



Climatic Perspectives



August 2 to 8, 1993

A weekly review of Canadian climate and water

Vol. 15 No. 32

... and the North sends smoke!

Low snow pack, combined with a dry summer, has resulted in 450 forest fires in the Northwest Territories, so far this year. As of August 4, some eighty-five fires were still burning. During midweek, northwesterly winds transported the smoke from these fires over most of Alberta.

Forest fires, burning in the Mackenzie Valley, have created smoky conditions in much of the North. On August 2, the Arctic Islands, the Keewatin, and the Great Slave area reported reduced visibility due to the smoke. Showers occurring midweek helped to control the fires.

Early on August 3, the winds over Alberta became northwesterly and by the 4th residents of northern and east-central Alberta woke to find the skies filled with the smoke. Late in the evening of the 4th, the smoke moved into southern Alberta. In some areas, the combination of fog and smoke reduced visibilities to less than 1 km overnight and into the morning of the 5th.

Heavy Rainfall

Many areas across the country received heavy rainfall this week. In eastern Canada, the Halifax/Dartmouth areas of Nova Scotia received 58 mm of rain from heavy showers and thunderstorms on the 3rd, causing minor flooding of basements. On the 5th, thunderstorms caused torrential rains in the Truro area with 60 mm falling over a short period. The rain overloaded

sewers in the town causing many basements to flood. Gander Newfoundland set a new daily rainfall record of 53.4 mm on the 6th, the result of heavy showers. In the Annapolis Valley, vegetable crops are suffering significant damage, the result of the wet summer which is also slowing development of tree fruit.

Heavy rain, again battered the rain-soaked Winnipeg area Sunday evening. The city received 72 mm on the 8th, most of which fell within a two hour period, causing flooding of basements and underpasses for the second time in two weeks. The rest of southeastern Manitoba had 10 to 20 millimetres of rain, with heavy local amounts of 68 mm at Emerson and 50 mm at Sprague. Some areas reported strong winds and golf ball sized hail.

The Alberta foothills experienced severe thunderstorms on the evening of the 5th. From the evening of the 6th to early on the 7th severe thunderstorms affected the entire province as a cold front pushed southeastwards. Large hail was reported at Drayton Valley and over Swan Hills. Local heavy downpours and strong gusty winds affected most areas. Rains continued through the weekend, being heavy in northern regions, but clearing up in southern regions on the 8th.

British Columbia was warm and dry all week, with the exception of Fort Nelson's new record daily precipitation total of 32.2 mm on the 8th.

Snow up North

Snow was reported at Eureka, Mould Bay and Resolute at least four days this week, and in northwestern Baffin Island, at Nanisivik, on the 6th.

Elsewhere ...

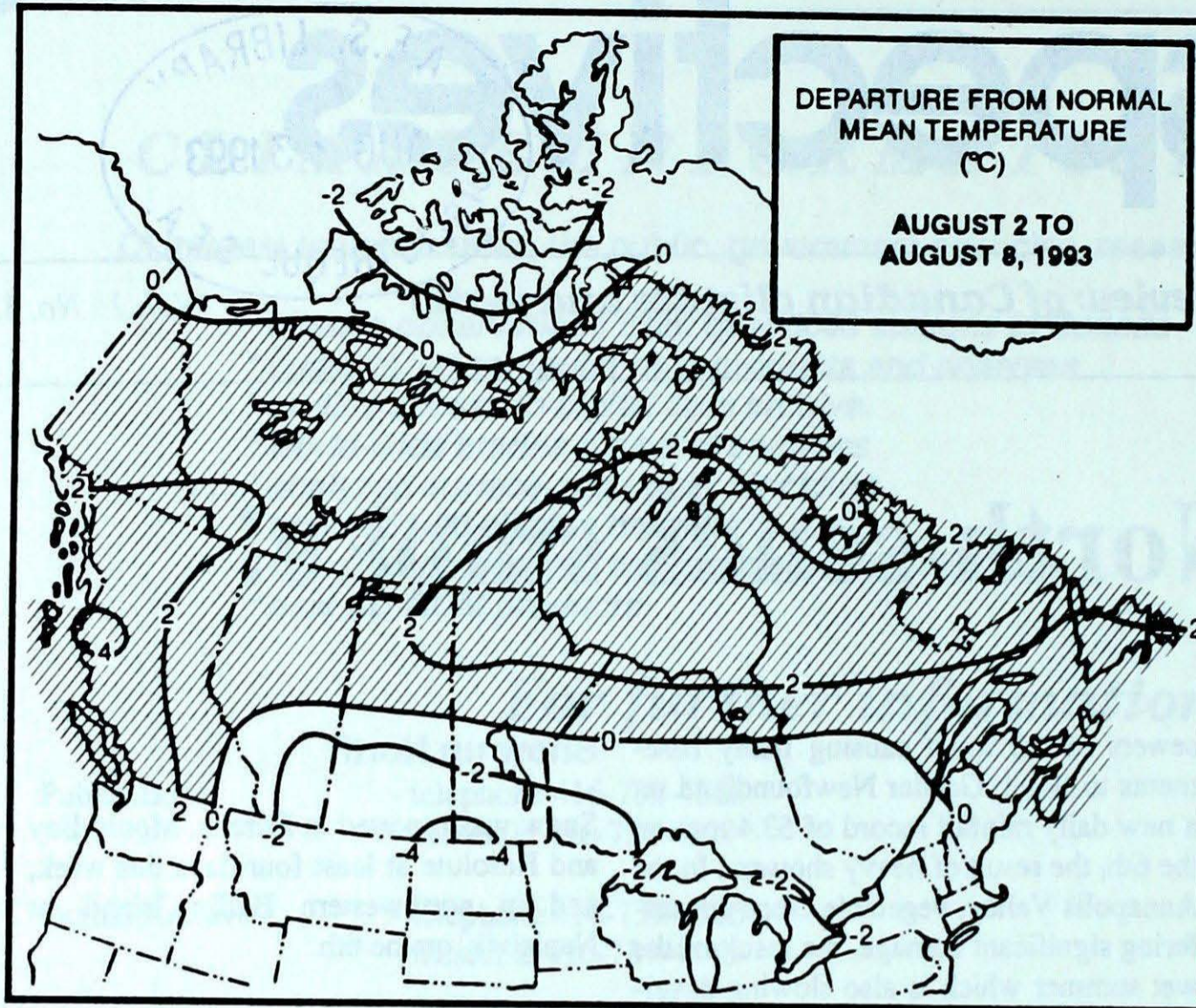
The Yukon, which began the week under sunny skies with temperatures in the mid-twenties, became cool and unstable with local heavy rain showers on the 5th. A thunderstorm on the 7th at Whitehorse brought the seasonal total to a record 15!

In Ontario, temperatures were cooler than normal as cloud and frequent rain prevailed throughout the week.

In much of Quebec, temperatures dropped midweek rising slowly by the weekend while southeastern regions saw temperatures drop even further on the weekend. Rains were heaviest in a band across the south.

A Look Ahead

For the week of August 16, above normal temperatures are expected for Quebec, Ontario, the Prairie provinces and the Northwest Territories. Elsewhere, near normal temperatures are likely. Precipitation is expected across British Columbia, the Yukon, the Mackenzie District of the Northwest Territories, Alberta, Saskatchewan and the Atlantic region.



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	20.0	7.8
Iqaluit A	11.2	4.0
Yellowknife A	20.2	11.6
Vancouver Int'l A	22.2	13.1
Victoria Int'l A	22.1	11.1
Calgary Int'l A	23.4	9.7
Edmonton Int'l A	22.7	10.0
Regina A	26.3	11.5
Saskatoon A	25.3	11.5
Winnipeg Int'l A	25.5	12.5
Ottawa Int'l A	25.8	14.5
Toronto (Pearson Int'l A)	26.3	14.2
Montréal Int'l A	25.8	15.2
Québec A	24.1	12.7
Fredericton A	25.6	12.9
Saint John A	22.5	12.1
Halifax (Shearwater)	22.3	14.2
Charlottetown A	23.2	14.4
Goose A	20.7	10.5
St John's A	20.4	12.0

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Hope A 36	Fort St John A 4	Fort Nelson A 42
Yukon Territory	Watson Lake A 27	Teslin (aut) 4	Whitehorse A 20
Northwest Territories	Fort Simpson A 31	Alert -2	Resolute A 28
Alberta	Fort McMurray A 31	Edson A 0	Whitecourt A 59
Saskatchewan	Saskatoon A 29	Saskatoon A 3	Uranium City 54
Manitoba	Churchill A 29	Gillam A 4	Winnipeg Int'l A 85
Ontario	Windsor A 29	Armstrong (aut) 3	Simcoe 42
Quebec	Gaspé A 30	Chibougamau 0	Québec A 33
New Brunswick	Charlo A 30	St-Léonard A 7	St-Léonard A 17
Nova Scotia	Greenwood A 30	Amherst (aut) 9	Shearwater A 64
Prince Edward Island	Charlottetown A 27	Charlottetown A 12	East Point (aut) 33
Newfoundland	Goose A 33	Churchill Falls A 7	Burgeo 75

Across The Country...

Highest Mean Temperature	Lytton (B.C.) 24
Lowest Mean Temperature	Resolute A (N.W.T.) 1

93/08/02-93/08/08

CLIMATIC PERSPECTIVES
VOLUME 15

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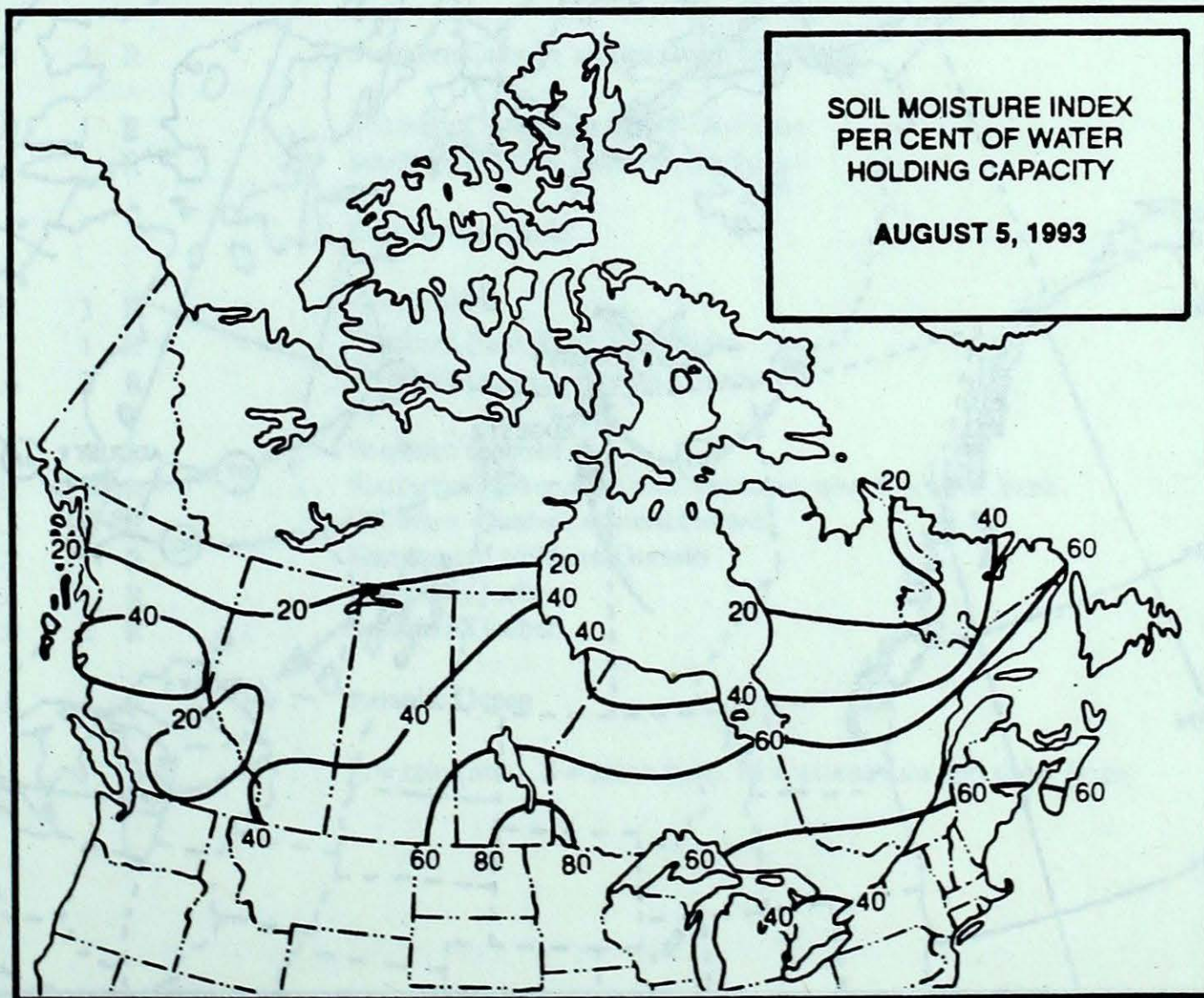
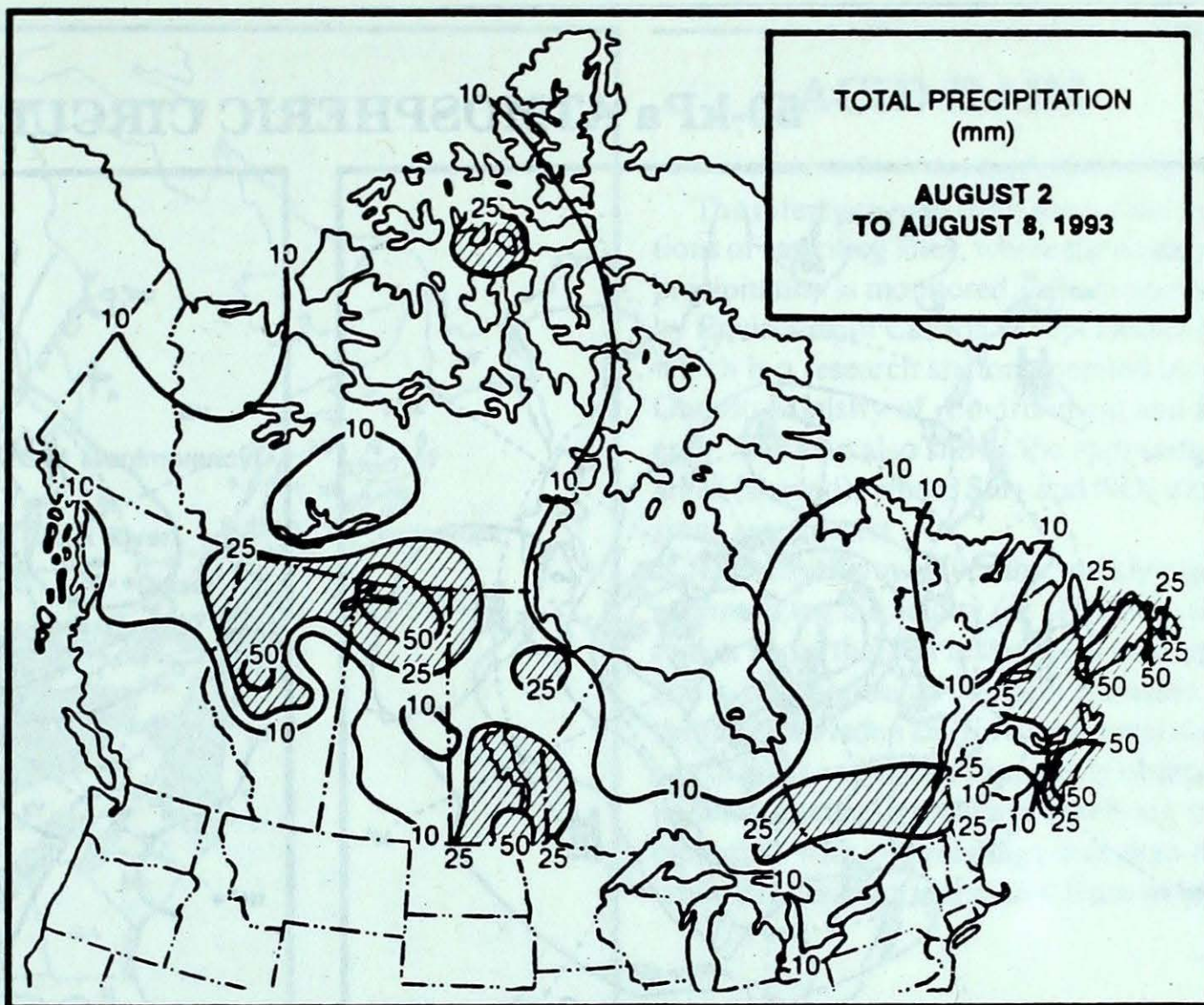
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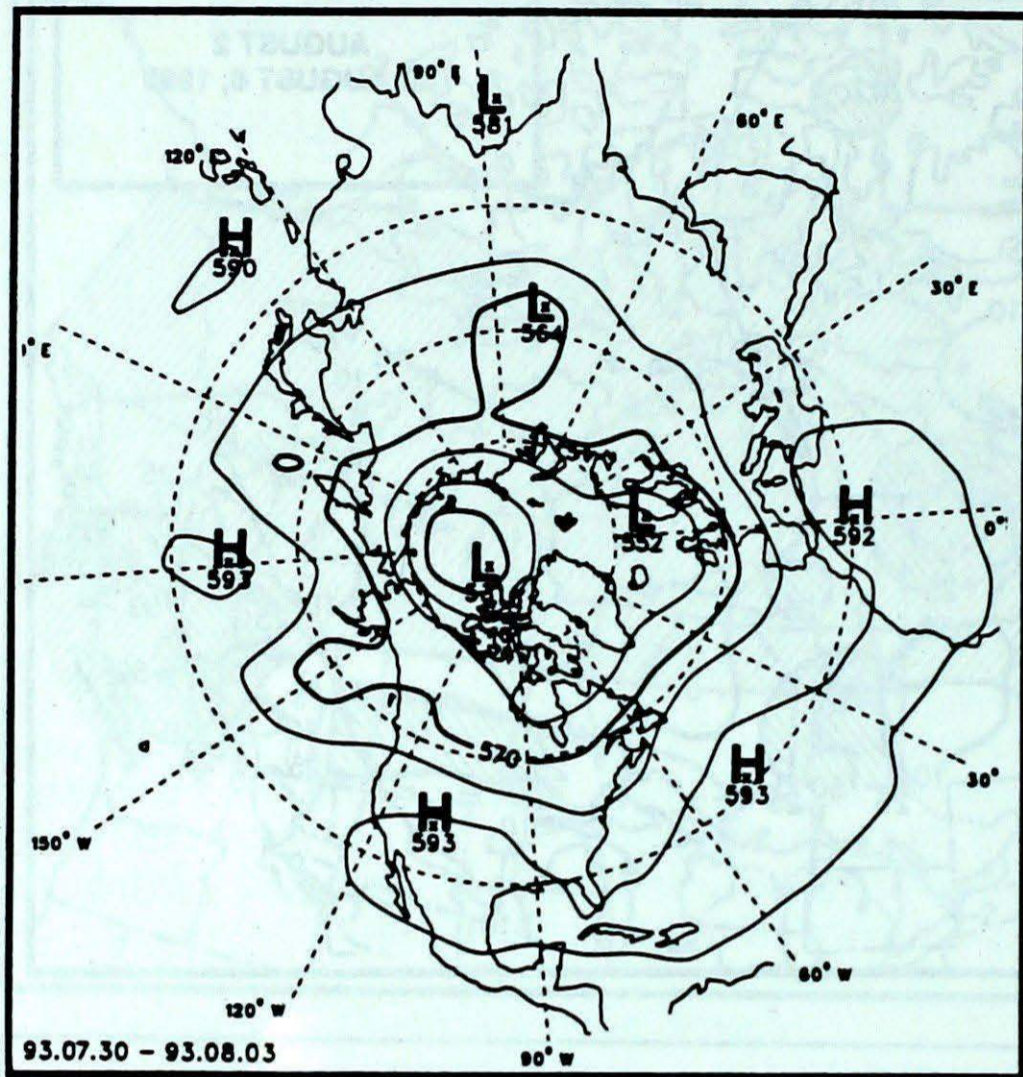
The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily reflect the views of the Atmospheric Environment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

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and changes:**

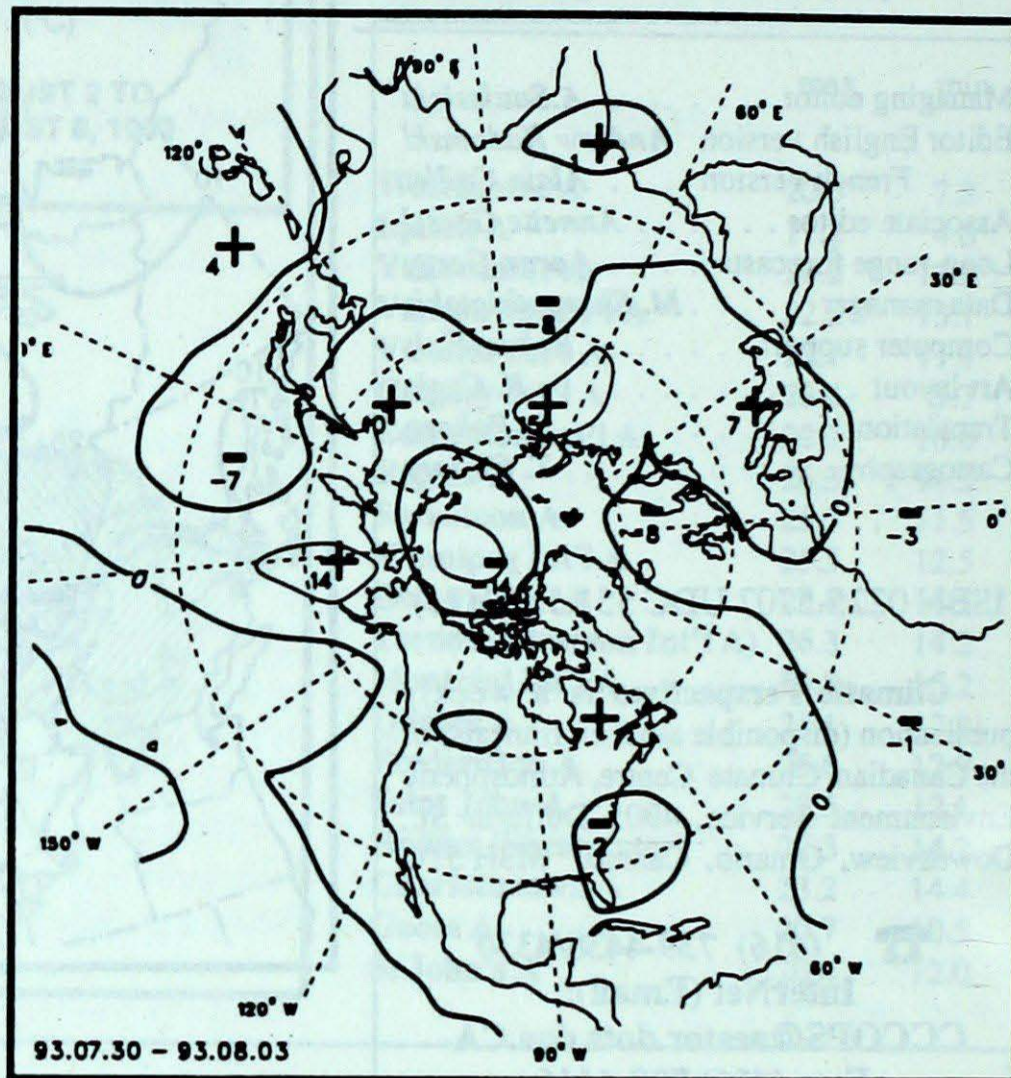
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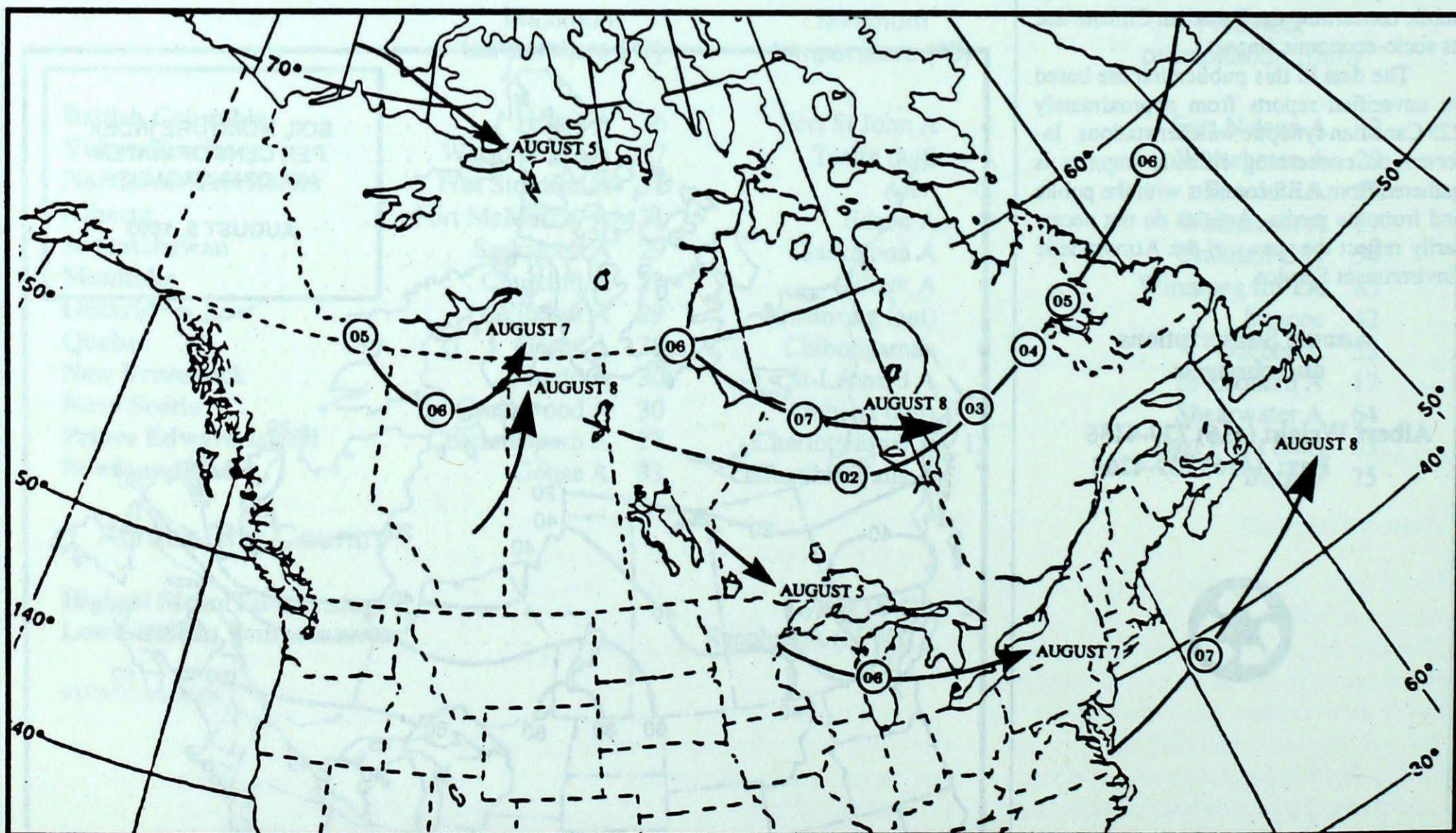
50-kPa ATMOSPHERIC CIRCULATION



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

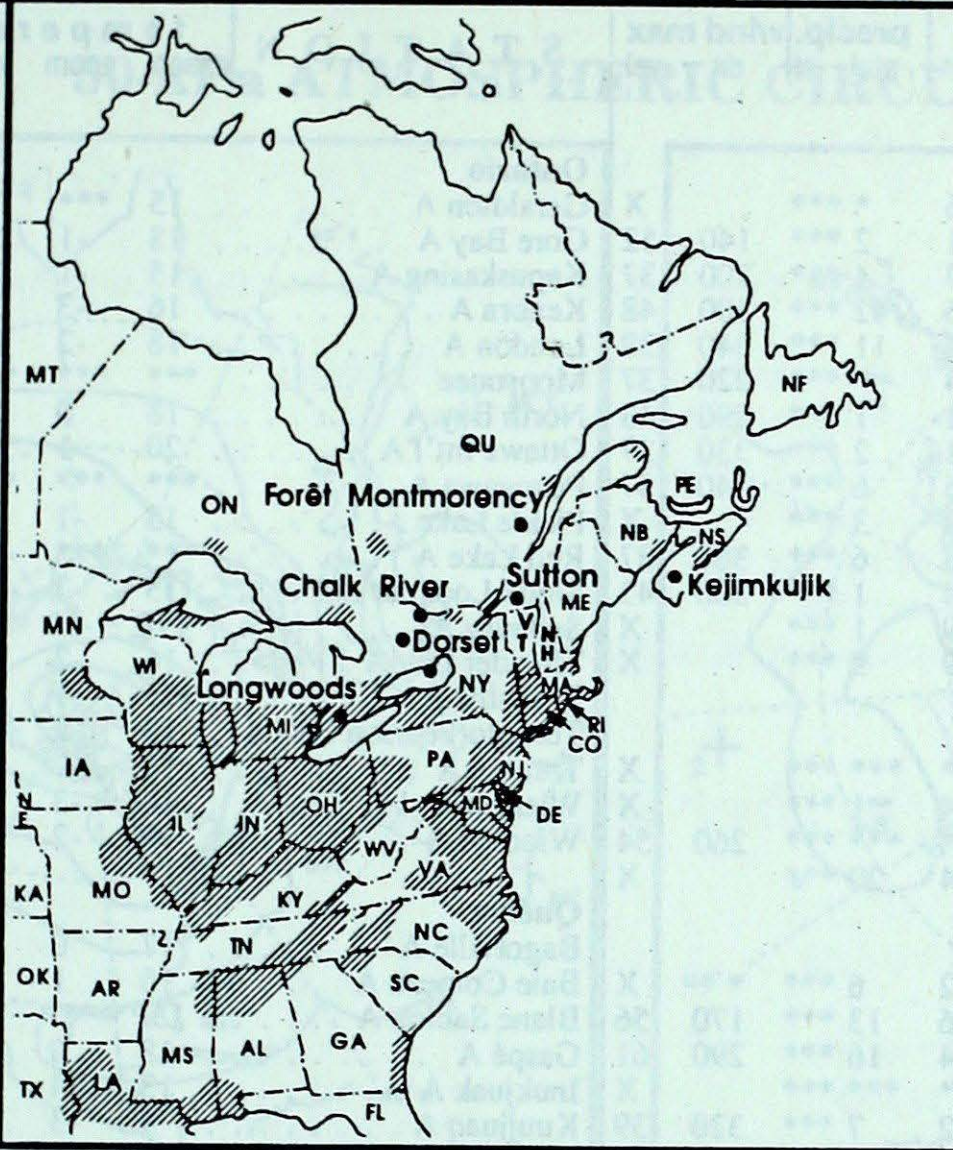


Mean geopotential height anomaly
50-kPa level (10 decametre intervals)



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

- ALABAMA - AL
- ARKANSAS - AR
- CONNECTICUT - CO
- DELAWARE - DE
- FLORIDA - FL
- GEORGIA - GA
- ILLINOIS - IL
- INDIANA - IN
- IOWA - IA
- KANSAS - KA
- KENTUCKY - KY
- LOUISIANA - LA
- MAINE - ME
- MANITOBA - ME
- MARYLAND - MT
- 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 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.

SITE	day	pH	amount	AIR PATH TO SITE
August 1 to 7, 1993				
Longwoods	06	4.3	2 R	Southern Ontario, southeastern Michigan
Dorset *	01	4.0	1 R	Southern Ontario, southern Michigan
	06	3.7	1 R	Southern Ontario, northern Michigan
Chalk River				Data not available
Sutton	02	4.3	3 R	New York
	04	4.7	1 R	Northern New York, Lake Erie
	05	4.6	2 R	Southern Quebec, eastern Ontario
Montmorency	01	4.7	4 R	Southern Quebec
	02	4.2	9 R	Southern Quebec, northern Vermont, northern New York
	03	4.5	8 R	Southern Quebec, eastern Ontario
	04	4.3	7 R	Eastern and southern Ontario
	05	4.4	1 R	Northern Quebec
	07	4.0	2 R	Southern Quebec
Kejimikujik	04	4.2	4 R	Atlantic Ocean
				R = rain (mm), S = snow (cm), M = mixed rain and snow (mm)

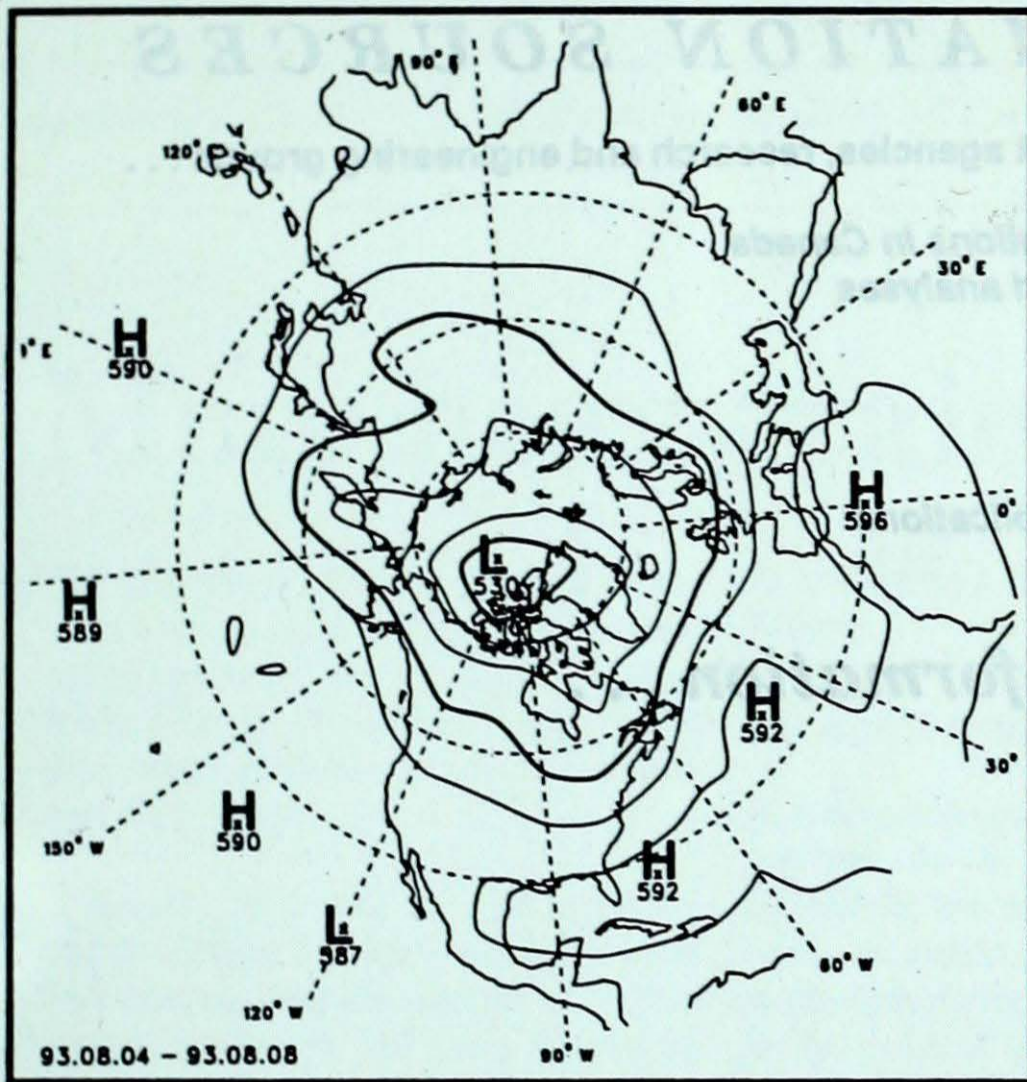
STATION	temperature				precip. ptot st	wind max		STATION	temperature				precip. ptot st	wind max									
	mean	anom	max	min		dir	vel		mean	anom	max	min		dir	vel								
British Columbia								Ontario															
Blue River A	18	0	31	6	* ***		X	Geraldton A	15	***	26	6	11 ***	280	44								
Comox A	21	3	33	11	2 ***	140	52	Gore Bay A	18	-1	24	10	12 ***	280	35								
Cranbrook A	18	-1	27	7	4 ***	200	37	Kapuskasing A	15	-1	27	5	4 ***	280	28								
Fort Nelson A	18	2	32	6	42 ***	300	48	Kenora A	16	-3	27	10	38 ***	170	39								
Fort St John A	17	1	29	4	11 ***	340	39	London A	18	-2	26	9	8 ***	260	44								
Kamloops A	23	2	33	14	* ***	220	37	Moosonee	***	***	***	***	*** ***		X								
Penticton A	22	1	34	11	1 ***	290	43	North Bay A	18	0	25	10	20 ***	240	41								
Port Hardy A	17	2	28	11	2 ***	330	37	Ottawa Int'l A	20	-1	28	11	14 ***	260	50								
Prince George A	17	2	30	5	6 ***	340	37	Petawawa A	***	***	***	***	*** ***		X								
Prince Rupert A	15	2	24	8	3 ***		X	Pickle Lake	15	-1	27	7	6 ***	340	43								
Smithers A	18	3	31	8	6 ***	360	37	Red Lake A	***	***	24	***	*** ***	350	37								
Vancouver Int'l A	21	3	30	14	1 ***	300	43	Sioux Lookout A	15	-3	26	8	17 ***	010	39								
Victoria Int'l A	19	2	32	9	1 ***		X	Sudbury A	17P	-1P	25P	9P	30P ***	210	44								
Williams Lake A	18	1	29	9	9 ***		X	Thunder Bay A	16	-2	25	9	12 ***	310	46								
Yukon Territory								Québec															
Komakuk Beach A	***	***	***	***	*** ***		X	Bagotville A	17	0	28	9	19 ***	230	43								
Teslin (aut)	15	***	26	4	1 ***		X	Baie Comeau A	16	1	24	7	23 ***	130	56								
Watson Lake A	***	***	27	***	*** ***	260	54	Blanc Sablon A	13P	***P	21P	7P	10P ***		X								
Whitehorse A	15	1	26	4	20 ***		X	Gaspé A	18	0	30	5	28 ***	190	41								
Northwest Territories								New Brunswick															
Alert	1	-3	4	-2	6 ***		X	Fredericton A	20	1	29	8	7 ***	210	37								
Baker Lake A	13	2	18	6	13 ***	170	56	Miscou Island (aut)	19P	1P	27P	10P	1P ***		X								
Cambridge Bay A	8	0	14	4	16 ***	290	61	Moncton A	19	1	29	9	1 ***	240	33								
Cape Dyer A	***	***	***	***	*** ***		X	Saint John A	18	0	26	9	1 ***		X								
Clyde A	5	0	17	-2	7 ***	320	39	St Leonard A	18	***	28	7	17 ***	200	41								
Coppermine A	10	1	21	2	19 ***	320	39	Nova Scotia															
Coral Harbour A	11	2	18	5	7 ***	160	44	Greenwood A	20	1	30	10	57 ***	210	54								
Eureka	2	-3	6	-1	7 3		X	Shearwater A	19	1	25	14	64 ***	280	43								
Fort Smith A	17	1	29	6	27 ***	310	32	Sydney A	***	***	27	***	*** ***		X								
Hall Beach A	7	2	16	-1	10 ***	150	44	Yarmouth A	17	0	23	10	22 ***	210	32								
Inuvik A	12	0	22	2	8 ***	300	50	Prince Edward Island															
Iqaluit A	9	1	19	-2	1 ***		X	Charlottetown A	20	1	27	12	14 ***	210	33								
Mould Bay A	***	***	5	***	*** 3		X	East Point (auto)	19P	***P	22P	15P	33P ***		X								
Norman Wells A	16	1	29	6	7 ***	350	52	Newfoundland															
Resolute A	1	-4	3	-1	28 3	350	65	Cartwright	17	4	30	7	4 ***	230	43								
Yellowknife A	17	1	24	11	7 ***	360	39	Churchill Falls A	18P	4P	28P	7P	4P ***		*								
Alberta								Gander Int'l A															
Calgary Int'l A	16	-1	27	7	11 ***	350	74	Goose A	21	5	33	9	6 ***	270	41								
Cold Lake A	17	0	28	9	5 ***		X	Stephenville A	19	2	28	11	27 ***	270	37								
Edmonton Namao A	18	1	28	10	19 ***	300	52	St John's A	20	4	28	10	18 ***	190	56								
Fort McMurray A	18	2	31	8	8 ***	360	39	St Lawrence	16	2	21	12	48 ***		X								
Grande Prairie A	18	1	30	7	8 ***	290	59	Wabush Lake A	16	3	26	8	30 ***	190	46								
High Level A	18	2	29	9	23 ***	290	56	93/08/02-93/08/08															
Lethbridge A	17	-2	28	8	4 ***	260	50																
Medicine Hat A	17	-3	28	8	7 ***		X																
Peace River A	17	1	27	8	33 ***	010	37																
Saskatchewan																							
Cree Lake	***	***	27	***	*** ***	210	32																
Estevan A	15	-4	26	6	5 ***	330	50																
La Ronge A	17	1	28	8	23 ***		X																
Regina A	16	-3	27	8	2 ***	360	46																
Saskatoon A	16	-2	29	3	12 ***	350	65																
Swift Current A	16	-2	28	5	6 ***	290	48																
Yorkton A	15P	-3P	27P	6P	12P ***	360	46																
Manitoba																							
Brandon A	15	-3	25	5	3 ***	310	44																
Churchill A	14	2	29	5	4 ***	200	46																
Lynn Lake A	18	2	27	8	21 ***	020	67																
The Pas A	17	-1	26	7	17 ***	360	41																
Thompson A	16	2	27	7	15 ***	020	50																
Winnipeg Int'l A	16	-3	27	8	85 ***	310	67																

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

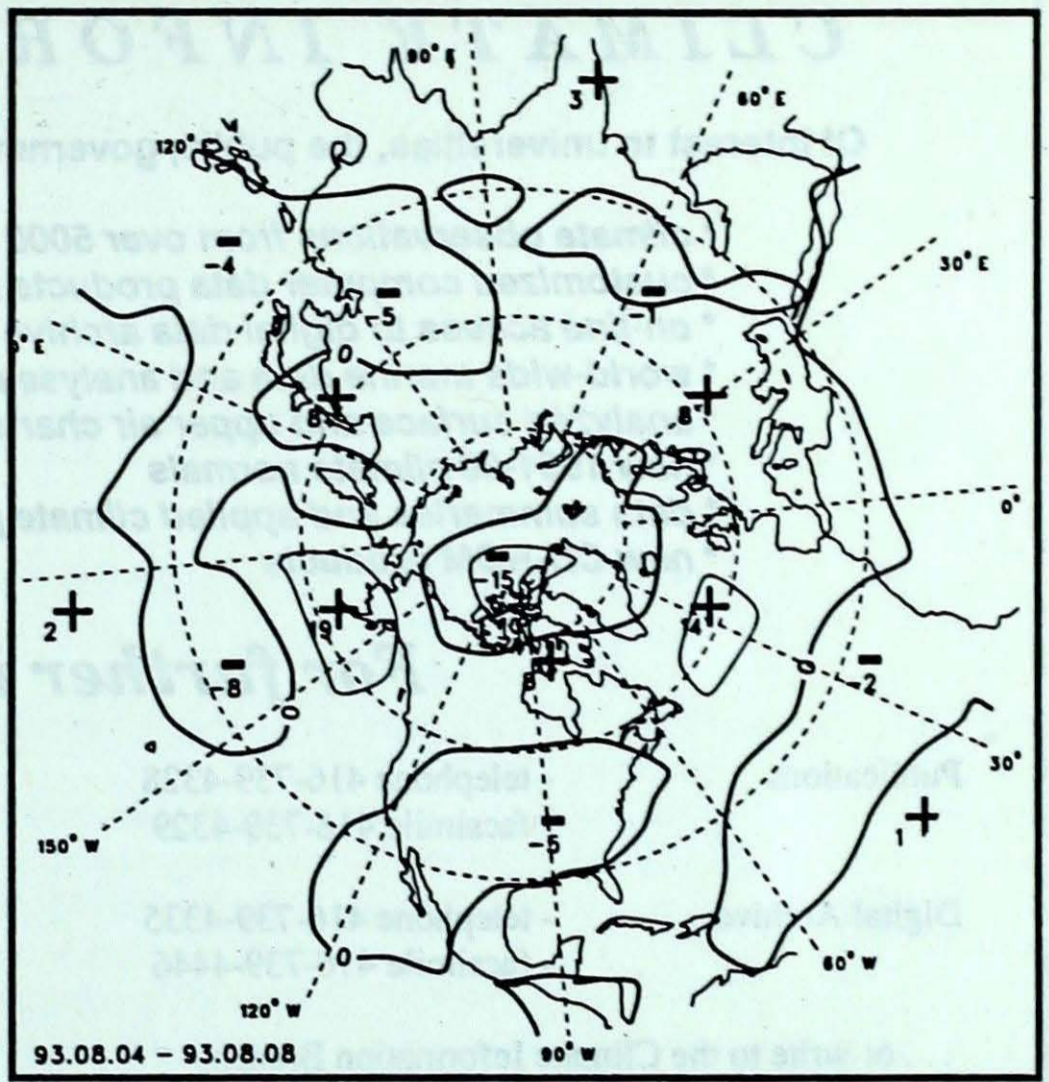
ptot = weekly precipitation total in mm
 st = snow thickness on the ground in cm
 dir = direction of max wind, deg. from north.
 vel = wind speed in km/h

— 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)



Environment Canada / Environnement Canada

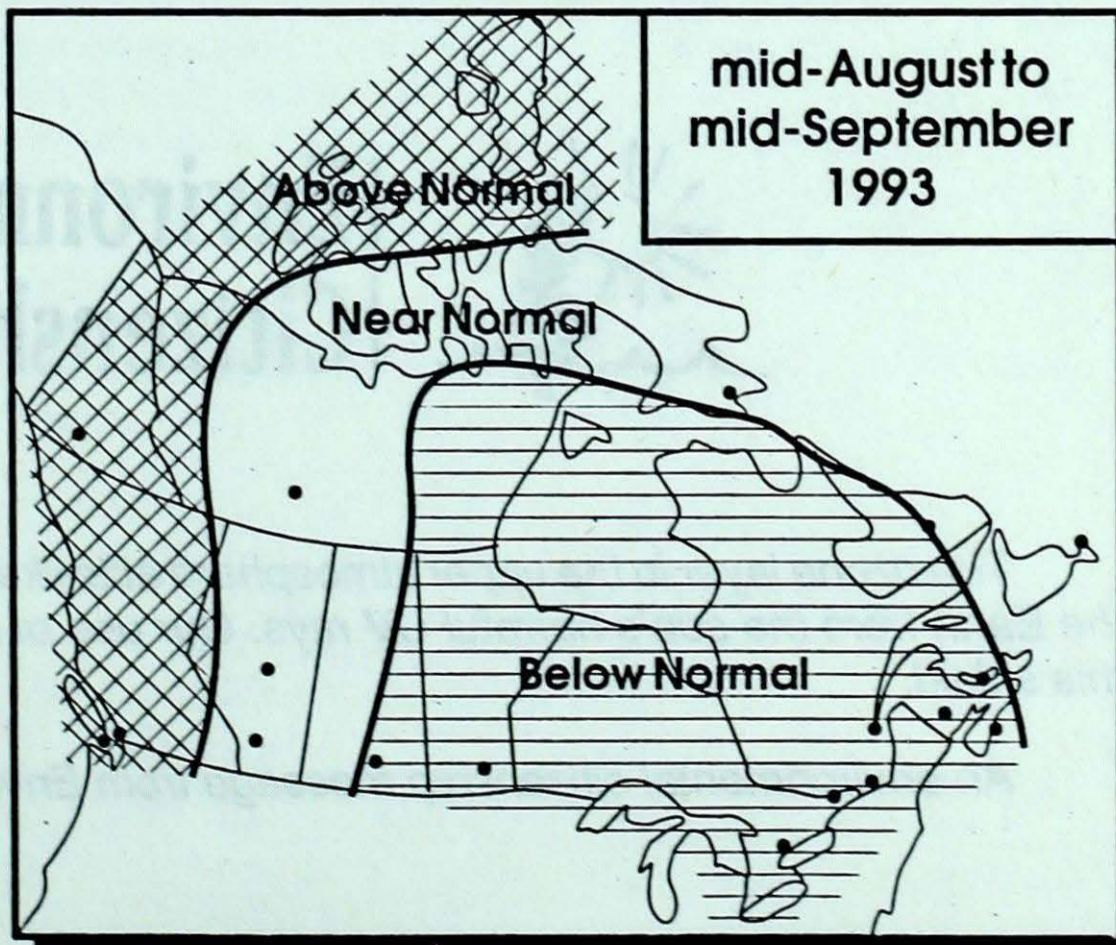
Atmospheric Environment Service / Service de l'environnement atmosphérique

MONTHLY TEMPERATURE FORECAST

Normal temperatures for mid-August to mid-September, °C

Whitehorse	10	Toronto	18
Yellowknife	10	Ottawa	17
Iqaluit	5	Montréal	17
Vancouver	16	Québec	15
Victoria	15	Fredericton	16
Calgary	13	Halifax	16
Edmonton	13	Charlottetown	16
Regina	15	Goose Bay	12
Winnipeg	15	St. John's	13

Canada



mid-August to mid-September 1993

CLIMATE INFORMATION SOURCES

Of interest to universities, the public, government agencies, research and engineering groups . . .

- * *climate observations from over 5000 stations in Canada*
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Environmental Citizenship

The ozone layer in the upper atmosphere acts like an invisible shield. It helps protect the Earth from the sun's harmful UV rays. Our use of chemicals like CFCs is damaging this shield.

An environmental citizenship message from Environment Canada.