW	MADISON	35.75	- 88.79	DAMAGE SURVEY FOUND EF-1 TORNADO DAMAGE FROM OLD MEDINA ROAD NORTHWEST TINTO FAR SOUTHEAST GIBSON COUNTY. (MEG)
23:52	EF1	6 SW HUNTINGDON	CARROLL	35.95	- 88.48	EF-1 DAMAGE WAS FOUND NEAR HUNTINGDON. (MEG)

Wind:

willu.						
Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
17:53		3 WNW BLUE GOOSE	MADISON	35.72	-88.63	1-INCH TREE LIMBS BROKEN; SHINGLES BLOWN OFF. (MEG)
21:15		3 S COLLIERVILLE	SHELBY	35.01	-89.69	LARGE TREE DOWN ON POWER LINES LAYING ACROSS THE ROAD AT E HOLMES RD AND BYHALIA RD. UTILITIES AFFECTED. (MEG)
22:20		3 S COLLIERVILLE	SHELBY	35.01	-89.69	CORRECTS PREVIOUS TSTM WND DMG REPORT FROM 3 S COLLIERVILLE. LARGE TREE DOWN ON POWER LINES LAYING ACROSS THE ROAD AT E HOLMES RD AND BYHALIA RD. UTILITIES AFFECTED. (MEG)

Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
22:30		4 W MOSCOW	FAYETTE	35.06	-89.47	POWERLINES DOWN ACROSS THE ROAD ON HWY 57. (MEG)
23:00		BOLIVAR	HARDEMAN	35.27	-89	MULTIPLE TREES DOWN NORTH AND AROUND THE BOLIVAR AREA PARTICULARLY NEAR HWY 179. (MEG)
23:05		8 W DOVER	STEWART	36.47	-87.99	SEVERAL TREES DOWN IN WESTERN PARTS OF THE COUNTY. (OHX)
23:20		JACKSON	MADISON	35.63	-88.83	CORRECTS PREVIOUS TSTM WND DMG REPORT FROM JACKSON. ROOF CAME OFF AT THE FORREST COVE NURSING HOME NEAR THE HOSPITAL. WINDOW BLOWN OUT AT THE HOSPITAL AS WELL. SEVERAL (MEG)
23:23	60	5 WNW BEMIS	MADISON	35.6	-88.92	60 MPH WIND GUST MEASURED BEFORE SITE LOST POWER. (MEG)
23:30		1 SW MEDINA	MADISON	35.79	-88.79	MULTIPLE TREES DOWN ON HOUSES ON CHRISTMASVILLE RD. ALSO REPORTS OF MULTIPLE TREES DOWN DAMAGING HOUSES ON WESTOVER RD. (MEG)
23:30		MEDINA	GIBSON	35.81	-88.78	MULTIPLE TREES DOWN ACROSS MEDINA. (MEG)
23:45		5 WSW HUNTINGDON	CARROLL	35.97	-88.48	CORRECTS PREVIOUS TSTM WND DMG REPORT FROM 5 WSW HUNTINGDON. TREE DOWN ON A MOBILE HOME ON OLD STAGE RD NO ENTRAPMENT BUT SEVERAL POWER LINES AND TREES DOWN ACROSS C (MEG)
23:45		HOLLOW ROCK	CARROLL	36.04	-88.27	MULTIPLE POWER LINES AND TREES DOWN ON HWY 70. (MEG)
0:00		12 ESE BUENA VISTA	BENTON	35.88	-88.1	POWER LINES DOWN ON HWY69A TREES DOWN ON HWY 192 AND LICK CREEK RD. (MEG)
0:00		CAMDEN	BENTON	36.06	-88.09	TREE AND POWER LINE DOWN CAUSING POWER OUTAGES. (MEG)
0:35	60	LOBELVILLE	PERRY	35.75	-87.8	TRAINED SPOTTER ESTIMATED 60+ MPH WIND GUST. (OHX)
1:10		CENTERVILLE	HICKMAN	35.78	-87.47	A FEW TREES DOWN IN THE COUNTY WITH THE MAIN LINE OF STORMS. (OHX)
1:31		11 WNW LAWRENCEBURG	LAWRENCE	35.32	-87.5	TREE DOWN AT GENSON RD AND TN- 240. (OHX)
1:50		1 N LEWISBURG	MARSHALL	35.46	-86.79	MARSHALL COUNTY EMA REPORTED A 3 MILE LONG BY 1/2 MILE WIDE SWATH OF WIND DAMAGE OCCURRED ACROSS THE NORTHEAST SIDE OF LEWISBURG. A MOBILE HOME ON VERONA ROAD LOST MUCH (OHX)
2:13		3 W FRANKLIN	WILLIAMSON	35.93	-86.9	TSPOTTER REPORT AND PHOTO OF A TREE SNAPPED IN THE FOUNDERS POINTE NEIGHBORHOOD. (OHX)

Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
2:50		1 N LEWISBURG	MARSHALL	35.46	-86.79	CORRECTS PREVIOUS TSTM WND DMG REPORT FROM 1 N LEWISBURG. MARSHALL COUNTY EMA REPORTED A 3 MILE LONG BY 1/2 MILE WIDE SWATH OF WIND DAMAGE OCCURRED ACROSS THE NORTHEAST (OHX)
2:52		4 NE GALLATIN	SUMNER	36.43	-86.41	FACEBOOK REPORT OF A LARGE TREE BLOWN DOWN ONTO A CAMPER ON GIBBS LANE. (OHX)
4:05		4 SSW LYNCHBURG	MOORE	35.23	-86.39	A TREE WAS REPORTED DOWN ON LOUSE CREEK ROAD. (HUN)
4:25		5 WNW MANCHESTER	COFFEE	35.51	-86.16	FACEBOOK REPORT INDICATED A SMALL SHED WAS BLOWN OVER AND A FEW SMALL TREES WERE BLOWN DOWN ON NORTON ROAD. (OHX)
6:29		5 NE PALIO	BLEDSOE	35.53	-85.26	A FEW TREES DOWN. (MRX)

CPC Outlooks for the Next Month:

The NOAA Climate Prediction Center monthly outlooks for April show that most of Tennessee will have equal chances for above or below normal temperatures for the month, with the exception of the southwestern and northeastern corners of the state which are leaning towards a warmer than normal April. The entire state is leaning towards a wetter than normal April, with chances between 33-40%.

