Environment Canada Environnement Canada

Climatic Perspectives

April 15 to 21, 1991 **A weekly review of Canadian climate and water** *Vol.13 No.16*

Prairies need soil moisture recharge

Low spring soil moisture levels across the southern Prairies means that this year's crop will require timely growing season rainfalls.

Below normal precipitation during the soil recharge period, September to March, has generally led to critical soil moisture reserves this spring. Levels are lower than at the start of the 1990 growing season, and in fact are more reminiscent of 1989. While eastern Saskatchewan and Manitoba have had shower activity lately, it has remained dry in southern Alberta and southwestern Saskatchewan. The poorest conditions are in the Palliser Triangle region. The probability of receiving enough moisture during the growing season to produce wheat, the dominant crop on the Prairies, is less than 50 percent, depending on the location. Perennial forage and pastures require even higher moisture input than annual crops, as these plants begin to use moisture early in the season. This implies that 1991 feed production will be almost totally dependent on spring and summer rainfalls.

More heavy rain in Ontario and Quebec

Another storm produced copious amounts of rain across the lower Great Lakes and St. Lawrence Valley, where soils are already saturated, resulting in rapid runoff.

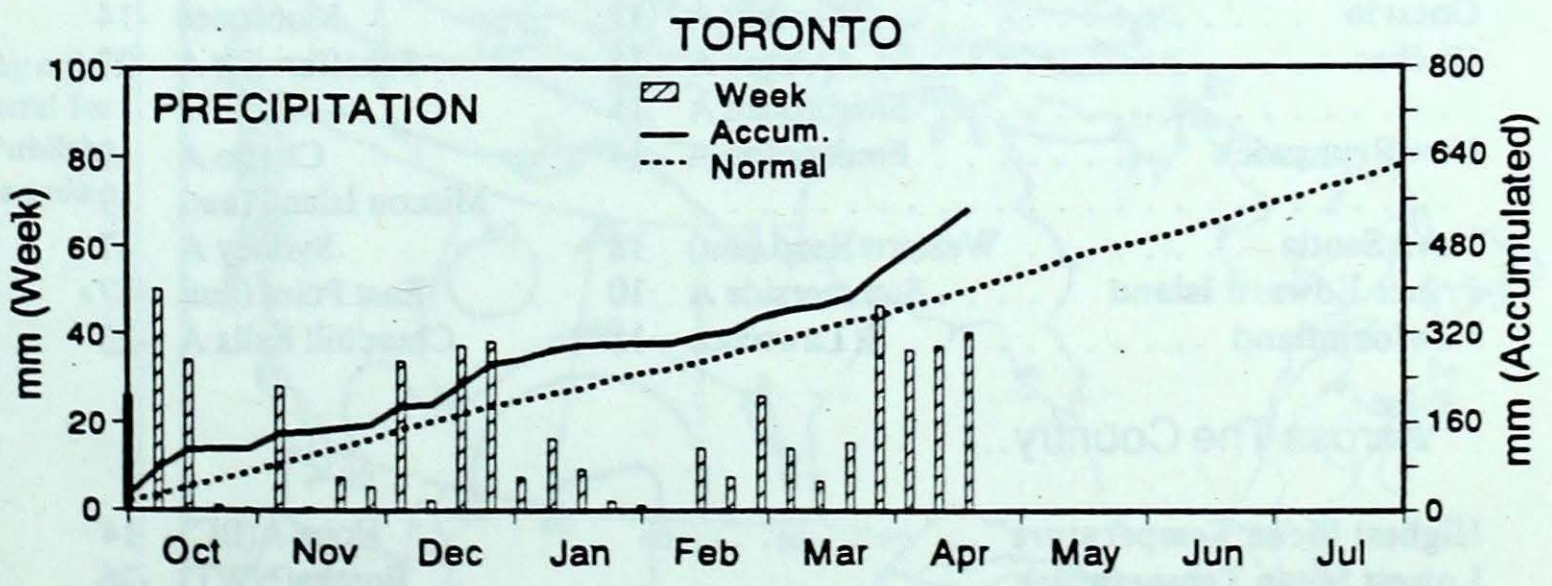
In the Montreal region five new 24-hour rainfall records were established this week. Montreal's 40.4 mm of rain on April 21, is a new daily record for April, breaking the previous rainfall record of 34.5 mm set April 2, 1979. In addition, winds gusting to 115 km/h whipped Montreal and Quebec City on April 22, causing a significant amount of damage to buildings, power lines and trees.

In Ontario, Muskoka has already established a new all-time April precipitation record of 167 mm, exceeding the former total of 131 mm set in 1938. At Toronto, the 130 mm of precipitation recorded in the first 21 days of this month, makes this the wettest April since 1929, and the 3rd wettest in the city's 151 year weather history. Only April 1929 and 1909 were wetter, with 154.7 and 137.4 millimetres, respectively.

The recent rainfalls are causing many flooding concerns in the province. Lake Simcoe is continuing to rise, and dykes protecting the fertile Holland Marsh at the south end of Cooks Bay are being threatened. Minor damage has already occurred to dykes in the Keswick Marsh area, just to the east. Heavy discharges from Lake Simcoe are keeping the Severn River high. In fact, the whole Trent-Severn watershed is particularly sensitive to more flooding. Rivers in the Kawarthas, northeast of Toronto, are still running high. The Otonabee River flowing through Peterborough is at flood stage, with major flooding occurring south of the city.

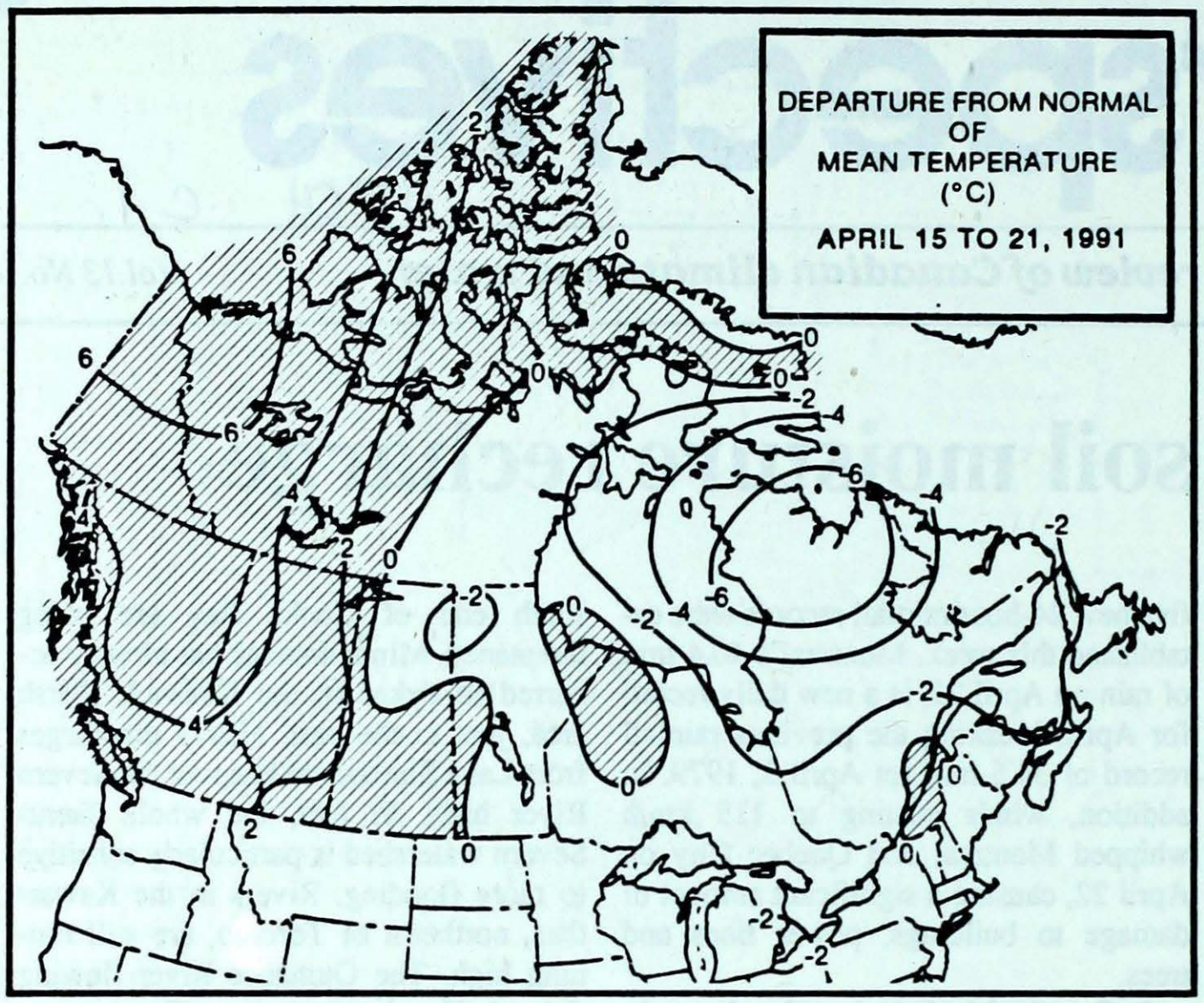
A look ahead ...

For the week of April 29, the high pressure area previously over the Arctic is expected to move to the east coast, ending the mild temperature regime in western Canada. This situation should result in a southerly air flow bringing mild temperatures to the Atlantic provinces, Quebec and Ontario. Western regions will experience near to below normal readings.



Accumulated precipitation since last October, 1990, has been consistently above average

Canada



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	5.4	-4.9
Iqaluit A	-9.2	-19.4
Yellowknife A	-0.3	-11.2
Vancouver Int'l A	12.4	4.6
Victoria Int'l A	12.4	3.7
Calgary Int'l A	9.0	-2.9
Edmonton Int'l A	8.5	-2.6
Regina A	10.3	-2.4
Saskatoon A	9.6	-1.9
Winnipeg Int'l A	10.5	-0.5
Ottawa Int'l A	13.0	1.6
Toronto (Pearson Int'l A)	13.4	1.8
Montréal Int'l A	12.9	1.9
Québec A	9.4	-0.6
Fredericton A	10.9	-1.0
Saint John A	9.1	-1.2
Halifax (Shearwater)	9.0	0.4
Charlottetown A	7.1	-1.3
Goose A	3.6	-5.8
St John's A	4.7	-1.9

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Kamloops A	27	Puntzi Mountain (aut)	-6	Estevan Point (aut)	1
Yukon Territory	Watson Lake A	16	Komakuk Beach A	-22	Shingle Point A	2
Northwest Territories	Fort Simpson A	16	Hall Beach A	-34	Cape Dyer A	37
Alberta	Grande Prairie A	23	Banff (aut)	-7	No precipitation	
Saskatchewan	Meadow Lake A	21	Collins Bay	-18	Swift Current A	8
Manitoba	Brandon A	18	Churchill A	-21	Thompson A	16
Ontario	Windsor A	17	Moosonee	-14	Ottawa Int'l A	57
Québec	Québec A	15	Schefferville A	-27	Montréal Int'l A	72
	Sherbrooke A	15				
New Brunswick	Fredericton A	14	Charlo A	-9	St Stephen (aut)	38
			Miscou Island (aut)	-9		
Nova Scotia	Western Head (aut)	18	Sydney A	-7	Yarmouth A	73
Prince Edward Island	Summerside A	10	East Point (aut)	-7	Summerside A	4
Newfoundland	St Lawrence	18	Churchill Falls A	-23	Cartwright	22

Across The Country...

Highest Mean Temperature	Hope A(BC)	14
Lowest Mean Temperature	Eureka(NWT)	-26

91/04/15-91/04/21

CLIMATIC PERSPECTIVES
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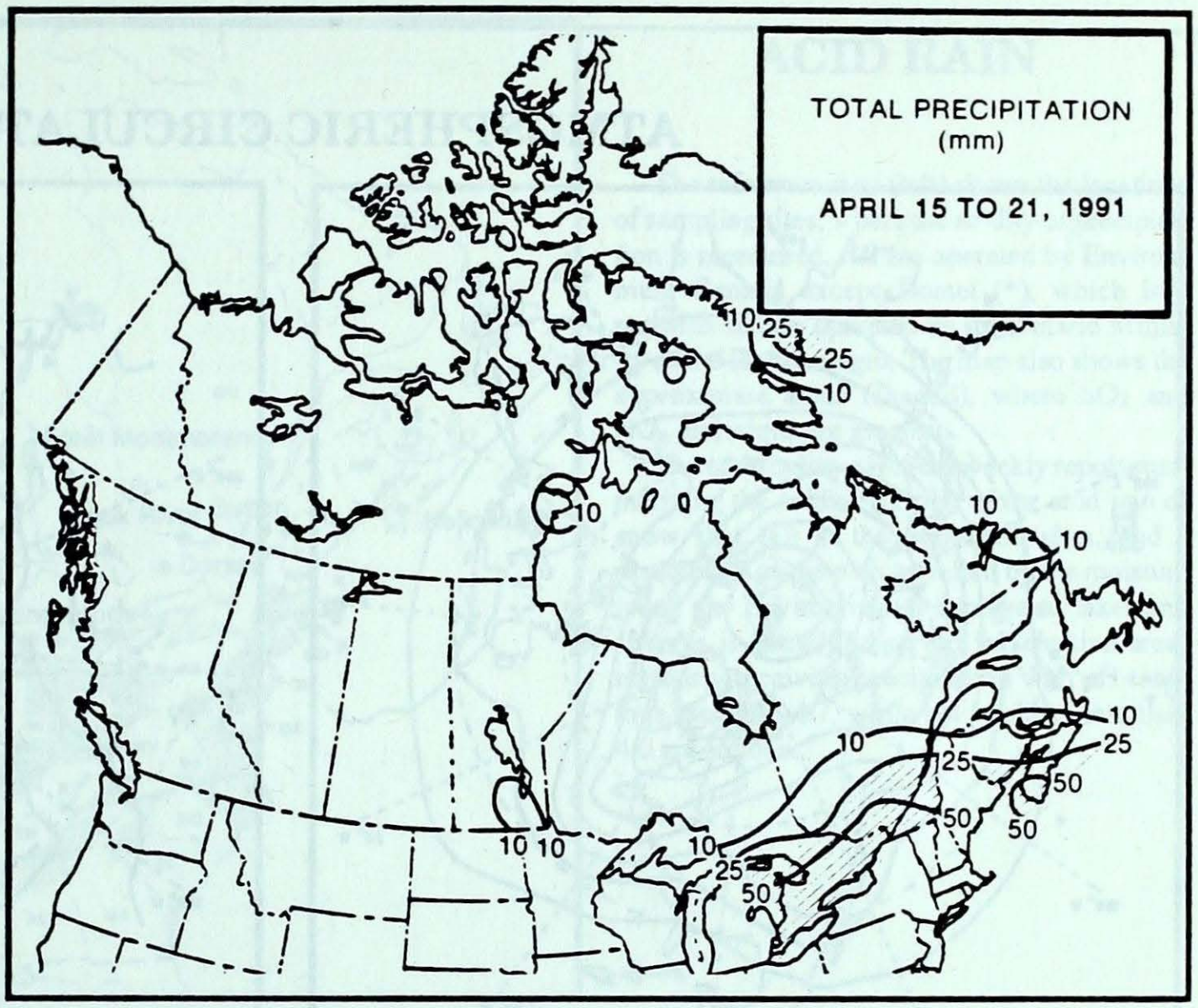
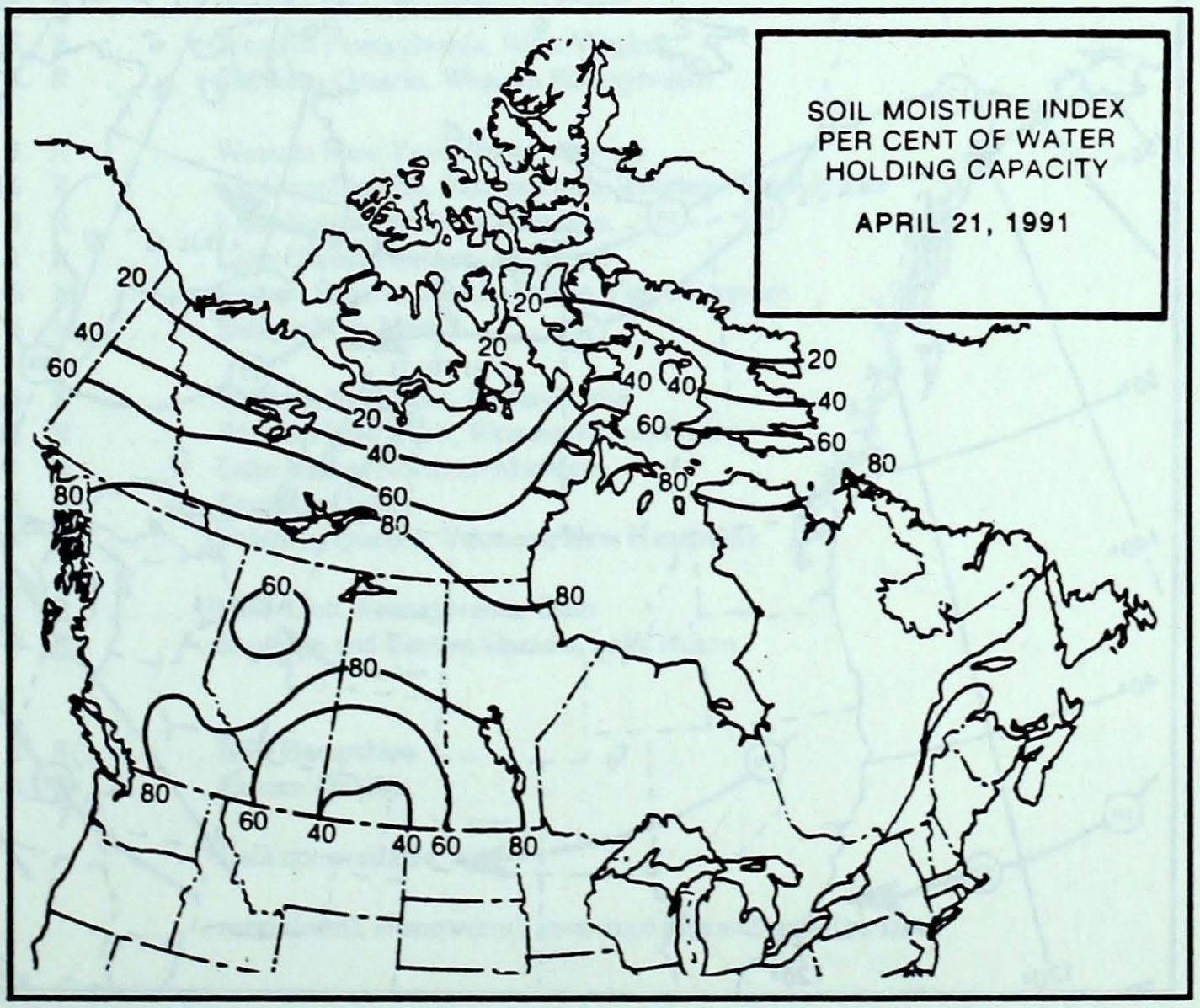
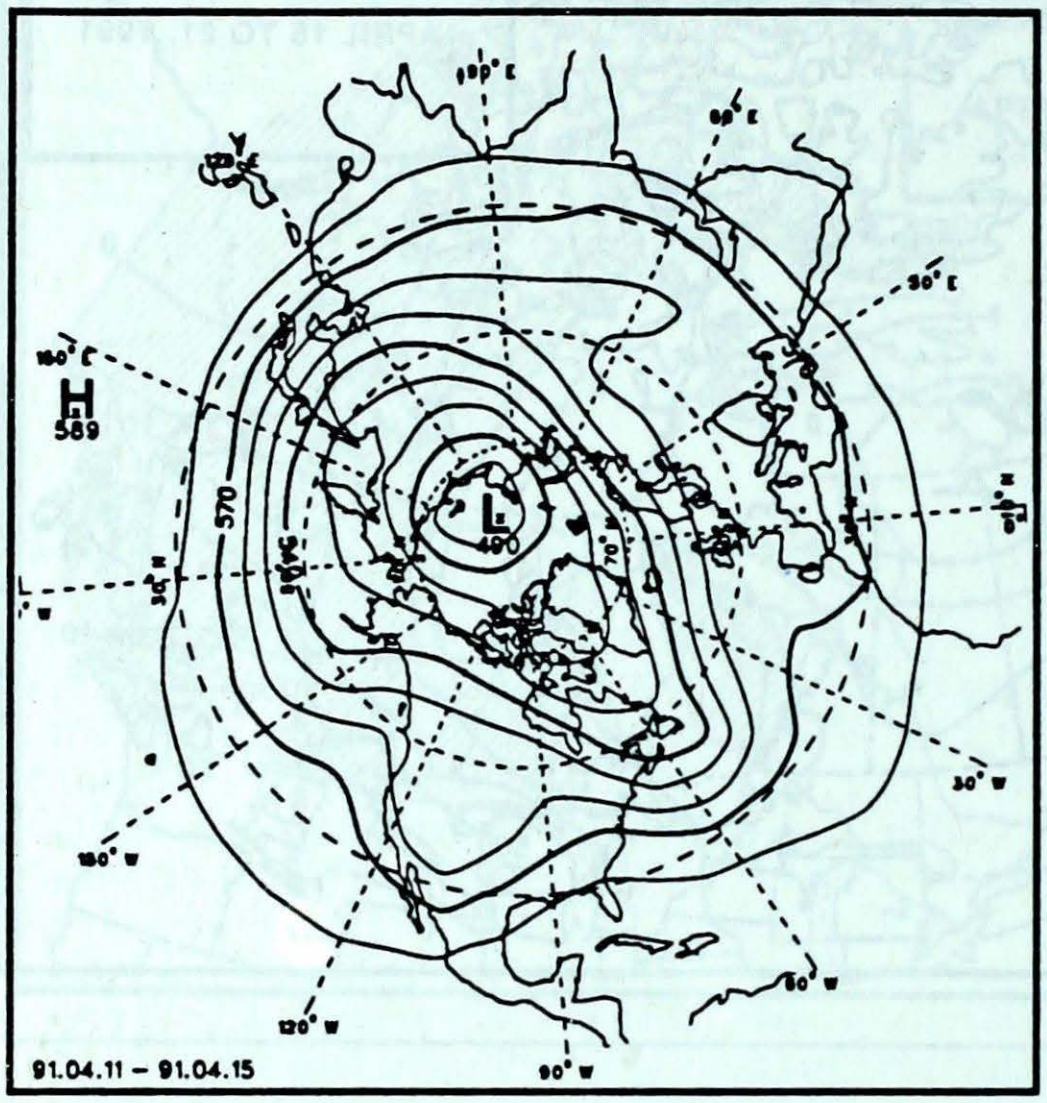
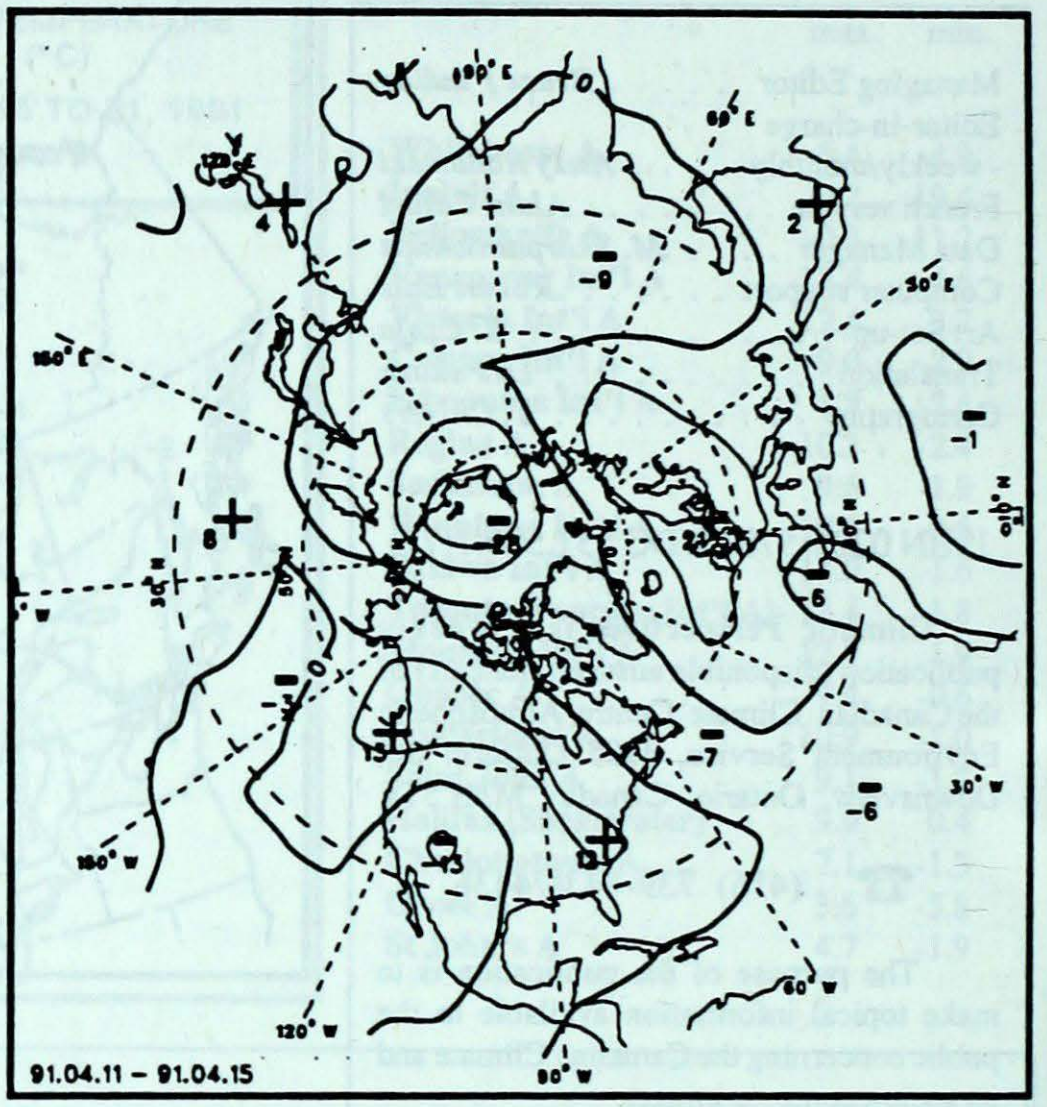




ATMOSPHERIC CIRCULATION



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



Mean geopotential height anomaly
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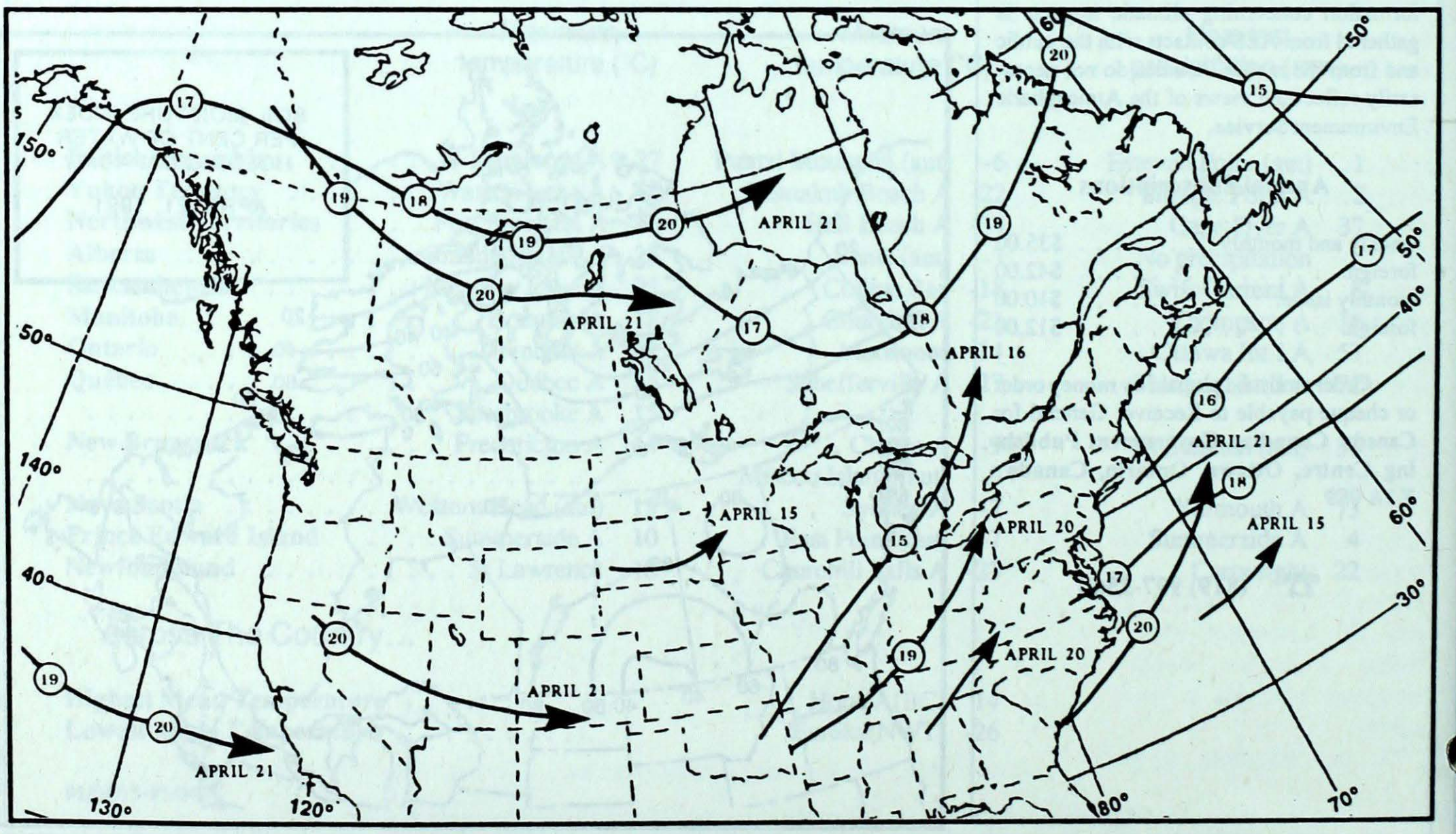
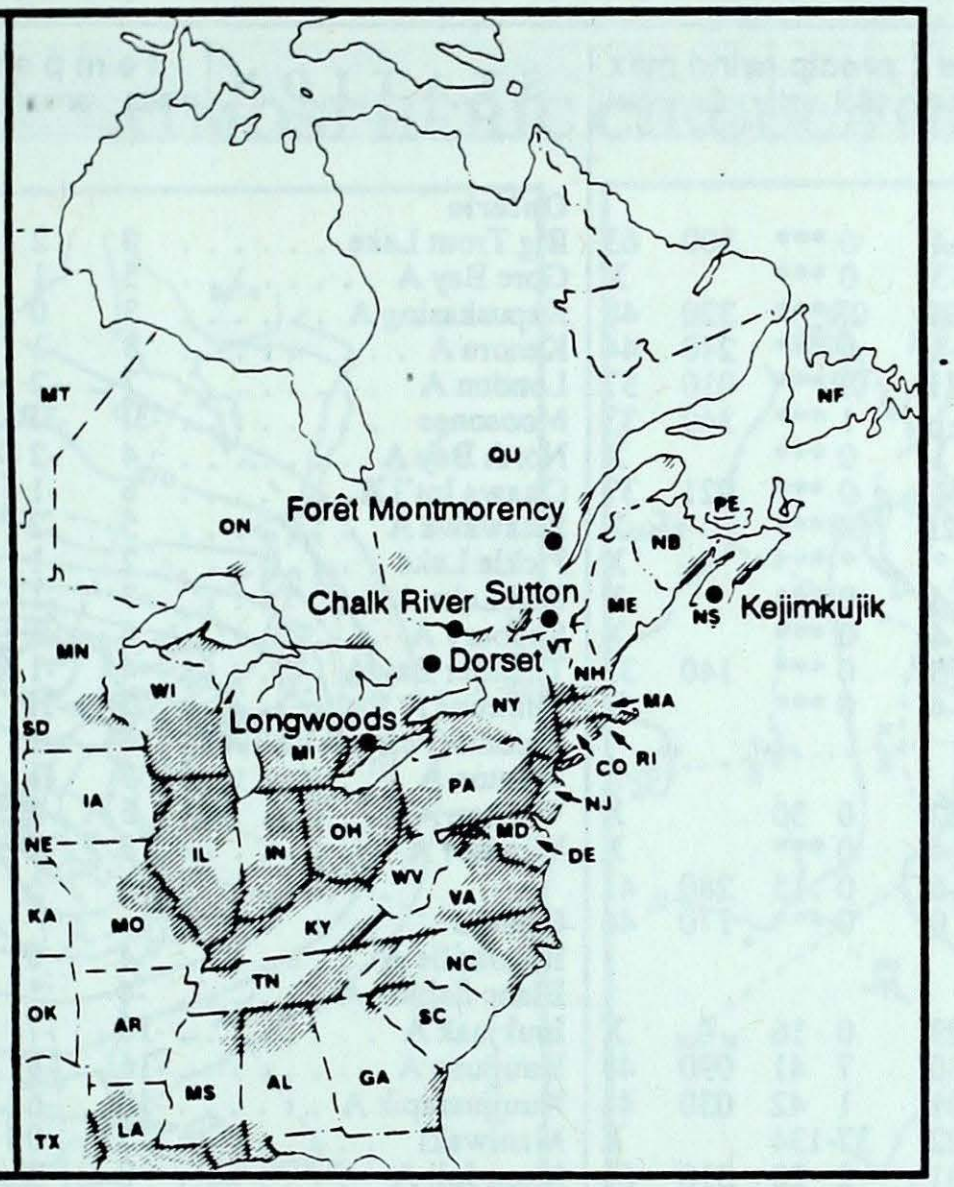


Tracks of low pressure centres at 12:00 U.T. each day during the period.

ALABAMA	—	AL
ARKANSAS	—	AR
CONNECTICUT	—	CO
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



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
					April 14 to 20, 1991
Longwoods	14	4.6	8	R	. . . . . Ohio, Eastern Kentucky
	15	4.0	8	R	. . . . . Western Ohio, Kentucky
	19	4.0	23	R	. . . . . Western Pennsylvania, West Virginia
	20	3.8	8	R	. . . . . Southern Ontario, Western Pennsylvania
Dorset*	14	4.1	3	R	. . . . . Western New York, Pennsylvania
	15	4.3	16	R	. . . . . Southern Ontario, Eastern Ohio, Western Pennsylvania
	16	4.5	4	R	. . . . . Lake Huron, Northern Michigan
	17	4.0	1	R	. . . . . Lake Huron, Northern Michigan
	19	4.4	6	M	. . . . . Eastern Ontario, Northern New York, Vermont
	20	4.4	5	M	. . . . . Eastern New York
Chalk River	14	4.1	3	R	. . . . . Western New York, Pennsylvania
	15	4.2	11	R	. . . . . Western New York, Western Pennsylvania
	17	4.2	1	R	. . . . . Lake Huron, Northern Michigan
	19	4.1	8	M	. . . . . Southern Quebec
	20	4.0	4	R	. . . . . Southern Quebec, Vermont, New Hampshire
Sutton	15	5.0	11	R	. . . . . New York, Pennsylvania, Ohio
	16	4.9	7	R	. . . . . Southern and Eastern Ontario, Lake Huron
Montmorency	15	4.5	2	S	. . . . . New Hampshire
	20	4.7	4	S	. . . . . Eastern Quebec
Kejimkujik					. . . . . Data not available
					. . . . . 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								
Cape St James	7	1	13	4	0	***	300	63
Cranbrook A	8	3	21	-3	0	***		X
Fort Nelson A	8P	6P	20P	-2P	0P	***	320	48
Fort St John A	10	7	22	-3	0	***	240	44
Kamloops A	13P	4P	27P	1P	0P	***	010	37
Penticton A	11	3	22	-1	1	***	340	33
Port Hardy A	7	0	16	1	0	***		X
Prince George A	8	4	22	-4	0	***	021	37
Prince Rupert A	5P	1P	16P	-2P	0P	***		X
Revelstoke A	*	*	*	*	*	***		X
Smithers A	9	5	21	-4	0	***		X
Vancouver Int'l A	11	2	17	4	0	***		X
Victoria Int'l A	10	2	20	3	0	***	140	33
Williams Lake A	8	4	21	-4	0	***		X
Yukon Territory								
Komakuk Beach A	-12	6	-6	-22	0	30		X
Teslin (aut)	4	400	12	-4	0	***		X
Watson Lake A	5	6	16	-6	0	15	280	41
Whitehorse A	6	6	12	0	0	***	170	46
Northwest Territories								
Alert	-23	0	-16	-29	0	16		X
Baker Lake A	-18	-2	-7	-30	7	41	090	48
Cambridge Bay A	-20	0	-10	-31	1	42	030	44
Cape Dyer A	-15	1	-9	-22	37	134		X
Clyde A	-19	0	-10	-31	2	20	310	61
Coppermine A	-12	4	-2	-21	0	95	210	63
Coral Harbour A	-19	-4	-8	-34	1	45	330	48
Eureka	-26	0	-18	-32	0	19		X
Fort Smith A	1	2	12	-11	2	9	310	39
Hall Beach A	-21	0	-10	-34	0	33	340	50
Inuvik A	-4	10	7	-17	4	42		X
Iqaluit A	-20	-5	-12	-27	2	40	330	74
Mould Bay A	-18	6	-11	-27	4	22	160	50
Norman Wells A	2	8	11	-6	2	9	120	46
Resolute A	-21	1	-14	-29	0	16	110	57
Yellowknife A	-4	2	5	-15	5	36	100	50
Alberta								
Calgary Int'l A	5	2	20	-7	0	***	360	52
Cold Lake A	7	3	20	-4	0	***	310	39
Edmonton Namao A	7	3	19	-4	0	***	360	46
Fort McMurray A	6	4	20	-7	0	***	250	35
High Level A	6	3	19	-3	0	1		X
Jasper	7	4	20	-5	0	***		X
Lethbridge A	6	1	20	-6	0	***	010	52
Medicine Hat A	8	2	21	-3	0	***	340	33
Peace River A	9	6	22	-4	0	***	270	43
Saskatchewan								
Cree Lake	0	-1	14	-14	0	1	310	44
Estevan A	5	0	18	-5	7	***	320	65
La Ronge A	4	2	21	-8	0	***	300	39
Regina A	6	2	17	-4	2	***	320	61
Saskatoon A	6	2	19	-4	2	***	340	33
Swift Current A	5	1	17	-4	8	***	340	52
Yorkton A	4	1	15	-7	2	***	360	44
Manitoba								
Brandon A	4	-1	18	-7	6	***	220	59
Churchill A	-8	0	0	-21	5	10	160	48
Lynn Lake A	-1	-1	15	-16	1	***	350	52
The Pas A	3	2	16	-11	3	***	310	56
Thompson A	-1	-1	13	-15	16	1	210	54
Winnipeg Int'l A	4	-1	17	-8	11	***	320	67

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	0	2	10	-13	0	1	100	41
Gore Bay A	5	-1	14	-1	27	***	040	56
Kapuskasing A	3	0	14	-9	2	***		X
Kenora A	3	-1	13	-6	0	***		X
London A	7	-2	15	-2	34	***	220	96
Moosonee	-3P	-3P	9P	-14P	1P	***	340	43
North Bay A	4	-2	12	-2	22	1	040	52
Ottawa Int'l A	6	-1	15	2	57	***	030	56
Petawawa A	5	-2	12	1	34	***	050	50
Pickle Lake	2	1	14	-7	2	1	180	39
Red Lake A	3	-1	13	-8	2	***	200	41
Sudbury A	4	-1	12	-4	20	***	040	46
Thunder Bay A	4	-1	15	-8	2	***		X
Timmins A	2P	-1P	14P	-9P	4P	3	340	44
Toronto(Pearson Int'l A)	6	-1	13	0	50	***	230	76
Trenton A	7	-1	14	2	38	***	010	74
Wiarton A	5	-2	14	0	47	***	240	59
Windsor A	8	-2	17	1	52	***	220	87
Québec								
Bagotville A	4	0	13	-3	8	17	110	50
Blanc Sablon A	-4	*	4	-13	0	22	340	59
Inukjuak A	-16	-7	-3	-25	1	39	200	54
Kuujjuaq A	-16	-8	-1	-24	3	22	300	43
Kuujjuarapik A	-10	-6	5	-19	0	27	100	46
Maniwaki	5	0	13	-1	43	***	010	44
Mont Joli A	0	-3	5	-6	2	2	060	70
Montréal Int'l A	8	0	14	3	72	***	050	89
Natashquan A	-4	-4	4	-15	0	33	310	39
Québec A	5	0	15	-1	29	***	080	96
Schefferville A	-12	-6	7	-27	2	76	340	48
Sept-Îles A	-2	-3	6	-10	0	41	330	43
Sherbrooke A	6	1	15	-1	30	***	060	67
Val-d'Or A	3	0	12	-7	20	***	060	44
New Brunswick								
Charlo A	0	-2	9	-9	9	15	100	39
Chatham A	1	-3	13	-8	16	1	060	46
Fredericton A	4	-1	14	-4	24	***	030	72
Moncton A	2P	-2P	13P	-6P	14P	1	090	63
Saint John A	4	0	14	-6	33	***	090	95
Nova Scotia								
Greenwood A	4	-1	15	-6	19	***	110	70
Shearwater A	3	-2	16	-5	36	***	100	78
Sydney A	1	-2	10	-7	0	***	340	56
Yarmouth A	5	-1	12	-2	73	***	090	74
Prince Edward Island								
Charlottetown A	1	-2	8	-7	2	1	110	48
Summerside A	1	-3	10	-5	4	1	100	56
Newfoundland								
Cartwright	-4	-2	9	-11	22	209	310	87
Churchill Falls A	-8	-1	10	-23	0	82	310	54
Gander Int'l A	-1	-2	9	-9	3	9	290	57
Goose A	-4	-3	10	-16	0	29	310	48
Port Aux Basques	2	0	12	-7	1	***	300	59
St John's A	0	-1	7	-5	2	1	300	67
St Lawrence	4	2	18	-6	0	***		X
Wabush Lake A	-7	-2	9	-23	1	15	010	41

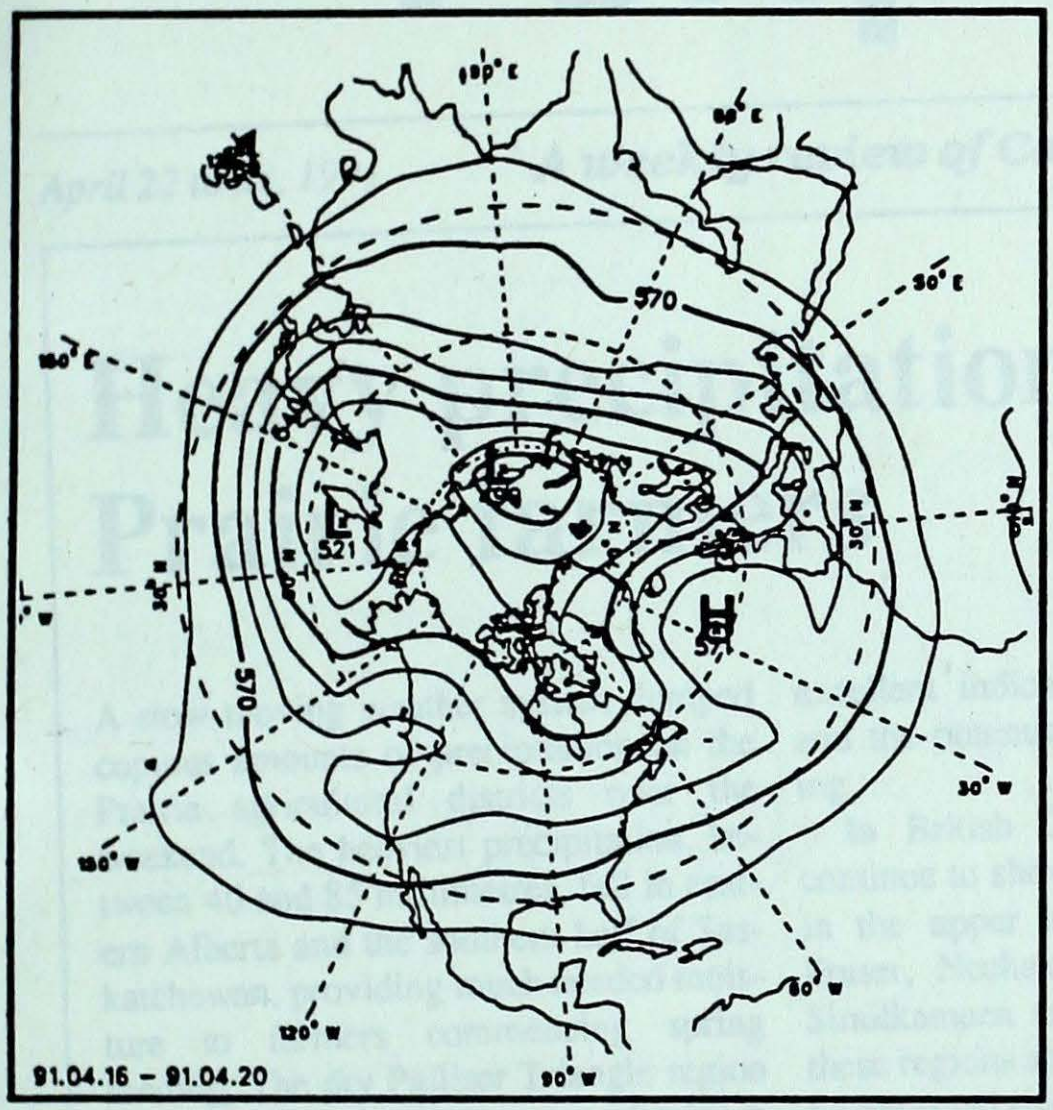
91/04/15-91/04/21

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

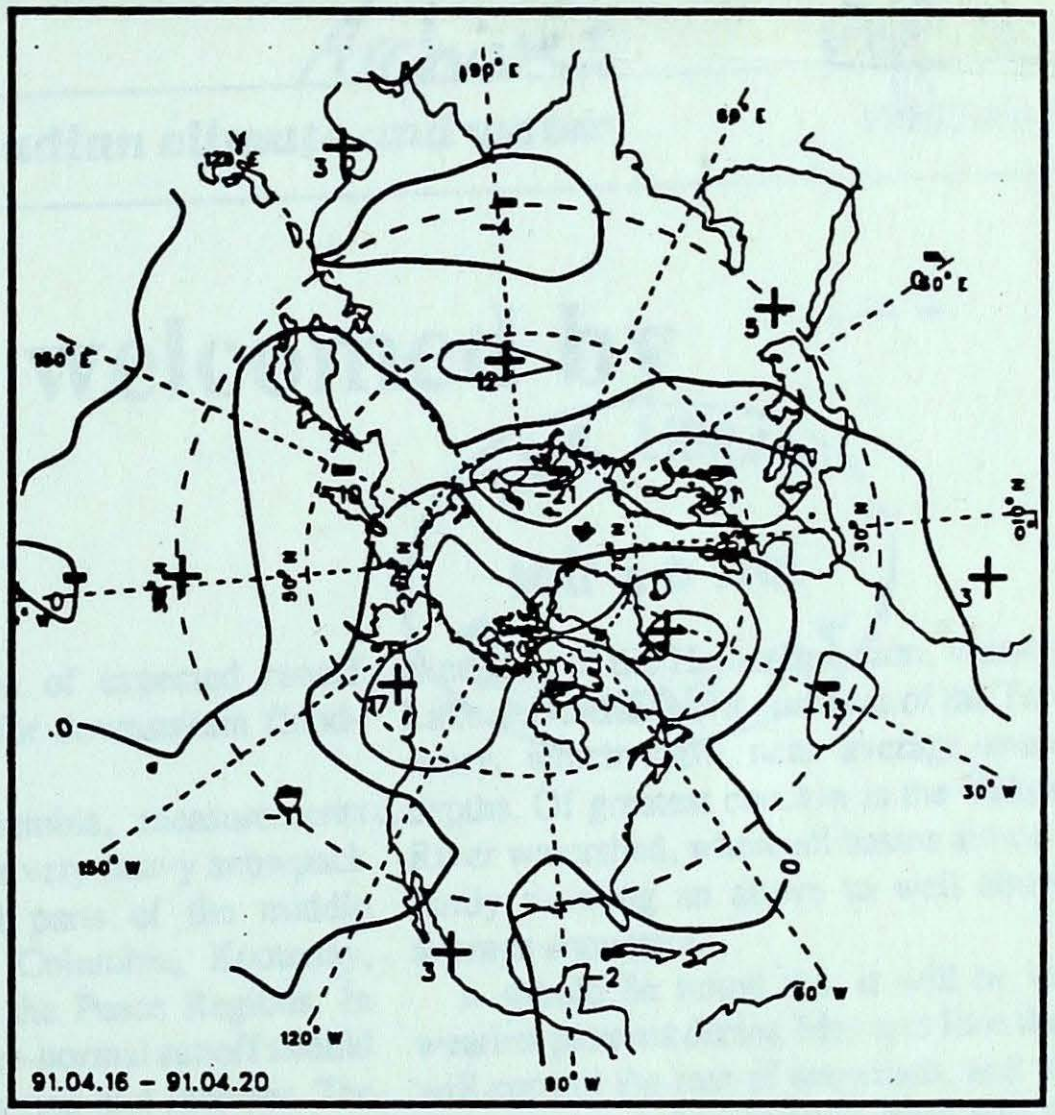
ptot = weekly precipitation total in mm
st = snow thickness on the ground in cm
dir = direction of max wind, deg. from north.
vel = wind speed in km/h

— 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)