



Climatic Perspectives



July 5 to 11, 1993

A weekly review of Canadian climate and water

Vol. 15 No. 28

Stifling heatwave in Ontario and Quebec

A persistent southerly flow from the Gulf of Mexico brought tropical air to the Great Lakes Basin, providing hot, hazy and humid weather for most of the period. In contrast, residents of western Canada continued to endure a cool and wet weather regime that has plagued this part of the country for several weeks.

A very warm, muggy air mass moved into southern and central Ontario late last week and remained, causing the maximum temperature at Toronto to rise to thirty degrees or more every day this week. The humidity made it feel more like forty. The heatwave lasted seven days, the longest stretch of hot weather in Toronto since a seven-day heatwave in July 1988, when the mercury topped 38°C. One of the longest heatwaves ever recorded in Toronto began on August 24, 1953, and lasted for 12 days, with the maximum temperature of 34°C.

The hot weather came to a gradual end over the weekend, with a major outbreak of severe weather on Friday, July 9, over a good portion of the province. A tornado, spawned by a thunderstorm which had tracked eastwards across Lake Huron, cut a swath along the north shore of Lake Nipissing west of North Bay. Lightning started three forest fires in the same area. In the vicinity of Toronto, in cottage country to the north, and in southwestern Ontario numerous heavy and damaging thunderstorms developed along an advancing squall line during the late afternoon and evening hours of the 9th. There were several funnel cloud sightings, and many reports of hail, torrential rain and winds gusting to between 100 and 150 km/h. More heavy thunderstorms, with frequent lightning occurred again Sunday evening.

Meanwhile, cool unsettled weather conditions remained well entrenched across the Prairie provinces this week. In addition to many areas receiving significant amounts of precipitation, many new low temperature records were established in all three provinces. On July 10 and 11, all weather stations across Alberta and Saskatchewan registered single digit nighttime temperatures. On the 10th, La Ronge recorded the coldest maximum temperature ever for the month of July, 11.9°C. On July 11, the temperature in Saskatoon dropped to just 3°C above freezing, while Winnipeg had the lowest maximum temperature for that day since 1882, 17°C. The cool, wet weather has delayed haying, slowed crop development and is causing disease concerns in cereals, oilseeds and pulse crops. Preventative spraying is becoming general practise in all regions. Funnel clouds were spotted near Calgary and Edmonton on Thursday and Sunday, respectively.

Elsewhere...

A nearly stationary disturbance provided unsettled, cool conditions in the Yukon. Thunderstorms later in the period produced some hail. A disturbance moving across the Arctic Islands gave varying amounts of cloud, moisture and windy weather to the Northwest Territories. During the week many wind warnings were posted for the region. On Baffin Island, the weather began sunny, with increased

cloud and precipitation during the middle of the week.

It was another cool, unsettled week in British Columbia. A hail storm that occurred on July 4, in the central Okanagan, caused approximately \$7 million in damage to fruits and vegetables - one of the worst storms to hit the area.

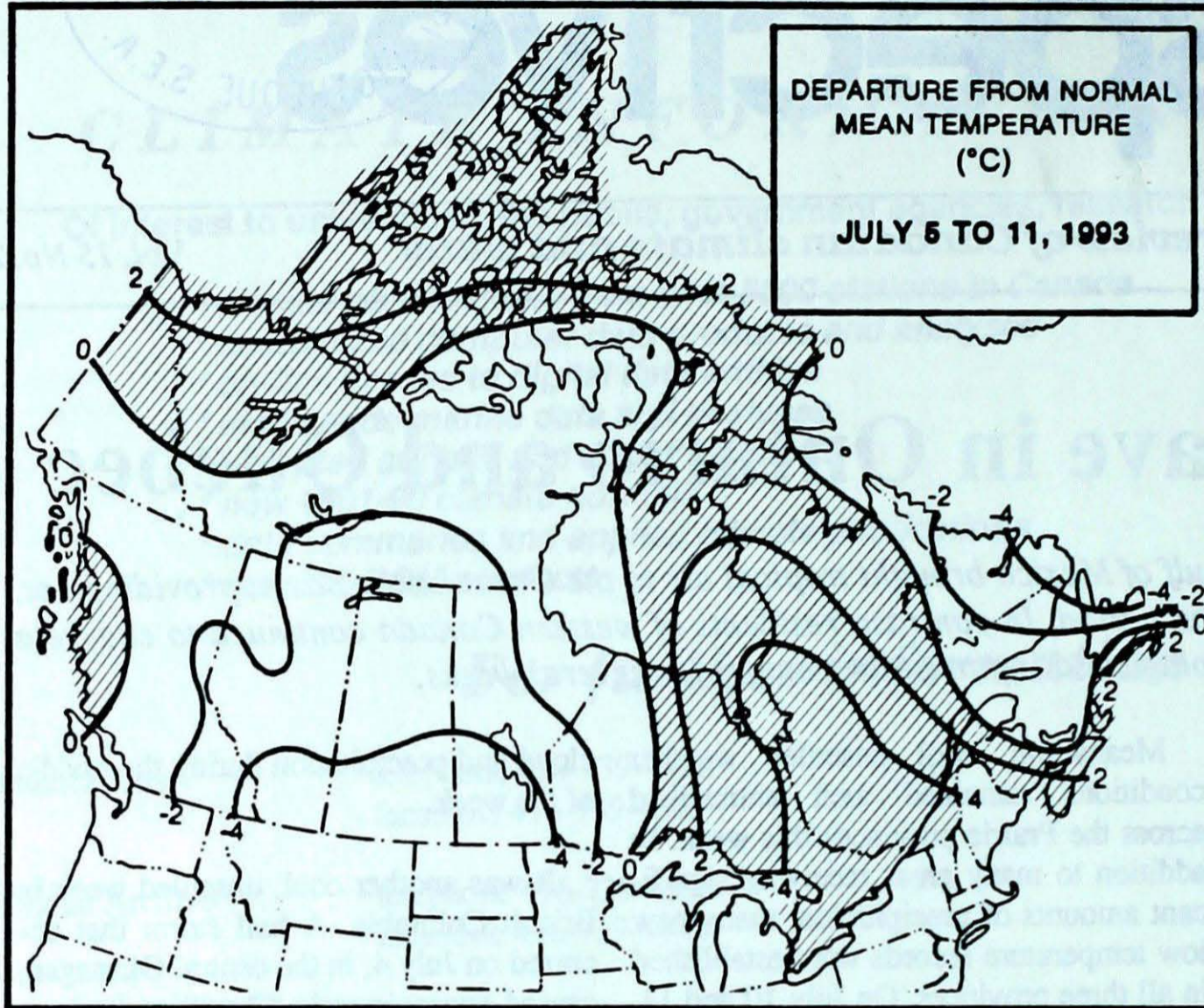
Mostly sunny and very warm summer weather prevailed over much of Quebec during the entire week.

The Maritimes enjoyed a pleasant summer week. Temperatures started off cool but increased each day. On July 10, a thunderstorm spawned a twister near Fredericton. Hail was also reported.

Except for the south coast, most of Newfoundland endured another cool, unsettled week, as a low pressure system remained stalled east of the Island. North-easterly onshore winds resulted in frequent fog and drizzle. Many daily low maximum temperature records were broken, with the mercury, most days, only climbing into the teens.

A look ahead...

For the week of July 19, seasonal summer temperatures should prevail across most of the country, with the exception of Atlantic Canada, where readings will be slightly cooler than normal.



**Weekly normal
temperatures (°C)**

	max.	min.
Whitehorse A	21.2	7.8
Iqaluit A	11.1	3.4
Yellowknife A	21.2	12.1
Vancouver Int'l A	21.3	12.4
Victoria Int'l A	20.9	10.6
Calgary Int'l A	23.0	9.5
Edmonton Int'l A	22.4	9.7
Regina A	26.1	11.9
Saskatoon A	25.3	11.8
Winnipeg Int'l A	26.1	13.6
Ottawa Int'l A	25.7	14.1
Toronto (Pearson Int'l A)	26.2	13.4
Montréal Int'l A	25.3	14.8
Québec A	24.5	12.7
Fredericton A	25.3	12.0
Saint John A	21.9	10.8
Halifax (Shearwater)	21.1	12.3
Charlottetown A	22.7	13.1
Goose A	21.4	10.2
St John's A	19.9	9.9

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Penticton A 28	Dease Lake A 2	Cranbrook A 42
Yukon Territory	Watson Lake A 22	Whitehorse A 4	Whitehorse A 25
Northwest Territories	Fort Smith A 26	Cape Hooper -4	Rankin Inlet A 41
Alberta	High Level A 26	Edson A 0	Pincher Creek (aut) 61
Saskatchewan	Uranium City A 26	Cree Lake 3	Cree Lake 63
Manitoba	Gillam A 26	Churchill A 1	Gillam A 48
Ontario	Windsor A 34	Sioux Lookout A 7	Thunder Bay A 64
Quebec	Montréal Int'l A 34	Kuujuaq A 2	Kuujuaq A 37
New Brunswick	Fredericton A 33	St-Léonard A 8	Moncton A 9
Nova Scotia	Greenwood A 31	Amherst (aut) 8	Greenwood A 5
Prince Edward Island	Charlottetown A 27	Charlottetown A 8	Charlottetown A 13
Newfoundland	Port Aux Basques 27	Churchill Falls A 0	St Anthony 64
	Wabush Lake A 27		

Across The Country...

Highest Mean Temperature	Windsor A (Ont.) 27
	Clyde A (N.W.T.) 4
Lowest Mean Temperature	Hall Beach A (N.W.T.) 4

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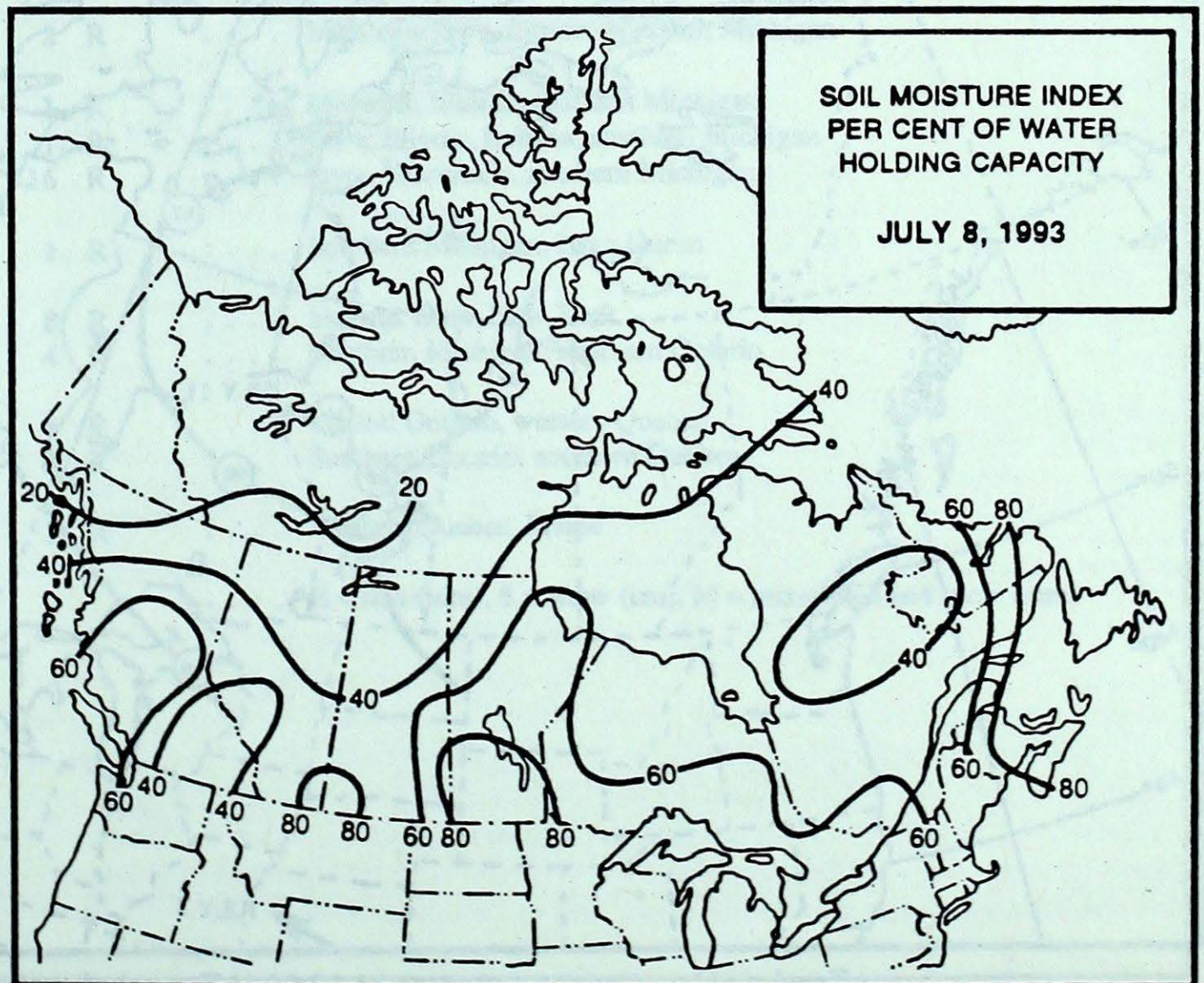
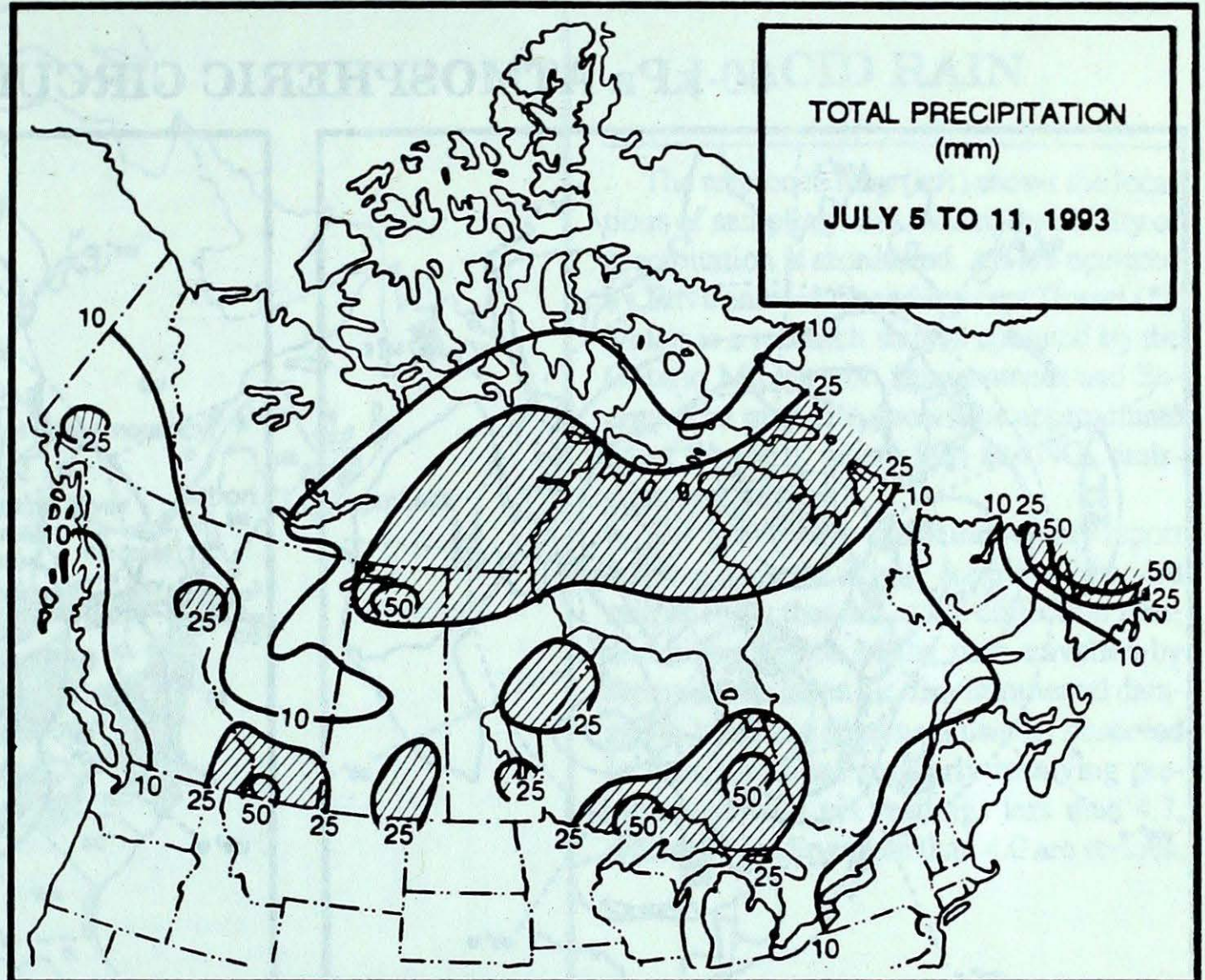
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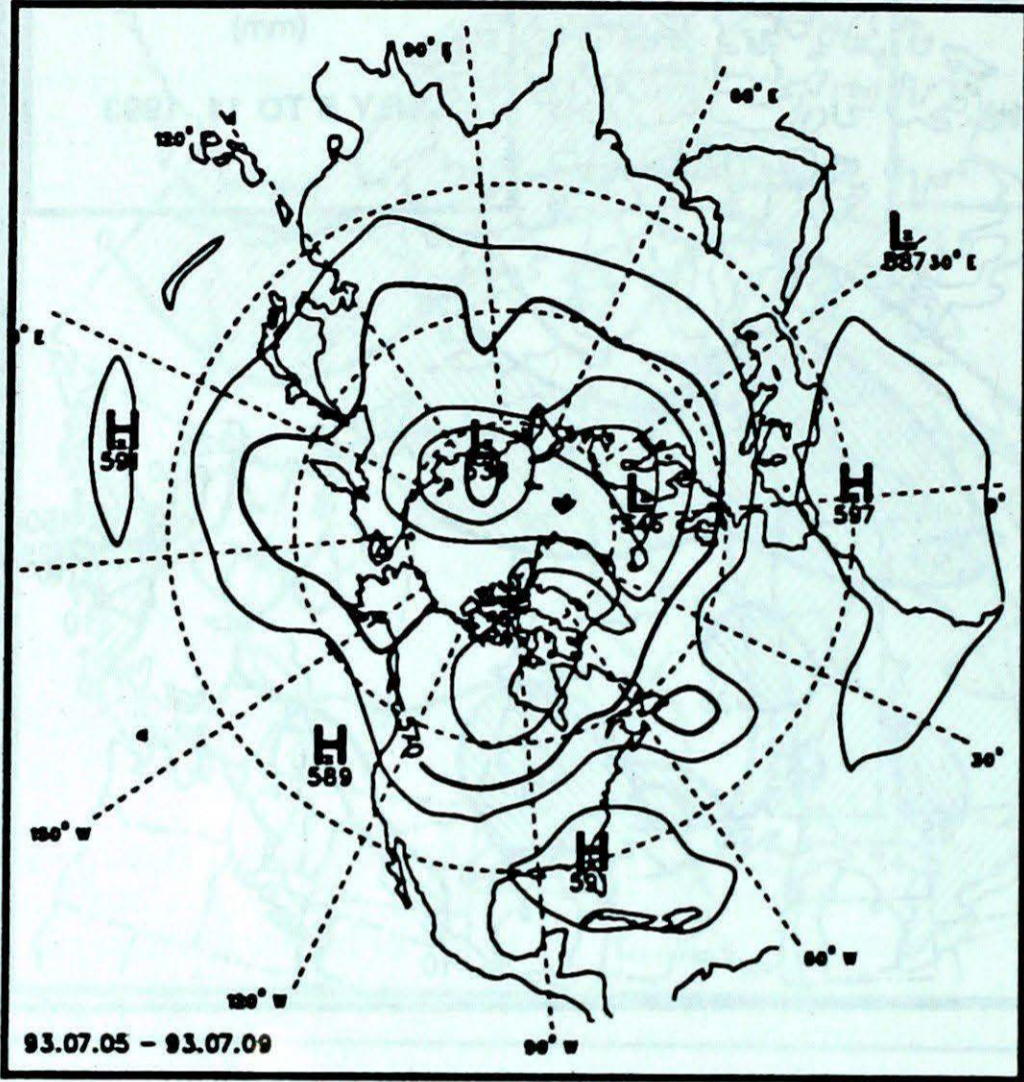
The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily reflect the views of the Atmospheric Environment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

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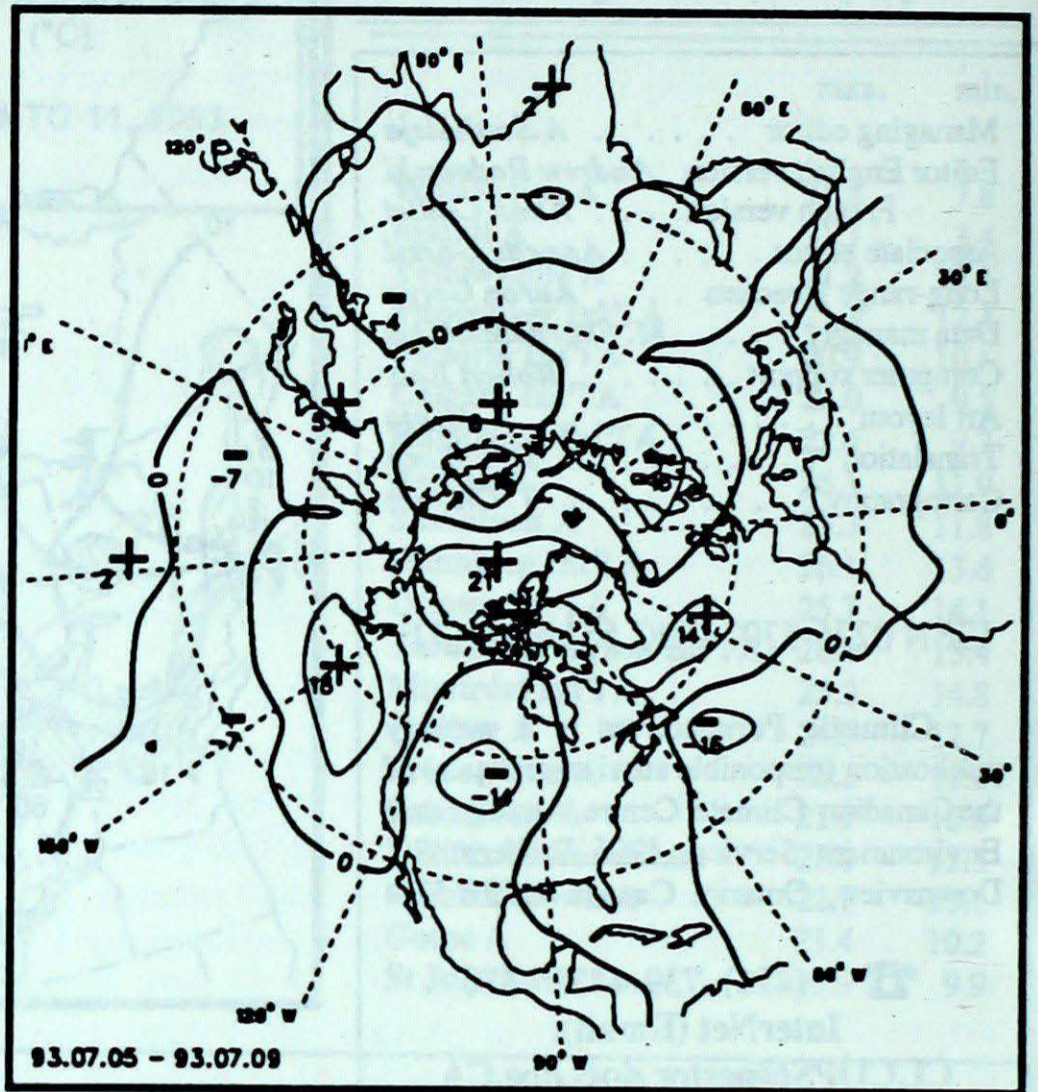
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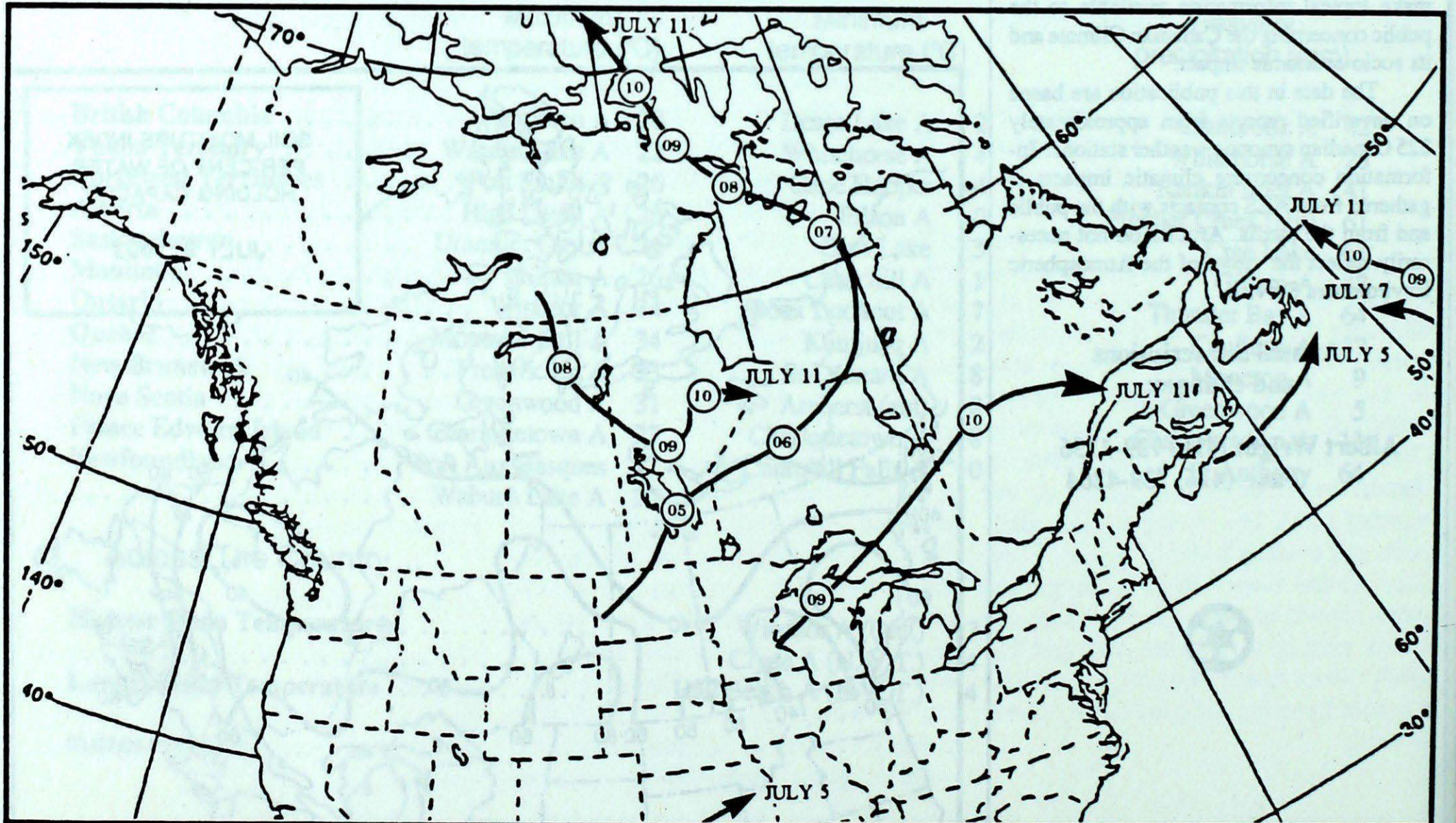
50-kPa ATMOSPHERIC CIRCULATION



Mean geopotential height
50-kPa level (10 decametre intervals)

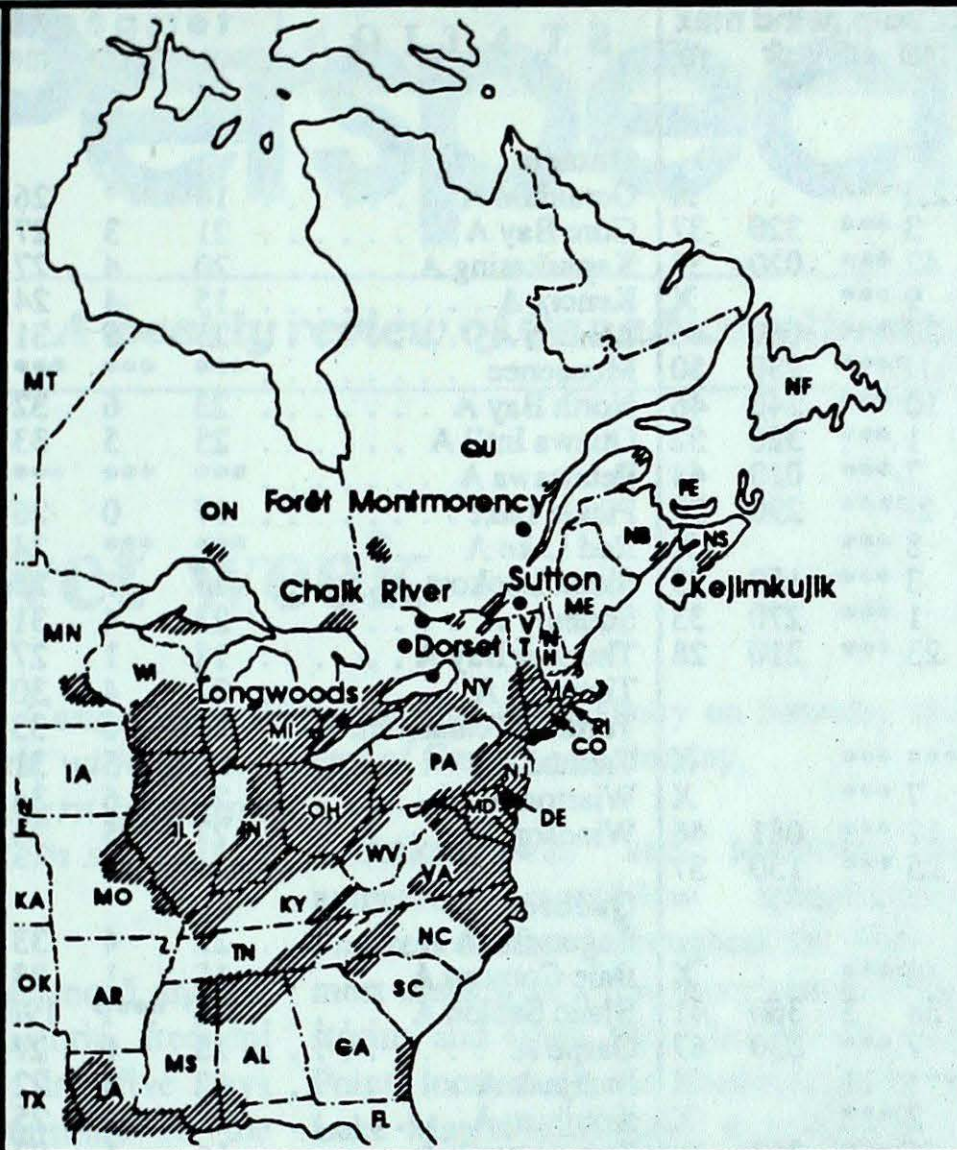


Mean geopotential height anomaly
50-kPa level (10 decametre intervals)



Tracks of low pressure centres at 12:00 U.T. each day during the period.

- ALABAMA - AL
- ARKANSAS - AR
- CONNECTICUT - CO
- DELAWARE - DE
- FLORIDA - FL
- GEORGIA - GA
- ILLINOIS - IL
- INDIANA - IN
- IOWA - IA
- KANSAS - KA
- KENTUCKY - KY
- LOUISIANA - LA
- MAINE - ME
- MANITOBA - ME
- MARYLAND - MT
- MASSACHUSETTS - MA
- MICHIGAN - MI
- MINNESOTA - MN
- MISSISSIPPI - MS
- MISSOURI - MO
- NEBRASKA - NE
- NEW BRUNSWICK - NB
- NEW FOUNDLAND - NF
- NEW HAMPSHIRE - NH
- NEW JERSEY - NJ
- NEW YORK - NY
- NORTH CAROLINA - NC
- NORTH DAKOTA - ND
- NOVA SCOTIA - NS
- OHIO - OH
- OKLAHOMA - OK
- ONTARIO - ON
- PENNSYLVANIA - PA
- PRINCE EDWARD ISLAND - PE
- QUÉBEC - QC
- RHODE ISLAND - RI
- SOUTH CAROLINA - SC
- SOUTH DAKOTA - SD
- TENNESSEE - TN
- TEXAS - TX
- VERMONT - VT
- VIRGINIA - VA
- WEST VIRGINIA - WV
- WISCONSIN - WI



ACID RAIN

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 Environment and Energy. 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.

SITE	day	pH	amount	AIR PATH TO SITE
July 4 to 10, 1993				
Longwoods	09	5.1	2 R	Missouri, Iowa, Illinois, southern Michigan
Dorset *	06	4.0	1 R	Missouri, Illinois, southern Michigan
	07	4.4	1 R	Iowa, Illinois, Indiana, southern Michigan
	09	4.4	16 R	Iowa, Wisconsin, southern Michigan
Chalk River	08	4.1	1 R	Southern Michigan, Lake Huron
Sutton	06	3.9	8 R	Indiana, Ohio, New York
	09	3.8	4 R	Southern Michigan, southern Ontario
Montmorency	08	4.2	4 R	Central Ontario, western Quebec
	09	4.0	3 R	Southern Ontario, southern Quebec
Kejimikujik	10	4.0	2 R	Western Quebec, Maine
R = rain (mm), S = snow (cm), M = mixed rain and snow (mm)				

STATION	temperature				precip. ptot	st	wind max		STATION	temperature				precip. ptot	st	wind max										
	mean	anom	max	min			dir	vel		mean	anom	max	min			dir	vel									
British Columbia									Ontario																	
Blue River A	14P	-2P	22P	5P	22P***			X	Geraldton A	18	***	26	11	44	***	220	56									
Comox A	16	-1	22	11	3	***	320	37	Gore Bay A	21	3	27	15	23	***	170	54									
Cranbrook A	14	-4	20	7	42	***	020	37	Kapuskasing A	20	4	27	13	47	***	150	67									
Fort Nelson A	15	-2	22	7	9	***		X	Kenora A	15	-4	24	8	10	***	190	59									
Fort St John A	13	-2	19	7	27	***	050	46	London A	25	5	31	18	48	***	280	120									
Kamloops A	19P	-2P	27P	11P	11P***	230	50		Moosonee	***	***	***	***	***	***		X									
Penticton A	18	-2	28	10	10	***	240	46	North Bay A	23	6	32	15	4	***	220	48									
Port Hardy A	14	1	18	9	1	***	320	52	Ottawa Int'l A	25	5	33	17	17	***	300	50									
Prince George A	15	0	22	8	7	***	010	44	Petawawa A	***	***	***	***	***	***		X									
Prince Rupert A	14P	1P	18P	8P	2P***	290	39		Pickle Lake	17	0	26	8	14	***	200	50									
Smithers A	15	1	23	7	8	***		X	Red Lake A	***	***	24	***	***	***	190	56									
Vancouver Int'l A	16	-1	21	10	3	***	150	35	Sioux Lookout A	17	-1	25	7	16	***	200	56									
Victoria Int'l A	15	-1	22	8	1	***	270	33	Sudbury A	23	4	31	14	29	***	180	59									
Williams Lake A	13	-2	20	6	23	***	210	28	Thunder Bay A	18	1	27	10	64	***	240	41									
Yukon Territory									Québec																	
Komakuk Beach A	***	***	***	***	***	***		X	Bagotville A	22	4	33	12	14	***	270	72									
Teslin (aut)	14	***	21	5	7	***		X	Baie Comeau A	15	-1	23	7	26	***	300	43									
Watson Lake A	15	-1	22	7	12	***	081	46	Blanc Sablon A	11P	***P	19P	5P	9P***	020	69										
Whitehorse A	13	-2	21	4	25	***	150	37	Gaspé A	15	-1	27	7	17	***	310	37									
Northwest Territories									New Brunswick																	
Alert	5P	1P	14P	-1P	0P***			X	Fredericton A	22	3	33	13	1	***	290	52									
Baker Lake A	10	-1	21	4	38	3	360	41	Miscou Island (aut)	15	***	22	10	1	***		X									
Cambridge Bay A	8	0	12	4	7	***	030	67	Moncton A	19	1	28	8	9	***	290	48									
Cape Dyer A	***	***	***	***	***	11		X	Saint John A	20	4	30	12	4	***	240	33									
Clyde A	4	0	15	-1	2	***		X	St Leonard A	21	***	32	8	2	***	230	33									
Coppermine A	11P	1P	18P	4P	2P***	350	46	Nova Scotia																		
Coral Harbour A	9	0	19	1	20	***	080	83	Greenwood A	21	2	31	10	5	***	260	52									
Eureka	8	3	14	3	1	***		X	Shearwater A	19	2	30	10	1	***	330	69									
Fort Smith A	14	-3	26	6	9	***	330	46	Sydney A	***	***	25	***	***	***	360	74									
Hall Beach A	4	-1	9	1	11	***	070	44	Yarmouth A	18	3	26	11	1	***	320	33									
Inuvik A	17	3	25	7	10	***	110	41	Prince Edward Island																	
Iqaluit A	6	-1	12	2	25	***	140	44	Charlottetown A	16	-2	27	8	13	***	360	63									
Mould Bay A	***	***	15	***	***	***		X	East Point (auto)	14	***	19	10	1	***		X									
Norman Wells A	18	1	26	9	3	***	270	43	Newfoundland																	
Resolute A	7	2	14	2	0	***	090	70	Cartwright	8P	-5P	24P	2P	10P***			X									
Yellowknife A	16P	-1P	26P	9P	18P***	030	69	Churchill Falls A	8P	-6P	26P	-4P	9P***	029	0											
Alberta									Gander Int'l A																	
Calgary Int'l A	13	-4	19	7	14	***	350	61	9	-7	21	4	13	***	340	54										
Cold Lake A	14	-4	25	4	11	***	320	52	Goose A	13	-3	23	0	2	***	300	33									
Edmonton Namao A	14	-3	22	7	13	***	300	54	Stephenville A	14	-1	22	8	3	***	330	52									
Fort McMurray A	14	-3	26	6	18	***	340	44	St John's A	10	-5	16	6	29	***	010	35									
Grande Prairie A	14	-2	20	7	24	***	340	39	St Lawrence	14	3	23	8	13	***		X									
High Level A	15	-1	26	3	9	***	360	48	Wabush Lake A	14	1	27	2	23	***	270	74									
Lethbridge A	14	-5	21	5	29	***	310	46	93/07/05-93/07/11																	
Medicine Hat A	15	-5	23	6	44	***	280	41																		
Peace River A	14	-1	21	7	5	***	320	46																		
Saskatchewan									Manitoba																	
Cree Lake	12	-4	24	3	63	***	030	50	Brandon A	13	-6	22	4	5	***	300	46									
Estevan A	14	-6	21	6	12	***	330	61	Churchill A	8	-4	24	1	4	***	330	48									
La Ronge A	14	-3	23	4	19	***	310	56	Lynn Lake A	13	-3	24	6	18	***	060	37									
Regina A	14	-5	23	5	37	***	330	54	The Pas A	14	-4	25	9	22	***	030	52									
Saskatoon A	14	-5	24	3	6	***	350	56	Thompson A	14	-1	25	5	23	***	040	46									
Swift Current A	13	-5	22	4	15	***	300	61	Winnipeg Int'l A	15	-5	26	7	18	***	180	44									
Yorkton A	14	-5	23	7	12	***	340	43																		

mean = mean weekly temperature, °C
 max = maximum weekly temperature, °C
 min = minimum weekly temperature, °C
 anom = mean temperature anomaly, °C

ptot = weekly precipitation total in mm
 st = snow thickness on the ground in cm
 dir = direction of max wind, deg. from north.
 vel = wind speed in km/h

— Annotations —

X = no observation
 P = less than 7 days of data
 * = missing data when going to printing.