Environment Canada Environnement Canada

Climatic Perspectives

Monthly Review **JULY – 1989** *Vol. 11*

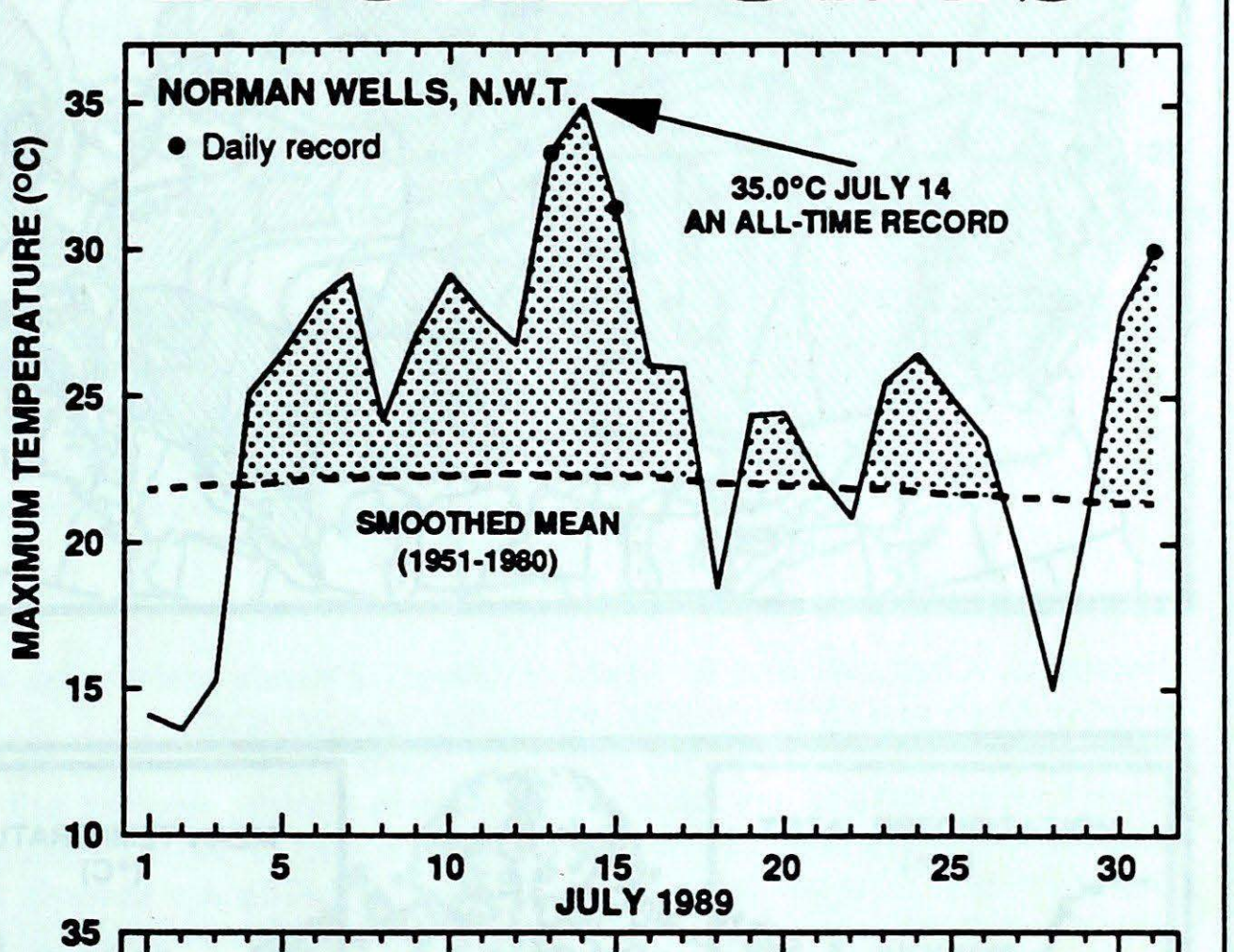
CLIMATIC HIGHLIGHTS

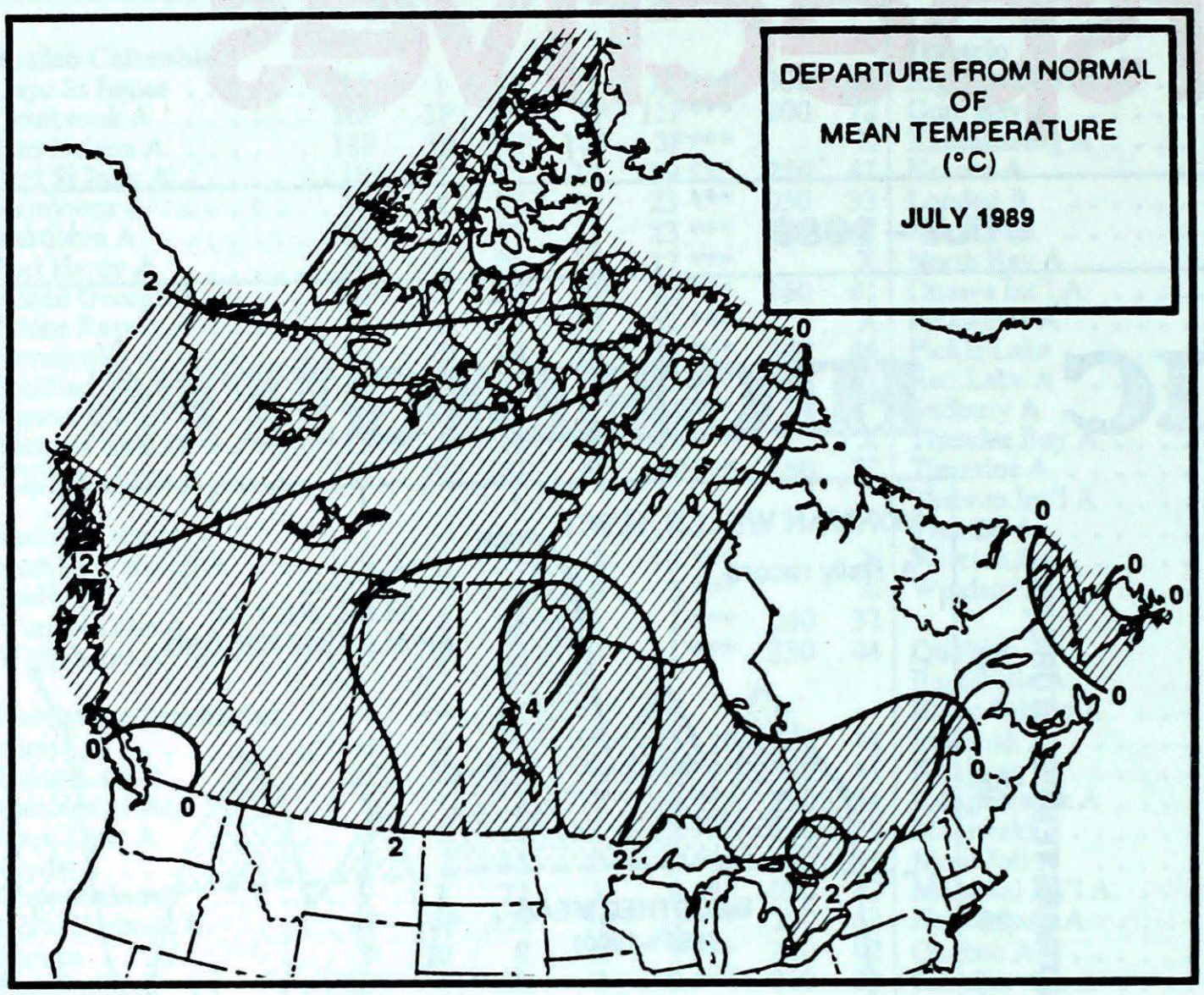
Heat wave in the north

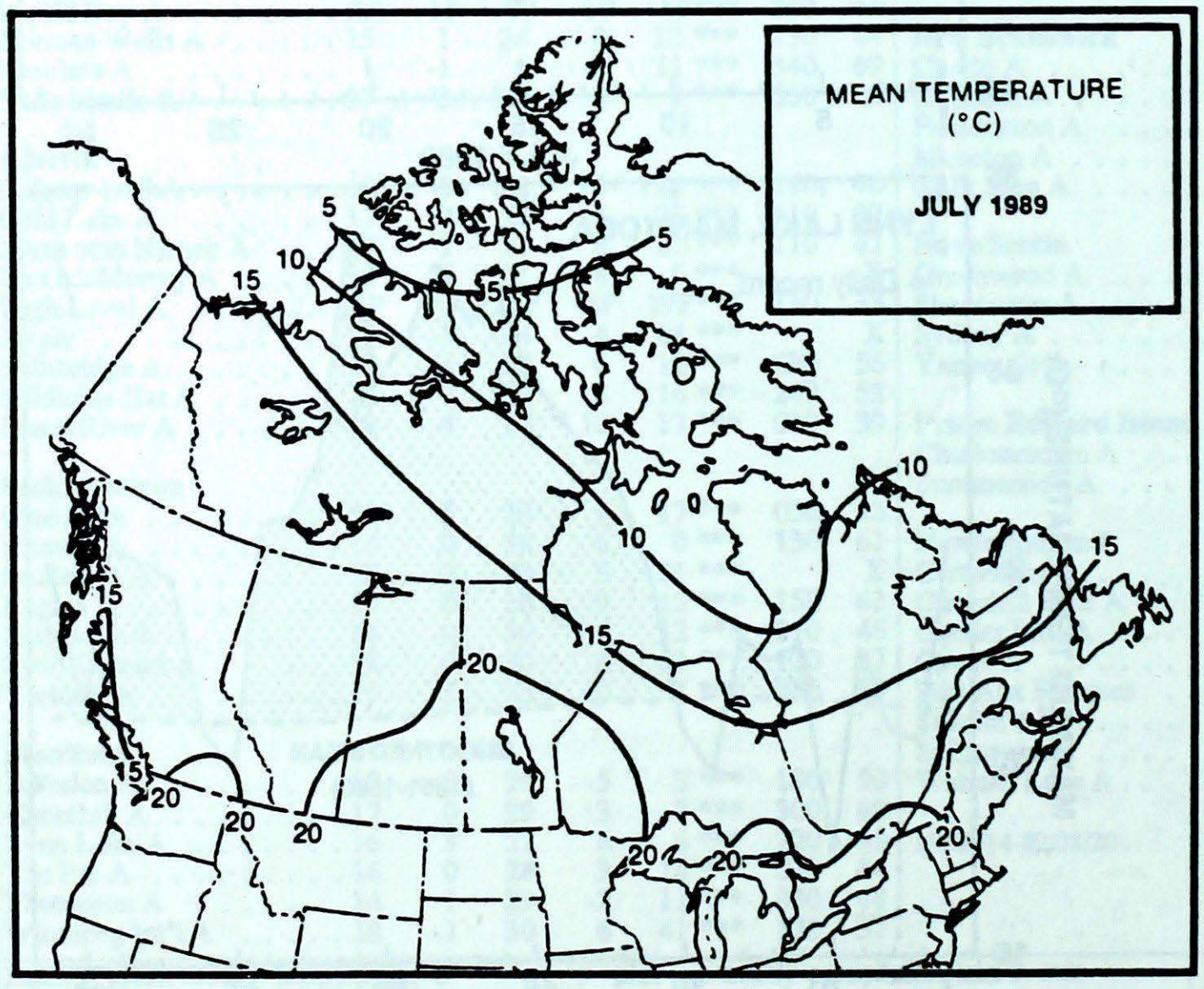
Torrid weather across the prairie provinces, the western Arctic and the Yukon held the limelight this past month as a strong ridge of high pressure dominated the scenario. It was the warmest July on record for a number of stations; in some cases, records dating back at least 20 years were eradicated. See table on page 5.

Sultry conditions shattered long-standing daily records along the coastal regions of the western Arctic during the week of the 10th. At Coppermine, the all-time record maximum temperature of 32.2°C set on July 9th, 1964, was trumped on 3 consecutive days, with a new record of 34.9°C being set on the 15th. Yellowknife also broke the all-time maximum of 32.2°C established on July 9th, 1964 with 32.5°C on the 16th. The hot, dry weather fuelled forest fires in the Yukon, Northwest Territories, and the northern parts of Manitoba, Saskatchewan and Ontario. Up to August 9th, 4.5 million hectares of forest have been destroyed in Canada this year, compared with the annual average (for the period 1976-86) of 2 million hectares, and thousands of people, particularly in Manitoba, were forced to flee their homes.

The other major event of the month was the record deluge of rain in southwestern Ontario on July 19th and 20th. In a 17-hour period, Harrow, Ont. received 264.2 mm of rain, the highest two-day total ever recorded in Ontario. Colchester unofficially recorded 300 mm. More than 1000 homes were affected by surface flooding and although no lives were lost, 3000 people were forced from their homes. Crop losses were set at 60% and road repairs were estimated to cost 35 million dollars.







Across the country

Yukon

The dominant weather pattern was a high pressure ridge. However, by mid-month, a few low pressure systems eroded the ridge bringing a break in the hot and dry conditions. It was one of the warmest Julys ever, with the mercury rising above 30°C at several locations. Fire fighters were kept busy by lightning-induced forest fires.

The entire western edge of the Yukon received only 50% of normal precipitation. The wettest areas were around Mayo and Teslin with 150% of normal.

Northwest Territories

A southerly flow of extremely warm air reached coastal areas of the western Arctic during mid-month. This very warm air persisted with only brief periods of cooler weather interspersed. Only Resolute, Eureka, and Cape Dyer were slightly below normal.

Some locations reported the warmest July temperatures on record, which when combined with below-normal precipitation, produced a hazardous forest fire situation in the Mackenzie Valley. At mid-month, over 30 forest fires were burning.

A thunderstorm on the 18th, over Yellowknife, produced 19.6 mm of rain within an hour and lightning blew several electrical transformers, leaving residents without power for 2 hours.

British Columbia

A series of cold upper troughs, located just offshore and at times moving over the province, dominated the weather for the month. As a result, very unsettled weather occurred, with well-above average numbers of thunderstorms on the coast and in the interior. Precipitation was above normal in the

northern half of B.C., with Dease Lake reporting the largest departure at 212% of normal, while to the east, Fort Nelson received only 49% of normal.

The southern third of the province had a very mixed pattern of precipitation due to local showers. Most of Vancouver Island reported 120 to 190% of normal except for the extreme northwest and southeast corners which reported 60 to 90%. In the interior, precipitation amounts varied from 30% of normal in the west Kootenays to 200% in the north Okanagan.

Temperatures averaged within a degree of normal over most of the south. In the north, it was a warm month, with departures from normal as high as 2.1°C at Dease Lake. Prince Rupert recorded their warmest July ever, at 14.0°C, 1.2°C above average.

Alberta

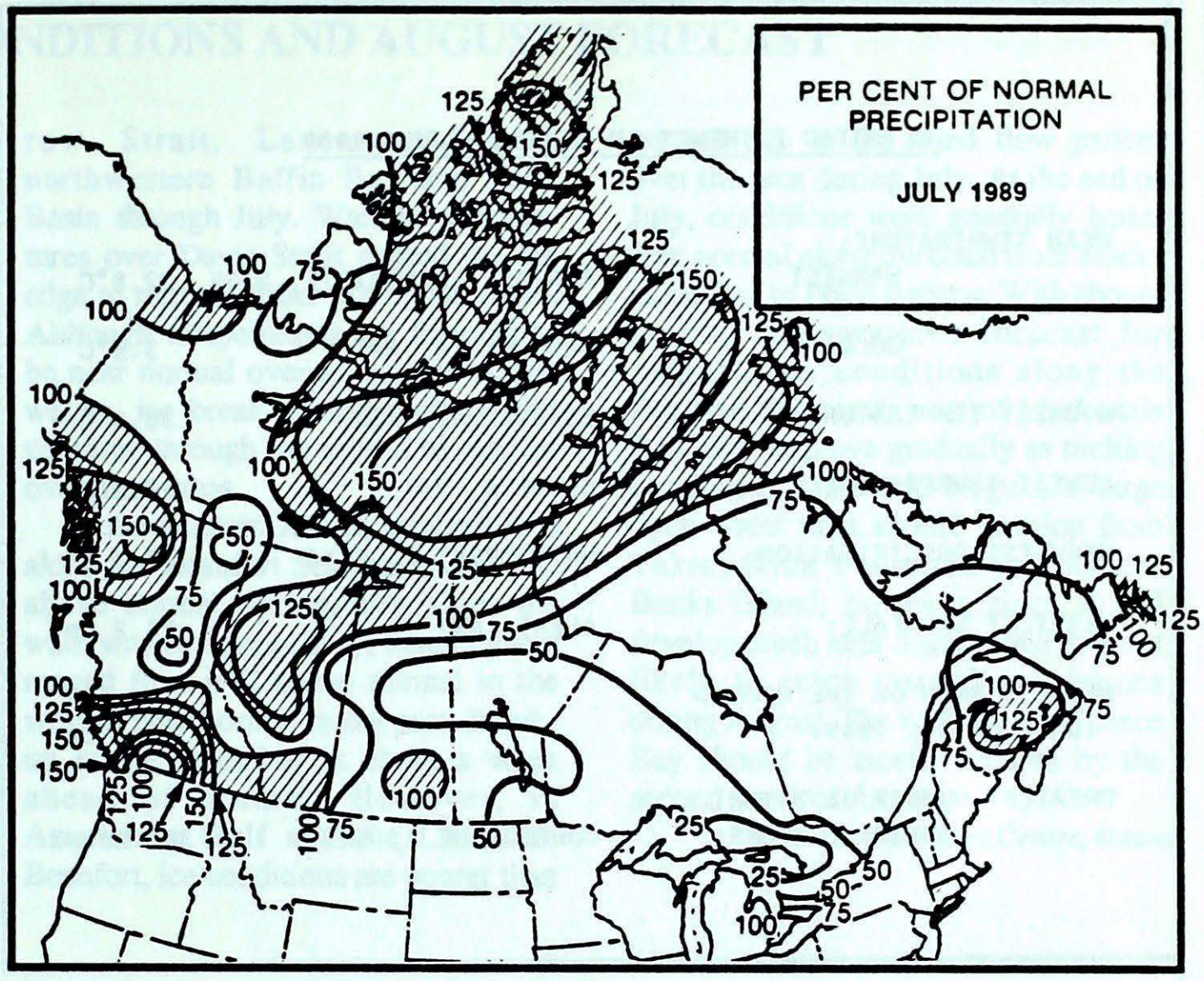
Average daily temperatures ranged from 0.5°C above normal over the south to near 2°C above normal over the northeast. Medicine Hat was the warmest location, recording 36.3°C on the 20th, while Banff had the coldest, 2.5°C on the 3rd.

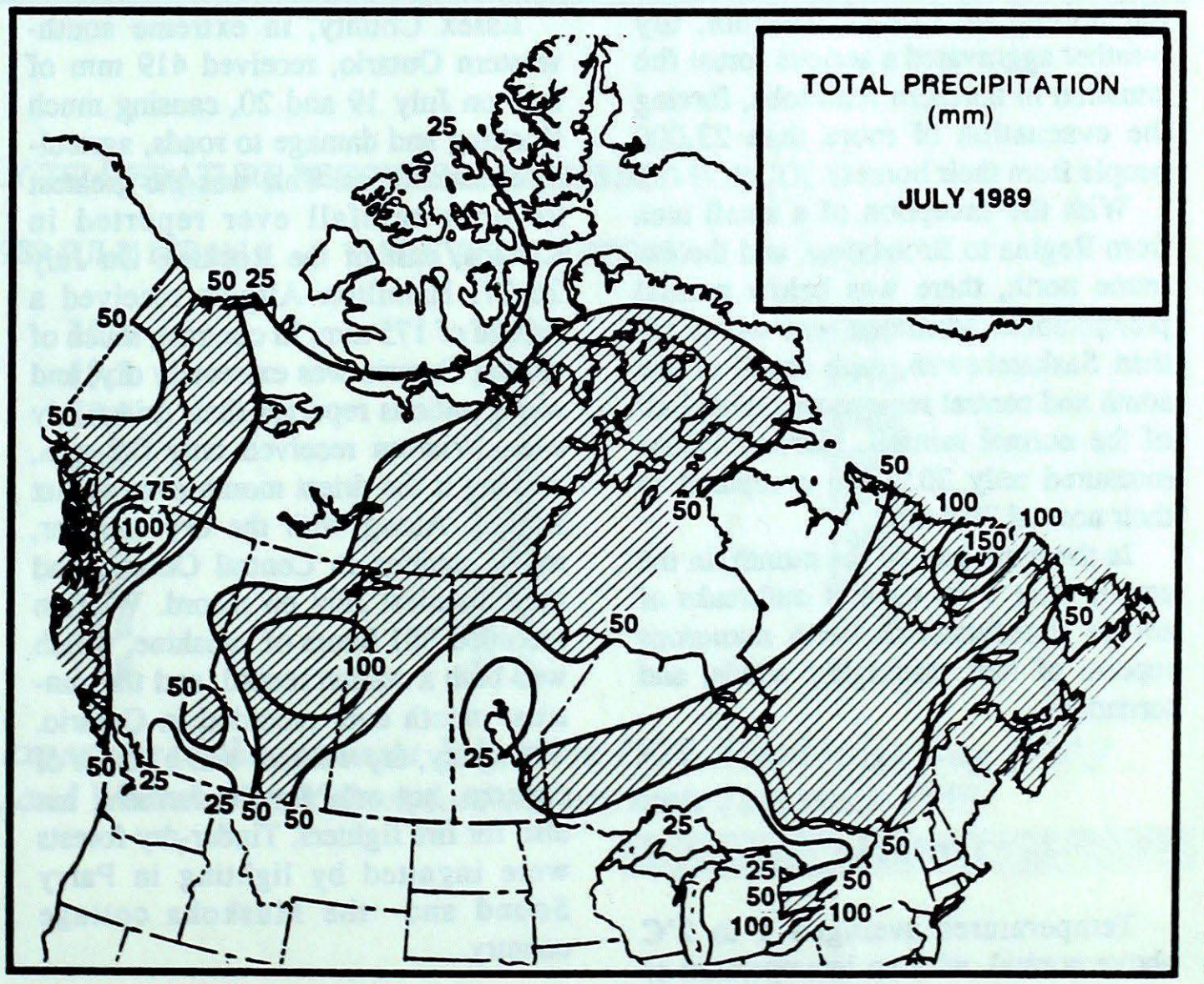
Except for the Cold Lake region, central regions were considerably wetter than normal. Above-normal rainfall was also recorded over the Grande Prairie-Peace River regions. The wettest areas were over the Edson-Whitecourt regions with 157 and 178 mm, respectively. Northern and south central regions were drier than normal.

A number of funnel clouds were reported from various areas. On July 27th, a tornado touched down briefly over west Edmonton, causing damage to several buildings. On the 21st, a hail storm in the Vermilion area caused considerable damage to aircraft, vehicles, buildings, and crops.

Saskatchewan and Manitoba

It was a warm month with the greatest anomaly in north-eastern





CLIMATIC EXTREMES IN CANADA - JULY 1989

MEAN TEMPERATURE:		
WARMEST	PORTAGE LA PRAIRIE, SASK	22.8°C
COLDEST	RESOLUTE A, NWT	3.5°C
HIGHEST TEMPERATURE:	ESTEVAN A, SASK	38.4°C
LOWEST TEMPERATURE:	CLYDE A, NWT	-6.8°C
HEAVIEST PRECIPITATION:	WHITECOURT A, ALTA	177.9 mm
HEAVIEST SNOWFALL:	ALERT, NWT	23.2 cm
DEEPEST SNOW ON THE GROUND ON JULY 31, 1989:		0.0 cm
GREATEST NUMBER OF BRIGHT SUNSHINE HOURS:	COPPERMINE A, NWT	383 hours

Manitoba. Churchill had a record monthly mean of 15.8°C compared to the normal of 11.8°C. The hot, dry weather aggravated a serious forest fire situation in northern Manitoba, forcing the evacuation of more than 23,000 people from their homes.

With the exception of a small area from Regina to Broadview, and the extreme north, there was below normal precipitation. Manitoba was worse off than Saskatchewan, with much of the south and central regions receiving half of the normal rainfall. Norway House measured only 20.2 mm compared to their normal 79.4 mm.

In the early part of the month, in the south, there were several outbreaks of severe thunderstorms, with numerous reports of hail, damaging winds, and tornadoes.

Ontario

Temperatures averaged 1 to 2°C above normal, with an interspersion of warm and cool spells. There were extremes of wetness and dryness, and very high sunshine totals.

Essex County, in extreme southwestern Ontario, received 419 mm of rain on July 19 and 20, causing much flooding and damage to roads, agriculture, and homes. This was the greatest 24-hour rainfall ever reported in Canada, east of the Rockies. On July 26-27, Hamilton Airport received a deluge of 175 mm. In contrast, much of central Ontario was extremely dry, and some stations reported their driest July ever. Wiarton received only 0.2 mm, making it the driest month ever at that station. Along with the dry weather, many stations in Central Ontario had their sunniest July on record. Wiarton recorded 381 hours of sunshine, which was both a station record, and the sunniest month ever recorded in Ontario. The sunny, dry weather was a matter of concern, not only for the farmers, but also for fire fighters. Tinder-dry forests were ingnited by lighting in Parry Sound and the Muskoka cottage country.

Québec

Every location in the province reported above-normal hours of bright sunshine, with the exception of Kuujjuak, 88% of normal.

Sunny and dry weather dominated most of south-western Québec. Temperatures were as much as 1.6°C above normal, in the National Capital Region. New records for total hours of bright sunshine in July were set at Québec, Sherbrooke, Maniwaki, Ste-Agathe, and Ottawa, with 347.6 hours, making it the sunniest location.

Over eastern Québec, mean monthly temperatures ranged from 0.8°C below normal at Gaspé, to 1.3°C above normal at Blanc Sablon. Gaspé received 177 mm of rain, which is 214% of normal.

Over northern Québec, mean monthly temperatures ranged from 1.4°C below normal at Inukjuak to 3.3°C above normal at Schefferville, which recorded a mean of 15.9°C, beating the old record of 15.0°C set in 1952. Inukjuak recorded 2.8 cm of snow.

Atlantic Provinces

Mean temperatures averaged near normal to slightly below normal across most of Atlantic Canada. There were no startling warm or cool spells, although frost was reported at some stations in Newfoundland during the first half of the month.

The usual summer pattern of showers and thunderstorms resulted in greatly variable precipitation totals. However, a dry spell from the 12th to the 26th caused concern to potato farmers in New Brunswick as well as to forestry officials, who were trying to keep a number of fires under control. Showers late in the month helped to alleviate the dry situation. Several major forest fires that were burning out of control in Labrador, early in July were brought under control later in the month by cooler, damper weather.

ICE CONDITIONS AND AUGUST FORECAST

Overall, temperatures over Hudson Bay averaged 1°C above normal. Despite the warm temperatures, ice cover in Hudson Bay and approaches was a bit more extensive than what would be expected in a normal year. With near to above-normal temperatures forecast for the month of August, the remaining ice in Hudson Strait and Ungava Bay should completely melt by the first week of August.

Average temperatures during July were slightly below normal over the eastern High Arctic and about 1°C above normal over Foxe Basin while Baffin Bay and Davis Strait were near normal. Patterns indicate that break-up in the north-eastern Arctic is one to two weeks ahead of normal this year. Near-normal ice conditions persisted in Barrow Strait, Lancaster Sound, northwestern Baffin Bay and Foxe Basin through July. Warmer temperatures over Davis Strait caused the ice edge to retreat further north than usual. Although temperatures are forecast to be near normal over all eastern Arctic waters, ice break-up and melting will continue through the month of August over most areas.

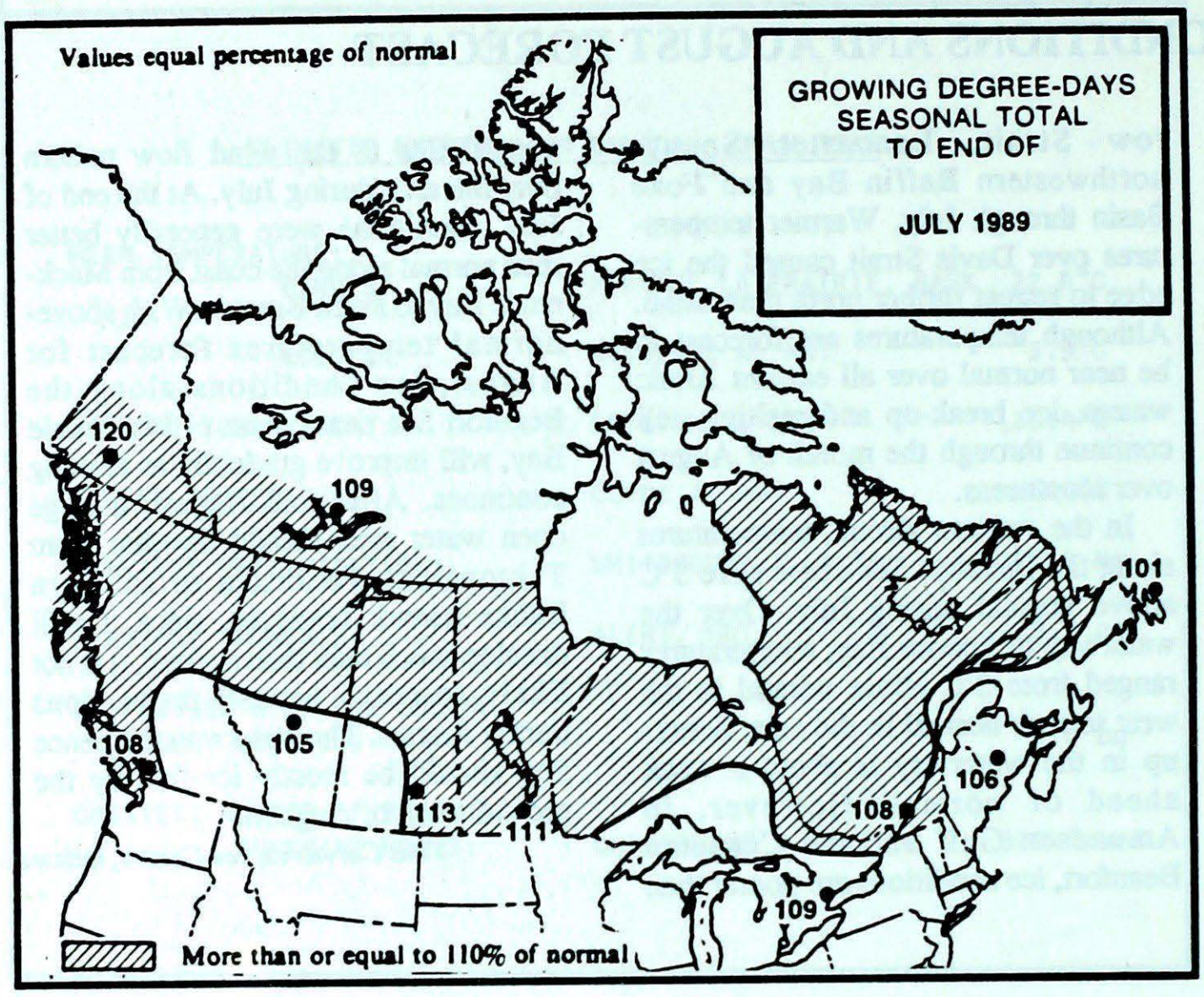
In the western Arctic, temperatures along the Beaufort Sea coast were 3°C above normal during July. Over the waterway to Spence Bay, temperatures ranged from 3°C above normal in the west to near normal in the east. Break-up in the waterway is about a week ahead of normal. However, in Amundsen Gulf and the Canadian Beaufort, ice conditions are poorer than normal due to the wind flow pattern over the area during July. At the end of July, conditions were generally better than normal along the coast from Mackenzie Bay to Point Barrow. With above-normal temperatures forecast for August, ice conditions along the Beaufort Sea coast, west of Mackenzie Bay, will improve gradually as melting continues. After mid-August, a large open water area should develop from Tuktoyaktuk Peninsula to southern Banks Island; however, since it will develop much later than normal, it is not likely to reach normal proportions during August. The waterway to Spence Bay should be mostly ice-free by the second week of August.

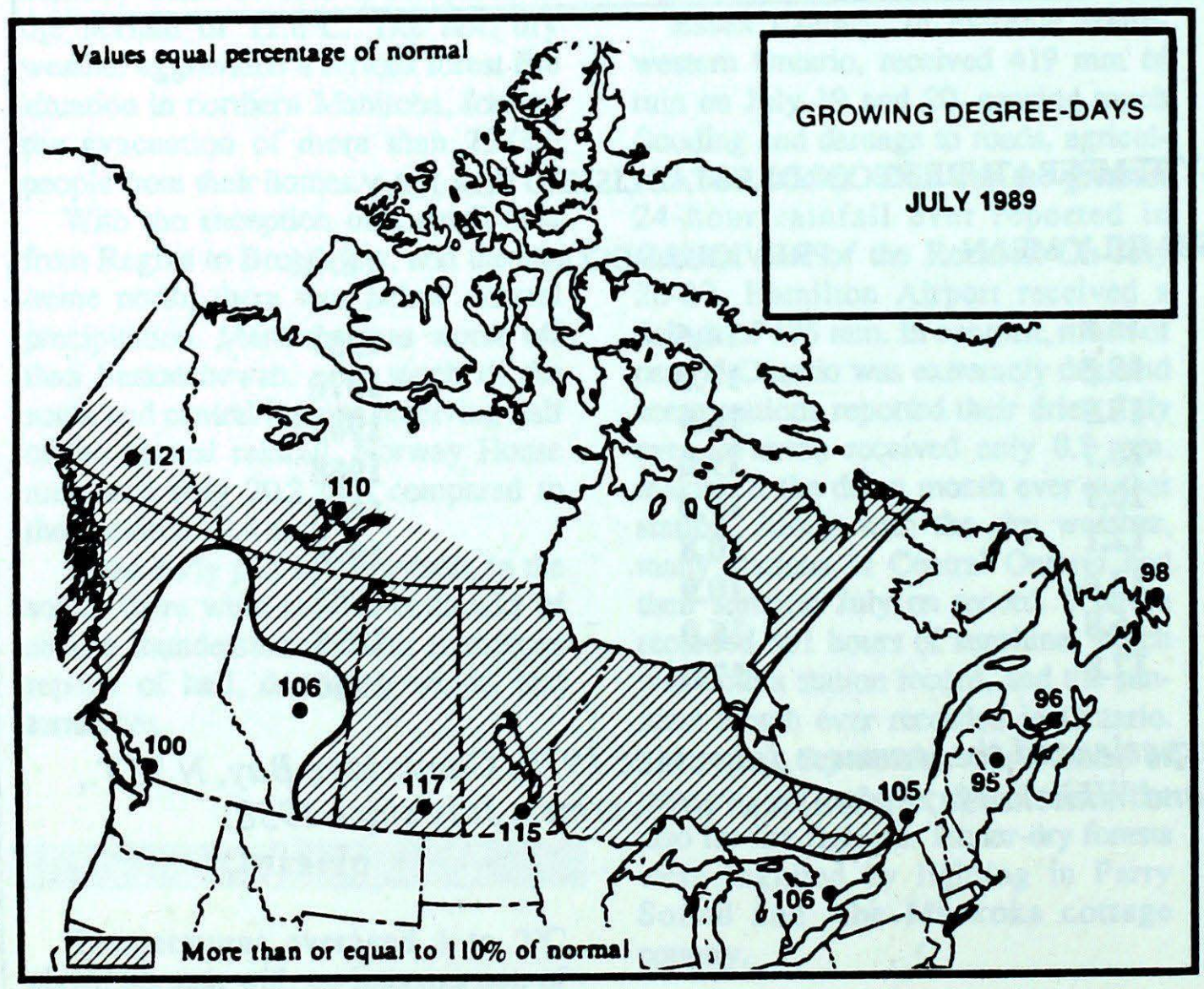
Tom Carrieres, Ice Centre, Ottawa

MEAN MONTHLY TEMPERATURE RECORDS ESTABLISHED FOR JULY

STATION	1989 JULY MEAN	PREVIOUS RECORD	YEAR
Churchill, Man.	**15.8**	**14.6**	**1937**
Thompson , Man.	**19.3**	**17.0**	**1970**
Gillam , Man.	**18.5**	**16.9**	**1982**
Island Lake, Man.	**20.7**	**19.0**	**1988**
Lynn Lake, Man.	**20.7**	**19.0**	**1963**
Rankin Inlet, N.W.T.	**12.1**	**10.8**	**1976**
Coppermine Airport, N.W.T.	**13.4**	**10.9**	**1981**
Old Crow Airport, Yukon	**16.8**	**16.0**	**1955**
Mayo Airport, Yukon	**17.8**	**17.0**	**1986**

Inuvik and Fort Simpson, N.W.T., experienced the warmest July since 1979, Cambridge Bay, N.W.T., tied the July temperature for 1961, and Whitehorse, Yukon, had the warmest July since 1958.



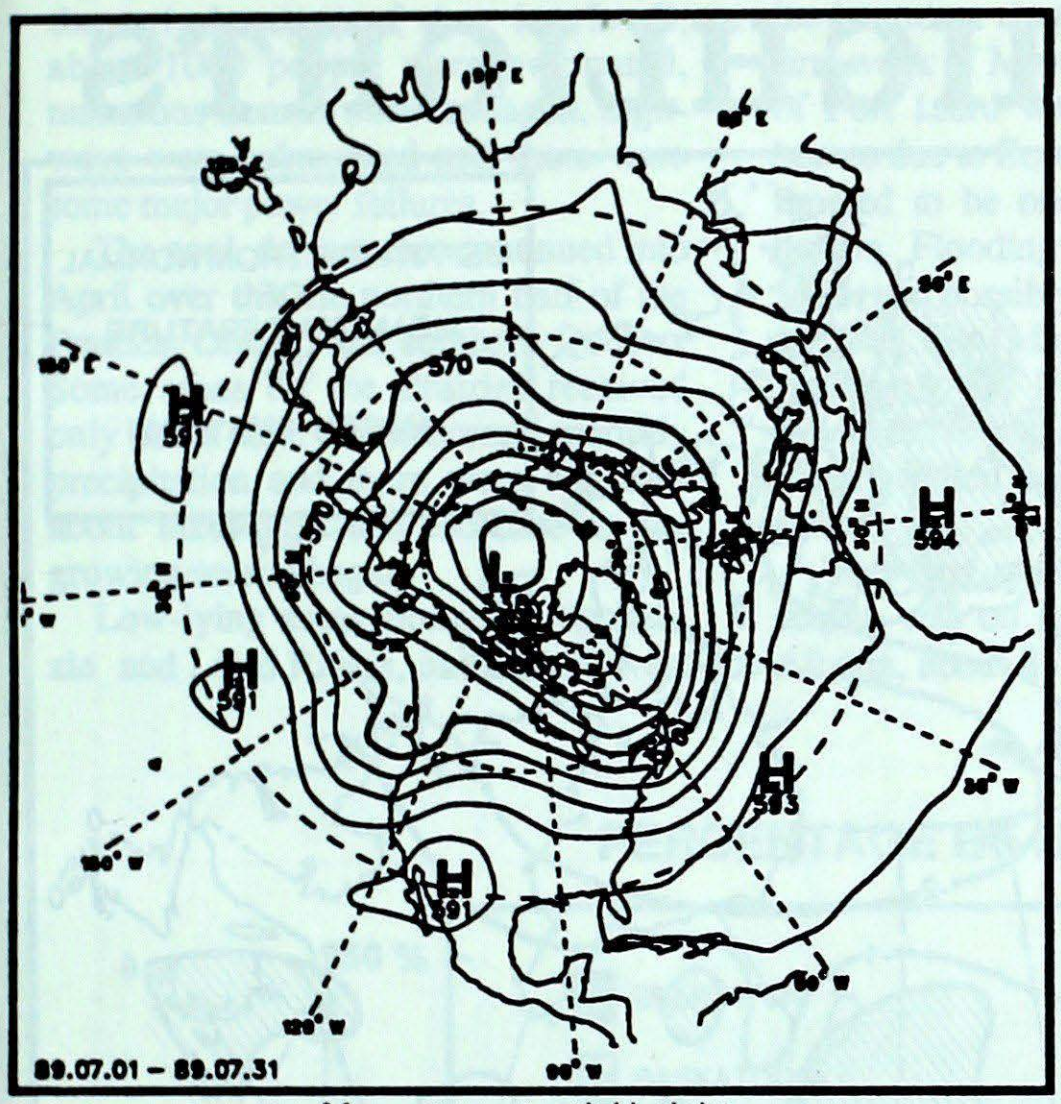


SEASONAL TOTAL OF GROWING DEGREE-DAYS TO END OF JULY

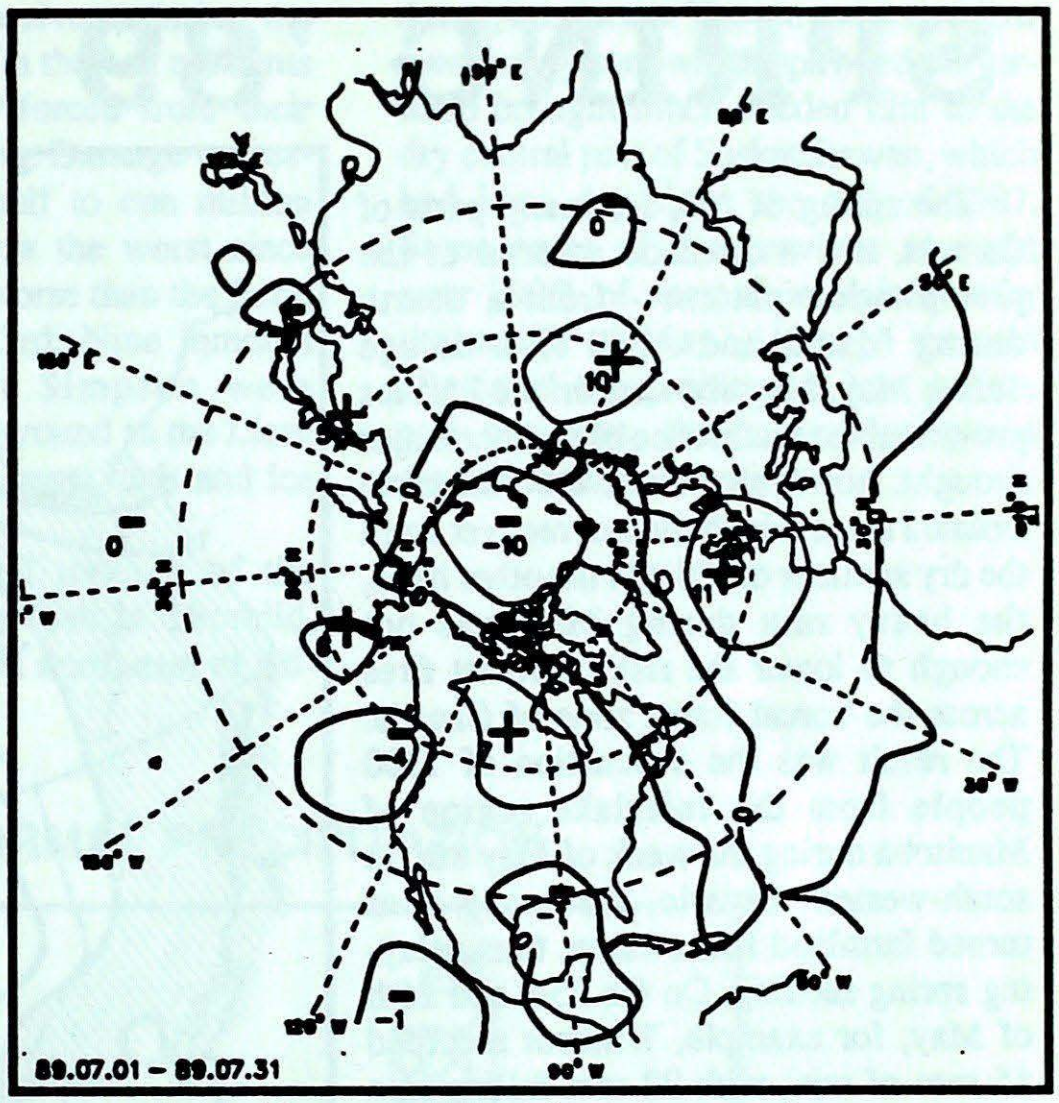
	1989	1988	NORMAL
BRITISH COLUMBIA			
Abbotsford	1065	1026	942
Kamloops	1330	*	1235
Penticton	1263	*	1166
Prince George	660	*	590
Vancouver	1052	1048	973
Victoria	947	924	893
ALBERTA			
Calgary	647	908	589
Edmonton Mun.	744	954	712
Grande Prairie	679	*	626
Lethbridge	732	1107	703
Peace River	849	742	774
SASKATCHEWAN			
Estevan	1061	1343	965
Prince Albert	892	974	801
Regina	1028	1265	911
Saskatoon	951	1218	890
Swift Current	884	*	856
MANITOBA			
Brandon	977	1068	899
Churchill	323	118	207
Dauphin	1005	1046	877
Winnipeg	1066	1103	960
ONTARIO			
London	1107	1230	1023
North Bay	969	*	862
Ottawa	1160	1231	1039
Thunder Bay	775	818	759
Toronto	1117	1195	1026
Trenton	1141	1157	1081
Windsor	1291	1439	1271
QUEBEC			
Baie Comeau	*	*	*
Maniwaki	1013	*	908
Montréal	1235	979	1148
Quebec	1023	1211	950
Sept-Iles	606	*	551
Sherbrooke	995	928	874
NEW BRUNSWICK			
Charlo	766	571	740
Fredericton	1011	948	952
Moncton	921	829	852
NOVA SCOTIA			
Sydney	647	719	663
Yarmouth	800	716	730
PRINCE EDWARD ISLAND			
Charlottetown	883	782	803
NEWFOUNDLAND			
Gander	457	502	455
St. John's	*	*	*
Stephenville	735	605	600

50-kPa ATMOSPHERIC CIRCULATION

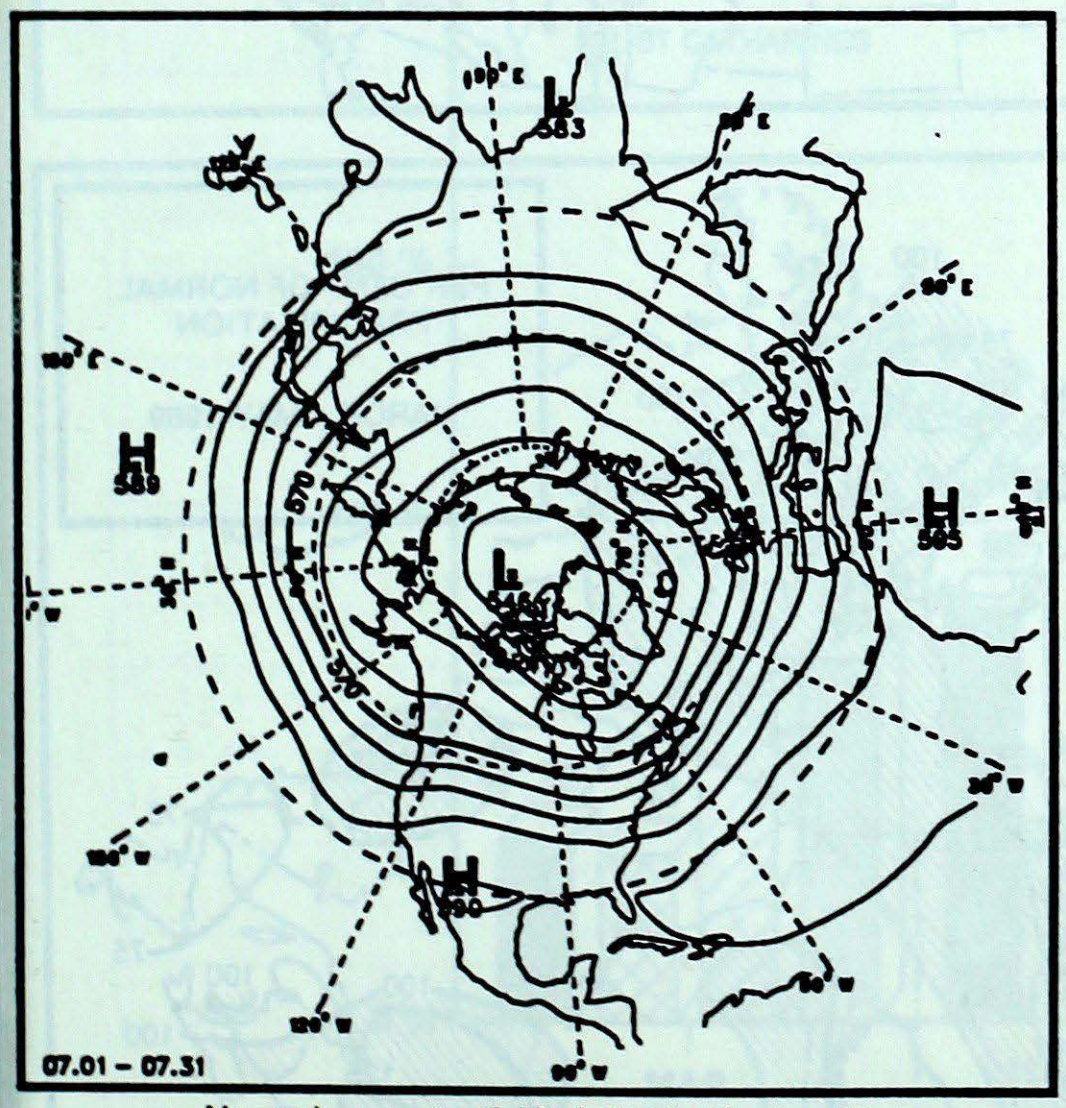
July 1989



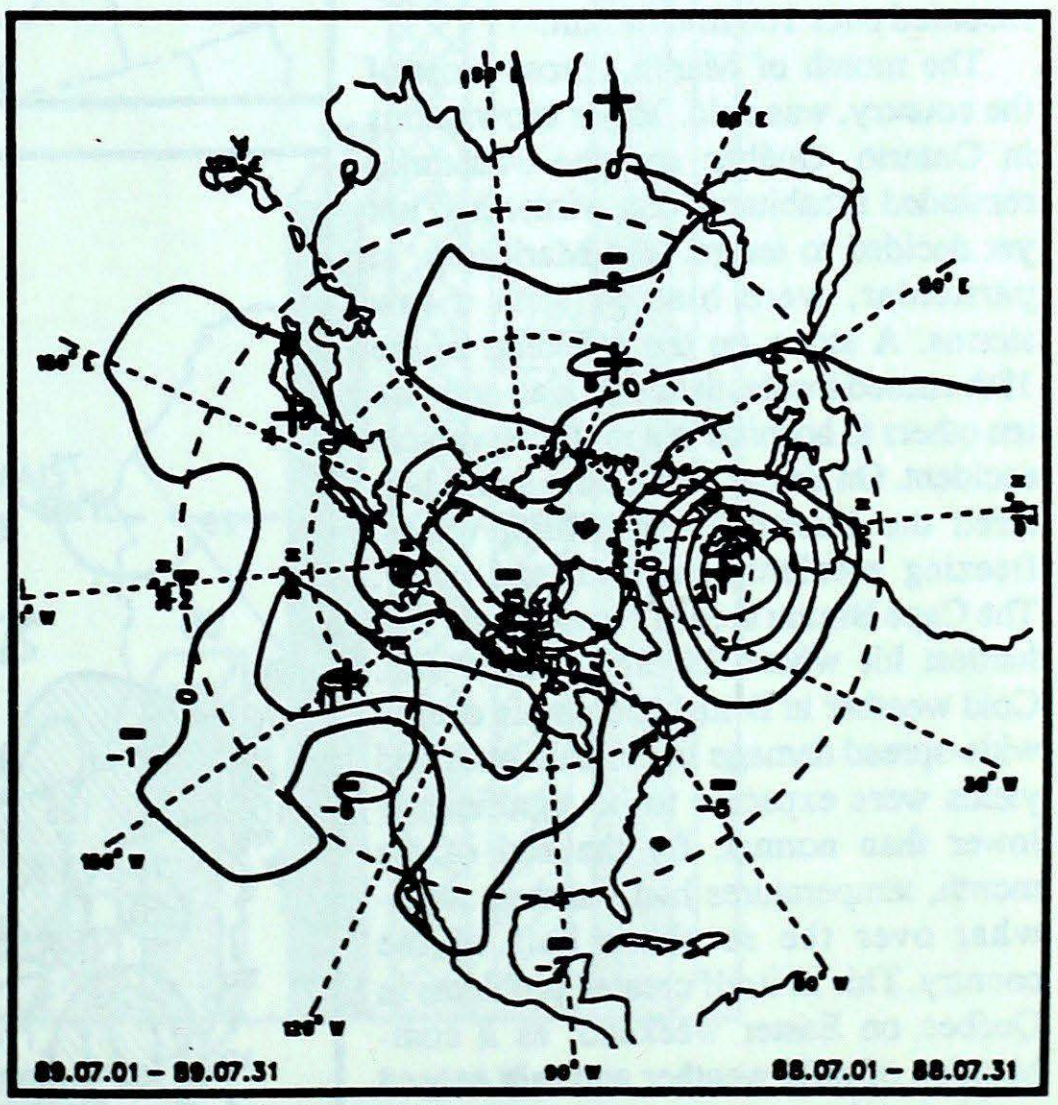
Mean geopotential heights
5-decametre interval



Mean geopotential height anomaly
5-decametre interval



Normal geopotential heights for the month
5-decametre interval

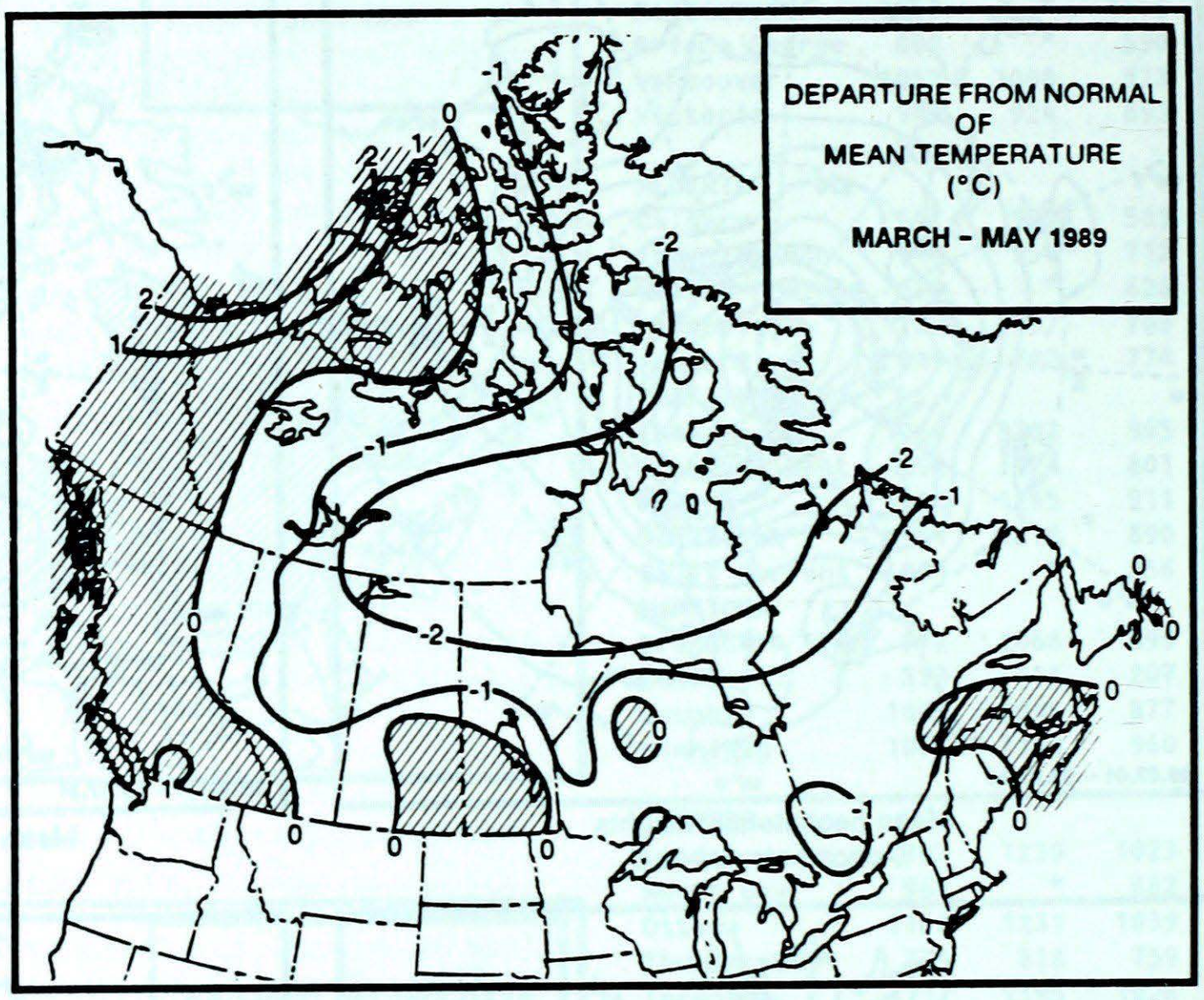


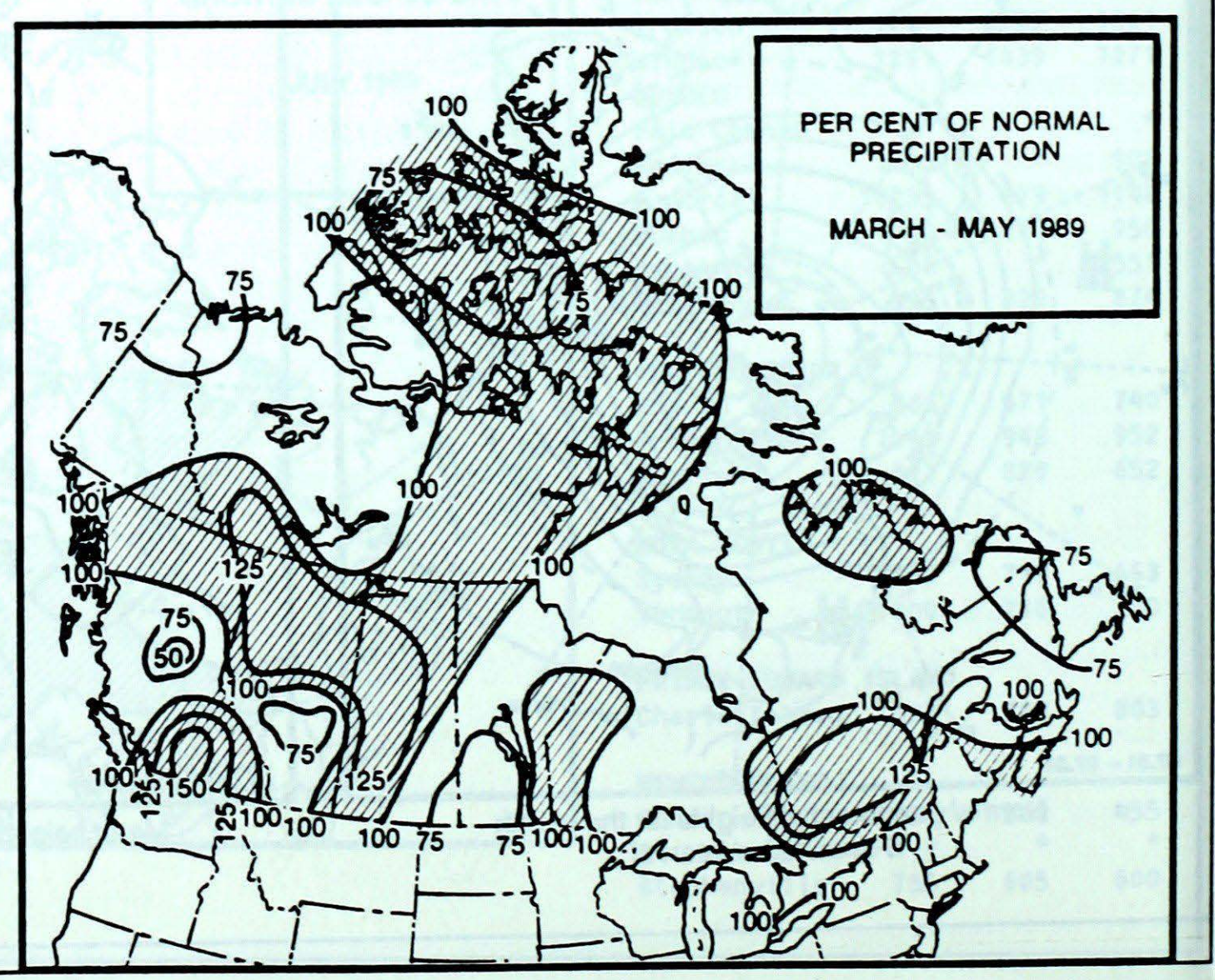
Mean heights difference w/r to previous month
5-decametre interval

SPRING '89 HIGHLIGHTS

The spring of '89, for many parts of Canada, saw a dramatic reversal of the precipitation pattern - from a dearth during March and April to a deluge during May. May showers on the Prairies prevented the recurrence of another major drought; however, there were still some isolated areas which did not recover from the dry summer of '88. On the other hand, the heavy rain during May was not enough to lower the risk of forest fires across the boreal forest zone of Canada. The result was the evacuation of 1300 people from the Interlake region of Manitoba during the week of May 8th. In south-western Ontario, the heavy rains turned farmland into swamp, thus delaying spring seeding. On the 25th and 26th of May, for example, Windsor recorded 55 mm of rain, with 22 mm falling in a 12-minute period. The area of Leamington to Wheatley unofficially recorded over 100 mm of rain.

The month of March, across most of the country, was cold. Major snowstorms in Ontario, Québec and the Maritimes reminded inhabitants that winter had not yet decided to let go. The Maritimes, in particular, were blasted with a few storms. A storm on the weekend of the 18th caused the death of one man and sent ten others to hospital in a multiple-vehicle accident. On Easter weekend, a storm battered the Maritimes with high winds, freezing precipitation, rain, and snow. The Cape Breton area of Nova Scotia was hardest hit where 35 cm of snow fell. Cold weather in British Columbia caused wide-spread damage to the fruit buds and yields were expected to be significantly lower than normal. By the end of the month, temperatures had warmed somewhat over the southern half of the country. This in itself created problems in Québec on Easter weekend, as a combination of mild weather and rain caused rapid thawing, resulting in millions of dollars worth of flood damage. The regions of Sherbrooke, Drummondville, Victoriaville, Bécancour and Saint



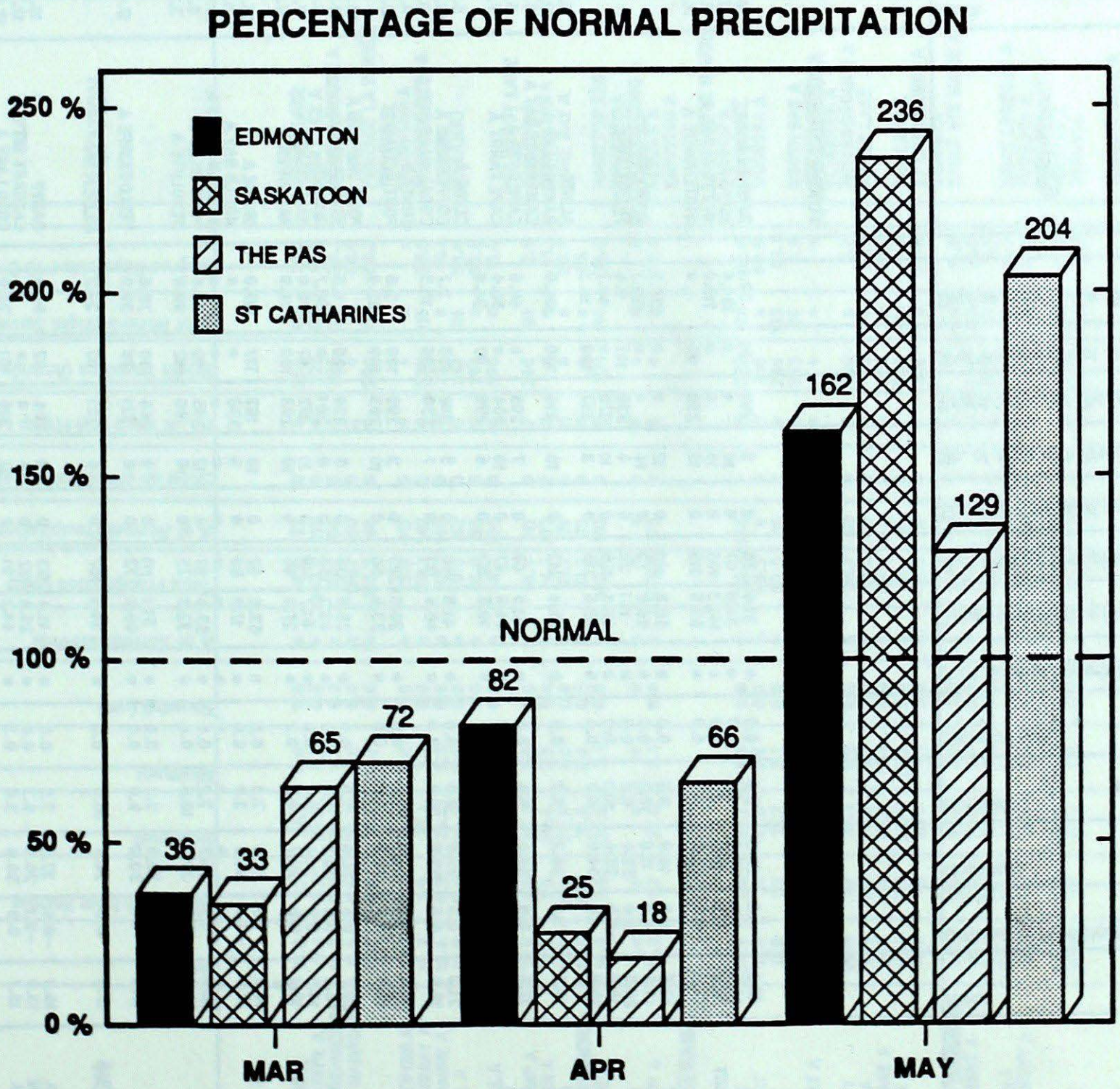


Hyacinthe were the worst affected by the early break-up of river ice. In all, about 1000 people were evacuated, numerous homes were damaged, highways were submerged and there were some major power failures.

The cool, dry weather continued into April over the the northern half of the Prairies, Ontario and southern Québec. Some areas on the Prairies received only about 25% of the normal monthly precipitation and there were concerns about inadequate soil moisture as the growing season began.

Low-lying areas along the Mackenzie and Liard Rivers, in the Northwest Territories, experienced flooding due to ice-jamming in the rivers, during the first week of May. On the 1st, residents of Fort Liard were forced from their homes due to flooding. Damage was estimated to be one-half to one million dollars. Flooding was the worst since 1976, and possibly worse than the flood of 1963. On May 3rd, Nine hundred residents of Fort Simpson were evacuated to higher ground as the Liard River swelled from snow melt and ice jams.

The first-reported tornado of the season was on May 10th at Thorhild, Alberta, about 85 km north-east of Edmonton, causing thousands of dollars of damage to farms. The slow-moving low pressure system which spawned the tornado brought much needed rain to the dry central part of Saskatchewan, which had been dry since the fall of 1987. Some areas of the province received over 200% of normal precipitation for the month of May. Although the rain alleviated the problem of low surface soil moisture, the heavy downpours slowed seed germination.



JULY 1989

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	17.0	0.0	28.3	8.0	0.0	*	31.4	76	0	5	266	91	39.1
ALERT BAY	14.6	0.6	22.0	8.1	0.0	*	34.9	67	0	10	*	*	104.4
AMPHITRITE POINT	14.2	0.3	18.5	9.2	0.0	*	141.3	195	0	10	*	*	119.0
BLUE RIVER A	17.1	0.6	32.6	4.0	0.0	*	83.9	115	0	15	230	94	*
CAPE ST JAMES	13.5	0.8	19.8	9.3	0.0	*	58.8	101	0	12	*	*	138.5
CAPE SCOTT	13.8	0.8	17.8	10.3	0.0	*	66.8	73	0	14	*	*	129.7
CASTLEGAR A	20.5	0.4	33.4	6.6	0.0	*	11.1	28	0	4	339	107	9.4
COMOX A	16.9	-0.5	26.4	10.1	0.0	*	49.6	178	0	11	270	*	40.7
CRANBROOK A	19.9	1.6	34.0	6.4	0.0	*	30.6	115	0	3	357	108	18.3
DEASE LAKE	14.6	2.1	28.2	3.7	0.0	0	117.4	212	0	18	214	108	106.9
FORT NELSON A	17.4	0.8	32.8	5.4	0.0	*	41.5	49	0	7	295	*	40.6
FORT ST JOHN A	16.8	1.2	29.8	5.5	0.0	*	74.6	97	0	10	304	*	50.4
HOPE A	17.9	-0.6	30.4	8.7	0.0	*	19.6	53	0	6	250	97	24.8
KAMLOOPS A	21.3	0.5	35.6	9.0	0.0	*	41.8	186	0	5	342	108	3.7
KELOWNA A	19.4	0.8	33.8	4.6	0.0	*	48.6	177	0	7	330	106	18.5
LYTTON	21.5	-0.1	36.5	9.7	0.0	*	20.5	225	0	3	295	100	2.6
MACKENZIE A	15.6	0.9	28.8	4.8	0.0	*	33.0	54	0	10	293	109	83.9
PENTICTON A	20.7	0.4	34.0	7.0	0.0	*	28.8	136	0	5	329	106	9.5
PORT ALBERNI A	16.3	-0.8	30.2	5.0	0.0	*	43.2	154	0	8	201	*	59.7
PORT HARDY A	14.5	0.9	21.4	7.3	0.0	*	61.7	119	0	11	172	87	108.0
PRINCE GEORGE A	15.9	0.8	29.7	4.0	0.2	*	27.3	46	0	10	293	100	76.9
PRINCE RUPERT A	14.0	1.3	20.9	7.3	0.0	*	63.6	57	0	10	182	127	127.0
PRINCETON A	17.5	-0.3	34.5	2.9	0.0	*	17.9	80	0	3	338	*	*
QUESNEL A	*	*	*	*	*	*	*	*	*	*	*	*	*
REVELSTOKE A	19.4	1.2	34.7	7.2	0.0	*	53.4	97	0	12	265	99	16.6
SANDSPIT A	14.8	0.8	29.2	10.5	0.0	*	32.2	75	0	10	190	102	99.6
SMITHERS A	15.7	1.0	32.0	3.0	0.0	*	51.1	111	0	9	244	100	78.6
TERRACE A	17.5	1.4	30.9	9.0	0.0	*	40.7	72	0	6	221	126	39.9
VANCOUVER INT'L A	17.3	0.0	24.4	10.6	0.0	*	34.1	107	0	4	281	92	24.2
VICTORIA INT'L A	15.9	-0.4	27.5	7.5	0.0	*	11.4	63	0	3	304	92	64.8
VICTORIA MARINE	13.9	-0.1	20.3	6.3	0.0	*	25.8	122	0	4	*	*	*
WILLIAMS LAKE A	15.7	0.3	30.6	3.6	0.3	*	44.1	91	0	12	316	101	76.9

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YUKON TERRITORY													
DAWSON A	16.8	*	32.1	2.2	0.0	*	17.0	*	0	*	*	*	*
MAYO A	17.8	2.6	31.5	5.4	0.0	*	37.4	72	0	*	*	*	*
WATSON LAKE A	17.1	2.2	30.0	6.0	0.0	*	60.6	104	0	11	287	109	45.9
WHITEHORSE A	16.0	1.9	30.1	2.9	0.0	*	36.2	107	0	8	274	110	72.8
NORTHWEST TERRITORIES													
ALERT	4.4	0.8	17.5	-2.0	23.2	209	28.3	146	0	6	283	95	419.9
BAKER LAKE A	12.0	1.0	33.6	1.2	0.0	*	59.0	155	0	6	291	97	192.6
CAMBRIDGE BAY A	9.8	1.9	26.9	0.8	0.0	0	16.0	81	0	5	302	99	256.4
CAPE DYER A	5.0	-0.1	15.5	-2.3	4.8	71	30.6	71	0	7	*	*	403.0
CAPE PARRY A	7.6	1.9	21.9	-1.7	3.2	457	11.7	69	0	4	*	*	323.0
CLYDE A	5.4	1.3	18.8	-6.8	4.6	61	34.2	149	0	8	315	121	388.8
COPPERMINE A	13.4	3.7	34.9	1.2	0.0	0	31.5	122	0	4	383	120	162.5
CORAL HARBOUR A	9.2	0.5	22.4	0.8	0.0	0	57.0	139	0	8	294	103	264.2
EUREKA	4.2	-1.2	11.9	-0.5	4.8	436	40.2	332	0	10	248	72	429.1
FORT RELIANCE	15.5	1.6	33.6	1.3	0.0	*	56.0	164	0	8	*	*	116.4
FORT SIMPSON A	18.5	1.9	34.2	1.8	0.0	*	46.7	99	0	8	354	123	57.4
FORT SMITH A	17.8	1.8	34.4	2.0	0.0	*	45.6	80	0	8	357	*	56.2
IQALUIT	8.6	1.0	19.8	1.5	0.0	0	82.4	130	0	8	192	95	292.4
HALL BEACH A	7.8	2.4	19.4	1.0	0.0	0	59.5	173	0	5	*	*	315.1
HAY RIVER A	17.2	1.4	34.6	4.5	0.0	*	48.9	102	0	8	*	*	24.0
INUVIK A	16.5	2.9	31.2	-0.3	0.0	0	63.2	188	0	9	351	103	83.4
MOULD BAY A	4.1	0.2	16.0	-1.6	1.6	*	11.6	78	0	4	150	*	464.2
NORMAN WELLS A	18.6	2.5	35.0	6.4	0.0	0	50.9	91	0	11	345	119	43.1
POND INLET A	6.7	*	17.5	0.0	0.0	*	35.8	*	0	9	329	*	348.0
RESOLUTE A	3.5	-0.6	14.2	-1.7	3.6	109	22.5	100	0	7	225	82	448.9
YELLOWKNIFE A	17.6	1.3	32.5	7.4	0.0	*	45.8	136	0	6	376	98	56.9
ALBERTA													
BANFF	16.1	1.3	31.5	2.5	0.0	*	39.4	93	0	11	*	*	*
CALGARY INT'L A	17.7	1.3	31.6	5.1	0.0	*	50.6	77	0	6	335	104	37.5
COLD LAKE A	18.8	1.9	32.2	7.5	0.0	*	47.2	55	0	8	327	105	18.9

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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
CORONATION A	19.0	1.7	34.1	6.4	0.0	*	48.6	77	0	6	354	105	22.6
EDMONTON INT'L A	17.1	1.3	28.5	5.7	0.0	*	105.8	116	0	14	322	103	46.7
EDMONTON MUNICIPAL	18.2	0.8	28.6	9.7	0.0	*	95.7	108	0	13	326	106	30.2
EDMONTON NAMAO A	17.5	0.6	29.3	8.5	0.0	*	114.7	150	0	12	*	*	40.6
EDSON A	15.5	1.0	27.2	2.7	0.0	*	156.5	146	0	15	280	100	86.2
FORT CHIPEWYAN A	18.1	2.0	34.0	5.0	0.0	*	73.8	115	0	*	*	*	*
FORT MCMURRAY A	18.3	1.9	32.1	3.2	0.0	*	107.1	142	0	10	328	115	39.5
GRANDE PRAIRIE A	16.4	0.5	29.2	5.3	0.0	*	96.1	148	0	13	327	*	61.7
HIGH LEVEL A	16.9	0.9	30.8	2.8	0.0	*	39.0	62	0	10	342	116	53.6
JASPER	15.4	0.3	30.3	2.7	0.0	*	42.0	85	0	10	267	*	90.8
LETHBRIDGE A	19.1	0.5	34.3	6.0	0.0	*	46.0	106	0	6	350	*	15.6
MEDICINE HAT A	21.5	1.6	36.3	7.9	0.0	*	45.4	112	0	7	346	99	2.8
PEACE RIVER A	17.2	1.5	30.4	5.5	0.0	*	74.7	123	0	12	*	*	41.1
RED DEER A	16.5	0.4	29.8	4.0	0.0	*	61.2	79	0	11	*	*	63.9
ROCKY MTN HOUSE A	15.6	0.3	27.0	3.4	0.0	*	67.2	72	0	11	*	*	88.1
SLAVE LAKE A	16.9	1.6	29.6	3.1	0.0	*	102.0	107	0	9	321	110	54.0
SUFFIELD A	*	*	*	*	*	*	*	*	*	*	*	*	*
WHITECOURT A	16.3	1.2	27.0	5.1	0.0	*	177.9	175	0	16	*	*	62.3
SASKATCHEWAN													
BROADVIEW	20.5	2.8	35.7	7.5	0.0	*	69.2	134	0	7	328	98	12.4
COLLINS BAY	17.8	*	32.8	5.6	0.0	*	88.5	*	0	11	310	*	60.5
CREE LAKE	17.8	1.9	31.2	3.7	0.0	*	80.8	85	0	9	286	103	62.1
ESTEVAN A	21.9	2.0	38.4	8.7	0.0	*	33.6	62	0	6	343	96	1.3
HUDSON BAY A	*	*	*	*	*	*	*	*	*	*	*	*	*
KINDERSLEY	20.0	1.7	34.1	5.8	0.0	*	38.7	81	0	5	356	*	6.7
LA RONGE A	19.2	2.6	35.5	7.2	0.0	*	59.2	65	0	9	*	*	21.2
MEADOW LAKE A	18.5	*	32.3	7.3	0.0	*	68.2	*	0	9	331	*	27.7
MOOSE JAW A	21.7	2.0	36.4	10.5	0.0	*	37.1	69	0	7	348	101	5.4
NIPAWIN A	19.5	*	35.4	4.1	0.0	*	41.6	*	0	7	342	*	20.8
NORTH BATTLEFORD A	19.8	1.7	35.7	7.2	0.0	*	64.2	99	0	6	*	*	14.9
PRINCE ALBERT A	19.8	2.4	36.3	5.4	0.0	*	30.4	47	0	10	334	113	14.5
REGINA A	21.5	2.6	36.2	7.6	0.0	*	64.7	121	0	6	328	96	5.7
SASKATOON A	20.5	2.0	36.9	8.9	0.0	*	27.8	51	0	8	*	*	8.3
SWIFT CURRENT A	19.7	1.4	34.4	7.5	0.0	*	25.1	54	0	5	355	104	13.6
WYNYARD	20.3	2.5	35.7	6.5	0.0	*	46.5	79	0	6	331	102	13.7
YORKTON A	20.0	1.7	34.5	4.9	0.0	*	39.8	70	0	6	323	98	14.1
MANITOBA													
BRANDON A	21.1	2.3	35.0	7.6	0.0	*	40.6	61	0	7	335	*	4.3
CHURCHILL A	15.8	4.0	33.8	4.0	0.0	*	55.0	121	0	4	307	108	93.5
DAUPHIN A	21.0	2.5	35.5	9.3	0.0	*	41.8	65	0	7	303	94	5.5
GILLAM A	18.5	3.6	34.4	4.4	0.0	*	63.0	69	0	6	*	*	47.4
GIMLI	21.2	*	33.1	12.1	0.0	*	55.1	*	0	6	336	103	2.6

STATION	Temperature C Mean	Difference from Normal	Maximum	Minimum	Snowfall (cm)	% of Normal Snowfall	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	% of Normal Bright Sunshine	Degree Days below 18 C
ISLAND LAKE	20.7	3.5	33.5	8.2	0.0	*	48.3	47	0	4	*	*	12.3
LYNN LAKE A	18.7	3.1	33.5	5.4	0.0	*	66.0	86	0	5	328	118	35.5
NORWAY HOUSE A	20.4	*	34.7	7.4	0.0	*	20.2	*	0	6	*	*	13.5
PORTAGE LA PRAIRIE	22.8	3.1	35.5	13.2	0.0	*	32.8	43	0	6	*	*	0.0
THE PAS A	20.0	2.3	36.0	4.8	0.0	*	34.9	50	0	6	340	112	20.4
THOMPSON A	19.3	4.0	35.9	3.8	0.0	*	26.7	28	0	6	309	122	31.4
WINNIPEG INT'L A	22.1	2.5	35.9	12.7	0.0	*	33.4	44	0	3	342	108	0.4
ONTARIO													
BIG TROUT LAKE	18.6	2.6	32.0	6.6	0.0	*	41.8	44	0	6	288	*	34.6
EARLTON A	18.9	1.2	33.3	3.0	0.0	*	85.3	106	0	9	*	*	35.0
GERALDTON A	18.3	*	31.6	5.0	0.0	*	54.2	*	0	8	*	*	37.5
GORE BAY A	20.7	1.9	32.2	10.0	0.0	*	5.4	9	0	2	*	*	2.6
HAMILTON RBG	22.4	*	33.7	10.1	0.0	*	43.4	*	0	6	328	*	*
HAMILTON A	21.3	0.8	31.5	7.4	0.0	*	175.4	249	0	8	*	*	3.3
KAPUSKASING A	18.0	1.2	33.5	1.3	0.0	*	39.6	41	0	7	*	*	55.7
KENORA A	21.9	2.7	32.2	13.2	0.0	*	53.4	58	0	7	*	*	3.5
KINGSTON A	20.8	0.7	32.4	10.2	0.0	*	30.0	50	0	7	321	114	2.7
LANSDOWNE HOUSE	*	*	*	*	*	*	*	*	*	*	*	*	*
LONDON A	21.3	1.0	31.6	7.7	0.0	*	23.4	32	0	5	273	100	2.6
MOOSONEE	14.9	-0.4	32.6	-0.4	0.0	*	92.1	96	0	11	290	122	119.1
MUSKOKA A	19.4	1.1	31.0	4.6	0.0	*	7.4	10	0	2	*	*	19.8
NORTH BAY A	19.9	1.6	31.8	8.7	0.0	*	37.6	37	0	5	365	133	18.3
OTTAWA INT'L A	22.2	1.6	34.4	12.2	0.0	*	67.2	78	0	3	348	127	0.0
PETAWAWA A	19.8	0.9	34.3	7.3	0.0	*	51.8	66	0	3	*	*	14.8
PETERBOROUGH A	20.1	0.7	33.8	5.4	0.0	*	5.4	7	0	1	*	*	0.0
PICKLE LAKE	19.7	2.6	31.7	5.2	0.0	*	57.6	52	0	11	*	*	21.6
RED LAKE A	20.4	2.2	33.3	7.0	0.0	*	73.8	83	0	12	325	*	11.7
ST CATHARINES A	22.3	0.6	33.3	11.0	0.0	*	35.2	54	0	4	*	*	0.8
SARNIA A	21.1	0.4	32.7	8.5	0.0	*	59.4	88	0	3	288	98	2.9
SAULT STE MARIE A	19.2	1.7	32.4	3.8	0.0	*	8.4	12	0	3	339	118	20.2
SIOUX LOOKOUT A	20.8	2.5	32.9	8.8	0.8	*	35.6	38	0	3	*	*	0.3
SUDBURY A	20.7	2.0	33.9	6.9	0.0	*	56.2	68	0	4	357	124	10.5
THUNDER BAY A	18.6	1.0	33.1	6.3	0.0	*	35.3	47	0	6	302	99	31.2
TIMMINS A	18.2	1.0	33.0	2.4	0.0	*	72.2	80	0	9	*	*	48.1
TORONTO	23.1	*	32.5	14.1	0.0	*	46.0	*	0	5	*	*	0.0
TORONTO INT'L A	21.5	0.9	32.6	9.1	0.0	*	70.4	99	0	5	*	*	2.0
TORONTO ISLAND A	22.6	*	33.4	13.0	0.0	*	23.2	*	0	5	*	*	0.0
TRENTON A	20.9	0.3	31.7	7.2	0.0	*	20.0	33	0	2	*	*	3.6
WATERLOO WELLINGTON	20.8	1.2	32.3	6.5	0.0	*	22.4	31	0	3	*	*	7.0
WAWA A	15.8	*	28.1	2.8	0.0	*	9.8	*	0	3	*	*	73.1
WIARTON A	19.6	1.1	31.5	6.8	0.0	*	0.2	0	0	0	381	129	16.5
WINDSOR A	22.7	0.5	34.5	13.3	0.0	*	96.3	115	0	8	*	*	0.0

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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									
QUÉBEC													
BAGOTVILLE A	18.3	0.4	34.3	5.8	0.0	*	55.2	46	0	9	*	*	38.9
BAIE COMEAU A	15.8	0.0	29.3	2.1	0.0	*	56.4	67	0	6	284	122	80.3
BLANC SABLON A	12.4	1.1	22.8	5.5	*	*	*	*	*	12	171	*	*
CHIBOUGAMAU CHAPAIS	15.9	*	30.9	3.0	0.0	*	86.2	*	0	9	276	111	85.0
GASPE A	16.4	*	32.9	4.0	0.0	*	17.7	*	0	13	303	*	69.1
INUKJUAK A	7.9	-1.4	19.6	0.8	2.8	*	36.0	66	0	7	251	122	302.7
KUUJJUAQ A	10.4	-1.0	24.9	1.9	0.0	*	23.8	41	0	9	174	88	233.7
KUUJJUARAPIK A	9.4	-1.1	28.5	-0.2	0.0	0	47.0	57	0	10	189	112	271.1
LA GRANDE IV A	12.6	*	28.4	0.9	0.0	*	56.8	*	0	14	217	*	170.0
LA GRANDE RIVIERE A	13.2	*	30.1	1.4	0.0	*	30.5	*	0	6	271	*	158.4
MANIWAKI	19.1	0.8	33.6	6.2	0.0	*	47.2	51	0	3	329	122	24.2
MATAGAMI A	*	*	32.5	2.8	0.0	*	97.8	*	0	11	326	130	82.0
MONT JOLI A	18.0	0.7	32.2	5.0	0.0	*	52.2	69	0	8	315	125	43.8
MONTREAL INT'L A	21.7	0.8	33.4	10.2	0.0	*	30.0	33	0	7	317	115	0.8
MONTREAL MIRABEL I/	20.4	*	32.9	7.6	0.0	*	51.2	*	0	7	293	*	6.5
NATASHQUAN A	14.2	0.0	26.1	4.0	0.0	*	55.6	59	0	6	267	109	119.0
QUEBEC A	19.6	0.5	32.3	9.4	0.0	*	55.8	48	0	5	325	131	11.3
ROBERVAL A	18.5	0.6	32.1	7.2	0.0	*	54.4	46	0	7	308	*	32.2
SCHEFFERVILLE A	12.2	-1.4	22.2	2.4	0.0	0	97.0	100	0	11	202	109	210.7
SEPT-ILES A	15.2	0.0	*	*	0.0	*	86.2	89	0	*	252	104	93.5
SHERBROOKE A	18.4	0.6	32.8	6.5	0.0	*	50.4	42	0	8	313	*	31.7
STE AGATHE DES MONT	18.5	0.9	31.3	6.8	0.0	*	36.0	33	0	6	314	114	28.1
ST HUBERT A	21.2	0.5	33.6	9.8	0.0	*	36.7	38	0	8	308	*	2.1
VAL D'OR A	18.0	0.9	32.1	4.0	0.0	*	92.0	91	0	13	324	125	45.8
NEW BRUNSWICK													
CHARLO A	17.8	0.0	32.6	4.7	0.0	*	85.1	86	0	8	328	129	47.3
CHATHAM A	18.7	-0.5	34.4	6.8	0.0	*	146.4	161	0	9	294	116	25.3
FREDERICTON A	18.3	-1.0	33.3	4.3	0.0	*	78.8	88	0	9	*	*	27.2
MONCTON A	17.6	-0.9	32.2	5.6	0.0	*	133.7	140	0	7	291	*	39.4
SAINT JOHN A	16.8	-0.1	28.6	7.6	0.0	*	82.8	80	0	6	253	116	49.9

STATION	Temperature C				Snowfall (cm)	% of Normal Snowfall	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	% of Normal Bright Sunshine	Degree Days below 18 C
	Mean	Difference from Normal	Maximum	Minimum									
NOVA SCOTIA													
GREENWOOD A	18.4	-0.7	33.0	6.4	0.0	*	75.9	98	0	7	*	*	25.6
HALIFAX INT'L A	17.6	-0.6	29.5	9.0	0.0	*	54.4	58	0	6	*	*	33.2
SABLE ISLAND	15.2	-0.3	20.7	4.5	0.0	*	107.2	117	0	11	237	146	86.1
SHEARWATER A	17.4	0.0	27.3	10.3	0.0	*	104.2	107	0	8	247	*	32.3
SYDNEY A	16.5	-1.2	31.2	4.6	0.0	*	42.7	52	0	5	283	116	68.9
YARMOUTH A	15.5	-0.8	25.9	7.5	0.0	*	69.6	89	0	7	208	101	78.1
PRINCE EDWARD ISLAND													
CHARLOTTETOWN A	17.6	-0.7	30.6	6.8	0.0	*	85.0	101	0	9	*	*	43.2
SUMMERSIDE A	18.2	-0.7	28.8	9.3	0.0	*	81.2	104	0	7	290	110	27.5
NEWFOUNDLAND													
BONAVISTA	15.1	0.4	26.3	6.7	0.0	*	69.0	113	0	10	*	*	98.6
BURGEO	13.6	0.1	22.8	5.4	0.0	*	92.3	66	0	13	*	*	132.2
CARTWRIGHT	11.9	-0.8	26.8	1.4	*****	*	118.1	142	0	13	209	105	183.3
CHURCHILL FALLS A	12.4	-1.5	25.2	2.1	0.0	*	43.2	40	0	9	217	108	173.6
COMFORT COVE	16.2	-0.3	30.4	6.9	0.0	*	77.5	95	0	10	*	*	72.9
DANIELS HARBOUR	15.1	0.7	23.6	4.0	0.0	*	45.8	51	0	10	170	84	89.2
DEER LAKE A	16.8	0.4	31.1	3.0	0.0	*	20.3	26	0	7	*	*	58.2
GANDER INT'L A	16.1	-0.4	30.2	6.6	0.0	*	67.8	98	0	7	224	105	*
GOOSE A	14.9	-0.9	28.9	3.7	0.0	*	168.0	160	0	15	203	104	107.3
MARY'S HARBOUR	13.3	*	29.2	2.4	*	*	72.2	106	0	10	*	*	150.4
PORT AUX BASQUES	13.9	0.7	22.0	5.5	0.0	*	30.0	28	0	6	225	*	128.5
ST ANTHONY	13.0	0.1	23.8	4.5	0.0	*	75.0	74	0	11	0	*	153.5
ST JOHN'S A	15.2	-0.3	26.8	5.2	0.0	*	97.8	130	0	14	200	91	96.1
ST LAWRENCE	14.4	2.3	23.1	4.0	0.0	*	92.9	94	0	8	*	*	110.9
STEPHENVILLE A	16.4	0.4	25.6	5.8	0.0	*	82.7	86	0	11	256	124	69.3
WABUSH LAKE A	12.6	-0.9	25.3	2.7	0.0	*	73.9	70	0	12	208	106	176.7

AGROCLIMATOLOGICAL STATIONS

JULY 1989

STATION	Temperature C				Snowfall (cm)	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	Degree days above 5 C	
	Mean	Difference from Normal	Maximum	Minimum							This month	Since jan. 1st
BRITISH COLUMBIA												
AGASSIZ	17.6	-0.3	30.5	9.0	0.0	32.6	70	0	7	240	390.5	1289.2
KAMPLOOPS	**	**	**	**	**	**	**	***	***	**	**	**
SIDNEY	15.4	-1.1	27.0	4.0	0.0	10.7	59	0	5	279	330.2	1094.3
SUMMERLAND	20.8	-0.1	33.0	8.0	0.0	32.4	146	0	7	341	476.0	1355.2
ALBERTA												
BEAVERLODGE	15.6	0.4	28.5	3.5	0.0	101.4	158	0	12	326	329.7	823.0
ELLERSLIE	**	**	**	**	**	**	**	***	***	**	**	**
LACOMBE	16.2	0.1	30.0	3.5	0.0	71.6	99	0	9	351	346.3	800.4
LETHBRIDGE	**	**	**	**	**	**	**	***	***	**	**	**
VEGREVILLE	**	**	**	**	**	**	**	***	***	**	**	**
SASKATCHWAN												
INDIAN HEAD	21.0	2.4	35.0	8.0	0.0	79.4	150	0	6	**	492.3	1130.2
MELFORT	19.5	2.1	37.0	6.0	0.0	40.2	62	0	6	302	384.5	948.0
REGINA	21.0	2.4	36.0	5.0	0.0	71.0	134	0	6	**	489.8	1099.9
SASKATOON	**	**	**	**	**	**	**	***	***	**	**	**
SCOTT	19.3	2.1	35.0	7.0	0.0	64.9	108	0	8	354	130.1	630.6
SWIFT CURRENT	20.0	1.5	34.0	8.0	0.0	30.9	80	0	5	331	464.6	1009.7
MANITOBA												
BRANDON	21.8	2.6	36.0	8.0	0.0	37.0	53	0	6	**	522.3	1170.2
GLENLEA	23.2	3.6	38 0	12.0	0.0	13.0	18	0	6	340	568.0	1279.5
MORDEN	21.8	1.6	34.0	11.5	0.0	37.7	52	0	4	308	517.0	1175.5
ONTARIO												
DELHI	21.4	0.7	33.5	5.5	0.0	39.0	55	0	7	1239	**	**
ELORA	20.0	0.9	31.9	5.3	0.0	8.9	12	0	1	**	464.1	1067.3
GUELPH	20.3	0.6	32.5	3.1	0.0	28 3	34	0	3	315	473.4	1121.7
HARROW	22.5	0.5	35.0	11.0	0.0	299.3	378	0	6	251	543.1	1346.8
KAPUSKASING	17.6	0.7	33.5	-0.5	0.0	39.3	42	0	6	316	392.3	802.6
OTTAWA	21.9	1.3	34.5	11.1	0.0	59.4	70	0	3	348	524.4	1275.4
SMITHFIELD	21.8	1.6	32.6	8.6	0.0	5.8	9	0	1	**	520.1	1253.3
VINELAND	21.9	0.4	32.1	10.6	0.0	76.8	124	0	6	292	522.4	1219.1
WOODSLIE	**	**	**	**	**	**	**	***	***	**	**	**

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
QUÉBEC												
LA POCATIERE	19.0	0.3	34.0	7.0	0.0	37.0	39	0	5	322	437.1	954.1
L'ASSOMPTION	20.6	0.4	34.5	7.5	0.0	32.4	35	0	7	320	**	124.8
LENNOXVILLE	**	**	**	**	**	**	**	***	***	**	**	**
NORMANDIN	17.3	0.4	33.5	4.5	0.0	86.2	76	0	10	298	383.7	885.1
STE.CLOTILDE	21.1	0.9	33.5	7.5	0.0	41.0	45	0	8	301	498.7	1241.8
NEW BRUNSWICK												
FREDERICTON	18.5	-0.6	33.0	6.0	0.0	85.6	95	0	12	205	419.7	1061.0
NOVA SCOTIA												
KENTVILLE	**	**	**	**	**	**	**	***	***	**	**	**
NAPPAN	17.4	-0.6	29.0	5.0	0.0	82.7	98	0	7	284	384.8	1006.9
PRINCE EDWARD ISLAND												
CHARLOTTETWN	18.2	-0.7	30.0	7.0	0.0	80.6	100	0	9	299	410.1	983.1
NEWFOUNDLAND												
ST.JOHN'S WEST	16.2	0.7	27.5	6.0	0.0	103.4	140	0	12	170	345.4	739.8