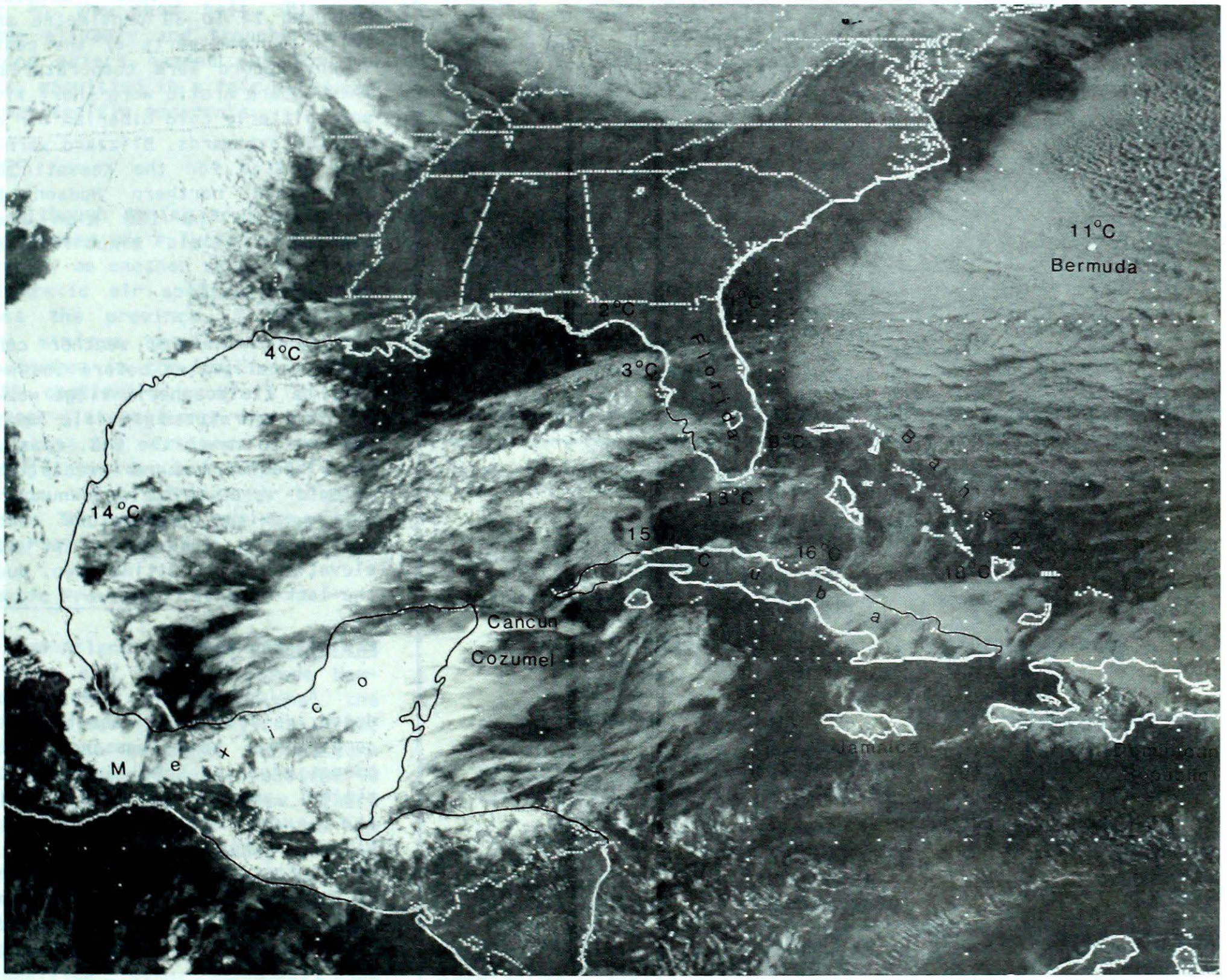
Environment Canada
Environnement Canada

Climatic Perspectives

March 15 to 21, 1988 *A weekly review of Canadian climate* *Vol. 10 No. 12*



Thousands of Canadians flock to the sunny, warm south every year for the March school break. If these satellite photos and morning temperatures are any indication, Florida and the Caribbean were not so warm and sunny after all. More information on page 3. Additional satellite photo on page 8. GOES satellite photograph, March 16, 1988.

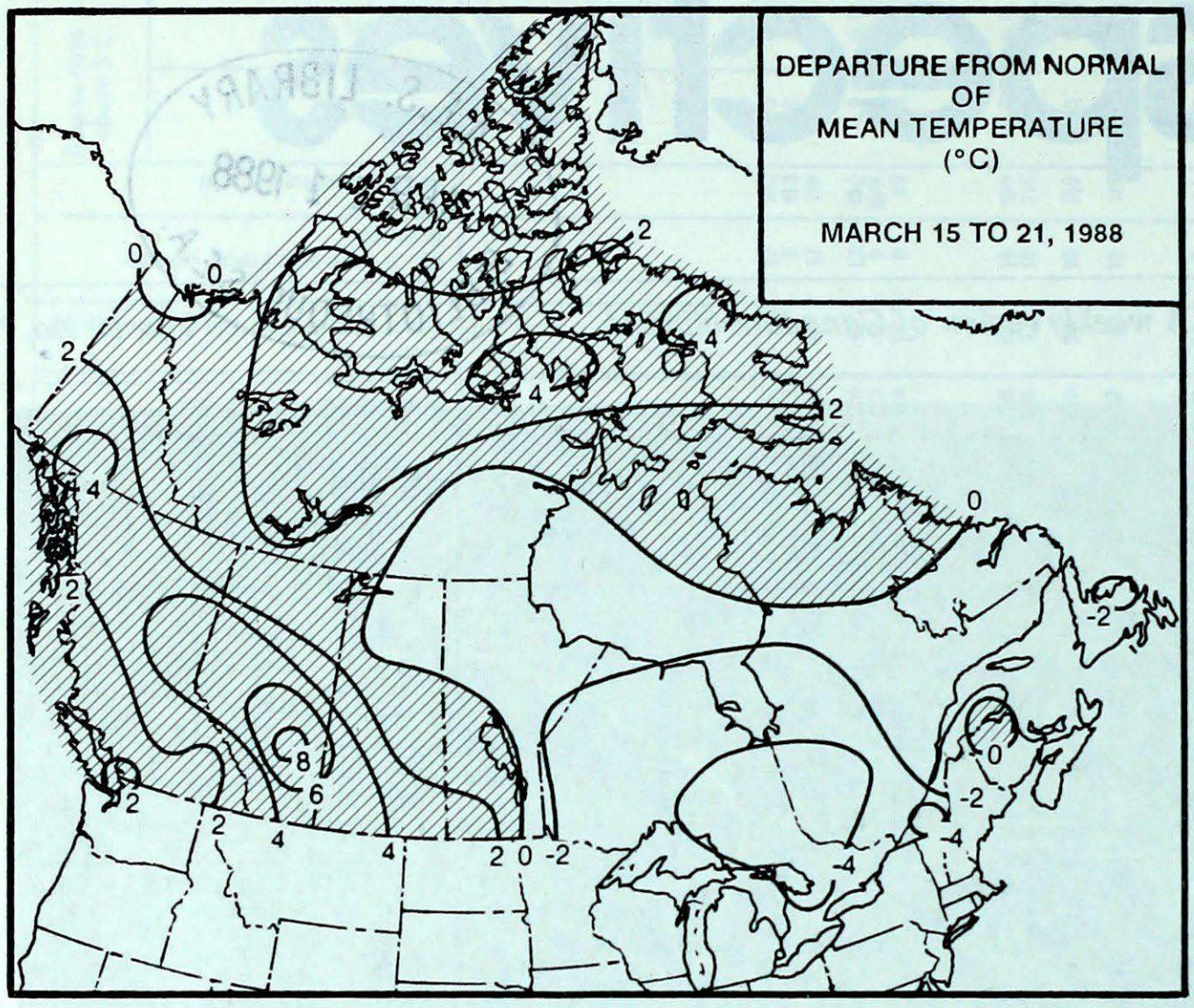
• No sign of spring in eastern Canada

– More snow and gales pound Newfoundland

– Record cold Ontario and Quebec

Canada

TEMPERATURE



WEEKLY TEMPERATURE EXTREME (C)

	MAXIMUM		MINIMUM	
BRITISH COLUMBIA	HOPE	19	FORT NELSON	-19
YUKON TERRITORY	CARCROSS	6	OLD CROW	-41
NORTHWEST TERRITORIES	FORT SIMPSON	-1	EUREKA	-48
ALBERTA	MEDICINE HAT	20	FORT CHIPEWYAN	-22
SASKATCHEWAN	ESTEVAN	18	COLLINS BAY	-31
MANITOBA	BRANDON	13	GILLAM	-31
ONTARIO	ARMSTRONG	7	GERALDTON	-36
QUEBEC	BAIE COMEAU	6	KUUJJUARAPIK	-36
NEW BRUNSWICK	ST STEPHEN	8	CHARLO	-18
NOVA SCOTIA	SHELBURNE	10	SYDNEY	-15
PRINCE EDWARD ISLAND	CHARLOTTETOWN	6	CHARLOTTETOWN	-15
NEWFOUNDLAND	CAPE RACE	4	CHURCHILL FALLS	-25

ACROSS THE NATION

WARMEST MEAN TEMPERATURE	9	ABBOTSFORD	BC
COOLEST MEAN TEMPERATURE	-36	EUREKA	NWT

ACROSS THE COUNTRY

Yukon and Northwest Territories

In the southern Yukon, it was another mild week with above freezing temperatures. Cold air pooling in some of the mountain valleys, resulted in locally lower temperatures. A moist Pacific air mass, crossing the coastal mountains, produced 20 to 30 centimetre snowfalls in some parts of the central Yukon. Record warm temperatures in the western Arctic were short lived, as a bitterly cold Siberian air mass drifted eastwards. Blizzard warnings were posted for the Keewatin district and northern Hudson Bay. Temperatures in the high Arctic plunged to the mid- minus forties.

British Columbia

Sunny and dry weather conditions deteriorated before the weekend, as a atmospheric ridge weakened, and permitted Pacific weather systems to reach the B.C. coast. In the interior, where precipitation amounts were minimal, a number of daily maximum temperature records were broken. Ski hills at lower elevations are shutting down, due to the lack of snow.

Prairie Provinces

A ridge of high pressure produced relatively pleasant weather conditions. Weak passing disturbances produced some cloud and only minimal amounts of precipitation, the exception being southern Alberta, which received 7 to 10 centimetres of snow at the beginning of the week. The weekend saw temperatures in Alberta rise to the mid to upper teens, breaking daily temperature records.

Temperatures in Saskatchewan and Manitoba varied markedly. A northwesterly circulation gave record cold weather across most of central Manitoba over the weekend. In contrast, a southerly return flow west of the ridge resulted in balmy temperatures in Saskatchewan.

Ontario

It was not a very spring-like week, and in fact the first day of

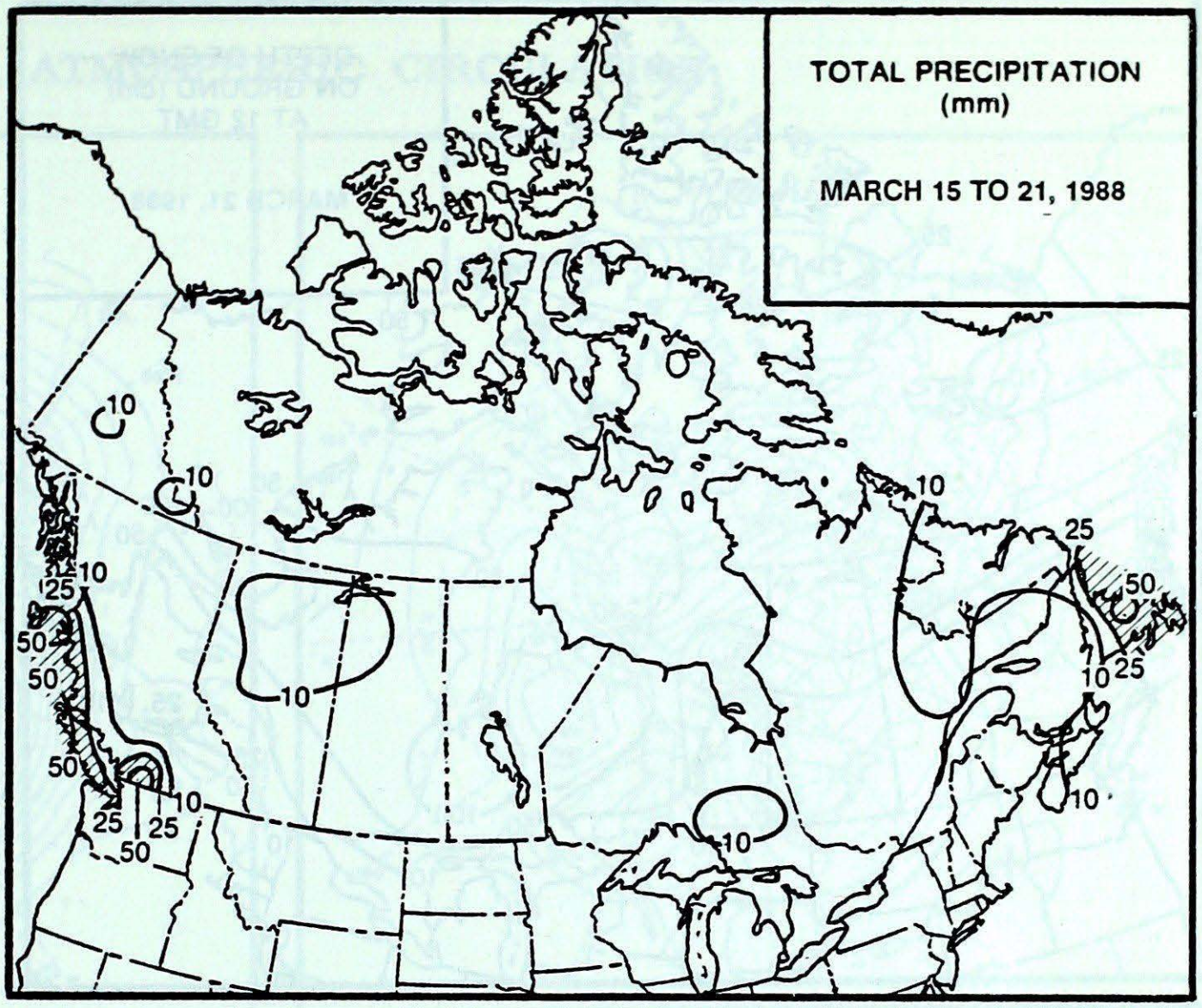
spring was down right blustery and cold. Arctic air settled in over the province, dropping temperatures to record low values. On the morning of the 21st, more than a dozen new daily minimum temperature records were established, with readings ranging from -36°C in the north to -10°C in the south. The Arctic outbreak triggered snow squalls, which produced as much as 20 cm of fresh snow in the snow belt. Highways became slippery and treacherous as weekend skiers headed out for the hills, resulting in a fair number of highway traffic accidents.

Quebec

Although spring arrived on the 20th, winter was reluctant to loosen its grip, as another surge of record cold Arctic air spilled southwards across the province. A number of daily minimum temperature records were broken in the southwest. A 15 to 25 centimetre snowfall covered the Sept-Iles region on the 19th and 20th. In the Eastern Townships, blowing snow resulted in poor visibility, which disrupted highway travel. The weather was ideal for outdoor winter sports.

Atlantic Provinces

Two Atlantic storms brushed the Maritimes and tracked towards Newfoundland. In the Maritimes, the period was variably sunny until late Sunday, when northern and eastern sections of Nova Scotia received 10 to 20 centimetres of snow. There were major traffic tie-ups in Halifax during the Monday morning rush hour. It was a stormy week in Newfoundland. During the middle of the week, eastern sections of the Island received up to 40 cm of snow. In addition, winds gusted to 100 km/h, producing whiteouts. On Sunday, a second storm gave another 15 to 20 centimetres snowfall, and winds gusting in excess of 100 km/h hit the eastern sections of the Island. The Avalon peninsula escaped with a mixture of rain and snow. In the last 13 days, Gander has received 121.4 cm of snow, increasing the snow depth to almost 100 cm. There were no major storms affecting Labrador, although 5 to 10 centimetres snowfalls were common to most areas.



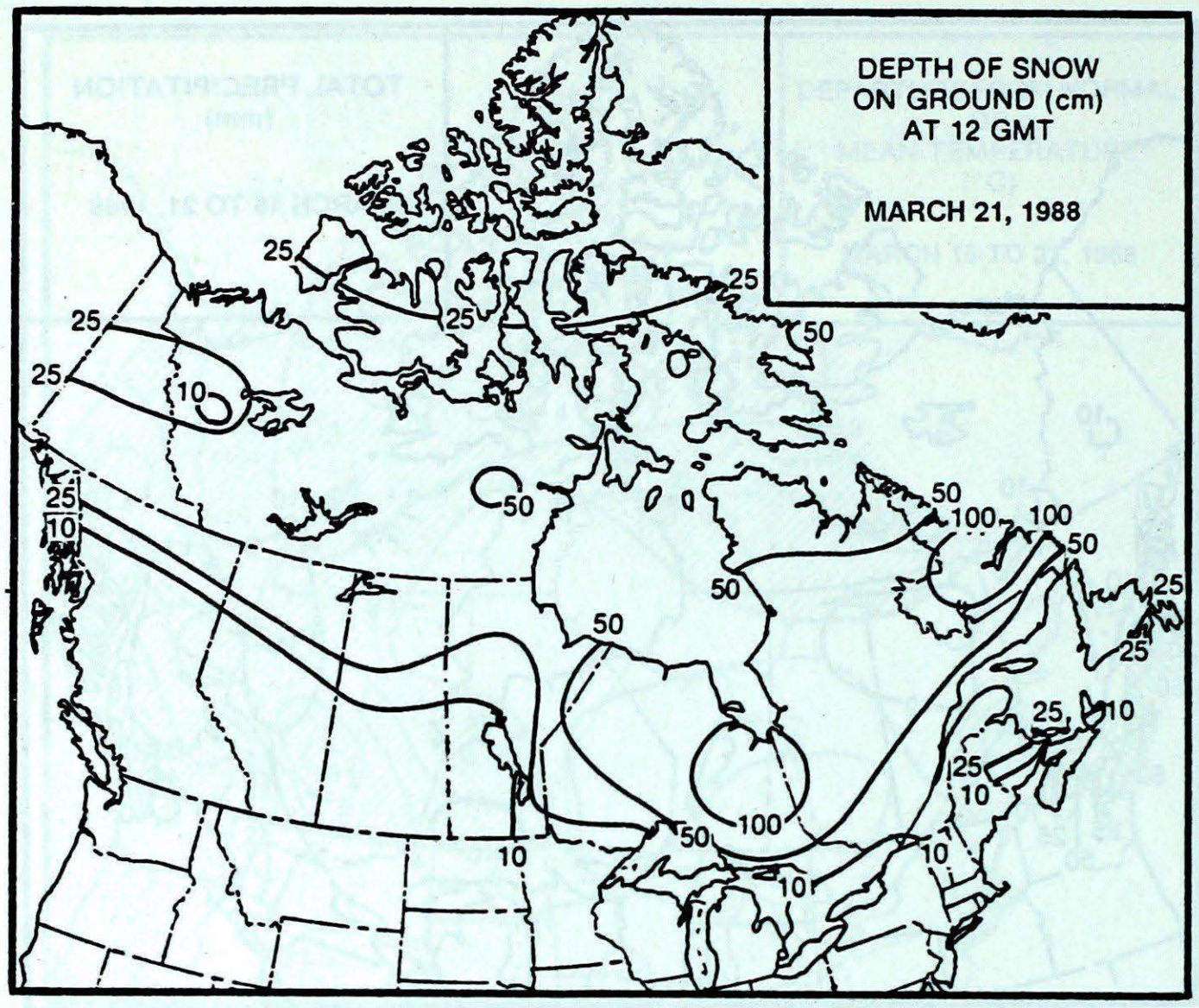
HEAVIEST WEEKLY PRECIPITATION (mm)

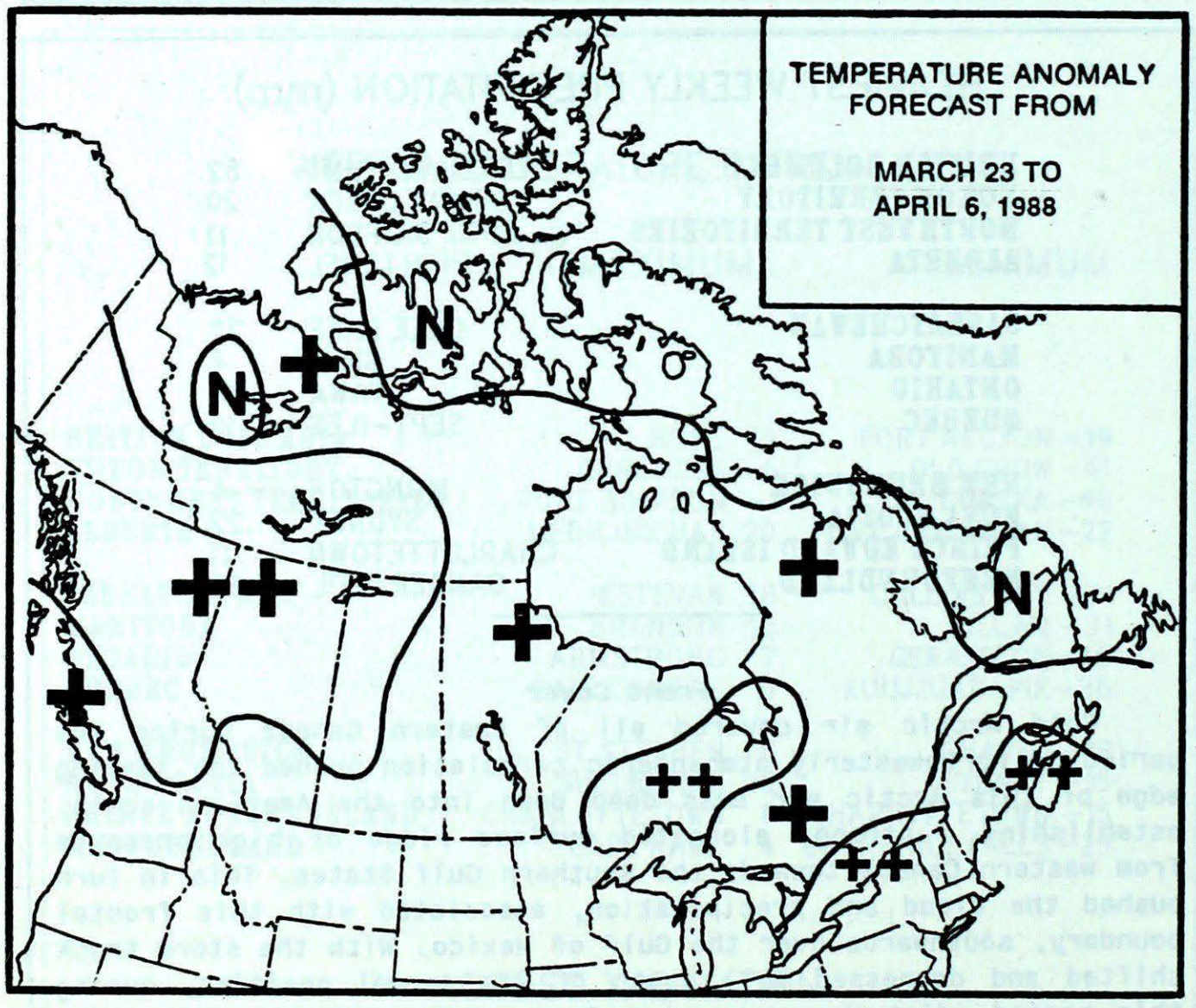
BRITISH COLUMBIA	ESTEVAN POINT	82
YUKON TERRITORY	DRURY CREEK	20
NORTHWEST TERRITORIES	FORT SIMPSON	11
ALBERTA	HIGH LEVEL	12
SASKATCHEWAN	CREE LAKE	23
MANITOBA	GIMLI	4
ONTARIO	WAWA	14
QUEBEC	SEPT-ILES	19
NEW BRUNSWICK	MONCTON	4
NOVA SCOTIA	SYDNEY	22
PRINCE EDWARD ISLAND	CHARLOTTETOWN	11
NEWFOUNDLAND	GANDER INT'L	66

Front Cover

Cold Arctic air covered all of eastern Canada during the period. A northwesterly atmospheric circulation pushed the leading edge of this Arctic air mass deep down into the American south, establishing a strong, elongated surface ridge of high pressure from western Canada towards the southern Gulf States. This in turn pushed the cloud and precipitation, associated with this frontal boundary, southwards over the Gulf of Mexico. With the storm track shifted and depressed well south of its normal position, during this period, disturbances moving from northern Mexico across the Gulf, gave relatively unsettled and changeable weather conditions to much of the Caribbean. This weather pattern persisted most of the week as depicted on the 50 kPa charts on page 5 and 9. Note the thick cloud deck, extending well off the east coast of North America towards Bermuda, due to the interaction of the cold Arctic air mass with the relatively warm ocean currents.

FORECAST





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.

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

CLIMATIC PERSPECTIVES VOLUME 10

Managing Editor P.R. Scholefield
Editors-in-charge
weekly A.K. Radomski
monthly A. Shabbar
French A.A. Caillet
Data Manager M. Skarpathiotakis
Art Layout K. Czaja
Word Processing P. Burke/U. Ellis
Translation D. Pokorn
Cartography G. Young/T. Chivers

Regional Correspondents
Atlantic: F.Amirault; Que.: J.Miron Ont.:B.Smith; Central: J.F. Bendell Western: W.Prusak; Pac.: E.Coatta; Yukon Weather Centre: J. Steele; Frobisher Bay & Yellowknife Weather Offices; Newfoundland Weather Centre: G.MacMillan; Ice Central Ottawa
ISSN 0225-5707 UDC 551.506.1(71)

Climatic Perspectives is a weekly bilingual publication of the Canadian Climate Centre, Atmospheric Environment Service, 4905 Dufferin St., Downsview, Ont. Canada M3H 5T4. **Phone (416)739-4438/4436.**

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

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.

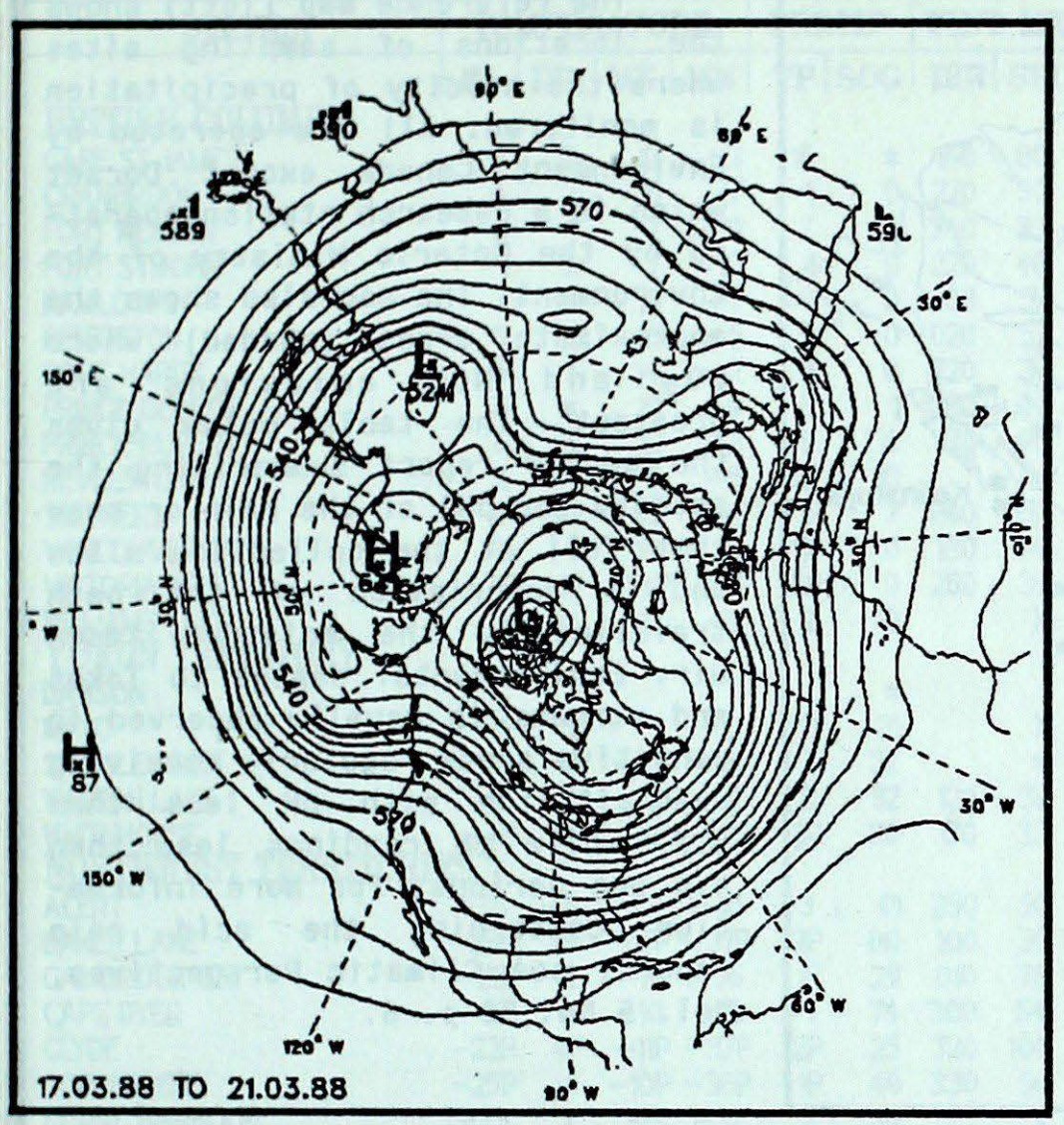
The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily reflect the views of the Atmospheric Environment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

Annual Subscriptions

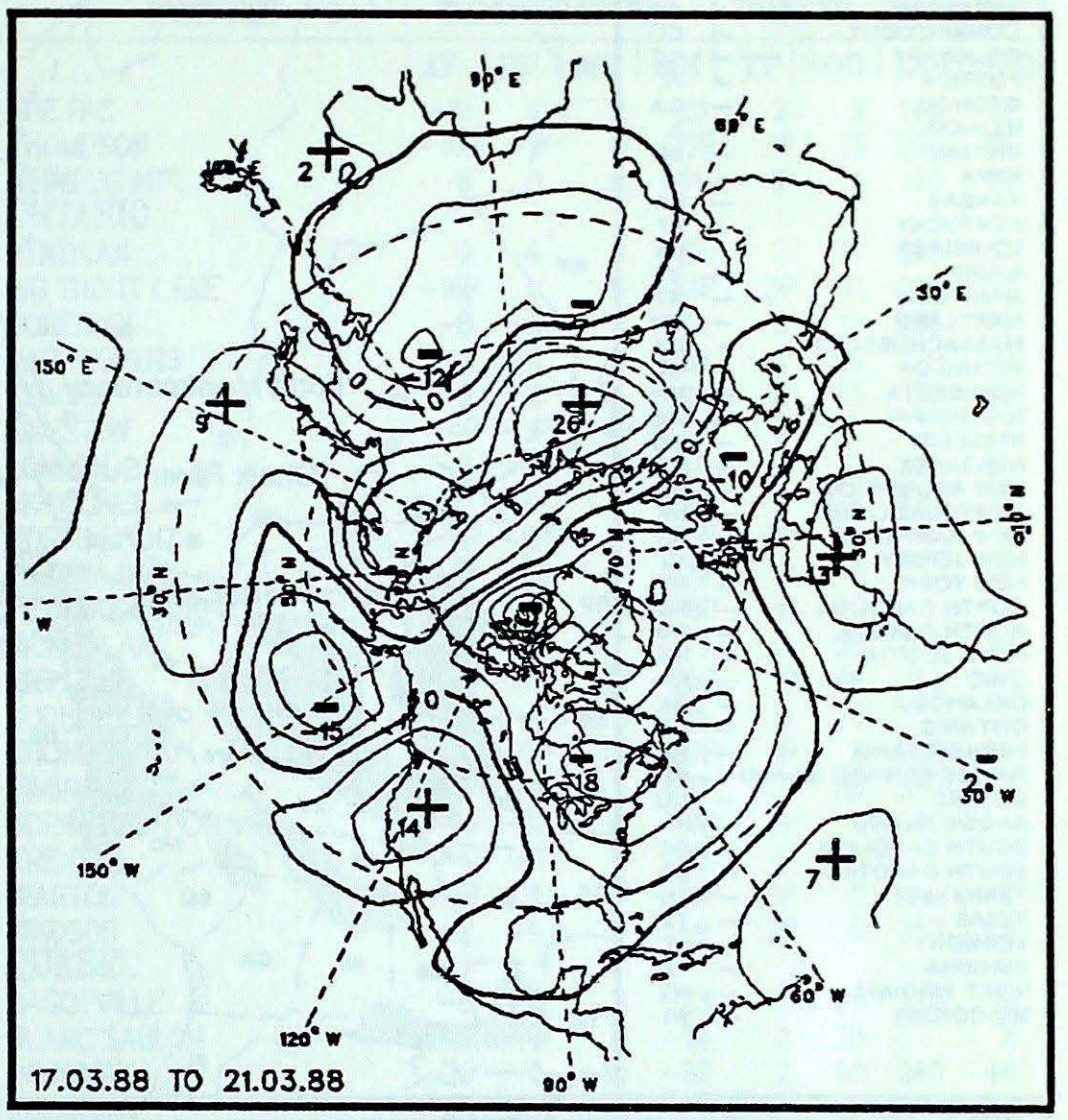
weekly & monthly supplement: $35.00
foreign: $42.00
Monthly issue: $10.00
foreign: $12.00

Orders must be prepaid by money order or cheque payable to Receiver General for Canada. **Canadian Government Publishing Centre, Ottawa, Ontario K1A 0S9** (613)994-1495

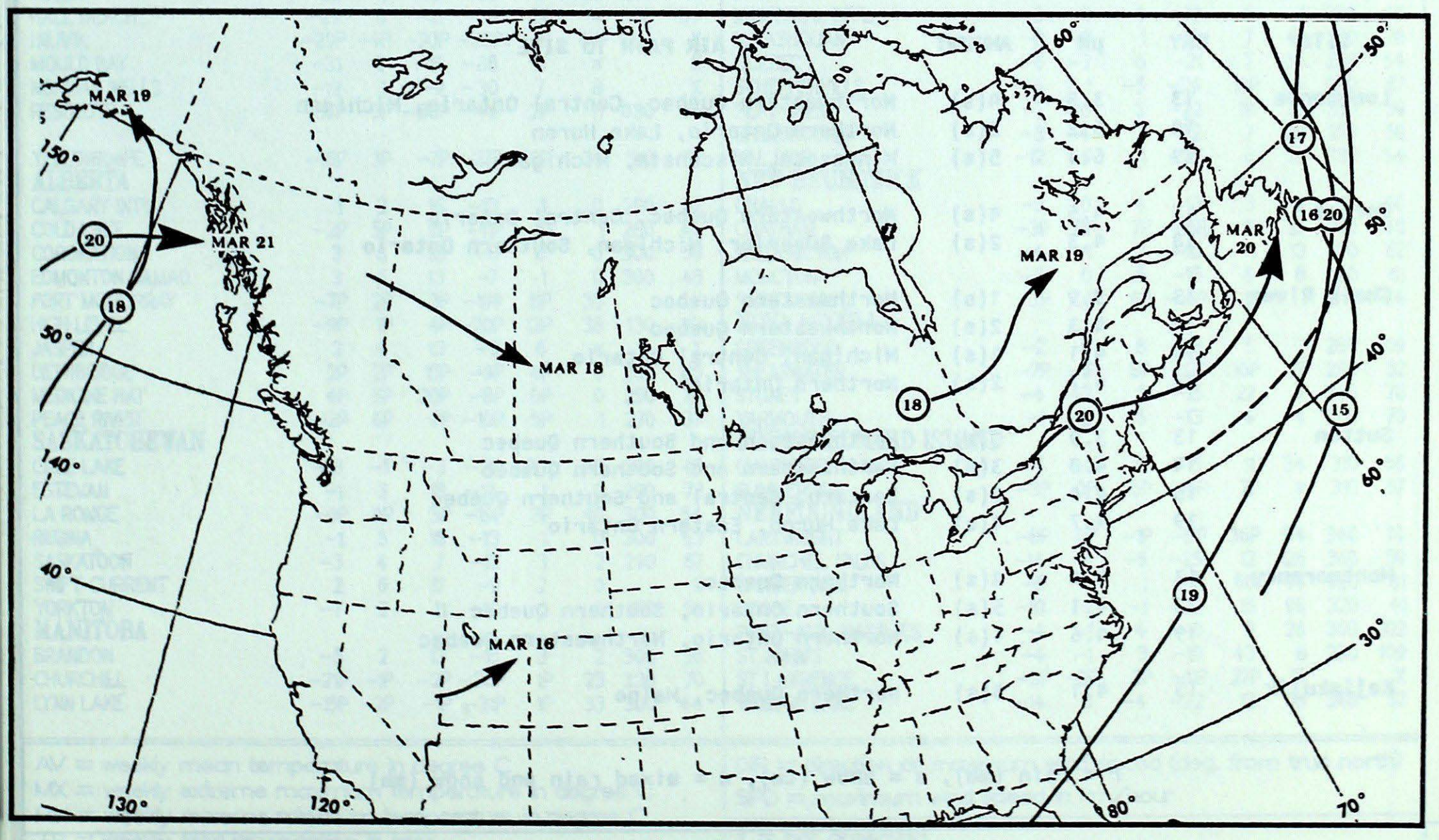
50 kPa ATMOSPHERIC CIRCULATION



Mean geopotential heights
50 kPa level (in decameter)



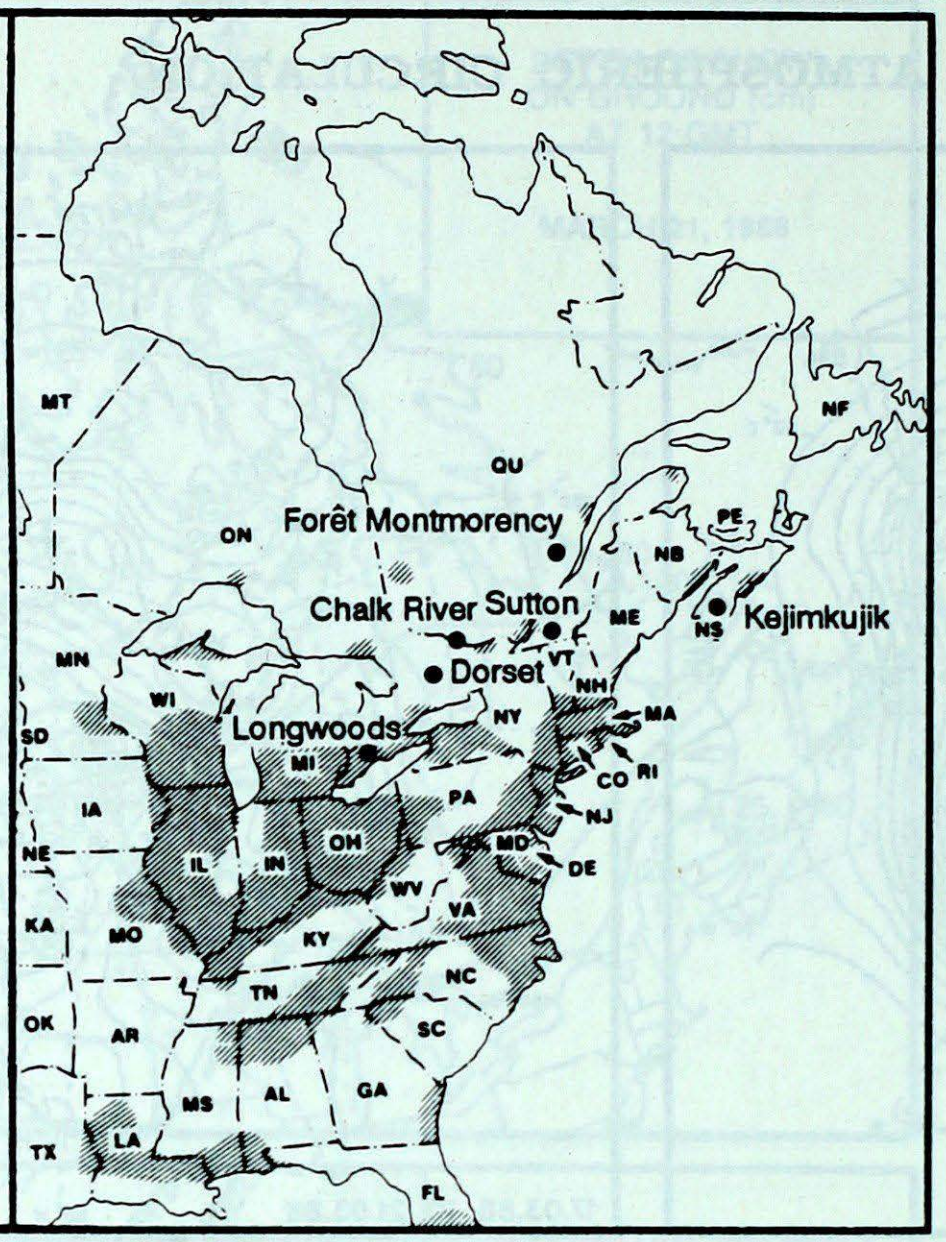
Mean geopotential height anomaly
50 kPa level (in decameter)



Storm track - Position of storm at 12 GMT during the period: March 15 to 21, 1988

ACID RAIN

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	—	MT
MARYLAND	—	MD
MASSACHUSETTS	—	MA
MICHIGAN	—	MI
MINNESOTA	—	MN
MISSISSIPPI	—	MS
MISSOURI	—	MO
NEBRASKA	—	NE
NEW BRUNSWICK	—	NB
NEWFOUNDLAND	—	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	—	QU
RHODE ISLAND	—	RI
SOUTH CAROLINA	—	SC
SOUTH DAKOTA	—	SD
TENNESSEE	—	TN
TEXAS	—	TX
VERMONT	—	VT
VIRGINIA	—	VA
WEST VIRGINIA	—	WV
WISCONSIN	—	WI



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_2 and 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.

MARCH 13 TO MARCH 19, 1988

SITE	DAY	pH	AMOUNT	AIR PATH TO SITE
Longwoods	13	3.8	4(s)	Northwestern Quebec, Central Ontario, Michigan
	14	5.2	2(s)	Northern Ontario, Lake Huron
	19	6.1	5(s)	Minnesota, Wisconsin, Michigan
Dorset	13	4.5	4(s)	Northwestern Quebec, Central Ontario
	18	4.3	2(s)	Lake Superior, Michigan, Southern Ontario
Chalk River	13	3.9	1(s)	Northwestern Quebec
	14	4.3	2(s)	Northwestern Quebec
	18	4.1	1(s)	Michigan, Central Ontario
	19	4.7	2(s)	Northern Ontario
Sutton	13	3.9	3(m)	Northwestern and Southern Quebec
	14	4.0	3(s)	Northwestern and Southern Quebec
	15	4.4	6(s)	Eastern, Central and Southern Quebec
	19	4.7	1(s)	Lake Huron, Eastern Ontario
Montmorency	13	4.4	3(s)	Northern Quebec
	18	4.1	5(s)	Southern Ontario, Southern Quebec
	19	4.6	1(s)	Northern Ontario, Northwestern Quebec
Kejimkujik	13	4.1	3(s)	Northern Quebec, Maine

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

STATISTICS

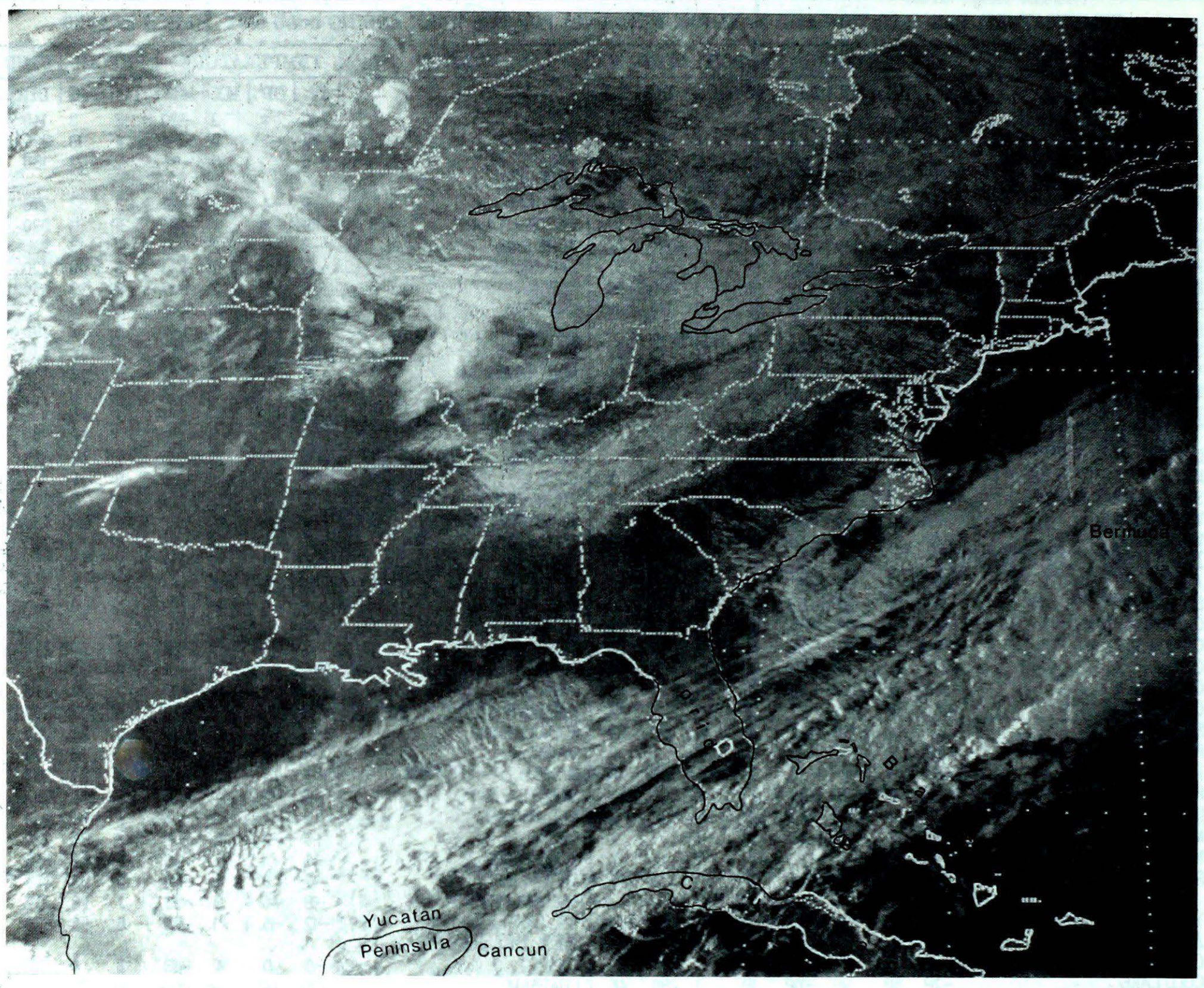
TEMPERATURE, PRECIPITATION AND MAXIMUM WIND DATA FOR THE WEEK ENDING 0600 GMT MARCH 22,1988

STATION	TEMPERATURE				PRECIP		WIND MX	
	AV	DP	MX	MN	TP	SOG	DIR	SPD
BRITISH COLUMBIA								
CAPE ST.JAMES	7	2	12	3	16	*	160	80
CRANBROOK	4	2	15	-7	1	0	270	50
FORT NELSON	-8	1	7	-19	7	28	340	33
FORT ST.JOHN	-1	5	7	-10	1	0	220	46
KAMLOOPS	7	2	18	-5	0	0	200	52
PENTICTON	6	1	15	-5	0	0	020	57
PORT HARDY	6	1	14	-2	79	0	220	37
PRINCE GEORGE	2	*	10	-9	8	1	280	39
PRINCE RUPERT	6	3	12	-3	59	0	170	96
REVELSTOKE	2	1	9	-5	12	10		*
SMITHERS	4P	4P	12P	-9P	1P	7	240	52
VANCOUVER INT'L	8	1	14	0	17	0	180	44
VICTORIA INT'L	7P	1P	14P	0P	5P	0	260	37
WILLIAMS LAKE	2	*	12	-9	2	0		X
YUKON TERRITORY								
DAWSON						*		
MAYO	-11	1	1	-21	2	21		X
SHINGLE POINT A	-27	-1	-20	-36	2	37		*
WATSON LAKE	-9	2	3	-22	8	52	120	37
WHITEHORSE	-4P	4P	4P	-12P	3P	36	170	33
NORTHWEST TERRITORIES								
ALERT	-36	-3	-2	-45	3	41	250	50
BAKER LAKE	-28P	0P	-17P	-37P	2P	80	100	39
CAMBRIDGE BAY	-28	3	-19	-36	1P	29	010	78
CAPE DYER	-18	4	-10	-25	1	74	300	54
CLYDE	-22P	4P	-11P	-37P	2P	25	320	106
COPPERMINE	-25P	*	-10P	-36P	1P	49	330	56
CORAL HARBOUR	-23	2	-8	-37	2	34		X
EUREKA	-36P	0P	-18P	-48P	2P	14	170	89
FORT SMITH	-13	2	-4	-21	5	40		X
IQALUIT	-22	1	-15	-30	2	35	340	61
HALL BEACH	-29	0	-18	-39	2P	*	300	54
INUVIK	-29P	-4P	-20P	-38P	1P	44		X
MOULD BAY	-31	2	-15	-38	3	*		X
NORMAN WELLS	-19	1	-9	-30	7	8		X
RESOLUTE	-35P	-5P	-30P	-41P	2P	11	030	94
YELLOWKNIFE	-16P	3P	-7P	-27P	3P	36	310	37
ALBERTA								
CALGARY INT'L	1	3	16	-13	1	0	290	52
COLD LAKE	-2P	5P	9P	-11P	1P	1	280	46
CORONATION	3	8	16	-6	0	0	300	59
EDMONTON NAMAO	3	6	13	-7	1	0	300	48
FORT MCMURRAY	-7P	2P	3P	-19P	11P	39		X
HIGH LEVEL	-9P	1P	4P	-20P	12P	38	130	33
JASPER	2	4	13	-9	6	*		X
LETHBRIDGE	2P	2P	15P	-9P	4P	0	260	85
MEDICINE HAT	4P	5P	20P	-8P	0P	0	250	78
PEACE RIVER	-2P	6P	7P	-10P	5P	1	270	37
SASKATCHEWAN								
CREE LAKE	-13	-1	-3	-26	23	33	290	46
ESTEVAN	-1	3	18	-14	1	0	290	72
LA RONGE	-9P	0P	3P	-19P	3P	40	300	54
REGINA	-1	5	16	-13	1	0	300	63
SASKATOON	-3	4	7	-12	3	2	290	67
SWIFT CURRENT	2	6	17	-9	2	0		X
YORKTON	-7	2	11	-19	1	6	150	56
MANITOBA								
BRANDON	-5	2	13	-15	3	2	300	56
CHURCHILL	-21P	-1P	-2P	-30P	1P	23	330	70
LYNN LAKE	-15P	-2P	-1P	-31P	1P	33	300	44
THE PAS	-10	*	2	-20	2	3	140	57
THOMPSON	-15P	-1P	1P	-29P	1P	13	290	46
WINNIPEG INT'L	-6	1	6	-14	2	1	180	65
ONTARIO								
ATIKOKAN	-9	-4	3	-27	3	37	270	37
BIG TROUT LAKE	-16P	*	1P	-34P	3P	71	020	50
GORE BAY	-8	-5	2	-21	2	13	300	70
KAPUSKASING	-13	-5	3	-28	6	116	220	41
KENORA	-9	-3	2	-19	1P	35	150	56
KINGSTON	-4P	-3P	4P	-19P	0	0		X
LONDON	-5	-4	3	-14	8	3	290	48
MOOSONEE	-15	-4	5	-32	3	104	330	33
NORTH BAY	-11P	-6P	1P	-25P	3P	56		*
OTTAWA INT'L	-6	-3	3	-19	2	8		X
PETAWAWA	-8P	-4P	5P	-26P	1P	28		X
PICKLE LAKE	-13	-3	2	-33	1	58	290	56
RED LAKE	-10P	-3P	2P	-26P	1P	46	150	46
SUDBURY	-9	-4	1	-26	8	76		X
THUNDER BAY	-5P	0P	5P	-20P	1P	2	300	44
TIMMINS	-13	-5	3	-27	12P	118	330	43
TORONTO INT'L	-4P	-3P	3P	-14P	2P	1	300	54
TRENTON	-4	-3	5	-17	4	2		X
WIARTON	-6P	-3P	1P	-14P	8P	0		X
WINDSOR	-2	-4	5	-9	2P	0	350	46
QUEBEC								
BAGOTVILLE	-8	-2	3	-23	2	34	290	56
BLANC SABLON	-6	*	0	-14	11	38		X
INUKJUAK	-20	0	-10	-32	2	50	240	46
KUUJJUAQ	-13P	4P	-6P	-21P	2P	33	360	48
KUUJJUARAPIK	-21	-5	-7	-36	2	36	260	43
MANIWAKI	-8	-4	5	-26	3	31	270	41
MONT JOLI	-7	-2	3	-19	3	29	260	61
MONTREAL INT'L	-5	-2	4	-18	6	2	250	48
NATASHQUAN	-8	-2	1	-18	7	49	260	76
QUEBEC	-6	-2	6	-21	7	86	220	54
SCHEFFERVILLE	-14	1	-5	-26	10P	84	350	67
SEPT-ILES	-7	0	3	-22	19	38	350	59
SHERBROOKE	-8	-4	3	-22	7	28	270	50
VAL D'OR	-12	-5	1	-28	6	56	330	54
NEW BRUNSWICK								
CHARLO	-5	0	4	-18	3	*	310	50
CHATHAM	-3P	0P	7P	-16P	1P	32	320	46
FREDERICTON	-4	-1	7	-16	1	13	300	52
MONCTON	-3	0	6	-15	4	8	360	61
SAINT JOHN	-3P	0P	6P	-16P	1P	1	310	54
NOVA SCOTIA								
GREENWOOD	-2	0	8	-13	5	3	280	69
SHEARWATER	-2P	-1P	8P	-12P	16P	17	280	52
SYDNEY	-4	-2	3	-15	22	7	340	70
YARMOUTH	-1	-2	6	-13	4	4	300	70
PRINCE EDWARD ISLAND								
CHARLOTTETOWN	-4	-1	6	-15	11	34	310	56
SUMMERSIDE	-3P	0P	5P	-14P	7P	*	310	57
NEWFOUNDLAND								
CARTWRIGHT	-8P	0P	-1P	-17P	36P	174	340	74
CHURCHILL FALLS	-14	-1	-5	-25	12	126	360	59
GANDER INT'L	-5	-1	1	-12	66	94	020	81
GOOSE	-10	-1	-1	-20	15	96	320	41
PORT-AUX-BASQUES	-4	-1	4	-10	8	26	360	102
ST JOHN'S	-4	-1	3	-10	43	8	280	109
ST LAWRENCE	-3P	-2P	3P	-11P	27P	15		X
WABUSH LAKE	-14	0	-4	-22	12	68	340	52

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

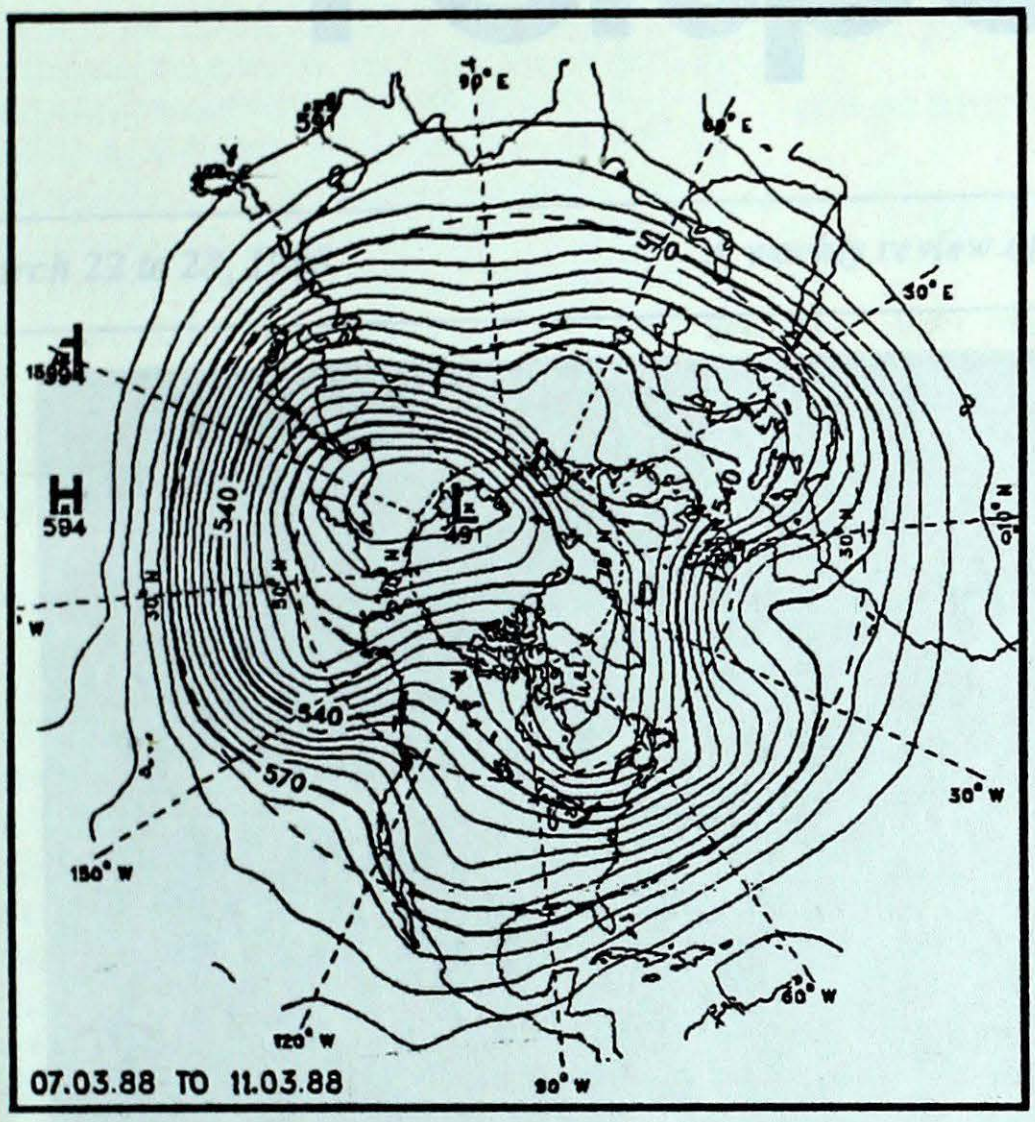
DIR = direction of maximum wind speed (deg. from true north)
SPD = maximum wind speed in km/hour

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

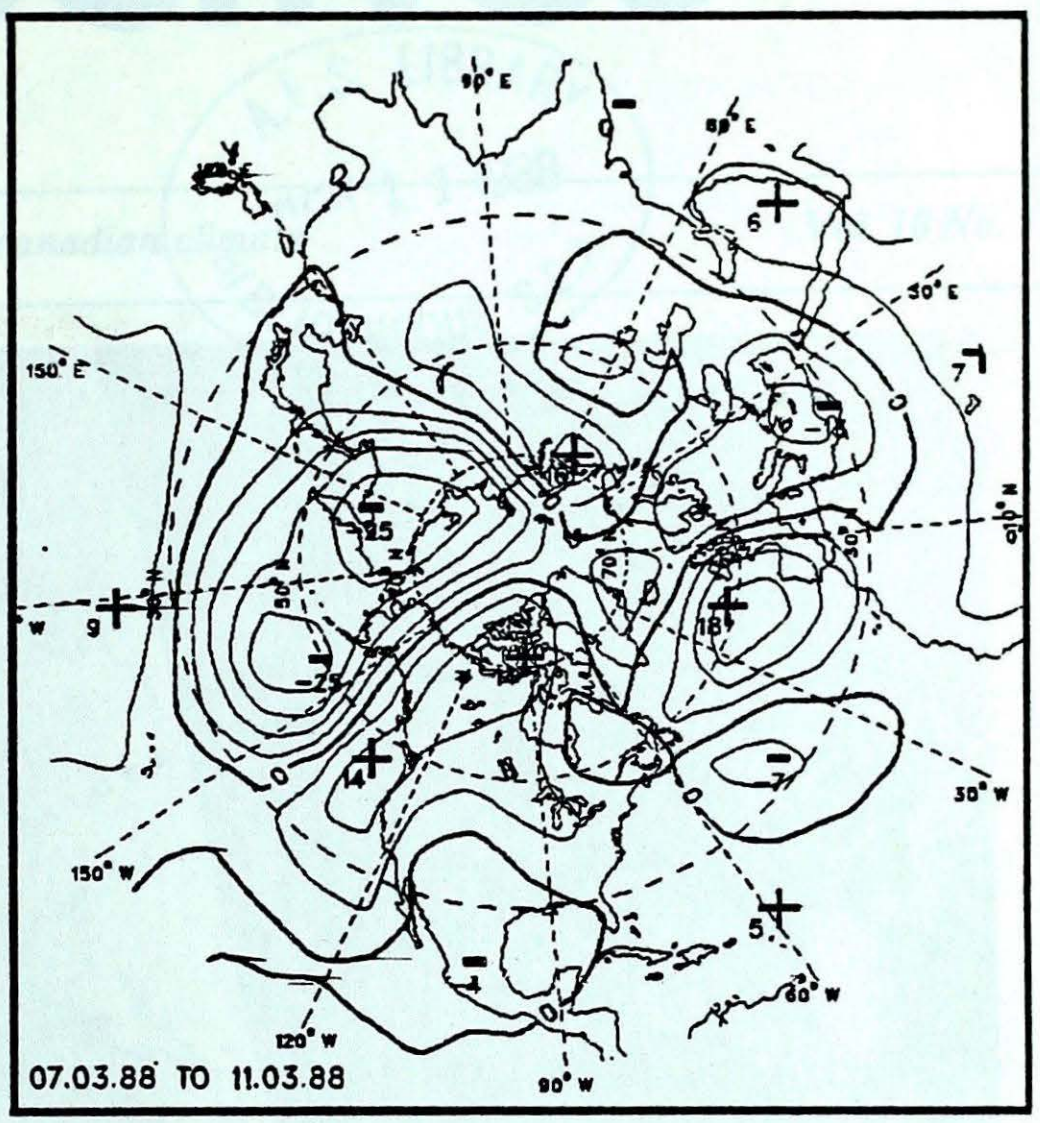


This GOES satellite photo of March 19, 1988, shows a low pressure frontal system stretching across the Gulf of Mexico, spreading cloud and showers from the Mexican Yukatan Peninsula towards Florida, Cuba, the Bahamas and Bermuda. A cold Arctic air mass, which penetrated into Florida a few days earlier dropped temperatures to the single digits. Note the cloud cover near the Great Lakes, due to the added moisture input.

50 kPa ATMOSPHERIC CIRCULATION



Mean geopotential heights
50 kPa level (in decameter)



Mean geopotential height anomaly
50 kPa level (in decameter)