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Tennessee Climate Office Monthly Report

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3-1-2018

### 2018 March - Tennessee Monthly Climate Report

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# March 2018 Tennessee State Climate Summary

Prepared by William Tollefson and Dr. Andrew Joyner  
Tennessee Climate Office, Department of Geosciences, East Tennessee State University.

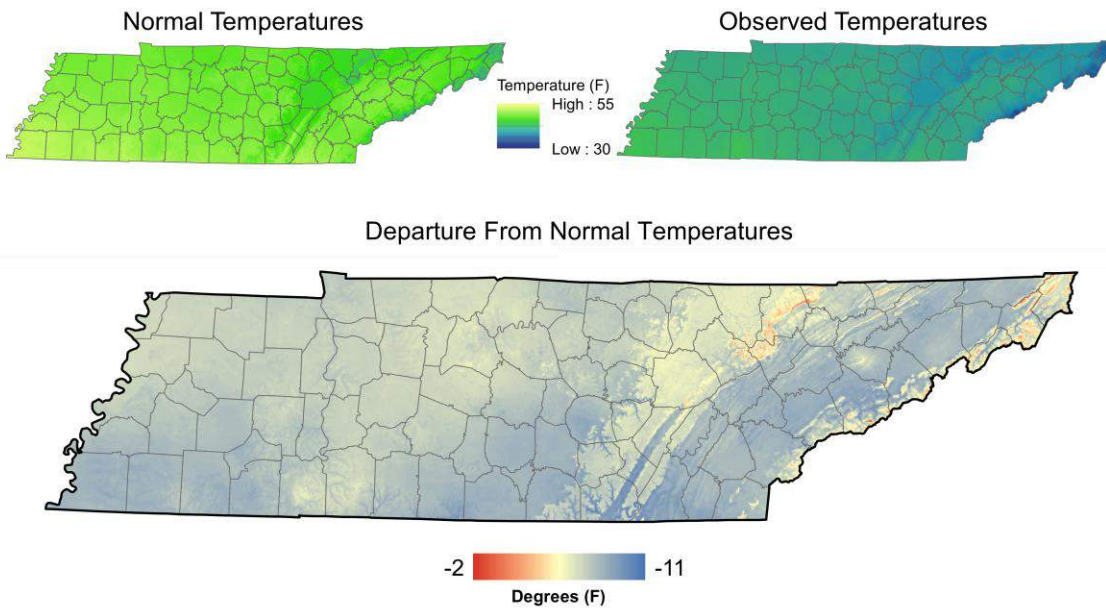
## Monthly Temp Summary:

In typical Tennessee Spring fashion, temperatures across the state swung from above to below average week-to-week during March. During the first week of March almost all areas of the state recorded temperatures above normal (highest in the west and middle sections), with a few exceptions in the mountains of east Tennessee that were below normal. A major frontal passage on the 7<sup>th</sup> brought colder than normal temperatures in for the second week of the month, except for a few places in southwest Tennessee. Climate divisions 1 and 2 were in the 6-10 degrees below normal range for the week. Then during the third week (15<sup>th</sup> – 21<sup>st</sup>) temperatures were once again above normal for almost all areas of the state. During the fourth week (22<sup>nd</sup> -28<sup>th</sup>) temperatures dropped below normal for most areas again (eastern Tennessee showed the greatest departure).

Despite the back-and-forth above and below normal weeks, the monthly average temperature was below normal for all areas of the state. With the larger departures mainly in the southern half of the state, and the eastern TN valley.



## March 2018 Mean Temperature



Stations with the highest mean temperature

Station Name	Station Type	Mean Temperature (°F)
MEMPHIS INTERNATIONAL AP	WBAN	54.1
GERMANTOWN 4SE	COOP	52.8
AMES PLANTATION	COOP	52.4
SHILOH NMP TENNESSEE	RAWS	52.3
MEMPHIS WFO	WBAN	52.2

Map Data From: PRISM Climate Group,  
Oregon State University,  
1980-2010 Normals Used  
Station Data retrieved from SC ACIS2

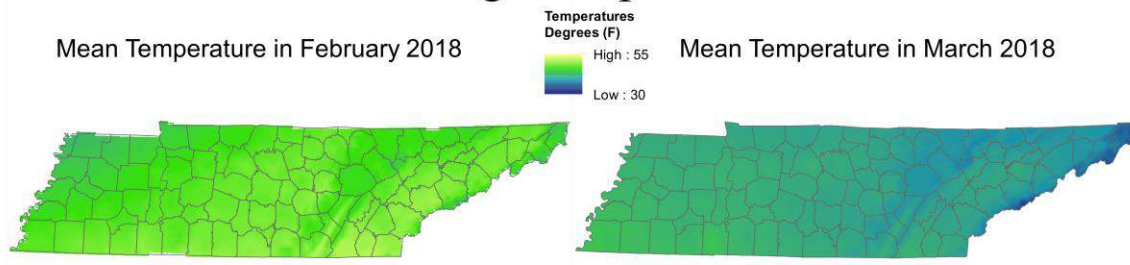
Stations with the lowest mean temperature

Station Name	Station Type	Mean Temperature (°F)
MT LECONTE	COOP	28.1
NEWFOUND GAP	COOP	34.8
ROAN MOUNTAIN 3SW	COOP	39.8
CROSSVILLE EXP STN	COOP	41.7
CHEROKEE TENNESSEE	RAWS	42.2

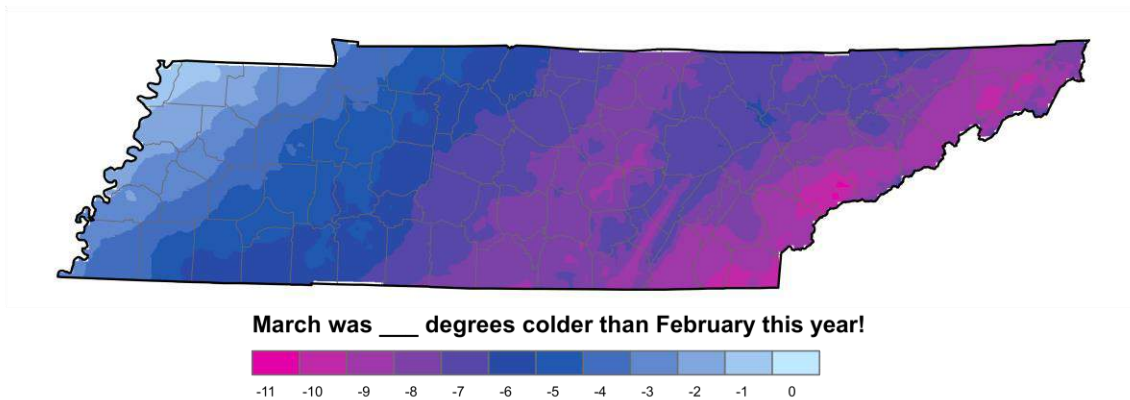
Given the much above normal temperatures in February, and the cooler than normal temperatures in March, most places in the state recorded a colder mean temperature in March than they did in February!



## 2018 February vs. March Average Temperature



How much colder was March than February?



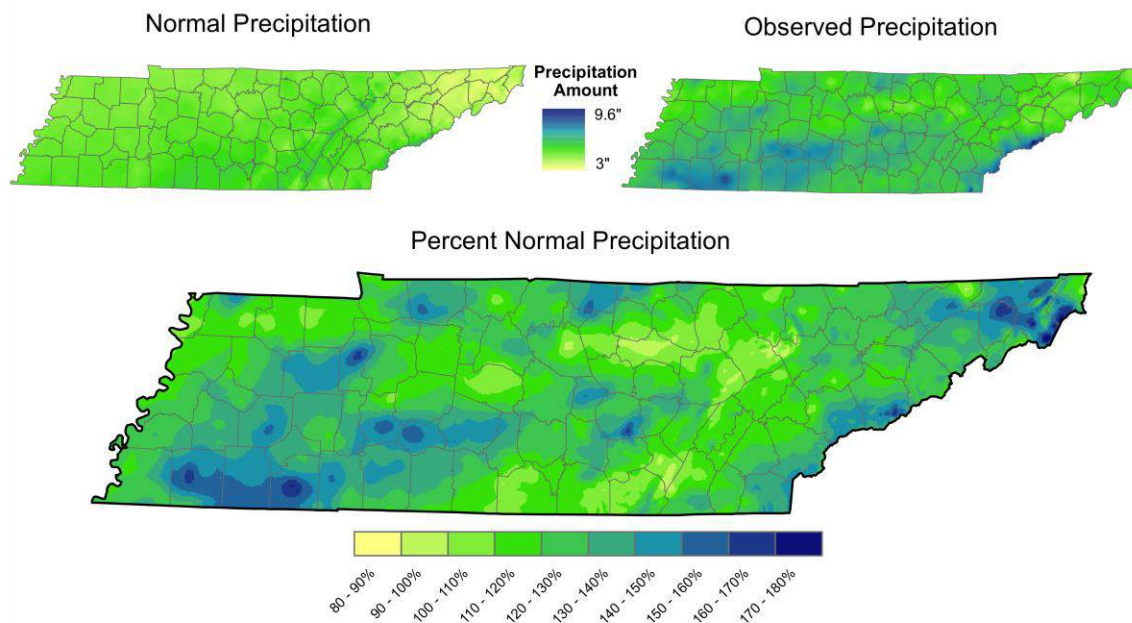
Note: Map data were sourced from PRISM Climate Group, at Oregon State University. These data are provisional and modeled using climatologically-aided interpolation (CAI), which uses the long-term average pattern (i.e., the 30-year normals) as first-guess of the spatial pattern of climatic conditions for a given month or day and incorporates as much station data as possible. While many stations across the state did record mean temperatures colder in March than February, some stations in West and Middle TN reported mean temperatures in March that were equal to or warmer than February.

## Monthly Precipitation Summary:

Precipitation for the month was generally close to normal, with frontal passages producing rain across the state each week, and several rounds of snow for the mountains, plateau, and northern Tennessee Valley. The first week of the month brought heavy rain generally along and south of the I-40 corridor, with rainfall totals above 2 inches (southern sections of climate divisions 1, 2, and 3 recorded rainfall in the 300-400% normal range). After that, precipitation for the rest of the month, until the last few days, was at or below normal for most places, with only a few spots picking up more than 1 inch per week. A large slow-moving frontal system brought heavy rainfall to western and middle parts of the state at the end of the month (28<sup>th</sup>-29<sup>th</sup>).



# March 2018 Precipitation



Stations with the most precipitation

Station Name	Station Type	Total Precipitation (in)
MT LECONTE	COOP	11.82
SELMER	COOP	8.68
WINCHESTER SSE	COOP	8.41
AMES PLANTATION	COOP	7.86
HOHENWALD	COOP	7.84

Map Data From: PRISM Climate Group,  
Oregon State University,  
1980-2010 Normals Used  
Station Data retrieved from SC ACIS2

Stations with the least precipitation

Station Name	Station Type	Total Precipitation (in)
ROCKWOOD 11.3 S	CoCoRaHS	2.03
CHEATHAM LOCK & DAM	COOP	2.09
NASHVILLE 5.2 S	CoCoRaHS	2.49
MURFREESBORO 7.9 NNW	CoCoRaHS	2.67
NASHVILLE 4.1 SSW	CoCoRaHS	2.71

Snowfall was recorded on the 7<sup>th</sup>, 12-14<sup>th</sup>, and 21<sup>st</sup> mainly in the Mountains and along the Cumberland Plateau. The highest totals occurred on mountain tops on the 21<sup>st</sup>, but the largest coverage, including valley locations, occurred on the 14<sup>th</sup>.



*(Left): 13" of snow was recorded at the Mt LeConte Lodge in the Great Smokey Mountains National Park with drifts up to waist deep on the 21<sup>st</sup> of March, the first full day of Spring! Image of the rocking chairs on the lodge porch via:*

*<http://www.highonleconte.com/daily-posts>*

*(Right): Snowy fields and hills between Johnson City and Elizabethton, TN on the morning of March 14<sup>th</sup>. Photo courtesy of William Tollefson*

## Top Tenn. (warmest/coldest, wettest/driest stations):

Stations with the highest temperatures:

Station Name	Station Type	Highest Temperature (°F)
DECATURVILLE	COOP	82
SHILOH NMP TENNESSEE	RAWS	82
KINGSPORT	COOP	81
BRISTOL TRI CITY AP	WBAN	81
ELIZABETHTON	COOP	80
NASHVILLE BERRY FIELD	COOP	80
GERMANTOWN 4SE	COOP	80
MOUSETAIL LANDING STATE PARK	COOP	80
NASHVILLE INTL AP	WBAN	80

*\*9 stations listed; an additional 10 stations tied for 10<sup>th</sup> highest temperature of 79°F*

Stations with the lowest temperatures:

Station Name	Station Type	Lowest Temperature (°F)
MT LECONTE	COOP	5
NEWFOUND GAP	COOP	12
COALMONT	COOP	17
ROAN MOUNTAIN 3SW	COOP	17
CROSSVILLE 7 NW	WBAN	18
CROSSVILLE EXP STN	COOP	18
JAMESTOWN	COOP	18
CROSSVILLE MEMORIAL AP	WBAN	19
BLEDSON SF TENNESSEE	RAWS	19
MEIGS EOC TENNESSEE	RAWS	19
LEWISBURG EXP STA	COOP	19
MONTEREY	COOP	19
ONEIDA	COOP	19
ALLARDT	COOP	19

*\*All stations reported a low temperature below freezing during the month.*

Stations with the warmest mean temperatures:

Station Name	Station Type	Mean Temperature (°F)
MEMPHIS INTERNATIONAL AP	WBAN	54.1
GERMANTOWN 4SE	COOP	52.8
AMES PLANTATION	COOP	52.4
SHILOH NMP TENNESSEE	RAWS	52.3
MEMPHIS WFO	WBAN	52.2
CHATTANOOGA AP	WBAN	51.2
FAYETTEVILLE WATER PLANT	COOP	51



BROWNSVILLE	COOP	50.9
COVINGTON 3 SW	COOP	50.9
JACKSON MCKELLAR- SIPES AP	WBAN	50.8

Stations with the coolest mean temperatures:

Station Name	Station Type	Mean Temperature (°F)
MT LECONTE	COOP	28.1
NEWFOUND GAP	COOP	34.8
ROAN MOUNTAIN 3SW	COOP	39.8
CROSSVILLE EXP STN	COOP	41.7
CHEROKEE TENNESSEE	RAWS	42.2
TAZEWELL	COOP	42.5
JAMESTOWN	COOP	43.5
ONEIDA	COOP	43.6
CROSSVILLE 7 NW	WBAN	43.6
GREENEVILLE EXP STA	COOP	44.1
COALMONT	COOP	44.1

Wettest Stations:

Station Name	Station Type	Total Precipitation (in)
MT LECONTE	COOP	11.82
SELMER	COOP	8.68
WINCHESTER 5SE	COOP	8.41
AMES PLANTATION	COOP	7.86
HOHENWALD	COOP	7.84
LINDEN WATER PLANT	COOP	7.63
HENDERSON 4 W	COOP	7.56
MOUNT PLEASANT 1N	COOP	7.41
LANCASTER EDGAR EVINS MARINA	COOP	7.4
COLUMBIA 3 WNW	COOP	7.2
GATLINBURG 2 SW	COOP	7.2

Driest Stations:

Station Name	Station Type	Total Precipitation (in)
ROCKWOOD 11.3 S	CoCoRaHS	2.03
CHEATHAM LOCK & DAM	COOP	2.09
NASHVILLE 5.2 S	CoCoRaHS	2.49
MURFREESBORO 7.9 NNW	CoCoRaHS	2.67
NASHVILLE 4.1 SSW	CoCoRaHS	2.71
CHATTANOOGA AP	WBAN	2.73

FAIRVIEW 1.9 ENE	CoCoRaHS	2.76
SCOTTS HILL 2.8 NNW	CoCoRaHS	2.81
BON AQUA 3.0 ESE	CoCoRaHS	2.91
CHARLOTTE 1.3 NW	CoCoRaHS	2.94
FRANKLIN 3.6 NW	CoCoRaHS	2.94

**Snowiest Stations:**

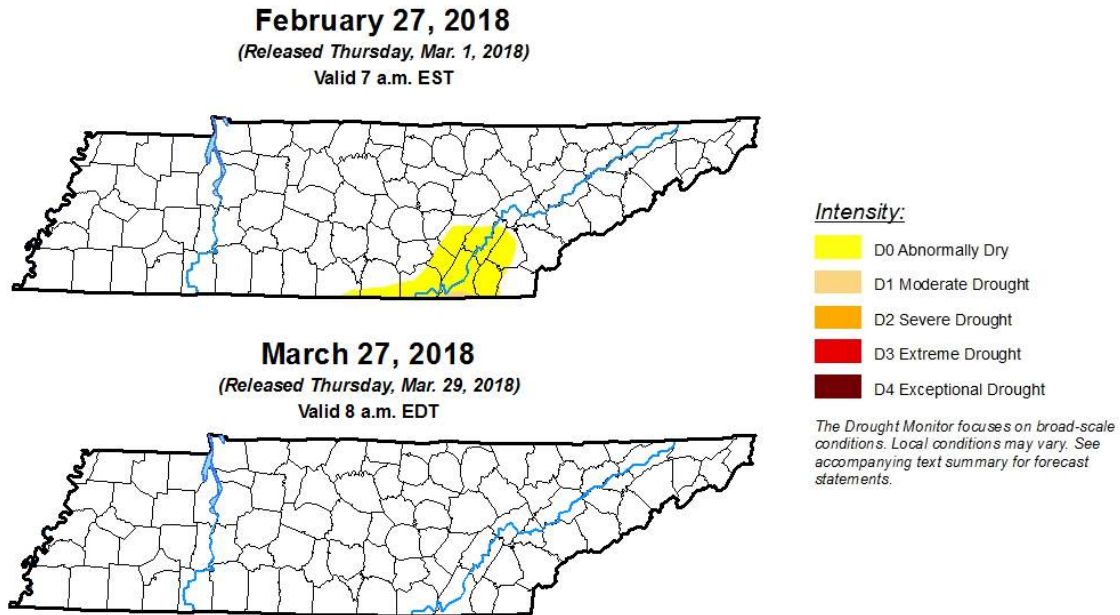
Station Name	Station Type	Total Snowfall (in)
MT LECONTE	COOP	28
ROAN MOUNTAIN 3SW	COOP	11.8
ROAN MOUNTAIN 7.1 W	CoCoRaHS	11.1
NEWFOUND GAP	COOP	8.1
JAMESTOWN 3.1 SE	CoCoRaHS	6.2
CLARKRANGE 6.0 NE	CoCoRaHS	6.1
ALLARDT	COOP	5.7
JAMESTOWN	COOP	5.5
MONTEREY 3.9 W	CoCoRaHS	4.1
JONESBOROUGH 2.5 SSW	CoCoRaHS	4.1

*\*68 stations reported 1" of snow or more during the month, 61 stations reported between 1/10" and 1", and 50 stations reported a Trace (less than 1/10").*



## Drought Monitor:

The US Drought Monitor weekly report and maps showed a decrease in drought across the state from the beginning to the end of March. Due to heavy rainfall in the first week of the month, the drought in the southeast part of the state was reduced, and then eliminated by March 13<sup>th</sup>.



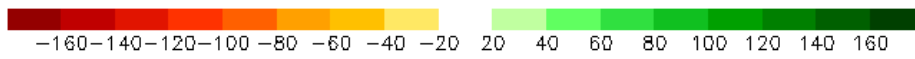
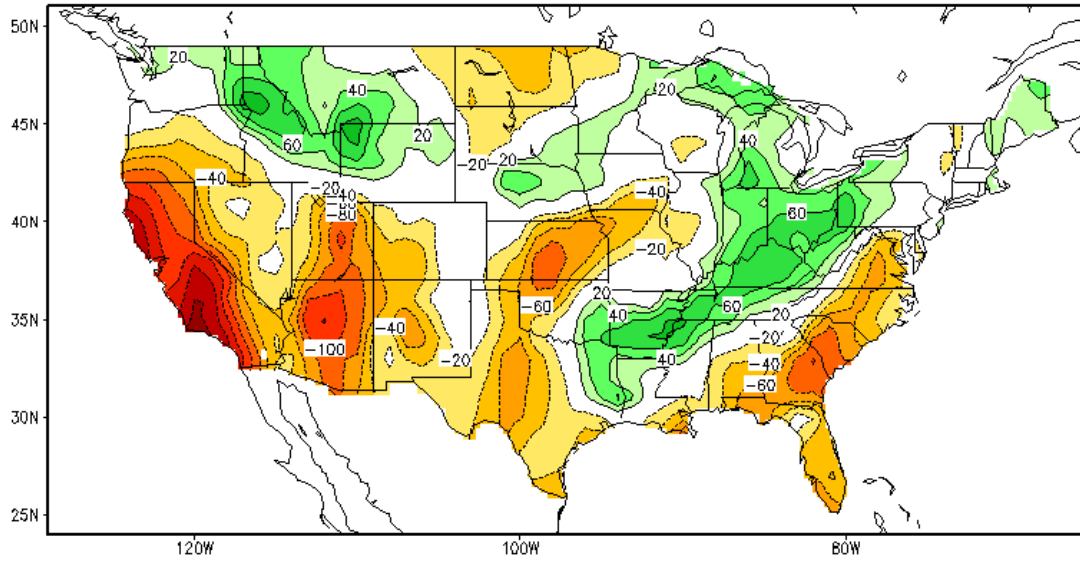
Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2018-02-27	93.54	6.46	0.18	0.00	0.00	0.00
2018-03-27	100.00	0.00	0.00	0.00	0.00	0.00
Change	6.46	-6.46	-0.18	0.00	0.00	0.00

## Soil Moisture:

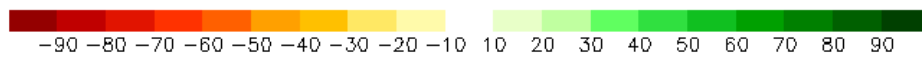
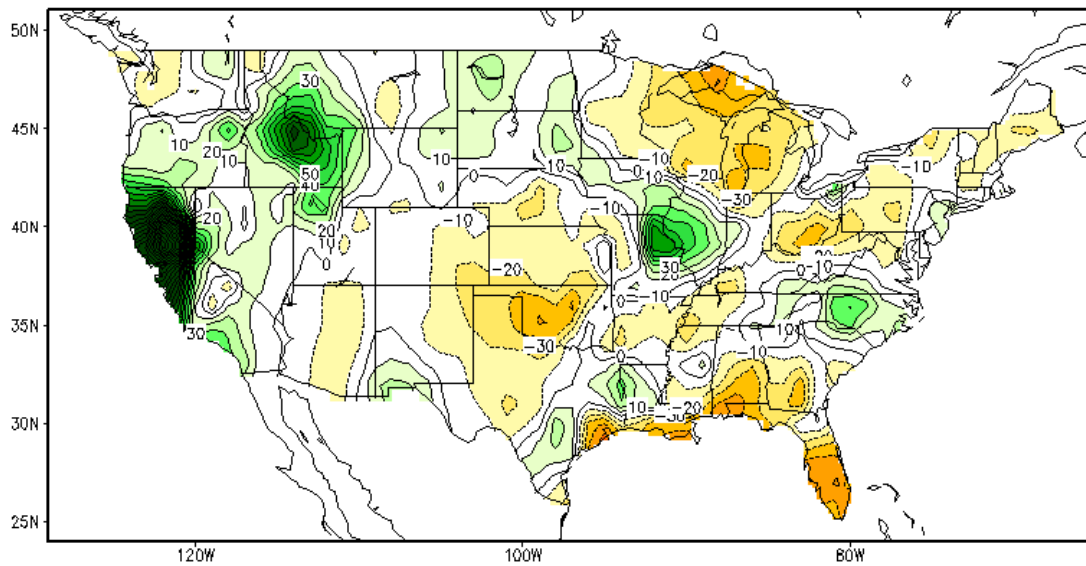
Almost all areas of the state observed above normal soil moisture for the month of March, with only the extreme eastern area of the state within 20mm of normal. Southwest TN, near Memphis recorded the highest anomaly, nearly 80mm (3in) above normal.

There was gradual change in soil moisture anomalies from the end of February to the end of March, with slight drying over the western half of the state, and a slight increase in soil moisture anomalies in the eastern third of the state.

Calculated Soil Moisture Anomaly (mm)  
MAR, 2018



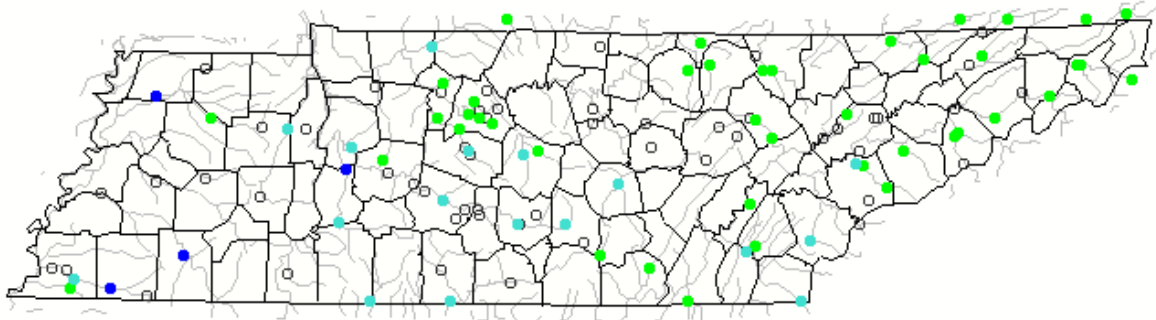
Calculated Soil Moisture Anomaly Change  
MAR 29, 2018 from FEB.28



### Streamflow:

Streamflow across the state was at or above normal for the month of March, with the “much above normal” (greater than 90<sup>th</sup> percentile) stream gauges located in west Tennessee.

March 2018



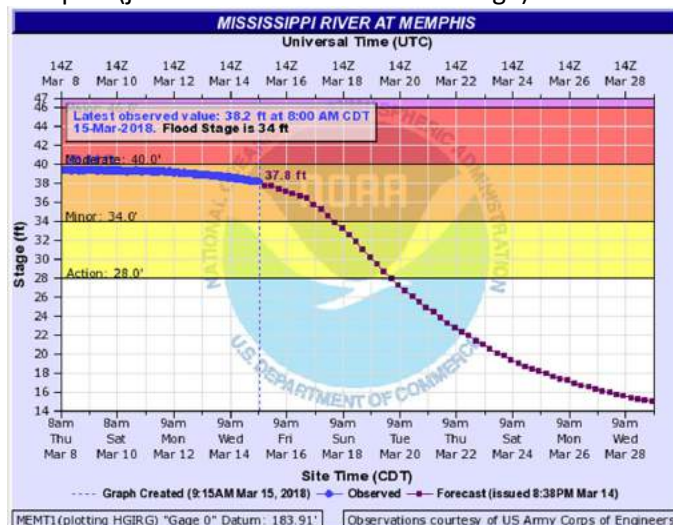
Search USGS streamgage

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

- List of all stations
- Single station
- Nearest stations
- Peak flow

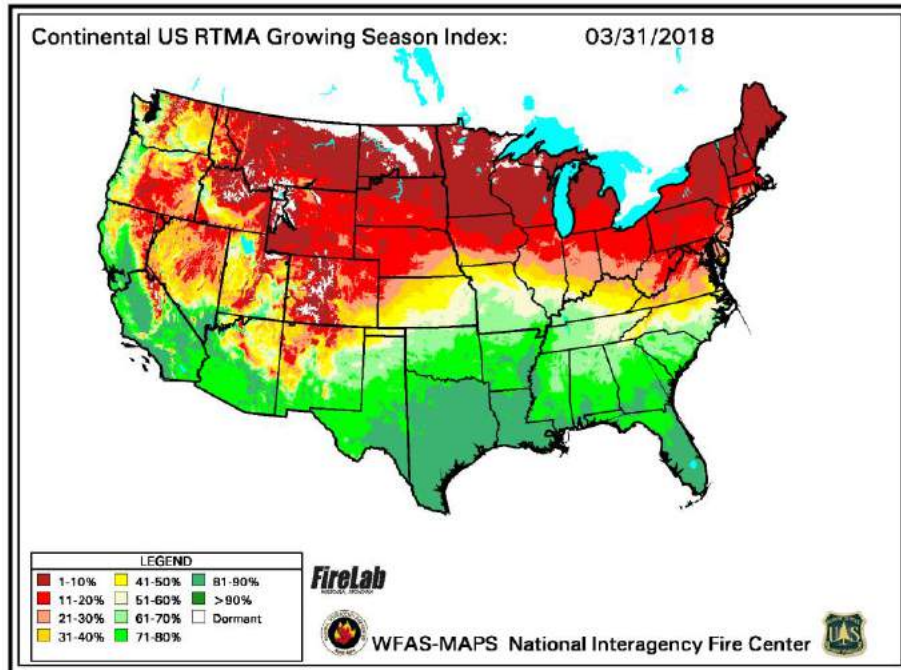
Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

February’s above normal precipitation for much of the state, combined with heavy rains that continued for the start of March and the annual spring snowmelt from the northern Mississippi drainage basin, resulted in flooding on the Mississippi River in West Tennessee. River flooding reached a peak close to 40 feet at the gauge in Memphis (just below Moderate Flood Stage) around the 7<sup>th</sup>-8<sup>th</sup> of March.



Miscellaneous:

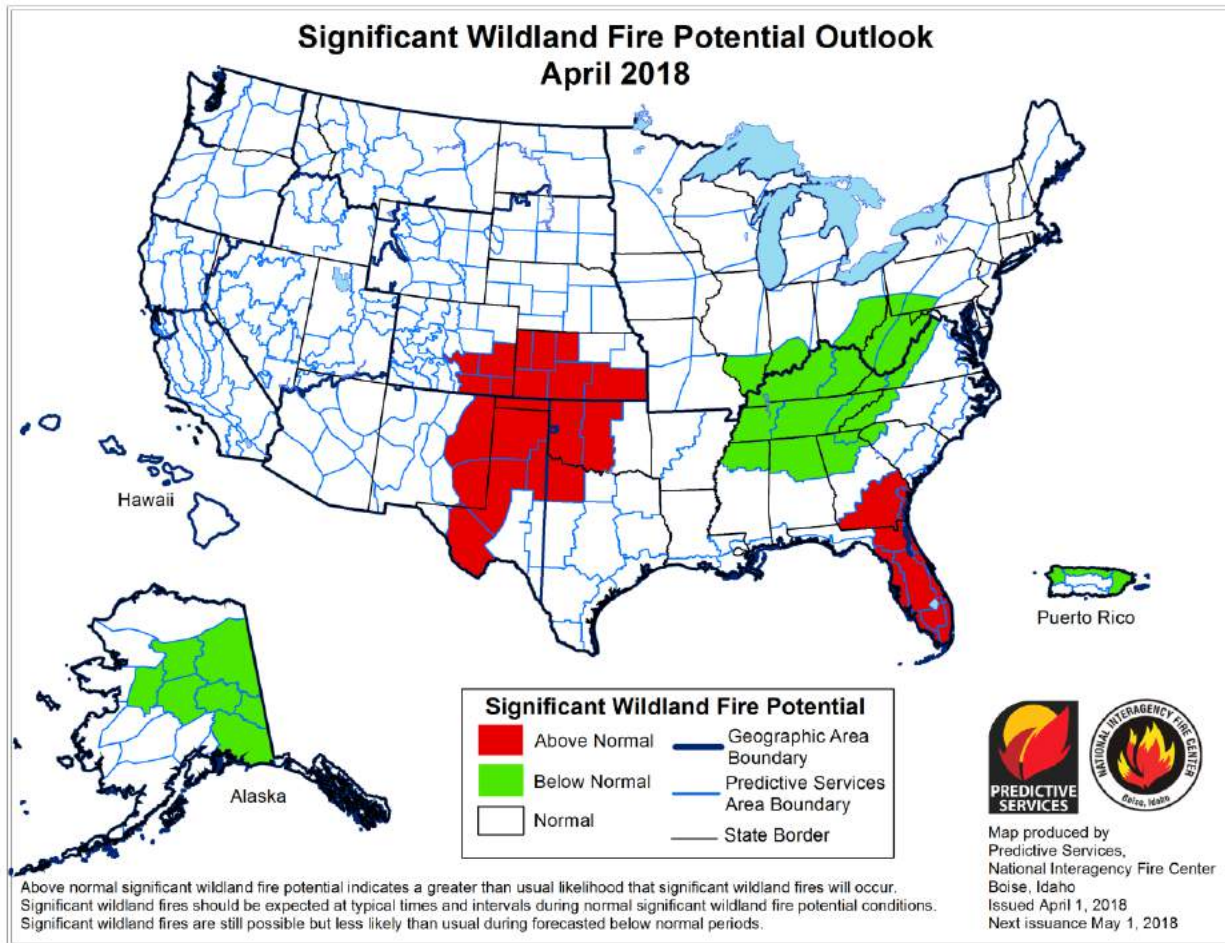
**Spring Green-Up:** As of the end of March almost all areas of the state (except for high elevation locations, >2,500ft) have entered into the Spring green-up period. The map below shows the Growing Season Index on March 31<sup>st</sup>, values at or greater than 50% indicate that green-up has begun.



**Crop Conditions from USDA:** Frequent rainfall this month, and past week has prevented many farmers from planting corn, putting them behind normal schedule. However, the rain has been very good for the state's wheat crop, with over half of the crop in good or excellent conditions. Pastures were also greening up, with mostly fair to good conditions. 15% of the apple crop is in full bloom as of the end of March, which is well head of last year's timing. Fruit crop blooms were reported to be thinned out due to cold snaps in Loudon County, and cold was also responsible for holding back pasture growth in Sullivan County. Potentially impactful freeze events were reported in Western TN March 8-9<sup>th</sup> and 13-14<sup>th</sup>.

**Fire Danger:** The threat of significant wildfires continues to be below normal for Tennessee, and is forecast to stay so throughout April.

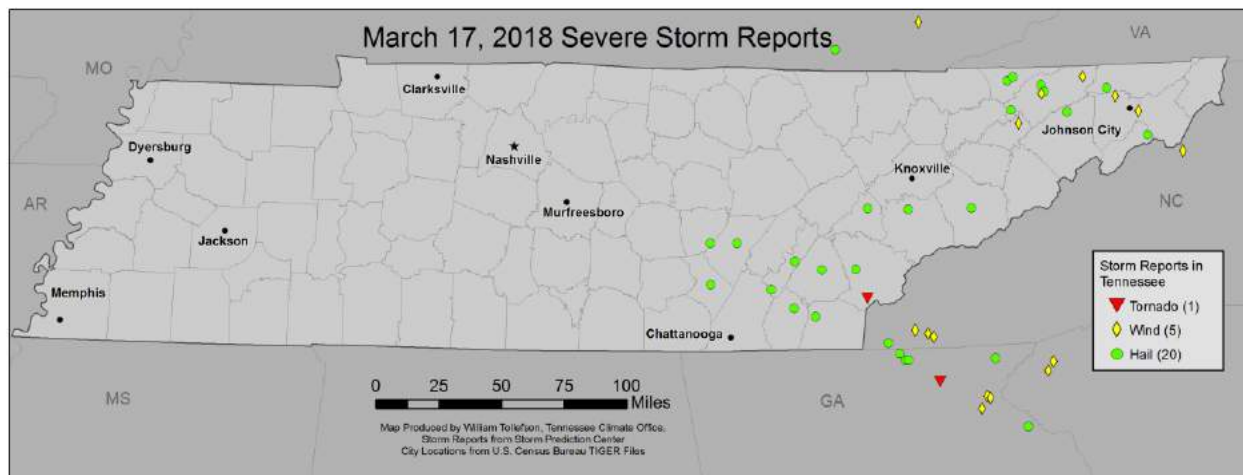




### Severe Storm Reports:

Severe storms associated with frontal passages were reported in the state on three dates: March 17<sup>th</sup>, March 19<sup>th</sup>, and March 24<sup>th</sup>. From the three dates there were reports of 1 tornado, 7 damaging wind events, and 24 severe hail events across the state.

March 17<sup>th</sup>:

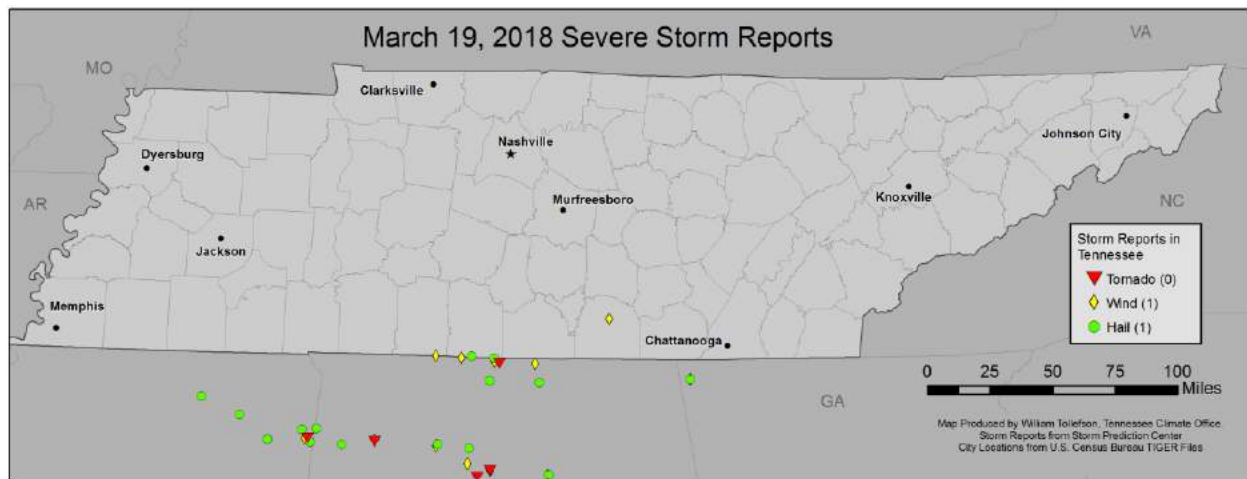


Type	Time (UTC)	Intensity	Location	County	Lat	Lon	Comments (NWS Office)
<b>Tornado</b>	23:49	EF0 / 85 mph	1 N COKER CREEK	MONROE	35.28	-84.28	SMALL BARN DESTROYED AND ROOF DAMAGE TO A FEW STRUCTURES. SHIFTED DOUBLE - WIDE MOBLE HOME AND DOWNED SEVERAL TREES
<b>Wind</b>	23:57	60 mph	2 N ROGERSVILLE	HAWKINS	36.44	-83.01	ALSO REPORTED 0.50 INCH SIZED HAIL. (MRX)
<b>Wind</b>	1:15	60 mph	3 ESE JOHNSON CITY	WASHINGTON	36.32	-82.32	REPORTED AT KING SPRINGS ROAD TN AND DAVE BUCK ROAD. ALSO REPORTED 0.50 INCH HAIL. (MRX)
<b>Wind</b>	1:35	UNK	CHURCH HILL	HAWKINS	36.53	-82.71	SEVERAL TREES AND POWER LINES DOWN BETWEEN CHURCH HILL AND SURGOINSVILLE... TN. (MRX)
<b>Wind</b>	2:00	UNK	1 NE RUSSELLVILLE	HAMBLEN	36.27	-83.18	A FEW TREES DOWN BETWEEN RUSSELLVILLE AND WHITESBURG... TN. (MRX)
<b>Wind</b>	2:10	UNK	GRAY	WASHINGTON	36.41	-82.48	TREES DOWN NEAR GRAY... TN. (MRX)
<b>Hail</b>	22:07	1"	10 SSE SPENCER	VAN BUREN	35.61	-85.39	FALL CREEK FALLS GOLF COURSE COVERED WITH QUARTERS AND NICKELS. (OHX)
<b>Hail</b>	22:25	1.25"	PIKEVILLE	BLEDSON	35.61	-85.2	QUARTER TO HALF DOLLAR SIZE HAIL JUST SOUTH OF PIKEVILLE... TN. (MRX)
<b>Hail</b>	22:55	1.25"	DUNLAP	SEQUATCHIE	35.37	-85.39	QUARTER TO HALF DOLLAR SIZE HAIL NORTHWEST OF DUNLAP... TN. (MRX)
<b>Hail</b>	23:05	1.75"	2 S DECATUR	MEIGS	35.5	-84.79	REPORTED BY PUBLIC. HAIL OCCURRED FOR 10 MINUTES. (MRX)
<b>Hail</b>	23:15	1"	LENOIR CITY	LOUDON	35.8	-84.27	QUARTER SIZE HAIL NEAR LENIOR CITY. (MRX)
<b>Hail</b>	23:30	1"	ATHENS	MCMINN	35.45	-84.6	(MRX)
<b>Hail</b>	23:30	1.25"	2 ENE EVANSTON	HANCOCK	36.52	-83.25	REPORTED AT 170 MILL DAM ROAD. ALSO REPORTED 50 MPH WINDS. (MRX)
<b>Hail</b>	23:35	1"	2 SE BIRCHWOOD	MEIGS	35.34	-84.96	REPORTED AT 787 RILEY LANE BIRCHWOOD TN. (MRX)
<b>Hail</b>	23:35	1.5"	3 N MOUNT VERNON	MONROE	35.45	-84.36	(MRX)
<b>Hail</b>	23:45	1"	SNEEDVILLE	HANCOCK	36.54	-83.21	(MRX)
<b>Hail</b>	23:48	1.75"	2 N TASSO	BRADLEY	35.23	-84.8	(MRX)
<b>Hail</b>	0:00	1"	ALCOA	BLOUNT	35.79	-83.98	QUARTER INCH SIZE HAIL NEAR ALCOA... TN. (MRX)
<b>Hail</b>	0:00	1"	6 SSE KYLES FORD	HAWKINS	36.49	-83.01	(MRX)
<b>Hail</b>	0:20	1.75"	BENTON	POLK	35.18	-84.65	SEVERAL REPORTS OF GOLFBALL SIZE HAIL ACROSS POLK COUNTY... TN. (MRX)
<b>Hail</b>	0:24	1"	2 SW COLONIAL HEIGHTS	SULLIVAN	36.46	-82.54	REPORTED AT I-26 WELCOME CENTER. (MRX)
<b>Hail</b>	0:25	1.25"	MOORESBURG	HAWKINS	36.35	-83.23	HALF DOLLAR SIZE HAIL NEAR MOORESBURG... TN. (MRX)
<b>Hail</b>	1:00	1"	3 NNE ROGERSVILLE	HAWKINS	36.45	-82.99	ALSO REPORTED ESTIMATED 50 MPH WINDS. REPORTED AT 119 DEVILS NOSE ROAD TN. (MRX)
<b>Hail</b>	1:03	1"	LIMESTONE COVE	UNICOI	36.18	-82.26	(MRX)
<b>Hail</b>	1:05	1.25"	BAILEYTON	GREENE	36.33	-82.83	HALF DOLLAR SIZE HAIL AND FEW TREES DOWN NEAR BAILEYTON... TN. (MRX)
<b>Hail</b>	1:30	1"	2 E PIGEON FORGE	SEVIER	35.79	-83.53	(MRX)



NWS Storm Survey off of Highway 68 between Tellico Plains and Coker Creek in Monroe County confirms a tornado occurred Saturday evening {March 17} around 7:49 PM EDT. Damage indicators show winds of around 85 mph which would make it a high-end EF-0 tornado.

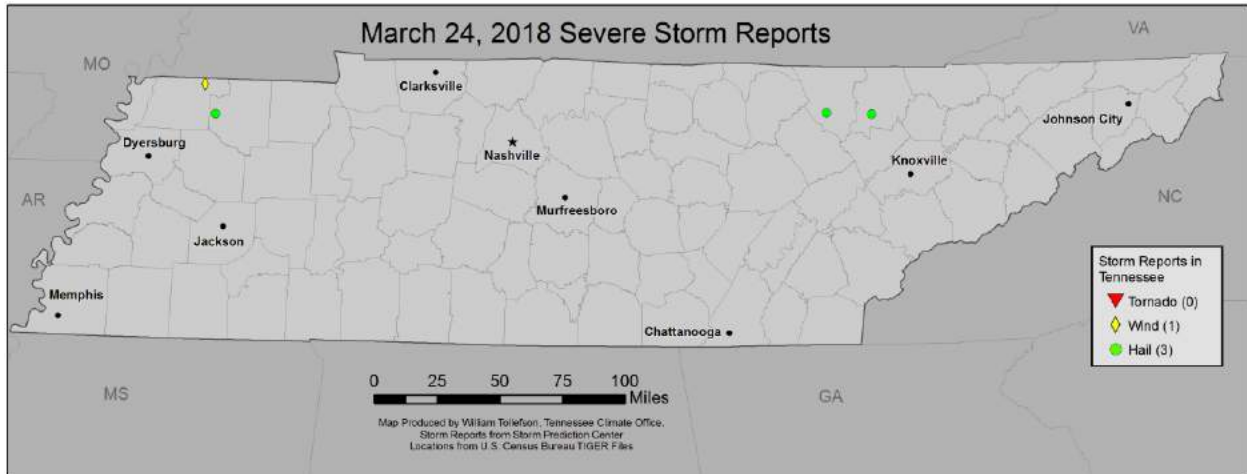
March 19<sup>th</sup>:



Type	Time (UTC)	Intensity	Location	County	Lat	Lon	Comments (NWS Office)
Wind	0:41	UNK	1 NE DECHERD	FRANKLIN	35.22	-86.08	SERIOUS ROOF DAMAGE TO A BUILDING AT THE CORNER OF PERKINS STREET AND SHELBY ROAD IN DECHERD... TN REPORTED. LIGHT POLE ALSO REPORTED BLOWN DOWN NEAR THAT LOCATION AND (HUN)
Hail	23:21	1"	7 ESE MINOR HILL	GILES	35	-87.05	TSPOTTER REPORT AND PHOTO OF QUARTER SIZE HAIL ON BETHEL PROSPECT ROAD IN PROSPECT (OHX)



March 24<sup>th</sup>:



Type	Time (UTC)	Intensity	Location	County	Lat	Lon	Comments (NWS Office)
Wind	23:52	UNK	5 NE UNION CITY	OBION	36.47	-88.99	A FEW TREES DOWN NEAR CLAUDE TUCKER ROAD. ALSO... AN ABOVE-GROUND POOL FLIPPED OVER ONTO A PRIVACY FENCE IN THE SAME AREA. TIME IS RADAR ESTIMATED. (MEG)
Hail	22:14	1"	4 E ELGIN	SCOTT	36.33	-84.54	MEDIA PHOTO FROM NEAR ROBBINS OF ESTIMATED QUARTER SIZE HAIL. TIME ESTIMATED BY RADAR. (MRX)
Hail	22:30	1"	CARYVILLE	CAMPBELL	36.32	-84.22	TIME ESTIMATED BY RADAR. (MRX)
Hail	0:29	1"	4 SW MARTIN	WEAKLEY	36.3	-88.91	QUARTER SIZED HAIL AND WINDS ESTIMATED AROUND 50 MPH. (MEG)

### CPC outlooks for the next month

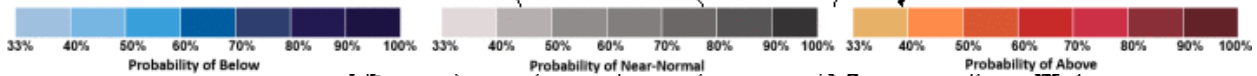
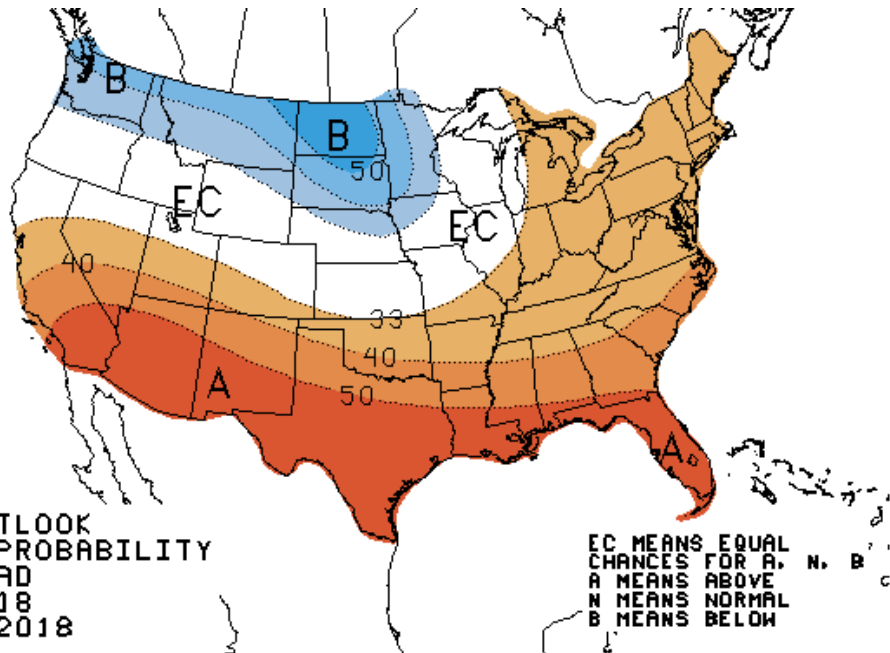
Climate Prediction Center outlooks for the month of April 2018 indicate that all of Tennessee has slightly better chances to see above normal temperatures. In fact, the southern and eastern portions of the Lower-48 are forecast to experience above normal temperatures for April with the southern-tier states having the strongest chance.

The western 2/3 of the state (climate divisions 3 and 4) are forecasted to have slightly better chances of above normal precipitation for the month, while the eastern third of the state does not have a clear signal to indicate whether precipitation will be normal, above-, or below-normal.

If temperatures are above normal and the eastern portion of the state sees below normal precipitation, careful attention will need to be focused on southeast Tennessee to watch for re-emergence of drought conditions in the southern Tennessee Valley.



ONE-MONTH OUTLOOK  
 TEMPERATURE PROBABILITY  
 0.5 MONTH LEAD  
 VALID APR 2018  
 MADE 15 MAR 2018



ONE-MONTH OUTLOOK  
 PRECIPITATION PROBABILITY  
 0.5 MONTH LEAD  
 VALID APR 2018  
 MADE 15 MAR 2018

