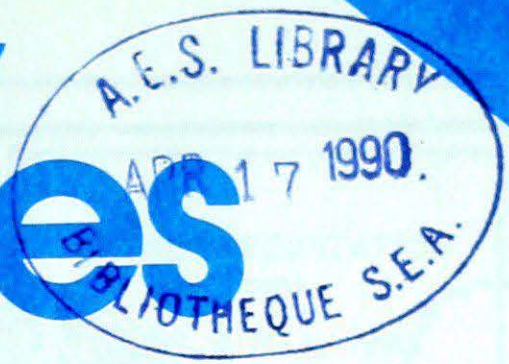


# Climatic Perspectives



April 2 to 8, 1990

A weekly review of Canadian climate

Vol.12 No.14

## Great Lakes water levels continue to decline

*Few thought it possible, but in just a few short years, below-normal precipitation managed to bring the Great Lakes water levels down to near- or even below-normal values from the record highs of 1986. Now there is concern that some of the Lake levels are dropping too low.*

During the December-to-March period, the Great Lakes drainage basin received precipitation amounts equivalent to 78%, 102%, 118% and 92% of the average for each of the 4 months, respectively. During March, the weather, ice, water supply and outflow conditions were such that the water level of Lake Superior continued its seasonal decline. Lake St. Clair experienced a decline at a time when it normally rises, while Lakes Erie and Ontario rose seasonally at a slower-than-average rate. Currently, the levels of Lakes Superior, Huron and Georgian Bay are 18 to 19 centimetres below their long-term, 1900-1988, average levels, while Lakes Erie and St. Clair remain above average. In March, Lake Superior was 17 cm below the 1955 chart datum. Lake Ontario, whose water levels can be controlled, is actually 37 cm above last year's level, but it is expected that a higher outflow into the St. Lawrence will bring the water level down to slightly-below average within the next two months.

### Prairie soil moisture reserves improved over last year

Spring soil moisture levels on the Prairies for annual and perennial crops, pastures

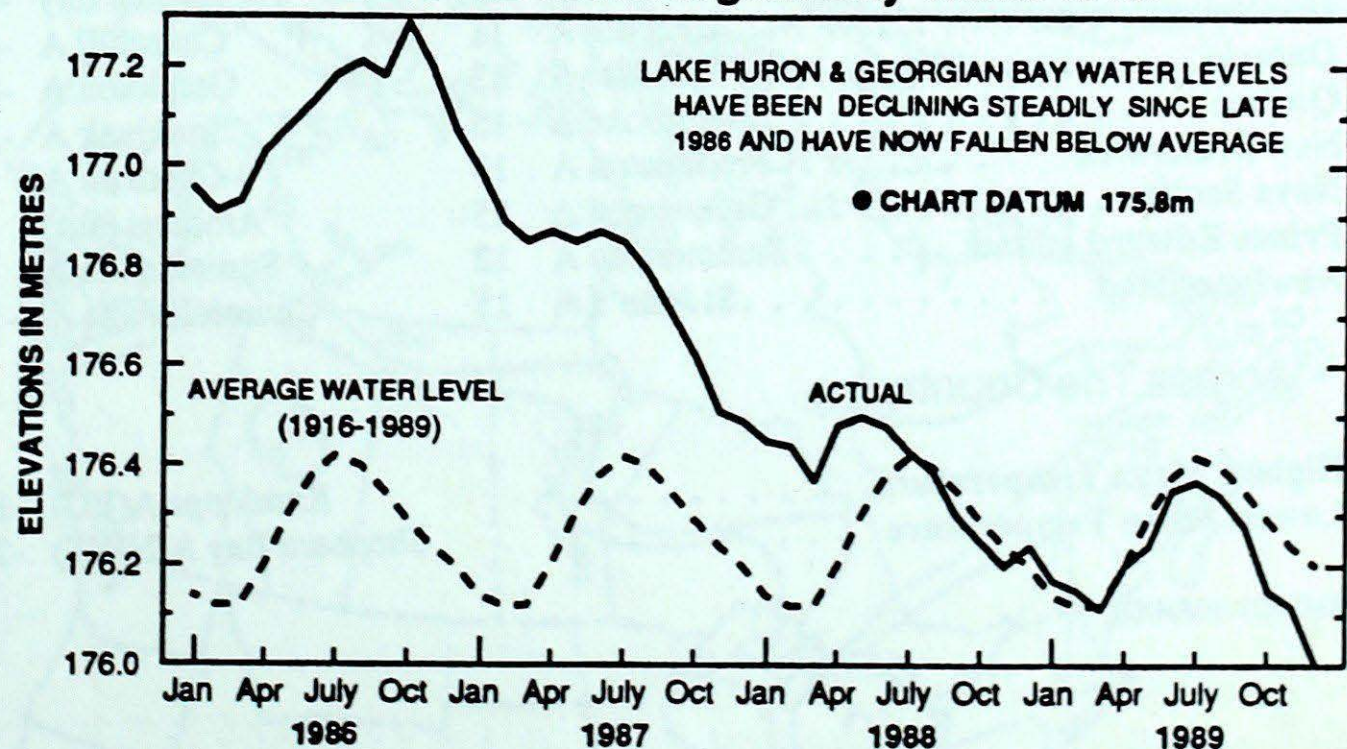
and forage fields are generally higher than they were in 1989, but like all generalizations, this does not apply everywhere. Two exceptions are the Interlake district and the southwest corner of Manitoba, where it is notably drier than last year. There is also concern about the very dry soil conditions in southern Alberta and southwestern Saskatchewan. However, most areas should initially have some soil moisture reserves that can be tapped between growing-season rainfalls. Total precipitation in the agricultural districts from December 1989 to February 1990 was be-

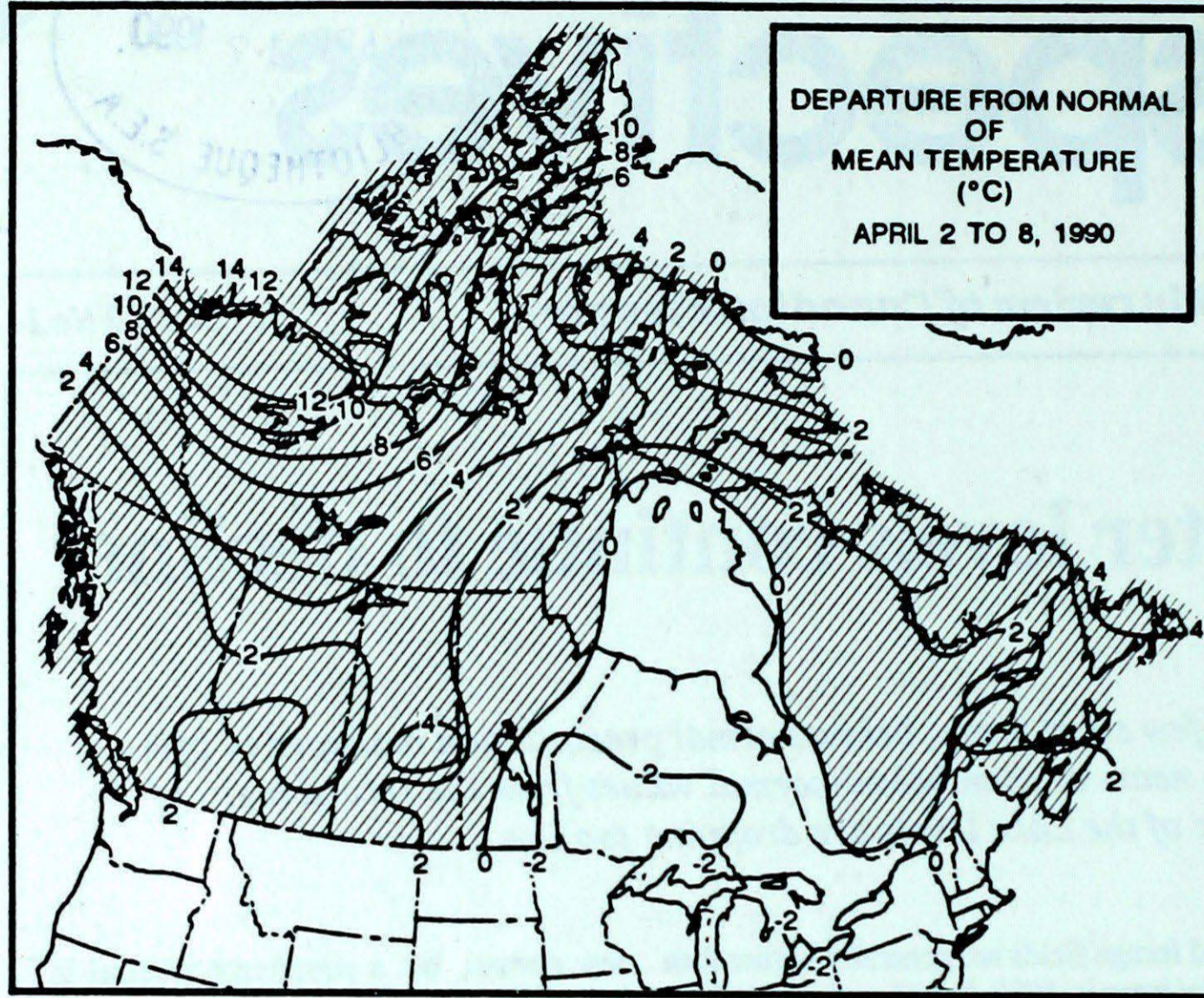
low normal, but a significant reversal in March saw most areas receive substantial amounts of snow and/or rain, in some cases more than twice the normal amount.

### Cool weather lingers on . . .

A trough of low pressure over the north-eastern Arctic will continue to bring below normal temperatures from the northern Prairies through northern Ontario into Quebec for the week starting April 16. The west coast of B.C. will also experience below-normal readings. Elsewhere, near-normal temperatures are expected.

Lake Huron/Georgian Bay Water level





DEPARTURE FROM NORMAL OF MEAN TEMPERATURE (°C) APRIL 2 TO 8, 1990

**Weekly normal temperatures (°C)**

	max.	min.
Whitehorse A	3.6	-6.6
Iqaluit A	-11.8	-21.6
Yellowknife A	-5.9	-18.3
Vancouver Int'l A	12.0	3.9
Victoria Int'l A	12.2	3.3
Calgary Int'l A	8.1	-4.4
Edmonton Int'l A	6.1	-5.3
Regina A	5.6	-5.1
Saskatoon A	5.2	-5.3
Winnipeg Int'l A	4.4	-5.5
Ottawa Int'l A	6.1	-2.7
Toronto (Pearson Int'l A)	7.6	-1.7
Montréal Int'l A	6.1	-1.9
Québec A	4.1	-4.1
Fredericton A	6.6	-3.0
Saint John A	5.7	-3.1
Halifax (Shearwater)	6.4	-1.2
Charlottetown A	4.2	-3.1
Goose A	0.7	-8.3
St John's A	3.3	-3.3

**Weekly temperature and precipitation extremes**

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Penticton A 23	Dease Lake -14	Prince Rupert A 14
Yukon Territory	Beaver Creek 9	Ogilvie -30	Komakuk Beach A 2
Northwest Territories	Fort Simpson A 11	Clyde A -40	Iqaluit A 20
Alberta	Medicine Hat A 23	High Level A -12	Red Deer A 16
Saskatchewan	Swift Current A 21	Collins Bay -19	Broadview 5
Manitoba	Dauphin A 11	Churchill A -23	Brandon A 13
Ontario	Windsor A 13	Geraldton A -23	Petawawa A 46
Québec	Sherbrooke A 15	Inukjuak A -28	Gaspe A 51
New Brunswick	Fredericton A 13	Chatham A -8	Saint John A 39
Nova Scotia	Greenwood A 15	Amherst (aut) -5	Shearwater A 65
Prince Edward Island	Summerside A 12	Summerside A -5	Charlottetown A 36
Newfoundland	St John's A 15	Churchill Falls A -18	Burgeo 79

**Across The Country...**

Highest Mean Temperature	Kamloops A(BC) 11
Lowest Mean Temperature	Shepherd Bay A(NWT) -25

CLIMATIC PERSPECTIVES  
VOLUME 12

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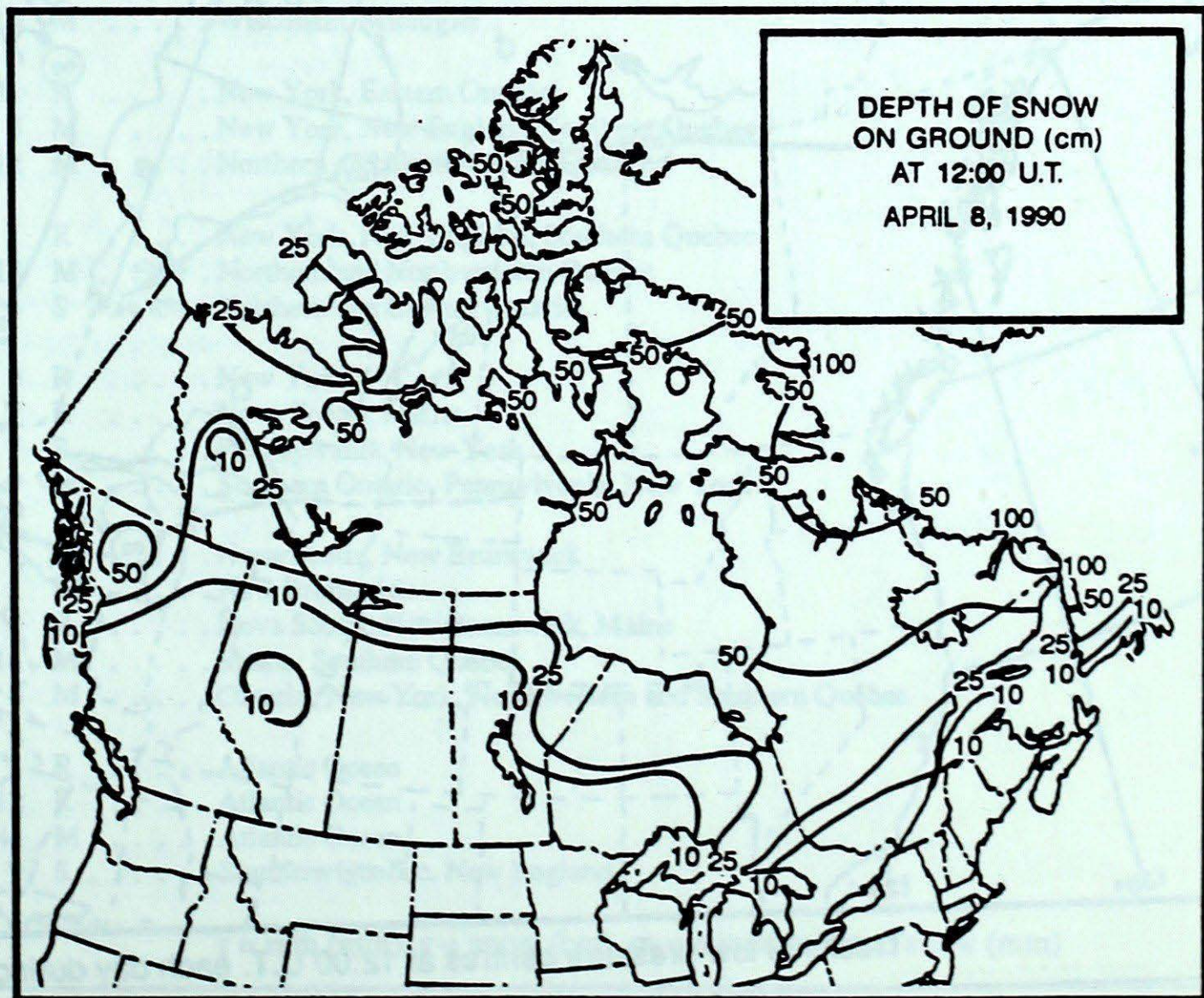
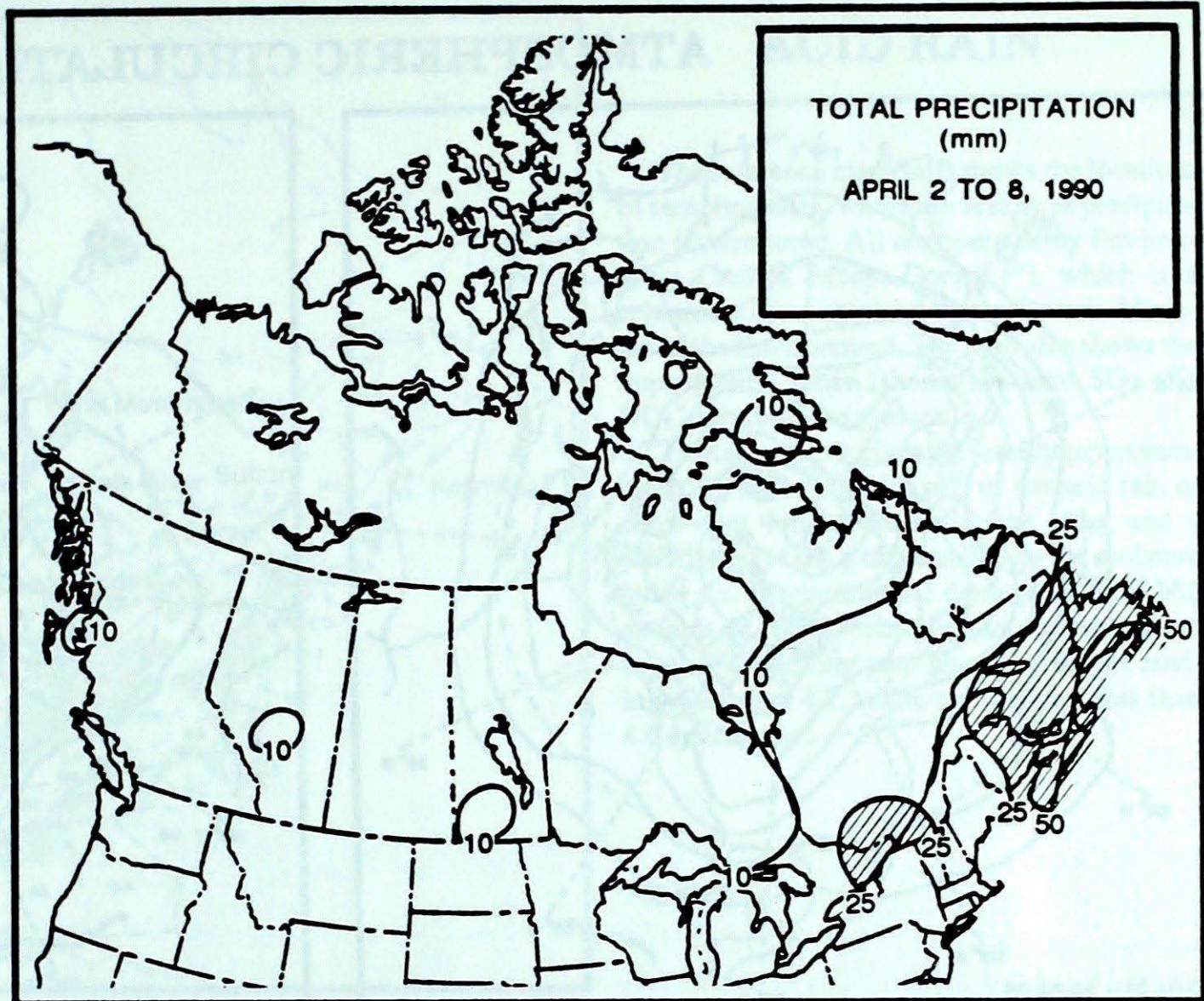
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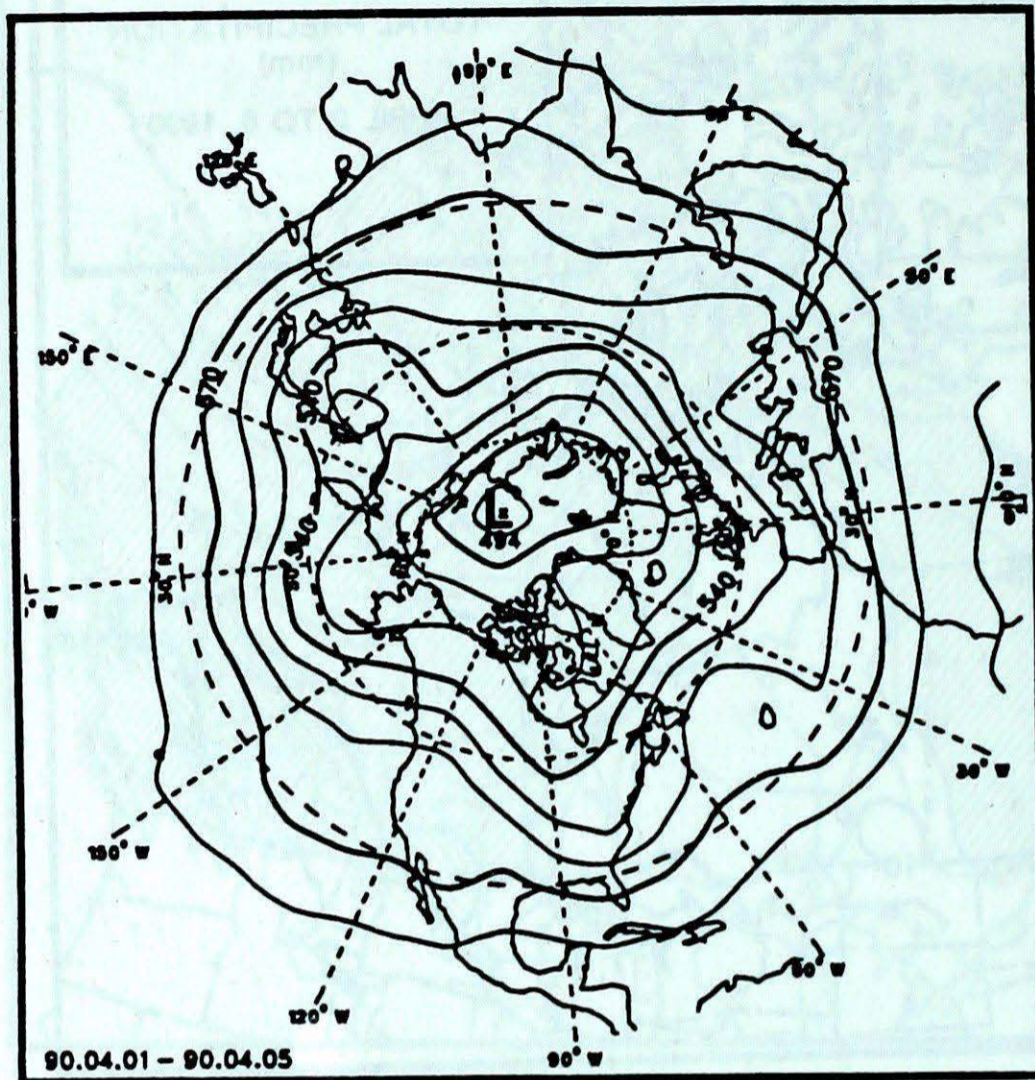
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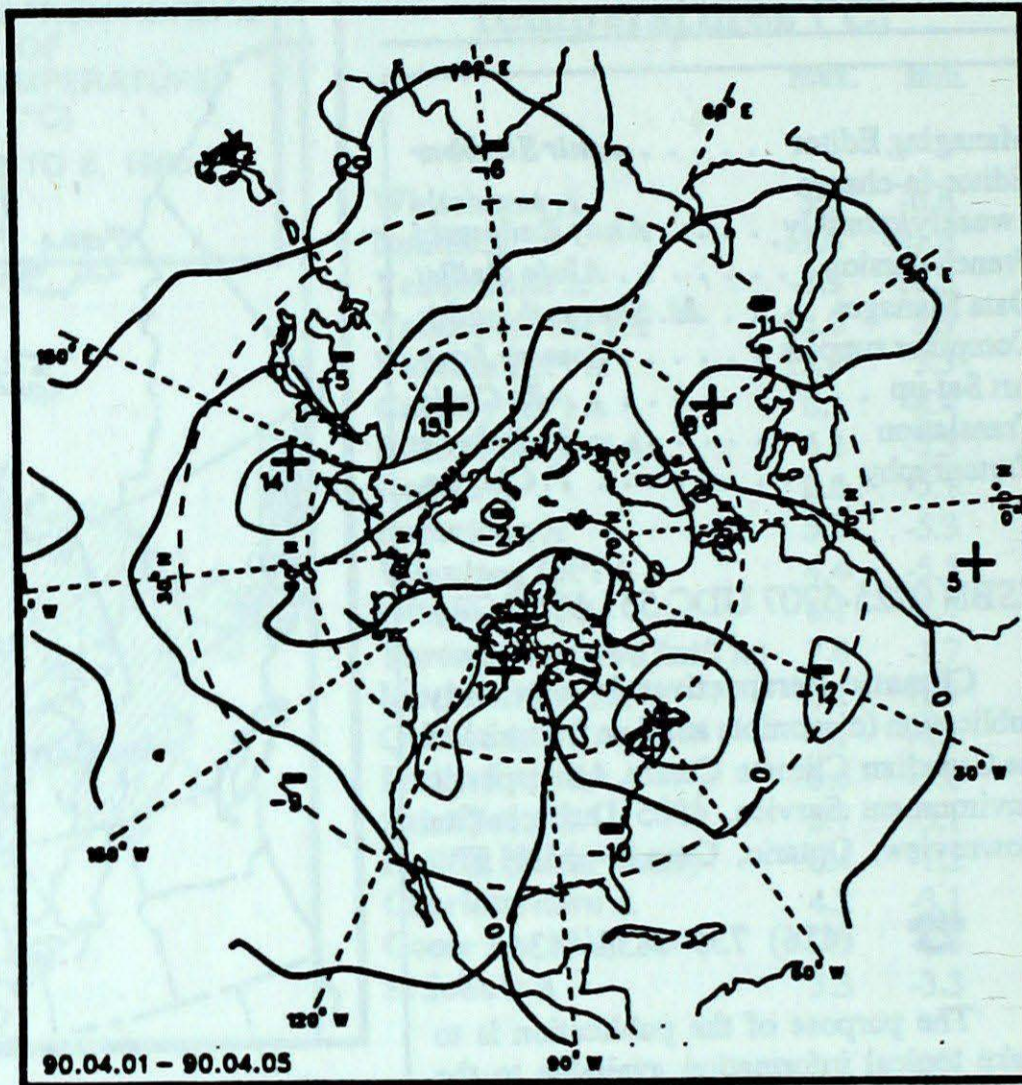
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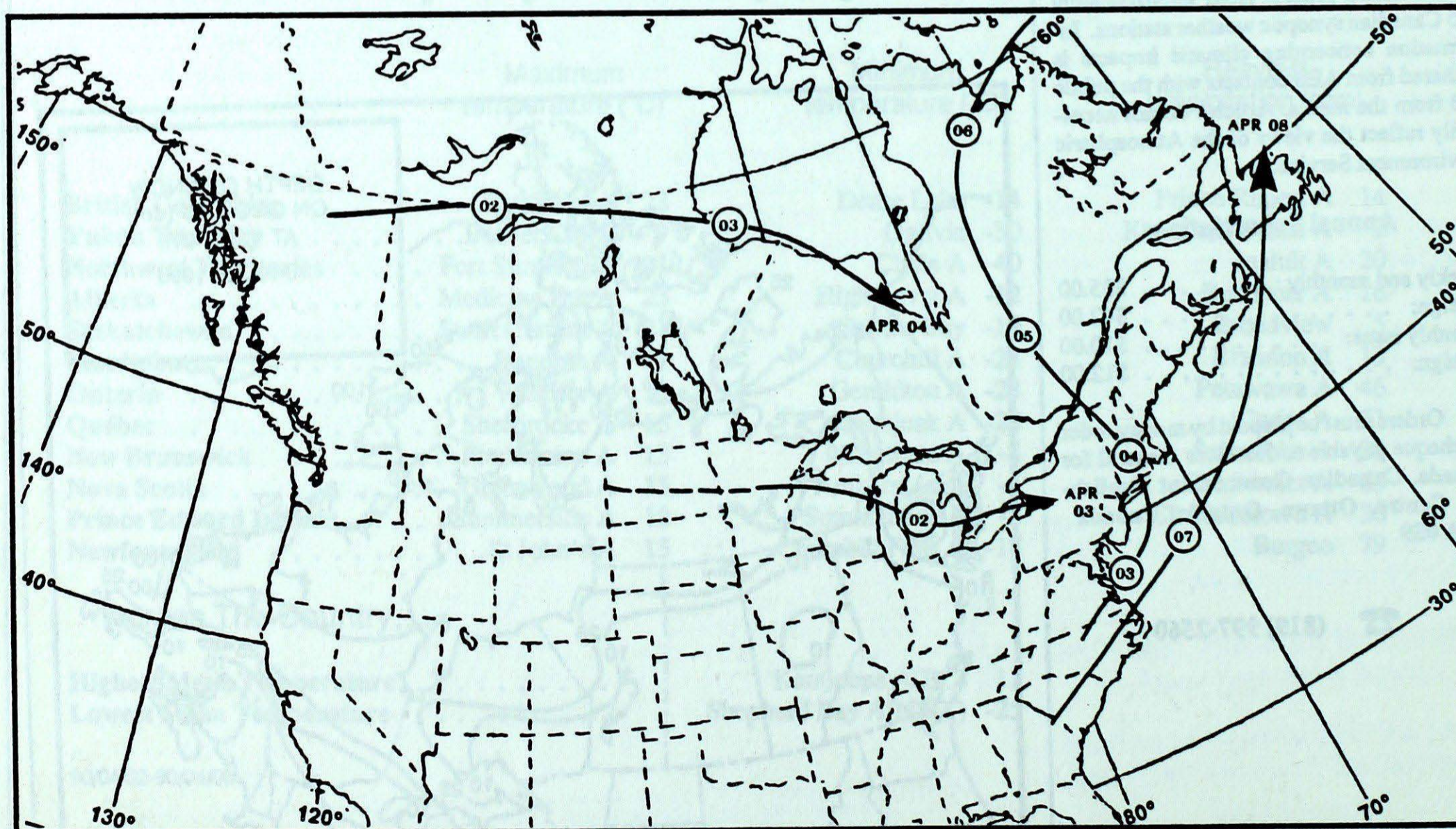
### ATMOSPHERIC CIRCULATION



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



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

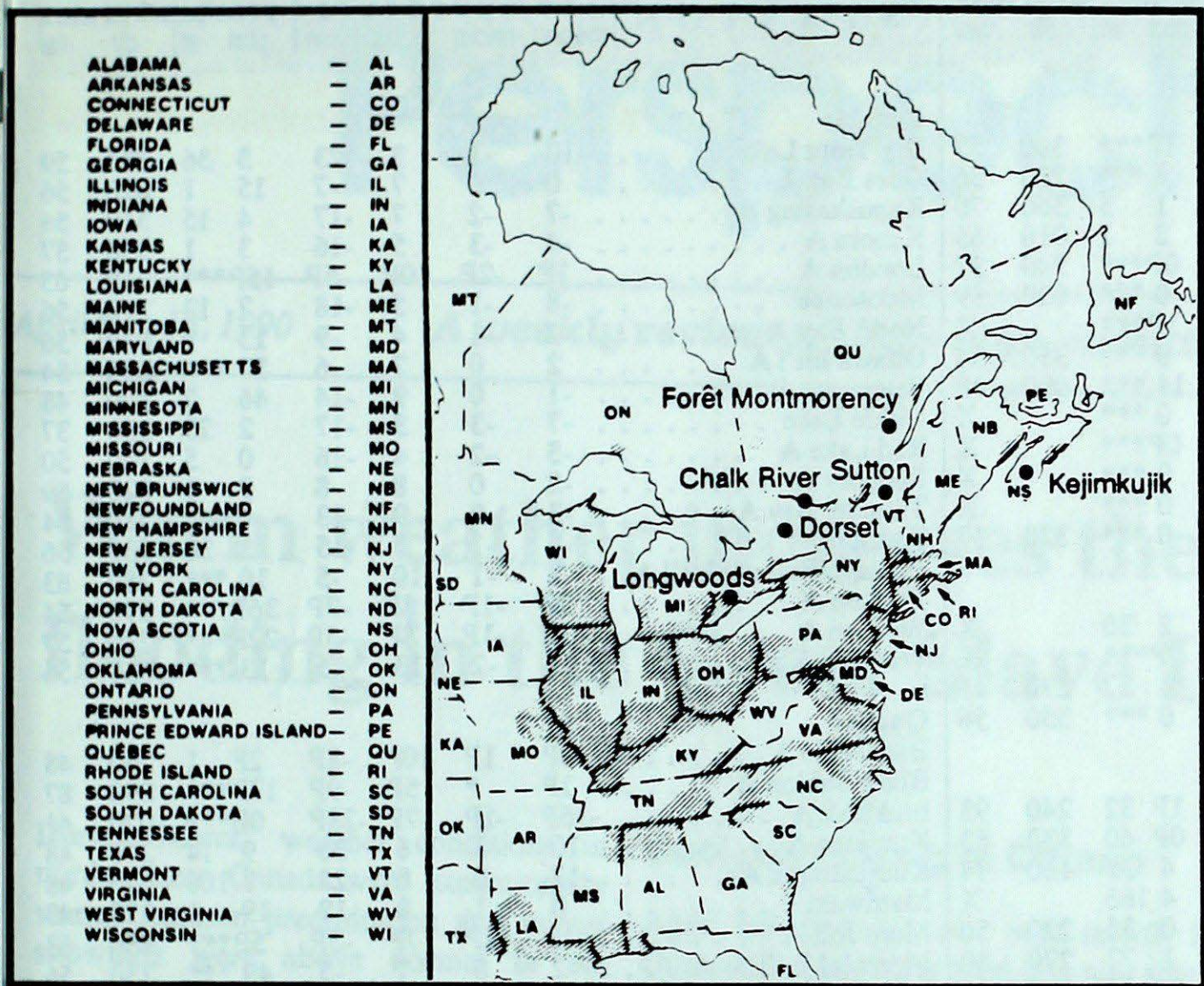


Tracks of low pressure centres at 12:00 U.T. each day during the period.

## 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 the Environment. The map also shows the approximate areas (shaded), where SO<sub>2</sub> and NO<sub>x</sub> 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	From April 1st to 7th, 1990
Longwoods	1	3.9	5 R	.....	Indiana, Ohio, Southern Michigan, Southern Ontario
	2	3.7	7 M	.....	Indiana, Ohio, Pennsylvania, Southern Ontario
	5	5.1	5 M	.....	Wisconsin, Michigan
Dorset *	2	4.3	21 R	.....	New York, Eastern Ontario
	3	4.4	3 M	.....	New York, New England, Southern Quebec
	4	4.8	12 M	.....	Northern and Northwestern Quebec
Chalk River	3	4.2	1 R	.....	New York, New England, Southern Quebec
	4	5.1	18 M	.....	Northern and Northwestern Quebec
	5	4.5	3 S	.....	Northern and Central Ontario
Sutton	1	4.4	9 R	.....	New York
	3	4.4	7 R	.....	Nova Scotia, Maine
	4	4.3	7 R	.....	Pennsylvania, New York
	5	4.7	9 M	.....	Southern Ontario, Pennsylvania, New York
Montmorency	1	4.8	2 S	.....	Nova Scotia, New Brunswick
	2	4.4	1 M	.....	New Brunswick
	3	4.9	5 R	.....	Nova Scotia, New Brunswick, Maine
	4	4.5	18 M	.....	Maine, Southern Quebec
	5	4.5	4 M	.....	Ontario, New York, Northwestern and Southern Quebec
Kejimikujik	2	5.4	1 R	.....	Atlantic Ocean
	3	5.2	12 R	.....	Atlantic Ocean
	4	5.4	44 M	.....	Atlantic Ocean
	5	4.4	9 S	.....	Southern Quebec, New England

r = rain (mm), s = snow (cm), m = mixed rain and snow (mm)

STATION	temperature				precip.		wind max		STATION	temperature				precip.		wind max	
	mean	anom	max	min	ptot	st	dir	vel		mean	anom	max	min	ptot	st	dir	vel
<b>British Columbia</b>								<b>Ontario</b>									
Cape St James	8P	2P	13P	4P	1P***		300	57	Big Trout Lake	-10	-1	3	-23	3	36	330	59
Cranbrook A	8	3	21	-2	1 ***		210	56	Gore Bay A	0	0	7	-7	15	1	020	56
Fort Nelson A	2	3	10	-8	1 3		360	70	Kapuskasing A	-7	-2	7	-17	4	15	310	54
Fort St John A	2	1	13	-12	2 1		010	65	Kenora A	-4	-3	5	-16	3	1	350	57
Kamloops A	11P	4P	23P	-1P	0P***		240	37	London A	1P	-2P	10P	-5P	15P***		310	65
Penticton A	10	3	23	0	0 ***		030	39	Moosonee	-8	-1	5	-18	7	13	310	56
Port Hardy A	7P	0P	12P	0P	1P***			X	North Bay A	-2	-1	4	-9	13	9	020	56
Prince George A	4	0	14	-5	0 ***		360	54	Ottawa Int'l A	2	0	7	-6	37 ***		300	54
Prince Rupert A	5	1	12	-2	14 ***		090	48	Petawawa A	-1	0	9	-14	46	2	300	48
Revelstoke A	8	4	18	-2	0 ***			X	Pickle Lake	-7	-3	3	-17	2	23	350	37
Smithers A	5P	2P	15P	-5P	0P***			X	Red Lake A	-5	-2	4	-16	0	5	340	50
Vancouver Int'l A	9	1	14	3	0 ***			X	Sudbury A	-2	0	8	-8	9	1	020	50
Victoria Int'l A	9	1	16	1	0 ***			X	Thunder Bay A	-3	-2	9	-13	4 ***		280	54
Williams Lake A	5	1	15	-4	0 ***		320	37	Timmins A	-5	-1	8	-15	3	30	330	56
<b>Yukon Territory</b>								<b>Toronto(Pearson Int'l A)</b>									
Komakuk Beach A	-8	14	3	-16	2 30			X	Trenton A	2P	-1P	8P	-7P	36P***		290	54
Teslin (aut)	-1P	*	4P	-12P	0P***			X	Warton A	1P	-1P	8P	-5P	22P***		270	59
Watson Lake A	-2	1	6	-14	1 37		270	41	Windsor A	3	-2	13	-5	13 ***		330	56
Whitehorse A	0	1	6	-10	0 ***		350	56	<b>Quebec</b>								
<b>Northwest Territories</b>								Bagotville A									
Alert	-18P	12P	-11P	-26P	1P 32		240	93	Blanc Sablon A	1P	*	5P	-9P	17P***		090	87
Baker Lake A	-21P	2P	-11P	-32P	0P 40		330	63	Inukjuak A	-16P	-1P	-7P	-28P	0P***		020	41
Cambridge Bay A	-19	8	-6	-29	4 37		160	74	Kuujuuaq A	-10	3	6	-26	9	14	270	48
Cape Dyer A	-18	-1	-7	-29	4 166			X	Kuujuarapik A	-12	0	0	-28	8	106	240	48
Clyde A	-23	-2	-9	-40	0 35		220	50	Maniwaki	0	1	8	-12	19	1	220	43
Coppermine A	-12	13	2	-24	1 77		270	80	Mont Joli A	1P	2P	7P	-5P	5P***		050	63
Coral Harbour A	-21P	-1P	-12P	-31P	0P 51		020	85	Montréal Int'l A	2	0	7	-5	49 ***		230	56
Eureka	-23	11	-11	-37	2 14		160	96	Natashquan A	-1P	2P	5P	-11P	40P 42		120	63
Fort Smith A	-3P	4P	7P	-13P	0P 27		320	56	Québec A	0P	0P	4P	-7P	9P 36		070	65
Hall Beach A	-24	0	-18	-33	1 45		020	56	Schefferville A	-10	0	5	-22	9	50	150	52
Inuvik A	-6	13	4	-14	1 38		300	76	Sept-Îles A	-3P	-1P	4P	-8P	0P***		240	52
Iqaluit A	-14	2	-7	-23	20 38		110	54	Sherbrooke A	3P	4P	15P	-7P	4P 1		020	57
Mould Bay A	-18	11	-4	-29	4 24		190	69	Val-d'Or A	-5	-2	6	-23	26	30	330	50
Norman Wells A	-1	11	8	-11	2 2		310	74	<b>New Brunswick</b>								
Resolute A	-23	5	-16	-31	1 29		110	98	Charlo A	1P	3P	7P	-6P	27P***		270	61
Yellowknife A	-7	5	7	-18	6 40		310	57	Chatham A	1P	1P	7P	-8P	1P 9		230	48
<b>Alberta</b>								Fredericton A									
Calgary Int'l A	4	2	20	-8	8 3		310	59	Moncton A	3	2	13	-4	24	1	300	44
Cold Lake A	2	2	11	-7	0 1		020	41	Saint John A	3	2	12	-7	39	6	200	59
Edmonton Namao A	3	1	13	-7	6 12		290	48	<b>Nova Scotia</b>								
Fort McMurray A	1	2	13	-9	2 2		020	43	Greenwood A	5	2	15	-4	39	10	140	67
High Level A	0	4	11	-12	7 15		320	50	Shearwater A	4	1	10	-2	65	1	110	63
Jasper	3	1	15	-8	0 1			X	Sydney A	3	3	14	-3	62	1	170	61
Lethbridge A	6	2	22	-8	7 ***		260	78	Yarmouth A	5	1	12	-2	36	6	120	59
Medicine Hat A	6P	2P	23P	-8P	0P***		030	37	<b>Prince Edward Island</b>								
Peace River A	3	3	11	-10	1 1		020	65	Charlottetown A	3	3	11	-4	36	15	200	52
<b>Saskatchewan</b>								Summerside A									
Cree Lake	-5	2	6	-19	2 14		340	50	3	2	12	-5	26	6	120	56	
Estevan A	2	1	13	-7	0 ***		320	57	<b>Newfoundland</b>								
La Ronge A	-1	3	9	-14	0 2		320	44	Cartwright	-1	3	8	-9	13	214	230	72
Regina A	2	2	14	-7	2 1		350	61	Churchill Falls A	-6	3	10	-18	12 ***		200	65
Saskatoon A	3	3	18	-7	4 1		261	39	Gander Int'l A	5P	5P	13P	-5P	33P 3		220	59
Swift Current A	3	2	21	-8	0 ***		200	48	Port Aux Basques	-2P	2P	10P	-11P	2P 70		220	69
Yorkton A	-1	1	8	-9	5 1		310	54	St John's A	0	1	6	-7	213	8	090	83
<b>Manitoba</b>								St Lawrence									
Brandon A	-1	0	11	-10	13 221		320	54	3	4	10	-4	75 ***		250	91	
Churchill A	-13	2	1	-23	8 25		350	72	Wabush Lake A	-7	3	5	-14	11	21	180	50
Lynn Lake A	-8	0	5	-22	0 6		200	52	90/04/02-90/04/08								
The Pas A	-2	2	6	-16	2 1		160	39									
Thompson A	-8	2	4	-21	3 4		350	52									
Winnipeg Int'l A	-2	-2	11	-13	1 ***		330	52									

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.