

# Maritimes Monthly Weather & Climate Summary July 2022

## Overview

July was warm, however, precipitation varied greatly across the region. Temperatures remained near normal at the beginning of the month which was a continuation from June, but transitioned to above normal for most of the remainder of the month along with a multi-day heat event. Precipitation mostly fell during localized, convective events with the exception of a few more organized events in parts of NB and PEI. There was one widespread precipitation event near the beginning of the month.

### **Temperature – Anomaly**

Overall, temperatures were near to above normal. For the first one-third of July, temperatures were near or below normal before a transition to above normal temperatures for the remainder of the month. Several maximum daily temperature records were broken between the five day period of July 21<sup>st</sup> and 25<sup>th</sup> with the warmest temperatures occurring in NS. Ingonish, NS recorded 35.4°C on the 25<sup>th</sup> and this was the second warmest July maximum daily temperature for the site and fifth warmest ever.

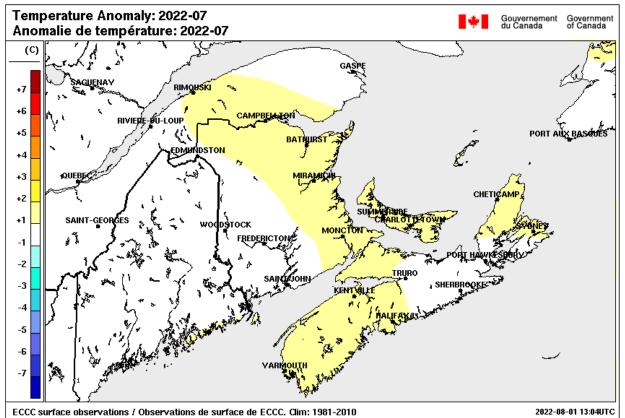
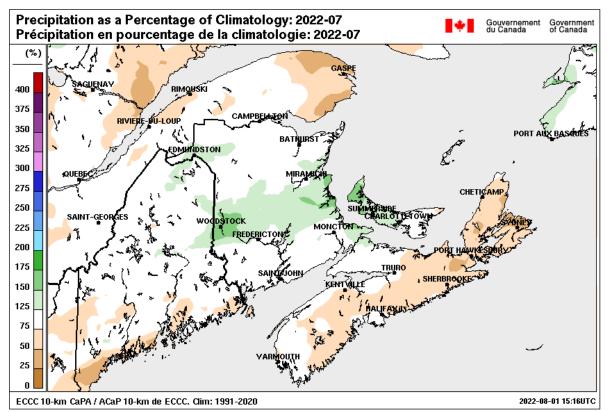


Figure 1: Monthly temperature anomaly map for July 2022 based on archived station data compared to 1981-2010 normals for the Maritimes.

### **Precipitation – Anomaly**

Precipitation was highly variable across the region with NB and PEI receiving near to above normal precipitation while NS was near to below normal. The Woodstock area in NB was much above normal reporting a total of 187.8 mm making it the third wettest July on record since records began in 1886. After the third wettest June on record for the Sydney area in NS, the area was much drier and received only 38% of its average precipitation for the month.



*Figure 2: Monthly precipitation anomaly for July 2022 based on ECCC Canadian Precipitation Analysis (CaPA) a gridded blend of model, radar, and station data, compared to 1991-2020 normals for the Maritimes. (Anomaly: Precipitation as a percentage of the average).* 

Table 1: Monthly average temperature and total precipitation for July 2022 for selected locations in the Maritimes compared to 1981-2010 Canadian Climate Normals (for the same or a nearby station). Temperature difference from normal: cells shaded pink if  $\ge 1$  °C, blue if  $\le -1$ ° C. Precipitation as a percent of normal: cells shaded green if  $\ge 125\%$  of normal, yellow if  $\le 75\%$  of normal. Rank (if included) provides a ranking of mean temperature (eg. 1 warmest, 2 second warmest etc.) for the month against long-term data for the month).

	N	Mean Ten	nperature (°	Total P	recipitati	on (mm)	
Location	Monthly Mean	Normal Mean	Diff. from Normal	Rank (Warmest)	Monthly Total	Normal Total	Total as % of Normal
Bas Caraquet	19.6	18.7	0.9	>10	65.9	80.9	81
Charlo	19.1	17.9	1.2	>10	84.5	102.1	83
Fredericton	20.1	19.4	0.8	>10	112.9	89.0	127
Moncton	20.4	18.8	1.6	>10	65.3	92.1	71
Saint John	17.8	17.1	0.7	>10	107.7	88.4	122
Woodstock	19.4	19.0	0.5	>10	187.8	100.2	188
Amherst (Nappan)	19.5	18.5	1.1	>10	82.9	89.0	93
Greenwood	20.6	19.7	0.9	>10	76.0	83.2	91
Halifax	20.1	18.8	1.3	7	62.4	95.5	65
Halifax (Shearwater)	19.2	18.1	1.1	>10	77.2	103.4	75
Sydney	19.1	17.9	1.2	>10	33.6	88.5	38
Truro (Debert)	18.9	18.6	0.3	>10	76.6	90.7	84
Yarmouth	18.4	16.8	1.6	7	56.6	88.4	64
Charlottetown	20.2	18.7	1.5	>10	114.2	79.9	143
Summerside	19.9	19.2	0.7	>10	77.6	74.1	105

## **Significant Weather Events & Impacts**

July 1 – Mother Nature provided the fireworks for Canada Day as a cold front swept across portions of NB in the evening. Pea-sized hail and heavy downpours occurred, with the Woodstock area reporting 42 mm in just over an hour along with strong winds of up to 91 km/h that caused broken tree limbs and several power outages.

July 5-6 – A slow-moving trough of low pressure crossed the Maritimes and provided widespread rain to all regions. Rainfall amounts totaled 20-40 mm with localized amounts exceeding 50 mm in embedded convective showers. A volunteer observation near St. Anns, NS reported the greatest amount at 66 mm. Gusty northwesterly winds behind the system exceeded 80 km/h along parts of PEI and Cape Breton. The extensive cloud cover from the system also resulted in the coolest conditions for the month as average daily temperatures were near 2 to 4 degrees below normal and as much as 5 degrees below normal in parts of NB.

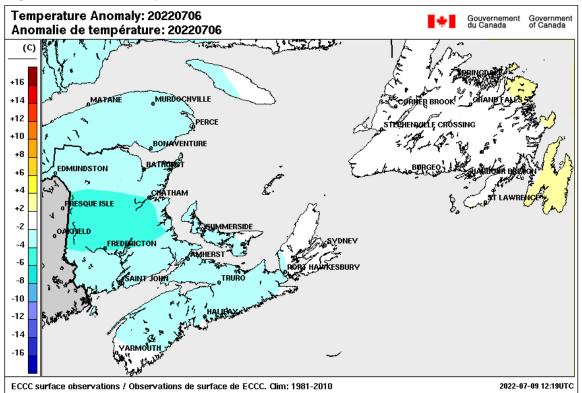


Figure 3: Daily mean temperature anomaly map for July 6, 2022.

July 18-19 – Some of the warmest temperatures of the year thus far were recorded in some localities in a southwesterly flow ahead of an unseasonable system that brought widespread rain to central and southern NB, PEI, and parts of central NS. Fredericton, Bathurst, and Charlo in NB and Sydney, Kentville, and Antigonish in NS all registered their first 30°C day of the year while Stanhope on PEI saw 29.3°C as the warmest day to date. Rainfall amounts of 15-35 mm fell Monday night and into Tuesday morning with localized higher amounts and was the most rain that fell during the entire month over the region. Severe thunderstorms moved through western NB Tuesday afternoon and evening causing gusty winds and heavy downpours. The strongest wind gusts were reported in Lakeville, NB and exceeded 100 km/h. The gusty winds that accompanied the severe thunderstorms resulted in over 4000 customers without power across the province. The Crowe Brook forestry station reported 62 mm of rain associated with the system.

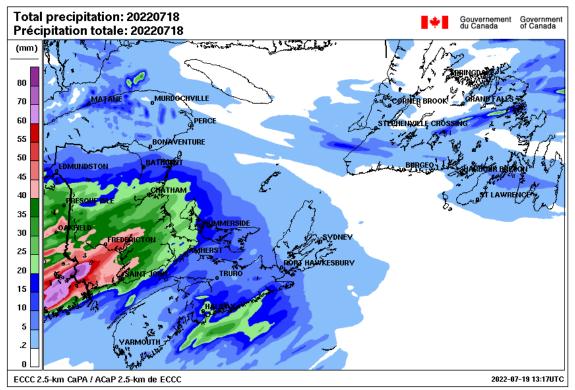


Figure 4: Daily total precipitation for July 18 2022 based on ECCC Canadian Precipitation Analysis (CaPA) a gridded blend of model, radar, and station data

#### July 21-25

A hot and humid air mass ushered in the first heat warnings of the year. Sunny skies and record setting daily maximum temperatures were observed across the area, with maximum temperatures reaching 33.4°C in NB, and reaching 31.2°C in PEI. Ingonish, NS recorded a maximum temperature of 35.4°C on July 25<sup>th</sup> making it the 2<sup>nd</sup> warmest temperature in July and the 5<sup>th</sup> warmest temperature ever. Average daily temperatures on the 24<sup>th</sup> were 2 to 5 degrees above normal and near 6 degrees above normal in parts of PEI and NS. Maximum humidex values of 43 were reported at both Greenwood and Kejimkujik Park, NS during the period. The heat wave coincided with no-swimming advisories at some beaches in NB and NS. On the 24<sup>th</sup> and 25<sup>th</sup>, a cold front passed through the region putting an end to the sultry conditions but also initiated some severe thunderstorms. Luckily, only minor damage in the form of some fallen trees and broken branches from wind gusts were reported in northern NB. In NS, over 3000 customers lost power due to the thunderstorms.

No-swimming advisories issued for 4 N.B. beaches | CBC News (July 21, 2022)

Why some Halifax-area beaches keep closing — and what's being done to keep them open | CBC News (July 21, 2022)

Record broken as P.E.I. enters 5th day of heat wave | CBC News (July 25, 2022)

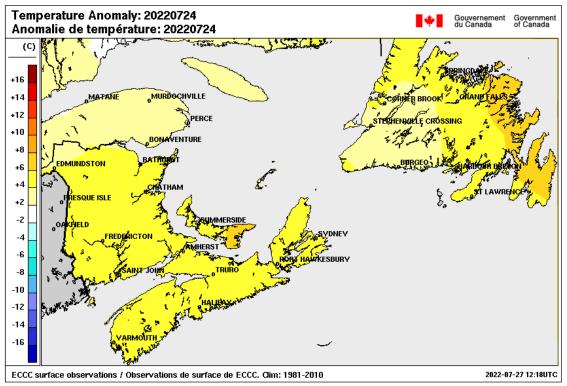


Figure 5: Daily mean temperature anomaly map for July 24, 2022.

**July 28-29** – An area of organized, nocturnal thunderstorms developed over Maine and drifted eastward across sections of central NB that produced heavy downpours and frequent lightning. Rain fell rapidly giving generally 15-30 mm with the Woodstock station reporting 45 mm over a time period of approximately 2 hours. The afternoon of the 29<sup>th</sup> saw the redevelopment of thunderstorms across northern NB that brought more heavy rain, gusty winds and hail. The St-Irénée area in northeast NB saw up to toonie-sized hail while other adjacent areas reported generally pea-sized hail with no damages reported.

keeping began in 2002.										
Province	July 2022	July	July 2022	Year-to-Date	Year-to-Date	Year-to-Date				
	Observed	Average	Rank	Observed	Average	Rank				
NB	18,199	20,280	9th Highest	26,397	32,911	9 <sup>th</sup> Lowest				
NS	6,324	6,266	8 <sup>th</sup> Highest	7,768	13,567	6 <sup>th</sup> Lowest				
PFI	353	1 089	9 <sup>th</sup> Lowest	676	1 678	5 <sup>th</sup> Lowest				

**July Lightning** – Lightning activity varied across the region from below normal in PEI, to slightly below normal in NB, to near normal in NS. Year-to-Date activity is below normal for all regions since record keeping began in 2002.

## **Daily Temperature and Precipitation Time Series**

The time series below for the three provincial capitals indicate precipitation events throughout the month resulting in above normal precipitation for Fredericton and Charlottetown and below normal for Halifax. In terms of temperatures, the first third of the month was generally near normal or below normal for Fredericton and Charlottetown and near to above normal for Halifax. By around the 11<sup>th</sup> of the month temperatures warmed to above normal for the remainder of the month for all sites.

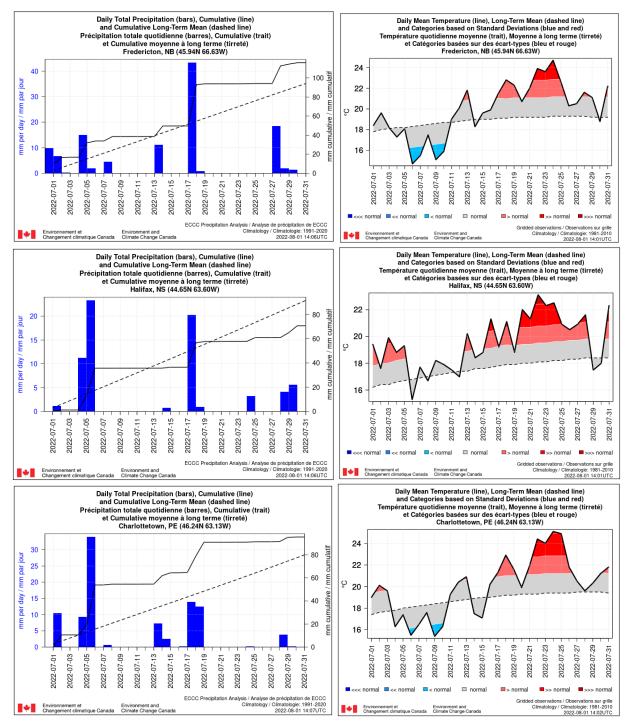


Figure 6: Daily total precipitation (Canadian Precipitation Analysis (CaPA) data) and mean temperature for Fredericton, NB (top), Halifax, NS (middle), and Charlottetown, PEI (bottom), for July 2022 based on gridded data, compared to long-term means (Canadian Precipitation Analysis (CaPA) data, 1991-2020, and temperature data, 1981 to 2010).

### Sea Surface Temperature - Departure from Normal

The sea surface temperature (SST) departure from normal map for the week of July 25-31, 2022 indicates some variation in the SST across the region. There is one area of colder than normal SST that is up to 4 degrees below normal over portions of the northern Gulf of St. Lawrence with a second area over eastern portions of the St. Lawrence River. A near normal to slightly below normal area resides along the Atlantic coast of NS and near Grand Manan. Elsewhere, the SST is above normal with several coastal areas more than 5 degrees above normal.

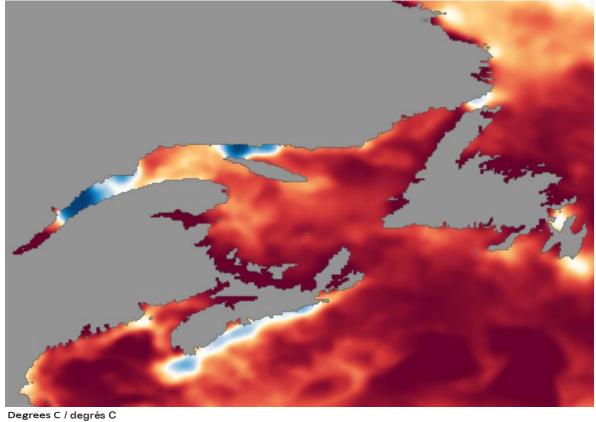


Figure 7: Sea surface temperature (SST) anomaly map for July 25-31, 2022. Data based on 1981-present. Source: <u>https://www.nnvl.noaa.gov/view/#SSTA</u>

### **Fire Weather Update**

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Despite an active forest fire season in May for NS, the season has positively shifted to below to near average for June and July. The season has been below average so far in NB and this is likely aided by the lack of drought conditions and extreme heat events. Air quality events from smoke have also been very limited this season due to the limited number of fires regionally and even <u>nationally</u>.

UPDATED: Cumberland County forest fire under control | SaltWire (July 25, 2022)

### **Other Climate Related Information**

Warm, mild spring means earlier strawberries, but not everywhere | CBC News

Will adaptability save the North Atlantic right whale? | CBC News

P.E.I. grain producers expecting a good year | CBC News

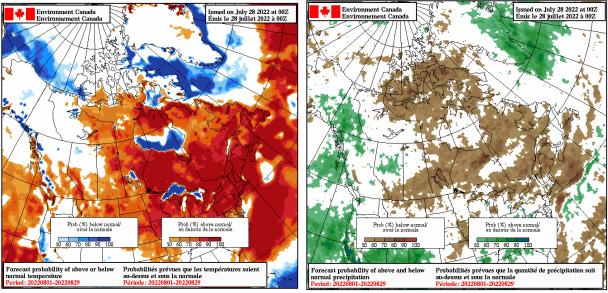
P.E.I. beekeepers suffer 'heartbreaking' winter loss | CBC News

Businesses and workplaces adapt to record-breaking heat on P.E.I. | CBC News

## **Temperature & Precipitation Outlook**

The four-week outlook for temperature and precipitation from the Canadian Global Ensemble Prediction System (GEPS) for August 1 to 29, 2022 indicates above normal temperatures are extremely probable across the region. There is a weak to moderate signal of below normal precipitation for most areas except over PEI, southeastern NB, and parts of northern NS where near normal conditions are possible.

The four-week outlook from June 30<sup>th</sup> performed reasonably well for temperature as all areas were near normal or slightly above normal although the prediction indicated that all areas were expected to be above normal. The precipitation outlook did not perform as well with many areas of above normal in NB and PEI when below normal conditions were forecasted for all areas. In NS, the precipitation outlook was better where forecast conditions of near to below normal occurred.



*Figure 8: Temperature and Precipitation Anomaly Forecasts from the MSC Global Ensemble Prediction System issued July 28, 2022 for August 1 to 29, 2022. Source:* http://collaboration.cmc.ec.gc.ca/cmc/ensemble/monthly/prev\_mens\_geps.html

### Contact

Environment and Climate Change Canada, Meteorological Service of Canada, Prediction Services Operations – Atlantic and Ice, Applied Climatology Services Email address: <u>climatatlantique-climateatlantic@ec.gc.ca</u>

### Appendix

Location/ Emplacement	Station Name/ Nom de la station	Climate ID/ID climat	Station Operator/ Opérateur de station <sup>1</sup>	Type <sup>2</sup>	
Bas Caraquet	BAS CARAQUET	8100467	ECCC-MSC	А	
Charlo	CHARLO AUTO	8100885	ECCC-MSC	А	
Fredericton	FREDERICTON CDA CS	8101605	ECCC-MSC	А	
Moncton	MONCTON/GREATER MONCTON ROMEO LEBLANC INTLA	8103201	NavCan	Н	
Saint John	SAINT JOHN A	8104901	NavCan	Н	
Woodstock	WOODSTOCK NEWBRIDGE	8105603	ECCC-MSC	А	
Amherst (Nappan)	NAPPAN AUTO	8203702	ECCC-MSC	А	
Greenwood	GREENWOOD A	8202000	DND	Н	
Halifax (Shearwater)	SHEARWATER RCS	8205092	ECCC-MSC	Α	
Halifax Stanfield Intl A	HALIFAX STANFIELD INT'L A	8202251	NavCan	Н	
Sydney	SYDNEY A	8205701	NavCan	н	
Truro (Debert)	DEBERT	8201390	ECCC-MSC	А	
Yarmouth	YARMOUTH A	8206495	NavCan	Н	
Charlottetown	CHARLOTTETOWN A	8300301	NavCan	Н	
Summerside	SUMMERSIDE	8300596	ECCC-MSC	А	

#### Table A1: Station metadata for the selected locations in Table 1.

<sup>1</sup> Station Operator: CCN = Cooperative Climate Network, ECCC-MSC = Environment and Climate Change Canada,

Meteorological Service of Canada, DND = Department of National Defence, NavCan = Nav Canada

<sup>2</sup> Type: A = Automatic observation, H = Human observation

Table A2: Monthly totals for July 2022 for New Brunswick stations compared to 1981-2010 Canadian Climate Normals (if available for same or nearby station). Temperature difference from normal: cells shaded pink if  $\ge 1$  °C, blue if  $\le -1$ ° C. Precipitation as a percent of normal: cells shaded green if  $\ge 125\%$  of normal, yellow if  $\le 75\%$  of normal.

					perature / T noyenne (°	empérature C)	Total Prec	•	itation / Précipitations otales (mm)	
Station Name / Nom de la		TC ID / ID de	Station Type / Type de	Monthly Mean / Moyenne	Normal Mean / Moyenne	Diff from Normal / Écart avec	Monthly Total / Total	Normal Total / Total	Total as % of Normal / Total en % de la	
station	Prov	тс	station	mensuelle	Normale	la normale	mensuel	normal	normale	
BAS CARAQUET	NB	WXS	AU8	19.6	18.7	0.9	65.9	80.9	81	
BAS CARAQUET	NB		DAILY				72.4	80.9	90	
BATHURST A	NB	ZBF	NCA	19.6	19.1	0.6	92.0	100.8	91	
CHARLO AUTO	NB	ZCR	AU8	19.1	17.9	1.2	84.5	102.1	83	
MIRAMICHI RCS	NB	ACQ	AU8	20.4	19.1	1.3	117.7	99.9	118	
DOAKTOWN AUTO RCS	NB	ADN	AU8	19.3	19.1	0.2	157.2	105.8	149	
FREDERICTON INTL A	NB	YFC	NCA	19.8	19.3	0.6				
FREDERICTON CDA CS	NB	AFC	AU8	20.1	19.4	0.8	112.9	89.0	127	
FUNDY PARK (ALMA) CS	NB	AFY	AU8	18.6	17.1	1.5	129.7	99.4	130	
GRAND MANAN SAR CS	NB	XGM	AU8	18.8			37.1			
KOUCHIBOUGUAC	NB	AKC	AU8	19.9	19.2	0.7	143.6	110.4	130	
MECHANIC SETTLEMENT	NB	AMS	AU8	18.7			102.7			
MISCOU ISLAND (AUT)	NB	WMI	AU8	19.0			64.2			
MONCTON/GREATER MONCTON ROMEO LEBLANC INTL A	NB	YQM	NCH	20.4	18.8	1.6	65.3	92.1	71	
OAK POINT	NB		DAILY	19.5	19.5	0.0	93.7	96.9	97	
POINT LEPREAU CS	NB	WPE	AU8	17.1	15.6	1.5	62.1	107.3	58	
RED PINES	NB	ARP	AU8	18.8	18.6	0.2	103.3	105.8	98	
SAINT JOHN A	NB	YSJ	NCH	17.8	17.1	0.7	107.7	88.4	122	
ST. STEPHEN	NB	WSS	AU8	19.9			88.7			
SUSSEX FOUR CORNERS	NB	ASF	AU8	19.9	19.2	0.7	105.1	84.0	125	
WOODSTOCK NEWBRIDGE	NB	EWD	AU8	19.4	19.0	0.5	187.8	100.2	188	
Average				19.3	18.5	0.8	99.7	96.5	110	
Max				20.4	19.5	1.6	187.8	110.4	188	
Min				17.1	15.6	0.0	37.1	80.9	58	

### Table A3: Same as Table A2, for Nova Scotia.

				Mean Temperature / Température moyenne (°C)			Total Precipitation / Précipitations totales (mm)			
Station Name / Nom de la		TC ID / ID de	Station Type / Type de	Monthly Mean / Moyenne	Normal Mean / Moyenne	Diff from Normal / Écart avec	Monthly Total / Total	Normal Total / Total	Total as % of Normal / Total en % de la	
station	Prov	TC	station	mensuelle		la normale	mensuel	normal	normale	
BACCARO PT	NS	ACP	AU8	13.9			60.9	111.4	55	
BEAVER ISLAND (AUT)	NS	WBV	AU8	14.5		1.0				
BEDFORD BASIN	NS	ABB	AU7	19.8		1.0				
BEDFORD RANGE	NS	ABR	AU7	18.8		0.4	54.6			
BRIER ISLAND	NS	WVU	AU8	16.9			51.6			
CARIBOU POINT (AUT)	NS	WBK	AU8	20.8		1.5	43.8	76.6		
CHETICAMP HIGHLANDS	NS	AHT	AU8	18.9		0.7	54.1	90.0		
COLLEGEVILLE AUTO	NS	AGL	AU8	18.4		0.1	51.9	86.7		
DEBERT	NS	ZDB	AU8	18.9		0.3	76.6	90.7		
ESKASONI FIRST NATION	NS	AEI	AU8	19.0		0.8	53.6	97.5	55	
GRAND ETANG	NS	WZQ	AU8	20.0		1.7				
GREENWOOD A	NS	YZX	WOD	20.6	19.7	0.9	76.0	83.2	91	
EMERGENCY WEATHER	NS	ERU	AU8							
STATION #2 (NEW ROSS)	NJ	LINO	700	19.7	19.1	0.6	57.7	91.0	63	
HALIFAX DOCKYARD	NS	AHD	AU7	19.8	18.8	1.0				
HALIFAX STANFIELD INT'L A	NS	YHZ	NCH	20.1	18.8	1.3	62.4	95.5	65	
HALIFAX KOOTENAY	NS	АНК	AU7	19.7	18.1	1.6	72.4	103.4	70	
HALIFAX WINDSOR PARK	NS	AHW	AU7	20.6	18.8	1.9				
HART ISLAND (AUT)	NS	WRN	AU8	17.9						
INGONISH BEACH RCS	NS	XIB	AU7	19.9	18.3	1.6				
KEJIMKUJIK 1	NS	WKG	AU8	20.2	18.4	1.8	62.6	97.5	64	
KENTVILLE CDA CS	NS	ХКТ	AU7	20.9	19.5	1.4	36.8	84.0	44	
LOUISBOURG	NS	AUU	AU8	17.3	16.2	1.1	70.2	108.4	65	
LUNENBURG	NS	XLB	AU8	18.3						
MALAY FALLS	NS	XMY	AU8	18.3	17.5	0.8	89.1	107.4	83	
MCNABS ISLAND (AUT)	NS	XMI	AU8	18.3	18.1	0.3				
NAPPAN AUTO	NS	XNP	AU8	19.5	18.5	1.1	82.9	89.0	93	
ALDERSVILLE	NS	ANR	AU8	19.8	19.1	0.7	62.5	91.0	69	
NORTHEAST MARGAREE (AUT)	NS	WNS	AU7	17.9	18.1	-0.2	52.7	79.0	67	
NORTH MOUNTAIN CS	NS	XNM	AU7	17.5	17.6	-0.1				
OSBORNE HEAD DND	NS	AOS	AU7	16.3			76.6	103.4	74	
UPPER STEWIACKE RCS	NS	AOH	AU8	18.5		0.1	53.0	94.6		
PARRSBORO	NS	APR	AU8	17.4		-0.1				
POCKWOCK LAKE	NS		DAILY	18.7						
PORT HAWKESBURY	NS	YPD	NCA	19.3			54.0	96.2	56	
SABLE ISLAND A	NS	WSA	NCA	17.1			51.0	50.2		
SABLE ISLAND A	NS	ASB	AU8	17.1			63.9	100.8	63	
ST PAUL ISLAND (AUT)	NS	WEF	AU8	17.0		1.3	05.5	100.0	03	
SHEARWATER RCS	NS	AAW	AU8	19.2		1.1	77.2	103.4	75	
SHEARWATER JETTY	NS	WZU	AU7	19.2		0.4	80.0	103.4		
SHELBURNE SANDY POINT	NS	ESB	AU7 AU8	18.5		0.4	57.2	105.4	//	
	NS NS			19.4		1.2		00 -	20	
SYDNEY A		YQY	NCH				33.6	88.5	38	
SYDNEY CS	NS NS	AQY	AU8	19.3						
SYDNEY A	NS	YQY	NCA	19.1			25.0	00 7		
	NS	XTD	AU8	20.3		2.1	35.9	86.7	41	
WESTERN HEAD	NS	WWE	AU8	15.4			48.0			
YARMOUTH RCS	NS	EQI	AU8	18.3			56.6	88.4		
YARMOUTH A	NS	YQI	NCH	18.4			56.6	88.4		
Average				18.6		1.0	60.3	93.9		
Max				20.9	19.7	2.1	89.1	111.4		
Min				13.9	15.8	-0.2	33.6	76.6	38	

				-	perature / T noyenne (°	empérature C)	Total Precipitation / Précipitations totales (mm)		
Station Name / Nom de la station	Prov	TC ID / ID de TC	Station Type / Type de station	Monthly Mean / Moyenne mensuelle	Normal Mean / Moyenne Normale	Diff from Normal / Écart avec la normale	Monthly Total / Total mensuel	Normal Total / Total normal	Total as % of Normal / Total en % de la normale
CHARLOTTETOWN A	PEI	YYG	NCH	20.2	18.7	1.5	114.2	79.9	143
EAST POINT (AUT)	PEI	WEP	AU8	19.2	18.2	1.1	53.0	86.6	61
NORTH CAPE	PEI	WNE	AU8	20.3			95.6		
ST. PETERS	PEI	ZSP	AU8	20.0	18.5	1.5	67.1	79.3	85
STANHOPE	PEI	ANH	AU8	20.6			84.4		
SUMMERSIDE	PEI	WSD	AU8	19.9	19.2	0.7	77.6	74.1	105
MAPLE PLAINS	PEI	XMP	AU8	19.0	18.8	0.2			
HARRINGTON CDA CS	PEI	AHR	AU8	19.9	18.7	1.2	99.8	79.9	125
Average				19.9	18.7	1.0	84.5	80.0	104
Max				20.6	19.2	1.5	114.2	86.6	143
Min				19.0	18.2	0.2	53.0	74.1	61

#### Table A4: Same as Table A2, for Prince Edward Island.

### Glossary

CaPA: The Canadian Precipitation Analysis. Full details available here

*Standard Deviation*: A statistical measure of how data compares to the mean (average) value. The standard deviation referenced in these monthly summaries is relative to the Canadian Climate Normals data set. The higher the standard deviation value, the further the data is from the normal value.

*Temperature Anomaly:* The deviation of temperature in a given region over a specified period from the long-term average value for the same region.

A more extensive glossary for weather and climate related terminology can be found here.

#### **Disclaimer:**

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