

# Climatic Perspectives

Monthly Review

DECEMBER - 1990

Vol. 12

## CLIMATIC HIGHLIGHTS

*Major winter storms hit Atlantic Canada in early December. Later, blizzards swept the prairies and major snowfalls and unusual cold were reported in B.C.*

### Flooding hits Newfoundland's west coast

Heavy rainfalls, in the order of 90 mm, fell over southwestern Newfoundland on December 8 and 9, resulting in flooding and washouts. Precipitation during the week was as much as 162 mm. The worst hit area was between Corner Brook and Port aux Basques. The Port au Port Peninsula west of Stephenville was completely cut off, stranding 4000 residents. Work crews worked around the clock making emergency repairs to roads, highways and numerous bridges, including the Trans-Canada Highway. There was significant flooding in Stephenville and nearby communities.

In Nova Scotia the same storm dropped more than 100 mm of rain on Shearwater and Sydney. This was in addition to a previous storm, which on December 4 and 5, dumped 50 to 80 millimetres of precipitation, giving combined weekly precipitation totals of 155 and 173 millimetres, respectively. Northern sections of New Brunswick were buried under 20 to 30 centimetres of snow on the 5th, while Cape Breton Island was buffeted by wind gusts to 122 km/h.

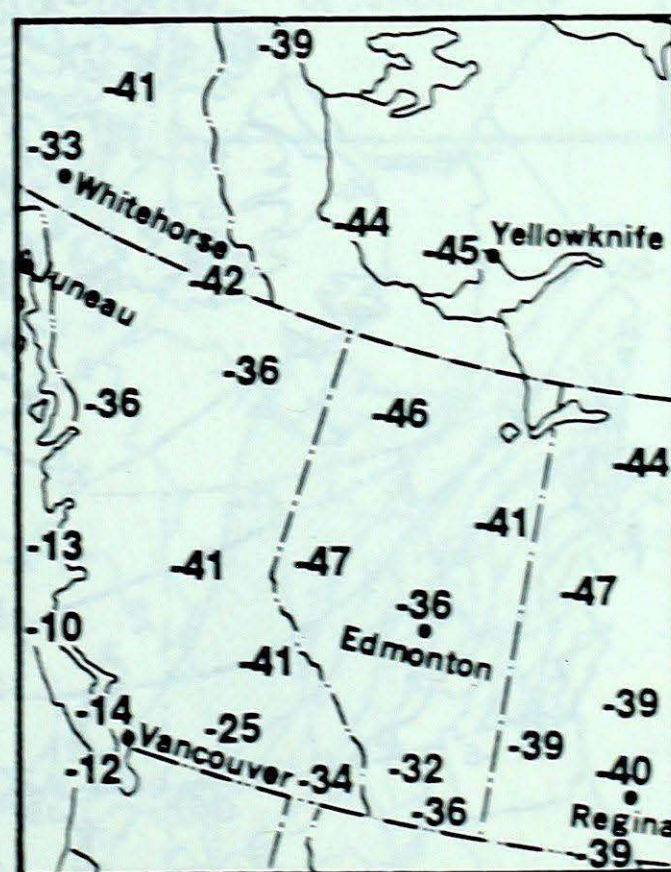
### Storm buffets the southern Arctic

A vigorous disturbance moved slowly across the Northwest Territories, on December 5. In the Keewatin District, the storm produced blizzard conditions, with high winds and heavy snow falling at a number of Arctic communities. During the storm, which lasted approximately 3 days, winds were clocked gusting to 100 km/h. Snowfalls were in the 20 to 30 centimetre range, and snow drifts were several metres high. The winds caused structural damage to buildings at Arctic Bay, Resolute, Hall Beach and at Igloolik.

### Arctic blast freezes western Canada

During the latter half of the month, bitterly cold Arctic air swept southwards across the prairies on two occasions accompanied by blizzards, 'whiteouts' caused by blowing snow and dangerous wind chills. The Arctic air mass spread westwards across B.C., where not only did temperatures plummet well below freezing in Victoria and Vancouver, but

significant snowfalls were also recorded. Damaging winds struck coastal B.C. on December 16 and 17. In the Fraser Valley winds were clocked at 120 km/h. In the southern interior, temperatures dropped to the minus thirties, while the prairies saw readings drop to the minus forties. On the 30th, the worst snowstorm in 20 years hit Vancouver. The 30 cm snowfall was just 2 cm short of the all time 1986 record.



Lowest temperature for Dec. 1990



## Across the country

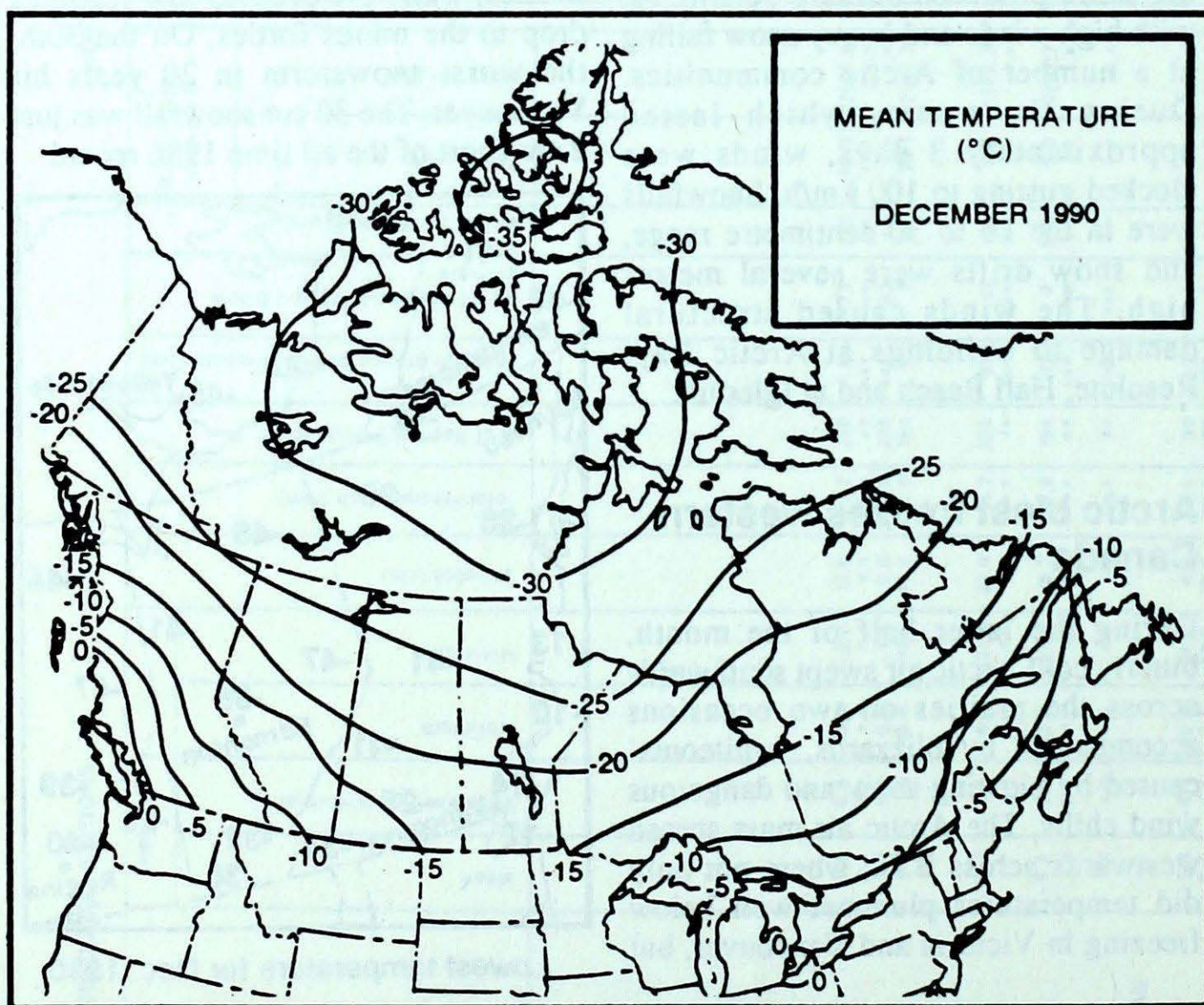
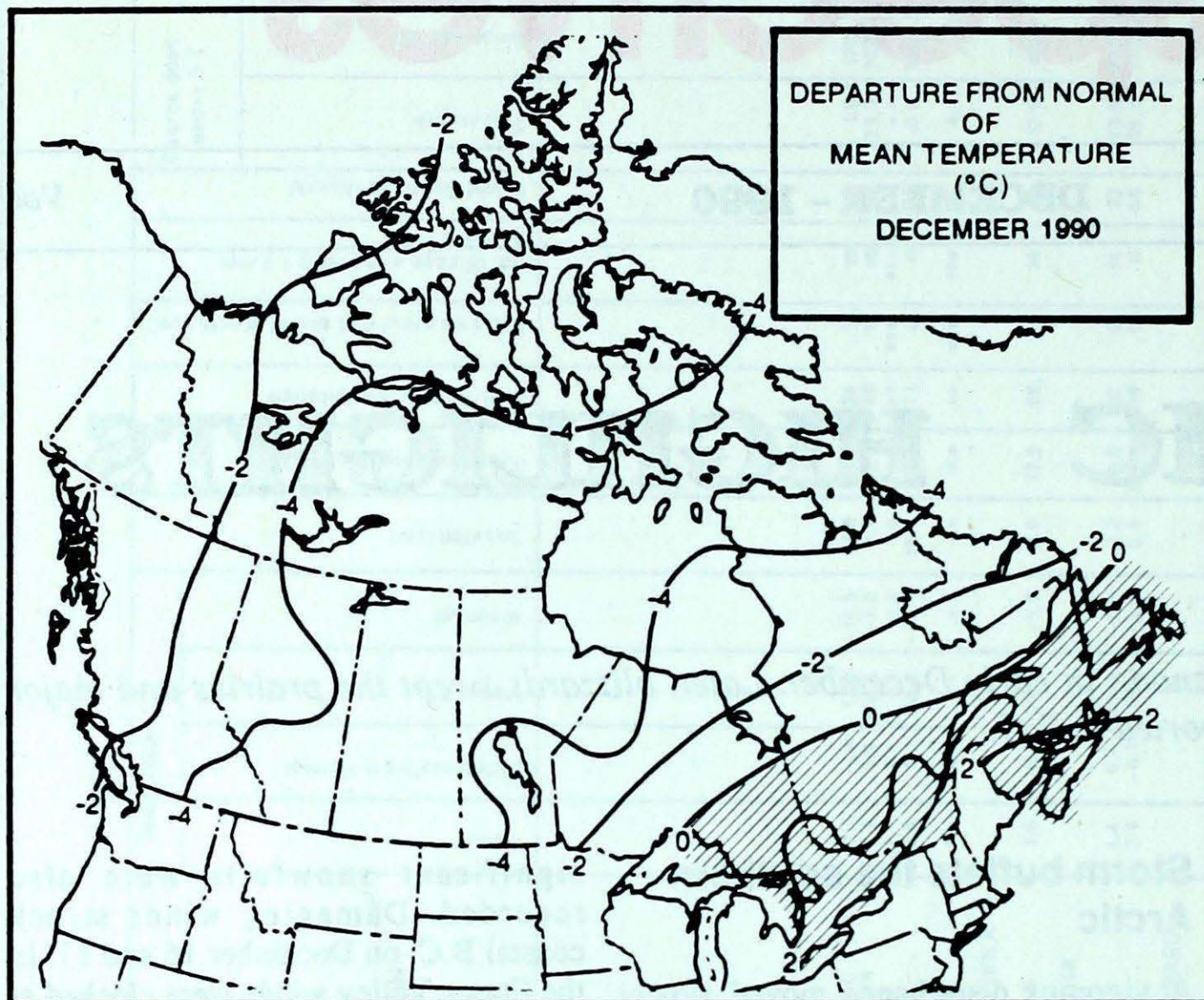
### Yukon and Northwest Territories

The Northwest Territories experienced a cold December with above normal precipitation. Eureka, N.W.T., reported the lowest mean monthly temperature for the central Northwest Territories with  $-35.8^{\circ}\text{C}$ . Precipitation was near to above normal in all of the central Northwest Territories. Resolute Bay recorded more than double the normal precipitation for the month. A total of 10.6 mm was reported compared to the normal of 4.9 mm. Baker Lake, N.W.T., recorded the most precipitation with 14.2 mm while Eureka was the driest with only 1.4 mm.

For the Yukon, temperatures sank into the  $-50^{\circ}\text{C}$  range, blocking the flow of propane, and turning rubber and plastics into brittle compounds that snapped at the slightest touch. Twenty-four Cold Wave Warnings were issued during the month. A Cold Wave Warning is issued when a temperature of  $-50^{\circ}\text{C}$  is forecast to occur or continue.

The coldest spot was Beaver Creek which recorded  $-54.0^{\circ}\text{C}$ . Second place was shared between Ross River and Carmacks with  $-51.0^{\circ}\text{C}$  while Ogilvie recorded  $-50.0^{\circ}\text{C}$ . Johnson was the only station which failed to dip into the minus forties overnight during the entire month. The coldest temperatures were reported during the first seven days of the month. On the warm side of the thermometer, several locations surpassed the freezing mark with daily maxima of  $3.0^{\circ}\text{C}$  at Carcross, Haines Junction, Swift River and Watson Lake. Seven other sites recorded above freezing daily maxima.

Snowfall was above normal from Carcross through Whitehorse to Carmacks and in the area around Eagle Plains. These areas recorded 150 to 200 percent of the normal December snowfall totals. The south recorded monthly snowfall totals in the 40 to 60 cm range, while the northern areas received 10 to 20 cm. The higher passes in the south such as Blanchard and Swift River recorded almost 100 cm by month's end.





### British Columbia

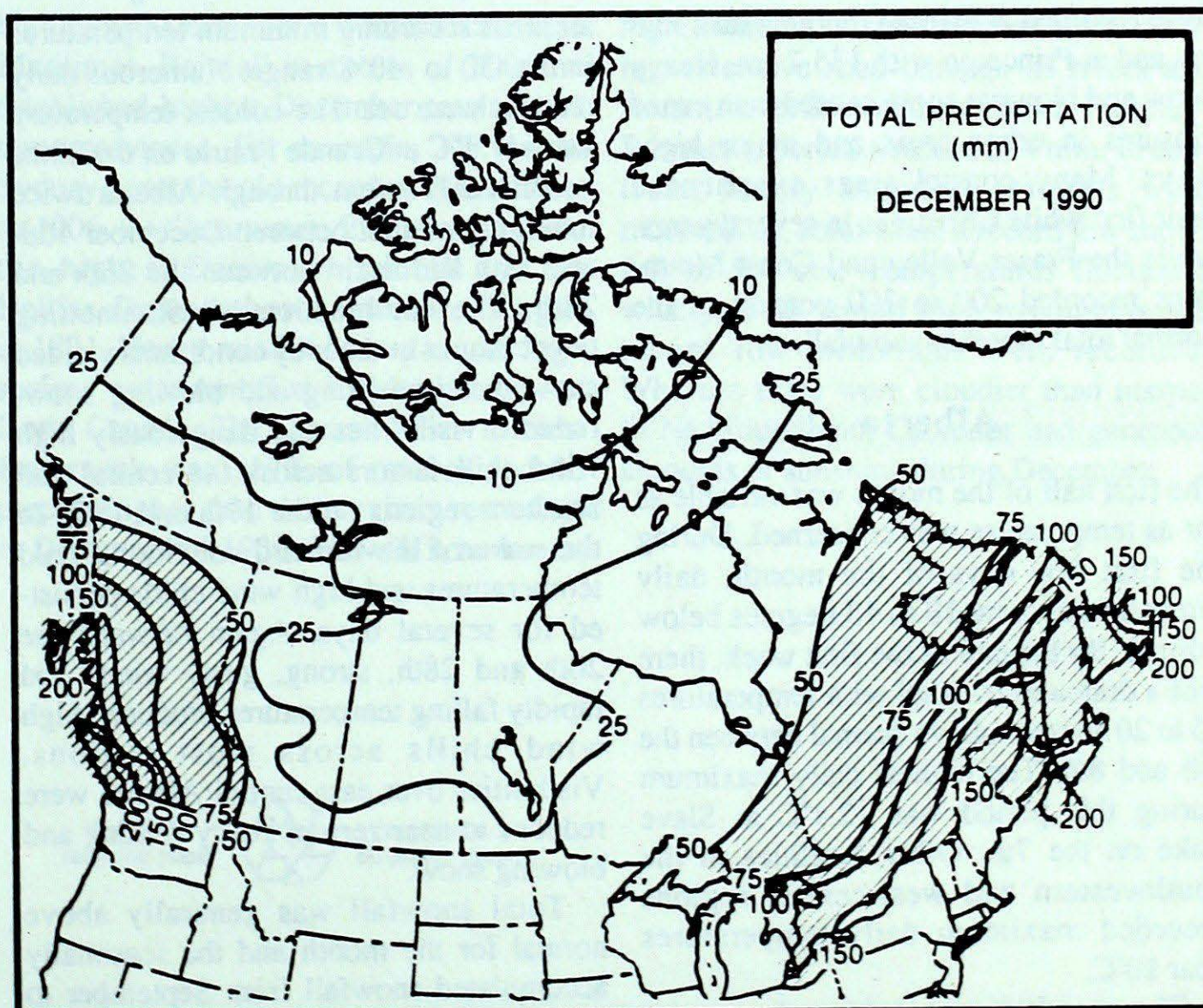
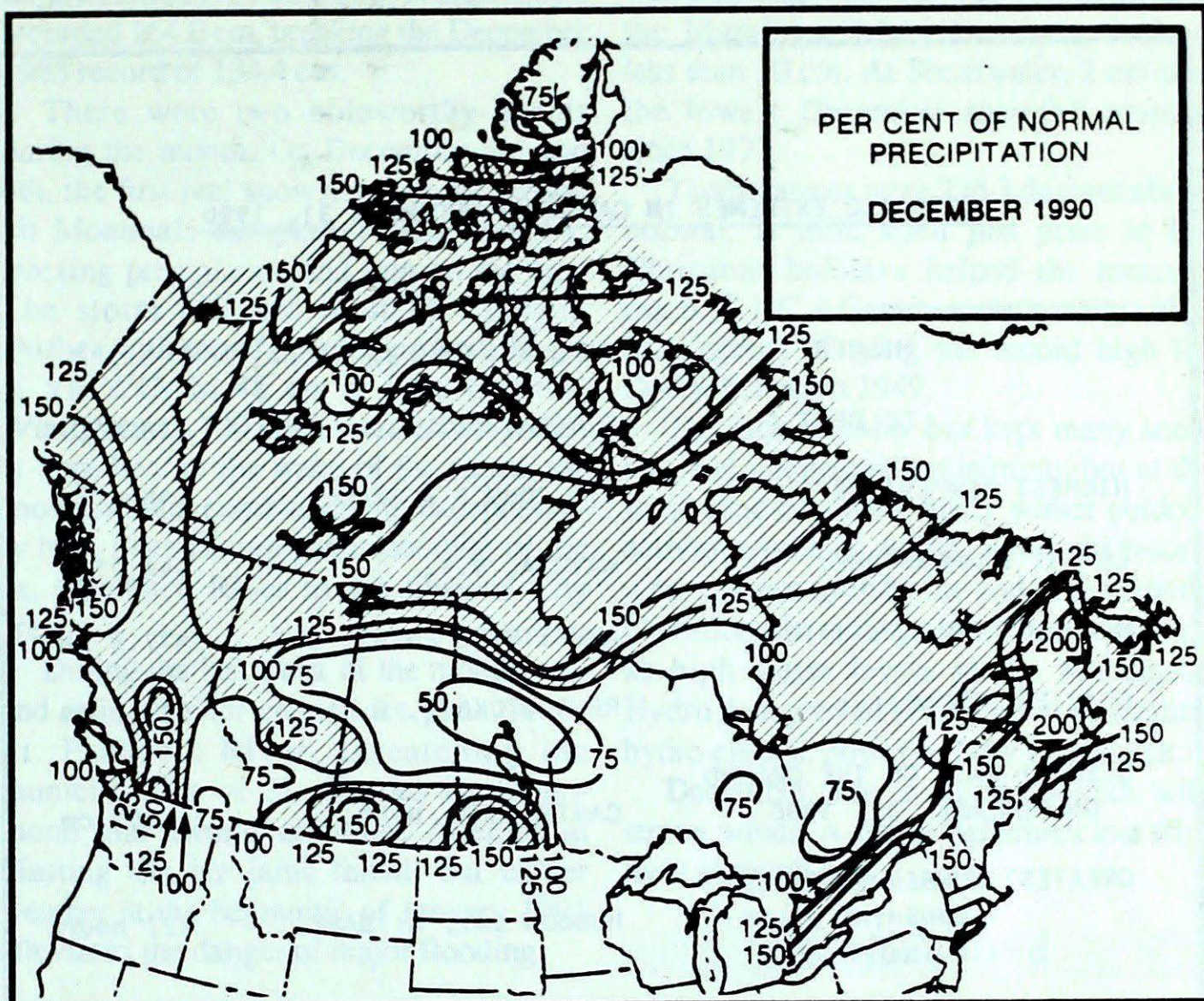
The first half of December gave mild weather for most of the province while for most of the latter half of the month, cold Arctic air spilled southwards, engulfing the entire province with frigid air, in the minus twenty degree Celsius range, and snow in most regions.

Although many areas reported record cold temperatures on individual days during the month, the only record-low mean monthly temperature was set at Merry Island in Georgia Strait, which reported a monthly mean of  $2.3^{\circ}\text{C}$ .

The month began with a strong Pacific storm in which maximum wind gusts were as high as 150 km/h in the exposed coastal areas, while interior regions reported gusts up to 100 km/h. One man was killed in Prince George when hit by a falling tree. Heavy rains on the 2nd and 3rd ranged from 40 to 100 mm on the east coast of Vancouver Island, resulting in flooding in several areas. The high water was aggravated by strong onshore winds and high tides.

The strong winds also played a factor during the two cold snaps, the first of which began on the 19th, and again, on the 28th. Many regions reported extreme wind chill values as very strong winds accompanied the cold snaps. Winds gusted up to 120 km/h in some interior areas and coastal valleys and inlets. Many areas experienced power disruptions and, in some cases, coastal residents were without power during much of the bitterly cold weather. The cold snaps consumed a record amount of natural gas for heating - nearly 65 per cent of the utilities' reserves.

With the colder air covering the province for most of the latter half of the month, most regions experienced significant and in some cases heavy snowfall. Snowfalls of 20 to 50 cm were recorded in the South Coast areas on the 29th and 30th, creating havoc for motorists. On the 30th, Vancouver International Airport reported 30 cm of snow - the worst storm in 20 years. The Okanagan fruit belt recorded a rare combination of temperatures in the minus twenties as well as 10 to 20 cm of snow. Record high monthly snowfalls





### CLIMATIC EXTREMES IN CANADA - DECEMBER 31, 1990

MEAN TEMPERATURE:			
HIGHEST	CAPE ST. JAMES, B.C.	4.2°C	
COLDEST	EUREKA, N.W.T.	-35.8°C	
HIGHEST TEMPERATURE:			
	ST. JOHN'S A NFLD.	15.3°C	
LOWEST TEMPERATURE:			
	MAYO A, Y.T.	-48.7°C	
HEAVIEST PRECIPITATION:			
	AMPHITRITE POINT, B.C.	477.8 mm	
HEAVIEST SNOWFALL:			
	REVELSTOKE A, B.C.	227.2 cm	
DEEPEST SNOW ON THE GROUND ON DECEMBER 31, 1990			
	CARTWRIGHT, NFLD.	102 cm	
GREATEST NUMBER OF BRIGHT SUNSHINE HOURS:			
	HUDSON BAY, A. SASK.	127 hours	

were recorded at Prince George with 135.8 cm and at Princeton with 135.7 cm. Heavy snow and blowing snow caused many road closures in urban areas and major highways. Many coastal areas experienced their first white Christmas in several years, while the Fraser Valley and Coast Mountains recorded 200 to 300 percent of the normal total monthly snowfall.

#### Alberta

The first half of the month was variable as far as temperature was concerned. During the first few days of the month, daily temperatures were 10 to 15 degrees below normal. By the end of the first week, there was a dramatic reversal with temperatures 15 to 20 degrees above normal between the 6th and 8th. The highest daily maximum during this period was 12.4°C at Slave Lake on the 7th. Other localities in the southwestern and west-central regions recorded maximum daily temperatures near 10°C.

The weather was cold and stormy during the second half of the month with

all areas recording minimum temperatures in the -30 to -40°C range. Numerous daily records were set. The coldest temperature was -47.4°C at Grande Prairie on the 20th.

Blizzards swept through Alberta twice in ten days - first between December 16th and 18th and again between the 26th and 28th. The combination of plummeting temperatures and windy conditions yielded snow, heavy drifting and blowing snow, reduced visibilities and dangerously high wind chill factors across the central and southern regions on the 17th and 18th. In the wake of the blizzard conditions, cold temperatures and high wind chills persisted for several days. Again between the 26th and 28th, strong, gusty winds and rapidly falling temperatures produced high wind chills across most regions. Visibilities over east-central Alberta were reduced to near zero in heavy drifting and blowing snow.

Total snowfall was generally above normal for the month and the seasonally accumulated snowfall from September to December was above normal except for the Pincher Creek area. These above nor-

mal seasonal amounts, will, for the time being, allay any fears of low soil moisture content for the upcoming agricultural year. The western regions from Grande Prairie to Jasper and Banff had twice the accumulated seasonal averages and the southwestern mountain areas are at or near record levels.

#### Saskatchewan and Manitoba

December was generally sunny and cold with variable amounts of precipitation.

The northern parts were bitterly cold throughout the month, reporting mean monthly temperatures 5 to 7 degrees below normal.

A minimum temperature of -40°C or colder was recorded by half of the reporting stations in the two provinces. Just before Christmas, several temperature records were shattered when the mercury fell to -47°C or colder at Thompson, Manitoba, Stony Rapids and Meadow Lake, Saskatchewan. The lowest temperature was -47.6°C at Thompson on the 20th of December.

As in Alberta, mild temperatures were reported on the 8th and 9th at several southern localities. Numerous daily maximum temperature records were established with temperatures ranging from 5 to 12°C. The latter half of the month was bitterly cold with high windchill factors.

#### Ontario

December was mild and wet in southern Ontario and mild and a bit drier in central Ontario. Heavy rainfalls resulted in the wettest December on record for St. Catharines (161 mm), Hamilton (157mm), Peterborough (138 mm) and Toronto International Airport (113 mm). London's 151 mm was their wettest December since 1949 and Toronto City's 132 mm was the most in any December since 1852. The heavy rain played havoc with snowcover and ruined much of the early ski season. However, the mild temperatures did allow the St. Lawrence Seaway to remain open longer than usual.

Total precipitation was pushed to record or near record heights by several heavy rainfalls during the month. Most communities south of Algonquin Park



recorded 100 to 150 mm of precipitation. Normal December precipitation is 70 to 90 mm. Kingston recorded the highest total with 175 mm, however this amount fell well short of the 207 mm recorded in December 1977. A dry pocket occurred east of Lake Superior from North Bay to Earlton where total monthly precipitation was only 50 to 75 percent of normal. Wawa's 49 mm compares to a normal of 104 mm for their driest December in 10 years.

Reviewing the year, Ontario recorded the warmest mean temperatures since 1987, and the third warmest year in Toronto since 1840. Windsor's 1228 mm of precipitation for the year was the wettest since records began at Windsor Airport in 1940.

### Quebec

Southern Quebec was also mild with abundant precipitation. Record amounts of rainfall fell at Montreal's Dorval Airport, which recorded 106.5 mm breaking the old record of 81.3 mm set in December 1957. St. Hubert Airport's 113.7 mm broke the 1957 record of 96.5 mm, Mirabel's 109.1 mm broke the December 1982 record of 71.9 mm and Iles-de-la-Madeleine's 200 mm total broke the December 1937 record of 113.0 mm set at Grindstone Island. In the Magdalen Islands, the 247.6 mm of precipitation this month represents the greatest amount for December since 1893 when the total precipitation at the station on Grindstone Island had been 263.1 mm. The mild, wet weather did not please skiers.

New records for snowfall were established at La Grande Riviere Airport with 78.0 cm breaking the record of 65.3 cm set

in December 1982, and Natashquan recorded 164.0 cm, breaking the December 1983 record of 134.4 cm.

There were two noteworthy events during the month. On December 3rd and 4th, the first real snowstorm of the season hit Montreal, dumping 17 cm of snow, freezing precipitation and rain on the city. The storm affected most of southern Quebec with snowfalls ranging from 15 cm at Val d'Or to 48 cm at Baie Comeau. Wind gusts to 100 km/h were also reported at Sept-Iles. In the wake of the storm, the snow and rain combined with exceptionally high tides caused some flooding of the St. Lawrence River in the Quebec City area.

During the last week of the month, rain and mild weather created ice jams on the St. Francois River, threatening the municipalities of St. Charles de Drummond and Drummondville. Attempts at blasting the ice jams failed, but colder weather at the beginning of January 1991 alleviated the danger of major flooding.

### Maritimes

Record high rainfall and mild temperatures highlighted December's weather across the Maritimes. Rainfall in excess of 200 mm established highest December totals in all three provinces. For example, 299 mm at Sydney upset the old record of 269 mm set in 1906. At Shearwater, 250 mm was also the highest December rainfall for the Halifax-Dartmouth area since record began in 1871. Heavy rainfall caused record high surface water runoff at 13 locations in Atlantic Canada. The Canaan River in New Brunswick was 317% of normal and 36 percent higher than the previous record set in December of 1938. Snowfall, however,

was well below normal throughout most of the Maritimes. Many locations received less than 10 cm. At Shearwater, 2 cm was the lowest December snowfall amount since 1973.

Temperatures were 2 to 3 degrees above normal. A mild spell just prior to the Christmas holidays helped the mercury reach 18.1°C at Greenwood, coming within 0.2 degrees of tying the record high for December set in 1949.

The lack of snow has kept many snow removal budgets at a minimum, but at the same time curtailing many winter outdoor activities such as skiing. Some ski resorts were still not open by the end of the month. Considerable savings in oil were realized as high water levels at the Mactaquac Hydro dam proved beneficial in generating hydro electric power in New Brunswick.

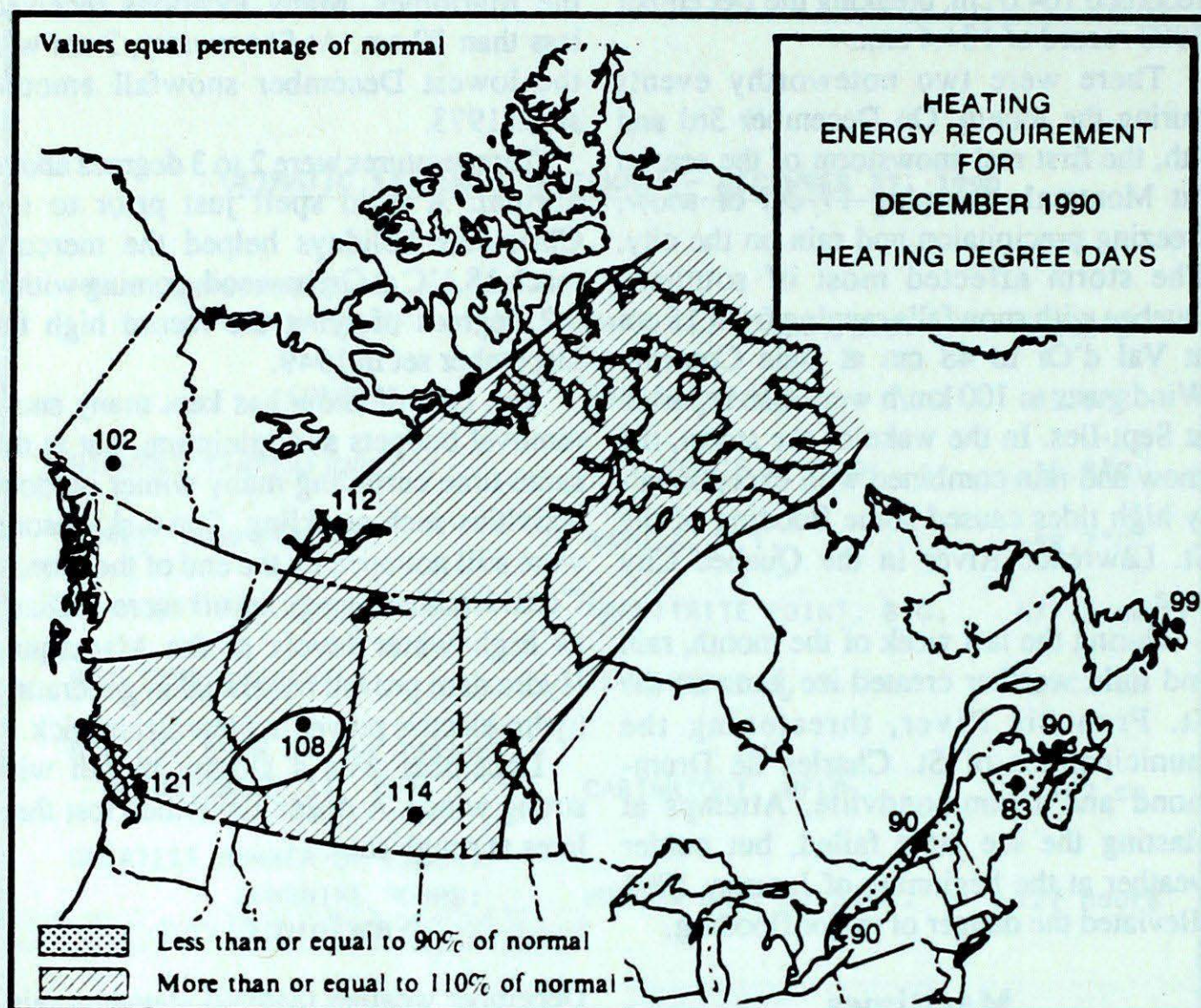
December was a stormy month with strong winds. A dozen fishermen lost their lives at rough seas.

### Newfoundland

December weather featured abundant rainfall and widely fluctuating temperatures in Newfoundland. Rainfall reached record high amounts in southwestern areas causing extensive road damage as rivers and streams overflowed their banks. Port-aux-Basques reported a record 354 mm. In contrast, scanty snowfall amounts were received. St. John's had a record low snowfall of 9.4 cm. Temperatures fluctuated widely. Both record high maximums and record low minimums were recorded. Whereas skies were cloudier than normal in Newfoundland, Labrador had generous amounts of sunshine during December.







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

	1990	1989	NORMAL
<b>BRITISH COLUMBIA</b>			
Kamloops	1607	1419	1533
Penticton	1507	1331	1414
Prince George	2383	1975	2303
Vancouver	1206	1110	1218
Victoria	1313	1226	1280

<b>YUKON TERRITORY</b>			
Whitehorse	3322	2703	3025
<b>NORTHWEST TERRITORIES</b>			
Iqaluit	4190	4030	4010
Inuvik	4391	4174	4188
Yellowknife	3835	3558	3382

<b>ALBERTA</b>			
Calgary	2218	1969	2168
Edmonton Mun	2363	2070	2197
Grande Prairie	2791	2262	2536

<b>SASKATCHEWAN</b>			
Estevan	2328	2238	2085
Regina	2411	2344	2257
Saskatoon	2611	2417	2352

<b>MANITOBA</b>			
Brandon	2553	2524	2337
Churchill	3753	3696	3534
The Pas	2850	2939	2637
Winnipeg	2299	2504	2214

<b>ONTARIO</b>			
Kapuskasing	2535	2753	2468
London	1407	1737	1461
Ottawa	1682	2066	1721
Sudbury	2004	2399	2015
Thunder Bay	2250	2515	2176
Toronto	1389	1737	1459
Windsor	1191	1529	1274

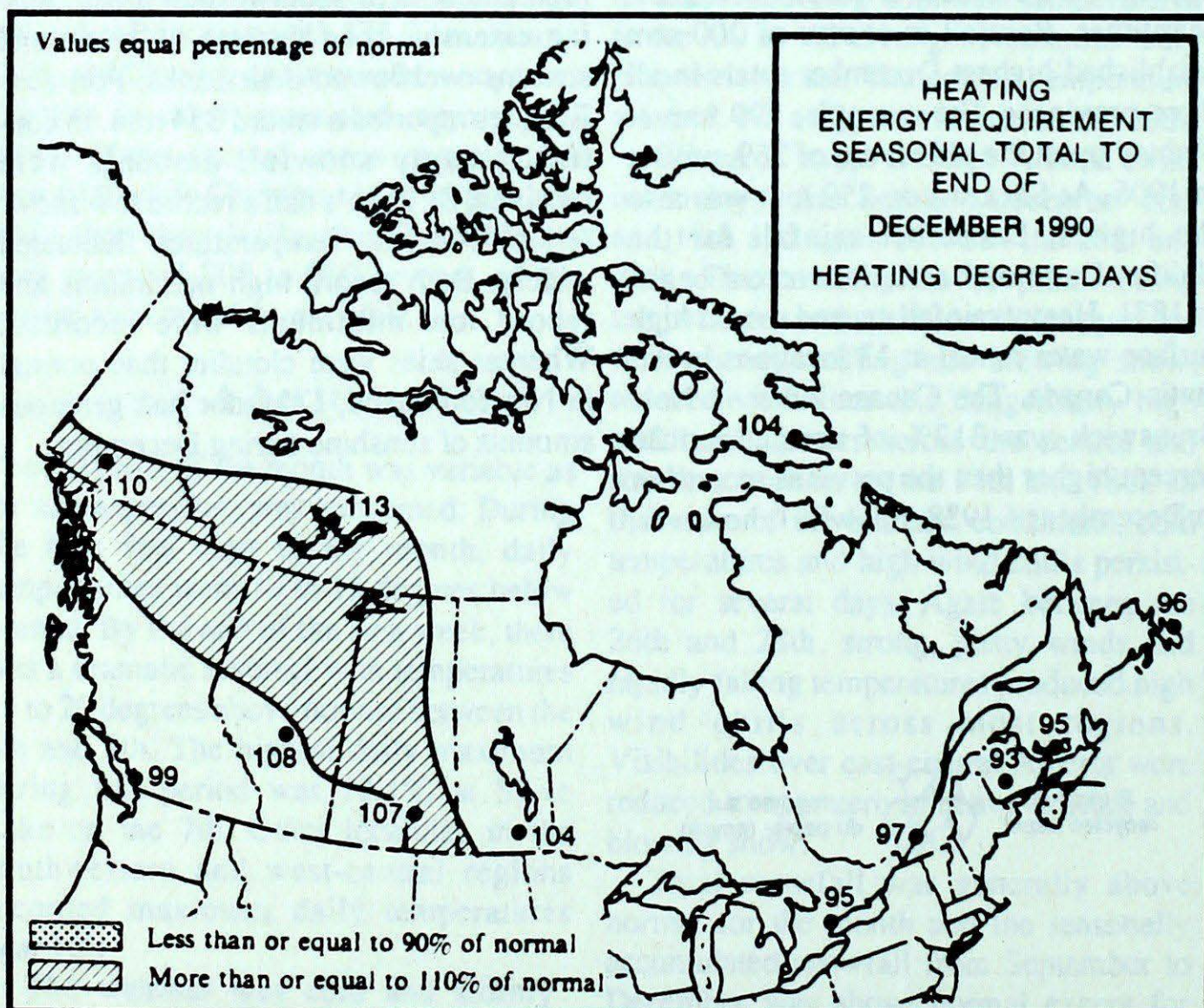
<b>QUÉBEC</b>			
Baie Comeau	2315	2536	2318
Montréal	1591	1987	1642
Québec	1884	2238	1942
Sept-Îles	2425	2600	2429
Sherbrooke	1815	2239	1981
Val-d'Or	2414	2710	2361

<b>NEW BRUNSWICK</b>			
Charlo	2042	1260	2056
Fredericton	1609	2099	1739
Moncton	1651	2000	1708

<b>NOVA SCOTIA</b>			
Sydney	1432	1777	1510
Yarmouth	1279	1670	1454

<b>PRINCE EDWARD ISLAND</b>			
Charlottetown	1529	1960	1603

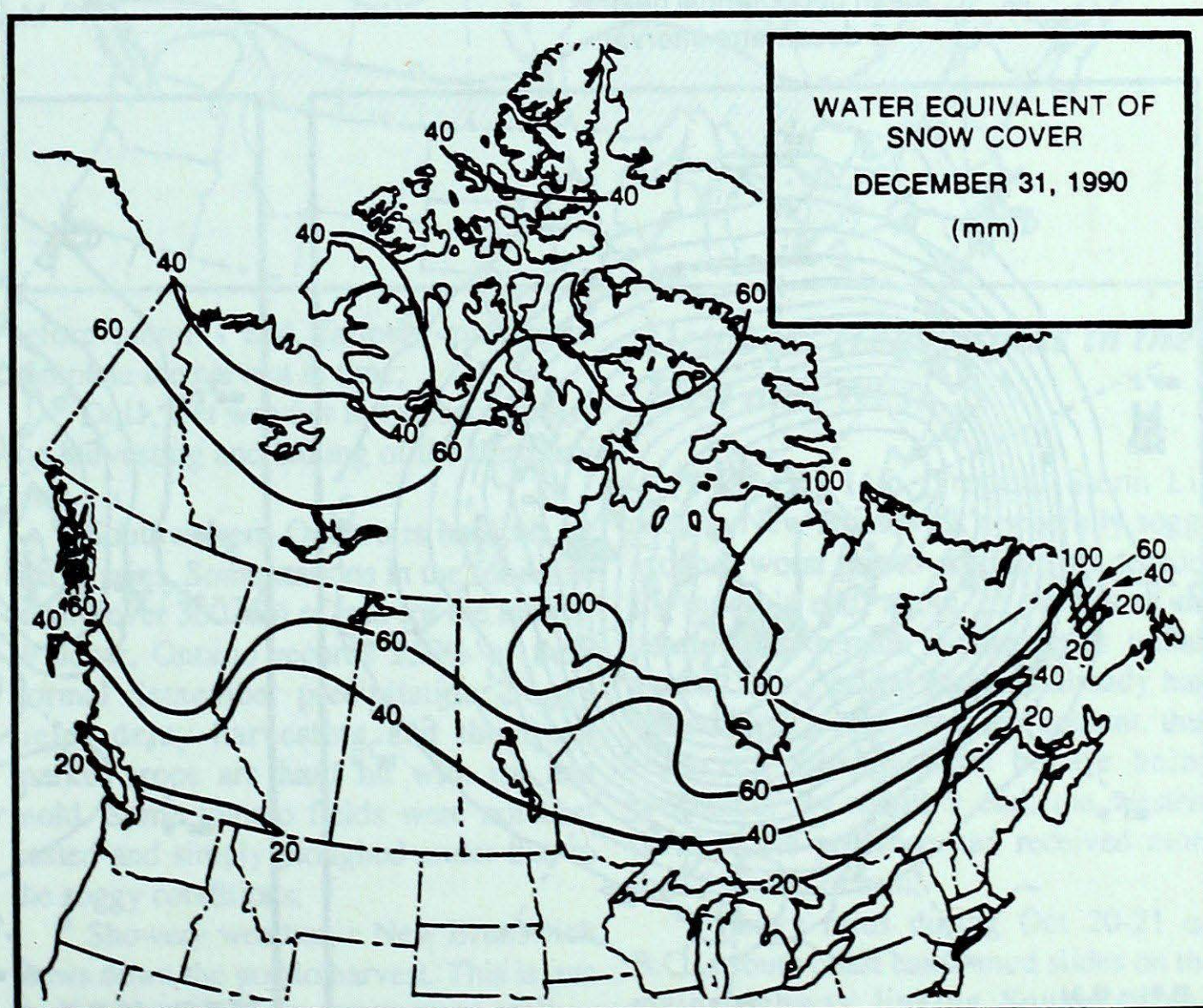
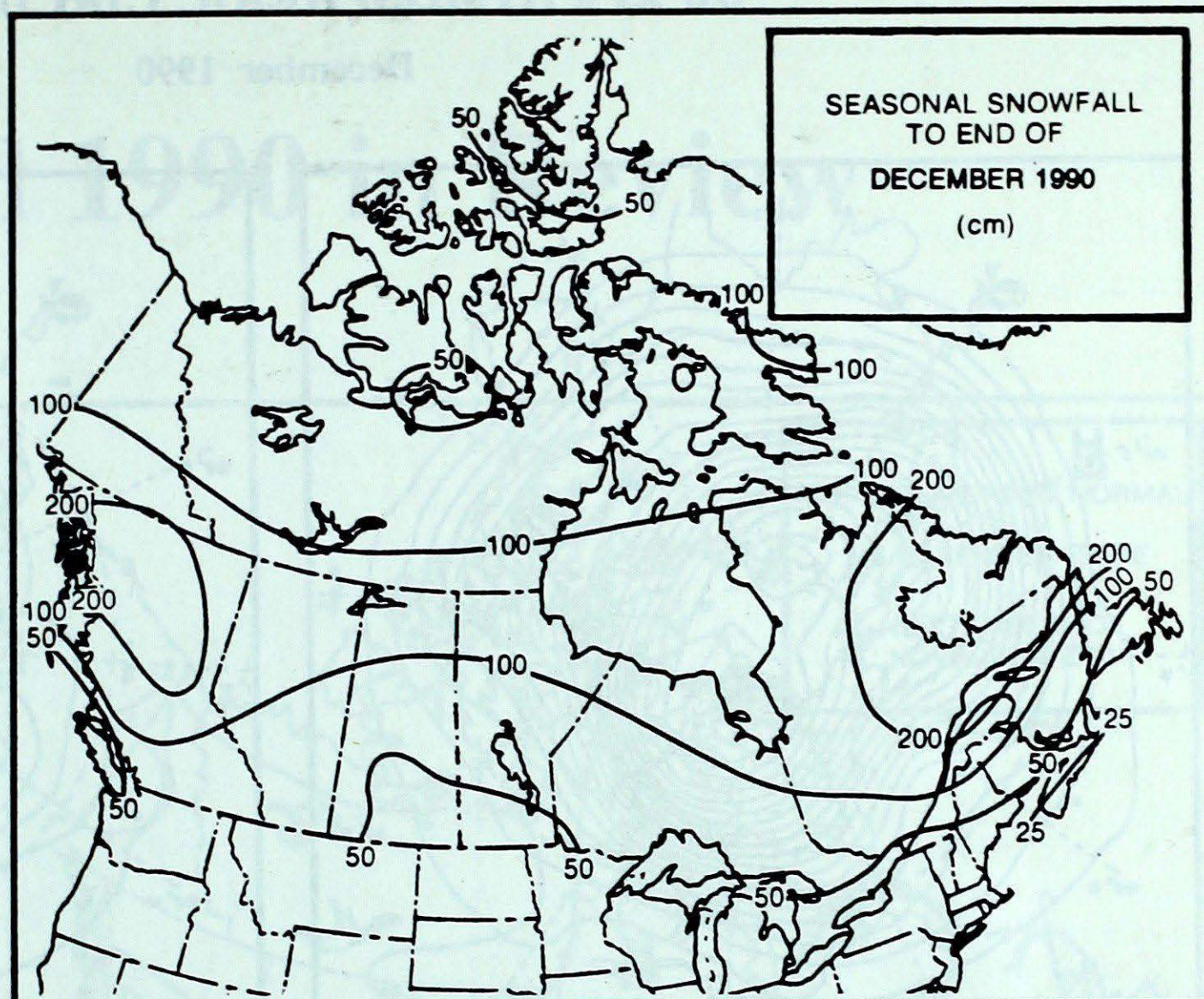
<b>NEWFOUNDLAND</b>			
Gander	1825	1970	1854
St. John's	1679	1818	1746





# SEASONAL SNOWFALL TOTALS (cm) TO END OF DECEMBER

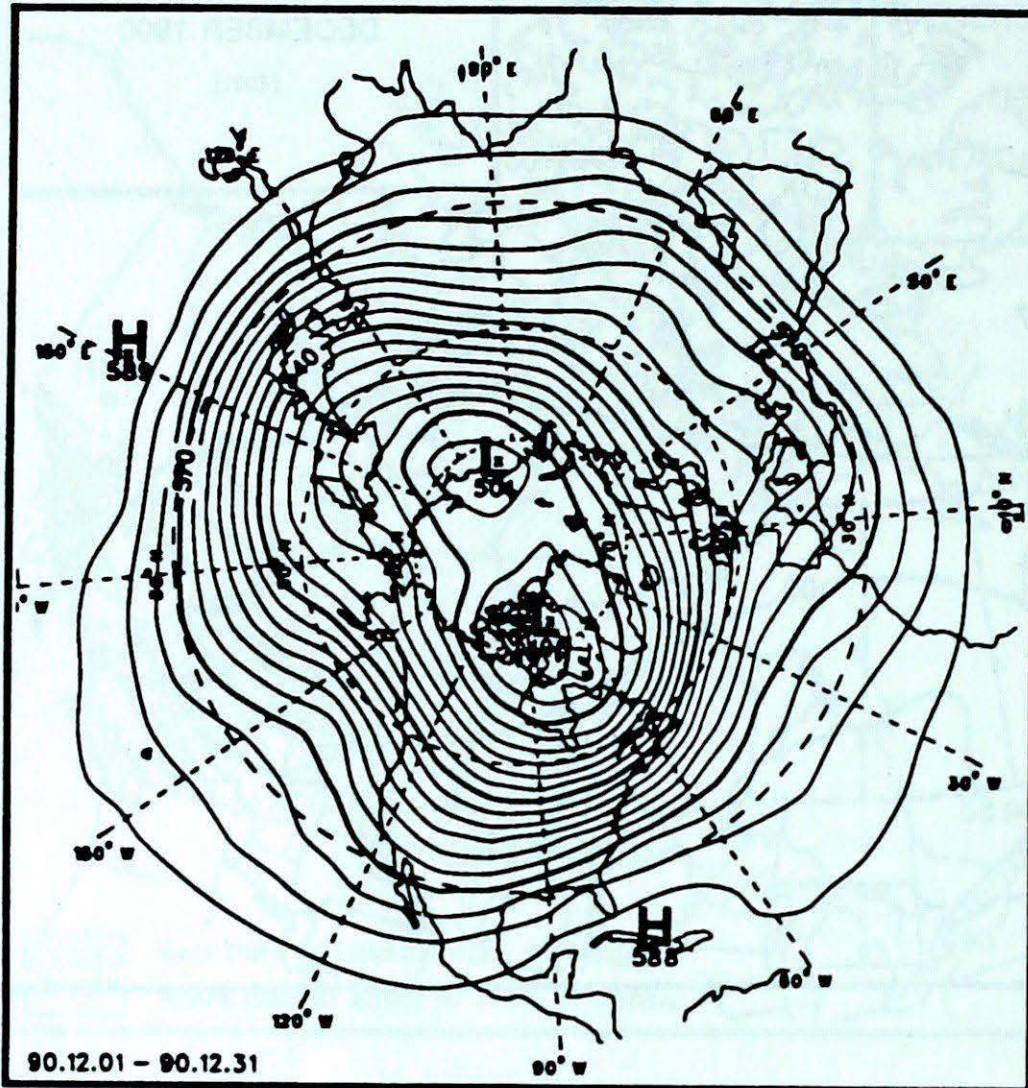
	1990	1989	NORMAL
<b>YUKON TERRITORY</b>			
Whitehorse	113	98	69
<b>NORTHWEST TERRITORIES</b>			
Clyde	69	*	106
Inuvik	54	107	96
Yellowknife	94	97	79
<b>BRITISH COLUMBIA</b>			
Kamloops	58	24	42
Port Hardy	49	0	20
Prince George	247	128	103
Vancouver	53	0	20
Victoria	23	0	15
<b>ALBERTA</b>			
Calgary	59	41	57
Edmonton Namao	65	43	54
Grande Prairie	174	55	77
<b>SASKATCHEWAN</b>			
Estevan	37	25	43
Regina	23	43	45
Saskatoon	42	33	45
<b>MANITOBA</b>			
Brandon	52	45	49
Churchill	178	85	100
The Pas	55	76	72
Winnipeg	36	88	48
<b>ONTARIO</b>			
Kapuskasing	114	190	139
London	59	118	78
Ottawa	56	102	82
Sudbury	105	133	96
Thunder Bay	98	63	80
Toronto	23	36	41
Windsor	36	46	40
<b>QUEBEC</b>			
Baie Comeau	209	71	134
Montréal	57	76	82
Québec	121	119	124
Sept-Îles	223	122	151
Sherbrooke	77	114	112
Val-d'Or	125	154	129
<b>NEW BRUNSWICK</b>			
Charlo	161	98	147
Fredericton	52	145	92
Moncton	56	168	97
<b>NOVA SCOTIA</b>			
Shearwater	3	61	47
Sydney	33	99	80
Yarmouth	6	125	52
<b>PRINCE EDWARD ISLAND</b>			
Charlottetown	46	130	97
<b>NEWFOUNDLAND</b>			
Gander	101	163	115
St. John's	41	87	91



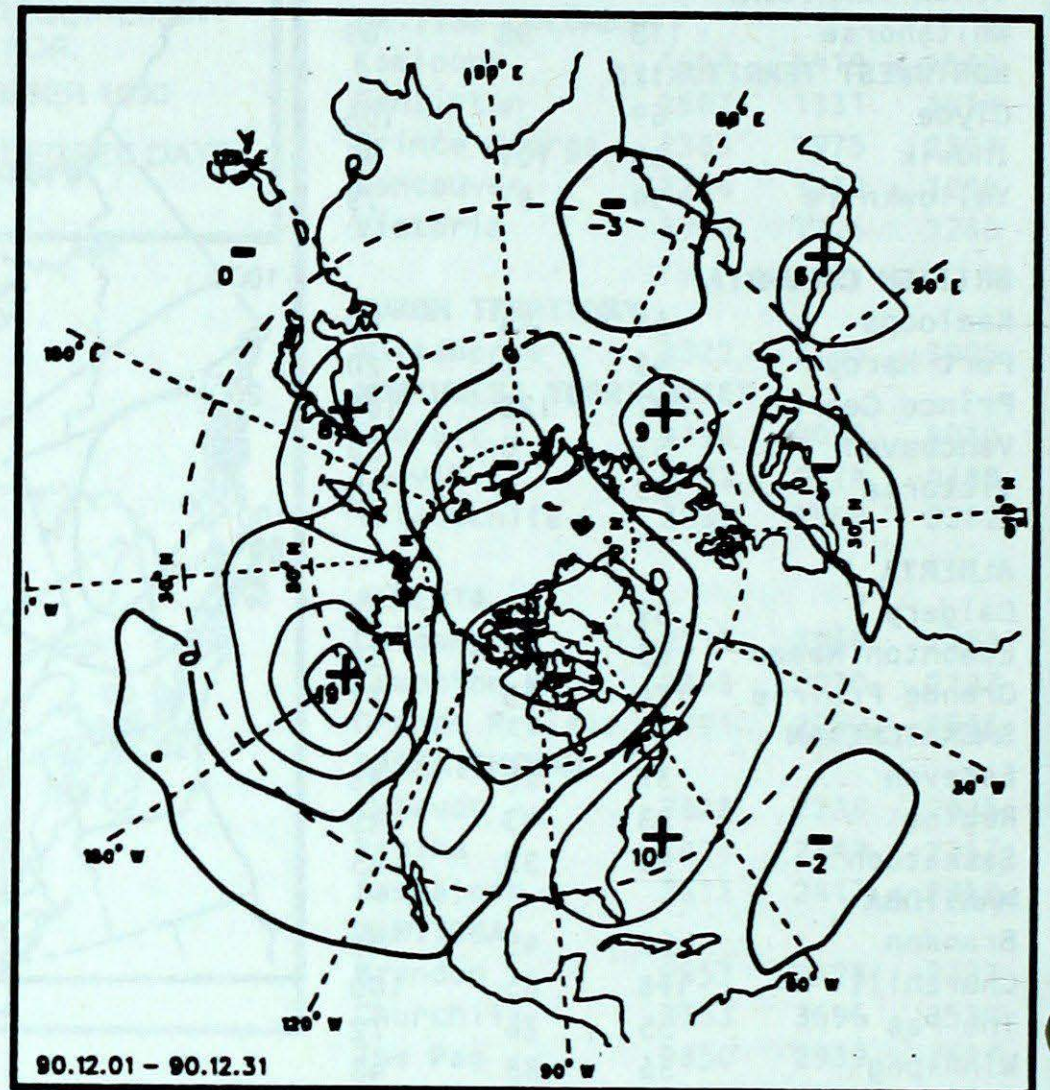


# 50-kPa ATMOSPHERIC CIRCULATION

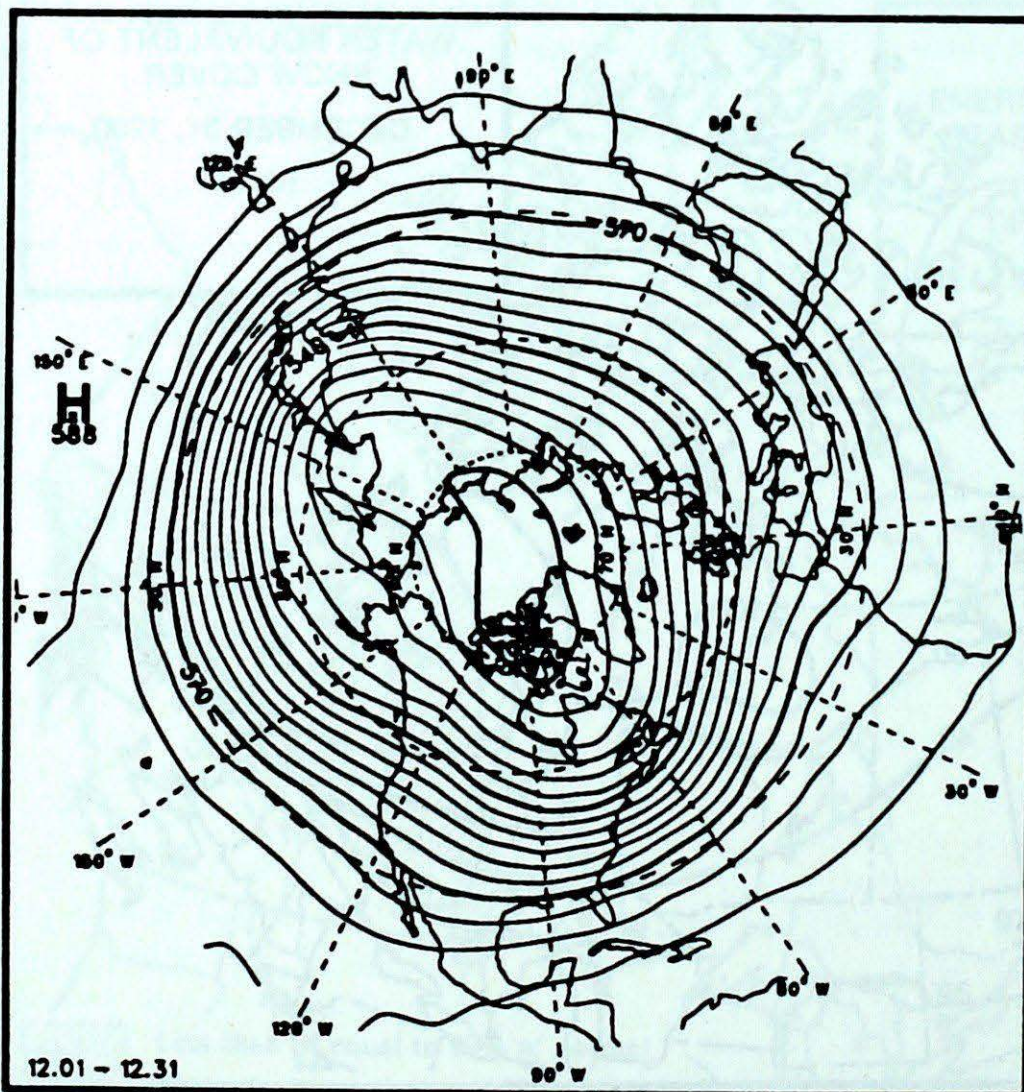
December 1990



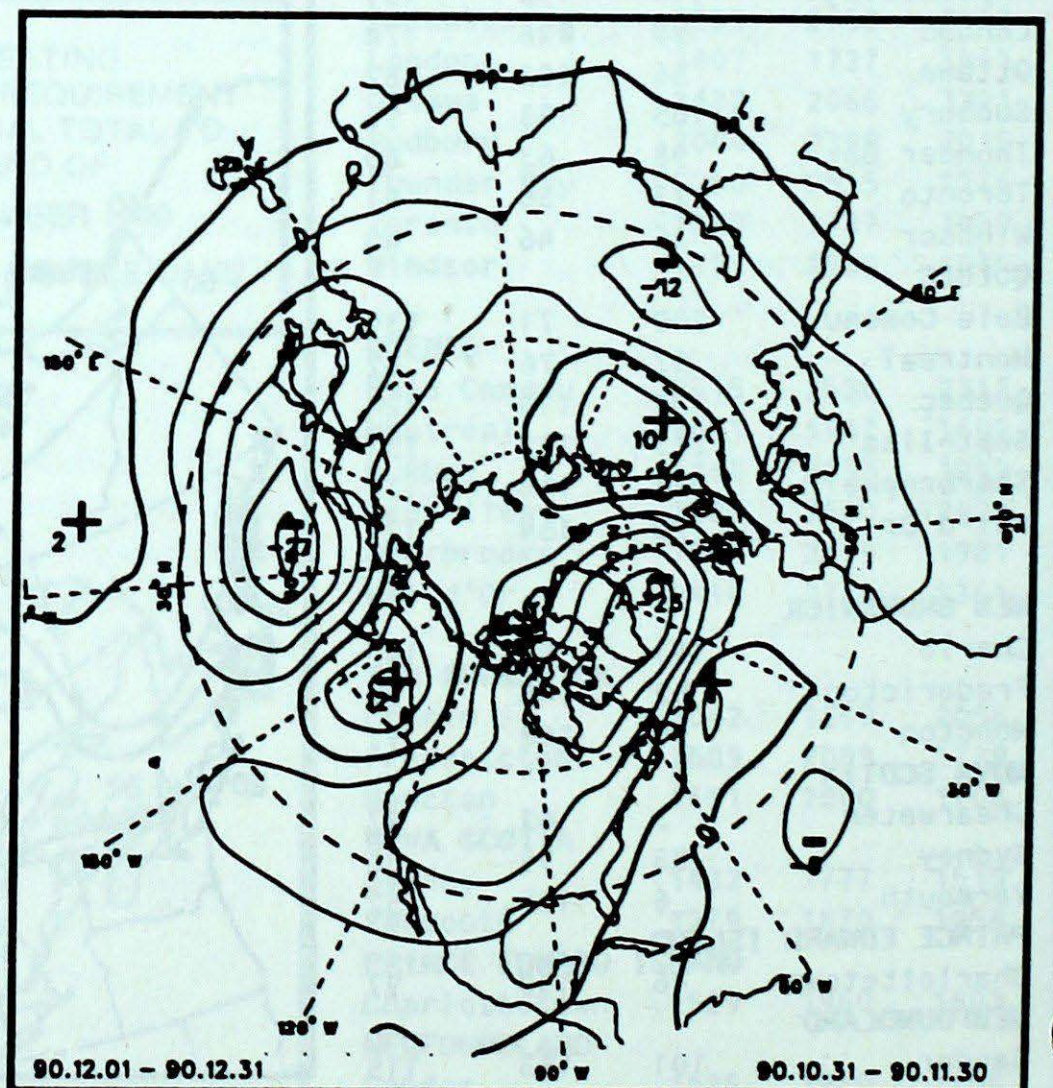
Mean geopotential heights  
- 5 decametre interval -



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 -



# Fall 1990 in Review

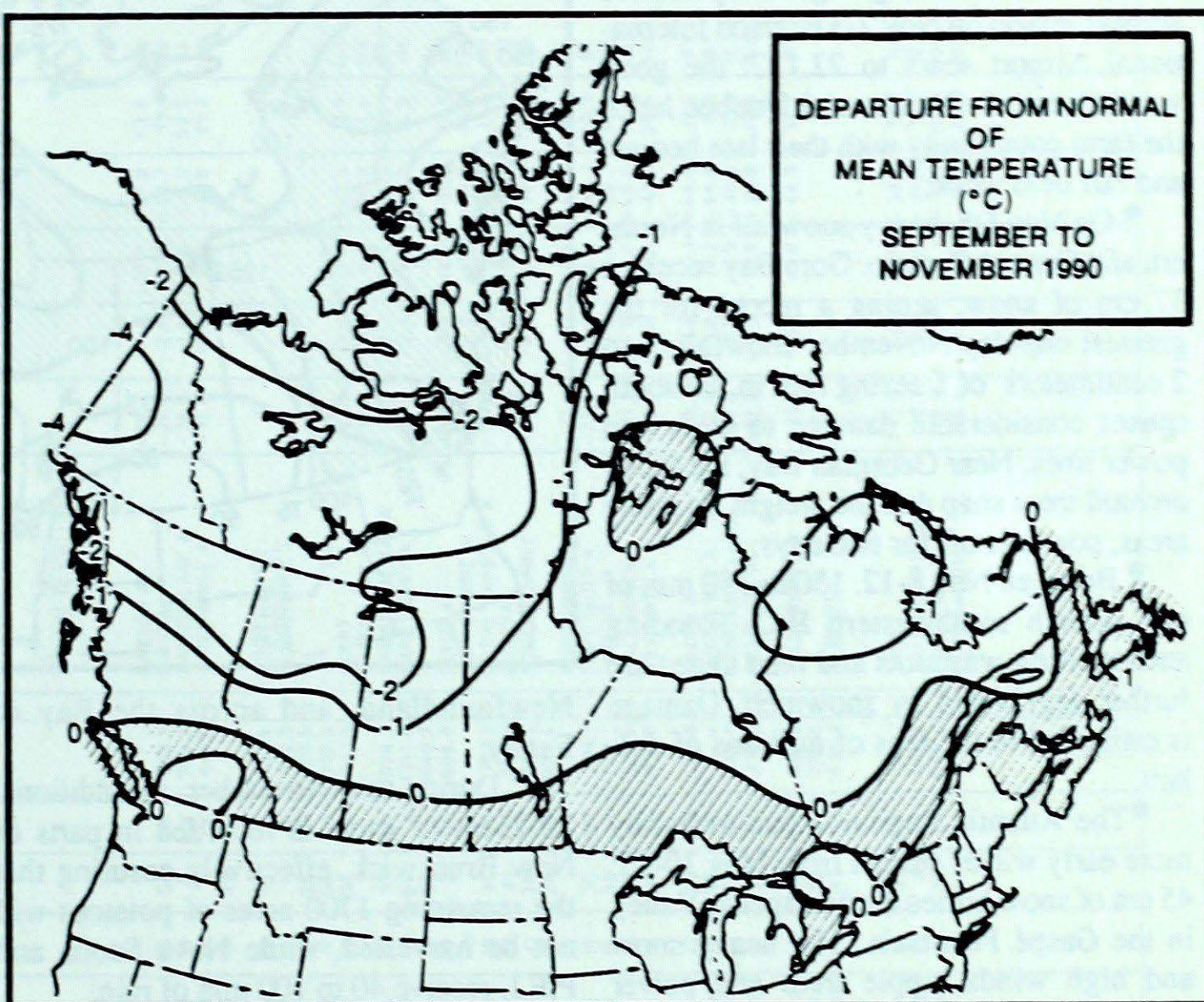
*Abnormally heavy rainfalls, particularly across British Columbia and the Atlantic region, and periods of warm spells over much of the country were the main climatic events this season.*

B.C. opened the season with a warm, dry September which gave way to above normal precipitation in October and two major deluges in November. In the growing regions of southwestern Ontario and in Quebec, the pattern during September and the first three weeks of October was much the reverse with dull, unsettled weather, hindering agricultural activity. Indian Summer across the eastern half of the country arrived during the last week of October and persisted into the first week of November, when it was abruptly superseded by snow and freezing rain in Ontario and Quebec.

The southern Prairies experienced exceptionally dry weather throughout the three-month period and thus there are concerns that given a winter of normal precipitation, the start of the 1991 growing season may be poor across the agricultural regions. The Maritimes suffered under consistently wetter-than-normal conditions which resulted in a poor potato crop.

## ***September: A poor month for farmers in the eastern half of the country...***

- The northern Prairies and B.C. still snow-free at month-end. Long stretches of warm and sunny conditions allowed more than 90 percent of a bumper grain crop to be harvested. Even in the Peace River District, where snow usually covers the fields



before month's end, farmers manage to complete the harvest in time;

- Dull, wet weather in Quebec hinders the harvesting and bailing of the third hay crop.

- Southwestern Ontario is hard hit by heavy rains. Some stations in the food belt record over 300 mm of rain for the month. Windsor, Ontario records 250% of their normal September precipitation. Soggy fields delay harvesting and the fresh market crops are hard hit with rot and mold. Some tomato fields were not harvested and simply ploughed under due to the soggy conditions;

- Showery weather in New Brunswick slows down the potato harvest. This is just the beginning of a devastating wet spell;

## ***October: Heavy rains in the East and West...***

- On Oct 14th, Tropical Storm Lili adds to New Brunswick's woefully soggy ground; worst potato crop in two decades. By month's end, about 25 percent of the potato crop remain in the fields unharvested. Many of the potatoes already harvested have a high moisture content, thus reducing storage time before being processed; By month's end, the western parts of the province had received more than 250 mm of rain;

- Heavy rains during Oct 20-21 on B.C.'s south coast cause mud slides on the main highway linking Squamish and Whistler with Vancouver. The road was



blocked for several days causing major problems for travellers;

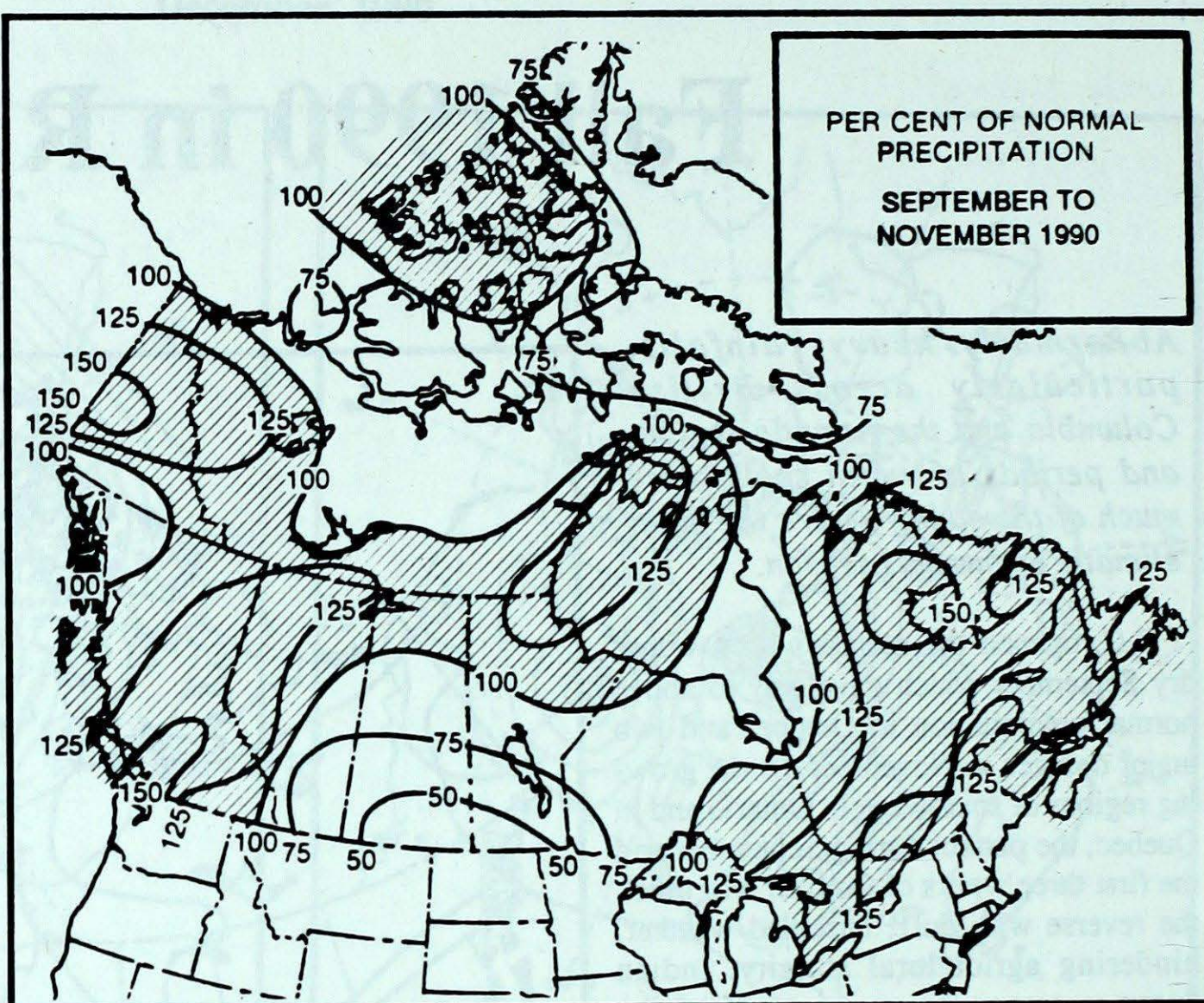
### ***November: Stormy weather continues to batter most of southern Canada...***

- Record-breaking high temperatures across Ontario on Nov 2-3 Pearson International Airport soars to 22.1°C. the good weather across Ontario and Quebec helps the farm community with their late harvest and fall field work;

- On Nov 5th, heavy snowfall in Northern and Central Ontario. Gore Bay receives 37 cm of snow, setting a record for the greatest one-day November snowfall; 1 to 2 centimeters of freezing rain in the south causes considerable damage to trees and power lines. Near Georgian Bay, ice-laden orchard trees snap due the weight. In some areas, power is off for two days;

- Between Nov 8-12, 150 to 350 mm of rain drench southwestern B.C. Flooding and resulting washouts and mud slides are further aggravated by snowmelt. Damage is estimated in the tens of millions of dollars.

- The Atlantic Region is pummeled by more early winter storms from Nov 10-13; 45 cm of snow buries the Matapedia Valley in the Gaspé Peninsula. The heavy snow and high winds topple trees and power lines, leaving thousands without power; flooding in P.E.I. and Nova Scotia with winds gusting to 130 km/h; 10-20 metre high waves cut ferry services to P.E.I.,



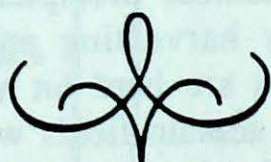
Newfoundland, and across the Bay of Fundy;

- During mid-November, an additional 20-25cm of snow is recorded in parts of New Brunswick, effectively ensuring that the remaining 1700 acres of potatoes will not be harvested, while Nova Scotia and P.E.I. receive 40 to 100 mm of rain;

- From Nov 21-25, a second Pacific frontal system brings monthly precipitation totals at Hope and Squamish, B.C., to over 800 mm, smashing all-time previous monthly records. Extensive snowfalls are

recorded in Alberta and the western Cordillera, with amounts up to 100 cm at some locations. Sunshine Village in Banff National Park received 231 cm of snow since the opening of the ski season. This was the best start to the season since the resort opened in 1935 in the central interior of B.C. Anahim Lake received 131 cm of snow on the 23rd, of which 94 cm fell in less than 12 hours. Avalanches became a major concern and in some areas the heavy snowfall severely restricted travel.

**A. Gergye, Canadian Climate Centre**





DECEMBER 1990

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	-0.6	-3.8	12.0	-14.9	71.1	323	259.0	114	29	20	52	96	574.7
ALERT BAY	1.6	-2.3	9.1	-8.5	24.8	151	277.9	119	0	18	0	*	509.3
AMPHITRITE POINT	3.6	-1.9	11.0	-6.8	14.9	131	477.8	106	0	24	0	*	447.0
BLUE RIVER A	-11.4	-3.6	5.4	-42.6	169.8	156	113.8	93	60	18	33	111	*
CAPE ST JAMES	4.2	-0.8	9.6	-5.7	4.2	36	140.2	73	0	20	50	*	427.6
CAPE SCOTT	3.4	-1.4	10.5	-5.9	*	*	*	*	0	24	*	*	452.9
CASTLEGAR A	-6.2	-4.2	7.3	-23.4	74.0	98	78.1	72	27	15	28	91	750.5
COMOX A	1.2	-2.5	9.5	-8.4	39.1	131	199.8	94	10	17	50	*	519.6
CRANBROOK A	-11.2	-4.6	4.3	-34.3	28.9	69	36.5	79	16	10	57	90	901.9
DEASE LAKE	-17.5	-1.5	3.8	41.4	87.4	211	65.8	196	86	14	37	90	1099.2
FORT NELSON A	-24.3	-3.3	-3.0	-35.9	42.2	156	33.6	157	50	11	64	*	1312.0
FORT ST JOHN A	-15.6	-2.3	7.0	-36.9	54.2	134	48.8	135	55	14	55	*	1040.7
HOPE A	-1.7	-3.3	10.6	-18.4	98.1	214	383.5	133	46	17	2	60	609.8
KAMLOOPS A	-6.6	-3.8	11.6	-31.2	40.8	136	42.8	133	18	10	47	99	762.2
KELOWNA A	-6.6	-3.5	7.1	-34.8	52.4	138	40.8	94	20	12	41	99	763.0
LYTTON	-4.0	-2.7	8.8	-25.1	13.8	34	62.6	82	15	11	34	77	680.2
MACKENZIE A	-13.8	-3.1	5.8	-41.0	93.5	117	94.5	111	84	12	28	76	985.4
PENTICTON A	-5.1	-4.7	8.2	-25.5	34.0	147	32.2	103	11	10	35	90	716.1
PORT ALBERNIA	0.7	-1.9	12.1	-13.2	37.4	131	291.5	86	8	16	30	*	537.2
PORT HARDY A	1.5	-2.0	11.9	-10.1	37.6	243	272.3	98	6	18	43	96	514.4
PRINCE GEORGE A	-11.5	-3.6	6.1	-40.5	135.8	257	100.9	177	54	16	31	66	916.0
PRINCE RUPERT A	0.6	-0.8	9.2	-12.8	63.0	173	499.0	176	14	22	39	123	538.8
PRINCETON A	-3.9	1.8	4.2	-39.7	135.7	302	98.5	188	79	13	38	*	*
REVELSTOKE A	-6.8	-2.6	5.0	-24.7	227.2	163	136.3	94	37	18	29	107	767.5
SANDSPIT A	2.6	-0.8	10.1	-6.7	8.0	47	181.0	102	0	19	52	131	478.9
SMITHERS A	-9.4	-1.8	6.5	-31.3	69.0	123	67.5	113	40	14	21	54	850.9
TERRACE A	-5.5	-2.1	5.4	-20.5	178.8	169	350.4	182	17	20	36	120	728.4
VANCOUVER INT'L A	0.8	-3.1	9.3	-13.9	52.2	298	202.2	111	22	23	47	98	535.2
VICTORIA INT'L A	1.8	-2.4	11.2	-11.7	23.4	179	177.2	113	0	17	55	105	504.1
VICTORIA MARINE	2.1	-2.6	9.6	-11.0	17.5	222	201.4	90	0	19	*	*	492.4
WILLIAMS LAKE A	-11.0	-3.3	4.4	-39.5	89.4	181	78.9	191	73	13	34	69	898.0

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 A	-28.3	*	-10.8	-47.8	43.4	*	30.2	*	53	*	*	*	*
MAYO A	-27.6	-3.4	-7.1	-48.7	39.1	160	24.0	107	51	*	*	*	*
WATSON LAKE A	-24.9	-1.4	2.6	-47.2	53.0	114	40.9	111	69	10	36	116	330.2
WHITEHORSE A	-17.6	-1.0	1.2	-41.8	49.2	203	32.6	161	36	11	34	150	1103.0
NORTHWEST TERRITORIES													
ALERT	-32.7	-2.7	-12.6	-43.5	8.7	105	7.5	95	*	49	*	*	1570.9
BAKER LAKE A	-32.4	-4.2	-9.6	-40.9	14.4	166	14.2	173	18	4	*	*	1579.2
CAMBRIDGE BAY A	-32.3	-2.3	-17.4	-38.3	8.2	130	7.2	133	17	2	0	*	1560.0
CAPE PARRY A	-27.5	-2.5	-4.2	-36.0	14.6	145	13.4	197	16	5	*	*	1412.3
CLYDE A	-26.9	-2.5	-4.2	-37.2	12.0	152	9.7	124	27	2	0	*	1391.6
COPPERMINE A	-30.1	-4.2	-5.6	-41.8	16.0	139	10.6	95	37	5	0	*	1492.0
CORAL HARBOUR A	-30.2	-4.7	-9.3	-41.9	11.6	107	11.6	114	20	7	9	32	1493.7
EUREKA	-35.8	-1.0	-7.3	-45.5	1.8	72	1.4	58	7	1	*	*	1667.6
FORT RELIANCE	-28.7	-4.8	-10.8	-39.8	27.8	146	19.8	132	36	2	*	*	1446.3
FORT SIMPSON A	-27.9	-3.1	-4.5	-40.4	22.5	94	21.0	114	46	7	24	82	1423.3
FORT SMITH A	-26.5	-4.9	-6.0	-44.1	20.9	84	18.1	82	55	6	37	*	1374.7
IQALUIT	-27.4	-5.6	0.4	-40.2	36.0	146	35.4	160	25	6	14	71	1408.0
HALL BEACH A	-31.2	-3.8	-10.0	-40.8	5.6	61	5.6	64	30	3	*	*	1527.3
HAY RIVER A	-25.7	-4.8	-4.1	-42.0	28.6	110	28.8	117	54	8	*	*	1353.3
INUVIK A	-28.7	-1.5	-2.1	-44.4	17.2	83	12.4	71	36	5	0	*	1446.5
MOULD BAY A	-32.6	-1.4	-14.2	-44.8	6.5	163	5.1	142	24	1	*	*	1568.9
NORMAN WELLS A	-27.0	-0.5	-0.9	-40.7	35.1	182	23.5	125	21	8	14	105	1395.3
RESOLUTE A	-32.6	-3.3	-13.6	-38.8	10.6	200	10.4	212	34	5	*	*	1568.2
YELLOWKNIFE A	-29.1	-5.1	-5.8	-44.9	36.7	167	31.7	174	42	8	37	175	1461.7
ALBERTA													
BANFF	-13.0	-4.1	4.5	-39.0	51.2	114	33.4	88	42	6	*	*	*
CALGARY INT'L A	-10.7	-2.9	11.8	-34.4	17.2	83	11.7	73	0	4	76	78	887.5
COLD LAKE A	-19.6	-5.4	8.7	-41.7	36.0	136	27.7	112	24	9	77	102	1166.7
CORONATION A	-15.4	-3.6	9.3	-38.7	24.6	109	17.0	87	4	6	84	100	1034.6



## DECEMBER 1990

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									
EDMONTON INT'L A	-14.4	-1.3	7.3	-36.1	27.2	105	22.4	102	16	9	73	94	1004.7
EDMONTON MUNICIPAL	-13.1	-2.7	8.8	-34.1	33.8	*	30.2	122	30	9	67	86	963.4
EDMONTON NAMAO A	-14.0	-2.2	7.6	-35.5	24.6	91	23.7	90	16	6	*	*	993.3
EDSON A	-14.9	-2.0	10.5	-42.6	36.2	162	21.4	88	44	9	64	97	1019.6
FORT CHIPEWYAN A	-25.4	-4.9	2.0	-46.5	35.4	129	37.0	176	85	*	*	*	*
FORT MCMURRAY A	-21.4	-4.4	8.4	-41.4	26.4	90	18.7	75	25	6	80	129	1223.0
GRANDE PRAIRIE A	-17.2	-3.8	9.5	-47.2	72.7	212	52.8	165	56	12	53	*	1091.5
HIGH LEVEL A	-25.6	-4.3	4.8	-45.7	35.9	116	32.9	136	52	6	40	109	573.3
JASPER	-13.1	-3.9	7.4	-39.6	36.4	111	31.8	97	37	8	42	*	964.3
LETHBRIDGE A	-10.2	-4.4	10.3	-36.5	32.0	125	25.3	116	9	8	89	*	872.2
MEDICINE HAT A	-11.4	-3.8	9.3	-36.2	22.6	119	21.5	132	8	5	90	103	913.0
PEACE RIVER A	-18.3	-3.0	5.9	-39.6	25.6	98	25.2	117	22	8	*	*	1125.7
RED DEER A	-13.9	-2.5	9.7	-38.5	33.6	157	31.3	155	20	12	*	*	990.1
ROCKY MTN HOUSE A	-14.4	-5.3	11.3	-43.3	45.4	182	29.0	130	34	10	*	*	1003.8
SLAVE LAKE A	-16.5	-1.7	12.4	-41.0	21.4	68	19.2	59	16	7	75	130	1069.1
WHITCOURT A	-15.2	-2.1	11.2	-41.3	54.3	197	29.4	110	22	8	*	*	1029.2
SASKATCHEWAN													
BROADVIEW	-17.3	-3.3	6.1	-39.0	28.6	136	24.5	123	7	6	113	117	1106.3
COLLINS BAY	-21.9	*	5.9	-47.0	29.8	*	16.4	*	*	***	*	*	*
CREE LAKE	-24.1	-2.8	2.5	-45.7	14.8	46	16.0	73	51	5	60	108	1306.6
ESTEVAN A	-16.2	-5.1	5.5	-39.3	25.8	132	20.5	105	9	5	86	84	1060.4
HUDSON BAY A	-20.9	*	4.4	-42.4	28.0	*	20.2	*	19	5	127	*	1205.6
KINDERSLEY	-16.6	-3.8	8.1	-39.6	50.2	244	34.6	179	17	7	81	*	1060.1
LA RONGE A	-22.1	-4.5	5.4	-43.8	13.2	48	13.2	59	41	4	*	*	1243.1
MEADOW LAKE A	-21.9	*	5.9	-47.0	29.8	*	16.4	*	22	6	88	*	1237.7
MOOSE JAW A	-14.8	-4.1	10.0	-39.1	36.0	142	29.1	137	22	9	79	91	1016.8
NIPAWIN A	-21.7	*	5.6	-43.7	21.7	*	13.1	*	54	8	120	*	1231.5
NORTH BATTLEFORD A	-19.1	-5.0	7.0	-43.6	26.4	115	21.1	100	19	6	*	*	1150.4
PRINCE ALBERT A	-21.7	-5.2	5.0	-44.0	16.6	69	16.4	75	23	5	115	162	1230.0
REGINA A	-17.2	-4.4	9.2	-39.9	18.2	88	16.3	98	10	5	92	109	1091.3
SASKATOON A	-18.6	-4.5	6.3	-39.1	15.2	71	12.8	64	7	7	*	*	1134.2
SWIFT CURRENT A	-14.4	-4.5	11.6	-38.7	33.9	164	32.7	164	23	9	78	92	1003.9
YORKTON A	-19.6	-5.0	5.6	-42.2	28.6	120	27.1	120	17	8	107	123	1157.8
MANITOBA													
BRANDON A	-18.9	-4.5	4.3	-39.7	43.0	219	40.6	213	26	9	99	*	1150.0
CHURCHILL A	-28.4	-6.2	-8.9	-39.8	42.3	186	33.5	160	30	9	63	115	1440.1
DAUPHIN A	-17.4	-3.1	7.7	-37.4	34.9	134	25.3	104	10	9	101	108	1096.8
GILLAM A	-27.8	-4.3	-5.8	-44.2	60.3	190	48.4	155	45	11	*	*	1421.7
GIMLI	-17.2	*	5.1	-36.3	31.4	*	23.1	*	14	7	102	100	1091.2
ISLAND LAKE	-22.9	-2.2	2.2	-40.2	22.8	39	15.6	47	30	6	*	*	1248.0
LYNN LAKE A	-26.5	-4.7	*	-31.7	31.5	95	22.6	89	30	8	71	115	1378.3
NORWAY HOUSE A	-22.8	*	2.6	-40.6	20.6	*	12.8	*	25	4	*	*	1263.6

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									
PORTAGE LA PRAIRIE	-15.8	-2.7	7.4	-33.7	51.9	220	37.1	169	8	12	*	*	1047.9
THE PAS A	-21.6	-4.0	4.3	-39.8	14.8	52	8.2	37	14	4	120	162	1227.6
THOMPSON A	-26.9	-4.9	-0.8	-47.6	22.4	50	19.8	62	60	7	97	143	1389.3
WINNIPEG INT'L A	-16.4	-2.4	5.4	-35.3	27.1	131	24.1	126	15	9	119	128	1064.0
ONTARIO													
BIG TROUT LAKE	-25.7	-5.8	1.4	-37.5	29.2	92	26.4	90	35	9	*	*	1270.5
EARLTON A	-10.5	2.1	5.1	-33.0	39.8	74	42.2	75	9	9	*	*	882.3
GERALDTON A	-17.3	*	4.6	-40.8	51.0	*	40.0	*	35	7	*	*	1089.0
GORE BAY A	-3.4	2.1	7.9	-20.0	84.6	145	70.4	94	17	14	*	*	143.3
HAMILTON RBG	0.2	*	14.1	-14.5	25.4	*	155.2	*	2	12	89	*	*
HAMILTON A	-1.0	2.4	13.1	-16.6	33.8	99	157.3	201	5	12	*	*	586.4
KAPUSKASING A	-14.5	0.2	5.9	-35.6	39.5	74	39.7	74	24	12	*	*	1006.9
KENORA A	-16.7	-2.6	5.4	-37.3	30.0	98	28.2	90	24	9	*	*	1071.9
KINGSTON A	-1.2	3.8	9.5	-16.2	33.8	71	174.8	156	3	12	74	97	595.3
LANSDOWNE HOUSE	*	*	*	*	*	*	*	*	*	*	*	*	*
LONDON A	-1.4	2.1	11.7	-17.2	48.0	94	151.4	173	3	15	71	128	600.7
MOOSONEE	-16.7	-0.7	5.7	-37.7	57.6	144	42.6	105	40	12	*	*	1076.4
MUSKOKA A	-4.8	2.3	8.9	-20.1	102.8	140	118.1	121	15	20	*	*	704.8
NORTH BAY A	-7.7	2.0	7.0	-26.6	55.8	92	52.0	69	14	11	68	88	797.7
OTTAWA INT'L A	-5.5	2.2	7.6	-19.1	48.6	86	121.5	151	4	12	76	96	728.7
PETAWAWA A	-8.4	1.8	6.5	-28.7	51.6	95	53.0	69	18	12	*	*	818.1
PETERBOROUGH A	-3.1	3.3	10.6	-16.1	42.1	109	137.6	172	2	14	*	*	654.3
PICKLE LAKE	-19.9	-2.2	2.6	-36.0	37.7	92	33.0	90	21	7	*	*	1173.6
RED LAKE A	-18.6	-2.5	3.4	-39.2	32.0	101	28.6	90	29	9	98	*	1134.5
ST CATHARINES A	0.6	2.1	14.3	-13.4	20.0	70	160.8	202	2	13	85	*	539.0
SARNIA A	-0.8	1.8	11.8	-18.0	26.1	69	85.7	118	3	10	85	129	582.2
SAULT STE MARIE A	-5.6	1.1	7.4	-22.6	80.1	106	68.5	86	9	14	54	87	732.2
SIOUX LOOKOUT A	-17.2	-2.1	4.0	-39.4	48.1	140	48.1	143	42	9	*	*	1086.3
SUDBURY A	-7.9	2.3	4.8	-26.0	55.8	98	54.4	84	9	11	67	79	802.9
THUNDER BAY A	-12.3	-1.2	7.5	-33.0	50.4	109	48.4	116	30	7	101	109	940.1
TIMMINS A	-12.4	1.6	5.2	-37.8	63.2	89	62.8	99	28	13	*	*	941.0
TORONTO	0.7	*	11.8	-12.7	30.0	*	131.9	*	1	13	*	*	535.2
TORONTO INT'L A	-1.0	2.5	13.5	-15.5	28.6	88	112.7	174	2	11	*	*	587.4
TORONTO ISLAND A	3.8	*	10.4	-12.5	22.4	78	112.8	*	1	11	*	*	543.9
TRENTON A	-1.9	2.6	9.6	-17.9	28.0	60	145.8	176	2	11	*	*	615.9
WATERLOO WELLINGTON	-2.1	2.2	11.7	-17.5	31.0	83	129.2	167	2	11	*	*	622.2
WAWA A	-9.3	*	4.8	-32.0	75.6	*	49.0	*	26	15	*	*	845.4
WIARTON A	-1.9	1.8	12.3	-15.0	96.3	104	116.9	109	9	17	50	108	617.7
WINDSOR A	0.2	2.1	12.1	-15.1	36.4	127	138.6	191	4	12	*	*	551.4



DECEMBER 1990

STATION	Temperature C				Snowfall (cm)	% of Norml 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									
QUEBEC													
BAGOTVILLE A	-10.4	1.7	4.2	-32.5	109.1	129	104.3	132	55	16	*	*	880.1
BAIE COMEAU A	-10.1	0.2	4.9	-33.8	120.1	156	112.0	107	60	13	103	122	871.1
BLANC SABLON A	-9.4	-1.8	3.5	-29.6	115.2	137	129.6	87	50	18	79	*	710.0
CHIBOUGAMAU CHAPAIS	-13.8	*	2.9	-37.2	87.4	*	73.4	*	48	19	52	67	987.2
GASPE A	-7.6	*	7.4	-28.2	138.1	*	160.2	*	33	13	84	*	793.9
INUKJUAQ A	-20.0	-2.1	-4.8	-32.6	53.0	228	49.3	219	34	10	*	*	*
KUUJJUAQ A	-22.5	-4.1	-0.6	-36.7	51.6	131	51.6	135	59	14	82	152	1255.3
KUUJJUARAPIK A	-17.9	-2.0	0.7	-35.3	36.9	88	36.7	87	19	16	*	*	1112.8
LA GRANDE IV A	-19.5	*	0.7	-37.3	63.2	*	53.0	*	86	15	42	*	1176.4
LA GRANDE RIVIERE A	-18.5	*	0.1	-35.4	78.0	*	64.8	*	40	15	53	*	1146.6
MANIWAKI	-9.0	1.0	6.0	-28.5	56.1	97	75.3	105	16	13	67	96	836.8
MATAGAMI A	-14.8	*	2.0	-35.5	67.2	*	59.4	*	33	14	44	66	1014.6
MONT JOLI A	-7.2	1.1	4.6	-22.9	104.4	116	123.0	130	30	11	71	120	746.6
MONTREAL INT'L A	-4.1	2.8	7.7	-18.8	40.9	70	147.9	171	9	11	78	98	685.8
MONTREAL MIRABEL I/	-6.4	*	7.7	-23.0	61.0	*	173.4	*	20	12	97	*	757.2
NATASHQUAN A	-9.9	-0.7	2.7	-30.2	164.0	243	179.0	164	62	18	93	106	866.1
QUEBEC A	-7.3	1.7	8.3	-25.1	70.2	82	131.4	116	40	15	93	122	784.0
ROBERVAL A	-9.7	3.0	5.0	-31.6	75.4	95	78.0	97	26	11	3	*	875.2
SCHEFFERVILLE A	-21.5	-2.5	-2.0	-39.2	64.4	128	55.6	113	71	16	71	118	1223.8
SEPT-ILES A	-12.0	-1.0	2.4	-34.3	129.0	145	113.1	108	*	*	*	*	92.9
SHERBROOKE A	-5.3	3.3	11.7	-22.8	50.8	68	129.7	134	3	14	63	*	721.7
STE AGATHE DES MONT	-8.1	2.5	7.3	-26.1	77.6	84	134.8	110	24	16	61	79	808.3
ST HUBERT A	-4.2	2.8	7.3	-16.9	55.7	*	178.0	178	5	11	85	*	688.9
VAL D'OR A	-11.8	1.4	5.1	-33.9	52.4	82	52.2	75	21	13	63	74	924.4
NEW BRUNSWICK													
CHARLO A	-7.8	0.9	4.8	-25.3	102.2	111	121.6	105	62	13	98	107	802.4
CHATHAM A	-5.3	1.6	8.9	-25.9	56.7	82	135.5	126	8	12	96	98	721.1
FREDERICTON A	-2.9	3.6	14.8	-16.7	34.6	50	192.8	164	3	14	104	*	646.2
MONCTON A	-2.9	2.5	16.3	-17.9	37.5	52	209.7	173	3	17	100	110	648.1
SAINT JOHN A	-1.5	3.3	11.4	-16.3	13.2	21	293.2	177	1	16	93	101	604.2

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									
NOVA SCOTIA													
GREENWOOD A	0.8	3.1	18.1	-12.7	8.0	13	187.0	156	0	16	*	*	533.5
HALIFAX INT'L A	-0.4	2.5	12.4	-14.6	8.5	16	203.5	113	0	19	*	*	569.8
SABLE ISLAND	3.9	1.3	11.4	-7.6	5.4	29	163.5	113	0	13	63	116	437.9
SHEARWATER A	0.7	2.2	11.9	-13.1	2.2	6	253.2	171	0	17	84	90	534.3
SYDNEY A	-0.3	1.5	13.2	-13.5	15.5	24	314.7	192	0	17	73	109	565.6
YARMOUTH A	1.9	2.2	12.4	-10.1	4.6	11	154.8	109	0	12	85	137	498.9
PRINCE EDWARD ISLAND													
CHARLOTTETOWN A	-1.7	2.2	14.5	-16.1	38.4	53	259.4	201	2	*	*	*	609.9
SUMMERSIDE A	-2.2	1.8	11.4	-15.6	35.8	59	248.0	231	2	17	66	90	626.0
NEWFOUNDLAND													
BONAVISTA	-0.9	0.6	12.8	-17.3	7.6	20	87.4	91	0	15	*	*	585.6
BURGEO	-1.3	0.5	9.2	-16.8	12.7	25	261.7	140	0	16	*	*	596.6
CARTWRIGHT	-11.2	-2.1	4.0	-30.7	90.4	133	91.4	122	102	13	76	124	906.4
CHURCHILL FALLS A	-19.6	-0.8	-0.7	-38.1	81.2	131	73.8	102	95	11	95	115	1166.9
COMFORT COVE	-3.6	0.5	11.5	-20.8	31.8	44	99.0	91	2	11	***	*	*
DANIELS HARBOUR	-4.2	-0.3	0.4	-8.5	84.2	121	205.0	225	24	23	18	59	832.5
DEER LAKE A	-4.0	1.2	11.7	-18.9	78.0	90	130.0	116	10	20	*	*	683.6
GANDER INT'L A	-3.4	0.4	11.1	-21.1	31.4	44	96.8	89	0	9	71	103	663.2
GOOSE A	-15.8	-2.8	2.3	-32.9	88.2	120	79.4	109	76	13	89	121	1048.0
MARY'S HARBOUR	-10.6	*	2.5	-31.2	94.0	146	101.4	123	65	14	*	*	889.4
PORT AUX BASQUES	-2.7	-1.0	7.7	-13.4	56.6	104	354.5	228	5	24	31	*	578.8
ST ANTHONY	-8.3	-0.6	2.0	-29.4	121.1	193	140.3	127	59	*	*	*	81.2
ST JOHN'S A	-1.1	0.4	15.3	-15.6	9.4	14	122.2	76	0	18	47	82	592.7
ST LAWRENCE	-0.5	0.5	11.7	-12.7	6.6	20	170.6	137	0	15	*	*	572.1
STEPHENVILLE A	-2.0	0.6	10.2	-16.2	64.1	79	245.3	215	4	23	20	62	620.5
WABUSH LAKE A	-19.7	-1.1	-2.2	-38.3	90.8	114	60.7	82	60	12	95	140	1158.7



