

Due to a strong atmospheric ridge of warm air over Ontario and Quebec, surface daytime temperatures rose to the upper twenties and low thirties at many southern locations in the two provinces during the first half of the period. May 9, maximum temperatures reached 33°C at Petawawa in eastern Ontario and at St. Hubert near Montreal.

To the west of the ridge, storm tracks following the upper air flow, moved northeastward and deposited up to 50 mm of precipitation in northern Ontario.

Temperatures in the eastern Canadian Prairies continued to be well below the average expected for this time of the year, at least for the first half of the period, as surface weather was under the influence of a deep atmospheric trough of cold air.

NOTE: The data shown in this publication are based on unverified reports from approximately 170 Surface Synoptic reporting stations of the Atmospheric Environment Service.

YUKON TERRITORY

Weekly temperatures ranged from near normal in the north to 2°C below normal in the south. Dawson recorded the warmest temperatures in the Territory during this week with 15°C reported on the 10th and 17th. 81 Precipitation continued to be seasonably light (weekly amounts, 3 mm to





NORTHWEST TERRITORIES

With the exception of a temperature anomaly of -2°C in the southern portions of the District of Keewatin, weekly temperatures ranged from normal to above normal throughout the Territories. Anomalies of +5°C occurred in the central Canadian Arctic Archipelago. Temperature extremes ranged from 18°C at Fort Simpson on the 12th to -23°C at Cambridge Bay on the 8th.

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Generally, less than 5 mm of precipitation fell throughout the Territories.

Break-up along the Hay River, which flows into Great Slave Lake, has resulted in localized flooding of low lying areas of the community of Hay River over the weekend. The 1.2 metre thick ice began jamming at a point where the river splits into the east and west channels about Veil Island, the community's business centre. About 45 residents were evacuated. Officials were still hopeful that rising water levels would find their own course through the ice jam. Flooding is a perennial problem along this stretch of the river. The community's worst flood disaster occurred at the end of April, 1963, following a 3 week spring thaw which removed much of the heavier than normal winter snowfall over the Hay River.

approximately 170 Surface Sanoptic reporting stations of the Atocspharti

Flood waters rose as much as 6.1 metres at the mouth of the river where onrushing ice-filled waters met the still solid ice barrier of Great Slave Lake. Severe flooding also occurred at the island townsite of Fort Simpson along the McKenzie River during this same period in 1963.

In the Beaufort Sea some leads are opening in the ice pack, a condition which is not unusual at this time of year.

In the eastern Arctic there is less ice than normal on the Davis Straits, a good sign for the oncoming shipping season.



BRITISH COLUMBIA

Near normal temperatures prevailed throughout the week as daytime readings reached the high teens and low twenties at most interior observing stations. Extremes ranged from 25°C at Castlegar on the 14th to -3° C at Fort Nelson on the 8th.

Unseasonably light precipitation fell during the week. Amounts were less than 5 mm in the interior and less than 20 mm along the coast.

ALBERTA

Conditions ameliorated somewhat as slightly below normal temperatures and generally dry weather predominated in direct contrast to the cold snowy weather of the previous week.

Alberta Hydrology reported increased flows during the past week as warm temperatures have initiated snowmelt over the mountain watershed area. However, most streams are flowing at normal levels for the period. With improved drying conditions Alberta Agriculture reported an increase in field work during the past week. In central areas of the province, field word is in progress on the better drained agricultural lands while only very spotty field work was reported in the Peace River district.

SASKATCHEWAN

Cool weather continued as temperatures averaged approximately 1°C below normal in the west and up to 5°C below normal in the eastern half of the province. On May 9, a low maximum record for the day was tied at Broadview when the temperature dropped to 2°C; at Estevan a new low maximum record was established for the day when the thermometer rose to only 2°C also (the previous record was 7°C set in 1946). A warming trend moved into the eastern half of the province by the 11th as maximum temperatures rose to the high teens.

Precipitation was unseasonably light, with amounts generally less than 5 mm.

Agriculture Canada - Research Branch, reports that computer derived estimates indicate that soil moisture reserves are near field capacity.

MANITOBA

Temperatures averaged as much as 6°C below the weekly normal in southern Manitoba as several low daily maximum records were set on the 9th.

	Maximum Temp. (°C)	Previous Record
Brandon	0°C	+1°C (1902)
Portage la Prairie	+1°C	+4°C (1956)
Gimli	+2°C	+5°C (1956)
Bissett	+2°C	+4°C (1946)
Pilot Mound	+1°C	+3°C (1967)
Dauphin	+1°C	+1°C (1946)

12 to 25 mm of precipitation fell during the week in the Red River Valley but flood waters were going down and people were returning to their homes. Recent precipitation has slowed down the retreat of flood waters slightly.

On May 10th and 11th, Winnipeg received a total of 7.2 cm of snow; warming developed thereafter with a maximum temperature of 16°C at Winnipeg on the 12th.

ONTARIO

Hot, humid weather during the first half of the week gave Ontario an early taste of summer. May 8 - 10 saw a number of record high maximum and high minimum temperature records established as daytime readings soared to the 30° C levels in the eastern half of Ontario. For example, Muskoka recorded 29° C on the 9th and 10th, surpassing the old mark set in 1953. Wiarton set an all time record high minimum for May with an overnight low of 21° C on May 9. The warmest temperature in the province, 33° C, occurred at Petawawa on the 9th. Temperatures returned to seasonable values on the 12th in southern Ontario; in the north a cold front near the week's end brought snow and near record low temperatures.

Considerable convective activity brought 30 mm to 35 mm of rain to some localities in southern Ontario; others received less than normal amounts. Hail and heavy rain caused damage in areas south of Parry Sound and the vicinity of Muskoka Airport, while 1.3 cm of hail was reported in Chesley, a small village to the east of Lake Huron. Water levels have stabilized in Lake Nipissing despite 25 mm of rain in the area. As of May 14, flooding was reported in the White River area northeast of Lake Superior.

QUEBEC

The beginning of the week was marked by an infiltration of warm but dry air over northwestern regions of the province. A maximum of 27.3°C was observed at Val d'Or on the 8th; the previous record, set in 1964, was 25°C. The warm air spread to the southern areas on the 9th and new records were set at most stations. St. Hubert recorded 32.6°C, the highest in the province for the week. Weekly temperature anomalies reached 7.3°C at Maniwaki. The small heatwave was replaced by a cooler air-mass producing below normal temperatures but weekly temperature anomalies remained positive.

The weather was not so warm over the north Shore, but nevertheless, a new record was set on the 11th at Sept-Iles with 14°C. This section of the province suffered generally cloudy weather and showers but temperatures remained above normal. There have been 9 days with precipitation at Sept-Iles since the month began.

An Eastern Township newspaper reported that spring 1979 favoured a record production of maple products. The maple season, which began on March 3rd, ended on April 17th.

ATLANTIC PROVINCES

Weekly temperatures averaged 1°C to 2°C below the 1941-70 normal on the east coast of Newfoundland and 1°C to 4°C above normal elsewhere. Hopedale, Labrador, reported a maximum temperature of 10°C on the 13th, setting a new daily high maximum record for the date. The warmest temperature in the Atlantic Provinces, 25°C, occurred at Fredericton on the 9th.

Precipitation ranged from 20 mm to 50 mm in southern New Brunswick and portions of Nova Scotia adjacent to the Bay of Fundy; elsewhere in New Brunswick, Nova Scotia and Prince Edward Island precipitation was light. 30 - 50 mm of precipitation fell in most portions of Newfoundland; in Labrador, precipitation was extremely variable ranging from 10 mm to 35 mm.

Thunderstorms late on the 9th and early on the 10th left various areas of the Maritimes without power. Lightning damage was sustained by a few homes in Nova Scotia.

A forest fire at Rolling Dam near St. Stephen, New Brunswick, destroyed 10 homes, a covered bridge, damaged a church and destroyed over 400 hectares of forest on Thursday and Friday. At least 57 other fires have been reported around New Brunswick so far this spring.

Ice in Notre Dame Bay and White Bay on the northeast coast of Newfoundland has the potential to cause problems for local fishermen.

Labrador ice is a little less than normal for this time of year. Since the Straits of Belle Isle are almost clear of ice, ships will be using this route shortly with caution due to icebergs.

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STATION	MONTHLY CUMULATIVE TOTAL	MONTHLY DIFF. FROM 1941-70 NORMAL	SEASONAL TOTAL	SEASONAL DIFF. FROM 1941-70 NORMAL	SEASONAL PERCENT OF NORMAL		
Resolute	353.0	-28.0	11825.0	333.0	103		
Inuvik and Johnani	242.5	-39.5	9314.5	-313.5	97		
Whitehorse	152.5	-0.5	6742.5	219.5	103		
Vancouver Int'l A	76.0	-6.0	2968.0	138.0	105		
Edmonton Mun A	150.0	44.0	5577.5	213.5	104		
Calgary Int'l A	177.0	55.0	5476.5	428.5	108		
Regina	187.5	72.5	6383.5	679.5	112		
Winnipeg Int'l A	178.5	64.5	6461.0	770.0	114		
Thunder Bay	163.0	35.0	6012.5	570.5	110		
Windsor	60.5	-11.5	3666.5	174.5	105		
Toronto Int'l A	91.0	-2.0	4120.0	180.0	105		
Ottawa Int'l A	76.0	-17.0	4607.5	66.5	101		
Montreal Int'l A	70.5	-16.5	4564.0	212.0	105		
Quebec	99.0	-11.5	5080.0	197.0	104		
Saint John, N.B.	111.5	-24.5	4506.0	20.0	100		
Halifax	108.0	-23.0	4021.5	178.5	105		
Charlottetown	130.0	-14.0	4432.5	83.5	102		
St. John's, Nfld.	188.0	23.0	4556.0	203.0	105		

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GROWING DEGREE-DAYS

Beginning with this issue, maps depicting accumulations of growing degree-days* will become a regular weekly feature of 'Climatic Perspectives'. The definition of growing degree-days is:

> $G = T_m - B \text{ for } T_m > B$ $G = 0 \qquad \text{for } T_m \le B$

where

T_m is the mean daily temperature

3" is the base or threshold temperature 5°C

G is the growing degree-day total for the day.

To eliminate isolated warm days which contribute nothing to plant growth and which occur at the beginning of the growing season in the spring and at the end of the growing season in the fall, several boundary conditions are incorporated.

First, accumulations begin following the last period of 5 consecutive spring days which have mean temperatures less than 5°C; similarly, accumulations terminate with the day preceding the first occurrence in fall of a period of 5 consecutive days with mean temperatures less than 5°C. Furthermore, any occurrence of an overnight minimum temperature less than or equal to -2° C, after September 1, terminates the seasonal accumulation.

* based on 96 climate stations



15 DAY TEMPERATURE ANOMALY FORECAST



Forecast Method

Analogue technique based on point prediction at 70 Canadian stations.

Temperature Scale

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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 Tempera	ature Anomaly (AT) Forecast
Dawson	Below Normal	$(-1.4^{\circ}C < \Delta T < -0.4^{\circ}C)$

Trenton Vancouver Above Normal Below Normal $(+0.5°C < \Delta T < +1.5°C)$ $(+0.4°C < \Delta T < +1.5°C)$ $(-1.2°C < \Delta T < -0.4°C)$

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

Commencing in this issue a 500 mb (50 kPa) Northern Hemisphere Seven Day Mean Height Field Map will be included, giving a better understanding of the upper air flow for each period. Some ongoing adjustments will be made in future issues, with high priority being given to include a 500 mb (50 kPa) seven day mean height anomaly map.

The 500 mb (50 kPa) level of the atmosphere on the average 5000 metres (500 dam) high, is generally considered as the steering flow for weather has systems. At this level air movement is nearly parallel to the contour lines depicted on the map, with wind speed being proportional to the contour gradient (i.e. inversely proportional to the distance between contour lines). Wind flow is generally in a west to east direction but aligning itself in wave-like patterns, around the hemisphere. These patterns called "waves" can vary in amplitude considerably, and usually persist for much longer periods than the surface wind fields. When the amplitude of these becomes waves increases and stronger (meridional flow) and their slow eastward progression slows down or stops, it is said that they have become Quasi-Stationary. If such is the case, strong temperature anomalies can occur over certain areas.

Above normal temperatures can usually be expected in terly upper air flow, or in May 7 to 13, 1979 other words, downstream from a

500 mb (50 kPa) Circulation



areas where there is a southwes- 50 kPa (500 mb) Height Map (decametres) 7 Day Mean

trough position and upstream from a ridge. Below normal temperatures can usually be expected in areas where there is a northwesterly upper air flow, downstream from a ridge position and upstream from a trough. Likewise, temperatures can usually be expected to be close to normal if the upper air flow is "zonal"; a west to east wind flow with no waves, or ones with a very weak amplitude.

Surface weather conditions are also affected by the 500 mb (50 kPa) up-Areas in the vicinity of a "cyclonic" air flow (wind direction per air flow. changing anti-clockwise) or a trough position, may receive relatively unsettled weather, while areas in the vicinity of an "anti-cyclonic" air flow (wind direction changing clockwise) or ridge position, may receive relatively more stable, warmer weather in summer, cooler weather in winter.

There are many other factors which can influence weather conditions, for example, topographic features such as mountains, large bodies of water (Great Lakes) etc., but over all, the 500 mb (50 kPa) upper air flow relates well to the surface weather pattern.

Andy Radomski

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TEMPERATURE AND PRECIPITATION DATA FOR THE WEEK ENDING 0600 G.M.T. 15 MAY, 1979

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