11-1-2020

2020 November - Tennessee Monthly Climate Report

Tennessee Climate Office, East Tennessee State University

November 2020 Tennessee State Climate Summary

*Tennessee Climate Office * East Tennessee State University*
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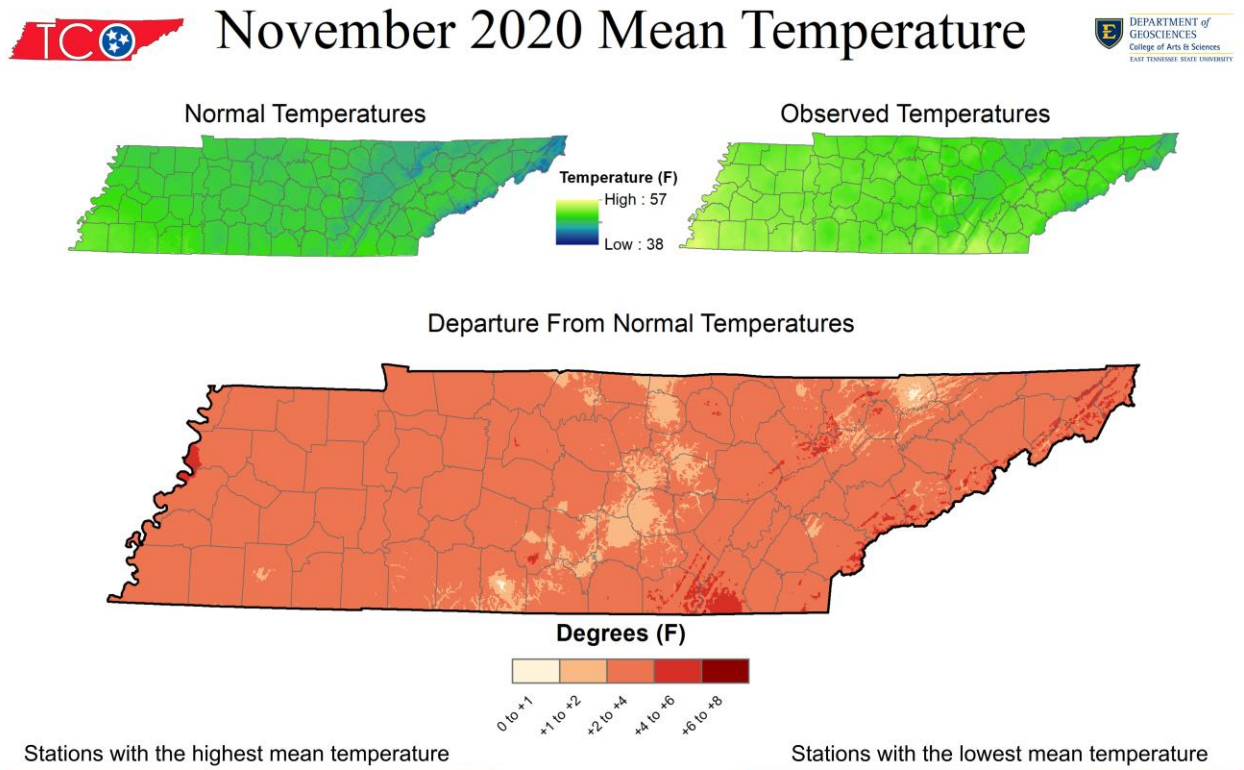
With contributions by Climate Data Representatives at University of Memphis, University of Tennessee-Martin, Vanderbilt University, University of Tennessee-Institute of Agriculture, and
University of Tennessee-Knoxville

Monthly Temperature Summary:

Temperatures in November were consistently at or above normal for the state, with the exception of cold spells at the very beginning and end of the month. The mean monthly temperature across much of the state was 2-4°F above the climatological average for November. Three long-term climate stations in East Tennessee recorded one of their top-10 warmest Novembers: Oak Ridge, tied for 7th warmest in the station's 74-year history; Chattanooga, tied for the 9th warmest in the station's 139-year history; and the Tri-Cities tied for the 10th warmest in the station's 73-year history. The heat peaked in the second week of the month, when at least one climate reporting station in the state set a record high maximum temperature each day from November 7 to 11, and a record high minimum temperature each day from November 8 to 12.



Stations with the highest mean temperature

Station Name	Station Type	Mean Temperature (F)
MEMPHIS INTERNATIONAL AP	WBAN	56.4
SHILOH NMP TENNESSEE	RAWS	56
LEWISBURG TOWER TENNESSEE	RAWS	55.6
CHATTANOOGA AP	WBAN	55.5
GERMANTOWN 4SE	COOP	55.1

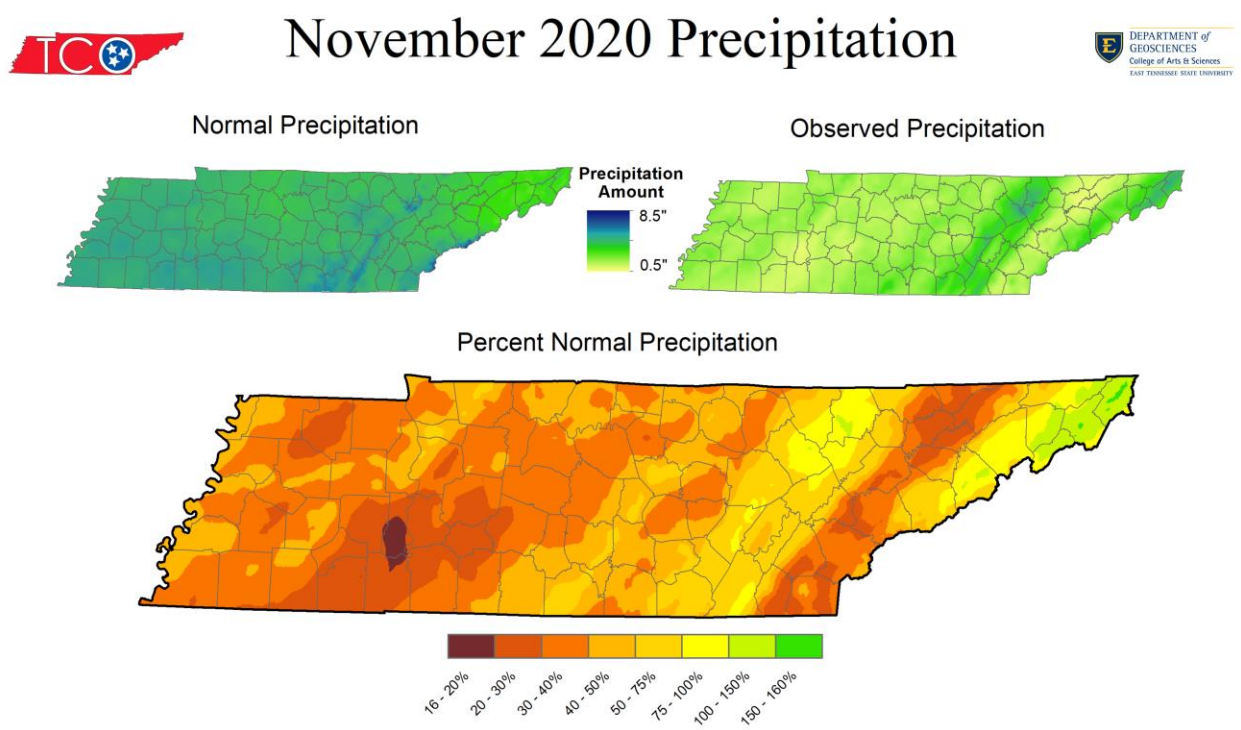
Map Data From: PRISM Climate Group, Oregon State University.
1981-2010 Normals Used
Station Data retrieved from SC ACIS2

Stations with the lowest mean temperature

Station Name	Station Type	Mean Temperature (F)
MT LECONTE	COOP	39.5
NEWFOUND GAP	COOP	45.5
ROAN MOUNTAIN 3SW	COOP	46.9
TAZEWELL	COOP	47
ONEIDA	COOP	48.1

Monthly Precipitation Summary:

November 2020 was a dry month across most areas of the state. Virtually no precipitation was reported during the first week of the month, with light precipitation occurring each of the following weeks (most locations recorded less than a half inch each week). The main exception was heavy rainfall that occurred during the second week of the month in parts of East Tennessee, producing precipitation totals of two inches or more in northeast Tennessee, and along the eastern edge of the Cumberland Plateau. Small areas in extreme northeast Tennessee and the northern Cumberland Plateau recorded above normal precipitation for the month due to this rainfall; otherwise, the state recorded below normal precipitation. The driest area of the state was in southeast West Tennessee, with areas around Decatur County recording less than 20% of their normal monthly precipitation totals. This portion of the state has been the driest region for the past couple of months, leading to the development of abnormally dry and moderate drought conditions by the end of the month. A strong storm system moved across the state on the last day of the month, bringing rain and the first snow of the season to many areas. Snowfall was reported across Middle and East Tennessee, minor accumulations were reported with higher totals on the Cumberland Plateau and in the mountains and higher elevations of East Tennessee.



Stations with the most precipitation

Station Name	Station Type	Total Precipitation (in)
MT LECONTE	COOP	4.18
NEWFOUND GAP	COOP	4.05
ERWIN 1 W	COOP	3.84
NEWCOMB	COOP	3.75
CHATTANOOGA AP	WBAN	3.67

Map Data From: PRISM Climate Group, Oregon State University.
1981-2010 Normals Used
Station Data retrieved from SC ACIS2

Stations with the least precipitation

Station Name	Station Type	Total Precipitation (in)
WAVERLY AIRPORT*	COOP	0
CARTHAGE	COOP	0.2
CENTERVILLE 4NE	COOP	0.28
SHELBY BOTTOMS NATURE CENTER	COOP	0.71
MOUSETAIL LANDING STATE PARK	COOP	0.77

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

Station data for airports across the state using WBAN weather stations:

Station Name	Temperatures (˚F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	%Norm
Memphis	67.2	45.6	56.4	**+3.2**	82	11/8	28	11/30	1.74	**-3.75**	**32%**
Jackson	65.5	38.6	52.1	**+2.0**	81	11/8	27	11/30	1.9	**-3.00**	**39%**
Clarksville	64.3	38.8	51.6	**+3.2**	80	11/8	27	11/18	1.58	**-3.00**	**34%**
Nashville	66.3	41.6	53.9	**+4.1**	83	11/9	32	11/30	1.2	**-3.11**	**28%**
Chattanooga	67.5	43.5	55.5	**+4.3**	82	11/9	32	11/19	3.67	**-1.33**	**73%**
Crossville	60.5	37.7	49.1	**+1.6**	74	11/9	27	11/30	2.61	**-2.49**	**51%**
Knoxville	65.1	40.1	52.6	**+2.9**	82	11/10	30	11/19	1.43	**-2.58**	**36%**
Bristol	64.3	36.2	50.3	**+3.7**	78	11/10	26	11/3	2.08	**-1.02**	**67%**

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
CAMDEN TOWER TENNESSEE	RAWS	83	8
CARTHAGE	COOP	83	10
COOKEVILLE	COOP	83	10
JACKSON EXP STA	COOP	83	9
LEBANON	COOP	83	10
MILAN EXP STN	COOP	83	9
NASHVILLE BERRY FIELD	COOP	83	10
NASHVILLE INTL AP	WBAN	83	9
NEWPORT 1 NW	COOP	83	10
SHILOH NMP TENNESSEE	RAWS	83	8

Ten stations tied for the highest maximum temperature (83°F).

Coldest Stations (lowest minimum temperature)

Station Name	Station Type	Lowest Temperature (F)	Date
MT LECONTE	COOP	11	2
PORTLAND SEWAGE PLANT	COOP	18	18
NEWFOUND GAP	COOP	20	2
UT MARTIN EXP STATION	COOP	21	2
TAZEWELL	COOP	21	19
PICKETT STATE PARK	COOP	21	2
MILAN EXP STN	COOP	22	2
NEWPORT 1 NW	COOP	23	29
ONEIDA	COOP	24	19
BETHPAGE 1 S	COOP	24	2
GLADEVILLE	COOP	24	19
ROAN MOUNTAIN 3SW	COOP	24	24
MAYNARDVILLE	COOP	24	19

Five stations tied for the ninth coldest temperature (24°F).

Warmest Stations (highest mean temperatures)

Station Name	Station Type	Mean Temperature (F)
MEMPHIS INTERNATIONAL AP	WBAN	56.4
SHILOH NMP TENNESSEE	RAWS	56
LEWISBURG TOWER TENNESSEE	RAWS	55.6
CHATTANOOGA AP	WBAN	55.5
GERMANTOWN 4SE	COOP	55.1
CAMDEN TOWER TENNESSEE	RAWS	55
AMES PLANTATION	COOP	54.7
MEMPHIS WFO	WBAN	54.7
DYERSBURG III GOLF	WBAN	54.6
LENOIR CITY TENNESSEE	RAWS	54.4

Coolest Stations (lowest mean temperatures)

Station Name	Station Type	Mean Temperature (F)
MT LECONTE	COOP	39.5
NEWFOUND GAP	COOP	45.5
ROAN MOUNTAIN 3SW	COOP	46.9
TAZEWELL	COOP	47
ONEIDA	COOP	48.1
PULASKI WASTEWATER PLANT	COOP	48.4
PICKETT STATE PARK	COOP	48.5
COALMONT	COOP	48.6
NEWCOMB	COOP	48.7
CROSSVILLE 7 NW	WBAN	48.8

Wettest Stations (highest precipitation totals):

Station Name	Station Type	Total Precipitation (in)
MT LECONTE	COOP	4.18
NEWFOUND GAP	COOP	4.05
ERWIN 1 W	COOP	3.84
NEWCOMB	COOP	3.75
CHATTANOOGA AP	WBAN	3.67
ELIZABETHTON	COOP	3.47
KINGSTON	COOP	3.33
NEWPORT 1 NW	COOP	3.3
ROAN MOUNTAIN 3SW	COOP	3.12
FAYETTEVILLE WATER PLANT	COOP	3

Driest Stations (lowest precipitation totals):

Station Name	Station Type	Total Precipitation (in)
WAVERLY AIRPORT*	COOP	0
CARTHAGE	COOP	0.2
CENTERVILLE 4NE	COOP	0.28
SHELBY BOTTOMS NATURE CENTER	COOP	0.71
MOUSETAIL LANDING STATE PARK	COOP	0.77
DECATURVILLE	COOP	0.97
PORTLAND SEWAGE PLANT	COOP	0.98
WAYNESBORO	COOP	1.06
BOLIVAR WATER WORKS	COOP	1.08
BROWNSVILLE	COOP	1.09

**Station missing 3 days of reporting during the month, so possibly higher rainfall recorded in the area.*

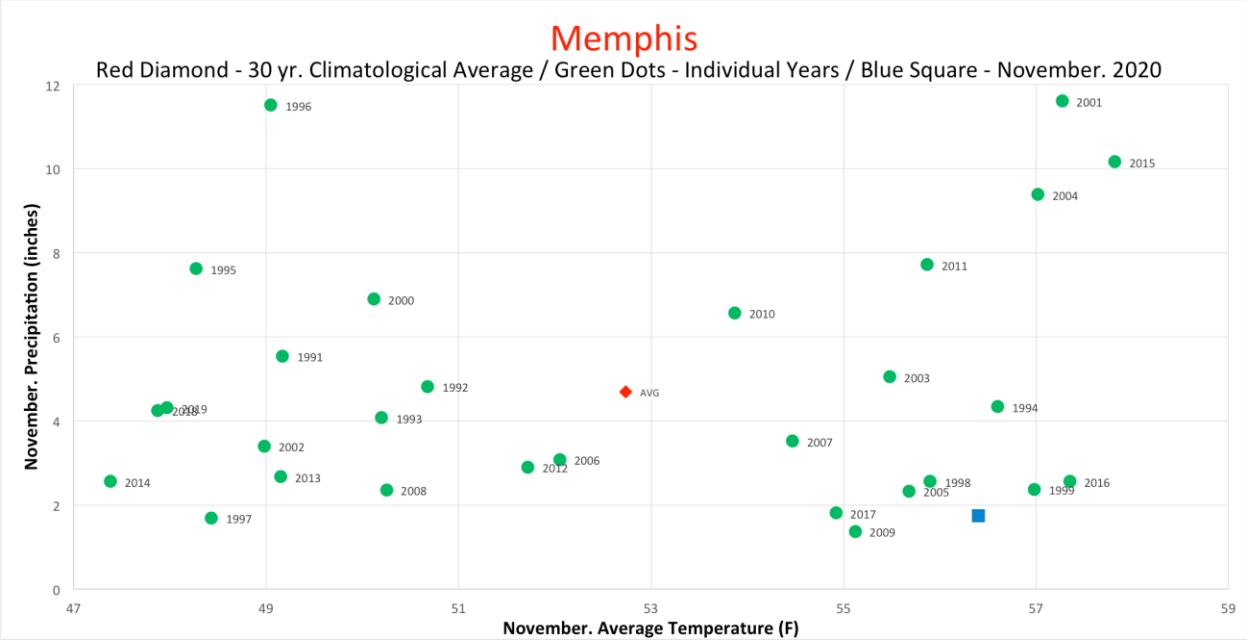
Snowiest Stations (highest snowfall accumulations):

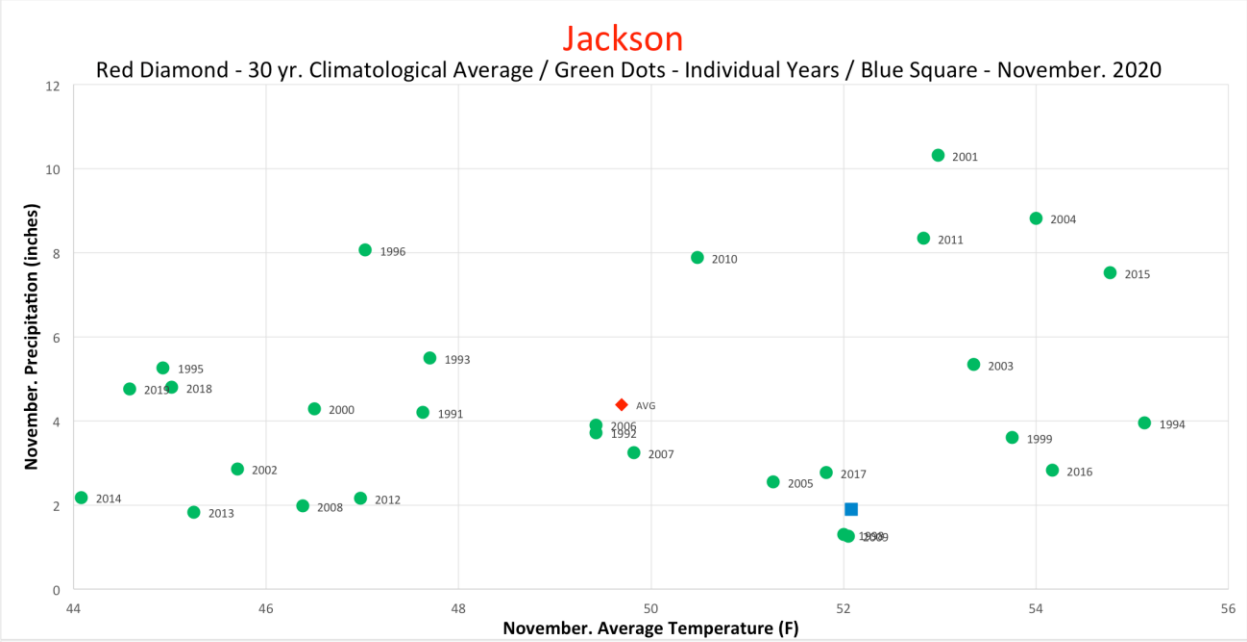
Station Name	Station Type	Total Snowfall (in)
MORRISTOWN WFO	COOP	1.1
KNOXVILLE AP	WBAN	0.7
TULLAHOMA	COOP	0.6
DICKSON	COOP	0.5
CARTHAGE	COOP	0.1

An additional seven stations reported a trace amount of snow (less than 1/10th inch). Note: many stations would not report accumulated snowfall until 7:00am December 1, so the full extent of the snow event on Nov 30th would not be captured in the November data.

The Month in Comparison:

Comparing the mean temperature and total precipitation for November 2020 to the previous thirty years, the warm and dry pattern for this year stands out across the state. While all stations were warmer than the average mean temperature for the last thirty years, it was not a major outlier for any station. All stations also recorded below average precipitation. It was the second driest November in this time period for Nashville and Knoxville, and only the third time that Knoxville recorded less than two inches of rainfall in November during the last thirty years.




Jackson
Red Diamond - 30 yr. Climatological Average / Green Dots - Individual Years / Blue Square - November. 2020
November. Precipitation (inches)
November. Average Temperature (F)
AVG
2001
2004
2011
2015
1996
2010
1995
1993
2003
2019
2018
2000
1991
1994
1999
2002
2007
2016
2014
2005
2017
2013
2008
2012
0
2
4
6
8
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12
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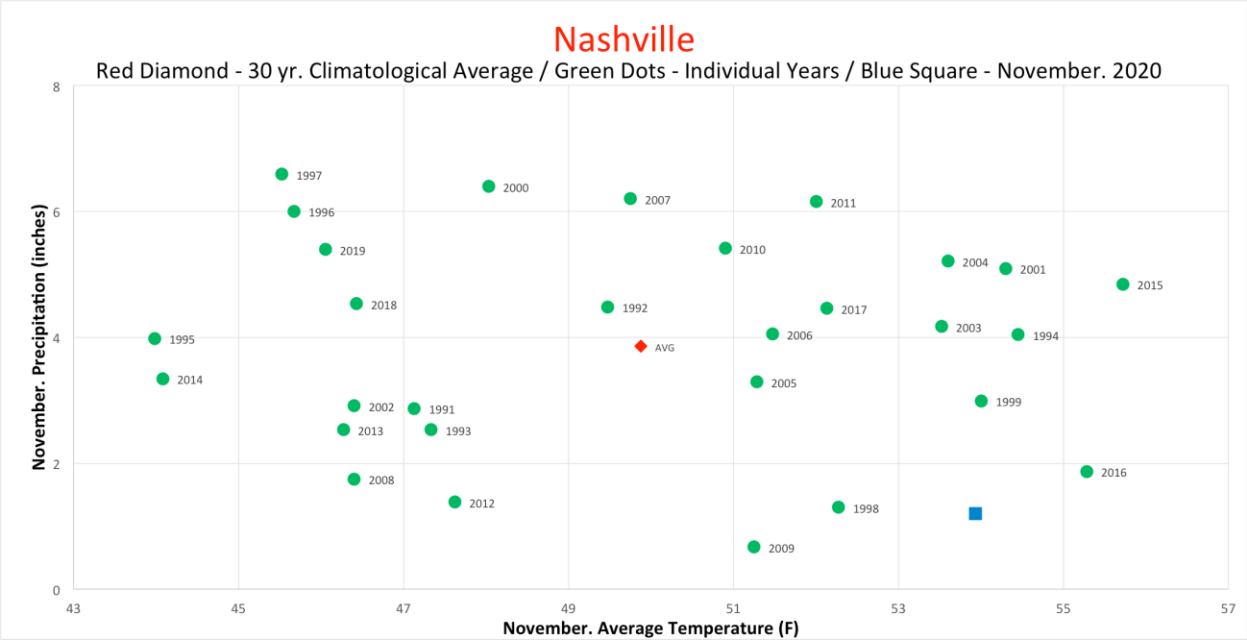
46
48
50
52
54
56


Nashville
Red Diamond - 30 yr. Climatological Average / Green Dots - Individual Years / Blue Square - November. 2020
November. Precipitation (inches)
November. Average Temperature (F)
AVG
1997
2000
2007
2011
1996
2019
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2004
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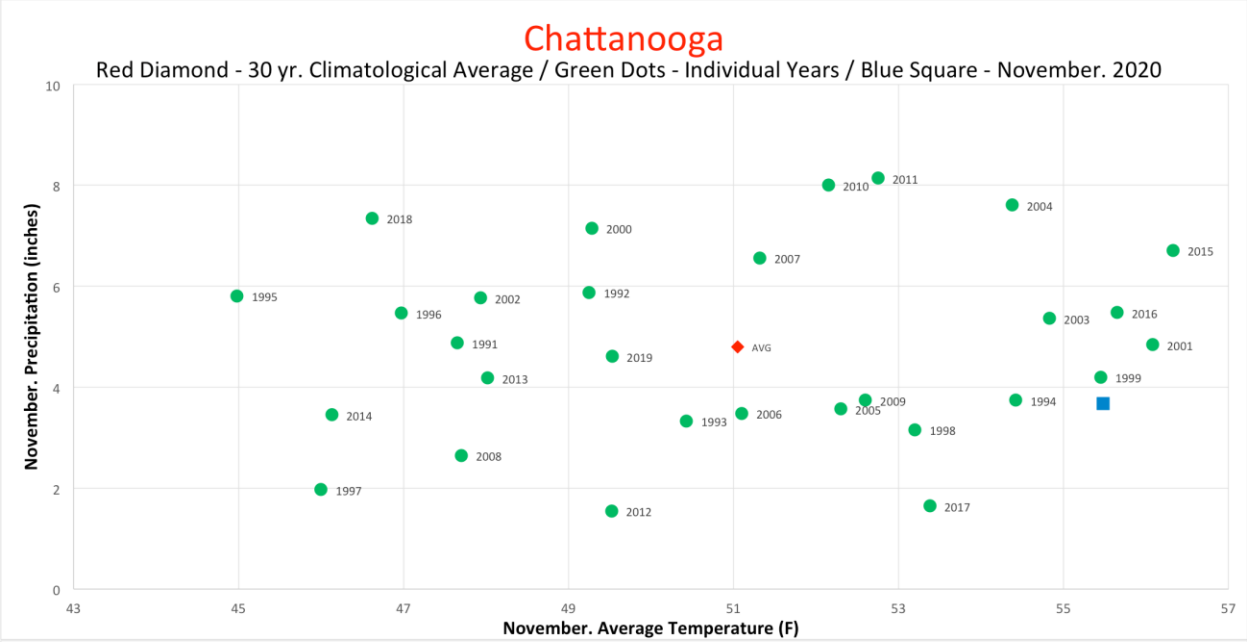
2012
1998
2009
0
2
4
6
8
43
45
47
49
51
53
55
57


Chattanooga
Red Diamond - 30 yr. Climatological Average / Green Dots - Individual Years / Blue Square - November. 2020
November. Precipitation (inches)
November. Average Temperature (F)
AVG
2018
2000
2010
2011
2004
2015
2007
1995
2002
1992
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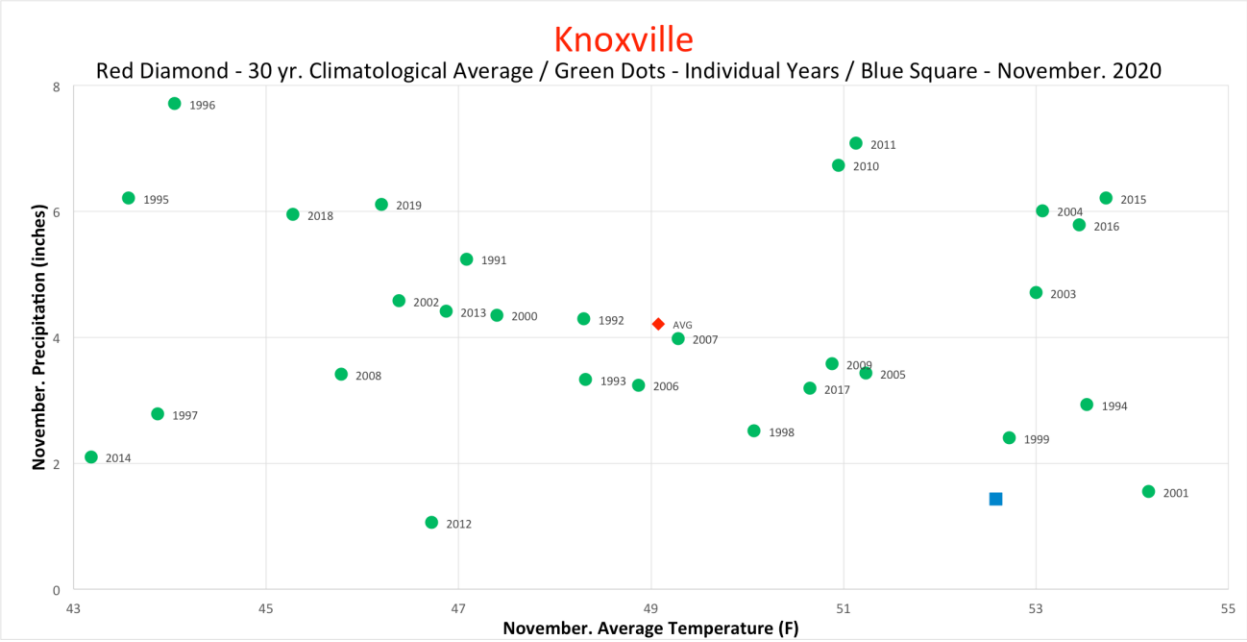
2008
1997
2012
2017


Knoxville
Red Diamond - 30 yr. Climatological Average / Green Dots - Individual Years / Blue Square - November. 2020
November. Precipitation (inches)
November. Average Temperature (F)
AVG
1996
2011
2010
1995
2018
2019
2015
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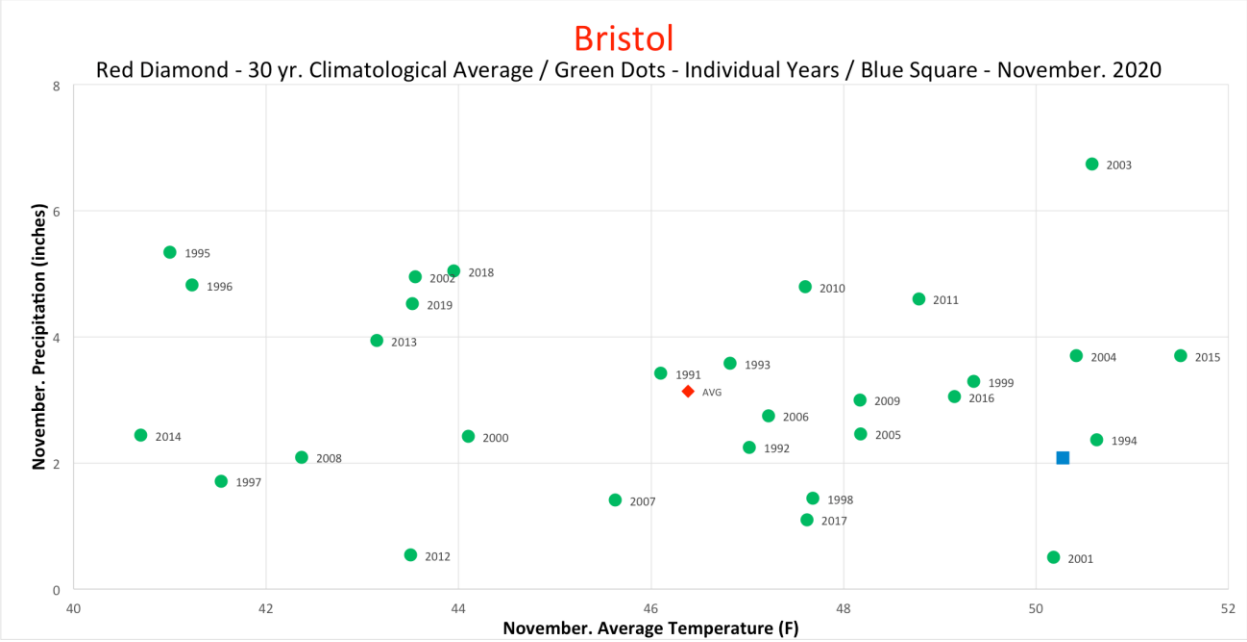
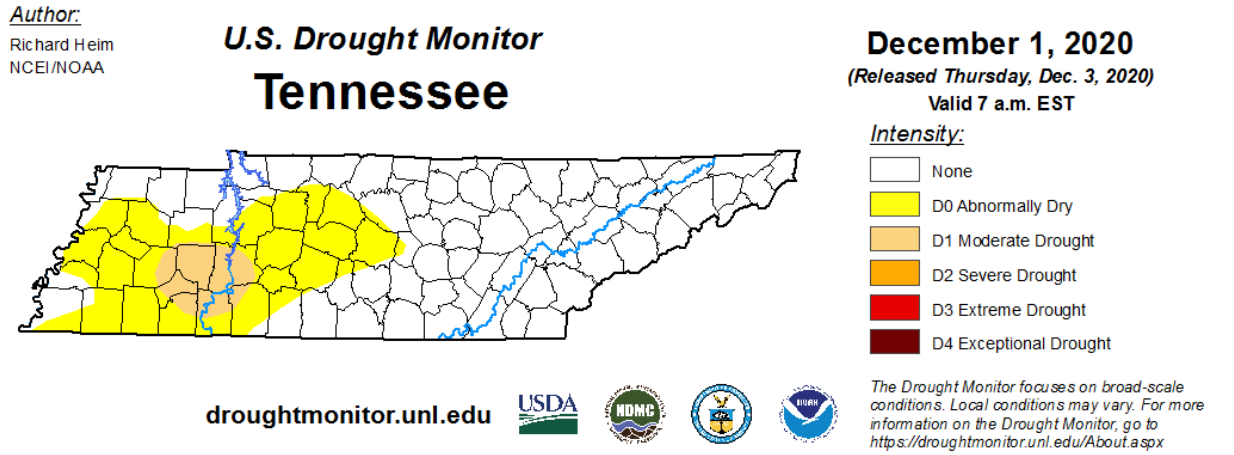
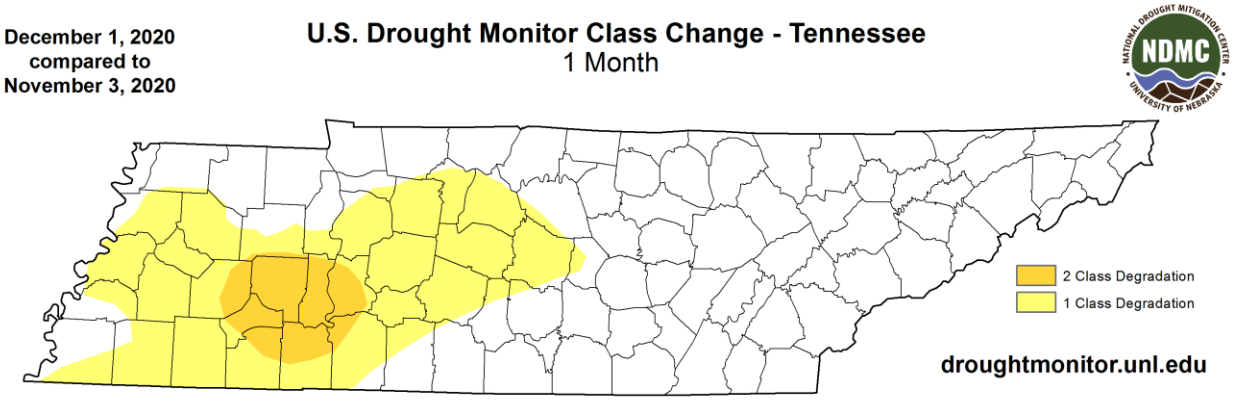

Bristol
Red Diamond - 30 yr. Climatological Average / Green Dots - Individual Years / Blue Square - November. 2020
November. Precipitation (inches)
November. Average Temperature (F)
AVG
1995
1996
2002
2018
2019
2013
2014
2008
2000
1997
2012
2007
1991
1993
1992
2006
2010
2011
2009
2005
1998
2017
2003
2004
2015
1999
2016
1994
2001
0
2
4
6
8
40
42
44
46
48
50
52

Drought Monitor:

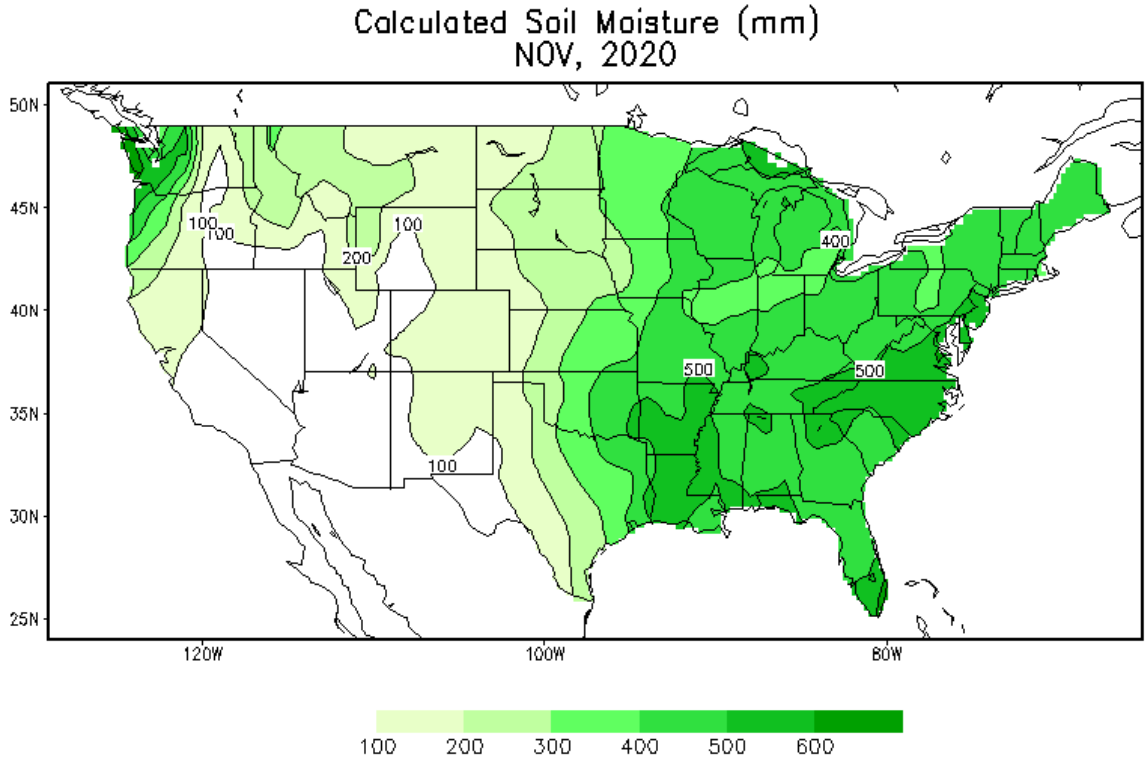
During the month of November, D0 (Abnormally Dry) and D1 (Moderate Drought) conditions developed in portions of West and Middle Tennessee. No area of the state was shown with either D0 or D1 in the first release of the U.S. Drought Monitor in November, but by the December 1 Drought Monitor 31.78% of the state was included in at least D0 conditions.

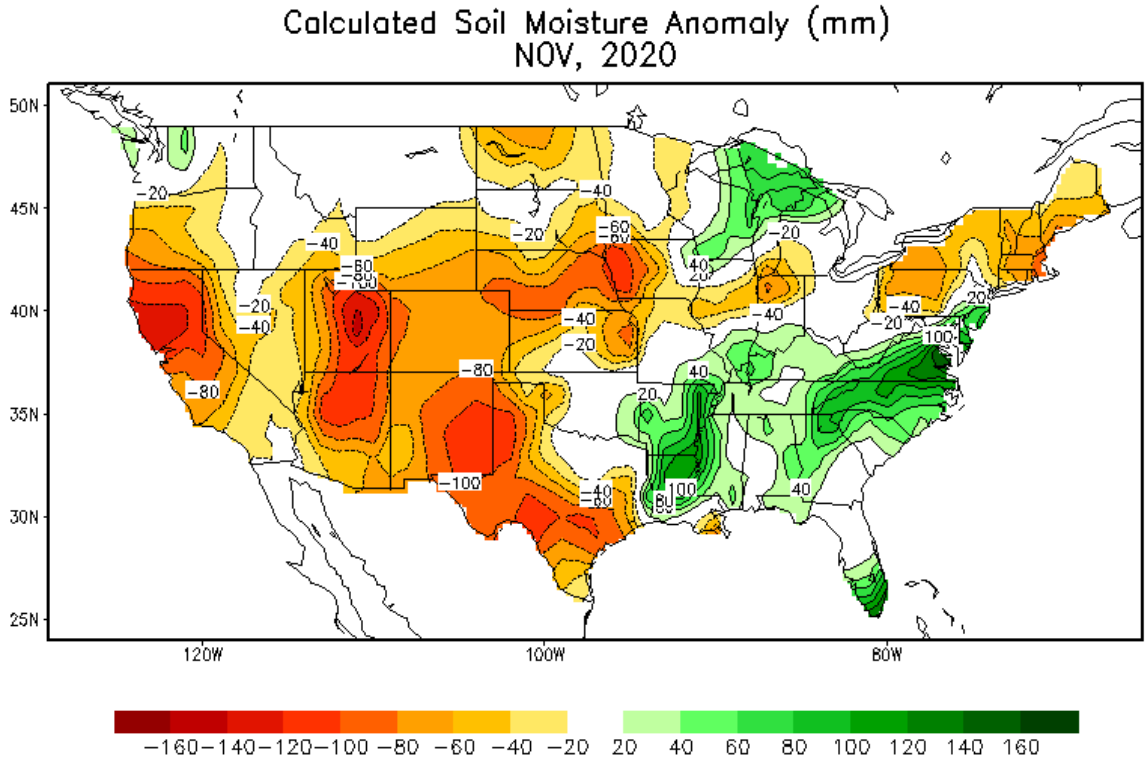


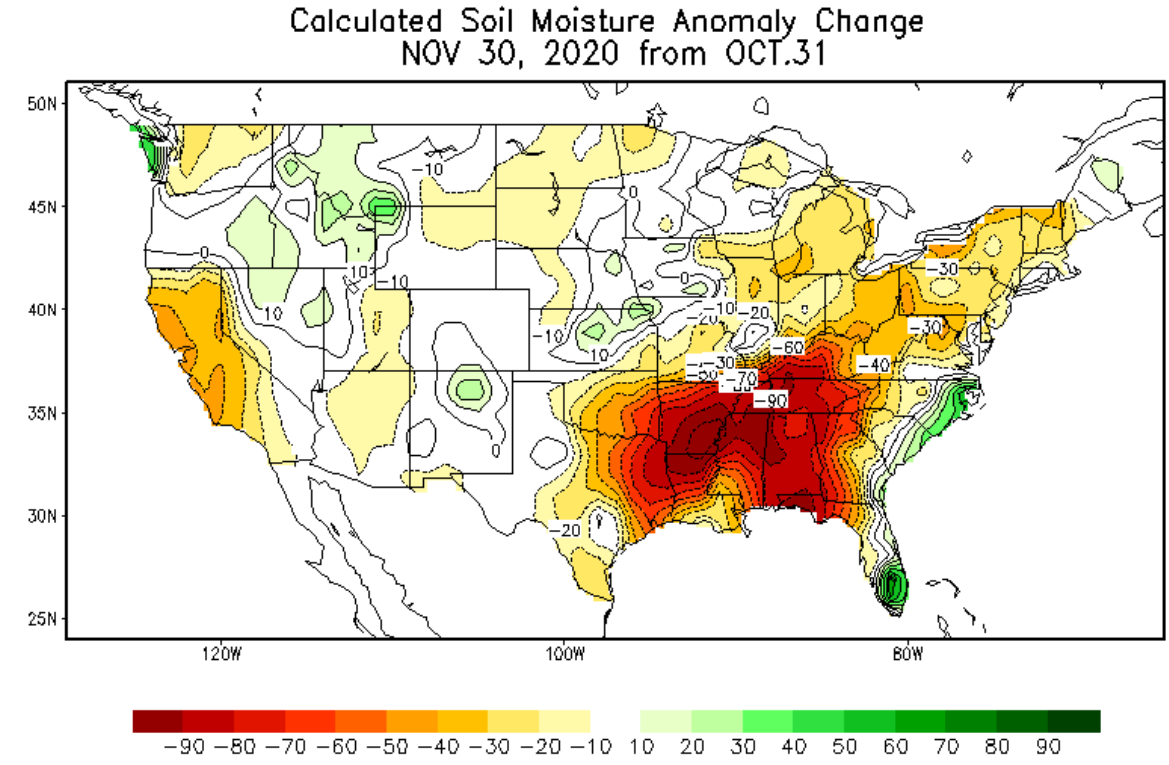


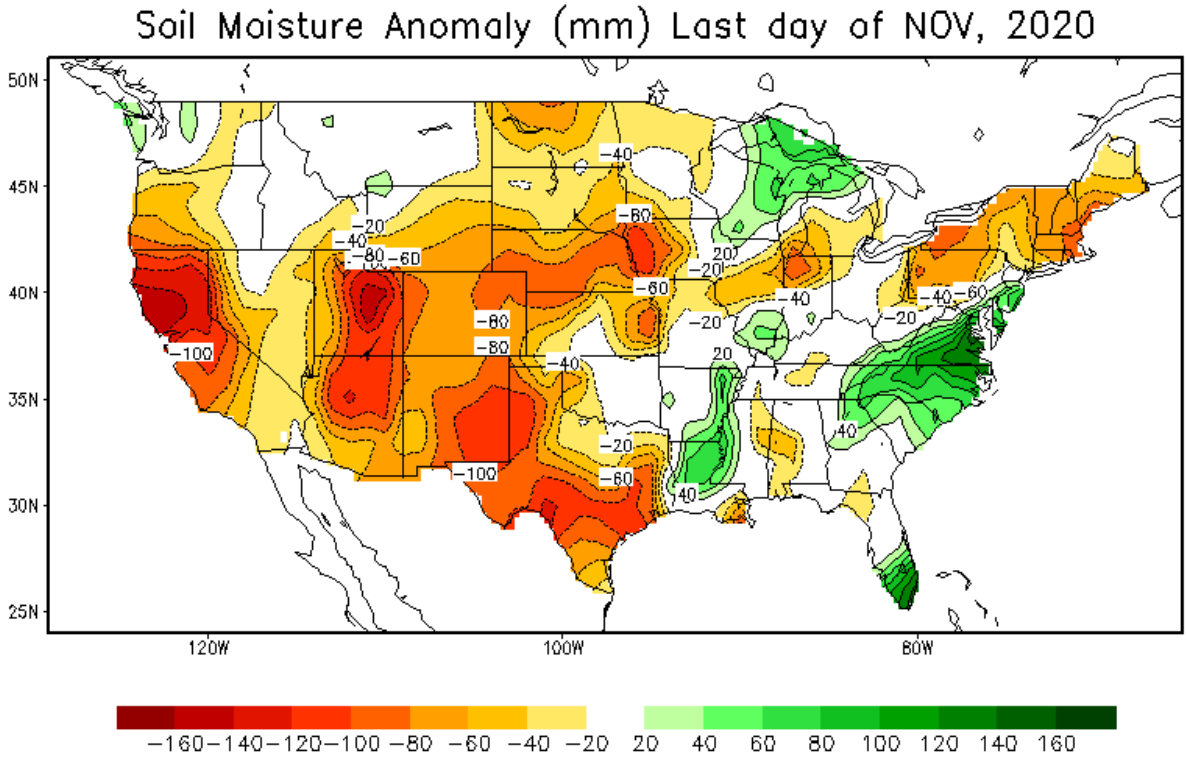
Soil Moisture:

Soil moisture for November averaged to just above 500mm in East Tennessee, and just below 500mm elsewhere in the state, which was at to above normal for the month. However, all areas of the state saw a drying trend over the month, with soil moisture levels dropping by up to 90mm. This produced negative soil moisture anomalies by the end of the month. At the start of the month only 3% of topsoil and 4% of subsoil in the state was rated short (deficit), but by the end of November that had grown to 17% of topsoil and 14% of subsoil rating short. On November 30, subsoil moisture was rated 14% percent short, 82% adequate, and 4% percent surplus; topsoil moisture rated 17% short, 73% adequate, and 10% surplus.


Calculated Soil Moisture (mm)
NOV, 2020
50N
45N
40N
35N
30N
25N
120W
100W
80W
100
200
300
400
500
600

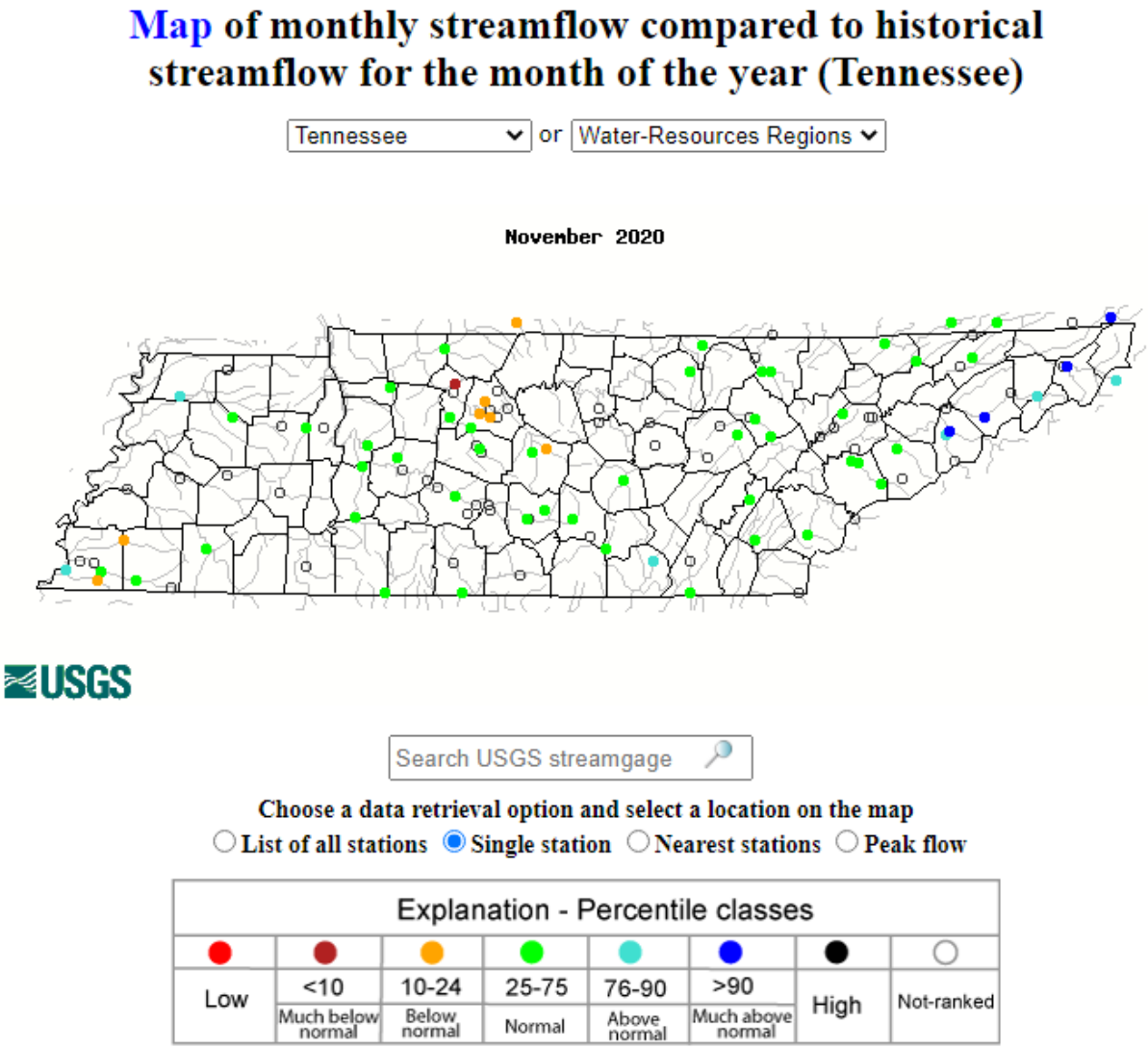

Calculated Soil Moisture Anomaly (mm)
NOV, 2020
50N
45N
40N
35N
30N
25N
120W
100W
80W
−160 −140 −120 −100 −80 −60 −40 −20 20 40 60 80 100 120 140 160


Calculated Soil Moisture Anomaly Change
NOV 30, 2020 from OCT.31
50N
45N
40N
35N
30N
25N
120W
100W
80W
−90 −80 −70 −60 −50 −40 −30 −20 −10 10 20 30 40 50 60 70 80 90


Soil Moisture Anomaly (mm) Last day of NOV, 2020
50N
45N
40N
35N
30N
25N
120W
100W
80W
−160 −140 −120 −100 −80 −60 −40 −20 20 40 60 80 100 120 140 160

Streamflow:

Most streams in the state reported streamflow within the normal range for this time of year. Areas in northeast Tennessee did report above or much above normal streamflow for November, due to heavy rains at the end of October and in the middle of November in the southern Appalachians. This was especially true for streams that have headwaters in western North Carolina where heavy rainfall was more widespread in November. A cluster of streams in Middle Tennessee (mostly around Nashville) reported below normal streamflow for the month, as well as several streams near Memphis.

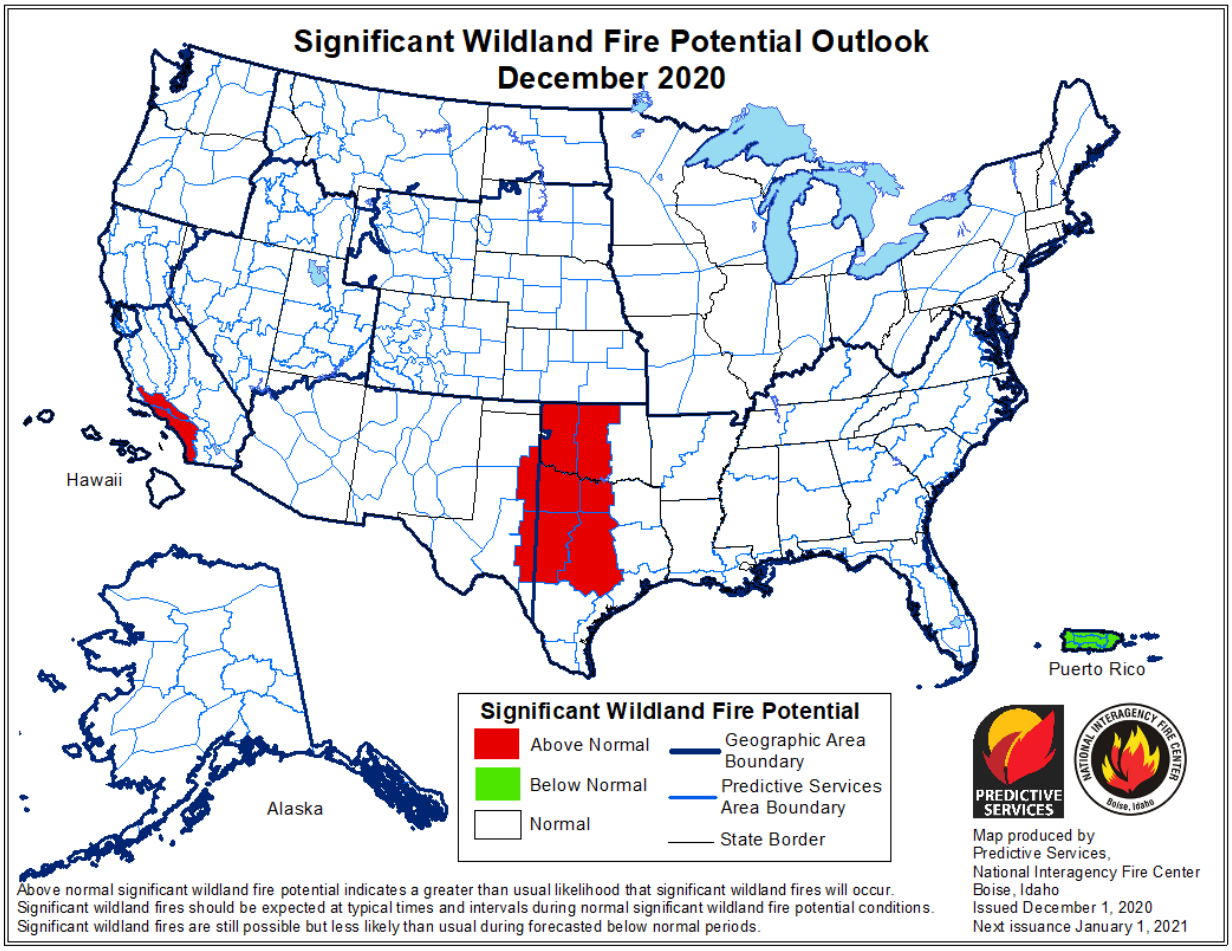


Miscellaneous:

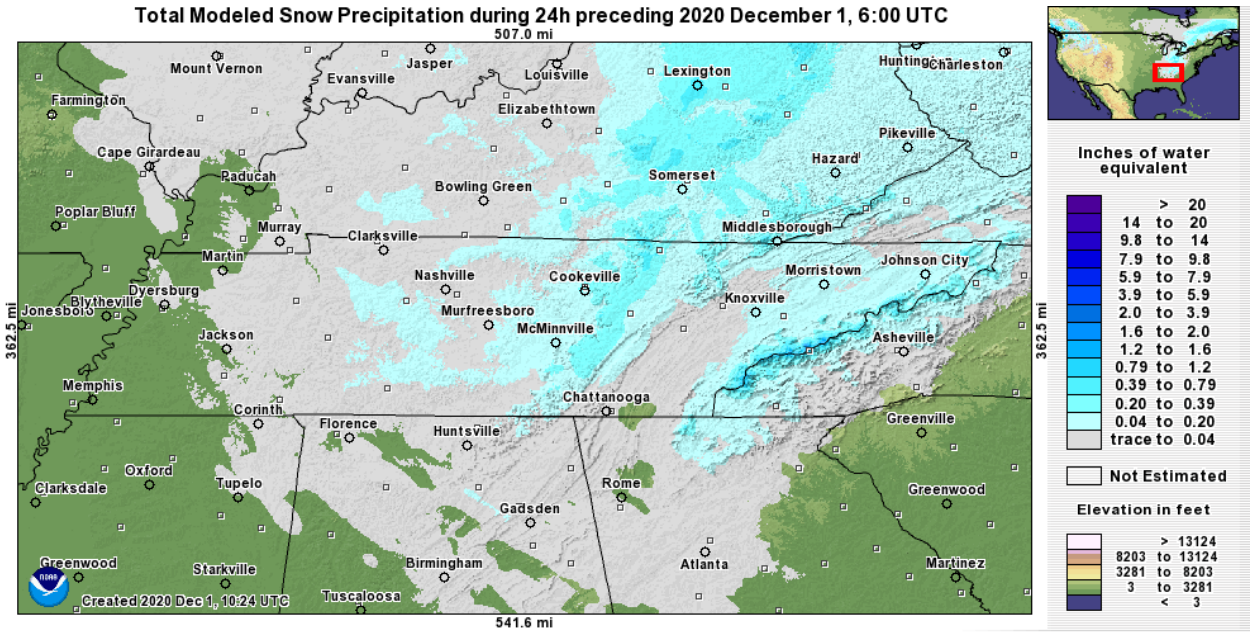
Crop Conditions from USDA: Cotton and soybean harvests were nearly completed by the end of November. The soybean harvest was well behind the 5-year average progress at the beginning of November, but dry weather in the first half of the month allowed producers to catch up to the average by the middle of the month. Most winter wheat had been planted by the end of the month, and the crop was starting out well, with only 3% reported in poor or very poor conditions. The mild weather was good for pastures, however most livestock producers have started feeding hay for the winter.

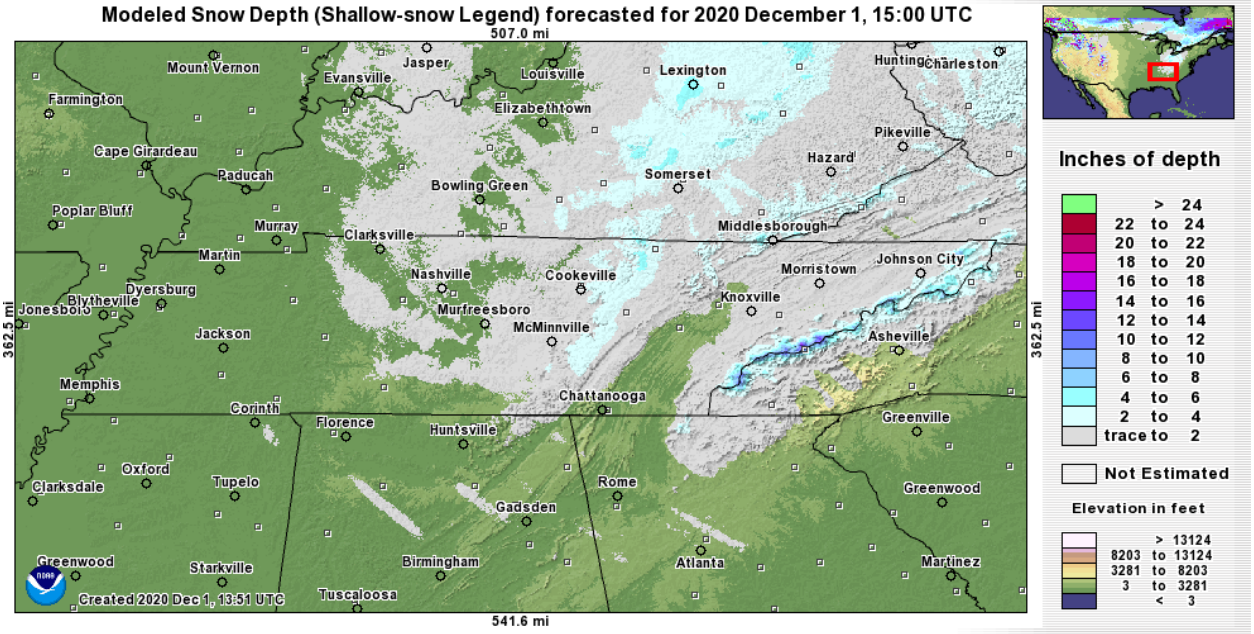
CROP PROGRESS					CONDITION					
Crop	This Week	Last Week	2019	5 Year Avg.	Item	Very Poor	Poor	Fair	Good	Excellent
	Percent					Percent				
Cotton – Harvested	96	90	93	95	Pasture	1	13	39	39	8
Soybeans – Harvested	95	87	94	94	Winter Wheat	1	2	29	50	18
Winter Wheat – Planted	96	91	N/A	N/A						
Winter Wheat – Emerged	86	78	N/A	N/A						

Fire Danger: The Interagency Fire Center significant wildland fire potential outlook indicates that all of Tennessee will have normal fire potential for December.



Snow: The first snow of the season occurred for many in Tennessee on November 30, stretching into December 1 for parts of East Tennessee. Snowfall was reported across much of the state (from Jackson eastward). Light accumulations were reported in Middle and East Tennessee, with the higher elevations of the Cumberland Plateau and the East Tennessee mountains reporting more substantial accumulations by December 1. The maps below, from the NOAA National Operational Hydrologic Remote Sensing Center show modeled snowfall precipitation for the 24-hours before midnight December 1 (CST), and modeled snowfall accumulation through 9:00am CST, December 1.


Total Modeled Snow Precipitation during 24h preceding 2020 December 1, 6:00 UTC
507.0 mi
362.5 mi
541.6 mi
Created 2020 Dec 1, 10:24 UTC
Inches of water equivalent
> 20
14 to 20
9.8 to 14
7.9 to 9.8
5.9 to 7.9
3.9 to 5.9
2.0 to 3.9
1.6 to 2.0
1.2 to 1.6
0.79 to 1.2
0.39 to 0.79
0.20 to 0.39
0.04 to 0.20
trace to 0.04
Not Estimated
Elevation in feet
> 13124
8203 to 13124
3281 to 8203
3 to 3281
< 3


Modeled Snow Depth (Shallow-snow Legend) forecasted for 2020 December 1, 15:00 UTC
507.0 mi
362.5 mi
541.6 mi
Created 2020 Dec 1, 13:51 UTC
Inches of depth
> 24
22 to 24
20 to 22
18 to 20
16 to 18
14 to 16
12 to 14
10 to 12
8 to 10
6 to 8
4 to 6
2 to 4
trace to 2
Not Estimated
Elevation in feet
> 13124
8203 to 13124
3281 to 8203
3 to 3281
< 3

Story of the Month:

The main story of November 2020, was the record setting warmth across the state from November 7 -12. In these dates at least one climate reporting station set a record high maximum or minimum temperature. High temperatures in this time ranged from 75-83°F, and low temperatures ranged from 59-66°F. The table below shows which days records were set or tied.

Station	Days with Record High Maximum Temperatures	Days with Record High Minimum Temperatures	Length of Station Record
Memphis	--	November 10	1875 - 2020
Jackson*	--	November 10	1948 - 2020
Clarksville*	November 7, 8, 9, & 19	November 8	2000 - 2020
Nashville	November 7 & 9	--	1874 - 2020
Oak Ridge	November 10	November 11	1947 - 2020
Chattanooga	November 9	November 9, 11, & 12	1879 - 2020
Crossville*	November 9	November 10	1954 - 2020
Knoxville	November 9 & 10	November 11	1871 - 2020
Bristol/Tri-Cities	November 7, 9, &11	November 11	1937 - 2020

**Denotes Climate Reporting WBAN weather station, with shorter period of record*

The following social media posts were shared by the National Weather Service offices in Nashville and Morristown regarding the record warmth.

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 severe storm reports in Tennessee during November 2020.

CPC Outlooks for the Next Month:

The NOAA Climate Prediction Center monthly temperature outlook for December 2020 shows portions of northwestern Tennessee having slightly better than equal chances for a warmer than normal month. While, the rest of the state is shown having equal chances of being normal, warmer than normal, or cooler than normal for December. The monthly precipitation outlook shows that most of the state (except for the extreme eastern portion of the state) will likely be dryer than normal, with slightly higher confidence in the forecast for the western half of the state.