

April 2019 Tennessee State Climate Summary

Tennessee Climate Office * East Tennessee State University

Prepared by William Tollefson and Dr. Andrew Joyner

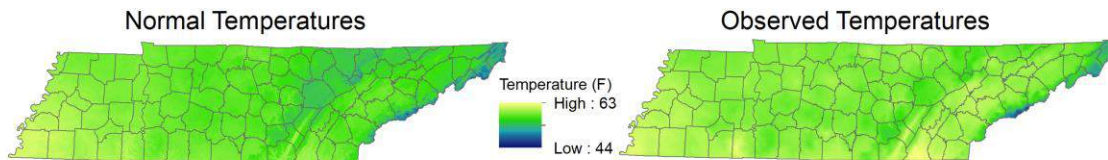
With contributions by Climate Data Representatives at University of Tennessee-Martin, Vanderbilt University, and University of Tennessee-Institute of Agriculture

Monthly Temperature Summary:

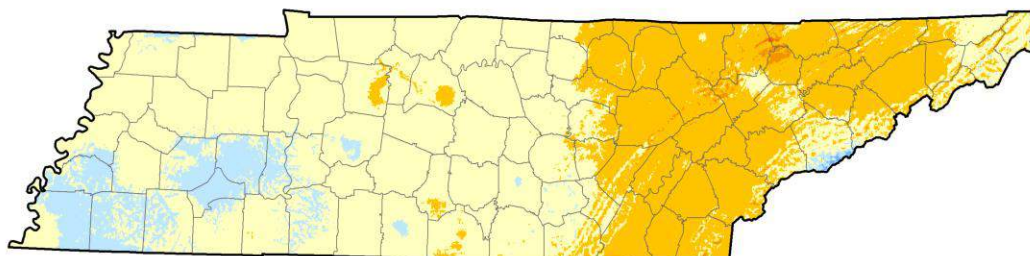
Mean temperatures for April were generally at to above normal for most of the state, with East Tennessee observing the largest temperature anomalies, in the range of 2-6°F above normal. Parts of southern West Tennessee and the higher elevations of Sevier County observed temperatures approximately 2°F below normal for the month. Within the month, temperatures started out below normal during the first week, then the pattern shifted and above normal temperatures were observed from the middle to the end of the month. There were relatively few freeze events across the state, with only higher elevation weather stations in the Appalachians recording more than 6 days with temperatures at or below freezing. Both the Memphis and Chattanooga airports reported no days with a minimum temperature below freezing, and the Clarksville, Nashville, Oak Ridge, and Knoxville airports only reported 1 day with freezing temperatures (all on April 1st). Two of the warmest periods of the month occurred from the 10th – 12th and then on the 30th; Shiloh National Military Park reached 90°F on the 10th and several other stations reached the upper 80's on that date and at the end of the month.



April 2019 Mean Temperature



Departure From Normal Temperatures



Stations with the highest mean temperature

| Station Name | Station Type | Mean Temperature (F) |
|--------------------------|--------------|----------------------|
| CHATTANOOGA AP | WBAN | 63.7 |
| SHILOH NMP TENNESSEE | RAWS | 62.8 |
| MEMPHIS INTERNATIONAL AP | WBAN | 62.7 |
| LENOIR CITY TENNESSEE | RAWS | 62.6 |
| OAK RIDGE ASOS | WBAN | 62.4 |

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

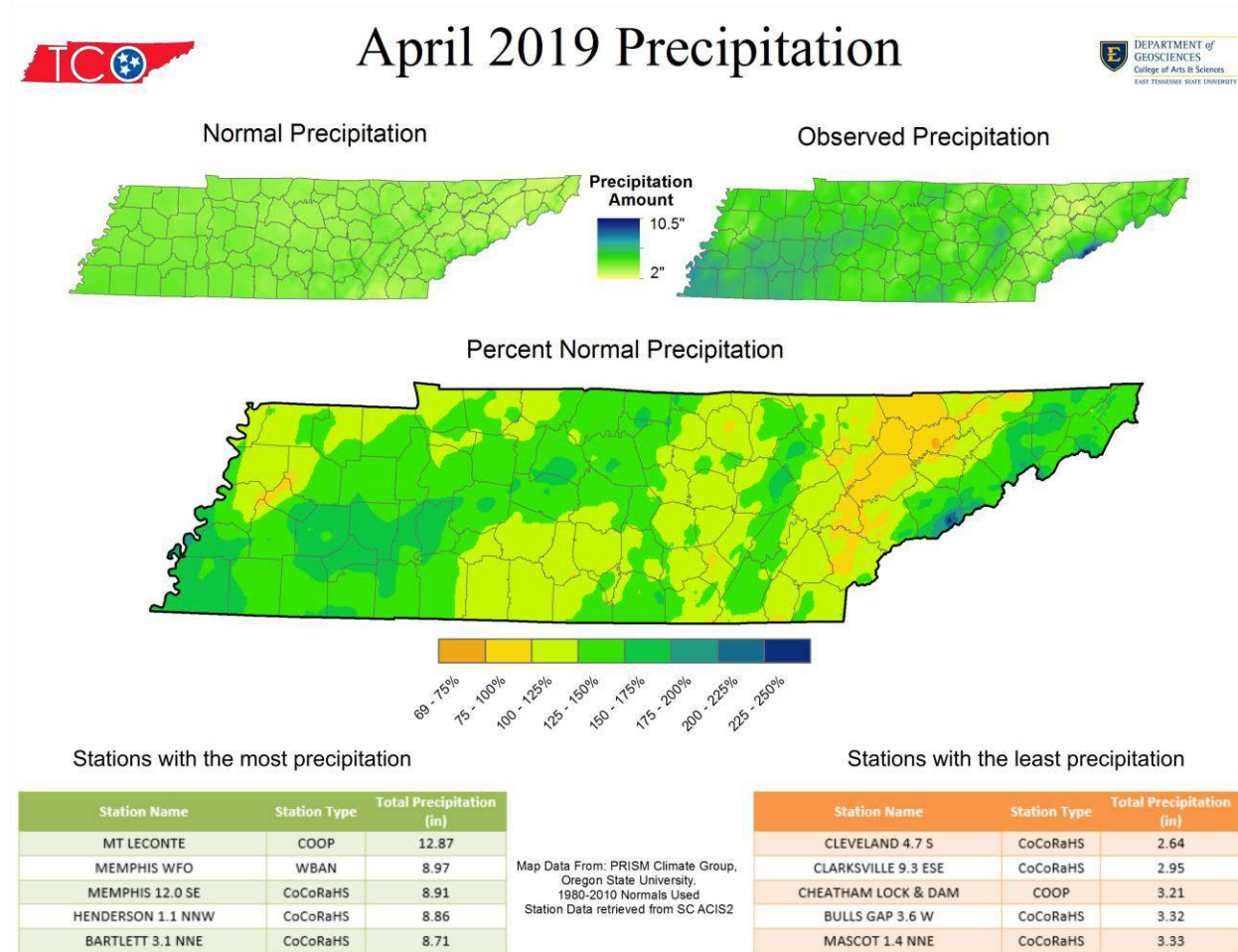
| Station Name | Station Type | Mean Temperature (F) |
|--------------------|--------------|----------------------|
| MT LECONTE | COOP | 42 |
| NEWFOUND GAP | COOP | 49.1 |
| ROAN MOUNTAIN 3SW | COOP | 52.2 |
| TAZEWELL | COOP | 54.3 |
| CROSSVILLE EXP STN | COOP | 55.2 |

Monthly Precipitation Summary:

Rainfall was generally above normal for most of the state, with the exception of parts of the northern Cumberland Plateau and Tennessee Valley in East Tennessee, and western Crockett County in West Tennessee where below normal precipitation was recorded. The wettest spot in the state this month was found in the Smoky Mountains, where Mount LeConte recorded 12.87 inches of rainfall!

April began with a relatively dry period, but then a series of storm systems impacted the state on a weekly basis bringing periodic heavy rains to parts of the state. Daily rainfall totals of three inches or more were reported by at least one station on the 8th, 9th, 14th, and 20th. Additionally, there were a large number of days with measurable rainfall – 396 of the 439 reporting precipitation stations recorded 7 or more days with measurable rainfall, 329 recorded 10 or more days, and 46 recorded 14 or more days. Heavy rainfall in the mountains on the 19th-20th resulted in flash flooding from streams and rivers in the area.

The mountains of East Tennessee recorded snowfall on the 20th and 21st with accumulation occurring for locations generally at or above 5,000 feet in elevation. Mount LeConte in the Great Smoky Mountains reported three inches of snow on the 21st and a monthly snowfall total of 4.5 inches.



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

Hottest Stations (highest maximum temperature)

| Station Name | Station Type | Highest Temperature (F) |
|------------------------------|--------------|-------------------------|
| SHILOH NMP TENNESSEE | RAWS | 90 |
| SEVIERVILLE | COOP | 89 |
| CAMDEN TOWER TENNESSEE | RAWS | 88 |
| MILAN EXP STN | COOP | 88 |
| SAVANNAH 6 SW | COOP | 88 |
| GERMANTOWN 4SE | COOP | 88 |
| MOUSETAIL LANDING STATE PARK | COOP | 88 |
| MEMPHIS WFO | WBAN | 87 |
| OAK RIDGE ASOS | WBAN | 87 |
| NASHVILLE INTL AP | WBAN | 87 |
| BROWNSVILLE | COOP | 87 |
| JACKSON EXP STA | COOP | 87 |
| SELMER | COOP | 87 |

Coldest Stations (lowest minimum temperature)

| Station Name | Station Type | Lowest Temperature (F) |
|------------------------------|--------------|------------------------|
| MT LECONTE | COOP | 10 |
| NEWFOUND GAP | COOP | 17 |
| NORRIS | COOP | 19 |
| UT MARTIN BRANCH EXP STATION | COOP | 20 |
| ROAN MOUNTAIN 3SW | COOP | 20 |
| TAZEWELL | COOP | 22 |
| TENNESSEE RIDGE | COOP | 22 |
| PICKETT STATE PARK | COOP | 22 |
| ALAMO 1 N | COOP | 23 |
| CROSSVILLE MEMORIAL AP | WBAN | 24 |
| CROSSVILLE 7 NW | WBAN | 24 |
| CHEROKEE TENNESSEE | RAWS | 24 |
| INDIAN GRAVE TENNESSEE | RAWS | 24 |
| CROSSVILLE EXP STN | COOP | 24 |
| ELIZABETHTON | COOP | 24 |

Warmest Stations (highest mean temperatures)

| Station Name | Station Type | Mean Temperature (F) |
|---------------------------|--------------|----------------------|
| CHATTANOOGA AP | WBAN | 63.7 |
| SHILOH NMP TENNESSEE | RAWS | 62.8 |
| MEMPHIS INTERNATIONAL AP | WBAN | 62.7 |
| LENOIR CITY TENNESSEE | RAWS | 62.6 |
| OAK RIDGE ASOS | WBAN | 62.4 |
| CAMDEN TOWER TENNESSEE | RAWS | 62.2 |
| NASHVILLE INTL AP | WBAN | 62.1 |
| MC MINNVILLE | COOP | 62 |
| LEWISBURG TOWER TENNESSEE | RAWS | 61.9 |
| SAVANNAH 6 SW | COOP | 61.9 |

Coollest Stations (lowest mean temperatures)

| Station Name | Station Type | Mean Temperature (F) |
|--------------------------|--------------|----------------------|
| MT LECONTE | COOP | 42 |
| NEWFOUND GAP | COOP | 49.1 |
| ROAN MOUNTAIN 3SW | COOP | 52.2 |
| TAZEWELL | COOP | 54.3 |
| CROSSVILLE EXP STN | COOP | 55.2 |
| COALMONT | COOP | 55.2 |
| PULASKI WASTEWATER PLANT | COOP | 55.9 |
| CHEROKEE TENNESSEE | RAWS | 56 |
| JAMESTOWN | COOP | 56 |
| CROSSVILLE 7 NW | WBAN | 56.1 |
| ERWIN 1 W | COOP | 56.1 |

Wettest Stations (highest precipitation totals):

| Station Name | Station Type | Total Precipitation (in) |
|-------------------|--------------|--------------------------|
| MT LECONTE | COOP | 12.87 |
| MEMPHIS WFO | WBAN | 8.97 |
| MEMPHIS 12.0 SE | CoCoRaHS | 8.91 |
| HENDERSON 1.1 NNW | CoCoRaHS | 8.86 |
| BARTLETT 3.1 NNE | CoCoRaHS | 8.71 |
| HENDERSON 4 W | COOP | 8.59 |
| ATOKA 3.2 ESE | CoCoRaHS | 8.49 |
| NEWFOUND GAP | COOP | 8.48 |
| MEDON 3.5 SSW | CoCoRaHS | 8.32 |
| SEWANEE | COOP | 8.24 |

Driest Stations (lowest precipitation totals):

| Station Name | Station Type | Total Precipitation (in) |
|-----------------------|--------------|--------------------------|
| CLEVELAND 4.7 S | CoCoRaHS | 2.64 |
| CLARKSVILLE 9.3 ESE | CoCoRaHS | 2.95 |
| CHEATHAM LOCK & DAM | COOP | 3.21 |
| BULLS GAP 3.6 W | CoCoRaHS | 3.32 |
| MASCOT 1.4 NNE | CoCoRaHS | 3.33 |
| MAYNARDVILLE 0.6 E | CoCoRaHS | 3.41 |
| KNOXVILLE 5.7 NNW | CoCoRaHS | 3.5 |
| LIVINGSTON RADIO WLIV | COOP | 3.53 |
| MOUNT PLEASANT 1N | COOP | 3.54 |
| TAZEWELL | COOP | 3.58 |

Snowy Stations (stations with snow accumulation):

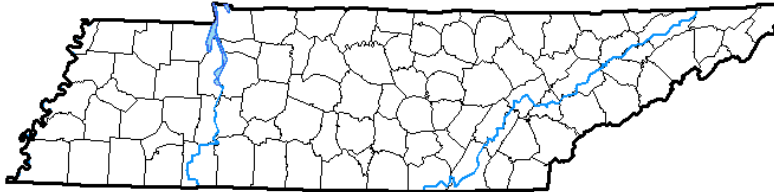
| Station Name | Station Type | Total Snowfall (in) |
|--------------|--------------|---------------------|
| MT LECONTE | COOP | 4.5 |
| NEWFOUND GAP | COOP | T |

Drought Monitor:

Tennessee remained free from drought conditions throughout the month of April.

U.S. Drought Monitor Tennessee

April 30, 2019
(Released Thursday, May 2, 2019)
Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Brad Rippey
U.S. Department of Agriculture

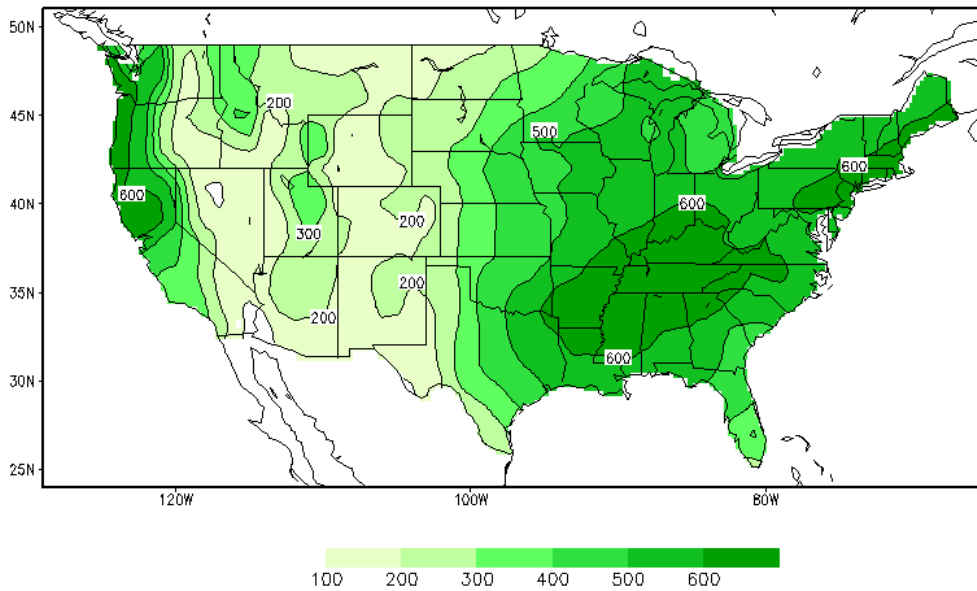


<http://droughtmonitor.unl.edu/>

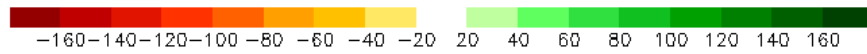
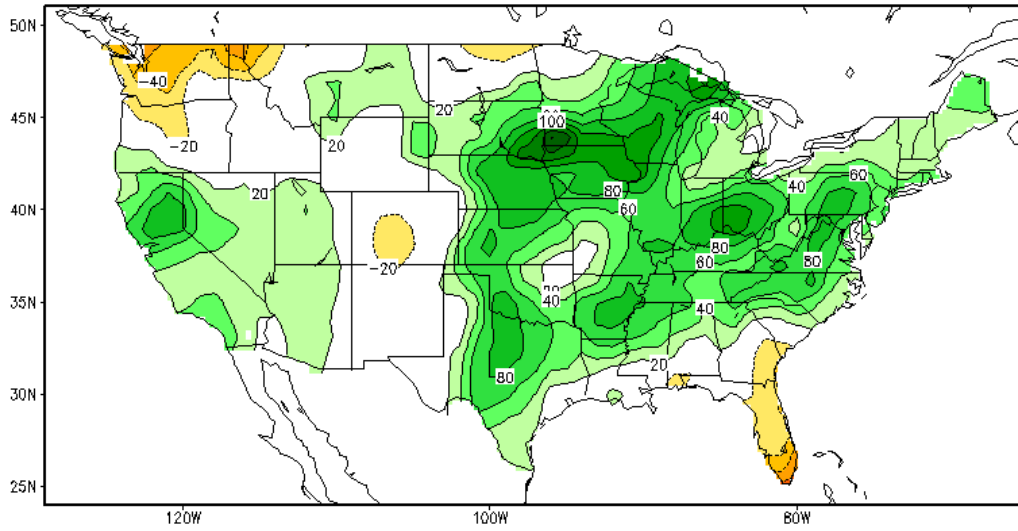
Soil Moisture:

Average soil moisture remained above 600mm during the month of April, which was above normal for the whole state, and is a result of wetter than normal conditions across much of the state so far this year. Soil moisture amounts did decrease from the beginning to the end of the month across most of the state. However, this was not due to a lack of precipitation, but rather to the extremely high values coming into the month from the record-setting wet February (and winter season overall).

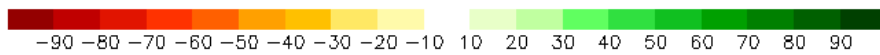
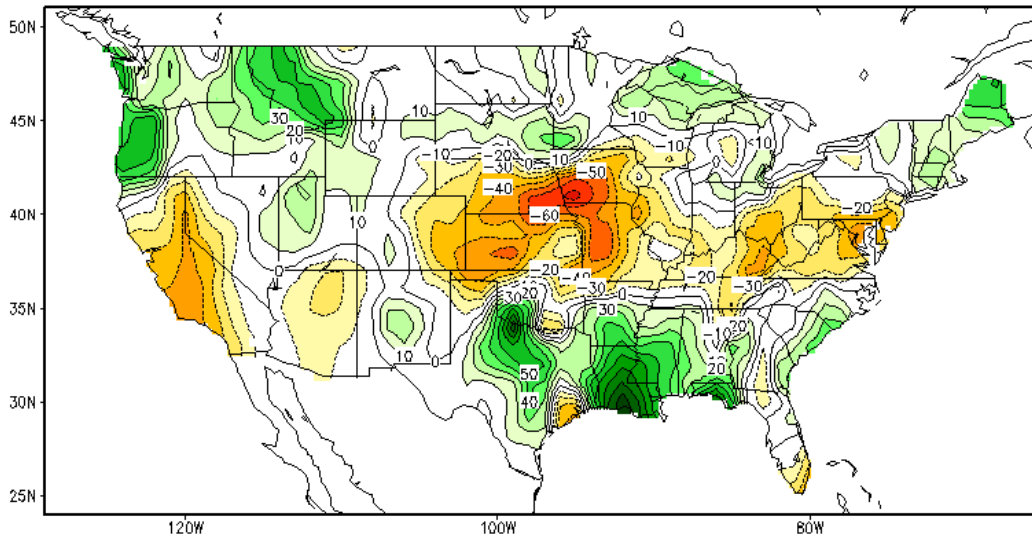
Calculated Soil Moisture (mm)
APR, 2019



Calculated Soil Moisture Anomaly (mm)
APR, 2019



Calculated Soil Moisture Anomaly Change
APR 30, 2019 from MAR.31



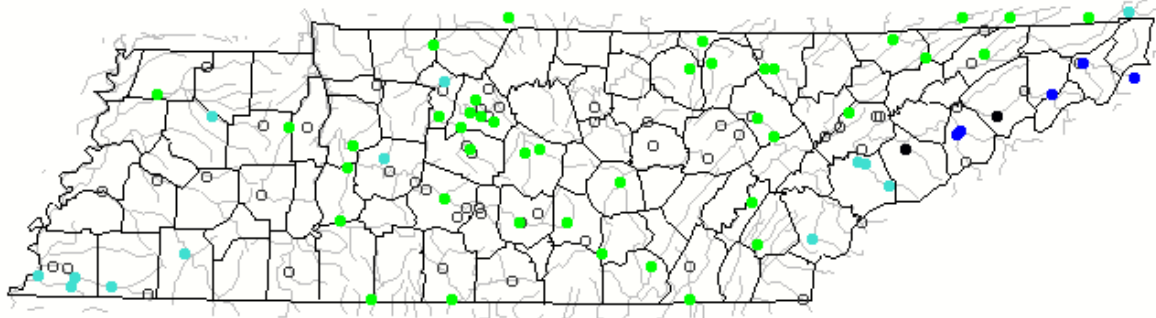
Streamflow:

Due to heavy rains periodically occurring during the month and high soil moisture, streamflow was at or above normal for all reporting streams during the month of April. Flash flooding occurred on some rivers in East Tennessee due to heavy rainfall from the 19th to the 20th, and the Mississippi River was rising at the end of the month as flood waters from farther north in the basin drained southwards.

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

Tennessee ▼ or Water-Resources Regions ▼

April 2019



Search USGS streamgage 🔍

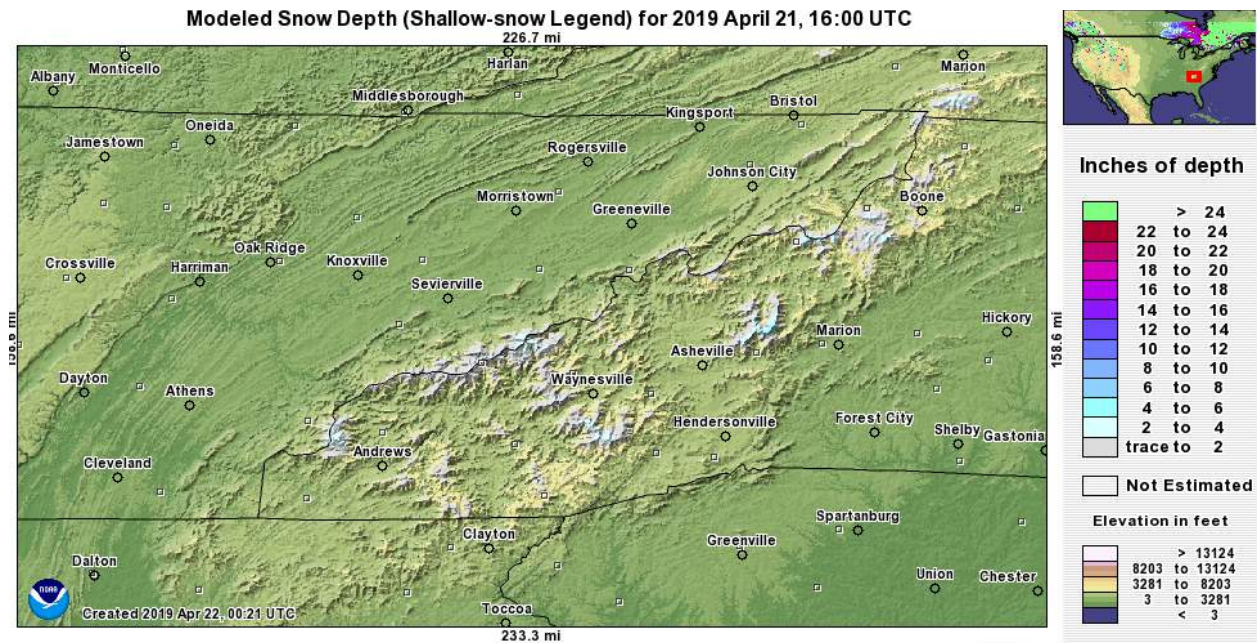
Choose a data retrieval option and select a location on the map

- List of all stations
 Single station
 Nearest stations
 Peak flow

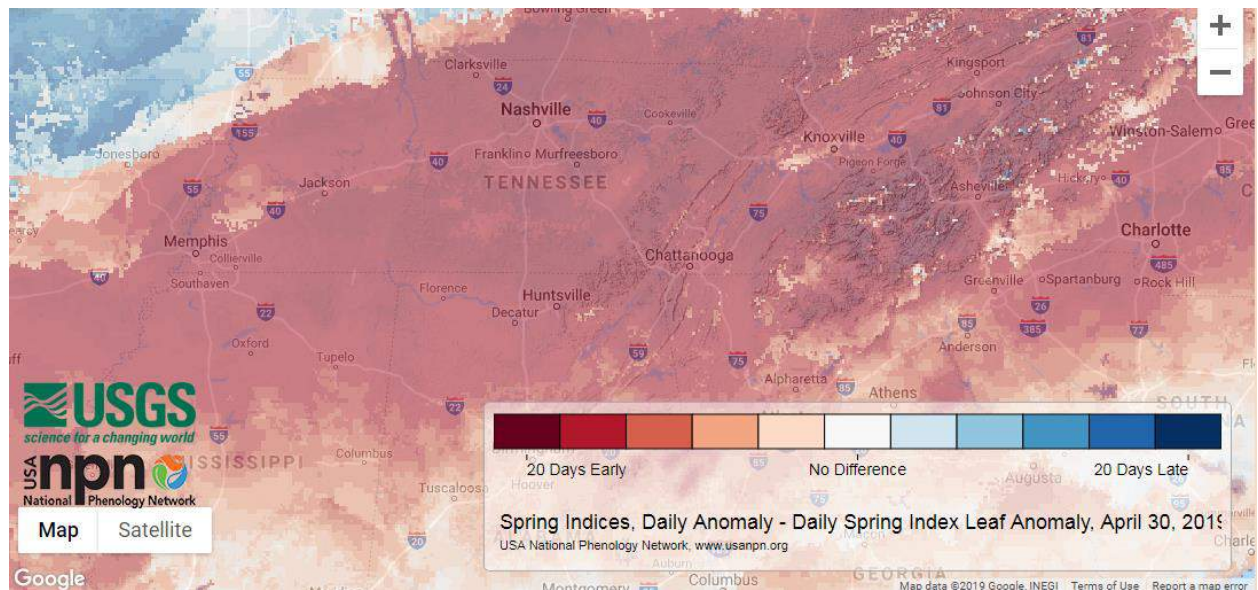
| Explanation - Percentile classes | | | | | | | |
|----------------------------------|--------------------------|-----------------------|-----------------|-----------------------|--------------------------|------|------------|
| | | | | | | | |
| Low | <10 Much below normal | 10-24 Below normal | 25-75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

Miscellaneous:

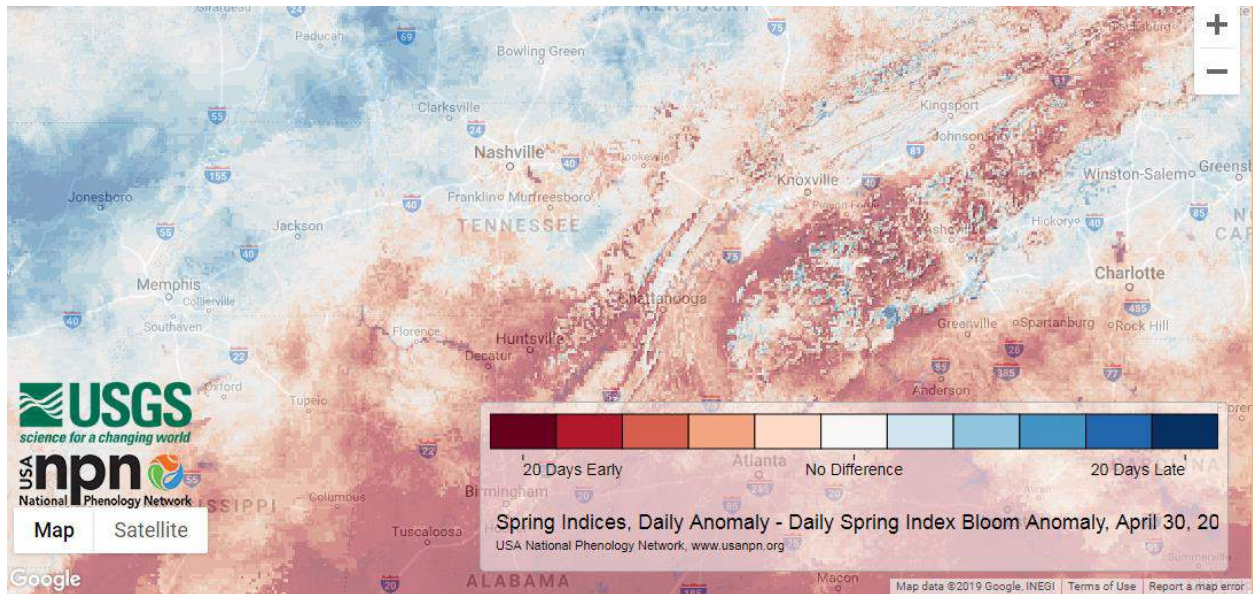
Snowfall: A late season snowfall was reported on the 20th and 21st in the mountains of East Tennessee, resulting in accumulation in areas generally at or above 5,000ft in elevation.



Spring Green-Up: As of the end of April, most areas in Tennessee were well into the growing season, with the exception of the highest elevation mountains in East Tennessee. The first leaf index data from the National Phenology Network indicated that spring arrived 1-2 weeks early across Tennessee. However, the first bloom index represented a mixed bag with blooms in West Tennessee occurring 2-4 days later than normal while being 2-6 days early in East Tennessee. This indicates excess warmth in the late winter – early spring season leading to leaf-out conditions and then some cooler conditions slowing down blooms.



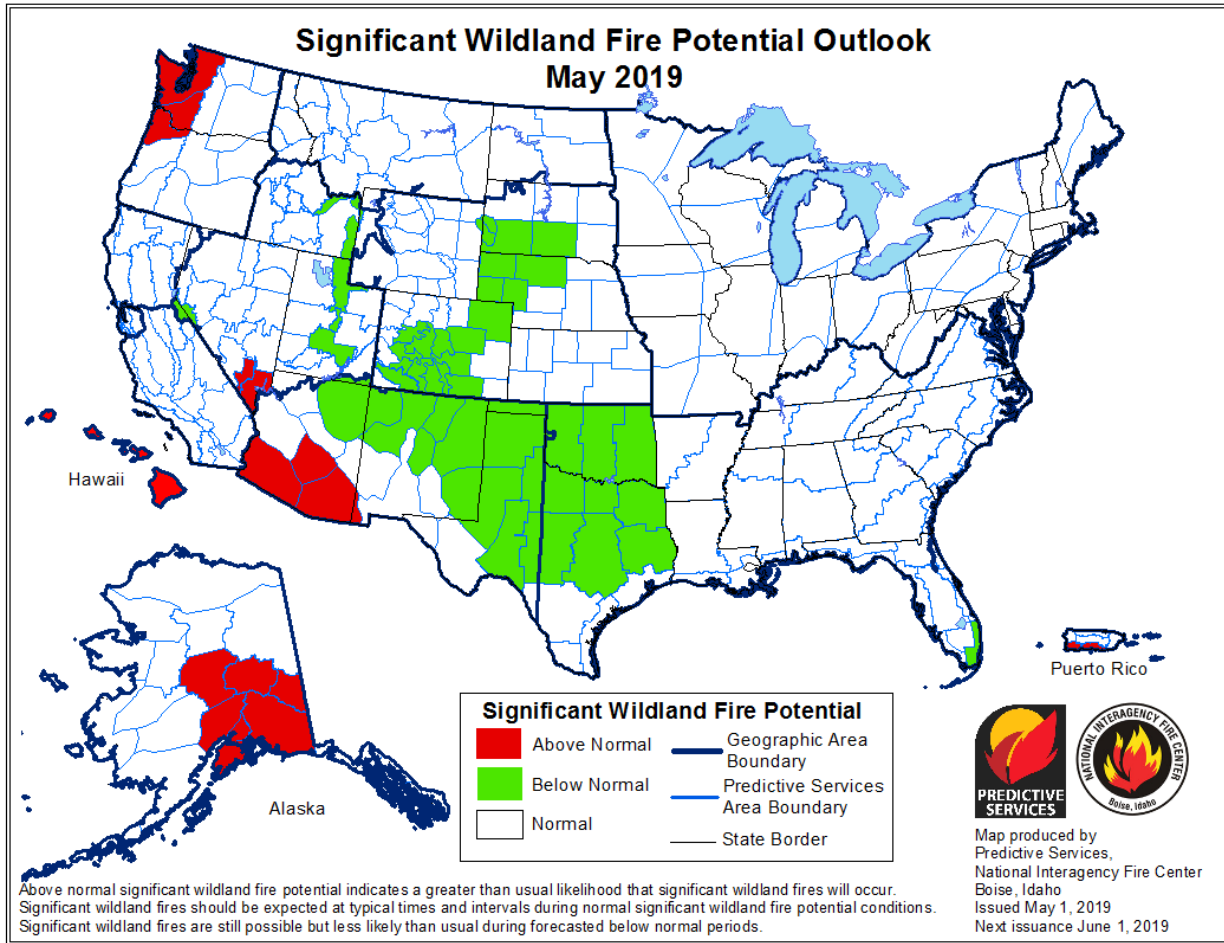
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Crop Conditions from USDA: April brought a return to large-scale agricultural work across the state, however the frequent and heavy rains proved to be a hindrance for many farmers trying to plant or prepare their fields for the season. Some drying towards the end of the month allowed planting to approach 5-year averages, but the amount of corn, cotton, and soybeans planted were still below normal.

| CROP PROGRESS | | | | | CONDITION | | | | | |
|-------------------------|----------------|-----------|------|-------------|--------------|----------------|------|------|------|-----------|
| Crop | This Week | Last Week | 2018 | 5 Year Avg. | Item | Very Poor | Poor | Fair | Good | Excellent |
| | Percent | | | | | Percent | | | | |
| Corn – Planted | 41 | 24 | 35 | 50 | Pasture | 1 | 9 | 31 | 49 | 10 |
| Corn – Emerged | 19 | 9 | 7 | 19 | Winter Wheat | 1 | 6 | 33 | 47 | 13 |
| Cotton – Planted | 2 | 1 | 1 | 4 | Strawberries | 0 | 2 | 22 | 59 | 17 |
| Soybeans – Planted | 3 | 1 | 2 | 4 | Apples | 0 | 1 | 16 | 71 | 12 |
| Winter Wheat - Jointing | 94 | 87 | 91 | 88 | | | | | | |
| Winter Wheat – Headed | 42 | 21 | 26 | 40 | | | | | | |
| Apples – Full Bloom | 84 | 78 | 81 | 86 | | | | | | |

Fire Danger: The fire potential outlook from the National Interagency Fire Center for May was normal across Tennessee.



Storm of the Month:

The storm system that moved across the state from the 18th to the 21st producing heavy rains, flash flooding, and mountain snowfall was the storm of the month for April. The surface low that moved across the state brought storms and heavy rainfall, and an upper-level low settled into the Ohio River Valley on the 20th that reinforced the cold air, light rain, and mountain snows for East Tennessee.

Flash flooding occurred on several rivers that have headwaters in North Carolina where even larger precipitation totals occurred on the 18th and 19th, the French Broad and Pigeon Rivers in Cocke County both entered into flood stage, and the Nolichucky River and some of its tributary streams in Unicoi County flooded homes and roads. In the Great Smoky Mountains National Park hikers had to be shuttled out of the park due to flooding of trails and campgrounds.



Rapid rises continue along the French Broad River with the latest forecast up to 17.5 feet at Newport. #mrwxw



Hydrograph and Flood forecast for French Broad River near Newport TN



Flooding in Sevier County; Photo Via WJHL



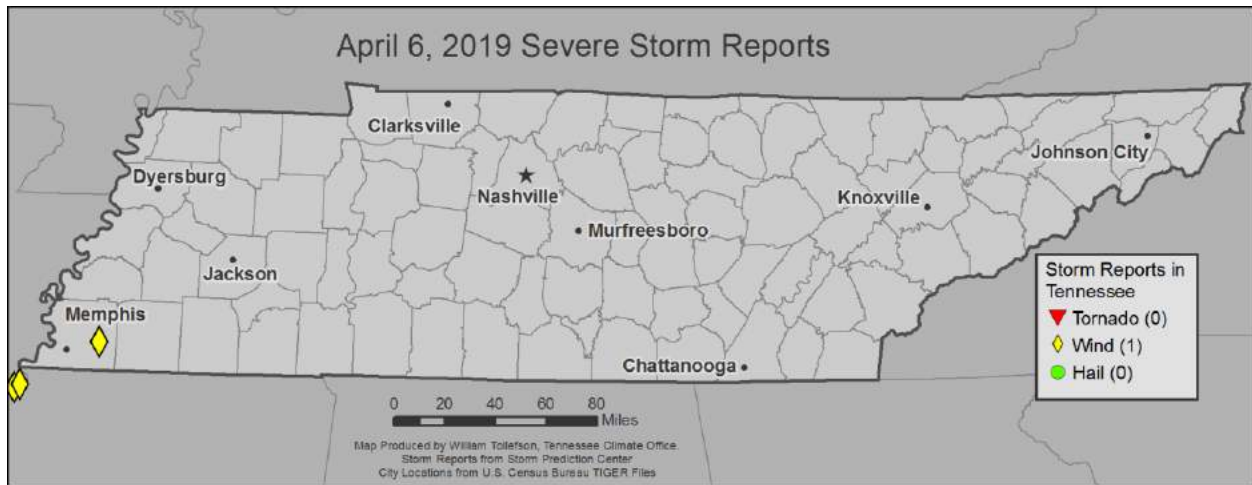
Flooding in Unicoi County; photo via Dr. Steven Wallace (ETSU)



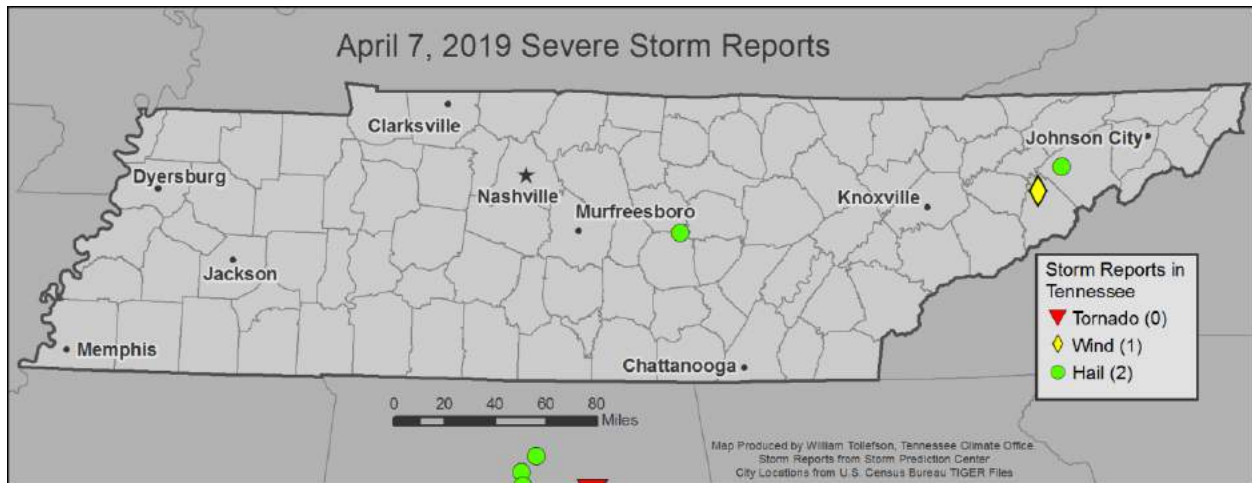
Webcam from Mt LeConte in the Great Smoky Mountains National Park

Storm Reports:

There were six days with severe weather reported in April, with a total of 19 reports of severe wind damage and 4 reports of severe hail (1" or larger).



| Time (UTC) | Speed (mph) | Location | County | Lat | Lon | Comments |
|------------|-------------|--------------|--------|-------|--------|---|
| 2:35 | -- | 1 NE CORDOVA | SHELBY | 35.16 | -89.76 | SPOTTER REPORTED POWERLINES DOWN FROM STORM LAST NIGHT (4/06/2019). (MEG) |



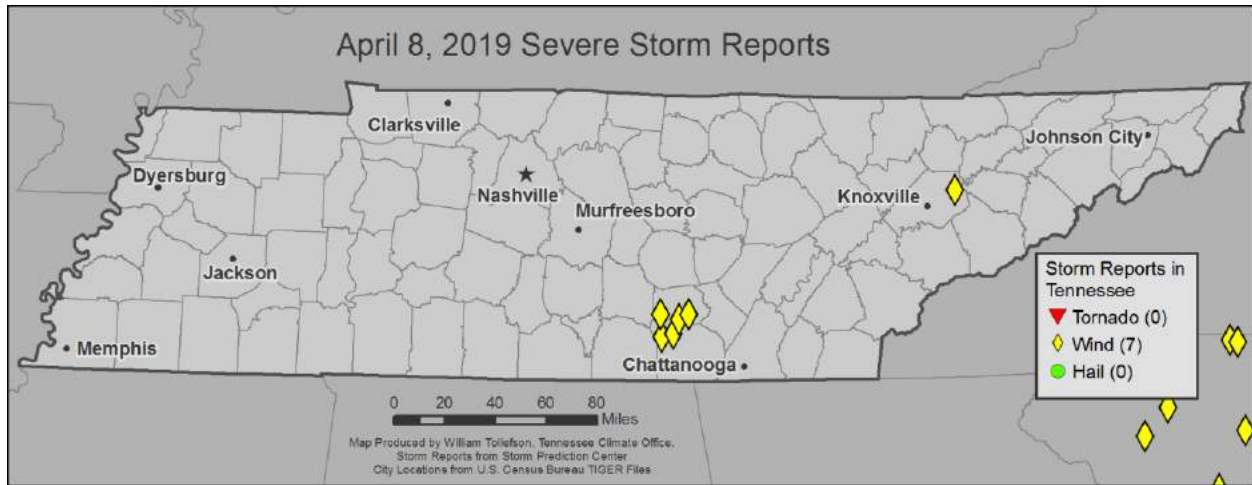
Hail Reports:

| Time (UTC) | Size (in) | Location | County | Lat | Lon | Comments |
|------------|-----------|------------------|---------|-------|-------|---|
| 22:18 | 1.25" | 10 SE SMITHVILLE | DE KALB | 35.84 | -85.7 | REPORTED THROUGH MEDIA OUTLET IN BELK... TN. THANKS TO DAVIS NOLAN. (OHX) |
| 22:45 | 1.50" | MIDWAY | GREENE | 36.18 | -83 | (MRX) |

Wind Reports:

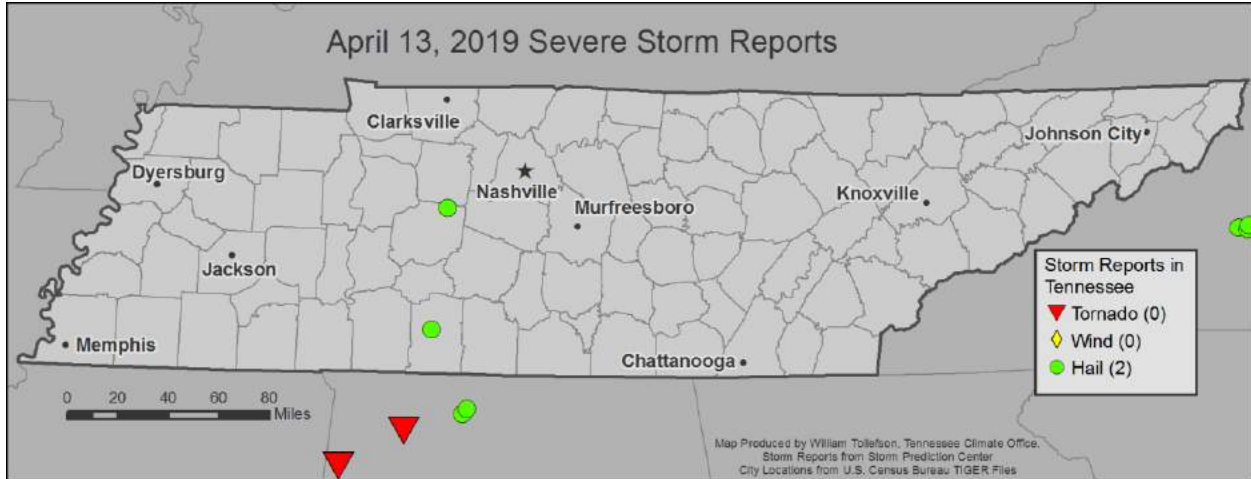
| Time (UTC) | Speed (mph) | Location | County | Lat | Lon | Comments |
|------------|-------------|----------|--------|-------|--------|--|
| 22:30 | -- | BYBEE | COCKE | 36.05 | -83.17 | MULTIPLE TREES DOWN AROUND THE BYBEE AREA. (MRX) |

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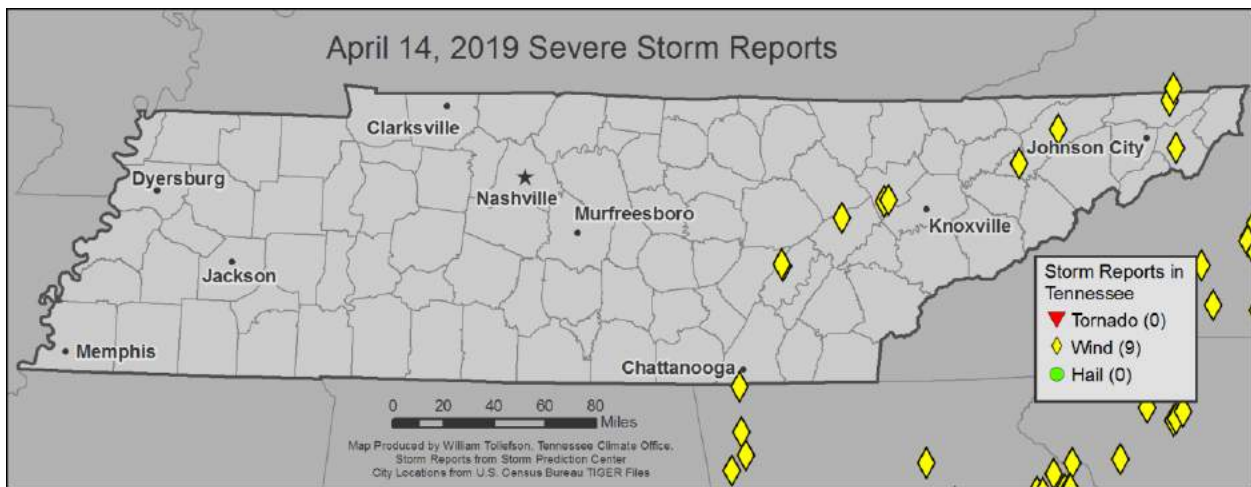


| Time (UTC) | Speed (mph) | Location | County | Lat | Lon | Comments |
|------------|-------------|----------------|--------|-------|--------|--|
| 12:48 | -- | 1 N MONTEAGLE | MARION | 35.24 | -85.83 | A FEW TREES DOWN IN AND AROUND MONTEAGLE. (MRX) |
| 13:00 | -- | TRACY CITY | GRUNDY | 35.26 | -85.75 | TREES WERE BLOWN DOWN ACROSS ROADS AND ONTO POWER LINES ACROSS GRUNDY COUNTY. (OHX) |
| 13:00 | -- | 9 N MONTEAGLE | GRUNDY | 35.37 | -85.84 | TREES AND A PAINT STORE SIGN WERE BLOWN DOWN. (OHX) |
| 13:08 | -- | COALMONT | GRUNDY | 35.34 | -85.71 | POWER LINES AND POLES WERE BLOWN DOWN THAT BLOCKED HIGHWAY 56 BETWEEN COALMONT AND TRACY CITY. NUMEROUS TREES WERE ALSO BLOWN DOWN IN AND AROUND COALMONT THAT BLOCKED L (OHX) |
| 13:10 | -- | GRUETLI-LAAGER | GRUNDY | 35.37 | -85.64 | TREES AND POWER LINES WERE BLOWN DOWN. (OHX) |
| 13:14 | -- | GRUETLI-LAAGER | GRUNDY | 35.37 | -85.64 | A TREE WAS BLOWN DOWN ONTO A HOUSE IN GRUETLI-LAAGER. TREES WERE ALSO BLOWN DOWN THAT BLOCKED DOG TOWN ROAD BETWEEN COALMONT AND GRUETLI-LAAGER. (OHX) |
| 16:00 | -- | MASCOT | KNOX | 36.06 | -83.76 | FEW SHINGLES OFF ROOF AND A LARGE TREE LIMB DOWN. (MRX) |

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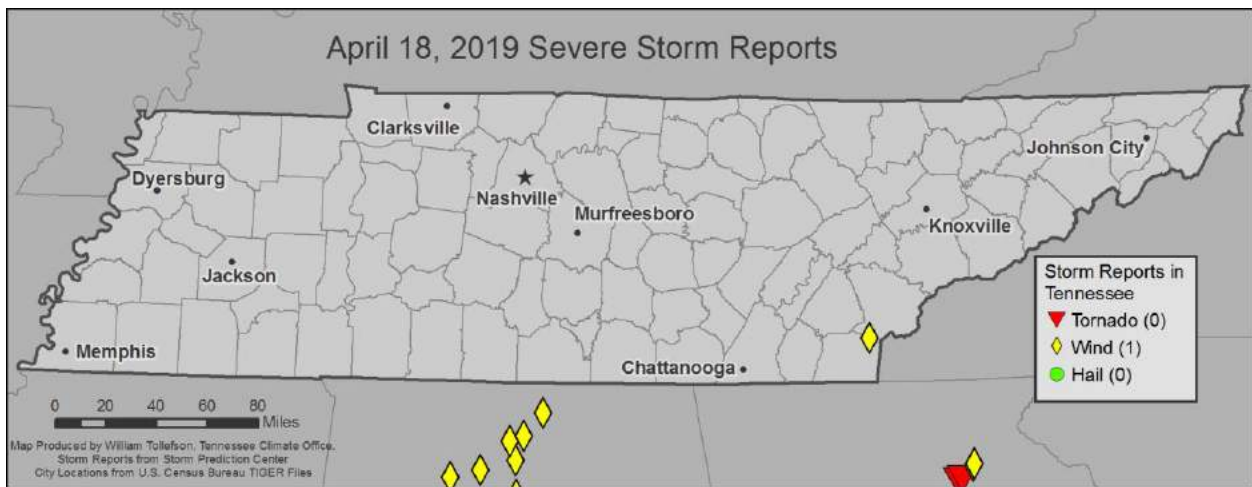
| Time (UTC) | Size (in) | Location | County | Lat | Lon | Comments |
|------------|-----------|------------------|----------|-------|--------|--|
| 1:40 | 1.00" | BON AQUA | HICKMAN | 35.95 | -87.33 | PHOTOS SHOWED HAIL UP TO QUARTER SIZE FELL IN BON AQUA (OHX) |
| 1:45 | 1.00" | 5 W LAWRENCEBURG | LAWRENCE | 35.25 | -87.43 | (OHX) |



| Time (UTC) | Speed (mph) | Location | County | Lat | Lon | Comments |
|------------|-------------|--------------------|----------|-------|--------|---|
| 13:10 | -- | 6 WSW SPRING CITY | RHEA | 35.67 | -84.98 | CORRECTS PREVIOUS TSTM WND DMG REPORT FROM 6 WSW SPRING CITY. A FEW TREES DOWN. (MRX) |
| 13:36 | -- | HARRIMAN | ROANE | 35.93 | -84.55 | 2 TREES DOWN IN HARRIMAN. (MRX) |
| 14:24 | -- | 6 WSW SPRING CITY | RHEA | 35.67 | -84.98 | A FEW TREES DOWN. (MRX) |
| 20:15 | -- | 5 E OLIVER SPRINGS | ANDERSON | 36.02 | -84.25 | *** 1 INJ *** K AND INJURED BY FALLING TREE AT NESPER ROAD IN OAK RIDGE TN. (MRX) |
| 20:15 | -- | 6 NE OAK RIDGE | ANDERSON | 36.03 | -84.22 | WIDESPREAD POWER LINES DOWN AND FALLEN TREES RIDGE. MULTIPLE TREES HAVE ALSO UILDINGS... HOUSES AND |

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| | | | | | | |
|-------|----|-----------------|----------|-------|--------|---|
| | | | | | | ACROSS OF WAS PARTIALLY BLOWN OFF A WAREHOUSE ROAD. LOCATION OF PPRO (MRX) |
| 22:22 | -- | MORRISTOWN | HAMBLEN | 36.22 | -83.29 | 1 TREE DOWN ALONG W MORRIS BLVD. (MRX) |
| 22:45 | -- | ROGERSVILLE | HAWKINS | 36.41 | -83.01 | SEVERAL TREES DOWN... ROOD DAMAGE AND POWER LINES DOWN IN AND AROUND ROGERSVILLE. (MRX) |
| 23:25 | -- | HAMPTON | CARTER | 36.28 | -82.18 | TREE ON POWERLINE BLOCKING ROADWAY. (TIME Y RADAR). (MRX) |
| 23:30 | -- | 1 SW BRISTOL TN | SULLIVAN | 36.55 | -82.21 | TREE AND POWERLINE DOWN ON GREENFIELD PLACE HILLS. (TIME ESTIMATED BY RADAR). (MRX) |



| Time (UTC) | Speed (mph) | Location | County | Lat | Lon | Comments |
|------------|-------------|-------------------|--------|-------|--------|--|
| 4:35 | -- | 4 SE BULLET CREEK | MONROE | 35.24 | -84.37 | APPROXIMATELY 15-20 TREES... 18-24 INCHES IN DIAMETER... WERE EITHER UPROOTED OR SNAPPED OFF ABOUT 20 FEET OFF THE GROUND IN A LOCATION ON THE TOP OF A RIDGE. (MRX) |

CPC Outlooks for the Next Month:

Climate Prediction Center outlooks for May indicate that much of the eastern third of the US, including Tennessee, will record above normal temperatures for the month. There is a higher confidence (50%) for above normal temperatures in Middle and East Tennessee. Tennessee will also likely observe wetter than normal conditions in May, with higher confidence (40%-50%) in West and Middle Tennessee.

