Quarterly Climate Impacts and Outlook

Gulf of Maine Region

June 2018

Gulf of Maine Significant Events – *March–May 2018*

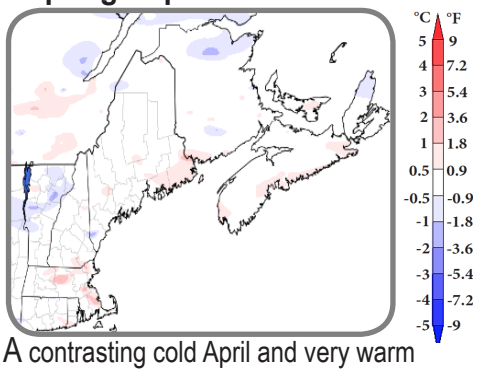
On **March 1–4**, the **first of several nor'easters** impacted the region. The storm brought significant snowfall to some areas; Doyleville, N.B., reported 26 cm (10.2 in.) of snow. Up to 130 mm (5 in.) of rain was reported in New England, which caused flooding. Strong winds associated with the storm downed trees and power lines; wind gusts greater than 146 km/hr (90 mph) were reported in Massachusetts. Storm surge and high waves washed rocks onto coastal roads in Nova Scotia. A few days later on **March 7–8**, a powerful **nor'easter** brought rain, heavy, wet snow, and strong winds to much of New England and the Maritimes. Flooded streets led to road closures, and wind gusts caused power outages affecting over 320,000 customers in Massachusetts and 30,000 in Nova Scotia. The Maritimes were affected by another **nor'easter** immediately afterward on **March 9–10**, with snowfall amounts over 40 cm (15.7 in.) in Nova Scotia, and 65,000 customers lost power there. **Another nor'easter** moved through the region on **March 13–14,** bringing heavy, wet snow and strong winds. Penobscot, ME, received 76 cm (30 in.) of snow and Grand Etang, N.S., reported gusts of 146 km/hr (90 mph). Blizzard conditions were reported in Boston causing additional power outages, and a sports dome in Nova Scotia was destroyed. Boston ranked this storm as its largest one-day March snowfall on record. Another **storm** on **March 21–22** brought mixed precipitation, significant snowfall, and strong winds that halted travel in parts of New England. Nantucket, MA, reported a gust of 88 km/hr (55 mph). Moncton, N.B., and Bas Caraquet, N.B., both reported March cumulative snowfall in excess of 100 cm (39 in.).

On **April 16–17**, **heavy rain and wind gusts** up to 85 km/hr (53 mph) were recorded in Massachusetts, which created unfavorable conditions for participants of the Boston Marathon. Freezing rain caused schools to close in parts of New Brunswick, and P.E.I. Bas Caraquet, N.B., reported 39 mm (1.5 in.) of total precipitation.

Heavy rain and mild temperatures led to melting snow and **major flooding** in New Brunswick on **April 27–30**. This was the beginning of a prolonged flood event that continued through mid-May as **several storm events** caused power outages and added to the ongoing flooding. Strong winds, up to 100 km/hr (62 mph) in Moncton, caused thousands to lose power on **May 4–5**. The high winds in New Brunswick complicated flood relief efforts and caused additional damage due to wave action. More rain, wet snow, winds, and lightning caused additional power outages on **May 23**.

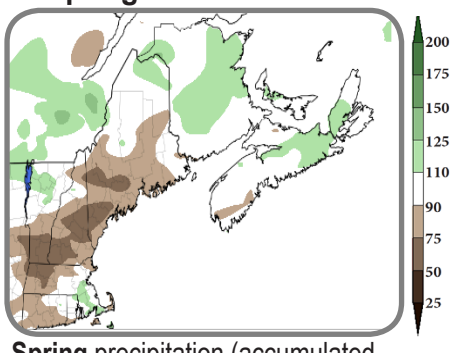
Regional Climate Overview – *March–May 2018*

Temperature
Spring Departure from Normal



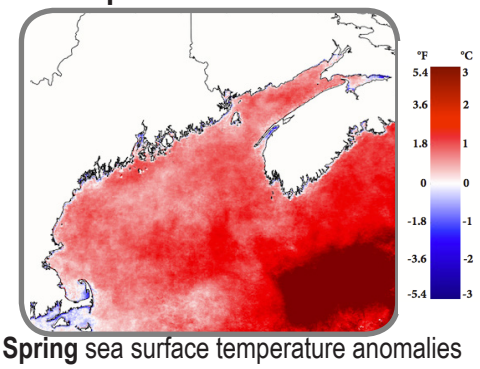
A contrasting cold April and very warm May balanced out the average **spring** temperatures (averaged over March, April, and May) to near normal. **March** temperatures ranged from 1°C (2°F) below normal to 3°C (5°F) above normal. **April** temperatures ranged from 4°C (7°F) below normal to near normal. **May** was warm in comparison, with temperatures ranging from 2°C (4°F) below normal in parts of the Maritimes to over 4°C (7°F) above normal in parts of New England.

Precipitation
Spring Percent of Normal



Spring precipitation (accumulated from March–May) ranged from 50% to 125% of normal. **March** precipitation ranged from 50–200% of normal. **April** precipitation ranged from 75–200% of normal. Nova Scotia was much wetter than normal. **May** precipitation ranged from less than 25% of normal in parts of New England to 150% of normal in isolated areas of the Maritimes.

Sea Surface Temperatures
Departure from Normal



Spring sea surface temperature anomalies over the Gulf of Maine and Scotian Shelf were all positive, ranging from 0.5°C (1°F) to 2°C (4°F) above average. Extremely strong positive anomalies of >3°C (5°F) were present in deep water off the shelf, south of Nova Scotia. Record-high ocean temperatures were recorded off of Nova Scotia in April, and a new study shows that ocean heat waves are happening more frequently and lasting longer.

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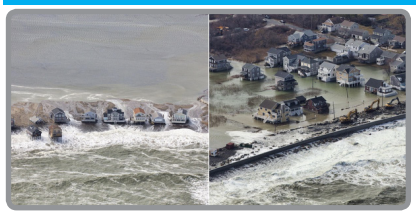
Environment and Climate Change Canada | Environnement et Changement climatique Canada

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

Regional Impacts – *March–May 2018*



Coastal Flooding in Scituate, MA, on March 4th. Credit: Ralph Karl Swenson, SKYWARN Spotter.

Flooded underpass on April 28 Fredericton, N.B. Credit: Rick Fleetwood.

North Atlantic right whale Credit: NOAA Center for Coastal Studies.

Spring Conditions

The March storms disrupted travel in New England which led to increased trucking costs. The storms, as well as a warming climate, were also linked to rare bird sightings in Nova Scotia. Weather conditions allowed for a good maple syrup harvest in southern New Brunswick. Despite cold winter temperatures, ticks were an issue this spring, as most survived due to the insulation provided by above-normal snowfall in many areas. Northern New Brunswick had a good snowmobile season due to the amount and duration of snow cover; in contrast the lack of snow in central and eastern P.E.I. was hard on the snowmobile industry. Early in April a conservation group in P.E.I. was concerned with low water table levels in a watershed, and fire chiefs warned it was **too dry to burn** with the fire weather index at moderate to high toward the end of April. New Brunswick experienced flooding that began in late April when water levels between Fredericton to Saint John reached or exceeded previous extreme levels set in the floods of 1973 and 2008. Early New Brunswick flood damage estimates were $80 million. Recovery was expected to take months, and concerns remained due to health and safety risks from impacts to infrastructure and contamination. Minor flooding was reported in northern Maine.

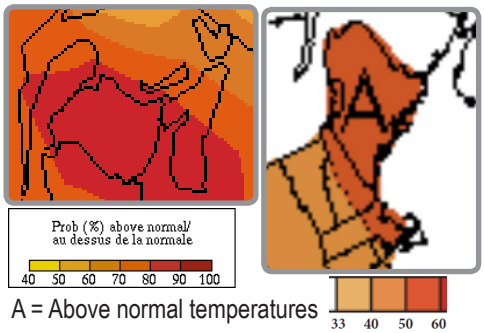
Spring ice breakup at Fredericton, N.B., on the Saint John River was on March 4, the eleventh earliest on record, continuing the trend of a lengthening open water season since records began in 1825. In early April, thick ice and colder-than-normal temperatures were expected to prevent an early start to the **snow crab fishery** in the western Gulf of St. Lawrence. Many fisheries had planned an early start and end to their season to prevent right whale entanglement. On May 20, two right whales were spotted in the Gulf of St. Lawrence, causing several fisheries to close.

Ocean Temperatures

Concern about the health of the **right whale** population in the region continued as no calves were spotted as of early spring. Scientists think the whales' migration may be changing due to changes with currents and climate, forcing them into new waters to find their food sources. In contrast, the **striped bass** population has tripled in the Gulf of St. Lawrence. Warming ocean temperatures are likely a factor for the northern movement and expansion of the fish population.

Regional Outlook – *Summer 2018*

Temperature and Precipitation



A = Above normal temperatures

ECCC temperature map (left) produced May 31. CPC temperature map (right) produced May 17.

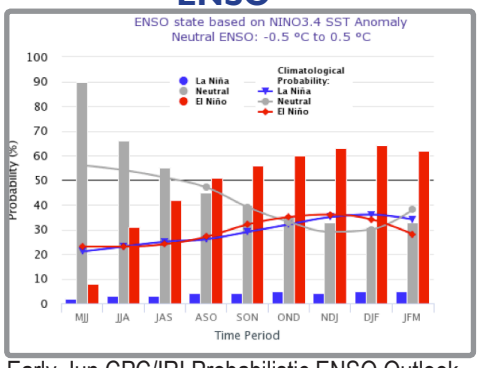
For June–August, the Environment and Climate Change Canada (ECCC) and NOAA's Climate Prediction Center (CPC) outlooks favor above-normal temperatures. ECCC's outlook favors below-normal precipitation for portions of the Maritimes and CPC's outlook favors above-normal precipitation for New England. According to CPC, ENSO-neutral is favored through summer 2018, with the chance of El Niño increasing to 50% during fall and near 65% during winter.

Atlantic Hurricane Season

	2018 Season Outlook	Average Season
# of Named Storms	10-16	12
# of Hurricanes	5-9	6
# of Major Hurricanes	1-4	3

NOAA's 2018 Atlantic hurricane outlook indicates a near- or above-normal season. The outlook calls for "10–16 named storms (winds of 39 mph or higher), of which 5–9 could become hurricanes (winds of 74 mph or higher), including 1–4 major hurricanes (winds of 111 mph or higher)." The Atlantic hurricane season runs from June 1 through November 30, with a peak from mid-August to late October.

ENSO



Early-Jun CPC/IRI Probabilistic ENSO Outlook

Contacts

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