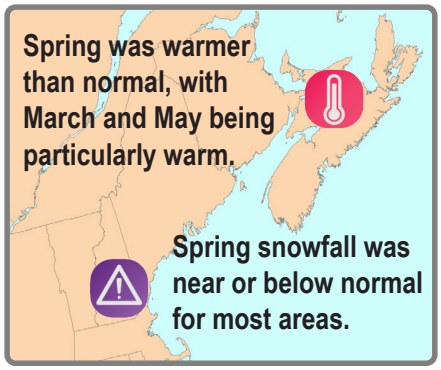
Quarterly Climate Impacts and Outlook

Gulf of Maine Region

June 2022

Gulf of Maine Significant Events – *March–May 2022*

Drought conditions contracted in Maine but were **introduced** in Massachusetts during spring. Only a few **notable storms** affected the region. See Regional Impacts for details.



March

March featured **near-** or **above-normal temperatures**, leading to **reduced snowfall** and snowpack for many areas. Several storms moved through the region, bringing a **mix of precipitation types**. March **sea surface temperatures** were the **third warmest** on record.

April

With **near-** or **above-normal temperatures, April** showers fell in the form of rain for many locations. While overall **precipitation** was near or **above normal, April snowfall** was **below** or **near normal**. The wet weather **alleviated** some of the **drought** and abnormal dryness in New England. Warm temperatures, rain, and snow melt led to **localized flooding** in northern Maine and parts of New Brunswick, but overall flooding was limited. Stormy conditions delayed the start of lobster season in P.E.I.

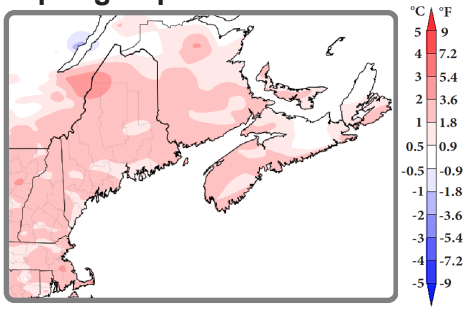
May

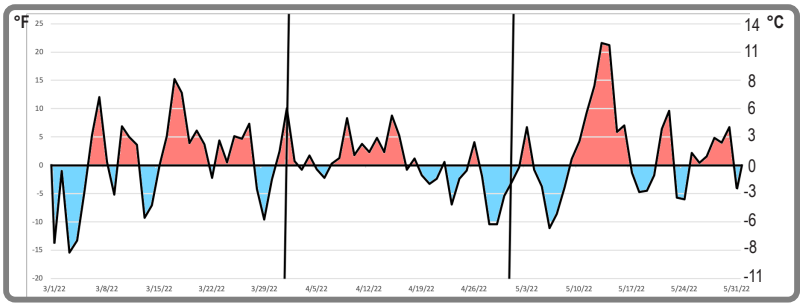
On **May 7** and **8**, some sites in the Maritimes set records for **lowest May minimum temperature** with lows down to -8°C (18°F). The rest of May featured a few **unusually warm periods**. Many sites set daily maximum and/or high minimum temperature records from **May 11 to 14**. Caribou, ME, saw record-high temperatures each day, with a high of 32°C (90°F) on May 13 tying as its 10th warmest May day and its **second earliest date** for a high of 32°C (90°F). Caribou also tied its third warmest low temperature for May with a low of 17°C (63°F) on May 14. The warm, dry conditions helped spark Nova Scotia's second largest **forest fire** in the past 50 years. On **May 16**, **severe thunderstorms** in New Hampshire produced multiple instances of straight-line wind damage and an **EF-1 tornado** that damaged around 1,000 trees along its 7.7 km (4.8 mi.) path. A **Heat Advisory** was issued for parts of New England for the first time in May since at least 2006 during a warm spell from **May 20** to **22**. A strong cold front on May 22 **dropped temperatures** by 5.6°C (10°F) in 15 minutes in Caribou, ME, and by 11°C (20°F) or more in 24 hours in some areas. The front also sparked **severe thunderstorms** in New England and New Brunswick, with storm reports noting downed trees, **hail as large as limes**, and heavy rain, as much as 55.9 mm (2.2 in.) in 90 minutes, leading to localized flooding. These storms contributed to New Brunswick having its **highest amount** of observed lightning strokes for May since records began in 2002; however, Nova Scotia had its second lowest amount for May. From **May 26** to **28**, northern Maine and northern New Brunswick saw **consistent rain**, setting daily records. Nearly 178 mm (7 in.) of rain in a 48-hour period in northern Maine qualified as a **200-year storm event** and led to localized flash flooding that washed out a road. Spring leaf out was delayed in northern Maine but generally early elsewhere in New England.

Tornado damage in Sullivan County, NH. Photo credit: NWS Gray

Regional Climate Overview – *March–May 2022*

Temperature
Spring Departure from Normal





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

Spring (averaged over March, April, and May) was up to 2°C (4°F) **warmer than normal**, with Portland, ME, and Boston, MA, having one of their 10 warmest springs on record. **March** was as much as 3°C (5°F) **warmer than normal**, with southeastern Massachusetts and western Nova Scotia being the warmest. Greenwood, N.S., had its ninth warmest March. **April** was up to 2°C (4°F) **warmer than normal**, with the warmest areas in eastern Massachusetts, southern New Brunswick, and parts of Maine and Nova Scotia. **May** was as much as 3°C (5°F) **warmer than normal**, with parts of New Hampshire and Maine being the warmest.

*U.S. normals based on 1991–2020 data; Canadian normals based on 1981–2010 data

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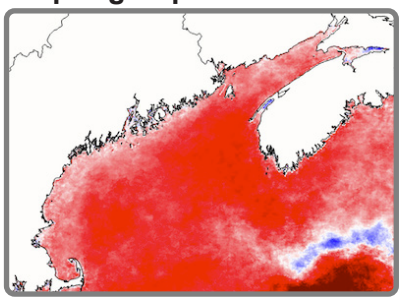
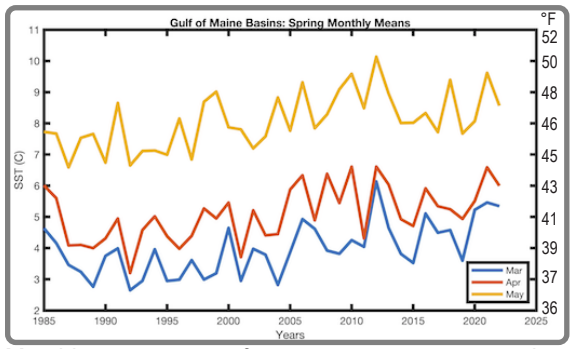
Regional Climate Overview – *March–May 2022*

Sea Surface Temperature

Spring Departure from Normal





Monthly mean sea surface temperature, averaged over the Gulf of Maine deep basins, for March, April, and May (1985 to 2022). Credit: University of Maine School of Marine Sciences

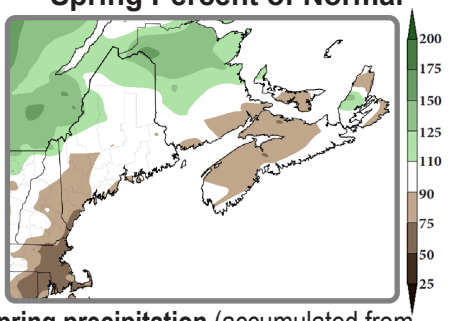
*SST normals based on 1985–2014 data

Spring sea surface temperature anomalies over the Gulf of Maine were quite **uniformly above normal** in all offshore regions for the period by around 1°C to 2°C (2°F to 4°F), strongest over the eastern Gulf. Nearshore regions had weaker anomalies (around 0.5°C [1°F]) extending furthest offshore in the western Gulf. Spring positive anomalies were weaker than those earlier in winter primarily due to cooler May sea surface temperatures. Daily sea surface temperatures from mid-April through May were cooler but still above the long-term mean.

Spring **monthly mean sea surface temperatures**, averaged over the Gulf of Maine deep basins, showed **March** to be the **third warmest on record**. Although April and May were both warmer than the 30-year (1985–2014) average, they were not as exceptionally warm.

Precipitation

Spring Percent of Normal



Spring precipitation (accumulated from March to May) ranged from 50% of normal to 175% of normal. **March precipitation** ranged from 25% of normal in coastal New England to 175% of normal in northern Maine and northern New Brunswick. **April precipitation** ranged from 50% of normal in southeastern Massachusetts to 200% normal in northern New Hampshire and parts of Maine. Fredericton, N.B., had its fifth wettest April. **May precipitation** ranged from 25% normal to near normal for most areas, with northern Maine and northern New Brunswick being wetter. Portland, ME, had its 10th driest May.

*Precipitation normals based on 1991–2020 data.

Regional Impacts – *March–May 2022*

Spring Conditions

Several storms moved through the region during **March**, with the storm track bringing mostly snow to interior New England and northern New Brunswick, mainly rain to coastal New England and southern parts of the Maritimes, and a mix of precipitation types including multiple periods of freezing rain to areas such as central/eastern New Brunswick. A storm from March 12 to 13 highlights the **variable conditions** many of the **March storms** produced in the region.

- **March 12 to 13**: Interior New England and northern New Brunswick saw mostly **snow**, with up to 36 cm (14 in.) in northern New Hampshire. Areas such as Nova Scotia and P.E.I. were **warmer**, setting daily temperature records and seeing **rain**, with up to 82 mm (3 in.) in Cape Breton, N.S. The intense storm produced **wind gusts** of up to 98 km/h (61 mph), with gusts of up to 120 km/h (75 mph) in coastal Nova Scotia. Blowing and drifting snow shut down a section of Route 1 in northern Maine.

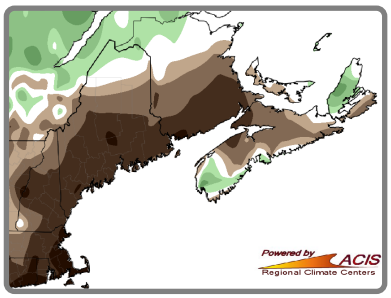
The storm track along with **warmer-than-normal temperatures** led to **below- or near-normal March snowfall** for most of the region. **Snow depth** at the end of March was **below normal** in Nova Scotia and southern New Brunswick, with little to no snow on the ground, but was **above normal** in northern New Brunswick and P.E.I.

April featured **near-** or **above-normal temperatures** and **multiple storms**, which generally produced **rain**. **April snowfall** was **below or near normal** for most areas, with parts of the Maritimes having deficits of up to 50 cm (20 in.). A notable storm occurred mid-month.

- **April 19:** Most areas saw **rain**, with the greatest totals of nearly 100 mm (4 in.) in eastern Maine, which experienced **some flooding** as did areas along the Saint John River in New Brunswick. Many daily precipitation records were broken in the Maritimes. **Wind gusts** reached as high as 100 km/h (62 mph), with higher gusts in coastal Nova Scotia. Downed trees and power lines blocked roads and led to power outages, causing some businesses to close.

Snow depth at the end of April in the Maritimes was **below or near normal**, with snow only remaining in the higher elevations of Cape Breton, N.S., and northern New Brunswick.

There was **little snowfall**, if any, during **May**. **Spring snowfall** (map right) ranged from less than 25% of normal to near normal for most areas. However, northern Maine, northern New Brunswick, southern Nova Scotia, and Cape Breton, N.S., saw up to 175% of normal spring snowfall.



Spring snowfall ranged from less than 25% of normal to 175% of normal.

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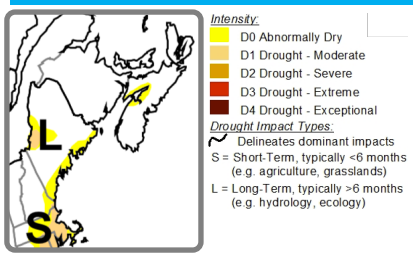
Regional Impacts – *March–May 2022*



North American Drought Monitor from May 31, 2022.

Drought Conditions

During **March**, **drought** and **abnormal dryness contracted** in New England due to near- to above-normal precipitation, decent snowpack, and improving streamflow and groundwater levels. A small area of abnormal dryness persisted in northwestern New Brunswick.

Timely precipitation, particularly during the first half of **April**, **eased severe drought** in western Maine, shrank areas of moderate drought and abnormal dryness in New England, and alleviated abnormal dryness in New Brunswick.

In **May**, moderate drought and abnormal **dryness contracted** in interior New England due to above-normal precipitation but was **introduced** in coastal New England due to increasing precipitation deficits, declining soil moisture, and below-normal streamflow and groundwater levels. **Abnormal dryness** also **developed** in northern Nova Scotia, where precipitation was below normal.

Fire: **Burn restrictions** were implemented in the Maritimes. **Multiple wildfires** burned in Nova Scotia including its second largest **forest fire** in the past 50 years, which burned 3,100 ha (7,600 acres) and led to **air quality alerts** for the Yarmouth area. There were also a few **wildfires** in New England, including a fire in New Hampshire's White Mountains that took a week to contain and consumed 101 ha (250 acres).

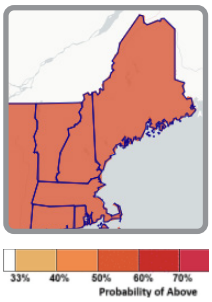
Water Resources: A few Massachusetts communities implemented or enhanced **water restrictions**. The dry, hot conditions in Nova Scotia led to the first **blue-green algae warning** of the season, earlier than usual.

Wildlife: Maine could have **another bad year** of browntail moth caterpillars without more rain, which promotes the spread of a fungus and virus that kill the caterpillars.

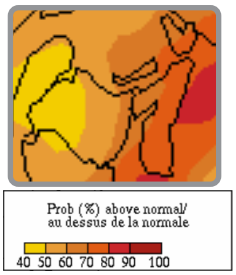
Wildfire in Yarmouth County, N.S. Photo credit: Communications Nova Scotia

Regional Outlook – *Summer 2022*

Temperature and Precipitation



CPC temperature map (above) produced May 19



ECCC temperature map (above) produced May 31

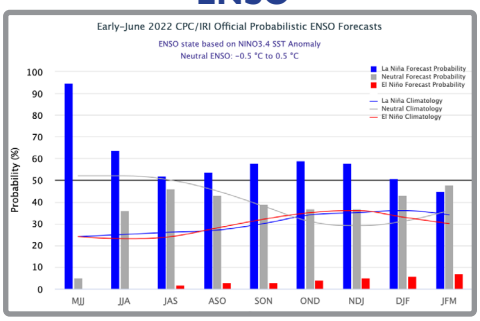
For **June–August**, NOAA's Climate Prediction Center (CPC) favors **above-normal temperatures** for New England, driven by long-term climate trends and warmer-than-normal sea surface temperatures. Environment and Climate Change Canada (ECCC) favors **above-normal temperatures** for the Maritimes. CPC favors **above-normal precipitation** for **June–August** for southeastern Massachusetts, potentially easing drought, while ECCC favors **below-normal precipitation** for part of Nova Scotia. **Equal chances** of below-, near-, or above-normal precipitation were forecast for the rest of the region.

Atlantic Hurricane Season

NOAA's 2022 Atlantic hurricane season outlook favors an **above-average season**, with "a likely range of 14–21 named storms, of which 6–10 could become hurricanes, including 3–6 major hurricanes." This is due to factors such as La Niña conditions and warmer-than-average sea surface temperatures. It would be the seventh consecutive above-average season. The season runs from June 1–November 30, peaking from mid-August to late October. The first named storm of the season, Tropical Storm Alex, formed on June 5. NOAA Eastern Region Climate Services webinar in August 2022 will focus on the updated hurricane outlook.

	2022 Atlantic Season Outlook	1991-2020 Average Season
Number of Named Storms	14-21	14
Number of Hurricanes	6-10	7
Number of Major Hurricanes	3-6	3

ENSO



During May, **La Niña conditions continued** in the equatorial Pacific Ocean. NOAA's Climate Prediction Center indicates there is a 52% chance **La Niña will continue** through **summer** and a 58% to 59% chance of La Niña conditions during fall and early winter. This could be the **third year in a row** with La Niña, which has happened only two other times since 1950.

Contacts

National Oceanic and Atmospheric Administration

Environment and Climate Change Canada

Northeast Regional Climate Center

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Northeast Regional Association of Coastal Ocean Observing Systems

Gulf of Maine Research Institute

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Gulf of Maine Council on the Marine Environment
Canada and the United States working together for a healthy environment