

# Climatic Perspectives

A.E.S.

SEP 29 1993

BIBLIOTHEQUE S.E.A.

MONTHLY  
SUPPLEMENT  
INCLUDED

September 13 to 19, 1993 A weekly review of Canadian climate and water

Vol. 15 No. 38

## A foretaste of Winter?

*With the autumn equinox nearly upon us, the 1993 agricultural season is quickly coming to an end. The first autumn frosts have already occurred in many parts of the country. Some Prairie districts had patchy ground frost as early as August. North of the 60th parallel snow is already becoming a regular feature. This week, Jack Frost was reported in many parts of southern Canada, including the Prairie agricultural districts and the lower Great Lakes.*

Across central Canada, a changeable weather regime prevailed, as warm and cold air masses vied for supremacy. In Alberta, nighttime frost was quite general during the early and middle part of the period, with lows dropping several degrees below freezing. In contrast, later in the week, daytime temperatures climbed into the teens, and on the 18th, maximums even nudged the low twenties.

In Saskatchewan and Manitoba, a killing frost was reported in all areas during the first two days of the period. In Winnipeg, this put to an end the unusually high mosquito population that thrived until now, due to the wet summer. Readings dropped as low as  $-5^{\circ}\text{C}$  in Saskatchewan's agricultural district.

Frost in the Prairies at this time of year is not unusual, in fact, in this part of Canada frost can occur as early as mid-August or as late as the second week in October, with the first half of September being the most likely time.

### Summer's last gasp?

In southern Ontario and southwestern Quebec, the week began on a very warm note, as tropical air penetrated northwards once again. Maximum temperatures across the south hit  $30^{\circ}\text{C}$  on the 14th, with the high twenties being more common. St. Catharines set a new daily record of  $31.2^{\circ}\text{C}$  on the 14th. The warm spell lasted for only three days before a cold front allowed Arctic air to spill southwards once again, dropping temperatures by 10 to 15 degrees. In sharp contrast, maximum temperatures in northwestern Ontario during the same first three days of the week remained in the single digits, with snow flurries reported. Armstrong and Geraldton registered a high of only  $4^{\circ}\text{C}$  on the 13th. On the morning of September 14, a centimetre of snow covered the ground at Sioux Lookout.

As the cold air deepened across the south, frost warnings were posted for most of south-central Ontario. By week's end, only the farming communities in southwestern Ontario escaped the effects of the first killing frost of the season.

### Elsewhere...

In the Yukon, the week started out sunny and unseasonably warm, but by mid-week all areas in the Yukon had succumbed to a killing frost. On the morning of the 18th, Whitehorse residents woke up to their first significant snowfall of the season. The Northwest Territories, were generally unsettled all week, with disturb-

ances tracking eastwards every couple of days. Over the weekend a vigorous low pressure system moved across Great Bear Lake towards Victoria Island, depositing 5 to 10 centimetres of snow from Norman Wells, northeastwards.

It was a predominantly cloudy week on Baffin Island, with snow in the north and periods of rain in the south. Temperatures hovered several degrees above freezing.

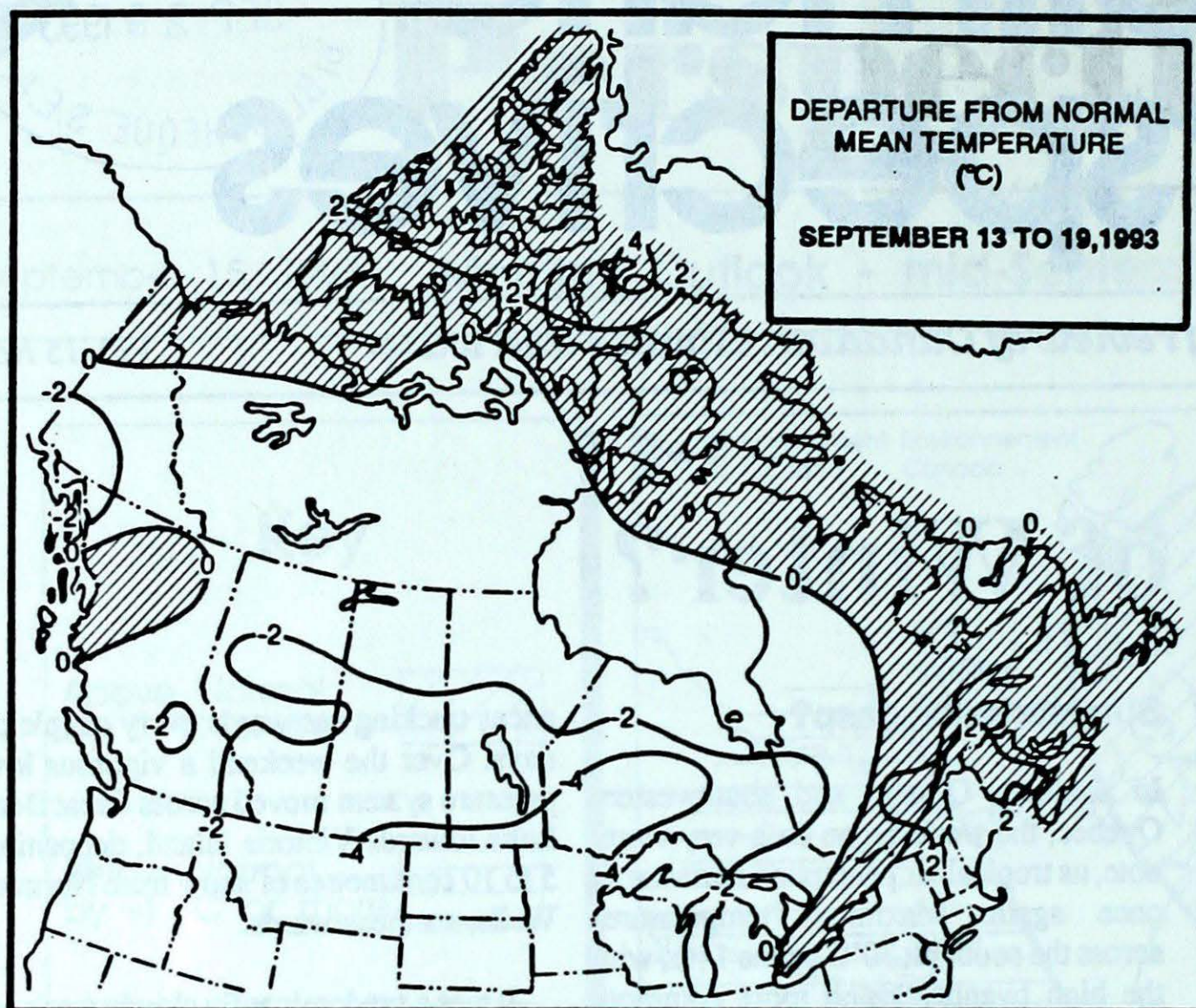
Sunny, cool but dry weather prevailed along the B.C. coast, where it has been one of the driest Septembers on record. In the north, autumn colours are at their peak, birds are migrating south and a dusting of snow covers the higher terrain. In the southern interior, it was wetter than along the coast, with significant rainfalls in the Okanagan, where the apple harvest is in full swing.

Mainly sunny skies were reported over the Maritimes, followed by overcast conditions and much needed rain on Saturday. New daily high temperature records were established on September 14 and 15. On Tuesday, Greenwood registered  $29^{\circ}\text{C}$ . A southwesterly circulation gave unsettled but mild weather conditions to Newfoundland. Heaviest precipitation was recorded on the 14th, 15th and 19th.

### A look ahead...

For the week of September 27, seasonably warm weather is forecast for British Columbia, Alberta and the Yukon. The rest of Canada should experience cool and changeable fall weather conditions.





### Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	12.9	3.4
Iqaluit A	4.9	-0.2
Yellowknife A	10.5	4.0
Vancouver Int'l A	18.3	10.1
Victoria Int'l A	19.0	8.8
Calgary Int'l A	17.1	3.8
Edmonton Int'l A	16.5	2.7
Regina A	18.3	4.4
Saskatoon A	17.7	4.5
Winnipeg Int'l A	18.2	6.2
Ottawa Int'l A	19.0	8.4
Toronto (Pearson Int'l A)	20.9	9.3
Montréal Int'l A	19.2	9.1
Québec A	17.5	6.5
Fredericton A	18.9	6.0
Saint John A	17.0	6.9
Halifax (Shearwater)	18.4	9.6
Charlottetown A	17.5	8.3
Goose A	13.5	4.0
St John's A	15.3	7.2

### Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia . . . . .	Abbotsford A 24	Prince George A -3	Cranbrook A 18
Yukon Territory . . . . .	Watson Lake A 18	Whitehorse A -6	Whitehorse A 14
Northwest Territories . . . . .	Hay River A 23	Eureka -15	Cape Dorset A 34
Alberta . . . . .	Fort McMurray A 23	High Level A -5	Lethbridge A 29
Saskatchewan . . . . .	Moose Jaw A 22	Collins Bay -5	Broadview 15
		Estevan A -5	
		North Battleford A -5	
Manitoba . . . . .	The Pas A 22	Thompson A -10	Dauphin A 13
Ontario . . . . .	Port Weller (aut) 30	Armstrong (aut) -4	Timmins A 57
		Thunder Bay A -4	
Quebec . . . . .	Montréal Int'l A 29	La Grande IV A -2	Chibougamau 69
New Brunswick . . . . .	Fredericton A 31	St-Léonard A 0	Fredericton A 17
Nova Scotia . . . . .	Greenwood A 29	Greenwood A 0	Shearwater A 53
Prince Edward Island . . . . .	Charlottetown A 24	Charlottetown A 3	Charlottetown A 5
Newfoundland . . . . .	Comfort Cove 26	Wabush Lake A -3	Burgeo 66

### Across The Country...

Highest Mean Temperature . . . . .	Port Weller (aut) (Ont.) 24
Lowest Mean Temperature . . . . .	Alert (N.W.T.) -13



# CLIMATIC PERSPECTIVES VOLUME 15

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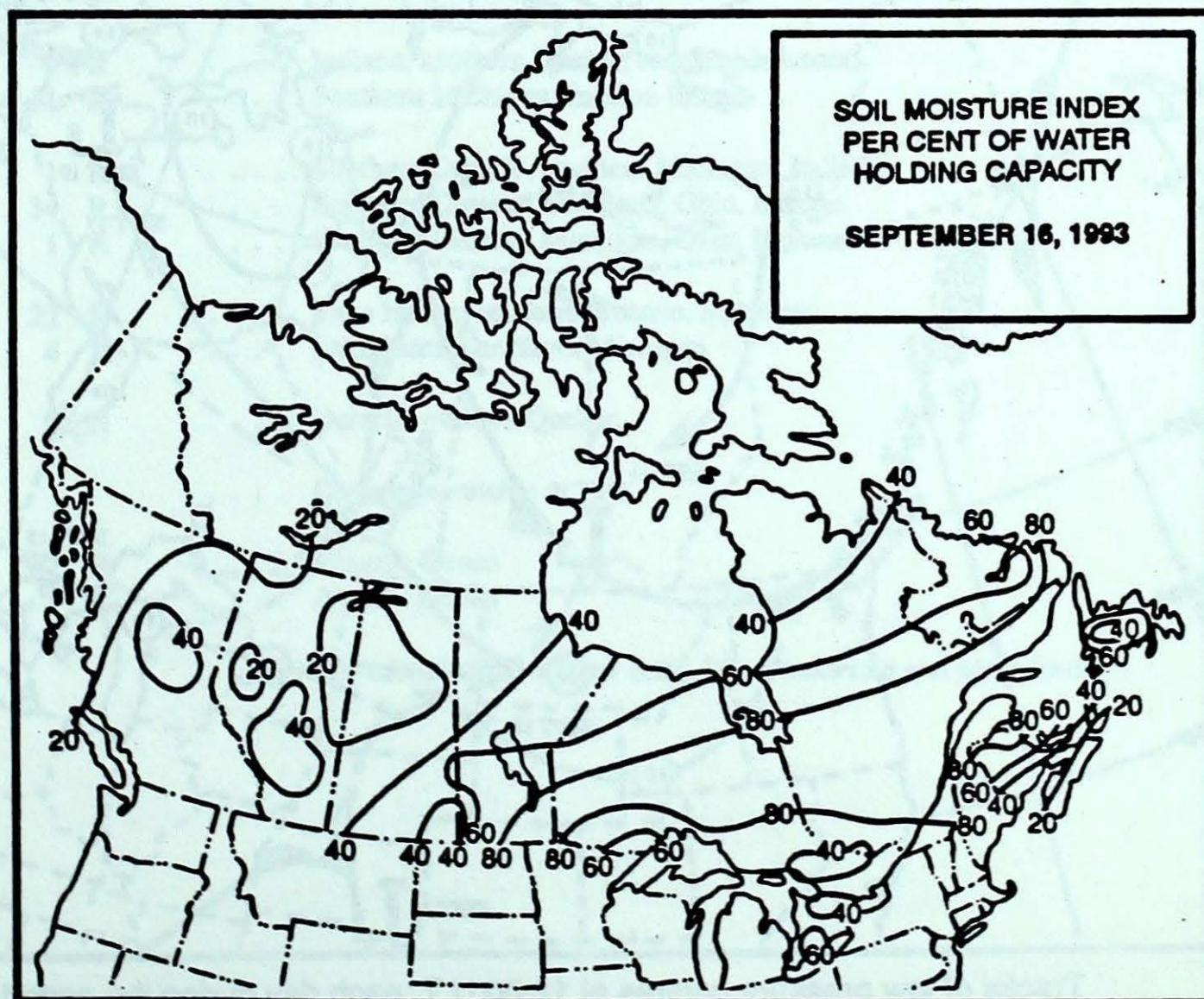
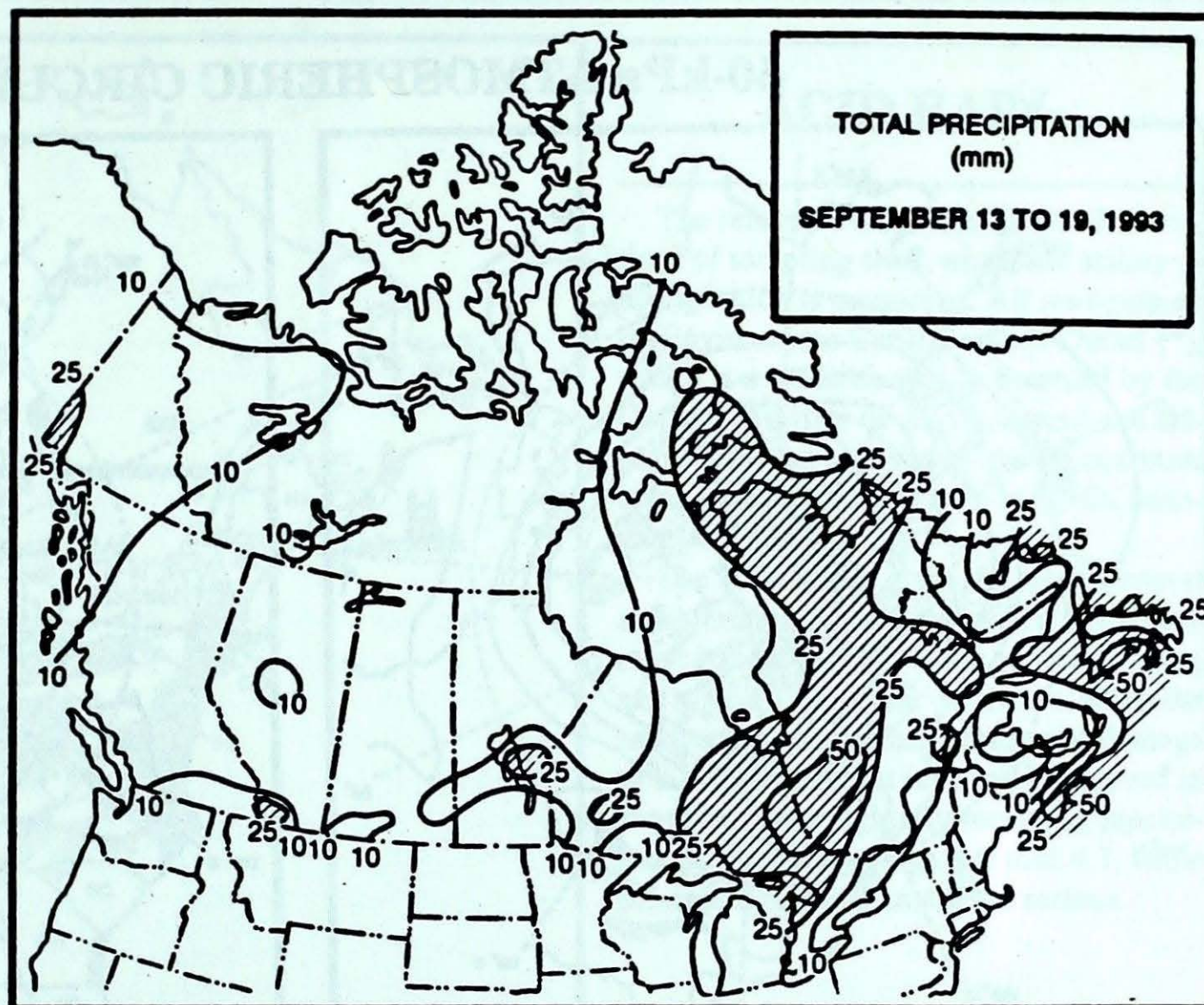
The purpose of the publication is to make topical information available to the public concerning the Canadian Climate and its socio-economic impact.

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.

## Annual Subscriptions and changes:

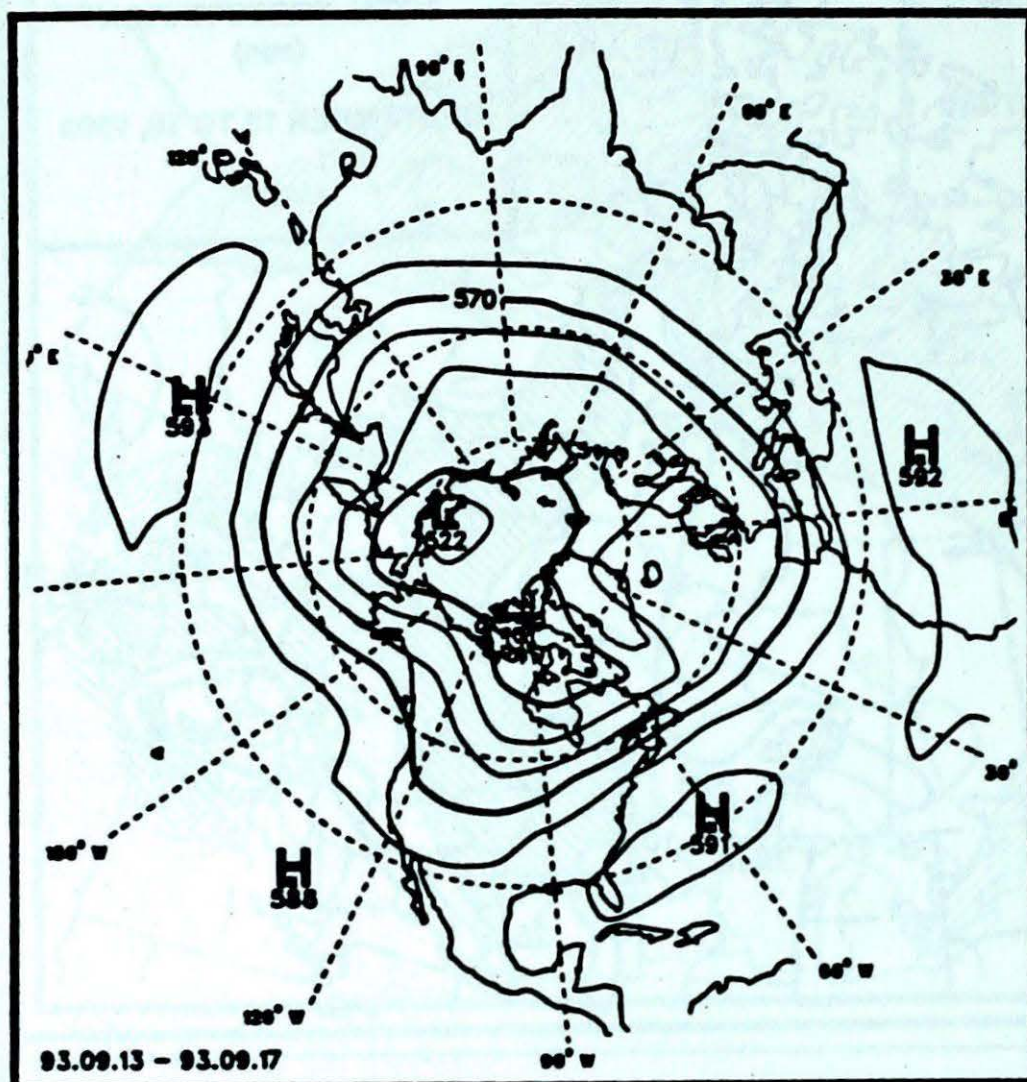
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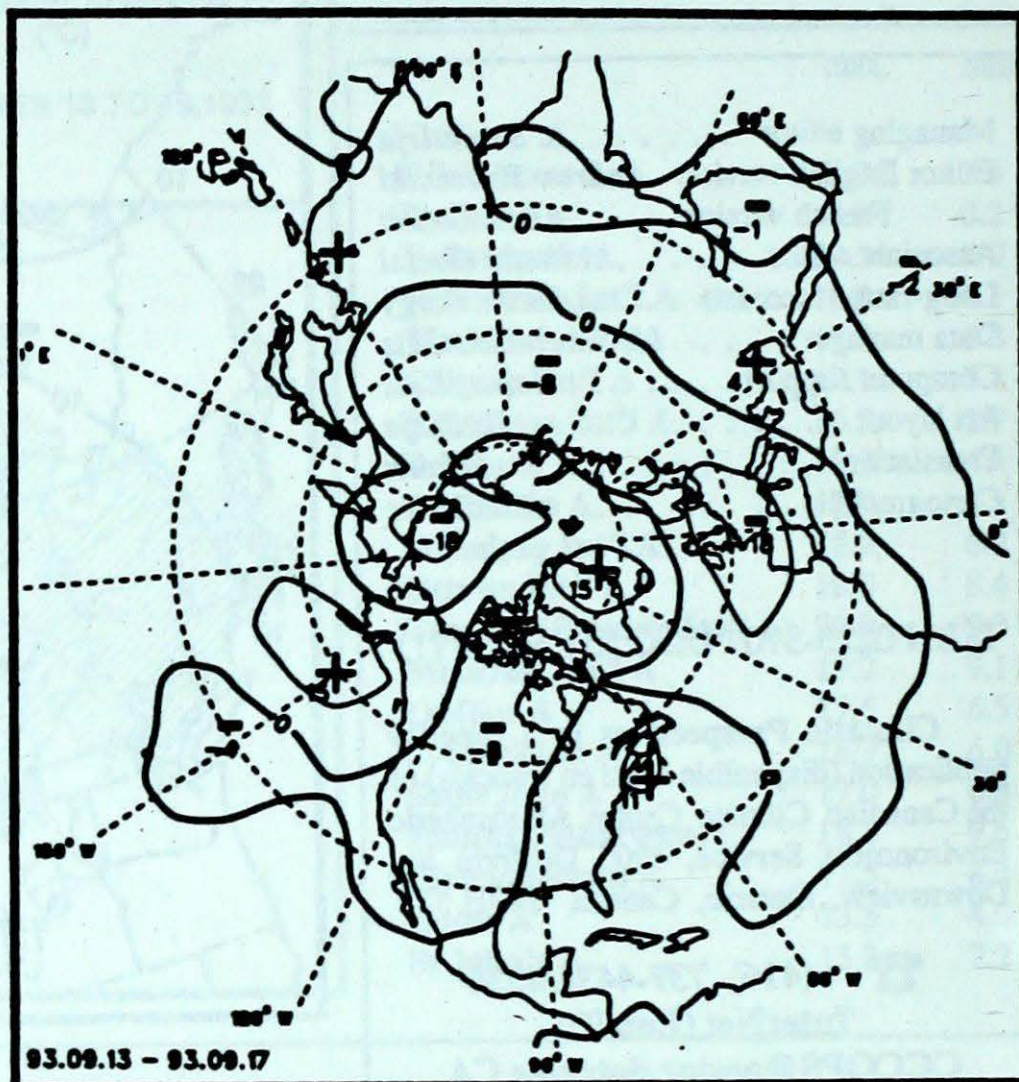




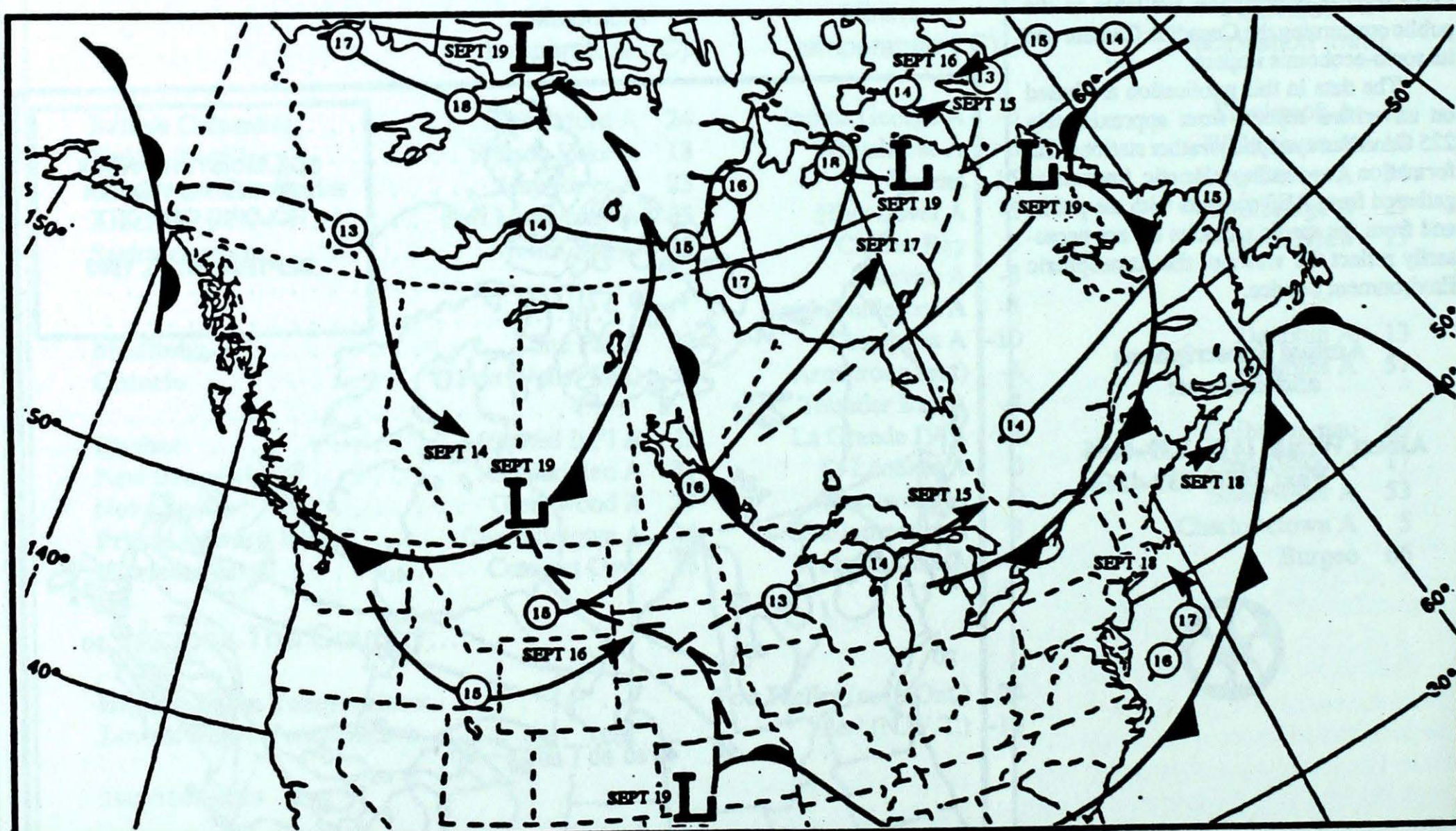
# 50-kPa ATMOSPHERIC CIRCULATION



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



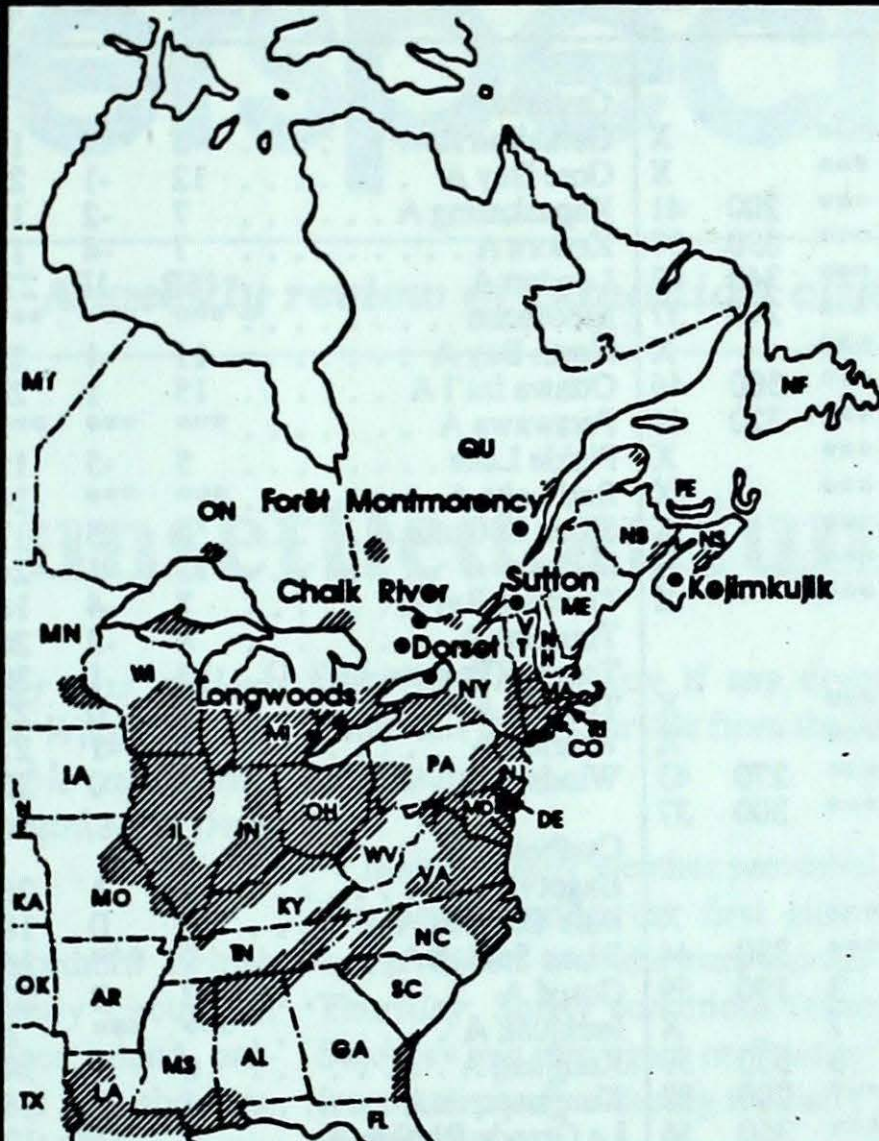
Mean geopotential height anomaly  
50-kPa level (10 decametre intervals)



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



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 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
------	-----	----	--------	------------------

September 12 to 18, 1993

Longwoods	12	4.4	4 R	..... Indiana, southern Illinois, southern Missouri
	14	4.4	11 R	..... Southern Michigan, Indiana Illinois
Dorset *	12	3.8	1 R	..... Southern Ontario, southern Michigan, Indiana
	14	4.6	34 R	..... Southern Ontario, Michigan, Ohio, Indiana
	15	4.8	1 R	..... Southern Ontario, Michigan, Ohio, Indiana
Chalk River	14	4.7	22 R	..... Lake Huron, southern Ontario, Michigan
	18	4.1	4 R	..... Lake Huron, northern Michigan
Sutton	15	3.9	7 R	..... Ontario, western Quebec
Montmorency				..... Data not available
Kejimikujik	17	5.2	27 R	..... Atlantic Ocean
	18	4.5	1 R	..... Atlantic Ocean

..... R = rain (mm), S = snow (cm), M = mixed rain and snow (mm)



STATION	temperature				precip. ptot st	wind max			
	mean	anom	max	min		dir	vel		
<b>British Columbia</b>									
Blue River A	9P	-2P	18P	-1P	9P***		X		
Comox A	14	0	21	7	1***		X		
Cranbrook A	9	-2	18	0	18***	200	41		
Fort Nelson A	10	1	21	-1	2***	330	37		
Fort St John A	9	-1	20	-2	3***	340	32		
Kamloops A	14	-1	23	4	10***	270	37		
Penticton A	13	-2	22	2	14***		X		
Port Hardy A	11	-1	15	7	2***	300	46		
Prince George A	9	-1	20	-3	8***	320	44		
Prince Rupert A	10	-1	18	3	13***		X		
Smithers A	9	-1	20	-1	4***		X		
Vancouver Int'l A	14	0	20	8	2***		X		
Victoria Int'l A	13	-1	22	6	2***		X		
Williams Lake A	8	-2	19	-2	5***		X		
<b>Yukon Territory</b>									
Komakuk Beach A	***	***	***	***	***		X		
Teslin (aut)	7P	***P	16P	-1P	0P***		X		
Watson Lake A	8P	0P	18P	0P	***P***	270	43		
Whitehorse A	6	-2	17	-6	14***	300	37		
<b>Northwest Territories</b>									
Alert	-13P	-2P	-8P	-15P	0P***		X		
Baker Lake A	1	-2	8	-5	3***	330	44		
Cambridge Bay A	-1	0	4	-5	3 3	190	59		
Cape Dyer A	***	***	***	***	*** 7		X		
Clyde A	1	1	5	-2	18 3	330	39		
Coppermine A	3	0	11	-4	10***	290	82		
Coral Harbour A	2	1	5	-3	16***	350	56		
Eureka	-8	1	-2	-15	1 4		X		
Fort Smith A	7	-1	21	-2	4***	300	43		
Hall Beach A	1	2	5	-1	9***	310	39		
Inuvik A	6P	2P	18P	-6P	0P 3		X		
Iqaluit A	3	0	7	-2	11***	120	52		
Mould Bay A	***	***	***	***	*** 4		X		
Norman Wells A	6	-1	19	-3	19***	300	65		
Resolute A	-3	2	0	-6	2 3	090	74		
Yellowknife A	6	-2	13	-1	2***	140	63		
<b>Alberta</b>									
Calgary Int'l A	8	-3	20	-2	7***	350	61		
Cold Lake A	8	-2	20	-2	3***	010	39		
Edmonton Namao A	9	-1	21	-1	8***	330	52		
Fort McMurray A	7	-2	23	-4	3***	250	35		
Grande Prairie A	8	-2	22	-2	5***	250	56		
High Level A	8	-2	20	-5	3***	270	41		
Lethbridge A	9	-4	21	-1	29***	020	48		
Medicine Hat A	9	-4	21	-2	9***	330	37		
Peace River A	8	-2	20	-2	5***	280	43		
<b>Saskatchewan</b>									
Cree Lake	***	***	***	***	***		X		
Estevan A	8	-4	20	-5	2***	310	56		
La Ronge A	6	-3	19	-5	2***	150	37		
Regina A	9	-3	20	-2	7***	260	44		
Saskatoon A	9	-2	22	-1	3***	320	37		
Swift Current A	9	-2	21	0	10***	200	41		
Yorkton A	7	-3	19	-5	4***	320	39		
<b>Manitoba</b>									
Brandon A	8	-4	19	-3	2***	290	50		
Churchill A	4	-2	16	-3	8 3	030	78		
Lynn Lake A	5	-1	16	-6	2***	340	44		
The Pas A	6	-4	22	-3	2***	340	39		
Thompson A	4	-3	21	-10	2***	300	37		
Winnipeg Int'l A	9	-4	20	1	3***	340	48		
<b>Ontario</b>									