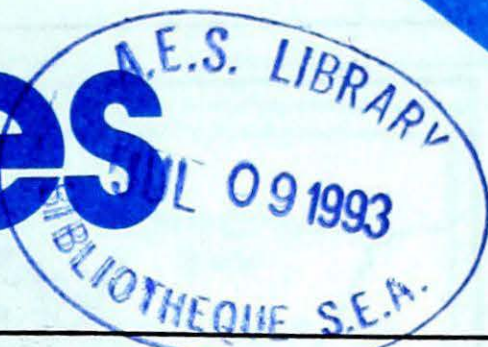




# Climatic Perspectives



June 28 to July 4, 1993

A weekly review of Canadian climate and water

Vol. 15 No. 27

## Heavy rainfalls in western Canada

*Intense, slow moving weather systems continued to provide significant amounts of rain across the country.*

Between 100 and 200 millimetres of rain fell in southern Saskatchewan and Manitoba over the weekend. Rivers in western Manitoba swelled, resulting in flash flooding in the Duck Mountains and Swan River Valley. Many roads and bridges were washed out and a number of communities were evacuated. Unofficial reports state that up to 210 mm of rain fell in some areas. The rainfalls helped quell some of the forest fires that have been burning in the region and also provided a good soaking of water to many of the dry agricultural areas.

In Alberta, cloud and frequent showers and thundershowers were common, resulting in localized heavy rainfalls and flooding. Funnel clouds were reported at Cochrane on Friday and Pincher Creek on Sunday.

An unstable air mass maintained cool, unsettled weather across British Columbia, giving frequent shower and thunderstorm activity. The central interior was especially hard hit with precipitation early in the week totalling as high as 50 to 65 millimetres. Forestry roads suffered from as much as a half million dollars in damage, as four bridges and numerous culverts were washed out, making many roads impassable. The June rainfall total at Prince George was 157.3 mm, a new record for any month of the year! The old record was 147.8 mm set in August 1948.

On the evening of the 28th, a beaver dam failed on a plateau above the community of Prince George, releasing a torrent of water, which spewed mud, logs and other debris on residential streets and lawns within the city. Clean up estimates range over fifty thousand dollars.

### Heat wave in Ontario?

The warmest temperatures since the summer of 1991 reached southern and central Ontario at the end of the week. The thermometer topped 30°C at many locations on July 3 and 4, as hot and humid air penetrated northwards from the southern States. At Windsor, the mercury reached 33.4°C on July 4, its warmest reading since July 1991. The humidex reading approached a sultry 40, with more still to come. The muggy weather triggered heavy thunderstorms, as they drifted into western Quebec. Five persons were struck by lightning in Algonquin Park over the weekend. In northwestern Ontario, rainfalls of nearly 40 mm provided much needed moisture to the region.

The warm weather is aiding fruits, vegetables and other crops in catching up on the slow growth to-date, with yields now expected to be much better than last year's. The strawberry crop is two weeks behind schedule due to the cool May and early June temperatures.

### Elsewhere...

In the Yukon, the week started out sunny and warm, with showers and thunder-

storms becoming more prevalent. Lightning started a number of new forest fires.

Sunny, warm weather prevailed over the Mackenzie Valley, with precipitation being mostly showery in nature. The forest fire hazard remains high to extreme, keeping fire crews busy. Record-warm weather penetrated into the Keewatin District, allowing the mercury to climb to the mid-twenties. Varying amounts of cloud and sun were reported over Baffin Island, with precipitation falling primarily as rain.

In the Maritimes, the weather was a mix of sun and cloud, with some coastal fog. Temperatures climbed to the mid and high twenties, except near cooler coastal waters.

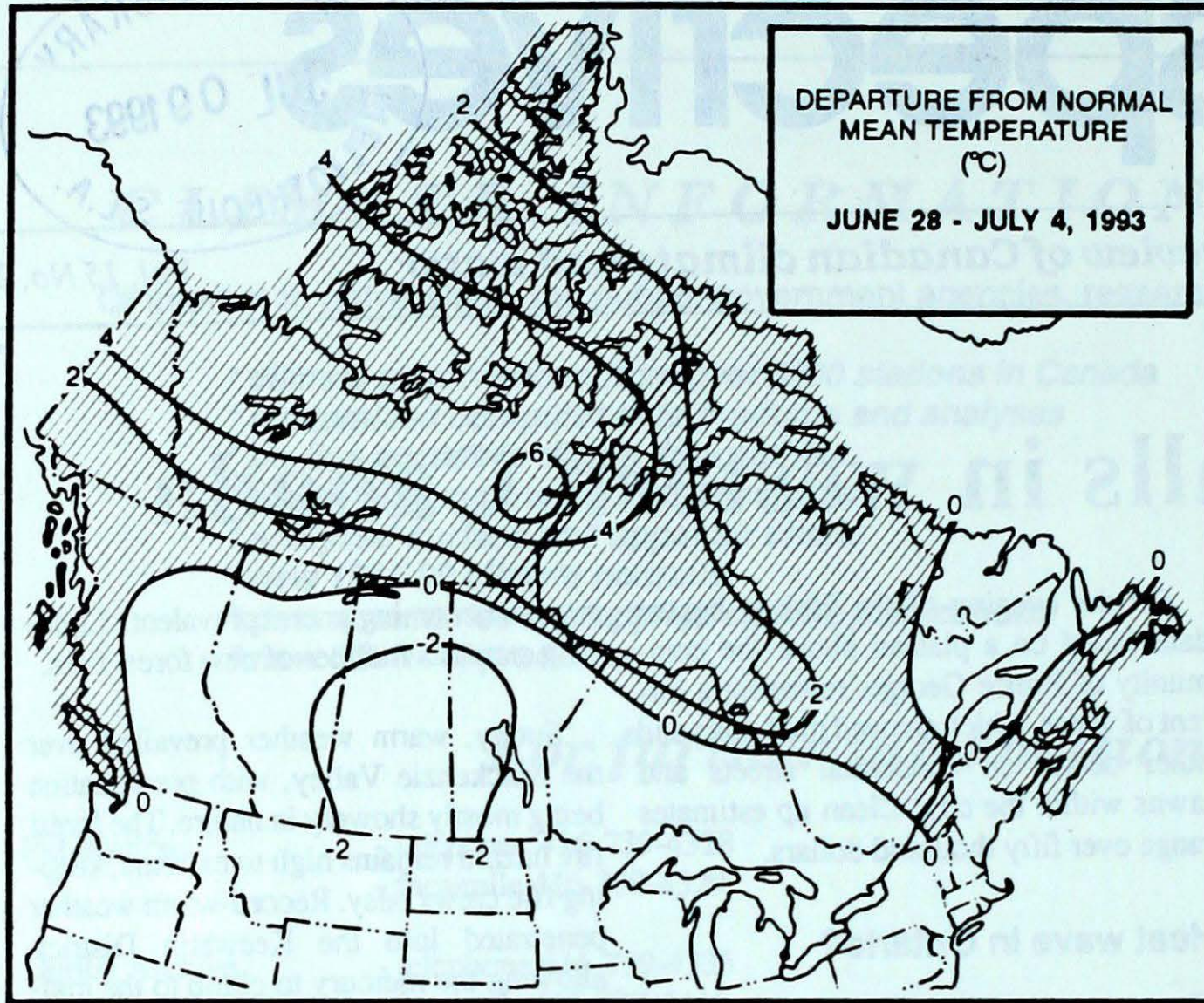
In Newfoundland, a couple of weather systems provided daily record rainfalls. On the 29th, heavy rain and thunderstorms resulted in flash flooding over western Newfoundland, with additional amounts of precipitation falling again on July 4. At St. John's more than 100 mm of rain was recorded.

In Labrador and eastern Quebec, rain helped contain forest fires, which were burning out of control. More than 100 mm fell on the Gulf's north coast.

### A look ahead...

For the week of July 12, temperatures are expected to be above normal for most of the country, except near to below normal across the southern Prairies and B.C.





**Weekly normal temperatures (°C)**

	max.	min.
Whitehorse A	19.1	7.1
Iqaluit A	9.7	2.4
Yellowknife A	20.8	11.2
Vancouver Int'l A	20.2	11.6
Victoria Int'l A	20.2	10.1
Calgary Int'l A	20.7	7.7
Edmonton Int'l A	21.5	8.0
Regina A	23.8	10.5
Saskatoon A	23.4	10.2
Winnipeg Int'l A	24.5	12.3
Ottawa Int'l A	25.7	14.4
Toronto (Pearson Int'l A)	26.0	13.8
Montréal Int'l A	25.5	15.1
Québec A	24.1	12.2
Fredericton A	24.9	11.9
Saint John A	21.5	10.5
Halifax (Shearwater)	21.0	11.7
Charlottetown A	21.7	12.0
Goose A	19.0	8.3
St John's A	18.4	8.5

**Weekly temperature and precipitation extremes**

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Lytton 26	Puntzi Mountain (aut) 1	Comox A 29
	Penticton A 26		
	Revelstoke A 26		
Yukon Territory	Whitehorse A 25	Komakuk Beach A 5	Watson Lake A 18
Northwest Territories	Norman Wells A 30	Clyde A -3	Iqaluit A 10
Alberta	High Level A 26	Edson A 0	Red Deer A 49
Saskatchewan	Estevan A 27	Nipawin A 5	Estevan A 122
Manitoba	Gillam A 26	Churchill A 0	Dauphin A 88
Ontario	Windsor A 34	Kapuskasing A 3	Armstrong (aut) 54
Quebec	Bagotville A 30	Border (aut) 0	Chevery (aut) 105
New Brunswick	Fredericton A 29	St-Léonard A 4	Moncton A 54
Nova Scotia	Greenwood A 27	Truro 8	Truro 65
Prince Edward Island	Charlottetown A 25	Charlottetown A 9	East Point (aut) 48
Newfoundland	Goose A 30	Churchill Falls A 1	St John's A 101

**Across The Country...**

Highest Mean Temperature	Windsor A (Ont.)	21
Lowest Mean Temperature	Cape Hooper (N.W.T.)	3



CLIMATIC PERSPECTIVES  
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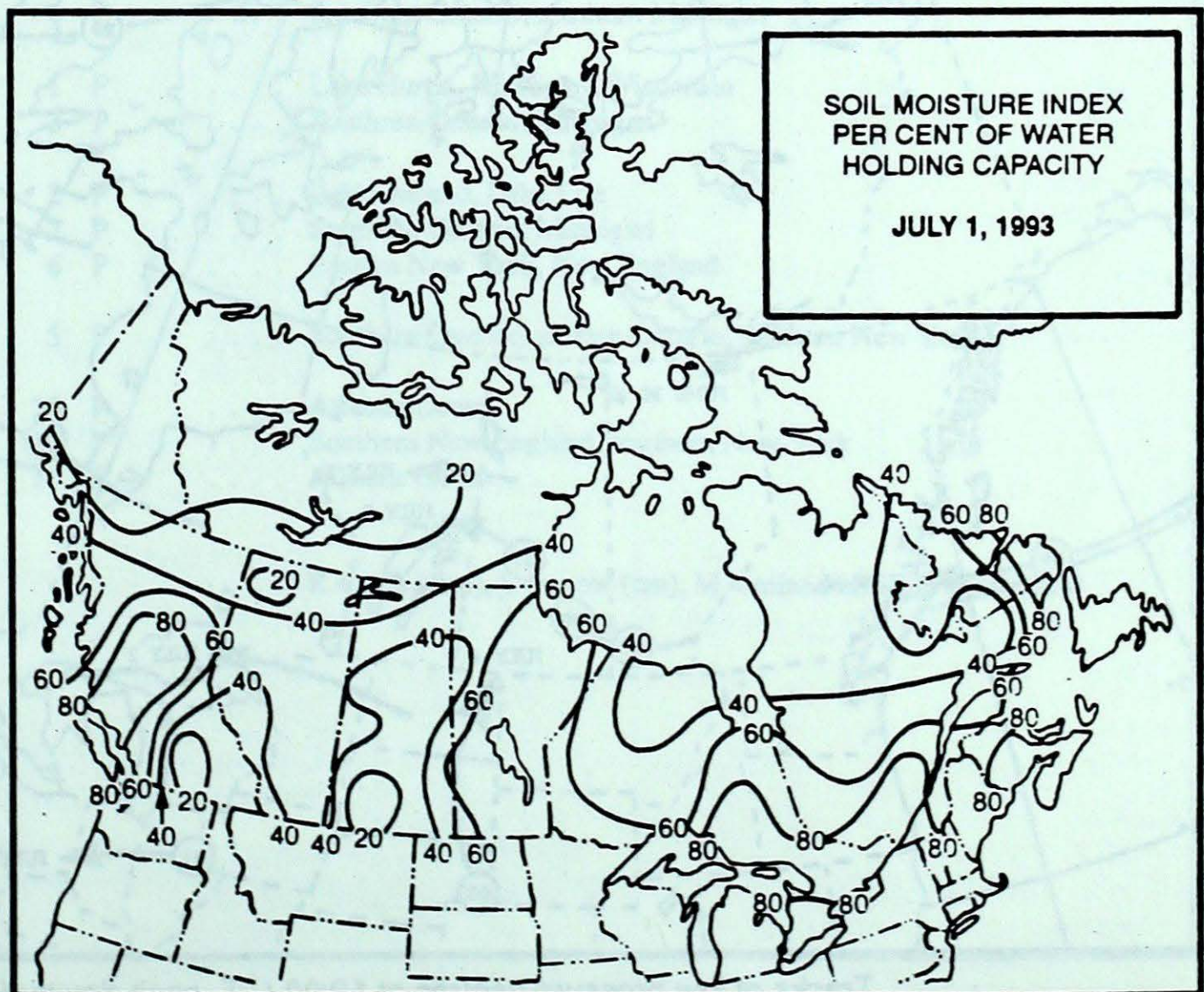
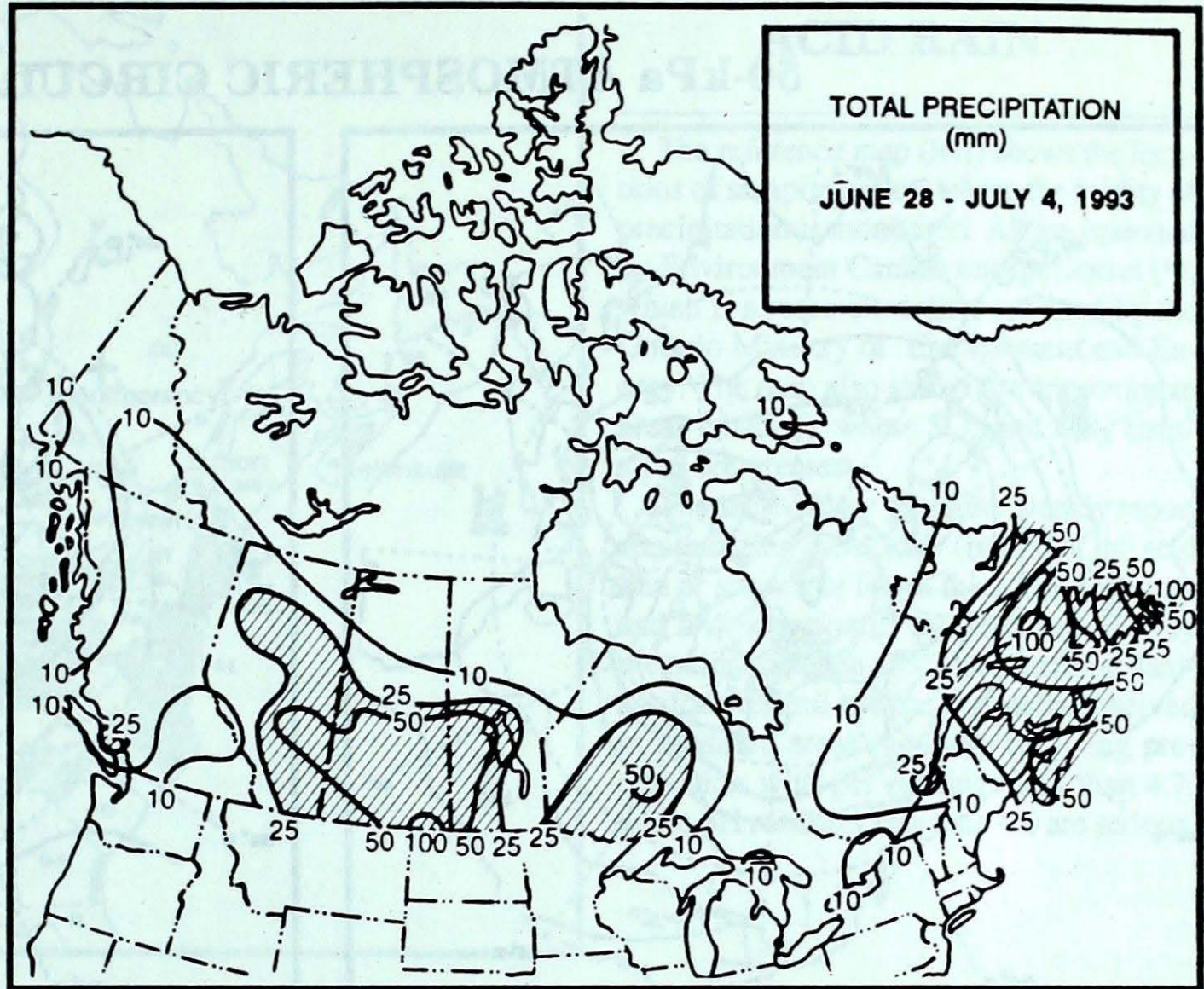
The purpose of the publication is to make topical information available to the public concerning the Canadian Climate and its socio-economic impact.

The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily reflect the views of the Atmospheric Environment Service.

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and changes:**

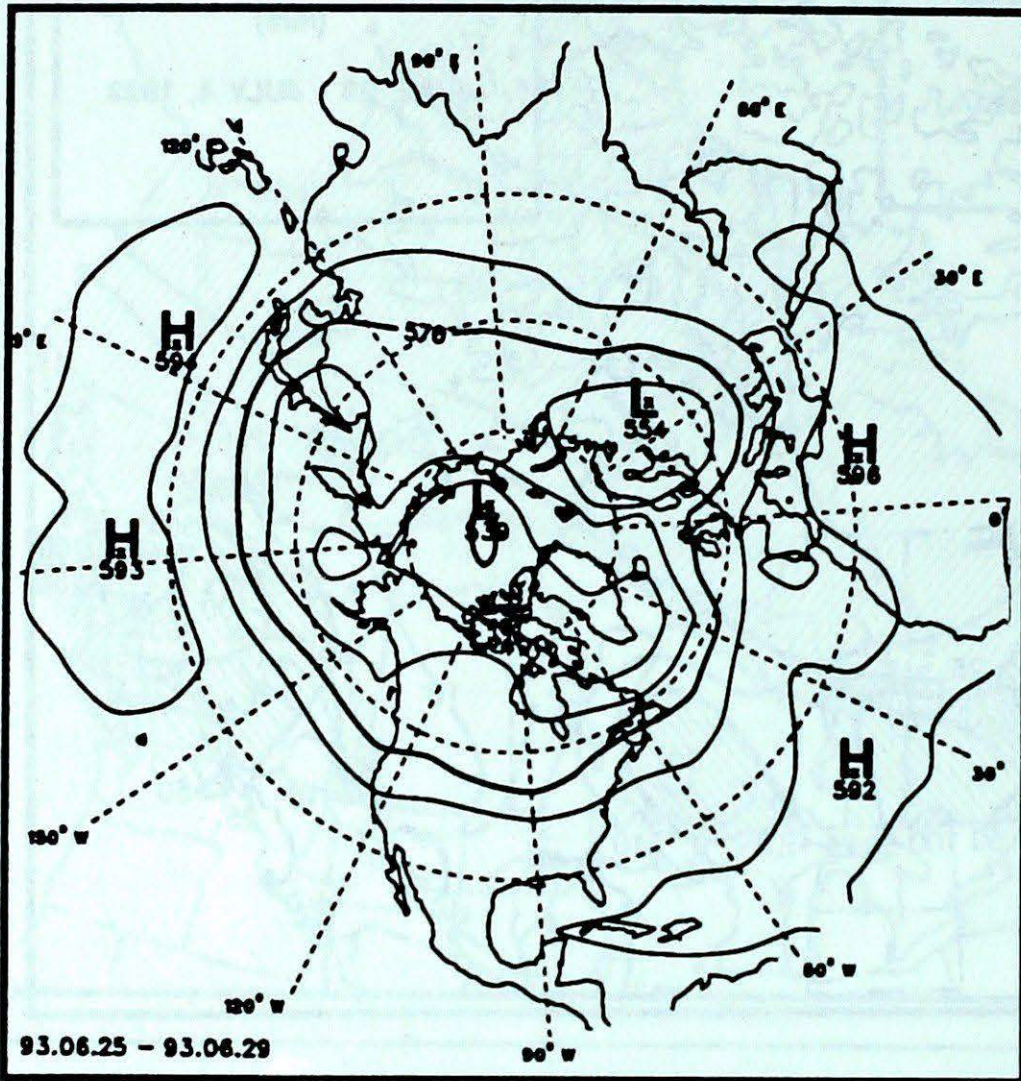
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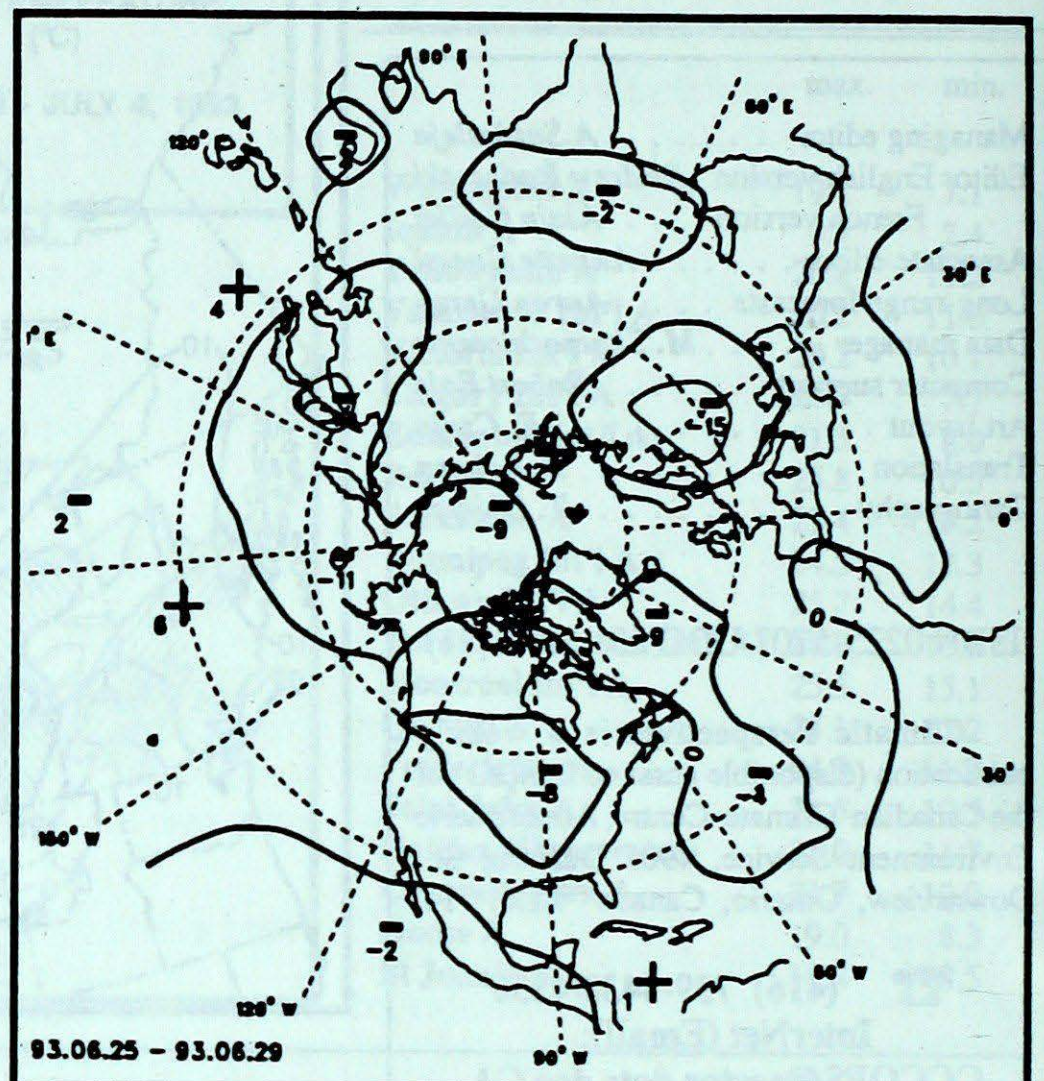




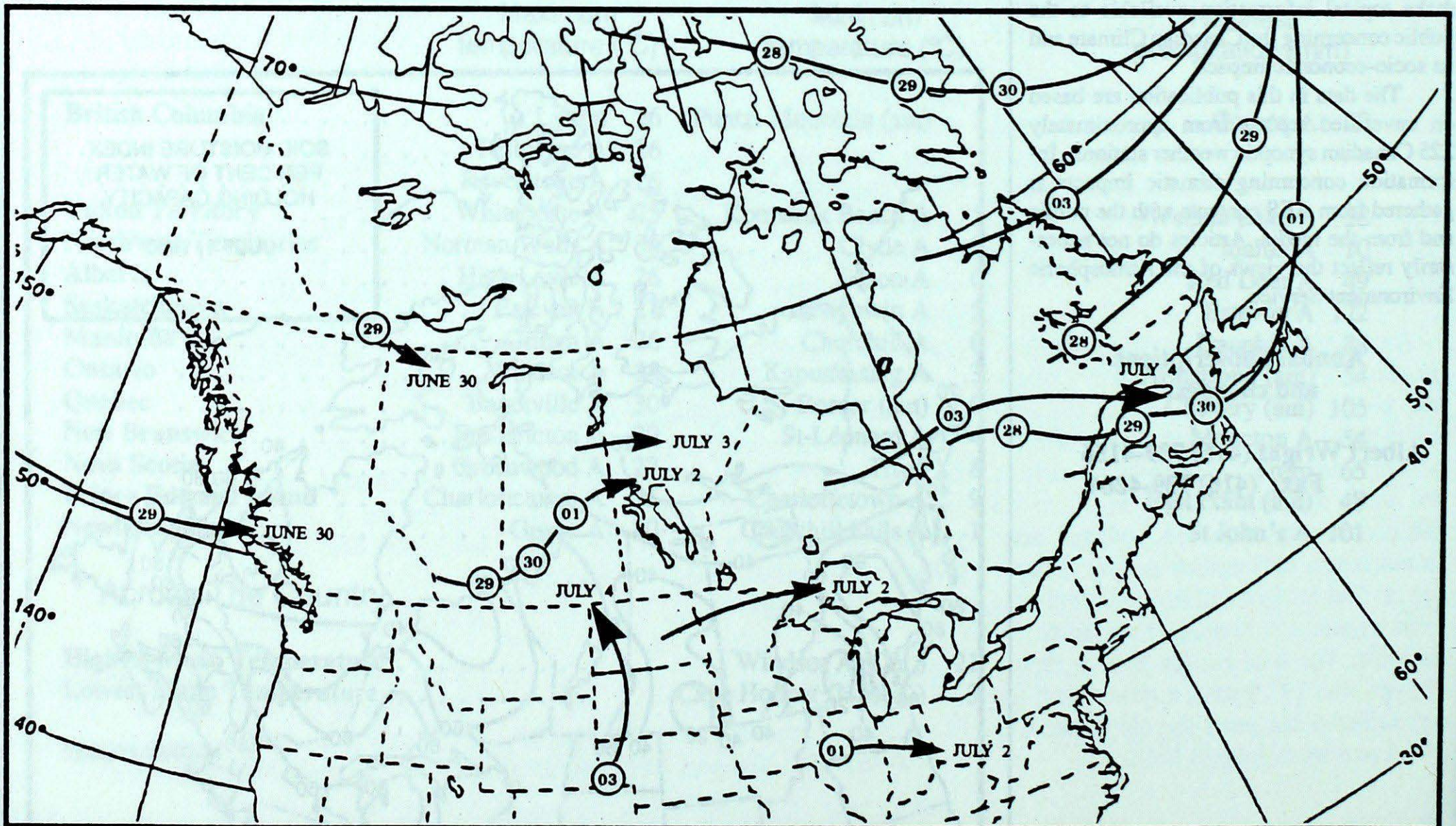
### 50-kPa ATMOSPHERIC CIRCULATION



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



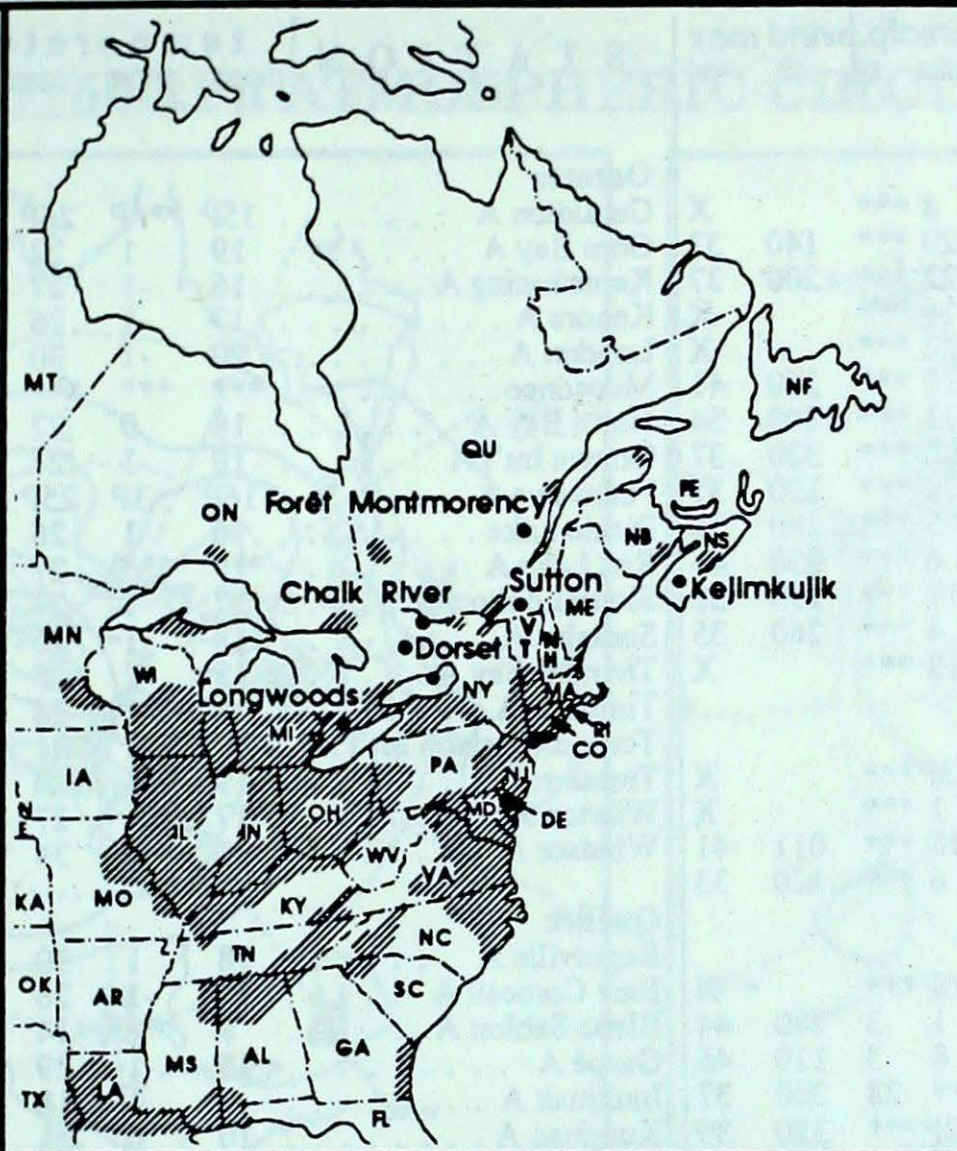
Mean geopotential height anomaly  
50-kPa level (10 decametre intervals)



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
	June 27 to July 3, 1993			
Longwoods	02	4.9	1 P	..... Southern Michigan
Dorset *	02	4.0	6 P	..... Southern Ontario, southern Michigan
Chalk River	27	4.9	1 P	..... Lake Huron, Michigan, Wisconsin
	02	3.7	3 P	..... Southern Ontario, Michigan
Sutton	27	4.4	2 P	..... Lake Ontario, Lake Erie
	28	4.6	2 P	..... Southern Ontario, Michigan
	02	4.7	6 P	..... Eastern New York, New England
Montmorency	3	4.2	5 P	..... Southern Quebec, eastern Ontario, northern New York
Kejimikujik	27	4.1	20 P	..... Atlantic Ocean
	28	3.8	12 P	..... Southern New England, southern New York
	03	4.5	16 P	..... 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	14	-1	23	3	8	***		X	Geraldton A	15P	***P	26P	4P	20P	***	150	50
Comox A	16	0	22	11	29	***	140	33	Gore Bay A	19	1	27	11	15	***		X
Cranbrook A	13	-3	21	3	22	***	200	37	Kapuskasing A	16	-1	27	3	6	***	130	46
Fort Nelson A	16	0	26	9	16	***		X	Kenora A	17	-1	26	8	42	***	120	46
Fort St John A	14	-1	23	8	22	***		X	London A	20	-1	30	9	0	***	060	41
Kamloops A	18	0	26	8	17	***	260	41	Moosonee	***	***	***	***	***	***		X
Penticton A	17	-1	26	7	11	***	340	54	North Bay A	18	0	27	9	1	***	330	35
Port Hardy A	14	1	19	8	21	***	320	37	Ottawa Int'l A	19	-1	27	12	17	***	300	56
Prince George A	14	0	22	6	20	***	190	37	Petawawa A	16P	-3P	25P	8P	1P	***	290	37
Prince Rupert A	14	2	17	10	5	***	280	30	Pickle Lake	16	-1	26	6	43	***	130	54
Smithers A	13	0	23	4	6	***	350	46	Red Lake A	***	***	27	***	***	***	140	59
Vancouver Int'l A	16	0	21	11	19	***	290	32	Sioux Lookout A	17	-1	27	8	32	***	140	65
Victoria Int'l A	16	1	22	10	4	***	260	35	Sudbury A	18	-1	26	9	6	***	340	37
Williams Lake A	13	-1	21	6	13	***		X	Thunder Bay A	15	-2	25	7	33	***	080	33
<b>Yukon Territory</b>									<b>Timmins A</b>								
Komakuk Beach A	14P	8P	22P	5P	3P	***		X	Toronto(Pearson Int'l A)	19	-1	31	11	1	***	090	41
Teslin (aut)	14	***	21	5	1	***		X	Trenton A	19	-1	29	11	15	***	140	44
Watson Lake A	15	1	22	9	18	***	011	41	Warton A	17	-1	27	9	0	***		X
Whitehorse A	14	1	25	5	6	***	120	33	Windsor A	21	-1	34	11	8	***		X
<b>Northwest Territories</b>									<b>Québec</b>								
Alert	3P	1P	10P	-1P	0P	***		X	Bagotville A	18	1	30	7	14	***	300	43
Baker Lake A	16	6	27	6	1	3	280	44	Baie Comeau A	14	-1	26	5	14	***	230	46
Cambridge Bay A	11	4	22	3	8	3	110	46	Blanc Sablon A	9	***	14	4	63	***	040	54
Cape Dyer A	***	***	***	***	***	28	300	37	Gaspé A	15	-1	29	4	19	***	240	39
Clyde A	4P	0P	11P	-3P	2P	***	320	39	Inukjuak A	9	1	18	3	1	***		X
Coppermine A	11	5	25	2	9	***	080	33	Kuujuuaq A	10	0	21	1	5	***	010	124
Coral Harbour A	11	4	23	4	1	***	340	41	Kuujuuarapik A	11	2	21	3	5	***	020	56
Eureka	7	2	17	2	1	***		X	La Grande Rivière A	16	5	27	5	1	***	200	35
Fort Smith A	18	2	26	10	0	***	180	43	Mont Joli A	16	0	27	8	13	***	170	43
Hall Beach A	8	4	16	2	1	***	320	48	Montréal Int'l A	20	0	28	12	4	***	220	35
Inuvik A	18	6	27	9	8	***		X	Natashquan A	12	-1	19	6	61	***	190	41
Iqaluit A	6	0	14	2	10	***	260	37	Québec A	19	1	28	9	43	***	230	52
Mould Bay A	***	***	13	***	***	***		X	Schefferville A	12P	0P	23P	1P	2P	***		X
Norman Wells A	21	5	30	12	1	***	120	46	Sept-Îles A	13	-2	25	5	48	***	020	57
Resolute A	5	2	11	0	0	***	320	43	Sherbrooke A	18	0	28	8	4	***	270	50
Yellowknife A	18	2	24	13	0	***	170	46	Val-d'Or A	17	0	27	6	18	***	180	46
<b>Alberta</b>									<b>New Brunswick</b>								
Calgary Int'l A	13	-1	21	7	44	***	320	63	Fredericton A	19	0	29	8	25	***	320	52
Cold Lake A	14	-1	21	9	40	***	120	43	Miscou Island (aut)	15P	-2P	26P	8P	45P	***		X
Edmonton Namao A	13	-2	20	8	26	***	310	37	Moncton A	18	0	26	9	54	***	010	44
Fort McMurray A	14	-2	22	8	33	***	110	33	Saint John A	16	0	25	7	45	***	310	37
Grande Prairie A	15	0	23	7	24	***	250	43	St Leonard A	15P	***P	27P	4P	13P	***	240	63
High Level A	17	1	26	8	20	***		X	<b>Nova Scotia</b>								
Lethbridge A	15	-2	23	8	28	***	260	63	Greenwood A	19	1	27	9	56	***	300	67
Medicine Hat A	16	-2	23	9	24	***	230	46	Shearwater A	16	-1	25	8	52	***	170	67
Peace River A	15	0	22	7	41	***	110	41	Sydney A	***	***	24	***	***	***	200	59
<b>Saskatchewan</b>									<b>Yarmouth A</b>								
Cree Lake	14	-2	19	9	4	***	160	48	16	0	24	8	45	***	180	44	
Estevan A	15	-3	27	7	122	***	100	69	<b>Prince Edward Island</b>								
La Ronge A	14	-2	20	9	21	***	120	43	Charlottetown A	17	0	25	9	48	***	190	46
Regina A	14	-3	24	7	78	***	040	61	East Point (auto)	14	***	21	9	48	***		X
Saskatoon A	14	-3	22	7	56	***	110	52	<b>Newfoundland</b>								
Swift Current A	14	-2	22	8	66	***	340	65	Cartwright	9	-2	25	2	29	***	340	56
Yorkton A	14	-2	25	6	99	***	030	50	Churchill Falls A	11P	-2P	21P	1P	12P	***	019	0
<b>Manitoba</b>									<b>Gander Int'l A</b>								
Brandon A	15	-2	25	8	86	***	050	76	15	0	25	5	27	***	180	67	
Churchill A	12	2	25	0	1	***	120	46	Goose A	12	-1	30	3	11	***	250	63
Lynn Lake A	14	-2	24	4	7	***	060	46	Stephenville A	14P	0P	22P	8P	55P	***	300	41
The Pas A	15	-2	23	2	33	***	130	59	St John's A	15	1	24	3	101	***	250	54
Thompson A	13	-2	25	1	8	***	040	56	St Lawrence	11P	1P	21P	5P	23P	***		X
Winnipeg Int'l A	17	-1	25	9	18	***	170	63	Wabush Lake A	12	0	25	2	15	***	300	44

93/06/28-93/07/04

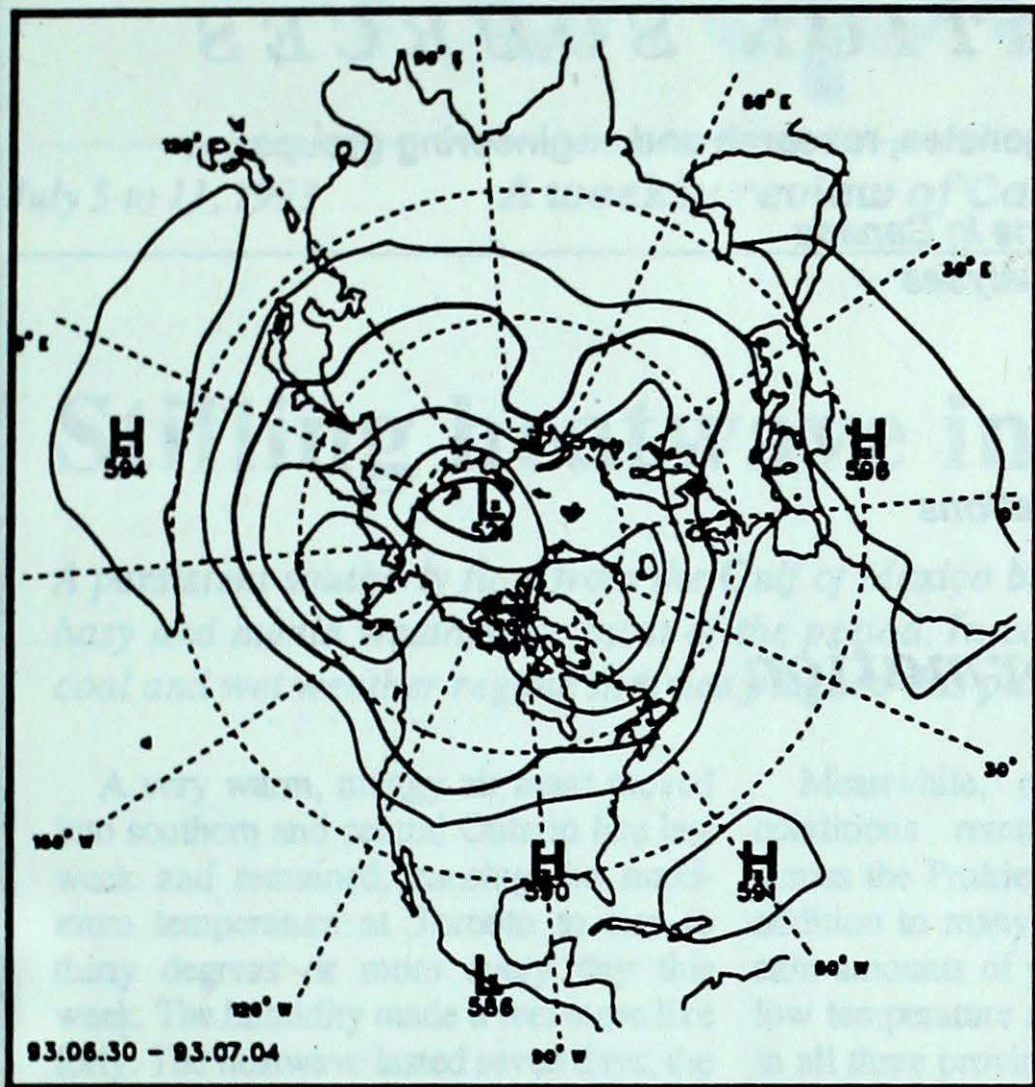
mean = mean weekly temperature, °C  
 max = maximum weekly temperature, °C  
 min = minimum weekly temperature, °C  
 anom = mean temperature anomaly, °C

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

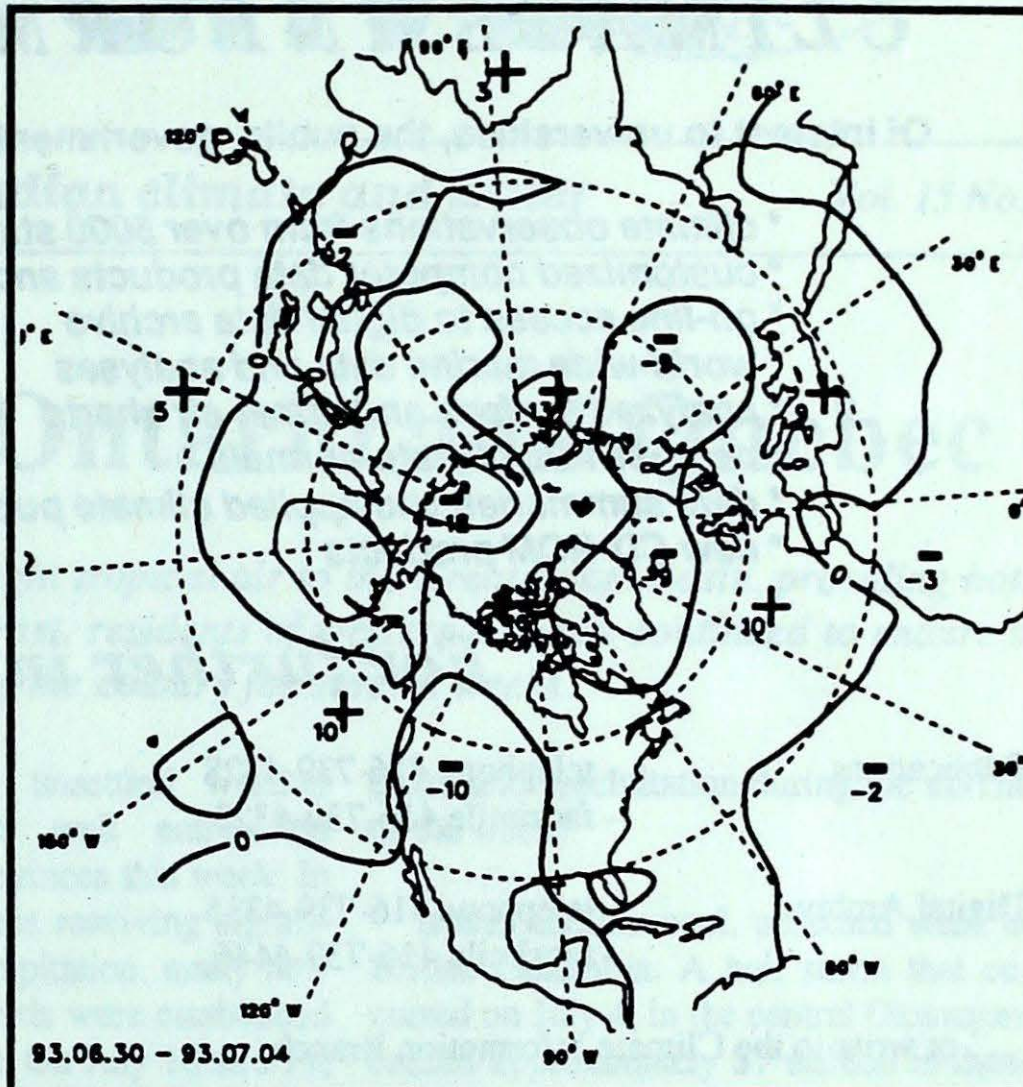
— Annotations —  
 X = no observation  
 P = less than 7 days of data  
 \* = missing data when going to printing.



### 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

*An average Canadian family uses 13 shopping bags a week. Some of these bags are reused, but most aren't strong enough to last very long. EcoLogo reusable shopping bags are made from cloth, so they last longer and help reduce waste.*

*An environmental citizenship message from Environment Canada.*



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