Environment Canada Environnement Canada

Climatic Perspectives

Monthly Review **NOVEMBER – 1988** *Vol. 10*

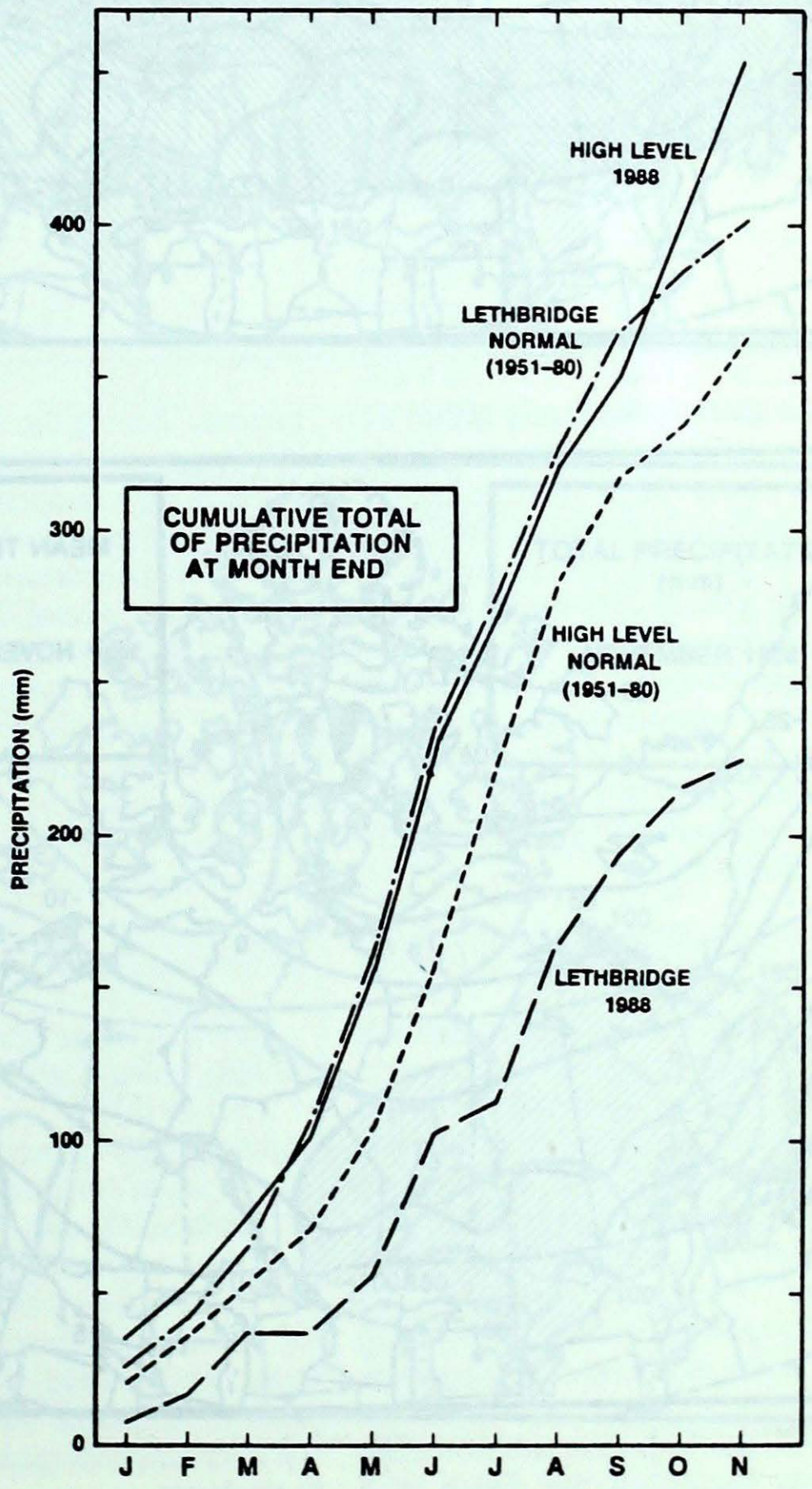
CLIMATIC HIGHLIGHTS

Prairie Drought Effects Linger On

The 1988 drought severely afflicted Canada's Prairie granary, particularly in southern Alberta (see page 7) which only received one-half of its "quota" of precipitation.

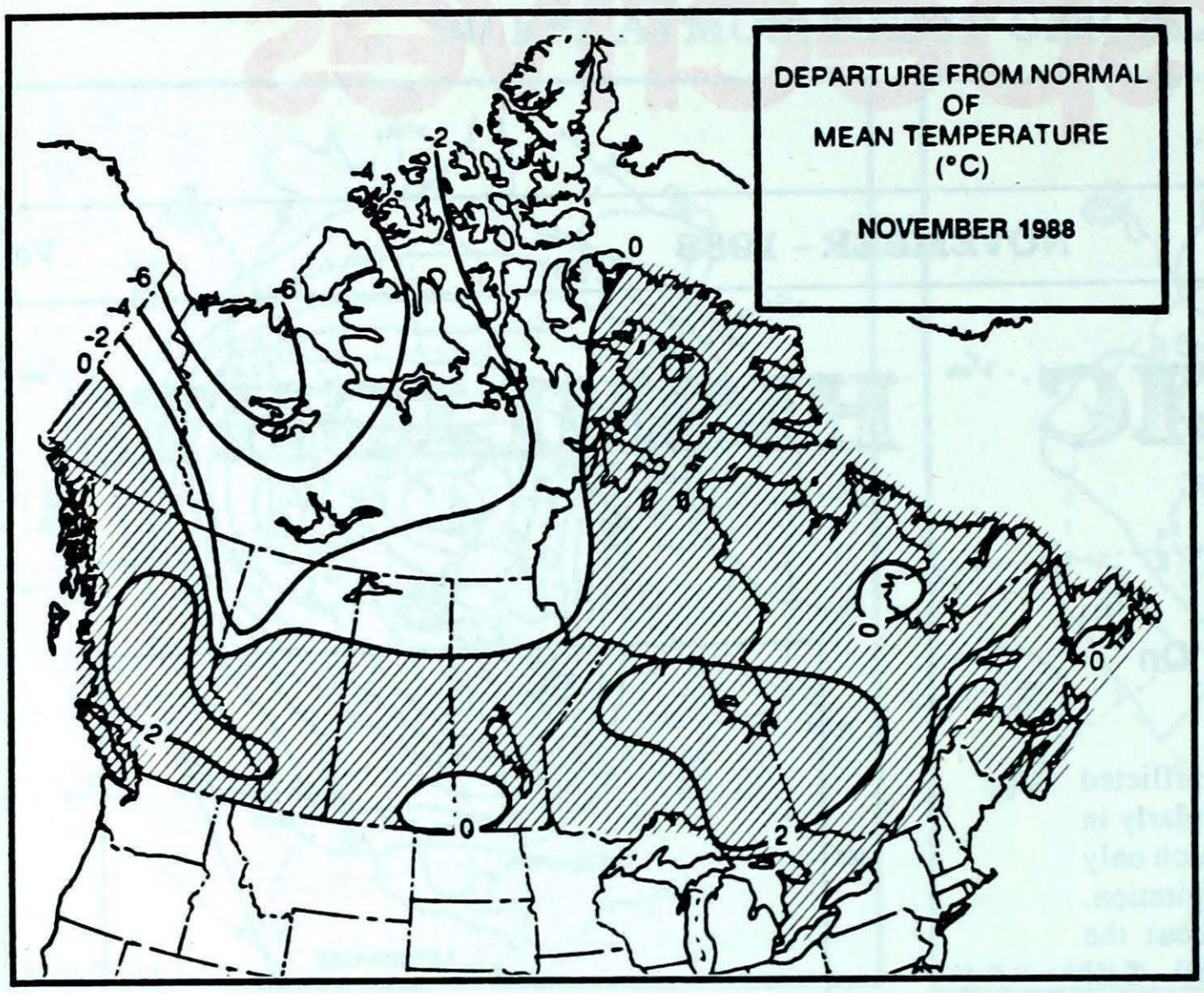
Concerns are now being raised about the possiblity of another drought in 1989. Soil moisture reserves have not improved since the rains of August which brought an end to most of the drought concerns across the Prairies. In Alberta, during October and November, the distribution of precipitation reverted to the same pattern seen in the summer with a surplus of precipitation in the north and a deficit in the south (see map on page 3). The accumulation of a thick blanket of snow during the fall and winter period is crucial to farming, not only to augment soil moisture reserves from spring snow melt, but also to prevent a further soil moisture depletion by the combined effect of high winds and low humidity. The lack of snow accumulation up to the end of November is not a good omen for farmers.

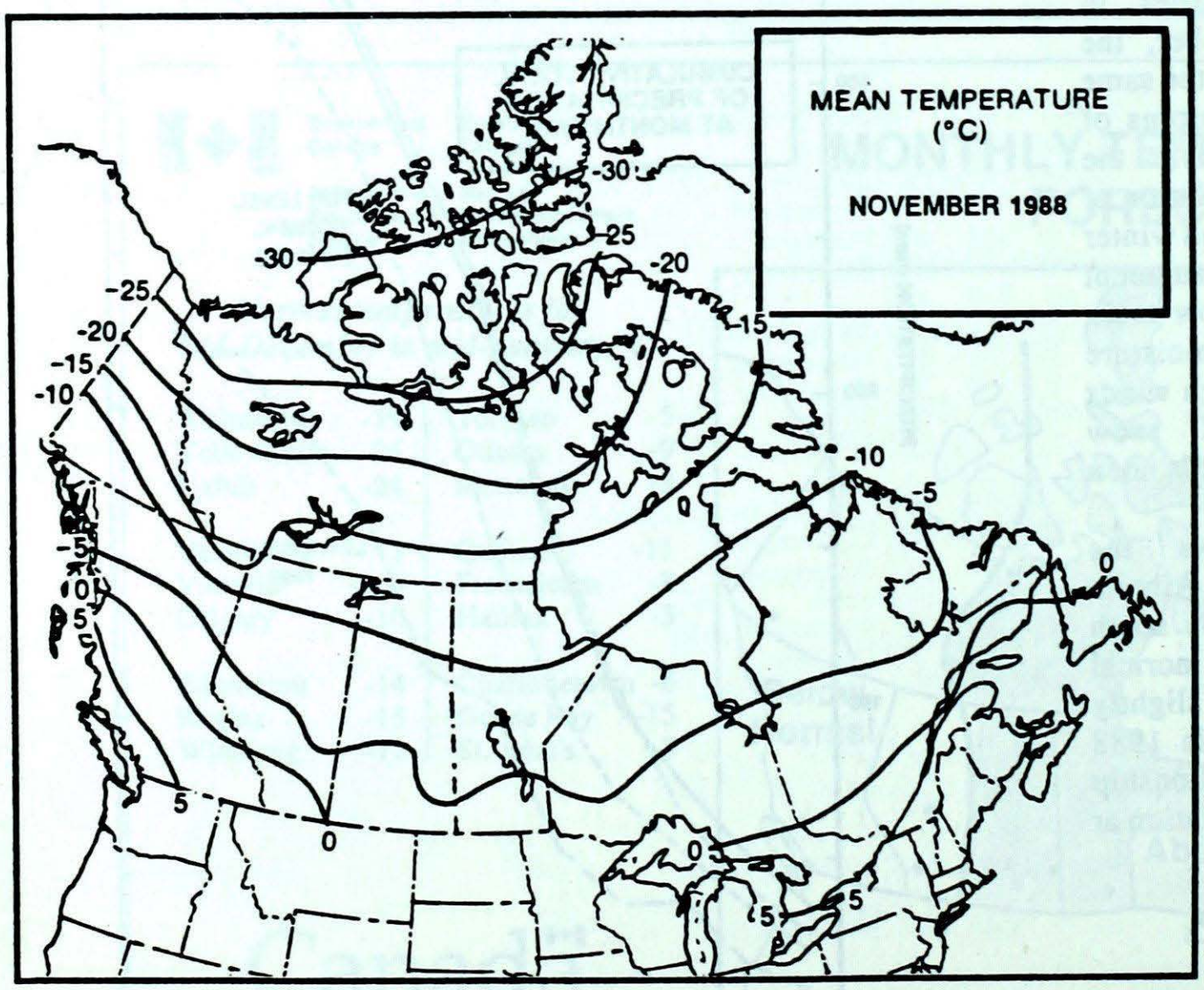
The accompanying graph shows the contrasting precipitation regimes in Alberta between the north (High Level) and the south (Lethbridge) during 1988. The normal cumulative precipitation curves show slightly more precipitation at Lethbridge, but in 1988 there has been a strongly inverse relationship where there has been a deficit of precipitation at Lethbridge of more than 40%.



Alain caillet — Monotoring and Prediction division

Canada





Across the country

Yukon and N.W. Territories

The northern Yukon was bitterly cold as daily minimum temperatures in the -30° C to -40° C range were recorded by the end of the second week.

For the first two weeks, a series of low pressure systems kept the south snowy. Low cloud hampered air traffic and ice fog created icy road conditions. On the 29th and 30th, heavy snow fell in the southwest as Haines Junction and Blanchard River received 58 cm and 85 cm respectively during the two-day period.

The Northwest Territories were also cold, especially the western half. Wind chill advisories were issued in the Keewatin District the second week of the month as temperatures sank to the -30's and -40's. The eastern half was milder. Eastern Baffin Island received 23 cm of snow the first week of the month, with another heavy snowfall in the third week. The Mackenzie and Great Slave Lake Regions also received substantial snowfall.

British Columbia

A persistent westerly flow kept most of B.C. mild, wet and dull during the month. Exceptions were the northeastern corner of the province which spent most of the month in cold arctic air and downslope areas which were generally sunny and dry.

During the first week, major storm systems in the Gulf of Alaska gave mild temperatures and heavy rain to southern parts. Some areas received more than 200 mm of rain while heavy snowfalls were recorded in the north. On the 2nd, strong winds, associated with thunderstorms, felled trees and power lines in the Kootenays.

Dull, wet conditions persisted to the end of the month over southern parts while the north remained cold and snowy. By the end of the third week, snow depths of almost 50 cm were recorded in the northeastern part of the

province. In the central interior, the combination of rain, snow and near freezing temperatures resulted in numerous traffic accidents due to icy roads.

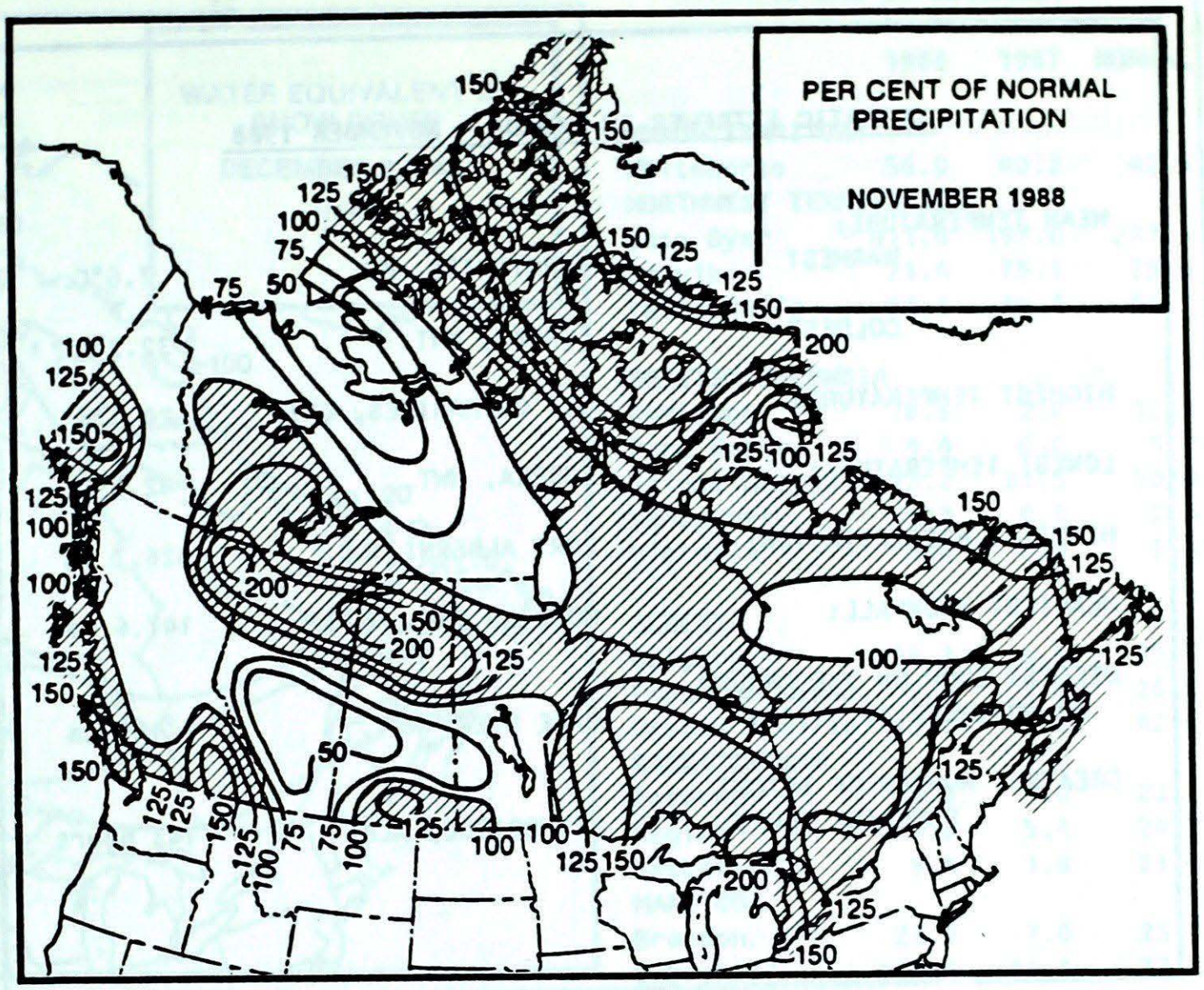
Prairie Provinces

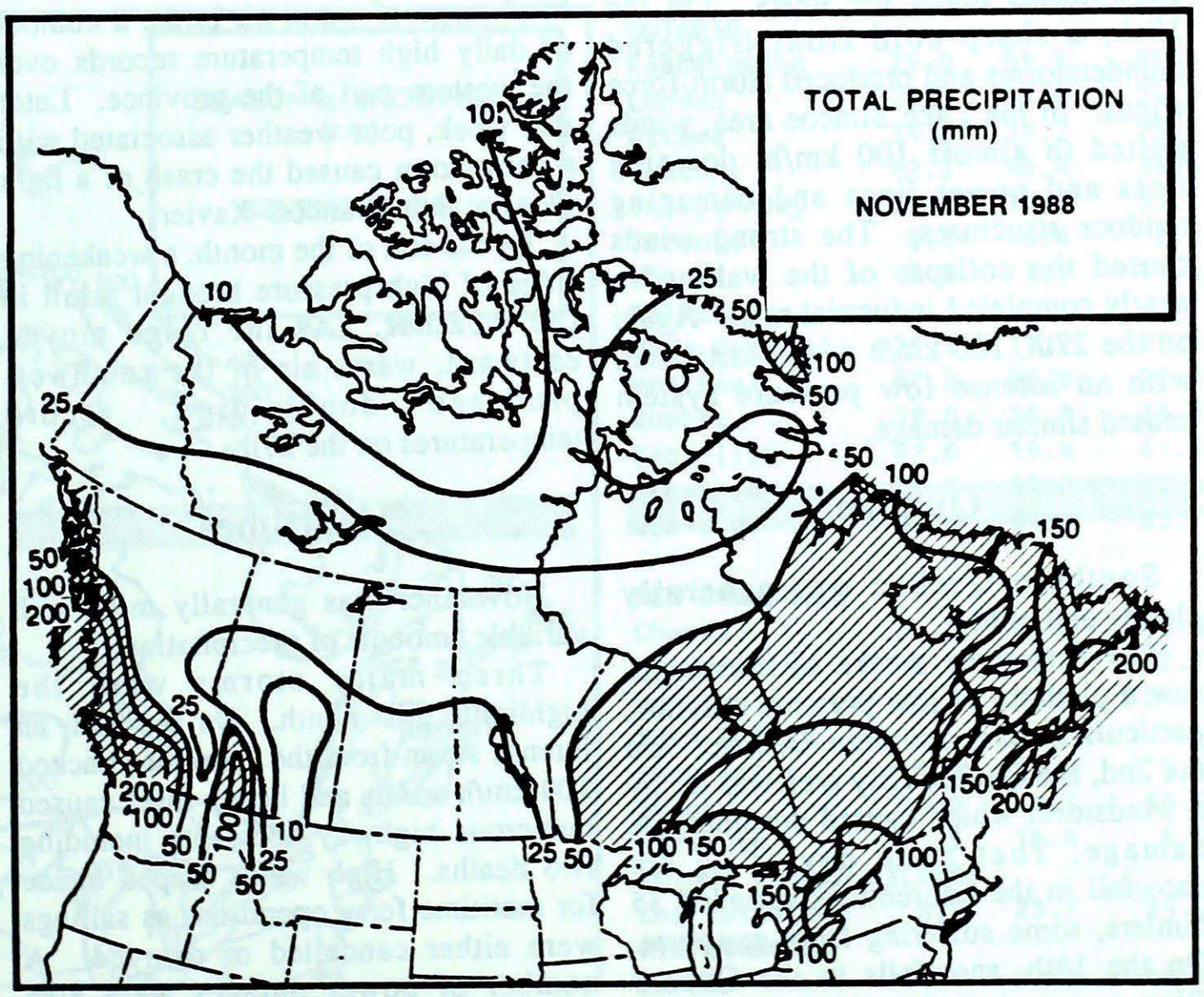
As a general rule, November is the wettest of all months on the Prairies and this year was no exception. In Alberta, there was a strong contrast between the northern third of the province, which experienced heavy precipitation and cold temperatures, and the regions to the south where it was milder and drier than normal. Jasper reported only 7 cm of snow compared to the mean monthly amount of 25 cm. Temperatures were extrememly variable, dropping to as low as -33°C at High Level on the 18th and 19th and rising to as high as 18°C at Lethbridge on the 1st. Temperatures were, in the mean, close to normal in Saskatchewan and Manitoba despite some pronounced daily fluctuations (the daytime temperature climbed above the freezing point in the north at the end of the month). There was not much sunshine though. It snowed practically every day between the 8th to the 21st in extreme southern regions and in the north where snowfalls were substantial (Collins Bay Sask. 147.6 cm and 103.8 cm at Lynn Lake Man. compared to respective normal amounts of 31.8 and 37.5 cm). In the north, there was less than 30 hours of sunshine and only 57.7 hours at Winnipeg (normal 90.7).

Ontario

Mild, wet weather prevailed over Ontario during November. While rain was in abundance, snowfall was noteably absent especially in the south. Only a trace of snow was recorded in Toronto, St. Catherines, Kingston and Trenton. At Trenton, this represented the lowest November snowfall since 1952 while Wiarton's 11 cm was the lowest since 1948.

In northestern Ontario, the bulk of the precipitation totals were due to two heavy snowfalls, both of which closed roads and disrupted travel.





CLIMATIC EXTREMES IN CANADA - NOVEMBER 1988

MEAN TEMPERATURE:		
WARMEST	AMPHITRITE, BC.	7.6°C
COLDEST	EUREKA, NWT.	-32.2°C
HIGHEST TEMPERATURE:	ST. CATHARINES, ONT.	20.1°C
LOWEST TEMPERATURE:	EUREKA, NWT.	-42.6°C
HEAVIEST PRECIPITATION:	PORT ALBERNI, BC.	426.7 mm
HEAVIEST SNOWFALL:	COLLINS BAY, NWT.	147.6 cm
DEEPEST SNOW ON THE GROUND ON NOVEMBER 30, 1988:	CAPE DYER, NWT.	149 cm
GREATEST NUMBER OF BRIGHT SUNSHINE HOURS:	LETHBRIDGE, ALB.	143 hours

In the south, windstorms rather than snowstorms made the news. On the 10th, a sharp cold front triggered thunderstorms and produced storm-force winds. In the Lake Simcoe area, winds gusted to almost 100 km/h, downing trees and power lines and damaging outdoor structures. The strong winds caused the collapse of the walls of a nearly completed industrial mall. Again on the 27th, 100 km/h winds associated with an intense low pressure system caused similar damage.

Québec

Southern Quebec was generally cloudy and mild.

The first three weeks of the month saw a plethora of low pressure systems, particularly over southern Quebec. On the 2nd, the Quebec City area was hit by a windstorm which caused considerable damage. That same day, a 75 cm snowfall in the Laurentians stranded 35 hunters, some suffering from exposure. On the 13th, snowfalls in the Quebec City area caused numerous traffic accidents including the death of 5 persons. During the week of the 14th, a brief surge of warm air broke a number of daily high temperature records over the western part of the province. Later that week, poor weather associated with a snowstorm caused the crash of a light plane at Saint Fancois-Xavier.

By the end of the month, a weakening ridge of high pressure brought a lull in the weather. As the ridge moved eastward, warm air in the southwest produced double-digit, record temperatures on the 27th.

Maritimes

November was generally mild with variable amounts of precipitation.

Three major storms were the highlights this month. On the 2nd, an intense storm from the Carolinas packed 100 km/h winds and heavy rains caused numerous highway accidents including two deaths. High winds reaped havoc for maritime ferry operations as sailings were either cancelled or delayed. A number of power outages were also reported and some roads were closed due to washouts.

The second storm on the 21st blasted northern New Brunswick with heavy snowfalls. CFB Chatham reported 37.5 cm in 24 hours, the second largest 24-hour accumulation for November since records began in 1873. Schools and some businesses were closed and highways were treacherous as voters tried to reach the polling stations.

On the 28th, a rainstorm with high winds caused major power disruptions and some flooding. The Canadian Coast Guard were involved in four sea-rescue operations, one of which was the rescue of 27 crew members of a floundering freighter

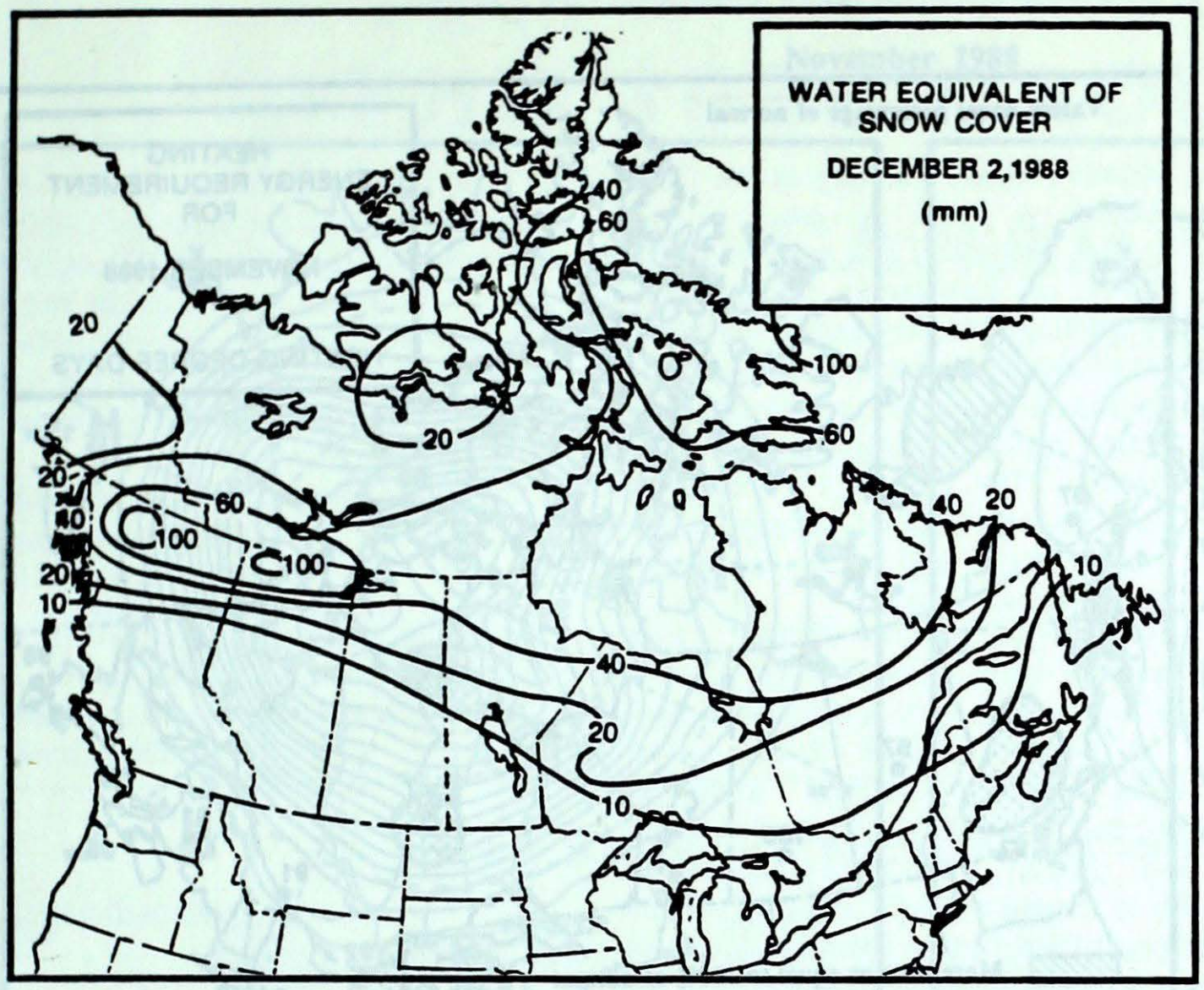
Newfoundland and Labrador

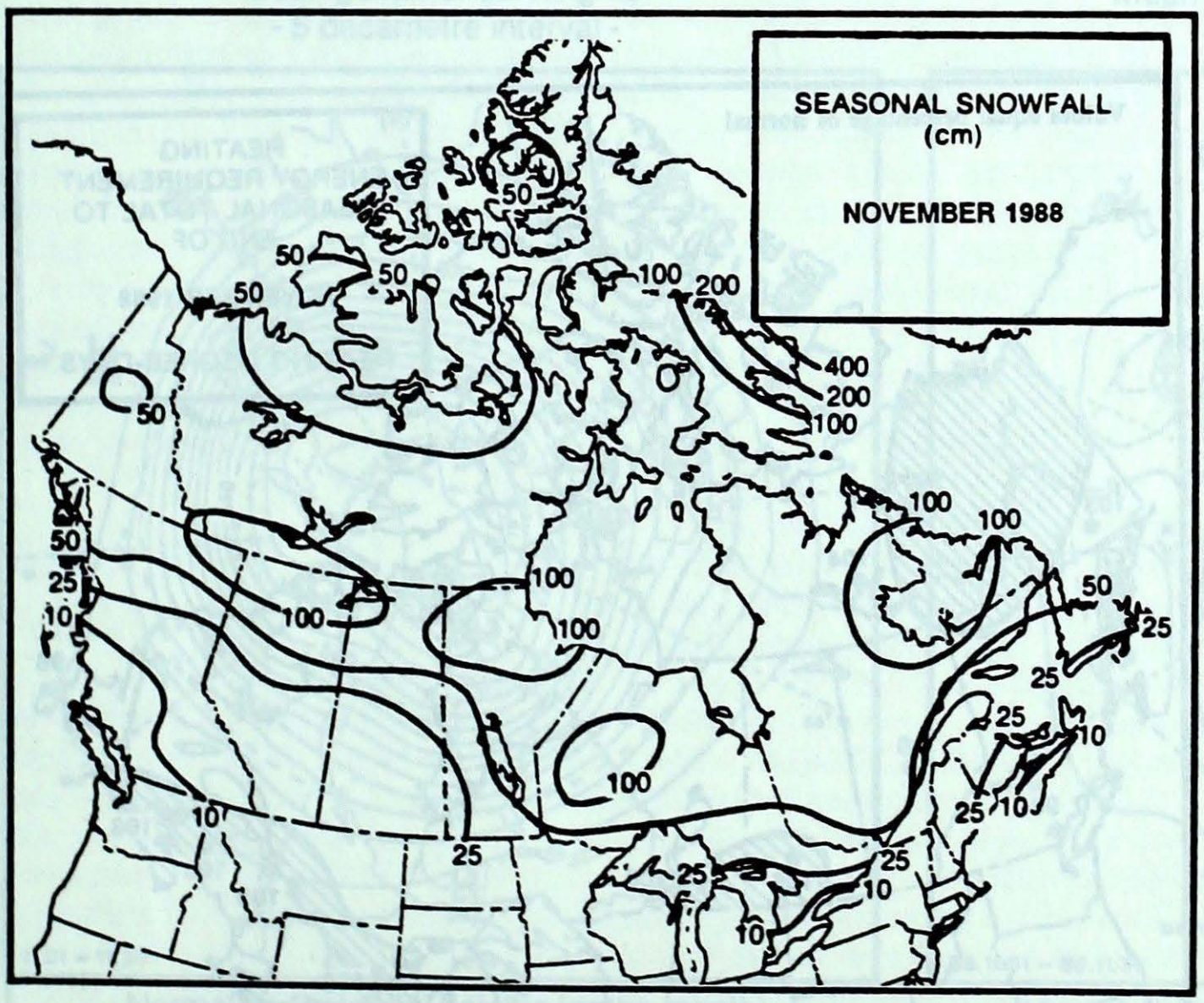
Stormy weather was also the highlight for Newfoundland and Labrador. In the first half of the month, two intense depressions brought strong winds and rain to Newfoundland and snow to Labrador. Winds in excess of 100 km/h hampered ferry service to the mainland and caused power outages.

Following a period of strong northwest winds and showers, an intense, slow-moving storm during the week of the 21st dumped more than 40 cm of snow along the Labrador coast and 55 cm of snow on the eastern end of Newfoundland.

Record cold weather on the 24th with winds gusting up to 115 km/h buffeted Newfoundland and Labrador, once again causing power outages.

On the 26th, the remnants of tropical storm Keith, passing east of St. John's, brought milder weather to all areas.



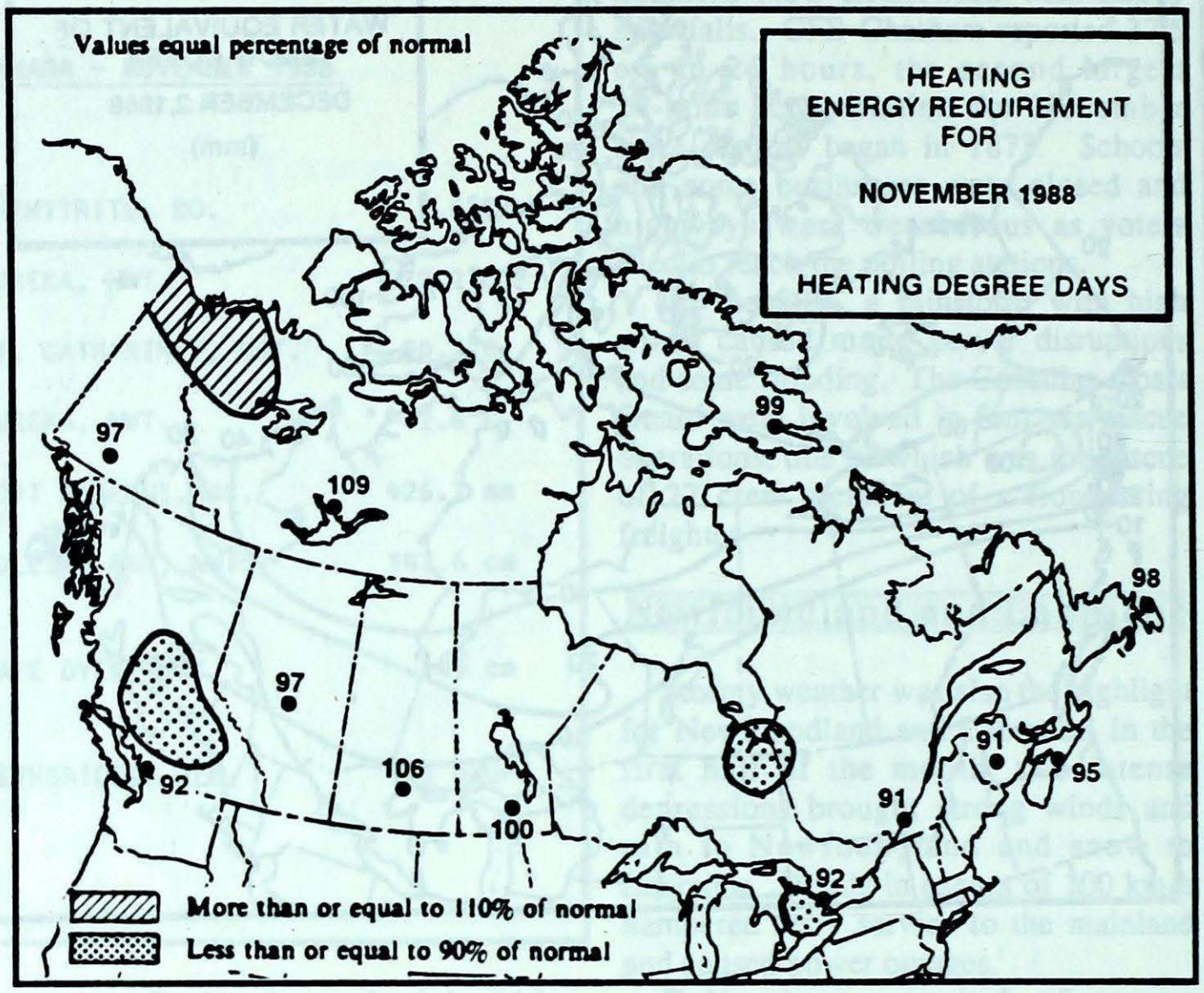


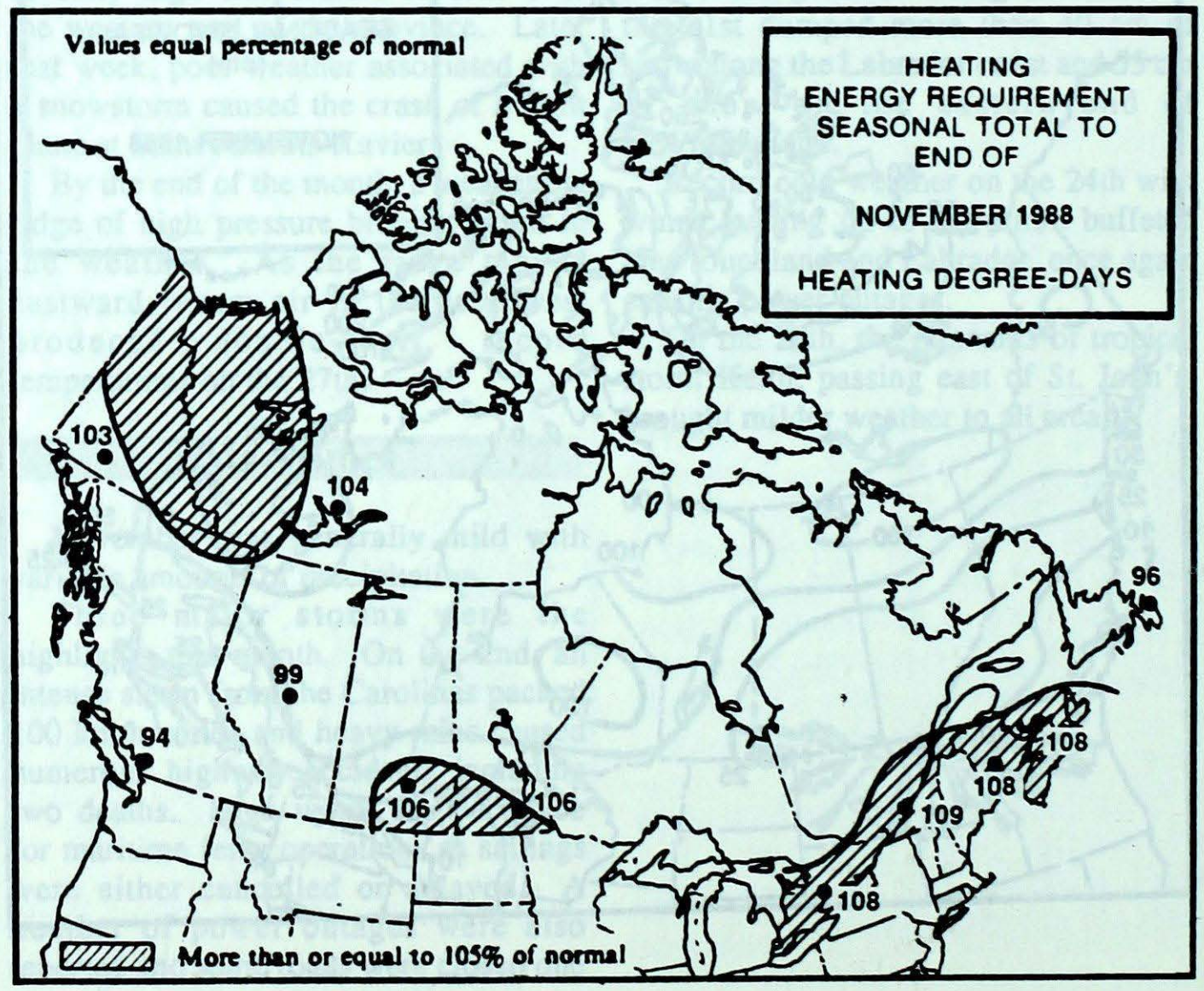
SEASONAL SNOWFALL TOTALS (CM) TO END OF NOVEMBER

	1988	1987	NORMAL
YUKON TERRITORY			
Whitehorse	56.0	40.2	42.5
NORTHWEST TERRITORIES			
Cape Dyer	411.0	197.6	241.3
Inuvik	71.4	75.1	75.6
Yellowknife	69.9	84.8	56.7
BRITISH COLUMBIA			
Kamloops	10.6	2.0	12.4
Port Hardy	4.4	0.0	4.2
Prince George	13.2	31.5	50.0
Vancouver	0.2	0.0	2.8
Victoria	0.6	0.0	2.3
ALBERTA			
Calgary	18.1	6.6	35.7
Edmonton Namao	9.4	1.7	26.5
Grande Prairie	22.6	9.6	42.4
SASKATCHEWAN			
Estevan	18.8	1.0	23.1
Regina	16.6	5.4	24.2
Saskatoon	9.4	1.8	23.4
MANITOBA			
Brandon	28.2	7.0	23.3
Churchill	106.0	36.1	77.3
The Pas	30.1	34.2	43.8
Winnipeg	39.0	11.4	27.3
ONTARIO			
Kapuskasing	79.0	54.8	85.0
London	20.2	40.0	26.3
Ottawa	34.8	39.2	25.5
Sudbury	42.2	46.4	38.6
Thunder Bay	33.6	14.1	33.1
Toronto	0.0	6.6	8.9
Windsor	3.8	1.6	11.6
QUEBEC			
Baie Comeau	29.2	19.2	41.6
Montréal	47.2	29.8	22.9
Quebec	29.0	16.0	38.3
Sept-Iles	62.6	19.4	61.4
Sherbrooke	28.8	64.3	42.4
Val-d'Or	92.6	44.0	63.7
NEW BRUNSWICK			
Charlo	35.5	5.0	42.9
Fredericton	15.0	18.4	22.7
Moncton	25.3	31.1	24.7
NOVA SCOTIA			
Shearwater	0.4	36.9	9.5
Sydney	20.0	2.6	14.6
Yarmouth	1.6	15.4	8.3
PRINCE EDWARD ISLAND			
Charlottetown	8.2	23.7	24.2
NEWFOUNDLAND			
Gander	101.1	33.2	44.1
St. John's	29.0	23.4	25.6

SEASONAL TOTAL OF HEATING DEGREE-DAYS TO END OF NOVEMBER

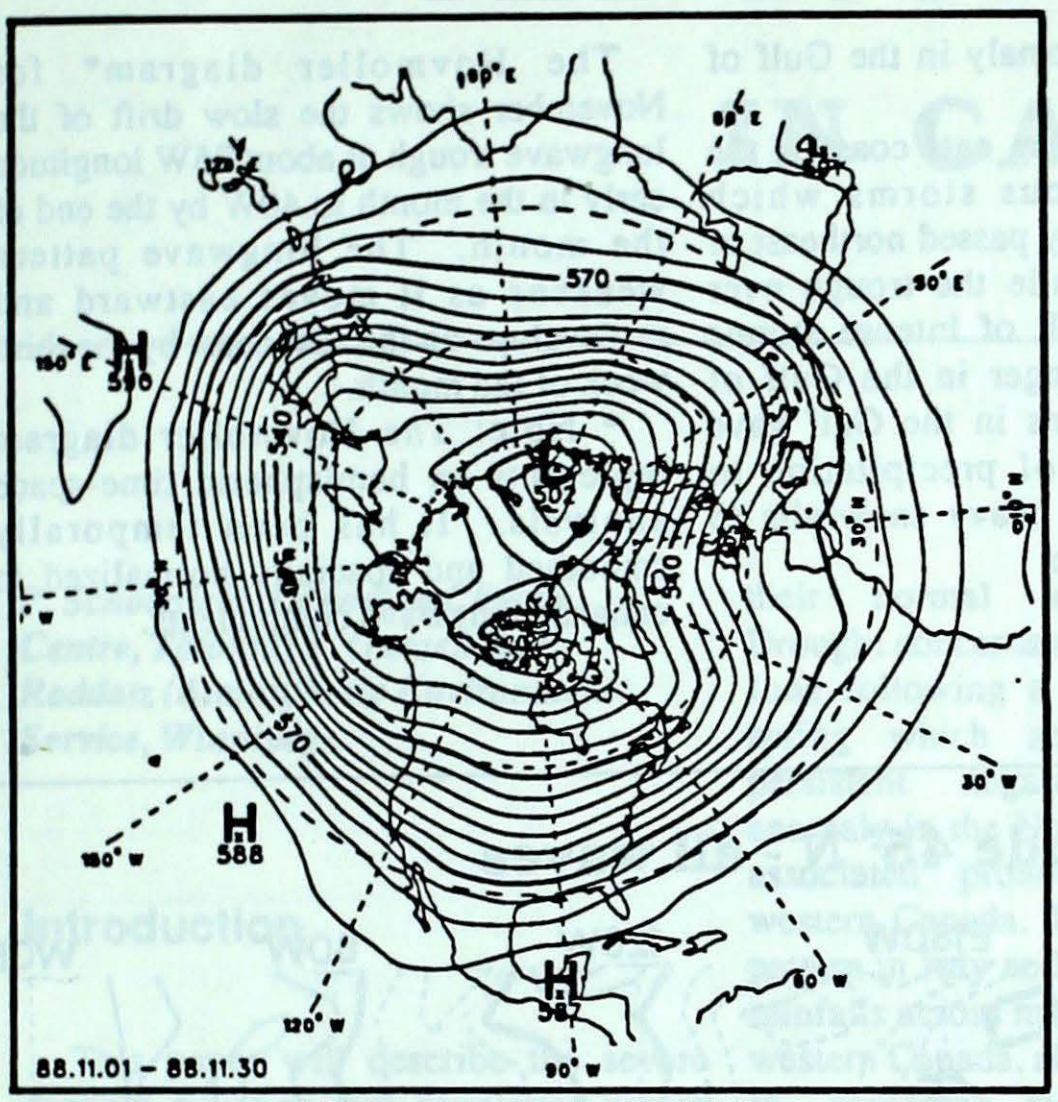
	1988	1987	NORMAL
BRITISH COLUMBIA			
Kamloops	841	730	887
Penticton	807	734	844
Prince George	1417	1284	1500
Vancouver	733	635	779
Victoria	859	750	853
YUKON TERRITORY			
Whitehorse	2008	1698	1953
NORTHWEST TERRITORIES			
Iqaluit	2484	2753	*
Inuvik	2985	2601	2788
Yellowknife	2166	2013	2083
ALBERTA			
Calgary	1319	1193	1369
Edmonton Mun	1310	1168	1318
Grande Prairie	1564	1313	1563
SASKATCHEWAN			
Estevan	1244	1136	1183
Regina	1376	1249	1301
Saskatoon	1387	1266	1357
MANITOBA			
Brandon	1435	1333	1332
Churchill	2233	2263	2289
The Pas	1506	1508	1536
Winnipeg	1302	1173	1222
ONTARIO			
Kapuskasing	1440	1526	1456
London	852	865	795
Ottawa	979	1037	924
Sudbury	1168	1207	1141
Thunder Bay	1308	1286	1276
Toronto	854	880	793
Windsor	724	717	659
QUÉBEC			
Baie Comeau	1462	1516	1442
Montréal	949	989	870
Quebec	1162	1213	1087
Sept-Iles	1488	1542	1532
Sherbrooke	1165	1229	1156
Val-d'Or	1381	1515	1392
NEW BRUNSWICK			
Charlo	1263	1270	1228
Fredericton	1063	1098	981
Moncton	1048	1043	983
NOVA SCOTIA			
Halifax	877	878	877
Sydney	1002	971	898
Yarmouth	878	932	887
PRINCE EDWARD ISLAND			
Charlottetown	994	988	923
NEWFOUNDLAND			
Gander	1218	1232	1180
St. John's	1097	1179	1141



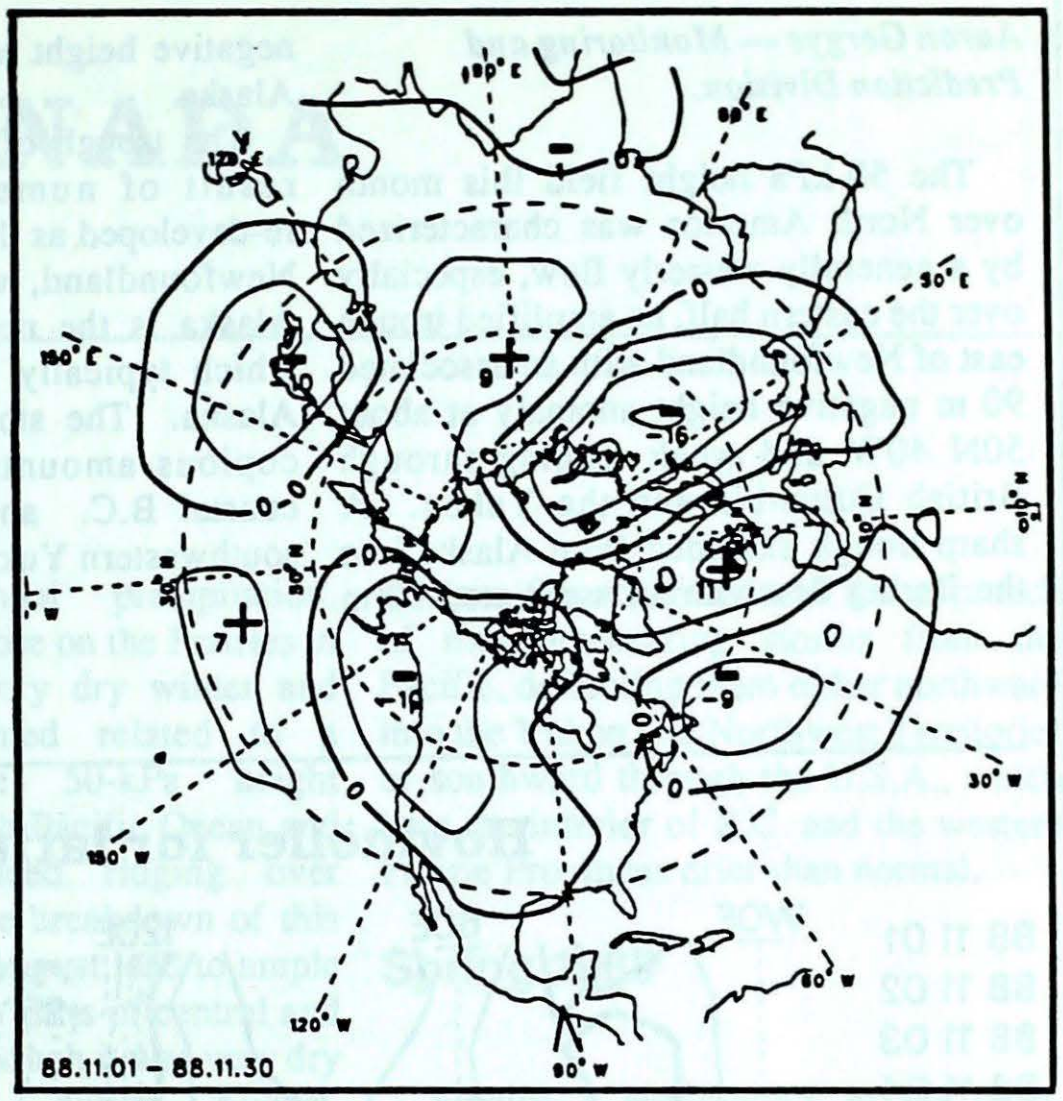


50 kPa ATMOSPHERIC CIRCULATION

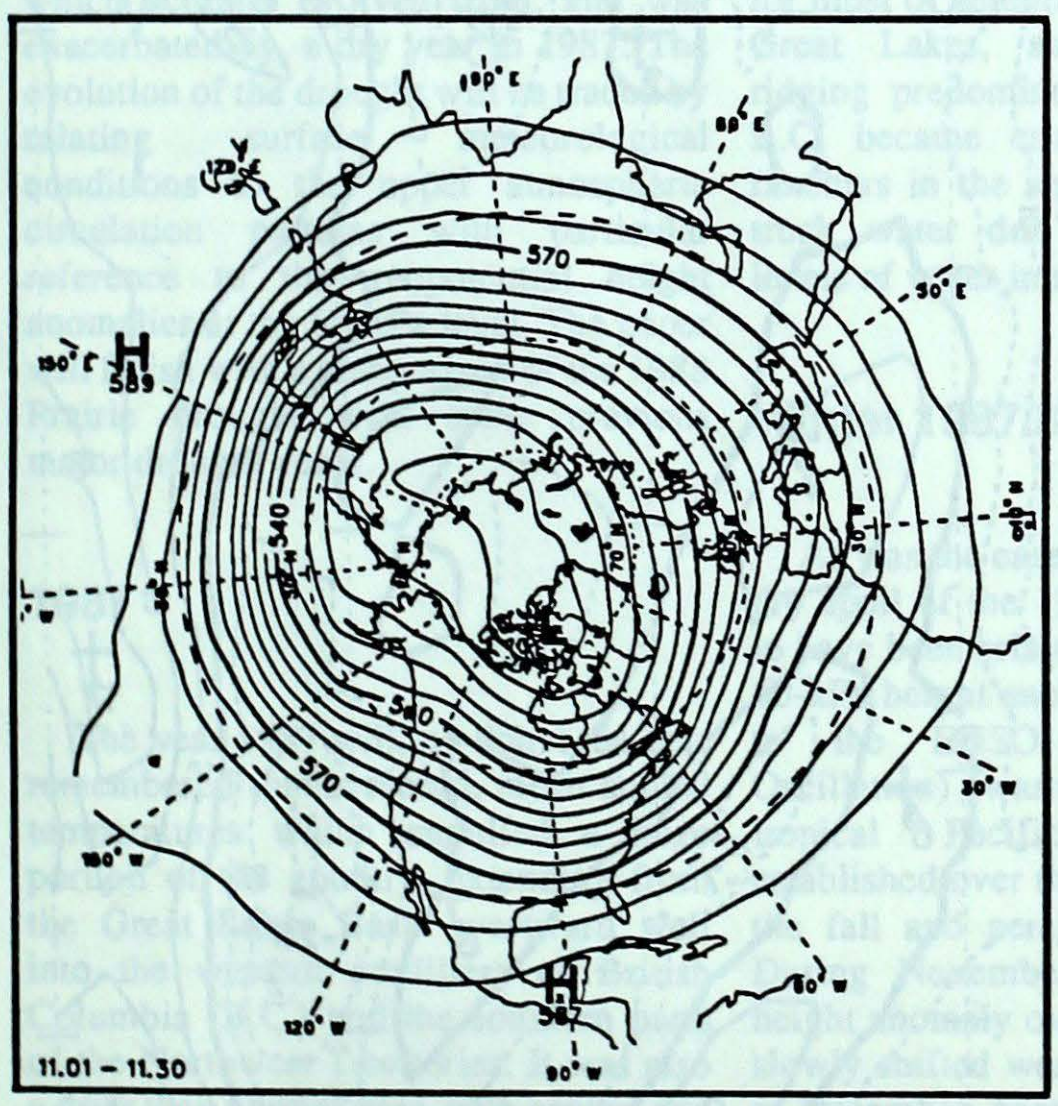
November 1988



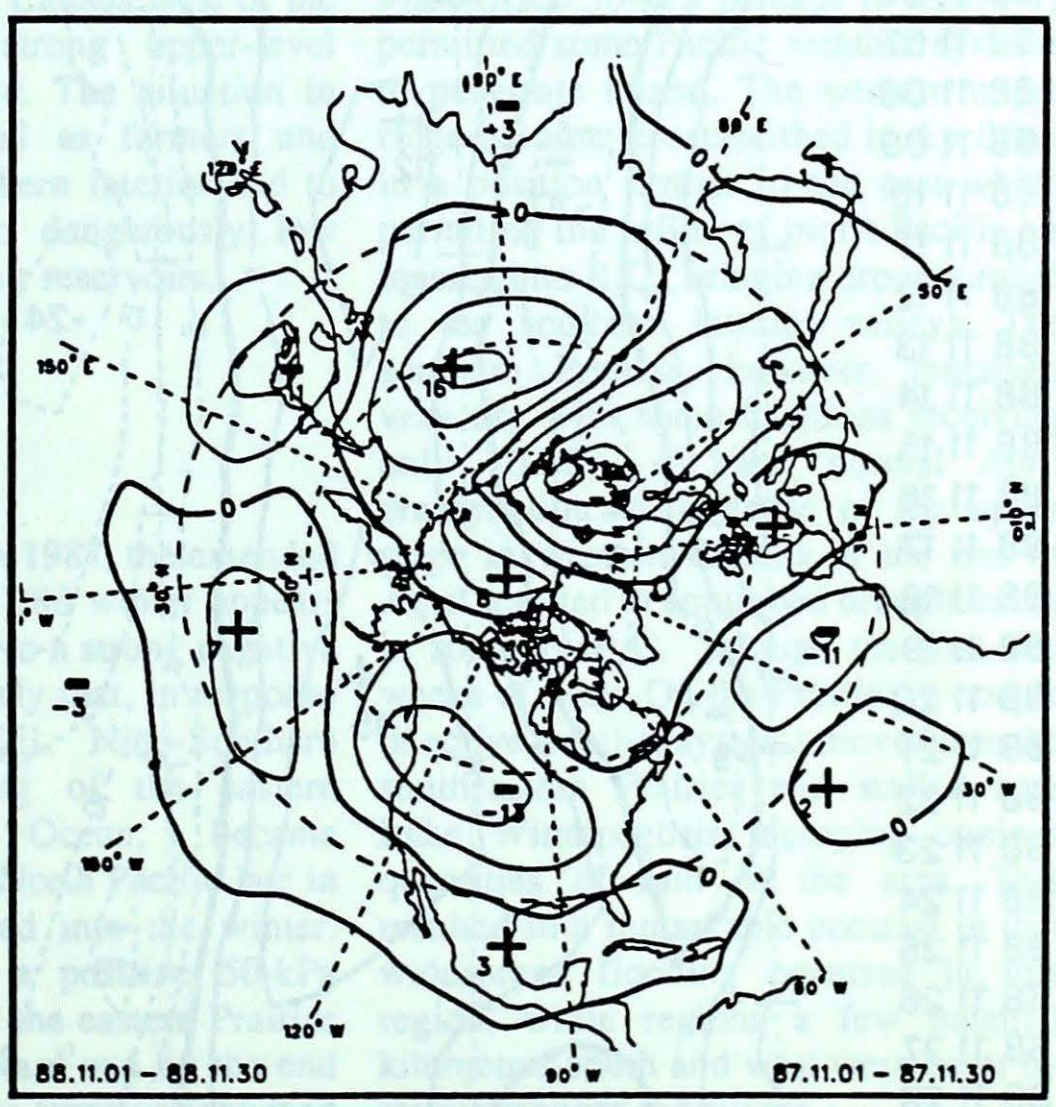
Mean geopotential heights
- 5 decametre interval -



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 -

50 kPa ATMOSPHERIC CIRCULATION

November 1988

Aaron Gergye — Monitoring and Prediction Division.

The 50-kPa height field this month over North America was characterized by a generally westerly flow, especially over the eastern half, an amplified trough east of Newfoundland with an associated 90 m negative height anomaly at about 50N 40W and weak ridging through British Columbia and the Yukon. A sharp trough extended from Alaska into the Bering Sea with an associated 90 m negative height anomaly in the Gulf of Alaska.

The trough off the east coast is the result of numerous storms which re-developed as they passed northeast of Newfoundland, while the trough over Alaska is the result of intense storms which typically linger in the Gulf of Alaska. The storms in the Gulf gave copious amounts of precipitation to coastal B.C. and heavy snowfalls to southwestern Yukon.

The Hovmoller diagram* for November shows the slow drift of the longwave trough at about 85W longitude early in the month to 40W by the end of the month. The longwave pattern weakens as it moves eastward and re-develops on the east coast by the third week of the month.

* Note: The Hovmoller diagram represents an hemispheric time-space analysis. It has been temporally smoothed and spacially normalized to enhance longwave components.

Hovmöller for latitude 45° N - all waves

THE 1988 DROUGHT IN CANADA

P. Scholefield (Canadian Climate Centre, Totonto) T. Guezen & R. Raddatz (Atmospheric Environment Service, Winnipeg).

Introduction

This paper will describe the severe drought situation that developed across western and central Canada during 1988 which actually evolved from, and was exacerbated by, a dry year in 1987. The evolution of the drought will be traced by relating surface meteorological conditions to the upper atmospheric circulation patterns with particular reference to the geopotential height anomalies at the 50-kPa level. The paper will finish with a comparison of the 1988 Prairie drought with some previous major drought years.

1987

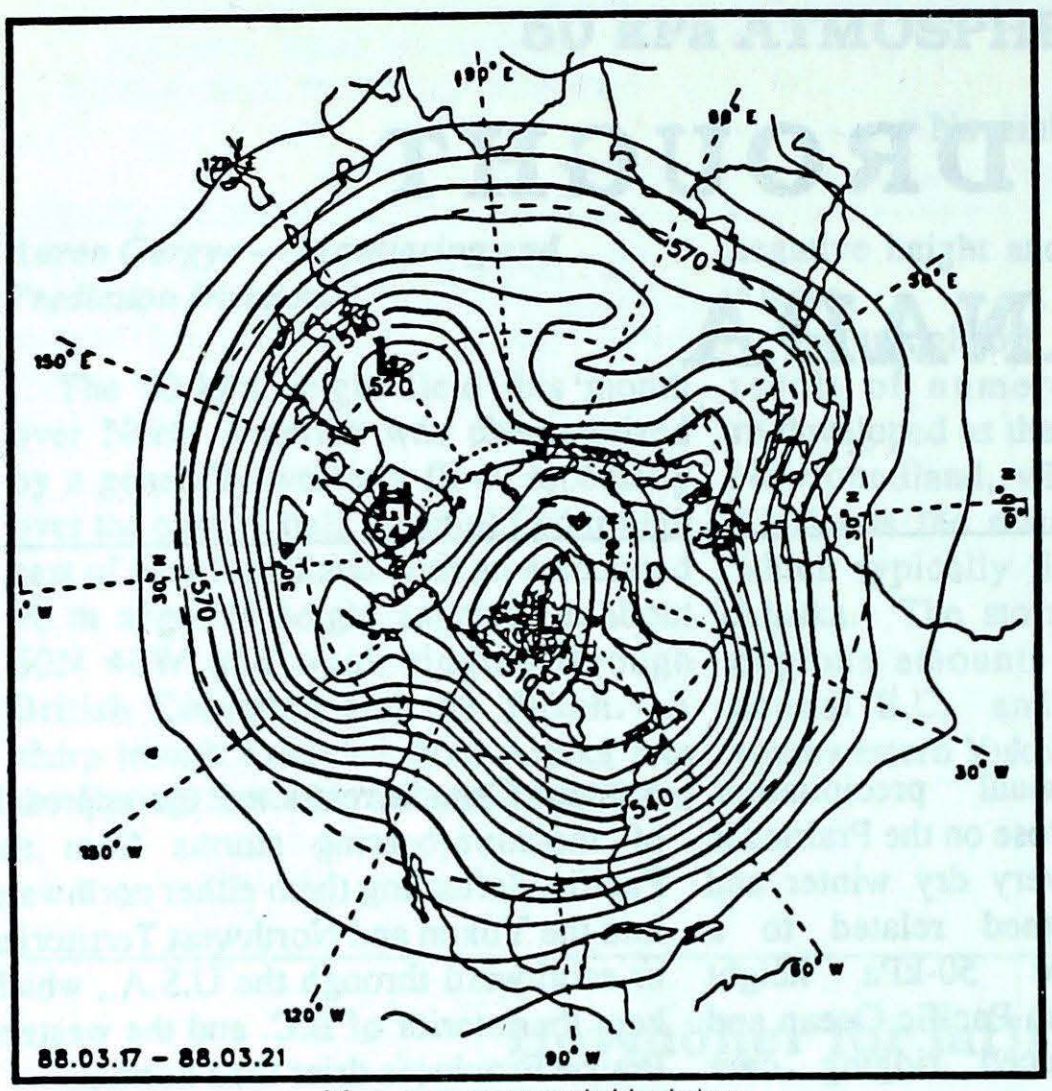
The year 1987 will, no doubt, be best remembered for its record, mean annual temperatures which engulfed a huge portion of the country, extending from the Great Lakes Basin westward well into the western cordillera of British Columbia (B.C.) and the southern parts of the Northwest Territories. It was also a drier than normal year, with central and western Canada receiving 80-90% of their normal annual precipitation. Drought concerns arose on the Prairies in June following a very dry winter and spring which seemed related to a persistent negative 50-kPa height anomaly in the North Pacific Ocean and associated pronounced ridging over western Canada. The breakdown of this pattern in July and August lead to ample rainfalls across most parts of central and western Canada, although it was very dry in southern B.C. during August. September was the start of a very dry fall for most of southern Canada west of the Great Lakes, as strong upper-level ridging predominated. The situation in B.C. became critical as farmers and ranchers in the southern interior had to truck water due to dangerously low levels of water in their reservoirs.

Winter 1987/88

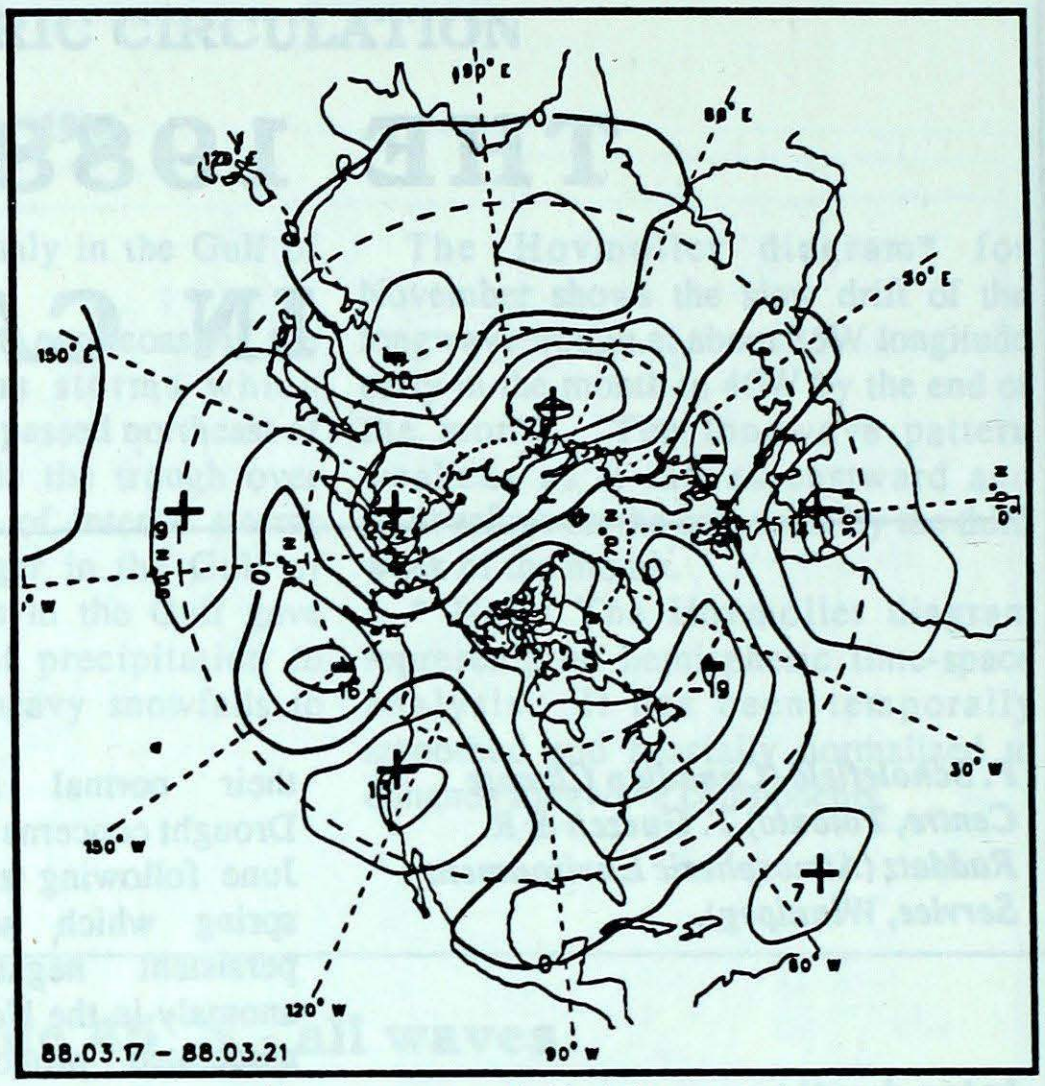
As was the case in 1987, the extended dry spell of the 1987/88 winter appears to have been related to a strong negative 50-kPa height anomaly that, in response to the ENSO (El Niño-Southern Oscillation) warming of the eastern tropical Pacific Ocean, became established over the North Pacific late in the fall and persisted into the winter. During November, a positive 50-kPa height anomaly over the eastern Prairies slowly shifted westward and by the end of December, became firmly established over B.C. The persistent upper ridge over western Canada restricted the approach of moisture-bearing storms from the Pacific, deflecting them either northward into the Yukon and Northwest Territories or southward through the U.S.A., which kept the interior of B.C. and the western Prairie Provinces drier than normal.

Spring 1988

Finally, a break-down of the persistent winter circulation pattern late in March (see 50-kPa pentads in figure 1) permitted some Pacific weather systems to penetrate inland. The western upper ridge became re-established in April but in a position further to the east which permitted the influx of moist Pacific air masses into B.C., bringing drought relief to the southern interior valleys. The southern Prairies, however, remained very dry with some locations receiving only 10-20% of their normal April precipitation. A collapse of the upper ridge in western Canada at the end of April resulted in continued drought relief in southern B.C. through the first two weeks of May. On the Prairies, a couple of active weather systems moved into the southeastern Prairies and stalled near Lake Winnipegosis, dumping copious quantities of rain in the area. This resulted in a remarkable contrast in that widespread flooding occurred in this region, while regions a few hundred kilometres south and west were beset by severe drought conditions.

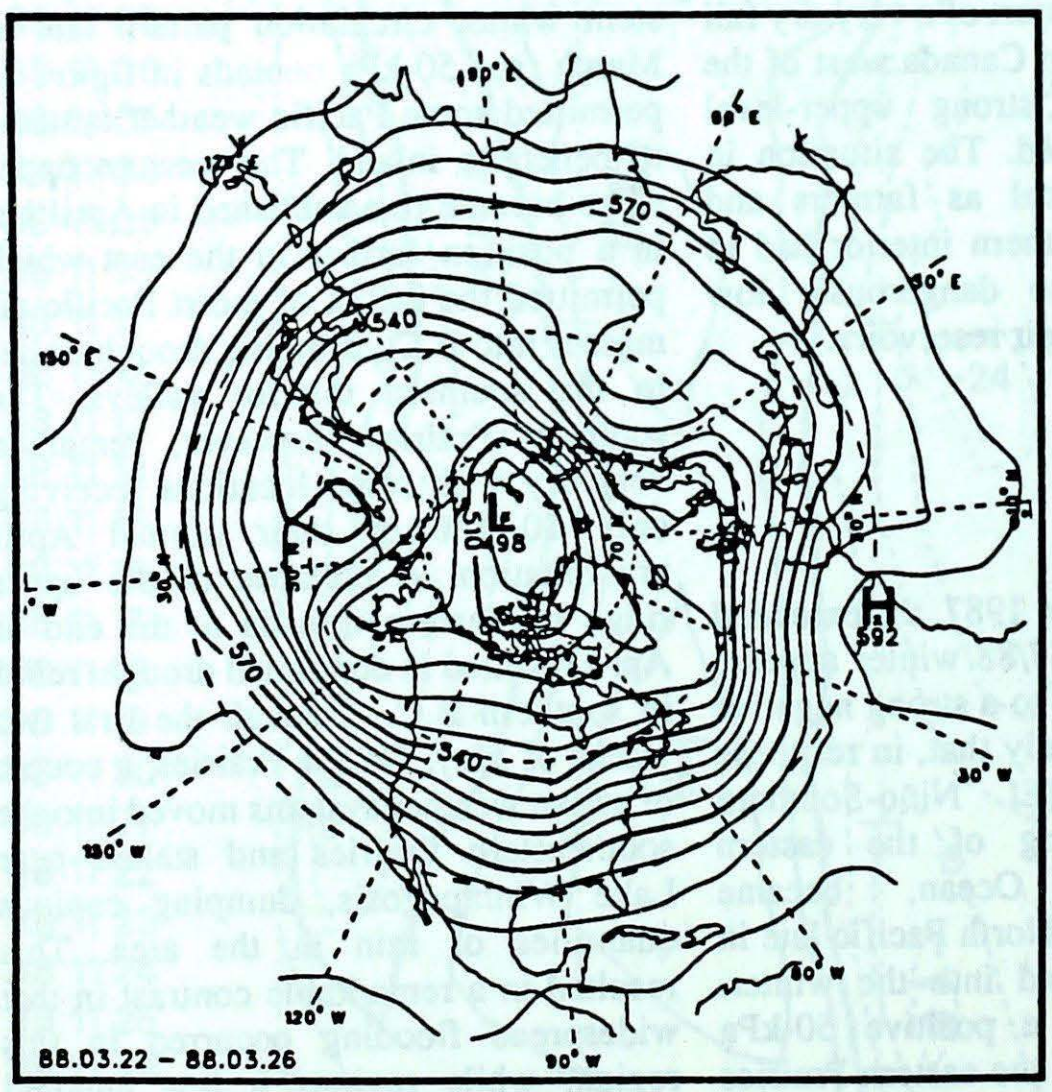


Mean geopotential heights
- 5 decametre interval -

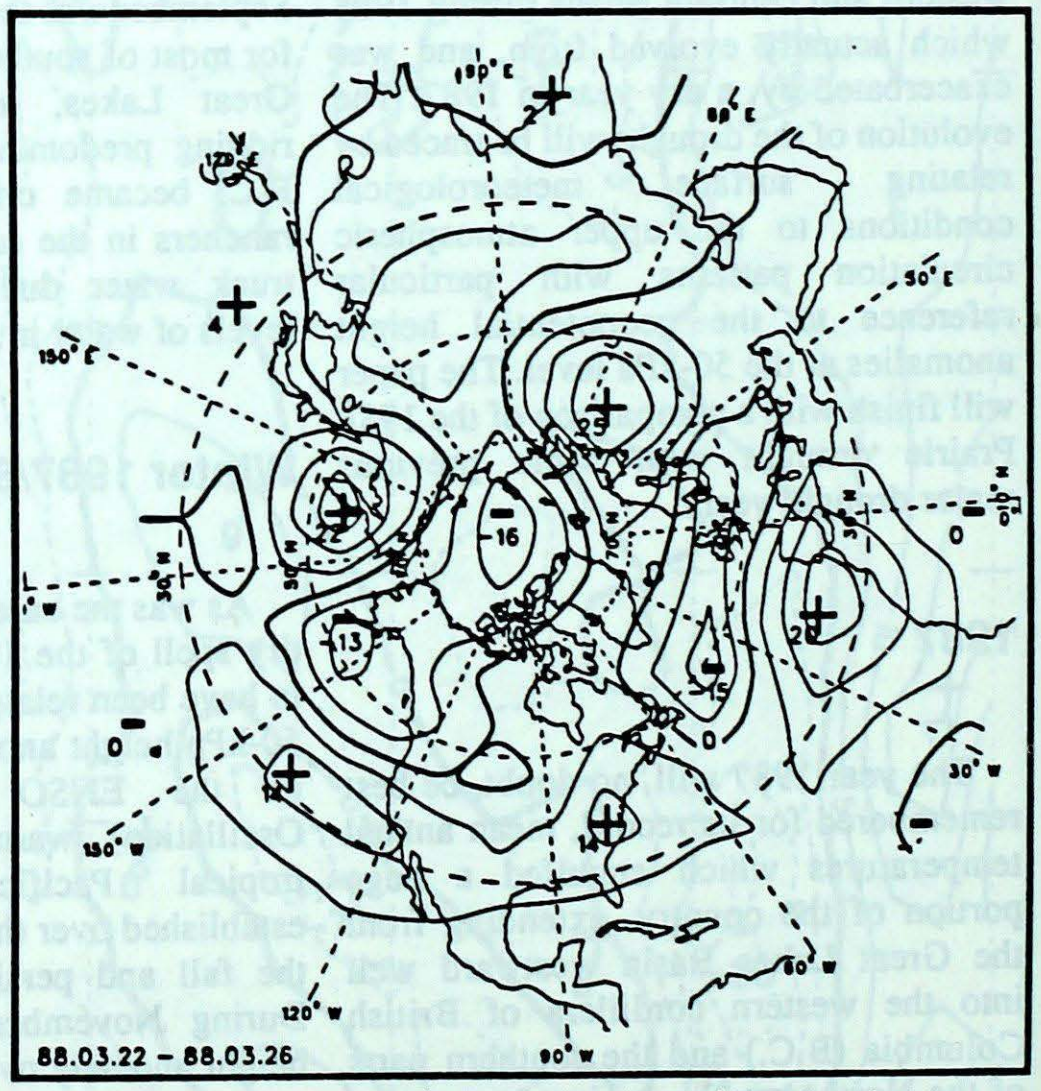


Mean geopotential height anomaly
- 5 decametre interval-

Figure 1.a Mean height and anomaly field at 50 kPa for the period March 17 to 29, 1988

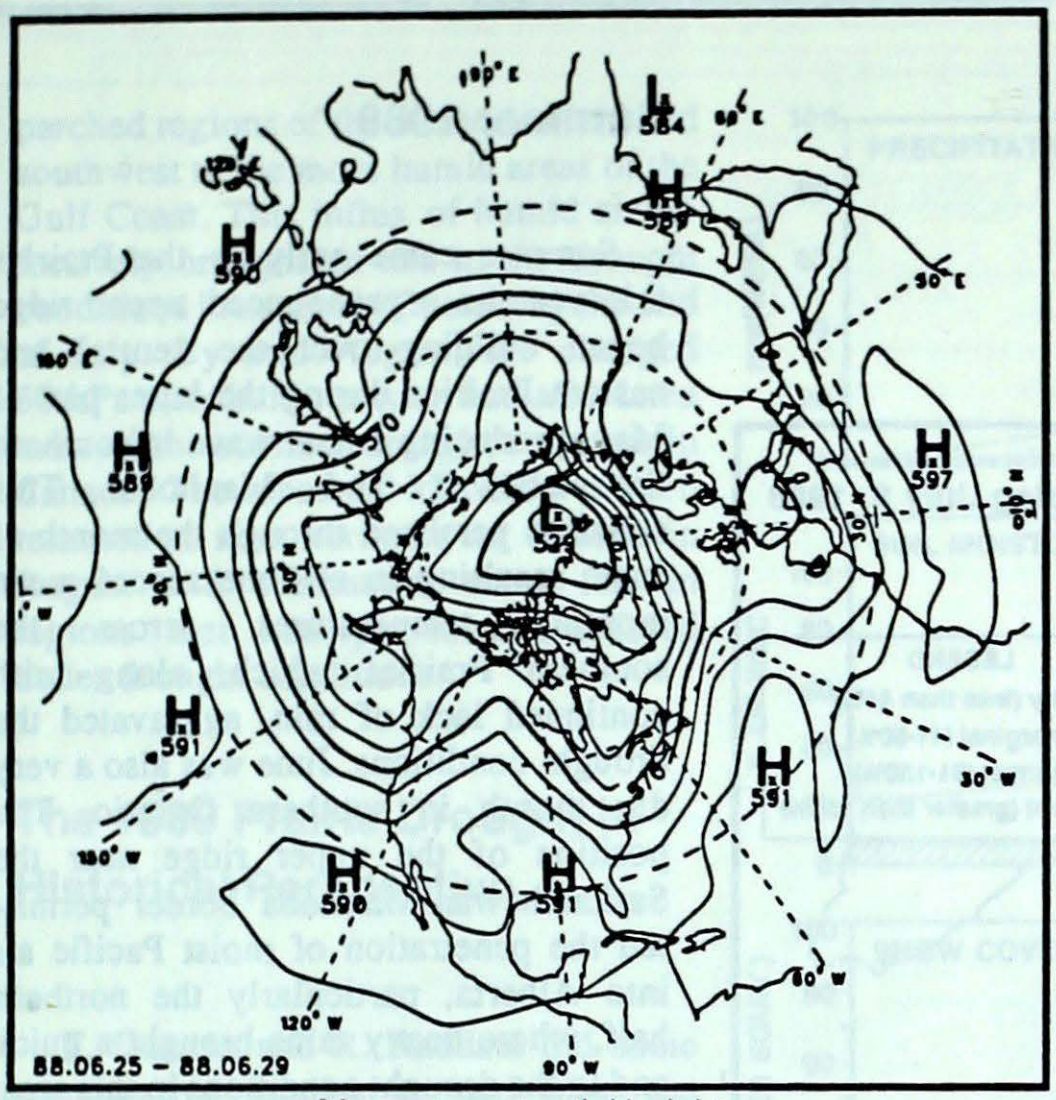


Normal geopotential heights for the month
- 5 decametre interval -

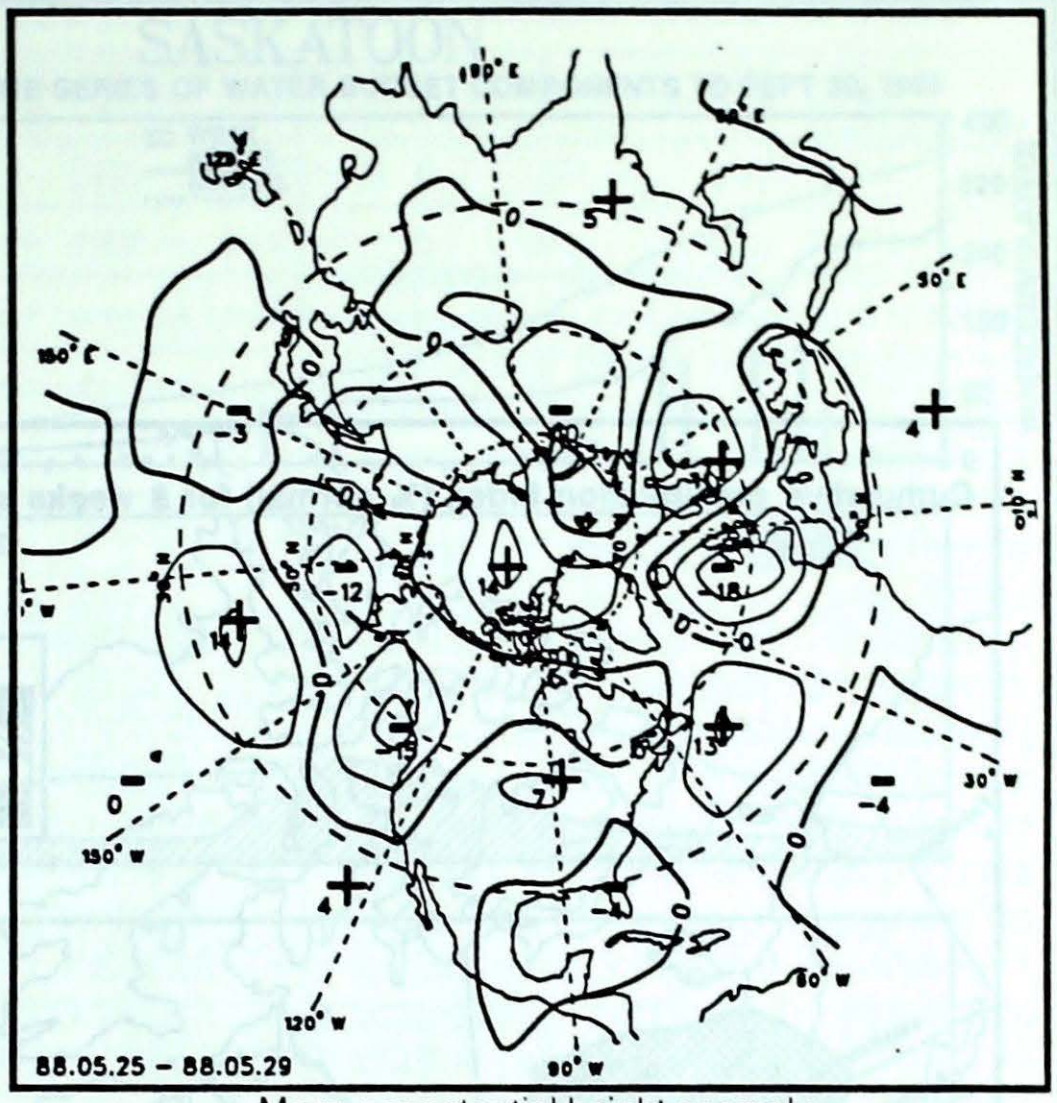


Mean heights difference w/r to previous month
- 5 decametre interval -

Figure 1.b Mean height and anomaly field at 50 kPa for the period March 22 to 26, 1988

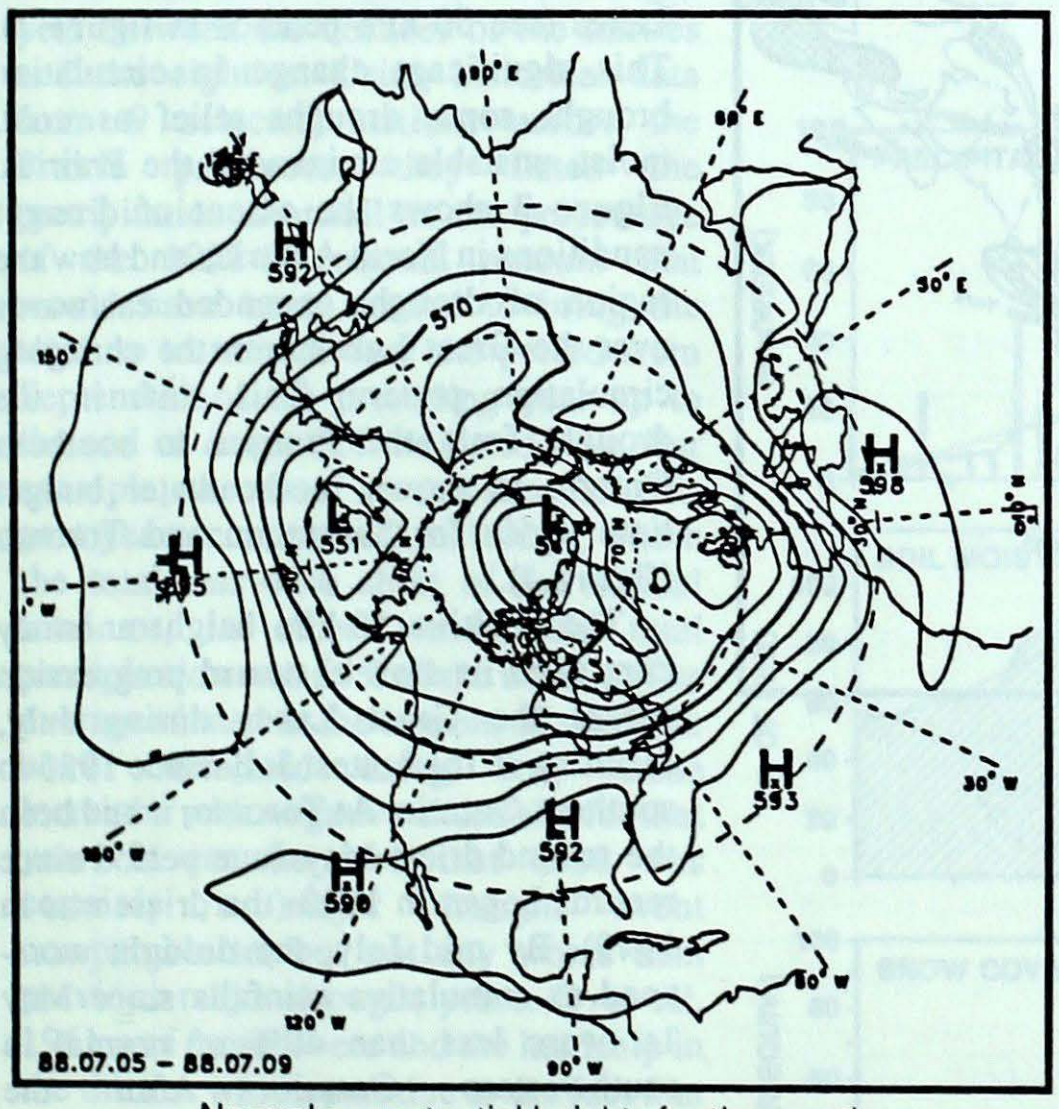


Mean geopotential heights
- 5 decametre interval -

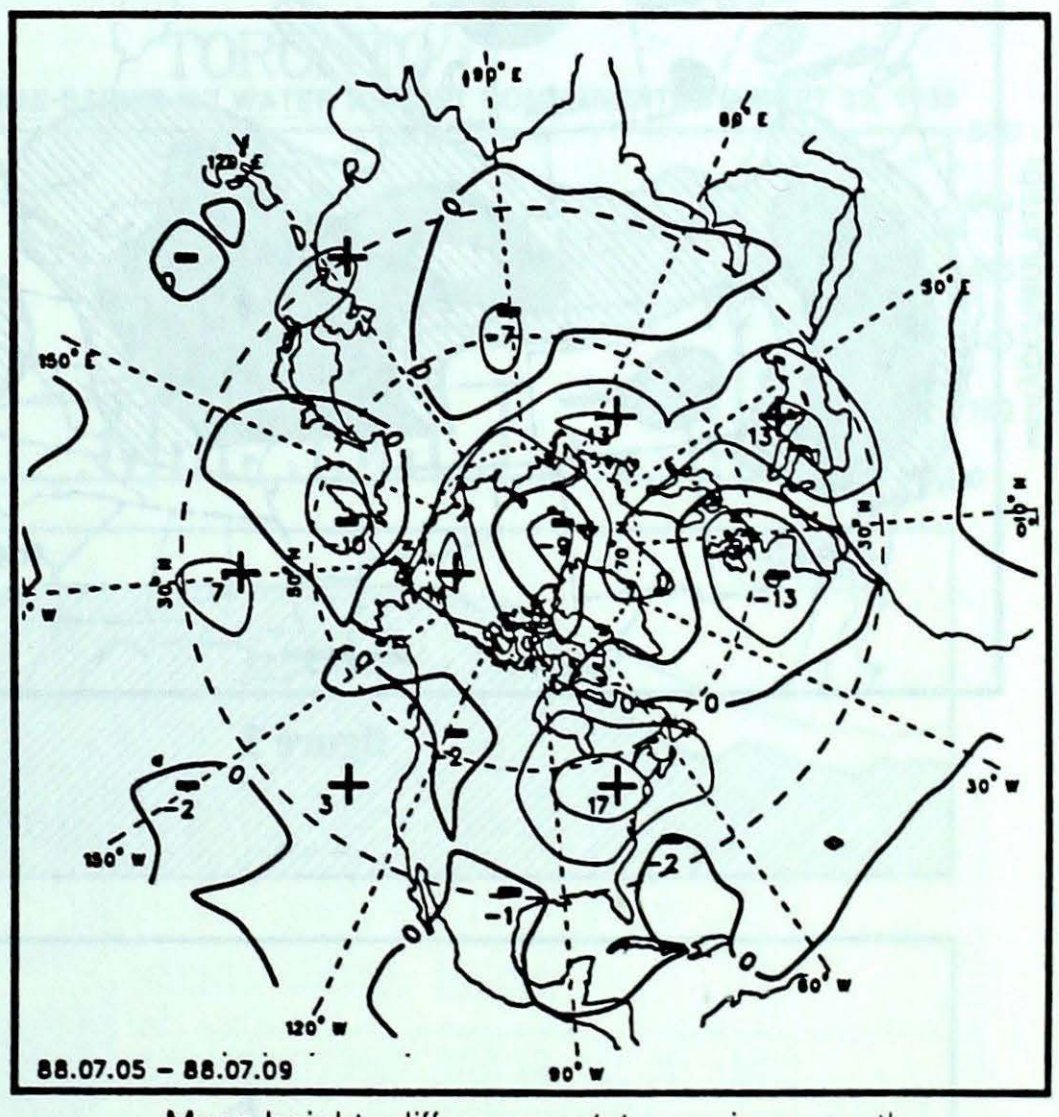


Mean geopotential height anomaly
- 5 decametre interval-

Figure 2.a Mean height and anomaly field at 50 kPa for the period June 25 to 29, 1988



Normal geopotential heights for the month
- 5 decametre interval -



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

Figure 2.b Mean height and anomaly field at 50 kPa for the period July 5 to 9, 1988

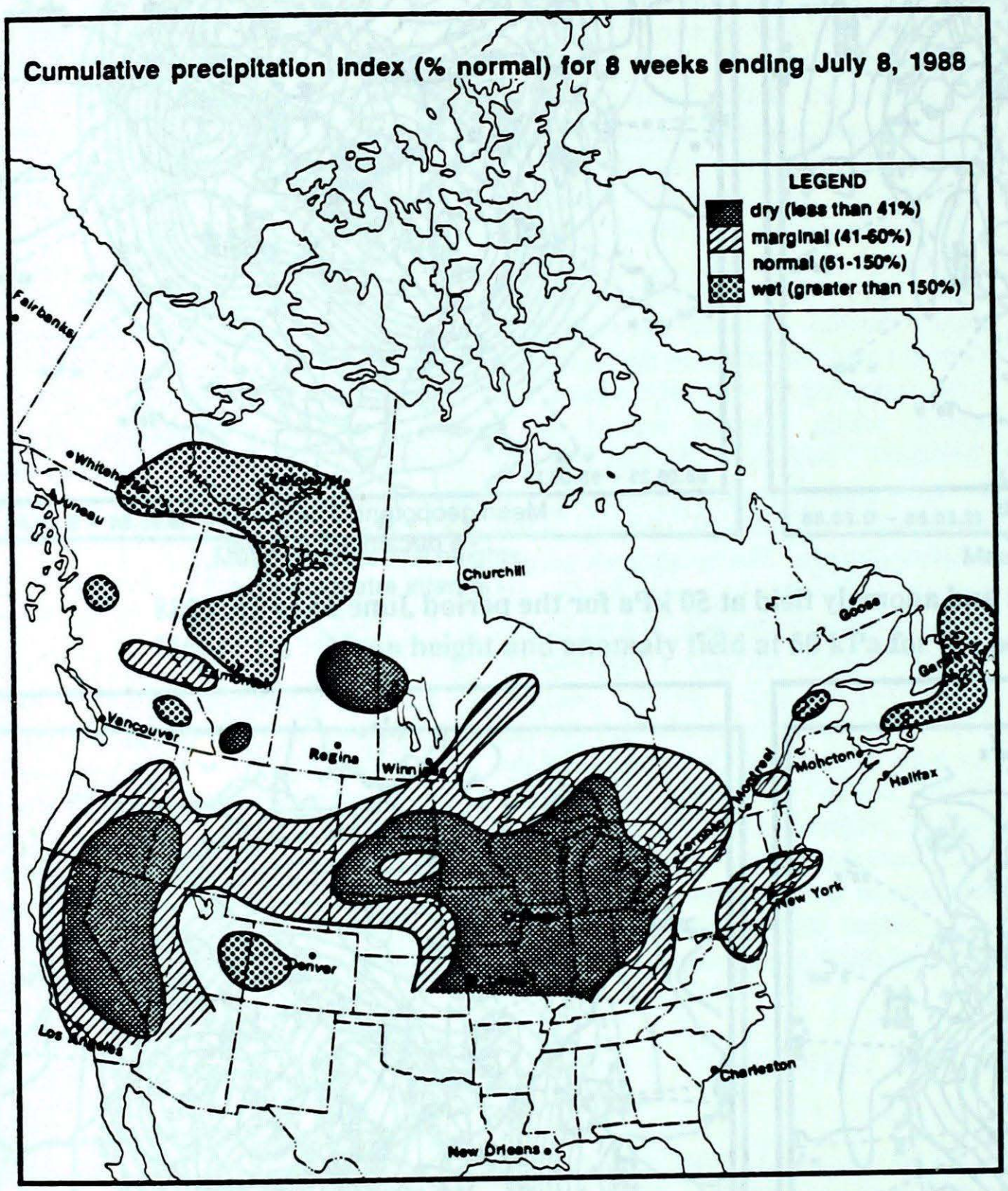


figure 3

Summer 1988

Summer came early to the Prairies this year as a pronounced upper ridge began building over the central and eastern Prairies during the latter part of May, producing a heat wave in southern Saskatchewan and Manitoba. This situation persisted through the month of June, resulting in all-time record mean monthly temperatures across the southern Prairies which, along with continued lack of rain, aggravated the drought conditions. June was also a very dry month in southern Ontario. The position of the upper ridge near the Saskatchewan-Manitoba border permitted the penetration of moist Pacific air into Alberta, particularly the northern half, where heavy rains brought a quick end to the drought conditions in this area, but not in the south. A major change in the upper atmospheric circulation occurred in early July when the upper ridge and associated positive 50-kPa height anomaly shifted eastward over the Great Lakes (see 50-kPa pentads in **figure 2**). This significant change in circulation brought some drought relief as cool, moist, unstable air invaded the Prairies. **Figure 3** shows the extent of drought conditions in North America and how the region of drought expanded eastwards over the Great Lakes with the changing circulation pattern. This shift in the drought from the Prairies to southern Ontario is shown in the water budget time series for Saskatoon and Toronto **(figure 4)**.

The positive 50-kPa height anomaly continued its slow eastward progression across the Great Lakes during July, resulting in the hottest July since 1955 in southern Ontario. At Toronto, it had been the second driest May-June period since records began in 1840 (the driest was in 1949). By mid July, the drought worsened as cumulative rainfalls since May 1st were less than 40% of normal in southwestern Ontario. After the upper-level height anomaly moved east of the Great Lakes in mid July, the trajectory of the upper level flow in southern Ontario shifted from the

parched regions of the American mid and southwest to the more humid areas of the Gulf Coast. This influx of humid air effectively brought an end to the drought conditions in southern Ontario by the end of July. By mid August, the changed 50-kPa circulation pattern had alleviated most of the summer drought concerns in Canada. The mean 50-kPa flow pattern returned to near normal over Canada in August and substantial rains fell in regions that had previously suffered under drought conditions.

The 1988 Prairie Drought in Historical Perspective

T. Guezen and R. Raddatz did some comparative studies to see how the drought years of the 1980's compared with those of the 1930's. They produced the comparative statistics shown in Table 1 and included the year 1961 which had been a memorable drought year between the decades of the thirties and the eighties. Using historical data from 9 selected stations across the Prairie provinces, they listed the precipitation shortfall as the percentage of the 1951-80 normal amount that would have been needed to bring the total up to normal over the period from September of the preceding year up to the end of August of the listed year. For example, the most severe shortfall this past year occurred at Lethbridge, where the total was 45% short of the normal total or, in other words, the total precipitation was 55% of the normal. The averages listed at the bottom of the table were calculated using only those locations with negative shortfalls for that year. It can be seen that 1988 was certainly a major drought event comparable to, but not any worse than previous major drought years. Over all, 1961 was most severe and the hardship in the thirties was in part due to the fact that there were two consecutive dry years.

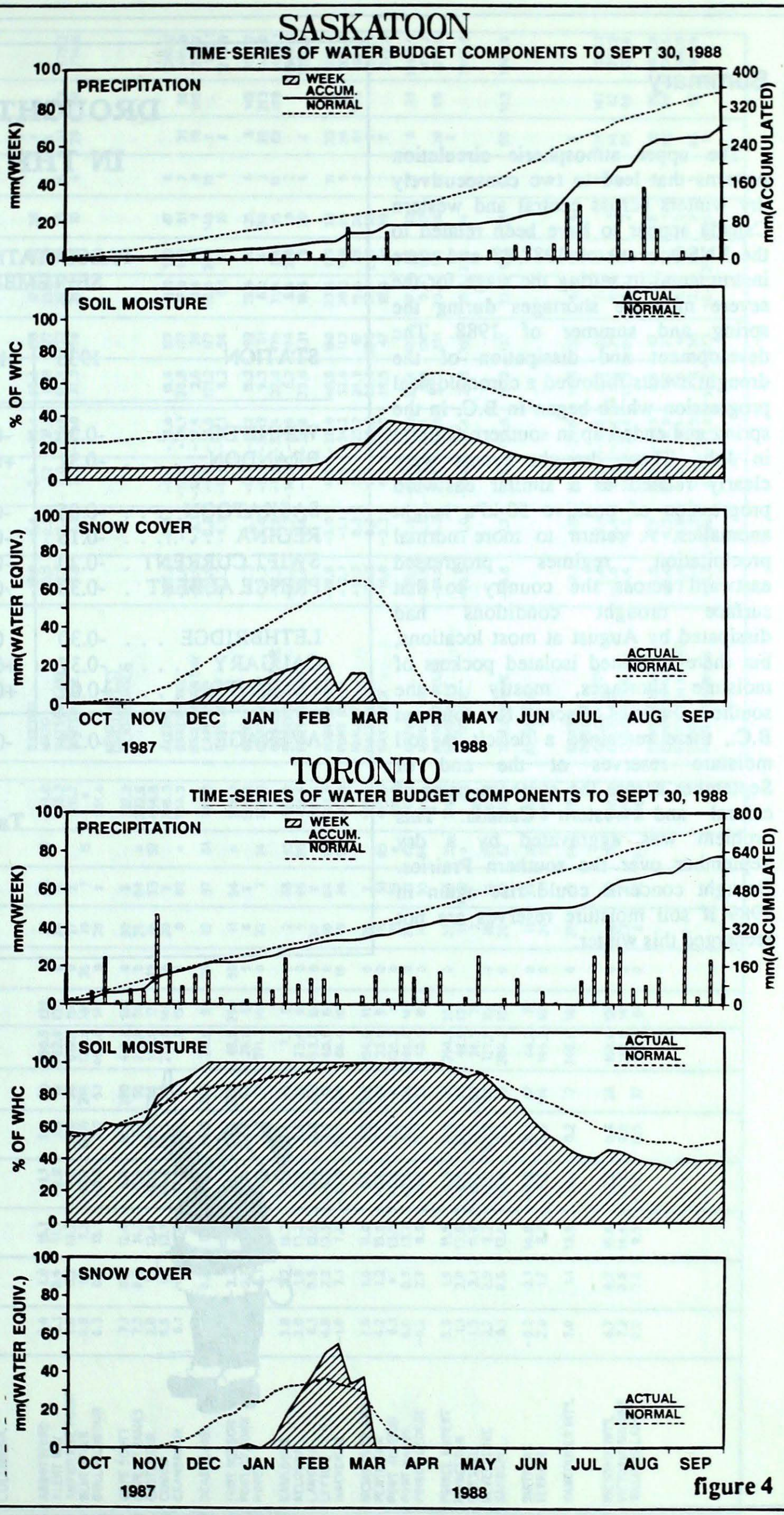


figure 4

Summary

The upper atmospheric circulation patterns that lead to two consecutively dry winters across central and western Canada appear to have been related to the ENSO event of 1987/88 and were instrumental in setting the stage for the severe moisture shortages during the spring and summer of 1988. The development and dissipation of the drought events followed a chronological progression which began in B.C. in the spring and ended up in southern Ontario in July. These drought events were clearly related to a similar eastward progression of positive 50-kPa height anomalies. A return to more normal precipitation regimes progressed eastward across the country so that surface drought conditions had dissipated by August at most locations, but there remained isolated pockets of moisture shortages, mostly in the southern Prairies. Except for southern B.C., there remained a deficit in soil moisture reserves at the end of September across the southern parts of central and western Canada. This problem was aggravated by a dry September over the southern Prairies. Drought concerns could rise again in 1989 if soil moisture reserves are not recharged this winter.

DROUGHT INTENSITY IN THE PRAIRIES

PRECIPITATION SHORTFALL
SEPTEMBRER-AUGUST

STATION	1936	1937	1961	1984	1988
WINNIPEG	-0.26	-0.06	-0.42	-0.06	-0.38
BRANDON	-0.31	+0.35	-0.43	-0.06	-0.22
SASKATOON . . .	-0.05	-0.19	-0.19	-0.24	-0.21
REGINA	-0.16	-0.53	-0.57	-0.34	-0.27
SWIFT CURRENT .	-0.20	-0.50	-0.35	-0.39	-0.25
PRINCE ALBERT .	-0.33	-0.13	-0.23	+0.34	+0.03
LETHBRIDGE . . .	-0.30	0.00	-0.31	-0.33	-0.45
CALGARY	-0.37	+0.01	-0.12	-0.32	-0.10
EDMONTON	+0.05	+0.01	-0.20	-0.32	+0.18
AVERAGE	-0.25	-0.28	-0.31	-0.26	-0.27

Table 1

NOVEMBER 1988

STATION	Temperature C Mean	Difference from Normal	Maximum	Minimum	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
BRITISH COLUMBIA													
ABBOTSFORD	6.6	1.0	16.1	-1.1	5.0	90	250.5	130	0	21	43	59	341.8
ALERT BAY	6.1	0.4	11.1	-0.8	1.0	14	283.6	133	0	24	X		359.2
AMPHITRITE POINT	7.6	0.2	13.2	0.2	0.8	36	610.7	154	0	27	X		311.7
BLUE RIVER	-0.8	1.5	7.2	-10.7	121.0	214	138.8	185	35	19	7	15	*
BULL HARBOUR	6.3	0.2	13.1	-0.9	2.2	53	403.6	149	0	28	X		351.4
CAPE SCOTT	7.1	0.2	12.4	0.4	10.7	260	412.8	124	0	30	X		327.3
CAPE ST.JAMES	7.2	0.3	14.1	0.5	2.1	55	218.9	116	0	26	64	*	322.6
CASTLEGAR	2.8	1.1	12.4	-9.3	28.6	95	143.5	177	13	16	33	57	454.9
COMOX	6.5	1.2	13.7	-0.9	8.8	110	276.6	144	0	20	X		345.3
CRANBROOK	0.1	1.9	16.6	-12.5	9.6	41	51.9	156	6	8	82	*	534.3
DEASE LAKE	-8.1	0.4	5.5	-26.1	36.0	103	26.6	90	26	13	37	61	781.3
FORT NELSON	-15.7	-3.7	7.5	-33.1	64.2	226	45.6	200	56	11	54	*	1011.1
FORT ST.JOHN	-8.7	-2.7	9.0	-23.4	28.4	92	25.8	82	5	6	X		802.3
HOPE	5.8	1.1	13.0	0.0	2.9	17	371.7	166	0	22	7	24	385.8
KAMLOOPS	3.8	2.2	16.7	-4.6	3.4	29	7.1	32	0	2	65	92	427.8
KELOWNA	3.0	1.9	13.2	-6.7	2.4	18	23.4	96	0	9	46	80	451.6
LANGARA	6.1	0.5	12.5	0.2	12.0	210	303.0	152	0	30	X		357.6
LYTTON	4.8	2.2	13.5	-5.3	3.5	15	80.6	84	0	10	64	98	391.3
MACKENZIE	-1.8	2.1	7.0	-23.9	52.2	105	66.4	109	18	18	26	53	592.9
MCINNES ISLAND	7.0	1.0	11.0	0.7	9.0	150	354.8	115	0	28	X		329.0
PENTICTON	4.2	1.2	15.5	-6.6	2.4	31	23.0	96	0	8	51	85	413.8
PORT ALBERNI	6.1	*	13.5	-0.6	7.2	*	426.7	*	0	21	35	*	356.2
PORT HARDY	6.0	0.7	13.7	-2.0	4.4	110	364.8	149	0	26	27	43	361.2
PRINCE GEORGE	-0.2	2.7	8.9	-15.7	13.2	33	40.5	80	0	10	55	84	544.6
PRINCE RUPERT	5.3	1.5	11.5	-7.3	6.3	71	294.1	109	0	27	16	32	379.4
PRINCETON	1.1	2.0	13.8	-8.0	21.2	90	49.9	132		11	62	*	*
QUESNEL	1.3	3.1	11.6	-10.7	11.7	40	34.3	79		7	X		500.4
REVELSTOKE	2.7	2.0	9.2	-3.3	33.8	66	127.5	150	3	19	14	33	461.5
SANDSPIT	6.1	0.6	12.6	-0.8	1.4	25	280.2	154	0	26	40	62	354.9
SMITHERS	-0.2	2.1	10.0	-11.8	18.1	47	44.2	75	0	11	36	78	536.1
TERRACE	2.0	1.7	8.7	-6.5	56.2	114	190.7	105	0	21	11	19	480.9
VANCOUVER INT'L	7.0	1.1	13.9	-0.1	0.2	7	248.9	165	0	20	45	64	329.5
VICTORIA INT'L	6.7	0.7	15.6	-2.2	0.6	26	162.6	124	0	18	61	78	340.2
VICTORIA MARINE	7.2	0.6	14.4	-1.0	0.0		278.0	149	0	23	X		324.6
WILLIAMS LAKE	0.0	2.6	9.5	-11.5	11.5	37	25.3	80	2	6	69	94	540.5

STATION	Temperature C Mean	Difference from Normal	Maximum	Minimum	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
YUKON TERRITORY													
DAWSON	-18.5	-0.4	-3.4	-39.4	39.4	155	17.8	70	36		X		
MAYO	-15.5	-0.3	1.2	-37.9	19.8	77	19.8	81			X		
WATSON LAKE	-14.5	-0.7	7.0	-36.4	49.4	132	28.5	89	35	15	31	72	973.2
WHITEHORSE	-7.8	1.0	2.8	-25.0	37.3	156	31.3	158	10	6	29	49	774.8
NORTHWEST TERRITORIES													
ALERT	-27.2	-0.6	-8.1	-35.4	15.4	177	11.0	132	47	6			1358.3
BAKER LAKE	-22.0	-1.7	-17.8	-26.1	30.8	177	17.0	103	51	7	31	60	1199.0
CAMBRIDGE BAY	-26.9	-3.1	-12.5	-37.4	2.6	28	1.6	20	7	0	10	105	1346.7
CAPE DYER	-13.9	0.8	-1.0	-26.5	121.2	177	118.4	200	149	10	X		957.1
CAPE PARRY	-23.2	-4.9	-8.7	-36.1	8.2	54	5.1	53	10	1	X		1236.9
CLYDE	-17.3	0.1	-0.7	-31.2	15.2	92	13.6	90	25	6	6	142	1057.7
COPPERMINE	-24.3	-4.6	-8.1	-36.3	9.3	61	6.0	41	30	3	28	213	1269.0
CORAL HARBOUR	-16.7	0.8	-1.0	-30.4	32.0	176	31.4	174	15	14	62	109	1040.1
EUREKA	-32.2	-0.7	-14.3	-42.6	6.2	206	5.4	216	9	2			1506.9
FORT RELIANCE	-16.4	-2.4	-1.1	-34.6	33.8	131	16.6	76	20	6	X		1000.5
FORT SIMPSON	-18.6	-3.0	4.6	-38.0	40.5	160	33.5	123	33	11	33	64	1097.0
FORT SMITH	-12.7	-1.1	2.5	-34.2	32.6	113	28.2	108	35	5	26	59	920.5
IQALUIT	-12.7	0.3	0.5	-25.2	24.9	67	19.4	56	24	5	61	133	921.9
HALL BEACH	-21.3	0.2	-2.7	-36.2	36.6	283	37.4	296	58	9	X		1180.5
HAY RIVER	-14.6	-3.3	4.9	-33.0	18.5	47	18.9	51	39	7	X		979.8
INUVIK	-28.1	-7.4	-12.8	-41.0	23.4	103	17.3	96	32	5	6	33	1383.8
MOULD BAY	-30.4	-3.8	-21.9	-40.4	6.6	150	5.8	156	17	4			1450.7
NORMAN WELLS	-24.5	-6.3	-7.2	-38.0	32.2	151	23.9	114	16	10	28	86	1274.6
POND INLET											X		
RESOLUTE	-25.5	-1.0	-11.9	-35.4	21.8	357	13.5	236	24	5			1305.9
YELLOWKNIFE	-16.8	-2.7	1.8	-36.9	59.3	197	32.7	133	25	13	60	143	1043.9
ALBERTA													
BANFF	-2.1	1.8	14.0	-20.5	10.8	33	14.4	46	6		X		
BROOKS													
CALGARY INT'L	-0.6	2.1	16.3	-19.4	3.8	23	7.0	55		3	126	101	557.1
COLD LAKE	-5.6	0.6	8.5	-25.4	6.2	29	9.4	46	1	3	64	67	707.2
CORONATION	-5.4	-0.5	12.5	-24.0	13.8	86	11.0	73	2	5	85	66	781.6
EDMONTON INT'L	-4.8	0.7	10.3	-21.3	8.6	47	7.8	46	6	2	78	76	683.8
EDMONTON MUNI.	-3.4	0.3	10.4	-18.0	4.2	27	5.2	33	1	1	86	80	642.5
EDMONTON NAMAO	-4.0	0.9	9.9	-19.4	7.0	41	6.9	38	2	2	X		584.9
EDSON	-5.1	1.3	12.1	-25.5	7.8	30	7.2	35	2	3	86	92	692.9
FORT CHIPEWYAN	-11.7	-0.8	6.5	-33.0	55.6	223	56.4	243	35		X		

NOVEMBER 1988

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	Mean	Difference from Normal	Maximum	Minimum									
FORT MCMURRAY	-8.9	-0.7	8.4	-27.8	40.4	138	28.4	112	29	8	33	39	805.8
GRANDE PRAIRIE	-7.1	-1.1	9.4	-22.5	21.2	81	24.0	86	4	9	37	*	754.5
HIGH LEVEL	-13.6	-2.2	7.8	-32.8	54.4	186	48.2	172	42	9	23	32	949.0
JASPER	-2.1	1.8	7.9	-20.4	7.2	29	26.4	89	4	7	57	*	601.3
LETHBRIDGE	0.8	1.6	18.1	-26.0	7.4	39	6.6	39	0	3	143	122	517.6
MEDICINE HAT	-0.5	1.1	17.0	-24.8	6.8	48	8.7	59		5	114	101	555.4
PEACE RIVER	-8.0	0.1	5.6	-22.5	18.0	81	25.0	125	5	7	X		779.1
RED DEER	-4.0	0.6	14.8	-21.3	6.3	41	4.7	31	1	2	X		659.4
ROCKY MTN HOUSE	-3.5	0.1	14.0	-22.0	7.4	37	6.0	33	3	2	X		644.3
SLAVE LAKE	-5.6	0.7	11.6	-18.6	24.4	103	18.1	75	10	6	65	65	707.7
SUFFIELD	-1.5	0.8	17.3	-22.6	8.6	61	13.4	91		5	116	95	584.3
WHITECOURT	-5.0	1.3	9.8	-21.2	14.4	65	12.1	51	1	5	X		684.3
SASKATCHEWAN													
BROADVIEW	-5.2	0.3	13.4	-23.0	12.2	81	14.6	108	1	5	105	97	697.1
COLLINS BAY	-13.0	-0.5	-1.7	-36.7	147.6	269	94.2	215	48	16	27	*	928.4
CREE LAKE	-10.6	-0.2	1.5	-27.6	45.8	162	47.6	227	31	11	8	12	857.5
ESTEVAN	-3.7	-0.1	14.7	-22.6	18.2	122	16.8	103		4	102	84	650.7
KINDERSLEY	-4.9	0.3	15.2	-23.0	11.4	111	9.4	75	2	4	X		689.5
LA RONGE	-7.5	0.4	5.5	-28.1	27.3	77	38.8	146	19	10	X		763.9
MEADOW LAKE	-6.1	0.5	7.9	-24.9	8.2	43	14.2	66	4	3	61	*	728.8
MOOSE JAW	-3.6	0.0	16.5	-21.5	20.7	110	21.5	128	8	5	97	88	646.4
NIPAWIN	-5.5	*	5.9	-20.8	15.2	*	14.6	*	1	5	48	*	705.5
NORTH BATTLEFORD	-5.2	0.6	9.9	-21.7	9.4	68	15.0	104		4	X		694.5
PRINCE ALBERT	-5.2	2.0	7.0	-21.3	3.4	19	8.2	48		2	47	55	698.7
REGINA	-4.8	0.3	13.2	-22.2	14.4	101	17.9	132	5	7	92	88	683.6
SASKATOON	-4.5	1.2	11.2	-20.8	7.2	55	7.4	50		3	X		676.2
SWIFT CURRENT	-3.4	0.3	16.7	-23.7	13.4	89	12.8	81	3	3	104	94	642.6
WYNYARD	-4.9	0.8	10.4	-21.2	11.2	60	13.4	69	3	4	X 67	71	688.4
YORKTON	-5.5	0.4	8.4	-20.1	14.9	76	18.4	91	5	5	73	81	705.2
MANITOBA													
BRANDON	-6.2	-0.5	13.7	-23.8	18.6	112	20.5	113	6	5	X		716.2
CHURCHILL	-12.5	-0.4	2.2	-35.0	40.4	97	33.4	86	26	13	33	66	912.8
DAUPHIN	-5.0	0.2	12.4	-21.5	12.2	50	13.1	51	3	2	64	68	689.3
GILLAM	-10.4	1.7	2.1	-31.4	46.6	104	36.0	104	38	9	X		852.0
GIMLI	-4.5	0.1	7.1	-23.3	31.2	109	25.0	83	11	5	45	47	675.2
ISLAND LAKE	-6.6	1.8	4.9	-25.7	42.0	83	34.4	87	22	10	X		739.9
LYNN LAKE	-11.8	0.5	-1.4	-33.6	103.8	276	48.9	149	44	8	29	47	892.5
NORWAY HOUSE	-7.0	*	4.9	-26.2	17.4	*	16.4	*	4	7	X	*	748.8
PORTAGE LA PRAIRIE	-4.8	-0.7	10.2	-20.8	26.3	228	20.4	69	2	5	X		686.6
THE PAS	-6.4	1.1	3.2	-24.2	24.4	76	21.8	75	8	8	27	40	731.9
THOMPSON	-9.8	2.1	2.5	-35.7	33.5	99	29.3	94	24	7	33	48	833.5
WINNIPEG INT'L	-4.4	0.1	6.7	-21.1	26.4	120	21.3	84	7	4	61	67	671.9
ONTARIO													
BIG TROUT LAKE	-6.5	2.5	3.2	-24.6	54.4	*	75.6	183	22	12	44	*	736.1
EARLTON	-0.4	2.1	11.1	-16.3	39.3	100	84.6	119	5	15	X		552.6
GERALDTON	-4.6	0.9	9.0	-27.8	59.0	105	85.2	138	20	11	X		678.0
GORE BAY	3.4	1.5	13.1	-4.2	4.6	17	174.6	215	0	19	X		436.9
HAMILTON RBG	5.4	0.9	18.2	-3.2			77.2	117	0	10	80	*	
HAMILTON	4.8	1.4	17.0	-2.4	2.4	20	77.0	112	0	11	X		397.7
KAPUSKASING	-2.4	2.0	9.3	-16.5	56.8	92	127.1	158	16	14	X		612.6
KENORA	-3.6	1.0	7.7	-19.9	36.3	97	36.5	90	25	3	X		649.3
KINGSTON	4.7	1.3	18.7	-5.5			87.2	103	0	13	65	83	399.4
LANSDOWNE HOUSE	-5.5	1.9	4.8	-22.8	90.0	189	64.6	138	17	7	X		7.5
LONDON	4.6	1.5	17.3	-1.8	8.4	34	116.3	137	2	17	60	80	402.1
MOOSONEE	-2.0	2.5	8.5	-16.9	40.8	86	82.4	124	9	12			598.1
MUSKOKA	2.8	1.7	15.8	-8.6	13.6	33	106.2	105	0	17	X		456.8
NORTH BAY	0.5	1.5	13.6	-13.3	44.8	130	99.0	114	2	14	44	67	525.7
OTTAWA INT'L	2.7	1.5	16.7	-5.7	10.2	44	82.8	106	0	10	76	*	459.3
PETAWAWA	2.2	2.3	15.4	-10.3	12.0	63	72.1	109		11	X		474.0
PETERBOROUGH	3.5	1.4	16.7	-7.2	1.0	6	81.0	116	0	8	X		436.8
PICKLE LAKE	-5.9	1.7	4.1	-24.7	63.5	130	63.8	130	32	6	X		720.9
RED LAKE	-4.9	0.9	4.5	-25.4	59.4	177	62.0	155	47	5	42	*	685.9
ST. CATHARINES	6.0	1.3	20.1	-3.0			67.4	108	0	9	X		358.9
SARNIA	5.1	0.9	18.5	-3.0	1.0	6	131.6	169	0	13	70	75	386.0
SAULT STE. MARIE	2.7	2.0	14.6	-5.1	14.6	35	169.7	198	2	24	21 X	32	460.5
SIOUX LOOKOUT	-4.4	0.9	7.2	-22.3	60.8	133	61.1	122	50	7	X		671.4
SUDBURY	0.5	1.7	11.5	-14.7	39.6	123	120.0	154	8	14	44	56	527.3
THUNDER BAY	-1.5	1.1	11.3	-14.6	29.4	98	89.1	168	3	9			584.9
TIMMINS	-1.6	2.2	11.8	-17.7	54.7	89	140.0	177	10	16	X		582.8
TORONTO	6.0	1.1	15.2	-0.2			68.8	100	0	10			358.3
TORONTO INT'L	4.5	1.2	16.8	-4.3			58.1	92	0	7	X		403.9
TORONTO ISLAND	5.3	0.7	12.5	-1.0			68.9	107	0	8			380.8
TRENTON	4.4	1.2	17.2	-6.2			67.7	78	0	10	X		409.5
WATERLOO-WELL	3.7	1.1	16.9	-3.8	3.4	23	95.1	131	0	13	X		428.9
WAWA	-0.5	*	13.5	-16.9	63.0	*	180.5	*	11	18		*	554.0
WIARTON	4.2	1.3	18.7	-4.0	11.1	28	123.5	130	0	16	32	52	414.7
WINDSOR	5.6	1.2	18.0	-2.1	3.6	31	116.8	179	0	12	X		371.4

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STATION	Temperature C Mean	Difference from Normal	Maximum	Minimum	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
QUEBEC													
BAGOTVILLE	-0.6	1.4	9.8	-16.1	45.2	95	71.9	97		14	X		557.3
BAIE COMEAU	-0.3	1.5	7.6	-11.1	27.4	77	76.5	95		8	68	*	548.8
BLANC SABLON													
CHIBOUGAMAU	-3.4	2.0	6.7	-20.6	57.8	108	90.2	117	4	16	31	62	640.9
GASPE	1.4	1.6	4.6	-1.8	21.6	69	142.9	170	2	12	75	*	497.3
INUKJUAK	-5.1	2.1	2.2	-16.6	42.8	112	42.8	107	19	9	35	125	693.4
KUUJJUAQ	-7.5	0.8	3.1	-22.6	60.4	168	94.4	135	26	12	74	143	764.5
KUUJJUARAPIK	-3.5	1.4	4.8	-18.1	47.1	89	54.5	89	14	16	50	130	645.6
LA GRANDE RIVIERE	-4.5	*	4.4	-16.6	69.2	*	86.4	*	35	11	24	*	637.5
MANIWAKI	1.5	1.8	14.9	-9.5	37.0	142	97.8	131	3	15	57	86	496.0
MATAGAMI	-2.0	3.2	8.3	-16.3	43.8	103	106.2	166	1	13	1	2	687.8
MONT JOLI	1.1	1.4	11.0	-9.0	22.0	61	57.0	76	0	11	56	73	507.6
MONTREAL INT'L	3.2	1.2	19.0	-7.9	24.8	116	117.8	145	0	11	74	86	445.5
MONTREAL M INT'L	2.0	*	17.7	-11.0	21.6	*	111.2	*	0	13		*	481.7
NATASHQUAN	0.6	1.7	8.4	-9.5	18.4	57	101.4	87	2	11	96	112	523.2
QUEBEC	1.2	1.4	13.7	-11.0	22.4	66	95.2	98		15	82	110	523.5
ROBERVAL	-0.7	1.5	11.4	-13.6	76.2	160	105.2	140	1	12	50	*	562.0
SCHEFFERVILLE	-9.5	-0.5	3.2	-24.7	59.8	97	62.4	94	35	14	45	*	803.3
SEPT-ILES	-0.7	1.8	8.9	-10.4	50.6	99	121.6	121	2	11	72	76	560.8
SHERBROOKE	1.4	1.0	19.2	-12.1	18.2	49	101.1	112	1	16	56	*	498.9
STE AGATHE DES MONTS	0.2	1.7	12.3	-9.9	48.0	116	147.6	145	1	14	57	81	534.5
ST-HUBERT	2.8	1.0	19.9	-10.2	14.9	62	123.9	139	0	12	*		454.7
VAL D'OR	-1.2	2.2	9.4	-13.7	57.2	119	98.8	124	9	16	21	35	576.4
NEW BRUNSWICK													
CHARLO	0.6	0.9	10.1	-10.0	26.7	71	76.0	90	4	12	70	74	521.4
CHATHAM	2.0	1.1	15.4	-12.5	46.8	178	150.1	146	10	13	104	105	482.4
FREDERICTON	2.8	1.4	17.8	-8.6	11.0	53	137.7	129	0	16	104	*	456.0
MONCTON	2.8	0.8	18.5	-10.6	24.8	114	160.9	146	0	12	110	114	456.1
SAINT JOHN	3.5	1.2	15.4	-8.3	4.4	51	215.3	147	0	14	118	121	435.7

STATION	Temperature C Mean	Difference from Normal	Maximum	Minimum	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
NOVA SCOTIA													
GREENWOOD	5.1	1.2	20.6	-6.9	3.8	26	166.8	153	0	12	X		388.5
HALIFAX INT'L	4.0	0.6	16.0	-7.0	6.5	54	197.4	129	0	9	*		420.3
SABLE ISLAND	7.1	-0.2	16.7	-2.1	0.9	29	219.6	160	0	13	95	135	327.8
SHEARWATER	5.0	0.4	15.0	-6.0			218.6	153	0	13	127	116	390.2
SYDNEY	4.2	0.4	14.5	-5.2	19.0	158	191.4	119		15	81	108	414.2
YARMOUTH	6.1	0.9	16.7	-3.7	1.4	21	196.4	145	0	14	143	160	358.1
PRINCE EDWARD ISLAND													
CHARLOTTETOWN	5.3	2.4	16.7	-7.4	8.2	37	112.1	93	0	12	X		432.7
SUMMERSIDE	3.4	0.4	16.4	-7.0	19.4	114	89.9	89	0	11	94	98	437.9
NEWFOUNDLAND													
BATTLE HARBOUR	-0.3	0.3	7.3	-11.4	56.4	*	154.0	246	4	19	X		548.5
BONAVISTA	3.8	0.4	13.9	-7.0	49.2	439	155.2	161	0	15	X		426.2
BURGEO	2.6	-0.6	10.3	-9.8	13.7	116	219.3	123	0	16	*		349.6
CARTWRIGHT	-0.9	0.9	4.8	-9.3	75.9	163	137.7	172	10	18	57	81	565.9
CHURCHILL FALLS	-6.8	1.1	3.0	-20.0	115.0	162	113.6	145	83	15	48	92	743.1
COMFORT COVE	2.0	0.1	15.0	-4.0	33.2	99	98.6	92	0	18	X		480.4
DANIEL'S HARBOUR	2.4	0.6	13.2	-7.6	54.3	207	164.6	160		21	36	73	469.6
DEER LAKE	2.4	1.4	14.4	-7.0	21.8	62	122.1	113		18	X		469.2
GANDER INT'L	1.8	0.0	14.4	-10.1	98.4	309	176.8	164	0	22	56	84	488.1
GOOSE	-3.2	0.6	6.2	-13.8	78.1	137	84.5	112	16	13	66	100	590.2
PORT-AUX-BASQUES	3.5	0.3	10.3	-7.6	24.1	211	211.1	135	2	20	58	*	436.4
ST ANTHONY	-0.1	1.2	7.5	-11.3	52.2	136	168.0	125		23	0	*	542.4
ST JOHN'S	3.3	-0.1	16.9	-8.7	29.0	136	153.4	94	0	2	63	91	442.0
ST LAWRENCE	4.3	0.8	12.6	-6.4	4.0	44	188.7	140		15	0	*	400.2
STEPHENVILLE	3.7	0.8	12.6	-7.8	30.6	125	148.8	121		23	31	*	429.6
WABUSH LAKE	-7.6	0.5	3.1	-22.7	49.0	72	48.3	63	19	12	37	*	765.4

AGROCLIMATOLOGICAL STATIONS — **NOVEMBER 1988**

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	Mean	Difference from Normal	Maximum	Minimum							This month	Since jan. 1st
BRITISH COLUMBIA												
AGASSIZ	6.5	0.5	13.5	0.0	0.7	287.8	136	0	24	37	54.5	2236.2
KAMPLOOPS	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x
SIDNEY	6.9	0.7	16.0	-1.5	0.0	162.6	125	0	21	47	65.3	1935.2
SUMMERLAND	4.0	1.5	15.5	-6.0	4.0	27.2	107	0	10	62	28.6	2293.9
ALBERTA												
BEAVERLODGE	-8.0	-2.9	9.5	-22.5	23.8	23.1	86	1	8	109	0.2	1988.7
ELLERSLIE	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x
LACOMBE	-3.8	0.6	11.5	-24.0	4.5	0.0	0	1	3	85	1.2	1463.4
LETHBRIDGE	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x
VEGREVILLE	-5.4	0.7	-1.0	-9.8	9.5	12.2	84	3	5	xx	1.0	1582.3
SASKATCHWAN												
INDIAN HEAD	-4.8	0.3	13.5	-21.5	15.6	12.4	73	4	2	xx	0.5	1545.5
MELFORT	-5.6	1.3	5.5	-20.0	7.7	10.4	55	4	x	x	x.x	x.x
REGINA	-5.1	0.8	13.0	-24.0	21.8	14.7	109	6	3	xx	0.0	1927.8
SASKATOON	-3.9	x.x	12.0	-19.5	7.1	7.9	xx	0	7	84	x.x	1997.0
SCOTT	-5.8	0.4	10.5	-23.0	8.0	12.0	87	4	3	67	0.0	1682.9
SWIFT CURRENT	-3.0	0.9	12.0	-24.0	9.5	11.7	90	5	4	102	9.4	2050.9
MANITOBA												
BRANDON	-5.3	-0.3	14.5	-24.0	16.6	18.8	94	7	4	xx	2.3	2094.8
GLENLEA	-3.7	1.2	13.0	-21.0	23.0	22.0	91	2	3	72	3.0	2361.5
MORDEN	-5.0	-1.5	7.0	-22.0	25.5	25.5	100	8	3	57	0.0	2077.1
ONTARIO												
DELHI	4.9	1.2	17.5	-4.0	8.0	105.6	128	0	14	65	44.4	2285.7
ELORA	3.5	1.6	15.6	-2.9	0.0	0.0	0	13	xxx	xx	x.x	x.x
GUELPH	3.8	1.3	16.5	-5.5	5.0	98.0	131	0	15	57	24.6	2045.3
HARROW	5.5	1.0	16.0	-2.5	0.0	103.8	155	0	12	67	46.9	2583.7
KAPUSKASING	-1.9	2.3	10.0	-16.5	73.3	131.8	179	12	16	20	0.0	1386.4
OTTAWA	3.2	1.6	16.0	-6.8	4.8	76.3	103	0	8	76	22.4	2140.8
SMITHFIELD	4.7	1.7	17.8	-5.4	0.0	61.0	69	0	7	xx	34.0	2327.8
VINELAND	6.0	0.9	19.8	-3.4	0.0	77.2	117	0	13	72	39.6	2335.8
WOODSLIE	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x

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	Mean	Difference from Normal	Maximum	Minimum							This month	Since jan. 1st
QUEBEC												
LA POCATIERE	1.5	1.1	12.0	-16.0	13.5	80.3	103	0	13	96	4.8	1644.5
L'ASSOMPTION	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x
LENNOXVILLE	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x
NORMANDIN	-1.5	1.4	8.0	-18.0	60.0	101.0	172	2	8	50	0.0	1358.1
STE.CLOTILDE	3.1	1.2	18.5	-10.0	9.0	102.8	128	0	9	71	27.2	2086.0
NEW BRUNSWICK												
FREDERICTON	2.5	0.8	17.5	-8.5	0.0	114.5	102	0	15	104	33.0	1840.9
NOVA SCOTIA												
KENTVILLE	5.3	1.3	20.0	-6.0	3.0	176.8	148	0	14	114	-50.0	1758.7
NAPPAN	4.1	1.1	19.0	-8.0	5.0	127.4	118	0	13	100	40.0	1755.8
PRINCE EDWARD ISLAND												
CHARLOTTETWN	4.0	0.6	17.0	-7.5	10.4	122.6	111	0	15	80	39.0	1721.4
NEWFOUNDLAND												
ST.JOHN'S WEST	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x