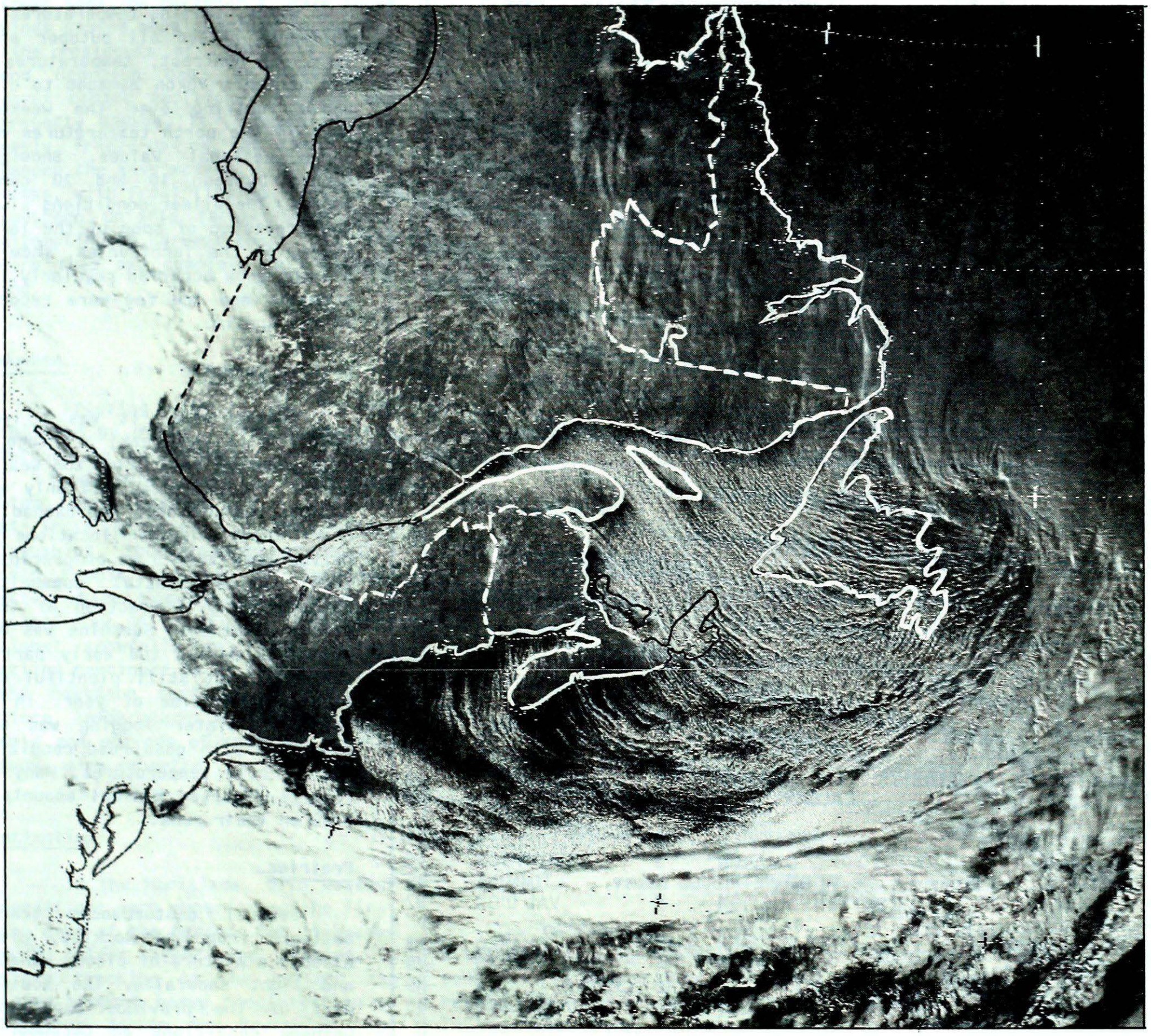
Environment Canada Environnement Canada

Climatic Perspectives

A weekly review of Canadian climate | December 2 to 8, 1986 | Vol.8 No.49

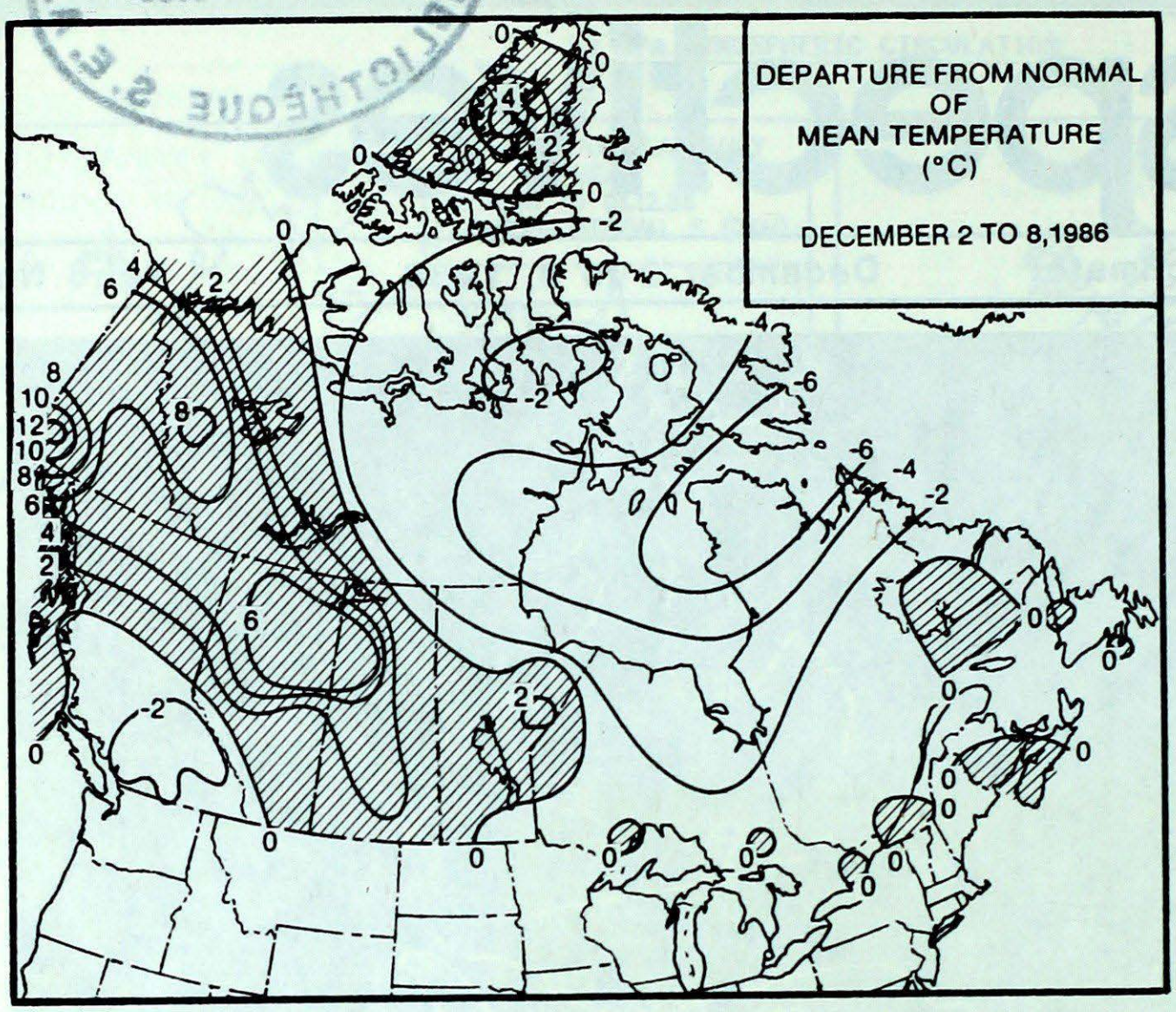


This NOAA 9 near infrared satellite photograph of December 8, 1986, shows a cold Arctic airmass sweeping across the Gulf of St. Lawrence. More information on page 3.

- ***Strong gales whip up the Great Lakes***
  -more shoreline erosion and property damage
- ***Unseasonably dry over coastal B.C.***

Canada

TEMPERATURE



WEEKLY TEMPERATURE EXTREME (C)

	MAXIMUM		MINIMUM	
BRITISH COLUMBIA	SANDSPIT	10	FORT NELSON	-23
YUKON TERRITORY	BURWASH	6	OLD CROW	-43
NORTHWEST TERRITORIES	CLINTON POINT	-6	SHEPHERD BAY A	-46
ALBERTA	CALGARY INT'L	8	FORT CHIPEWYAN	-30
SASKATCHEWAN	BROADVIEW	2	COLLINS BAY	-35
MANITOBA	DAUPHIN	3	THOMPSON	-40
ONTARIO	POINT PETRE	6	TIMMINS	-36
QUEBEC	SUTTON JUNCTION	8	VAL D'OR	-37
NEW BRUNSWICK	ST STEPHEN	13	CHARLO	-23
NOVA SCOTIA	GREENWOOD	14	TRURO	-19
PRINCE EDWARD ISLAND	CHARLOTTETOWN	10	CHARLOTTETOWN	-19
NEWFOUNDLAND	BURGEO	6	WABUSH LAKE	-35

ACROSS THE NATION

WARMEST MEAN TEMPERATURE	7	CAPE ST.JAMES	BC
COOLEST MEAN TEMPERATURE	-35	SHEPHERD BAY A	NWT

ACROSS THE COUNTRY...

Yukon and Northwest Territories

It was another cold week in the eastern Arctic. On the morning of December 2, as school classes were to begin at Frobisher Bay, a blizzard hit southern Baffin Island. High winds, falling temperatures and whiteouts halted all outdoor activity. In contrast, temperatures in the southern Yukon managed to climb above freezing over the weekend. Even in the north temperatures were above seasonal values. Snowfalls ranged between 10 and 20 centimetres. The milder conditions slowed the freeze up of some of the larger lakes. In the Territories, snow and blowing snow occurred regularly. Ice crystals and ice fog were reported in the Arctic.

British Columbia

Weather-wise, it was a relatively pleasant week. A ridge of high pressure controlled the weather across the province, and only weak frontal disturbances approached the coast. Most interior locations received less than 5 mm of precipitation, while coastal communities received only a fraction of their normal allotment. Sunshine was more prevelant during the early part of the week, but still plentiful considering the time of year. In the interior, winter logging was well underway, with good road conditions due to cold temperatures. Many ski resorts reported minimal amounts of snow on their runs.

Prairies

Several disturbances tracked eastward from the Rockies, giving Alberta a mixture of cloud, sunshine and light snowfalls. The southern part of the province experienced Chinook conditions on December 4, when daytime temperatures rose well above the freezing mark. Disturbances produced heavier snowfalls further to the east, where temperatures slid to well-below-normal values during the course of the period. On December 7, a weather system produced heavy snowfalls in central Saskatchewan. Thompson, on the same day, set a new daily minimum temperature record of -40.4°C.

Ontario

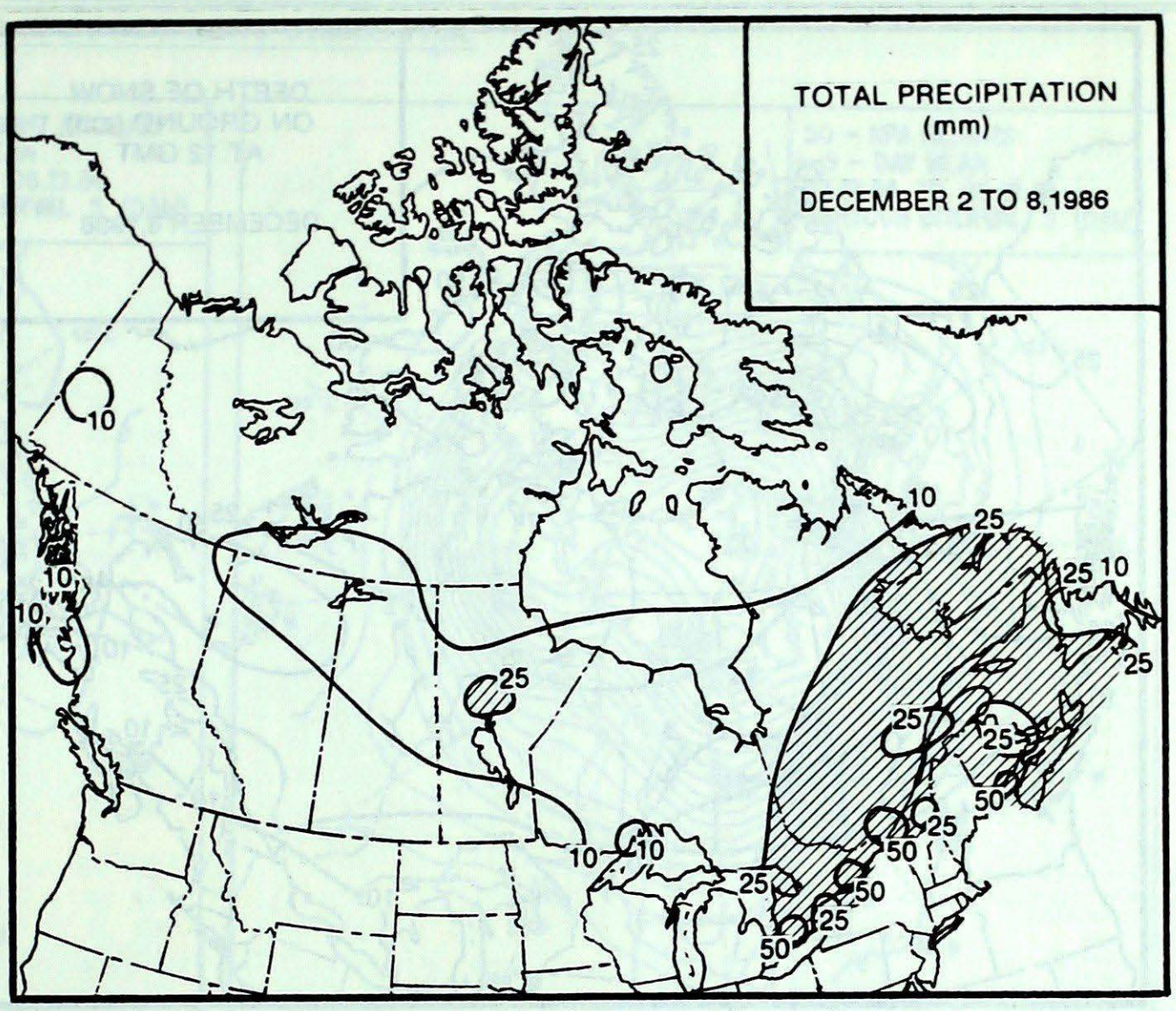
Several weather systems affected the province, giving typically wintery weather conditions. The lower Great Lakes received a mixture of snow and rain, while central and northern areas of the province were blanketed by 10 to 20 centimetres of fresh snow. On December 4, gale force winds caused more problems for shoreline residents of Lake Erie, Huron and Georgian Bay, as destructive waves caused additional erosion and property damage. It is hoped that an early freeze-up on the Lakes will dampen the wave action. The last few weeks, with frost firming the fields, southern Ontario farmers have been attempting to harvest their remaining corn crop and complete fall ploughing.

Quebec

Freezing rain on the 3rd was followed by milder, windy conditions through to the weekend. On December 6, strong winds gusting to 70 km/h blew copper roofing off a cathedral at Trois Rivières. In the Eastern Townships, thunderstorms preceded a cold frontal passage on Saturday, after which temperatures dropped to record low daily values. With additional snowfalls in resort areas, skiing continues to be favourable. In the northern sections of the province, temperatures were unseasonally cold and periods of snow and blowing snow were reported.

Atlantic

In the Maritimes, mild weather conditions were experienced the first few days of the period, but it became much colder after the weekend. A storm tracking up the eastern sea board brought heavy precipitation on December 3. In New Brunswick, the precipitation began as a mixture of snow, freezing rain and ice pellets before changing to rain. Wind gusts frequently exceeded 100 km/h. The inclement weather reached Newfoundland a day later. In Labrador, the storm dumped 25 cm of fresh snow. Cold temperatures and strong winds affected eastern Canada over the weekend.



HEAVIEST WEEKLY PRECIPITATION (mm)

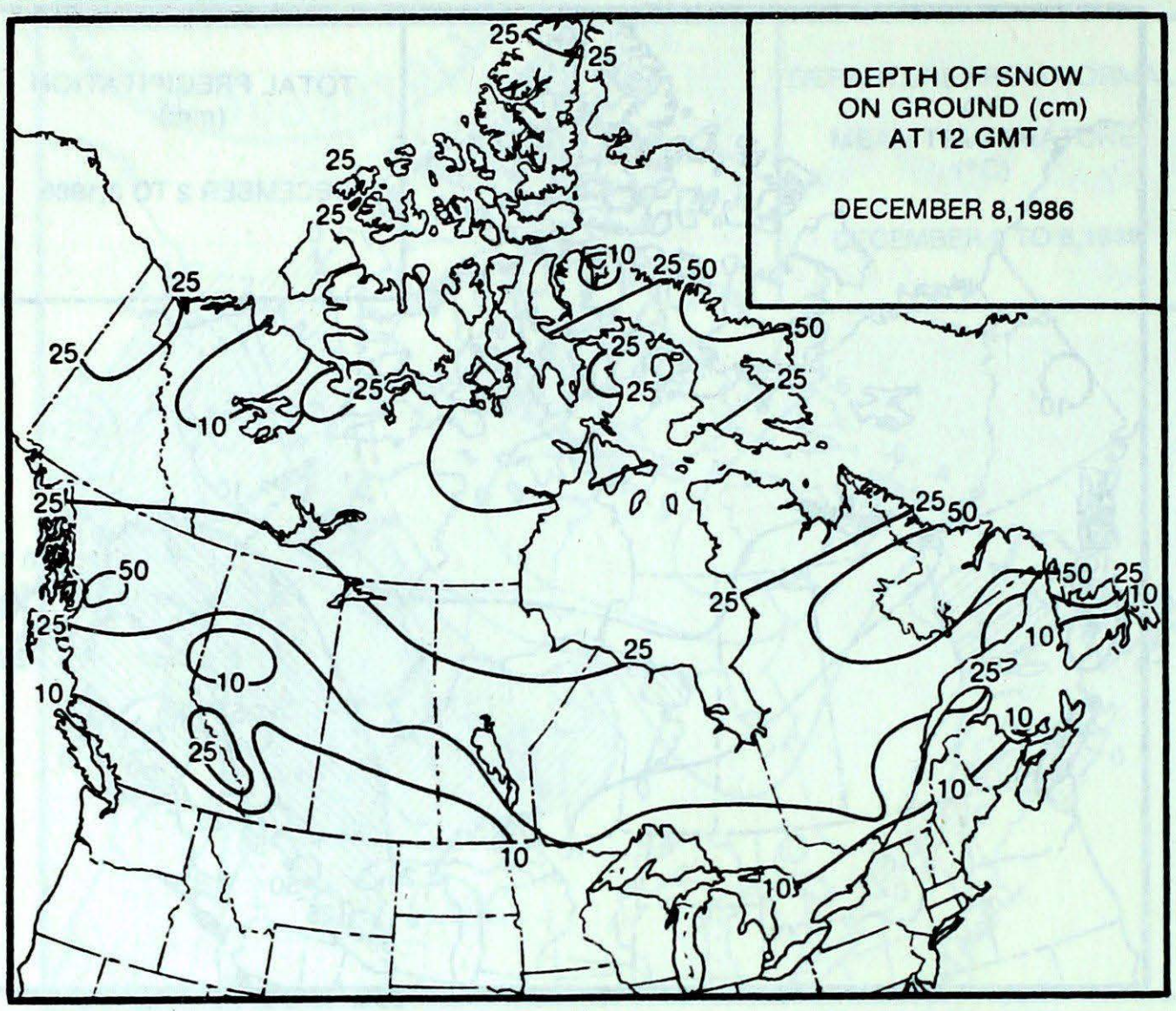
BRITISH COLUMBIA	PRINCE RUPERT	21
YUKON TERRITORY	TUCHITUA	17
NORTHWEST TERRITORIES	HAY RIVER	19
ALBERTA	HIGH LEVEL	13
SASKATCHEWAN	LA RONGE	19
MANITOBA	THOMPSON	27
ONTARIO	LONDON	58
QUEBEC	STE AGATHE DES MONTS	63
NEW BRUNSWICK	SAINT JOHN	56
NOVA SCOTIA	SHELBURNE	51
PRINCE EDWARD ISLAND	EAST POINT	23
NEWFOUNDLAND	ST ANTHONY	51

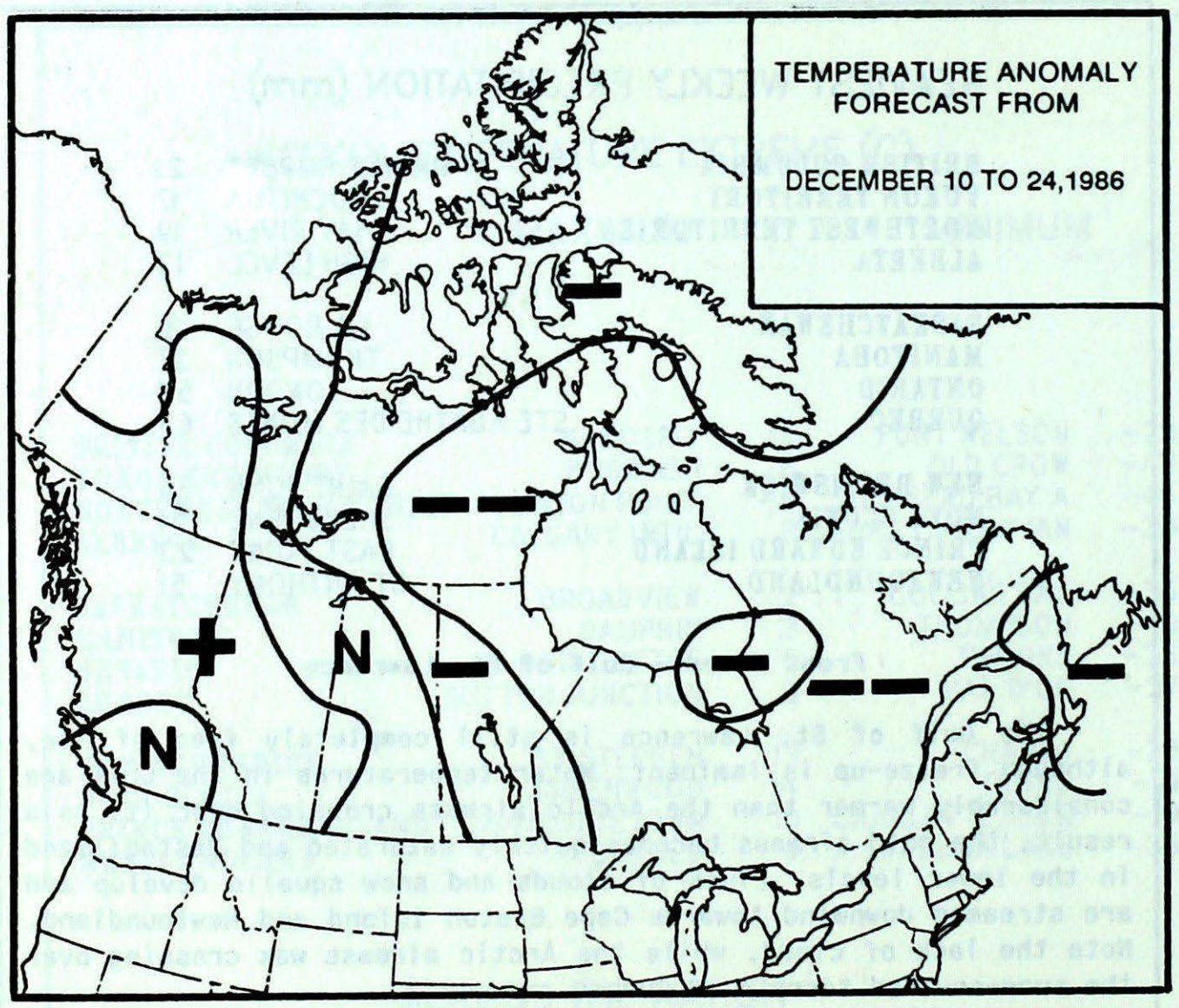
Front Cover - Gulf of St. Lawrence

The Gulf of St. Lawrence is still completely free of ice, although freeze-up is imminent. Water temperatures in the Gulf are considerably warmer than the Arctic airmass crossing over it. As a result, the cold airmass becomes quickly saturated and destabilized in the lower levels. Lines of clouds and snow squalls develop and are streamed downwind towards Cape Breton Island and Newfoundland. Note the lack of cloud, while the Arctic airmass was crossing over the snow-covered terrain of Quebec.

Freeze-up is expected to begin earlier than usual in Atlantic Canada this year. Water temperatures are generally below normal, and new ice should begin forming in the shallow bays and inlets of the Gulf during the current cold spell.

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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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 shown 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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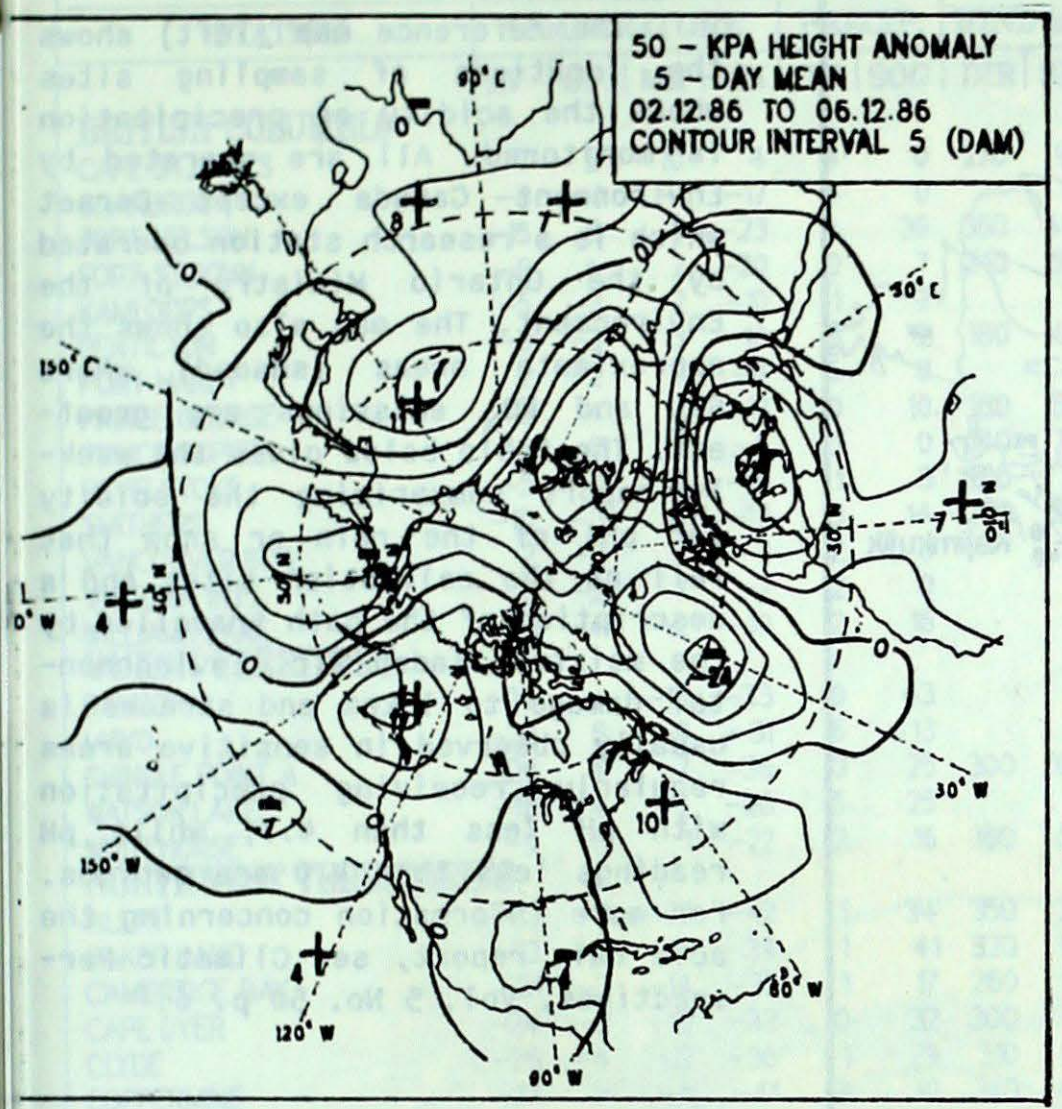
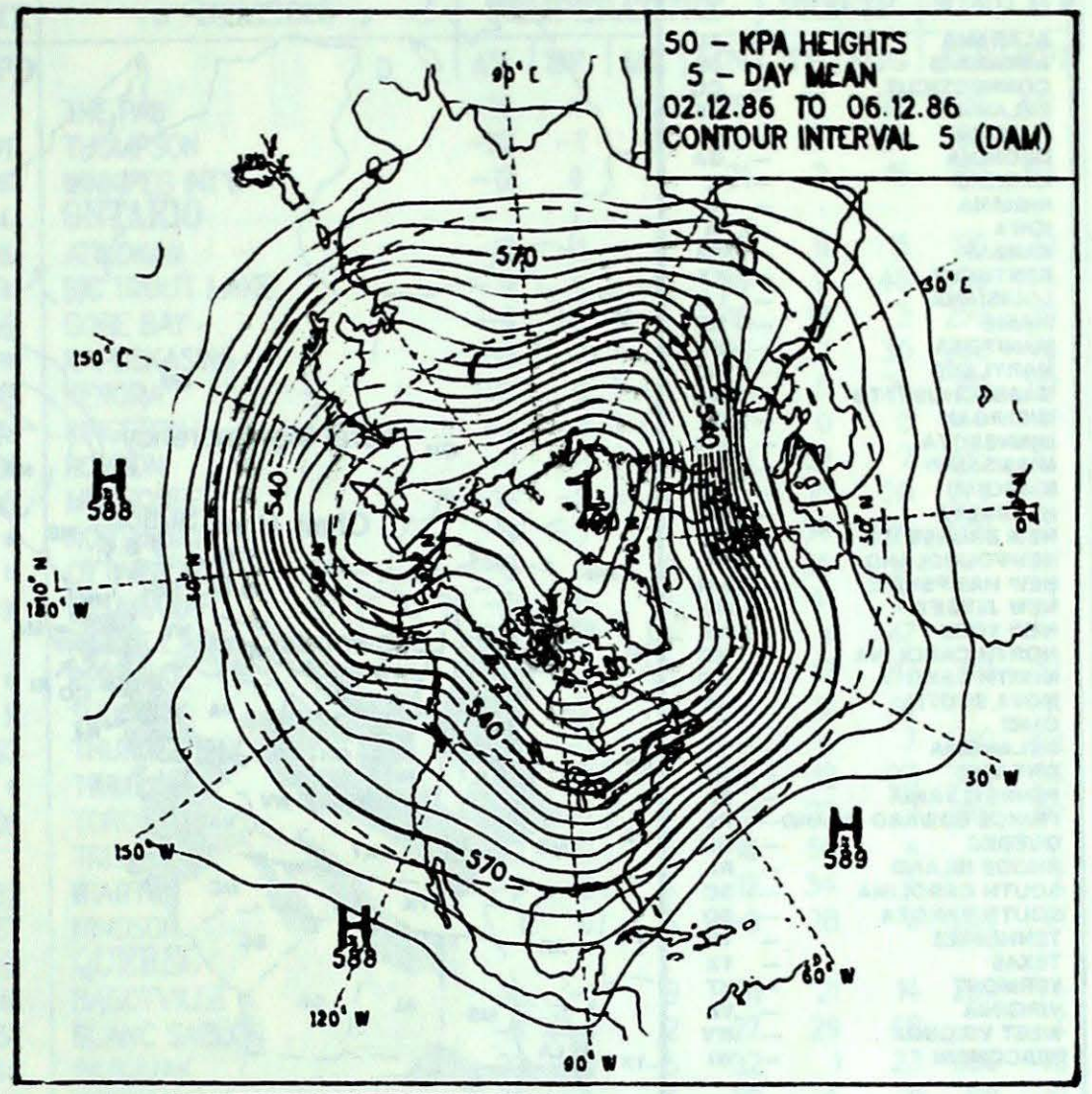
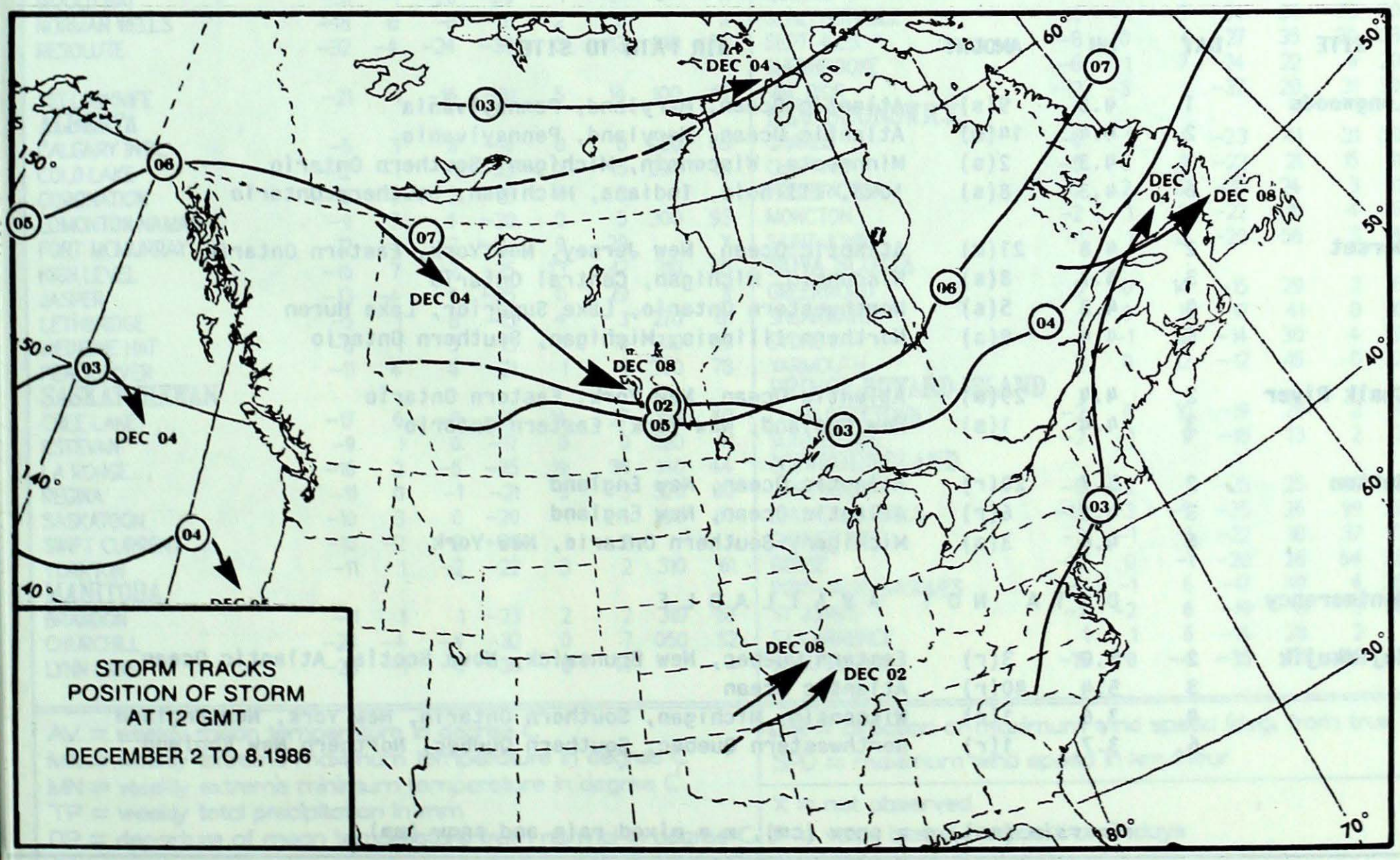
50 KPa ATMOSPHERIC CIRCULATION



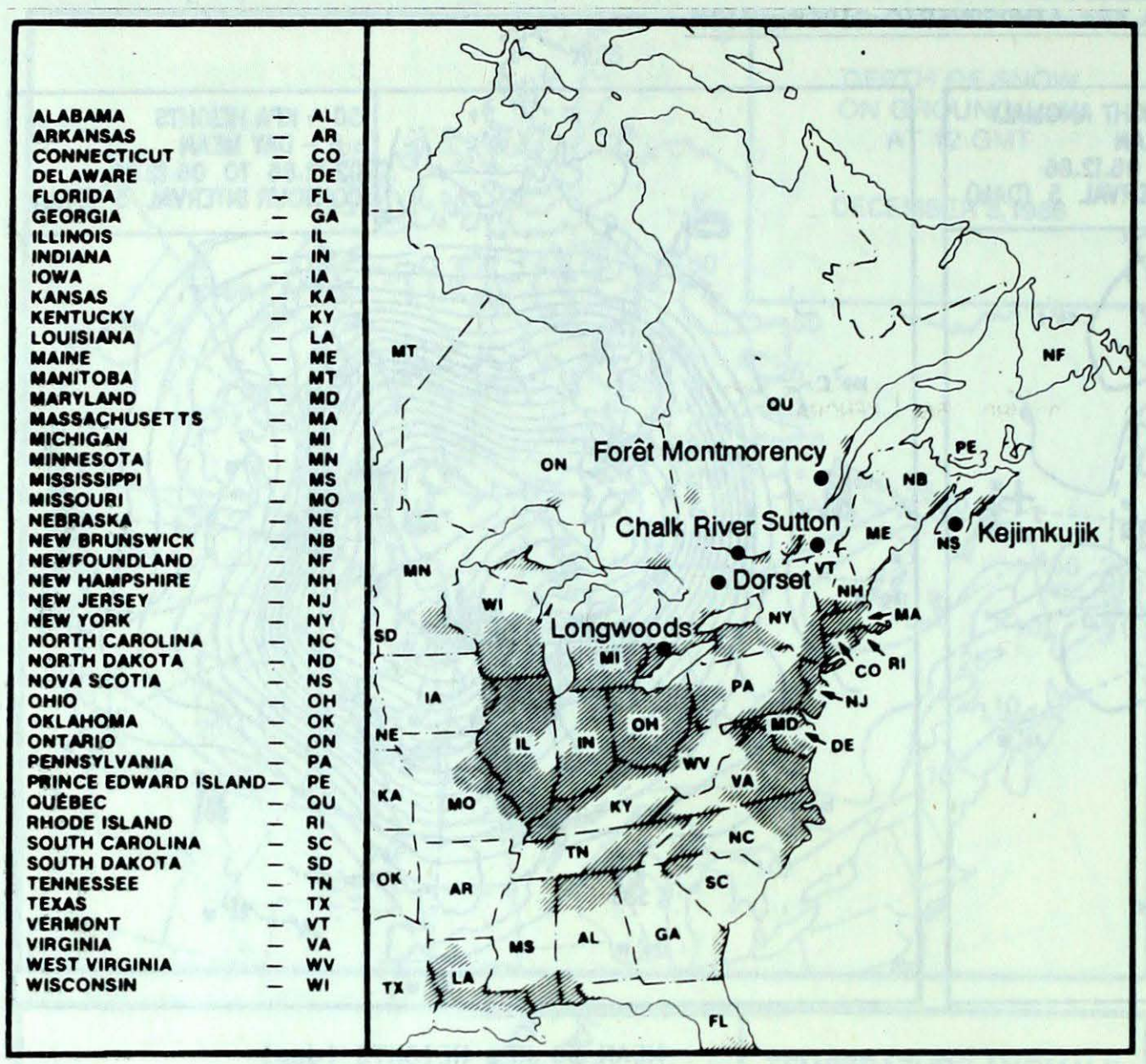
MEAN 50 KPa HEIGHT ANOMALY (dam)
December 2 to December 6, 1986



MEAN 50 KPa HEIGHTS (dam)
December 2 to December 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 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.

NOVEMBER 30 TO DECEMBER 6, 1986

SITE	DAY	pH	AMOUNT	AIR PATH TO SITE
Longwoods	1	4.8	9(s)	Atlantic Ocean, Maryland, Pennsylvania
	2	4.4	14(m)	Atlantic Ocean, Maryland, Pennsylvania
	3	4.3	2(s)	Minnesota, Wisconsin, Michigan, Southern Ontario
	6	4.3	8(s)	Iowa, Illinois, Indiana, Michigan, Southern Ontario
Dorset	2	4.8	21(m)	Atlantic Ocean, New Jersey, New York, Eastern Ontario
	3	4.7	8(s)	Wisconsin, Michigan, Central Ontario
	4	4.8	5(s)	Northwestern Ontario, Lake Superior, Lake Huron
	6	4.4	9(s)	Northern Illinois, Michigan, Southern Ontario
Chalk River	2	4.4	29(m)	Atlantic Ocean, New York, Eastern Ontario
	3	4.4	1(s)	New England, New York, Eastern Ontario
Sutton	2	5.7	20(r)	Atlantic Ocean, New England
	3	4.8	6(r)	Atlantic Ocean, New England
	6	4.6	3(s)	Michigan, Southern Ontario, New York
Montmorency		D A T A N O T A V A I L A B L E		
Kejimkujik	2	5.0	3(r)	Eastern Quebec, New Brunswick, Nova Scotia, Atlantic Ocean
	3	5.4	40(r)	Atlantic Ocean
	4	3.6	1(r)	Wisconsin, Michigan, Southern Ontario, New York, New England
	6	3.7	1(r)	Northwestern Quebec, Southern Quebec, Northern New England

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 DECEMBER 9,1986

STATION	TEMPERATURE				PRECIP.		WIND MX	
	AV	DP	MX	MN	TP	SOG	DIR	SPD
BRITISH COLUMBIA								
CAPE ST.JAMES	7	2	10	4	4	0	270	91
CRANBROOK	-8	-1	-1	-17	4	0		*
FORT NELSON	-15	5	-6	-23	4	36	350	44
FORT ST.JOHN	-9	4	2	-20	0	7	240	56
KAMLOOPS	-5	-3	2	-10	1	2		*
PENTICTON	-3	-3	3	-10	3	2	180	46
PORT HARDY	2	-2	7	-4	6	0		*
PRINCE GEORGE	-9	*	2	-17	0	10	180	56
PRINCE RUPERT	1	0	9	-5	21	0	140	74
REVELSTOKE	-5	-1	2	-10	1	3	360	31
SMITHERS	-10	-3	4	-18	3	14	290	56
VANCOUVER INT'L	2	-2	7	-3	2	0		*
VICTORIA INT'L	2	-2	7	-2	2	0		*
WILLIAMS LAKE	-11	*	-2	-19	2	16		X
YUKON TERRITORY								
DAWSON	-24	*	-10	-33	10	43		*
MAYO	-20	5	-9	-31	6	13		X
SHINGLE POINT A	-20	4	-7	-39	0	25	300	63
WATSON LAKE	-18	4	-5	-26	5	25		*
WHITEHORSE	-9	8	1	-22	2	16	180	59
NORTHWEST TERRITORIES								
ALERT	-32	-3	-22	-42	1	34	350	33
BAKER LAKE	-32	-5	-18	-39	1	41	320	67
CAMBRIDGE BAY	-31	-2	-14	-37	1	17	260	61
CAPE DYER	-24	-3	-13	-33	0	32	300	61
CLYDE	-28	-4	-17	-36	1	29	310	57
COPPERMINE	-27	*	-11	-41	3	30	240	46
CORAL HARBOUR	-27	-2	-19	-37	0	12		X
EUREKA	-29	4	-21	-38	1	16	280	57
FORT SMITH	-18	-1	-12	-26	11	34		X
FROBISHER BAY	-26	-7	-7	-34	1	15	320	98
HALL BEACH	-29	-2	-17	-36	0	19	300	78
INUVIK	-21	6	-10	-38	2	19		X
MOULD BAY	-31	-1	-20	-39	1	31		X
NORMAN WELLS	-18	8	-8	-31	2	6		X
RESOLUTE	-32	-4	-24	-39	0	13	010	74
YELLOWKNIFE	-21	1	-16	-31	5	14	100	57
ALBERTA								
CALGARY INT'L	-5	3	8	-16	0	0	020	65
COLD LAKE	-12	-1	1	-23	2	15	290	81
CORONATION	-10	0	2	-18	*	8		
EDMONTON NAMAO	-9	3	4	-20	0	5	300	93
FORT MCMURRAY	-12	4	2	-27	9	29		X
HIGH LEVEL	-16	7	-7	-25	13	42	310	65
JASPER	-13	-4	0	-25	0	29		X
LETHBRIDGE	-5	1	8	-15	4	3	270	81
MEDICINE HAT	-6	1	5	-13	0	0	310	59
PEACE RIVER	-11	4	4	-21	1	6	300	78
SASKATCHEWAN								
CREE LAKE	-17	6	-8	-28	14	27	160	48
ESTEVAN	-9	1	0	-17	0	0	320	91
LA RONGE	-16	2	-5	-25	19	36	140	44
REGINA	-11	0	-1	-21	5	3	320	80
SASKATOON	-10	3	0	-20	1	4	290	67
SWIFT CURRENT	-10	-2	-2	-20	1	2		X
YORKTON	-11	1	-2	-22	3	2	310	61
MANITOBA								
BRANDON	-11	1	1	-23	2	2	310	67
CHURCHILL	-24	-4	-4	-32	0	7	050	52
LYNN LAKE	-23	-1	-6	-36	8	14		*

STATION	TEMPERATURE				PRECIP.		WIND MX	
	AV	DP	MX	MN	TP	SOG	DIR	SPD
THE PAS	-16	*	-2	-29	15	22	330	50
THOMPSON	-22	-1	-5	-40	27	34	360	46
WINNIPEG INT'L	-12	0	-1	-21	2	15	310	63
ONTARIO								
ATIKOKAN	-13	-1	0	-25	11	15	190	41
BIG TROUT LAKE	-19	*	-4	-36	11	46	030	46
GORE BAY	-4	-2	4	-18	19	3	250	61
KAPUSKASING	-13	-2	-1	-36	17	30	260	70
KENORA	-12	0	-2	-23	8	26	310	50
KINGSTON	-2	1	5	-17	0	0		X
LONDON	-2	-1	3	-8	52	7	280	57
MOOSONEE	-14	-2	-1	-33	10	30	270	59
NORTH BAY	-9	-3	1	-26	36	24	010	54
OTTAWA INT'L	-5	0	3	-22	34	10		X
PETAWAWA	-8	0	2	-27	41	16		X
PICKLE LAKE	-15	-2	-1	-34	*	47		
RED LAKE	-14	1	-3	-26	12	42	310	52
SUDBURY	-9	-2	1	-28	22	16		X
THUNDER BAY	-8	-1	2	-17	6	7	290	63
TIMMINS	-12	-1	-1	-36	18	23	300	56
TORONTO INT'L	-2	0	4	-11	22	1	240	69
TRENTON	-2	0	5	-16	50	*		X
WIARTON	-3	-2	4	-12	34	4		X
WINDSOR	1	0	5	-5	28	0	250	61
QUEBEC								
BAGOTVILLE	-10	-1	3	-31	21	14	280	74
BLANC SABLON	-6	*	2	-27	29	48		X
INUKJUAK	-23	-10	-5	-32	1	23	050	48
KUUJJUAQ	-19	-4	-5	-30	4	21	270	70
KUUJJUARAPIK	-14	-5	-4	-29	6P	31	320	52
MANIWAKI	-8	-1	2	-27	26	13	310	50
MONT JOLI	-5	0	3	-23	14	*	280	78
MONTREAL INT'L	-4	0	4	-20	52	7	240	61
NATASHQUAN	-5	1	3	-26	32	14	270	89
QUEBEC	-7	-1	3	-24	38	19	250	76
SCHEFFERVILLE	-16	-1	-6	-34	36	73	300	83
SEPT-ILES	-8	0	1	-27	35	30	080	91
SHERBROOKE	-6	1	7	-24	22	*	290	52
VAL D'OR	-12	-3	1	-37	28	31	300	63
NEW BRUNSWICK								
CHARLO	-6	1	4	-23	41	31	300	65
CHATHAM	-5	0	9	-22	21	15	310	69
FREDERICTON	-2	2	12	-20	24	3	310	67
MONCTON	-2	1	11	-22	15	4	160	87
SAINT JOHN	-1	1	12	-20	56	3	140	69
NOVA SCOTIA								
GREENWOOD	0	0	14	-15	29	2	160	107
SHEARWATER	1	0	11	-17	41	0	160	78
SYDNEY	-1	-1	10	-14	30	4	290	81
YARMOUTH	2	0	12	-12	45	0	320	85
PRINCE EDWARD ISLAND								
CHARLOTTETOWN	-2	0	10	-19	20	2	140	65
SUMMERSIDE	-2	-1	9	-18	13	2	130	80
NEWFOUNDLAND								
CARTWRIGHT	-8	-2	1	-25	25	69	320	83
CHURCHILL FALLS	-14	3	-5	-35	26	99	290	78
GANDER INT'L	-3	-1	6	-22	18	37	270	102
GOOSE	-10	0	-1	-28	26	64	280	78
PORT-AUX-BASQUES	-1	-1	6	-17	49	6	280	111
ST JOHN'S	-2	-2	6	-19	6	5	260	91
ST LAWRENCE	1	1	6	-14	28	2		X
WABUSH LAKE	-15	0	-4	-35	31	69	110	35

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