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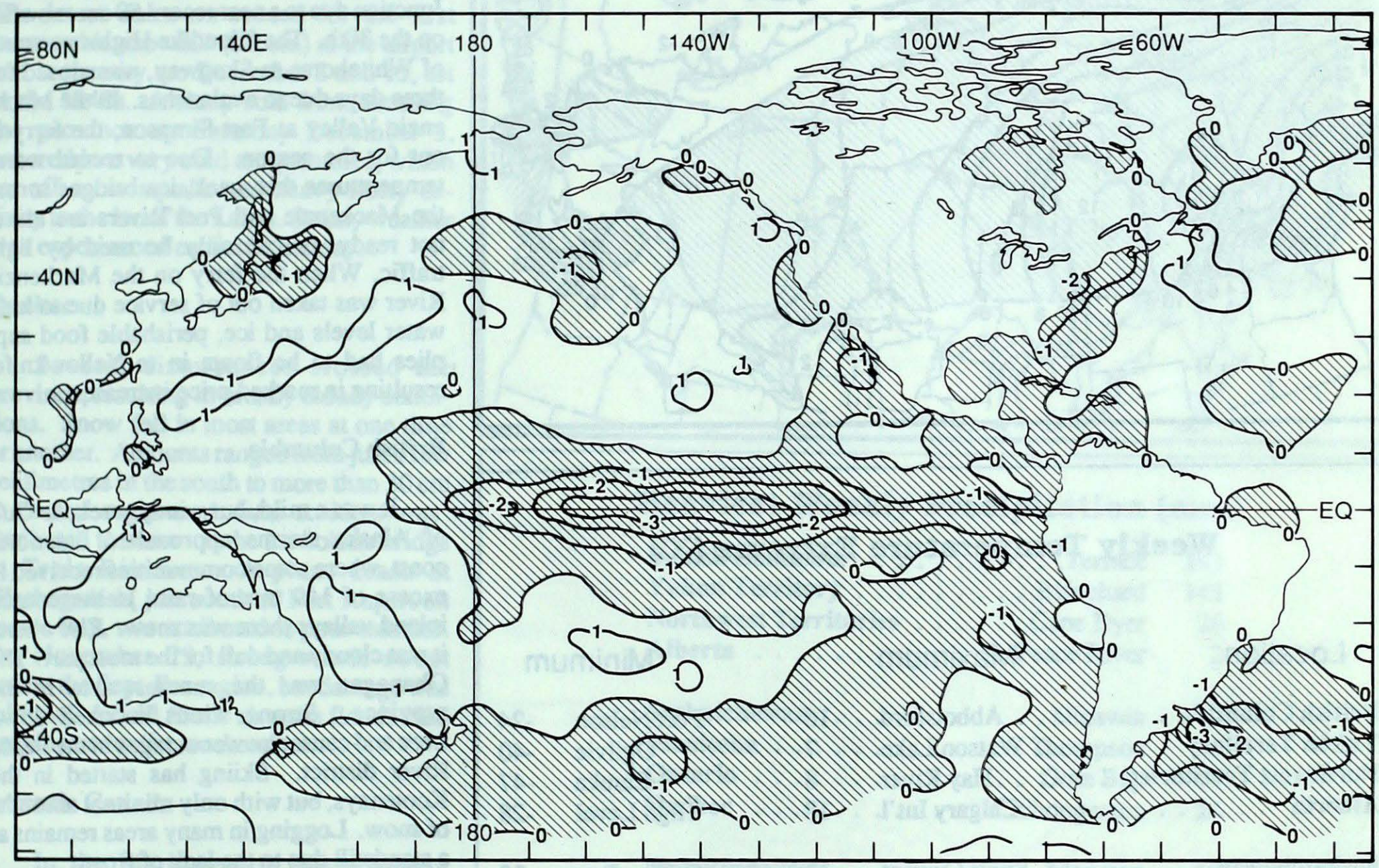
Climatic Perspectives

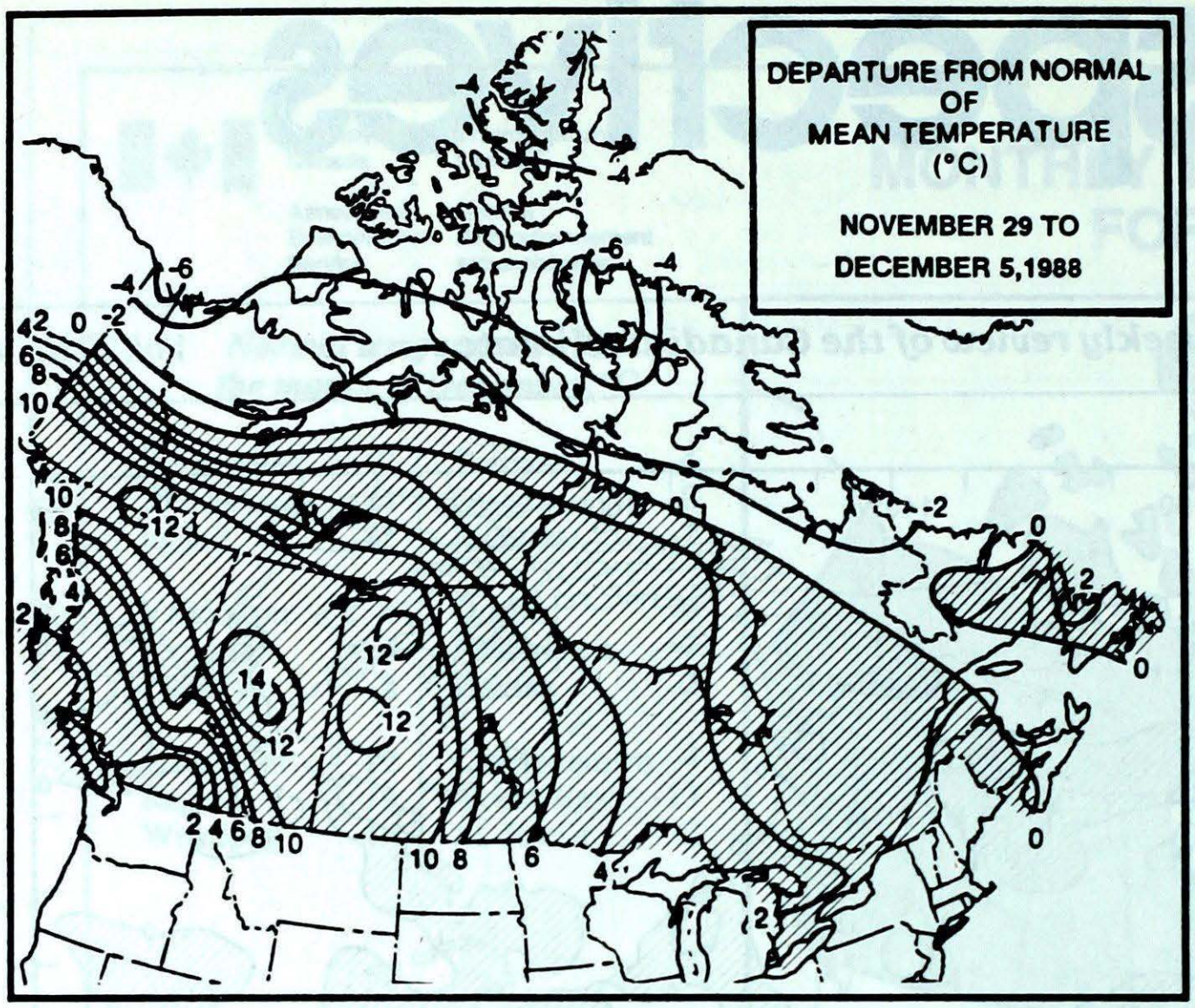
November 29 to December 5, 1988 **A weekly review of the Canadian climate** *Vol. 10 No. 49*



Sea surface temperatures in the vast expanse of the equatorial Pacific, from the west coast of South America to the dateline, have been below normal for seven consecutive months. These recent prolonged periods of colder than normal water temperatures have been identified as a typical La Nina condition, which is the opposite to El-Nino. The above sea surface temperature analysis is an average from October 17 to November 1, 1988. For more information see page 8.

- **Heavy snowfalls in the Yukon**
- **Raging forest fires in the Alberta foothills**

Canada



Weekly Temperature Extreme (°C)

Location	Maximum		Minimum	
British Columbia	Abbotsford	16	Fort Nelson	-24
Yukon Territory	Watson Lake	7	Ogilvie	-40
Northwest Territories	Hay River	8	Eureka	-47
Alberta	Calgary Int'l	18	High Level	-28
Saskatchewan	Swift Current	11	Collins Bay	-30
Manitoba	Portage La Prairie	10	Lynn Lake	-33
Ontario	Windsor	11	Geraldton	-29
Québec	Blanc Sablon	9	Kuujjuaq	-28
New Brunswick	Saint John	8	Charlo	-17
Nova Scotia	Inverness	16	Truro	-13
Prince Edward Island	Charlottetown	12	Summerside	-12
Newfoundland	St John's	16	Churchill Falls	-28

Across The Country...

Warmest Mean Temperature	Estevan Point (BC)	8
Coolest Mean Temperature	Eureka (NWT)	-37

88/11/29-88/12/5

ACROSS THE COUNTRY . . .

Yukon and Northwest Territories

Vigorous Pacific storms moved into the Gulf of Alaska and then inland, affecting the northwestern part of the country with heavy snowfalls and high winds. Blizzards prevailed along the Arctic coast and on Baffin Island. The Alaska Highway and the Haines Road were closed through Haines Junction due to a near record 50 cm snowfall on the 30th. The Klondike Highway, south of Whitehorse to Skagway, was closed for three days due to avalanches. In the Mackenzie Valley at Fort Simpson, the ferry is out for the season. Due to record warm temperatures this week, ice bridges across the Mackenzie and Peel Rivers are either not ready, or can only be used by light traffic. When the ferry on the Mackenzie River was taken out of service due to high water levels and ice, perishable food supplies had to be flown in to Yellowknife, resulting in marked price increases..

British Columbia

It was a mild, but windy week, as Gulf of Alaska storms approached the north coast, where some communities received in excess of 140 mm of rain. In the coastal inland valleys there was snow. Elsewhere, it was cloudy and dull for the most part. The Okanagan was the sunniest area in the province. Strong winds knocked down trees and caused power outages in the Peace River district. Skiing has started in the Kootenays, but with only minimal amounts of snow. Logging in many areas remains at a standstill due to the lack of frost.

Prairie Provinces

A broad atmospheric ridge dominated the southern portions of the Prairies, while disturbances affected primarily the north. A strong westerly circulation produced chinook conditions in Alberta. Sunshine predominated, but it was also very windy, with gusts reaching 120 km/h. Numerous daily temperature records were broken throughout the province, with the mercury frequently soaring to the mid to upper teens. In Manitoba, the week started off cold, especially in the north and east. By the beginning of December, temperatures had risen to daily record levels, nudging the teens in southern Saskatchewan. In general precipitation amounts were light, with

patches of freezing rain or drizzle along a warm front.

Ontario

It was a relatively settled period, but with widely fluctuating temperatures. Snowfalls were generally less than 10 cm, with the southern parts of the province receiving none at all. In the Toronto area to-date, no measurable snow has fallen. The latest dates on record for the first measurable snowfall (0.2 cm) at the airport and in the city are December 8 and 15, set in the 1940s. A sharp cold front, crossing the province on Saturday December 3, ushered in a very cold temperatures, which set off snow squalls and heavy flurry activity to the lee of the Lakes. Balmy weather was experienced earlier in the day.

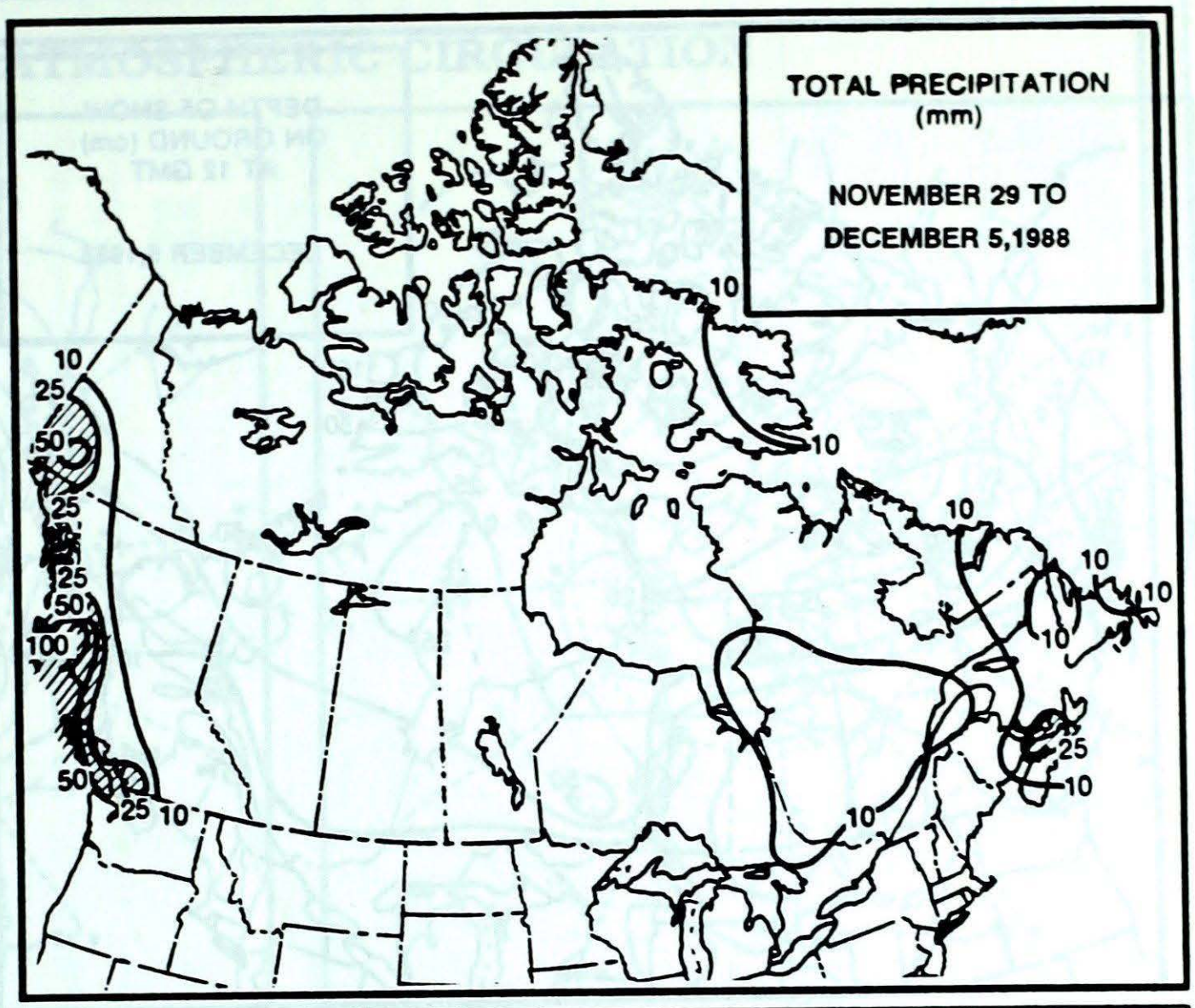
Quebec

Several disturbances crossed the province, resulting in mostly cloudy conditions. Snow fell in most areas at one time or another. Amounts ranged from just a few centimetres in the south to more than 30 cm in central regions. A fatal accident was attributed to snow on the Laviolette bridge at Trois Rivieres. A plane crash at Washaganish, just south of Fort Rupert on James Bay, was attributed to poor weather. On November 29, strong winds swept across the Sept-Iles region, but damage was minimal. A cold Arctic air mass flooded the province over the weekend.

Atlantic Canada

In the Maritimes, it was a mostly cloudy week, with minimal amounts of precipitation occasionally in the form of snow. Temperatures managed to rise above the ten degree mark early in the period. Persistently strong winds in the wake of last weeks storm, kept most of the lobster fishing fleet in port Tuesday, allowing the Coast Guard to take a breather from the hectic opening day of the Lobster season.

Newfoundland experienced very strong winds on the 29th, as an intense rapidly moving low pressure system crossed the Island. Winds along the coast gusted to well in excess of 100 km/h. At LaScie speeds topped 130 km/h. Another disturbance moved through on December 1. Precipitation fell as a mixture of rain and snow, with the western half of the Island receiving from 15 to 35 centimetres.

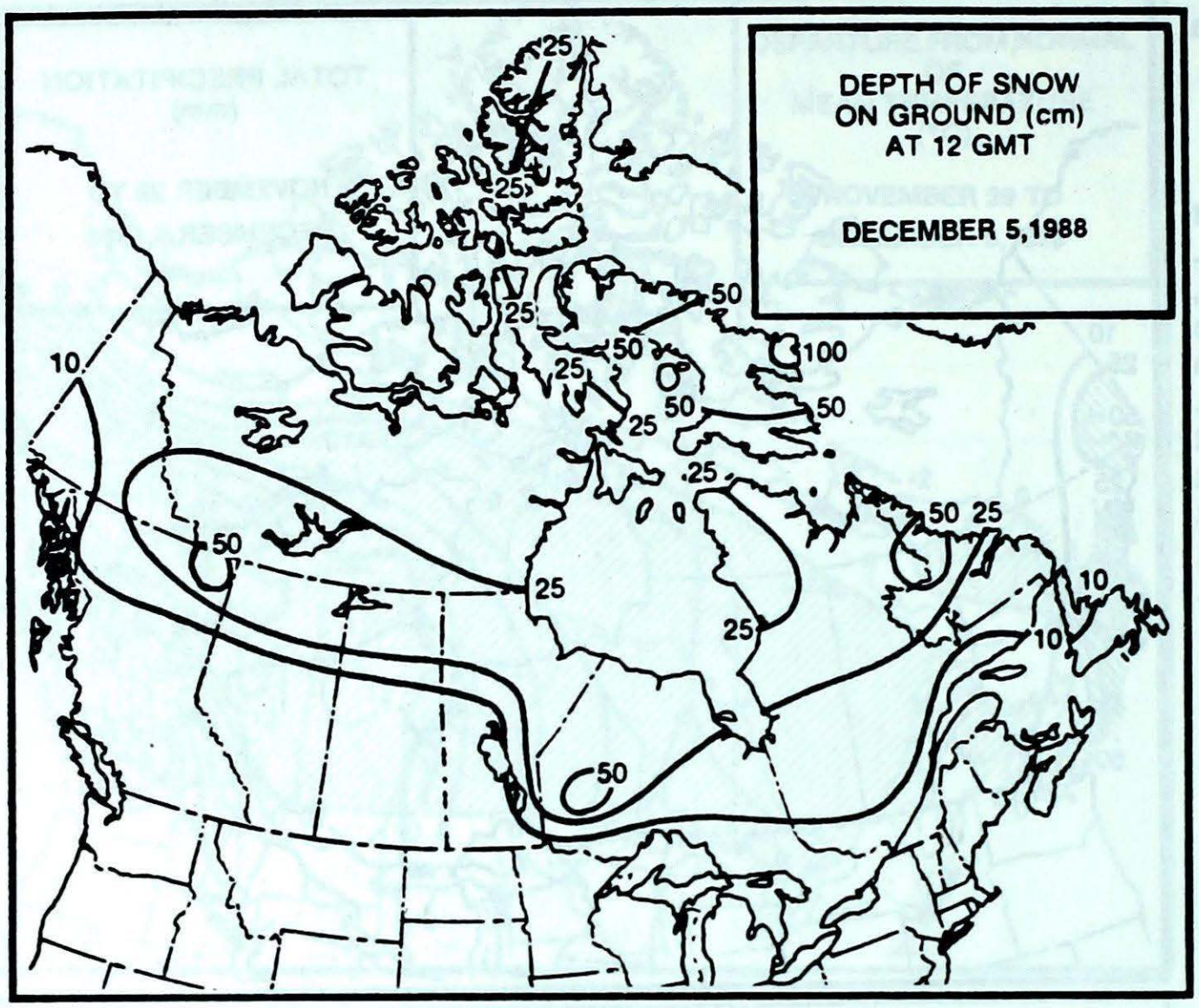


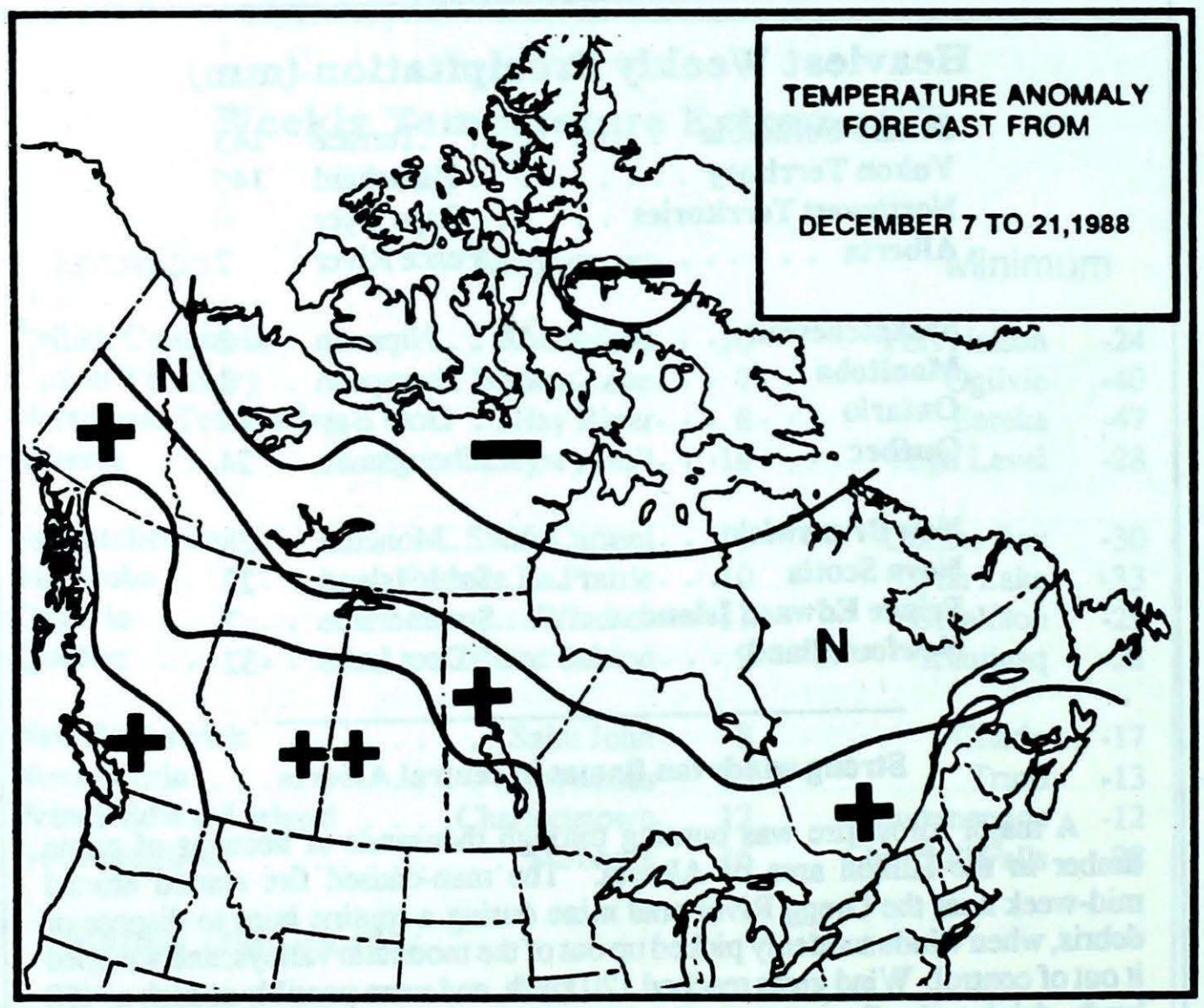
Heaviest Weekly Precipitation (mm)

British Columbia	Terrace	143
Yukon Territory	Blanchard	145
Northwest Territories	Cape Dyer	26
Alberta	Peace River	2
Saskatchewan	Nipawin	2
Manitoba	Thompson	3
Ontario	Gore Bay	14
Québec	Chibougamau	24
New Brunswick	Moncton	28
Nova Scotia	Sable Island	22
Prince Edward Island	Summerside	7
Newfoundland	Deer Lake	32

Strong winds fan flames in central Alberta

A major forest fire was burning through thousands of hectares of prime timber in the Hinton area of Alberta. The man-caused fire started around mid-week near the Gregg River coal mine during a routine burn to dispose of debris, when winds suddenly picked up out of the mountain valleys, and whipped it out of control. Wind gusts reached 120 km/h, and were possibly as high as 150 km/h, driving the flames eastward across the tops of the trees. Three water bombers flown in to fight the fire had to be grounded because of the high winds. Two hundred men and more than a dozen bulldozers have been sent in to fight the fire, which at the moment was not a big threat to private property. About 50 spot fires have been touched off in the area of the out of control burn. More than a dozen other forest fires were burning in the province at this time due to the dry conditions.





+ +	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.

CLIMATIC PERSPECTIVES VOLUME 10

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Climatic Perspectives is a weekly bilingual publication of the Canadian Climate Centre, Atmospheric Environment Service, 4905 Dufferin St., Downsview, Ontario, Canada M3H 5T4

☎ (416) 739-4438/4436

ISBN 0225-5707 UDC 551.506.1(71)

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.

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weekly and monthly supplement:	$35.00
foreign:	$42.00
monthly issue:	$10.00
foreign:	$12.00

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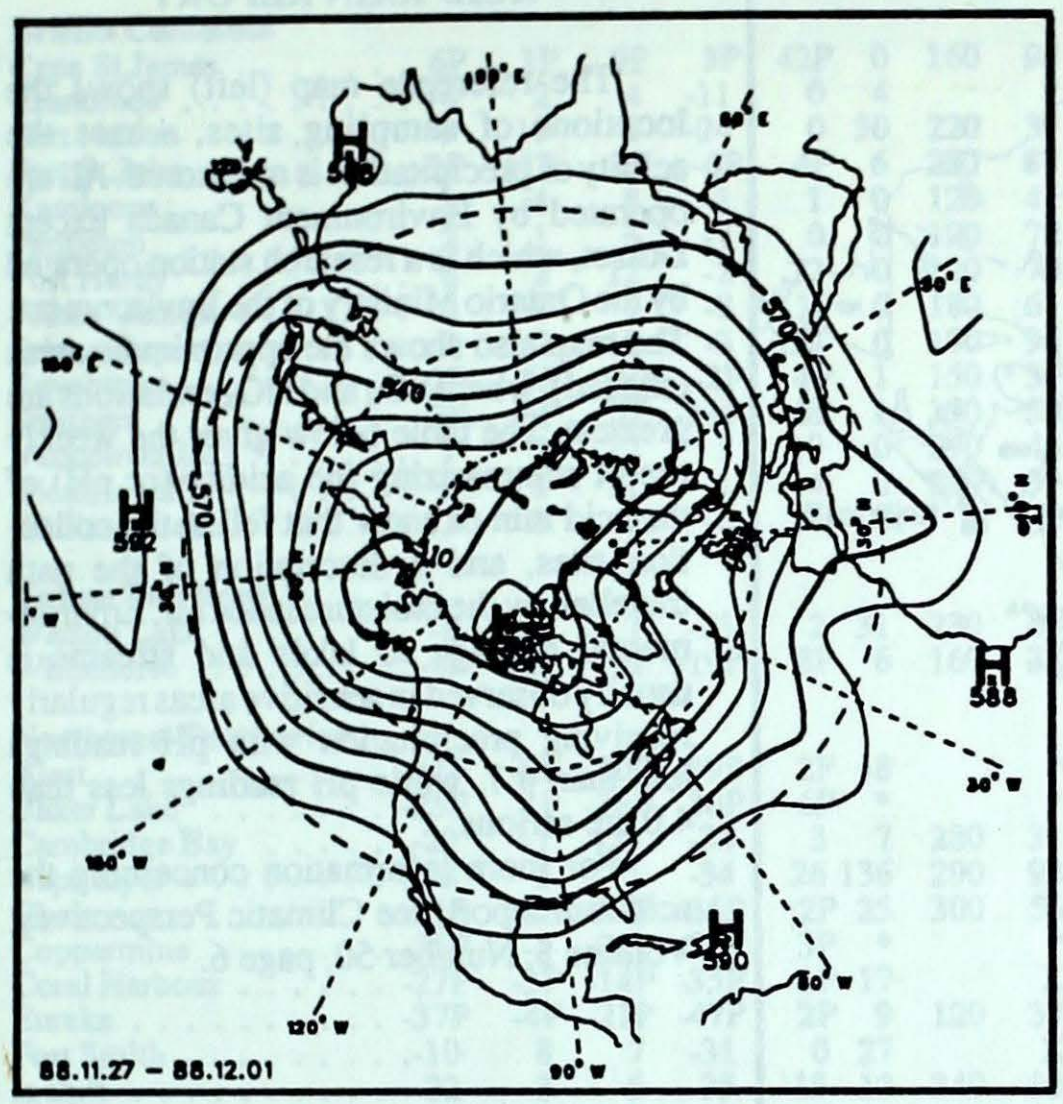
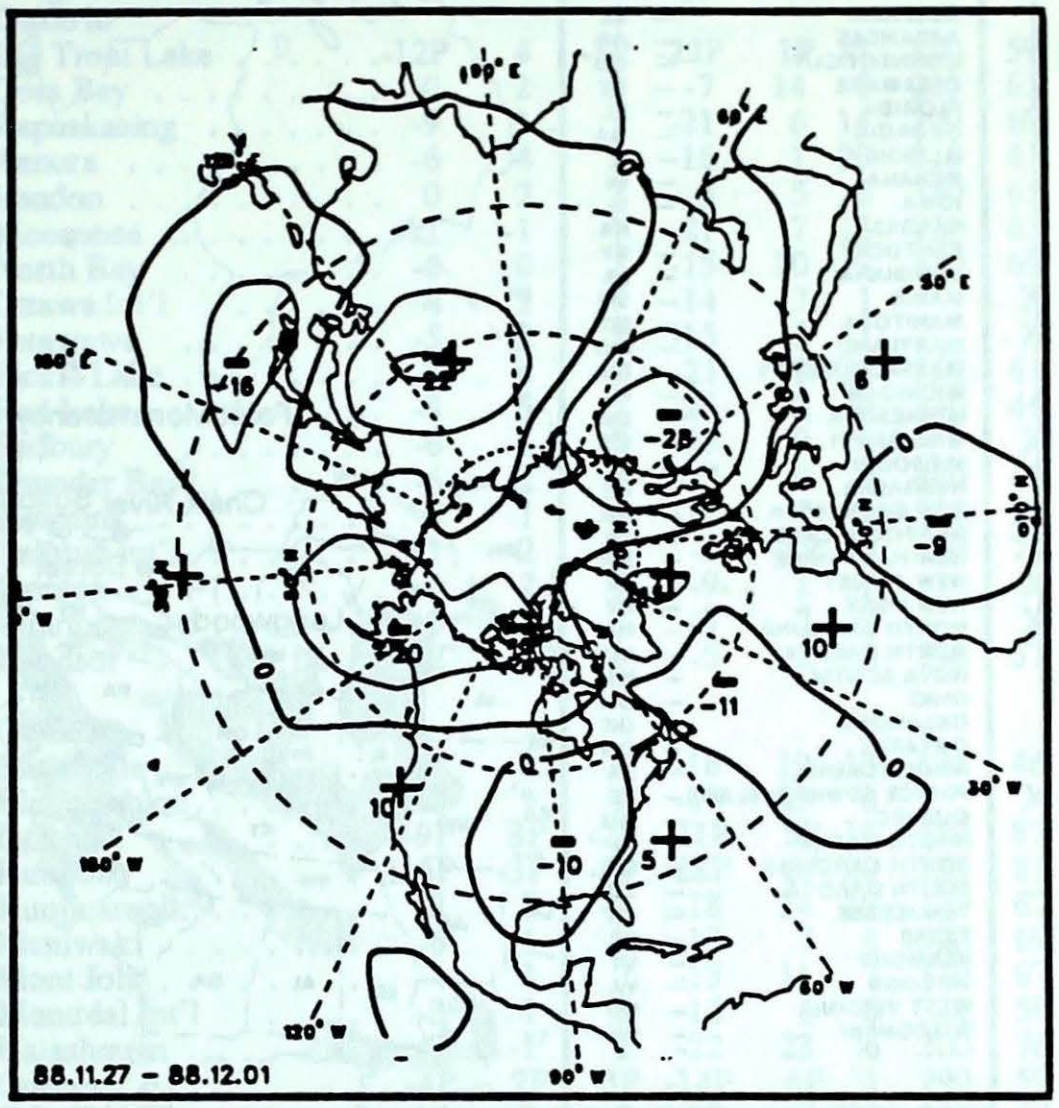
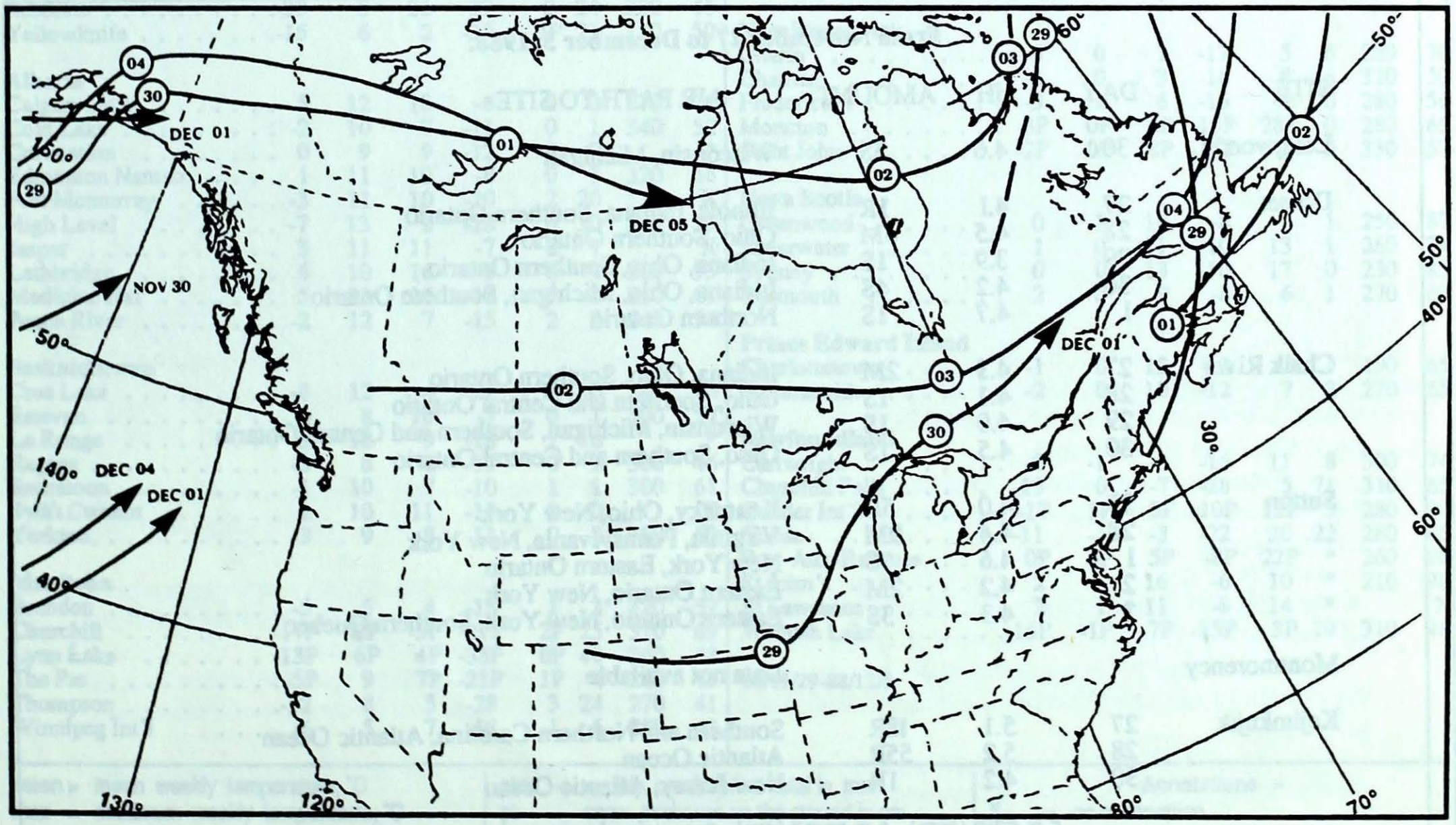
50 kPa ATMOSPHERIC CIRCULATION



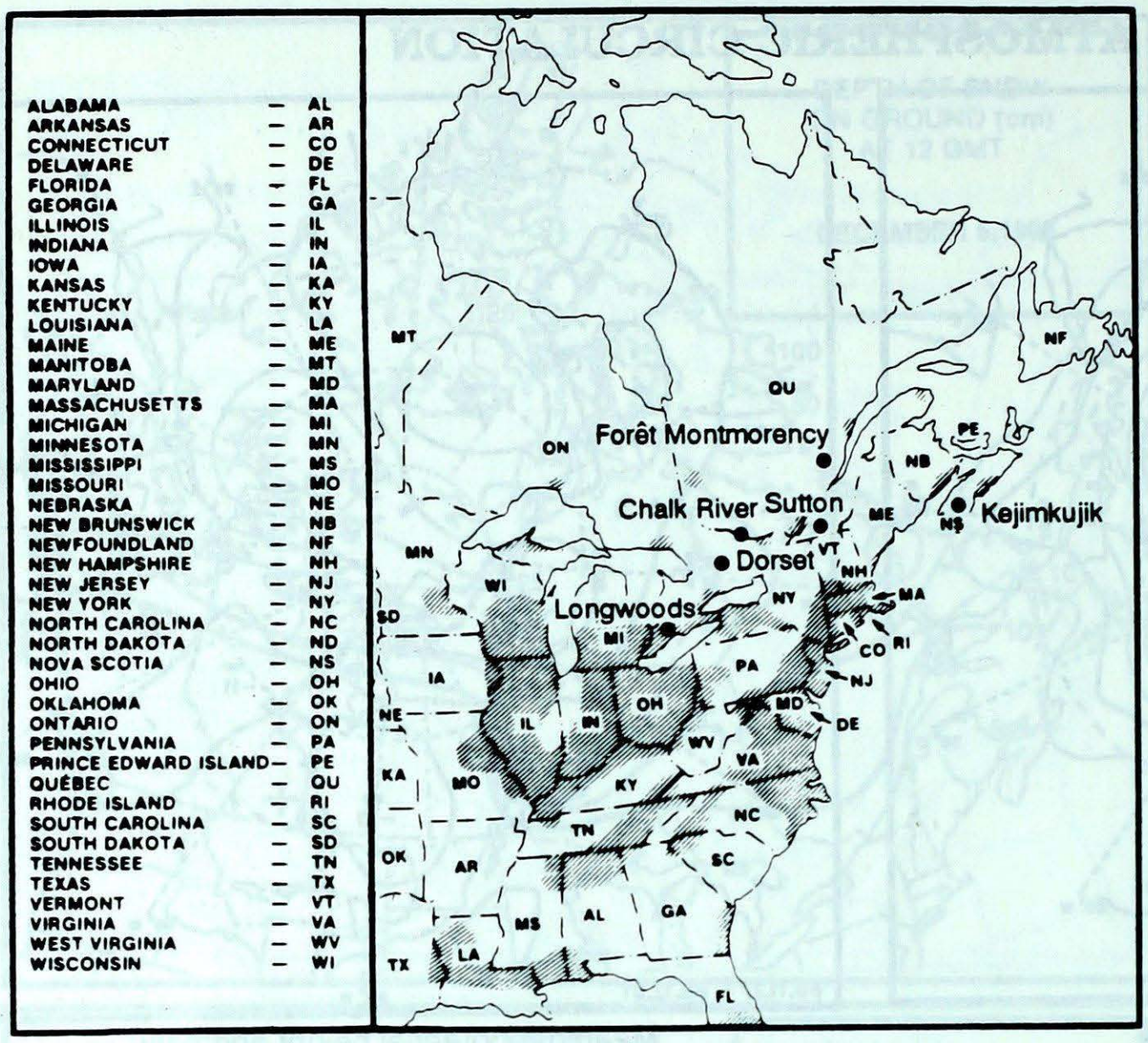
Mean geopotentiial height
50 kPa level (10 decameter intervals)



Mean geopotential height anomaly
50 kPa level (10 decameter intervals)



Storm track - Position of storm at 12 GMT each day during the period.



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 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.

From November 27 to December 3, 1988.

SITE	DAY	pH	AMOUNT	AIR PATH TO SITE
Longwoods	30	4.6	5S	Wisconsin, Michigan
Dorset	27	4.1	1R	Illinois, Indiana, Southern Ontario
	28	4.5	4M	Ohio, Southern Ontario
	29	3.9	1S	Indiana, Ohio, Southern Ontario
	30	4.2	4S	Indiana, Ohio, Michigan, Southern Ontario
	1	4.7	1S	Northern Ontario
Chalk River	27	4.3	2M	Indiana, Ohio, Southern Ontario
	28	4.1	1S	Ohio, Southern and Central Ontario
	29	4.0	1S	Wisconsin, Michigan, Southern and Central Ontario
	30	4.5	1S	Ohio, Southern and Central Ontario
Sutton	27	4.0	5R	Kentucky, Ohio, New York
	28	4.4	9M	Virginia, Pennsylvania, New York
	1	4.6	1S	New York, Eastern Ontario
	2	4.2	2M	Eastern Ontario, New York
	3	4.3	3S	Eastern Ontario, New York, Southern Quebec
Montmorency				Data not available
Kejimkujik	27	5.1	18R	Southern and Northern Carolina, Atlantic Ocean
	28	5.2	55R	Atlantic Ocean
	30	4.2	1R	New Jersey, Atlantic Ocean

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

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vit
British Columbia								
Cape St.James	6P	1P	9P	3P	42P	0	160	98
Cranbrook	-4	2	4	-11	0	4		*
Fort Nelson	-9	10	8	-24	0	50	220	39
Fort St.John	-1P	11P	7P	-6P	4P	6	230	87
Kamloops	3	4	8	-3	1	0	120	41
Penticton	2	1	6	-7	0	0	190	72
Port Hardy	6	2	12	-2	72	0	120	70
Prince George	2	8	9	-8	1P	0	180	61
Prince Rupert	4	2	10	-3	139	0	170	96
Revelstoke	2P	5P	5P	-2P	4P	1	150	39
Smithers	0P	5P	7P	-11P	5P	1	170	50
Vancouver Int'l	7	2	12	1	19	0	290	43
Victoria Int'l	5	1	11	-1	4	0	280	39
Williams Lake	2	8	7	-6	3	0		X
Yukon Territory								
Watson Lake	-8	13	7	-23	2	31	230	48
Whitehorse	-4P	12P	3P	-19P	8P	6	160	74
Northwest Territories								
Alert	-31P	-3P	-20P	-39P	2P	48		*
Baker Lake	-25P	1P	-16P	-30P	6P	*		*
Cambridge Bay	-29	-1	-23	-34	3	7	280	31
Cape Dyer	-18	1	-5	-34	26	136	290	93
Clyde	-21P	1P	-16P	-35P	2P	25	300	56
Coppermine	-26P	-2	-21P	-33P	3P	*		*
Coral Harbour	-27P	-3P	-14P	-35P	1P	17		X
Eureka	-37P	-4P	-21P	-47P	2P	9	120	37
Fort Smith	-10	8	7	-31	0	27		X
Iqaluit	-22	-3	-5	-35	15	12	340	93
Hall Beach	-33P	-6P	-23P	-40P	2P	53	300	56
Inuvik	-31P	-6P	-24P	-38P	3P	*		X
Mould Bay	-35	-5	-28	-41	2	17		X
Norman Wells	-28	-3	-20	-35	6	0		X
Resolute	-33	-5	-26	-39	2	24	320	41
Yellowknife	-15	6	2	-35	3P	21	130	50
Alberta								
Calgary Int'l	5	12	18	-6	0	0	270	76
Cold Lake	-2	10	7	-11	0	1	340	52
Coronation	0	9	9	-12	0	0		*
Edmonton Namao	1	11	10	-8	0	1	320	56
Fort Mcmurray	-3	11	10	-20	2	20		X
High Level	-7	13	8	-28	0	30	240	39
Jasper	3	11	11	-7	0	1		X
Lethbridge	6	10	16	-9	0	0	260	93
Medicine Hat	5	11	16	-10	0	0	210	61
Peace River	-2	12	7	-15	2	3	240	54
Saskatchewan								
Cree Lake	-8	12	4	-27	1	30	240	43
Estevan	0	8	10	-7	0	1	300	57
La Ronge	-3	12	9	-18	1	16		*
Regina	-3	8	6	-11	0	2	300	46
Saskatoon	-1	10	7	-10	1	1	300	61
Swift Current	2	10	11	-11	0	0		X
Yorkton	-3	9	8	-11	0	2	300	52
Manitoba								
Brandon	-5	6	4	-13	1	3	320	57
Churchill	-17P	2P	-5P	-27P	2P	25	310	69
Lynn Lake	-13P	6P	4P	-33P	0P	40	260	48
The Pas	-5P	9	7P	-21P	1P	4	260	43
Thompson	-12	8	5	-28	3	24	270	41
Winnipeg Int'l	-6	5	7	-18	1	6	280	43

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vit
Ontario								
Big Trout Lake	-12P	4	-1P	-22P	1P	35	340	59
Gore Bay	0	2	5	-7	14	0	260	65
Kapuskasing	-9	1	1	-21	6	14	300	69
Kenora	-6	4	3	-16	1	20	310	41
London	0	2	7	-5	5	0	330	65
Moosonee	-11	-1	1	-21	7	13	320	63
North Bay	-6	0	2	-15	10	9	330	69
Ottawa Int'l	-4	1	7	-14	3	1		X
Petawawa	-5	2	5	-15	3	1		X
Pickle Lake	-9	4	2	-23	1	32	350	61
Red Lake	-8	5	5	-23	2	40	340	46
Sudbury	-6	1	2	-15	9	6		X
Thunder Bay	-6	2	6	-17	0	2	340	48
Timmins	-9	1	2	-18	7	8	320	59
Toronto Int'l	1	2	8	-6	1P	0	250	72
Trenton	0	2	9	-9	1	1		X
Wiarton	0	2	7	-7	7	0		X
Windsor	2	2	11	-5	2	0	230	57
Québec								
Bagotville	-7	1	1	-18	19	13	320	46
Blanc Sablon	-5	*	9	-17	23	8		X
Inukjuak	-9P	3P	-2P	-21P	5P	16	180	87
Kuujjuaq	-16P	-3P	-8P	-28P	6P	29	290	81
Kuujjuarapik	-8	2	-1	-18	14	19	170	67
Maniwaki	-6	1	3	-17	7	4	320	69
Mont Joli	-4	1	2	-13	11	7	310	67
Montréal Int'l	-3	1	6	-12	1	0	320	59
Natashquan	-7	-1	2	-22	23	6	300	76
Québec	-4P	2P	3P	-14P	6P	1	290	59
Schefferville	-16	-1	-7	-27	3	31	320	67
Sept-Iles	-7	1	-1	-22	2	3	310	72
Sherbrooke	-4	1	5	-18	7	2	290	57
Val D'or	-10	0	0	-20	14	13	330	80
New Brunswick								
Charlo	-5	0	1	-17	5	6	280	70
Chatham	-4	0	3	-16	8	6	310	59
Fredericton	-3	1	6	-16	4P	0	280	56
Moncton	-3P	0P	6P	-15P	28P	0	280	65
Saint John	-2P	0P	8P	-15P	11P	0	330	57
Nova Scotia								
Greenwood	0	1	10	-8	4	1	250	87
Shearwater	1	0	11	-10	13	1	260	74
Sydney	0	0	13	-10	17	0	230	85
Yarmouth	2	0	9	-8	6	1	270	69
Prince Edward Island								
Charlottetown	-1	0	12	-12	4P	1	190	65
Summerside	-2	0	10	-12	7	2	270	65
Newfoundland								
Cartwright	-8	-1	-1	-16	11	8	300	74
Churchill Falls	-15	0	-7	-28	5	71	310	65
Gander Int'l	-1P	1P	5P	-10P	12P	3	280	93
Goose	-11	-1	-3	-22	20	22	280	65
Port-Aux-Basques	0P	0P	5P	-8P	22P	*	260	98
St John's	2	2	16	-6	10	*	210	98
St Lawrence	2	1	11	-8	14	*		X
Wabush Lake	-15P	-1P	-7P	-25P	3P	19	310	48

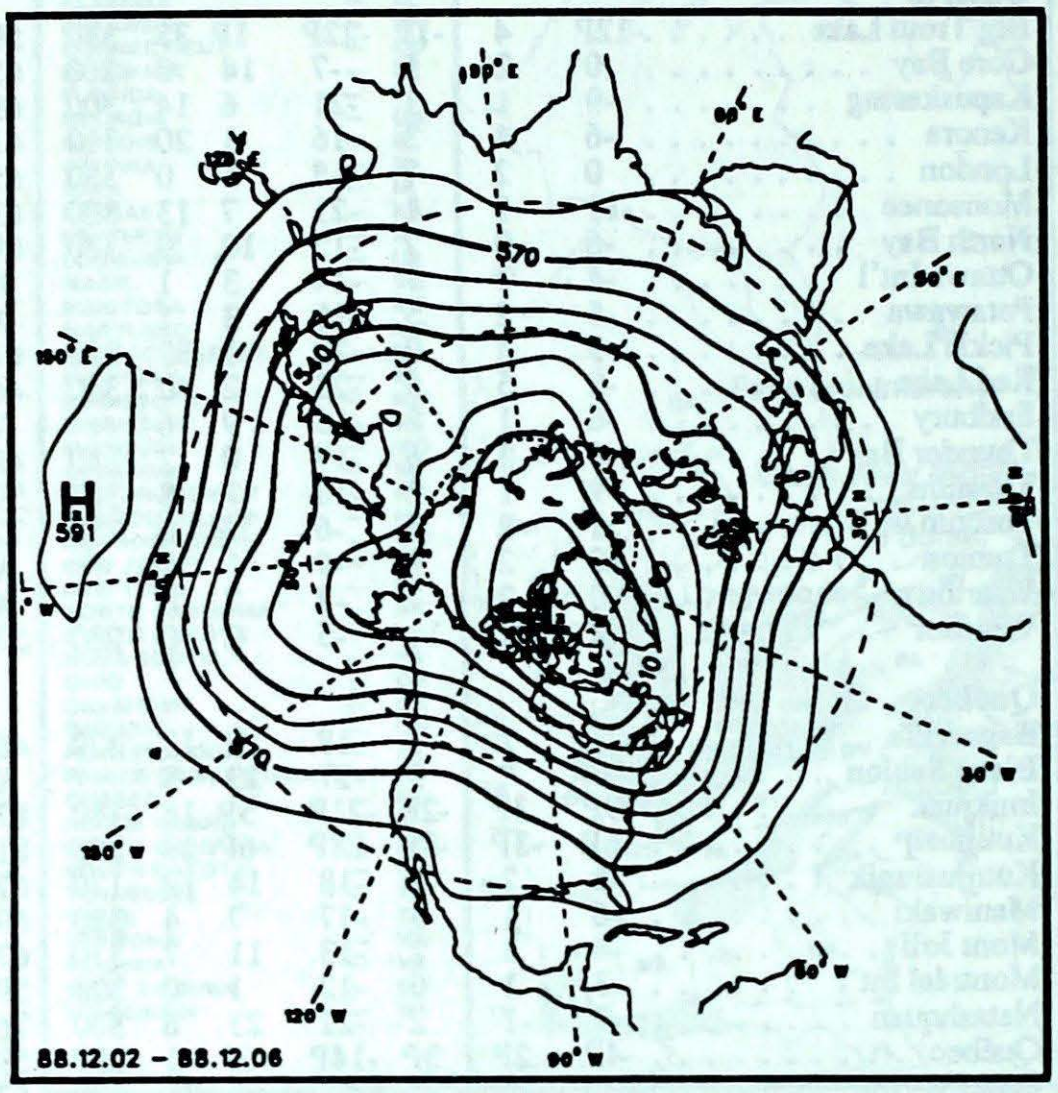
88/11/29-88/12/5

mean = mean weekly temperature, °C
max = maximum weekly temperature, °C
min = minimum weekly temperature, °C
anom = mean temperature anomaly, °C

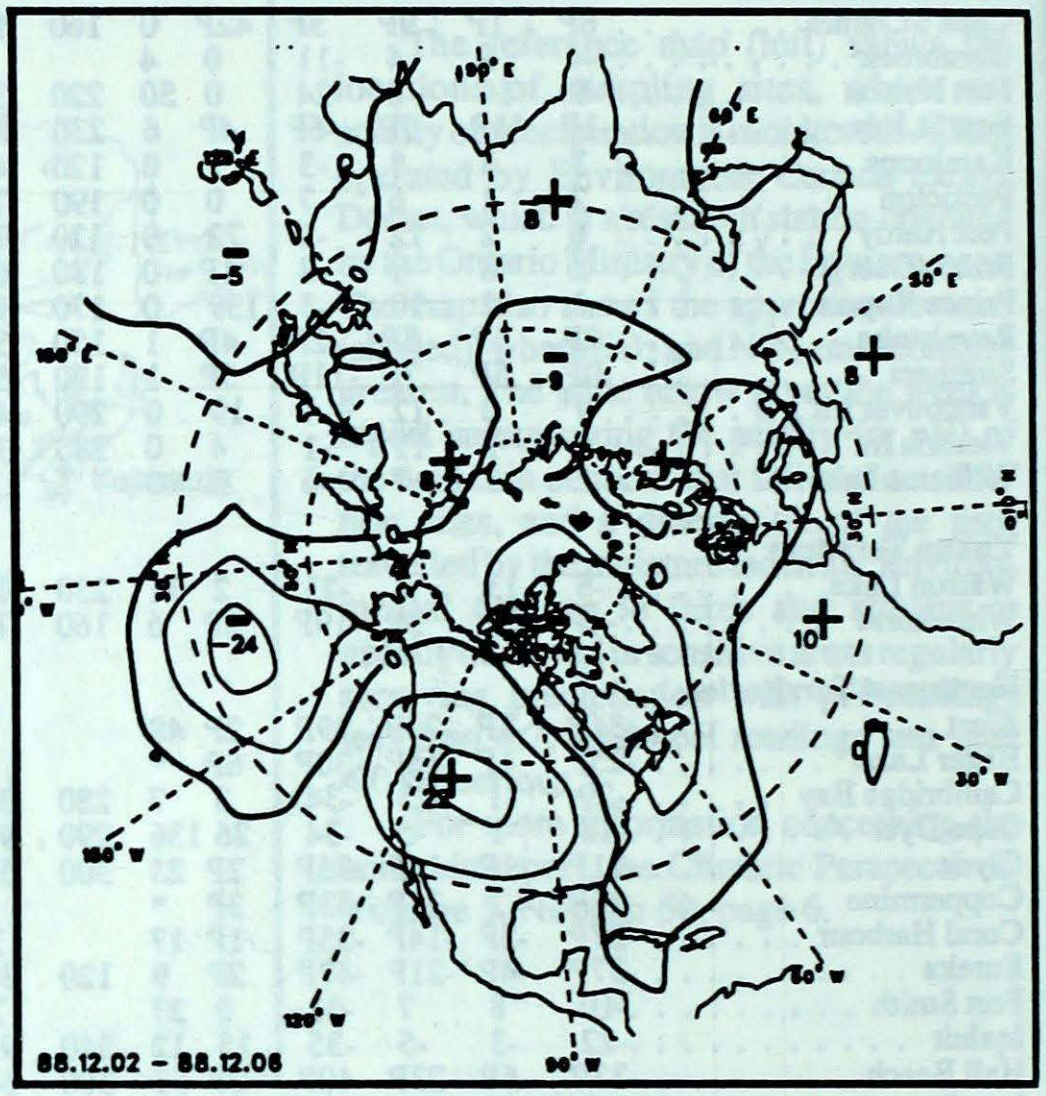
ptot = weekly precipitation total in mm
st = snow thickness on the ground in cm
dir = direction of max wind, deg. from north.
vit = wind speed in km/h

- Annotations -
X = no observation
P = less than 7 days of data.
* = missing data when going to printing.

50 kPa ATMOSPHERIC CIRCULATION



Mean geopotentiial height
50 kPa level (10 decameter intervals)



Mean geopotential height anomaly
50 kPa level (10 decameter intervals)

La Niña May Lead to Colder Winter for Northwestern Canada

As winter approaches, everyone speculates on the potential severity of the weather for the upcoming months. At the Atmospheric Environment Service, meteorologists are busy looking at current and historical weather patterns and applying data to weather prediction models, to produce weather forecasts for Canadians.

Due to the increased demand for long-range forecasts, the Canadian Climate Centre began making experimental season forecasts in 1985. Unfortunately, the Centre is not in position to make an official seasonal forecast this year, but the appearance of a recurring weather pattern has prompted Environment Canada to issue a statement.

This year, evidence indicates a pattern, that can be described as the alter ego of El Niño. El Niño is characterized by persisting, warmer than normal surface water temperatures in the central and eastern Pacific Ocean along the equator. The associated circulation patterns have likely contributed to some mild winters in western Canada in the past, including the 1986/87 and 1987/88 seasons.

La Niña, on the other hand is identified by long periods of colder than normal water temperatures in the tropical Pacific Ocean. It tends to be associated with winter circulation patterns that lead to cool northwesterly circulation over western Canada.

Because of the La Niña influence, odds this winter are slightly in favour of colder than normal winter temperatures in northwestern Canada, including the Yukon, western portions of the Northwest Territories, northern British Columbia and the northern Prairies. The effect of La Niña is anticipated to be minimal in the rest of Canada.

The La Niña pattern is not expected to be evident in December, as the Canadian Climate Centre December forecast calls for above-normal temperatures over regions west of the Ontario-Manitoba border, and below-normal temperatures to the east.

The Canadian Climate Centre plans to continue exploring prospects for producing routine seasonal forecasts. For the time being, routine 30-day forecasts which began in May of this year, will continue.