

Environment and
Climate Change Canada

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Newfoundland and Labrador

Quarterly Climate Summary: Summer 2021

Summary & significant weather events (June—August):

We generally experienced a warmer than normal summer across the province this year, in spite of temperatures being normal or below normal for much of July.

With regards to precipitation, the west coast of Newfoundland received significantly more precipitation than normal while most of the rest of the Island was quite dry leading to drought conditions and very low river flows in some areas.

In Labrador, a generally wet June and August were balanced by a dry July, causing the summer precipitation to be near normal.

We also saw some additional impacts, as a number of heavy rainfall and thunderstorm events caused some localized flooding and other damage over a few locations in Newfoundland.

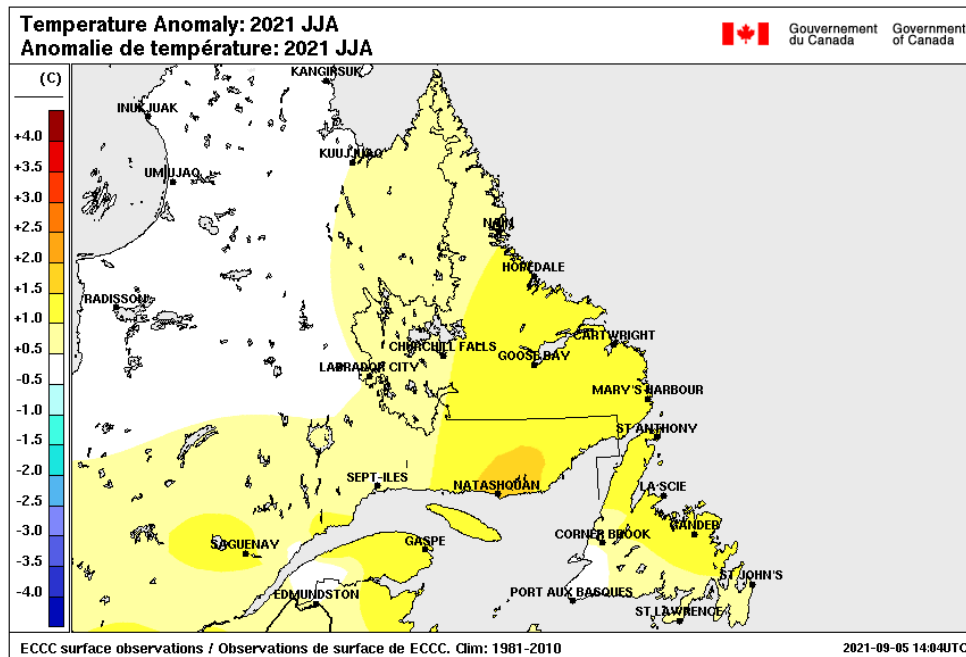
Provincial Climate Overview (June—August):

Temperature (Departure from Normal):

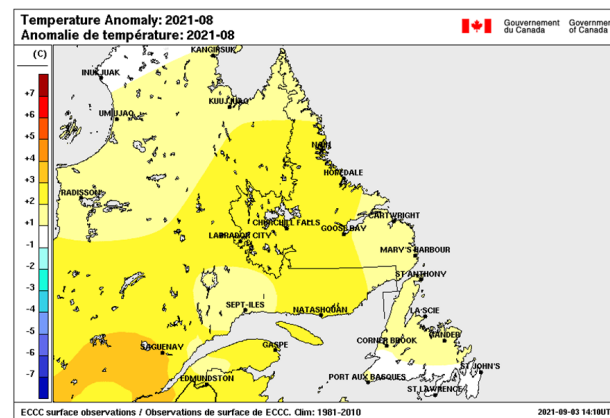
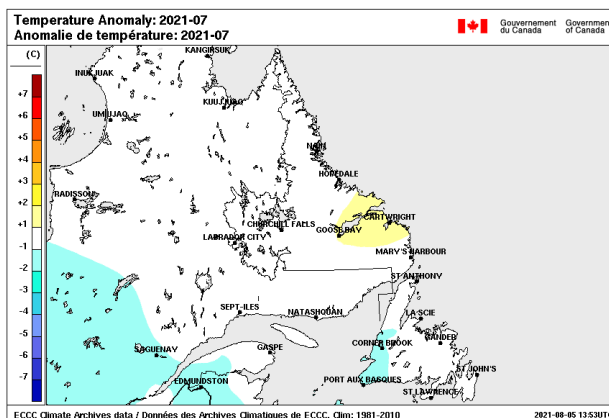
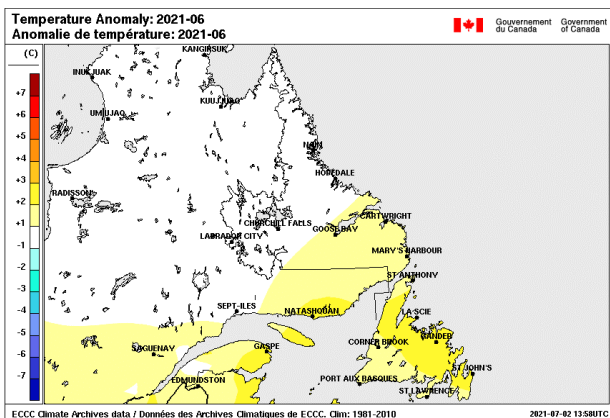
Temperatures for this summer (averaged over June, July, and August) were generally warmer than normal except for a small area over southwestern Newfoundland that recorded near normal temperatures. The warmest area (1 to 2 C) was reported in most of Labrador as well as generally the northeastern half of Newfoundland.

Highlights:

- 2nd warmest summer for the Mary's Harbour area.
- 3rd warmest summer for the Bonavista, Twillingate, Cartwright and L'Anse-au-loup (Lourdes de Blanc Sablon) areas.
- Warmest June on record in the Bonavista area, 2nd warmest June in the Gander area.
- 2nd warmest Augusts on record for the Corner Brook and Nain areas, the 3rd warmest for the Hopedale area.



above: Temperature anomalies for Newfoundland and Labrador for June-August combined.



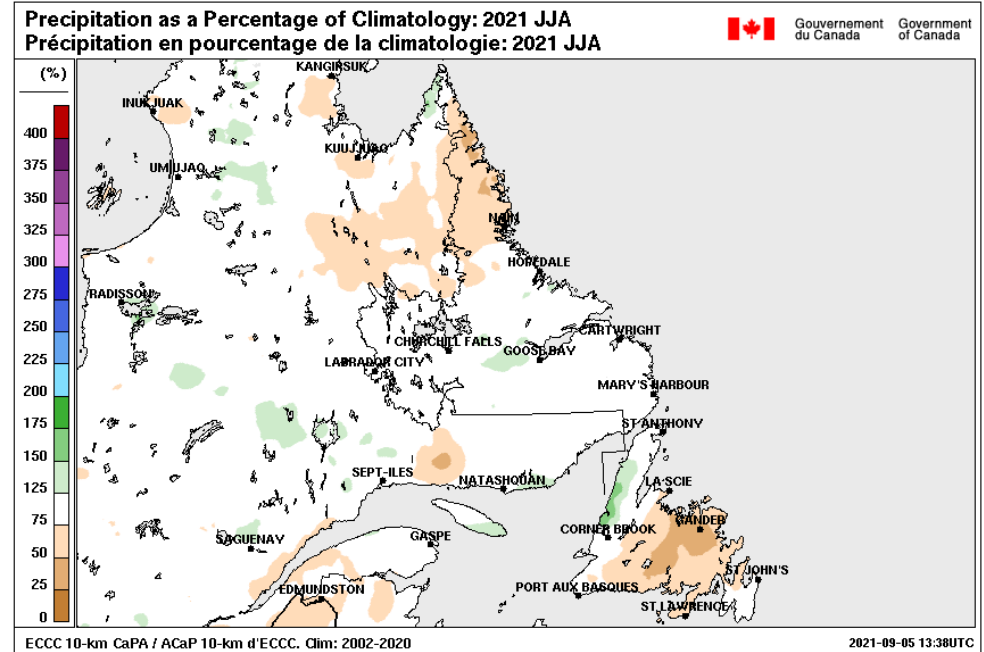
left to right: Temperature anomalies for Newfoundland and Labrador for June, July, and August.

Precipitation (Percent of 2002-2020 average):

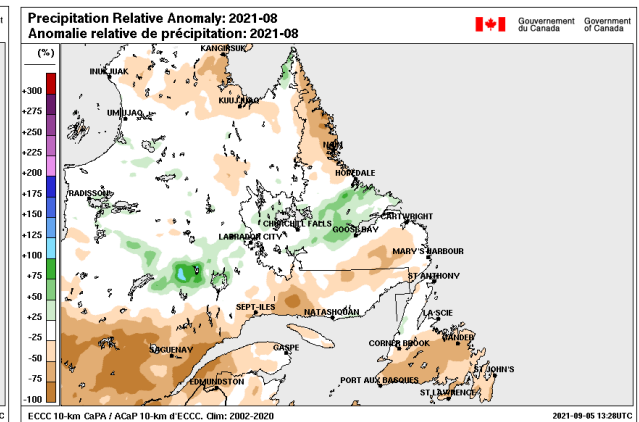
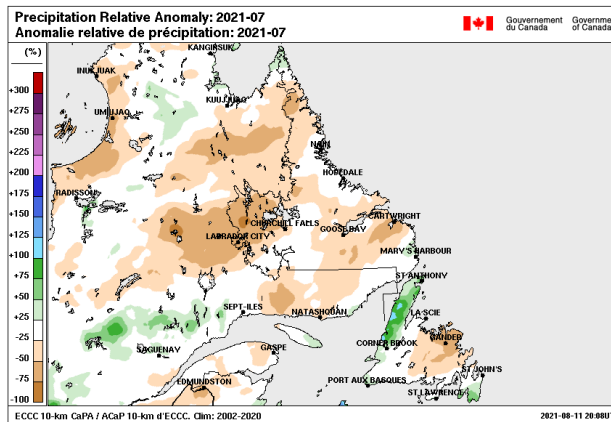
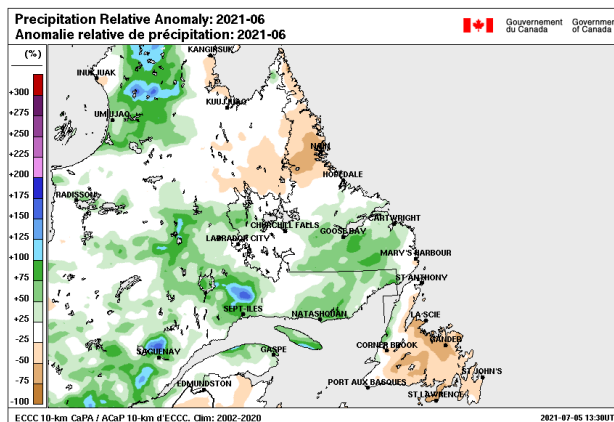
Precipitation for this summer (averaged over June, July, and August) varied from region to region. Labrador reported generally near average precipitation. In Newfoundland, the northern half of the west coast saw as much as 50% more precipitation than average, while a large portion of central and the interior reported 25 to 60% less precipitation than average.

Highlights:

- 3rd driest summer on record in the Gander area.
- 3rd driest June on record in the Gander area.
- Driest July on record in the Wabush area, 2nd driest in the Cartwright area.



Above: Precipitation as a percentage of 2002-2020 average for Newfoundland and Labrador for June-August combined.



Above left to right: Precipitation anomalies for Newfoundland and Labrador for June, July, and August.

Seasonal Temperature and Precipitation Tables:

Seasonal temperature averages and precipitation totals compared to seasonal normals for June to August 2021, for selected locations in Newfoundland and Labrador

	Mean Temperature (°C)				Total Precipitation (mm)		
Location	Seasonal Mean	Average of Monthly Normal Means	Diff.	Rank (Warmest Summer)	Seasonal Total	Total of Monthly Normals	Seasonal Total as % of "Normal"
Bonavista	15.0	13.2	1.9	3	120.9	251.1	48
Channel-Port aux Basques	14.1	13.0	1.0	7	334.3	358.5	93
Corner Brook	17.4	15.8	1.6	8	284.5	286.0	99
Gander	16.0	14.7	1.2	8	117.1	287.9	41
St. John's	15.2	14.3	0.9	>10	238.6	289.2	83
St Lawrence	15.2	14.6	0.6	6	358.6	316.5	113
Stephenville	15.8	14.8	1.0	>10	144.3	331.5	44
Terra Nova Nat Park	14.5	13.4	1.1	>10	271.5	348.4	78
L'anse au Loup (Lourdes de Blanc Sablon)	12.3	11.0	1.3	3	292.7	290.3	101
Cartwright	13.2	11.2	2.0	3	257.2	293.5	88
Happy Valley-Goose Bay	15.4	14.0	1.4	6	388.0	312.0	124
Hopedale							
Nain	11.2	9.2	2.0	>10			
Wabush	12.7	12.2	0.5	>10			

Above: cells shaded pink if ≥ 1 °C, blue if ≤ -1 °C. Precipitation as a percent of normal: cells shaded green if $\geq 125\%$ of normal, yellow if $\leq 75\%$ of normal

Significant Weather events:

June 8: A strong southwesterly flow brought [warmer than normal temperatures](#) across Newfoundland. Several new maximum temperature records were set for the 8th with maximums generally in the 25 to 33C range.

June 22-27: Another brisk southwesterly flow brought a prolonged period of above normal temperatures to the region. Several new maximum and high minimum temperature records were set especially on the 22nd which was the warmest day with maximum temperatures in the 25 to 30C range.

June 26-28: A low pressure system tracked eastward across the region bringing some heavy rain to parts of the west coast of the Island. The highest totals reported were in the 40 to 80 mm range at several locations with some localized flooding and road washouts.

July 9-10: A frontal trough and the [remnants of Post-Tropical Storm Elsa](#) brought heavy rain to parts of western Newfoundland and south-eastern Labrador. The heaviest amounts were generally in the 25 to 75 mm range with Daniel's Harbour reporting the most at 75.2 mm. Strong winds accompanied Elsa with maximum gusts generally in the 60 to 85 km/h range. Wreckhouse reported peak gusts of up to 104 km/h.

July 22-23: A slow-moving low pressure system brought heavy rain and isolated thunderstorms to parts of western Newfoundland. The highest 2-day rainfall totals were in the 50 to 80 mm range.

July 27-28: Some severe thunderstorms developed on the west coast of Newfoundland ahead of a cold front approaching from the west. Rainfall amounts were quite variable with a few locations reporting amounts in the 25 to 40 mm range. Deer Lake picked up about 35 mm in 20 minutes. A section of the TCH near Deer Lake was damaged due to the intense rainfall in addition to some localised flooding.

July 30-31: A low pressure system from the west brought some heavy rain and isolated thunderstorms mostly across southern Newfoundland. Several locations reported [rainfall totals](#) in the 20 to 55 mm range.

Aug 12-19: An [unusually warm westerly flow](#) developed across the region resulting in dozens of new daily maximum temperature records. The only day that new records were not reported was the 17th. The highest temperatures ranged from 26 to 33 C with the 18th and 19th being the hottest.

Aug 20: Following the hot and humid conditions, a line of thunderstorms developed over eastern Newfoundland during the evening of Friday, August 20. These intensified upon crossing the Avalon Peninsula before exiting out to sea near midnight. Rainfall rates of 20 to 30 mm/hr were reported at some locations resulting in flash flooding and [road washouts](#) in parts of the [St. John's metro region](#). Frequent lightning accompanied these storms and power outages were reported in several areas, along with damage to a local radio transmission tower. The highest rainfall totals were in the 30 to 50 mm range, which accumulated in just a few hours.

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.

June

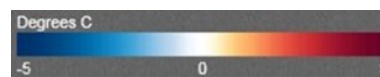
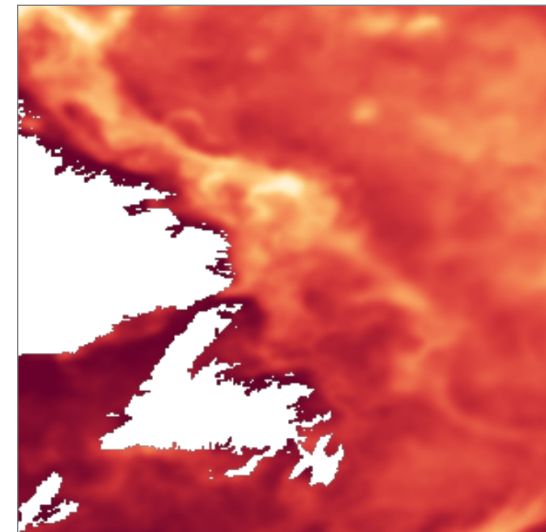
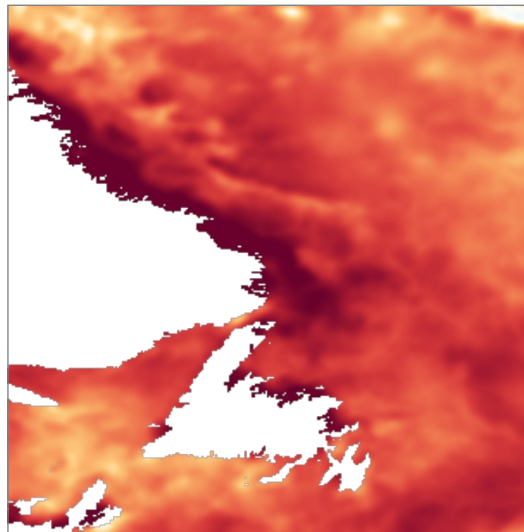
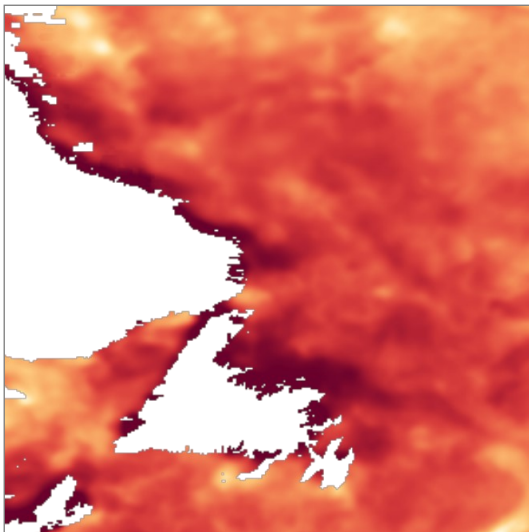
- * Generally above normal SST's across the region
- * Warmest along the coasts (5C or greater)

July

- * No major changes from June.
- * Warmest along the Labrador coast and the northeast coast of Newfoundland. (5C or greater)
- * Some areas of near normal along the south coast (0 to 1C).

August

- * Significant increase in SST anomalies in the Gulf of St. Lawrence and along the south coast of Newfoundland.
- * Warmest along the coasts and in the Gulf of St. Lawrence (5C or greater)
- * Near normal SST's in the Labrador sea associated with the Labrador current. (0 to 1C)



NOAA weekly mean SST anomaly map (based on 1981-2010 Normals) for the last week of Jun 2021 (left), Jul 2021 (middle), and Aug 2021 (right)

<https://www.nnvl.noaa.gov/view/globaldata.html#SSTA>

River Flows:

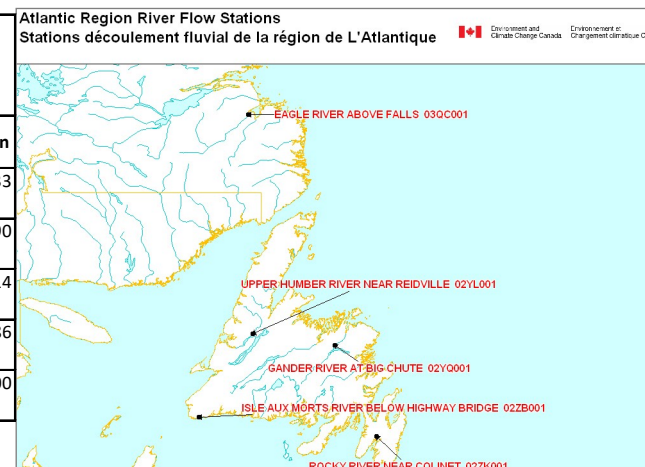
Most of the rivers in the province started off the summer by recording a deficit flow in **June**, a continuation of the early spring runoff that left river levels low in May. It was only the Eagle river station that reported near normal. The Gander River set a new record low mean flow for June.

In **July**, more rainfall than normal along the southwest coast and in the southeast successfully brought those river levels back to near normal flow rates. However, the Upper Humber River actually rose to excessive flow after a few heavy rainfall events moved through the area. Flow rates in Labrador fell, but remained just under normal while Gander River reported a second record low mean flow rate in a row.

As the warm and dry weather returned in **August** for many areas, the mean flow values continued to drop for Eagle River, which recorded a new record low mean flow for August. Similarly, the Isle Aux Morts River and Gander River also reported deficit flow. The Rocky River in the southeast remained near normal, likely due to a few heavy rainfall events that affected the Avalon during the month. Near normal precipitation in the west kept the Upper Humber above normal, though the mean flow did drop a bit.

Preliminary monthly runoff summary for selected river sites in Newfoundland and Labrador (location map below) for June, July, and August 2021, courtesy of ECCC Water Survey of Canada. Note: Record values provisional and may change after the data is reviewed.

River Flow Station		June 2021		July 2021		August 2021		Cumulative Run-off* (Oct. 1 to Aug. 31)
Station Number	Drainage Area (km ²)	Mean Flow (m ³ /s)	% of Median	Mean Flow (m ³ /s)	% of Median	Mean Flow (m ³ /s)	% of Median	% of Median
EAGLE RIVER ABOVE FALLS 03QC001	10900	718	114	223	81	87.2	43	133
GANDER RIVER AT BIG CHUTE 02YQ001	4400	32.3	41	13.4	26	10.8	23	90
ISLE AUX MORTS RIVER BELOW HIGHWAY BRIDGE 02ZB001	205	7.71	73	7.76	113	3.04	45	114
ROCKY RIVER NEAR COLINET 02ZK001	301	2.17	36	6.25	116	4.33	94	86
UPPER HUMBER RIVER NEAR REIDVILLE 02YL001	2110	35	32	73.7	177	54.2	153	100



* Run off accumulates from October 1st

E - Excessive (> 75th percentile (based on 30-years, 1981-2010))

D - Deficient (< 25th percentile (based on 30-years, 1981-2010))

R - Record (provisional new extreme (preliminary data subject to review), compared to period of record up to 2010)

Canadian Drought Monitor (produced by Agriculture and Agri-Food Canada):

June

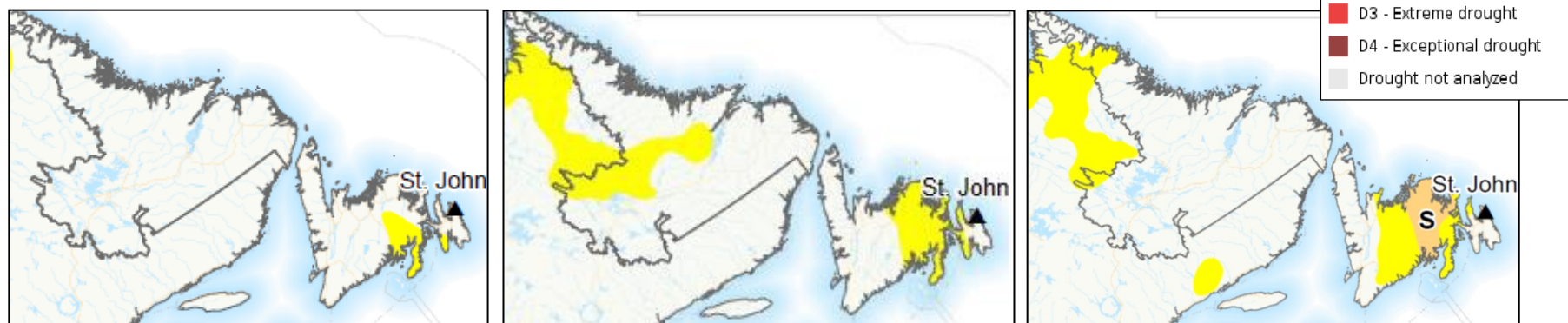
- * Abnormally dry conditions over the Burin and Connaigre peninsulas.

July

- * Abnormally dry conditions spread to northeastern Newfoundland.
- * Another area of abnormally dry conditions develops over parts of northwestern Labrador.

August

- * Abnormally dry conditions continue to expand in Newfoundland around an area of Moderate drought from the northeast coast to the south coast.
- * Abnormally dry conditions over northwestern Labrador recede slightly.



Canadian Drought Monitor Map for June 30, 2021 (left), July 31, 2021 (middle), and August 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>

Provincial Impacts (June—August):

Heat waves, drought and low water levels:

We experienced several periods of hot weather in June this year, breaking or tying 57 temperature records for maximum highs at various sites during the month. While things cooled down in July (only 13 new records), August saw the heat return, with 65 new or tied record max highs.

Due to the lack of precipitation, it is no surprise that as the summer went on, an area of moderate drought had developed over much of northeastern and parts of southern Newfoundland. Water conservation advisories and open fire bans were prevalent throughout the summer months in many communities in the affected area. While the forest fire index did hit high frequently, and even extreme on several occasions, thankfully there were no significant or long lasting wild fires.

As warm temperatures and dry conditions persisted through the season in the northeast, [water temperatures rose as water levels in rivers and lakes fell](#). Many salmon fishing rivers were closed in the afternoons and evenings, opening only in the mornings when air and water temperatures were cooler. However, the overall number of rivers closed during this season was not as high as last year, most likely due to the higher than normal rainfall along Newfoundland's west coast. In the northeast, many locals claimed the lake, pond and river levels were the lowest they've seen them in decades.

Heavy rain causes problems each month:

Heavy rainfall over southwestern Newfoundland on June 26 to 28th caused a [road washout](#) over the Port Au Port Peninsula after 40 to 80 mm fell over the region. Significant disruptions in local traffic were reported as repairs of the road lasted into the 2nd week of July.

A particularly heavy downpour occurred over the Deer Lake area on July 27-28, dumping as much as 35 mm in roughly 20 minutes. The deluge caused [erosion of the Trans-Canadian Highway](#), prompting travel delays as traffic was forced to detour through the town for several days while the province administered repairs.

On August 20th, a severe line of thunderstorms moved across the Avalon peninsula, at times dropping 20 to 30 mm of rain in one hour, causing flash flooding, road washouts, lightning damage, and [widespread power outages](#). Some [sections of road in St John's downtown area](#) were closed for repairs for a week. Lightning also damaged a [local radio station transmitter](#), causing the station in question to go silent for the first time in 97 years.

2021 Tropical Cyclone Season Update (As of August 31st):

The Atlantic Basin Hurricane season once again got off to an early start this year, with Subtropical Storm Ana forming on May 22nd. This made 2021 the 7th season in a row a named storm formed before the official start of the season on June 1.

Three tropical storms formed in June, but it wasn't until July that first hurricane of the season formed. This was Hurricane Elsa, which first reached hurricane status on July 2nd near the Barbados. Elsa reached Atlantic Canada 8 days later as a post-tropical storm.

After Elsa, nearly one full month passed without any tropical activity in the Atlantic. The second week of August saw three storms form, two of which became hurricanes. The last week of August saw three more named storms form, with one becoming a hurricane. This brought the total number of named storms by the end of August to 11, with four having reached hurricane status.

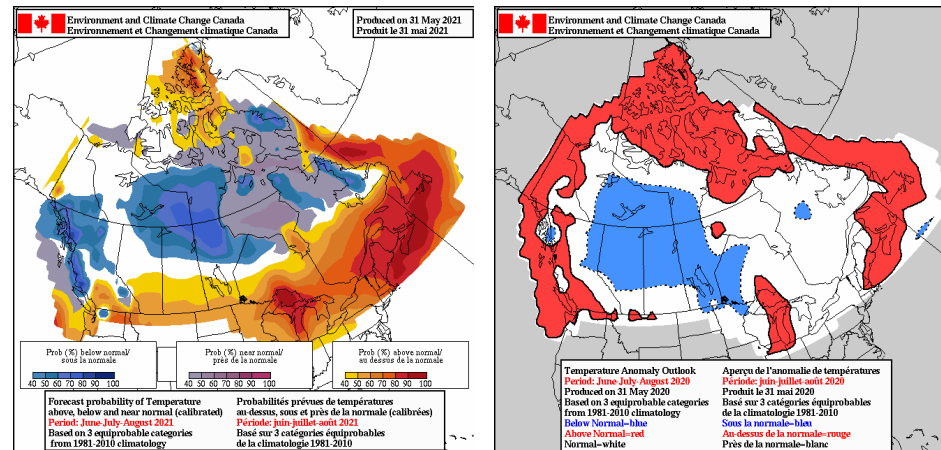
By the end of August six storms that were either named or the remnants of a named storm, entered the Canadian Hurricane Centre's Response Zone. Post-tropical storms **Elsa** and **Henri** brought the most weather and impacts to land and/or the marine waters.

See link below for the latest Tropical Weather Outlook from the National Hurricane Center issued on August 4th, 2021

[Atlantic hurricane season shows no signs of slowing | National Oceanic and Atmospheric Administration \(noaa.gov\)](#)

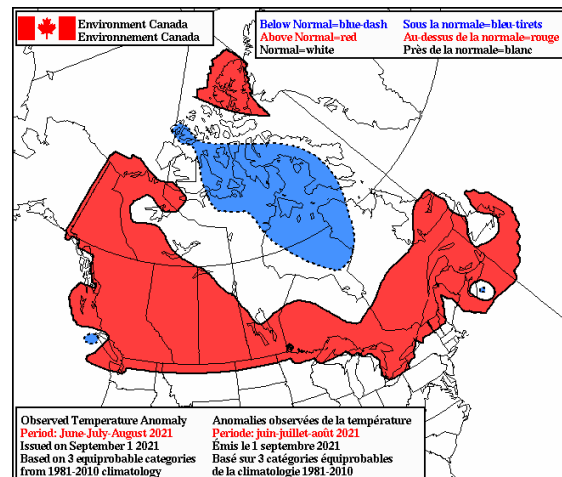
Summer Season (Period: June-July-August) Temperature Outlook Performance:

The temperature forecast for summer was expecting generally warmer than normal conditions for Newfoundland and southeastern-most Labrador, while the rest of Labrador was expected to be near normal.



Left: Probability of above, below and near normal: Produced May 31, 2021 – Right: Forecast Temperature Anomaly: Produced May 31, 2021

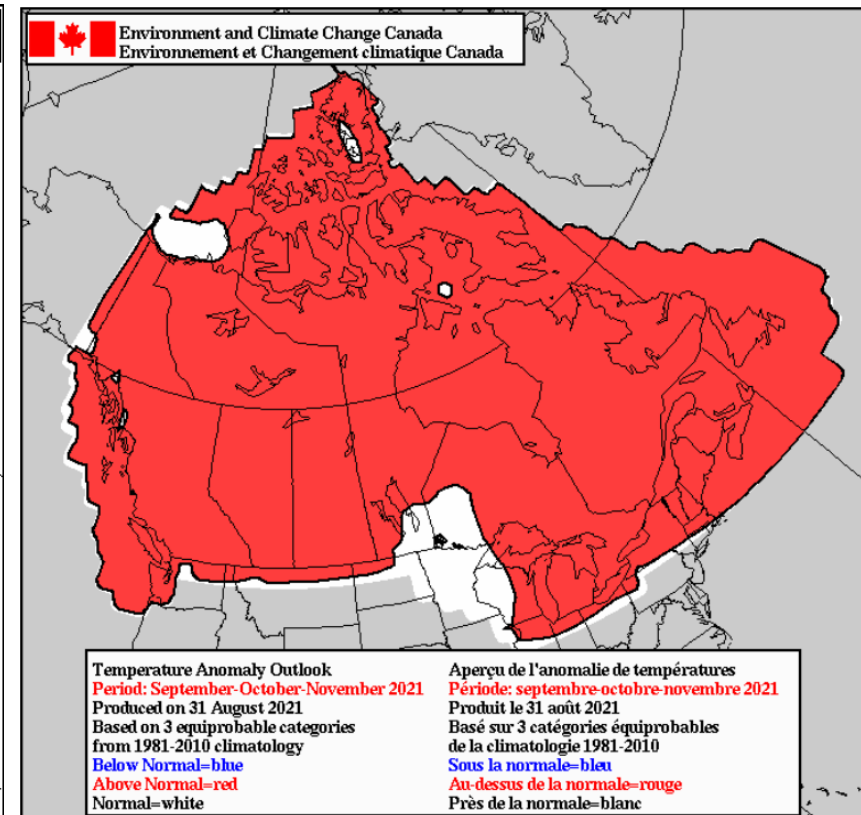
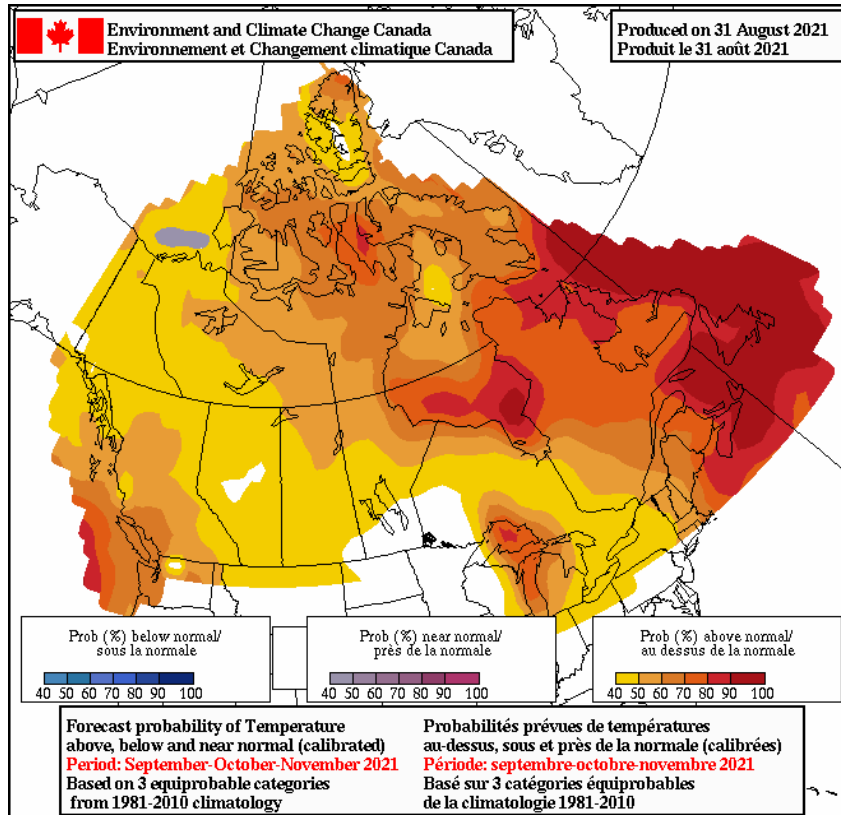
The forecast worked out in some places but was too warm in others. The main difference are a large portion of Newfoundland ended up near normal while a large portion of Labrador observed warmer than normal temperatures.



Above: Observed Temperature Anomaly – Issued on September 1, 2021

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

Looking ahead to fall we see a strong signal for warmer than normal temperatures across the entire province (and all of Atlantic Canada for that matter). Precipitation is showing a low to moderate chance of wetter than normal conditions across much of the province. However, we are excluding the precipitation maps as they typically verify less than 40% of the time.



Left: Probability of above, below and near normal temperature: Produced August 31, 2021 – Right: Temperature Anomaly Outlook: Produced August 31, 2021
https://weather.gc.ca/saisons/index_e.html

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