Southeast Region: (Information provided by the Southeast Regional Climate Center)

The top 10 weather and climate extremes that occurred across the region during the year are designated with "***Extreme***" in parentheses. The numbers associated with each extreme are used as identifiers rather than rankings.

- Mean temperatures were well above average across much of the Southeast region, including Puerto Rico and the U.S. Virgin Islands, during the year (***Extreme #1***). The greatest departures in mean temperature were generally found across portions of northern and central Alabama, northern and coastal Georgia, the Florida Panhandle, southern and western South Carolina, and western North Carolina. Annual departures were 3 to 4 degrees F (1.7 to 2.2 degrees C) above average in these areas, primarily due to persistent warmth during the summer and autumn. At least 23 long-term (i.e., period of record equaling or exceeding 50 years) stations across the region observed or tied their warmest annual mean temperature on record. Two or more of these stations were located in every state except Virginia, including Montgomery, AL (68.6 degrees F; 20.3 degrees C), Atlanta, GA (65.9 degrees F; 18.8 degrees C), Pensacola, FL (70.8 degrees F; 21.6 degrees C), Greenville-Spartanburg, SC (63.4 degrees F; 17.4 degrees C), and Asheville, NC (58.4 degrees F; 14.7 degrees C). In Puerto Rico, Juncos 1 SE (1931–2016) observed its second warmest annual mean temperature on record (79.5 degrees F; 26.4 degrees C). A greater number of long-term stations (38) observed average minimum temperatures that were ranked within the top 2 warmest values on record, compared to 27 stations for average maximum temperatures. The persistence of daytime heat and nighttime warmth was exceptional for many locations, particularly during the summer and autumn (***Extreme #2***). At least 8 long-term stations observed their highest annual count of days with a maximum temperature at or above 90 degrees F (32.2 degrees C), including Montgomery, AL (1873–2016), with 129 days (35 percent of the year), and Charleston, SC (1939–2016), with 98 days (27 percent of the year). Ending on August 19th, Athens, GA (1903–2016) recorded its longest streak of 52 consecutive days with a maximum temperature of at least 90 degrees F. Atlanta, GA (1879–2016) and Birmingham, AL (1897–2016) observed their highest annual count of 106 (29 percent of the year) and 104 (28 percent of the year) days with a minimum temperature at or above 70 degrees F (21.1 degrees C). Ending on August 23rd, Wilmington, NC (1875–2016) recorded its longest streak of 58 consecutive days with a minimum temperature of at least 70 degrees F. San Juan, PR (1899–2016) and Tampa, FL (1891–2016) observed their highest annual count of 268 (73 percent of the year) and 116 (32 percent of the year) days with a minimum temperature at or above 75 degrees F (23.9 degrees C). The coldest temperature observed during the year was -9 degrees F (-22.8 degrees C), which was recorded at Millgap, VA on January 25th. The warmest temperature observed during the year was 107 degrees F (41.7 degrees C), which was recorded on July 3rd at the University of South Carolina in Columbia.
- A pronounced west-to-east gradient in annual precipitation totals was observed across the Southeast, with persistent drought over the interior portion of the region and heavy rainfall from tropical cyclones along much of the Atlantic coast. The

driest locations were found across northern and central Alabama, northern and central Georgia, and the western Carolinas, where annual precipitation totals were 50 to 75 percent of normal. At least 22 long-term stations in these areas observed annual precipitation totals that were ranked within the three lowest values on record, including Anderson Regional Airport, SC (1949–2016) with 25.07 inches (637 mm), Elberton 2 N, GA (1892–2016) with 27.61 inches (701 mm), and Anniston Regional Airport, AL (1942–2016) with 32.13 inches (816 mm). During late summer and autumn, exceptionally long streaks of no rainfall were recorded at numerous locations across the region, particularly in Alabama and Georgia (***Extreme #3***). Eufaula Wildlife Refuge, AL (1967–2016), located about 75 miles southeast of Montgomery, recorded its longest streak of 91 days with no measurable precipitation, ending on November 28th. This is also the longest streak for any station in Alabama's historical record. In southwestern Georgia, Plains Experiment Station (1956–2016) and Montezuma 2 NW (1904–2016) recorded their longest streak of 72 days with no measurable rainfall. In contrast, the wettest locations were found across portions of the eastern Carolinas, west-central and coastal Virginia, central and southern Florida, and northern and western Puerto Rico. Annual precipitation totals were 125 to 300 percent of normal in these areas. A few long-term stations observed annual precipitation totals that were ranked within the three highest values on record, including Plymouth 5 E, NC (1947–2016) with 74.83 inches (1,901 mm), Norfolk, VA (1874–2016) with 68.86 inches (1,749 mm), and Florence Regional Airport, SC (1948–2016) with 60.97 inches (1,549 mm). Five tropical cyclones (Tropical Storm Bonnie in late May, Tropical Storm Colin in early June, Hurricane Hermine in early September, Tropical Storm Julia in mid-September, and Hurricane Matthew in early October) contributed more than 30 percent of the total annual precipitation recorded at numerous coastal locations extending from Florida to Virginia. As Hurricane Matthew (***Extreme #4***) tracked nearly parallel to the Atlantic coastline in early October, six long-term stations in the Carolinas observed their wettest day for any month on record, and multiple stations in five states (FL, GA, SC, NC, and VA) recorded over 10 inches (254 mm) of rainfall. On October 8th, four states recorded their highest 1-day precipitation totals during the year, including 14.00 inches (356 mm) at Fayetteville Regional Airport, NC, 12.00 inches (305 mm) in Manning, SC, 11.23 inches (285 mm) in Springfield, GA, and 9.61 inches (244 mm) at Fentress Naval Field, VA. Over half (28) of the 51 reported fatalities caused by Matthew across the Southeast occurred in North Carolina, and most of these resulted from drowning in flash floods. Approximately three thousand hogs and nearly two million chickens and turkeys perished in the extreme inland flooding over eastern North Carolina. During summer, numerous heavy rainfall and flash flooding events were observed across the Southeast. On July 16th, training thunderstorms caused a significant flash flooding event in the Triangle region of North Carolina (i.e., the cities of Raleigh, Durham, and Chapel Hill), resulting in road closures and water rescues (***Extreme #5***). The greatest 1-day precipitation total of 7.52 inches (191 mm) was recorded by a CoCoRaHS gauge in Cary, NC. On January 22nd and 23rd, a strong coastal cyclone produced exceptional snowfall totals and blizzard conditions across northern Virginia and the Washington, D.C. area (***Extreme #6***). Washington Dulles Airport, VA (1963–2016)

observed its second greatest 1-day and 2-day snowfall on record, with 22.1 and 29.3 inches (561 and 744 mm), respectively.

- There were 4,003 severe weather reports across the Southeast during the year, which is very close to normal (based on the median annual frequency of 3,942 reports during 2000–2015). Over half (2,165 of 4,003) of these reports were observed during June and July. The fewest number of reports occurred in Florida (480; 12 percent of total), while the greatest numbers were reported in North Carolina (864; 22 percent of total) and Virginia (842; 21 percent of total). Strong thunderstorm winds accounted for over 80 percent (3,292 of 4,003) of the severe weather reports during the year and caused at least 2 fatalities and 16 injuries across the region. The highest thunderstorm wind gust recorded during the year was 87 mph, which was observed on Grandfather Mountain as a vigorous squall line moved through western North Carolina on July 8th. The largest hailstones observed during the year were tea cup-sized (3-inch diameter), with reports in Vance County, NC and Mecklenburg County, VA on February 24th, Loudoun County, VA on June 16th, and Halifax County, VA on September 28th. A total of 154 tornadoes (62 EF-0s, 70 EF-1s, 14 EF-2s, 6 EF-3s, 2 unrated) were confirmed across the Southeast during the year, which is well below the median annual frequency of 187 tornadoes for the region. Over 40 percent (64 of 154) of the tornadoes occurred in Alabama, including 9 EF-2s and 2 EF-3s. Fifty-three tornadoes, or about one-third of the annual total, were observed during February, making it the greatest February tornado count for the region since modern records began in 1950 (***Extreme #7***). Of the 9 fatalities and at least 89 injuries caused by tornadoes during the year, four of the fatalities and 49 of the injuries occurred in February. During a two-day severe weather outbreak on February 23rd and 24th, an EF-3 tornado touched down in Pensacola, FL, resulting in 3 reported injuries. Numerous homes and apartment buildings were significantly damaged or destroyed, and a warehouse at the local General Electric plant was demolished. Another EF-3 tornado, with a maximum path width of 500 yards, tracked 30 miles across four counties in east-central Virginia and injured at least 25 people. Fourteen fatalities resulted from lightning strikes across the Southeast, which is the highest annual count for the region since 2007, with 18 recorded fatalities (***Extreme #8***). Nine of the 14 fatalities occurred in Florida, including a man who was struck outside his home near Molino, FL on December 12th. This is the first December lightning fatality in the United States since 1998, when a man was struck inside a home under construction in Paradise Valley, AZ. Lightning also caused at least 37 injuries across the region during the year.

- An intense and expansive drought developed across the western half of the Southeast region, with the most significant impacts occurring predominately in Alabama, Georgia, and western portions of the Carolinas (***Extreme #9***). Moderate (D1) drought formed initially over northern Georgia and the western Carolinas in early May, as well-below-normal precipitation amounts were observed during March and April. With a widespread lack of rainfall persisting through late spring, summer, and autumn, drought conditions continued to intensify and expand in

coverage across much of Alabama, Georgia, the Florida Panhandle, the western Carolinas, and southwestern Virginia. When the peak of the drought occurred in late November, extreme-to-exceptional (D3–D4) drought conditions covered over one-third of the region, including 97 percent of Alabama, 62 percent of Georgia, 21 percent of South Carolina, and 13 percent of North Carolina. Indeed, a portion of every state in the region was classified in extreme drought for the first time since March 2008. Drought conditions improved significantly during December, as several low pressure systems generated heavy rainfall across portions of the region. Consequently, the coverage of extreme-to-exceptional drought across the Southeast decreased from 36 percent at the end of November to 21 percent in late December. Severe-to-extreme (D2–D3) drought was eliminated across southern and eastern portions of Puerto Rico by May, but moderate drought persisted in a small area of southeastern Puerto Rico until the middle of November. Dryland crops in drought-stricken parts of the region were severely stressed for much of the growing season. Substantial losses in corn yields occurred in many Alabama and Georgia fields during the latter half of summer. Farmers in these states also struggled to dig up peanuts from excessively dry fields, while agricultural producers in the western Carolinas reported reduced yields of soybeans. Pastures and hay fields across the western half of the region remained in very poor condition during summer and autumn, due to the drought and a widespread infestation of fall armyworms. Livestock producers had to sell off some cattle and feed hay from supplemental reserves during the latter half of the year. Across the interior portion of the region, the very dry forest floor coupled with seasonal leaf litter provided ideal conditions for an extraordinary number of autumn wildfires, with over 180,000 acres burned during November (***Extreme #10***). Thousands of residents in western North Carolina had to evacuate from several large fires, which cost the state nearly $30 million in fire suppression expenses. The wind-driven transport of wildfire smoke caused poor air quality during mid-November across a broad portion of the region, including the cities of Atlanta, GA, Asheville, NC, Charlotte, NC, and even cities farther away, such as Raleigh, NC and Charleston, SC. Respiratory issues were reported for both people and livestock in these affected areas.