



## Gulf of Maine Significant Events – December 2022–February 2023

Winter was mostly **warmer than normal**, with a few [brief intrusions of Arctic air](#). The season was generally **wetter than normal**; however, warm temperatures led to **more rain** and mixed precipitation, **reducing snowfall totals** for most areas. **Drought and abnormal dryness eased** in New England, with New Hampshire free of dryness for the **first time since May 2020**.

### December

This December ranked **among the 10 warmest** on record for [Caribou, ME](#), and most Maritimes sites. Portland, ME, tied its **10th latest measurable snow** on December 11. A **significant storm** from **December 22 to 24** produced heavy precipitation, severe winds, and coastal flooding. Much of the region saw **below- or near-normal snowfall**.

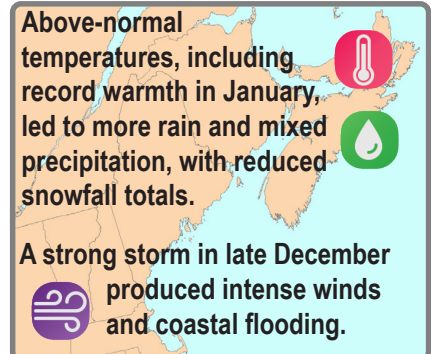
### January

January was **exceptionally warm**, with [multiple sites including Portland, ME](#), Halifax, N.S., and Charlottetown, P.E.I., having their **warmest January** on record and many other sites having one of their five warmest. Boston, MA, Concord, NH, and Portland tied their **greatest number of January days** with a high at or above 0°C (32°F), with Boston at or above freezing every day in January for only the second time since 1873. Halifax, N.S., saw 20 days with a high at or above 0°C (32°F), seven more than normal. The number of January days with a low at or above -6.7°C (20°F) set/tied records at Boston and Portland. The lowest temperature observed this January was the **warmest on record** when compared to all other Januaries for several New England sites. Warm weather allowed some [maple syrup producers](#) to tap trees [earlier than usual](#); however, soft ground limited access to forests for loggers, [delaying projects](#). The second half of January featured several storms, with warm temperatures leading to a mix of precipitation types. January was **wetter than normal**, with Moncton, N.B., and Portland having one of their **10-wettest Januaries**. However, **snowfall amounts varied**, ranging from below normal in areas such as Nova Scotia to above normal in areas such as Maine, where Caribou had its **ninth-snowiest January**.

### February

**Arctic air and gusty winds** led to unusually low temperatures, extreme wind chills, power outages, and whiteout conditions on **February 3 and 4**. There were **limited storms** in February; however, a storm on **February 17** gave Caribou, ME, its fourth-snowiest February day with 35.6 cm (14.0 in.) of snow. **Monthly snowfall** and precipitation were **below or near normal** in most areas.

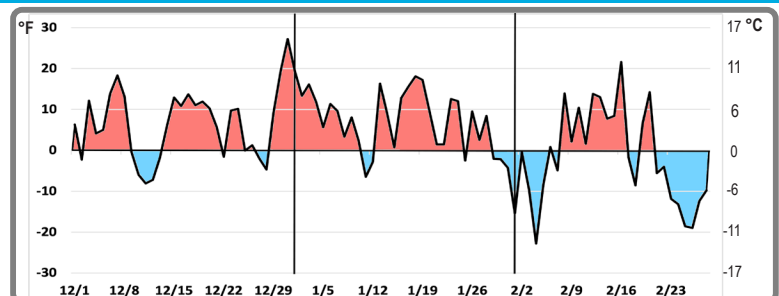
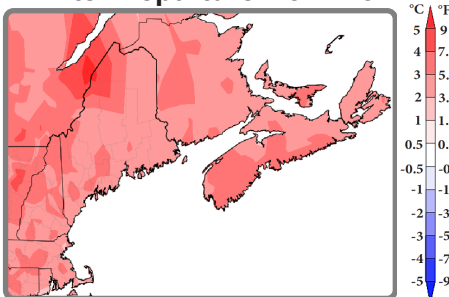
This **winter** was among the **five warmest on record** for multiple sites including Boston, MA, Concord, NH, Portland and Caribou, ME, Halifax and Yarmouth, N.S., and Moncton, N.B. **Record or near-record warm** [daily sea surface temperatures](#) were observed in the Gulf of Maine from mid-January through February. Monthly mean sea surface temperatures in the Gulf ranked as the fourth-warmest December, second-warmest January, and **record-warmest February**, with the **winter season** also being **record warm**. **Winter snowfall** was **below or near normal** for most of the region, with Boston, Halifax, and Yarmouth having one of their 10 least snowy winters.



## Regional Climate Overview – December 2022–February 2023

### Temperature

#### Winter Departure from Normal



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

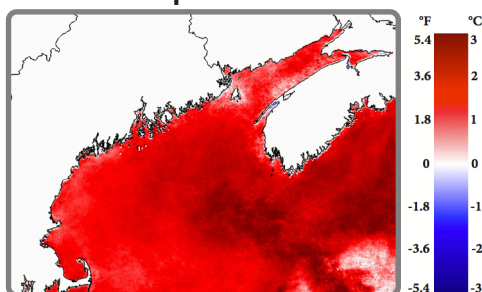
**Winter** (averaged over December, January, and February) was up to 4°C (7°F) **warmer than normal\***, with multiple sites having one of their **five-warmest winters** on record. **December** temperatures were up to 4°C (7°F) above normal, with Caribou, ME, and most Maritimes sites having one of their **10-warmest Decembers**. **January** was more than 4°C (7°F) **warmer than normal** region-wide, with multiple sites having their **warmest January** and many others having one of their five warmest. **February** ranged from 2°C (4°F) below normal in northern New Brunswick and parts of Nova Scotia to 3°C (5°F) above normal in parts of New Hampshire and Massachusetts.

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

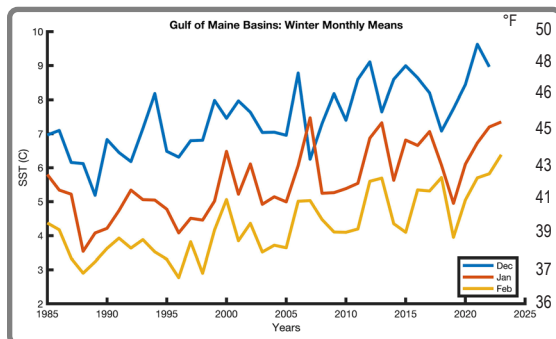
## Regional Climate Overview – December 2022–February 2023

### Sea Surface Temperature

#### Winter Departure from Normal



Winter sea surface temperature anomalies over the Gulf of Maine were **above normal in all regions**. Anomalies were around 1.5°C (2.7°F) along the Gulf of Maine coast and in the Bay of Fundy, around 2.0°C (3.6°F) over deeper basins, and greater than 2.5°C (4.5°F) over the Scotian Shelf.

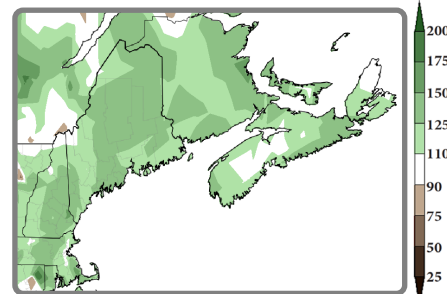


Monthly mean sea surface temperature averaged over the Gulf of Maine for December, January, and February (1985 to 2023). Credit: University of Maine School of Marine Sciences

\*SST normals based on 1991–2020 data

### Precipitation

#### Winter Percent of Normal



Winter precipitation (accumulated from December to February) ranged from near normal\* to 150% of normal. Caribou, ME, had its fourth-wettest winter. **December precipitation** ranged from 50% of normal in parts of Nova Scotia and P.E.I. to more than 200% of normal in parts of Maine and New Hampshire. **January precipitation** ranged from near normal to more than 200%. This January was among the **10 wettest** on record for several sites such as Portland, ME, and Moncton, N.B. **February precipitation** ranged from 25% of normal to near normal for most areas.

\*Precipitation normals based on 1991–2020 data.

## Regional Impacts – December 2022–February 2023

### Winter Conditions

December featured several storms, the most notable a **rapidly-intensifying storm** from **December 22 to 24**. Much of the precipitation fell as rain, with portions of New England seeing snow and ice at the start and end of the storm. The **greatest precipitation totals** exceeded 90 mm (3.50 in.) in parts of New Hampshire, Maine, and in Ingonish Beach, N.S. Wind gusts exceeded 100 km/h (62 mph) across the region, with **localized extreme wind gusts** of up to 129 km/h (80 mph) in eastern Maine and up to 167 km/h (104 mph) in Cape Breton, N.S. Strong winds damaged roofs and [downed trees](#) and power lines. In Piscataquis County, ME, more than 300 trees were downed, resulting in extended road closures. [More than 365,000 customers](#) in Maine, more than 200,000 customers in the Maritimes, and [more than 100,000 customers](#) in New Hampshire **lost power**, some for a few days. **Significant coastal flooding** occurred in parts of New England, with [water entering buildings](#), damaging property such as docks, and [submerging roads](#). Preliminary data indicated the water level at Portland, ME, reached [4.18 m \(13.72 ft.\)](#), its **fourth highest crest** since at least the 1940s. Coastal flooding resulted in a road closure and local evacuations in Charlo, N.B. **Travel was difficult**, with numerous accidents and cancelled or delayed flights, on some of the busiest travel days of the year. The storm caused [at least \\$2.4 million in damage](#) in Maine. Most areas saw **below- or near-normal snowfall** during **December**, with end-of-month snow depth in the Maritimes also below or near normal.

January was **unusually warm** across the region, with the [ground freezing later than usual](#) in parts of New England. The month started quietly, with a lack of snow [affecting winter activities](#), such as [skiing](#) and [snowmobiling](#), and [related businesses](#). The second half of January featured a **series of storms**, with warm temperatures leading to rain or a **mix of precipitation types**. The Maritimes saw up to 133 mm (5 in.) of precipitation, **nearly a month's worth**, between **January 13 and 17**, with freezing rain [leading to power outages](#). A storm from **January 22 to 24** dropped up to 43 cm (17 in.) of snow on New Hampshire and Maine, while coastal Nova Scotia saw up to 66 mm (3 in.) of rain. In fact, some Nova Scotia sites saw two to three times more rainfall than normal in January. **January snowfall** was **below normal** in P.E.I., Nova Scotia, and Massachusetts but **near or above normal** in New Brunswick, New Hampshire, and Maine. Caribou had its **ninth-snowiest January**, while northwestern New Brunswick saw double its normal snowfall. End-of-month snow depth was below normal for much of the Maritimes. **Wet weather** in December and January **eased dryness** in New England, with New Hampshire being [free of dryness](#) for the **first time since May 2020**.



Ice accumulation from freezing rain in Caribou, ME, on January 13.

Credit: [NWS Caribou](#)

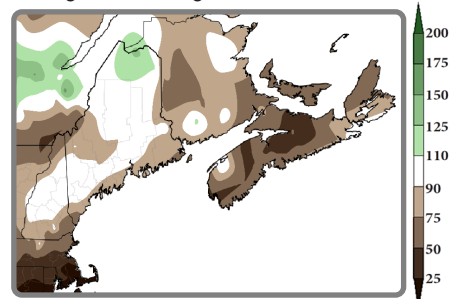


## Regional Impacts – December 2022–February 2023

### Winter Conditions Continued

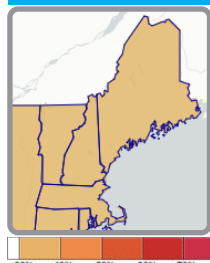
On **February 3 and 4**, Arctic air moved through the region. Boston, MA's lows of  $-22^{\circ}\text{C}$  ( $-8^{\circ}\text{F}$ ) and  $-23^{\circ}\text{C}$  ( $-10^{\circ}\text{F}$ ) ranked among the site's **10-coldest temperatures for February**. Caribou, ME, remained below  $-18^{\circ}\text{C}$  ( $0^{\circ}\text{F}$ ) for 49 consecutive hours. In Maine, [trees splintered](#), there were [frost quakes](#), and [mussels died](#) due to the cold. The cold conditions led to [frozen pipes](#) in several areas and [damaged grape vines](#) in the Maritimes. Cold temperatures combined with wind gusts of up to 111 km/h (69 mph) led to **wind chills** as low as  $-51^{\circ}\text{C}$  ( $-60^{\circ}\text{F}$ ) to  $-34^{\circ}\text{C}$  ( $-30^{\circ}\text{F}$ ) in many areas. Mount Washington, NH, recorded an **unofficial wind chill** of  $-78^{\circ}\text{C}$  ( $-108^{\circ}\text{F}$ ), possibly the **lowest on record for the U.S.** Blizzard warnings were issued for northern Maine, where whiteout conditions and significant drifting [left roads impassable](#). The gusty winds downed trees and power lines, leading to power outages including for over 53,000 customers in the Maritimes. Temperatures [climbed quickly](#) in much of New England from **February 4 to 5**, with Boston warming by  $22^{\circ}\text{C}$  ( $40^{\circ}\text{F}$ ) in 24 hours. On **February 16**, Halifax, N.S., recorded its second-warmest February temperature with a high of  $14.6^{\circ}\text{C}$  ( $58^{\circ}\text{F}$ ), while Boston saw its sixth-warmest low temperature for February at  $8^{\circ}\text{C}$  ( $46^{\circ}\text{F}$ ). There were **limited storms** in February, with **snowfall below or near normal** for most of the region. End-of-month snow depth was also below or near normal for most of the Maritimes. However, February snowfall was **above normal** in northern Maine and parts of Nova Scotia.

This **winter** was among the **five warmest on record** for multiple sites including Boston, MA, Concord, NH, and Portland and Caribou, ME, Halifax and Yarmouth, N.S., and Moncton, N.B. **Winter snowfall** ranged from less than 25% of normal to near normal for most areas, with Boston, Halifax, and Yarmouth having one of their 10 least snowy winters. However, northern Maine and northwestern New Brunswick were snowier, seeing up to 125% of normal snowfall.

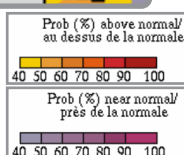


Winter snowfall ranged from less than 25% of normal\* to 125% of normal. \*U.S. normals based on 1991–2020 data; Canadian normals based on 1981–2010 data

## Regional Outlook – Spring 2023



CPC temperature map (left) produced February 16. ECCC



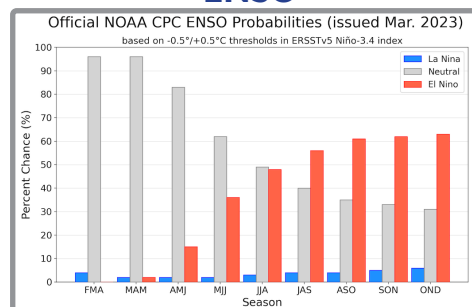
### Temperature and Precipitation

For **March–May**, [NOAA's Climate Prediction Center \(CPC\)](#) favors above-normal temperatures in New England, while [Environment and Climate Change Canada \(ECCC\)](#) favors **near or above-normal temperatures** for most of the Maritimes.

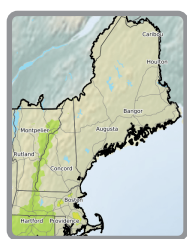
Due in part to **decadal trends**, above-normal temperatures are forecast for spring in New England; however, sub-seasonal outlooks are influenced by **other factors** such as a pronounced [Madden-Julian Oscillation](#) that could lead to below-normal temperatures in the short term.

ECCC favors **below-normal precipitation** for southern New Brunswick and much of mainland Nova Scotia for **March–May**. **Equal chances** of below-, near-, or above-normal precipitation are forecast for the rest of the Maritimes and all of New England.

### ENSO



During February, **La Niña conditions ended** in the equatorial Pacific Ocean. NOAA's [Climate Prediction Center](#) [indicates ENSO-neutral conditions](#) will likely continue through spring and into early summer, with elevated chances of **El Niño conditions** developing after that.



LEGEND - River Flood Risk  
■ Much Above ■ Below  
■ Above ■ Much Below

### Flood Potential

The **river flood risk** is **near normal** for New Hampshire and Maine and, in the near term, **near to above normal** for eastern Massachusetts.

The ice jam flood risk is **near to above normal** for March 16–30, 2023, for flood outlook from northern/central Maine and NOAA's NERFC **below normal** elsewhere in New England. Very heavy rain can cause flooding at any time of the year, even in areas that have little to no snow cover.

New Brunswick's **River Watch program**, which monitors water levels along the St. John River and its tributaries, [launched on March 14](#). The [New Brunswick Flood Hazard Viewer](#) allows users to **view flood maps** and future changes due to climate change.

## Contacts

[National Oceanic and Atmospheric Administration](#)

[Environment and Climate Change Canada](#)

[Northeast Regional Climate Center](#)

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