



Gulf of Maine Significant Events – September–November 2020

Drought conditions persisted in the region during September, with **many impacts** noted. Conditions improved in some areas in October and November. Several tropical systems affected the region during autumn, including **Hurricane Teddy** from **September 22 to 23**, **Hurricane Delta** from **October 12 to 14**, and **Tropical Storm Zeta**, which brought snow to New England, on **October 30**. See Regional Impacts for details.

September

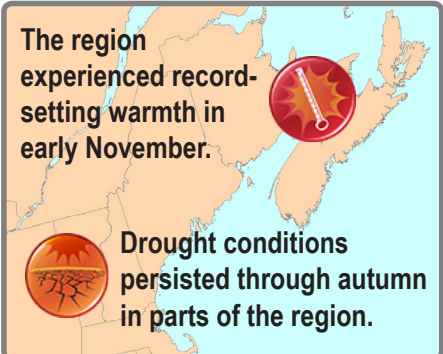
Several frosts in **mid-September** cut short an already difficult [growing season](#). Caribou and Bangor, ME, had one of their **10 shortest growing seasons**. From **September 26 to 30**, high temperatures of up to 30°C (86°F) and low temperatures above 16°C (60°F) set **dozens of temperature records** in the region. Caribou, ME, had its second-latest day in the year with a high of at least 27°C (80°F). A **storm system** from **September 29 and 30** ended the warm spell and brought up to 76 mm (3 in.) of rain. Wind gusts of up to 116 km/h (72 mph), highest in Massachusetts, caused over 165,000 New England customers and around 49,000 Maritimes customers [to lose power](#). Downed trees and wires led to road and school closures in New England. Bangor, ME, had its **driest September on record**, while Caribou, ME, had its second driest, and Woodstock, N.B., had its third driest. Caribou had its **second-fewest number** of days with measurable precipitation for September.

October

October featured **frequent storms**. On **October 7**, a [derecho with wind gusts of up to 132 km/h \(82 mph\)](#) produced **widespread damage** in Massachusetts and southern New Hampshire. Numerous trees were downed due to strong winds, drought stress, and being fully leafed. In Massachusetts, [nearly 240,000 customers lost power](#) and there was an EF-0 tornado. The system produced [wind gusts](#) of up to 102 km/h (63 mph) in the Maritimes. The **first measurable snow** of the season fell in northern Maine and the Maritimes from **October 26 to 27**, with the greatest total of 10 cm (4 in.) in Doyleville, N.B. Caribou, ME, had its third-wettest October on record.

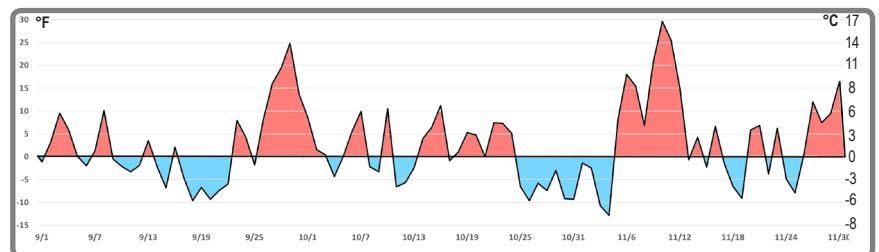
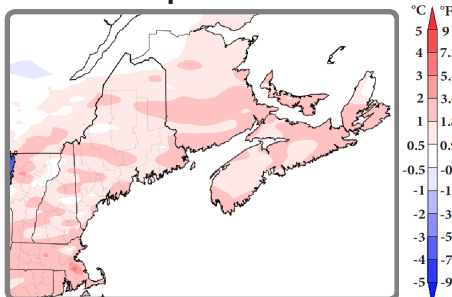
November

The region experienced **unusual warmth** from **November 6 to 12**, with high temperatures up to 25°C (77°F). More than 30 Maritimes sites and Portland and Caribou, ME, had their **all-time hottest November day** on record. In fact, multiple days during the period [ranked among the 10 warmest for November](#). For instance, Caribou had its hottest November day as well as its second-, fifth-, and eighth-hottest November days. Low temperatures around 10°C (50°F) ranked among the 10 warmest for November at a few sites. November featured **frequent storms**. For instance, a storm from **November 1 to 2** brought up to 70 mm (3 in.) of rain, light snow, and wind gusts of up to 100 km/h (62 mph) to the Maritimes, [cancelling ferry crossings](#). A storm from **November 30 to December 2** dropped up to 208 mm (8 in.) of rain. The greatest totals were in southern New Brunswick where [some homes flooded and a family was trapped](#). **Wind gusts of up to 113 km/h (70 mph)** downed trees and wires, leaving [more than 100,000 customers](#) in Maine without power.



Regional Climate Overview – September–November 2020

Temperature Autumn Departure from Normal

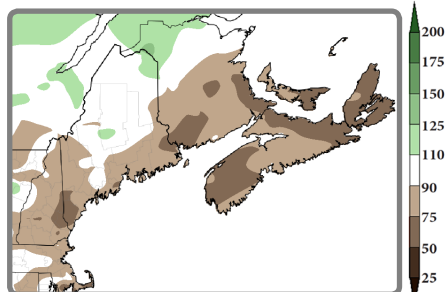


Daily average temperature departure from normal during autumn at Caribou, ME. Warmer-than-normal days are shaded red and colder-than-normal days are shaded blue.

Autumn (averaged over September, October, and November) was up to 2°C (4°F) **warmer than normal***. This autumn was among the 10 warmest on record for Caribou and Portland, ME. **September temperatures** generally ranged from near normal to 2°C (4°F) **above normal**, with the warmest spots in New England. Portland, ME, had its seventh-warmest September on record. **October temperatures** were **within 1°C (2°F) of normal** for most areas, with parts of Massachusetts and New Hampshire up to 2°C (4°F) warmer than normal. **November** was up to 3°C (5°F) **warmer than normal**. This November was the **warmest on record** for Greenwood and Lunenburg, N.S., and among the 10 warmest for Caribou and Portland, ME, and several Maritimes sites. *Temperature normals based on 1981–2010 data.

Regional Climate Overview – September–November 2020

Precipitation Autumn Percent of Normal

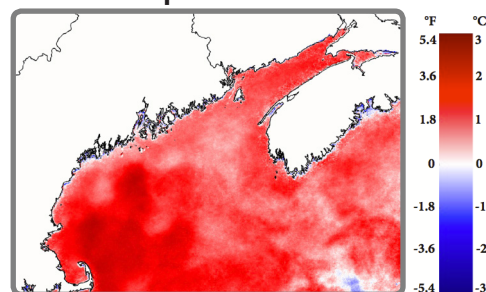


U.S. precipitation normals based on 1981–2010 data; Canadian precipitation normals based on 2002–2019 data.

SST normals based on 1985–2014 data

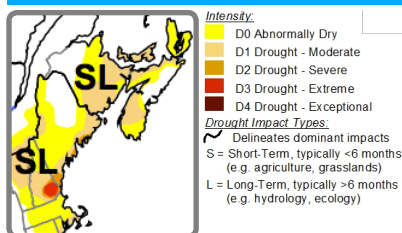
Autumn precipitation (accumulated from September to November) ranged from 50% of normal to near normal for a majority of the region. **September was dry** for most areas, with parts of Maine and western New Brunswick seeing less than 25% of normal precipitation. In **October**, southern parts of the Maritimes were **dry** while northern parts of the Maritimes and New England were **wet**, with precipitation ranging from 25% of normal to more than 200% of normal. **November precipitation** ranged from 25% of normal to near normal for most areas, with the **driest spots** in western Maine and northern New Hampshire. However, northern Maine was wetter than normal.

Sea Surface Temperature Autumn Departure from Normal



Sea surface temperatures over the entire Gulf of Maine were **above normal** during **autumn**. Anomalies were strongest (greater than 2.0°C [4°F]) over the deeper basins of the western Gulf, greater than 1.0°C (2°F) over most of the rest of the region, and weakest over the deeper basins in the eastern Gulf (around 0.5°C [0.9°F]). The entire Bay of Fundy and Scotian Shelf were around 1.0°C (2°F) above normal.

Regional Impacts – September–November 2020



Above: November 30, 2020 [North American Drought Monitor](#). Below: Record low streamflow along the Aroostook River at Washburn, ME. Photo courtesy: James Sinko.



Drought Conditions

During **September**, drought conditions **intensified** in **New England**, with **severe to extreme drought** in many areas, but some **Maritimes** locations saw **slight improvement**. From mid-October through November, conditions improved in some areas.

Agriculture: **Forage yields** were expected to be **reduced by up to 75%** in Maine and New Hampshire and up to 50% in the Maritimes. Farmers [bought hay to feed livestock](#), but there were [hay shortages](#) and increased prices, with one New Hampshire farmer spending around [\\$14,000 on feed](#). **Potato yields** were down by at least 20% in [northern Maine](#) and [P.E.I.](#) and by [as much as 50%](#) in New Brunswick, meaning revenue losses of up to \$50 million. Apples were [smaller than usual](#) and yields were down in parts of New England. A Massachusetts farm [lost around a third](#) of its Christmas tree saplings. A [lack of water presented challenges](#) for cranberry growers, with [some losses in Massachusetts](#). **Wild blueberry yields** were down in Maine and the Maritimes due to drought and frost. Crop yields were expected to be **half of normal** in Maine. In New Brunswick, fields that normally yield 8,000 lbs per acre yielded less than 1,000 lbs per acre. New England farmers saw **increased expenses** due to the drought, with irrigation and labor costs [exceeding \\$50,000](#) at a Massachusetts farm and [around \\$30,000](#) at a New Hampshire farm. However, it was a [good season for garlic](#) in P.E.I.

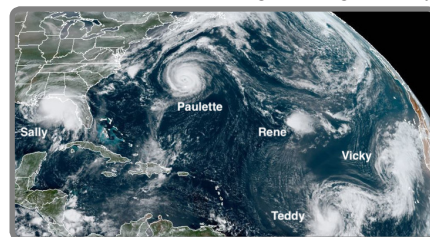
Wildfires: New England saw an **unusually high number of fires**, which [burned deeper](#) and took [longer to extinguish](#). Massachusetts had more than 1,000 wildfires as of late September, with [52 fires in a nine-day period](#) from late September to early October. The state's fire tower network was extended due to increased fire risk. **Maine** had its **worst year for fires in 35 years** with [1,150 wildfires](#) as of early December. In New Hampshire, an [emergency drought law banning outdoor fires](#) near public woods was in effect for a month, and [several communities](#) and the [White Mountains National Forest](#) had burn bans. Drought conditions also [dried up or reduced water supplies](#) that some firefighters rely on to fight fires. There were 176 **fires in Nova Scotia** that burned 710 hectares, the **highest losses since 2016**. In New Brunswick, there have been 462 fires through late November with 1388 hectares burned, **well above the 10-year averages** of 236 fires and 319 hectares.

Water Resources: The [Aroostook River at Washburn](#) and Masardis, ME, dropped to an **all-time record low flow**. River levels in the Maritimes hovered near to slightly below historic lows at many locations in the summer and into mid-fall. Water restrictions were in place for hundreds of Massachusetts and New Hampshire locations. **Dry wells** were reported across New England, including more than 1,000 in New Hampshire, with some well-drilling contractors having a wait list of over 100 people or a [6–12 week wait](#). A lower-than-usual water table helped [construction move ahead of schedule](#) along the waterfront in Bangor, ME.

Regional Impacts – September–November 2020

Hurricane Season

It was the [fifth consecutive year](#) with **above-normal tropical activity** in the Atlantic Ocean. There were a [record-setting 30 named storms](#) of which [13 became hurricanes](#) (second most on record) including six major hurricanes (second most on record). An average season produces 12 named storms of which six become hurricanes including three major hurricanes. In mid-September, there were [five tropical systems in the Atlantic at the same time](#) for only the second time on record. The month finished with a [record 10 named storms](#). November had [two major hurricanes](#) for the **first time on record**. Three tropical systems [affected the region during summer](#) and another **three impacted the region** during autumn. **Hurricane Teddy** produced rough surf, **minor coastal flooding**, and [extremely high fire danger](#) due to winds in **New England** as it moved north in the Atlantic Ocean on **September 22**. Teddy transitioned into a post-tropical storm before making **landfall** near Ecum Secum, N.S., on **September 23**. The storm brought [heavy rain, strong winds](#), and pounding surf to the Atlantic coast of Nova Scotia. Offshore buoys recorded **significant wave heights** of up to 12 m (39 ft.), with peak waves of up to 25 m (82 ft.), while the Halifax buoy had significant wave heights of up to 5 m (16 ft.) with a peak of 7 m (23 ft.). The **greatest rain totals** ranged from around 80–125 mm (3–5 in.). Wind gusts of up to 100 km/h (62 mph) were recorded in Nova Scotia, with the **highest gust** of 119 km/h (74 mph) at Eskasoni. The strong winds caused [power outages throughout the Maritimes](#). Crop damage was generally localized, with some apple orchards in Nova Scotia losing around 10% of their apples. A storm system associated with the remnants of **Hurricane Delta** produced up to 102 mm (4 in.) of **rain** in the region, with the greatest amounts in New England, from **October 12 to 14**. Caribou, ME, had its largest two-day precipitation total since October 2017. On **October 30**, the remnants of **Tropical Storm Zeta** brought up to 16.5 cm (6.5 in.) of snow to New England. The greatest amounts were in eastern Massachusetts, where branches and wires were downed due to the weight of the snow. Boston, MA, had its **snowiest October** and **snowiest October day** on record. Combined with late spring snowfall, Boston tied its **shortest time between measurable snowfalls** on record at 194 days (April 18–October 30).

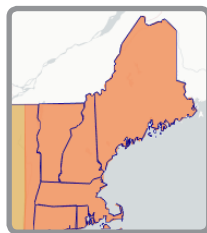


Five named tropical systems in the Atlantic on September 14, 2020. Credit: NOAA

Regional Outlook – Winter 2020–21

Temperature and Precipitation

For **December–February**, [NOAA's Climate Prediction Center \(CPC\)](#) and [Environment and Climate Change Canada \(ECCC\)](#) favor increased chances of **above-normal temperatures** for the Gulf of Maine region. The precipitation outlook from ECCC favors **above-normal precipitation** for the **Maritimes** for **December–February**. There is an increased likelihood of above-normal precipitation for northern New Hampshire for **December–February**, according to CPC. **Equal chances** of below-, near-, or above-normal precipitation were forecast for the rest of **New England**.

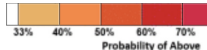


CPC temperature map (above left) produced November 19.



Prob (%) above normal/
au dessus de la normale

ECCC temperature map (above right) produced November 30.



- Drought remains but improves
- Drought removal likely

CPC drought map (left) produced December 17.

Contacts

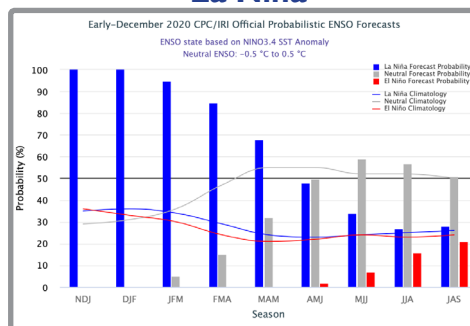
[National Oceanic and Atmospheric Administration](#)

[Environment and Climate Change Canada](#)

[Northeast Regional Climate Center](#)

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La Niña



During November, **La Niña conditions** persisted in the equatorial Pacific Ocean. NOAA's [Climate Prediction Center](#) [indicates](#) there is a 95% chance La Niña **will continue through winter** and around a 50% chance of ENSO-neutral conditions during spring 2021. This La Niña is expected [to be moderate strength](#).

Gulf of Maine Partners

[Gulf of Maine Council on the Marine Environment, Climate Network](#)

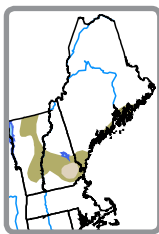
[University of Maine, School of Marine Sciences](#)
[State Climatologists](#)

[National Integrated Drought Information System](#)

[Northeast Regional Association of Coastal Ocean Observing Systems](#)

Drought

NOAA's [Climate Prediction Center](#) [indicates](#) that **drought conditions are expected to ease** in New England between **December 17, 2020** and **March 31, 2021**. The



exception is southeastern New Hampshire, where drought conditions are expected to improve but linger. The forecast is based on current La Niña conditions, which tends to shift the storm track toward interior New England.