

# Climatic Perspectives



ARCH. C2.

May 28 to June 3, 1990

A weekly review of Canadian climate and water

Vol.12 No.22

## Heavy rain and mountain snowmelt contribute to heavy runoff in the Rockies

Although lower elevations of the Western Cordillera are generally free of snow, at higher levels the spring snowmelt has begun. As of the middle of May, the snowpack was well-above normal in the upper Fraser and Peace basins, while the snow remaining in the middle Fraser, Okanagan, Similkameen, Coastal and Vancouver Island basins was well below normal.

Runoff in B.C.'s major snowmelt rivers generally declined in May, however, with average-to-above average snowpacks in the upper Fraser, Thompson, Columbia, Peace and Skeena River basins, the rivers have begun to rise again in response to warmer weather and increased rainfalls.

May was a very wet month in British Columbia and Alberta, and this past week has been no exception. The combination of seasonal mountain snowmelt and heavy rainfalls have swelled many rivers, which have already caused washouts in the mountain valleys. In Alberta, several communities are bracing for floods as river water levels rise downstream from the watershed.

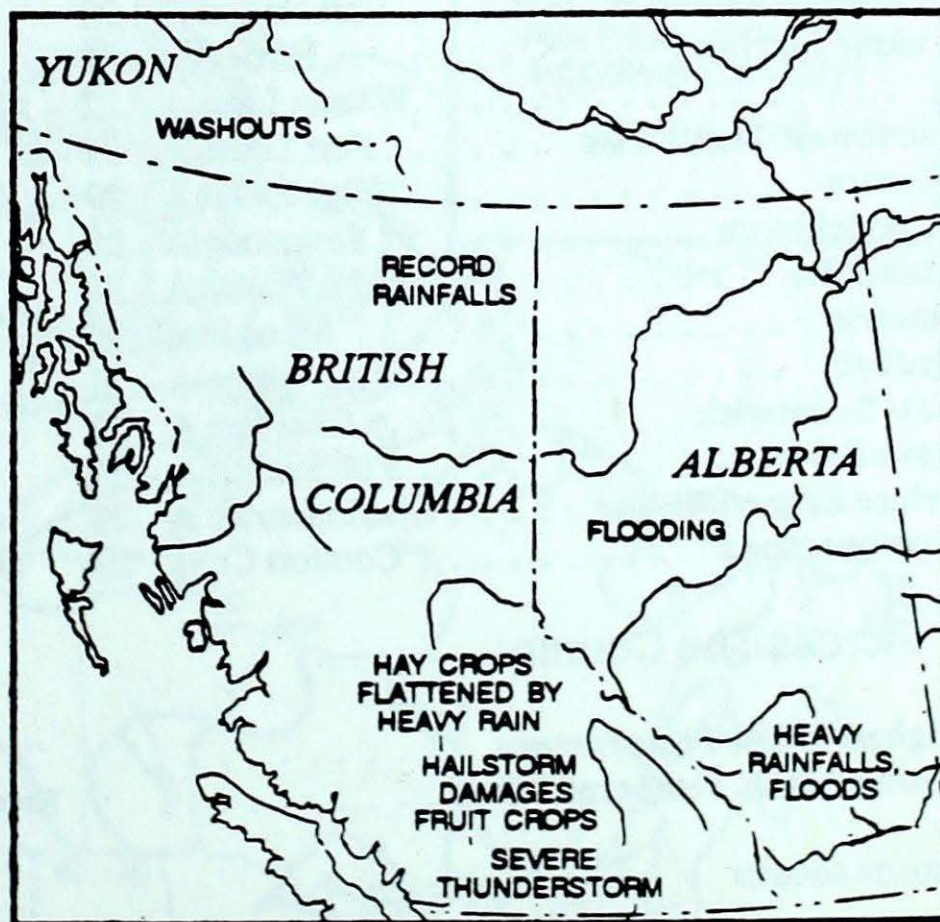
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### Severe weather season arrives

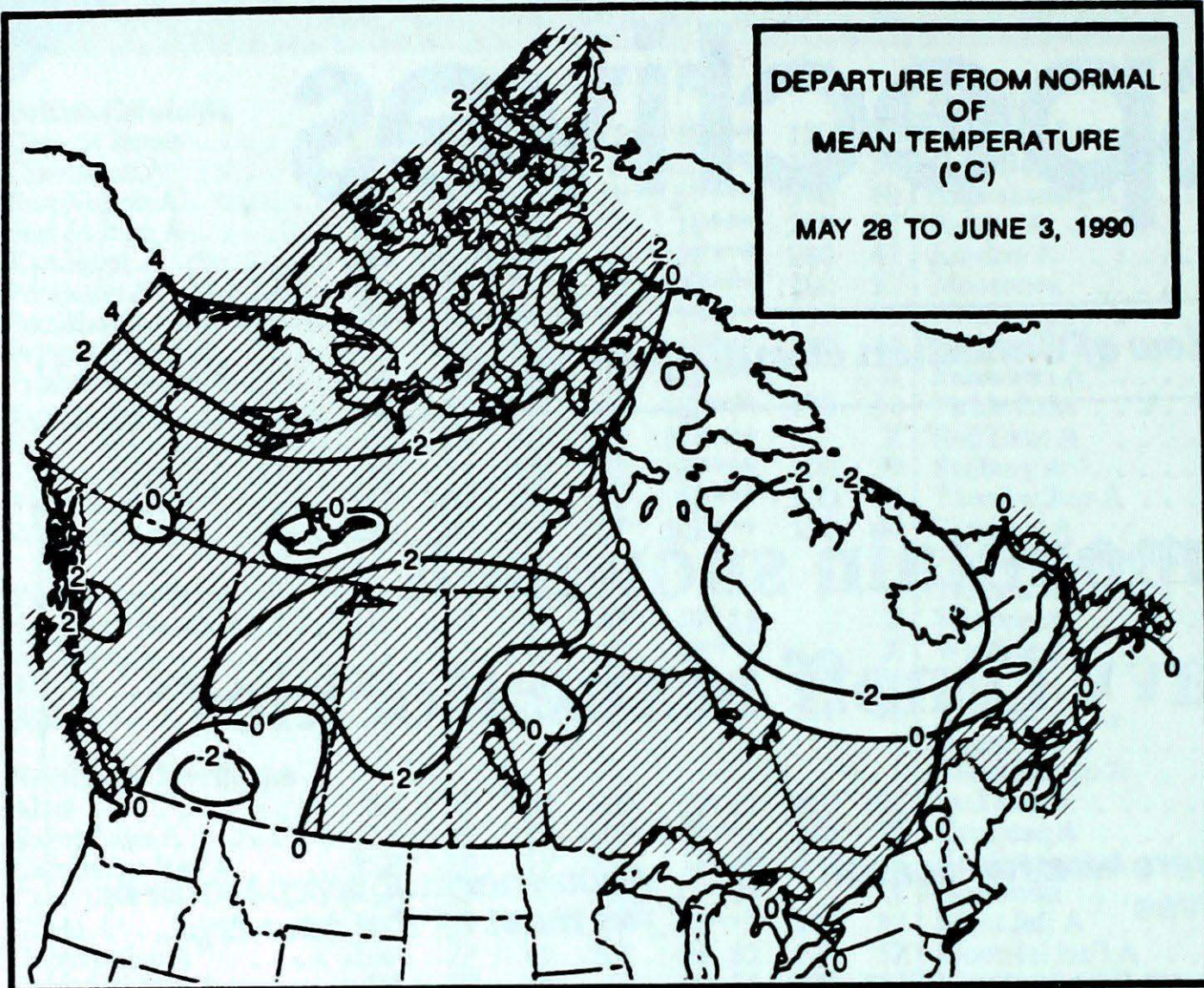
A severe thunderstorm hit the Okanagan Valley early in the morning on June 4, producing torrential rain and damaging hail. In just a couple of hours, 56.6 mm of rain was recorded, and hail wiped out entire orchards. In Saskatchewan and Manitoba, thunderstorms pelted a number of communities with hail, varying in size up to 25 mm. In south-central Ontario on the evening of the 3rd, a fast moving line of severe thunderstorms produced hail, squalls and wind gusts to 110 km/h. In the Lac St-Jean and Saguenay region of Quebec, strong winds on the 28th toppled hundreds of trees. On June 3 at St-Liguori, a tornado was reported to have briefly touched down. The same day strong winds uprooted trees and caused power failures at Ste-Martine and on the western end of Montreal Island.

### Above-normal temperatures for most of the country...

For the week of June 11, above-normal temperatures are forecast across most of the country except below normal conditions are expected for Nova Scotia, New Brunswick, southern Quebec, eastern Ontario, the northern half of the Yukon and the Arctic Islands. The greatest above-normal departures are expected across the southern Prairies.



Recent meteorological events and related impacts that have taken place in the Rocky Mountain watershed.



DEPARTURE FROM NORMAL OF MEAN TEMPERATURE (°C) MAY 28 TO JUNE 3, 1990

**Weekly normal temperatures (°C)**

	max.	min.
Whitehorse A	15.8	3.0
Iqaluit A	3.2	-2.5
Yellowknife A	14.4	4.2
Vancouver Int'l A	18.2	9.3
Victoria Int'l A	18.1	8.1
Calgary Int'l A	18.5	5.4
Edmonton Int'l A	19.8	5.5
Regina A	21.2	6.5
Saskatoon A	20.6	6.7
Winnipeg Int'l A	20.6	7.6
Ottawa Int'l A	21.3	9.9
Toronto (Pearson Int'l A)	21.0	8.7
Montréal Int'l A	21.3	10.4
Québec A	20.1	7.9
Fredericton A	20.7	7.4
Saint John A	17.2	6.4
Halifax (Shearwater)	16.3	6.9
Charlottetown A	16.9	6.9
Goose A	13.9	2.7
St John's A	13.0	3.1

**Weekly temperature and precipitation extremes**

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Fort Nelson A 28	Clinton (aut) 2	Abbotsford A 79
Yukon Territory	Faro (aut) 22	Komakuk Beach A -3	Watson Lake A 29
	Watson Lake A 22		
Northwest Territories	Fort Smith A 31	Clyde A -14	Cape Dorset A 15
Alberta	High Level A 29	High Level A -1	Calgary Int'l A 42
Saskatchewan	Saskatoon A 28	La Ronge A -3	Moose Jaw A 38
Manitoba	Portage La Prairie A 31	Grand Rapids (aut) -5	Gimli 71
Ontario	Moosonee 30	Moosonee -5	Moosonee 81
Québec	Gaspe A 31	La Grande Rivière -5	Parent (aut) 60
New Brunswick	Chatham A 32	Charlo A -2	Saint John A 50
Nova Scotia	Sydney A 30	Sydney A 2	Greenwood A 68
Prince Edward Island	Charlottetown A 26	Charlottetown A 1	Charlottetown A 71
Newfoundland	Comfort Cove 29	Wabush Lake A -5	St Anthony 68

**Across The Country...**

Highest Mean Temperature	Windsor A (ON)	17
Lowest Mean Temperature	Broughton Island(NWT)	-7

CLIMATIC PERSPECTIVES  
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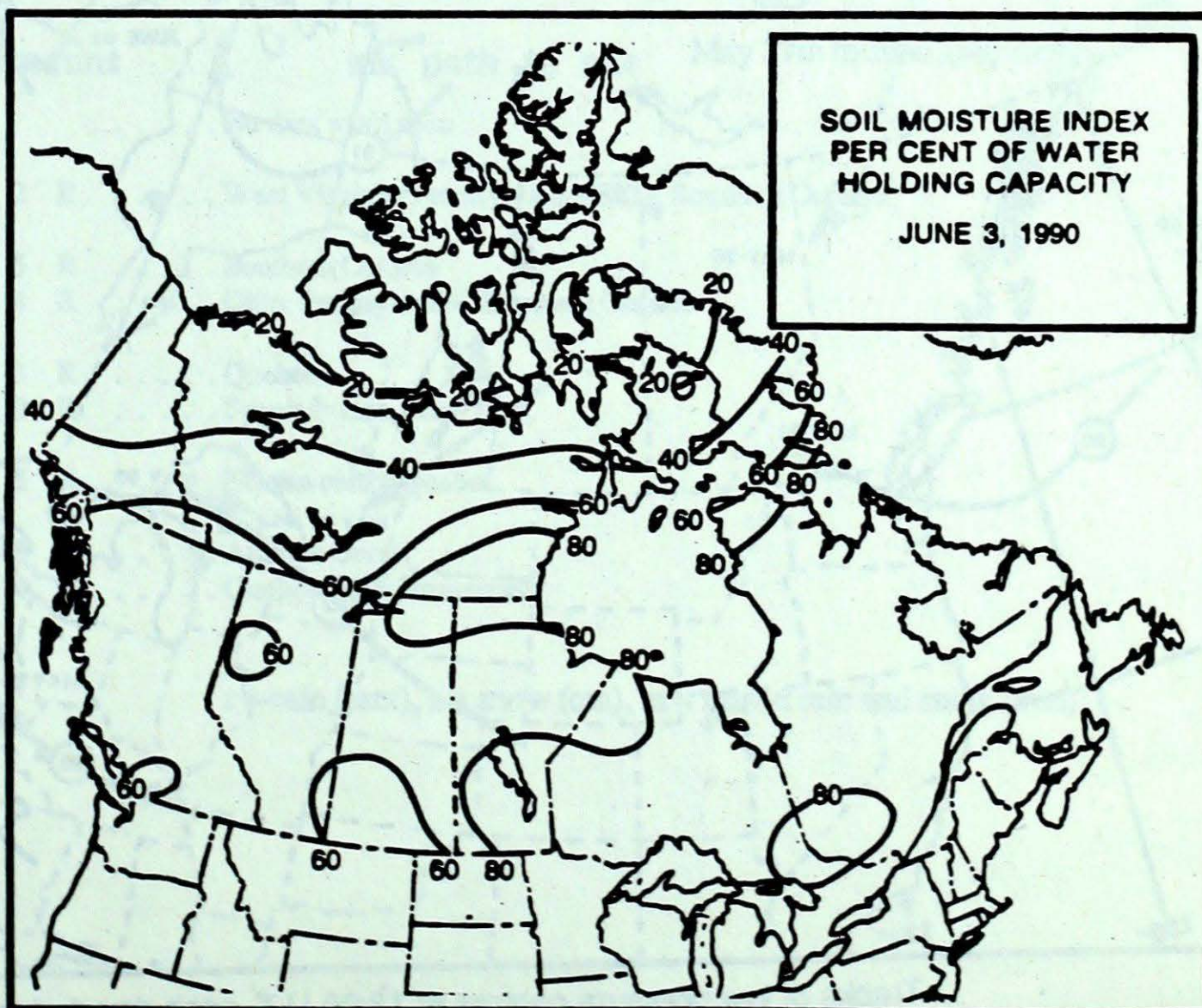
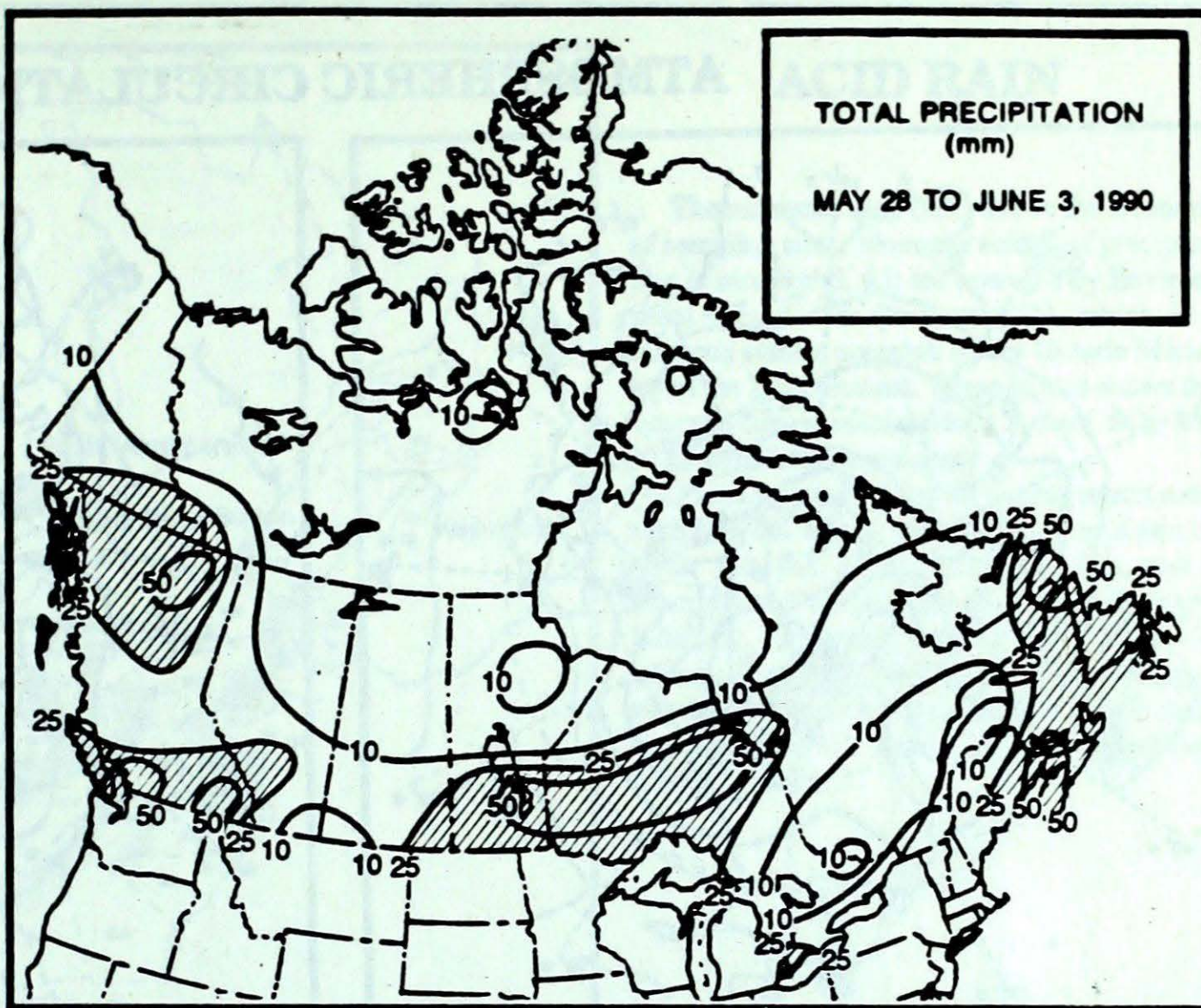
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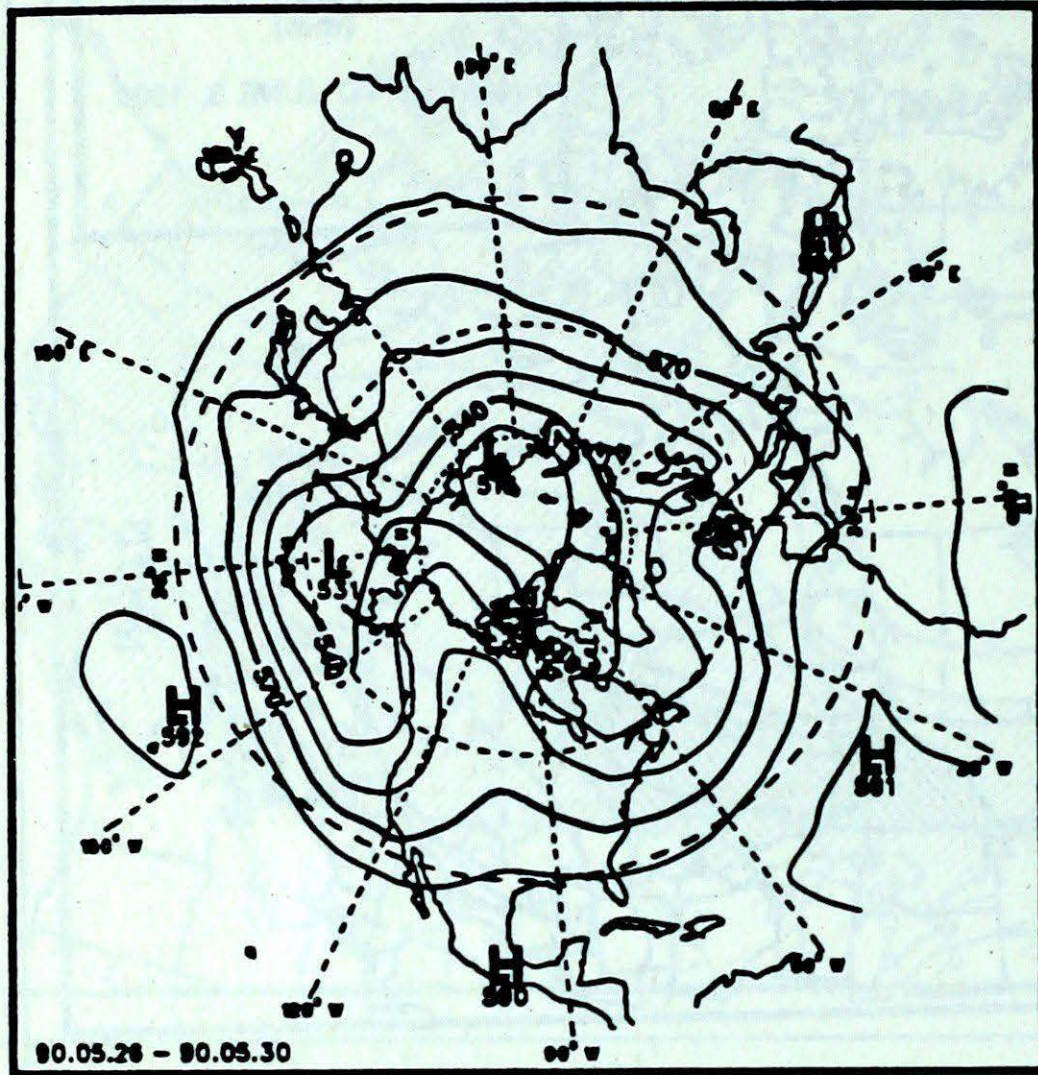
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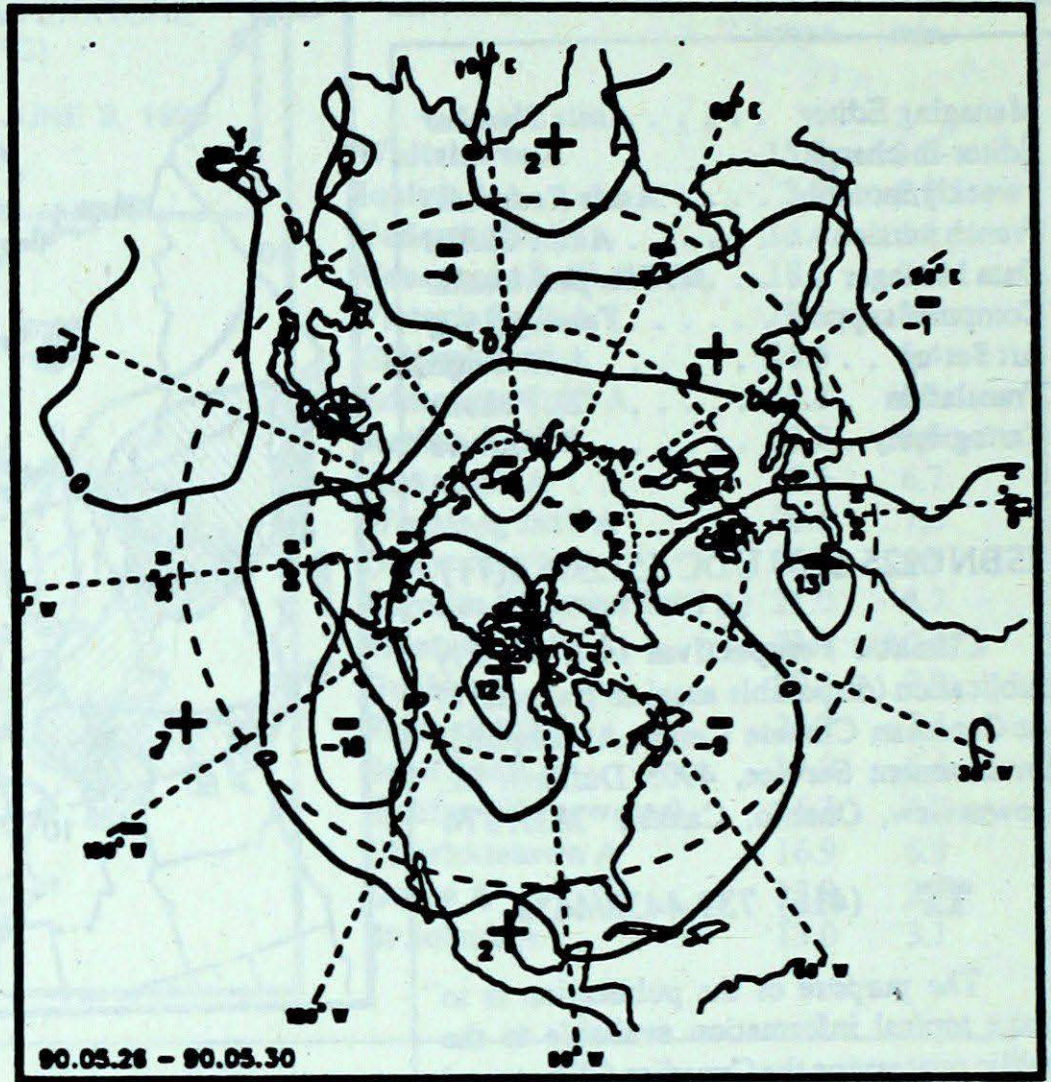
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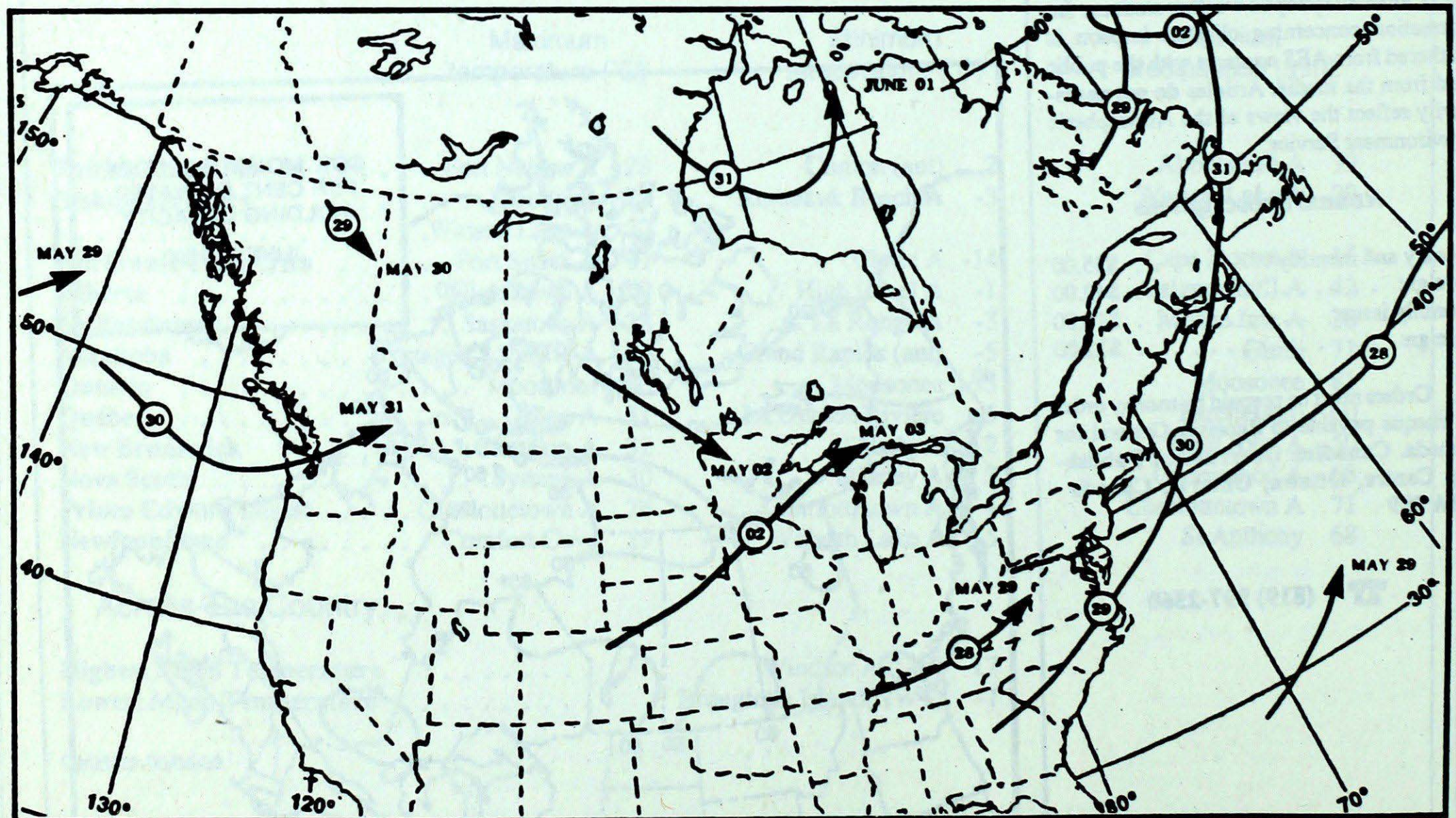
### ATMOSPHERIC CIRCULATION



Mean geopotential height  
50-kPa level (10-decametre intervals)



Mean geopotential height anomaly  
50-kPa level (10-decametre intervals)

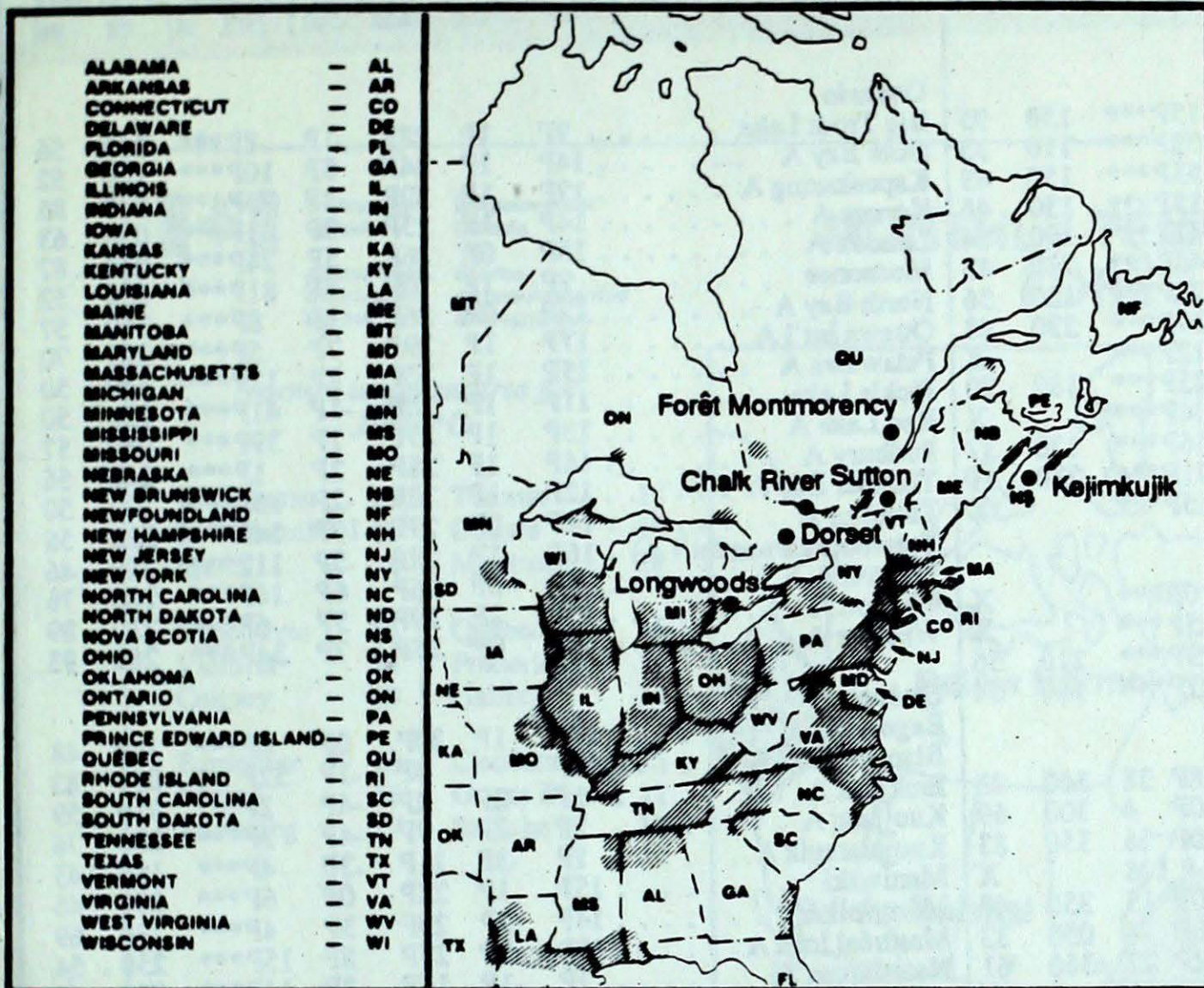


Tracks of low pressure centres at 12:00 U.T. each day during the period.

## ACID RAIN

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<sub>2</sub> and NO<sub>x</sub> 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.



Site	day	pH	amount	air path to site	May 27th to June 2nd, 1990
Longwoods				.....	No data available
Dorset *	2	3.8	2 R	.....	West Virginia, Pennsylvania, Ohio, Southern Ontario
Chalk River	1	3.6	5 R	.....	Southern Ontario
	2	3.9	4 R	.....	Ohio, Pennsylvania, Southern Ontario
Sutton	29	4.0	3 R	.....	Quebec
	2	3.4	2 R	.....	Pennsylvania, New York
Montmorency	28	4.4	5 R	.....	Northwestern Quebec
Kejimikujik	29	5.1	40 R	.....	Atlantic Ocean
	30	4.8	4 R	.....	Quebec, New Brunswick

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

STATION	temperature				precip. ptot	st	wind max		STATION	temperature				precip. ptot	st	wind max	
	mean	anom	max	min			dir	vel		mean	anom	max	min			dir	vel
<b>British Columbia</b>								<b>Ontario</b>									
Cape St James	11P	1P	18P	7P	15P***	150	95	Big Trout Lake	9P	1P	28P	-1P	8P***	360	56		
Cranbrook A	10P	-3P	17P	3P	52P***	110	33	Gore Bay A	14P	1P	24P	5P	10P***	160	52		
Fort Nelson A	13P	0P	28P	2P	53P***	150	43	Kapuskasing A	12P	1P	29P	-3P	74P***	240	85		
Fort St John A	11P	-2P	23P	4P	15P***	130	46	Kenora A	14P	1P	25P	2P	51P***	030	63		
Kamloops A	15P	-2P	23P	9P	12P***	190	54	London A	15P	0P	26P	5P	24P***	230	87		
Penticton A	14P	-1P	23P	9P	48P***	210	43	Moosonee	9P	1P	30P	-6P	81P***	230	52		
Port Hardy A	12P	1P	17P	6P	22P***	120	56	North Bay A	13P	0P	26P	1P	8P***	360	57		
Prince George A	13P	1P	22P	3P	39P***	230	48	Ottawa Int'l A	17P	1P	29P	7P	5P***	220	70		
Prince Rupert A	12P	2P	18P	7P	12P***		X	Petawawa A	15P	1P	30P	2P	12P***	340	50		
Revelstoke A	13P	-2P	22P	7P	25P***	180	70	Pickle Lake	11P	1P	28P	-1P	41P***	220	50		
Smithers A	12P	1P	19P	6P	34P***		X	Red Lake A	13P	1P	27P	1P	39P***	050	57		
Vancouver Int'l A	14P	0P	20P	9P	56P***	120	37	Sudbury A	14P	1P	28P	2P	1P***	240	56		
Victoria Int'l A	13P	0P	20P	6P	41P***	230	41	Thunder Bay A	12P	1P	28P	-2P	15P***	200	50		
Williams Lake A	12P	1P	19P	4P	15P***		X	Timmins A	14P	2P	29P	-10P	14P***	320	56		
<b>Yukon Territory</b>								<b>Toronto (Pearson Int'l A)</b>									
Komakuk Beach A	3P	3P	11P	-3P	0P***		X	Trenton A	15P	0P	26P	6P	16P***	280	76		
Teslin (aut)	9P	*	20P	2P	25P***		X	Warton A	15P	2P	29P	5P	6P***	230	89		
Watson Lake A	10P	0P	22P	3P	29P***	210	56	Windsor A	17P	0P	26P	7P	34P***	260	93		
Whitehorse A	11P	1P	20P	2P	21P***	160	54	<b>Québec</b>									
<b>Northwest Territories</b>								<b>Bagotville A</b>									
Alert	-4P	2P	1P	-8P	8P	38	340	43	Blanc Sablon A	3P	*	9P	-1P	52P	1	050	83
Baker Lake A	1P	2P	8P	-5P	0P	4	300	69	Inukjuak A	-1P	-2P	2P	-4P	2P	1	310	59
Cambridge Bay A	-1P	3P	5P	-6P	0P	26	350	83	Kuujuuaq A	2P	-2P	9P	-4P	2P***	280	76	
Cape Dyer A	*	*	1	*	*	108		X	Kuujuarapik A	1P	-3P	11P	-3P	4P***	180	43	
Clyde A	-3P	0P	3P	-14P	0P	15	350	48	Maniwaki	15P	1P	28P	0P	6P***	280	46	
Coppermine A	4P	7P	19P	-3P	0P	4	050	33	Mont Joli A	14P	2P	29P	3P	4P***	240	69	
Coral Harbour A	-3P	-1P	3P	-9P	2P	22	360	61	Montréal Int'l A	18P	2P	27P	8P	15P***	250	54	
Eureka	-3P	1P	1P	-6P	1P	14	330	61	Natashquan A	7P	-1P	16P	2P	14P***	260	65	
Fort Smith A	13P	2P	31P	-3P	5P***	060	46	Québec A	14P	0P	29P	0P	2P***	260	56		
Hall Beach A	-4P	1P	2P	-11P	0P	45	330	39	Schefferville A	2P	-3P	15P	-4P	12P***	270	80	
Inuvik A	9P	4P	21P	-1P	0P***	130	43	Sept-Îles A	9P	0P	25P	-2P	1P***	310	59		
Iqaluit A	0P	-1P	3P	-6P	0P	3	150	56	Sherbrooke A	13P	0P	26P	-1P	14P***	290	57	
Mould Bay A	-1P	3P	6P	-7P	0P	2	030	52	Val-d'Or A	13P	1P	29P	-2P	6P***	250	44	
Norman Wells A	15P	5P	28P	5P	0P***	120	56	<b>New Brunswick</b>									
Resolute A	-4P	2P	0P	-7P	0P	24	330	76	Charlo A	13P	1P	31P	-2P	6P***	280	57	
Yellowknife A	10P	1P	25P	0P	0P***	150	35	Chatham A	14P	1P	32P	0P	35P***	190	56		
<b>Alberta</b>								<b>Fredericton A</b>									
Calgary Int'l A	12P	0P	20P	4P	42P***	020	56	Moncton A	13P	0P	28P	1P	43P***	220	82		
Cold Lake A	15P	2P	27P	6P	0P***	130	56	Saint John A	11P	-1P	23P	4P	50P***	020	70		
Edmonton Namao A	13P	0P	26P	4P	11P***	140	56	<b>Nova Scotia</b>									
Fort McMurray A	15P	3P	29P	0P	11P***	130	50	Greenwood A	15P	1P	28P	5P	68P***	220	85		
High Level A	14P	1P	29P	-1P	9P***	350	57	Shearwater A	13P	2P	25P	5P	25P***	340	74		
Jasper	13P	2P	23P	6P	20P***		X	Sydney A	13P	3P	30P	2P	47P***	300	59		
Lethbridge A	13P	-1P	20P	3P	20P***	240	63	Yarmouth A	12P	0P	21P	6P	66P***	340	78		
Medicine Hat A	15P	0P	26P	3P	9P***	110	46	<b>Prince Edward Island</b>									
Peace River A	15P	3P	26P	5P	1P***	140	50	Charlottetown A	13P	2P	26P	1P	71P***	320	74		
<b>Saskatchewan</b>								<b>Summerside A</b>									
Cree Lake	11P	0P	28P	-3P	9P***	050	52	13P	0P	26P	3P	45P***	360	80			
Estevan A	16P	2P	27P	1P	37P***	150	61	<b>Newfoundland</b>									
La Ronge A	12P	0P	27P	-3P	2P***	060	37	Cartwright	6P	0P	21P	-2P	26P	6	340	89	
Regina A	16P	2P	27P	0P	7P***	160	74	Churchill Falls A	3P	-3P	18P	-3P	13P	1	260	83	
Saskatoon A	16P	2P	28P	3P	15P***	140	52	Gander Int'l A	12P	3P	27P	1P	5P***	240	61		
Swift Current A	14P	1P	26P	2P	9P***	130	65	Goose A	7P	-2P	25P	-2P	11P***	260	98		
Yorkton A	14P	1P	27P	0P	8P***	020	59	Port Aux Basques	6P	-1P	15P	1P	33P***	310	93		
<b>Manitoba</b>								<b>St John's A</b>									
Brandon A	15P	2P	29P	2P	18P***	040	56	11P	3P	23P	1P	14P***	300	100			
Churchill A	6P	4P	27P	-2P	4P***	360	48	St Lawrence	6P	0P	14P	1P	21P***		X		
Lynn Lake A	13P	3P	28P	-1P	5P***	230	37	Wabush Lake A	3P	-4P	18P	-5P	12P	1	270	56	
The Pas A	13P	1P	28P	1P	0P***	040	41	<b>90/05/28-90/06/03</b>									
Thompson A	10P	0P	29P	-4P	10P***	040	44										
Winnipeg Int'l A	17P	2P	29P	3P	48P***	030	91										

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.  
 vel = wind speed in km/h

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

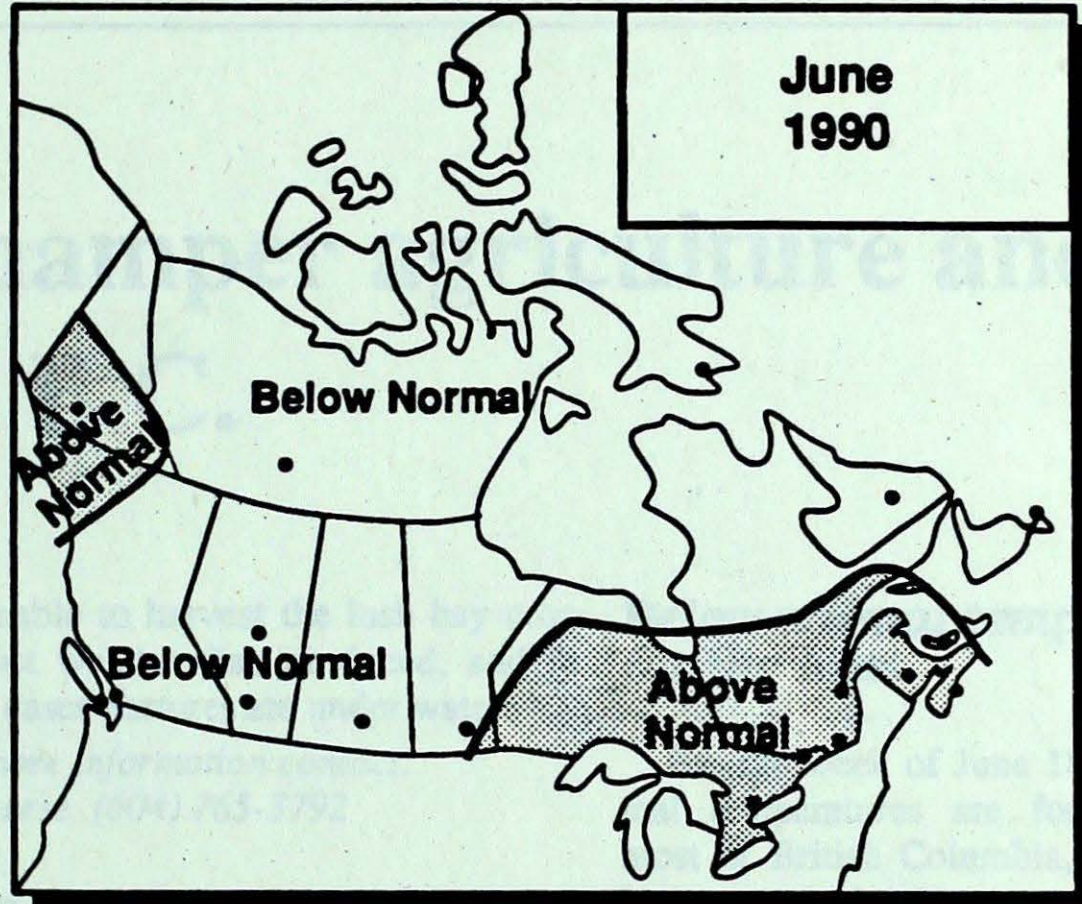


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## MONTHLY TEMPERATURE FORECAST

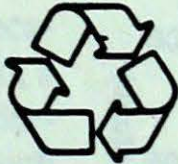
### Normal temperatures for June, °C

Whitehorse	12	Toronto	18
Yellowknife	13	Ottawa	18
Iqaluit	3	Montréal	18
Vancouver	15	Québec	16
Victoria	14	Fredericton	16
Calgary	13	Halifax	14
Edmonton	15	Charlottetown	15
Regina	16	Goose Bay	11
Winnipeg	17	St. John's	11



Canada

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