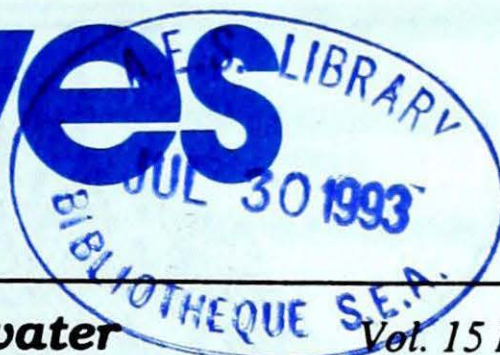




# Climatic Perspectives



July 19 to 25, 1993

A weekly review of Canadian climate and water

Vol. 15 No. 30

## And the cool, wet weather continues...

*While residents of Ontario and Quebec have enjoyed a relatively pleasant summer thus far, the Prairies have been getting drenched with rain; but then, the island of Newfoundland has not fared much better.*

As in previous weeks, showers and thunderstorms developed almost every day over many parts of the Canadian prairies. The intensity of the storms has varied from gentle showers to storms, with gusty winds and hail. Funnel clouds were sighted in central Alberta on the 21st and in southern and central Saskatchewan on the 22nd. A small tornado touched down near Medicine Hat on the 24th.

Rainfall amounts, ranging between 20 to 50 millimetres, were commonplace in Alberta, especially near the foothills. Regina got over 58 mm of rain on the 22nd, alone, causing flooding in the city.

During the weekend, a low pressure disturbance from the U.S. spread heavy rain northwards into southeastern Manitoba, dumping between 40 and 200 millimetres of rain. The greatest rainfall totals were in the Winnipeg area, where basements and roadways were flooded. Many fields were covered with water, and it is believed that crop damage is extensive. Although the Red and Assiniboine Rivers swelled, there was no flooding.

Damp and cloudy weather continues to plague Newfoundland, with low pressure disturbances slowing down or stalling over the region. Along the east coast, the lack of sunshine and persistent cool northerly winds have resulted in a number of

new low maximum temperature records being set. Some days temperatures struggled to reach 10°C. In addition, a few stations are on track to setting new low monthly sunshine records.

The Maritimes were mainly cloudy and cool, particularly on Sunday, when Charlottetown reported a maximum temperature of only 13.5°C, breaking the old record of 15°C set way back in 1883. Showers, sometimes accompanied by thunder, were reported almost everyday, giving varying amounts of precipitation.

### Record rainfall for Victoria

A small but intense disturbance drifted over southern Vancouver Island on July 20, dumping copious amounts of rain on the greater Victoria area during the early morning hours. In just five hours, 44 mm of rain was recorded. In fact, the eight-hour total of 50.0 mm, broke Victoria's monthly precipitation record for July, as well as the 24-hour precipitation record. The previous monthly record was 49.8 mm set in 1966. The previous 24-hour record was 20.3 mm set in 1982. As the ground was fairly dry, only local flooding was reported; but one thing for certain, the lawns are now nice and green. Elsewhere in the province, the weather continues to be unsettled.

### Elsewhere...

In Ontario, the month of July continues to be relatively dry across most of the province except in the northwest - a far cry from last year's summer. However, heavy rain fell in the Toronto region on July 19, causing creeks and rivers to overflow and some

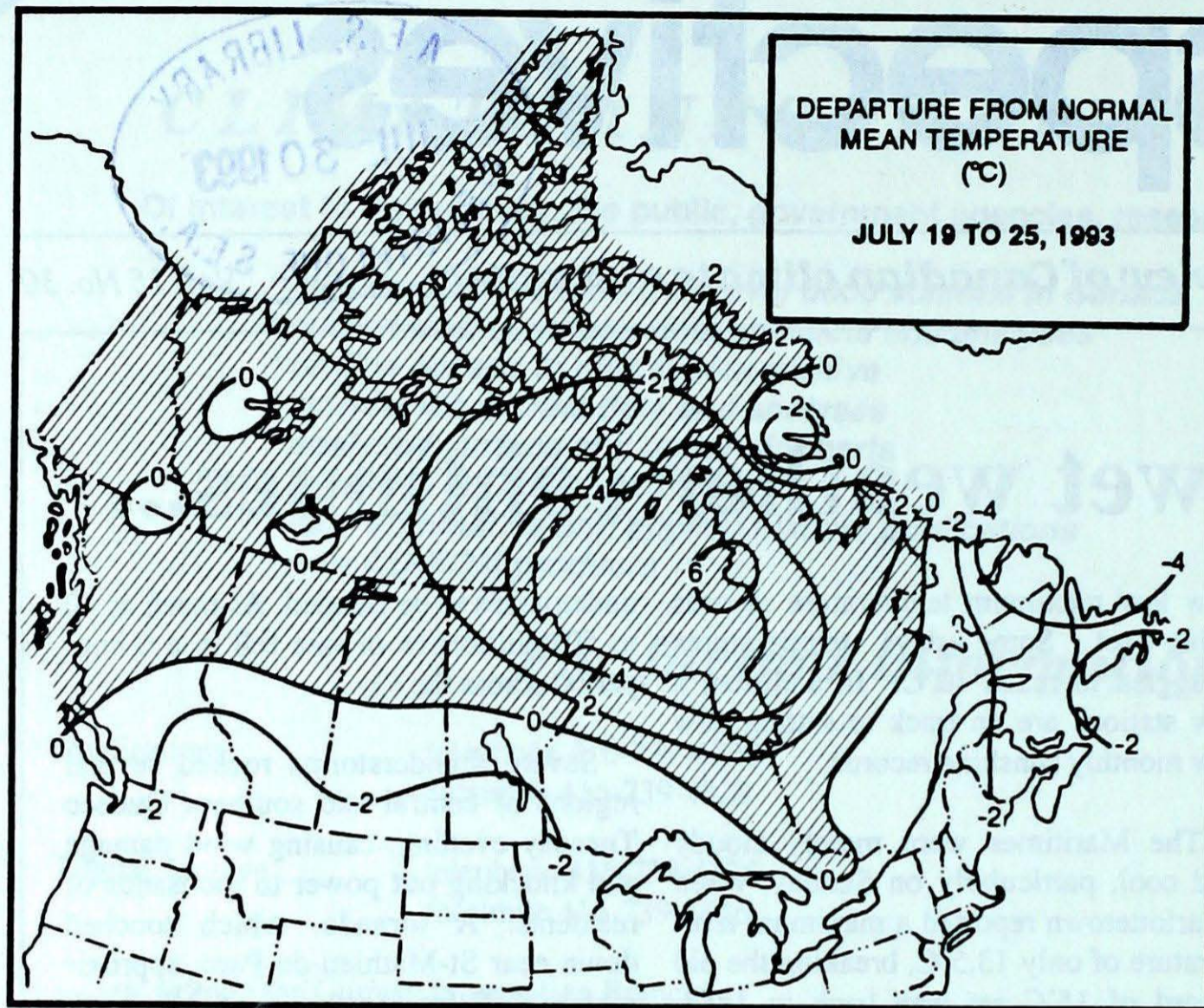
underpasses to be flooded. As much as 40 to 50 millimetres of rain fell in a 6-hour period across the city.

Severe thunderstorms rocked several regions of central and southern Quebec Tuesday evening, causing wind damage and knocking out power to thousands of residents. A tornado, which touched down near St-Mathieu-du Parc, approximately 150 km northeast of Montreal, lifted an entire house off its foundation and moved it a few feet into the backyard. In the Lac St-Jean region, thunderstorms dumped 55 mm of rain. Hail was reported in Montreal.

The weather in the Yukon and Mackenzie district was rather uneventful, with varying amounts of cloud. Scattered showers and thundershowers developed during the afternoons, while later in the week a disturbance brought some rain to the northern regions. Extensive fog developed along the Arctic coast. Baffin Island had varying amounts of sun and cloud, with maximums reaching the teens except in Iqaluit, where a persistent southeasterly flow kept temperatures much cooler.

### A Look Ahead...

For the week of August 2, near normal temperatures are expected for most of the country. Above-normal values are likely across the Northwest Territories. Precipitation is expected across British Columbia, Alberta, the Mackenzie district of the N.W.T. and the Atlantic region.



**Weekly normal temperatures (°C)**

	max.	min.
Whitehorse A	19.4	7.9
Iqaluit A	12.7	4.6
Yellowknife A	20.6	12.2
Vancouver Int'l A	22.3	12.9
Victoria Int'l A	22.1	11.0
Calgary Int'l A	23.9	9.6
Edmonton Int'l A	22.5	9.0
Regina A	26.8	12.1
Saskatoon A	26.0	11.9
Winnipeg Int'l A	26.5	13.8
Ottawa Int'l A	26.6	15.5
Toronto (Pearson Int'l A)	27.3	15.2
Montréal Int'l A	26.8	16.2
Québec A	25.4	13.6
Fredericton A	26.2	13.3
Saint John A	22.6	11.9
Halifax (Shearwater)	21.9	13.4
Charlottetown A	23.1	14.0
Goose A	21.4	10.3
St John's A	20.0	10.8

**Weekly temperature and precipitation extremes**

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Lytton 29	Revelstoke A 0	Victoria Int'l A 52
Yukon Territory	Watson Lake A 23	Teslin (aut) 5	Watson Lake A 21
Northwest Territories	Fort Smith A 27	Cape Hooper -1	Rankin Inlet A 45
Alberta	High Level A 28	Banff (aut) 4	Whitecourt A 65
Saskatchewan	Wynyard 29	Elbow A 4	Regina A 61
Manitoba	Churchill A 29	Churchill A 5	Winnipeg Int'l A 119
Ontario	Ottawa Int'l A 30	Geraldton A 6	Thunder Bay A 64
	Windsor A 30		
Quebec	Montréal Int'l A 29	Border 2	Sept-iles A 50
New Brunswick	St-Léonard A 25	Saint John A 6	Miscou Island (aut) 47
Nova Scotia	Greenwood A 26	Greenwood A 6	Truro 77
Prince Edward Island	Charlottetown A 23	Charlottetown A 8	East Point (aut) 23
Newfoundland	Gander Int'l A 24	Cartwright 2	Cartwright 57

**Across The Country...**

Highest Mean Temperature	Windsor A (Ont.)	23
Lowest Mean Temperature	Resolute A (N.W.T.)	5

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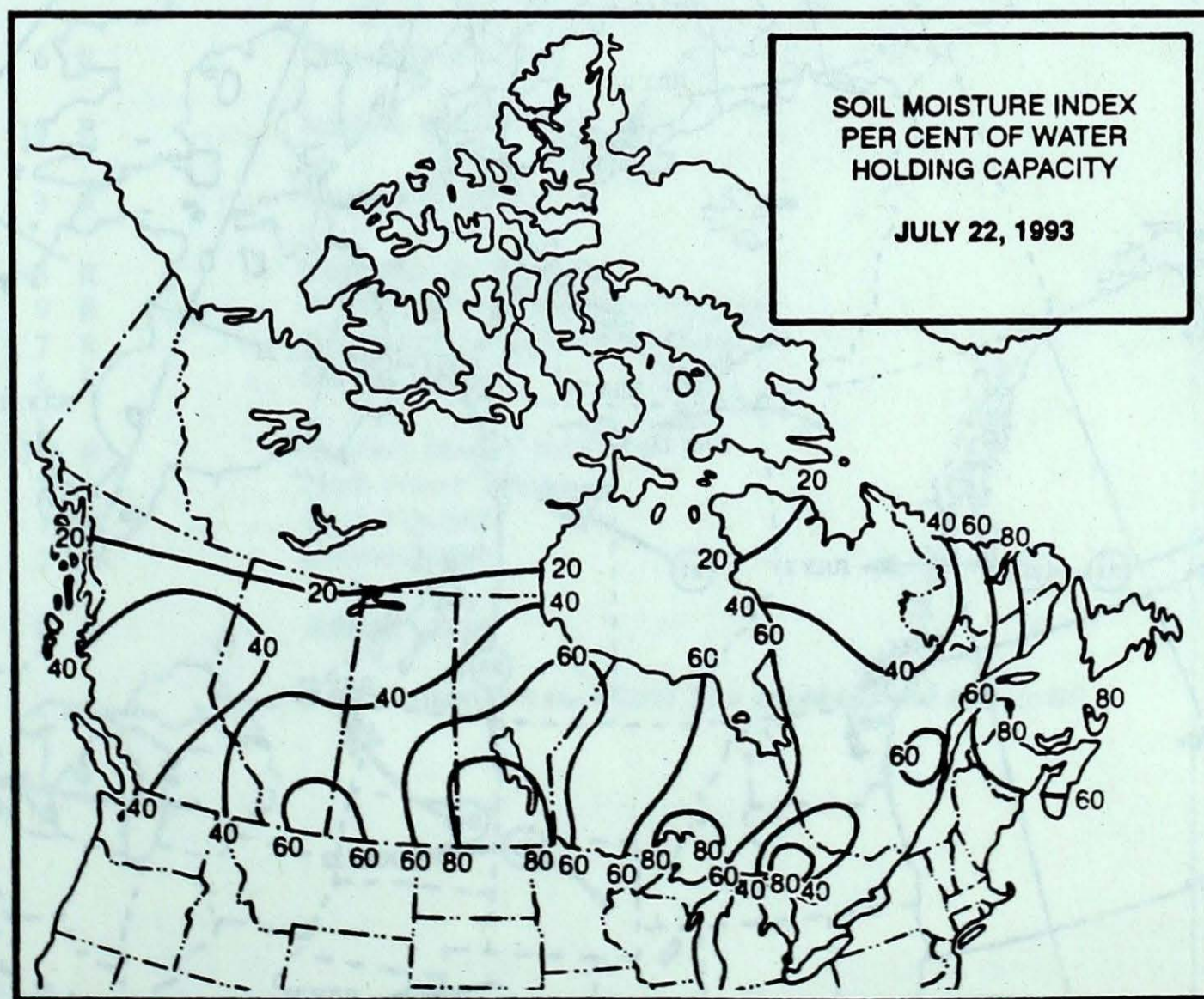
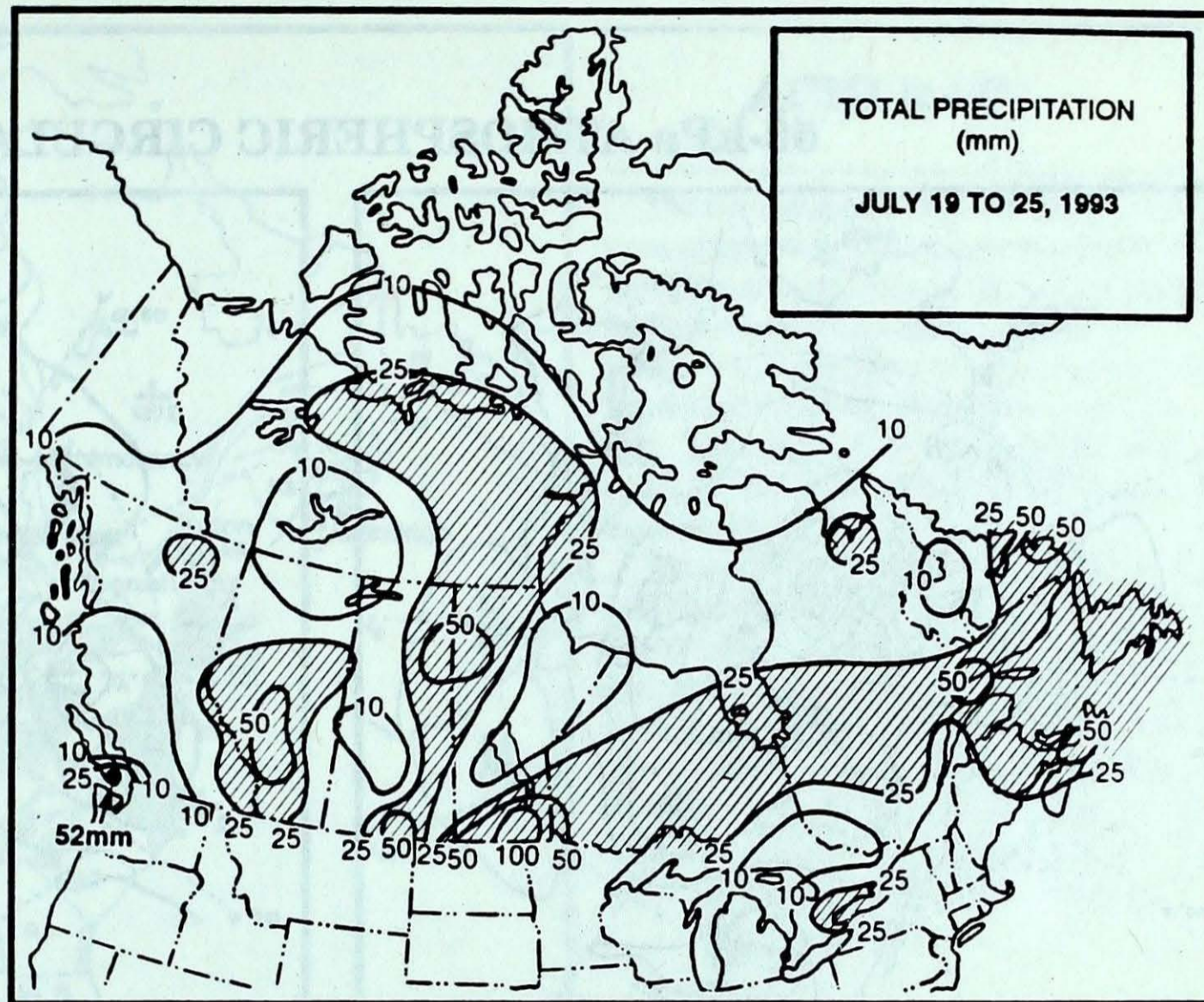
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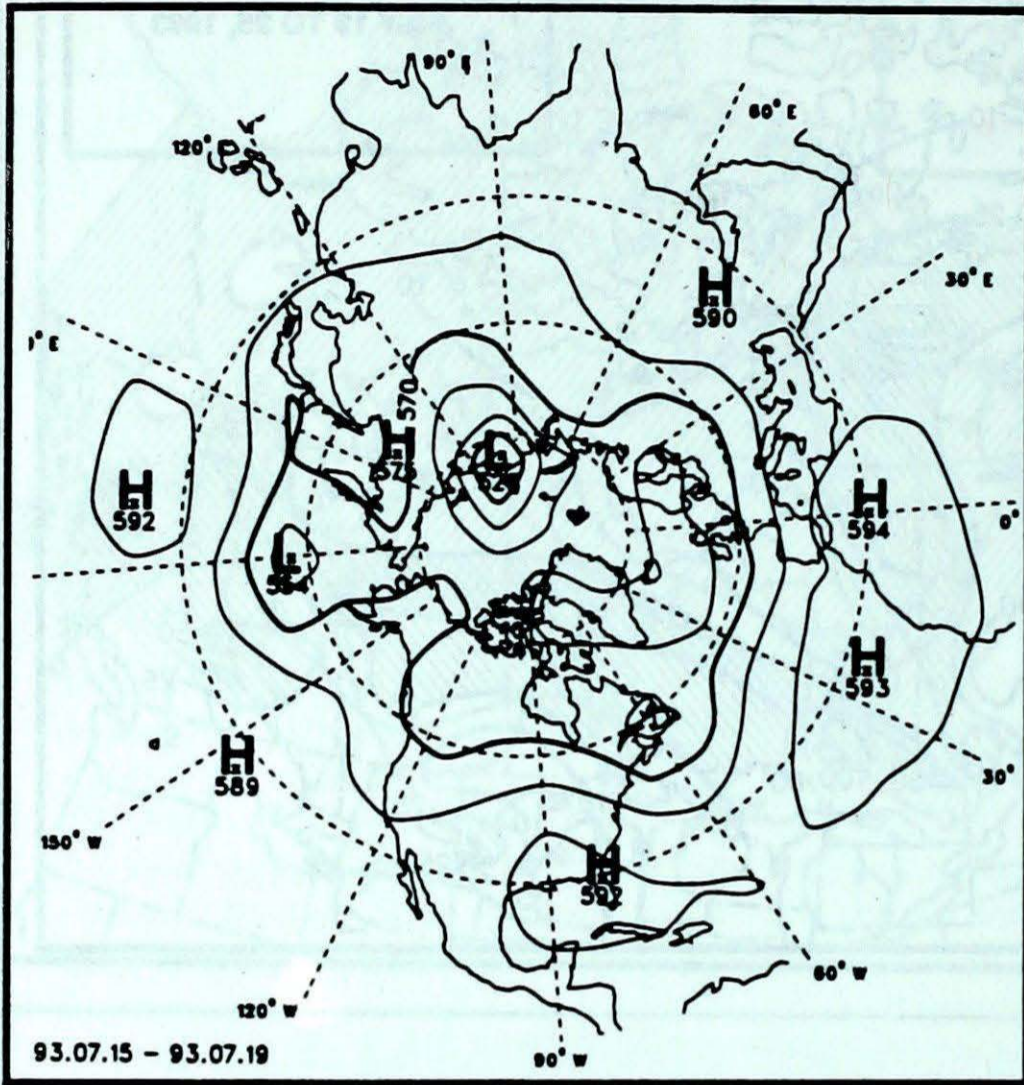
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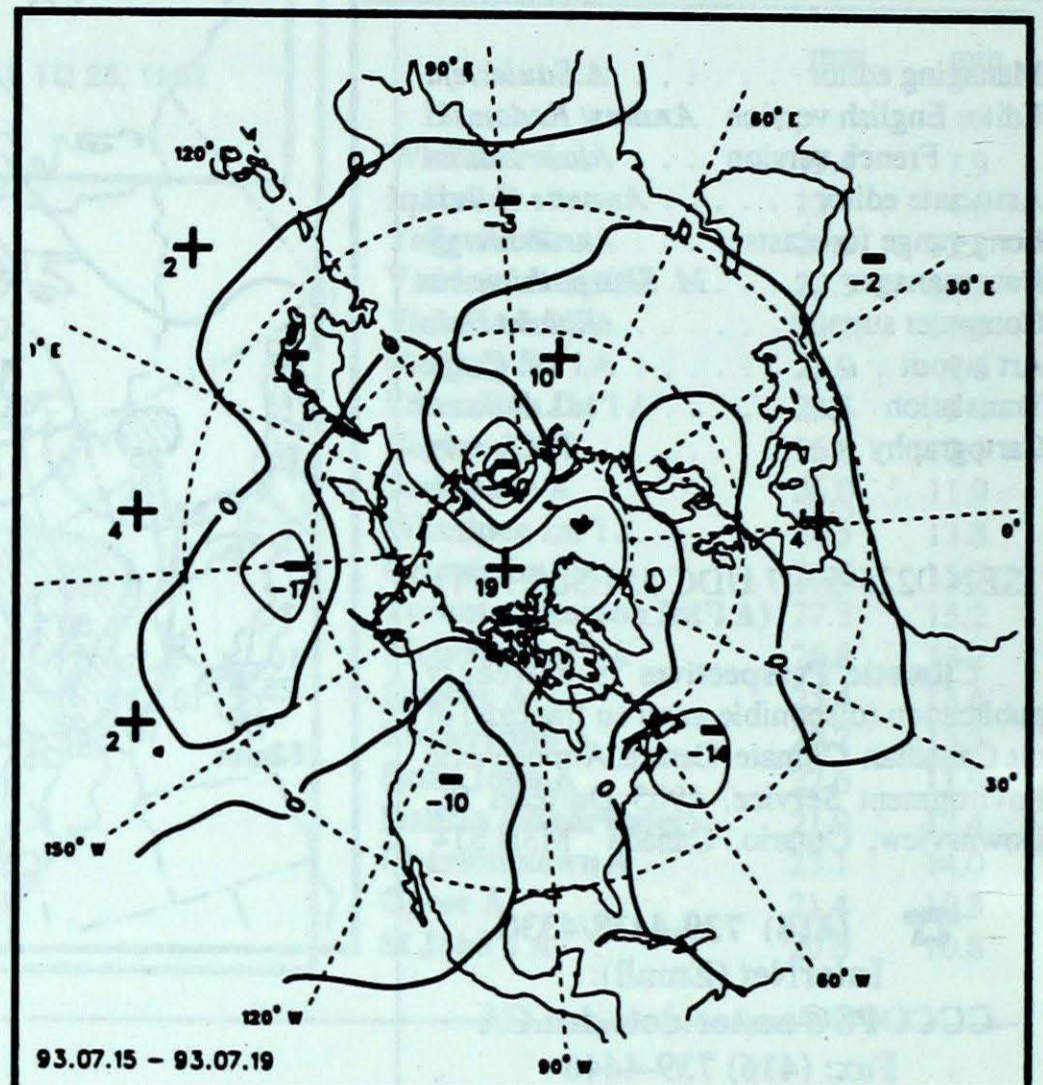
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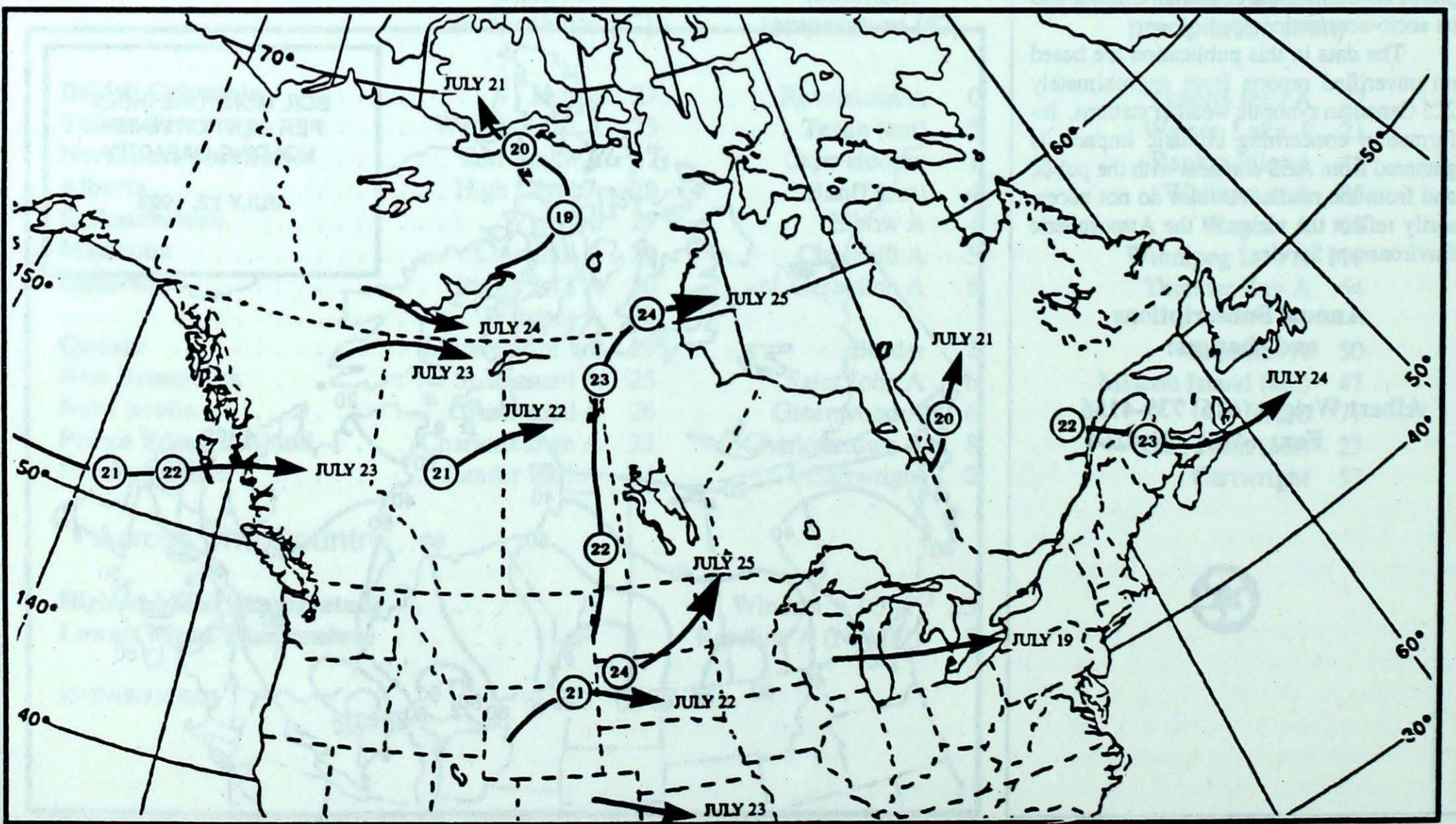
### 50-kPa ATMOSPHERIC CIRCULATION



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

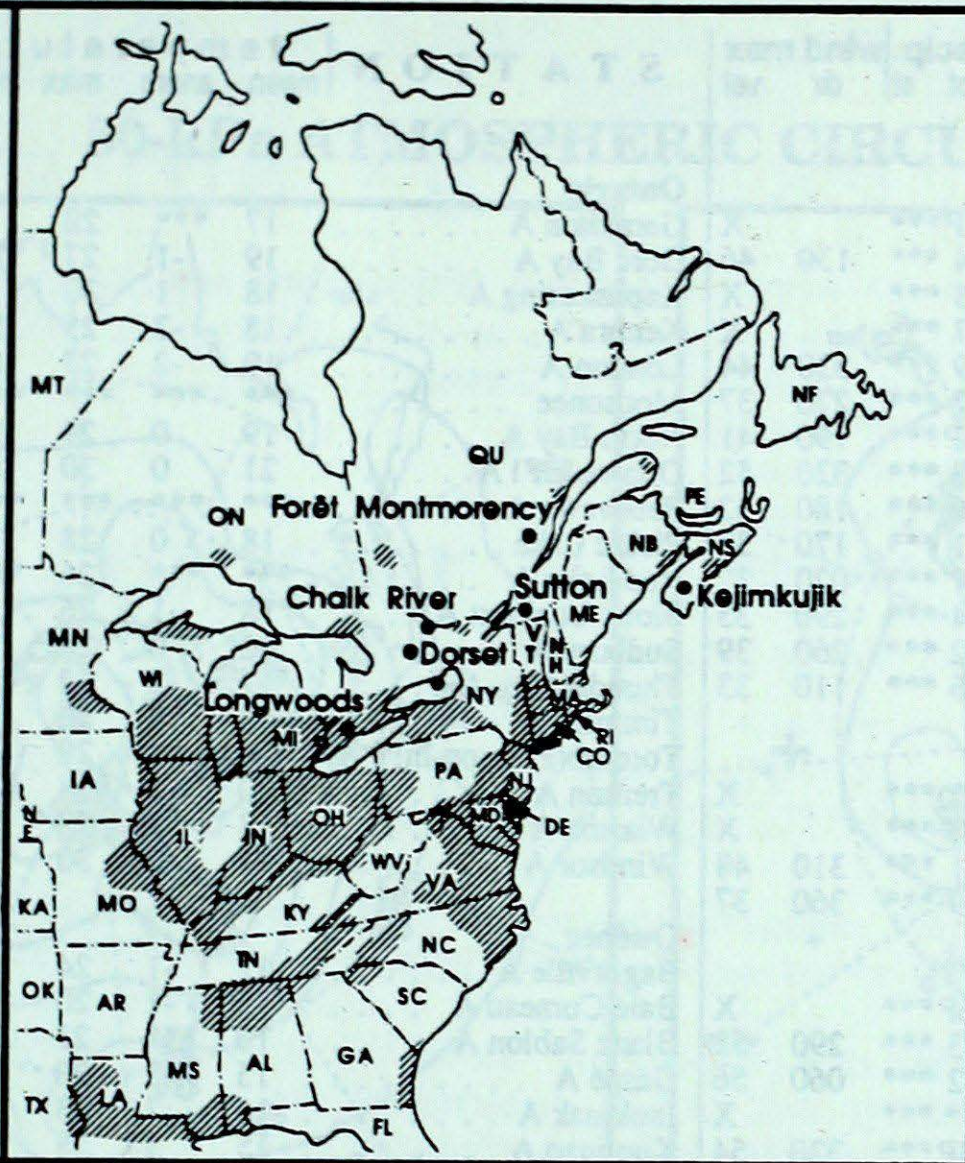


Mean geopotential height anomaly  
50-kPa level (10 decametre intervals)



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

- 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 - MB
- MARYLAND - MD
- MASSACHUSETTS - MA
- MICHIGAN - MI
- MINNESOTA - MN
- MISSISSIPPI - MS
- MISSOURI - MO
- NEBRASKA - NE
- NEW BRUNSWICK - NB
- NEW FOUNDLAND - 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 - QC
- 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 Environment and Energy. 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
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July 18 to 24, 1993

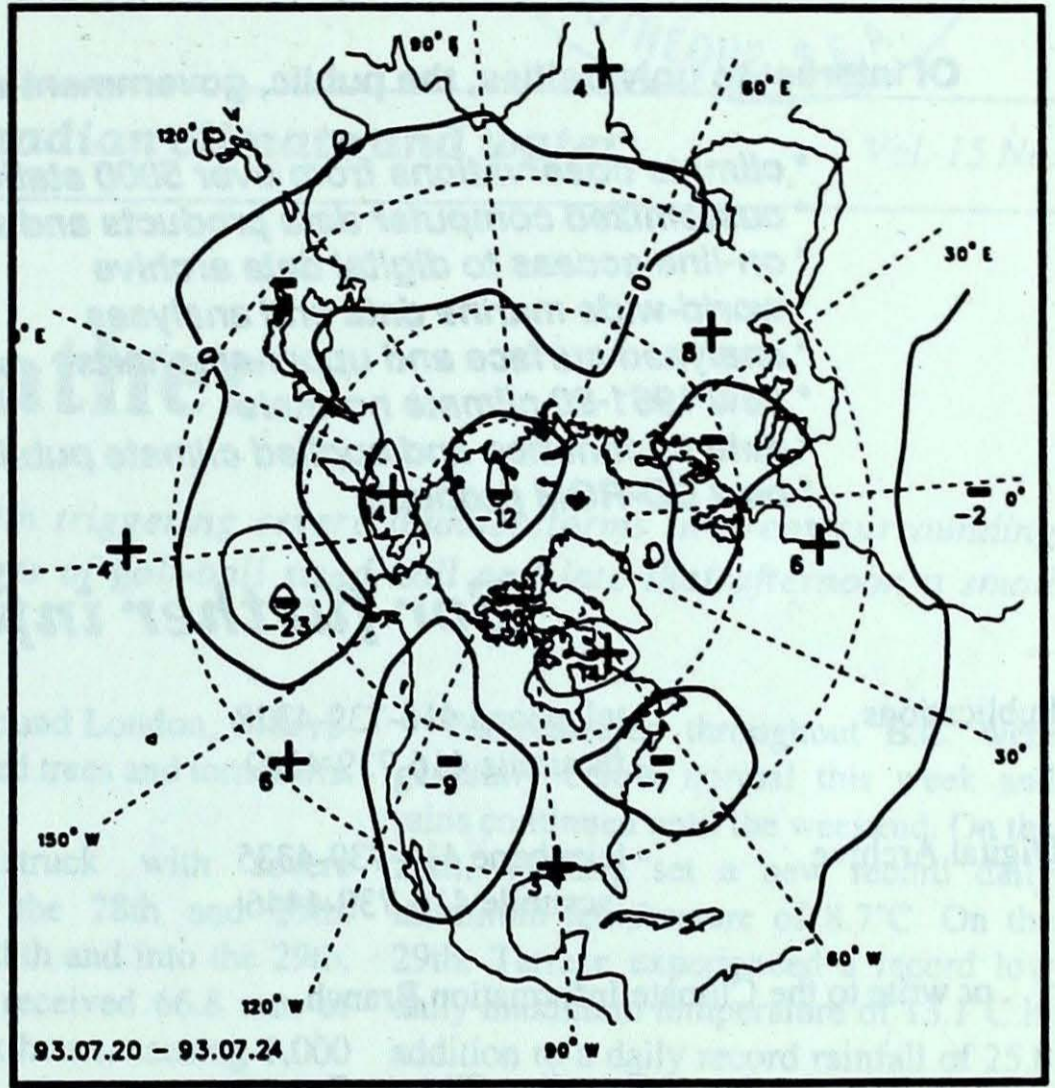
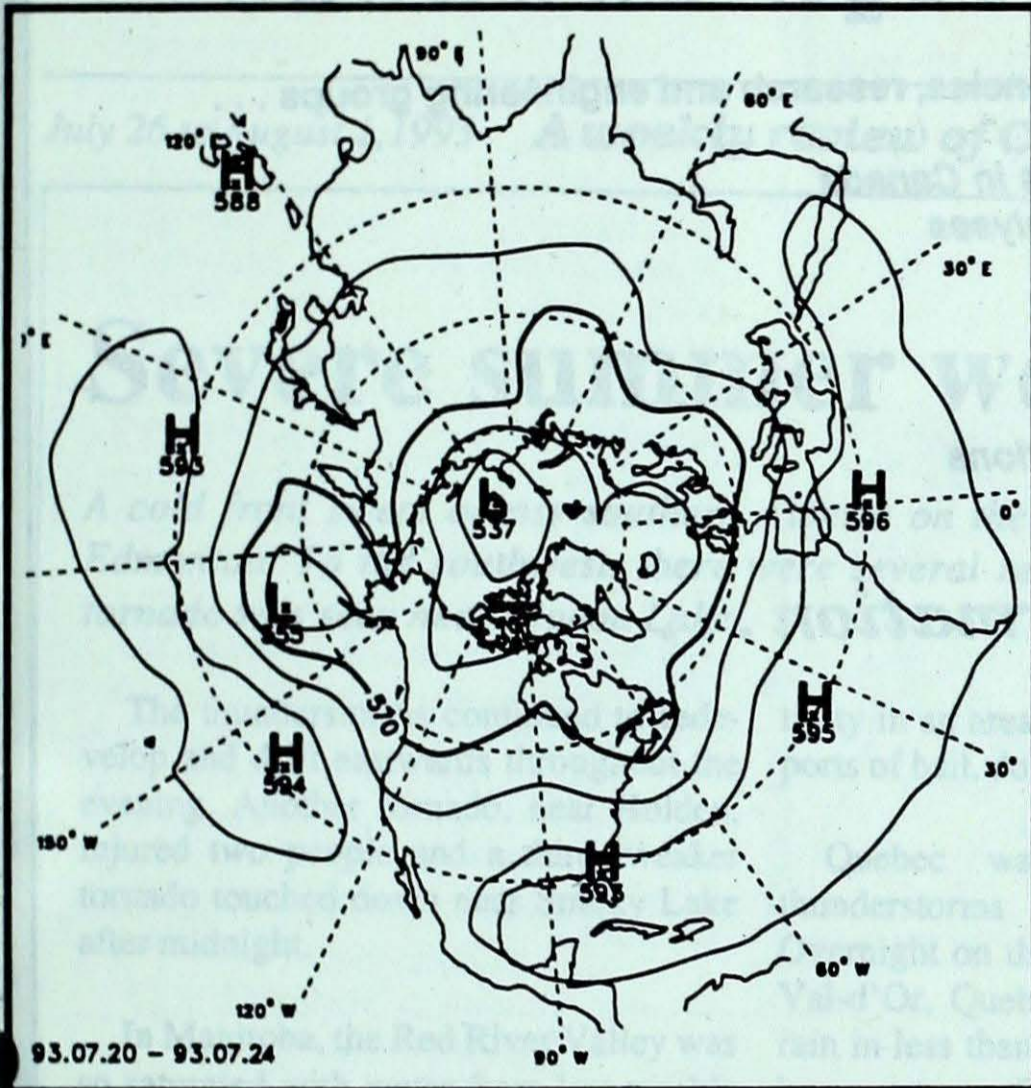
Longwoods	18	3.9	6 R	Ohio, central Indiana
Dorset *	21	4.9	10 R	Northern Ontario
Chalk River	21	4.9	3 R	Northern Ontario
Sutton	20	5.0	5 R	New York, Pennsylvania
	21	5.2	9 R	Western and northernwestern Quebec
	22	4.9	7 R	Western and northernwestern Quebec
	24	5.0	6 R	Central Quebec
Montmorency	20	4.6	30 R	Southern Quebec, New York
	21	5.0	3 R	Northwestern Quebec
	22	4.9	1 R	Central Quebec
	23	4.9	2 R	Central Quebec
Kejimikujik	20	4.8	6 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
<b>British Columbia</b>									<b>Ontario</b>								
Blue River A	16P	-2P	24P	7P	34P	***		X	Geraldton A	17	***	28	6	14	***	160	44
Comox A	17	0	24	12	4	***	130	46	Gore Bay A	19	-1	27	11	5	***	290	57
Cranbrook A	15	-5	23	9	33	***		X	Kapuskasing A	18	1	30	7	28	***	330	50
Fort Nelson A	17	0	26	6	27	***		X	Kenora A	18	-2	25	11	41	***	180	43
Fort St John A	16	0	23	7	19	***	330	44	London A	19	-2	27	10	5	***	310	48
Kamloops A	19	-3	27	11	7	***	270	37	Moosonee	***	***	***	***	***	***		X
Penticton A	19P	-2P	27P	11P	6P	***	190	41	North Bay A	19	0	29	11	9	***	340	57
Port Hardy A	15	1	21	11	8	***	320	52	Ottawa Int'l A	21	0	30	14	5	***	260	67
Prince George A	17	2	24	8	6	***	180	52	Petawawa A	***	***	***	***	***	***		X
Prince Rupert A	14	1	18	8	21	***	170	37	Pickle Lake	18	0	28	10	43	***	330	54
Smithers A	16	1	25	6	7	***	020	37	Red Lake A	***	***	26	***	***	***	170	44
Vancouver Int'l A	17	-1	21	12	4	***	290	33	Sioux Lookout A	18	-1	26	2	35	***	290	46
Victoria Int'l A	16	-1	22	11	52	***	260	39	Sudbury A	20	0	28	10	2	***	270	57
Williams Lake A	14	-2	22	6	6	***	110	33	Thunder Bay A	17	-2	25	8	64	***	320	35
<b>Yukon Territory</b>									<b>Québec</b>								
Komakuk Beach A	***	***	***	***	***	***		X	Bagotville A	17	-1	24	12	26	***	320	39
Teslin (aut)	14P	***P	22P	5P	4P	***		X	Baie Comeau A	15	-1	20	9	28	***	230	41
Watson Lake A	14	0	23	5	21	***	310	48	Blanc Sablon A	10	***	21	2	17	***	080	69
Whitehorse A	15	1	23	6	19	***	360	37	Gaspé A	15	-3	20	8	45	***	080	33
<b>Northwest Territories</b>									<b>New Brunswick</b>								
Alert	5P	2P	14P	0P	6P	***		X	Fredericton A	17	-3	25	7	31	***	200	52
Baker Lake A	15	3	26	8	23	***	290	52	Miscou Island (aut)	15	-4	21	11	47	***		X
Cambridge Bay A	10	2	17	4	12	***	060	56	Moncton A	16	-3	24	7	32	***	150	44
Cape Dyer A	***	***	***	***	***	***		X	Saint John A	16	-2	22	6	26	***	020	41
Clyde A	6P	2P	14P	1P	13P	***	320	54	St Leonard A	15	***	25	7	28	***	160	39
Coppermine A	10	1	24	5	26	***	240	33	<b>Nova Scotia</b>								
Coral Harbour A	13	4	22	8	2	***	260	37	Greenwood A	17	-2	26	6	16	***	130	48
Eureka	7	1	13	3	10	***		X	Shearwater A	16	-2	23	11	18	***	130	54
Fort Smith A	16	0	27	9	6	***		X	Sydney A	***	***	22	***	***	***		X
Hall Beach A	6	0	16	1	7	***	200	50	Yarmouth A	15	-2	20	8	7	***	160	59
Inuvik A	13	0	25	5	2	***		X	<b>Prince Edward Island</b>								
Iqaluit A	6	-3	12	0	1	***		X	Charlottetown A	15	-3	23	8	22	***	130	41
Mould Bay A	***	***	13	***	***	***		X	East Point (auto)	14	***	17	11	23	***		X
Norman Wells A	15	0	26	9	8	***	270	43	<b>Newfoundland</b>								
Resolute A	5	1	9	0	4	***	110	82	Cartwright	7P	-5P	19P	2P	57P	***	350	52
Yellowknife A	17	1	25	9	4	***		X	Churchill Falls A	13P	0P	24P	3P	8P	***		*
<b>Alberta</b>									<b>93/07/19-93/07/25</b>								
Calgary Int'l A	14	-2	22	6	37	***	340	80	Gander Int'l A	12	-5	24	4	25	***	340	52
Cold Lake A	18	1	27	7	18	***	310	44	Goose A	11	-5	20	3	41	***	050	43
Edmonton Namao A	16	-1	24	9	25	***	330	37	Stephenville A	15P	-1P	21P	8P	29P	***	110	56
Fort McMurray A	17	1	27	10	32	***	260	52	St John's A	13	-3	21	5	33	***	150	59
Grande Prairie A	16	0	23	8	16	***		X	St Lawrence	12	-1	18	6	47	***		X
High Level A	17	1	28	9	2	***	330	44	Wabush Lake A	13	0	24	5	15	***	180	39
Lethbridge A	16	-4	24	8	23	***	250	67									
Medicine Hat A	17	-3	26	8	23	***		X									
Peace River A	16	1	24	8	18	***		X									
<b>Saskatchewan</b>																	
Cree Lake	18P	2P	25P	11P	5P	***	200	39									
Estevan A	17	-3	24	8	22	***	120	50									
La Ronge A	18	1	28	9	19	***	130	41									
Regina A	18	-2	26	6	61	***	140	59									
Saskatoon A	17	-2	27	6	2	***	120	46									
Swift Current A	17	-2	25	6	27	***	120	61									
Yorkton A	17	-2	26	7	13	***	170	44									
<b>Manitoba</b>																	
Brandon A	16	-3	25	7	16	***	140	61									
Churchill A	19	6	29	5	4	***	210	61									
Lynn Lake A	17	2	25	7	50	***	190	56									
The Pas A	17	-1	27	6	20	***	150	70									
Thompson A	17	2	26	6	7	***	180	50									
Winnipeg Int'l A	18	-2	24	11	119	***	180	67									

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-kPa ATMOSPHERIC CIRCULATION



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

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



## Environmental Citizenship

**Canada's wetlands are disappearing. Swamps, marshes and ponds provide homes for wildlife. They also break down pollutants and purify water. It's important to preserve this valuable resource.**

**An environmental citizenship message from Environment Canada.**

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. . . or write to the Climate Information Branch

Canadian Climate Centre  
 4905 Dufferin Street  
 Downsview, Ontario M3H 5T4



*(Faint background table with columns for STATION, TEMPERATURE, PRECIPITATION, etc.)*