

National Significant Events – December 2019–February 2020

Selected U.S. Significant Climate Anomalies and Events for February and Winter

Blizzard conditions and heavy lake-effect snowfall occurred across the Great Lakes states in late Feb with as much as 4 feet of snow reported in parts of upstate NY.



December

A major storm from Dec 1-3 resulted in over 24 in. of snow and up to 0.40 in. of ice accumulation in the region, severely affecting travel.

January

Boston sets all-time Jan record high temperature on Jan 12 – 74°F. Many East Coast temperature records fell on Jan 11.

Below average Great Lakes ice cover in Jan – approximately 35% of average.

The average winter temperature for the contiguous U.S. was 36.0°F, 3.8°F above the 20th-century average and the sixth warmest on record. Average temperatures for December, January, and February were 3.8°F above average (sixth warmest), 5.4°F above average (**fifth warmest**), and 2.4°F above average, respectively. Globally, it was the second warmest December, the warmest January, the second warmest February, and the second warmest winter. The contiguous U.S. winter precipitation total was 7.71 inches, 0.92 inches above average. December, January, and February precipitation were 0.18 inches above average, 0.39 inches above average, and 0.27 inches above average, respectively.

Highlights for the Northeast

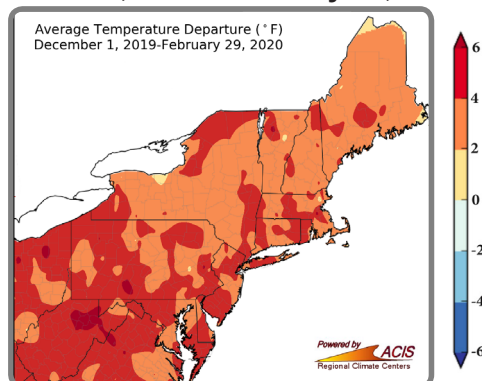
- Winter was unusually mild. **January 11 and 12** featured record or near-record warmth, with highs ranging from 50–80°F. Boston, Bridgeport, and Providence had their **warmest January day** on record, and it was Providence's **first 70°F January day**. Charleston's high of 80°F was only its second 80°F January day on record. High and low temperatures ranked among the 10 warmest for January at many sites. Buffalo did not record a single-digit temperature until **February 14**, the **second latest date** on record. The coldest temperature observed this winter in Washington, D.C., was 22°F and at Dulles Airport was 15°F, which were the **warmest minimum temperatures** for winter on record.
- The warm winter led to a **lack of snowfall** for many areas. [Several climate sites](#) including Providence, Newark, Philadelphia, and Baltimore had their **least snowy February** on record. Baltimore recorded **no snow** in February for the **first time** in 128 years. [Southern New Jersey](#) had its **lowest October–February snowfall** total since winter 1895-96.
- A **significant storm** from **December 1–3** dropped up to **36 inches** of snow on New York and New England. Another storm system from **February 5–8** produced a **rare tornado outbreak** in Maryland and **heavy snow and rain** in other areas, and also set the record for **lowest February air pressure** at Hartford. See Regional Impacts for details.
- Several **temperature and precipitation records** were set during winter:
 - *Wettest December*: JFK Airport (NY)
 - *Warmest year (2019)*: Elkins (WV)
 - *Warmest winter*: Allentown (PA)

Regional Climate Overview – December 2019–February 2020

Temperature

Departure from Normal (°F)

December 1, 2019–February 29, 2020



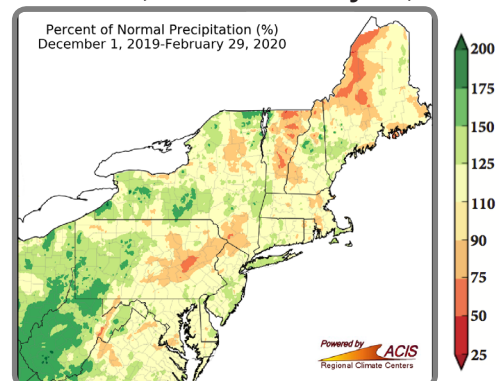
Climate normals based on 1981–2010 data; Rankings based on 1895–2020.

The Northeast had its **seventh warmest winter** at 4.1°F above normal. This winter was among the 10 warmest for all 12 Northeast states. **December** was 1.7°F above normal, in the **warmest third** of all years. West Virginia had its 16th warmest December. The Northeast had its **10th warmest January** at 6.7°F above normal. It ranked among the 15 warmest Januaries for all 12 states. The Northeast had its **11th warmest February** at 3.9°F above normal. All 12 states had a top 20 warm February.

Precipitation

Percent of Normal (%)

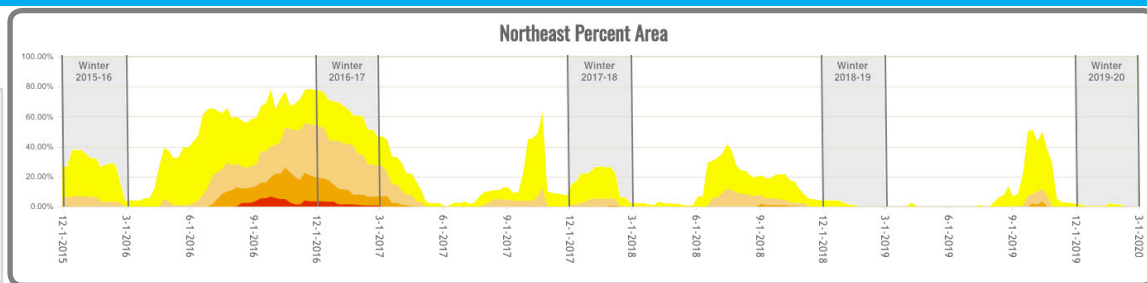
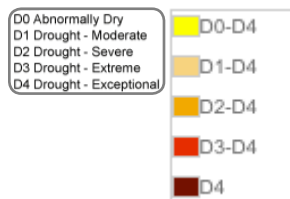
December 1, 2019–February 29, 2020



The Northeast saw 113% of normal precipitation during winter, ranking in the **wettest third** of all years. West Virginia had its 14th wettest winter. **December** precipitation was 123% of normal, in the **wettest third** of all years. Five states had a top 20 wet December. **January** precipitation was 94% of normal, in the **middle third** of all years. Three states ranked this January among their 20 driest. **February** precipitation was 122% of normal, in the **wettest third** of all years. West Virginia had its 10th wettest February.

Regional Climate Overview – December 2019–February 2020

Drought in the Northeast

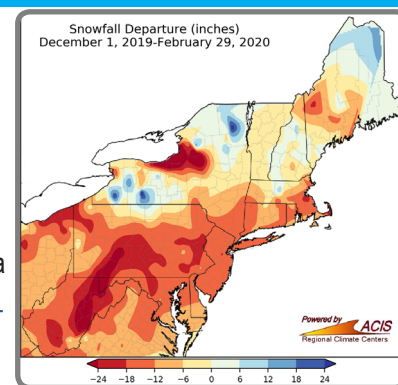


The **December 3 U.S. Drought Monitor** showed [2% of the region](#) was **abnormally dry**, including southern New Jersey, southeastern Pennsylvania, parts of Delaware, and southern/eastern Maryland. **Dryness eased** in New Jersey, Pennsylvania, and southern Maryland during the month; however, **abnormal dryness lingered** in eastern Maryland and southern Delaware. The **January 7 U.S. Drought Monitor** showed [less than 1%](#) of the region was abnormally dry. Persistent precipitation deficits, below-normal streamflow, and below-normal soil moisture led to a **slight expansion of abnormal dryness** in Maryland and Delaware during the month. The **February 4 U.S. Drought Monitor** showed 2% of the region [was abnormally dry](#), including eastern Maryland and southern Delaware. Enough precipitation fell during the first half of February that the Northeast became **free of abnormal dryness** for the first time since July 2019. The region remained free of abnormal dryness and drought through early March.

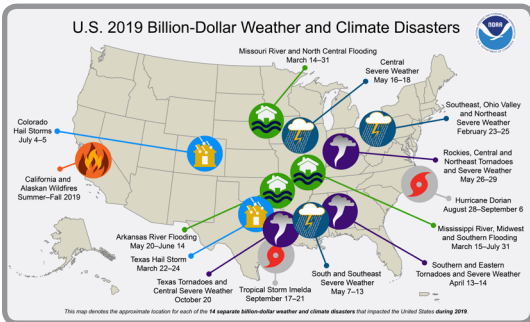
Regional Impacts and Updates – December 2019–February 2020

Winter Conditions

- This winter's [unusual warmth](#) was tied to the [polar vortex](#) and an atmospheric circulation pattern called the [Arctic Oscillation](#). The polar vortex is an area of low pressure and extremely cold air at the Earth's poles. At the outermost edge of this cold air mass is the polar jet stream. When the **polar vortex is strong**, the jet stream (and storm track) is farther north and the **cold air is contained**. The strength of the polar vortex and the phase of the Arctic Oscillation are [closely related](#). When there is lower-than-average air pressure over the Arctic and higher-than-average air pressure over the mid-latitudes, the [Arctic Oscillation is positive](#). Driven by a strong polar vortex, the Arctic Oscillation was **persistently positive** this winter. In fact, [in early February](#), the Arctic Oscillation reached its **highest daily value on record**.
- The **mild winter** affected [winter recreation](#) businesses, [transportation budgets](#), private [snow removal companies](#), and [others](#). The [USA National Phenology Network](#) estimated that this year's **spring leaf out** occurred 24 days **earlier than usual** in Washington, D.C., and New York City and 16 days early in Philadelphia. Many of the region's lakes and rivers had **thin ice** this winter, [prompting warnings](#) from officials and leading to [three deaths in one week](#) in New Jersey.
- **December 1–3:** A storm dropped **24–36 inches of snow** in New England and eastern New York. It was Albany's **fourth largest December snowstorm** and eighth all-time largest snowstorm. Parts of Maryland, Pennsylvania, and New York saw up to 0.40 inches of ice accumulation from **freezing rain**. Storm impacts included [flight delays/cancellations](#), power outages, and [road closures](#).
- **December snowfall** ranged from more than 12 inches **below normal** in parts of West Virginia, Maine, and northern New York to more than 12 inches **above normal** in areas that received heavy snow during the early December storm.
- **January snowfall** was **below normal** for most areas, with deficits exceeding 12 inches in parts of New York, Pennsylvania, and West Virginia. Atlantic City and Huntington did not see measurable snow, making this January the **second least snowy** on record.
- **February 5–8:** [Five tornadoes](#) touched down on February 7 in Maryland, making it the state's **largest winter tornado outbreak** and the **first February tornadoes** for several counties. The tornadoes downed trees and damaged buildings. Delaware, southeastern Pennsylvania, and New Jersey saw [damaging severe thunderstorms](#), while West Virginia saw up to 4 inches of **flood-inducing rain**. [Up to 22 inches of snow](#), up to 0.50 inches of ice accumulation, **thundersnow**, and [snowfall rates](#) of 2–3 inches per hour were noted in northern New England and upstate New York, where some roads were shut down. The storm produced (non-thunderstorm) **wind gusts** of up to 80 mph, which downed trees and wires, left [thousands of customers without power](#), and caused whiteout conditions.
- **February 23–25:** A 10-day dry period, [no snow cover](#), and low relative humidity likely helped **ignite and spread a forest fire** that [burned 80 acres](#) in Worthington State Forest (on the New Jersey side of the Delaware Water Gap National Recreational Area). Smoke from the fire slowed traffic along Interstate 80, which runs through the area.
- **February 27–March 1:** A **major lake effect event** dropped up to **48 inches of snow** east of Lake Ontario and up to 34.5 inches east of Lake Erie. Wind gusts of up to 60 mph created **blizzard conditions**, led to lakeshore flooding, and resulted in power outages.
- **February snowfall** ranged from 12 inches **below normal** in an area from central Maryland to eastern Massachusetts to more than 12 inches **above normal** in New York's lake-effect areas.



Regional Impacts and Updates – December 2019–February 2020

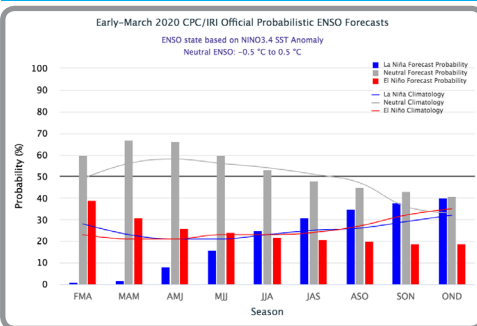


Tornado damage in Pennsylvania from a severe weather outbreak in mid-April 2019. Credit: NWS State College

Billion-Dollar Disasters

Since 1980, there have been **258 weather/climate disasters** in the U.S. that caused at least **\$1 billion in damage**, with the total cost of these **exceeding \$1.75 trillion**. There were 14 of these disasters **in 2019**, the **fourth highest total number** of events and the **fifth consecutive year** with 10 or more billion-dollar disasters. Three of these disasters affected the Northeast. On **February 24 and 25**, the region experienced **wind gusts of up to 88 mph**, with Pittsburgh having its highest non-thunderstorm-related wind gust since 1952. Impacts included downed trees and wires, more than 450,000 **power outages**, road and school closures, and damaged buildings. Snow drifts as high as 10 feet in northern Maine created **impassable roads**. Areas near Lake Ontario experienced shoreline flooding, lake-effect snow, and **blizzard conditions**. From **April 14–15**, **severe thunderstorms** produced **13 tornadoes**, wind gusts of up to 105 mph, and golf ball-sized hail in the Northeast. Delaware had its first April tornadoes in over 25 years. The severe weather outbreak was also unusual because it generally occurred in the early morning. **Eleven tornadoes** touched down in Pennsylvania from **May 28–29**. The state also experienced damaging straight-line winds of up to 100 mph, **softball-sized hail**, and heavy rain that led to flash flooding. A tornado also touched down in New Jersey.

Regional Outlook – Spring 2020



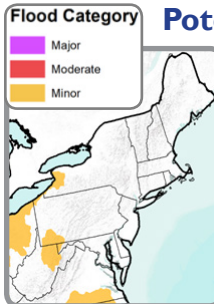
ENSO

During February, El Niño-Southern Oscillation (**ENSO**)-**neutral conditions** were observed in the equatorial Pacific Ocean. NOAA's Climate Prediction Center indicates that **ENSO-neutral conditions are expected to persist**, with a 65% chance they will continue through spring and a 55% chance they will continue through summer.

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](#)

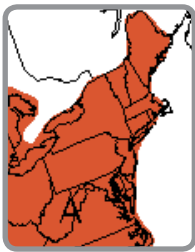
Spring Flood Potential



According to NOAA, the **flood risk** during spring is **below normal or normal** for most of the Northeast. This is mainly due to below-normal snow cover.

However, the **flood risk is above normal** for southwestern Pennsylvania, northern West Virginia, and western Maryland. **Minor flooding** is possible as these areas had a wet winter, have near- to above-normal soil moisture, and are expected to experience a wet spring. Northwestern Pennsylvania and western New York also have an **above-normal flood risk**. Minor flooding is possible as "streams draining into Lake Erie may experience high streamflow due to record high lake levels." Very heavy rain can cause flooding at any time of the year, even in areas experiencing drought or that have little to no snow on the ground.

Temperature and Precipitation



Normal April–June average temperatures range from the upper 40s in New England to the mid 60s in Maryland. NOAA's Climate Prediction Center favors an **increased chance of above-normal**

temperatures for April–June in the Northeast (map above).

Increased chances of above-normal precipitation for April–June were predicted for the region (map right). Normal April–June precipitation ranges from less than 10 inches in parts of New York to more than 14 inches in parts of West Virginia.

