

Climatic Perspectives

February 19 to 25, 1990

A weekly review of Canadian climate

Vol.12 No.8

Unusually heavy ice disrupts shipping in Atlantic Canada

Since the beginning of the year, cold weather has promoted rapid ice growth in the waters off eastern Canada, and has consequently produced some of the most difficult ice conditions in the Gulf of St. Lawrence and eastern Newfoundland in recent memory. Both the thickness and extent of the ice cover has now reached record proportions.

Gulf of St. Lawrence

The Gulf is completely covered with ice, ranging in thickness from 30 to 70 centimetres. Persistently strong northwesterly winds have compressed the ice pack along Newfoundland's west coast, and the heavily rafted and ridged ice has attained thickness in excess of two metres. Ice funnelling through Cabot Strait is disrupting commercial navigation. Six Canadian Coast Guard icebreakers are working full-time trying to keep the shipping lanes across the Gulf open, as well as keep marine traffic moving through the Gaspé passage and into Chaleur Bay. In the Gulf, ships are constantly requiring icebreaker assistance. At times, icebreaker-led convoys have been stuck in the ice for days waiting for the winds to let up and the ice pressure to ease. Ships are enduring delays of up to a week trying to reach Stephenville and Cornerbrook, Nfld.

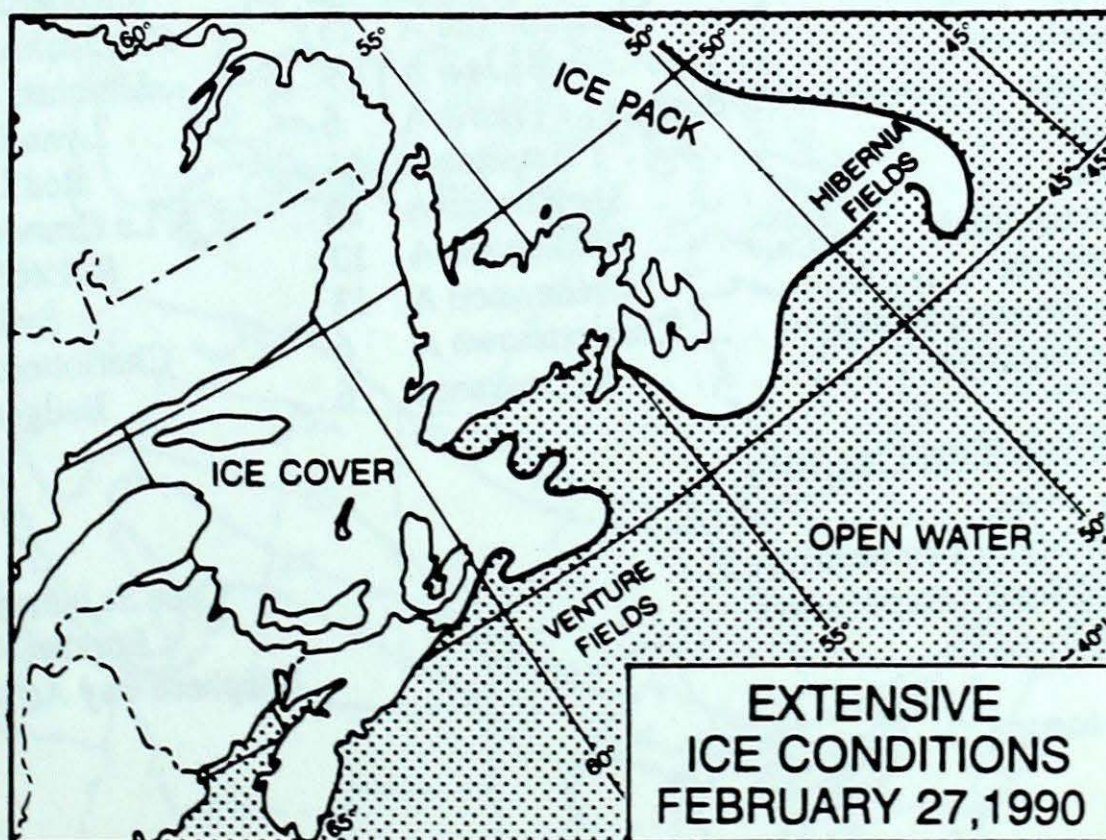
Newfoundland coast

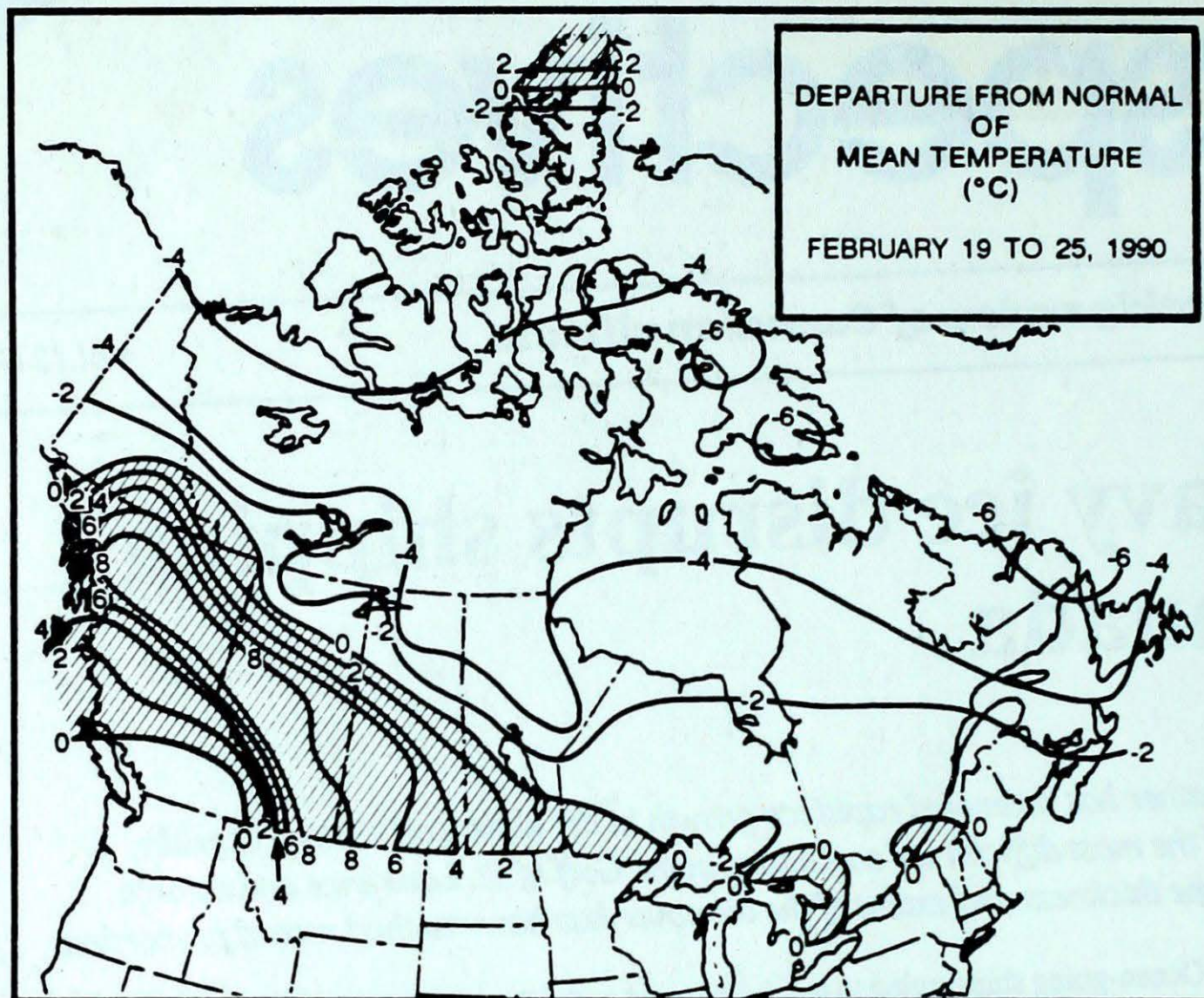
The Labrador ice pack now extends well south of the Avalon Peninsula and east to the Hibernia oil fields. This past month ice conditions have become particularly heavy along the north coast of the Island, as they have been each winter since the mid 80s.

Ocean-going ships trying to reach Botwood and Lewisporte are even finding it difficult to follow icebreakers into port because of the exerted ice pressures. Most coastal ferries are still operating with icebreaker assistance, but a shift in wind direction could cause severe problems. Deep-sea fishing trawlers leaving St. John's are forced to detour well south of their intended route in order to avoid the extensive pack ice. Because of the unusually cold temperatures the Coast Guard is being called in to break up ice in the harbours along the south coast.

Cold temperatures will delay ice breakup in the East...

For the week of March 5, below-normal temperatures are expected across the Yukon, Arctic, Quebec and the Atlantic Provinces. As a result, ice conditions are expected to remain difficult in the Gulf of St. Lawrence, and initial ice breakup is not expected until after mid-March. Elsewhere across the country, above-normal temperatures are expected.





DEPARTURE FROM NORMAL OF MEAN TEMPERATURE (°C)
FEBRUARY 19 TO 25, 1990

Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-6.0	-15.9
Iqaluit A	-21.9	-30.5
Yellowknife A	-18.2	-28.6
Vancouver Int'l A	8.5	1.4
Victoria Int'l A	8.6	1.3
Calgary Int'l A	-0.7	-12.5
Edmonton Int'l A	-3.8	-16.3
Regina A	-6.9	-18.1
Saskatoon A	-7.8	-18.9
Winnipeg Int'l A	-8.7	-20.2
Ottawa Int'l A	-3.4	-12.1
Toronto (Pearson Int'l A)	-0.2	-8.9
Montréal Int'l A	-3.0	-11.7
Québec A	-4.6	-13.8
Fredericton A	-1.7	-13.1
Saint John A	-1.3	-11.9
Halifax (Shearwater)	0.4	-7.6
Charlottetown A	-2.6	-11.0
Goose A	-9.0	-19.5
St John's A	-1.3	-8.2

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Abbotsford A 14	Fort Nelson A -30	Prince Rupert A 53
Yukon Territory	Haines Junction 6	Ogilvie -52	Faro 16
Northwest Territories	Hay River A -2	Shepherd Bay A -47	Yellowknife A 6
Alberta	Medicine Hat A 13	Fort McMurray A -31	Slave Lake A 9
Saskatchewan	Moose Jaw A 9	Uranium City A -40	La Ronge A 13
Manitoba	Portage La Prairie A 6	Lynn Lake A -37	Gillam A 6
Ontario	Timmins A 11	Red Lake A -37	Windsor A 81
Quebec	Sherbrooke A 10	La Grande IV A -38	Montréal Int'l A 24
New Brunswick	Fredericton A 12	St-Léonard A -26	Saint John A 34
Nova Scotia	Greenwood A 13	Sydney A -20	Greenwood A 71
Prince Edward Island	Charlottetown A 6	Charlottetown A -23	Summerside A 53
Newfoundland	St Lawrence 6	Badger (aut) -36	St John's A 49

Across The Country...

Highest Mean Temperature	Cape St James(BC) 6
Lowest Mean Temperature	Eureka(NWT) -42
	Shepherd Bay A(NWT) -42

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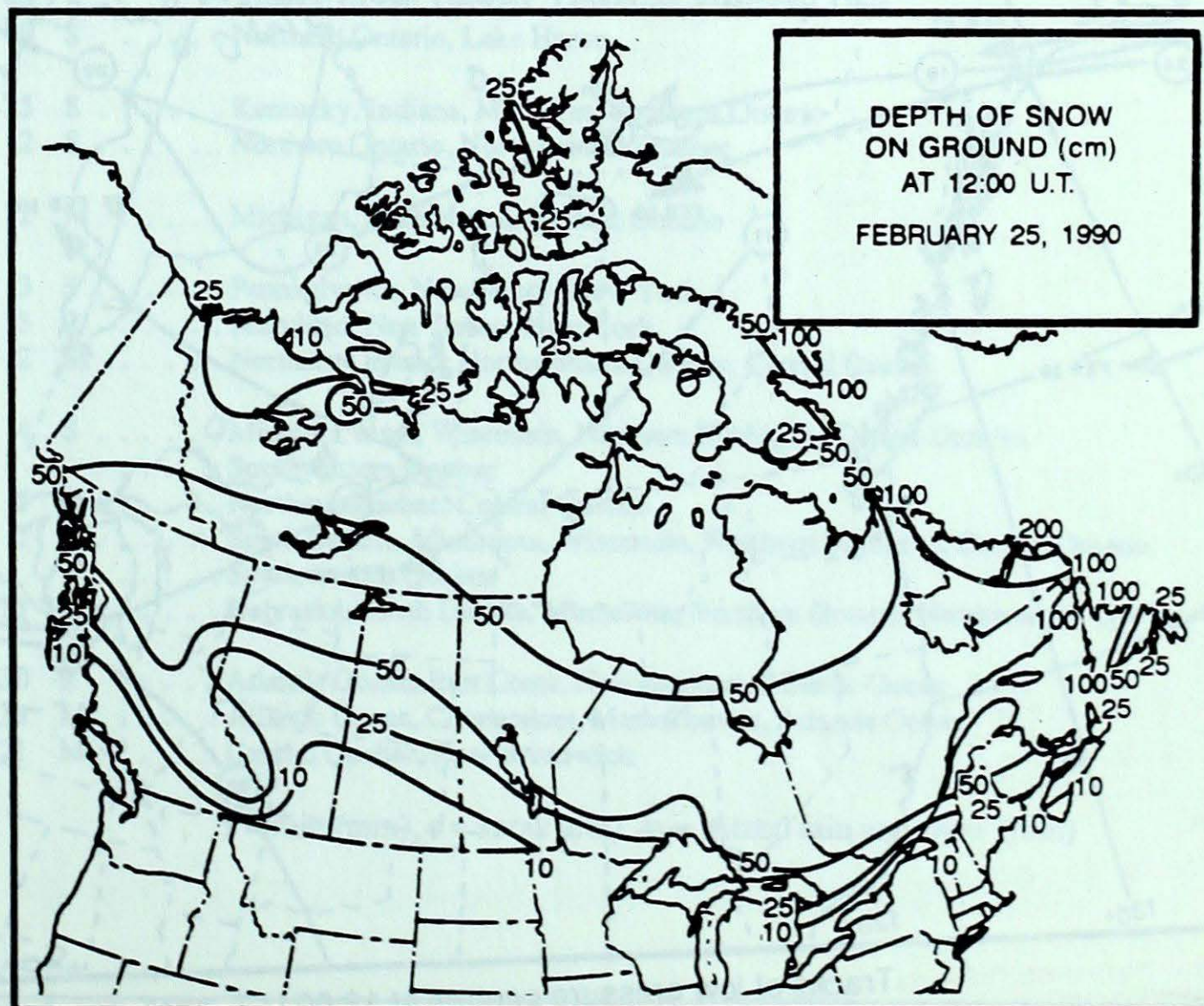
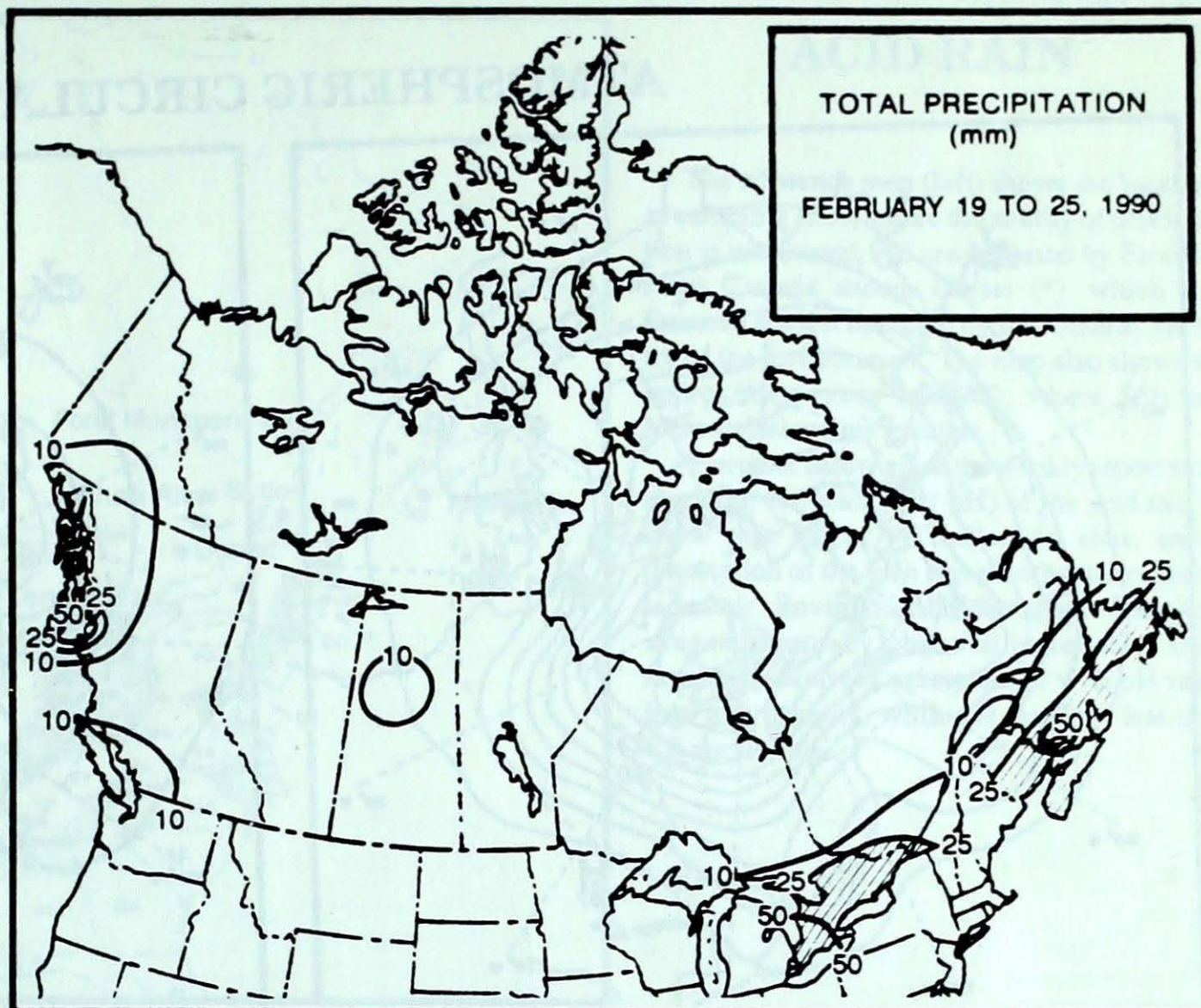
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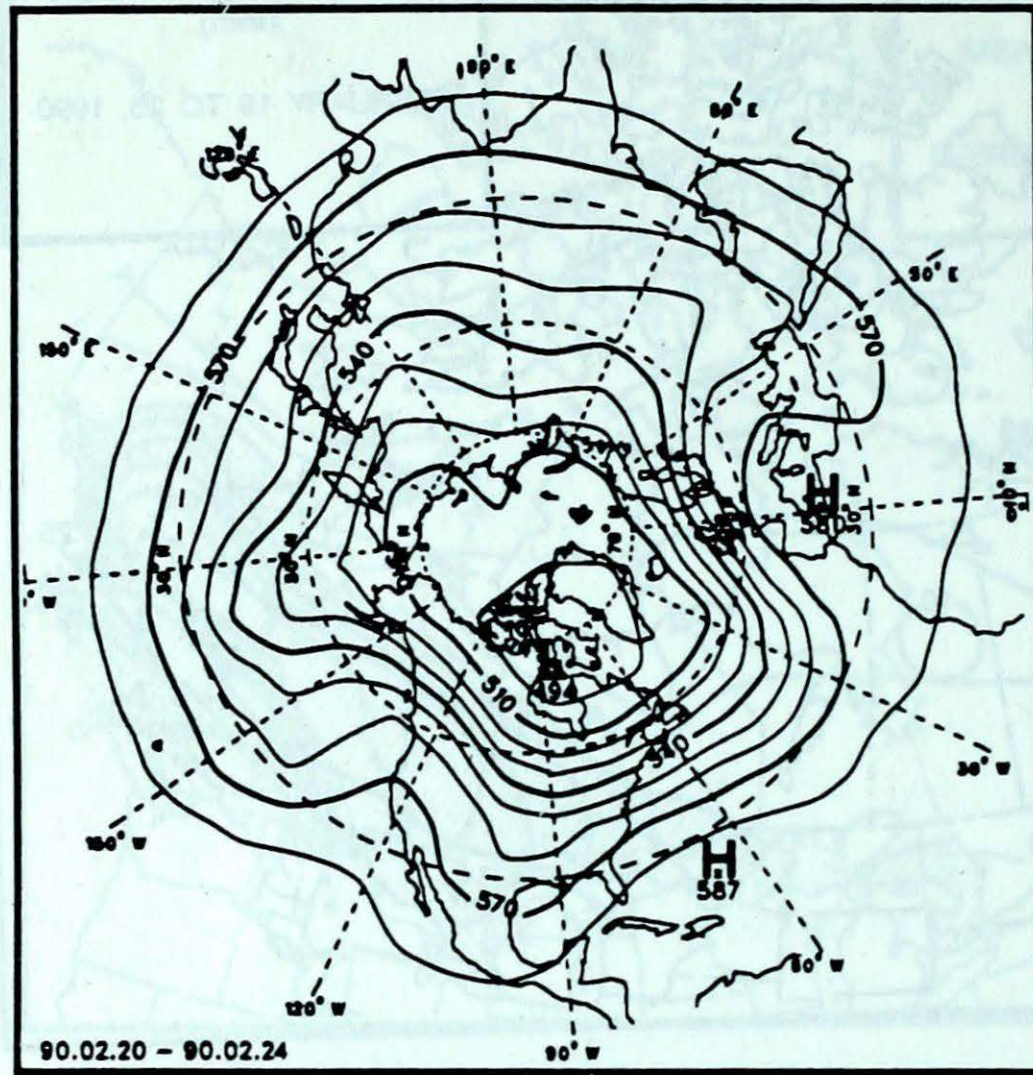
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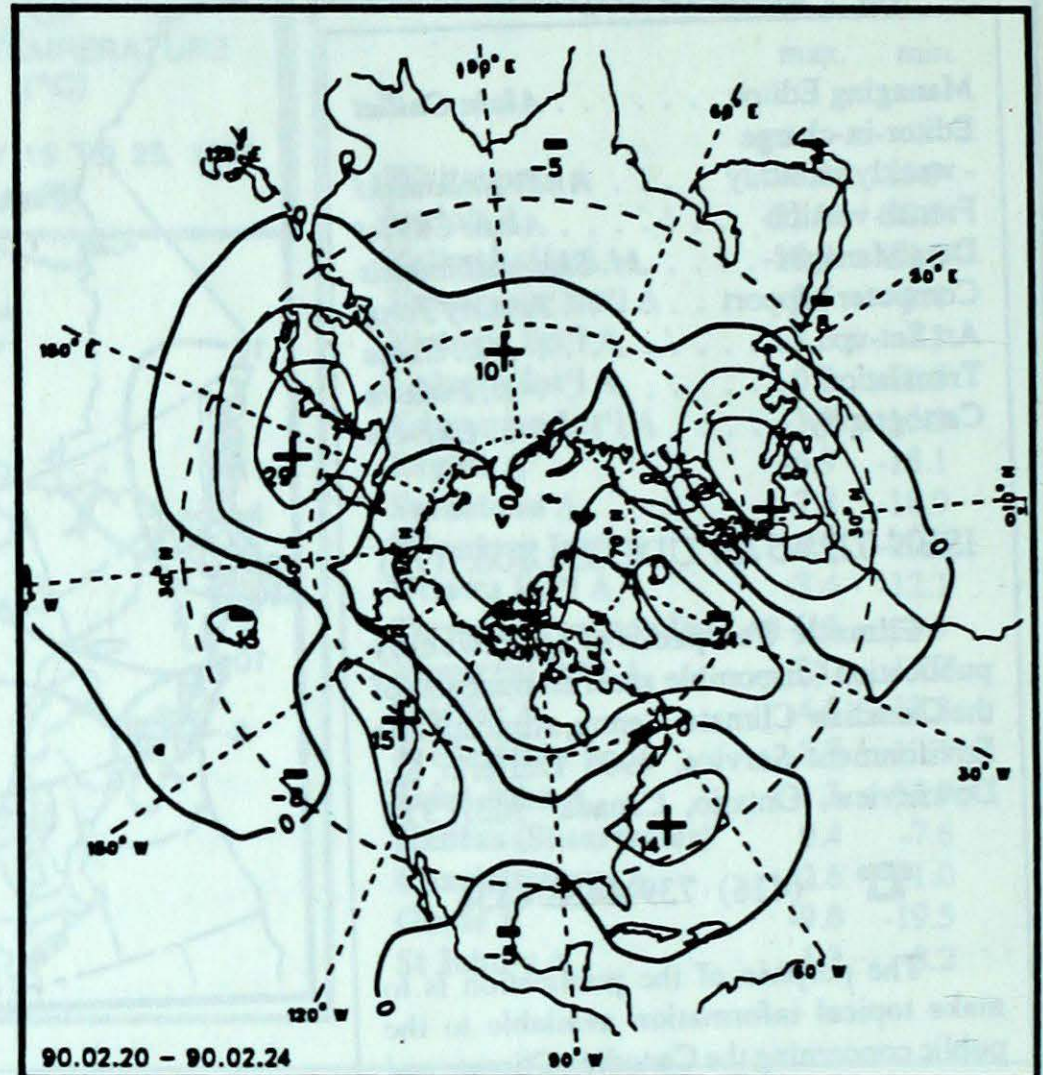
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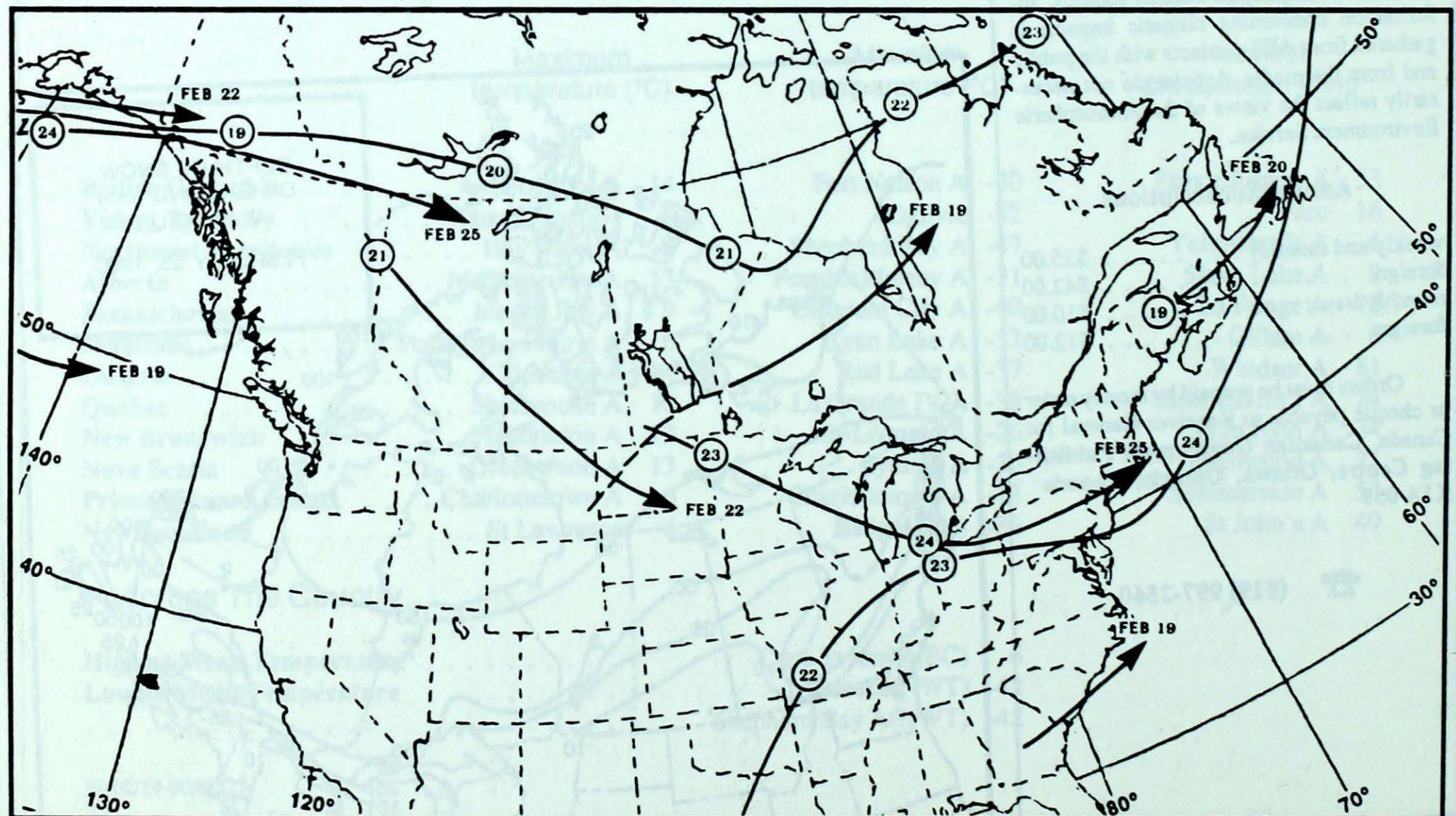
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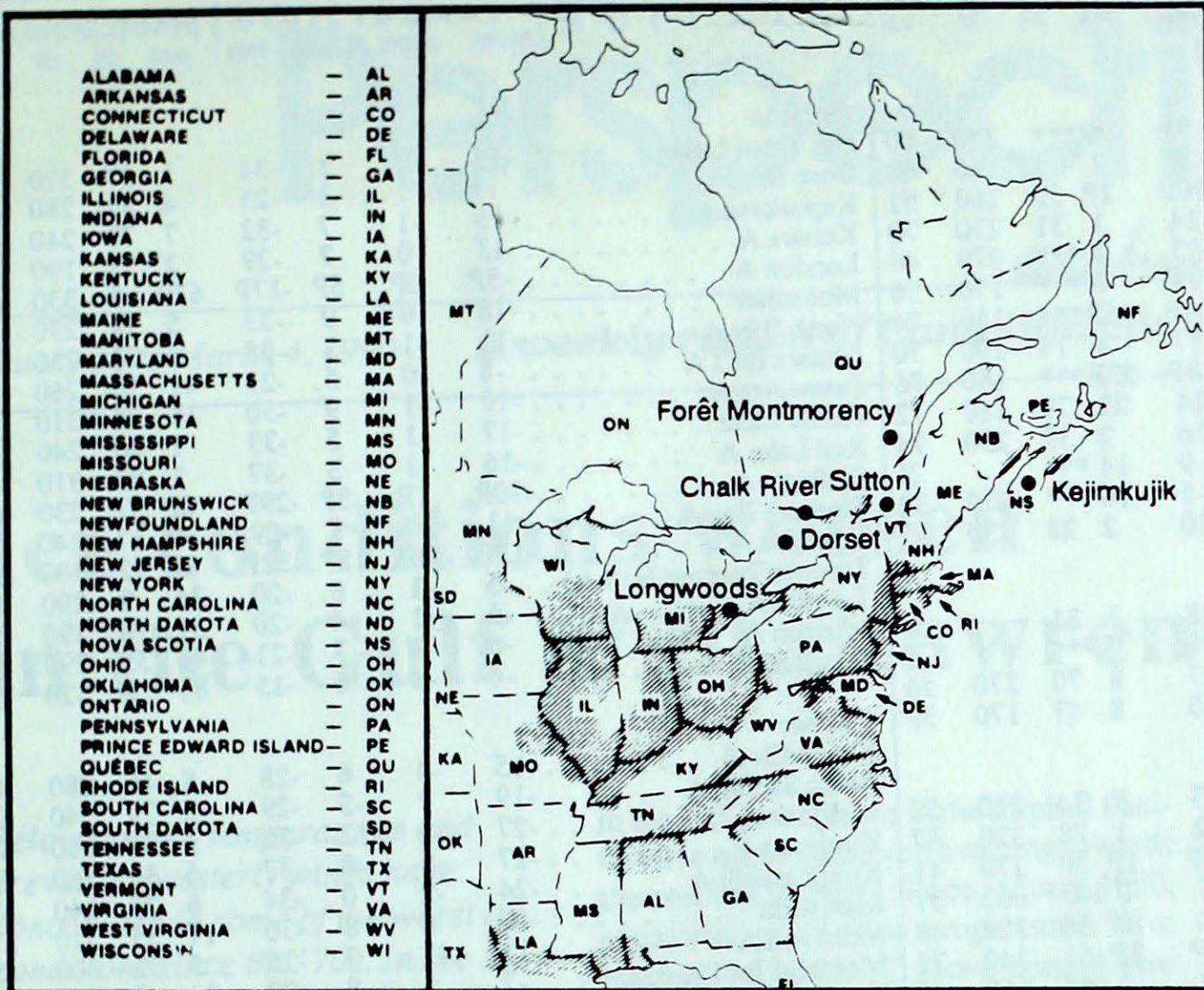
Mean geopotential height
50-kPa level (10-decametre intervals)



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
From February 18 to 24, 1990				
Longwoods	21	3.9	12 R	Georgia, Tennessee, Kentucky, Indiana, Michigan
	22	3.6	45 R	Atlantic Ocean, Georgia, Tennessee, Kentucky, Ohio
	24	4.6	15 S	Northern Ontario, Lake Huron
Dorset *	22	4.6	25 S	Kentucky, Indiana, Michigan, Southern Ontario
	24	4.8	2 S	Northern Ontario, Northwestern Quebec
Chalk River	22	4.2	12 M	Michigan, Lake Huron, Eastern Ontario
Sutton	19	4.1	3 S	Pennsylvania, New Jersey, New York
	22	4.1	23 R	Maryland, New Jersey, New York
	23	3.9	2 M	Northern Ontario, Northwestern Quebec, Central Quebec
Montmorency	18	4.2	4 S	Missouri, Iowa, Wisconsin, Northern Michigan, Central Ontario, Southwestern Quebec
	19	4.3	5 S	Northern Quebec, Central Quebec
	20	4.6	1 S	South Dakota, Minnesota, Wisconsin, Northern Michigan, Central Ontario, Southwestern Quebec
	22	4.3	11 S	Nebraska, South Dakota, Minnesota, Northern Ontario, Northwestern Quebec
Kejimikujik	22	4.8	30 R	Atlantic Ocean, East Coast, New England, Atlantic Ocean
	23	4.2	13 M	Atlantic Ocean, Connecticut, Massachusetts, Atlantic Ocean
	24	4.1	21 M	Central Quebec, New Brunswick

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																
Cape St James	6P	1P	10P	3P	2P***		270	80	Big Trout Lake	-22	-2	1	-34	1	67	320	57							
Cranbrook A	-2	1	10	-20	1	1	160	48	Gore Bay A	-7	1	3	-25	4	35	280	69							
Fort Nelson A	-14P	1P	5P	-30P	2P	52	360	52	Kapuskasing A	-16	-1	7	-32	7	70	240	83							
Fort St John A	-1	8	9	-14	1	31	230	70	Kenora A	-13	0	7	-29	2	33	190	54							
Kamloops A	0	0	10	-15	3	***	070	46	London A	-5P	0P	5P	-17P	67P	5	330	67							
Penticton A	0	-2	10	-14	0	***	170	56	Moosonee	-18	0	9	-33	5	74	270	61							
Port Hardy A	5P	0P	11P	-1P	6P***		110	74	North Bay A	-11	-1	3	-28	4	74	230	56							
Prince George A	-1	4	9	-17	4	14	190	70	Ottawa Int'l A	-8	0	5	-21	41	16	260	67							
Prince Rupert A	4P	0P	10P	-3P	53P***		160	76	Petawawa A	-10	-1	9	-30	16	28	310	61							
Revelstoke A	-1	0	7	-14	22	79	180	72	Pickle Lake	-17	1	5	-33	1	46	240	46							
Smithers A	2	5	12	-16	2	39	230	74	Red Lake A	-16	-1	3	-37	1	83	310	48							
Vancouver Int'l A	4	-2	9	-9	14	***		X	Sudbury A	-10P	1P	3P	-29P	0P	57	230	54							
Victoria Int'l A	4	-1	11	-5	16	***	270	32	Thunder Bay A	-11	0	7	-29	1	17	240	59							
Williams Lake A	0	3	10	-10	2	28	150	52	Timmins A	-17P	-3P	11P	-32P	3P	92	300	57							
Yukon Territory								Toronto (Pearson Int'l A)																
Komakuk Beach A	-32	-6	-27	-38	1	31		X	Trenton A	-6	-1	4	-20	31	10	290	78							
Teslin (aut)	-9	*	4	-18	0	***		X	Warton A	-6	1	7	-21	44	35	290	63							
Watson Lake A	-11	6	4	-27	8	70	270	56	Windsor A	-4	-2	6	-15	81	8	320	83							
Whitehorse A	-13	-2	3	-23	8	47	170	59	Québec															
Northwest Territories								Bagotville A																
Alert	-28	6	-16	-35	5	34	210	52	Blanc Sablon A	-19	*	-5	-29	3	79	340	61							
Baker Lake A	-37	-4	-28	-42	1	28	320	67	Inukjuak A	-27	-2	-12	-35	5	32	260	57							
Cambridge Bay A	-39P	-4P	-30P	-44P	1P	30	270	41	Kuujuuaq A	-27	-5	-8	-37	6	33	260	78							
Cape Dyer A	-28	-4	-13	-37	0	103	060	37	Kuujuuarapik A	-24	-2	0	-34	6	29	140	63							
Clyde A	-33	-5	-20	-40	0	38	320	48	Maniwaki	-10	0	8	-30	17	53	310	57							
Coppermine A	-32P	-3P	-19P	-42P	3P	61	340	72	Mont Joli A	-11	-1	7	-25	5	33	300	65							
Coral Harbour A	-35	-6	-25	-42	2	***	350	65	Montréal Int'l A	-7	1	8	-20	24	5	260	67							
Eureka	-42	-3	-36	-46	0	16		X	Natashquan A	-16	-5	-3	-28	2	80	280	35							
Fort Smith A	-22	-2	-7	-36	0	80	130	48	Québec A	-10	-1	6	-23	18	100	300	69							
Hall Beach A	-38	-6	-34	-41	1	39	310	50	Schefferville A	-26	-5	-2	-37	5	60	290	82							
Inuvik A	-31	-4	-19	-45	4	41	300	44	Sept-Îles A	-17	-6	0	-30	9	33	310	48							
Iqaluit A	-33P	-7P	-21P	-39P	2P	15	330	98	Sherbrooke A	-7P	3P	10P	-24P	10P	19	300	65							
Mould Bay A	-40	-4	-34	-45	0	24		X	Val-d'Or A	-15	-2	6	-33	3	58	220	63							
Norman Wells A	-29	-4	-14	-42	1	10	280	63	New Brunswick															
Resolute A	-37	-3	-30	-42	0	23	310	44	Charlo A	-12	-1	11	-24	9	104	280	63							
Yellowknife A	-25P	-2P	-14P	-36P	6P	46	310	61	Chatham A	-10	-2	9	-20	14	52	300	67							
Alberta								Fredericton A																
Calgary Int'l A	2	8	12	-12	0	***	250	85	Moncton A	-12P	-5P	11P	-21P	3P	35	300	78							
Cold Lake A	-8	4	5	-25	4	28	310	48	Saint John A	-8	-2	6	-19	34	28	310	74							
Edmonton Namao A	-2	8	8	-12	1	7	320	54	Nova Scotia															
Fort McMurray A	-14	-1	4	-31	7	49	280	54	Greenwood A	-5	-1	13	-18	71	30	280	83							
High Level A	-18	-3	0	-27	6	59	350	56	Shearwater A	-4	0	8	-16	46	12	300	82							
Jasper	0	6	10	-12	1	27		X	Sydney A	-9	-3	8	-20	32	20	350	54							
Lethbridge A	3	8	12	-8	3	***	260	93	Yarmouth A	-2	1	8	-12	36	5	310	85							
Medicine Hat A	2	9	13	-11	0	***	220	78	Prince Edward Island															
Peace River A	-6P	6P	7P	-17P	3P	15	260	61	Charlottetown A	-10P	-3P	6P	-23P	39P	33	310	83							
Saskatchewan								Summerside A																
Cree Lake	-21	-5	-1	-37	8	48	330	57	Summerside A	-9	-2	5	-20	53	77	310	69							
Estevan A	-5	6	8	-21	2	1	320	65	Newfoundland															
La Ronge A	-15	-1	7	-33	13	65	320	48	Cartwright	-20	-7	-7	-31	3	232	220	56							
Regina A	-7	5	5	-23	3	12	360	63	Churchill Falls A	-24	-4	-1	-35	7	78	300	70							
Saskatoon A	-8	5	4	-24	1	7	010	48	Gander Int'l A	-12	-5	2	-22	32	51	340	59							
Swift Current A	-3	7	7	-16	1	1	250	74	Goose A	-20	-5	-2	-29	2	112	290	65							
Yorkton A	-12	3	2	-26	2	30	300	50	Port Aux Basques	-10	-4	1	-19	31	115	020	80							
Manitoba								St John's A																
Brandon A	-13P	2P	4P	-28P	0P	21	290	56	St Lawrence	-6	-1	6	-15	40	10		X							
Churchill A	-28	-3	-14	-36	1	18	300	70	Wabush Lake A	-23	-2	0	-34	6	56	290	69							
Lynn Lake A	-23	-5	-1	-37	3	65	300	48	90/02/19-90/02/25															
The Pas A	-17	0	1	-30	4	31	330	50																
Thompson A	-26P	-7P	-1P	-36P	0P	57	340	19																
Winnipeg Int'l A	-14	1	4	-29	1	13	180	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.