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Tennessee Climate Office Monthly Report

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9-1-2020

### 2020 September - Tennessee Monthly Climate Report

Tennessee Climate Office, East Tennessee State University

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# September 2020 Tennessee State Climate Summary

Tennessee Climate Office \* East Tennessee State University

Prepared by William Tollefson and Dr. Andrew Joyner

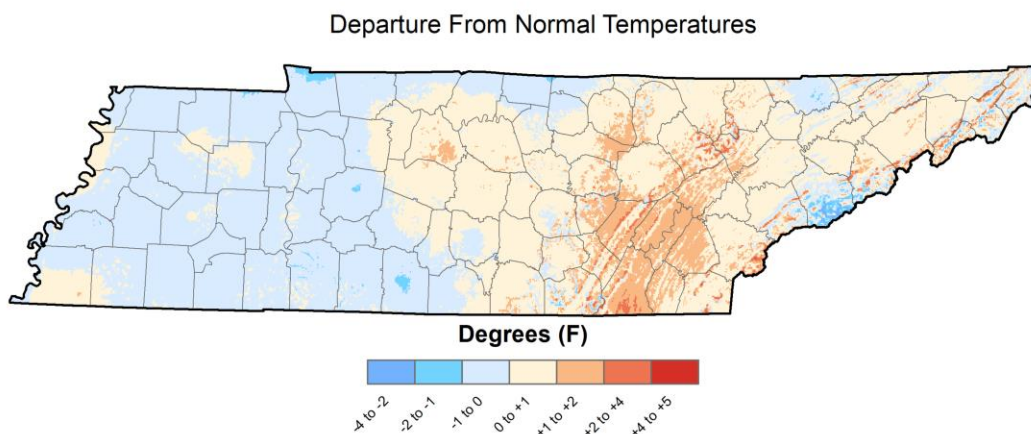
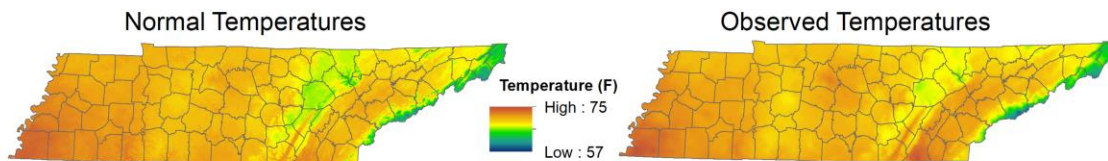
With contributions by Climate Data Representatives at University of Memphis, University of Tennessee-Martin, Vanderbilt University, University of Tennessee-Knoxville, and University of Tennessee-Institute of Agriculture

## Monthly Temperature Summary:

September 2020 brought seasonal temperatures across much of the state, with the mean temperatures  $\pm 1^\circ\text{F}$  from normal for most locations. The drier parts of East Tennessee and the Cumberland Plateau were a bit warmer (1-4 $^\circ\text{F}$  above normal) than other parts of the state. Despite being close to normal for the month, temperatures felt quite cool; especially compared to September in the past two years, when the state experienced temperatures of 5-10 $^\circ\text{F}$  above normal. Temperatures in the first half of the month were a bit above normal, with a big cool down bringing fall temperatures across the state for the latter half of the month. As is typical for the Fall and Spring months, there was a wide range in temperatures across Tennessee, with maximum and minimum temperatures ranging from 99 $^\circ\text{F}$  at Dover on the 4<sup>th</sup>, to 29 $^\circ\text{F}$  at Mt LeConte on the 30<sup>th</sup>, a 70-degree spread! At individual stations, it was common for temperatures to range from the mid-forties to the low nineties, with the Tri-Cities airport reporting one of the larger ranges (41 $^\circ\text{F}$  to 91 $^\circ\text{F}$ ).



## September 2020 Mean Temperature



Stations with the highest mean temperature

Station Name	Station Type	Mean Temperature (F)
GERMANTOWN 4SE	COOP	74.5
CHATTANOOGA AP	WBAN	74.5
MEMPHIS INTERNATIONAL AP	WBAN	74.5
WINCHESTER SSE	COOP	74
MEMPHIS WFO	WBAN	73.3

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	53
NEWFOUND GAP	COOP	59.5
ROAN MOUNTAIN 3SW	COOP	61.7
CHEROKEE TENNESSEE	RAWS	64.1
CROSSVILLE EXP STN	COOP	65.2

### Monthly Precipitation Summary:

Rainfall for the month was hit or miss, with swaths of above normal precipitation in parts of East and Middle Tennessee; while much of the Cumberland Plateau and parts of Middle and West Tennessee recording below normal precipitation. There were very few statewide rain events in September, with heavy rains limited to the northwest portions of the state during the first week of the month, Middle Tennessee the second week of the month, and East Tennessee in the second half of the month. Much of the rainfall across the state this month was tropical in nature, with the remnants of Hurricane Laura bringing rain to northwest Tennessee in the first days of the month, and the remnants of Hurricane Sally and Tropical Storm Beta bringing rains to East Tennessee in the third and fourth weeks of the month.

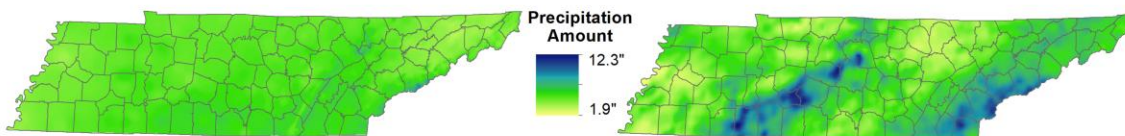


## September 2020 Precipitation

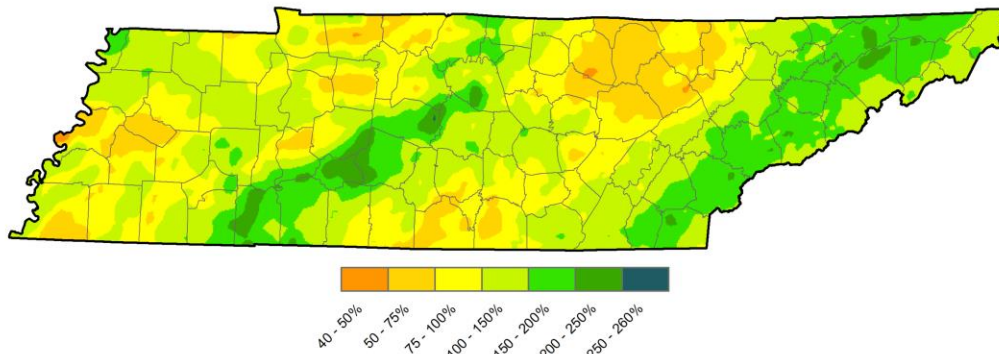


Normal Precipitation

Observed Precipitation



Percent Normal Precipitation



Stations with the most precipitation

Station Name	Station Type	Total Precipitation (in)
BENTON 2.3 ESE	CoCoRaHS	10.86
SAVANNAH 6 SW	COOP	10.17
NEWFOUND GAP	COOP	9.71
NOLENSVILLE 1.0 NNW	CoCoRaHS	9.61
LEBANON 2.7 SSE	CoCoRaHS	9.39

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)
LAWRENCEBURG FILT PLANT	COOP	0*
CLARKSVILLE WWTP	COOP	1.11
CLARKSVILLE NO.2	COOP	1.17
MEMPHIS INTERNATIONAL AP	WBAN	1.58
DICKSON 5.8 NW	CoCoRaHS	1.64

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	82.6	66.4	74.5	-0.7	92	9/11	52	9/29	1.58	-1.51	51%
Jackson	80.7	60.5	70.6	-0.8	91	9/11	47	9/30	3.60	+0.22	107%
Clarksville	80.0	59.5	69.8	-0.3	91	9/11	45	9/30	1.81	-1.72	51%
Nashville	82.5	62.7	72.6	+1.1	92	9/11	48	9/30	3.80	+0.39	111%
Chattanooga	84.0	64.9	74.5	+2.0	94	9/11	49	9/30	5.64	+1.60	140%
Crossville	75.7	57.3	66.5	-0.7	86	9/11	42	9/22	3.01	-0.87	78%
Knoxville	80.1	61.6	70.8	-0.3	90	9/11	46	9/21	4.57	+1.33	141%
Bristol	78.9	57.6	68.3	+1.2	91	9/11	41	9/22	4.77	+1.78	160%

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
DOVER 1 W	COOP	99	4
LEWISBURG EXP STA	COOP	95	16
FRANKLIN SEWAGE PLANT	COOP	95	12
CHEATHAM LOCK & DAM	COOP	95	12
GERMANTOWN 4SE	COOP	94	8
CHATTANOOGA AP	WBAN	94	11
MEMPHIS WFO	WBAN	94	11
AMES PLANTATION	COOP	93	12
CLARKSVILLE NO.2	COOP	93	12
CLARKSVILLE WWTP	COOP	93	10
DECATUR 7NE	COOP	93	12
DECATURVILLE	COOP	93	12
MERIWETHER LEWIS TENNESSEE	RAWS	93	11

Six stations tied for the fourth hottest temperature (93°F).

**Coldest Stations (lowest minimum temperature)**

Station Name	Station Type	Lowest Temperature (F)	Date
MT LECONTE	COOP	29	30
ROAN MOUNTAIN 3SW	COOP	33	22
NEWFOUND GAP	COOP	34	21
CHEROKEE TENNESSEE	RAWS	34	22
TAZEWELL	COOP	39	23
LEWISBURG EXP STA	COOP	40	23
GATLINBURG 2 SW	COOP	40	22
CROSSVILLE EXP STN	COOP	40	23
GREENEVILLE EXP STA	COOP	40	21
GAINESBORO	COOP	40	30
ONEIDA	COOP	40	23
BETHPAGE 1 S	COOP	40	30
DECATUR 7NE	COOP	40	22
COALMONT	COOP	40	30
BLEDSON SF TENNESSEE	RAWS	40	22
CROSSVILLE 7 NW	WBAN	40	22

*Eleven stations tied for fifth coldest temperature (40°F).*

**Warmest Stations (highest mean temperatures)**

Station Name	Station Type	Mean Temperature (F)
GERMANTOWN 4SE	COOP	74.5
CHATTANOOGA AP	WBAN	74.5
MEMPHIS INTERNATIONAL AP	WBAN	74.5
WINCHESTER 5SE	COOP	74
MEMPHIS WFO	WBAN	73.3
NASHVILLE BERRY FIELD	COOP	72.8
AMES PLANTATION	COOP	72.7
SAVANNAH 6 SW	COOP	72.6
NASHVILLE INTL AP	WBAN	72.6
JACKSON EXP STA	COOP	72.5

**Cooltest Stations (lowest mean temperatures)**

Station Name	Station Type	Mean Temperature (F)
MT LECONTE	COOP	53
NEWFOUND GAP	COOP	59.5
ROAN MOUNTAIN 3SW	COOP	61.7
CHEROKEE TENNESSEE	RAWS	64.1
CROSSVILLE EXP STN	COOP	65.2
GATLINBURG 2 SW	COOP	65.3
TOWNSEND 5S	COOP	65.6
CROSSVILLE 7 NW	WBAN	65.7
PORTLAND SEWAGE PLANT	COOP	66.2
TAZEWELL	COOP	66.4

**Wettest Stations (highest precipitation totals):**

Station Name	Station Type	Total Precipitation (in)
BENTON 2.3 ESE	CoCoRaHS	10.86
SAVANNAH 6 SW	COOP	10.17
NEWFOUND GAP	COOP	9.71
NOLENSVILLE 1.0 NNW	CoCoRaHS	9.61
LEBANON 2.7 SSE	CoCoRaHS	9.39
LA VERGNE 2.1 SW	CoCoRaHS	9.33
CLEVELAND FILTER PLANT	COOP	9.08
HOHENWALD 0.3 E	CoCoRaHS	8.92
CLARKSVILLE 3.4 NNW	CoCoRaHS	8.88
MT LECONTE	COOP	8.84

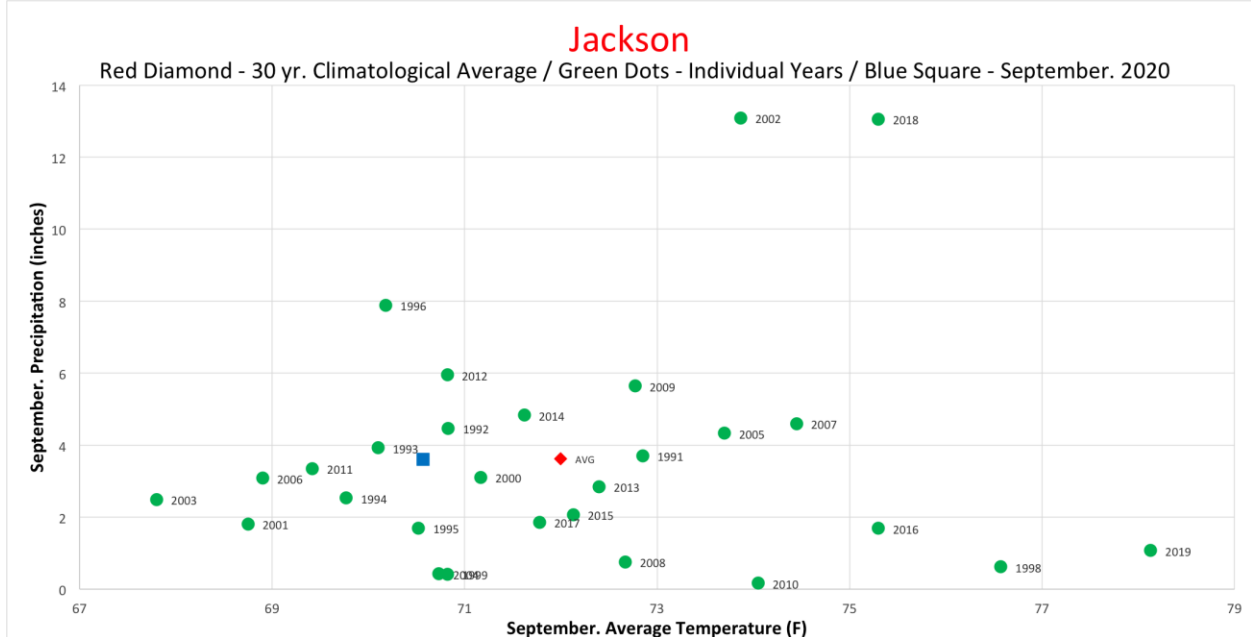
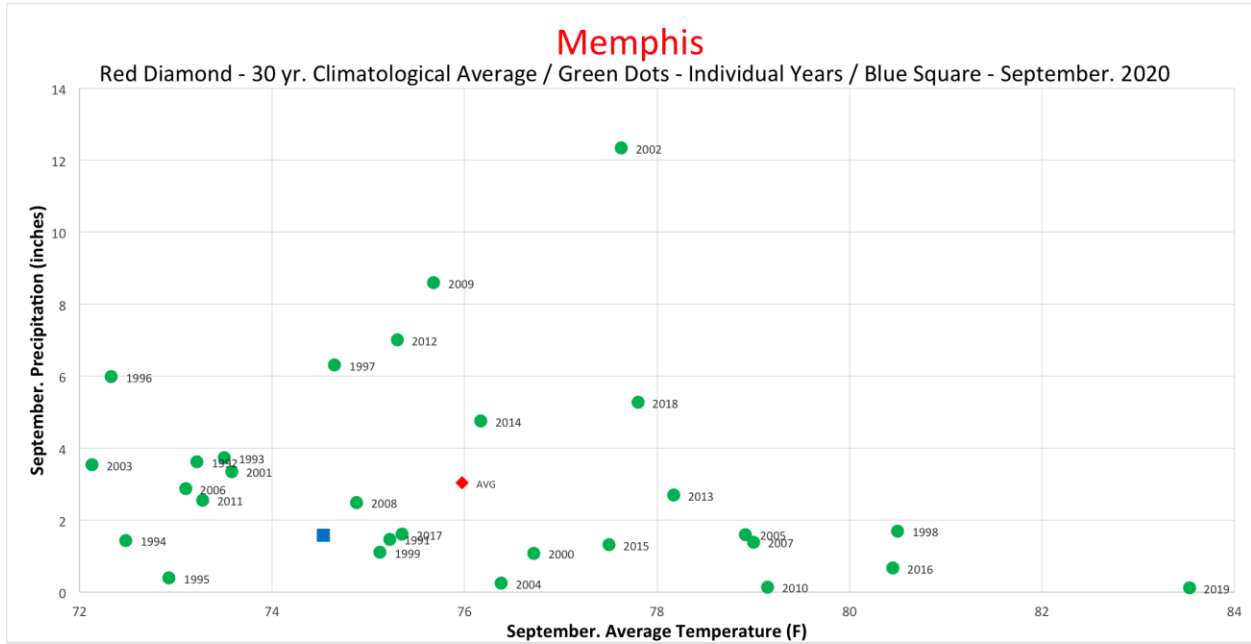
**Driest Stations (lowest precipitation totals):**

Station Name	Station Type	Total Precipitation (in)
LAWRENCEBURG FILT PLANT	COOP	0*
CLARKSVILLE WWTP	COOP	1.11
CLARKSVILLE NO.2	COOP	1.17
MEMPHIS INTERNATIONAL AP	WBAN	1.58
DICKSON 5.8 NW	CoCoRaHS	1.64
RICKMAN 3.8 ESE	CoCoRaHS	1.73
CROSSVILLE 11.3 ENE	CoCoRaHS	1.74
MEMPHIS 12.0 SE	CoCoRaHS	1.76
FINGER 4.1 ENE	CoCoRaHS	1.8
CLARKSVILLE OUTLAW AP	WBAN	1.81
BYRDSTOWN	COOP	1.83

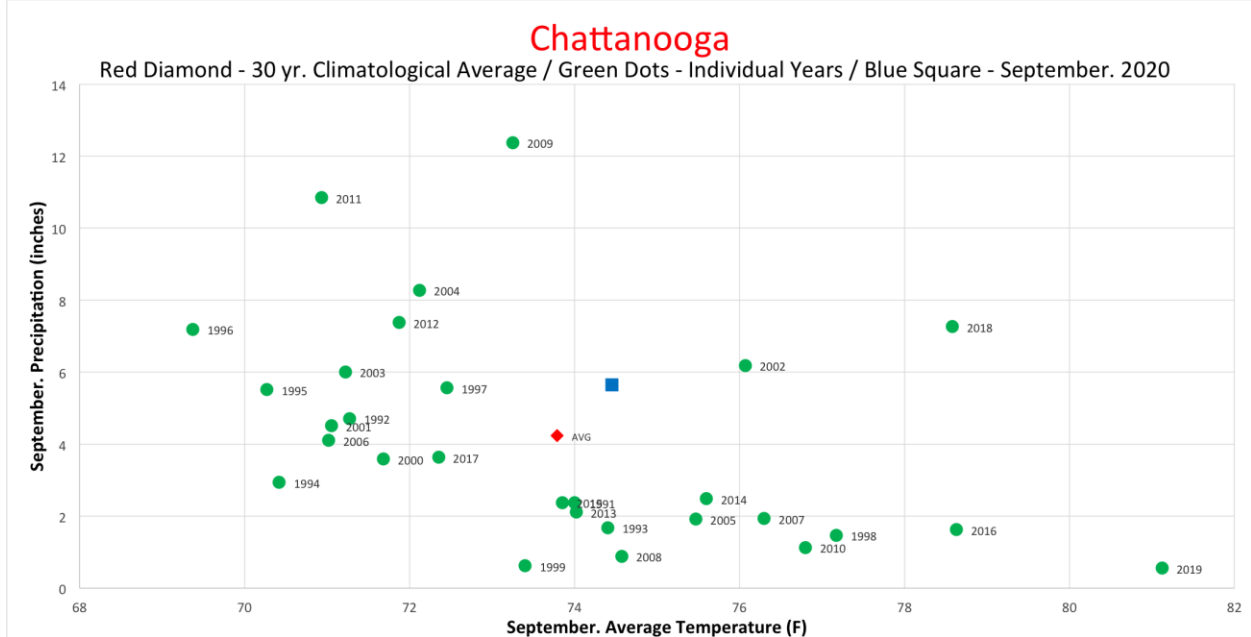
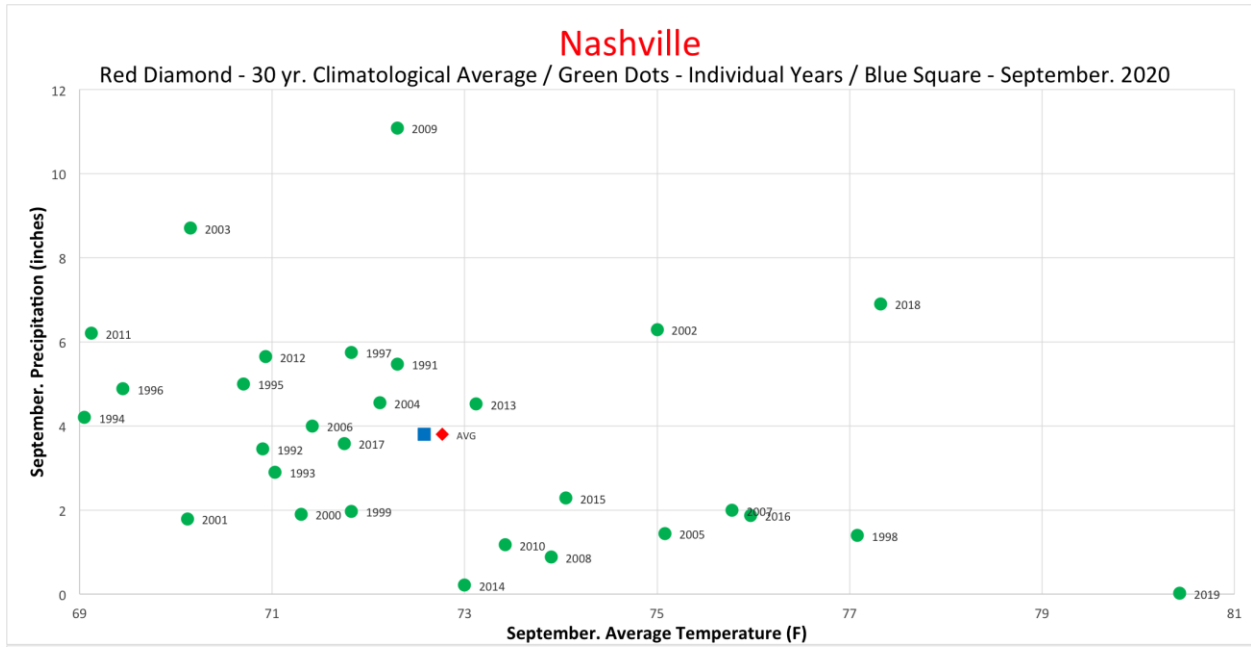
\*The Lawrenceburg Filt Plant station reported missing one day of reporting.

### The Month in Comparison:

The moderate, near normal conditions for both temperatures and rainfall patterns across the state means that this year was in the middle of the pack, when compared to the September rainfall and precipitation patterns for the last 30 years. These graphs do show the outliers that September 2019 and 2018 were for many locations.

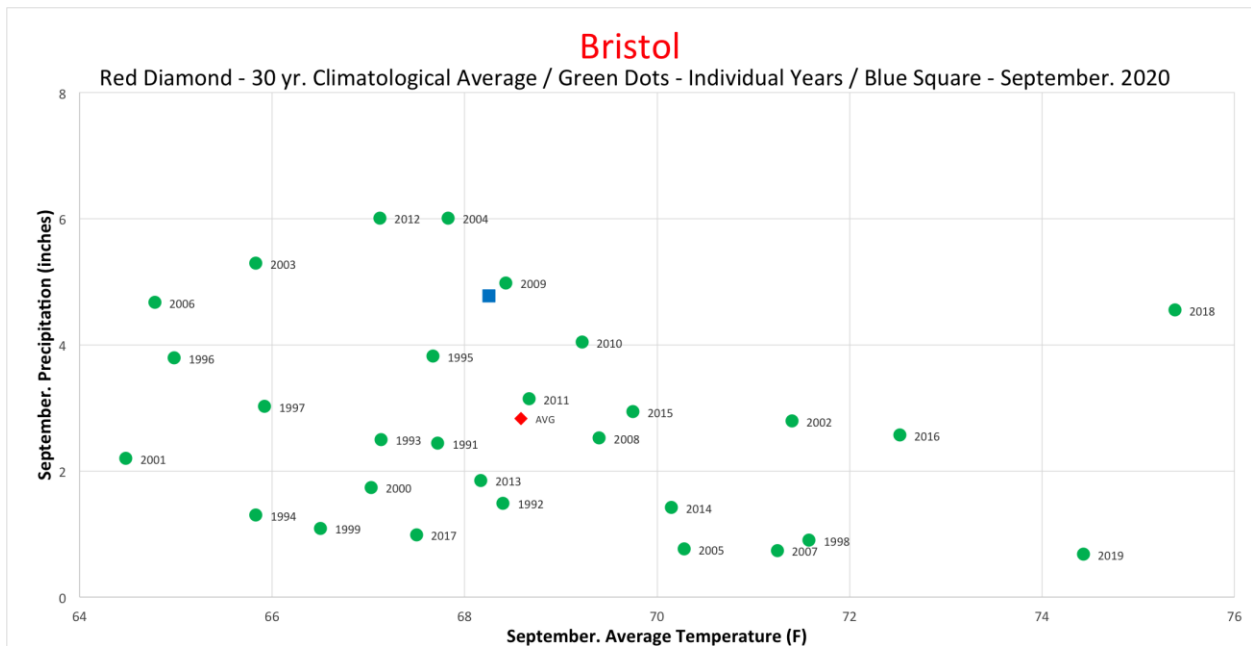
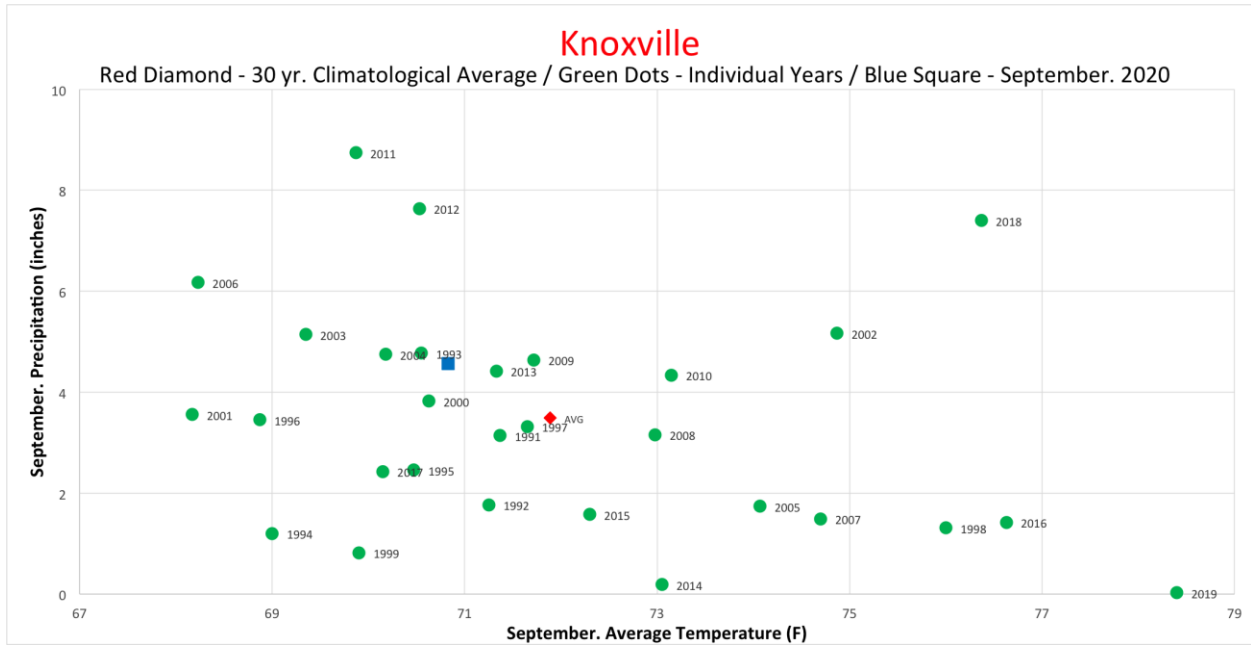


September 2020 Tennessee State Climate Summary





September 2020 Tennessee State Climate Summary



### Drought Monitor:

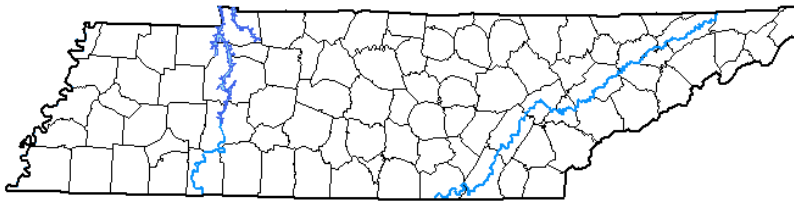
Despite the drier than normal conditions showing up this month in parts of the state, as of the last Drought Monitor Release on September 29<sup>th</sup>, all areas of drought were cleared from Tennessee. This is the first time since June 9<sup>th</sup> that no D0 (Abnormally Dry) conditions were present in the state. If the dry pattern from the end of the month continues into October, some new areas of D0 may be introduced in the coming weeks.

Author:

Brad Rippey  
U.S. Department  
of Agriculture

## U.S. Drought Monitor Tennessee

**September 29, 2020**  
(Released Thursday, Oct. 1, 2020)  
Valid 8 a.m. EDT



Intensity:

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

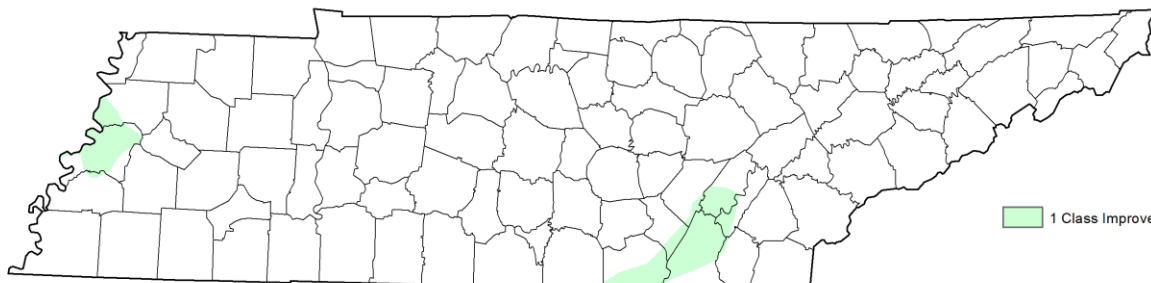
[droughtmonitor.unl.edu](http://droughtmonitor.unl.edu)



*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>*

September 29, 2020  
compared to  
September 1, 2020

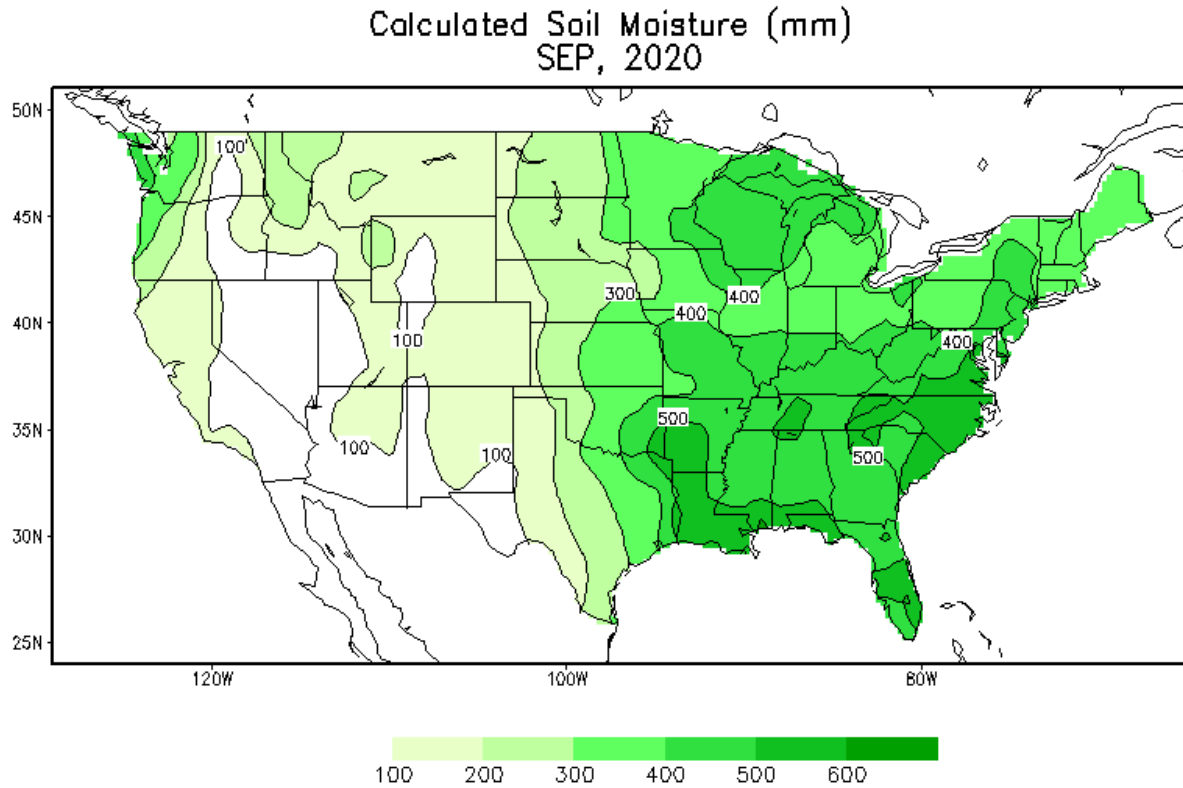
### U.S. Drought Monitor Class Change - Tennessee 1 Month



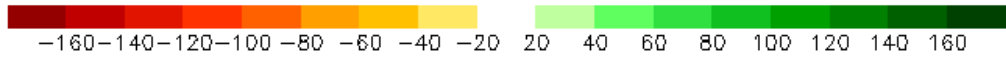
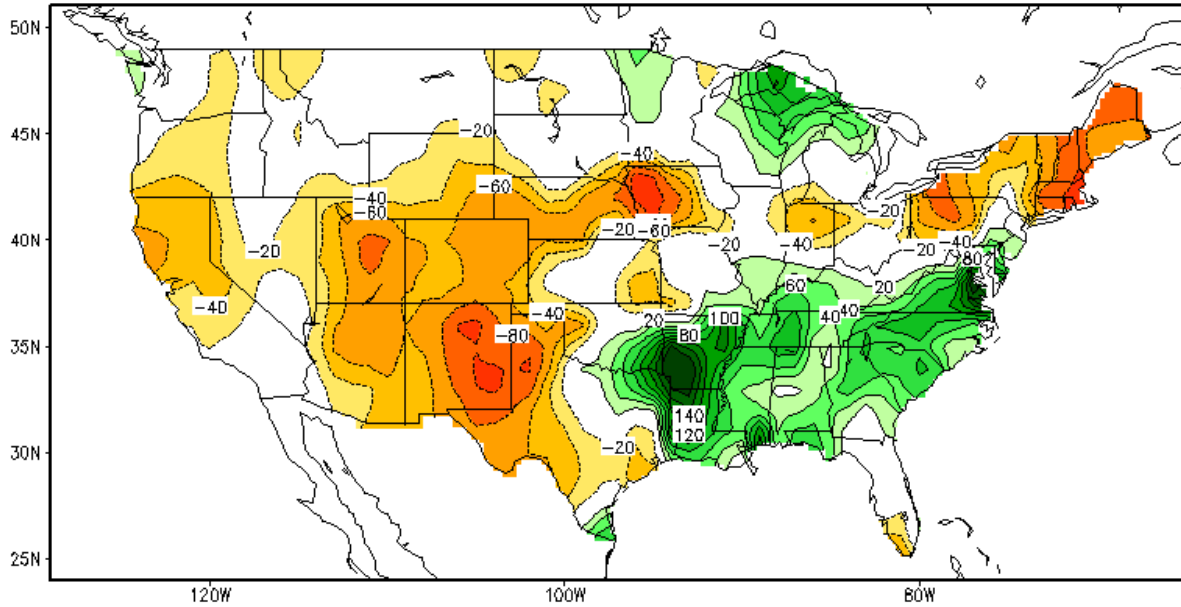
1 Class Improvement

### Soil Moisture:

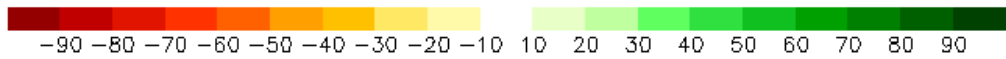
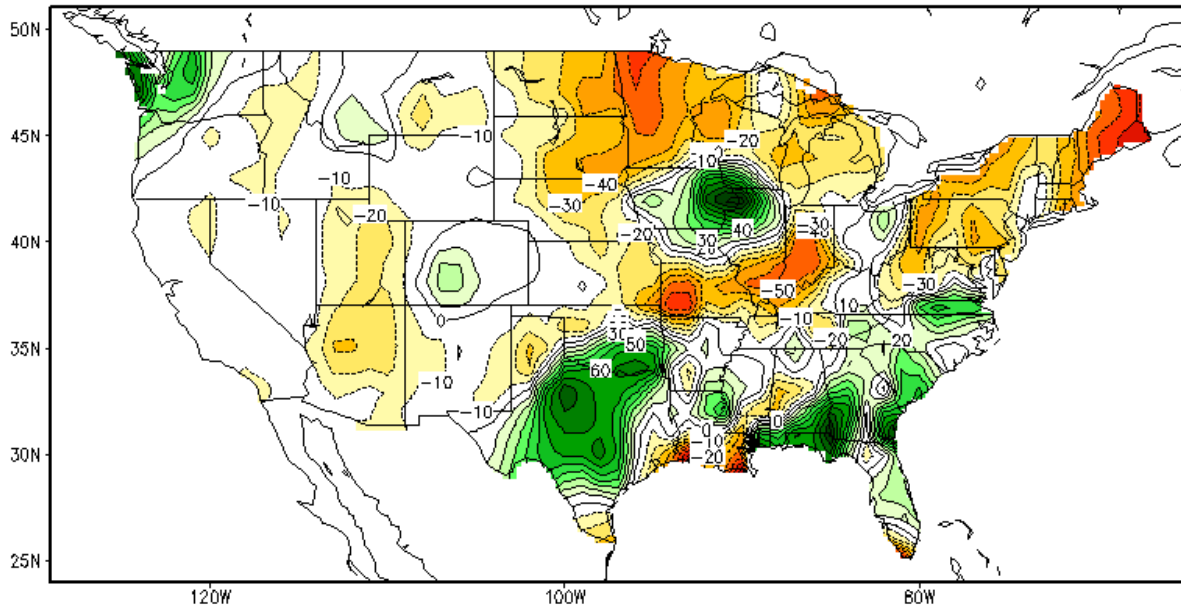
Despite a drying trend in some areas, soil moisture was at to above normal levels in most areas of the state. As of the end of the month the USDA crop weather report for Tennessee listed subsoil moisture as 10% short, 80% adequate, and 10% surplus. Topsoil moisture was rated 9% short, 77% adequate, and 14% surplus.



### Calculated Soil Moisture Anomaly (mm) SEP, 2020



### Calculated Soil Moisture Anomaly Change SEP 30, 2020 from AUG.31



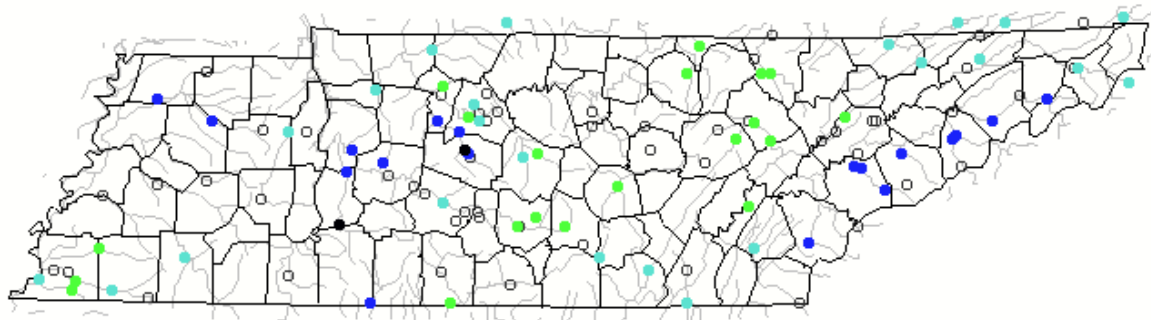
**Streamflow:**

Streamflow for the month of September was at to above normal across the state, with some streams in East Tennessee and Middle Tennessee running much above normal for this time of year.

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

Tennessee ▼ or Water-Resources Regions ▼

September 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

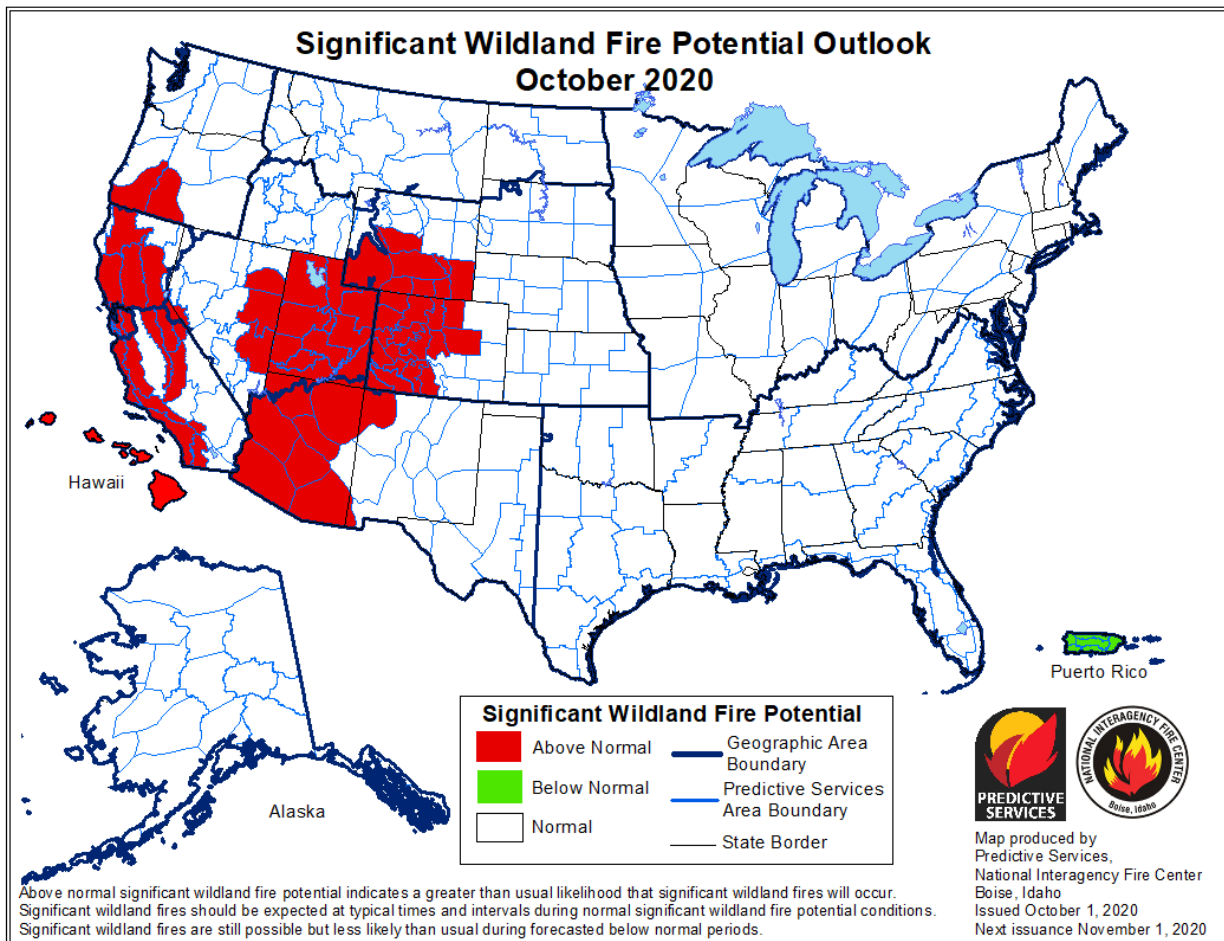
**Miscellaneous:**

**Crop Conditions from USDA:** During September, harvesting began for Tobacco, Soybeans, Corn, and Cotton. Most harvests remained below the 5-year average due to the timing of rains during the month, but by the end of the month, the Tobacco harvest had surpassed the 5-year average. Cotton crops saw the worst conditions among the major crops, with 20% being reported in poor or very poor condition, mainly due to the timing of the rain in West Tennessee. Heading into the Fall, pasture and hay conditions across the state look good, and fields are being prepped for and planted with winter wheat. The crop progress and condition table from the end of September is shown on the next page.

CROP PROGRESS					CONDITION					
Crop	This Week	Last Week	2019	5 Year Avg.	Item	Very Poor	Poor	Fair	Good	Excellent
	Percent					Percent				
Corn – Dented	100	98	99	100	Corn	1	3	22	60	14
Corn – Mature	88	78	97	96	Cotton	7	13	18	50	12
Corn – Harvested for Grain	40	27	69	69	Pasture	1	6	29	52	12
Cotton – Bolls Opening	66	50	78	79	Soybeans	1	3	21	60	15
Cotton – Harvested	2	1	10	7						
Soybeans – Dropping Leaves	52	37	67	66						
Soybeans – Harvested	12	7	24	17						
Tobacco – Cut	86	75	93	83						
Winter Wheat – Planted	5	4	8	5						
Winter Wheat – Emerged	3	1	1	1						

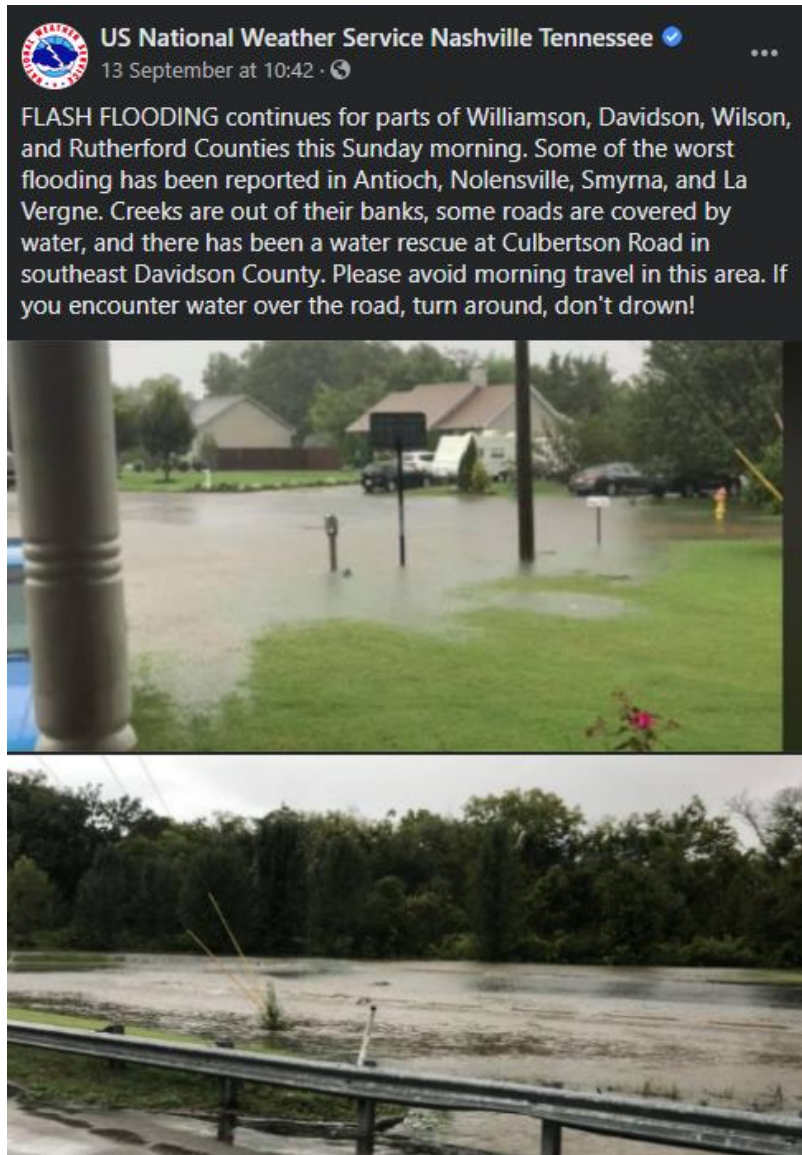
**Fire Danger:**

The Interagency Fire Center significant wildland fire potential outlook for October shows all of Tennessee, and the eastern half of the county will have normal fire potential.



### Story of the Month:

One of the main stories of September 2020 was the flash flooding that occurred with a line of heavy rain and training storms that set up over Middle Tennessee on September 13<sup>th</sup>. These storms produced 5-8 inches of rain in the span of about 8 hours, resulting in several instances of flash flooding in the Nashville metro area. One of the highest totals came from Brentwood, with 8.25 inches of rain on the 13<sup>th</sup>, which accounted for over 90% of their rainfall for the month.





**US National Weather Service Nashville Tennessee** ✓  
 14 September at 17:50 · 🌐

Here are some of the higher measured rainfall totals from yesterday's flooding rainfall event. These are 24 hour rainfall totals, but most of this fell in about an 8 hour window Sunday morning. Hopefully Sally stays away!

Location:	Amount:	Source of Report:
1.9 ESE BRENTWOOD	8.25"	COCORAHS
LASCASSAS	7.45"	TWITTER
NOLENSVILLE	7.03"	FACEBOOK
2.4 SW NOLENSVILLE	6.04"	COCORAHS
SARDIS	5.60"	FACEBOOK
2.0 W NOLENSVILLE	5.53"	COCORAHS
2.1 SW LAVERGNE	5.38"	COCORAHS
MT. PLEASANT	5.14"	OHX COOP
COLUMBIA	5.00"	FACEBOOK

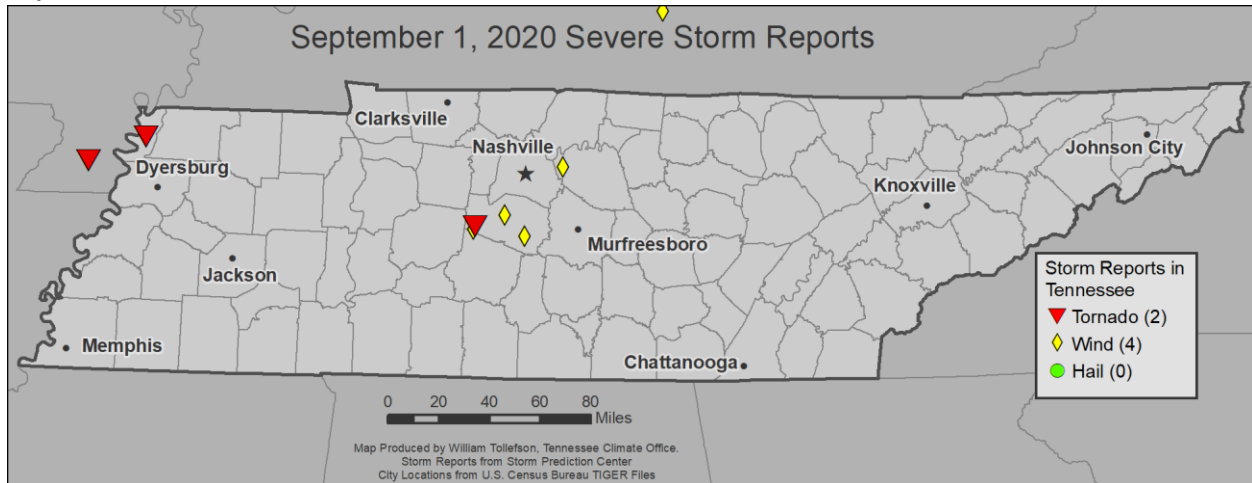


### Storm Reports:

\*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](http://spc.noaa.gov) for any updates.

There were 3 days with severe storm reports during August, with a total of 2 tornadoes and 6 severe wind damage reports.

#### September 1



#### Tornado Reports:

Time (UTC)	Strength	Location	County	Lat	Lon	Comments
21:28	EF0	8 S FAIRVIEW	WILLIAMSON	35.86	-87.14	A BRIEF EF-0 TORNADO TOUCHED DOWN IN FAR SOUTHWESTERN WILLIAMSON COUNTY CAUSING MOSTLY TREE DAMAGE ON GREEN CHAPEL ROAD. THE TORNADO CONTINUED EAST AND CAUSED MINOR TREE (OHX)
22:24	EF0	3 S TIPTONVILLE	LAKE	36.33	-89.48	TORNADO DEVELOPED WEST OF WYNNBURG AND MOVED NORTHEAST ACROSS OPEN FARMLAND... LIFTING BEFORE REACHING HIGHWAY 78 SOUTH OF TIPTONVILLE. NO STRUCTURAL DAMAGE WAS OBSERVE (MEG)

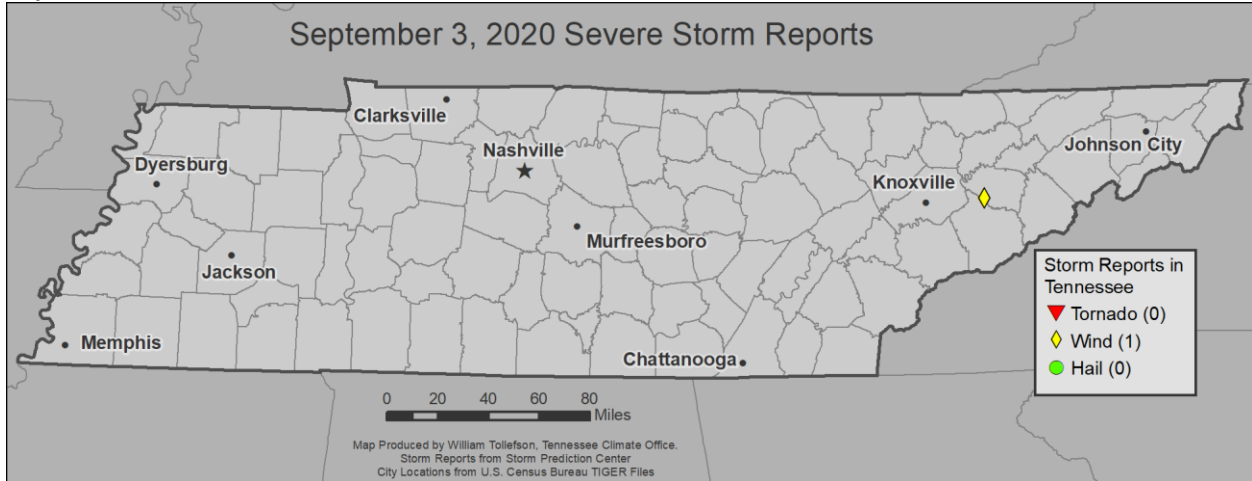
#### Wind Reports:

Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
21:24	--	9 S FAIRVIEW	WILLIAMSON	35.85	-87.15	REPORT OF TREES AND POWER LINES DOWN ON NORTH LICK CREEK RD IN THE PRIMM SPRINGS AREA. (OHX)
21:55	--	5 W FRANKLIN	WILLIAMSON	35.93	-86.93	TSPOTTER REPORT OF A TREE DOWN IN BLOSSOM PARK (OHX)
22:12	--	7 E THOMPSON'S STATION	WILLIAMSON	35.81	-86.79	TREE DOWN AT PULLTIGHT HILL RD AND CROSS KEYS RD (OHX)

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Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
22:41	--	MOUNT JULIET	WILSON	36.21	-86.52	18 INCH DIAMETER TREE DOWN ACROSS THE 2 EASTBOUND LANES OF BELINDA PKWY (OHX)

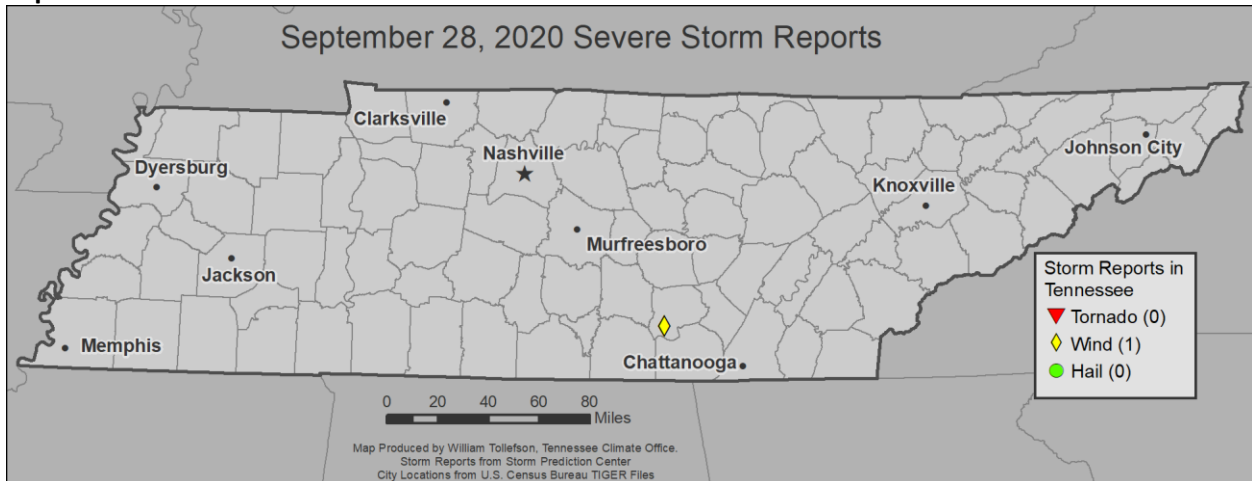
September 3



Wind Reports:

Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
19:41	---	3 SSW PIEDMONT	JEFFERSON	35.99	-83.54	POWERLINE DOWN REPORTED ON SOCKLESS RD. ALSO A TRAFFIC LIGHT REPORTED OUT JUST A BIT EARLIER AT THE INTERSECTION OF WINFIELD DUN PKWY AND DOUGLAS DAM RD. (MRX)

September 28



Wind Reports:

Time (UTC)	Speed (mph)	Location	County	Lat	Lon	Comments
21:00	--	4 NW TRACY CITY	GRUNDY	35.3	-85.8	TREES DOWN ON POWER LINES AND ACROSS ROADS ALONG HIGHWAY 50 AND ON CLOUSE HILL ROAD. (OHX)

CPC Outlooks for the Next Month:

The NOAA Climate Prediction Center outlook for October shows most of Tennessee will likely see below normal temperatures continue through October, with higher confidence (40% likelihood) in East Tennessee. The outlook for precipitation shows all of Tennessee will likely have below normal precipitation as well, with the most confidence in the northwest corner of the state (50% likelihood).

