Environment Canada Environnement Canada

Climatic Perspectives

Monthly Review APRIL – 1989 Vol. 11

CLIMATIC HIGHLIGHTS

Lack of early Spring rains further aggravates dry soil conditions on the Prairies

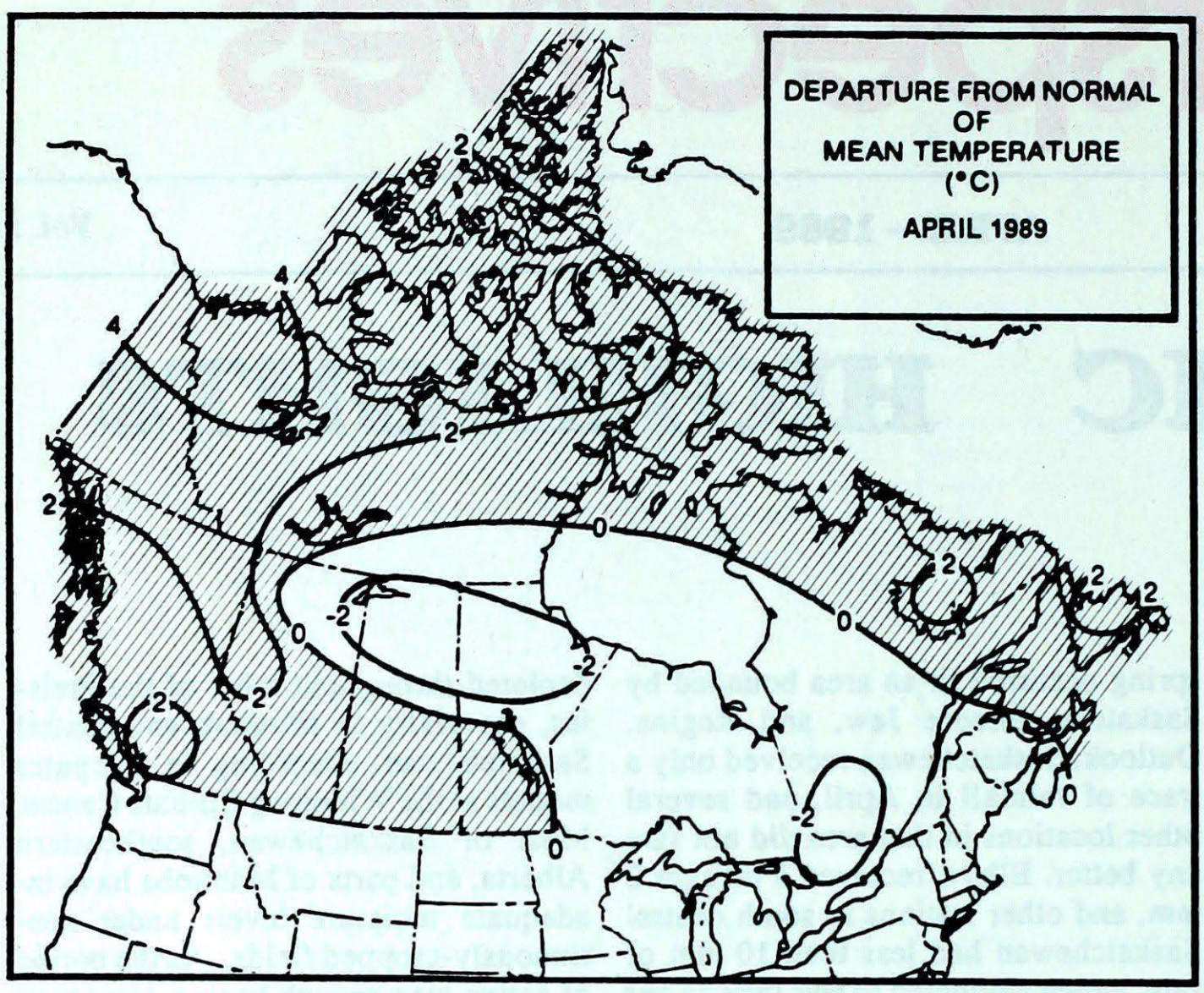
Much-below normal rainfall and snowfall during April, further stressed the soil moisture reserves throughout most of the grain-growing areas of the Prairies. Only the Swift Current region of Saskatchewan and some areas of south and central Alberta received greater than normal precipitation in April. After a winter with scanty snowfall, a drier than normal early spring occurred in an area bounded by Saskatoon, Moose Jaw, and Regina. Outlook, Saskatchewan received only a trace of rainfall in April, and several other locations in that area did not fare any better. Elbow received a meagre 2 mm, and other stations in south central Saskatchewan had less than 10 mm of rain, which amounted to less than 25 per cent of normal for the month. Some localities in southern Saskatchewan have now experienced below normal precipitation as far back as last June.

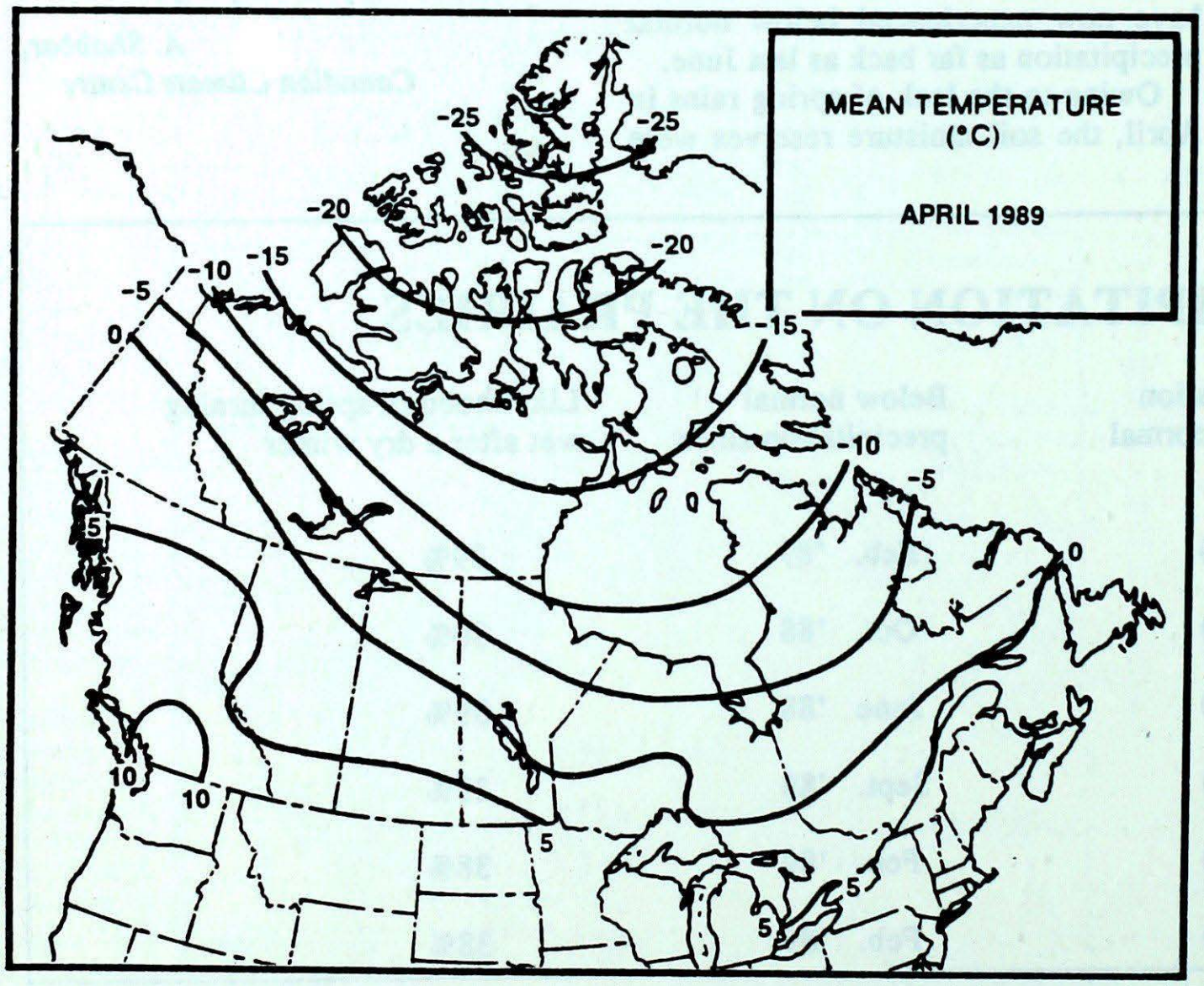
Owing to the lack of spring rains in April, the soil moisture reserves were depleted throughout most of the Prairies, especially in southern and central Saskatchewan, according to computer models at the Winnipeg Climate Centre. Most of Saskatchewan, southeastern Alberta, and parts of Manitoba have inadequate moisture levels under continuously-cropped fields. As the period of active crop growth begins, almost all of the prairie perennial forage and pasture lands are dry to very dry.

A. Shabbar,
Canadian Climate Centre

PRECIPITATION ON THE PRAIRIES

Location	April '89 precipitation mm	(%) of normal	Below normal precipitation since	Likelihood of spring turning wet after a dry winter
Regina	9.4	(48%)	Feb. '89	39%
Saskatoon	5.2	(26%)	Oct. '88	30%
Broadview	7.4	(30%)	June '88	39%
Yorkton	6.2	(28%)	Sept. '88	33%
Winnipeg	15.9	(47%)	Feb. '89	38%
Edmonton	12.6	(55%)	Feb. '89	38%





Across the country

Yukon

April was dominated by a persistent high pressure area for most of the month. Plentiful sunshine, mild temperatures and dry conditions resulted in a pleasant month for most areas. Temperatures varied from readings in the minus 20's at the beginning of the month to the plus 20's at the end of the month. Carmacks was Canada's hot spot for the day on the 26th, with a reading of 23.0°C. Ogilivie recorded the coldest temperature for the month with -30°C on the 2nd. All stations south of Old Crow reported less than half of their normal precipitation. Carmacks, Carcross, and Beaver Creek recorded no measurable precipitation.

The Northwest Territories

The overall monthly temperatures were above normal across the Territories. During the month, many record maximums were set such as 24.2°C on the 29th at Fort Simpson. The mild air which had been entrenched over western regions for most of the month, managed to move eastwards by the third and fourth weeks. Iqaluit tied a record of 3.7°C on the 24th. The west remained dry with very little precipitation, while in the east, Cape Dyer received 64 mm of precipitation.

British Columbia

April started poorly but by the beginning of the second week, a ridge of high pressure became established offshore. The result was a warmer, sunnier, and for the most part, a drier month than normal. Temperatures across the entire province ranged upwards to 2.8°C above normal. Stations which set record high averages for the month were Abbotsford (11.5°C), Hope (11.8°C), Comox (10.3°C), and Prince Rupert (7.0°C). An abundance of sunshine was recorded across the entire

province. Virtually all stations in the northern half of the province established record-high bright sunshine-hours. With southern B.C. well into the growing season, the effects of the unusually cold weather in February and March are now being realised. Extensive damage occurred to crops in the Okanagan Valley, Fraser River Valley, Caribou Region, and along the coast. Replanting of crops and bushes, will be necessary in some cases, as well as extensive pruning.

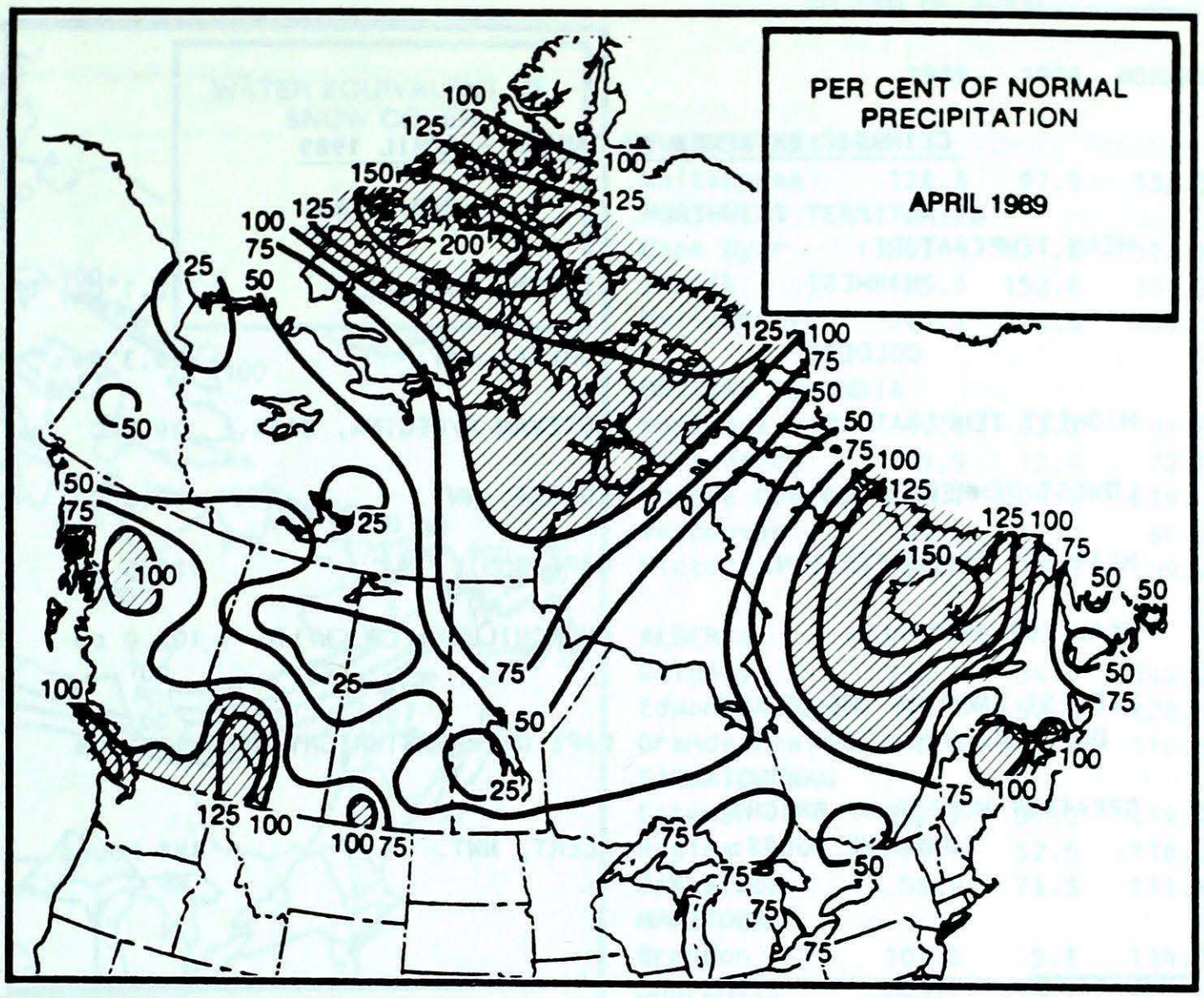
Alberta

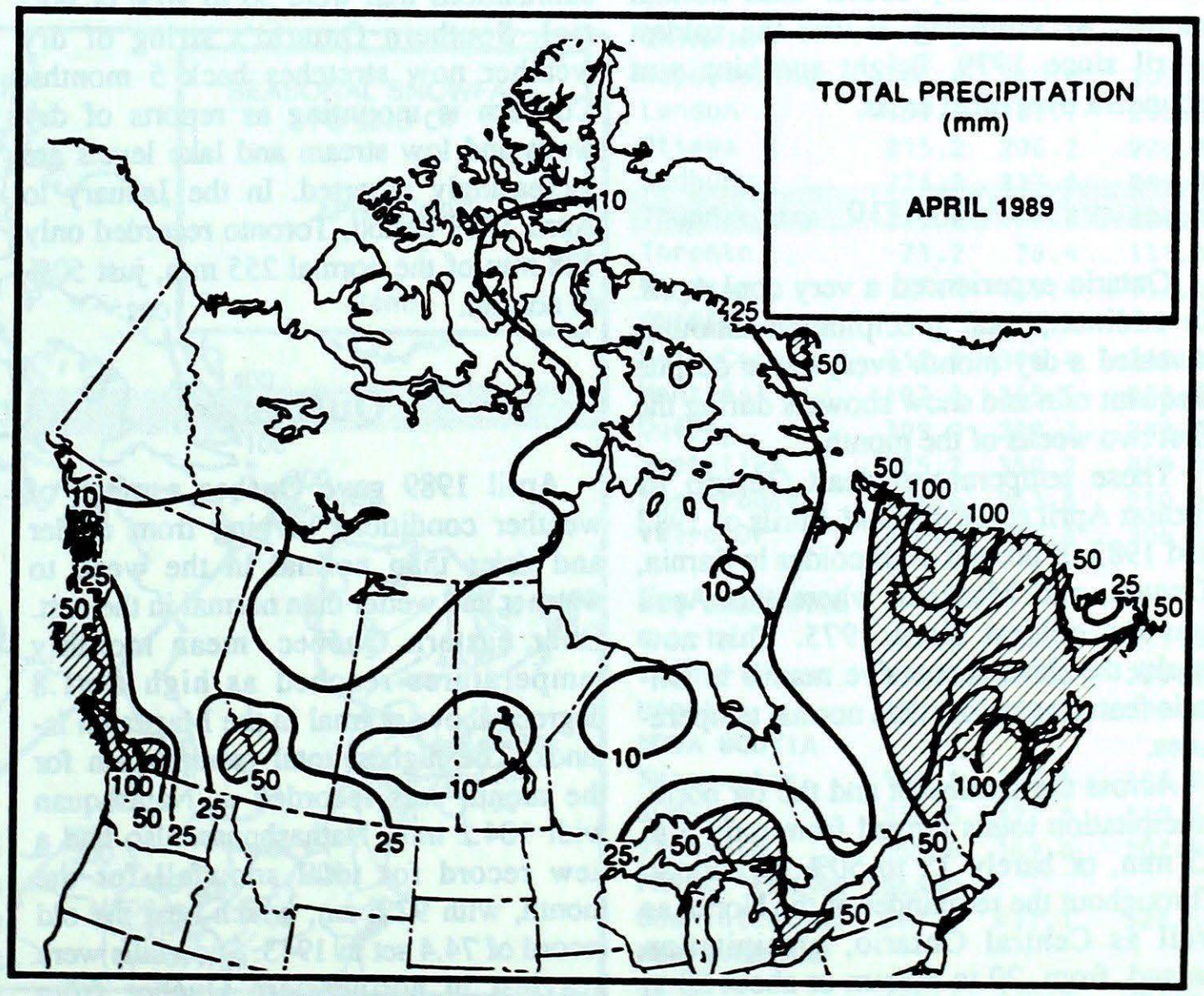
Temperatures were 0.5 to 2.5°C above normal except for the High Level and Fort Chipewyan regions which ranged to 2.9°C below normal.The lowest temperature was -22.0°C at Fort Chipewyan on the 3rd. Extreme maximum temperatures at most localities peaked in the low to mid twenties. The maximum temperature of 26.4°C was recorded at Lethbridge on the 20th. Banff, with 53 mm of precipitation, mostly in the form of snow, was the only location to report above normal precipitation. Northern regions were considerably drier than normal. Peace River received only 1.3 mm of precipitation.

Saskatchewan and Manitoba

Below-normal precipitation was the major feature of concern across the agricultural districts of these two prairie provinces during April. Only extreme southwestern Saskatchewan received greater than normal precipitation. Swift Current, for example, recorded 31.8 mm compared to their normal of 28.3 mm which extended the period of above-normal precipitation which began last fall.

The area between Saskatoon, Moose Jaw and Regina was the worst off, receiving less than 25% of normal precipitation. Following a dry winter, a dry spring has compounded moisture deficit problems. The town of Outlook recorded only a trace of rainfall for the whole month. Elbow received only 2.0 mm, Saskatoon 5.2, Moose Jaw 6.5, and Regina 9.4 mm.





CLIMATIC EXTREMES IN CANADA - APRIL 1989

MEAN TEMPERATURE:		
WARMEST	LYTTON, BC.	12.1°C
COLDEST	EUREKA, NWT.	-26.3°C
HIGHEST TEMPERATURE:	ESTEVAN A/REGINA, SASK.	29.5°C
LOWEST TEMPERATURE:	EUREKA, NWT.	-40.8°C
HEAVIEST PRECIPITATION:	CAPE SCOTT, B.C.	189.5 mm
HEAVIEST SNOWFALL:	CHURCHILL FALLS, NFLD.	102.0 cm
DEEPEST SNOW ON THE GROUND ON APRIL 30, 1989:	CAPE DYER/CARTWRIGHT NFLD.	142 cm
GREATEST NUMBER OF BRIGHT SUNSHINE HOURS:	ALERT, NWT.	398 hours

In southeastern Manitoba, it was the third consecutively cooler than normal month. At Winnipeg, it was the coldest April since 1979. Bright sunshine was abundant over most areas.

Ontario

Ontario experienced a very cool April. In addition, total precipitation amounts revealed a dry month everywhere despite frequent rain and snow showers during the first two weeks of the month.

These temperatures dealt Ontario its coolest April since the cold Aprils of 1982 and 1983. It proved even colder in Sarnia, Trenton, and Muskoka where this April was the coldest since 1975. This now marks the third successive month in Ontario featuring colder than normal temperatures.

Across the northwest and the far north, precipitation totals ranged from only 5 to 25 mm, or barely 15 to 50% of normal. Throughout the remainder of the North, as well as Central Ontario, precipitation ranged from 20 to 60 mm or about 50 to 75% of normal. In the south, a range in totals from 25 to 70 mm represented accumulations that were 50 to 90% of normal. Southern Ontario's string of dry weather now stretches back 5 months. Concern is mounting as reports of dry wells and low stream and lake levels are increasingly reported. In the January to April 1989 period, Toronto recorded only 128 mm of the normal 255 mm, just 50% of normal.

Québec

April 1989 gave Québec a range of weather conditions varying from colder and drier than normal in the west, to warmer and wetter than normal in the east. Over eastern Québec, mean monthly temperatures reached as high as 1.8 degrees above normal in the Magdalen Islands. The highest total precipitation for the month was recorded at Natashquan with 104.2 mm. Nathashquan also had a new record for total snowfall for the month, with 92.6 cm, which beat the old record of 74.4 set in 1943. Snowfalls were heaviest in northeastern Québec from Natashquan northwards to the Schefferville area, with values ranging from 80 cm to 92.6 cm.

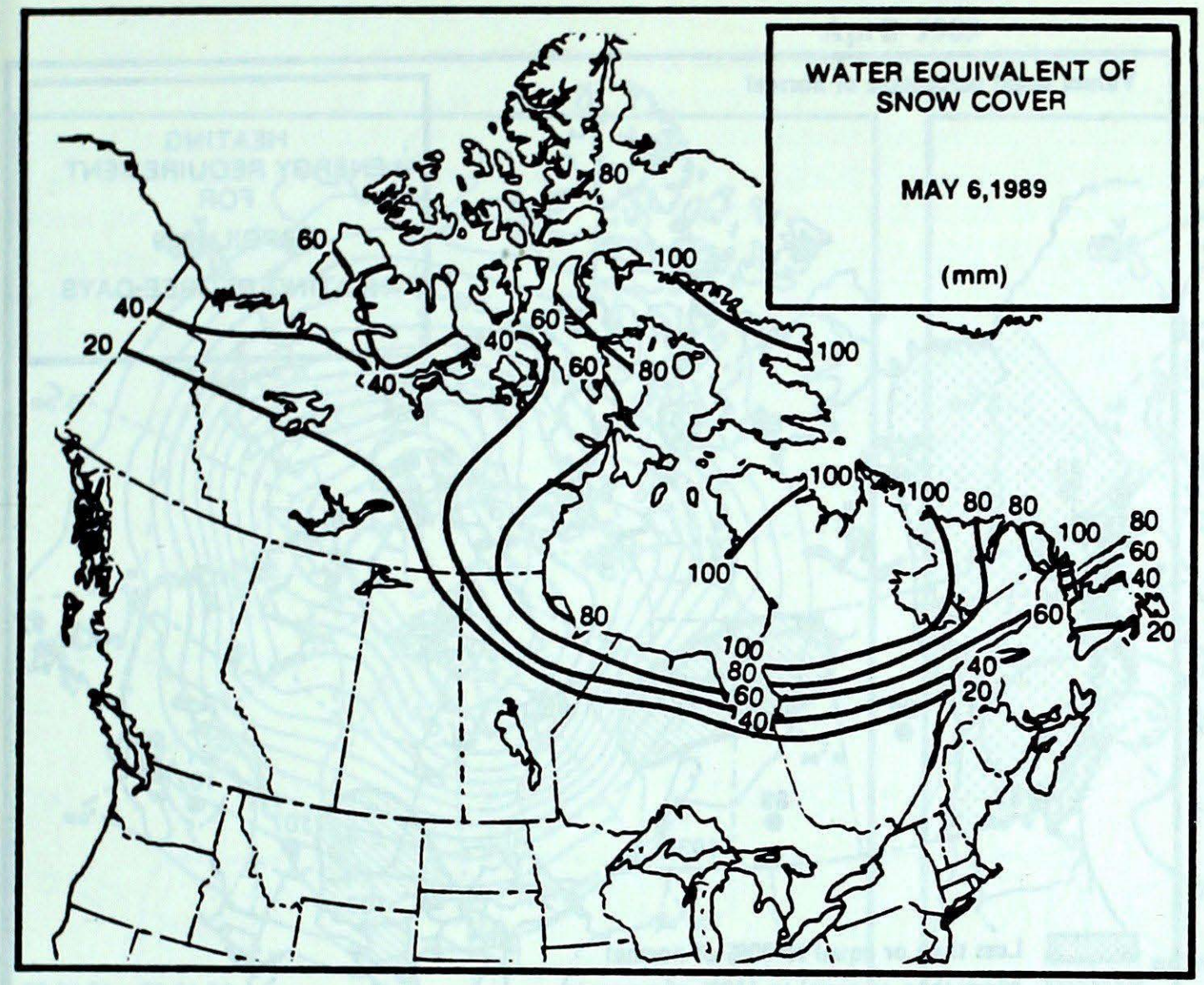
Maritimes

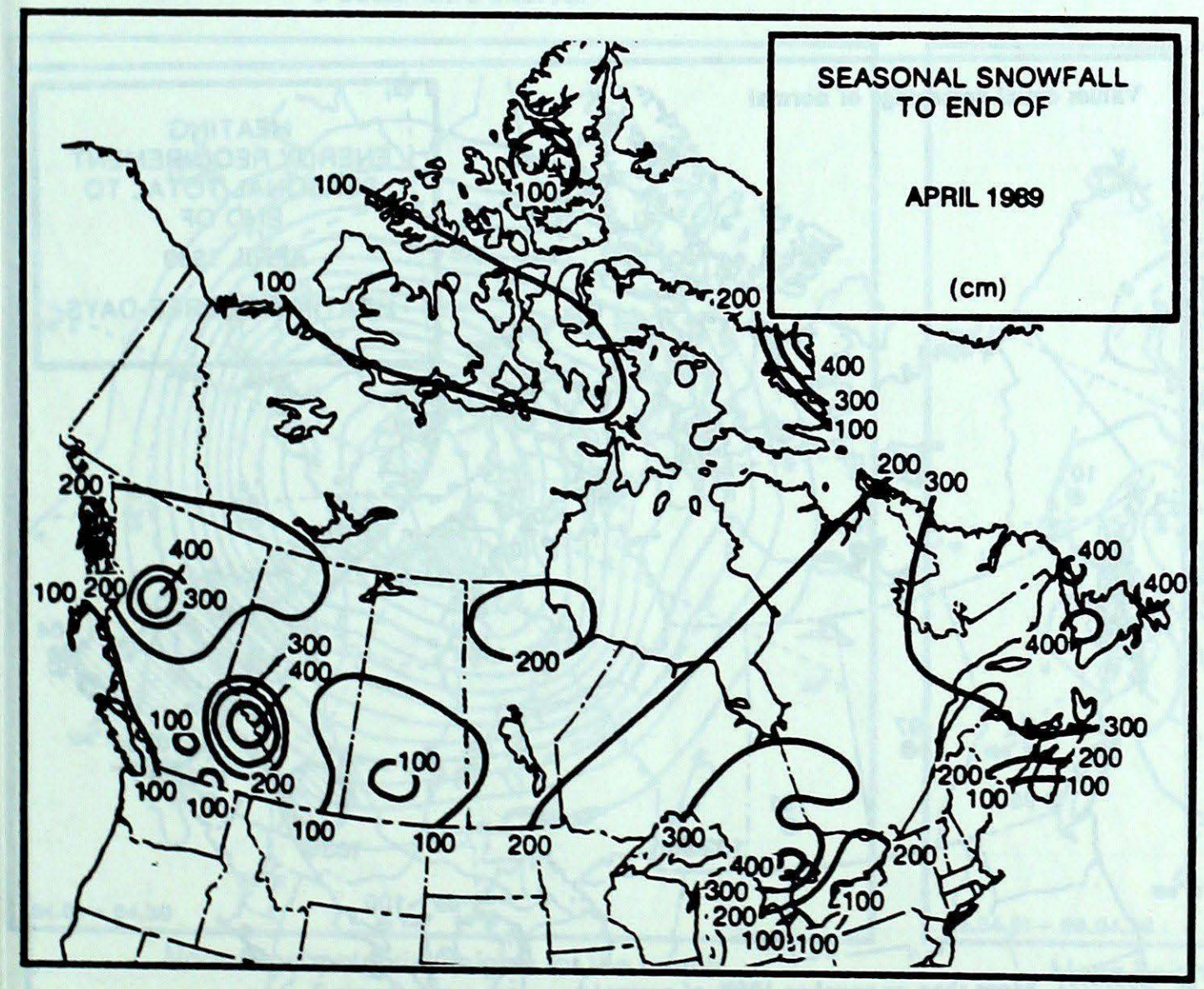
Unsettled weather prevailed over the Maritimes. On the 6th and 7th, new daily record-high maximums were set at CFB Greenwood, N.S., with readings of 21°C and 18°C, respectively. On the 23rd, unusually cold air settled over the Maritimes, setting a number of low maximum temperature records and several low minimum temperature records. Precipitation totals were below normal except for central New Brunswick, where Moncton recorded 149% of normal. Snow was reported on a number of occasions with significant falls reported at several locations. Fredericton received 22.8 cm on the 8th. Ingonish Beach, Nova Scotia had a combined total of 44.8 cm for the 16th and 17th. Other locations receiving heavy snowfalls were Bathurst, N.B. (31.8 cm), Chatham, N.B. (27.8 cm), and Charlottetown, P.E.I. (21.0 cm).

Newfoundland and Labrador

Except for a cool spell during mid-month, temperatures in Newfoundland were generally 1 to 2 degrees above normal.The maximum temperature was 17.7°C at St. John's and the coldest was -9.4°C recorded at St. Anthony. While snowfall and rainfall were below normal in most locations, above normal sunshine was recorded. The first and third weeks brought significant precipitation to the island. Strong winds occurred at the beginning of April, with gusts to 110 km/h being recorded at many locations.

In Labrador, temperatures and precipitation were above normal, and sunshine was below normal. The maximum temperature of 12.8°C was recorded in Cartwright, and the minimum of -23.0°C was recorded in Wabush. Snowfall in Labrador was above normal by 30 to 50 cm at most locations. Nain had 125 cm above normal snowfall, with 172 cm being recorded. At the latter part of the month, snow depths at many locations were in excess of 100 cm.



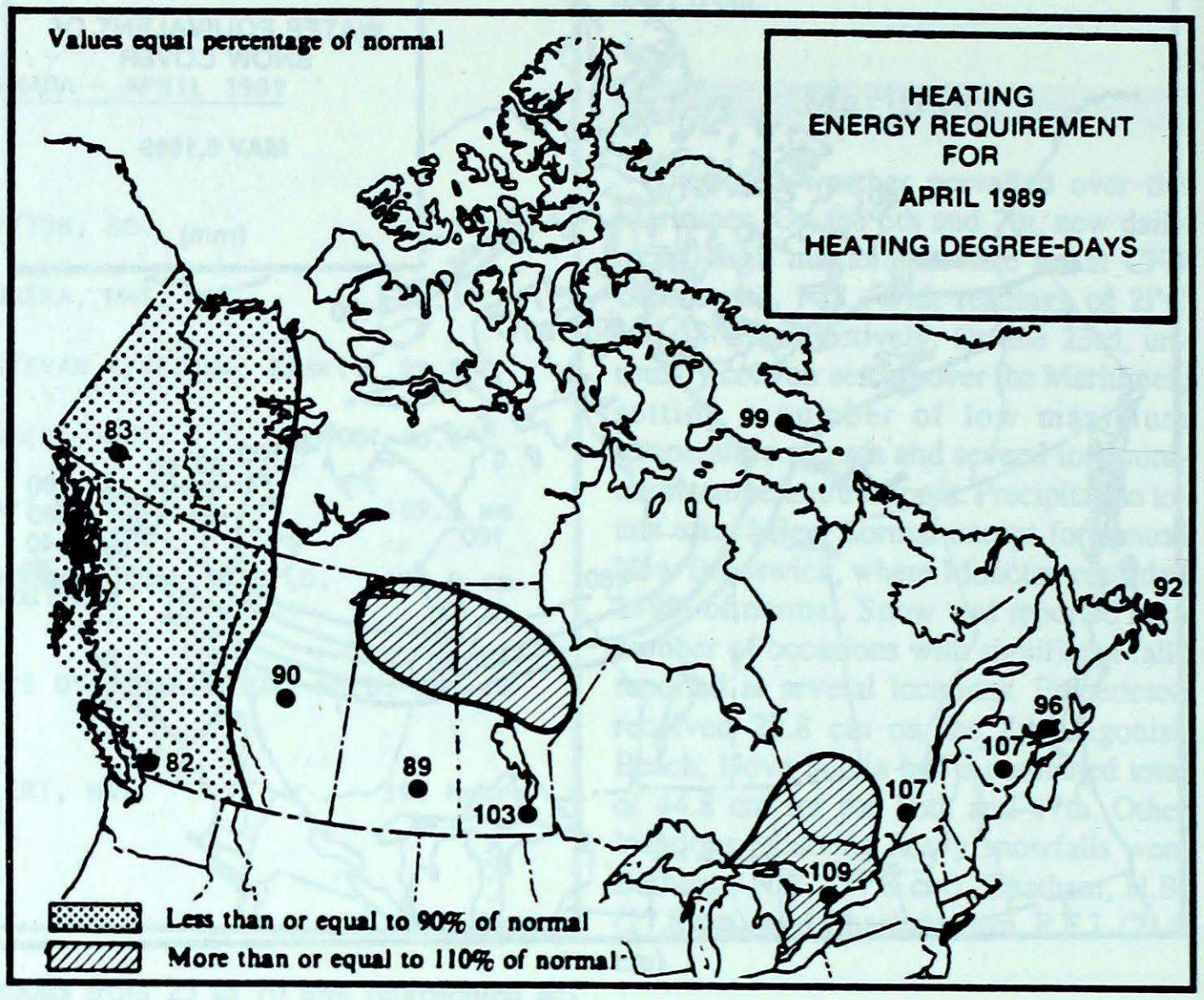


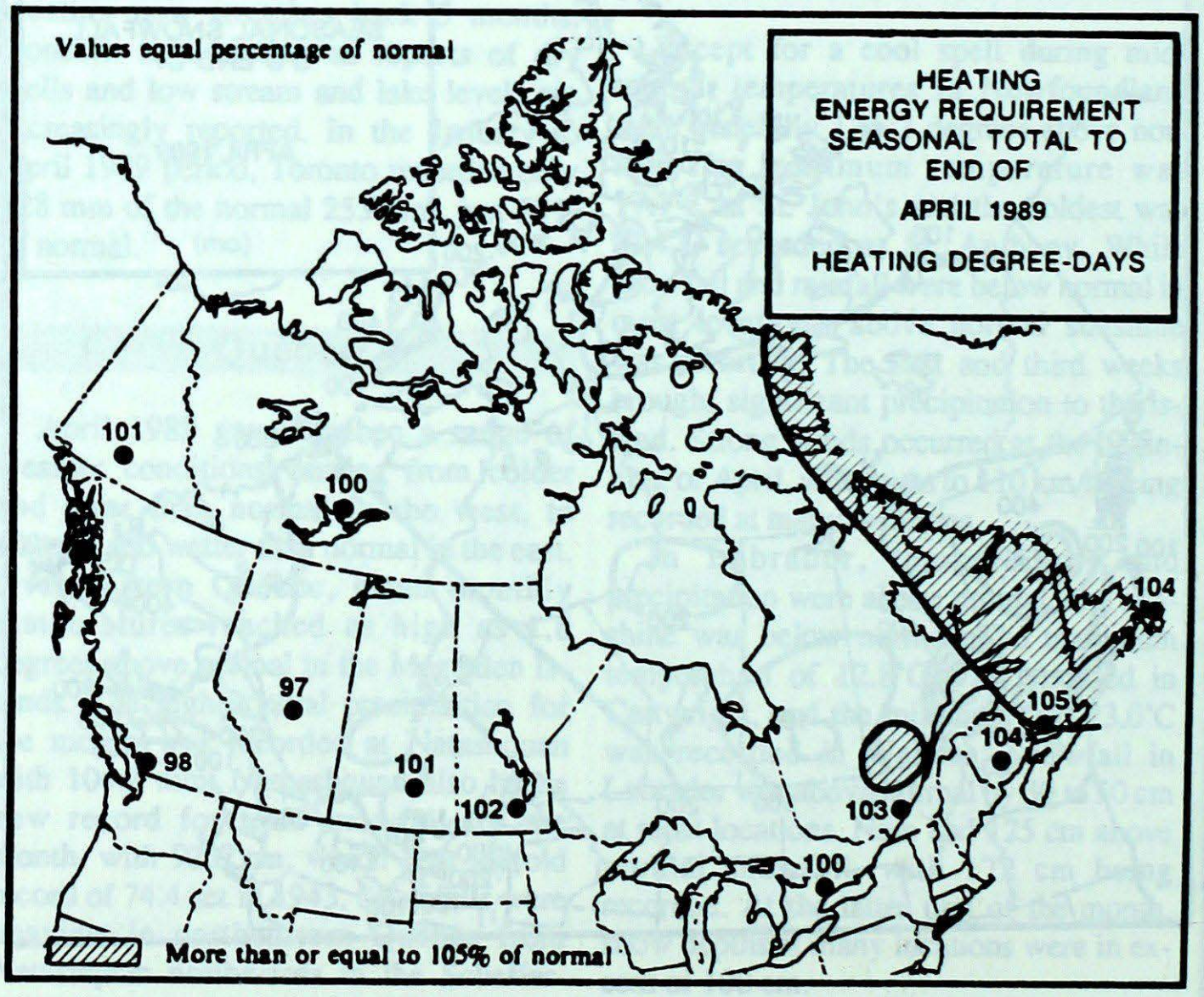
SEASONAL SNOWFALL TOTALS (cm)
TO END OF APRIL

	1989	1988	NORMAL
YUKON TERRITORY			
Whitehorse	128.8	97.9	132.8
NORTHWEST TERRITORIES			
Cape Dyer	567.4	471.0	526.8
Inuvik	135.8	152.8	161.9
Yellowknife	140.1	180.4	131.5
BRITISH COLUMBIA			
Kamloops	40.4	33.3	91.5
Port Hardy	49.9	13.4	72.1
Prince George	205.7	204.7	239.5
Vancouver	41.8	12.0	60.4
Victoria	60.1	2.4	49.9
ALBERTA			
Calgary	113.1	54.0	142.2
Edmonton Namao	94.4	52.3	128.5
Grande Prairie	119.3	119.0	176.2
SASKATCHEWAN			
Estevan	132.8	39.6	114.2
Regina	79.4	52.5	118.5
Saskatoon	56.0	73.3	111.1
MANITOBA			
Brandon	107.6	59.8	114.8
Churchill	204.7	178.1	172.5
The Pas	103.0	157.1	164.0
Winnipeg	153.5	65.3	123.0
ONTARIO			
Kapuskasing	305.4	330.6	309.7
London	156.1	189.7	208.5
Ottawa	215.2	206.2	226.1
Sudbury	278.2	333.0	245.0
Thunder Bay	216.2	120.7	208.8
Toronto	71.2	78.4	131.1
Windsor	77.6	115.4	117.4
QUEBEC			
Baie Comeau	312.8	396.4	368.3
Montréal	197.8	165.6	233.4
Québec	309.0	292.2	342.5
Sept-Îles	375.2	350.2	420.9
Sherbrooke	248.6	263.8	290.8
Val-d'Or	330.8	305.8	306.6
NEW BRUNSWICK			
Charlo	347.7	380.6	411.4
Fredericton	252.7	283.3	289.3
Moncton	321.2	431.7	339.0
NOVA SCOTIA			
Shearwater	154.3	197.6	196.8
Sydney	374.5	322.8	312.6
Yarmouth	155.6	164.0	207.4
PRINCE EDWARD ISLAND			
Charlottetown	361.0	411.1	328.5
NEWFOUNDLAND			
Gander	532.1	558.4	389.0
St. John's	351.0	257.8	346.8

SEASONAL TOTAL OF HEATING DEGREE-DAYS TO END OF APRIL

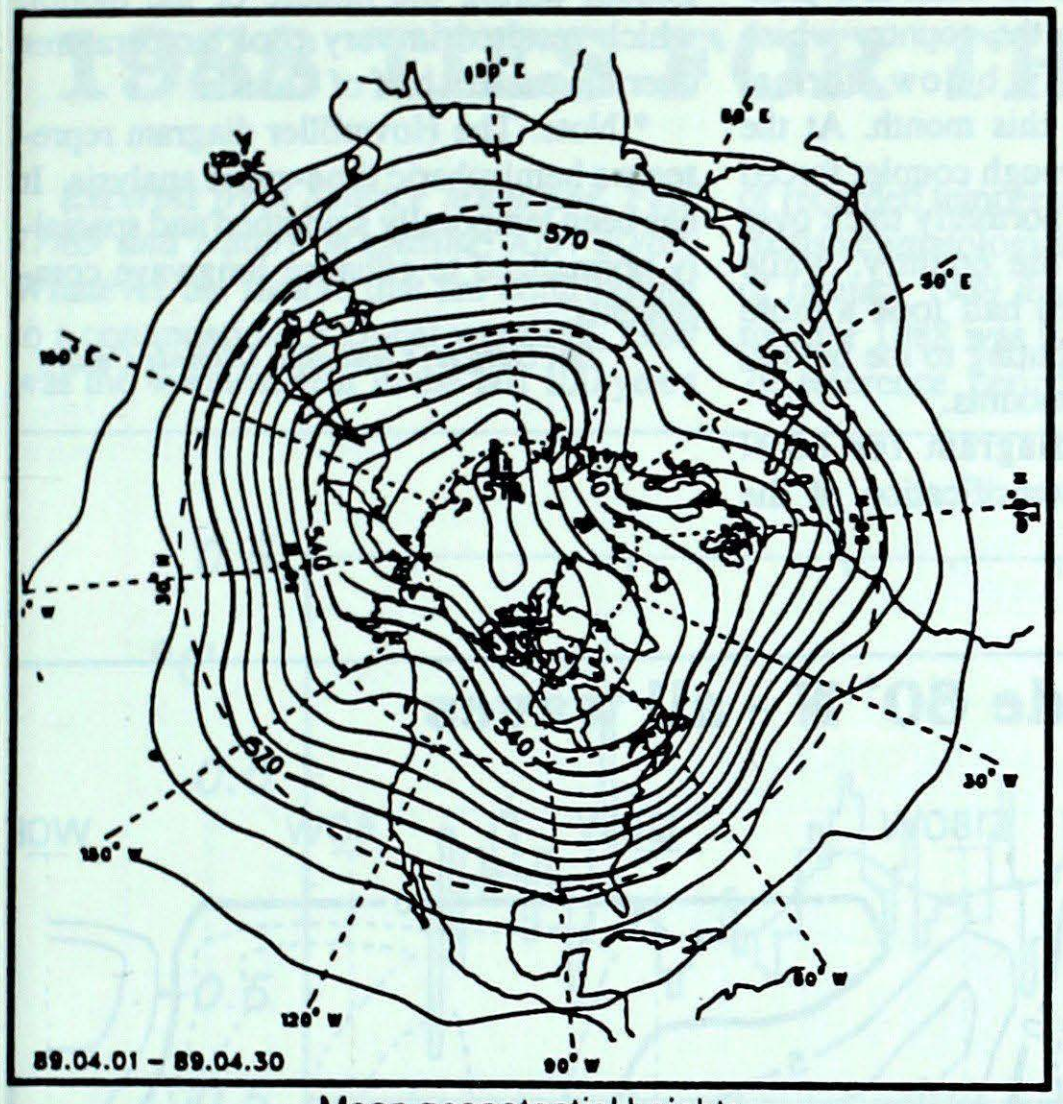
	1989	1988	NORMAL
BRITISH COLUMBIA			
Kamloops	3434	3180	3541
Penticton	3269	3035	3267
Prince George	4877	*	4933
Vancouver	2670	2521	2732
Victoria	2833	2667	2789
YUKON TERRITORY			
Whitehorse	6479	5629	6441
NORTHWEST TERRITORIES			
Iqaluit	*	8778	*
Inuvik	8820	8418	9274
Yellowknife	7945	7338	7930
ALBERTA			
Calgary	4825	4237	4920
Edmonton Mun	4949	4353	5117
Grande Prairie	5561	4758	5727
SASKATCHEWAN			
Estevan	5160	4611	5145
Regina	5562	4975	5494
Saskatoon	5595	5173	5683
MANITOBA			
Brandon	5796	5307	5733
Churchill	8369	8108	8204
The Pas	6220	*	6348
Winnipeg	5665	5152	5555
ONTARIO			
Kapuskasing	6046	5899	5930
London	3748	3710	3833
Ottawa	4512	4301	4411
Sudbury	5103	4941	5048
Thunder Bay	5457	5144	5295
Toronto	3840	3733	3843
Windsor	3366	3336	3412
QUÉBEC			
Baie Comeau	5605	5405	5470
Montréal	4408	4127	4277
Québec	5020	4774	4803
Sept-Îles	5741	5509	5576
Sherbrooke	4869	4660	4850
Val-d'Or	5901	5680	5691
NEW BRUNSWICK			
Charlo	5191	4964	5071
Fredericton	4566	4472	4370
Moncton	4447	4418	4336
NOVA SCOTIA			
Sydney	4273	4094	3996
Yarmouth	3646	3650	3637
PRINCE EDWARD ISLAND			
Charlottetown	4411	4304	4218
NEWFOUNDLAND			
Gander	4716	4544	4475
St. John's	4348	4249	4188



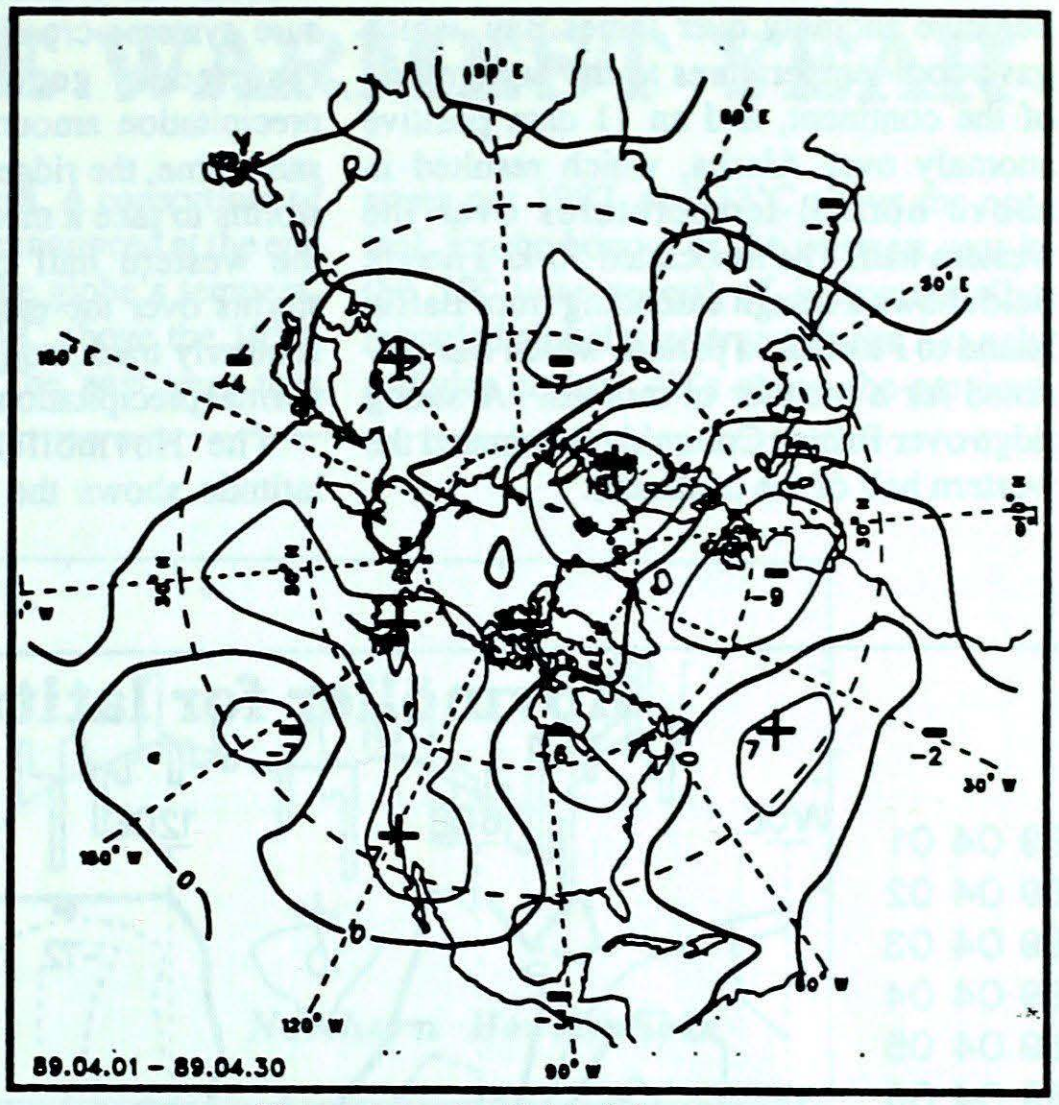


50-kPa ATMOSPHERIC CIRCULATION

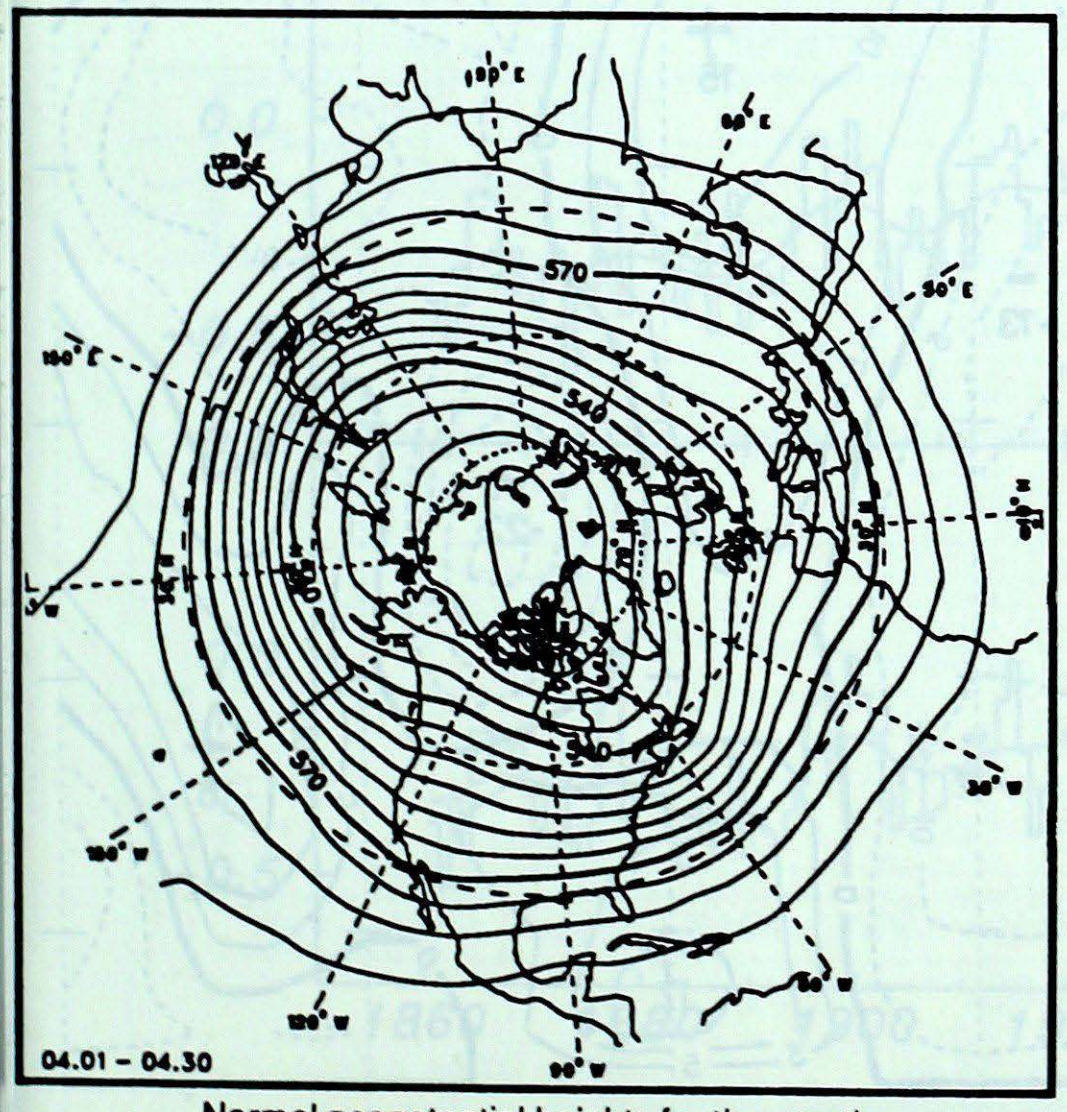
April 1989



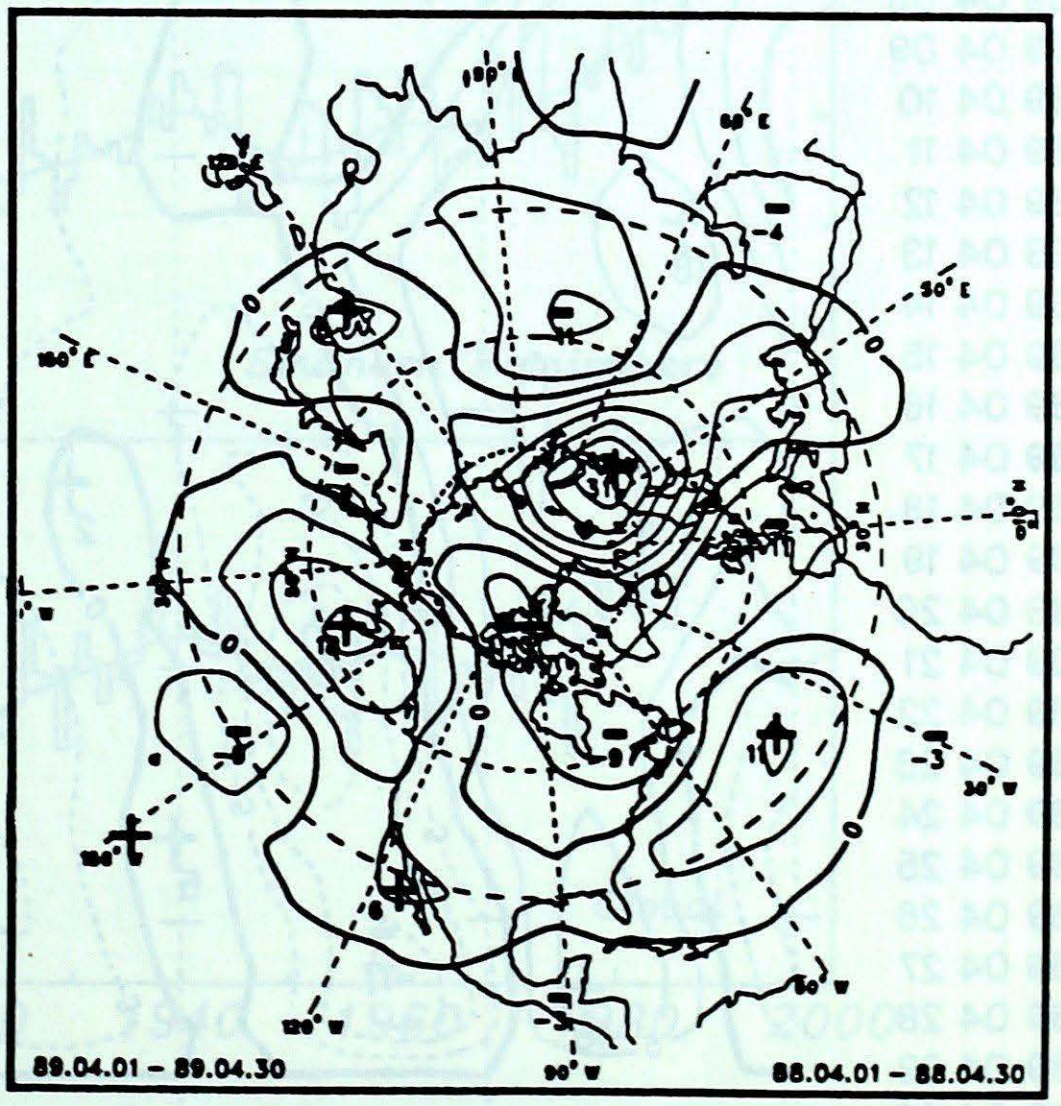
Mean geopotential heights
- 5 decametre interval -



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

April 1989

The 50-kPa height anomaly field over North America this month shows a 6 dam negative anomaly over James Bay, which gave cool temperatures to the eastern half of the continent, and an 11 dam positive anomaly over Alaska, which resulted in above normal temperatures over the western half. The associated 50-kPa height field shows a trough extending from Baffin Island to Florida - a pattern which has persisted for a number of months. A strong ridge over British Columbia dominated the western half of the continent.

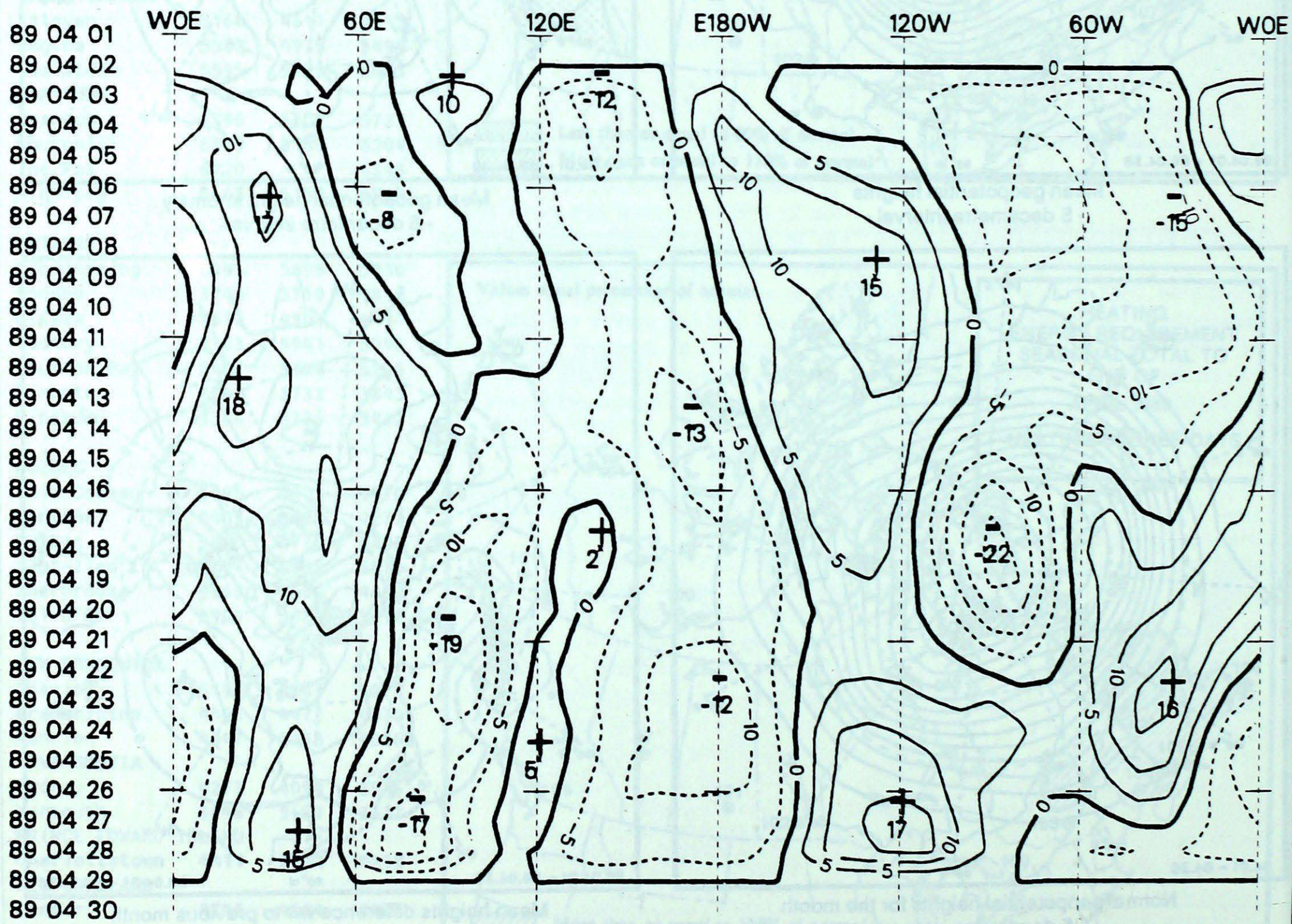
The relatively slack gradient over Canada was indicative of weak low pressure systems crossing the country which resulted in generally below normal precipitation amounts this month. At the same time, the ridge/trough couplet forced storms to take a more northerly track over the western half of the country, while storms over the eastern half took a more southerly track, contributing to the below-normal precipitation amounts.

The Hovmöller diagram for 60°N latitude shows the intensification of the arctic vortex (in the vicinity of 90°W longitude) during the middle of the month, which resulted in very cool temperatures over the eastern half of Canada.

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

A. Gergye, Canadian Climate Centre

Hovmöller for latitude 60° N - all waves



1988 TIES FOR THE WARMEST YEAR

Excerpts from Science Magazine, Feb. 17/89 and Nature Magazine, Apr. 20/89. Whatever the factors that are contributing to a continuation of global warming, 1988 was the warmest year in the last 100 years of recorded temperatures. A consortium of British climatologists announced at the end of January 1989 that the globe's temperature for 1988 was 0.34°C above the 1950-79 reference period. The past year thus noses out 1987, at 0.33°C above the normal, for the honour of the warmest year in the 100-year record of instrumentally-recorded global temperatures. But it is only a titular honour. "It's above the previous

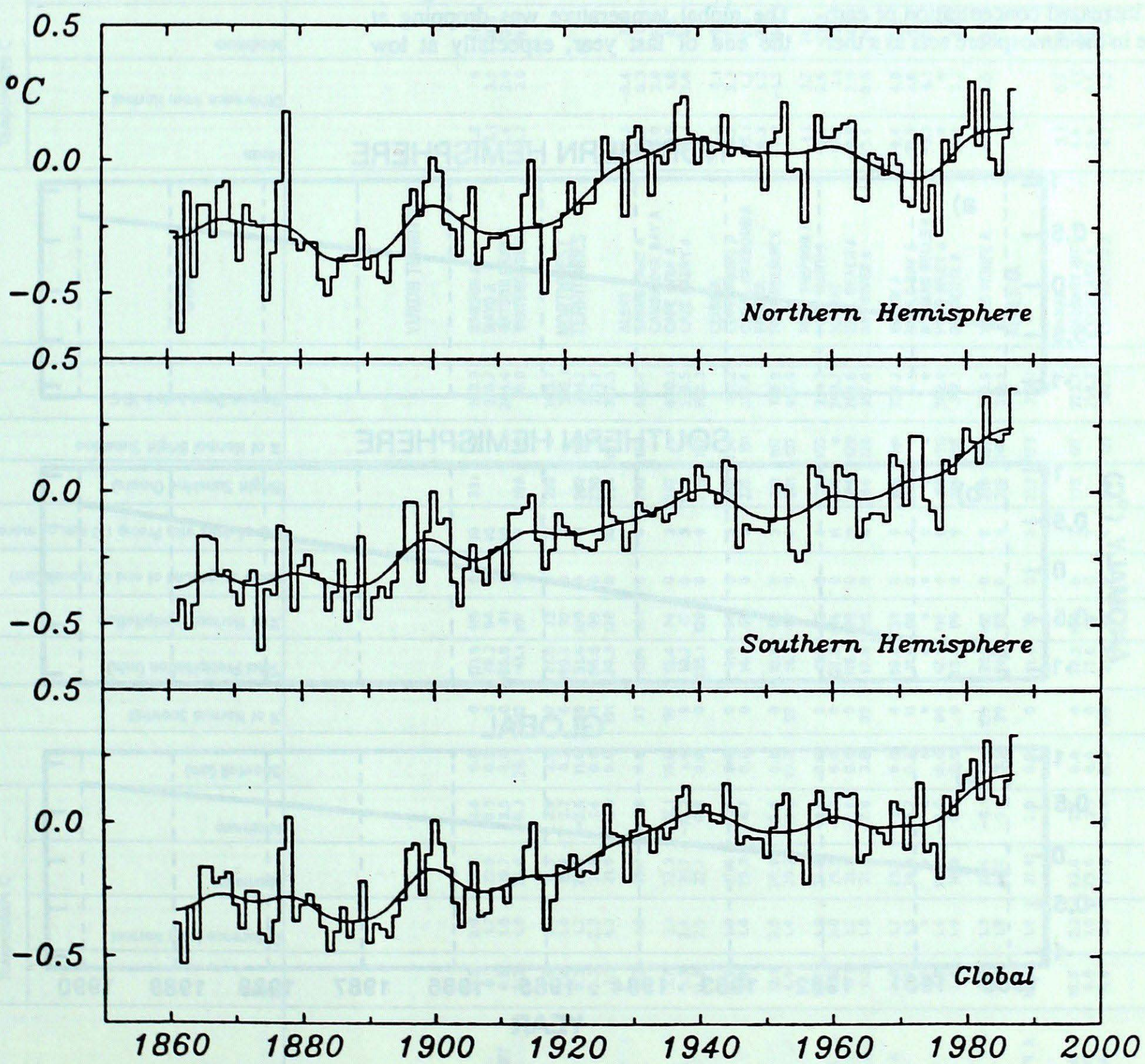


figure 1: Land surface temperature anomalies (°C) as a departure from 1950-1979.

year," says Phillip Jones of the University of East Anglia, but considering the inherent errors, "it's not any different than the previous year." Quite so.

This decade lays claim to the six warmest years on record (see fig 1) which shows the global surface air temperature anomalies since 1860. Using satellite-derived sea surface temperatures (SST), the major oceans also show a warming trend (figure 2) for the period 1982 to June 1988.

There are two important, albeit opposing theories, on whether the earth is warming or cooling: greenhouse warming, in which an increased concentration of carbon dioxide in the atmosphere acts as a thermal blanket preventing radiation from escaping the earth's surface; and La Nina, a strong cooling of Pacific Ocean surface temperatures which, in turn, causes global cooling.

The thought that it may be the greenhouse effect that is the overriding factor is still tenuous. "It's the multi-year and decadal trends, not the individual years, that are important," says Jones. "While this trend is consistent with theory, it can't be taken as unambiguous proof. We still need more warm years before we can say we've detected a trend."

1989 should offer an interesting test. The global temperature was dropping at the end of last year, especially at low latitudes, as La Nina took effect. On the assumption that only La Nina will be cooling the globe, 1989 should be cooler than 1988 by 0.2°C, which is still 0.15°C above the normal, according to Jones. Another warm year in the 1980's, in the face of La Nina cooling, would impress climatologists, but it would not convince them of a warming trend. Jones says, "Perhaps in several years, when the next La Nina again tests the robustness of the warming trend, the consensus could shift."

A. Gergye,
Canadian Climate Centre

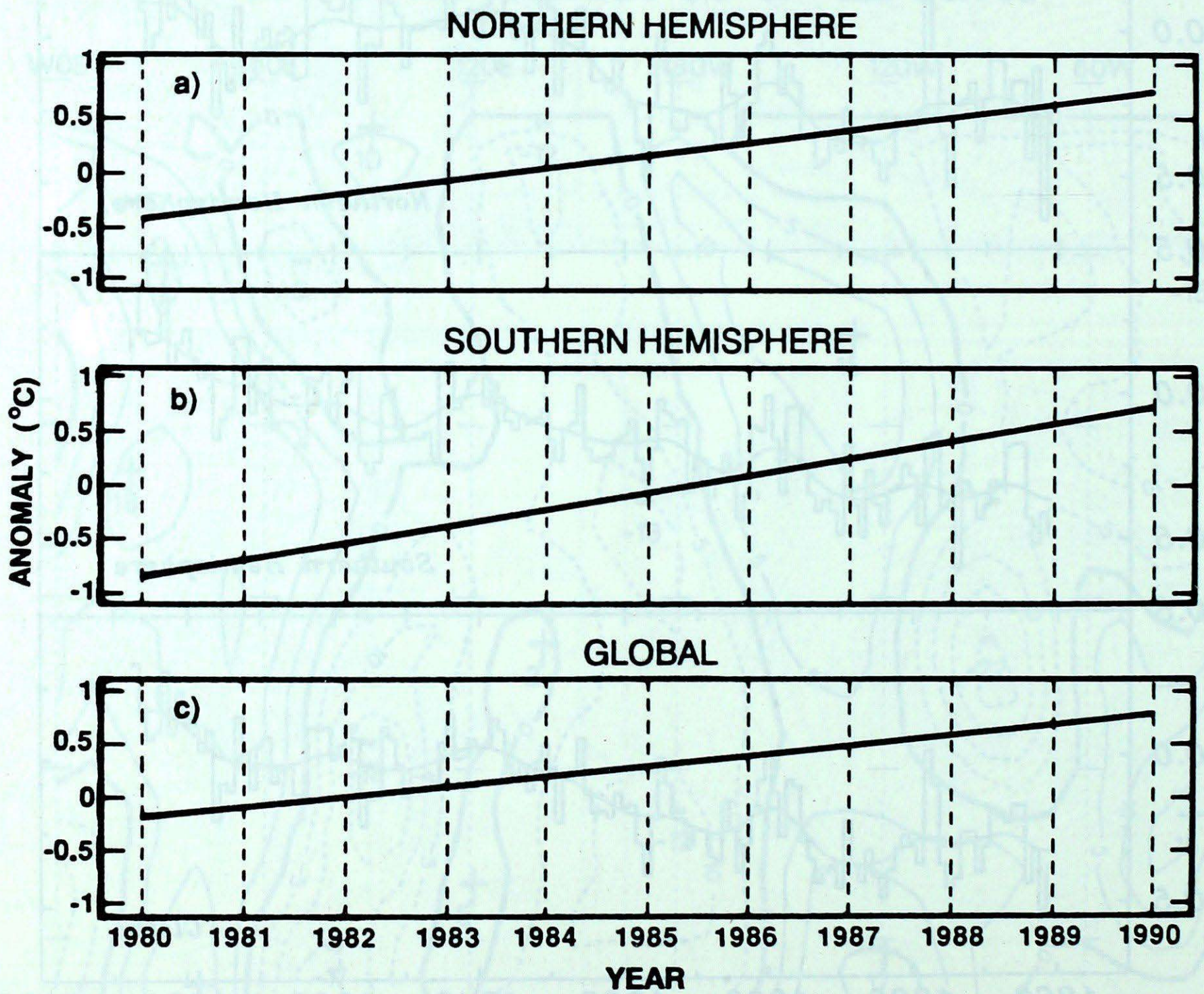


figure 2: Sea surface temperature anomaly trend for 1980 to 1990

APRIL 1989

STATION	Temperature C				Snowfall (cm)	% of Normal Snowfall	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	% of Normal Bright Sunshine	Degree Days below 18 C
	Mean	Difference from Normal	Maximum	Minimum									
BRITISH COLUMBIA													
ABBOTSFORD A	11.5	2.8	26.5	1.4	0.0	0	121.6	119	0	10	231	141	193.9
ALERT BAY	9.1	1.7	22.9	0.5	0.0	0	78.2	94	0	10			270.7
AMPHITRITE POINT	9.8	1.8	19.7	3.5	0.0	0	185.8	91	0	10			244.4
BLUE RIVER A	5.3	1.0	24.0	-9.3	28.1	312	41.1	107	0	7	188	112	0.0
CAPE ST JAMES	7.9	1.4	17.5	2.9	2.0	80	77.8	73	0	11	222	*	303.7
CAPE SCOTT	7.9	1.0	15.6	2.7	0.2	6	189.5	92	0	9			302.1
CASTLEGAR A	9.3	1.2	25.6	-2.6	11.6	138	51.4	109	0	8	202	117	261.7
COMOX A	10.3	2.3	21.8	1.4	0.0	0	56.8	99	0	6	230	*	231.7
CRANBROOK A	7.1	1.3	21.9	-4.9	8.0	151	36.3	128	0	10	224	103	327.5
DEASE LAKE	2.2	1.9	18.7	-16.2	6.4	53	12.4	101	0	4	292	153	473.4
FORT NELSON A	3.7	2.1	22.3	-15.1	15.6	97	12.4	74	0	2	302	*	430.1
FORT ST JOHN A	5.3	2.4	21.7	-12.2	1.4	9	10.2	47	0	3	303	*	379.5
HOPE A	11.8	2.5	27.7	0.6	0.0	0	135.1	129	0	9	220	137	188.3
KAMLOOPS A	10.9	1.8	27.4	-2.4	0.0	0	9.4	90	0	3	258	130	211.2
KELOWNA A	9.4	1.9	25.3	-4.7	0.0	0	14.0	69	0	3	225	111	257.4
LYTTON	12.1	2.5	28.4	-0.6	0.0	0	12.8	69	0	3	219	107	178.9
MACKENZIE A	4.4	1.4	20.2	-10.0	10.2	95	14.2	87	0	4	261	127	407.9
PENTICTON A	10.4	1.8	24.8	-1.5	0.0	0	11.2	52	0	4	221	105	231.7
PORT ALBERNI A	9.9	2.0	25.5	-0.7	0.0	0	127.8	134	0	11	205	*	243.7
PORT HARDY A	8.1	1.5	21.6	-0.4	0.0	0	116.1	108	0	11	186	129	295.6
PRINCE GEORGE A	6.1	1.8	21.5	-7.8	3.8	38	13.8	50	0	4	244	120	357.6
PRINCE RUPERT A	7.0	1.7	23.2	-1.5	0.0	0	59.0	33	0	9	190	141	328.2
PRINCETON A	7.7	1.5	24.8	-5.7	0.4	11	11.9	80	0	4	253	*	*
QUESNEL A	*	*	*	*	*	*	*	*	*	*	*	*	*
REVELSTOKE A	7.9	1.4	25.0	-3.0	16.0	90	47.8	118	0	8	199	111	302.9
SANDSPIT A	7.4	1.4	18.0	0.0	0.0	0	83.8	99	0	9	214	138	317.1
SMITHERS A	5.5	1.3	22.4	-6.1	11.1	159	29.1	165	0	6	226	128	376.9
TERRACE A	7.5	1.8	24.6	-1.5	3.5	29	39.7	65	0	9	216	146	314.5
VANCOUVER INT'L A	10.4	1.6	21.4	2.0	0.0	0	41.6	70	0	6	223	123	227.1
VICTORIA INT'L A	10.6	2.2	23.0	2.6	0.0	0	39.2	100	0	7	228	177	223.7
VICTORIA MARINE	9.8	1.9	23.6	2.1	0.0	0	77.6	117	0	7			256.2
WILLIAMS LAKE A	6.0	1.6	21.8	-7.4	15.3	158	21.2	99	0	4	254	121	362.1

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	Mean	Difference from Normal	Maximum	Minimum									
YUKON TERRITORY													
DAWSON A	1.8	*	21.7	-23.2	0.0	*	1.8	*	0	*	*	*	*
MAYO A	3.1	3.5	21.3	-20.0	2.4	32	5.2	60	0	*	*	*	*
WATSON LAKE A	1.4	2.0	20.0	-18.3	8.9	64	7.2	48	0	1	283	131	497.5
WHITEHORSE A	3.2	2.9	19.3	-16.5	2.2	21	3.6	38	0	1	280	122	443.6
NORTHWEST TERRITORIES													
ALERT	-25.3	-0.4	-7.3	-40.4	4.8	60	4.7	60	76	2	398	*	1297.7
BAKER LAKE A	-17.0	0.3	-1.4	-30.6	21.2	156	16.2	117	44	4	*	*	*
CAMBRIDGE BAY A	-18.0	3.9	-0.6	-32.0	7.1	88	5.4	75	33	1	229	91	1080.4
CAPE DYER A	-13.6	1.8	4.6	-36.1	76.4	151	63.8	142	142	7	*	*	948.5
CAPE PARRY A	-15.3	3.4	4.0	-31.8	6.8	52	6.2	65	20	1	*	*	996.7
CLYDE A	-18.3	0.1	-0.1	-35.8	19.4	142	17.0	125	37	5	247	100	1090.0
COPPERMINE A	-14.2	3.3	7.8	-32.2	11.0	108	8.0	73	80	4	247	114	965.9
CORAL HARBOUR A	-15.1	1.2	0.6	-21.3	25.6	178	22.4	164	35	6	267	96	983.4
EUREKA	-26.3	1.3	-7.9	-40.8	2.4	83	2.4	89	20	*	347	98	1328.2
FORT RELIANCE	-11.1	-1.5	14.6	-30.2	7.0	53	3.6	29	23	1	*	*	872.9
FORT SIMPSON A	1.1	2.7	24.2	-22.6	9.5	81	9.5	63	0	3	310	140	507.3
FORT SMITH A	-1.6	0.6	21.7	-23.0	4.8	36	4.8	30	0	2	314	*	605.2
IQALUIT	-13.2	1.1	5.1	-30.3	18.8	66	14.7	56	6	4	235	100	936.2
HALL BEACH A	-18.9	2.0	-1.5	-36.7	12.0	104	12.2	112	34	4	*	*	1106.4
HAY RIVER A	-3.4	0.8	24.1	-25.6	8.6	66	8.6	54	0	3	*	*	641.4
INUVIK A	-9.4	4.9	12.8	-29.5	2.6	15	1.6	11	12	0	231	93	822.3
MOULD BAY A	-21.5	2.6	-5.1	-35.0	15.2	262	8.0	160	20	2	256	90	1183.9
NORMAN WELLS A	-3.1	4.1	18.0	-25.8	6.0	39	4.0	26	0	2	300	126	633.2
POND INLET A	*	*	*	*	*	*	*	*	*	*	*	*	*
RESOLUTE A	-19.9	3.2	-3.8	-32.5	19.7	303	18.9	320	28	8	207	75	1137.7
YELLOWKNIFE A	-6.4	0.5	16.3	-27.7	1.4	14	1.2	12	0	0	364	137	731.9
ALBERTA													
BANFF	3.1	0.7	19.5	-11.0	40.6	128	53.0	141	0	8	*	*	*
CALGARY INT'L A	4.4	1.1	22.0	-10.3	12.4	48	22.7	70	0	6	224	110	406.4
COLD LAKE A	3.4	0.5	21.0	-16.5	6.6	53	9.4	44	0	3	252	110	438.1
CORONATION A	4.2	1.2	22.4	-12.1	3.2	21	11.4	48	0	4	250	108	401.6

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	Mean	Difference from Normal	Maximum	Minimum									
EDMONTON INT'L A	4.3	1.1	21.0	-12.4	12.9	100	16.5	82	0	6	283	122	410.8
EDMONTON MUNICIPAL	5.6	1.4	21.4	-13.0	7.8	*	12.6	58	0	4	293	128	371.3
EDMONTON NAMAO A	5.2	1.3	21.5	-13.8	7.2	62	11.4	63	0	4	*	*	382.7
EDSON A	3.6	0.4	21.2	-10.6	16.2	109	21.0	88	0	4	242	119	434.4
FORT CHIPEWYAN A	-2.8	-2.9	20.0	-22.0	4.4	19	6.6	33	0	*	*	*	*
FORT MCMURRAY A	1.9	-0.2	23.9	-18.4	3.8	28	4.8	23	0	2	252	109	482.9
GRANDE PRAIRIE A	5.2	2.5	23.5	-13.7	0.0	0	12.4	64	0	3	304	*	384.3
HIGH LEVEL A	0.6	-1.6	22.9	-18.5	13.2	91	11.0	68	0	2	304	124	522.6
JASPER	4.6	1.3	21.5	-10.5	6.8	62	15.4	68	0	5	224	*	403.6
LETHBRIDGE A	6.0	1.1	26.4	-10.0	13.4	49	28.5	67	0	8	225	*	358.8
MEDICINE HAT A	6.3	0.7	25.3	-9.9	5.4	29	25.2	83	0	5	231	115	352.4
PEACE RIVER A	4.1	2.0	23.3	-14.4	0.4	4	1.3	9	0	0	*	*	416.3
RED DEER A	3.8	0.7	20.1	-10.5	9.7	57	22.1	84	0	5	*	*	426.4
ROCKY MTN HOUSE A	2.8	-0.2	19.8	-11.3	15.6	54	26.5	77	0	5	*	*	456.4
SLAVE LAKE A	3.0	-0.1	22.6	-14.8	0.2	2	4.6	26	0	1	292	125	448.6
SUFFIELD A	5.7	*	25.1	-9.0	5.8	*	17.2	*	0	5	229	*	*
WHITECOURT A	4.7	2.0	22.0	-12.2	18.8	107	17.0	63	0	3	*	*	399.8
SASKATCHEWAN													
BROADVIEW	4.0	1.4	28.0	-12.2	1.6	11	7.4	24	0	3	268	128	422.3
COLLINS BAY	-6.0	*	13.8	-27.4	55.8	*	45.4	*	91	5	232	*	719.4
CREE LAKE	-4.8	3.0	18.6	-26.6	4.0	21	3.2	17	8	1	231	96	684.0
ESTEVAN A	5.8	1.7	29.5	-10.2	2.0	12	18.6	50	0	4	244	116	366.1
HUDSON BAY A	*	*	*	*	*	*	*	*	*	*	*	*	*
KINDERSLEY	4.4	0.6	26.2	-10.4	2.0	18	12.8	60	0	3	250	*	407.0
LA RONGE A	-0.2	-1.2	16.1	-17.3	3.0	22	28.0	142	0	3	*	*	579.6
MEADOW LAKE A	3.1	*	24.6	-4.3	8.7	*	17.0	*	0	2	290	*	446.9
MOOSE JAW A	5.3	1.1	27.1	-9.4	0.6	5	6.5	22	0	2	258	118	380.0
NIPAWIN A	2.9	*	26.0	-14.4	1.4	*	9.4	*	0	3	281	*	454.4
NORTH BATTLEFORD A	4.4	1.4	26.4	-12.5	0.8	7	12.6	60	0	3	*	*	407.4
PRINCE ALBERT A	3.4	1.5	26.9	-13.0	1.8	16	14.0	64	0	5	267	119	439.1
REGINA A	5.0	1.7	29.5	-13.6	4.0	37	9.4	40	0	3	270	129	390.9
SASKATOON A	4.4	1.1	27.8	-11.6	1.2	13	5.2	25	0	3	*	*	408.0
SWIFT CURRENT A	4.6	1.1	26.2	-10.8	23.4	153	31.8	112	0	7	240	115	402.2
WYNYARD	3.6	1.0	27.8	-11.0	6.0	43	10.0	43	0	3	306	133	431.1
YORKTON A	3.6	1.4	27.5	-10.6	1.6	12	6.2	28	0	3	291	130	445.2
MANITOBA													
BRANDON A	3.9	1.1	24.0	-10.2	5.4	48	17.8	53	0	2	242	*	424.2
CHURCHILL A	-11.6	-1.5	4.5	-26.5	21.4	96	21.5	94	30	10	168	83	887.2
DAUPHIN A	3.3	1.0	25.1	-11.8	5.4	33	7.4	23	0	4	262	118	439.9
GILLAM A	-7.3	-3.2	16.8	-25.3	25.4	66	*	*	14	5	*	*	759.3
GIMLI	0.8	*	15.2	-13.8	13.0	*	21.0	*	0	5	272	110	515.8

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ISLAND LAKE	-3.4	-0.2	11.8	-23.0	5.4	19	15.6	58	***	4	*	*	640.9
LYNN LAKE A	-5.7	-2.2	15.5	-24.9	8.0	34	13.0	76	3	3	253	109	711.2
NORWAY HOUSE A	-1.9	*	15.2	-17.8	2.8	*	6.4	*	0	2	*	*	*
PORTAGE LA PRAIRIE	3.5	0.3	24.2	-11.6	8.9	54	20.5	48	0	3	*	*	436.1
THE PAS A	0.1	0.1	16.1	-15.0	0.0	0	4.9	18	0	2	271	120	510.8
THOMPSON A	-4.4	-2.1	16.5	-24.2	6.3	21	36.9	165	0	5	218	95	672.2
WINNIPEG INT'L A	2.6	-0.8	22.9	-11.8	6.9	61	15.9	41	0	3	263	120	461.7
ONTARIO													
BIG TROUT LAKE	-4.8	1.0	10.8	-24.5	2.0	8	7.8	28	6	1	200	*	683.7
EARLTON A	0.4	-1.5	13.0	-11.7	11.3	58	29.8	60	0	5	*	*	526.8
GERALDTON A	0.6	*	11.2	-23.8	20.4	*	31.8	*	1	7	*	*	593.1
GORE BAY A	2.9	-0.8	15.0	-8.2	26.0	243	60.2	92	0	12	*	*	463.0
HAMILTON RBG	6.2	*	17.0	-6.1	1.0	*	39.9	*	0	9	209	*	*
HAMILTON A	5.0	-1.1	18.4	-7.6	4.0	63	43.7	56	0	9	*	*	392.1
KAPUSKASING A	-0.7	-1.2	11.1	-15.2	22.2	89	31.8	60	7	6	*	*	560.0
KENORA A	1.5	-1.2	15.5	-16.5	8.8	44	20.8	50	0	6	*	*	495.9
KINGSTON A	3.8	-1.5	15.2	-5.5	5.6	74	42.2	55	0	9	171	85	426.8
LANSDOWNE HOUSE	-2.6	-0.3	10.9	-18.4	6.4	20	6.2	15	10	2	*	*	618.2
LONDON A	5.0	-1.4	19.2	-7.4	9.6	105	64.0	79	0	12	160	96	389.6
MOOSONEE	-3.3	-1.0	8.6	-18.2	3.8	18	9.5	22	4	3	165	95	638.8
MUSKOKA A	1.9	-2.6	16.1	-11.6	23.5	196	48.6	66	0	12	*	*	478.2
NORTH BAY A	1.1	-2.1	13.6	-9.9	16.2	98	32.3	52	0	7	187	96	507.0
OTTAWA INT'L A	4.5	-1.1	17.5	-5.0	2.2	27	24.2	35	0	6	213	120	405.4
PETAWAWA A	2.3	-1.4	17.0	-11.5	2.6	43	15.2	24	0	5	*	*	472.1
PETERBOROUGH A	3.9	-1.7	18.4	-7.2	8.8	135	43.4	62	0	10	*	*	422.2
PICKLE LAKE	-1.6	-1.1	11.5	-19.5	11.7	40	14.6	33	11	5	*	*	650.6
RED LAKE A	-0.3	-1.8	14.8	-18.6	8.4	45	14.2	38	0	4	240	*	546.2
ST CATHARINES A	5.7	-1.0	17.9	-5.2	3.6	109	52.6	66	0	10	*	*	370.7
SARNIA A	4.9	-1.4	19.3	-7.5	4.6	75	50.8	66	0	10	189	99	337.6
SAULT STE MARIE A	2.5	-0.4	17.0	-11.2	12.5	125	51.4	79	0	8	215	110	464.4
SIOUX LOOKOUT A	0.0	-1.4	13.8	-18.0	8.2	32	21.6	48	0	5	*	*	539.2
SUDBURY A	1.4	-1.3	15.0	-10.5	20.4	130	58.2	95	0	10	185	89	499.7
THUNDER BAY A	1.5	-1.0	16.3	-17.0	13.4	83	25.1	50	0	6	214	100	494.5
TIMMINS A	-0.1	-1.1	12.9	-14.0	31.7	140	44.3	91	0	8	*	*	533.8
TORONTO	6.2	*	16.3	-5.1	7.4	*	35.4	*	0	10	*	*	352.2
TORONTO INT'L A	5.1	-1.1	19.7	-6.8	6.0	81	41.1	59	0	10	*	*	387.5
TORONTO ISLAND A	*	*	*	*	*	*	*	*	*	*	*	*	*
TRENTON A	4.4	-2.0	17.6	-7.0	10.2	165	34.3	45	0	6	*	*	405.4
WATERLOO WELLINGTON	4.4	-0.9	19.2	-7.0	7.4	106	49.1	60	0	12	*	*	408.0
WAWA A	-0.1	*	14.4	-13.9	28.4	*	59.6	*	7	11	*	*	564.5
WIARTON A	4.7	-1.5	15.5	-5.5	8.5	79	27.4	40	0	10	206	107	444.5
WINDSOR A	6.9	-1.2	19.6	-6.2	1.6	38	72.0	87	0	9	*	*	332.6

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QUEBEC													
BAGOTVILLE A	1.8	-0.4	19.3	-10.8	25.6	129	54.4	114	0	9	*	*	486.0
BAIE COMEAU A	1.2	1.0	12.4	-9.4	26.8	91	64.4	91	0	6	185	106	503.0
BLANC SABLON A	*	*	9.4	*	43.2	109	*	*	0	9	138	*	551.2
CHIBOUGAMAU CHAPAIS	-2.3	*	12.4	-17.1	23.6	*	29.2	*	70	8	133	71	607.9
GASPE A	-2.3	*	16.8	-9.3	31.6	*	74.8	*	0	10	***	*	470.9
INUKJUAK A	-11.0	-0.1	2.4	-29.9	7.0	53	6.4	44	37	2	190	107	869.1
KUUJJUAQ A	-8.0	1.2	5.9	-27.6	35.6	164	32.2	139	4	8	199	101	781.1
KUUJJUARAPIK A	-8.2	-1.4	5.9	-25.7	24.7	112	24.1	90	23	8	128	69	786.8
LA GRANDE IV A	-5.6	*	8.9	-27.7	36.0	*	33.2	*	22	8	163	*	706.9
LA GRANDE RIVIERE A	-5.9	*	6.9	-22.1	23.1	*	26.3	*	40	9	178	*	716.6
MANIWAKI	2.1	-1.5	18.2	-9.2	8.2	68	20.0	33	0	7	206	107	478.5
MATAGAMI A	-3.4	*	10.4	-22.6	24.2	*	22.0	*	10	4	165	90	64.9
MONT JOLI A	3.3	1.7	15.6	-5.1	15.4	55	52.6	94	0	8	164	107	441.9
MONTREAL INT'L A	4.8	-0.9	19.4	-4.8	3.6	37	52.0	70	0	9	189	100	395.5
MONTREAL MIRABEL I/	3.6	*	19.4	-7.2	4.2	*	38.0	*	0	8	201	*	425.2
NATASHQUAN A	-0.2	0.3	9.4	-13.8	92.6	310	104.2	138	11	12	179	110	545.9
QUEBEC A	3.1	-0.2	19.9	-7.0	9.8	60	63.2	87	0	8	181	105	448.5
ROBERVAL A	1.3	-0.4	15.2	-9.6	29.0	131	50.0	106	0	6	181	*	500.0
SCHEFFERVILLE A	-5.8	1.4	4.1	-29.4	80.0	196	82.0	181	69	13	165	93	712.6
SEPT-ILES A	1.1	1.1	13.4	-10.2	24.2	73	56.4	72	0	8	165	88	507.4
SHERBROOKE A	2.7	-0.6	16.2	-7.2	16.2	69	48.1	66	0	7	146	*	458.8
STE AGATHE DES MONT	1.4	-0.8	17.7	-10.4	14.8	73	28.2	35	0	7	189	98	497.8
ST HUBERT A	4.6	-1.1	20.2	-6.1	2.6	*	49.4	66	0	9	*	*	401.7
VAL D'OR A	-1.2	-2.1	11.2	-14.7	16.6	77	29.8	59	0	6	197	107	575.8
NEW BRUNSWICK													
CHARLO A	3.3	2.4	15.5	-7.6	40.9	119	76.8	91	0	9	159	98	490.4
CHATHAM A	2.9	-0.1	17.9	-5.9	47.9	146	102.0	121	0	12	146	84	452.3
FREDERICTON A	3.2	-0.9	17.4	-5.8	38.4	179	119.1	149	0	14	156	*	445.7
MONCTON A	3.2	0.2	18.1	-5.0	32.6	115	76.6	85	0	14	148	92	444.1
SAINT JOHN A	2.7	-0.5	15.6	-6.1	28.4	137	99.0	92	0	14	153	97	460.0

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NOVA SCOTIA													
GREENWOOD A	4.7	0.1	20.7	-4.8	6.2	36	55.7	74	0	13	*	*	398.3
HALIFAX INT'L A	3.9	0.6	16.3	-3.1	13.4	56	64.3	96	0	12	*	*	423.5
SABLE ISLAND	3.9	0.6	10.1	-1.7	17.8	292	64.0	65	0	9	154	114	424.0
SHEARWATER A	4.2	0.2	17.0	-3.5	6.2	48	77.2	77	0	13	161	97	413.7
SYDNEY A	2.9	0.9	13.4	-5.2	38.4	151	92.4	91	0	11	175	111	463.7
YARMOUTH A	4.2	-0.5	12.2	-2.9	5.6	86	83.6	87	0	13	173	97	412.8
PRINCE EDWARD ISLAND													
CHARLOTTETOWN A	3.0	0.7	15.7	-4.4	36.6	134	87.4	107	0	13	*	*	450.3
SUMMERSIDE A	3.1	0.5	15.3	-4.7	29.0	121	57.8	77	0	12	175	109	446.0
NEWFOUNDLAND													
BONAVISTA	2.6	2.0	12.4	-3.9	10.6	47	36.2	56	0	8	*	*	462.0
BURGEO	1.6	0.3	10.2	-4.9	12.4	52	49.2	42	0	10			495.4
CARTWRIGHT	-1.2	1.4	12.8	-17.1	91.3	159	94.9	118	142	14	146	113	475.9
CHURCHILL FALLS A	-3.1	2.9	8.0	-19.8	102.0	195	101.7	158	106	16	136	88	633.5
COMFORT COVE	2.9	2.3	13.3	-4.8	13.8	30	23.4	27	0	9	*	*	*
DANIELS HARBOUR	1.1	0.8	11.4	-9.5	24.6	86	45.2	87	1	10	150	112	505.9
DEER LAKE A	2.8	2.0	14.2	-8.9	18.0	61	31.0	57	0	9	*	*	455.7
GANDER INT'L A	2.7	1.8	12.2	-5.4	31.6	67	37.2	40	0	10	194	167	459.5
GOOSE A	0.2	1.9	12.5	-17.3	84.4	174	85.9	140	12	12	144	103	544.3
MARY'S HARBOUR	-1.1	0.9	11.7	-15.5	51.8	101	65.6	86	2	11	*	*	564.4
PORT AUX BASQUES	0.7	-0.1	8.5	-5.4	11.0	46	58.8	63	1	11	170	*	518.3
ST ANTHONY	-0.4	1.5	7.2	-9.4	44.4	103	64.9	69	25	12	*	*	550.8
ST JOHN'S A	2.6	1.4	17.7	-4.0	10.2	29	45.8	40	0	11	178	153	462.6
ST LAWRENCE	2.0	0.9	11.4	-4.9	13.8	75	64.9	62	0	10	*	*	482.3
STEPHENVILLE A	2.6	0.8	12.6	-6.7	10.3	47	26.7	45	0	9	161	123	464.5
WABUSH LAKE A	-4.5	1.1	7.9	-23.0	90.8	184	84.1	160	26	11	132	92	674.0

AGROCLIMATOLOGICAL STATIONS — **APRIL 1989**

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	12.5	3.0	27.5	2.0	0.0	123.2	111	0	10	234	224.8	286.4
KAMPLOOPS	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x
SIDNEY	10.8	2.4	21.5	2.0	0.0	41.0	106	0	7	189	167.0	224.0
SUMMERLAND	10.3	1.6	25.0	-1.0	0.0	17.4	89	0	6	235	159.7	190.6
ALBERTA												
BEAVERLODGE	5.0	2.4	23.0	-12.0	9.0	6.0	31	0	2	281	54.5	55.5
ELLERSLIE	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x
LACOMBE	4.1	1.0	20.0	-11.0	21.6	27.6	117	0	4	250	25.6	25.6
LETHBRIDGE	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x
VEGREVILLE	x.x	x.x	x.x	x.x	x.x	x.x	xx	xxx	xxx	xx	x.x	x.x
SASKATCHWAN												
INDIAN HEAD	4.2	1.1	28.0	-11.0	0.0	9.4	33	0	4	xx	50.4	50.4
MELFORT	3.3	2.0	26.5	-12.0	5.3	12.7	67	0	4	244	35.0	35.0
REGINA	4.4	1.4	30.0	-15.0	3.8	7.6	32	0	3	xx	45.5	45.5
SASKATOON	4.7	1.3	28.0	-10.5	2.5	3.0	14	0	1	277	37.0	37.0
SCOTT	7.4	4.7	25.0	-13.0	2.2	9.1	38	0	2	276	25.5	25.5
SWIFT CURRENT	4.6	0.6	25.5	-10.5	16.5	24.2	94	0	7	212	45.3	45.5
MANITOBA												
BRANDON	4.6	1.3	25.3	-11.3	5.3	18.3	50	0	3	xx	48.8	48.8
GLENLEA	4.0	0.6	23.0	-11.0	7.4	21.2	57	0	4	242	50.0	50.0
MORDEN	2.2	-1.8	21.0	-14.0	6.8	13.4	32	0	4	262	33.0	33.0
ONTARIO												
DELHI	5.1	-1.6	19.0	-8.0	5.0	63.3	68	0	9	xx	x.x	63.5
ELORA	3.8	-1.3	18.5	-9.0	0.0	44.6	64	0	9	44	x.x	x.x
GUELPH	4.1	-1.7	19.1	-8.9	6.4	55.3	75	0	11	155	x.x	51.2
HARROW	6.8	-1.1	18.0	-6.5	0.6	76.6	95	0	8	180	66.1	98.1
KAPUSKASING	-1.2	-1.7	10.0	-19.5	13.0	21.4	44	0	6	185	0.0	0.0
OTTAWA	4.9	-0.8	18.4	-4.9	0.6	19.5	30	0	7	213	37.8	48.0
SMITHFIELD	4.9	-1.2	18.4	-7.2	7.3	46.4	57	0	7	xx	38.4	51.6
VINELAND	5.7	-1.2	16.4	-5.6	1.8	41.6	57	0	11	165	46.1	69.2
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	3.4	0.6	18.0	-7.0	0.6	20.4	32	4	xxx	19	x.x	x.x
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	0.2	-0.3	16.5	-12.0	8.2	27.8	57	0	5	192	4.4	4.4
STE.CLOTILDE	5.2	-0.5	19.0	-4.0	0.0	35.4	46	0	6	177	34.1	53.0
NEW BRUNSWICK												
FREDERICTON	3.5	-0.5	17.0	-6.5	14.5	86.8	105	0	12	156	17.0	23.0
NOVA SCOTIA												
KENTVILLE	4.9	0.5	21.5	-6.0	9.6	57.9	70	0	10	168	30.7	47.9
NAPPAN	4.2	0.9	20.0	-5.0	19.0	67.3	89	0	12	148	21.5	29.5
PRINCE EDWARD ISLAND												
CHARLOTTETOWN	3.6	0.8	15.0	-4.5	31.6	91.8	118	0	13	180	12.9	14.4
NEWFOUNDLAND												
ST.JOHN'S WEST	3.5	1.9	16.5	-4.0	9.8	41.2x	xx	0	4	165	12.7	14.2