Environment Canada Environnement Canada

Climatic Perspectives

September 6 to 12, 1993 **A weekly review of Canadian climate and water** *Vol. 15 No. 37*

Snow falls on the Prairies

A northwesterly circulation allowed cool Arctic air to sweep southwards and cover most of central Canada. The cool air brought several centimetres of snow to parts of southern Saskatchewan and central Manitoba over the weekend.

A disturbance moving across southern Saskatchewan and Manitoba resulted in an early snowfall, surprising residents in some agricultural regions of the Prairies. On Saturday, Gillam, Man. recorded more than 6 cm of the white stuff. The next day, September 12, Yorkton received 6 cm of snow, while Swift Current and Broadview had 3 cm. Several other locations in central and southern Saskatchewan reported a trace of snow over the weekend. The snow was wet, and most of it melted as it touched the ground. Frost was general in Saskatchewan and northern Manitoba on Sunday, as minimum temperatures dropped as low as -3°C. The frost and snow is not expected to damage the crops as much as a further delay in the harvest will.

Wind storm lashes coastal B.C.

Sunny and warm weather for most of the week came to an abrupt end on Saturday, September 11, when an active frontal system, associated with heavy thunderstorms, moved across the province, bringing cooler, windy weather, and in many locations the first rain of the month. On Saturday, the Whistler-Blackcomb area was hit by high winds, with gusts of up to 140 km/h. Pit Meadows, 35 km east of Vancouver, clocked speeds of 141 km/h. Wind gusts in the Howe Sound and Fraser Valley reached 121 km/h. Numerous trees and powerlines were knocked down and property was damaged along B.C.'s lower mainland. Thousands of people were without hydro until late on Sunday. Two people were killed. The Coast Guard was flooded with numerous calls from weekend sailors in distress. Statistically, a windstorm of this magnitude should only occur once every 100 years.

Severe storms hit Ontario

Despite a week of cool, autumn-like weather, on September 9 severe thunderstorms moved across central Ontario. Between 5 and 8 pm on Thursday, the storms produced heavy downpours, strong gusty winds and spawned funnel clouds and two tornadoes in Muskoka and Haliburton cottage country. Luckily, due to the sparseness of the area, damage was mainly limited to downed trees and utility poles, but one trailer park did receive a considerable amount of damage from a twister.

Elsewhere...

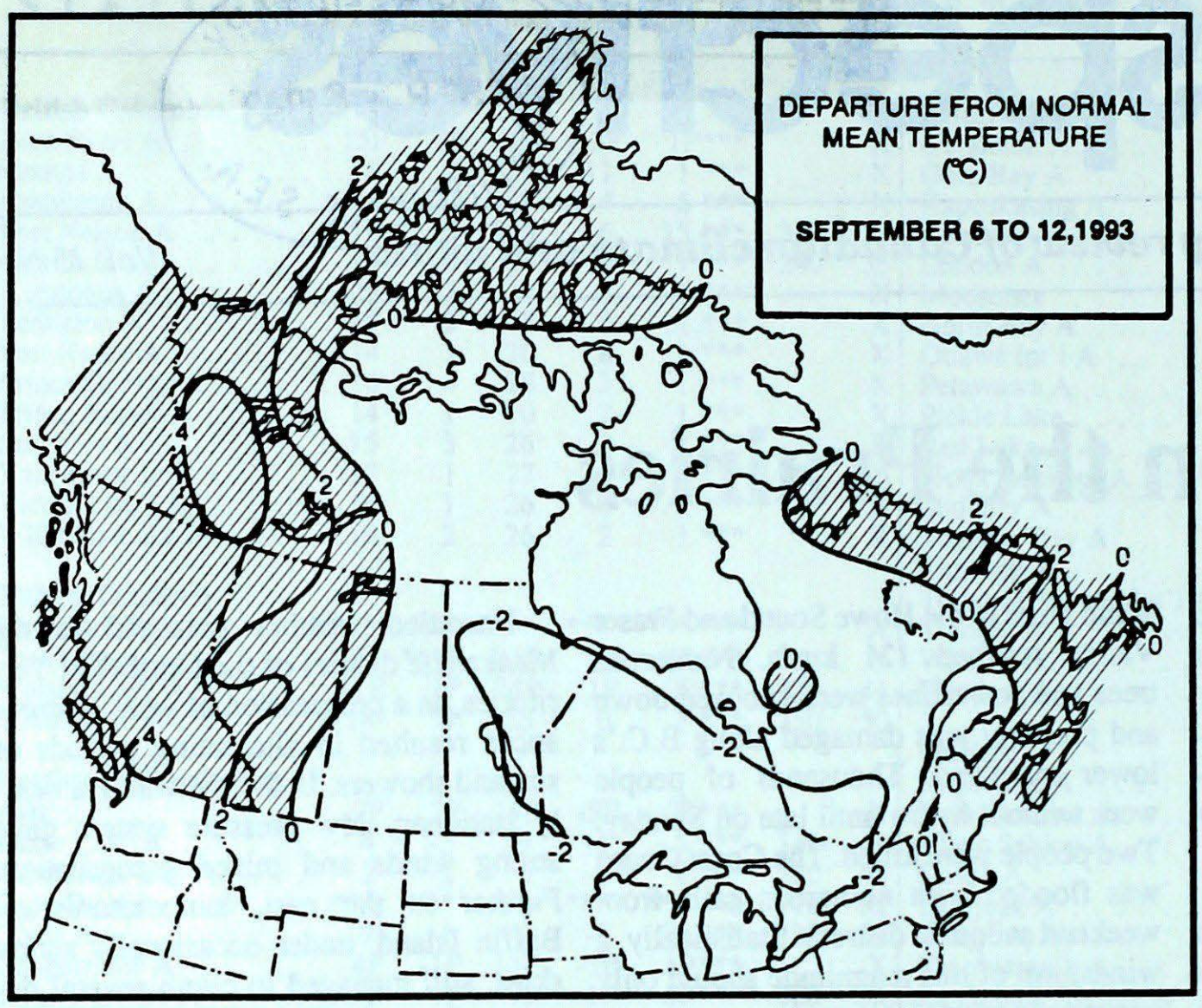
In the Yukon, the period started out unseasonably warm, but temperatures dropped to more normal values as the week progressed. Due to unusually high freezing levels, only a dusting of new snow is evident on the mountains. This was appreciated by participants of the annual 110 km Klondike Road Relay from Skagway, Alaska to Whitehorse, which is frequently run in blizzard-like conditions when ascending the White Pass.

Unsettled weather persisted in the Mackenzie district of the Northwest Territories, as a progression of weak disturbances resulted in alternating periods of sun and showers. In the Keewatin, a nearly stationary low pressure system gave strong winds and mixed precipitation. Further to the east, temperatures on Baffin Island, under occasionally sunny skies, still managed to climb several degrees above freezing. Precipitation was mostly in the form of rain in the south, but was mixed with snow further north. The Arctic Islands saw frequent flurries, with temperatures hovering near freezing. The high Arctic has definitely become winter-like, with maximum readings failing to climb above freezing and snow accumulating on the ground.

A westerly circulation maintained seasonable temperatures and mainly sunny skies over Newfoundland. However, the remnants of tropical storm Floyd, which passed south of the Island towards the end of the period, gave 40 mm of rain to portions of the Avalon Peninsula. In the Maritimes, the week was generally cloudy with some sun. Heavy showers fell in New Brunswick on the 11th.

A look ahead...

For the week of September 20, above-normal temperatures are forecast for Atlantic Canada. Elsewhere across the country, changeable, seasonably cool weather should prevail, with below-normal temperatures in the extreme northwest.



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	13.5	3.0
Iqaluit A	6.5	1.1
Yellowknife A	11.4	4.7
Vancouver Int'l A	19.1	10.7
Victoria Int'l A	19.9	9.2
Calgary Int'l A	18.5	4.6
Edmonton Int'l A	16.5	4.1
Regina A	20.9	6.3
Saskatoon A	19.4	6.2
Winnipeg Int'l A	20.0	7.6
Ottawa Int'l A	21.2	10.1
Toronto (Pearson Int'l A)	23.3	10.5
Montréal Int'l A	21.2	10.5
Québec A	19.2	8.3
Fredericton A	20.6	7.9
Saint John A	18.6	8.7
Halifax (Shearwater)	19.9	11.1
Charlottetown A	18.9	10.1
Goose A	15.0	5.9
St John's A	16.7	8.7

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Lytton A	33	Prince George A	-3	Hope A	21
Yukon Territory	Watson Lake A	22	Faro (aut)	1	Faro (aut)	15
			Teslin (aut)	1		
			Whitehorse A	1		
Northwest Territories	Fort Simpson A	25	Alert	-11	Cape Dorset A	17
Alberta	Lethbridge A	30	High Level A	-3	Cold Lake A	30
Saskatchewan	Estevan A	29	Meadow Lake A	-3	Saskatoon A	36
Manitoba	Brandon A	26	Thompson A	-2	Gillam A	23
Ontario	London A	25	Pickle Lake	-1	London A	35
Quebec	Montréal Int'l A	22	Parent (aut)	-2	Sept-iles A	49
New Brunswick	Fredericton A	23	St Stephen (aut)	2	Moncton A	66
Nova Scotia	Greenwood A	26	Greenwood A	5	Yarmouth A	16
Prince Edward Island	Charlottetown A	22	Charlottetown A	8	Charlottetown A	19
Newfoundland	Port Aux Basques	27	Wabush Lake A	-1	St Anthony	60

Across The Country...

Highest Mean Temperature	Lytton (B.C.)	21
Lowest Mean Temperature	Alert (N.W.T.)	-7

93/09/06-93/09/12

CLIMATIC PERSPECTIVES
VOLUME 15

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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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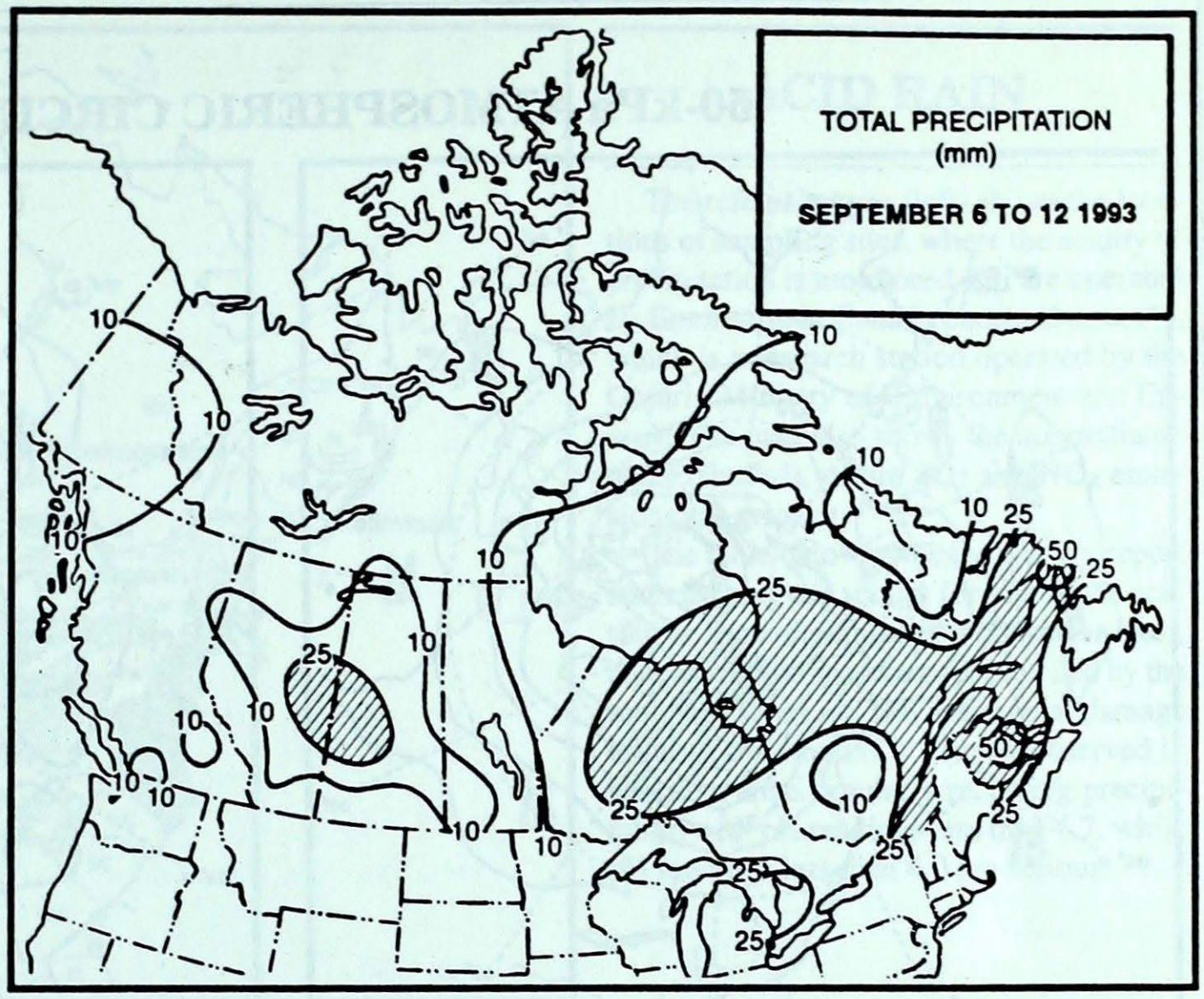
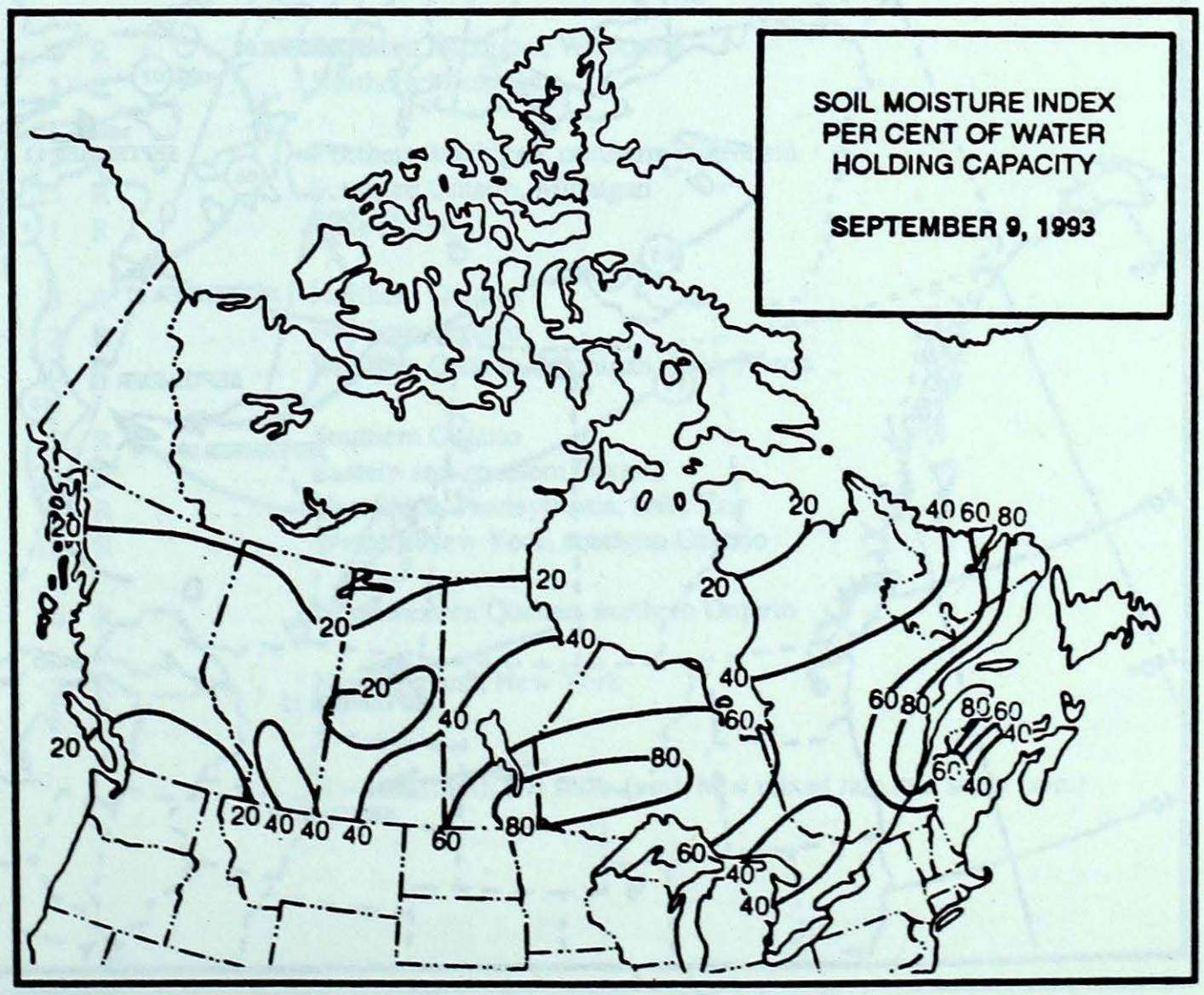
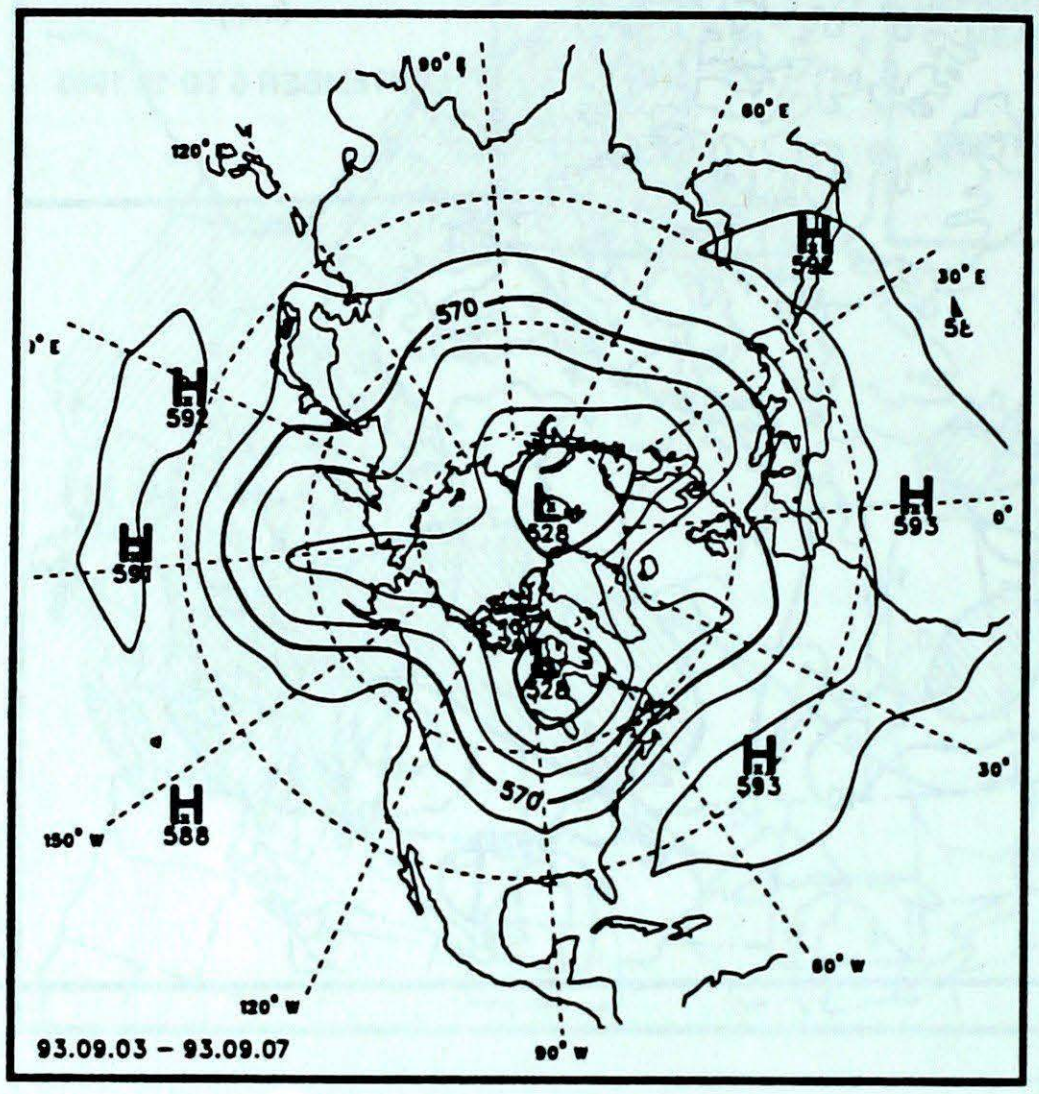


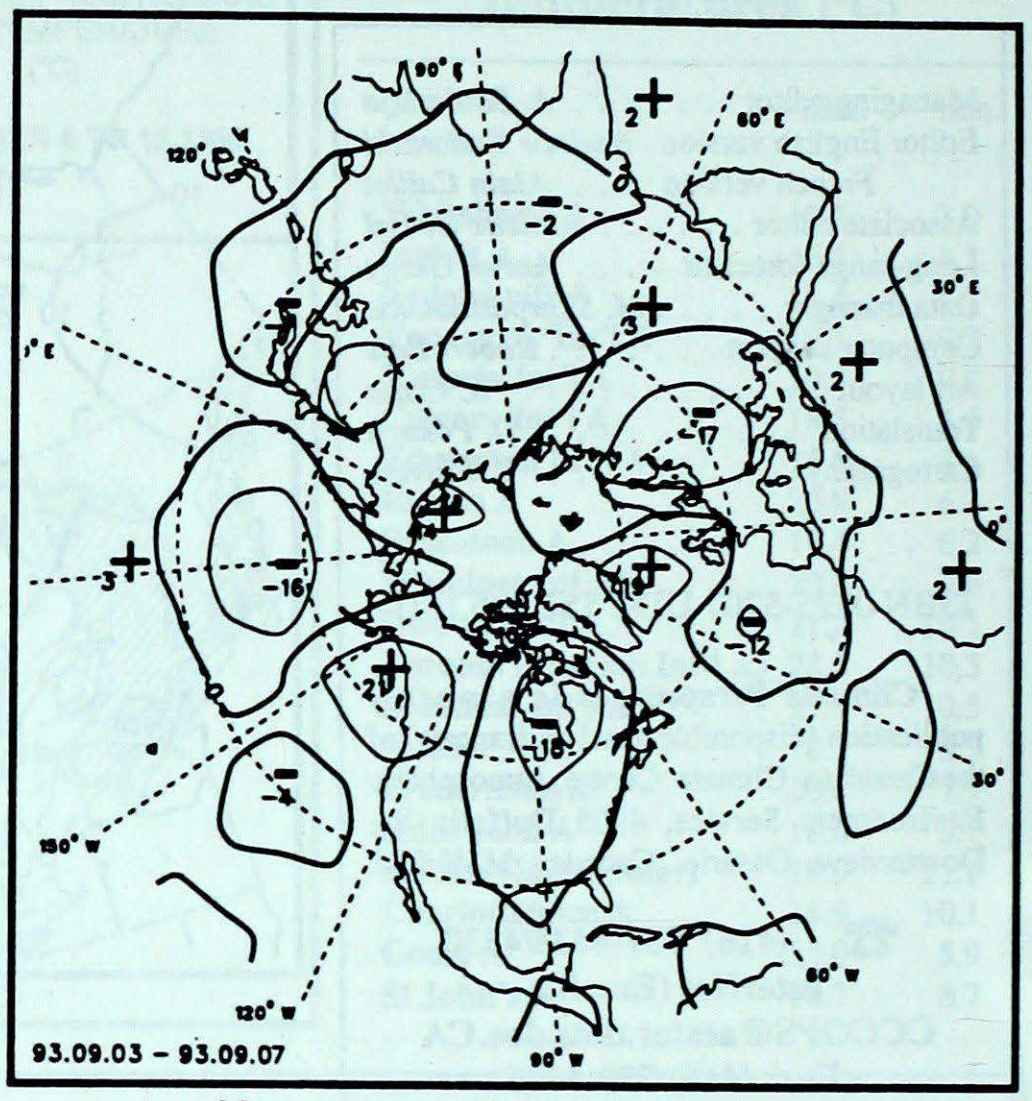


Canada

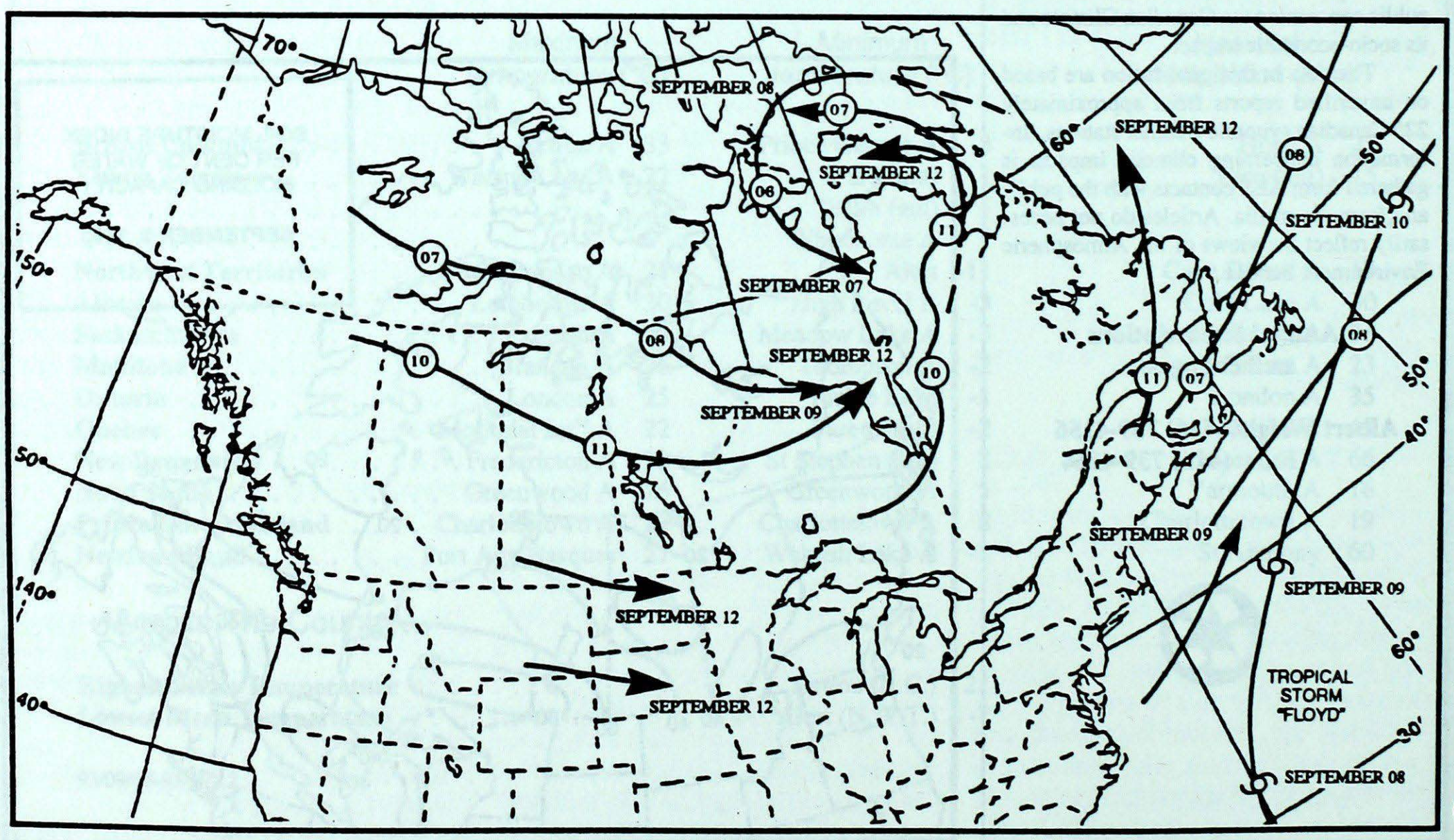
50-kPa ATMOSPHERIC CIRCULATION



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

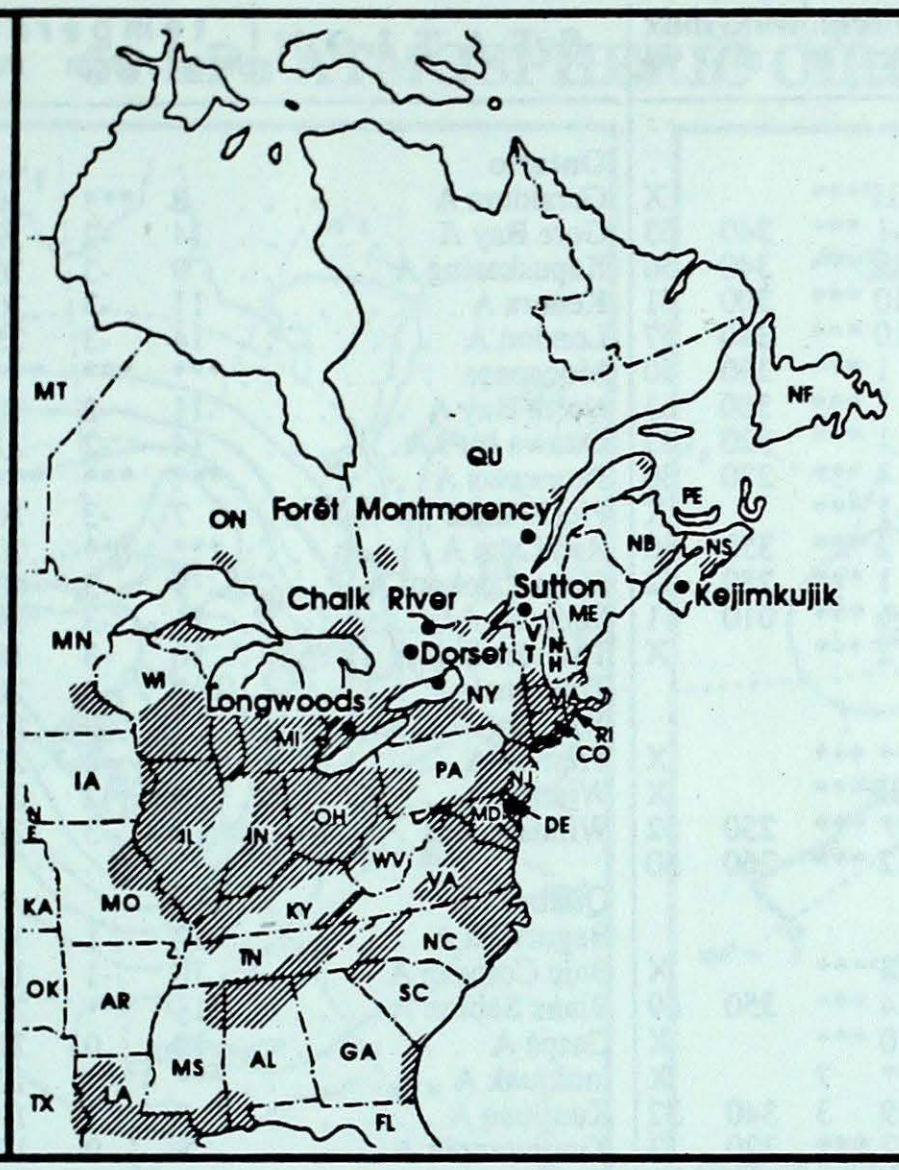


Mean geopotential height anomaly
50-kPa level (10 decametre intervals)



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
					September 5 to 11, 1993
Longwoods	09	4.5	4	R	Southern Michigan, Wisconsin
	10	5.4	1	R	Northern Michigan
Dorset *	08	3.9	2	R	Northern Michigan, northern Wisconsin
	09	5.5	25	R	Southern Ontario, Michigan
	10	4.9	1	R	Lake Huron
Chalk River	06	4.2	3	R	Northern Ontario
	07	4.4	2	R	Northern Ontario
	09	4.4	10	R	Southern Ontario, Michigan, Lake Huron
Sutton	05	4.3	2	R	Southern Ontario
	06	4.4	23	R	Eastern and southern Ontario
	09	4.0	11	R	New York, Pennsylvania, Lake Erie
	10	4.9	10	R	Western New York, southern Ontario
Montmorency	06	5.0	6	R	Northwestern Quebec, northern Ontario
Kejimkujik	08	3.6	3	R	New England, New York

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	15P	4P	29P	2P	1P	***		X
Comox A	18	3	25	7	1	***	340	63
Cranbrook A	14	1	29	4	9	***	340	56
Fort Nelson A	13	3	25	2	10	***	300	41
Fort St John A	13	2	23	-2	10	***	340	57
Kamloops A	20	3	32	9	1	***	330	50
Penticton A	18	2	32	8	1	***	360	63
Port Hardy A	13	1	19	6	1	***	320	43
Prince George A	13	3	27	-3	4	***	270	50
Prince Rupert A	13	1	19	5	1	***		X
Smithers A	13	3	26	0	2	***	350	46
Vancouver Int'l A	17	2	26	7	1	***	280	52
Victoria Int'l A	16	2	26	6	1	***	010	41
Williams Lake A	14	3	26	1	2	***		X
Yukon Territory								
Komakuk Beach A	***	***	***	***	***	***		X
Teslin (aut)	10P	***P	18P	1P	13P	***		X
Watson Lake A	***	***	22	***	***	***	250	52
Whitehorse A	11	3	22	1	12	***	260	50
Northwest Territories								
Alert	-7P	0P	-4P	-11P	0P	***		X
Baker Lake A	3	-2	7	-2	4	***	350	69
Cambridge Bay A	0	-1	3	-4	0	***		X
Cape Dyer A	***	***	***	***	***	7		X
Clyde A	1	-1	7	-2	9	3	340	32
Coppermine A	4	-1	9	-6	7	***	320	33
Coral Harbour A	3P	0P	6P	-1P	8P	***	010	59
Eureka	-4	0	-1	-9	5	6		X
Fort Smith A	10	1	23	-5	4	***	330	46
Hall Beach A	1	-1	3	-2	2	***		X
Inuvik A	8	3	15	1	6	***	300	37
Iqaluit A	4	0	7	1	11	***	070	80
Mould Bay A	***	***	0	***	***	4		X
Norman Wells A	11	4	22	3	11	***	310	74
Resolute A	-1	2	1	-4	3	3	040	46
Yellowknife A	10	2	22	3	3	***	320	78
Alberta								
Calgary Int'l A	13	1	27	2	6	***	350	67
Cold Lake A	12	1	25	0	30	***	330	57
Edmonton Namao A	13	1	25	3	12	***	320	63
Fort McMurray A	11	1	26	0	3	***	320	33
Grande Prairie A	13	2	28	1	6	***	330	54
High Level A	11	2	25	-3	3	***	310	48
Lethbridge A	15	1	30	3	23	***	330	82
Medicine Hat A	15	0	28	2	6	***	200	52
Peace River A	11	1	25	0	20	***	310	56
Saskatchewan								
Cree Lake	***	***	***	***	***	***		X
Estevan A	13	-1	29	0	6	***	300	85
La Ronge A	10	0	21	-1	9	***	040	56
Regina A	13	-1	28	1	3	***	340	70
Saskatoon A	12	0	25	0	36	***	360	74
Swift Current A	13	0	27	0	11	***	360	89
Yorkton A	12	-1	24	0	15	***	300	93
Manitoba								
Brandon A	12	-1	26	0	10	***	320	111
Churchill A	5	-2	14	1	12	***	010	89
Lynn Lake A	6	-2	17	-1	10	***	060	48
The Pas A	10	-1	20	2	0	***	320	69
Thompson A	7	-2	18	-2	5	***	330	41
Winnipeg Int'l A	12	-2	23	2	7	***	320	63

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Geraldton A	8	***	16	0	31	***	200	59
Gore Bay A	14	-2	19	8	18	***	190	78
Kapuskasing A	9	-3	16	2	29	***	310	56
Kenora A	11	-3	20	3	10	***	330	56
London A	14	-3	25	6	35	***	270	63
Moosonee	***	***	***	***	***	***		X
North Bay A	11	-2	18	5	21	***	240	59
Ottawa Int'l A	14	-2	21	6	19	***	270	52
Petawawa A	***	***	***	***	***	***		X
Pickle Lake	7	-3	16	-1	26	***	320	56
Red Lake A	***	***	20	***	***	***	270	61
Sioux Lookout A	9	-3	18	2	28	***	330	56
Sudbury A	11	-3	19	3	16	***	150	65
Thunder Bay A	10	-3	18	0	6	***	210	56
Timmins A	9	-3	20	0	17	***	300	52
Toronto(Pearson Int'l A)	14	-3	22	6	13	***	210	61
Trenton A	13	-3	23	5	19	***	230	83
Wiarton A	13	-2	20	6	35	***	270	52
Windsor A	16	-3	25	7	21	***	200	57
Québec								
Bagotville A	12	-1	19	3	17	***	300	48
Baie Comeau A	10	-1	17	2	24	***	290	50
Blanc Sablon A	11	***	20	5	41	***	250	59
Gaspé A	12	0	21	1	38	***	190	61
Inukjuak A	***	***	12	***	***	***		X
Kuujjuaq A	8	1	17	1	9	***	240	69
Kuujjuarapik A	8	0	17	4	29	***	240	76
La Grande Rivière A	7	0	17	1	38	***	270	61
Mont Joli A	12	0	20	5	37	***	150	44
Montréal Int'l A	15	-1	22	4	37	***	260	48
Natashquan A	13P	2P	18P	7P	30P	***	180	67
Québec A	13	-1	20	1	30	***	310	37
Schefferville A	6	0	12	0	19	3	270	59
Sept-Îles A	10	-1	15	2	49	***	100	46
Sherbrooke A	13	0	22	2	35	***	270	46
Val-d'Or A	9	-3	19	-1	15	***	180	57
New Brunswick								
Fredericton A	16	1	23	6	20	***	200	46
Miscou Island (aut)	14P	0P	21P	6P	28P	***		X
Moncton A	15	1	23	6	66	***	300	61
Saint John A	15	2	22	7	36	***	200	59
St Leonard A	12	***	21	3	46	***	310	48
Nova Scotia								
Greenwood A	16	2	26	5	6	***	190	87
Shearwater A	18	2	23	10	5	***	160	50
Sydney A	***	***	25	***	***	***	180	48
Yarmouth A	15	1	22	10	16	***	180	59
Prince Edward Island								
Charlottetown A	15	1	22	8	19	***	170	52
East Point (auto)	15P	***P	20P	9P	15P	***		X
Newfoundland								
Cartwright	12	3	20	5	28	***	150	65
Churchill Falls A	7P	-1P	14P	0P	1P	***		X
Gander Int'l A	14	2	24	5	12	***	130	63
Goose A	11	1	20	4	24	***	270	59
Stephenville A	15	1	21	9	11	***	280	65
St John's A	12	0	21	7	14	***	160	59
St Lawrence	13	1	19	7	***	***		X
Wabush Lake A	7	-1	14	-1	14	***	220	39

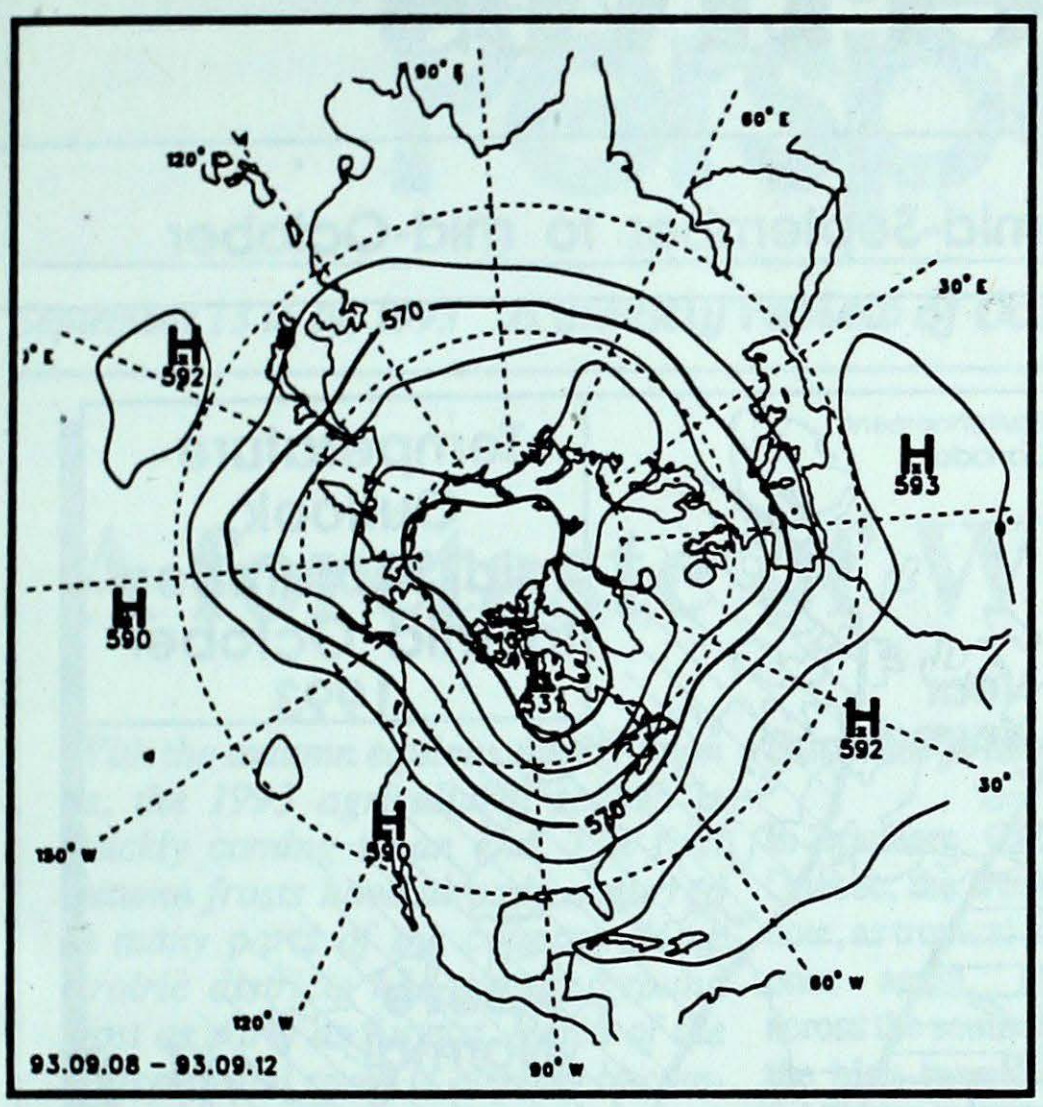
93/09/06-93/09/12

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

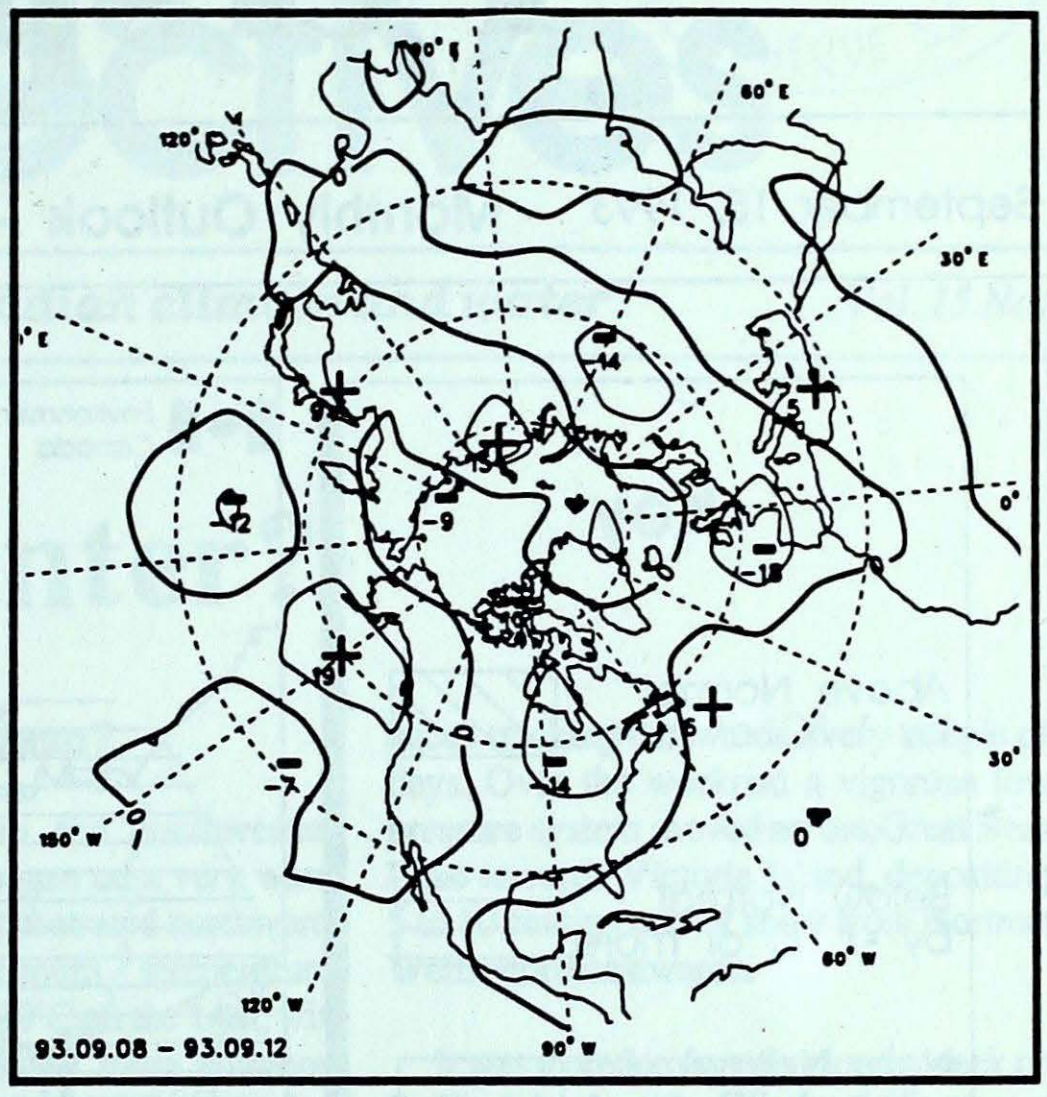
ptot = weekly precipitation total in mm
st = snow thickness on the ground in cm
dir = direction of max wind, deg. from north.
vel = wind speed in km/h

— 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

Most automobile air conditioners use ozone-depleting CFCs. If you have one, make sure that your garage captures and recycles CFCs when servicing your air conditioning system.

An environmental citizenship message from Environment Canada.

Canada

Environment Canada Environnement Canada

Climatic Perspectives

September 15, 1993 **Monthly Outlook - mid-September to mid-October**

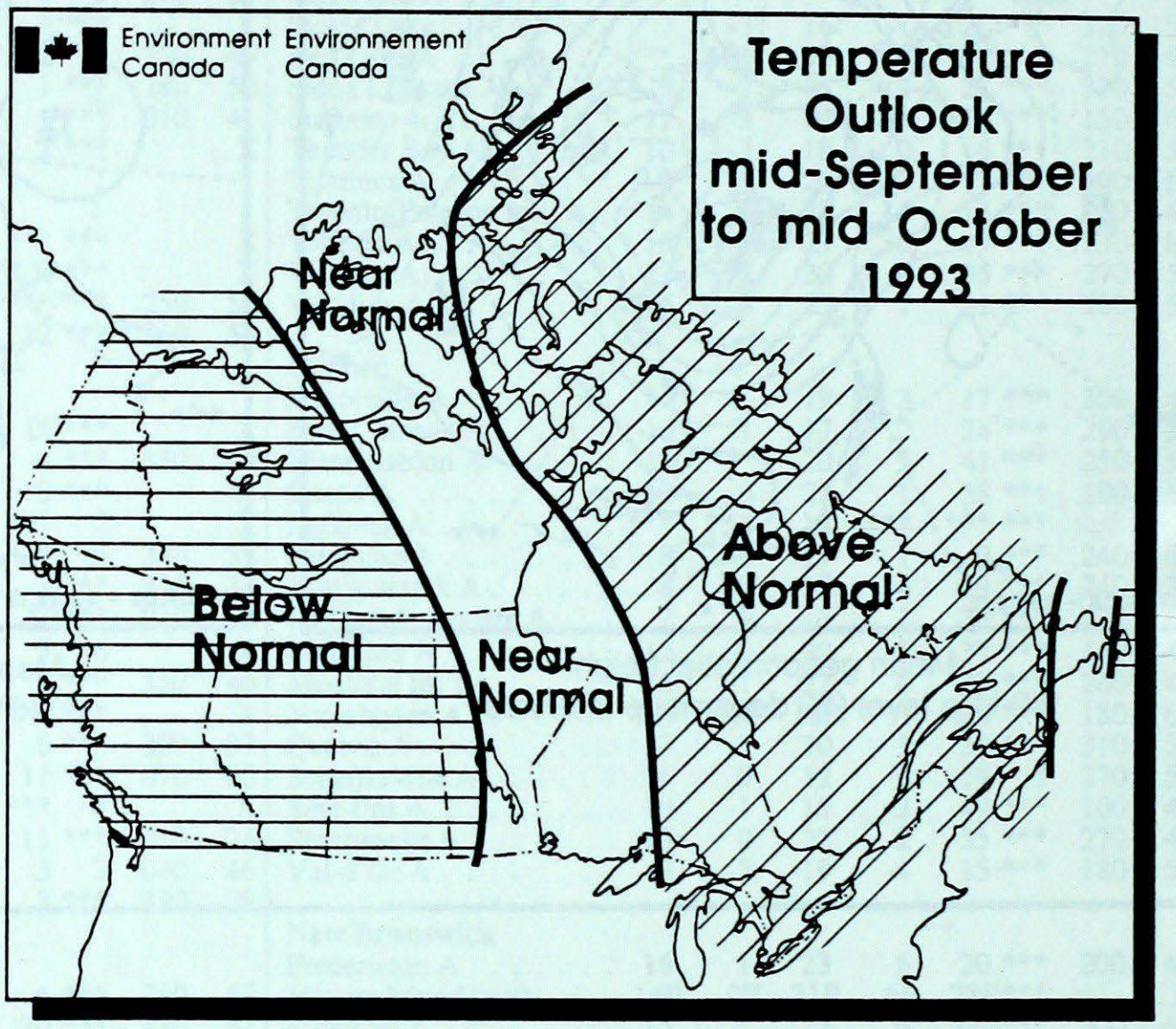
Key

Above Normal by 1 °C or more

Below Normal by -1 °C or more

Near Normal within 1 °C

Normal Period 1951-1980



Normal Temperatures °C (1951-80)

mid-September to mid-October

	Max	Min
Whitehorse	8	1
Yellowknife	6	-1
Iqaluit	2	-4
Vancouver	16	8
Victoria	17	8
Calgary	15	2
Edmonton	14	1
Regina	16	2
Winnipeg	15	3
Toronto	18	7
Ottawa	17	6
Montreal	17	8
Quebec	15	5
Halifax	16	7
Fredericton	16	5
Charlottetown	15	7
Goose Bay	10	2
St. John's	13	6

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