





Environnement et Changement climatique Canada

## Newfoundland and Labrador Quarterly Climate Summary: Spring 2020

Summary & significant weather events (March—May):

Overall it was a cold Spring season for Newfoundland and western Labrador, with some areas getting plenty of snow and rain. For the rest of Labrador, temperatures were pretty usual for the season, but it was high in precipitation.

2020 provided a classic, <u>stormy March</u>, making for a snowy (and in some parts, rainy) month. It would be a contributor (though not the only one) to a season which was above normal for precipitation for the province.

Things calmed down somewhat in April, though there were still a few storms that brought a mix of snow, rain and strong winds to both Newfoundland and Labrador. Overall it was a fairly normal month, except for some parts of the province which experienced a drier than normal April.

May saw a more true onset of spring for the island portion of the province. For most of the island, precipitation fell predominantly as rain, though with higher than normal amounts. Though the month was generally near to below normal for temperatures, <u>May ended with an unseasonably warm spell</u>, giving visions of summer. Labrador, on the other hand, received even more snowfall. And overall, well above normal precipitation fell along the coast.

#### Here is a description of the most significant events:

## March 1-2: A winter storm for the Avalon Peninsula.

• **Snowfall**: 40 cm was reported in Mount Pearl, 24 cm at St. John's Airport, and 15 cm in Mount Carmel.

**March 4-5:** Not to be left out, a winter storm produced heavy snowfall for western Newfoundland and much of Labrador. The remainder of Newfoundland got an early dose of spring, with rain and strong winds.

- **Snowfall**: 28 cm fell at Makkovik Airport, while 3 stations along the Labrador Strait reported 13-15 cm.
- Rainfall: Stations across the south coast of Newfoundland and the Avalon Peninsula reported rainfall amounts in the 13-28 mm range.
- Wind: Peak gusts of 89-107 km/h were observed. In southern and eastern Newfoundland, and along parts of the Labrador coast.

March 7-8: Another string of wintry storms was set in motion, as eastern Newfoundland was hit with another snowy winter event.

• Snowfall: 25 cm of fresh snow fell at Lethbridge, while St. John's and Mount Pearl each received 22 cm. Terra Nova got 21 cm of snow, while 2 stations in Gander received 18-19 cm.

March 8-10: A persistent cold flow produced an extended period of very cold wind chills in much of Labrador and the Northern Peninsula.

• Coldest wind chills: Wind chill values bottomed out at -50 to -40 across interior and northern Labrador. The Northern Peninsula and southeastern Labrador had minimum values near -35.

## March 13-15: Labrador and northern Newfoundland went from extreme cold to gaining even more snow.

- Snowfall: Makkovik picked up the most snow with this storm as well, gaining an additional 26 cm. L'Anse au Loup ended up with 15 cm of additional snow, while Goose Bay received 14 cm.
- Wind: Peak gusts of 87-115 km/h were reported along parts of the Newfoundland coast, with Wreckhouse hitting 149 km/h..

March 20-21: A deep low pressure system brought more snowfall to Labrador, rain and mild temperatures to Newfoundland, and strong winds province-wide.

- Snowfall: Makkovik wins again, picking up 33 cm. Goose Bay reported 25 cm of snow, while L'Anse au Loup received roughly 11 cm.
- **Rainfall:** Stations across the south coast of Newfoundland reported rainfall amounts of 28-42 mm.
- Wind: Many stations across the island and the Labrador coast reported wind gusts of 90-130 km/h.

March 24-25: Yet another low pressure system produced more snow and blowing snow in eastern Newfoundland

- Snowfall: 35 cm was estimated at Terra Nova, while two observations from Gander had 29 cm (Gander West) and 24 cm (Gander Airport). Paradise reported 21 cm while St. John's Airport observed 18 cm.
- Wind: Bonavista peaked at 98 km/h and St. John's Airport hit 91 km/h.

**March 27-29:** Another intense storm brought a mix of wintry precipitation and strong winds to the province.

- Rainfall: Estimated rainfall of 51.3 mm were reported at Burgeo, while stations across the eastern half of the island reported 20-45 mm.
- **Snowfall:** La Scie had an estimated snowfall total of 36 cm, while snowfall reports of 34 cm and 31 cm came from Corner Brook and Sops Arm, respectively. Deer Lake and Goose Bay each received 21 cm of snow, while Stephenville and L'Anse au Loup picked up 18-20 cm.
- Wind: Wreckhouse area winds peaked at 123 km/h, while Hopedale and Port aux Basques peaked at 102 km/h. Peak winds of 91-98 km/h were observed at Blanc Sablon, Bonavista, Makkovik, and St. Anthony.

## March 29-30: An extended period of freezing precipitation occurred in the St. John's Metro area and northeast Avalon.

• **Freezing precipitation:** St. John's Airport reported continuous freezing rain or freezing drizzle from the evening of March 29 through the evening of March 30.

## April 1-2: Another winter storm for northern Labrador.

- Snowfall: Makkovik got another 20 cm.
- Wind: Wreckhouse gusts peaked at 109 km/h, but gusts of 80 km/h or stronger occurred for the better part of two straight days.

**April 10:** A low pressure system gave another winter-like mix of precipitation and strong winds to the island. A further bout of snow and blowing snow was in store for southeastern Labrador.

- Rainfall: Rainfall amounts over the Burin and Avalon Peninsulas were in the range of 21-28 mm.
- **Snowfall:** L'Anse au Loup received 10 cm of fresh snowfall.
- Wind: Wreckhouse reported a peak wind of 161 km/h. Burgeo and Port aux Basques each hit 107 km/h for a peak wind gust.

**April 15-16:** Another storm produced heavy rain for the Avalon Peninsula, and a mix of snow and freezing rain elsewhere along Newfound-land's east coast.

• **Rainfall:** 18-25 mm of rain was reported at many stations across the Avalon Peninsula.

**April 19-20:** An intense storm gave <u>a mix of snow and rain to the Avalon and Burin Peninsulas</u>, while the rest of the island and southeastern Labrador received more snow.

- **Snowfall:** Roddickton received an estimated 30 cm of snow while La Scie got an estimated 29 cm. Stations scattered elsewhere across the island and the Labrador Strait picked up 15-21 cm of snow with this storm.
- Rainfall: The St. John's metro area received 23-41 mm of rain.
- Wind: Cape Pine winds peaked at 121 km/h and Burgeo hit 116 km/h. Gusts of 80-100 km/h occurred elsewhere in eastern Newfoundland.

**May 2-3:** The trend of storms at the start of the month continued for May as a low produced heavy rainfall and strong winds in southwestern Newfoundland and along the Labrador Strait.

- Rainfall: St. Alban's reported 119.9 mm of rain and Wreckhouse station picked up 53.6 mm. Burgeo got 47.3 mm of rain and L'Anse au Loup reported 40.5 mm. Rainfall amounts in the 25-39 mm range were reported at Gander West, Kippens, and Port aux Basques.
- Wind: Wreckhouse and St. Lawrence each peaked at 95 km/h.

May 5-7: <u>Another low tracked across Newfoundland</u> and gave more rainfall for eastern Newfoundland. Another shot of snow was in store for northern Newfoundland and parts of Labrador.

- Rainfall: Amounts of 22-36 mm were reported on the Avalon Peninsula, as well as Lethbridge.
- **Snowfall:** Goose Bay received 25 cm.

**May 12-14:** Parts of Labrador experienced yet another winter storm despite being well into spring. More rain was on tap for southern and eastern Newfoundland with this storm.

- Snowfall: Makkovik received another 38 cm of snow.
- Rainfall: Whitbourne received 39.6 mm of rain, while St. Alban's got 37.3 mm. 20-30 mm of rain was reported at several other stations across the Avalon Peninsula
- Wind: Wreckhouse winds peaked at 112 km/h, and Hopedale reported a peak gust of 80 km/h.

## **Provincial Climate Overview (March—May):**

#### **Temperature (Departure from Normal):**

The **Spring** temperatures averaged out to below normal across most of the island, except for the Avalon Peninsula which experienced a roughly normal season. In Labrador, western areas had below normal temperatures, as did a portion of the Labrador Strait. Slightly above normal temperatures were the story for the Nain area. Elsewhere in Labrador, temperatures were near normal for the 3-month period.

**March** average temperatures were about 1-2 degrees below normal through parts of central & western Newfoundland, as well as western Labrador. The remainder of the province saw near normal temperatures for the month.

April average temperatures remained about a degree or so below normal for western areas in Newfoundland and Labrador. Northern Labrador received temperatures which were roughly a degree above normal and was the main contributor to a warmer than average spring season. Meanwhile the rest of the province was near normal.

May continued to be 1-2 degrees cooler than normal for western areas of the province. Otherwise temperatures were near normal to conclude the Spring season despite a late-season record warm surge for pats of the island.

Right: Temperature anomalies for Newfoundland and Labrador for (from top) March-May combined, March, April, May.



ECCC Climate Archives data / Données des Archives Climatiques de ECCC. Clim: 1981-2010

#### **Precipitation (**Percent of Normal):

**Spring** precipitation exhibited a general west to east contrast in conditions. Western regions of both Newfoundland and Labrador were near normal in terms of precipitation. Otherwise, central and eastern regions of the province received about 10-60% wetter than normal conditions.

**March** precipitation was about 10-60% above normal across most of the province. Exceptions to these wetter than normal conditions were noted in western and extreme northern Labrador, as well as parts of the Northern Peninsula. Over those areas, precipitation was near normal to about 75% of normal, except the Nain area which received only half of its normal precipitation.

**April** precipitation told a slightly different story. Parts of eastern Newfoundland, the Northern Peninsula, and most of the Labrador coast were about 10-50% wetter than normal for the month. The remainder of the province was generally near normal to drier than normal. Most areas received only 50-90% of normal precipitation, with parts of Newfoundland's west coast ending the month with as little as 25% of normal precipitation.

May ended the season on a very wet note. Parts of eastern Newfoundland and the Labrador coast received more than twice their normal precipitation amounts, with Mary's Harbour getting its wettest May on record. Much of the remainder of the province received between 25 and 100% wetter than normal conditions. The main exception to these wet conditions was western Labrador, which got near to slightly below normal precipitation.

Right: Precipitation anomalies for Newfoundland and Labrador for (from top) March-May combined, March, April, May.



#### Snow (Total / Percent of Normal):

In Newfoundland, total snowfall for the Spring season generally ranged from 80 to 200 cm across most of the province. Parts of northern Labrador received total snowfall estimated near 300 cm or more. Newfoundland and Labrador, for the most part, received 20-75% above normal snowfall through the Spring season. May in particular was snowier than normal, with Corner Brook and Goose Bay each experiencing their 3rd highest snowfall total on record for May. Stephenville received its 4th snowiest May on record. The Gander and St. John's areas, on the other hand, each received snowfall totals which were about normal for the March to May period.



Left: Total snowfall for select observation sites in Newfoundland and Labrador—March-May combined. Centre: Estimated total snowfall using a blend of observations and model data (experimental product). Right: Snowfall anomalies (percent of normal) at observation sites in Newfoundland and Labrador for March-May combined.

#### **Snow depth**

The only snow remaining on the ground in Newfoundland at the end of May was located in the usual areas atop the Long Range Mountains.

In Labrador, considerable snow depths remained in the Mealy Mountains and in the Makkovik area, where snow depths were estimated at roughly 60-80 cm. Elsewhere in the Big Land, snow depths were in the 10-30 cm range, with a few pockets in northern, central and southeastern Labrador showing no snow cover.



Snow depth (estimated) for Newfoundland and Labrador as of 9:30 am NDT June 1, 2020

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

Sea ice charts for the East Coast at the end of the Spring season show ice cover lingering in Lake Melville (with above normal concentration), and an ice edge extending off the mid-Labrador coast (with below normal concentration). The iceberg limit at the end of May extended just southeast of Newfoundland, into the Grand Banks, and into the northeast Gulf of St. Lawrence. This is in stark contrast to last year, when the iceberg limit extended well south of the Grand Banks. The <u>International Ice Patrol</u> reported 148 icebergs sighted or drifted below latitude 48° N in the trans-Atlantic shipping lanes at the end of May, well below the average (607). Last year saw 1468 icebergs below this latitude at the end of the same month.



Left: Sea ice analysis chart for May 25, 2020 (Note: the blue area indicates the area containing icebergs). Right: Sea ice concentration departure from normal: May 25, 2020

#### 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 **March** and **April**, sea surface temperatures were generally about 1 to 3 °C warmer than average across Newfoundland and Labrador waters. A portion of the Northwest Labrador Sea was about 4 °C above normal in March. For **May**, sea surface temperatures continued to be above normal across most offshore waters to a similar extent as the past two months. However, Gulf of St. Lawrence and southern Newfoundland coastal waters switched sides for the month, with sea surface temperatures ending up roughly 1-2 °C below normal.



NOAA monthly mean SST anomaly map (based on 1981-2010 Normals) for Mar 2020 (left), Apr 2020 (middle), and May 2020 (right) https://www.nnvl.noaa.gov/view/globaldata.html#SSTA

### **Provincial Impacts (March—May):**

#### A classic March:

While weather during the spring of 2020 was not the main story, Newfoundland and Labrador endured a classic, stormy March. The train of storms was kicked off right at the start of the month, with a heavy blast of snow for the Avalon Peninsula. While not nearly like <u>Snowmageddon</u> this past January, this storm resulted in <u>government office closures and poor commuting conditions</u>. Two more storms would impact the province within the first week of the month, bringing a mix of snow and rain along with strong winds. All told, 8 storms brought accumulating snowfall or <u>freezing precipitation</u> through March, which at least may have made <u>self-isolation and travel restrictions</u> a bit easier to handle. As usual though, the active month caused the usual share of ferry cancellations for those who were still able to travel across the Cabot Strait.

#### Cain's Quest:

The 2020 edition of the grueling cross-Labrador snowmobile race went ahead early in March. As mentioned previously, March was a busy month in terms of weather. But for the most part, the weather cooperated for much of the duration of the race. A light winter season for snowfall, and the cold wind chills that define Labrador through the winter and early spring, did provide a few challenges for the competitors. But in the end, the 2020 version of Cain's Quest was completed with few hitches.

#### A quiet spring thaw until the end:

The annual spring thaw appeared to move along without much incident. Below-normal snowfall through the winter (December-February) for Labrador left the area with less than usual snow to melt; a stark difference from the previous winter and <u>spring</u>. One moderate <u>rainfall event in</u> <u>early May did cause some localized flooding in the St. John's area</u>. Despite that instance, gradual thaw and melt conditions went along quite well until the end of May, when water levels started to rise in the Humber River area. <u>Water levels continued to climb into the first days of June</u>, causing some minor flooding.

## **Provincial Impacts (March—May):**

#### Start to forest fire season:

May 1 marks the start of the forest fire season in Newfoundland, while the season commences May 15 in Labrador. Through the last week of May, <u>a few small fires were reported in parts of Newfoundland and central Labrador</u>. But by the end of the month, no active fires were noted by the Canadian Wildland Fire Information System. Most of the province was classified at low fire danger thanks to a wet conclusion to May, except for eastern Newfoundland which had a moderate to high fire danger classification. Parts of central and southern Newfoundland did have moderate to high fire danger classifications off and on through the last week of May before conditions moderated by the end of the month.



Fire danger map for Newfoundland and Labrador for May 31, 2020. Source: Canadian Wildland Fire Information System, NRCan, http://cwfis.cfs.nrcan.gc.ca/interactive-map

#### **River Flows / Drought Conditions:**

River flow rates in Newfoundland and Labrador were near to above normal for **March** for several rivers, with Eagle and Rocky Rivers reporting excessive flow. The Gander and Upper Humber Rivers went against this trend, reporting below normal to deficient flow for the month.

**April** flows flipped from the previous month for Isle aux Morts River, going from well above normal flow the previous month to deficient flow. Many other rivers showed near to below normal flow rates for the month, with the Upper Humber also running at deficient flow. The Rocky River, however, continued to exhibit excessive flow rates, continuing its trend from the month prior.

The Rocky River continued to show excessive flow rates in **May** and, at over 300% of median, flow rates were deemed at record values for the month. Gander River also reported excessive flow, while the opposite was the case for Eagle and Isle aux Morts Rivers.



Right: Monthly runoff summary for select river sites in Newfoundland and Labrador (map above) for Mar. 2020 (top), Apr. 2020 (middle), and May 2020 (bottom) - tables courtesy of ECCC Water Survey of Canada

STATION	DRAINAGE		N	IEAN FLO	% OF
NUMBER	AREA			(M3/S)	MEDIAN
EAGLE				44	132
03QC001	10900	KM2		E	
GANDER				49.7	46
02YQ001	4400	KM2		D	
ISLE AUX	MORTS			9.49	179
02ZB001	205	KM2			
ROCKY				20.8	144
02ZK001	301	KM2		Е	
UPPER H	JMBER			20.9	66
02YL001	2110	KM2			

STATION	DRAINAGE		MEAN FLOV % OF		
NUMBER	AR	EA	(M3/S	) MEDIAN	
EAGLE			37.9	79	
03QC001	10900	KM2			
GANDER			269	102	
02YQ001	4400	KM2			
ISLE AUX	MORTS		14.8	61	
02ZB001	205	KM2	D		
ROCKY			32.9	202	
02ZK001	301	KM2	E		
UPPER H	JMBER		48.6	49	
02YL001	2110	KM2	D		

STATION	DRAINAGE		MEAN FLOV % OF		
NUMBER	AREA			(M3/S)	MEDIAN
EAGLE				525	64
03QC001	10900	KM2		D	
GANDER				421	176
02YQ001	4400	KM2		Е	
ISLE AUX	MORTS			17.4	58
02ZB001	205	KM2		D	
ROCKY				27	306
02ZK001	301	KM2		ER	
UPPER HUMBER				261	104
02YL001	2110	KM2			

E - Excessive

D - Deficient

R - Record

Most of Labrador was classified as unusually dry by the end of March, as some areas had drier than normal conditions. These dry conditions contributed to another unusually dry month in April through central Labrador and were not overcome in May despite above normal precipitation. Elsewhere, abnormally dry conditions were not analyzed throughout the spring.



Canadian Drought Monitor Map for March 31, 2020 (left), April 30, 2020 (middle), and May 31, 2020 (right). Drought maps courtesy of Agriculture and Agri-Food Canada- <u>http://www.agr.gc.ca/eng/programs-and-services/list-of-programs-and-services/drought-watchcanadian-drought-monitor/?id=1463575104513</u>

## 2019 Hurricane Season Review / 2020 Hurricane Season Outlook:

The next graphic shows a review of the 2019 Hurricane season. The actual number of observed named storms ended up above the upper bound of the prediction, while the actual number of hurricanes and major hurricanes fell exactly in the middle of the forecast range. The most noteworthy for our interests was Hurricane Dorian, which was a dangerous post-tropical storm when it tracked across Nova Scotia.

2019 Atlantic Tropical Cyclone Season Review				
Named Storms: Hurricanes: Major Hurricanes:	<u>Predicted</u> 9-15 4-8 2-4	<u>Actual</u> 18 6 3		
Andrea Barry Chantal Dorian Erin Fernand Gabrielle	Humberto Imelda Jerry Karen Lorenzo Melissa Nestor	Olga Pablo Rebekah Sebastien Tanya Van Wendy		

Newfoundland got its dose of the 2019 Tropical Cyclone season in the form of <u>Dorian</u>. Though Dorian did not have the impact that it did in Nova Scotia or PEI, the storm still brought very strong winds to Newfoundland and southeastern Labrador, and contributed to a massive rogue wave just offshore south of Port aux Basques.

The 2020 season marks the 6th straight year with a named storm forming prior to June 1, as tropical storm Arthur formed on May 16 and the short-lived tropical storm Bertha formed on May 27. Adding in tropical storm Cristobal from early June, there have already been 3 named storms so far this season. Looking ahead, the <u>National Hurricane Center is predicting an above normal season</u> for Atlantic tropical cyclone activity. The Canadian response zone generally sees about 38% of the total named storms each year, so our forecast would be in the 4 to 7 named storm range. The latest long range guidance predicts a moderate chance of neutral El Nino conditions through the summer. Combined with warmer-than-average sea surface temperatures in the Tropical Atlantic and Caribbean Sea, this leads to the expectation of an above nor-

mal Atlantic hurricane season for 2020.



**Spring Season (Period: March-April-May) Temperature Outlook Performance:** For the most part, spring in most of Labrador was forecast to be warmer than normal, while Newfoundland, along with the Labrador Strait, were forecast to be near normal in terms of temperatures.





It was a swing and a miss on both fronts, as temperatures across the province were observed to be below normal overall for the March to May time period. A few areas in Labrador ended up having a roughly normal Spring season for temperatures.



Above: Observed Temperature Anomaly – Issued on June 1, 2020

#### Summer Season (Period: June-July-August) Temperature / Precipitation Outlook:

The summer temperature outlook for Newfoundland and Labrador shows generally a moderate chance of warmer than normal temperatures for Newfoundland and much of the Labrador coast. The remainder of Labrador is predicted to be near normal for temperatures.

The precipitation forecast (not shown) has a slight chance of higher than normal precipitation over most of the Labrador coast, as well as parts of the Northern Peninsula and Baie Verte Peninsula. Otherwise, there is no signal over the province. 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 May 31, 2020 – Right: Temperature Anomaly Outlook: Produced May 31, 2020 https://weather.gc.ca/saisons/index\_e.html

#### **Temperature Outlook: Next 4 Weeks**

Temperatures across Newfoundland were generally near to above normal for the first week of June, and near to below normal for the second week. In Labrador, temperatures were generally near to below normal for both weeks. Our Global Ensemble Prediction System did a decent job capturing this result leading up to the first 2 weeks of the month. Below is an outlook for the next 4 weeks of the summer season.

#### Week 1 (June 15 to 22):

Temperatures for week 1 have a moderate to high probability of being above normal across Newfoundland and most of Labrador into the first official days of summer. The exception for the week is northern Labrador, where temperatures are expected to be near normal, with a slight chance of being below normal along the immediate coastline.

#### Week 2 (June 22 to 29):

A moderate probability of above normal temperatures is predicted again for the island, as well as southeastern and extreme western Labrador. Elsewhere in Labrador, temperatures are predicted to be near normal.

*Right: Forecast probability of above or below normal temperature from the Canadian Global Ensemble Prediction System for week 1 (top) & week 2 (bottom): Produced June 11, 2020* 



#### Week 3 (June 29 to July 6):

Temperatures into early July are again predicted to be above normal for central and northern Newfoundland, with a moderate probability. Temperatures elsewhere in the province are forecast to be near normal, except along much of the immediate coastline in Labrador. There, temperatures have a moderate chance of being below normal as we move into July.

#### Week 4 (July 6 to 13):

The warm start to summer has a moderate chance to continue in central and northern Newfoundland, as well as into southeastern Labrador. Temperatures elsewhere along the Labrador coast have a moderate chance to be below normal once again. Elsewhere, temperatures are predicted to be near normal.

Right: Forecast probability of above or below normal temperature from the Canadian Global Ensemble Prediction System for week 3 (top) & week 4 (bottom): Produced June 11, 2020



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