Environment Canada Environnement Canada

Climatic Perspectives

August 19 to 25, 1991 **A weekly review of Canadian climate and water** *Vol. 13 No 34*

Archives

Heavy rain drenches southwestern Ontario and Atlantic Canada

Hurricane Bob, which began as a tropical depression east of the Bahamas on August 16, moved up the eastern seaboard and reached the Maritimes on August 19. Surprisingly, the precipitation the Atlantic provinces received from this tropical storm was not nearly as great as what fell in southwestern Ontario the same day.

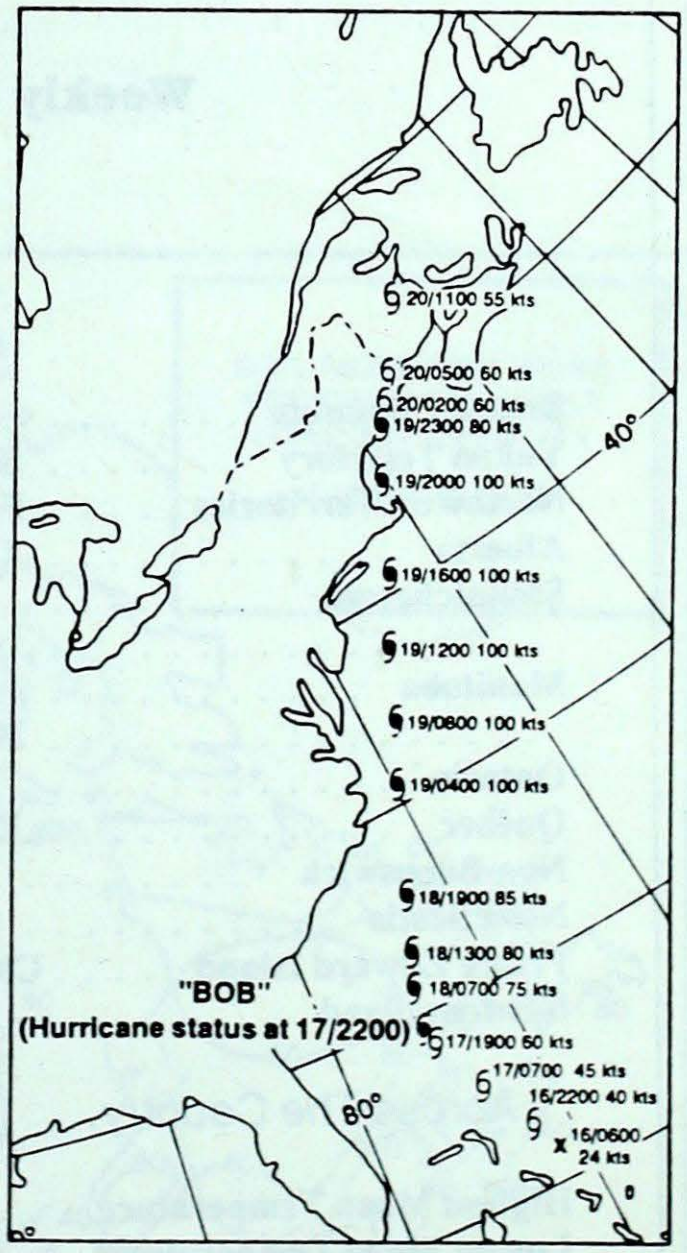
Hurricane Bob, the season's first hurricane quickly lost its punch and was downgraded to a tropical storm, when it moved inland near Rockland, Maine, reaching St. Stephen, N.B. late on Monday, August 19. Sustained winds, which just a few hours earlier were howling in excess of 150 km/h, with gusts to 220 km/h, subsided rapidly upon landfall to less than half that speed. Digby, in southwestern Nova Scotia, was hit with the strongest winds - gusts up to 130 km/h. Elsewhere in the Maritimes, 50 km/h wind speeds were more common, with several stations reporting wind gusts to almost 100 km/h.

Bands of rain and thunderstorms, which spread across Nova Scotia and New Brunswick ahead of "Bob" early on the 19th, produced some heavy downpours. However, overall rainfall amounts were surprisingly light for a storm of this stature. There were also reports of hail and an unconfirmed tornado. Heaviest rain, between 60 and 100 millimetres, occurred over northern New Brunswick and the Gaspé. Elsewhere, amounts of 50 mm were more common. With the exception of coastal areas, damage from this storm seems to be minimal. Fishing boats were swamped, docks damaged and weir fisherman on Grand Manan Island, off the coast of New Brunswick, sustained heavy loses to their equipment.

In southwestern Ontario, a weather system, which moved slowly eastwards across Lake Erie, produced unusually heavy and sustained rainfalls on August 19. During the afternoon and evening hours, southern portions of Essex County, along the north shore of Lake Erie, were inundated with 200 to 300 millimetres of rain. Unofficial rainfall totals at Colchester, Fox Creek, Gore Road and Harrow Research Station are 304.8, 250.4, 224.8 and 182.2 millimetres, respectively. The rain was accompanied by thunderstorms, and there was an unconfirmed report of a tornado. Preliminary damage estimates due to flooding and washouts are at least $1 million. This event is reminiscent of another very heavy rainfall event that caused widespread flooding on July 19 and 20, 1989, when more than 400 mm of rain fell in nearly the same area of southwestern Ontario.

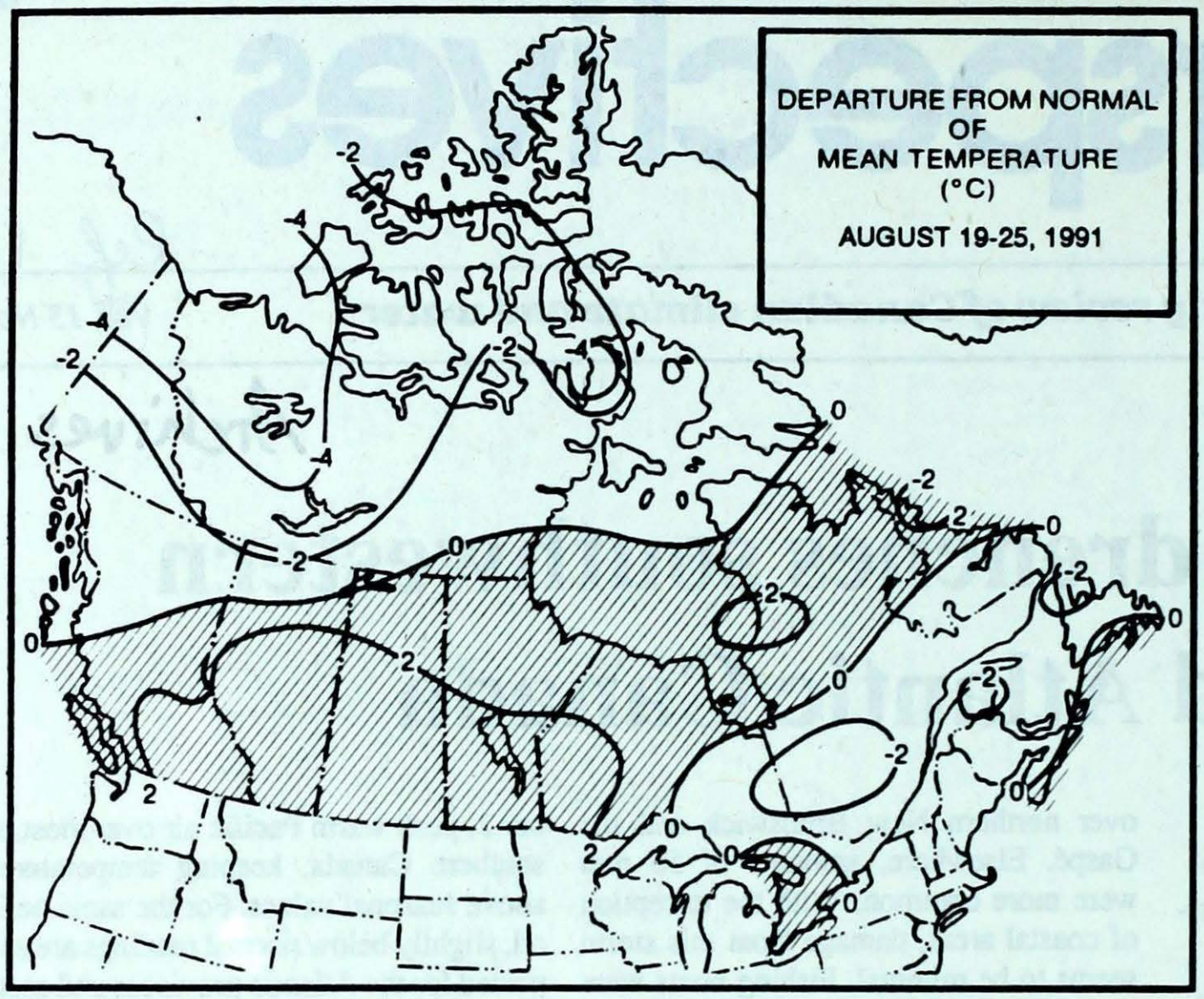
A look ahead ...

A strong ridge of high pressure over the central U.S. will, for the week of September 2, push warm Pacific air over most of southern Canada, keeping temperatures above seasonal values. For the same period, slightly below normal readings are expected for the Atlantic provinces and eastern Quebec.



Approximate position of "Bob", date/time (G.M.T.), and sustained wind speed.

Canada



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	17.0	6.2
Iqaluit A	9.9	3.1
Yellowknife A	17.4	9.9
Vancouver Int'l A	20.7	12.5
Victoria Int'l A	20.7	10.4
Calgary Int'l A	21.7	7.7
Edmonton Int'l A	20.9	7.0
Regina A	25.3	10.4
Saskatoon A	24.3	9.8
Winnipeg Int'l A	24.7	12.0
Ottawa Int'l A	23.9	12.5
Toronto (Pearson Int'l A)	25.3	12.8
Montréal Int'l A	23.9	13.1
Québec A	22.1	10.7
Fredericton A	23.7	10.6
Saint John A	21.2	10.6
Halifax (Shearwater)	21.9	12.7
Charlottetown A	21.3	12.2
Goose A	18.3	8.2
St John's A	18.4	10.3

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Penticton A	35	Puntzi Mountain (aut)	-1	Prince Rupert A	103
Yukon Territory	Shingle Point A	19	Komakuk Beach A	-5	Teslin (aut)	50
Northwest Territories	Fort Simpson A	23	Alert	-4	Pelly Bay	29
Alberta	Lethbridge A	32	Jasper	3	Edmonton Municipal A	47
Saskatchewan	Estevan A	34	Collins Bay	4	Collins Bay	38
	Regina A	34				
Manitoba	Gretna (aut)	34	Lynn Lake A	2	Lynn Lake A	45
	Pilot Mound Po	34				
Ontario	Kenora A	30	Nagagami (aut)	0	Harrow CDA	182
Québec	Kuujjuarapik A	27	Kuujjuaq A	0	Gaspe A	76
New Brunswick	Moncton A	25	St-Léonard A	3	St-Léonard A	97
Nova Scotia	Greenwood A	26	Truro	4	Yarmouth A	89
Prince Edward Island	Charlottetown A	24	Charlottetown A	6	Charlottetown A	55
Newfoundland	Goose A	26	St. John's A	3	Badger (aut)	62

Across The Country...

Highest Mean Temperature	Penticton A(BC)	23
Lowest Mean Temperature	MacKar Inlet(NWT)	-1

91/08/19-91/08/25

CLIMATIC PERSPECTIVES
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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.

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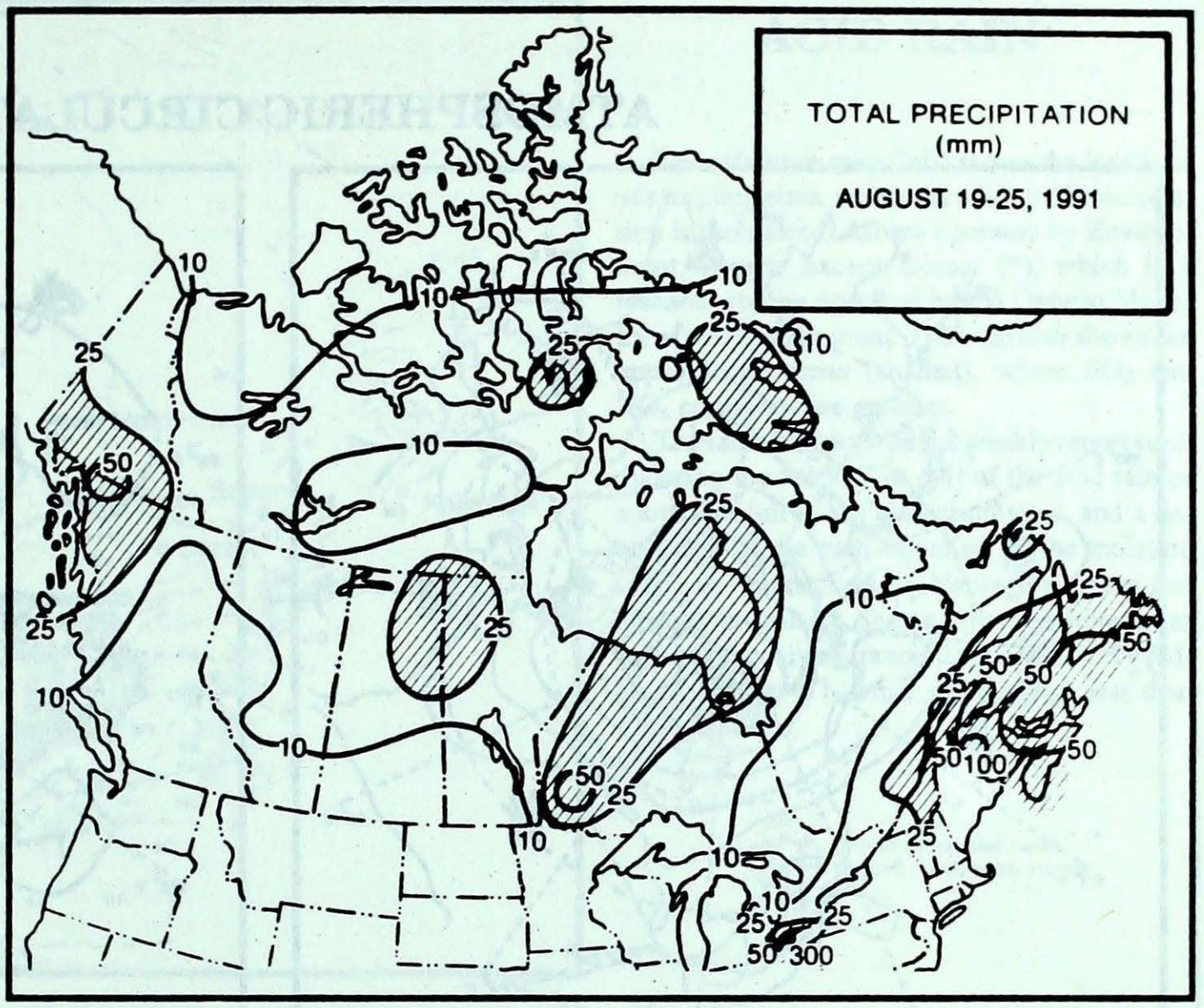
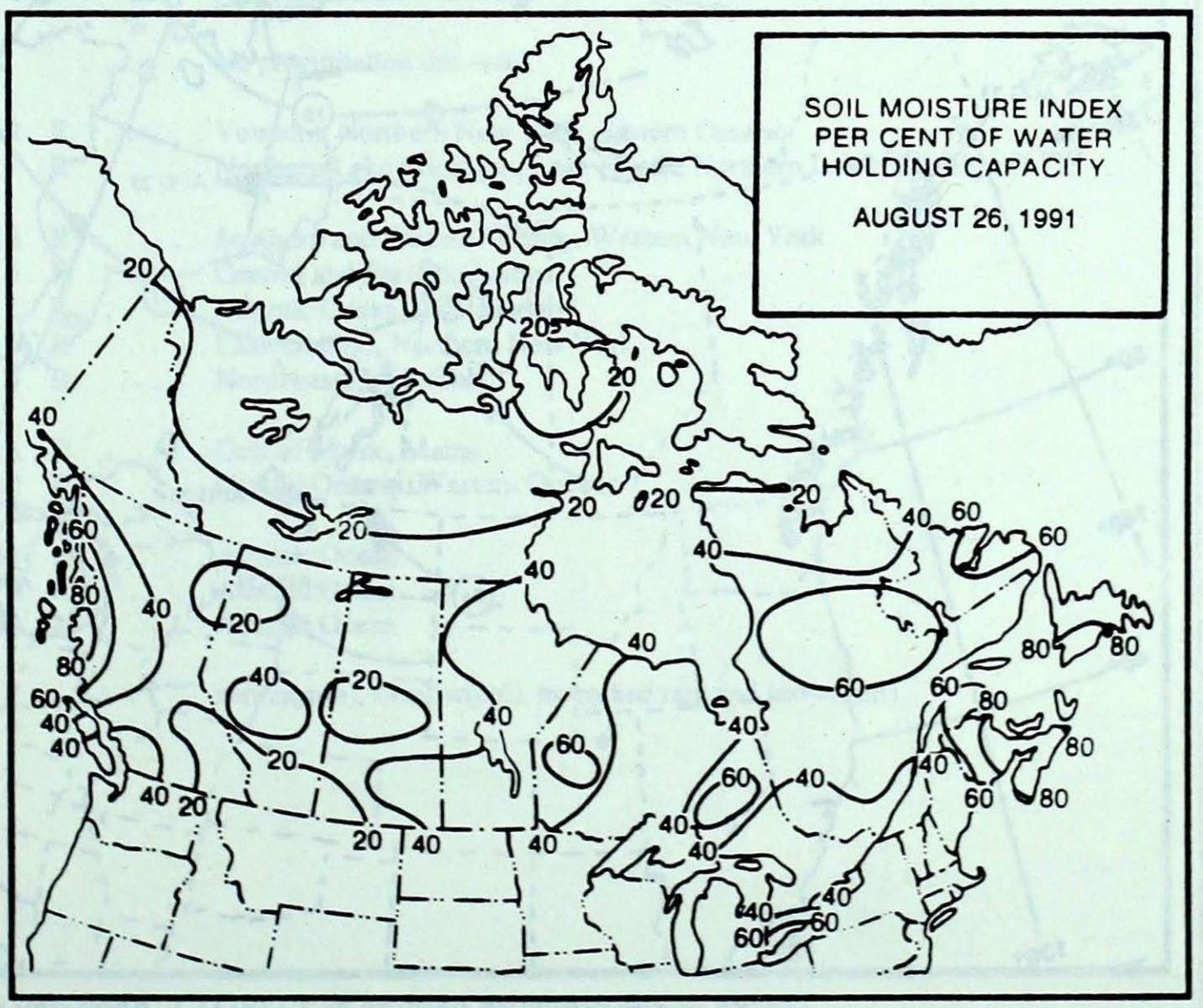
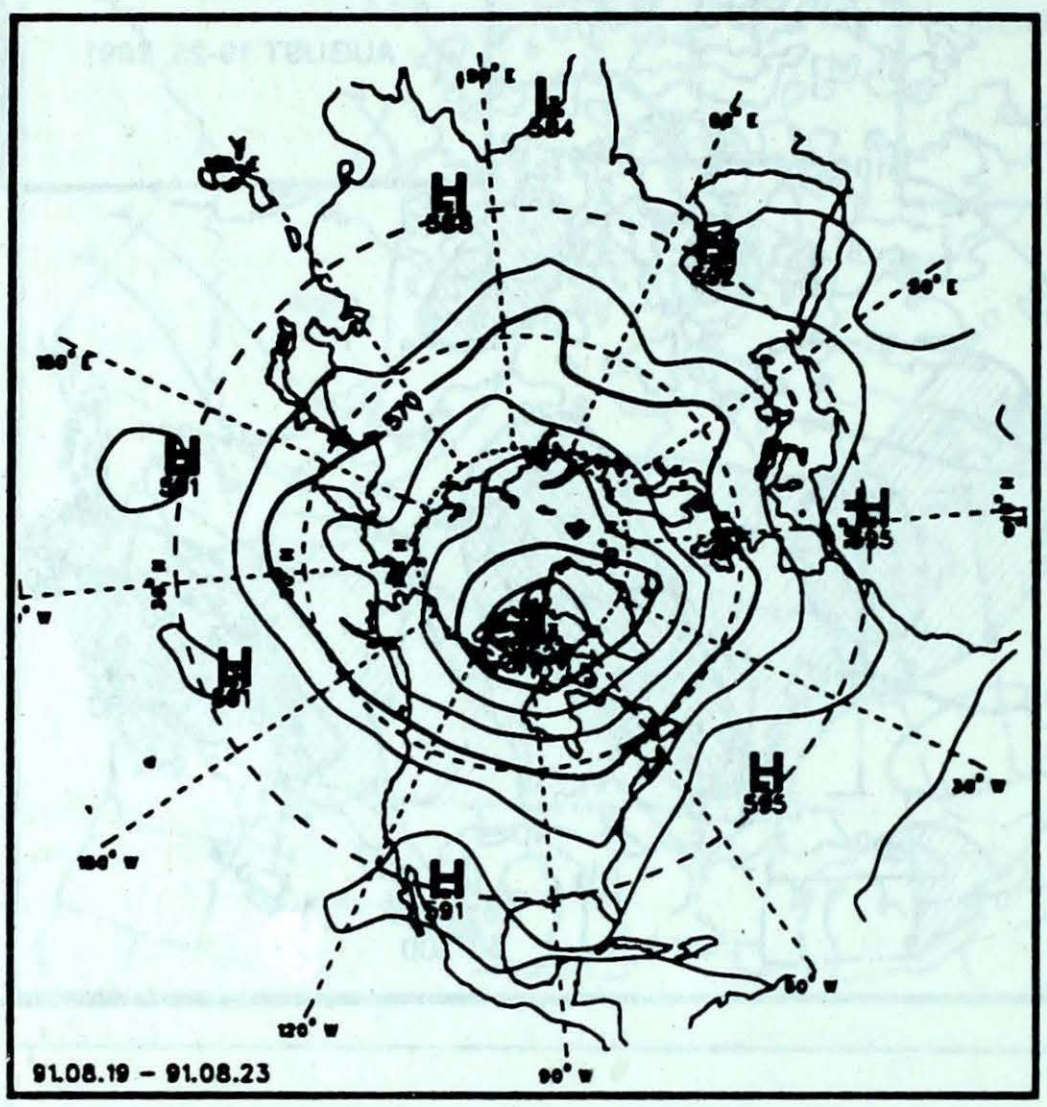
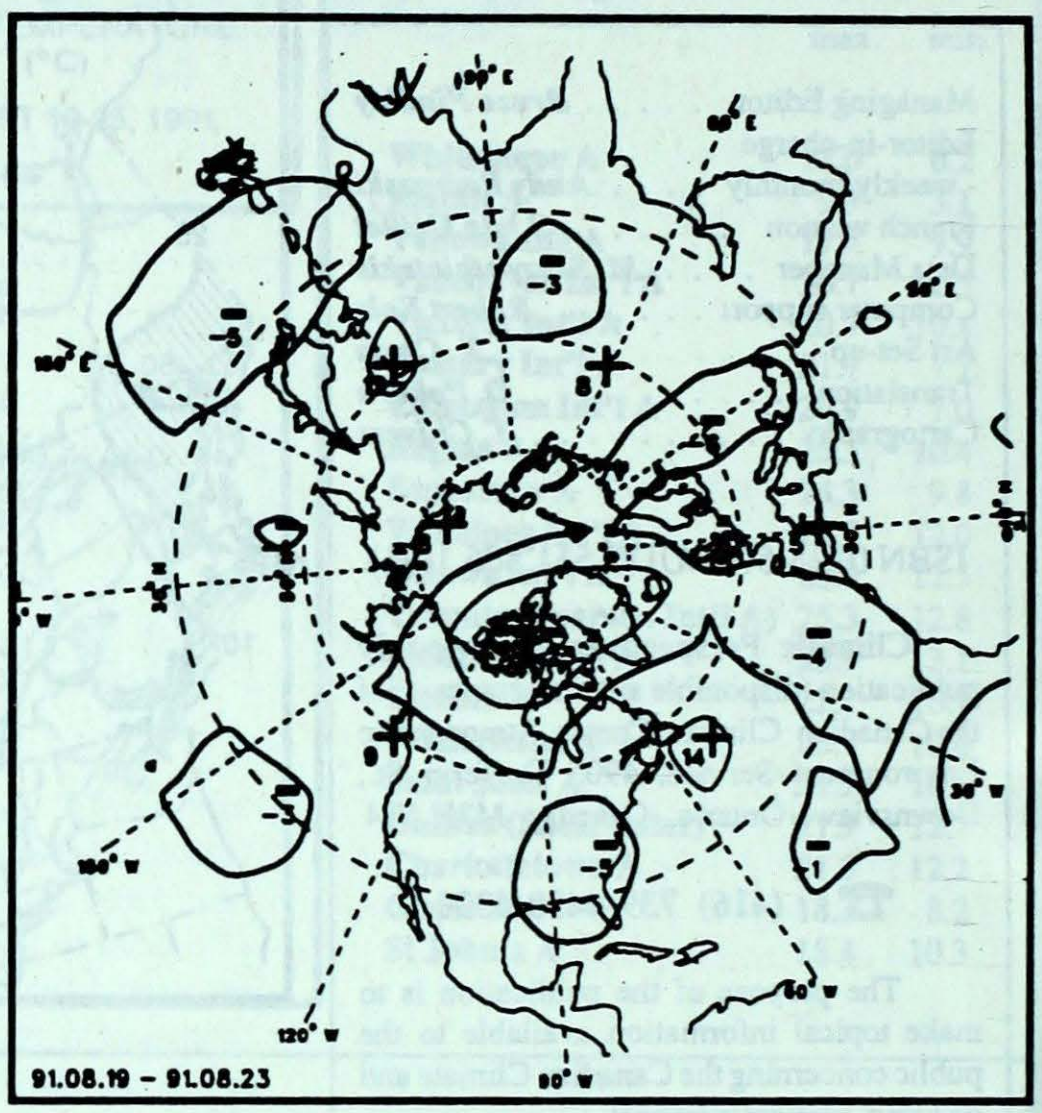




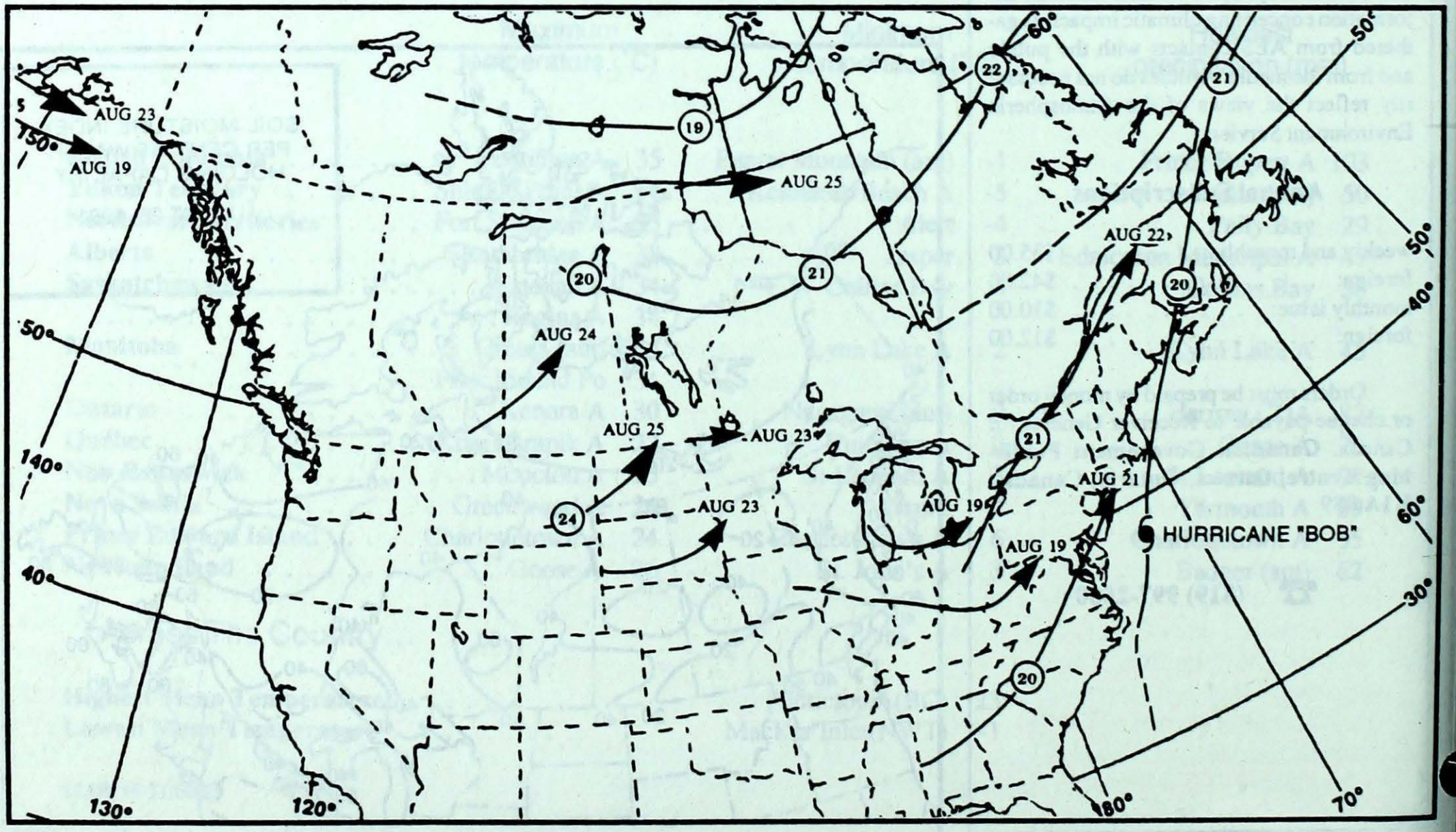
ATMOSPHERIC CIRCULATION



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

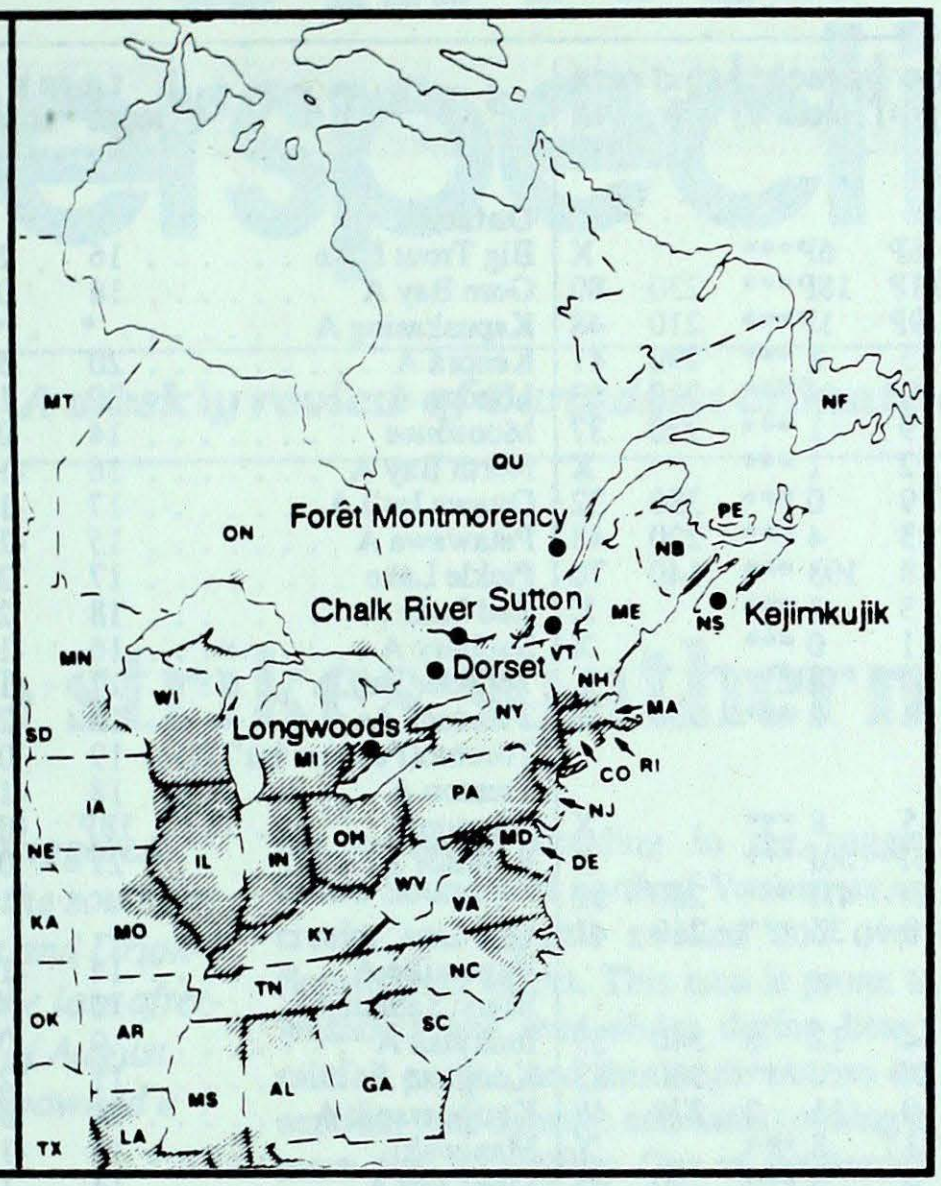


Mean geopotential height anomaly
50-kPa level (10-decametre intervals)



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
					August 18 to 24, 1991
Longwoods					. . . . . No precipitation this week
Dorset*					. . . . . No precipitation this week
Chalk River	21	4.9	2	R	. . . . . Vermont, Northern New York, Eastern Ontario
	22	4.1	1	R	. . . . . Northern Lake Michigan, Lake Huron, Northern Lower Michigan
Sutton	18	4.2	12	R	. . . . . Southern and Eastern Ontario, Western New York
	19	4.8	5	R	. . . . . Central and Eastern Quebec
	21	4.7	5	R	. . . . . Atlantic Ocean, New England
	22	4.8	6	R	. . . . . Lake Ontario, Northern New York
	23	3.9	5	R	. . . . . Northwestern Quebec
Montmorency	21	5.4	26	R	. . . . . Gulf of Maine, Maine
	22	4.3	12	R	. . . . . Central Ontario, Western Quebec
Kejimkujik	19	4.9	53	R	. . . . . Atlantic Ocean
	20	4.6	8	R	. . . . . Atlantic Ocean
	21	5.5	19	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	16P	1P	27P	6P	6P***			X
Cape St James	14P	0P	18P	11P	18P***		230	80
Cranbrook A	21P	4P	33P	9P	1P***		210	48
Fort Nelson A	12	-2	21	5	8 ***		290	41
Fort St John A	14P	0P	23P	4P	1P***		210	63
Kamloops A	22	3	33	9	1 ***		220	37
Penticton A	23	4	35	12	1 ***			X
Port Hardy A	14	1	21	9	0 ***		330	32
Prince George A	14	1	24	3	4 ***		220	44
Prince Rupert A	13	0	16	8	103 ***		140	70
Smithers A	13	-1	20	3	1 ***			X
Vancouver Int'l A	18	2	24	11	0 ***			X
Victoria Int'l A	16P	1P	24P	7P	0P***			X
Williams Lake A	15	0	25	1	2 ***		330	37
Yukon Territory								
Komakuk Beach A	2	-4	14	-5	8 ***			X
Teslin (aut)	9P	*	15P	3P	50P***			X
Watson Lake A	11P	-2P	17P	2P	41P***		280	52
Whitehorse A	10	-2	16	3	35 ***		210	41
Northwest Territories								
Alert	0	1	8	-4	12	6	340	39
Baker Lake A	8P	-1P	18P	0P	6P***		360	83
Cambridge Bay A	3	-3	6	0	16	2	270	48
Cape Dyer A	4	0	11	-1	8 ***			X
Clyde A	5	1	11	0	5 ***		120	65
Coppermine A	6	-2	19	-3	17 ***		260	57
Coral Harbour A	6	-1	17	-1	7 ***		020	56
Eureka	2	0	9	-1	0 ***			X
Fort Smith A	13	-1	22	3	8 ***		300	44
Hall Beach A	3	-1	8	0	10 ***		300	46
Inuvik A	5	-5	19	0	17	1	330	43
Iqaluit A	7	0	14	1	25 ***		220	54
Mould Bay A	0	-2	1	-2	4	1		X
Norman Wells A	8	-5	22	-1	7 ***		330	48
Resolute A	-1	-2	5	-3	4	1	110	57
Yellowknife A	10	-3	19	4	7 ***		260	63
Alberta								
Calgary Int'l A	18	3	29	9	9 ***		180	41
Cold Lake A	17	2	29	5	9 ***		310	59
Edmonton Namao A	17	2	26	7	13 ***		290	52
Fort McMurray A	15	0	25	5	14 ***		310	54
High Level A	12	-1	20	3	13 ***		330	39
Jasper	15	2	26	3	4 ***			X
Lethbridge A	21	4	32	10	0 ***		230	50
Medicine Hat A	22	3	31	10	3 ***		010	130
Peace River A	15	1	24	4	9 ***		240	52
Saskatchewan								
Cree Lake	14	1	23	5	13 ***		230	59
Estevan A	21	3	34	10	0 ***		070	57
La Ronge A	16	2	27	5	11 ***		270	56
Regina A	20	3	34	10	2 ***		330	57
Saskatoon A	20	3	33	10	5 ***		160	46
Swift Current A	20	3	30	11	1 ***		170	63
Yorkton A	19	2	32	8	4 ***		150	43
Manitoba								
Brandon A	20	3	33	9	4 ***		180	48
Churchill A	12	1	29	6	10 ***		350	52
Lynn Lake A	12	0	26	2	45 ***		030	44
The Pas A	18	2	32	9	15 ***		280	70
Thompson A	14	1	30	2	21 ***		310	65
Winnipeg Int'l A	21	3	34	8	0 ***		180	76

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	16	2	26	3	26 ***		330	63
Gore Bay A	18	0	25	9	1 ***		300	33
Kapuskasing A	*	*	*	0P	17P***		200	46
Kenora A	20	3	30	10	6 ***		180	43
London A	20	1	28	14	1 ***		240	43
Moosonee	14	0	27	2	14 ***		330	41
North Bay A	16	-1	24	5	5 ***		010	163
Ottawa Int'l A	17	-1	26	9	10 ***		240	41
Petawawa A	15	-2	25	5	2 ***			X
Pickle Lake	17	2	27	8	32 ***		210	37
Red Lake A	18	2	29	8	50 ***		360	54
Sudbury A	16	-1	26	7	4 ***		200	35
Thunder Bay A	17	1	30	3	2 ***			X
Timmins A	13	-2	24	1	5 ***		240	44
Toronto(Pearson Int'l A)	19	0	29	12	12 ***		310	48
Trenton A	18	-1	26	9	10 ***		030	46
Wiarton A	18P	0P	27P	11P	3P***		230	33
Windsor A	21	0	30	14	33 ***		030	43
Québec								
Bagotville A	14	-1	24	5	34 ***		290	37
Blanc Sablon A	11	*	21	3	6 ***		080	80
Inukjuak A	9	0	12	6	51 ***		200	63
Kuujjuaq A	11	2	23	0	9 ***		250	59
Kuujjuarapik A	14	3	27	7	24 ***		200	67
Maniwaki	15	-1	25	4	21 ***			X
Mont Joli A	14	-1	21	6	19 ***		050	46
Montréal Int'l A	17	-1	26	10	13 ***			X
Natashquan A	11	-2	17	2	27 ***		110	52
Québec A	17	0	24	8	29 ***		060	44
Schefferville A	10	1	23	3	18 ***		230	61
Sept-Îles A	12	-2	19	3	12 ***		320	48
Sherbrooke A	16	0	24	4	26 ***		060	41
Val-d'Or A	13	-2	24	3	7 ***		330	50
New Brunswick								
Chatham A	15	-2	24	4	38 ***		060	74
Fredericton A	16	-1	25	6	61 ***		060	69
Miscou Island (aut)	*	*	*	*	* ***			
Moncton A	16	-1	25	4	37 ***		210	78
Saint John A	16	0	23	7	48 ***		190	96
Nova Scotia								
Greenwood A	18	1	26	5	68 ***		200	89
Shearwater A	18	0	24	9	61 ***		190	65
Sydney A	17	0	25	8	39 ***		210	76
Yarmouth A	17	1	24	9	89 ***		210	65
Prince Edward Island								
Charlottetown A	16	-1	24	6	55 ***		220	67
East Point (auto)	16P	*	21P	14P	46P***			
Newfoundland								
Cartwright	12	1	21	4	27 ***		340	61
Churchill Falls A	11	0	24	3	3 ***		320	54
Gander Int'l A	13	-1	23	6	38 ***		270	63
Goose A	13	-1	26	4	12 ***		330	46
Port Aux Basques	14	0	20	7	50 ***		240	83
St John's A	14	-1	23	3	35 ***		290	78
St Lawrence	14P	1P	24P	4P	23P***			X
Wabush Lake A	11	0	24	3	8 ***		230	50

91/08/19-91/08/25

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.