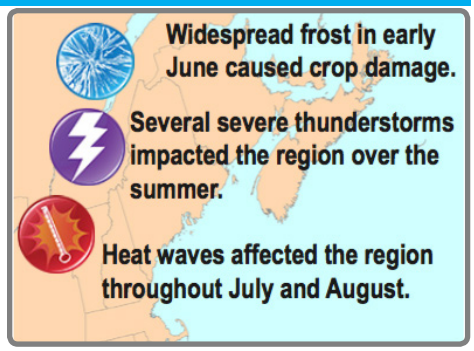
Quarterly Climate Impacts and Outlook

Gulf of Maine Region

September 2018

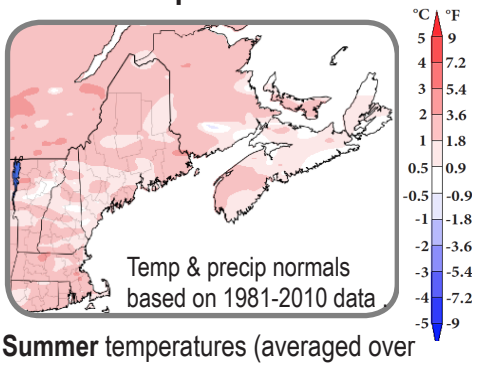
Gulf of Maine Significant Events – *June–August 2018*



In early **June** a significant frost event impacted the Maritimes and northern Maine. A **June 14 rain event** brought up to 40 mm (1.57 in.) to the Maritimes, and associated thunderstorms caused over 7,000 customers in New Brunswick to lose power due to lightning strikes. A slow-moving, **low pressure system** brought up to 100 mm (3.94 in.) of rain to southern parts of the Maritimes on **June 28–29**. Lightning strikes during this event cause one death and a house fire in New Brunswick. From **July 1–5**, high humidity along with unusually warm temperatures throughout the region resulted in heat indices/ humidex values over 43°C (110°F) in some areas, prompting heat warnings to be issued. On **July 10**, strong thunderstorms crossed the region, bringing damaging high winds, power outages, hail, and localized heavy rain. Up to 100 mm (3.94 in.) fell in northern New Brunswick. Large hail which damaged cars, buildings, and crops was reported in Maine and northern New Brunswick. A **heat event** affected the Maritimes on **July 22–25**, as temperatures reached as high as 32°C (90°F) and humidex values reached as high as 39°C (102°F). The heat forced some businesses to close and extra caution to be taken during outside activities. Locations in New Brunswick reported 13 days with temperatures greater than 30°C (86°F), much more than the normal 3.5 days. Heat waves throughout August led to heat advisories being issued and record warm overnight lows in New England. The Maritimes also experienced heat events and many days with high humidex and heat warnings. During the first week of August, St. Stephen, N.B., had a humidex value of 41°C (106°F), and Maritime Electric (P.E.I.) reported that use of air conditioning this summer had resulted in higher-than-normal electricity loads. The extreme heat over the summer caused additional hardship for the homeless in Nova Scotia and one confirmed death in New Brunswick. Strong storms on **August 6–7** brought high wind and intense lightning that knocked down trees and impacted power distribution in parts of southern New Brunswick with more than 50,000 customers losing power. Severe storms in the Maritimes on **August 9–10** brought flooding rain (89 mm [3.50 in] was reported in Harvey Bank, N.B.), golf-ball-size hail, and power outages. On **August 11–12**, heavy rains flooded streets and homes in Massachusetts; the town of Lynn had 207 mm (8.14 in.). During a **rain event** on **August 17–18** Sussex, N.B., received 129 mm (5.08 in.) of rain, which surpassed the August daily extreme of 95 mm (3.74 in.). The heavy rain caused localized flooding and road closures in Charlottetown, P.E.I.

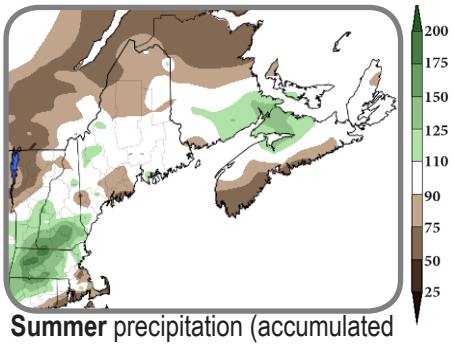
Regional Climate Overview – *June–August 2018*

Temperature
Summer Departure from Normal



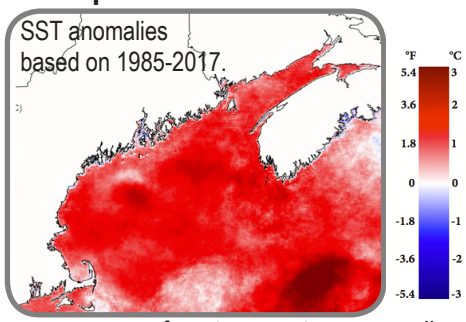
Summer temperatures (averaged over June, July, and August) were near normal to 2°C (4°F) above normal. Caribou, ME, had its warmest summer on record. **June** temperatures ranged from 4°C (7°F) below normal to 1°C (2°F) above normal. **July** temperatures ranged from near normal to 4°C (7°F) above normal. **August** temperatures ranged from 1°C (2°F) to 4°C (7°F) above normal. While several locations had their warmest July and/or August on record, June was much colder than average.

Precipitation
Summer Percent of Normal



Summer precipitation (accumulated from June–August) ranged from 50% to 150% of normal. **June** precipitation ranged from 50% to over 200% of normal. **July** precipitation ranged from less than 25% in the Maritimes to over 150% of normal in parts of New England. **August** precipitation ranged from less than 25% of normal in parts of Nova Scotia to 200% of normal in parts of New England.

Sea Surface Temperatures
Departure from Normal



Summer sea surface temperature anomalies were 1°C (2°F) to 3°C (5°F) above the 30-year average over the region. These positive anomalies were strongest over the deeper central basin portions of the Gulf of Maine and off the shelf, south of Nova Scotia where temperatures approached 3°C (5°F) above normal. Ocean heat waves are becoming more common in the Gulf of Maine. On August 8, the sea surface temperatures measured were the second warmest ever observed there.

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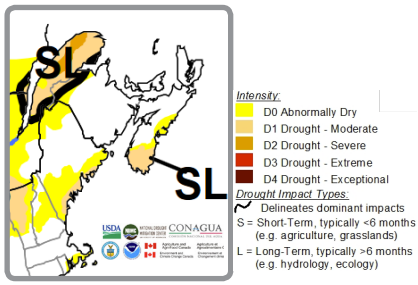
Gulf of Maine Council on the Marine Environment
Canada and the United States working together for a healthy environment

Regional Impacts – *June–August 2018*



August 31, 2018 North American Drought Monitor.

Harmful Algal Bloom. Credit: NOAA

Right Whales

Right whale sightings in June and July caused fishing areas to close. Sightings in the Gulf of St. Lawrence are thought to be linked to warming ocean temperatures and migration of their food sources into cooler waters farther north. In late August a dead right whale was spotted off the coast of Massachusetts.

Drought

The increasingly dry conditions in June prompted over 75 public water suppliers to enforce varying degrees of water bans in locations throughout Massachusetts. Abnormally dry conditions in June and early July across parts of New Brunswick contributed to much lower-than-normal river levels. During July many farmers in parts of northern New England had reduced harvests and heat stressed crops. Across the Maritimes, the Fire Weather Index was high to extreme at times, but despite dry, hot conditions across Nova Scotia, the number of forest fires and hectares burned was not unusual, possibly due to the high humidity. The lack of rain in P.E.I. for the second year in a row caused concerns about low potato yields, but late-season rains may save the crop. Over the summer, moderate drought persisted or developed over portions of Nova Scotia and coastal Maine.

Health

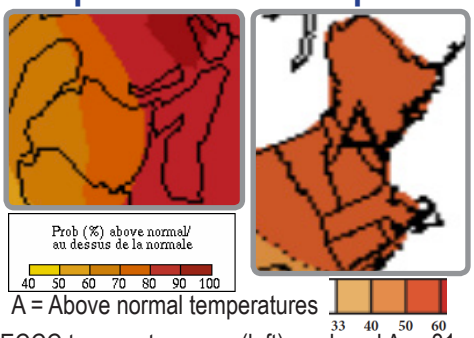
Blue-green algae were reported in some rivers, ponds, lakes, and reservoirs in New Brunswick and Lake Banook in N.S. in late July and early August, creating a concern for human and animal health and prompting a warning for residents to not swim or allow pets into the water. The algae is linked to the hotter than normal weather this summer. Two ocean beaches in southwest Nova Scotia were closed for the first time ever due to high bacteria levels which were linked to the abnormally high temperatures and humidity and relatively light winds observed this summer.

Forestry & Agriculture

Colder than normal conditions in early June resulted in **widespread frost** in the Maritimes and northern Maine, which heavily damaged berry, grape, and apple crops, and slowed down corn. The hard frost also affected Christmas tree crops in Nova Scotia and P.E.I., damaging new growth and affecting the quality of the trees. An unusually warm July brought an early end to the berry picking season, already challenged due to the June frost. **Southern pine beetles**, which caused over one billion dollars in losses to the timber industry in the southeastern U.S., have been found as far north as New England. Research showed these beetles could reach Nova Scotia by 2020 due to a warming climate. Hot and dry conditions forced some farmers in Nova Scotia to change their harvesting practices this year.

Regional Outlook – *Autumn 2018*

Temperature and Precipitation



A = Above normal temperatures

ECCC temperature map (left) produced Aug 31.
CPC temperature map (right) produced Aug 16.

For September–November, the Environment and Climate Change Canada (ECCC) and NOAA's Climate Prediction Center (CPC) outlooks favor above-normal temperatures and call for equal chances of below-, near-, or above-normal precipitation.

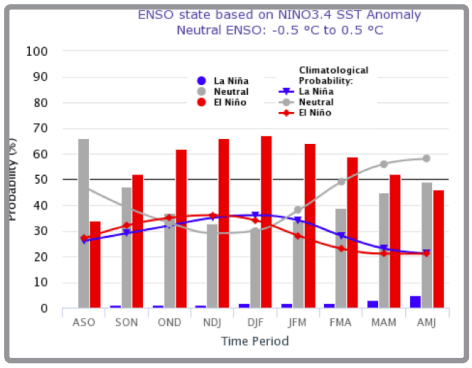
According to CPC, the chance of El Niño is 50–55% during fall and increasing to 65–70% during winter.

Atlantic Hurricane Season

	Through Sep. 20	Aug. 9 Outlook	Average Season
# of Named Storms	10	9-13	12
# of Hurricanes	5	4-7	6
# of Major Hurricanes	1	0-2	3

By September 20 there had been 10 named storms of which 5 were hurricanes, including Florence which made landfal in North Carolina September 14 causing catastrophic flooding. NOAA's 2018 Atlantic hurricane outlook, updated August 9, had indicated a less active hurricane season than initially predicted in May, due to the forecast development of El Niño in the fall, cooler-than-average sea surface temperatures in the tropical Atlantic Ocean, and strong wind shear.

ENSO



Early-Sep CPC/IRI Probabilistic ENSO Outlook

Contacts

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Canada and the United States working together for a healthy environment