



Climatic Perspectives

MONTHLY
SUPPLEMENT
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Archives

Ref 1

March 4 to 10, 1991

A weekly review of Canadian climate and water

Vol. 13 No. 10

Fierce storms pound Eastern Canada

Major snow and freezing rain episodes are not unusual in Atlantic Canada and Quebec this late in the season. This week was no exception.

One of the worst storms of the winter pelted all three Maritime provinces on March 4, with a mixture of rain, freezing rain, ice pellets and snow, not to mention strong winds. The complex weather system, which had beforehand affected the Great Lakes, developed an extensive area of precipitation, which covered all of Atlantic Canada early in the period. A second storm, which moved in three days later, provided additional heavy snowfalls to northern New Brunswick, in total between 50 and 100 centimetres this week.

Freezing rain and ice pellets moved into western New Brunswick and Nova Scotia early on the 4th, and reached Prince Edward Island by mid-morning. Heavy snow moved into northern New Brunswick, while southern Nova Scotia escaped with just rain. Weather offices at Sydney, N.S. and Fredericton, N.B. reported freezing rain and ice pellets for 13 and 24 hours, respectively. In the Halifax area, the ice storm was one of the worst in recent memory, glazing everything with a thick coating of ice. The combination of strong winds and heavy ice brought down trees, power/telephone lines, and slowed transportation to a crawl. The Nova Scotia Power Commission estimated damage from this storm alone would exceed \$100 thousand.

In northwestern New Brunswick, it

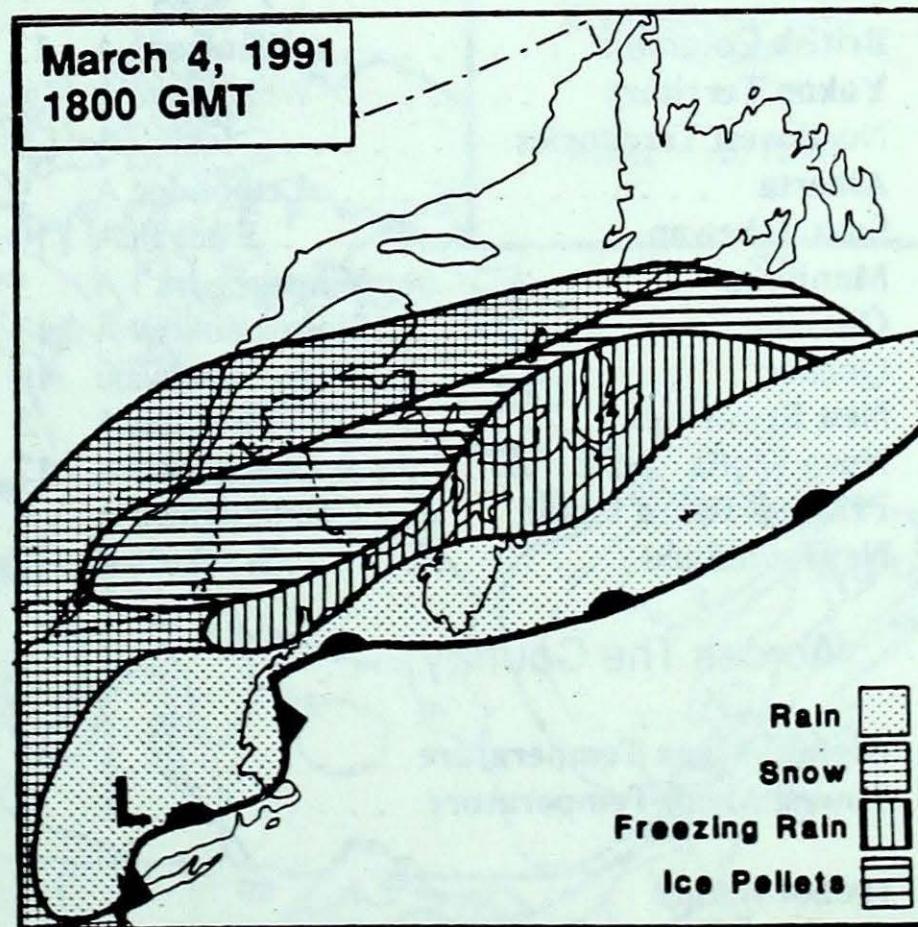
snowed almost every day this week, bringing the weekly snowfall total at St. Leonard to almost 100 cm. So far this winter, St. Leonard has received more than 350 cm of snow, compared to last years seasonal total of 366 cm; two and three winters ago, 300 and 311 centimetres of snow were recorded. Seasonal averages in the area range from 300 to 365 centimetres. In Newfoundland and Labrador, the storm dumped between 25 and 35 centimetres of snow before changing to freezing rain. Parts of Labrador now have snow depths of 220 cm.

The same complex weather system coated southern Quebec with 10 and 15 millimetres of freezing rain, before changing to snow on March 4. Roberval received 40 cm of snow. In the Quebec City region, 90 km/h winds damaged some buildings, and the city's transportation system was brought to a halt for the first time in 10 years. The second storm on the 7th and 8th paralysed the North Shore with between 30 and 40 centimetres of

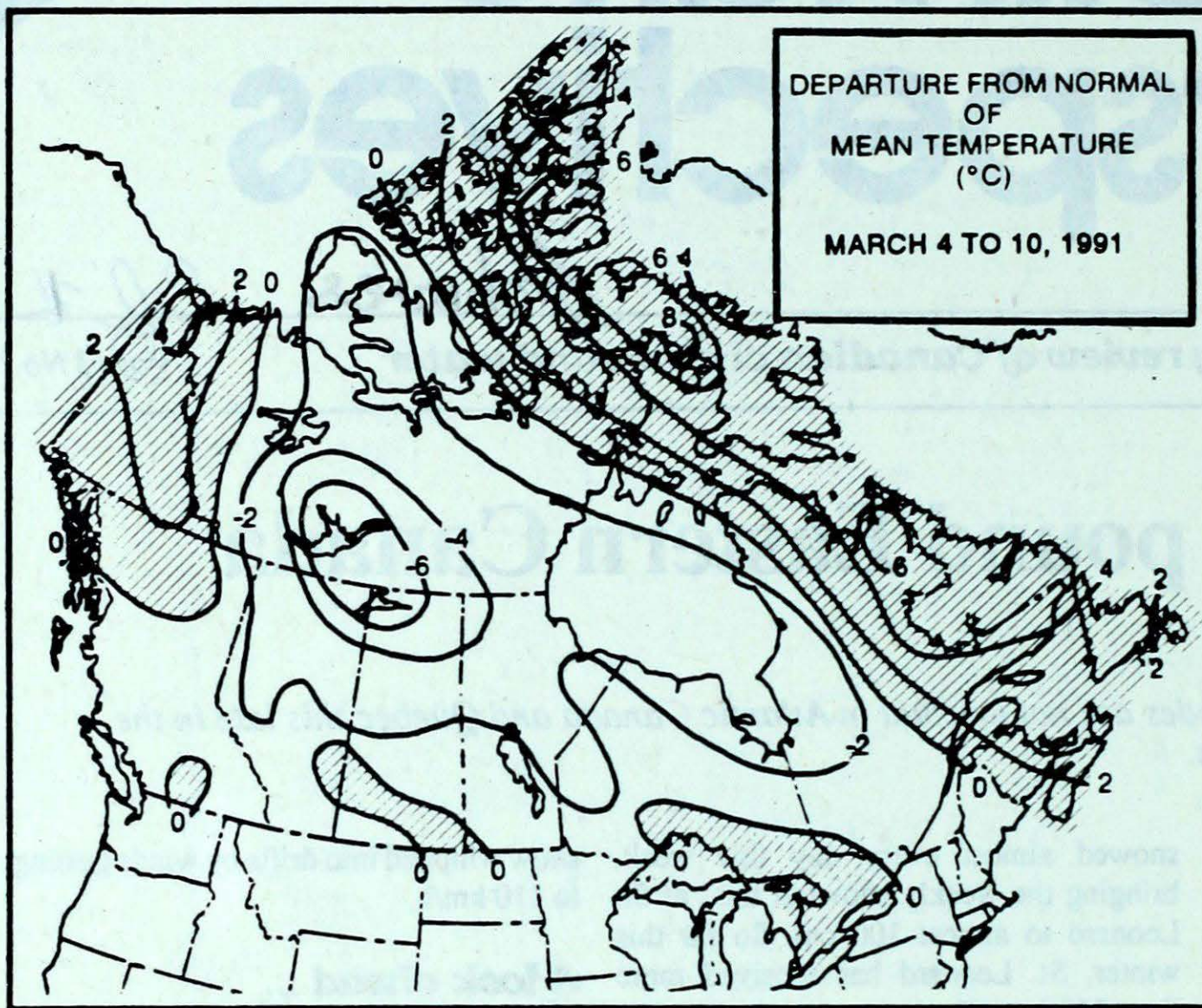
snow whipped into drifts by winds gusting to 110 km/h.

A look ahead ...

The beneficial influence of a high pressure system over the Hudson Bay - Great Lake Basin will continue to bring very mild temperatures from the Manitoba to the Atlantic provinces for the week of March 18. Regions west of Manitoba should experience a warming trend to near normal temperatures.



The March 4, storm that hit eastern Canada had a large area of freezing precipitation and ice pellets associated with it.



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-4.9	-16.2
Iqaluit A	-19.4	-28.7
Yellowknife A	-16.0	-27.0
Vancouver Int'l A	8.3	1.1
Victoria Int'l A	8.7	0.8
Calgary Int'l A	-0.1	-12.0
Edmonton Int'l A	-2.2	-15.1
Regina A	-5.0	-17.0
Saskatoon A	-6.1	-17.8
Winnipeg Int'l A	-5.8	-17.4
Ottawa Int'l A	-0.5	-9.1
Toronto (Pearson Int'l A)	1.4	-6.5
Montréal Int'l A	-0.3	-8.4
Québec A	-1.7	-10.6
Fredericton A	1.1	-9.0
Saint John A	0.7	-8.4
Halifax (Shearwater)	2.1	-5.3
Charlottetown A	-0.6	-7.9
Goose A	-4.9	-15.6
St John's A	0.4	-6.1

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Kamloops A 13	Puntzi Mountain (aut) -30	Estevan Point (aut) 56
Yukon Territory	Whitehorse A 4	Shingle Point A -40	Whitehorse A 2
Northwest Territories	Iqaluit A -4	Clyde A -48	Cape Dorset A 10
Alberta	Lethbridge A 9	High Level A -37	Whitecourt A 14
Saskatchewan	Estevan A 10	Uranium City A -42	Broadview 9
Manitoba	Winnipeg Int'l A 5	Churchill A -39	Gimli 14
Ontario	Sioux Lookout A 17	Big Trout Lake -35	London A 39
Québec	Maniwaki 10	Schefferville A -39	Mont Joli A 73
New Brunswick	Moncton A 8	St-Léonard A -14	St-Léonard A 94
Nova Scotia	Greenwood A 12	Sydney A -9	Shearwater A 69
Prince Edward Island	Charlottetown A 9	Summerside A -6	Summerside A 57
Newfoundland	St John's A 7	Churchill Falls A -33	Comfort Cove 64

Across The Country...

Highest Mean Temperature	Cape St James(BC) 5
Lowest Mean Temperature	Cambridge Bay A(NWT) -36

CLIMATIC PERSPECTIVES
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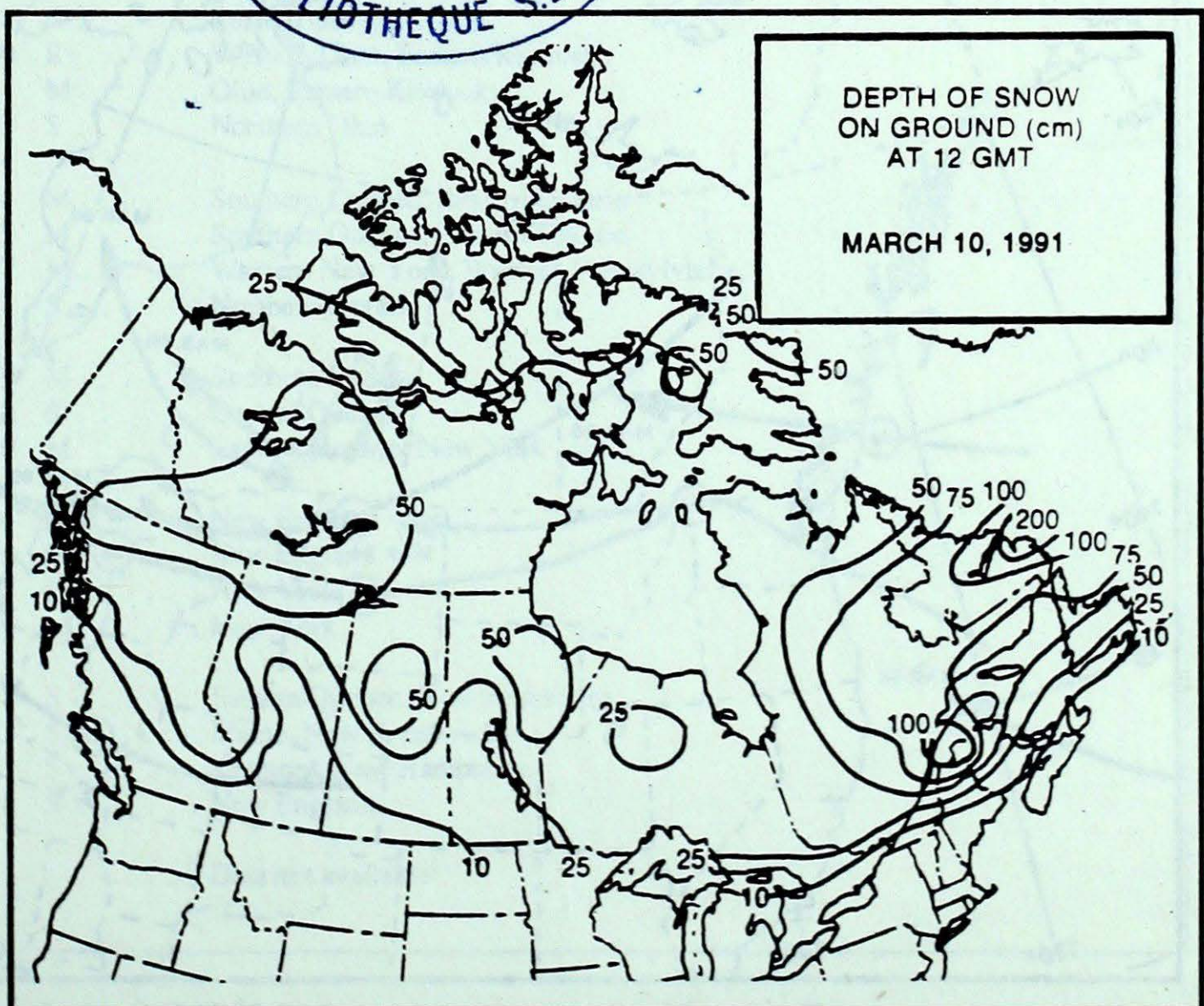
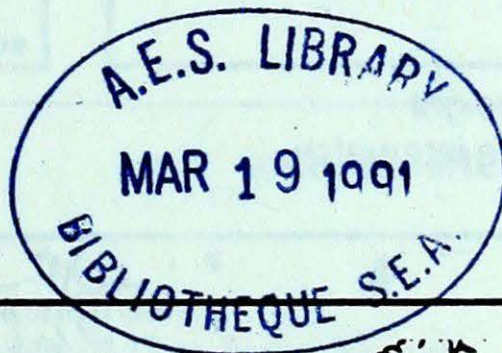
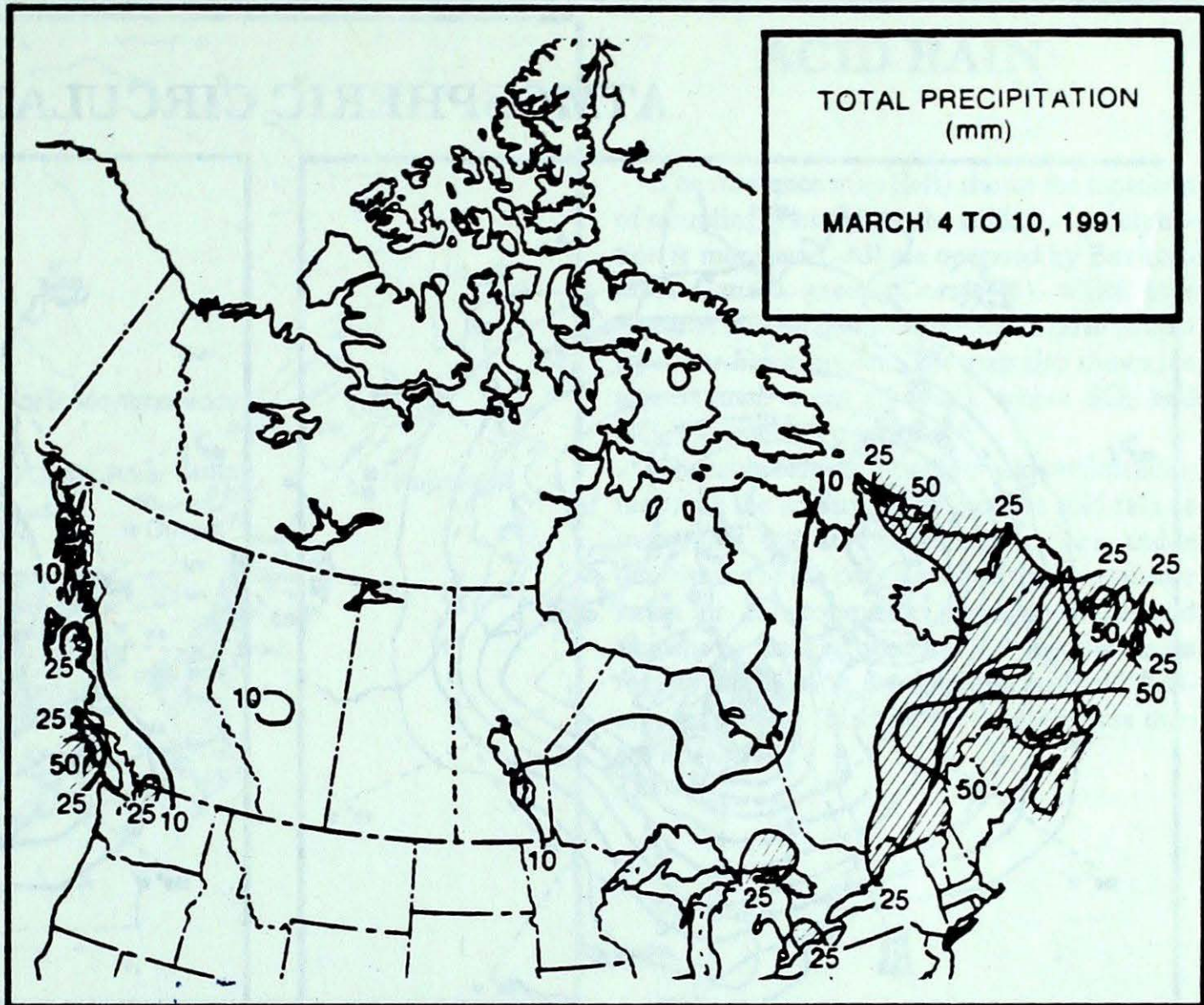
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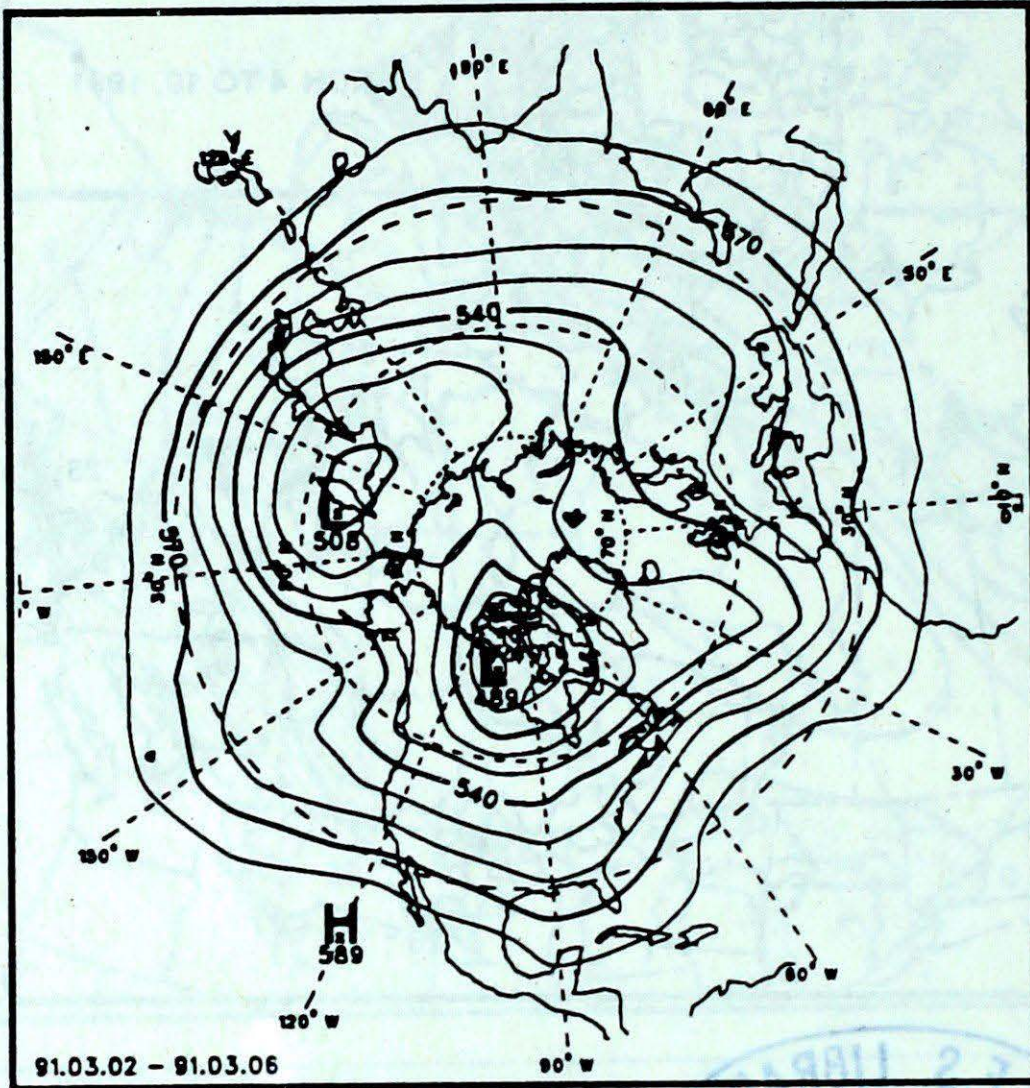
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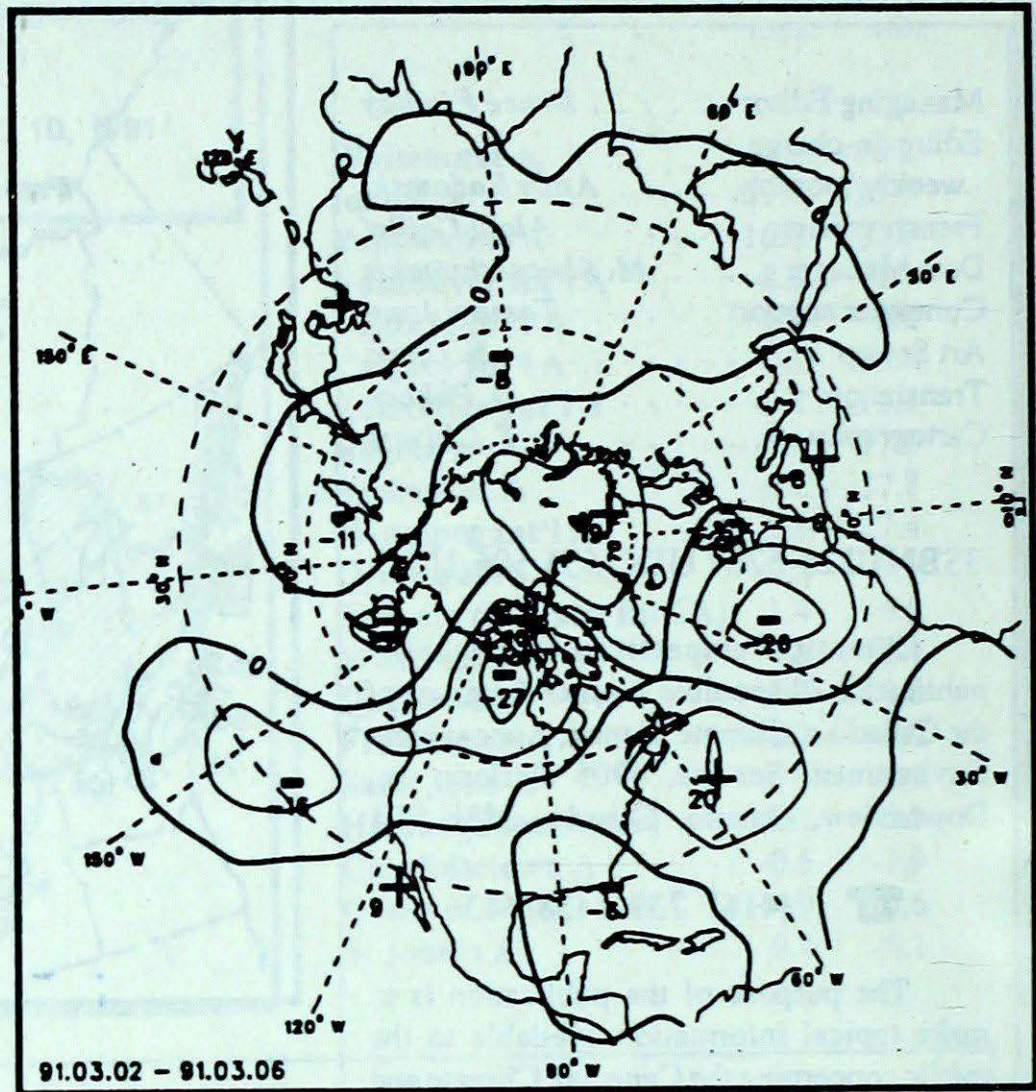
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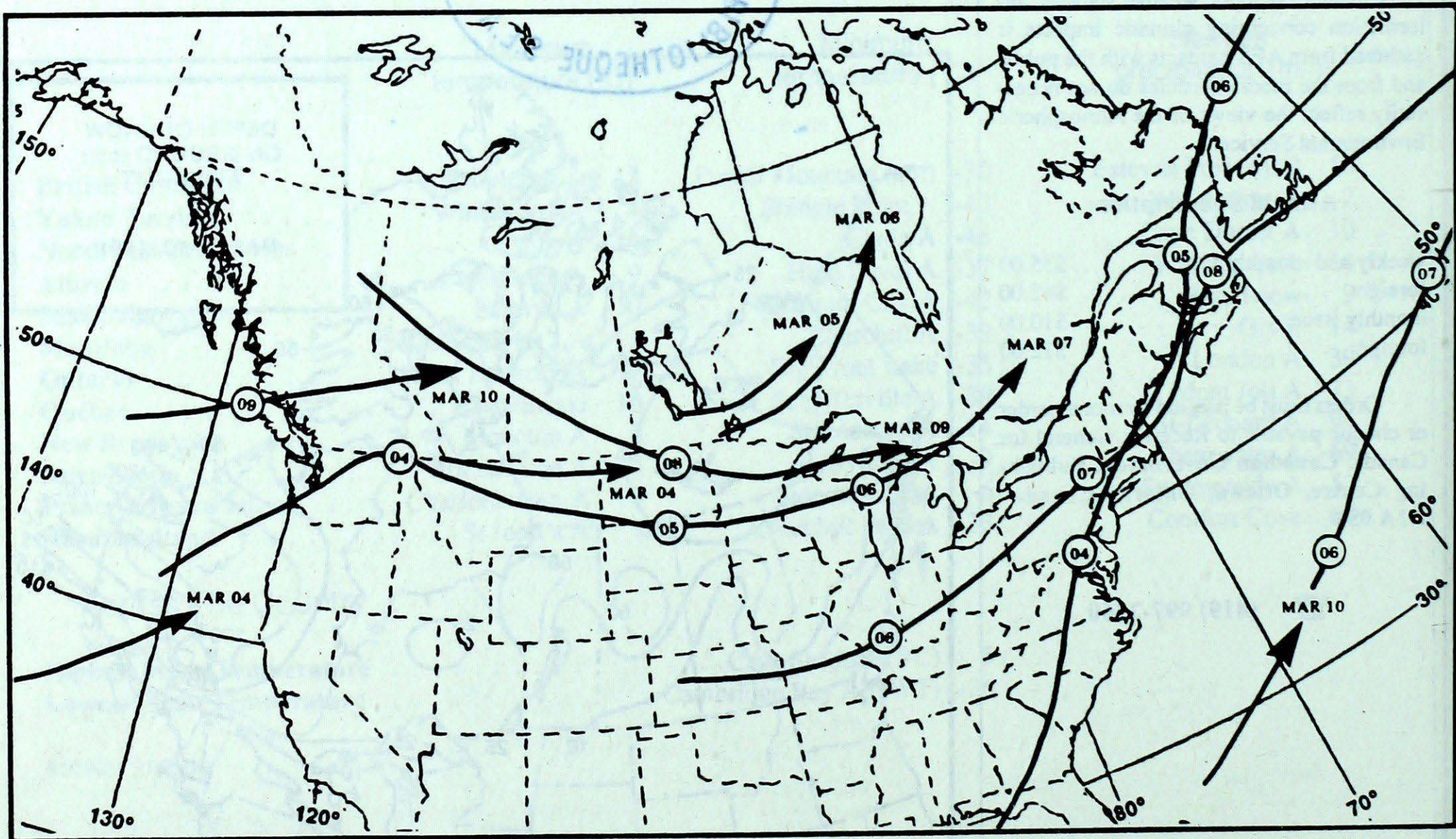
ATMOSPHERIC CIRCULATION



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



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

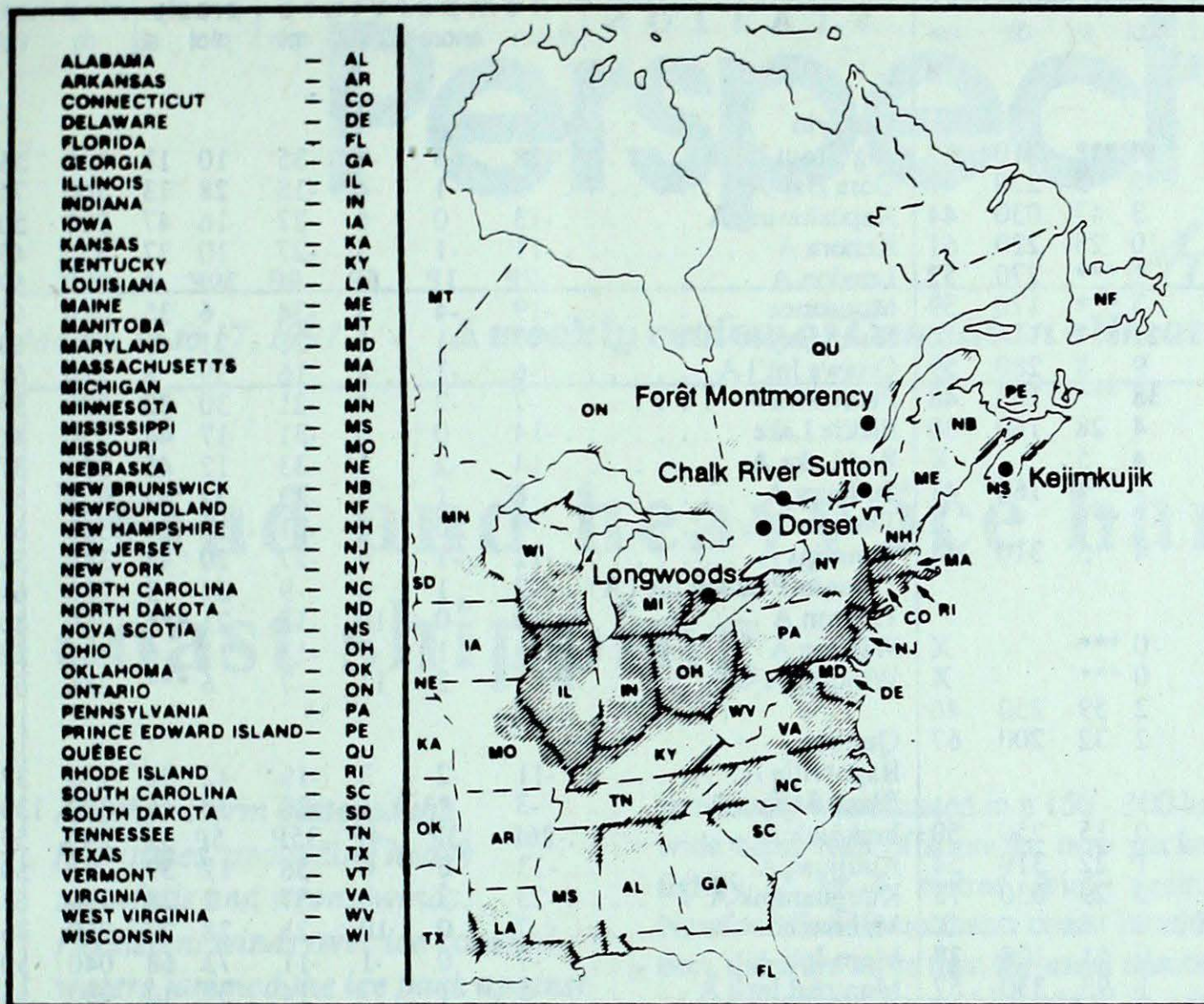


Tracks of low pressure centres at 12:00 U.T. each day during the period.

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 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
March 3 to 9, 1991				
Longwoods	03	4.6	8 S	Eastern Ontario
	05	4.1	9 R	Western Ohio, Eastern Kentucky
	06	4.0	4 M	Ohio, Eastern Kentucky
	09	3.9	5 S	Northern Ohio
Dorset*	03	4.8	6 M	Southern Quebec, Eastern Ontario
	04	5.0	2 M	Southern Quebec, Eastern Ontario
	06	4.2	17 M	Western New York, Western Pennsylvania
	07	4.5	1 S	Northern Ontario
Chalk River	03	4.7	9 M	Southern Quebec
	04	5.0	2 S	Central Quebec
	06	4.2	20 M	Eastern Ontario, New York
Sutton	03	4.4	21 R	New England
	04	4.8	15 M	New England
	06	4.2	1 R	New York
	07	4.5	4 M	New York
Montmorency	03	5.0	17 S	Eastern Quebec, New Brunswick
	04	4.9	23 S	Maine, New Brunswick
	06	4.5	13 S	Vermont, New Hampshire
	07	4.3	8 S	New England
Kejimikujik			 Data not available

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							
British Columbia								Ontario																
Cape St James	5P	0P	10P	-1P	9P***	310	87	Big Trout Lake	-18	0	-1	-35	10	18	300	56								
Cranbrook A	-1	-1	5	-11	5	5	220	41	Gore Bay A	-5	1	4	-18	28	13	360	74							
Fort Nelson A	-11	1	5	-26	3	47	030	44	Kapusking A	-13	0	6	-27	16	47	360	50							
Fort St John A	-10	0	5	-26	10	25	220	61	Kenora A	-11	-1	5	-27	10	37	320	43							
Kamloops A	0	-1	13	-12	1	***	270	52	London A	-2P	1P	6P	-9P	39P	4	290	69							
Penticton A	3	1	12	-8	3	***	170	59	Moosonee	-19	-4	3	-34	6	35	010	61							
Port Hardy A	3	-1	8	-3	21	***	X	X	North Bay A	-7	1	6	-21	21	46	350	65							
Prince George A	-5	-2	6	-17	9	8	280	59	Ottawa Int'l A	-6	-1	4	-16	39	8	290	61							
Prince Rupert A	0	-3	7	-11	38	***	150	48	Petawawa A	-7	-2	4	-21	30	30	320	59							
Revelstoke A	-1	0	7	-8	4	28	160	50	Pickle Lake	-14	0	0	-31	17	44	330	41							
Smithers A	-4	-1	6	-21	4	5	X	X	Red Lake A	-14	-2	3	-33	12	45	330	37							
Vancouver Int'l A	4	-1	9	-3	7	***	160	41	Sudbury A	-8	1	4	-23	32	42	350	57							
Victoria Int'l A	4	0	11	-2	3	***	X	X	Thunder Bay A	-9	0	2	-21	14	24	350	61							
Williams Lake A	-7	-5	6	-24	4	5	310	44	Timmins A	-12	-1	4	-27	20	43	340	56							
Yukon Territory								Toronto (Pearson Int'l A)																
Komakuk Beach A	-24	3	-12	-36	0	***	X	X	Trenton A	-2	0	10	-13	21	***	260	80							
Teslin (aut)	-10	*	2	-28	0	***	X	X	Warton A	-3	1	7	-13	11	6	160	52							
Watson Lake A	-12	3	2	-33	2	59	250	46	Windsor A	1	2	11	-7	6	***	280	61							
Whitehorse A	-9	2	4	-23	2	32	200	67	Québec															
Northwest Territories								Bagotville A																
Alert	-28	7	-10	-37	0	15	250	50	Blanc Sablon A	-3	*	4	-22	30	46	300	130							
Baker Lake A	-32	-2	-22	-43	1	22	310	54	Inukjuak A	-26P	-3P	-4P	-35P	5P	32	290	59							
Cambridge Bay A	-36	-3	-21	-45	0	29	030	78	Kuujuuaq A	-13	6	3	-36	12	39	240	50							
Cape Dyer A	-21	4	-5	-37	0	16	X	X	Kuujuarapik A	-23	-3	0	-37	2	28	150	63							
Clyde A	-31	-3	-18	-48	0	21	120	37	Maniwaki	-7	0	10	-21	28	29	260	46							
Coppermine A	-34	-3	-24	-41	1	93	330	57	Mont Joli A	-7	0	-1	-11	73	68	040	50							
Coral Harbour A	-28	-1	-12	-37	2	32	080	59	Montréal Int'l A	-5	-1	7	-14	37	4	250	65							
Eureka	-34	5	-18	-45	0	8	X	X	Natashquan A	-6P	2P	7P	-21P	24P	74	070	57							
Fort Smith A	-25	-7	-8	-41	6	68	X	X	Québec A	-7	-1	2	-16	51	87	260	59							
Hall Beach A	-24	7	-12	-33	4	31	110	96	Schefferville A	-13	4	0	-39	9	80	150	48							
Inuvik A	-24	2	-14	-40	3	44	300	54	Sept-Îles A	-5P	3P	3P	-18P	33P	54	080	56							
Iqaluit A	-20	4	-4	-40	5	27	140	48	Sherbrooke A	-6	-1	10	-15	38	6	270	57							
Mould Bay A	-33P	2P	-21P	-41P	2P	18	070	43	Val-d'Or A	-11	-1	6	-28	18	47	350	59							
Norman Wells A	-23	-1	-13	-38	6	30	290	74	New Brunswick															
Resolute A	-27	6	-16	-36	1	11	100	117	Charlo A	-5	3	5	-11	52	117	080	65							
Yellowknife A	-29	-8	-17	-41	1	51	310	37	Chatham A	-3	2	5	-11	***	33	060	69							
Alberta								Fredericton A																
Calgary Int'l A	-7	-1	6	-21	6	2	040	78	Moncton A	-2	3	8	-7	76	22	050	52							
Cold Lake A	-12	-2	6	-32	5	20	300	41	Saint John A	-2	2	7	-9	65	17	330	59							
Edmonton Namao A	-8	0	6	-21	8	9	330	59	Nova Scotia															
Fort McMurray A	-16	-4	4	-35	2	24	350	41	Greenwood A	0	2	12	-7	34	13	100	48							
High Level A	-17	-3	4	-37	10	58	350	39	Shearwater A	1	3	9	-5	69	***	090	61							
Jasper	-5	-1	6	-21	8	29	X	X	Sydney A	0	3	8	-9	61	4	360	44							
Leihbridge A	-6	-1	9	-20	5	1	260	85	Yarmouth A	1	1	11	-5	66	5	290	57							
Medicine Hat A	-6	0	8	-17	3	5	260	41	Prince Edward Island															
Peace River A	-13	-2	3	-29	4	11	011	59	Charlottetown A	0	4	9	-6	45	6	070	43							
Saskatchewan								Summerside A																
Cree Lake	-20	-4	-3	-39	0	49	340	48	0	4	8	-6	57	10	290	46								
Estevan A	-7	3	10	-22	2	1	300	70	Newfoundland															
La Ronge A	-16	-2	4	-34	1	52	320	44	Cartwright	-4	5	1	-22	20	222	330	57							
Regina A	-10	1	3	-24	5	11	320	78	Churchill Falls A	-9	6	3	-33	11	102	090	43							
Saskatoon A	-12	0	3	-27	2	10	X	X	Gander Int'l A	-2	3	4	-13	27	26	230	44							
Swift Current A	-7	1	8	-24	5	16	300	59	Goose A	-5	5	5	-28	29	118	050	48							
Yorkton A	-13	-1	4	-29	7	32	230	33	Port Aux Basques	-1	2	5	-9	15	20	080	76							
Manitoba								St John's A																
Brandon A	-14	-2	-1	-28	6	30	270	48	St Lawrence	-1	2	4	-7	15	10	X	X							
Churchill A	-26	-3	-13	-39	0	19	330	69	Wabush Lake A	-10	6	3	-31	11	69	X	X							
Lynn Lake A	-21	-4	-2	-37	0	31	300	52	91/03/04-91/03/10															
The Pas A	-16	-2	2	-30	2	11	340	48																
Thompson A	-20	-3	0	-36	0	64	310	54																
Winnipeg Int'l A	-11	0	5	-24	7	17	340	41																

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.