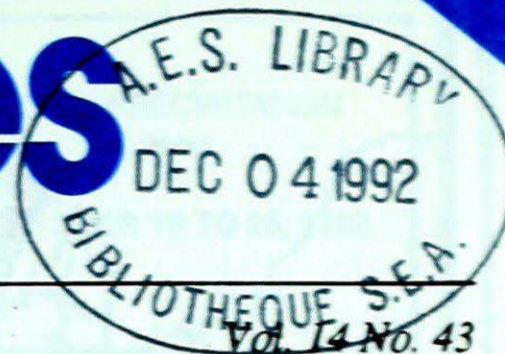




Environment  
Canada

Environnement  
Canada

# Climatic Perspectives



October 19 to 25, 1992

**A weekly review of Canadian climate and water**

## Indian Summer?

*By this time of the year, most Canadians have had their first taste of winter-like climate - whether it is in the form of snow, cold temperatures or both - and start wondering if there will be at least one last gasp of summer before winter finally closes in.*

In Canada, a prolonged period of warm, sunny and dry late Autumn weather, which occurs after the first killing frost and before the first lasting snow cover, is commonly referred to as Indian Summer. Indian Summer is loosely defined as three or more predominantly sunny days, with no precipitation and above normal temperatures of 15°C or more. Most regions of southern Canada enjoy at least one spell of Indian Summer weather each fall. Sometimes there may be two or more such episodes, while in other years, Indian Summer might pass us by completely.

Meteorologically speaking, Indian Summer occurs when a large atmospheric ridge of high pressure stalls and strengthens over North America, deflecting storm tracks northwards, and at the same time, allowing warm air from the southern States to penetrate northwards into southern Canada.

The exquisite warm, sunny weather that results is usually accompanied by light winds and a low level inversion, which traps dust and pollutants near the surface, producing a bluish haze. This stable pattern may linger for a week or more, sometimes preventing pollutants

from dispersing, and occasionally creating a serious smog problem.

In Canada, Indian Summer usually occurs between mid-September and mid-October, but in the lower Great Lakes Basin, Indian Summer can occur as late as mid-November. The most probable onset across the Prairies is mid-September. In the last 40 years, both Fredericton and Montreal experienced one of the latest occurring warm spells - from November 18 to 20, 1953. In October 1963, Winnipeg and Toronto had one of the longest warm spells, 22 and 23 days, respectively; the temperature in Toronto climbed above 23°C for 17 of those days and reached 29.4°C on the 6th.

For those of us who feel that we have not yet benefitted from an Indian Summer this year, there is still hope. While Edmontonians can expect Indian Summer to occur every three out of four years, Winnipeg has the most consistent record; in the last 38 years, Indian Summer failed to materialize only twice.

### Storm pounds Atlantic Canada

An intense low pressure system, which moved up the eastern seaboard and

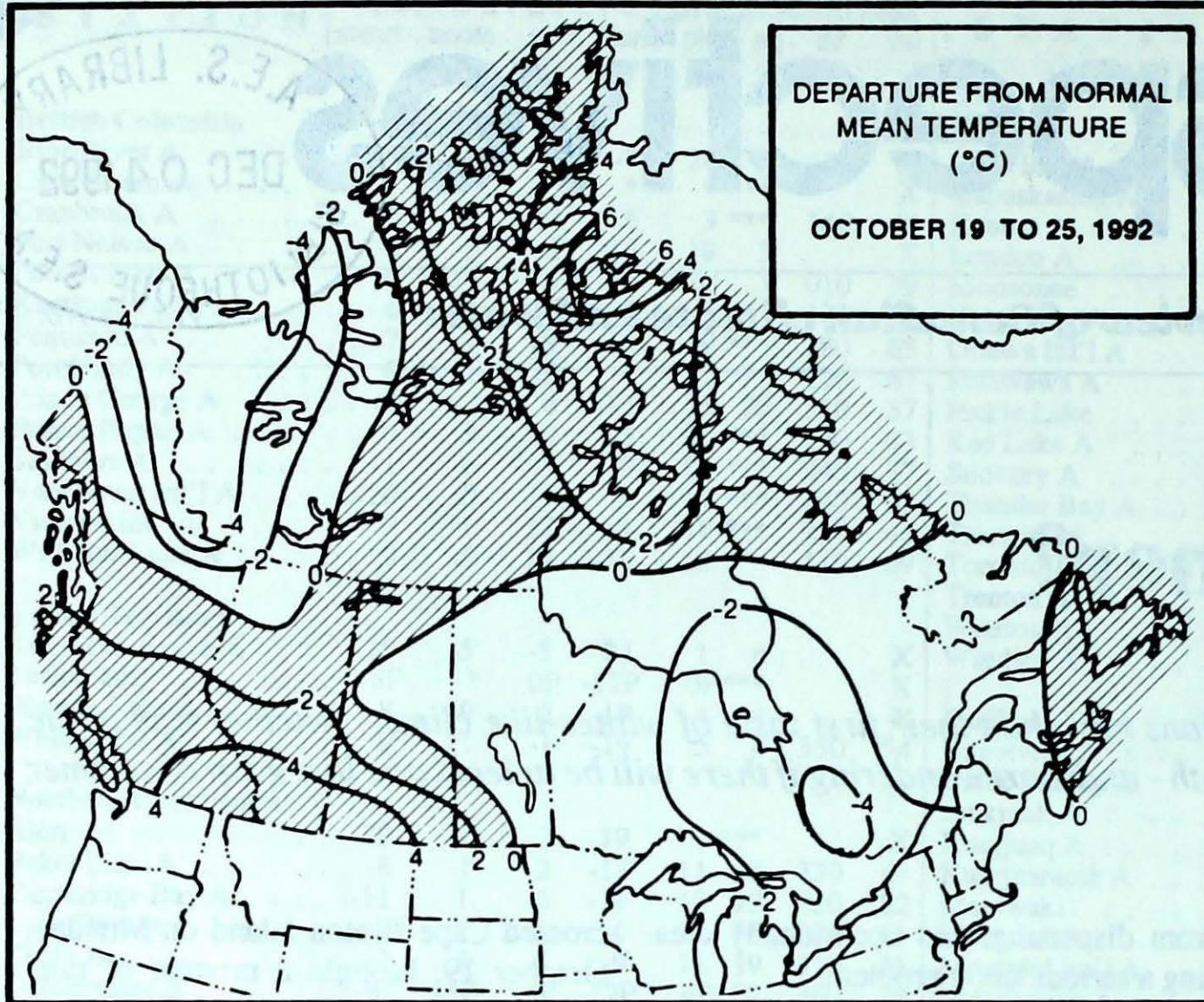
crossed Cape Breton Island on Monday, October 19, brought a mixture of rain, snow and high winds to the Maritimes. Almost 100 mm of rain fell at Sydney N.S., during a 12-hour period, causing flooding. Northerly winds gusting to 111 km/h were reported at East Point, P.E.I. Sections of eastern Nova Scotia had periods of heavy snow; Halifax picked up 5 cm in 4 hours.

As the system tracked northwards along the west coast of Newfoundland, strong southerly winds of between 80 and 120 km/h pushed the mercury to the upper teens. Winds at Gander, Nfld., gusted to 113 km/h. In addition, a number of daily rainfall records were broken.

### A look ahead . . .

For the week of November 2, above-normal temperatures are expected for all of Canada. Near normal temperatures are likely across the Maritimes and the high Arctic. Indian Summer seems likely across the southern Prairies and the southern half of Ontario and Quebec. Stormy weather is likely in the Atlantic region, and British Columbia.





**Weekly normal temperatures (°C)**

	max.	min.
Whitehorse A	2.2	-4.9
Iqaluit A	-3.5	-10.0
Yellowknife A	-0.5	-6.4
Vancouver Int'l A	12.4	5.8
Victoria Int'l A	13.0	5.2
Calgary Int'l A	10.7	-2.8
Edmonton Int'l A	9.6	-3.5
Regina A	10.2	-2.7
Saskatoon A	9.5	-2.6
Winnipeg Int'l A	10.3	-0.4
Ottawa Int'l A	11.9	2.2
Toronto (Pearson Int'l A)	13.3	3.0
Montréal Int'l A	12.3	3.0
Québec A	10.0	1.2
Fredericton A	11.9	0.7
Saint John A	10.8	1.9
Halifax (Shearwater)	12.1	4.3
Charlottetown A	10.5	2.7
Goose A	5.0	-2.6
St John's A	9.0	2.2

**Weekly temperature and precipitation extremes**

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Penticton A 21	Fort Nelson A -15	Estevan Point (aut) 182
Yukon Territory	Faro (aut) 8	Komakuk Beach A -26	Watson Lake A 11
Northwest Territories	Fort Smith A 10	Eureka -32	Shepherd Bay A 20
Alberta	Medicine Hat A 25	Peace River A -14	High Level A 12
Saskatchewan	Estevan A 26	Collins Bay -15	Cree Lake 8
Manitoba	Brandon A 22	Thompson A -16	Churchill A 8
Ontario	Warton A 22	Lansdowne House -14	Petawawa A 33
Quebec	Montréal Int'l A 16	La Grande IV A -13	Blanc Sablon A 33
New Brunswick	Moncton A 17	Fredericton A -3	Fredericton A 73
Nova Scotia	Sable Island 20	Greenwood A -3	Sydney A 103
Prince Edward Island	Charlottetown A 17	Charlottetown A 1	Charlottetown A 34
Newfoundland	Badger (aut) 19	Wabush Lake A -10	St Anthony 60

**Across The Country...**

Highest Mean Temperature	Abbotsford A (B.C.) 13
Lowest Mean Temperature	Eureka (N.W.T.) -21

92/10/19-92/10/25

CLIMATIC PERSPECTIVES  
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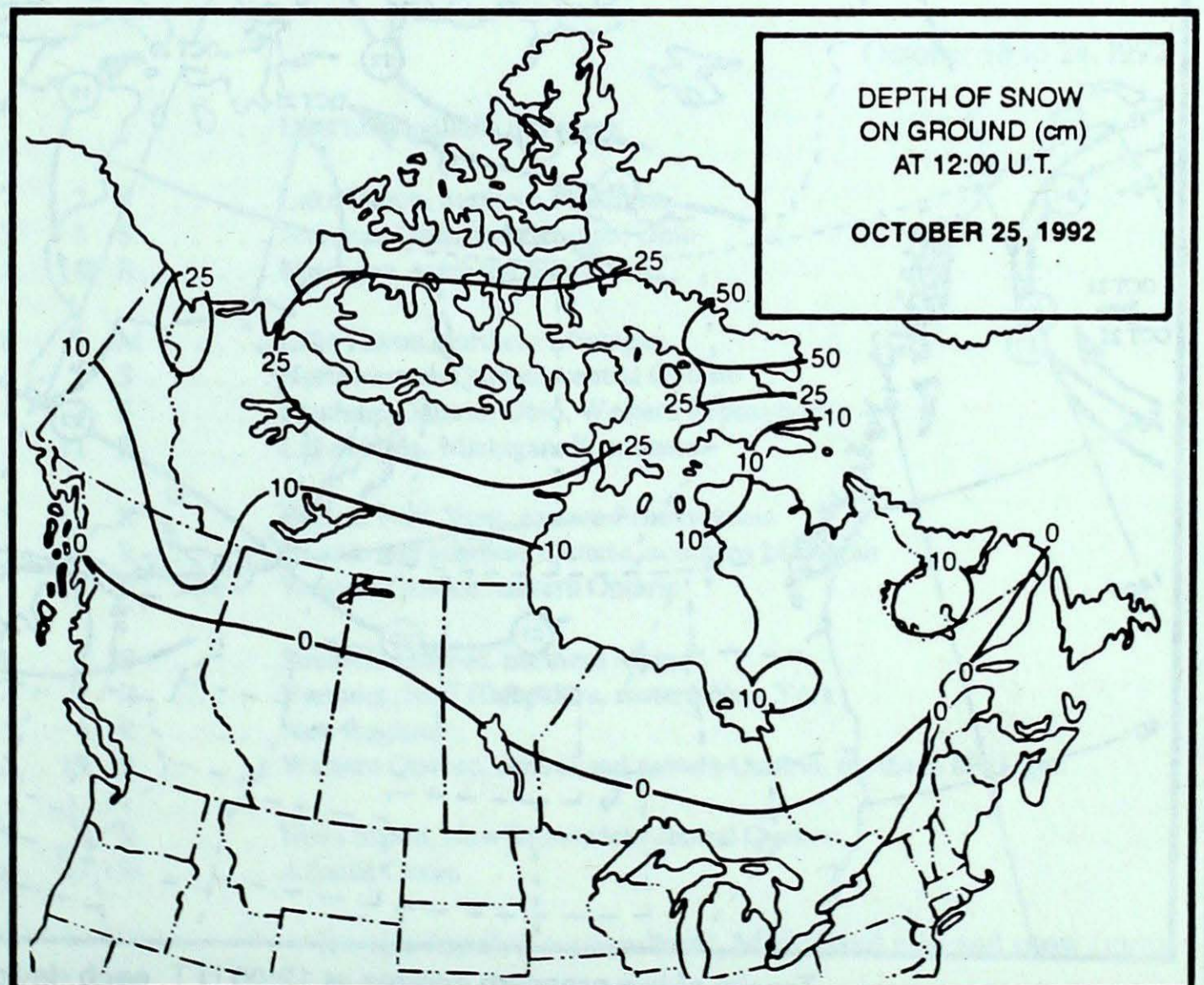
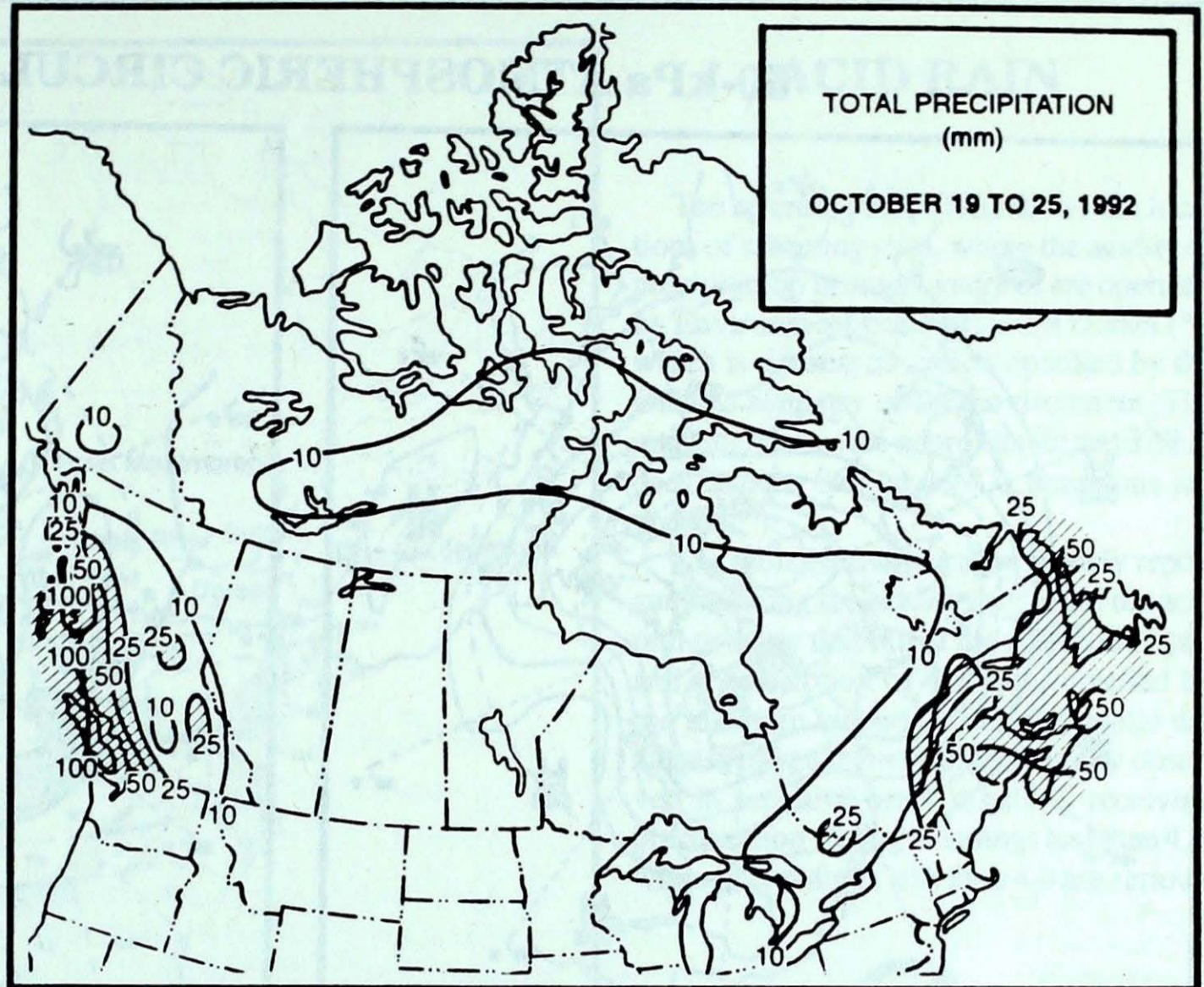
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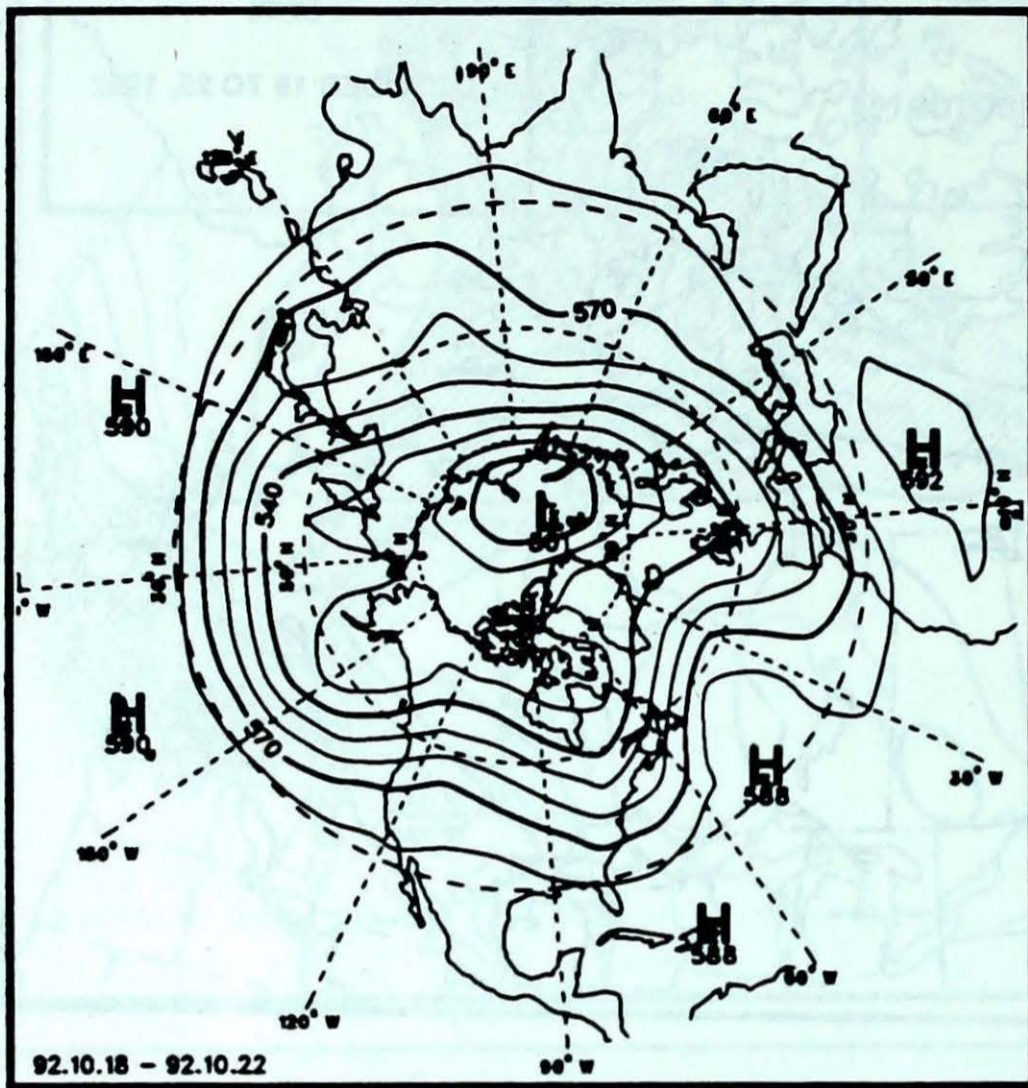
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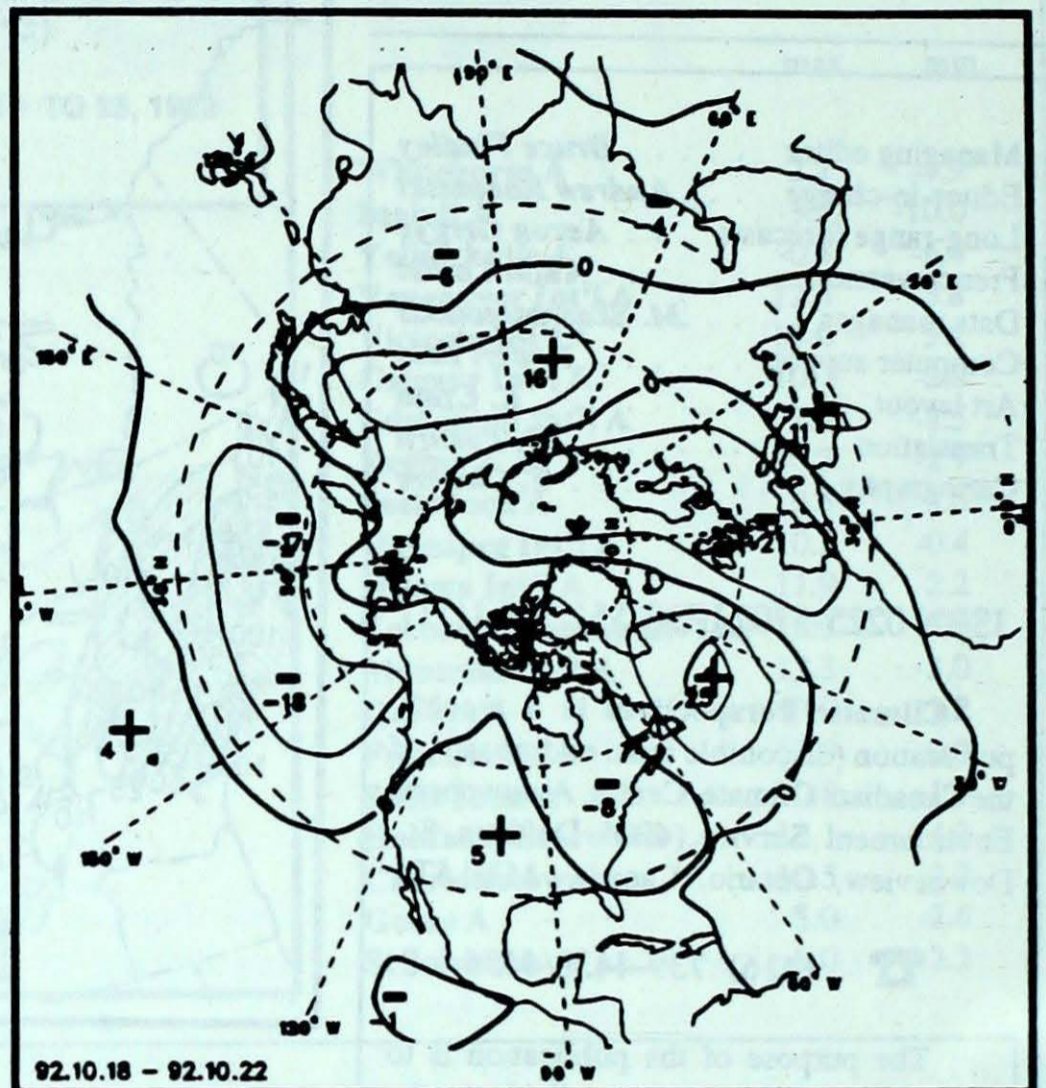
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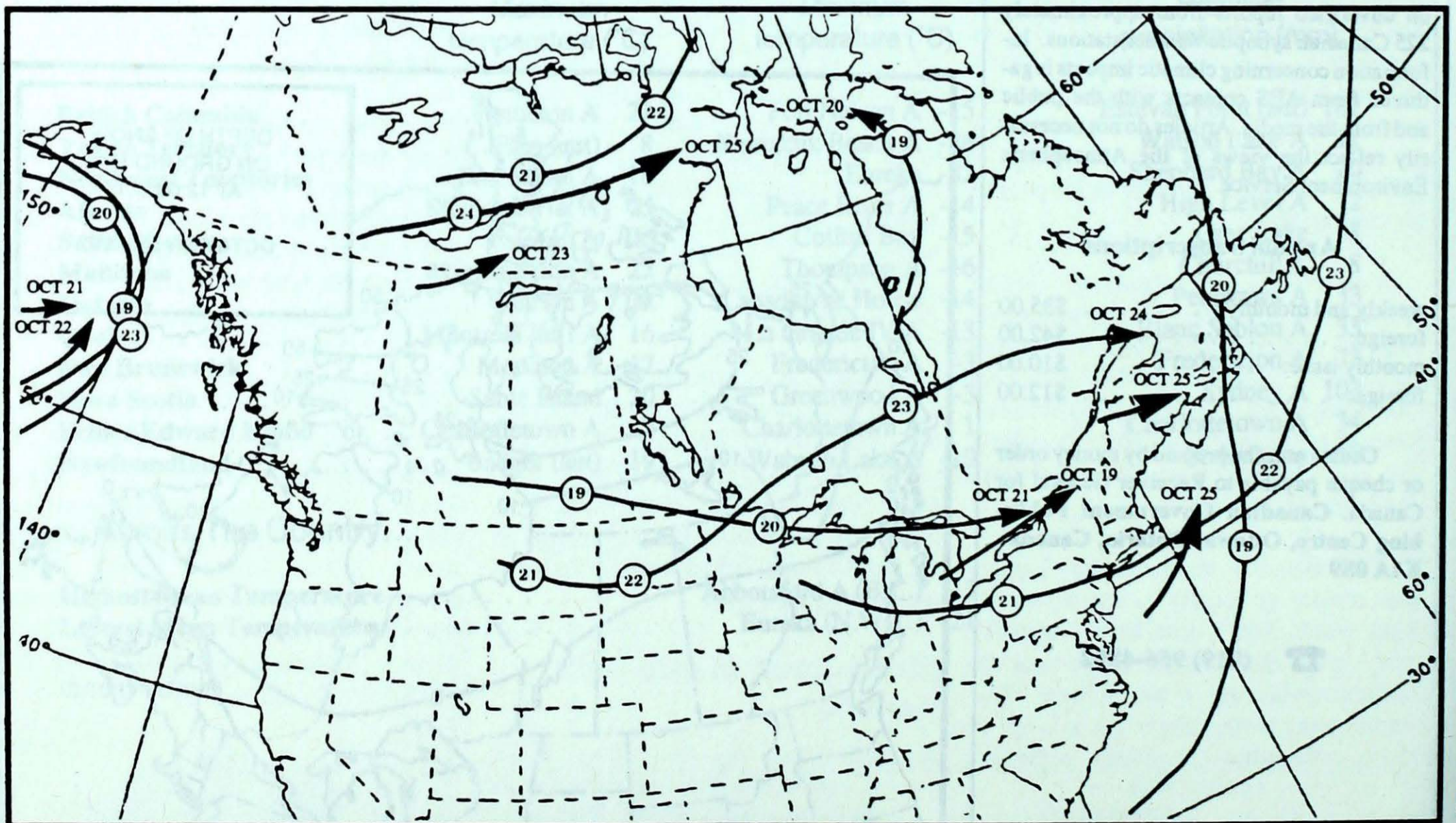
### 50-kPa ATMOSPHERIC CIRCULATION



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



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

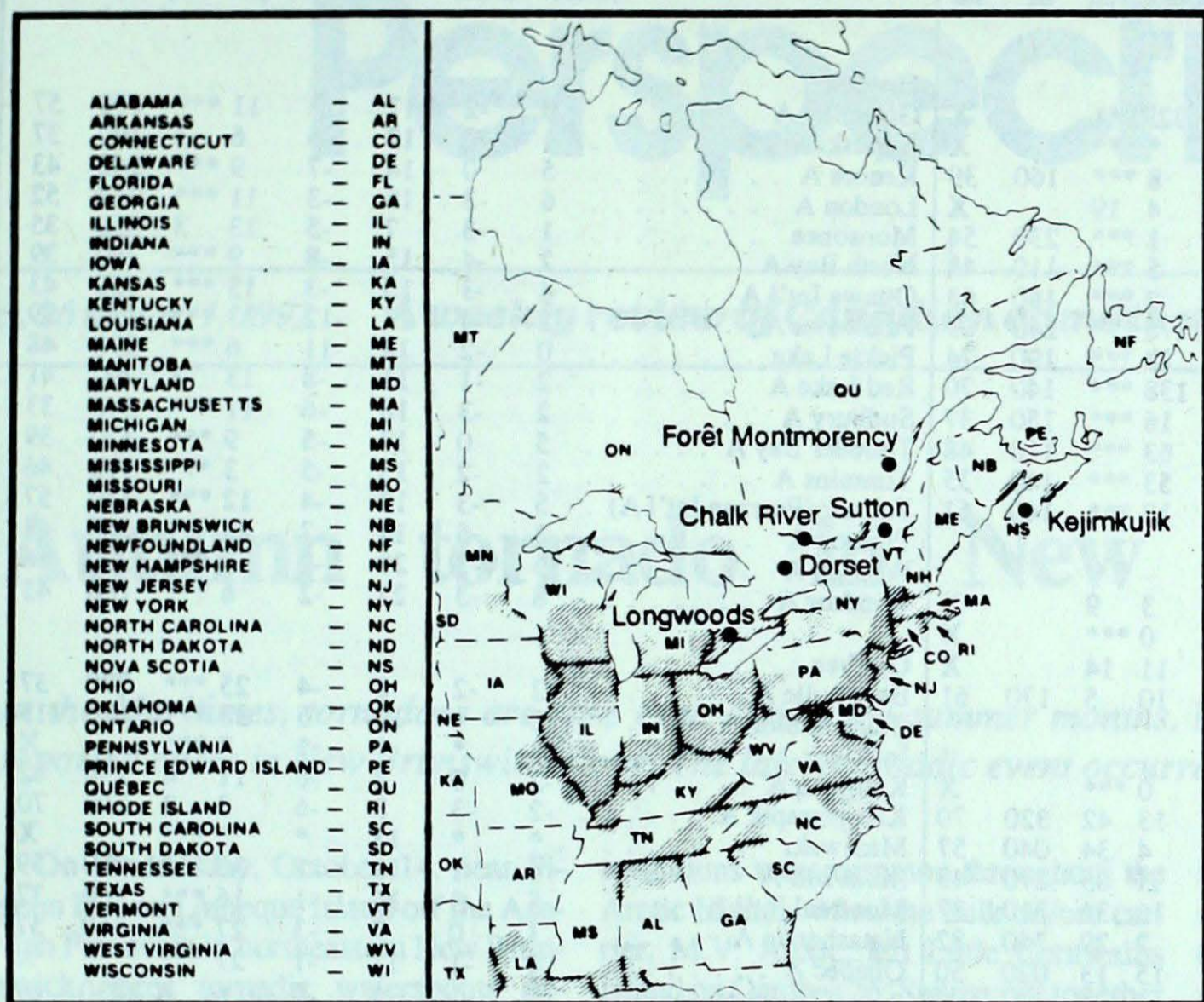


Tracks of low pressure centres at 12:00 U.T. each day during the period.

## 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<sub>2</sub> and NO<sub>x</sub> 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 18 to 24, 1992

Longwoods				..... Data not available this week
Dorset *	18	4.7	2 S	..... Lake Huron, northern Michigan
	20	4.3	6 S	..... Southern Ontario, Michigan, Ohio
	23	4.1	16 R	..... Michigan, southern Wisconsin
Chalk River	18	4.8	5 M	..... Lake Huron, northern Michigan
	19	4.4	2 S	..... Northwestern Quebec, central Ontario
	20	4.4	3 S	..... Southern Ontario, Ohio, Western Pennsylvania
	23	4.2	11 R	..... Lake Huron, Michigan, Wisconsin
Sutton	20	4.1	2 R	..... Eastern New York, eastern Pennsylvania
	23	4.1	16 R	..... Eastern and southern Ontario, southern Michigan
	24	4.3	13 R	..... Western Quebec, eastern Ontario
Montmorency	19	4.3	1 S	..... Southern Quebec, northern Maine
	20	4.4	4 R	..... Vermont, New Hampshire, eastern New York
	21	4.3	1 R	..... New England
	23	4.3	19 R	..... Western Quebec, central and eastern Ontario, northern Michigan
Kejimikujik	19	4.9	4 R	..... Nova Scotia, New Brunswick, central Quebec
	21	5.0	23 R	..... Atlantic Ocean

R= rain (mm), S = snow (cm), M = mixed rain and snow (mm)

STATION	temperature				precip. ptot	st	wind dir	max vel	STATION	temperature				precip. ptot	st	wind dir	max vel
	mean	anom	max	min						mean	anom	max	min				
<b>British Columbia</b>								<b>Ontario</b>									
Blue River A	6P	2P	12P	0P	32P***			X	Gore Bay A	6	-2	17	-3	11 ***	170	57	
Cape St James	*	*	*	*	* ***			X	Kapuskasing A	1	-2	12	-6	6 3	190	37	
Cranbrook A	10	5	20	-1	8 ***	160	39		Kenora A	5	0	14	-7	9 ***	140	43	
Fort Nelson A	-5	-4	6	-15	4 19			X	London A	6	-3	18	-3	11 ***	210	52	
Fort St John A	3	1	11	-13	1 ***	230	54		Moosonee	1	-3	7	-5	13 3	350	35	
Kamloops A	11	4	19	2	5 ***	110	48		North Bay A	2	-4	15	-8	9 ***	350	39	
Penticton A	12	5	21	3	2 ***	180	63		Ottawa Int'l A	4	-3	15	-3	15 ***	330	43	
Port Hardy A	11	3	14	4	176 ***	240	69		Petawawa A	2	-4	17	-12	33 ***	330	39	
Prince George A	7	3	17	-1	28 ***	190	74		Pickle Lake	0	-2	14	-11	6 ***	290	48	
Prince Rupert A	10	3	14	4	138 ***	140	70		Red Lake A	2	-1	11	-8	13 3	290	41	
Smithers A	4	1	11	-2	16 ***	150	37		Sudbury A	2	-3	16	-6	11 ***	340	33	
Vancouver Int'l A	13	4	18	9	63 ***	110	48		Thunder Bay A	5	0	17	-5	9 ***	320	39	
Victoria Int'l A	12	3	18	4	53 ***	140	35		Timmins A	2	-2	15	-5	3 ***	310	46	
Williams Lake A	8	4	17	-4	12 ***	140	61		Toronto(Pearson Int'l A)	5	-3	19	-4	12 ***	340	57	
<b>Yukon Territory</b>								<b>Québec</b>									
Komakuk Beach A	-16	-5	-11	-26	3 9			X	Bagotville A	2	-2	8	-4	25 ***	270	37	
Teslin (aut)	0	*	7	-9	0 ***			X	Blanc Sablon A	2	*	11	-5	33 ***	070	113	
Watson Lake A	-7	-4	8	-16	11 14			X	Inukjuak A	*	*	*	*	* ***		X	
Whitehorse A	0	2	7	-12	10 5	170	61		Kuujuuaq A	-2	0	2	-6	11 4	230	82	
<b>Northwest Territories</b>								<b>New Brunswick</b>									
Alert	-18	4	0	-28	0 ***			X	Fredericton A	6	0	13	-3	73 ***	140	39	
Baker Lake A	-10	1	1	-18	13 42	320	70		Miscou Island (aut)	6P	1P	10P	-1P	25P***			
Cambridge Bay A	-14	1	-9	-21	4 34	040	57		Moncton A	7	1	17	-2	31 ***	020	72	
Cape Dyer A	-9P	1P	7P	-20P	2P 85	170	43		Saint John A	6	0	14	-2	67 ***	350	54	
Clyde A	-8	0	0	-22	16 36	310	37		<b>Nova Scotia</b>								
Coppermine A	-12	-2	-4	-22	2 29	340	82		Greenwood A	7	0	19	-3	20 ***	020	76	
Coral Harbour A	-4	6	1	-9	15 13	020	50		Shearwater A	8	-1	16	0	28 ***	350	82	
Eureka	-21	3	-14	-32	1 6			X	Sydney A	8	0	17	-2	103 ***	170	89	
Fort Smith A	0	2	10	-9	7 3	160	57		Yarmouth A	7	-1	15	1	42 ***	010	56	
Hall Beach A	-10	3	0	-20	4 29	100	52		<b>Prince Edward Island</b>								
Inuvik A	-14	-4	-10	-21	2 31			X	Charlottetown A	8	1	17	1	34 ***	010	78	
Iqaluit A	-5	2	1	-15	4 7	190	50		East Point (auto)	9P	*	14P	4P	32P***			
Mould Bay A	-19	2	-12	-23	7 19			X	<b>Newfoundland</b>								
Norman Wells A	-11	-4	-6	-18	8 22	130	50		Cartwright	2	0	5	-3	25 3	310	57	
Resolute A	-14	4	-5	-27	3 11	030	72		Churchill Falls A	-2	1	3	-10	6 13	090	35	
Yellowknife A	-3	1	5	-9	13 4	320	70		Gander Int'l A	6	2	18	0	17 ***	170	113	
<b>Alberta</b>								<b>92/10/19-92/10/25</b>									
Calgary Int'l A	8	4	21	-5	2 ***	240	59		Goose A	0	-1	5	-7	19 3	250	39	
Cold Lake A	4	1	17	-10	2 ***	290	33		St John's A	6	0	15	-1	17 ***	200	89	
Edmonton Namao A	7	3	19	-5	0 ***	290	44		St Lawrence	6	1	17	-2	25 ***		X	
Fort McMurray A	3	1	14	-5	3 ***	300	44		Wabush Lake A	-3	-1	2	-10	6 8	230	41	
High Level A	0	-1	11	-9	12 3	290	52										
Jasper	*	*	16	*	* ***			X									
Lethbridge A	12	5	23	2	0 ***	270	78										
Medicine Hat A	12	5	25	2	0 ***	260	46										
Peace River A	2	-1	12	-14	0 ***	260	46										
<b>Saskatchewan</b>																	
Cree Lake	1	0	8	-8	8 3	320	52										
Estevan A	8	3	26	-4	0 ***	300	63										
La Ronge A	2	-1	14	-6	7 ***	320	46										
Regina A	8	4	25	-4	1 ***	310	56										
Saskatoon A	5	1	22	-6	4 ***	300	44										
Swift Current A	10	5	26	-2	0 ***	220	43										
Yorkton A	5	2	23	-5	5 ***	310	59										
<b>Manitoba</b>																	
Brandon A	6	2	22	-6	1 ***	290	72										
Churchill A	-4	-1	3	-11	8 7	290	85										
Lynn Lake A	-2	-1	8	-15	1 ***	300	52										
The Pas A	2	-1	12	-7	5 ***	310	56										
Thompson A	-2	-1	5	-16	3 ***			X									
Winnipeg Int'l A	5	0	15	-6	2 ***	190	61										

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