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Newfoundland and Labrador

Quarterly Climate Summary: Summer 2019

Summary & significant weather events (June—August):

The summer season started out wet and cold for Newfoundland before drier, warmer conditions were able to prevail. For Labrador, it was a slightly wetter than normal summer. Though most of Labrador was around the norm for temperatures, it was a very chilly summer for northern Labrador, as we could debate whether or not summer actually happened.

The month of June saw several systems which brought significant rain to much of the province. The month also signaled a bit of a delayed start to the summer, as many areas saw few days of 20+ degree temperatures.

Though some areas received above normal precipitation in July, there were very few weather events to speak of. There were several days with thundershowers though, with the province receiving above average number of lightning strikes. Temperatures remained relatively cold early in the month, but late July saw summer truly get switched on over much of the island and most areas in Labrador.

A warm August was also cause for several thunderstorm days in Newfoundland, with nearly 3 times the average number of lightning strikes. Ultimately it ended up being a drier than normal month regardless. Labrador saw a relatively wet month to close out the summer.

Here is a description of the most significant events:

June 2-3: A deep low pressure system slowly tracked across western Labrador while an associated frontal wave swept northward across the province. Showers continued off and on throughout the week.

- **Rainfall:** 55 mm of rain was observed at Burgeo over the two-day period. Many stations across southern, western and central Newfoundland reported 15-35 mm over the two days.

June 12: A trough of low pressure brought more rain to Newfoundland and Labrador.

- **Rainfall:** Peak rainfall rates of 11.6 mm in one hour occurred in Port aux Basques, while 7.1 mm in one hour was observed in Stephenville.

June 21-24: A deep low pressure system tracked across the island, bringing rain and strong winds.

- **Rainfall:** 99.6 mm of rain fell at Cartwright, while Stephenville, Kippens, L'Anse au Loup, and Mary's Harbour picked up between 70-90 mm. Many other stations across western half of Newfoundland and eastern half of Labrador received 33-65 mm of rain for the event, with [Goose Bay Airport reporting 49.6 mm](#).
- **Wind:** Wreckhouse wind gusts peaked at 113 km/h.

July 1-2: Another low pressure system tracked across the island, producing a wet Canada Day for much of the island.

- **Rainfall:** A two-day rainfall total of 42.6 mm was reported at La Scie, with most of that falling on July 2. 42.2 mm was reported at St. John's Airport, with the bulk of the rainfall occurring on Canada Day. Many stations elsewhere across the island reported amounts in the 25-40 mm range over the two-day period.

August 1-10: A persistent easterly flow created [prolonged fog conditions in the Nain area](#).

August 10: Thunderstorms brought isolated heavy showers and sudden strong wind gusts to parts of Newfoundland.

- **Rainfall:** The St. John's metro area reported as little as 1 mm of rain, [up to 45 mm of rain at several sites in thundershowers](#). 19.1 mm of rain fell in 2 hours in Daniel's Harbour, and Rocky Harbour received 14.3 mm in one hour.
- **Wind:** Ferolle Point reported a wind gust of 106 km/h, while Daniel's Harbour received a 65 km/h gust.

August 13: [Severe thunderstorms](#) once again brought heavy showers and strong wind gusts to parts of the island.

- **Rainfall:** 19.6 mm was observed in one hour at La Scie, 6 mm in one hour at Cormack, and Grand Falls-Windsor received 23.5 mm in about 6 hours.
- **Wind:** A peak wind gust of 95 km/h was observed at Cormack, while La Scie had a gust to 57 km/h in thunderstorms.

August 22-24: A deepening low pressure system brought steady rain to parts of the province.

- **Rainfall:** Goose Bay received 66.2 mm of rain over a two-day period, while Mary's Harbour picked up 33.6 mm. August 22 produced 46.8 mm of rain in Burgeo and 42.5 mm in Port aux Basques. Other two-day rainfall totals at St. Anthony, Sop's Arm, and St. Lawrence were in the 21-27 mm range.

Provincial Climate Overview (June—August):

Temperature (Departure from Normal):

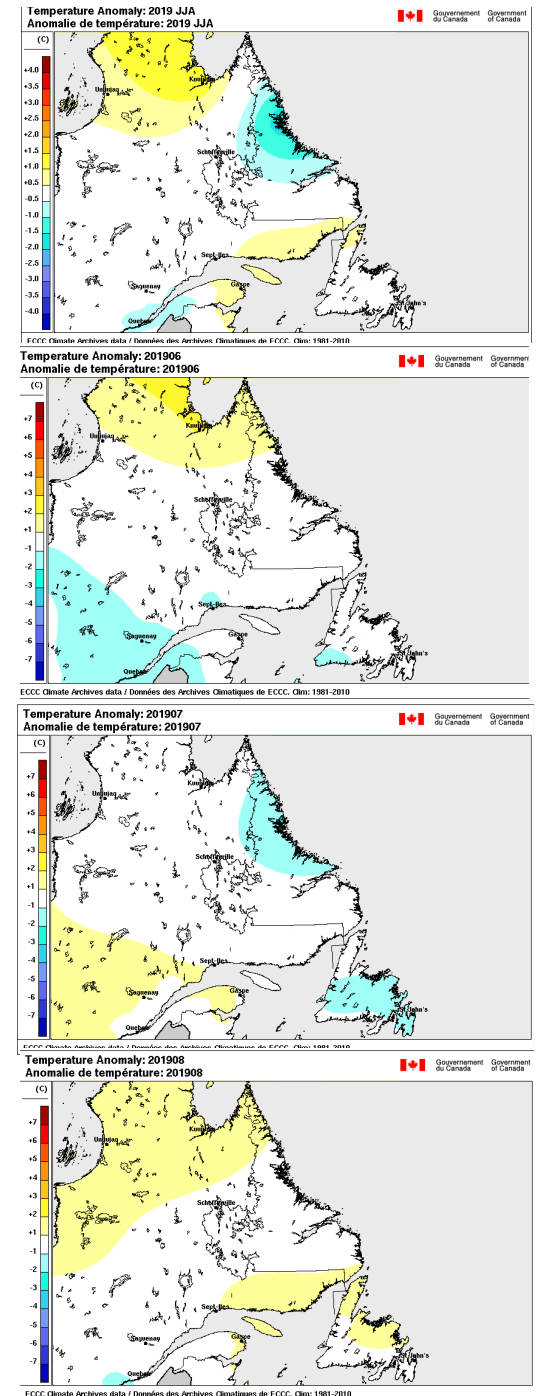
Summer temperatures averaged out to roughly a degree above normal for the Northern Peninsula and the Labrador Strait region, while northern Labrador observed a much chillier summer season. There, temperatures were about 1-2 degrees below normal. Nain had its 2nd coldest summer on record, while it was the 3rd coldest for Hopedale and Makkovik. Elsewhere in the province, summer temperatures were near normal.

June average temperatures were near normal across most of the province, except for extreme southwestern Newfoundland. There, temperatures were roughly a degree below normal.

July temperatures averaged out to about 1-2 degrees below normal across most of Newfoundland, as well as in northern Labrador. Twillingate would have its 5th coldest July on record, while the Badger area had its 6th coldest. The Nain and Hopedale areas were about 3 degrees colder than normal for the month, with Nain having its second coldest July on record. Elsewhere in Labrador, temperatures were near normal for the month. The same could be said for the Northern Peninsula, Baie Verte Peninsula, and much of Newfoundland's south coast.

Average temperatures for **August** saw a turnaround over some areas. The Northern Peninsula, northeastern Newfoundland, and the Labrador Strait were roughly 1-2 degrees above normal for the month. Elsewhere in the province, temperatures were near normal, except northern Labrador was about a degree below normal. Cold conditions continued especially for Nain, which recorded its 5th coldest August.

Right: Temperature anomalies based on observations for Newfoundland and Labrador for (from top) June-August combined, June, July, August.



Precipitation (Percent above/below Normal):

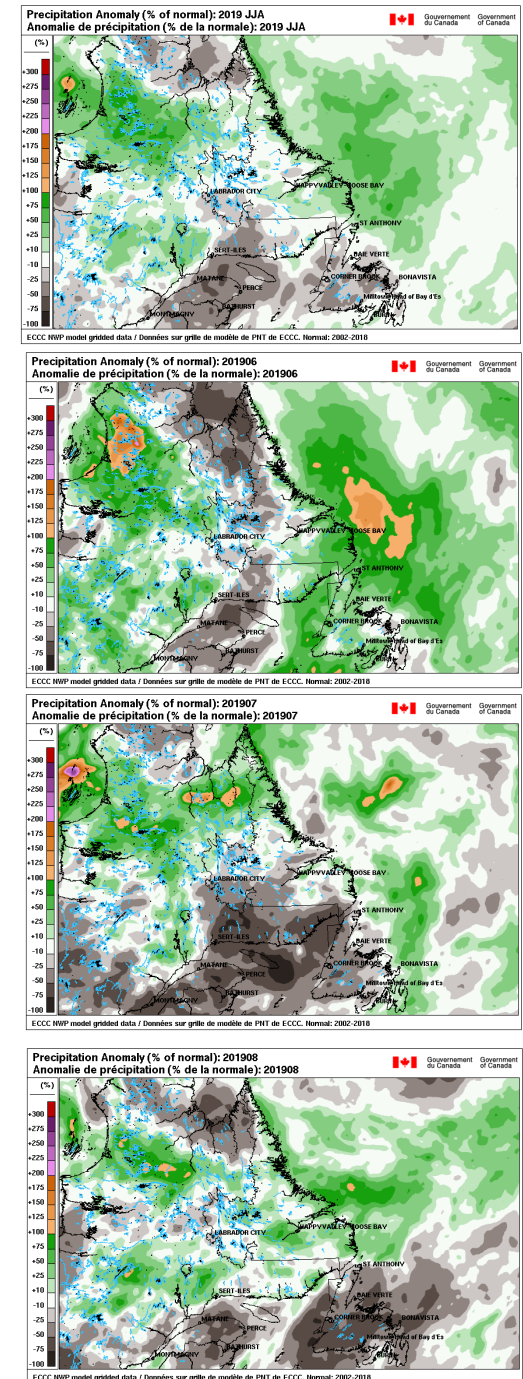
Summer was, for the most part, drier than normal across Newfoundland, as well as western Labrador and most of the Labrador Strait. L'Anse au Loup actually had its driest summer season on record in 2019. Wetter than normal conditions were experienced across the remainder of Labrador.

For **June**, most of the island reported 10-50% above normal precipitation. The Stephenville area saw its 4th wettest June on record. Contrasting these wetter-than-normal conditions were parts of northeastern Newfoundland, as well as the Avalon Peninsula, which were near to slightly below normal for precipitation. In Labrador, coastal and southeastern areas received 25-75% above normal precipitation, with Mary's Harbour having its 3rd wettest June on record. Most of interior Labrador saw near normal precipitation.

July saw quite a change in precipitation with respect to normal. Newfoundland ranged from about 10% below normal precipitation in the Bonavista Bay and Burin Peninsula areas to about 60% below normal in parts of the west. It was in fact the 7th driest July on record for the Daniel's Harbour area. The Avalon Peninsula and other parts of eastern Newfoundland, however, received about 10-40% above normal monthly rainfall thanks in part to a [wet Canada Day](#). Most of Labrador was about 10-50% below normal for rainfall, with the L'Anse au Loup area having its driest July on record. Elsewhere along the Labrador coast, precipitation ranged from near normal to 25% above normal.

August precipitation conditions were quite different between Newfoundland and Labrador. For the island portion of the province, it was a dry month, with precipitation generally 25-75% below normal. Wreckhouse had its driest August on record, while Gander and Terra Nova placed 3rd and 5th driest all time, respectively. Extreme western Labrador and the Labrador Strait areas were about 10-25% below normal for precipitation as well. But the remainder of Labrador saw around 10-50% above normal rainfall. Happy Valley-Goose Bay, Nain, and Mary's Harbour respectively had their 2nd, 3rd, and 4th wettest August's on record.

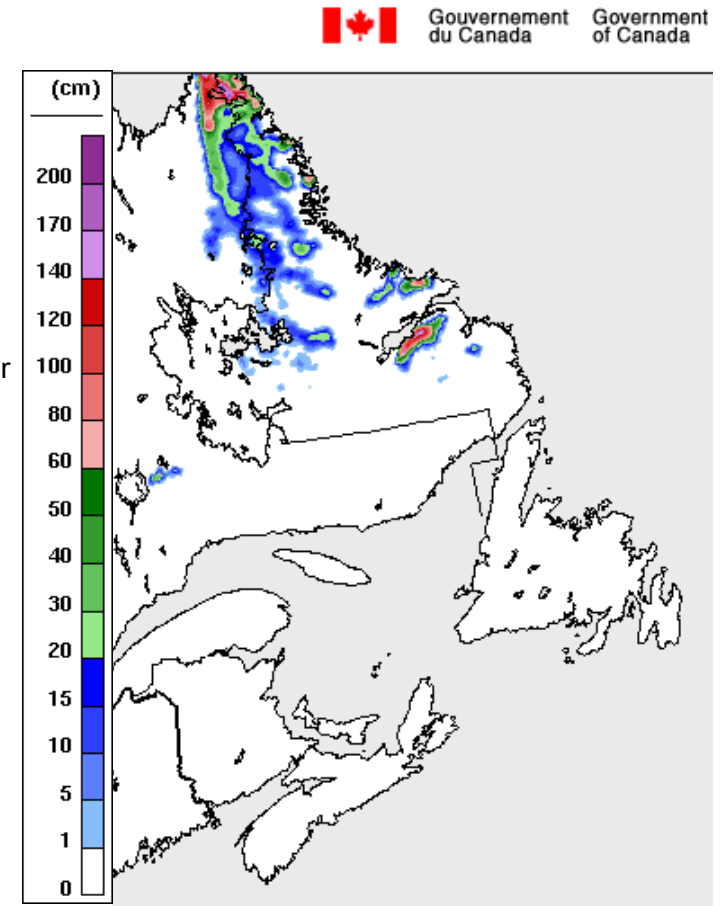
Right: Precipitation anomalies for Newfoundland and Labrador for (from top) June-August combined, June, July, August.



Snow depth

At the end of June, [significant snow still remained over parts of Labrador](#). Over the Mealy Mountains, it was estimated that nearly 100 cm still remained over some areas. There were areas with an estimated 10-40 cm remaining elsewhere in the Big Land, with roughly 40-70 cm on the ground over parts of the mid coast.

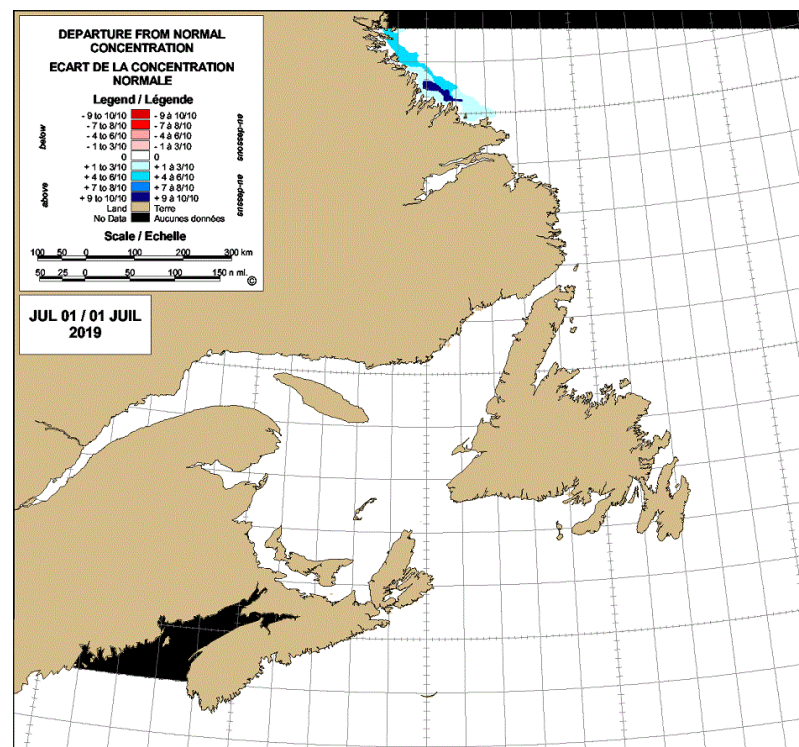
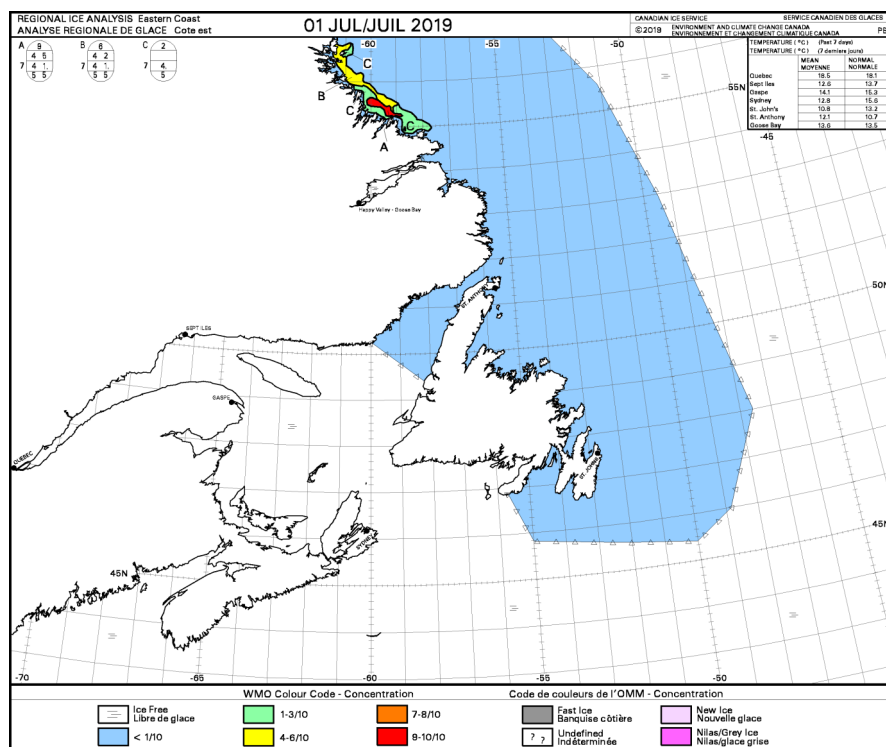
The image does not show any snow left on the ground in Newfoundland, but [parts of the Long Range Mountains still had considerable snow remaining](#). Some of these areas in Newfoundland and Labrador would still have snow remaining through most of the remainder of this summer.



*Snow depth (estimated) for Newfoundland and Labrador
as of 9:30 am NDT June 30, 2019*

Sea Ice Coverage (Analysis / Concentration departure from normal):

Sea ice charts for the East Coast at the end of June show some ice cover lingering along the mid Labrador coast, with above normal concentration. Near the end of July, the [iceberg limit extended just to the southeast of the Avalon Peninsula](#), with the International Ice Patrol (IIP) approximating 34 icebergs present along the Newfoundland coast. The IIP classified 2019 as the 10th most severe year for icebergs since 1900.



Left: Sea ice analysis chart for July 1, 2019. Right: Sea ice concentration departure from normal: July 1, 2019

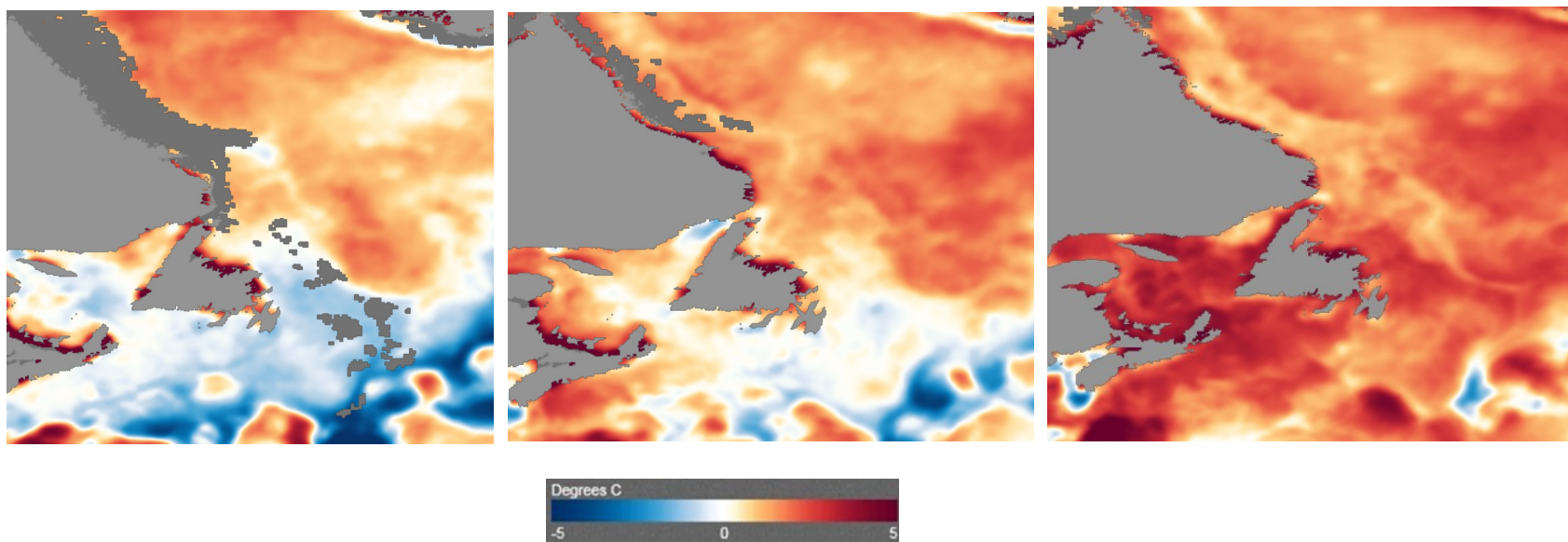
Sea Surface Temperature (Departure from Normal):

Note: We are excluding the area over the southern Grand Banks where the Labrador Current and the Gulf Stream meet. This area is extremely variable even in normal conditions. Grey areas along much of the coast may represent either gaps in data or presence of sea ice.

For **June**, sea surface temperatures were generally about 1 to 3 °C warmer than average over Labrador waters, and over waters well northeast of Newfoundland. Sea surface temperatures across remaining Newfoundland waters varied from about 1-2 °C below normal around the east and south coasts, to 1-2 °C above normal over the Northeast Gulf, up to 5 °C above normal along the northeast coast and in the Strait of Belle Isle.

In **July**, warm sea surface temperature anomalies started to make their way further south. Most Newfoundland and Labrador waters were 1-4 °C above normal, while northeast coastal waters in Newfoundland remained about 5 °C above normal. A small area along the Quebec coast came in about a degree below normal, while some areas off the east and south coasts of Newfoundland were near normal for the month.

For **August**, sea surface temperatures continued to warm up, as all Newfoundland and Labrador waters were about 2-4 °C above normal for the month.



NOAA monthly mean SST anomaly map (based on 1981-2010 Normals) for Jun 2019 (left), Jul 2019 (middle), and Aug 2019 (right) - <https://www.nnvl.noaa.gov/view/globaldata.html#SSTA>

Provincial Impacts (June—August):

Heavy rains & thunderstorms

Though for some areas the summer wasn't anything special in terms of total precipitation, there were several heavy rainfall events that caused considerable road damage throughout the season. A wet month of June was capped off by a late-month rain event which caused a [portion of the Trans-Labrador Highway to wash out](#). The damage caused several communities in Labrador to be cut off from one another for nearly a week. [Helicopter service was required](#) several days after the washout, before the [stretch of highway was finally made passable](#) again.

Damage due to heavy rain and severe weather wasn't just isolated to Labrador, nor to the early summer. Though August was overall relatively dry, several thunderstorm events did occur. One of these storms in mid-August caused lightning damage to an electrical pole in Rocky Harbour and to [homes in the Gander area, while heavy rainfall caused road damage in downtown St. John's](#). Both July and August were, in fact, above normal for total lightning strikes in the province. Wet weather also caused some [minor hiccups for Canada Day preparations](#) across the island, though these conditions did allow for a [strong start to Newfoundland's growing season](#).

The hottest month in recorded history...though a few places missed the memo:

Scientists with the European Union's Copernicus Climate Change Service concluded that [July 2019 was the warmest month in recorded world history](#). Many places across [Newfoundland and Labrador seemed to miss the boat on this](#), however. In the Nain area, July 2019 will go down as the 2nd coldest in its recorded history. Nain only reported 3 days in all of July in which their daytime high reached 20 degrees or higher. Twillingate had its 5th coldest July in its history of weather observations, though it fared better in terms of 20+ degree days, having 11 in total.

Twillingate, like much of the island, slogged through a cooler start to July. But, also like much of the island, [the latter part of July signaled a true start to summer](#). For Twillingate, 6 of the final 7 days of July reached daytime highs above 20 degrees. Three days in the last week of July saw at least one station in Newfoundland break their daily record for highest temperature. Warm, summery temperatures would continue for most of August across most of the province, though it didn't mean all good news. These warm temperatures did cause [some impacts for the summer salmon fishery](#). The warm temperatures combined with high humidity also [forced some health procedures to be postponed](#) in western Newfoundland.

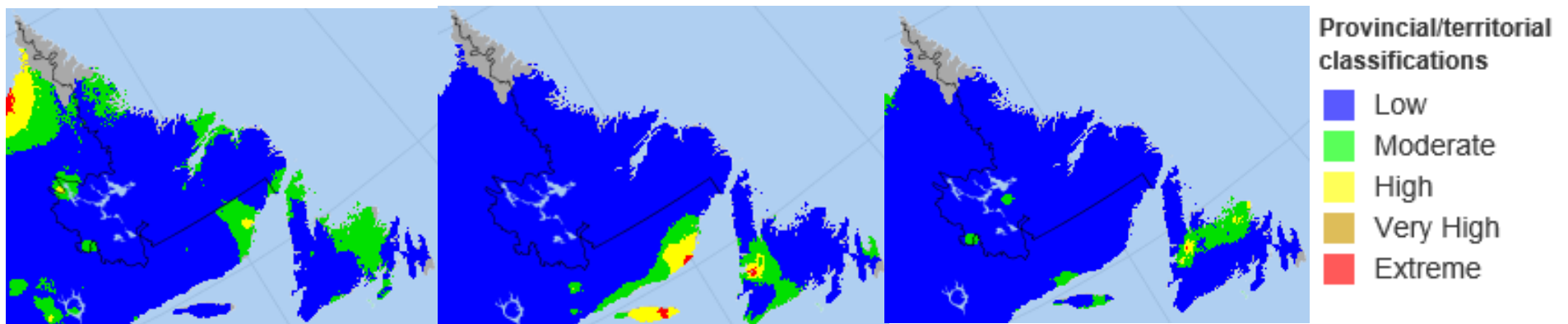
Provincial Impacts (June—August):

Lingering fog in northern Labrador:

When the calendar turned to August, residents in northern Labrador were likely hoping to get at least a small taste of summer. But in rolled the fog. A persistent moist onshore flow provided ideal conditions for thick fog to hang around the region for more than a week, causing considerable [air travel disruptions](#) and [supply shortages](#) to the remote Nain area. The lack of ability to travel to the area also caused [lengthy delays in repairing telecommunications services and a broken water main](#), leaving some residents in Nain without running water for more than a week. Conditions finally improved in the area, though it [took until mid-August to clear up the supply and passenger backlog](#) brought on by the fog.

Forest fire season:

Dry conditions in July lead to a classification of “high to extreme fire hazard” conditions across much of the island by late-month. The island maintained some areas of moderate to high fire danger throughout the summer, with occasional times at very high or extreme risk. According to Natural Resources Canada, Newfoundland and Labrador had an estimated 88 wildland fires up to September 6, slightly below the 10-year average (105).



Fire danger map for Newfoundland and Labrador for (left) June 30, 2019, (middle) July 31, 2019, (right) August 31, 2019. Source: Canadian Wildland Fire Information System, NRCan

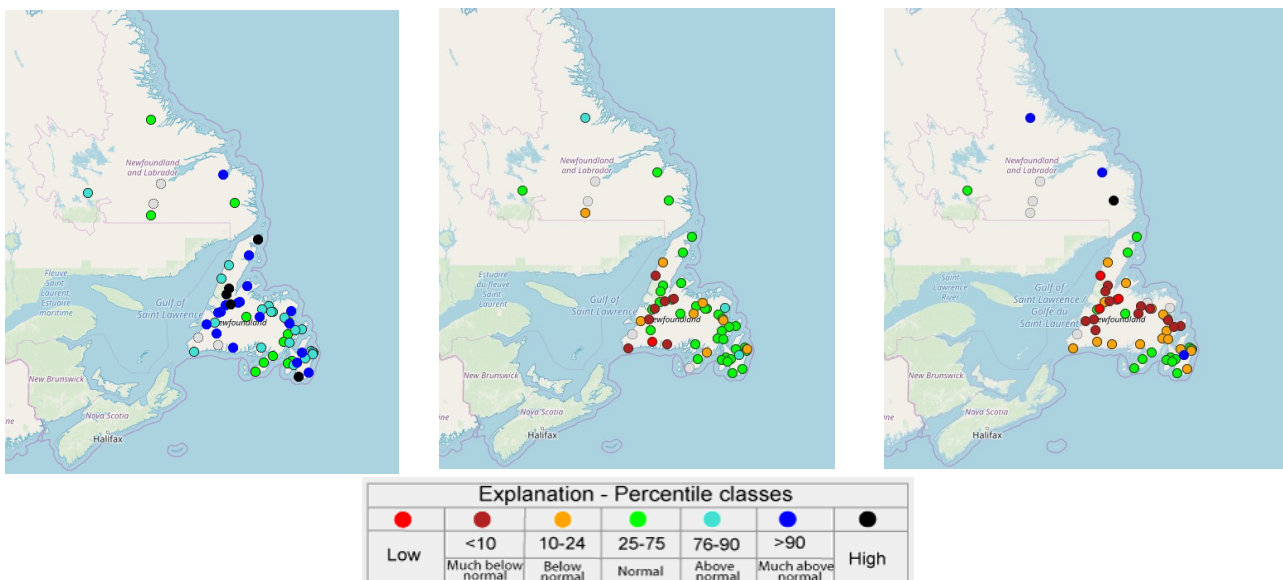
<http://cwffis.cfs.nrcan.gc.ca/interactive-map>

River Flows / Drought Conditions:

By the end of **June**, most rivers across the island were near to above normal for flow rates, with many running well above normal due to a wetter than normal month. Rivers in Labrador were near normal for flow rates, except for the Atikonak and Eagle Rivers, which ran above normal. Eagle River in particular, as well as the Gander and Upper Humber Rivers, reported excessive mean flow for the month.

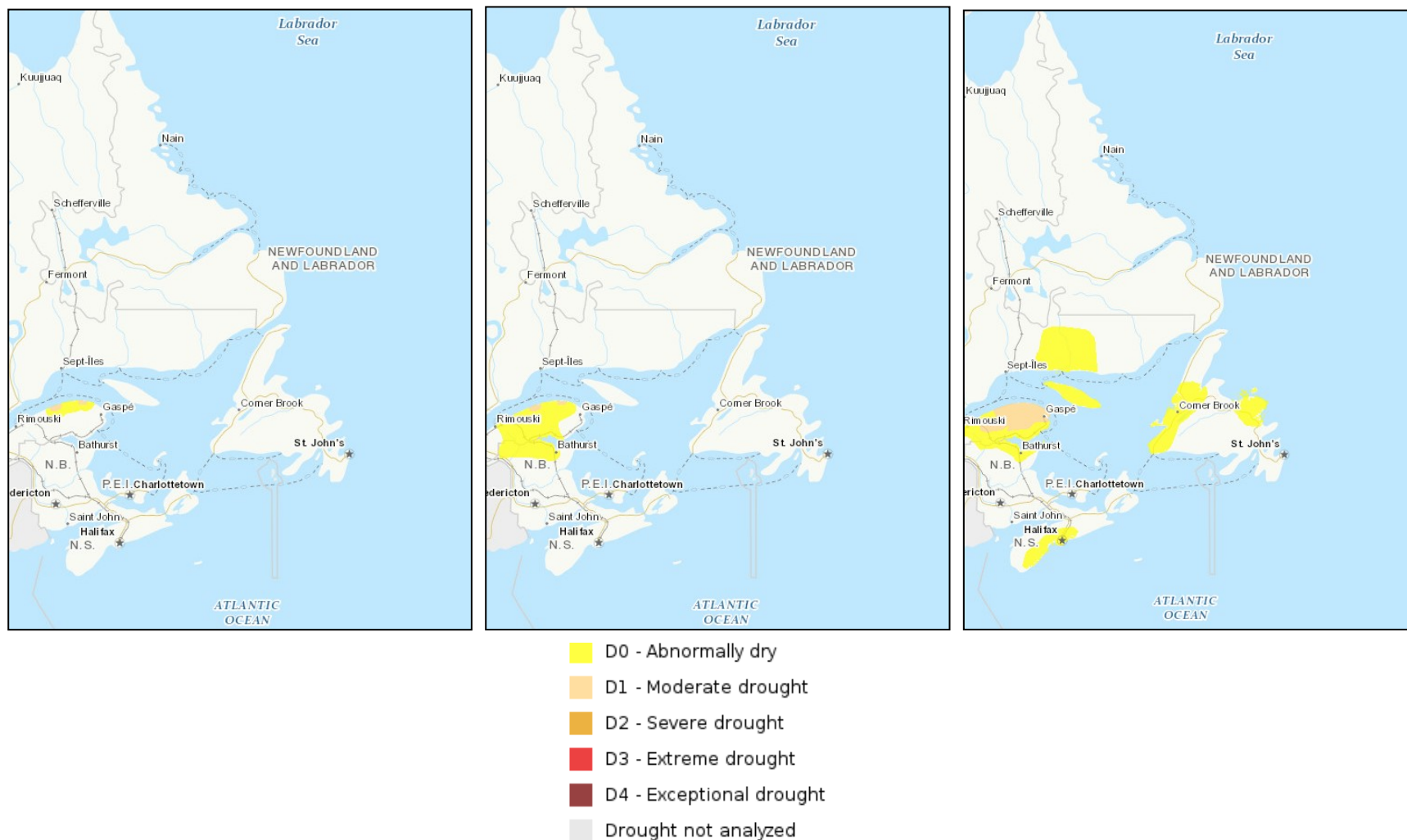
At the end of **July**, conditions were quite different in Newfoundland. Most rivers across the island were near to below normal for flow rates as dry conditions were observed for most of the month. Labrador rivers continued to run near normal, though the Ugjoktok River in northern Labrador flowed above normal. Despite the low flow rates reported at the end of the month, mean flow for July was once again recorded as excessive for the Gander, Upper Humber, and Eagle Rivers.

By the end of **August**, near to below normal flow conditions continued to be prevalent for Newfoundland rivers, with many showing flow rates well below normal in response to continued dry conditions. In fact, Isle aux Morts River reported record deficient mean flow for August. After being classified as excessive for flow rates the previous two months, the Gander and Upper Humber Rivers flipped to having deficient flow to close out the summer. In Labrador, most rivers were near to above normal for flow rates thanks to wetter than normal conditions. Mean flow in Eagle River was yet again reported as excessive for the month.



North America WaterWatch map of real-time streamflow compared to historical streamflow for the day of year: as of July 4 (left), August 1 (middle) & September 3 (right), 2019 - <https://watermonitor.gov/naww/index.php>

Much of western Newfoundland, as well as a portion of northeastern Newfoundland, were classified as unusually dry by the end of August thanks to a drier-than-normal month. Elsewhere, abnormally dry conditions were not analyzed throughout the summer.

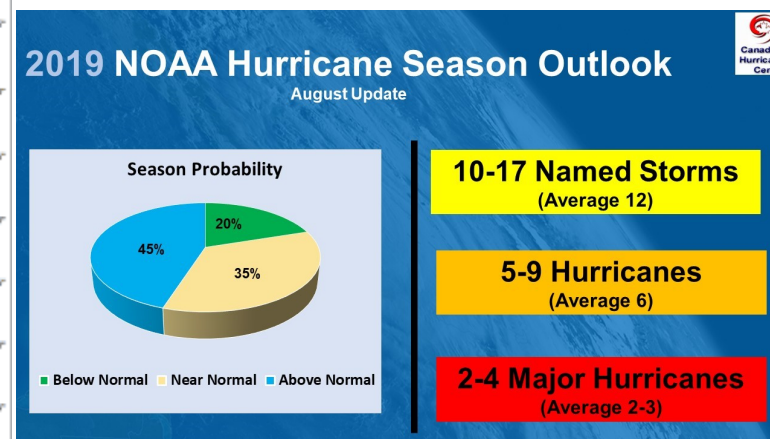
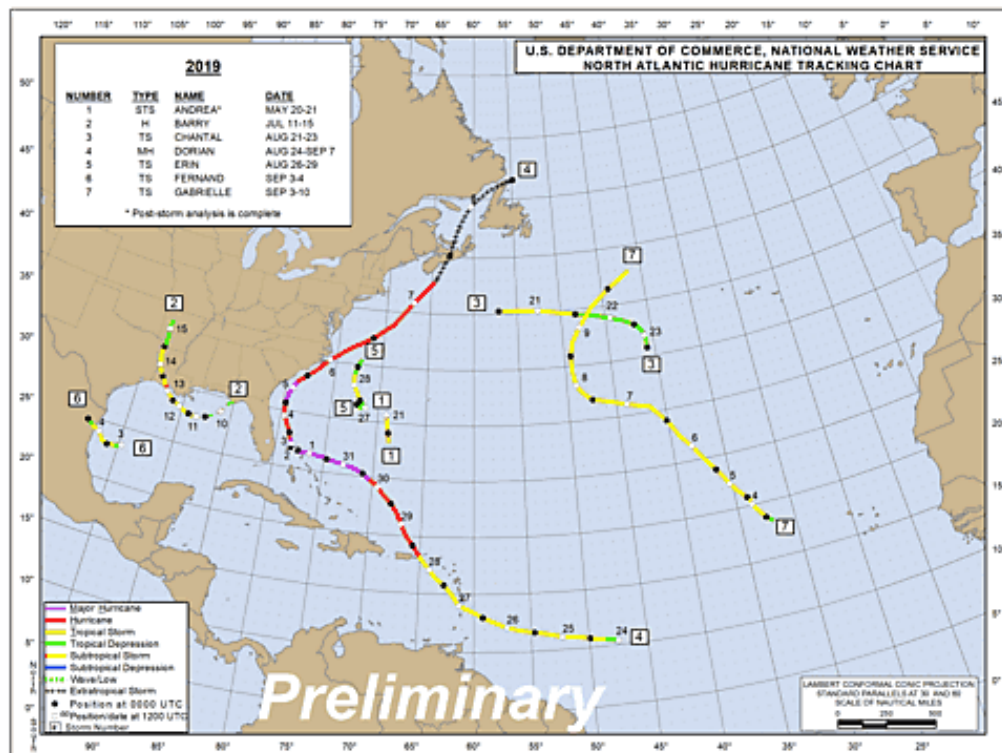


Canadian Drought Monitor Map for June 30, 2019 (left), July 31, 2019 (middle), and August 31, 2019 (right). Drought maps courtesy of Agriculture and Agri-Food Canada- <http://www.agr.gc.ca/eng/programs-and-services/list-of-programs-and-services/drought-watchcanadian-drought-monitor/?id=1463575104513>

2019 Hurricane Season Update:

The 2019 season marks the 5th straight year with a named storm forming prior to June 1, as subtropical storm Andrea formed on May 20. Though the hurricane season by mid-summer was fairly quiet, on their [August 8 update](#), the National Hurricane Center slightly increased their predicted number of named storms thanks to the end of El Nino. [The Canadian Hurricane Centre response zone generally sees about 32% of the total named storms each year](#), so our forecast would be 3 to 5 named storms.

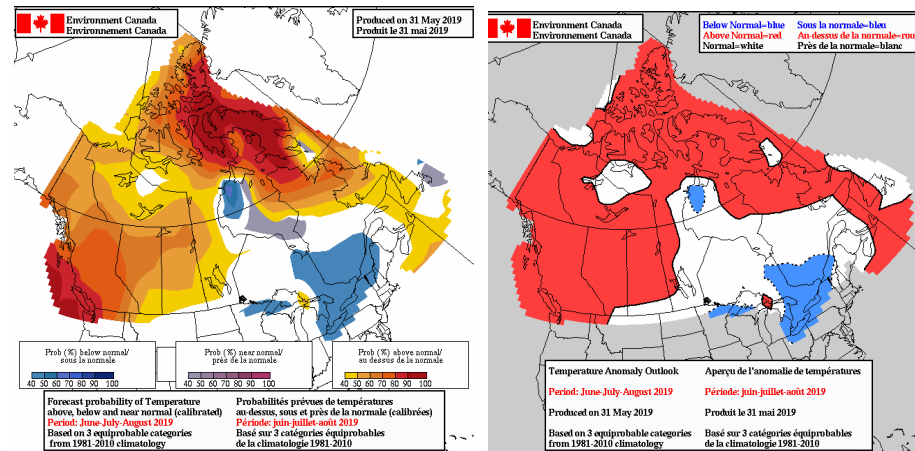
By the end of August, there have been 5 named storms in the tropical Atlantic for the 2019 season. Hurricane Dorian would eventually become a major hurricane, slamming into the Bahamas as a dangerous Category 5 hurricane. Dorian made its way northward to Canadian waters in early September. More information on Dorian and its impacts will be provided in the Fall 2019 Climate Summary bulletin. September 10 marks the climatological peak of the Atlantic Hurricane season.



Left: NOAA Preliminary Atlantic Tropical Cyclone tracks (up to September 10, 2019). Right: August 8 update, NOAA/CHC 2019 Tropical Cyclone season outlook.

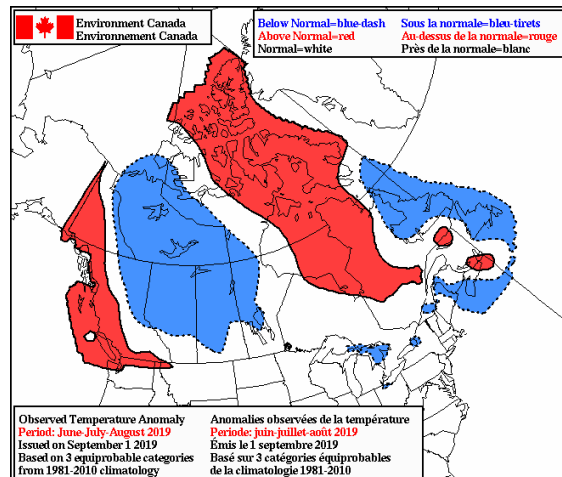
<https://www.nhc.noaa.gov/>

Summer Season (Period: June-July-August) Temperature Outlook Performance: For the most part, summer in eastern Newfoundland was predicted to be near normal for temperatures, while the rest of the province had an outlook for a warmer than normal season.



Left: Probability of above, below and near normal: Produced May 31, 2019 – Right: Forecast Temperature Anomaly: Produced May 31, 2019

As it turns out, observed temperatures did not work out as expected over most areas, as we ended up with a generally near normal to colder-than-normal summer season. Though August was near normal or warmer than normal across the province, it could not compensate for colder than normal conditions in June and July over some areas.

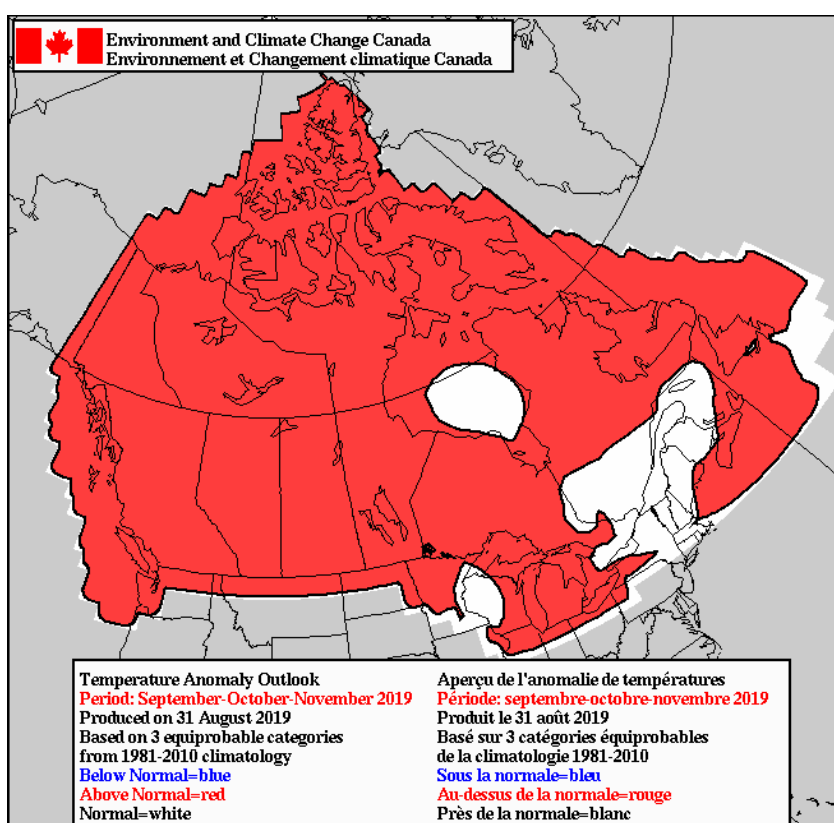
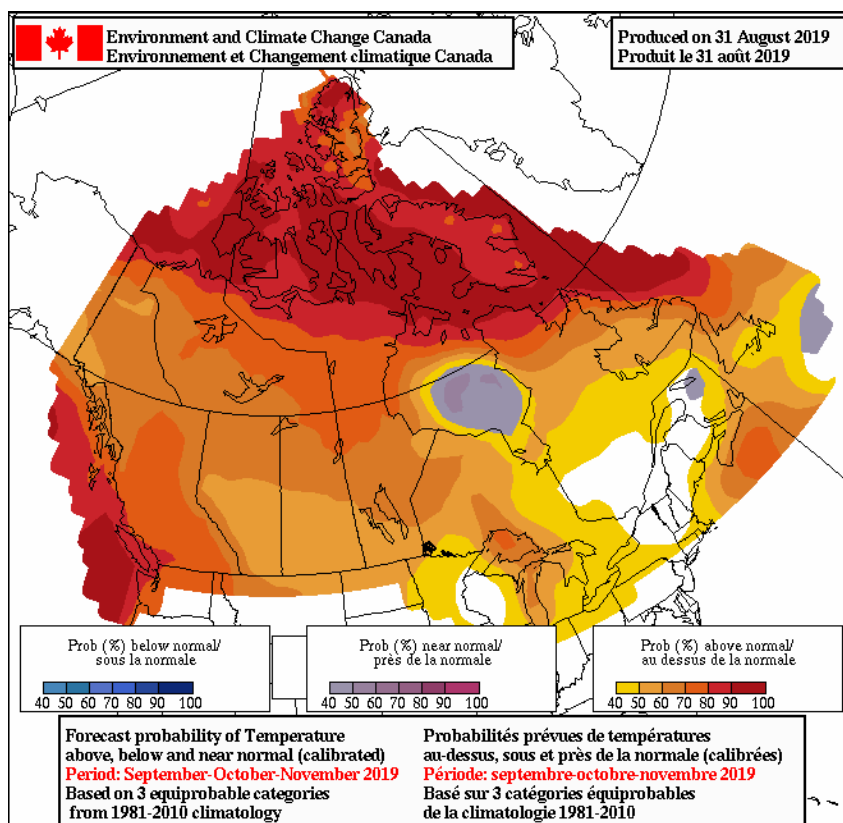


Above: Observed Temperature Anomaly – Issued on September 1, 2019

Fall Season (Period: September-October-November) Temperature / Precipitation Outlook:

Perhaps recent fortunes will turn around for the fall temperature outlook. Newfoundland and Labrador, along with most of the remainder of the country, is predicted to have a warmer than normal fall. The probability of such conditions falls in the 40-70% range for our province.

The precipitation forecast (not shown) exhibits no signal across the province, with the exception of a roughly 40% chance of higher than normal precipitation over extreme western Labrador. The seasonal precipitation forecast typically does not perform as well as the seasonal temperature forecast, so the graphics are not included.



Left: Probability of above, below and near normal temperature: Produced August 31, 2019 – Right: Temperature Anomaly Outlook: Produced August 31, 2019

https://weather.gc.ca/saisons/index_e.html

Temperature Outlook: Next 4 Weeks

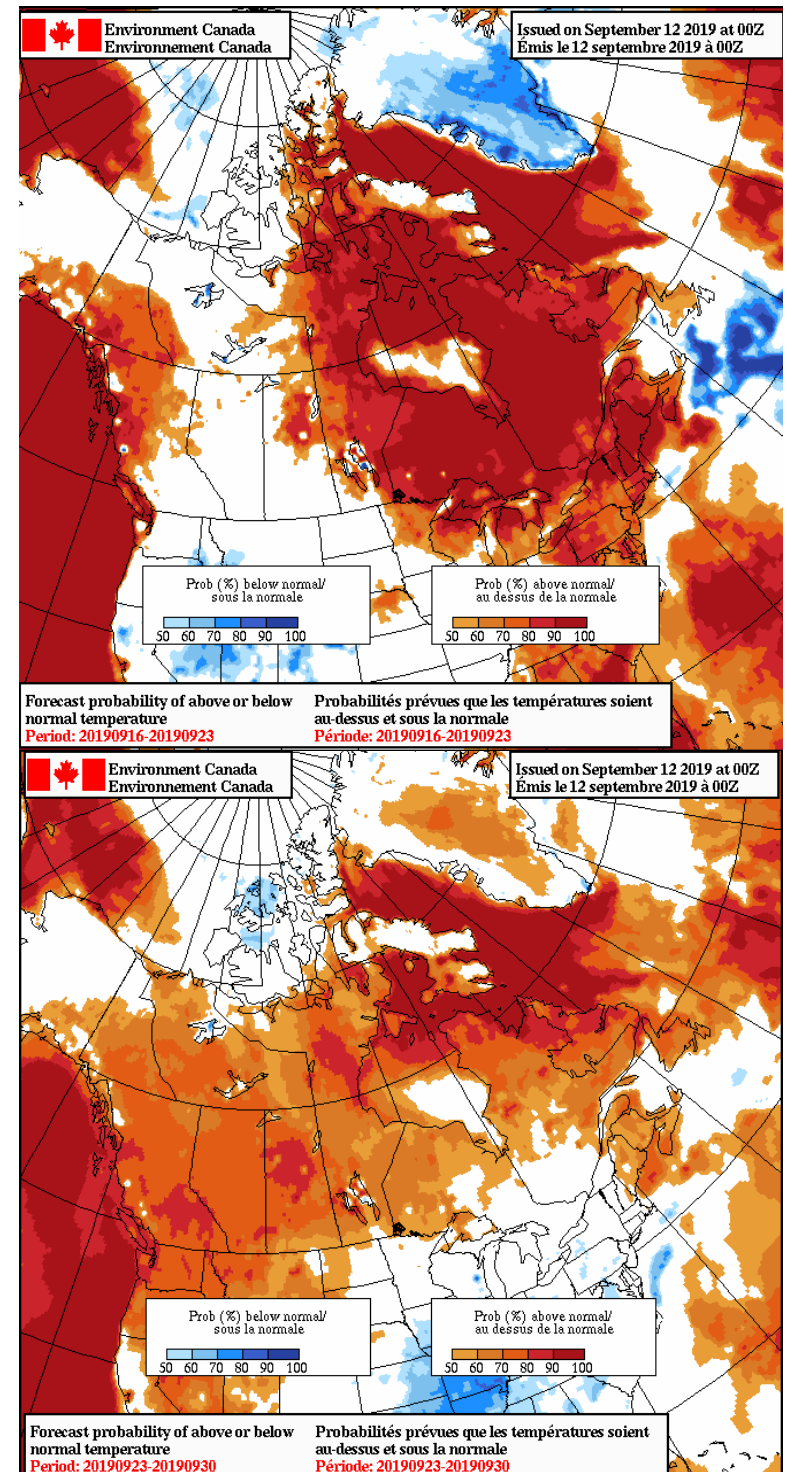
An above normal start to September was quickly replaced by colder than normal temperatures in the second week over much of the province. Overall, the result was decently captured by the Global Ensemble Prediction System. Here are the predictions for the next 4 weeks.

Week 1 (September 16 to 23):

Temperatures into the first few days of Autumn are expected to be near normal for the Avalon and Bonavista Peninsulas, as well as the south and west coasts of the island. Elsewhere in Newfoundland, there is a 50-70% chance of above normal temperatures. In Labrador, above normal temperatures are predicted with a higher probability, generally in the 60-90% range.

Week 2 (September 23 to 30):

The warm trend continues to close out the month of September. The Ensemble Prediction System calls for a 50-90% chance of above normal temperatures across the province.



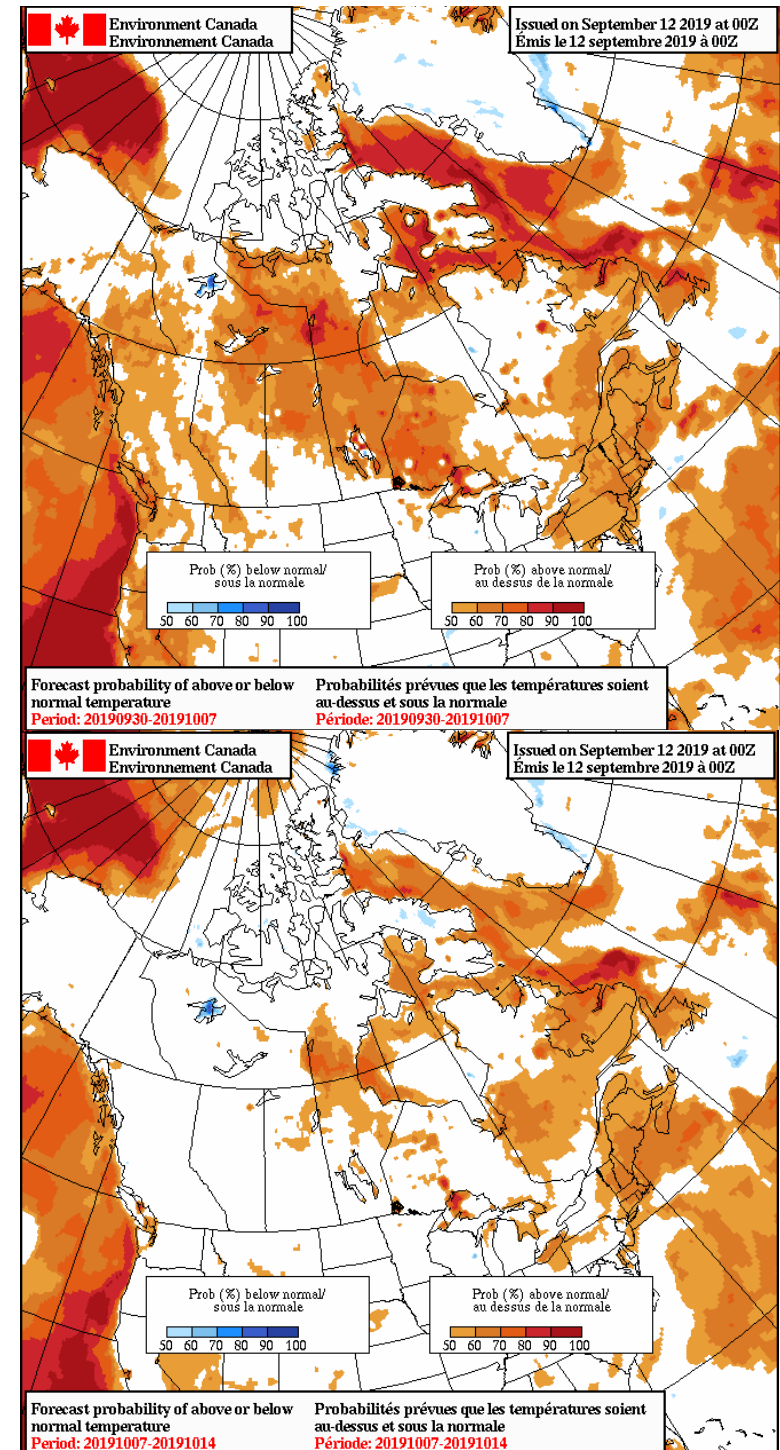
Right: Forecast probability of above or below normal temperature from the Canadian Global Ensemble Prediction System for week 1 (top) & week 2 (bottom): Produced September 12, 2019

Week 3 (September 30 to October 7):

Into October, temperatures are predicted to fall back to near normal through western Labrador and along a sliver of the southwest coast of Newfoundland. Across the remainder of the province, higher than normal temperatures are once again forecast, with probabilities ranging from 50-80%.

Week 4 (October 7 to 14):

Parts of Newfoundland's south coast are forecast to be near normal for the second week of October. The rest of Newfoundland and Labrador is predicted again to stay warmer than normal, with a 50-70% chance, except slightly higher along parts of the Labrador coast.



Right: Forecast probability of above or below normal temperature from the Canadian Global Ensemble Prediction System for week 3 (top) & week 4 (bottom): Produced September 12, 2019

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