

Climatic Perspectives

August 23 to 29, 1993

A weekly review of Canadian climate and water

Vol. 15 No. 35

Some have it hot... some not

There were record-breaking high temperatures in the southeast, due to a midweek warm spell, but below normal values throughout most of the remainder of the country. Snow fell in the north and frost was reported in the Prairies.

Hot

Warm, muggy air moved into southwestern Ontario on the 24th raising temperatures over the 30 degree mark, for a four-day stretch. Many maximum temperature records were established throughout the province - most occurring on the 25th with records exceeding 32°C at Geraldton, Hamilton, Waterloo, Sudbury, Timmins and Kapuskasing.

The warm air extended into southern Quebec on the 25th, and the Maritimes on the 26th. In the Maritimes, the week started off with early morning minimums well below normal at many locations. The warm spell that followed caused maximums to climb to record levels at a number of sites. On the 26th, Shearwater reported a maximum of 32°C setting a record for that day and also a new record for the month of August. Yarmouth also broke their record for August with a reading of 30°C on the 27th.

Cold

Temperatures throughout the rest of the country averaged below normal, for the most part. The Yukon began the week cloudy, cool and wet. Rain turned to snow at higher elevations, west of Dawson on

the 24th and in the Whitehorse area on the 25th. By the weekend, southern Yukon had warmed up but clear skies dropped overnight temperatures to below zero at a number of locations.

An upper low, centred in the Arctic Islands, dominated the weather for the entire Northwest Territories, maintaining mostly cloudy skies, showers and below normal temperatures. Wet flurries were reported on the north coast of Keewatin on the 26th. Northern Baffin Island received snow mixed with rain and some flurries throughout the period.

Labrador was hit with cold winds from the north causing some localities to receive snow late in the week.

Mean temperatures were also below normal throughout the western half of the country. Terrace, British Columbia, reported record low maximums on the 23rd and 24th. In Alberta, the first frosts of the season were reported on the 26th at a few locations. On the 29th, Meadow Lake, Saskatchewan and Thompson, Manitoba reported their first frost.

Severe weather

In Alberta, an upper cold low moved over the province on the 23rd, developing frequent showers in the north and thunder-showers across central regions. Hail and funnel clouds were sighted between Wabumun and Edmonton. Cold Lake received 73 mm of rain on the 24th. Local heavy thunder-showers moved through the province again on the weekend. Small

hail was reported in the Slave Lake region on the 28th as well as in the Edmonton and Calgary areas on the 29th.

On the 27th, a cold front moved into southern Ontario, reducing temperatures and creating episodes of severe thunderstorms from London to Peterborough. Sioux Lookout reported 44 mm of heavy rain. The severe weather continued into Quebec on the evening of the 27th, with heavy thunder-showers causing local flooding in the Ottawa area. A band of thunderstorms crossed over the Maritimes on the 28th causing heavy rain, high winds and power outages.

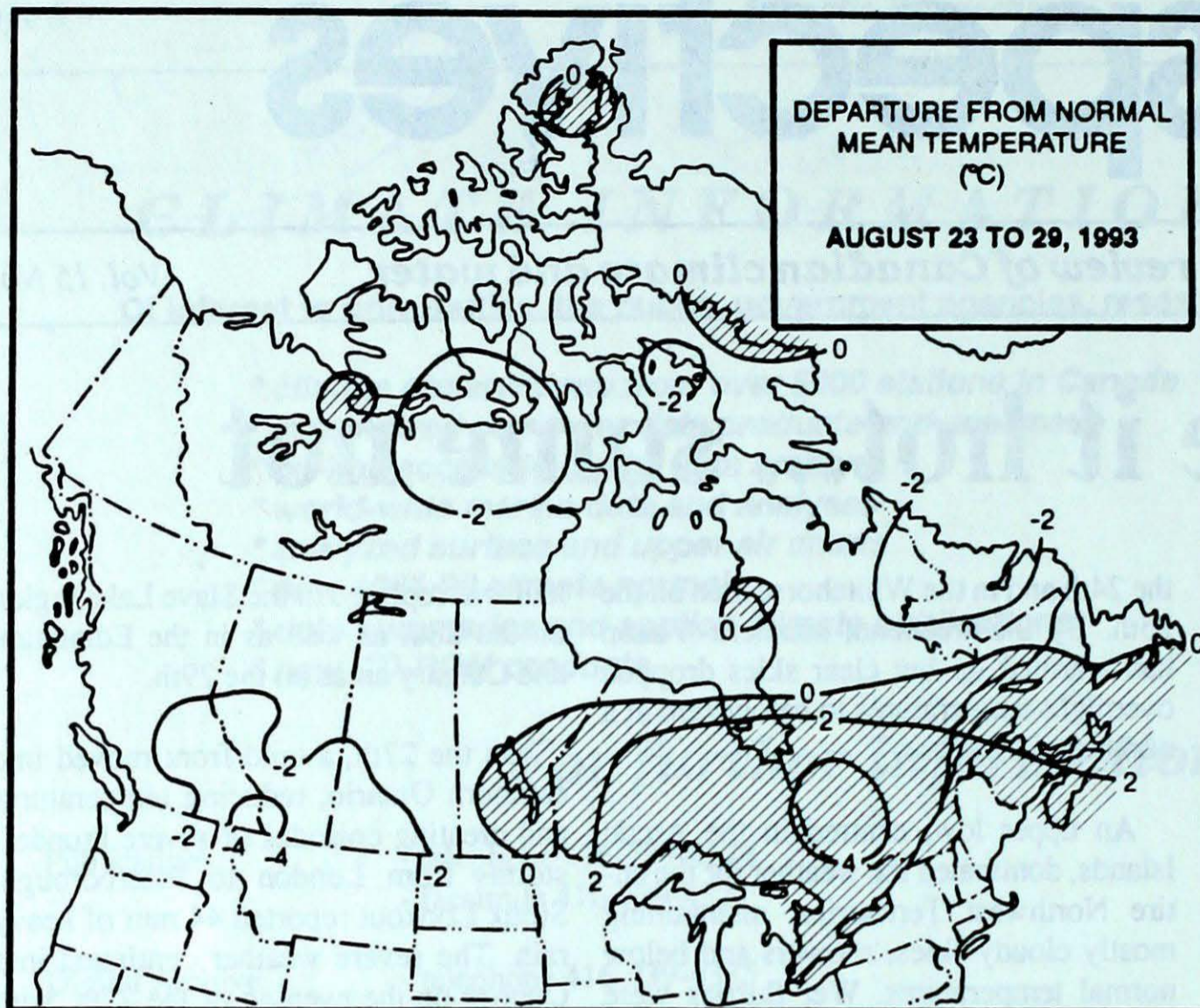
Elsewhere ...

Newfoundland was mainly cloudy and cool with scattered showers due to low pressure systems crossing the Island. In Stephenville a new daily rainfall record of 41 mm was set for the 25th.

Fort Nelson, B.C., recorded a daily rainfall record of 25 mm for the 23rd.

A Look Ahead...

For the week of Sept. 6, below normal temperatures are expected for Manitoba, Ontario, Quebec, Labrador and the Atlantic provinces. Above normal temperatures are expected for the District of Mackenzie, Northwest Territories, Yukon, British Columbia and the Arctic Islands. Elsewhere, near normal values are likely. Near normal precipitation is anticipated east of Manitoba, while below normal amounts are expected to the west.



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	16.3	5.2
Iqaluit A	9.5	2.8
Yellowknife A	16.3	8.9
Vancouver Int'l A	20.2	12.1
Victoria Int'l A	20.3	10.3
Calgary Int'l A	20.1	7.2
Edmonton Int'l A	19.6	6.7
Regina A	24.2	9.5
Saskatoon A	22.7	9.1
Winnipeg Int'l A	24.4	11.6
Ottawa Int'l A	24.3	13.0
Toronto (Pearson Int'l A)	25.7	13.5
Montréal Int'l A	24.3	13.7
Québec A	22.3	11.2
Fredericton A	23.4	10.7
Saint John A	20.9	10.5
Halifax (Shearwater)	21.5	12.7
Charlottetown A	21.0	12.1
Goose A	18.0	8.0
St John's A	18.4	10.0

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Hope A 27	Clinton 2	Blue River A 48
.	Lytton 27		
Yukon Territory	Faro (aut) 20	Faro (aut) 0	Teslin (aut) 21
Northwest Territories	Fort Smith A 24	Alert -7	Cape Dorset A 45
Alberta	Medicine Hat A 28	High Level A 0	Cold Lake A 90
Saskatchewan	Moose Jaw A 28	Meadow Lake A 0	La Ronge A 25
Manitoba	Gretna (aut) 30	Thompson A -1	Gillam A 55
Ontario	Toronto Int'l A 35	Kapuskasing A 6	Sioux Lookout A 93
Quebec	Montréal Int'l A 33	La Grande IV A 0	Sept-Îles A 81
New Brunswick	St Stephen (aut) 35	St Stephen (aut) 4	St-Léonard A 16
Nova Scotia	Greenwood A 34	Greenwood A 4	Amherst (aut) 1
Prince Edward Island	Charlottetown A 28	Charlottetown A 10	Charlottetown A 10
Newfoundland	Comfort Cove 23	Churchill Falls A 0	Cartwright 56

Across The Country...

Highest Mean Temperature	Port Weller (aut) (Ont.) 26
Lowest Mean Temperature	Alert (N.W.T.) -3

93/08/23-93/08/29

CLIMATIC PERSPECTIVES
VOLUME 15

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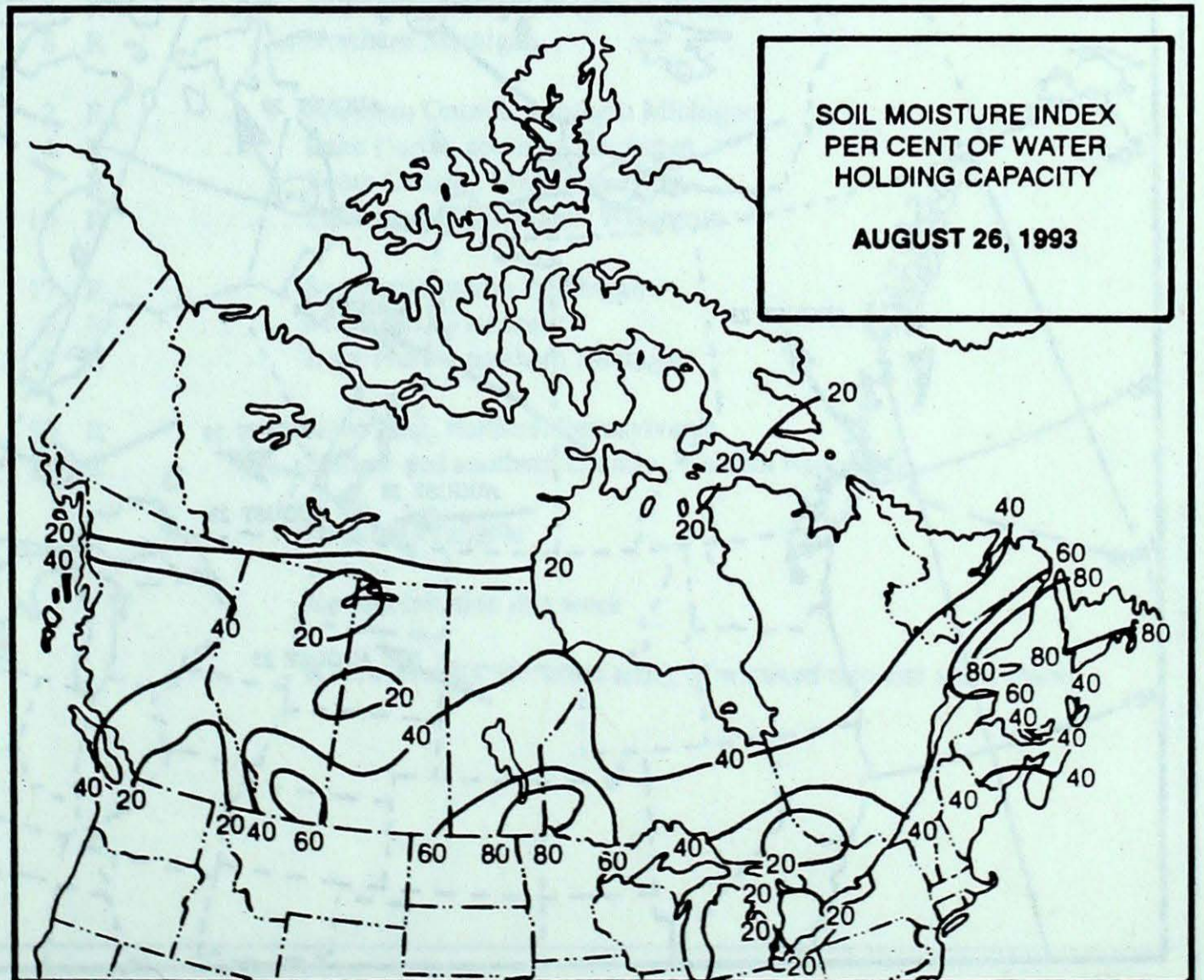
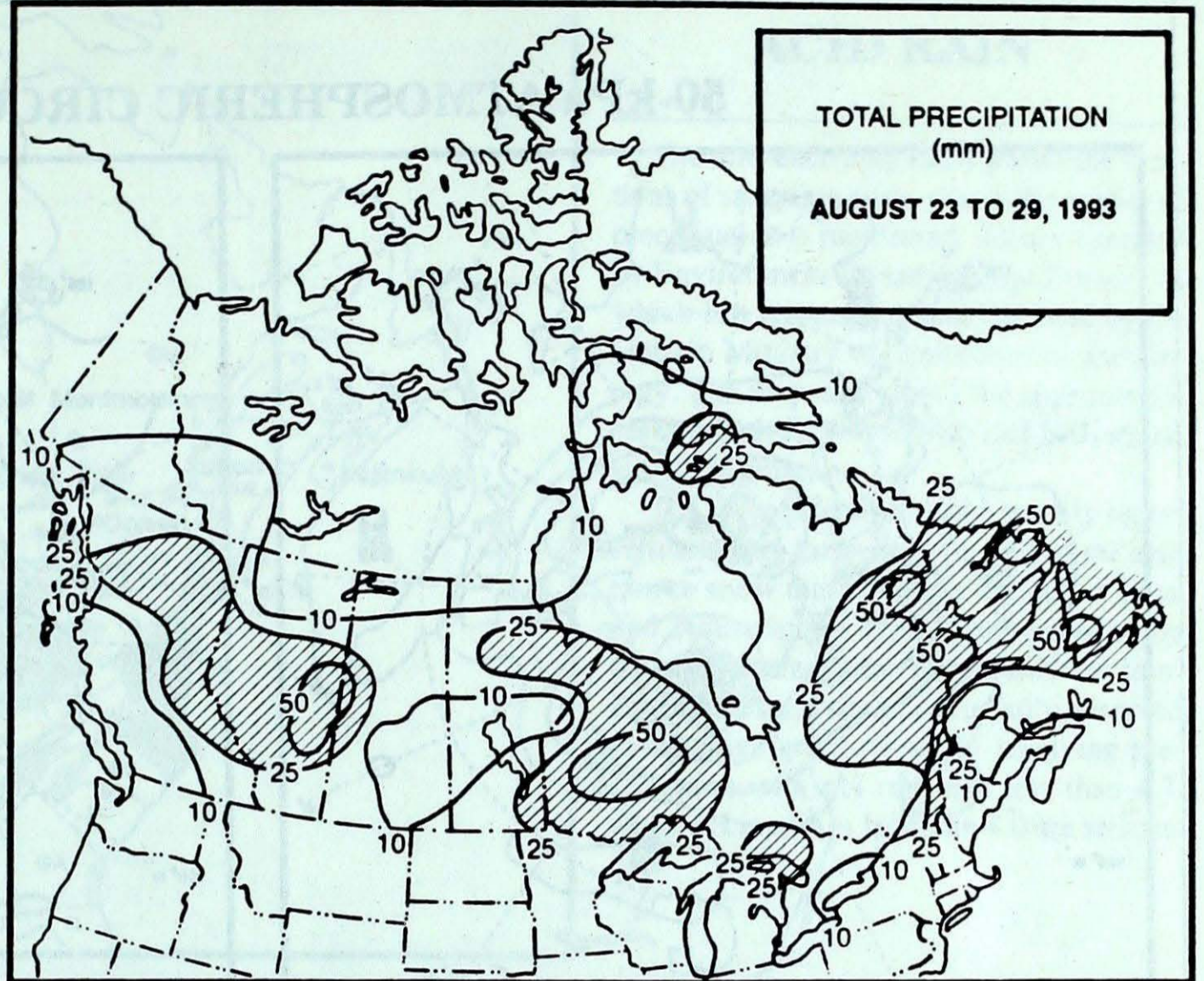
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The purpose of the publication is to make topical information available to the public concerning the Canadian Climate and its socio-economic impact.

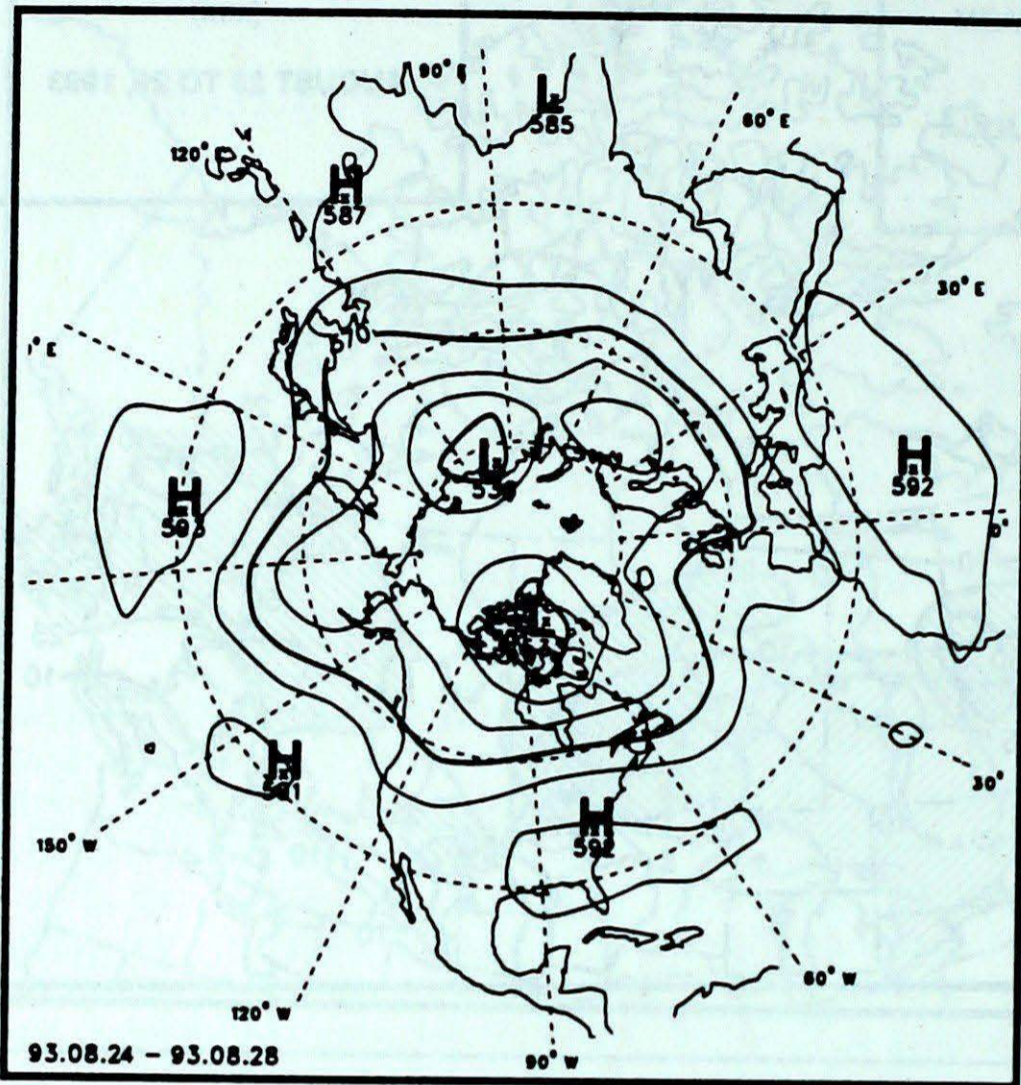
The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily reflect the views of the Atmospheric Environment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

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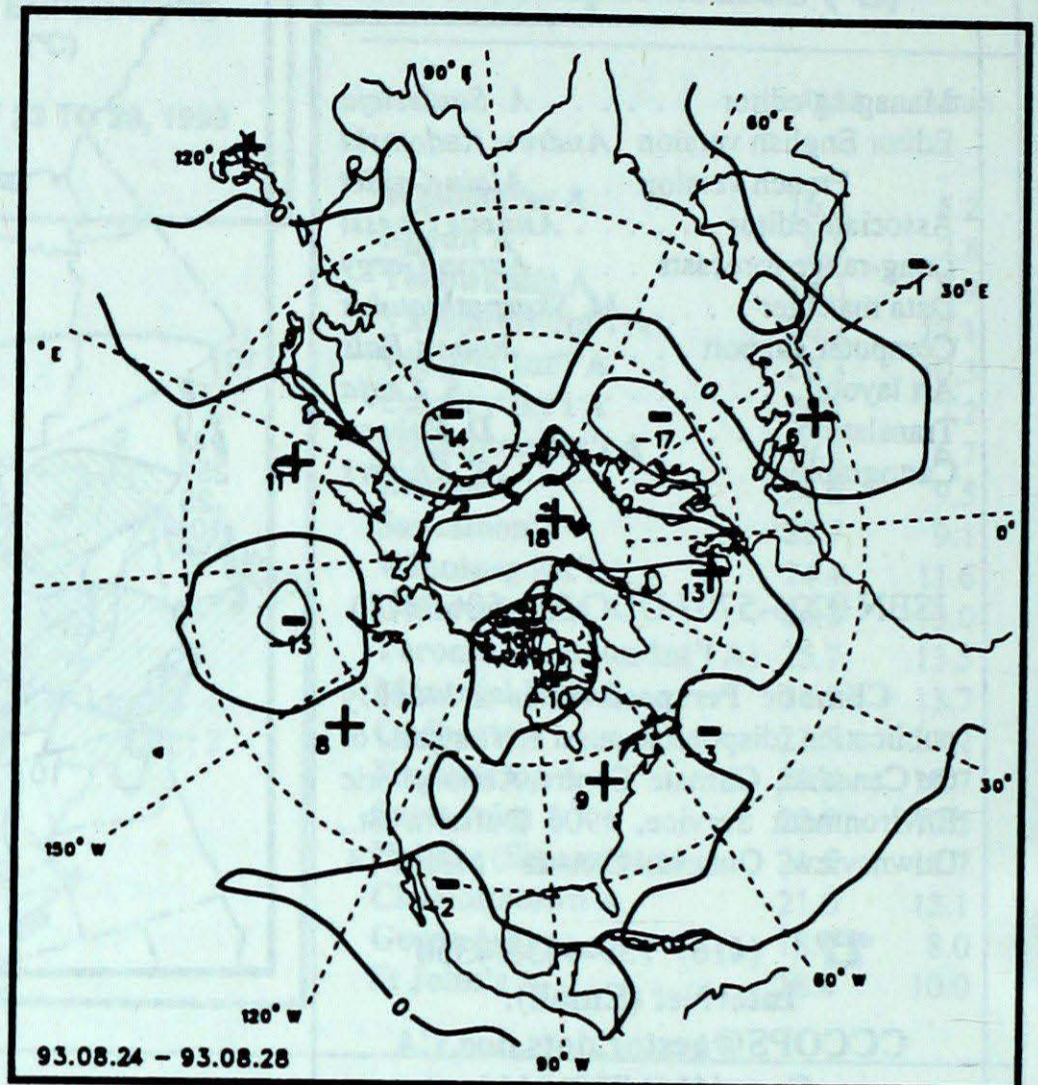
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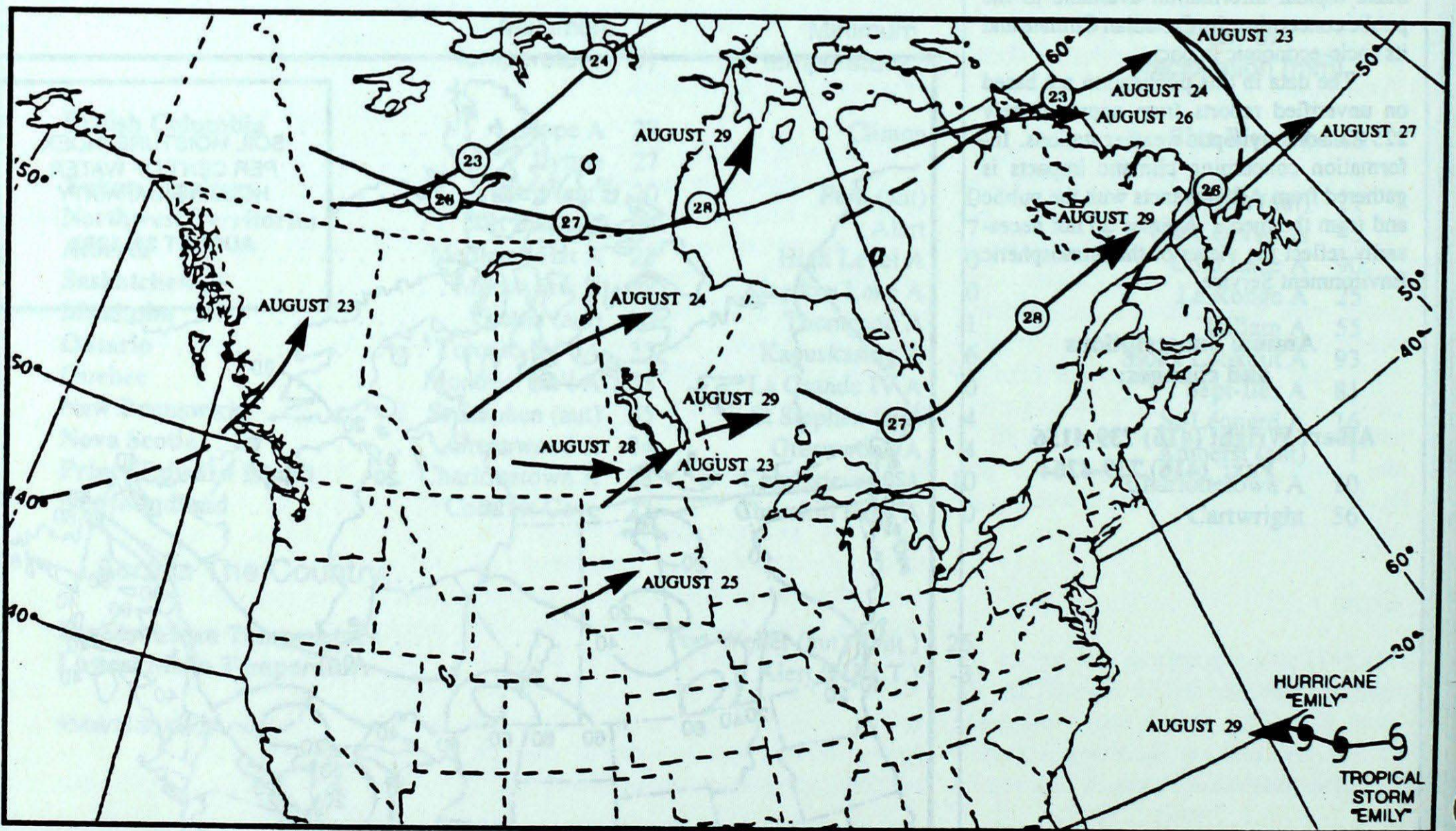
50-kPa ATMOSPHERIC CIRCULATION



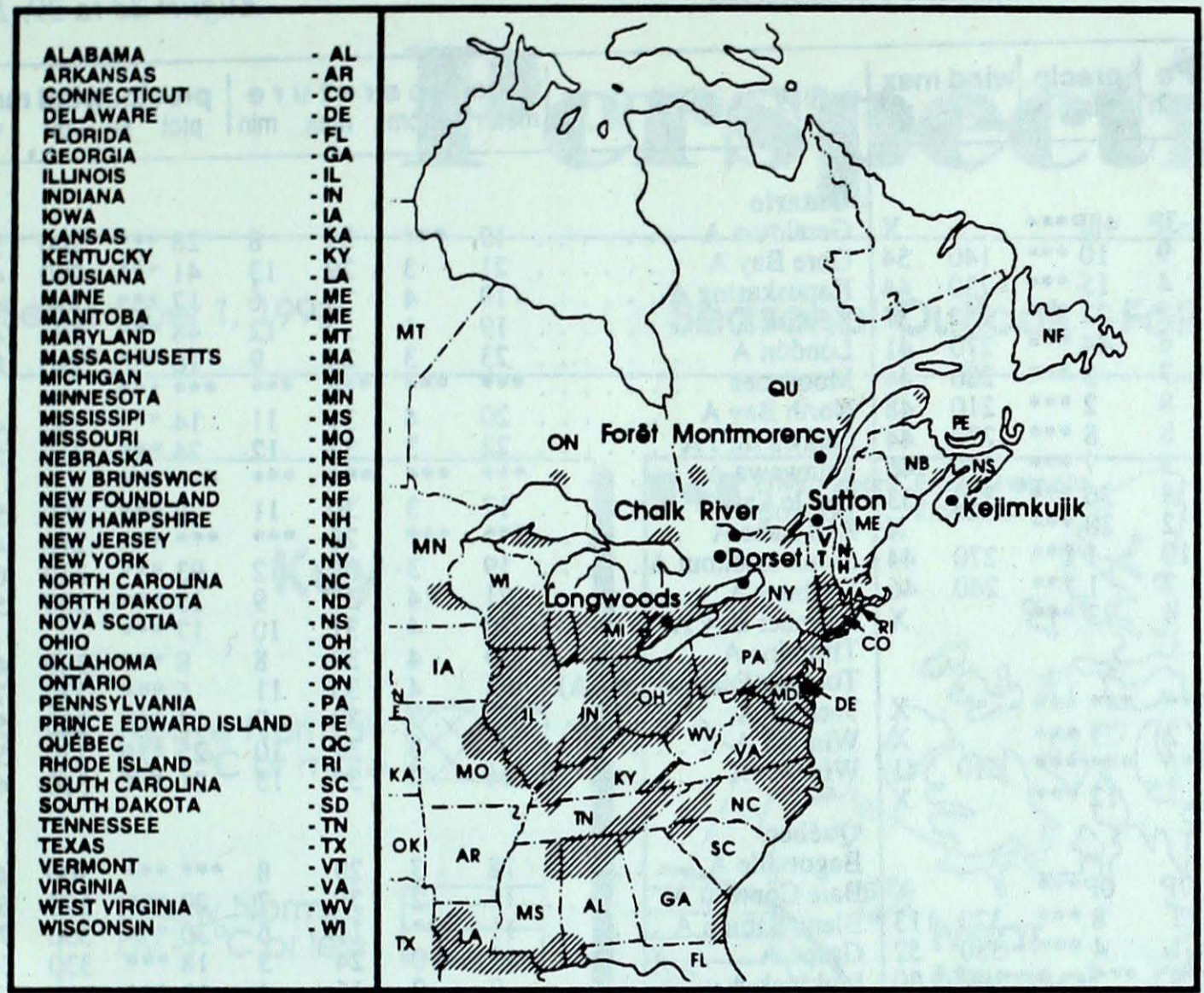
Mean geopotential height
50-kPa level (10 decametre intervals)



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.



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 22 to 28, 1993				
Longwoods	27	4.0	8 R	..... Southern Michigan, northern Indiana
	28	4.0	8 R	..... Northern Michigan
Dorset *	23	3.7	2 R	..... Southern Ontario, southern Michigan
	24	4.3	4 R	..... Lake Huron, southern Michigan
	26	4.2	1 R	..... South Ontario, Michigan
	27	4.6	10 R	..... Lake Huron, Michigan, Wisconsin
Chalk River	23	3.9	17 R	..... Southern Ontario, Michigan
	24	4.2	5 R	..... Michigan, Wisconsin
	27	4.4	9 R	..... Lake Huron, northern Michigan
Sutton	24	3.8	50 R	..... New York, northern Pennsylvania
	27	4.5	10 R	..... Eastern and southern Ontario, Western New York
Montmorency				..... Data not available
Kejimikujik				..... No precipitation this week
				..... 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								
British Columbia									Ontario																
Blue River A	12P	-3P	21P	-3P	48P***			X	Geraldton A	19	***	33	8	28	***	260	52								
Comox A	15	-1	21	9	10	***	140	54	Gore Bay A	21	3	29	13	41	***	290	46								
Cranbrook A	12	-4	23	4	15	***	230	44	Kapuskasing A	19	4	33	6	17	***	330	46								
Fort Nelson A	13	0	20	2	27	***	150	37	Kenora A	19	1	30	12	48	***	260	41								
Fort St John A	12	-1	19	6	44	***	270	41	London A	23	3	34	9	18	***	290	80								
Kamloops A	16	-2	24	7	3	***	280	44	Moosonee	***	***	***	***	***	***		X								
Penticton A	16	-1	25	8	2	***	210	48	North Bay A	20	4	31	11	14	***	240	43								
Port Hardy A	13	0	17	8	8	***	220	44	Ottawa Int'l A	22	3	33	12	24	***	210	56								
Prince George A	11	-1	20	3	7	***	240	46	Petawawa A	***	***	***	***	***	***		X								
Prince Rupert A	13	0	16	8	36	***	320	33	Pickle Lake	17	3	30	11	29	***	250	50								
Smithers A	11	-2	21	2	28	***		X	Red Lake A	***	***	28	***	***	***	240	43								
Vancouver Int'l A	16	-1	21	10	1	***	270	44	Sioux Lookout A	19	3	31	12	93	***	310	65								
Victoria Int'l A	15	0	23	7	1	***	240	46	Sudbury A	21	4	33	9	13	***	230	59								
Williams Lake A	11	-2	18	4	33	***		X	Thunder Bay A	20	4	31	10	17	***		X								
Yukon Territory									Timmins A	19	4	33	8	8	***	300	46								
Komakuk Beach A	***	***	***	***	***	***		X	Toronto(Pearson Int'l A)	23	4	35	11	6	***	270	76								
Teslin (aut)	11	***	19	2	21	***		X	Trenton A	22	3	32	9	2	***	300	52								
Watson Lake A	***	***	19	***	***	***	310	41	Warton A	21	3	31	10	25	***	270	56								
Whitehorse A	10	-1	19	1	12	***		X	Windsor A	24	3	35	15	21	***	310	46								
Northwest Territories									Québec																
Alert	-3P	-2P	4P	-7P	0P***			X	Bagotville A	18	3	29	8	***	***	300	46								
Baker Lake A	6	-2	13	1	8	***	320	113	Baie Comeau A	15	2	28	7	29	***	290	56								
Cambridge Bay A	2	-3	8	-1	4	***	330	52	Blanc Sablon A	11	***	19	6	30	***	350	74								
Cape Dyer A	***	***	***	***	***	3	190	50	Gaspé A	15	0	24	5	18	***	330	59								
Clyde A	4	1	10	-2	5	***	140	41	Inukjuak A	9	0	16	4	12	***		X								
Coppermine A	6	1	12	2	8	***	320	48	Kuujuuaq A	8	-2	17	0	13	***	300	91								
Coral Harbour A	5	-1	13	0	21	***	280	70	Kuujuuarapik A	10	-1	22	3	13	***	140	54								
Eureka	2P	1P	6P	-2P	1P***			X	La Grande Rivière A	11	0	20	4	7	***	280	48								
Fort Smith A	11	-1	24	0	6	***	320	33	Mont Joli A	17	2	26	10	20	***	250	50								
Hall Beach A	2	-2	6	-1	14	7	280	59	Montréal Int'l A	22	3	33	12	12	***	250	43								
Inuvik A	7	-2	16	-1	9	***		X	Natashquan A	13	1	20	6	36	***	330	52								
Iqaluit A	5	-1	11	0	11	***	270	37	Québec A	20	3	31	8	24	***	240	48								
Mould Bay A	***	***	0	***	***	3		X	Schefferville A	7	-3	16	0	57	3	320	57								
Norman Wells A	10	-2	20	0	2	***	130	46	Sept-Îles A	13	0	24	5	81	***	100	61								
Resolute A	0	-1	3	-2	5	4	030	74	Sherbrooke A	20	4	30	6	40	***	270	48								
Yellowknife A	12	-1	19	6	1	***	280	46	Val-d'Or A	19	4	31	6	12	***	310	37								
Alberta									New Brunswick																
Calgary Int'l A	12	-2	24	5	31	***	290	78	Fredericton A	21	4	35	6	8	***	270	63								
Cold Lake A	12	-2	27	1	90	***	310	54	Miscou Island (aut)	18P	2P	24P	11P	11P***			X								
Edmonton Namao A	12	-2	23	6	37	***	270	57	Moncton A	19	3	32	8	6	***	240	78								
Fort McMurray A	12	-2	20	1	11	***		X	Saint John A	19	4	33	7	2	***	330	46								
Grande Prairie A	13	0	19	4	22	***	260	65	St Leonard A	19	***	31	7	16	***	310	46								
High Level A	12	-1	21	0	3	***	010	46	Nova Scotia																
Lethbridge A	13	-3	25	7	10	***	240	91	Greenwood A	20	3	34	4	1	***	250	59								
Medicine Hat A	14	-3	28	5	6	***	230	65	Shearwater A	20	3	32	10	1	***	290	63								
Peace River A	12	0	20	3	6	***	350	44	Sydney A	***	***	25	***	***	***	310	56								
Saskatchewan									Yarmouth A	18	2	31	9	1	***	240	50								
Cree Lake	***	***	26	***	***	***	030	57	Prince Edward Island																
Estevan A	17	-1	27	9	14	***	270	57	Charlottetown A	18	2	28	10	10	***	320	44								
La Ronge A	13	-1	23	1	25	***	040	33	East Point (auto)	18P	***P	20P	14P	7P***			X								
Regina A	15	-2	28	7	5	***	260	54	Newfoundland																
Saskatoon A	14	-2	27	7	4	***	280	57	Cartwright	9	-2	22	2	56	***	330	74								
Swift Current A	13	-3	27	6	16	***	250	67	Churchill Falls A	7P	-3P	15P	0P	45P***			X								
Yorkton A	15	-1	26	7	10	***	220	43	Gander Int'l A	13	-1	22	7	49	***	330	63								
Manitoba									Goose A	10	-3	23	2	41	***	320	52								
Brandon A	17	0	27	7	17	***	260	46	Stephenville A	14	-1	20	8	55	***	300	50								
Churchill A	10	-1	20	3	3	***	150	44	St John's A	14	-1	21	8	31	***	310	63								
Lynn Lake A	12	-1	22	2	20	***	070	46	St Lawrence	15	1	22	8	27	***		X								
The Pas A	15	0	25	5	4	***	250	59	Wabush Lake A	9P	-1P	19P	1P	16P***		330	41								
Thompson A	11	-1	21	-1	44	***		X	93/08/23-93/08/29																
Winnipeg Int'l A	19	1	28	10	21	***	290	72																	

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.




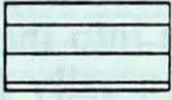
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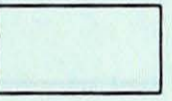
September 1, 1993

Seasonal Outlook - Fall

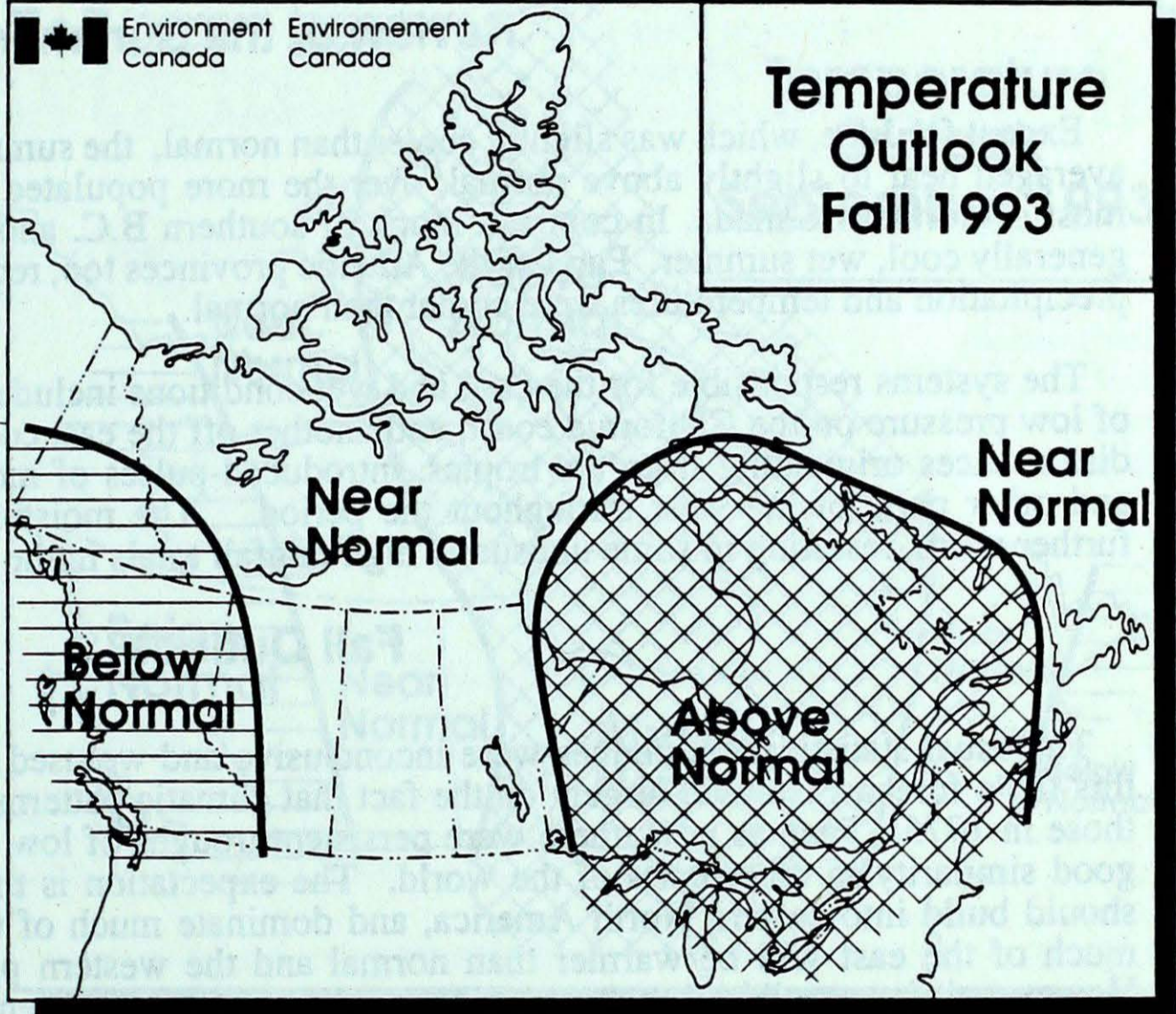
Key

Above Normal by 1 °C or more 

Below Normal by -1 °C or less 

Near Normal within 1 °C 

Normal Period 1951-1980



Normal Temperatures °C (1951-80)

	September		October		November	
	Max	Min	Max	Min	Max	Min
Whitehorse	12	3	4	-2	-5	-12
Yellowknife	10	3	1	-4	-10	-18
Iqaluit	5	0	-2	-8	-9	-17
Vancouver	18	10	14	6	9	3
Victoria	19	9	14	6	9	2
Calgary	17	4	12	-1	3	-9
Edmonton	16	3	11	-2	0	-11
Regina	19	5	12	-2	0	-10
Winnipeg	18	6	11	0	0	-9
Toronto	21	10	14	4	7	0
Ottawa	20	9	13	3	5	-3
Montreal	20	10	13	5	5	-2
Quebec	18	7	11	2	3	-4
Halifax	19	9	13	4	7	0
Fredericton	19	7	13	2	6	-3
Charlottetown	18	9	12	4	6	0
Goose Bay	14	4	6	-1	0	-7
St. John's	16	8	10	4	6	0

Fall 1993 Outlook

Review of the Summer

Except for June, which was slightly cooler than normal, the summer of 1993 had temperatures which averaged near to slightly above normal, over the more populated areas of Ontario and Quebec, and most of northern Canada. In contrast, much of southern B.C. and most of the Prairies experienced a generally cool, wet summer. Parts of the Atlantic provinces too, received more than their usual share of precipitation and temperatures were cooler than normal.

The systems responsible for the cool and wet conditions included a very persistent upper air trough of low pressure on the California coast, and another off the east coast. Moreover, an unusual series of disturbances originating from the tropics, introduced pulses of moisture into the American mid-west and other parts of the west throughout the period. The moisture eventually fed into disturbances further north, resulting in some unusually high rainfall totals in the Prairies and elsewhere in the west.

Fall Outlook

The usual statistical techniques were inconclusive and we used less reliable analogical techniques: this fall's forecast is based largely on the fact that climatic patterns occurring this year closely match those in 1975. Then as now, there were persistent troughs of low pressure on the coasts, and there is good similarity in other parts of the world. The expectation is that an upper ridge of high pressure should build into eastern North America, and dominate much of the fall. Generally this means that much of the east will be warmer than normal and the western part of Canada cooler than normal. However, it is possible that there will be a significant adjustment in circulation patterns late in the period. This could lead to a reversal in the forecast pattern before the winter. Our confidence level in the fall forecast is limited.

For the period September to November, average temperatures are expected to be above normal for Ontario, Quebec, New Brunswick and Labrador. Below normal temperatures are expected for British Columbia, and vicinity. Elsewhere, near normal temperatures are expected.

Heavy rainfall across the American mid-West has waterlogged their soils. This area is twice the size of the Great Lakes Basin and is usually dry at this time of year. It could act as a source of moisture and may produce above normal amounts of precipitation over some parts of southern Canada - from the Prairies eastward.


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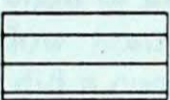
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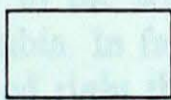
September 1, 1993

Monthly Outlook - September

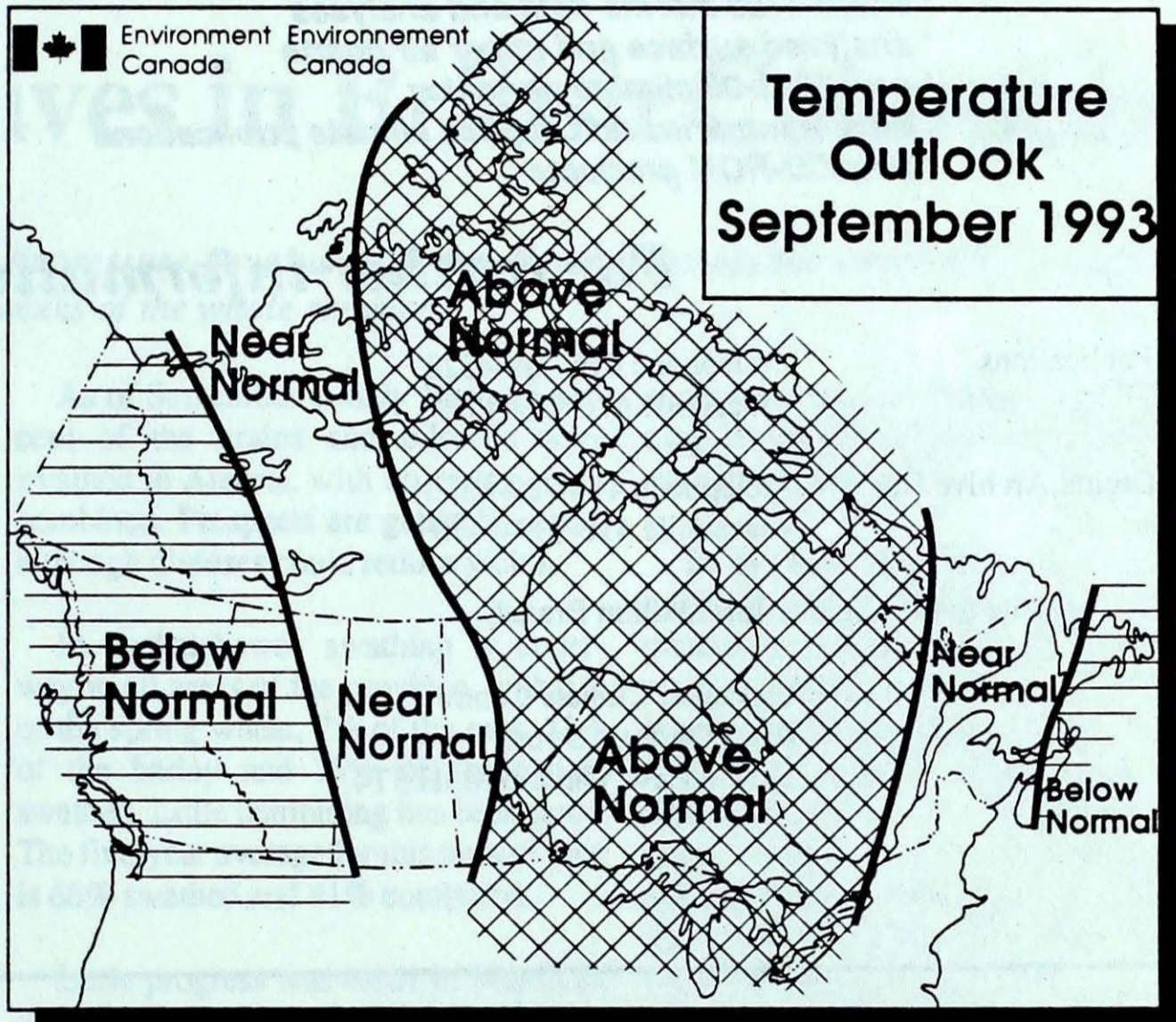
Key

Above Normal by 1 °C or more 

Below Normal by -1 °C or less 

Near Normal within 1 °C 

Normal Period 1951-1980



Normal Temperatures °C (1951-80)

September

Max Min

Whitehorse	12	3
Yellowknife	10	3
Iqaluit	5	0
Vancouver	18	10
Victoria	19	9
Calgary	17	4
Edmonton	16	3
Regina	19	5
Winnipeg	18	6
Toronto	21	10
Ottawa	20	9
Montreal	20	10
Quebec	18	7
Halifax	19	9
Fredericton	19	7
Charlottetown	18	9
Goose Bay	14	4
St. John's	16	8

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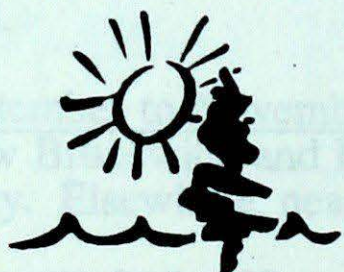
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Environmental Citizenship

Some fire extinguishers contain halons, chemicals that are extremely damaging to the ozone layer. Look for one that doesn't contain halons. They are just as effective, and won't harm the ozone.

An environmental citizenship message from Environment Canada.