Environment Canada Environnement Canada

Climatic Perspectives

Monthly review DECEMBER Vol.9 1987

CLIMATIC HIGHLIGHTS

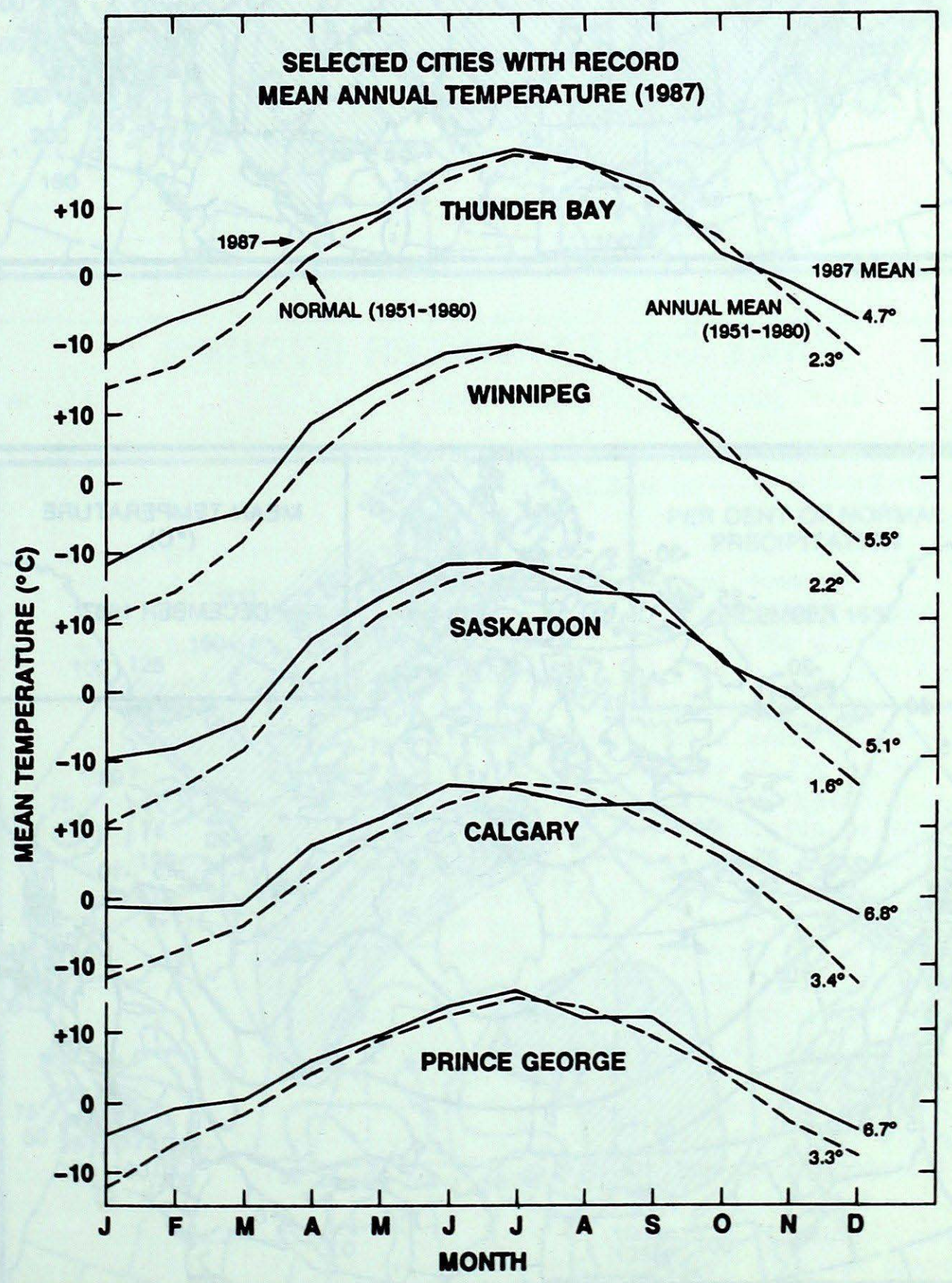
by
P. Scholefield, Monitoring and Prediction Division

Unusual Mildness Contributes to Record High Annual Temperatures

The extremely mild weather of November continued right through to near the end of December across Canada from central Quebec to the west coast of B.C. The exception was a small region in southwestern B.C. where slightly below-normal temperatures ended a 16-month consecutive spell of above-normal temperatures. As was the case last winter, Atlantic Canada is again shouldering the brunt of cold stormy winter weather so far this season.

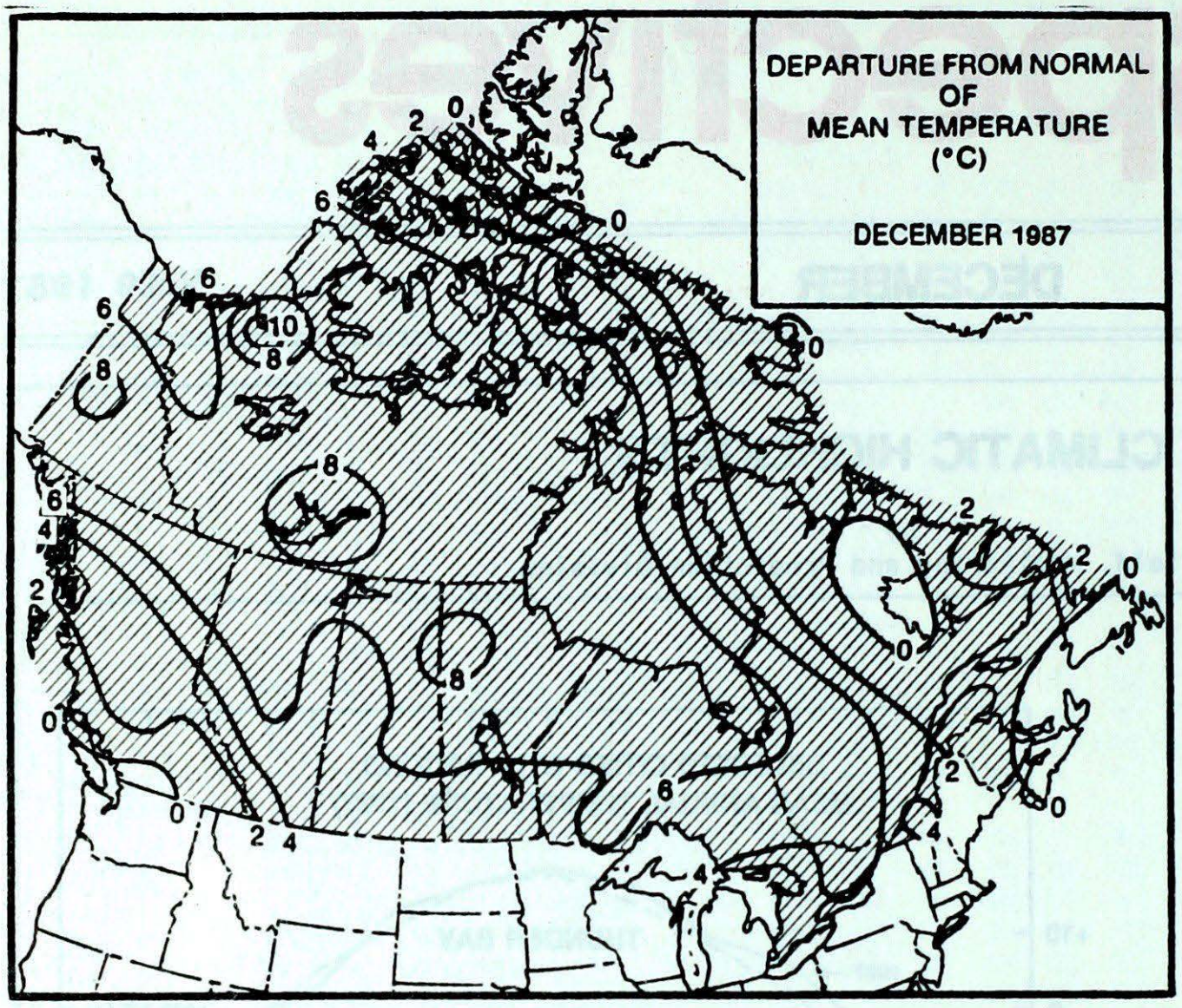
This recent pronounced spell of mild weather combined with the record period of above-normal temperatures last winter and spring was enough to push the mean annual temperature to an all-time record high value at many locations covering a vast area extending from the Great Lakes basin west-northwestward to B.C., and northward into the Yukon and the District of Mackenzie.

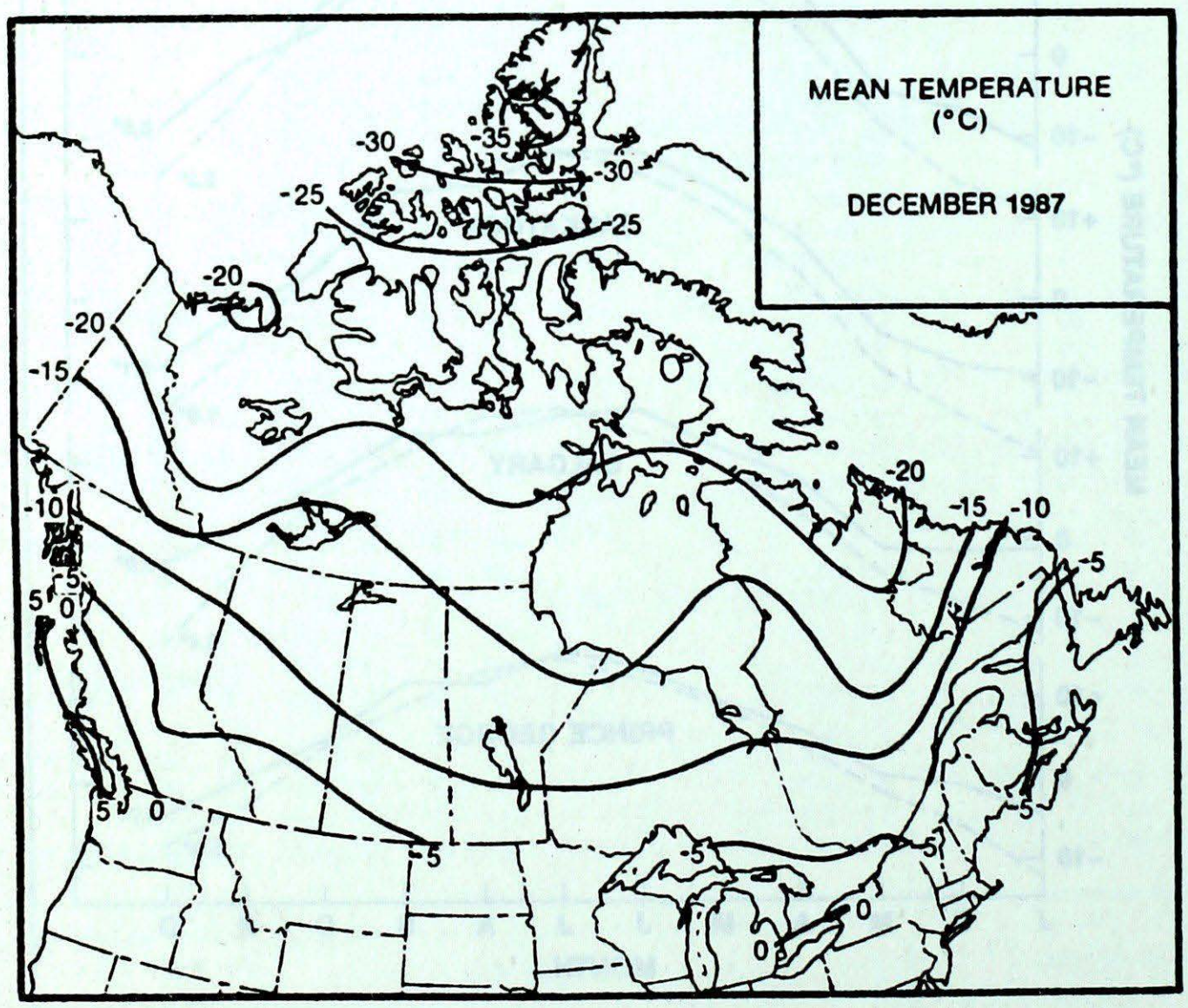
The adjacent graphs show the mean monthly temperature distribution for the year at one city in each of the five provinces which experienced record high mean annual temperatures. Note the magnitude of the positive departures from normal during the colder months of the year. The El Nino condition and enhanced greenhouse warming may have both contributed to this warm event but the cause cannot yet be proved conclusively.



Canada

TEMPERATURE





ACROSS THE COUNTRY

Yukon and Northwest Territories

December, known as a cold month across the North, didn't live to its billing of years past. Although winter did settle in as scheduled, the temperatures were still well above normal over the Yukon and a large portion of the Northwest Territories. Monthly averages were 2 to 10°C above normal with Cape Parry registering the greatest departure of 10.1°C. During the last few days of the month, there was a cold reminder of the winter season as bitterly cold air settled over the Arctic. The temperatures dipped below -40°C at Old Crow and Ogilvie. Only eastern Baffin Island and northern Ellesmere Island experienced colder than normal December.

Except for the central part of the Territories, precipitation was below normal almost everywhere. Southern mountainous areas in the Yukon had above normal snowfall. Beaver Creek, Carmack and Dawson also received ample snowfall. By the end of the month, most rivers and lakes across the Yukon were frozen over.

British Columbia

December began with very mild weather but cooled down towards the middle of the month. Overall, the temperatures were 2 to 7°C above normal from central to northern areas of the province. However, after months of above normal temperatures near to slightly below normal readings were common across southwestern British Columbia.

With the exception of the north coastal areas and the southern interior valley, precipitation was below normal throughout most of the regions. Central areas received only a third of their normal December share. Snowfall was also below normal with only Alert Bay experiencing above normal amounts (101%) while 40 km away Port Hardy had only 12% of normal. The northwest received near normal snowfall as did the southern Cascades (90% at Lytton). Sunshine was below normal north of 55°N and in the eastern half of the southern interior. Elsewhere above normal

amounts were reported.

Due to lack of adequate snow cover, ski resorts at low altitude were operating on marginal snow pack.

Prairie Provinces

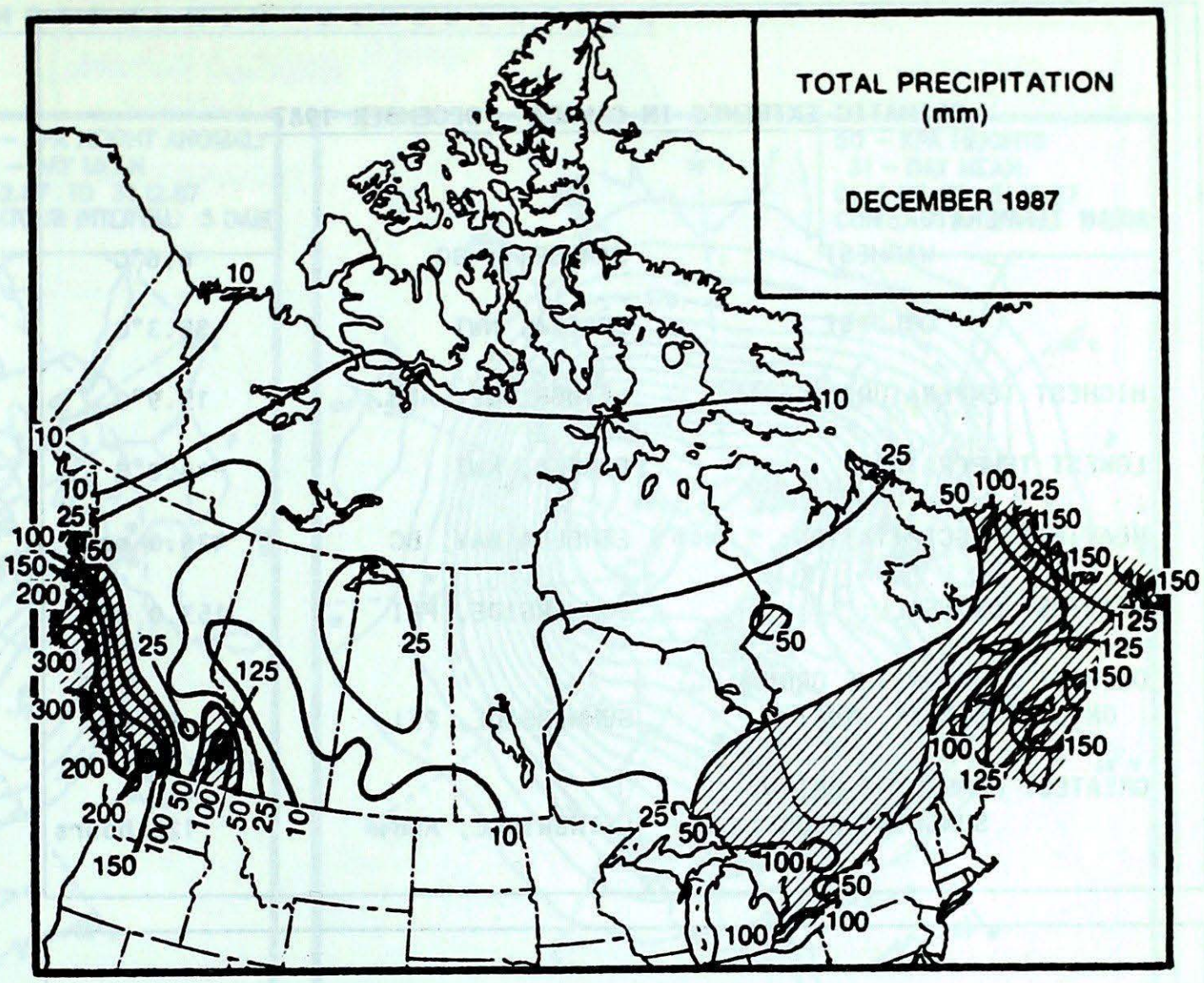
Record warmth and scanty snowfall highlighted the weather across most of the Prairies. The temperatures were 5 to 9°C above normal. At least 90 daily maximum temperature records were established including a reading of 9°C at Edmonton on 25th which established the mildest Christmas Day since records began in 1880. The first bite of winter was not felt until the last few days of the month as a surge of cold Arctic air flooded the Prairies. December's warmth helped to produce a near record to record mild 1987 across the region. For example, an annual reading of 5.5°C at Winnipeg topped the highest reading set in 1931.

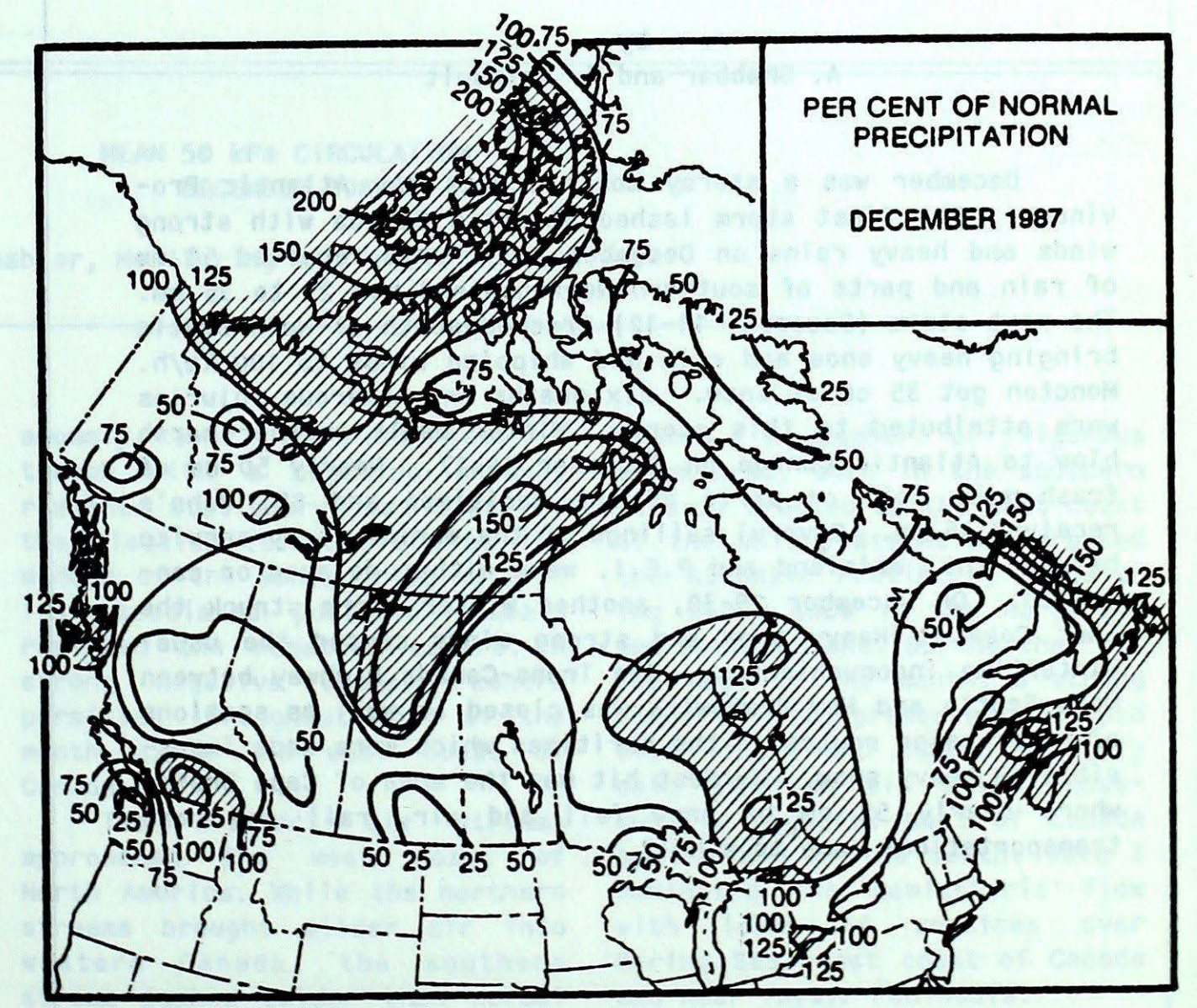
Except for northern Saskatchewan, precipitation was only 50 to 75 percent of normal. Estevan got the least amount, only 1.8 mm or 9% of normal. Seasonal snowfall was less than one-half the normal over the southern two-thirds of Alberta. Lack of snow cover (less than 5 cm) continued to plague the agricultural areas. Soil erosion by the winds was a serious concern in the southern Prairies.

Ontario

December 1987 was a dramatically mild month marking a fit ending to one of the warmest years ever recorded in Ontario. In particular, Northwestern Ontario continued to enjoy above-normal temperatures with readings 5 to 8°C above normal making this the mildest December since 1959. Northwestern regions were 4 to 7°C above normal. Meanwhile, in central and southern Ontario the temperatures were a more modest 2 to 4°C warmer than usual, but still sufficient to account for the mildest December since 1982.

Snowfall was light in southern Ontario. The amounts ranged from a low of 9.8 cm in Toronto - the least December snowfall since 1952 - to more general falls of 20-40 cm elsewhere. Windsor was an exception





EXTREMES

CLIMATIC EXTREMES IN CANADA - DECEMBER 1987

MEAN TEMPERATURE:		
WARMEST	SANDSPIT, BC	6.6°C
COLDEST	EUREKA, NWT	-35.3°C
HIGHEST TEMPERATURE:	LETHBRIDGE, ALB.	15.9°C
LOWEST TEMPERATURE:	EUREKA, NWT	-48.0°C
HEAVIEST PRECIPITATION:	ETHELDA BAY, BC	436.0 mm
HEAVIEST SNOWFALL:	SUMMERSIDE, PEI	153.0 cm
DEEPEST SNOW ON THE GROUND ON DECEMBER 31, 1987:	SUMMERSIDE, PEI	91 cm
GREATEST NUMBER OF BRIGHT SUNSHINE HOURS:	LETHBRIDGE, ALB.	125 hours

EAST COAST WINTER STORMS

by
A. Shabbar and F. Amirault

December was a stormy month across the Atlantic Provinces. The first storm lashed Atlantic Canada with strong winds and heavy rains on December 1. Charlo received 58 mm of rain and parts of southern Newfoundland had 25 to 35 mm. The next storm (December 11-12) tracked south of Nova Scotia bringing heavy snow and rain and whipping winds to 100 km/h. Moncton got 35 cm of snow. Six deaths and numerous injuries were attributed to this storm. Winter dealt another harsh blow to Atlantic Canada on December 16-17. Nearly 50 cm of fresh snow fell on parts of the maritimes and St. John's received 35 cm. Several sailings of the marine ferry service between the mainland and P.E.I. were either delayed or cancelled. On December 29-30, another winter storm struck the East Coast. Heavy snow and strong winds caused the usual wintertime inconveniences. The Trans-Canada Highway between Nova Scotia and New Brunswick was closed as well as sections of other major routes in the maritimes which were made impassible by heavy snow. Hardest hit was the area of Cape Breton where nearly 52 cm of snow fell and air, rail and road transportations came to a halt.

where a heavy snowfall on December 28-29 helped to provide them with their snowiest December since 1977. Central and northern portions of the province received above normal amounts. At Moosonee, 75 cm was the most since 1943.

The mild December helped to make 1987 one of the warmest years ever recorded. Toronto's mean of 10.1°C was the second warmest in 148 years of record. But in Northwestern Ontario, 1987 was the warmest ever.

Quebec

After a cool November, the weather turned mild across most of Quebec. The only exception was northwestern portions of the province where the temperatures were about a degree below normal. Along the St. Lawrence Valley, the readings were 2 to 4°C above normal, and record high values were established at Matagami (-9.5°C) and at La Grande Rivière (-12.5°C).

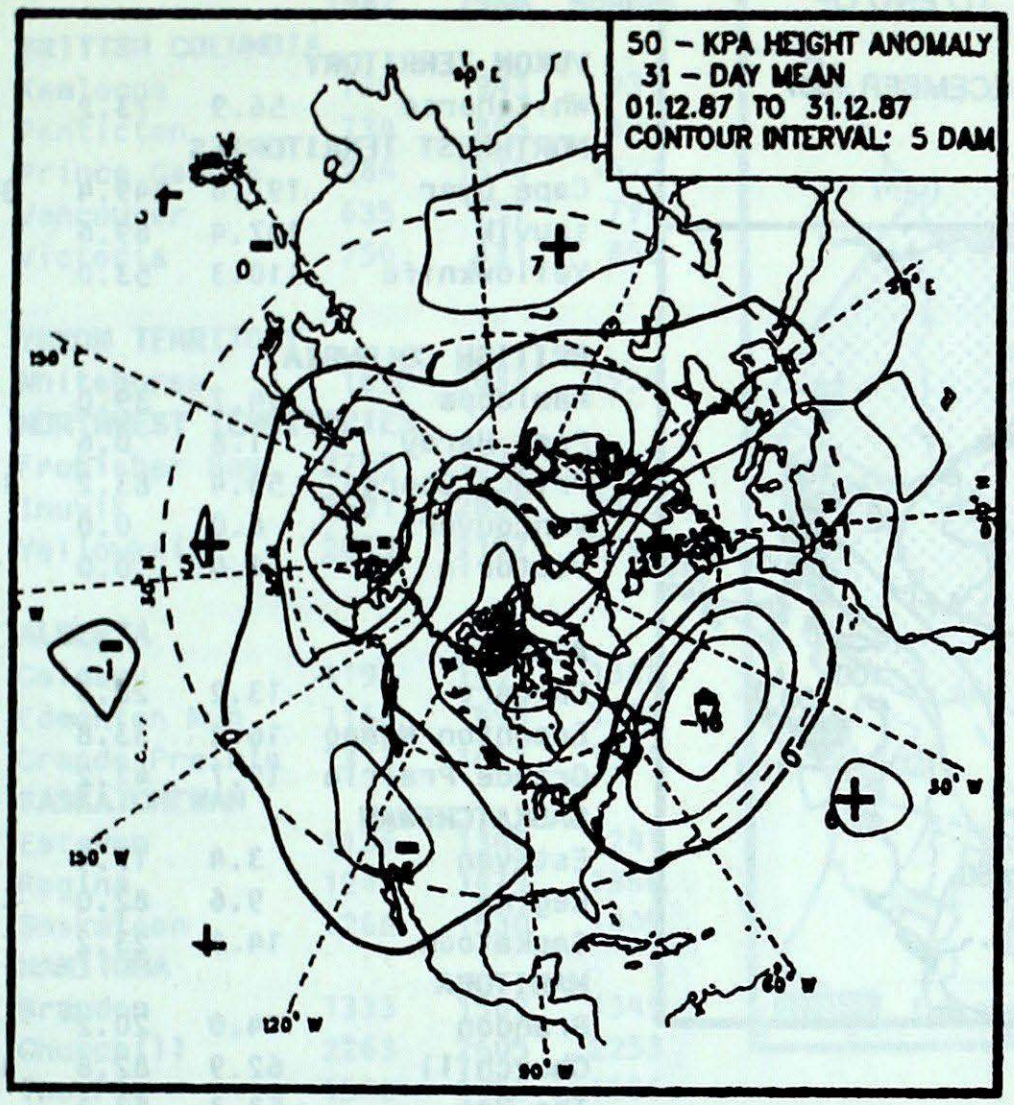
Precipitation was below normal except in the Hull-Ottawa and Val d'Or areas where near-normal amounts fell. Gaspé received the most, 144.4 mm. Only ten days with measurable precipitation set a record number of dry days at Dorval airport. Below-normal snowfall was recorded at most locations. Amounts ranged from 24 cm at Sept-Iles (where a seasonal accumulation of 44 cm was the least since 1952) to 88 cm at Gaspé in the south. Snowfall in the north ranged from 22 cm at Kuujjuaq to 49 cm at La Grande Rivière. December was rather dull across the province. At Val-d'Or, a meagre 32 hours of bright sunshine proved to be the least December amount since the record low set in 1981.

Atlantic Provinces

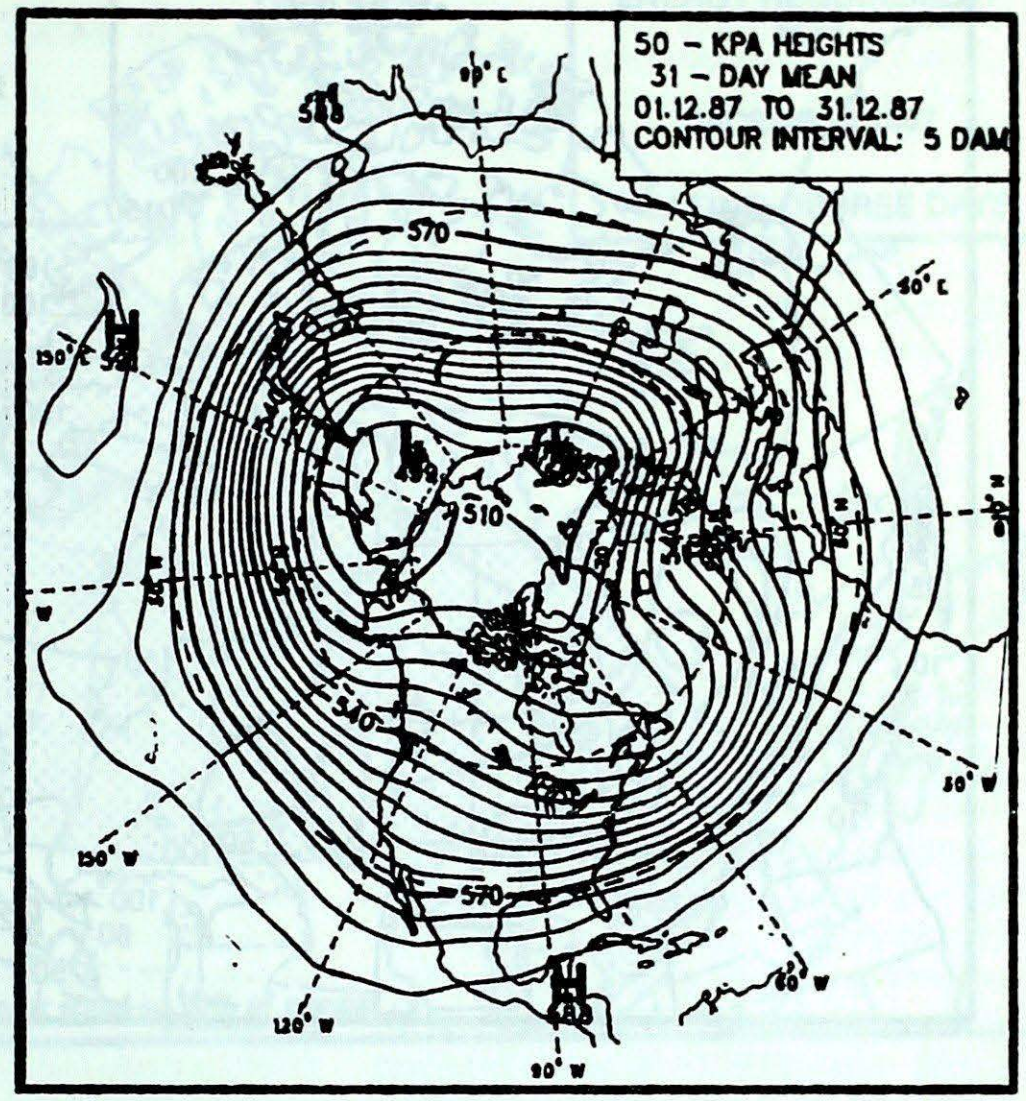
Wintry weather plagued the East Coast as gale force winds and heavy snow paralyzed parts of the maritimes and Newfoundland on several occasions (see East Coast Winter Storms on 4B). Temperatures were slightly below normal almost everywhere. Only New Brunswick and eastern Labrador enjoyed a

....Continued page 11B, Regions

ATMOSPHERIC CIRCULATION



Mean 50 kPa height anomaly (dam)



Mean 50 kPa heights (dam)

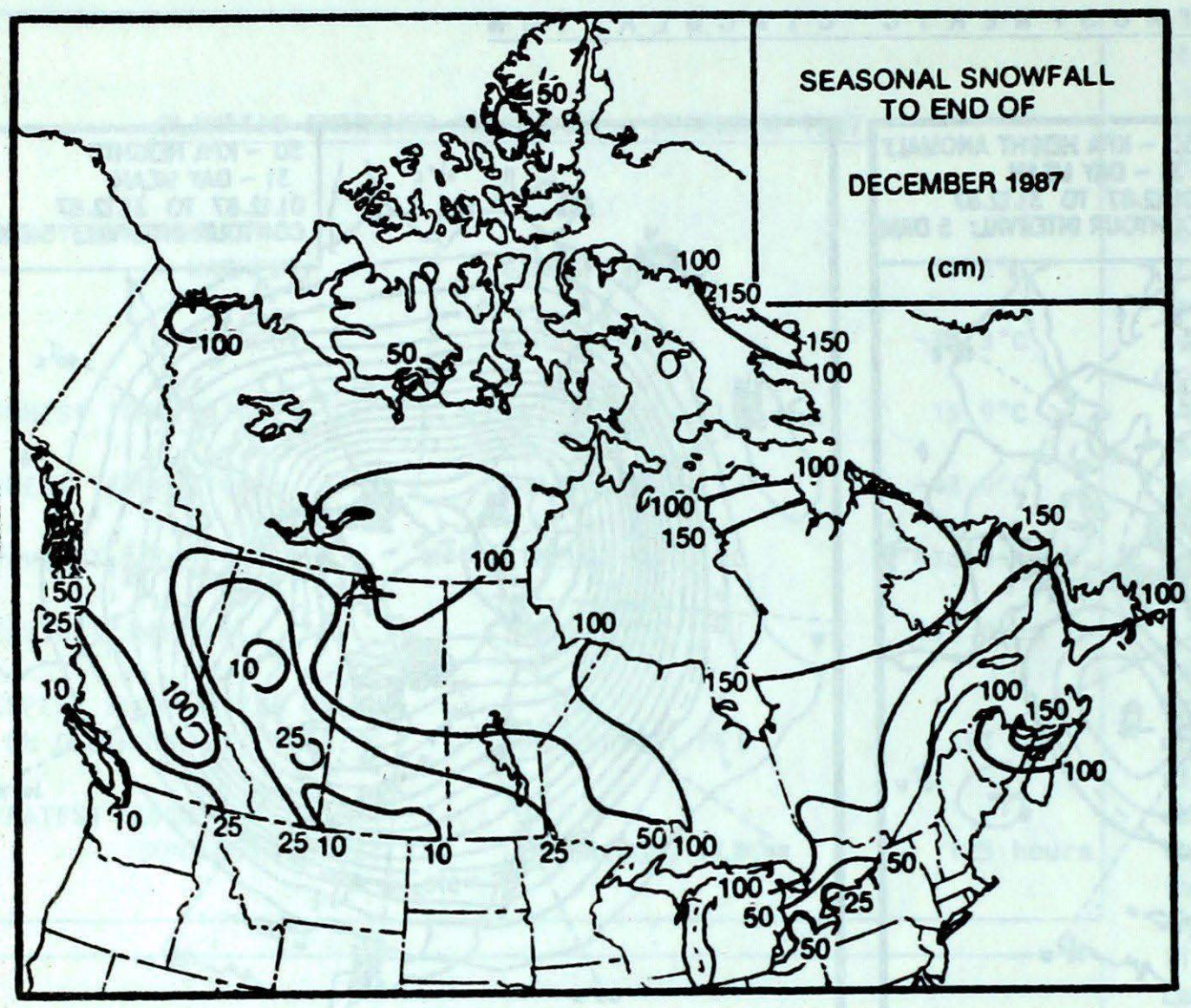
MEAN 50 kPa CIRCULATION
DECEMBER 1987

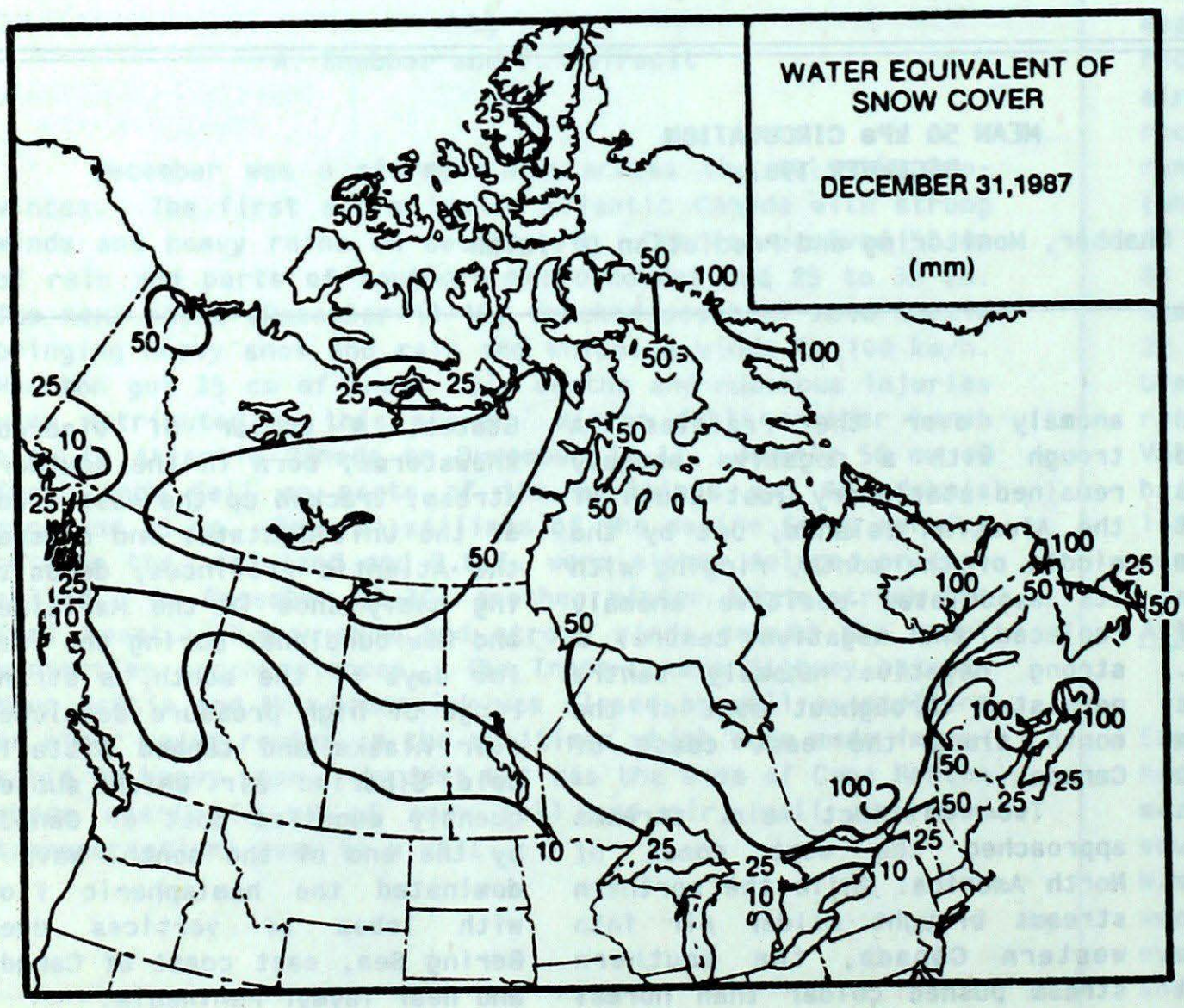
Amir Shabbar, Monitoring and Prediction Division

The mean 50 kPa circulation during December was characterized by a benignly mild air flow across most of Canada. A vast area of positive anomaly, stretching from the north Atlantic ocean to the Canadian Arctic, covered most of the central part of the country. The centre of the anomaly was located just northwest of Hudson Bay. Both the east and west coast were influenced by troughs, which produced negative anomalies. During the first half of the month, strong blocking positive anomalies traversed from the European side into the Canadian Arctic and reinforced the positive anomaly over the Prairies. A trough with a negative anomaly remained stationary just south of the Aleutian Islands, but by the middle of the month, ridging with its associated positive anomaly replaced the negative centre. A strong negative anomaly centre persisted throughout most of the month along the east coast of Canada.

Two distinct air streams approached the west coast of North America. While the northern streams brought milder air into western Canada, the southern stream pushed colder than normal temperatures into western United States. A number of vigorous snowstorms, born in the southern stream, tracked up the east coast of the United States and crossed the Atlantic Provinces, depositing heavy snow in the Maritimes and Newfoundland. During the last few days of the month, a strong ridge of high pressure developed over Alaska and tapped bitterly cold Siberian air which subsequently engulfed most of Canada by the end of the month. Wave 3 dominated the hemispheric flow with lobes of vortices over Bering Sea, east coast of Canada and near Taymyr Peninsula.

SNOWFALL



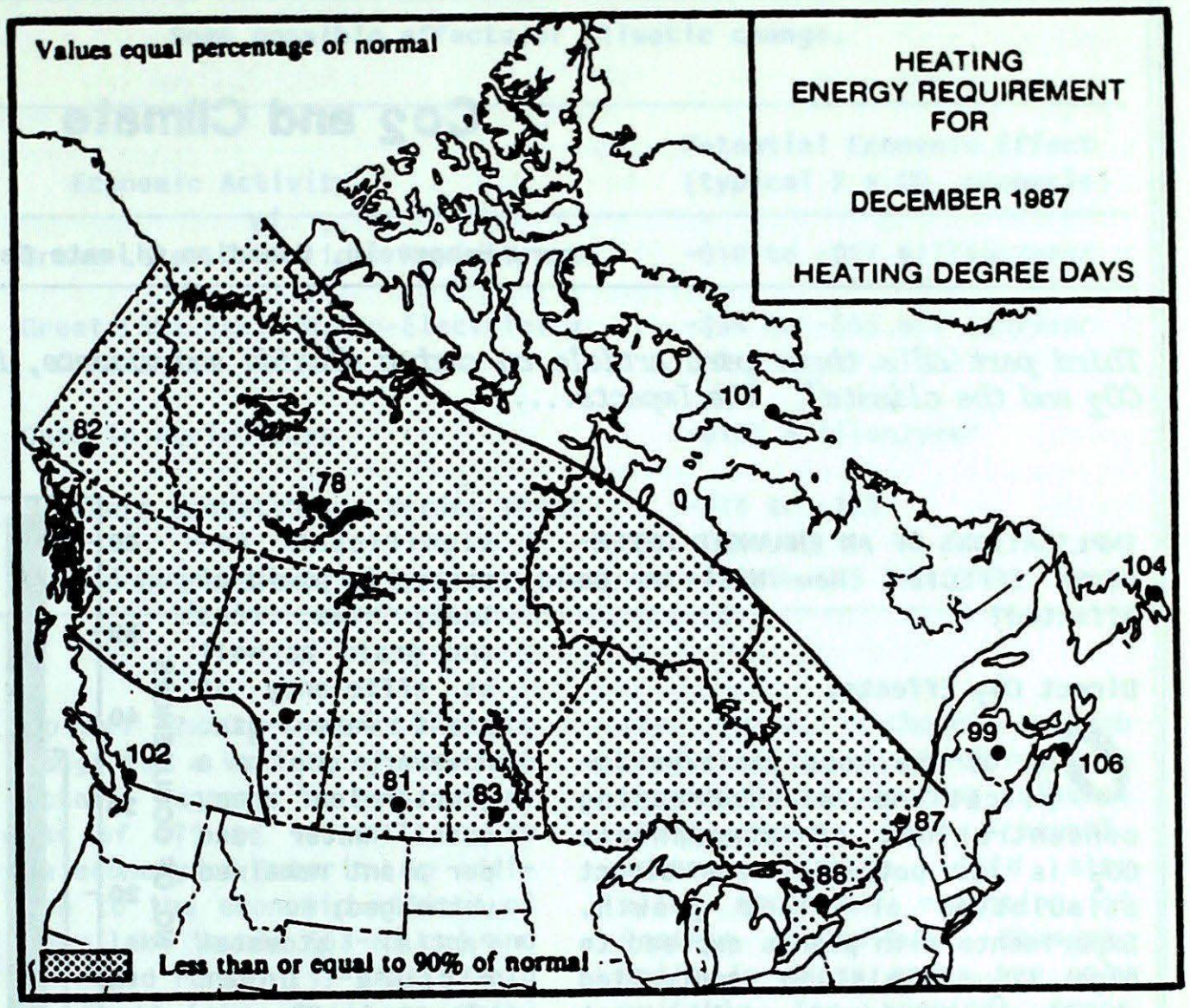


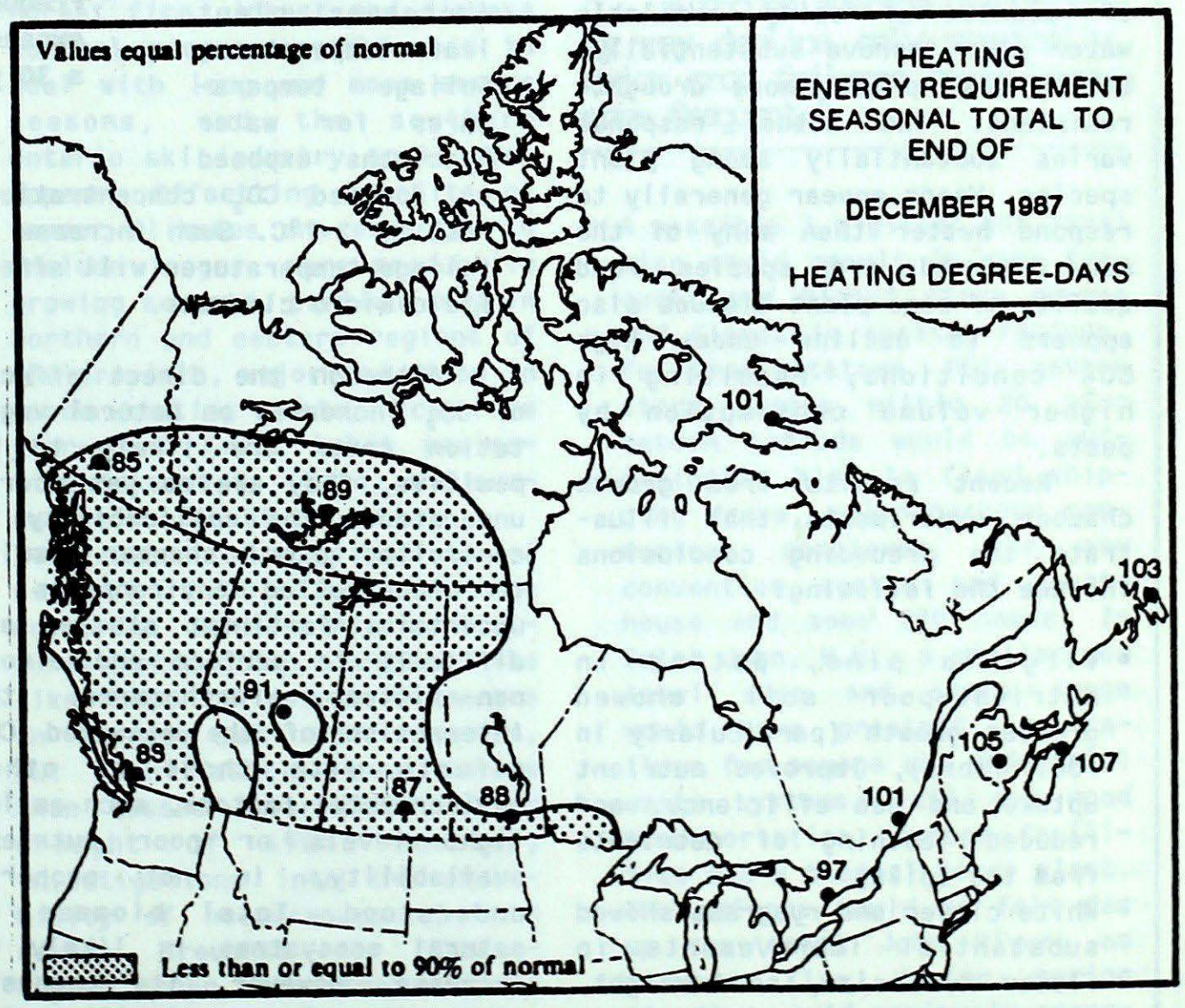
SEASONAL SNOWFALL TOTALS (CM) TO END OF DECEMBER

	1987	1986	NORMAL
YUKON TERRITORY			
Whitehorse	56.9	73.2	69.4
NORTHWEST TERRITORIES			
Cape Dyer	197.6	249.4	303.3
Inuvik	107.4	89.6	96.4
Yellowknife	110.3	53.0	78.7
BRITISH COLUMBIA			
Kamloops	14.7	39.0	42.0
Port Hardy	1.8	0.6	19.7
Prince George	55.4	83.2	102.9
Vancouver	6.0	0.0	20.3
Victoria	1.0	0.0	15.4
ALBERTA			
Calgary	13.2	28.3	56.5
Edmonton Namao	16.2	33.8	53.5
Grande Prairie	19.7	41.2	76.7
SASKATCHEWAN			
Estevan	3.4	17.4	42.7
Regina	9.6	82.0	45.0
Saskatoon	14.8	23.2	44.8
MANITOBA			
Brandon	14.0	20.2	42.9
Churchill	62.9	82.8	100.1
The Pas	53.3	61.1	72.1
Winnipeg	21.6	54.2	48.1
ONTARIO			
Kapuskasing	124.8	141.8	138.8
London	82.7	61.8	77.6
Ottawa	94.4	59.8	81.7
Sudbury	116.2	106.0	95.6
Thunder Bay	31.3	51.0	79.3
Toronto	19.2	27.4	41.4
Windsor	45.4	21.3	40.2
QUEBEC			
Baie Comeau	64.2	150.8	133.5
Montréal	68.0	67.9	81.7
Quebec	81.4	109.0	124.4
Sept-Iles	43.8	163.1	150.5
Sherbrooke	125.5	101.6	111.9
Val-d'Or	114.4	148.2	127.8
NEW BRUNSWICK			
Charlo	76.6	115.1	146.9
Fredericton	103.9	45.2	92.0
Moncton	181.8	*	96.8
NOVA SCOTIA			
Shearwater	95.7	50.7	47.2
Sydney	133.3	75.3	80.2
Yarmouth	76.2	33.8	52.0
PRINCE EDWARD ISLAND			
Charlottetown	175.4	65.1	97.0
NEWFOUNDLAND			
Gander	124.6	196.4	115.0
St. John's	113.0	117.7	90.7

SEASONAL TOTAL OF HEATING DEGREE-DAYS TO END OF NOVEMBER

	1987	1986	NORMAL
BRITISH COLUMBIA			
Kamloops	730	943	931
Penticton	734	895	875
Prince George	1284	1510	1522
Vancouver	635	757	794
Victoria	750	831	850
YUKON TERRITORY			
Whitehorse	1698	2033	1954
NORTHWEST TERRITORIES			
Frobisher Bay	2753	3076	2739
Inuvik	2601	2880	2826
Yellowknife	2013	2197	2092
ALBERTA			
Calgary	1193	1495	1388
Edmonton Mun	1168	1490	1398
Grande Prairie	1313	1661	1574
SASKATCHEWAN			
Estevan	1136	1340	1241
Regina	1249	1475	1366
Saskatoon	1266	1530	1405
MANITOBA			
Brandon	1333	1562	1349
Churchill	2263	2605	2253
The Pas	1508	1753	1556
Winnipeg	1173	1438	1264
ONTARIO			
Kapuskasing	1526	1757	1475
London	865	903	829
Ottawa	1037	1073	950
Sudbury	1207	1323	1186
Thunder Bay	1286	1465	1308
Toronto	880	938	819
Windsor	717	709	690
QUÉBEC			
Baie Comeau	1516	1715	1435
Montréal	989	1040	872
Quebec	1213	1300	1087
Sept-Iles	1542	1779	1512
Sherbrooke	1229	1301	1186
Val-d'Or	1515	1672	1414
NEW BRUNSWICK			
Charlo	1270	1506	1138
Fredericton	1098	1266	1013
Moncton	1043	1274	995
NOVA SCOTIA			
Halifax	878	1029	814
Sydney	971	1193	908
Yarmouth	932	1041	864
PRINCE EDWARD ISLAND			
Charlottetown	988	1196	925
NEWFOUNDLAND			
Gander	1232	1482	1191
St. John's	1179	1415	1145





FEATURE

Co_2 and Climate

by
Henry Hengeveld, Canadian Climate Centre

Third part of a three part article on carbon dioxide and climate, from the annual report: "Understanding CO_2 and the climate". The Impacts....

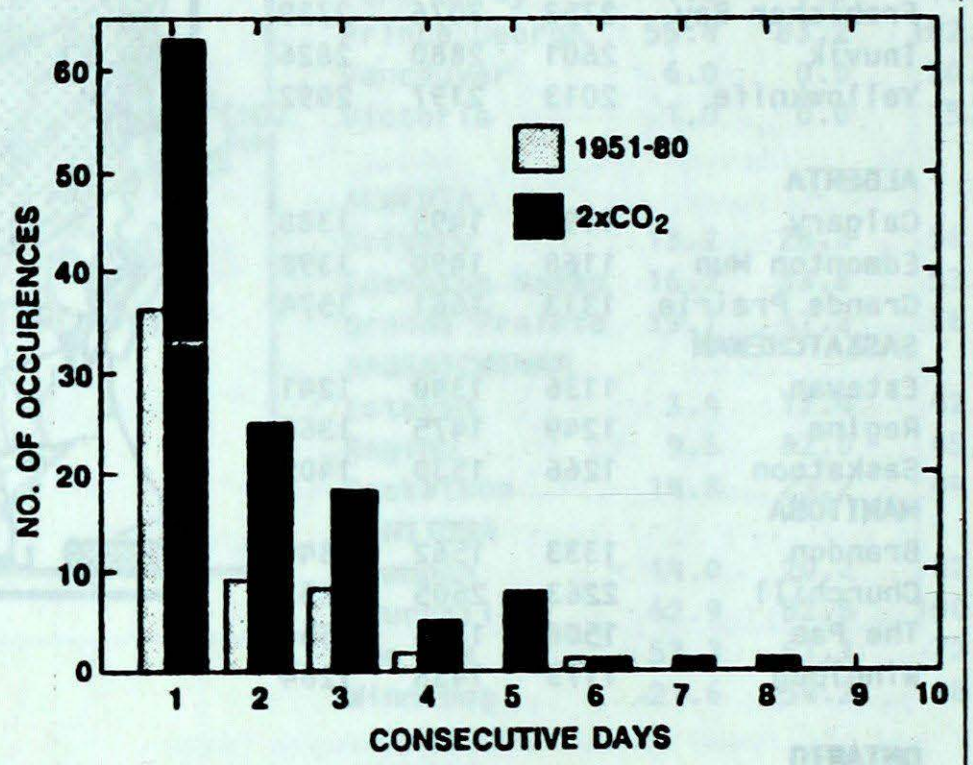
IMPLICATIONS OF AN ENHANCED GREENHOUSE EFFECT: How Will We Be Affected?

Direct CO_2 Effects:

One of the most positive implications of increasing concentrations of atmospheric CO_2 is its potential for direct stimulation of plant growth. Experiments with plants exposed to high CO_2 levels in controlled growth chambers in general suggest an enhanced plant growth response, given ideal growing conditions, of 0.5 to 2.0% for each 10 ppmv increase in CO_2. Efficiencies of plants in using available water also improve substantially, making most plants more drought-resistent. The actual response varies subtantially among plant species. Weeds appear generally to respond better than many of the more desirable crop species. Food quality of some plant tissues also appears to decline under high CO_2 conditions, resulting in higher volume consumption by pests.

Recent results from growth chamber experiments that illustrate the preceding conclusions include the following:

- Virginia pine, potted in nutrient-poor soil, showed greater growth (particularly in root fibre), improved nutrient uptake and use efficiency, and reduced leaching of nutrients from the soils;
- White clover and ryegrass showed substantial improvements in flower head size, seed weight, plant height and leaf size;
- Sorghum (a C_4 plant) showed significant increase in yield of leaf, stem, root and grain as well as efficiency of plant water use. However, due to a greater leaf area, total water use per plant remained unchanged;
- Partial stomatal closure under elevated CO_2, a primary factor in related improvements in water use efficiency, also increases plant leaf temperature. Foliage temperatures for water hyacinths exposed to doubled CO_2 concentrations rose by 2-7°C. Such increase in foliage temperatures will affect field micro climates.



Frequency of Saskatoon July heat waves exceeding daily maximum of 31.1°C, over a 30 year period

Although the direct effects of CO_2 increases on natural vegetation cover are likely to be positive, they are as yet poorly understood. The applicability of controlled growth chamber results to uncontrolled environments is uncertain. Pertinent studies are difficult to perform and almost non-existent. Furthermore, the interaction of the elevated CO_2 effects with those of other environmental factors, such as low light levels or poor nutrient availability, is not properly understood. Total biomass in natural ecosystems is likely to increase. However, its composition will change significantly, favoring plants with largest net improvements in water use efficiency and growth. In general, life cycles would likely accelerate.

Efforts at detecting the direct effects of the past century's increases in concentrations of atmospheric CO_2 on plants within natural ecosystems have provided interesting although as yet inconclusive results. Recent analysis of tree rings taken from Douglas firs in the moist coastal regions of British Columbia, where trees appear to be relatively insensitive to climate variations, showed a marked increase in ring widths over the past few decades. Explanations other than the direct effects of higher atmospheric CO_2 concentrations have not been found. Trees in the interior of B.C., where climate factors appear to dominate growth

patterns, do not exhibit similar trends for increased ring width.

Impacts of Climate Warming:

Lack of confidence in how climate will respond to an enhanced greenhouse effect is a major obstacle to reliable assessment of the related impacts on nature and society. This lack of confidence is particularly justified when considering the regional characteristics of possible rainfall patterns and the local details of change. In addition, other often unpredictable factors affecting future society (such as political, economic or technological developments) further complicate such assessments. However, understanding of how sensitive the environment and human behaviour are to climatic change can be advanced considerably by undertaking "what if" case studies. To-date, most such studies are based on 2 x CO_2-type climatic change scenarios generated by general circulation model experiments, together with appropriate assumptions with respect to other non-climatic socio-economic factors. Few as yet deal effectively with the year-to-year climatic variability and altered frequencies of extreme events within such climatic change scenarios. Hence such studies can provide information on the general nature and direction of climatic change impacts but do not provide adequate understanding of how new extremes or frequencies in droughts, floods, heat spells or cold snaps will affect society. Results of these studies must thus as yet be considered with considerable caution and await further analysis to better define true sensitivities to changing climatic regimes.

"....a net annual loss of $79 to 146 million to the economy of Ontario."

Canadian Impacts. A number of studies into Canadian socio-economic sensitivities to climate change have been undertaken during 1986. Results include the following:

- Estimates of implications of a typical 2xCO_2-type climatic change for a variety of economic sectors suggest a net annual loss of $79 to 146 million to the economy of Ontario. In addition to the economic effects of lower lake levels (63-83 cm) and decreased runoff (17-21%) within the Great Lakes Basin on shipping and hydro electric productivity, the agricultural economy would suffer due to increased aridity in Southern Ontario. Forest fire, insect and disease control programs would need to deal with long and more severe seasons, and the southern Ontario ski industry would disappear. Offsetting benefits of warmer climates are expected to include longer, more productive growing seasons, particularly in northern and eastern regions of the province, major reduction in space heating costs, ice free year-round Great Lakes navigation (except L. Erie) and summer recreational potential;
- Evaluations of implications of several 2xCO_2-type climate scenarios for Prairie agricultural production suggest the likelihood of modest decreases in average net crop revenues, but significantly less severe than losses experienced during drought of 1961. However, investigations into the probability of occurrences of such severe droughts for Saskatchewan under the warmer climate scenario suggest a major increase in frequency and severity. Hence, although average productivity may decline only marginally, major crop failures could become more frequent. Warmer climates would also allow northward expansion of Prairie agriculture. However, soils in these areas are only suitable for marginal crops such as forage, and their development would be of questionable economic benefit;

"....although average productivity may decline only marginally, major crop failures could become more frequent."

- A possible 1 m global sea level rise would result in more frequent and higher storm surges and floods in coastal regions. For Charlottetown, PEI, severe storm surges within 20 year return periods would be sufficiently high to flood shipping docks, major harbour commerical complexes, the new convention centre and courthouse and some 270 homes. In Saint John, N.B., a similar sea level rise and storm surge would have greatest implications for sewage and industrial waste systems, rail and road transportation, harbor facilities and a thermal power plant. The effects would be felt far up the Saint John River, as reduced flow during spring flooding would seriously aggravate area flooding problems.

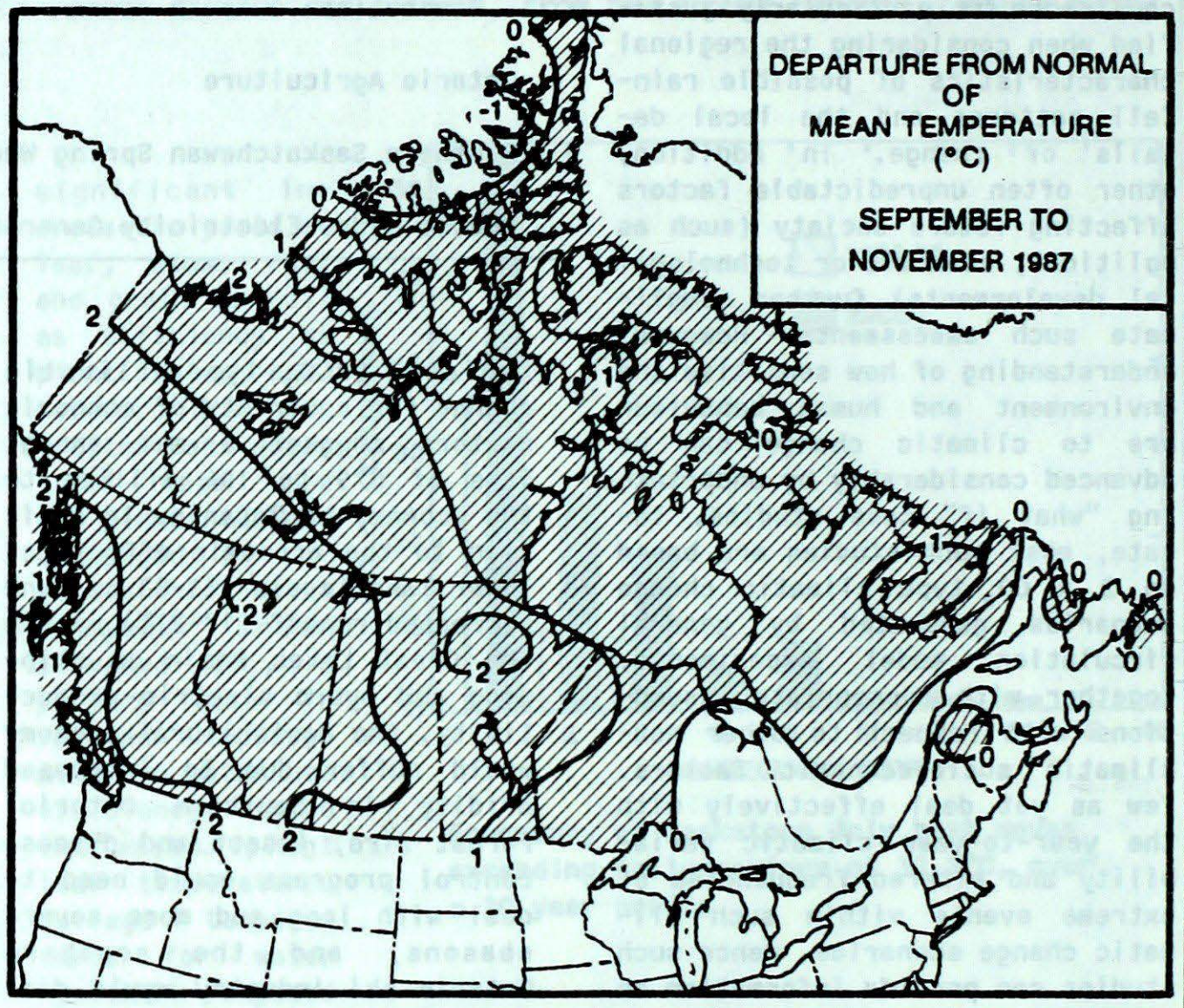
Some possible effects of climatic change.

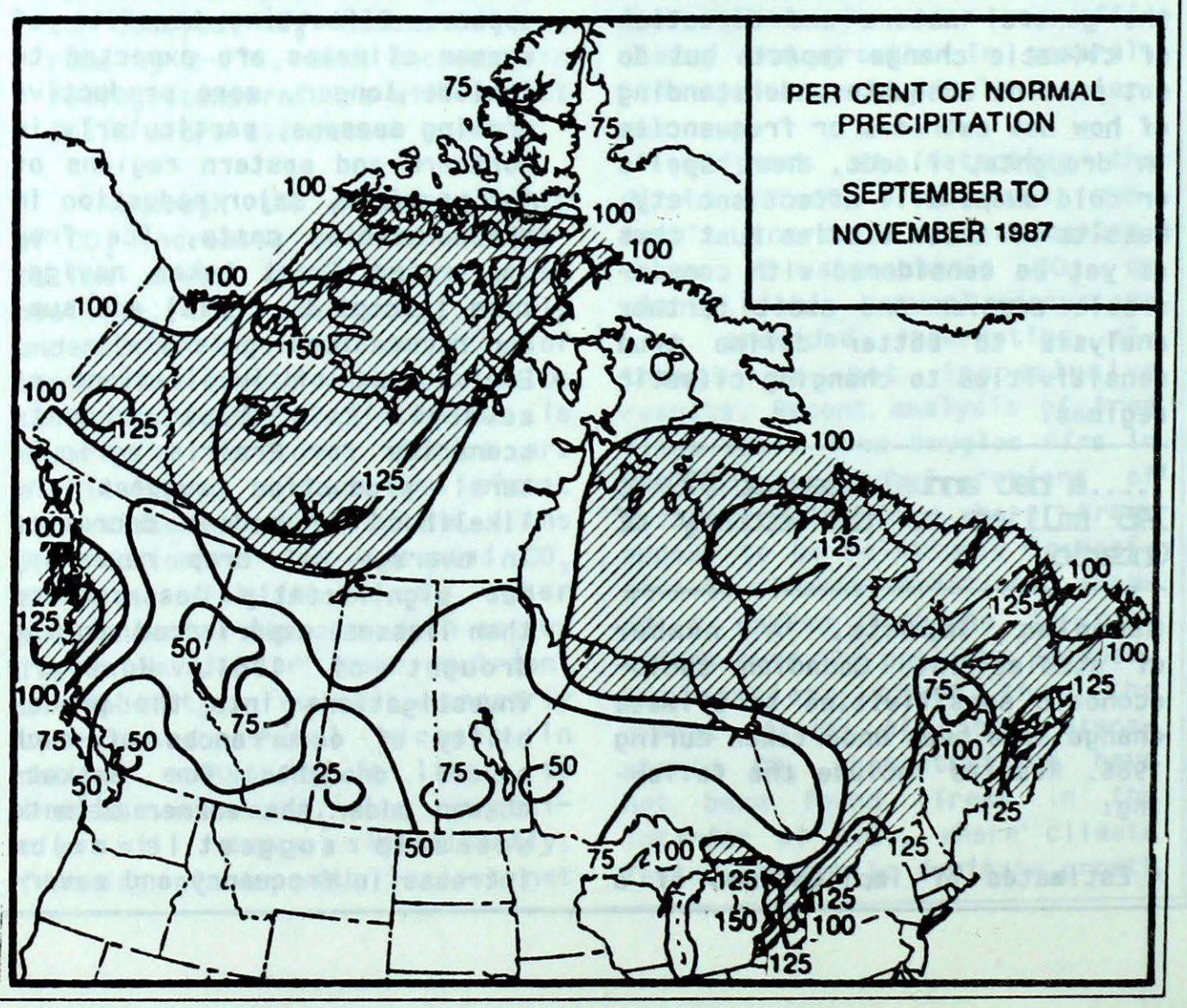
Economic Activity	Potential Economic Effect (typical 2 x CO_2 scenario)
Great Lakes Commerical Navigation	-$10 to -$27 million/year
Great Lake Basin Hydro-Electricity Generation	-$34 to -$65 million/year (-2.2 to -4. TWh)
Ontario Agriculture	-$107 million/year
Southern Saskatchewan Spring Wheat	-$18 to -28%
Quebec Hydro-Electricity Generation	+9.2 to 9.5 Twh

FALL OF 1987 - A REVIEW

by
Alain Caillet
Climate Monitoring and Prediction Division

The arrival of fall saw a return of the trend toward warmer or at any rate milder than normal temperatures, which began in late 1986 and continued during the spring and most of the summer. During the fall months, positive mean temperature anomalies became limited to the area west of Lake Superior. By late November, all indications were that this area would have an exceptional number of mean annual temperature records in 1987.





Warm weather returns to Western Canada

The unusual climatic regime which had been keeping the country's temperatures well above normal since winter 86-87 was severely disturbed in August, and only a few areas remained above normal, such as southwestern British Columbia, the Great Lakes Basin, and southern Ontario. In September, a change in the general circulation aloft, marked by an intensification of the planetary ridge over the Canadian West, brought mild air from the Pacific. With a few exceptions, mean monthly temperatures climbed back to above-normal levels across the country. In the west particularly, it was as if summer had returned: In September, Penticton and Kelowna, B.C., recorded maximum temperatures of 37 and 35°C respectively, while in southern Alberta and Saskatchewan, temperatures rose above 30°C. In October, Edmonton and even Fort McMurray in northern Alberta saw temperatures over 28°C while Calgary and Lethbridge got as high as 19°C. The effects of the ridge of high pressure continued, irregularly, across the country until mid-November: Alberta and British Columbia remained above normal for two additional months, while in Ontario and western Quebec October was cold, as was November in all of Quebec and in the Atlantic Provinces.

It would be hard to identify a definite period of "Indian summer", since while temperature swings were great enough, they were also too rapid and there were too many of them.

Snow comes late to the west

The precipitation picture during the fall was in some ways the opposite of the temperature picture. Beginning in September, the Maritimes made up for much of the precipitation deficit they had experienced in June and August. In southern British Columbia, on the other hand, the lateness of the rainy season created a critical situation, with reports in late October of dry wells and of lake, river and reservoir levels so low that there was a risk of fish dying during the winter. At Calgary, there was still no more than 5 cm of snow on the ground in mid-November. On the Atlantic coast, seasonal storms arrived a bit late this year (in October). In the Maritimes, only Summerside, P.E.I, had a measurable quantity of snow, and then only 0.2 cm!

Impacts

With the opening of the storm season on the east coast, Newfoundland was hit by the biggest of the weather systems affecting the Atlantic Provinces, and in some cases schools and roads had to be closed. Generally, however, climatic extremes were of the pleasant rather than the unpleasant sort, and the effects on Canadians and on the economy were relatively mild. An exception was the severe thunderstorms which cost two people their lives when they were hit by lightning, one in Toronto and the other in Orillia, Ontario, on September 13. In Alberta, crops whose growth had slowed in August reached maturity thanks to the fine weather, and harvesting could proceed at a good clip. By the end of November, British Columbia had had its sixteenth consecutive month of above-normal temperatures, but the rains finally arrived, eliminating the risk to sport fishing, fruit production and cattle raising associated with the low water levels in lakes and rivers the previous month. On the Prairies, however, the lack of snow on the ground was a cause for concern not only for farmers but also for the organizers of the Olympic Games, who could not count on artificial snow machines because the temperatures were not cold enough, at least during the daytime.

Regions, continued from page 4B

milder than normal December. The readings were more than 3°C above normal at Cartwright.

Precipitation was well above normal in P.E.I., eastern Nova Scotia, southern and southeastern New Brunswick and eastern Newfoundland. The remaining areas received below normal amounts. With the exception of northern New Brunswick, most of the areas received more than their normal December share of snowfall. Sydney, Charlottetown and Summerside reported their second highest December snowfall with totals of 131 cm, 153 cm, and 152 cm respectively.

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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	2.1	-1.1	13.4	-7.6	10.9	49	213.5	93	1	16	62	114	472.5
ALERT BAY	3.7	-0.2	9.4	-1.3	16.6	101	246.5	105	0	23	X		444.8
AMPHITRITE POINT	5.5	0.0	11.8	-1.9	6.0	52	372.1	82	0	21	X		388.6
BLUE RIVER	-5.9	1.4	6.1	-22.0	75.4	69	78.7	73	29	10	36	122	MSG
BULL HARBOUR	4.2	0.0	9.3	-1.6	3.1	23	349.1	116	0	23	X		428.5
CAPE SCOTT	5.4	0.3	10.1	0.8	3.6	30	353.7	102	0	24	X		388.7
CAPE ST.JAMES	5.9	0.9	9.7	1.0	2.4	20	177.1	92	0	17	70	*	375.2
CASTLEGAR	-1.4	0.5	8.3	-11.2	52.8	69	123.8	124	16	14	28	91	602.8
COMOX	3.8	0.1	10.9	-2.2	1.0	3	192.4	90	0	16	X		440.3
CRANBROOK	-6.6	-0.5	-8.6	-20.4	26.9	51	36.5	94	14	9	60	*	769.0
DEASE LAKE	-10.2	5.8	3.5	-28.6	37.1	89	25.8	77	37	6	29	70	879.0
ETHELDA BAY	3.9	0.8	10.2	-4.1	5.0	15	436.0	119	0	22	X		439.8
FORT NELSON	-14.0	7.0	1.0	-29.3	19.4	71	11.6	54	23	5	51	*	991.1
FORT ST.JOHN	-5.7	7.5	5.2	-24.5	13.0	32	11.1	30	6	6	X		734.5
HOPE	1.3	-0.3	9.8	-5.8	32.4	70	292.5	101	9	16	4	105	517.9
KAMLOOPS	-1.4	1.4	12.9	-14.8	12.7	42	24.1	74	7	6	38	79	600.1
KELOWNA	-2.0	0.5	11.7	-13.4	30.4	95	31.5	74	13	8	33	80	618.8
LANGARA	4.4	0.8	8.7	-0.5	6.1	25	245.7	117	0	25	X		420.1
LYTTON	-1.2	-0.2	8.0	-13.1	37.3	90	119.9	161	4	8	53	119	594.9
MACKENZIE	-7.0	3.1	3.2	-21.0	58.0	72	47.8	54	40	11	28	76	775.3
MCINNES ISLAND	*		*	*	3.1	18	272.5	90	0	23	X		MSG
PENTICTON	-0.2	0.2	11.5	-10.1	11.6	50	41.2	132	5	9	43	110	564.0
PORT ALBERNI	2.4	*	12.6	-2.5	21.9	*	307.1	*	0	17	6	*	484.0
PORT HARDY	3.6	0.1	8.4	-3.5	1.8	11	211.6	76	0	24	50	110	446.3
PRINCE GEORGE	-4.0	3.9	7.6	-23.5	23.9	45	19.5	34	5	7	52	110	681.4
PRINCE RUPERT	3.7	2.1	11.1	-6.8	29.4	80	284.9	100	0	23	40	125	445.5
PRINCETON	-5.9	-0.2	5.8	-17.9	36.8	81	49.8	94	23	9	65	*	MSG
QUESNEL	-3.2	3.9	12.1	-23.4	17.9	36	15.9	31	8	5	X		657.5
REVELSTOKE	-2.4	1.4	6.1	-12.4	52.4	37	139.0	96	15	16	22	82	632.3
SANDSPIT	6.6	3.2	9.0	-2.6	0.2	1	295.5	166	0	21	65	161	427.2
SMITHERS	-5.5	2.1	4.9	-21.0	36.6	65	25.1	41	15	9	37	95	728.8
TERRACE	-0.4	3.0	5.7	-10.4	59.0	55	91.4	47		17	37	122	569.3
VANCOUVER HARBOUR	4.6	-0.1	12.8	-1.6	5.6	37	151.6	62	0	14	X		410.7
VANCOUVER INT'L	3.6	-0.3	12.7	-4.1	6.0	34	155.0	84	0	13	62	129	447.7
VICTORIA GONZ. HTS	5.1	-0.2	10.7	-0.4	0.0		110.5	92	0	12	70	119	398.6
VICTORIA INT'L	3.4	-0.8	10.9	-3.3	1.0	7	175.7	111	0	16	73	141	450.8
VICTORIA MARINE	4.2	-0.7	11.5	-2.3	0.4	5	228.1	100	0	16	X		426.6
WILLIAMS LAKE	-5.0	2.7	8.7	-23.6	23.8	48	15.4	37	16	5	55	111	711.4

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									
YUKON TERRITORY													
DAWSON	-21.1	4.8	-3.0	-34.5	24.3	68	24.3	60			X		
MAYO	-14.9	9.3	4.0	-34.1	30.8	125	19.6	87	31	5	X		1019.5
WATSON LAKE	-15.6	7.9	1.6	-34.2	49.5	106	32.0	86	46	7	10	31	1050.4
WHITEHORSE	-9.7	6.9	3.7	-30.5	16.4	67	7.1	35	18	7	41	178	858.7
NORTHWEST TERRITORIES													
ALERT	-30.2	-0.2	-6.0	-44.3	8.8	106	3.9	49	26	1			
BAKER LAKE	-21.6	6.6	-5.2	-34.9	35.1	403	18.2	221	74	5			1226.6
CAMBRIDGE BAY	-22.2	7.8	-7.6	-38.5	5.3	84	2.6	48	21	0	0		1247.1
CAPE DYER	-20.7	-0.4	-6.2	-34.8	TR		TR		28	0	X		1200.5
CAPE PARRY	-14.9	10.1	-3.8	-31.3	18.2	180	8.5	124	15	4	X		1019.3
CLYDE	-23.5	0.9	-11.1	-37.6	6.8	86	5.2	66	21	3	0		1286.9
COPPERMINE	-19.9	6.0	-0.6	-36.7	19.0	165	14.8	133	35	5	0		1174.6
CORAL HARBOUR	-18.1	7.4	-6.8	-32.2	14.2	131	14.2	139	42	6	26	91	1120.1
EUREKA	-35.3	-0.5	-19.8	-48.0	5.4	216	5.4	225	10	2			1656.3
FORT RELIANCE	-15.7	8.2	-1.2	-41.3	30.0	157	17.6	117	41	5	X		1043.6
FORT SIMPSON	-19.5	5.0	-6.1	-35.1	25.8	107	26.1	111	49	5	29	98	1162.3
FORT SMITH	-13.6	8.0	-1.2	-32.5	27.9	112	24.8	111	35	4	25	88	981.5
IQALUIT	-21.4	0.4	-8.0	-35.0	12.0	48	10.0	45	29	2	38	193	1220.9
HALL BEACH	-24.1	6.3	-9.1	-39.5	10.1	109	7.1	81	29	2	X		1212.3
HAY RIVER	-14.1	6.8	1.2	-29.6	14.5	55	14.7	59	13	5	X		990.5
INUVIK	-21.4	5.8	-3.6	-39.2	32.3	155	23.7	136	38	8	0		1221.6
MOULD BAY	-26.8	4.4	-7.2	-42.6	17.2	430	7.9	219	12	2			1389.9
NORMAN WELLS	-21.0	5.5	-3.5	-32.7	10.8	55	8.6	45	15	5	6	45	1208.6
POND INLET	-25.8	2.9	-11.5	-40.2	7.6	46	5.4	40	16	2	X		1359.0
RESOLUTE	-25.4	3.9	-11.3	-40.5	10.2	192	7.2	146	9	3			1346.4
YELLOWKNIFE	-14.3	9.7	-1.4	-33.2	25.5	115	16.4	90	33	4	15	72	1002.6
ALBERTA													
BANFF	-7.3	1.6	5.5	-26.0	42.4	94	28.8	75	18	7	X		
BROOKS	-3.9	5.6	14.0	-28.0	6.2	29	6.6	34	3		101	*	
CALGARY INT'L	-2.9	4.9	12.4	-23.7	6.6	31	4.9	30	3	2	123	125	647.8
COLD LAKE	-8.9	5.3	1.7	-23.4	18.6	70	13.1	52	13	4	64	83	833.2
CORONATION	-7.8	4.0	4.6	-25.3	27.4	121	21.3	108	22	8	115	137	799.1
EDMONTON INT'L	-5.1	8.0	9.3	-23.2	10.4	39	6.4	29	8	2	116	149	717.0
EDMONTON MUNI.	-4.1	6.3	8.9	-19.1	8.0	29	7.0	28	6	1	114	146	683.5
EDMONTON NAMAO	-4.5	7.3	8.5	-20.0	14.5	53	7.6	29	8	2	X		698.2
EDSON	-6.9	5.1	8.0	-25.8	12.2	54	6.0	37	10	3	89	135	772.6
FORT CHIPEWYAN	-12.9	7.8	3.5	-31.0	24.9	90	24.9	100	21		X		

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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
PORT MCMURRAY	-11.3	5.7	1.6	-27.0	41.6	141	27.8	111	24	8	59	95	907.2
GRANDE PRAIRIE	-6.2	7.2	8.4	-25.3	10.1	29	8.8	27	8	2	80	*	751.3
HIGH LEVEL	-13.8	6.5	3.7	-28.0	17.1	55	14.4	58	20	3	24	64	984.2
JASPER	-6.8	2.4	4.2	-25.1	20.0	61	21.0	64	8	3	65	*	768.1
LETHBRIDGE	-2.5	3.3	15.9	-24.8	15.5	60	12.9	58	2	2	125	138	633.8
MEDICINE HAT	-3.7	3.9	15.2	-27.6	4.9	25	8.7	53	1	3	113	130	674.3
PEACE RIVER	-7.6	7.7	5.9	-26.3	8.8	33	14.2	65	6	4	X		792.1
RED DEER	-5.0	6.4	9.5	-26.3	7.0	32	5.6	27	5	2	X		713.4
ROCKY MTN HOUSE	-6.1	3.0	8.8	-27.5	14.4	57	7.4	33	7	2	X		752.2
SLAVE LAKE	-7.3	6.8	7.7	-22.0	9.6	30	10.8	39	5	2	77	133	784.7
SUFFIELD													
WHITECOURT	-7.1	6.0	8.5	-22.5	8.6	31	8.0	29	7	2	X		777.5
SASKATCHEWAN													
BROADVIEW	-6.8	6.7	7.2	-27.3	6.8	32	5.4	29	2	3	97	101	768.0
COLLINS BAY	-16.0	6.1	-0.9	-30.6	36.1	95	19.8	64	37	5	25	*	1054.7
CREE LAKE	-13.8	6.3	-0.7	-34.2	46.4	143	27.3	114	23	8	37	66	986.9
ESTEVAN	-5.4	5.7	10.4	-25.5	2.4	12	1.8	9	1	0	108	104	725.1
HUDSON BAY	-10.6	5.6	2.6	-27.3	37.8	128	33.4	150	22	4	64	*	885.6
KINDERSLEY	-7.9	4.9	5.8	-26.5	13.4	65	9.8	50	3	4	X		803.3
LA RONGE	-11.7	5.7	2.2	-31.2	43.8	158	39.3	180	46	8	X		920.4
MEADOW LAKE	-11.2	3.8	1.4	-29.3	18.2	70	14.6	55	13	6	73	*	904.4
MOOSE JAW	-5.6	5.1	11.5	-15.0	7.6	30	5.1	23	4	2	107	124	731.1
NIPAWIN	-11.3	*	2.0	-31.2	27.9	*	17.6	*	16	6	68	*	910.6
NORTH BATTLEFORD	-8.4	5.7	8.0	-27.6	14.4	62	10.2	48	8	4	X		817.6
PRINCE ALBERT	-10.8	5.7	4.9	-26.6	30.9	129	25.8	118	17	7	78	110	892.2
REGINA	-6.9	5.9	11.5	-27.5	4.2	20	2.4	14	3	1	107	127	771.5
SASKATOON	-8.3	5.8	8.3	-26.5	13.0	60	11.2	56	7	5	X		814.9
SWIFT CURRENT	-5.5	4.4	10.7	-27.2	16.2	78	16.8	84	7	6	123	144	728.2
											X		
WYNYARD	-8.2	5.5	6.4	-26.0	16.2	65	13.8	62	6	4	94	105	814.1
YORKTON	-8.6	6.0	4.6	-25.5	9.1	38	8.4	37	1	3	64	73	823.3
MANITOBA													
BRANDON	-8.9	5.6	3.1	-25.5	7.0	35	8.6	45		3	X		818.5
CHURCHILL	-16.7	5.5	0.6	-32.0	26.8	117	17.1	81	16	10	51	92	1073.4
DAUPHIN	-8.9	5.4	2.9	-26.6	12.0	46	10.2	41	3	4	73	78	832.5
GILLAM	-15.9	6.9	1.2	-32.4	44.6	140	27.0	64	40	9	X		1053.1
GIMLI	-8.8	6.7	2.6	-27.1	27.4	109			13	4	59	58	829.1
ISLAND LAKE	-12.8	7.0	1.7	-32.8	31.4	53	20.6	46	20	9	X		953.6
LYNN LAKE	-12.3	9.5	0.0	-32.3	24.6	73	13.6	47	25	5	46	74	1042.2
NORWAY HOUSE	-12.4	*	0.9	-30.7	18.6	*	14.8	*	11	6		*	943.0
											X		
PORTAGE LA PRAIRIE	-8.0	5.1	3.4	-25.4	19.3	114	21.7	99	5	6	X		806.7

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
THE PAS	-11.2	6.4	1.4	-28.0	19.1	67	14.9	67	15	7	54	73	913.6
THOMPSON	-15.4	6.3	0.9	-32.0	27.4	61	21.2	55	23	6	64	94	1035.3
WINNIPEG INT'L	-8.2	5.8	3.6	-25.8	10.2	49	14.6	76	4	4	63	68	811.5
ONTARIO													
ATIKOKAN	-8.2	5.9	2.1	-26.5	33.4	78	17.8	52	19	9	50	65	813.2
BIG TROUT LAKE	-13.0	6.9	1.5	-34.4	45.8	*	31.0	105	41	21	46	*	959.7
EARLTON	-7.9	4.7	4.6	-30.0	60.8	113	66.0	117	38	14	X		801.3
GERALDTON	-10.2	5.2	2.4	-31.2	52.2	150	39.4	101	33	12	X		868.5
GORE BAY	-2.0	3.5	8.1	-17.1	40.3	69	76.2	101	15	10	X		620.4
HAMILTON RBG	-1.0	0.9	13.2	-15.8	14.8	48	65.2	88	1	12	69	*	
HAMILTON	-0.7	2.7	12.1	-16.9	34.2	99	82.3	105	2	13	X		577.8
KAPUSKASING	-9.2	5.5	2.9	-29.0	70.0	131	59.0	110	46	14	X		841.3
KENORA	-8.4	5.7	0.8	-13.4	17.2	56	17.8	57	18	7	X		819.2
KINGSTON	-0.7	3.5	9.1	-18.8	19.8	41	56.8	62	0	11	69	89	580.1
LANSDOWNE HOUSE	-10.8	7.5	1.4	-29.8	36.0	99	26.5	85	26	10	X		892.7
LONDON	-0.2	3.3	11.5	-12.0	42.7	83	100.7	115		15	41	73	961.9
MOOSONEE	-9.1	6.9	1.9	-29.8	75.1	188	48.6	120	59	12	21	35	841.2
MUSKOKA	-3.6	3.5	7.8	-24.6	86.9	118	105.8	108	14	19	X		668.1
NORTH BAY	-6.0	3.7	6.3	-27.5	65.8	108	86.4	114	20	16	44	57	762.9
OTTAWA INT'L	-4.0	3.7	9.4	-21.7	55.2	98	79.2	98	22	11	70	*	680.5
PETAWAWA	-5.2	4.5	5.8	-24.9	61.0	112	77.7	119	24	14	X		718.8
PETERBOROUGH	-2.0	4.0	10.1	-18.9	27.3	70	59.9	80	1	10	X		619.6
PICKLE LAKE	-11.1	6.6	1.6	-30.1	44.0	108	36.4	99	32	11	X		906.5
RED LAKE	-10.8	5.0	0.9	-32.4	30.6	96	27.4	96	21	5	59	*	891.1
ST. CATHARINES	1.1	2.1	13.2	-11.7	24.2	84	68.4	96	3	12	X		524.5
SARNIA	0.7	2.9	12.4	-13.0	17.4	45	75.2	92		11	34	51	536.8
SAULT STE. MARIE	-3.2	3.5	7.3	-17.5	74.6	98	84.6	106	7	13	57	91	651.5
											X		
SIOUX LOOKOUT	-9.7	5.4	2.0	-27.1	30.6	89	30.5	90	22	6	X		857.5
SUDBURY	-5.8	4.4	5.1	-24.9	69.8	122	73.5	113	38	12	55	65	737.2
THUNDER BAY	-6.2	4.9	3.8	-22.5	17.2	37	11.4	27	9	4	85	91	749.8
TIMMINS	-8.9	5.1	1.9	-31.2	85.7	120	86.6	135	38	17	X		825.4
TORONTO	1.2	2.8	12.3	-14.9	9.8	28	62.4	85		8			521.1
TORONTO INT'L	-0.3	3.2	13.0	-16.1	12.6	38	47.4	73		8	X		565.5
TORONTO ISLAND	1.3	3.2	10.4	-15.0	10.8	37	62.0	85	0	6			519.1
TRENTON	-1.0	3.5	9.4	-18.6	26.0	55	60.0	72	0	9	X		588.5
WATERLOO-WELL	-1.6	2.7	11.4	-15.0	24.8	66	78.5	110	1	11	X		605.3
WAWA	-6.2	*	5.6	-25.0	44.4	*	64.4	*	18	12		*	747.8
WIARTON	-0.8	2.9	11.4	-18.2	63.8	68	86.0	80	6	15	27	58	581.7
WINDSOR	1.0	2.9	12.4	-15.6	43.8	153	122.0	168	8	11	X		528.1

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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	-9.8	2.3	2.3	-28.3	41.4	48	40.0	50	23	8	X		862.0
BAIE COMEAU	-8.5	1.9	3.6	-22.6	45.0	58	54.0	59	12	7	95	*	821.8
BLANC SABLON	-5.7	1.4	3.6	-19.4	83.6	99	107.6	101	8	14	61	*	
CHIBOUGAMAU	-12.2	3.7	0.6	-32.5	56.2	83	41.8	66	26	12	51	65	935.9
GASPE	-6.9	0.3	6.9	-18.7	88.0	102	144.4	123	35	13	75	*	771.1
INUKJUAK	-15.1	2.8	-2.0	-35.5	22.6	97	20.8	92	39	9	53	197	1024.9
KUUJJUAQ	-19.8	-1.4	-1.4	-33.8	22.0	55	20.6	53	55	5	35	65	1171.4
KUUJJUARAPIK	-11.6	4.3		-33.2	70.4	167	75.0	177	15	7	32	62	820.6
LA GRANDE RIVIERE													
MANIWAKI	-5.4	4.6	5.7	-24.0	55.2	95	54.9	76	26	12	61	87	723.8
MATAGAMI	-9.5	6.7	2.8	-31.2	63.8	105	39.2	70	35	12	35	52	853.1
MONT JOLI	-7.0	1.3	2.5	-19.7	51.8	57	70.0	74		14	63	106	776.4
MONTREAL INT'L	-3.3	3.6	6.7	-20.9	38.2	64	53.6	61	12	7	62	77	661.0
MONTREAL M INT'L	-5.1	*	5.1	-22.4	66.5	*	81.3	*	25	10	89	*	717.9
NATASHQUAN	-8.6	0.6	4.5	-22.2	42.6	63	75.2	69	13	9	104	117	820.0
QUEBEC	-6.1	2.9	5.5	-24.1	65.4	75	75.6	66	34	11	83	109	747.5
ROBERVAL	-9.5	3.2	2.0	-25.5	58.8	73	59.6	74	42	10	74	*	852.1
SCHEFFERVILLE	-20.2	-1.2	-1.0	-39.0	42.2	83	41.2	84	48	7	53	*	1184.3
SEPT-ILES	-9.3	1.7	5.3	-22.1	24.4	27	81.2	77	8	6	100	102	
SHERBROOKE	-4.6	3.6	6.0	-25.2	61.2	81	62.4	68	26	11	43	*	733.5
STE AGATHE DES MONTS	-6.7	3.7	4.1	-25.0	73.4	79	91.2	81	42	13	51	66	765.2
ST-HUBERT	-3.6	3.4	6.7	-20.4	46.8	71	63.5	63	7	8	*		669.0
VAL D'OR	-8.5	4.7	4.5	-31.6	70.4	109	75.0	107	37	19	32	37	820.6
NEW BRUNSWICK													
CHARLO	-7.0	1.4	7.3	-22.2	71.6	77	104.0	101	32	9	99	107	776.6
CHATHAM	-6.7	0.2	9.3	-25.5	91.3	132	131.0	121	32	12	83	84	765.0
FREDERICTON	-6.1	0.4	11.0	-22.5	85.5	123	126.1	107	37	11	89	*	747.0
MONCTON	-6.3	-0.9	12.5	-22.2	150.7	209	169.0	139	47	15	73	80	755.5
SAINT JOHN	-4.9	-0.1	13.5	-21.2	101.2	208	139.8	84	48	15	82	89	710.0

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	-2.5	-0.2	14.6	-18.4	105.6	171	114.3	95	35	18	X		636.0
HALIFAX INT'L	-3.4	-0.5	11.7	-18.6	98.3	182	178.3	99	46	16	*		663.7
SABLE ISLAND	2.5	-0.1	13.2	-7.1	31.8	169	124.6	86	2	16	50	92	481.7
SHEARWATER	-2.4	-0.9	11.4	-16.5	58.8	155	139.1	94	26	15	69	74	630.8
SYDNEY	-1.9	-0.1	9.3	-10.7	130.7	199	207.7	126	70	18	56	84	617.3
TRURO													
YARMOUTH	-0.2	0.1	13.9	-12.1	60.8	139	129.2	90	10	20	65	105	547.4
PRINCE EDWARD ISLAND													
CHARLOTTETOWN	-4.2	-0.3	11.8	-17.1	151.7	208	174.9	135	85	18	X		683.7
SUMMERSIDE	-3.9	0.1	*	*	153.0	253	189.8	176	91	16	58	78	679.5
NEWFOUNDLAND													
BATTLE HARBOUR	-5.0	1.8	5.1	-19.9	130.5	*	156.9	335	74	19	X		714.0
BONAVISTA	-1.3	0.2	9.6	-9.8	59.2	152	135.0	140	32	15	X		597.0
BURGEO	-2.4	-0.8	6.4	-11.9	47.4	93	88.6	48	21	9	*		631.4
CARTWRIGHT	-6.0	3.1	3.7	-17.6	103.6	152	114.3	152	71	21	33	54	742.6
CHURCHILL FALLS	-18.2	-0.6	0.5	-32.1	32.4	52	34.4	54	61	5			1121.1
COMFORT COVE	-3.7	0.1	9.2	-16.0	87.4	121	137.5	128	70	18	X		674.8
DANIEL'S HARBOUR	-3.4	0.5	6.5	-13.5	51.1	73	54.9	60	36	11	22	74	662.5
DEER LAKE	-4.4	0.9	8.1	-21.0	65.6	75	69.2	62	39	13	X		695.5
GANDER INT'L	-3.9	-0.1	9.3	-14.5	91.4	128	141.3	130	57	17	55	80	678.0
GOOSE	-10.8	2.2	5.0	-26.7	47.1	83	49.1	67	34	9	53	72	903.1
PORT-AUX-BASQUES	-2.4	-0.7	6.7	-10.2	84.0	154	140.5	90	4	20	39	*	633.7
ST ANTHONY	-4.6	*	4.8	-17.3	140.0	*	188.5	*	87	20	*	*	702.6
ST JOHN'S	-2.1	-0.6	11.9	-12.6	89.6	137	187.5	116	38	15	51	89	623.4
ST LAWRENCE	-1.7	*	10.3	-15.0	60.7	*	127.2	*	30	14		*	
STEPHENVILLE	-2.9	*	10.1	-14.6	80.9	*	106.7	*	37	20	17	*	634.6
WABUSH LAKE	-19.3	*	-0.6	-37.2	42.9	*	39.4	*	47	7	70	*	1148.3

AGROCLIMATOLOGICAL STATIONS

DECEMBER 1987

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	2.3	−0.7	10.0	−7.0	32.6	214.0	82	0	20	50	10.3	2376.2
KAMLOOPS	4.0	*	10.5	−1.5	0.0	112.5	*	0	15	62	17.0	2249.2
SIDNEY	−0.9	0.2	10.5	−11.5	9.2	29.6	90	5	9	43	10.8	2546.0
SUMMERLAND												
ALBERTA												
BEAVERLODGE	−5.0	6.6	9.0	−20.0	15.0	12.0	37	12	2	65	0.0	1387.6
ELLERSLIE												
FORT VERMILLION												
LACOMBE	−4.8	6.7	9.5	−26.0	4.0	3.8	20	0	2	125	0.0	1393.7
LETHBRIDGE												
VAUXHALL												
VEGREVILLE	−7.2	6.8	5.5	−27.5	8.3	8.3	49	6	3	N/A	0.0	1529.6
SASKATCHEWAN												
INDIAN HEAD	−6.9	6.1	7.0	−27.0	6.4	4.0	19	4	1	N/A	0.0	1899.5
MELFORT	−10.1	6.4	3.5	−27.0	27.8	27.8	110	27	8	71	0.0	1666.5
REGINA	−7.5	5.5	11.5	−27.0	4.8	4.8	27	3	0	N/A	0.0	1776.5
SASKATOON	−7.7	6.2	9.5	−25.0	9.3	11.0	43	4	5	89	0.0	1904.0
SCOTT	−8.5	5.7	4.0	−27.0	14.7	11.5	56	8	5	98	0.0	1597.2
SWIFT CURRENT SOUTH	−5.2	5.1	11.0	−27.5	9.1	8.6	53	5	3	114	1.0	1906.6
MANITOBA												
BRANDON	−7.9	6.2	4.8	−25.9	1.6	3.2	16	1	2	N/A	0.0	1973.3
GLENLEA	−10.5	3.9	4.0	−25.5	9.4	9.4	41	6	5	53	0.0	1949.8
MORDEN	−7.1	5.2	5.5	−24.0	8.6	15.0	67	2	4	63	0.0	2219.0
ONTARIO												
DELHI	−0.8	2.1	12.0	−20.5	25.0	102.6	120	5	14	42	2.2	2314.0
ELORA	−2.0	3.2	10.1	−15.2	N/A	70.8	99	TR	N/A	N/A	1.1	1995.4
GUELPH	−1.5	2.6	11.1	−16.3	17.2	89.9	126	TR	9	50	2.5	2172.0
HARROW	1.4	3.1	11.0	−16.0	48.5	85.7	115	3	10	44	9.9	2746.1
KAPUSKASING	−9.1	5.6	2.0	−31.5	43.6	59.3	116	27	20	31	0.0	1486.8
MERIVALE												
OTTAWA	−3.4	4.0	6.1	−21.6	43.6	59.4	82	13	11	70	0.0	2193.0
SMITHFIELD	−2.9	1.6	9.5	−20.0	4.2	98.5	102	0	9	N/A	1.5	2366.0
VINELAND STATION	1.6	2.6	14.0	−11.8	21.8	73.4	100	4	9	56	6.8	2436.5
WOODSLEE												
QUEBEC												
LA POCATIERE	−6.4	1.8	2.0	−22.0	29.8	32.3	35	10	7	102	0.0	1630.4
L'ASSUMPTION	−4.9	3.6	4.5	−26.0	35.0	45.6	50	18	11	70	0.0	2016.8
LENNOXVILLE												
NORMANDIN	−11.7	2.4	0.0	−30.5	51.2	48.8	69	20	7	81	0.0	1407.4
ST. AUGUSTIN												
STE CLOTHILDE	−2.6	4.1	9.0	−20.0	31.0	44.6	53	5	7	55	0.0	2086.2
NEW BRUNSWICK												
FREDERICTON	−5.3	0.9	10.5	−23.0	39.6	49.6	40	29	8	89	3.2	1695.3
NOVA SCOTIA												
KENTVILLE	0.2	2.6	14.5	−15.0	89.1	94.6	73	43	16	53	7.1	1928.8
NAPPAN	−4.6	−0.6	14.0	−23.0	116.2	103.5	87	60	15	68	6.8	1742.8
PRINCE EDWARD ISLAND												
CHARLOTTETOWN	−3.4	0.1	12.0	−16.0	124.8	141.0	127	66	66	54	4.8	1750.1
NEWFOUNDLAND												
ST. JOHN'S WEST	−1.8	−0.4	11.0	−12.0	63.8	206.0	115	40	21	47	0.8	1252.6