SOLIOTHEQUE S.E.

une 28 to July 4, 1988

A weekly review of the Canadian climate

Vol. 10 No. 27



Environment Canada Environnement Canada

Atmospheric Environment Service

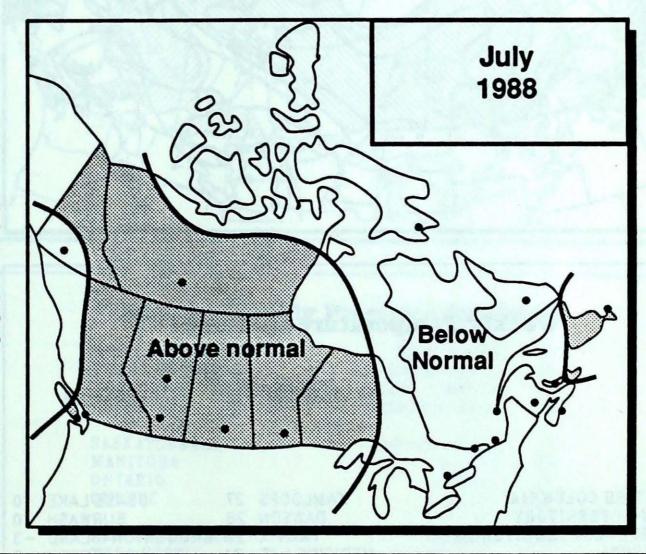
Service de l'environnement atmosphérique

Normal temperatures for the month of July, °C

Whitehorse	14	Toronto	21
Yellowknife	16	Ottawa	21
Iqaluit	8	Montreal	21
Vancouver	17	Quebec	19
Victoria	16	Fredericton	19
Calgary	16	Halifax	17
Edmonton	17	Charlottetown	18
Regina	19	Goose Bay	16
Winnipeg	20	St. John's	16

Canadä

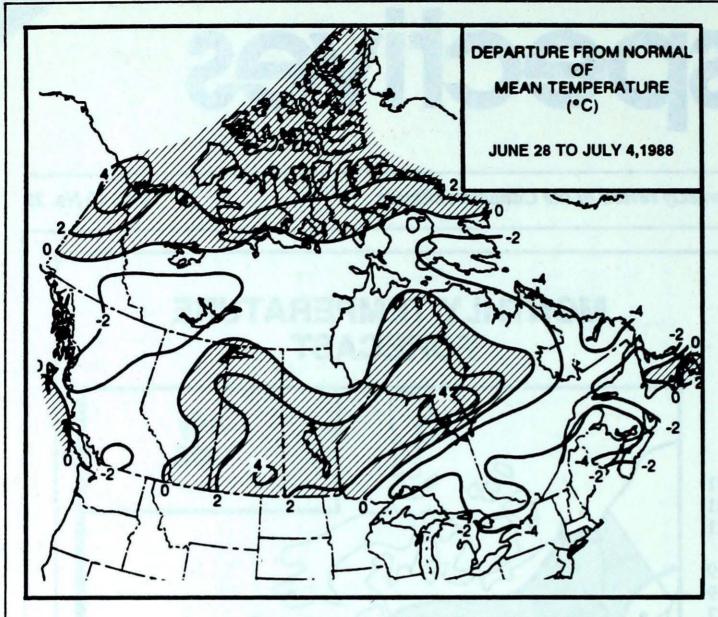
MONTHLY TEMPERATURE FORECAST



In May 1988, the first official monthly temperature forecast was made public, and is now available at all A.E.S. weather centres and offices in a map version transmitted on the national facsimile network, and a text version on the national telecommunications network.

- Record rainfalls northwestern Canada
 - Unusual frost in Ontario
- Unsettled in B.C. and western Prairies

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Weekly Temperature Extreme ('C)

MAXIMUM

MINIMUM

BRITISH COLUMBIA	KAMLOOPS	27	DEASE LAKE	0
YUKON TERRITORY	DAWSON	28	BURWASH	0
NORTHWEST TERRITORIES	INUVIK	27	BROUGHTON ISLAND	-3
ALBERTA	MEDICINE HAT	31	EDSON	3
SASKATCHEWAN	MOOSE JAW	34	EASTEND CYPRESS	5
MANITOBA	PORTAGE LA PRAIRIE	34	CHURCHILL	1
ONTARIO	ARMSTRONG	33	WINISK	-1
QUEBEC	BAGOTVILLE	29	KUUJJUAQ	0
NEW BRUNSWICK	MONCTON	28	CHATHAM	6
NOVA SCOTIA	TRURO	26	SHELBURNE	5
PRINCE EDWARD ISLAND	SUMMERSIDE	27	CHARLOTTETOWN	7
NEWFOUNDLAND	ST JOHN'S	26	CARTWRIGHT	0

ACROSS THE NATION

WARMEST MEAN TEMPERATURE	22	MOOSE JAW	SASK
COOLEST MEAN TEMPERATURE	3	CAPE HOOPER	NWT
		DEWAR LAKES	NWT

ACROSS THE COUNTRY ...

Yukon and Northwest Territories

In the southern Yukon, the week started out cloudy and wet, with sunny and warm conditions in the central and northern Yukon gradually deteriorating, as the wet weather moved northward. It was wet and windy in the Mackenzie and Great Slave Lake districts. Heavy rainfall warnings were issued for the southern Mackenzie, where more than 100 mm of rain was recorded. Yellowknife set a new daily precipitation record on June 27. There were several road and highway closures due to washouts, with repairs taking as long as three weeks. In the eastern Arctic, the period started out sunny and warm, with the latter half being mostly cloudy and cool.

British Columbia

Under the influence of a nearly stationary atmospheric disturbance, weather conditions were not at all favorable for tourism. For the most part, it was cloudy, cool and damp, with only the coast and the central interior remaining relatively dry. In the southern interior, heavy showers provided nearly 70 percent of the normal expected July rainfall in just a couple of days. The moisture was helpful in the dry areas, but the Okanagan orchards have suffered, due to cherry splitting. It was wet in the north.

Prairie Provinces

In Alberta, it has been an unsettled, cool week with some improvement in the weather towards the end of the period. The northwest portion of the province received substantial rainfalls, with flooding being a concern near High Level. Heavy thunderstorms accompanied by funnel clouds and frequent lightning moved through parts of central Alberta late Saturday night and early Sunday morning, dumping heavy amounts of rain. More information is found on page 3.

In Saskatchewan and Manitoba, temperatures were not as oppressive as in previous weeks. Thirty-degree maximum readings were only observed during the early and latter parts of the period. The first half of the week was mostly cloudy, with wide spread shower and thunderstorm activity throughout a large portion of Saskatchewan. Heaviest rainfalls occurred on the 29th, when there were also reports of tornados and funnel cloud sightings. Heavy rain moved into Manitoba the last day of the period.

Ontario

It was an unseasonably cool week, with daily record low temperatures broken on June 27 and 28. Pockets of overnight frost developed in a number of agricultural districts, ruining rural vegetable gardens and plots. A slow moving disturbance produced significant rainfalls in northern and eastern Ontario during the first half of the week, but in the southern agricultural districts scattered showers did not produce much rain, and for the most part it was dry. The drought in southwestern Ontario is affecting the agricultural industry. Total June rainfall west of Toronto and south of Georgian Bay is generally less than 20 mm, and as a result a significant reduction in crop yields is now inevitable. More rain is also desperately needed in northern Ontario in order to prevent a forest fire resurgence.

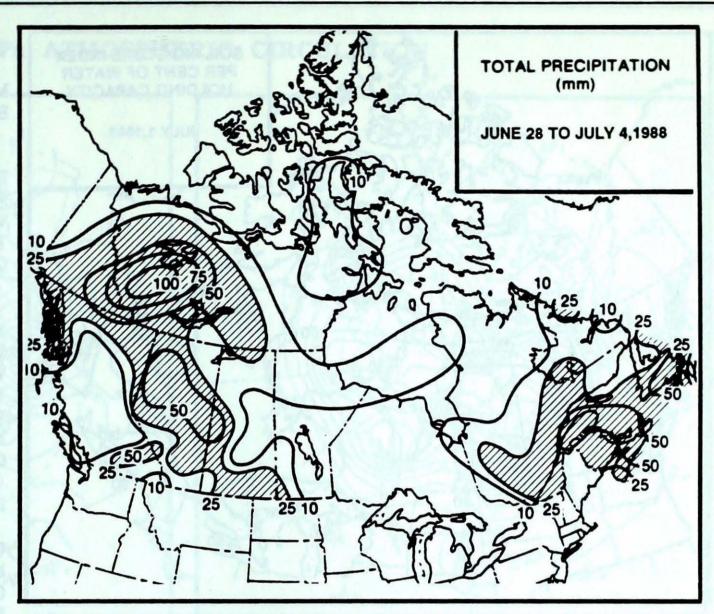
Quebec

Last week's unseasonably cold weather persisted, with 42 daily low temperature records broken at 16 different locations across southern Quebec. A slow moving atmospheric disturbance affected the province for much of the week, giving predominantly cloudy showery weather. In many areas, rainfall was abundant, especially near the St. Lawrence Valley and the Gaspé. Thunderstorms with hail were reported at Arthabaska and Victoriaville. At Hull-Ottawa, marble-size hail damaged cars.

Atlantic Provinces

In the Maritimes, it was mainly unsettled and cool. At most locations maximum temperatures only managed to reach the midteens. At Charlo, a maximum reading of 12C on the 1st was the lowest maximum temperature ever recorded on this date. Heavy thunderstorms dumped 52 mm of rain on the Halifax-Dartmouth area on the 30th. Many city streets were flooded, causing traffic tieups. Basements were flooded and there were a number of power outages. On July 1, rain and fog resulted in the postponement of a number of Canada Day celebration events.

It was cloudy and wet in Newfoundland, as disturbances affected the Island, giving precipitation almost every day. Clearing ensued the final day of the period. In Labrador, it was cloudy and cool, with temperatures in the low teens. A significant amount of rain was reported over the weekend, with clearing skies thereafter.



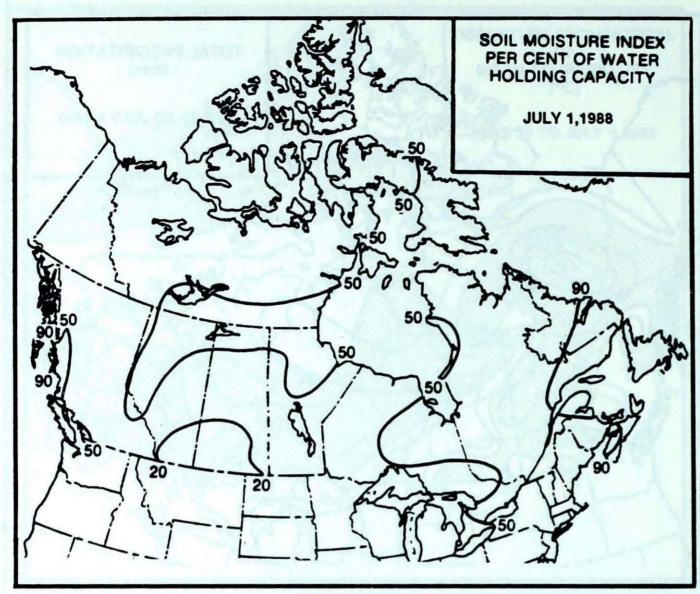
Heaviest Weekly Precipitation (mm)

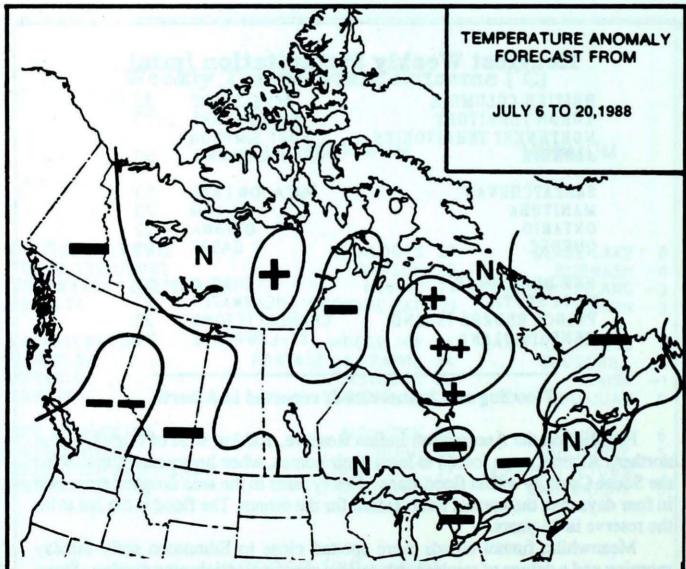
BRITISH COLUMBIA	REVELSTOKE	52
YUKON TERRITORY	WATSON LAKE	65
NORTHWEST TERRITORIES	FORT SIMPSON	131
ALBERTA	GRANDE PRAIRIE	68
SASKATCHEWAN	MEADOW LAKE	53
MANITOBA	GILLAM	23
ONTARIO	OTTAWA	22
QUEBEC	GASPE	69
NEW BRUNSWICK	CHARLO	39
NOVA SCOTIA	SHEARWATER	77
PRINCE EDWARD ISLAND	CHARLOTTETOWN	22
NEWFOUNDLAND	ST. LAWRENCE	84

Flooding and funnel clouds reported in Alberta

Families on the Assumption Indian Reserve, 100 km west of High Level in northern Alberta, were forced to leave their homes, when heavy rainfalls swelled the Sousa Creek to within flood stage. Heavy rains in the area dropped more rain in four days than the normal total rainfall for the month. The flood is the 3rd to hit the reserve in 11 years.

Meanwhile, funnel clouds were spotted close to Edmonton early Sunday morning and a deluge of rain accompanied a spectacular lightning display. Stony Plain, west of Edmonton, received 72 mm of rain in one hour, four times as much as Edmonton received during all of May. This area has had one of the wettest June's on record; 158 mm of rain was recorded - double the normal June rainfall amount and eight times as much as in May. The highest June rainfall total on the record books is 216 mm set in 1914, with records dating back to 1880.





- ++ much above normal
- + above normal
- N normal

Cararara fatorata facultara factoratora protection of the caracteristics of the

- below normal
- -- much below normal

Temperature Anomaly Forecast

This forecast is prepared by searching historical weather maps to find cases similar to the present. The historical outcome during the 15 days subsequent to the chosen analogues is assumed to be a forecast for the next 15 days from now.

CLIMATIC PERSPECTIVES VOLUME 10

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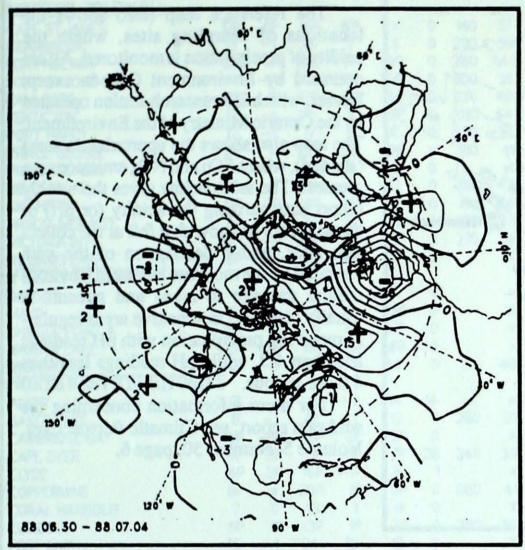
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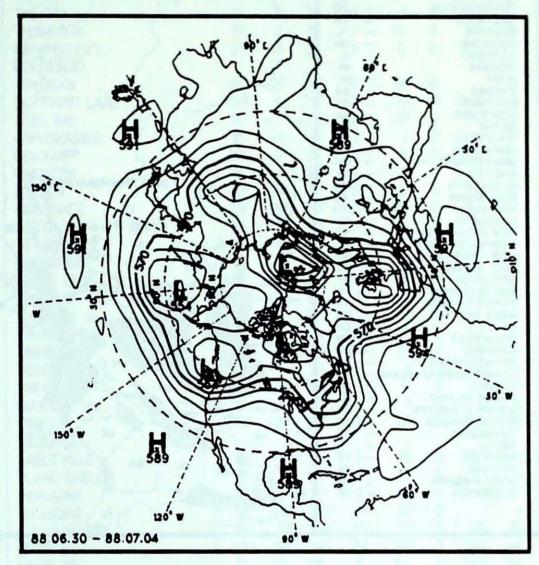
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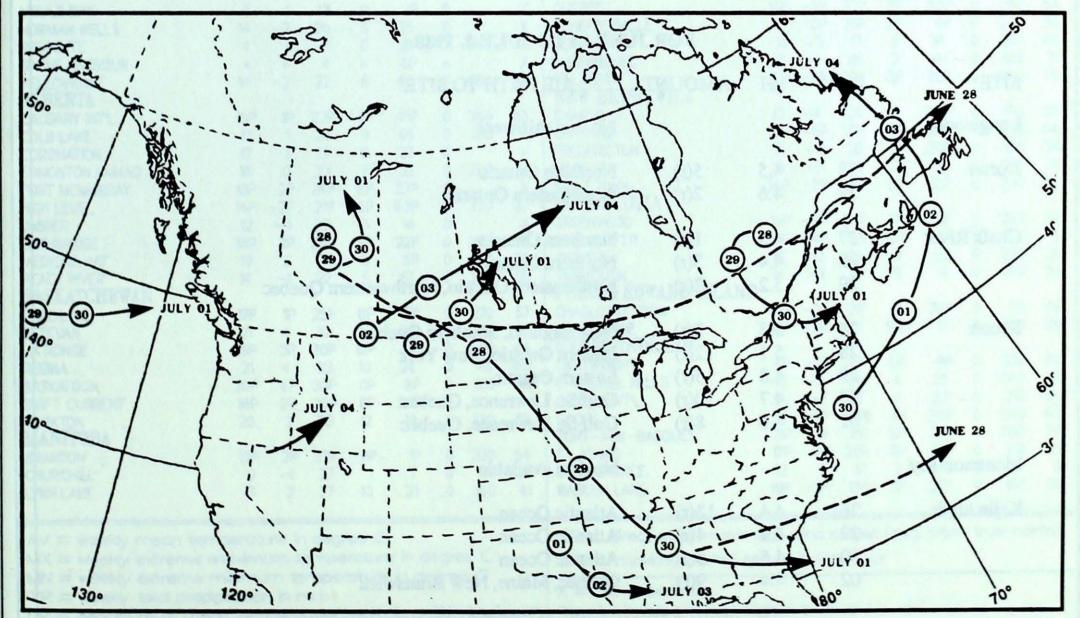
50 kPa ATMOSPHERIC CIRCULATION



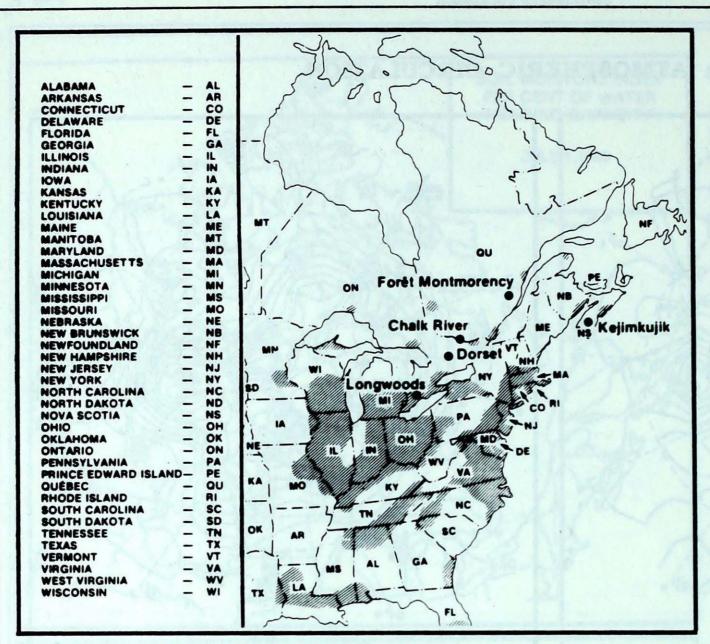
Mean geopotential height anomaly 50 kPa level (5 decameter intervals)



Mean geopotential height 50 kPa level (5 decameter intervals)



Storm track - Position of storm at 12 GMT during the period: June 28 to July 4, 1988



ACID RAIN REPORT

The reference map (left) shows the locations of sampling sites, where the acidity of precipitation is monitored. All are operated by Environment Canada except Dorset, which is a research station operated by the Ontario Ministry of the Environment. The map also shows the approximate areas (shaded), where SO₂ and NO_x emissions are greatest. The table below gives the weekly report summarizing the acidity (or pH) of the acid rain or snow that fell at the collection sites, and a description of the path travelled by the moisture laden air. Environmental damage to lakes and streams is usually observed in sensitive areas regularly receiving precipitation with pH readings less than 4.7, while pH readings less than 4.0 are serious.

For more information concerning the acid rain report, see Climatic Perspectives, Volume 5, Number 50, page 6.

			FOR JU	UNE 26 TO JULY 2, 1988
SITE	DAY	pН	AMOUNT	AIR PATH TO SITE
Longwoods				No rain this week
Dorset	28	4.5	5(r)	Northern Ontario
	29	4.6	2(r)	Northeastern Ontario
Chalk River	27	4.5	1(r)	Northern Ontario
	28	4.4	3(r)	Northern Ontario
	29	5.2	2(r)	Northeastern Ontario, Northwestern Quebec
Sutton	26	5.3	2(r)	New England, Southern Quebec
	28	5.1	12(r)	Eastern Ontario, New York
	29	4.8	5(r)	Eastern Ontario
	30	4.7	10(r)	Gulf St. Lawrence, Quebec
	01	4.6	8(r)	Gulf St. Lawrence, Quebec
Montmorency				No data available
Kejimkujik	26	4.4	13(r)	Atlantic Ocean
	27	4.9	4(r)	Atlantic Ocean
	30	4.6	8(r)	Atlantic Ocean
	02	4.4	9(r)	Quebec, Maine, New Brunswick

		TEMPERATURE						WIND MX									
STATION		_	RATU			CIP.		D MX	STATION		_			PREC			
	AV	DP	MX	MN	TP	SOG	DIR	SPD		AV	DP	MX	MN	TPS	OG	DIR	SPI
BRITISH COLUMBIA									THE PAS	20	*	29	10	1	0	130	63
CAPE ST.JAMES	12P	OP	16P	8P	*	0	140	57	THOMPSON	17	2	28	7	14	0	170	59
CRANBROOK	15	-1	24	7	9	0	200	59	WINNIPEG INT'L	21	3	32	11	0	0	200	63
FORT NELSON	12P	-4P		7P	79P		280	41	ONTARIO			100	6.7				
FORT STJOHN	14P	-1P		7P	25P		250	59	ATIKOKAN	15P	-2P	29P	2P	5P	0		*
KAMLOOPS	17P	-1P		90	16P		230	48	BIG TROUT LAKE	17P	*	29P	2P	7P	0	240	76
		-1	26	5			010	and the same of	GORE BAY	17P		-	10P				
PENTICTON	17				13	0		44			-1P	27P	21227	OP	0	310	43
PORT HARDY	12	-1	17	5	10	0	330	37	KAPUSKASING	15	-1	31	3	1	0	340	57
PRINCE GEORGE	12P	*	22P	3P	2P		180	41	KENORA	20	2	32	11	8	0	080	37
PRINCE RUPERT	11	-1	16	6	20	0		*	KINGSTON	15	-4	26	4	*	0		X
REVELSTOKE	15	-2	23	9	52	0	160	43	LONDON	17	-3P	31	5	0	0	310	52
SMITHERS	11P	-3P	19P	3P	15P	0	150	56	MOOSONEE	12P	-2P	29P	2P	18P	0	350	44
VANCOUVER INT'L	15	-1	22	9	3	0	110	33	NORTH BAY	15	-3	28	5	6	0	360	54
VICTORIA INT'L	14P	-1P		8P	2P		270	39	OTTAWA INT'L	16	-4	29	5	22	0	0.00	X
WILLIAMS LAKE	13P	*	21P	5P	7P		210	X	PETAWAWA	15	-3	31	4	9	0		Ŷ
VIIVAN TEDDITADY	IJF	1	ZIF	J.	/ -	0		^		1001000		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100		-	200	^
YUKON TERRITORY									PICKLE LAKE	17P		29P	4P	OP	0	200	37
DAWSON	*	*	*	*	*	*		*	RED LAKE	20	2	31	7	0	0	180	44
MAYO	17	3	27	4	7P			X	SUDBURY	15	-3	30	5	1P	0		X
SHINGLE POINT A	16P	7P	23P	4P	OP	0		*	THUNDER BAY	16	-1	32	3	0	0	220	33
WATSON LAKE	11P	-3P		6P	65P	0		*	TIMMINS	13P	-4P	28P	3P	7P	0	320	48
WHITEHORSE	12	-1	21	7	34	0	170	48	TORONTO INT'L	16	-4	28	5	1	0	290	46
NORTHWEST TERRITORI				act of the	-		1,0	,,,	TRENTON	15	-5	28	3	9	0	250	X
ALERT			- 11		14	14					-4	27					200
	3	200	11	-1	14	14		*	WIARTON	14			4	1	0		X
BAKER LAKE	8	-1	18	1	13	0	280	31	WINDSOR	2 0P	-2P	32F	11F	OF	0	320	48
CAMBRIDGE BAY	6P	-1P		OP	2P			*	QUEBEC								
CAPE DYER	4P	OP	11P	-1P	7P	28	340	39	BAGOTVILLE	14	-3	29	3	15	0	280	46
CLYDE	6P	3P	16P	-1P	3P	1		*	BLANC SABLON	9	*	14	5	17	0		X
COPPERMINE	8P	*	20P	1P	OP		080	41	INUKJUAK	10	2	20	2	18	0	340	70
CORAL HARBOUR	7	0	13	1	8	0	-	Y	KUUUUAQ	8P		23P	OP	OP	0	0.0	*
EUREKA	6P	1P	13P	1P	3P		280	69	KULWUARAPIK	11P	2P	25P	3P	3P	_	170	67
		IP					200								0		
FORT SMITH	16	1	24	10	12	0		X	MANIWAKI	13P		29P	3P	29P	0	340	44
FROBISHER BAY	6P	OP	15P	, 1P	5P		150	57	MONT JOLI	13	-4	25	6	64	0	060	54
HALL BEACH	5P	1P	10P	2P	3P	1	280	37	MONTREAL INT'L	15	-5	29	5	39	0	250	50
INUVIK	18	5	27	9	0	0		X	NATASHQUAN	12	-1	21	6	18P	0	070	48
MOULD BAY	5	1	13	0	1P	0		X	QUEBEC	14P	-5P	27P	3P	30P	0	060	54
NORMAN WELLS	14	-2	26	5	35	0		X	SCHEFFERVILLE	11P	OP	26P	3P	4P	0	280	50
RESOLUTE	4	1	11	Ö	8P		340	61	SEPT-ILES	11	-3	17	6	34	0	060	48
		ART III					340		the state of the s	VI. Car Million							
SACHS HARBOUR	*	*	*	*	OP			X	SHERBROOKE	13	-4	28	2	41	0	300	31
YELLOWKNIFE	14	-2	22	8	46	0	050	54	VAL D'OR	12P	-5P	28P	3P	35P	0	340	70
ALBERTA									NEW BRUNSWICK								
CALGARY INT'L	15P	1P	22P	7P	45P	0	340	65	CHARLO	13	-4	25	8	39P	0	090	39
COLD LAKE	17	1	28	9	65	0	100	74	CHATHAM	13P	-5P	22P	6P	382	0	070	44
CORONATION	17	1	29	8	37	0	BITTO	*	FREDERICTON	15	-3	28	8	30P	0	180	39
EDMONTON NAMAO	16	0	23	7	32	Ö	290	41	MONCTON	15	-3	28	7	28	0	090	41
FORT MCMURRAY	18P	2P	24P	8P	32P		250	X	SAINT JOHN	14P		21P	8P			290	52
							220	1/2-2		HP	-25	211	OP	22P	0	290	32
HIGH LEVEL	14P	-2P	21P	6P	63P		330	37	NOVA SCOTIA			-				-	
JASPER	12	-1	20	5	16	0		X	GREENWOOD	15P	-	24P	6P	11P	0	280	56
LETHBRIDGE	18P	2P	28P	9P	22 P		280	78	SHEARWATER	13P	-4P	19P	9P	77P	0	100	46
MEDICINE HAT	19	2	31	8	6P	0	320	74	SYDNEY	14	-2	25	9	52	0	200	35
PEACE RIVER	14	-1	22	5	67	0	240	56	YARMOUTH	14	-1	22	9	4	0	240	39
SASKATCHEWAN		100							PRINCE EDWARD ISLAND							-0.5	7000
CREE LAKE	17P	1P	25P	8P	17P	0	270	57	CHARLOTTETOWN	14P	-3P	21P	7P	22P	0	110	46
ESTEVAN								Walter Tolland									39
	21	4	32	10	38	0	120	59	SUMMERSIDE	14P	-3P	27	10P	17	0	120	39
LA RONGE	19P	3P	30P	12P	9P		190	46	NEWFOUNDLAND	and 2.1		Tall .			200	9.135	/40.00
REGINA	21	4	33	10	26	0	140	63	CARTWRIGHT	6P	1-21	16P	OP	9 P	0	330	46
SASKATOON	20P	4P	30P	11P	8P	0	120	59	CHURCHILL FALLS	10	-2	26	4	25	0	060	37
SWIFT CURRENT	18P	2P	30P	8P	34P	0		X	GANDER INT'L	14	-1	25	4	33	0	210	65
YORKTON	20	3	30	12	19	0	130	63	GOOSE	9P	-5P	17P	4P	20P	0	040	43
MANITOBA			-		.,				PORT-AUX-BASQUES	11P	-1P	14P	BP	37P	Ö	090	74
BRANDON	19P	2P	220	9P	40		220	54	ST JOHN'S		4P	26P	8P	38P	0	210	65
				90	1P			54		17P						210	
CHURCHILL	9	-1	27	, 1	1	0	110	37	ST LAWRENCE	13	3	17	9	84P	0	100	X
LYNN LAKE	17	2	27	10	21	0	180	41	WABUSH LAKE	10P	-2P	18P	5P	20P	0	100	39

MX = weekly extreme maximum temperature in degree C
MN = weekly extreme minimum temperature in degree C
TP = weekly total precipitation in mm

DP = departure of mean temperature from normal in degree C P = value based on less than 7 days

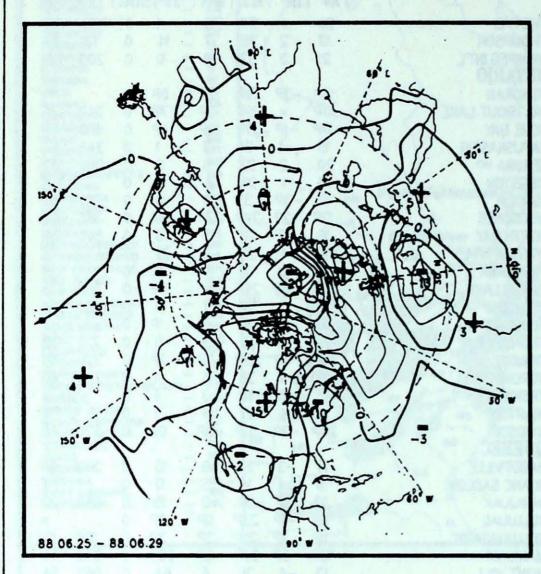
SOG = snow depth on ground in cm, last day of the period

SPD = maximum wind speed in km/hour

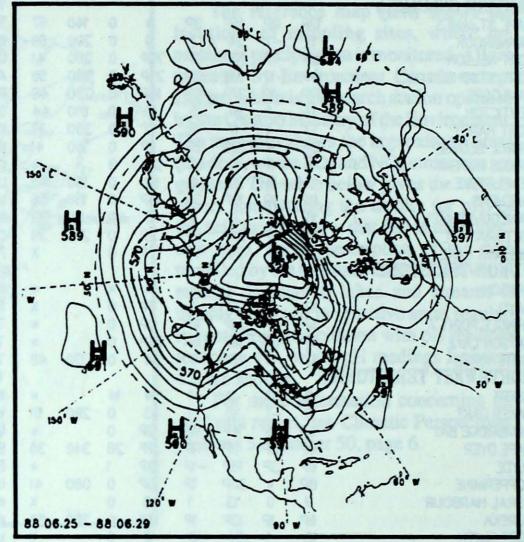
X = not observed

* = missing

50 kPa ATMOSPHERIC CIRCULATION



Mean geopotential height anomaly 50 kPa level (5 decameter intervals)



Mean geopotential height 50 kPa level (5 decameter intervals)

