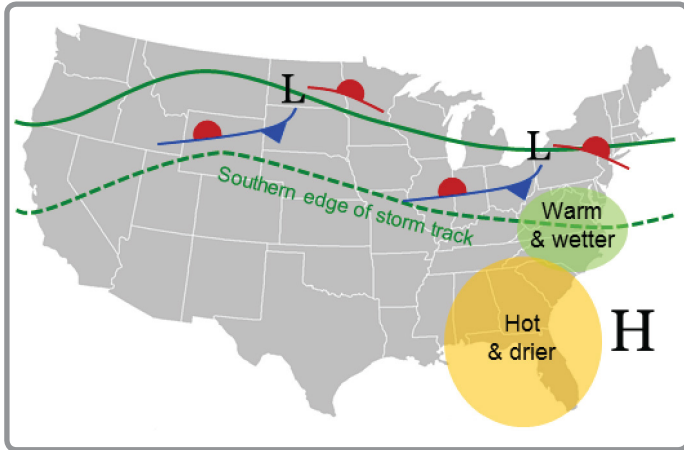




Regional – Weather Pattern and Significant Events for June–August 2016



From June through August 2016, a large upper-level ridge extended across much of the country, shifting the storm track farther to the north than normal. This shift brought unusually warm weather to North Carolina and Virginia, while clusters of thunderstorms along weak frontal systems produced wetter-than-normal conditions. In contrast, the southern portion of the region experienced persistent heat and dryness, as the Bermuda High intensified and expanded westward across the Southeast.

Highlights for the Southeast

Mean temperatures were well above average across the region (including Puerto Rico and the U.S. Virgin Islands) in June, July, and August. At least 22 long-term stations (i.e., period of record exceeding 50 years), with over half of these located in Florida, observed or tied their warmest July mean temperature on record. The Carolinas observed their second warmest summer (June–August) on record, while Georgia, Florida, and Virginia had their third warmest summer on record.

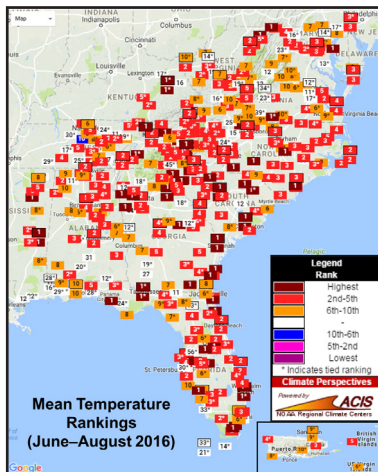
During July, at least five fatalities in South Carolina were attributed to heat-related illness, with four of these occurring in the Columbia metropolitan area.

Precipitation was highly variable across the Southeast from June through August, with generally below-average totals across the southern portion of the region and above-average totals across the northern portion of the region. At least 11 long-term stations in Georgia and Florida observed their driest or second driest July on record. Georgia and Florida had their second and third driest July on record, respectively. On July 31, Norfolk, Virginia observed its wettest July day and fifth wettest day for any month on record, with 6.98 inches of precipitation.

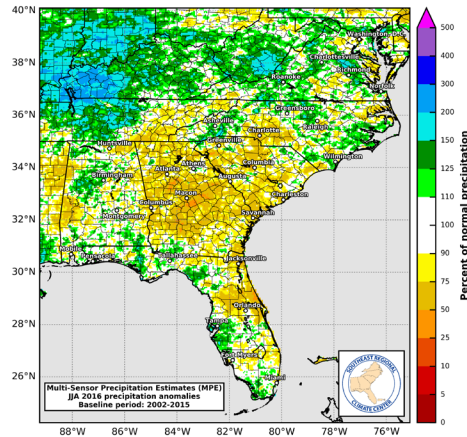
On June 6, Tropical Storm Colin made landfall along the Big Bend of Florida with maximum sustained winds of 50 mph. Gainesville, Florida observed its second wettest June day and tied its eighth wettest day for any month on record, with 5.65 inches of precipitation.

Regional – Climate Overview for June–August 2016

Temperature and Precipitation Anomalies

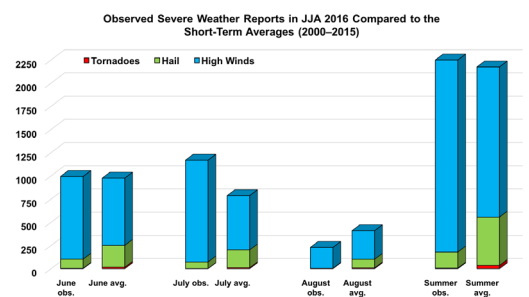


Exceptional warmth was observed across much of the Southeast region (including Puerto Rico and the U.S. Virgin Islands) during summer, with the greatest departures from average occurring in July. Several locations recorded their warmest June–August mean temperature on record, including Charleston, South Carolina, Asheville, North Carolina, Athens, Georgia, and Savannah, Georgia. Savannah, Georgia, Daytona Beach, Florida, and Athens, Georgia observed their longest streaks of 69, 63, and 52 days, respectively, with a maximum temperature at or above 90°F. Atlanta, Georgia and Birmingham, Alabama observed their highest counts of 84 and 82 days, respectively, during summer with a minimum temperature at or above 70°F. (www.sercc.com/perspectivesmap)



Widespread portions of the Southeast region were unusually dry during summer, including much of Georgia, South Carolina, and the Atlantic coast of Florida. These areas received only 25%–75% of their average summer precipitation. Anderson, South Carolina, Daytona Beach, Florida, and Jacksonville, Florida observed their driest June–August period on record, with only 3.93, 7.63, and 7.88 inches of precipitation, respectively. In contrast, above-normal precipitation occurred across parts of west-central Alabama, North Carolina, Virginia, and the Gulf Coast of Florida, where seasonal precipitation totals were between 125%–200% of normal. Summer precipitation was generally above normal across western Puerto Rico and below normal in eastern Puerto Rico. (www.sercc.com/mpe)

Severe Weather

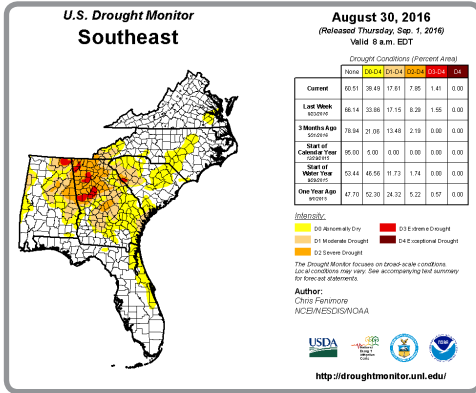


There were 2,395 severe weather reports across the Southeast region during summer, which is slightly above normal (based on the median frequency of 2,175 reports during 2000–15). Strong thunderstorm winds accounted for over 90% (2,215 of 2,395) of these reports and were responsible for at least one fatality and 13 injuries across the region. There were eight reports of large hail (i.e., at least 2 inches in diameter), including 3-inch (tea cup-sized) hail in Loudoun County, Virginia on June 16. Only seven tornadoes were confirmed during summer, which is the lowest count on record from June–August since 1952. Across the Southeast, lightning strikes were responsible for 10 fatalities (out of 28 total fatalities reported nationwide) and 30 injuries. The lightning fatality count this summer was slightly higher than the short-term (2006–15) average of seven for the region.



Regional – Climate Impacts for June–August 2016

Drought



The latest U.S. Drought Monitor, released on September 1, indicates that nearly 18% of the Southeast region was classified in moderate-to-extreme (D1–D3) drought conditions. In early June, moderate-to-severe (D1–D2) drought covered much of northern Georgia and Alabama as well as western portions of the Carolinas. Drought conditions intensified and expanded in coverage during June and July, due to a persistent lack of rainfall and high rates of evapotranspiration caused by excessive heat. Soil moisture levels dropped substantially across interior portions of the region, leading to widespread agricultural and livestock impacts. Some improvement occurred during August in parts of Alabama and the Carolinas, as scattered rainfall from thunderstorms reduced precipitation deficits. By late August, moderate-to-extreme drought covered nearly 50% of Georgia, 27% of Alabama, 18% of South Carolina, and 4% of North Carolina. A small area of southeastern Puerto Rico remained in moderate drought during summer. (www.droughtmonitor.unl.edu/)

Agriculture

A combination of drought and severe weather produced widespread agricultural impacts across the Southeast region. Throughout much of summer, dryland (i.e., non-irrigated) crops (corn, cotton, soybeans, peanuts, and tobacco) were severely stressed by above-average temperatures and drought conditions across interior portions of the region. Substantial losses in corn yields were reported in many Georgia and Alabama fields during the latter half of summer. However, exceptionally high yields of corn and sweet potatoes are expected in North Carolina, where less intense heat and more consistent rainfall prevailed during summer. Despite some improvement in late summer, pastures across the region remained in poor condition from the drought, and many became infested with fall armyworms during July and August. Livestock producers had to begin a supplemental feeding for their herds due to a shortage of forage grasses. High and high winds from severe thunderstorms damaged several corn and tobacco fields across North Carolina and Virginia in July.

Flash Flooding

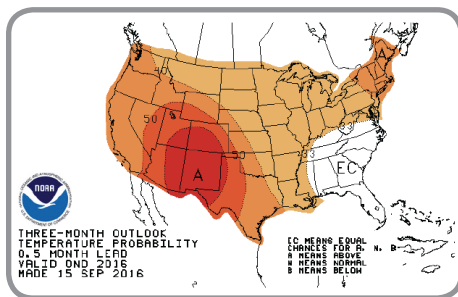
Numerous heavy rainfall and flash flooding events were observed across the Southeast region during the summer. On July 16, training thunderstorms caused a significant flash flooding event within the Triangle region of North Carolina (i.e., Raleigh, Durham, and Chapel Hill), resulting in numerous road closures and water rescues. The greatest 1-day precipitation total of 7.52 inches was recorded by a CoCoRaHS gauge in Cary, North Carolina. On August 1, slow-moving thunderstorms produced flash flooding in Columbia, South Carolina, with 5.44 inches of precipitation observed at the South Carolina State Climatology Office. Of that daily total, 4.64 inches was recorded in just 1.5 hours, leading to the flooding of many businesses and several road closures in the downtown area.



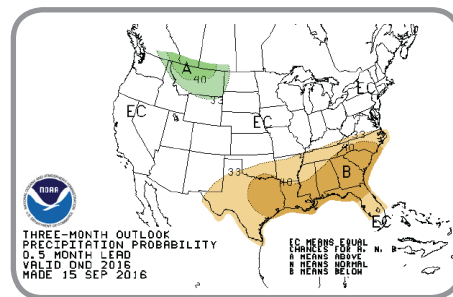
Flooded parking deck at Crabtree Valley Mall in Raleigh, NC. (Photo credit: Tisha Powell, ABC11 News)

Regional Climate Outlook for Autumn 2016

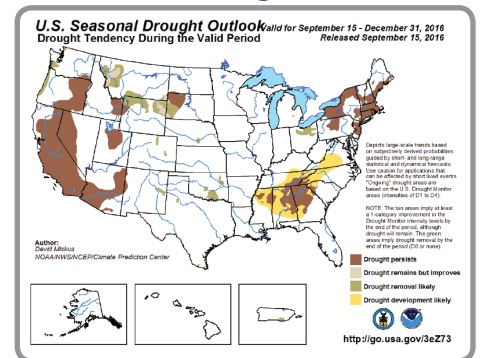
Temperature



Precipitation



Drought



Equal chances of below-normal, above-normal, and near-normal autumn temperatures are forecasted for the Southeast by NOAA's Climate Prediction Center (CPC). However, a slightly higher probability of warmer-than-normal autumn temperatures is predicted for northern Virginia. With the exception of Virginia and southern Florida, increased chances of below-normal autumn precipitation is predicted for the region. (www.cpc.ncep.noaa.gov/products/predictions/90day/)

Atlantic Hurricane Season

In the updated 2016 Atlantic Hurricane Season Outlook released by NOAA on August 11, there is a 50% probability of a near-normal hurricane season and a 35% chance of an above-normal season. The primary competing factors that will affect this season's outcome include warmer-than-average sea surface temperatures across the Main Development Region (MDR), the potential development of La Niña conditions in the equatorial Pacific (i.e., less vertical wind shear over the tropical Atlantic), and a strong west African monsoon (i.e., higher frequency of easterly disturbances). Twelve named storms have already formed, including Hurricane Alex in January. (www.cpc.ncep.noaa.gov/products/outlooks/hurricane.shtml)

The U.S. Seasonal Drought Outlook issued by the CPC indicates that current drought conditions are likely to persist through the autumn months, with additional development expected in Alabama, Georgia, the Carolinas, and Virginia. Climatologically, autumn is the driest season of the year for much of the Southeast, but landfalling tropical cyclones can provide drought-busting rainfall. The small area of drought in southeastern Puerto Rico will likely be eliminated as tropical easterly waves restore lingering rainfall deficits. (www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php)

