Environment Canada Environnement Canada

Climatic Perspectives

Monthly Review JANUARY - 1991 Vol. 13

CLIMATIC HIGHLIGHTS

Record warmth replaced by record cold in western Canada

The new year began with frigid Arctic air covering most of western Canada. Temperatures in the Yukon dropped to the minus fifties, while minus forty minimum temperature readings were common place across the Prairies. Numerous low temperature records fell. In the Territories, winter ice roads opened up, allowing the transportation of goods and supplies into the remote mining camps.

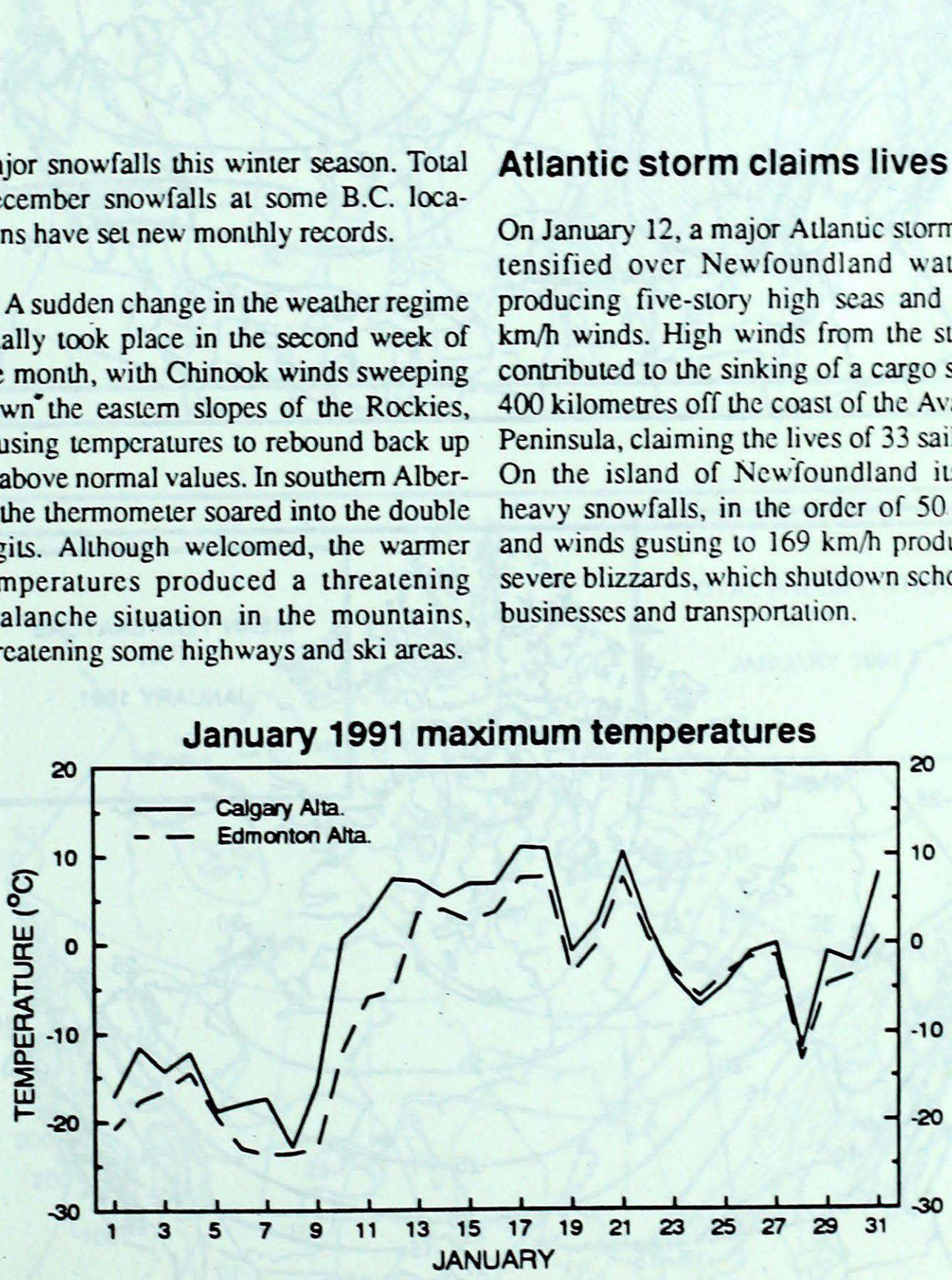
In southern B.C., it is feared that the prolonged cold spell that started around Christmas has damaged many fruit trees, especially the soft fruit varieties. The cold weather was accompanied by heavy snowfalls, which have increased the B.C. mountain snow pack to record levels along the western Cordillera. This in turn might result in a heavy runoff this coming spring. Beginning on January 6, 20 to 40 centimetres of heavy wet snow buried the B.C. lower mainland and Vancouver Island by the second day. Even Victoria did not escape the white stuff as huge piles of snow lined many of the streets. Although there were record snowfalls for individual days, no new all-time maximum one-day snowfalls records have been established. Southern B.C. was already hit by three major snowfalls this winter season. Total December snowfalls at some B.C. locations have set new monthly records.

A sudden change in the weather regime finally took place in the second week of the month, with Chinook winds sweeping down the eastern slopes of the Rockies, causing temperatures to rebound back up to above normal values. In southern Alberta the thermometer soared into the double digits. Although welcomed, the warmer temperatures produced a threatening avalanche situation in the mountains, threatening some highways and ski areas.

Atlantic storm claims lives

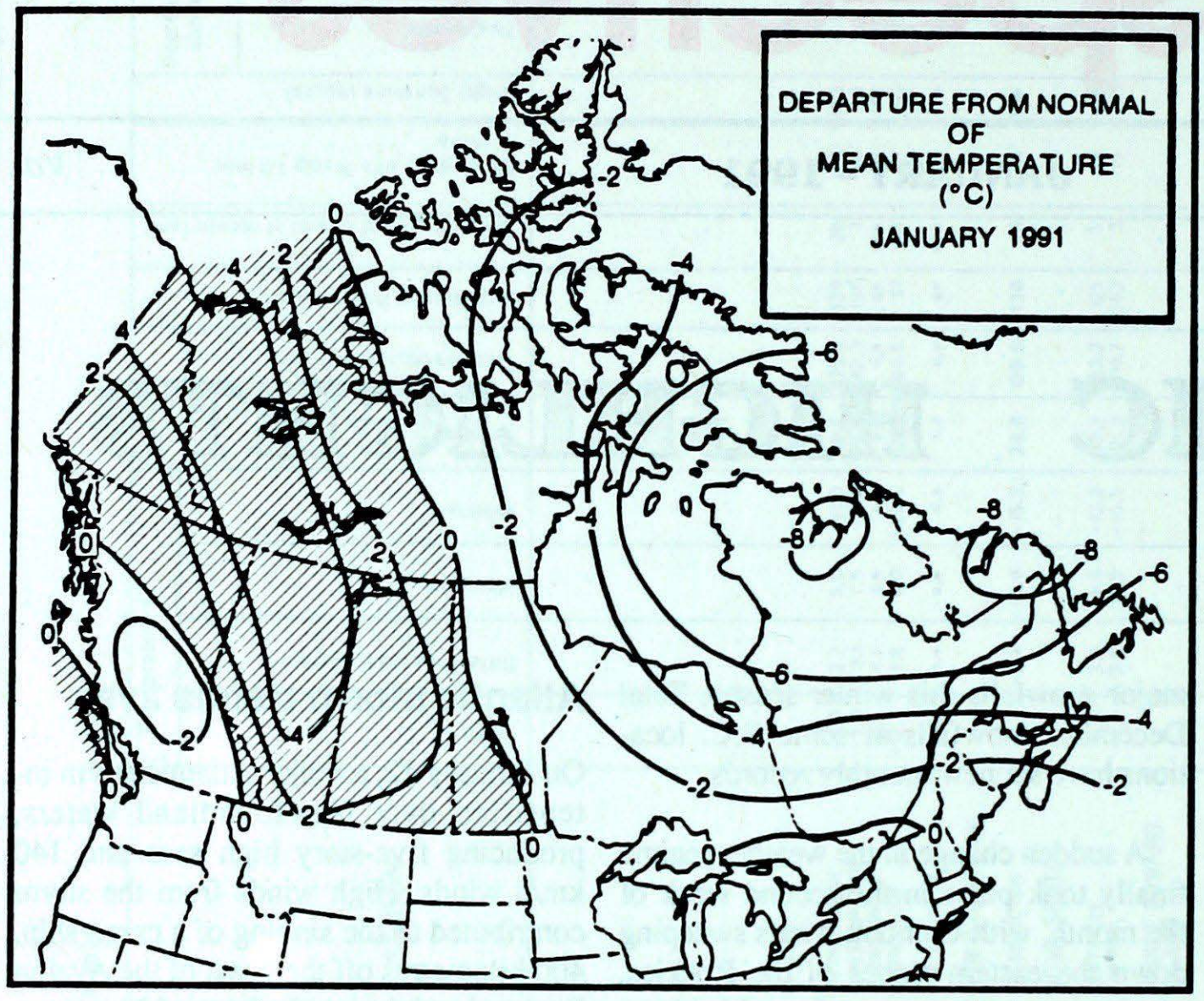
On January 12, a major Atlantic storm intensified over Newfoundland waters, producing five-story high seas and 140 km/h winds. High winds from the storm contributed to the sinking of a cargo ship, 400 kilometres off the coast of the Avalon Peninsula, claiming the lives of 33 sailors. On the island of Newfoundland itself, heavy snowfalls, in the order of 50 cm, and winds gusting to 169 km/h produced severe blizzards, which shutdown schools, businesses and transportation.

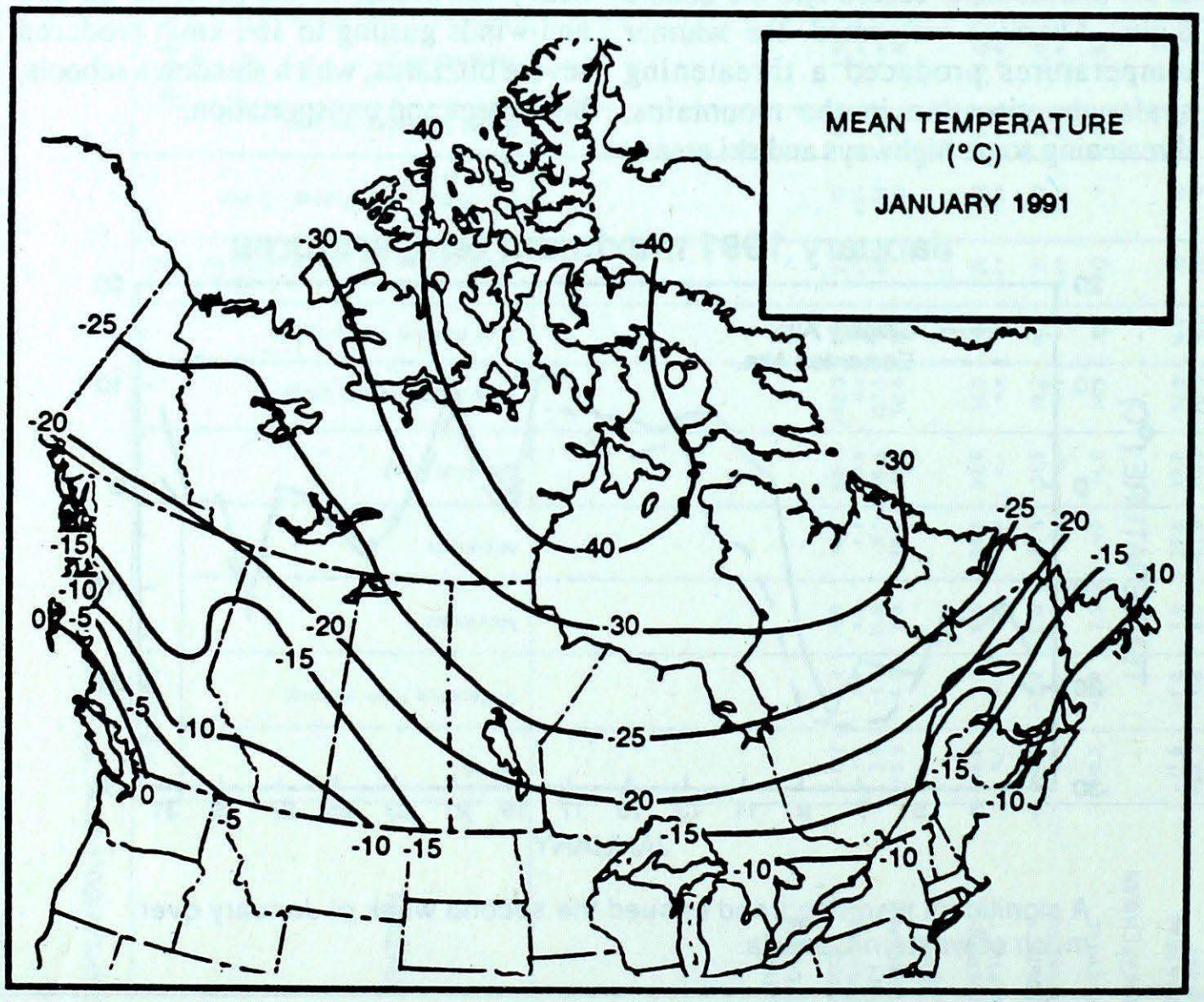
January 1991 maximum temperatures



A significant warming trend ensued the second week of January over much of western Canada.

Canada





Across the country

Yukon and Northwest Territories

January brought a pleasant surprise to most residents of the Yukon, as bitterly cold conditions at the beginning of the month gave way to unseasonable warmth by mid-month.

Three stations that recorded the month's coldest temperatures of -51°C, within the first few days of January, rebounded to register monthly maximums 55 to 62 degrees warmer. Ross River and Drury Creek went from -51°C on the 2nd and 3rd, to 4 and 6 degrees above freezing, respectively, on the 17th. However Carmacks, which recorded -51°C on the 4th, recovered to clinch the monthly warm spot of a balmy 11°C.

The heaviest snowfalls occurred near the coastal passes, but the greatest above-normal snowfalls occurred in the north. Stations north of the Ogilvie Mountains had over twice their normal. The Dempster Highway received between 35 to 40 centimetres, which is nearly double the January average.

January was cold in the N.W.T, with above normal snowfalls in the Mackenzie Valley and Great Slave Lake regions. The lowest mean temperature for the month was a bitter cold -40.1°C at Eureka. Surprisingly, Eureka registered both the highest and lowest temperature in the region. On what can only be called a pleasant January day in Eureka, the mercury at one point soared to -13.4°C. Eureka's lowest temperature this month was -50.7°C. Snowfalls were below normal in the east, where most stations reported less than half the normal. Snowfall amounts ranged from 1.4 cm at Eureka to 6.2 cm at Coral Harbour. Winter roads are now open, but the transportation of goods was frequently hampered by blizzard conditions.

British Columbia

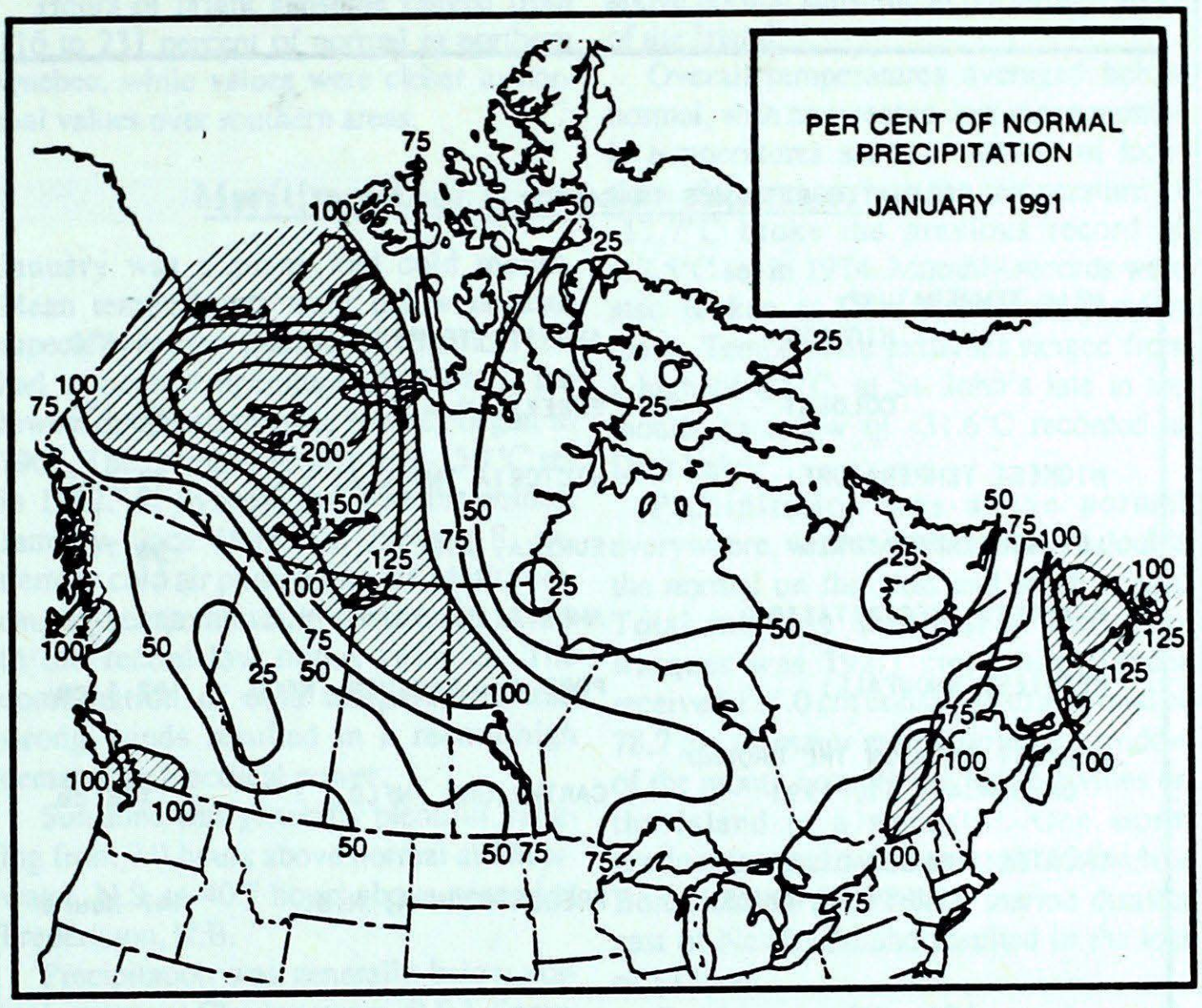
Very cold Arctic air covered the whole province early in the month. This kept precipitation amounts low and sunshine plentiful in most areas.

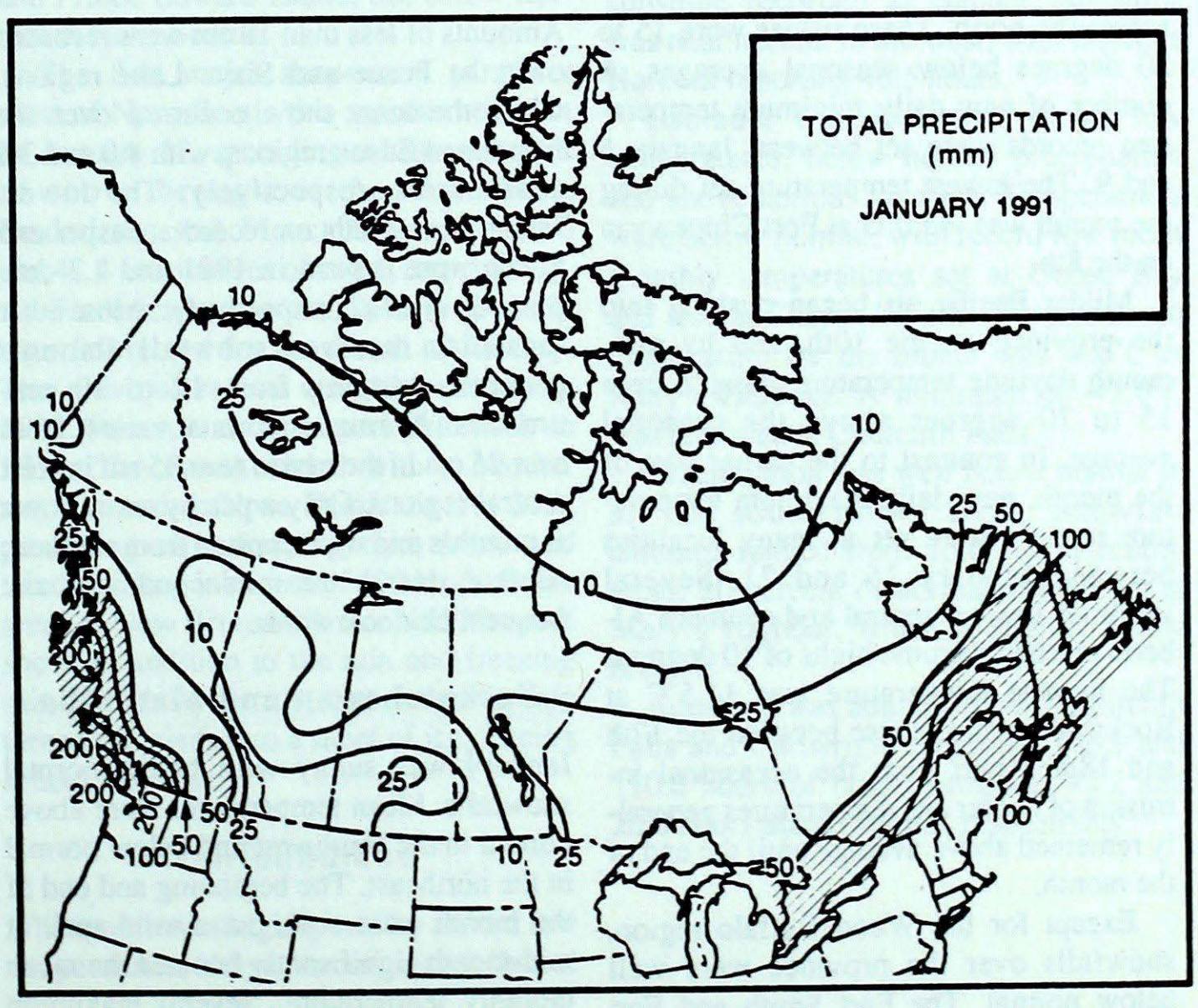
A brief surge of very cold Arctic air gave extremely cold temperatures during the first week of the month, causing concern that bud damage may have occurred on trees in the southern interior orchards. Two January extreme minimum temperature records were broken. Blue River reported a minimum temperature of -43.8°C breaking the old record of -42.8°C set in 1972. Mackenzie set a new record of -44.6°C. Milder air pushed slowly northeastward during the second and third weeks of the month.

The lack of a strong southwesterly flow for most of the month kept Pacific storms away from the B.C. coast, and as a result, most areas reported below average precipitation. Only localized areas had above average precipitation, including the Prince Rupert area, the lower mainland, the upper Fraser Valley and the northern half of the Okanagan. Mackenzie reported the driest January on record, 17.6 mm.

Snowfalls were below average almost everywhere, but with some very glaring exceptions. The lower mainland and southern Vancouver Island regions reported nearly double their normal snowfall. Most of the snow came over a 2 to 3 day period early in the month. Snowfalls totalled 20 to 60 centimetres, with some freezing rain. Major traffic problems resulted in the greater Vancouver area. This same storm gave heavy snow in the mountains. Main highways were closed due to avalanche hazards all across the southern portion of the province. Surprisingly no records were broken.

Sunshine totals were above average for much of B.C. as dry Arctic air and a strong ridge of high pressure kept cloud away. Record high January sunshine totals were reported at Terrace, 94.7 hours, Mackenzie, 88.9 hours and Blue River, 69.6 hours.





Alberta

Temperatures dipped well below average during early January, following the second blizzard in ten days to sweep through the Province. As very cold Arctic air moved in, minimum temperatures across the province again dipped well into the minus thirties across the southern two-thirds of the province, and into the minus forties

CLIMATIC EXTREMES IN CANADA - JANUARY 31, 1991

MEAN TEMPERATURE:		
HIGHEST	AMPHITRITE POINT, B.C.	4.8°C
COLDEST	EUREKA, N.W.T.	-40.1°C
HIGHEST TEMPERATURE:	VICTORIA INT'L A, B.C.	12.0°C
LOWEST TEMPERATURE:	EUREKA, N.W.T.	-50.7°C
HEAVIEST PRECIPITATION:	AMPHITRITE POINT, B.C.	383.2 mm
HEAVIEST SNOWFALL:	PORT AUX BASQUES, NFLD.	192.1 cm
DEEPEST SNOW ON THE GROUND ON JANUARY 31, 1991	CARTWRIGHT, NFLD.	138 cm
GREATEST NUMBER OF BRIGHT SUNSHINE HOURS:	FREDERICTON A, N.B.	147 hours

across the north. These values were 15 to 20 degrees below seasonal averages. A number of new daily minimum temperature records were set between January 6 and 9. The lowest temperature set during the month was -45.0°C at Fort Chipewyan on the 8th.

Milder Pacific air began pushing into the province on the 10th, and by mid-month daytime temperatures ranged from 15 to 20 degrees above the seasonal average. In contrast to the earlier part of the month, new daily maximum temperature records were set at many localities between January 16 and 21. Several localities in west central and southern Alberta reached daytime highs of 10 degrees. The highest temperature was 11.5°C at Rocky Mountain House between the 17th and 18th. Apart from the occasional intrusion of cooler air, temperatures generally remained above average until the end of the month.

Except for the Wood Buffalo region, snowfalls over the province were well below normal. The Fort Smith and Fort Chipewyan areas received 27 to 32 centimetres of snow during the month. Amounts of less than 10 cm were recorded over the Peace and Slave Lake regions, while the least snow occurred over the Jasper and Edson regions, with 4.0 and 3.8 centimetres, respectively. The lowest January snowfalls on record at Jasper and Edson were 0.8 cm in 1981 and 1.3 centimetres in 1942, respectively. Most other localities received snowfall amounts generally ranging from 12 to 20 centimetres. Normal amounts varied from near 25 cm in the east to near 35 cm in west central regions. Only a patchy snow cover at month's end was reported from southern Alberta, due to the mild conditions and frequent chinook winds.

Saskatchewan and Manitoba

January was sunny with below normal snowfalls. Mean temperatures were above normal in the southwest and below normal in the northeast. The beginning and end of the month were cold, but a mild spell at mid-month significantly boosted the mean monthly temperature. Several maximum temperature records were broken during that period. Minimums dipped into the minus forties at several locations during the early and latter parts of the month. The 6th, 7th and 8th were record setting days at Stony Rapids. The temperature fell as low as -47.4°C, and managed to recover only to a maximum of -38.0°C. The minimum of -47.4°C at Stony Rapids was almost equalled at Thompson on the 30th, when the temperature fell to -46.8°C.

Snowfalls were mostly below normal, with near to just above normal snowfalls only reported in central Manitoba. The greatest snowfall this month was 41.2 cm at Island Lake, just surpassing the monthly normal. Churchill had the least with 2.2 cm, a mere 13 percent of normal. Freezing rain fell at Winnipeg.

Winds were occasionally strong and gusty, causing the closure of the Trans-Canada Highway just west of Winnipeg on a few days.

Most areas enjoyed well-above normal hours of bright sunshine. The only area with below normal sunshine hours was northern Saskatchewan. Winnipeg was the sunniest with 139.3 hours, while Cree Lake tallied the least sunshine, 65.2 hours. Total sunshine hours at Churchill was 120.2, which was almost 40 hours above the normal.

Ontario

It was basically a cold and snowy month. Following a string of five consecutively mild Januaries, this one featured cold temperatures that averaged below normal across the north and near, to just slightly above normal, in the south. As a result, northern Ontario experienced their coldest January since 1982, with Moosonee's minus 24.6°C mean, being 4.0°C colder than the long-term average. Meanwhile, in the south, even though temperatures were slightly above normal, it was the coldest January since 1985. London's -6.0°C mean temperature was 0.6 degrees above normal, and yet it was colder than any January in the last 6 years.

Snowfalls were near to slightly above the January normal, province-wide. Most areas received from 30 to 50 centimetres of snow, except the snowbelt regions, which received 80 to 125 centimetres. Wiarton recorded the most snow, with 125 cm - their snowiest January since 1985. Muskoka's 119 cm was 40 cm above

average for the snowiest January since 1979. In addition, Peterborough with 62 cm of snow realized their greatest January snowfall total since 1978. Windsor however, bucked the trend with only 17 cm of snow - only one-half their usual allotment.

Despite the relatively heavy snowfalls, this was a rather dry month. Monthly precipitation totals revealed that only the snowbelt regions to the lee of Lake Huron and Georgian Bay, received near normal moisture. The rest of southern Ontario, as well northeastern Ontario, reported below normal precipitation.

Sunshine was generally above normal in the northwest, but close to or below normal near the Great Lakes. Moosonee's dry, cold January featured plenty of sunshine, 130 hours or 50 hours above average, making this their second sunniest January since 1932. In contrast, Wiarton's 47 hours was their third cloudiest January in 29 years of records.

Quebec

Cold weather dominated northern and eastern Quebec during the month. New low mean monthly temperature records were established at six locations, Kuujjuak, Schefferville, La Grands Rivière, Blanc Sablon, Baie Comeau and Gaspé. Mean monthly temperatures ranged from six to nine degrees below normal from Hudson Bay to Blanc Sablon. Mean temperatures were closer to normal in southern Quebec.

Total precipitation this month was generally between 50 and 75 millimetres over the southern portions of the province, with a maximum value of 115.8 mm recorded at Blanc Sablon. Over the northern areas, total precipitation was less than 25 mm. On January 11 and 12, southern Quebec received 25 to 30 cm of new snow. In the Montreal area, this storm was the most significant storm since November 1986. Snow squalls, giving zero visibility over southern Quebec, during the afternoon of the 18th, and icy road conditions, resulted in four deaths on the highways. Over southern areas, the combination of slightly above normal snowfalls and seasonal temperatures were conducive to outdoor activities.

Hours of bright sunshine ranged from 116 to 231 percent of normal in northern Quebec, while values were closer to normal values over southern areas.

Maritimes

January was a sunny and cold month. Mean temperatures were below normal, especially in New Brunswick. Charlo, N.B. had a mean temperature of -16.4°C, the lowest temperature since records began in 1967. The previous record was -15.1°C set in 1982. At Sydney, this was the coldest January since 1943. On January 8, extremely cold air pushed into the Maritimes, causing temperatures in some areas to dip to the record-low minus twenties. The combination of cold temperatures and strong winds resulted in a record-high demand for electrical power.

Sunshine was generally plentiful, ranging from 7.9 hours above normal at Shearwater, N.S. to 40.7 hours above normal at Fredericton, N.B.

Precipitation was generally below normal, except at Charlottetown, P.E.I. Snowfalls were above normal in New Brunswick and Prince Edward Island, but below normal in Nova Scotia.

The first major snowstorm to affect most of Nova Scotia this season moved in on January 12, spreading a heavy blanket of snow throughout the Maritimes. Fredericton and Moncton received 51.6 and 41.4 centimetres of snow, respectively. At Fredericton, this was a new 24-hour snowfall record for the month of January. The previous record was 46.6 cm set in 1982. Records at the airport date back to 1952. The month ended with a another storm crossing Nova Scotia on the 31st, producing rain, freezing rain, snow and winds gusting in excess of 100 km/h. Some areas of New Brunswick received 20 cm of snow, in addition to the rain and freezing rain. In Nova Scotia, the freezing rain turned the roads into a sheet of ice, forcing schools to close.

Newfoundland

The month was highlighted by record low temperatures, above normal snowfalls and above normal sunshine in the eastern areas of the Island.

Overall temperatures averaged below normal, with new record-low mean monthly temperatures set at a number of locations. St. Anthony's mean temperature of -17.7°C broke the previous record of -17.5°C set in 1974. Monthly records were also broken at Deer Lake and Comfort Cove. Temperature extremes ranged from a high of 8.5°C, at St. John's late in the month, to a low of -31.6°C recorded at Deer Lake.

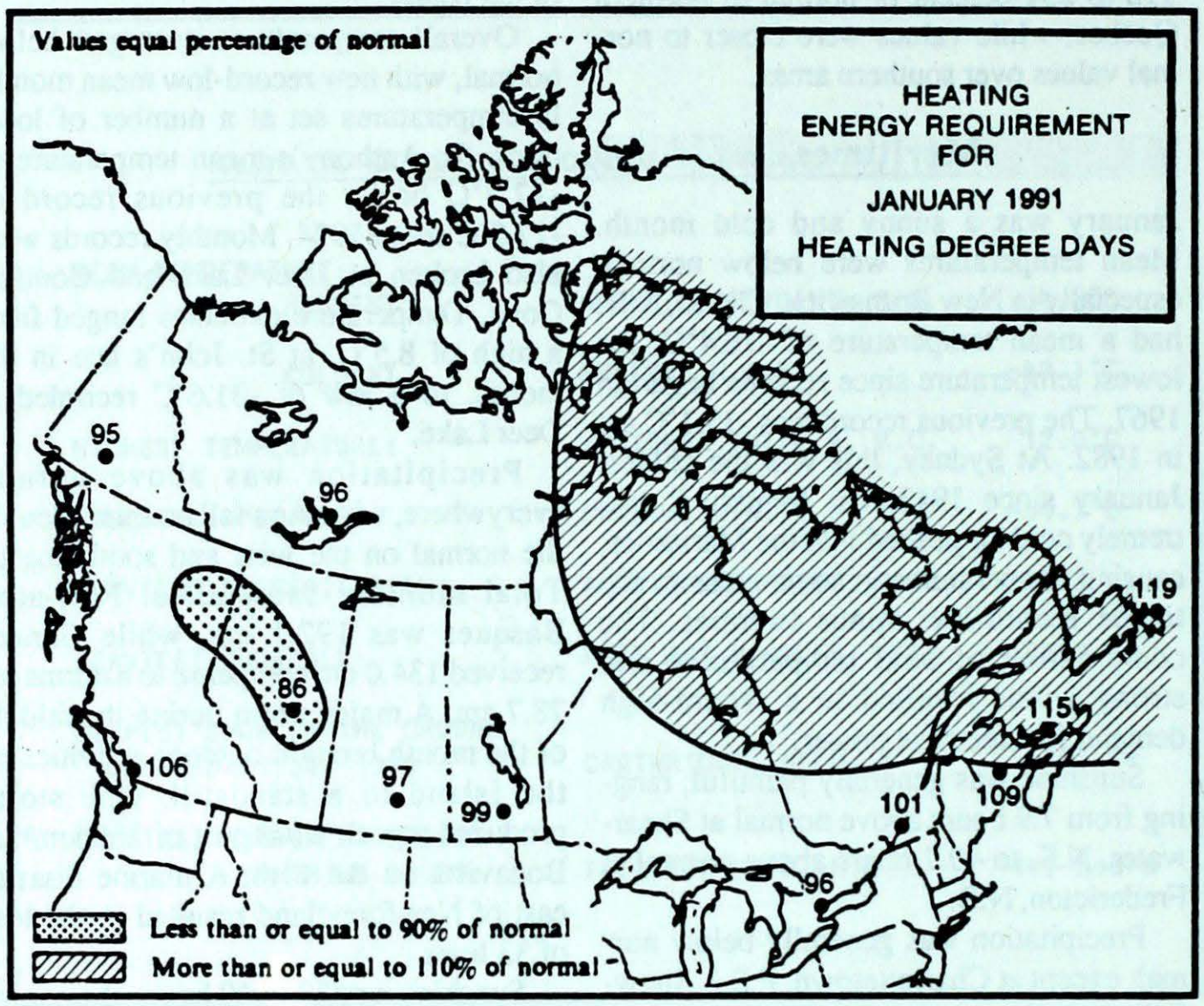
Precipitation was above normal everywhere, with snowfall amounts double the normal on the west and south coasts. Total monthly snowfall at Port-aux-Basques was 192.1 cm, while Gander received 134.0 cm compared to a normal of 78.7 cm. A major storm during the middle of the month brought outdoor activities on the Island to a standstill. One storm produced a peak wind gust of 169 km/h at Bonavista on the 11th. A marine disaster east of Newfoundland resulted in the loss of 33 lives.

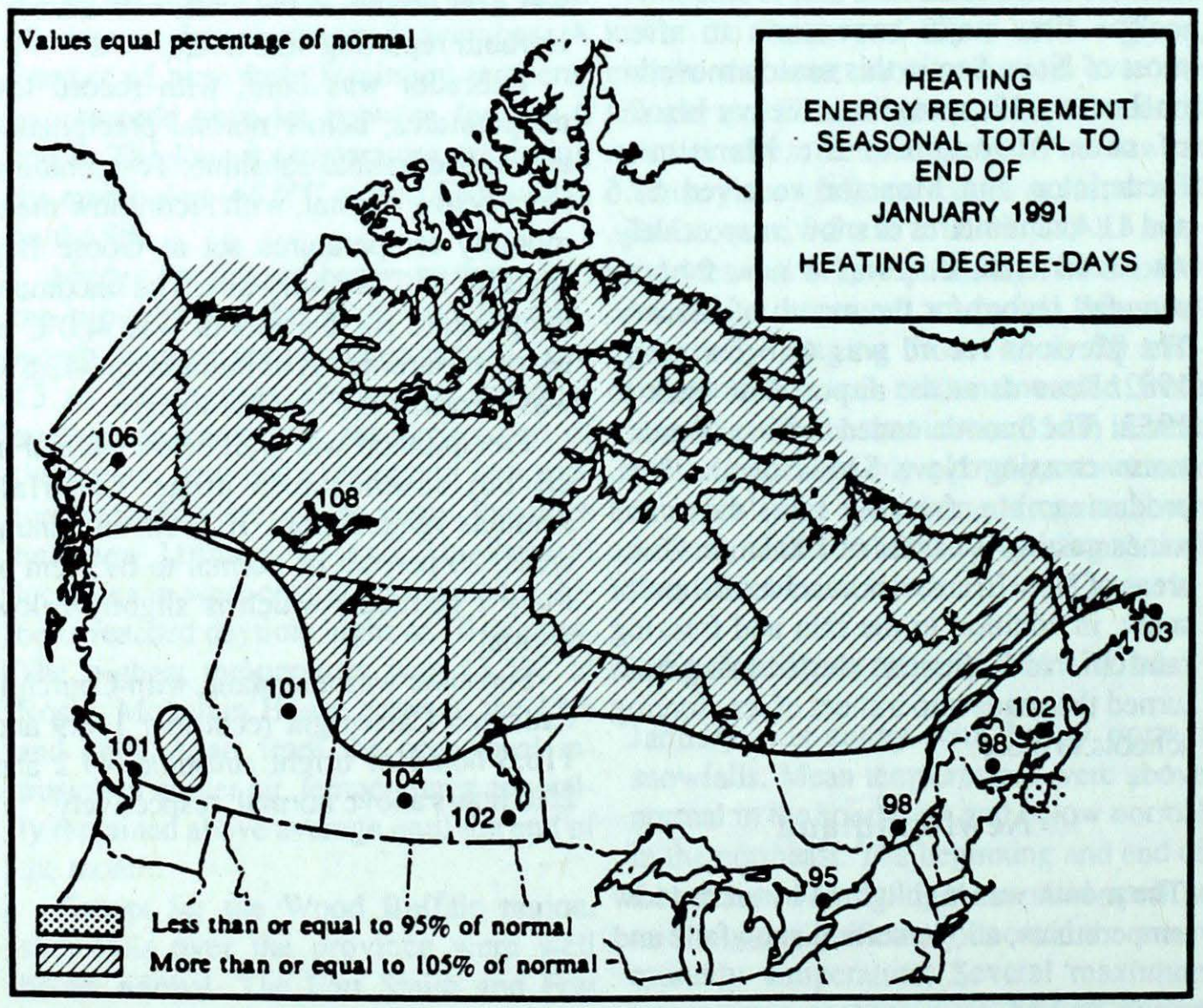
Sunshine was 30 to 40 hours above normal in the east, with 130.7 hours of bright sunshine recorded at Gander. Sunshine was near normal in the west, with Daniel's Harbour reporting 46.5 hours.

Labrador was cold, with record low temperatures, below normal precipitation and above normal sunshine. Temperatures were below normal, with record low mean monthly temperatures set at Goose Bay and also at Churchill Falls. The maximum temperature for the month was -4.0°C at Mary's Harbour. A minimum of -42.6°C was recorded at Churchill Falls.

Precipitation was well below normal in all but southeastern areas. Snowfall amounts ranged from 16.0 cm in central areas, 20 percent of normal to 69.8 cm at Mary's Harbour, which is slightly below normal.

Sunshine was abundant, with Churchill Falls and Cartwright recording 146.9 and 110.6 hours of bright sunshine, 47.2 and 20.0 hours above normal, respectively.



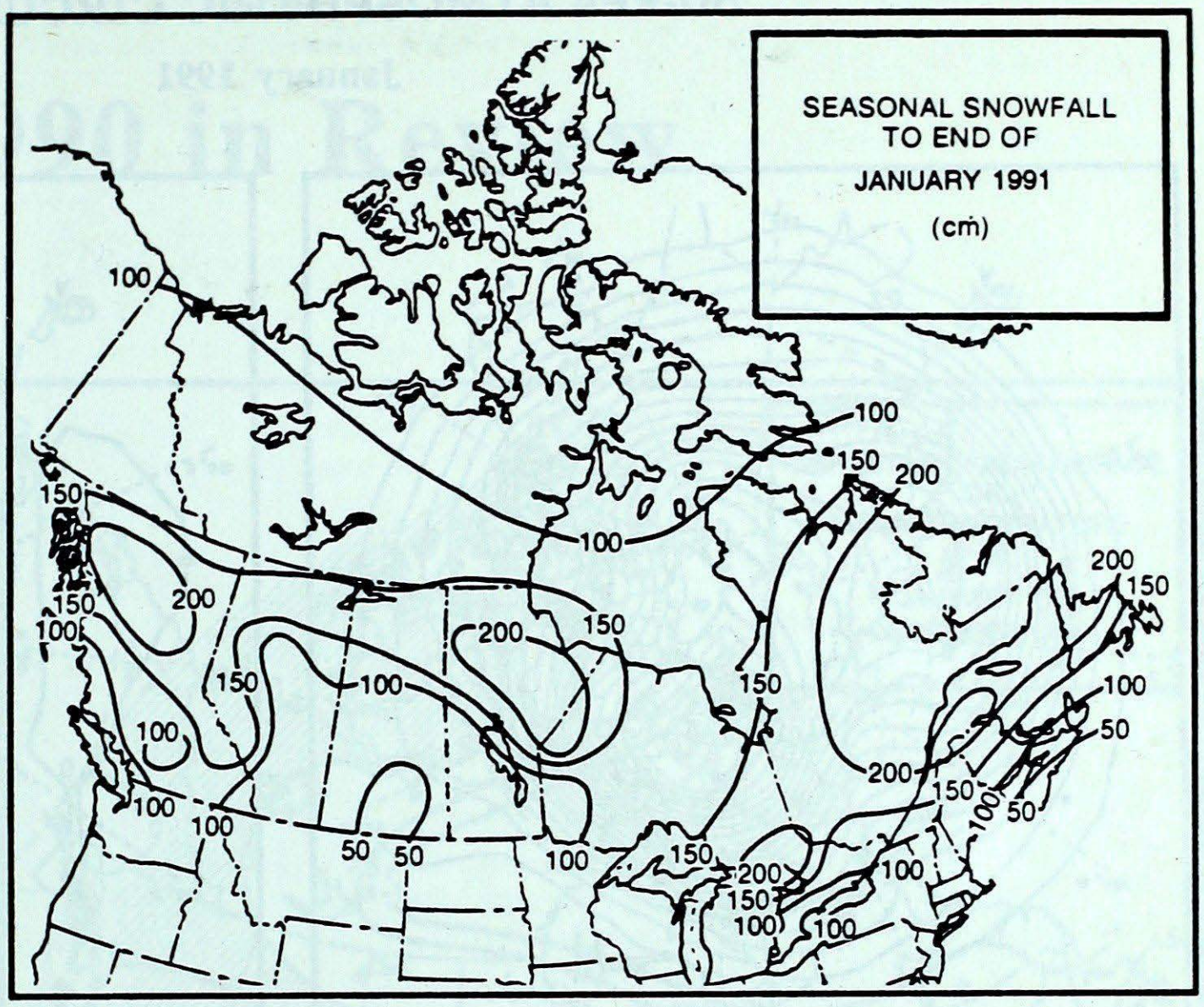


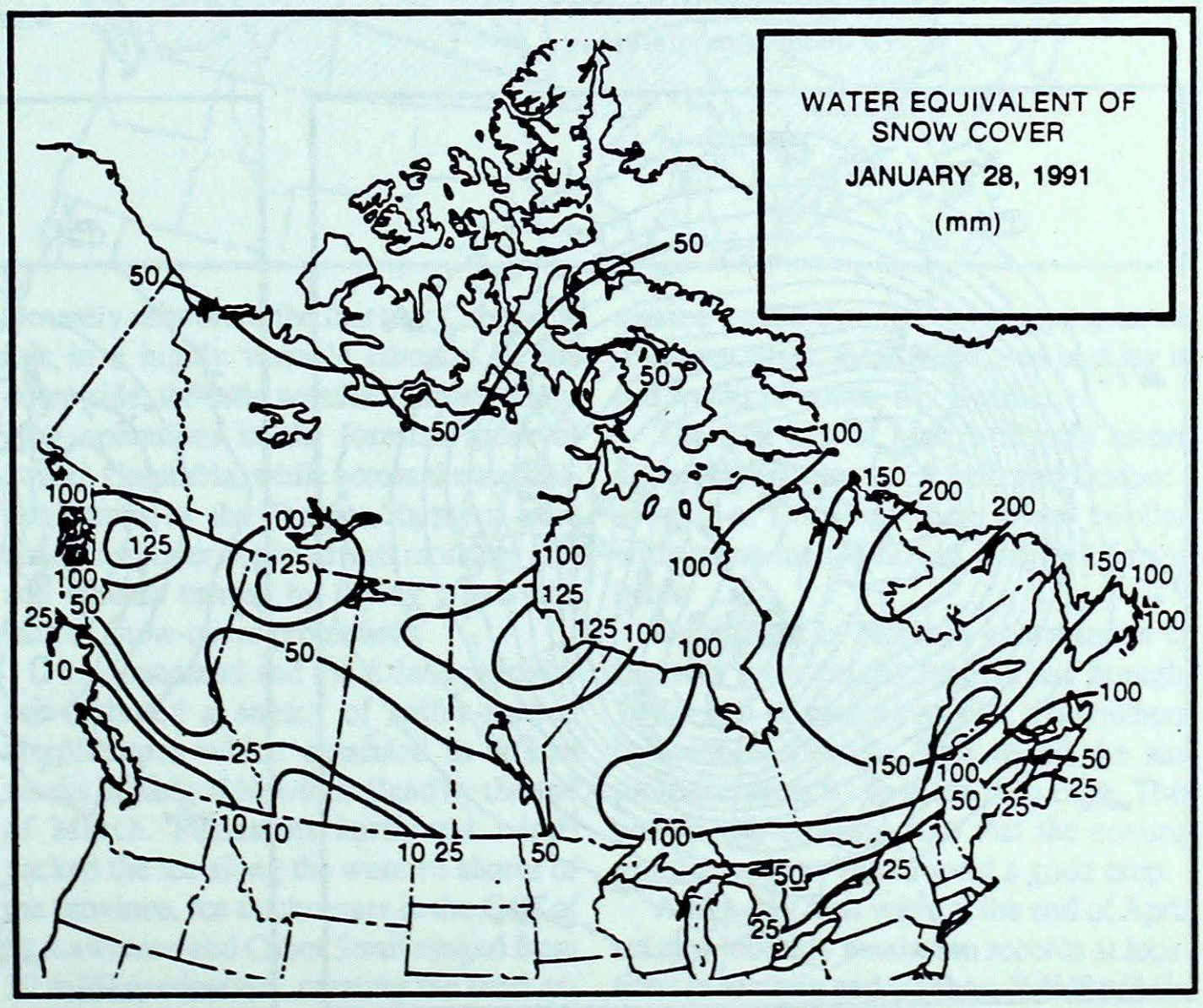
SEASONAL TOTAL OF HEATING DEGREE-DAYS TO END OF JANUARY

	1991	1989	NORMAL
BRITISH COLUMBIA			
Kamloops	2446	2045	2281
Penticton	2161	1857	2056
Prince George	3383	2943	3234
Vancouver	1715	1533	1698
Victoria	1794	1642	1745
YUKON TERRITORY			
Whitehorse	4461	3837	4224
NORTHWEST TERRITORIES			
Iqaluit	5740	5482	5362
Inuvik	5724	5745	5661
Yellowknife	5226	4988	4833
ALBERTA			
Calgary	3047	2689	3091
Edmonton Mun	3243	2868	3218
Grande Prairie	3804	3194	3644
SASKATCHEWAN			
Estevan	3392	3040	3146
Regina	3489	3204	3370
Saskatoon	3712	3364	3506
MANITOBA			
Brandon	3727	3464	3506
Churchill	5281	5105	4943
The Pas	4089	4079	3899
Winnipeg	3441	3431	3367
ONTARIO			
Kapuskasing	3746	3768	3602
London	2150	2343	2224
Ottawa	2568	2777	2617
Sudbury	2970	3202	2996
Thunder Bay	3341	3397	3210
Toronto	2123	2329	2225
Windsor	1879	2070	1983
QUÉBEC			
Baie Comeau	3440	3482	3310
Montréal	2469	2667	2516
Québec	2875	3020	2856
Sept-Iles	3618	3606	3421
Sherbrooke	2728	2950	2900
Val-d'Or	3532	3638	3440
NEW BRUNSWICK			
Charlo	3108	3140	3006
Fredericton	2525	2837	2581
Moncton	2527	2711	2517
NOVA SCOTIA			
Sydney	2262	2468	2213
Yarmouth	1947	2241	2094
PRINCE EDWARD ISLAND			
Charlottetown	2422	2690	2381
NEWFOUNDLAND			
Gander	2744	2763	2603
St. John's	2486	2517	2424

SEASONAL SNOWFALL TOTALS (cm)
TO END OF JANUARY

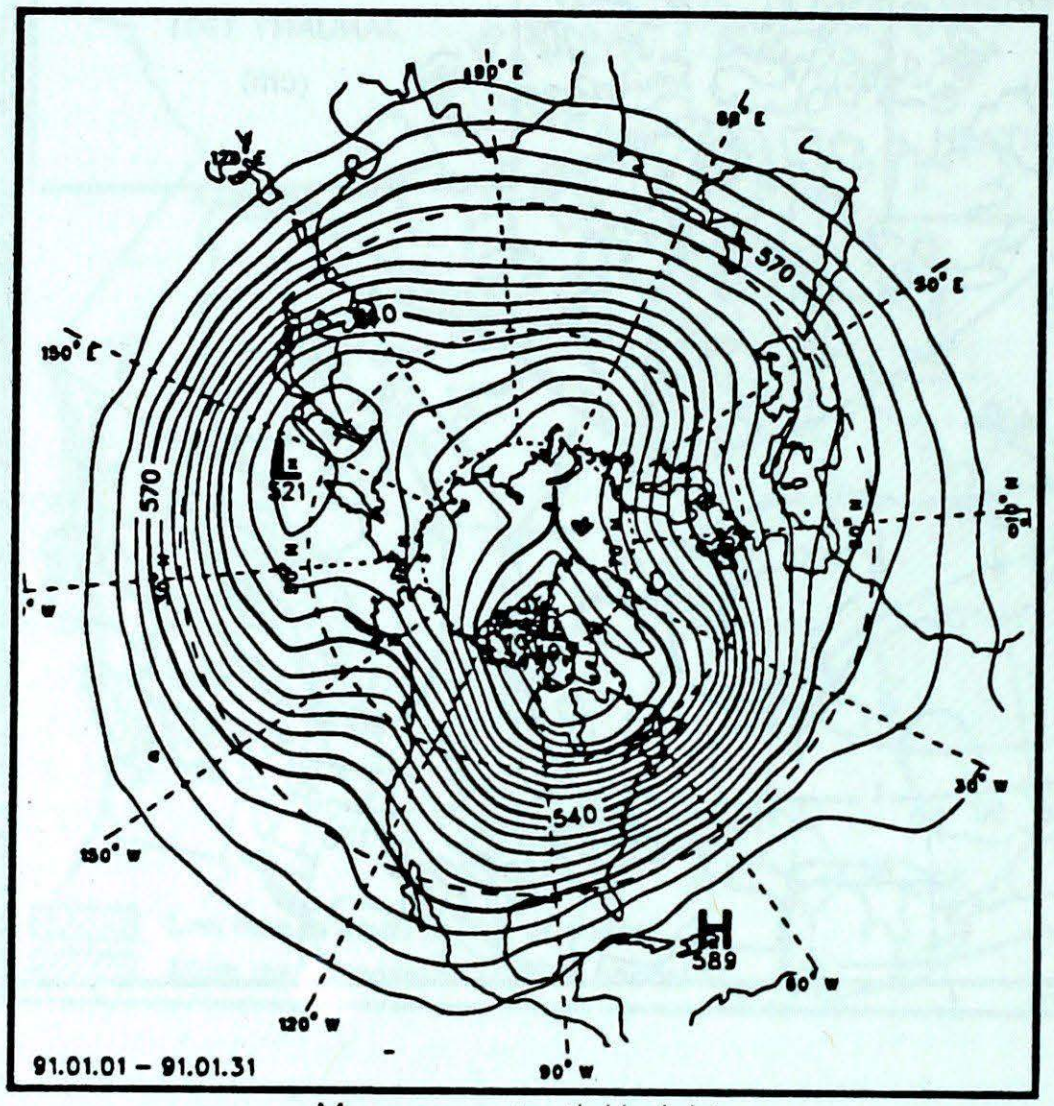
	1991	1990	NORMAL
YUKON TERRITORY			
Whitehorse	140	118	91
NORTHWEST TERRITORIES			
Clyde	71	*	116
Inuvik	108	130	117
Yellowknife	124	122	94
BRITISH COLUMBIA			
Kamloops	84	41	74
Port Hardy	64	13	49
Prince George	277	166	164
Vancouver	99	4	46
Victoria	59	9	35
ALBERTA			
Calgary	70	53	77
Edmonton Namao	73	52	78
Grande Prairie	180	109	115
SASKATCHEWAN			
Estevan	49	40	63
Regina	33	67	65
Saskatoon	49	47	65
MANITOBA			
Brandon	60	70	64
Churchill	180	116	117
The Pas	104	114	96
Winnipeg	53	64	72
ONTARIO			
Kapuskasing	166	268	193
London	106	150	133
Ottawa	122	159	132
Sudbury	165	209	150
Thunder Bay	142	117	128
Toronto	54	47	75
Windsor	53	59	70
QUÉBEC			
Baie Comeau	281	177	203
Montréal	123	130	134
Québec	222	216	202
Sept-Îles	308	207	244
Sherbrooke	154	206	180
Val-d'Or	195	216	188
NEW BRUNSWICK			
Charlo	273	197	219
Fredericton	162	145	156
Moncton	163	234	175
NOVA SCOTIA			
Shearwater	43	102	93
Sydney	91	186	155
Yarmouth	52	162	114
PRINCE EDWARD ISLAND			
Charlottetown	134	212	174
NEWFOUNDLAND			
Gander	218	233	194
St. John's	126	142	172



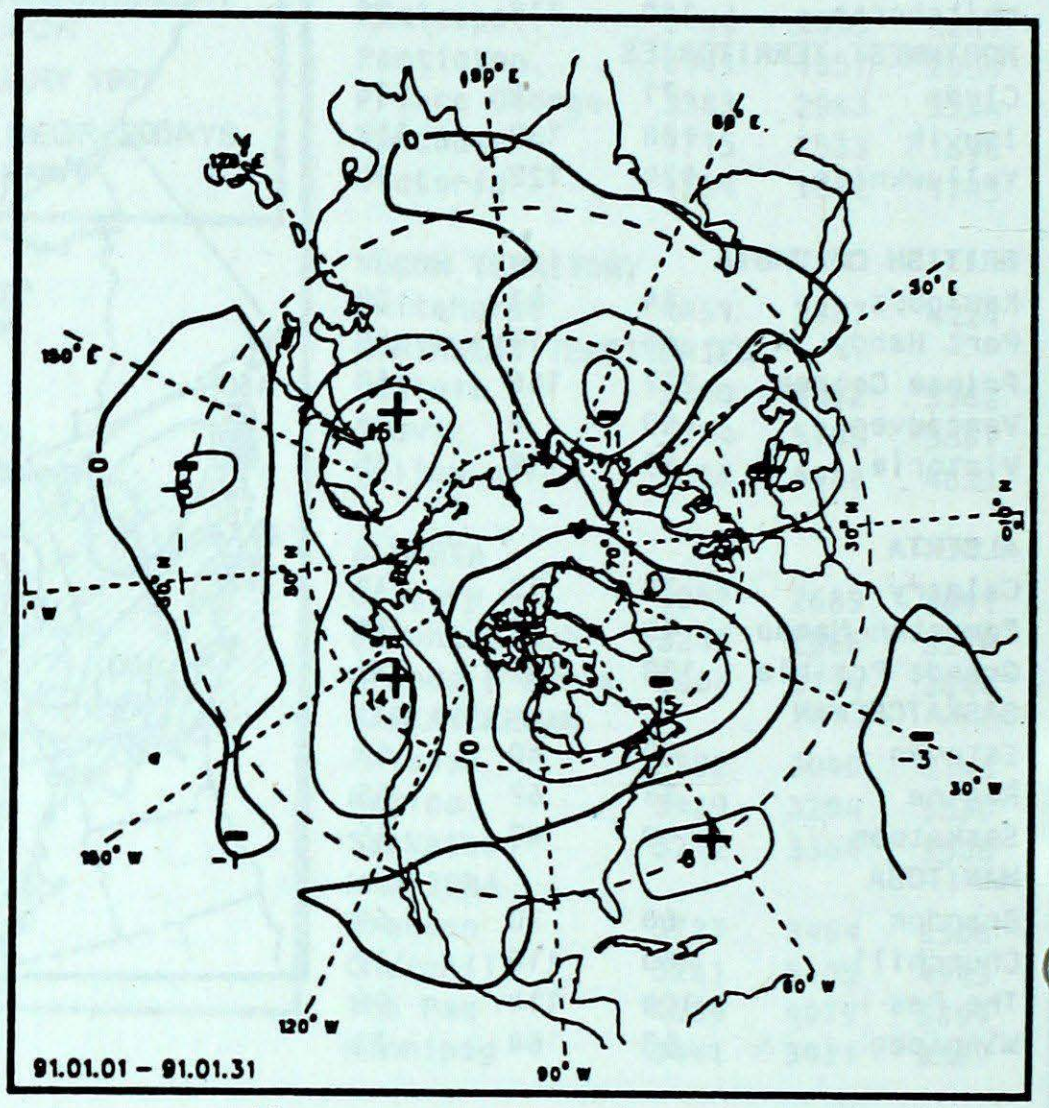


50-kPa ATMOSPHERIC CIRCULATION

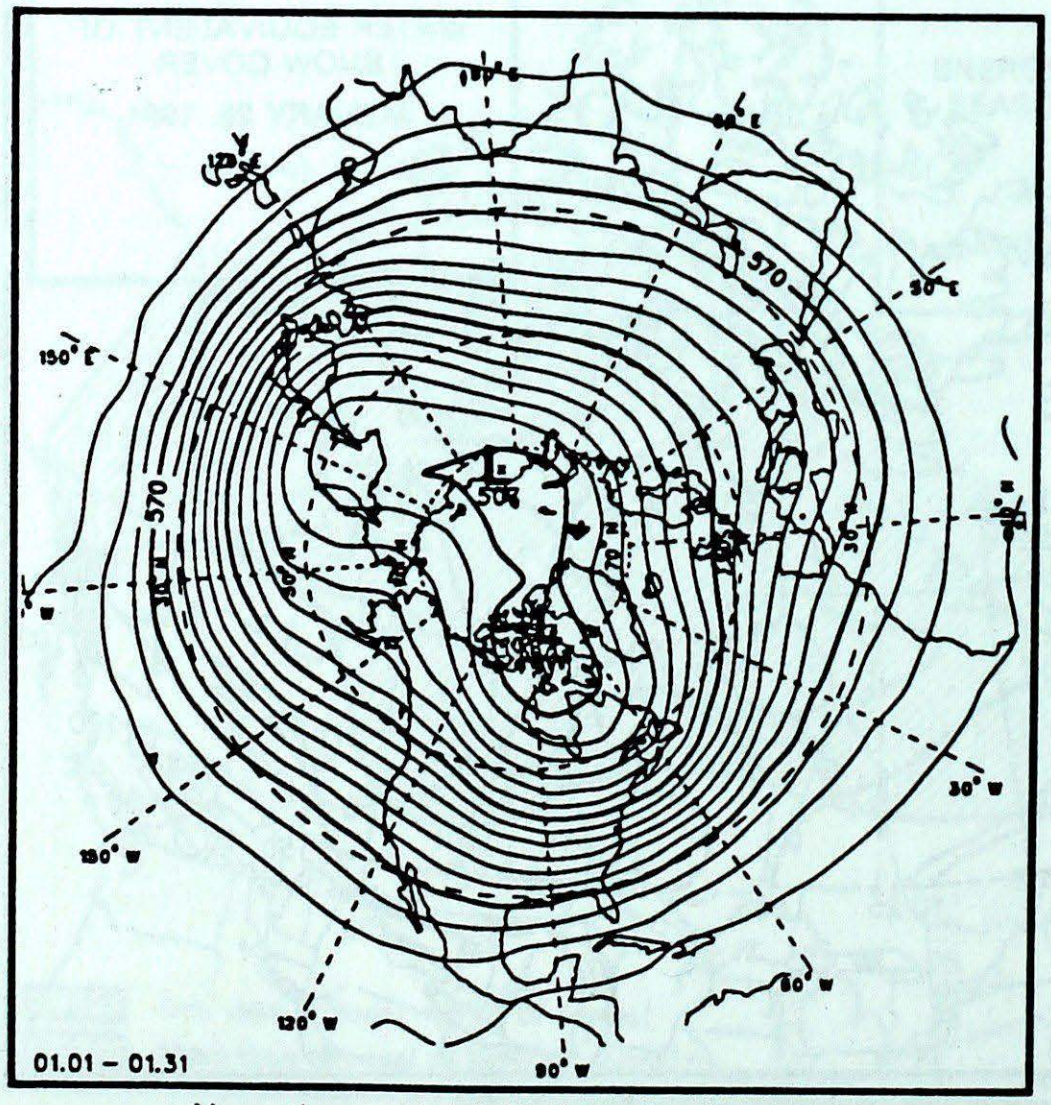
January 1991



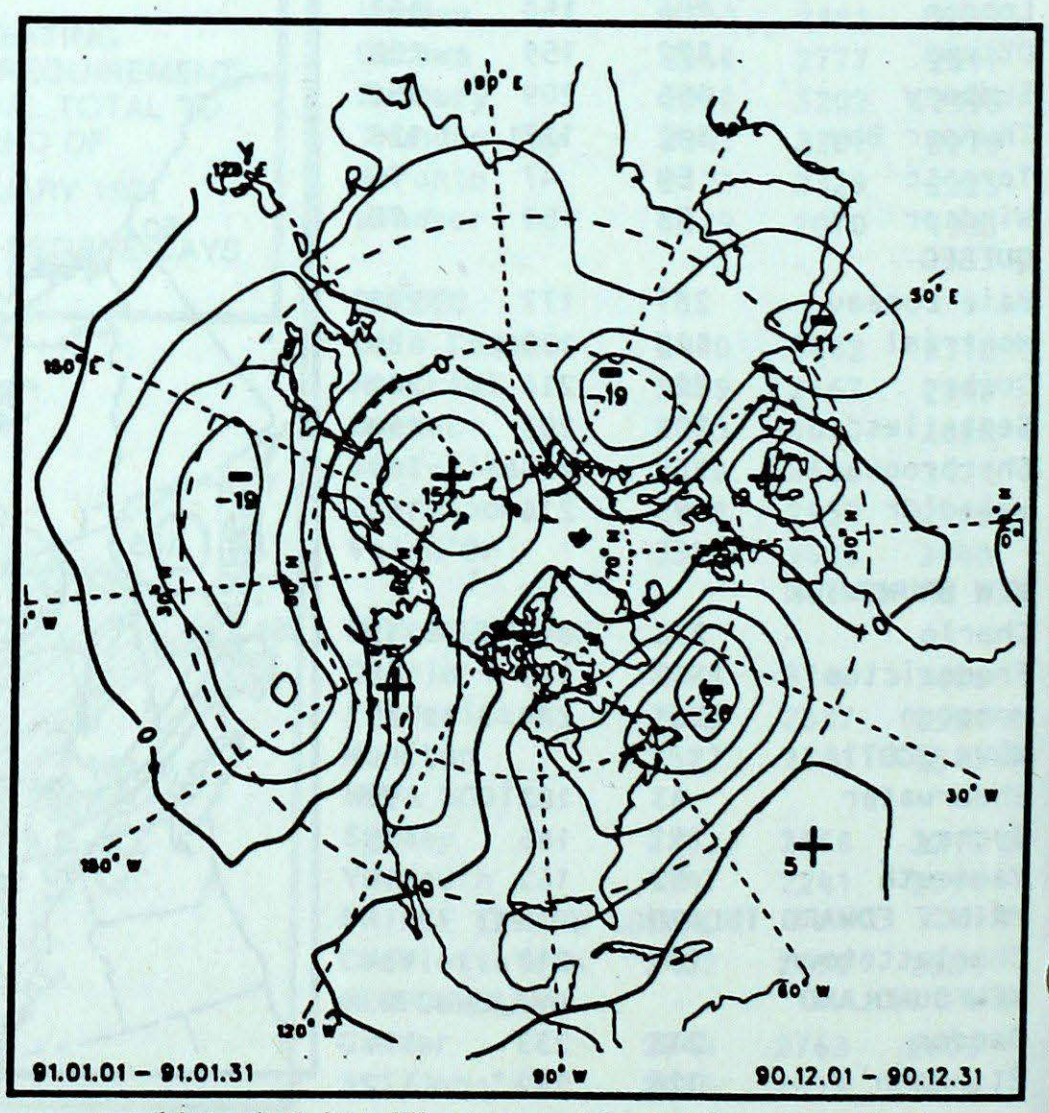
Mean geopotential heights
- 5 decametre interval -



Mean geopotential height anomaly
- 5 decametre interval-



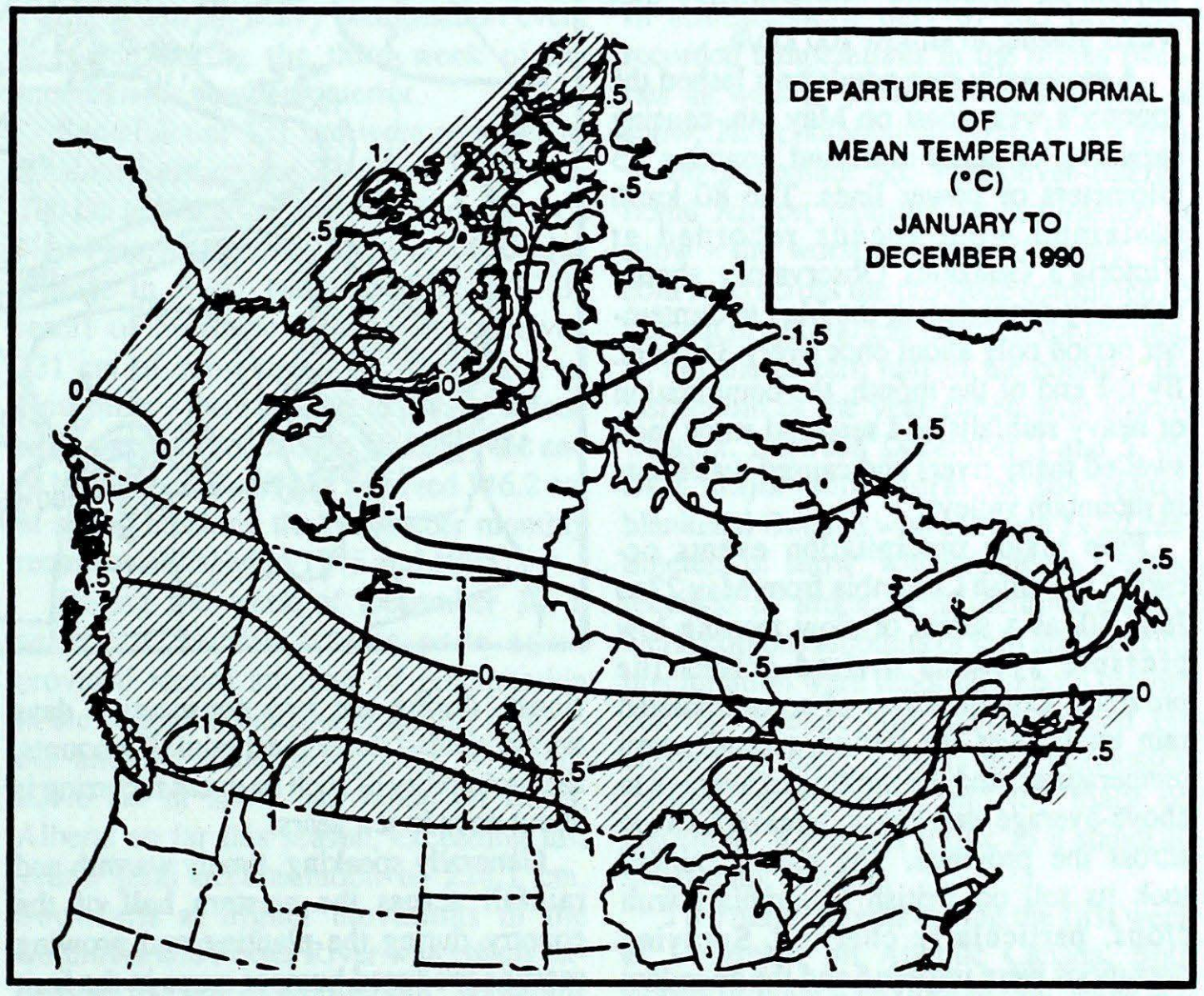
Normal geopotential heights for the month
- 5 decametre interval -



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

1990 in Review

The annual means of temperature were above normal across the southern parts of Canada, especially across the extreme southern Prairies, the southeastern parts of Ontario and southwestern Quebec. Below normal temperatures occurred across most of northern Canada, especially the southern half of Baffin Island and extreme northern Quebec. Generally, precipitation was near to below normal across the Prairies except for the extreme western parts of Alberta and a small pocket on the southern border of Saskatchewan and Manitoba. Most parts of the country experienced some record or near-record extremes of heat (Ontario in March), cold (Western Canada in December), precipitation (British Columbia in May-June and again in November-December, and also the Maritimes during the fall period) or summer drought (across portion of the Prairies).



The year started with unseasonably mild weather sweeping across the southern portion of the country, with the Prairies and parts of British Columbia recording monthly mean temperatures of 6 to 8 Celsius degrees above normal. Most of Ontario and southern Quebec were 4 to 6 degrees above the monthly mean. This signalled an abrupt and, for most, a welcome departure from the bitterly cold weather which had prevailed throughout December 1989. During that month some areas broke daily low maximum temperature records dating back to the late nineteenth century. Although, statistically, the chances of observing such a dramatic swing in temperatures from one month to the next is minute, it merely reinforces the fact that Canadians live in a highly variable climate. On the down side, the mild weather disrupted logging operations in the forested areas of British Columbia, while across the agricultural areas of the Prairies, farmers were concerned over depleted soil moisture and soil erosion caused by drying winds and lack of snow-cover protection.

Newfoundland and the Atlantic provinces recorded a stretch of below-normal temperatures which extended to fifteen weeks in parts of Newfoundland by the end of March. Persistent northwest winds packed the ice along the western shores of the province. Ice thicknesses in the Gulf of St. Lawrence and Cabot Strait ranged from 30 to 70 centimeters, creating the most arduous conditions in recent years and keeping ice-breakers busy trying to move marine traffic through the shipping lanes. The west coast, meanwhile, was basking in 5-6 weeks of warm, dry weather.

The first half of March brought record high temperatures to Ontario and Quebec - as well as flooding where rivers swollen with snow-melt emptied into still-frozen lakes.

By the end of April, a combination of rain and snow on the Prairies had brought 10-30 mm of precipitation to the southern agricultural districts. This raised the soil moisture capacity to more than 60%. This was an encouraging sign that the coming growing season would yield a good crop.

A five-day heat wave at the end of April set new monthly maximum records at locations in Ontario and Quebec. Petawawa set a new high of 32°C on April 25; on the same date, Toronto's high of 31.1°C was

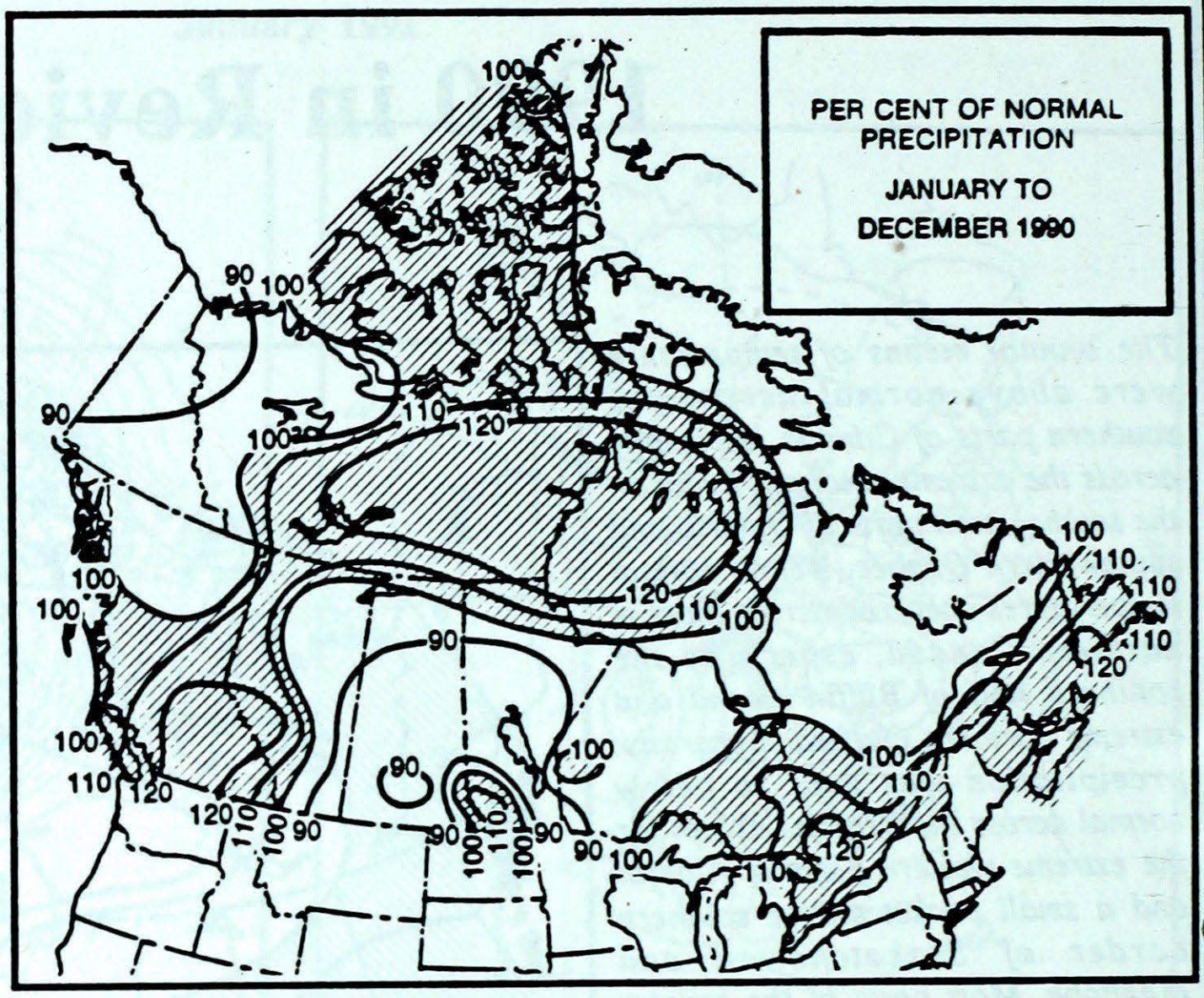
the warmest April day at Toronto's International Airport in 54 years of records. The unseasonable warmth raised concerns for the fruit crop as orchards came into early bloom.

These concerns were to some extent justified two weeks later when southern and central sections of the province experienced dropping temperatures and winds gusting to almost 100 km/h.

A seasonally rare windstorm lashed the country's west coast on May 5th, causing capsizing of small craft and downing 35 kilometers of power lines. The 80 km/h sustained wind speeds recorded at Victoria's Gonzales Observatory should normally occur during the May to September period only about once every 35 years. By the end of the month, the combination of heavy rainfalls and seasonal snow melt swelled many rivers and caused wash-outs in mountain valleys.

Five major precipitation events occurred in British Columbia from May 22 to June 30, as a series of slow moving low pressure systems drifted across the province. Combinations of accummulated rain totals over the period, record warm temperatures, and the melting of average to above-average snowpack wreaked havoc across the province. The record rainfall took its toll on British Columbia's fruit crops, particularly cherries. Spraying operations were impeded and the abundant hay crop could not be reaped.

The thunderstorms in British Columbia generated by the low pressure system from May 22 to 25 produced such substantial rainfall that some locations recorded amounts which, in these three days alone, exceeded the mean monthly totals for May. During the first ten days of the month, Lake Okanagan, British Columbia, and other Valley lakes, rose 2 to 5 centimeters per day. The low pressure system which crossed the southern interior of British Columbia from June 10 to June 12, engendered major flooding and mudslides, taking nine lives, necessitating numerous evacuations, and causing almost ten million dollars worth of damage to roads, homes and other structures. For most of the climate stations (with a few notable exceptions), during the two consecutive days which yielded the highest rainfall amounts, the probability of such an event recurring is about once in ten years.



Generally speaking, timely warmth and rainfall across the western half of the country during the planting and growing seasons produced bumper crops in the fruit belt of southeastern British Columbia and much of the Prairie wheat-growing areas.

By July, thunderstorms yielded greater available soil moisture across the Prairies during the 1990 summer growing season than during the previous two years. Significant soil moisture improvements were noted at that time across southern Saskatchewan, southern Manitoba and the northern border area between Alberta and Saskatchewan. This year's crop benefitted from these improved levels. The warm dry autumn, however, which contributed to the successful harvesting of the bounty, depleted the soil moisture reserves once more.

The lack of rain in the fall resulted in dry stubble fields and pastures. Reports rate pasture conditions as poor to fair in the foothills and northwest Alberta. Fields fallowed in 1990 have about 80 percent of normal moisture reserves although conditions are somewhat poorer in the southern and central Alberta/Saskatchewan border regions.

There were very few, if any, significant surface recharge events from local intense storms and with high evaporation rates, on-farm surface water storage is low in some Prairie areas. Most areas have adequate supplies for the winter, although on-farm shortages may be anticipated in east-central Alberta, west-central and southern Saskatchewan and western Manitoba.

Assuming normal precipitation during the winter of 1990-91 and the early spring, computer model projections indicate that by mid-May 1991, soil moisture for stubble fields will be dry across southeastern and west-central Alberta, most of southern Saskatchewan, (except for the southeastern parts), as well as the area surrounding the Winnipeg Lakes. Assuming above normal amounts of precipitation during the winter period, soil moisture levels will be increased and conversely.

The eastern half of the country fared less well agriculturally than the west during the year. A wet spring and wetter autumn resulted in a shortened tomato season in Ontario, while fears have been expressed that the New Brunswick potato crop may not survive through the winter storage season.

In southwestern Ontario, some climate stations in the food belt recorded 300 mm of rain, while Windsor recorded two and one half times the normal monthly precipitation during September. Soggy fields and continuing rain delayed harvesting, with fresh market crops suffering the worst damage through molding and rotting. In some areas, tomato fields had to be plowed under as harvesting became impossible.

In Quebec, as well, August and September were wet and unsettled months, with many farmers finding the third hay crop difficult to harvest. On the evening of August 13, torrential rain inundated the Beauce region of the Eastern Townships with more than 100 mm of rain. Saint-Prosper, Quebec, recorded a maximum of 135 mm of rain that same evening.

Hurricane Bertha brought August precipitation totals for New Brunswick to well above normal for the month. Northern New brunswick recorded about 150 percent of the monthly mean. September's added rain and the passing of tropical storm Lili in October spelled trouble for potato farmers. This year's crop is estimated to have a higher moisture content than normal, which could jeopardize winter shelf-life.

Brief but repetitive downpours alleviated the forest fire effect of summer's hot dry spells. Near the end of the forest fire season (ending in early September), an estimated 500,000 hectares of forest lands had been destroyed, representing only 25 percent of the normal, and only 11 percent of 1989's near-record losses of about 4.5 million hectares. The annual average for the period 1976-86 is 2 million hectares.

Early in the month of November, British Columbia once again experienced unusually heavy precipitation. Along the coastline, and in the upper Fraser valley, the impacts felt in June were repeated, with extensive flooding, mudslides, and bridge wash-outs, with damage totals again reaching the $ 10 million mark. At Hope, the three-day rainfall total of 328.7 mm could be expected to occur less than once in every one hundred years. For Abbotsford, the two-day accummulation of 142.6 mm of rain has a return period of 35 years. The return periods for Chilliwack and Gold River for the five-day precipitation amounts of 245.3 and 354.2 millimeters, respectively, are twenty-five years. A second heavy precipitation event occurred during the third week of the month in the southern interior.

Snowfalls of 131 cm were recorded at Anahim Lake on the 23rd, and more than 100 cm at Waterton National Park, Crow's Nest Pass, Knanaskis County and Sunshine Village in Banff National Park. The ski resort of Sunshine Village had received 231 cm of snow up to the third week of November - the best start to the ski season since the resort opened in 1935. By the end of November, Banff had received 146.2 cm of snow, breaking the November monthly record established in 1945 and 1895.

During the week of December 10, a series of Pacific storms once again provided record amounts of precipitation in the coastal mountains of British Columbia and the Alberta Rockies. A record 229.6 cm of snow had fallen on Banff, Alberta so far this season, exceeding last year's total accumulation of 224.1 cm. Snowfalls at higher elevations of the Columbia and Fraser River watersheds exceeded 500 cm by mid-month. Snowfalls were two to three times higher than normal by the mid-month period and were approaching or had exceeded the heavy snowfall years of 1976, 1972 and 1948.

The second half of December plunged Western Canada into two deep freezes, as record cold temperatures spilled southwards from Alaska. Along with cold temperatures, snow and blizzard conditions paralysed many western areas. The first cold wave began on the 19th with temperatures plummeting to as low as -47° Celsius across the Prairies, while snow, ice and high winds left thousands of homes without power in southern British Columbia. Below-freezing temperatures and heavy snowfall on British Columbia's lower mainland is highly unusual this time of year. Both Vancouver and Victoria, British Columbia reported snow and winds through the interior valleys reached 100 km/h. The second cold spell moved into the west by the December 28, producing temperatures in the -30° to -40° Celsius range as well as blowing and drifting snow across the Prairies. THe cold air spilled westward across the Rocky Mountains and eventually covered the entire province of British Columbia. The Okanagan fruit belt in southeastern part of the province recorded temperatures in the minus twenties as well as 10 to 20 centimeteres of snow. This combination is rare in this area.

On December 30, Vancouver International Airport reported 30 centimeters of snow - the worst storm in 20 years. The cold snap across the province consumed 65 percent of natural gas reserves for heating.

For the eastern half of the country, the last month of the year ended with stormy weather. Between December 3 and 5, the first major snowstorm of the season blanketed Ontario with as much as 20 centimeters of snow, while southern Quebec received as much as 50 centimeters. As well, copious amounts of rain and freezing precipitation were reported in both provinces. In Quebec, the storm forced the closure of many schools and businesses. Falling temperatures and icy roads on December 4 brought traffic to a standstill in Toronto, Ontario.

Two major storms during the first week of December hit Atlantic Canada. Both storms brought a mixture of rain, snow and strong winds gusting up to 122 km/h along the coastlines of Cape Breton Island, and Prince Edward Island. The second storm produced rain amounts, in some cases exceeding 100 mm. Sydney, Nova Scotia recorded a total of 173.2 mm for the week of December 3. In Newfoundland, precipitation totals during the first week of the month were as high as 162.0 mm.

Heavy rain falling on top of recent snowfalls resulted in major flooding between Corner Brook and Port aux Basques. Four thousand residents of the Port au Port Peninsula, west of Stephenville, were stranded due to flooding on the 9th. Along with numerous bridge and road washouts, many homes in Stephenville were also flooded.

Aaron Gergye, Canadian Climate Centre

JANUARY 1991

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 A	0.2	-1.4	9.7	-12.4	57.2	175	201.4	96	0	14	86	127	553.0
ALERT BAY	2.8	0.0	8.2	-3.4	9.8	29	110.9	57	0	11	*	*	472.3
AMPHITRITE POINT	4.8	0.1	10.0	-1.0	0.0	0	383.2	94	0	17	*	*	408.0
BLUE RIVER A	-14.0	-2.6	4.6	-43.8	50.6	52	51.9	63	81	8	70	148	*
CAPE ST JAMES	4.0	0.1	8.3	-1.0	5.0	31	116.6	72	0	13	76	*	433.8
CAPE SCOTT	4.2	0.6	10.1	-3.6	0.8	3	224.6	67	0	15	*	*	426.7
CASTLEGAR A	-5.0	-0.6	4.2	-17.6	44.4	53	70.1	87	20	12	45	99	712.5
COMOX A	1.9	-0.3	10.2	-5.7	35.4	83	83.8	43	0	11	78	*	497.8
CRANBROOK A	-10.4	0.1	7.2	-30.3	21.9	41	16.5	38	19	4	71	90	879.6
DEASE LAKE	-18.9	0.8	4.2	-43.0	28.6	84	20.8	75	83	6	77	122	1142.1
FORT NELSON A	-20.0	3.8	6.5	-39.7	9.2	29	8.0	32	38	3	77	*	1178.0
FORT ST JOHN A	-12.2	5.5	8.1	-35.2	9.3	24	8.4	24	43	3	74	*	937.4
HOPE A	-1.7	-1.3	8.5	-14.6	46.2	57	277.6	108	1	13	15	85	843.7
KAMLOOPS A	-8.9	-2.8	8.1	-27.6	26.4	82	24.9	79	9	6	64	110	832.4
KELOWNA A	-7.3	-0.8	6.2	-23.5	43.4	137	35.7	107	14	8	46	103	783.7
LYTTON	-5.1	-0.9	11.8	-21.3	12.0	21	38.2	55	0	8	71	114	716.5
MACKENZIE A	-16.1	-1.6	4.9	-44.6	20.4	25	17.6	27	70	7	89	159	1076.1
PENTICTON A	-4.3	-1.6	6.2	-15.1	33.0	114	30.2	94	0	7	41	86	692.1
PORT ALBERNI A	1.1	0.3	10.0	-8.3	61.6	102	250.4	102	17	12	39	*	523.2
PORT HARDY A	2.6	0.2	8.8	-5.9	14.6	49	139.7	66	0	11	63	99	477.7
PRINCE GEORGE A	-15.0	-2.9	4.0	-46.1	30.2	49	32.3	56	31	5	73	123	1024.2
PRINCE RUPERT A	-1.4	-0.9	9.4	-17.7	7.7	15	232.4	101	0	13	62	130	601.5
PRINCETON A	*	*	*	*	*	*	*	*	*	*	*	*	*
REVELSTOKE A	-8.3	-0.5	4.3	-28.5	113.6	78	98.6	89	55	12	54	123	815.9
SANDSPIT A	1.7	-0.3	10.1	-7.1	0.8	2	58.0	40	0	10	70	120	507.0
SMITHERS A	-12.7	-1.8	7.0	-35.2	17.4	30	19.3	35	33	6	65	119	916.1
TERRACE A	-8.1	-2.2	6.8	-22.1	54.7	47	118.9	77	4	10	95	182	807.1
VANCOUVER INT'L A	1.6	-0.9	11.3	-9.1	46.4	181	156.8	102	0	14	85	158	508.5
VICTORIA INT'L A	2.5	-0.6	12.0	-6.3	35.4	177	113.5	74	0	14	90	140	480.6
VICTORIA MARINE	3.6	0.3	11.6	-3.2	12.0	108	190.2	98	0	17	*	*	445.8
WILLIAMS LAKE A	-12.9	-2.5	5.5	-38.9	33.8	68	34.0	77	65	3	77	112	956.2

STATION	Temperature C Mean	Difference from Normal	Maximum	Minimum	Snowfall (cm)	% of Normal Snowfall	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	% of Normal Bright Sunshine	Degree Days below 18 C
YUKON TERRITORY													
DAWSON A	-26.7	*	2.6	-47.1	33.6	*	18.4	*	*	*	*	*	*
MAYO A	-24.7	4.3	3.3	-48.1	26.8	143	17.5	100	*	*	*	*	*
WATSON LAKE A	-25.0	1.7	4.5	-49.6	12.5	31	11.8	36	55	4	71	158	1327.7
WHITEHORSE A	-18.8	1.9	4.6	-44.9	27.0	127	18.0	102	35	3	41	89	1140.7
NORTHWEST TERRITORIES													
ALERT	-34.6	-2.5	-22.3	-44.1	4.0	54	3.8	54	19	1	0	*	1630.8
BAKER LAKE A	-35.3	-2.3	-22.6	-41.6	3.3	41	2.6	34	19	2	*	*	1653.4
CAMBRIDGE BAY A	-35.4	-1.8	-21.0	-44.5	2.8	53	2.8	58	16	1	6	630	1656.3
CAPE PARRY A	-27.1	1.7	-6.3	-38.7	10.8	110	7.7	108	15	1	*	*	1392.2
CLYDE A	-31.2	-4.7	-16.0	-43.3	1.9	19	1.9	19	22	0	0	*	1524.9
COPPERMINE A	-29.0	1.1	-14.8	-41.1	26.9	292	21.6	232	59	7	9	218	1462.6
CORAL HARBOUR A	-34.7	-5.0	-19.9	-46.6	6.2	72	6.2	75	20	3	16	*	1634.9
EUREKA	-401*	-3.7	-13.4	-50.7	1.4	43	1.4	48	5	0	0	0	1800.8
FORT RELIANCE	-29.3	0.3	13.5	-43.1	31.0	215	17.2	145	59	6	*	*	1266.0
FORT SIMPSON A	-21.6	6.7	2.2	-39.9	11.5	56	11.0	61	42	3	47	99	1227.3
FORT SMITH A	-23.7	3.1	-8.5	-43.9	27.2	127	20.2	109	62	10	54	*	1301.8
IQALUIT	-32.1	-6.5	-18.0	-44.9	7.6	28	7.0	27	26	3	38	109	1551.8
HALL BEACH A	-33.4	-2.4	-21.1	-42.4	1.6	18	1.6	18	30	0	*	*	1604.7
HAY RIVER A	-21.6	4.2	-1.0	-38.9	20.6	92	20.6	99	64	7	*	*	1186.7
INUVIK A	-25.0	4.6	0.0	-46.1	24.2	119	20.0	112	45	6	4	51	1333.7
MOULD BAY A	-34.7	-1.2	-16.2	-46.2	3.0	91	2.4	89	21	0	0	*	1632.8
NORMAN WELLS A	-23.1	5.8	3.0	-38.3	47.9	233	43.6	224	26	8	18	59	1244.6
POND INLET A	-33.9	*	-24.2	-43.8	4.2	*	3.2	*	23	*	*	*	1610.8
RESOLUTE A	-35.2	-3.1	-25.6	-46.8	2.0	59	1.8	55	21	0	0	*	1650.9
YELLOWKNIFE A	-26.9	1.9	-9.7	-43.7	30.2	195	22.7	171	50	8	48	33	1391.8
ALBERTA													
BANFF	-10.3	1.2	6.0	-33.0	10.4	24	6.8	18	36	4	*	*	*
CALGARY INT'L A	-8.8	3.0	11.0	-31.3	11.1	53	7.4	46	2	3	134	132	829.5
COLD LAKE A	-16.2	2.8	6.2	-42.6	20.4	86	11.6	52	18	7	100	110	1061.6
CORONATION A	-13.5	3.0	5.5	-36.6	14.2	56	9.4	44	12	3	131	110	977.2

JANUARY 1991

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	-12.0	4.5	8.3	-37.3	12.6	44	12.6	52	17	2	134	137	927.5
EDMONTON MUNICIPAL	-10.4	4.6	8.0	-32.1	11.6	*	11.6	47	17	2	123	137	880.2
EDMONTON NAMAO A	-11.0	4.6	7.6	-32.1	8.0	32	7.8	31	8	2	*	*	900.4
EDSON A	-12.3	2.0	10.1	-42.0	3.8	11	1.8	7	32	1	106	127	938.0
FORT CHIPEWYAN A	-22.8	2.9	0.5	-45.0	32.2	151	29.8	145	*	*	*	*	*
FORT MCMURRAY A	-18.8	3.0	6.8	-41.5	22.8	86	13.1	58	28	5	76	87	1141.6
GRANDE PRAIRIE A	-14.7	3.0	7.0	-41.5	6.4	17	6.5	19	44	2	109	*	1013.5
HIGH LEVEL A	-18.9	4.3	6.6	-43.8	19.9	75	18.0	78	47	6	67	124	1143.7
JASPER	-11.7	1.1	7.0	-35.2	4.0	10	2.5	7	23	0	72	*	919.7
LETHBRIDGE A	-7.9	2.4	10.6	-30.0	18.2	64	14.4	61	0	4	103	*	802.7
MEDICINE HAT A	-11.0	1.6	7.0	-25.4	12.0	46	11.8	52	2	1	124	134	898.8
PEACE RIVER A	-14.5	5.9	7.3	-36.8	5.3	20	5.7	26	8	2	*	*	1004.5
RED DEER A	-12.4	3.1	8.7	-36.0	8.7	35	8.7	37	16	2	*	*	944.5
ROCKY MTN HOUSE A	-12.9	0.1	11.5	-41.0	14.2	47	9.4	34	32	4	*	*	955.9
SLAVE LAKE A	-13.0	4.2	10.0	-39.1	9.4	28	8.8	33	11	4	83	98	960.6
WHITECOURT A	-11.8	4.8	8.6	-38.0	22.3	70	14.6	50	32	4	*	*	927.2
SASKATCHEWAN													
BROADVIEW	-17.5	2.2	3.5	-39.6	13.6	72	10.0	57	7	4	131	109	1100.1
CREE LAKE	-23.4	1.5	2.0	-44.0	17.4	83	17.4	115	45	8	65	77	1285.3
ESTEVAN A	-16.3	0.0	3.2	-38.0	12.2	60	7.5	39	9	3	135	111	1064.4
HUDSON BAY A	-20.1	*	5.1	-38.7	16.2	*	7.8	*	22	1	123	*	1182.6
KINDERSLEY	-16.8	0.4	3.6	-35.8	6.0	33	2.6	15	7	0	126	*	1032.7
LA RONGE A	-20.5	2.2	6.1	-44.0	15.7	71	15.7	90	53	6	*	*	1201.9
MEADOW LAKE A	-18.7	*	5.0	-44.6	12.4	*	5.8	*	15	2	87	*	1136.8
MOOSE JAW A	-14.4	1.4	5.6	-37.5	6.4	28	5.8	31	123	*	123	117	1004.1
NIPAWIN A	-20.2	*	6.1	-41.2	5.6	*	2.6	*	55	0	115	*	1183.2
NORTH BATTLEFORD A	-16.8	2.2	5.9	-40.2	6.0	27	5.4	27	13	2	*	*	1089.2
PRINCE ALBERT A	-19.4	2.1	5.8	-43.7	11.3	62	8.0	48	19	3	109	114	1157.6
REGINA A	-16.8	1.1	4.2	-35.8	9.4	47	7.0	42	13	4	122	122	1078.8
SASKATOON A	-17.5	1.8	4.4	-38.5	6.8	34	5.4	30	9	2	*	*	1101.7
SWIFT CURRENT A	-13.8	0.9	5.3	-34.0	17.2	77	15.2	72	19	5	121	131	969.4
YORKTON A	-19.2	0.7	3.4	-42.3	19.8	82	19.8	87	28	3	117	108	1112.5
MANITOBA													
BRANDON A	-19.8	-0.1	2.5	-39.8	8.3	39	7.1	37	21	2	133	*	1183.0
CHURCHILL A	-31.3	-3.8	-14.0	-39.4	2.2	13	1.4	9	22	0	120	150	1528.5
DAUPHIN A	-17.9	1.6	4.5	-35.4	9.2	36	6.2	25	5	2	127	107	1111.4
GILLAM A	-29.8	-1.8	-10.9	-40.8	19.8	86	12.4	70	51	5	*	*	1482.5
GIMLI	-19.9	*	2.0	-37.4	21.4	*	14.9	*	15	5	134	109	1175.2
ISLAND LAKE	-26.4	-1.6	-6.8	*	*	*	21.8	99	50	6	*	*	1377.0

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									
LYNN LAKE A	-27.6	-0.7	-7.3	-42.2	24.4	92	18.6	101	33	5	70	75	1415.0
NORWAY HOUSE A	-25.4	*	-5.1	-40.4	34.4	*	24.7	*	35	8	*	*	1345.0
PORTAGE LA PRAIRIE	-17.9	0.4	5.2	-37.5	15.9	52	11.0	42	7	3	*	*	1111.3
THE PAS A	-22.0	0.7	1.0	-38.3	19.3	82	13.8	77	20	4	105	102	1239.3
THOMPSON A	-29.2	-2.6	-8.6	-46.8	26.8	106	20.8	110	70	7	114	121	1465.5
WINNIPEG INT'L A	-18.9	0.4	2.4	-37.3	16.6	70	15.2	71	19	6	139	115	1142.8
ONTARIO													
BIG TROUT LAKE	-26.9	-2.4	-8.4	-42.3	20.4	75	18.0	73	50	6	*	*	1392.4
EARLTON A	-17.3	-1.0	1.3	-39.6	45.3	79	39.6	70	28	10	*	*	1095.3
GERALDTON A	-22.1	*	0.7	-41.8	39.6	*	29.8	*	50	9	*	*	1244.6
GORE BAY A	-9.3	0.8	3.3	-25.1	57.6	101	26.6	43	35	11	*	*	847.4
HAMILTON RBG	-4.5	*	5.5	-17.5	21.4	*	40.8	*	4	7	99	*	*
HAMILTON A	-6.0	0.4	4.5	-20.6	32.8	83	29.4	42	6	7	*	*	744.0
KAPUSKASING A	-20.7	-2.1	0.4	-37.7	52.0	94	45.9	86	68	14	*	*	1201.5
KENORA A	-19.5	-1.0	0.8	-34.6	25.6	82	25.2	89	35	8	*	*	1162.7
KINGSTON A	-6.6	1.1	4.7	-22.6	44.2	85	57.6	72	10	15	86	86	761.5
LONDON A	-6.0	0.6	4.2	-16.4	47.4	86	51.3	68	9	11	73	102	743.2
MOOSONEE	-24.6	-4.2	-6.6	-40.6	29.2	68	26.0	64	57	9	130	158	1321.9
MUSKOKA A	-10.1	0.3	5.8	-32.7	119.2	148	86.2	100	49	17	*	*	704.8
NORTH BAY A	-12.8	0.2	1.3	-30.2	79.4	134	60.4	95	47	15	95	98	952.1
OTTAWA INT'L A	-10.6	0.3	3.6	-26.9	66.0	131	51.4	84	36	12	117	118	876.9
PETAWAWA A	-13.9	-0.8	2.0	-39.8	56.6	121	48.9	86	36	11	*	*	989.0
PETERBOROUGH A	-8.7	0.9	3.4	-29.8	62.0	176	52.2	93	22	11	*	*	826.0
PICKLE LAKE	-22.7	-1.3	-4.2	-38.1	34.8	83	30.9	81	38	9	*	*	1262.2
RED LAKE A	-22.2	-1.2	-0.5	-38.9	37.0	119	33.0	115	59	9	137	*	1245.2
ST CATHARINES A	-3.9	0.8	6.3	-16.2	28.9	88	39.2	67	2	10	87	*	678.6
SARNIA A	-5.4	1.1	5.1	-20.4	34.2	119	40.2	76	6	9	94	112	725.8
SAULT STE MARIE A	-10.9	-0.2	2.7	-27.7	75.4	99	40.9	51	20	12	60	80	895.4
SIOUX LOOKOUT A	-20.6	-1.2	0.1	-38.8	40.7	107	40.3	112	61	10	*	*	1194.9
SUDBURY A	-13.2	0.5	1.7	-29.9	60.0	111	50.0	87	49	14	88	87	966.4
THUNDER BAY A	-17.2	-1.8	3.8	-35.5	44.0	91	26.4	65	37	6	135	114	1091.9
TIMMINS A	-19.1	-1.8	1.3	-38.4	49.5	75	38.7	69	53	10	*	*	1149.1
TORONTO	-3.9	*	5.7	-17.8	32.8	*	43.8	*	1	7	*	*	679.1
TORONTO INT'L A	-5.7	1.0	4.9	-18.8	24.6	74	33.6	67	4	6	*	*	734.5
TORONTO ISLAND A	-3.8	*	4.7	-16.3	29.8	96	36.5	*	1	7	*	*	675.6
TRENTON A	-6.9	0.7	4.9	-24.0	59.8	125	46.3	67	15	11	*	*	771.4
WATERLOO WELLINGTON	-7.0	0.7	3.7	-22.4	42.0	104	48.1	80	7	12	*	*	776.0
WAWA A	-15.4	*	1.3	-36.0	83.4	*	55.1	*	60	15	*	*	1037.8
WIARTON A	-6.4	0.7	5.4	-23.5	125.3	123	75.1	77	47	18	47	69	754.5
WINDSOR A	-4.2	0.7	6.5	-14.9	16.6	55	40.2	73	3	8	*	*	688.9

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STATION	Temperature C Mean	Difference from Normal	Maximum	Minimum	Snowfall (cm)	% of Normal Snowfall	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	% of Normal Bright Sunshine	Degree Days below 18 C
QUEBEC													
BAGOTVILLE A	-19.1	-3.3	-1.1	-36.3	78.1	114	75.3	119	72	15	*	*	1149.9
BAIE COMEAU A	-18.3	-4.3	-1.8	-40.1	71.4	84	51.0	56	76	11	137	140	1125.6
BLANC SABLON A	-19.5	-8.2	-2.2	-30.5	115.8	102	115.8	89	61	14	115	*	1125.5
CHIBOUGAMAU CHAPAIS	-22.8	*	-4.7	-41.2	48.6	*	38.6	*	69	14	119	136	1264.4
GASPE A	-16.5	*	0.1	-32.2	65.4	*	56.1	*	42	9	142	*	1058.2
INUKJUAK A	-31.2	-6.7	-17.0	-40.4	5.6	56	4.6	47	30	1	120	231	1526.8
KUUJJUAQ A	-31.4	-8.1	-13.2	-42.7	11.8	36	11.8	36	45	3	91	144	1530.2
KUUJJUARAPIK A	-28.9	-6.4	-13.3	-39.6	14.6	54	14.7	57	15	5	83	116	1420.9
LA GRANDE IV A	-29.4	*	-8.8	-45.1	14.6	*	11.8	*	71	6	109	*	1470.8
LA GRANDE RIVIERE A	-29.0	*	-11.9	-39.8	21.0	*	16.2	*	*	6	93	*	1456.5
MANIWAKI	-13.8	-0.3	1.5	-37.5	65.2	135	48.1	87	40	12	100	109	983.7
MATAGAMI A	*	*	-5.1	-39.9	41.6	*	32.0	*	54	12	81	104	1245.5
MONT JOLI A	-15.7	-4.1	-1.4	-30.4	77.8	90	58.2	67	*	160	99	123	1046.5
MONTREAL INT'L A	-10.5	-0.3	2.5	-26.5	65.8	125	75.6	105	32	14	114	108	883.7
MONTREAL MIRABEL I/	-12.6	*	1.1	-31.7	84.8	*	85.2	*	49	14	136	*	948.2
NATASHQUAN A	-19.5	-7.4	-2.5	-33.0	80.4	117	72.6	80	88	11	136	125	1161.1
QUEBEC A	-14.0	-1.9	0.2	-32.4	100.8	130	91.0	101	84	18	119	123	991.7
ROBERVAL A	-18.8	-3.0	-2.1	-35.0	42.2	60	33.2	49	47	8	127	*	1140.4
SCHEFFERVILLE A	-30.4	-7.6	-10.3	-43.0	11.6	24	9.4	20	72	4	121	153	1501.6
SEPT-ILES A	-20.4	-6.4	-2.6	-35.4	84.4	90	52.9	55	*	15	129	119	1190.7
SHERBROOKE A	-11.3	0.3	2.6	-30.6	76.8	123	70.0	95	*	13	94	*	907.4
STE AGATHE DES MONT	-13.5	-0.2	-0.1	-32.1	89.0	109	71.0	74	64	18	105	110	977.4
ST HUBERT A	-10.5	-0.4	2.6	-25.8	63.1	*	78.8	95	27	14	107	*	883.3
VAL D'OR A	-18.1	-1.3	0.3	-39.6	69.8	117	54.8	91	53	14	84	83	1119.3
NEW BRUNSWICK													
CHARLO A	-16.4	-3.7	0.5	-29.9	112.3	134	80.6	90	133	14	145	123	1045.9
CHATHAM A	-13.3	-3.6	2.3	-30.4	73.7	111	80.3	81	22	13	142	124	970.0
FREDERICTON A	-11.6	-2.4	2.8	-33.0	109.9	172	98.6	95	40	13	147	*	916.7
MONCTON A	-11.2	-3.1	2.6	-26.9	107.2	138	94.6	76	40	13	137	128	906.4
SAINT JOHN A	-9.3	-1.5	4.3	-26.5	77.2	101	102.2	69	19	13	138	131	846.2

STATION	Temperature C Mean	Difference from Normal	Maximum	Minimum	Snowfall (cm)	% of Normal Snowfall	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	% of Normal Bright Sunshine	Degree Days below 18 C
NOVA SCOTIA													
GREENWOOD A	-7.1	-2.1	6.8	-21.6	65.9	87	97.3	77	5	15	*	*	777.7
HALIFAX INT'L A	-8.1	-2.1	7.5	-22.2	72.8	115	107.3	70	1	15	*	*	809.0
SABLE ISLAND	-1.8	-1.9	9.6	-12.7	27.0	74	145.9	100	0	16	82	154	614.0
SHEARWATER A	-3.9	0.2	7.8	-20.9	40.6	89	109.2	76	0	13	121	107	746.4
SYDNEY A	-8.8	-4.1	6.3	-22.2	58.2	78	108.8	73	7	13	97	113	829.9
YARMOUTH A	-3.6	-0.9	9.1	-15.6	46.4	75	114.6	81	0	15	88	124	667.8
PRINCE EDWARD ISLAND													
CHARLOTTETOWN A	-10.8	-3.7	4.0	-24.7	88.0	115	121.4	104	36	11	*	*	893.5
SUMMERSIDE A	-10.6	-3.4	3.1	-23.5	79.8	120	90.2	88	37	12	140	129	887.8
NEWFOUNDLAND													
BONAVISTA	-8.1	-3.8	4.9	-18.5	99.2	195	107.7	119	82	9	*	*	807.7
BURGEO	-8.8	-4.0	2.9	-22.4	120.5	211	157.6	103	73	17	0	0	828.5
CARTWRIGHT	-21.0	-7.8	-5.4	-31.7	68.8	83	68.8	77	138	9	111	123	1208.1
CHURCHILL FALLS A	-28.9	-7.6	-9.6	-42.6	16.0	19	15.3	21	84	5	147	147	1452.4
COMFORT COVE	-12.7	-5.3	1.7	-24.8	146.8	181	142.7	149	103	12	*	*	953.1
DANIELS HARBOUR	-14.3	-7.4	-0.5	-27.5	127.0	143	127.0	128	54	20	47	83	996.7
DEER LAKE A	-13.7	-5.3	0.1	-31.6	157.9	183	122.5	131	86	20	*	*	981.2
GANDER INT'L A	-11.7	-5.5	3.3	-22.8	134.0	170	133.3	122	55	11	131	154	919.9
GOOSE A	-24.5	-8.1	-6.2	-35.3	36.6	46	27.2	37	84	6	139	158	1318.6
MARY'S HARBOUR	-19.9	-9.6	-4.0	-33.0	69.8	94	67.6	79	107	14	*	*	1170.1
PORT AUX BASQUES	-7.8	-3.7	3.2	-20.7	192.1	261	206.9	155	110	28	52	*	804.0
ST ANTHONY	-17.7	-6.4	-3.0	-29.4	124.9	218	122.3	126	69	14	*	*	1108.0
ST JOHN'S A	-8.1	-4.2	8.5	-17.9	85.2	105	128.6	83	24	12	108	152	808.2
ST LAWRENCE	-7.1	-3.3	4.0	-18.5	127.8	251	175.2	148	32	17	*	*	805.1
STEPHENVILLE A	-10.2	-5.2	4.0	-21.3	186.5	196	166.8	145	89	26	*	*	878.6
WABUSH LAKE A	-28.4	-6.1	-8.1	-42.2	30.0	41	19.3	30	60	7	115	142	1437.5

AGROCLIMATOLOGICAL STATIONS — JANUARY, 1991

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	0.0	-1.2	9.0	-10.5	28.6	162.1	71	0	15	75	0.0	0.0
KAMPLOOPS	*.*	*.*	*.*	*.*	*.*	*.*	**	***	***	**	*.*	*.*
SIDNEY	2.9	-0.2	12.5	-4.5	12.0	96.4	62	0	13	77	0.0	15.5
SUMMERLAND	-5.2	-1.8	8.0	-16.5	29.8	27.6	78	9	6	43	0.0	0.0
ALBERTA												
BEAVERLODGE	-12.2	3.7	7.5	-40.0	10.0	7.4	22	16	2	98	0.0	0.0
ELLERSLIE	*.*	*.*	*.*	*.*	*.*	*.*	**	***	***	**	*.*	*.*
LACOMBE	-12.2	3.3	8.5	-37.5	8.3	5.2	24	10	2	116	0.0	0.0
LETHBRIDGE	*.*	*.*	*.*	*.*	*.*	*.*	**	***	***	**	*.*	*.*
VEGREVILLE	*.*	*.*	*.*	*.*	*.*	*.*	**	***	***	**	*.*	*.*
SASKATCHWAN												
INDIAN HEAD	-17.2	0.7	4.0	-38.0	12.6	6.6	31	21	5	**	0.0	0.0
MELFORT	-19.0	1.9	4.0	-40.0	7.4	7.4	39	34	2	93	0.0	0.0
REGINA	-17.7	0.3	4.5	-39.0	5.5	7.6	42	9	5	**	*.*	0.0
SASKATOON	-17.1	2.0	4.5	-37.5	7.1	7.1	31	14	2	0	*.*	*.*
SCOTT	-16.2	2.9	5.0	-40.0	21.5	12.4	73	8	5	101	0.0	0.0
SWIFT CURRENT	-12.9	1.9	5.0	-34.0	10.6	7.6	46	8	2	106	0.0	0.0
MANITOBA												
BRANDON	-19.4	-0.1	4.1	-40.5	8.4	8.4	39	24	2	**	0.0	0.0
MORDEN	-16.5	3.2	5.0	-37.0	11.8	10.0	39	4	2	146	0.0	0.0
GLENLEA	-20.0	-2.7	2.5	-40.0	17.2	17.2	73	40	7	134	0.0	0.0
ONTARIO												
DELHI	-5.2	0.8	5.0	-19.0	28.2	37.2	56	5	12	**	0.0	0.0
ELORA	-7.8	0.4	3.3	-23.7	*****	40.9	70	21	11	0	*.*	*.*
GUELPH	-6.9	0.1	4.1	-27.6	48.1	48.1	85	9	11	76	0.0	0.0
HARROW	-3.9	0.9	6.0	-16.5	27.7	38.3	65	3	8	86	0.0	0.0
KAPUSKASING	-21.4	-2.8	0.5	-40.0	40.7	37.8	78	36	11	96	0.0	0.0
OTTAWA	-10.0	0.8	4.0	-28.8	57.9	48.6	88	34	9	117	0.0	0.0
SMITHFIELD	-5.7	1.8	4.8	-27.4	75.8	87.8	106	12	13	**	0.0	0.0
VINELAND	*.*	*.*	*.*	*.*	*.*	*.*	**	***	***	**	*.*	*.*
WOODSLIE	*.*	*.*	*.*	*.*	*.*	*.*	**	***	***	**	*.*	*.*

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	Mean	Difference from Normal	Maximum	Minimum							This month	Since jan. 1st
QUEBEC												
LA POCATIERE	-13.0	-1.7	-0.5	-30.0	49.4	42.8	54	40	9	140	0.0	0.0
L'ASSOMPTION	-11.4	0.5	1.0	-32.5	61.3	66.0	89	30	12	121	0.0	0.0
LENNOXVILLE	*.*	*.*	*.*	*.*	*.*	*.*	**	***	***	**	*.*	*.*
NORMANDIN	-21.6	-3.6	-3.0	-41.0	46.2	32.2	51	40	**	128	0.0	0.0
STE.CLOTILDE	*.*	*.*	*.*	*.*	*.*	*.*	**	***	***	**	*.*	*.*
NEW BRUNSWICK												
FREDERICTON	-11.0	-1.9	3.5	-31.5	88.2	109.3	106	35	11	147	0.0	0.0
NOVA SCOTIA												
KENTVILLE	-6.8	-1.8	8.5	-21.0	63.0	112.4	83	15	12	82	*.*	0.0
NAPPAN	-9.6	-2.8	5.0	-26.5	76.8	92.4	81	25	12	102	0.0	0.0
PRINCE EDWARD ISLAND												
CHARLOTTETWN	-9.9	-3.3	4.0	-24.0	69.8	116.0	114	34	9	126	0.0	0.0
NEWFOUNDLAND												
ST.JOHN'S WEST	-2.9	0.9	8.5	-18.0	100.0	155.6	86	14	16	96	0.0	7.1