



Climatic Perspectives

October 21 to 27, 1991

A weekly review of Canadian climate and water

Vol. 13 No 43

Early winter episode continues over western Canada

Cold Arctic air continued to stream southwards across western Canada, producing subfreezing temperatures, heavy snowfalls and brisk winds. In contrast, most of eastern Canada enjoyed a taste of Indian Summer.

In British Columbia, a dramatic change has taken place from the warm and dry September and early October weather. Temperatures dropped rapidly, as a cold Arctic outbreak infiltrated B.C.'s interior, producing record low temperatures and strong outflow winds in the coastal valleys. All southern B.C. mountain passes and many of the interior valleys received their first significant snowfalls of the season, and many, including farmers and ranchers, were caught unprepared. In the Okanagan Valley, irrigation equipment, used just a few weeks ago, still remains on the fields waiting to be drained and put away. In the orchards, some of the late apple varieties still remaining on the trees have been frozen, and sensitive nursery stock has had to be quickly protected from the -10°C temperatures recorded in the southern valleys this week. Winds gusting in excess of 70 km/h downed trees and power lines, and have curtailed the burning of slash material.

On a positive note the cold weather has been good news to the forestry industry, which is hoping for an early freeze-up in order to firm up the logging roads and resume operations.

On the Prairies for the second week in a

row considerable snowfalls have occurred. Two major storms dumped between 20 and 55 centimetres of snow. Hardest hit areas were the central agricultural districts, but this time the southern regions were also buried under the white stuff, as much as 15 to 20 centimetres of it. In addition, it became bitterly cold after mid-week. Minimum temperatures plummeted to the record-low minus twenties, breaking dozens of daily low temperature records.

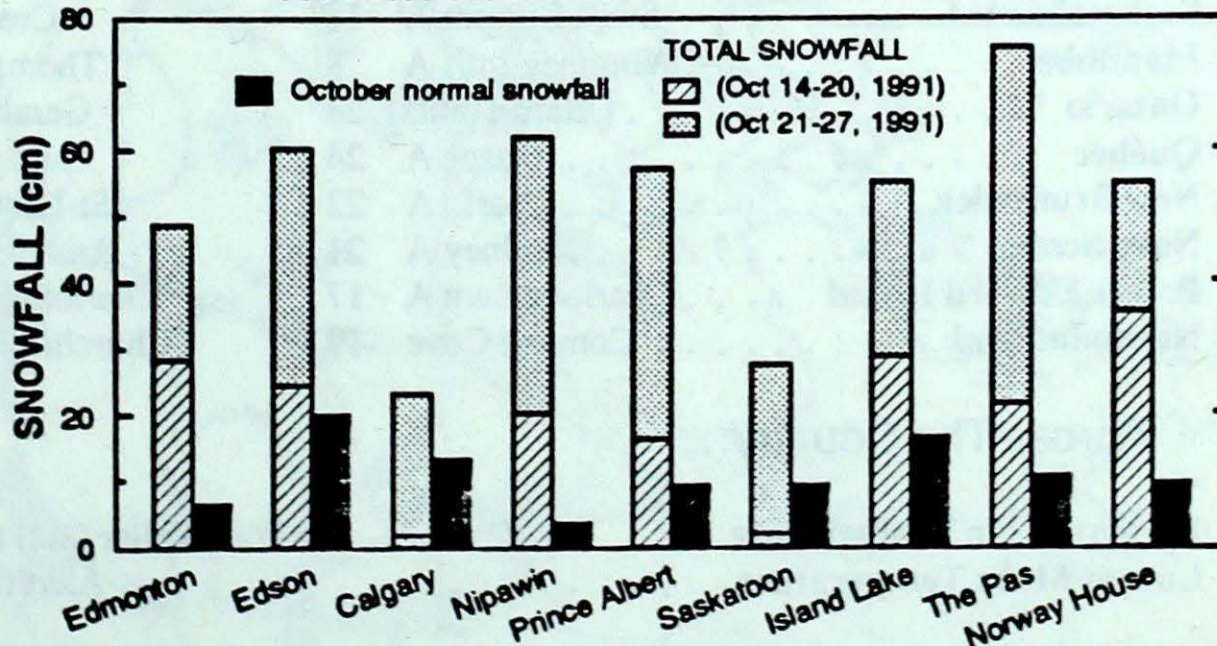
In contrast to the winter-like weather in western Canada, southern Ontario and most of eastern Canada enjoyed an Indian Summer. In the Niagara Peninsula, the mercury soared to the daily record mid-twenties. Eventually the sunshine gave

way to rain, but the moisture was appreciated by farmers.

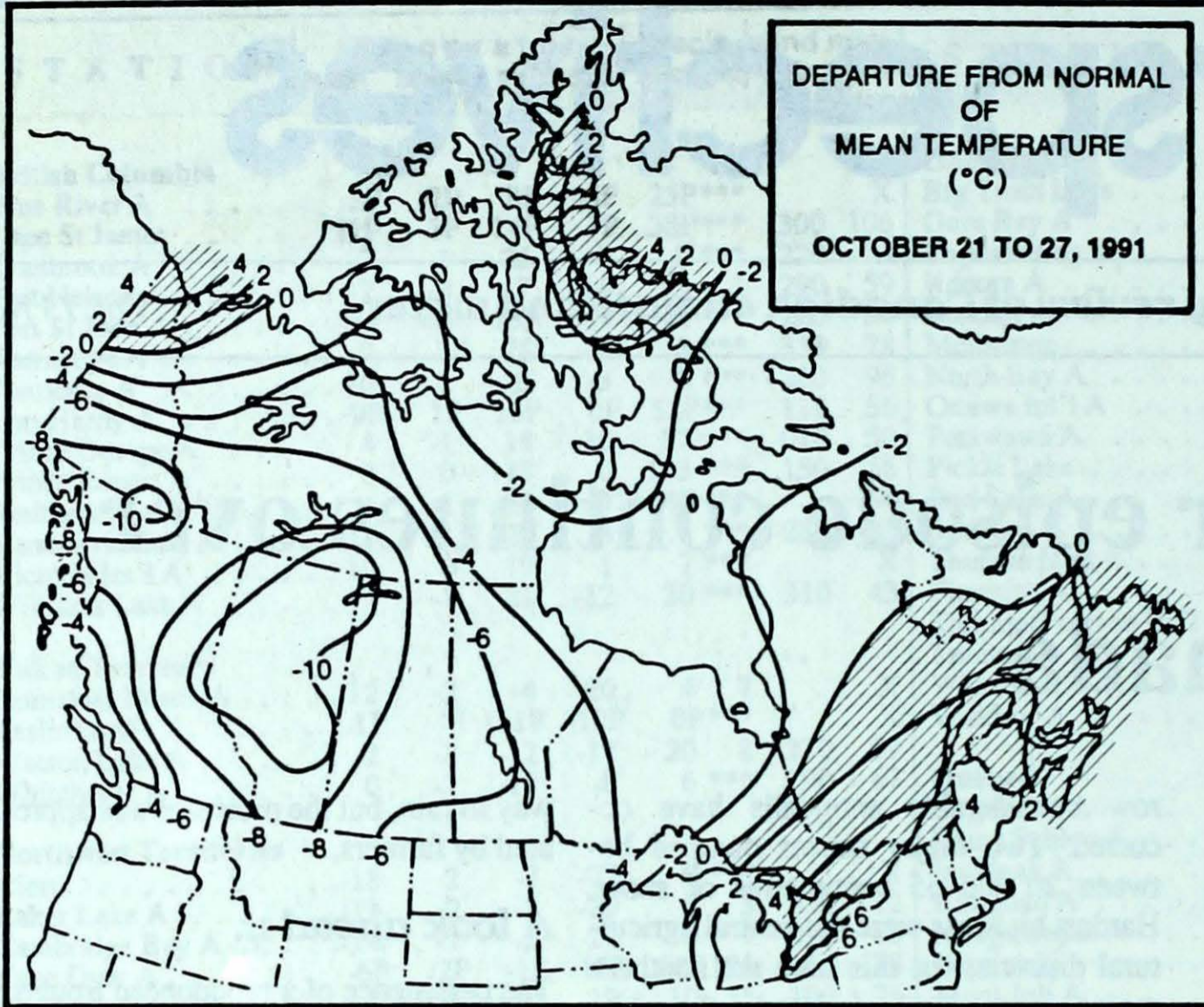
A look ahead ...

The persistence of a pronounced trough of low pressure over western Canada, will continue, for the week of November 4, to channel cold northern air masses and to maintain a below normal temperature regime over the Prairies and northern Ontario. Further east, southern Ontario, Quebec, and the Atlantic provinces can expect above normal temperatures. The Yukon and B. C. should revert to the influence of mild Pacific air and above normal readings.

Recent snowfalls in western Canada



For two consecutive weeks the Prairie provinces have been inundated with heavy snow. This year's October snowfalls are running two to four times the normal for the month.



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	1.8	-5.4
Iqaluit A	-3.6	-10.2
Yellowknife A	-1.0	-6.8
Vancouver Int'l A	12.3	5.3
Victoria Int'l A	12.6	4.8
Calgary Int'l A	9.7	-3.6
Edmonton Int'l A	8.2	-4.4
Regina A	8.9	-3.3
Saskatoon A	8.1	-3.3
Winnipeg Int'l A	9.3	-1.1
Ottawa Int'l A	11.5	2.0
Toronto (Pearson Int'l A)	12.9	2.9
Montréal Int'l A	11.8	2.9
Québec A	9.6	0.8
Fredericton A	11.6	0.6
Saint John A	10.5	1.8
Halifax (Shearwater)	11.9	4.1
Charlottetown A	10.4	2.6
Goose A	5.1	-2.7
St John's A	9.1	2.1

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Penticton A 18	Dease Lake -22	Abbotsford A 39
Yukon Territory	Komakuk Beach A 2	Watson Lake A -26	Watson Lake A 9
Northwest Territories	Coral Harbour A 5	Eureka -32	Hay River A 11
Alberta	Medicine Hat A 19	Red Deer A -28	Red Deer A 34
Saskatchewan	Swift Current A 18	Cree Lake -24	Saskatoon A/Prince Albert 41
Manitoba	Winnipeg Int'l A 8	Thompson A -24	The Pas A 49
Ontario	Barrie (aut) 24	Geraldton A -12	Windsor A 72
Québec	Gaspé A 24	Inukjuak A -12	Maniwaki 53
New Brunswick	Charlo A 22	St-Léonard A -6	St-Léonard A 46
Nova Scotia	Sydney A 21	Amherst (aut) -2	Shearwater A 16
Prince Edward Island	Charlottetown A 17	Charlottetown A 0	East Point (aut) 11
Newfoundland	Comfort Cove 19	Churchill Falls A -11	Goose A 42

Across The Country...

Highest Mean Temperature	Port Weller (aut) (ONT) 16
Lowest Mean Temperature	Alert (NWT) -24

91/10/21-91/10/27

CLIMATIC PERSPECTIVES
VOLUME 13

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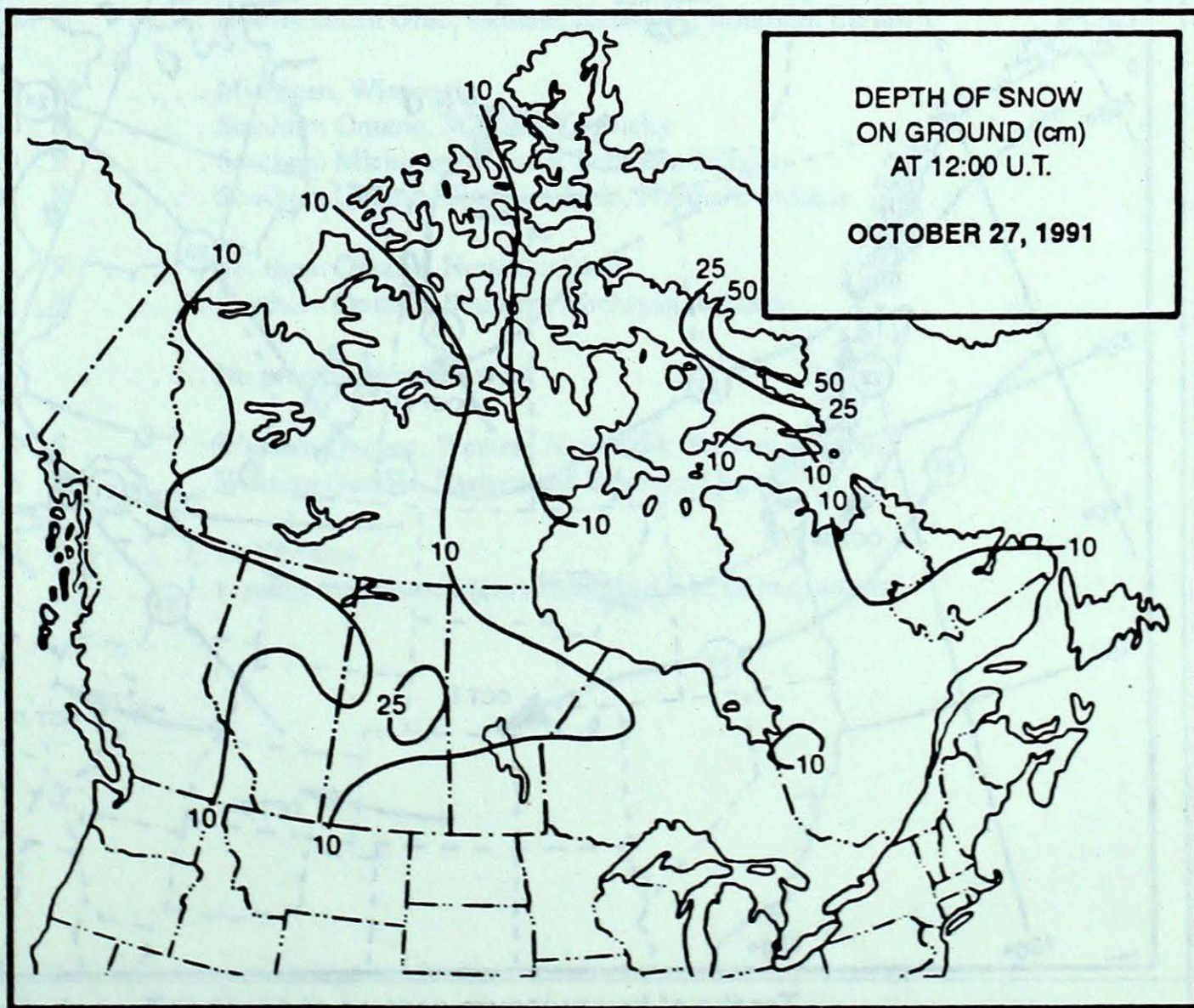
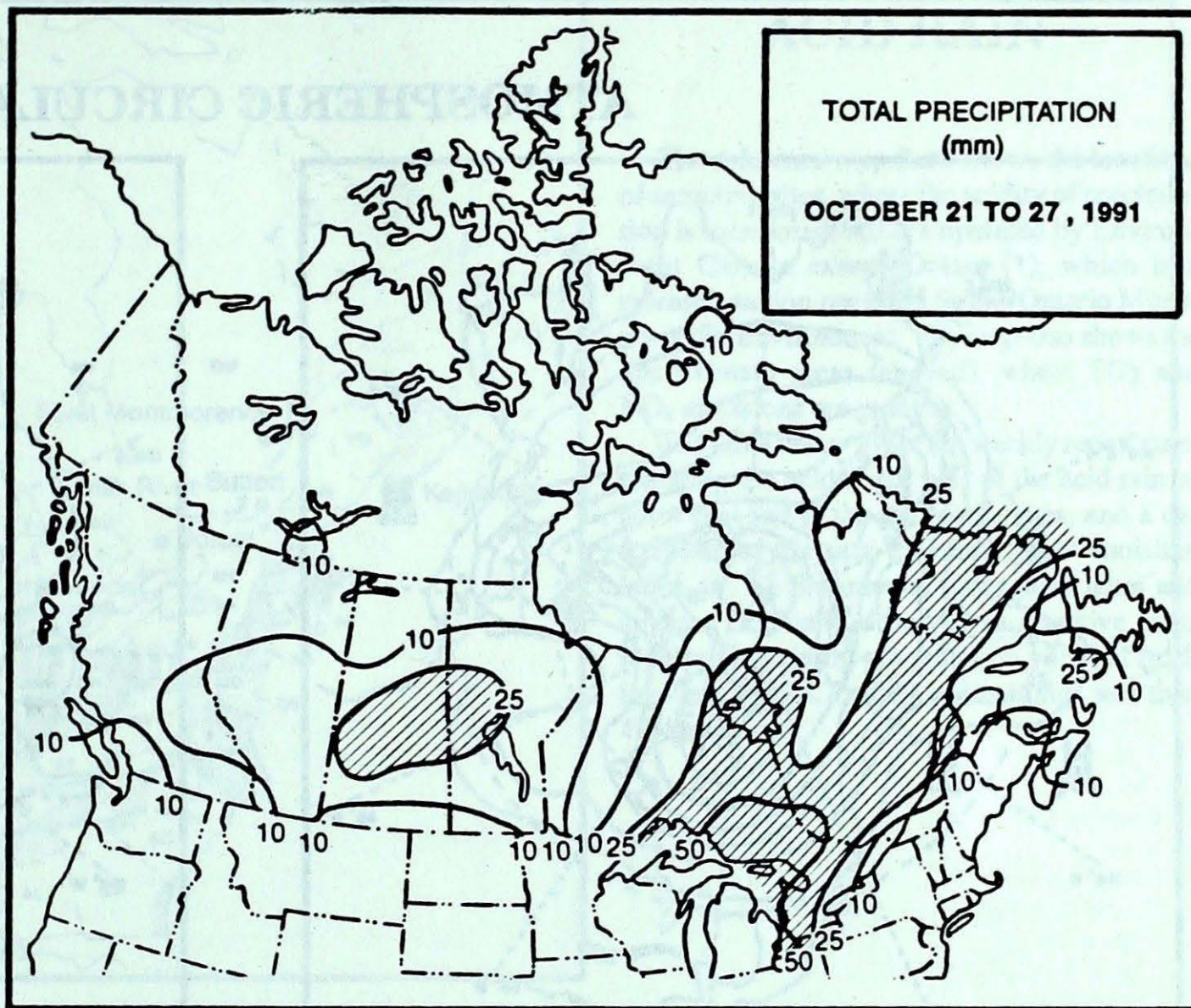
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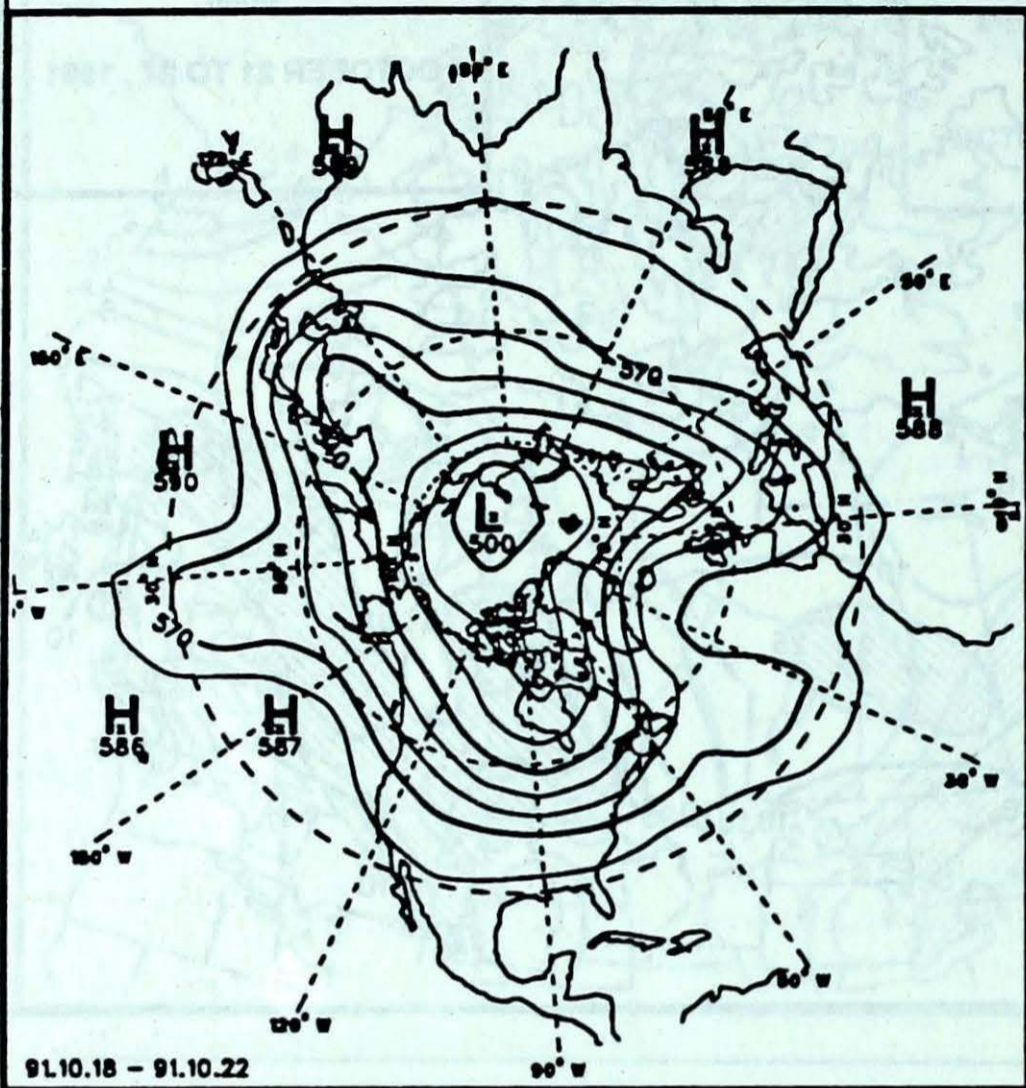
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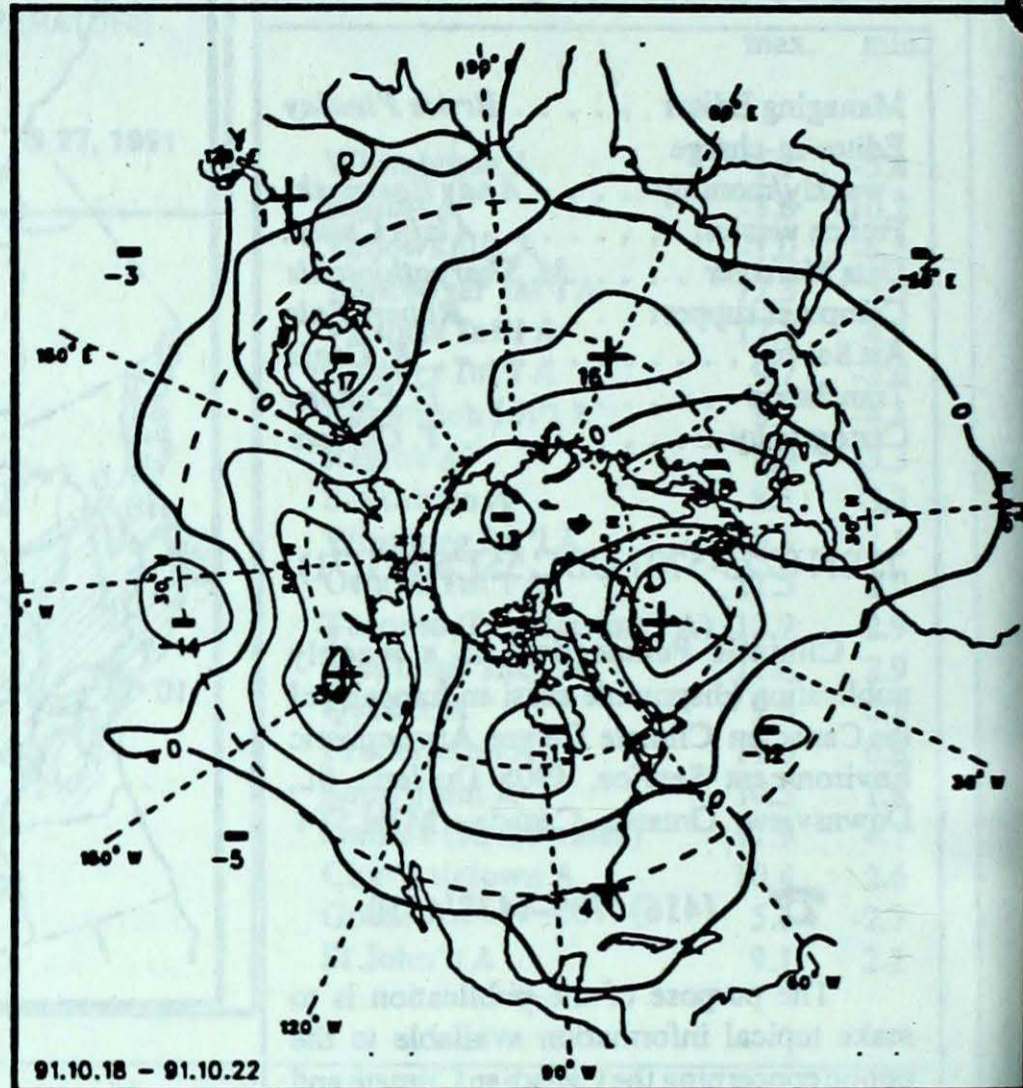
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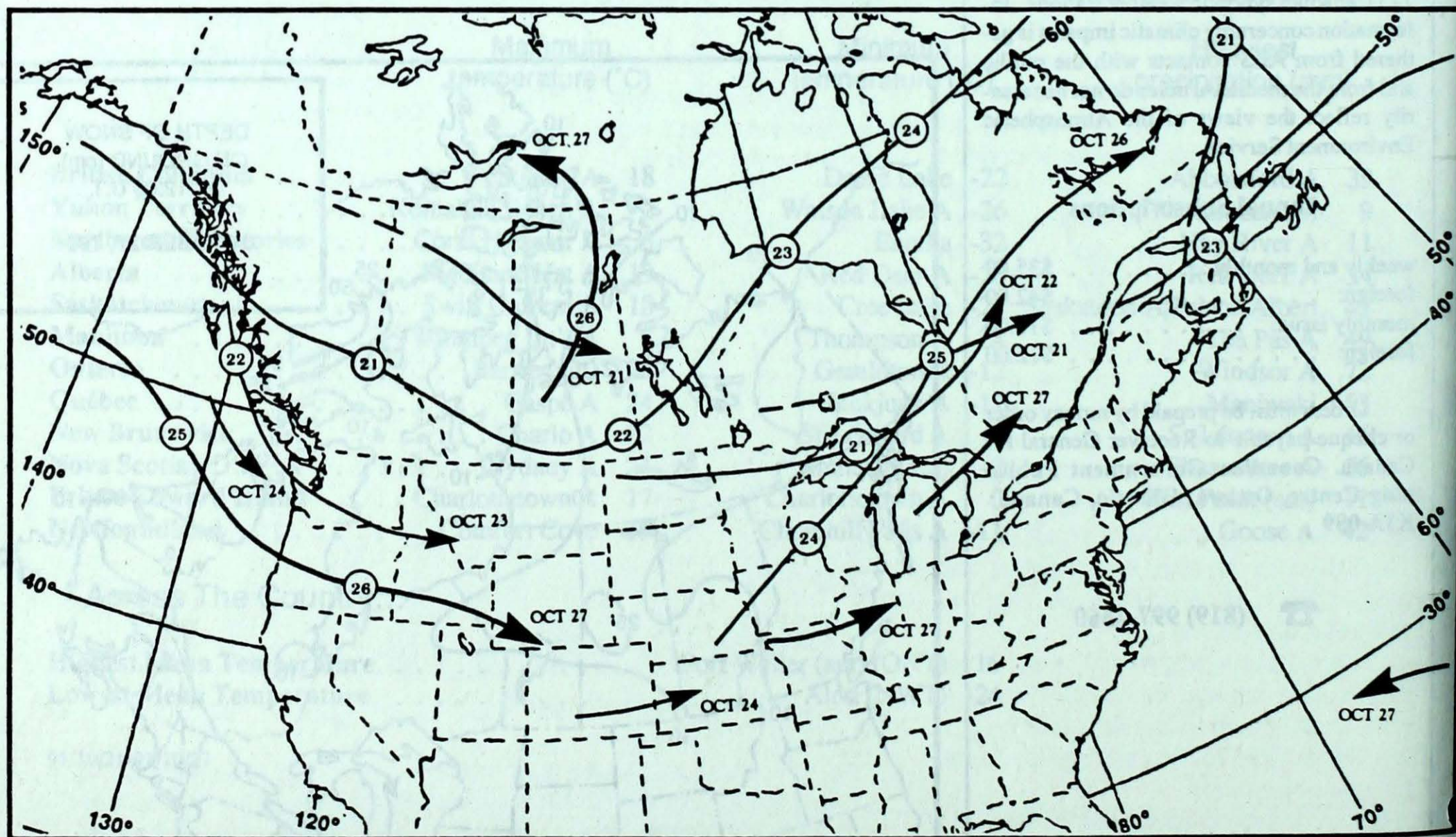
ATMOSPHERIC CIRCULATION



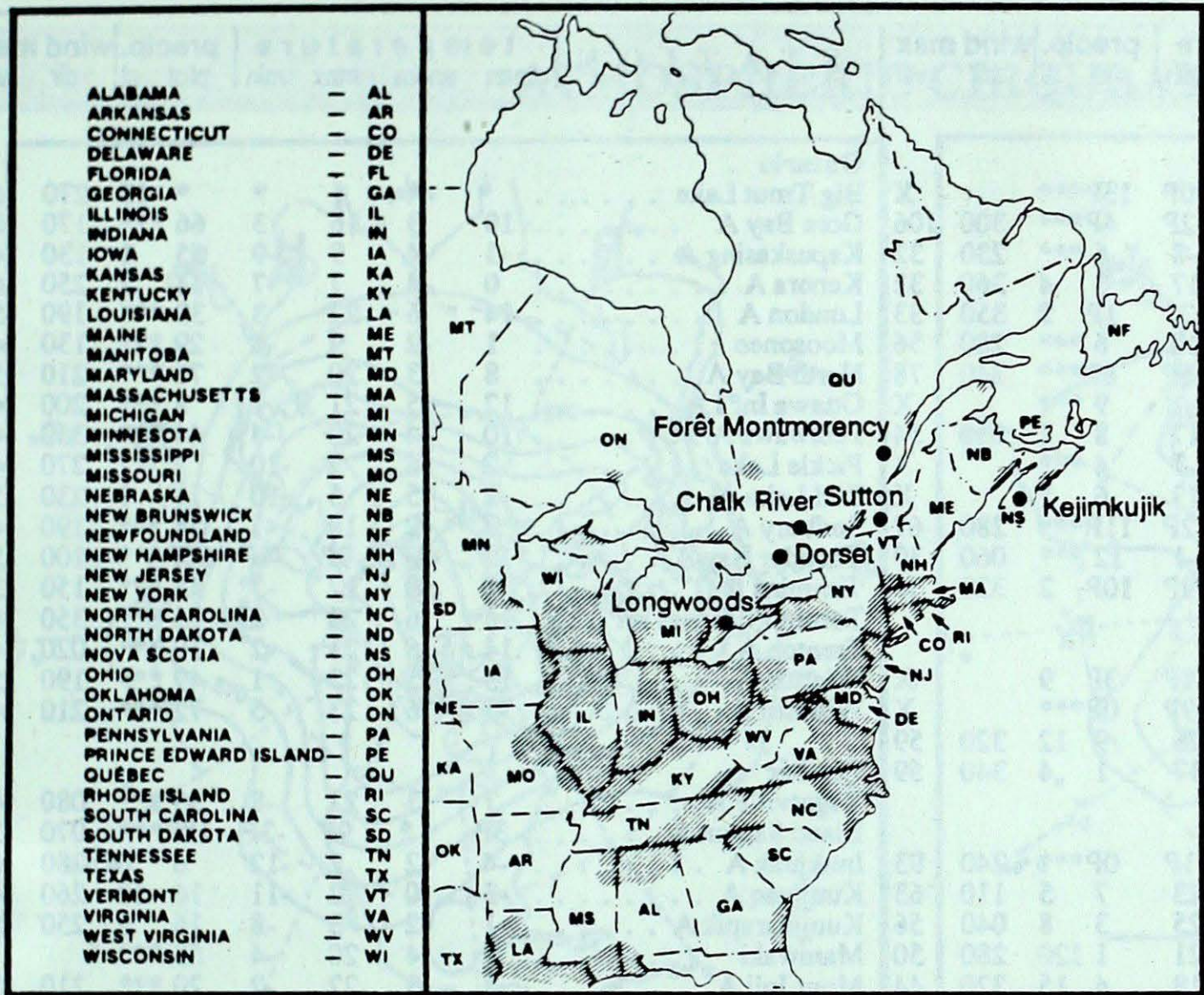
Mean geopotential height
50-kPa level (10-decametre intervals)



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 SO₂ 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
October 20 to 26, 1991				
Longwoods	24	4.2	25 R	Northwestern Ohio, Indiana, Kentucky
	25	4.6	14 R	Indiana, Southern Illinois, Southern Missouri
	26	4.4	13 R	Northwestern Ohio, Indiana, Kentucky, Southern Illinois
Dorset*	20	4.9	3 M	Michigan, Wisconsin
	24	4.2	10 R	Southern Ontario, Western Kentucky
	25	4.2	14 R	Southern Michigan, Indiana, Southern Illinois
	26	4.2	41 R	Southern Ontario, Southern Ohio, Northern Indiana
Chalk River	21	4.0	1 R	Southern Ontario, Northern Ohio
	22	3.9	1 R	Southern Ontario, Southern Michigan, Indiana
Sutton				No precipitation this week
Montmorency	21	4.3	9 S	Western Quebec, Western New York, Eastern Ontario
	25	4.1	6 R	Western Quebec, Eastern and Southern Ontario
Kejimkujik	22	4.1	2 R	Gulf Maine

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

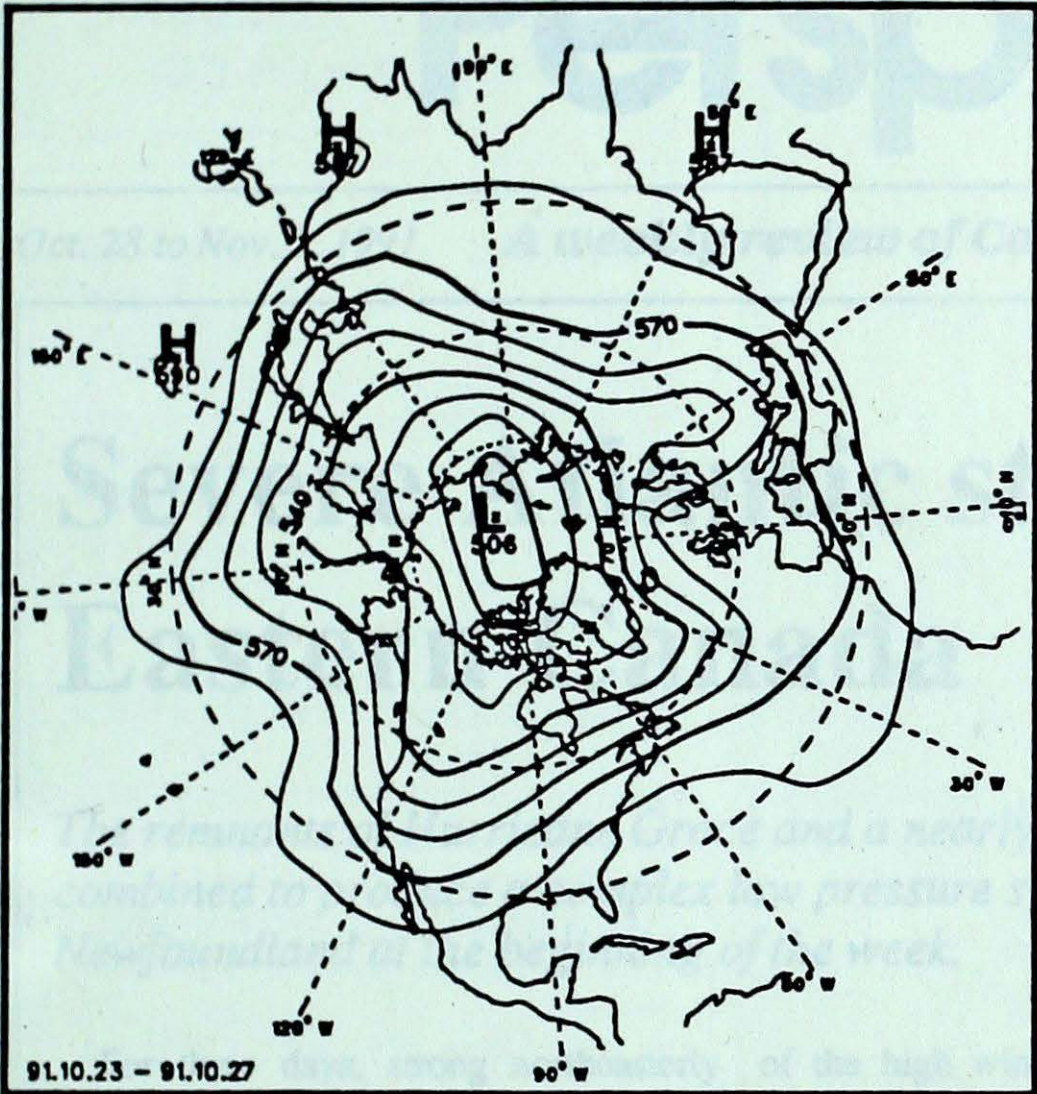
STATION	temperature				precip. ptot st	wind max		STATION	temperature				precip. ptot st	wind max	
	mean	anom	max	min		dir	vel		mean	anom	max	min		dir	vel
British Columbia								Ontario							
Blue River A	0P	-4P	7P	-10P	13P***		X	Big Trout Lake	*	*	1	*	* 10	270	65
Cape St James	6P	-3P	12P	2P	4P***	300	106	Gore Bay A	10	3	16	3	66 ***	170	67
Cranbrook A	0	-4	13	-8	6 ***	230	32	Kapuskasing A	-1	-4	9	-9	55 1	130	44
Fort Nelson A	-9	-7	0	-17	3 4	360	32	Kenora A	0	-4	7	-7	14 2	250	61
Fort St John A	-6P	-8P	1P	-12P	1P 2	350	33	London A	14	6	22	3	39 ***	190	59
Kamloops A	2	-5	11	-10	6 ***	280	56	Moosonee	1	-2	9	-6	29 ***	130	41
Penticton A	4P	-3P	18P	-6P	8P***	340	78	North Bay A	8	3	20	-2	71 ***	210	52
Port Hardy A	4	-4	11	-1	9 ***		X	Ottawa Int'l A	12	5	21	1	8 ***	200	41
Prince George A	-5	-8	4	-17	8 1	010	54	Petawawa A	10	4	20	-4	44 ***	350	41
Prince Rupert A	2	-5	8	-7	4 ***		X	Pickle Lake	-2	-4	2	-10	2 1	270	46
Smithers A	-3	-6	3	-13	6 1		X	Red Lake A	-2	-5	5	-10	11 1	230	59
Vancouver Int'l A	6P	-3P	14P	-2P	11P***	280	67	Sudbury A	7	2	18	-1	54 ***	190	48
Victoria Int'l A	6	-3	16	-1	12 ***	060	39	Thunder Bay A	2P	-2P	9P	-4P	25P***	100	50
Williams Lake A	-6P	-10P	7P	-19P	10P 2	320	56	Timmins A	4	0	17	-7	45 ***	150	37
Yukon Territory								Québec							
Komakuk Beach A	-7P	5P	2P	-18P	3P 9		X	Bagotville A	7	3	21	-8	35 ***	080	44
Teslin (aut)	-10P	*	-1P	-19P	0P***		X	Blanc Sablon A	3P	*	9P	-3P	18P***	070	50
Watson Lake A	-14	-11	0	-26	9 12	320	59	Inukjuak A	-4	-2	2	-12	6 6	280	69
Whitehorse A	-10	-8	0	-17	1 4	340	59	Kuujuuaq A	-3	0	2	-11	16 10	260	48
Northwest Territories								New Brunswick							
Alert	-24P	-2P	-14P	-31P	0P***	240	93	Chatham A	*	*	*	*	* ***		X
Baker Lake A	-12	-2	-1	-23	7 5	110	63	Fredericton A	9	2	19	-5	9 ***	200	46
Cambridge Bay A	-17	-2	-8	-25	3 8	040	56	Miscou Island (aut)	6P	1P	14P	-1P	0P***		
Cape Dyer A	-12	-3	-6	-21	1 120	280	50	Moncton A	8	2	20	-5	9 ***	290	39
Clyde A	-11	-3	-4	-18	4 15	320	44	Saint John A	8	2	14	-2	8 ***	210	41
Coppermine A	-14	-3	-3	-20	1 14	210	61	Nova Scotia							
Coral Harbour A	-12	-2	5	-23	1 19		X	Greenwood A	9	1	21	-1	2 ***	190	41
Eureka	-24	2	-12	-32	2 13		X	Shearwater A	9	1	19	0	16 ***	310	46
Fort Smith A	-12	-10	-4	-22	3 23	310	37	Sydney A	9	2	21	-1	14 ***	300	52
Hall Beach A	-14	-1	-7	-24	1 ***	320	43	Yarmouth A	9	1	17	2	1 ***	320	52
Inuvik A	-10	1	1	-20	3 20	300	56	Prince Edward Island							
Iqaluit A	-11	-4	-1	-19	1 4	330	39	Charlottetown A	9	2	17	0	9 ***	230	41
Mould Bay A	-22P	-1P	-12P	-31P	0P 9		X	East Point (auto)	8P	*	16P	2P	11P***		
Norman Wells A	-11P	-3P	-1P	-20P	3P 5	310	59	Newfoundland							
Resolute A	-20	-2	-12	-31	3 8	160	44	Cartwright	1	-1	6	-3	27 ***	310	54
Yellowknife A	-11	-8	-3	-22	4 15	360	44	Churchill Falls A	-2	1	4	-11	36 1	280	48
Alberta								91/10/21-91/10/27							
Calgary Int'l A	-8	-11	7	-20	13 15	360	82	Gander Int'l A	7	2	17	-2	4 ***	240	46
Cold Lake A	-7	-9	3	-17	5 5	040	56	Goose A	0	-1	7	-8	42 ***	050	32
Edmonton Namao A	-8	-11	6	-19	18 14	350	46	Port Aux Basques	8	2	15	1	38 ***	290	67
Fort McMurray A	-9P	-10P	-1P	-24P	5P 4	340	39	St John's A	7	1	17	-1	2 ***	260	74
High Level A	-11	-10	-3	-24	2 1	360	37	St Lawrence	7	2	14	1	3 ***		X
Jasper	-6	-9	5	-19	8 ***		X	Wabush Lake A	-1	1	11	-10	39 ***	130	48
Lethbridge A	-4	-10	18	-16	19 12	310	87								
Medicine Hat A	-3	-9	19	-16	13 11	320	63								
Peace River A	-9	-11	1	-25	3 2	010	54								
Saskatchewan															
Cree Lake	-10	-9	-2	-24	8 20	340	37								
Estevan A	-1	-5	9	-10	7 1	090	59								
La Ronge A	-6	-7	-1	-12	23 28	340	33								
Regina A	-2	-4	9	-10	10 ***	300	70								
Saskatoon A	-5	-8	4	-13	41 12	360	50								
Swift Current A	-2	-6	18	-14	17 8	320	50								
Yorkton A	-4	-7	3	-13	15 10	310	56								
Manitoba															
Brandon A	-3	-6	7	-13	14 4	280	89								
Churchill A	-6	-2	1	-17	5 7	140	59								
Lynn Lake A	-8	-6	-1	-12	24 12	310	33								
The Pas A	-5	-6	1	-14	49 24	110	54								
Thompson A	-8	-6	0	-24	22 11	090	41								
Winnipeg Int'l A	0	-5	8	-11	12 ***	250	76								

mean = mean weekly temperature, °C
 max = maximum weekly temperature, °C
 min = minimum weekly temperature, °C
 anom = mean temperature anomaly, °C

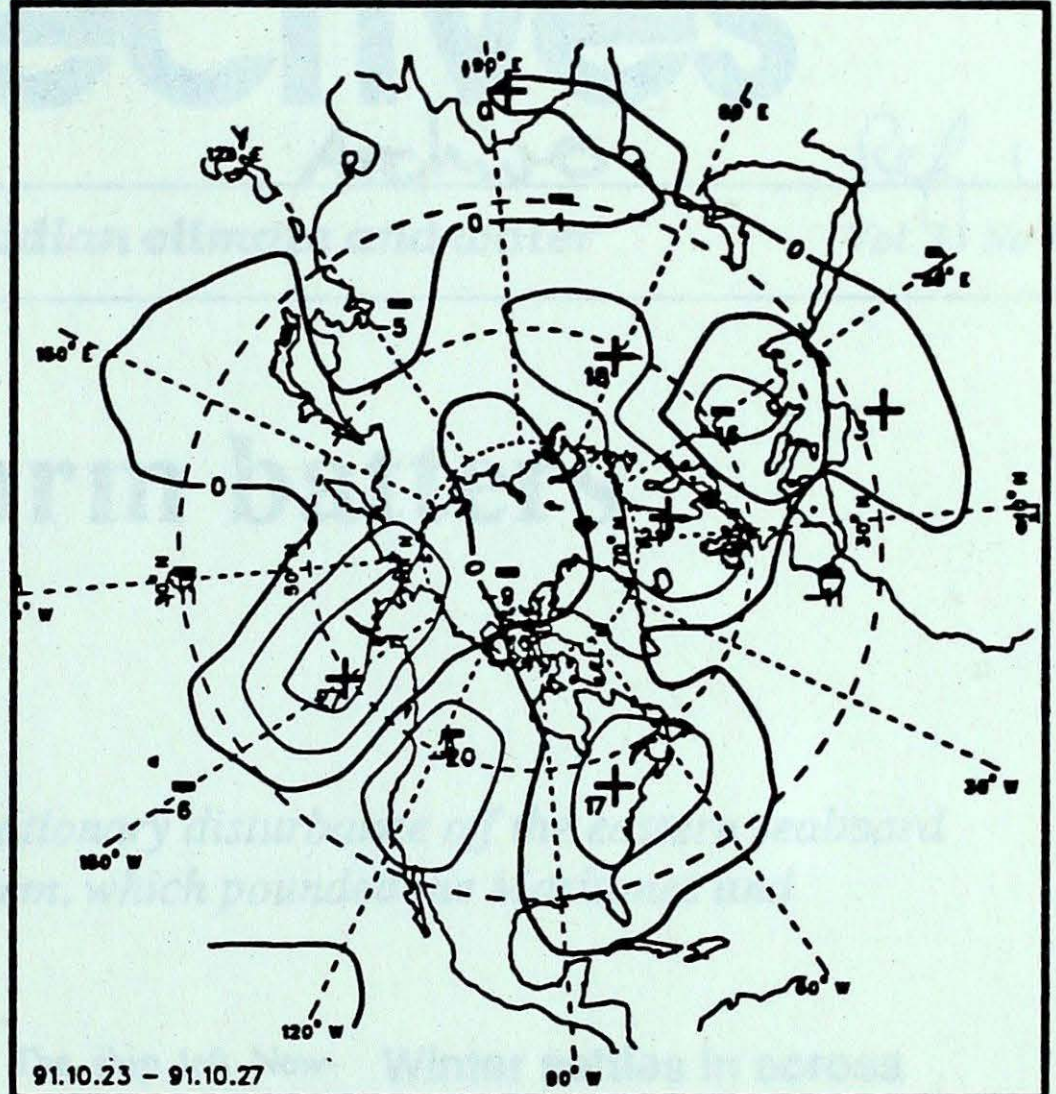
ptot = weekly precipitation total in mm
 st = snow thickness on the ground in cm
 dir = direction of max wind, deg. from north.
 vel = wind speed in km/h

— Annotations —
 X = no observation
 P = less than 7 days of data
 * = missing data when going to printing.

ATMOSPHERIC CIRCULATION



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



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



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