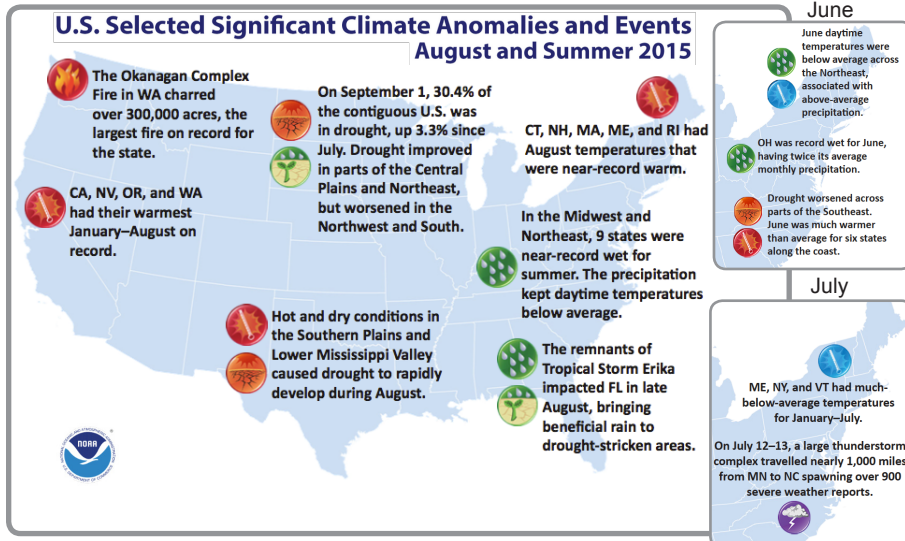


National - Significant Events for June–August 2015



Highlights for the East

Ohio had a record-wet June and another 9 states ranked this June among their top 10 wettest. Baltimore, MD, also had a record-wet June, while several sites set or tied records for greatest number of June days with measurable precipitation. The heavy rain caused flooding and impacted crops in Ohio, but it helped keep drought conditions from worsening in the Northeast. However, increasing dryness in the Carolinas led to the development of severe drought by late July. In August, Woodstock, VA was record-dry and Bridgeport, CT had its greatest number of days without measurable precipitation. With spotty rainfall, dry conditions expanded in the region.

The highs of 49°F on June 2 and 3 were the coolest highs recorded on any June day in Boston, MA. Conversely, Raleigh, NC, had 12 consecutive days in June with a high of at least 95°F, which is the site's longest and earliest streak on record. From July 10 to September 9, Central Park, NY had its longest stretch of consecutive days with a high of at least 80°F. August was a record-warm month for Caribou, ME and Kennedy Airport, NY.

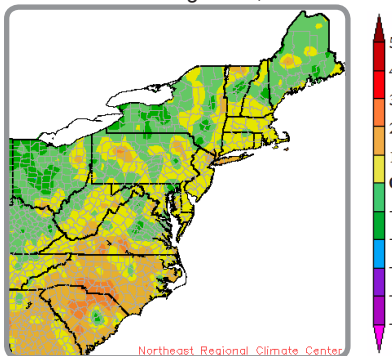
Severe storms produced large hail, damaging winds, and over 30 weak tornadoes in the region during summer. Heavy rains caused flooding, including a flash flood emergency in Charleston, SC on August 18.

The contiguous United States' average temperature for summer was 72.7°F, 1.3°F above the 20th century average. During June, the average temperature was 71.4°F, 2.9°F above average, making it the 2nd warmest June on record. The average temperature for July was 73.9°F, 0.2°F above average. August's average temperature for the U.S. was 73.0°F, 0.9°F above average. During summer, the contiguous United States' precipitation total was 9.14 inches, 0.82 inches above the 20th century average. June precipitation was 3.53 inches, 0.60 inches above average, making it the 9th wettest June on record. For July, total precipitation was 3.16 inches, 0.38 inches above average. August precipitation was 2.36 inches, 0.26 inches below average.

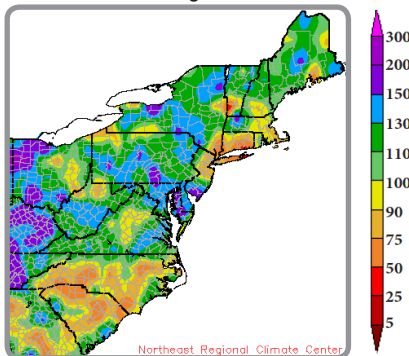
Regional - Climate Overview for June–August 2015

Temperature and Precipitation Anomalies

Departure from Normal Temperature (°F)
June 1–August 31, 2015



Percent of Normal Precipitation (%)
June 1–August 31, 2015



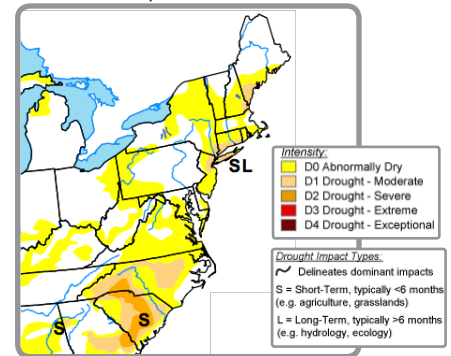
There was a sharp temperature contrast in the Eastern Region during June, with average temperatures ranging from 3.3°F below normal in Maine to 3.1°F above normal in North Carolina. Overall, the region was 0.6°F above normal in June. The region was 0.1°F below normal in July, with thirteen of the sixteen states within 1°F of normal. August temperatures varied, with the Ohio Valley more than 1°F below normal, the Carolinas near normal, and New England more than 2°F above normal. For the region as a whole, August was 0.2°F below normal. Summer was 0.3°F above normal for the region, with fourteen states within 1°F of normal.

The Eastern Region had its fourth wettest June, seeing 161% of normal precipitation. Fifteen of the sixteen states were wetter than normal, with totals ranging from 117% of normal in North Carolina to 230% of normal in Maryland. In fact, Ohio had a record-wet June. In July, the region saw 91% of normal precipitation, with thirteen states drier than normal. August wrapped up at 78% of normal for the region. All but two states saw below-normal precipitation. Driven by the wet June, summer precipitation totaled 112% of normal for the region. Twelve states saw above-normal precipitation.

Normals based on 1981–2010

Drought in the East

U.S. Drought Monitor
September 17, 2015



Abnormal dryness expanded and moderate and severe drought were introduced in the Carolinas during June and July. This was due to lack of precipitation, low streamflows, low soil moisture, and mounting agricultural impacts. Dry conditions continued through summer, with water restrictions enacted in several counties in the Carolinas.

A very wet June eased dry conditions across much of the Northeast, with lingering areas of abnormal dryness and moderate drought in parts of New York and New England through summer. Below-normal precipitation in August led to the expansion of abnormal dryness and moderate drought in parts of the Northeast.

Regional - Impacts and Updates for June–August 2015



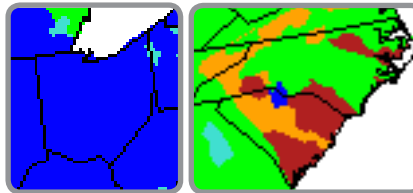
The Parker River in Massachusetts during a March 2010 flood. Credit: Matt Collins

Climate Change and River Floods

Long-term flood records in the Northeast U.S. in "climate-sensitive" watersheds, where land cover and land use have not significantly changed over the period of record, show [increasing trends in flood magnitude and frequency](#) over the late 20th and early 21st centuries. For example, the magnitude of the annual maximum flood on the Hoosic River in New York has increased by 60%. [Another study](#), though, found that climate-sensitive watersheds in Atlantic Canada show no trends in magnitude over the same period, although [changes in flood timing and frequency](#) have been observed. For example, the annual maximum flood is occurring earlier in the year at some watersheds in New Brunswick. But the past may not be a good guide to the future. [Recent projections for New Brunswick](#) suggest precipitation and flood magnitudes may increase in the future with continued warming.

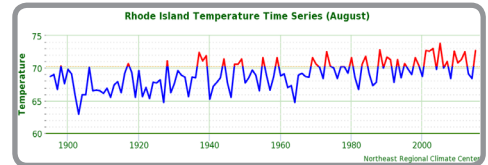
Agriculture

Overly wet conditions in Ohio during the first half of summer impacted agriculture. Fieldwork was slowed, with ponding in low-lying fields. Some field crops were stunted and yellow, with diseases also a concern for growers. In addition, farmers reported [very poor wheat quality](#). In the Carolinas, however, persistent hot and dry conditions were particularly adverse for crop growth, including soybeans, cotton, corn, and tobacco. Some corn was [declared a loss in South Carolina](#). Poor pasture conditions in a few North Carolina counties forced farmers to feed hay to their animals earlier than usual, likely leading to a hay shortage this winter.



Explanation - Percentile classes				
<10	10-24	25-75	76-90	>90
Much below normal	Below normal	Normal	Above normal	Much above normal

USGS monthly average streamflow maps for Ohio in July and for the Carolinas in August.



New Tools and Resources

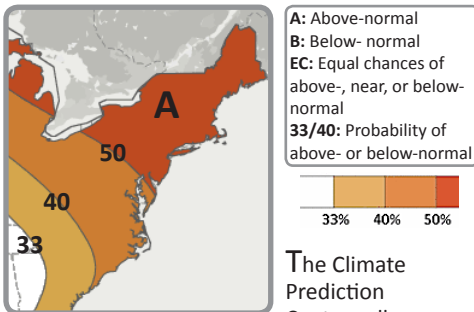
The National Centers for Environmental Information recently released the [Northwest Atlantic Regional Climatology](#), which includes high-resolution quality-controlled long-term annual, seasonal, and monthly mean temperature and salinity fields on different depth levels. There are six decadal climatologies, from 1955 to 2012, and an average of all decades. Future updates will include oxygen, density, time–depth diagrams, and model–data comparison.

The Northeast Regional Climate Center (NRCC) has a [new website](#). The updated design makes it easier to find data and products and features more interactive elements. One of these products is a [time series graph](#) of monthly state average temperatures (see above). This graph provides a visualization of the change in average temperatures over the period of record. The new website also features an archive of monthly webinars, the NRCC's frequently-updated blog, and a larger variety of recent climate maps.

Regional - Outlook for Autumn 2015

Precipitation and Temperature

Valid for October–December 2015

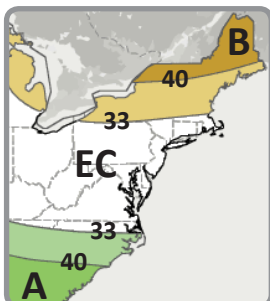


A: Above-normal
B: Below-normal
EC: Equal chances of above-, near-, or below-normal
33/40: Probability of above- or below-normal

The Climate Prediction Center calls

for an increased chance of above-normal temperatures for the entire Eastern Region for October through December.

An increased chance of above-normal precipitation is forecast for South Carolina and most of North Carolina for October through December, while an increased chance of below-normal precipitation is forecast for upstate New York and northern New England. Equal chances of above-, near-, or below-normal precipitation were forecast elsewhere.



El Niño

Issued: September 10, 2015

Atmospheric and oceanic conditions during August reflected a strong El Niño. The Climate Prediction Center said there is a [95% chance](#) of El Niño continuing through winter. Models predict one of the strongest El Niños on record, peaking in late fall or early winter, with impacts increasing during that time. In the Eastern Region, those impacts include an increased chance of below-normal precipitation in the Ohio Valley and an increased chance of above-normal precipitation and below-normal temperatures for the Carolinas. El Niño is expected to gradually weaken through spring 2016.

Updated 2015 Atlantic Hurricane Season

Issued: August 6, 2015

According to the Climate Prediction Center's [updated outlook](#), there is now a 90% chance of a below-normal 2015 Atlantic hurricane season. Including the eight named storms to date, the forecast calls for 6–10 named storms, with 1–4 of those becoming hurricanes, and 0–1 becoming major hurricanes. May's outlook, which had a 70% chance of a below normal season, predicted 6–11 names storms, with 3–6 of those becoming hurricanes, and 0–2 becoming major hurricanes. In comparison, a normal hurricane season averages 12 named storms, 6 hurricanes, and 3 major hurricanes. The increased confidence level, the highest since hurricane outlooks began in 1998, is based on a strengthening El Niño and cooler-than-average tropical Atlantic sea-surface temperatures.

Eastern Region Partners

National Oceanic and Atmospheric Administration
[www.noaa.gov](#)

National Centers for Environmental Information

[www.ncei.noaa.gov](#)

National Weather Service, Eastern Region

[www.weather.gov](#)

NOAA Fisheries Science Centers and

Regional Offices, Atlantic

[www.nmfs.noaa.gov](#)

Office for Coastal Management

[www.oceanservice.noaa.gov](#)

NOAA Research, Climate Program Office and

Geophysical Fluid Dynamics Lab

[www.research.noaa.gov](#)

NOAA National Sea Grant Office

[www.seagrant.noaa.gov](#)

NOAA's North Atlantic, South Atlantic, and Great

Lakes Regional Collaboration Teams

[www.regions.noaa.gov](#)

Climate Prediction Center

[www.cpc.noaa.gov](#)

National Operational Hydrologic Remote Sensing Center

[www.nohrsc.noaa.gov](#)

Northeast Regional Climate Center

[www.nrcc.cornell.edu](#)

Southeast Regional Climate Center

[www.sercc.com](#)

National Integrated Drought Information System

[www.drought.gov](#)

Carolinas Integrated Sciences and Assessments

[www.cisa.sc.edu](#)

Consortium on Climate Risk in the Urban Northeast

[www.ccrun.org](#)

Cooperative Institute for North Atlantic Research

[www.cinar.org](#)

Eastern Region State Climatologists

[www.stateclimate.org](#)

