

National Significant Events – September–November 2022

Selected U.S. Significant Climate Anomalies and Events for November and Autumn

On Nov 16-20, a historic lake-effect snowstorm slammed parts of western and northern NY with more than six feet of snow, closing roads, triggering driving bans, and canceling flights.

September

Above-normal rainfall improved drought and abnormally dry conditions in New England.

October

The remnants of Hurricane Ian brought high winds and flooding from the Carolinas to NJ in early Oct.

Highlights for the Northeast

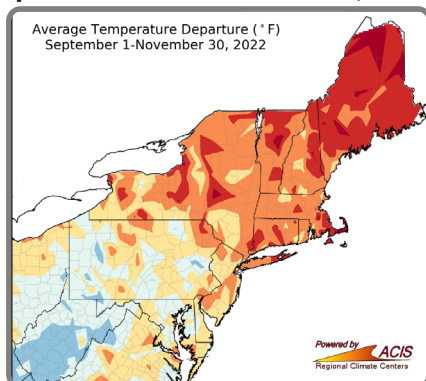
- **September** was wetter than normal in New England, helping **alleviate drought and abnormal dryness**; however, a drier-than-normal **November** allowed remaining **drought and dryness to persist**, or even expand.
- In **early October**, the **remnants of Hurricane Ian** and a coastal low phased and stalled off the Mid-Atlantic coast, bringing multiple days of rain, gusty winds, and high water levels to areas from Maryland to New York.
- **November 5–7** was **unusually warm**, with highs ranging from the 60s to 80s and lows in the 50s and 60s. Several sites including Kennedy Airport, NY, and Burlington, VT, had their **warmest November day on record**, with other sites seeing one of their 10 warmest November days. At least 17 sites saw their **warmest low temperature for November**, with many others having one of their 10 warmest. In fact, some sites **recorded multiple days** with highs and/or lows that ranked among their 10 warmest for November.
- This November ranked among the 20 warmest Novembers for 10 states. Multiple sites saw a **record number of days** this November with a high of at least 70°F, including Dulles Airport, VA, and Philadelphia, PA, with 10 days. Islip, NY's **first fall frost** (32°F or lower) occurred on **November 15**, tying as its **latest date** on record and making it the site's longest frost-free season at 229 days. November's warmth helped eight states have one of their 20 warmest autumns on record.
- A **major lake-effect snow event** occurred from **November 16–20** east of Lakes Erie and Ontario in New York, with preliminary storm snowfall totals of up to 81 inches.

The contiguous U.S. autumn average temperature was 54.7°F, 1.2°F above the 20th-century average. Average temperatures for September, October, and November were 3.2°F above average (fifth warmest), 1.2°F above average, and 0.7°F above average, respectively. Globally, it was the fifth-warmest September, the fourth-warmest October, the ninth-warmest November, and the fifth-warmest autumn. The contiguous U.S. autumn precipitation total was 5.92 inches, 0.96 inches below average. September, October, and November precipitation were 0.66 inches below average (10th driest), 0.50 inches below average, and 0.17 inches above average, respectively.

Regional Climate Overview – September–November 2022

Temperature

Departure from Normal (°F) September 1–November 30, 2022

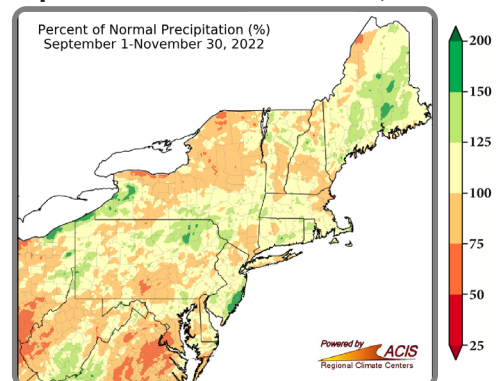


Climate normals based on 1991–2020 data; rankings based on 1895–2022.

The Northeast had its **17th-warmest autumn** at 0.9°F above normal. Autumn was among the 20 warmest on record for eight of the 12 Northeast states. **September** was exactly normal but ranked in the **warmest third** of all years. **October** was 0.2°F below normal, in the **middle third** of all years. This October was among the 20 warmest for three states. It was the **14th-warmest November** at 2.9°F above normal. This November was among the 20 warmest for 10 states.

Precipitation

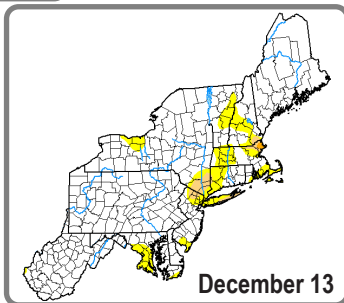
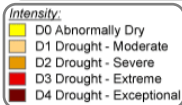
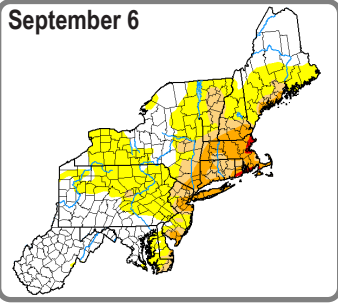
Percent of Normal (%) September 1–November 30, 2022



The Northeast saw 101% of normal **autumn** precipitation, ranking in the **wettest third** of all years. Maine had its 20th-wettest autumn. **September** precipitation was 114% of normal, in the **wettest third** of all years. September was among the 20 wettest for four states. **October** precipitation was 84% of normal, in the **middle third** of all years. However, New Jersey had its 10th-wettest October. **November** precipitation was 108% of normal, in the **middle third** of all years.

Regional Climate Overview – September–November 2022

September 6



December 13

Drought in the Northeast

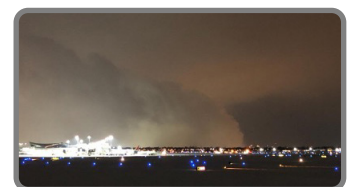
As of [September 6](#), the [U.S. Drought Monitor](#) showed 20% of the Northeast in drought and 37% as abnormally dry. **During September**, near- or above-normal precipitation allowed drought and abnormal dryness to **contract or ease** in multiple locations, particularly New England. For instance, extreme drought was limited to northeastern Massachusetts, while **severe drought eased entirely** in northern New England. The [October 4](#) U.S. Drought Monitor showed 11% of the Northeast in drought and 16% as abnormally dry. **During October**, coastal areas tended to see **above-normal precipitation**, allowing drought and abnormal dryness to **ease or shrink in coverage**. For instance, extreme drought eased in northeastern Massachusetts, while severe drought was erased in Connecticut and New Jersey. Maine and Rhode Island went from moderate drought in early October to being free of any drought and dryness in late October. However, some interior portions of the Northeast such as central New York and southwestern West Virginia were **quite dry**, causing abnormal dryness to **expand or be introduced**. The [November 1](#) U.S. Drought Monitor showed 2% of the Northeast in drought and 19% as abnormally dry. **During November**, the remnants of Hurricane Nicole **alleviated drought and dryness** in much of upstate New York, Pennsylvania, Maryland, and West Virginia. However, coastal areas were drier, **allowing drought and dryness to persist or expand**. The U.S. Drought Monitor from [November 29](#) showed 2% of the Northeast in drought and 9% as abnormally dry. There was **little change** in conditions during the **first half of December**. For current conditions, see the [Northeast DEWS Dashboard](#).

Regional Impacts and Updates – September–November 2022

Autumn Conditions

Waves of low pressure moving along a stalled front brought **multiple rounds of rainfall** to the region from **September 4–7**, during Labor Day weekend, resulting in **flash flooding** that closed roads and led to water rescues. Drought-stricken southern New England was hit particularly hard, with the greatest rain totals of **9–11 inches** in Providence County, RI. In that county, [flooding along Interstate 95](#) caused an hours-long traffic jam and about 30 students were displaced when [floodwaters entered a dorm](#). However, the rain **chipped away at drought conditions**. During the second half of September, two EF-1 tornadoes snapped and uprooted trees in central New York, one in Steuben County on September 19 and one in Delaware County on September 25, making them each county's first tornado since 2013. From **September 30–October 4**, the **remnants of Hurricane Ian** traversed the Mid-Atlantic, phased with a coastal low, and stalled off the Mid-Atlantic coast. The storm brought multiple days of rain, gusty winds, and elevated water levels to an area from Maryland to southern New England. Storm total **rainfall** generally ranged from 1–6 inches, with totals of [6–10 inches in New Jersey](#) and Delaware. Atlantic City, NJ, set back-to-back daily precipitation records on October 2 and 3, with 3.01 inches of rain on **October 2** becoming the site's **fourth-wettest October day** on record. The storm pushed Atlantic City to have its fourth-wettest October on record. The multi-day rainfall event **chipped away at drought** and abnormal dryness. Coastal areas also experienced gusty winds, with the **highest gusts** ranging from 50–70 mph in New Jersey, which contributed to [shoreline erosion](#) and minor to moderate [coastal flooding](#). A **slow-moving storm** fueled by moisture from the Atlantic Ocean brought rainfall to the Northeast, particularly New England, from **October 13–15**. The greatest **rainfall totals** of up to 6 inches were generally reported in Maine where **flash flooding** led to road closures, caused [two roads to collapse](#), and stranded several vehicles. **Gusty winds** of up to 58 mph in Massachusetts and Maine downed trees and power lines, which blocked roads and caused [over 100,000 customers](#) in Maine to lose power.

From **November 11–12**, the **remnants of Hurricane Nicole** moved through the Northeast. The storm dropped up to 3.50 inches of rain on the region, with the greatest amounts generally in western New York and western Pennsylvania. Several sites experienced one of their **10 wettest November days** on record including Pittsburgh, PA, which had its second-wettest November day with 2.36 inches of rain. **Storm impacts were limited** due to dry antecedent conditions, with only a few reports of localized flooding leading to road closures in western New York. From **November 16–20**, a **major lake-effect snow event** dumped heavy snow in narrow bands east of Lakes Erie and Ontario in New York. In Erie County, snow fell at rates of up to [5 inches per hour](#) and [snowfall totals](#) were **up to 81 inches**. Buffalo, NY, saw 36.6 inches of snow from November 17–19, its second largest three-day snowfall for November and seventh all-time largest three-day snowfall. November 19 became the site's **second snowiest November day** and its fifth all-time snowiest day with 21.5 inches of snow. Buffalo had its **second snowiest November** on record with 36.9 inches of snow. The storm [halted travel](#), closed schools and businesses, [knocked out power](#), led to a [roof collapse](#), and was blamed for several deaths.



Lake-effect snow band south of Buffalo, NY, on November 18.
Credit: Dan Kelly

Regional Impacts and Updates – September–November 2022



Smoke from wildfires in West Virginia on November 9. Credit: [NASA](#)

Drought

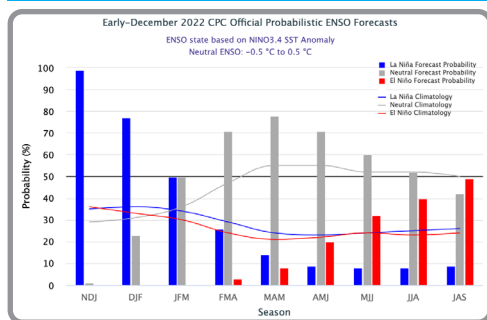
Water Resources: Low water levels at Beltzville State Park in Pennsylvania caused the swimming area to [close early for the season](#). Summer water rates remained in effect for a [month longer than usual](#) in Ipswich, MA. Some waterways in Massachusetts, Long Island, and New Jersey saw **record or near-record low streamflows** during September, but flows improved in most areas by mid-October. However, groundwater and [reservoir levels](#) were generally **slower to recover**. For instance, the Wanaque Reservoir in New Jersey hovered [around 50% capacity](#) for much of fall. **Water restrictions also continued**, including for around 100 New Hampshire water systems. **Drought and sudden heavy rain** were thought to be possible causes of [E. coli in the drinking water](#) of a few Massachusetts towns and a change in the [smell and taste](#) of Portsmouth, RI's drinking water.

Agriculture: Drought conditions led to [reduced grain yields](#) in Pennsylvania and [reduced soybean yields](#) and **corn losses** in Delaware. In New England, **Christmas tree saplings died** and some mature trees had [brown needles](#) and bare spots, causing some farms to [not fully open](#) and growers to [raise prices](#). Some southern New England farmers noted their apples were [smaller but sweeter](#). With [reduced yields](#) and [rising costs](#), prices of popular fall crops such as [apples and pumpkins](#) increased in several areas. On Long Island, NY, dry conditions led to **fewer crop diseases**; however, irrigation was expensive, with one grower [raising prices by 15%](#).

Health: Drought conditions in Massachusetts **limited the mosquito population**, [reducing the number](#) of mosquito-borne viruses.

Wildfires: **Warm, dry, windy conditions** in early November helped fuel [several wildfires](#) in Pennsylvania and [around 20 wildfires](#) in West Virginia, with a few of the fires each [charring hundreds of acres](#).

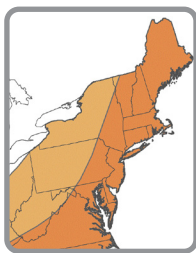
Regional Outlook – Winter 2022–23



ENSO

During November, **La Niña conditions persisted** in the equatorial Pacific Ocean. NOAA's [Climate Prediction Center](#) [indicates](#) La Niña will continue through winter, with a quick transition to ENSO-neutral conditions thereafter. There are equal chances of La Niña and ENSO-neutral for January–March, with a 71% chance of ENSO-neutral in February–April.

Temperature and Precipitation

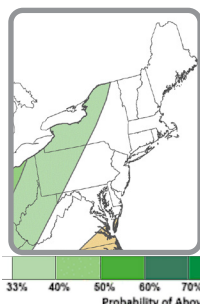


Normal January–March average temperatures range from the teens in northern New England and northern New York to the 40s in parts of the Mid-Atlantic and southern West Virginia. [NOAA's Climate Prediction Center \(CPC\)](#) favors **above-normal temperatures** for **January–March** for the entire Northeast (map left).

Normal January–March precipitation ranges from less than 6 inches in western/central New York to more than 13 inches in several locations including Rhode Island, southeastern Massachusetts, and higher elevations of West Virginia. **Above-normal precipitation** is favored for **January–March** for much of West

Virginia, the western half of Pennsylvania, and portions of western, central, and northern New York (map below). **Equal chances** of below-, near-, or above-normal **precipitation** were forecast for the rest of the Northeast.

The forecast for above-normal temperatures and above-normal precipitation is due in part to long-term climate trends and effects from La Niña.



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