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Climatic Perspectives

June 14 to 20, 1993 **A weekly review of Canadian climate and water** *Vol. 15 No. 25*

Great Lakes water levels on the rise

During April, the Great Lakes Basin received approximately 127 percent of the average precipitation expected during the month. In May, precipitation was about 9 percent greater than average.

As a result of the record-high water supply to Lake Ontario in April (135 percent of normal), the lake rose 46 cm during the month to its highest level since 1973. During May, the water supply to Lake Ontario declined. This, in combination with the regulated record-high outflows from the Lake, caused the level to decline by about 12 cm from its peak of 75.65 cm earlier in May. Lake Ontario is 49 cm above the level recorded last year at this time, or 62 cm above the long-term average.

The controlled record-high outflow from Lake Ontario, resulted in temporary halts in commercial navigation in the international section of the St. Lawrence River due to strong, unsafe currents. The outflow from Lake Ontario during May was 37 percent above average, with about the same discharge expected during June.

Further downstream in Montreal harbour, the April mean water level was 1.3 metres higher than recorded one year ago, due to the high volume of water. By May it dropped .85 of a metre due to reduced outflows from the Ottawa River and other tributaries, but the level was still .32 metres higher than recorded in the same period last year.

Although the water supply to Lake Erie during the last two months was well-below normal, and its level is declining, Lake Erie is still 42 cm above normal, and 25 cm above the level recorded one year ago, due to last year's heavy rainfalls.

The high water levels on Lakes Erie and Ontario are declining, but there is still a risk of storm damage along the shorelines for the next few months.

Lake Superior, during April and May, received 138 and 153 percent of normal precipitation, respectively, causing it to rise by more than its usual amount during this two-month period. Currently, Lake Superior is 5 cm above last year's level or 2 cm above the long-term average.

Lakes Huron, Michigan and Georgian Bay are 17 cm above last year's levels due to 33 percent more precipitation than normal falling in April and 13 percent more falling during May of this year. This is 18 cm above the long-term average.

Elsewhere ...

In the land of the midnight sun, a relatively dry spring in the western Northwest Territories has resulted in a high forest fire hazard. In the Yukon, temperatures cooled down from previous weeks, with scattered showers and thundershowers reported. In the Keewatin, the snow has almost disappeared. Cloud, showers and rain were common over Baffin Island; Cape Dyer still reports 37 cm of snow on the ground.

The B.C. interior was unsettled and damp, with a mud slide in the Fraser Valley attributed to the wet conditions. In contrast, it was mostly sunny in Victoria.

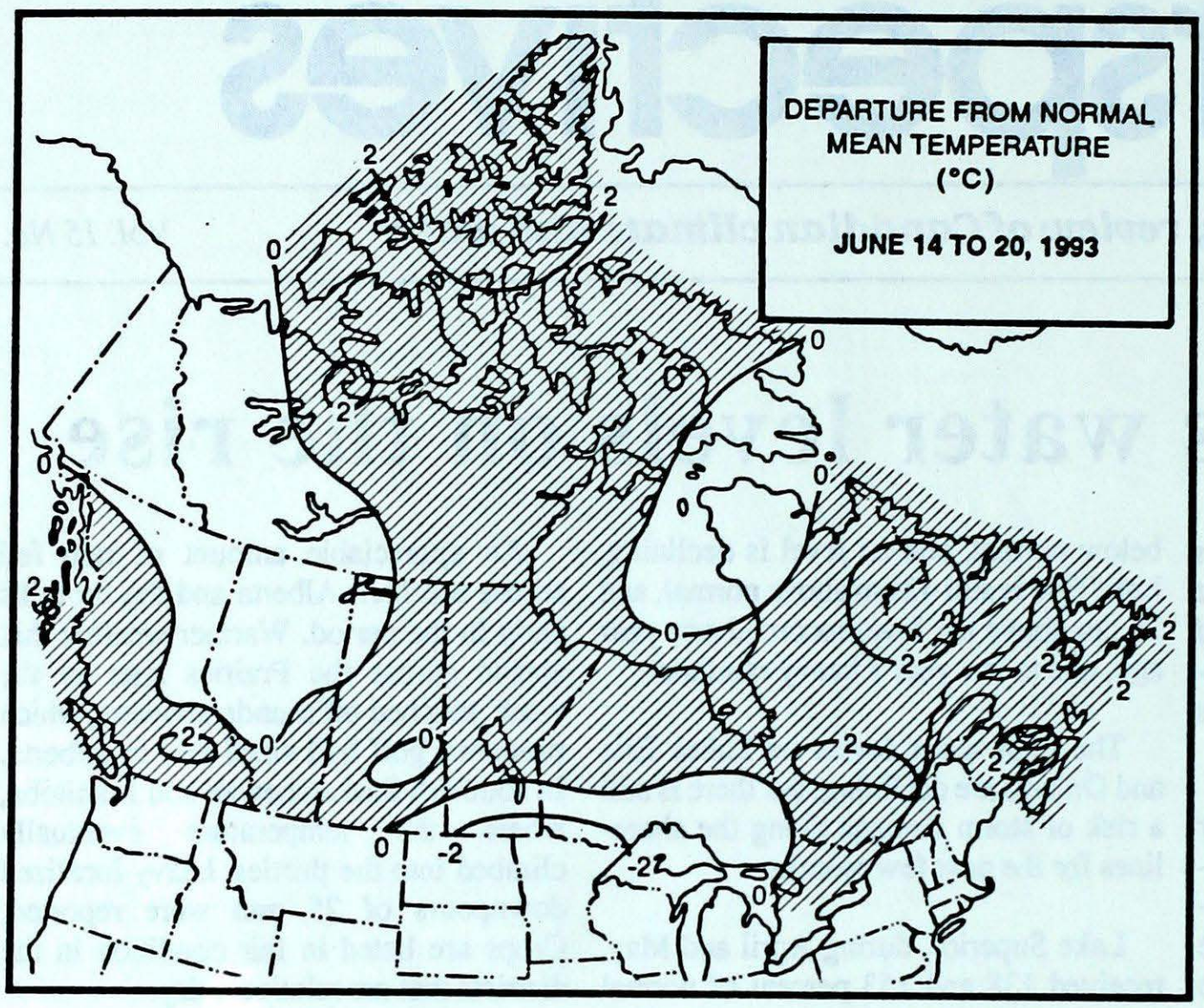
An appreciable amount of rain fell across southern Alberta and the foothills early in the period. Warmer weather that spread across the Prairies later in the week, touched off thundershowers, which produced golf ball sized hail in Alberta. In southern Saskatchewan and Manitoba, where the temperature eventually climbed into the thirties, heavy localized downpours of 25 mm were reported. Crops are listed in fair condition in the districts that are relatively dry.

The week ended very wet in southern Ontario, with some areas reporting nearly 100 mm of rain. On the 20th, a tornado touched down near London and a massive mud slide occurred east of Ottawa. June rainfall amounts are almost double the normal in the south. Hail was reported in the Ottawa Valley, as well as a waterspout on Lac Ringuet located in Parc des Laurentides north of Quebec City.

It's been a long time coming but Atlantic Canada finally got a week with lots of sunshine and warm temperatures. Even Newfoundland experienced summer-like conditions, with readings in the mid to high twenties until the weekend, when the weather turned inclement. In Labrador, the mercury reached the mid-thirties.

A Look Ahead...

For the week of June 28, above-normal temperatures are expected across Canada except for near to below normal values in Ontario and southwestern Quebec. Precipitation will fall across British Columbia, Alberta and the southern parts of Ontario and Quebec.



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	18.9	5.7
Iqaluit A	7.4	0.7
Yellowknife A	18.3	8.2
Vancouver Int'l A	19.8	11.3
Victoria Int'l A	19.8	9.6
Calgary Int'l A	19.9	7.3
Edmonton Int'l A	21.0	7.7
Regina A	22.6	8.9
Saskatoon A	22.4	8.8
Winnipeg Int'l A	22.9	10.2
Ottawa Int'l A	23.9	12.3
Toronto (Pearson Int'l A)	23.9	11.7
Montréal Int'l A	23.9	13.2
Québec A	22.9	10.9
Fredericton A	23.4	10.1
Saint John A	19.5	8.5
Halifax (Shearwater)	18.6	9.2
Charlottetown A	20.1	9.9
Goose A	18.3	6.4
St John's A	16.8	6.5

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Cranbrook A	30	Smithers A	2	Prince George A	36
	Revelstoke A	30				
Yukon Territory	Teslin (aut)	21	Komakuk Beach A	-3	Watson Lake A	11
Northwest Territories	Norman Wells A	28	Alert	-5	Iqaluit A	30
Alberta	Medicine Hat A	30	Fort McMurray A	0	Medicine Hat A	32
Saskatchewan	Estevan A	34	Cree Lake	0	Estevan A	21
Manitoba	Brandon A	32	Thompson A	0	Gillam A	20
Ontario	Petawawa A	30	Timmins A	2	Wiarton A	84
Quebec	Kuujjuarapik A	32	Inukjuak A	-1	Montréal Int'l A	45
New Brunswick	St Stephen (aut)	33	St-Léonard A	7	St Stephen (aut)	11
Nova Scotia	Greenwood A	30	Shearwater A	8	Shearwater A	15
Prince Edward Island	Charlottetown A	28	East Point (aut)	9	Charlottetown A	3
Newfoundland	Goose A	35	Deer Lake A	-1	Bonavista	43

Across The Country...

Highest Mean Temperature	Windsor A (Ont.)	21
Lowest Mean Temperature	Alert (N.W.T.)	-1

93/06/14-93/06/20

CLIMATIC PERSPECTIVES
VOLUME 15

Managing editor . . . . . *A.Saulesleja*
Editor English version *Andrew Radomski*
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Long-range forecasts . . . . *Aaron Gergy*
Data manager . . . . . *M. Skarpathiotakis*
Computer support . . . . . *Robert Eals*
Art layout . . . . . *K. Czaja*
Translation . . . . . *D. Pokorn*
Cartography . . . . . *T. Chivers*

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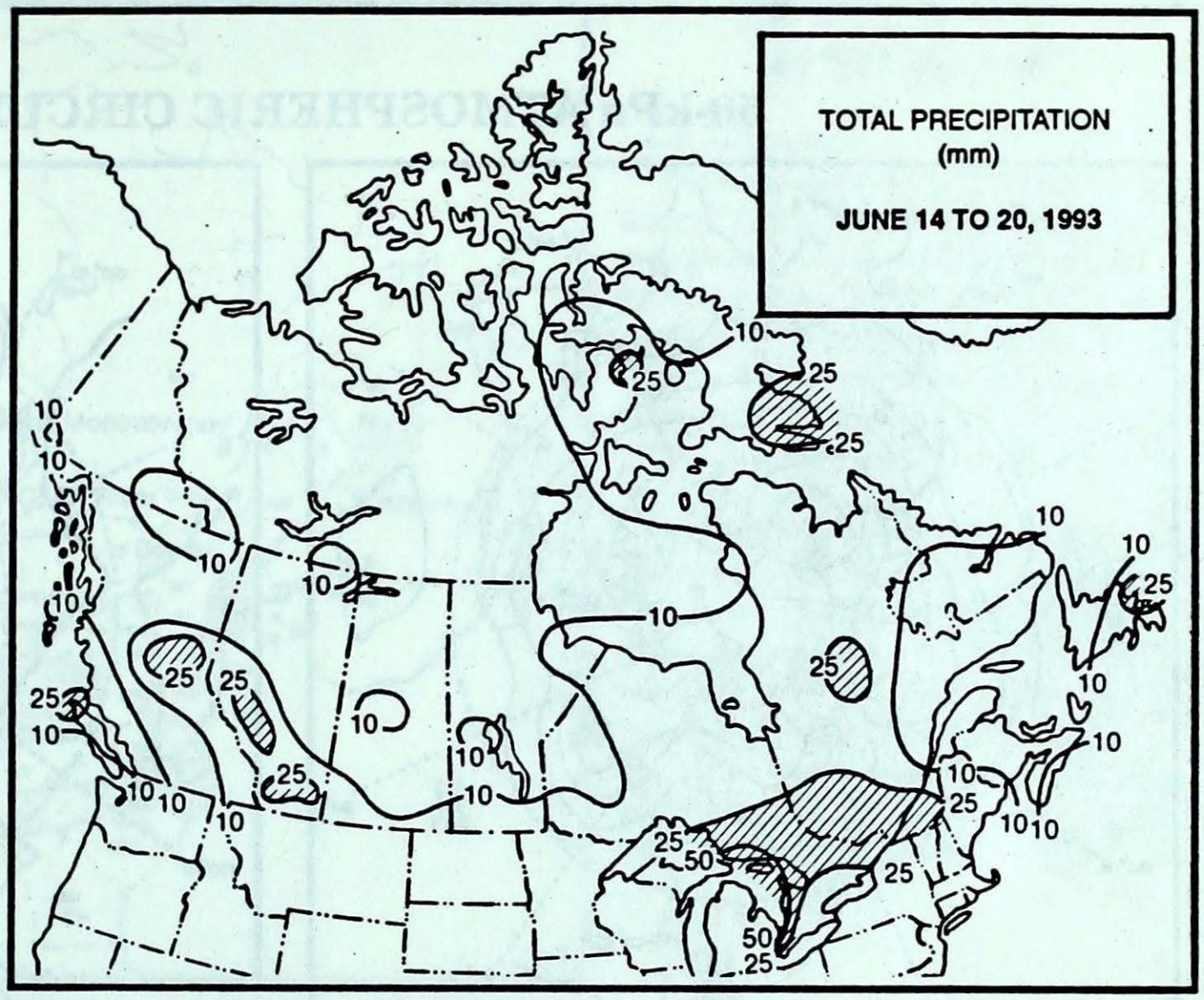
☎ (416) 739-4438/4330
InterNet (Email):
CCCOPS@aestor.dots.doe.CA
Fax: (416) 739-4446

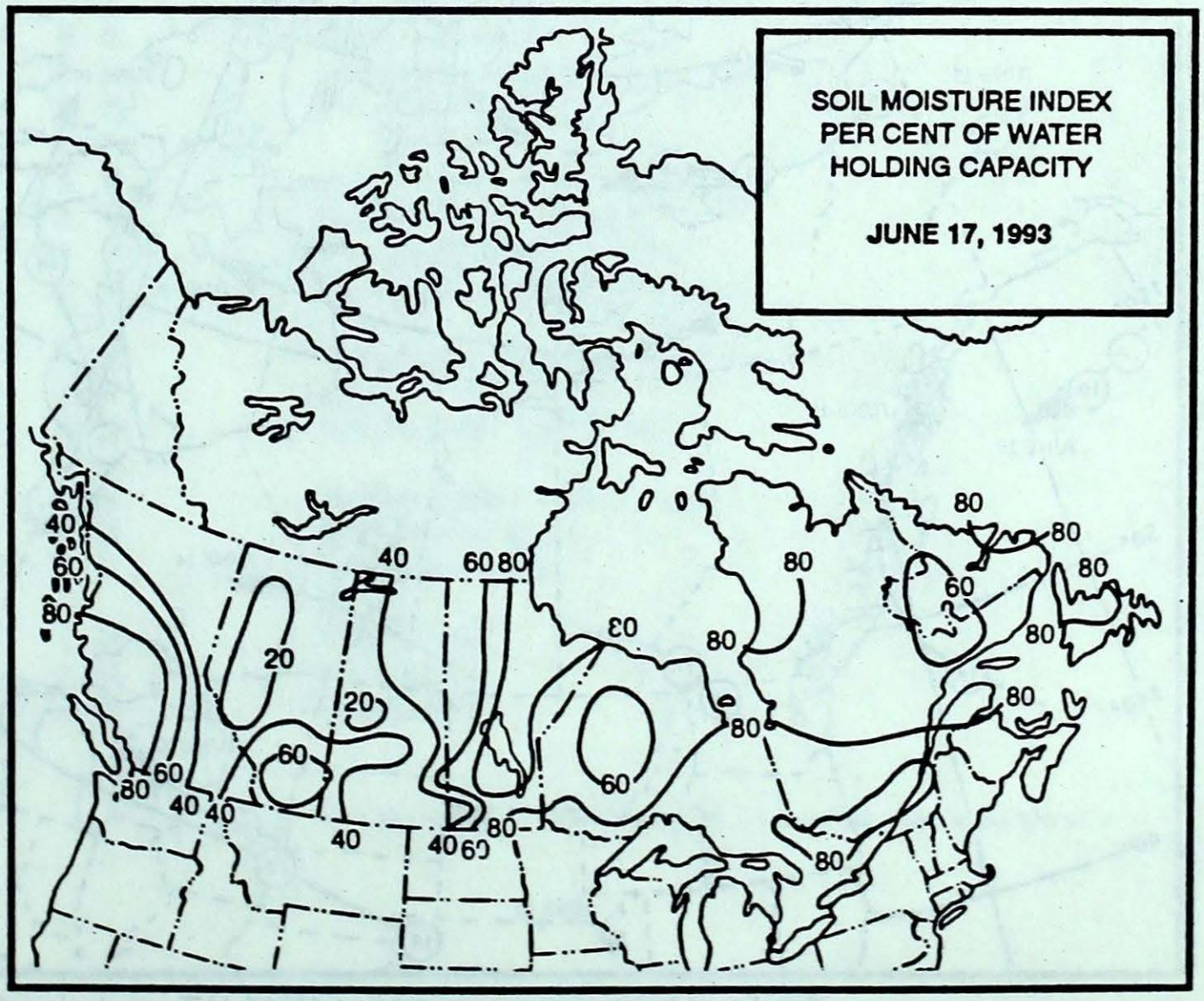
The purpose of the publication is to make topical information available to the public concerning the Canadian Climate and its socio-economic impact.

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.

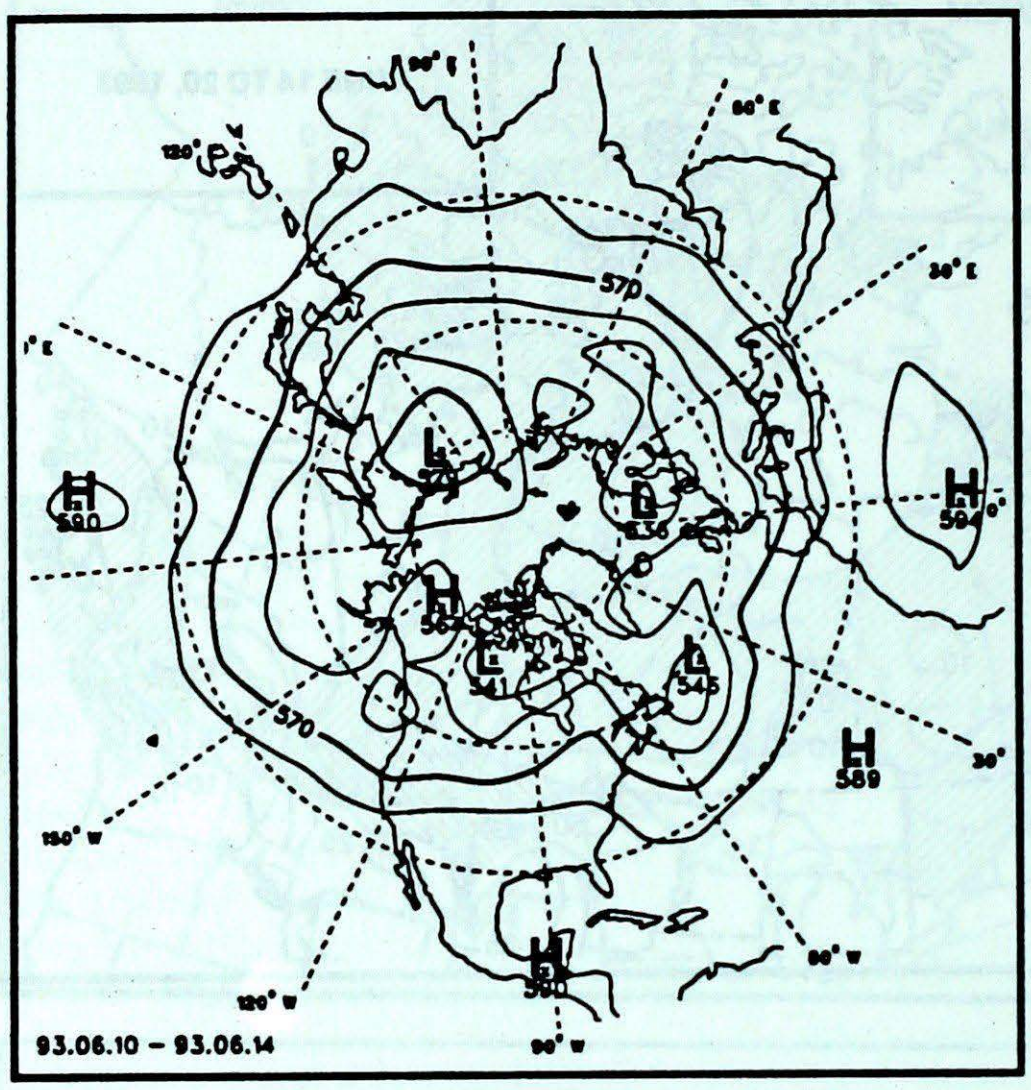
Annual Subscriptions and changes:

Albert Wright (416) 739-4156
Fax: (416) 739-4264

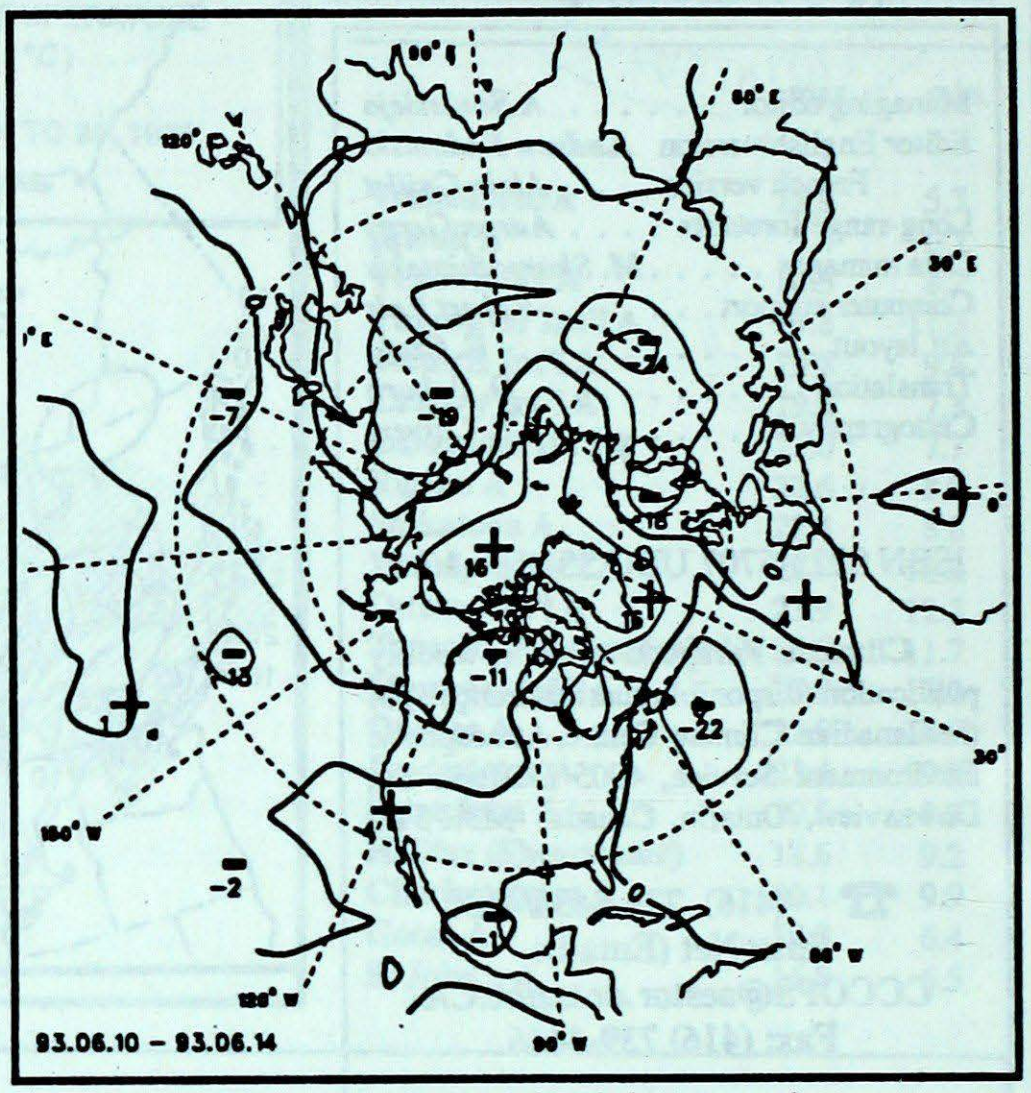




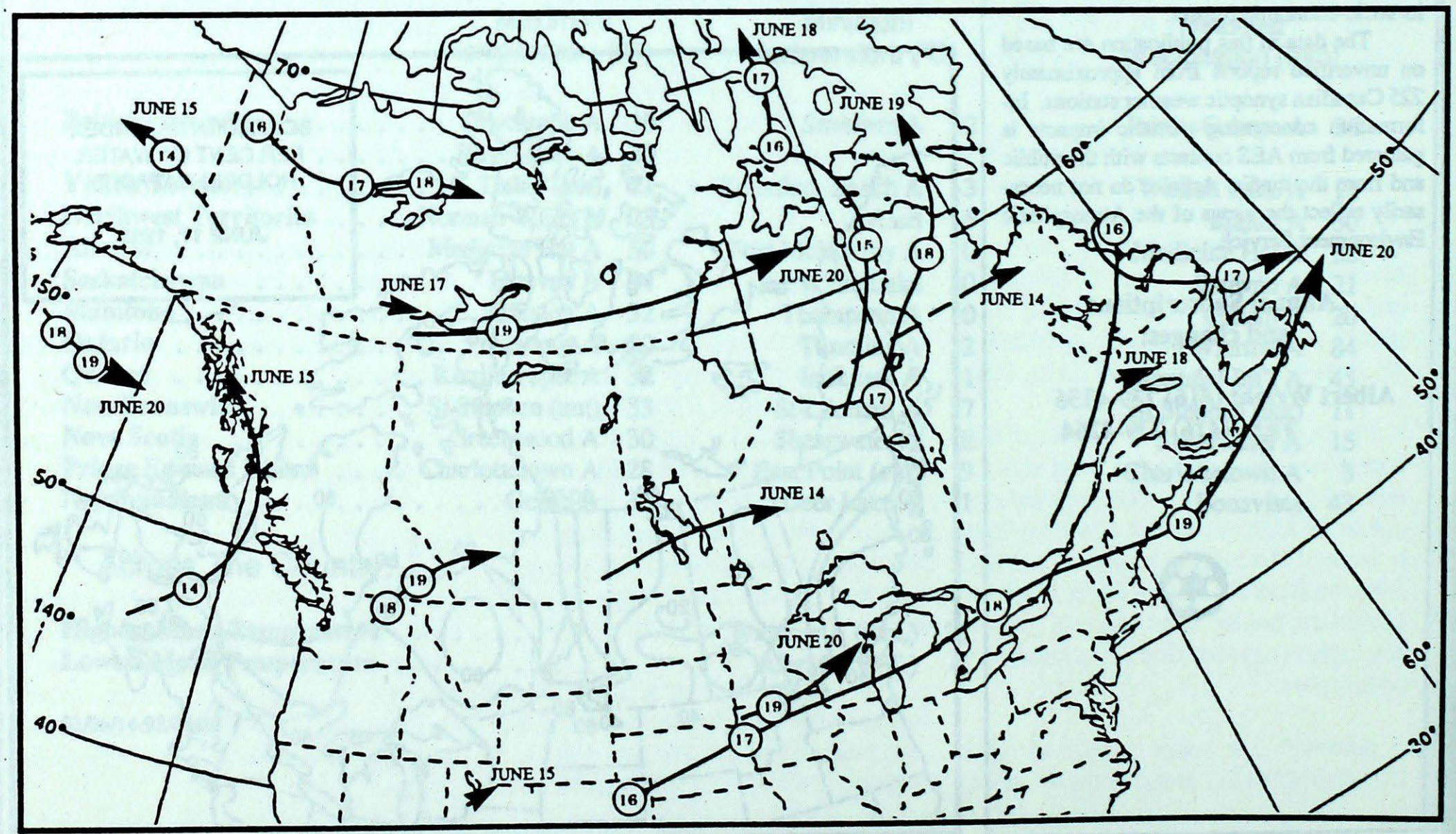
50-kPa ATMOSPHERIC CIRCULATION



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

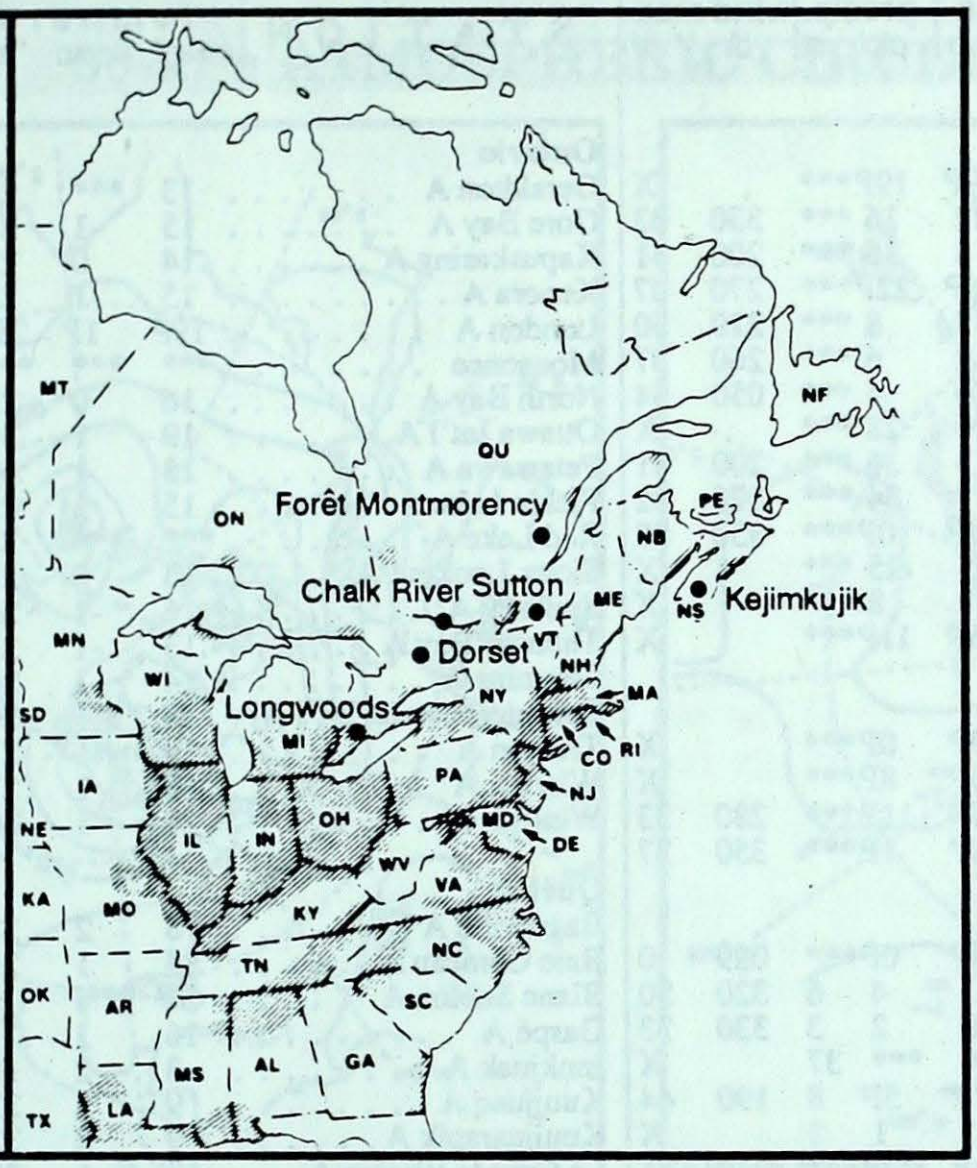


Mean geopotential height anomaly
50-kPa level (10 decametre intervals)



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

ALABAMA	- AL
ARKANSAS	- AR
CONNECTICUT	- CO
DELAWARE	- DE
FLORIDA	- FL
GEORGIA	- GA
ILLINOIS	- IL
INDIANA	- IN
IOWA	- IA
KANSAS	- KA
KENTUCKY	- KY
LOUSIANA	- LA
MAINE	- ME
MANITOBA	- ME
MARYLAND	- MT
MASSACHUSETTS	- MA
MICHIGAN	- MI
MINNESOTA	- MN
MISSISSIPI	- 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_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
					June 13 to 19, 1993
Longwoods	14	4.0	3	R	Western Ohio, southern Indiana
Dorset *	14	4.2	6	R	Southern Ontario, Ohio
	17	4.0	10	R	Southern Ontario, southern Michigan
	18	4.1	9	R	Lake Huron, Michigan
Chalk River	14	3.7	6	R	Southern Ontario, southern Michigan
	15	4.4	3	R	Southern Ontario, Michigan
	17	4.0	14	R	Southern Ontario, Michigan
	18	4.3	4	R	Central Ontario, northern Michigan
Sutton	15	3.8	7	R	Western New York, eastern and southern Ontario
	16	4.8	3	R	Northwestern Quebec
	18	4.9	8	R	Eastern Ontario, Lake Huron
Montmorency	15	4.3	7	R	Southern Quebec, eastern Ontario
	17	4.5	2	R	Nortwestern Quebec
	18	4.5	3	R	Nortwestern Quebec
Kejimkujik	15	4.3	1	R	Atlantic Ocean
	18	3.4	3	R	New England
	19	4.0	2	R	New England

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								
Blue River A	16P	2P	24P	9P	19P***			X
Comox A	17	1	22	12	16 ***		330	33
Cranbrook A	17	2	30	8	15 ***		200	41
Fort Nelson A	11P	-4P	16P	6P	22P***		270	37
Fort St John A	14	0	22	3	8 ***		220	50
Kamloops A	20	2	29	12	6 ***		260	37
Penticton A	19	2	29	10	4 ***		050	54
Port Hardy A	13	1	18	6	28 ***			X
Prince George A	14	1	21	3	36 ***		200	41
Prince Rupert A	13	2	18	7	34 ***		170	32
Smithers A	11P	-2P	18P	2P	0P***		350	48
Vancouver Int'l A	17	1	24	11	25 ***			X
Victoria Int'l A	16	1	25	8	8 ***			X
Williams Lake A	14P	-1P	22P	5P	11P***			X
Yukon Territory								
Komakuk Beach A	2P	-1P	6P	-3P	0P***			X
Teslin (aut)	12P	***	21P	3P	8P***			X
Watson Lake A	11P	-2P	15P	6P	11P***		280	33
Whitehorse A	11P	-1P	18P	2P	1P***		350	37
Northwest Territories								
Alert	-1P	-1P	2P	-5P	0P***		029	0
Baker Lake A	6	1	22	-1	4	6	320	50
Cambridge Bay A	3	0	9	0	2	3	330	33
Cape Dyer A	***	***	***	***	***	37		X
Clyde A	2P	1P	8P	-2P	5P	8	190	44
Coppermine A	6	3	15	-1	1	3		X
Coral Harbour A	4P	1P	8P	1P	23P***		240	65
Eureka	5	2	12	1	2	3		X
Fort Smith A	12	-1	27	0	13 ***		210	61
Hall Beach A	2	1	6	-1	26	3	050	56
Inuvik A	7P	-5P	14P	5P	0P***			X
Iqaluit A	3	-1	9	0	30	3	140	63
Mould Bay A	***	***	7	***	***	3		X
Norman Wells A	14	-1	28	6	1 ***		330	63
Resolute A	3	2	7	-1	4	4	040	56
Yellowknife A	13	-1	25	4	1 ***		030	59
Alberta								
Calgary Int'l A	15	1	27	6	17 ***		360	67
Cold Lake A	14	0	24	4	6 ***			X
Edmonton Namao A	16	1	25	6	2 ***		320	57
Fort McMurray A	14	0	26	0	1 ***		260	48
Grande Prairie A	13	-1	23	2	19 ***		250	70
High Level A	14	-1	27	2	9 ***		010	37
Lethbridge A	16	0	30	5	20 ***		220	50
Medicine Hat A	17	0	30	6	32 ***		180	41
Peace River A	13	-1	24	3	1 ***		290	56
Saskatchewan								
Cree Lake	13	0	25	0	1 ***		250	54
Estevan A	15	-1	34	3	21 ***		330	56
La Ronge A	15	2	26	1	5 ***		260	59
Regina A	16	0	32	2	3 ***		310	50
Saskatoon A	16	0	27	4	2 ***		320	59
Swift Current A	16	1	30	3	18 ***		030	50
Yorkton A	16	0	29	2	1 ***		340	56
Manitoba								
Brandon A	14	-2	32	5	17 ***		280	65
Churchill A	8	1	25	0	8 ***		230	70
Lynn Lake A	13	1	27	1	2 ***		330	56
The Pas A	16	1	29	2	6 ***		220	54
Thompson A	14	2	27	0	5 ***		260	74
Winnipeg Int'l A	15	-2	30	6	15 ***		250	82

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Geraldton A	13	***	26	3	16 ***		180	56
Gore Bay A	15	-1	21	8	68 ***		290	50
Kapuskasing A	14	0	27	3	12 ***		150	46
Kenora A	15	-1	25	5	13 ***		330	44
London A	19P	1P	28P	8P	19P***		300	52
Moosonee	***	***	***	***	***	***		X
North Bay A	16	0	27	7	51 ***		200	43
Ottawa Int'l A	19	1	30	11	49 ***		300	50
Petawawa A	18	1	30	10	44 ***		200	43
Pickle Lake	15	1	29	3	7 ***		330	48
Red Lake A	***	***	25	***	***	***	320	56
Sioux Lookout A	15	0	28	5	14 ***		350	70
Sudbury A	16	-1	24	7	27 ***		190	48
Thunder Bay A	13	-1	21	4	20 ***		290	67
Timmins A	14	-1	26	2	20 ***		300	46
Toronto(Pearson Int'l A)	19	1	29	8	23 ***		320	48
Trenton A	19	1	27	12	23 ***		290	43
Wiarton A	16	1	27	8	84 ***		190	37
Windsor A	21	1	30	12	21 ***		230	50
Québec								
Bagotville A	18	2	32	8	14 ***		180	50
Baie Comeau A	15	1	25	8	3 ***		350	44
Blanc Sablon A	9P	***P	15P	1P	8P***			X
Gaspé A	16	1	29	5	1 ***		110	37
Inukjuak A	3	-2	18	-1	9 ***			X
Kuujjuaq A	9	2	32	2	12 ***		300	57
Kuujjuarapik A	9	2	32	-1	18 ***		190	76
La Grande Rivière A	13	1	30	1	17 ***		270	76
Mont Joli A	17	1	31	8	2 ***		240	41
Montréal Int'l A	19	0	29	11	45 ***		160	35
Natashquan A	13P	2P	21P	3P	1P***		090	43
Québec A	19	2	30	10	10 ***		260	44
Schefferville A	12	2	29	2	11 ***		310	61
Sept-Îles A	14	1	23	5	1 ***		280	50
Sherbrooke A	17	1	28	9	27 ***		270	56
Val-d'Or A	16	1	29	5	27 ***		160	39
New Brunswick								
Fredericton A	19	3	33	10	7 ***		300	54
Miscou Island (aut)	15P	1P	24P	8P	1P***			X
Moncton A	18	2	31	10	0 ***		230	46
Saint John A	16	2	29	9	5 ***			X
St Leonard A	18P	***P	31P	7P	5P***		280	41
Nova Scotia								
Greenwood A	18	2	30	9	4 ***		230	59
Shearwater A	14	1	26	8	15 ***		360	39
Sydney A	***	***	28	***	***	***		X
Yarmouth A	14	1	26	9	9 ***		220	52
Prince Edward Island								
Charlottetown A	17	2	28	11	3 ***		240	46
East Point (auto)	14P	***P	19P	9P	0P***			X
Newfoundland								
Cartwright	11	2	30	2	15 ***		330	59
Churchill Falls A	***	***	***	***	0 ***		*	*
Gander Int'l A	14	1	29	1	10 ***		320	78
Goose A	14	2	35	3	5 ***		290	78
Stephenville A	15P	3P	23P	6P	3P***		330	48
St John's A	13	1	26	3	24 ***		300	57
St Lawrence	12	3	21	3	22 ***			X
Wabush Lake A	14	3	30	2	7 ***		280	46

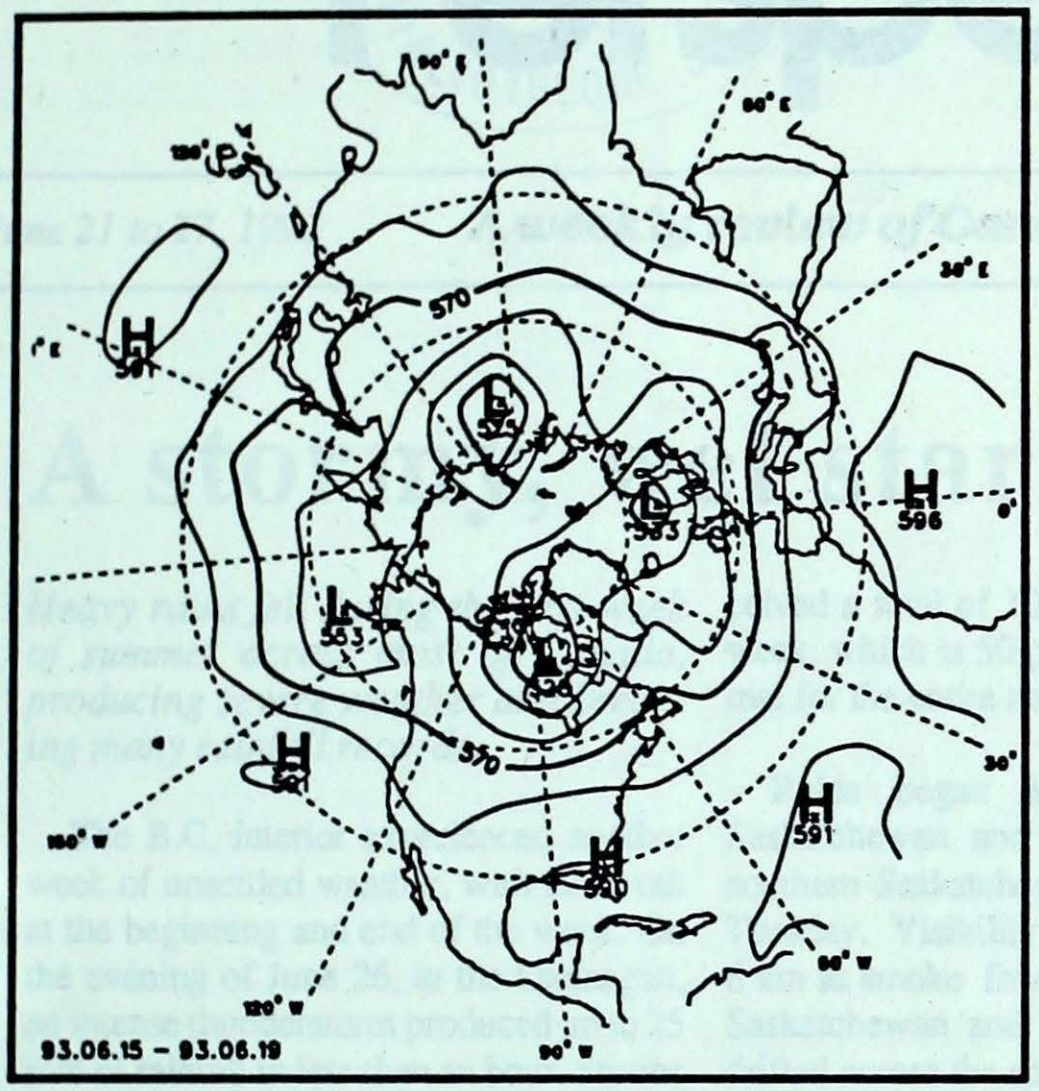
93/06/14-93/06/20

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

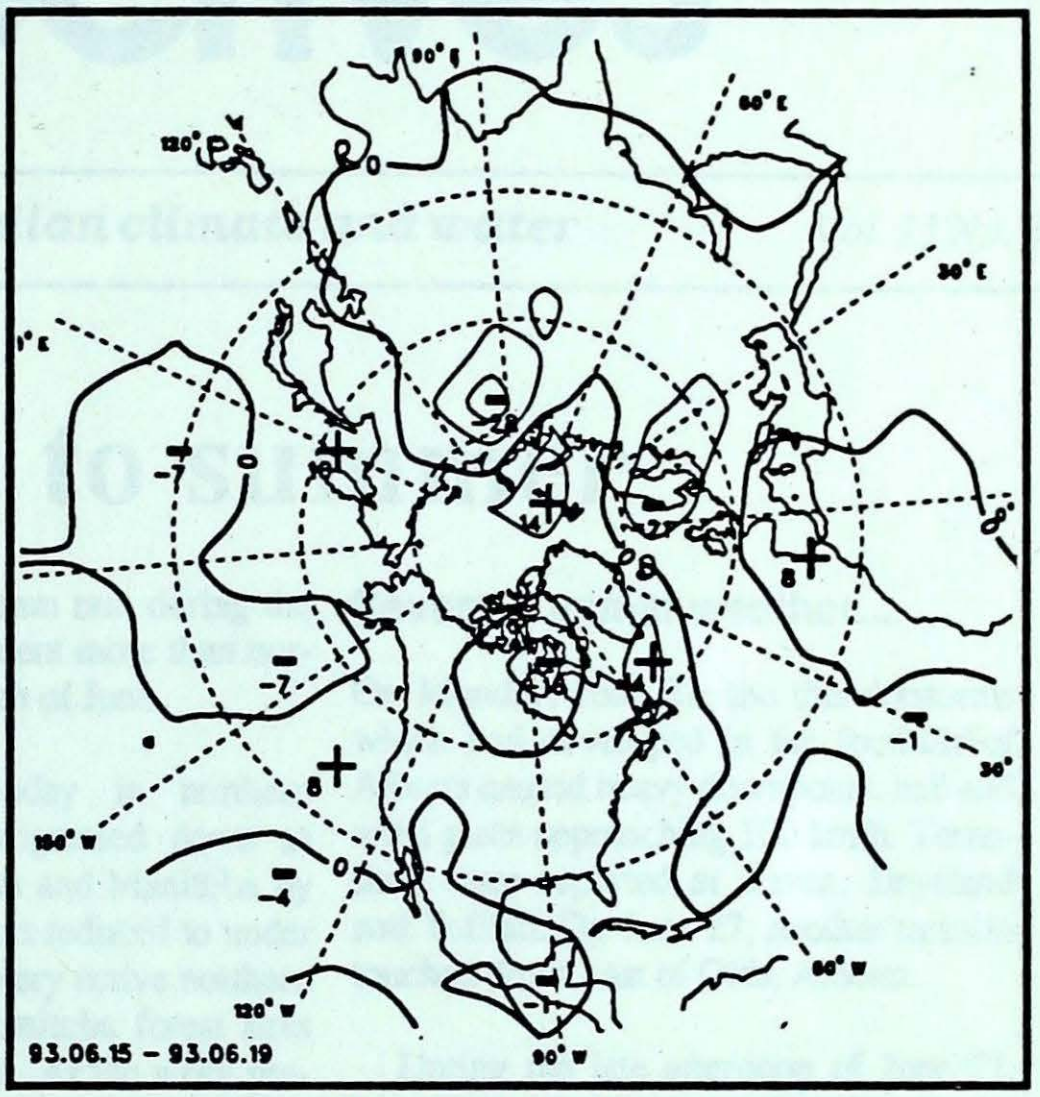
ptot = weekly precipitation total in mm
st = snow thickness on the ground in cm
dir = direction of max wind, deg. from north.
vel = wind speed in km/h

— 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

Plastics found in the world's oceans come from many sources. Beach users, pleasure boaters, commercial ships, and garbage dumps close to shore can pollute our oceans. Dispose of your garbage properly. Do your part to keep the oceans clean!

An environmental citizenship message from Environment Canada.