

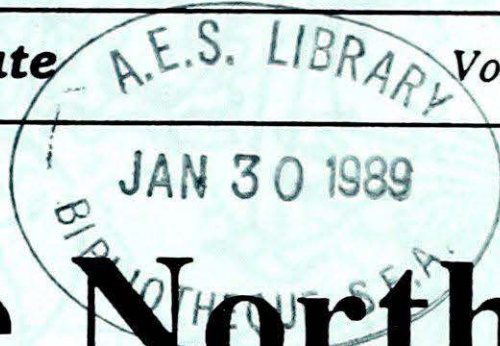
Climatic Perspectives

MONTHLY SUPPLEMENT INCLUDED

January 16 to 22, 1989

A weekly review of Canadian climate

Vol. 11 No. 4



Deep freeze in the North

With the exception of Atlantic Canada, the southern parts of the country enjoyed a reprieve from usual winter conditions. Mild Pacific air streamed across southern Canada, forcing the arctic air to remain in its northern source regions and intensify, as it certainly did in the Yukon.

The Siberian high pressure area, which in the previous week gave -56°C temperatures to some Russian communities, crossed into Alaska then progressed southward over the Yukon this week. The coldest temperatures in several years were experienced. The territorial capital saw the thermometer sink to -42.9°C on Sunday morning which was the coldest temperature in Whitehorse since a -44°C reading on December 29, 1984. The coldest temperature ever recorded at Whitehorse Airport was -52°C on January 31 1947. The territorial cold spots over the weekend were Ogilvie, Beaver Creek and Mayo at -54°C. Further north, Old Crow has stayed below -40°C since January 13.

J. Steele, Yukon Weather Centre.

strike Newfoundland. This pattern came to an abrupt end on January 21st when a severe storm crossed southern New Brunswick and Prince Edward Island, causing wind gusts in excess of 100 km/h at several locations. The strong winds caused blizzard conditions in many areas and up to 25-30 cm of snow, reminding Maritimers that winter was still here. This same storm tracked across central Newfoundland producing winds as high as 139 km/h (Burgeon) on the 21st, which disrupted Gulf ferry service and caused the closure of western sections of the Trans Canada Highway.

F. Amrault, AES Halifax and G. McMillan, AES Gander

the Prairies and into eastern Canada. Brian Smith at AES Toronto reports that January snowfall is only about 50% of normal south of Lake Simcoe. On the the Prairies, the mild weather has depleted the the snow cover and according to John Bendell at AES Winnipeg, an area in central Saskatchewan with inadequate snow cover (less than 10 cm) has grown noticeably over the past week. In the western mountains, avalanches were a major concern (see article by W. Prusak on page 2).

A look ahead ...

Cold weather is expected to continue across the Yukon and the northern half of the Northwest Territories this coming week, with a moderating trend by the end of the month. At the same time, indications are that the rest of Canada will be experiencing even milder weather as a warm pool, presently over the American mid-west, intensifies and moves north-eastward into the Great Lakes region.

There are also indications that by the end of the month, a significant change in the upper atmospheric circulation may end the dearth of winter storms that the eastern half of the continent has been experiencing so far this winter - prepared January 25.

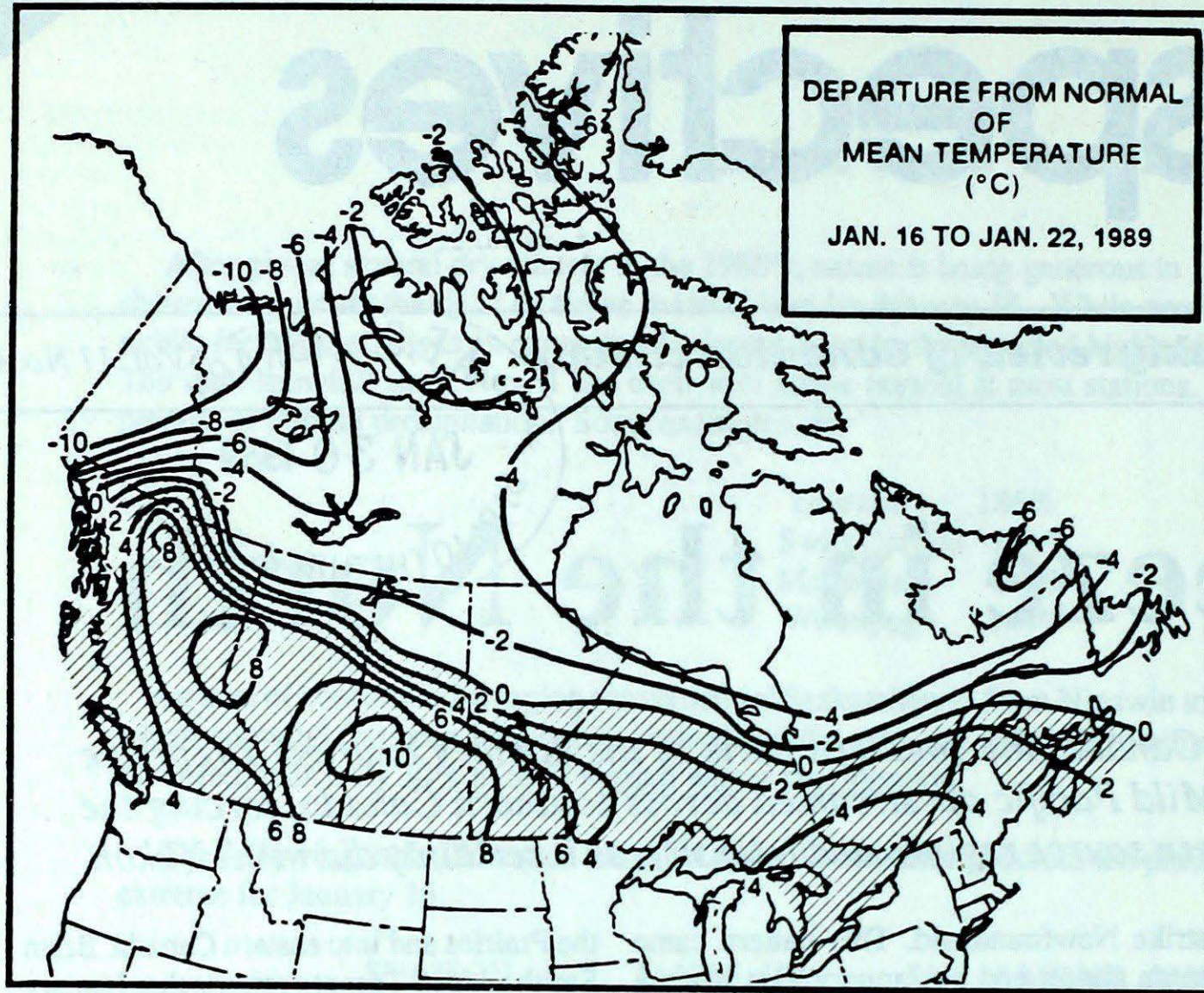
A. Gergye, Canadian Climate Centre

Respite from winter storms ends in the Maritimes

Prior to this past weekend, most areas of the Maritimes have been experiencing an unusual winter with low snowfalls, little snow cover and short-lived cold spells. Most of the major storms that usually bring winter to the region have been tracking well to the south of Nova Scotia then often curving northward to

Mild weather continues over most of southern Canada

The eastward thrust of mild Pacific air produced above normal temperatures throughout most of B.C. and extending eastward to the Maritimes. Heavy precipitation fell across northern B.C. as Pacific storms were swept inland. However they dropped most of their moisture in the mountains of B.C. so that precipitation amounts diminished as they moved across



Avalanche Hazard in Alberta

A moderate to strong southwesterly flow maintained chinook conditions over southwestern Alberta through most of the past week. Winds between January 16th and 19th over the Lethbridge - Pincher Creek areas were generally in the 65 to 80 km/h range with a peak gust of near 110 km/h at Pincher Creek on the 16th. Maximum temperatures climbed into the 5 to 7 degree C range over these regions. The Alberta Avalanche Safety Association posted avalanche warnings for Banff Park and the southwestern mountain regions as a result of heavy snowfalls, unusually high winds, and mild temperatures during the past week. These extreme avalanche conditions were expected to continue. Already avalanches were widespread both above and below the tree line.

W.Prusak, AES Edmonton

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia Kamloops	11	Fort Nelson -31	Prince Rupert 117
Yukon Territory Blanchard River	-8	Beaver Creek -54	Carcross 28
Northwest Territories Iqaluit	-12	Shepherd Bay A -48	Cape Dyer 17
Alberta Rocky Mtn House	10	Fort Chipewyan -34	Fort McMurray 13
Saskatchewan Kindersley	5	Uranium City -35	Nipawin 3
Manitoba Dauphin	1	Thompson -40	Island Lake 7
Ontario Windsor	8	Moosonee -39	North Bay 24
Québec Montréal Int'l	2	Schefferville -44	Sherbrooke 27
New Brunswick St Stephen	4	Charlo -22	Charlo 32
Nova Scotia Sydney	5	Truro -18	Sydney 22
Prince Edward Island East Point	4	Charlottetown -18	Charlottetown 3
Newfoundland St John's	8	Wabush Lake -39	Stephenville 31

Across The Country...

Warmest Mean Temperature	Vancouver Int'l (BC)	5
Coollest Mean Temperature	Eureka (NWT)	-45

CLIMATIC PERSPECTIVES
VOLUME 11

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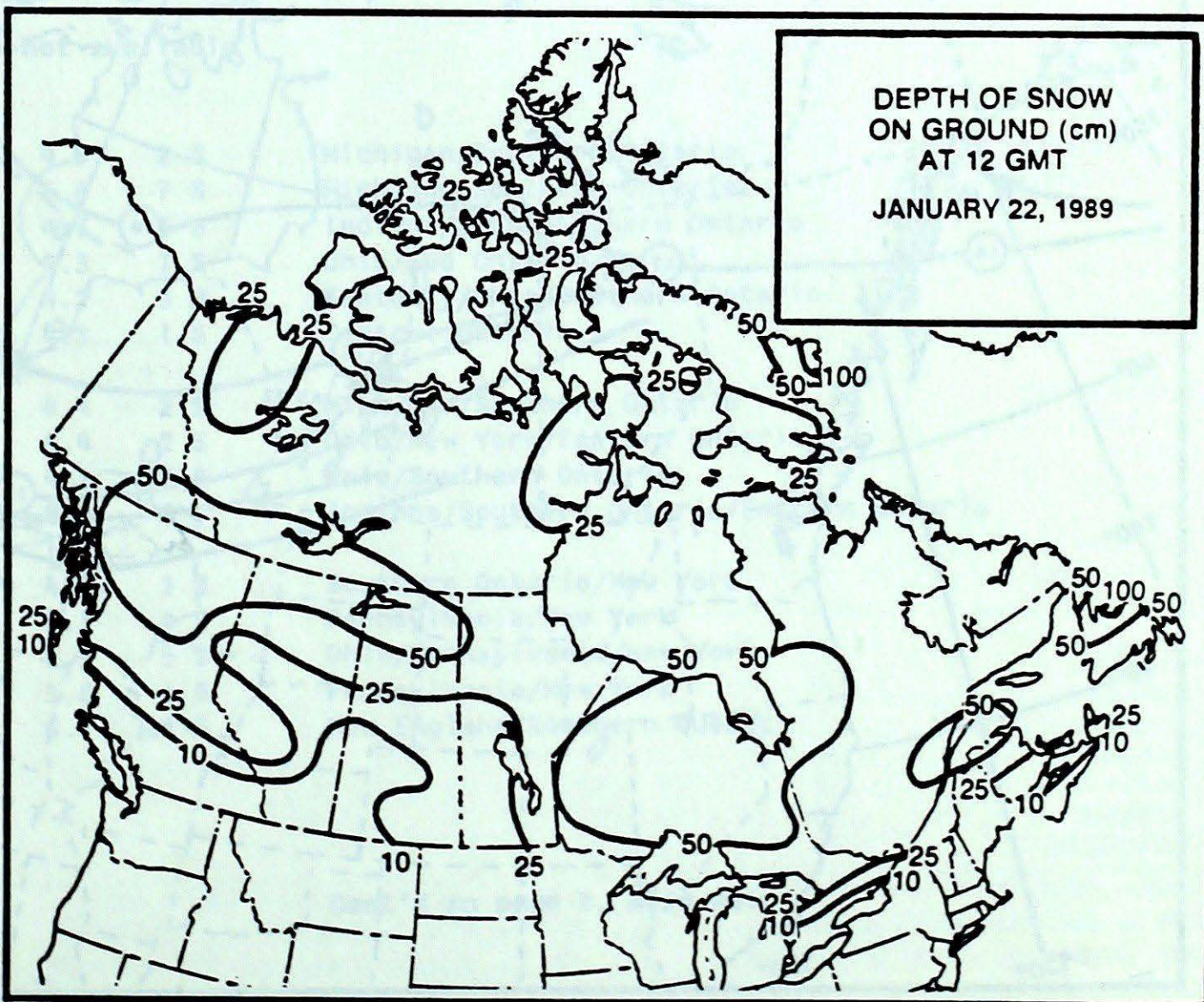
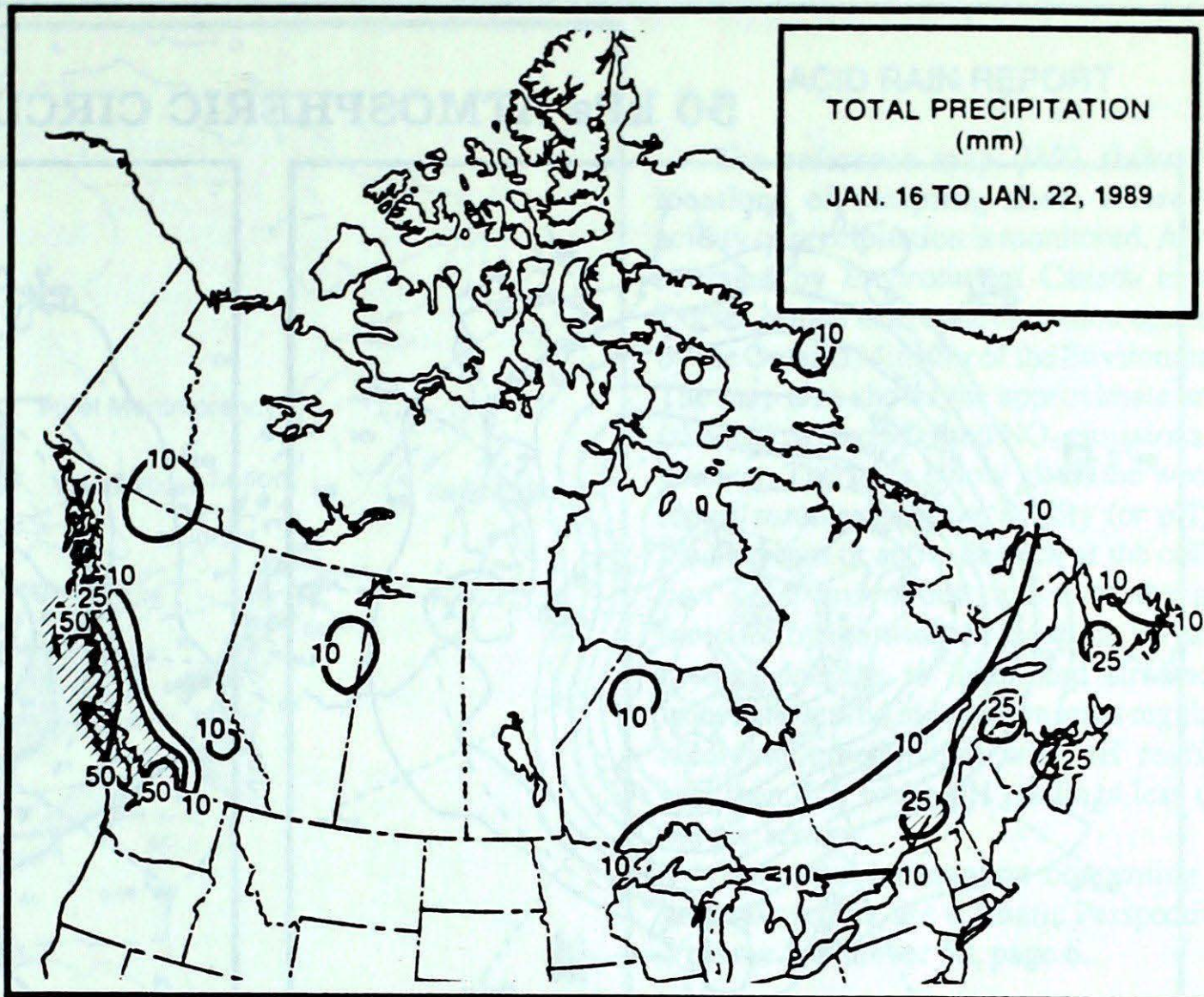
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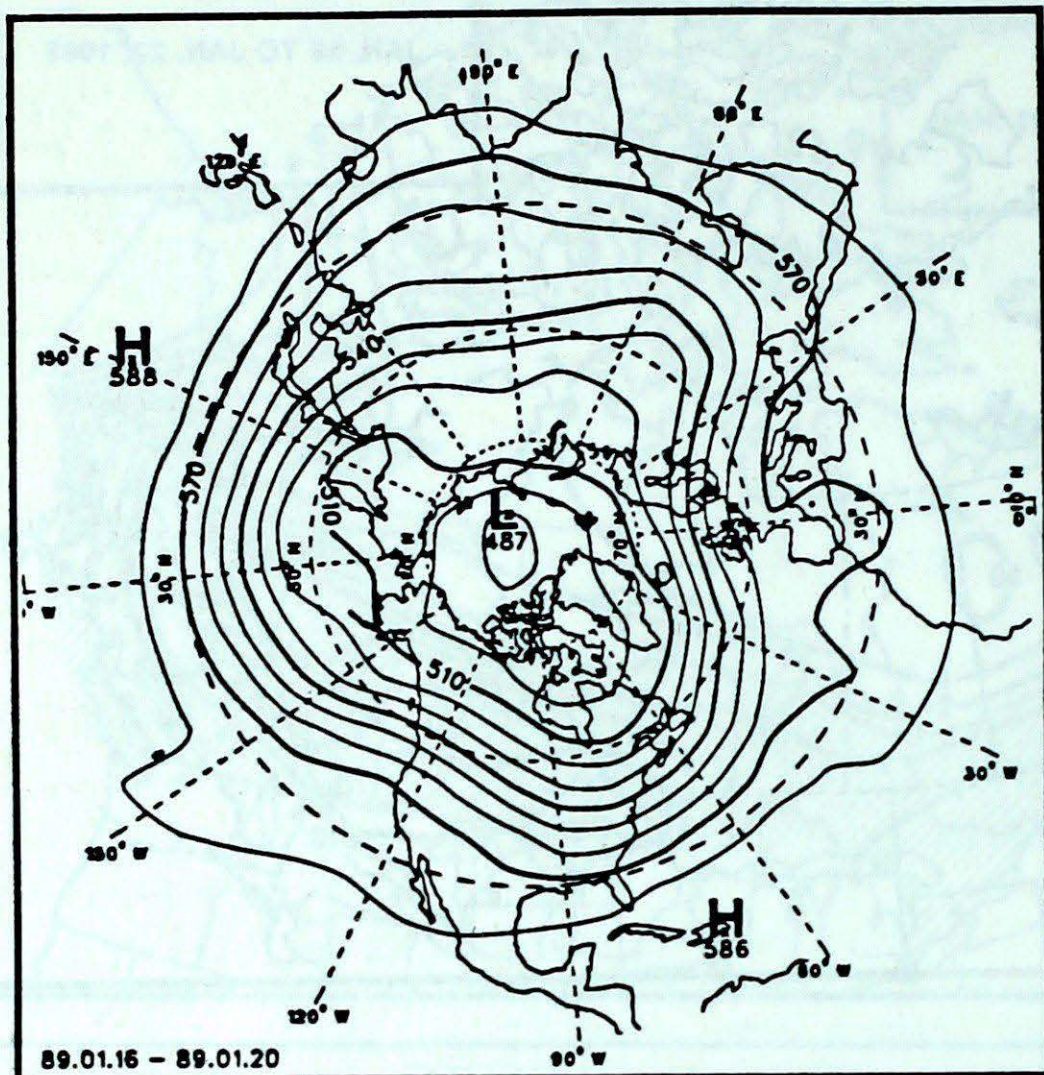
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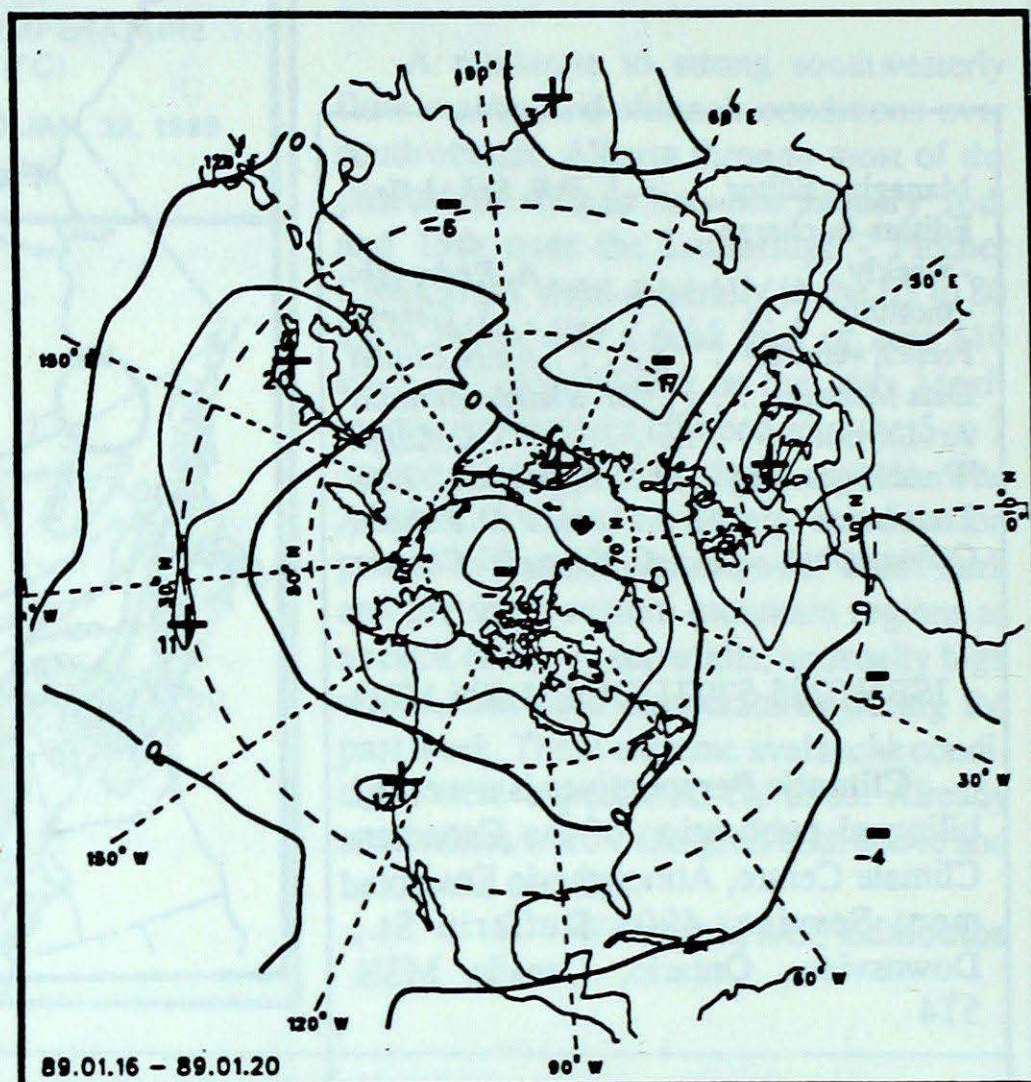
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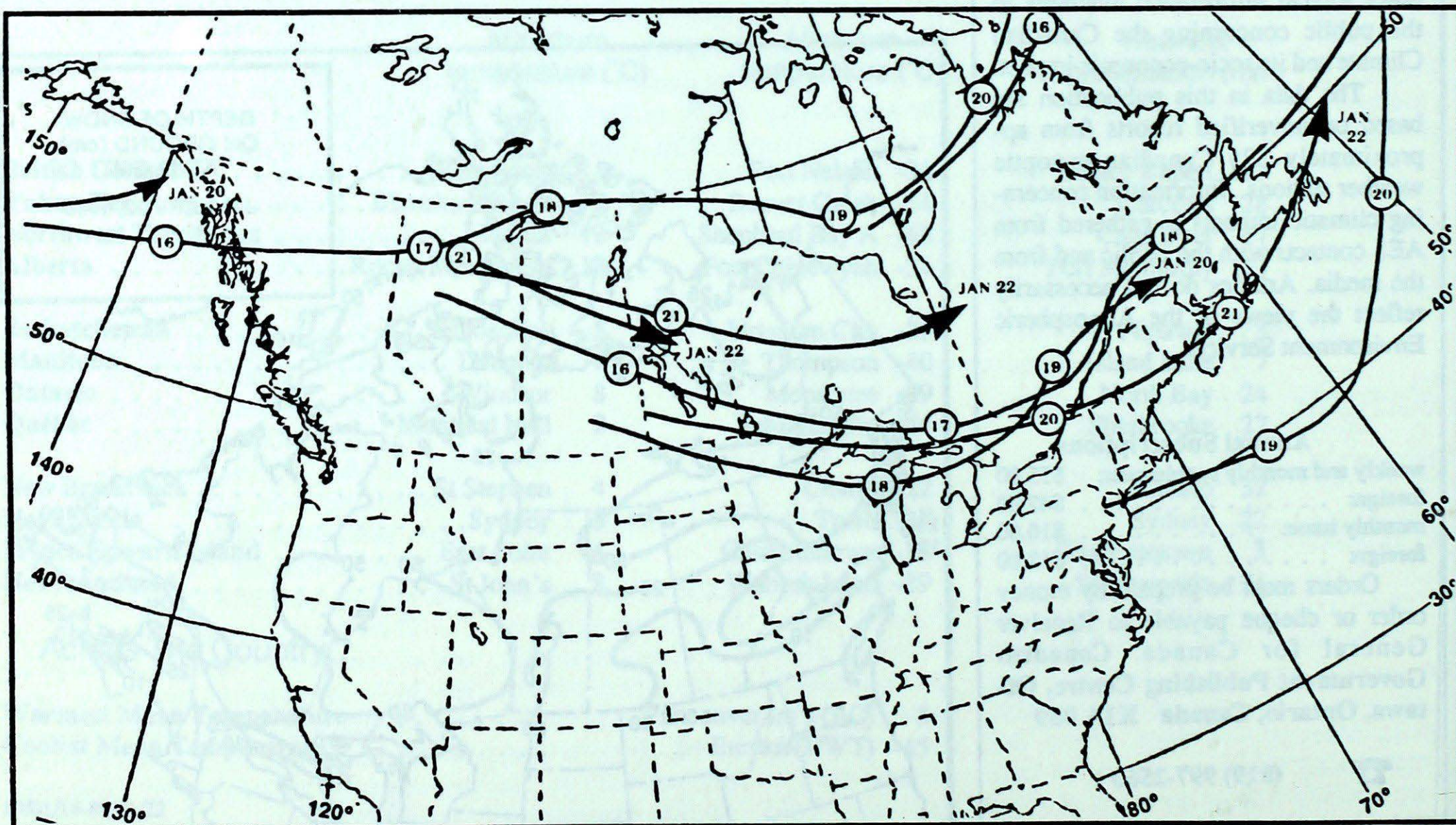
50 kPa ATMOSPHERIC CIRCULATION



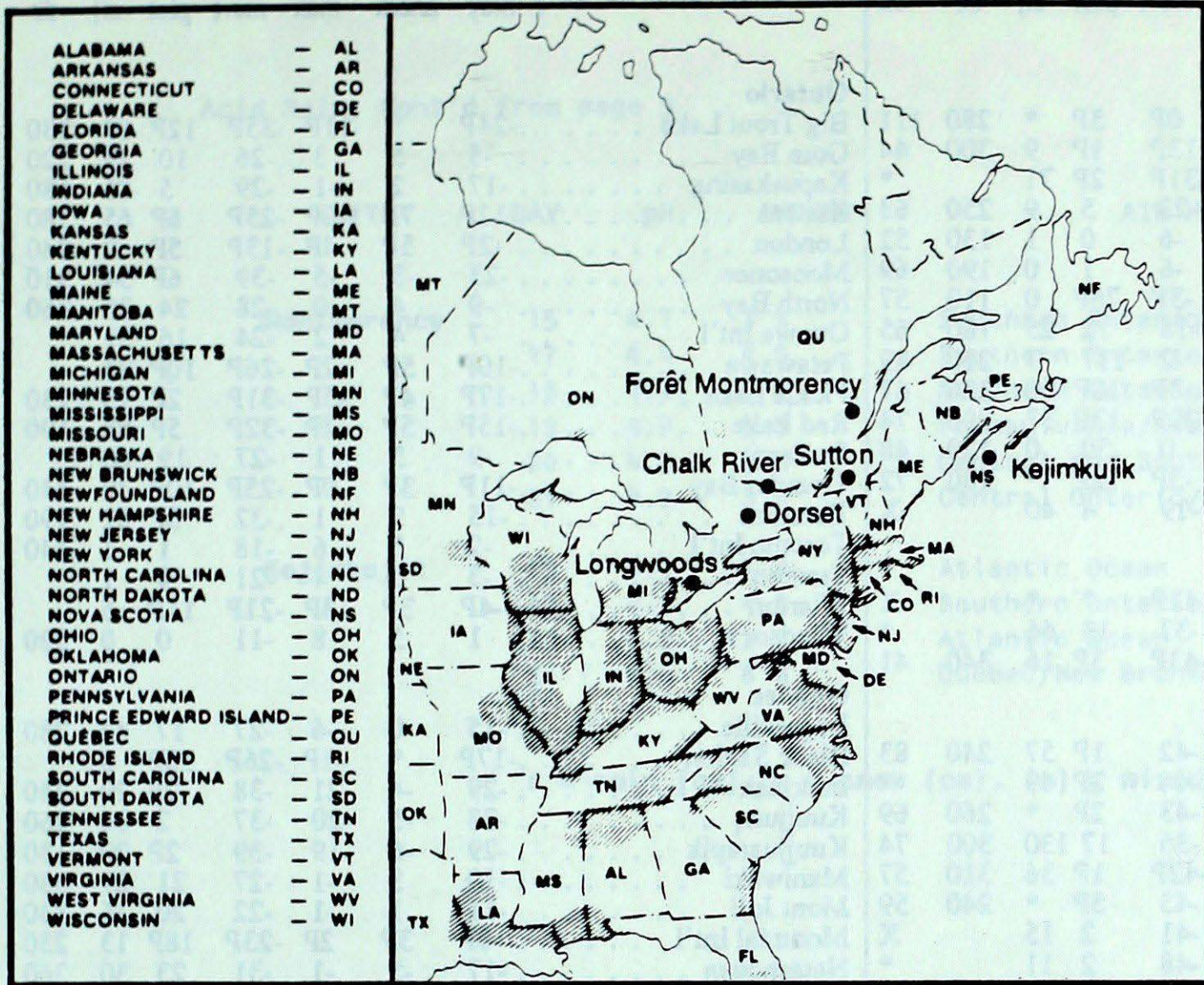
Mean geopotential height
50 kPa level (10 decameter intervals)



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 SO₂ 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.

JANUARY 15 TO JANUARY 21, 1989

SITE	DAY	pH	AMOUNT	AIR PATH TO SITE
Longwoods	Data not available			
Dorset	15	4.3	2 S	Michigan/Southern Ontario
	16	4.8	7 S	Michigan/Southern Ontario
	17	4.7	5 S	Indiana/Ohio/Southern Ontario
	18	4.3	7 S	Ohio/Sud Ontario
	19	4.2	3 M	Kentucky/Ohio/Southern Ontario
	20	4.3	1 S	Central Ontario
Chalk River	16	4.4	2 S	Michigan/Southern Ontario
	17	4.4	2 S	Ohio/New York/Eastern Ontario
	18	4.1	10 S	Ohio/Southern Ontario
	19	4.2	6 S	Indiana/Southern Ontario/Eastern Ontario
Sutton	16	4.2	3 S	Southern Ontario/New York
	17	4.1	4 S	Pennsylvania/New York
	18	3.9	5 S	Ohio/Pennsylvania/New York
	19	3.8	6 S	Pennsylvania/New York
	20	4.1	24 S	New England/Southern Quebec

Cont'd on page 8, Acid Rain

STATION	temperature				precip.		wind max		STATION	temperature				precip.		wind max									
	moy	anom	max	min	ptot	st	dir	vit		moy	anom	max	min	ptot	st	dir	vit								
British Columbia									Ontario																
Cape St. James	3P	-1P	5P	0P	3P	*	280	111	Big Trout Lake	-24P	*	-11P	-35P	12P	69	330	44								
Cranbrook	-1P	6P	7P	-13P	1P	9	300	44	Gore Bay	-5	5	3	-26	10	29	220	70								
Fort Nelson	-26P	-3P	-22P	-31P	2P	71		*	Kapusking	-17	2	-1	-29	5	86	180	44								
Fort St. John	-7	9	3	-22	5	9	250	63	Kenora	-12P	7P	0P	-25P	6P	65	180	41								
Kamloops	1	6	11	-6	0	1	130	52	London	-2P	5P	4P	-13P	5P	2	240	69								
Penticton	3	5	10	-6	1	0	190	69	Moosonee	-23	-3	-5	-39	6P	54	310	31								
Port Hardy	4P	1P	8P	-3P	76P	0	110	57	North Bay	-9	4	0	-28	24	32	360	57								
Prince George	-2	9	5	-18	12	25	180	65	Ottawa Int'l	-7	4	2	-24	16	31		X								
Prince Rupert	3	2	8	-2	117	7	210	89	Petawawa	-10P	5P	2P	-26P	10P	33		X								
Revelstoke	0P	5P	9P	-8P	18P	60	320	67	Pickle Lake	-17P	4P	-5P	-31P	2P	73	230	37								
Smithers	-3P	7P	5P	-20P	13P	37	290	74	Red Lake	-15P	5P	-2P	-32P	5P	88	190	33								
Vancouver Int'l	5	2	10	0	50	0	170	48	Sudbury	-9	5	1	-27	19	60		X								
Victoria Int'l	4P	0P	9P	-3P	12P	*	180	72	Thunder Bay	-11P	3P	0P	-25P	10P	49	340	41								
Williams Lake	-3	5	6	-19	4	40		X	Timmins	-15	2	1	-32	5P	52	190	52								
Yukon Territory									Toronto Int'l																
Mayo	-38P	-11P	-33P	-42P	*	*		X	Trenton	-2	5	6	-18	1	1	340	78								
Watson Lake	-23	3	-15	-37	13	66		*	Warton	-4P	3P	3P	-21P	11P	6		X								
Whitehorse	-29P	-11P	-19P	-43P	3P	16	340	41	Windsor	1	5	8	-11	0	0	220	61								
Northwest Territories									Québec																
Alert	-36	-4	-30	-42	1P	57	240	83	Bagotville	-15	0	-6	-27	17	42	280	50								
Baker Lake	-38	-5	-31	-44	2P	49		*	Blanc Sablon	-17P	*	-1P	-26P	18P	6		X								
Cambridge Bay	-38	-3	-27	-43	2P	*	260	69	Inukjuak	-29	-4	-21	-38	2P	29	240	46								
Cape Dyer	-25	-3	-15	-35	17	130	300	74	Kuujuuaq	-28	-5	-20	-37	2	34	260	85								
Clyde	-32P	-6P	-24P	-42P	1P	36	310	57	Kuujuarapik	-29	-6	-19	-39	2P	20	130	76								
Coppermine	-33	-3	-22	-43	5P	*	240	59	Maniwaki	-10	3	-1	-27	21	27	330	48								
Coral Harbour	-34	-5	-25	-41	2	15		X	Mont Joli	-11	1	-1	-22	20	36	330	69								
Eureka	-45	-8	-37	-48	2	11		*	Montréal Int'l	-8P	3P	2P	-23P	18P	13	250	48								
Fort Smith	-25P	0P	-16P	-35P	10P	45		X	Natashquan	-17	-5	-1	-31	23	30	260	83								
Iqaluit	*		-12P	-36P	9P	14	340	61	Québec	-10	2	-2	-22	25	51	010	54								
Hall Beach	-36	-6	-23	-43	2	40	300	37	Schefferville	-28	-6	-8	-44	3	38	300	69								
Inuvik	-41	-12	-32	-46	2	37		X	Sept-Iles	-17	-3	-2	-28	8	33	340	76								
Mould Bay	-36	-2	-26	-43	2	27		X	Sherbrooke	-8	4	1	-26	27	26	290	61								
Norman Wells	-37	-9	-31	-45	5	12		X	Val D'or	-14	3	-1	-32	10	42	350	48								
Resolute	-35	-2	-27	-42	2P	22	120	54	New Brunswick																
Yellowknife	-33P	-5P	-20P	-42P	6P	31	080	37	Charlo	-12	2	0	-22	32	90	310	69								
Alberta									Chatham																
Calgary Int'l	-2P	8P	8P	-12P	0P	5	270	76	Fredericton	-7P	2P	3P	-20P	16P	225	320	67								
Cold Lake	-5P	12P	2P	-12P	2P	*	290	31	Moncton	-6	2	1	-21	27	28	340	93								
Coronation	-7P	8P	4P	-14P	0	0		*	Saint John	-4P	4P	2P	-18P	17P	*	310	85								
Edmonton Namao	-4P	9P	7P	-16P	0P	8	340	59	Nova Scotia																
Fort McMurray	-15	5	1	-26	13	*		X	Greenwood	-4P	1P	3P	-15P	9P	2	300	96								
High Level	-24P	-5P	-18P	-33P	11P	55	330	33	Shearwater	-4P	1P	4P	-15P	12P	2	290	74								
Jasper	-3	9	4	-18	5	31		X	Sydney	-6P	-1P	5P	-17P	22P	12	120	87								
Lethbridge	-1P	9P	9P	-12P	0P	1	250	100	Yarmouth	-1P	2P	4P	-12P	2P	1	300	96								
Medicine Hat	-1	10	6	-11	0	3	260	63	Prince Edward Island																
Peace River	-10P	9P	3P	-21P	9P	14	340	56	Charlottetown	-7P	1P	2P	-18P	3P	34	330	102								
Saskatchewan									Summerside																
Cree Lake	-23P	-2P	-4P	-34P	3P	*	270	54	Charlottetown	-7P	1P	1P	-18P	1P	22	340	107								
Estevan	-5	10	2	-14	2P	23	320	85	Newfoundland																
La Ronge	-15P	4P	0P	-28P	3P	36	360	37	Cartwright	-19	-6	-2	-30	12	*	330	83								
Regina	-9	8	2	-19	2	12	310	74	Churchill Falls	-26	-4	-7	-38	3	70	300	70								
Saskatoon	-8P	10P	1P	-22P	1P	12	320	67	Gander Int'l	-8P	-2P	4P	-16P	9P	*	310	100								
Swift Current	-5	8	4	-18	0	28		X	Goose	-21	-6	-5	-30	4	37	270	70								
Yorkton	-10	9	-2	-19	3	24	280	56	Port-Aux-Basques	-6P	-2P	2P	-12P	30P	39	300	104								
Manitoba									St John's																
Brandon	-12	7	-4	-23	3	16	300	63	St Lawrence	-5P	0P	4P	-12P	19P	30		X								
Churchill	-29	-2	-21	-36	4	31	090	56	Wabush Lake	-25	-2	-7	-39	4	45	240	65								
Lynn Lake	-27P	-2P	-17P	-37P	6P	*	290	37	89/01/16-89/01/22																
The Pas	-15P	7	-3P	-25P	2P	19	150	33																	
Thompson	-25P	-2P	-15P	-40P	5P	*		*																	
Winnipeg Int'l	-13P	6P	-3P	-26P	7P	24	190	59																	

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.

Acid Rain, Cont'd from page 5

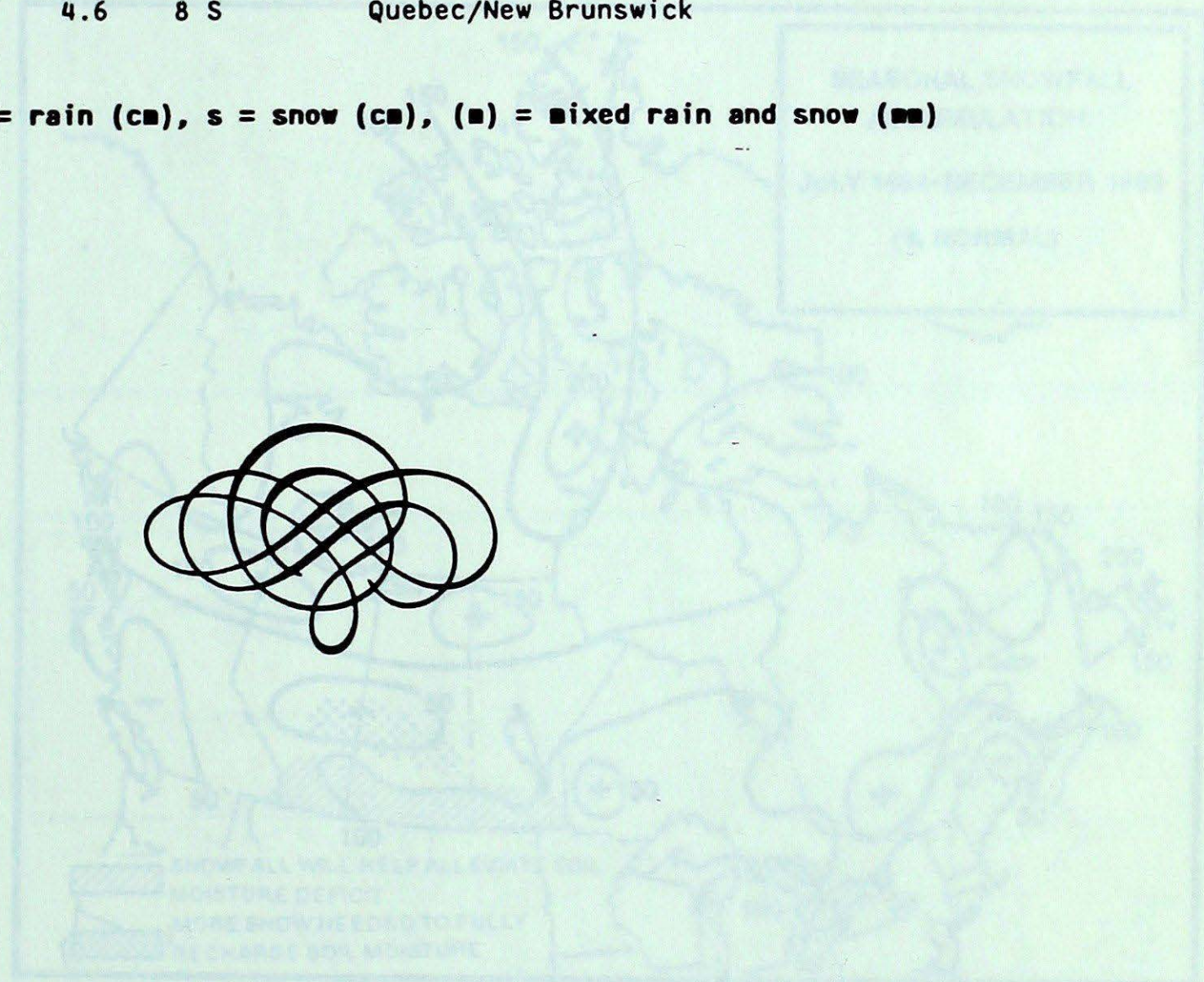
SITE	DAY	pH	AMOUNT	AIR PATH TO SITE
DECEMBER - 1988				
Montmorency	15	4.1	3 S	Southern Ontario/Southern Quebec
	17	4.4	4 S	Southern Ontario/Southern Quebec
	18	4.1	4 S	Southern Ontario/Southern Quebec
	19	4.0	5 S	Pennsylvania/New York/Southern Quebec
	20	4.2	5 S	Central and Southern Quebec
	21	4.3	3 S	Central Ontario/Central Quebec
Kejimikujik	15	5.1	17 R	Atlantic Ocean
	17	4.1	4 S	Southern Ontario/New York/New England
	20	4.2	12 S	Atlantic Ocean
	21	4.6	8 S	Quebec/New Brunswick

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

At last a winter with near-normal snowfall in southern Alberta. Blizzard swept southeastern Prairie Provinces.

There are some of the welcome headlines that the prairie farmers heard recently. After a few winters of a meagre snowfall and summer droughts, ample snowfall finally arrived over the southern prairies. By the end of December, Winnipeg's seasonal snowfall of 65.4 cm reached the total amount for all of last winter. Seasonal snowfall was above normal in southwestern Saskatchewan - an area in desperate need to reload its depleted soil moisture reserves. Swift Current's 38 cm in December was nearly double the usual amount for that month. Although snowfall was below normal over southern Alberta at the end of the month, two winter storms in early January dumped from 10 to 50 cm of snow, with up to 100 cm in the foothills. Seasonal snowfall in central and western Saskatchewan, from Prince Albert to Lloydminster, was still below normal.

After suffering from the worst summer drought since the 1930s, the agricultural communities heeded the arrival of this winter snowfall. The snow fell where it was needed the most - in the drought-stricken areas of southwestern Saskatchewan and southern Alberta. During the spring melt period, the snow cover will help to recharge the depleted soil moisture reserves. Snow-



fall in Alberta will also help to build the mountain snow pack - another source of moisture for spring germination. Plagued by the previous summer drought, southern Ontario is still in need of more snowfall. Seasonal snowfall is well below normal (50 - 75%) in Toronto, a seasonal total of 15 cm was only 37% of normal. The East Coast winter storms took a more easterly path this month, leaving most of the maritimes with below-normal snowfall.

The biggest deficit was registered in central New Brunswick (about 70% of normal). In contrast, Newfoundland and eastern Labrador received generous amounts of snow. At Moncton, snowfall total reached a whopping 104 cm or 116% of normal.

Walter Shubert,
Monitoring and Prediction Division