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## Newfoundland and Labrador

### Quarterly Climate Summary: Spring 2021

#### Summary & significant weather events (March—May)

Winter started late this year and ended early. Impacts from this were felt across the province, although most severely in Labrador. Persistent warm temperatures made lake and sea ice untrustworthy in many locations. As a result, travel, hunting and other regular activities became too risky for some to attempt.

While March started snowy in Newfoundland, that quickly changed to a series of freeze and thaw events throughout the month. While snowfall and rainfall amounts generally remained modest, a particularly strong wind event along the west coast did cause some issues for many communities. In Labrador, precipitation remained mainly as snow, with healthy accumulations reported across most of the region.

Once April arrived in Newfoundland, the snow began to melt quickly. Persistent northeasterlies brought a steady and prolonged dose of rain, drizzle and fog. River levels surged much earlier than usual, and with the added rainfall amounts, flooding became a problem in many areas. Several stations recorded their wettest or were within their top 3 wettest April's on record. In Labrador, some early-April rainfall caused some flooding issues in the Happy Valley-Goose Bay area, as iced up storm drains were unable to discharge the water away from streets. Otherwise, western and northern Labrador remained snowy while in the southeast the snow pack began to melt slowly.

In May, the early melt of the snow pack continued. Very little snow fell during the month and what did fall had a hard time accumulating due to mild temperatures. Generally, there were only a few notable events which mainly affected western Newfoundland in the form of rainfall. However, the second half of May did seem to be windier than usual over southeastern Newfoundland, with sustained winds exceeding 50 km/h frequently over a period of two weeks.

Overall, what seemed like it might be an early start to summer, just ended up being a longer version of spring.

# Significant Weather Events:

## March

**Mar 1-4: A slow moving intense low-pressure system over the Gulf of St Lawrence** brought winter conditions to southern Labrador and Newfoundland. The system gave 10 to 25 cm to most regions in the first two days and 5 to 10 mm of rain to southeastern Newfoundland. Once the system moved into Labrador it stalled resulting in persistent strong winds with snow and blowing snow across much of the region with an additional 10 to 20 cm across Newfoundland and southern Labrador. Many [delays, cancellations and transportation disruptions](#) were reported due to the storm.

**Mar 26-27: A low-pressure system moving by to the south of the island** brought a [mix of precipitation to Newfoundland](#). Snowfall amounts were near 5 cm in the west and north, while reaching up to 25 cm in the south. However, the snow was also mixed with ice pellets and rain at times. Strong winds with peak gusts in the 70 to 100 km/h range caused blowing snow and poor visibilities in some areas.

**Mar 29-30: An intense storm whose centre tracked northeastward through the Strait of Belle Isle** brought heavy precipitation to parts of the region. The highest amounts, generally in the 30 to 65 mm range, affected western Newfoundland and southeastern Labrador. The heaviest snowfall was across southern Labrador with reported amounts in the 15-25 cm range. Winds were very strong especially across the island where peak gusts were above 100 km/h at many locations including at Bonavista (117km/h) and Wreckhouse (146 km/h). The high winds caused some significant damage in [York Harbour](#), [Lark Harbor](#) as well as in the [Bay St Georges](#).

# April

**April 1-3: A low-pressure system tracked northeastward through Labrador** bringing significant rain, snow, freezing rain and strong winds to the region. The heaviest precipitation and strongest winds affected Labrador and parts of western Newfoundland with amounts in the 40 to 100 mm range and peak gusts in the 70 to 110 km/h range. Significant snowfall affected mostly Labrador. Goose Bay reported 17 cm on the 1<sup>st</sup> followed by about 31 hours of freezing rain before changing to rain. Significant flooding was reported in the area.

**April 9-13: A trough of low pressure, associated with an area of low pressure south of Newfoundland, moved westward over the island.** A mixture of rain, snow and freezing rain swept over the eastern half of the island on the 9<sup>th</sup> before changing over to rain on the 10<sup>th</sup>. Up to 15 cm of snow was reported in the northeast while significant ice accretion was reported on the Avalon after roughly 12 to 14 hours of freezing rain, with power outages affecting many customers. A new low pressure system then formed in the trough which also stalled south of the island, slowly drenching eastern and northeastern Newfoundland with rain until early on the 13<sup>th</sup>. Rainfall ranged from 50 to 100+ mm in the northeast, and from [100 to 150+ mm in the southeast](#). Road washouts and flooding were reported in many areas. In addition, strong northeasterly winds developed along Newfoundland's south coast on the 13<sup>th</sup>, with maximum gusts between 96 and 136 km/h at various stations. Some damage due to the high winds was reported.

**April 22-23: A low-pressure system moved through New Brunswick and stalled over the western Gulf of St. Lawrence.** Rain and strong winds swept across Newfoundland while a mixture of rain and snow affected Labrador. Peak wind gusts at Wreckhouse reached 138 km/h. A transport truck [overturned and blocked the Trans-Canada Highway](#) near the Starlite Trail. In Labrador, Wabush reported 23 cm of snow with 17 cm at Nain.

**April 26-27: Another Low pressure system tracked into and stalled over the western Gulf of St. Lawrence.** [Strong winds](#) and heavy rain affected Newfoundland while a mixture of both rain and snow affected Labrador. The highest rainfall amounts ranged from 35 to 70 mm with some minor flooding reported on the Avalon Peninsula. High winds at both Rocky Harbour and Wreckhouse reached 135 km/h gusts. Some damage was reported on the west coast. [Winds serve up damage to Lark Harbour, Newfoundland restaurant | SaltWire](#)

# May

**Late April to early May: A persistent easterly flow** brought drizzle, fog and low visibilities to the Labrador coast, resulting in lengthy flight delays for passengers and resupply of essential items including food. [Labrador town nearly runs out of toilet paper due to backlogged cargo flights | SaltWire](#)

**May 21-23: A low-pressure system tracked across Newfoundland** and brought heavy rainfall especially to western parts of the island. Many locations reported rainfall amounts in the 40 to 100 mm range. Many locations reported strong winds with peaks gusts in the 70-90 km/h range. Some localized flooding was reported in southwestern Newfoundland.

# Provincial Climate Overview (March—May): Temperature (Departure from Normal):

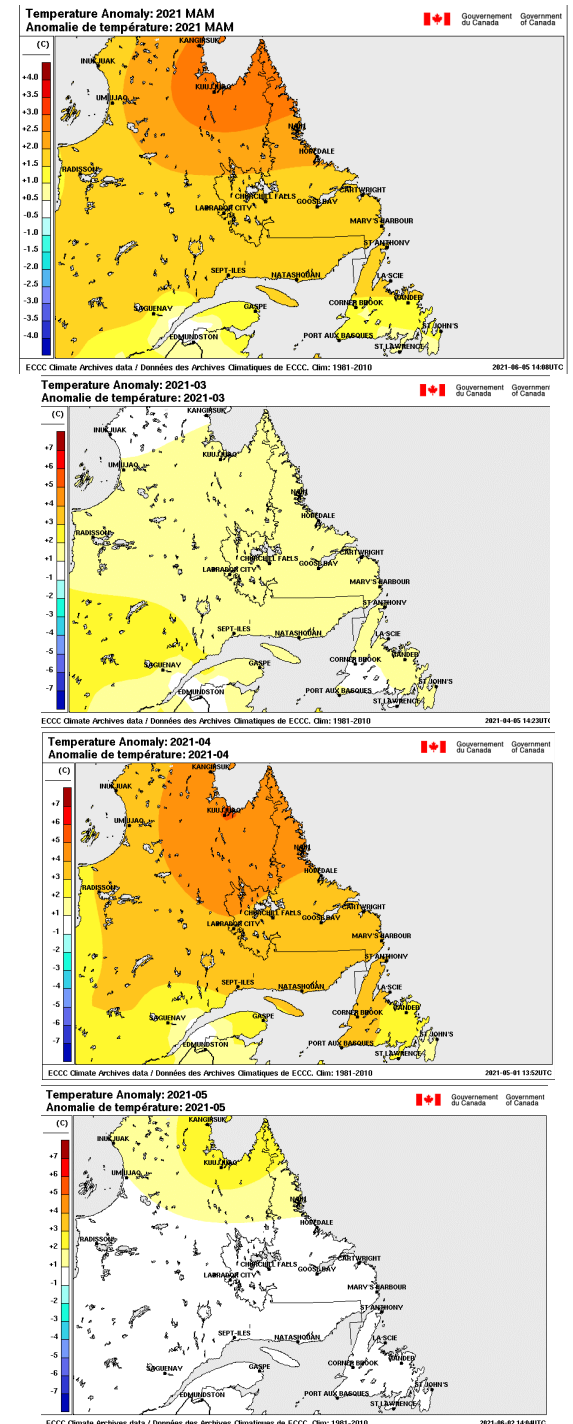
**Spring** average temperatures were somewhat above normal for Newfoundland, with a warmer March and April offset by a near normal May. In Labrador we saw temperatures 1 to 3 degrees above normal over most areas, except in the west and east where anomalies were 0.5 to 1 degree above normal. Hopedale reported its 2<sup>nd</sup> warmest spring on record.

Newfoundland and Labrador had above normal temperatures for the month of **March**. The monthly mean temperatures generally ranged from 1 to 3 C above normal. Southwestern parts of the island were the only regions to have near normal temperatures.

Temperatures across NL were significantly above normal in **April** continuing the pattern set in the winter. Monthly mean temperatures ranged from 1 to nearly 5 C above normal. This April ranked among the top 5 warmest on record at many areas in the province. It was the warmest April on record in the Channel-Port aux Basques, Daniel's Harbour, Winterland, and L'anse-au-Loup areas.

Temperatures across NL in **May** were generally near normal except for northern Labrador where temperatures were 1-3 C above normal.

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



## Precipitation (Departure from Average/Percentage of Climatology):

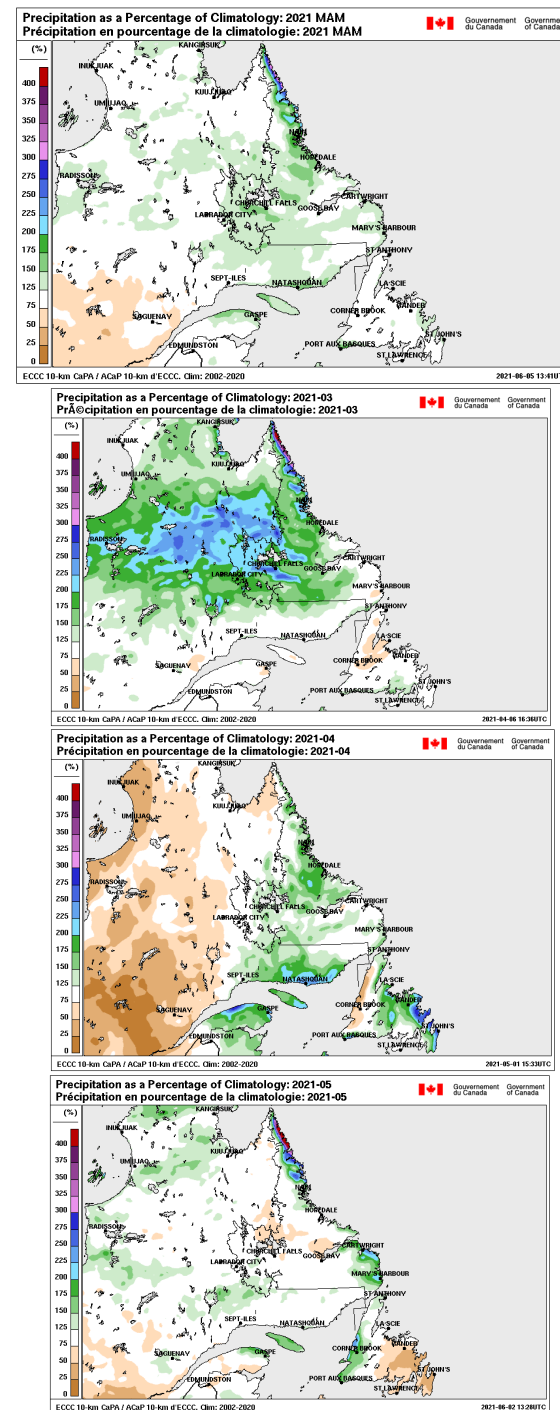
**Spring** was generally near the average for Newfoundland in terms of precipitation, except for some areas in the east and southwest, which ended up with 125 to 150% of average. In Labrador, many areas saw precipitation totals roughly 125 to 150% of average, with the exception of the Upper Lake Melville area, which was near or just slightly above average. However, along the north Labrador coast precipitation totals reached 150 to 200%, or even more, of average.

Total precipitation amounts for **March** were generally above average across Labrador with the exception of the southeast where amounts were near average. The greatest anomalies were in the west and north where totals exceeded 275% of average in some locations. Across Newfoundland, precipitation amounts were generally near average with some areas slightly above or below.

Total precipitation amounts for **April** were generally near to somewhat above average across most of the region. Southeastern portions of the Island were well above average with amounts exceeding twice the monthly average. Portions of the West Coast received less than 50 percent of the monthly average. Channel-Port aux Basques area received 252.6 mm of precipitation making this April its wettest on record since 1898. The Bonavista area received 196.9 mm and the St. John's area received 293.4 mm of precipitation, making this April the second and third wettest on record respectively at these locations.

Western Newfoundland and coastal sections of Labrador were much wetter than average in **May**. In contrast, southeastern Newfoundland and parts of central Labrador were drier than average. Elsewhere, precipitation totals were near average.

*Right: Precipitation anomalies for Newfoundland and Labrador for (from top) March-May combined, March, April, May. Anomalies based on averages for the 2002-2020 period.*



**Seasonal temperature averages and precipitation totals compared to equivalent values (“normals”) based on averages and totals of monthly normals for March to May 2021, for selected locations in Newfoundland and Labrador.**

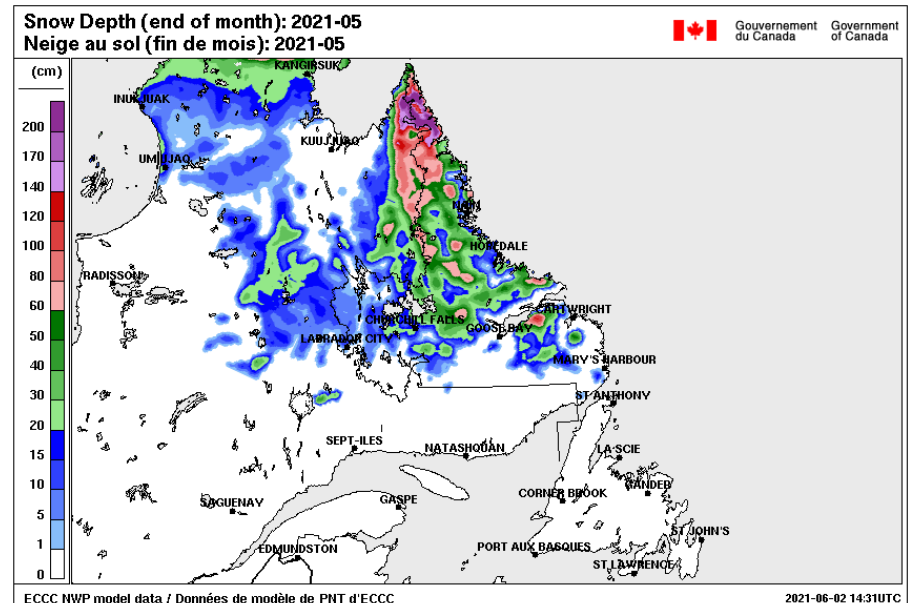
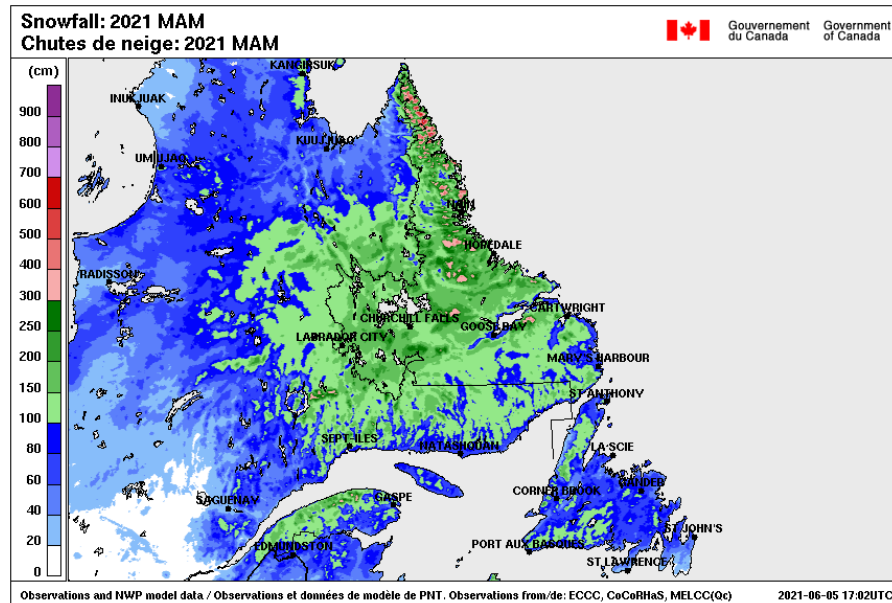
	Mean Temperature (°C)			Total Precipitation (mm)		
Location	Seasonal Mean	Average of Monthly Normal Means	Difference	Seasonal Total	Total of Monthly Normals	Average of Monthly Tot. as % of Normal
Bonavista	3.0	1.3	1.7	325.1	262.2	125
Corner Brook	3.2	1.7	1.5	329.5	292.3	108
Gander	3.2	1.9	1.4	305.1	293.8	107
Channel-Port aux Basques	3.1	1.6	1.5	427.8	336.4	117
St. John's Intl A	3.1	1.9	1.2	416.7	367.7	112
Stephenville	3.2	2.2	1.0	284.5	261.3	105
Terra Nova Nat Park	3.2	2.1	1.1	155.4	185.5	80
L'anse au Loup (Lourdes de Blanc Sablon, QC)	0.6	-1.5	2.1	240.2	199.4	125
Cartwright	-0.7	-2.4	1.7			
Happy Valley-Goose Bay	-0.1	-1.7	1.6	220.0	198.2	112
Hopedale	-2.0	-4.1	2.1			
Nain	-3.6	-5.2	1.6			



## Total Snowfall and Snow Depth

The spring snowfall breaks down as follows: Roughly 20 to 60 cm (near to slightly above normal) fell in the southeastern-most parts of the Island. Elsewhere on Newfoundland, 60 to roughly 100 cm (below or well below normal) fell, with areas likely exceeding 150 cm over highest elevations of the west coast. In Labrador, the southeast and along Lake Melville saw a similar 60 to 100 cm (below normal). Elsewhere, totals reached between 100 and 200 cm (near or just above normal), with some localized pockets near 300 cm over higher elevations of the Torngat Mountains.

Snow depth by the end of May was limited to inland areas, especially over higher terrain and away from most communities. In general 5 to 20 cm remained over higher elevations, with 40 to 80 cm locally over highest terrain. Similar to the snowfall, the maximum depths were located in northern Labrador, with 100 to 200+ cm estimated over the Torngat Mountains. (Note: snow depths displayed in the image below are estimates from model data. The model analysis of snow depth includes assimilation of station daily snow depth observations. The estimates may under-represent the amount of snow on ground for some areas, especially in Newfoundland).



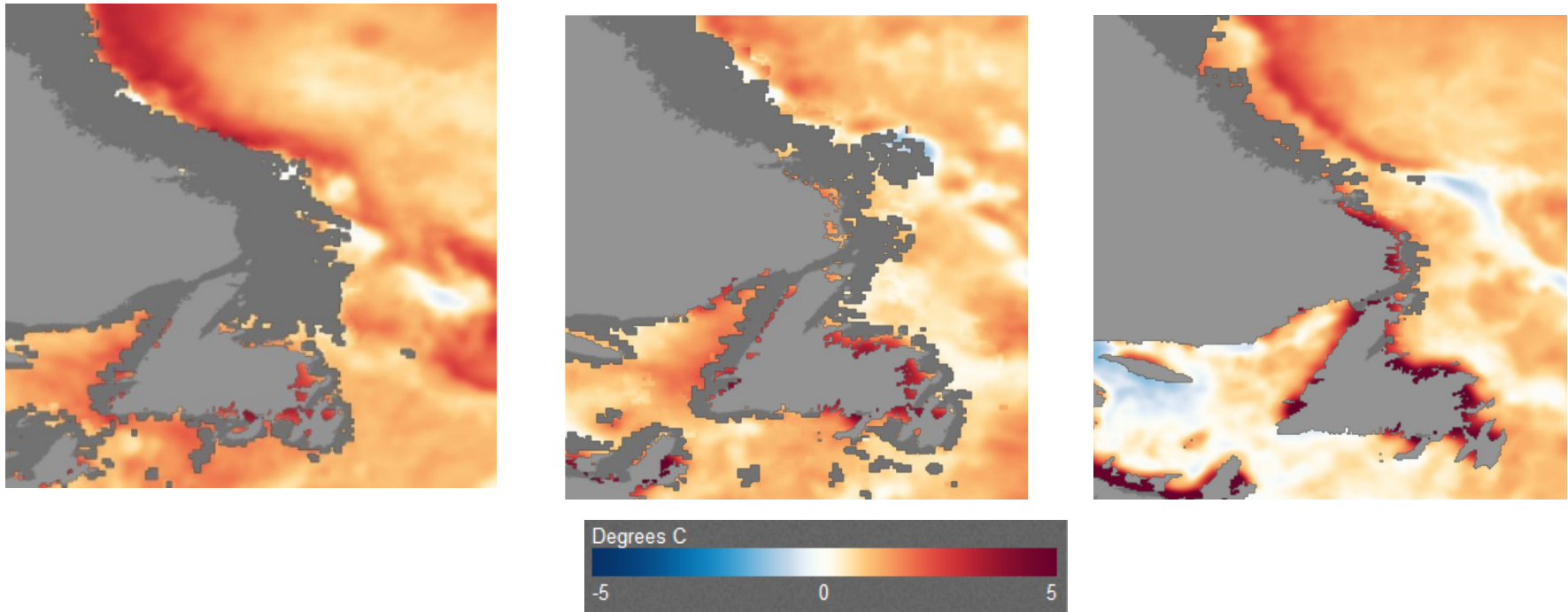
Left: Total snowfall for March, April, May 2021 combined (experimental product estimated using a blend of observations and model (forecast) data). Right: Snow depth at the end of May 2021 (model data).



## 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 may represent gaps in data or presence of sea ice.

With warmer air temperatures came warmer waters. For each of **March, April** and **May**, sea surface temperatures were generally about 1 to 3 C warmer than average over open water and 3 to 5+ C warmer over coastal Newfoundland waters. Another area that stands out is near the ice edge in the Labrador Sea, where temperatures were generally 3 to 5 C warmer than normal for March and May. We can also see a small ribbon of roughly 0 to 1 C colder than normal extending southeastwards from south Labrador Sea, likely due to sea ice melting.

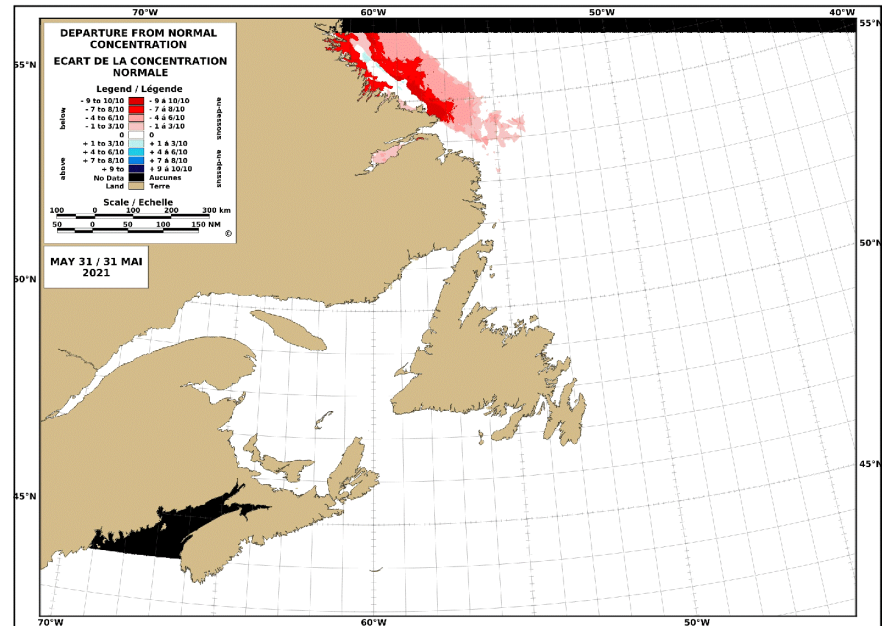
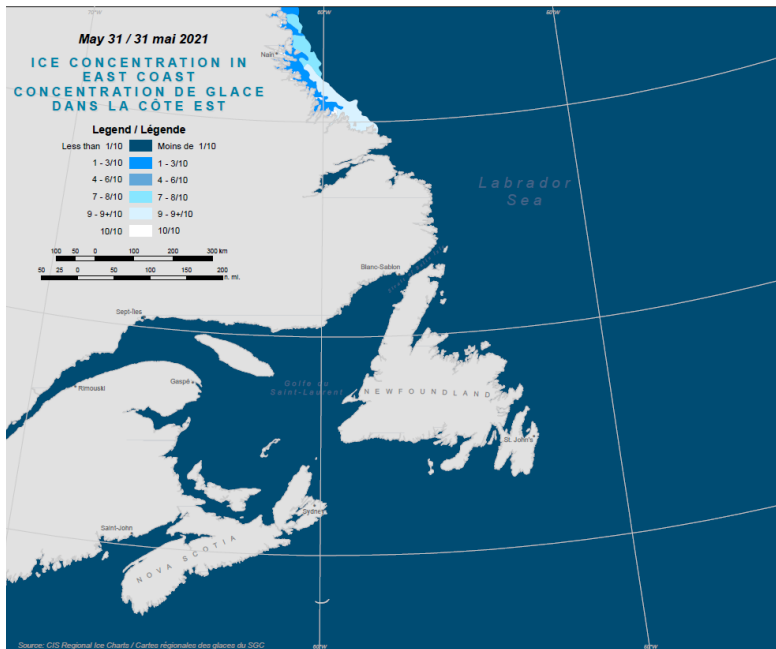


U.S. National Oceanic and Atmospheric Administration (NOAA) monthly mean SST anomaly map (based on 1981-2010 Normals) for Mar (left), Apr (middle), and May (right), 2021 - <https://www.nvhl.noaa.gov/view/globaldata.html#SSTA>

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

Newfoundland did not record any sea ice for the month of May. Typically, there would have been 2% ice coverage at the beginning of May with most of the ice residing near the Northern Peninsula and in the Strait of Belle Isle. By the end of May, all of the ice usually melts away. With the ice season having ended, the 2020/2021 ice season ties the 2010/2011 ice season as the second lowest overall ice coverage behind the 2009/2010 season.

Labrador started out the month of May near 3% ice covered compared to the median of 12% ice covered. Ice coverage grew very slightly in the second week of May before falling slightly again in the second half of May, down to 1.6% ice covered, well below the median of 7.5% ice covered. Ice conditions changed very little through the month as sea ice continued to drift along the Labrador coast through the month. The sea ice remained close to the Labrador coast and north of Groswater Bay. Lake Melville was completely open water with the last of the ice melting in the far eastern sections by May 23rd. By the end of May, the ice conditions represent the 2nd lowest ice coverage, with the 2010/2011 ice season recorded as having the lowest ice coverage.



Above Left: Sea ice analysis chart for May 31, 2021 — Above right: Sea ice concentration departure from normal: May 31, 2021

## Provincial Impacts (March—May):

### A mild winter continued:

Mild conditions continued through much of spring, causing an early exit for the snow pack over most areas. By the end of April, most of Newfoundland's snow pack was already gone, and parts of Labrador were already melting. A late March early April freezing rain storm caused some [flooding in Happy Valley-Goose Bay](#) due to iced up storm drains. In Newfoundland, the early snow melt timed with a particularly heavy rainfall in early April to cause some [flooding across Newfoundland](#). A section of the Trans-Canada Highway was washed out near Springdale, cutting the east of the Island off from the west.

Sea ice also suffered due to the water temperatures, with persistent easterly winds keeping it glued to the Labrador coast. It eventually made a brief visit to northeastern Newfoundland waters, but nowhere near its normal spring time extent. [This basically put an end to the iceberg tourism season before it even began](#), only a small number of bergs were spotted off the Great Northern Peninsula early on.

In Labrador, a lack of trustworthy sea ice meant locals were less willing to travel to places they usually go via fast sea ice along the coast. Impacts on fishing and generally on the [way of life](#) were significant. Inversely, some locals from Rigolet were reported to have made a trip via boat to Cartwright about a month earlier than usual due to relatively ice free conditions between the two communities. The trip was required as the normal snow mobile routes were no longer safe.

### Prolonged easterlies cause supply issues for Nain:

Low ceilings and poor visibilities caused by a lengthy period of easterly winds caused a [supply problem in Nain](#). Food, toilet paper and other essentials were nearly or completely out of stock due to an inability to get flights in to resupply the area. Nain's landing limits for ceilings and visibility are higher than most airports, requiring at least 1100 feet (335 meters) and 3 miles (4.8 kilometers) to land. The easterly flow meant that the airport was experiencing fog and cloud ceilings below 1000 feet (305 meters) for most of the last weeks of April into the first weeks of May.

### Low water levels in various rivers:

Water levels in rivers across the province have been far from normal in some cases. Along the west coast of Newfoundland, very unusually low snowfall totals for the winter caused provided very little melt water to refill reservoirs. As a result, the [local pulp mill in the area was forced to purchase power from the grid to keep up with demand](#). While waters rebounded in some areas due to the spring melt in April, a relatively dry May for most of the island has meant that waters were already much lower than usual by the end of May. This prompted [concerns over the upcoming salmon fishing season](#) this summer.

## River Flows:

In **March**, the mean flow for Eagle River (Labrador) was above normal, while the Upper Humber (western Newfoundland) was below normal. The three remaining rivers were near or just below normal.

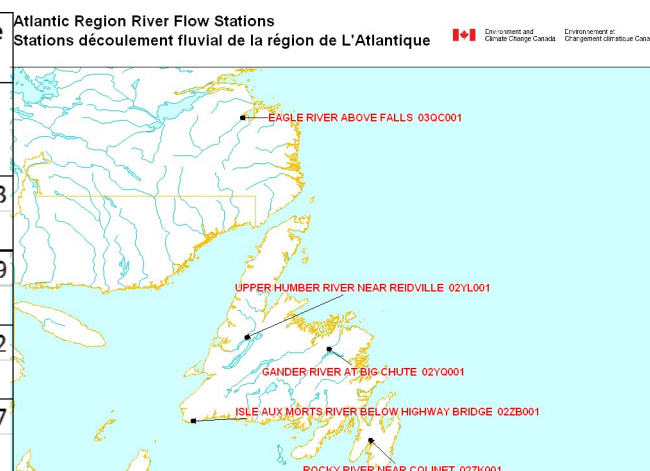
**April** flows increased significantly over all rivers except the Rocky (southeastern Newfoundland), which became deficient. Record flow rates were recorded in both Isle aux Morts (southwestern Newfoundland) and Eagle River, which reported an incredible 12 times above median flow for April. Early spring melt is the likely cause of flow rates rising well above the normal for April, as rivers are usually still frozen during this time.

In **May**, all Newfoundland rivers were below normal, with the Gander (northeastern Newfoundland), Rocky and the Upper Humber rivers all reporting record low flow rates for May. In Labrador, Eagle River's mean flow actually increased, but because May is normally the month for spring melt, this value was now just slightly above normal.

The cumulative run-off since October was generally close to normal.

**Monthly runoff summary for selected river sites in Newfoundland and Labrador (location map below) for Mar, April, and May 2021, courtesy of ECCC Water Survey of Canada.**

River Name		March 2021		April 2021		May 2021		Cumulative Run-off*
Station Number	Drainage Area	Mean Flow (m <sup>3</sup> /s)	% of Median	Mean Flow (m <sup>3</sup> /s)	% of Median	Mean Flow (m <sup>3</sup> /s)	% of Median	% of Median
<b>EAGLE</b>		58.5	176	591	1234	927	114	163
03QC001	10900 km <sup>2</sup>	E		ER				
<b>GANDER</b>		88.2	82	413	156	81.7	34	99
02YQ001	4400 km <sup>2</sup>			E		DR		
<b>ISLE AUX MORTS</b>		5.26	99	52.7	218	13.6	46	122
02ZB001	205 km <sup>2</sup>			ER		D		
<b>ROCKY</b>		15.6	108	11.3	69	2.64	30	87
02ZK001	301 km <sup>2</sup>			D		DR		
<b>UPPER HUMBER</b>		15.6	49	202	203	116	46	104
02YL001	2110 km <sup>2</sup>			E		DR		
E - Excessive, D - Deficient, R - Record								
* Cumulative Run-off(Oct. 1 to May 31)								



## Drought Conditions:

Abnormally dry conditions were noted in **March** and **April** over parts of the west and south coasts. In **May**, only a small portion of the west coast and most of the burin peninsula remained drier than normal.

- D0 - Abnormally dry
- D1 - Moderate drought
- D2 - Severe drought
- D3 - Extreme drought
- D4 - Exceptional drought
- Drought not analyzed

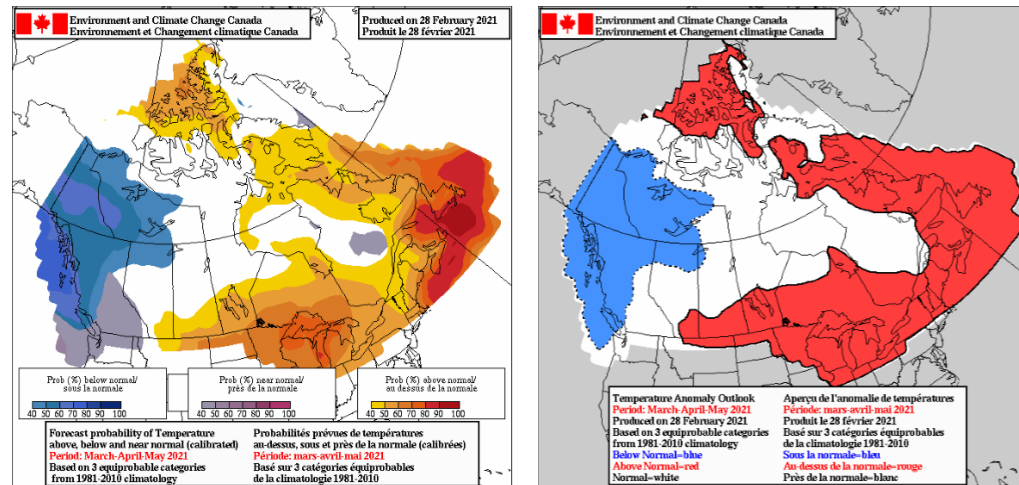


Canadian Drought Monitor Map for March 31, 2021 (left), April 30, 2021 (middle), and May 31, 2021 (right). Drought maps courtesy of Agriculture and Agri-Food Canada. <http://www.agr.gc.ca/eng/programs-and-services/list-of-programs-and-services/drought-watchcanadian-drought-monitor/?id=1463575104513>



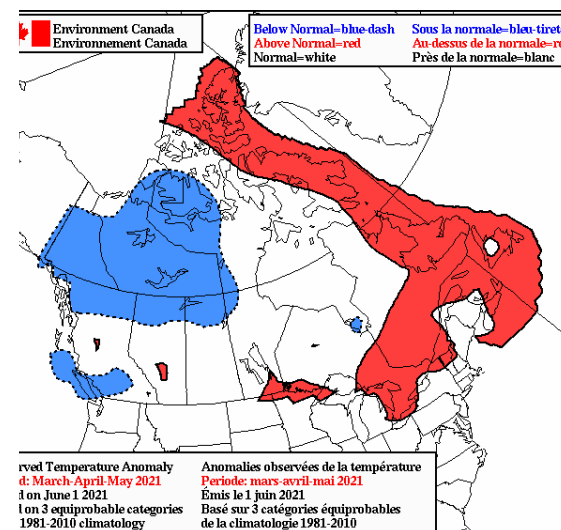
## Spring Season (Period: March-April-May) Temperature Outlook Performance

The temperature outlook for spring predicted warmer than normal conditions for the entire province except a small portion of westernmost Labrador.



Left: Probability of above, below and near normal temperature from CanSIPS (Canadian Seasonal and Inter-annual Prediction System). Right: Forecast Temperature Anomaly. Maps produced February 28, 2021

The observed temperature anomaly matched the forecast remarkably well for the province, with nearly everywhere reporting above normal temperatures except for a small area in central Newfoundland.



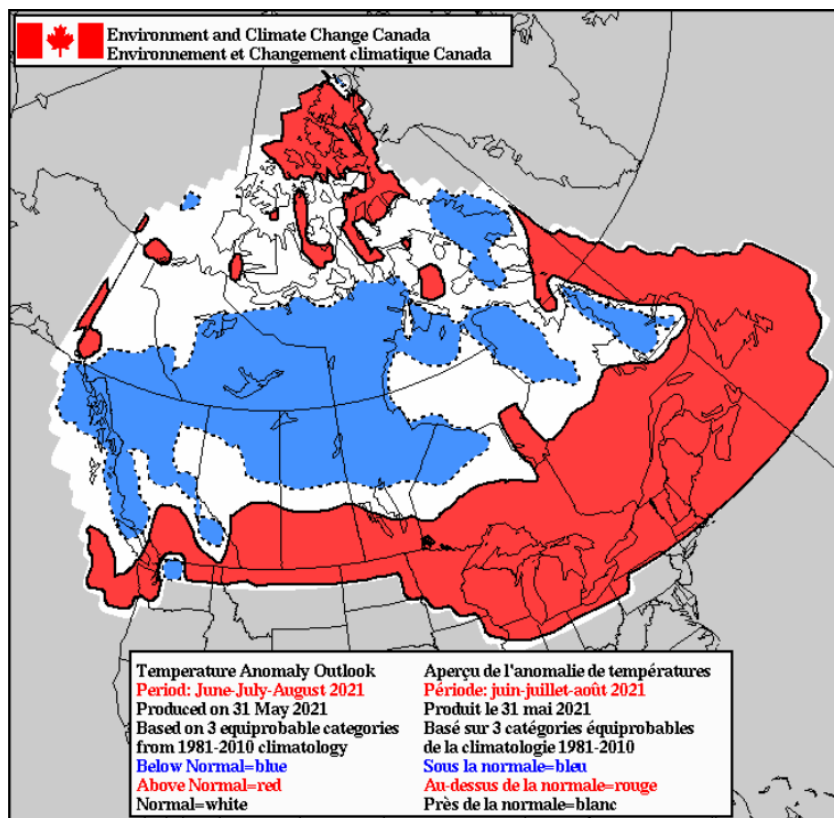
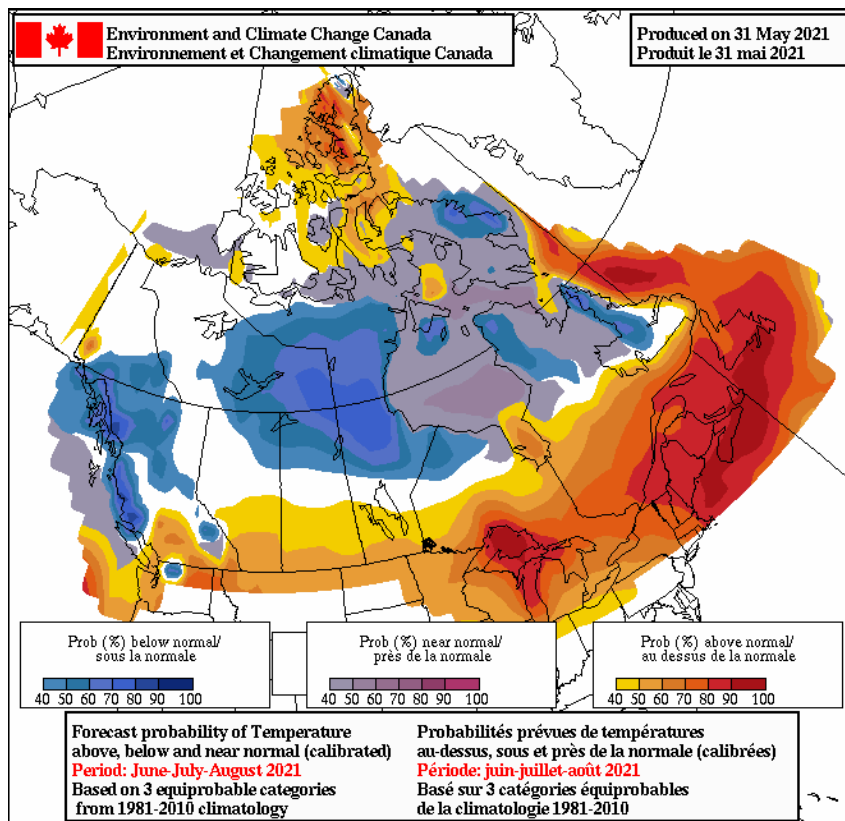
Right: Observed Temperature Anomaly – Issued on June 1, 2021



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

For Newfoundland, there is a moderate to high probability for warmer than normal conditions to continue this summer. In Labrador, we see a signal for a warmer than normal summer near the coast, and a slight signal for colder than normal temperatures in the interior.

The precipitation forecast (not shown) indicates lower than normal precipitation over southern, central and eastern Newfoundland. Otherwise, there are equal probabilities for above, near, and below normal precipitation for the summer. The seasonal precipitation forecast typically does not perform as well as the seasonal temperature forecast, so the graphics are not included.

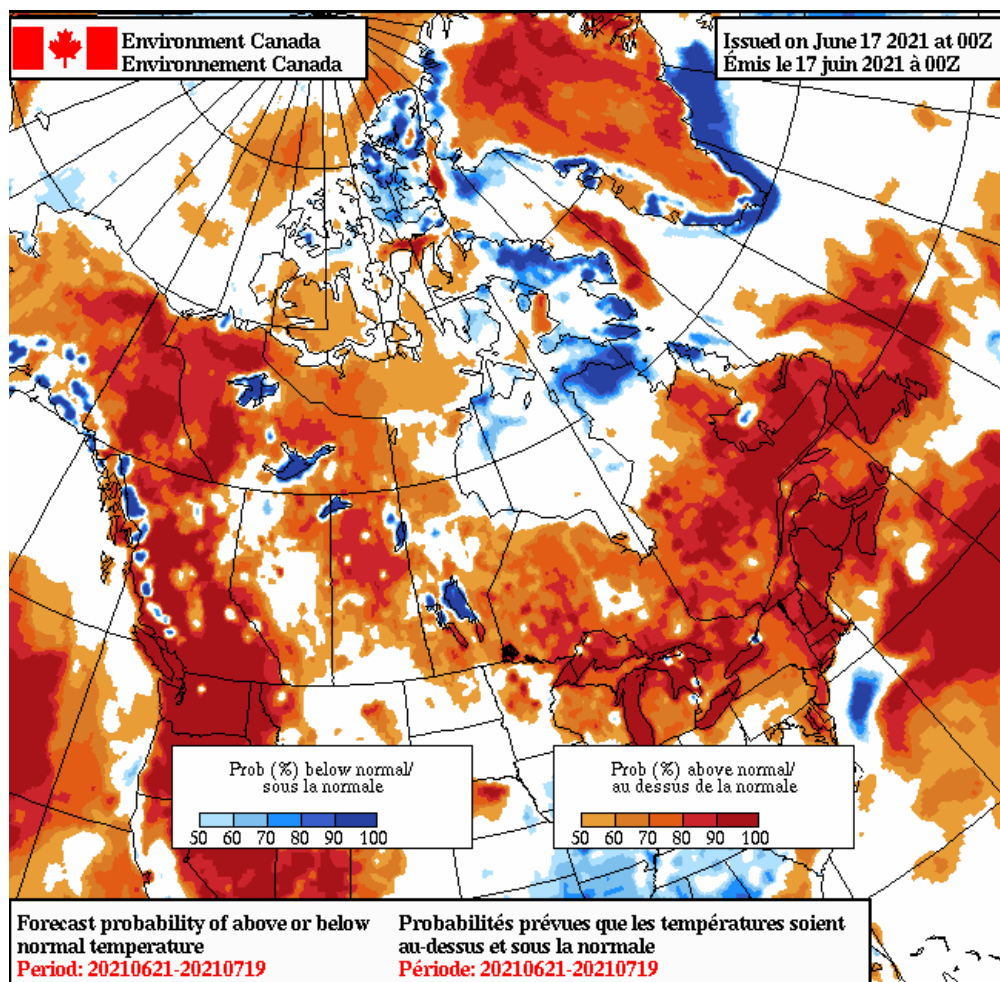


Left: Probability of above, below and near normal temperature from CanSIPS: Produced May 31, 2021. Right: Temperature Anomaly Outlook from CANSIPS: Produced May 31, 2021

[https://weather.gc.ca/saisons/index\\_e.html](https://weather.gc.ca/saisons/index_e.html)

## Temperature Outlook: Next 4 Weeks

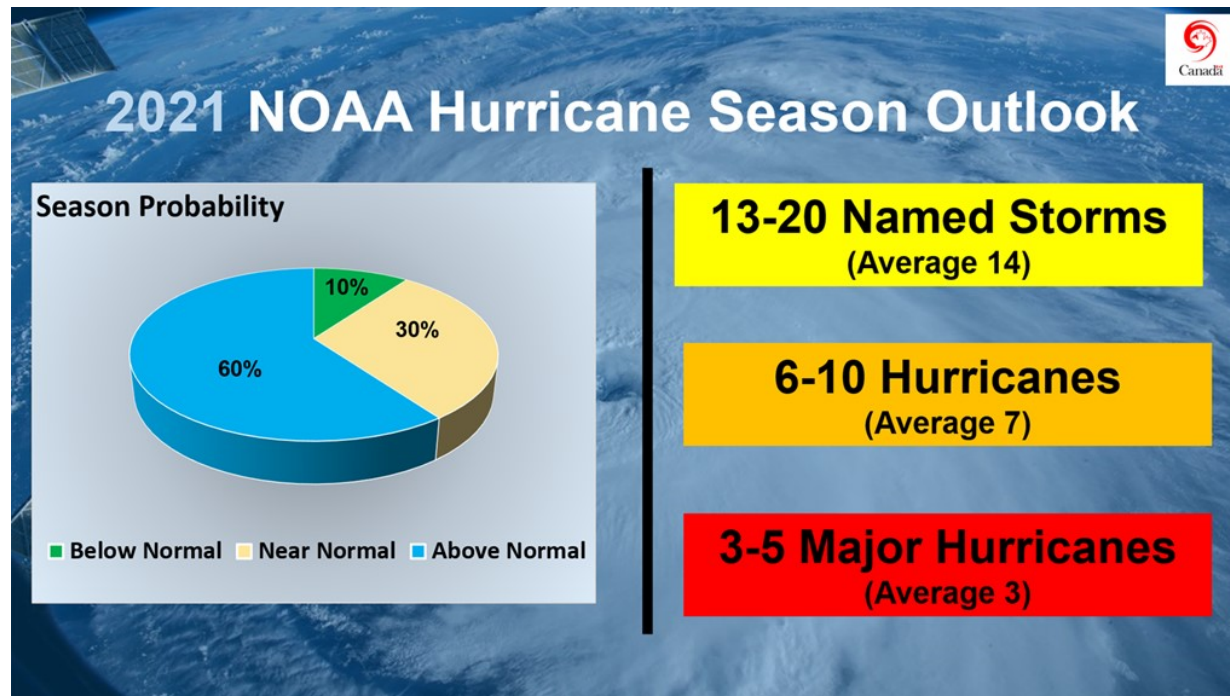
Generally we see a very strong signal for above normal temperatures across most of the province looking forward. It is only a small area in northernmost Labrador that is expected to remain near or below normal.



Above: Forecast probability of above or below normal temperature from the Canadian Global Ensemble Prediction System for June 21 to July 19, 2021: Produced June 17, 2021

# Atlantic Hurricane Season Outlook

For the 2021 Atlantic Hurricane Season (June 1-November 30), the U.S. National Oceanic and Atmospheric Administration (NOAA) is predicting another above-normal season (60% probability) for Tropical Storm formation in the Atlantic although it is not expected to be as active as the **record 2020 season**. On average about 1/3 of tropical storms in the Atlantic enter the Canadian Response Zone. The first tropical storm of the 2021 season (Ana) formed May 22 but was short-lived lasting only 2 days. This was the seventh season in a row with a named tropical storm forming prior to the official start of the Hurricane Season. More information is available from NOAA at their website: <https://www.noaa.gov/media-release/noaa-predicts-another-active-atlantic-hurricane-season>



*Summary infographic showing hurricane season probability and numbers of named storms predicted from NOAA's 2021 Atlantic Hurricane Season Outlook. (Source: NOAA/Canadian Hurricane Centre (CHC))*

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Newfoundland and Labrador Quarterly Climate Summaries are available online here:

<https://www.arctic-rcc.org/quarterly-climate-summary>

Maps of monthly and seasonal temperature, precipitation, snowfall, and snow depth for eastern and western Canada, and Canada as a whole, and map data sources and methodology are available online here: <https://collaboration.cmc.ec.gc.ca/cmc/wtoftpa/www/>.

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