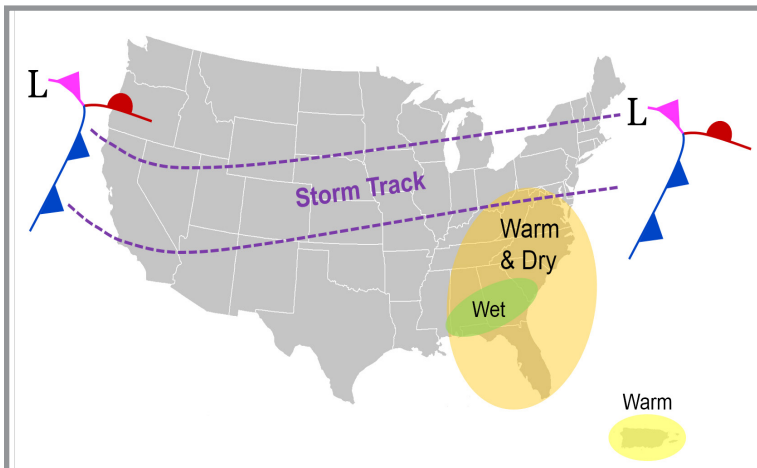


## Regional Weather Pattern and Highlights for Winter 2016–2017



From December 2016 through February 2017 (i.e., meteorological winter), upper-level ridging was unusually prevalent across much of the southern United States, shifting the storm track farther to the north than normal. This shift resulted in a **persistence of unseasonably warm weather** across the Southeast. While much of the region was drier than normal, several low pressure systems produced **extreme wetness** in an area extending from southern Alabama to central South Carolina. Temperatures were generally above average across Puerto Rico and the U.S. Virgin Islands, while precipitation ranged from above-normal in western Puerto Rico to below-normal in parts of eastern Puerto Rico and the U.S. Virgin Islands.

## Highlights for the Southeast

Multiple [stations](#) in every state observed February mean temperatures that were **well above** their 30-year (1981–2010) mean temperature for **March**, including Pensacola, FL (+3.2°F above its March mean temperature), Charlotte, NC (+2.3°F), Norfolk, VA (+2.1°F), and Atlanta, GA (+1.8°F). On February 12th and 24th, **19** long-term (i.e., period of record equaling or exceeding 50 years) [stations](#) in Georgia, the Carolinas, and Virginia observed or tied their highest daily maximum temperature on record for the month.

**Well-above-normal** precipitation occurred in a narrow corridor extending northeastward from coastal Alabama to west-central South Carolina. Albany, GA and Pensacola, FL observed their **second and third wettest** winter on record, with 24.08 and 24.97 inches of precipitation, respectively.

On December 17th, [freezing rain accumulations](#) up to a **quarter of an inch** in northern Virginia caused Washington Dulles Airport and segments of Interstate 95 and the Beltway to **close** for several hours. Despite much lower freezing rain totals (0.01–0.05 inches), over **200 vehicle accidents** were reported in Raleigh, NC. In early January, a winter storm produced a broad swath of 3 to more than 12 inches of snowfall across portions of Georgia, the Carolinas, and Virginia.

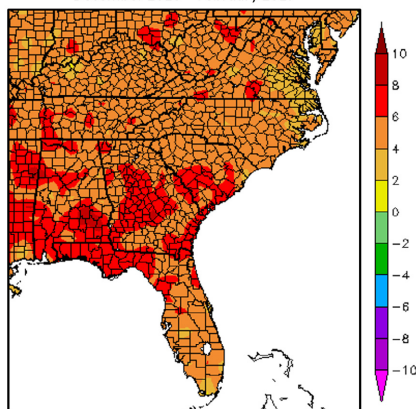
A total of **88** tornadoes (27 EF-0s, 48 EF-1s, 11 EF-2s, 2 EF-3s) were confirmed across the Southeast, which is the **greatest** winter tornado count for the region since modern records began in 1950.

Drought conditions **improved significantly and decreased in coverage** across much of the Southeast. The coverage of extreme-to-exceptional (D3–D4) drought across the region decreased from **36%** on November 29th to **4%** on February 28th. Exceptional drought conditions were completely removed from the region in early January.

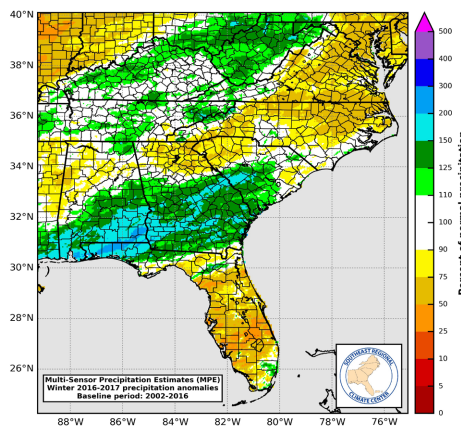
## Regional Climate Overview for Winter 2016–2017

### Temperature and Precipitation Anomalies

Mean Temperature: Departure from Average (°F)  
December 2016 – February 2017

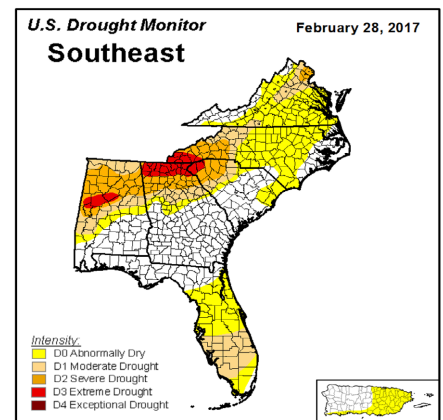


**Well-above-average** temperatures were observed across the Southeast region, particularly during January and February. Winter temperature departures of **4°–8°F** above average were found across much of the region. At least **80** long-term stations, with **seven** or more in every state, observed winter mean temperatures that were ranked within the top 3 warmest values on record. Miami, FL, Fort Myers, FL, and Huntsville, AL observed their **warmest** winter on record. Several long-term stations recorded their highest winter count of daily maximum temperatures at or above 70°F, including Macon, GA (**41** days) and Greenville-Spartanburg, SC (**18** days). From January 11th–29th, Washington, D.C. observed its **second longest** streak of days during winter (19) with a minimum temperature above 32°F.



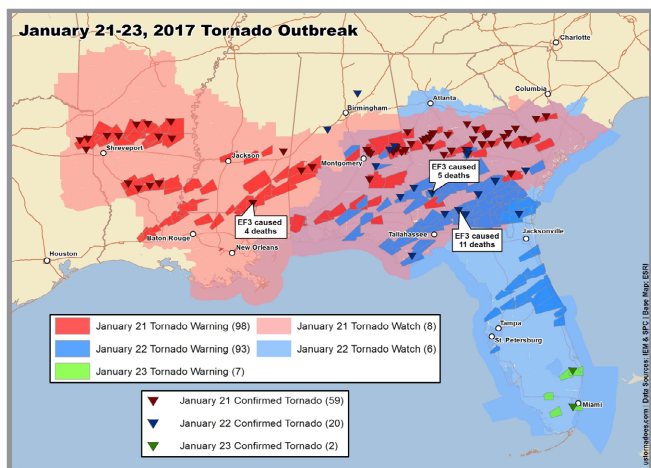
Much of the Southeast region received below-normal precipitation amounts, with departures of **25%–75%** of normal across broad portions of North Carolina, Virginia, and Florida. In contrast, winter precipitation totals were between **125%–250%** of normal across southern Alabama, central and southern Georgia, west-central South Carolina, and the Florida Panhandle. On December 6th, Chitley, FL and Camilla 3 SE, GA observed their **wettest day for any month on record**, with 9.60 and 6.75 inches of precipitation, respectively. [Snowfall](#) was well below normal across [northern Virginia](#), as Washington, D.C. tied its **fifth lowest** winter snowfall on record (1.4 inches). The greatest winter snowfall recorded across the region was 49.0 inches on Mt. Mitchell, NC, with nearly **90%** of this total occurring during January.

### Drought



As of February 28th, the [U.S. Drought Monitor](#) indicated that about **30%** of the Southeast region was classified in moderate-to-extreme (D1–D3) drought conditions, which is nearly **half** the coverage observed in late November. Drought improvement occurred across the region during December and January, with well-above-normal rainfall **ending** the drought across the Florida Panhandle as well as the southern half of Alabama and Georgia. In February, the drought began to **reintensify** across northern Georgia and the western Carolinas due to unseasonably warm temperatures and below-average precipitation. A narrow corridor of moderate-to-severe (D1–D2) **drought developed** east of the Shenandoah Valley in northern Virginia and the Washington, D.C. area, while a broader area of moderate drought **emerged** across parts of central and southern Florida.

## Severe Weather



Confirmed tornadoes during the severe weather outbreak on January 21–23, 2017. (Image credit: [U.S. Tornadoes](#))

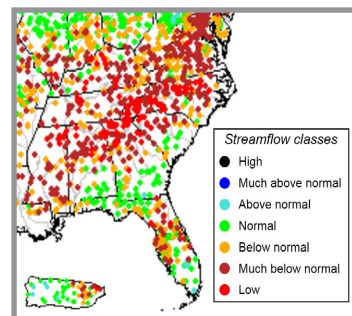
Severe weather was exceptionally active across the Southeast, with more than **six times** the typical number of reports observed during January. Numerous thunderstorm wind gusts ranging from **60 to nearly 90 mph** were observed across the southern portion of the region, resulting in **7 fatalities and 8 injuries**. Over **70%** (63 of 88) of the tornadoes confirmed from December–February occurred during a multi-day severe weather outbreak on January 21st–23rd. Over **half** (41 of 63) of the tornadoes in this outbreak, including four EF-2s and two EF-3s, occurred in Georgia, which set new **state records** for the most tornadoes recorded in a single day (27) and two-day period (41). The two EF-3 tornadoes caused **16 fatalities** in southern Georgia on the 22nd, which is **more than double** the number of January tornado fatalities recorded in the state from 1950 to 2016 (6). On December 12th, a man was **killed** by a lightning strike while standing outside his home near Molino, FL. This is the first December lightning fatality in the United States since **1998**.

## Agriculture and Livestock

While agricultural production was suspended across much of the Southeast, several **impacts** were reported. The planting of **small grains** was abandoned in some drought-stricken areas due to insufficient soil moisture. Despite reaching their period of winter dormancy, pastures **improved** across portions of the region recovering from drought, due to warmer-than-average temperatures and more consistent rainfall. However, livestock producers continued to provide a **supplemental feeding** for their herds since many pastures had only recovered enough to support limited grazing. An **exceptional lack** of accumulated **chill hours** during the winter could significantly diminish fruit and nut yields across the region. **Premature budding and blooming** of several crops (e.g., **blueberries, strawberries, peaches, and pecans**) were observed as far north as Virginia, which increases their vulnerability to damaging late **frosts or freezes**. Rather than focusing on field preparation for spring planting, many farmers in central and southern Georgia had to clean up debris caused by **severe thunderstorms** in January, which **damaged** agricultural equipment, irrigation pivots, grain bins, and pecan orchards.

## Water Resources

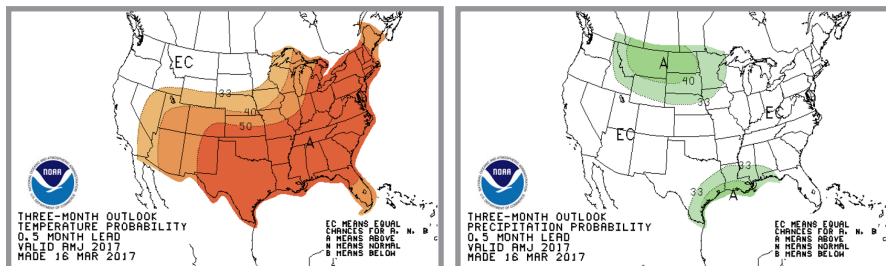
Despite some beneficial rainfall across the interior portion of the region, streamflow, lake levels, and soil moisture remained **slow to recover** from the long-term effects of the drought. Over **50%** of the **USGS gages** in every state, except Alabama and Florida, recorded **much-below-normal** (i.e., less than the 10th percentile) streamflows at the end of February. Several **lakes** in northern Georgia were much lower than their normal winter pool level, including Lake Lanier (**9 feet** below normal). As vegetation began consuming groundwater earlier than normal due to the unusual warmth, **soil moisture** remained at **extremely low** levels (i.e., less than the 5th percentile) across portions of northeastern Alabama, northern Georgia, and the western Carolinas.



Average streamflows during February. (Image credit: [USGS](#))

## Regional Climate Outlook for Spring 2017

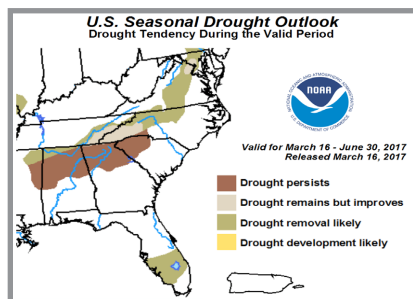
### Temperature and Precipitation



According to the latest **seasonal outlook** from NOAA's Climate Prediction Center (CPC), a much higher probability of **warmer-than-normal** spring temperatures is forecasted for the Southeast. **Equal chances** of below-normal, above-normal, and near-normal spring precipitation are predicted for much of the region, but above-normal precipitation is **slightly favored** in southwestern Alabama and the western part of the Florida Panhandle.

### Drought

The **U.S. Seasonal Drought Outlook** issued by the CPC indicates that current drought conditions across much of northern Alabama, northern Georgia, and Upstate South Carolina are likely to **persist** during the spring. However, drought is expected to **improve** or be totally **removed** in North Carolina, Virginia, southern Florida, and northwestern Alabama. While spring marks the beginning of the wet season in Florida, it is also the end of the groundwater recharge season for the interior Southeast.



### River Flooding

According to NOAA's **Southeast River Forecast Center (SERFC)**, a **below-normal** risk of river flooding is predicted for much of the region this spring. While early spring is the climatological peak for river flooding in the Southeast, streamflows and soil moisture levels are well-below-normal from the ongoing drought. ENSO-neutral conditions will not affect spring precipitation patterns.

### Southeast Region Partners

- [National Oceanic and Atmospheric Administration](#)
- [National Centers for Environmental Information](#)
- [National Weather Service Eastern Region](#)
- [National Weather Service Southern Region](#)
- [National Weather Service River Forecast Centers](#)
- [National Integrated Drought Information System](#)
- [Carolinas Integrated Sciences and Assessments](#)
- [National Sea Grant Office](#)
- [Southeast and Caribbean Regional Collaboration Team](#)
- [State Climatologists](#)
- [U.S. Department of Agriculture](#)
- [Southeast Regional Climate Hub](#)
- [U.S. Department of the Interior](#)
- [Southeast Climate Science Center](#)
- [South Atlantic Landscape Conservation Cooperative](#)