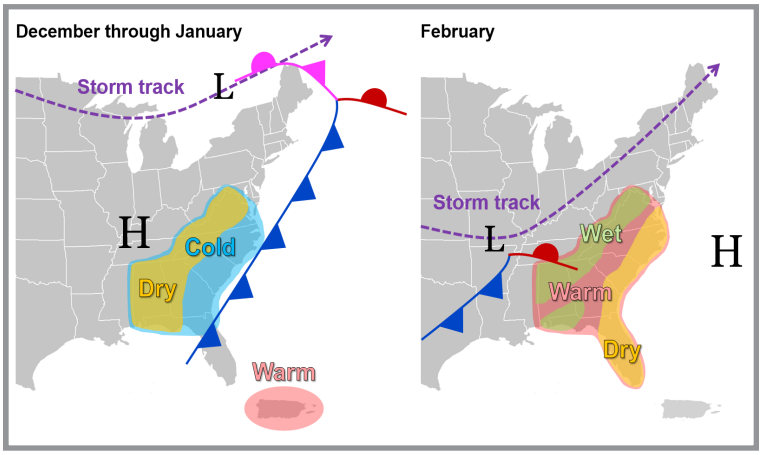
Quarterly Climate Impacts and Outlook

Southeast Region

March 2018

Regional Weather Pattern and Highlights for Winter 2017–2018



Numerous weather and climate extremes occurred across the Southeast from December 2017 through February 2018 (i.e., meteorological winter). During much of December and January, polar high pressure systems ushered in frigid air that ***originated near or north of the Arctic Circle*** *(i.e., latitude of 66.6°N). The passage of relatively few low pressure systems produced unusual dryness in northern and western portions of the region. In contrast, a pattern reversal occurred during February, as a persistent area of high pressure off the Atlantic coast transported* ***unseasonably warm, humid air*** *across the Southeast.* ***Common during La Niña winters****, an active mid-latitude storm track extending northeastward from the Mississippi River Valley brought above-normal precipitation to portions of the region that were dry from December through January.*

Highlights for the Southeast

With two periods of extreme coldness during January, monthly mean temperatures were **at least 3°F below average** for approximately 60% of the 194 long-term (i.e., period of record equaling or exceeding 50 years) stations across the region. Mean temperatures during the first week of the year were the **coldest on record** for at least 122 long-term stations, and numerous locations in the Carolinas observed their **coldest 7-day period for any month on record**, including Brevard, NC and Charleston, SC.

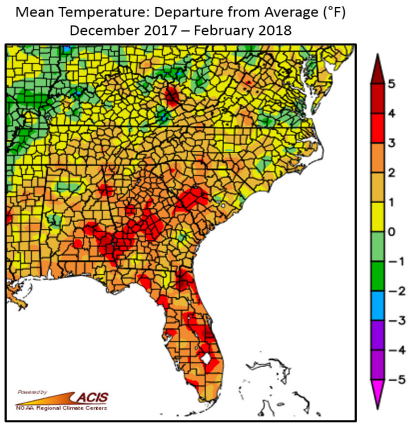
Record-breaking warmth was observed across the Southeast during February, with monthly temperature departures ranging from **6°F to more than 10°F above average**. Collectively, the Southeast region observed its **warmest February since records began in 1895**. A total of 47 long-term stations observed or tied their **highest daily maximum temperature** on record for February, while 108 long-term stations observed or tied their **highest daily minimum temperature** on record for February. It is especially outstanding that 38 of the 47 stations observed or tied their highest daily maximum temperature on record for **meteorological winter**, including Sarasota-Bradenton, FL (90°F), Savannah, GA (87°F), and Roanoke, VA (84°F).

Measurable snowfall was recorded **in every state across the Southeast** for the first time since the winter of 2013–2014. Much of the seasonal snowfall within the region was produced by three winter storms, including an early-season snowstorm on December 8th–9th and two winter storms in January.

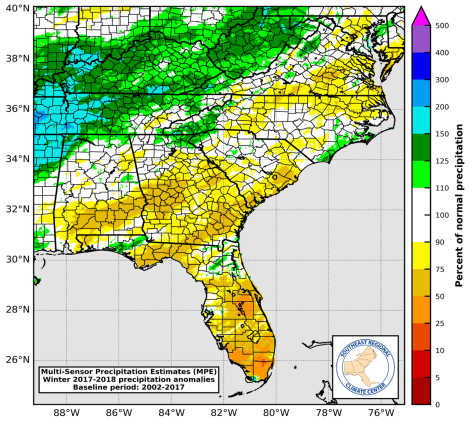
Severe weather was **extremely inactive** across the Southeast, with the fewest number of hail, thunderstorm wind, and tornado reports (75) occurring **since the winter of 2003–2004** (42 reports). Only 16 tornadoes were confirmed, which is about half of the median count of 31 winter tornadoes observed during 2000–2016.

Regional Climate Overview for Winter 2017–2018

Temperature and Precipitation Anomalies

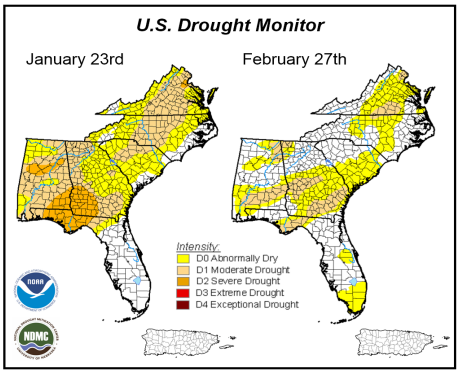


With an unusually cold January and an exceptionally warm February, winter mean temperatures were **near average to above average** across the Southeast. **Only 10%** of the 210 long-term stations in the region observed winter mean temperatures that were ranked within their ten warmest or coolest values on record. Several long-term stations in the Carolinas and Virginia observed or tied their **highest count of winter days with a maximum temperature of 32°F or less**, including Salisbury, NC (10 days), Williamsburg, VA (9 days), and Florence, SC (4 days). Four water theme parks near Orlando, FL, including Walt Disney World's Blizzard Beach and SeaWorld's Aquatica, closed due to excessive coldness in January. In contrast, nearly half (106 of 216) of the long-term stations in the region observed or tied their **highest February mean temperature on record**, with at least 14 stations in every state except Virginia.



Winter precipitation was **near normal to below normal** across much of the Southeast. **Less than 6%** of the 208 long-term stations in the region observed winter precipitation totals that were ranked within their ten highest or lowest values on record. However, winter precipitation was **75% to less than 50% of normal** across broad portions of Alabama, Georgia, and Florida. Several long-term stations observed December–January precipitation totals that were ranked within their five lowest values on record, including Washington, D.C. (1.44 inches) and Roanoke, VA (2.50 inches). On February 11th, multiple long-term stations in central and western Virginia observed their **wettest February day on record**, including Wise (3.74 inches) and Appomattox (2.73 inches). A rock slide caused by this heavy rainfall event blocked a section of the Blue Ridge Parkway in western North Carolina.

Drought



As of February 27th, the U.S. Drought Monitor indicated that about 13% of the Southeast region was classified in moderate (D1) drought conditions, which is **less than a third of the peak drought coverage** observed on January 23rd. From December through January, drought intensified and expanded in coverage across the region due to well-below-normal precipitation. By late January, moderate-to-severe (D1–D2) drought covered **all of the Florida Panhandle and over half of Alabama, Georgia, and Virginia**. In addition, over 35% of North Carolina and 20% of South Carolina were classified in moderate drought conditions. However, significant drought improvement occurred during February, as above-normal precipitation was recorded over the most drought-stricken portions of the region. Severe drought was **eliminated from the Southeast** by mid-February, while the coverage of moderate drought **fell below 30% in every state**. By the end of the winter season, streamflows improved to near-normal conditions in many areas recovering from drought.

Contacts: Chip Konrad, Jordan McLeod, and William Schmitz (SERCC)
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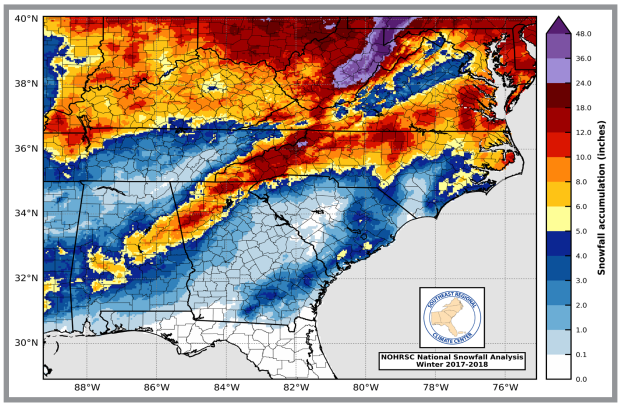
Regional Climate Impacts for Winter 2017–2018

Winter Storms



Total snowfall accumulation during winter 2017–2018. (Data: NOHRSC)

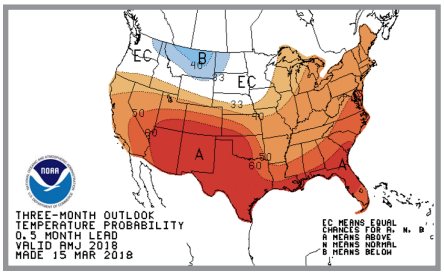
While measurable snowfall was observed in southern and coastal portions of the region that rarely receive snow, some of the climatologically snowiest locations in the region recorded much-below-normal snowfall during the winter. Washington, D.C., Roanoke, VA, and Boone, NC recorded only **3.3, 5.1, and 16.6 inches of winter snowfall**, which is **11.2, 10.1, and 7.6 inches below their long-term averages**, respectively. Three winter storms in December and January caused significant economic and societal impacts across the region. On December 8th–9th, an early-season winter storm produced **3 to more than 12 inches of snowfall** in a continuous swath extending from southwestern Alabama to east-central Virginia, with **exceptionally high snowfall totals occurring north and west of Atlanta, GA**. Three long-term stations in these areas observed their **second greatest 1-day snowfall for any month on record**, including Dallas, GA (12.3 inches), Taylorsville, GA (8.8 inches), and Carrollton, GA (8.0 inches). Over 325,000 customers lost power in northern Georgia, and more than 800 flights were cancelled at Hartsfield-Jackson International Airport in Atlanta. On January 3rd–4th, a mid-latitude cyclone undergoing rapid intensification (i.e., bombogenesis) off the Atlantic coast produced a mixture of wintry precipitation along a swath extending from northern Florida to eastern Virginia. Portions of northern Florida and southern Georgia observed their **first winter storm since December 1989**, a span of over 28 years. With a tenth of an inch of snow recorded on the 3rd, Tallahassee, FL observed its **first measurable snowfall during the month of January** and its greatest 1-day snowfall since 1989. Charleston, SC observed its **greatest 1-day snowfall for January** and its **third-greatest 1-day snowfall for any month on record**, with an accumulation of 5.3 inches. Norfolk, VA observed its **greatest 2-day snowfall on record for January**, with an accumulation of 10.3 inches. Freezing rain accumulations ranging from **a tenth to as much as one half of an inch** occurred from northern Florida to southeastern North Carolina. The freezing rain caused nearly 100,000 power outages in northern Florida and southern Georgia, while numerous vehicle accidents were reported in the Charleston, SC metropolitan area. On January 16th–18th, another winter storm produced a swath of **1 to 4 inches of snowfall** extending from southwestern Alabama to north-central Georgia, followed by **6 to more than 12 inches of snowfall** in portions of north-central North Carolina, south-central Virginia, and the Outer Banks of North Carolina. On the 17th, Danville, VA and Roxboro, NC observed their **second and third greatest 1-day snowfall on record for January**, with an accumulation of 8.8 and 10.3 inches, respectively. The wintry weather created treacherous road conditions in portions of several states, which resulted in **thousands of vehicle accidents and 5 reported** fatalities.

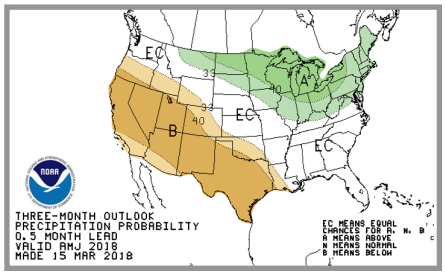
Agriculture and Livestock

While agricultural production was suspended across much of the Southeast, a mixture of beneficial and harmful impacts were reported from the extreme variability in weather conditions during the winter. In January, below-average temperatures across the region **helped to eliminate some of the cold-sensitive crop diseases and** insect pests that were able to survive the previous two warm winters. Persistent coldness from December through January was **beneficial for fruit and nut crops** to accumulate sufficient chill hours before the spring growing season. However, unseasonably warm temperatures during February caused many fruit trees to **bud and bloom prematurely** similar to last year, which increases their vulnerability to a damaging spring freeze. Though vegetable crops in Georgia and Florida sustained damage from excessively low temperatures in January, citrus trees in central and southern Florida were able to **build up their tolerance for cold weather**. The growth of small grains, livestock pastures, and hayfields across the region was stunted by the unusually cold, dry conditions from December through January, but warm and wet weather during February promoted a quick green-up. Livestock were stressed by periods of frigid temperatures, with producers having to provide supplemental feed to their cattle due to **poor winter grazing**. Poultry producers in Georgia and Florida had to supply **greater-than-normal heating** for vulnerable young chicks in their coops, which resulted in increased energy costs.

Regional Climate Outlook for Spring 2018

Temperature and Precipitation





NOAA's Climate Prediction Center (CPC) forecasted an increased probability of **warmer-than-normal spring temperatures** for the entire Southeast, particularly across the southern half of the region. **Equal chances** of below-normal, above-normal, and near-normal spring precipitation are predicted for much of the region, while **above-normal precipitation** is slightly favored in northern Virginia. La Niña weakened across the equatorial Pacific Ocean in February, with a transition to ENSO-neutral conditions expected during the spring.

Drought and River Flooding

The CPC's U.S. Seasonal Drought Outlook indicates that current drought conditions in portions of Virginia and southern Florida are **likely to be removed** during the spring. However, drought is **expected to persist** across portions of southern Alabama, the Florida Panhandle, the southern half of Georgia, and southern South Carolina. NOAA's Southeast River Forecast Center (SERFC) predicts a **near-average risk** of river flooding in every state except Florida, where a **below-average threat** is forecasted due to recent dryness.

Southeast Region Partners

- National Oceanic and Atmospheric Administration
  - National Centers for Environmental Information
  - National Weather Service Eastern Region
  - National Weather Service Southern Region
  - Climate Prediction Center
  - National Hurricane Center
  - 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

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