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# Climatic Perspectives

Ref 1

Monthly Review

October - 1991

Vol. 13

## CLIMATIC HIGHLIGHTS

### Record rainfalls in B.C.

During the second week of October, the north B.C. coastline was inundated with well over 200 mm of rain, while further to the south very strong winds were encountered. Two heavy rain storms between October 8 and the 14, left more than 340 mm of rain saturating the Nass and Iskut River watershed, exceeding the previous record rainfall of 336 mm for the entire month. During the same period, Prince Rupert and Terrace received 365 and 235 millimetres of rain, as compared to the normal precipitation amounts for the entire month of October of 367 and 215 millimetres, respectively. Raging floods triggered by the heavy rain stranded more than 1000 residents living in remote northern B.C. A number of small communities, including the towns of Greenville and Canyon City, located about 140 km northwest of Terrace, were isolated for several days before crews could rebuild the washed out roads. In the meantime, relief supplies had to be airlifted in. October is normally the wettest month of the year in British Columbia, and local rivers can only absorb a certain amount of runoff at any one time. When you get rainfalls of the magnitude experienced this month, during such a short time span, there is

bound to be flooding, especially when the roads leading into interior follow the river valleys.

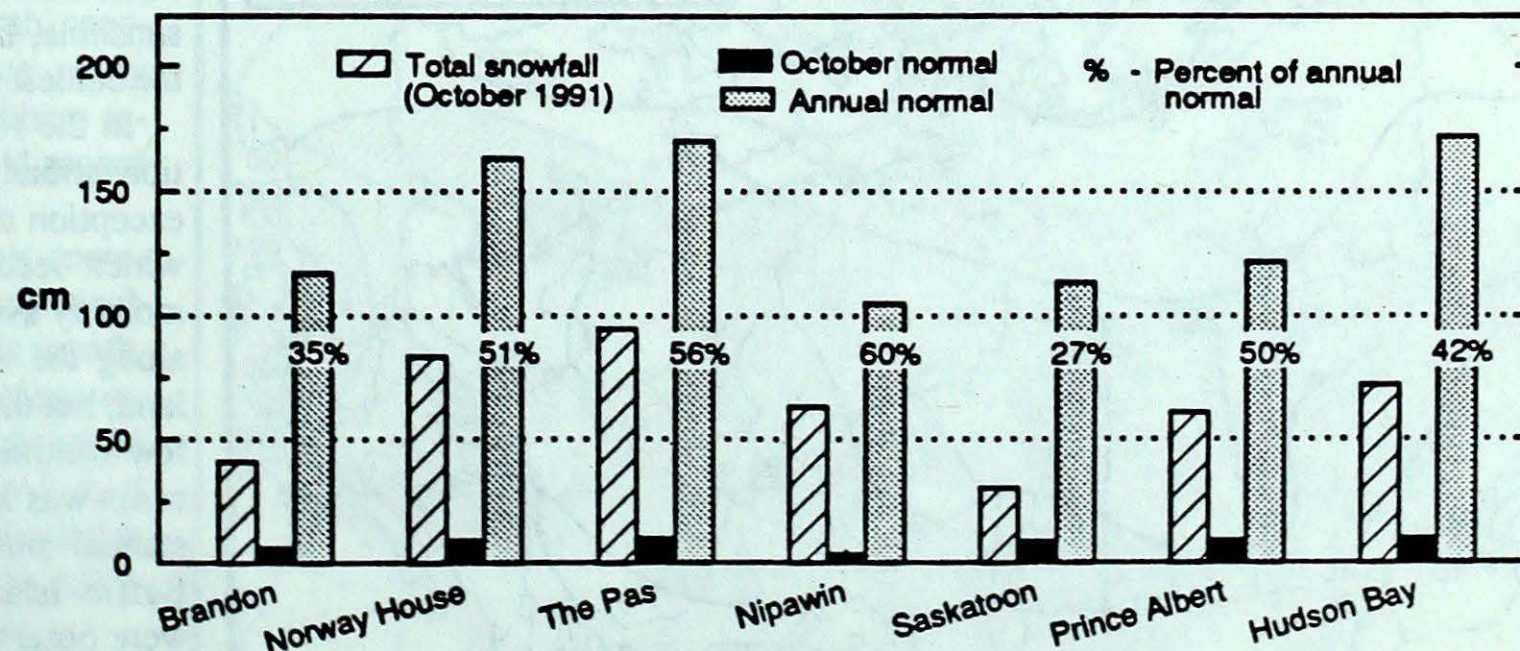
### Heavy snowfalls on the Prairies

During the latter half of the month, snowstorms dumped more than ten times the normal October snowfall on parts of the Prairies. Each storm that passed, seemed selective in the amount of snow that was deposited in the different regions, but at month's end many locations had tallied between 30 and 60 centimetres. Central areas had the most snow, ranging as high as 60 to 90 centimetres. Some of the higher accumulations recorded in Manitoba and Saskatchewan were at The Pas, Norway House and Hudson Bay, 94.6,

83.4 and 72.0 centimetres, respectively.

Altogether there were six major snowfalls beginning on October 15, when central and northern areas received between 15 and 30 centimetres of snow, accompanied by westerly winds gusting in excess of 100 km/h. On October 21 and 22, 10 to 25 centimetres of snow and blowing snow closed highways in Saskatchewan and western Manitoba. The 24th saw an additional 10 cm snowfall in northern Saskatchewan. Two separate low pressure systems ploughed northward from the central States between October 26 and 29, producing heavy snow, blowing snow and freezing rain. There were prolonged power outages and highways were closed again. Snowfalls in Manitoba were as high as 40 cm, with 70 cm falls reported in northwestern Ontario.

Snowfall accumulations in Manitoba and Saskatchewan



Snowfalls during the month of October on the Prairies in some cases were 5 to 10 times the normal.



## Across the country

### Yukon and Northwest Territories

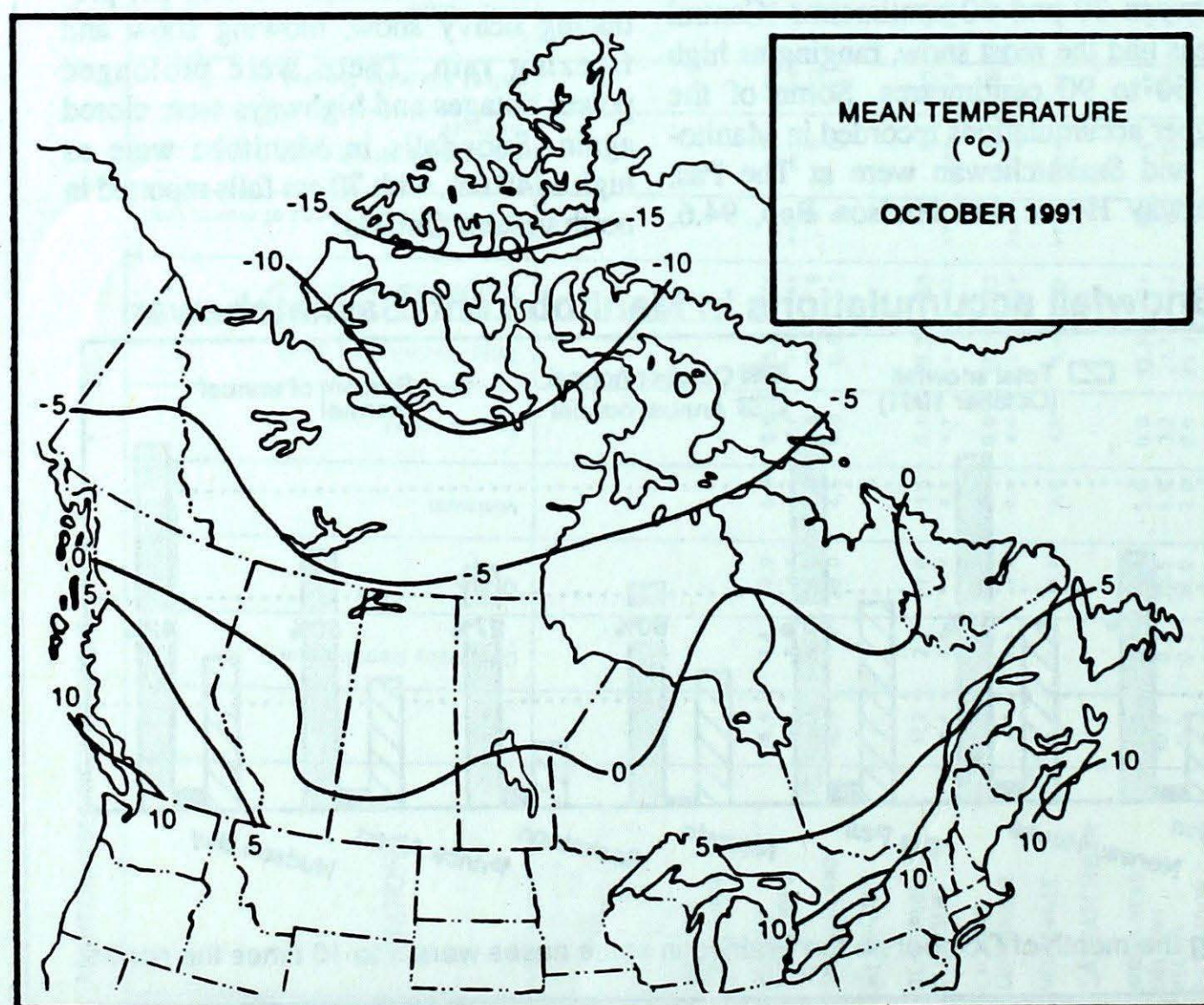
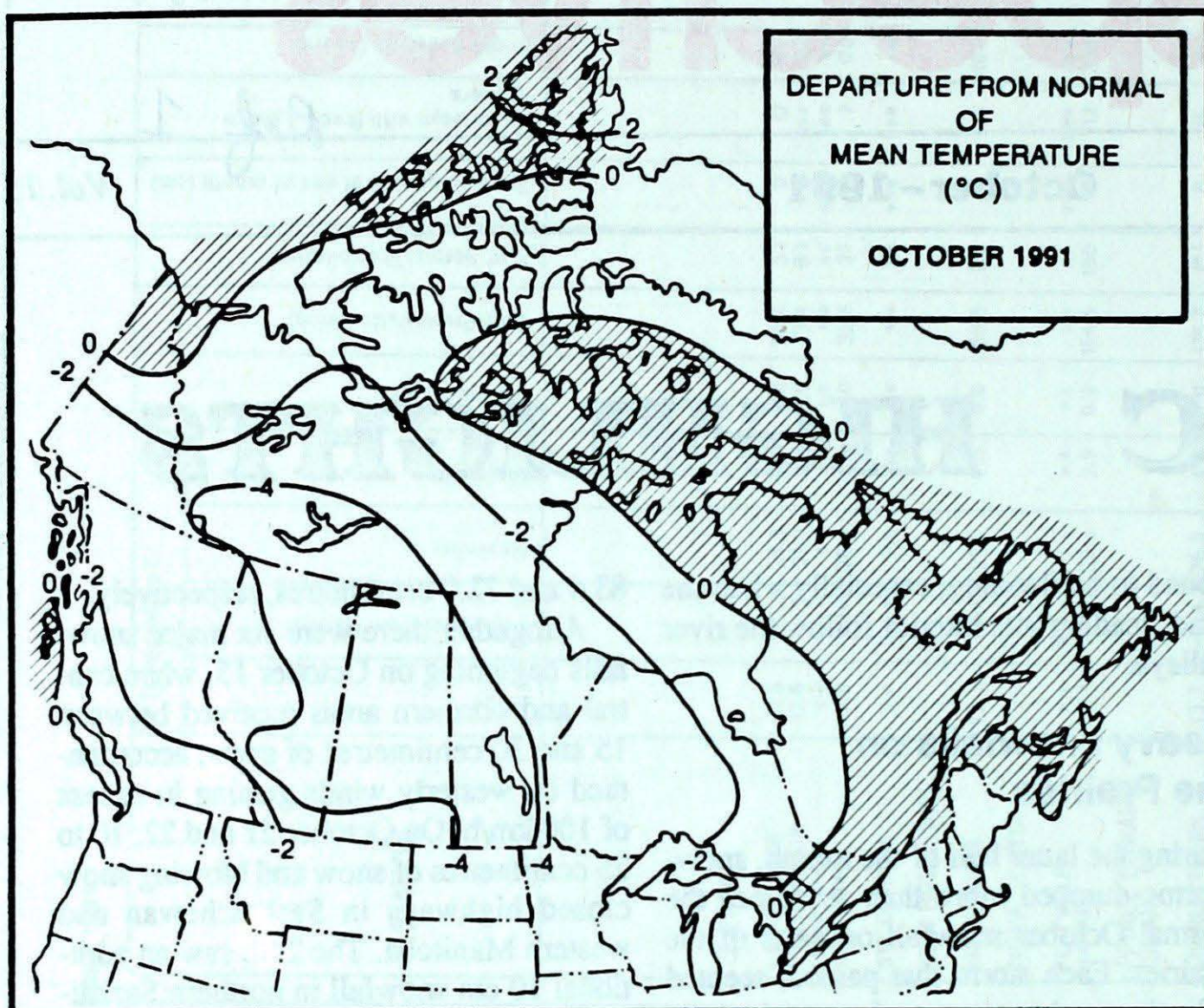
As "old man winter" spreads his snowy mantle and the sun shines less and less each day, everyday life settles down to the routine of another northern winter. All locations in the Yukon had minimums register in the minus twenties or colder by the end of the month. Old Crow and Ogilvie reported the lowest readings,  $-31^{\circ}\text{C}$  on October 30. Watson Lake had the highest temperature in the Yukon this month,  $14^{\circ}\text{C}$  on October 5, and also had the greatest amount of precipitation, a monthly total of 74.7 mm, which is more than twice the normal.

Whitehorse residents endured a wetter and another cloudier than normal month, but not a record breaker like the last three months were. Below normal temperatures insured that snowfall was above normal. Whitehorse established a new record for the number of days with a trace or more of snow - 21 compared to the old record of 20 set in 1961. There were also 26 days of precipitation this month, which is one more than the old record set in 1984.

Normally "old man Sol" shows his face in Whitehorse for an average 93.4 hours during October. This month Whitehorse was 12.4 hours shy of breaking the 1961 record for the least amount of sunshine. In contrast, the sunniest October ever recorded in 1951 had 144.9 hours of bright sunshine, but at the same time, produced the coldest mean monthly temperatures.

In the Northwest Territories, precipitation amounts were below normal, with the exception of the Great Slave Lake region, which received two to three times their monthly average. Blizzards were common along the Arctic coast and on Baffin Island, but the Arctic region only received a few centimetres of snow, which in some cases was less than half the normal. Substantial amounts of snow fell on eastern Baffin Island. The coldest temperatures were observed at Eureka,  $-32.0^{\circ}\text{C}$ ; Resolute Bay,  $-31.4^{\circ}\text{C}$ ; and Mould Bay,  $-30.6^{\circ}\text{C}$ .

For some of the far northern sites, October is the last month of the year with sunshine until February. This month Resolute Bay (52.8 hours) and Mould Bay





(23.3 hours) received more than double their average sunshine of 23.7 and 10.7 hours, respectively. On the other hand, residents living in Eureka saw the sun for only 2.4 hours this month, which is less than one third of their normal 8.4 hours.

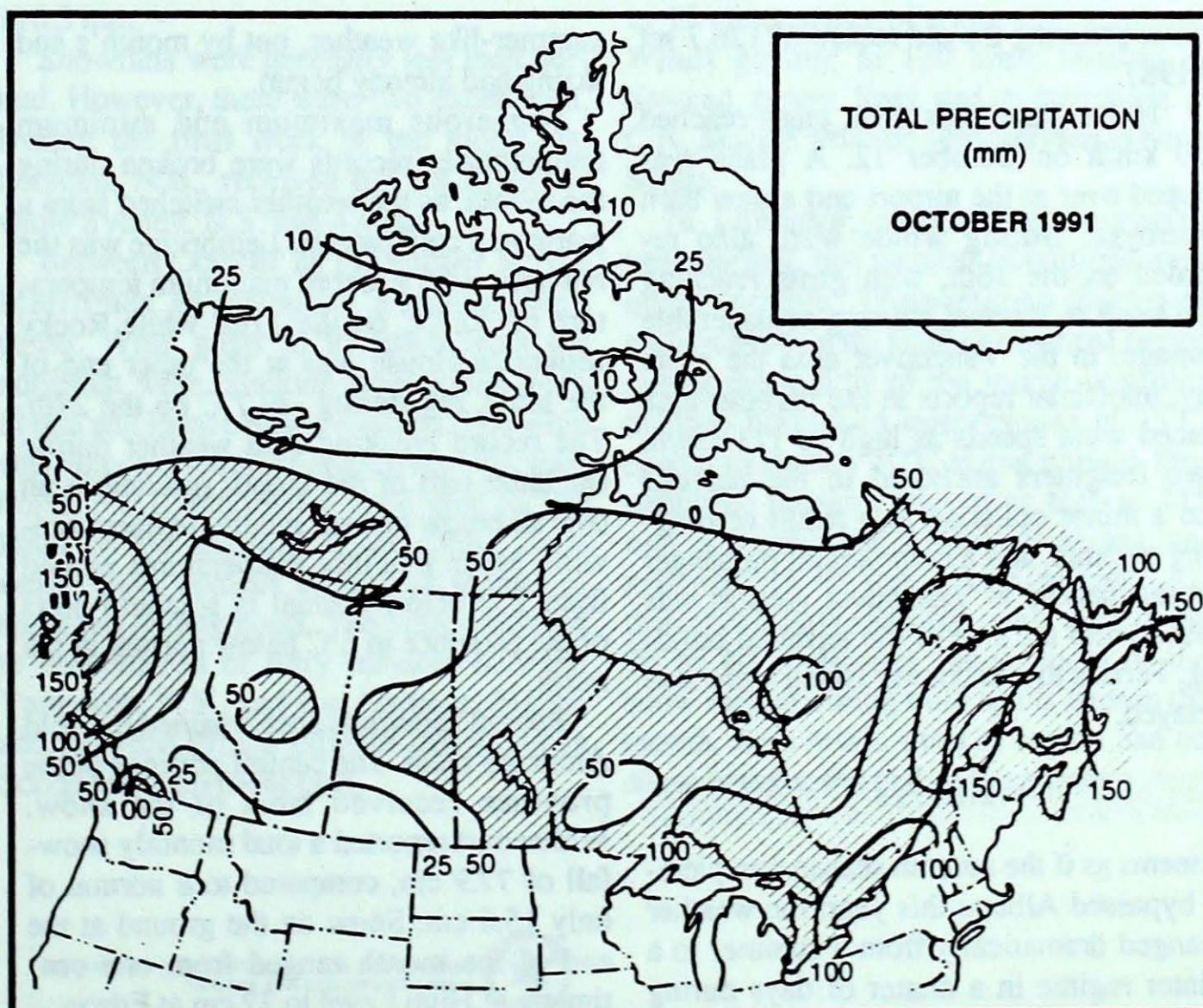
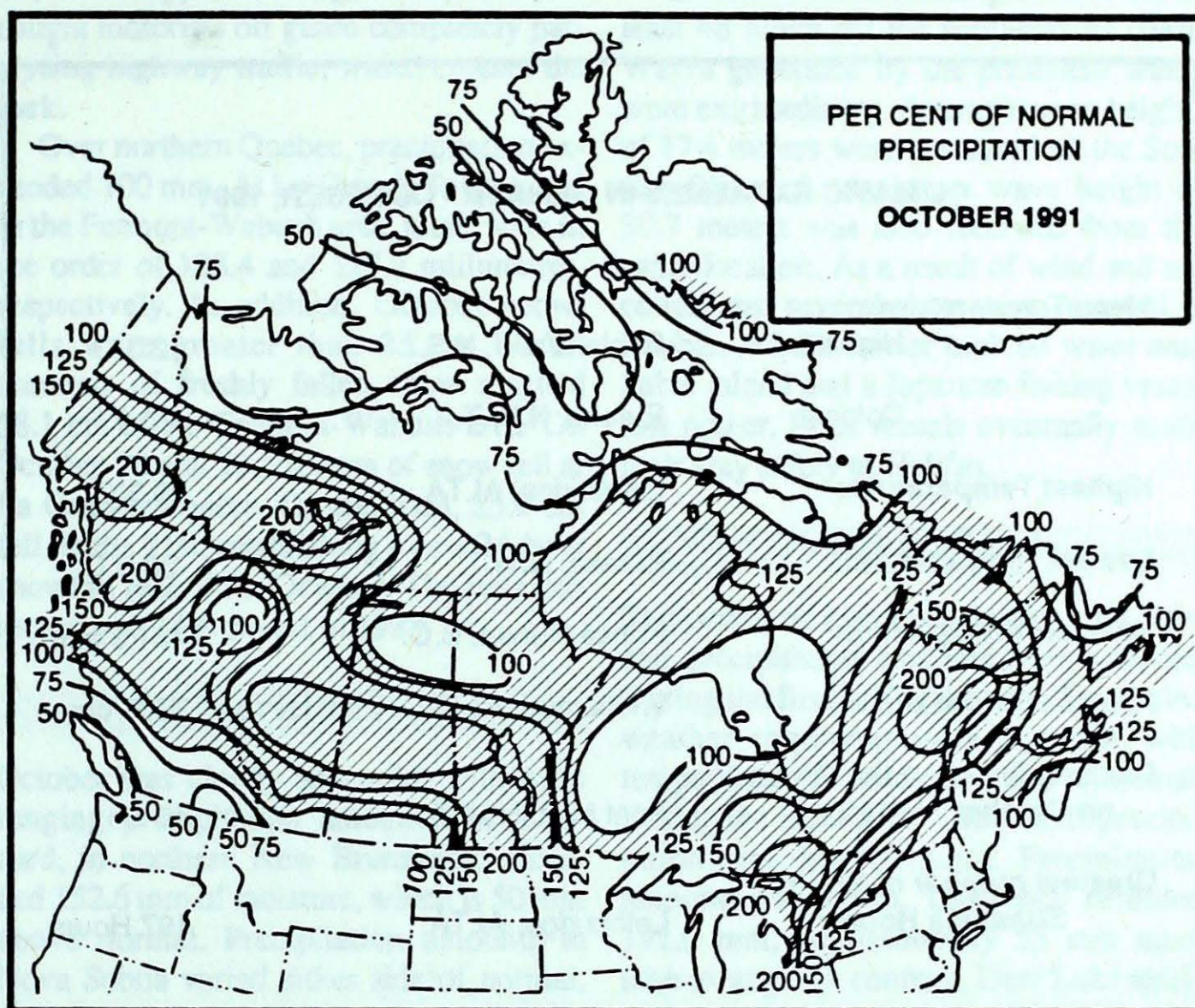
### British Columbia

Temperatures were well above normal across the southern two thirds of the province until mid-month, when an influx of cold Arctic air was responsible for setting many new daily minimum temperature records. As a result, most of the province recorded below average monthly mean temperatures. Mackenzie set a new record low mean monthly temperature of  $0.5^{\circ}\text{C}$ , breaking the previous record of  $1.0^{\circ}\text{C}$  set in 1984. Blue River tied the record low mean value of  $2.8^{\circ}\text{C}$  also set in 1984. On a positive note, monthly maximum temperature records were set at: Revelstoke,  $21.3^{\circ}\text{C}$ ; and Vancouver,  $23.7^{\circ}\text{C}$  earlier in the month. Cranbrook set a new monthly low temperature record of  $-16.1^{\circ}\text{C}$ , breaking the old record of  $-15.0^{\circ}\text{C}$  set in 1971.

Some parts of the province were very dry. In the southern interior, some communities went 30 to 40 days with little or no precipitation. Record low monthly values were reported at Amphitrite Point, 47.3 mm and Merry Island, 19.4 mm. On the other hand, the Smithers, Nass River and Iskut River regions of northern B.C. reported two to three times their average monthly precipitation. Most precipitation fell during the first half of the month, causing severe flooding and isolating many small communities for days. Smithers received 184.6 mm, breaking the old record of 128.0 mm set in 1951.

After Fort Nelson's late August snowfall - its earliest since 1955 - not much snow fell in the province until this month. On October 28, south coastal regions recorded their earliest measurable snowfalls ever, with amounts ranging from 2 to 5 centimetres. At the same time, mountain passes in the interior received their first significant snowfalls of the season.

It was a sunnier than normal month in the southern half of the province. Port Hardy set the only new record, 131.6





## CLIMATIC EXTREMES IN CANADA - OCTOBER, 1991

<b>Mean Temperature:</b>			
Highest	Sable Island, N.S..	12.3°C	
Coldest	Eureka, N.W.T.	-20.0°C	
<b>Highest Temperature:</b>			
	Lethbridge, ALTA.	30.3°C	
<b>Lowest Temperature:</b>			
	Eureka, N.W.T.	-32.0°C	
<b>Heaviest Precipitation:</b>			
	Prince Rupert, B.C.	461.3 mm	
<b>Heaviest Snowfall:</b>			
	Whitecourt, ALTA.	77.9 cm	
<b>Deepest Snow on the Ground on October 31, 1991</b>			
	Pont Inlet, N.W.T.	40 cm	
<b>Greatest number of Bright Sunshine Hours:</b>			
	Lethbridge, ALTA.	197 Hours	

## Manitoba and Saskatchewan

October was a very cold and snowy month. The seasonal southward migration of the storm track brought disturbances through the region that dumped an abundance of snow in all but a very few places, and allowed cold Arctic air to spill southwards. Surprisingly, the two provincial capitals reported the least amount of snow, with central areas being hit the hardest. In the final tally, several locations received between five and ten times their normal October snowfall, and a few received more than half their annual seasonal average. Some of the higher snowfall amounts were: The Pas, 94.7 cm; Norway House, 83.4 cm; Hudson Bay, 72.0 cm; La Ronge, 62.1 cm; Island Lake, 61.6 cm and 60.8 cm at Prince Albert. Amounts in the south and in the far north were generally between 30 and 50 centimetres. Although most of the precipitation fell as snow, there was some rain and more than enough freezing rain. One freezing rain storm in the Red River Valley district of southern Manitoba caused numerous accidents, closed highways and cut electrical power to some areas.

Mean temperatures were well below the monthly normal. During this month's cold wave there were numerous new daily and monthly low temperature records established. The coldest temperature in the region was -27.2°C at North Battleford on the 28th. Other locations that had their lowest October temperatures ever are: Brandon, -24.4°C; Estevan, -21.5°C; Stony Rapids, -23.8°C; Swift Current, -24.2°C.

## Ontario

October was generally a wet month. In northern Ontario it was the coldest October in 11 years. In contrast, although southern Ontario was wet, temperatures were warmer than normal, bringing this year another month closer to laying claim as the warmest year ever recorded in southern Ontario.

Precipitation was abundant, especially in a broad area to the lee of the Great Lakes. October 1991 was the wettest October ever recorded at: Gore Bay (Manitoulin Island), 195 mm; Sudbury, 159 mm; and Sarnia, 124 mm. In addition, Wawa's

hours, breaking the old record of 126.7 set in 1987.

In the Kamloops area, gusts reached 100 km/h on October 12. A plane was flipped over at the airport and a new barn destroyed. Strong winds were also recorded on the 16th, with gusts reaching 156 km/h at Vernon, causing considerable damage. In the Vancouver area the same day, unofficial reports in the harbour area placed wind speeds as high as 111 km/h. Two freighters anchored in the harbour had a minor collision as a result of dragging anchors, and a commercial passenger aircraft parked at Vancouver Airport was pushed into the side of the terminal building. Ferries to Vancouver Island were also delayed.

## Alberta

It seems as if the autumn season completely bypassed Alberta this year; the weather changed dramatically from a summer to a winter regime in a matter of days during the middle of the month. At the beginning of the period, Albertans were still enjoying

summer-like weather, but by month's end skiing had already begun.

Numerous maximum and minimum temperatures records were broken during the month, as the weather switched from a warm to a cold pattern. Lethbridge was the hot spot, with a record maximum temperature of 30.3°C on the 11th, while Rocky Mountain House was at the other end of the scale, registering -29.7°C on the 28th. The record breaking cold weather during the latter part of the month resulted in an overall below normal month, temperature-wise. Mean monthly temperatures ranged from 2°C below normal in southern parts of the province to 6°C below normal in the north.

Record snowfalls accompanied the cold Arctic air mass. The central portions of the province received most of the snow. Whitecourt reported a total monthly snowfall of 77.9 cm, compared to a normal of only 15.6 cm. Snow on the ground at the end of the month ranged from one centimetre at High Level to 22 cm at Edson.



169 mm total made this their wettest October since 1979. Muskoka's 157 mm total was the most since 1980. Windsor received 120 mm of rain this month - their wettest October since 1977, ending a long stretch of dry weather experienced in southwestern Ontario through the summer. The remainder of the province recorded from 70 to 110 mm of precipitation - 10 to 50 per cent above the October average. The exceptions in the wet weather pattern were the western end of Lake Ontario, including Niagara, and a broad stretch from Red Lake to Moosonee in the far north.

Snowfalls were plentiful in northern Ontario, especially towards the end of the month. Thunder Bay's 17 cm (3 cm is normal) was the snowiest October since 1981, while Big Trout Lake's 34 cm was the provincial high. For the first time in 6 years there was no measurable October snowfall in Muskoka.

### Quebec

It seems Indian Summer failed to materialize in southwestern Quebec due to the changeable sunny and damp weather. Except over the mountainous regions, temperatures averaged near normal. Precipitation amounts exceeded 100 mm over the Laurentians and the Eastern Townships, and were double the normal value at Maniwaki, which had a total of 142.4 mm.

Over eastern Quebec, heavy rainfalls were recorded between October 6 and 12. During this period, 122.8 mm of precipitation was recorded at Sept-Iles, for a monthly total of 215.1 mm. Precipitation was more than double the October normal from the Saguenay region to the North Shore, and new monthly rainfall records were established at Quebec, Bagotville, Baie Comeau and Sept-Iles. Snowfall at Gaspé during October was 18.0 cm, exceeding the monthly record of 8.9 cm set in October 1972.

Parc des Laurentides, located north of Quebec City, was subjected to its first major snowfall of the season on October

12, when approximately 12 cm of snow caught motorists off guard completely paralyzing highway traffic, which crosses the park.

Over northern Quebec, precipitation exceeded 100 mm. At La Grande Rivière and in the Fermont-Wabush area, totals were in the order of 128.4 and 127.9 millimetres, respectively. In addition, October snowfalls were greater than 25 cm. Total amounts of freshly fallen snow reached 58.1 cm in the Fermont-Wabush area. On October 20 and 21, 28.0 cm of snow fell at La Grande Rivière. Of that total, 25.4 cm fell on the 21st, establishing a new 24-hour snowfall record for October. The previous record was 14.6 cm set in 1988.

### Maritimes

October was cloudy and mild, with wide ranging precipitation amounts. St. Leonard, in northern New Brunswick, recorded 152.6 mm of moisture, which is 50 mm above normal. Precipitation amounts in Nova Scotia varied either side of normal, while they were near normal on P.E.I. Sable Island recorded 243.5 mm of rain, which is more than double the normal of 116.3 mm.

Snowfalls were generally less than normal. However, there were two exceptions. During the final week of the month St. Leonard, N.B., received 6.6 cm of snow, while Sydney, N.S. had 4.4 cm.

Between October 28 to October 30, the Maritimes experienced a major wind storm. Wind gusts to 95 km/h from the northeast were common throughout Nova Scotia and Prince Edward Island. The wind was higher in exposed coastal regions. East Point, P.E.I., reported a wind gust to 120 km/h on the evening of the 28th. There were power outages as well as reports of damaged fishing boats. The high winds led to cancellation of ferry services between Yarmouth, N.S., and Bar Harbour, Maine, and between Prince Edward Island, Nova Scotia and Newfoundland.

Hurricane force winds prevailed for at least 48 hours off the southeastern coast. Waves generated by the persistent winds were extraordinary. Average wave heights of 17.4 meters were measured on the Scotian Slope. A maximum wave height of 30.7 meters was also recorded from the same location. As a result of wind and sea conditions, several ships were reported in trouble. A bulk carrier took on water near Sable Island and a Japanese fishing vessel lost power. Both vessels eventually made their way safely to Halifax.

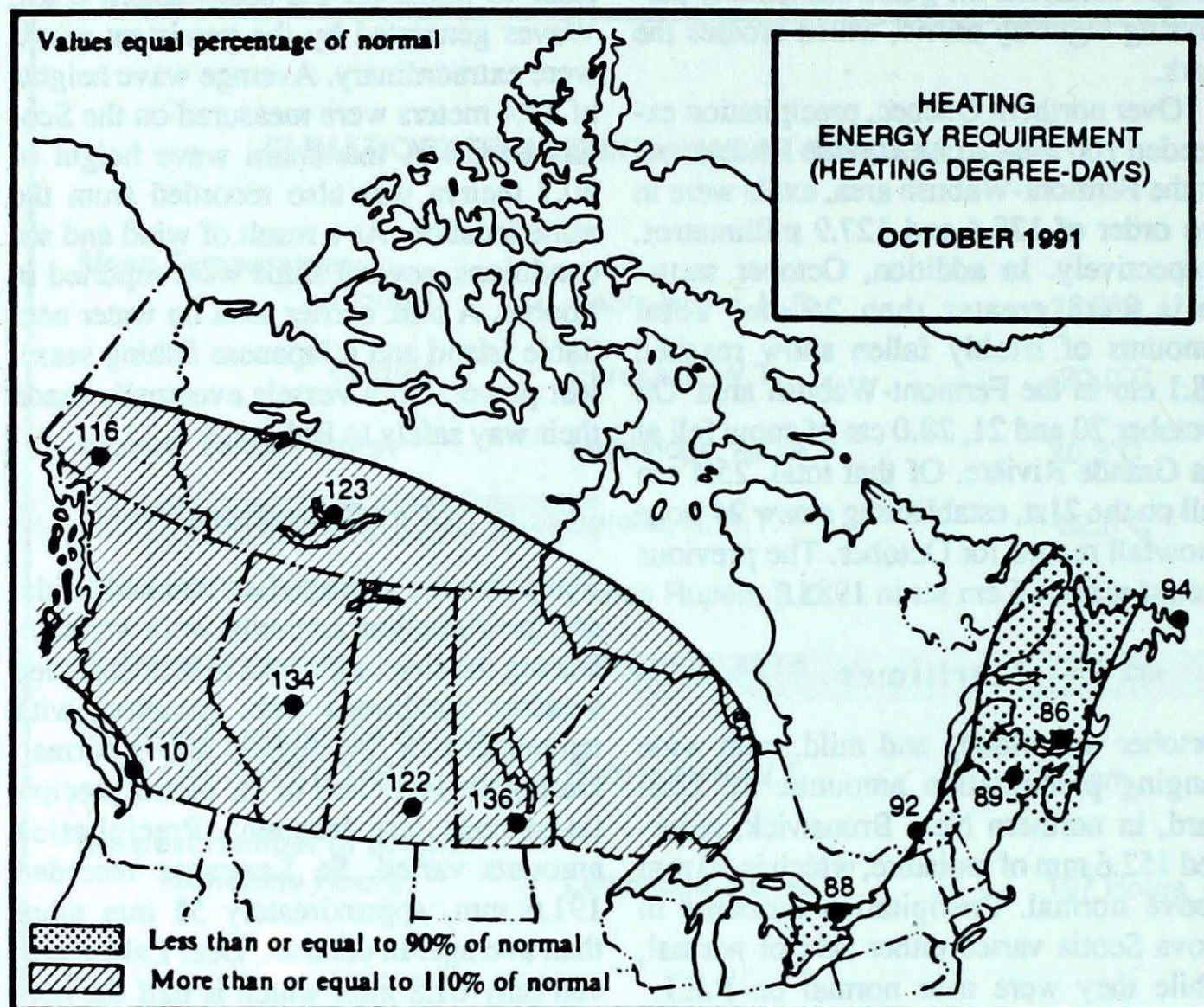
### Newfoundland

Temperatures averaged on the mild side, and precipitation amounts were variable. During the first half of the month unsettled weather conditions were common, with temperatures a few degrees above normal. During the latter half of the month precipitation was less frequent. Precipitation amounts varied. St. Lawrence recorded 191.6 mm, approximately 55 mm more than average. In contrast, Deer Lake received only 61.8 mm, which is half the normal. Late in the month a major storm tracking south of Newfoundland gave 10 to 15 centimetres of snow to most areas. Winds gusting to 130 km/h resulted in downed power lines and a disruption in C.N. Marine Atlantic ferry service to Nova Scotia.

In Labrador, temperatures averaged near normal, but weather conditions were quite variable. Temperatures fluctuated significantly, with an above normal period during the middle of the month, resulting in daily maximum temperatures of 15°C, or approximately 10°C above normal. Precipitation amounts ranged as high as 115 mm in central and western locations, approximately 40 mm above normal. Although monthly snowfall totals were in the 30 to 40 centimetre range, most of the snow melted during mild spells later in the month. As a result, most of region had no snow cover at the end of the month.

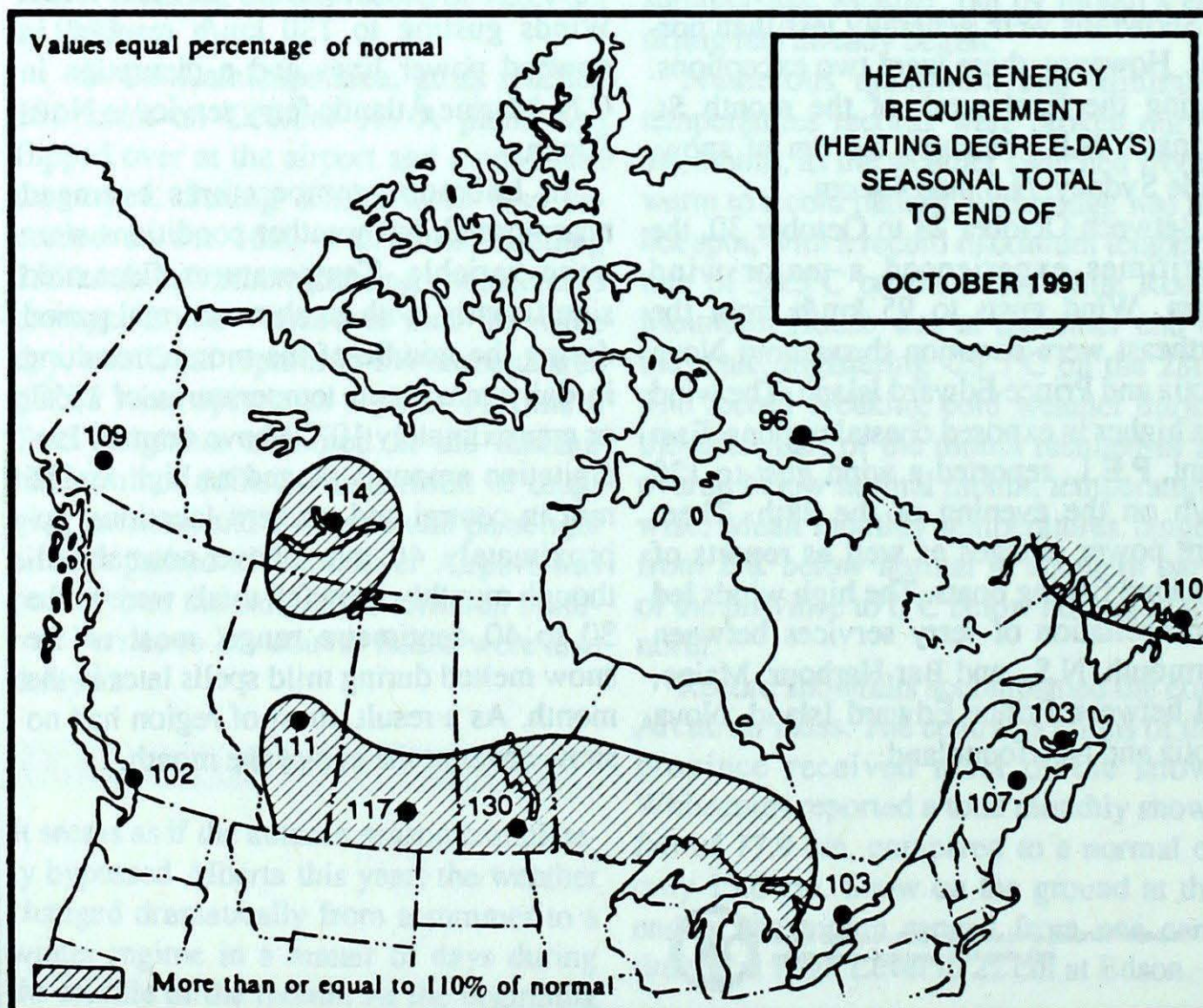






### SEASONAL TOTAL OF HEATING DEGREE-DAYS TO END OF OCTOBER

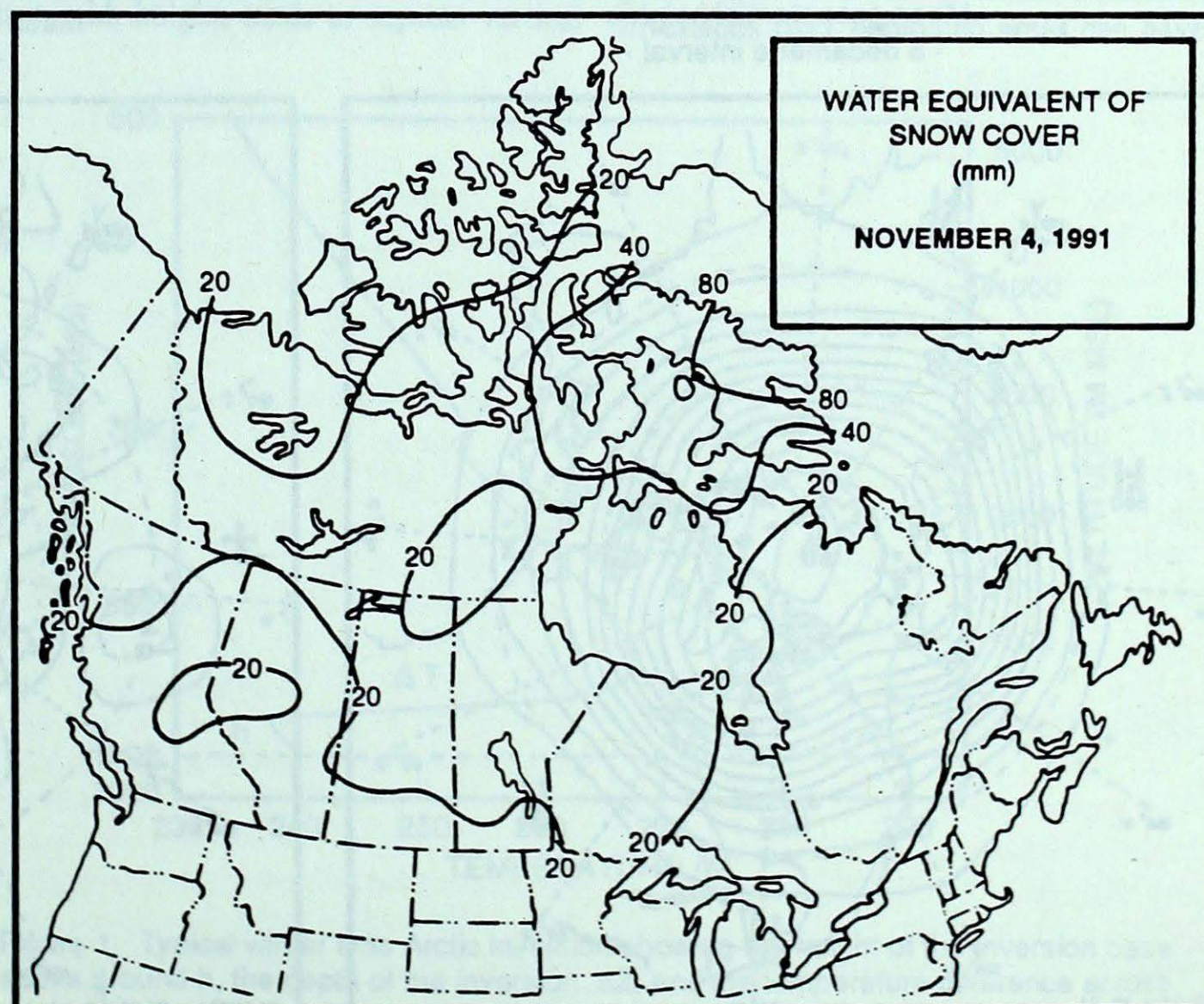
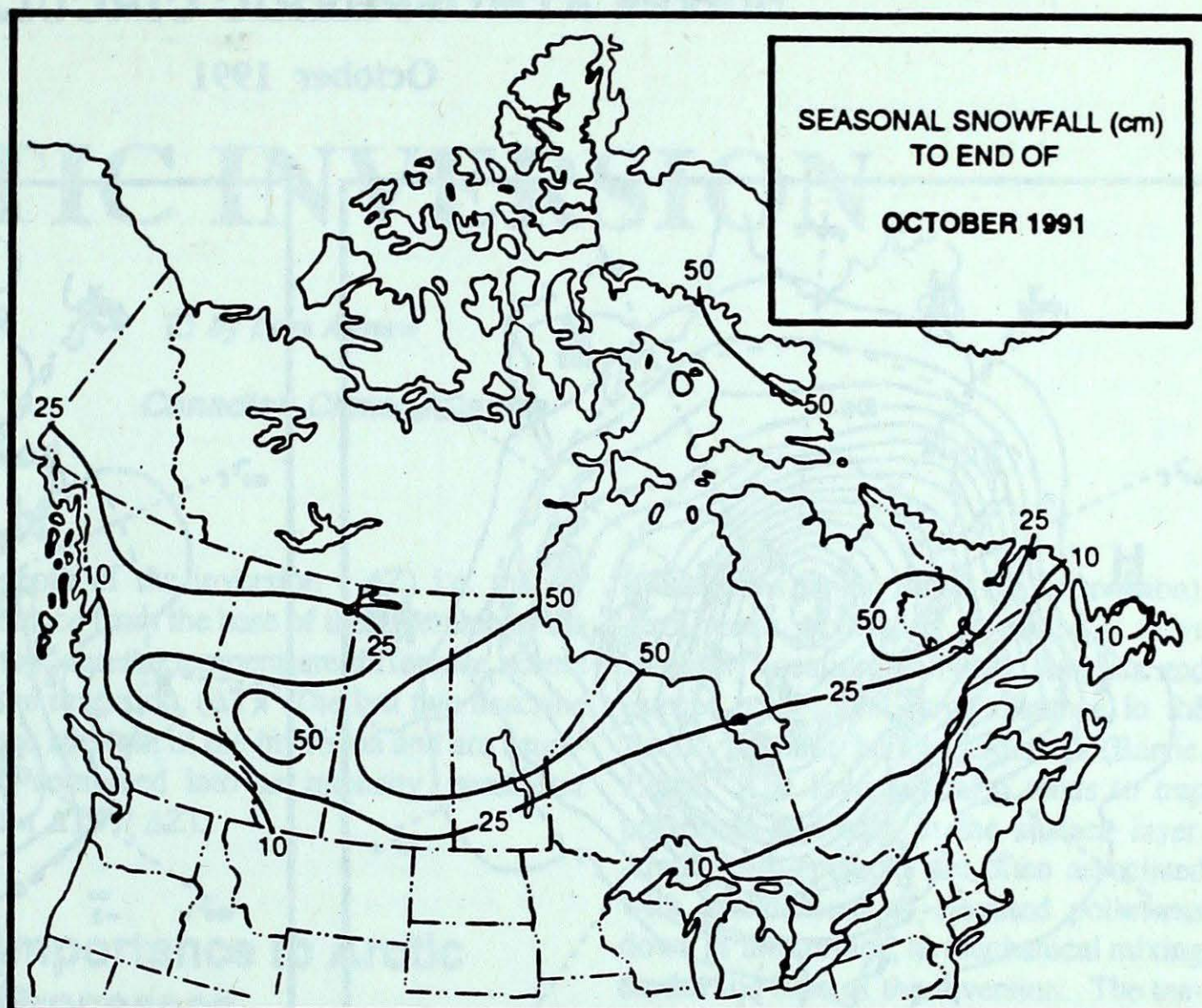
	1991	1990	NORMAL
<b>BRITISH COLUMBIA</b>			
Kamloops	417	371	393
Penticton	384	363	393
Prince George	888	786	874
Vancouver	423	342	416
Victoria	504	467	492
<b>YUKON TERRITORY</b>			
Whitehorse	1258	1112	1149
<b>NORTHWEST TERRITORIES</b>			
Iqaluit	1773	1900	1850
Inuvik	1668	1588	1623
Yellowknife	1280	1225	1121
<b>ALBERTA</b>			
Calgary	779	684	748
Edmonton Mun.	744	675	667
Grande Prairie	894	807	844
<b>SASKATCHEWAN</b>			
Estevan	684	595	535
Regina	709	635	609
Saskatoon	777	*	645
<b>MANITOBA</b>			
Brandon	818	707	619
Churchill	1362	1405	1386
The Pas	899	827	770
Winnipeg	709	573	547
<b>ONTARIO</b>			
Kapuskasing	875	907	786
London	365	402	597
Ottawa	436	468	420
Sudbury	623	662	565
Thunder Bay	785	723	658
Toronto	363	381	351
Windsor	264	282	249
<b>QUÉBEC</b>			
Baie Comeau	873	835	848
Montréal	424	432	389
Québec	589	541	540
Sept-Îles	906	877	919
Sherbrooke	589	569	612
Val d'or	813	857	752
<b>NEW BRUNSWICK</b>			
Charlo	*	653	664
Fredericton	516	491	483
Moncton	518	508	501
<b>NOVA SCOTIA</b>			
Sydney	514	438	471
Yarmouth	471	384	502
<b>PRINCE EDWARD ISLAND</b>			
Charlottetown	480	450	468
<b>NEWFOUNDLAND</b>			
Gander	818	665	694
St. John's	769	627	702





# SEASONAL SNOWFALL TOTALS (cm) TO END OF OCTOBER

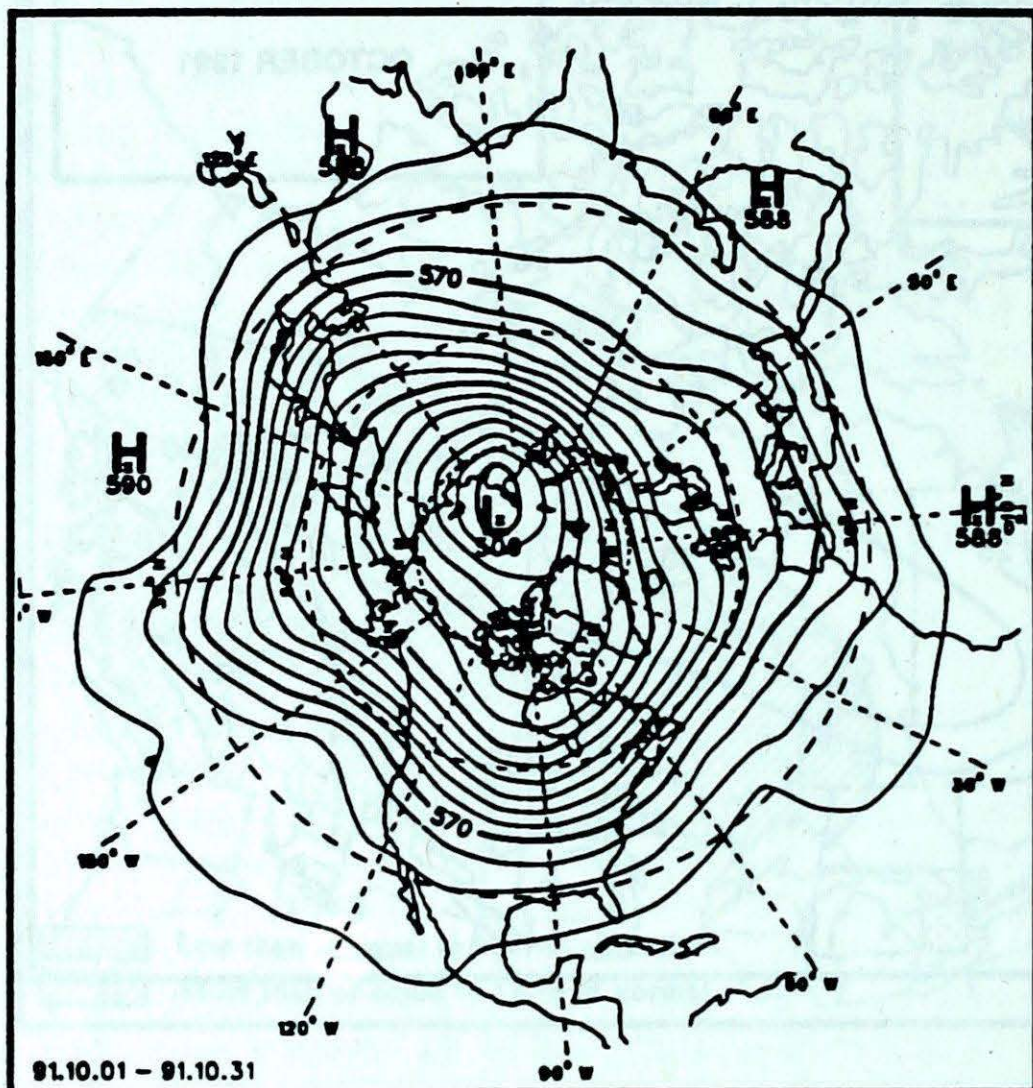
	1991	1990	NORMAL
<b>BRITISH COLUMBIA</b>			
Kamloops	2	0	0
Port Hardy	1	0	0
Prince George	29	14	10
Vancouver	2	0	0
Victoria	5	0	0
<b>YUKON TERRITORY</b>			
Whitehorse	22	28	21
<b>NORTHWEST TERRITORIES</b>			
Iqaluit	30	41	54
Inuvik	50	30	53
Yellowknife	28	33	27
<b>ALBERTA</b>			
Calgary	24	11	19
Edmonton	37	15	10
Grande Prairie	19	20	16
<b>SASKATCHEWAN</b>			
Estevan	15	0	8
Regina	7	2	10
Saskatoon	30	4	10
<b>MANITOBA</b>			
Brandon	43	0	7
Churchill	50	68	36
The Pas	95	15	12
Winnipeg	17	1	5
<b>ONTARIO</b>			
Kapuskasing	22	35	24
London	0	1.6	2
Ottawa	0	1.0	3
Sudbury	3	7	7
Thunder Bay	17	13	3
Toronto	0	0	1
Windsor	0	0	0
<b>QUÉBEC</b>			
Baie Comeau	25	16	6
Montréal	0	0	2
Québec	0	2	4
Sept-Îles	2	13	11
Sherbrooke	0	0	6
Val d'or	10	13	16
<b>NEW BRUNSWICK</b>			
Charlo	2	0	6
Fredericton	0	0	2
Moncton	0	1	3
<b>NOVA SCOTIA</b>			
Sydney	4	0	2
Yarmouth	0	0	3
<b>PRINCE EDWARD ISLAND</b>			
Charlottetown	1	2	3
<b>NEWFOUNDLAND</b>			
Gander	10	21	12
St. John's	12	2	4



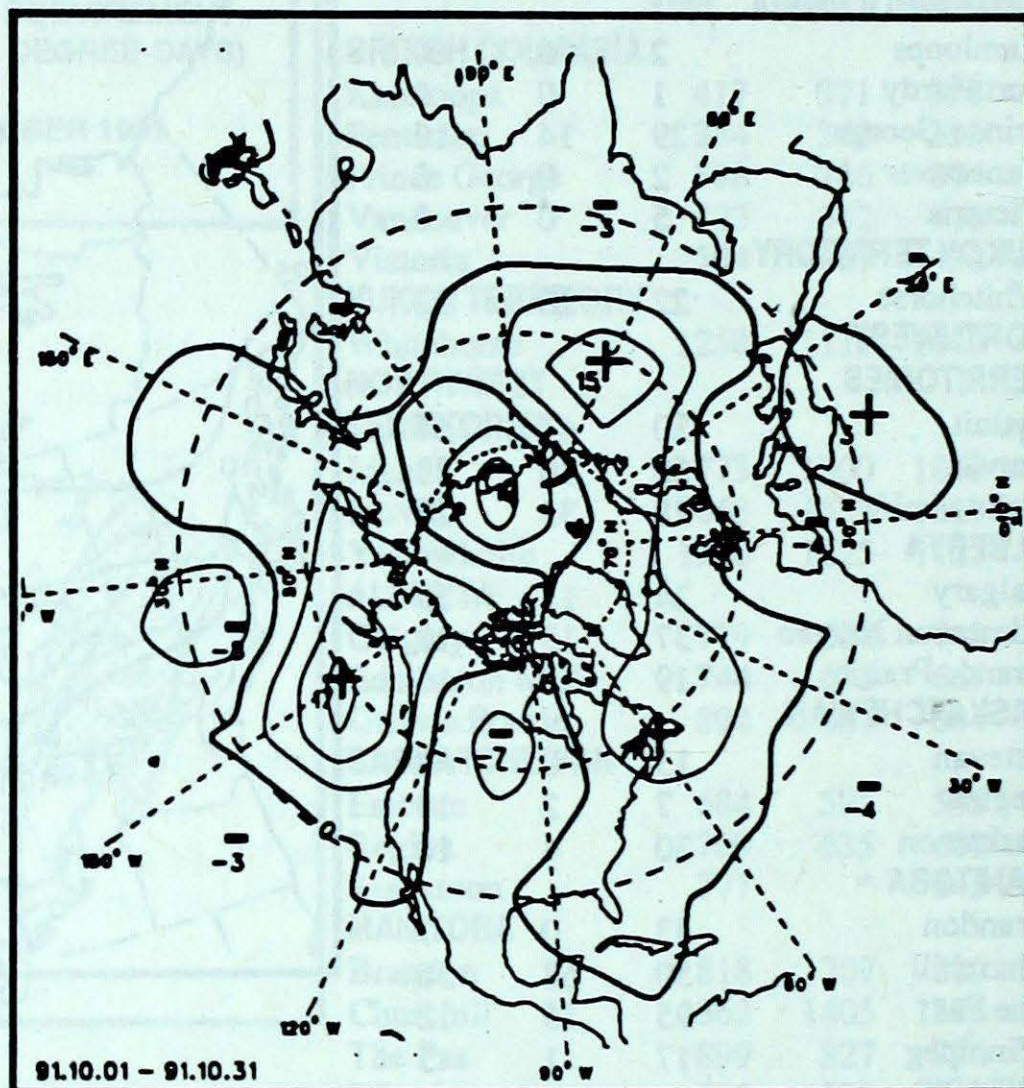


# 50-kPa ATMOSPHERIC CIRCULATION

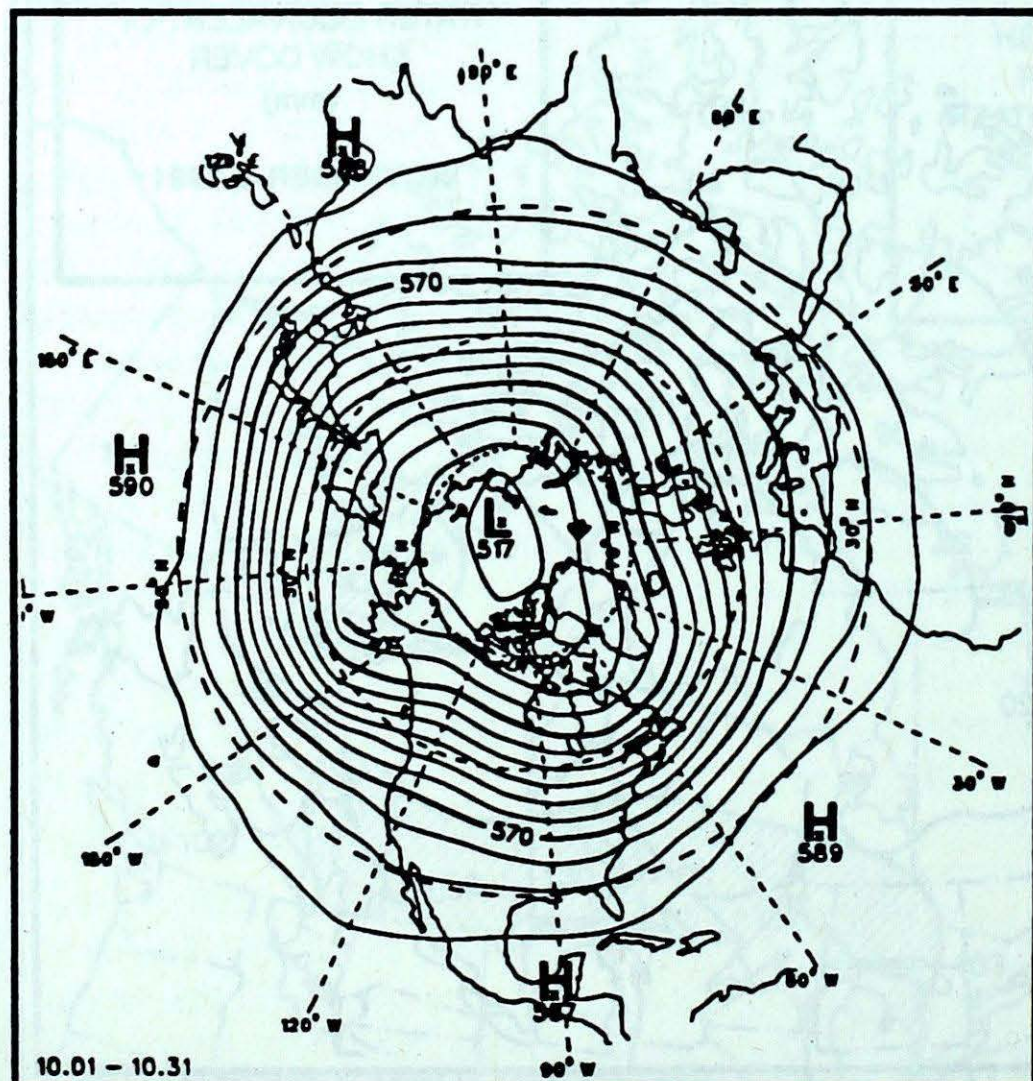
October 1991



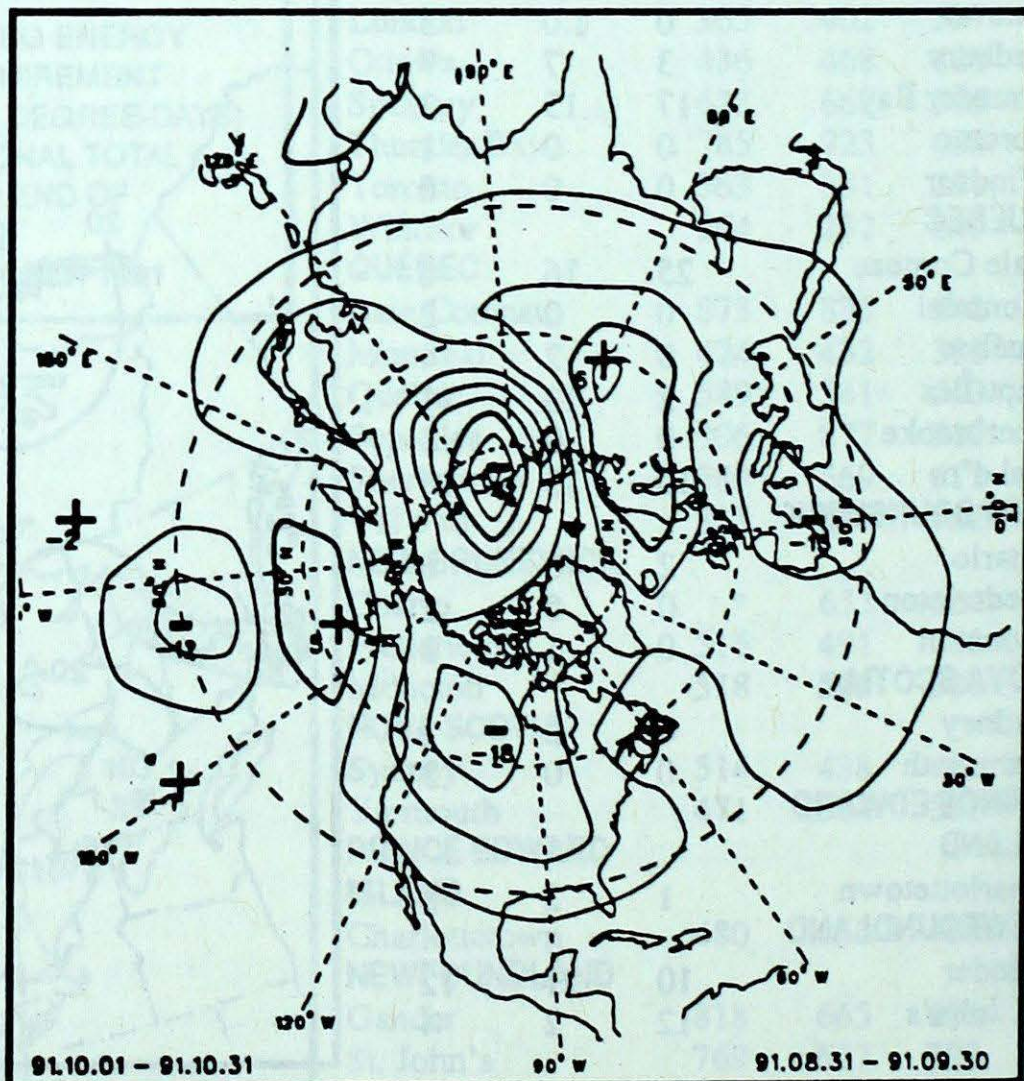
Mean geopotential heights  
- 5 decametre interval -



Mean geopotential height anomaly  
- 5 decametre interval -



Normal geopotential heights for the month  
- 5 decametre interval -



Mean heights difference w/r to previous month  
- 5 decametre interval -



# ARCTIC INVERSION

□ by Tom Agnew

Canadian Climate Centre

## Introduction

It goes without saying that Arctic winters are cold. Surface temperatures below  $-40^{\circ}\text{C}$  are common. However quite often temperatures just 100 metres or more above the surface can be quite reasonable. This warming of the air with height (called a negative lapse rate) is known as an inversion. In the Arctic such inversions can continue for 1000 metres in vertical extent.

Inversions can be based at the ground or aloft if there is mechanical mixing due to surface winds (Figure 1). To include both types of inversions, the term low-level inversion is used. Arctic low-level inversions occur over 95% of the time during the Canadian winter (Kahl et al., 1991), and have been known to last up to 100 days in succession in the high Arctic. Inversions are usually thought of as a local phenomenon, but in fact, they can be widespread geographically. They form as a result of radiational cooling and large scale subsidence (descending air), which occurs during the dry Arctic winter. As a result, they influence the negative surface radiation balance and large scale Arctic circulations.

## Inversion characteristics

Figure 1, shows a typical vertical temperature profile during an inversion episode. The three parameters which are used to describe inversions are: the height of the base of the inversion above ground (h); the

depth of the inversion ( $\Delta Z$ ) i.e. the distance from the base of the inversion to the top; and the temperature difference across the inversion, ( $\Delta T$ ). The last two describe the strength of the inversion and are usually combined into an intensity parameter  $I = (\Delta T)^2 / (\Delta Z)$ .

## Importance to Arctic Processes

In the inversion layer, increasing temperature with height, tends to suppress vertical

fluctuations in the wind (i.e. dispersion). As a result, pollutants generated at more southerly locations in North America and Europe, can travel large distance in the Arctic without being dispersed (Barrie, 1986). The inversion also tends to trap pollutants and heat in the surface layer. Arctic haze episodes are often associated with entrainment of elevated pollutants down to the surface, as mechanical mixing erodes the base of the inversion. The tendency to trap heat is one of the reasons for the amplification of the  $\text{CO}_2$  warming signal in the Arctic during winter. Persistent inversions over populated areas can have

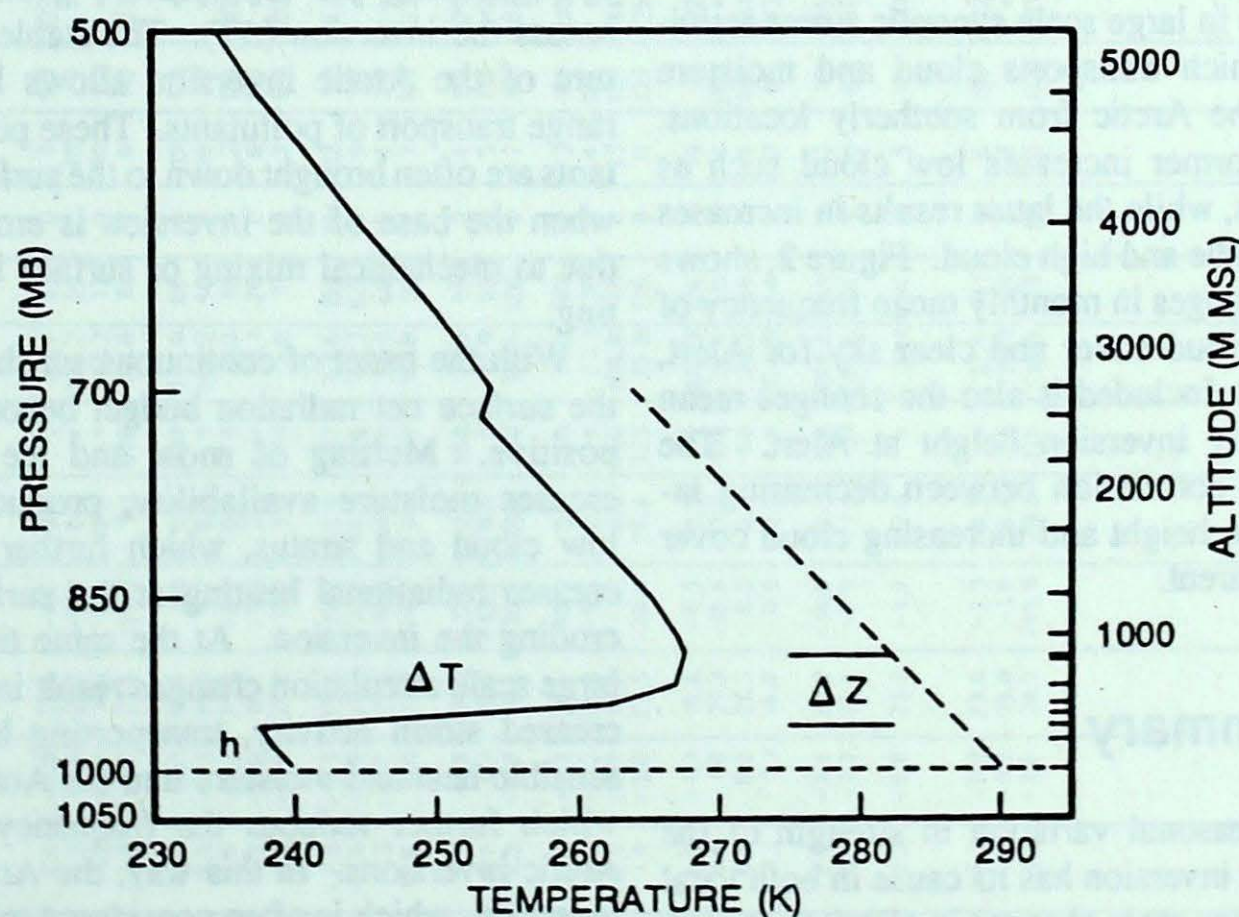


Figure 1. Typical winter time Arctic inversion showing the height of the inversion base above ground  $h$ , the depth of the inversion  $\Delta Z$ , and the temperature difference across the inversion  $\Delta T$ .



implications for human health, and elsewhere, damage to the biosphere may ensue from sustained exposure to pollutants such as ozone.

The Arctic inversion is linked to several current Arctic research topics including: occurrence and transport of Arctic haze (Barrie, 1986); modelling the movement of sea ice (Overland, 1987); estimation of surface heat and moisture fluxes over open leads in sea ice (Barry, 1989).

## Seasonal variability and links to large scale Climate

The frequency of Arctic inversions decreases considerably with the onset of summer. Although this is, to some extent, due to continual daylight conditions, the main reason is increased moisture and cloud cover, which changes the net long-wave radiation balance at the surface. This increased moisture availability is associated with: 1) melting of snow and ice and increasing open water; and 2) an increase in large scale synoptic storm activity, which transports cloud and moisture into the Arctic from southerly locations. The former increases low cloud such as stratus, while the latter results in increases in middle and high cloud. Figure 2, shows the changes in monthly mean frequency of total cloud cover and clear sky for Alert, NWT. Included is also the changes mean monthly inversion height at Alert. The strong correlation between decreasing inversion height and increasing cloud cover is apparent.

## Summary

The seasonal variation in strength of the Arctic inversion has its cause in both local and large scale changes in climate. During winter, the negative longwave radiation balance reduces temperatures at the surface. At the same time, the Arctic energy deficit drives the poleward transport of

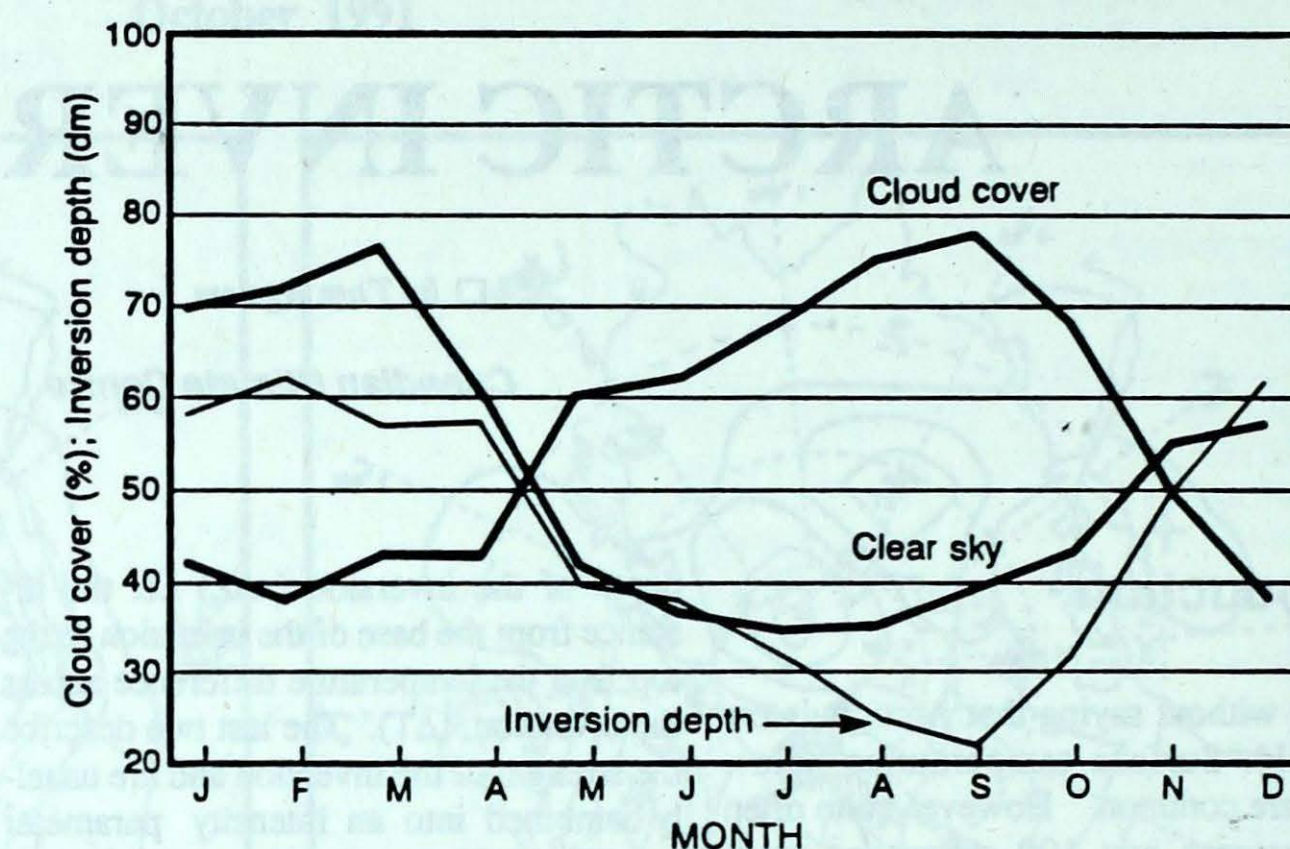


Figure 2. Seasonal variation in the mean monthly cloud cover, clear sky, and the depth of the Arctic inversion at Alert, NWT.

heat from more equatorial regions, producing descending air (downward flux of heat) over the polar regions. This results in warm dry air above the surface, thus strengthening the temperature gradient across the inversion ( $\Delta T$ ). The stable nature of the Arctic inversion allows long range transport of pollutants. These pollutants are often brought down to the surface, when the base of the inversion is eroded due to mechanical mixing or surface heating.

With the onset of continuous sunshine, the surface net radiation budget becomes positive. Melting of snow and ice increases moisture availability, producing low cloud and stratus, which further increases radiational heating at the surface eroding the inversion. At the same time, large scale circulation changes result in increased storm activity, transporting both sensible heat and moisture into the Arctic, which further reduces the frequency of Arctic inversions. In this way, the Arctic inversion, which is often considered to reflect local surface conditions is, in fact, closely linked to large scale climate processes.

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## OCTOBER 1991

STATION	Temperature C				Snowfall (cm)	% of Normal Snowfall	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	% of Normal Bright Sunshine	Degree Days below 18 C
	Mean	Difference from Normal	Maximum	Minimum									
BRITISH COLUMBIA													
ABBOTSFORD A	9.6	-0.5	25.9	-4.6	0.0	0	50.4	33	0	7	167	122	259.9
ALERT BAY	8.3	-1.0	21.2	-0.8	6.0	***	124.2	59	0	13	0	*	301.5
AMPHITRITE POINT	10.2	-0.3	18.1	0.6	0.0	*	47.3	13	0	10	0	*	240.2
BLUE RIVER A	2.8	-2.2	21.5	-18.8	9.1	276	46.8	61	3	6	112	123	*
CAPE ST JAMES	10.0	0.1	16.4	1.8	0.6	600	131.4	66	0	15	113	*	246.5
CAPE SCOTT	9.5	-0.3	16.8	1.2	0.0	0	144.2	40	0	16	0	*	264.0
CASTLEGAR A	7.6	-0.2	25.5	-9.5	0.0	0	9.0	16	0	2	165	132	321.2
COMOX A	8.6	-0.6	19.4	-3.3	2.6	***	33.1	26	0	6	175	*	290.8
CRANBROOK A	4.6	-0.8	25.2	-16.1	3.0	91	5.6	31	0	2	173	102	415.0
DEASE LAKE	-2.0	-3.3	13.4	-23.2	43.4	247	53.6	152	30	12	81	93	621.3
FORT NELSON A	-1.6	-2.7	19.2	-22.2	19.6	104	40.2	165	7	9	117	*	608.9
FORT ST JOHN A	1.3	-3.0	21.6	-19.5	14.2	79	18.9	68	5	4	117	*	517.6
HOPE A	10.4	0.0	27.2	-4.0	0.0	0	99.8	58	0	7	129	123	236.6
KAMLOOPS A	6.9	-1.5	28.1	-12.9	2.2	550	14.5	95	2	4	176	129	344.1
KELOWNA A	6.6	-0.1	23.6	-13.2	0.0	0	12.0	62	0	5	175	117	354.5
MACKENZIE A	0.5	-3.3	17.4	-20.5	19.2	110	64.4	128	6	7	101	87	542.3
PENTICTON A	8.0	-0.7	24.4	-10.3	0.0	0	10.2	67	0	2	172	110	310.1
PORT ALBERNI A	9.6	-0.2	24.8	-5.4	2.0	*	33.1	19	0	4	154	*	260.6
PORT HARDY A	8.0	-0.7	19.3	-1.0	0.8	400	109.8	45	0	13	132	134	309.4
PRINCE GEORGE A	1.8	-3.0	23.5	-20.4	29.4	323	75.8	128	9	11	137	125	502.4
PRINCE RUPERT A	6.8	-1.3	16.6	-6.5	0.0	0	461.3	126	0	19	79	122	348.0
PRINCETON A	5.6	-1.0	27.2	-15.6	12.7	470	25.4	111	0	4	180	*	*
REVELSTOKE A	6.5	0.2	21.3	-8.5	0.4	80	24.2	34	0	4	145	161	357.7
SANDSPIT A	9.1	0.1	16.8	0.9	0.0	*	124.9	64	0	13	85	93	277.2
SMITHERS A	2.3	-2.4	20.2	-14.6	12.3	148	184.6	289	7	12	77	85	482.4
TERRACE A	5.1	-1.3	17.4	-7.9	1.2	31	294.6	137	0	15	63	102	400.8
VANCOUVER INT'L A	9.2	-0.8	23.7	-4.7	2.0	*	27.1	24	0	5	171	141	274.0
VICTORIA INT'L A	9.2	-0.7	23.0	-2.3	4.6	*	32.4	41	0	6	190	132	272.2
VICTORIA MARINE	9.0	-0.7	19.0	-1.6	3.4	*	33.1	29	0	7	*	*	279.8
WILLIAMS LAKE A	1.7	-3.4	24.7	-19.9	28.2	376	52.5	173	12	6	124	91	510.5
YUKON TERRITORY													
DAWSON A	-7.4	*	8.8	-26.7	18.0	*	22.8	*	*	*	*	*	*
MAYO A	-1.6	0.7	10.5	-27.2	9.6	46	30.6	108	*	*	*	*	*
WATSON LAKE A	-4.0	-3.9	13.8	-28.1	45.3	210	74.7	213	19	15	87	90	683.1
WHITEHORSE A	-2.1	-2.7	11.5	-21.1	22.3	139	38.5	179	10	8	77	82	623.6
NORTHWEST TERRITORIES													
BAKER LAKE A	-8.8	-1.1	2.3	-25.4	17.8	77	20.7	68	6	10	40	55	832.0
CAMBRIDGE BAY A	-11.7	0.0	-0.3	-25.1	17.2	112	14.2	96	11	6	57	98	920.7
CAPE PARRY A	-7.8	-1.0	1.1	-22.9	13.6	50	12.3	61	19	1	*	*	799.4
CLYDE A	-7.8	-0.9	-0.1	-24.5	45.6	123	40.0	117	18	13	51	107	798.8
COPPERMINE A	-9.1	-2.5	3.1	-22.7	18.4	88	14.8	46	15	4	53	114	838.6
CORAL HARBOUR A	-7.5	0.3	1.5	-25.3	37.7	141	37.5	101	29	6	62	71	789.2
EUREKA	-20.0	2.1	-5.9	-32.0	8.4	112	8.4	120	13	3	2	27	1177.2
FORT SIMPSON A	-5.6	-5.2	17.1	-25.5	33.7	182	52.6	196	18	7	107	125	731.7
FORT SMITH A	-5.1	-5.4	13.3	-22.3	59.2	372	72.0	272	27	14	44	*	715.5
IGALUIT	-5.0	0.0	4.2	-18.6	24.6	62	24.6	56	6	5	52	89	712.5
HALL BEACH A	-9.4	1.1	-0.3	-23.8	8.5	40	8.1	38	8	2	*	*	850.7
HAY RIVER A	-3.7	-4.6	0.3	-7.6	37.8	200	64.9	213	27	13	*	*	670.4
INUVIK A	-7.5	0.6	11.3	-22.8	38.8	104	29.6	89	20	7	60	120	791.3
MOULD BAY A	-17.1	0.5	-4.2	-30.6	3.6	33	3.6	38	9	1	23	212	1088.9
NORMAN WELLS A	-6.1	-1.5	12.6	-23.2	22.0	88	18.0	67	5	7	89	150	746.3
POND INLET A	-10.1	*	-0.6	-25.1	62.4	*	33.2	*	40	14	61	*	871.2
RESOLUTE A	-16.0	-0.9	-3.9	-31.4	7.8	53	5.1	37	6	2	53	220	1053.4
YELLOWKNIFE A	-6.1	-4.5	7.4	-25.6	28.4	123	46.9	136	16	9	69	124	747.7
ALBERTA													
BANFF	2.3	-2.1	25.1	-22.6	27.4	154	25.1	80	4	4	*	*	488.0
CALGARY INT'L A	2.2	-3.3	26.7	-25.0	24.0	178	15.8	90	8	6	185	105	493.4
COLD LAKE A	-0.1	-4.6	23.2	-20.4	18.8	269	24.0	142	7	5	113	73	561.0
CORONATION A	-0.3	-5.1	26.4	-25.5	37.4	430	47.2	315	18	7	152	85	565.2



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	Mean	Difference from Normal	Maximum	Minimum									
EDMONTON INT'L A	0.4	-4.3	25.2	-22.5	54.8	818	69.0	448	13	9	140	86	546.3
EDMONTON MUNICIPAL	1.5	-4.3	24.1	-18.6	56.4	*	61.6	371	16	6	145	89	510.9
EDMONTON NAMAO A	0.8	-4.3	23.7	-19.5	37.4	486	38.6	213	14	6	*	*	533.9
EDSON A	1.3	-2.4	25.3	-25.7	67.9	336	82.5	421	22	10	124	82	570.9
FORT CHIPEWYAN A	-4.3	-5.6	14.5	-25.0	35.2	196	39.2	139	*	*	*	*	*
FORT MCMURRAY A	-1.5	-4.8	19.6	-23.5	15.6	123	36.5	130	4	8	100	80	604.7
GRANDE PRAIRIE A	0.6	-3.6	23.3	-26.4	19.2	163	34.8	131	9	10	113	*	539.4
HIGH LEVEL A	-3.3	-5.3	17.5	-24.6	5.8	38	14.2	99	1	5	104	73	660.8
JASPER	2.0	-2.7	25.1	-22.5	27.8	515	31.8	109	9	5	148	*	497.0
LETHBRIDGE A	4.4	-3.1	30.3	-26.4	21.4	183	24.7	139	11	6	197	*	429.6
MEDICINE HAT A	3.6	-3.8	27.7	-28.7	15.6	195	16.0	99	9	4	187	108	447.6
PEACE RIVER A	-0.1	-3.8	21.1	-24.7	10.6	110	20.8	104	6	6	*	*	561.3
RED DEER A	0.0	-4.6	26.3	-28.8	39.6	336	46.9	228	23	10	*	*	559.5
ROCKY MTN HOUSE A	-0.5	-5.4	25.9	-30.1	43.4	289	52.6	232	17	9	*	*	567.4
SLAVE LAKE A	0.7	-3.5	22.0	-18.2	29.4	186	43.4	175	15	12	116	78	535.6
WHITCOURT A	0.0	-3.4	24.7	-21.1	77.9	499	69.2	251	14	11	*	*	549.0
SASKATCHEWAN													
BROADVIEW	1.7	-2.6	21.4	-19.1	16.6	195	27.2	110	1	9	118	74	505.5
CREE LAKE	-4.1	-5.3	15.2	-24.1	34.2	231	31.8	81	18	5	80	83	685.8
ESTEVAN A	2.7	-3.7	25.8	-21.5	13.2	191	15.0	68	5	5	131	69	472.3
HUDSON BAY A	-0.7	*	19.9	-17.0	72.0	*	63.8	*	23	10	95	*	578.2
KINDERSLEY	-0.6	-5.9	27.1	-26.3	33.6	494	30.8	222	24	5	166	*	561.4
LA RONGE A	-1.9	-4.5	19.5	-20.9	62.1	634	65.8	193	36	14	*	*	616.5
MEADOW LAKE A	-1.1	*	22.1	-22.3	33.6	*	47.2	*	13	9	105	*	596.3
MOOSE JAW A	3.2	-3.2	28.1	-19.2	10.2	134	15.6	85	6	4	144	83	460.0
NIPAWIN A	-1.0	*	21.1	-22.3	63.4	*	58.2	*	52	9	102	*	591.2
NORTH BATTLEFORD A	-0.6	-5.5	25.2	-27.0	42.4	597	60.1	380	26	9	*	*	573.8
PRINCE ALBERT A	-0.3	-4.0	21.7	-21.8	60.8	654	63.4	294	36	9	116	79	568.7
REGINA A	2.3	-2.9	26.4	-19.7	6.6	80	16.5	88	0	4	119	71	489.1
SASKATOON A	0.6	-4.3	24.2	-24.1	30.4	330	56.8	328	15	9	*	*	538.3
SWIFT CURRENT A	2.4	-3.4	26.8	-24.2	20.4	224	20.8	115	10	5	154	91	486.2
YORKTON A	1.1	-3.7	20.8	-17.9	22.6	301	29.2	128	7	6	104	66	543.0
MANITOBA													
BRANDON A	0.4	-4.8	21.8	-24.4	41.2	634	59.5	277	23	9	135	*	544.7
CHURCHILL A	-4.3	-2.8	4.9	-23.1	48.6	166	50.8	118	14	11	46	74	690.8
DAUPHIN A	0.7	-4.8	22.0	-20.9	36.6	441	44.6	154	20	6	116	76	539.9
GILLAM A	-2.8	-2.1	9.0	-18.1	50.2	238	*	*	14	12	*	*	645.4
ISLAND LAKE	0.4	-2.2	3.5	-9.8	61.6	376	84.2	154	23	14	*	*	570.4
LYNN LAKE A	-4.1	-3.6	12.8	-24.7	44.7	160	45.2	96	18	11	61	86	685.1
PORTAGE LA PRAIRIE	2.0	-4.5	20.0	-20.1	34.5	460	43.1	140	14	9	*	*	497.4
THE PAS A	-1.0	-4.6	17.8	-16.7	94.7	928	93.5	282	32	10	85	71	594.9
THOMPSON A	-3.5	-3.2	14.7	-23.6	36.7	133	51.7	98	14	9	67	84	665.0
WINNIPEG INT'L A	1.9	-4.2	19.8	-15.5	16.8	323	74.1	240	4	8	125	82	500.9
ONTARIO													
BIG TROUT LAKE	-1.1	-2.9	10.0	-11.9	34.0	141	62.2	111	7	14	34	*	590.5
EARLTON A	5.0	-0.4	19.9	-6.9	5.0	67	109.7	157	0	14	*	*	403.2
GORE BAY A	8.2	-0.1	16.4	-0.5	0.0	0	195.0	288	0	16	*	*	303.3
HAMILTON A	10.2	0.8	25.2	-2.9	0.0	0	74.2	121	0	12	*	*	243.7
KAPUSKASING A	2.5	-1.9	22.8	-8.9	17.2	82	116.6	151	0	12	*	*	480.6
KENORA A	2.4	-3.2	16.5	-10.0	17.2	232	60.8	149	0	10	*	*	483.5
KINGSTON A	10.1	1.1	23.1	-3.0	0.0	0	87.0	106	0	10	145	96	247.7
LONDON A	10.5	1.1	26.1	-3.2	0.0	0	88.8	121	0	9	125	88	234.8
MOOSONEE	2.7	-1.4	19.5	-6.2	2.8	19	71.6	96	0	13	78	88	473.4
MUSKOKA A	8.0	0.5	21.6	-4.5	0.0	0	157.2	167	0	20	*	*	297.9
NORTH BAY A	6.3	-0.1	20.5	-5.2	4.0	58	155.5	177	0	15	112	94	362.3
OTTAWA INT'L A	9.1	1.0	26.9	-3.4	0.0	0	92.6	136	0	11	140	103	277.1
PETAWAWA A	7.4	1.1	24.4	-6.3	1.1	22	114.1	157	0	11	*	*	329.3
PETERBOROUGH A	8.6	1.1	23.4	-7.1	0.0	0	72.0	116	0	15	*	*	291.5
PICKLE LAKE	0.1	-2.6	3.5	-3.3	15.4	74	34.8	55	0	12	*	*	555.3
RED LAKE A	1.2	-2.8	16.4	-11.6	16.0	147	49.8	99	2	8	84	*	522.0
ST CATHARINES A	11.5	1.4	25.7	-2.1	0.0	0	49.4	69	0	9	158	*	211.9
SARNIA A	11.0	1.1	26.8	-3.8	0.0	0	123.6	208	0	13	134	92	218.3
SAULT STE MARIE A	7.0	-0.6	23.8	-3.5	1.0	16	84.1	113	0	14	97	82	340.7
SIoux LOOKOUT A	1.8	-2.9	17.1	-9.8	16.0	112	46.2	71	0	9	*	*	501.1
SUDBURY A	6.0	-0.3	17.9	-4.9	2.6	41	158.9	213	0	16	103	84	370.8
THUNDER BAY A	3.4	-2.3	22.9	-9.5	16.8	509	71.7	131	0	11	114	89	454.1
TIMMINS A	4.0	-0.8	22.0	-6.5	19.3	153	99.2	145	0	17	*	*	434.0
TORONTO	11.7	*	22.6	-0.7	0.0	*	53.2	*	0	14	*	*	196.1
TORONTO INT'L A	10.4	1.1	26.6	-3.0	0.0	0	46.3	75	0	12	*	*	237.3
TORONTO ISLAND A	10.4	*	24.7	0.7	0.0	0	52.4	*	0	12	*	*	236.0
TRENTON A	9.8	0.6	24.4	-5.1	0.0	0	78.0	111	0	11	*	*	254.5
WATERLOO WELLINGTON	9.4	1.2	25.1	-4.1	0.0	0	63.8	94	0	13	*	*	267.2
WAWA A	5.5	*	21.4	-6.4	7.4	*	168.6	*	0	14	*	*	420.1
WIARTON A	9.5	0.5	23.4	-2.4	0.0	0	127.2	155	0	19	117	87	264.9
WINDSOR A	12.2	1.1	27.4	-1.5	0.0	0	120.2	211	0	14	*	*	182.6



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	Mean	Difference from Normal	Maximum	Minimum									
QUEBEC													
BAGOTVILLE A	5.4	0.1	21.4	-8.2	12.1	103	145.1	202	0	13	0	*	391.7
BAIE COMEAU A	4.7	0.4	16.7	-7.2	25.0	410	206.6	231	1	14	91	75	411.1
BLANC SABLON A	*	*	13.4	*	0.0	0	*	*	*	*	*	*	*
CHIBOUGAMAU CHAPAIS	3.2	*	19.4	-6.8	27.4	*	91.2	*	0	14	66	93	461.3
GASPE A	6.8	*	23.9	-5.0	18.0	*	108.0	*	4	14	87	*	348.1
INUKJUAQ A	0.1	0.5	6.5	-11.7	40.8	185	65.0	142	0	11	49	94	554.0
KUUJJUAQ A	-0.4	0.5	11.5	-11.7	29.0	107	48.4	100	1	12	70	143	570.7
KUUJJUARAPIK A	1.0	-1.0	12.1	-8.1	33.6	123	69.2	94	0	18	2	5	525.7
LA GRANDE IV A	0.7	*	13.7	-11.1	24.4	*	92.3	*	0	17	63	*	*
LA GRANDE RIVIERE A	0.5	*	14.1	-9.5	52.8	*	128.4	*	5	20	57	*	543.9
MANIWAKI	6.9	0.4	23.3	-6.4	2.4	59	142.4	198	0	12	120	99	344.5
MONT JOLI A	6.3	0.6	21.8	-5.8	3.8	51	136.6	180	0	15	97	83	362.7
MONTREAL INT'L A	9.5	0.8	24.5	-2.8	*	*	70.7	94	0	13	136	100	265.6
MONTREAL MIRABEL I/	8.0	*	24.8	-5.1	0.4	*	89.1	*	0	13	143	*	311.9
NATASHQUAN A	5.7	1.6	16.4	-5.6	6.2	159	146.6	135	0	15	105	81	382.2
QUEBEC A	6.9	0.3	20.8	-4.1	0.0	0	158.2	174	0	17	97	84	343.7
ROBERVAL A	5.8	0.6	21.7	-6.5	6.6	65	104.2	163	0	15	106	*	380.1
SCHIEFFERVILLE A	-1.1	0.3	8.8	-14.8	36.4	81	87.2	115	4	15	67	103	591.7
SEPT-ILES A	4.1	0.5	18.5	-9.5	2.2	21	215.1	223	0	19	90	71	429.9
SHERBROOKE A	8.0	1.6	24.5	-6.2	0.0	0	120.4	132	*	10	113	*	309.8
STE AGATHE DES MONT	6.6	1.3	19.7	-6.0	0.8	11	125.4	134	0	13	120	94	353.3
ST HUBERT A	9.3	0.9	24.4	-5.5	0.6	*	85.7	111	0	12	136	*	269.8
VAL D'OR A	4.5	-0.1	18.9	-8.4	4.4	30	62.4	76	0	11	92	103	419.6
NEW BRUNSWICK													
CHARLO A	6.3	0.9	21.5	-5.0	2.0	35	93.2	101	0	18	102	79	348.8
FREDERICTON A	8.6	1.1	21.2	-4.5	0.0	0	108.6	112	0	13	110	*	289.7
MONCTON A	9.0	1.4	20.7	-4.5	0.0	0	100.5	102	0	15	111	78	280.6
SAINT JOHN A	9.1	1.5	19.5	-2.1	0.0	0	126.0	99	0	11	110	78	277.0

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	Mean	Difference from Normal	Maximum	Minimum									
NOVA SCOTIA													
GREENWOOD A	10.2	1.6	22.5	-1.4	2.6	96	80.4	82	0	13	*	*	242.2
HALIFAX INT'L A	9.8	1.2	13.3	6.2	0.0	0	123.5	93	0	13	*	*	246.0
SABLE ISLAND	12.3	0.8	19.6	1.5	0.0	*	243.5	209	0	14	135	112	177.7
SHEARWATER A	*	*	*	*	*	*	*	*	*	*	*	*	*
SYDNEY A	9.2	0.8	21.5	-1.0	4.4	169	183.7	150	0	20	117	89	271.0
YARMOUTH A	10.4	0.9	20.7	0.5	0.0	0	97.6	84	0	12	130	87	235.1
PRINCE EDWARD ISLAND													
CHARLOTTETOWN A	9.7	1.6	20.6	0.2	1.0	38	108.4	102	0	17	*	*	258.1
NEWFOUNDLAND													
BONAVISTA	7.7	0.5	18.3	-1.6	5.4	318	134.6	132	0	11	*	*	318.1
BURGEO	7.8	0.9	11.2	4.5	21.0	***	193.5	118	0	16	*	*	312.5
CARTWRIGHT	3.9	0.8	17.0	-5.4	12.6	105	62.6	87	0	14	69	78	438.6
CHURCHILL FALLS A	0.9	1.7	14.7	-11.0	48.5	90	126.6	152	0	15	59	88	531.7
COMFORT COVE	6.8	1.0	18.6	-1.5	2.6	20	87.2	74	0	13	*	*	347.1
DANIELS HARBOUR	6.9	1.0	20.0	-5.8	0.0	0	64.0	71	0	11	95	113	325.4
DEER LAKE A	6.0	0.6	19.8	-7.0	7.6	104	61.8	54	0	11	*	*	376.8
GANDER INT'L A	6.8	0.8	17.8	-1.7	9.6	79	90.6	87	0	12	89	80	347.2
GOOSE A	3.5	0.8	16.0	-7.6	27.2	110	111.2	145	0	15	92	98	448.2
MARY'S HARBOUR	4.1	0.5	16.2	-5.8	0.0	0	66.8	90	0	15	*	*	431.9
PORT AUX BASQUES	7.8	0.8	18.2	-1.7	13.0	406	154.6	117	0	19	113	*	317.1
ST ANTHONY	5.0	1.8	13.0	-5.2	2.0	23	74.3	70	0	13	*	*	432.9
ST JOHN'S A	7.6	0.7	19.6	-0.6	12.2	277	115.5	79	2	12	111	101	323.7
ST LAWRENCE	8.2	1.0	11.5	4.9	16.0	***	191.6	129	0	13	*	*	301.7
STEPHENVILLE A	8.3	1.3	18.3	-1.0	5.8	161	124.6	112	0	14	75	81	300.2
WABUSH LAKE A	0.7	1.4	12.5	-12.2	58.1	116	127.9	151	0	18	73	111	538.1



## AGROCLIMATOLOGICAL STATIONS

OCTOBER 1991

STATION	Temperature C				Snowfall (cm)	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	Degree days above 5 C	
	Mean	Difference from Normal	Maximum	Minimum							This month	Since Jan. 1st
BRITISH COLUMBIA												
AGASSIZ	10.2	-0.7	25.5	-2.5	0.0	41.0	23	0	7	178	173.5	2225.4
KAMPLOOPS	**	**	**	**	**	**	**	***	***	**	**	**
SIDNEY	9.6	-0.5	21.5	-1.0	3.0	34.4	42	0	8	181	158.8	1882.4
SUMMERLAND	7.8	-1.2	24.5	-10.5	0.0	9.0	51	0	2	190	136.3	2181.7
ALBERTA												
BEAVERLODGE	1.2	-3.2	23.5	-25.5	18.0	41.0	143	12	11	117	77.5	1446.3
ELLERSLIE	**	**	**	**	**	**	**	***	***	**	**	**
LACOMBE	0.2	-4.5	26.0	-26.5	23.1	41.8	238	16	8	146	66.0	1408.3
LETHBRIDGE	**	**	**	**	**	**	**	***	***	**	**	**
VEGREVILLE	**	**	**	**	**	**	**	***	***	**	**	**
SASKATCHEWAN												
INDIAN HEAD	1.8	-3.5	23.0	-22.0	14.2	26.5	107	3	7	1775	**	**
MELFORT	0.7	-3.5	22.5	-24.0	51.7	54.4	205	32	9	103	45.5	1657.5
REGINA	4.1	-0.4	25.0	-21.0	4.0	16.4	89	5	***	**	**	**
SASKATOON	**	**	**	**	**	**	**	***	***	**	**	**
SCOTT	-0.7	-4.9	26.0	-25.5	28.5	57.5	420	15	10	153	40.8	1652.2
SWIFT CURRENT	2.6	-3.3	27.5	-24.0	14.2	16.2	100	8	2	147	98.1	1809.1
MANITOBA												
BRANDON	1.3	-4.3	23.0	-26.3	39.7	53.1	227	21	9	1981	**	**
MORDEN	**	**	**	**	**	**	**	***	***	**	**	**
GLENLEA	**	**	**	**	**	**	**	***	***	**	**	**
ONTARIO												
DELHI	10.9	1.0	25.0	-3.0	0.0	98.9	132	0	13	2466	**	**
ELORA	9.6	1.1	24.3	-3.5	86.6	0.0	0	12	***	**	**	**
GUELPH	10.2	1.0	25.2	-5.5	74.0	0.0	0	12	***	2260	**	**
HARROW	12.3	1.0	26.5	-2.5	0.0	151.3	271	0	13	136	214.3	2842.8
KAPUSKASING	2.1	-2.5	22.0	-11.0	13.4	104.0	139	0	12	60	**	1507.1
OTTAWA	9.6	1.1	27.0	-2.4	0.0	108.8	160	0	14	140	148.7	2319.8
SMITHFIELD	11.3	2.4	33.5	-4.6	0.0	69.3	86	0	11	2700	**	**
VINELAND	**	**	**	**	**	**	**	***	***	**	**	**
WOODSLIE	**	**	**	**	**	**	**	***	***	**	**	**

STATION	Temperature C				Snowfall (cm)	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	Degree days above 5 C	
	Mean	Difference from Normal	Maximum	Minimum							This month	Since Jan. 1st
QUEBEC												
LA POCATIERE	7.3	0.4	20.5	-5.0	5.0	181.7	254	0	16	110	98.9	1695.6
L'ASSOMPTION	8.9	0.9	24.0	-3.5	0.0	91.6	115	0	12	129	130.0	1856.0
LENNOXVILLE	**	**	**	**	**	**	**	***	***	**	**	**
NORMANDIN	4.5	-0.1	21.5	-10.0	22.6	95.6	160	0	13	99	48.1	1426.8
STE.CLOTILDE	**	**	**	**	**	**	**	***	***	**	**	**
NEW BRUNSWICK												
FREDERICTON	9.0	1.3	21.0	-3.0	0.0	116.9	116	0	11	110	130.4	2003.7
NOVA SCOTIA												
KENTVILLE	10.7	1.6	23.0	-1.0	0.0	104.6	103	0	15	114	**	2013.0
NAPPAN	9.5	1.2	22.0	-2.0	0.0	108.0	107	0	13	106	150.5	1726.8
PRINCE EDWARD ISLAND												
CHARLOTTETWN	10.1	1.4	20.5	0.0	0.0	108.2	104	0	17	1793	**	**
NEWFOUNDLAND												
ST.JOHN'S WEST	11.7	4.6	19.5	-2.0	23.8	167.0	115	4	12	106	110.5	1171.7

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