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2020 October - Tennessee Monthly Climate Report

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October 2020 Tennessee State Climate Summary

Tennessee Climate Office * East Tennessee State University

Prepared by William Tollefson and Dr. Andrew Joyner

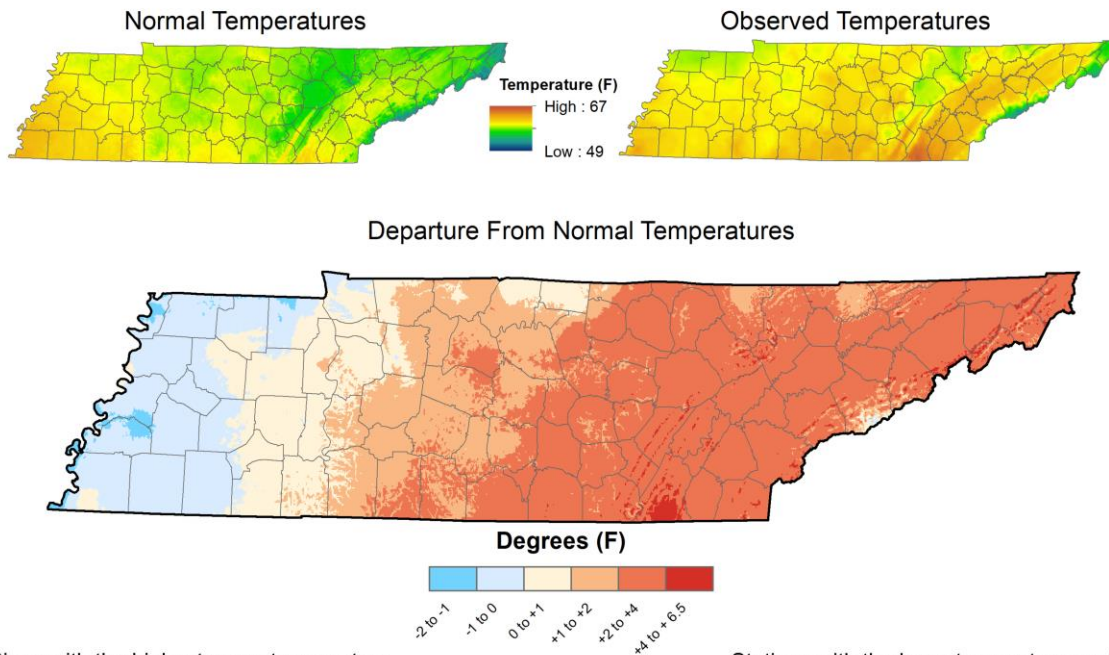
With contributions by Climate Data Representatives at University of Memphis, University of Tennessee-Martin, Vanderbilt University, University of Tennessee-Knoxville, and University of Tennessee-Institute of Agriculture

Monthly Temperature Summary:

October started on a cold note across the state, with mean temperatures for the first week of the month 4-8°F below normal in most areas of the state, with parts of West Tennessee recording temperatures of 8-10°F below normal! However, warmer temperatures, and a more late-summer weather pattern set up over the state in the middle and end of the month, especially in Middle and East Tennessee. The last week of October brought average temperatures that were over 10°F above normal to much of East Tennessee. A few cold spells did sweep across the state after the first week of the month, bringing frost/freeze conditions to many areas on October 17-18 and October 31.



October 2020 Mean Temperature



Stations with the highest mean temperature

Station Name	Station Type	Mean Temperature (F)
CHATTANOOGA AP	WBAN	65.9
ATHENS	COOP	63.3
MC MINNVILLE	COOP	63.2
SHILOH NMP TENNESSEE	RAWS	63
MEMPHIS INTERNATIONAL AP	WBAN	62.8

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

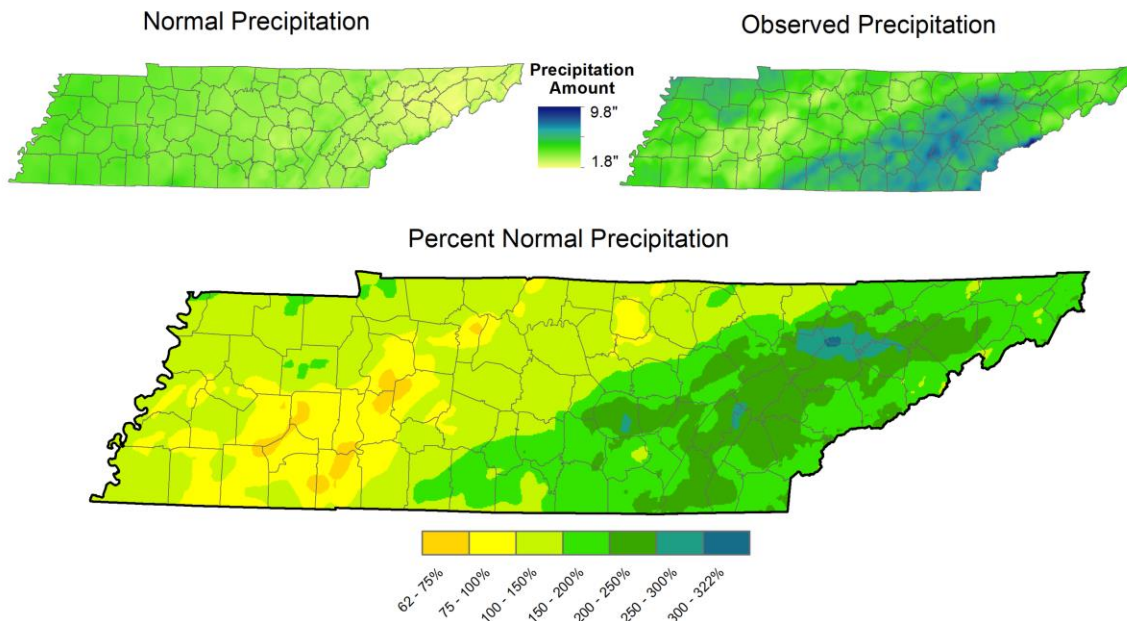
Station Name	Station Type	Mean Temperature (F)
MT LECONTE	COOP	47.8
NEWFOUND GAP	COOP	53.7
ROAN MOUNTAIN 3SW	COOP	54.5
NORRIS	COOP	55.5
MILAN EXP STN	COOP	56.3

Monthly Precipitation Summary:

October was a mostly dry month across the state, with a few notable systems that brought heavy rains. Almost the entire state recorded no rain during the first week of the month. The remnants of Hurricane Delta brought heavy rains to the southern and eastern portions of the state during the second week of the month. The northwest corner of the state that did not get much rain from Delta did get some decent rain from a frontal passage in the third week of the month. In the last week of the month, heavy rains from a mid-latitude cyclone and the remnants of Hurricane Zeta brought widespread heavy rains, again mainly to eastern portions of the state. This resulted in the eastern half of the state recording mostly above normal rainfall, with some places in the northern sections of the Tennessee Valley recording over 250% of their normal October rainfall totals. Southern sections of West Tennessee and western portions of Middle Tennessee were on the edges of the best rains each week, and recorded below normal monthly rainfall totals.



October 2020 Precipitation



Stations with the most precipitation

Station Name	Station Type	Total Precipitation (in)
MT LECONTE	COOP	10.26
NEWFOUND GAP	COOP	9.79
LOOKOUT MTN-POINT PARK	COOP	9.18
FAIRFIELD GLADE 0.1 NNW	CoCoRaHS	9.16
GRAYSVILLE 5.5 WNW	CoCoRaHS	8.9

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)
BROWNSVILLE 1.0 SE	CoCoRaHS	1.21
MILAN EXP STN	COOP	2.1
MADISON 1.2 WSW	CoCoRaHS	2.2
MEDON 3.5 SSW	CoCoRaHS	2.2
SPRINGFIELD EXP STATION	COOP	2.21

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	72.3	53.3	62.8	-1.3	85	10/22	39	10/30	4.69	+0.71	118%
Jackson	71.9	47.8	59.9	-0.6	85	10/22	33	10/17	3.07	-0.70	81%
Clarksville	70.2	47.9	59.0	+0.1	85	10/22	34	10/17	4.90	+0.99	125%
Nashville	73.0	51.8	62.4	+2.1	86	10/22	38	10/17	3.51	+0.47	115%
Chattanooga	76.3	55.6	65.9	+4.4	84	10/7	40	10/17	6.73	+3.45	205%
Crossville	68.7	48.4	58.5	+1.5	78	10/8	30	10/17	6.22	+3.18	205%
Knoxville	72.9	51.5	62.2	+2.3	82	10/22	35	10/17	5.45	+2.94	217%
Bristol	72.5	47.0	59.8	+3.5	82	10/22	32	10/31	3.68	+1.58	175%

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
CLARKSVILLE NO.2	COOP	87	23
JACKSON EXP STA	COOP	87	23
CAMDEN TOWER TENNESSEE	RAWS	87	22
MEMPHIS WFO	WBAN	87	22
CLARKSVILLE WWTP	COOP	86	21
NASHVILLE BERRY FIELD	COOP	86	23
GERMANTOWN 4SE	COOP	86	23
DECATURVILLE	COOP	86	24
AMES PLANTATION	COOP	86	23
BURNS TENNESSEE	RAWS	86	22
NASHVILLE INTL AP	WBAN	86	22

Seven stations tied for the second hottest temperature (86°F).

Coldest Stations (lowest minimum temperature)

Station Name	Station Type	Lowest Temperature (F)	Date
NORRIS	COOP	19	17
MT LECONTE	COOP	22	17
CLARKSVILLE WWTP	COOP	28	31
PICKETT STATE PARK	COOP	28	17
ROAN MOUNTAIN 3SW	COOP	28	31
MILAN EXP STN	COOP	29	17
TAZEWELL	COOP	29	17
COALMONT	COOP	29	18
FALL CREEK FALLS SP	COOP	29	17
NEWFOUND GAP	COOP	29	17

Warmest Stations (highest mean temperatures)

Station Name	Station Type	Mean Temperature (F)
CHATTANOOGA AP	WBAN	65.9
ATHENS	COOP	63.3
MC MINNVILLE	COOP	63.2
SHILOH NMP TENNESSEE	RAWS	63
MEMPHIS INTERNATIONAL AP	WBAN	62.8
CLEVELAND FILTER PLANT	COOP	62.7
FAYETTEVILLE WATER PLANT	COOP	62.5
PIKEVILLE	COOP	62.5
NASHVILLE BERRY FIELD	COOP	62.4
OAK RIDGE ASOS	WBAN	62.4
NASHVILLE INTL AP	WBAN	62.4

Two stations tied for the 10th warmest mean temperature (62.4°F)

Cooltest Stations (lowest mean temperatures)

Station Name	Station Type	Mean Temperature (F)
MT LECONTE	COOP	47.8
NEWFOUND GAP	COOP	53.7
ROAN MOUNTAIN 3SW	COOP	54.5
NORRIS	COOP	55.5
MILAN EXP STN	COOP	56.3
PICKETT STATE PARK	COOP	56.6
UT MARTIN EXP STATION	COOP	56.9
CROSSVILLE EXP STN	COOP	57
TAZEWELL	COOP	57.4
MONTGOMERY BELL STATE PARK	COOP	57.5

Wettest Stations (highest precipitation totals):

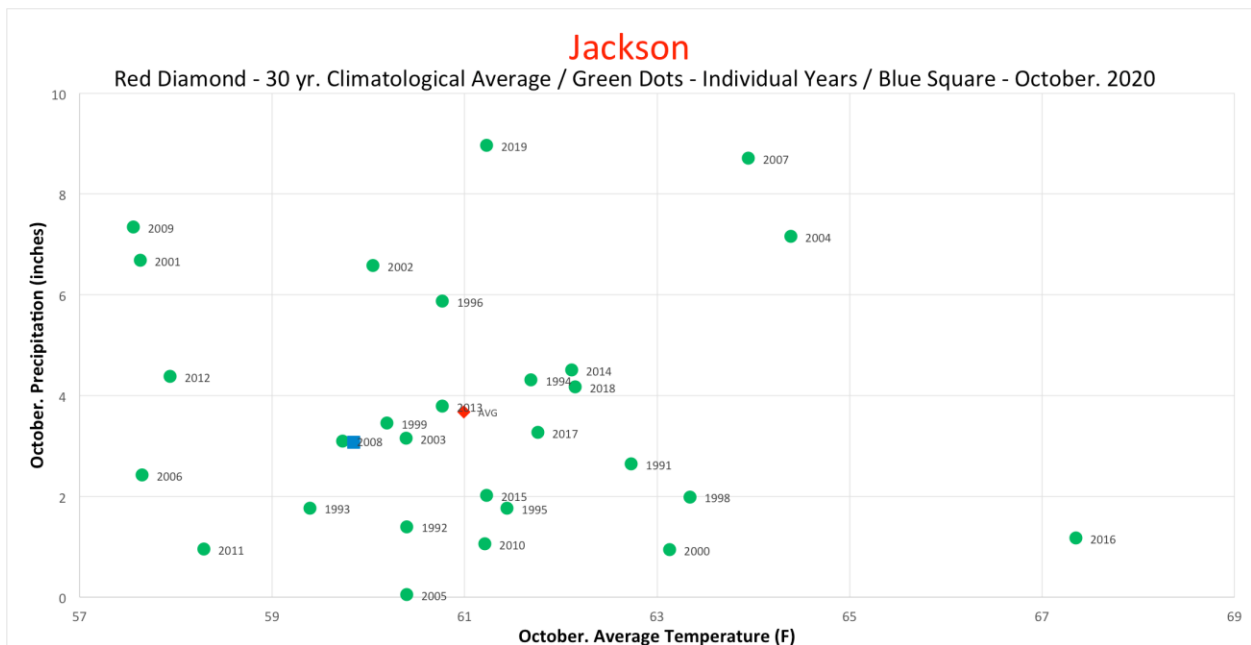
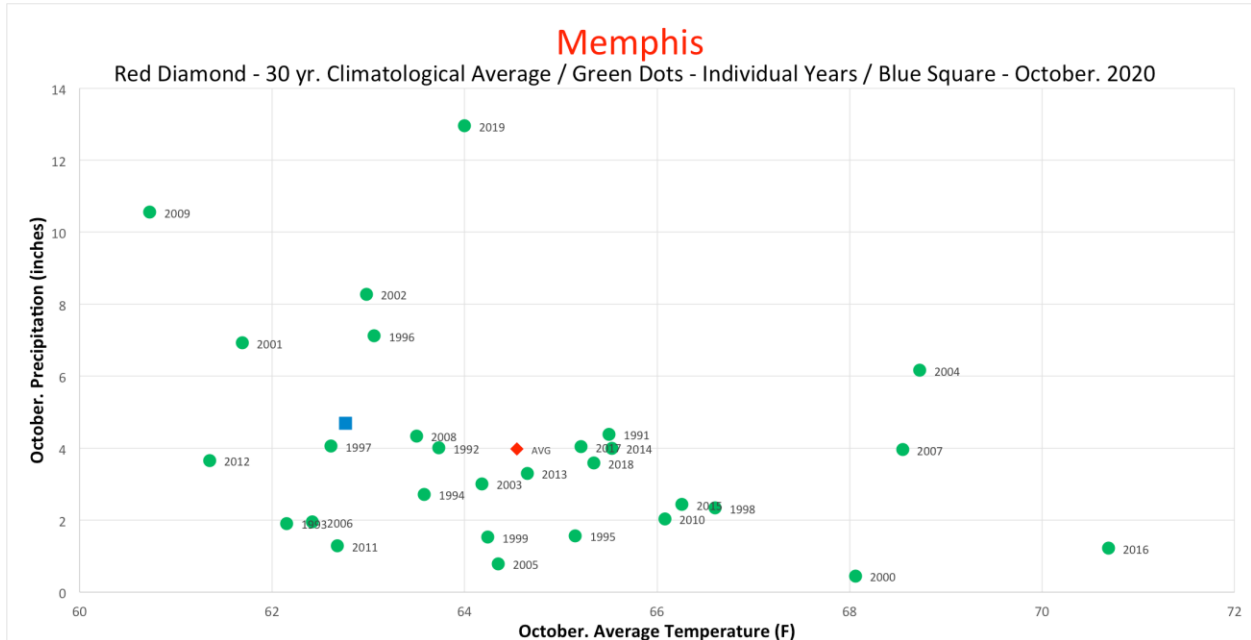
Station Name	Station Type	Total Precipitation (in)
MT LECONTE	COOP	10.26
NEWFOUND GAP	COOP	9.79
LOOKOUT MTN-POINT PARK	COOP	9.18
FAIRFIELD GLADE 0.1 NNW	CoCoRaHS	9.16
GRAYSVILLE 5.5 WNW	CoCoRaHS	8.9
NORRIS 0.6 NW	CoCoRaHS	8.47
GRAYSVILLE 11.6 WSW	CoCoRaHS	8.34
TEN MILE 2.2 NW	CoCoRaHS	8.16
BENTON 2.3 ESE	CoCoRaHS	7.92
CROSSVILLE 5.8 SSW	CoCoRaHS	7.89

Driest Stations (lowest precipitation totals):

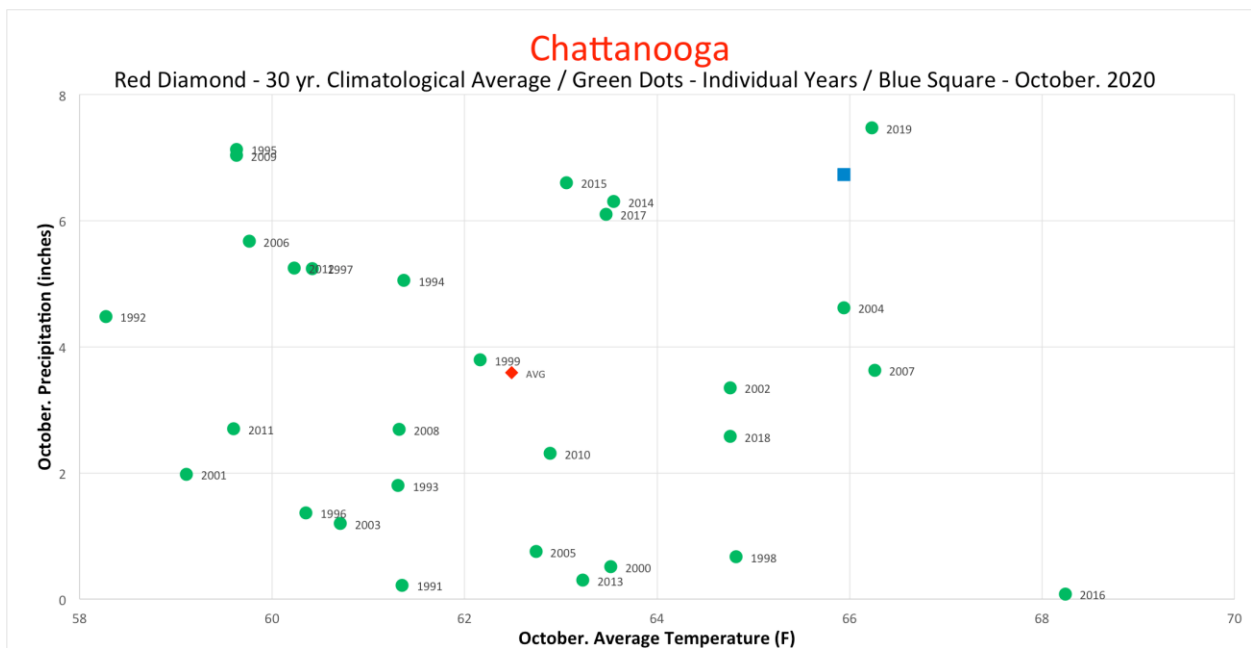
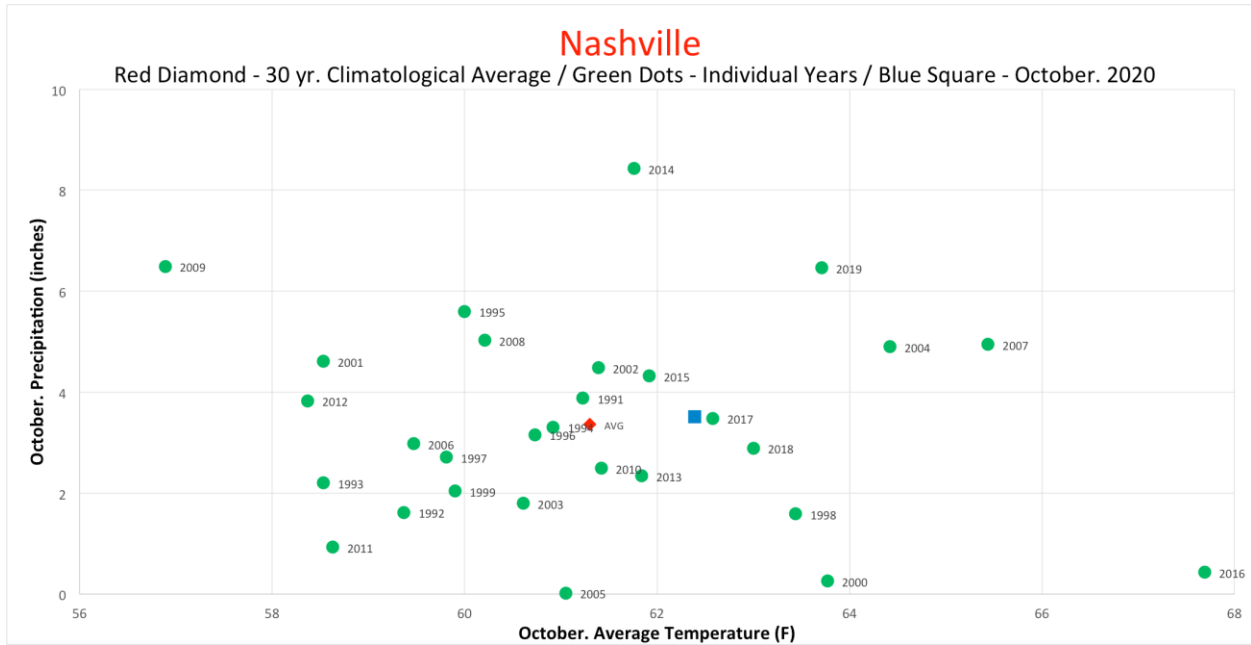
Station Name	Station Type	Total Precipitation (in)
BROWNSVILLE 1.0 SE	CoCoRaHS	1.21
MILAN EXP STN	COOP	2.1
MADISON 1.2 WSW	CoCoRaHS	2.2
MEDON 3.5 SSW	CoCoRaHS	2.2
SPRINGFIELD EXP STATION	COOP	2.21
LIVINGSTON 1.9 NNW	CoCoRaHS	2.26
HENDERSON 1.1 NNW	CoCoRaHS	2.51
MOUSETAIL LANDING STATE PARK	COOP	2.52
DICKSON 6.7 SSW	CoCoRaHS	2.7
COOKEVILLE 5.4 WNW	CoCoRaHS	2.75

The Month in Comparison:

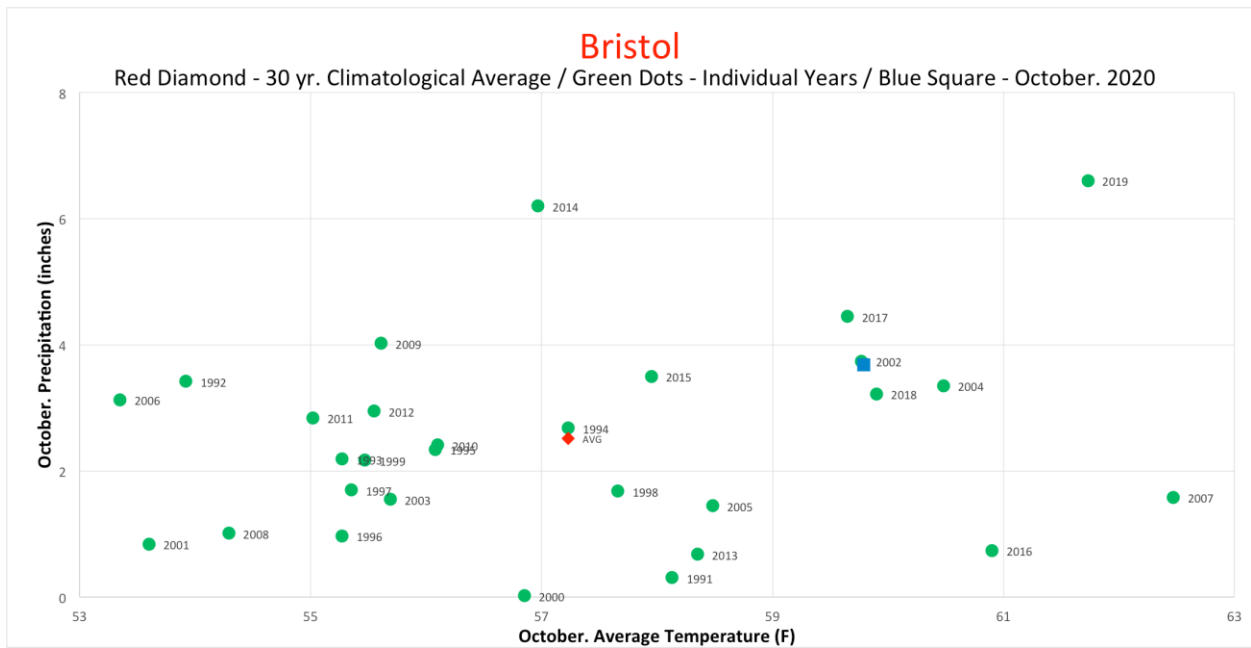
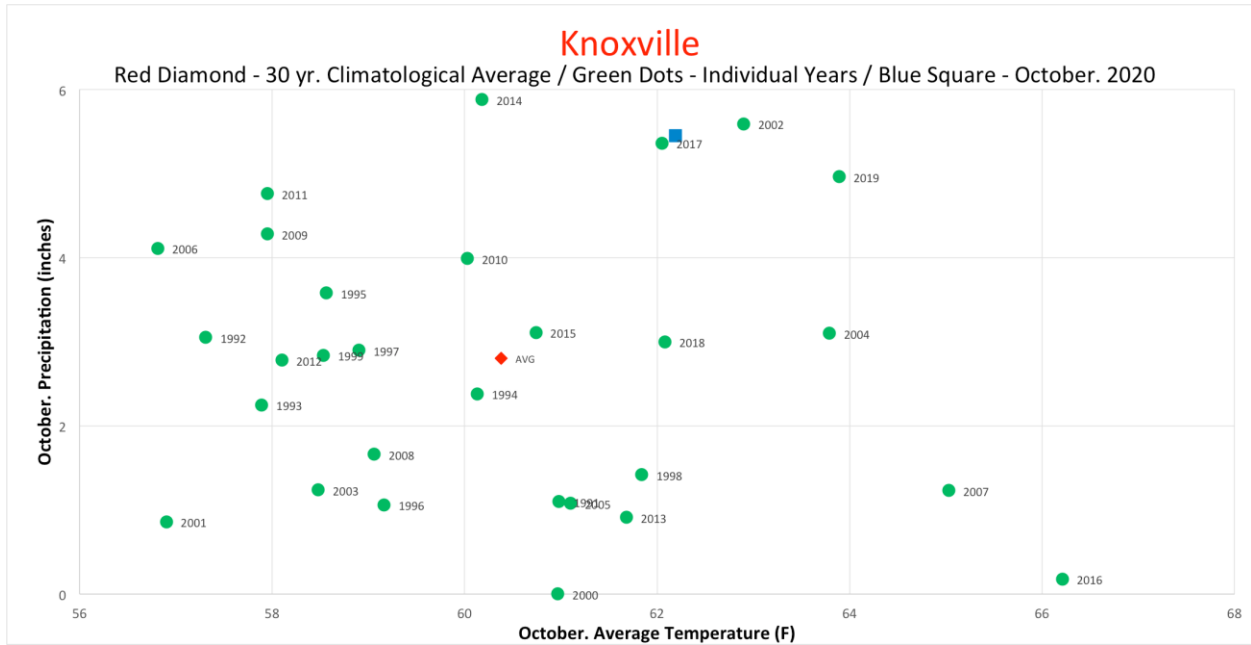
Comparing the average temperature and precipitation totals for October 2020 to the October conditions for the past thirty years, also shows the split between the cooler than average west and warmer than average east. Knoxville and Chattanooga also stand out, being in the top five wettest Octobers for the last 30 years.



October 2020 Tennessee State Climate Summary



October 2020 Tennessee State Climate Summary



Drought Monitor:

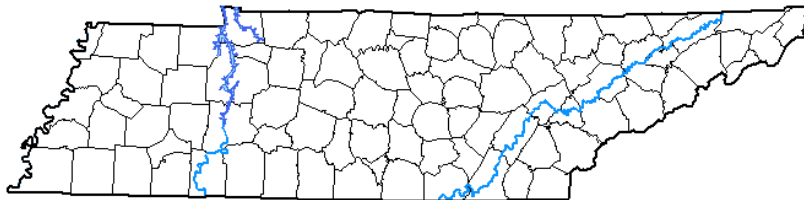
Some areas of West Tennessee were drying out this month; however, the dryness in those areas stayed just short of D0 criteria for the US Drought Monitor. So all areas of the state remained drought-free in the Drought Monitor releases during October.

Author:

David Miskus
NOAA/NWS/NCEP/CPC

U.S. Drought Monitor Tennessee

October 27, 2020
(Released Thursday, Oct. 29, 2020)
Valid 8 a.m. EDT



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought



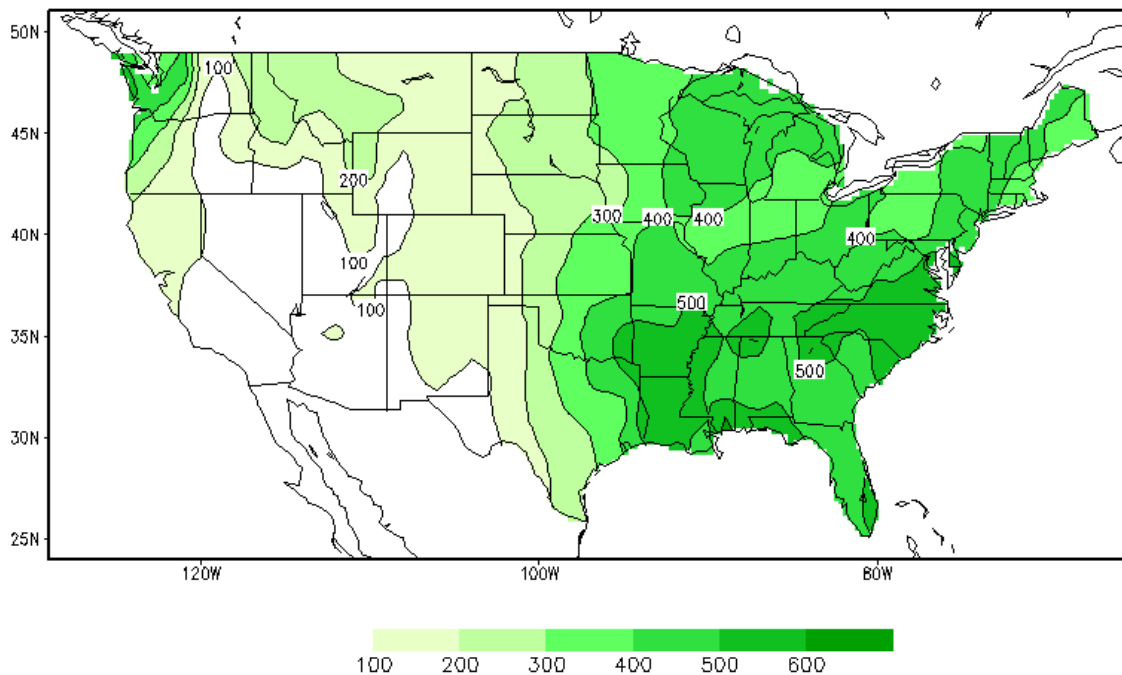
droughtmonitor.unl.edu

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

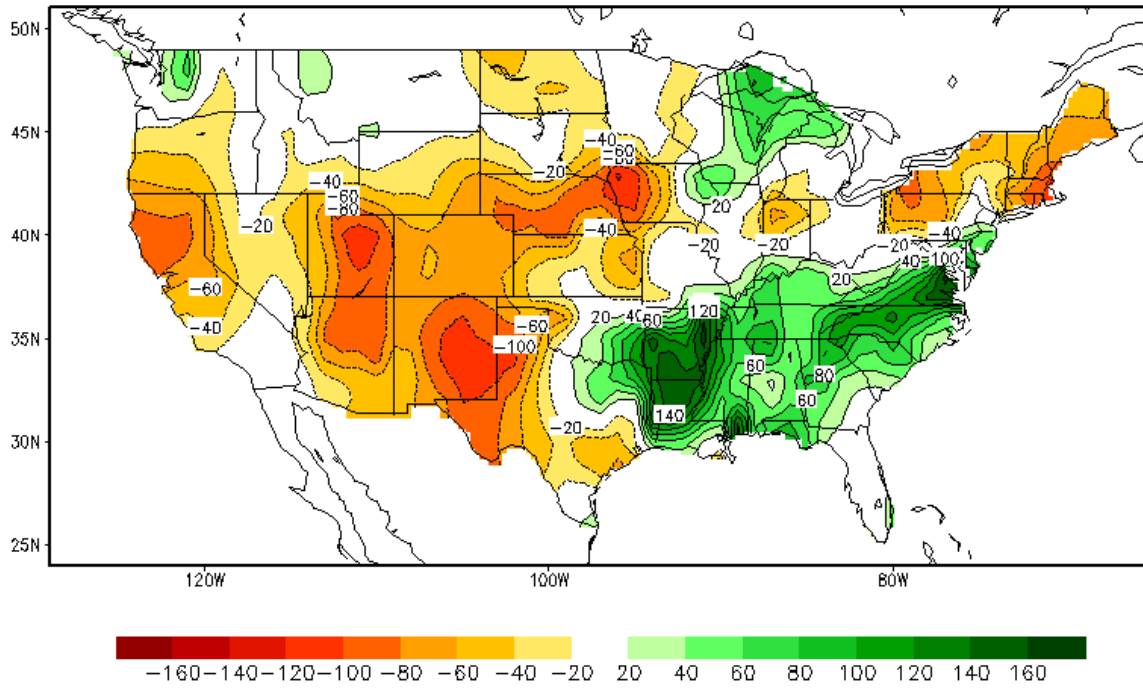
Soil Moisture:

Soil moisture across the state was close to 500mm, which was above normal for this time of year (although before the last few days of the month, there was a dry area in the southwest portion of the state). The USDA Tennessee Field Office reported that subsoil moisture rated 4% short, 72% adequate, and 24% surplus across the state, and topsoil moisture rated 3% short, 64% adequate, and 33% surplus.

Calculated Soil Moisture (mm)
OCT, 2020



Calculated Soil Moisture Anomaly (mm) OCT, 2020



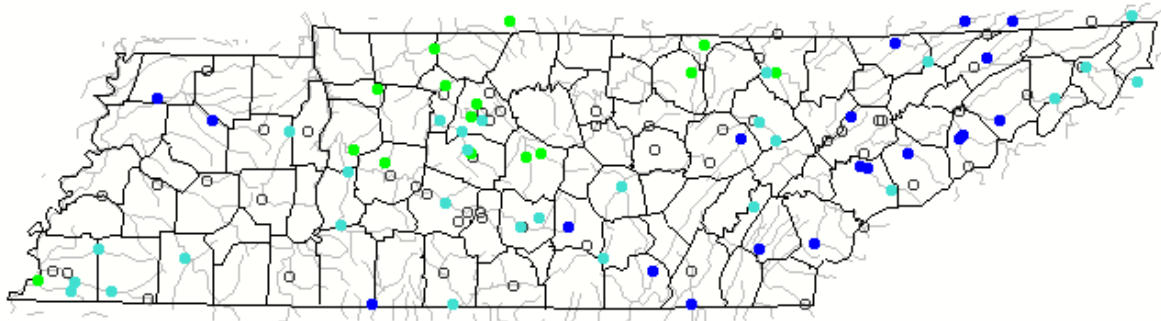
Streamflow:

All streams in Tennessee recorded normal to above normal streamflow for the month of October. Due to widespread heavy rainfall from the remnants of Hurricanes Delta and Zeta during the month, most streams in East Tennessee were much above normal (greater than 90th percentile for flow).

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

Tennessee ▼ or Water-Resources Regions ▼

October 2020



Search USGS streamgage 🔍

Choose a data retrieval option and select a location on the map

List of all stations Single station Nearest stations Peak flow

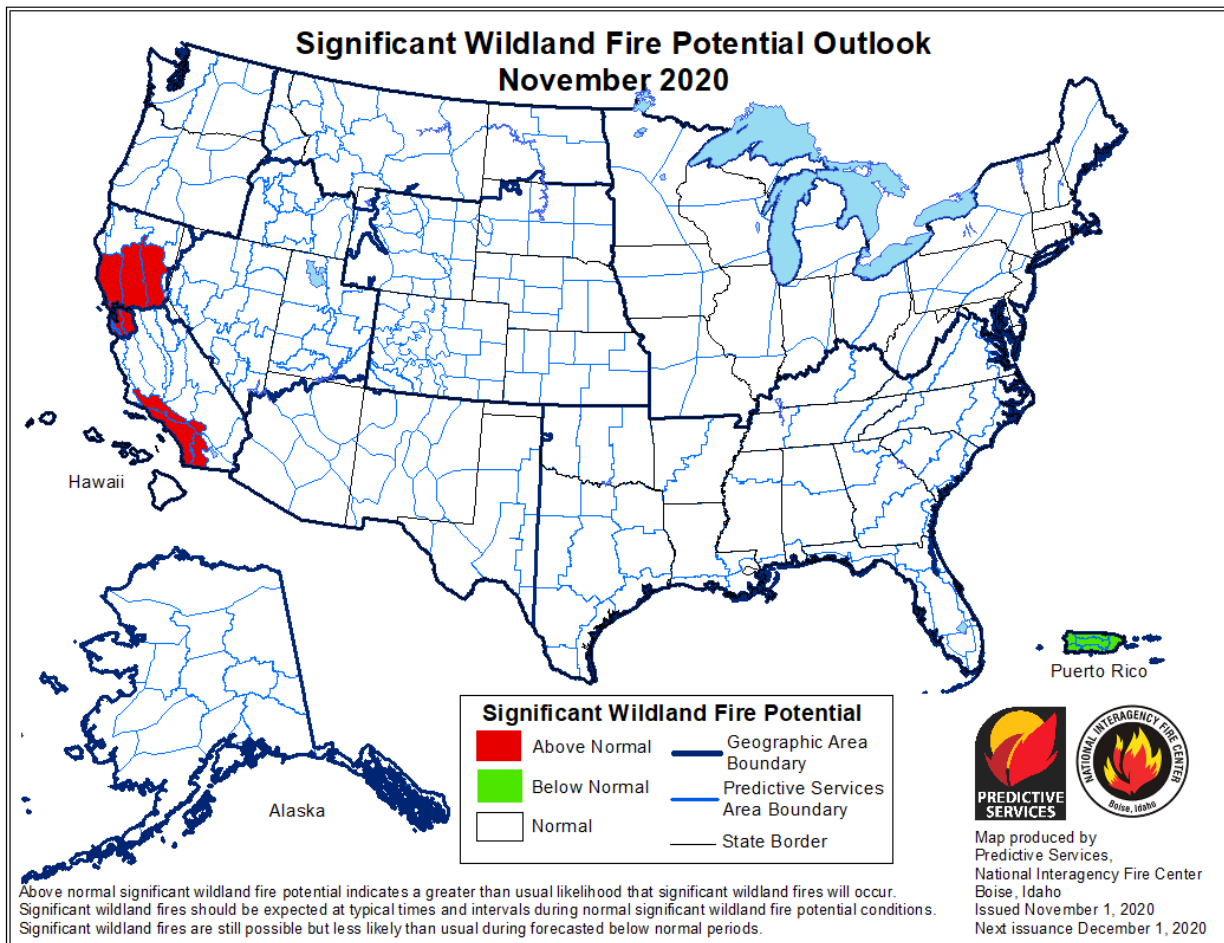
Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Miscellaneous:

Crop Conditions from USDA: October brought harvest time for most Tennessee crops, including corn, cotton, and soybeans. Rains at the end of the month delayed many of the harvests, so they fell below the 5-year average progress. Drying conditions in parts of West and Middle Tennessee were a concern for pastures, but the rain at the end of the month provided some relief. Frosts in the middle of the month, and Frost/Freeze conditions on Halloween brought an end to summer produce for many home gardeners across the state.

CROP PROGRESS					CONDITION					
Crop	This Week	Last Week	2019	5 Year Avg.	Item	Very Poor	Poor	Fair	Good	Excellent
	Percent									
Corn – Harvested for Grain	94	91	99	98	Cotton	6	11	20	48	15
Cotton – Bolls Opening	100	98	100	100	Pasture	2	7	38	44	9
Cotton – Harvested	52	46	65	69	Winter Wheat	1	3	29	50	17
Soybeans – Harvested	58	51	74	73						
Winter Wheat – Planted	64	56	56	62						
Winter Wheat – Emerged	48	36	32	37						

Fire Danger: The Interagency Fire Center outlook for significant wildland fire potential shows all of Tennessee, and most of the country, with normal chances for fires in November.



Story of the Month:

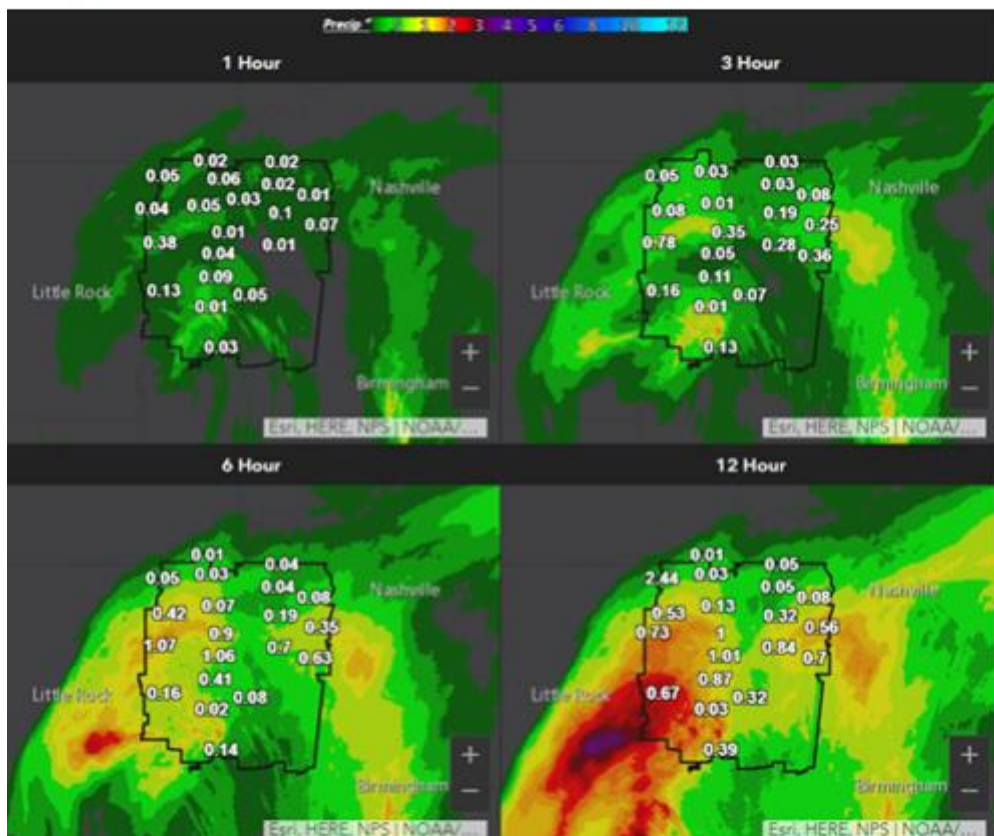
In a continuation of the last several months, major stories for October include the effects from remnants of tropical cyclones. Most of Tennessee would be quite dry without the rains brought by the remnants of Hurricane Laura (late August), Hurricane Sally (mid-September), Tropical Storm Beta (mid-September), and now Hurricane Delta (early October) and Hurricane Zeta (late October). The remnants of Hurricane Delta brought a couple of heavy rain bands into southwest Tennessee, as well as one in Middle Tennessee, and throughout East Tennessee in the second week of October. Then in the last week of the month the remnants of Hurricane Zeta combined with a low pressure system moving east from the Great Plains, producing widespread heavy rainfall totals, especially in East Tennessee where almost all areas recorded over 2" of rain for the week.



US National Weather Service Memphis Tennessee

October 10 at 9:29 AM

As expected, the biggest threat from Tropical Depression Delta has been flooding from heavy rainfall. Radar estimates show as much as 2-3" of rain have fallen in the past 12 hours over portions of eastern AR and northwestern MS.





US National Weather Service Morristown Tennessee

October 28 at 9:21 PM

Zeta will move northeast across the southern Appalachians this morning. Rainfall amounts of 2-4 inches are expected with locally higher amounts. Localized flooding. High winds are possible across far southwest North Carolina and far east Tennessee Mountains.

Tropical System Zeta

1230 AM EDT Update October 29, 2020

Morristown, TN
WEATHER FORECAST OFFICE

Hurricane Zeta
Wednesday, October 28, 2020
10 PM EDT Albany, GA
1800 National Hurricane Center

Current information: **K**
Center location: 31.2 N, 86.7 W
Maximum sustained wind: 60 mph
Minimum MB: 97.00 mph

Forecast positions:
● Project Center: 32.00 N, 82.00 W
● Sustained winds: 60-70 mph
● 20-25 mph: 10.75 N, 78.75 W to 10.75 N, 82.00 W

Potential track area:

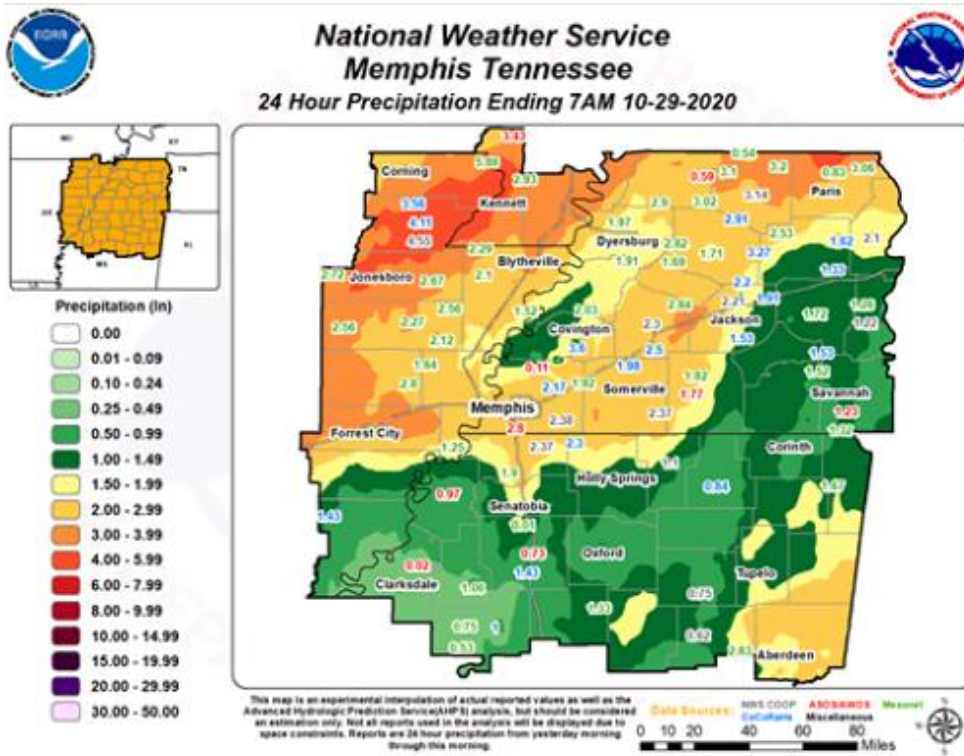
Warnings:

Current wind extent:

Rainfall Totals From Zeta
From This Afternoon Through Midday On Thursday

- Zeta will move northeast across the southern Appalachians Thursday morning.
- Impacts across the southern Appalachians will be moderate to heavy rains with rainfall amounts of 2-4 inches and locally higher amounts. Localized flash flooding is possible. High winds are possible across far southwest North Carolina and far east Tennessee Mountains with gusts up to 55 mph.

10/29/2020 12:05 AM
www.weather.gov/mox



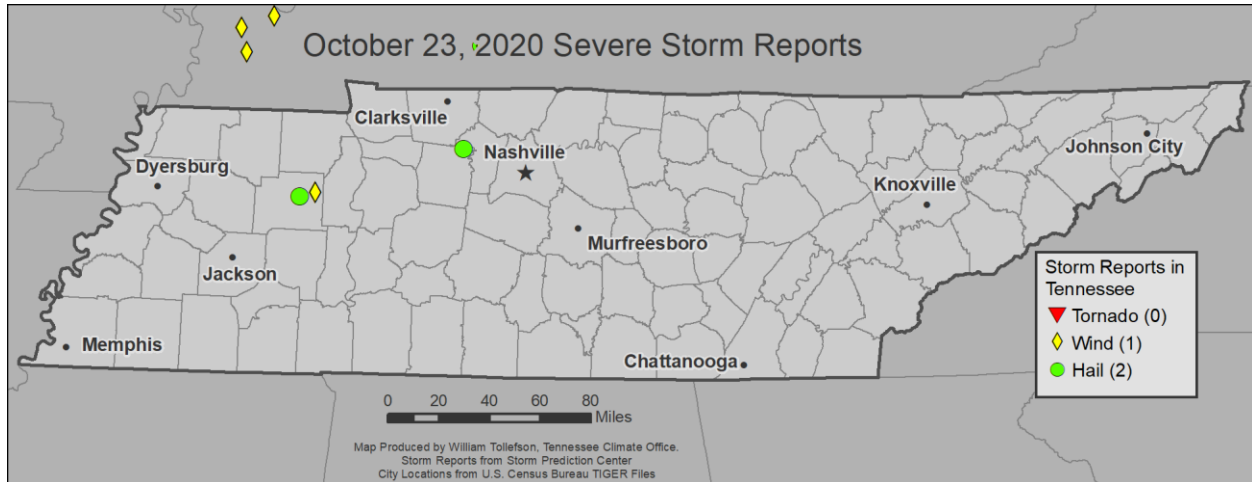
Rainfall totals in West Tennessee from the combination of Hurricane Zeta and a low pressure system moving east from the Great Plains.

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 was one day with severe storm reports during October, with a total of 1 severe wind damage report, and 2 reports of severe hail (1" diameter or larger).

October 23



Wind Reports:

Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
20:10	--	HOLLOW ROCK	CARROLL	36.04	-88.27	TELEPHONE LINES DOWN ON SEMINARY STREET IN HOLLOW ROCK... TN. (MEG)

Hail Reports:

Time (UTC)	Size (in)	Location	County	Lat	Lon	Comments
20:09	1.00	2 E HUNTINGDON	CARROLL	36.01	-88.38	QUARTER SIZE HAIL REPORTED IN ROSSER AREA OF HUNTINGDON. (MEG)
21:50	1.00	5 W CHAPMANSBORO	DICKSON	36.3	-87.23	PHOTO SENT TO WKRN SHOWED QUARTER SIZE HAIL FELL NEAR CUMBERLAND FURNACE (OHX)

CPC Outlooks for the Next Month:

NOAA Climate Prediction Center outlooks for November show all of Tennessee having slightly better than average chances to see above normal temperatures for the month. With stronger chances to record below normal precipitation for the month.

