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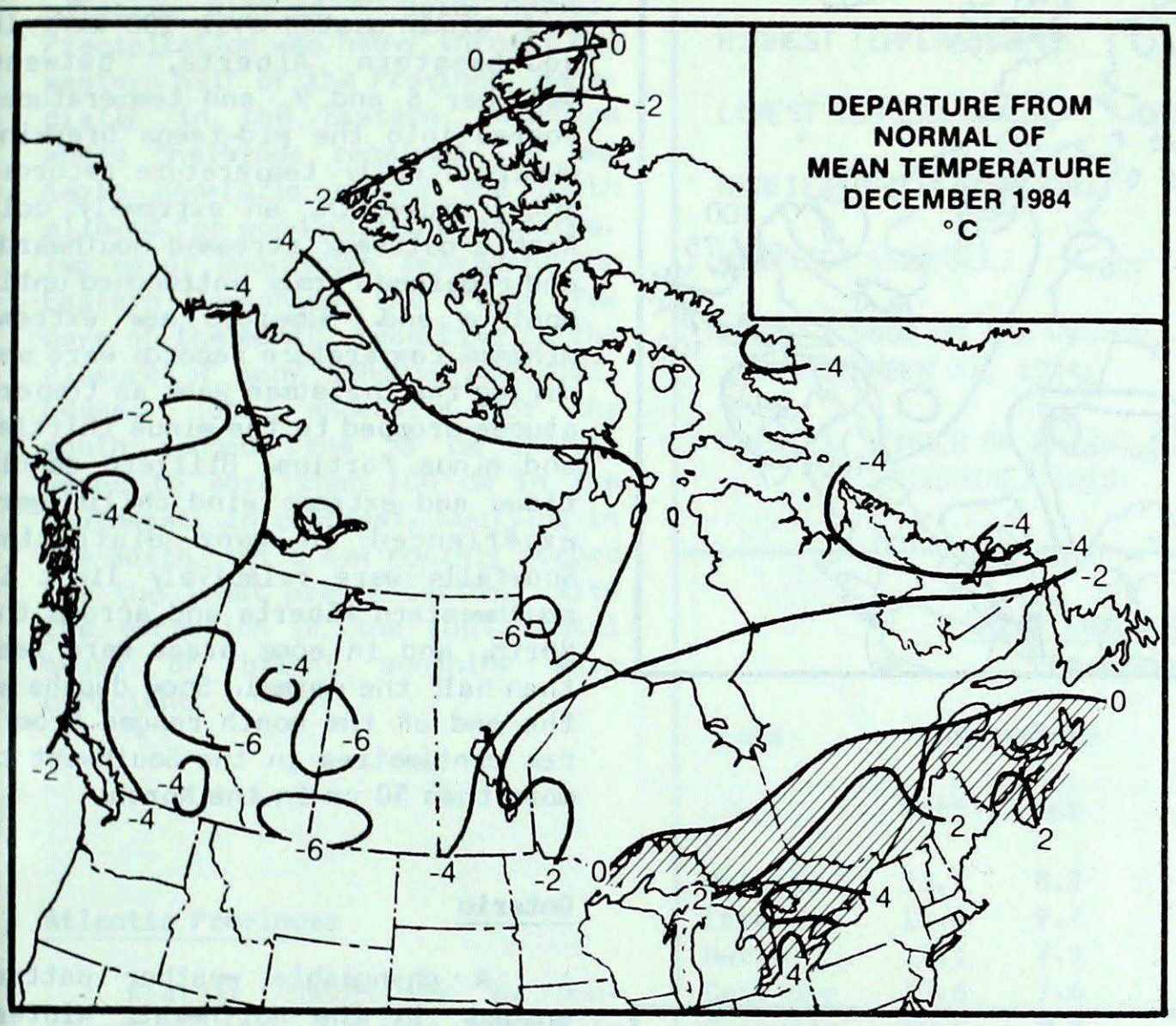
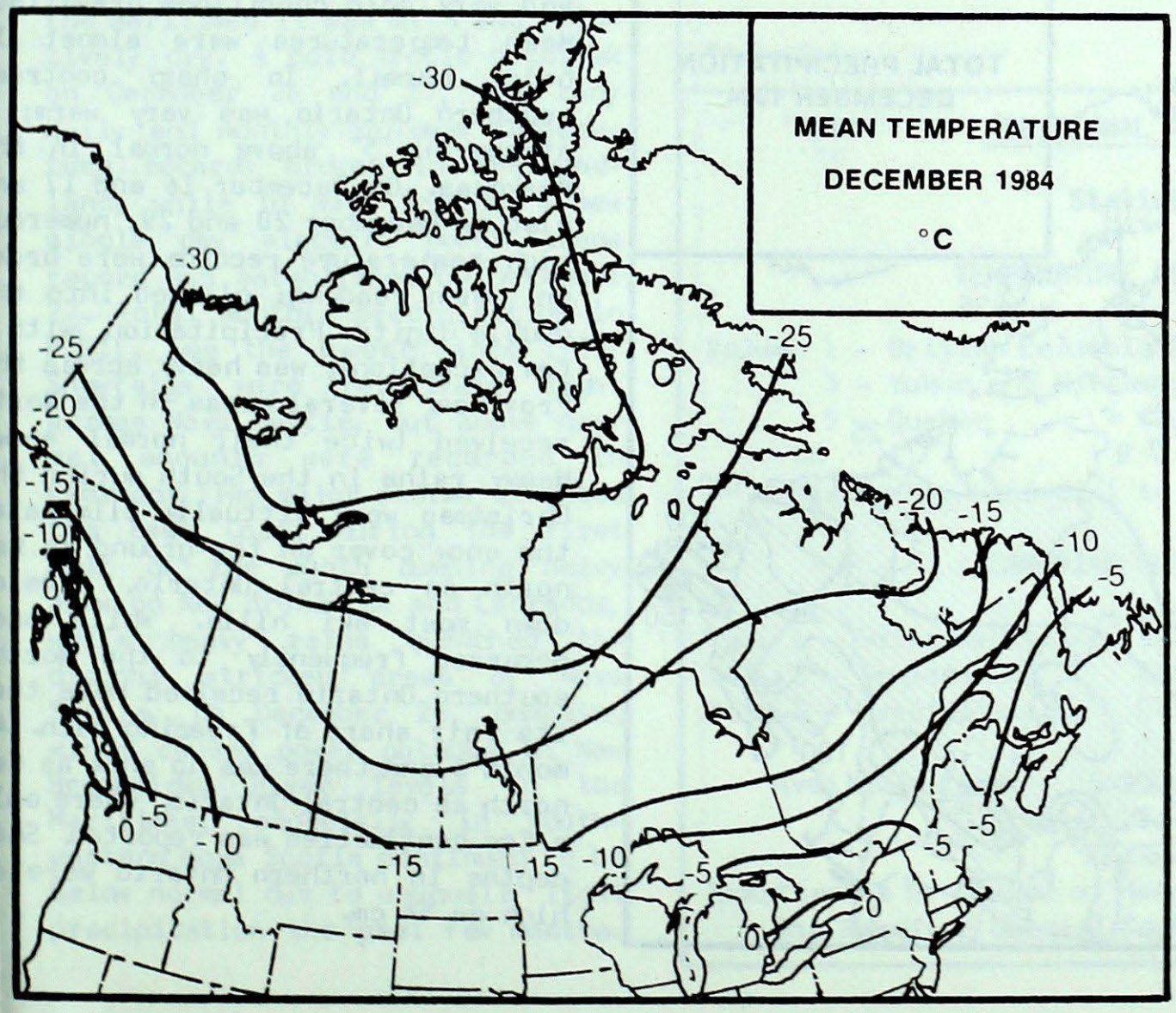
dian Climate Centre

Climatic Perspectives

MONTHLY SUPPLEMENT

Vol.6 December, 1984





ACROSS THE COUNTRY

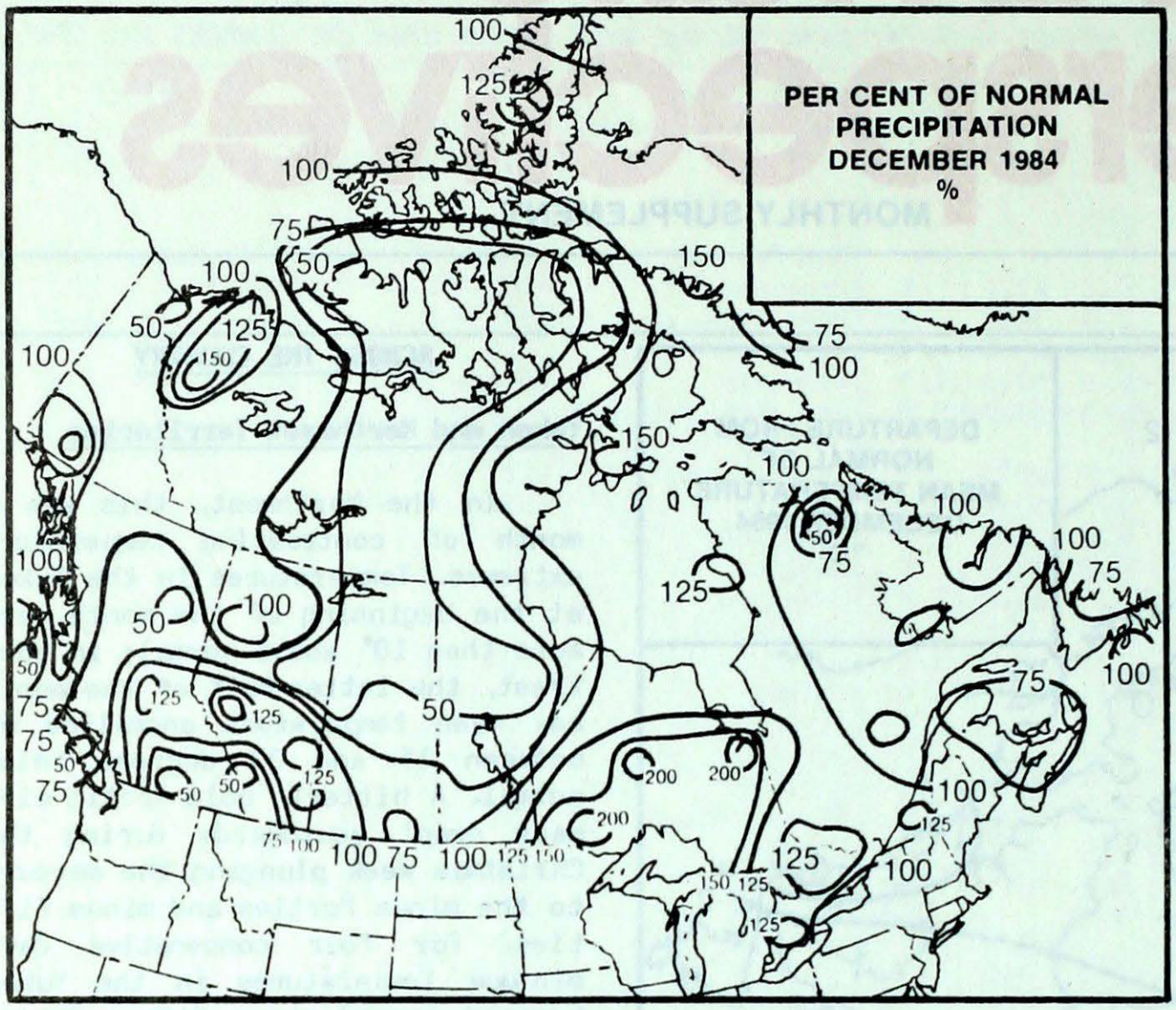
Yukon and Northwest Territories

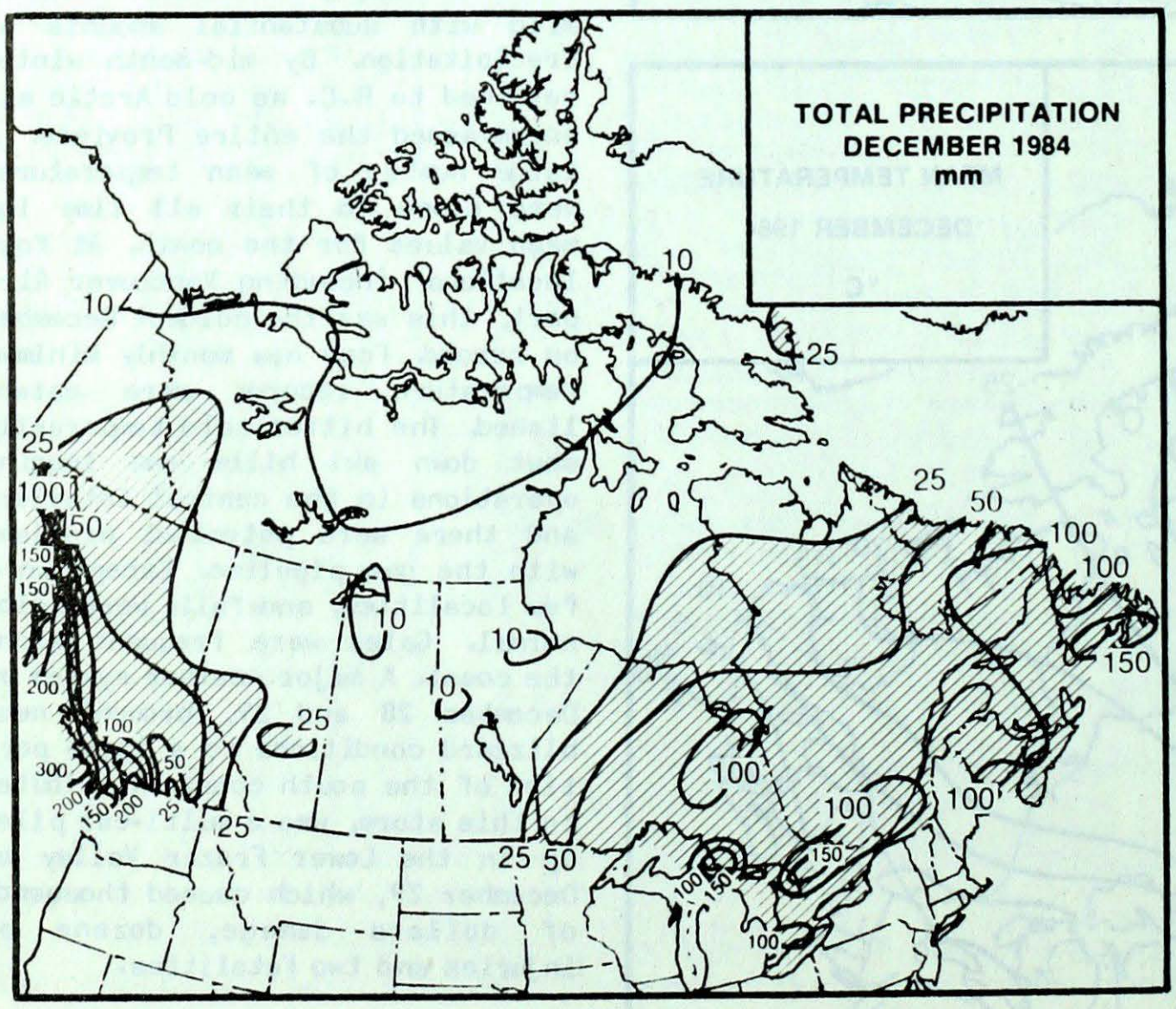
In the Northwest, this was a month of contrasting temperature extremes. Temperatures in the Yukon at the beginning of the month were more than 10° above normal; in contrast, the latter half of the month saw mean temperature anomalies of between 15 and 20 degrees below normal. A bitterly cold Arctic airmass swept southwards during the Christmas week plunging the mercury to the minus forties and minus fifties. For four consecutive days minimum temperatures in the Yukon hovered around minus fifty. Strong winds effectively terminated all outdoor activity, and traveller advisories were issued due to the extreme cold and ice fog.

British Columbia

The early part of the month was mild with substantial amounts of precipitation. By mid-month winter returned to B.C. as cold Arctic air encompassed the entire Province. A large number of mean temperatures were close to their all time low mean values for the month. At four locations, including Vancouver Airport, this was the coldest December on record. Four new monthly minimum temperature records were established. The bitter cold temporarily shut down ski hills and logging operations in the central interior, and there were potential problems with the gas pipeline. Except in a few localities, snowfalls were below normal. Gales were frequent along the coast. A major weather system on December 28 and 29, brought near blizzard conditions to a large portion of the south coast. Attributed to this storm, was a multi-car pile-up in the Lower Frazer Valley on December 29, which caused thousands of dollars damage, dozens of injuries and two fatalities.

Canada





Prairie Provinces

Overall it was cold, with mean temperatures 5 to 7 degrees below normal. Mild weather during the first week saw temperatures rise well above normal, with daytime maximums mostly above freezing in agricultural districts. Strong Chinook winds gusted over 100 km/h in southwestern Alberta, between December 6 and 9, and temperatures soared into the mid-teens breaking numerous daily temperature records. After mid-month, an extremely cold Arctic outbreak streamed southward, and remained firmly entrenched until month's end. Numerous new extreme minimum temperature records were set during the Christmas week as temperatures dropped to the minus thirties and minus forties. Blizzard conditions and extreme wind chills were experienced in many districts. Snowfalls were relatively light in southwestern Alberta and across the North, and in some areas were less than half the normal. Snow depths at the end of the month ranged from a few centimetres in the Southwest to more than 50 cm in the North.

Ontario

A changeable weather pattern ensued. In the Northwest, wintery and very cold conditions prevailed. Mean temperatures were almost 3° below normal. In sharp contrast southern Ontario was very warm; a staggering 5° above normal in the Muskokas. On December 16 and 17 and also on December 28 and 29, numerous high temperature records were broken, when readings climbed into the double digits. Precipitation, with a few exceptions, was heavy across the Province. Several areas in the North received twice their normal snow. Heavy rains in the South during the Christmas week virtually eliminated the snow cover on the ground as far north as central Ontario, closing down most ski hills. While snow occurred frequently to the North, southern Ontario received more than its fair share of freezing rain. At month's end there was no snow as far north as central Ontario, where only a few centimetres was reported. Snow depths in northern Ontario were as high as 54 cm.

Quebec

Mild weather conditions were predominant across the South. The first half of the month saw numerous new daily high temperature records established. In the North, it was cold, with temperature anomalies as much as 4° below normal. Precipitation was heavy through the western half of the Province, especially in the Eastern Townships where Sherbrook received 138 mm. Ample snowfalls across the South allowed for good skiing conditions. Two major snowstorms paralyzed the Eastern Townships the first few days of the month, resulting in the closure of many schools and businesses. Total snowfalls for the month ranged from 50 cm in the Gaspé to more than 100 cm in the Southwest. In contrast, Kuujjuaq in the North, set a new monthly record for the least precipitation. With the exception of the East, total hours of bright sunshine were deficient.

Atlantic Provinces

Weather conditions in Newfoundland were variable, while in the Maritimes it was mild and relatively dry. A cold Arctic outbreak on December 26 and 27, saw many daily and monthly minimum temperature records broken in Newfoundland, while in Nova Scotia, a new single day electric power usage record was established on December 27. Total monthly precipitation in P.E.I. was the lowest since 1955. Snowfalls were relatively light across Nova Scotia, but above normal amounts were recorded in Labrador. Two major storms affected the East Coast during the first half of the month dumping heavy snow on New Brunswick and Labrador, while heavy rains quenched the drought stricken areas of Nova Scotia. On December 26, damaging winds caused power outages in New Brunswick. River levels in the Maritimes, especially in southwestern Nova Scotia continued to be below normal due to unusually light precipitation the past few months.

CLIMATIC EXTREMES - DECEMBER 1984

MEAN TEMPERATURE:		
WARMEST	Victoria Marine, BC	5.0°
COLDEST	Eureka, NWT	-37.2°
HIGHEST TEMPERATURE:	Windsor A, ONT	16.7°
LOWEST TEMPERATURE:	Watson Lake, YT	-53.3°
HEAVIEST PRECIPITATION:	McInnes Island, BC	375.2 mm
HEAVIEST SNOWFALL:	Blue River, BC	208.4 cm
DEEPEST SNOW ON THE GROUND ON DECEMBER 31, 1984:	Cartwright, NFLD	99 cm
GREATEST NUMBER OF BRIGHT SUNSHINE HOURS:	Calgary A, ALTA	124 hrs

GREAT LAKES MONTHLY MEAN WATER TEMPS.
for Oct. and Nov., 1984 (°C)

Lake	Temperature		Normal		Departure	
	Oct*	Nov	Oct	Nov	Oct*	Nov
Ontario	13.1	8.3	12.3	7.5	+0.8	+0.8
Erie	15.4	9.7	14.5	8.8	+0.9	+0.9
Huron	12.1	7.5	11.5	7.4	+0.6	+0.1
Geo. Bay	12.6	7.6	11.3	7.3	+1.3	+0.3
Superior	10.1	5.8	8.6	5.7	+1.5	+0.1

*Amended

ADDITIONAL AES CLIMATE PUBLICATION

Statistical Climate Data

TEMPERATURE AND PRECIPITATION 1951-1980

Volume 1 - British Columbia
2 - Prairie Provinces
3 - Yukon and Northwest Territories
4 - Ontario
5 - Quebec
6 - Atlantic Provinces

Catalog No. EN56-61/1 to 6 - 1982 $5.00 Foreign $6.00

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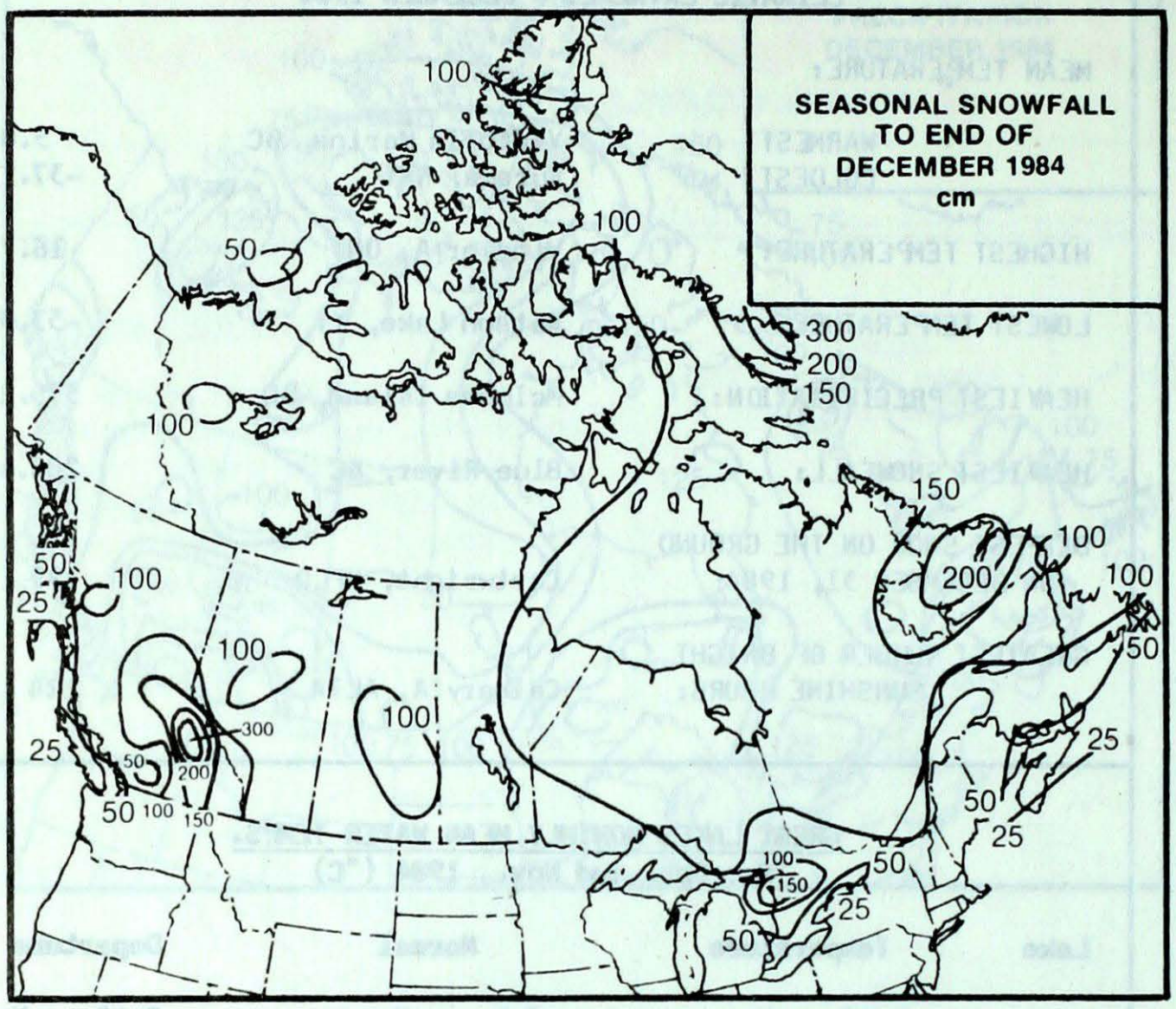
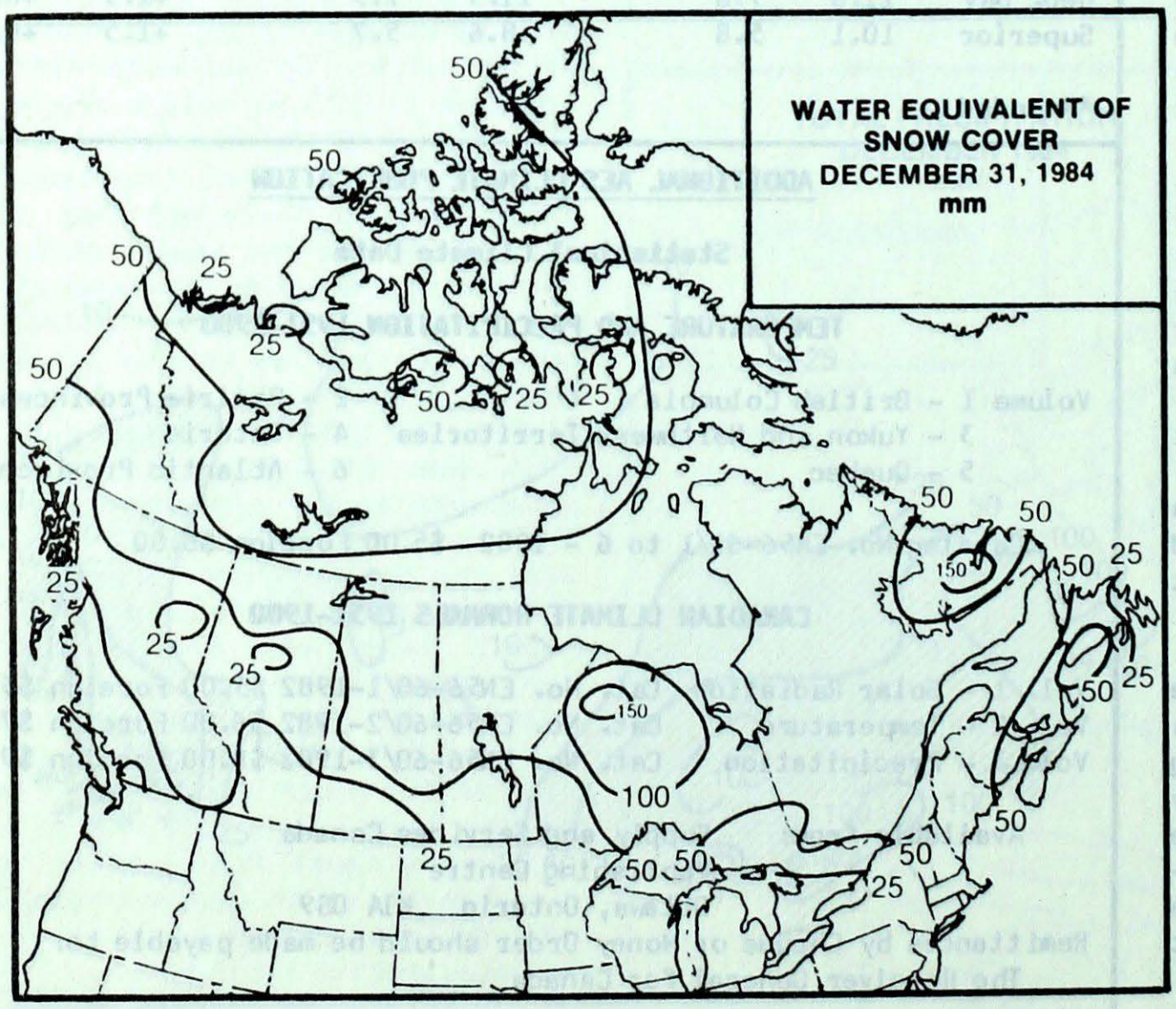
SNOWFALL





SEASONAL SNOWFALL TOTALS (CM)

TO END OF DECEMBER

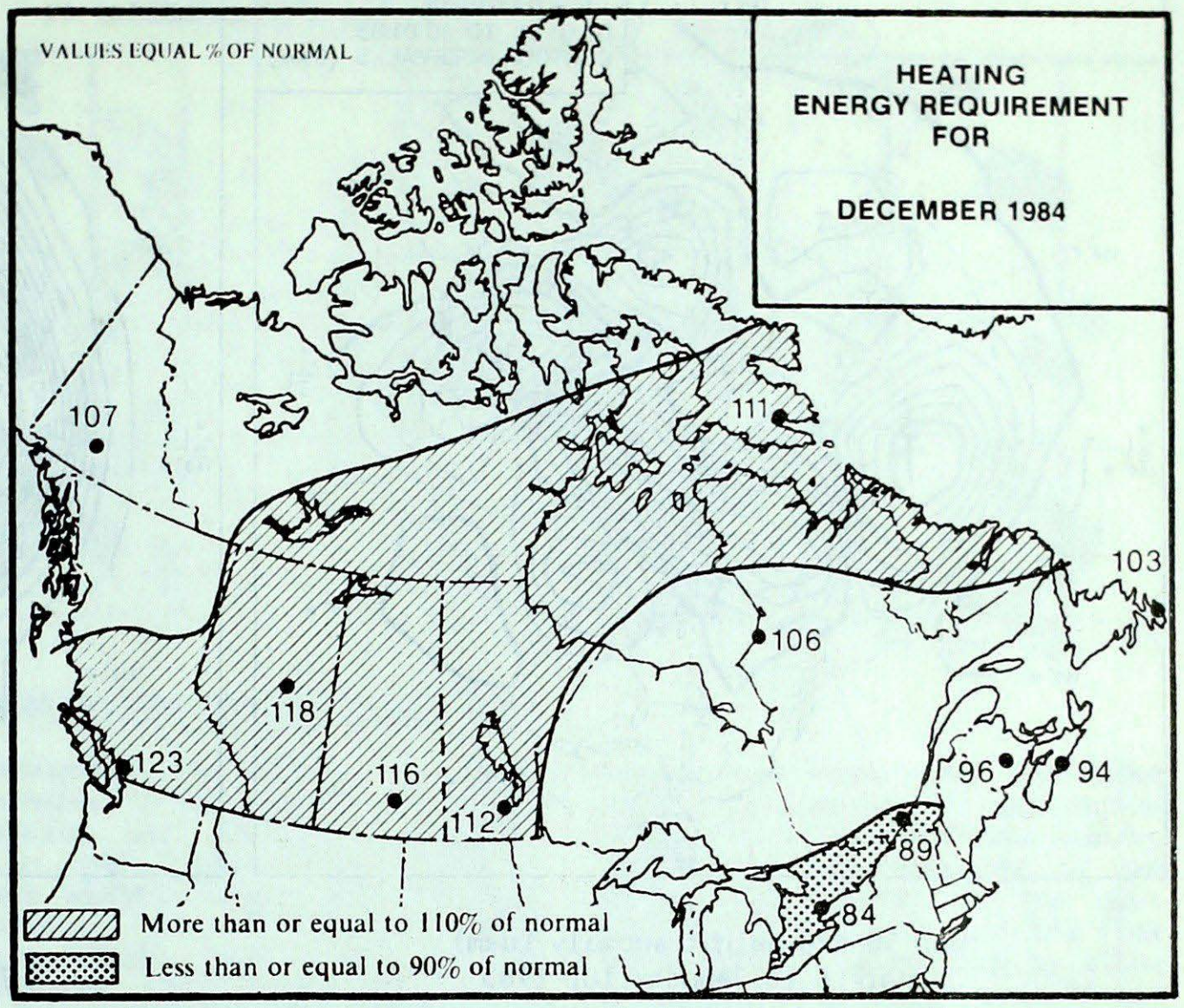
	1984	1983	NORMAL
YUKON TERRITORY			
Whitehorse	86.2	38.2	69.4
NORTHWEST TERRITORIES			
Frobisher Bay	116.6	102.3	115.8
Inuvik	58.6	82.8	96.4
Yellowknife	77.8	74.8	78.7
BRITISH COLUMBIA			
Kamloops	71.2	31.1	42.0
Penticton	81.4	50.1	70.9
Prince George	119.2	49.1	102.9
Vancouver	35.6	8.7	20.3
Victoria	53.3	17.1	15.4
ALBERTA			
Calgary	58.9	43.5	56.5
Edmonton Namao	92.1	37.3	53.5
Grande Prairie	81.0	51.9	76.7
SASKATCHEWAN			
Estevan	77.0	20.8	42.7
Regina	85.2	31.6	45.0
Saskatoon	91.3	35.8	44.8
MANITOBA			
Brandon	53.8	42.9	42.9
Churchill	115.7	100.1	100.1
The Pas	96.3	72.1	72.1
Winnipeg	55.4	28.5	48.0
ONTARIO			
Kapuskasing	138.8	118.0	138.2
London	55.2	89.3	77.6
Ottawa	89.5	146.8	81.7
Sudbury	74.5	133.1	95.6
Thunder Bay	54.3	84.9	79.3
Toronto	18.0	48.2	41.4
Windsor	29.0	48.0	40.2
QUÉBEC			
Baie Comeau	118.0	253.4	133.5
Montréal	85.2	150.2	81.7
Quebec	107.8	170.6	124.4
Sept-Iles	127.0	251.2	150.5
Sherbrooke	126.6	123.3	111.9
Val-d'Or	131.1	123.0	127.8
NEW BRUNSWICK			
Charlo	92.4	144.3	146.9
Fredericton	69.2	45.3	92.0
Moncton	53.4	123.0	127.8
NOVA SCOTIA			
Halifax	-	53.4	69.4
Sydney	64.0	104.4	80.2
Yarmouth	16.6	61.0	52.0
PRINCE EDWARD ISLAND			
Charlottetown	51.0	65.3	97.0
NEWFOUNDLAND			
Gander	112.0	118.3	115.0
St. John's	47.6	53.1	90.7

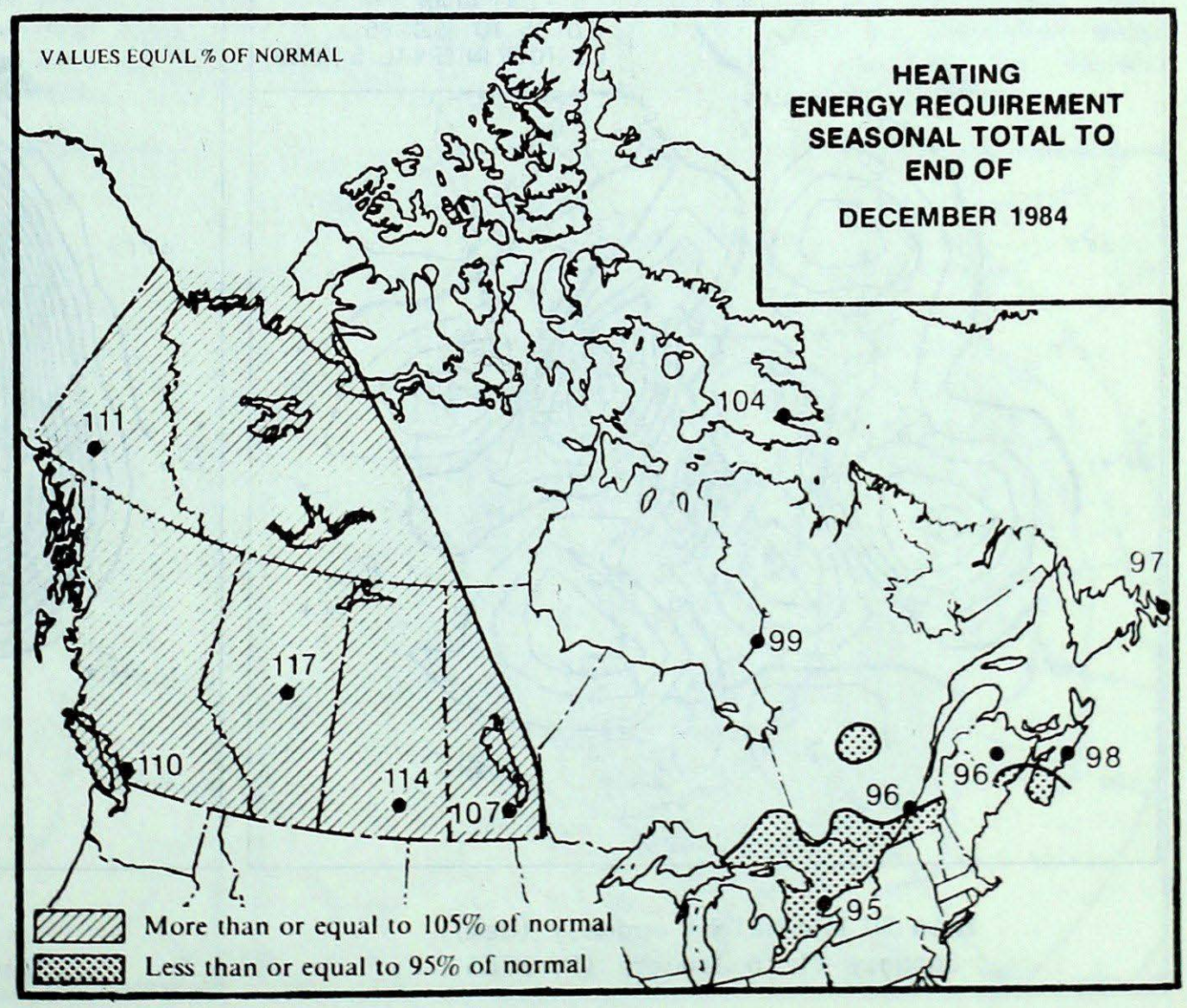
SEASONAL TOTAL OF HEATING

DEGREE-DAYS TO END OF DECEMBER

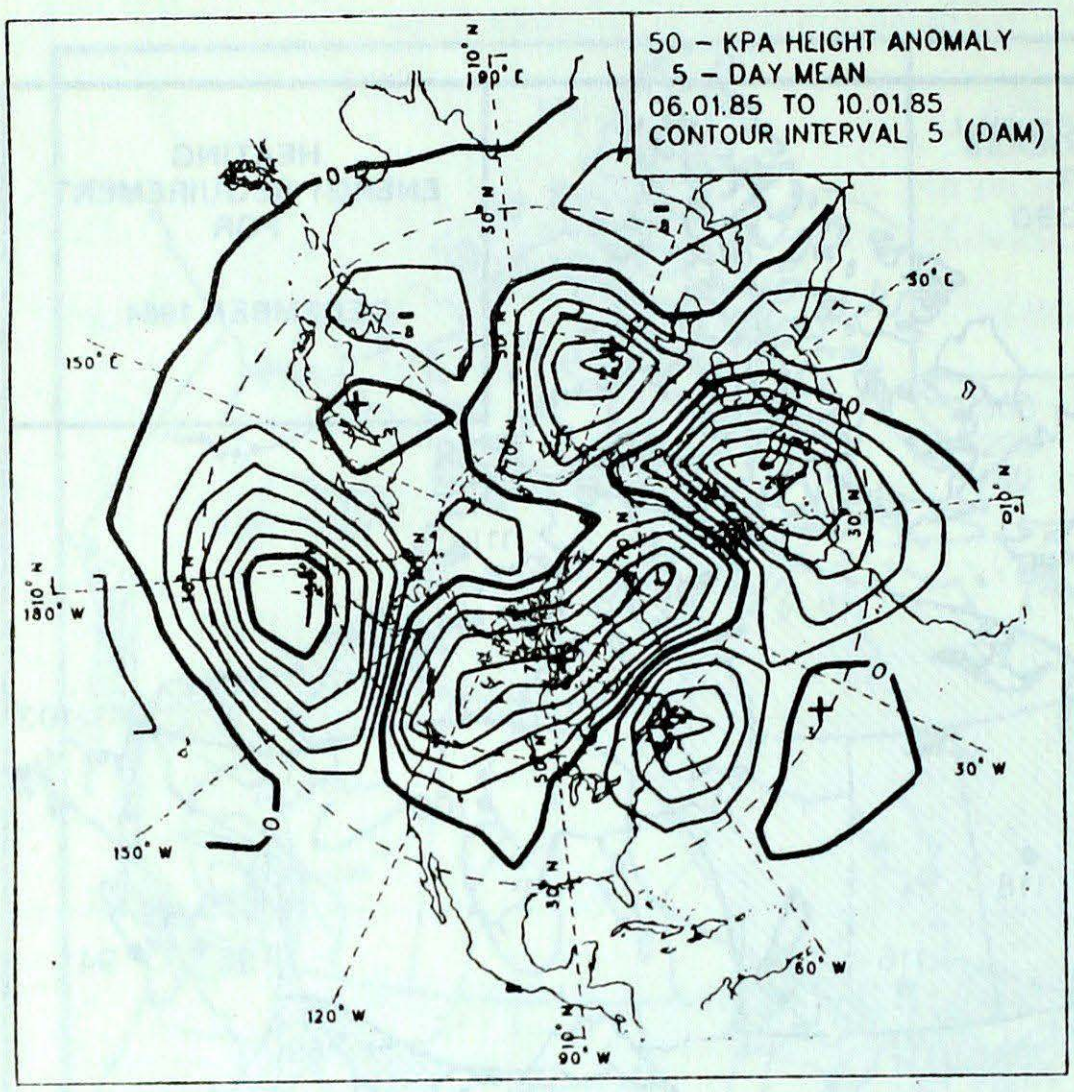
	1984	1983	NORMAL
YUKON TERRITORY			
Whitehorse	3302	3394	2913
NORTHWEST TERRITORIES			
Frobisher Bay	4415	4229	3802
Inuvik	4490	4118	4081
Yellowknife	3776	3256	3283
BRITISH COLUMBIA			
Kamloops	1860	1702	1532
Penticton	1712	1577	1403
Prince George	2734	2537	2246
Vancouver	1372	1319	1195
Victoria	1451	1348	1238
ALBERTA			
Calgary	2562	2441	2109
Edmonton Mun.	2678	2438	2218
Grande Prairie	3148	2761	2474
SASKATCHEWAN			
Estevan	2410	2331	2089
Regina	2668	2506	2258
Saskatoon	2780	2577	2333
MANITOBA			
Brandon	2658	2466	2272
Churchill	3658	3315	3384
The Pas	2917	2580	2577
Winnipeg	2415	2374	2190
ONTARIO			
Kapuskasing	2460	2490	2400
London	1365	1542	1464
Ottawa	1620	1741	1410
Sudbury	1950	2091	1999
Thunder Bay	2135	2230	2133
Toronto	1366	1581	1451
Windsor	1188	1627	1282
QUÉBEC			
Baie Comeau	2333	2270	2302
Montréal	1610	1687	1595
Quebec	1850	1913	1854
Sept-Iles	2410	2423	1311
Sherbrooke	1916	1951	1957
Val-d'Or	2359	2347	2305
NEW BRUNSWICK			
Charlo	1984	1907	1873
Fredericton	1700	1698	1711
Moncton	1664	1670	1668
NOVA SCOTIA			
Halifax	1411	1345	1365
Sydney	1534	1495	1469
Yarmouth	1362	1377	1386
PRINCE EDWARD ISLAND			
Charlottetown	1596	1522	1550
NEWFOUNDLAND			
Gander	1981	1873	1795
St. John's	1728	1729	1683

ENERGY REQUIREMENT

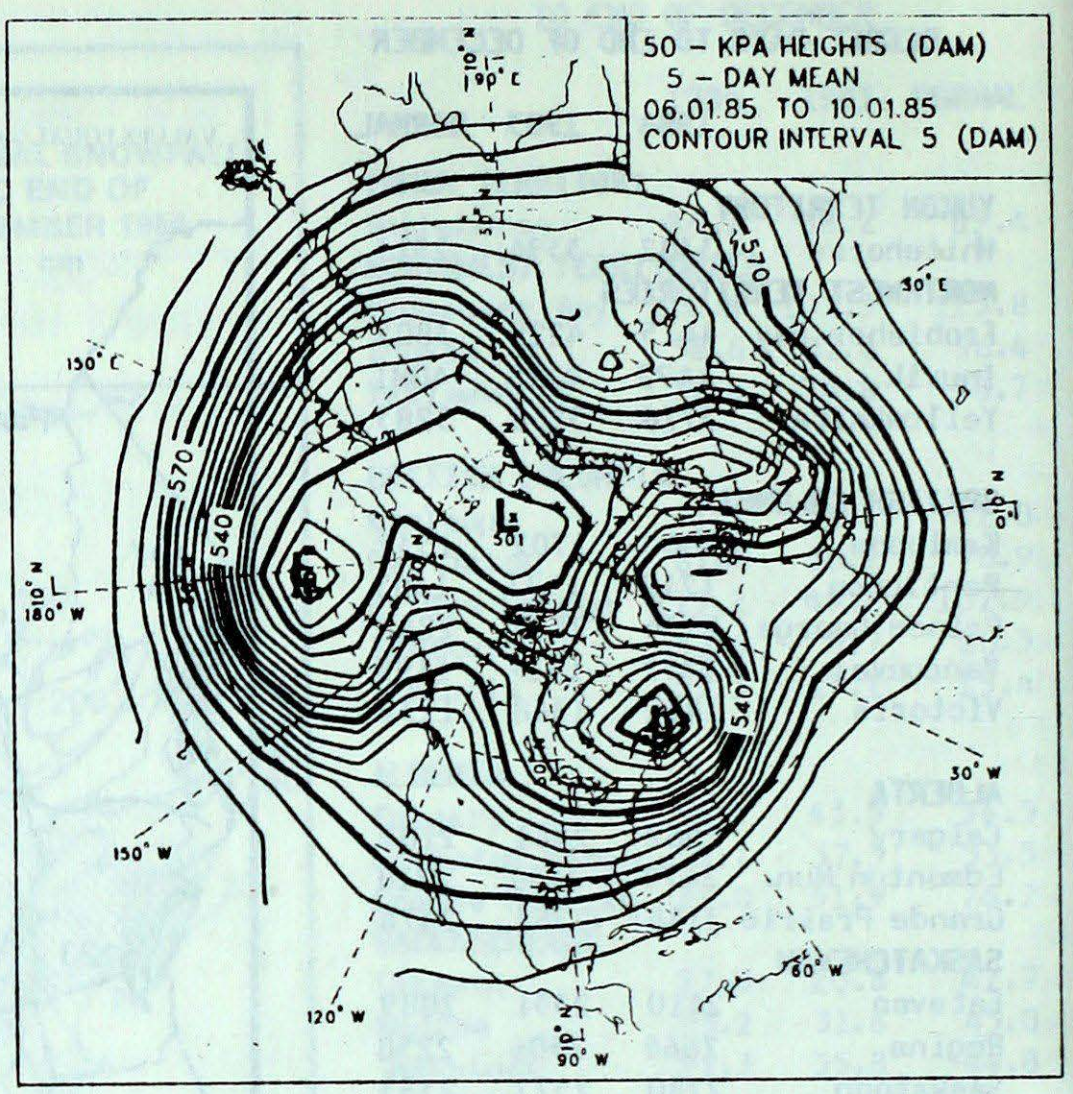




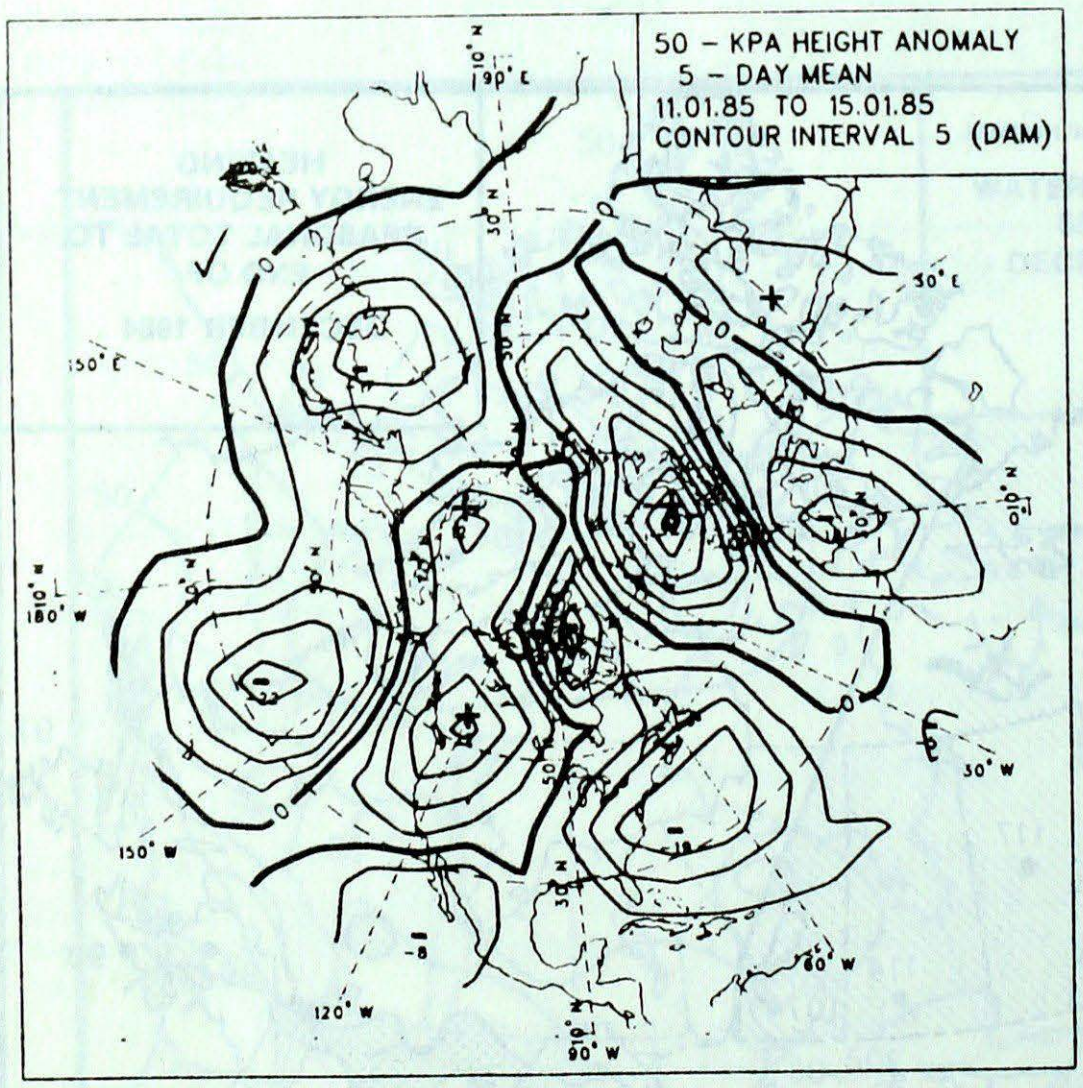
ATMOSPHERIC CIRCULATION



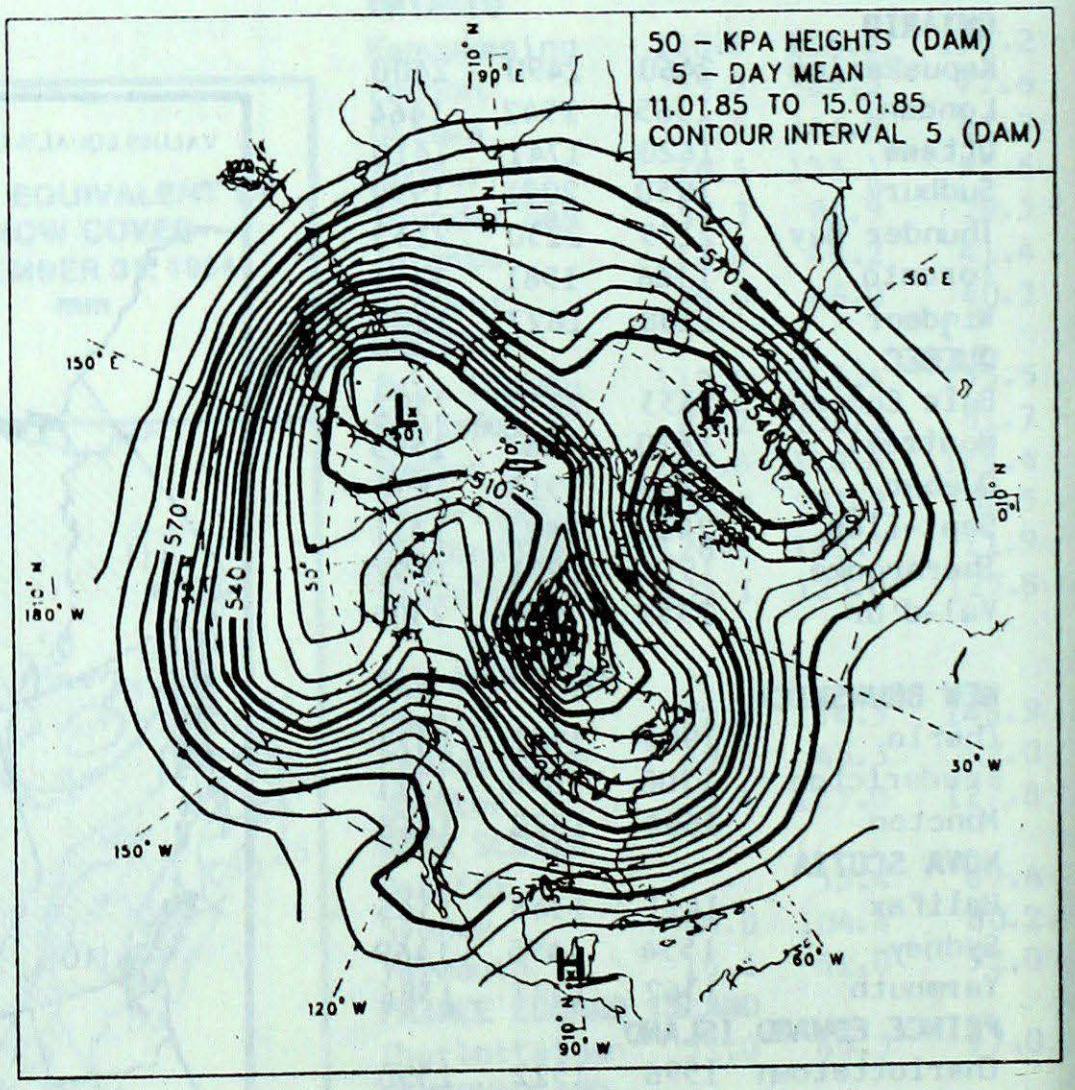
Mean 50 kPa height anomaly (dam)
January 6 to January 10, 1985



Mean 50 kPa heights (dam)
January 6 to January 10, 1985



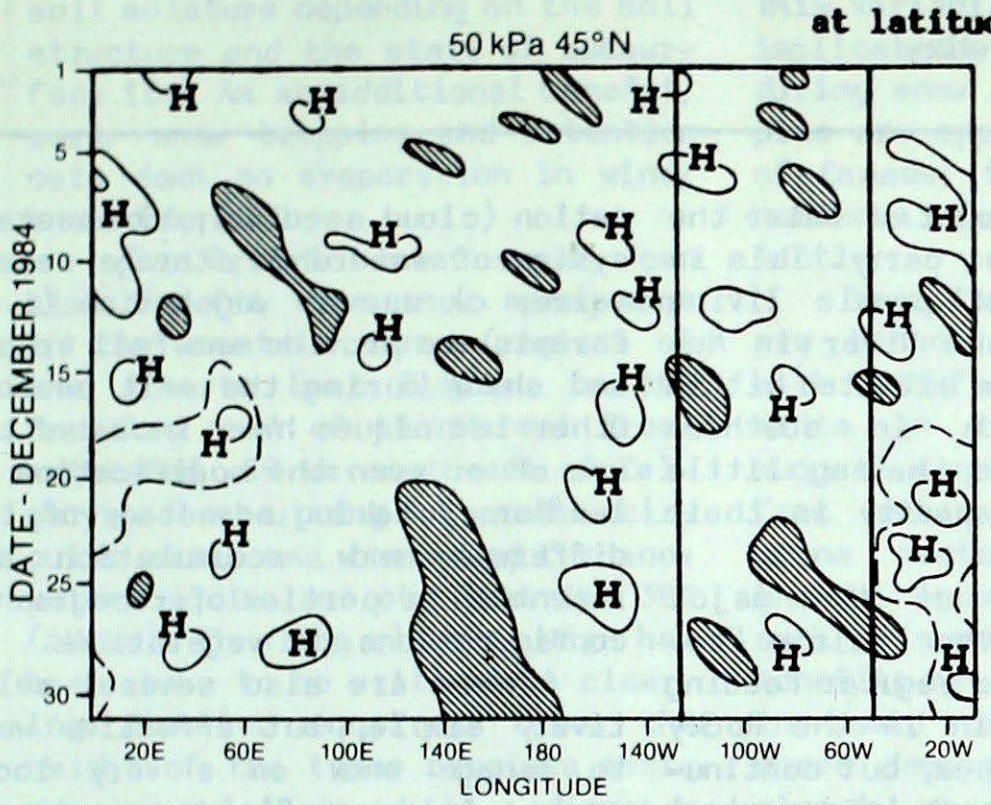
Mean 50 kPa height anomaly (dam)
January 11 to January 15, 1985

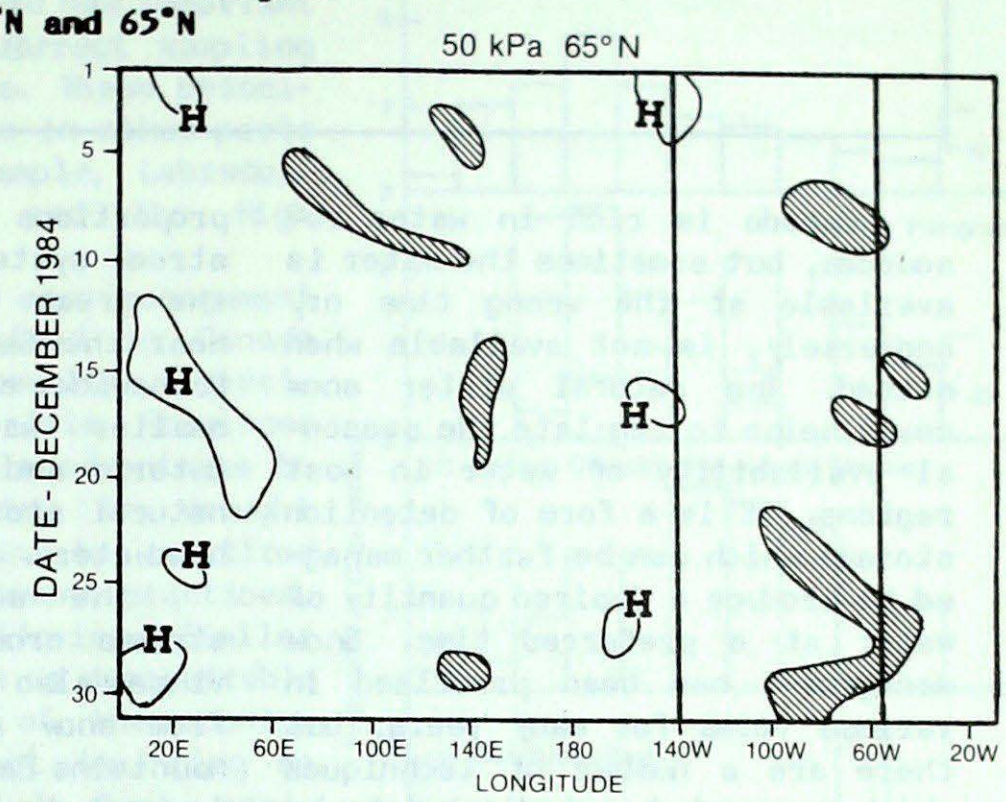


Mean 50 kPa heights (dam)
January 11 to January 15, 1985

HOVMÖLLER DIAGRAM

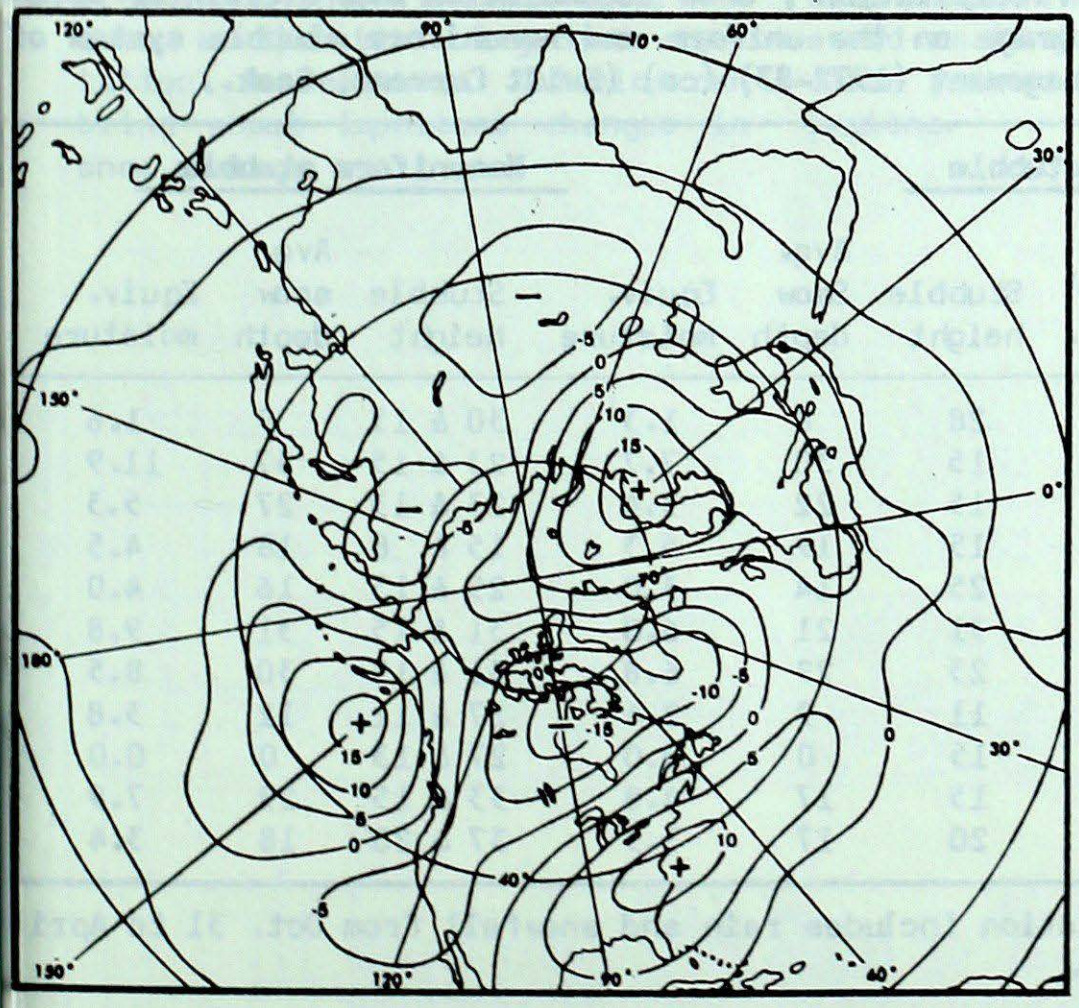
Time-longitude diagrams of 50 kPa heights at latitudes 45°N and 65°N



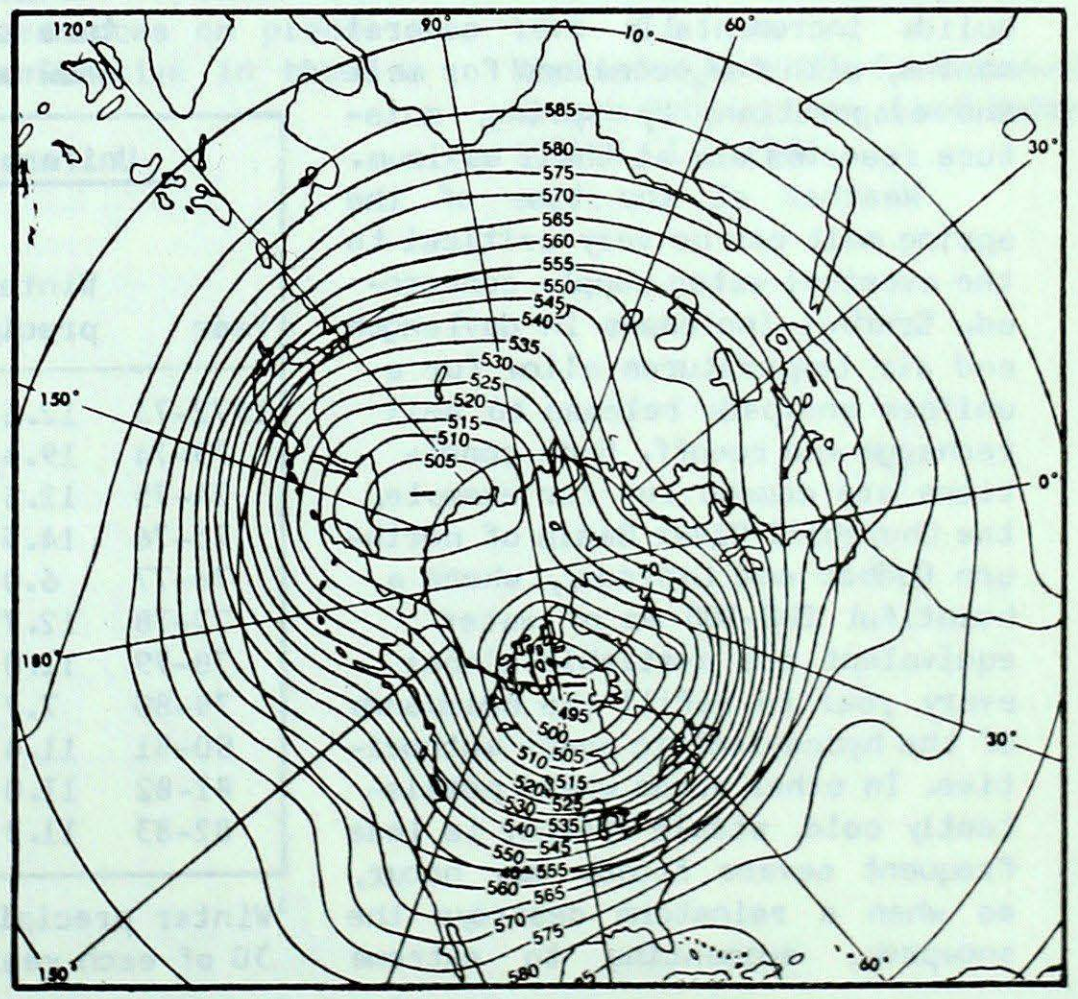


MEAN DECEMBER 50 kPa CIRCULATION

During December 1984, the main feature of the mean 50 kPa circulation was the bimodal polar vortex. The two polar lows were centred close to their mean climatological locations, but as the 50 kPa anomaly map shows, both lows were deeper than average. The blocking ridges which can be seen over Scandinavia and Alaska were also evident in November and have shown no sign of breaking down. The Hovmöller diagram for latitude 65°N (above) shows the stationary behaviour of these two features during December. If anything, they tended to retrogress slightly throughout the month. The mean December circulation over North America was strongly anomalous with lower than normal heights over western Canada and the west coast of the U.S., while heights were higher than normal in the relative ridge over the lower Great Lakes and the southeastern U.S. At 45°N (above), the number of waves around the hemisphere varied from 3 to 5 during the month. During the first week of the month a ridge was located over the west coast but then retrogressed to a position over the Pacific at about 160°W. The downstream trough, at first over the Great Lakes, followed suit and retrogressed to a location over western Canada for the remainder of the month. The effect of the mean northwesterly cyclonic 50 kPa flow over western Canada was to allow very cold Arctic air to penetrate southwards. Temperatures during some periods of the month were as much as 18°C below normal in parts of Saskatchewan, Alberta and interior BC. From the Great Lakes eastwards to the Maritimes however, the west to southwest mean circulation resulted in warmer than normal temperatures.



Mean 50 kPa height anomaly (dam)



Mean 50 kPa heights (dam)

Snow Management for Water Purposes

by

B.F. Findlay

Canada is rich in water resources, but sometimes the water is available at the wrong time or, conversely, is not available when needed. The natural winter snow cover helps to regulate the seasonal availability of water in most regions. It is a form of detention storage which can be further managed to produce a desired quantity of water at a preferred time. Snow management has been practised in various forms for many years, but there are a number of techniques which research has indicated to be very beneficial, but which have not been put into broad operational use for a number of reasons.

Most of Canada receives one-third or more of its precipitation in the form of snow. Warmer coastal and southern regions may have trouble retaining a snowpack for more than a few days, but most of the country has snow on the ground for three to six months or more. The quantity received is a function of factors such as distance from the moisture source, intervening terrain, pathways of storms, and ambient air temperature. Over the long northern winter the snow cover builds incrementally over several months, with few occasions for melt and evaporation; by spring, moisture reserves are at their maximum.

Weather at the time of the spring melt can be very critical to the eventual water supply concerned. Gradual increases in daylength and air temperatures allow for a uniform snowpack release to soil recharge and runoff. Such conditions are common in, for example, the Churchill River Basin of northern Québec and Labrador, where a bountiful 200-300 mm of water equivalent are available almost every year to refill the headponds of the hydroelectric power authorities. In other areas where persistently cold, stable weather is less frequent severe floods may occur, as when a rainstorm destroys the snowpack, augmenting to extreme proportions the amount of water the stream systems must carry. This is the great fear of people living near the Saint John River in New Brunswick, or those situated within smaller watersheds in southern Ontario and Québec, having little natural storage capacity in their headwaters.

The sources of the major streams crossing the Prairie Provinces also receive regular feeding from snow and rain in the Rocky Mountains East Slopes, but continuing not too far east into central Alberta, precipitation decreases sharply, and spring freshets of feeder streams are much smaller and variable from year to year. This is where local snow management can be very profitable.

Serving User Demands

The principle of management is to take optimal advantage of the supply in order to serve user demands. This can be done in a number of ways. For example: a) augment the supply through weather modification (cloud seeding); b) create a system of watershed storage reservoirs; c) use of vegetation (i.e. forests) to provide snowfall traps, and shade during the melt season. Other techniques have included the use of or even the modification of landforms, taking advantage of the different snow accumulation and retention properties of topographic configurations and vegetations.

There are also several relatively simple, but effective ways to manage snow on a very local scale. In some field experiments carried out in Saskatchewan at Swift Current and Saskatoon, harvested grain crops were cut at different heights, or in rows or patches. In critical areas, part of the crop was left in the field. Some remarkable differences in snow (i.e. water) retention were demonstrated. Cases were recorded where 3.1% of the crop area was left uncut and an augmentation of 53 mm of water occurred, double the amount available in a nearby cleared field. Table 1 shows for an eleven-year period how using uniform and

Table 1. Winter Precipitation[1], snow accumulation and overwinter moisture storage on the uniform and nonuniform stubble system of snow management (1972-83) (cm) (Swift Current, Sask.)

	Uniform stubble				Nonuniform stubble		
Year	Winter[1] precip.	Stubble height	Avg. Snow depth	Equiv. moisture	Stubble height	Avg. snow depth	Equiv. moisture
1972-73	12.6	28	8	1.3	30 & 13	9	1.6
73-74	19.4	15	30	7.7	23 & 15	37	11.9
74-75	12.6	15	22	5.4	23 & 13	27	5.3
75-76	14.5	15	19	5.3	15 & 8	18	4.5
76-77	6.0	25	14	3.0	25 & 13	16	4.0
77-78	12.7	31	21	6.0	31 & 15	31	9.8
78-79	11.0	23	29	6.8	31 & 13	30	8.5
79-80	7.7	11	9	2.4	27 & 11	12	3.8
80-81	11.4	15	0	0.0	27 & 13	0	0.0
81-82	11.0	15	17	4.8	33 & 15	29	7.9
82-83	11.3	20	17	3.3	37 & 20	18	3.4

[1]Winter precipitation includes rain and snowfall from Oct. 31 to April 30 of each year.

non-uniform stubble surfaces can significantly increase snow water storage. This water may replenish soil moisture depending on the soil structure and the state of subsurface ice. As an additional benefit, early snow trapping and retention cuts down on evaporation in windy environments.

The Prairie water supply can also benefit from snow management in the mountain source regions of the Alberta East Slopes. In the forested part of the Marmot Creek watershed, 80 km southeast of Calgary, clearcutting of small circular areas has increased the snow water equivalent by nearly 30% (50 mm). Thus the clearing size has been shown to be critical. A clearing diameter equal to twice the height of the trees receives maximum accumulation, while a diameter equal to the tree height has the slowest ablation rate.

Snow storage

In Ontario and eastward, the purposes of snow management are oriented more to preventing flooding than increasing water supply. However, serious dry spells do exist which could benefit from reservoir storage for irrigation. The usual snow management practices are reforestation of critical headwater regions, small dams on third and fourth-order streams, windbreaks and snow fencing. Nevertheless, manipulation of ground vegetation in southern Ontario can bring about important changes in snow storage.

In Figure 1 the snow storage characteristics of neighbouring land use types are illustrated. This variability also has important implications for correct sampling during snow surveys. These principles are applicable in other parts of Canada; for example, Labrador, northern Quebec, and the High Arctic.

Some forms of snow management are broadly practised in Canada with beneficial results. Experiments in the Prairie Provinces suggest considerable advantages to farm water supplies in drought prone regions can be realized through crop management practices, such a summer fallowing. Similar benefits may not be as demonstrable in humid regions of the country where demand is not impinging so closely on supply. In fact, agricultural practices like summer fallowing can result in severe soil loss or degradation through water erosion.

Nevertheless, careful attention to watershed land use is important everywhere in managing runoff from snowmelt. Arguments both pro and con in managing snow through land use have been made and they point out the difficulties that can arise when headwater lands have many private owners with varying interests.

Developing regions in northern Canada can profit from experience from both the West and East and avoid wasting resources on procedures proven ineffective in those regions.

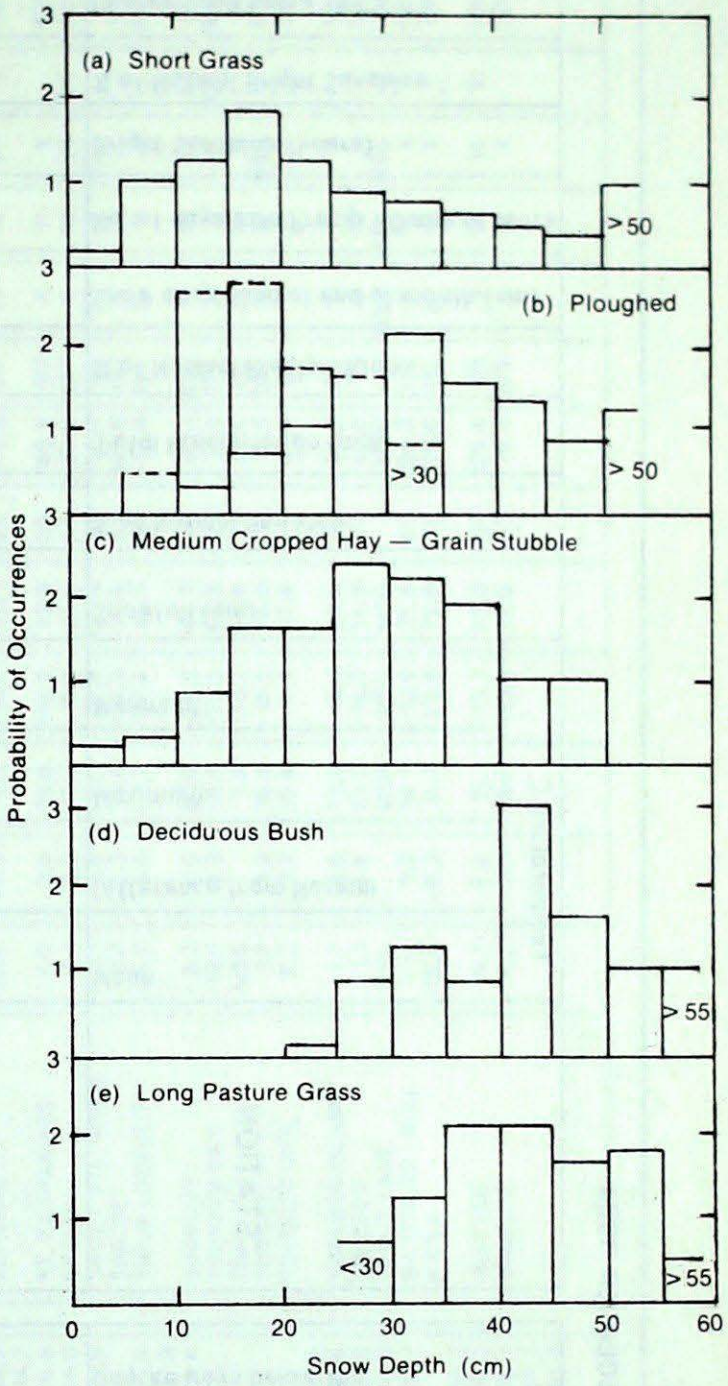


Figure 1
Probability Distribution of Snow Depth by Land-Use Type March 26-29, 1977

Reprinted from the Environment Canada Publication **Land Watch** 5(3):8, 11, 1984

DECEMBER 1984

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	0.7	-2.5	7.9	-16.1	32.8	149	174.0	76	20	18	MSG		578.9
ALERT BAY	1.7	-2.2	5.3	-7.2	12.8	78	184.8	79	TR	16	X		505.6
BLUE RIVER	-14.1	-6.8	9.8	-44.8	208.4	191	129.6	120	95	14	36	122	MSG
CAPE ST. JAMES	4.3	-0.7	9.4	-8.0	7.8	67	94.2	49	1	17	59	*	424.2
CAPE SCOTT	3.7	-1.4	9.5	6.6	1.1	9	259.8	75	0	18	X		443.4
CASTLEGAR	-5.8	-3.9	2.2	-14.4	66.5	88	62.2	62	44	13	35	114	736.5
COMOX	0.7	-3.0	8.1	-8.2	20.8	70	79.2	37	10	10	X		536.7
CRANBROOK	-11.2	-5.1	3.5	-31.0	41.0	79	25.5	66	36	7	65	*	900.2
DEASE LAKE	-19.6	-3.6	4.1	-43.5	54.6	132	26.2	78	27	8	61	147	1165.0
ETHELDA BAY	0.9	-2.2	9.6	-12.1	0.9	3	319.9	88	0	15	X		531.2
FORT NELSON	-24.0	-3.0	0.6	-42.6	21.1	78	16.0	75	46	5	59	*	1302.3
FORT ST. JOHN	-18.1	-4.9	4.7	-37.3	12.1	30	8.8	24	5	2	X		1118.9
HOPE	-2.3	-3.9	7.0	-16.5	82.4	180	292.2	101	36	18	6	155	628.1
KAMLOOPS	-7.9	-5.1	4.9	-29.2	42.4	141	34.1	106	18	7	52	109	804.5
KELOWNA	-7.4	-4.9	2.3	-28.4	56.4	178	27.2	65	17	8	32	77	785.7
LANGARA	-5.7	-9.3	3.5	-16.1	24.1	100	14.5	7	10	7	X		735.1
LYTTON	-6.0	-5.0	8.0	-27.1	19.3	47	42.8	58	4	5	53	119	744.9
MACKENZIE	-17.0	-6.9	4.5	-45.1	69.4	87	55.6	63	46	12	49	135	1073.1
MCINNES ISLAND	2.3	-1.8	8.8	-16.0	16.4	98	375.2	124	0	16	X		484.5
MERRY ISLAND	MSG		MSG	MSG	MSG		MSG		MSG	MSG	MSG		MSG
PENTICTON	-5.9	-5.3	3.5	-16.1	24.1	104	14.5	46	10	7	36	92	735.1
PORT ALBERNI	0.3	-2.3	7.3	-10.7	30.6	82	175.7	52	8	11	43	*	549.7
PORT HARDY	1.7	-1.8	7.8	-10.1	8.5	55	244.0	88	1	15	63	140	507.2
PRINCE GEORGE	-15.0	-7.1	3.8	-44.6	53.9	102	45.0	79	18	9	65	139	1023.7
PRINCE RUPERT	0.2	-1.4	9.9	-16.3	8.3	23	294.9	104	0	16	45	140	563.3
PRINCETON	-11.0	-5.3	2.2	-3.5	35.0	78	28.4	54	34	10	50	*	MSG
QUESNEL	-12.9	-5.8	4.6	-40.6	77.2	156	64.2	126	48	12	X		956.7
REVELSTOKE	-6.5	-2.7	2.6	-23.0	128.0	92	84.0	58	64	13	36	136	758.8
SANDSPIT	2.6	-0.8	11.0	-10.2	3.4	20	106.1	60	5	15	48	120	364.5
SMITHERS	-11.5	-3.9	4.9	35.1	47.3	84	42.5	71	23	8	41	107	913.8
STEWART	MSG		MSG	MSG	MSG		MSG		MSG	MSG	MSG		MSG
TERRACE	-5.9	-2.5	5.2	-23.5	71.4	68	143.2	74	TR	9	50	167	740.0
VANCOUVER HARBOUR	1.8	-2.9	8.4	-5.9	26.5	179	230.4	95	7	13	X		504.4
VANCOUVER INT'L	0.6	-3.3	8.5	-11.3	33.4	191	159.6	88	11	16	65	139	538.6
VICTORIA GONZ. HTS	3.0	-2.3	9.5	-5.3	56.0	727	107.2	90	23	14	75	128	464.9
VICTORIA INT'L	1.2	-3.0	8.7	-7.1	49.7	379	137.2	87	22	15	66	128	521.1
VICTORIA MARINE	5.0	0.1	8.6	-6.1	46.1	584	192.2	85	20	18	X		478.4
WILLIAMS LAKE	-13.5	-5.6	3.1	-41.5	74.1	150	54.5	132	6	11	52	106	975.9

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													
BURWASH	-19.7	2.3	1.5	-43.8	18.5	168	14.9	108	18	5	X		1158.5
DAWSON	-28.2	-2.3	-7.4	-47.5	38.7	110	35.4	87	39	8	X		1433.5
MAYO	-27.7	-3.5	1.9	-51.5	32.6	134	17.2	76	27	5	X		1421.3
WATSON LAKE	-27.7	-4.2	0.3	-53.3	40.2	86	28.0	76	49	6	22	69	1415.1
WHITEHORSE	-18.2	-1.6	0.3	-44.4	43.0	178	32.0	158	33	6	16	70	1122.4
NORTHWEST TERRITORIES													
ALERT	-29.8	0.2	-10.6	-40.9	10.0	120	7.6	96	49	2	0	*	1482.1
BAKER LAKE	-32.3	-4.1	MSG	-36.0	14.9	171	14.9	182	MSG	MSG	6	90	940.0
CAMBRIDGE BAY	-33.5	-3.5	-19.5	-41.9	1.6	25	1.6	30	17	0	0	*	1588.8
CAPE DYER	-25.0	-4.7	-12.0	-41.3	35.4	57	34.2	60	97	8	X		1334.6
CAPE PARRY	-30.0	-5.0	-19.5	-39.0	13.5	134	9.7	143	5	4	X		1488.5
CLYDE	-26.1	-2.0	-15.5	-37.6	21.5	271	14.9	191	41	5	0		1371.5
COPPERMINE	-30.8	-4.9	-15.8	-43.0	23.2	202	10.5	95	21	2	NIL	*	1512.4
CORAL HARBOUR	-30.5	-5.0	-12.2	-42.6	17.1	158	17.1	168	20	7	1	2	1502.1
EUREKA	-37.2	-2.4	-17.3	-45.8	3.2	128	3.2	133	30	2	0	*	1709.9
FORT RELIANCE	-29.2	-5.3	-10.1	-39.8	16.4	86	6.9	46	23	4	X		1464.3
FORT SIMPSON	-27.8	-3.3	-2.8	-44.8	18.5	77	15.1	64	29	4	27	91	1418.7
FORT SMITH	-27.2	-5.6	-3.0	-41.9	22.6	91	14.5	65	48	5	35	124	1403.3
FROBISHER BAY	-24.6	-2.8	-5.9	-36.2	24.4	99	22.8	103	17	7	16	80	1320.7
HALL BEACH	-28.7	-1.3	-14.8	-43.5	5.0	54	5.0	57	19	2	X		1446.7
HAY RIVER	-25.9	-5.0	0.4	-43.2	17.1	66	17.1	70	39	5	X		1370.0
INUVIK	-30.3	-3.1	-5.5	-43.6	13.4	64	8.2	47	18	3	0	*	1496.8
MOULD BAY	-33.1	-1.9	-15.6	-43.6	4.2	105	3.6	100	14	0	0	*	1583.6
NORMAN WELLS	-28.0	-1.5	-1.3	-44.0	36.8	191	30.1	160	33	6	1	5	1457.9
POND INLET	-32.1	-3.4	-19.1	-42.1	4.4	61	4.4	61	9	1	X		1553.8
RESOLUTE	-32.0	-2.7	-21.2	-41.3	2.8	53	2.0	41	15	1	NIL	*	1556.7
SACHS HARBOUR	-31.9	-4.5	-19.5	-44.2	1.8	42	1.8	44	9	0	NIL	*	1546.3
YELLOWKNIFE	-31.3	-7.3	-13.2	-44.2	12.4	56	10.4	57	18	5	17	80	1527.0
ALBERTA													
BANFF	-14.5	-5.6	6.0	-34.0	64.6	144	51.8	137	MSG	MSG	X		MSG
BROOKS	-15.2	-5.7	6.5	-40.0	29.4	139	20.9	109	20	MSG	X		MSG
CALGARY INT'L	-12.5	-4.7	16.1	-36.2	12.4	60	7.2	45	6	3	124	127	946.4
COLD LAKE	-20.3	-6.1	7.2	-40.0	17.6	67	11.9	48	29	4	89	116	1186.1
CORONATION	-17.8	-6.0	5.0	-35.8	29.8	132	24.6	126	29	8	94	113	1107.8
EDMONTON INT'L	-16.9	-3.8	7.4	-36.6	23.9	92	23.9	109	25	8	79	102	1081.1
EDMONTON MUN.	-16.0	-5.6	7.7	-33.7	31.9	118	31.9	129	45	8	81	104	1053.1
EDMONTON NAMAO	-16.9	-5.1	7.3	-35.3	25.4	94	17.6	67	29	7	X		1081.9
EDSON	-17.1	-5.1	10.4	-43.0	59.8	268	41.7	259	50	9	76	117	1089.1
FORT CHIPEWYAN	-26.4	-5.7	3.5	-44.5	19.3	70	19.3	78	44	MSG	X		MSG

X = Not observed * = normal missing MSG = data missing

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
FORT MCMURRAY	-22.0	-5.0	6.8	-42.6	15.9	54	12.3	49	19	5	98	159	1238.6
GRANDE PRAIRIE	-19.5	-6.1	6.1	-43.1	24.5	71	20.0	62	27	7	80	*	1163.7
HIGH LEVEL	-26.6	-6.3	2.1	-45.2	21.7	70	18.9	77	49	5	48	131	1381.7
JASPER	-16.1	-6.9	4.0	-40.2	48.2	147	31.6	96	33	5	45	*	1054.9
LETHBRIDGE	-11.8	-6.0	11.3	-31.9	15.3	60	14.1	64	7	5	84	94	922.6
MEDICINE HAT	-13.6	-6.0	8.2	-37.0	26.0	137	20.3	125	18	7	89	103	981.6
PEACE RIVER	-20.2	-4.9	4.4	-39.3	23.6	91	23.2	107	32	5	X		1183.6
RED DEER	-16.9	-5.5	6.5	-42.7	28.0	131	24.8	123	21	7	X		1081.1
ROCKY MTN HOUSE	-16.5	-7.4	13.4	-43.7	28.9	115	19.2	86	20	9	X		1069.5
SLAVE LAKE	-18.3	-4.2	11.2	-35.1	19.8	63	12.2	45	24	4	67	116	1125.5
SUFFIELD	MSG		MSG	MSG	MSG		MSG		MSG	MSG	MSG		MSG
WHITECOURT	-17.2	-4.1	10.0	-37.0	42.1	153	34.5	129	37	7	X		1098.9
SASKATCHEWAN													
BROADVIEW	-18.1	-4.6	3.2	-35.4	20.0	95	18.0	98	23	6	97	102	1118.6
COLLINS BAY	-27.0	-4.9	0.2	-41.0	25.3	67	13.1	42	39	4	76	*	MSG
CREE LAKE	-25.9	-5.8	2.6	-45.9	15.4	48	9.5	40	21	4	74	132	1358.8
ESTEVAN	-15.2	-4.1	5.3	-34.8	20.8	106	12.0	62	18	3	83	81	1029.9
HUDSON BAY	-21.2	-5.0	5.6	-40.7	14.2	48	7.8	35	35	2	112	*	1214.3
KINDERSLEY	-18.2	-5.4	3.6	-38.8	28.9	140	23.5	122	17	9	X		1122.6
LA RONGE	-23.1	-5.7	6.0	-43.2	20.1	73	15.4	71	41	5	X		1275.3
MEADOW LAKE	-21.6	-6.6	6.5	-38.4	14.4	56	14.5	55	16	5	102	*	1227.8
MOOSE JAW	-15.8	-5.1	6.4	-35.5	20.9	83	20.0	94	12	6	92	107	1048.6
NIPAWIN	-21.1	*	7.0	-37.1	21.9	*	14.5	*	42	5	102	129	1211.5
NORTH BATTLEFORD	-20.5	-6.4	4.9	-35.5	10.1	44	10.5	50	22	4	X		1194.5
PRINCE ALBERT	-21.2	-4.7	6.7	-37.1	14.5	61	14.0	64	27	4	96	136	1214.7
REGINA	-18.1	-5.3	3.5	-37.6	29.4	141	22.1	132	23	7	89	107	1118.8
SASKATOON	-19.6	-5.5	2.7	-38.5	15.6	73	14.6	73	21	6	X		1164.6
SWIFT CURRENT	-15.9	-6.0	5.0	-37.3	MSG		22.4	113	15	10	76	89	1051.6
URANIUM CITY	-28.3	-6.6	-4.5	-44.7	18.0	44	7.5	27	47	3	X		1435.6
WYNYARD	-18.7	-5.0	3.1	-37.0	23.2	94	18.6	84	16	8	97	110	1137.9
YORKTON	-19.9	-5.3	4.2	-38.7	23.1	97	23.5	104	36	5	109	125	1176.4
MANITOBA													
BISSETT	-18.2	-2.1	1.2	-40.5	23.1	92	18.6	83	16	6	79	94	1130.4
BRANDON	-19.4	-5.0	3.4	-35.9	19.7	101	17.7	93	23	6	X		1159.4
CHURCHILL	-28.2	-6.0	-4.1	-38.9	21.1	93	19.8	95	32	5	70	126	1431.9
DAUPHIN	-19.0	-4.7	4.2	-37.1	20.2	78	17.6	72	26	5	95	102	1154.3
GILLAM	-27.9	-5.1	-3.1	-40.9	16.2	51	9.6	23	35	6	X		1423.2
GIMLI	-17.7	-2.2	5.1	-35.6	26.6	106	22.0	94	11	5	98	97	1106.2
ISLAND LAKE	-22.3	-2.5	1.4	-37.2	26.0	44	12.7	29	44	6	X		1250.2
LYNN LAKE	-27.4	-5.6	1.3	-42.8	16.0	48	15.7	55	48	4	64	103	1373.3
NORWAY HOUSE	-22.8	*	4.5	-42.2	15.6	*	13.6	*	20	7	X		1264.7
PILOT MOUND	-16.7	-2.9	3.7	-35.3	21.0	102	22.4	108	7	6	X		1101.8
PORTAGE LA PRAIRIE	-17.0	-3.9	4.3	-32.1	34.2	204	24.2	111	23	6	X		1084.1
THE PAS	-21.8	-4.2	-16.4	-27.2	11.3	40	8.6	39	20	3	99	135	1228.5
THOMPSON	-27.1	-5.4	0.5	-45.1	14.2	32	13.4	35	26	6	71	104	1397.8
WINNIPEG INT'L	-17.6	-3.6	3.4	-34.5	25.6	124	22.3	116	13	5	93	101	1102.8
ONTARIO													
ATIKOKAN	-14.6	-0.3	3.2	-37.0	42.6	94	71.3	204	24	9	76	100	1010.7
EARLTON	-11.0	1.6	9.7	-31.0	71.8	134	71.6	127	30	16	X		898.8
GERALDTON	-15.5	-0.1	3.8	-38.0	67.1	194	106.3	273	26	13	X		1039.6
GORE BAY	-3.3	2.2	10.2	-17.6	47.4	81	70.0	94	4	13	X		659.0
HAMILTON RBG	0.9	2.8	15.9	-11.1	38.0	125	98.6	133	0	11	69	*	MSG
HAMILTON	0.1	3.5	14.9	-12.0	25.6	75	78.9	101	0	12	X		558.9
KAPUSKASING	-15.4	-0.4	8.2	-36.6	84.8	159	101.7	191	38	18	X		1026.7
KENORA	-16.9	-2.8	3.0	-34.6	46.6	152	48.4	155	37	9	X		1080.7
KINGSTON	0.8	5.0	12.3	-17.0	34.8	73	72.0	79	0	12	44	57	582.3
LANSDOWNE HOUSE	-19.6	-1.3	0.8	-37.4	67.0	185	63.7	205	54	10	X		1165.0
LONDON	0.7	4.2	15.0	-14.8	51.9	101	111.3	127	0	15	49	87	577.7
MOOSONEE	-17.3	-1.3	2.8	-35.6	72.9	183	101.2	250	40	14	71	120	1093.1
MOUNT FOREST	-2.2	3.2	13.5	-15.2	45.6	67	92.2	100	0	15	23	41	629.0
MUSKOKA	-1.9	5.2	12.7	-24.0	120.1	164	154.4	158	2	19	X		638.1
NORTH BAY	-7.2	2.5	9.9	-26.7	59.8	98	95.8	127	5	16	45	58	782.6
OTTAWA INT'L	-4.8	2.9	9.2	-22.8	83.5	149	107.6	133	20	16	58	*	707.3
PETAWAWA	-6.4	3.3	12.5	-30.8	71.0	131	90.1	139	16	15	X		755.7
PETERBOROUGH	-2.0	4.0	14.3	-18.3	33.3	86	68.3	92	0	13	X		620.7
PICKLE LAKE	-19.4	-1.7	1.5	-38.3	67.0	170	50.6	138	53	7	X		1159.5
RED LAKE	-18.4	-2.3	4.3	-42.1	43.9	123	40.2	126	39	10	80	*	1129.6
ST. CATHARINES	1.0	2.0	15.8	-10.0	19.9	69	68.5	97	0	11	X		529.8
SARNIA	0.1	2.3	15.2	-15.0	21.4	56	87.3	107	0	13	56	86	556.0
SAULT STE. MARIE	-5.1	1.6	10.1	-20.8	125.9	166	154.4	194	52	25	MSG		715.5
SIMCOE	0.1	2.3	15.0	-14.0	22.6	62	105.6	131	0	16	X		554.9
SIOUX LOOKOUT	-16.7	-1.6	2.7	-37.4	46.7	136	51.9	154	32	11	X		1075.1
SUDBURY	-8.2	2.0	MSG	-26.0	64.7	114	80.1	123	12	16	46	55	812.0
THUNDER BAY	-10.1	0.3	8.9	-29.5	42.5	92	71.0	170	21	8	117	125	893.0
TIMMINS	MSG		7.6	-33.7	63.4	89	73.0	115	29	16	X		917.2
TORONTO	1.7	3.3	15.6	-10.5	24.0	71	79.5	109	0	12	MSG		504.6
TORONTO INT'L	0.2	3.7	15.4	-11.7	17.4	54	61.4	95	0	11	X		562.9
TORONTO ISLAND	1.7	3.6	13.9	-10.1	20.0	69	60.2	83	0	11	X		507.3
TRENTON	-1.1	3.4	13.0	-16.5	36.0	77	67.0	81	0	12	X		590.9
TROUT LAKE	MSG		MSG	MSG	MSG		MSG		MSG	MSG	MSG		MSG
WATERLOO-WELL	-1.1	3.2	14.5	-12.9	25.6	69	84.3	119	0	14	X		590.5
WAWA	-10.6	-0.3	11.0	-33.9	75.8	93	116.4	112	20	17	X		885.1
WIARTON	0.7	4.4	15.1	-13.7	93.0	101	129.6	121	0	16	14	31	580.3
WINDSOR	1.2	3.1	16.7	-13.9	18.0	63	78.9	109	0	13	X		520.9

X = Not observed * = normal missing MSG = data missing

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	-10.2	1.9	9.5	-31.7	92.4	109	83.2	106	27	17	X		873.4
BAIE COMEAU	-10.6	-0.2	6.9	-32.6	100.2	130	71.5	78	23	15	90	*	886.2
BLANC SABLON	-10.8	-3.7	3.7	-30.2	99.8	119	110.6	104	25	19	79	*	835.7
CHIBOUGAMAU	-14.9	1.0	6.0	-36.3	69.9	104	76.1	122	34	17	52	67	1019.0
KUUJJUAQ	-22.7	-4.3	2.7	-42.5	17.2	44	13.6	36	38	6	62	116	1261.7
GASPE	MSG	MSG	8.9	-24.7	62.9	74	62.3	53	10	9	85	*	810.7
INUKJUAK	-21.2	-3.3	-1.6	-38.4	44.6	192	32.6	145	55	11	MSG		1215.6
LA GRANDE RIVIERE	-19.2	*	0.5	-36.3	52.7	*	41.9	*	29	11	14	*	115.4
MANIWAKI	-7.5	2.5	10.2	-29.0	71.7	124	83.4	117	19	16	48	70	789.1
MATAGAMI	-15.2	1.0	6.0	-35.0	66.3	110	65.3	118	29	16	47	70	1030.5
MONT JOLI	-7.5	0.8	9.4	-25.6	65.6	73	49.2	52	12	16	57	96	791.3
MONTREAL INT'L	-4.0	2.9	10.5	-22.1	76.2	130	101.2	117	9	16	61	77	682.8
MONTREAL M INT'L	-6.0	*	9.4	-27.0	87.4	*	106.6	*	22	18	63	*	741.8
NATASHQUAN	-10.5	-1.3	3.5	-28.6	85.6	127	107.5	99	21	19	90	102	886.2
NITCHEQUON	-19.8	-0.6	0.1	-42.7	43.0	103	35.4	82	31	12	54	93	1174.8
KUUJJUARAPIK	-17.5	-1.6	1.3	-35.3	47.0	112	MSG		20	13	32	64	1102.2
QUEBEC	-7.2	1.8	6.6	-29.6	100.0	115	94.9	84	45	17	73	96	781.5
ROBERVAL	-10.3	2.4	7.6	-32.5	50.0	63	57.9	72	24	15	82	*	869.8
STE AGATHE DES MONTS	-7.3	3.1	8.9	-30.0	103.8	112	136.6	122	32	20	53	59	784.0
ST HUBERT	-3.9	3.1	10.0	-23.3	77.4	118	108.7	109	8	12	X		695.0
SCHEFFERVILLE	-21.1	-2.1	0.0	-40.7	48.7	97	38.6	79	22	11	61	*	1211.2
SEPT-ILES	-12.2	-1.2	5.7	-29.7	98.0	110	82.0	78	22	14	76	78	935.9
SHERBROOKE	-5.2	3.0	10.1	0.0	100.2	133	137.7	150	6	16	58	*	717.6
VAL D'OR	-12.3	0.9	8.7	-33.7	66.8	104	80.7	116	31	21	43	51	936.8
NEW BRUNSWICK													
CHARLO	-8.2	0.2	8.4	-27.1	75.7	82	72.2	71	35	12	75	82	808.2
CHATHAM	-6.5	0.4	7.7	-26.0	73.8	107	72.2	67	10	13	82	84	758.7
FREDERICTON	-5.4	1.1	9.2	-24.0	61.2	88	103.9	88	4	16	MSG		724.8
MONCTON	-3.8	1.6	12.8	-24.3	42.3	59	70.4	58	1	14	95	105	675.6
SAINT JOHN	-2.6	2.2	9.2	-23.3	56.4	116	167.0	101	TR	17	89	97	638.6

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													
EDDY POINT	0.9	2.4	10.3	-20.0	27.3	45	130.0	79	5	17	74	94	584.5
GREENWOOD	0.4	2.7	11.4	-18.3	28.8	47	77.8	65	0	15	X		571.5
HALIFAX INT'L	-1.1	1.8	10.8	-20.6	27.2	50	137.2	76	0	14	X		591.7
SABLE ISLAND	3.0	0.4	13.4	-12.9	4.6	24	118.4	82	0	15	74	137	464.7
SHEARWATER	0.2	1.7	11.5	-19.3	25.8	68	138.5	94	0	15	92	99	551.8
SYDNEY	-1.1	0.7	9.8	-17.4	47.8	73	117.3	72	TR	15	64	96	591.1
TRURO	-1.8	1.9	10.6	-22.6	30.2	56	97.8	73	0	16	67	97	611.9
YARMOUTH	1.8	2.1	12.5	-15.3	14.2	32	123.8	87	0	14	91	147	505.1
PRINCE EDWARD ISLAND													
CHARLOTTETOWN	-2.9	1.0	8.1	-22.2	33.6	46	75.3	58	1	14	X		646.5
SUMMERSIDE	-3.1	0.9	7.9	-21.7	32.0	53	59.0	55	5	16	66	89	651.0
NEWFOUNDLAND													
ARGENTIA	0.7	0.4	15.1	-17.5	7.4	25	65.2	59	TR	13	X		575.8
BATTLE HARBOUR	-11.6	-4.8	5.0	-29.2	50.0	*	62.9	135	31	16	X		917.5
BONAVISTA	-2.3	-0.8	12.2	-19.3	30.6	79	67.6	70	TR	14	X		630.1
BURGEO	-2.1	-0.5	10.6	-17.9	39.9	78	179.3	98	3	17	70	99	622.1
CARTWRIGHT	-13.0	-3.9	2.9	-29.0	88.9	131	79.6	106	99	14	79	130	31.0
CHURCHILL FALLS	-20.1	-2.5	2.0	-36.9	84.4	136	68.6	110	94	16	63	75	1102.2
COMFORT COVE	-5.0	-1.2	11.5	-22.6	56.2	78	60.5	57	4	15	X		711.9
DANIEL'S HARBOUR	-5.0	-1.1	11.3	-22.9	104.3	149	116.5	128	23	23	30	100	715.0
DEER LAKE	-5.2	0.1	11.4	-22.2	112.6	130	93.9	85	27	18	X		718.0
GANDER INT'L	-4.3	-0.5	11.3	-22.8	57.0	80	68.2	63	2	16	87	127	692.1
GOOSE	-17.2	-4.2	5.1	-33.7	143.2	195	112.5	155	72	15	92	126	1091.0
PORT-AUX-BASQUES	-2.0	-0.3	7.8	-21.2	55.9	103	143.5	92	13	21	38	*	619.3
ST ANTHONY	-9.1	-2.6	4.8	-28.6	107.1	143	116.5	113	49	23	X		841.4
ST JOHN'S	-2.0	-0.5	14.5	-19.7	34.3	53	109.2	68	5	20	63	111	622.6
ST LAWRENCE	-1.1	-0.3	3.0	-5.2	31.8	97	154.0	121	TR	MSG	X		572.1
STEPHENVILLE	-2.7	-0.1	12.6	-20.2	79.4	98	104.7	92	7	24	28	86	640.6
WABUSH LAKE	-19.0	-0.4	3.1	-37.6	64.6	81	52.2	72	31	13	53	78	1145.9

X = Not observed * = normal missing MSG = data missing

X = Not observed - = normal missing MSG = data missing

DECEMBER 1984 DÉCEMBRE

STATION	Temperature °C Température °C: Mean Moyenne	Difference from Normal Écart à la normale	Maximum Maximale	Minimum Minimale	Snowfall (cm) Chute de neige (cm)	Total Precipitation (mm) Précipitation totale (mm)	% of Normal Precipitation % de précipitation normale	Snow on ground at end of month (cm) Neige au sol à la fin du mois (cm)	No. of days with Precip. 1.0 or more (mm) Nombre de jours de préc. 1.0 ou plus (mm)	Bright sunshine (hours) Durée de l'insolation (heures)	Degree Days above 5°C Degrés-jours au-dessus de 5°C: This Month Présent mois	Since Jan. 1st Depuis le 1er janv.	Mean Dew Point °C Point de rosée moyen °C
AGROCLIMATOLOGICAL STATIONS AGROCLIMATOLOGIQUES													
BRITISH COLUMBIA COLOMBIE-BRITANNIQUE													
Agassiz	-1.2	-4.2	6.5	-13.5	42.4	252.5	97	2	19	58	0.0	2042.5	
Summerland	-6.5	-5.4	3.5	-21.0	22.6	15.4	47	10	4	36	0.0	1971.5	
ALBERTA													
Beaverlodge	-18.0	-6.4	6.0	-38.0	28.0	28.0	87	25	7	80	0.0	1146.7	
Ellerslie	-17.3	-5.1	6.5	-37.5	16.0	26.0	105	27	7	74	0.0	1370.2	
Lacombe	-16.4	-5.1	8.0	-40.0	34.0	28.1	151	22	6	88	0.0	1287.5	
Lethbridge	-11.7	-5.7	11.0	-32.0	17.2	13.7	62	6	5	85	1.8	1774.7	
Vauxhall	-14.0	-6.1	10.0	-38.0	19.0	11.0	53	9	5	73	3.0	1718.7	
Vegreville	-18.8	-4.8	6.0	-39.0	17.2	17.2	102	18	8		0.0	1368.6	
SASKATCHEWAN													
Indian Head	-18.3	-5.3	4.5	-36.0	26.2	23.0	107	33	7		0.0	1701.0	
Melfort	-20.5	-4.0	3.5	-35.5	12.8	12.8	51	29	5	98	0.0	1604.5	
Regina	-18.6	-5.6	4.0	-40.5	17.2	21.6	119	9	8		0.0	1562.0	
Saskatoon	-19.5	-5.6	2.5	-38.0	17.6	17.6	68	15	5	82	0.0	1782.0	
Scott	-21.0	-6.8	4.5	-40.0	15.7	15.0	74	18	6	81	0.0	1461.2	
Swift Current South	-15.8	-5.5	7.0	-38.0	17.8	16.9	105	10	5	66	0.0	1734.2	
MANITOBA													
Brandon	-19.2	-5.1	4.0	-39.5	23.7	23.7	117	20	9	103	0.0	1731.8	
Glenlea	-18.0	-3.6	3.5	-39.0	27.0	27.0	116	27	7	90	0.0	1799.8	
Morden	-15.8	-3.5	6.0	-30.5	24.2	24.2	109	7	4	98	0.0	2006.3	
ONTARIO													
Delhi	0.1	3.0	15.5	-15.0	22.2	123.1	144	0	14	62	13.2	2174.0	
Elora	-1.6	3.6	13.8	-14.7		98.8	138	0			5.7	1847.9	
Guelph	-0.5	3.6	14.7	-13.6	19.9	86.8	122	0	17	46	11.2	1950.4	
Harrow	1.4	3.1	14.5	-13.5	17.5	113.0	153	0	15	66	16.8	2482.4	
Ottawa	-4.2	3.3	9.4	-21.3	81.7	99.7	138	12	13	56	0.0	2105.5	
Smithfield													
Vineland Station	1.5	2.5	16.3	-10.4	29.4	93.8	128	0	13	66	15.2	2267.0	
Woodslee													
QUEBEC													
La Pocatiere	-6.9	1.3	8.5	-28.0	60.3	56.8	63	16	13	81	0.0	1588.3	
L'Assomption	-5.4	3.0	9.0	-29.0	66.1	93.4	103	13	13	63	0.0	1945.0	
Normandin	-12.0	2.1	7.5	-35.5	47.3	57.6	81	10	17	70	0.0	1392.7	
Ste. Clothilde	-3.2	3.5	13.0	-23.0	85.4	134.4	158	T	13	55	1.8	2130.5	
NOVA SCOTIA NOUVELLE-ECOSSE													
Kentville	-0.4	2.0	10.0	-19.0	30.4	94.5	73	0	15	58	4.3	2043.9	
Nappan	-3.7	0.3	9.0	-22.5	25.0	84.0	71	0	12	82	0.8	1793.5	
PRINCE EDWARD ISLAND ILE-DU-PRINCE-EDOUARD													
Charlottetown													
NEWFOUNDLAND TERRE-NEUVE													
St. John's West	-1.3	0.1	13.5	-19.5	26.7	126.5	72	5	15	59	0.3	1407.6	