

10057870
REF. 1

Climatic Perspectives

December 4 to 10, 1989

A weekly review of Canadian climate

Vol. 11 No 50

Severe storms continue to batter Atlantic Canada

Since the middle of November, the Atlantic provinces have been pounded by a succession of fierce storms. The latest storm produced winds of up to 130 km/h, churning up the Gulf of St. Lawrence into a fury. The hurricane-force winds and huge 10-metre waves claimed a total of 47 lives on two ocean-going cargo ships and a longliner fishing boat.

East Coast storms

Vicious Atlantic storms are nothing new to residents of eastern Canada. In fact, high winds and heavy snowfalls are a way of life during the winter months. What is unusual, is the fact that since November 21, four major snow storms have already hit the region. These low pressure systems intensify dramatically when they reach the east coast, because of the added moisture and heat input of the ocean.

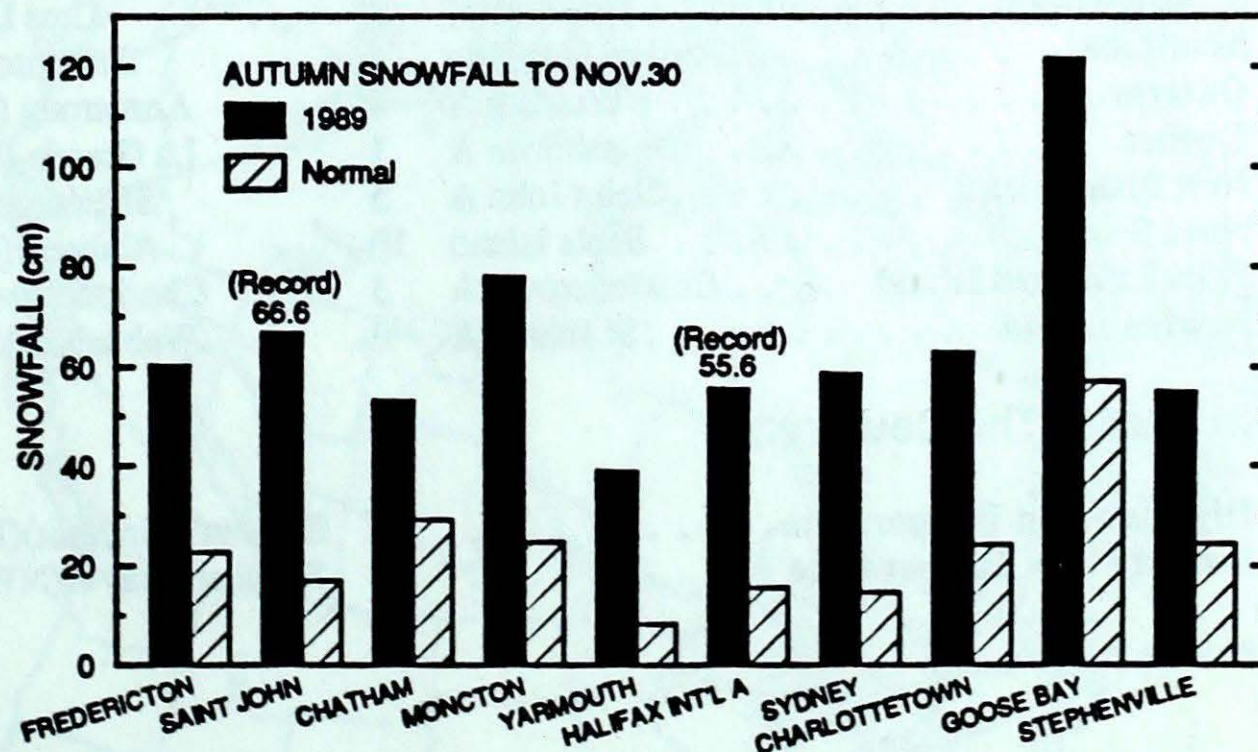
On December 3 and 4, the Gaspé was buried under 58.4 cm of snow, making this the 2nd-greatest two-day snowfall ever. The record is 60.2 cm, set January 18 and 19, 1988. Western Newfoundland was buffeted by blowing snow and howling winds of up to 139 km/h at Port-aux-Basques, while the Avalon Peninsula was drenched with 51.2 mm of rain, causing major flooding in the St. John's area. On December 7 and 8, a killer storm raged through the Gulf of St. Lawrence. A record-cold Arctic air mass covering the region at the time, helped intensify both these storms. Although the storms were not unusual, they were vicious, hitting eastern Quebec and Newfoundland hardest by closing schools and highways, and

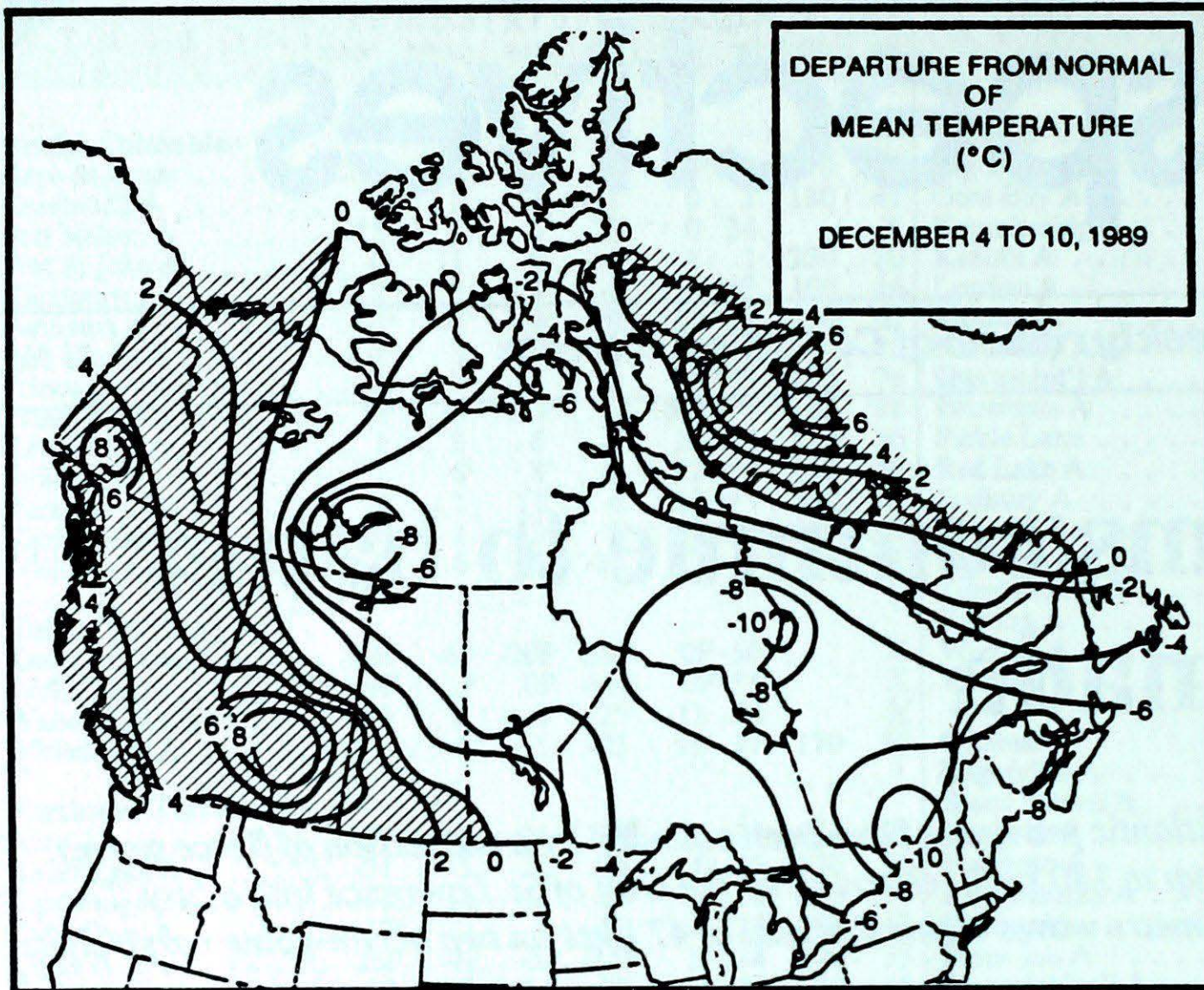
disrupting C.N. Marine ferry services. Labrador was inundated with record snowfalls this week; residents of Nain, in northern Labrador, had to dig out from under 116 cm of the white stuff.

The ghost of winter past may return...

During the last few months, the weather pattern over the Northern Hemisphere

has been similar to the winter of 1976-77. That winter, western Europe experienced unusually-warm temperatures, while the eastern half of North America experienced below-normal readings. For the week of December 18, below-normal temperatures are expected to continue across Manitoba, Ontario, Quebec, the Atlantic provinces and the eastern half of the Northwest Territories. Elsewhere, temperatures are expected to be above normal.





Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-13.5	-21.4
Iqaluit A	-16.6	-24.5
Yellowknife A	-19.5	-27.3
Vancouver Int'l A	6.5	1.0
Victoria Int'l A	6.9	-1.0
Calgary Int'l A	-2.2	-14.5
Edmonton Int'l A	-7.3	-18.2
Regina A	-7.3	-17.5
Saskatoon A	-8.8	-18.5
Winnipeg Int'l A	-8.5	-16.8
Ottawa Int'l A	-1.1	-8.5
Toronto Int'l A	2.4	-5.0
Montréal Int'l A	-0.5	-7.7
Québec A	-2.5	-9.6
Fredericton A	0.7	-8.6
Saint John A	1.8	-6.7
Halifax (Shearwater)	4.2	-2.8
Charlottetown A	2.0	-4.9
Goose A	-6.3	-14.8
St John's A	2.6	-3.2

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Abbotsford A 14	Fort Nelson A -31	Hope A 118
Yukon Territory	Burwash 7	Ogilvie -44	Blanchard 14
Northwest Territories	Iqaluit A -1	Eureka -44	Cape Dyer A 39
Alberta	Lethbridge A 13	High Level A -37	Cold Lake A 27
Saskatchewan	Eastend Cypress (aut) 9	Cree Lake -42	Yorkton A 12
Manitoba	Portage la Prairie 5	Thompson A -41	Gimli 9
Ontario	Windsor A 4	Armstrong (aut) -36	North Bay A 15
Québec	Natashquan A 1	La Grande IV A -41	Blanc Sablon A 58
New Brunswick	Saint John A 5	St-Léonard A -24	Fredericton A 16
Nova Scotia	Sable Island 10	Amherst (aut) -17	Greenwood A 14
Prince Edward Island	Charlottetown A 3	Charlottetown A -17	Summerside A 17
Newfoundland	St John's A 6	Wabush Lake A -29	Nain A 116

Across The Country...

Highest Mean Temperature	Estevan Point (aut)(BC) 8
Lowest Mean Temperature	Shepherd Bay A(NWT) -39

89/12/04-89/12/10

CLIMATIC PERSPECTIVES
VOLUME 11

Managing Editor *Alain Caillet*
Editor-in-charge
- weekly/monthly *Andy Radomski*
French version *Alain Caillet*
Data Manager *M. Skarpathiotakis*
Computer support *Tommy Jang*
Art Set-up *K. Czaja*
Translation *D. Pokorn*
Cartography *G. Young/T. Chivers*

ISBN 0225-5707 UDC 551.506.1(71)

Climatic Perspectives is a weekly publication (disponible aussi en français) of the Canadian Climate Centre, Atmospheric Environment Service, 4905 Dufferin St., Downsview, Ontario, Canada M3H 5T4

☎ (416) 739-4438/4436

The purpose of the publication is to make topical information available to the public concerning the Canadian Climate and its socio-economic impact.

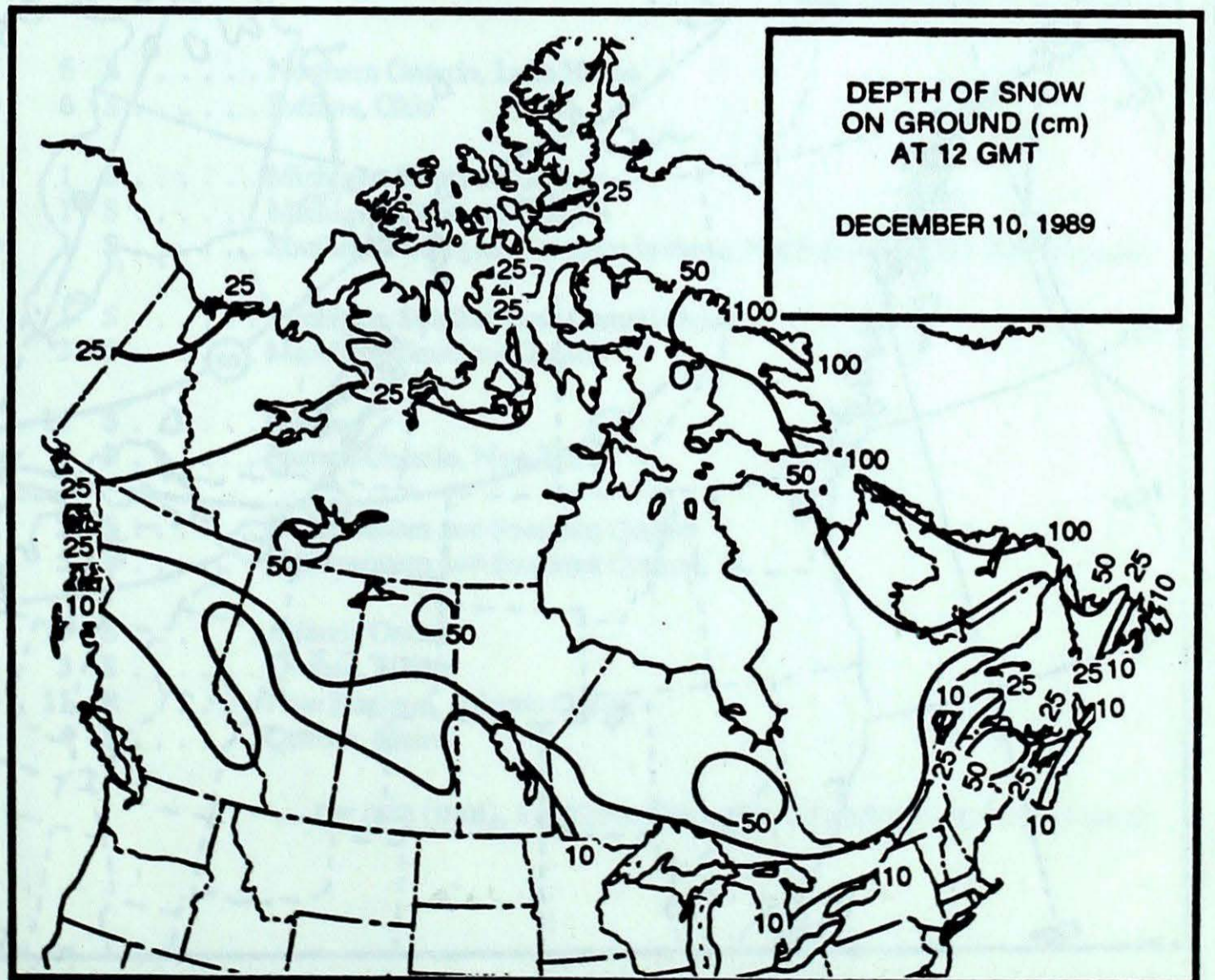
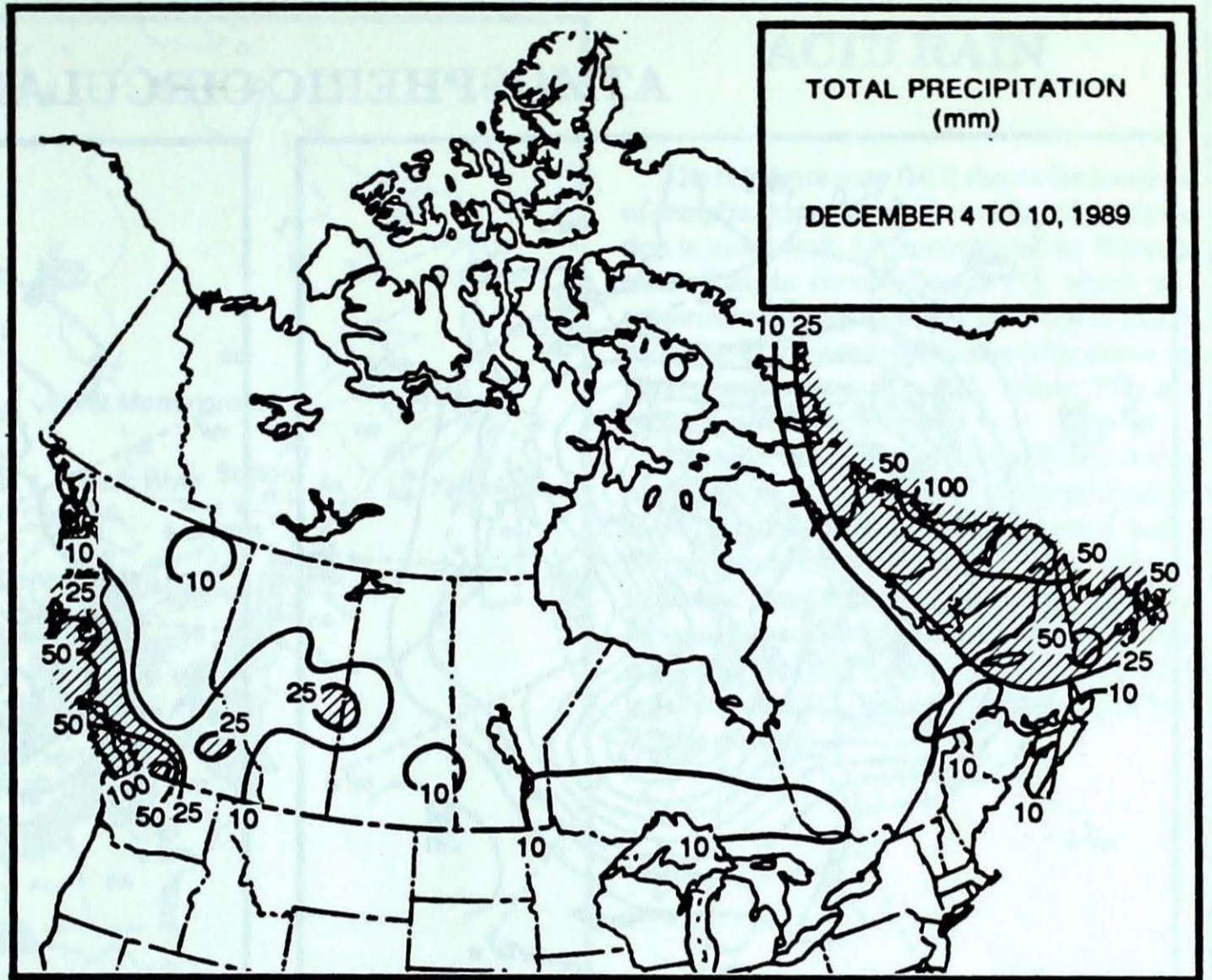
The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily reflect the views of the Atmospheric Environment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

Annual Subscriptions

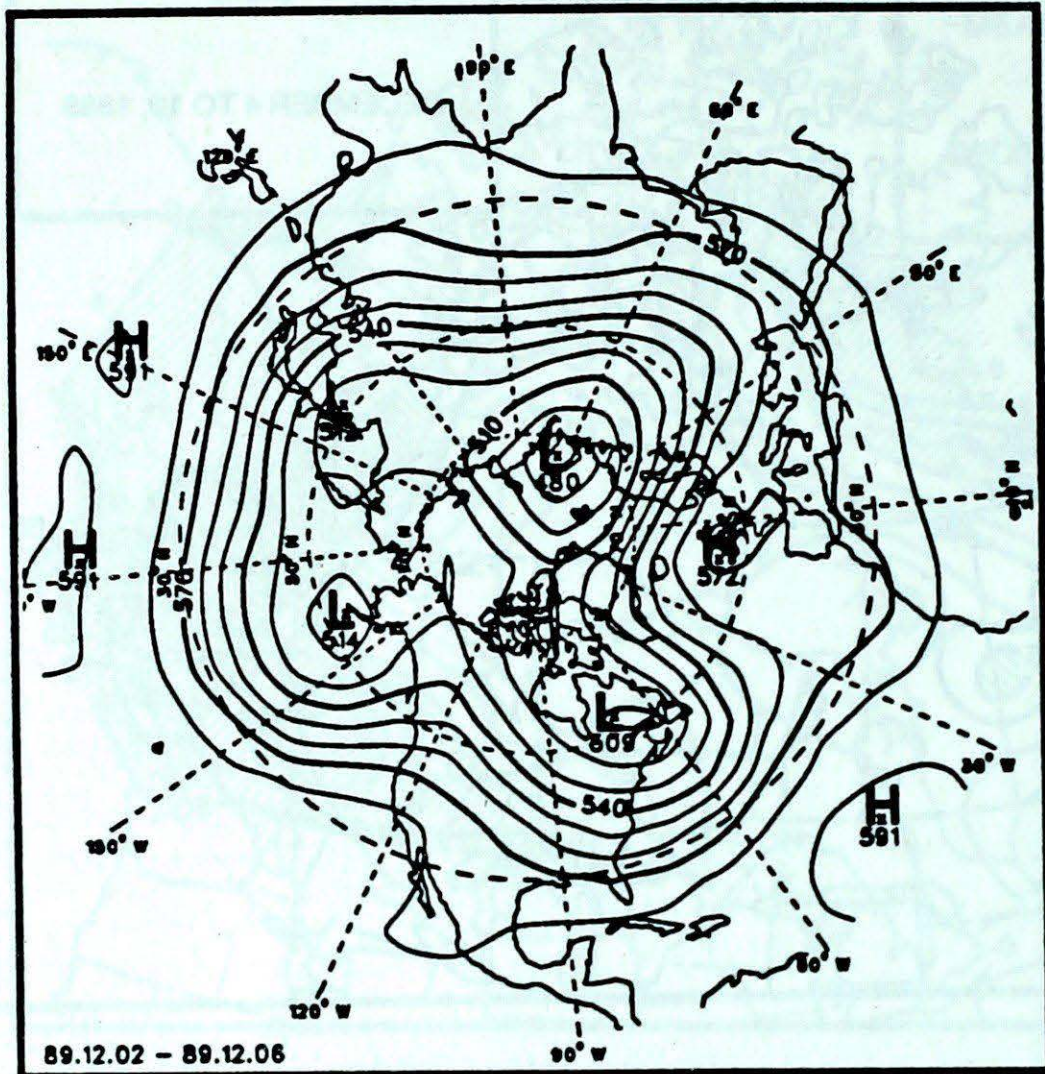
weekly and monthly : \$35.00
foreign: \$42.00
monthly issue: \$10.00
foreign: \$12.00

Orders must be prepaid by money order or cheque payable to Receiver General for Canada. Canadian Government Publishing Centre, Ottawa, Ontario, Canada K1A 0S9

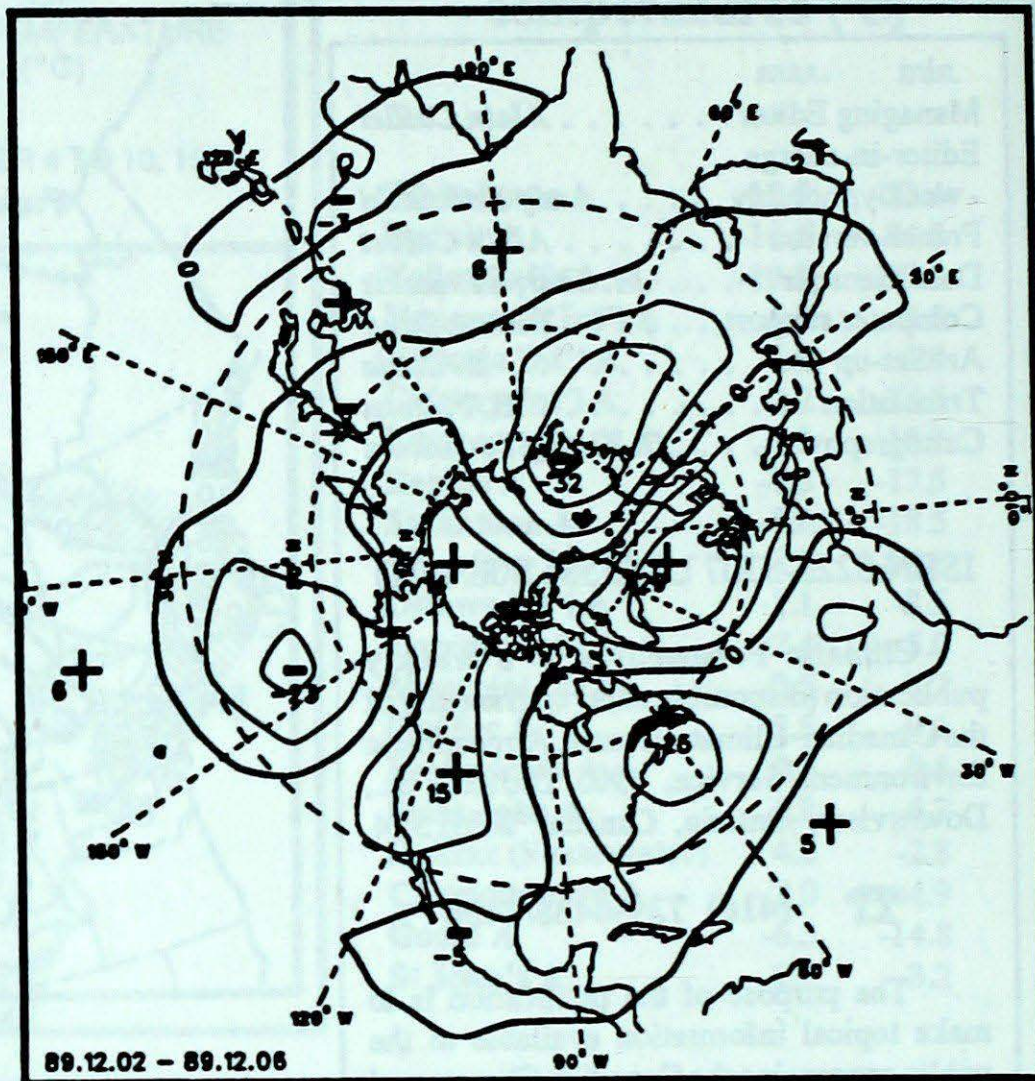
☎ (819) 997-2560



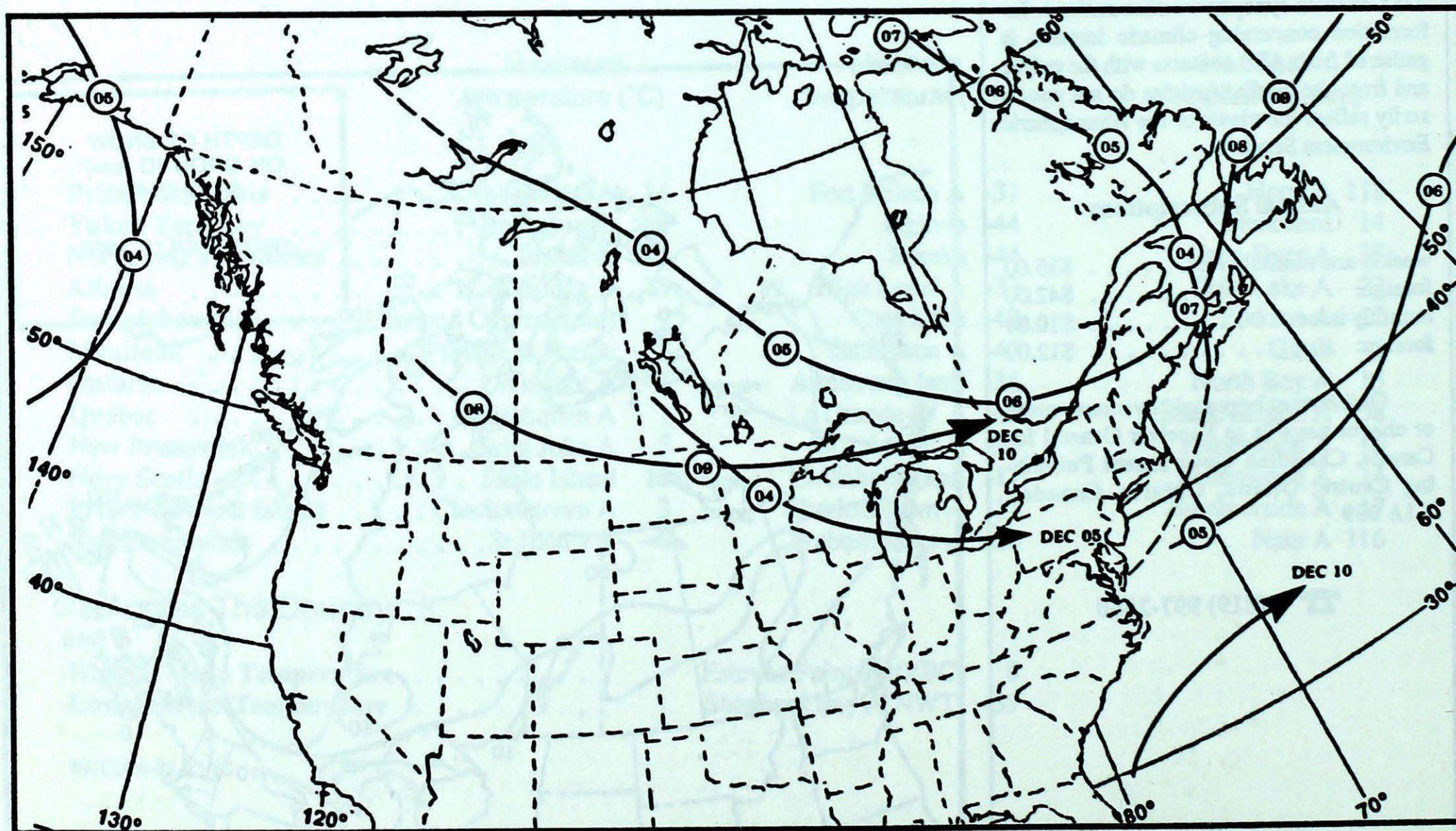
ATMOSPHERIC CIRCULATION



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



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



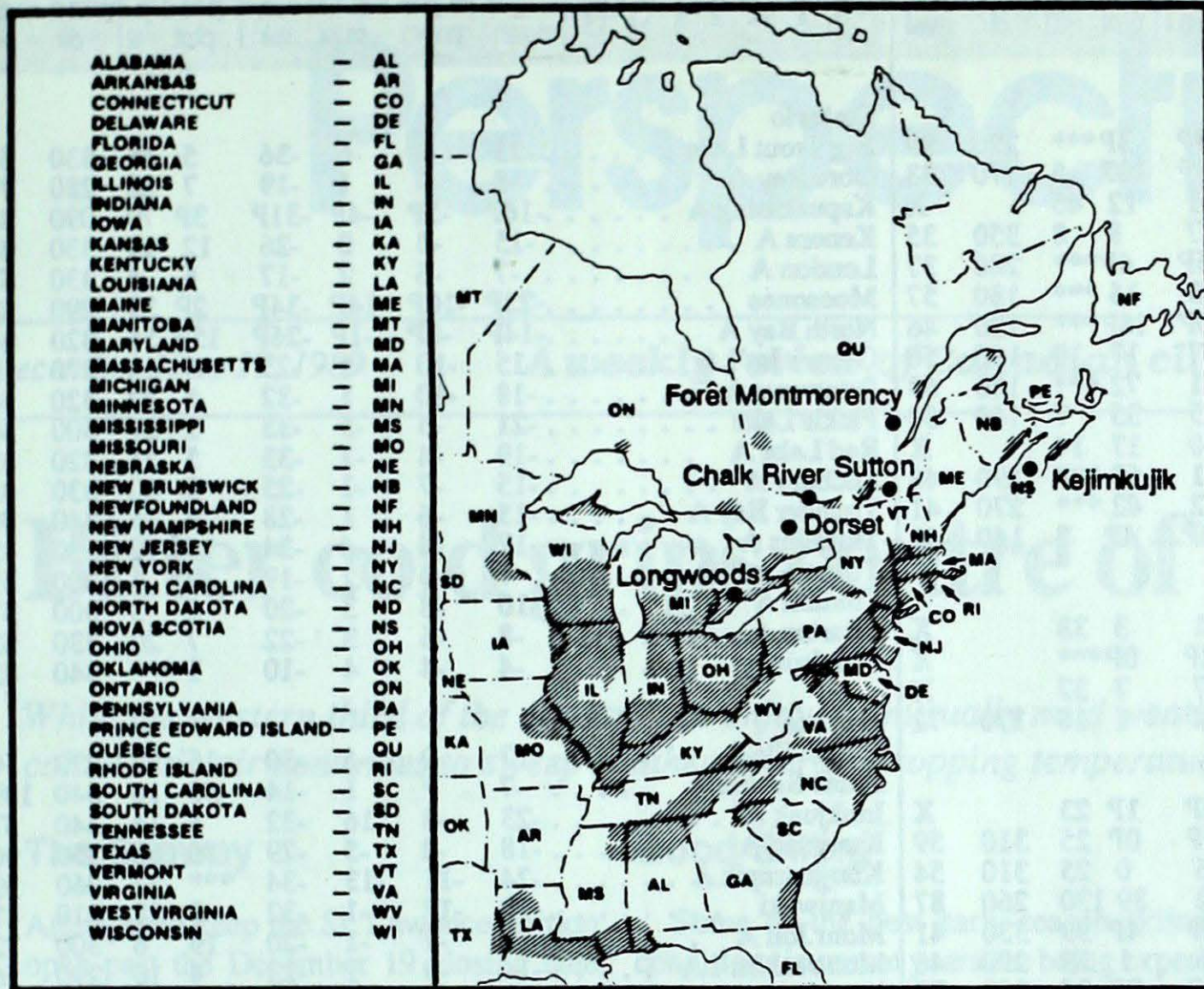
Tracks of low pressure centres at 12:00 U.T. each day during the period.

ATMOSPHERIC ENVIRONMENT SERVICE LIBRARY

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
------	-----	----	--------	------------------

From December 3 to 9, 1989

Longwoods	3	4.5	6 S	Northern Ontario, Lake Huron
	4	3.9	6 S	Indiana, Ohio
Dorset *	5	4.2	1 S	Michigan, Southern Ontario
	6	4.4	1 S	Michigan, Southern Ontario
	9	4.0	1 S	Southern Michigan, Northern Indiana, Northern Ohio, Southern Ontario
Chalk River	5	4.0	1 S	Michigan, Southern and Central Ontario
	9	3.8	3 S	Michigan, Southern Ontario
Sutton	3	4.2	12 S	Quebec
	6	4.2	9 S	Eastern Ontario, New York
Montmorency	5	4.1	2 S	Northwestern and Southern Quebec
	6	4.1	5 S	Northwestern and Southern Quebec
Kejimikujik	3	5.3	19 S	Atlantic Ocean
	4	4.8	3 S	Quebec, Maine
	6	4.0	11 R	New England, Atlantic Ocean
	7	4.6	4 S	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								
Cape St James	8P	3P	10P	5P	3P***	220	89	Big Trout Lake	-23	-6	-6	-36	5	35	330	56
Cranbrook A	-1P	6P	7P	-13P	10P 5	170	33	Gore Bay A	-8	-5	1	-19	7	20	280	74
Fort Nelson A	-19	2	-5	-31	12 45		X	Kapuskasing A	-16P	-5P	-4P	-31P	3P	70	090	43
Fort St John A	-12	2	5	-27	8 8	350	35	Kenora A	-15	-3	0	-26	12	14	330	48
Kamloops A	3P	5P	9P	-5P	4P***	280	37	London A	-7	-6	2	-17	6	4	330	57
Penticton A	3	4	8	-3	15 ***	180	57	Moosonee	-22P	-10P	-14P	-34P	2P	39	290	33
Port Hardy A	5P	2P	12P	0P	16P***	120	46	North Bay A	-14P	-8P	-1P	-26P	15P	56	320	46
Prince George A	-3	4	7	-17	17 10	180	50	Ottawa Int'l A	-15	-10	1	-23	5	11	270	59
Prince Rupert A	5	3	10	-1	72 ***	180	69	Petawawa A	-18	-10	1	-32	5	22	320	56
Revelstoke A	1	6	6	-5	35 7	140	50	Pickle Lake	-21	-5	-5	-33	2	37	300	50
Smithers A	-2	5	6	-10	17 14		X	Red Lake A	-19	-4	-1	-33	5	21	320	43
Vancouver Int'l A	8	4	13	1	60 ***	290	46	Sudbury A	-15	-7	-1	-25	9	40	330	43
Victoria Int'l A	7	3	14	-2	42 ***	270	41	Thunder Bay A	-15	-6	1	-28	6	15	340	50
Williams Lake A	-2P	5P	5P	-14P	4P 8	140	48	Timmins A	-17	-6	-4	-34	15	72	320	43
Yukon Territory								Toronto Int'l A								
Komakuk Beach A	-23	1	-12	-31	3 38		X	Trenton A	-10	-8	3	-20	2	3	300	57
Teslin (aut)	-9P	*	1P	-22P	0P***		X	Warton A	-8	-6	3	-22	7	20	330	52
Watson Lake A	-20	3	-5	-37	7 37		X	Windsor A	-4	-4	4	-10	1 ***	340	43	
Whitehorse A	-9	8	1	-22	1 18	170	72	Québec								
Northwest Territories								Bagotville A								
Alert	-31P	-2P	-24P	-36P	1P 23		X	Blanc Sablon A	-7	*	1	-14	58	10	340	109
Baker Lake A	-31P	-4P	-22P	-35P	0P 25	310	59	Inukjuak A	-23	-8	-16	-32	3	14	340	57
Cambridge Bay A	-31	-2	-23	-36	0 25	310	54	Kuujuuaq A	-18	-2	-5	-29	30	56	350	96
Cape Dyer A	-14	7	-2	-22	39 130	260	87	Kuujuuarapik A	-24	-11	-13	-34	***	22	260	59
Clyde A	-25P	-1P	-18P	-35P	4P 39	330	41	Maniwaki	-19	-12	-1	-32	8	28	310	41
Coppermine A	-28	-1	-19	-36	1 39	290	46	Mont Joli A	-12	-7	-1	-20	19	6	300	72
Coral Harbour A	-25P	-1P	-17P	-35P	2P 27	350	70	Montréal Int'l A	-14	-9	1	-23	4	10	290	56
Eureka	-36P	-2P	-25P	-44P	0P 21	280	32	Natashquan A	-10	-3	1	-17	40	32	300	67
Fort Smith A	-30P	-9P	-11P	-41P	0P 40	310	41	Québec A	-15	-9	-3	-24	5	42	260	59
Hall Beach A	-30	-2	-21	-38	0 33	330	44	Schefferville A	-22	-5	-9	-30	31	74	340	82
Inuvik A	-26	2	-16	-37	0 24	180	41	Sept-Îles A	-14	-6	-6	-23	22	14	020	72
Iqaluit A	-14P	6P	-1P	-29P	8P 25	310	54	Sherbrooke A	-17	-11	-2	-32	8	20	280	57
Mould Bay A	-31P	-1P	-27P	-37P	3P 22	350	50	Val-d'Or A	-18P	-8P	-5P	-32P	4P	36	320	43
Norman Wells A	-24	4	-14	-34	2 5	120	83	New Brunswick								
Resolute A	-30	-1	-22	-37	0 28	030	50	Charlo A	-13	-7	-4	-20	10	24	280	80
Yellowknife A	-32	-8	-20	-38	0 20	070	33	Chatham A	-12	-8	-1	-21	11	47	290	69
Alberta								Fredericton A								
Calgary Int'l A	-5	4	11	-21	4 2	340	44	Moncton A	-11P	-8P	2P	-20P	7P	50	260	82
Cold Lake A	-14P	0P	2P	-30P	27P 28		X	Saint John A	-12	-9	5	-21	16	48	300	76
Edmonton Namao A	-8P	4P	7P	-24P	4P 3	330	33	Nova Scotia								
Fort McMurray A	-19P	-3P	5P	-32P	4P 25		X	Greenwood A	-9P	-9P	5P	-14P	14P	13	270	65
High Level A	-22	1	-7	-37	7 37	330	37	Shearwater A	-6	-7	7	-13	9	1	280	76
Jasper	-5	4	5	-22	13 18		X	Sydney A	-7P	-7P	6P	-11P	3P	10	300	74
Lethbridge A	-2	4	13	-27	12 6	270	74	Yarmouth A	-5	-6	8	-10	11	1	300	83
Medicine Hat A	-3	5	12	-26	2 4	250	50	Prince Edward Island								
Peace River A	-18P	-3P	3P	-29P	1P 7		X	Charlottetown A	-11	-9	3	-17	12	16	300	70
Saskatchewan								Summerside A								
Cree Lake	-29	-5	-3	-42	0 30		X	-10	-9	1	-16	17	35	280	82	
Estevan A	-9	1	5	-24	1 3	320	50	Newfoundland								
La Ronge A	-22P	-3P	3P	-33P	1P 18		X	Cartwright	-7	1	1	-14	98	112	350	96
Regina A	-11	2	4	-26	2 3	340	52	Churchill Falls A	-18	-1	-4	-25	31	73	300	72
Saskatoon A	-13	1	1	-30	8 11	050	46	Gander Int'l A	-6	-4	2	-13	49	30	100	85
Swift Current A	-6	4	8	-24	1 1	280	54	Goose A	-13P	-2P	-1P	-24P	52P	95	060	59
Yorkton A	-14	0	3	-27	12 13		X	Port Aux Basques	-6P	-5P	5P	-10P	61P	41	300	120
Manitoba								St John's A								
Brandon A	-12P	1P	2P	-26P	6P 7	040	57	St Lawrence	-3	-2	5	-7	46	1		X
Churchill A	-26	-6	-14	-34	6 32	050	63	Wabush Lake A	-21	-5	-10	-29	18	24	301	37
Lynn Lake A	-28P	-4P	-2P	-39P	0P 37	330	48	89/12/04-89/12/10								
The Pas A	-21	-5	1	-34	0 8	340	39									
Thompson A	-27	-5	-3	-41	1 43	320	44									
Winnipeg Int'l A	-14	-2	4	-26	7 6	010	44									

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
 dlr = 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.