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. Temperature 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.

Temperature and Precipitation Anomalies

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, Chipley, FL and Camilla 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.

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-0, 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 Impacts for Winter 2016–2017

Severe Weather

January 21–23, 2017 Tornado Outbreak

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 1850 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 from NOAA’s Climate Prediction Center (CPC), (in every state, except during the winter could significantly diminish fruit and nut yields, and for the SERCC), NOAA/NCEI (9), a according to the latest, and 9% of water resources 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.

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.

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.

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.

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
Carolinan 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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