

# Climatic Perspectives

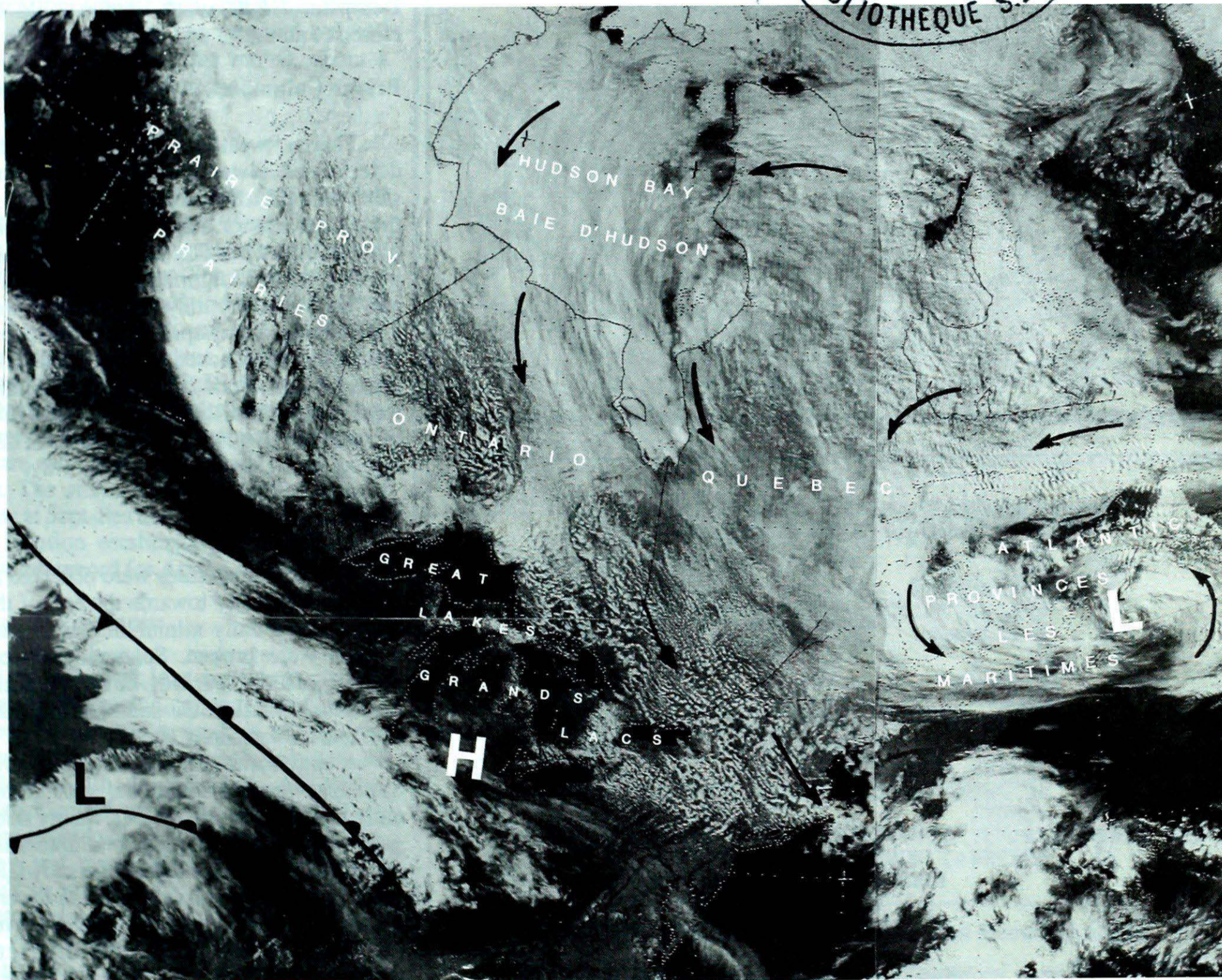
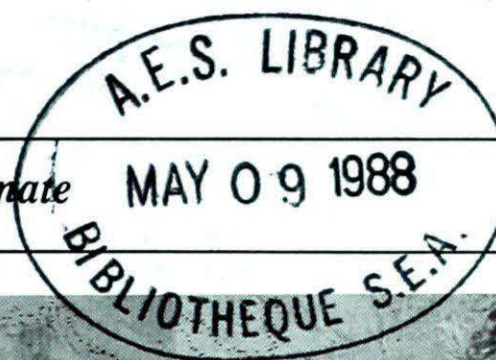
MONTHLY SUPPLEMENT INCLUDED

April 19 to 25, 1988

A weekly review of Canadian climate

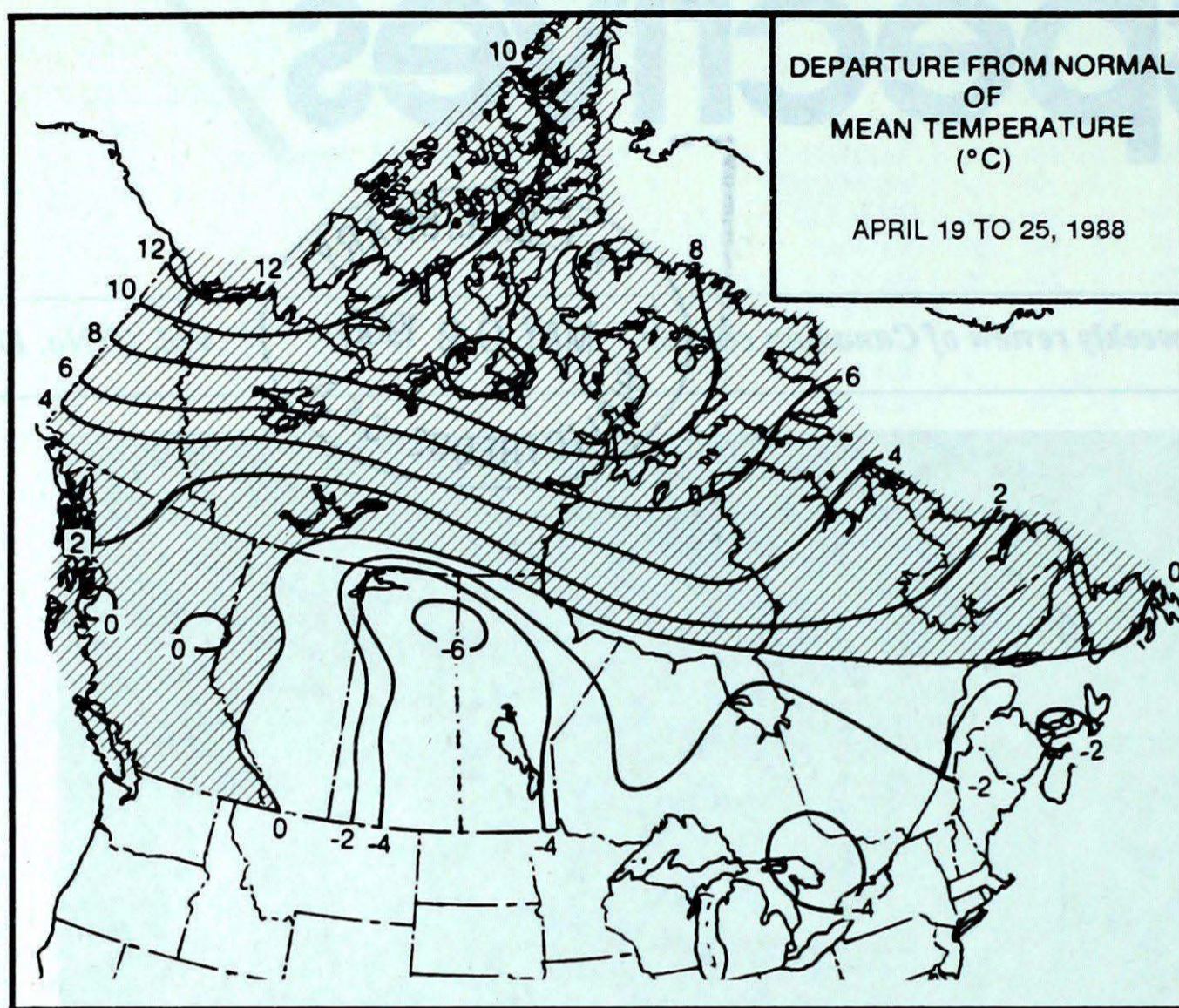
MAY 09 1988

Vol. 10 No. 17



This NOAA 9 satellite photo of April 21, 1988, shows the large expanse of cloud associated with the cold Arctic air, which plagued the eastern half of the country most of the week.

- **Winter lingers in the East**
- **Major storms disrupt Atlantic Canada**



**ACROSS THE COUNTRY ...**

**Yukon and Northwest Territories**

A ridge of high pressure resulted in sunny, warm days and cool nights in the Yukon. Most of the territory was void of precipitation. Due to the mild weather, notice has been given that ice bridges crossing the Peel and Mackenzie Rivers on the Dempster Highway to Inuvik could be closed to all traffic with 24 hours notice.

**British Columbia**

Pleasant weather conditions gradually deteriorated towards the weekend. Sunshine was plentiful along the coast and in the central interior. Rain drenched portions of the southern interior, with amounts ranging from 15 to 30 millimetres. At Penticton and Kelowna, monthly precipitation was approaching record April values. An unconfirmed tornado touched down south of Williams Lake on April 20. It was an unsettled week in the Peace River District. Thirty centimetres of snow fell on northern B.C., disrupting traffic on the Alaska Highway.

**Prairie Provinces**

Cooler temperatures were observed in Alberta, especially towards the end of the period, when daily minimum temperature records were broken. Scattered showers started off the period, but very little precipitation fell in the south, and for the most part it was sunny and dry.

A large block of Arctic air settled over Saskatchewan and Manitoba, setting new daily low temperature records. Sunny skies gave way to mainly cloudy conditions after mid-week. There were significant snowfalls of 30 to 40 centimetres in the Swan River - Riding Mountain areas of Manitoba over the weekend. Agricultural districts remained dry, and many southern locations have yet to receive a single drop of rain this month.

**Ontario**

It was a cold unsettled week, not at all like spring. An Arctic vortex was displaced well south of its normal position, and a northwesterly circulation allowed an Arctic air mass to cover the whole province. Record low temperatures were set throughout southern and central Ontario on

**Weekly Temperature extreme (°C)**

	MAXIMUM	MINIMUM
BRITISH COLUMBIA	LYTTON 26	PUNTZI MOUNTAIN -6
YUKON TERRITORY	DAWSON 15	TUCHITUA -12
NORTHWEST TERRITORIES	FORT SIMPSON 15	ALERT -28
ALBERTA	MEDICINE HAT 18	FORT CHIPEWYAN -12
SASKATCHEWAN	ESTEVAN 16	CREE LAKE -19
MANITOBA	KINDERSLEY	CHURCHILL -15
ONTARIO	WINNIPEG INT'L 13	BIG TROUT LAKE -15
QUEBEC	WINDSOR 24	VAL D'OR -11
	BAGOTVILLE 15	
NEW BRUNSWICK	ST STEPHEN 14	MISCOU ISLAND -3
NOVA SCOTIA	SHEARWATER 14	SYDNEY -2
PRINCE EDWARD ISLAND	SUMMERSIDE 12	CHARLOTTETOWN -3
NEWFOUNDLAND	STEPHENVILLE 11	CHURCHILL FALLS -12

**ACROSS THE NATION**

WARMEST MEAN TEMPERATURE	12	KAMLOOPS	BC
COOLEST MEAN TEMPERATURE	-15	ALERT	NWT

April 19 and 20, with readings dropping down well below freezing. Frequently cloudy days and brisk winds did not make it feel any warmer. The unseasonably cold weather slowed down field work and delayed seeding. Precipitation was generally light; however, snow flurries were reported as far south as the lower Great lakes. It was another dry week in northwestern Ontario, adding to the fear of increasingly hazardous forest fire conditions. Thunder Bay has received only 10 mm of precipitation this month, about a quarter of their April normal.

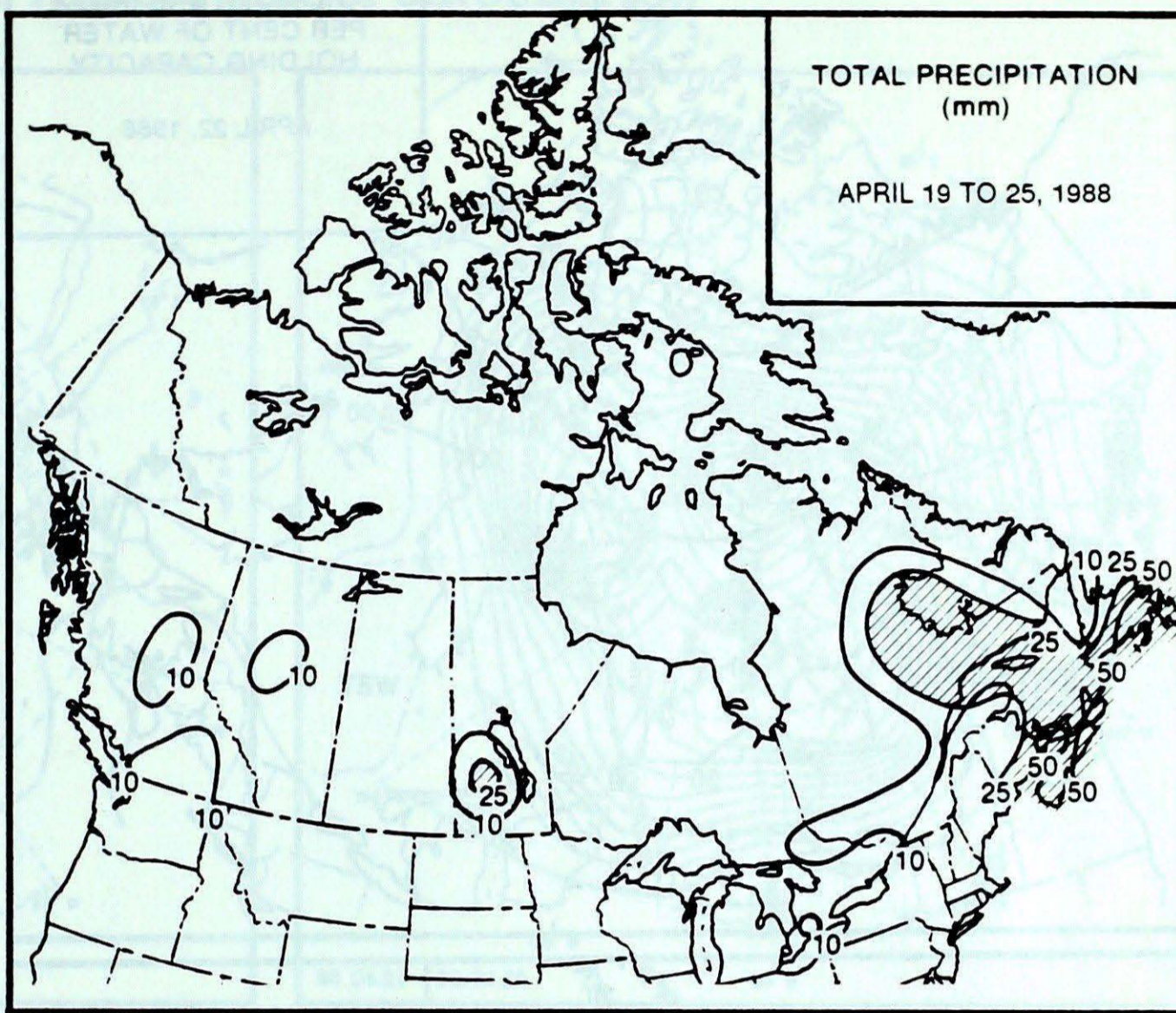
**Quebec**

It was an unseasonably cold and dull week more reminiscent of winter. Precipitation varied, with heaviest amounts recorded along the north coast. The snow storm and associated freezing rain, which hit the north coast late on the 18th and 19th, caused the province-wide power failure, which plunged 80 percent of the inhabitants into darkness, in some cases for more than a day. Losses in the industrial and commercial sector are estimated to be several million dollars. The storm dumped nearly 40 cm of snow at Sept-Iles and Baie Comeau, the latter location establishing a new 24-hour snowfall record for April.

**Atlantic Provinces**

A series of low pressure systems plagued the region, giving cloudy skies, strong winds and a mixture of rain and snow. Thunderstorms were reported on the 20th and 24th. In Yarmouth, a lightning strike touched off a fire. Periods of wet snow caused power outages in urban areas. Snow and strong winds made driving difficult in northern Nova Scotia and Cape Breton Island.

The middle of the week saw 10 cm of fresh snow fall over northern Newfoundland, while Gander recorded 15 to 20 centimetres over the weekend. Late on the 20th, winds gusted to 141 km/h in the Port-aux-Basques area. Funnelling winds blew over four tractor trailer units in the wind-famous Wreckhouse area near the southwest coast, while 60 other rigs were forced to wait out the storm. Ferry services to Newfoundland were also affected, as the ships were unable to dock at Port-aux-Basques. It was a wintry week in Labrador too. Churchill Falls had a two-day snowfall of 27cm.



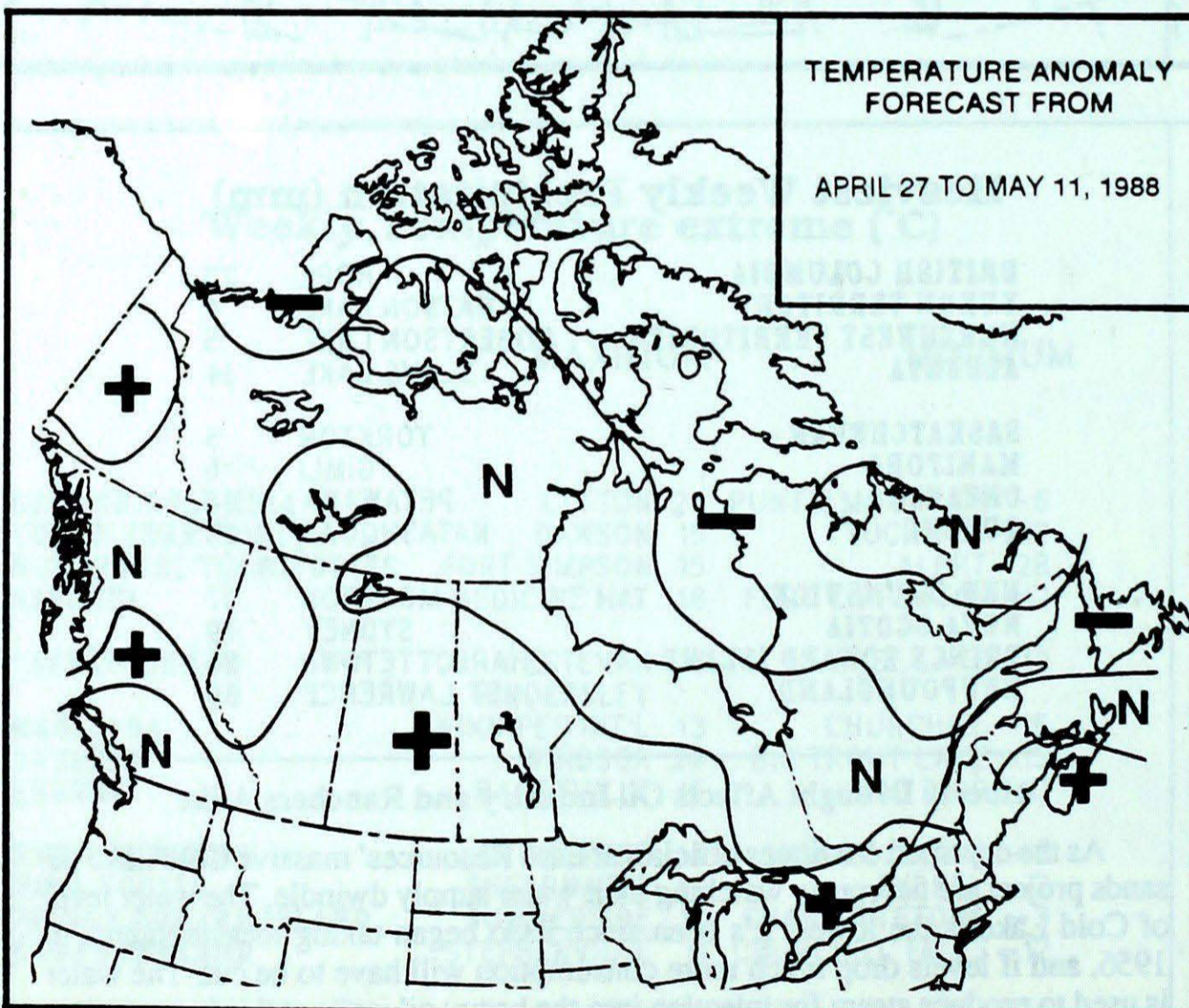
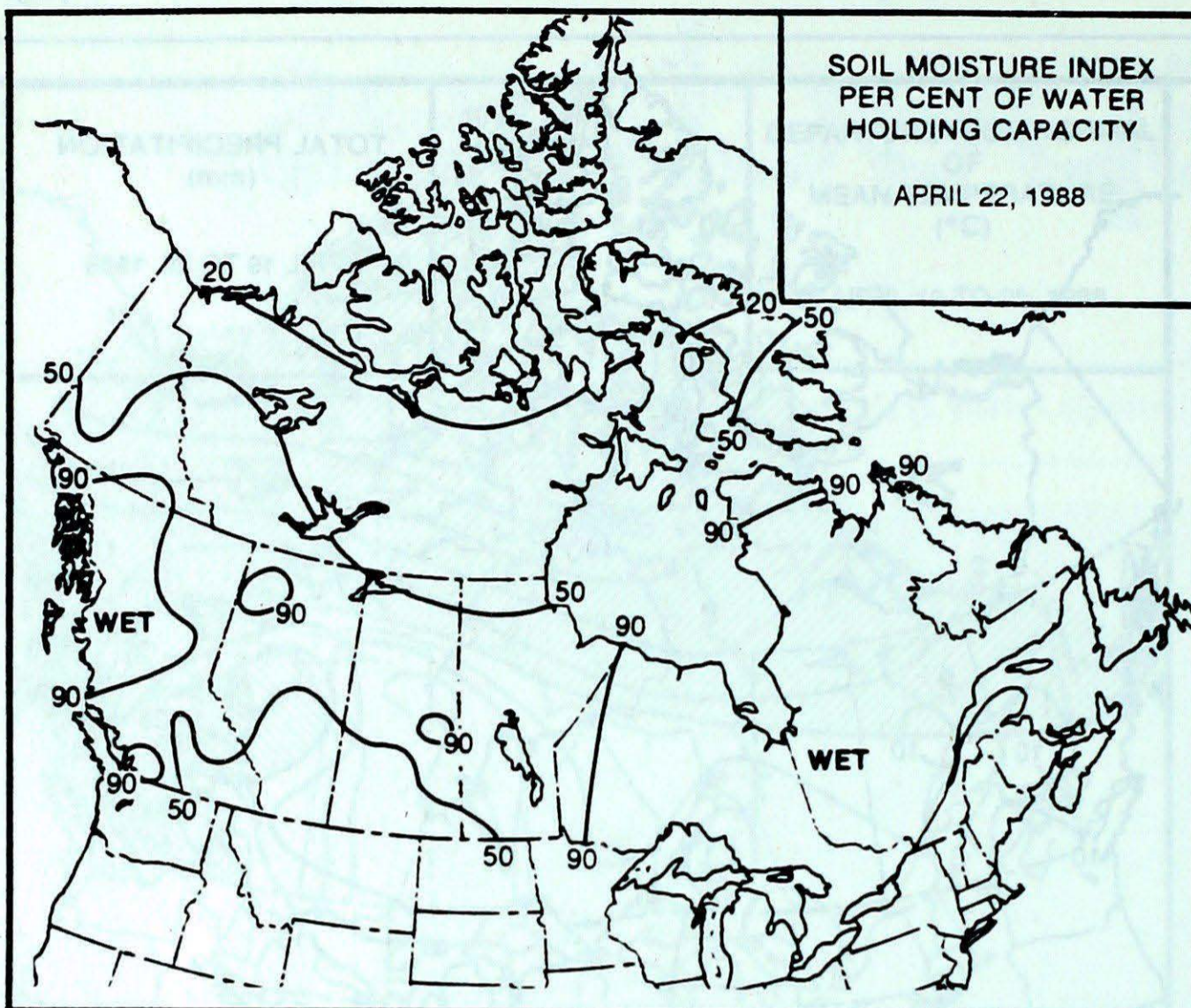
**Heaviest Weekly Precipitation (mm)**

BRITISH COLUMBIA	HOPE	23
YUKON TERRITORY	WATSON LAKE	4
NORTHWEST TERRITORIES	ROBERTSON LAKE	5
ALBERTA	SLAVE LAKE	14
SASKATCHEWAN	YORKTON	5
MANITOBA	GIMLI	6
ONTARIO	PETAWAWA	23
QUEBEC	NATASHQUAN	48
NEW BRUNSWICK	MONCTON	57
NOVA SCOTIA	SYDNEY	79
PRINCE EDWARD ISLAND	CHARLOTTETOWN	56
NEWFOUNDLAND	ST LAWRENCE	69

**Alberta Drought Affects Oil Industry and Ranchers Alike**

As the dry-spell continues officials at Esso Resources' massive Cold Lake tar sands project are nervously watching their water supply dwindle. The water level of Cold Lake is the lowest it's been since Esso began taking measurements in 1956, and if levels drop much more consumption will have to be cut. The water is used to produce steam for injection into the heavy oil wells at this huge project currently producing 95,000 barrels of oil per day.

The dry spell also has farmers in northeastern Alberta worried. There has been virtually no carry over moisture from last season, and the most immediate concern is water for livestock. Many farm dugouts are dry or critically low, and some ranchers have begun selling their livestock. Many creeks north of Edmonton have dried up. Twelve towns have asked the Alberta government for aid in order to restock their critically low water reservoirs.



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

**Temperature Anomaly Forecast**

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.

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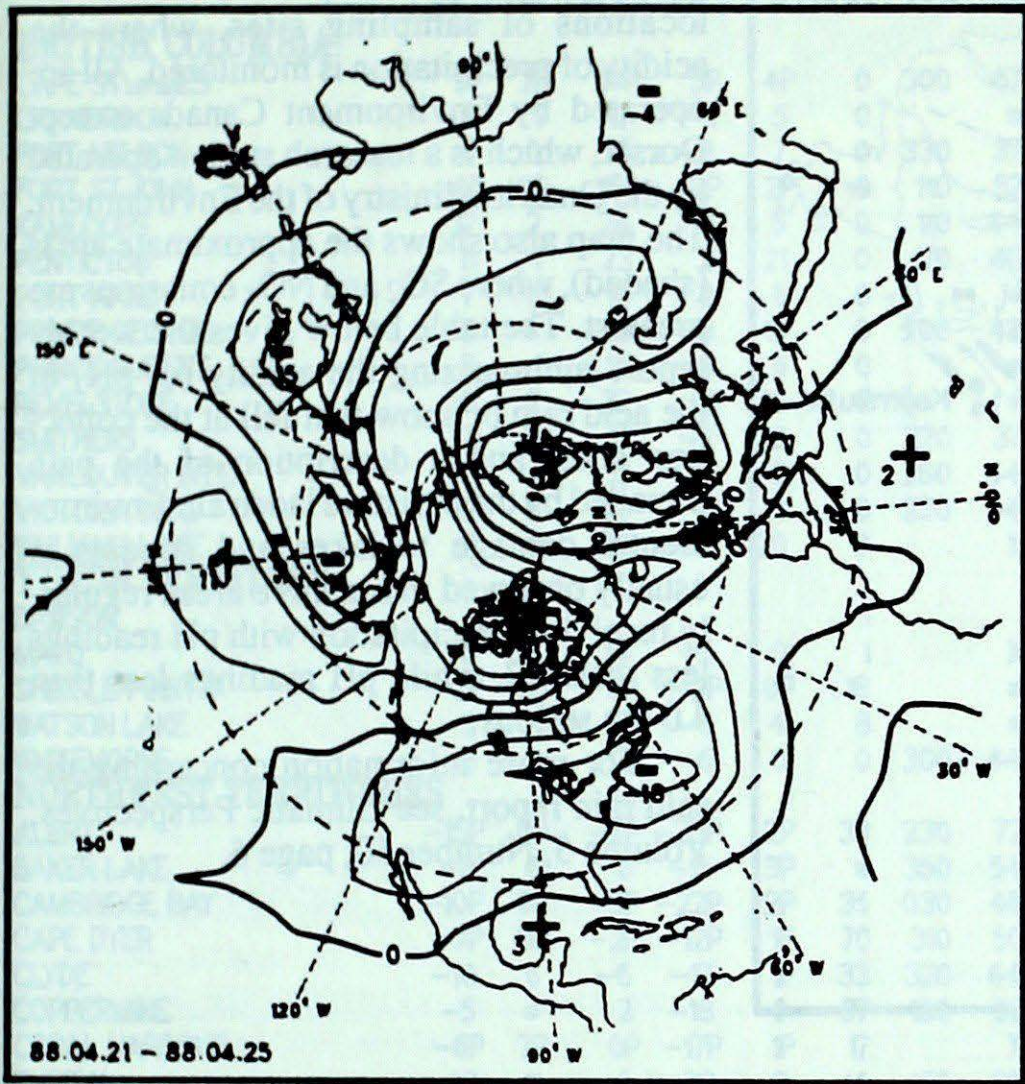
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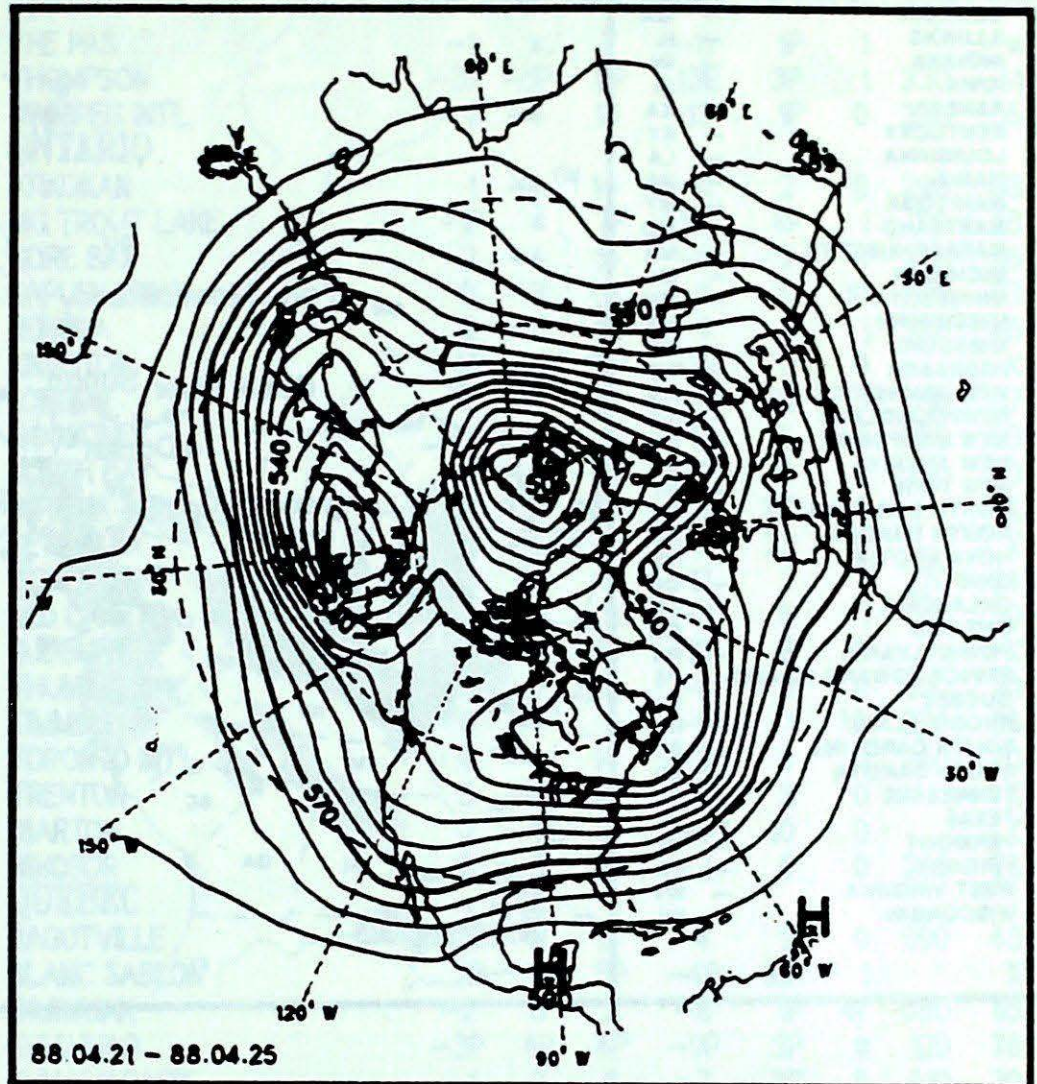
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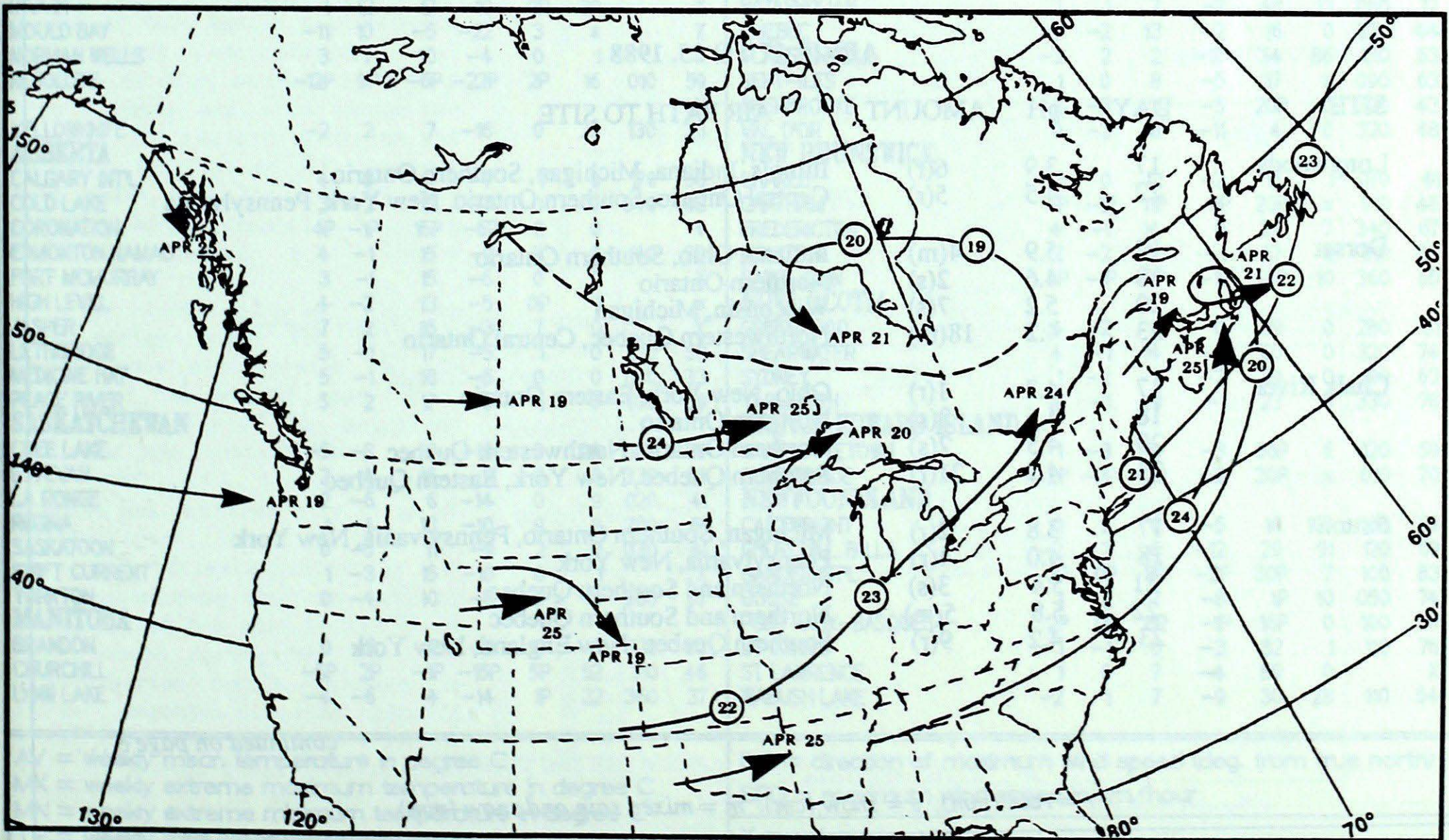
### 50 kPa ATMOSPHERIC CIRCULATION



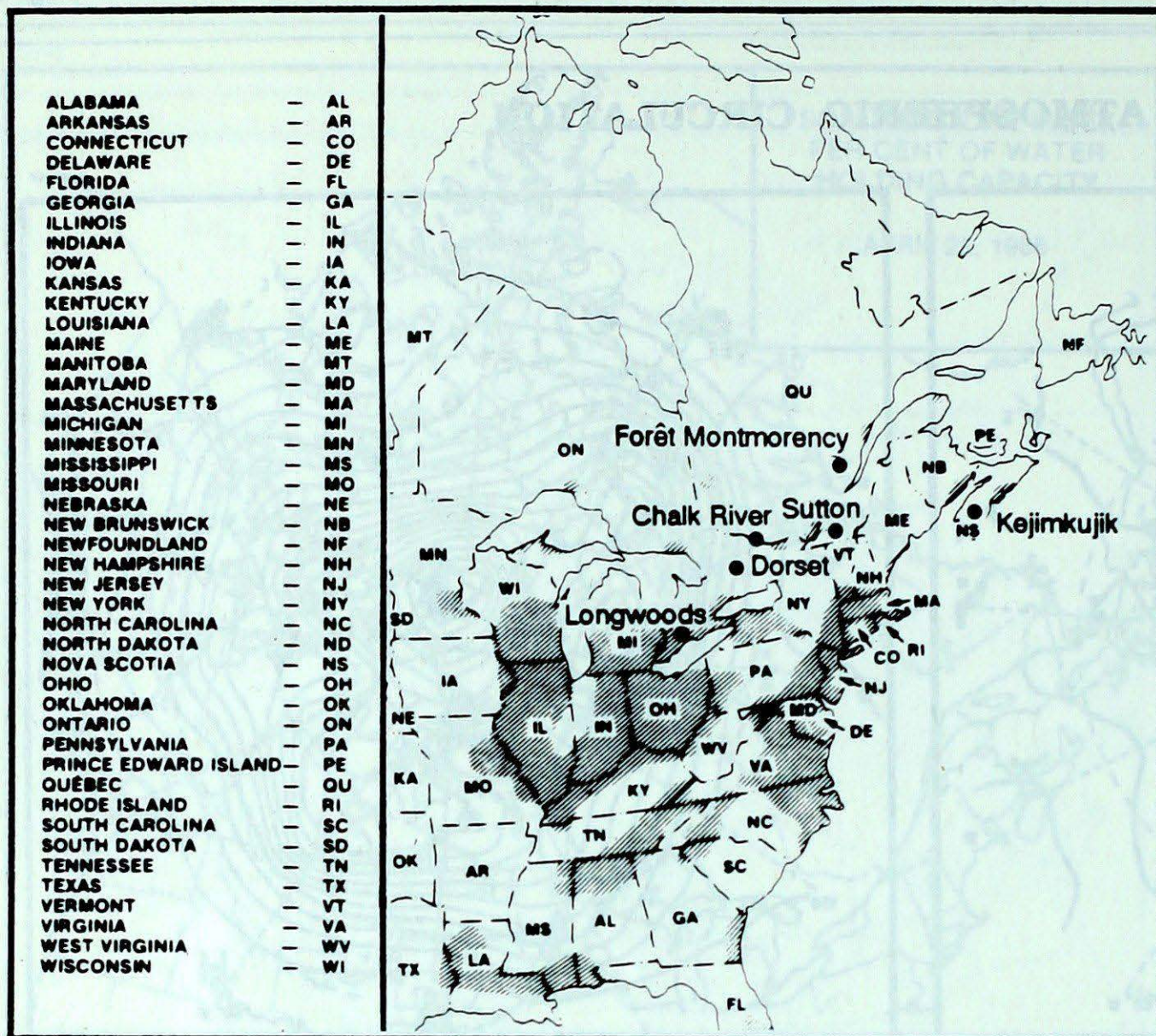
Mean geopotential height anomaly  
50 kPa level (5 decameter intervals)



Mean geopotential height  
50 kPa level (5 decameter intervals)



Storm track - Position of storm at 12 GMT during the period: April 19 to 25, 1988



**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 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.

For more information concerning the acid rain report, see Climatic Perspectives, Volume 5, Number 50, page 6.

**APRIL 17 TO 23, 1988**

SITE	DAY	pH	AMOUNT	AIR PATH TO SITE
Longwoods	17	3.9	6(r)	Illinois, Indiana, Michigan, Southern Ontario
	22	4.5	5(r)	Central Ontario, Southern Ontario, New York, Pennsylvania
Dorset	17	5.9	4(m)	Indiana, Ohio, Southern Ontario
	18	4.6	2(s)	Northern Ontario
	20	5.2	7(s)	Wisconsin, Michigan
	23	4.2	18(m)	Northwestern Quebec, Central Ontario
Chalk River	17	4.7	1(r)	Ohio, New York, Eastern Ontario
	18	4.6	3(s)	Northern Ontario
	20	4.5	2(s)	Northern Ontario, Northwestern Quebec
	23	4.2	21(r)	Southern Quebec, New York, Eastern Quebec
Sutton	17	3.8	2(r)	Michigan, Southern Ontario, Pennsylvania, New York
	18	4.0	4(r)	Pennsylvania, New York
	21	5.4	3(s)	Northern and Southern Quebec
	22	5.8	5(m)	Northern and Southern Quebec
	23	4.2	9(r)	Southern Quebec, New England, New York

*continued on page 8 . . .*

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

STATISTICS FOR THE WEEK ENDING 0600 GMT APRIL 26, 1988

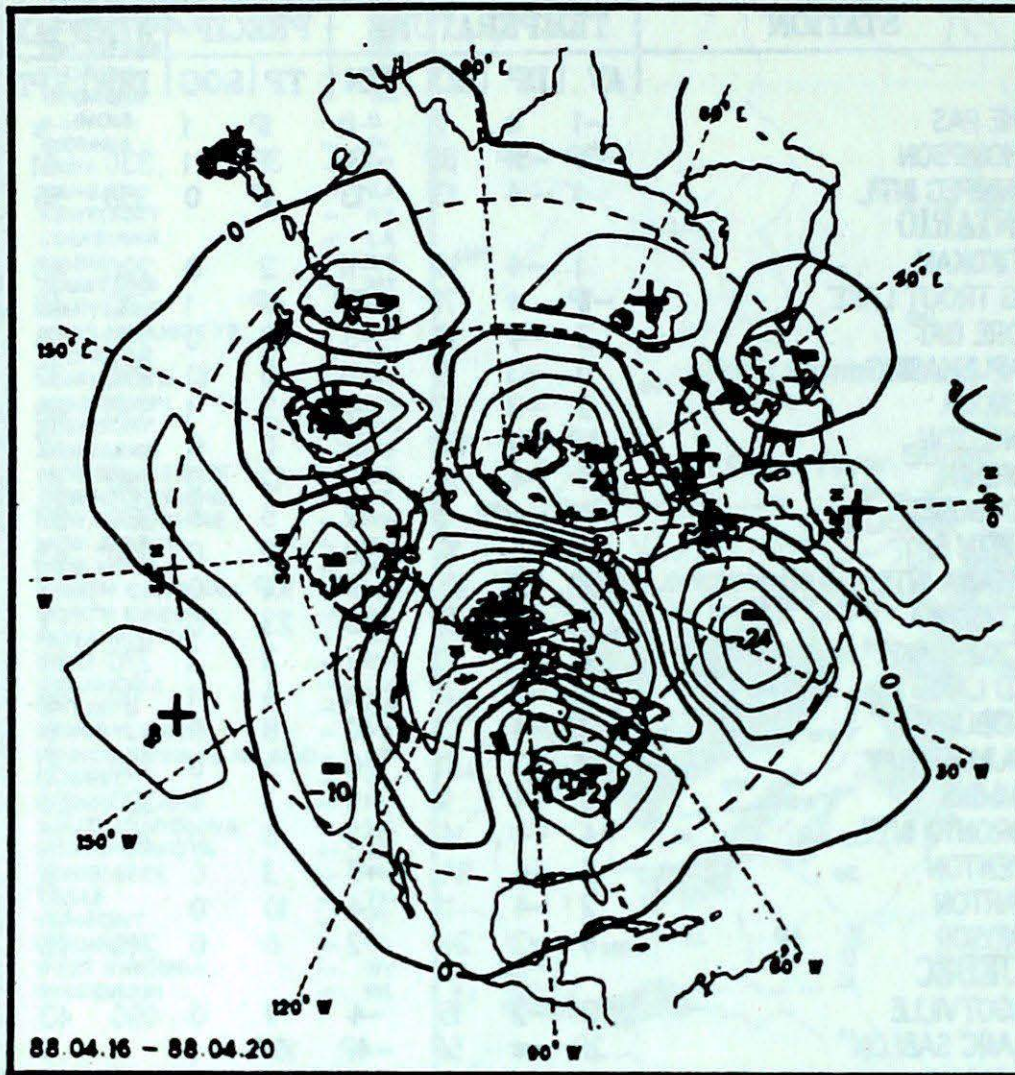
STATION	TEMPERATURE				PRECIP.		WIND MX		STATION	TEMPERATURE				PRECIP.		WIND MX	
	AV	DP	MX	MN	TP	SOG	DIR	SPD		AV	DP	MX	MN	TP	SOG	DIR	SPD
<b>BRITISH COLUMBIA</b>									THE PAS	-1	*	7	-11	1P	1		*
CAPE ST. JAMES	9P	2P	14P	5P	4P	0	300	67	THOMPSON	-3P	-5P	8P	-13P	3P	1	330	41
CRANBROOK	8	1	17	-1	5	0		*	WINNIPEG INT'L	1	-4	13	-13	1P	0	350	56
FORT NELSON	4	0	16	-3	7	0	330	37	<b>ONTARIO</b>								
FORT ST. JOHN	4P	0P	15P	-2P	2P	0	110	52	ATIKOKAN	1	-4	14	-11	2	0	290	46
KAMLOOPS	12	2	24	3	5	0	110	44	BIG TROUT LAKE	-1P	*	7P	-15P	4P	1	310	46
PENTICTON	11	1	23	2	21	0	170	46	GORE BAY	2	-4	10	-5	7	0	290	56
PORT HARDY	7	0	16	2	6	0		*	KAPUSKASING	0	-3	9	-11	5	10	290	33
PRINCE GEORGE	7	*	18	-3	19	0	200	43	KENORA	2	-3	12	-9	3	1	330	46
PRINCE RUPERT	5	-1	13	0	6	0		*	KINGSTON	4P	-4P	13P	-2P	0	0		X
REVELSTOKE	10	2	22	2	20	0		*	LONDON	5	-4	19	-3	12	0	280	67
SMITHERS	7	2	17	-2	2	0	220	37	MOOSONEE	-4	-4	5	-12	5	6	280	33
VANCOUVER INT'L	10	1	17	5	3	0	280	44	NORTH BAY	1	-4	10	-10	10	0	340	43
VICTORIA INT'L	9	0	20	1	0	0	230	44	OTTAWA INT'L	5P	-3P	12P	-3P	10P	0		X
WILLIAMS LAKE	7	*	19	-2	20	0		X	PETAWAWA	3	-4	12	-5	23	0		X
<b>YUKON TERRITORY</b>									PICKLE LAKE	0	-2	11	-12	3	1	270	44
DAWSON						1			RED LAKE	0	-3	11	-11	6	1	110	59
MAYO	6	5	14	-5	0	1		X	SUDBURY	1	-4	13	-10	8	0		X
SHINGLE POINT A	-2P	13P	8P	-9P	0P	18		*	THUNDER BAY	3	-2	11	-6	5	0	300	41
WATSON LAKE	3	1	13	-6	4	8		*	TIMMINS	0	-4	9	-9	1	7	320	35
WHITEHORSE	3	2	13	-6	0	0	300	44	TORONTO INT'L	4	-4	14	-3	6	0	240	70
<b>NORTHWEST TERRITORIES</b>									TRENTON	5	-4	14	-5	3	0		X
ALERT	-15P	6P	-7P	-28P	2P	39	230	72	WIARTON	2	-4	11	-4	10	0		X
BAKER LAKE	-8	6	0	-15	3P	*	350	54	WINDSOR	8	-3	24	-2	6	0	240	76
CAMBRIDGE BAY	-10P	9P	-3P	-22P	2P	35	030	46	<b>QUEBEC</b>								
CAPE DYER	-7P	8P	-2P	-12P	1P	70	310	50	BAGOTVILLE	2	-2	15	-4	9	0	090	43
CLYDE	-10	6	-6	-17	1P	33	320	44	BLANC SABLON	2P	*	5P	-4P	16P	1		X
COPPERMINE	-5	*	2	-18	0	37	180	52	INUKJUAQ	-2	6	2	-8	1P	47	080	65
CORAL HARBOUR	-6P	7P	0P	-17P	1P	17		X	KUUUJUAQ	-3P	4P	4P	-9P	3P	*	120	76
EUREKA	-13	11	-6	-23	2	14	160	85	KUUUJARAPIK	-1	2	5	-7	3P	5	010	39
FORT SMITH	0	0	9	-10	0	4		X	MANIWAKI	3	-3	11	-5	18	0	320	52
IQUALUIT	-8	5	3	-19	1	40	140	52	MONT JOLI	2	-1	9	-5	18	0	040	78
HALL BEACH	-11P	8P	-6P	-18P	1P	36	320	48	MONTREAL INT'L	5	-3	13	-2	21	0	240	44
INUVIK	1	12	12	-10	0P	20		X	NATASHQUAN	2	1	7	-2	48	13	060	72
MOULD BAY	-11	10	-5	-22	3	*		X	QUEBEC	4	-2	13	-2	16	0	220	44
NORMAN WELLS	3	7	10	-4	0	1		X	SCHIEFFERVILLE	-3	2	2	-10	34	86	130	63
RESOLUTE	-12P	9P	-6P	-22P	2P	16	010	59	SEPT-LES	1	0	8	-5	37	11	090	63
								X	SHERBROOKE	2	-3	11	-5	20P	0	320	43
YELLOWKNIFE	-2	2	7	-16	0	25	130	33	VAL D'OR	0	-3	8	-11	4	0	320	48
<b>ALBERTA</b>									<b>NEW BRUNSWICK</b>								
CALGARY INT'L	4	0	17	-7	1	0	170	50	CHARLO	3	0	12	-2	15	1	070	41
COLD LAKE	3	-2	12	-7	0	0	040	43	CHATHAM	4P	-1P	11P	0P	20P	*	010	46
CORONATION	4P	-1P	15P	-6P	0	0		*	FREDERICTON	4	-1	14	0	39	7	340	67
EDMONTON NAMAO	4	-1	15	-9	3	0	140	39	MONCTON	2	-2	13	-1	57	6	010	89
FORT McMURRAY	3	-1	15	-6	0	0		X	SAINT JOHN	4P	-1P	12P	-1P	54P	10	360	65
HIGH LEVEL	4	-2	13	-5	0P	1		*	<b>NOVA SCOTIA</b>								
JASPER	7	2	16	-3	7	0		X	GREENWOOD	4	-2	11	0	39	0	280	81
LETHBRIDGE	5	-1	17	-5	1	0	270	59	SHEARWATER	4	-1	14	-1	60	0	320	74
MEDICINE HAT	5	-1	18	-5	0	0	050	33	SYDNEY	1	-2	7	-2	79	0	100	63
PEACE RIVER	5	2	17	-5	1	0	070	39	YARMOUTH	4	-1	9	-1	23	0	330	76
<b>SASKATCHEWAN</b>									<b>PRINCE EDWARD ISLAND</b>								
CREE LAKE	-5	-8	8	-19	0	29	060	39	CHARLOTTETOWN	1	-3	9	-3	56P	6	020	59
ESTEVAN	2	-4	16	-9	0	0	330	65	SUMMERSIDE	2P	-2P	12P	-1P	30P	*	010	70
LA RONGE	-2	-6	6	-14	0	9	020	41	<b>NEWFOUNDLAND</b>								
REGINA	1	-4	13	-10	0	0	280	61	CARTWRIGHT	0	2	6	-5	10	107	100	59
SASKATOON	0	-5	11	-9	2	0	030	41	CHURCHILL FALLS	-2	2	6	-12	29	91	120	69
SWIFT CURRENT	1	-3	15	-10	0	1		X	GANDER INT'L	2P	0P	8P	-3P	30P	7	100	83
YORKTON	0	-4	10	-8	5	0	200	67	GOOSE	1	2	7	-8	1P	10	050	74
<b>MANITOBA</b>									PORT-AUX-BASQUES	2P	0P	6P	-1P	16P	0	100	96
BRANDON	0	-5	12	-11	0	0	320	80	ST JOHN'S	1	-1	8	-3	52	1	110	76
CHURCHILL	-6P	2P	-1P	-15P	5P	52	310	46	ST LAWRENCE	1	0	7	-4	89	0		X
LYNN LAKE	-4	-6	4	-14	1P	22	360	37	WABUSH LAKE	-2	1	7	-9	30	28	110	54

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

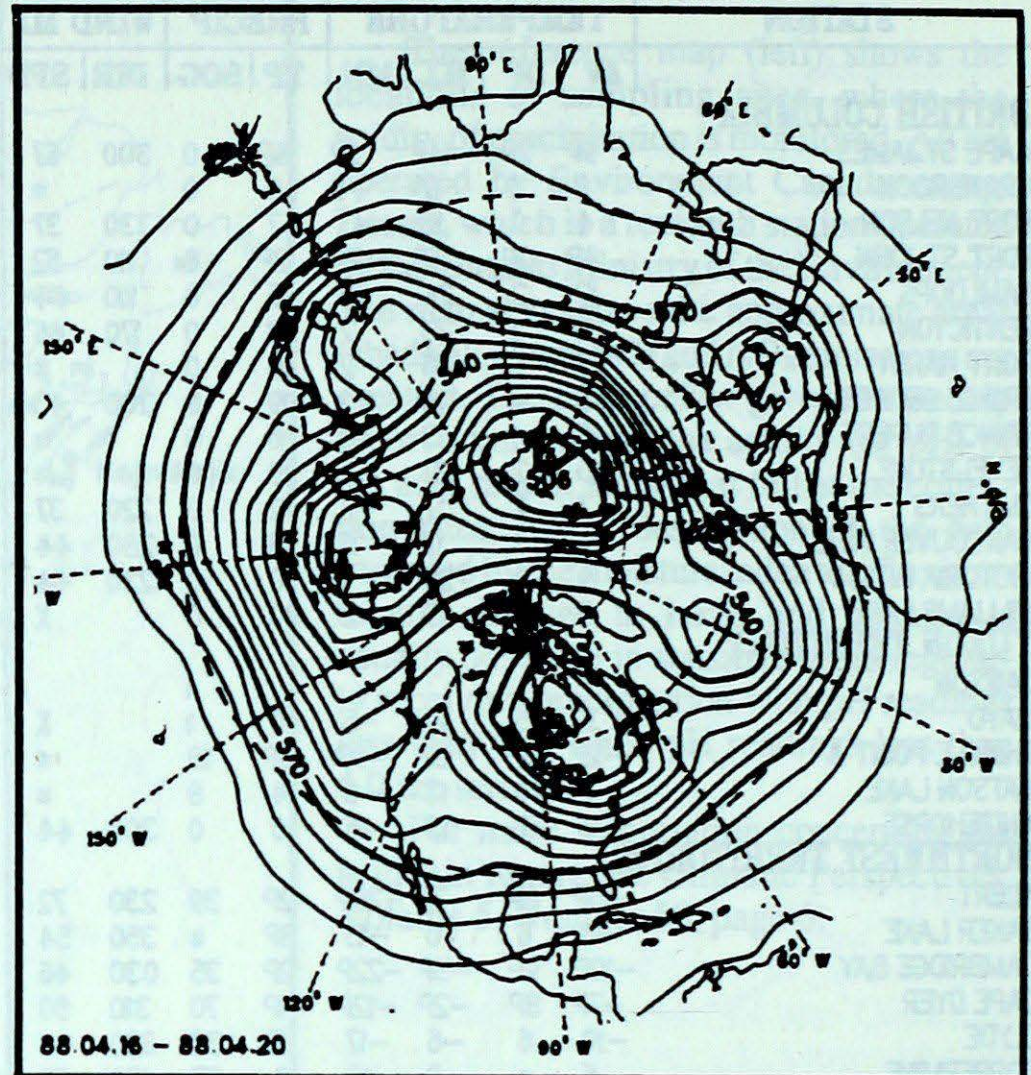
DIR = direction of maximum wind speed (deg. from true north)  
 SPD = maximum wind speed in km/hour

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

50 kPa ATMOSPHERIC CIRCULATION



Mean geopotential heights anomaly  
50 kPa level ( 5 decameter intervals)



Mean geopotential height  
50 kPa level ( 5 decameter intervals)

continued from page 6 . . .

ACID RAIN

APRIL 17 TO 23, 1988

SITE	DAY	pH	AMOUNT	AIR PATH TO SITE
Montmorency	17	5.4	23(s)	Ontario, New York, New England, Southern Quebec
	18	4.4	8(m)	Pennsylvania, New York, New England,
	19	4.3	4(s)	Northern Ontario, Northwestern Quebec
	21	6.4	7(s)	Northern Quebec
	23	3.8	2(s)	Eastern and Southern Quebec
Kejimkujik	18	4.2	3(r)	Atlantic Ocean
	19	5.0	8(m)	Atlantic Ocean, Nova Scotia
	20	4.6	5(m)	Atlantic Ocean, Maritimes
	22	5.0	4(m)	Atlantic Ocean, Maritimes

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