Environment Canada Environnement Canada

Climatic Perspectives

MONTHLY SUPPLEMENT INCLUDED

October 14 to 20, 1991 **A weekly review of Canadian climate and water** *Vol. 13 No 42*

Canadian west gets a taste of winter

As winter approaches, the cold air in the Arctic deepens and spreads southwards, and temperature differences between the Arctic air mass and the warmer air to the south become more pronounced. It is these strong temperature contrasts that cause storms to increase in strength at this time of the year.

A Pacific storm that approached the B.C. west coast and moved inland on October 16, reorganized itself and strengthened as it moved into Alberta. The system produced strong winds, snow and sharply colder temperatures.

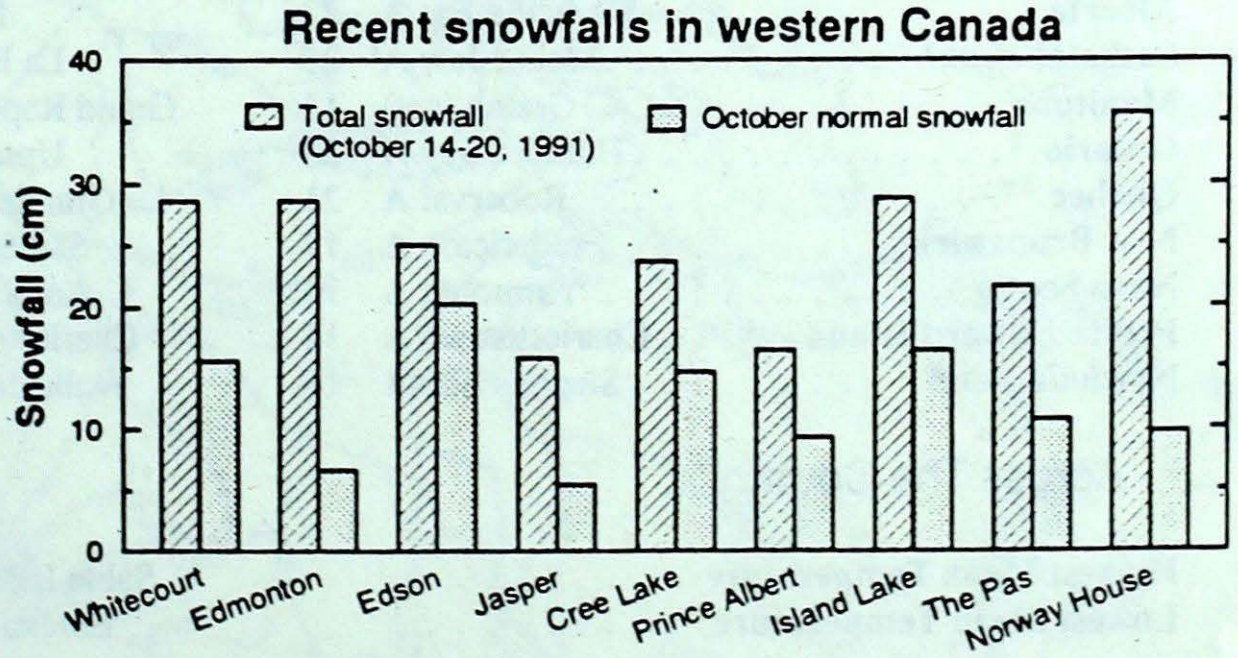
On the morning of the 16th, gale-force winds whipped through many parts of British Columbia, causing widespread wind damage and power outages. Wind gusts, both in the interior and near the coast exceeded 90 km/h at many locations, including: Hope, 111 km/h; Vernon, 154 km/h; Kamloops, 95 km/h; Penticton, 96 km/h. A peak gust of 76 km/h at Kelowna, located in the Okanagan Valley, is the highest on record for the month of October. There was extensive damage in the Valley, but fortunately for farmers, most of the apples and grapes were already picked. Temperatures dropped dramatically with the passage of a trailing cold front. At Kamloops the temperature dropped from 14°C to 4°C in just 10 minutes. Due to the very dry conditions, downed hydro lines ignited some grass and bush fires, which were fanned by the winds. The storm produced the first major snowfall in the southern mountain passes, including the Coquihalla Highway.

On the Prairies, the weather conditions were very wintry this week, as a major snowstorm crossed the region on October 16 and 17. The storm left 26 and 20 centimetres of snow on the ground at Edson and Edmonton, Alta., respectively. In central Saskatchewan and Manitoba snowfalls this week ranged between 20 and 36 centimetres. In the more southern areas of the prairie provinces, where snowfalls were minimal, west winds gusted in excess of 100 km/h. On the 16th, Moose Jaw, Sask., clocked a wind gust at a 108 km/h. A peak wind speed of 119 km/h was recorded at Winnipeg on the 17th. As the system departed, clear cold Arctic air encompassed all three provinces, and minimum temperatures plummeted to the record low minus teen values. La Ronge, Sask., recorded a minimum of -20°C on the morning of the 19th. That same day at Winnipeg and Brandon, Man., minimum temperature records that stood since 1881 and 1896, respectively, were broken.

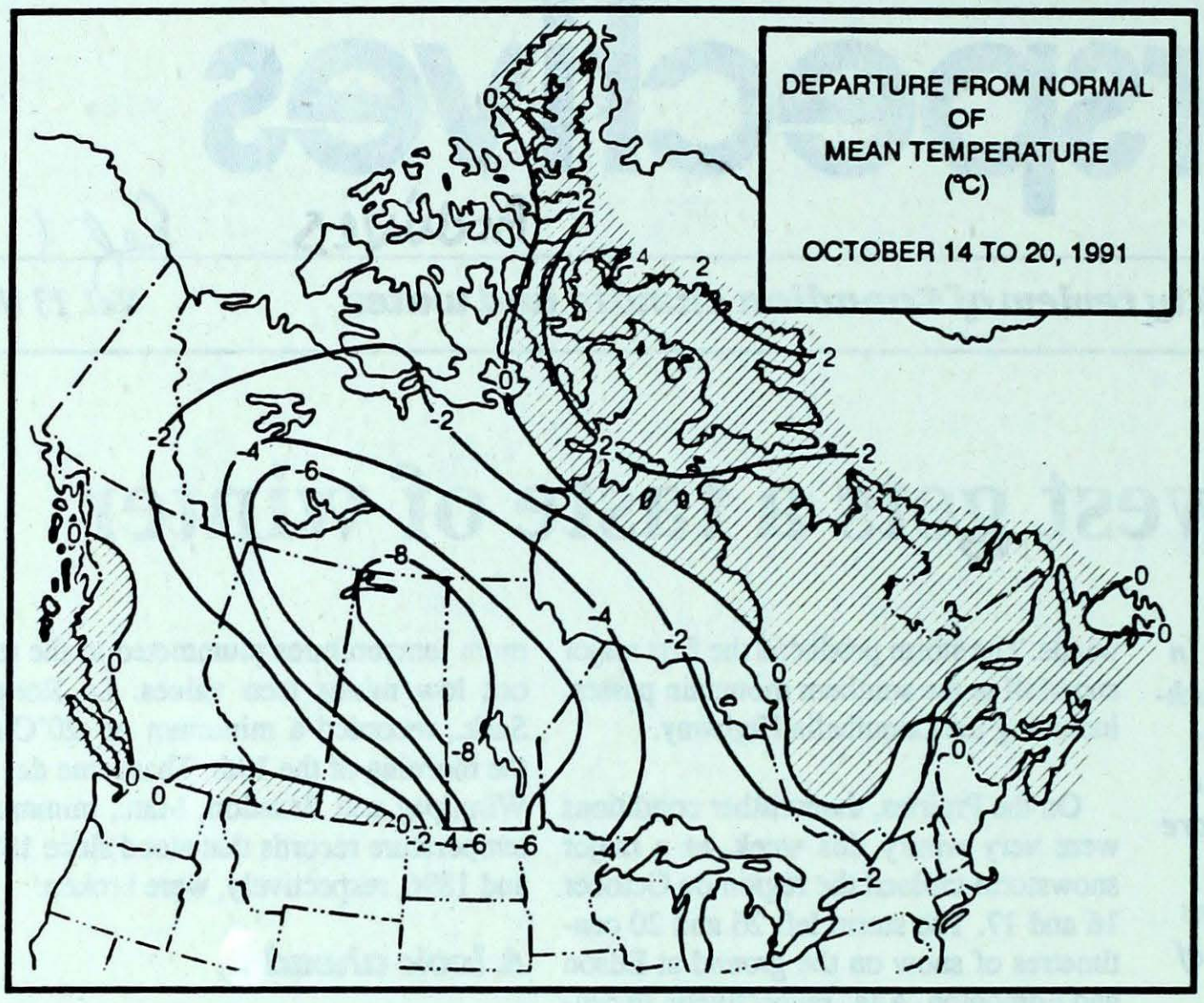
A look ahead ...

The week of October 28, will see a strong low pressure system deepen over western Canada, resulting in a change to below normal temperatures in southern B.C. and the southern Prairies. Elsewhere, but more specifically in southern Ontario, Quebec and the Maritimes, temperatures are expected to be above normal for the same period. Northern regions should experience slightly above normal readings also.

Recent snowfalls in western Canada



Snowfalls on the Prairies this week have exceeded the average for the whole month of October.



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	4.4	-3.1
Iqaluit A	-2.0	-7.6
Yellowknife A	0.9	-4.8
Vancouver Int'l A	13.1	5.9
Victoria Int'l A	14.0	5.3
Calgary Int'l A	12.9	-1.3
Edmonton Int'l A	12.3	-2.1
Regina A	12.7	-1.7
Saskatoon A	12.0	-1.6
Winnipeg Int'l A	11.7	0.4
Ottawa Int'l A	13.1	3.0
Toronto (Pearson Int'l A)	14.6	3.6
Montréal Int'l A	13.4	3.8
Québec A	11.2	2.2
Fredericton A	13.0	1.7
Saint John A	12.1	2.8
Halifax (Shearwater)	13.5	5.2
Charlottetown A	12.0	3.7
Goose A	6.3	-0.8
St John's A	10.2	3.1

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Kamloops A	28	Fort Nelson A	-14	Prince Rupert A	113
Yukon Territory	Watson Lake A	12	Shingle Point A	-21	Watson Lake A	20
Northwest Territories	Hay River A	4	Eureka	-30	Cape Dyer A	56
Alberta	Medicine Hat A	27	Edson A	-16	Edmonton Int'l A	32
Saskatchewan	Moose Jaw A	26	La Ronge A	-20	La Ronge A	31
Manitoba	Gretna (aut)	13	Grand Rapids (aut)	-18	Norway House A	30
Ontario	Thunder Bay A	23	Upsala (aut)	-11	Ottawa Int'l A	37
Québec	Roberval A	21	La Grande Rivière	-9	Québec A	33
New Brunswick	Fredericton A	17	St-Léonard A	-4	Saint John A	37
Nova Scotia	Yarmouth A	18	Amherst (aut)	-1	Sable Island	95
Prince Edward Island	Charlottetown A	14	Charlottetown A	2	Charlottetown A	18
Newfoundland	Stephenville A	16	Wabush Lake A	-6	Port Aux Basques	27

Across The Country...

Highest Mean Temperature	Sable Island (NS)	13
Lowest Mean Temperature	Eureka (NWT)	-22

91/10/14-91/10/20

CLIMATIC PERSPECTIVES
VOLUME 13

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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

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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

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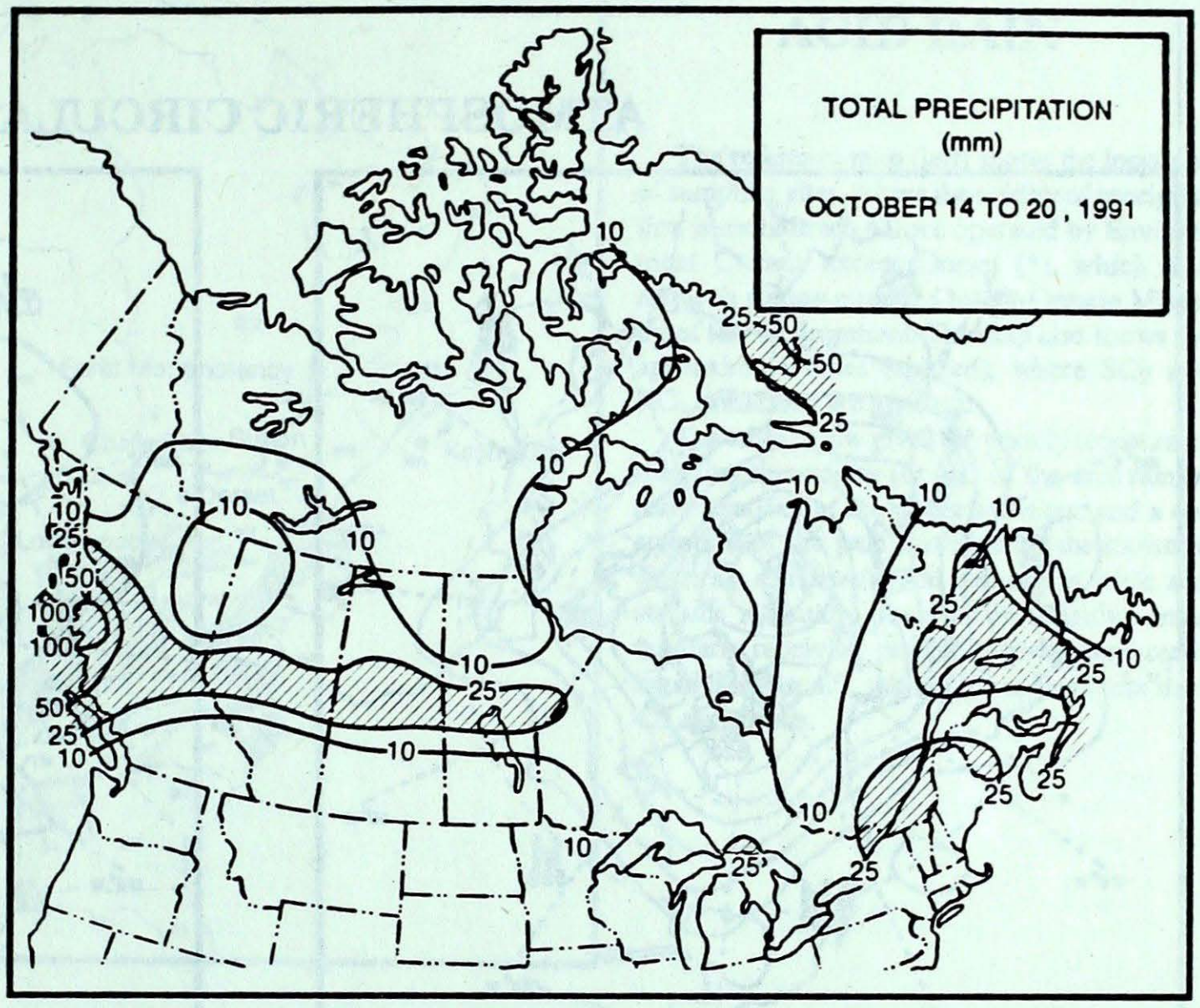
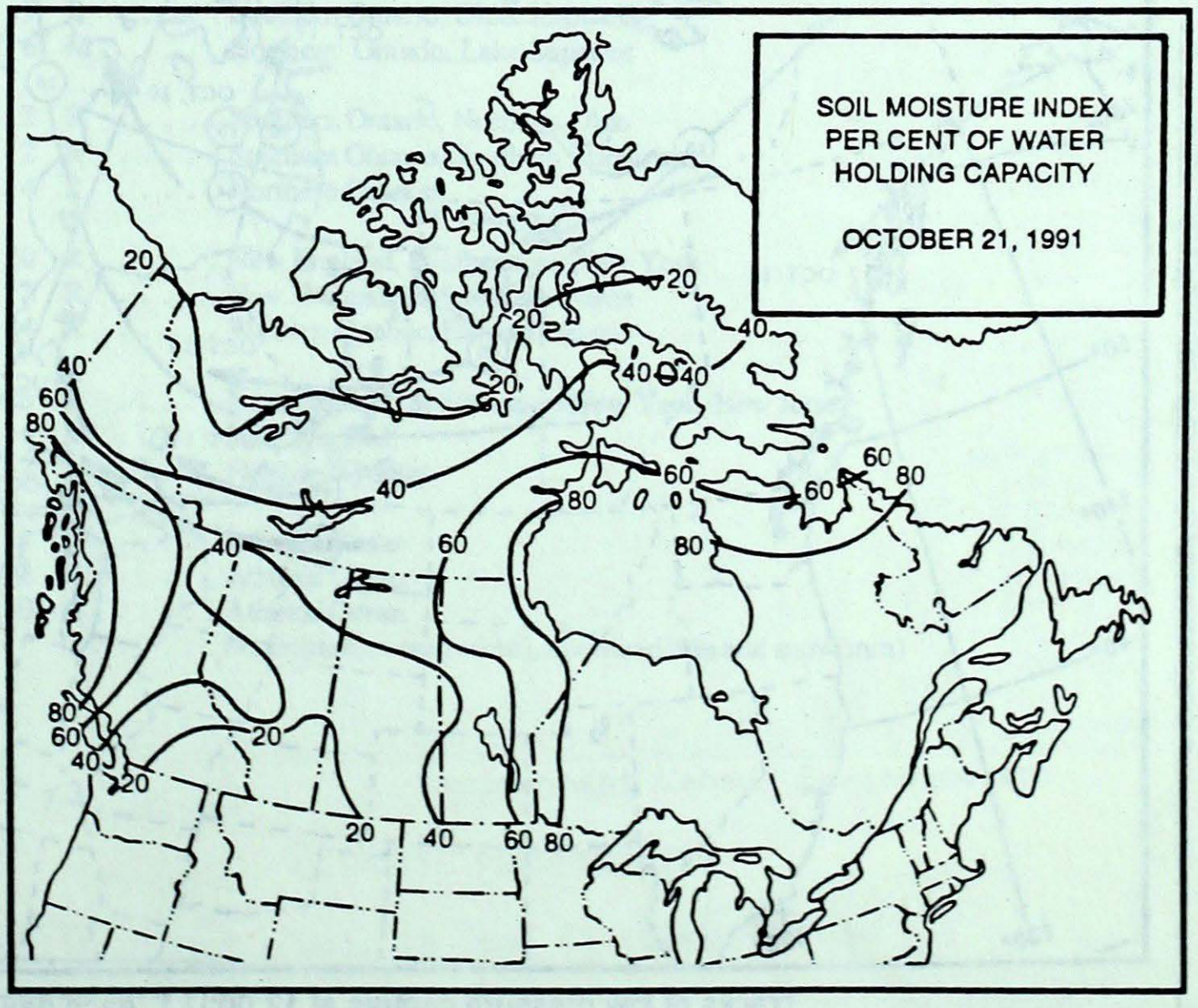
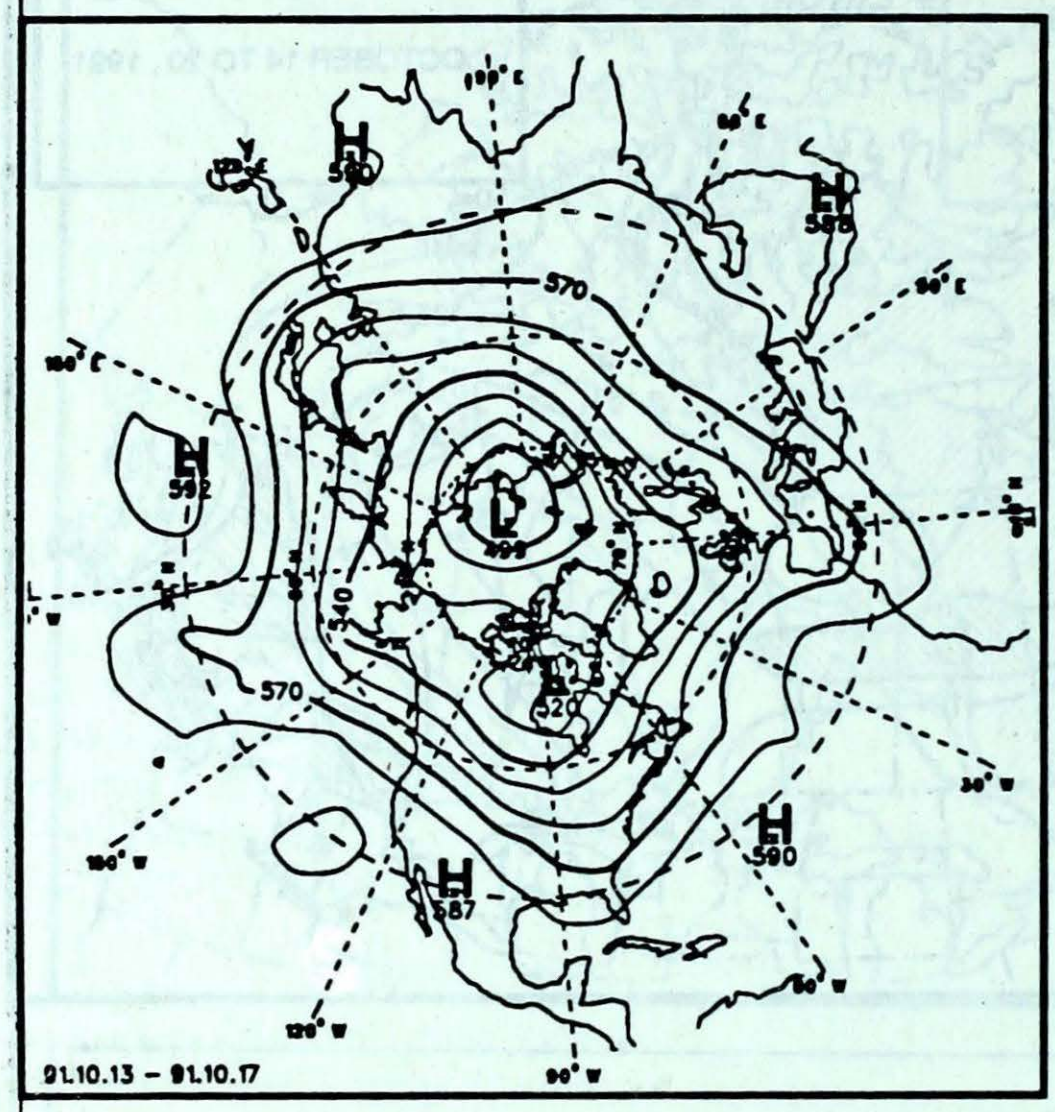


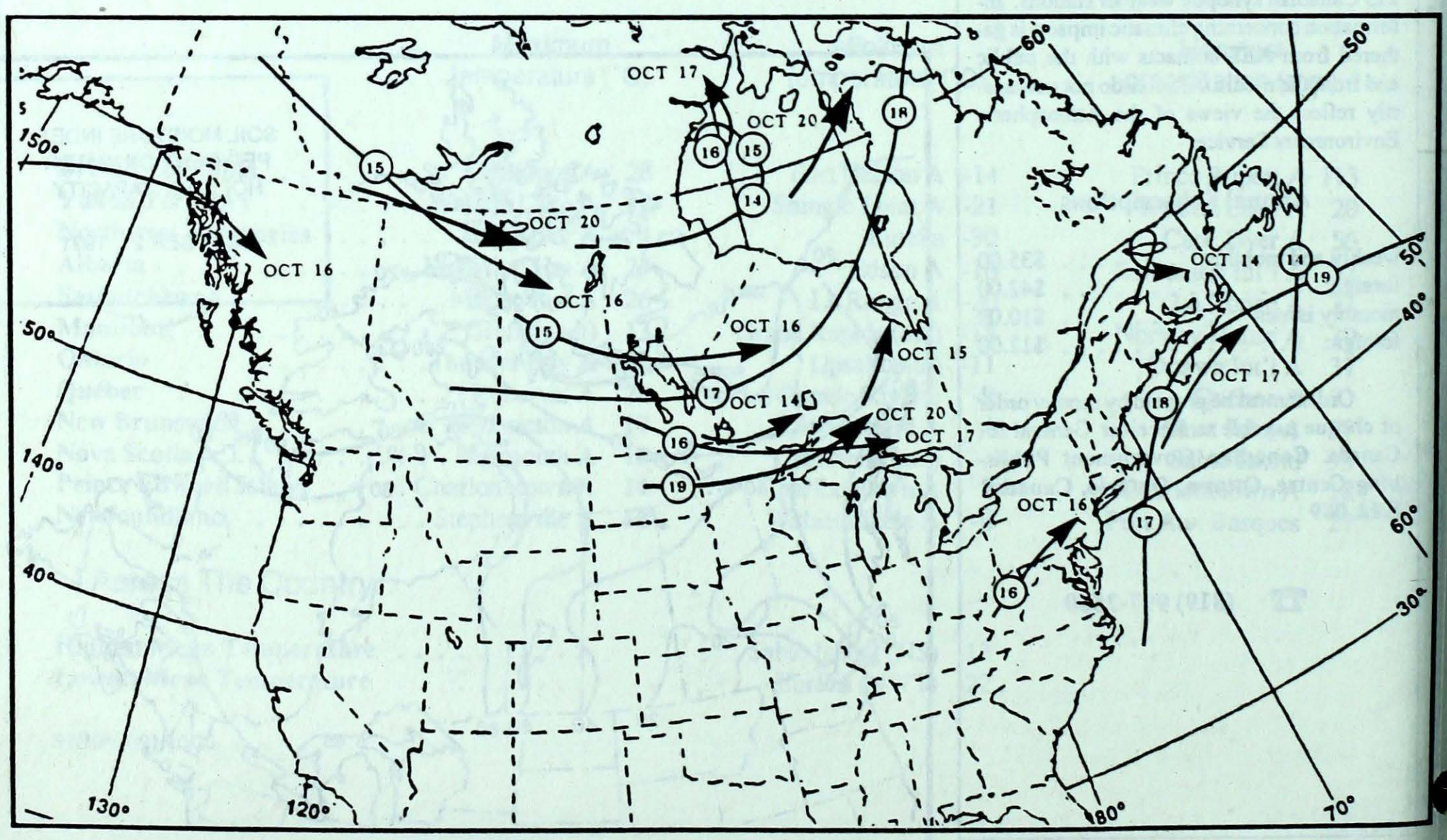


ATMOSPHERIC CIRCULATION



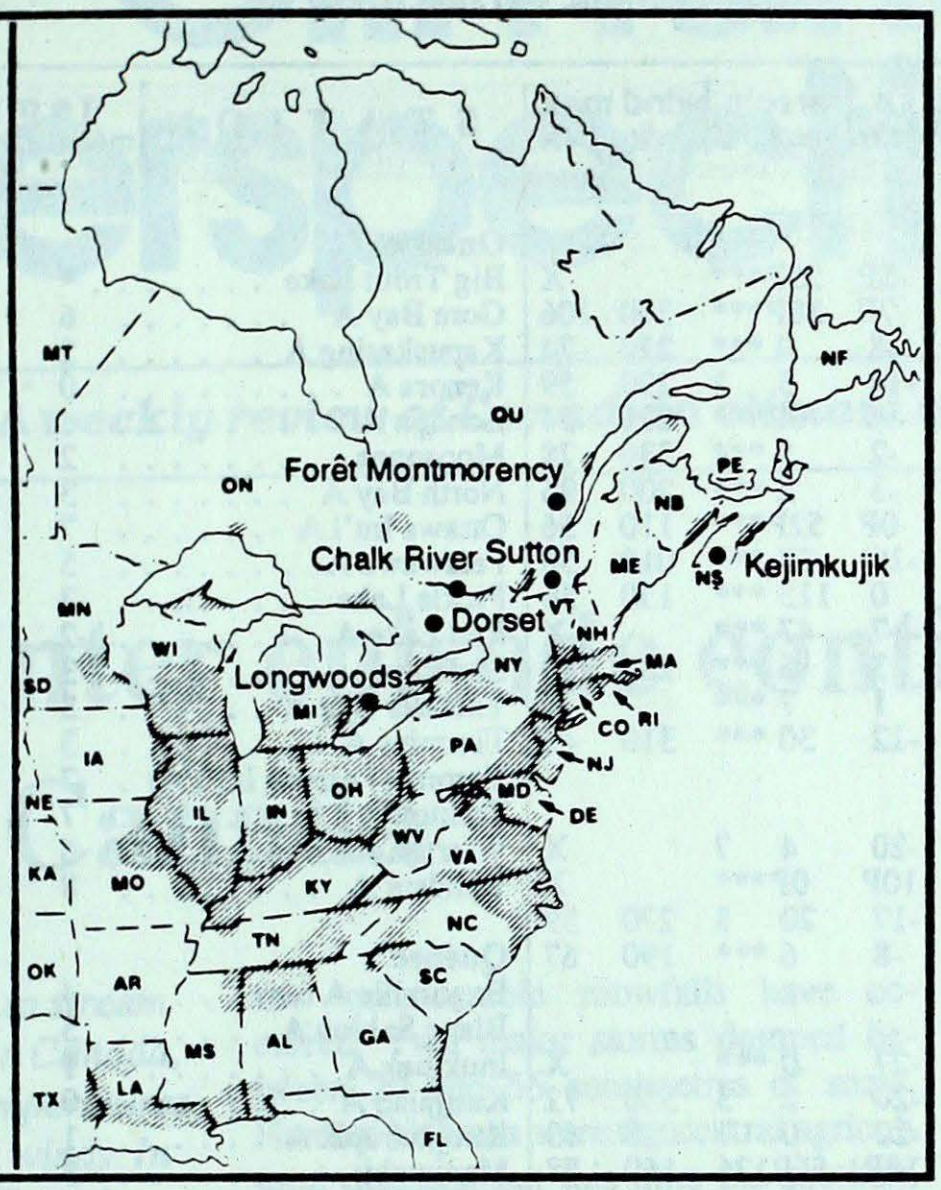
Mean geopotential height
50-kPa level (10-decametre intervals)

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.

October 13 to 19, 1991

Site	day	pH	amount		air path to site
Longwoods	14	4.1	7	R	. . . . . Northwestern Ohio, Indiana
Dorset*	14	4.1	9	R	. . . . . Southern Ontario, Ohio, Kentucky
	18	4.9	6	M	. . . . . Northern Ontario, Lake Superior
Chalk River	14	4.2	3	R	. . . . . Southern Ontario, Northern Ohio
	15	4.6	2	R	. . . . . Southern Ontario, Southern Michigan
	18	5.3	4	R	. . . . . Northern Ontario
Sutton	15	4.7	20	R	. . . . . New England, Southeastern New York
	17	5.3	2	R	. . . . . New Hampshire, Southern Maine
	18	5.3	4	R	. . . . . Western Quebec, Eastern Ontario
Montmorency	15	4.6	25	R	. . . . . New England, Southeastern New York, New Jersey
	16	5.1	4	M	. . . . . New England
	19	4.8	7	S	. . . . . Northern Quebec
Kejimkujik	16	4.8	8	R	. . . . . Atlantic Ocean
	17	5.0	2	R	. . . . . Atlantic Ocean
	18	4.7	10	R	. . . . . 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								
Blue River A	3P	-2P	8P	-5P	25P	***		X
Cape St James	11P	1P	14P	7P	38P	***	300	106
Cranbrook A	7	1	25	-8	0	***	220	74
Fort Nelson A	-2	-4	7	-14	5	1	290	59
Fort St John A	1P	-4P	16P	-9P	0P	***	220	54
Kamloops A	9	1	28	-2	5	***	330	78
Penticton A	10	1	23	-3	2	***	200	96
Port Hardy A	9P	1P	16P	0P	52P	***	110	56
Prince George A	4	-1	18	-10	37	***	010	50
Prince Rupert A	8	0	13	0	113	***	150	56
Smithers A	4	-1	12	-7	47	***		X
Vancouver Int'l A	11	1	20	3	6	***	280	85
Victoria Int'l A	10	0	19	1	7	***		X
Williams Lake A	3	-1	21	-12	30	***	310	43
Yukon Territory								
Komakuk Beach A	-12	-2	-4	-20	4	7		X
Teslin (aut)	-1P	*	11P	-10P	0P	***		X
Watson Lake A	-2	-3	12	-17	20	8	270	59
Whitehorse A	0	-1	12	-8	6	***	190	67
Northwest Territories								
Alert	-18	2	-7	-27	0	***		X
Baker Lake A	-11	-2	-3	-20	2	3	350	72
Cambridge Bay A	-14	-1	-5	-20	0	7	020	63
Cape Dyer A	-6P	2P	-1P	-18P	56P	126	160	78
Clyde A	-6	1	0	-12	10	15	100	76
Coppermine A	-12	-5	-6	-21	1	13	350	48
Coral Harbour A	-5	2	0	-19	17	19	070	69
Eureka	-22	2	-13	-30	5	8		X
Fort Smith A	-8P	-8P	-2P	-19P	21P	28	300	37
Hall Beach A	-7	4	0	-19	3	4	090	78
Inuvik A	-11	-2	-1	-20	7	15	320	65
Iqaluit A	-2	3	3	-9	11	5	140	93
Mould Bay A	-21P	-3P	-16P	-27P	0P	8		X
Norman Wells A	-7	-2	0	-17	6	7	100	83
Resolute A	-16	-1	-7	-27	0	4	050	70
Yellowknife A	-8	-6	-4	-12	17	13	100	72
Alberta								
Calgary Int'l A	6	0	24	-9	2	***	340	89
Cold Lake A	0	-5	15	-15	19	1	300	56
Edmonton Namao A	3	-3	17	-11	18	2	290	44
Fort McMurray A	-3	-7	7	-14	15	***	290	44
High Level A	-4	-7	7	-16	3	1	310	50
Jasper	5	0	22	-11	18	1		X
Lethbridge A	9	1	26	-9	1	***	250	109
Medicine Hat A	9P	1P	27P	-9P	0P	***	270	126
Peace River A	2	-2	16	-12	2	***	300	46
Saskatchewan								
Cree Lake	-8	-9	-2	-18	23	10	340	48
Estevan A	4	-2	23	-11	2	***	300	98
La Ronge A	-5	-8	1	-20	31	9	300	44
Regina A	4	-2	25	-12	5	***	290	98
Saskatoon A	1	-4	19	-14	14	***	360	48
Swift Current A	5	-1	25	-11	0	***	270	102
Yorkton A	1	-5	14	-10	8	***	250	83
Manitoba								
Brandon A	-1	-6	10	-14	8	***	290	107
Churchill A	-7	-6	-2	-15	11	5	340	87
Lynn Lake A	-8	-7	-4	-14	7	7	290	46
The Pas A	-5	-9	1	-16	25	8	330	61
Thompson A	-7	-7	-3	-15	3	3	280	52
Winnipeg Int'l A	0	-6	10	-10	1	***	270	119

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	*		6	*	*	6	330	65
Gore Bay A	6	-2	14	-1	26	***	160	67
Kapuskasing A	2	-2	23	-6	22	***	210	63
Kenora A	0	-5	13	-8	1	***	270	78
London A	6	-3	18	-3	11	***	330	52
Moosonee	2	-2	20	-6	12	***	280	70
North Bay A	3	-3	18	-5	21	***	200	54
Ottawa Int'l A	7	-1	18	-2	37	***		X
Petawawa A	5	1	18	-6	9	***	120	39
Pickle Lake	-3	-6	10	-10	11	1	330	95
Red Lake A	-2	-6	9	-11	4	1	260	70
Sudbury A	3	-3	17	-5	19	***	190	41
Thunder Bay A	3	-3	23	-10	7	***	270	74
Timmins A	3	-1	22	-6	13	***	190	63
Toronto(Pearson Int'l A)	7	-2	19	-3	8	***	110	43
Trenton A	7	-3	17	-5	14	***	220	48
Wiarton A	6	-3	20	-2	19	***	240	46
Windsor A	8	-3	18	-2	10	***	210	39
Québec								
Bagotville A	4	-2	15	-7	9	3	090	44
Blanc Sablon A	5	*	11	0	5	***	240	48
Inukjuak A	1	2	5	-2	22	9	270	70
Kuujjuaq A	0	1	6	-5	2	1	240	93
Kuujjuarapik A	1	-1	12	-5	21	4	250	87
Maniwaki	5	-2	19	-6	27	***		X
Mont Joli A	6	0	12	-1	18	***	230	65
Montréal Int'l A	7	-1	18	-3	26	***	160	44
Natashquan A	6	2	11	0	31	***	150	50
Québec A	6	-1	18	-3	33	***	260	39
Schefferville A	-1	0	8	-8	16	1	170	54
Sept-Îles A	4	1	10	-2	25	***	350	48
Sherbrooke A	5	-1	18	-5	29	***	160	41
Val-d'Or A	3	-2	19	-8	8	***	200	50
New Brunswick								
Chatham A	*		*	*	*	***		X
Fredericton A	7	0	17	-4	22	***	150	57
Miscou Island (aut)	7P	1P	12P	2P	0P	***		
Moncton A	8	1	15	-3	12	***	180	74
Saint John A	9	2	16	-1	37	***	160	46
Nova Scotia								
Greenwood A	10	2	17	0	11	***	160	80
Shearwater A	11	2	17	2	31	***	320	44
Sydney A	9	0	15	2	38	***	170	46
Yarmouth A	10	1	18	1	10	***	140	56
Prince Edward Island								
Charlottetown A	9P	1P	14P	2P	18P	***	160	46
East Point (auto)	11	*	14	5	9	***		
Newfoundland								
Cartwright	5	2	14	0	9	***	020	56
Churchill Falls A	0P	2P	15P	-4P	16P	4	190	37
Gander Int'l A	6	-1	14	1	9	***	010	33
Goose A	4	2	16	-2	27	1	260	52
Port Aux Basques	8	1	12	2	27	***	080	78
St John's A	7	0	14	0	5	***	040	41
St Lawrence	8	1	14	3	2	***		X
Wabush Lake A	0	1	13	-6	19	2	180	44

91/10/14-91/10/20

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.