Environment Canada | Environnement Canada

Climatic Perspectives

Monthly review | AUGUST | Vol.9 1987

CLIMATIC HIGHLIGHTS

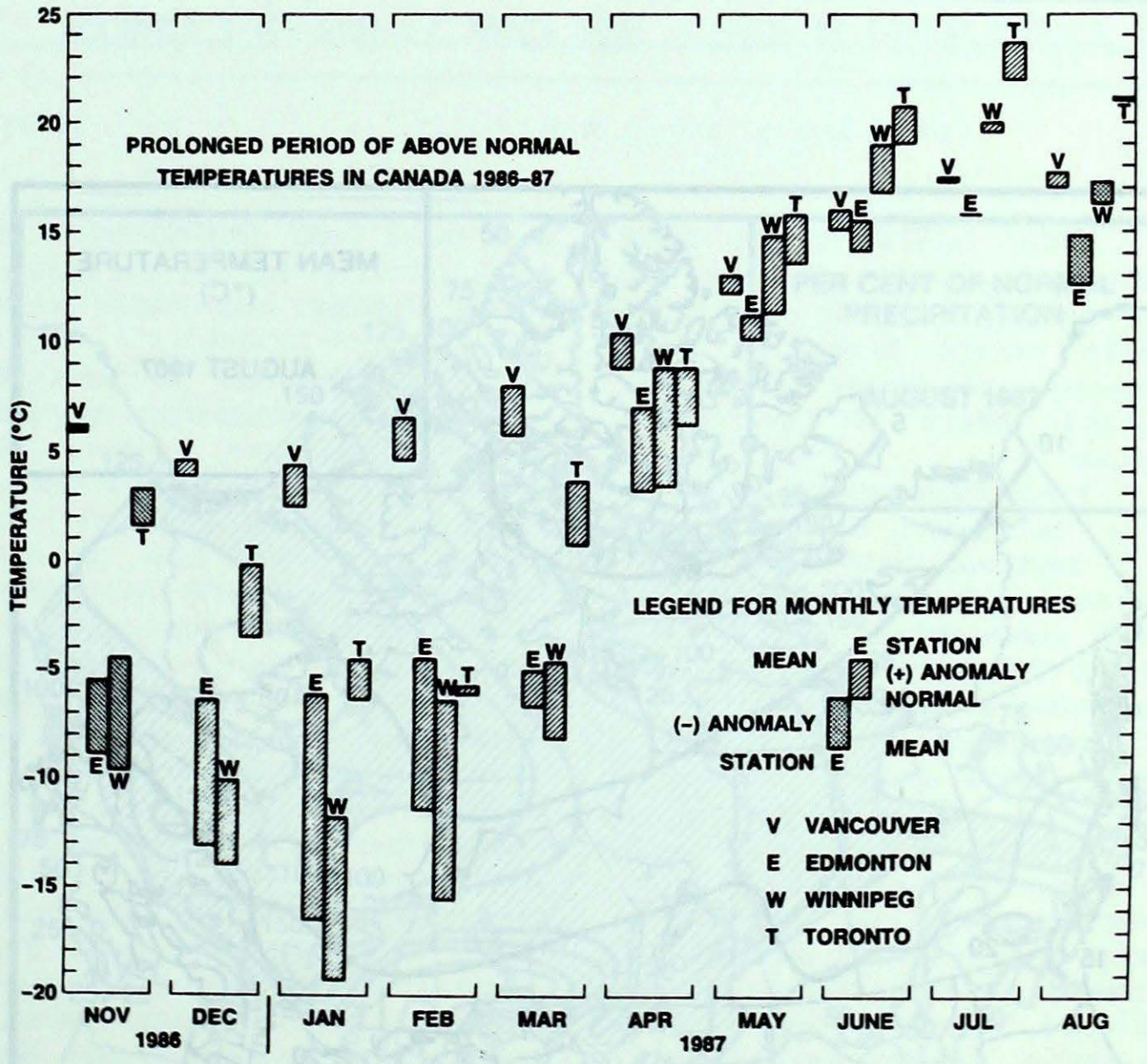
by
P. Scholefield, CCRM

Prolonged Period of Above-Normal Temperatures Draws to an End

Up to the end of June, a vast region across the country including a portion of western Quebec, most of Ontario and most of the southern half of the four western provinces, had experienced 8 consecutive months of above normal mean monthly temperatures. This spell persisted into July but began to break down in the southern parts of the Prairie provinces and in southeastern B.C. where mean monthly temperatures were just slightly below normal. This breakdown proceeded more dramatically in August as negative temperature anomalies dominated in most regions that had been affected by the prolonged warm spell (see anomaly map on page 2B). Small pockets of the extended warm spell have persisted in the Great Lakes basin in Ontario and in southwestern B.C. In fact, a few south coastal B.C. locations, including Vancouver, have experienced 13 consecutive months of above normal temperatures.

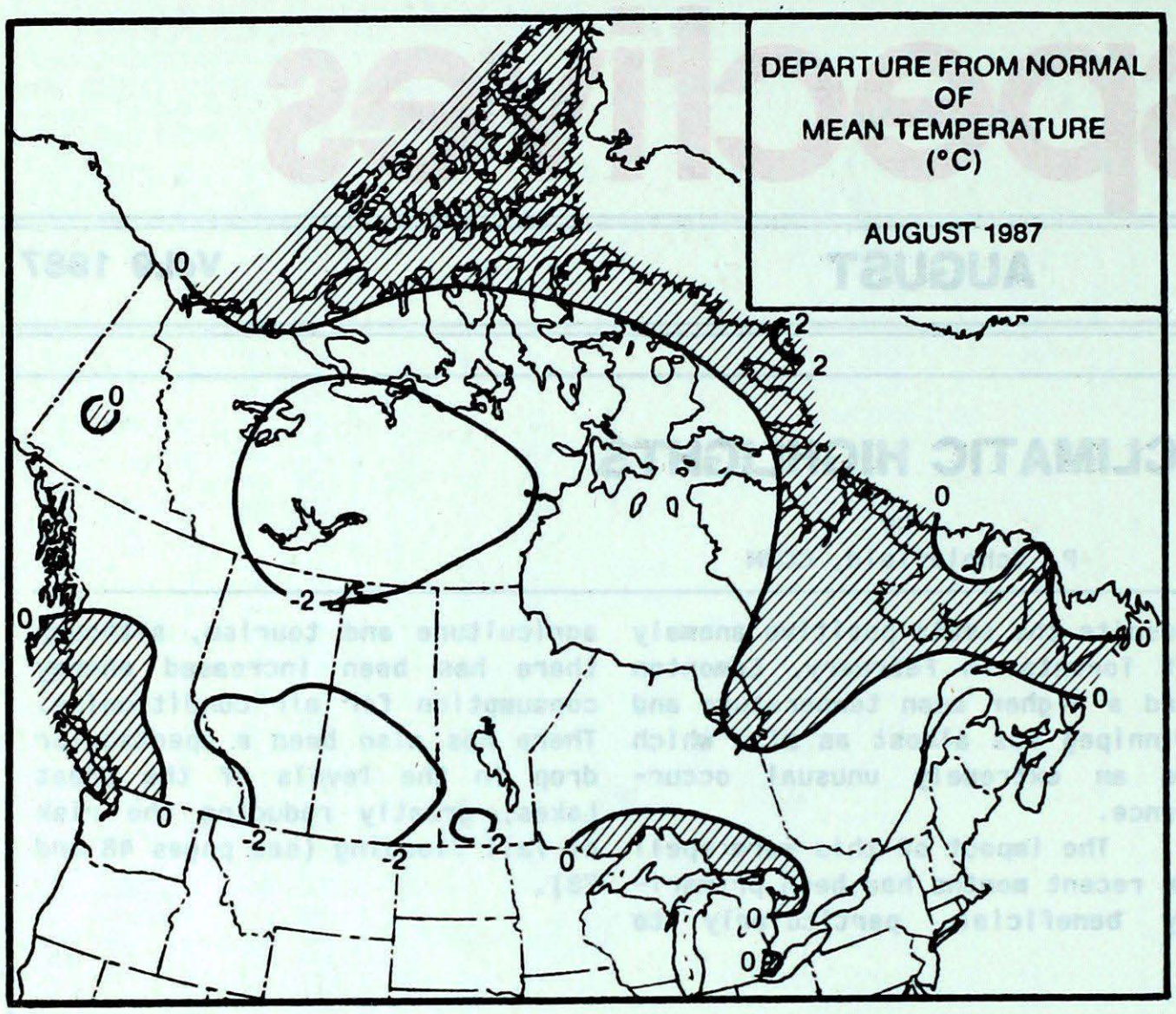
The accompanying graphic display defines in some detail the magnitude of the event as it affected four of the largest cities across the country starting last December. Note the spectacular positive anomalies in the Prairie cities during the winter. The magnitude of the anomalies at Vancouver and Toronto are not as pronounced, primarily due to the climate-modifying influence of nearby large bodies of water. Despite the small positive anomaly at Toronto in February, Edmonton had a higher mean temperature and Winnipeg was almost as mild which is an extremely unusual occurrence.

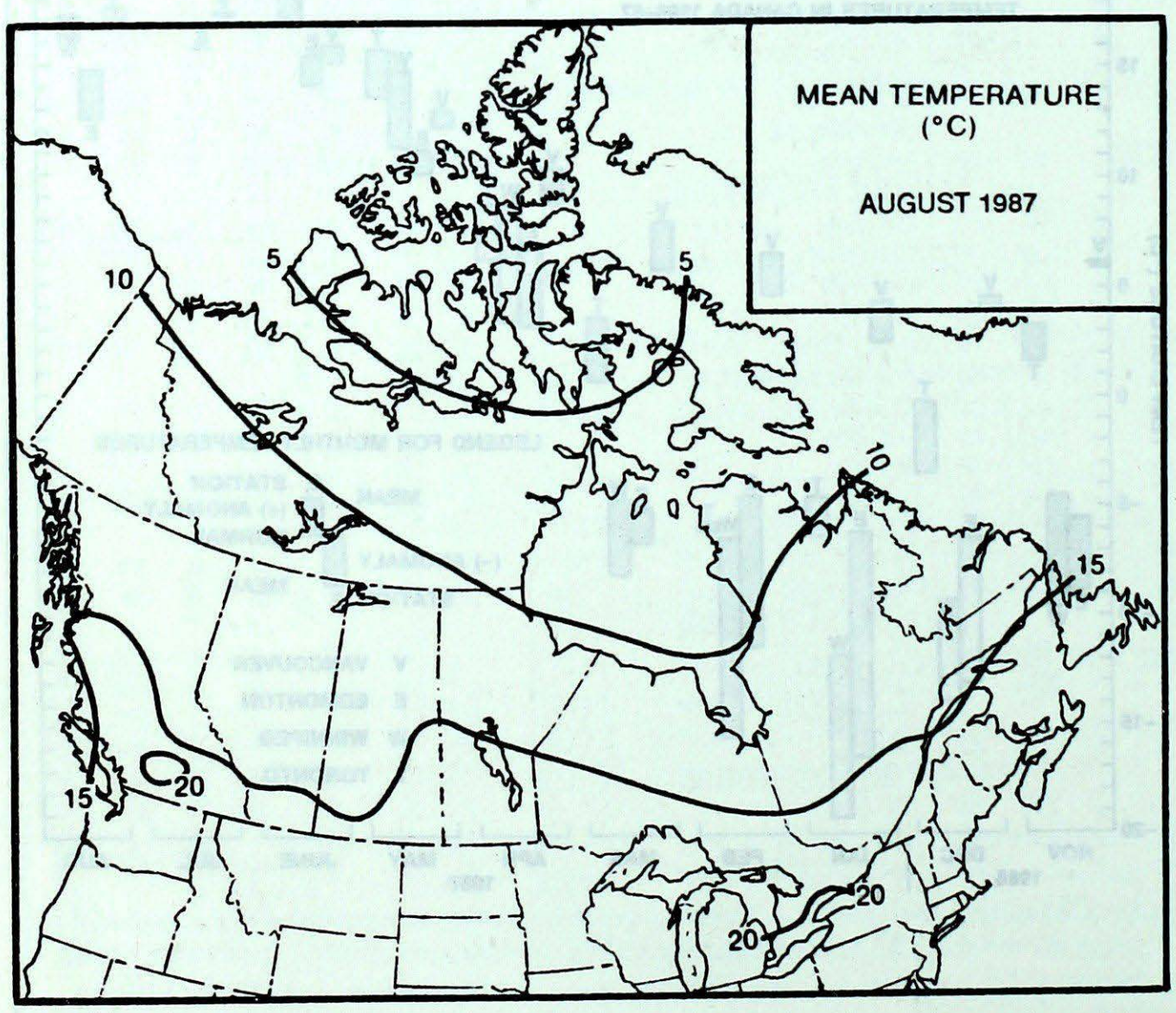
The impact of this warm spell in recent months has been primarily beneficial, particularly to agriculture and tourism, although there has been increased energy consumption for air conditioning. There has also been a spectacular drop in the levels of the Great Lakes, greatly reducing the risk of fall flooding (see pages 4B and 7B).



Canada

TEMPERATURE





ACROSS THE COUNTRY

Yukon and Northwest Territories

The Arctic cooled down this month. Towards the end of the month, blustery cold weather and snow in the High Arctic served reminder that winter is not far behind. The temperatures were 1 to 2°C below normal throughout most of the region. The readings were near normal over Baffin Island and areas north of Resolute.

Precipitation amounts varied greatly across the Arctic. While 103 mm was twice the normal at Cape Dyer, 9 mm was only one-third of normal at Alert. Snowfall in the 10-20 cm range was recorded towards the end of the month.

Owing to favourable winds, ice conditions in the central and eastern Arctic waters were just right for the winter resupply of the northern communities. The M.V. Arctic took on a load of oil for the first time this year at Cameron Island.

British Columbia

Coastal British Columbia enjoyed fine summer weather. Interior areas were not so fortunate as the ridge of high pressure protecting the coast never became solidly established in the interior. Southern interior areas experienced reasonable conditions but the weather deteriorated in areas further north. The temperatures were near normal to 1°C above normal along the coast and in the coastal valley areas. Interior areas had near normal to 2°C below normal monthly readings.

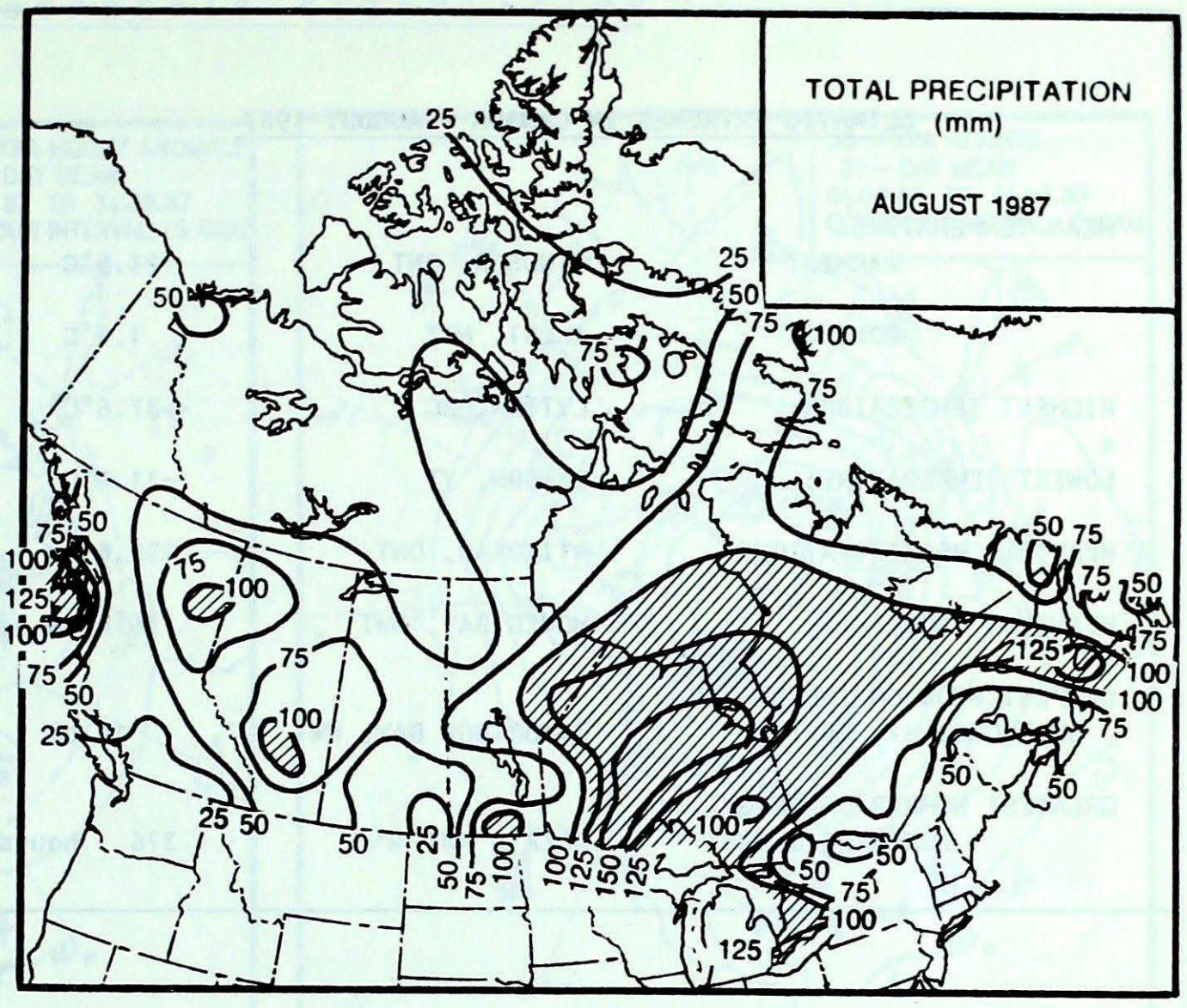
Rainfall was below normal throughout most of the province. The coast and the southern portion of British Columbia received only 15 to 45% of normal precipitation while northern areas had 50 to 80% of normal amounts. But upto 190% of normal amounts were recorded in the northeastern areas of the province. Fort Nelson had a taste of winter near the end of the month when arctic air briefly invaded the north bringing snow. Victoria received a record 348 hours of bright sunshine during the month.

PRECIPITATION

Prairie Provinces

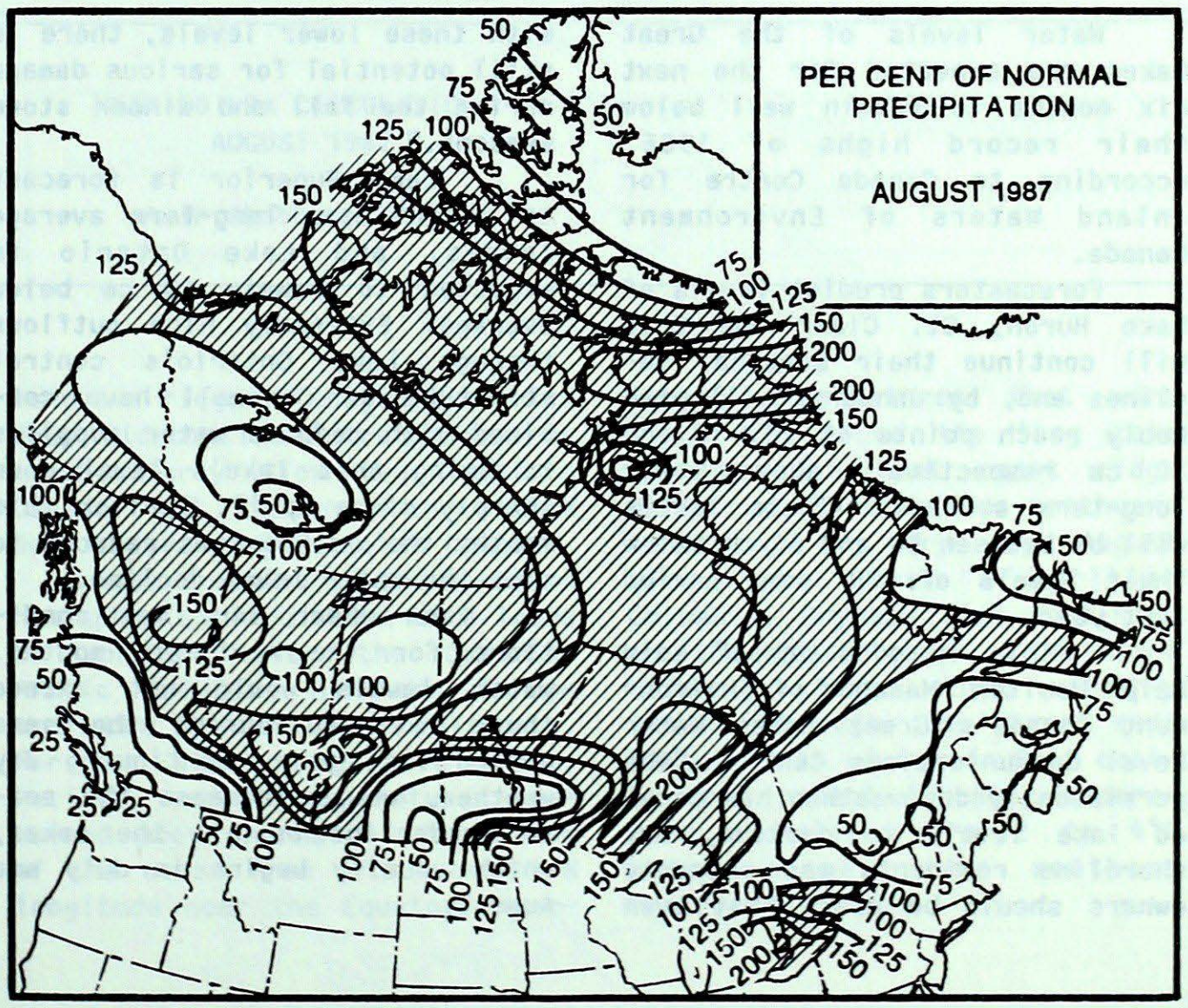
Cool unsettled and wet weather prevailed across most of the Prairies as July's cool temperatures continued into August. Monthly readings were 2 to 3°C below normal, and maximum readings struggled to reach the mid twenties in central and northern Alberta. Western Prairies experienced its first seasonal frost during mid month and widespread frost covered southern Manitoba on August 31.

Rainfall was frequent across Alberta. Amounts exceeded 100 mm in the Rocky, Red Deer, Calgary area. On August 14, southern Manitoba experienced a 'once in a lifetime' rainfall in the region southwest of Portage La Prairie. Climate stations in this region received 120 to 140 mm of rain in 24 hours - a once in over 100 year occurrence. A number of severe weather events were reported. Hail storms, funnel clouds and tornadoes made news once again this month. A well developed funnel cloud on August 24 was observed west of Edmonton.



Ontario

The remarkable run of 8 consecutive months of above normal temperatures ended quietly with readings falling 0.1 to 0.7°C shy of normal in most of the province. In Toronto, the summer of 1987 produced a mean temperature of 21.9°C ranking as the 6th warmest summer of this century. Extreme southwestern Ontario experienced slightly warmer than normal temperatures. Rainfall was higher than usual across most regions. The amounts were in the 90 to 130 mm range or 20 to 75% above normal. Atikokan's record 199 mm was more than double the normal August amount of 99 mm. Moosonee experienced its wettest August since 1975 (158 mm). In contrast, Eastern Ontario, the Muskoka to Sudbury area, as well as Toronto were drier than normal by 10 to 60%. Three small tornadoes were reported during the month with damage restricted to out-buildings and trees. Tornado locations were: Mississauga on August 7, Ancaster on August 7 and Tilbury near Chatham on August 22.



EXTREMES

CLIMATIC EXTREMES IN CANADA - AUGUST 1987

MEAN TEMPERATURE:		
WARMEST	WINDSOR, ONT	21.5°C
COLDEST	ALERT, NWT	1.6°C
HIGHEST TEMPERATURE:	LYTTON, BC	37.6°C
LOWEST TEMPERATURE:	DAWSON, YT	-11.0°C
HEAVIEST PRECIPITATION:	ATIKOKAN, ONT	198.6 mm
HEAVIEST SNOWFALL:	MOULD BAY, NWT	36.0 cm
DEEPEST SNOW ON THE GROUND ON AUGUST 31, 1987:	CAMBRIDGE BAY, NWT	16 cm
GREATEST NUMBER OF BRIGHT SUNSHINE HOURS:	ALERT, NWT	376 hours

LAKE LEVELS WELL BELOW 1986 RECORDS

Water levels of the Great Lakes are expected for the next six months to remain well below their record highs of 1986, according to Canada Centre for Inland Waters of Environment Canada.

Forecasters predict levels of Lake Huron, St. Clair and Erie will continue their seasonal declines and, by January, will probably reach points at 20, 10 and 30 cm respectively above their long-term averages. These levels will be between 50 and 60 cm below their levels of the same period last year.

"This is good news," said Ralph Moulton, Manager of Environment Canada's Great Lakes Water Level Communications Centre. "The persistently dry weather has caused lake levels to decline, but shoreline residents and property owners should be aware that even with these lower levels, there is still potential for serious damage during the fall and winter storm seasons."

Lake Superior is forecast to remain near long-term average levels, and Lake Ontario is expected to remain 10 cm below average. Extremely high outflows through Lake Ontario's control structure at Cornwall have combined with reduced water supplies to bring that lake's level down sharply since April. Earlier this month, the outflow was reduced to slow the water level decline.

Even under very wet conditions for the next six months, water levels would not exceed those recorded during the same period last year. Continuing dry weather, would increase the seasonal decline on all the lakes, which usually begins in July and August.

Quebec

After July's warmth, the temperatures fell below normal over southwestern Quebec. The values were about a degree below the long term average. Northern Quebec experienced near normal August. The only exception was the Fermont-Wabush area where the mean temperature was 1.8°C above normal.

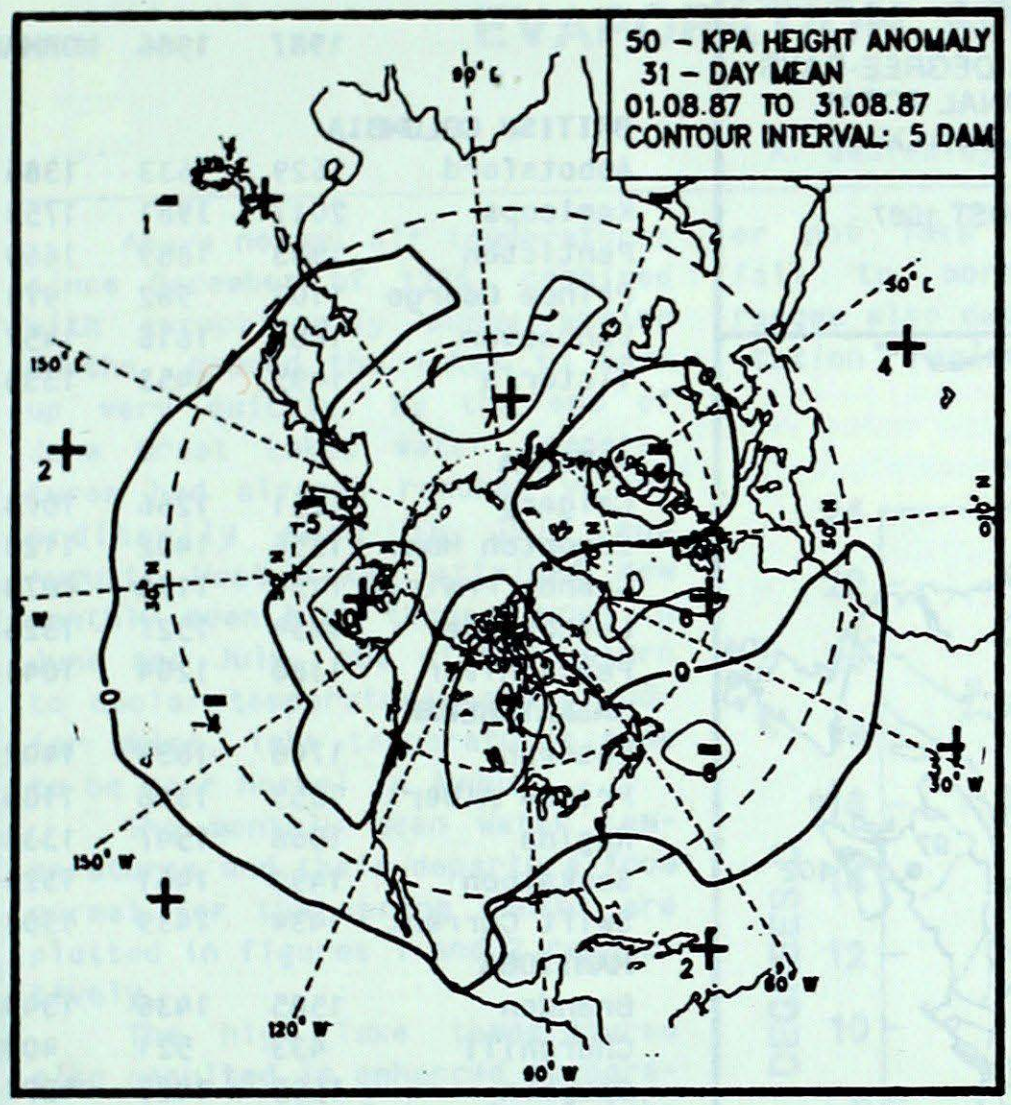
August was relatively dry over southern Quebec. Most locations received only 40 to 90% of their normal rainfall. At Sherbrooke, 57.6 mm proved to be the least August rainfall amount since 1962. In sharp contrast, above normal precipitation fell over northern Quebec. At Inukjuak, 123.2 mm was only 0.2 mm shy of the record August rainfall set in 1979; and 141.4 mm of rainfall at La Grande Riviere was a record for August. Sunshine abounded southern Quebec. Majority of the stations received more than their normal share. Sunshine and warm temperatures provided ideal weather for the Quebec Games held at Val-D'or early in the month.

Atlantic Provinces

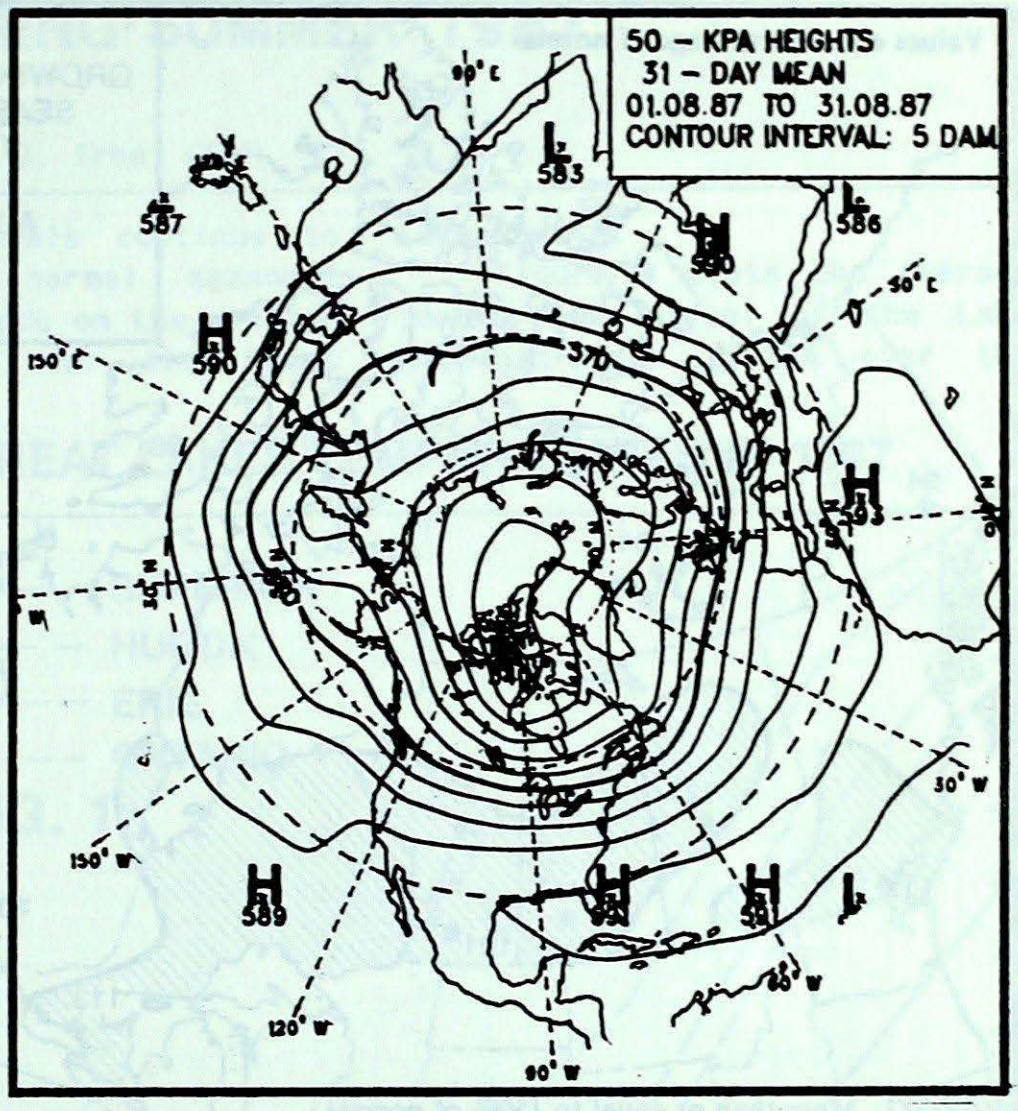
Record high sunshine and scanty rainfall highlighted the East Coast weather. Hours of bright sunshine were above normal throughout the provinces. Yarmouth and Shearwater received record high amounts with 278 and 281 hours respectively. The temperatures were slightly cooler than normal throughout the Maritimes and Newfoundland. The largest departure was -1°C and occurred at Fredericton and eastern Labrador.

Extremely dry summer weather continued into August. Most of the Maritimes had about half their normal August share and amounts were below normal in Newfoundland. At Yarmouth, the July-August combined total of 59 mm was the lowest since 1934. Wells were drying up and water levels in rivers and streams were desperately low. In Nova Scotia, a ban on woods travel and fishing in some rivers was in effect. Some crops were under stress due to the shortage of rainfall.

ATMOSPHERIC CIRCULATION



Mean 50 kPa height anomaly (dam)



Mean 50 kPa heights (dam)

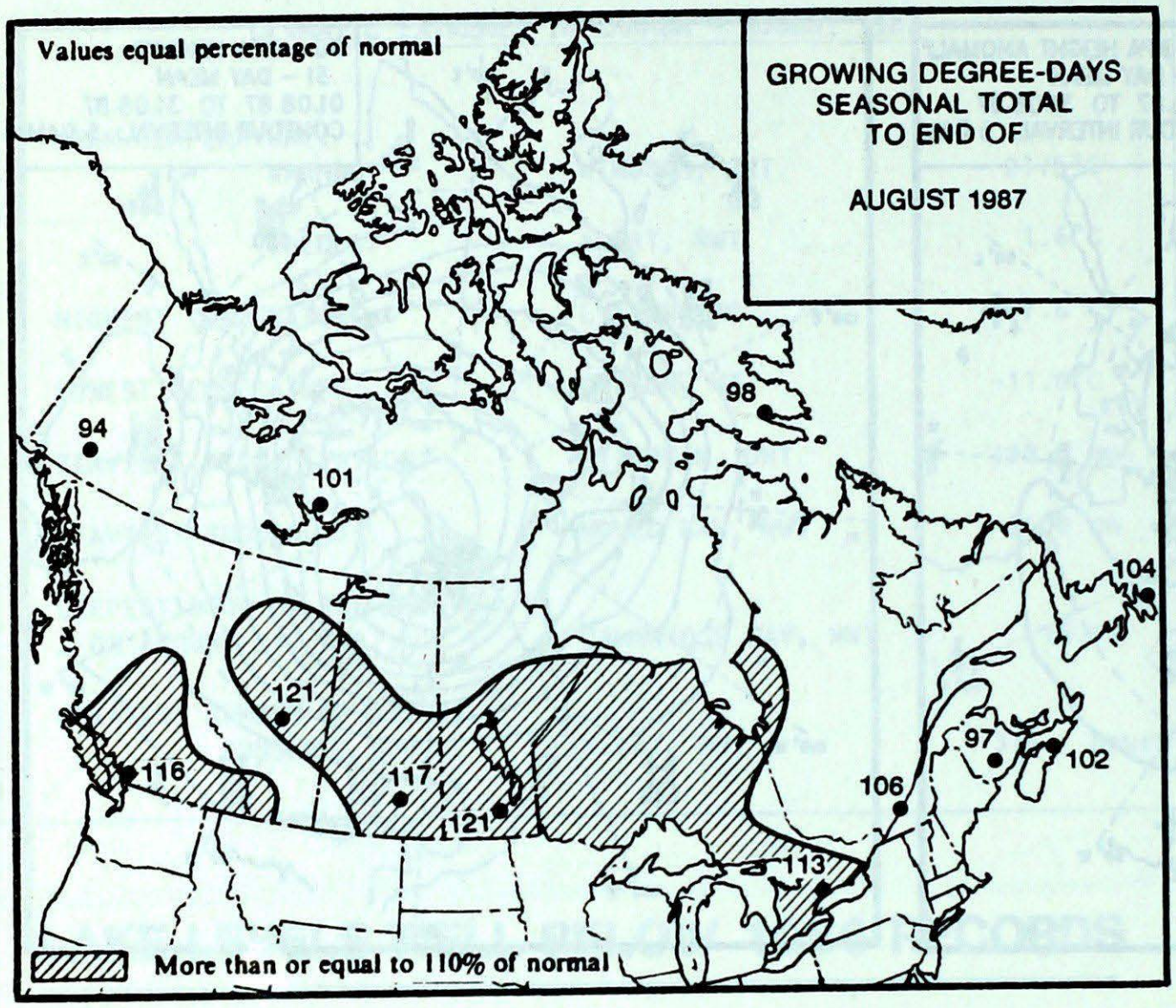
MEAN 50 kPa CIRCULATION
AUGUST 1987

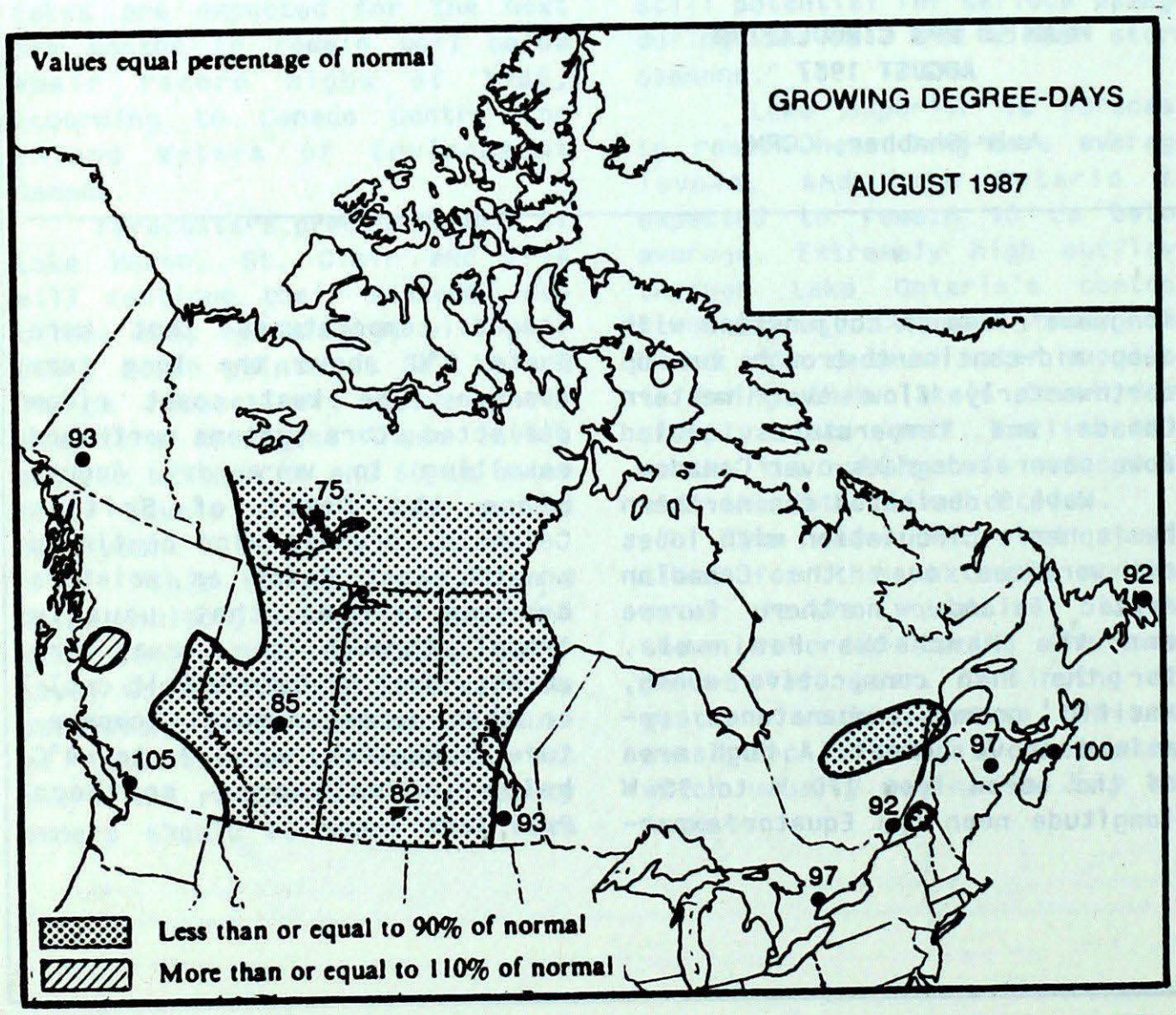
Amir Shabbar, CCRM

The mean 50 kPa circulation during August was characterized by a depressed flow across North America. A vast area of negative anomaly centred just west of Hudson Bay covered most of Canada. The climatological East Coast trough was near its normal strength but the western Canadian ridge was replaced by cyclonic air flow. Longwave ridge that developed over the Gulf of Alaska during July persisted into August. A positive 10 decameter height anomaly was located over Alaska. This longwave ridge in conjunction with deep mid-continent trough set up northwesterly flow over western Canada and temperatures cooled down several degrees over Canada.

Wave 3 dominated the northern hemispheric circulation with lobes of vortices over the Canadian Arctic Islands, northern Europe and the Kamchatka Peninsula. For the 11th consecutive month, Pacific ocean temperatures remained above normal. A hugh area of the ocean from 170 W to 90 W longitude near the Equator experienced temperatures that were 1 to 2°C above the long term average. The west coast ridge deflected storm systems northward resulting in very dry August along the Coast of British Columbia. Dryness also continued on the East Coast as moisture bearing storms that usually travel through the area were absent. Most of Canada felt cooler than normal August. Temperature anomalies were 2 to 4°C below normal over southern Prairies.

GROWING DEGREE DAYS





SEASONAL TOTAL OF GROWING DEGREE-DAYS TO END OF AUGUST

	1987	1986	NORMAL
BRITISH COLUMBIA			
Abbotsford	1629	1633	1386
Kamloops	2017	1981	1755
Penticton	1903	1889	1669
Prince George	1103	962	971
Vancouver	1686	1616	1457
Victoria	1495	1453	1335
ALBERTA			
Calgary	1251	1266	1074
Edmonton Mun.	1356	1402	1123
Grande Prairie	1154	1178	1074
Lethbridge	1454	1527	1326
Peace River	1180	1204	1041
SASKATCHEWAN			
Estevan	1740	1634	1442
Prince Albert	1355	1348	1185
Regina	1568	1547	1338
Saskatoon	1490	1461	1321
Swift Current	1434	1439	1301
MANITOBA			
Brandon	1505	1436	1349
Churchill	433	521	403
Dauphin	1505	1429	1291
Winnipeg	1729	1657	1421
ONTARIO			
London	1896	1760	1632
Mount Forest	1486	1524	1308
North Bay	1373	1407	1353
Ottawa	1749	1782	1598
Thunder Bay	1309	1326	1130
Toronto	1857	1788	1641
Trenton	1805	1755	1627
Windsor	2124	2119	1888
QUEBEC			
Baie Comeau	891	908	938
Maniwaki	1338	1409	1284
Montréal	1745	1746	1646
Quebec	1365	1403	1363
Sept-Iles	838	876	829
Sherbrooke	1303	1452	1443
NEW BRUNSWICK			
Charlo	1181	1158	1170
Fredericton	1325	1386	1365
Moncton	1273	1302	1260
NOVA SCOTIA			
Sydney	1082	1097	1106
Truro	1166	1242	1152
Yarmouth	1165	1232	1110
PRINCE EDWARD ISLAND			
Charlottetown	1212	1270	1106
NEWFOUNDLAND			
Gander	997	1038	940
St. John's	867	918	836
Stephenville	1007	1090	954

FEATURE

GREAT LAKES WATER TEMPERATURES AND EVAPORATION: SPRING-SUMMER 1987

by
A. Saulesleja, G. Irbe, CCAH

Above normal air temperatures since December of 1986, combined with exceptionally sunny spring months, caused the lakes to warm up very quickly. By the end of June Great Lakes water temperatures had already reached values ordinarily seen in July and August. Most Lakes attained new monthly mean high temperatures in June and July, but with a return to cooler temperatures and cloudier skies, lake temperatures came to be near normal in August.

The monthly mean water temperatures and their departure from normal for the spring months are plotted in figures 1 and 2 respectively.

The high lake temperatures also resulted in enhanced evaporation from most of the Great lake in the Spring and Summer months. New records for June evaporation estimates were set for Huron/ Georgian Bay and Lake Erie. Lower than normal precipitation over much of the Great Lakes Basin combined with the above normal evaporation reduced the record and near record high levels of the lakes more than even the most optimistic forecasts would have hoped. Lake Superior is at near normal levels now.

Prognosis

Guided by the present high surface water temperatures, and the stored energy these would seem to imply, above normal evaporation should continue over the next few months, particularly over Lakes Superior and Huron. There is however an element of uncertainty in this as the total heat content of any particular lake depends on the thermal structure over its depth as well as at the surface. The satellite imagery from which the water temperature estimates are obtained unfortunately is capable only of providing information about the surface layers. Whether or not lake levels continue to fall to more normal seasonal ranges also depends on the precipitation regime over the Great Lakes Basin.

Figure 3 plots the average annual lake level of the Lake Michigan-Huron system over the

GREAT LAKES TEMPERATURES IN 1987

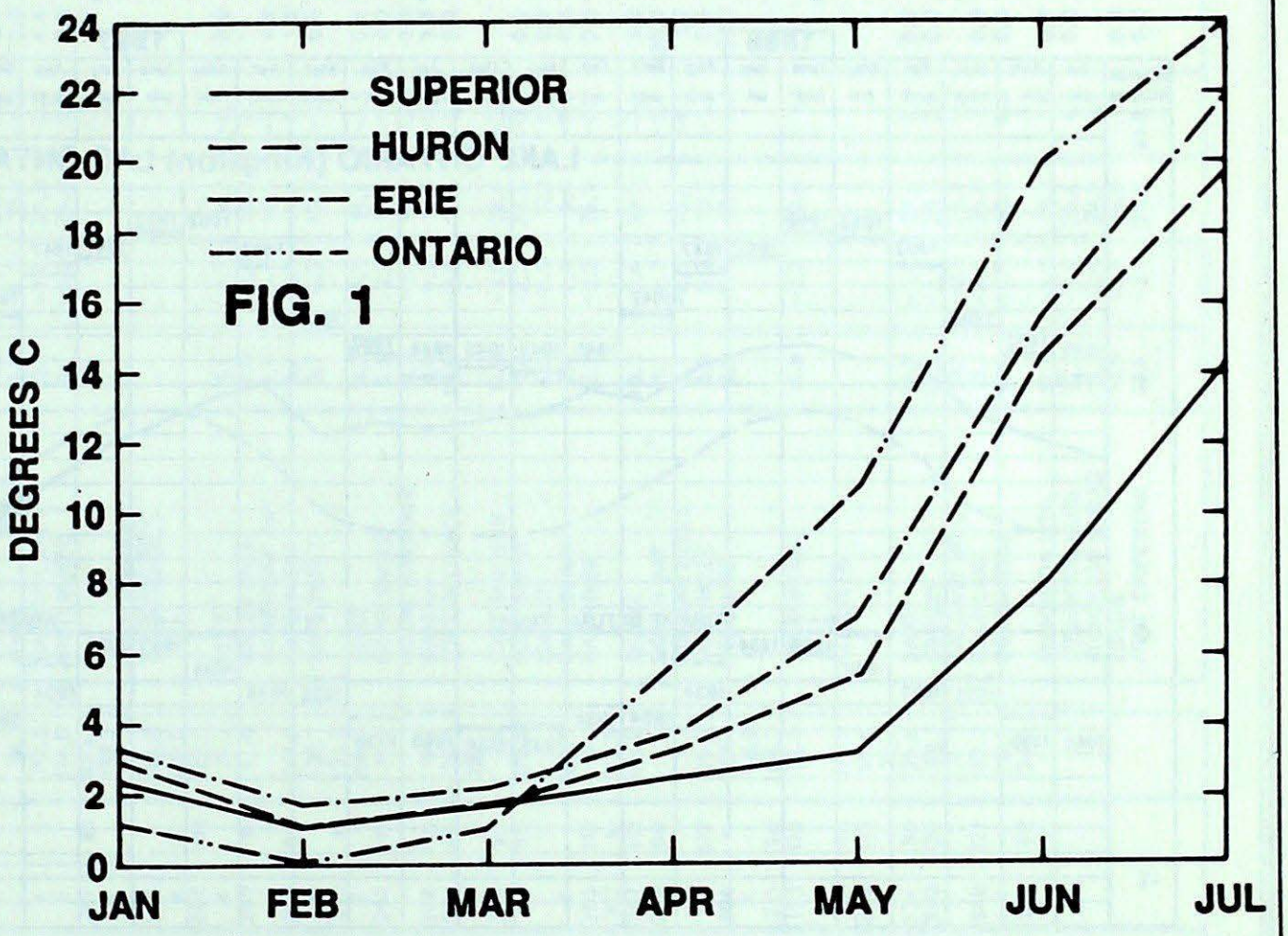


FIG. 1

LAKE TEMPERATURE DEPARTURES FROM MEAN

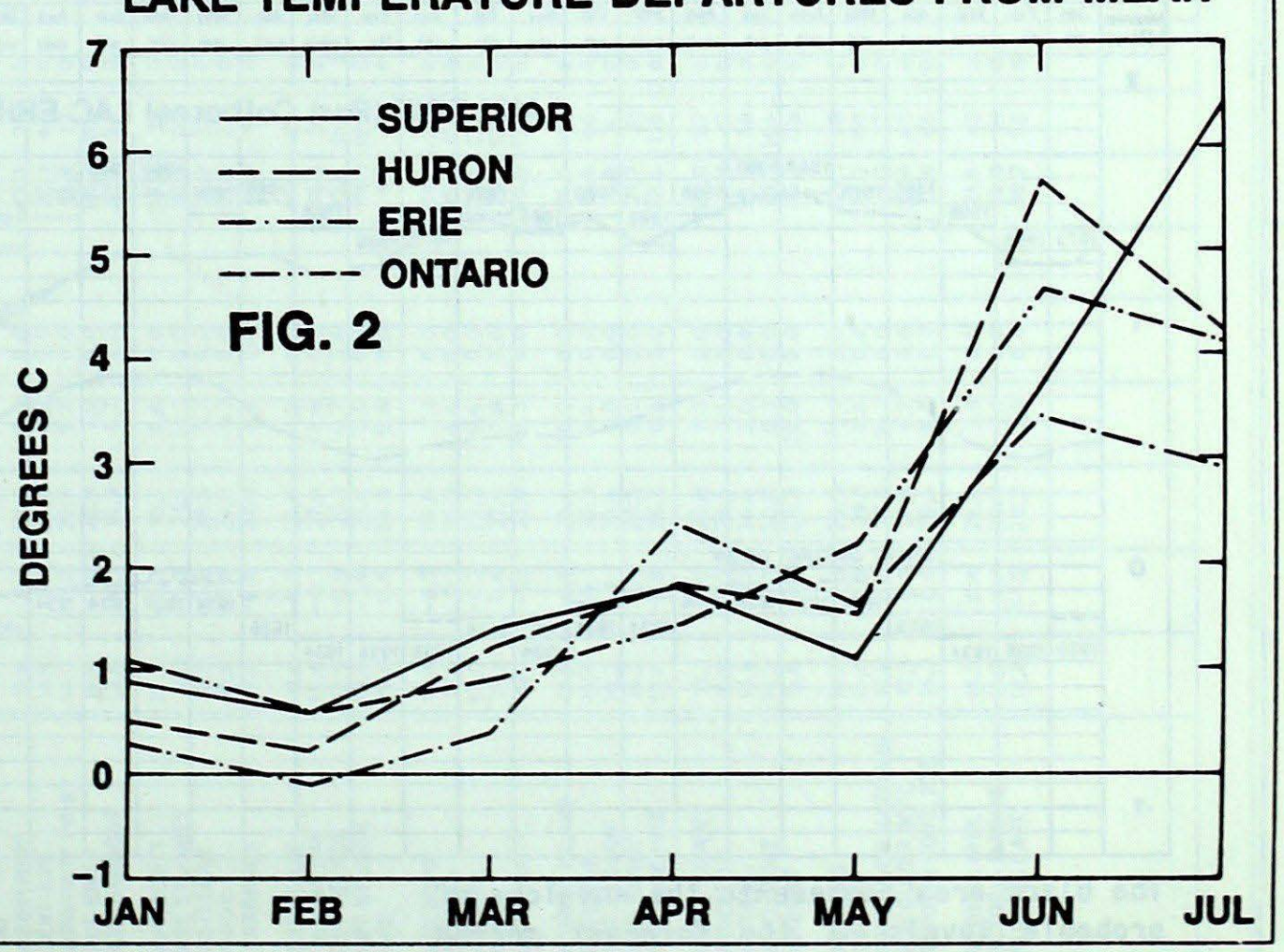
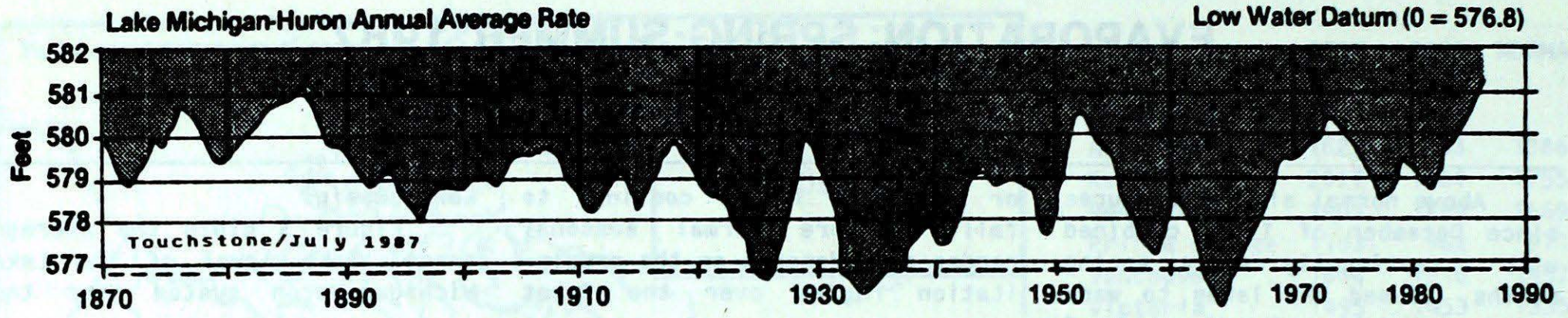


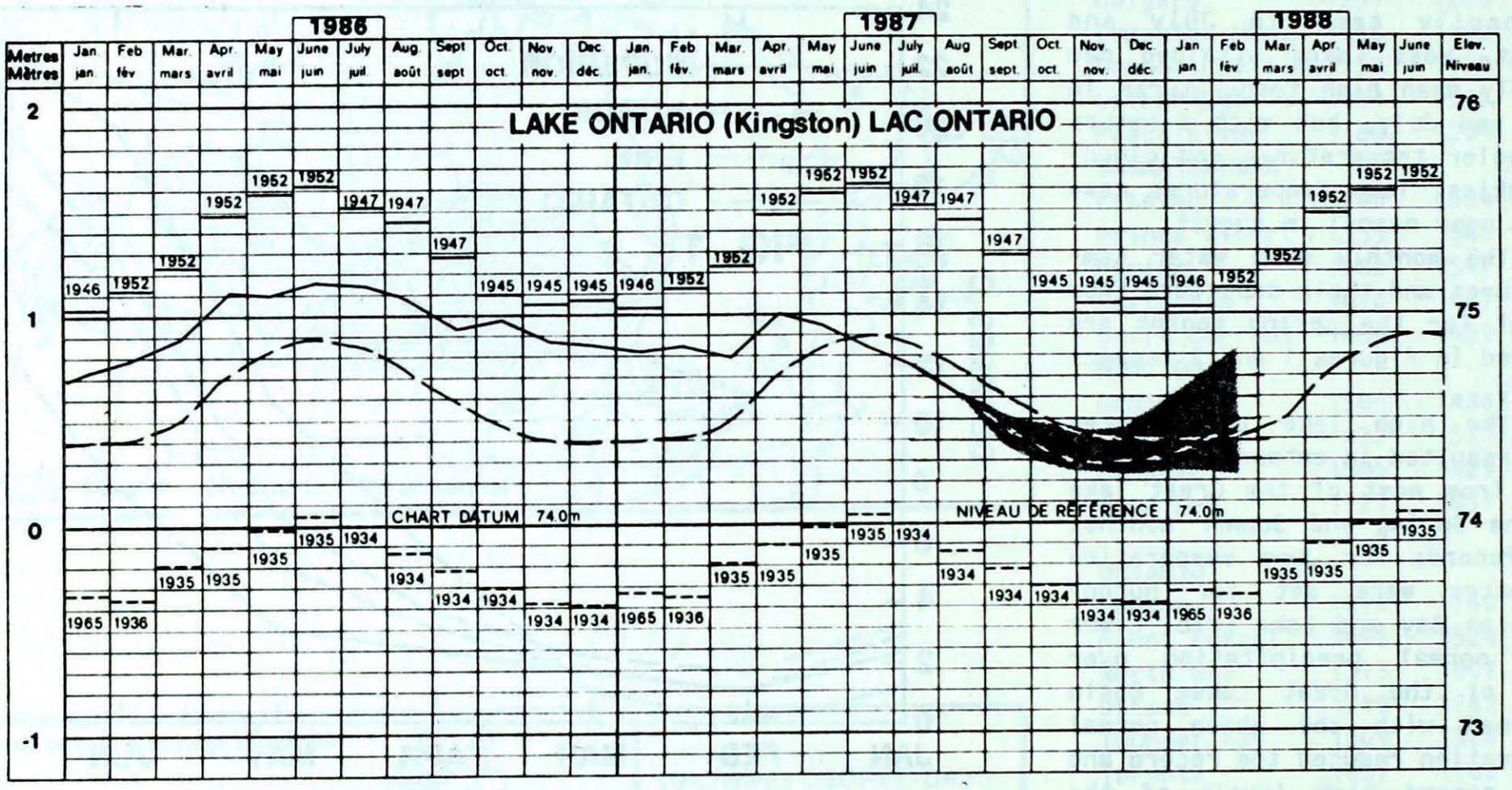
FIG. 2

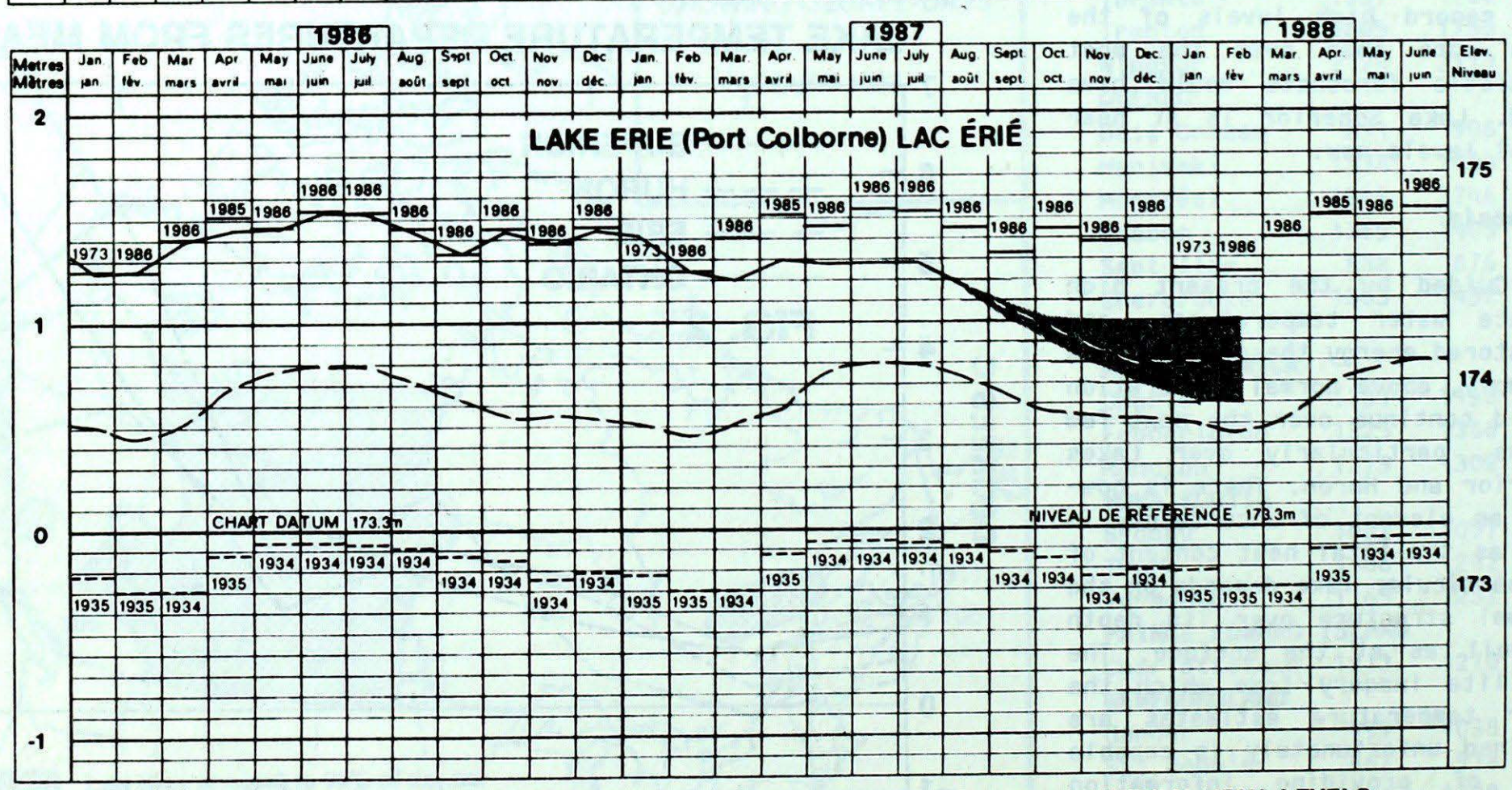
FEATURE

past 117 years. There is evidence that levels may have been about a meter higher than this in the preceding few centuries. There appears to be some trend to gradually higher lake levels in recent decades, but no basis on which to predict whether or not this trend should continue.



Despite the dramatic impacts of very high and very low water levels, the total range of fluctuations on Lake Michigan over the past 117 years has been only seven feet.





The black area represents the envelope of probable levels if the forecast period weather is wet or dry (1 year in 20)

MONTHLY MEAN LEVELS

Recorded —— Maximum —— ——

Average — — Minimum — — — —

AUGUST 1987

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	17.6	0.7	33.3	5.3	0.0		13.9	25	0	2			34.1
ALERT BAY	14.4	0.1	26.6	8.2	0.0		32.3	48	0	5	X		112.9
AMPHITRITE POINT	14.3	0.0	22.6	9.3	0.0		14.9	13	0	2	X		114.8
BLUE RIVER	14.4	-1.2	29.9	1.0	0.0		88.2	118	0	12	207	91	MSG
BULL HARBOUR	13.6	0.1	19.9	6.7	0.0		28.3	34	0	7	X		137.7
CAPE SCOTT	13.6	-0.3	18.2	9.6	0.0		33.4	31	0	7	X		135.8
CAPE ST.JAMES	14.1	0.3	21.2	10.1	0.0		51.3	65	0	9	*		120.0
CASTLEGAR	18.9	-0.8	36.5	5.7	0.0		16.2	35	0	4	280	101	22.8
COMOX	17.6	0.6	29.6	9.1	0.0		10.4	23	0	2	X		27.2
CRANBROOK	16.6	-0.8	32.8	3.3	0.0		13.6	41	0	3	289	*	67.0
DEASE LAKE	11.0	-0.6	24.6	-1.2	0.0		46.0	87	0	12	202	100	217.9
ETHELDA BAY	13.6	-0.1	27.0	4.8	0.0		89.9	52	0	11	X		135.1
FORT NELSON	13.9	-0.9	26.1	-0.7	3.6		95.4	155	1	13	242	*	131.0
FORT ST.JOHN	13.0	-1.4	25.6	2.5	0.0		114.1	189	0	9	X		156.0
HOPE	19.0	0.6	33.8	8.8	0.0		4.2	8	0	2	292	131	17.8
KAMLOOPS	19.6	-0.2	34.8	7.1	0.0		14.7	53	0	4	308	110	9.4
KELOWNA	17.9	0.1	35.9	4.4	0.0		35.8	116	0	4	276	106	29.2
LANGARA	13.0	-0.2	23.3	9.4	0.0		133.5	129	0	15	X		187.1
LYTTON	21.3	0.4	37.6	7.8	0.0		23.1	135	0	3	239	99	5.7
MACKENZIE	12.1	-1.7	27.0	-0.3	0.0		80.8	138	0	10	217	90	176.9
MCINNES ISLAND	14.5	0.2	20.6	10.0	0.0		74.0	49	0	12	X		109.9
PENTICTON	19.4	-0.1	35.3	5.4	0.0		17.6	66	0	2	305	112	10.1
PORT ALBERNI	18.3	*	35.4	4.0	0.0		9.6	*	0	2	312	*	23.9
PORT HARDY	14.2	0.4	23.5	6.0	0.0		21.7	31	0	4	207	112	114.9
PRINCE GEORGE	13.6	-0.5	26.2	0.5	0.0		78.6	115	0	11	253	100	
PRINCE RUPERT	14.1	1.0	25.8	7.0	0.0		130.0	82	0	10	177	127	120.8
PRINCETON	16.8	-0.3	34.5	1.4	0.0		3.2	12	0	2	294	*	MSG
QUESNEL	14.9	-0.7	29.4	3.0	0.0		38.4	59	0	7	X		98.9
REVELSTOKE	16.3	-1.3	33.8	6.3	0.0		61.3	144	0	10	219	90	64.2
SANDSPIT	15.6	0.9	24.3	10.0	0.0		86.7	175	0	11	193	110	75.4
SMITHERS	14.3	0.2	26.3	2.1	0.0		43.1	98	0	6	231	98	113.5
TERRACE	16.6	0.8	29.1	6.6	0.0		38.2	60	0	6	233	115	58.8
VANCOUVER HARBOUR	17.8	0.6	27.5	10.1	0.0		15.2	27	0	2	X		22.2
VANCOUVER INT'L	17.7	0.6	27.5	9.2	0.0		26.0	63	0	2	334	130	25.6
VICTORIA GONZ. HTS	16.2	0.9	29.5	9.3	0.0		13.8	65	0	1	360	124	68.1
VICTORIA INT'L	16.5	0.4	29.8	7.5	0.0		11.4	42	0	2	348	127	52.3
VICTORIA MARINE	14.3	0.1	26.8	7.1	0.0		10.9	41	0	2	X		115.0
WILLIAMS LAKE	13.8	-1.2	28.3	2.0	0.0		38.7	90	0	5	274	98	134.3

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	11.8	0.0	25.5	-11.0	0.0		34.1	61	0	9	X		191.7
MAYO	12.9	0.3	25.1	-4.2	0.0		40.4	97	0	11	X		158.4
WATSON LAKE	12.1	-1.0	24.0	-0.2	4.4		53.8	128		12	217	95	181.7
WHITEHORSE	11.7	-0.8	24.0	0.5	2.6	325	40.4	106	1	10	228	98	194.8
NORTHWEST TERRITORIES													
ALERT	1.6	0.7	14.3	-6.5	8.6	41	9.0	31	0	3	376	181	507.7
BAKER LAKE	7.0	-2.7	16.3	6.2			65.2	174	0	15	153	72	340.4
CAMBRIDGE BAY	4.8	-1.7	10.5	-2.5	4.6	766	55.6	198		16	88	50	409.4
CAPE DYER	6.7	2.1	14.8	0.2	1.4	13	103.2	201		7	X		350.7
CAPE PARRY	5.7	0.3	10.3	-1.8	6.6	412	29.9	107		9	X		382.2
CLYDE	4.7	0.7	14.5	-1.5	0.4	5	17.2	65		4	218	113	412.4
COPPERMINE	6.5	-2.2	15.9	-1.5	0.2	50	38.6	100	0	13	*		355.9
CORAL HARBOUR	6.3	-1.1	14.5	-2.0	0.0		43.3	97	0	10	203	90	362.4
EUREKA	4.0	0.7	12.5	-2.7	3.8	140	8.6	74		5	309	128	432.9
FORT RELIANCE	10.0	-2.9	19.6	2.5	0.0		30.9	76	0	9	X		249.2
FORT SIMPSON	12.9	-1.5	26.5	-2.5			15.3	34	0	5	307	124	162.5
FORT SMITH	11.9	-2.3	23.5	-0.6	0.0		60.4	142	0	8	247	94	188.3
IQALUIT	6.0	-0.9	12.1	0.5	0.0		83.1	141	0	15	111	68	372.6
HALL BEACH	2.6	-2.0	9.4	-3.0	6.6	366	84.2	206		15	X		478.1
HAY RIVER	12.2	-2.2	25.0	-0.7	0.0		41.2	109	0	10	X		179.3
INUVIK	10.3	-0.4	22.3	-2.5	9.2	278	63.0	144	0	14	203	93	238.8
MOULD BAY	1.7	0.3		-5.4	36.0	400	34.5	160	4	8	64	48	504.4
NORMAN WELLS	12.5	-0.9	24.4	-4.5	1.8	*	48.6	82	0	7	225	95	170.1
POND INLET	4.9	0.2	13.7	-1.4	0.6	33	29.6	76		8	X		551.1
RESOLUTE	2.8	0.4	12.0	-4.1	24.1	359	44.5	143		29	168	105	472.9
YELLOWKNIFE	11.9	-2.2	20.8	1.1			28.1	63	0	8	297	103	190.9
ALBERTA													
BANFF	12.0	-1.8	27.5	0.0	0.0		67.8	138	0	15	X		
BROOKS	14.6	-2.8	29.5	2.0	0.0		102.6	216	0		257	*	
CALGARY INT'L	13.1	-2.1	26.6	3.1			102.9	185	0	13	251	88	152.8
COLD LAKE	13.1	-2.4	25.8	1.2	0.0		91.1	119	0	16	212	83	153.0
CORONATION	12.4	-3.7	25.2	0.5	0.0		66.4	128	0	10	236	82	172.6
EDMONTON INT'L	12.6	-2.2	25.1	1.5	0.0		95.7	122	0	11	208	73	165.7
EDMONTON MUNI.	13.7	-2.5	25.4	4.6	0.0		74.1	95	0	14	212	76	135.3
EDMONTON NAMAO	13.2	-2.4	24.9	3.7			110.7	150	0	11	X		151.4
EDSON	11.5	-1.7	24.8	-1.0	0.0		72.2	77	0	11	213	86	203.3
FORT CHIPEWYAN	12.4	-2.1	25.0	0.5	0.0		59.4	122	0		X		

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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
FORT MCMURRAY	13.1	-1.7	26.9	1.0	0.0		86.6	113	0	12	248	100	153.2
GRANDE PRAIRIE	13.0	-1.8	25.4	2.8	0.0		69.6	115	0	11	219	*	162.7
HIGH LEVEL	12.2	-1.8	23.9	0.2	0.8		86.8	150	0	11	262	102	179.0
JASPER	12.0	-2.2	26.7	0.0	0.0		70.4	145	0	13	209	*	187.2
LETHBRIDGE	14.7	-2.9	30.3	2.6	0.0		55.1	116	0	8	272	90	109.6
MEDICINE HAT	15.8	-3.1	31.1	2.4	0.0		91.9	252	0	7	292	97	82.6
PEACE RIVER	13.3	-0.9	26.6	3.7	0.0		57.0	113	0	11	X		146.7
RED DEER	11.8	-3.1	25.4	-0.3	0.0		115.4	175	0	16	X		192.2
ROCKY MTN HOUSE	11.5	-2.8	25.2	-0.7	0.0		100.8	130	0	16	X		203.4
SLAVE LAKE	12.7	-1.7	23.6	2.0	0.0		70.0	98	0	8	221	90	164.3
SUFFIELD													
WHITECOURT	12.1	-1.8	25.0	0.4	0.0		98.5	111	0	16	X		182.0
SASKATCHEWAN													
BROADVIEW	15.2	-1.2	30.9	0.1	0.0		24.8	41	0	7	269	90	96.7
COLLINS BAY	10.1	-2.5	21.6	-3.1	0.0		58.5	87	0	16	235	*	234.7
CREE LAKE	12.0	-2.4	23.4	-1.5	0.0		62.7	103	0	10	231	93	196.5
ESTEVAN	16.8	-1.8	35.9	3.7	0.0		13.1	24	0	3	272	87	62.8
HUDSON BAY	13.7	-2.1	27.5	2.0	0.0		47.6	80	0	10	266	*	137.2
KINDERSLEY	14.0	-3.4	28.8	1.5			51.4	138	0	8	X		125.0
LA RONGE	13.4	-1.8	27.7	-0.8	0.0		61.4	98	0	12	X		147.3
MEADOW LAKE	12.6	-3.1	27.1	0.2	0.0		69.3	93	0	15	*		
MOOSE JAW	15.9	-2.7	30.3	2.9	0.0		23.7	58	0	5	280	94	81.2
NIPAWIN	13.7	*	26.5	2.9	0.0		136.0	*	0	13	258	*	138.7
NORTH BATTLEFORD	13.5	-3.3	26.2	2.7	0.0		107.3	235	0	10	X		135.2
PRINCE ALBERT	13.7	-2.2	25.7	2.5	0.0		70.3	134	0	10	248	92	135.1
REGINA	15.6	-2.2	31.0	2.3	0.0		30.3	67	0	7	271	91	84.4
SASKATOON	14.4	-2.8	28.9	1.7	0.0		41.6	109	0	9	X		116.1
SWIFT CURRENT	14.2	-3.3	27.6	2.7	0.0		50.5	117	0	6	260	87	123.6
WYNYARD	14.6	-2.2	27.7	3.4	0.0		49.7	91	0	8	X 261	93	112.9
YORKTON	14.9	-2.0	28.7	2.5	0.0		37.7	61	0	10	265	93	102.9
MANITOBA													
BRANDON	15.5	-2.0	29.6	-0.9	0.0		67.0	103	0	6	X		89.9
CHURCHILL	9.9	-1.4	23.6	-0.1	0.0		66.0	113	0	16	233	100	251.4
DAUPHIN	15.7	-1.4	30.1	1.8	0.0		46.6	74	0	8	253	92	85.2
GILLAM	11.8	-2.0	30.7	1.2	0.0		109.8	180	0	11	X		194.4
GIMLI	16.1	-1.0	30.9	2.2	0.0		91.8	160	0	9	247	93	76.1
ISLAND LAKE	14.1	-1.4	25.9	4.5	0.0		129.2	207	0	16	X		126.9
LYNN LAKE	11.4	-2.1	*	2.0	0.0		49.7	85	0	11	232	99	203.7
NORWAY HOUSE	15.5	*	28.6	0.2	0.0		87.7	*	0	11	* X	*	134.8
PORTAGE LA PRAIRIE	17.2	-1.2	30.9	3.0	0.0		134.8	166	0	12	X		61.2

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
THE PAS	14.7	-1.4	30.6	3.3	0.0		95.7	166	0	10	269	103	122.3
THOMPSON	11.6	-2.3	28.0	-2.0	0.0		103.2	143	0	14	214	93	200.4
WINNIPEG INT'L	17.3	-1.0	31.3	2.8	0.0		97.1	129	0	8	263	92	52.7
ONTARIO													
ATIKOKAN	15.8	0.0	29.6	2.6			198.6	202		15	242	99	90.5
BIG TROUT LAKE	13.6	-0.7	25.6	4.3			141.2	172		17	184	*	140.1
EARLTON	15.9	-0.3	30.3	1.3			42.1	50		11	X		91.9
GERALDTON	14.5	-0.1	28.0	0.5			75.2	112		11	X		118.0
GORE BAY	18.5	0.3	29.6	8.4			69.2	91		11	X		27.7
HAMILTON RBG													
HAMILTON	19.9	-0.1	31.0	6.7			100.0	132		9	X		29.1
KAPUSKASING	15.1	-0.2	30.2	1.2			82.3	88		13	X		108.2
KENORA	17.2	-0.4	30.5	5.0			82.7	96		10	X		52.2
KINGSTON	19.3	-0.1	30.2	7.5			71.0	93		7	264	103	21.0
LANSDOWNE HOUSE	14.6	-0.6	27.3	4.8			192.3	220		13	X		112.9
LONDON	19.4	-0.1	31.2	6.8			98.6	122		11	200	81	26.5
MOOSONEE	14.3	0.0	28.5	0.0			158.2	199		19	192	89	121.2
MOUNT FOREST													
MUSKOKA	17.9	0.5	31.5	3.2			67.8	76		11	X		47.3
NORTH BAY	16.7	-0.3	28.7	4.2			126.6	128	0	10	238	101	64.1
OTTAWA INT'L	18.9	-0.3	33.6	5.5			36.8	41		5	284	*	27.7
PETAWAWA	16.9	-0.7	32.9	1.4	0.0		49.6	62	0	8	X		65.6
PETERBOROUGH	17.9	-0.2	31.4	5.5			84.1	113		9	X		44.2
PICKLE LAKE	14.8	-0.3	29.1	2.0			121.4	117		13	X		96.9
RED LAKE	15.7	-1.2	31.2	3.2			52.6	67		14	258	*	86.8
ST. CATHARINES	20.3	-0.7	31.8	8.5			129.4	160		7	X		15.6
SARNIA	20.2	-0.1	32.7	8.3			119.4	232		9	249	99	19.0
SAULT STE. MARIE	17.5	0.6	31.7	6.7			117.4	141		15	240 X	96	48.9
SIOUX LOOKOUT	16.5	-0.1	30.9	4.2			127.7	144		11	X		74.7
SUDBURY	17.7	0.4	33.3	4.0			43.7	52		9	265	105	48.7
THUNDER BAY	16.6	0.2	30.1	3.0			119.0	143		11	256	100	68.4
TIMMINS	14.8	-0.7	30.4	0.3			110.3	123		11	X		120.0
TORONTO	21.1	-0.1	32.5	10.4			57.2	78		7			4.6
TORONTO INT'L	19.6	-0.1	33.0	6.0			52.3	68		6	X		18.3
TORONTO ISLAND	20.3	0.2	31.0	10.4			67.2	94		6			14.3
TRENTON	19.4	-0.3	30.4	7.7			73.5	102		10	X		21.1
WATERLOO-WELL	18.2	-0.7	30.3	6.8			133.6	150		6	X		37.4
WAWA	15.3	*	28.2	1.4			93.2	*		12		*	104.2
WIARTON	18.8	0.7	30.9	9.5			119.2	137		11	253	99	23.4
WINDSOR	21.5	0.2	33.7	10.2			143.2	170		10	X		12.1

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QUEBEC													
BAGOTVILLE	15.4	-1.0	31.4	1.6	0.0		78.1	78	0	13	X		97.4
BAIE COMEAU	13.1	-1.5	26.1	0.0	0.0		73.5	77	0	14	209	*	154.0
BLANC SABLON	13.3	1.5	22.0	3.6	0.0		42.4	39	0	8	197	*	145.1
CHIBOUGAMAU	13.6	-0.4	29.0	1.3	0.0		72.5	61	0	13	210	101	146.6
GASPE	14.8	-1.2	29.2	0.3	0.0		46.9	52	0	8	244	*	108.6
INUKJUAK	8.6	-0.3	17.9	1.9	0.0		123.2	189	0	14	145	99	289.5
KUUJJUAQ	10.7	0.3	23.5	0.7	0.0		70.7	110	0	14			229.1
KUUJJUARAPIK	10.4	0.0	28.2	2.0	0.0		128.6	136	0	18	129	77	237.4
LA GRANDE RIVIERE	11.5	*	*	1.0	0.0		141.4	*	0	20	153	*	207.1
MANIWAKI	16.3	-0.7	30.1	2.0	0.0		80.0	87	0	9	245	108	75.7
MATAGAMI	13.7	-0.3	29.6	0.0	0.0		9.8	9	0	13	238	116	130.0
MONT JOLI	15.1	-0.9	26.8	3.4	0.0		36.2	45	0	8	234	95	96.9
MONTREAL INT'L	18.7	-0.9	33.9	5.8	0.0		54.6	59	0	8	282	117	31.3
MONTREAL M INT'L	17.0	*	31.0	4.0	0.0		69.6	*	0	10	287	*	57.7
NATASHQUAN	13.6	0.3	23.5	3.7	0.0		115.0	109	0	9	211	91	126.0
QUEBEC	17.0	-0.5	31.2	4.0	0.0		71.2	60	0	9	255	116	54.5
ROBERVAL	16.1	-0.3	29.6	3.0	0.0		51.4	52	0	9	217	*	85.2
SCHEFFERVILLE	11.0	0.2	21.5	1.7	0.0		97.6	99	0	19	146	*	217.9
SEPT-ILES	13.3	-0.8	6.3	3.0	0.0		60.1	57	0	9	217	97	146.7
SHERBROOKE	16.1	-0.4	32.1	1.6	0.0		57.6	47	0	11	265	*	82.6
STE AGATHE DES MONTS	15.5	-0.3	28.8	0.6	0.0		60.4	53	0	12	248	104	91.8
ST-HUBERT	18.3	-0.9	35.4	4.4	0.0		45.6	47	0	9	*		34.9
VAL D'OR	15.0	-0.5	30.4	1.4	0.0		68.6	67	0	13	238	101	114.2
NEW BRUNSWICK													
CHARLO	16.1	0.0	28.3	2.8	0.0		110.2	102	0	10	261	107	79.8
CHATHAM	17.4	-0.6	32.1	3.3	0.0		48.2	57	0	8	273	114	53.3
FREDERICTON	17.2	-1.0	33.3	1.8	0.0		46.8	53	0	9	273	*	53.3
MONCTON	17.2	-0.4	33.5	2.9	0.0		43.3	55	0	8	276	119	57.1
SAINT JOHN	16.3	-0.3	27.7	4.4	0.0		50.6	49	0	7	271	127	65.5

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NOVA SCOTIA													
GREENWOOD	17.7	-0.6	34.4	2.9	0.0		40.8	45	0	6	X		50.0
HALIFAX INT'L	17.8	-0.3	30.7	7.4	0.0		64.6	58	0	6	*		43.4
SABLE ISLAND	17.0	-0.6	23.1	4.4	0.0		125.6	108	0	7	232	129	40.2
SHEARWATER	17.9	0.1	28.5	8.0	0.0		53.9	55	0	6	281	124	38.4
SYDNEY	16.9	-0.7	31.2	6.0	0.0		55.0	54	0	14	259	114	56.8
YARMOUTH	16.2	-0.2	26.8	5.8	0.0		29.2	30	0	3	278	132	63.9
PRINCE EDWARD ISLAND													
CHARLOTTETOWN	17.3	-0.5	32.1	5.4	0.0		49.8	56	0	9	X		49.9
SUMMERSIDE	18.0	-0.4	29.8	8.1	0.0		43.4	54	0	8	279	116	35.6
NEWFOUNDLAND													
BATTLE HARBOUR	11.4	0.2	22.5	4.8	0.0		33.1	39	0	7	X		204.0
BONAVISTA	15.3	0.3	24.7	8.9	0.0		38.2	45	0	7	X		88.8
BURGEO	15.2	0.3	24.5	6.5	0.0		120.8	81	0	11	*		83.5
CARTWRIGHT	10.8	-1.2	23.4	3.0	0.0		73.5	89	0	12	178	101	221.7
CHURCHILL FALLS	12.4	0.0	23.8	0.4	0.0		91.7	96	0	16	188	108	173.3
COMFORT COVE	15.1	-0.5	26.6	6.3	0.0		41.2	38	0	6	X		91.9
DANIEL'S HARBOUR	14.5	0.0	22.0	6.0	0.0		97.9	85	0	9	226	125	108.7
DEER LAKE	15.0	0.0	28.5	2.6	0.0		77.3	75	0	12	X		96.9
GANDER INT'L	15.5	-0.1	28.7	4.9	0.0		51.4	52	0	8	244	130	83.0
GOOSE	14.0	-0.3	28.2	5.4	0.0		76.8	74	0	13	183	103	128.7
PORT-AUX-BASQUES	15.3	0.6	23.0	8.2	0.0		131.6	114	0	12	249	*	89.0
ST ANTHONY	11.6	-0.5	21.7	4.6	0.0		79.1	58	0	11	*	*	186.2
ST JOHN'S	14.5	-0.8	25.2	5.2	0.0		70.9	58	0	10	204	109	110.7
ST LAWRENCE	15.0	1.1	27.0	5.5	0.0		51.6	36	0	7		*	
STEPHENVILLE	16.3	0.2	24.6	7.8	0.0		124.6	120	0	10	231	*	60.0
WABUSH LAKE	13.6	1.8	26.2	1.9	0.0		107.9	114	0	15	179	*	203.3

AGROCLIMATOLOGICAL STATIONS — AUGUST 1897

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	18.8	1.1	32.5	8.5	0.0	13.8	22	0	4	284	427.0	1699.6
KAMLOOPS												
SIDNEY	117	*	28.5	8.5	0.0	0.0	*	0	0	307	373.8	1551.3
SUMMERLAND	20.0	0.0	35.0	8.5	0.0	21.0	76	0	3	300	468.2	1970.2
ALBERTA												
BEAVERLODGE	12.0	−2.2	25.0	2.0	0.0	69.0	108	0	14	218	226.3	1085.3
ELLERSLIE												
FORT VERMILLION												
LACOMBE	12.2	−2.7	25.5	0.0	0.0	69.6	102	0	15	227	226.1	1110.6
LETHBRIDGE												
VAUXHALL												
VEGREVILLE	12.7	−2.4	25.5	1.0	0.0	68.5	92	0	13		237.7	1227.1
SASKATCHEWAN												
INDIAN HEAD	15.8	−1.6	31.5	2.0	0.0	24.0	43	0	8		334.5	1585.5
MELFORT	13.7	−2.4	27.5	3.0	0.0	74.4	136	0	14	242	270.0	1389.0
REGINA	15.2	−2.2	31.0	−1.0	0.0	27.3	62	0	6		323.3	1479.5
SASKATOON	14.8	−2.4	29.5	3.0	0.0	44.3	126	0	10	201	305.5	1556.5
SCOTT	13.1	−2.9	36.0	0.0	0.0	53.2	114	0	11	246	250.1	1320.3
SWIFT CURRENT SOUTH	14.4	−3.3	28.0	3.0	0.0	42.9	112	0	7	230	292.2	1521.9
MANITOBA												
BRANDON	16.5	−1.2	30.4	−1.1	0.0	49.0	71	0	6		357.7	1648.9
GLENLEA	16.7	−1.5	32.0	0.5	0.0	49.4	84	0	5	277	358.8	1650.8
MORDEN	18.0	−1.0	31.5	5.0	0.0	64.2	90	0	5	251	408.0	1836.5
ONTARIO												
DELHI	19.0	−0.8	31.0	5.0	0.0	115.8	124	0	9	236	435.2	1875.7
ELORA	18.1	0.0	30.2	4.2	0.0	89.8	125	0	7		404.1	1684.1
GUELPH	18.5	−0.3	31.0	5.7	0.0	84.6	104	0	10	238	417.5	1723.8
HARROW	21.6	0.4	34.0	9.0	0.0	170.8	216	0	82	241	512.9	2159.8
KAPUSKASING	14.9	−0.6	29.0	0.0	0.0	82.9	93	0	13	219	302.7	1259.5
MERIVALE												
OTTAWA	19.0	−0.4	32.8	4.8	0.0	37.3	44	0	7	285	431.9	1801.3
SMITHFIELD	19.8	−0.5	31.0	9.0	0.0	67.3	89	0	7		462.8	1919.0
VINELAND STATION	20.3	−0.5	31.4	9.3	0.0	142.2	165	0	9	252	475.7	1915.2
WOODSLEE												
QUEBEC												
LA POCATIERE	16.5	−0.8	29.0	3.0	0.0	52.2	53	0	10	270	356.4	1343.2
L'ASSUMPTION	17.8	−1.0	33.0	3.0	0.0	47.0	49	0	8	275	397.2	1645.4
LENNOXVILLE												
NORMANDIN	14.6	−0.8	29.5	−0.5	0.0	55.1	59	0	10	224	307.0	1185.4
ST. AUGUSTIN												
STE CLOTHILDE	18.1	−0.8	35.0	2.5	0.0	59.4	62	0	7	269	407.2	1690.5
NEW BRUNSWICK												
FREDERICTON	17.3	−0.8	33.0	3.0	0.0	43.5	50	0	7	273	377.0	1316.5
NOVA SCOTIA												
KENTVILLE	18.2	−0.2	33.5	5.5	0.0	30.6	31	0	4	271	410.2	1447.1
NAPPAN	16.8	−0.4	31.0	2.0	0.0	35.5	40	0	7	255	361.8	1304.0
PRINCE EDWARD ISLAND												
CHARLOTTETOWN	18.0	−0.4	31.5	5.5	0.0	49.0	60	0	8	278	403.1	1311.1
NEWFOUNDLAND												
ST. JOHN'S WEST	14.7	−0.8	26.5	7.0	0.0	56.4	49	0	9	206	294.9	909.8