

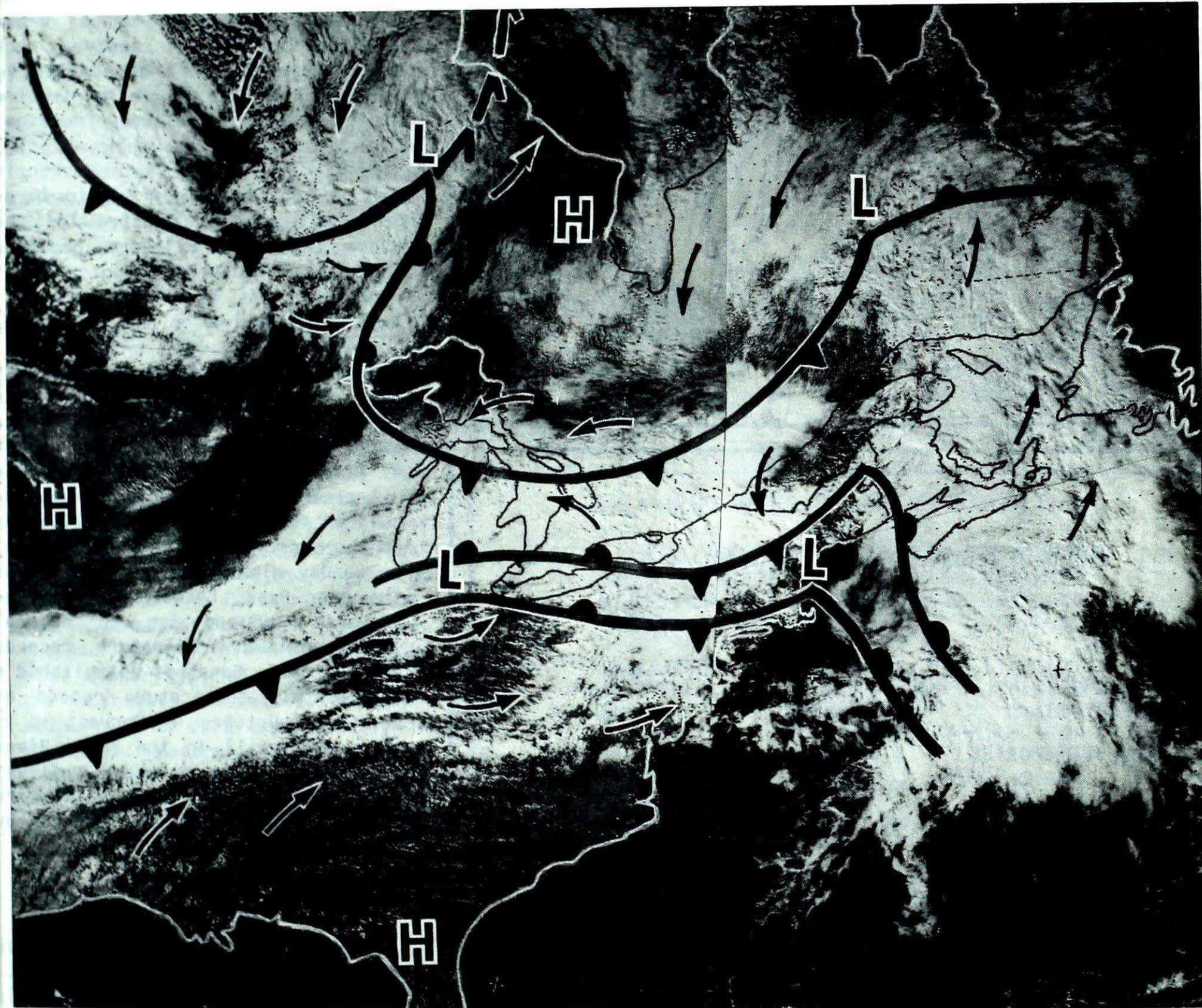
# Climatic Perspectives



A weekly review of Canadian climate

September 30 to October 6, 1986

Vol.8 No.40



The last in a series of frontal disturbances approaches the Great Lakes, bringing with it copious amounts of rain. A cold Arctic airmass is poised ready to sweep southwards behind a cold front crossing the Prairies. A NOAA 9 satellite photo October 4, 1986.

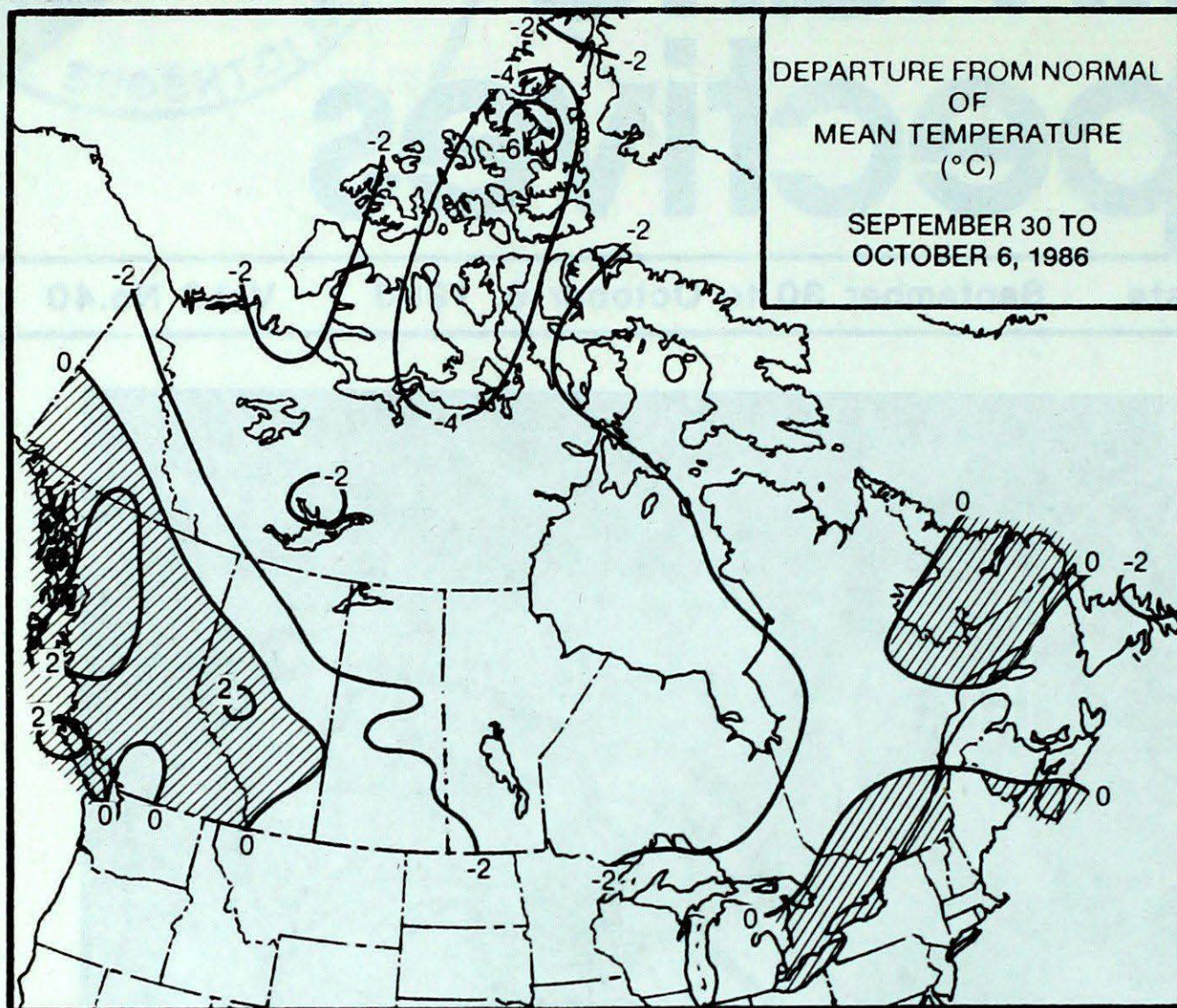
## ● **Another wet week**

**Harvesting delays continue**

**Mud slides north B.C. coast**

**Shoreline damage to Ontario waterways**

# TEMPERATURE



## ACROSS THE COUNTRY...

### Yukon and Northwest Territories

With the sun's energy greatly diminished, temperatures in the Arctic are cooling off at a rapid rate. At Eureka, the temperature registered  $-29^{\circ}\text{C}$  this week. Fresh snow covered all of the Arctic, with snow depths ranging up to 36 cm. Areas near Baffin Island received more than 20 cm of fresh snow. Only in the Yukon and Northwest Territories did the mercury rise above freezing. Except in the mountains, precipitation in the Yukon and Mackenzie Valley fell mostly in liquid form. Gale warnings were posted for the Hudson Bay coast. Blizzards occurred in the southern Arctic.

### British Columbia

Incoming Pacific weather systems produced unusually heavy rain along the north coast during the latter part of the week. On October 4, Prince Rupert Airport set a new all-time 24-hour precipitation record of 107.8 mm. There was flooding in the Nass Valley north of Terrace. On Sunday night, a mud slide closed the Bear Pass, between Terrace and Stewart. In addition to several daily maximum temperature records being broken, Sandspit established a new monthly temperature record of  $20.6^{\circ}\text{C}$  on October 4. Harvesting is at a standstill in the Peace River District. In the southern valleys, farmers are bringing in their third hay crop, and the pear and grape harvest is underway.

### Prairies

Weather conditions varied. In Alberta, through the first part of the period it was predominantly cloudy and damp. There have been significant snowfalls in the Rockies. In the east, an Arctic airmass drifted southwards, giving partly sunny, but cool weather conditions. On October 2 and 3, daily low temperature records were broken over northern areas of Saskatchewan and Manitoba; the mercury dropped well below freezing. Snow was reported in central Manitoba on the 4th and 5th. The Prairie harvest continues to be set-back, with approximately 50 per cent completed.

## WEEKLY TEMPERATURE EXTREME (C)

		MAXIMUM		MINIMUM
BRITISH COLUMBIA	PUNTZI MOUNTAIN	23	CLINTON	-3
	YUKON TERRITORY	CARCROSS 13	OGILVIE	-21
NORTHWEST TERRITORIES	WHITEHORSE		EUREKA	-31
	ALBERTA	FORT SMITH 14	FORT CHIPEWYAN	-11
SASKATCHEWAN	LETHBRIDGE	24	CREE LAKE	-10
MANITOBA	NORTH BATTLEFORD	24	THOMPSON	-13
ONTARIO	BRANDON	21	GERALDTON	-7
QUEBEC	OTTAWA	25	KUUJJUAQ	-6
	MONTREAL INT'L	25		
NEW BRUNSWICK	ST STEPHEN	22	FREDERICTON	-2
NOVA SCOTIA	WESTERN HEAD	23	SHELBURNE	-2
PRINCE EDWARD ISLAND	CHARLOTTETOWN	17	CHARLOTTETOWN	3
			SUMMERSIDE	
NEWFOUNDLAND	GOOSE	16	BADGER	-5

## ACROSS THE NATION

WARMEST MEAN TEMPERATURE	15	WINDSOR	ONT
COOLEST MEAN TEMPERATURE	-23	EUREKA	NWT

**Ontario**

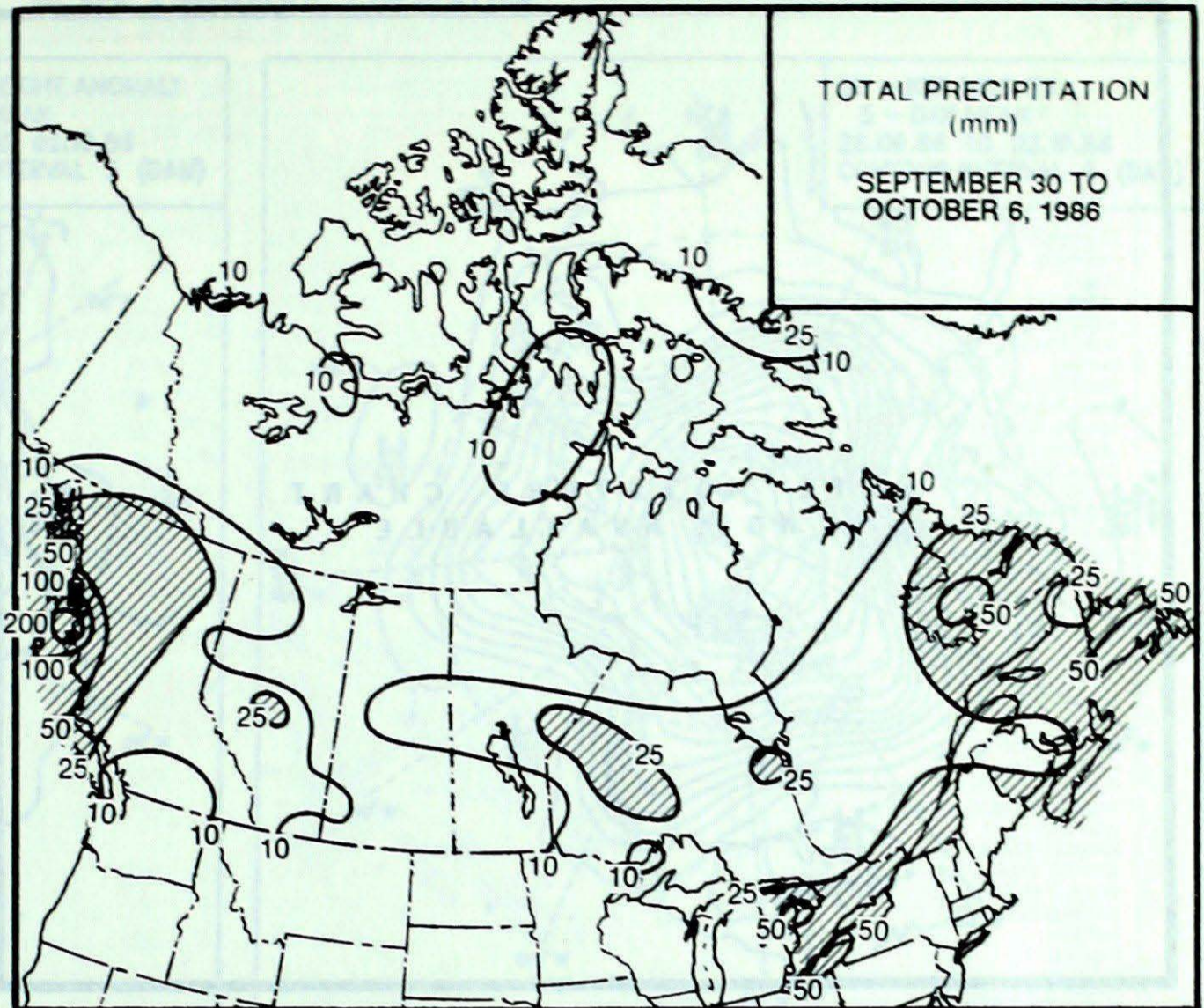
Once again wet weather plagued the southern half of the province, with rain falling each day. Although, temperatures in the south were mild, a cold Arctic airmass over northern Ontario changed the precipitation to snow. Moosonee had 13 cm of snow by the morning of the 6th. A sharp cold front swept across the rest of the province during the weekend. Strong northwesterly winds, gusting to 70 km/h, whipped up the larger brimming lakes in the province, swamping shoreline properties, and tearing docks and boats away from their moorings. Cloud streamers developed over the relatively warm waters of the Great Lakes, producing snow flurries over the lee shores. Parts of the Trent-Severn waterway had to be closed because of high water levels and dangerous currents.

**Québec**

With a few exceptions, the weather once again was rather dismal and wet. The southern two thirds of the province received significant amounts of precipitation, ranging up to 60 mm in the Eastern Townships. Temperatures were mild at first, but dropped sharply over the weekend, with the arrival of Arctic air. In the southwest, several daily temperature records were broken early in the week. Several centimetres of snow fell in the mountainous regions of central Québec. Between 5 and 10 centimetres of fresh snow was reported in the Laurentians.

**Atlantic**

Weather conditions were changeable in the Maritimes, as a number of weather systems affected the region. Temperatures were seasonably mild until the weekend, when most of New Brunswick experienced widespread frost. Sunny weather on the October 3, allowed Newfoundlanders to observe the partial solar eclipse. Disturbances produced generous amounts of rain, especially on the Island. Winds on October 5, gusted to almost 100 km/h at Argentinia. The weather conditions were similar in Labrador. Light snow fell in the more northern locations.

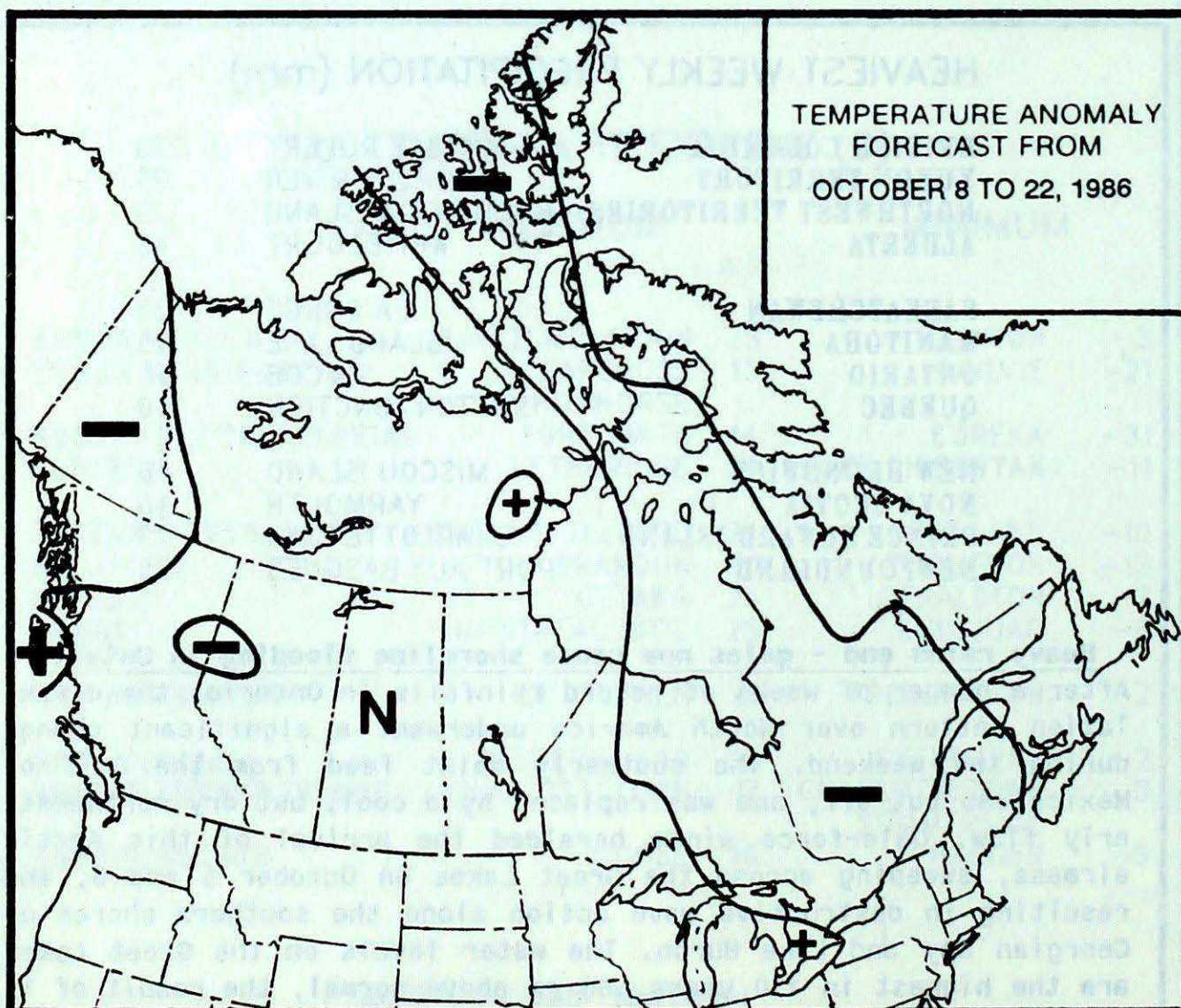
**HEAVIEST WEEKLY PRECIPITATION (mm)**

BRITISH COLUMBIA	PRINCE RUPERT	270
YUKON TERRITORY	MORLEY RIVER	35
NORTHWEST TERRITORIES	BROUGHTON ISLAND	29
ALBERTA	WHITECOURT	45
SASKATCHEWAN	LA RONGE	23
MANITOBA	ISLAND LAKE	25
ONTARIO	SIMCOE	54
QUEBEC	SUTTON JUNCTION	60
NEW BRUNSWICK	MISCOU ISLAND	48
NOVA SCOTIA	YARMOUTH	48
PRINCE EDWARD ISLAND	CHARLOTTETOWN	23
NEWFOUNDLAND	PORT AUX BASQUES	58

**Heavy rains end - gales now cause shoreline flooding in Ontario**

After a number of weeks of record rainfalls in Ontario, the circulation pattern over North America underwent a significant change during the weekend. The southerly moist feed from the Gulf of Mexico was cut off, and was replaced by a cool, but dry northwesterly flow. Gale-force winds heralded the arrival of this Arctic airmass, sweeping across the Great Lakes on October 5 and 6, and resulting in destructive wave action along the southern shores of Georgian Bay and Lake Huron. The water levels on the Great Lakes are the highest in 110 years, 80 cm above normal, the result of 15 years of higher than average precipitation. Two-metre waves crashed onto waterfront homes, buildings and stores. Many residents spent Sunday night trying to save their boats and docks. Shoreline properties and roads were severely eroded after the storm; many trees toppled over, some on houses. The high water levels are potentially dangerous, especially since the migratory storm season is just beginning. If mother nature does not cooperate, very little can be done to resolve the situation in the near future.

# FORECAST



**Temperature Anomaly Forecast**

++ **much above normal**  
 + **above normal**  
 N **normal**  
 - **below normal**  
 -- **much below normal**

This forecast is prepared by searching historical weather maps to find cases similar to the present. The historical outcome during the 15 days subsequent to the chosen analogues is assumed to be a forecast for the next 15 days from now.

## CLIMATIC PERSPECTIVES VOLUME 8

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Unsolicited articles are welcome but should be at maximum about 1500 words in length. They will be subject to editorial change without notice due to publishing time constraints. The contents may be reprinted freely with proper credit.

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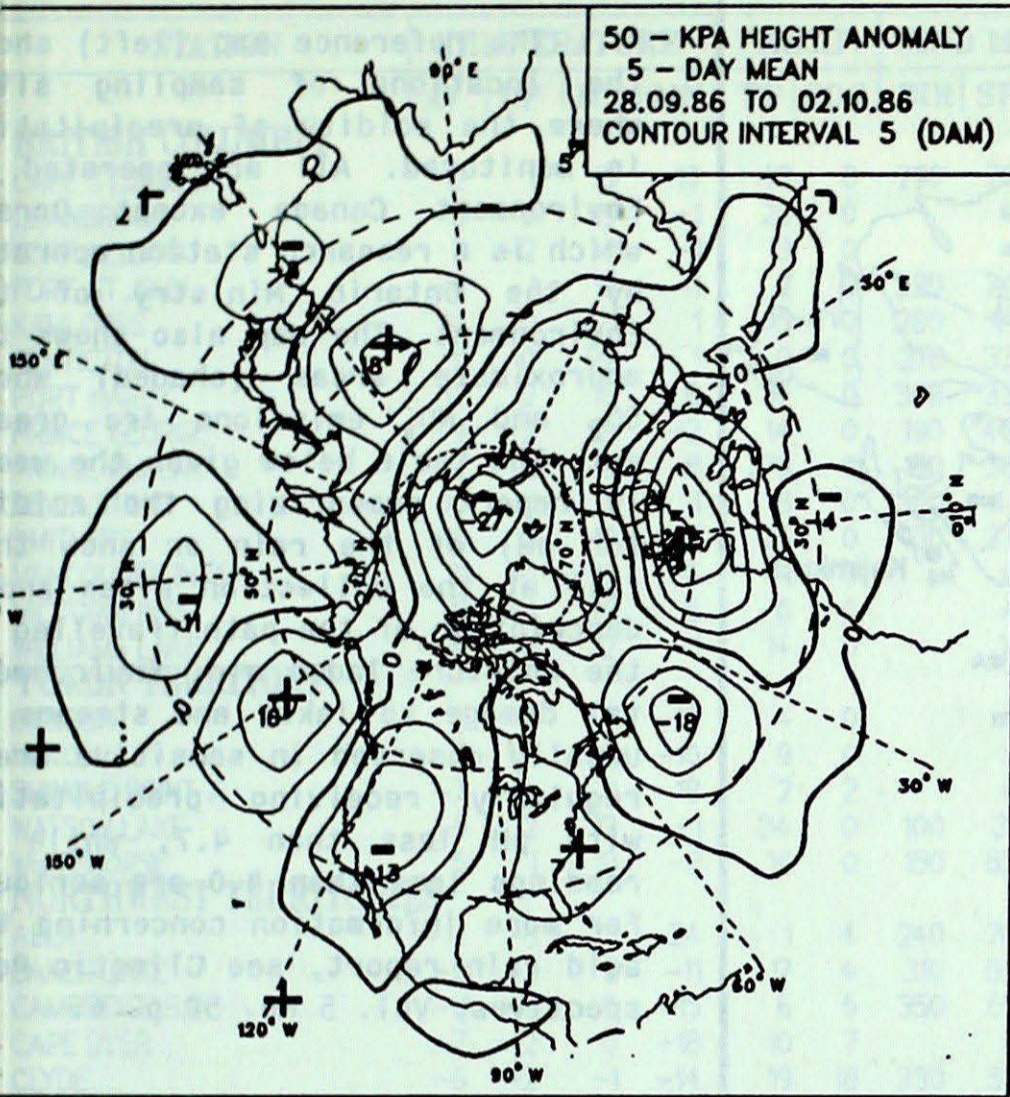
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**CIRCULATION**

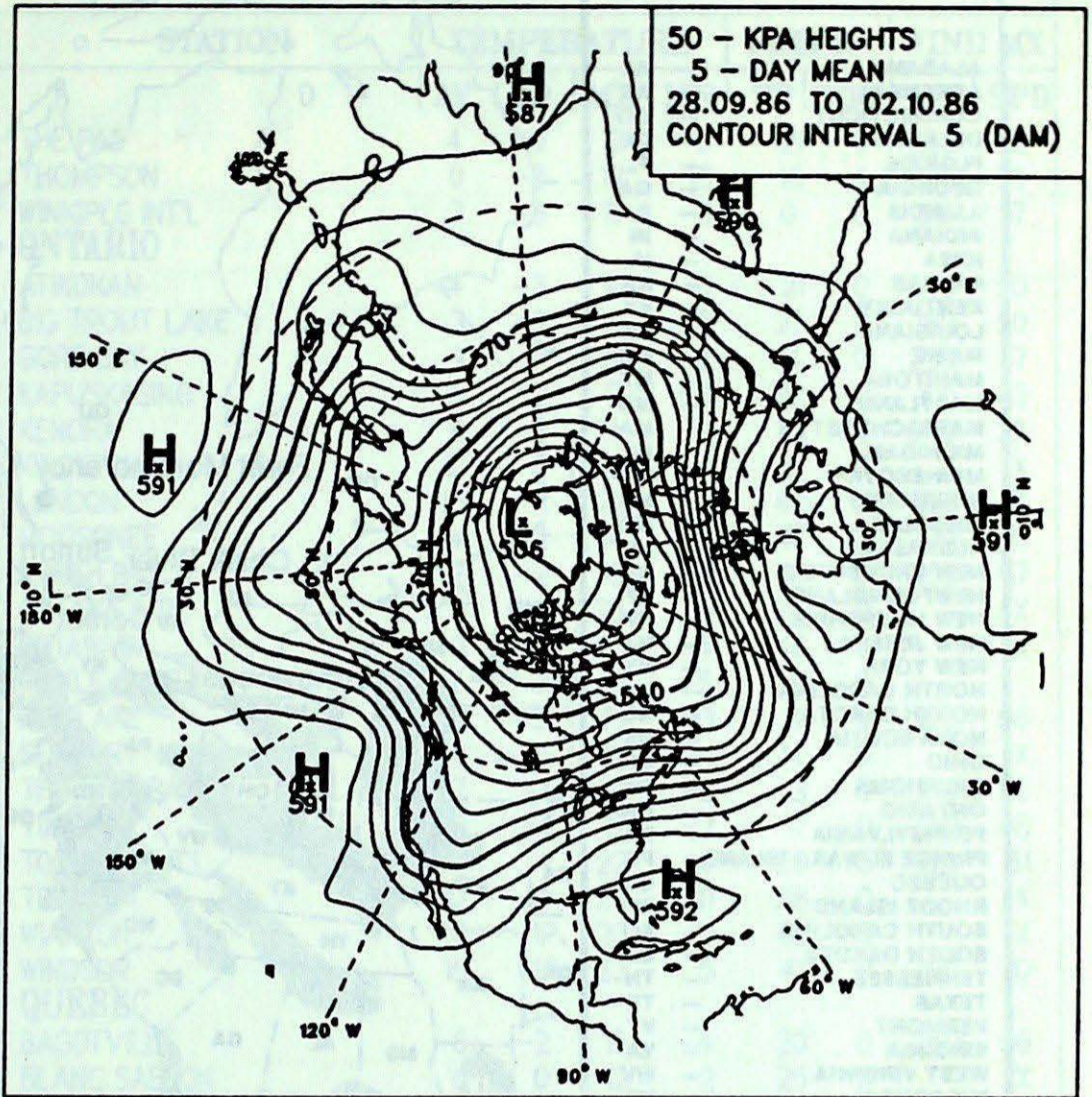
**50 KPa ATMOSPHERIC CIRCULATION**

50 - KPa HEIGHT ANOMALY  
5 - DAY MEAN  
28.09.86 TO 02.10.86  
CONTOUR INTERVAL 5 (DAM)

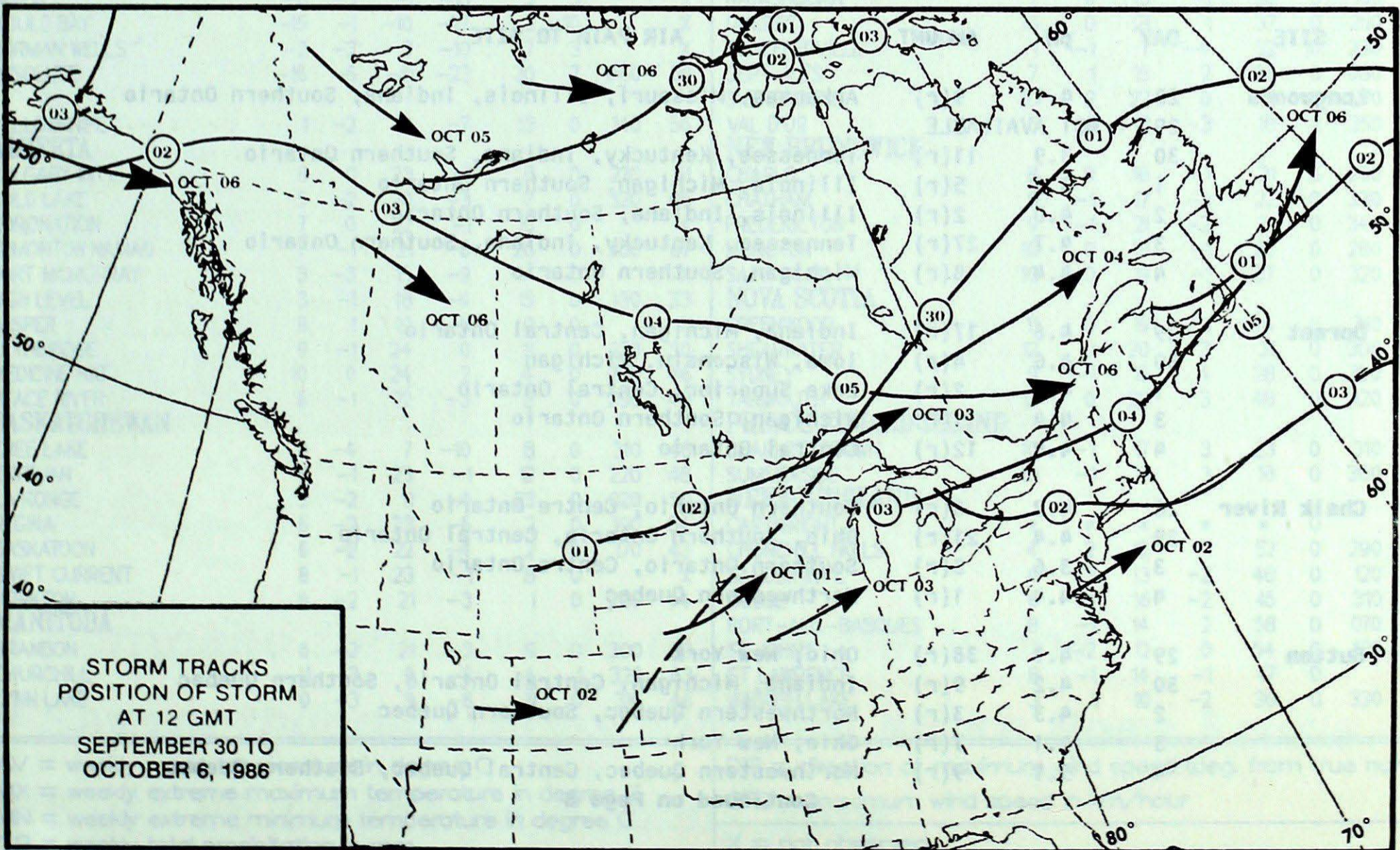


MEAN 50 KPa HEIGHT ANOMALY (dam)  
September 28 to October 2, 1986

50 - KPa HEIGHTS  
5 - DAY MEAN  
28.09.86 TO 02.10.86  
CONTOUR INTERVAL 5 (DAM)



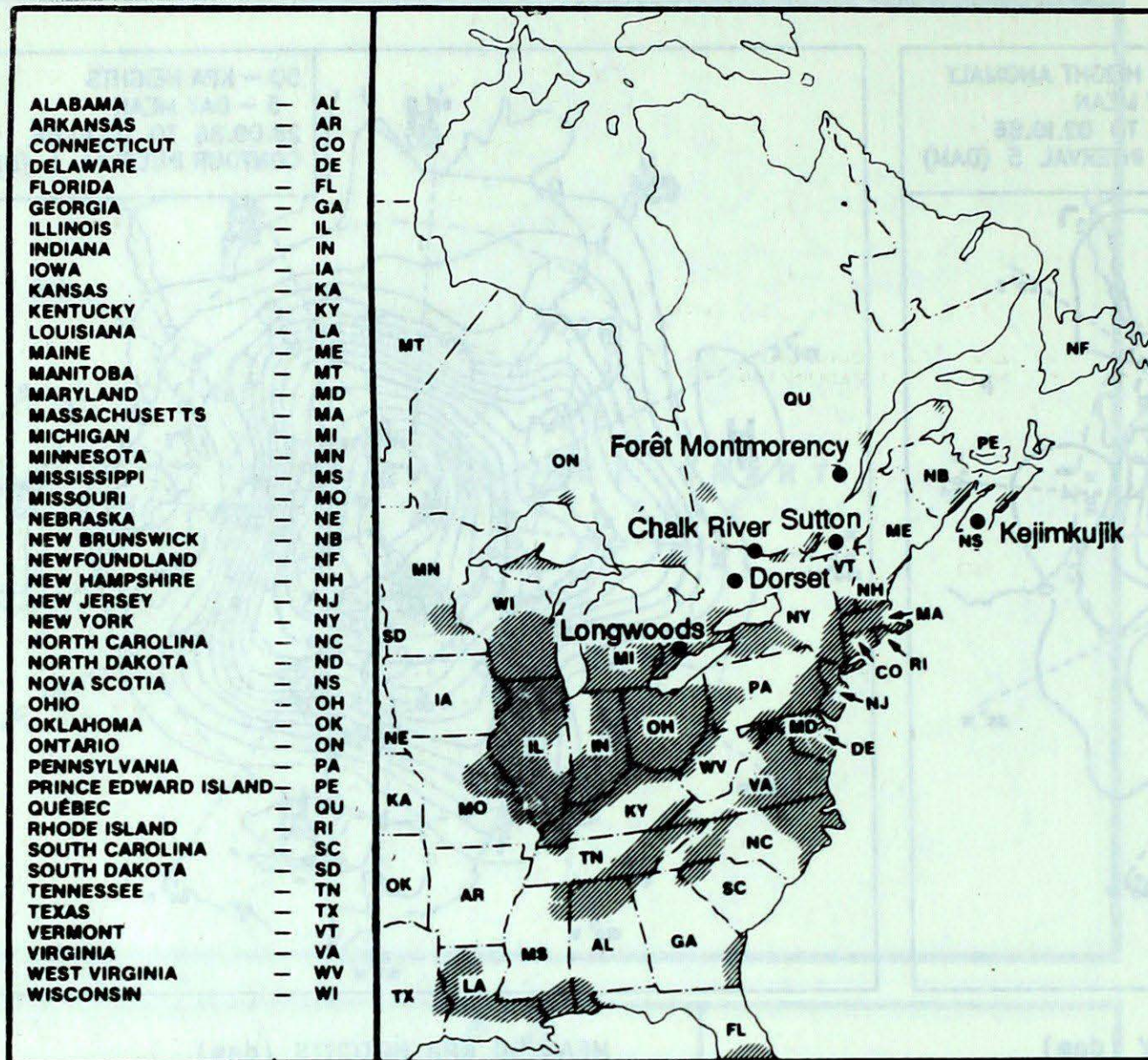
MEAN 50 KPa HEIGHTS (dam)  
September 28 to October 2, 1986



STORM TRACKS  
POSITION OF STORM  
AT 12 GMT  
SEPTEMBER 30 TO  
OCTOBER 6, 1986

# ACID RAIN

## ACID RAIN REPORT



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 the Environment. The map also shows the approximate areas (shaded) where  $\text{SO}_2$  and  $\text{NO}_x$  emissions are greatest. The table below gives the weekly report summarizing the acidity (or pH) of the 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 less than 4.7, while pH readings less than 4.0 are serious. For more information concerning the acid rain report, see Climatic Perspectives, Vol. 5 No. 50 p. 6.

### SEPTEMBER 28 TO OCTOBER 4, 1986

SITE	DAY	pH	AMOUNT	AIR PATH TO SITE
Longwoods	28	4.1	9(r)	Arkansas, Missouri, Illinois, Indiana, Southern Ontario
	29	NOT AVAILABLE		
	30	3.9	11(r)	Tennessee, Kentucky, Indiana, Southern Ontario
	1	3.8	5(r)	Illinois, Michigan, Southern Ontario
	2	4.0	2(r)	Illinois, Indiana, Southern Ontario
	3	4.7	27(r)	Tennessee, Kentucky, Indiana, Southern Ontario
Dorset	4	4.4	8(r)	Michigan, Southern Ontario
	29	4.6	17(r)	Indiana, Michigan, Central Ontario
	30	4.6	4(r)	Iowa, Wisconsin, Michigan
	1	4.6	2(r)	Lake Superior, Central Ontario
	3	4.4	11(r)	Michigan, Southern Ontario
Chalk River	4	4.9	12(r)	Central Ontario
	28	4.2	6(r)	Southern Ontario, Centre Ontario
	29	4.4	21(r)	Ohio, Southern Ontario, Central Ontario
	3	3.6	3(r)	Southern Ontario, Centre Ontario
Sutton	4	4.4	1(r)	Northwestern Quebec
	29	4.1	38(r)	Ohio, New York
	30	4.2	9(r)	Indiana, Michigan, Central Ontario, Southern Quebec
	2	4.3	3(r)	Northwestern Quebec, Southern Quebec
	3	4.1	7(r)	Ohio, New York
4	5.1	9(r)	Northwestern Quebec, Central Quebec, Southern Quebec	

Continued on Page 8

r = rain (mm), s = snow (cm), m = mixed rain and snow (mm).

# STATISTICS

TEMPERATURE, PRECIPITATION AND MAXIMUM WIND DATA FOR THE WEEK ENDING 0600 GMT OCTOBER 7, 1986

STATION	TEMPERATURE				PRECIP.		WIND MX		STATION	TEMPERATURE				PRECIP.		WIND MX	
	AV	DP	MX	MN	TP	SOG	DIR	SPD		AV	DP	MX	MN	TP	SOG	DIR	SPD
<b>BRITISH COLUMBIA</b>																	
CAPE ST. JAMES	12	1	15	10	43	0	290	70	THE PAS	4	-3	12	-6	21	0	330	48
CRANBROOK	8	0	19	-1	20	0		*	THOMPSON	0	-3	12	-13	16	4	020	39
FORT NELSON	3	-2	14	-1	13	0		*	WINNIPEG INT'L	7	-3	17	-3	0	0	310	57
FORT ST. JOHN	8	1	19	-1	2	0	230	74	<b>ONTARIO</b>								
KAMLOOPS	10	0	21	1	5	0	280	41	ATIKOKAN	4	-3	16	-6	21	0	340	50
PENTICTON	11	0	22	1	0	0	270	33	BIG TROUT LAKE	3	-3	14	-6	27	0	180	50
PORT HARDY	12	2	16	8	35	0	300	33	GORE BAY	9	-1	19	2	14	0	290	67
PRINCE GEORGE	9	2	19	-2	14	0	190	46	KAPUSKASING	5	-2	17	-3	22	0	310	43
PRINCE RUPERT	12	2	15	8	270	0	150	56	KENORA	6	-2	14	-1	10	0	340	39
REVELSTOKE	10	1	17	1	8	0	360	41	KINGSTON	12	0	21	-1	*	0		X
SMITHERS	10	3	19	2	25	0	130	37	LONDON	13	1	22	4	49	0	320	57
VANCOUVER INT'L	11	-1	16	6	1	0		*	MOOSONEE	4	-3	14	-2	47	13	030	41
VICTORIA INT'L	11	-1	18	5	0	0		*	NORTH BAY	7	-2	18	-1	18	0	360	67
WILLIAMS LAKE	8	0	22	-1	14	0		X	OTTAWA INT'L	11	1	25	0	36	0		X
<b>YUKON TERRITORY</b>									PETAWAWA	9	*	23	-4	16	0		X
DAWSON	1	-1	8	-13	4	0		*	PICKLE LAKE	4	-3	13	-5	*	0		
MAYO	2	-1	9	-10	9	0		X	RED LAKE	4	-3	13	-3	4	0	320	56
SHINGLE POINT A	-7	-4	1	-18	2	2		*	SUDBURY	8	-1	18	-1	14	0		X
WATSON LAKE	6	2	13	-1	34	0	100	31	THUNDER BAY	7	-1	19	-2	3	0	010	56
WHITEHORSE	5	1	13	-2	16	0	150	63	TIMMINS	6	-1	17	-2	17	0	340	48
<b>NORTHWEST TERRITORIES</b>									TORONTO INT'L	13	1	22	4	26	0	320	61
ALERT	-17	-1	-13	-24	1	4	240	70	TRENTON	12	1	23	0	38	0		X
BAKER LAKE	-6	-3	3	-11	17	4	310	89	WIARTON	10	-1P	20	3	52	0		X
CAMBRIDGE BAY	-11	-4	-5	-15	6	5	350	65	WINDSOR	15	1P	23	5	47	0	290	70
CAPE DYER	-7	-2	0	-18	10	7		*	<b>QUEBEC</b>								
CLYDE	-6	-2	-1	-14	19	18	330	52	BAGOTVILLE	6	-2	15	-4	20	0	260	56
COPPERMINE	-6	-3	0	-12	11	10	290	61	BLANC SABLON	6	0	12	-2	25	0		X
CORAL HARBOUR	-7	-3	1	-14	7	3		X	INUKJUAQ	1	-1	6	-5	8	0	260	65
EUREKA	-23	-6	-16	-31	1	9	160	33	KULUJUAQ	1	-2	10	-6	2	1		*
FORT SMITH	0	-3	14	-13	2	0		X	KULUJUAPIK	1	-3	6	-5	6	0	350	31
FROBISHER BAY	-4	-2	1	-10	5	3	130	57	MANIWAKI	9	1	24	-3	18	0	320	59
HALL BEACH	-6	-1	0	-13	5	5	320	57	MONT JOLI	7	-2	14	1	22	0	250	46
INUVIK	-6	-3	-1	-15	5	3		X	MONTREAL INT'L	12	0	25	2	41	0	270	67
MOULD BAY	-15	-1	-10	-27	3	10		X	NATASHQUAN	7	0	13	-1	32	0	160	56
NORMAN WELLS	-2	-3	3	-10	7	3		X	QUEBEC	10	0	21	1	37	0	250	44
RESOLUTE	-16	-6	-11	-23	20	7	040	59	SCHEFFERVILLE	1	-1	7	-4	32	10	330	54
YELLOWKNIFE	1	-2	13	-7	13	0	140	56	SEPT-ILES	7	1	15	2	36	0	080	56
<b>ALBERTA</b>									SHERBROOKE	10	2	22	0	51	0	270	57
CALGARY INT'L	8	0	23	-1	8	0	270	61	VAL D'OR	6	-1	18	-3	18	2	350	61
COLD LAKE	5	-2	20	-3	7	0	320	85	<b>NEW BRUNSWICK</b>								
CORONATION	7	0	22	-1	10	0		*	CHARLO	8	0	16	-1	31	0	290	48
EDMONTON NAMAO	7	-1	21	-6	20	0	300	67	CHATHAM	9	-1	17	-2	22	0	330	52
FORT MCMURRAY	3	-3	15	-9	*	0		X	FREDERICTON	9	-1	21	-2	31	0	340	50
HIGH LEVEL	3	-1	18	-4	15	0	180	33	MONCTON	10	0	18	-1	23	0	280	48
JASPER	8	1	19	-5	0	0		X	SAINT JOHN	10	0	19	-1	37	0	320	52
LETHBRIDGE	9	-1	24	0	11	0	270	50	<b>NOVA SCOTIA</b>								
MEDICINE HAT	10	0	24	2	4	0	200	46	GREENWOOD	11	0	19	1	44	0	310	65
PEACE RIVER	6	-1	22	-3	8	0	250	48	SHEARWATER	12	0	20	3	31	0	300	57
<b>SASKATCHEWAN</b>									SYDNEY	9	-1	15	4	28	0	320	59
CREE LAKE	0	-4	7	-10	8	0	310	46	YARMOUTH	12	0	20	3	48	0	320	74
ESTEVAN	8	-1	23	-1	12	0	220	48	<b>PRINCE EDWARD ISLAND</b>								
LA RONGE	3	-2	11	-4	23	0	020	50	CHARLOTTETOWN	10	-1	17	3	23	0	310	46
REGINA	6	-2	23	-6	2	0	190	54	SUMMERSIDE	10	-1	17	3	18	0	300	63
SASKATOON	6	-2	22	-4	2	0	170	43	<b>NEWFOUNDLAND</b>								
SWIFT CURRENT	8	-1	23	-1	8	0		X	CARTWRIGHT	*	*	*	*	*	0		*
YORKTON	6	-2	21	-3	1	0	200	44	CHURCHILL FALLS	4	2	12	-1	52	0	290	63
<b>MANITOBA</b>									GANDER INT'L	6	-3	13	-2	48	0	120	83
BRANDON	6	-2	21	-3	9	0	300	59	GOOSE	6	0	16	-2	45	0	310	48
CHURCHILL	-1	-3	9	-8	4	1	320	63	PORT-AUX-BASQUES	8	-1	14	2	58	0	070	87
LYNN LAKE	0	-3	9	-8	8	0	310	46	ST JOHN'S	7	-2	12	0	54	0	130	78
									ST LAWRENCE	8	-1	14	-1	47	0		X
									WABUSH LAKE	3	1	10	-2	36	0	320	46

AV = weekly mean temperature in degree C  
 MX = weekly extreme maximum temperature in degree C  
 MN = weekly extreme minimum temperature in degree C  
 TP = weekly total precipitation in mm  
 DP = departure of mean temperature from normal in degree C  
 SOG = snow depth on ground in cm, last day of the period

DIR = direction of maximum wind speed (deg. from true north)  
 SPD = maximum wind speed in km/hour

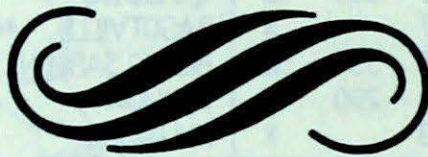
X = not observed  
 P = value based on less than 7 days  
 \* = missing

## ACID RAIN

Cont'd from page 6

SITE	DAY	pH	AMOUNT	AIR PATH TO SITE
Montmorency	29	4.6	26(r)	Southern Ontario, Southern Quebec
	30	5.0	4(r)	New York, Southern Quebec
Kejikujik	29	4.1	20(r)	Southern Ontario, New York, New England
	30	3.9	1(r)	Ohio, Pennsylvania, New York, New England
	3	4.5	2(r)	Atlantic Ocean
	4	4.8	11(r)	Atlantic Ocean

r = rain (mm), s = snow (cm), m = mixed rain and snow (mm).



200 = snow depth on ground in cm, day of the period  
 19 = geostrophic mean temperature from normal station  
 TP = weekly total precipitation in mm  
 18 = weekly extreme minimum temperature in degrees C  
 17 = weekly extreme maximum temperature in degrees C  
 16 = weekly maximum wind speed in km/hour  
 15 = weekly minimum wind speed in km/hour  
 14 = daily maximum wind speed in km/hour  
 13 = daily minimum wind speed in km/hour  
 12 = daily maximum wind speed in km/hour  
 11 = daily minimum wind speed in km/hour  
 10 = daily maximum wind speed in km/hour  
 9 = daily minimum wind speed in km/hour  
 8 = daily maximum wind speed in km/hour  
 7 = daily minimum wind speed in km/hour  
 6 = daily maximum wind speed in km/hour  
 5 = daily minimum wind speed in km/hour  
 4 = daily maximum wind speed in km/hour  
 3 = daily minimum wind speed in km/hour  
 2 = daily maximum wind speed in km/hour  
 1 = daily minimum wind speed in km/hour