Environment Canada Environnement Canada

Climatic Perspectives

November 4 to 10, 1991 **A weekly review of Canadian climate and water** Vol. 13 No 45

Heavy rains drench the Maritimes

Fierce east coast storms are a fact of life in Atlantic Canada during the winter months, and last week's hurricane-force winds and this week's heavy rainfalls exemplify the situation. The intensity of these storms is related to the proximity of the Atlantic Ocean - the relatively warmer water during the winter months and the abundant moisture supply.

A state of emergency was declared after two days of heavy, widespread rainfalls caused extensive flooding of roads and homes along Nova Scotia's southwestern shore, as the storm responsible drifted slowly south of the province. The rain, which began on the 10th, inundated the Liverpool area with a total of 154 mm, of which, 113 mm fell on the 11th, setting a new 24-hour rainfall record for the month of November. Shearwater, also set a record for the greatest rainfall in 24-hours on the 11th, a total of 70 mm.

In northern New Brunswick and Newfoundland, the precipitation fell as a mixture of snow, ice pellets and freezing rain. Charlo, N.B., received 27 cm of snow. Winds gusting to more than 110 km/h were reported Monday in the Bay of Fundy, the Gulf of St. Lawrence and Cabot Strait.

The deep freeze continues

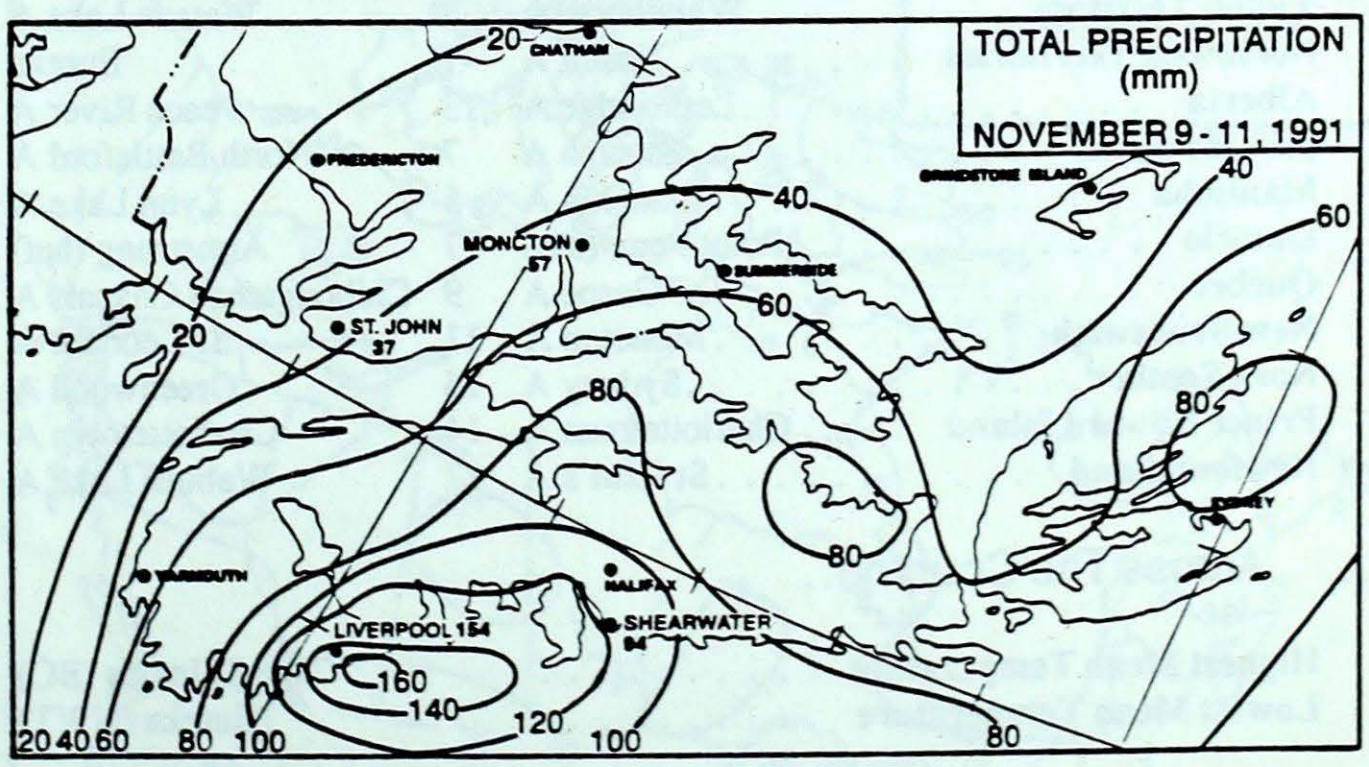
Temperature records continued to tumble in Manitoba, including a November 4, low maximum temperature record in Winnipeg, which had remained intact for 118 years (new record -10.4°C, old -8.9°C). On November 5, strong northwesterly winds combined with daytime temperature readings of between -10°C and -17°C, produced bitterly cold wind chills of up to 2000 W/m^2 - dangerous for outdoor activity without protection.

In B.C., even the normally balmy southern interior valleys received between 5 and 25 centimetres of fresh snow. Although the snow caused numerous accidents, ski resort operators are hopeful that the ski season will be able to commence soon.

Ontario's record cold winter-like weather continued unabated, with temperatures running well below the average for this time of year. Snowfalls have also been plentiful in both the north and to the lee of the Great Lakes. Even the Niagara Peninsula was hit with a 5 to 10 centimetre snowfall on November 7. In central Ontario, "cottage country", the freeze has resulted in early ice forming along the shorelines and in the bays of many of the smaller lakes. Many long-time residents in the Muskoka's claim that this is the earliest they have seen ice form on the lakes in the last twenty years.

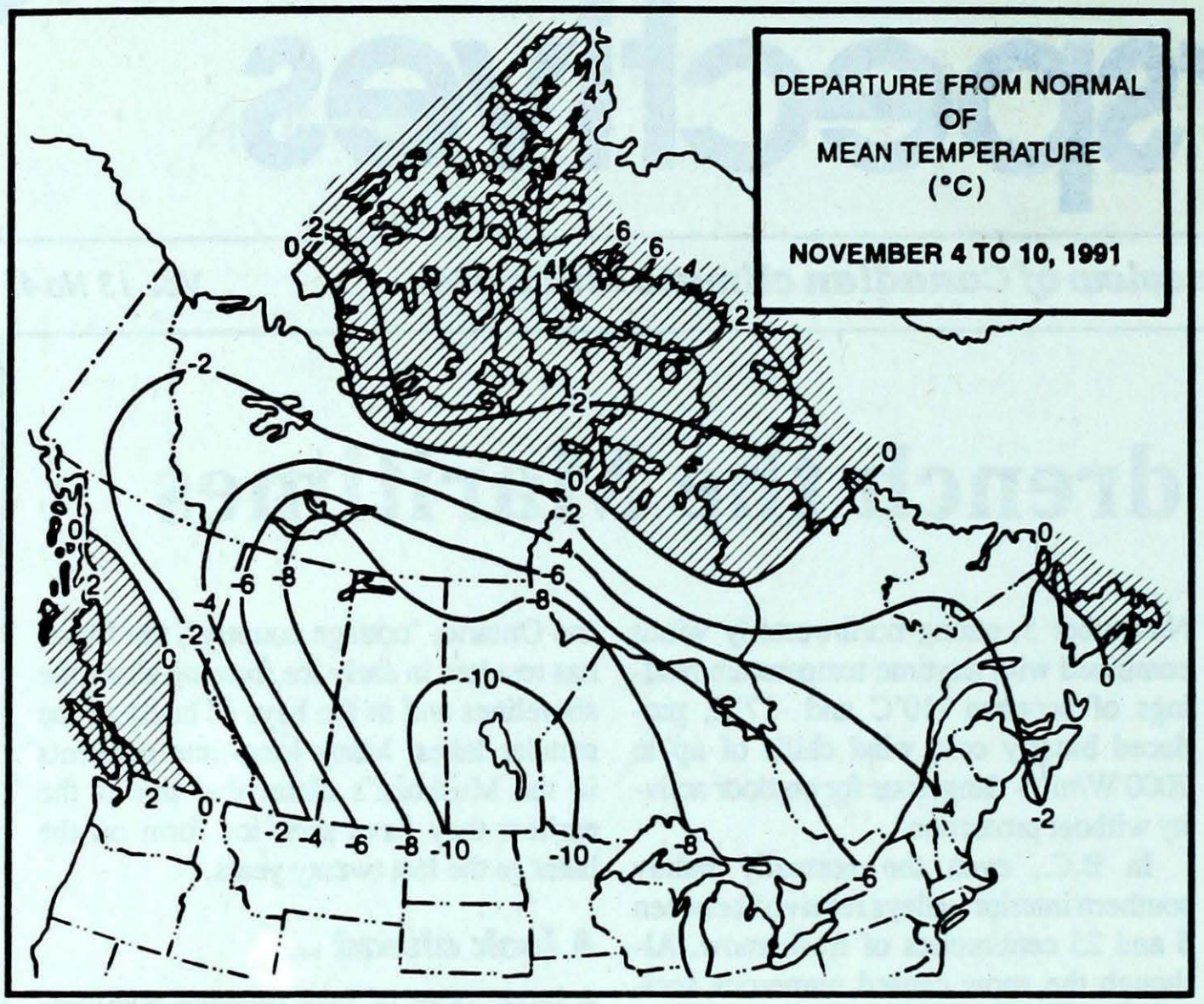
A look ahead ...

A broad ridge of high pressure now centred over the Great Lakes Basin will, for the week of November 18, bring a pleasant temperature regime to most of the country. Temperatures in the Yukon, British Columbia, Labrador and the Atlantic provinces are expected to be near or below normal, while the Prairies, Ontario, Quebec and the Arctic are forecast, on average, to experience above normal temperatures.



The storm which dumped heavy rain on the Maritimes developed off the coast of Florida on the 9th, and moved slowly up the eastern seaboard.

Canada



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-2.9	-9.5
Iqaluit A	-7.3	-14.6
Yellowknife A	-6.5	-13.7
Vancouver Int'l A	10.5	4.1
Victoria Int'l A	10.7	3.7
Calgary Int'l A	6.4	-5.9
Edmonton Int'l A	2.8	-8.4
Regina A	4.1	-7.5
Saskatoon A	2.8	-7.1
Winnipeg Int'l A	3.3	-5.7
Ottawa Int'l A	6.7	-0.8
Toronto (Pearson Int'l A)	8.4	0.4
Montréal Int'l A	7.4	0.4
Québec A	5.3	-1.6
Fredericton A	8.1	-1.1
Saint John A	7.9	0.3
Halifax (Shearwater)	9.5	2.8
Charlottetown A	8.0	1.2
Goose A	2.1	-5.0
St John's A	8.2	1.7

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Victoria Int'l A	16	Fort Nelson A	-22	Prince Rupert A	178
Yukon Territory	Whitehorse A	-3	Watson Lake A	-26	Watson Lake A	17
Northwest Territories	Iqaluit A	-1	Eureka	-33	Shepherd Bay A	18
Alberta	Lethbridge A	13	Peace River A	-28	High Level A	20
Saskatchewan	Estevan A	7	North Battleford A	-30	Cree Lake	9
Manitoba	Dauphin A	5	Lynn Lake A	-32	Thompson A	11
Ontario	Point Petre (aut)	7	Armstrong (aut)	-27	Geraldton A	19
Québec	Gaspe A	9	Chibougamau Chapais A	-20	La Grande Rivière	25
New Brunswick	Moncton A	11	St-Léonard A	-13	Moncton A	17
Nova Scotia	Sydney A	16	Greenwood A	-4	Greenwood A	48
Prince Edward Island	Charlottetown A	14	Charlottetown A	-6	Charlottetown A	24
Newfoundland	St John's A	17	Wabush Lake A	-16	St Lawrence	27

Across The Country...

Highest Mean Temperature	Cape St James (BC)	10
Lowest Mean Temperature	Eureka (NWT)	-28

91/11/04-91/11/10

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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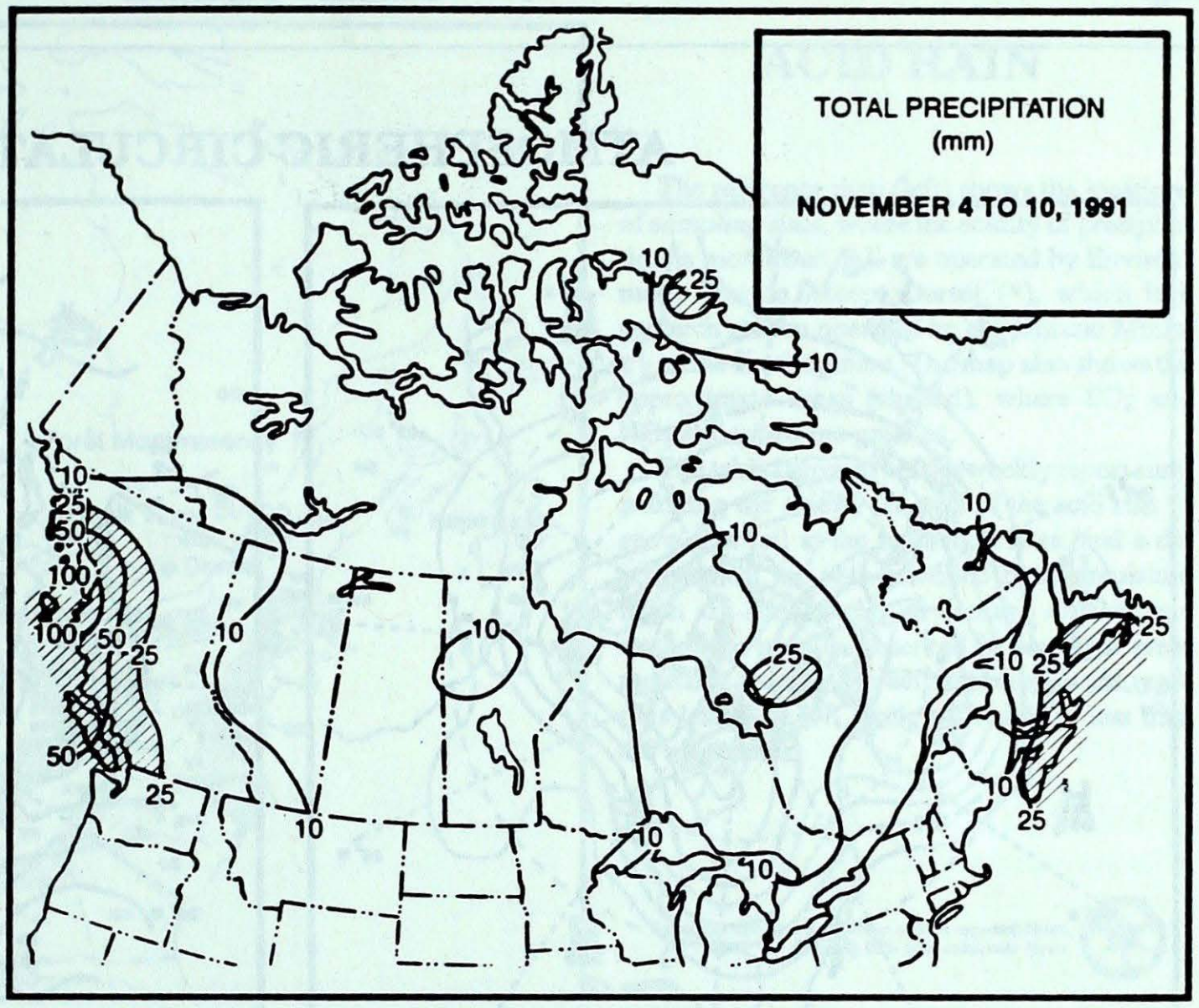
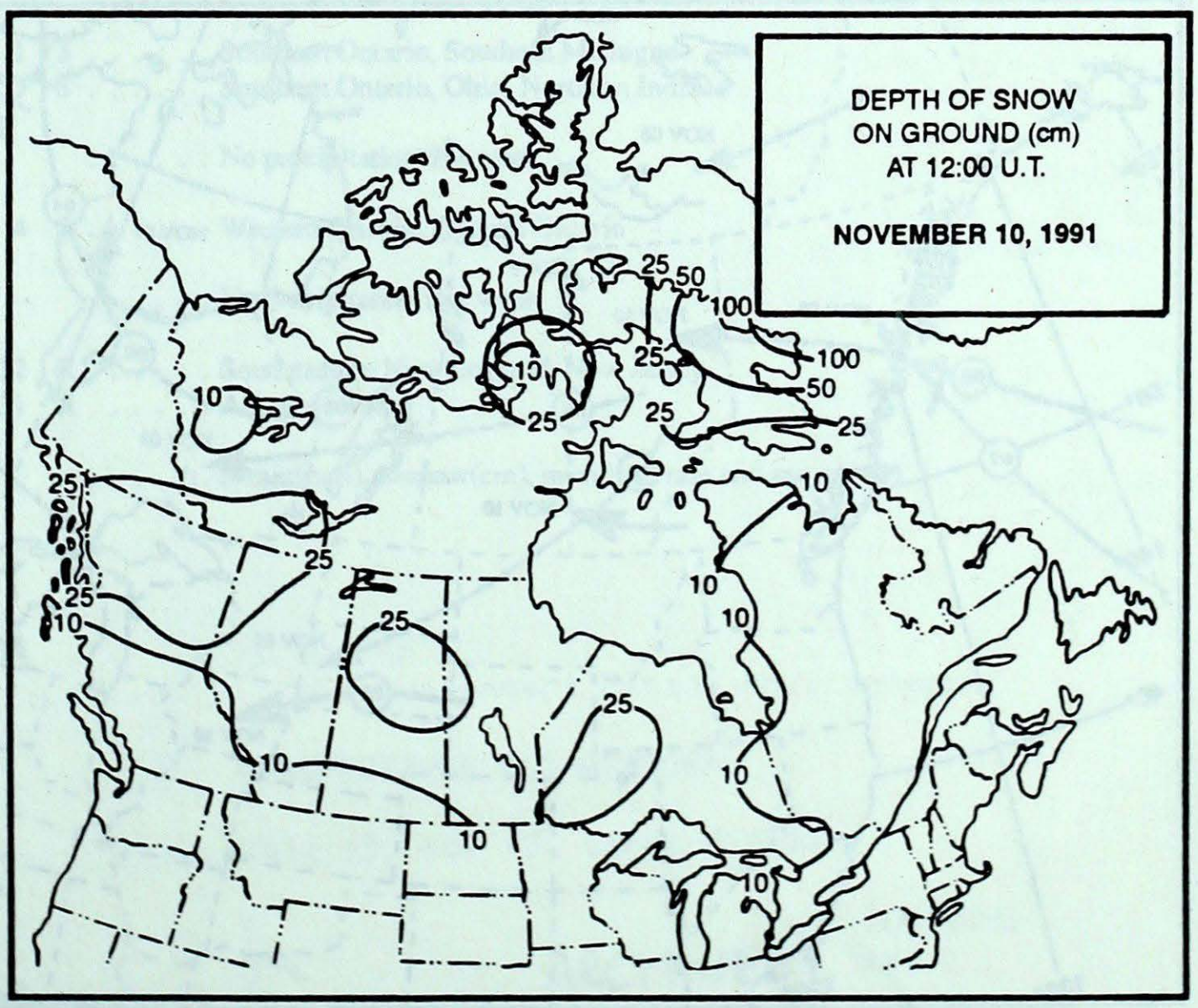
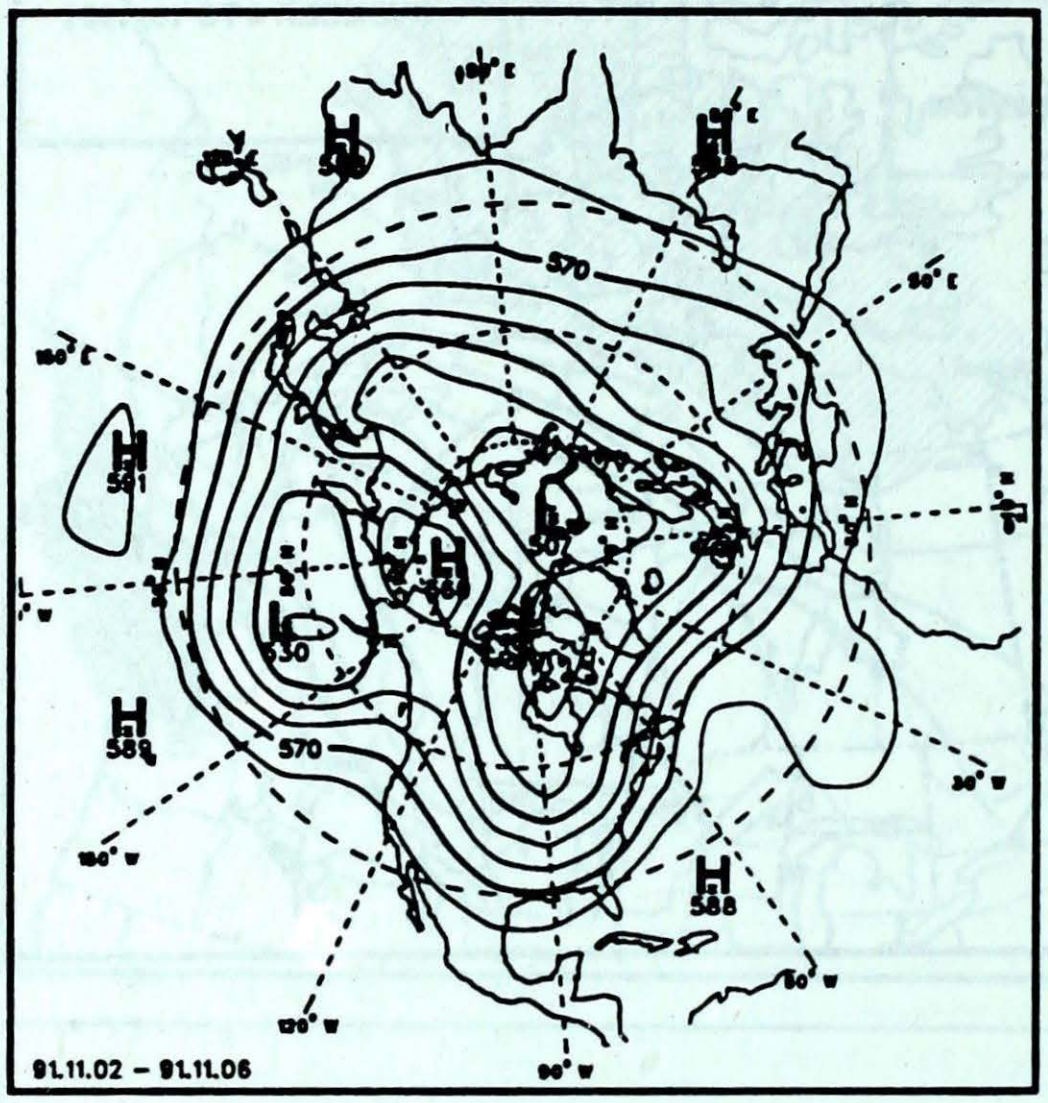
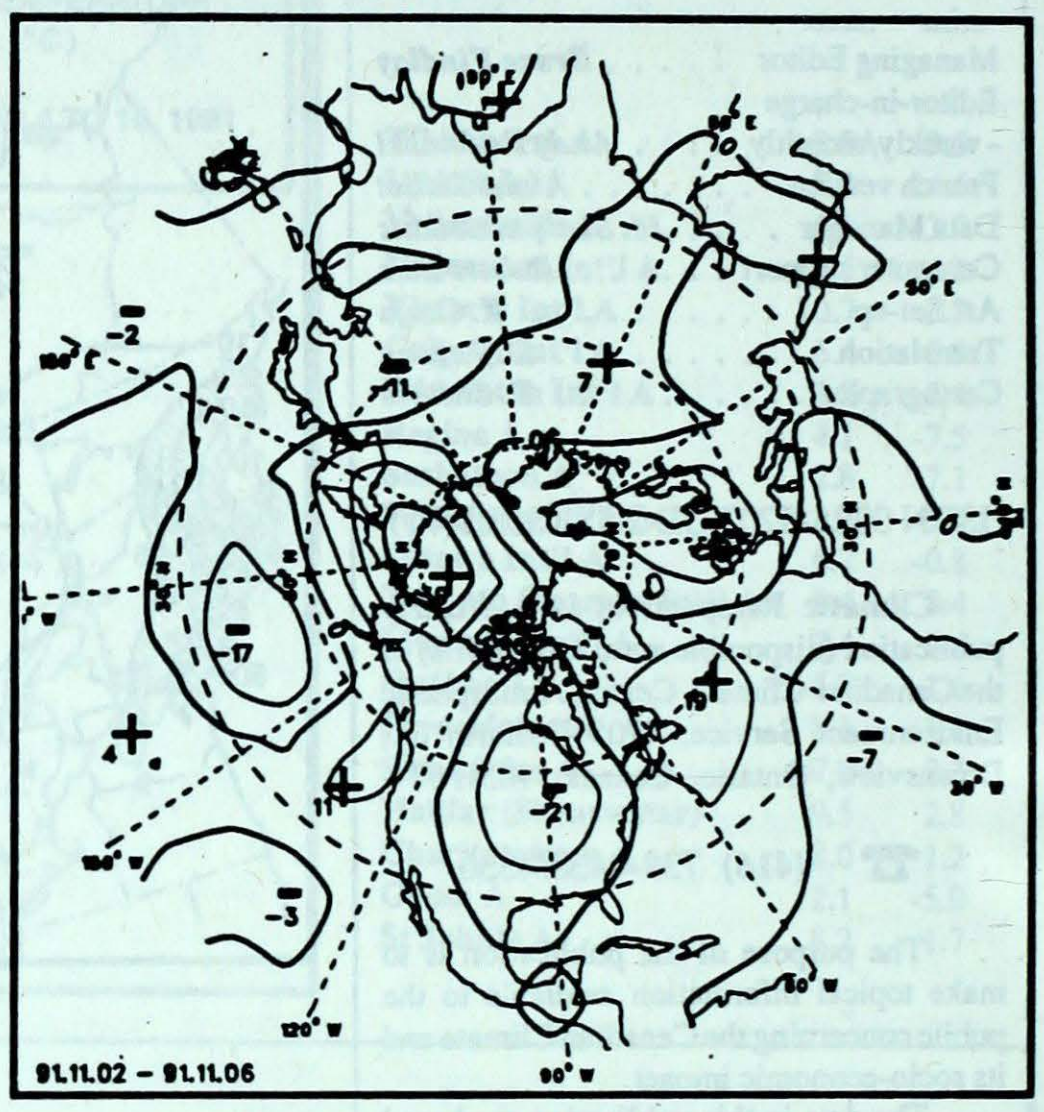




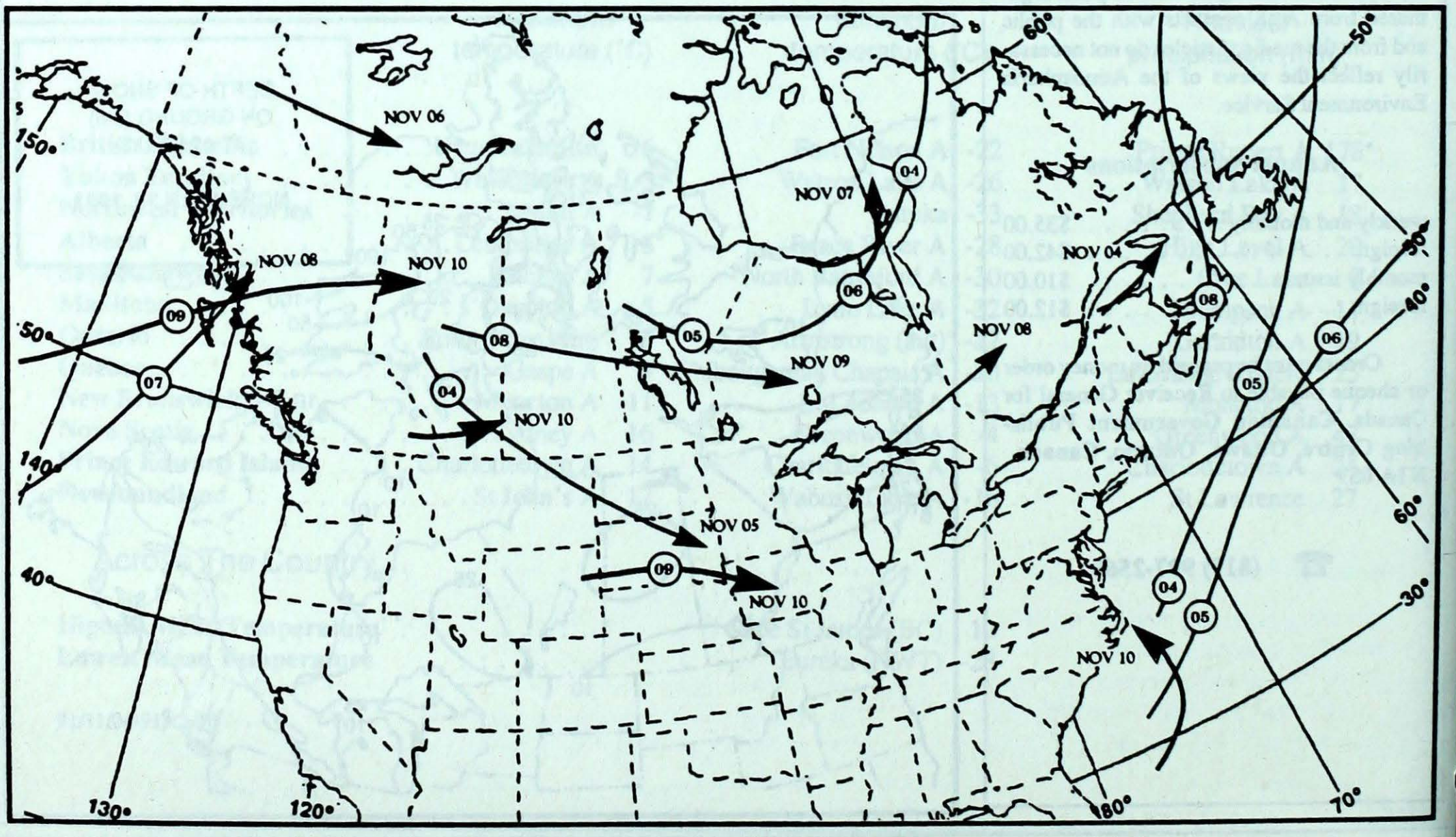
ATMOSPHERIC CIRCULATION



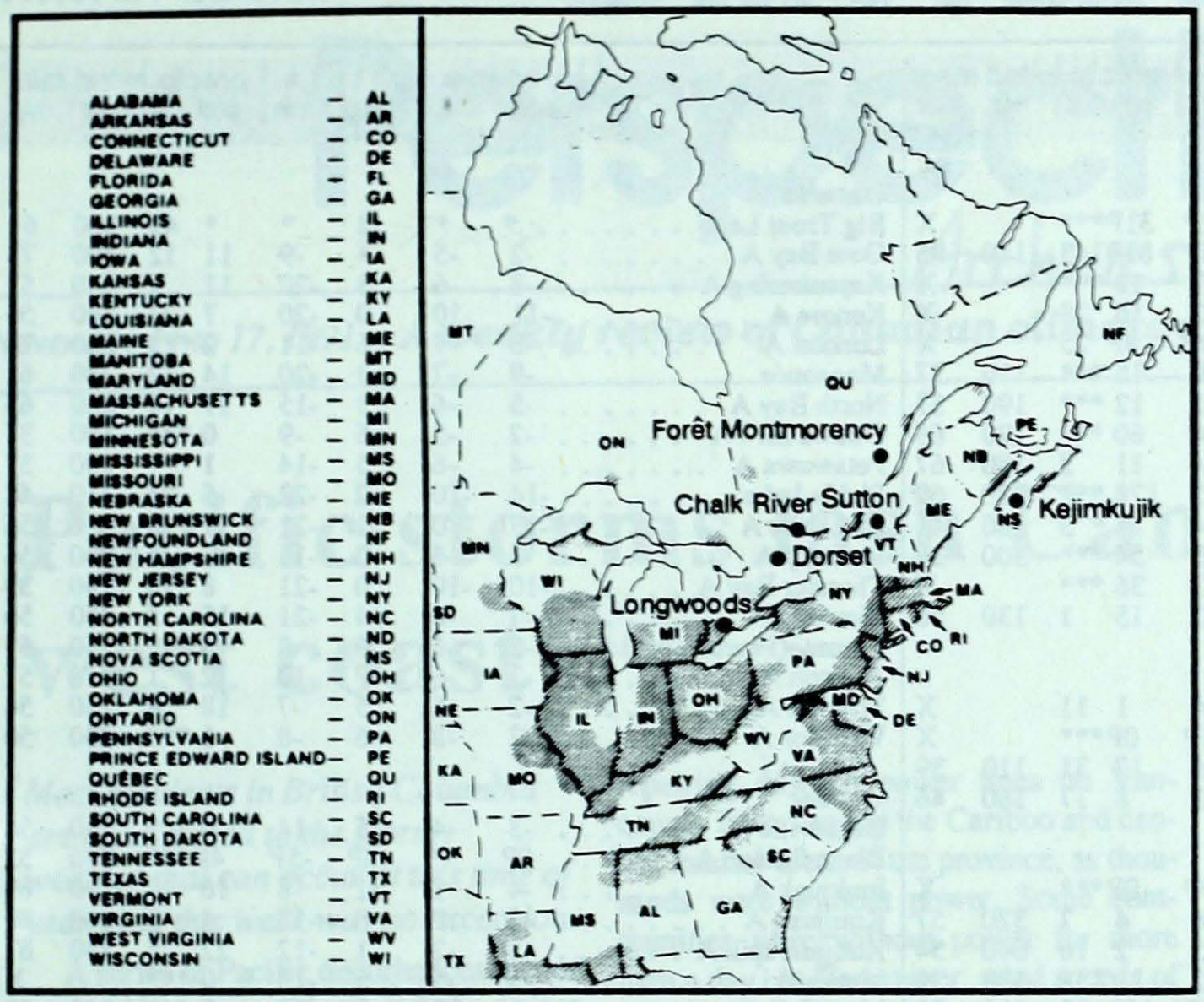
Mean geopotential height
50-kPa level (10-decametre intervals)



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.



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 3 to 9, 1991
Longwoods	06	5.5	2	S	Northern Michigan, Northern Wisconsin
Dorset*	03	4.5	1	S	Southern Ontario, Southern Michigan
	05	4.2	3	S	Southern Ontario, Ohio, Northern Indiana
Chalk River					No precipitation this week
Sutton	07	4.4	4	S	Western Quebec, Eastern Ontario
Montmorency					No precipitation this week
Kejimkujik	04	4.3	12	R	Southeastern New England, New Jersey
	07	4.8	31	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	4P	4P	7P	2P	31P	***		X
Cape St James	10P	2P	12P	8P	81P	143	140	95
Cranbrook A	0	-1	11	-7	18	***		X
Fort Nelson A	-12	-3	14	-22	16	28		X
Fort St John A	*	*	2P	-20P	8P	25		X
Kamloops A	3	0	9	0	15	***	110	37
Penticton A	6	1	10	1	12	***	190	57
Port Hardy A	9	2	14	4	60	***	120	65
Prince George A	1	2	6	-4	11	2	180	67
Prince Rupert A	8	4	12	5	178	***	220	67
Smithers A	2	2	7	-4	16	3	180	41
Vancouver Int'l A	10	2	15	5	54	***	300	32
Victoria Int'l A	8	1	16	3	36	***		X
Williams Lake A	2	2	6	-2	15	1	130	56
Yukon Territory								
Komakuk Beach A	-17	-1	-6	-24	1	11		X
Teslin (aut)	-7P	*	-4P	-11P	0P	***		X
Watson Lake A	-16	-6	-7	-26	17	31	110	39
Whitehorse A	-7	0	-3	-11	8	17	160	46
Northwest Territories								
Alert	-22P	4P	-16P	-29P	0P	***		X
Baker Lake A	-21	-2	-13	-26	4	7	320	57
Cambridge Bay A	-18	3	-11	-25	2	16	040	54
Cape Dyer A	-13	0	-3	-22	11	158	170	59
Clyde A	-14P	1P	-3P	-26P	15P	33	280	80
Coppermine A	-16	-1	-8	-24	2	16	280	59
Coral Harbour A	-16	0	-6	-26	5	16	280	44
Eureka	-28P	3P	-17P	-33P	0P	***		X
Fort Smith A	-16	-8	-10	-24	3	23	290	44
Hall Beach A	-17	4	-7	-26	4	12	310	69
Inuvik A	-18	0	-12	-25	2	20	300	46
Iqaluit A	-8	3	-1	-20	3	17	340	67
Mould Bay A	-21	4	-10	-31	5	14		X
Norman Wells A	-20	-5	-12	-30	0	2	310	67
Resolute A	-20P	3P	-15P	-27P	1P	4	110	52
Yellowknife A	-18	-8	-10	-26	2	23	320	39
Alberta								
Calgary Int'l A	-2	-2	9	-16	8	6	270	54
Cold Lake A	-11	-8	4	-27	4	5	330	37
Edmonton Namao A	-7	-5	5	-22	2	15	340	44
Fort McMurray A	-13	-9	-1	-26	10	13	340	52
High Level A	-16	-8	-7	-27	20	13	330	44
Jasper	-1	0	6	-12	7	1		X
Lethbridge A	-1	-3	13	-17	13	1	250	87
Medicine Hat A	-3	-5	11	-17	4	1	230	56
Peace River A	-13	-9	2	-28	8	12	010	32
Saskatchewan								
Cree Lake	-15	-8	-5	-30	9	21	360	43
Estevan A	-9	-8	7	-28	4	2	300	69
La Ronge A	-12	-7	-2	-20	2	40	340	44
Regina A	-9	-7	7	-27	3	1	320	61
Saskatoon A	-11	-9	2	-27	2	12	330	46
Swift Current A	-8	-7	7	-26	6	8	320	54
Yorkton A	-11	-9	4	-24	1	10		X
Manitoba								
Brandon A	-13	-11	3	-24	5	15	310	48
Churchill A	-18	-8	-10	-26	1	23	320	56
Lynn Lake A	-17	-9	-8	-32	6	22	350	57
The Pas A	-14	-10	-5	-23	3	27	200	67
Thompson A	-19	-10	-8	-32	11	21	340	43
Winnipeg Int'l A	-12	-11	1	-20	3	8	320	80

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	*	*	-8	*	*	42	300	61
Gore Bay A	-2	-5	4	-9	11	12	190	78
Kapuskasing A	-8	-6	3	-20	11	7	240	57
Kenora A	-11	-10	0	-20	7	27	340	56
London A	-3	-7	6	-11	2	***	210	70
Moosonee	-9	-7	3	-20	14	12	230	61
North Bay A	-5	-6	3	-15	17	14	260	63
Ottawa Int'l A	-2	-5	5	-9	0	***	180	37
Petawawa A	-4	-6	5	-14	1	***	190	37
Pickle Lake	-14	-10	-2	-22	6	23	310	48
Red Lake A	-13	-10	-1	-21	7	13	310	56
Sudbury A	-5	-6	2	-15	9	8	230	56
Thunder Bay A	-10	-10	0	-21	8	18	290	39
Timmins A	-7	-6	4	-21	15	5	250	56
Toronto(Pearson Int'l A)	-2	-6	6	-8	0	***	250	57
Trenton A	-2	-6	7	-10	2	1	210	57
Wiarton A	-2	-6	5	-7	18	4	250	56
Windsor A	-2	-8	6	-8	1	***	230	50
Québec								
Bagotville A	-3	-4	5	-14	0	***	240	56
Blanc Sablon A	0P	*	8P	-5P	4P	***	270	52
Inukjuak A	-4	1	-1	-8	16	10	290	69
Kuujjuaq A	-6	0	0	-12	4	1	260	80
Kuujjuarapik A	-5	-2	1	-12	22	5	230	67
Maniwaki	-3	-5	5	-13	0	***		X
Mont Joli A	-1	-2	7	-10	0	***	260	48
Montréal Int'l A	1	-3	8	-9	0	***	020	37
Natashquan A	0	-1	7	-9	10	***	190	43
Québec A	-2	-4	6	-11	0	***		X
Schefferville A	-8P	-1P	-2P	-15P	1P	4	220	56
Sept-Îles A	-3	-3	7	-13	0	***		X
Sherbrooke A	-3	-5	6	-13	2	1		X
Val-d'Or A	-7	-6	2	-18	9	5	170	61
New Brunswick								
Chatham A	*	*	*	*	*	***		X
Fredericton A	1	-3	9	-9	3	***	320	33
Miscou Island (aut)	1P	-2P	8P	-7P	0P	***		
Moncton A	1	-3	11	-7	17	***	150	37
Saint John A	2	-2	11	-5	8	***		X
Nova Scotia								
Greenwood A	4	-1	15	-4	48	***	120	37
Shearwater A	5	-1	14	-1	40	***	120	41
Sydney A	5	0	16	-3	40	***	140	54
Yarmouth A	5	-2	12	-1	36	***	070	46
Prince Edward Island								
Charlottetown A	3	-2	14	-6	24	***	150	33
East Point (auto)	5	*	13	1	0	***		
Newfoundland								
Cartwright	-1	-1	9	-6	15	9	200	56
Churchill Falls A	-7	-2	2	-15	2	1	260	44
Gander Int'l A	4	0	17	-4	12	***	280	37
Goose A	-3	-1	9	-11	6	7	200	48
Port Aux Basques	*	*	12	*	*	***	300	59
St John's A	6	1	17	-1	11	***	180	56
St Lawrence	5	1	11	-3	27	***		X
Wabush Lake A	-8	-3	-1	-16	4	2	240	46

91/11/04-91/11/10

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.