



Climatic Perspectives



December 2 to 8, 1991

A weekly review of Canadian climate and water

Vol. 13 No 49

Blanket of snow covers the country

A number of weather systems affected Canada this week, depositing significant amounts of precipitation, but this time, only southern B.C. escaped the snow.

In the Yukon and northwestern British Columbia, the mountain passes have taken the brunt of the snow this week, with two heavy snowfalls. This has occurred repeatedly this year. For example, Pleasant Camp, B.C., just south of Yukon border, recorded a November snowfall of 263 cm, leaving 213 cm on the ground at month's end. Whitehorse received 44.5 cm this week. This is already close to the record-high December snowfall of 55.6 cm set in 1980. Numerous new daily snowfall records were set between December 2 and 4. The snowfall has caused transportation problems, and there was at least one avalanche crossing a roadway.

On Baffin Island, snow and blowing snow gave way to a blizzard condition on December 5, as a low pressure system moved towards Davis Strait. For the next 24-hours the town of Iqaluit was paralysed. Schools, offices, stores were all closed.

Following a heavy 10 to 20-centimetre snowfall on Nov 29, and storm-force winds on Nov 30, a storm combining snow and freezing rain covered southern and central Ontario on December 2 and 3. Many schools were closed and electrical power outages were reported. In addition, on the 5th and 6th another storm dumped 10 to 20 centimetres of snow on southern Ontario.

Winter began abruptly in the Mari-

times. On Tuesday, December 3, a winter storm approaching from New England, gave 5 to 10 centimetres of snow to Nova Scotia. The snow changed to freezing rain and then to rain later in the day. Southern New Brunswick received 7 to 14 centimetres of snow before it changed over to freezing rain and ice pellets. By Wednesday, 20 to 30 centimetres of snow covered the ground. On December 6 and 7, two more low pressure systems gave an additional 15 to 30 centimetres of snow to the region.

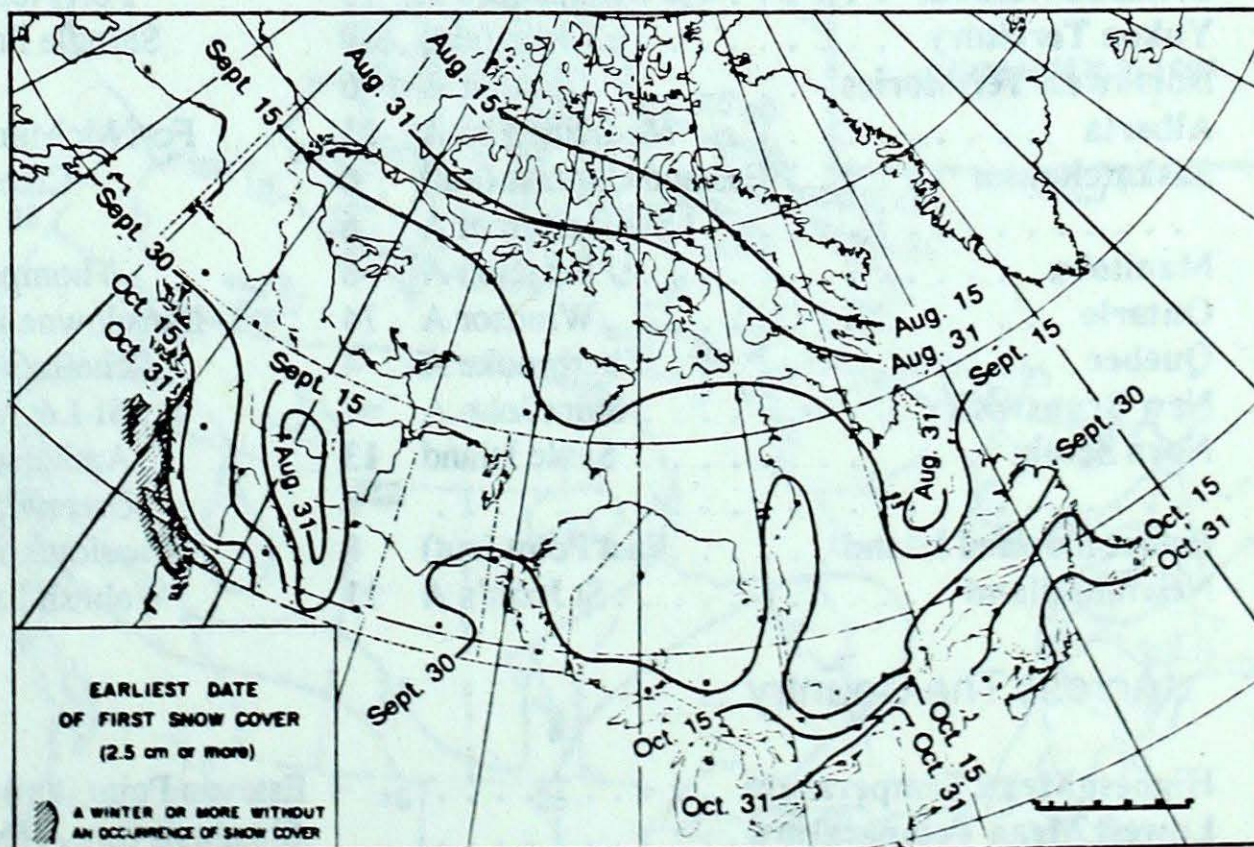
Newfoundland experienced fair weather early in the week, but by Wednesday snow was reported in the north, while a mixture of rain, freezing rain or snow occurred in the south. In the wake of this system, much colder air, flurries and very

strong winds invaded the province. A marine ferry was unable to dock at Port-aux-Basques due to winds gusting to 110 km/h.

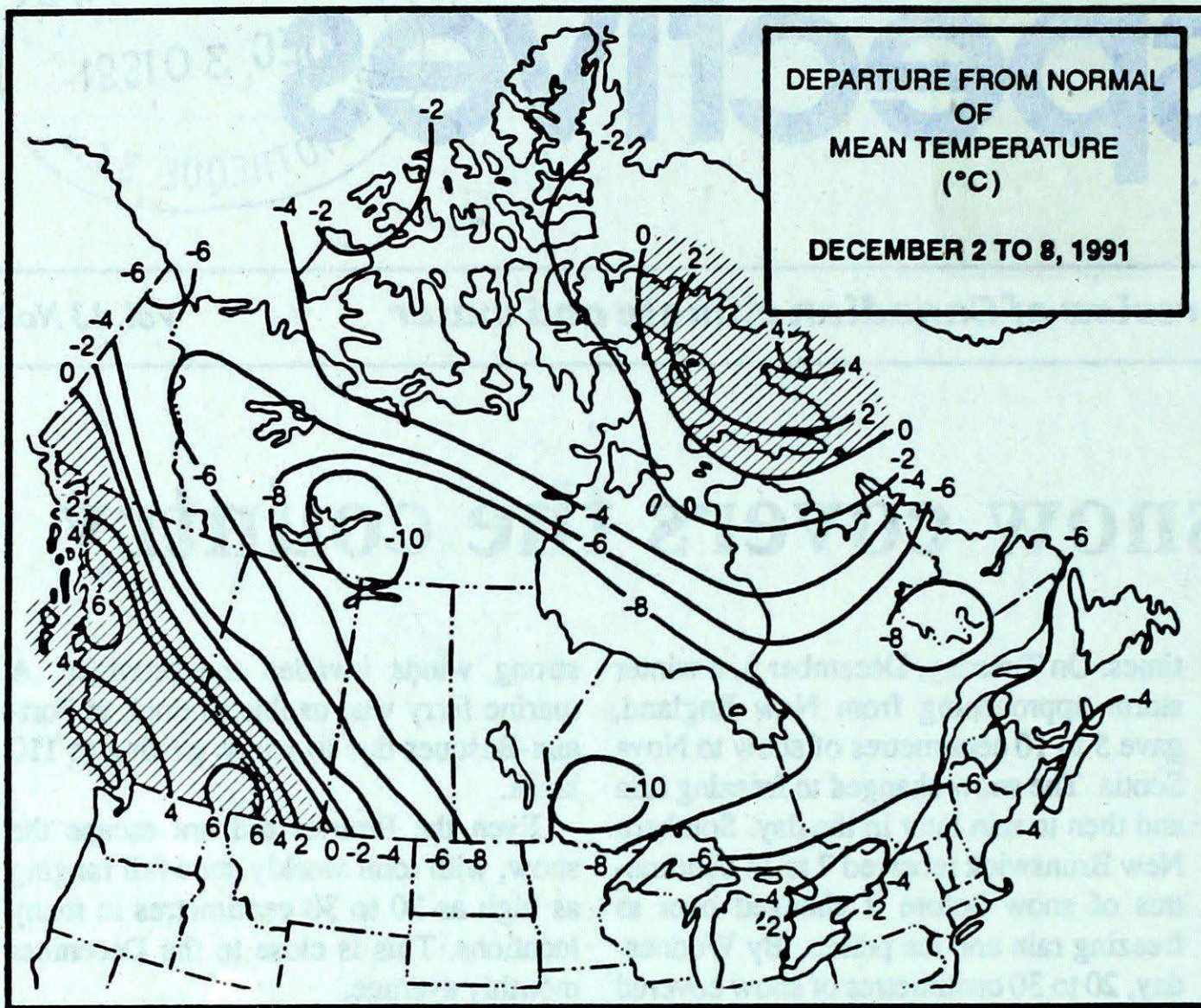
Even the Prairies did not escape the snow, with total weekly snowfall ranging as high as 20 to 30 centimetres in many locations. This is close to the December monthly average.

A look ahead ...

We will see, for the week of December 16, little change from last week's temperature regime. The broadening and displacement of the Canadian low pressure trough over Newfoundland will now place the whole country under a westerly circulation with a slightly northerly component, keeping temperatures in all regions below normal.



A snow cover along the British Columbia coastline at this time of year is uncommon.



**Weekly normal
temperatures (°C)**

	max.	min.
Whitehorse A	-13.3	-20.7
Iqaluit A	-16.2	-24.4
Yellowknife A	-18.8	-26.5
Vancouver Int'l A	6.8	1.5
Victoria Int'l A	7.3	1.4
Calgary Int'l A	-2.1	-14.2
Edmonton Int'l A	-6.8	-17.5
Regina A	-6.3	-16.6
Saskatoon A	-7.9	-17.4
Winnipeg Int'l A	-7.3	-15.6
Ottawa Int'l A	-0.9	-8.4
Toronto (Pearson Int'l A)	2.6	-5.1
Montréal Int'l A	-0.3	-7.7
Québec A	-2.3	-9.6
Fredericton A	0.6	-8.9
Saint John A	1.6	-6.9
Halifax (Shearwater)	4.2	-3.1
Charlottetown A	1.8	-5.0
Goose A	-5.6	-14.3
St John's A	2.7	-3.1

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Abbotsford A 13	Fort Nelson A -32	Prince Rupert A 160
Yukon Territory	Teslin (aut) -9	Shingle Point A -39	Watson Lake A 27
Northwest Territories	Iqaluit A -6	Alert -45	Cape Dyer A 24
Alberta	Medicine Hat A 11	Fort McMurray A -37	Peace River A 27
Saskatchewan	Eastend Cypress (aut) 6	Cree Lake -43	Yorkton A 26
	Swift Current A 6		
Manitoba	Brandon A -8	Thompson A -41	Brandon A 19
Ontario	Windsor A 14	Lansdowne House -37	Warton A 49
Québec	Sherbrooke A 4	Schefferville A -35	Montréal Int'l A 40
New Brunswick	Saint John A 7	St-Léonard A -28	Saint John A 36
Nova Scotia	Sable Island 13	Amherst (aut) -16	Shearwater A 38
		Greenwood A -16	Sydney A 38
Prince Edward Island	East Point (aut) 8	Charlottetown A -15	Charlottetown A 28
Newfoundland	St John's A 11	Wabush Lake A -37	St John's A 32

Across The Country...

Highest Mean Temperature	Estevan Point (aut) (BC) 8
Lowest Mean Temperature	Shepherd Bay A (NWT) -36

**CLIMATIC PERSPECTIVES
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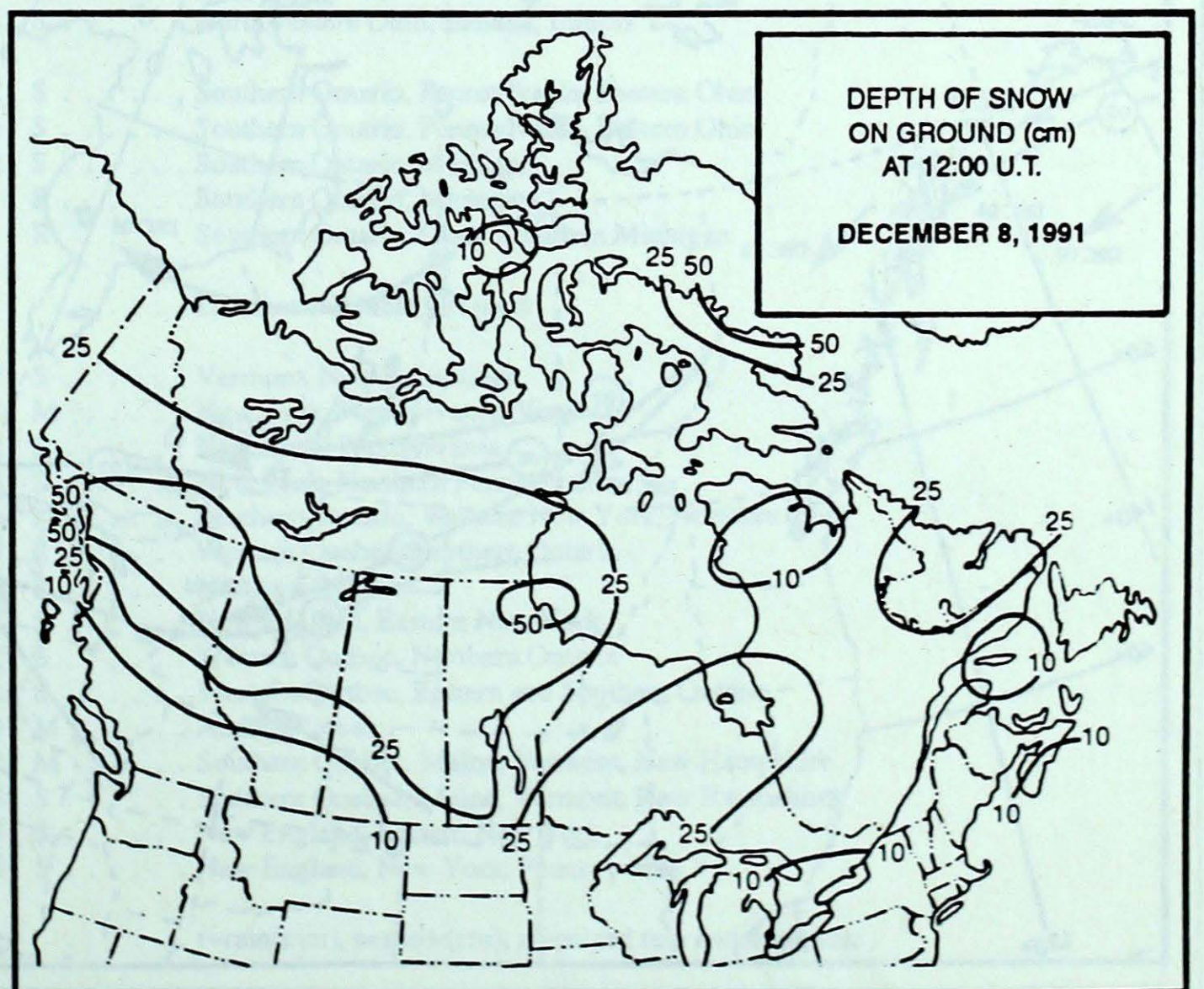
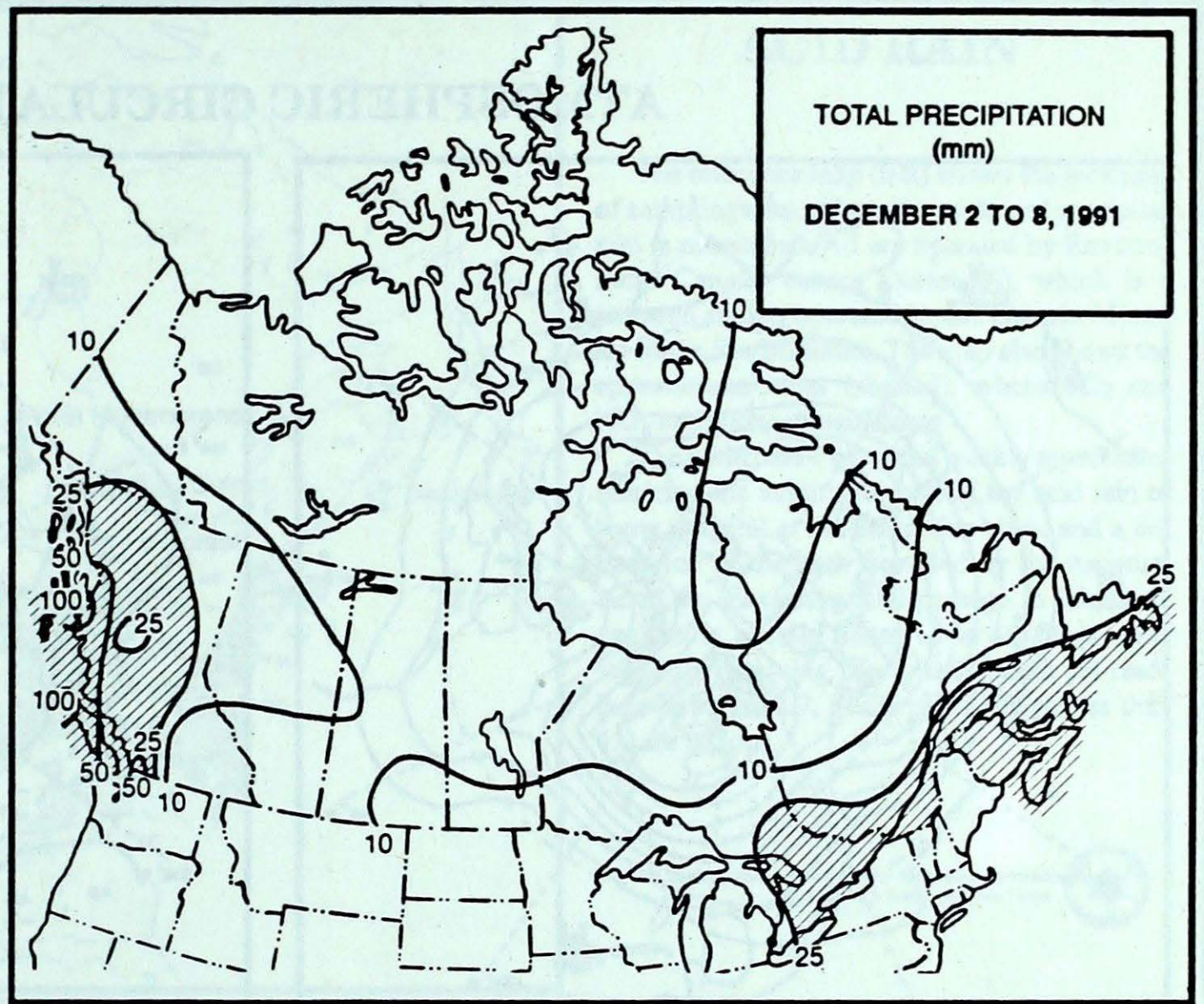
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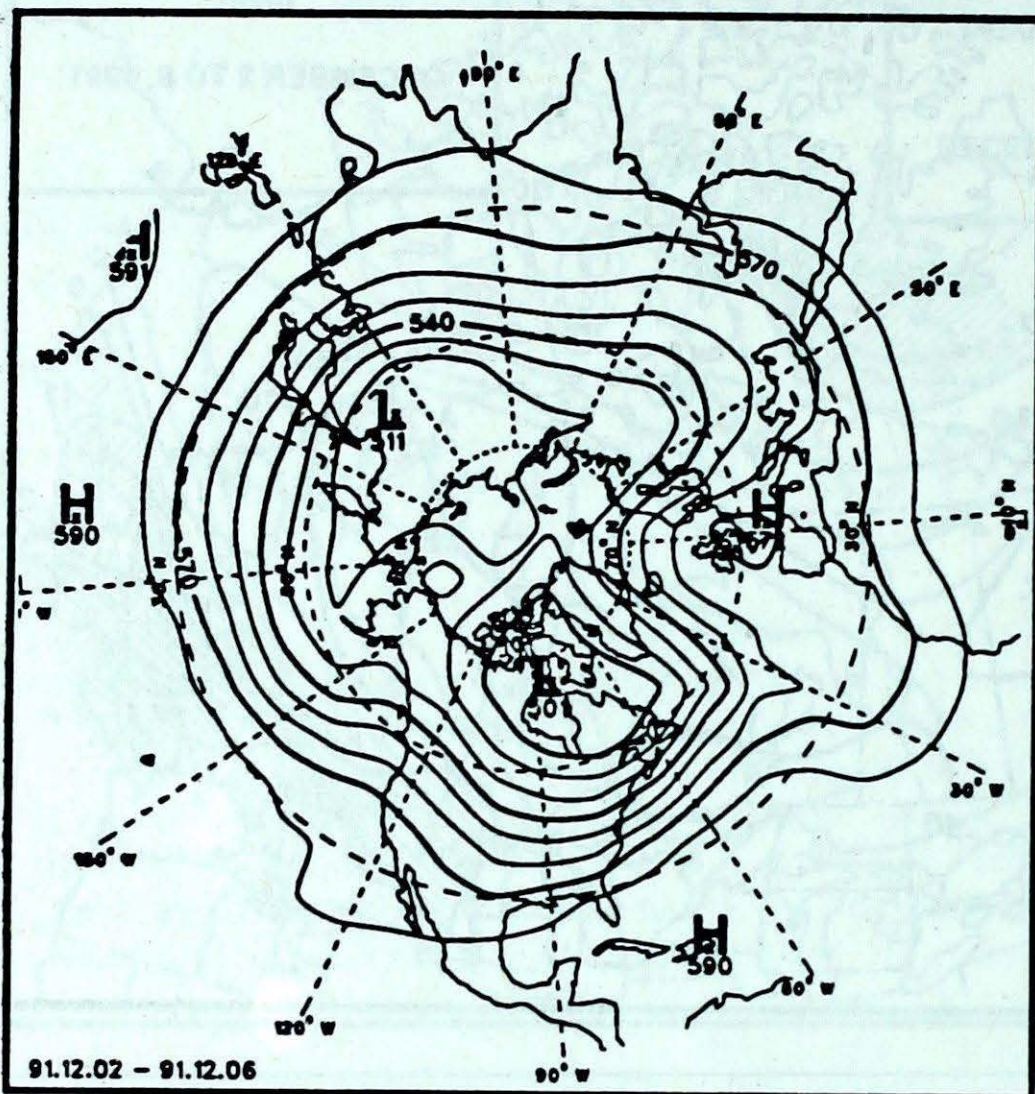
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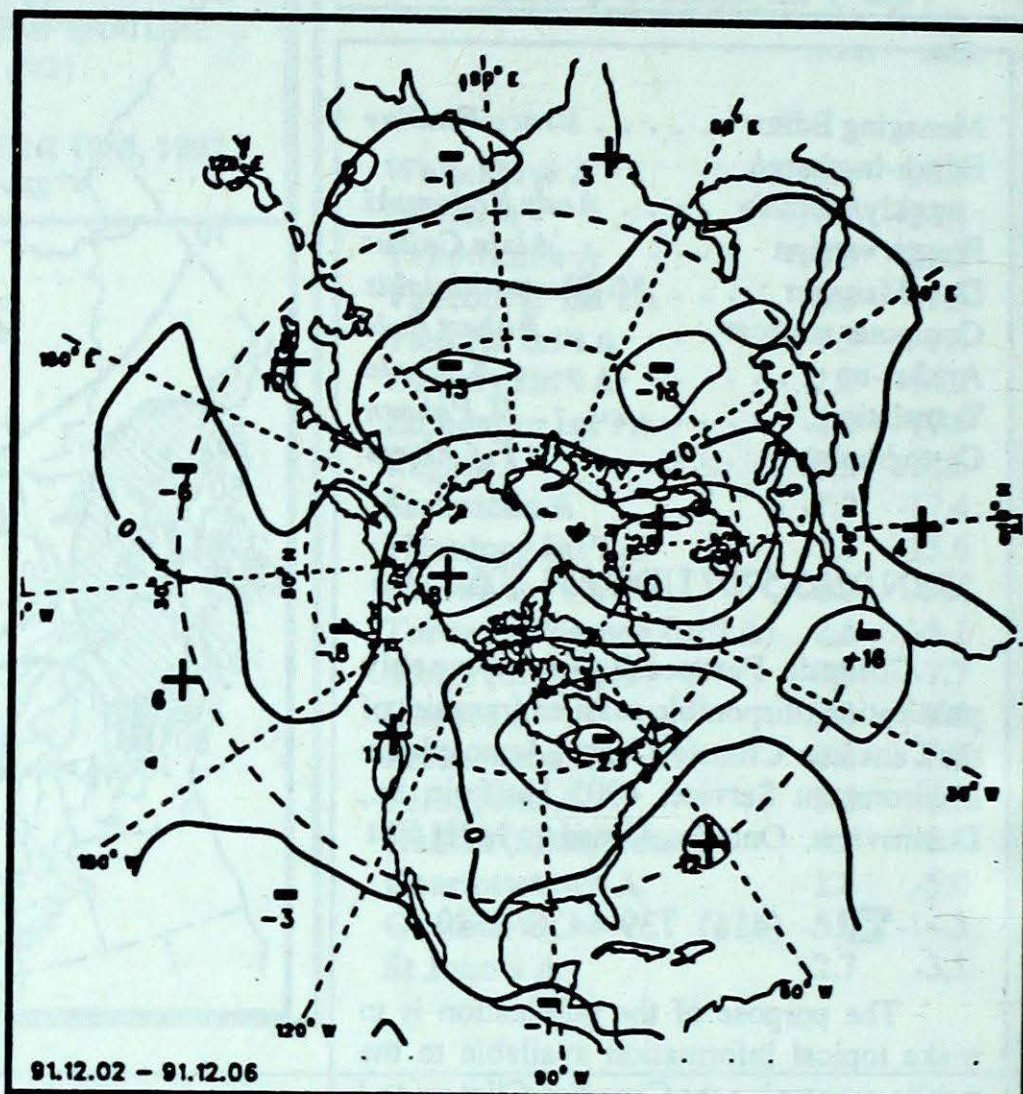
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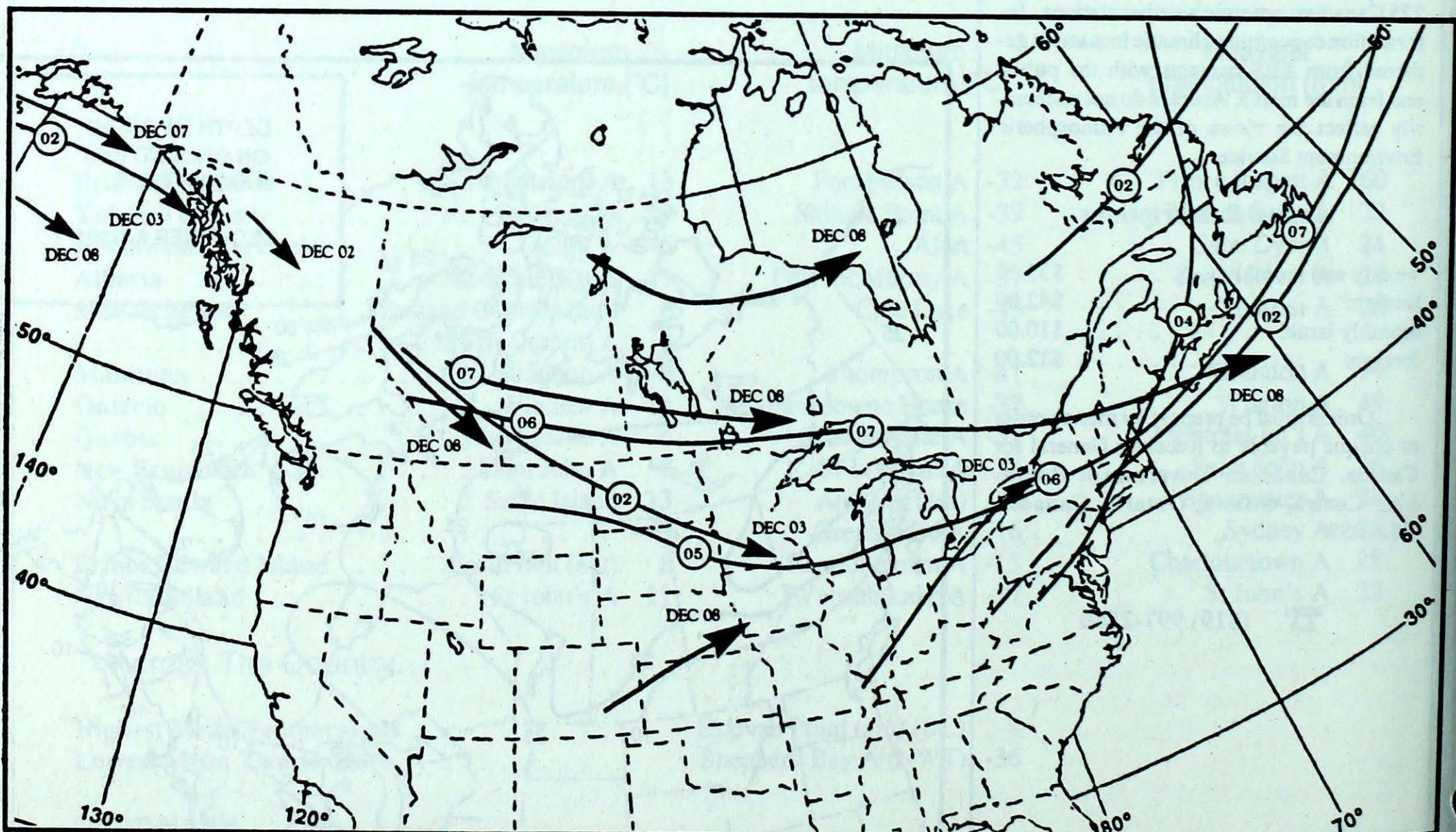
ATMOSPHERIC CIRCULATION



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



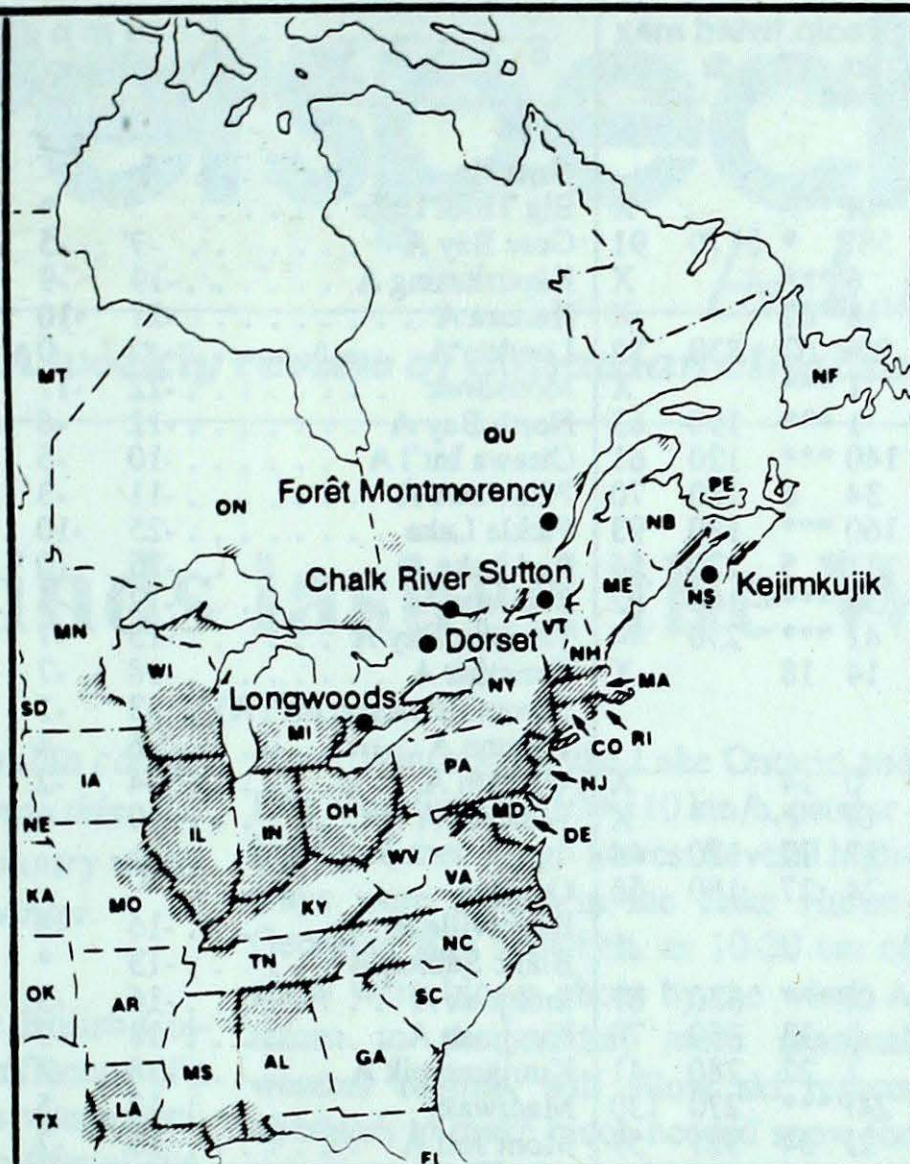
Mean geopotential height anomaly
50-kPa level (10-decametre intervals)



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


ACID RAIN

- ALABAMA -- AL
- ARKANSAS -- AR
- CONNECTICUT -- CT
- DELAWARE -- DE
- FLORIDA -- FL
- GEORGIA -- GA
- ILLINOIS -- IL
- INDIANA -- IN
- IOWA -- IA
- KANSAS -- KA
- KENTUCKY -- KY
- LOUISIANA -- LA
- MAINE -- ME
- MANITOBA -- MT
- MARYLAND -- MD
- MASSACHUSETTS -- MA
- MICHIGAN -- MI
- MINNESOTA -- MN
- MISSISSIPPI -- MS
- MISSOURI -- MO
- NEBRASKA -- NE
- NEW BRUNSWICK -- NB
- NEWFOUNDLAND -- 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 -- QU
- RHODE ISLAND -- RI
- SOUTH CAROLINA -- SC
- SOUTH DAKOTA -- SD
- TENNESSEE -- TN
- TEXAS -- TX
- VERMONT -- VT
- VIRGINIA -- VA
- WEST VIRGINIA -- WV
- WISCONSIN -- WI



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.

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Site	day	pH	amount	air path to site	
December 1 to 7, 1991					
Longwoods	02	4.7	14 M	Michigan, Northern Ohio	
	05	4.3	14 S	Northwestern Ohio, Indiana, Illinois	
Dorset*	02	5.1	12 S	Southern Ontario, Pennsylvania, Eastern Ohio	
	03	4.4	2 S	Southern Ontario, Pennsylvania, Eastern Ohio	
	05	4.5	2 S	Southern Ontario, Michigan	
	06	4.2	11 S	Southern Ontario, Michigan	
	07	3.7	1 R	Southern Ontario, Ohio, Southern Michigan	
Chalk River				Data not available this week	
Sutton	02	5.0	7 S	Vermont, New Hampshire	
	03	4.4	4 M	New York, Pennsylvania, Virginia	
	05	4.4	2 S	New York, Pennsylvania	
	06	4.8	3 S	New York, Northern Pennsylvania	
	07	4.2	16 M	Southern Ontario, Western New York, Northern Ohio	
	Montmorency	01	4.7	4 S	Western Quebec, Northern Ontario
		02	5.2	2 S	Northern Quebec
03		4.6	14 S	New England, Eastern New York	
06		5.2	2 S	Western Quebec, Northern Ontario	
07		4.9	4 S	Western Quebec, Eastern and Southern Ontario	
Kejimkujik	03	4.6	13 M	Atlantic Ocean	
	04	4.4	2 M	Southern Quebec, Maine, Vermont, New Hampshire	
	05	4.6	3 S	Southern Quebec, Maine, Vermont, New Hampshire	
	06	4.5	3 S	New England, Eastern New York	
	07	4.3	5 S	New England, New York, Pennsylvania	

..... 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
British Columbia									Ontario								
Blue River A	-1P	7P	3P	-8P	0P***			X	Big Trout Lake	*	*	-14	*	*	21	290	39
Cape St James	7P	2P	10P	3P	58P *	170	91		Gore Bay A	-7	-5	6	-20	25	20	280	70
Cranbrook A	0	7	7	-10	6 ***			X	Kapuskasing A	-19	-9	-1	-31	17	49	330	41
Fort Nelson A	-24	-4	-20	-32	18 62			X	Kenora A	-21	-10	-10	-31	13	27	110	32
Fort St John A	-21P	-8P	-15P	-22P	20P 57	330	32		London A	-2	0	13	-12	43	6	090	74
Kamloops A	2	4	7	-4	1 ***			X	Moosonee	-22	-11	-5	-32	5	38	280	48
Penticton A	5	4	8	-3	1 ***	190	63		North Bay A	-12	-6	6	-27	31	12	050	48
Port Hardy A	7	3	10	4	140 ***	120	61		Ottawa Int'l A	-10	-5	2	-18	32	22	070	65
Prince George A	0	7	4	-6	34 8	180	70		Petawawa A	-11	-3	2	-23	32	17	300	59
Prince Rupert A	7	5	11	3	160 ***	180	93		Pickle Lake	-25	-10	-12	-35	5	28		X
Smithers A	1	8	6	-5	11 5	220	56		Red Lake A	-25	-10	-12	-36	14	27		X
Vancouver Int'l A	7	3	11	0	36 ***	160	52		Sudbury A	-12	-5	4	-26	34 ***		040	48
Victoria Int'l A	8	3	12	1	41 ***	230	44		Thunder Bay A	-15	-7	-2	-32	11	43	070	35
Williams Lake A	-2	6	3	-9	14 18			X	Timmins A	-18	-7	1	-30	27	19	330	46
Yukon Territory									Toronto (Pearson Int'l A)								
Komakuk Beach A	-30	-6	-22	-38	0 14			X	Trenton A	-6	-4	10	-17	30	3	060	63
Teslin (aut)	-17P	*	-9P	-21P	0P***			X	Warton A	-4	-2	13	-11	49	9	320	56
Watson Lake A	-21	2	-12	-24	27 77	120	44		Windsor A	0	0	14	-13	21 ***		080	50
Whitehorse A	-16	1	-10	-19	24 27	160	56		Québec								
Northwest Territories									Bagotville A								
Alert	-22P	7P	*	-45P	0P***	330	67		Blanc Sablon A	-13	*	0	-23	19	1	230	85
Baker Lake A	-34	-7	-27	-38	0 13	350	70		Inukjuak A	-16	-3	-8	-23	12	7	270	67
Cambridge Bay A	-31	-2	-27	-36	1 22	280	41		Kuujuuaq A	-18	-3	-10	-25	9	7	270	89
Cape Dyer A	-16P	5P	-11P	-27P	24P***	270	130		Kuujuarapik A	-18	-7	-11	-25	14	11	270	104
Clyde A	-24P	0P	-16P	-33P	2P 34	321	59		Maniwaki	-12	-5	1	-23	34	23		X
Coppermine A	-30	-4	-26	-34	0 21	260	48		Mont Joli A	-13	-7	2	-23	31	11	280	82
Coral Harbour A	-27P	-3P	-15P	-40P	1P 19	360	67		Montréal Int'l A	-9	-5	4	-17	40	18	050	54
Eureka	-36P	-3P	-26P	-42P	1P 16			X	Natashquan A	-15	-9	0	-28	19	6	270	59
Fort Smith A	-30	-10	-22	-40	4 41			X	Québec A	-12	-6	3	-22	23	15	070	57
Hall Beach A	-29	-1	-12	-40	1 16	300	43		Schefferville A	-24	-9	-16	-35	8	33	270	80
Inuvik A	-32	-5	-23	-40	1 24			X	Sept-Îles A	-16	-8	-3	-29	17	11	310	78
Iqaluit A	-17	3	-6	-28	15 13	310	96		Sherbrooke A	-10	-3	4	-25	29	20	260	61
Mould Bay A	-30	0	-21	-42	2 18			X	Val-d'Or A	-18	-9	1	-31	24	20	310	43
Norman Wells A	-34	-8	-23	-42	1 5	290	46		New Brunswick								
Resolute A	-31	-3	-25	-36	0 6	050	50		Chatham A	*	*	*	*	*	***		X
Yellowknife A	-35	-12	-25	-41	2 ***			X	Fredericton A	-11	-7	5	-25	33	20	280	67
Alberta									Miscou Island (aut)								
Calgary Int'l A	-6	2	8	-16	1 ***	010	43		Moncton A	-9	-6	5	-22	31	18	290	72
Cold Lake A	-22	-8	-12	-31	13 15			X	Saint John A	-8	-5	7	-20	36	20	290	54
Edmonton Namao A	-16	-5	-6	-24	9 21			X	Nova Scotia								
Fort McMurray A	-25	-10	-17	-37	10 29	110	33		Greenwood A	-5	-4	9	-16	27	14	280	74
High Level A	-26	-3	-22	-33	18 35	110	33		Shearwater A	-2	-3	11	-12	38	3	090	78
Jasper	-2	7	4	-11	8 15			X	Sydney A	-4	-4	9	-11	38	11	260	87
Lethbridge A	-2	4	9	-16	0 ***			X	Yarmouth A	-1	-3	10	-11	32	1	100	67
Medicine Hat A	-6	1	11	-20	1 1	250	59		Prince Edward Island								
Peace River A	-22P	-7P	-15P	-26P	27P 54			X	Charlottetown A	-6	-5	6	-15	28	17	270	74
Saskatchewan									East Point (auto)								
Cree Lake	-31P	-8P	-18P	-43P	4P 26			X	-4P	*	8P	-14P	0P***				
Estevan A	-15	-5	5	-32	11 4	100	57		Newfoundland								
La Ronge A	-26	-9	-16	-38	8 35	090	32		Cartwright	-13	-6	-1	-23	24	34	330	87
Regina A	-17P	-6P	1P	-31P	10P 15	120	57		Churchill Falls A	-22	-6	-14	-33	10	38	290	63
Saskatoon A	-21P	-8P	-9P	-32P	8P 21	060	44		Gander Int'l A	-8	-5	5	-16	13	6	290	78
Swift Current A	-11	-2	6	-27	9 6	310	54		Goose A	-18	-8	-5	-27	23	28	280	63
Yorkton A	-21	-8	-8	-34	26 38	140	33		Port Aux Basques	*	*	5	*	*	14	300	126
Manitoba									St John's A								
Brandon A	-21	-8	-8	-32	19 23	060	56		-5	-5	11	-17	32	17	270	100	
Churchill A	-30P	-10P	-20P	-35P	1P 53	310	56		St Lawrence	-5	-5	8	-15	26	9		X
Lynn Lake A	-31	-9	-20	-39	4 33			X	Wabush Lake A	-24	-9	-12	-37	10	26	260	74
The Pas A	-26	-10	-17	-35	2 26	110	39		91/12/02-91/12/08								
Thompson A	-30	-9	-20	-41	5 27			X									
Winnipeg Int'l A	-20P	-9P	-9P	-30P	18P 19	090	54										

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.