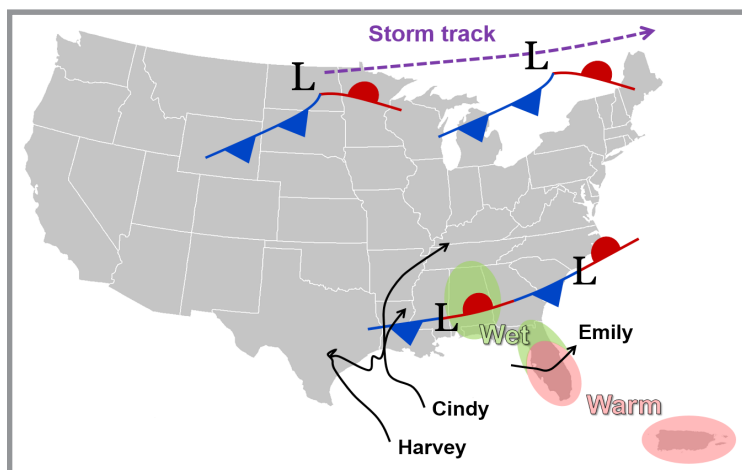


Regional Weather Pattern and Highlights for Summer 2017



Several weather and climate extremes occurred across the Southeast from June–August 2017 (i.e., meteorological summer), causing a diverse array of economic and societal impacts. A balance between upper-level ridging (high pressure) and troughing (low pressure) patterns resulted in **near-average temperatures** across much of the Southeast. However, **well-above-average temperatures** (driven largely by **exceptionally warm minimum temperatures**) were observed in portions of central and southern Florida, as well as Puerto Rico. Weak frontal boundaries stalled out frequently within the region, producing **well-above-normal precipitation** across much of Alabama, the Florida Peninsula, and the western Florida Panhandle.

Highlights for the Southeast

Periods of unusually warm and cool weather produced **few extremes in average summer temperature** across the region. In fact, about 80% of the 206 long-term (i.e., period of record equaling or exceeding 50 years) [stations](#) observed summer mean temperatures that were ranked outside their ten warmest or coolest values on record. However, extreme warmth occurred in portions of central and southern Florida, as well as Puerto Rico. Miami, FL and Guayama, PR observed their **second warmest summer on record**.

A majority of long-term stations in Virginia and South Carolina recorded below-normal summer precipitation, while **extreme wetness occurred in much of Alabama, the Florida Peninsula, and the western Florida Panhandle**. At least 15 long-term stations in Alabama and Florida observed their **wettest summer on record**, including Naples, FL (58.04 inches), Pensacola, FL (46.35 inches), Atmore, AL (40.77 inches), Gainesville, FL (39.35 inches), and Birmingham, AL (27.90 inches). Florida and Alabama observed their **second and fifth wettest summer**, respectively, since records began in 1895.

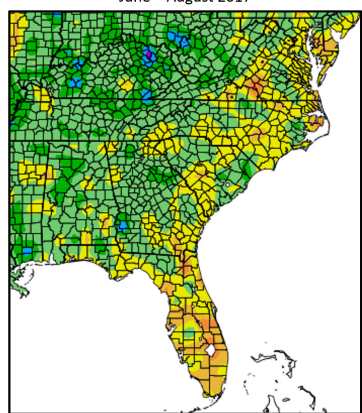
Heavy rainfall and flooding impacted every state within the region, with **100-year to 1,000-year precipitation events** occurring in Alabama, Georgia, Florida, and South Carolina. Three tropical storms (**Cindy in June, Emily in July, and Harvey in August**) brought heavy rainfall, flooding, and tornadoes to portions of the region. **Twelve of the 26 tornadoes** confirmed during summer were spawned by these tropical storms, with the remnants of Harvey producing two [EF-2 tornadoes](#) in Alabama on August 31st.

Drought conditions were **eliminated** from the mainland portion of the region by early July, while moderate (D1) drought **developed and persisted** across a strip of southern Puerto Rico from late July through August.

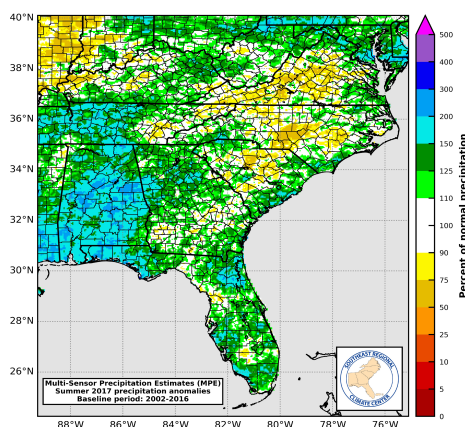
Regional Climate Overview for Summer 2017

Temperature and Precipitation Anomalies

Mean Temperature: Departure from Average (°F)
June – August 2017

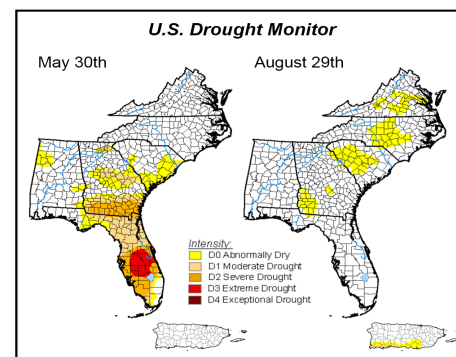


Near-average temperatures were recorded over much of the Southeast region during summer. **Persistent cloud cover and rainfall suppressed daily maximum temperatures** in Alabama, Georgia, and northern Florida, with departures of 1–3°F below average in these areas. At least 45 long-term [stations](#) across the region, with over half located in Florida, observed average minimum temperatures during summer that were ranked within their five warmest values on record. Miami, FL recorded its **highest summer count of 47 days with a minimum temperature at or above 80°F**, surpassing the previous record (2010) by 7 days. In **July and August, Miami, FL** observed its **warmest mean temperature for any month on record (85.7°F)**, with 10 to 15 [heat-related illnesses](#) reported in Miami Beach on July 25th.



Summer precipitation was highly variable across the Carolinas and Virginia, as departures ranged from **less than 75% to more than 150% of normal**. Well-above-normal precipitation, with departures of **150% to nearly 300% of normal**, was recorded over much of Alabama and portions of Florida and Georgia. Several locations observed their **highest or second highest count of summer days with measurable precipitation**, including Federal Point, FL (68 days) and Pensacola, FL (57 days). Gainesville, FL observed its **third wettest month on record** in July (16.70 inches) and recorded its **highest summer count of 15 days with at least 1 inch of rainfall**. Many extreme rainfall events occurred, including a daily total of 14.85 inches near [Everglades City, FL](#) (June 6th) and 1-hour totals of 5.40 and 4.84 inches at [Robins Air Force Base, GA](#) (July 1st) and [Montgomery, AL](#) (August 10th), respectively.

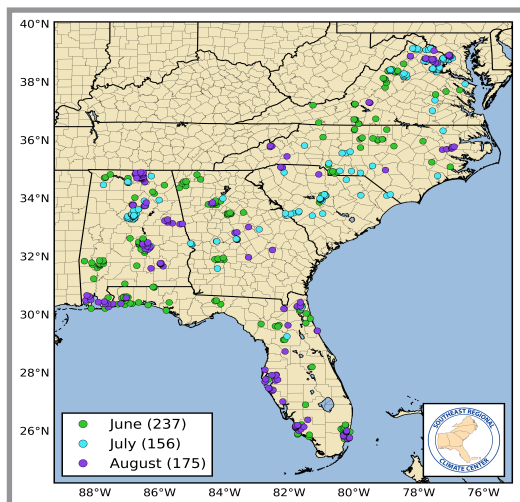
Drought



As of August 29th, the [U.S. Drought Monitor](#) indicated that **drought-free conditions were observed across the mainland portion of the Southeast region**, compared to the 21% coverage of moderate-to-extreme (D1–D3) drought on May 30th. While moderate-to-extreme drought covered about 72% of Florida at the end of May, **a persistence of heavy rainfall rapidly eliminated the drought** during the first three weeks of June. In addition, the moderate-to-severe (D1–D2) drought conditions that covered one third of Georgia on May 30th were removed from the state by early July. Well-above-average rainfall during June replenished streamflows, recharged soil moisture, and suppressed lingering wildfires in Florida and southern Georgia. In contrast, **a strip of moderate drought** developed across southern Puerto Rico at the end of July and persisted through August. By the end of August, **abnormally dry (D0) conditions** were observed across broad portions of several states, including areas of North Carolina and Virginia since late July.

Regional Climate Impacts for Summer 2017

Heavy Rainfall and Flooding



NWS reports of flooding during summer 2017.

There were 568 reports of flooding across the Southeast during summer, with the highest counts occurring in Alabama (187) and Florida (132). On June 10th, a nearly stationary thunderstorm caused flash flooding in Ocala, FL, when **4.62 inches of rainfall was measured in less than 30 minutes**. About 15 vehicles were submerged in several feet of floodwater, and one vehicle was swallowed by a **25-foot-deep sinkhole**. On July 23rd, slow-moving thunderstorms over **Columbia, SC** produced **exceptional rainfall amounts of 2.99 inches in 30 minutes and 3.82 inches in one hour**, which correspond to an average recurrence interval of about 100 to 200 years at this location. The USGS **streamflow gage** for Rocky Branch at Whaley Street reached its **third highest crest of 12.15 feet** since **records** began in 2007, which nearly surpassed the gage height of 12.28 feet that was measured during the historic October 2015 flood. Sarasota-Bradenton, FL observed its **highest 1-day and 2-day precipitation totals for August** and its **third highest 1-day and 2-day precipitation totals for any month on record**, with 8.12 inches on August 26th and 12.44 inches from August 26th–27th. Over **60 homes** were flooded in a Bradenton neighborhood, requiring at least 26 residents to be evacuated. Additional heavy rainfall and flooding events are summarized in the [monthly climate reports](#) for the Southeast region.

Agriculture and Livestock

Crops (e.g., [corn](#) and [peanuts](#)) and pastures **thrived from timely rainfall and few days of extreme heat** across much of the Southeast, but detrimental impacts were also reported. Persistent rainfall from June through mid-July **delayed winter wheat harvesting, hay cutting, and crop planting** across portions of the region, especially in [Alabama](#) and [Georgia](#). Nutrient and pesticide treatments could not be applied to saturated fields, which increased disease pressure on the crops. High humidity and excessive precipitation produced **fungal diseases** in several crops across the region, particularly fruit and vegetable products in [Georgia](#), tobacco in parts of [North Carolina](#) and [Georgia](#), and cotton in multiple states. **Wine grapes rotted in northern Georgia** during August, despite a regular spraying of fungicides in some vineyards. A period of unusually dry weather from mid-July through August **stunted the growth of crops, hay fields, and pastures** in central portions of the [Carolinas](#) and [Virginia](#). However, adequate rainfall and near-average temperatures during summer contributed to a **bumper crop of watermelons** in [South Carolina](#), with some farmers reporting double their normal yields.

Severe Weather

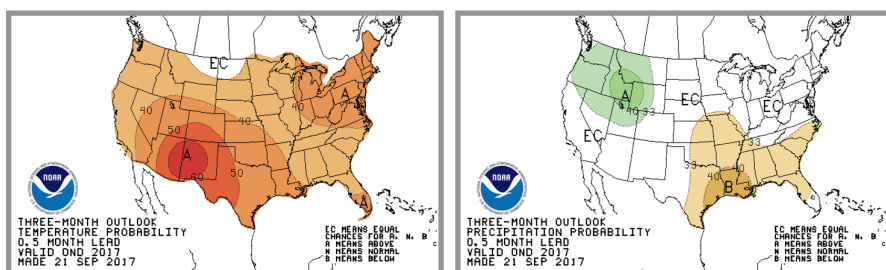
While only 70% of the typical number of severe weather reports were observed during summer, several significant impacts occurred across the Southeast. Strong thunderstorm winds **accounted for nearly 95% of all severe weather reports and were responsible for 16 injuries** (including 8 that occurred in vehicles) across the region. **A combination of thunderstorm wind gusts and wet soils** produced many downed trees, with at least 81 reports of home damage during summer. In some cases, the root systems of these trees were likely **weakened** by the recent drought, increasing their vulnerability to wind gusts. **Twenty-six tornadoes** (1 unrated, 16 EF-0s, 7 EF-1s, 2 EF-2s) were confirmed from June–August, which is **about half the average count of 47 tornadoes** observed during 2000–2016. **Nine fatalities and 39 injuries** were caused by lightning strikes, compared to the summer average of 10 fatalities and 59 injuries for the region. Lightning also struck at least 47 homes across the Southeast, with 27 residential fires reported during summer.



Lightning-caused house fire in Powersville, GA. (Image credit: [Randy Mabia](#))

Regional Climate Outlook for Autumn 2017

Temperature and Precipitation



According to the [seasonal outlook](#) from NOAA's Climate Prediction Center (CPC), an increased probability of **warmer-than-normal autumn temperatures** is forecasted for the Southeast, particularly in Virginia, northeastern North Carolina, and southern Florida. **Increased chances of below-normal precipitation** are predicted for Alabama, northern and central Florida, Georgia, and much of the Carolinas. The potential development of [La Niña](#) conditions during late autumn favors drier-than-normal weather across the Southeast.

Atlantic Hurricane Season

Updated by the CPC on August 9th, the Atlantic [hurricane season outlook](#) indicates a **60% chance of an above-normal season** this year, as atmospheric and oceanic conditions are **very conducive for storm formation** over the tropical Atlantic and Caribbean basins. A total of 14–19 named storms are predicted to develop (9 had formed by the end of August), including 5–9 hurricanes and 2–5 major (Category 3 or greater) hurricanes. ENSO-neutral or weak La Niña conditions during autumn will not suppress Atlantic hurricane activity.

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](#)

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[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](#)