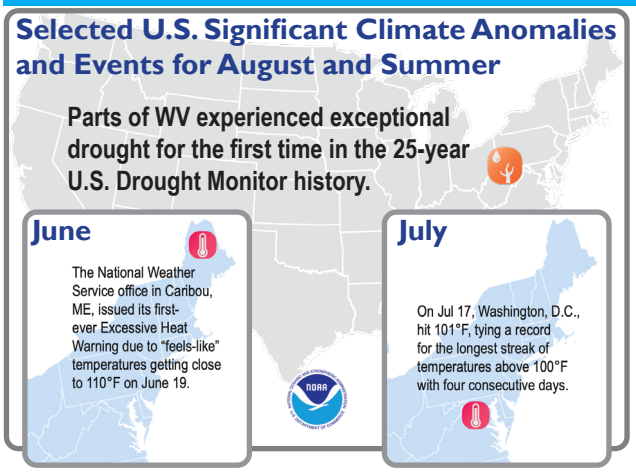
Quarterly Climate Impacts and Outlook

Northeast Region

September 2024

National Significant Events – *June–August 2024*

Selected U.S. Significant Climate Anomalies and Events for August and Summer



The contiguous U.S. had its fourth-warmest summer with an average temperature of 73.8°F, 2.5°F above the 20th-century average. Average temperatures for June, July, and August were 3.4°F above average (second warmest), 2.1°F above average (11th warmest), and 1.9°F above average (15th warmest), respectively. Globally, it was the hottest June, July, August, and summer. The contiguous U.S. summer precipitation total was 8.30 inches, near average. June, July, and August precipitation were 0.18 inches below average, 0.26 inches above average, and 0.16 inches below average, respectively.

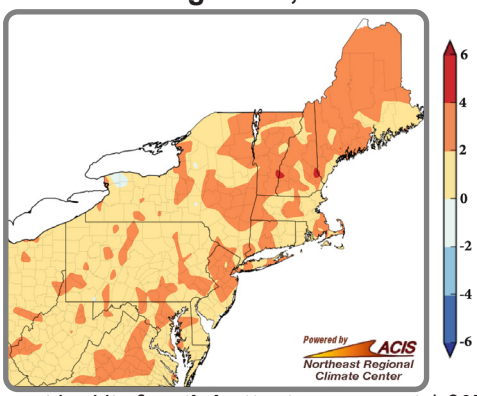
Highlights for the Northeast

- June featured unusually hot temperatures, with records like **hottest June** and **all-time warmest low temperature** set/tied. July was also exceptionally hot, setting records such as **all-time hottest month** and **greatest number of 100°F days**. Summer 2024 was **record hot** for Maine, New Hampshire, and several sites like Hartford, CT; Caribou, ME; and Dulles Airport, VA.
- June and July had an **above-average number of tornadoes**. New York saw 23 tornadoes in July, its **greatest tally for any month** since records began in 1950.
- **Drought intensified** in the Mid-Atlantic during summer. West Virginia experienced **exceptional drought** for the first time since the U.S. Drought Monitor began in 2000, with multiple impacts including record-low water levels, failing crops, and an increased number of wildfires.
- An 8.41-inch rainfall total set Vermont's record for **greatest daily precipitation amount for July**. The site's monthly total of 17.73 inches was the state's second greatest July total. In mid-August, up to 15 inches of rain fell on New York's Long Island and parts of Connecticut, **possibly setting a Connecticut state record**.
- **Extreme rainfall** from the remnants of two hurricanes, Beryl in early July and Debby in early August, caused **devastating flash flooding** in places like Vermont, northern Pennsylvania, and central New York.
- During summer, **smoke from wildfires** in the western U.S. and Canada caused hazy skies and occasionally reduced air quality in the Northeast.

Regional Climate Overview – *June–August 2024*

Temperature

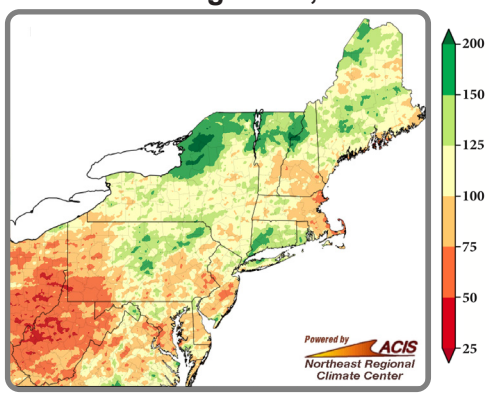
Departure from Normal (°F)
June 1–August 31, 2024



Climate normals based on 1991–2020 data; rankings based on 1895–2024.

Precipitation

Percent of Normal (%)
June 1–August 31, 2024



The Northeast had its **fourth-hottest summer** at 1.8°F above normal. It was **record hot** for two states and among the 12 hottest for the other 10 Northeast states. The region had its **fourth-hottest June** at 2.4°F above normal. It was among the 10 hottest for 11 states. The region had its **fourth-hottest July** at 2.5°F above normal. It was record hot for New Hampshire and among the 14 hottest for the other states. **August** was 0.3°F above normal, in the **warmest third** of all years. It was Maine's 20th-hottest August.

The Northeast's **summer** precipitation was 102% of normal, in the **middle third** of all years. It was West Virginia's fifth driest but among the 12 wettest for two states. **June** precipitation was 85% of normal, in the **middle third** of all years. It was among the 20 driest for three states. **July** precipitation was 92% of normal, in the **middle third** of all years. West Virginia had its eighth driest, while Vermont had its 11th wettest. The region had its **13th-wettest August** with 132% of normal. It was among the 18 wettest for five states.

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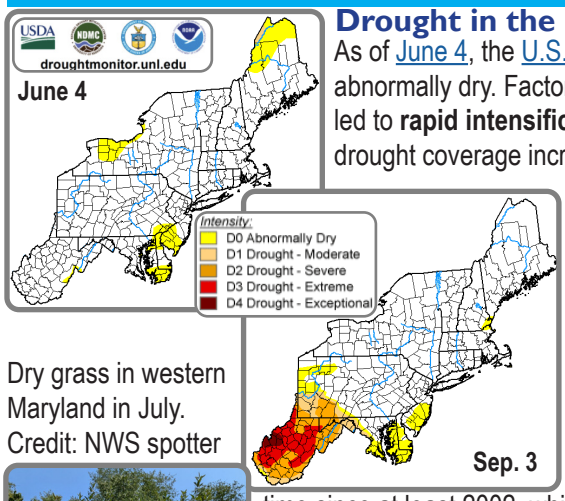
Regional Climate Overview – *June–August 2024*



Drought in the Northeast

As of June 4, the U.S. Drought Monitor showed less than 1% of the Northeast in drought and 9% as abnormally dry. Factors including excessive heat, little rainfall, reduced soil moisture, and low streamflow led to **rapid intensification of drought** in the Mid-Atlantic. In one week, Maryland and West Virginia's drought coverage increased 10-fold. With similar conditions in July, drought and dryness expanded and **extreme drought** was introduced in West Virginia and Maryland for the first time since 2010. Rain from Debby's remnants in early August reduced drought coverage in many areas. However, much of West Virginia missed out, allowing **exceptional drought** to take hold in the state for the **first time** since the U.S. Drought Monitor began in 2000. The September 3 Drought Monitor showed 16% of the Northeast in drought and 7% as abnormally dry.

Dry grass in western Maryland in July. Credit: NWS spotter

Crops were **stunted and stressed** so growers relied heavily on irrigation. Even so, there were significant crop losses. For the week ending August 25, all of West Virginia had topsoil moisture in the very short-short categories for the first time since at least 2002, while pasture/rangeland conditions were the state's worst also since at least 2002. **Farmers hauled water** for livestock, dipped into their winter feed for cattle as pastures were not grazable, and **sold livestock off early**. Many farmers faced decreased revenue and increased operational costs. Low streamflow and water levels contributed to algal blooms and limited recreational activities, with the boating season ending early in some spots. West Virginia saw more wildfires than usual this summer, while **increased fire risk** prompted burn bans in parts of Pennsylvania. For current conditions, see the Northeast DEWS Dashboard.

Regional Impacts and Updates – *June–August 2024*

Summer Conditions

Fog along the New Jersey coast in early July. Credit: MyCoast NJ

June 2024 was the **hottest June on record** for some sites and featured several notable records. For instance, Caribou, ME, tied its **all-time hottest temperature**, while Caribou and Burlington, VT, saw their **all-time warmest lows.** Dulles Airport, VA, had never recorded a low of 75°F or higher in June until this year when it had two. That site and Elkins, WV, had their warmest lows for June, while Binghamton, NY, saw its **greatest number of June days** with a low of 70°F or higher. This heat **occurred much earlier than usual** for some places. **July** became the **all-time hottest month** for a few sites and set other records including **all-time greatest number of days** with a low of at least 75°F (at Dulles Airport, VA; Hartford, CT; and Harrisburg, PA) and **longest streak of days** with a high of at least 100°F (at Washington, D.C., and Baltimore, MD). Baltimore also had its **greatest number of 100°F days for any month**. The heat had several impacts including multiple heat-related deaths in Maryland, disrupting train service for major cities, causing a New York City bridge to get stuck open, and leading New York City to implement its Heat Emergency Plan for a record 23 days. In stark contrast to June and July, the second half of August featured a **brief cooldown**, with a few higher-elevation sites in West Virginia dipping **close to freezing**. Coastal New Jersey was also notably cooler and sometimes foggy during the height of the summer tourism season due to persistent southerly winds that led to upwelling of cool water along the coast. Overall, summer was **record hot** for several sites including Hartford, CT; Caribou, ME; and Dulles Airport, VA.

From July 10 to 11, the **remnants of Hurricane Beryl** dropped up to 7 inches of rain on parts of northern New England and New York where Lowville saw 6.02 inches of rain, its **all-time wettest day**. Multiple waterways overflowed their banks, with a few in Vermont reaching one of their **five highest levels**. The resultant flooding caused extensive damage, including an estimated $50 million in Lewis County, NY, where Lowville is located. The storm also spawned seven tornadoes. On July 30, over five inches of rain caused significant flash flooding in northeastern Vermont. The highest total, 8.41 inches in St. Johnsbury, became **Vermont's greatest daily precipitation total for July.** The site accrued 17.73 inches in July, the state's second greatest July total. Climate change is one of several factors contributing to an uptick in extreme rainfall events in Vermont, which saw historic flash flooding last summer. From August 8 to 11, the **remnants of Hurricane Debby** and a frontal system dropped up to 8 inches of rain on the region, with a few sites having one of their three wettest August days and multiple areas seeing flash flooding. The **most intense flooding** occurred in parts of central New York and northern Pennsylvania. For instance, hundreds of buildings and roads were damaged in Potter County, PA, resulting in **over $1 billion** in losses. The storm also produced four tornadoes.

Flooding in Vermont from Hurricane Beryl's remnants. Credit: Vermont National Guard

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Regional Impacts and Updates – *June–August 2024*

Summer Conditions Continued

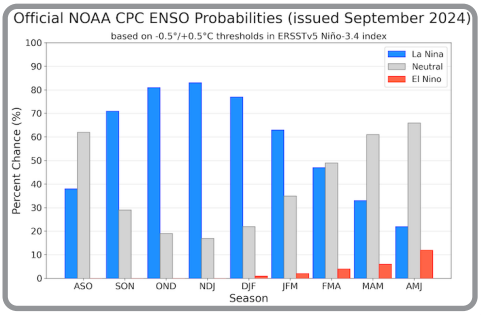
Between August 17 and 19, 8 to 15 inches of rain fell on New York's Long Island and southwestern Connecticut, leading to catastrophic flash flooding. The highest daily rainfall totals were near Oxford, CT, with 14.83 inches and 13.50 inches, **500-year storm events** with a 0.2% chance of occurring in any given year. Both reports were being reviewed as a **possible state record for Connecticut**. Each of the summer extreme rainfall events had significant impacts, with several Flash Flood Emergencies declared, signifying a dangerous, life-threatening situation. Floodwaters washed away roads and houses, destroyed bridges, inundated buildings, led to hundreds of evacuations and dozens of water rescues, impacted public water supplies, resulted in crop losses, and contributed to at least four deaths.

Tornado damage in Rome, NY. Credit: NWS Binghamton

Severe Weather

During June, nine of the 12 Northeast states had tornadoes, with the monthly tally of 23 tornadoes being **more than three times the June average** of seven. Providence County, RI, saw its **first June tornado** since records began in 1950, while Bristol County, MA, and Berkeley County, WV, tied their records for **most tornadoes in a single day**. During July, New York saw 23 tornadoes, **more than any other month** on record and well above the state's July average of two and annual average of nine. Hamilton County saw four tornadoes on July 16, making it the county's **greatest number for any day, month, or year**. Also, 57 tornado warnings were issued for New York this July, **more than any other month** for the state since these unofficial records began in 1986 and the greatest number for any U.S. state this July. There were eight tornadoes in the Northeast in August, which is average. In addition, there were many instances of damaging straight-line winds during summer. Storm reports noted damaged houses and vehicles, thousands of snapped/uprooted trees, and multiple storm-related fatalities and injuries.

Regional Outlook – *Autumn 2024*



ENSO

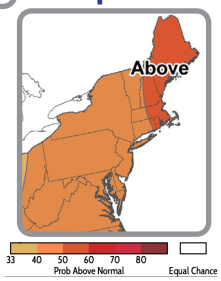
ENSO-neutral conditions were present in the equatorial Pacific Ocean during August. NOAA's Climate Prediction Center indicates there is a 71% chance that **La Niña conditions** will **emerge** during the September–November period. **La Niña** is expected to persist through January–March 2025.

Atlantic Hurricane Season

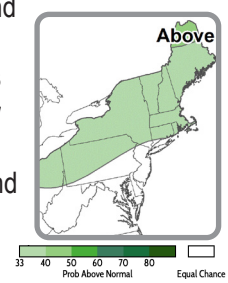
	Updated 2024 Atlantic Season Outlook	1991-2020 Average Season
Number of Named Storms	17-24	14
Number of Hurricanes	8-13	7
Number of Major Hurricanes	4-7	3

NOAA's updated 2024 Atlantic hurricane season outlook favors an **above-normal season** due to factors like exceptionally warm sea surface temperatures and a developing La Niña leading to reduced wind shear. Through September 9, there were six named storms. The remnants of Hurricanes Beryl and Debby produced extreme rainfall and tornadoes in the Northeast. Hurricane Ernesto brought rough surf and rip currents to the region as it passed well offshore. There was an unusual lull in tropical activity from mid-August through mid-September. The season runs through November 30, peaking from mid-August to late October. See NOAA's Eastern Region Climate Services webinar from August 2024 for more details.

Temperature and Precipitation



Normal October–December average temperatures range from the low 30s in far northern New England to the upper 40s in the region's southeastern corner. NOAA's Climate Prediction Center (CPC) favors **above-normal temperatures** for **October–December** for the entire Northeast (map above). Normal October–December precipitation ranges from less than 9 inches in western New York and eastern West Virginia to over 15 inches in northern New York and coastal Maine. **Above-normal precipitation** is favored for most of New England and New York, part of Pennsylvania, and northern West Virginia (map right).



Northeast Partners

National Oceanic and Atmospheric Administration offices including:

- NESDIS/National Centers for Environmental Information
- NWS, Eastern Region
- NWS, Climate Prediction Center
- NWS, National Operational Hydrologic Remote Sensing Center
- NMFS, Fisheries Science Centers and Regional Office, Atlantic
- NOS, Office for Coastal Management
- NOS, National Centers for Coastal Ocean Science
- OAR, Climate Program Office and Geophysical Fluid Dynamics Lab
- OAR, National Sea Grant Office
- NOAA's North Atlantic and Great Lakes Regional Collaboration Teams

And the following other offices:

- Northeast Regional Climate Center
- National Integrated Drought Information System
- Consortium of Climate Risk in the Urban Northeast
- Cooperative Institute for the North Atlantic Research
- Northeast Region State Climatologists
- Mid-Atlantic RISA

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