



Climatic Perspectives

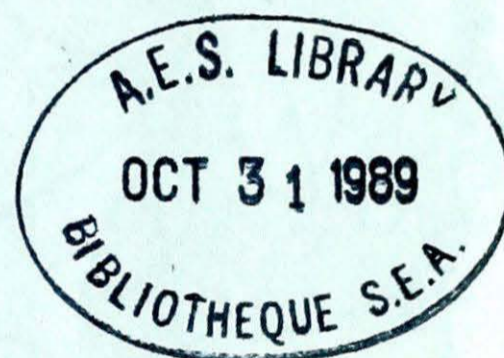
MONTHLY
SUPPLEMENT
INCLUDED

October 16 to 22, 1989

A weekly review of Canadian climate

Vol. 11 No 43

Great Lakes' water levels near normal



In just a couple of years, Mother Nature accomplished what experts thought would be almost impossible to reverse in such a short time span. Now, three years after the destructive all-time high water levels that had eroded the shores of the Great Lakes in 1986, water levels have dropped to near or even below-normal levels. On Lake Huron, one of the lakes where water levels cannot be controlled, there has been more than a one-metre drop from just three years earlier.

The following are the current October, Great Lakes' water levels in metres as compared to the record high 1986 values: Lake Superior 183.05 (183.56); Lake Huron 176.14 (177.28); Lake Erie 173.98 (174.85); Lake Ontario 74.55 (75.16).

Present Great Lakes' water levels in relation to the long-term average are: Lake Superior (-12 cm); Lake Huron and Georgian Bay, (-16 cm); Lake St. Clair (+14 cm); Lake Erie (+14 cm); Lake Ontario (+8 cm).

The weather this past summer has continued to be relatively dry over the Great Lakes' drainage basin, where total rainfall has been on average 65 to 75% of normal. As a result, drainage basin water

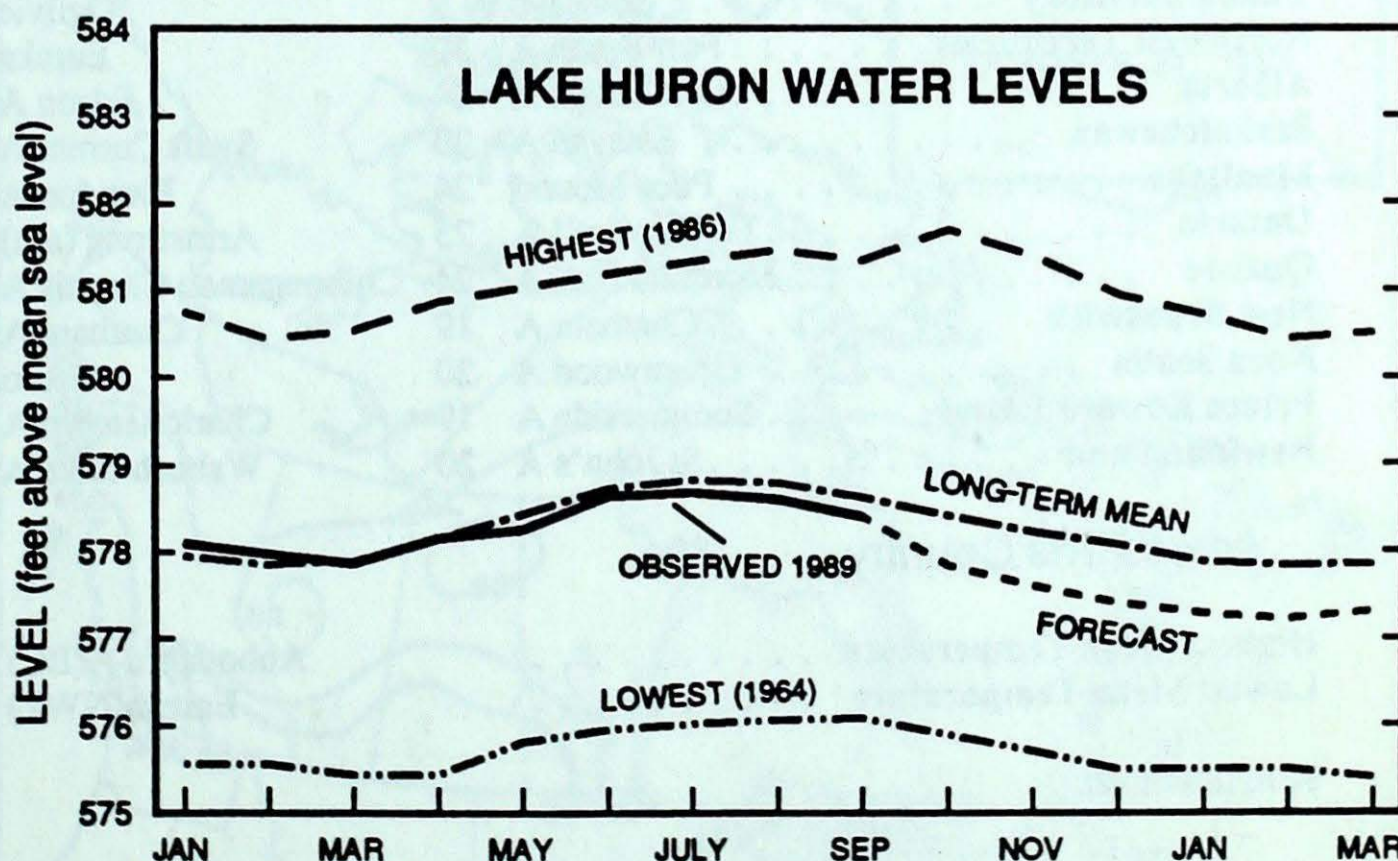
inflows to Lakes Huron and Superior have been below average. Because of this summer's rainfall deficiency, Lakes Huron and Superior began their seasonal water level declines earlier than usual by one and two months, respectively. By September, the levels on all the Great Lakes were declining at a faster-than-average rate.

The water outflows of Lakes Superior and Ontario can be controlled to some extent. In order to compensate for the net deficiency, measures were taken during this past summer to cut the outflow of

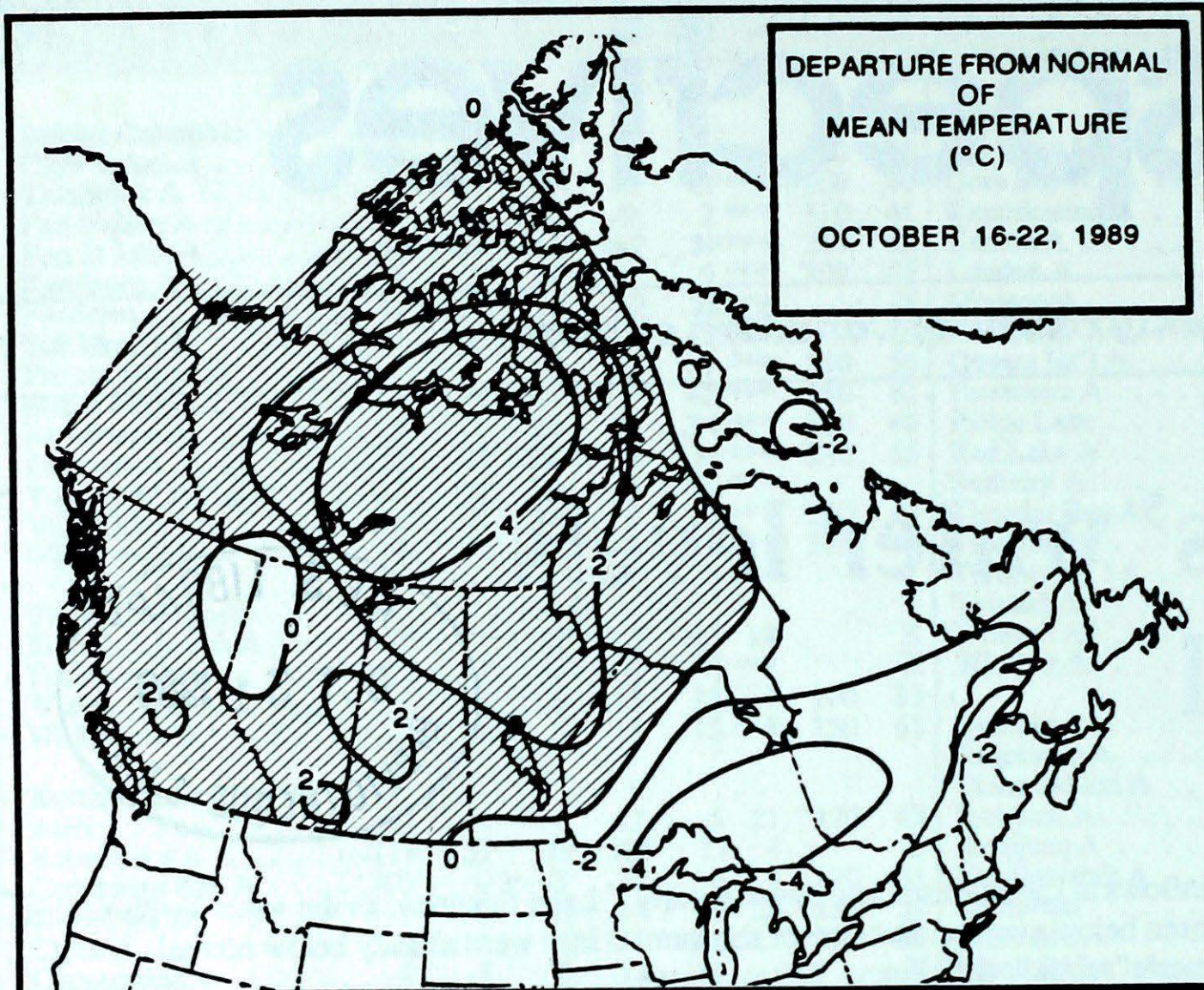
Lake Superior, as the water levels of this lake were already below normal.

Indian Summer expected over eastern Canada

For the week of October 30th, average temperatures are expected to be above normal for all of Canada, except the Yukon, which can expect below-normal temperatures. The greatest departures from normal are likely over Manitoba, Ontario and south-western Québec.



Great Lakes-St.Lawrence Study Office, IWD, Cornwall



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	3.6	-3.6
Iqaluit A	-2.7	-8.5
Yellowknife A	0.3	-5.5
Vancouver Int'l A	12.7	5.8
Victoria Int'l A	13.5	5.2
Calgary Int'l A	12.0	-2.0
Edmonton Int'l A	11.2	-2.6
Regina A	11.7	-2.3
Saskatoon A	10.9	-2.0
Winnipeg Int'l A	11.2	-0.1
Ottawa Int'l A	12.7	2.6
Toronto Int'l A	13.9	3.2
Montréal Int'l A	12.9	3.3
Québec A	10.8	1.7
Fredericton A	12.3	1.2
Saint John A	11.4	2.2
Halifax	12.9	4.7
Charlottetown A	11.2	3.2
Goose A	5.6	-1.6
St John's A	9.8	2.9

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Abbotsford A 19	Puntzi Mountain (aut) -11	Port Alberni A 144
Yukon Territory	Mayo 9	Ogilvie -30	Klondike 15
Northwest Territories	Fort Smith A 12	Eureka -37	Cape Dyer A 19
Alberta	Lethbridge A 24	Edson A -11	High Level A 36
Saskatchewan	Estevan A 23	Swift Current A -10	Nipawin A 4
Manitoba	Pilot Mound 24	Brandon A -14	Island Lake 5
Ontario	Toronto Int'l A 25	Armstrong (aut) -12	Ottawa Int'l A 59
Québec	Montréal Int'l A 24	Chibougamau Chapais A -11	Ste-Agathe-des-Monts 85
New Brunswick	Chatham A 19	Chatham A -7	St Stephen (aut) 42
Nova Scotia	Greenwood A 20	Truro -4	Sable Island 73
Prince Edward Island	Summerside A 19	Charlottetown A -3	Charlottetown A 13
Newfoundland	St John's A 20	Wabush Lake A -8	Burgeo 56

Across The Country...

Highest Mean Temperature	Abbotsford A(BC) 11
Lowest Mean Temperature	Eureka(NWT) -24

89/10/16-89/10/22

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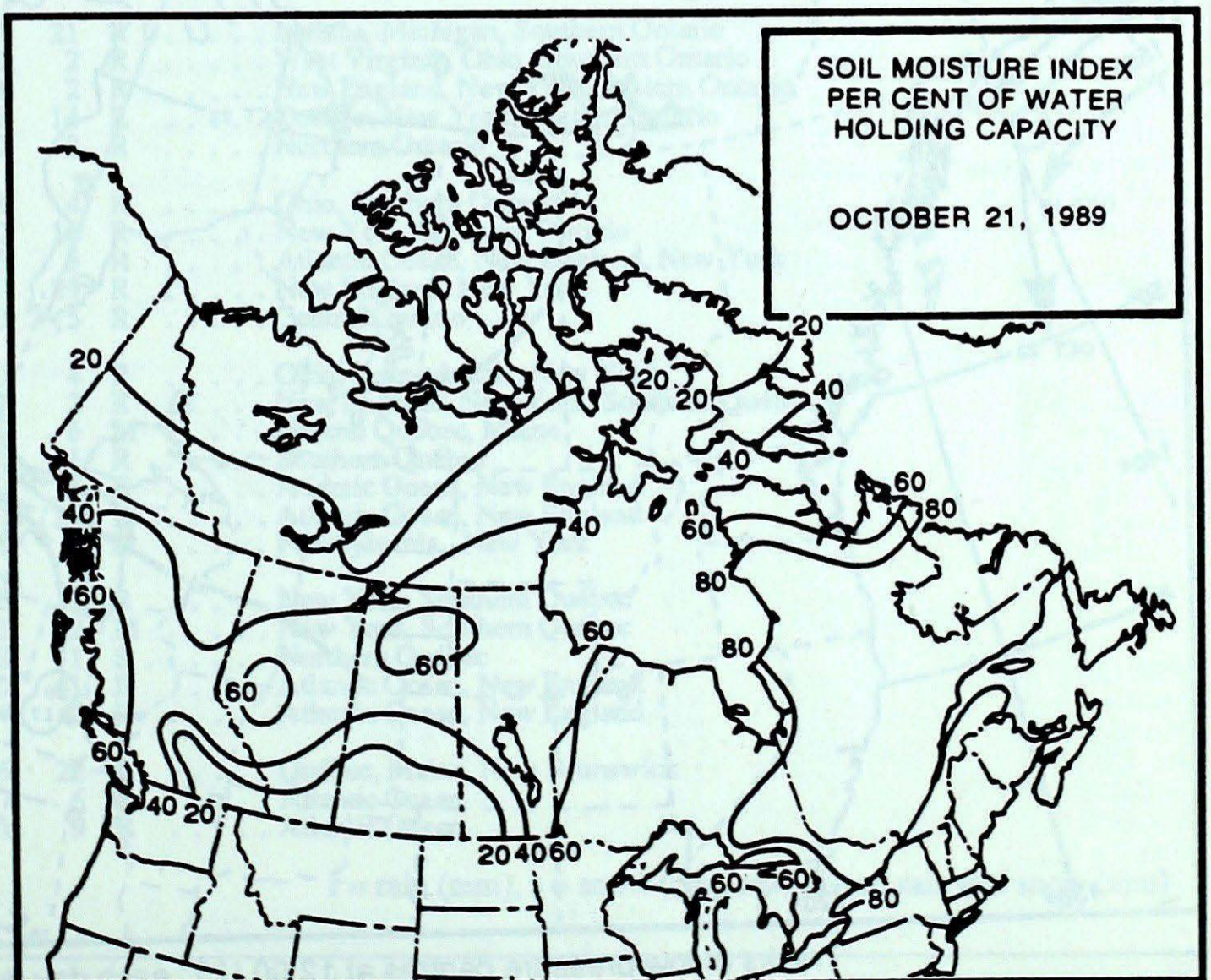
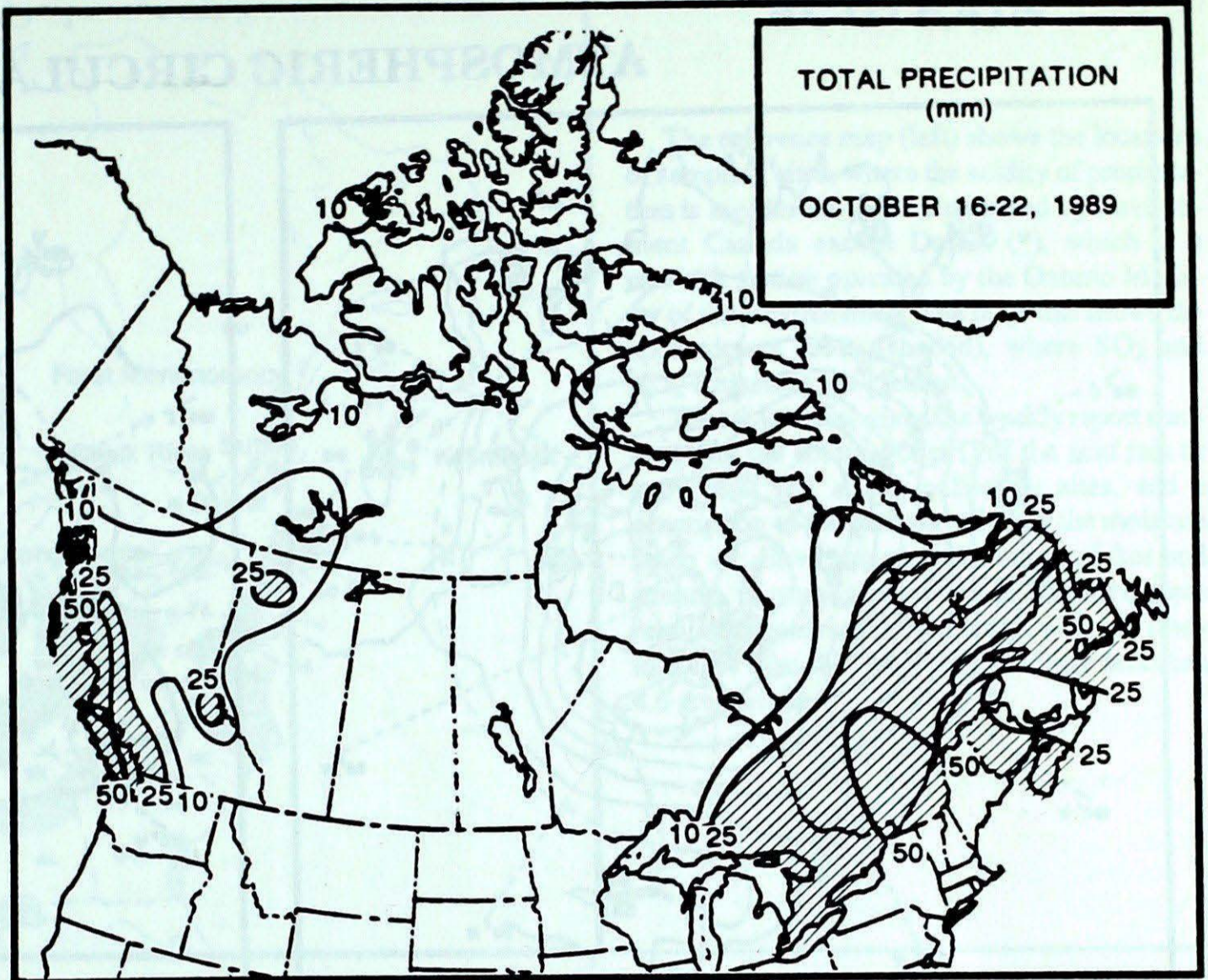
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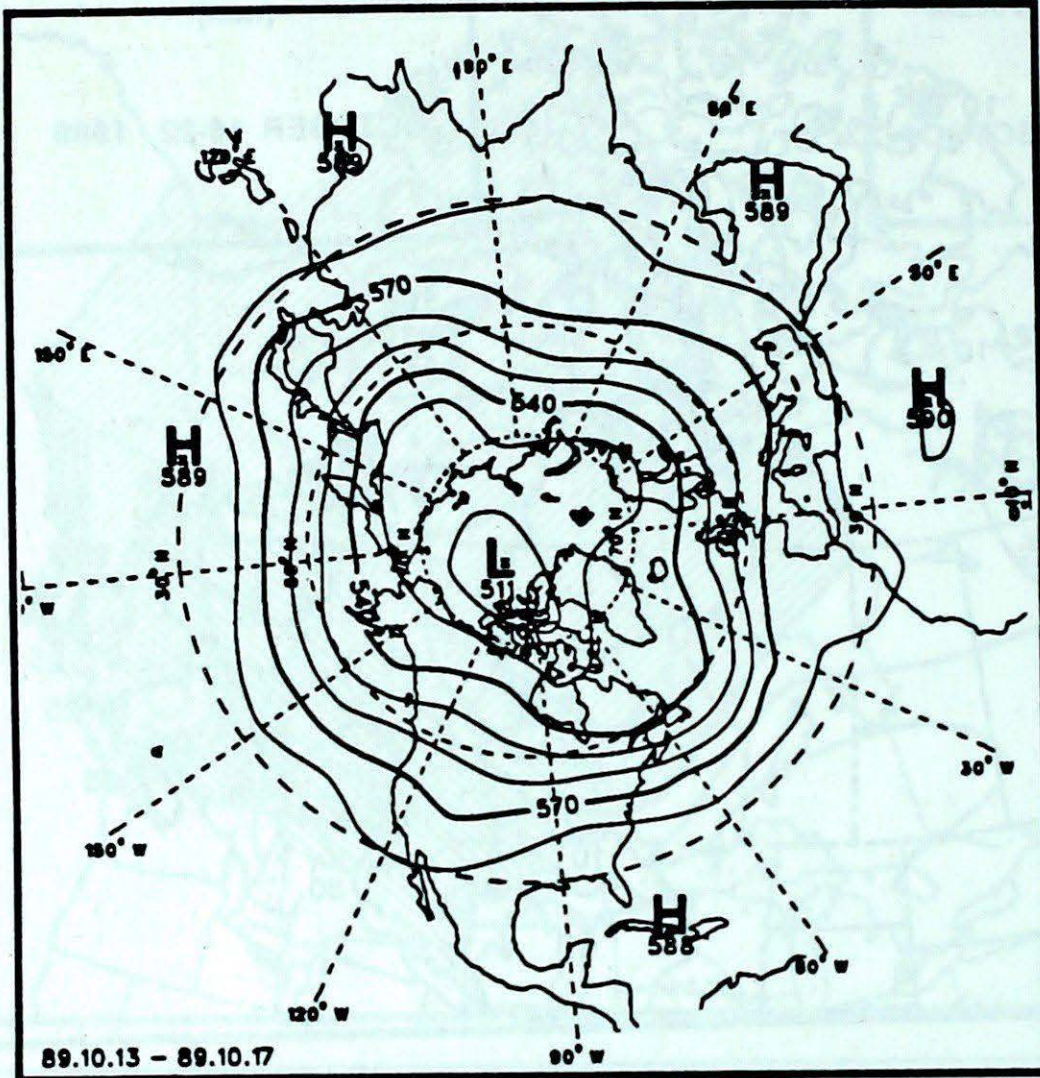
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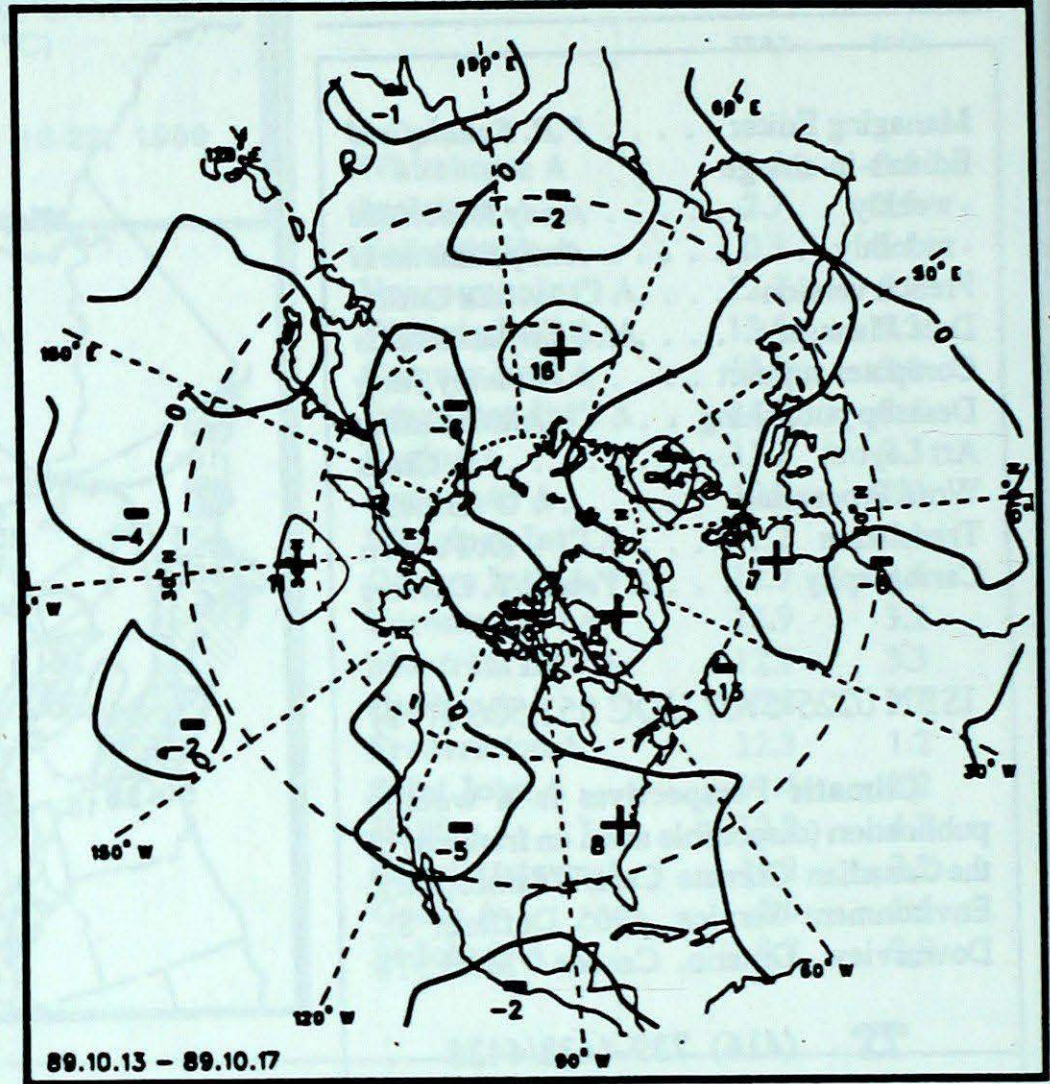
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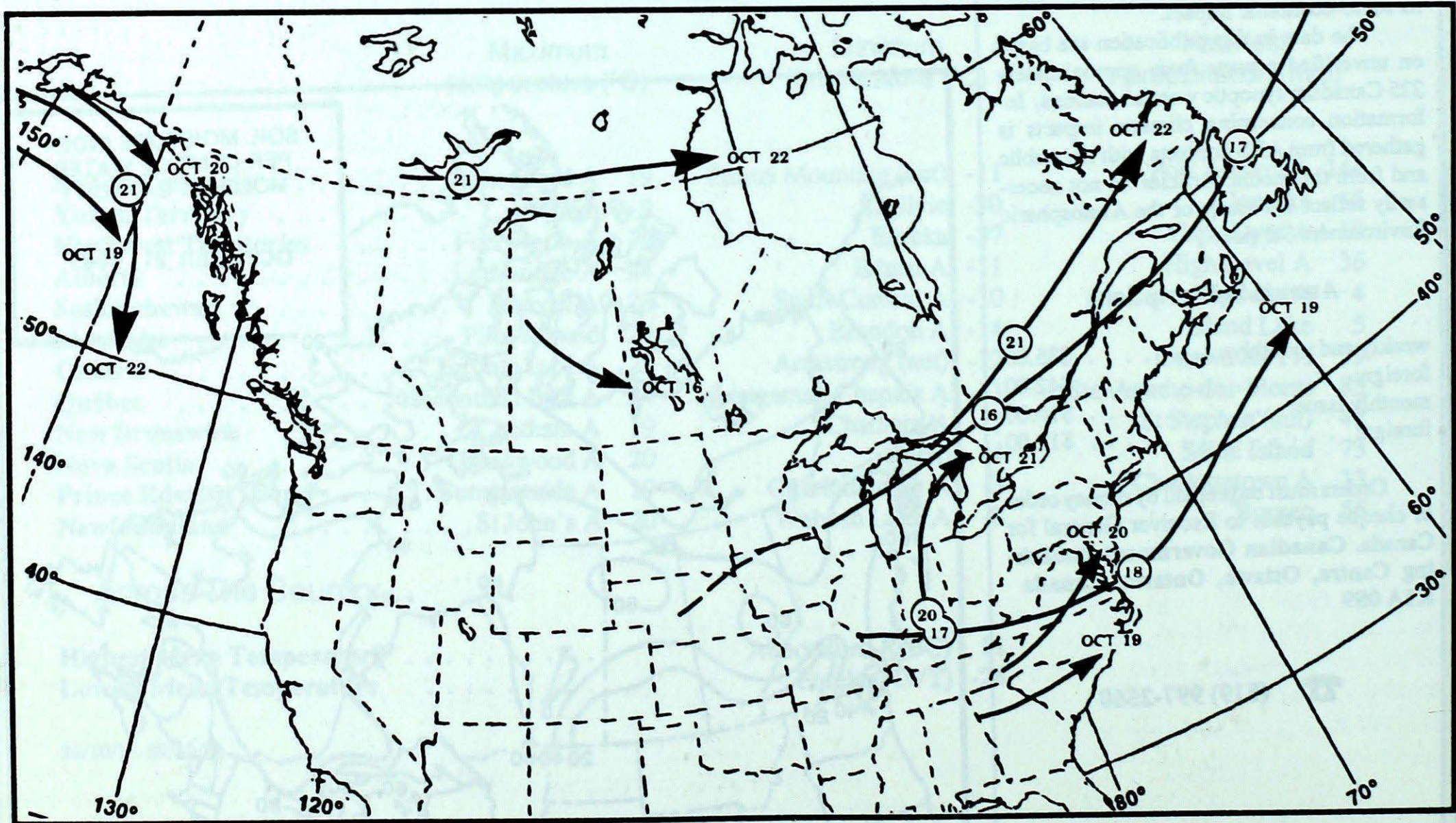
ATMOSPHERIC CIRCULATION



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.

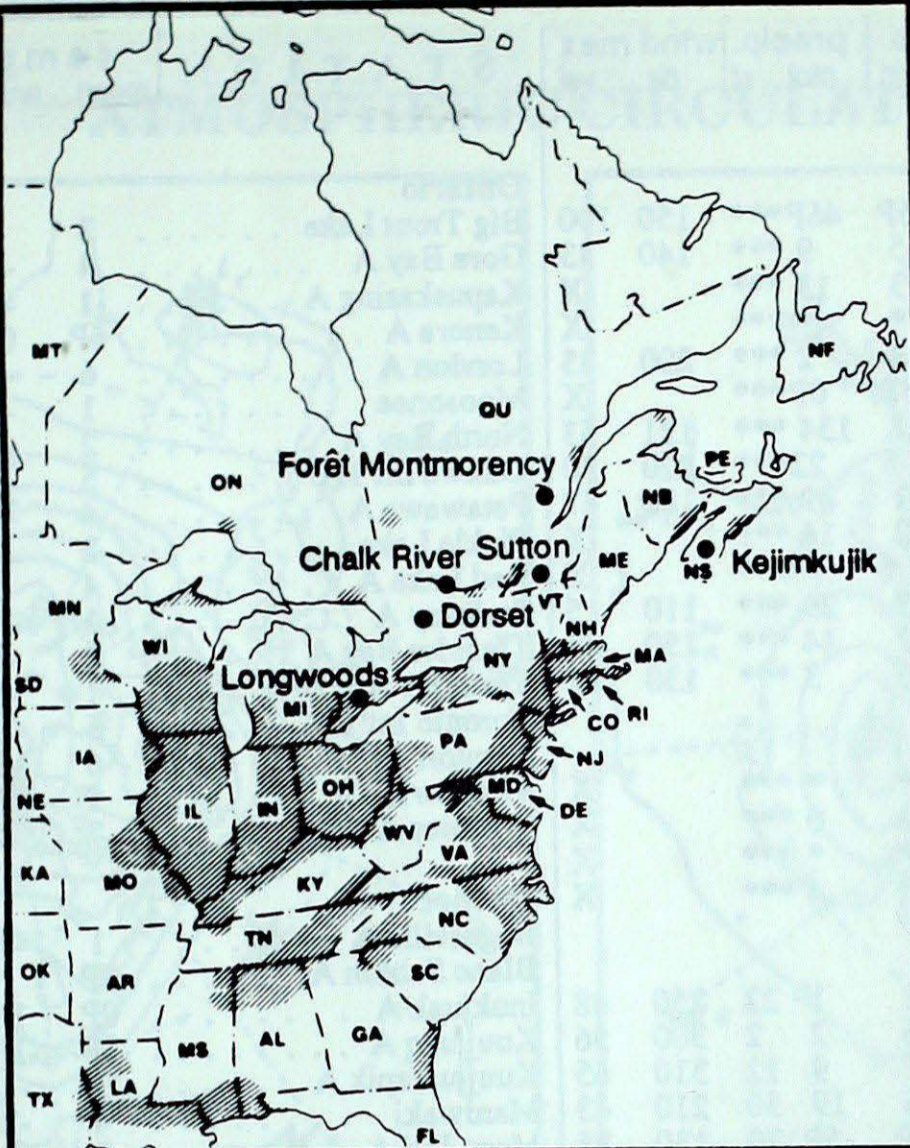
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ACID RAIN

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.

- ALABAMA — AL
- ARKANSAS — AR
- CONNECTICUT — CT
- 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



SITE day pH amount AIR PATH TO SITE

October 15 to October 21, 1989

SITE	day	pH	amount		AIR PATH TO SITE
Longwoods	16	4.0	2 R	.....	Kentucky, Ohio, Southern Ontario
	17	4.3	7 R	.....	North-eastern and Central Ontario
	19	4.1	9 M	.....	New England, New York, Southern Québec, Southern Ontario
	21	4.2	3 R	.....	Michigan, Southern Ontario
Dorset *	15	4.1	21 R	.....	Indiana, Michigan, Southern Ontario
	16	4.2	2 R	.....	West Virginia, Ohio, Southern Ontario
	19	4.4	2 R	.....	New England, New York, Eastern Ontario
	20	4.5	14 R	.....	Québec, New York, Eastern Ontario
	21	4.0	2 R	.....	Northern Ontario
Chalk River	15	3.8	4 R	.....	Ohio, Southern Ontario
	16	4.0	16 R	.....	New York, Southern Ontario
	19	4.5	3 R	.....	Atlantic Ocean, New England, New York
	20	4.7	29 R	.....	New England, New York
	21	4.0	5 R	.....	Central Ontario
Sutton	15	4.0	4 R	.....	Ohio, Pennsylvania, New York
	16	3.7	2 R	.....	New England, New York, Southern Québec
	17	4.5	6 M	.....	Central Québec, Maine
	18	4.3	1 R	.....	Southern Québec
	19	5.0	5 R	.....	Atlantic Ocean, New England
	20	4.7	35 R	.....	Atlantic Ocean, New England
Montmorency	21	3.8	7 R	.....	Pennsylvania, New York
	15	4.0	2 R	.....	New York, Southern Québec
	16	4.1	22 M	.....	New York, Southern Québec
	18	4.8	1 S	.....	Northern Québec
	20	5.0	41 R	.....	Atlantic Ocean, New England
Kejimikujik	21	4.4	9 R	.....	Atlantic Ocean, New England
	17	4.6	22 R	.....	Québec, Maine, New Brunswick
	20	4.7	6 R	.....	Atlantic Ocean
	21	5.1	9 R	.....	Atlantic Ocean

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

STATION	temperature				precip.		wind max		STATION	temperature				precip.		wind max								
	mean	anom	max	min	ptot	st	dir	vel		mean	anom	max	min	ptot	st	dir	vel							
British Columbia								Ontario																
Cape St James	9P	-1P	12P	5P	46P***		150	100	Big Trout Lake	3	1	12	-5	4 ***		210	54							
Cranbrook A	6	0	15	-5	9 ***		140	33	Gore Bay A	4	-4	12	-1	23 ***		050	65							
Fort Nelson A	.0	-1	9.8	-10.3	13 ***			X	Kapuskasing A	-1	-5	7	-8	39 16		320	65							
Fort St John A	*	*	*	*	***			X	Kenora A	6P	0P	16P	-2P	0P***		210	43							
Kamloops A	10	2	19	-4	2 ***		200	85	London A	6	-3	24	0	35 ***		060	65							
Penticton A	3P	-5P	16P	-3P	0P***			X	Moosonee	1	-3	9	-6	4 ***		340	54							
Port Hardy A	9	1	13	1	134 ***		121	63	North Bay A	2	-4	11	-4	32 1		080	48							
Prince George A	5	0	13	-8	22***		220	50	Ottawa Int'l A	5	-3	23	0	59 ***		290	48							
Prince Rupert A	8	0	13	-1	89 ***		180	67	Petawawa A	4	-1	15	-3	42 ***		300	46							
Revelstoke A	6	0	11	-2	16 ***			X	Pickle Lake	2	-1	15	-6	0 1		230	48							
Smithers A	*	*	*	*	***			X	Red Lake A	4	0	19	-3	1 ***		220	48							
Vancouver Int'l A	11	2	15	3	29 ***		110	5	Sudbury A	1	-4	11	-4	26 ***		020	61							
Victoria Int'l A	10	0	16	1	14 ***		150	43	Thunder Bay A	2	-4	15	-9	0 ***		020	35							
Williams Lake A	7	3	14	-5	3 ***		130	67	Timmins A	-1	-5	5	-10	28 5		300	61							
Yukon Territory								Toronto Int'l A																
Komakuk Beach A	*	*	*	*	***			X	Trenton A	6	-2	25	1	40 ***		340	56							
Teslin (aut)	0	*	7	-10	0 ***			X	Warton A	5	-3	19	0	13 ***		070	56							
Watson Lake A	*	*	*	*	***			X	Windsor A	7	-4	25	0	36 ***		050	65							
Whitehorse A	.0	0	*	*	4 ***			X	Québec															
Northwest Territories								Bagotville A																
Alert	-24	-3	-15	-31	1 22		250	48	Blanc Sablon A	0P	*	11P	-8P	6P***		020	61							
Baker Lake A	-5	4	3	-16	2 2		300	56	Inukjuak A	0P	1P	4P	-7P	4P 1		240	61							
Cambridge Bay A	-10	4	-1	-21	9 12		310	65	Kuujuuaq A	-3P	-1P	3P	-8P	14P 3		280	63							
Cape Dyer A	-8	1	-2	-16	19 50		210	43	Kuujuuarapik A	1	-1	7	-5	7 ***		220	61							
Clyde A	-9P	-2P	-3P	-20P	5P 20		130	35	Maniwaki	4	-2	15	-3	53 ***		330	43							
Coppermine A	-5	3	3	-12	10 2		250	70	Mont Joli A	3	-2	19	-7	45 ***		060	35							
Coral Harbour A	-8P	1P	0P	-21P	3P 11		200	52	Montréal Int'l A	6	-2	24	0	84 ***		230								
Eureka	-24	0	-11	-37	1 12		170	52	Natashquan A	1P	-3P	11P	-10P	24P***		360	48							
Fort Smith A	3	4	12	-4	14 ***		170	48	Québec A	4	-2	8	-1	72 ***		070	59							
Hall Beach A	-9P	2P	-2P	-19P	5P 25		330	78	Schefferville A	-4	-2	6	-10	28 26		250	74							
Inuvik A	*	*	*	*	***			X	Sept-Îles A	-1	-4	10	-11	30 ***		080	50							
Iqaluit A	-8	-2	0	-16	4 7		130	46	Sherbrooke A	6	-1	20	-2	30 ***		120	57							
Mould Bay A	-19	0	-10	-27	11 16		090	46	Val-d'Or A	0	-4	5	-9	32 2		350	48							
Norman Wells A	-4	2	3	-14	3 5		130	37	New Brunswick															
Resolute A	-17	0	-9	-28	4 ***		110	74	Charlo A	3	-2	11	-7	29 ***		100	44							
Yellowknife A	2	4	7	-3	13 ***		150	52	Chatham A	5	-2	19	-7	19 ***		320	61							
Alberta								Fredericton A																
Calgary Int'l A	7	2	20	-7	0 ***		180	56	Moncton A	4P	-3P	19P	-4P	2P***		340	48							
Cold Lake A	7	2	18	-5	0 ***		160	43	Saint John A	6	-1	17	-1	23 ***		180	72							
Edmonton Namao A	7	2	19	-7	0 ***		160	65	Nova Scotia															
Fort McMurray A	5	2	15	-4	***		160	44	Greenwood A	7	-1	20	-4	23 ***		160	57							
High Level A	2P	0P	10P	-3P	36P***		330	33	Shearwater A	7	-2	17	0	28 ***		160	48							
Jasper	4	0	13	-9	3 ***			X	Sydney A	6	-2	17	-3	22 ***		180	41							
Lethbridge A	9	2	24	-8	0 ***		240	65	Yarmouth A	9	0	19	3	50 ***		150	72							
Medicine Hat A	10	3	23	-7	0 ***		180	74	Prince Edward Island															
Peace River A	3	0	12	-10	7 ***			X	Charlottetown A	6	-1	19	-3	13 ***		310	56							
Saskatchewan								Summerside A																
Cree Lake	4	2	14	-4	0 ***		200	48	7	-1	19	-1	11 ***		160	57								
Estevan A	5	-1	23	-10	0 ***		210	50	Newfoundland															
La Ronge A	4	2	16	-7	0 ***		180	43	Cartwright	2	-1	10	-3	24 ***		290	54							
Regina A	6	1	21	-7	0 ***		190	59	Churchill Falls A	-2	1	10	-8	29 1		320	4							
Saskatoon A	7	3	19	-6	0 ***		180	69	Gander Int'l A	5	-1	16	-2	21 ***		300	85							
Swift Current A	6	1	19	-10	0 ***		180	85	Goose A	2	-1	14	-5	30 ***		260	50							
Yorkton A	5	1	23	-7	0 ***		200	48	Port Aux Basques	5	-2	11	0	46 ***		300	83							
Manitoba								St John's A																
Brandon A	4	-1	22	-14	0 ***		240	67	St Lawrence	6	-1	15	-2	16 ***			X							
Churchill A	0	2	6	-8	1 ***		220	61	Wabush Lake A	-2	0	9	-8	40 ***		350	50							
Lynn Lake A	3	4	13	-6	2 ***		190	44	89/10/16-89/10/22															
The Pas A	5	2	17	-5	0 ***		200	56																
Thompson A	3	4	16	-10	0 ***		200	54																
Winnipeg Int'l A	5	0	21	-7	3 ***		190	52																

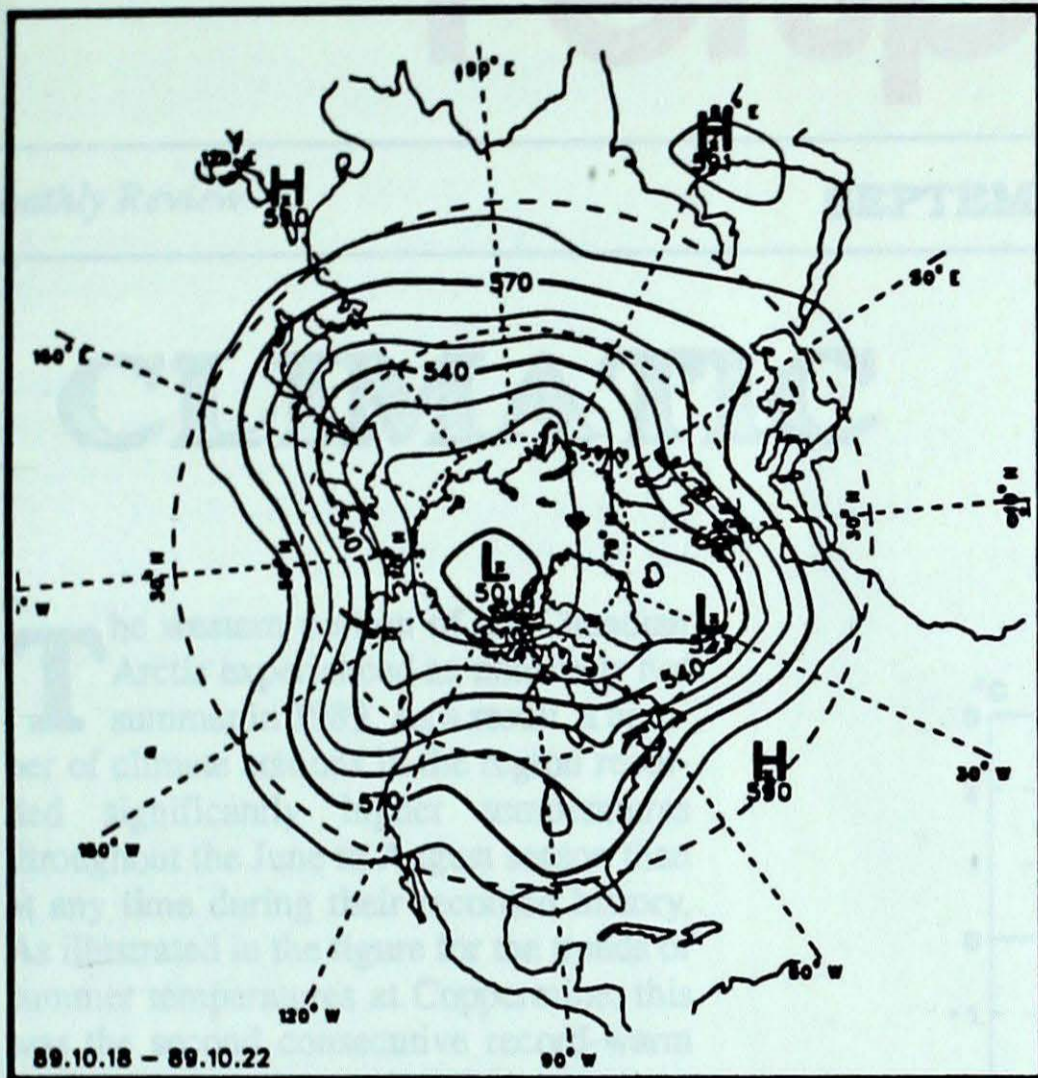
mean = mean weekly temperature, °C
 max = maximum weekly temperature, °C
 min = minimum weekly temperature, °C
 anom = mean temperature anomaly, °C

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

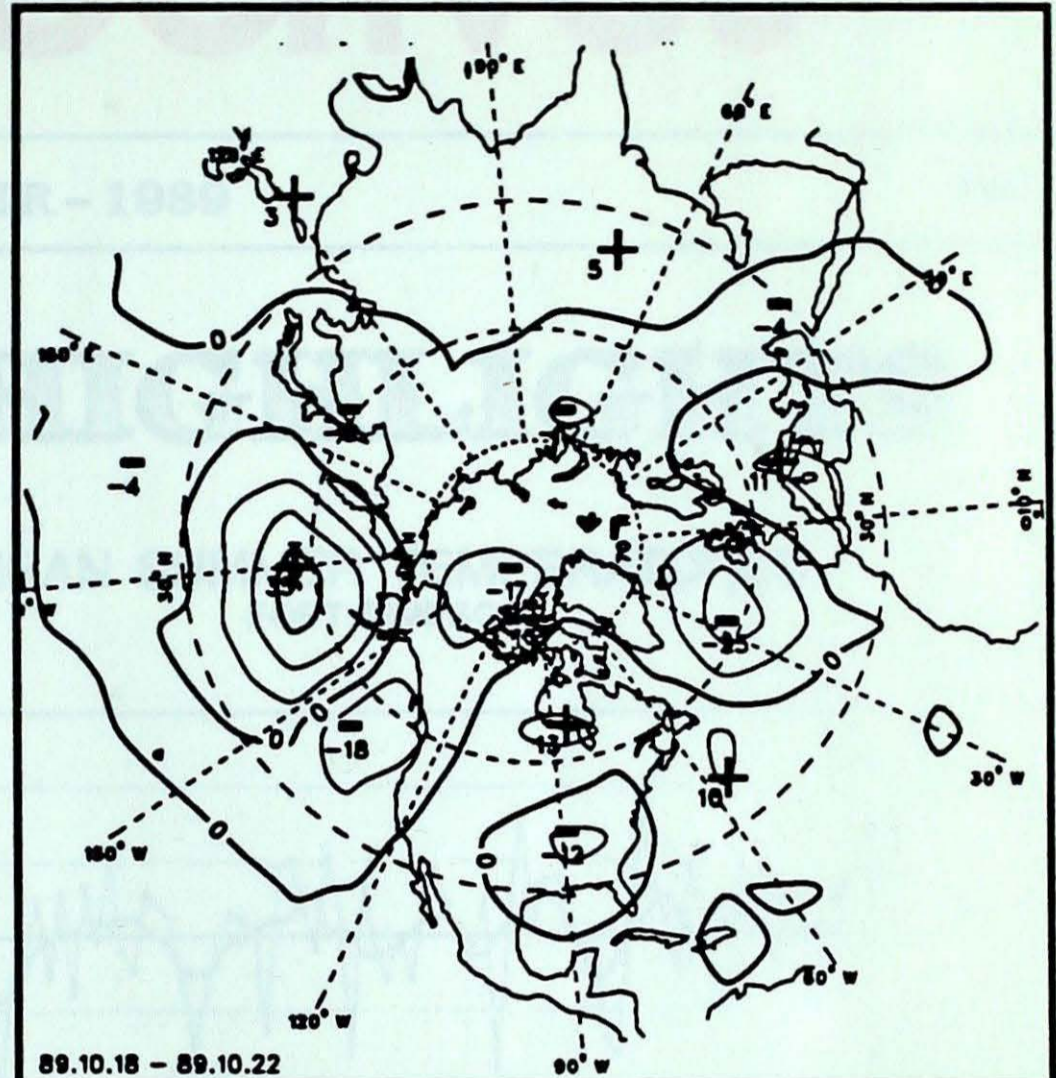
— Annotations —

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)



Environnement Canada
Service de l'environnement atmosphérique

MONTHLY TEMPERATURE FORECAST

Normal temperatures for mid-October to mid-November, °C

Whitehorse	-4	Toronto	6
Yellowknife	-8	Ottawa	5
Iqaluit	-9	Montréal	5
Vancouver	8	Québec	3
Victoria	8	Fredericton	4
Calgary	1	Halifax	7
Edmonton	0	Charlottetown	6
Regina	0	Goose Bay	1
Winnipeg	1	St. John's	5

Canada

