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Environnement Canada A WEEKLY REVIEW OF CANADIAN CLIMATE

Atmospheric Environment Environnement atmosphérique

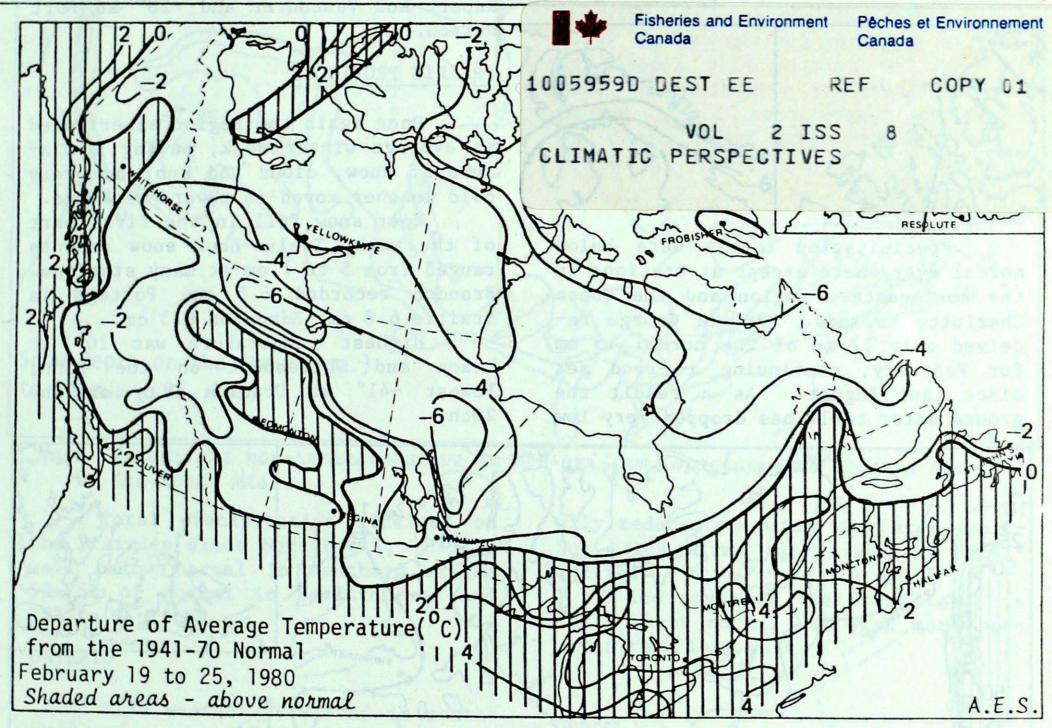
CLIMATIC PERSPECTIVES

THE CANADIAN CLIMATE CENTRE, ATMOSPHERIC ENVIRONMENT SERVICE, 4905 DUFFERIN ST., DOWNSVIEW, ONTARIO M3H 5T4

FEBRUARY 29, 1980

(Aussi disponible en français)

VOL.2 NO.8



WEATHER HIGHLIGHTS FOR THE WEEK - FEBRUARY 19 - 25 1980

Winter not yet ended in Canada

Average temperatures across the Arctic dropped rapidly during the week, reaching 8° below normal on Baffin Island. This dramatically ends a 5-week period of much above normal temperatures. As the cold air continues to build and move southward, all Canadians should expect to experience wintry weather. Extreme temperatures were recorded at Vancouver and Prince Rupert (14°) and at Shepherd Bay (-48°).

Except for the Prairie Provinces and isolated stations, most of Canada had below normal precipitation. Cape Scott and Tofino had the maximum precipitation of 51.5 cm. Some snow fell in southern areas of eastern Canada. So far this winter Montreal has not had a snowfall greater than 10 cm. February snowfall at Halifax may break the record low of 8.2 cm which was set in 1979.

NOTE: The data shown in this publication are based on unverified reports from approximately 225 Canadian and 115 northern United States Synoptic stations.

YUKON AND NORTHWEST TERRITORIES.

Arctic weather became more seasonable during the week as the mild temperatures dropped to near normal values and almost no snow fell. However, exceptions occurred over southern Baffin Island where average temperatures dropped 8° below normal; and in southern Yukon where precipitation was above normal, with maximum snowfalls of 5 to 10 cm in the central region. Heavy snow on the coastal side closed the Haines Highway for several days. Temperatures ranged from 5° at Haines Junction in southwest Yukon to -48° at Shepherd Bay.

BRITISH COLUMBIA

Precipitation totals were below normal everywhere except at stations in the southeastern region and the Queen Charlotte Islands. Prince George received only 17 mm of the normal 43 mm for February, continuing a trend set since last August. As a result the ground water table has dropped very low

and will cause some problems this year. Winter snowfall at Fort Nelson is only about 50% of normal.

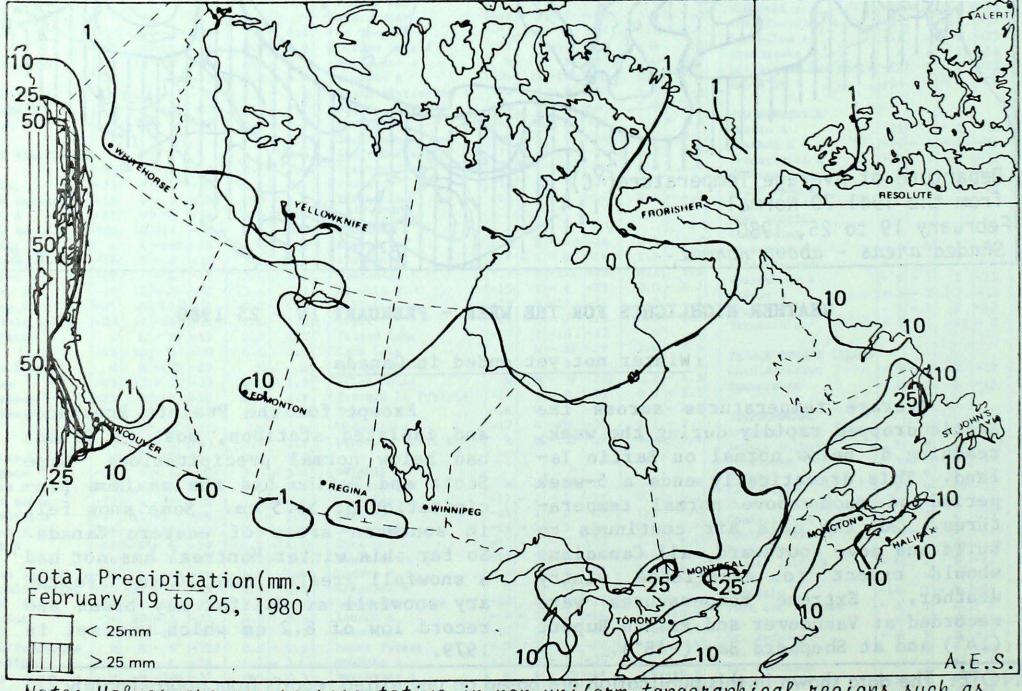
Mild weather in many northern areas is hampering industrial and logging operations by melting the snow and producing muddy and soft roads. Elsewhere average temperatures were near normal. Highest and lowest temperatures were 14° at both Prince Rupert and Vancouver and -28° at Fort Nelson.

PRAIRIE PROVINCES

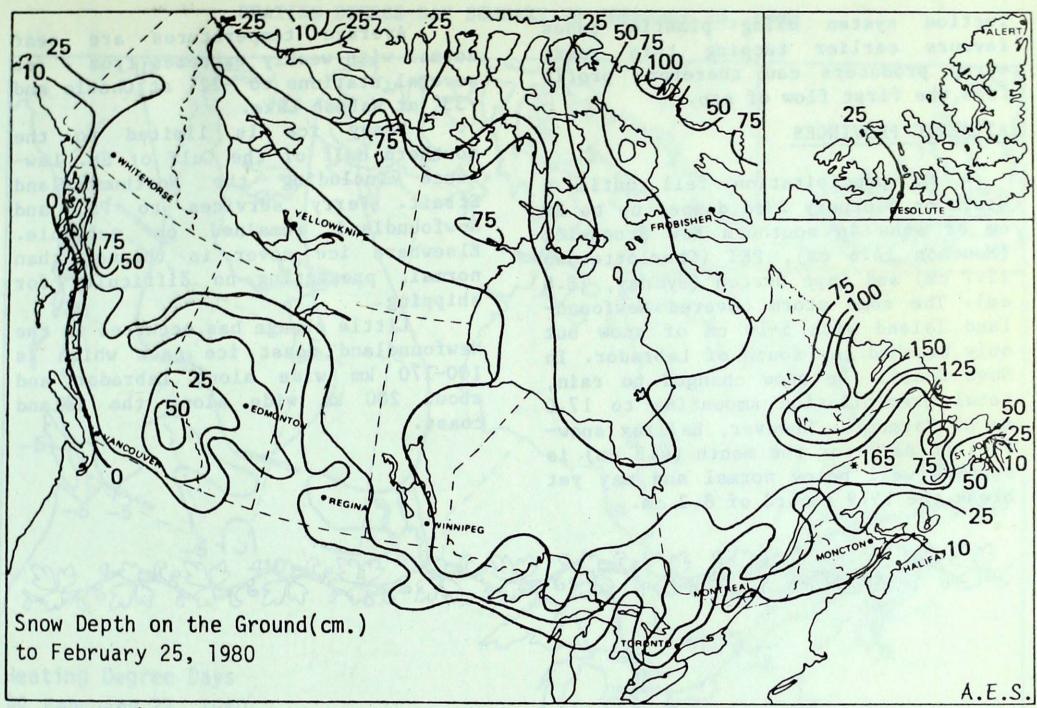
Once again the region experienced an average winter week, having a mixture of snow, cloud and sun, but very cold weather moved in toward week-end.

Most snow fell in the first part of the week. Twelve-hour snow amounts ranged from 5 to 7 cm at many stations. Brandon recorded 6.5 cm; Portage la Prairie 6.8 cm; Edmonton 6.3 cm.

Highest temperature was 10° at Edson and Whitecourt on the 25th; lowest -41° at Uranium City on the 20th.



Note: Values are non-representative in non-uniform topographical regions such as the Rocky Mts.



Note: Values are non-representative in non-uniform topographical regions such as the Rocky Mts.

Total precipitation received on the Prairies since November 1, 1979 is well below normal in southern areas: 50-75% of normal in Saskatchewan and 75% in Manitoba.

ONTARIO

Mild weather persisted in southern areas even though temperatures in the north continued a downward trend. The week's highest and lowest temperatures were reported at the same stations as last week: Windsor (6°) and Geraldton (-38°).

Nasty freezing rain fell on February 22 across southern Ontario delaying flights at many airports and hampering travel on slippery roads for several hours. In the lower Great Lakes region the rain and mild weather have reduced snow cover to barely a centimetre. Despite recent snowfalls ski resorts are having their worst year in more than a decade. Sales of sporting and snow removal equipment are drastic-

ally reduced, forcing two large sporting goods firms into financial difficulties.

Ice cover on the Great Lakes is still about normal but with more open water than last week.

QUEBEC

Southern regions experienced the snowiest week of the winter with snowfalls of as much as 22 cm at some stations including Trois-Rivières. Remarkably, Montreal has not had a snowfall exceeding 10 cm so far this winter.

Under generally cloudy skies mean temperatures remained above normal throughout the south; elsewhere, they returned to below normal values even though the sun only shone 40-60% of the time.

The maple sap has started to run, just a few days in advance of last year. Introduction of the modern col-

lection system using plastic tubes favours earlier tapping this year; syrup producers can therefore profit from the first flow of sap.

ATLANTIC PROVINCES

No precipitation fell until a storm on February 23rd dumped up to 20 cm of snow in southern New Brunswick (Moncton 14.6 cm), PEI (Charlottetown 12.7 cm) and Cape Breton (Sydney, 18.8 cm). The same storm covered Newfoundland Island with 5-10 cm of snow but only brushed the south of Labrador. In Nova Scotia the snow changed to rain, total precipitation amounting to 17.0 mm at Yarmouth. However, Halifax snowfall to date for the month (4.8 cm) is running well below normal and may yet break the 1979 record of 8.2 cm.

LIVE STEEL ON SELECTION LET OF STORY

Average temperatures are near normal with weekly extremes from 7° at several stations to -22° at Charlo and -33° at Wabush Lake.

Heavy ice is limited to the southern half of the Gulf of St. Law-rence including the Northumberland Strait. Ferry services to PEI and Newfoundland remained on schedule. Elsewhere ice cover is thinner than normal, presenting no difficulty for shipping.

Little change has occurred in the Newfoundland coast ice pack which is 100-170 km wide along Labrador and about 200 km wide along the Island coast.



CLIMATIC PERSPECTIVES

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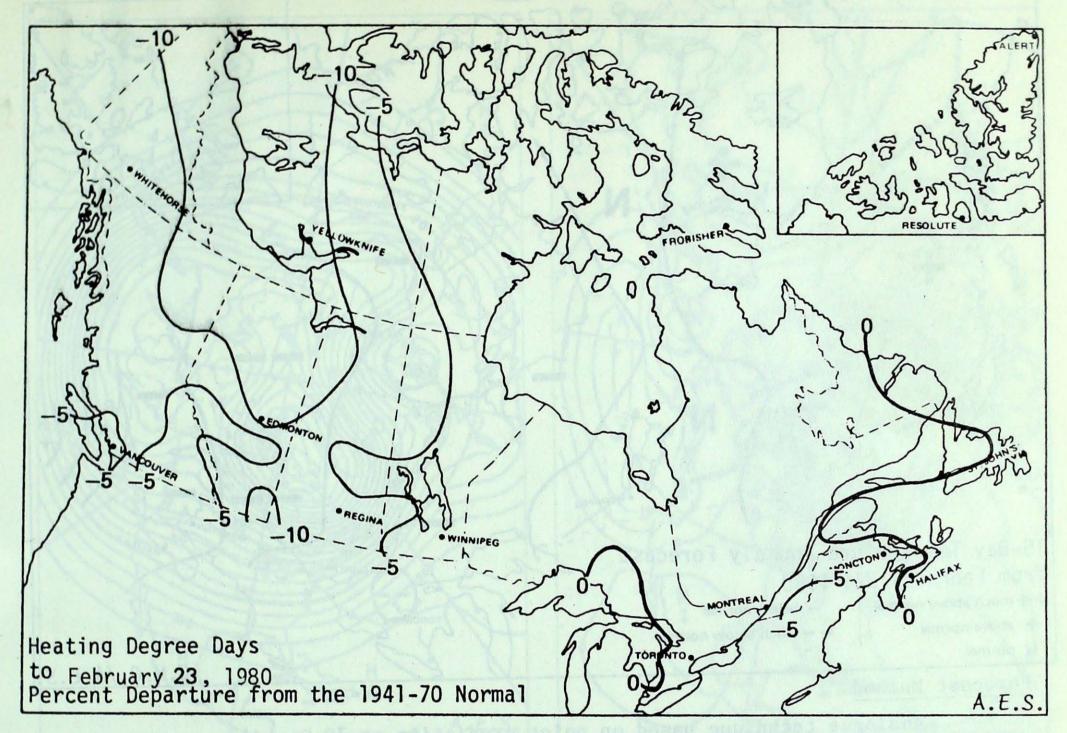
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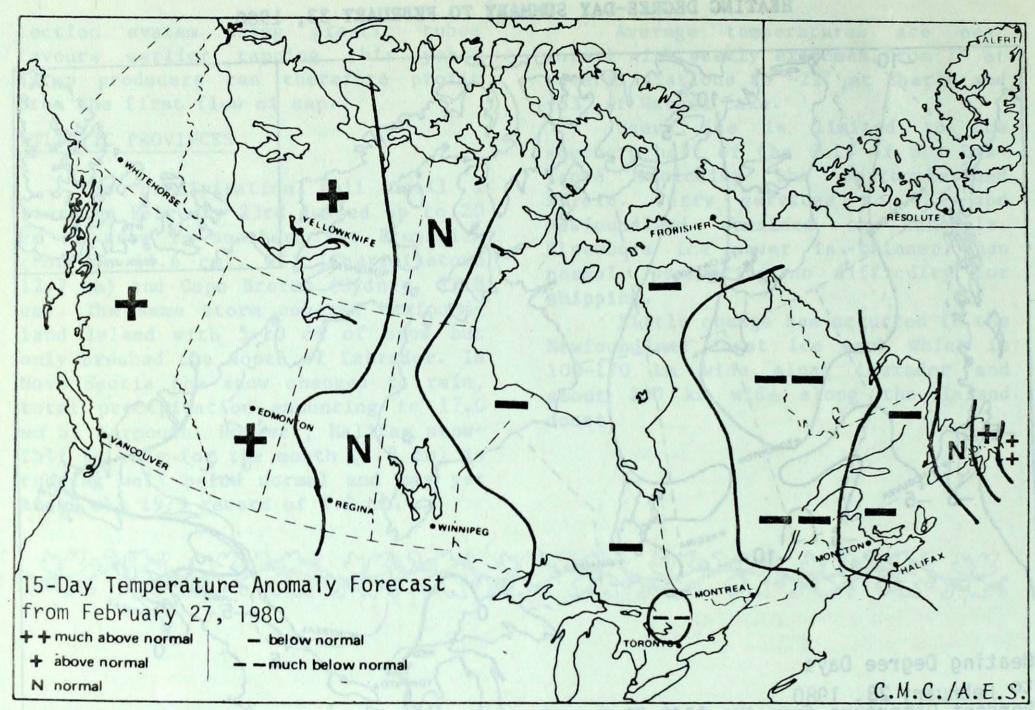
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HEATING DEGREE-DAY SUMMARY TO FEBRUARY 23, 1980



CITY	MONTHLY CUMULATIVE TOTAL	MONTHLY DIFF. FROM 1941-70 NORMAL	SEASONAL	SEASONAL DIFF. FROM 1941-70 NORMAL	SEASONAL PERCENT OF NORMAL
Resolute	1004.0	-194.0	8030.5	-63.5	99
Inuvik	917.5	-192.5	5818.5	-1014.5	85
Whitehorse	641.0	-95.0	4572.5	-311.5	94
Vancouver	307.0	-11.0	1978.0	-56.0	97
Edmonton	604.5	-61.5	3518.5	-451.5	89
Calgary	589.0	-10.0	3450.0	-226.0	94
Regina	701.5	-57.5	3873.0	-303.0	93
Winnipeg	744.0	-47.0	4095.5	-68.5	98
Thunder Bay	698.0	-32.0	3833.5	-115.5	97
Windsor	524.5	19.5	2450.0	-54.0	98
Toronto	580.5	24.5	2767.0	-30.0	99
Ottawa	623.0	-20.0	3150.0	-138.0	96
Montreal	622.5	-13.5	3078.5	-60.5	98
Quebec	671.0	-5.0	3508.5	3.5	100
Saint John, N.B.	609.5	8.5	3018.5	-124.5	96
Halifax	540.5	19.5	2648.5	44.5	102
Charlottetown	606.0	12.0	2962.0	4.0	100
St. John's, Nfld.	539.5	15.5	3017.0	75.0	103



Forecast Method

Analogue technique based on point prediction at 70 Canadian stations.

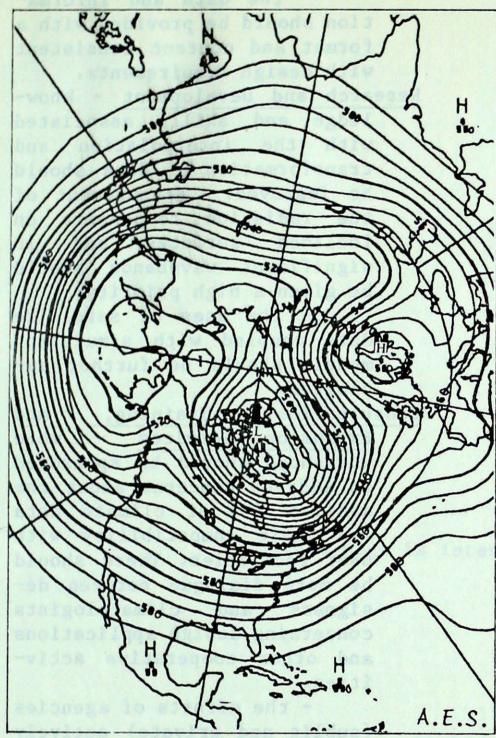
Temperature Scale

Each temperature class is designed to contain 20% of the historically observed 15 day means pertinent to specific location and time of year:

Station	Current Temperature Anomal	y (ΔT) Forecast
Whitehorse	Above Normal (+1.3°C	<ΔT <+4.4°C)
Victoria		<ΔT <+1.3°C)
Vancouver	Above Normal (+0.4°C	<ΔT <+1.4°C)
Edmonton	Above Normal (+1.2°C	<ΔT <+4.0°C)
Regina	Near Normal (-1.2°C	<ΔT <+1.2°C)
Winnipeg	Near Normal (-1.0°C	<ΔT <+1.0°C)
Thunder Bay	Below Normal (-2.7°C)	<ΔT <-0.8°C)
Toronto	Below Normal (-2.2°C	<ΔT <-0.7°C)
Ot tawa	Below Normal (-2.4°C	<ΔT <-0.7°C)
Montreal	Below Normal (-2.4°C	<ΔT <-0.7°C)
Quebec	Much Above Normal	<ΔT <-2.6°C)
Fredericton	Below Normal (-2.5°C	<ΔT <-0.8°C)
Halifax	Below Normal (-1.8°C	<ΔT <-0.5°C)
Charlottetown	Below Normal (-2.3°C	<ΔT <-0.7°C)
St. John's	Much Above Normal (+2.0°C	
Goose Bay	Much Below Normal	<ΔT <-3.9°C)
Frobisher Bay	Below Normal (-4.9°C	<ΔT <-1.4°C)
Inuvik	Above Normal (+1.1°C	<ΔT <+3.9°C)

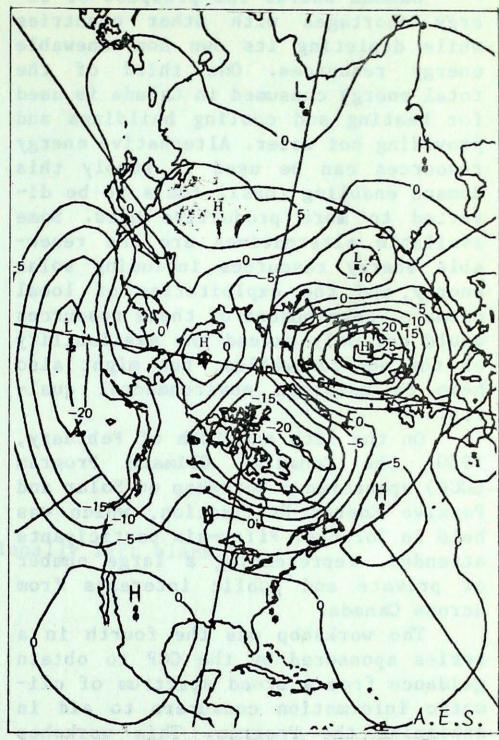
Note: Anomaly denotes departure from the 1949-73 mean.

Atmospheric Circulation Features



50KPa Height Map(decametres)
7 day mean February 18 to 24, 1980

The upper steering flow gradually increased its north-south component, changing the relatively zonal west to east upper flow to a more normal meridional pattern, as a major ridge built over the western Cordillera and a long wave trough centred over northern Hudson Bay increased its amplitude over the eastern half of the country. As a result of a strong west to northwesterly upper air flow, cold Arctic air and associated high pressure strengthened its grip over most of the country. Extreme southern portions of eastern Canada remained relatively milder. Weak



7 day Mean 50kPa Height Anomaly February 18 to 24, 1980

moving disturbances produced changeable weather and delayed the arrival of the Arctic air.

Precipitation amounts were quite variable, with rain being reported along the west coast and southern British Columbia and light snowfalls elsewhere.

A strengthening disturbance moving south of the lower Great Lakes on Friday, crossed the Atlantic provinces on Saturday bringing freezing rain and heavy snow to these respective regions. Very cold air eventually penetrated southward behind the storm system.

Canada shares the prospect of energy shortages with other countries while depleting its own non-renewable energy resources. One third of the total energy consumed in Canada is used for heating and cooling buildings and providing hot water. Alternative energy resources can be used to supply this demand enabling fossil fuels to be diverted to more productive uses. Some available alternatives are the renewable energy resources including solar energy, and the exploitation of local climate. Development of these resources would not only extend the availability of the non-renewables, but might also help to maintain environmental quality.

On the 12th and 13th of February, 1980, the Canadian Climate Program (CCP) sponsored a Workshop on Solar and Passive Energy Utilization, which was held in Toronto. Fifty-six participants attended, representing a large number of private and public interests from across Canada.

The workshop was the fourth in a series sponsored by the CCP to obtain guidance from a broad spectrum of climatic information consumers to aid in designing the Program. This workshop was concerned with the climatological information needed by consumers for:

- passive solar energy systems
- active solar energy systems
 - mesoscale planning
 - demonstration projects using active and passive systems
- policy matters related to solar energy utilization in Canada

The workshop recommended a set of objectives and actions which demonstrated that there were requirements for more climatic information and more sophisticated ways of communicating the information. The recommendations for action fell into the following four major areas:

Services - the existing radiation data acquisition network should be expanded by upgrading stations (i.e. installing more radiation fields) and by adding more stations.

- the data and information should be provided with a format and content consistent with design requirements.

Research and Development - knowledge and skills associated
with the interpolation and
transformation of data should
be improved. Measurement of
the radiation components on
inclined surfaces and in
significant wavebands should
be given a high priority.

- the uses of satellite data coupled with simulation models should be further exploited.

Extension Services - more workshops should be sponsored to address concerns about the availability of climate data and their compatibility with user facilities. There should be more dialogue between designers and climatologists concerning design applications and other cooperative activities.

- the efforts of agencies (public and private) actively exploiting renewable energy resources should be coordinated.

Policy - the Canadian Climate

Program should provide the
lead in promoting the development of a national institute
(or equivalent focus) to address the needs and opportunities for effective utilization of renewable energy
resources.

A complete summary of the objectives and recommendations will be available in the Workshop Proceedings to be published in the fall of 1980. Anyone who did not attend the Workshop and who would like a copy of the Proceedings when they become available should contact Mr. P. Scholefield of the Canadian Climate Centre, AES, Downsview, ((416)-667-4525).

R. Berry
Applications and Impact Division
Canadian Climate Centre.

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	TEMPERATURE AND PRECIPIT						IT.
	mper	ature (Precip. (mm)				
Stotion	Average	Departure from Normal	Extreme	Extreme	Total	Departure from Normal	
BRITISH COLUMBIA Abbotsford A Alert Bay Blue River Bull Harbour Burns Lake Cape Scott Capt St. James Castlegar A Comox A Cranbrook A Dease Lake Estevan Point Fort Nelson A Fort St. John A Kamloops A Langara Lytton Mackenzie A McInnes Island Penticton A Port Hardy A Prince George A Prince Rupert A Quesnel A Revelstoke A Sandspit A Smithers A Spring Island Stewart A Terrace A Tofino A Vancouver Int'l A Victoria Int'l A Williams Lake A	77 M 6 M 77 70 5 - 11 M - 16 - 9 2 5 M M M 1 6 - 8 4 - 6 - 1 5 - 6 M M - 1 M 6 6 6 - 5	X M 0 1 - 3 0 - 2 0 2 - 3 M X - 1 M 1	7 11 8 14 7 6 9 3 M 4P 6 13P 14 13	- 8 - 1	3.4 M M 7.7 51.5 15.6 16.6	- 9.1	
YUKON Burwash A Dawson A Komakuk Beach A Mayo A Shingle Point A Watson Lake A Whitehorse A	-15 -24 -27 -16 -27 -18 - 9	- 3 0 1 - 2 - 2	- 7 0 - 2 - 6	-33 -41 -39 -35 -38 -29 -20	0.0 0.2 0.0 2.5	0.1 - 4.1 - 0.6 - 3.0 - 0.5 - 3.2 - 3.3	
NORTHWEST TERRITORIE Alert Baker Lake Broughton Island Byron Bay A Cambridge Bay A Cape Dorset Cape Dyer A Cape Hooper Cape Parry A Cape Young A Chesterfield Inlet Clinton Point Clyde Contwoyto Lake Coppermine Coral Harbour Dewar Lakes Ennadai Eureka Fort Reliance Fort Simpson Fort Smith A Frobisher Bay A Gladman Point A Hall Beach A Hay River A Inuvik A Jenny Lind Island Lady Franklin Point Longstaff Bluff Mackar Inlet Mould Bay Nicholson Peninsula Norman Wells A Pelly Bay Pond Inlet A Port Burwell	-34 -37 -36 -27 -36 -27 -30 -31 -35 -26 -30 M M -34 -32 M -41 -29 -22 -24 -32 -37 -23 -23 -37 -23 -31 -34	- 2 - 3 - 2 - 1	-19 -28 -31 -17P -15 -22 -21 -26 -29 -21 -22 -27P -25P -27 -23 M -31 -13 - 4 - 9 -24 -30 -30 - 8 - 8 -30 -27 -23 -27 -28 -17 - 6 -35 -31	-36 -35 -35 -35 -41 -35 -36 -39	0.0 1.3 0.0 0.0 3.2 0.4 1.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	-12.9 0.0 -1.5 -1.1 -1.0 -0.7 M -1.6 -2.3 -0.4 M -0.5 -3.1 -1.8 -2.2 -6.0 -0.8 -2.1 -3.7 -4.1 -0.8 -2.1 -1.4 -0.1 -1.4 -0.1 -1.4 -0.1 -1.4 -0.1 -1.4 -0.1 -1.4 -0.1 -1.4 -0.1	

Temperature (°C) Precip. (m						- 7
Station	Averoge	Departure from Normal	Extreme	Extreme Minimum	Total	Deporture from Normal
Resolute A Sachs Harbour Shepherd Bay A Tuktoyaktuk Yellowknife A	-36 -30 -39 -29 -26	- 1 - 4	-21 -33 -18	-40 -35 -48 -36 -37	0.0	- 0.5 - 0.9 - 2.1 - 0.6 - 1.8
ALBERTA Banff Brooks Calgary Int'l A Cold Lake A Coronation A Edmonton Int'l. A Edmonton Mun. A Edmonton Namao A Edson A Fort Chipewyan Fort McMurray A Grande Prairie A High Level A Jasper Lethbridge A Medicine Hat A Peace River A Red Deer A Rocky Mountain House Slave Lake A Whitecourt	-22 -14 -12 -18 - 7 -10 -12 -13 -11 - 9 -13	1 0 - 2 2 1 - 3 - 7 1 - 1 - 7 - 0 - 4 - 3 0 - 1 - 4 - 2	2 6 9 7 10 - 2 7 6 2 8 7 6 8	-18 M -21 -26 -26 -21 -21 -38 -28 -27 -31 -18 -21 -25 -29 -24 -25 -21	3.9 1.6 4.4 7.3 1.7 2.8 1.4	- 1.2 1.2 2.1 6.2 6.3 4.1 - 1.9 - 3.1 - 2.3 1.4 - 2.0 0.6 - 3.0 - 1.1 - 3.8 - 3.4 - 0.8 1.9
SASKATCHEWAN Broadview Buffalo Narrows Cree Lake Estevan A Hudson Bay Kindersley La Ronge A Meadow Lake A Moose Jaw A Nipawin A North Battleford A Prince Albert A Regina A Saskatoon A Swift Current A Uranium City Wynyard Yorkton A	-15 M -13 -16 -13 -17 -16 -12 -18	- 5 X 0 0 1 - 4 X 0 X - 1 0 0 0 0 - 3 0	- 1 - 2 - 8	-29 -26 -39 -28 -27 -22 -29 -26 -24 -31 -25 -30 -26 -24 -23 -41 -24 -26	3.4 6.7 7.4 5.9 7.3 8.2 6.1 4.4	- 5.2 X 5.6 M - 1.2 - 2.0 X 3.5 X 3.1 4.4 2.7 - 0.6 - 1.9 3.9
MANITOBA Bissett Brandon A Churchill A Dauphin A Gillam A Gimli Island Lake Lynn Lake Norway House Pilot Mound Portage la Prairie The Pas A Thompson A Winnipeg Int'l A	-18 -27 -18 -25 -18 -22 -23 -16 -16 -19 -24	- 2 - 1 - 3 X - 1 X - 6 X - 1 - 2 - 1	- 7 - 6 -19 - 6 -13 -10 - 9 - 5 -10 - 8 - 7 - 6 - 9 - 9	-37 -32 -34 -32 -38 -31 -33 -36 -35 -30 -31 -30 -37 -31	8.8 1.6 9.7 2.2 12.5 M 0.2 3.0 13.4 7.9	- 0.9 6.3 X 6.5 X - 2.0 X 9.3 2.8 - 1.1 - 0.4
ONTARIO Armstrong A Atikokan Earlton A Geraldton Gore Bay A Kapuskasing A Kenora A Kingston A Lansdowne House London A Moosonee Mount Forest Muskoka A North Bay A Ottawa Int'l A Petawawa A	-18 -11 -10 -18 - 6 -16 -16 -17 -17 -17 -17 -17 -17 -17 -17 -17 -17	1 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	2 - 6 2 0 - 6P 4 - 9 4 1 - 6 2P 3 0 5	-13 -35 -12 -35	M 8.2 5.3 7.0 5.6 9.0 M 4.7 9.8 2.3 M 10.8 28.9 25.2 14.3	4.2 - 5.6 - 0.7 - 6.0 - 2.9 M M - 1.8 - 4.7 - 7.7 M - 3.5 14.7 12.7

	Temperature (°C)					Precip. (mm)		
Station	Average	Departure	from Normal	Extreme Maximum	Extreme	Total .	Departure from Normal	
Red Lake A Simcoe	-21 -19 M	_	M	- 8 5P	-34 -36 -11P	8.1 M	м	
Sudbury A	-16 - 8 -11 -13		1 3 1 3	- 5 1 1 1	-33 -24 -28 -27	7.0	- 0.9	
Toronto Int'l A Trenton A Trout Lake	- 2 - 3 -24 M	-	4 3 3 X		-13 -12 -37 -29	6.6 8.9 3.4 7.3	- 3.8	
Wawa A Wiarton A Windsor A	- 3 1		3	3 6	-15 -10		- 6.6 1.7	
QUEBEC Bagotville A Baie Comeau Blanc Sablon	-12 -11 -15		-81	1 0 - 3	-28 -25 -27	10.2 7.4 16.4	- 6.0 - 4.0 -14.3	
Border Chibougamau Fort Chimo A	M -17 -27	-	M X 6	-1 9P - 1 -21	-31P -36 -41	15.8 2.4 3.6	- 4.4	
Gaspé A Grindstone Island Inoucdjouac Koartak	-10 - 7 -28 M	=		1 -20	-20 -16 -36 -38P	9.7	- 7.3 - 2.3	
La Grande Rivier A Maniwaki Matagami A	-25 - 6 -18 - 9		5 M	4	-37 -20 -34 -20	4.8	-10.9	
Mont Joli A Montréal Int'l A Natashquan A Nitchequon	- 4 -13 -23	-	4 2 3	6 - 1 - 9	-16 -24 -35	10.9 10.0 6.2	- 6.1 - 8.6 - 1.9	
Port Menier Poste de la Baleine Québec A	-26	-	4 2	-17 0	-19 -40 -21 -22	5.5	1.2 1.2 - 5.3 -17.0	
Riviere du Loup Roberval A Schefferville A Sept-Iles A	-12 -23	-	3 2 0	2 -12 - 1	-30 -35 -25	4.2 4.5 9.3	- 8.6 - 1.4 -15.3	
Sherbrooke A Ste.Agathe des Monts Val d'Or A	- 7 - 8 -13		6 3 1	9 3 1	-21 -21 -31	17.6	- 6.6 - 5.1 - 7.8	
NEW BRUNSWICK Charlo A Chatham A	-10 - 8		0 1	3	-22 -20		-18.2 -18.7 - 7.8	
Fredericton A Moncton A Saint John A	- 6 - 6 M		2 1 M	5	-21 -19	15.0	-11.4 -16.0	
NOVA SCOTIA Eddy Point Greenwood A	- 4 - 4 - 1		X 1 0	7	-13 -15 -10	5.5 1.2 16.9	-21.6 - 6.1	
Sable Island Shearwater A Sydney A Truro	- 3 - 6		1 0 M	7 3 4P	-16 -16 -13P	8.6 19.8 M	-19.8 - 3.5	
Yarmouth A PRINCE EDWARD ISLAND Charlottetown	- 6		2		-13	14.3	- 7.6	
Summerside NEWFOUNDLAND	- 6		1		-18	15.4	- 8.2	
Argentia VTMS Battle Harbour Bonavista Burgeo	- 14 - 7 - 6	=	1 0	0	-19 -18	11.1	-13.5 -17.7	
Cartwright Churchill Falls A Comfort Cove Daniels Harbour	-16 M -10		4 M M 3	- 6P OP		12.2 M M 30.8	10.2	
Deer Lake Gander Int'l A Goose A	-11 -10 -18	-	0 4 4	0 0 - 3	-22 -23 -28 -26P	14.7 11.2 4.7 14.9	-13.0	
Hopedale Port aux Basques St. Albans St. Anthony	- 5 M -14		M 1 M X	0 2P - 3	-16 -19 -26	15.3 M 8.6	-10.8 M X	
St. John's A	- 6 - 5 - 7		0 1	1	-20 -16 -19	19.3 9.1 16.3	-11.3	