

National Significant Events – March–May 2023

Selected U.S. Significant Climate Anomalies and Events for May and Spring

Parts of PA had their driest May on record, resulting in the expansion of abnormal dryness from about 12% on May 2 to 93% on May 30.

March

On Mar 13–15, a winter storm brought heavy snowfall to the Northeast with accumulations of up to 40 in. in higher elevations—the largest winter storm for the region this season.

April

On Apr 1, a 700-yard-wide EF-3 tornado touched down in DE, becoming the widest tornado in the state's history and tying as its strongest.

The contiguous U.S. spring average temperature of 51.5°F was 0.6°F above the 20th-century average. Average temperatures for March, April, and May were 0.8°F below average, 0.3°F above average, and 2.2°F above average (11th warmest), respectively. Globally, it was the second-warmest March, the fourth-warmest April, the third-warmest May, and the third-warmest spring. The contiguous U.S. spring precipitation total was 7.86 inches, 0.08 inches below average. March, April, and May precipitation were 0.30 inches above average, 0.12 inches below average, and 0.35 inches below average, respectively.

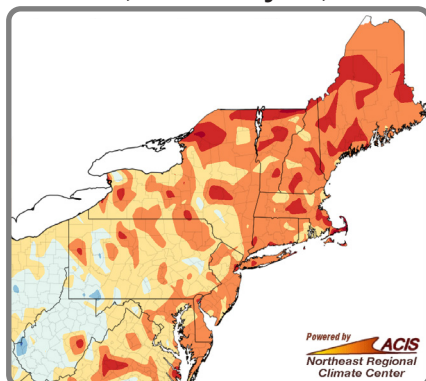
Highlights for the Northeast

- It was the **warmest April on record** for Wilmington, DE, Newark, NJ, and Burlington, VT. **April 12–15** was **unusually mild**, with Hartford, CT, tying its **warmest April temperature** of 96°F and Worcester, MA, and Scranton and Williamsport, PA, seeing their **earliest 90°F day** on record.
- A **late-season freeze** in **mid-May** damaged crops in some northern areas.
- **Below-normal precipitation** in **March and April** allowed **drought and dryness** to expand, with several large wildfires. A stalled storm system in **late April–early May** brought **drought-busting rain** to the Mid-Atlantic, **flooding** to northern New England, and **record snowfall** to higher elevations. Scranton, PA, had its **wettest April day** with 3.06 inches of rain.
- **May** was **record dry** and among the 10 all-time driest months for some sites including Philadelphia, PA, and Wilmington, DE. A few sites had their **greatest number of May days with no measurable precipitation**. **Abnormal dryness and drought** expanded in the region in May.
- **October–May snowfall** was **below or near normal** in most areas, with sites including Central Park, NY, Baltimore, MD, and Atlantic City, NJ, seeing their **least snowy season** on record. The season's **most notable storm** was a **mid-March nor'easter** that dropped up to 42 inches of snow on parts of New York and New England.
- The Northeast saw **more tornadoes than usual** in **April**. On **April 1, 10 tornadoes** touched down in the southeastern corner of the region. Delaware saw its **widest tornado** since records began in 1950, while New Jersey had **one of its largest tornado outbreaks**. However, there was **limited severe weather** in **May**, which is **unusual**.

Regional Climate Overview – March–May 2023

Temperature

Departure from Normal (°F)
March 1, 2022–May 31, 2023

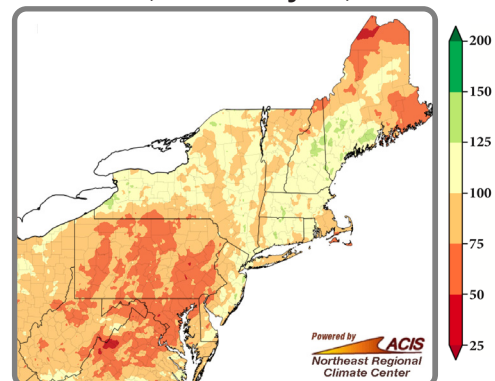


Climate normals based on 1991–2020 data; rankings based on 1895–2023.

The Northeast had its **19th-warmest spring** at 1.1°F above normal. This spring was among the 20 warmest since 1895 for eight of the 12 Northeast states. **March** was 1.6°F above normal, in the **warmest third** of all years. It was among the 20 warmest Marches for two states. The region had its **sixth-warmest April** at 3.2°F above normal. It was among the 20 warmest Aprils for all states except West Virginia. **May** was 1.7°F below normal, in the **middle third** of all years.

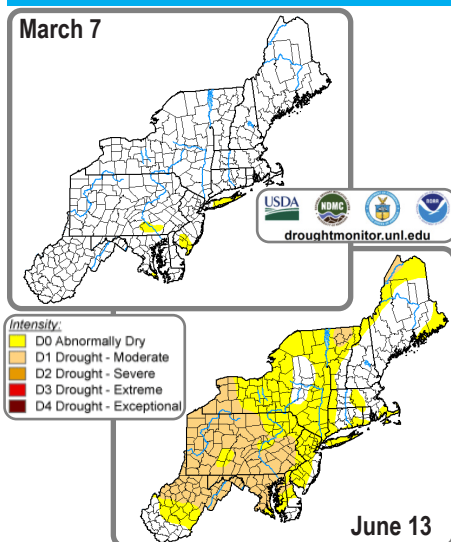
Precipitation

Percent of Normal (%)
March 1, 2022–May 31, 2023



The Northeast saw 81% of normal **spring** precipitation, in the **driest third** of all years. This spring was among the 20 driest since 1895 for three of the 12 Northeast states. **March** precipitation was 83% of normal, in the **driest third** of all years. It was among the 20 driest Marches for two states. **April** precipitation was 94% of normal, in the **middle third** of all years. It was among the 20 wettest Aprils for two states. **May** precipitation was 68% of normal, in the **driest third** of all years. It was among the 20 driest Mays for three states.

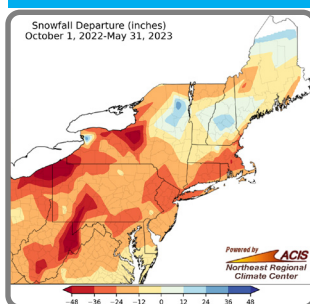
Regional Climate Overview – March–May 2023



Drought in the Northeast

As of [March 7](#), the [U.S. Drought Monitor](#) showed 2% of the Northeast as abnormally dry. **During March**, increasing precipitation deficits, below-normal streamflow, and declining soil moisture allowed **moderate drought to develop** and **abnormal dryness to expand** in the Mid-Atlantic. The [April 4](#) U.S. Drought Monitor showed 2% of the Northeast in drought and 9% as abnormally dry. **Similar conditions persisted** through much of **April**, with moderate drought and abnormal dryness expanding across the region. The [April 25](#) U.S. Drought Monitor showed 6% of the Northeast in moderate drought and 22% as abnormally dry. The dry conditions helped fuel [multiple large wildfires](#) in New Jersey, [several smaller fires](#) in southeastern New York, and a fire that [burned over 4,000 acres](#) in northeastern Pennsylvania. **Heavy rainfall in late April and early May erased** much of the **moderate drought** and chipped away at abnormal dryness. However, a **drier-than-normal May** led to an **increase in moderate drought** and a **broad expansion of abnormal dryness** in the region. The [June 6](#) U.S. Drought Monitor showed 20% of the Northeast in drought and 47% as abnormally dry. **Drought and dryness expanded** in the region during the first half of **June**. For current conditions, see the [Northeast DEWS Dashboard](#).

Regional Impacts and Updates – March–May 2023



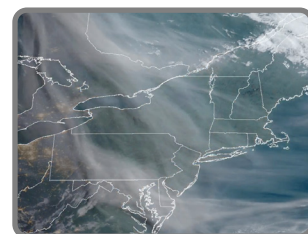
Spring Conditions

With **limited storms** during winter, **March** featured the **largest storm of the snow season** for some areas. From **March 13–15**, a nor'easter dropped over 12 inches of snow on parts of New York and New England, with the greatest [storm snow totals](#) reaching **36 inches** in eastern New York and western Massachusetts and **42 inches** in southern Vermont. [Heavy, wet snow](#) and gusty winds produced whiteout conditions and downed trees and power lines, leaving some roads impassable and causing [over 250,000 customers](#) to lose power. Areas away from the snow such as Boston, MA, and New York City were impacted by [delayed or cancelled flights](#). While the storm pushed **March snowfall totals** closer to, or even above, normal at some sites, much of the region saw **below or near-normal** March snowfall.

Temperatures were unusually mild from **April 12–15**. Highs in the 70s, 80s, and 90s were among the 10 warmest April temperatures on record at multiple sites, with Hartford, CT, tying its **warmest April temperature** of 96°F. Sites such as Worcester, MA, and Scranton and Williamsport, PA, saw their **earliest day** with a high of at least 90°F. In **late April**, an upper-level low pressure system stalled near the region, bringing **persistent below-normal temperatures** and **rounds of precipitation**. From **April 28–May 1**, between 4 and 8 inches of rain fell in an area from Maryland to southeastern New York, as well as in Maine. Some sites had one of their 10 wettest April days, with **April 30** being Scranton's **wettest April day** with 3.06 inches of rain. In the Mid-Atlantic and parts of New York, **dry antecedent conditions** tempered impacts; however, the sheer amount of rain, particularly falling on an urban setting, led to road closures, some stranded vehicles, and a few water rescues in a few of areas. In parts of Maine and New Hampshire, **floodwaters entered buildings**, swamped vehicles, and [swept away chunks of roads](#). On **May 1**, [at least eight sites](#) including Boston, Williamsport, and New York City set **record-low sea level pressures for May**. As the upper-level low slowly moved away in **early May**, a **rare snow event** occurred in [higher elevations of West Virginia](#), western Maryland, and southwestern Pennsylvania. From **May 1–4**, Davis, WV, saw 20.3 inches of snow, ranking as the **largest May snowstorm** and **snowiest May** for any West Virginia site on record. The 10.1 inches of snow on **May 3** in Davis was the **snowiest May day** for any West Virginia site. Meanwhile, the snow depth of 15.0 inches on **May 4** at Snowshoe, WV, was the **greatest May snow depth** for West Virginia. The event was notable even at sites with less snowfall, such as Donegal, PA, which had its snowiest May since 1945 with 0.7 inches.

After a mild April, some **crops were ahead of schedule**. On **May 18**, lows dropped into the 20s and 30s, leading to **frost/freeze damage**. In New York, early estimated losses of [70 to 100%](#) of a few grape varieties were reported [at some vineyards](#). Early estimates indicate around [a third of Massachusetts' apple crop](#) was damaged. Damages to [New Hampshire's apple crop](#) could **exceed \$1 million**, with [peach and berry losses](#) also noted. Vermont officials reported [severe damage](#) to **thousands of acres** of crops, while Connecticut officials reported [significant crop losses](#). The full extent of damage will take more time to assess. There were [hazy skies](#) on [nearly half of all May days](#) as the jet stream steered **smoke from western Canadian wildfires** through the Northeast. In late May, smoke from wildfires in eastern Canada and New Jersey led to [reduced air quality](#) in parts of the Mid-Atlantic. **May was record dry** for multiple sites including Philadelphia, PA, and Wilmington, DE.

October–May snowfall was below normal in most areas, with some sites including Central Park, NY, Baltimore, MD, and Atlantic City, NJ, seeing their **least snowy seasons**. However, Buffalo, NY, had its **fifth-snowiest season** due to two historic lake-effect snow events.



NOAA image of smoke plumes over the Northeast on May 10.

Regional Impacts and Updates – March–May 2023



Tornado damage in Sussex County, DE, in April 2023. Credit: NWS PHI

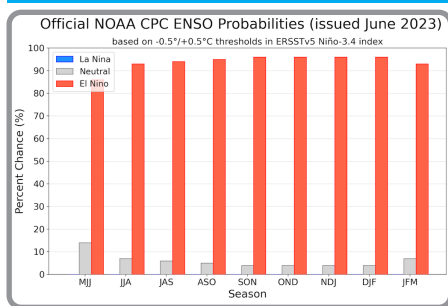
Spring Severe Weather

On **April 1, 10 tornadoes** touched down in the southeastern corner of the region. The strongest tornado was an EF-3, with estimated peak wind speeds of up to 140 mph, that traveled over 14 miles across Sussex County, DE. It was roughly **0.4 miles wide at its largest**, making it the **state's widest tornado** since 1950. A few homes were swept off their foundations and collapsed, while multiple other buildings were damaged, some substantially. The tornado also caused significant tree damage and downed power poles including a few steel high-tension poles. There was **one fatality**, Delaware's third tornado-related death since 1950. **Seven tornadoes**, three EF-2s and four EF-1s, touched down in New Jersey, tying as the state's greatest number of tornadoes in a single day and being **one of**

the state's largest tornado outbreaks since 1950. It was also likely the **greatest number of tornadoes in a single day** since 1950 for both Burlington and Monmouth counties in New Jersey, with an EF-2 tornado in Monmouth County **among the county's strongest tornadoes** on record. Pennsylvania and Maryland each saw an EF-1 tornado. Another **severe weather event** on **April 22** produced **three tornadoes** in the region. The Northeast saw 13 tornadoes during April compared to the **1997–2021 average** of four tornadoes. Notably, New Jersey typically averages no tornadoes in April but saw seven this April. The National Weather Service (NWS) office in Mount Holly, NJ, issued **44 severe warnings** in April, its **greatest number for April** since 1986.

In contrast, **May was unusually quiet** in terms of **severe weather**. For the **first time in over 35 years**, no Severe Thunderstorm Warnings were issued during May by the Mount Holly/Philadelphia, **Washington/Baltimore**, or Pittsburgh (PA) NWS offices. Also, it was the **first time since 1999** that the Albany (NY) NWS office did not issue any Severe Thunderstorm Warnings between January and May.

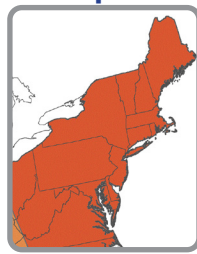
Regional Outlook – Summer 2023



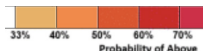
ENSO

El Niño conditions emerged in the equatorial Pacific Ocean during May. NOAA's **Climate Prediction Center indicates** **El Niño** will likely **continue and strengthen** to a **moderate or strong event** by winter 2023–24. **During El Niño winters**, the U.S. East Coast tends to see **above-normal precipitation** and possibly snowfall.

Temperature and Precipitation



Normal July–September average temperatures range from the low 60s in parts of New England and New York to the mid 70s in some coastal areas. **NOAA's Climate Prediction Center (CPC)**



favors above-normal temperatures for July–September for the Northeast (map above). Normal July–September precipitation ranges from less than 10 inches in western New York to more than 15 inches in eastern New York and parts of Pennsylvania and West Virginia. **Equal chances** of below-, near-, or above-normal **precipitation** were forecast for **July–September** for the region.

CPC notes that **drought conditions could persist or develop** in portions of the Northeast due in part to current below-normal streamflows and soil moisture going into the hottest months of the year and predicted above-normal temperatures. Some northern parts of the region have an **increased risk of significant wildland fires** in July and August.

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](#)

Atlantic Hurricane Season

	2023 Atlantic Season Outlook	1991-2020 Average Season
Number of Named Storms	12-17	14
Number of Hurricanes	5-9	7
Number of Major Hurricanes	1-4	3

NOAA's 2023 Atlantic hurricane season outlook slightly favors a **near-normal season**, with "a likely range of 12–17 named storms, of which 5–9 could become hurricanes, including 1–4 major hurricanes." This is due to **competing factors**. **El Niño**, which typically suppresses Atlantic hurricane activity, is expected to develop this summer. However, conditions such as **above-normal sea surface temperatures** and an active West African monsoon are favorable for hurricane development. The season runs from June 1–November 30, peaking from mid-August to late October. NOAA Eastern Region Climate Services webinar in **August 2023** will focus on the updated hurricane outlook.