Climatic Perspectives

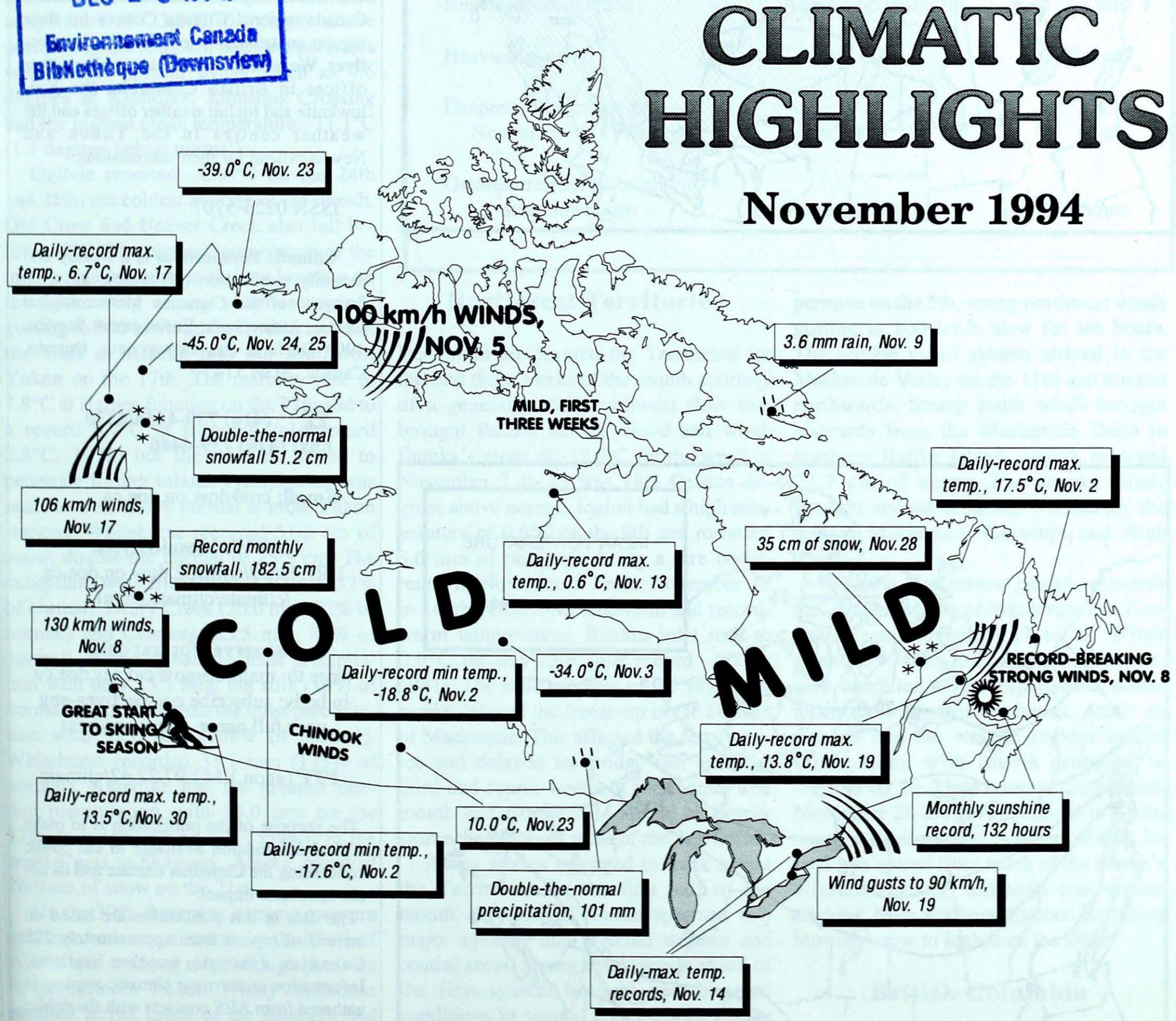
November 1994

Monthly review of Canadian climate and water

vol. 16

CLIMATIC HIGHLIGHTS

November 1994



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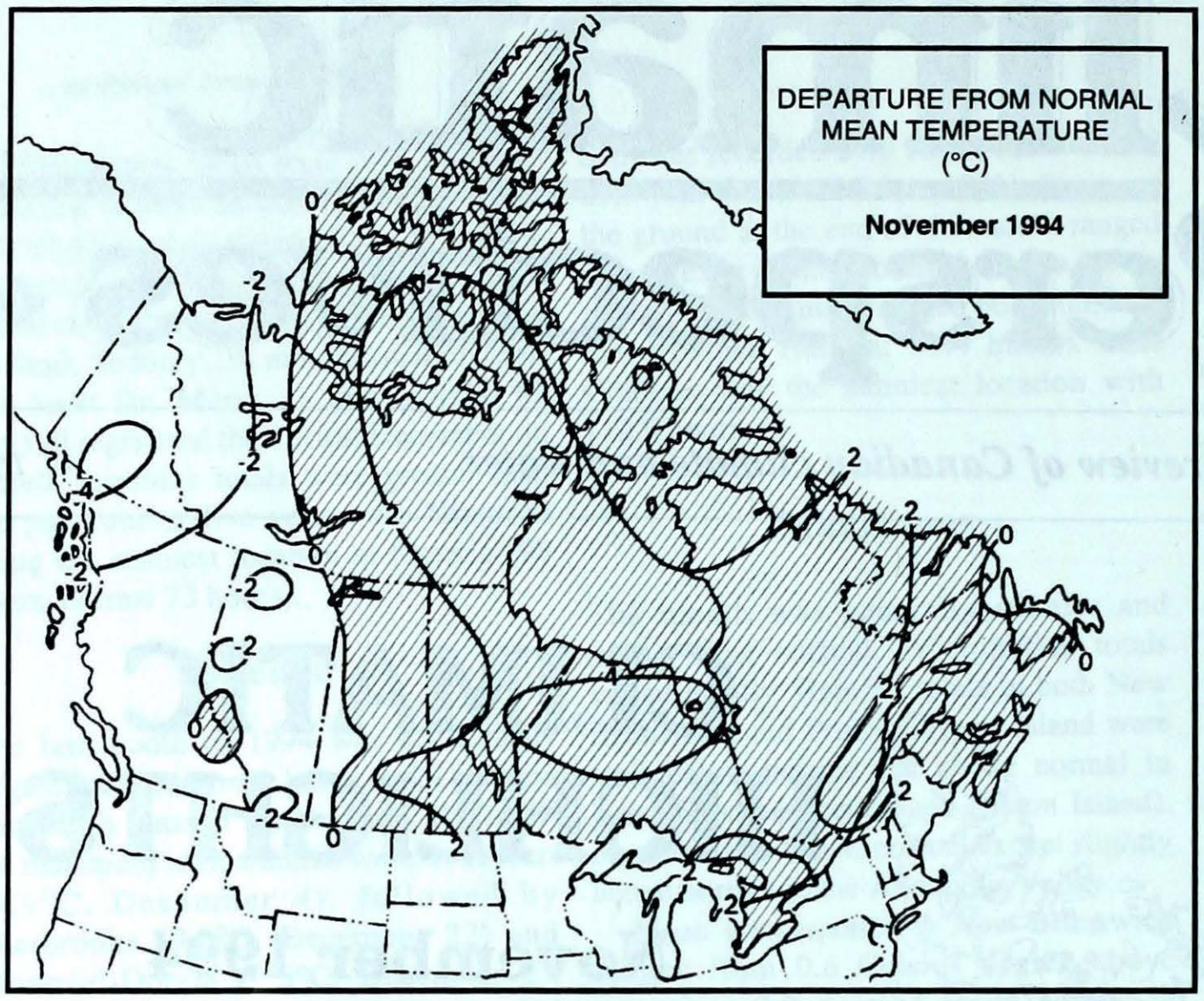

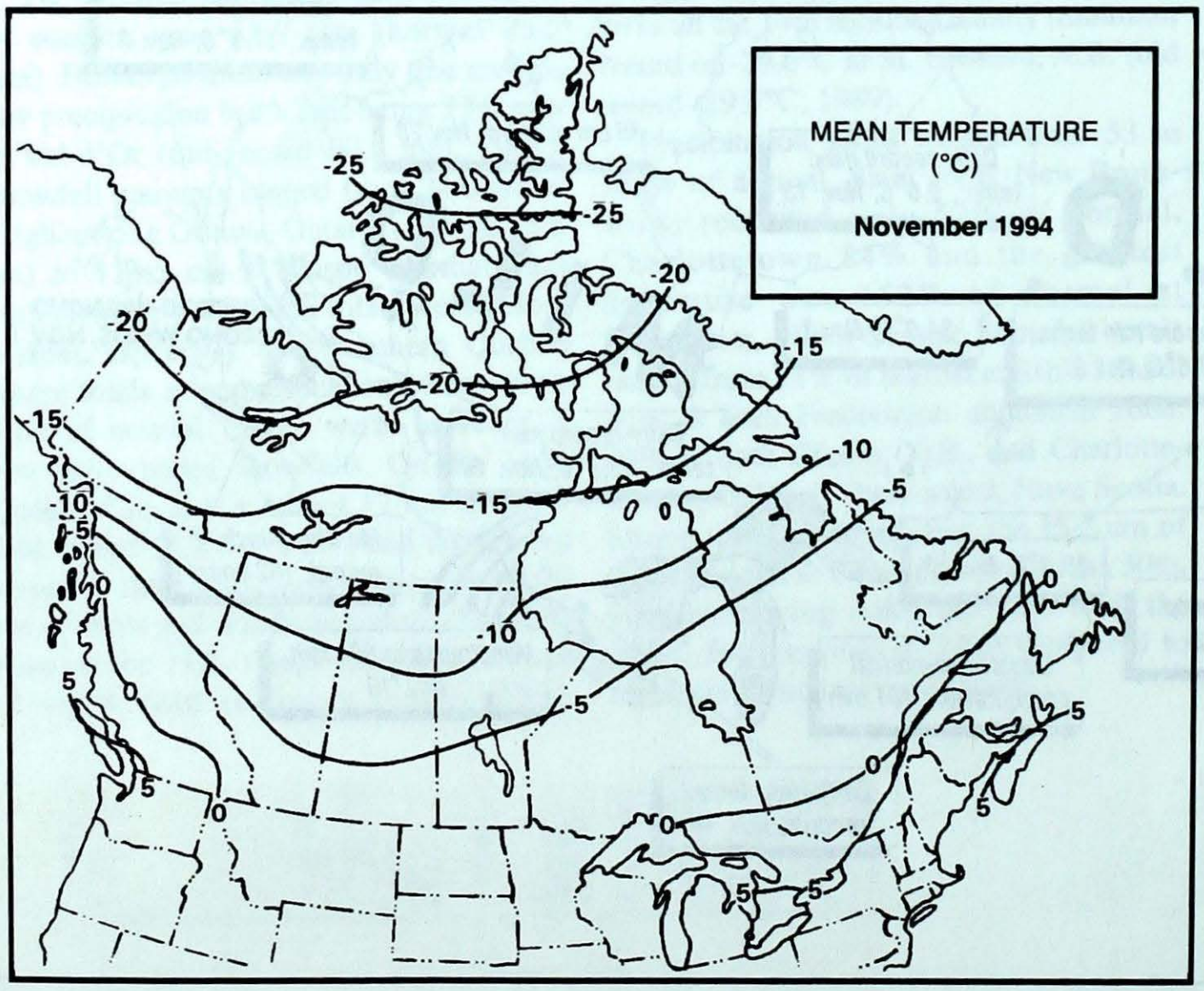

CLIMATIC PERSPECTIVES
VOLUME 16

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The purpose of the publication is to make topical information available to the public concerning the Canadian climate and its socio-economic impact.

The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily reflect the views of Atmospheric Environment Service.

Across the country

Yukon

Winter settled over the Yukon in November. Arctic air to the north clashed with mild Pacific air to the south, with the Arctic air winning most of the battles. The result was generally cold and snowy conditions over most of the Territory. Temperatures in the northern half of the Yukon ranged from near normal to two Celsius degrees above normal. Old Crow was the coldest place in the territory with a mean temperature of -23.8°C (0.2 degree above normal). In the southern half, temperatures were below normal by as much as 4.6 degrees at Klondike. Johnsons Crossing had the highest mean temperature, -11.1°C (1.1 degrees below normal).

Ogilvie reported -45.0°C on the 24th and 25th, the coldest reading of the month. Old Crow and Beaver Creek also fell below -40°C. The highest temperature of the month was recorded at Haines Junction on the 17th. Very strong southwest winds gusting to 106 km/h pushed warm air from the Gulf of Alaska into the southwest Yukon on the 17th. The mercury rose to 7.8°C at Haines Junction on the 17th and to a record 6.7°C at Burwash (old record 2.8°C, 1971) but the mild air failed to penetrate further inland. Precipitation was near- to well-above normal at most Yukon stations. Whitehorse received 51.2 cm of snow, double the normal of 25.5 cm. The exceptions were Blanchard (37.0 mm, 32% of normal), Drury Creek (20.0 mm, 72% of normal) and Carcross (25.5 mm, 82% of normal). Burwash had the least precipitation with only 15.3 mm, but still 119% of normal. Swift River had the most precipitation with 92.0 mm (168% of normal). Whitehorse recorded 33.1 mm (175% of normal). Klondike had the greatest one-day precipitation with 19.0 mm on the 17th. In neighbouring B.C., Fraser, in the coastal pass to Skagway, Alaska, received 26.0 cm of snow on the 21st.

On the 30th, there was a strong pressure gradient between a storm in the Gulf of Alaska and a strong ridge of high pressure in the northern Yukon. Windy conditions resulted across much of the southern and central areas. Combined with cold temperatures, there were high to very high wind chills.

CLIMATIC EXTREMES IN CANADA - NOVEMBER 1994

Mean temperature:		
Highest	Windsor, Ont.	7.0°C
Coldest	Eureka, N.W.T.	-25.7°C
Highest temperature:	St. Catharines, Ont.	20.7°C
Lowest temperature:	Ogilvie, Yukon	-45.0°C
Heaviest precipitation:	Amphitrite Point, B.C.	577.1 mm
Heaviest snowfall:	Terrace, B.C.	182.5 cm
Deepest snow on the ground November 30, 1994:	Terrace B.C.	42 cm
Greatest number of bright sunshine hours:	Moncton, N.B.	153 hours

Northwest Territories

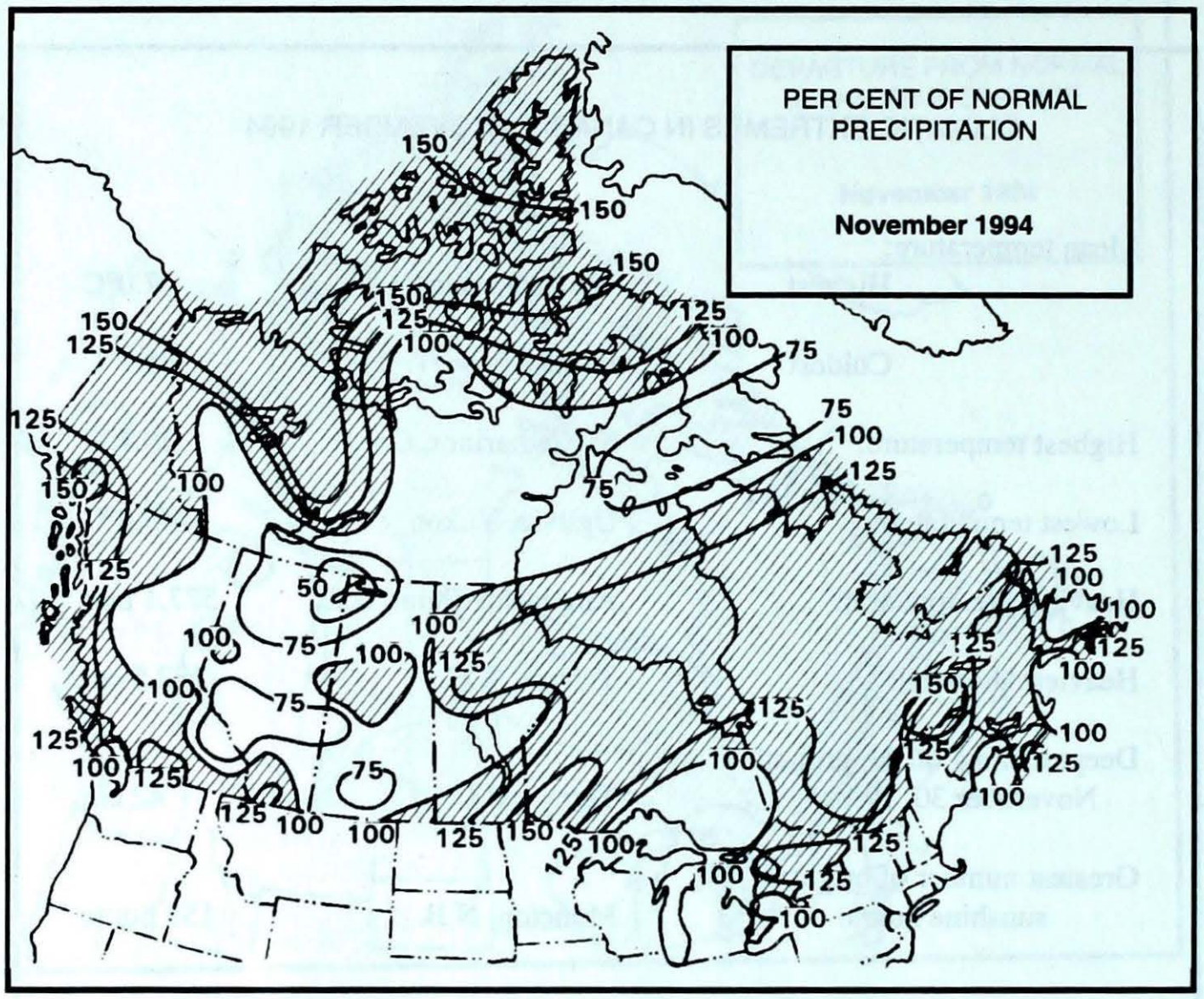
Very mild air covered the Territories for the first three weeks of the month courtesy of a generally west/southwest flow that brought Pacific storms, cloud and wind. Eureka's mean of -12.0°C for the week of November 7 to 13 was 18.5 Celsius degrees above normal. Iqaluit had a high temperature of 0.6°C on the 9th and recorded 3.6 mm of rain (rain being a rare occurrence in November). From November 11 to 14, the District of Keewatin had record-warm temperatures. Rankin Inlet rose to 0.6°C on the 13th (old record -4.2°C, 1981). The mild weather of the first three weeks delayed the freeze-up in the District of Mackenzie. This affected the ferry service and delayed ice bridge use until the third and fourth weeks of the month. The month ended with cold Arctic air firmly entrenched in most areas of the Territories.

A few storms managed to track across the Territories. In the first half of the month, the Gulf of Alaska spawned two major systems that affected western and central areas. Strong south winds ahead of the first system brought near-blizzard conditions to several communities on the 3rd. The winds spread to the Arctic islands and at least one ship became icebound for a few days. As the low centre passed Coppermine on the 5th, strong northwest winds gusting to 100 km/h blew for ten hours. The second major system arrived in the Mackenzie Valley on the 11th and tracked northwards. Strong south winds brought blizzards from the Mackenzie Delta to northern Baffin Island. Inuvik received 23.7 cm of snow. The strong winds brought record-breaking warmth to the eastern Mackenzie, Keewatin and High Arctic.

The next disturbance moved eastwards across the Districts of Mackenzie and Keewatin from November 17 to 22. Winds gusted to 90 km/h in Coppermine, and blizzard conditions were experienced across most of the western Territories. Arctic air flooded into the western regions behind this system, with Inuvik dropping to -39.0°C on the 23rd. Another disturbance, November 28-29, gave blizzards to northwestern Hudson Bay. Southern Baffin Island was spared from much of the month's blizzard activity, although one system tracking from northern Quebec did bring blowing snow to Iqaluit on the 24th.

British Columbia

Winter touched most of the province in one form or another. Most areas had below-normal temperatures and sunshine but



above-normal precipitation. The southern interior had the greatest departure, 1.5 to 2.0 Celsius degrees below normal. Prince George to Smithers and northwest to Dease Lake was the only region that reported average or slightly above-average temperatures. The season's first serious Arctic outbreaks occurred and all areas had at least some snow. By the end of the month the Arctic front was hovering in and around the Rockies. Winter winds affected most regions, particularly coastal sections. The month ended with record-warm temperatures in the south where Kamloops recorded 13.5°C (old record 11.1°C, 1951).

Precipitation totals were generally 125 to 150% of normal except 75 to 100% in the central interior, 70% in the East Kootenays and 84% in the Princeton area. There were no new monthly precipitation records. Snowfall was above average in all areas except eastern regions, from Fort St. John (95%) to Revelstoke (70%). The greatest snowfall departures, as a per cent of normal were Kelowna and Castlegar (200%), Prince Rupert/Terrace (over 300%) and Penticton (over 400% but not a record). Terrace set a record of 182.5 cm of snow breaking the 1975 record of 167.1 cm. Terrace reported heavy snows in all but the second week of the month. Coastal sections received snow but it did not last in lower elevations. Ample snowfall in mountainous areas early in the season resulted in ski areas opening one to two weeks earlier than usual. Snowpacks in most areas were between 125 and 175% of average but a few locations were over 200%. Heavy snowpacks hampered winter logging in some coastal mountain areas.

Most areas experienced below-normal sunshine, ranging from 40% at Hope, 60 to 70% in central areas and 60 to 90% in most southern interior areas. There were no new low-monthly sunshine records, though Hope reported only 9.5 hours (record 7.5 hours, 1989). In exception, above-normal sunshine totals were 110 to 120% of normal in the far north, 140 to 150% on the east side of Vancouver Island north of Nanaimo, 117% of normal near Kamloops and near normal in Vancouver.

Winter means frequent gales on the coast. There were approximately 20 days with gale- or storm-force winds. The peak wind gust on the coast was 165 km/h, with a sustained wind of 130 km/h, November 8, at Solander Island, on the northwest coast of Vancouver Island - winds greater than 120 km/h are classified as hurricane-force. Strong winds in the Vancouver/Victoria areas, gusting to 85 km/h, resulted in downed trees and power outages on a couple of occasions during the month. Similar winds and local damage occurred in Prince George and Kamloops.

Alberta

Temperatures were near normal in central areas and near two Celsius degrees below normal in the extreme northwest. In the south, Lethbridge was 1.6 degrees below normal whereas Medicine Hat was 0.2 degree above normal. Precipitation totals varied from only 8.4 mm in Fort McMurray (32% of normal) to 38.6 mm at Grande Prairie (138% of normal). The greatest departure from normal was Lethbridge (37.7 mm, 231% of normal).

Winter arrived in Alberta on the 1st, as a low pressure area brought up to 15 cm of snow to north-central regions. North winds on the 2nd brought record-cold air. Temperatures approached -20°C, anywhere the skies cleared. Grande Prairie recorded -17.6°C and Edmonton, -18.8°C. By the 4th, a flow from the west returned, bringing milder Pacific air into the province. The south enjoyed above-normal temperatures during the second week of November. Warm south winds on the 14th produced temperatures from 5 to 10°C in the south. The cold air that covered the north moved southwards on the 17th, colliding with the warmer air in the south. This produced 10 to 20 cm of snow in the extreme south. Chinook winds on the 18th brought above-normal temperatures to many locations, melting the previous day's snow. West winds on the 18th gusted to 90 km/h as temperatures reached 6°C at both Calgary and Edmonton. Again on the 22nd, west winds were strong, gusting to 100 km/h in the south. For the last week of the month, the south had above-normal temperatures while the north had to endure a cold arctic airmass with its wintry temperatures. A Pacific disturbance spawned ski fever as it brought 10 to 20 cm of fresh snow to the mountain parks by the morning of the 30th. On the same day, Calgary recorded a mild 9.3°C

Saskatchewan and Manitoba

Temperatures averaged near normal in Saskatchewan but most of Manitoba was more than two Celsius degrees above nor-

mal. However, November could be summarised by breaking it into two distinctly different periods:

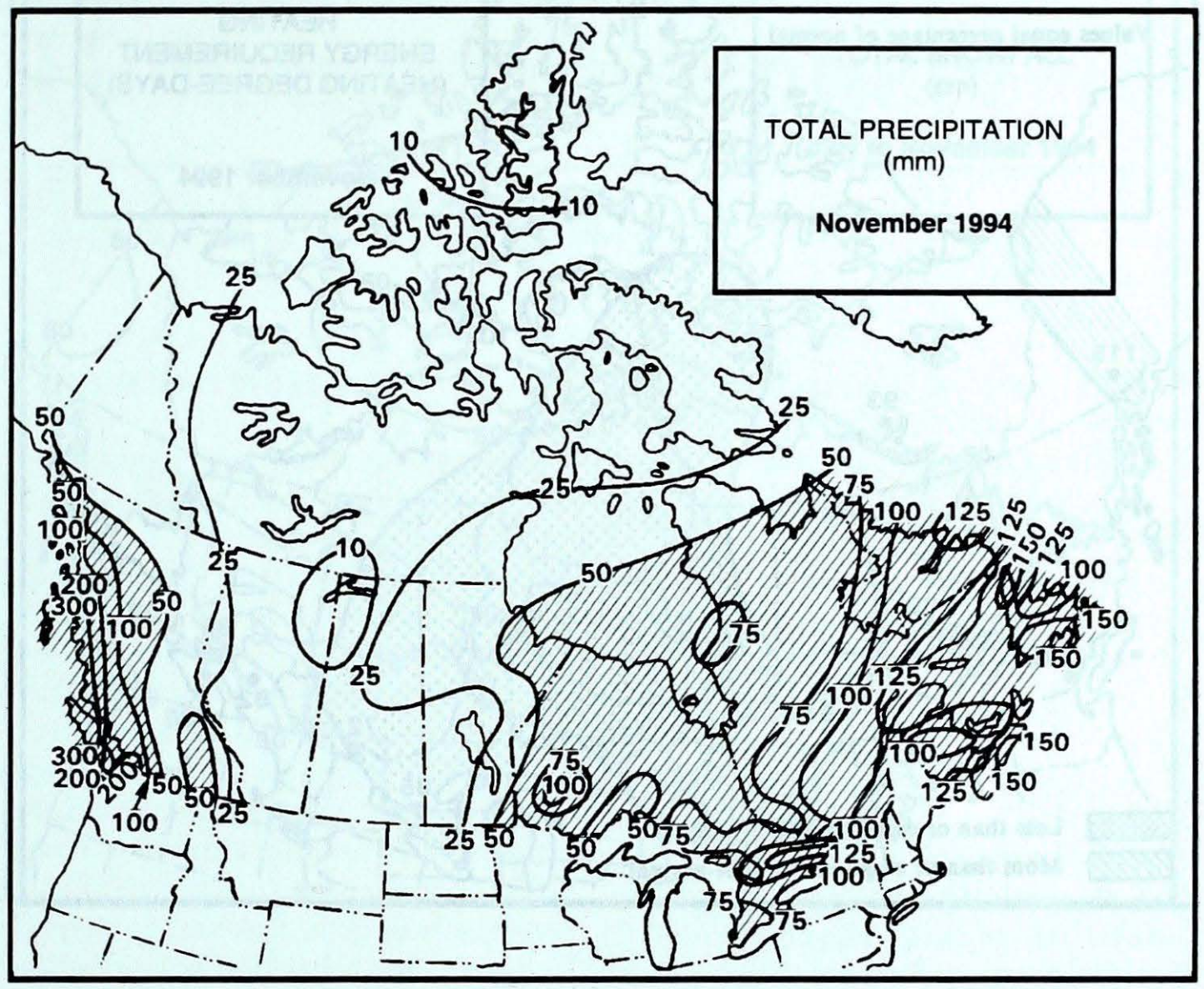
The first half of the month saw unseasonably-mild temperatures over most of the two provinces. A southwesterly flow developed at the beginning of the month and dominated for fifteen days. On several days early in the month, temperatures reached higher than 10°C in southern areas. Snow at the beginning of the month disappeared in southern and central areas as the mercury stayed above 0°C nearly every day. The mild temperatures also meant that the few storms that did cross the south gave rain instead of snow.

The second half of November was dramatically different. Instead of temperatures climbing well above zero, there were many days when maximum temperatures stayed below freezing. In the north, temperatures of -20 to -10°C became common. Temperatures in northern Manitoba were below -30°C on a couple of mornings. On November 23, the overnight low in Thompson was -34.0°C. Winter has arrived in the north, with a thick blanket of snow on the ground. Meanwhile, in the south, a brief period of mild air (Moose Jaw, 10.0°C) on the 23rd removed much of the snow cover in southern Saskatchewan. The month ended with below-normal temperatures everywhere except southern Manitoba.

Precipitation in the second half of the month fell in the form of snow, nearly everywhere. There were several intense winter storms that tracked through the two provinces. An intense low from the United States on the 17th initially gave rain to southern Manitoba but changed to snow, giving over 30 cm to Miami, Manitoba.

Ontario

November 1994 contributed to Ontario's fine fall weather with above-normal temperatures and sunshine. Mean temperatures were two to three Celsius degrees above normal. Southern Ontario enjoyed the warmest November since 1975, while northern Ontario was the warmest since 1963. Ontario has now featured three months of warm temperatures, plenty of sunshine and until the last week of November, very little snow.



Kenora had the greatest positive temperature anomaly in the province, being 3.5 degrees above the normal of -4.5°C. Northwestern Ontario was the warmest since 1981. In southern Ontario, several daily-record high temperatures were set. November 14 was the most notable for record-high temperatures. Toronto recorded 17.9°C (old record 17.2°C, 1973), St. Catharines 20.7°C (old record 17.3°C, 1989) and in the north, Moosonee 15.1°C (old record 11.7°C, 1981).

Rainfall was near normal in most areas, ending the string of five months of below-normal precipitation. The month began wet in the south as many sites recorded more rainfall in the first six days of the month than they recorded for the entire month of October. Ottawa recorded 55 mm of rain November 1-6, compared to October's total of only 15 mm. Monthly precipitation totals were above normal in eastern, central, extreme northwestern and eastern Lake Superior regions. Kingston was the wettest location with 144 mm (normal 96 mm). Sioux Lookout (northwestern Ontario) recorded 101 mm, double the normal of 49 mm. Most locations were within 10% of normal precipitation, with a general lack of snow. In Sudbury, for example, only 10 cm of snow fell - the least since 1984. Not only were the snowfall totals less than normal, the first snow of the season was extremely late. From Muskoka, southwards, the first snowflake did not fall until the 22nd - the latest on record at Muskoka. At Toronto, snow on the 22nd was the latest since the record of November 28, 1849.

Sunshine hours averaged 10 to 35 hours more than normal. Ironically, Ontario's wettest site, Kingston, was also the sunniest site with 118 hours - 34 hours more than normal and its sunniest November since 1981.

Gale- to storm-force winds occurred in southern and central Ontario on the 6th, gusting to 90 km/h in the Ottawa Valley. Similar winds blew across the Great Lakes on the 22nd and province-wide on the 27th with gusts in the 80 to 110 km/h range. On the 27th, a mix of snow, ice pellets, freezing rain, rain and fog accompanied the winds in the south. Meanwhile in the northwest, on the 27th, 5 to 15 cm of snow and heavy drifting closed many roads.

November completed the fall season in fine fashion. For golfers, 1994 was perhaps

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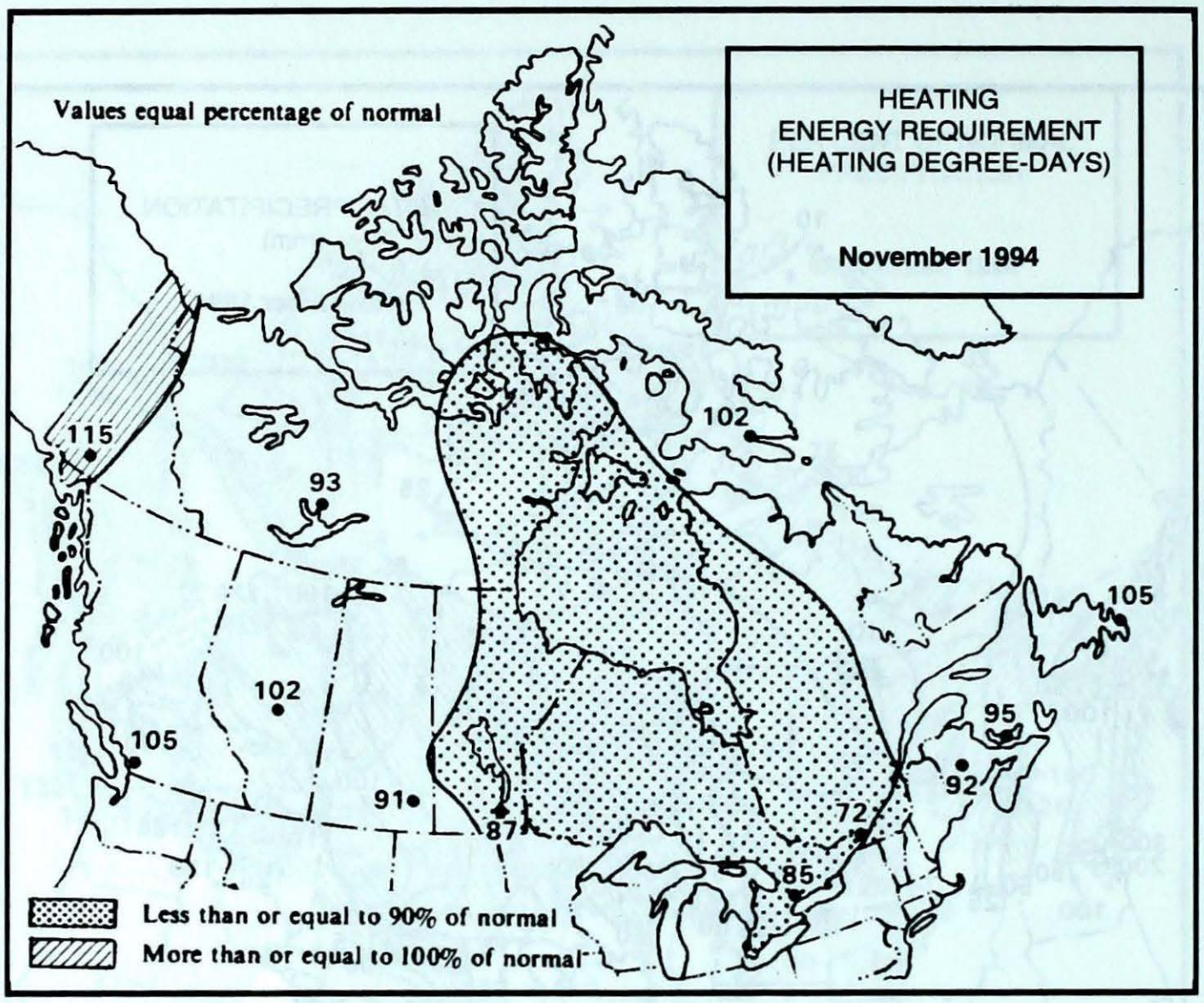
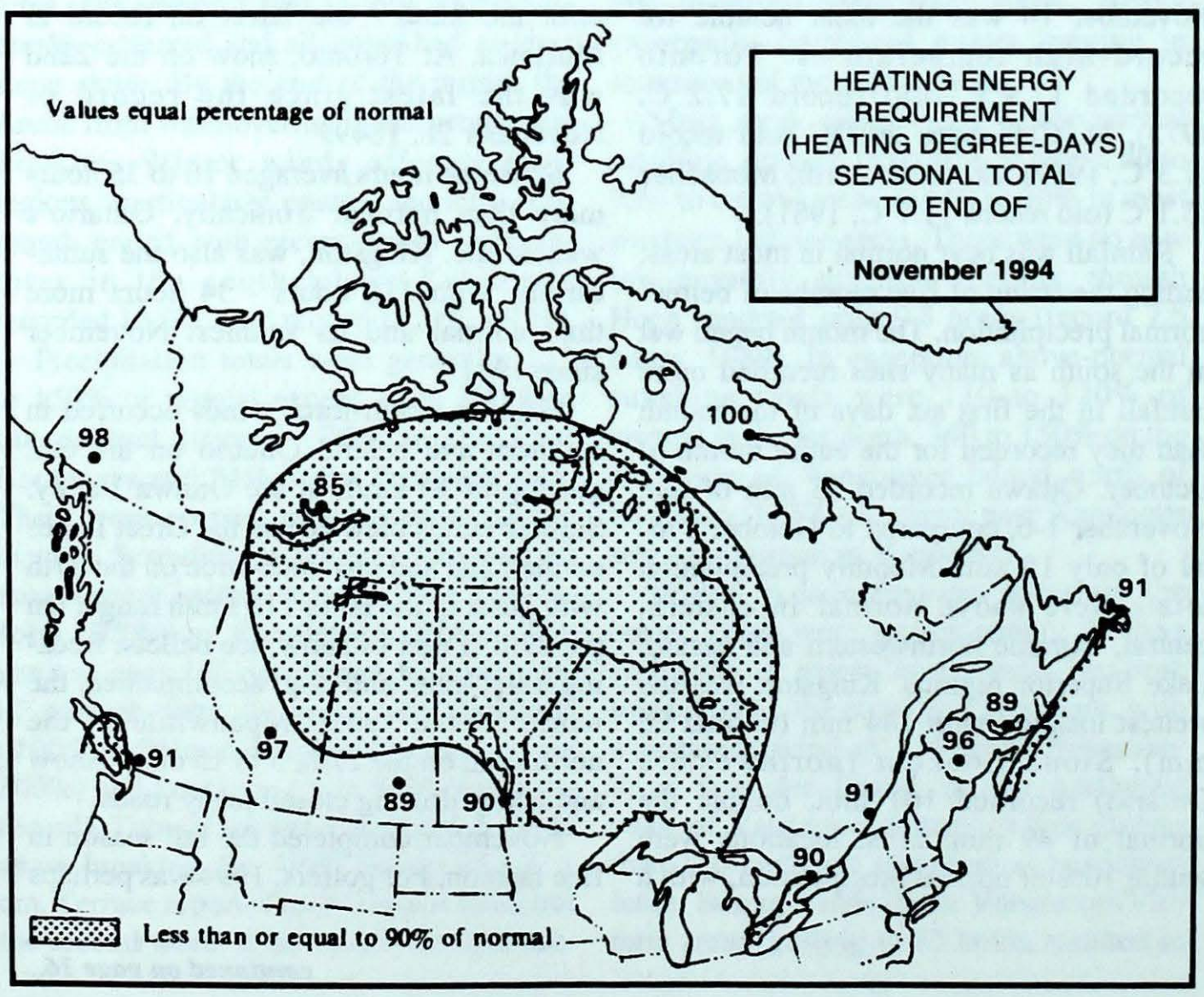


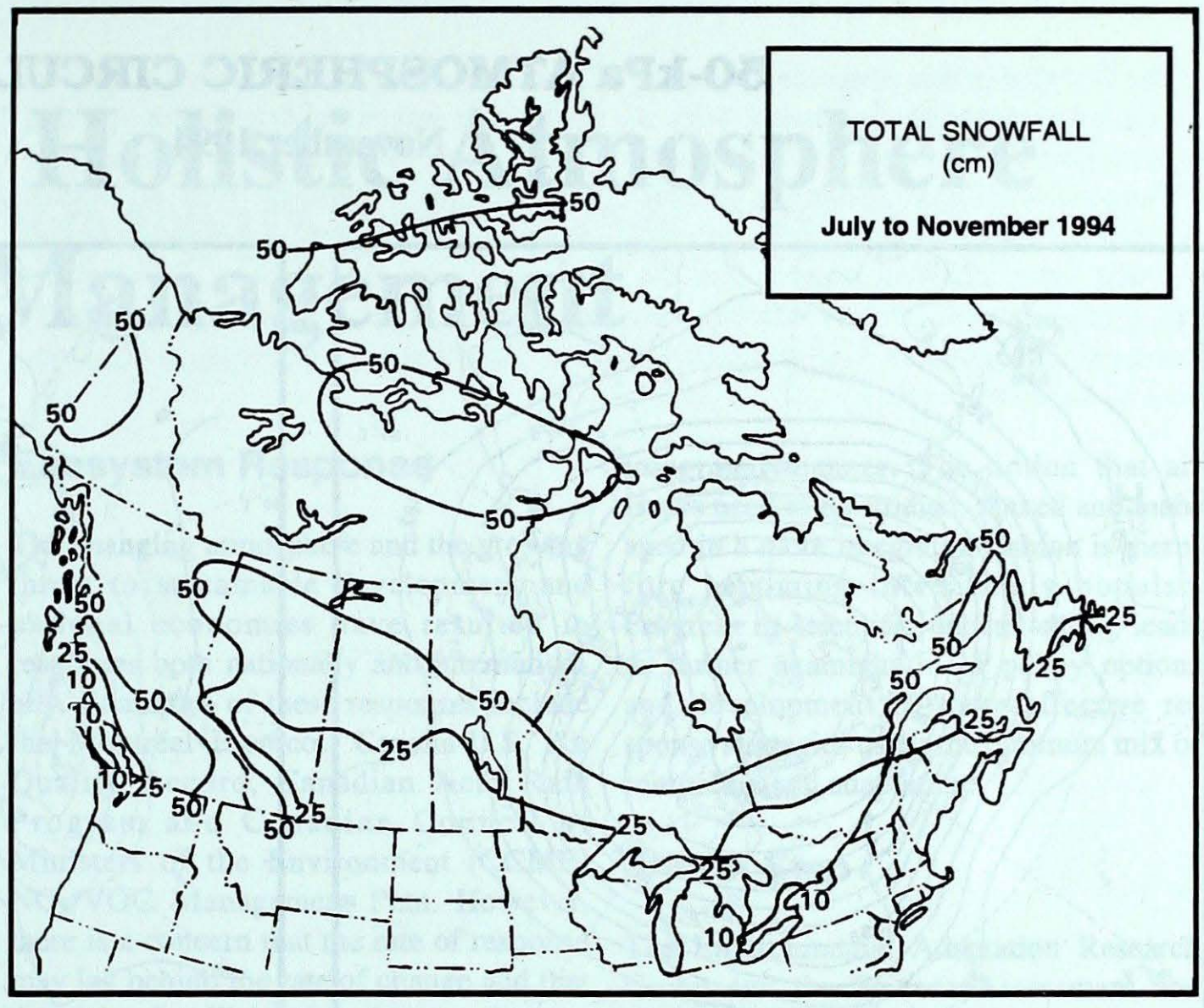


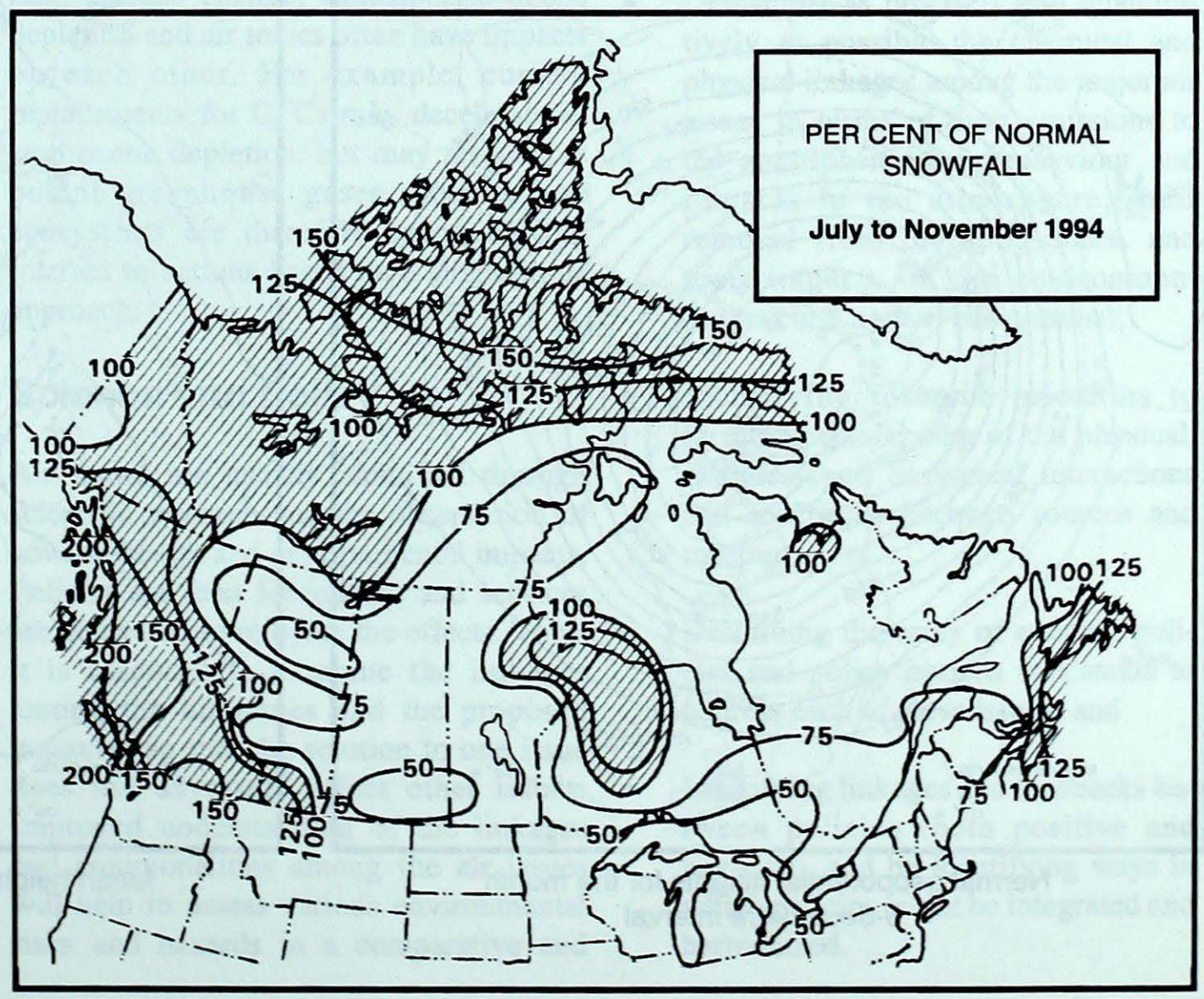
SEASONAL TOTAL OF HEATING DEGREE-DAYS TO END OF NOVEMBER

	1994	1993	NORMAL
BRITISH COLUMBIA			
Kamloops	851	954	887
Penticton	828	918	844
Port Hardy	1034	1040	1127
Vancouver	706	776	779
Victoria	768	852	853
YUKON TERRITORY			
Whitehorse	1910	1768	1953
NORTHWEST TERRITORIES			
Iqaluit	2779	2912	2778
Inuvik	2575	2456	2788
Yellowknife	1761	2089	2083
ALBERTA			
Calgary	1313	1480	1369
Edmonton Mun.	1273	1337	1318
Grande Prairie	1517	1487	1563
SASKATCHEWAN			
Estevan	1145	1512	1183
Regina	1156	1543	1301
Saskatoon	1290	1632	1357
MANITOBA			
Brandon	1247	1645	1332
Churchill	2024	2501	2289
Dauphin	1248	1557	1322
Winnipeg	1103	1454	1222
ONTARIO			
Kapuskasing	1275	1652	1456
London	741	914	795
Ottawa	825	1033	924
Sudbury	1072	1348	1141
Thunder Bay	1149	1501	1276
Toronto	715	899	793
Windsor	557	756	659
QUEBEC			
Baie Comeau	1335	1553	1442
Montréal	796	978	870
Québec	1007	1190	1087
Sept-Îles	1429	1698	1532
Sherbrooke	1068	1168	1156
Val-d'Or	1288	1587	1392
NEW BRUNSWICK			
Fredericton	939	1073	981
Moncton	960	1112	983
NOVA SCOTIA			
Yarmouth	790	875	887
PRINCE EDWARD ISLAND			
Charlottetown	913	1064	1180
NEWFOUNDLAND AND LABRADOR			
Gander	1129	1381	1180
St. John's	1044	1318	1141

SEASONAL SNOWFALL TOTALS (cm) TO END OF NOVEMBER

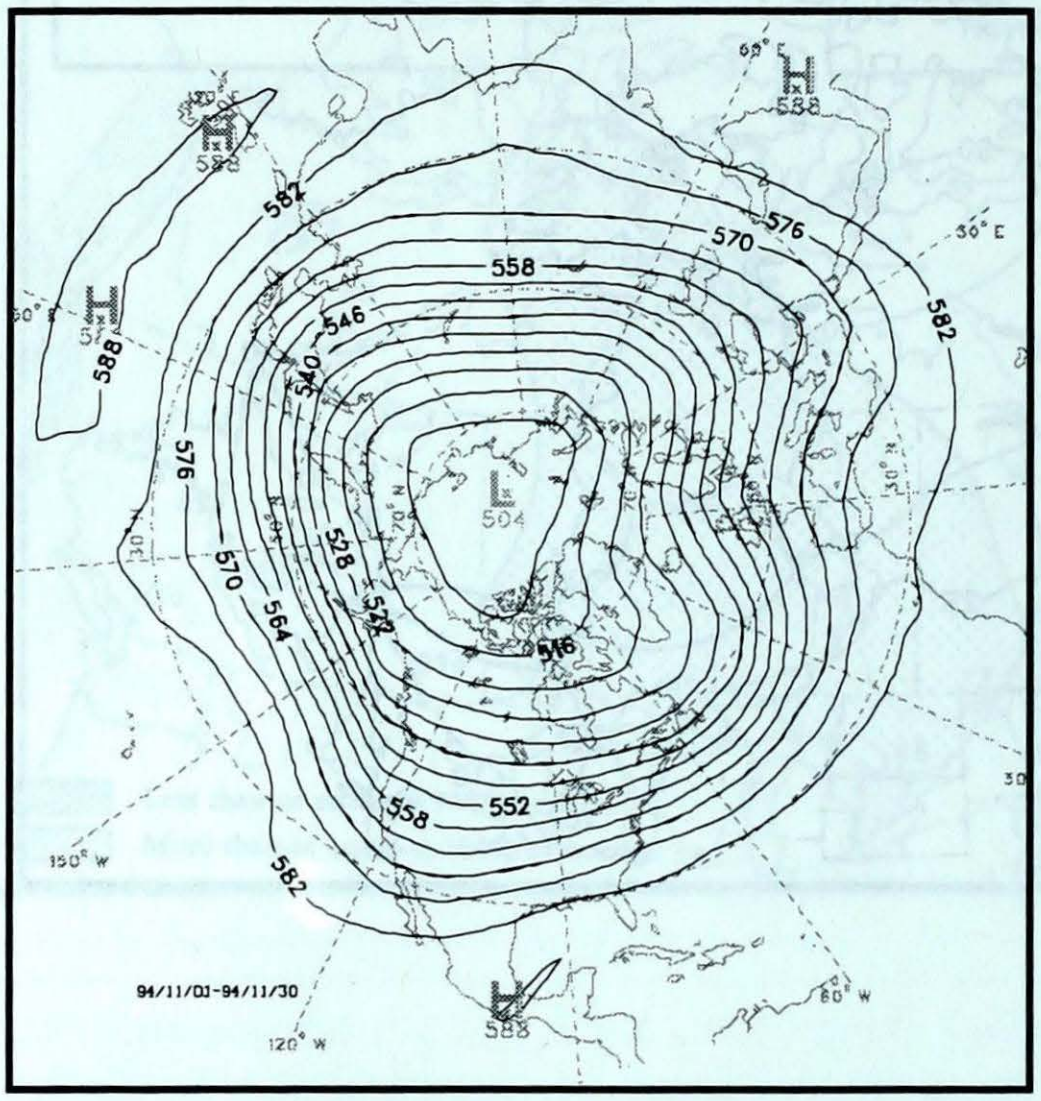
	1994	1993	NORMAL
BRITISH COLUMBIA			
Kamloops	14	5	12
Port Hardy	9	2	4
Prince George	67	14	50
Vancouver	1	0	3
Victoria	0	0	2
YUKON TERRITORY			
Whitehorse	62	43	43
NORTHWEST TERRITORIES			
Iqaluit	74	73	91
Inuvik	90	57	76
Yellowknife	60	44	57
ALBERTA			
Calgary	37	16	36
Edmonton Mun.	24	24	27
Grande Prairie	57	13	42
SASKATCHEWAN			
Estevan	13	30	23
Regina	10	17	24
Saskatoon	13	*	23
MANITOBA			
Brandon	14	8	23
The Pas	21	39	44
Winnipeg	14	27	27
ONTARIO			
Kapuskasing	52	83	85
London	12	11	26
Ottawa	14	16	26
Sudbury	10	50	39
Thunder Bay	12	51	33
Toronto	9	5	9
Windsor	0	3	12
QUEBEC			
Baie Comeau	24	47	42
Montréal	14	26	23
Québec	15	45	38
Sept-Îles	61	63	61
Sherbrooke	18	19	42
Val-d'Or	38	96	64
NEW BRUNSWICK			
Fredericton	15	4	23
Moncton	11	9	25
NOVA SCOTIA			
Sydney	14	2	15
Yarmouth	6	0	8
PRINCE EDWARD ISLAND			
Charlottetown	18	16	26
NEWFOUNDLAND AND LABRADOR			
Gander	27	35	44
St. John's	35	26	26



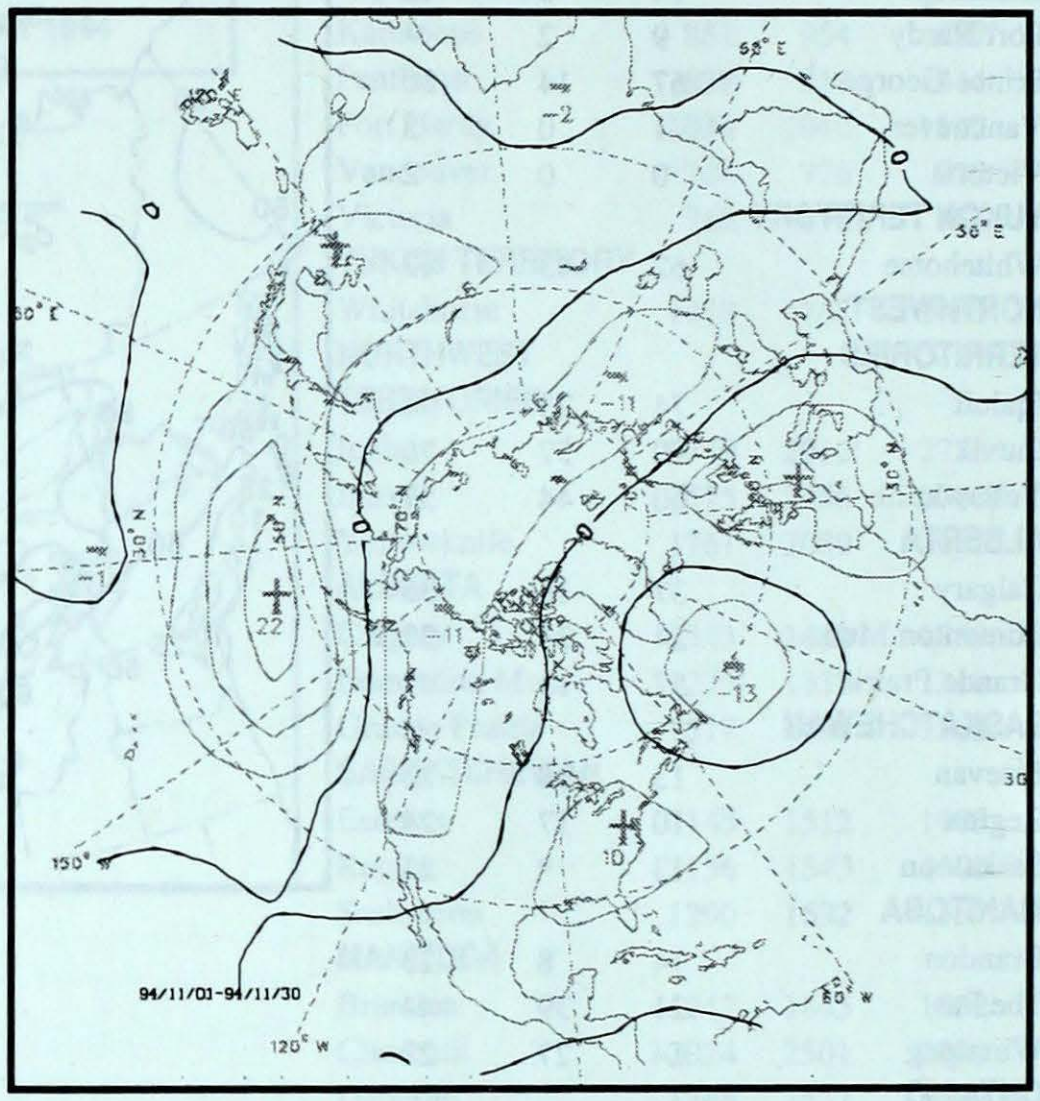


50-kPa ATMOSPHERIC CIRCULATION

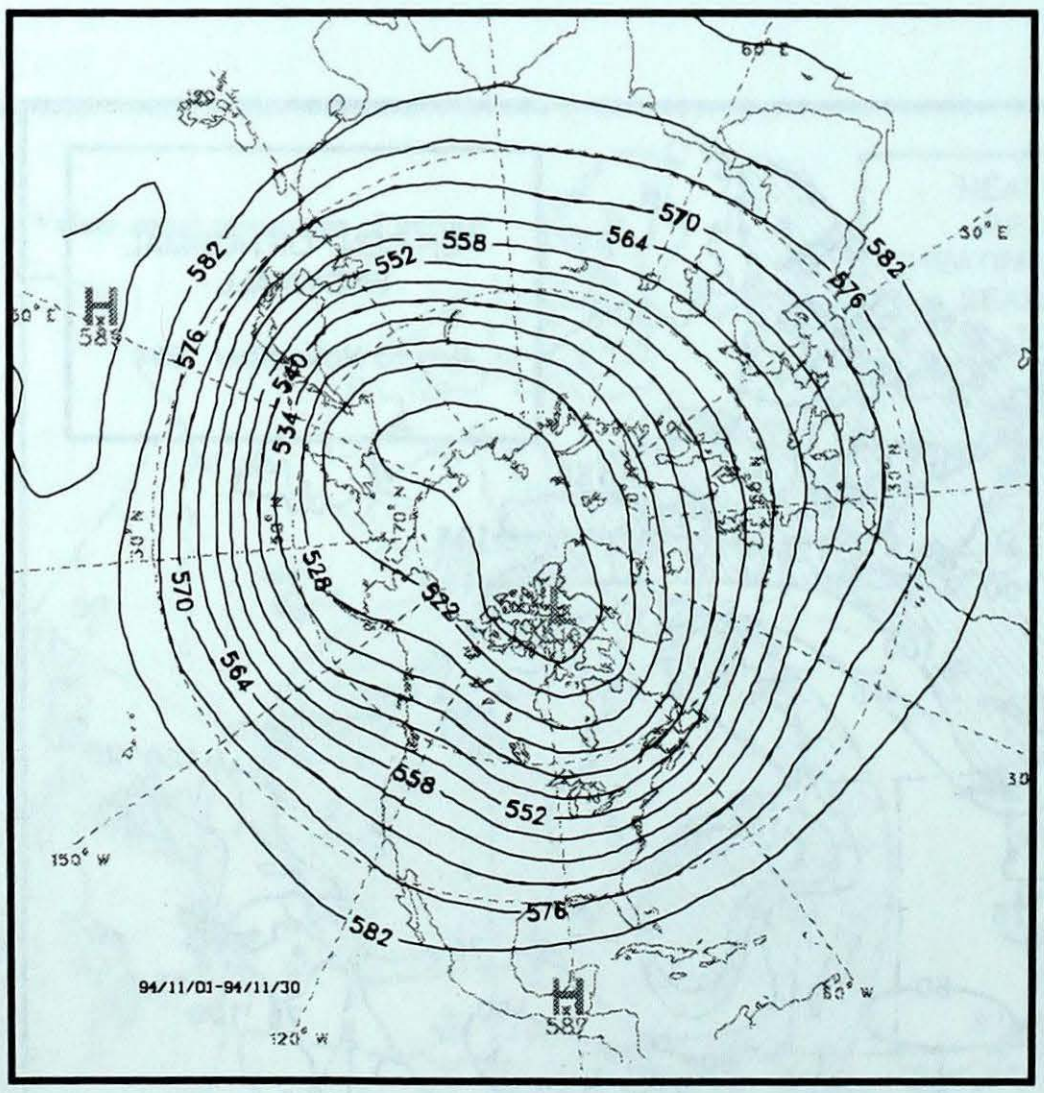
November 1994



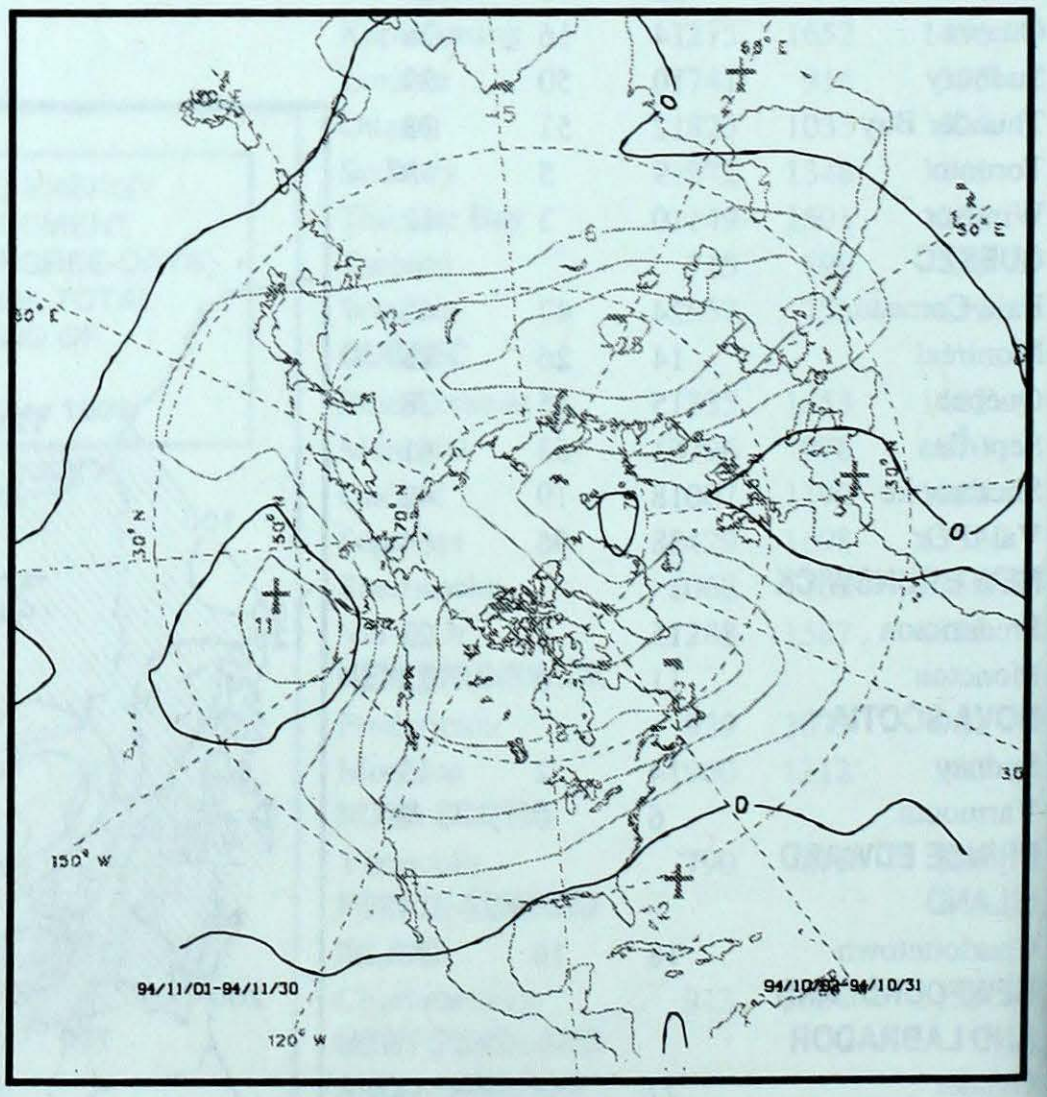
Mean geopotential heights
6-decametre interval



Mean geopotential height anomaly
6-decametre interval



Normal geopotential heights for the month
6-decametre interval



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

Towards Holistic Atmosphere Management

Current Atmospheric Issues

The atmosphere is changing in many ways as a consequence of natural events as well as human actions. Canada and the world community are at increasing risk from several of these changes. The risks vary in nature and severity from region to region, and from one atmospheric issue to another. Atmospheric (air) issues of current and primary concern include: 1)climate change; 2)smog; 3)hazardous air pollutants; 4)ozone layer depletion; 5) acid rain; and 6)particles in the atmosphere.

Global Issues

Air issues of global concern are climate change and stratospheric ozone depletion. Greenhouse gases are pumped into the atmosphere at rates more than what the biosphere can safely absorb. This will lead to a gradual warming of the Earth's climate with potential for drastic changes in regional climates. Stratospheric ozone depletion has led to an increase in the amount of UV-B radiation reaching the surface with adverse effects on human health and ecosystems.

Regional Issues

Continental or hemispheric air pollution is widely recognized as an undesirable by-product of industrialization. Photochemical oxidants (e.g. tropospheric ozone) are very reactive and cause damage to vegetation, materials and human health. Principal precursors of acid deposition are oxides of sulphur and nitrogen, which can be transported by winds for long distances. Acid deposition is causing damage to vegetation, fabrics, structures, freshwater, soils and forests in many areas. Airborne toxic metals, organic and inert particles are also a major health and environmental concern.

Ecosystem Response

The changing atmosphere and the growing threat to sustainable development and national economies have resulted in responses both nationally and internationally. Examples of these responses include the Montréal Protocol, Canada-U.S. Air Quality Accord, Canadian Acid Rain Program and Canadian Council of Ministers of the Environment (CCME) NO_x/VOC Management Plan. However, there is a concern that the rate of response may lag behind the rate of change and that the risk of collision between ecosystems and the environment could rise.

The air issues, stated under "Current Atmospheric Issues" and their impacts on society and ecosystems, clearly act in concert and not as separate entities. Issues related to and actions taken to mitigate acid rain, climate change, stratospheric ozone depletion and air toxics often have impacts on each other. For example, current replacements for CFCs may decelerate or stop ozone depletion, but may also act as potent greenhouse gases. Society and ecosystems are therefore becoming less tolerant to actions based on a single-issue approach.

Science and Policy

Air issues are usually identified through scientific research and the observation of adverse health and environmental impacts. Policies are then formulated and services are generated to mitigate the effects. Thus, it is essential to examine the linkages among the air issues and the proposed measures so that the solution to one issue does not adversely affect other issues. Improved understanding of the linkages and commonalities among the air issues will help to assess various environmental risks and hazards in a comparative and integrated manner. The notion that air issues need to be studied, ranked and managed in a more integrated fashion is therefore becoming increasingly popular. Progress in scientific understanding leads to further examination of policy options and development of more-effective response strategies using the optimum mix of mitigation and adaptation.

A First Step

The Environmental Adaptation Research Group and the Science Assessment and Policy Integration Division of Atmospheric Environment Service (AES) are jointly co-ordinating a project to address the comparative and integrated assessment of the six major air issues, in terms of their strategy for science and policy. This will be accomplished by:

- Describing as precisely and quantitatively as possible the chemical and physical linkages among the major air issues in terms of their emissions to the atmosphere, their behaviour and impacts in the atmosphere, their removal from the atmosphere, and their impacts on the environment (human and natural ecosystems);

- Identifying research priorities to further understanding of the physical, chemical and biological interactions and feedbacks between sources and receptors:

- Describing the array of existing policies and policy options in Canada to address each of these issues; and

- Identifying linkages and feedbacks between policies (both positive and negative), and by identifying ways in which policies might be integrated and harmonized.

The first step in this project is to prepare a state-of-knowledge document with a working title: "Air Issues: An Assessment of Commonalities and Linkages in Science and Policy." This document will provide scientific input and new insights into the policy development process through the National Air Issues Co-ordinating Committee (NAICC). The eventual goal is to develop recommendations for moving from a single-issue approach to a comprehensive policy dealing with air issues within the framework of ecosystem health and sustainable development. This will be achieved in collaboration with other Services, Branches and Regions of Environment Canada, other government departments at all levels, industry, private sector and scientific/educational institutions.

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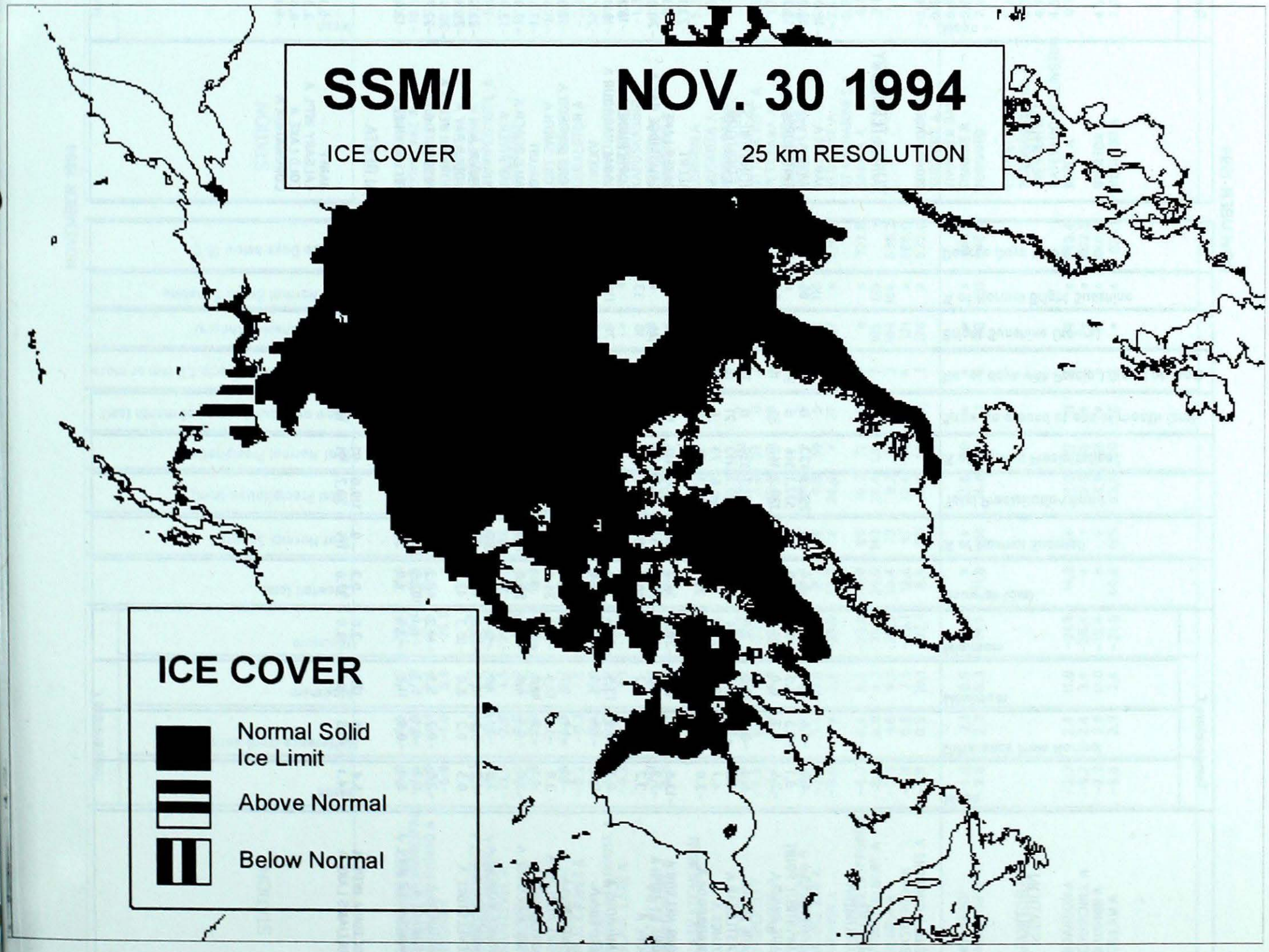
End-of-November Ice Image

The advance of ice is progressing at an above-normal rate through the Bering Strait. The ice advance in the Hudson Bay area is slightly below normal due to warmer-than-normal air temperatures.

Arvids Silis
Climate Processes and
Earth Observation Division



NOVEMBER 1994

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	4.0	-1.6	11.4	-5.0	6.4	116	255.3	133	0	20	47	65	419.5
AMPHITRITE POINT	6.1	-1.3	12.0	0.0	1.0	45	577.1	146	0	24	*	*	356.8
BLUE RIVER A	-2.5	0.2	8.0	-18.6	132.5	235	120.2	143	35	15	26	56	*
CAPE SCOTT	6.0	-0.8	10.0	2.0	0.4	10	491.7	139	0	27	*	*	359.8
CASTLEGAR A	0.1	-1.7	8.4	-10.4	62.5	208	87.1	113	21	16	46	81	537.2
COMOX A	4.7	-0.6	12.9	-3.1	0.4	5	140.6	73	0	17	81	*	399.1
CRANBROOK A	-3.0	-1.1	6.2	-14.8	26.1	107	23.1	75	8	5	58	70	629.1
FORT NELSON A	-13.6	-1.6	2.4	-30.2	36.7	130	25.4	112	16	5	80	*	948.8
FORT ST JOHN A	-7.3	-1.3	6.5	-23.4	28.0	91	24.3	78	11	7	74	*	757.5
HOPE A	3.2	-1.5	11.2	-3.7	30.3	181	331.6	148	0	23	10	33	444.3
KAMLOOPS A	0.7	-0.9	13.5	-10.5	14.0	121	27.2	124	4	7	78	110	519.2
KELOWNA A	-0.5	-1.6	9.5	-14.1	22.6	195	36.6	141	4	13	38	66	554.1
PENTICTON A	1.1	-1.9	9.7	-11.1	32.0	416	38.0	159	0	11	36	60	507.0
PORT ALBERNI A	3.8	-1.1	12.9	-3.8	34.4	485	368.9	128	0	21	34	*	424.6
PORT HARDY A	4.1	-1.2	11.8	-3.4	9.1	227	372.9	152	0	25	64	103	417.3
PRINCE GEORGE A	-3.0	-0.1	4.9	-15.7	58.8	148	47.7	94	18	11	63	96	630.6
PRINCE RUPERT A	2.8	-1.1	7.9	-5.7	34.1	388	421.7	157	0	26	31	62	455.5
PRINCETON A	-1.8	-0.9	10.1	-15.0	18.0	77	35.8	95	0	5	60	*	*
REVELSTOKE A	0.5	0.2	8.0	-10.3	42.2	83	57.2	59	2	16	26	62	524.3
SMITHERS A	-2.5	-0.2	5.5	-14.2	48.2	125	45.2	78	23	11	30	65	630.7
TERRACE A	0.2	-0.1	5.3	-6.1	182.5	373	234.0	130	42	23	36	64	536.2
VANCOUVER INT'L A	5.0	-0.9	11.8	-3.7	1.0	36	205.2	137	0	20	67	97	390.6
VICTORIA INT'L A	5.4	-0.6	12.1	-3.0	0.2	9	119.0	91	0	17	78	100	378.2
WILLIAMS LAKE A	-4.1	-1.5	8.1	-19.0	37.0	119	28.7	91	19	10	61	84	662.1

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	-18.6	-5.3	1.5	-38.7	43.4	171	27.8	117	*	*	*	*	*
MAYO A	-18.7	-3.5	4.3	-38.2	30.7	120	27.1	111	19	*	*	*	*
WHITEHORSE A	-13.2	-4.4	3.2	-26.7	51.2	215	33.1	167	17	9	42	73	935.9
NORTHWEST TERRITORIES													
ALERT	-23.1	3.5	-4.0	-38.5	*	*	10.8	220	*	*	*	*	1232.0
BAKER LAKE A	-17.1	3.2	0.2	-32.3	15.8	91	13.8	84	11	5	28	54	1052.5
CAMBRIDGE BAY A	-20.0	3.8	-1.4	-34.8	5.5	61	5.5	71	12	*	18	179	*
COPPERMINE A	-18.1	1.6	0.0	-37.3	22.7	150	21.5	150	38	6	23	191	1081.2
CORAL HARBOUR A	-15.8	1.7	-1.3	-35.3	11.2	62	11.6	64	8	5	66	116	1014.1
EUREKA	-25.7	5.8	-6.0	-42.1	2.9	97	2.6	104	4	1	*	*	1311.6
FORT SIMPSON A	-17.0	-1.3	1.8	-32.6	28.2	111	22.2	92	29	8	66	130	1049.6
FORT SMITH A	-11.6	0.0	1.4	-27.7	19.8	69	9.2	35	31	5	33	76	883.2
IQALUIT	-13.5	-0.5	0.6	-32.9	23.8	65	22.8	66	15	7	31	66	946.5
HALL BEACH A	-19.9	1.6	-1.8	-36.9	21.4	166	16.0	127	34	4	*	*	1138.0
HAY RIVER A	-13.0	-1.7	2.8	-27.3	20.9	53	19.2	52	34	7	*	*	929.5
INUVIK A	-22.8	-2.1	-4.4	-39.0	44.5	197	34.7	194	32	5	8	47	1225.1
MOULD BAY A	-25.5	1.1	*	*	*	*	*	*	*	*	*	*	*
NORMAN WELLS A	-20.4	-2.2	-3.9	-36.6	25.0	117	20.0	96	27	7	4	12	1152.0
RESOLUTE A	-22.7	1.8	-4.7	-39.4	25.0	410	20.7	363	40	6	*	*	1221.3
YELLOWKNIFE A	-12.4	1.7	1.9	-32.1	46.4	155	39.3	160	26	10	24	58	912.3
ALBERTA													
BANFF	-5.1	-1.2	4.5	-19.0	17.3	54	17.2	55	7	7	*	*	693.9
CALGARY INT'L A	-3.3	-0.6	11.0	-17.0	25.0	153	13.9	109	5	4	125	101	638.9
COLD LAKE A	-6.6	-0.4	6.5	-24.4	25.4	120	22.6	111	9	5	102	109	737.4
CORONATION A	-6.1	-1.2	6.2	-21.3	*	*	*	*	3	*	*	*	*

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	Mean	Difference from Normal	Maximum	Minimum									
EDMONTON INT'L A	-6.0	-0.5	7.2	-22.4	21.0	117	17.8	107	9	5	115	112	719.7
EDMONTON MUNICIPAL	-4.6	-0.9	7.8	-19.1	16.5	*	13.2	84	*	5	113	105	677.8
EDMONTON NAMAO A	-5.0	-0.1	7.6	-18.6	13.0	77	9.4	52	8	4	*	*	687.5
EDSON A	-6.9	-1.0	5.9	-25.1	*	*	*	*	*	*	*	*	*
FORT MCMURRAY A	-8.1	0.1	7.8	-30.7	11.8	41	8.4	33	3	3	67	81	782.4
GRANDE PRAIRIE A	-8.1	-2.1	6.2	-25.8	48.4	185	38.6	139	26	6	89	*	783.6
HIGH LEVEL A	-13.5	-2.8	4.5	-29.3	24.9	86	18.3	72	12	6	47	67	946.0
JASPER	-3.0	0.9	5.7	-18.1	16.2	66	11.0	37	8	4	58	*	673.3
LETHBRIDGE A	-2.8	-2.0	10.7	-25.8	45.4	241	37.7	224	6	7	128	109	624.7
MEDICINE HAT A	-1.9	-0.3	12.7	-21.5	9.4	67	9.6	66	4	2	130	116	593.4
PEACE RIVER A	-8.2	-0.1	7.6	-23.6	10.6	48	10.8	54	6	3	*	*	786.9
RED DEER A	-5.0	-0.4	11.0	-21.0	8.4	56	8.0	53	3	3	*	*	689.1
ROCKY MTN HOUSE A	-5.6	-2.0	11.2	-23.7	*	*	*	*	4	*	*	*	*
SLAVE LAKE A	-6.7	-0.7	6.1	-24.1	*	*	*	*	13	*	*	*	*
SUFFIELD A	-2.2	*	12.1	-22.2	8.6	*	8.2	*	2	2	139	*	604.4
WHITECOURT A	-6.0	0.3	6.9	-24.1	28.4	130	20.9	89	14	6	*	*	705.7
SASKATCHEWAN													
ESTEVAN A	-2.8	0.8	10.8	-18.2	11.8	79	18.0	111	7	6	116	96	623.2
KINDERSLEY	-4.4	0.8	9.1	-23.1	5.8	57	3.0	24	0	1	120	*	672.3
LA RONGE A	-7.7	0.7	4.9	-30.7	29.4	84	28.9	113	20	7	*	*	770.3
MEADOW LAKE A	-8.9	*	5.5	-32.5	23.0	*	19.8	*	9	4	102	*	806.1
MOOSE JAW A	-2.0	1.6	10.0	-18.9	8.3	44	9.9	59	5	4	121	110	600.4
NIPAWIN A	-8.0	*	3.4	-25.9	40.8	*	24.4	*	27	8	107	*	778.8
NORTH BATTLEFORD A	-6.2	-0.4	5.4	-23.9	11.8	86	10.3	72	2	3	*	*	727.8
PRINCE ALBERT A	-8.0	-0.8	4.3	-25.6	24.8	143	20.4	120	12	7	105	125	*
REGINA A	-3.3	1.8	9.7	-20.3	10.4	73	8.2	61	2	3	109	104	639.3
SASKATOON A	-4.8	0.9	7.5	-25.1	12.6	97	12.4	84	3	4	121	*	684.0
SWIFT CURRENT A	-2.8	0.9	10.1	-22.1	8.4	56	8.8	56	7	1	126	*	632.0
WYNYARD	-4.0	2.1	8.5	-21.0	*	*	13.8	88	*	*	*	*	661.0
YORKTON A	-3.6	2.3	8.3	-19.7	11.8	61	14.0	70	1	4	118	131	646.6
MANITOBA													
BRANDON A	-3.3	2.4	11.8	-21.9	14.2	86	22.0	122	11	4	119	*	640.4
CHURCHILL A	-9.7	2.4	3.4	-28.4	*	*	40.9	105	*	*	*	*	832.5
DAUPHIN A	-2.3	2.9	11.0	-19.4	*	*	9.9	39	*	*	*	*	610.4
GILLAM A	-9.5	2.3	2.4	-31.0	64.4	145	63.0	200	38	12	*	*	827.1
ISLAND LAKE	-3.8	4.1	7.6	-21.7	20.8	41	25.8	70	3	7	*	*	651.7
LYNN LAKE A	-10.5	1.3	2.7	-28.9	31.8	85	25.0	85	15	8	46	75	854.9
NORWAY HOUSE A	-5.5	*	6.8	-23.7	26.0	*	18.8	*	6	7	*	*	704.1
THE PAS A	-5.9	1.6	5.3	-21.9	18.0	56	20.0	69	6	5	101	150	716.8
THOMPSON A	-9.8	1.6	3.5	-34.0	54.7	162	45.3	153	21	8	63	93	834.3
WINNIPEG INT'L A	-1.8	2.7	9.6	-17.2	14.2	65	36.2	144	6	6	112	123	594.7
ONTARIO													
EARLTON A	-0.2	2.3	14.4	-19.1	13.9	36	58.1	82	6	6	*	*	546.3
GERALDTON A	-2.6	*	10.7	-22.4	26.8	*	44.6	*	20	9	*	*	618.4
HAMILTON RBG	6.4	*	18.5	-6.5	1.4	*	78.2	*	0	9	116	*	*
HAMILTON A	5.5	2.1	18.2	-8.8	3.8	33	91.3	130	0	9	*	*	375.0
KAPUSKASING A	-1.3	3.1	13.5	-18.2	49.7	81	63.7	80	35	9	*	*	578.1
KENORA A	-1.0	3.6	9.7	-16.2	16.3	44	63.7	158	2	10	*	*	570.7
KINGSTON A	5.1	2.2	17.2	-11.1	3.6	25	144.2	154	0	9	118	151	388.2
LONDON A	5.3	2.2	16.6	-8.4	11.8	48	73.2	86	0	11	92	122	381.3
MUSKOKA A	2.9	1.8	15.2	-16.5	49.4	123	136.4	135	26	14	*	*	454.0
NORTH BAY A	1.1	2.1	14.2	-14.8	20.8	61	94.4	109	7	9	104	160	509.0
OTTAWA INT'L A	3.6	2.4	16.9	-10.7	13.6	60	88.1	113	1	10	102	128	432.6
PETAWAWA A	1.7	2.2	16.7	-16.8	19.4	103	72.6	111	6	7	*	*	489.6
PETERBOROUGH A	3.5	1.5	16.8	-19.2	18.8	118	83.8	123	0	12	*	*	436.1
PICKLE LAKE	-3.6	4.0	9.5	-20.1	64.8	133	74.4	152	13	9	*	*	648.3
RED LAKE A	-2.4	3.7	8.9	-20.1	19.3	58	51.9	139	3	10	83	*	611.2
ST CATHARINES A	6.8	2.2	20.7	-5.5	1.0	12	85.6	135	0	10	114	*	335.8
SARNIA A	6.1	2.3	16.8	-7.4	0.2	1	58.2	79	0	8	109	118	355.3
SAULT STE MARIE A	2.1	1.4	14.6	-12.1	42.4	102	80.4	94	8	14	81	127	478.2
SIOUX LOOKOUT A	-1.8	3.5	10.6	-18.7	28.4	63	101.4	203	12	11	*	*	593.1
SUDBURY A	0.6	1.8	13.6	-14.3	10.2	32	75.2	97	4	8	94	120	523.8
THUNDER BAY A	-0.6	2.0	12.9	-19.7	11.8	40	42.5	80	9	9	99	114	556.8
TIMMINS A	-0.8	3.0	15.0	-18.2	36.3	59	60.5	77	0	9	*	*	563.4
TORONTO	7.0	*	18.2	-4.6	4.0	*	69.0	*	0	10	*	*	328.5
TORONTO INT'L A	5.4	2.1	18.0	-6.8	9.2	115	84.8	135	0	9	*	*	379.0
TORONTO ISLAND A	6.3	*	14.4	-4.3	1.6	27	82.8	*	0	9	*	*	351.7
TRENTON A	4.7	1.5	16.4	-12.3	13.0	99	111.0	129	0	11	*	*	399.2
WATERLOO WELLINGTON	4.5	2.0	16.6	-11.0	6.0	42	75.8	104	0	11	*	*	405.3
WAWA A	0.1	*	13.4	-16.4	24.2	*	94.2	*	14	9	*	*	536.8
WIARTON A	4.5	1.6	16.6	-8.6	20.6	52	120.6	127	8	12	95	158	394.9
WINDSOR A	7.0	2.6	17.1	-6.1	0.0	0	70.6	108	0	9	*	*	328.8

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QUEBEC													
BAGOTVILLE A	-1.0	1.0	14.9	-17.6	54.8	116	100.2	137	39	16	*	*	567.7
BAIE COMEAU A	-0.6	1.2	10.7	-19.9	24.2	68	119.0	149	10	10	103	123	557.9
BLANC SABLON A	-1.0	-0.3	7.8	-17.0	20.6	57	83.4	86	2	12	91	*	554.5
CHIBOUGAMAU CHAPAIS	-2.9	*	10.0	-18.1	*	*	78.2	*	*	14	*	*	628.0
GASPE A	1.3	*	13.8	-14.6	32.1	*	144.9	*	0	13	111	*	502.3
KUUJJUAQ A	-5.2	3.1	3.2	-23.6	53.0	148	54.8	137	9	15	34	66	695.1
KUUJJUARAPIK A	-2.1	2.8	8.6	-20.9	45.6	87	82.4	135	8	16	23	62	603.1
LA GRANDE IV A	-5.0	*	7.3	-28.5	48.8	*	*	*	14	13	37	*	691.3
LA GRANDE RIVIERE A	3.0	*	9.4	-18.0	32.2	*	56.4	*	23	0	29	*	648.7
MANIWAKI	1.6	1.9	16.1	-16.6	*	*	112.0	151	0	6	*	*	493.1
MONT JOLI A	0.8	1.1	15.2	-11.3	22.6	64	124.8	168	9	12	79	103	515.7
MONTREAL INT'L A	3.7	1.7	18.0	-10.7	13.6	64	118.7	147	***	*	123	143	429.5
MONTREAL MIRABEL I/	2.6	*	17.5	-13.7	12.8	*	130.6	*	4	11	123	*	462.0
NATASHQUAN A	-0.5	0.6	8.8	-20.7	26.0	81	134.6	116	12	12	98	115	553.4
QUEBEC A	1.3	1.5	15.9	-13.6	14.8	44	112.0	115	8	13	104	141	500.1
ROBERVAL A	-0.3	1.9	12.5	-15.7	19.6	41	100.9	135	1	8	75	*	545.4
SEPT-ILES A	-1.2	1.3	10.2	-21.4	61.4	121	126.3	126	23	16	88	93	527.7
SHERBROOKE A	1.9	2.0	17.5	-17.4	18.0	49	96.0	100	3	15	88	*	483.3
ST HUBERT A	3.6	1.8	18.1	-12.8	13.0	*	120.3	135	1	11	119	*	432.3
VAL D'OR A	-1.0	2.4	11.2	-19.8	37.4	78	92.2	116	7	9	71	120	570.3
NEW BRUNSWICK													
CHARLO A	1.1	1.9	12.9	-13.7	24.1	65	140.1	176	6	14	97	103	508.4
FREDERICTON A	2.7	1.3	17.2	-14.0	15.0	74	118.8	112	5	80	*	*	460.8
MONCTON A	2.8	0.8	17.4	-14.0	11.4	53	78.6	71	1	9	153	159	456.4
SAINT JOHN A	3.4	1.1	16.7	-10.9	14.3	99	136.6	94	0	11	120	124	437.2

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NOVA SCOTIA													
GREENWOOD A	5.0	1.1	19.3	-9.2	7.4	51	102.8	95	0	10	*	*	387.6
HALIFAX INT'L A	4.5	1.1	18.0	-10.0	13.4	113	194.9	128	0	8	*	*	406.8
SABLE ISLAND	7.3	0.0	15.3	-2.4	3.0	97	132.2	97	0	9	101	144	321.8
SHEARWATER A	5.4	0.8	17.0	-8.6	12.6	162	207.2	145	0	8	138	126	378.8
SYDNEY A	4.4	0.6	17.5	-11.4	14.0	117	125.8	78	0	11	109	146	408.9
YARMOUTH A	6.1	0.9	17.0	-4.9	6.4	100	124.0	92	0	7	115	129	355.9
PRINCE EDWARD ISLAND													
CHARLOTTETOWN A	3.7	0.8	17.2	-9.4	17.7	82	123.3	102	0	10	*	*	429.1
NEWFOUNDLAND													
BONAVISTA	3.1	-0.3	15.1	-7.0	28.0	250	113.6	118	7	17	*	*	447.5
BURGEO	3.1	0.1	12.6	-10.0	19.0	161	194.9	106	1	13	*	*	447.4
CARTWRIGHT	-1.0	0.8	8.2	-15.1	49.8	108	164.7	206	*	14	74	106	571.2
COMFORT COVE	1.7	0.1	14.8	-11.2	11.6	35	98.8	89	4	14	*	*	489.1
DANIELS HARBOUR	1.5	-0.3	13.9	-11.1	27.6	105	162.3	158	5	19	40	81	483.3
DEER LAKE A	1.8	0.8	13.7	-14.9	42.8	123	106.0	98	16	18	*	*	486.3
GANDER INT'L A	1.5	-0.3	15.4	-11.6	25.6	81	96.0	89	6	17	69	104	495.1
GOOSE A	-2.0	1.8	7.6	-17.3	76.7	135	117.8	157	19	11	77	117	240.5
MARY'S HARBOUR	-1.2	-0.3	7.7	-21.2	28.6	70	115.2	129	17	13	*	*	577.1
PORT AUX BASQUES	3.3	0.1	12.8	-6.2	34.8	305	147.2	95	1	21	62	*	442.7
ST ANTHONY	-0.3	1.0	7.7	-15.6	54.8	143	228.4	183	15	18	*	*	563.2
ST JOHN'S A	2.7	-0.7	17.1	-10.0	35.4	167	139.6	86	1	19	84	*	459.3
ST LAWRENCE	*	*	15.3	-8.5	22.4	249	208.3	154	0	18	*	*	447.3
STEPHENVILLE A	3.1	0.2	17.5	-7.3	40.6	166	150.0	122	6	18	41	*	447.5
WABUSH LAKE A	-5.8	2.3	4.5	-23.7	99.4	*	89.4	116	32	20	50	*	713.7

AGROCLIMATOLOGICAL STATIONS — NOVEMBER 1994

STATION	Temperature C										Degree days above 5 C	
	Mean	Difference from Normal	Maximum	Minimum	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)	This month	Since jan. 1st
BRITISH COLUMBIA												
AGASSIZ	3.7	-2.3	14.0	4.0	24.3	185.8	88	0	19	43	10.3	2406.8
SUMMERLAND	0.2	-2.3	9.0	-11.5	21.2	30.4	120	1	13	40	0.0	2425.4
ALBERTA												
BEAVERLODGE	-6.9	-1.8	5.5	-22.0	68.6	43.3	162	18	8	93	0.0	1426.5
LACOMBE	-5.7	-1.3	9.9	-21.5	8.9	8.9	64	5	3	**	0.0	1499.4
SASKATCHWAN												
INDIAN HEAD	-3.3	1.8	9.0	-21.0	8.0	8.6	50	2	2	**	0.0	1708.3
MELFORT	-6.6	0.3	5.0	-26.5	19.7	19.7	104	13	6	95	0.0	1553.5
SCOTT	-6.2	0.0	5.0	-24.5	9.0	7.6	55	9	0	107	0.0	1534.1
MANITOBA												
BRANDON	-2.6	2.4	12.1	-23.1	11.7	19.7	99	11	5	**	0.0	1726.5
MORDEN	-1.3	3.6	14.0	-19.0	18.2	42.0	174	8	6	126	2.5	1997.0
GLENLEA	-2.1	1.4	9.5	-16.0	2.0	37.1	145	2	5	115	0.0	1847.9
ONTARIO												
DELHI	6.1	2.4	17.0	-7.5	3.0	93.0	113	0	12	**	72.3	2259.1
HARROW	7.0	2.5	16.5	-5.0	0.0	57.0	85	0	6	134	86.7	2464.1
KAPUSKASING	-0.4	3.8	12.0	-17.5	35.4	58.2	79	10	8	62	12.8	1390.6
OTTAWA	4.0	2.4	17.5	-10.4	11.0	89.8	121	2	11	102	54.1	2167.4
SMITHFIELD	5.9	2.9	17.0	-13.6	12.8	101.6	115	0	6	**	72.7	2274.8

Courtesy of Agriculture Canada

STATION	Temperature C										Degree days above 5 C	
	Mean	Difference from Normal	Maximum	Minimum	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)	This month	Since jan. 1st
QUEBEC												
LA POCATIERE	2.1	1.7	16.0	-11.0	17.0	112.0	144	5	***	107	21.5	1624.9
L'ASSOMPTION	3.0		7.5	-1.6	8.1	124.0	**	1	11	121	*.*	1968.0
NORMANDIN	-1.8	1.1	11.5	-18.0	*.*	109.7	187	14	16	77	0.0	1350.6
NEW BRUNSWICK												
FREDERICTON	3.6	1.9	18.0	-12.0	18.2	124.2	111	8	7	127	39.5	1936.5
NOVA SCOTIA												
KENTVILLE	5.3	1.3	19.0	-9.0	10.0	103.3	87	0	8	102	53.7	2036.3
NAPPAN	6.7	3.7	18.0	-11.0	10.8	79.9	74	0	9	121	53.0	1842.5
PRINCE EDWARD ISLAND												
CHARLOTTETWN	*.*	*.*	*.*	*.*	*.*	*.*	**	***	***	**	*.*	*.*
NEWFOUNDLAND												
ST.JOHN'S WEST	3.2	-0.3	18.5	-10.0	31.4	152.4	91	5	20	81	20.9	1439.0

Courtesy of Agriculture Canada

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their longest season ever. Farmers completed harvesting and ploughing on time and in the comfort of sunny, warm weather.

Quebec

Temperatures in Quebec were one to three degrees above normal with the greatest departures in the north. Saint-Hubert recorded the warmest temperature (18.1°C, November 5), followed by Dorval (18.0°C). Gaspé recorded a record 13.8°C on the 19th (old record 6.7°C, 1969). Despite the above-normal temperatures, cold air managed to make an appearance in southwestern Quebec. St-Jovite recorded -18.8°C on the 27th and Québec City, -13.6°C on the 30th. To the north, La Grande recorded Quebec's coldest November temperature, -28.5°C on the 30th. Precipitation ranged from 100% of normal in Sherbrooke to 168% of normal in Mont Joli. Strong winds affected eastern Quebec, the Gulf of St. Lawrence and Newfoundland on the 8th. Wind gusts of 131 km/h at Cap-aux-Meules (Îles-de-la- Madeleine) on the 8th, surpassed the November record of 126 km/h, set in 1980.

In general, total snowfall was below normal. Dorval received 13.6 cm (normal 24.2 cm), Québec City 14.8 cm (normal 37.6 cm) and Roberval 19.6 cm (normal 51.7 cm). The only stations with above-normal snow totals were Sept-Îles (61.2 cm, normal 47.1 cm), Wabush (in neighbouring Labrador, 99.4 cm, normal 71.8 cm), Bagotville (54.8 cm, normal 49.2 cm) and Kuujjuaq (53.0 cm, normal 45.1 cm). The first major winter storm began November 27 in the southwest of the province and before it had exited Quebec on the 28th, 12 cm of snow had fallen in the southwest, 15 to 20 cm in the Saguenay/Lac St-Jean area, 23.6 cm at Gaspé and 35 cm at Sept-Îles. The storm also included rain and freezing rain. At the end of the month, the greatest snow on the ground was 39 cm at Bagotville followed by Wabush (32 cm), La Grande and Sept-Îles (23 cm). Elsewhere, snow on the ground was generally less than 10 cm with most sites less than 5 cm.

Heavy rain in southern Quebec in the first week of the month contributed to a good portion of the monthly total. By the end of the first week of the month, Montréal (72.6 mm) and Québec City (75 mm) had already exceeded their normal November rainfalls (70.4 and 67.7 mm, respectively). Three days of rain (November 1, 2 and 4) added up to 63.8 mm at Roberval (Lac St-Jean). Sunshine totals for the month ranged from 99% of normal at Roberval to 147% at Îles-de- la-Madeleine. The exception was 60 to 91% of normal sunshine, in northern Quebec.

Maritimes

November 1994 will be remembered as sunny and warm in the Maritimes. The overall mean temperature for the Maritimes was 3.9°C (1.2 Celsius degrees above normal). It was the sunniest November in many years in the Maritimes. Charlottetown, Prince Edward Island, where the normal November sunshine is 77 hours, set a record of 132 hours (old record 126 hours, 1978). Precipitation was inconsistent with some areas receiving greater than normal while other areas were well below normal. Snowfall was below normal with the exception of southwestern Nova Scotia. On the 8th, hurricane-force winds kept the Marine Atlantic ferry that crosses the Cabot Strait, in port.

Precipitation totals ranged from 69 to 158% of normal. New Brunswick had the greatest variation. Moncton recorded 79 mm (69% of normal) and Charlo, 140 mm (158% of normal). Nova Scotia's range was 103 mm at Kentville (84% of normal) to 207 mm at Shearwater (148% of normal). Charlottetown, P.E.I., recorded 123 mm (101% of normal). For the three-month period of September to November, Moncton, N.B., received only 171 mm of precipitation (57% of normal). The sunniest location was Moncton, reporting 153 hours of sunshine (normal (96 hours). Other stations reported 8 to 30 hours more than normal sunshine.

Newfoundland and Labrador

Near-normal temperatures prevailed across much of Newfoundland. Snowfall was below normal in eastern and central sections but above normal over the remainder of the Island. Sunshine was about 15 hours above normal on the Avalon Peninsula (normal, near 70 hours) but 10 hours below normal in western Newfoundland (normal, near 50 hours). Temperatures varied considerably. A record maximum of 17.5°C was set at Stephenville on the 2nd (old record 16.8°C, 1991). The latter part of the month, colder air invaded the region with minimums near -20°C inland. Light precipitation was common throughout the month with above-normal amounts in southern locations. Frequent periods of snow during the latter part of the month gave St. John's a monthly total of 35.4 cm (16.7 cm above normal). In contrast, Gander recorded 25 cm, 10 cm below normal. Total precipitation at St.Lawrence was 208.3 mm, 66.2 mm above normal. Several major wind storms affected the region . . . notably November 7 and 8 when gusts to 146 km/h were reported at Port-aux-Basques. The Marine Atlantic ferry service was disrupted and highways and schools in the area were closed.

Temperatures for November averaged above normal in Labrador. Wabush Lake with a mean of -5.8°C was 2.4 Celsius degrees above normal. On the 19th, Cartwright recorded 8.2°C (old record 7.2°C, 1937). However, much colder air was evident for the latter part of the month with minimums near -25°C, inland. Although frequent snowfall was reported early in the month, mild temperatures and rain resulted in melting at many locations. Total monthly snowfall ranged from 70 to 90 cm inland and 30 to 40 cm in coastal communities. At the end of the month, Labrador had a snow cover of 20 to 30 cm, inland. Sunshine hours were near normal, ranging from 50 to 70 hours.