Climatic Perspectives

Oct. 29 to Nov. 4, 1990 **A weekly review of Canadian climate and water** Vol.12 No.44

Indian Summer brings a reprieve from unsettled weather over Great Lakes Basin

The legendary expression "Indian Summer" is used in the United States and Canada to designate a period of fine autumn weather with particularly warm days, which have occurred after a widespread killing frost.

Week long sunshine and progressively moderating temperatures culminated November 2 and 3 with record breaking daily high temperatures across Ontario. In Muskoka on November 2, the temperature hit 19.5°C, surpassing the old record of 19.4°C set in 1944. On November 3, the temperatures at Toronto's Pearson International Airport reached 22.1°C, the hot spot in the province. Temperatures in southwestern Quebec also warmed up dramatically.

The fine weather continued to help the farm community with their late harvest and fall field work that had been severely delayed by wet October weather.

Incipient drought or just a dry spell

A review of rainfall totals at 17 locations spread across the southern Prairies, reveals that most of this area has received less than average precipitation over the last four months.

Southern Manitoba has been exceptionally dry. The 1990 July-October period was the driest on record at Winnipeg in the last 117 years and the second driest at Kenora in 51 years. The Saskatoon and Lethbridge areas have also been very dry. Saskatoon has had the eighth driest July-October on record (92 years), while Lethbridge was the 6th driest in 90 years of observations.

A comparison of modelled available soil moisture under wheat stubble on continuously cropped fields reveals a broad corridor from Saskatoon to Lethbridge with extremely low soil moisture - about 15 percent capacity verses 45 percent at the same time in 1989. The available soil moisture in southeastern Manitoba is generally 30 to 45 percent of capacity versus about 60 percent at a comparable time in 1989.

Winnipeg Climate Centre
(204) 983-2082

Cool weather expected across the West...

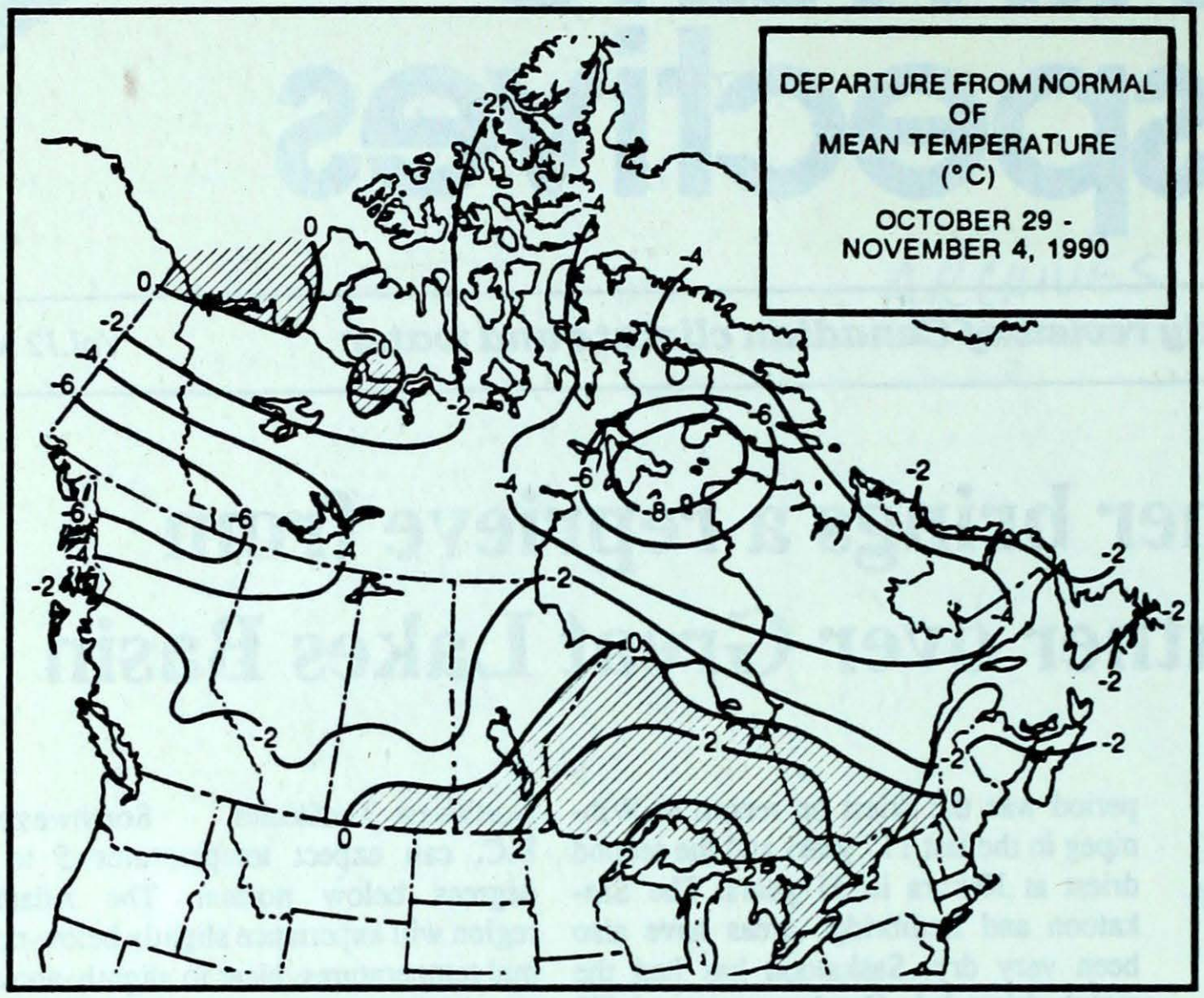
For the week of November 12, below-normal temperatures are expected across the western half of the country from Manitoba to British Columbia, and most of the Northwest Territories. Southwestern B.C. can expect temperatures 5 to 7 degrees below normal. The Atlantic region will experience slightly below-normal temperatures. Near to slightly above-normal temperatures are likely to occur elsewhere.

July - October precipitation 1990 in historical perspective

Location	July-October precipitation mm (%)	No. of drier July-October periods	No. of years of record
Kenora	155.1 (55)	1	51
Winnipeg	90.4 (39)	0	117
Portage	123.9 (57)	10	89
Dauphin	141.5 (68)	9	66
Regina	138.2 (88)	36	96
Saskatoon	94.6 (61)	7	92
Edmonton	260.0 (125)	91	109
Calgary	162.4 (90)	49	107
Lethbridge	75.5 (51)	5	90

An incipient drought or just a dry spell? The situation will be monitored closely, to see if it develops into a significant climatological event or is reversed by winter and spring precipitation

Canada



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-0.1	-7.0
Iqaluit A	-5.6	-12.8
Yellowknife A	-3.7	-10.3
Vancouver Int'l A	11.4	4.5
Victoria Int'l A	11.7	4.0
Calgary Int'l A	8.6	-4.2
Edmonton Int'l A	6.7	-5.2
Regina A	6.3	-5.5
Saskatoon A	5.5	-5.0
Winnipeg Int'l A	6.0	-3.0
Ottawa Int'l A	9.6	0.8
Toronto (Pearson Int'l A)	11.0	2.0
Montréal Int'l A	9.8	1.6
Québec A	7.5	-0.5
Fredericton A	10.1	-0.2
Saint John A	9.8	1.2
Halifax (Shearwater)	11.1	3.6
Charlottetown A	9.8	2.1
Goose A	3.6	-3.6
St John's A	8.3	1.7

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Fort St John A	19	Fort Nelson A	-21	Hope A	88
Yukon Territory	Whitehorse A	1	Watson Lake A	-28	Komakuk Beach A	2
Northwest Territories	Killinek	0	Pond Inlet A	-38	Broughton Island	18
Alberta	Medicine Hat A	18	High Level A	-21	High Level A	14
Saskatchewan	Swift Current	19	Cree Lake	-18	Prince Albert A	21
Manitoba	Pilot Mound Po	17	Churchill A	-20	Thompson A	33
	Winnipeg Int'l A	17				
Ontario	Toronto Int'l A	22	Wawa A	-7	North Bay A	15
Québec	Sherbrooke A	20	Inukjuak A	-18	Blanc Sablon A	30
			Schefferville A	-18		
New Brunswick	St Stephen (aut)	22	Moncton A	-6	Moncton A	42
Nova Scotia	Greenwood A	20	Sydney A	-3	Sydney A	69
Prince Edward Island	Charlottetown A	13	Charlottetown A	-3	Charlottetown A	58
	Summerside A	13			East Point (aut)	58
Newfoundland	St Lawrence	12	Wabush Lake A	-17	Daniels Harbour	72

Across The Country...

Highest Mean Temperature	Windsor A(ONT)	12
Lowest Mean Temperature	Eureka(NWT)	-32

90/10/29-90/11/04

CLIMATIC PERSPECTIVES
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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.

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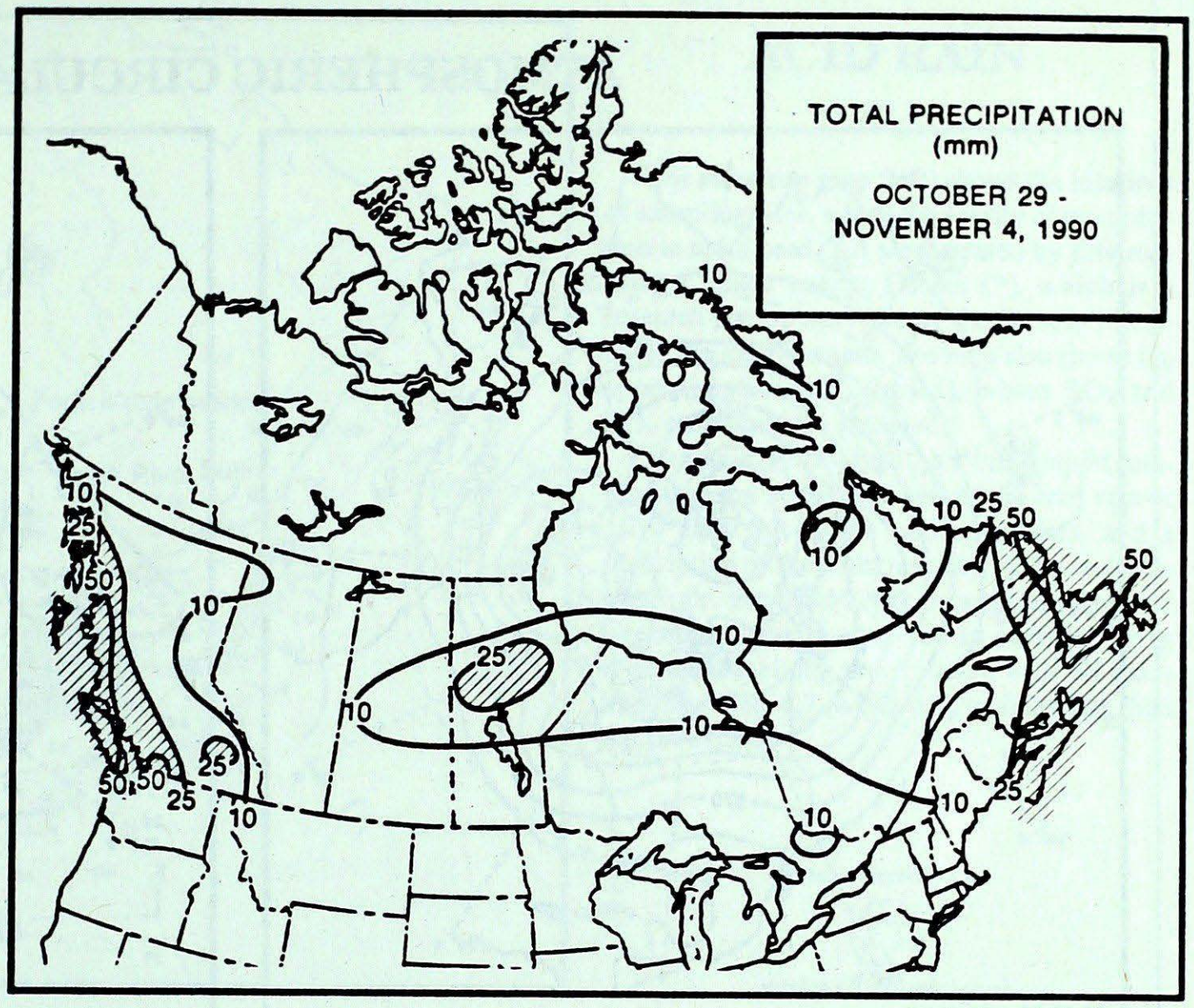
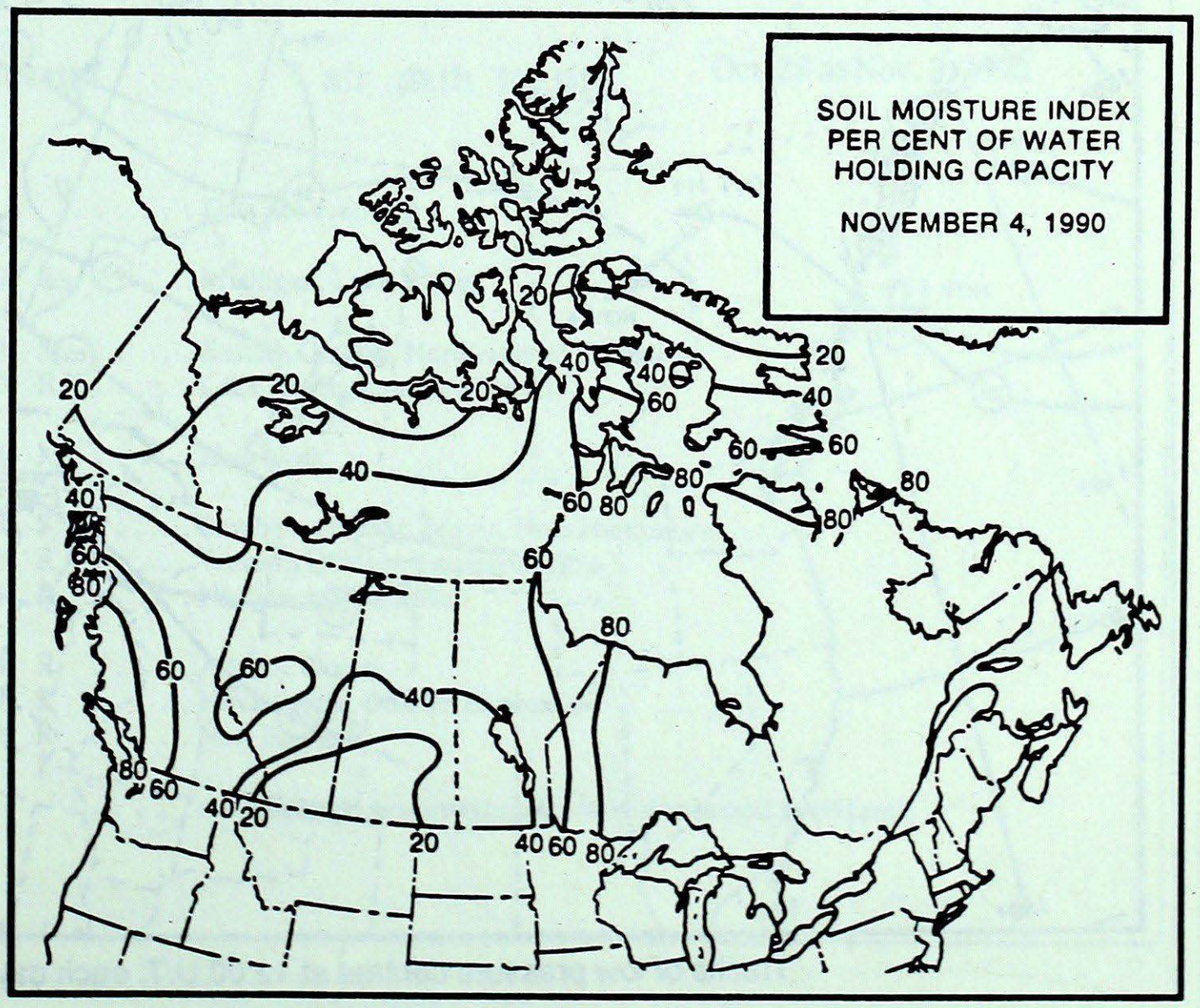
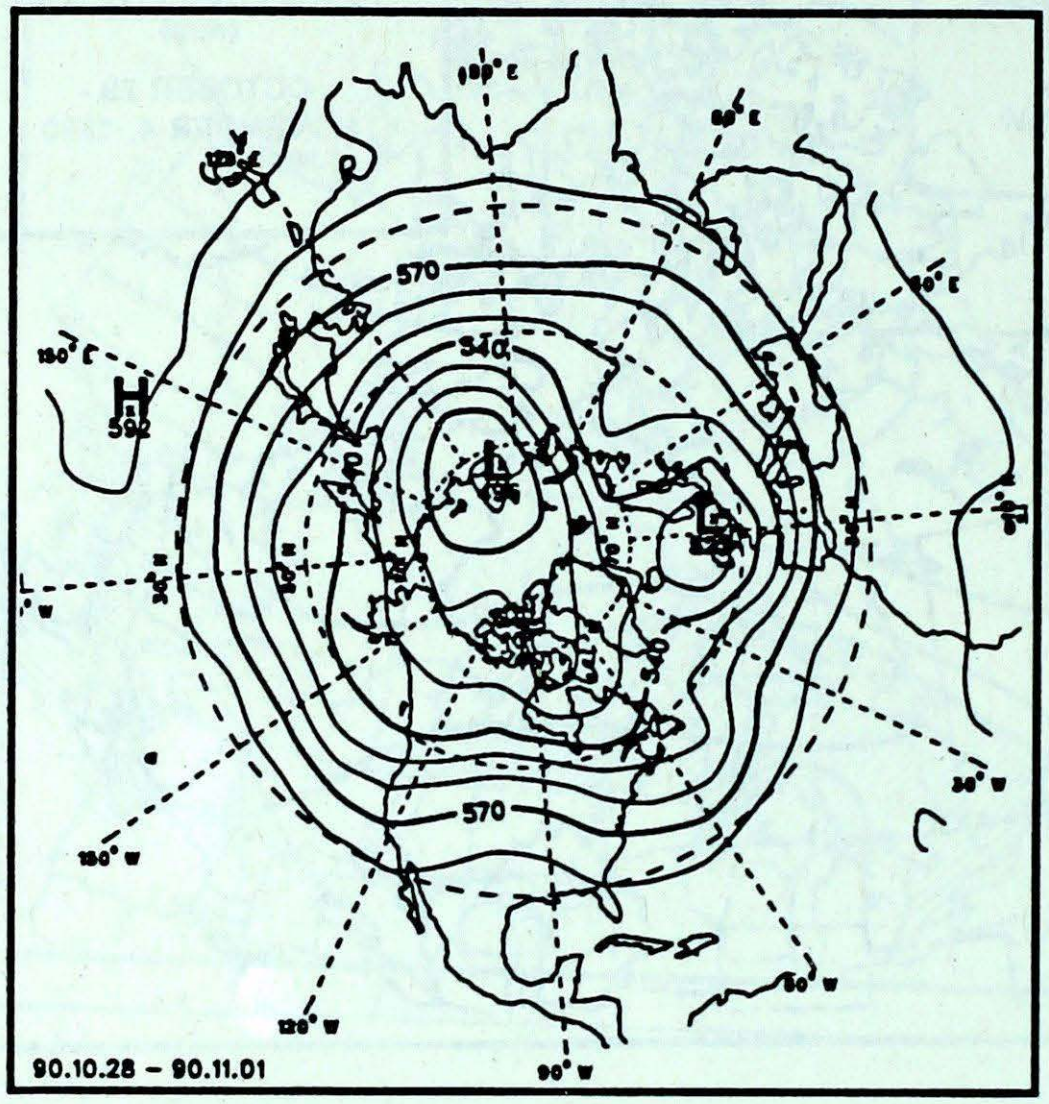
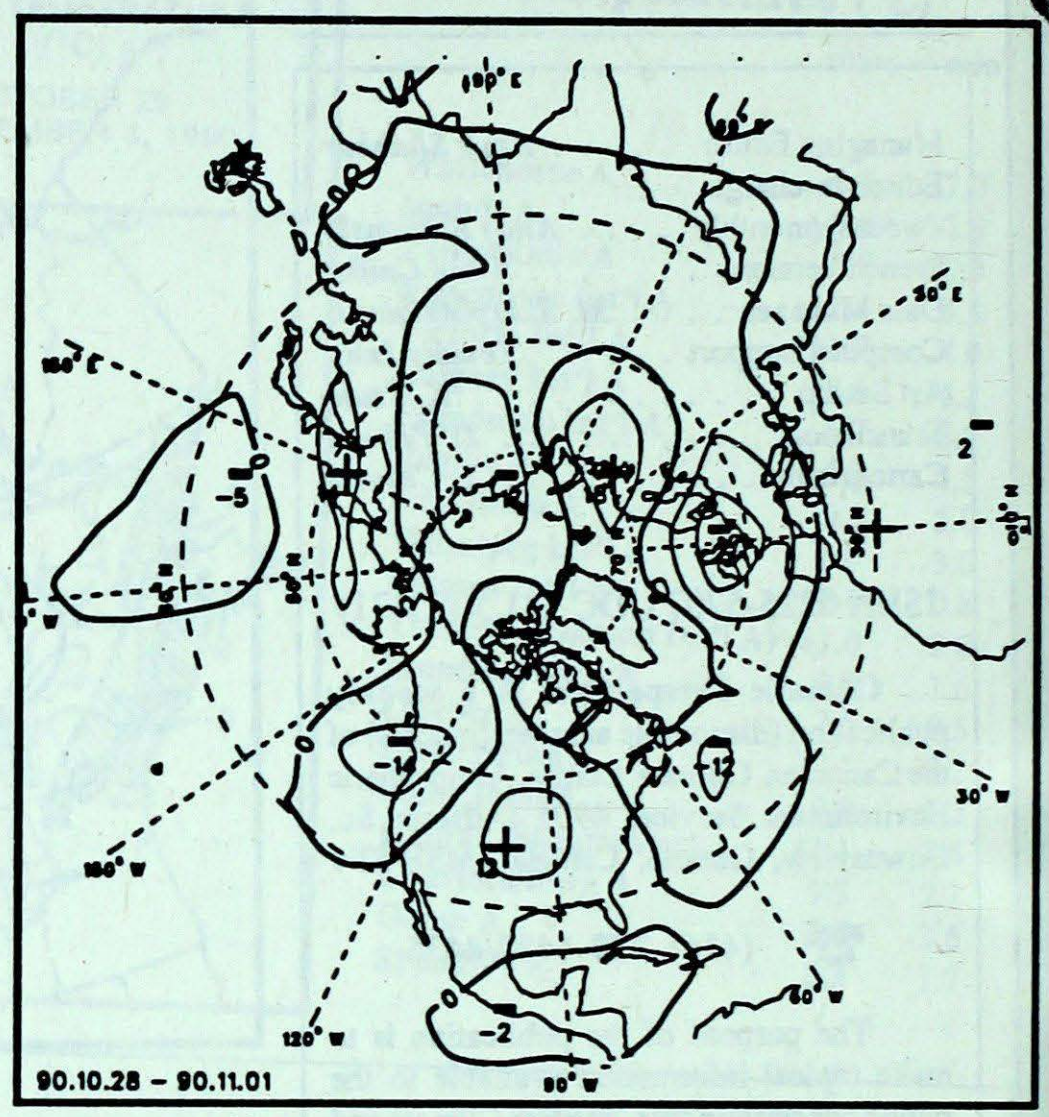




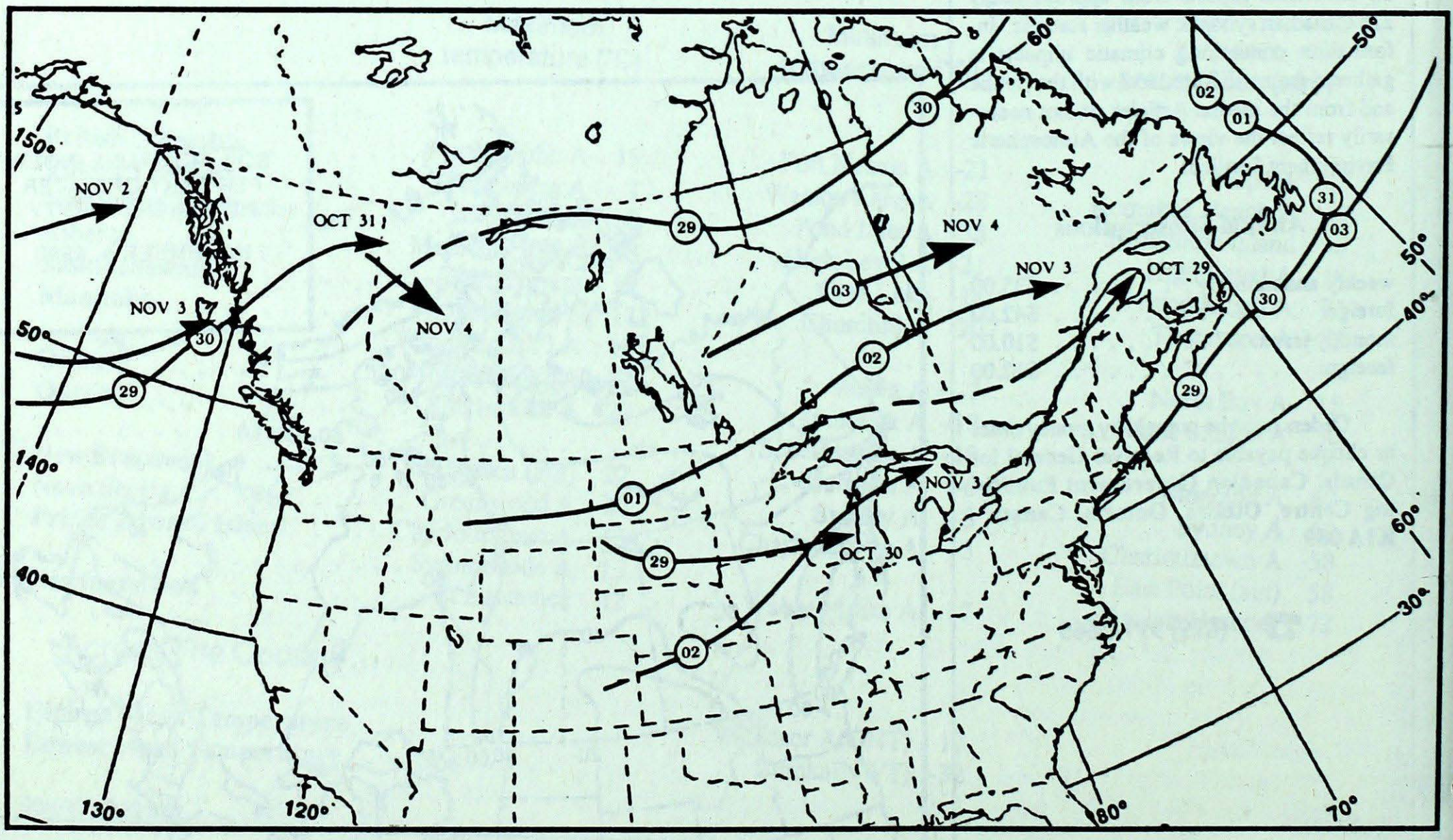
ATMOSPHERIC CIRCULATION



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

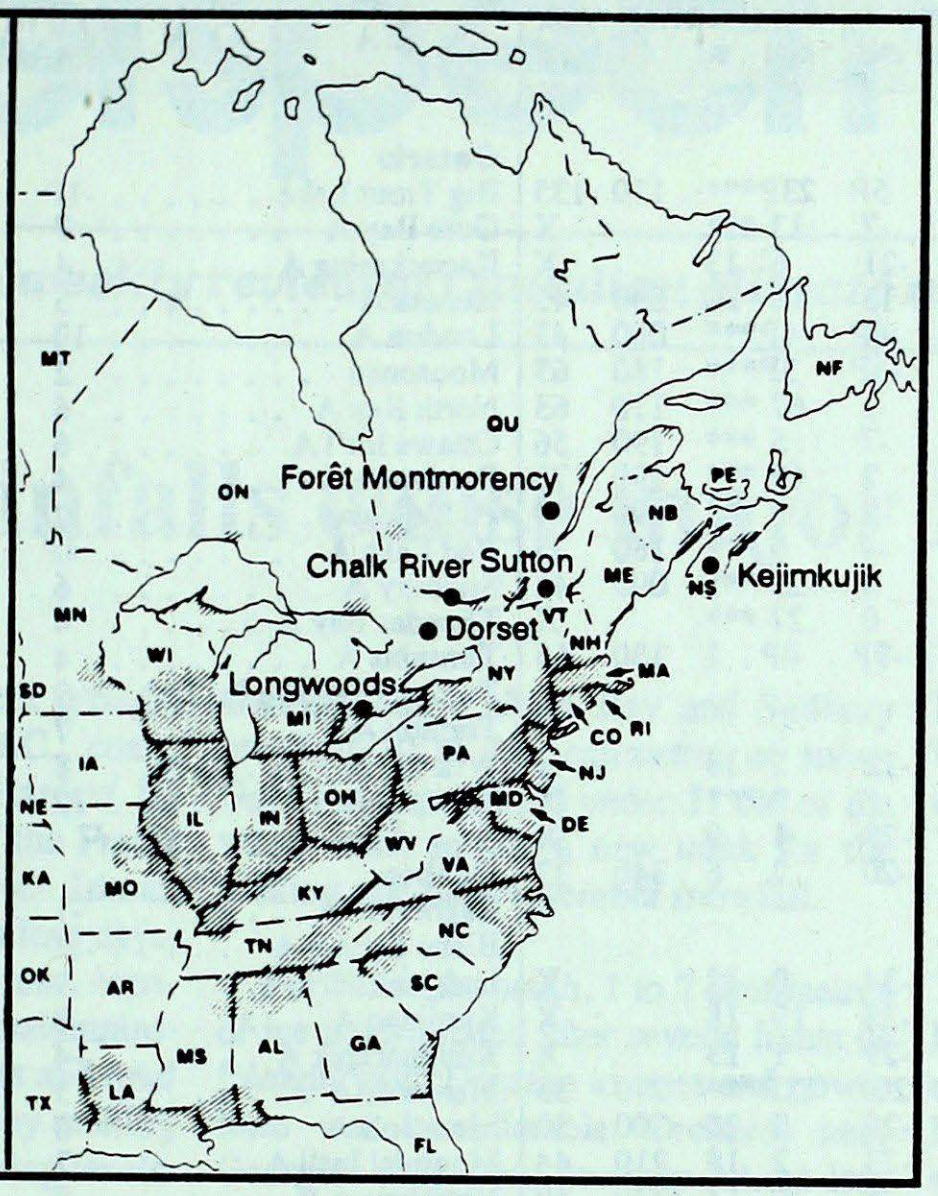


Mean geopotential height anomaly
50-kPa level (10-decametre intervals)



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

ALABAMA	—	AL
ARKANSAS	—	AR
CONNECTICUT	—	CO
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



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 Oct. 28 to Nov. 3, 1990

Site	day	pH	amount		air path to site
Longwoods					. . . . . Data not available
Dorset*	3	4.3	3	R	. . . . . Michigan, Lake Huron
Chalk River	28	4.2	2	M	. . . . . Eastern Ontario, Northwestern Quebec
	3	4.3	5	R	. . . . . Lake Huron, Southern Ontario
Sutton	28	4.2	4	M	. . . . . New York
Montmorency	28	4.4	3	S	. . . . . Southern Quebec, Maine, New Hampshire
	2	4.1	3	R	. . . . . Western Quebec, Eastern Ontario
	3	4.0	5	R	. . . . . Northwestern Quebec
Kejimkujik	28	5.3	14	R	. . . . . Atlantic Ocean
	29	3.4	17	R	. . . . . Nova Scotia, Gulf St. Lawrence
	2	3.9	1	R	. . . . . New England

. . . . . 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	0P	11P	5P	23P	***	110	135
Cranbrook A	2	0	10	-7	13	***		X
Fort Nelson A	-11	-6	-6	-21	6	13		X
Fort St John A	-4	-4	19	-13	15	20	330	43
Kamloops A	4P	-1P	15P	-6P	4P	***	080	43
Penticton A	4P	-2P	12P	-5P	3P	***	180	65
Port Hardy A	6	-1	11	1	67	***	110	63
Prince George A	0	-1	9	-7	5	***	190	56
Prince Rupert A	6	-1	10	2	69	***	190	70
Revelstoke A	3	0	10	-2	31	***	190	44
Smithers A	1	-1	7	-4	9	***	160	35
Vancouver Int'l A	8	0	13	3	25	***	090	41
Victoria Int'l A	7	-1	14	0	27	***		X
Williams Lake A	-1P	-3P	9P	-9P	4P	1	130	65
Yukon Territory								
Komakuk Beach A	-12	3	0	-22	2	18		X
Teslin (aut)	*	*	0	*	*	***		X
Watson Lake A	-13	-7	-2	-28	1	9		X
Whitehorse A	-10	-6	1	-20	2	6	340	33
Northwest Territories								
Alert	-26	-2	-18	-34	0	12		X
Baker Lake A	-19	-5	-7	-28	10	18		X
Cambridge Bay A	-19	-1	-9	-29	1	13		X
Cape Dyer A	-12P	0P	-6P	-20P	12P	***	270	35
Clyde A	-18	-6	-12	-28	8	20	300	59
Coppermine A	-14	1	-7	-23	2	18	210	44
Coral Harbour A	-22	-9	-13	-28	0	18	330	50
Eureka	-32	-4	-29	-36	1	10		X
Fort Smith A	-8	-4	-3	-22	6	18	300	43
Hall Beach A	-21	-4	-13	-26	0	10	310	41
Inuvik A	-17P	-2P	-2P	-26P	1P	19	300	39
Iqaluit A	-13	-4	-2	-23	8	9	330	56
Mould Bay A	-24P	-1P	-14P	-35P	3P	25	180	33
Norman Wells A	-13	-2	-7	-20	3	8		X
Resolute A	-23	-3	-16	-30	0	27	040	35
Yellowknife A	-11	-4	-4	-21	3	15		X
Alberta								
Calgary Int'l A	-1	-3	13	-13	6	***	280	61
Cold Lake A	-2	-2	9	-12	3	2	280	35
Edmonton Namao A	-1	-2	10	-11	0	1	150	43
Fort McMurray A	-4	-3	4	-11	4	4	120	37
High Level A	-9	-6	-4	-21	14	21		X
Jasper	0P	-1P	5P	-10P	2P	1		X
Lethbridge A	2	-1	15	-13	1	***	250	87
Medicine Hat A	3	-1	18	-13	1	***	240	59
Peace River A	-4	-3	7	-17	3	2		X
Saskatchewan								
Cree Lake	-8	-5	-3	-18	5	8	270	54
Estevan A	2	0	*	-12	1	***	301	57
La Ronge A	-3	-2	8	-8	12	7	090	43
Regina A	2	1	17	-9	0	1	290	52
Saskatoon A	-1	-1	13	-9	7	***	290	35
Swift Current A	3	1	19	-13	1	***	270	54
Yorkton A	0	0	13	-9	3	2	300	46
Manitoba								
Brandon A	1	1	12	-8	2	***	280	65
Churchill A	-6	-1	-1	-20	7	20	040	50
Lynn Lake A	-7	-3	2	-16	2	12	280	69
The Pas A	-2	-1	9	-8	25	18	340	44
Thompson A	-5	-1	4	-13	33	21	270	70
Winnipeg Int'l A	4	2	17	-8	0	***	340	56

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	-1P	2P	8P	-5P	13P	6	330	50
Gore Bay A	7	2	17	-1	5	***		X
Kapuskasing A	4	3	16	-5	7	***	290	46
Kenora A	5	3	15	-5	1	1	290	39
London A	10	3	20	-2	4	***	220	44
Moosonee	2	1	10	-6	9	***	220	35
North Bay A	6	3	15	-5	15	***	330	35
Ottawa Int'l A	6	1	19	-4	4	***	290	57
Petawawa A	4	-1	17	-7	5	***	300	43
Pickle Lake	2	3	11	-5	3	1	340	35
Red Lake A	4P	3P	14P	-7P	2P	1	240	41
Sudbury A	6	3	17	-3	9	***	290	33
Thunder Bay A	4	2	15	-5	0	***	300	39
Timmins A	4	2	16	-5	4	***	300	46
Toronto(Pearson Int'l A)	9	3	22	-3	1	***	240	54
Trenton A	7	0	19	-5	1	***	260	63
Wiarton A	8	2	19	-2	5	***	180	50
Windsor A	12	4	21	0	8	***	220	44
Québec								
Bagotville A	-1	-3	3	-7	21	***	300	41
Blanc Sablon A	-2P	*	5P	-11P	30P	***	360	95
Inukjuak A	-9	-6	1	-18	4	6	160	72
Kuujjuaq A	-8	-4	2	-16	13	14	270	70
Kuujjuarapik A	-4	-3	3	-11	10	8	250	56
Maniwaki	5	1	16	-5	4	***	310	48
Mont Joli A	0	-3	5	-4	18	***	310	54
Montréal Int'l A	7	1	19	-3	1	***	320	57
Natashquan A	-2	-4	8	-11	8	***	350	65
Québec A	2	-1	12	-4	14	***	300	41
Schefferville A	-10	-6	-1	-18	5	31	330	63
Sept-Îles A	-3	-4	5	-11	17	6	350	63
Sherbrooke A	6	2	20	-5	5	***	270	37
Val-d'Or A	4	3	15	-5	5	***	200	39
New Brunswick								
Charlo A	1	-2	6	-5	11	***	290	65
Chatham A	2	-2	16	-5	7	***	310	67
Fredericton A	4	-1	20	-2	9	***	320	61
Moncton A	3	-3	19	-6	42	***	020	82
Saint John A	5	-1	14	-3	25	***	350	72
Nova Scotia								
Greenwood A	6	-1	20	-1	46	***	360	93
Shearwater A	6	-2	15	-2	52	***	300	61
Sydney A	4	-3	12	-3	69	***	310	80
Yarmouth A	7	0	16	-2	30	***	340	78
Prince Edward Island								
Charlottetown A	3	-3	13	-3	58	***	020	70
Summerside A	3	-3	13	-2	31	***	360	74
Newfoundland								
Cartwright	-1	-2	4	-6	65	30	360	120
Churchill Falls A	-8	-4	1	-15	5	9	280	74
Gander Int'l A	0	-4	9	-4	54	11	280	56
Goose A	-4	-4	5	-13	12	7	290	67
Port Aux Basques	3	-2	10	-2	49	1	300	107
St John's A	3	-2	11	-2	47	1	290	85
St Lawrence	4	-1	12	-2	28	***		X
Wabush Lake A	-9P	-5P	-2P	-17P	10P	2	300	48

90/10/29-90/11/04

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.