Environment Canada Environnement Canada

MONTHLY SUPPLEMENT INCLUDED

Climatic Perspectives

November 13 to 19, 1989 **A weekly review of Canadian climate** *Vol. 11 No 47*

Stormy weather ushers in winter

A record cold Arctic air mass spilled southeastwards across the Prairies, while in eastern Canada a southwesterly circulation pumped record warm, moist air northwards. An active frontal disturbance dividing these two strongly contrasting air masses eventually reached the east coast, plunging all of eastern Canada into a winter-like regime for the weekend.

Intense storm batters East

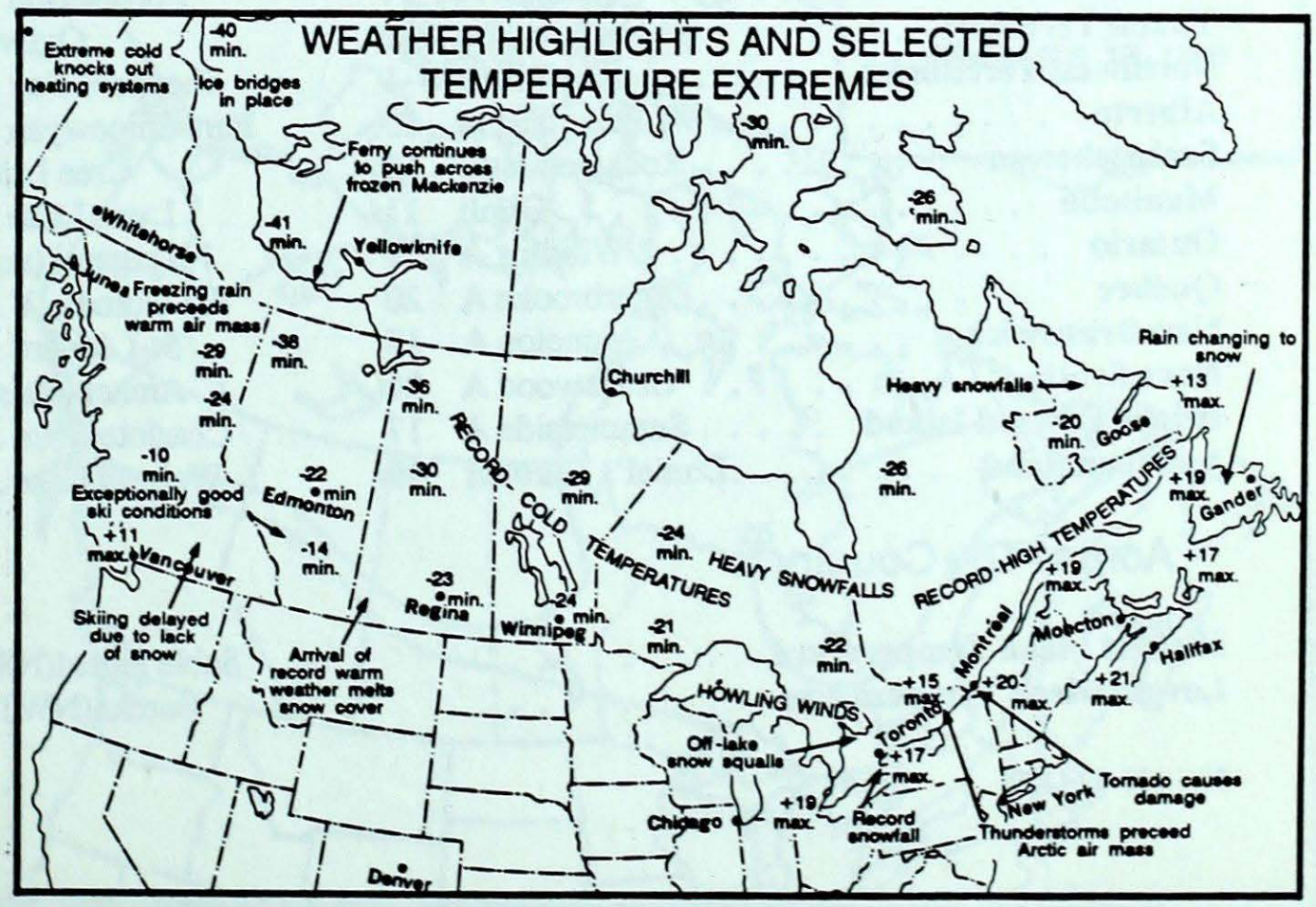
Fierce winds accompanied by dropping temperatures ravaged the Great Lakes Basin from November 16 to the 18th. In northern Ontario, where snowfalls ranged between 20 and 30 centimetres, the wind whipped the snow into drifts more than a metre high. Snow squalls, which developed to the lee of the Great Lakes, dumped an additional 30 cm of snow in the snow belt regions. By the morning of the 18th, St. Catharines, in the Niagara Peninsula, had received 26 cm of snow, while Muskoka reported 30 cm on the ground. Strong winds, heavy precipitation and thunderstorms accompanied this weather system into Québec.

Tornado hits Québec town

On November 16, thunderstorms which developed ahead of a sharp cold front crossing Ontario and Québec, spawned a late-season tornado, which touched down near the town of Mont-St-Hilaire during the mid-afternoon. The tornado, which cut a swath 500 metres wide for more than one kilometre, caused extensive damage, estimated to reach $2 million.

Alberta skiing season underway

Alberta ski resorts in the Rockies are starting off the season with the best snow conditions in more than a decade. Fortress Mountain in Kananaskis County was the first to open its slopes last week, while resorts near Banff, Lake Louise and Jasper will be opening very soon. At least 30 to 50 centimetres of fresh snow has fallen during the last few weeks. One week ago, Sunshine Village near Banff got 105 cm in eight days. The cold temperatures have also been beneficial for snow-making. In contrast, ski resorts in the southern B.C. interior have had to delay opening because of a lack of snow.



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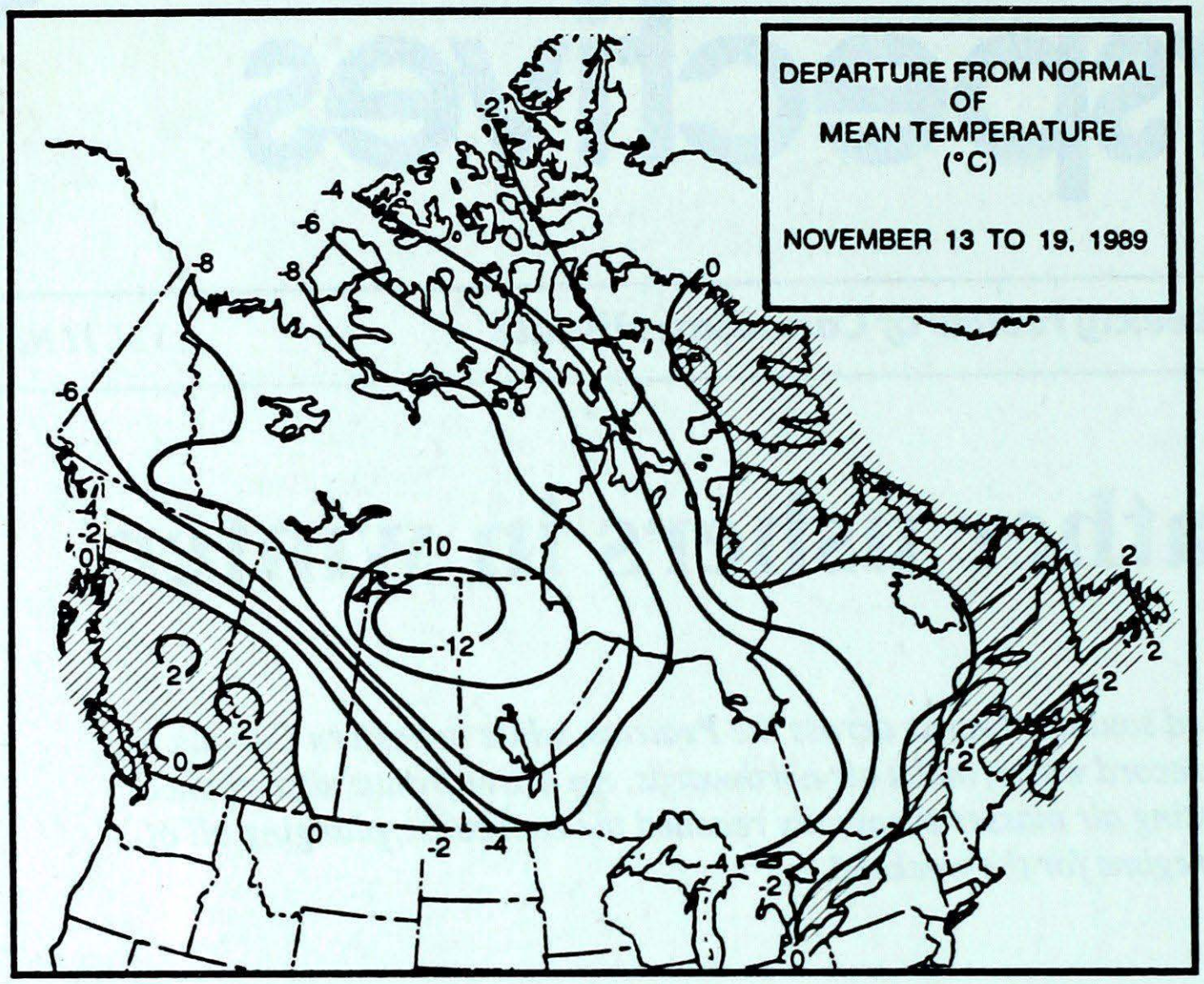

Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-6.1	-13.4
Iqaluit A	-8.6	-16.6
Yellowknife A	-9.4	-17.2
Vancouver Int'l A	8.4	2.4
Victoria Int'l A	8.8	2.3
Calgary Int'l A	2.2	-9.5
Edmonton Int'l A	-0.1	-11.0
Regina A	0.0	-10.0
Saskatoon A	-1.0	-10.0
Winnipeg Int'l A	-0.2	-7.9
Ottawa Int'l A	4.9	-2.4
Toronto Int'l A	7.7	-0.4
Montréal Int'l A	5.2	-1.7
Québec A	3.0	-3.8
Fredericton A	5.2	-3.2
Saint John A	5.4	-2.1
Halifax (Shearwater)	7.4	0.8
Charlottetown A	5.6	-0.7
Goose A	-0.6	-7.6
St John's A	5.8	-0.1

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Sandspit A	14	Fort Nelson A	-30	Prince Rupert A	91
Yukon Territory	Haines Junction	5	Ogilvie	-49	Watson Lake A	6
Northwest Territories	Iqaluit A	-1	Shepherd Bay A	-41	Cape Dyer A	31
Alberta	Medicine Hat A	15	Fort Chipewyan A	-39	Whitecourt A	12
Saskatchewan	Rockglen (aut)	13	Cree Lake	-36	Cree Lake	12
Manitoba	Gimli	11	Lynn Lake A	-30	Island Lake	14
Ontario	Windsor A	19	Nagagami (aut)	-25	Trenton A	74
Québec	Sherbrooke A	20	La Grande IV A	-26	Ste-Agathe-des-Monts	80
New Brunswick	Moncton A	19	St-Léonard A	-13	Saint John A	59
Nova Scotia	Greenwood A	21	Amherst (aut)	-8	Truro	45
Prince Edward Island	Summerside A	17	Charlottetown A	-9	Charlottetown A	41
Newfoundland	Daniel's Harbour	19	Wabush Lake A	-21	Burgeo	70

Across The Country...

Highest Mean Temperature	Sable Island(NS)	9
Lowest Mean Temperature	Eureka(NWT)	-33

89/11/13-89/11/19

CLIMATIC PERSPECTIVES
VOLUME 11

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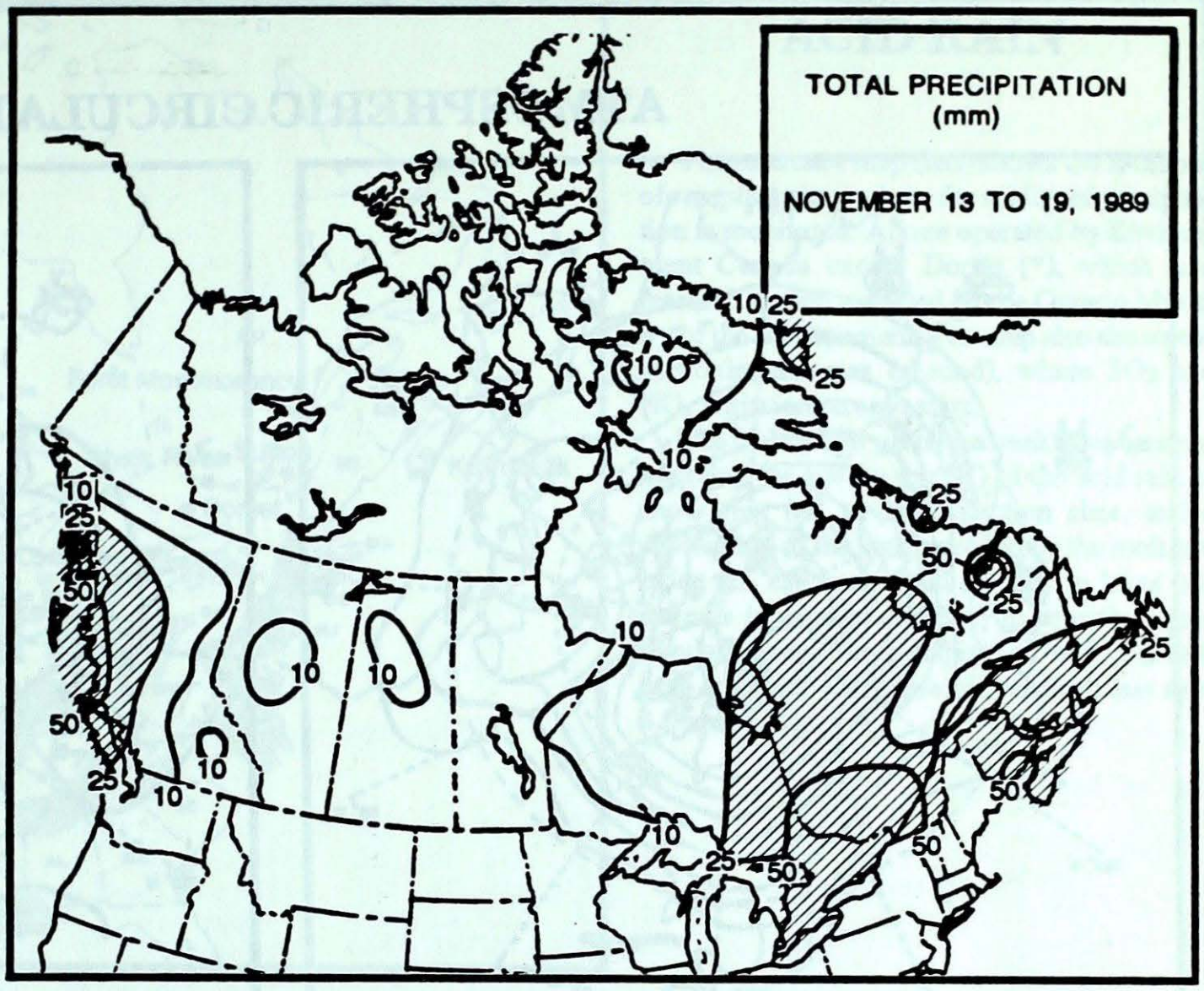
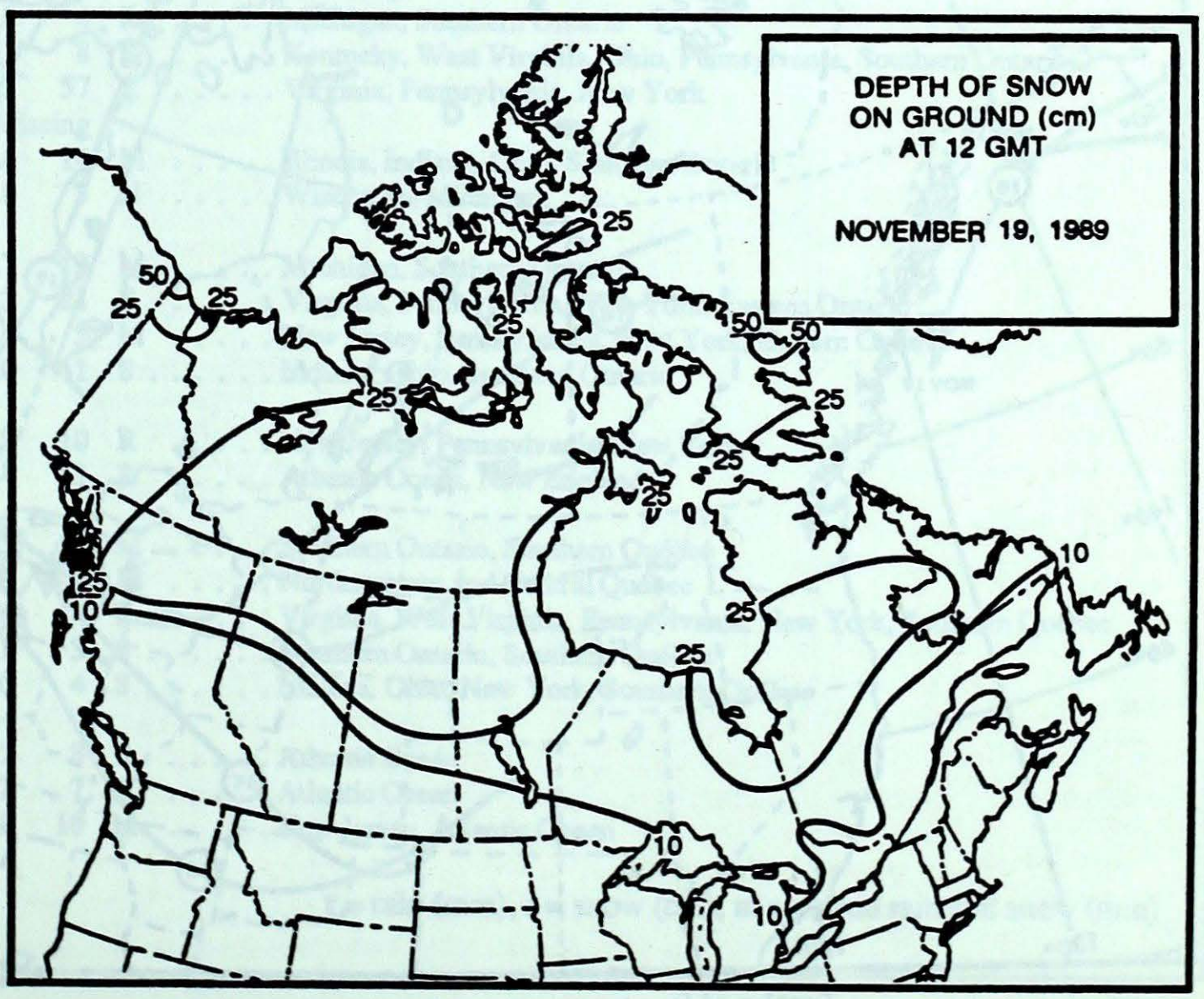
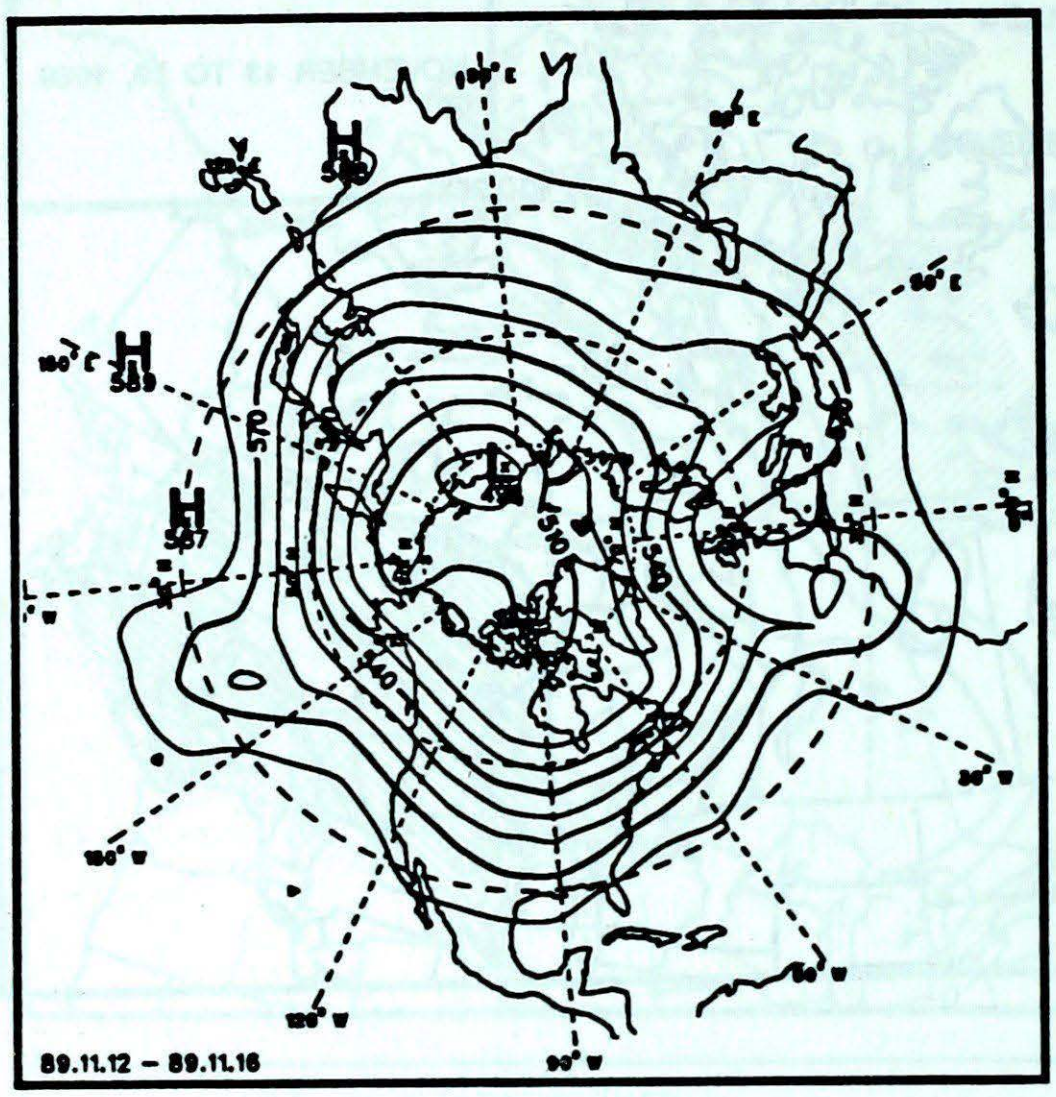
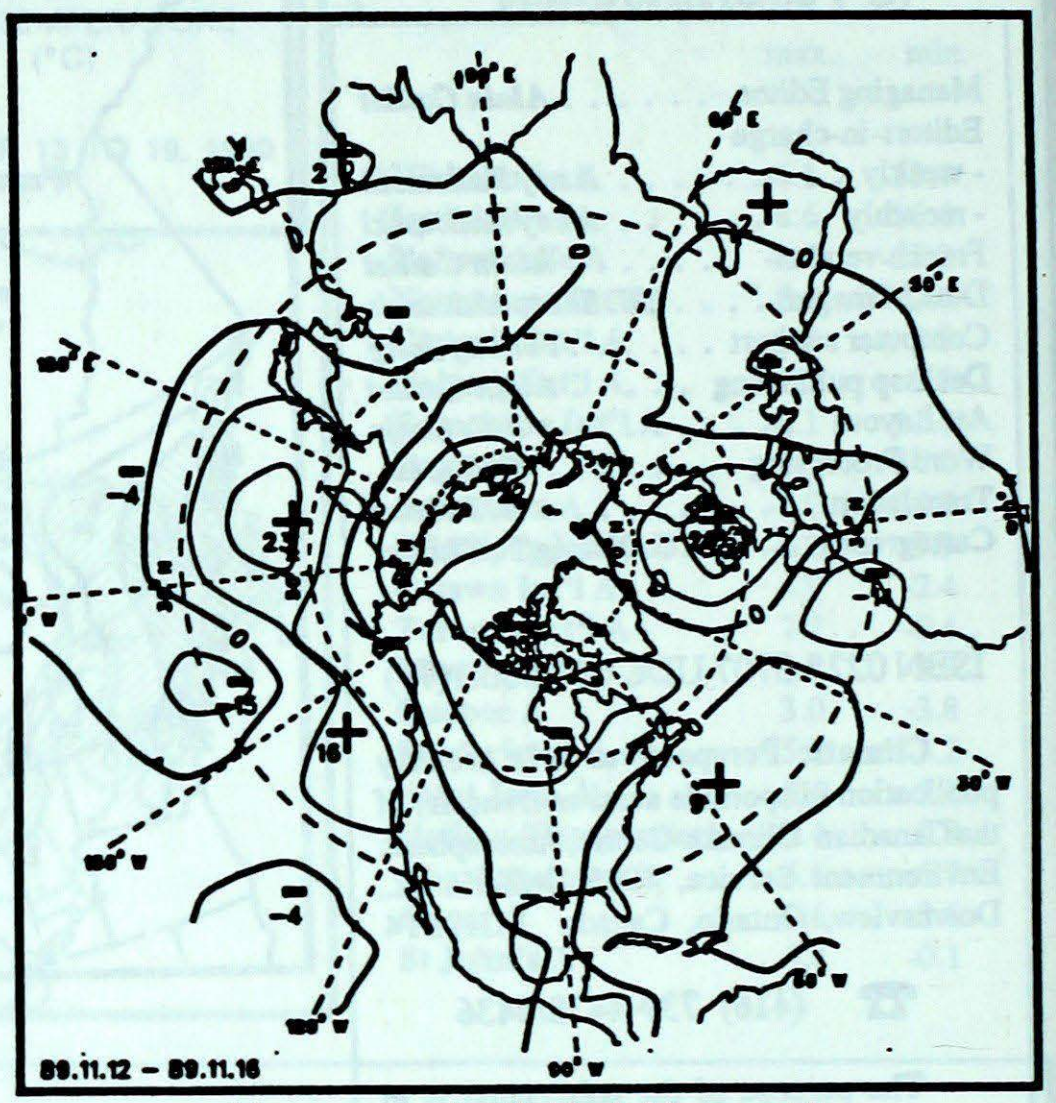




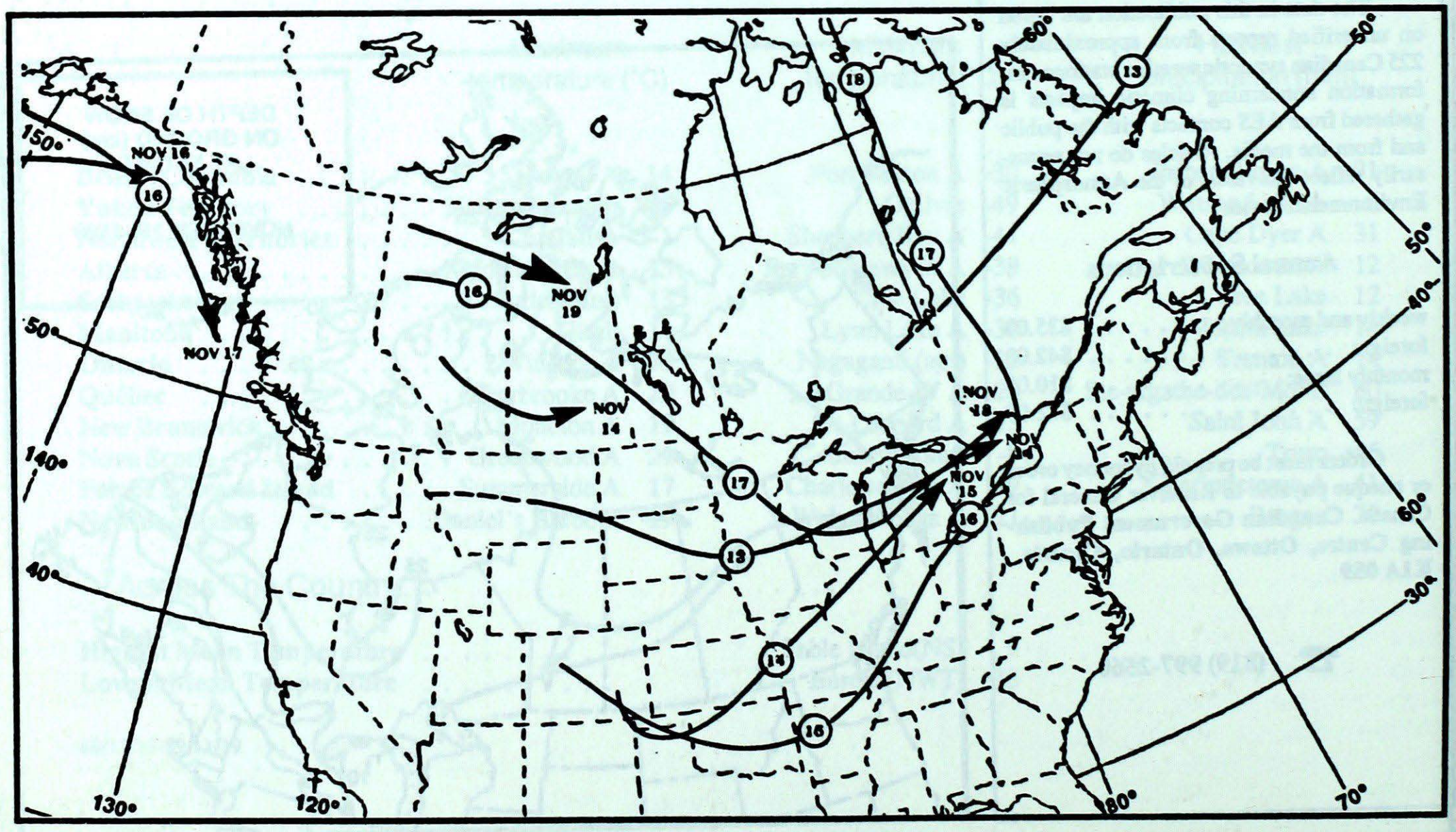
ATMOSPHERIC CIRCULATION



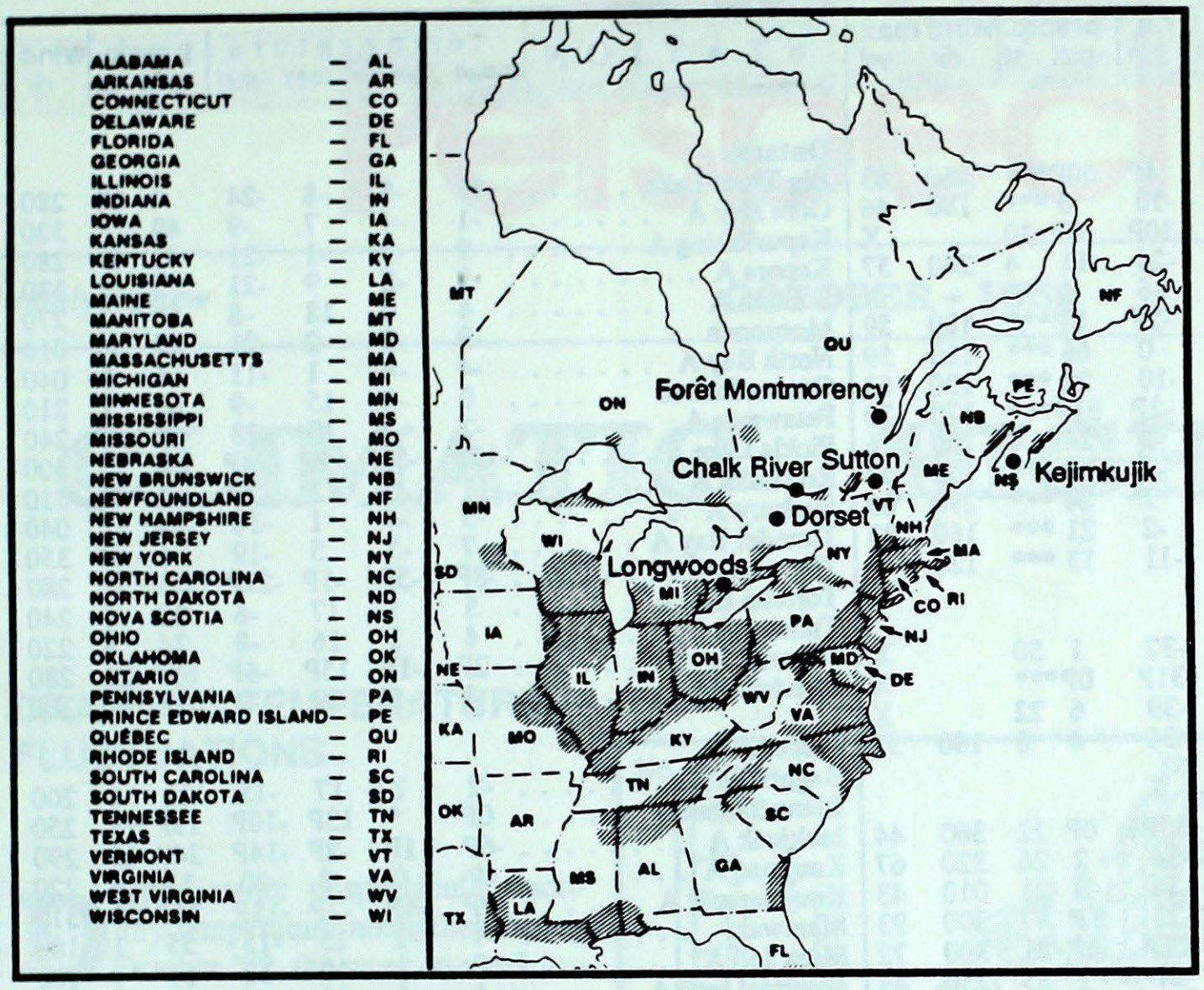
Mean geopotential height
50-kPa level (10-decametre intervals)



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_2 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
					November 12 to November 18, 1989
Longwoods					. . . . . Data not available
Dorset *	13	4.2	4	R	. . . . . Michigan, Southern Ontario
	14	4.1	8	R	. . . . . Kentucky, West Virginia, Ohio, Pennsylvania, Southern Ontario
	15	4.2	57	R	. . . . . Virginia, Pennsylvania, New York
	16	Missing			
	17	4.6	14	M	. . . . . Illinois, Indiana, Ohio, Southern Ontario
	18	4.8	3	N	. . . . . Wisconsin, Michigan
Chalk River	13	3.7	13	M	. . . . . Michigan, Southern Ontario
	15	4.2	21	R	. . . . . Virginia, Pennsylvania, New York, Eastern Ontario
	16	4.6	5	M	. . . . . New Jersey, Pennsylvania, New York, Eastern Ontario
	17	4.0	1	S	. . . . . Indiana, Ohio, Southern Ontario
Sutton	14	3.9	10	R	. . . . . New Jersey, Pennsylvania, New York
	16	4.4	13	R	. . . . . Atlantic Ocean, New England
Montmorency	13	4.3	5	M	. . . . . Southern Ontario, Southern Québec
	14	4.0	2	R	. . . . . Northwestern and Central Québec
	15	4.0	14	R	. . . . . Virginia, West Virginia, Pennsylvania, New York, Southern Québec
	17	4.1	3	S	. . . . . Southern Ontario, Southern Québec
	18	4.0	4	S	. . . . . Indiana, Ohio, New York, Southern Québec
Kejimkujik	15	4.7	3	R	. . . . . Atlantic Ocean
	16	5.2	7	R	. . . . . Atlantic Ocean
	18	4.1	10	m	. . . . . New Jersey, Atlantic Ocean

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

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
British Columbia								
Cape St James	8P	1P	11P	4P	50P	***	150	83
Cranbrook A	-1	1	9	-10	0	***	180	46
Fort Nelson A	-17P	-4P	-5P	-30P	0P	30		X
Fort St John A	-8	-1	9	-24	11	4	240	57
Kamloops A	1	-1	8	-6	1	***		X
Penticton A	3P	1P	8P	-2P	0P	***	180	59
Port Hardy A	6	1	11	0	66	***	110	59
Prince George A	-1	3	7	-10	24	***	190	63
Prince Rupert A	5P	2P	10P	-2P	91P	***	170	70
Revelstoke A	0	-1	7	-9	24	4	180	46
Smithers A	-1	2	7	-7	48	***	150	33
Vancouver Int'l A	7	1	11	2	24	***	290	63
Victoria Int'l A	7	1	11	-2	21	***	160	33
Williams Lake A	-2	1	6	-11	13	***	120	41
Yukon Territory								
Komakuk Beach A	-26	-8	-19	-32	1	50		X
Teslin (aut)	-16P	*	2P	-31P	0P	***		X
Watson Lake A	-23	-9	-7	-39	6	22		X
Whitehorse A	-16	-6	2	-36	4	8	180	59
Northwest Territories								
Alert	-29P	-3P	-8P	-35P	0P	22	360	44
Baker Lake A	-26	-7	-11	-34	2	26	320	67
Cambridge Bay A	-30	-7	-23	-36	0	21	010	43
Cape Dyer A	-12	3	-2	-23	31	47	300	93
Clyde A	-20P	-2P	-10P	-28P	4P	21	300	72
Coppermine A	-29	-8	-20	-37	1	35	250	43
Coral Harbour A	-19P	-2P	-5P	-31P	4P	27	330	89
Eureka	-33	-1	-19	-41	1	11	290	56
Fort Smith A	-20	-9	-10	-33	9	27	280	19
Hall Beach A	-21	-1	-10	-30	10	41	300	87
Inuvik A	-29	-8	-19	-40	0	***		X
Iqaluit A	-10	3	-1	-26	12	16	110	83
Mould Bay A	-30	-2	-25	-35	1	18	350	43
Norman Wells A	-25	-7	-17	-37	4	10		X
Resolute A	-28	-3	-19	-34	1	25	361	41
Yellowknife A	-21	-8	-12	-32	5	23	100	33
Alberta								
Calgary Int'l A	-1	2	14	-14	1	***	350	69
Cold Lake A	-10	-4	7	-24	6	1	310	57
Edmonton Namao A	-5	0	8	-19	8	***	310	61
Fort McMurray A	-17	-9	3	-33	8	25	310	35
High Level A	-17P	-7P	-4P	-38P	0P	34		X
Jasper	-1	3	10	-14	3	***		X
Lethbridge A	1	2	14	-15	0	***	270	96
Medicine Hat A	-3	-1	15	-22	3	1	240	85
Peace River A	-12P	-4P	6P	-26P	5P	3		X
Saskatchewan								
Cree Lake	-21	-13	-2	-36	12	36	310	39
Estevan A	-6	-2	13	-20	1	1	320	74
La Ronge A	-16	-9	5	-30	10	33	320	56
Regina A	-8	-3	12	-23	1	1	340	70
Saskatoon A	-10	-4	9	-25	3	1	320	67
Swift Current A	-6	-2	12	-24	1	1	250	61
Yorkton A	-11	-5	9	-26	7	6	350	50
Manitoba								
Brandon A	-14P	-8P	8P	-25P	2P	5	300	46
Churchill A	-19	-8	-12	-28	1	19	330	57
Lynn Lake A	-22	-12	-13	-30	6	38	330	39
The Pas A	-14	-7	5	-24	7	20	310	65
Thompson A	-21	-11	-12	-29	8	25	330	32
Winnipeg Int'l A	-11P	-7P	8P	-24P	4P	5	330	48

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	-17	-8	-8	-24	4	18	280	50
Gore Bay A	-1	-4	7	-9	49	***	320	69
Kapuskasing A	-9	-5	-1	-21	43	49	280	70
Kenora A	-9	-5	9	-21	5	7	330	61
London A	4	0	18	-8	53	2	270	76
Moosonee	-9	-5	-2	-21	44	36	010	67
North Bay A	-4	-4	1	-11	66	9	040	46
Ottawa Int'l A	0	-1	15	-9	69	1	210	74
Petawawa A	-2	-1	13	-13	42	2	240	69
Pickle Lake	-12P	-5P	1P	-24P	13P	16	300	63
Red Lake A	-11	-5	5	-21	6	***	310	69
Sudbury A	-5	-4	1	-16	44	11	040	35
Thunder Bay A	-7	-5	5	-19	6	8	350	52
Timmins A	-8P	-5P	-1P	-22P	28P	***	280	56
Toronto Int'l A	5	1	17	-6	38	1	240	78
Trenton A	4	1	16	-8	74	8	220	87
Wiarton A	2P	-1P	15P	-6P	69P	28	280	72
Windsor A	4	-1	19	-7	28	1	300	76
Québec								
Bagotville A	-2	1	17	-15	11	4	200	57
Blanc Sablon A	0P	*	13P	-10P	13P	***	250	74
Inukjuak A	-6P	1P	-2P	-14P	24P	10	290	93
Kuujjuaq A	-9	0	3	-20	11	16	220	89
Kuujjuarapik A	-9P	-4P	-2P	-18P	24P	29	310	83
Maniwaki	-1	-1	15	-13	55	1	180	65
Mont Joli A	0	1	19	-12	13	1	160	98
Montréal Int'l A	1	-1	20	-9	80	2	230	
Natashquan A	0	1	10	-9	19	***	260	72
Québec A	0	0	18	-10	47	3	200	85
Schefferville A	-11	-1	5	-23	25	49	210	76
Sept-Îles A	-3P	0P	9P	-13P	17P	1	080	74
Sherbrooke A	2	3	20	-8	17	1	270	67
Val-d'Or A	-7	-4	0	-19	51	15		X
New Brunswick								
Charlo A	1	1	17	-12	25	1	270	59
Chatham A	2	1	19	-13	26	***	250	61
Fredericton A	3	2	18	-10	20	***	200	78
Moncton A	3P	2P	19P	-9P	22P	***	160	74
Saint John A	5	3	18	-7	59	***	220	63
Nova Scotia								
Greenwood A	7	3	21	-4	43	***	180	72
Shearwater A	7	3	15	-4	33	***	290	61
Sydney A	6	2	18	-3	44	***	180	43
Yarmouth A	8	4	17	-1	37	***	160	59
Prince Edward Island								
Charlottetown A	5P	2P	17P	-9P	41P	3	300	48
Summerside A	5	2	17	-6	29	***	210	63
Newfoundland								
Cartwright	-2	0	13	-7	18	***	290	63
Churchill Falls A	-8	0	9	-18	22	31	280	57
Gander Int'l A	3	2	18	-3	24	***	190	102
Goose A	-4	1	12	-11	52	20	240	72
Port Aux Basques	4	1	12	-2	61	***	290	83
St John's A	6	3	18	-2	24	***	270	70
St Lawrence	5	2	15	-2	38	***		X
Wabush Lake A	-10	-1	4	-21	24	21	230	56

89/11/13-89/11/19

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.