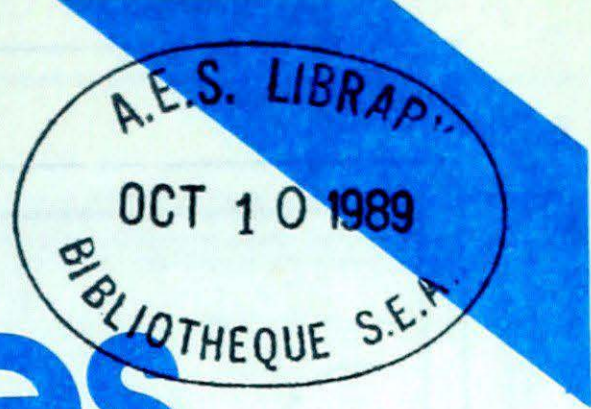




# Climatic Perspectives



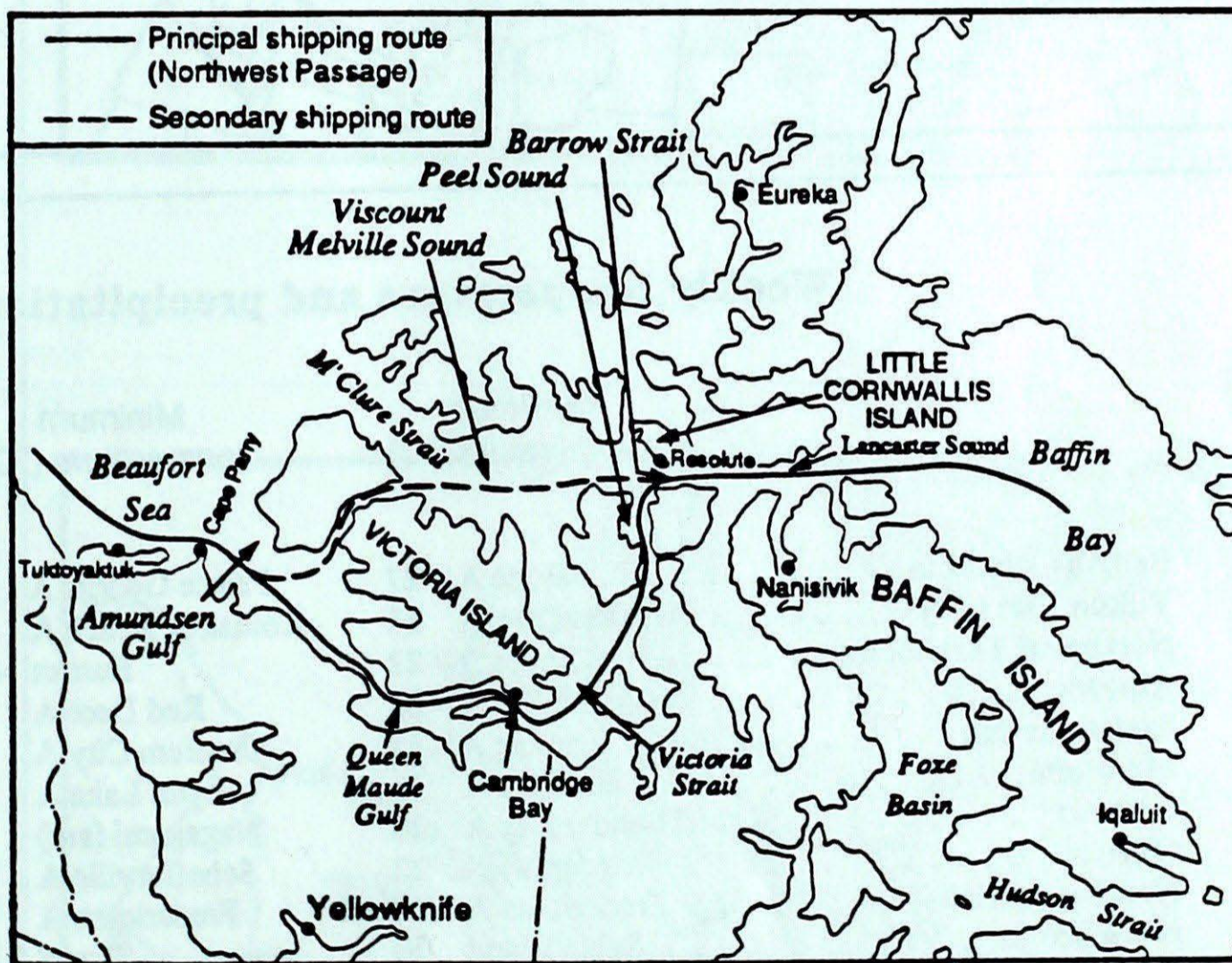
September 25 to October 1, 1989 A weekly review of Canadian climate

Vol. 11 No 40

## Winter takes hold of northern Canada

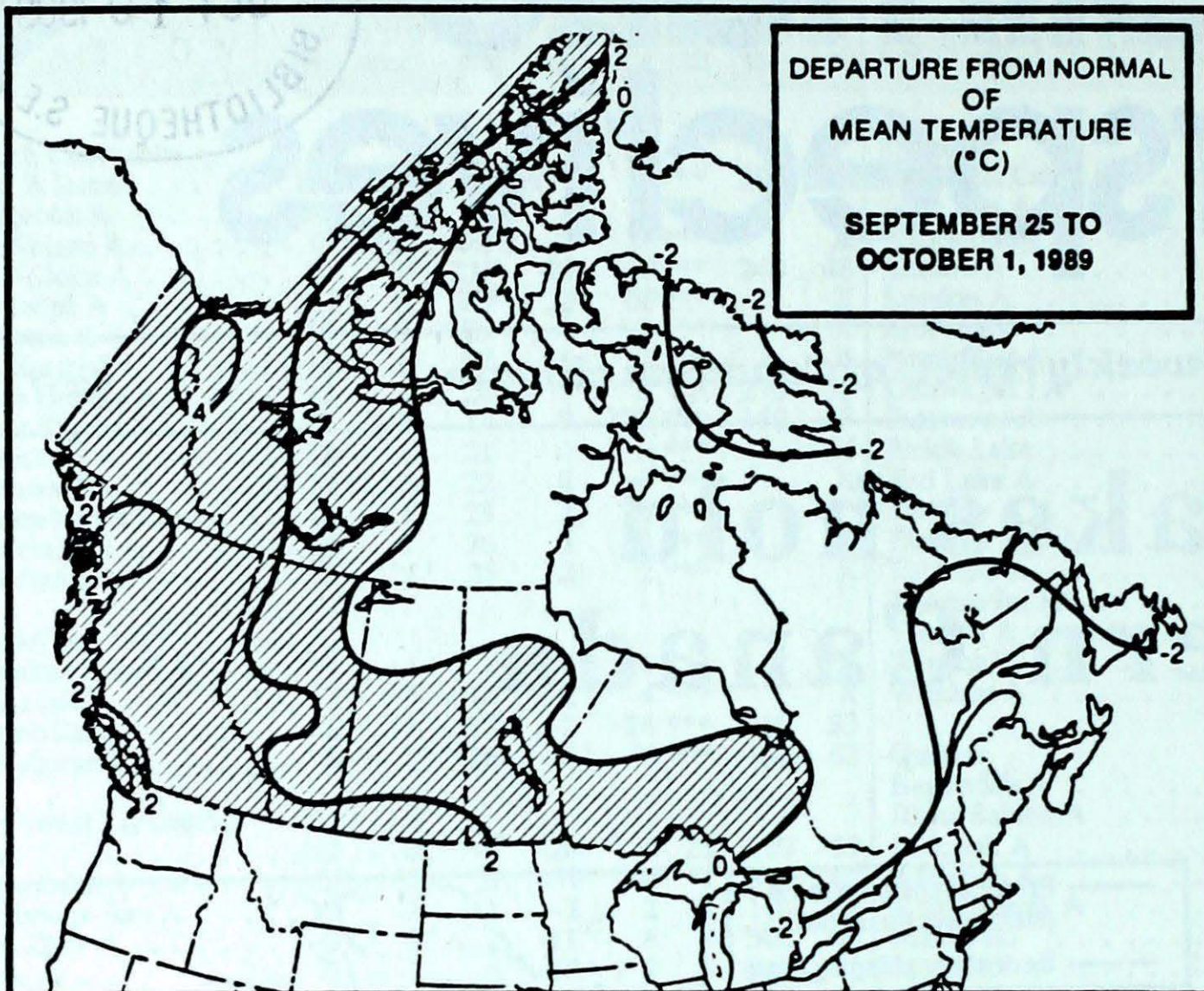
With snow and blowing snow becoming more frequent and maximum temperatures in the Arctic remaining below freezing, the short Arctic shipping season is quickly drawing to a close. Resupply operations in the Beaufort and along the southern Arctic coast were completed just as freeze-up got underway. The support ice breaker, C.C.G.S. *G. R. Pearkes*, made the return trip along the Alaskan north coast without incident two weeks ago, as ice conditions in the Beaufort have been particularly good. This is in sharp contrast to one year ago, when at this time the Arctic ice pack had pushed south, and prevented any westward navigation. A second ice breaker, C.C.G.S. *Sir J. Franklin*, will be leaving the western Arctic shortly, escorting a vessel eastwards through the northwest passage via Peel Sound; the combination of new thickening ice and old pack ice drifting into Victoria Strait, will make the route impassable in a matter of weeks. The *Franklin's* departure will officially end the 1989 resupply operations in the western Arctic.

In the eastern Arctic freeze-up is slightly ahead of normal. In the last few weeks cooler than normal temperatures have produced extensive new ice growth in Lancaster Sound, with multi-year pack ice drifting eastwards through Barrow Strait. By the end of the month, the new ice is



expected to be 30 cm thick. The C.C.G.S. *Des Groseilliers* has already left the Arctic, while the ice breaker, C.C.G.S. *John A. MacDonald* has been designated to remain in the Parry Channel near Resolute until all commercial ships have cleared northern waters. As is the case most years, the ice-strengthened ore and oil carrier, M.V. *Arctic*, is scheduled to return to Little Cornwallis Island after mid-month and Nanisivik as late as

November before closing off the 1989 season. In mid-September, the M.V. *Arctic* was forced to cut short its last trip to Cameron Island for a load of crude, due to threatening ice conditions. In the southeastern region of the Arctic, resupply operations, supported by the C.C.G.S. *N. M. Rogers*, are continuing, occasionally hampered by gale-force winds and ever more frequent snowfalls, which will soon become the norm.



### Weekly normal temperature (°C)

	max	min
Whitehorse A	9.4	0.8
Iqaluit A	1.6	-3.0
Yellowknife A	6.0	0.3
Vancouver Int'l A	16.6	9.0
Victoria Int'l A	17.3	7.7
Calgary Int'l A	15.7	2.3
Edmonton Int'l A	15.0	1.7
Regina A	16.1	2.1
Saskatoon A	15.1	2.2
Winnipeg Int'l A	15.8	3.6
Ottawa Int'l A	16.8	6.4
Toronto Int'l A	18.3	6.9
Montréal Int'l A	17.2	7.3
Québec A	14.9	5.0
Fredericton A	17.0	4.8
Saint John A	15.5	6.1
Halifax	17.0	8.4
Charlottetown A	15.8	7.2
Goose A	10.5	2.2
St John's A	13.9	6.0

### Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Hope A 27	Prince George A -5	Fort St John A 41
Yukon Territory	Watson Lake A 21	Komakuk Beach A -6	Watson Lake A 7
Northwest Territories	Fort Smith A 22	Eureka -24	Resolute A 14
Alberta	Medicine Hat A 28	Red Deer A -8	Fort McMurray A 38
Saskatchewan	Estevan A 31	Uranium City A -8	Buffalo Narrows A 13
Manitoba	Brandon A 31	Lynn Lake A -6	Island Lake 17
Ontario	Thunder Bay A 26	Nagagami (aut) -6	Big Trout Lake 16
Québec	Maniwaki 22	Schefferville A -6	Blanc Sablon A 36
New Brunswick	Fredericton A 20	Fredericton A -3	Miscou Island (aut) 16
Nova Scotia	Sable Island 20	Truro -2	Inverness (aut) 76
Prince Edward Island	Charlottetown A 19	Summerside A 1	Charlottetown A 28
Newfoundland	St John's A 20	Wabush Lake A -5	Burgeo 57

#### Across The Country...

Highest Mean Temperature	Hope A(BC) 17
Lowest Mean Temperature	Eureka(NWT) -16

89/09/25-89/10/01

CLIMATIC PERSPECTIVES  
VOLUME 11

Managing Editor . . . . . *Alain Caillet*  
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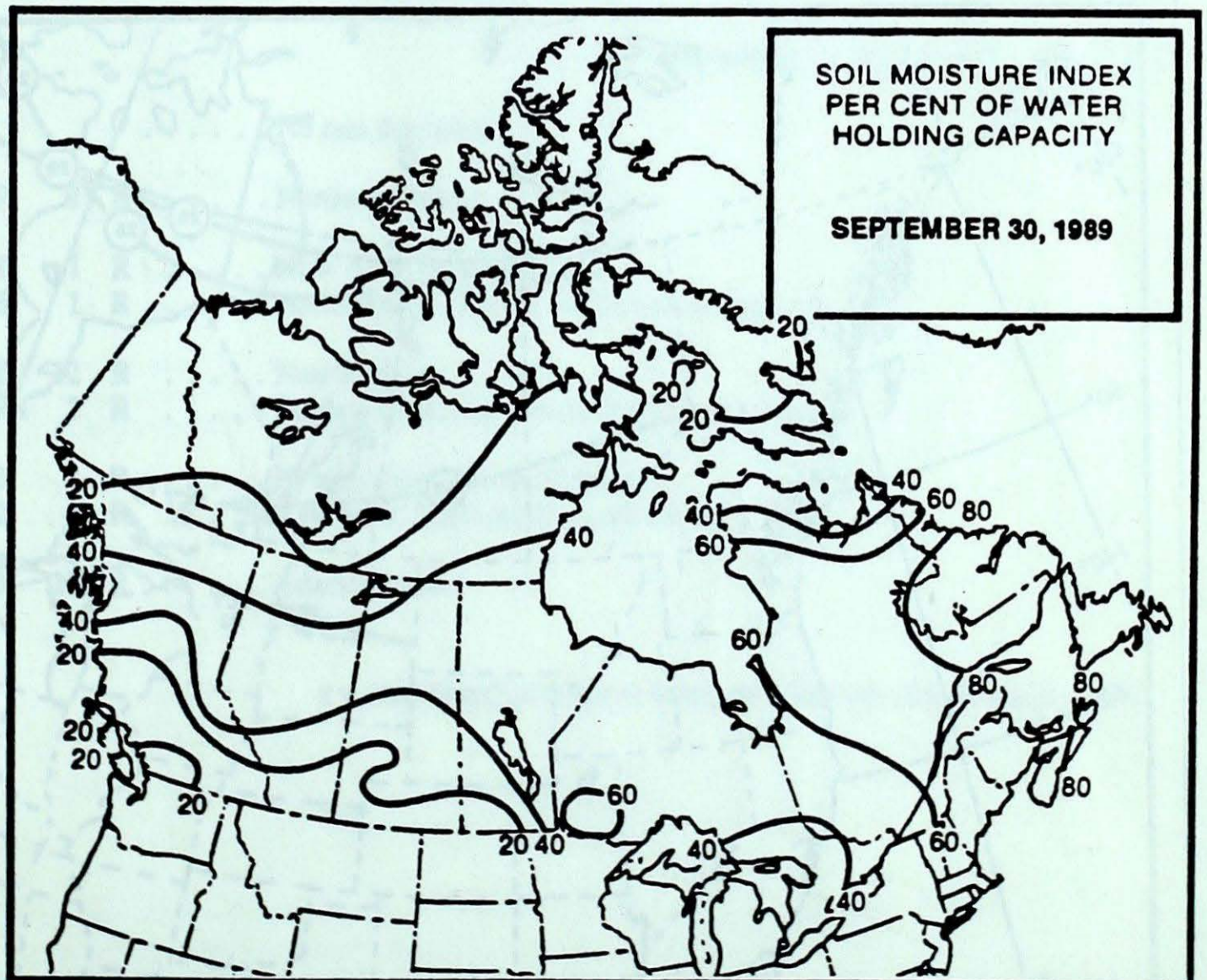
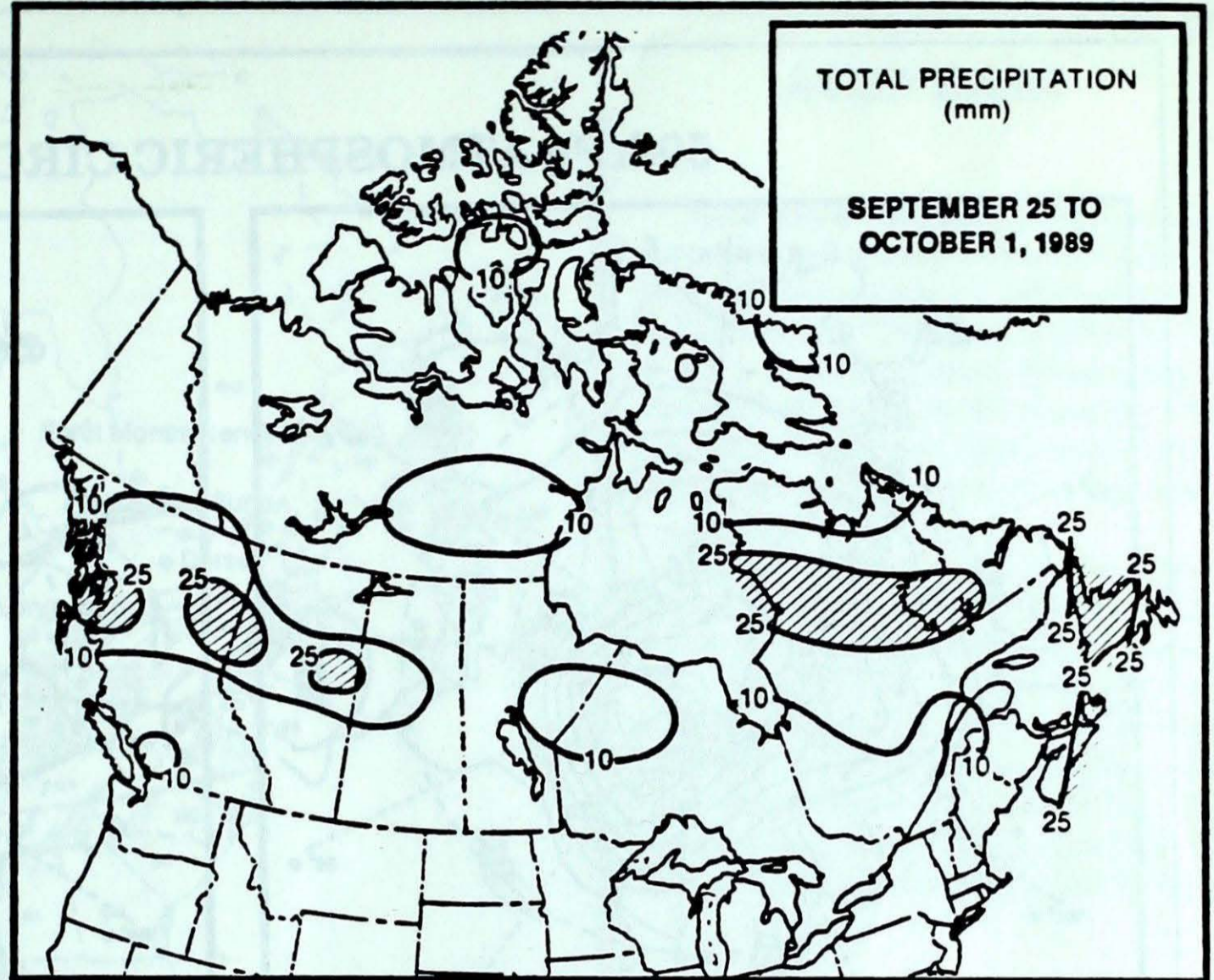
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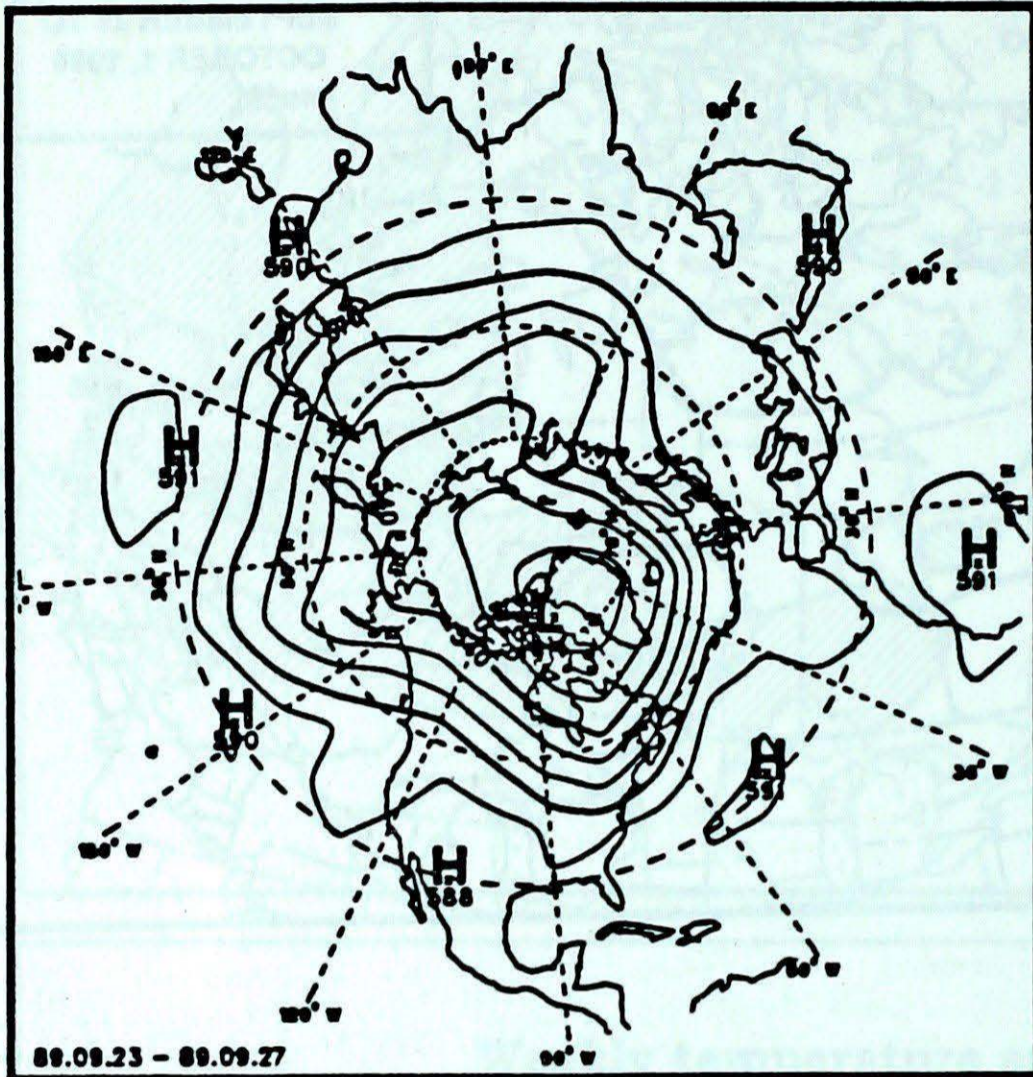
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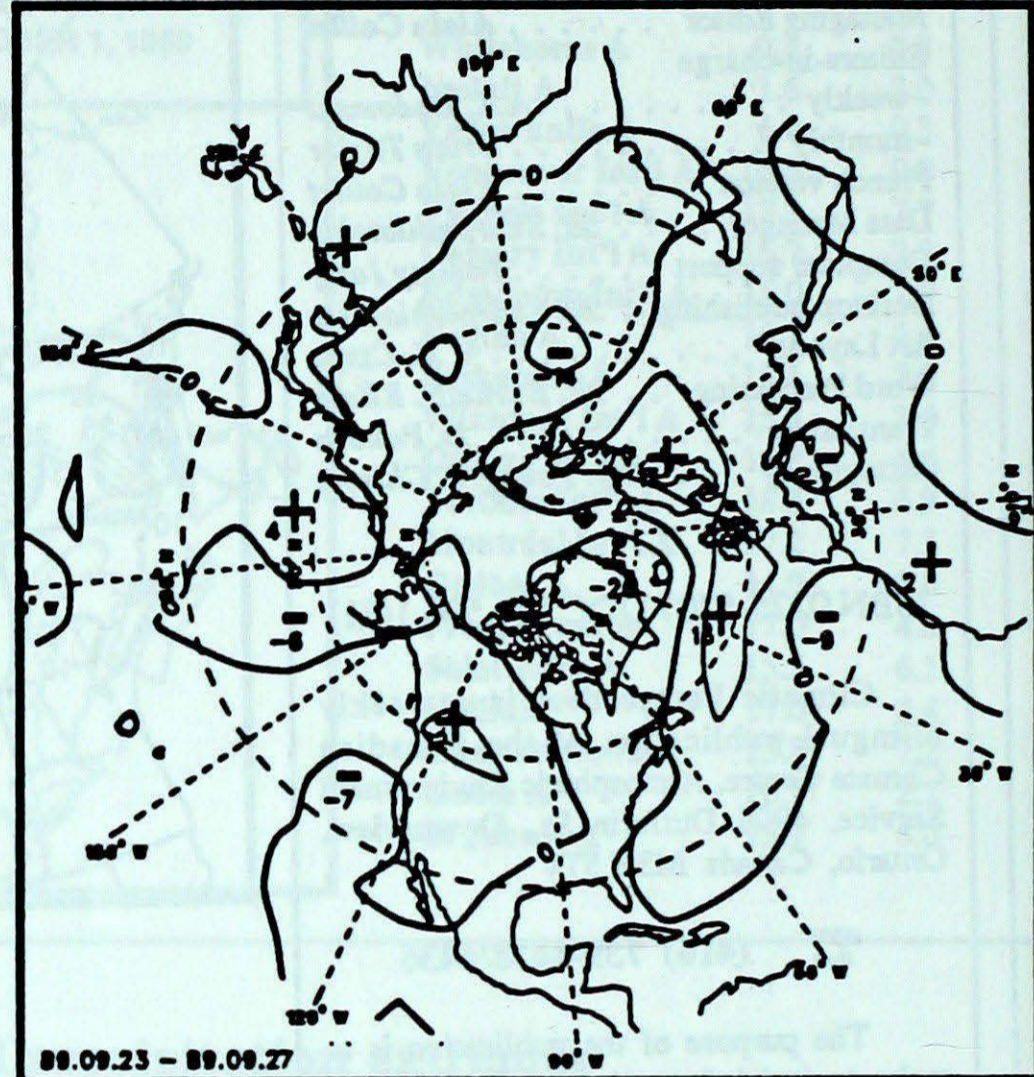
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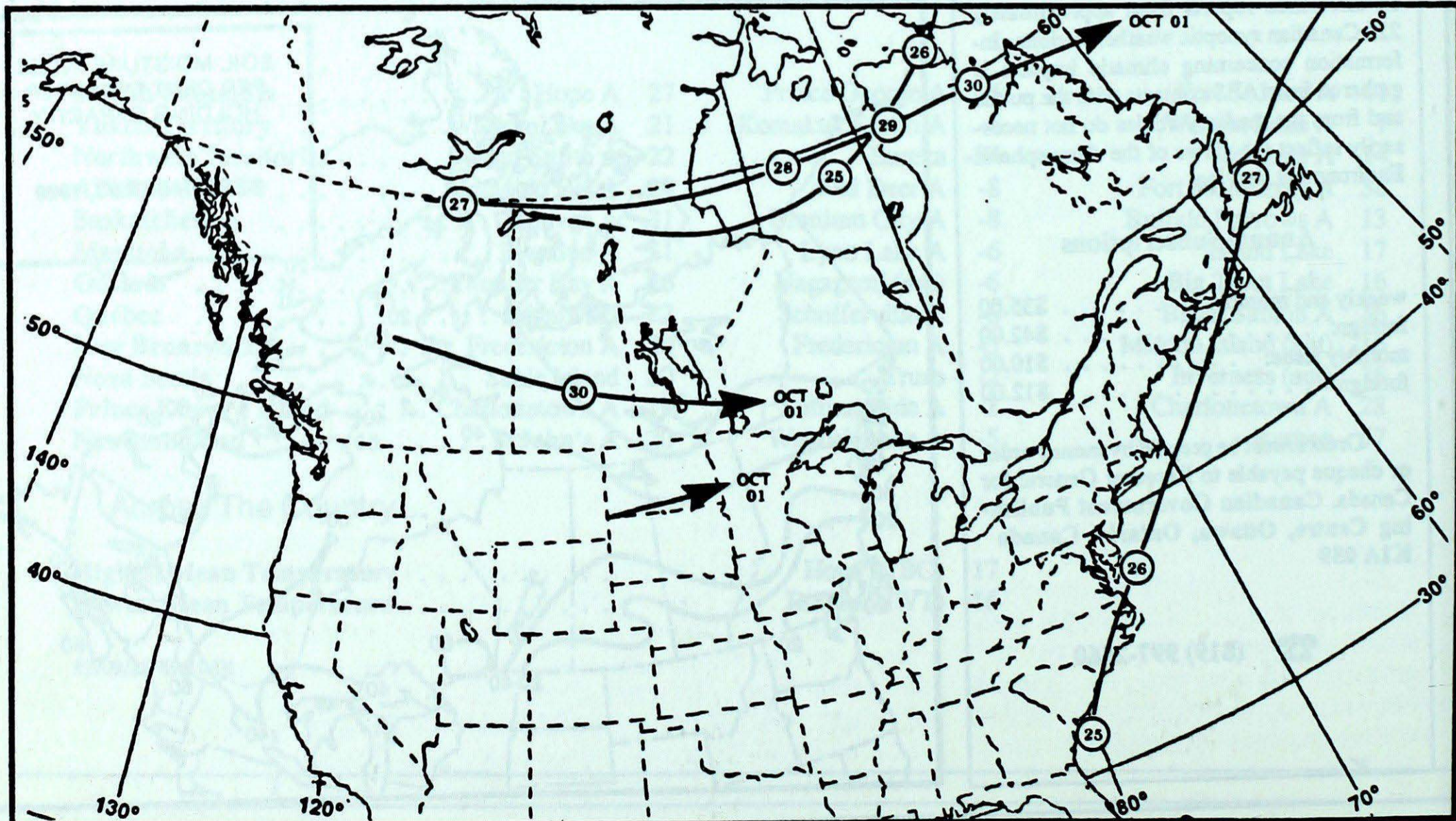
### 50-kPa ATMOSPHERIC CIRCULATION



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



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



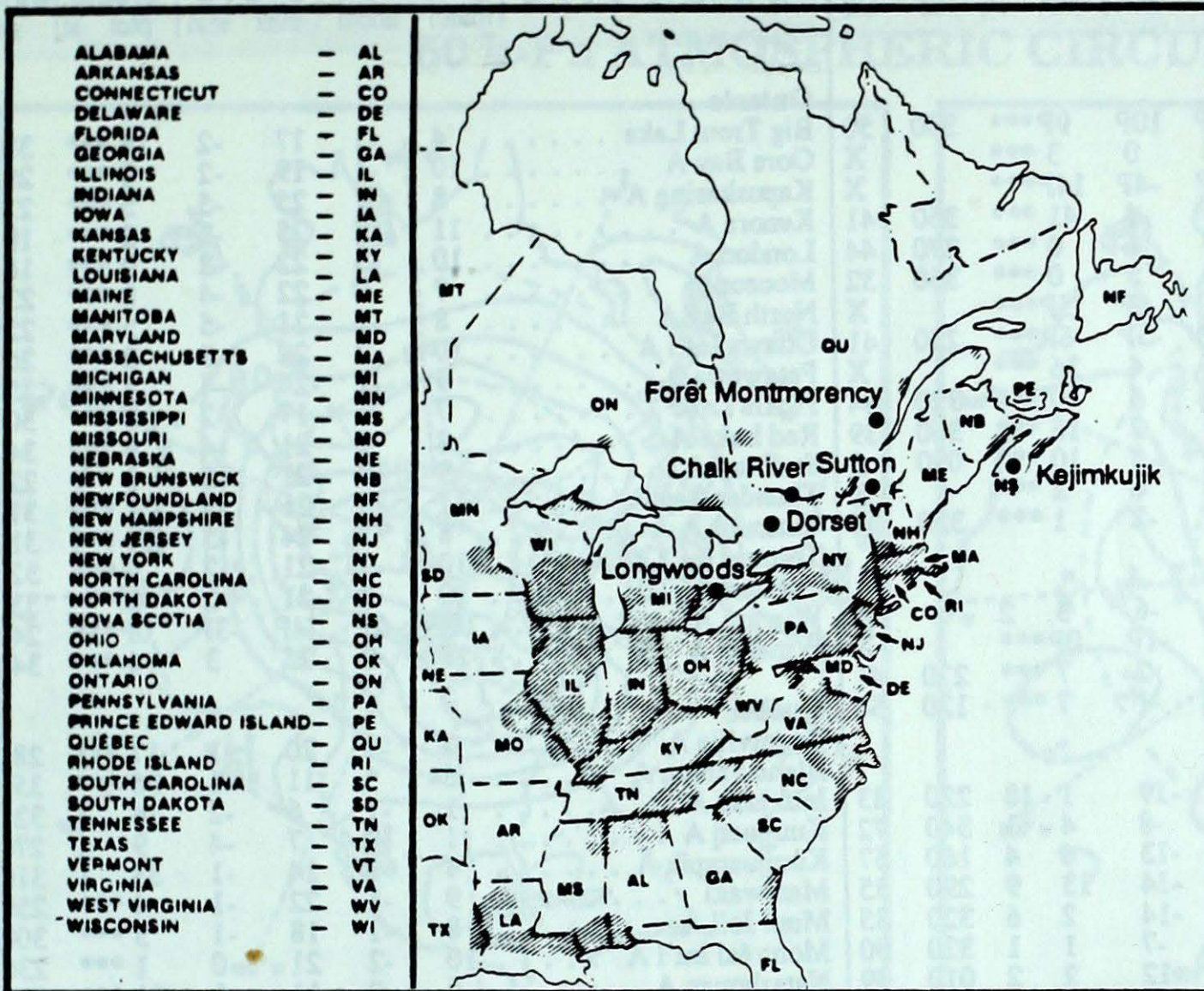
Tracks of low pressure centres at 12:00 U.T. each day during the period.

ATMOSPHERIC ENVIRONMENT SERVICE LIBRARY

## 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
------	-----	----	--------	------------------

September 24 to September 30, 1989

Longwoods				..... No rain this week
Dorset *	26	4.9	1 R	..... Northern Ontario
Chalk River	25	4.1	1 R	..... New York, Eastern Ontario
	26	4.6	1 R	..... Northeastern, Ontario, Northwestern, Quebec
Sutton	26	4.2	12 R	..... New England
	29	4.0	2 R	..... Pennsylvania, New York, Southern Quebec
Montmorency	26	3.8	3 R	..... New England, Southern Quebec
	29	4.2	4 R	..... New York, Southern Ontario Southern Quebec
Kejimkujik	26	5.3	20 R	..... Atlantic Ocean

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

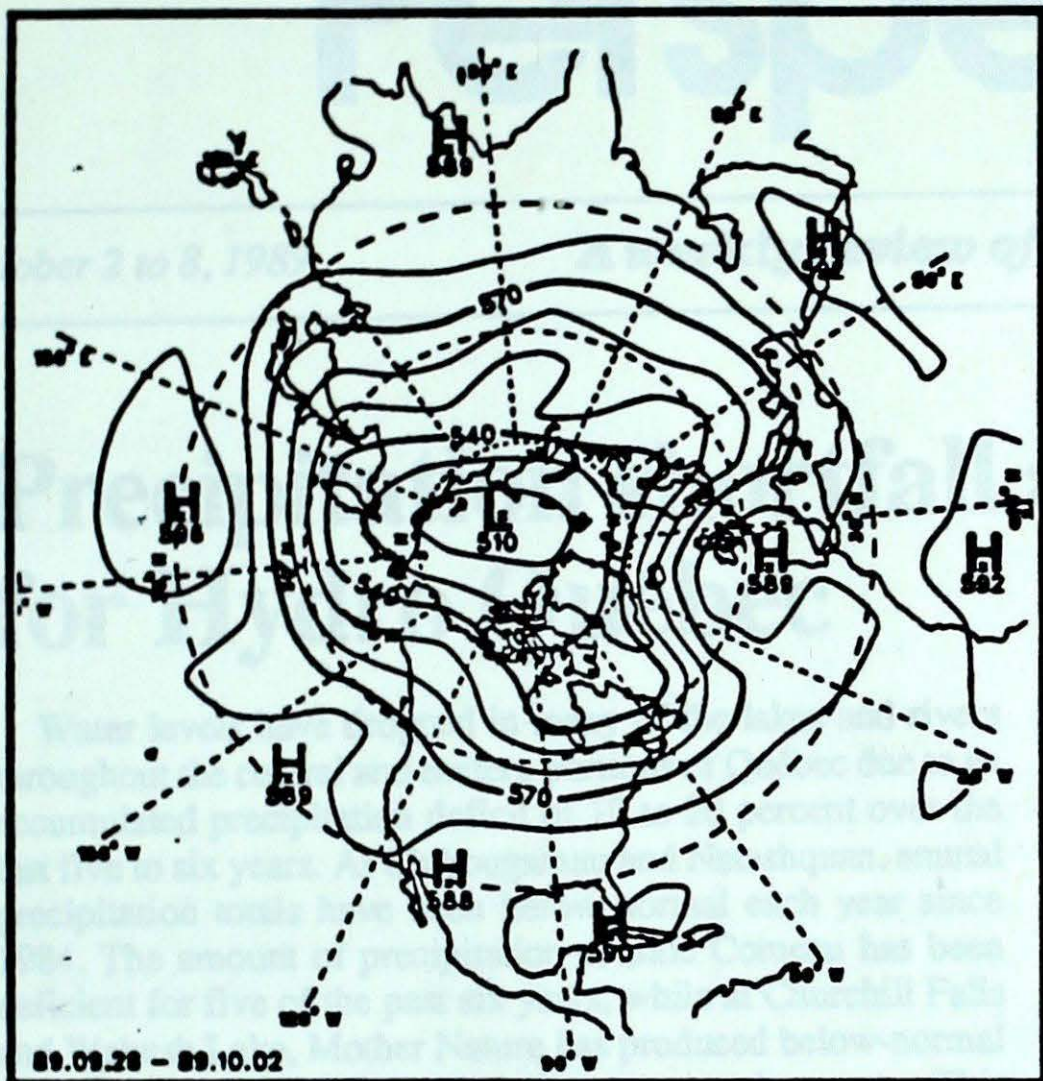
STATION	temperature				precip. ptot st	wind max		STATION	temperature				precip. ptot st	wind max	
	mean	anom	max	min		dir	vel		mean	anom	max	min		dir	vel
<b>British Columbia</b>								<b>Ontario</b>							
Cape St James	14P	2P	19P	10P	9P***	300	50	Big Trout Lake	4	-1	17	-2	16***	330	67
Cranbrook A	12	2	24	0	3***		X	Gore Bay A	10	-1	19	-2	0***	290	56
Fort Nelson A	9P	3P	24P	-4P	14P***		X	Kapusking A	8	1	25	-5	5***	220	56
Fort St John A	10	2	23	-4	41***	350	41	Kenora A	11	2	25	-1	2***	190	50
Kamloops A	15	3	26	6	0***	270	44	London A	10	-3	22	-2	0***	180	35
Penticton A	15	2	25	5	0***	360	32	Moosonee	7	0	22	-4	8***	230	61
Port Hardy A	12P	1P	17P	6P	5P***		X	North Bay A	8	-1	21	-5	5***	220	52
Prince George A	10P	2P	24P	-5P	6P***	230	41	Ottawa Int'l A	10	-2	22	-2	2***	260	76
Prince Rupert A	11	0	17	4	36***		X	Petawawa A	9	-2	24	-4	4***	350	46
Revelstoke A	13	3	20	4	0***	320	44	Pickle Lake	7	1	17	-2	8***	300	63
Smithers A	11	3	24	2	16***	360	39	Red Lake A	8	1	21	-4	6***	340	52
Vancouver Int'l A	14	2	22	8	10***	090	3	Sudbury A	9	0	21	-5	0***	220	61
Victoria Int'l A	14	2	23	6	2***		X	Thunder Bay A	11	3	26	-4	1***	310	59
Williams Lake A	11	2	23	-2	1***	330	56	Timmins A	8	1	24	-5	10***	310	56
<b>Yukon Territory</b>								<b>Toronto Int'l A</b>							
Komakuk Beach A	1	3	7	-6	3 2		X	Trenton A	10	-3	21	-2	0***	320	70
Teslin (aut)	7P	*	17P	-1P	0P***		X	Warton A	10P	-2P	24P	-3P	0P***	240	56
Watson Lake A	7	2	21	-2	7***	270	41	Windsor A	13	-2	23	3	4***	340	48
Whitehorse A	7	2	16	-1	7***	120	54	<b>Québec</b>							
<b>Northwest Territories</b>								<b>Bagotville A</b>							
Alert	-13	2	-6	-19	1 18	220	83	Blanc Sablon A	6	*	11	-1	36***	350	70
Baker Lake A	-4	-2	3	-8	4 1	340	72	Inukjuak A	1	-1	6	-2	26 1	320	76
Cambridge Bay A	-6	-1	1	-13	6 4	160	57	Kuujuuaq A	1	-2	7	-4	9 1	270	82
Cape Dyer A	-7	-2	0	-14	13 9	290	85	Kuujuuarapik A	4	-1	14	-1	33 1	310	91
Clyde A	-7	-4	-1	-14	2 6	320	35	Maniwaki	9	-1	22	-1	4***	250	54
Coppermine A	0	2	8	-7	1 1	320	50	Mont Joli A	8	-1	18	-1	3***	300	46
Coral Harbour A	-5	-2	-2	-12	2 2	010	59	Montréal Int'l A	10	-2	21	0	1***	230	
Eureka	-16	0	-6	-24	5 7	290	50	Natashquan A	5	-2	11	-1	21***	310	59
Fort Smith A	5	1	22	-8	3***	320	37	Québec A	8	-2	18	-1	8***	320	54
Hall Beach A	-5	-1	-1	-11	4 11	340	46	Schefferville A	0	-3	7	-6	10 1	280	72
Inuvik A	5	6	12	-2	0***		X	Sept-Iles A	4	-3	11	-2	11***	320	63
Iqaluit A	-3	-2	3	-7	4 1	050	72	Sherbrooke A	8	-2	21	-2	6***	310	43
Mould Bay A	-9	3	-1	-17	1 5	260	69	Val-d'Or A	7P	0P	22P	-4P	7P***	320	61
Norman Wells A	5	3	11	-4	9***	120	56	<b>New Brunswick</b>							
Resolute A	-10	0	-3	-19	14 36	020	89	Charlo A	6	-3	16	-2	8***	290	61
Yellowknife A	4	1	16	-2	4***	340	50	Chatham A	7	-4	19	-3	12***	310	69
<b>Alberta</b>								<b>Fredericton A</b>							
Calgary Int'l A	12	3	27	-5	3***	340	65	Moncton A	8P	-3P	18P	-3P	12P***	200	59
Cold Lake A	10	2	22	-4	4 1	020	54	Saint John A	8P	-3P	15P	-1P	15P***	200	70
Edmonton Namao A	11	3	25	-2	2***	290	56	<b>Nova Scotia</b>							
Fort McMurray A	8	1	23	-6	38***	280	35	Greenwood A	9	-3	20	-1	18***	220	67
High Level A	7	1	24	-7	0***	330	43	Shearwater A	10	-3	17	2	46***	220	59
Jasper	11	3	25	-3	4***		X	Sydney A	9	-3	19	-1	55***	230	56
Lethbridge A	13	2	28	-2	0***	350	67	Yarmouth A	10	-3	17	2	16***	320	63
Medicine Hat A	14	3	28	-1	0***	340	46	<b>Prince Edward Island</b>							
Peace River A	9P	2P	21P	-4P	0P***	020	39	Charlottetown A	9	-3	19	1	28***	220	52
<b>Saskatchewan</b>								<b>Summerside A</b>							
Cree Lake	5	0	19	-7	5***	290	59	9	-3	16	1	23***	210	72	
Estevan A	13	3	31	-2	3***	310	59	<b>Newfoundland</b>							
La Ronge A	8P	2P	23P	-5P	2P 2	280	41	Cartwright	5	-1	12	-1	20***	350	83
Regina A	12	3	28	-3	4***	330	57	Churchill Falls A	1	-1	8	-4	30 1	310	6
Saskatoon A	11	2	24	-2	2***	170	44	Gander Int'l A	7	-2	18	-1	28***	170	78
Swift Current A	13	3	25	-2	4***	290	57	Goose A	4	-2	13	-1	10***	210	54
Yorkton A	10	2	26	-4	3***	320	48	Port Aux Basques	7	-3	13	0	55***	300	82
<b>Manitoba</b>								<b>St John's A</b>							
Brandon A	11	2	31	-3	1***	310	63	8	-2	20	1	24***	200	89	
Churchill A	2	-1	17	-4	3 1	330	80	St Lawrence	8	-2	18	1	17***		X
Lynn Lake A	4	0	21	-6	1 1	290	80	Wabush Lake A	1P	-2P	9P	-5P	30P***	320	50
The Pas A	8	1	22	-4	3 2	040	67	<b>89/09/25-89/10/01</b>							
Thompson A	5P	1P	21P	-5P	2P 2	290	63								
Winnipeg Int'l A	12	2	30	-1	0***	330	65								

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

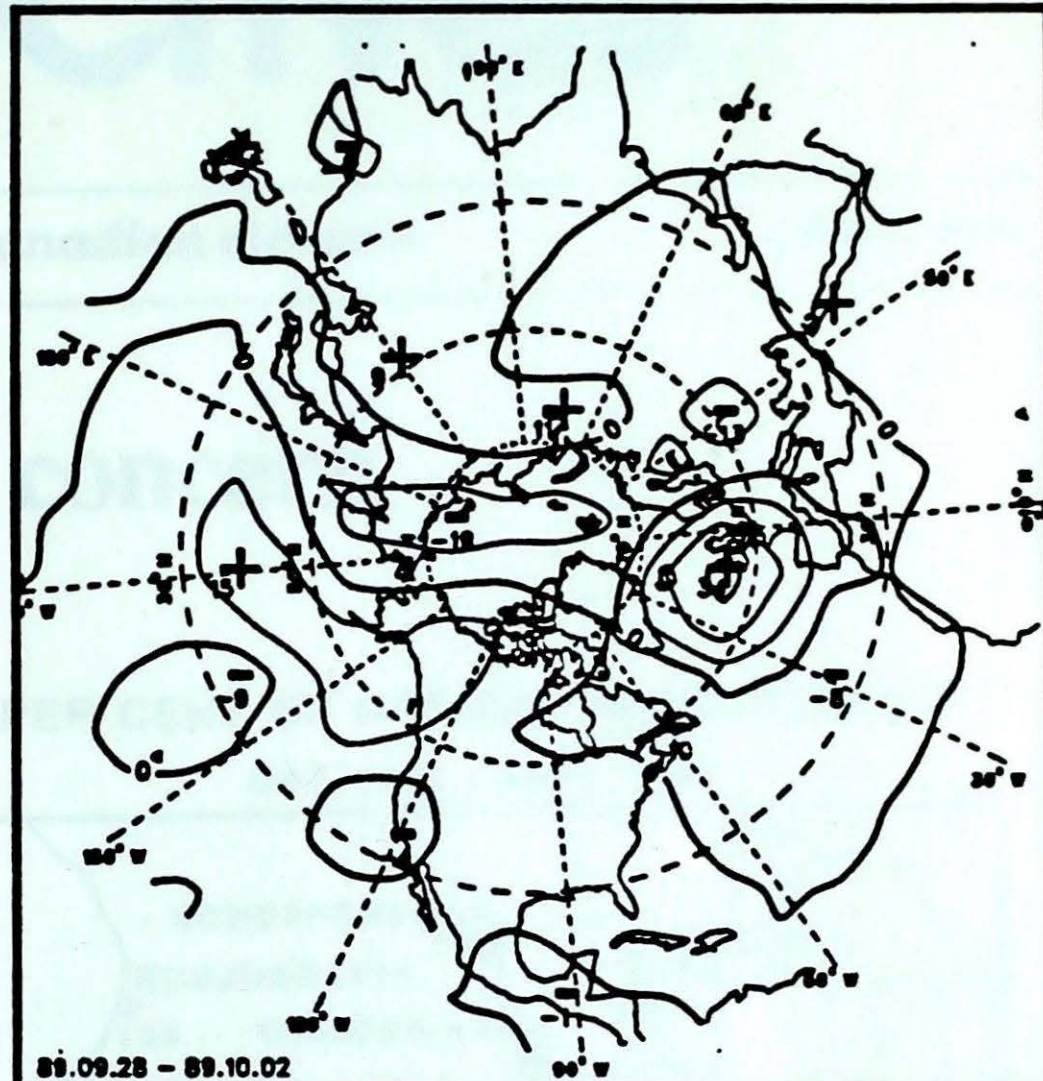
ptot = weekly precipitation total in mm  
 st = snow thickness on the ground in cm  
 dir = direction of max wind, deg. from north.  
 vel = wind speed in km/h

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

### 50 k-Pa ATMOSPHERIC CIRCULATION



Mean geopotential height  
50 kPa level (10 decametre intervals)



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

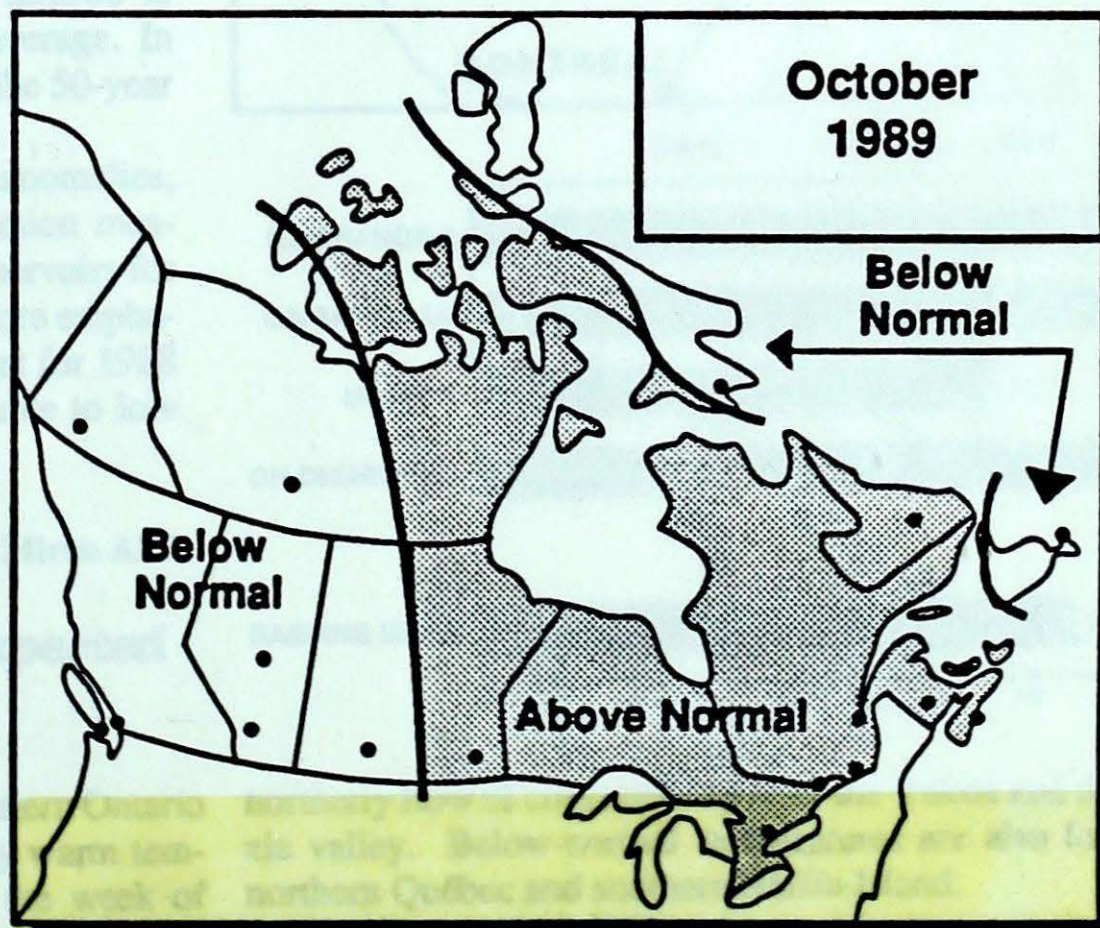


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Atmospheric Environment Service  
Service de l'environnement atmosphérique

### MONTHLY TEMPERATURE FORECAST

Normal temperatures for the month of October, °C

Whitehorse	1	Toronto	9
Yellowknife	-2	Ottawa	8
Iqaluit	-5	Montréal	9
Vancouver	10	Québec	7
Victoria	10	Fredericton	8
Calgary	6	Halifax	10
Edmonton	5	Charlottetown	8
Regina	5	Goose Bay	3
Winnipeg	6	St. John's	7



Canada