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Tennessee Climate Office Monthly Report

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10-1-2017

### 2017 October - Tennessee Monthly Climate Report

Tennessee Climate Office, East Tennessee State University

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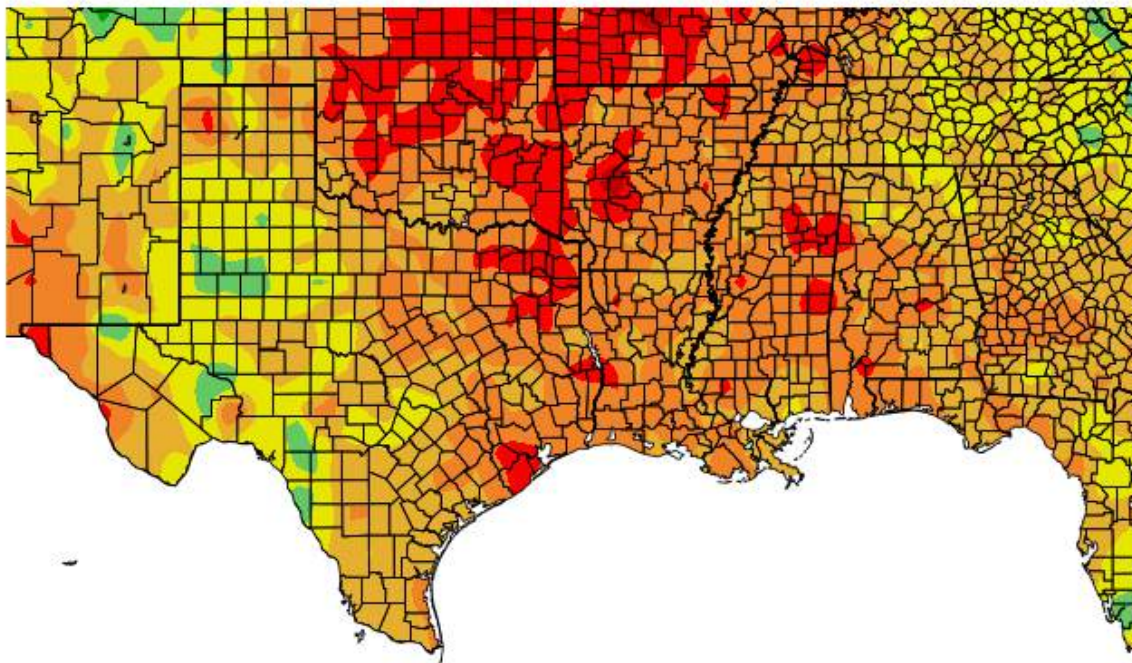
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## October Tennessee Weather and Climate Roundup:

### Week 1: (Thursday, Sep 28<sup>th</sup> - Wed, Oct 4<sup>th</sup>)

October began in the same way that September ended, warm and dry across most of the state, with temperatures averaging 2-6 degrees above normal. Although in drier parts of the state the high temperatures were closer to 10 degrees above normal, but lows were close to average, producing large diurnal temperature swings (~40 degrees F)

### Departure from Normal Temperature (F) 9/29/2017 – 10/5/2017



Generated 10/6/2017 at HPRCC using provisional data.

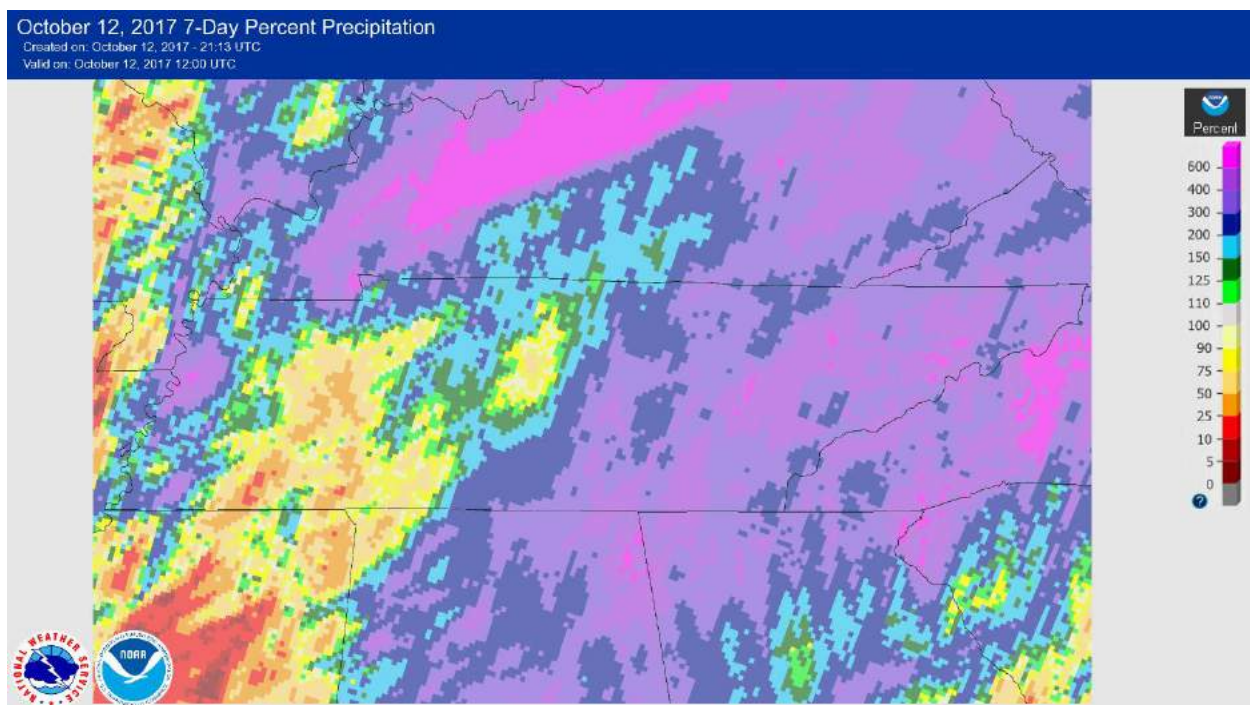
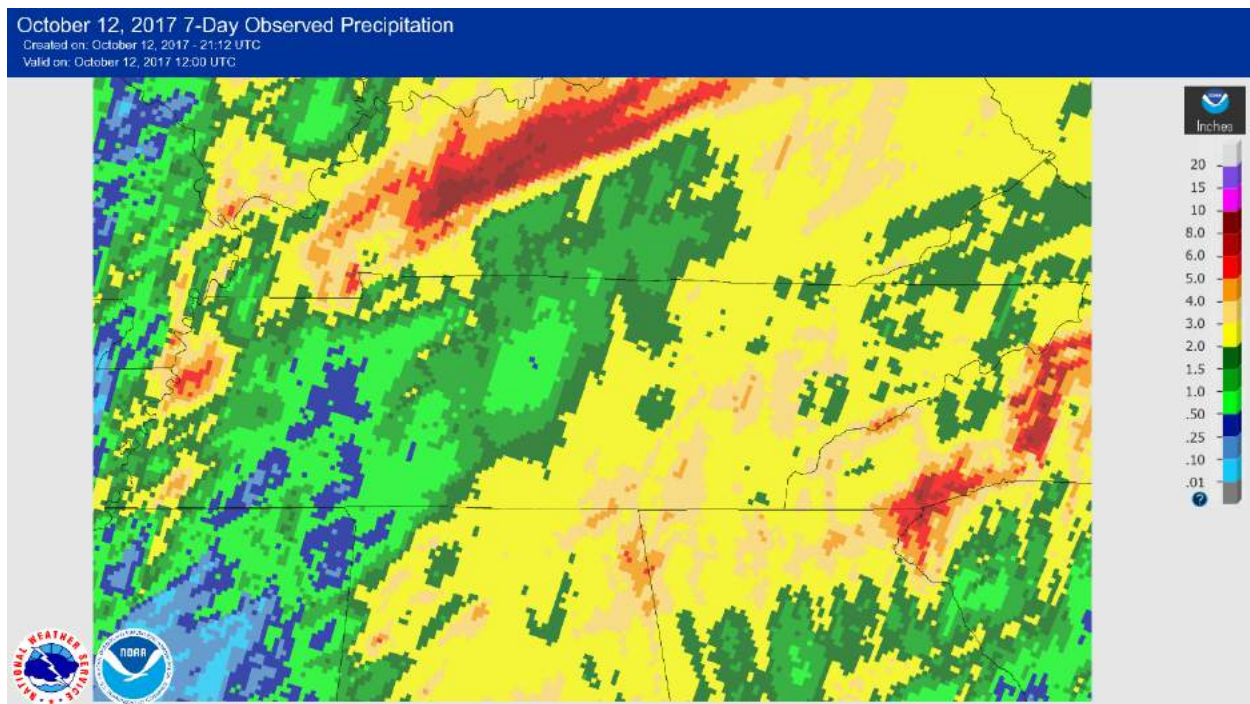
NOAA Regional Climate Centers

### Week 2: (Thursday, Oct 5<sup>th</sup> - Wednesday, Oct 11<sup>th</sup>)

The remnants of Hurricane Nate began to pass through central and eastern Tennessee on Sunday October 8<sup>th</sup> leaving the state on the 9<sup>th</sup> as a tropical depression with the center of low pressure moving northwards along the Cumberland Plateau. There were no reports of tornadoes or wind damage associated with the storm.

Nate produced large amounts of rainfall (2+ inches) in the eastern 2/3 of the state; although a little less in the northern great valley due to down sloping on the western side of the Appalachians. It was still enough to produce 200-300% average rainfall, during the typically driest month for most of Tennessee.

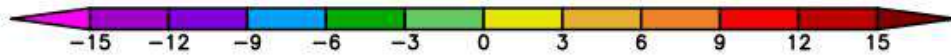
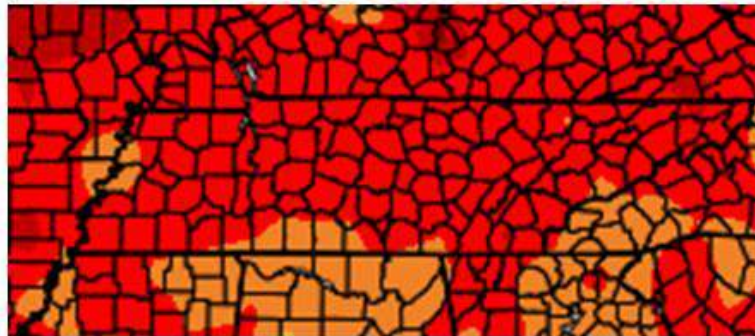
Heavy thunderstorm rains moved into extreme western TN on Tuesday morning ahead of an approaching cold front.



Nate also brought a warm, humid tropical air mass to the state with most places observing temperatures 9-12 degrees above average for the week.



## Departure from Normal Temperature (F) 10/5/2017 – 10/11/2017



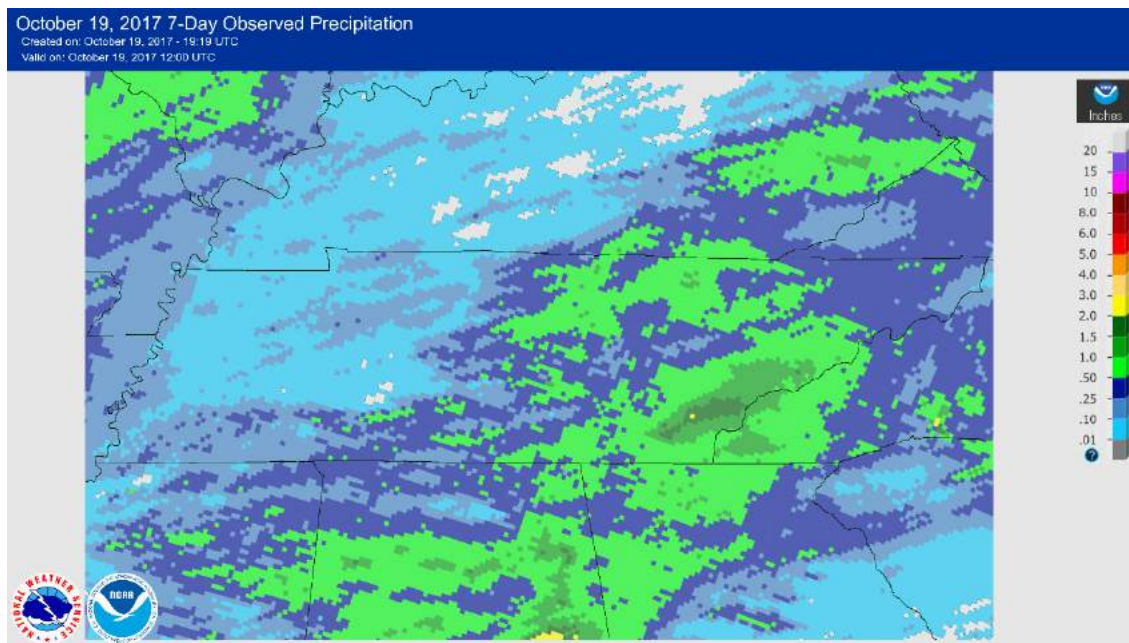
Generated 10/12/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

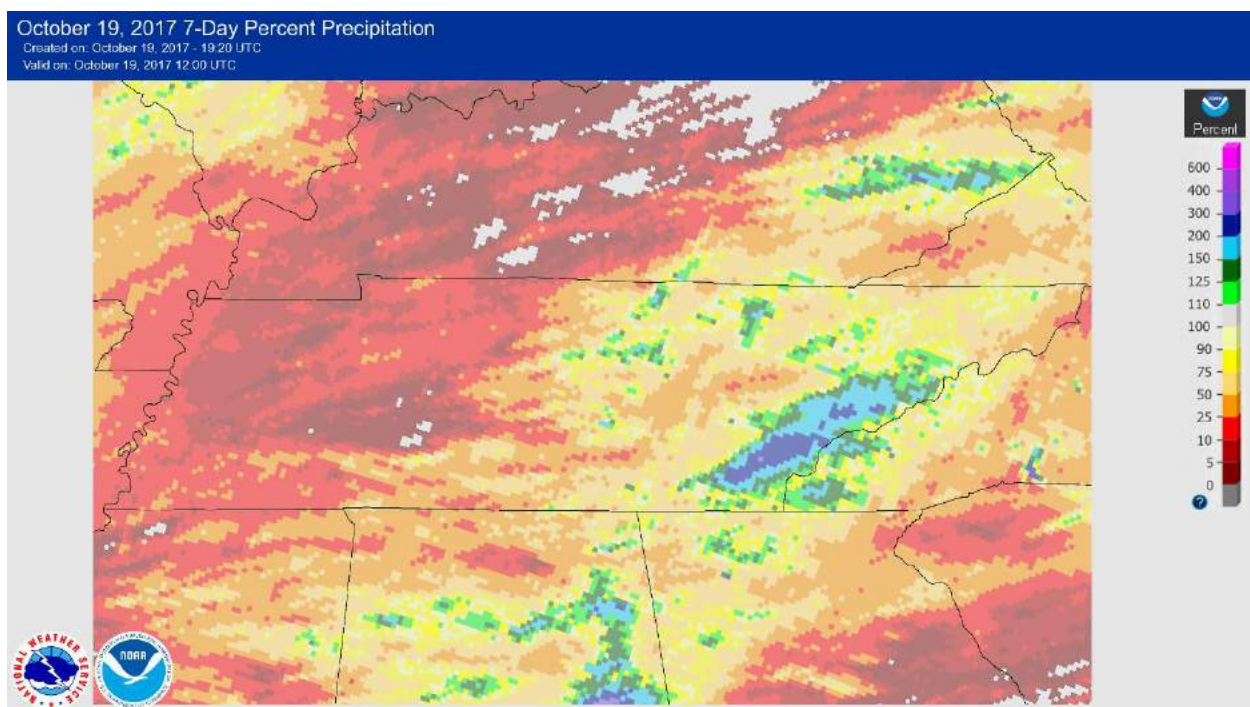
Tuesday night into Wednesday, an impressive cold front worked its way through western and middle Tennessee with many stations in western TN reporting around 20 degree temperature drops from Tuesday into Wednesday, as well as a 20 degree lowering of dew points in the same period. Many locations did not get out of the 60's for their afternoon highs. The front made little impact in Eastern TN, as highs Wednesday ranged into the low 80's with continued high humidity east of the Cumberland Plateau.

### Week 3: (Thursday, Oct 12<sup>th</sup> – Wednesday, Oct 18<sup>th</sup>)

A continued warm spell resulted in near-record temperatures observed across the state on Thursday, October 12<sup>th</sup>. More normal, fall-like conditions moved into Tennessee for the second half of the week, as a strong cold front swept across the state Sunday and Monday. On Sunday, Memphis dipped below 50 degrees for the first time since May 6<sup>th</sup> (163 day streak). Not much rainfall was produced by this front, except in the eastern parts of the state, where a few locations in the southern valley picked up 2 inches of rain for the week.



Overall for most of the state the week's precipitation was below average, only the places that saw heavy rains in the mountains of eastern/southeastern TN recorded above average precipitation.



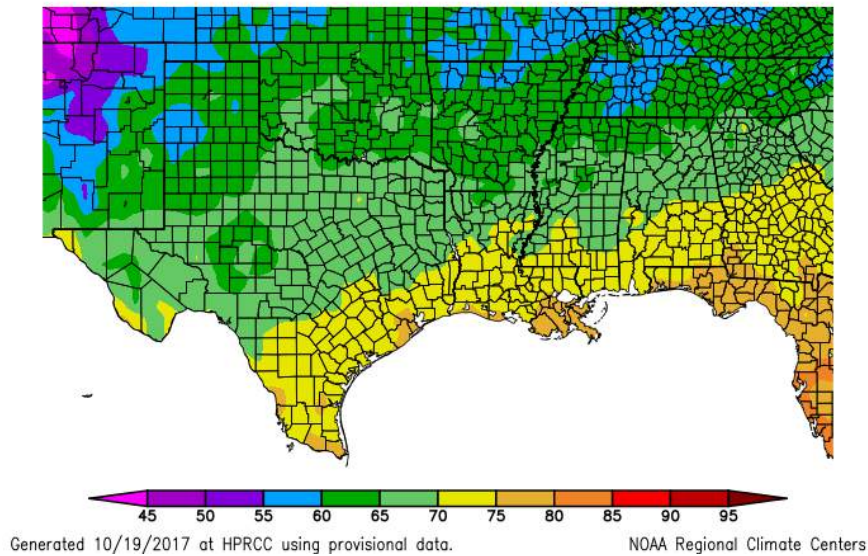
Average temperatures for the week ranged from 55-70 degrees, with northwestern TN and the western Tennessee River valley seeing the coolest temperatures (due to cool air from the frontal passage at the end of last week, and the cold front that moved in over the weekend).

Temperature departures from normal ranged from 2 degrees below normal in some areas of west TN, to 6-8 degrees above average in NE-TN.

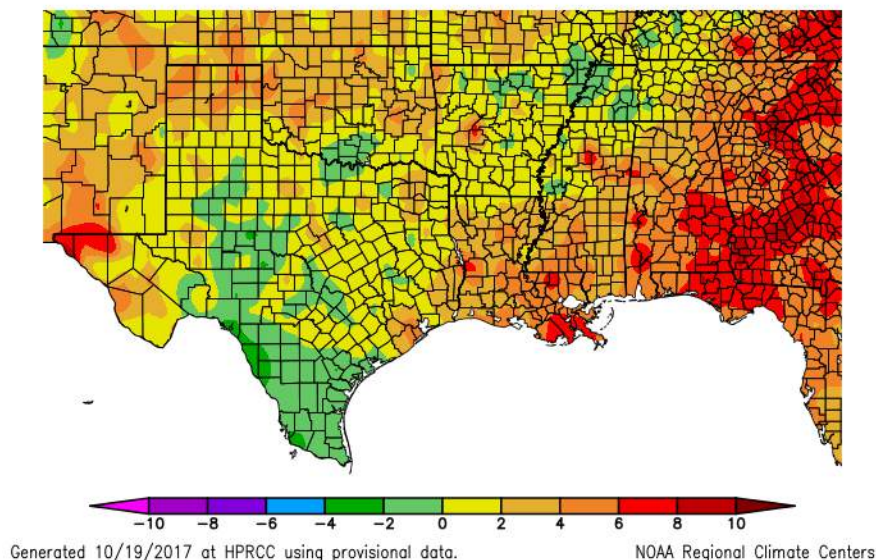


The first frost occurred in many areas of the state on Monday or Tuesday following the frontal passage. (*\* Frost was observed by the de-facto state climatologist and de-facto assistant state climatologist on Monday and Tuesday mornings in Washington and Carter counties, respectively*).

Temperature (F)  
10/12/2017 – 10/18/2017



Departure from Normal Temperature (F)  
10/12/2017 – 10/18/2017

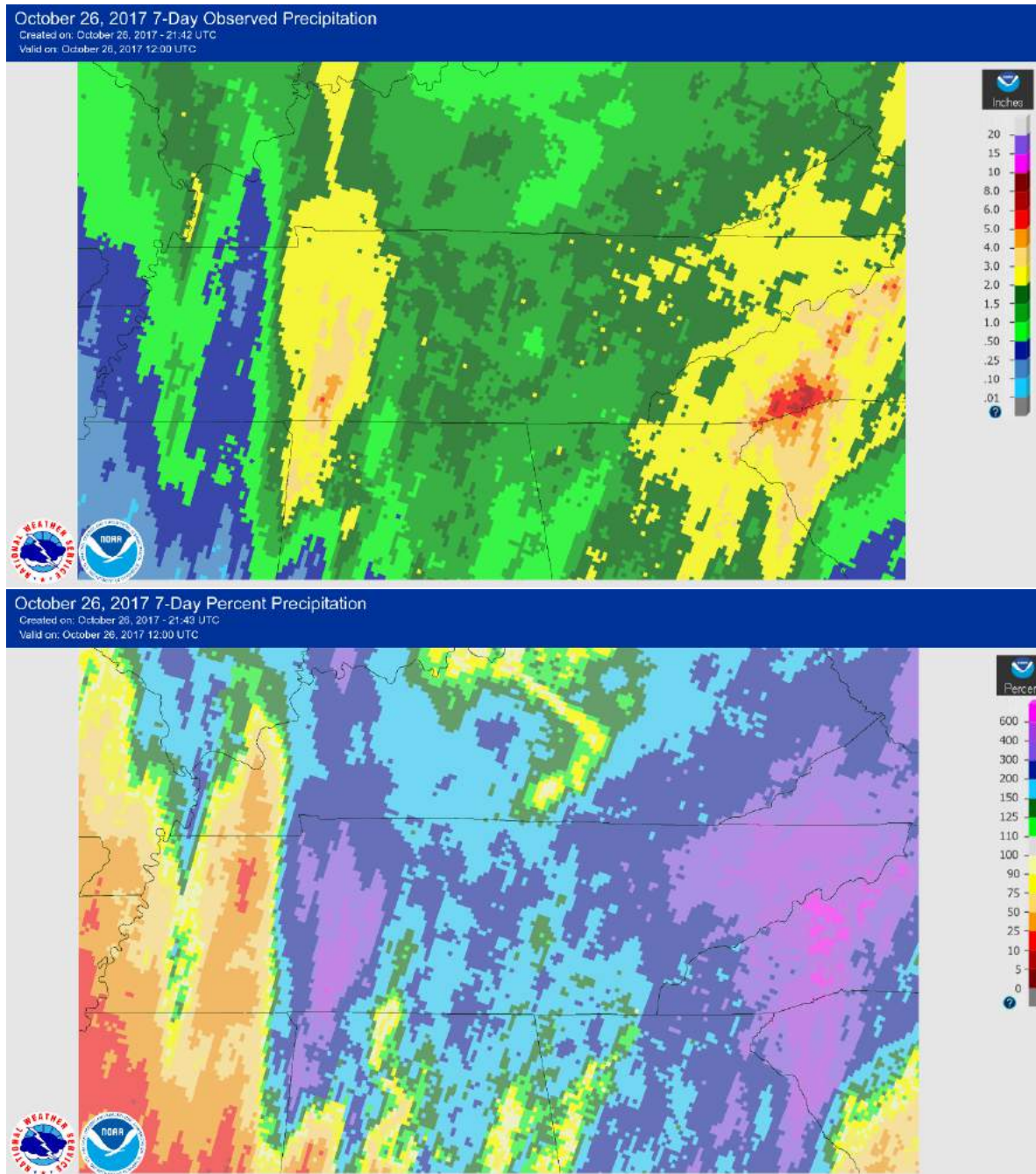


Week 4: (Thursday, Oct 19<sup>th</sup> – Wednesday, Oct 25<sup>th</sup>)

Seasonal to above average temperatures continued into the fourth week of October, with a strong cold front that crossed the state on the 22<sup>nd</sup> - 23<sup>rd</sup> ushering in colder air for the end of the week. The frontal

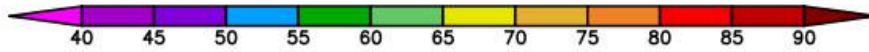
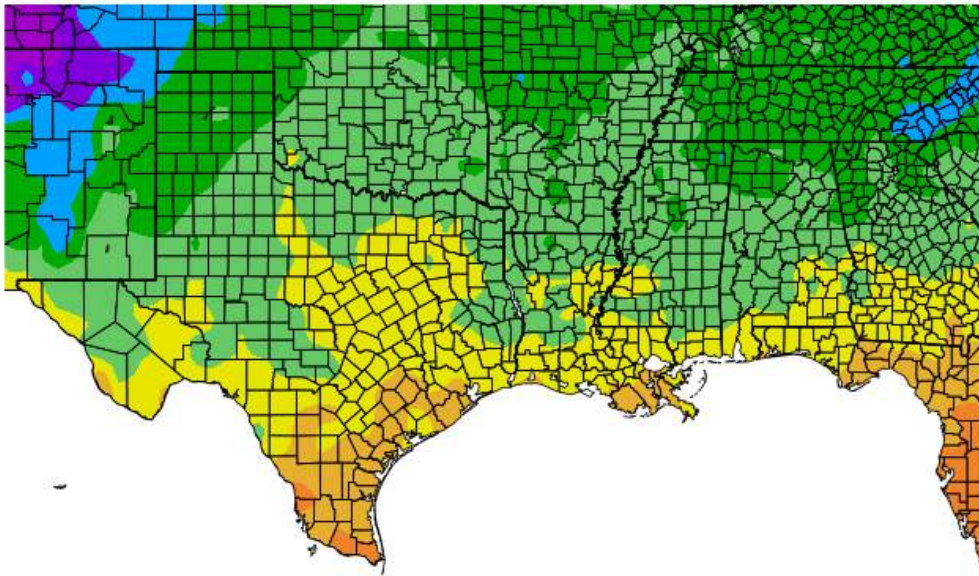
passage also brought heavy rains (over 2 inches) to western parts of middle Tennessee as well as eastern/northeastern TN, prompting flood advisories for locations near the western Tennessee River valley. Carter County, in NE TN, was also hard hit with flash flooding on Monday night prompting a high water rescue and county schools being closed on Tuesday due to flood waters.

Wind damage was reported near Murfreesboro, resulting in minor damage including small trees being blown down. Shingle and fence damage also occurred on the 23<sup>rd</sup> (only SPC storm report in the state for the month of October!). Cool/cold air remained in place on Wednesday, with cloud cover and scattered showers over middle and eastern TN.





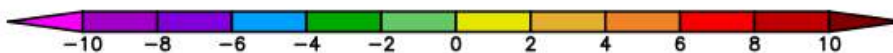
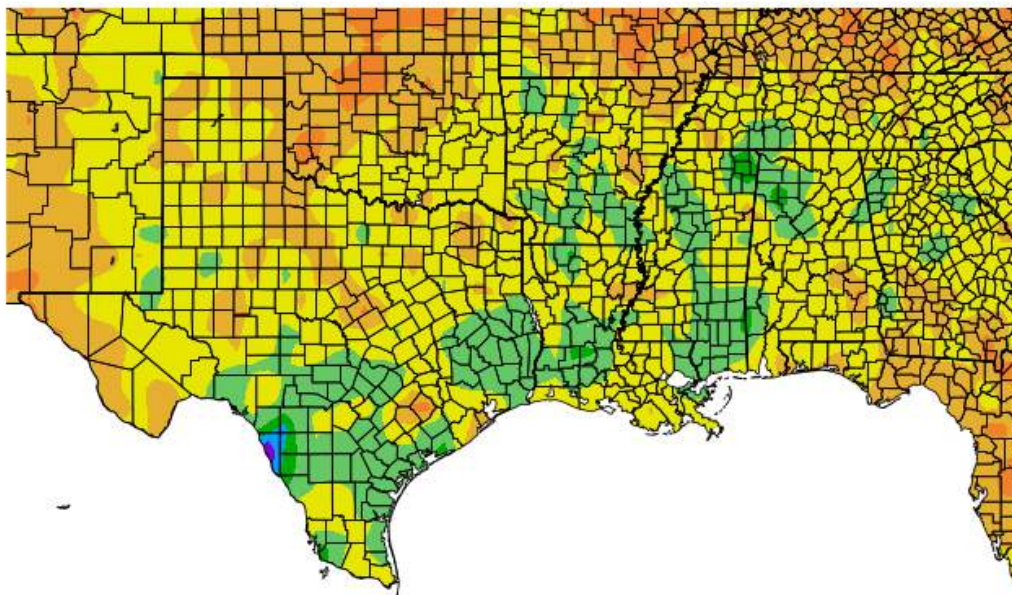
Temperature (F)  
10/19/2017 – 10/25/2017



Generated 10/26/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from Normal Temperature (F)  
10/19/2017 – 10/25/2017



Generated 10/26/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers



## Week 5: (Thursday, Oct 26<sup>th</sup> – Wednesday, Nov 1<sup>st</sup>)

Warm, sunny conditions on Thursday/Friday (west/east) gave way to another strong cold front that crossed the state 26<sup>th</sup>-27<sup>th</sup>. Freeze warnings were in place over the course of the weekend for all parts of the state. On Oct 29<sup>th</sup> Memphis temperatures went below freezing for the first time in 228 days (the first time they have had a freeze in the month of October since 1993!), approximately two weeks ahead of their average first freeze. Post frontal precipitation from NW flow/jet stream/orographic effects resulted in rain/mist and even SNOW over eastern Tennessee on Sunday, with small accumulations along the mountain tops (generally over 3,500 ft) and flurries observed in valley locations like Johnson City.

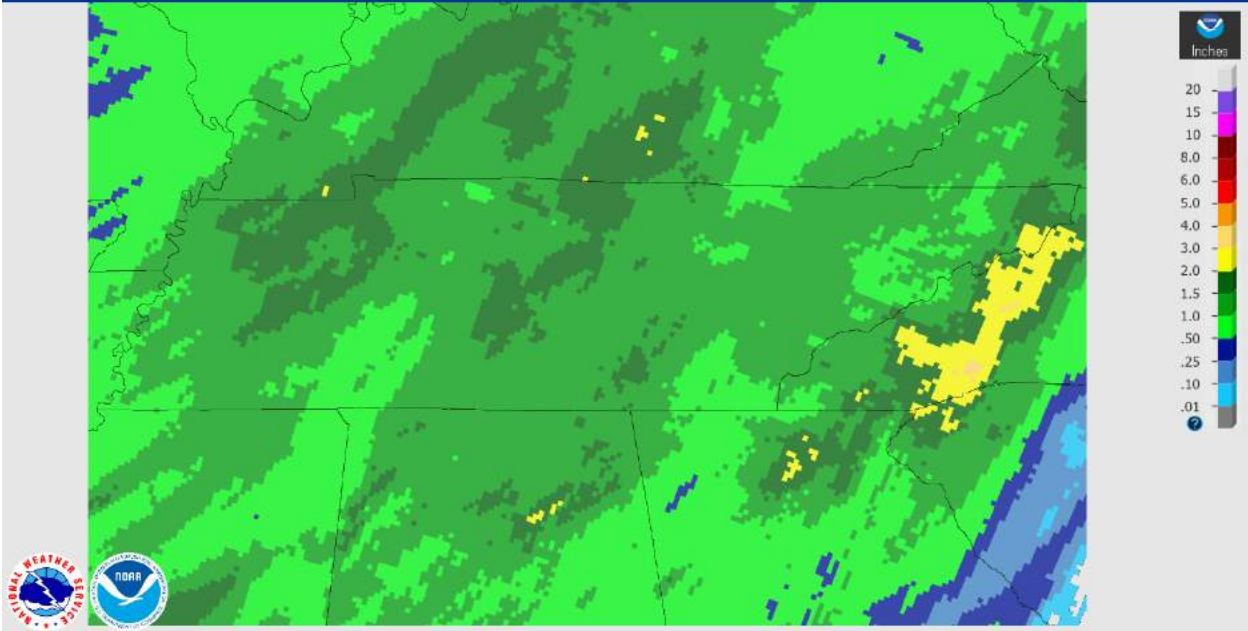


*Snow at Cloudland on Roan Mountain at the TN/NC border on Sunday, October 28<sup>th</sup> (photo by Wil Tollefson).*

Rainfall totals between ½ and 2 inches were common across the entire state associated with the frontal passage. Some areas in Northeast TN that had been hit with flash flooding at the end of last week also saw the most rain this week. No water rescues were required, but streams and rivers were well above average. Comparing average precipitation amounts, those who received over an inch of rain were above normal, while the parts of the state that only saw about a ½" from the front were below normal for the week.

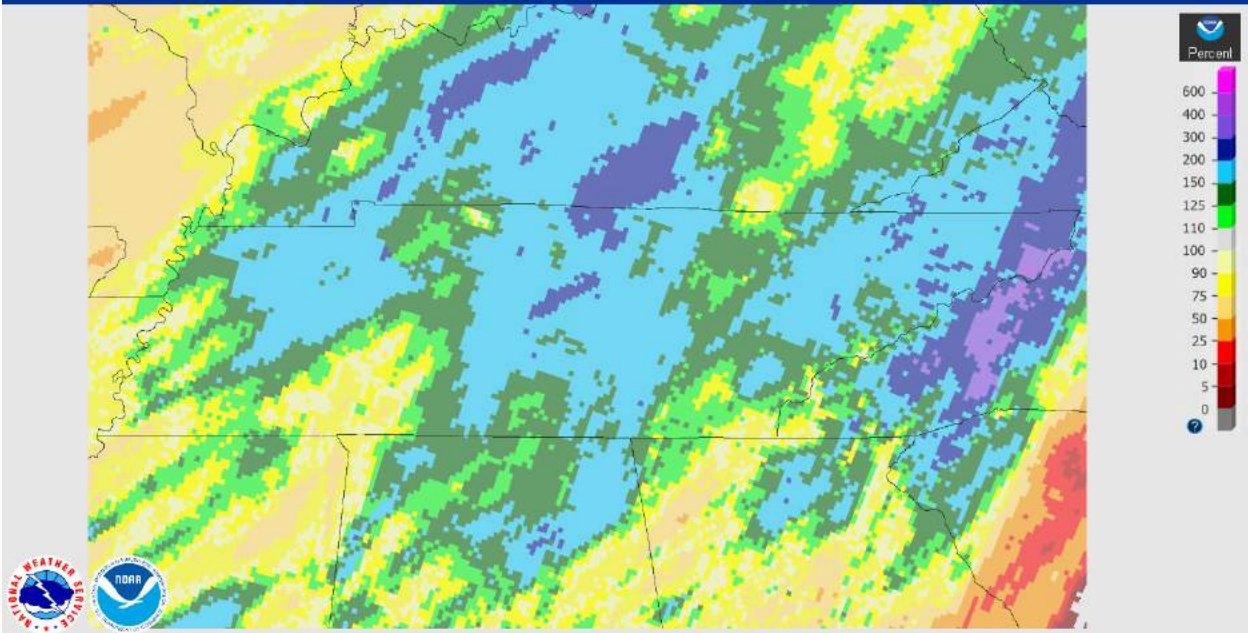
### November 02, 2017 7-Day Observed Precipitation

Created on: November 02, 2017 - 19:33 UTC  
Valid on: November 02, 2017 12:00 UTC



### November 02, 2017 7-Day Percent Precipitation

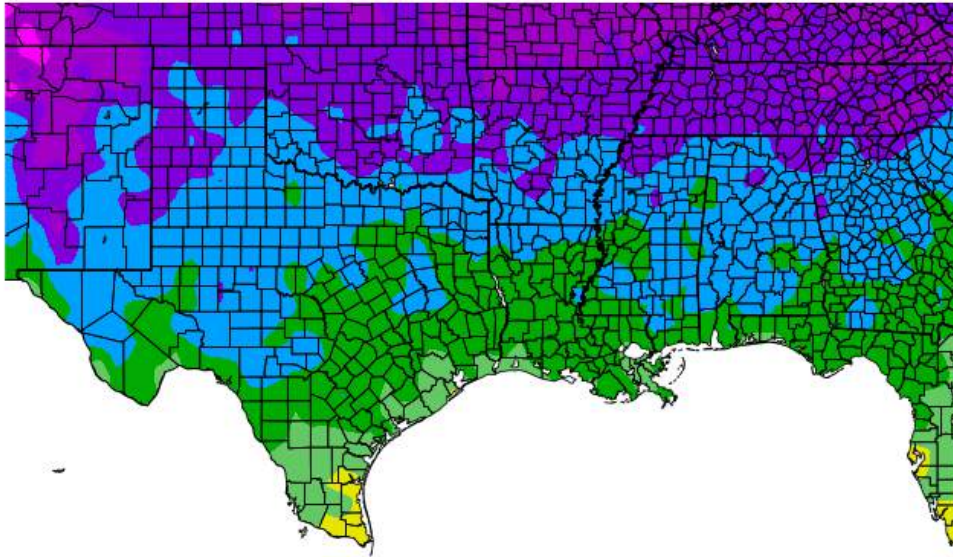
Created on: November 02, 2017 - 19:34 UTC  
Valid on: November 02, 2017 12:00 UTC



Because of the cold front, most of the state averaged a temperature of 50 degrees or lower for the week, 6-10 degrees below average!

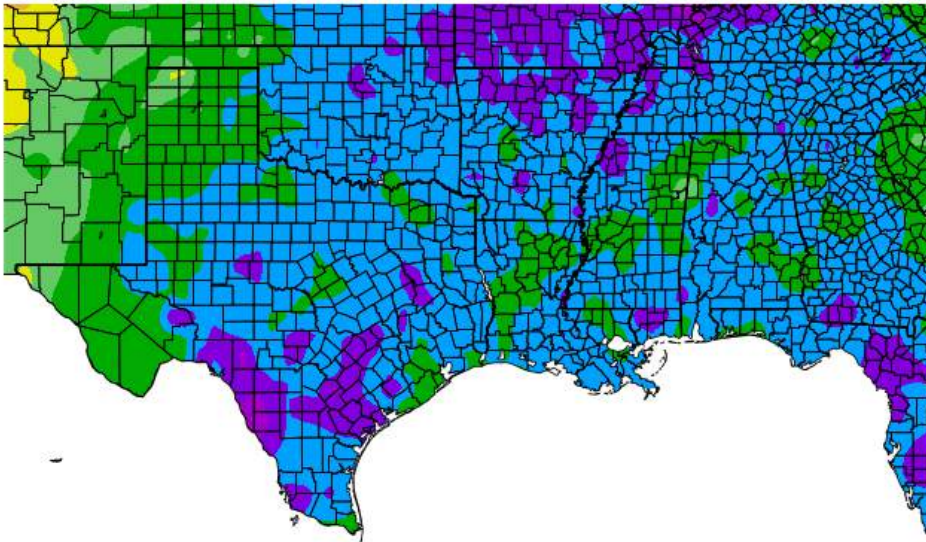


Temperature (F)  
10/26/2017 – 11/1/2017



Generated 11/2/2017 at HPRCC using provisional data. NOAA Regional Climate Centers

Departure from Normal Temperature (F)  
10/26/2017 – 11/1/2017



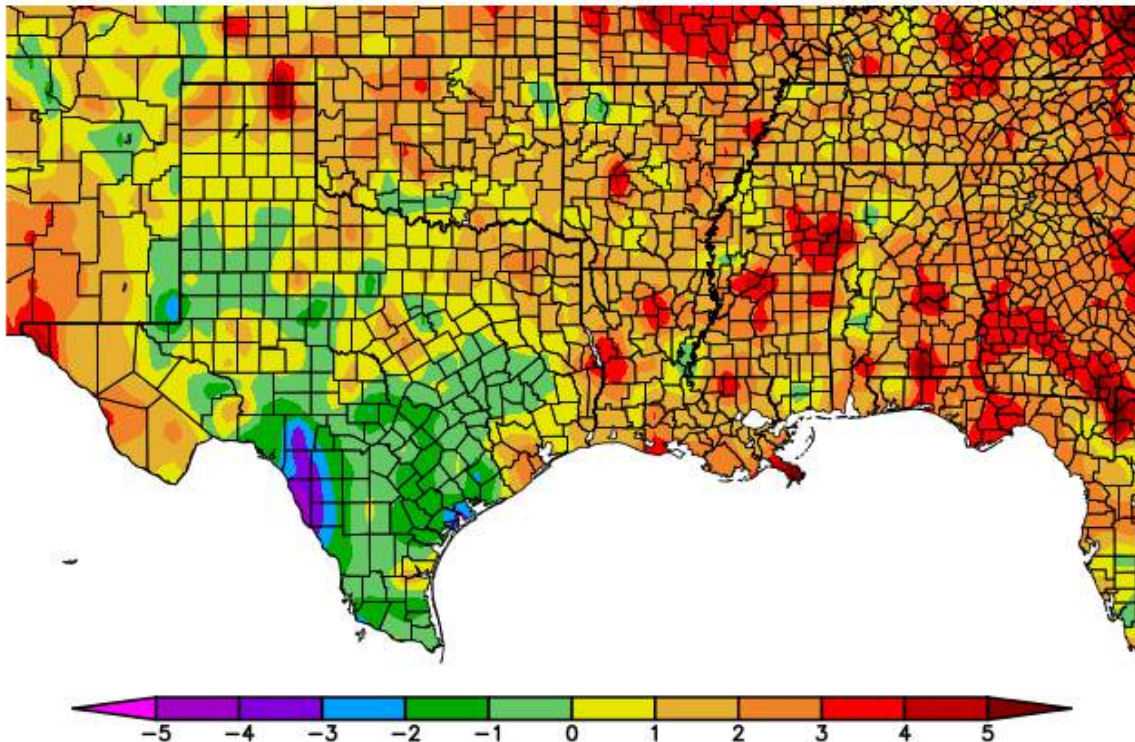
Generated 11/2/2017 at HPRCC using provisional data. NOAA Regional Climate Centers

Cooler conditions from the past two weeks also allowed East TN and the Cumberland Plateau to reach peak fall foliage color at the end of this week.

## October Monthly Review

October was a month of ups and downs with record highs set in some locations in the first weeks of the month, followed by a few earlier than normal frosts and freezes. For the month as a whole, almost all parts of the state were above normal in temperatures (averaging 1-4 degrees warmer than normal).

### Departure from Normal Temperature (F) 10/1/2017 – 10/31/2017



Generated 11/2/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

Precipitation was at or above normal for the middle and western parts of the state (some mountain locations picked up over 10 inches of rain for the month!) due to the remnants of Hurricane Nate and the passage of several strong cold fronts; while the west stayed below average (except for a few counties like Dyer and Lauderdale along the MS River), receiving only 50-75% of normal rainfall after missing out on any tropical moisture.

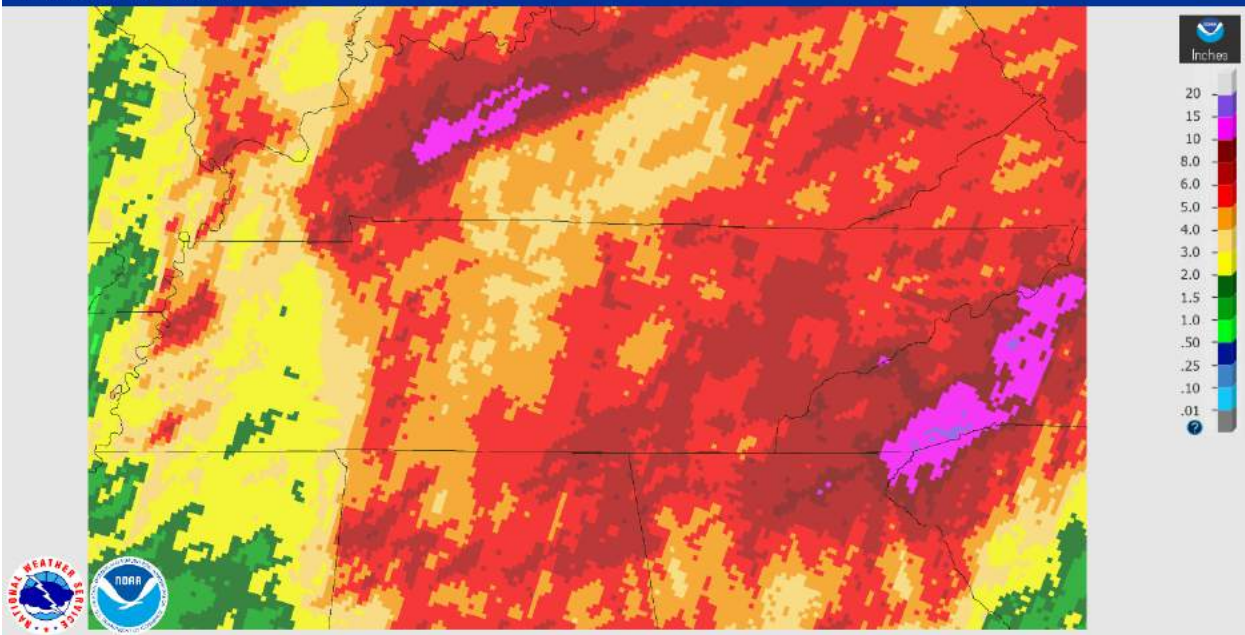
Two strong cold fronts (one in the middle and one at the end of the month) brought our first tastes of winter with frosts, freezes, and snow in some locations.

Even with tropical cyclone remnants and those strong frontal passages, only one severe weather report was recorded during the month, however there were several instances of flash flooding across the state.



### October 31, 2017 30-Day Observed Precipitation

Created on: October 31, 2017 - 17:42 UTC  
Valid on: October 31, 2017 12:00 UTC



### October 31, 2017 30-Day Percent Precipitation

Created on: October 31, 2017 - 17:38 UTC  
Valid on: October 31, 2017 12:00 UTC

