

**CLIMATIC PERSPECTIVES**

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VOL 2 ISS 9  
CLIMATIC PERSPECTIVES

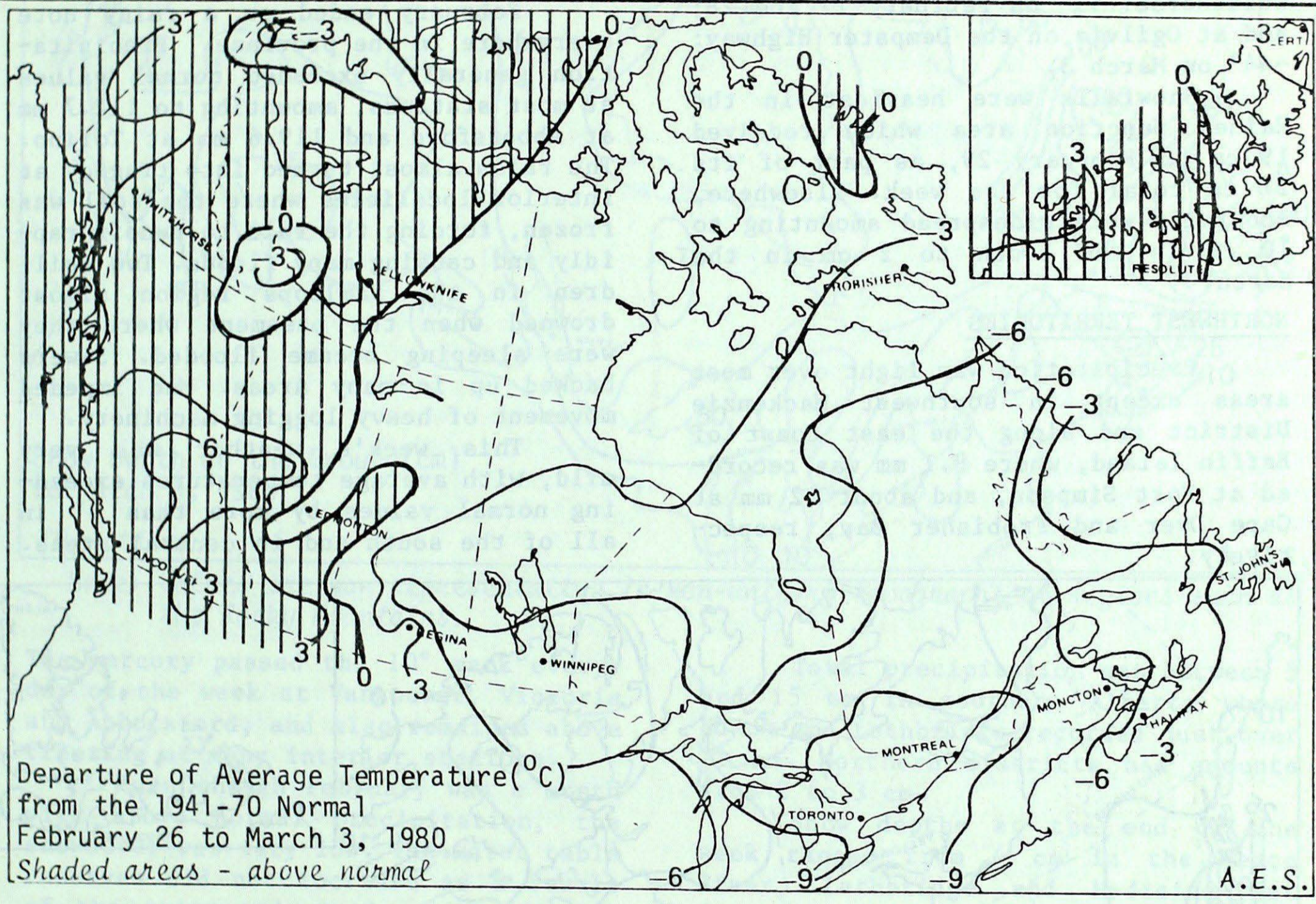
CLIMATE CENTRE,  
ENVIRONMENT SERVICE,  
DOWNSVIEW, ONTARIO M3H 5T4

**NON-CIRCULATING**

MARCH 7, 1980

(Aussi disponible en français)

VOL. 2 NO. 9



**WEATHER HIGHLIGHTS FOR THE WEEK - FEBRUARY 26 - MARCH 3, 1980**

Heavy Rains in British Columbia, cold wave elsewhere

Only British Columbia could escape the cold wave which encompassed the rest of Canada and produced a long list of record low temperatures from Saskatchewan to the Maritimes. In spite of a few snowfalls most eastern areas experienced fairly sunny weather accompanying the Arctic air. Temperatures dipped to  $-48^{\circ}$  at Eureka, indicating that winter has still some cold air in reserve for the southern areas. In contrast, the mercury reached  $16^{\circ}$  at Port Hardy.

Rain was quite plentiful on the Pacific Coast amounting to 119.6 mm at Tofino and, with very few exceptions, exceeding normal values in the entire province. Rain throughout interior areas caused numerous local floods. Two young children narrowly missed being drowned during their sleep. On the Atlantic Coast, Cape Breton Island and Newfoundland endured the effects of two storms which dumped more than 40 cm of snow, partially paralysing urban centres.

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

YUKON

Winter returned in force near the end of February after above normal temperatures for much of the month. The last few days of February were 5 to 10° above normal but the first days of March dropped 5° to 12° below seasonable values. This was reflected by temperature extremes reported at Whitehorse: +3° on February 27 and 28; and at Ogilvie on the Dempster Highway: -44° on March 3.

Snowfalls were heaviest in the Haines Junction area which received 19 cm on February 29, as part of its 27 cm total for the week. Elsewhere, snowfalls were widespread amounting to 10 cm in the south to 2 cm in the north.

NORTHWEST TERRITORIES

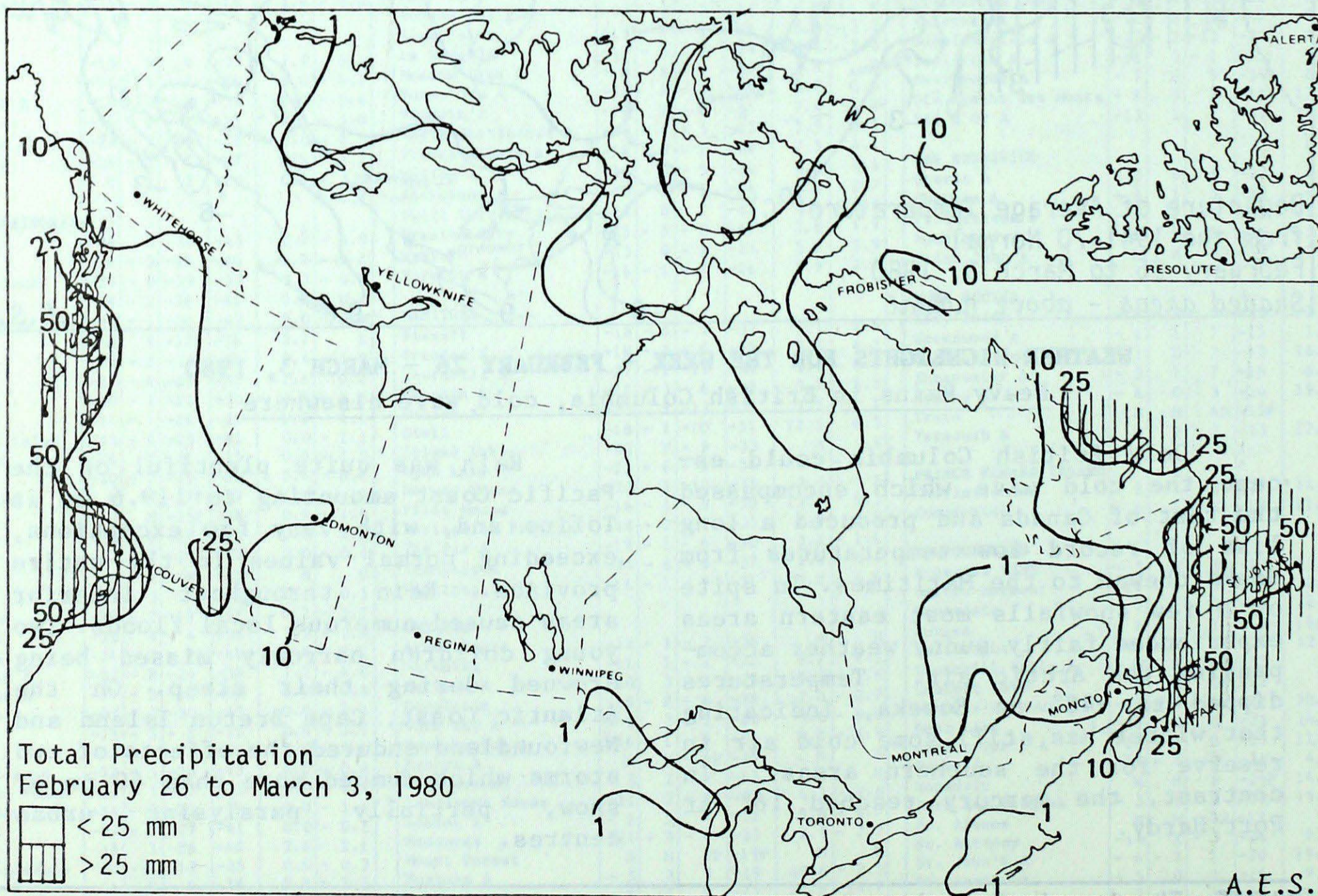
Precipitation was light over most areas except in southwest Mackenzie District and along the east coast of Baffin Island, where 8.1 mm was recorded at Fort Simpson, and about 12 mm at Cape Dyer and Frobisher Bay, respectively.

Mean temperatures were within a few degrees of normal, the western Arctic (except for several small areas) being above, and the eastern Arctic below averages for the week. Highest temperature reported was -5° at Hay River on February 28; lowest, -48° at Eureka on the 27th.

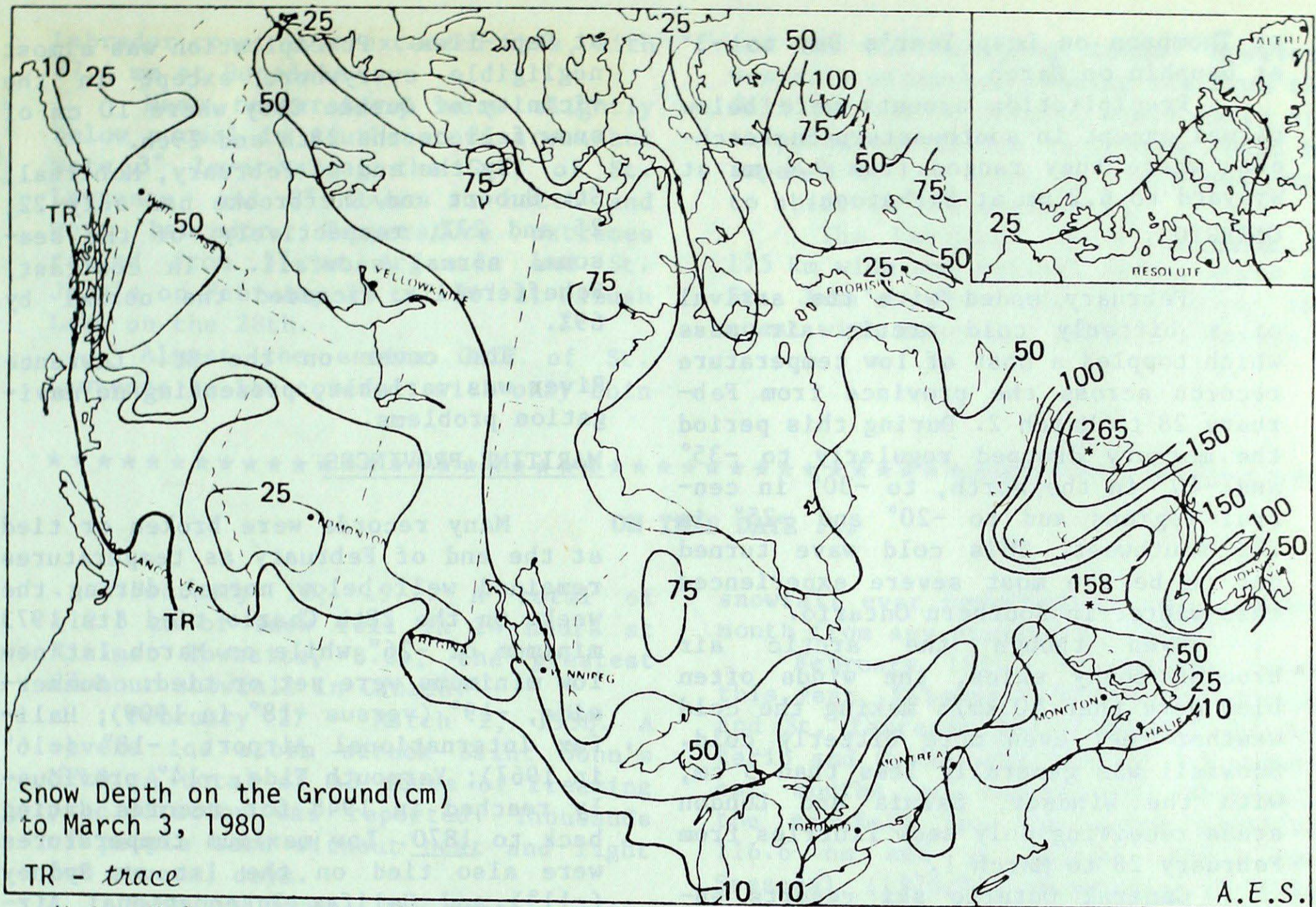
BRITISH COLUMBIA

February ended on a rainy note everywhere in the province. Precipitation generally exceeded normal values at most stations, amounting to 112.7 mm at Abbotsford and 119.6 mm at Tofino. The rains almost turned into tragedy at interior localities where the soil was frozen, forcing the rain to runoff rapidly and causing many floods. Two children in the Kamloops region almost drowned when the basement where they were sleeping became flooded. Sewers backed up in many areas. Mud impeded movement of heavy logging machinery.

This week's weather was very mild, with average temperatures exceeding normal values by more than 3° in all of the south and in central areas.



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



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

The mercury passed the  $10^{\circ}$  mark everyday of the week at Vancouver, Victoria and Abbotsford, and also remained above freezing at many interior stations.

Even though February was a month with above normal precipitation, the snowcover was very low. The water table reserves did not increase as a result of the rains, since the soil was too deeply frozen. Moreover, the rains considerably reduced the snowcover at many places. Ski resorts are suffering from the lack of snow on the ground, at least in the vicinity of Prince George.

#### ALBERTA

Slightly milder than normal weather persisted during the week in most districts, but on March 3rd daytime maximum temperatures generally plummeted  $10^{\circ}$  to  $15^{\circ}$  below those of the previous day, dropping by as much as  $18^{\circ}$  at Lethbridge and Edson. Highest and lowest temperatures for the week were  $+15^{\circ}$  at Lethbridge on February 27, and  $-37^{\circ}$  at High Level on March 3.

Total precipitation was between 5 and 15 mm in southern Alberta where Edson and Lethbridge recorded just over 11 mm. Northern districts had amounts from 2 to 3 cm.

Snow depths at the end of the week ranged from 4 cm in the Peace River, Lethbridge and Medicine Hat districts to 46 cm at Rocky Mountain House.

#### SASKATCHEWAN AND MANITOBA

February 29th more than honoured its name by leaping into the record book after very cold weather moved into the provinces on the previous day. Winnipeg set an all-time high pressure sea-level reading of 105.34 kPa for February. On the 29th Brandon had its lowest minimum temperature of  $-39^{\circ}$  since 1916 when  $-37^{\circ}$  had been reported.

Temperatures were  $7^{\circ}$  below normal in southern Manitoba and southeastern Saskatchewan reaching near normal values along the border with Alberta. Extremes for the week ranged from  $-41^{\circ}$

at Thompson on Leap Year's Day to  $-3^{\circ}$  at Dauphin on March 2.

Precipitation amounts were below normal except in southeastern Saskatchewan where they ranged from 9.4 mm at Wynyard to 6.2 mm at Saskatoon.

#### ONTARIO

February ended with the arrival of a bitterly cold arctic air mass which toppled a host of low temperature records across the province from February 28 to March 2. During this period the mercury dropped regularly to  $-35^{\circ}$  and  $-40^{\circ}$  in the north, to  $-30^{\circ}$  in central regions and to  $-20^{\circ}$  and  $-25^{\circ}$  in the southwest. This cold wave turned out to be the most severe experienced this winter in southern Ontario.

Even though the arctic air brought sunny skies, the winds often blew more than 50 km/h making the cold weather feel even more bitterly cold. Snowfall was generally less than 5 cm, with the Windsor, Sarnia and London areas receiving only snow flurries from February 28 to March 1.

Central Ontario ski resorts enjoyed 25 to 35 cm of snowcover and very cold sunny weather, ideal for winter sports.

The southern third of Lake Huron is almost totally covered with ice while Lake Superior is 80-90% ice covered with open water appearing in the east central region. Ice lies along the shores of the east end of Lake Ontario. Conditions elsewhere remain about the same.

#### QUEBEC

Quebec experienced the coldest week of the winter, as witnessed by the many low temperature records which were set. Departures from normal almost reached  $10^{\circ}$  in the south. Temperatures dropped to  $-43^{\circ}$  at Nitchequon on February 27 and 28, and never rose up to the freezing mark anywhere in the province, reaching only  $-1^{\circ}$  at Roberval on March 3.

However, in most regions, the cold air brought plenty of sunny weather. Inoucdjouac recorded 86.7% of the total possible sunshine while most stations received more than 50 hours of sunshine, with a maximum of 65.1 hours

at Sept-Iles. Precipitation was almost negligible everywhere except in the vicinity of Quebec City where 10 cm of snow fell on the 28th and 29th.

By the end of February, Montreal, St. Hubert and Sherbrooke had only 22, 25 and 27%, respectively, of the seasonal normal snowfall. In contrast, Schefferville exceeded the normal by 69%.

Ice cover on the St. Lawrence River was variable, presenting no navigation problems.

#### MARITIME PROVINCES

Many records were broken or tied at the end of February as temperatures remained well below normal during the week. On the 28th Charlo tied its 1973 minimum of  $-26^{\circ}$  while on March 1st new low minimums were set or tied: Summerside,  $-19^{\circ}$  (versus  $-18^{\circ}$  in 1909); Halifax International Airport,  $-18^{\circ}$  ( $-16^{\circ}$  in 1967); Yarmouth Tide,  $-14^{\circ}$  previously reached in 1948 for records dating back to 1870. Low maximum temperatures were also tied on the 1st at Sydney ( $-11^{\circ}$ ) and Halifax International Airport ( $-8^{\circ}$ ) where previous extremes were recorded in 1897 and 1963, respectively.

After a storm missed the region on the 26th leaving Cape Breton with 8 cm of snow, a major storm hit Nova Scotia on the 28th. The Trans-Canada Highway was closed at Canso Strait where more than 40 cm of snow fell. Sydney received 17.1 cm, Halifax 13.0 cm and Yarmouth 9.4 cm. However, precipitation totals throughout the entire Maritimes were below normal everywhere except at Sable Island which reported 69 mm.

New ice is developing along the east coast of Nova Scotia.

#### NEWFOUNDLAND AND LABRADOR

Two major storms hit Newfoundland with heavy snowfalls during the first part of the week, closing schools and disrupting traffic. Up to 20 cm of snow fell on February 26 and 27, and even as much or more again on the 28th and 29th. Maximum precipitation amount on the Island was 68.0 mm reported at St. John's, but some stations along the

Labrador coast even exceeded this, with 87.4 mm at Hopedale.

Mean temperatures were slightly below normal in southeastern areas but were 3° lower along the Gulf of St. Lawrence, and 6° lower in north and west Labrador. Temperature extremes ranged from 5° at Argentia and St. John's on February 29 to -36° at Wabush Lake on the 28th.

Almost the entire Gulf of St. Lawrence is ice covered, with only thin

ice in the shipping lanes. However, westerly winds are shoving ice from the Gulf into Cabot Strait, where ferry and shipping operations to Sydney could be impeded by ice jams if the winds were to shift to the northeast.

The Labrador coast ice pack is 175 km wide and extends as far south as St. John's. Thin ice lies along the coast with heavy ice farther offshore.

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### ON THIS DATE ...

.....February 18, 1972. A total of 112.3 cm of snow fell in 24 hours at Kitimat Townsite, B.C., the greatest 24-hour snowfall in Canada.

February 27 - March 2, 1958. A severe ice storm struck Saint John's NFLD. A total of 43 hours of freezing precipitation was reported. Thousands of people were without heat and light for several days.

February 1954. The monthly snowfall total at Kemano B.C. (Kildala Pass) amounted to 514.3 cm, the most

snowfall ever reported in any calendar month from any station in Canada.

February 1971. In contrast with this year, February 1971 in the Ottawa and St. Lawrence River valleys of Ontario and Quebec was one of the snowiest months on record. At Montreal, the snowfall for the month totalled 116.6 cm and at Ottawa, 259.5 cm. Seasonal (1970/71) snowfalls in this area were also record breaking in this century totalling 402.3 cm at McGill, 38.3 cm at Dorval Airport and 444.0 cm at Ottawa.



#### CLIMATIC PERSPECTIVES

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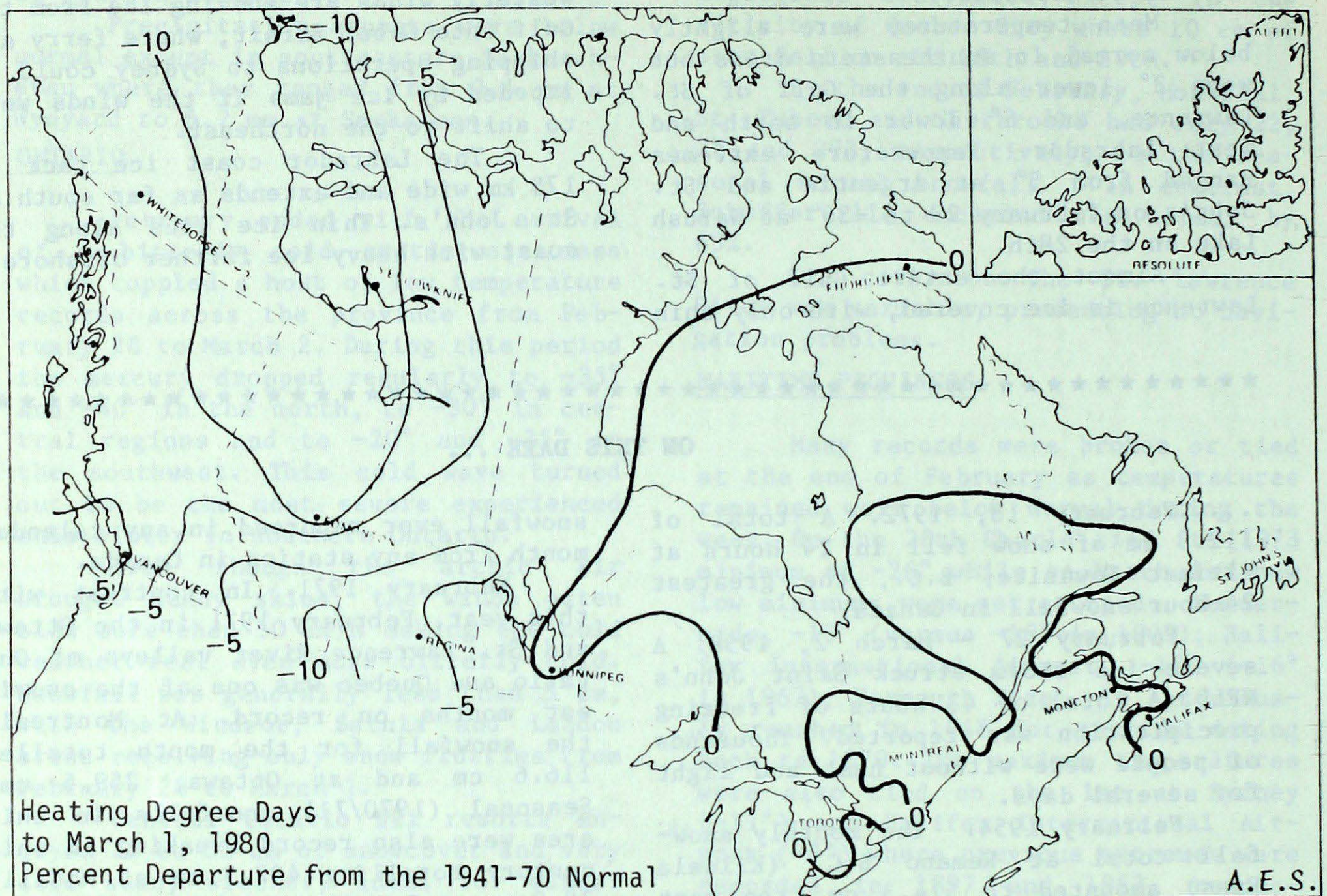
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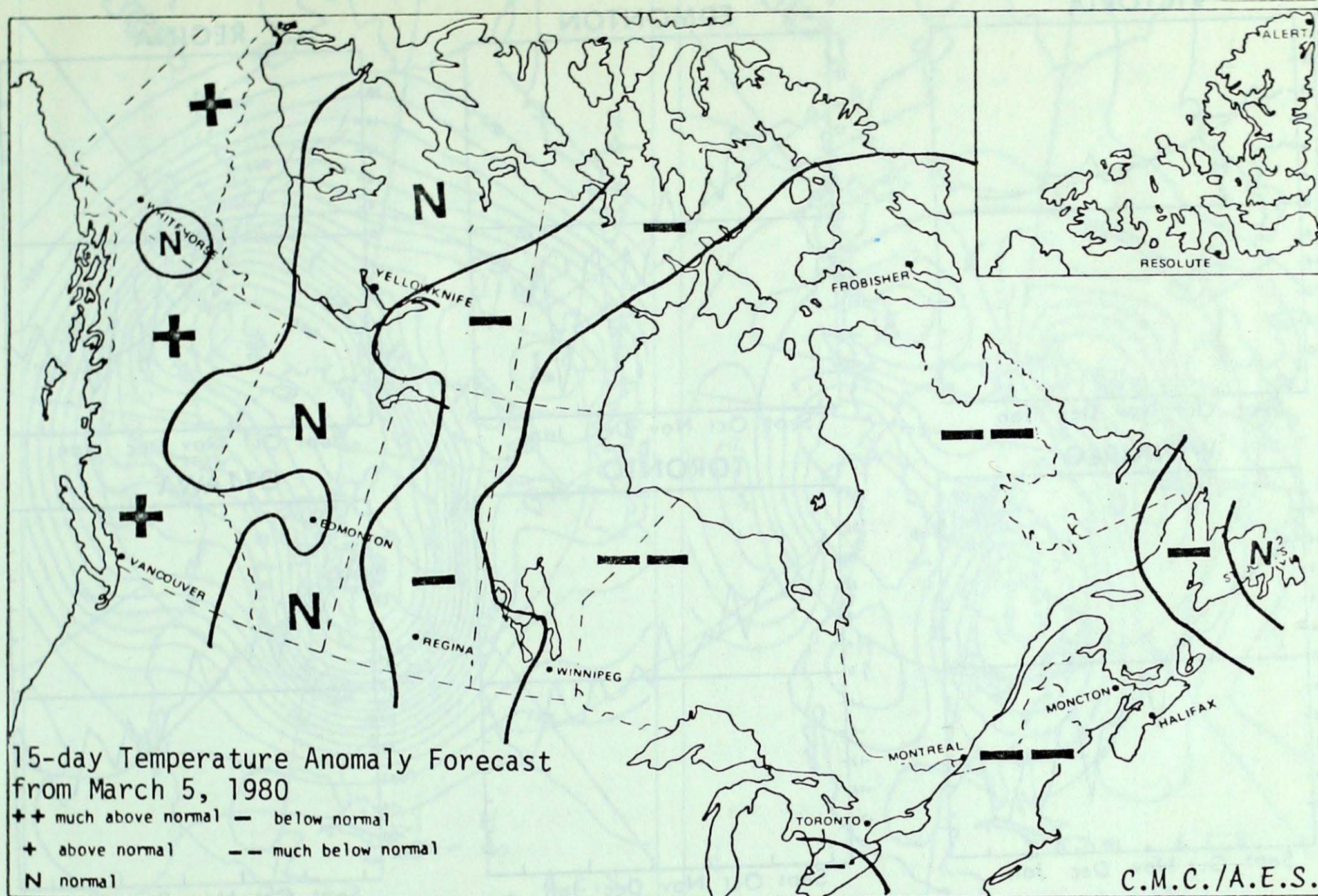
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## HEATING DEGREE-DAY SUMMARY TO MARCH 1, 1980



CITY	MONTHLY CUMULATIVE TOTAL	MONTHLY DIFF. FROM 1941-70 NORMAL	SEASONAL TOTAL	SEASONAL DIFF. FROM 1941-70 NORMAL	SEASONAL PERCENT OF NORMAL
Resolute	51.0	0.0	8400.0	-54.0	99
Inuvik	52.0	7.0	6095.0	-1054.5	85
Whitehorse	29.0	0.0	4718.0	-369.0	93
Vancouver	10.0	-3.0	2038.0	-87.0	96
Edmonton	19.5	-8.5	3679.0	-487.0	88
Calgary	19.0	-5.0	3596.5	-247.5	94
Regina	34.0	3.0	4114.0	-279.0	94
Winnipeg	41.0	10.0	4374.5	-14.5	100
Thunder Bay	35.5	6.5	4092.5	-61.5	99
Windsor	30.0	10.0	2628.0	-17.0	99
Toronto	34.5	12.5	2971.5	14.5	100
Ottawa	37.0	11.0	3375.5	-100.5	97
Montreal	37.5	14.5	3296.5	-10.5	100
Quebec	36.5	10.5	3736.0	45.0	101
Saint John, N.B.	31.5	7.5	3209.0	-102.0	97
Halifax	29.5	8.5	2822.5	69.5	103
Charlottetown	32.0	8.0	3161.5	35.5	101
St. John's, Nfld.	25.0	4.0	3169.5	80.5	103

## 15 DAY TEMPERATURE ANOMALY FORECAST

Forecast Method

Analogue technique based on point prediction at 70 Canadian stations.

Temperature Scale

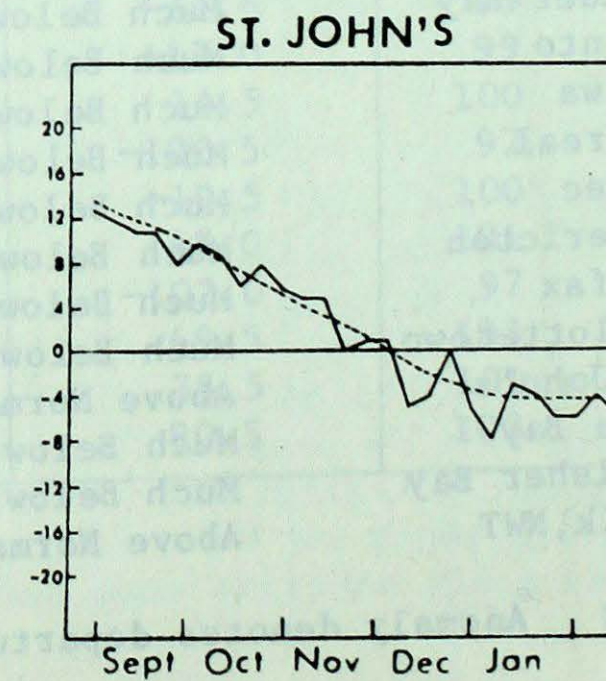
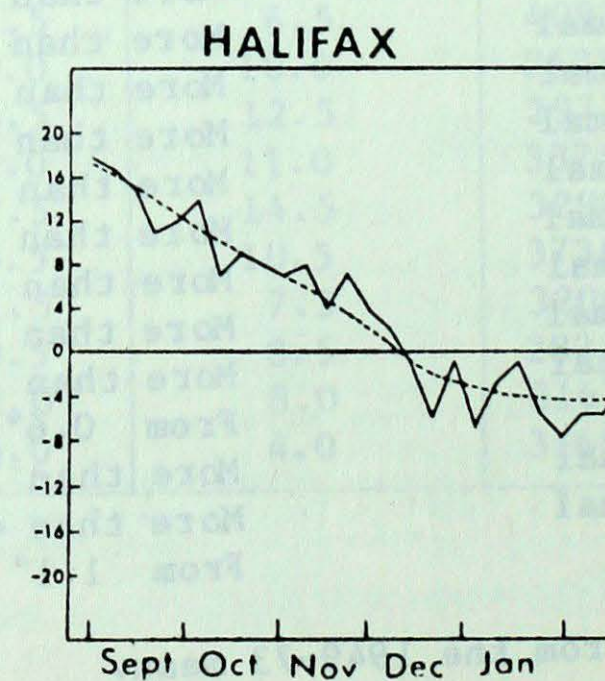
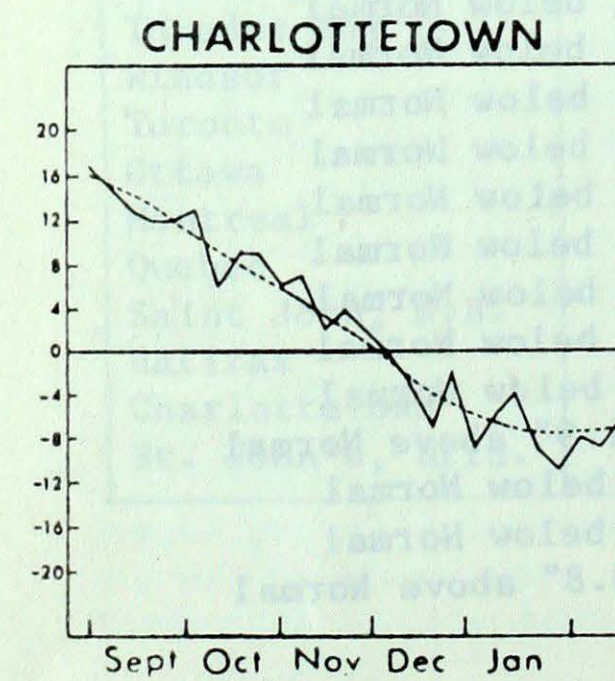
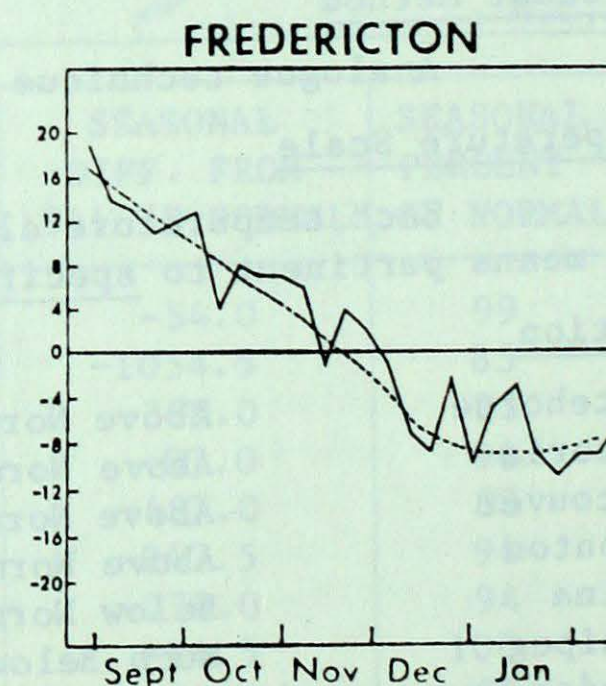
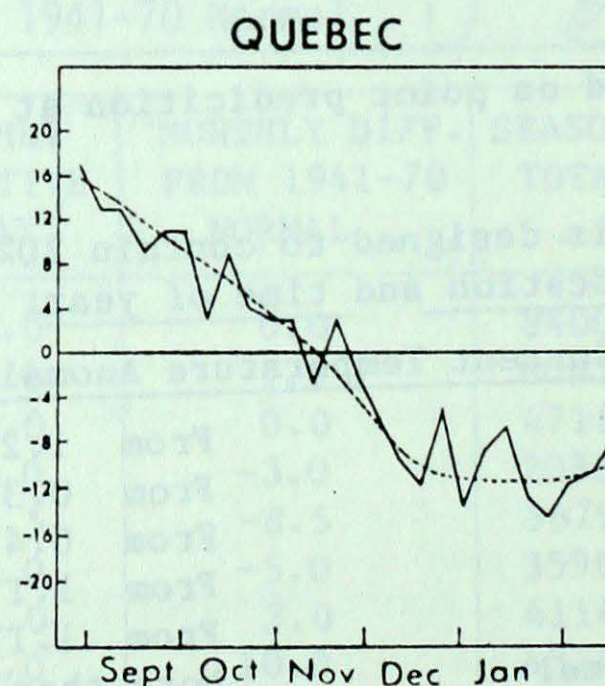
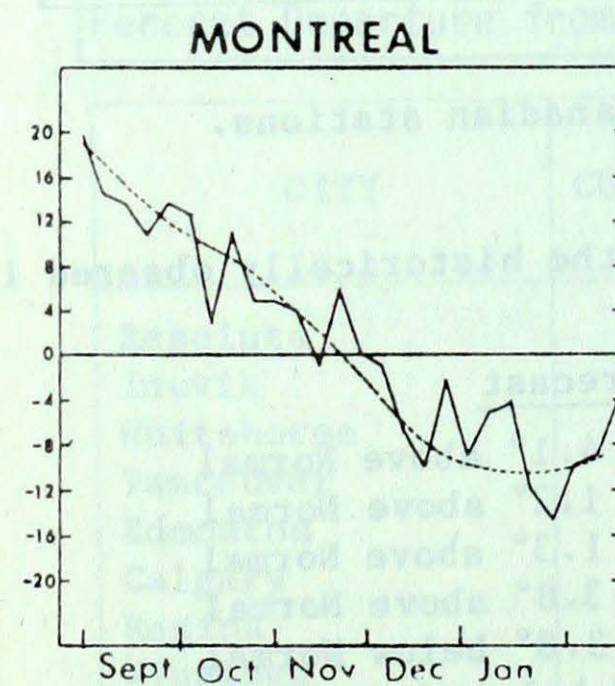
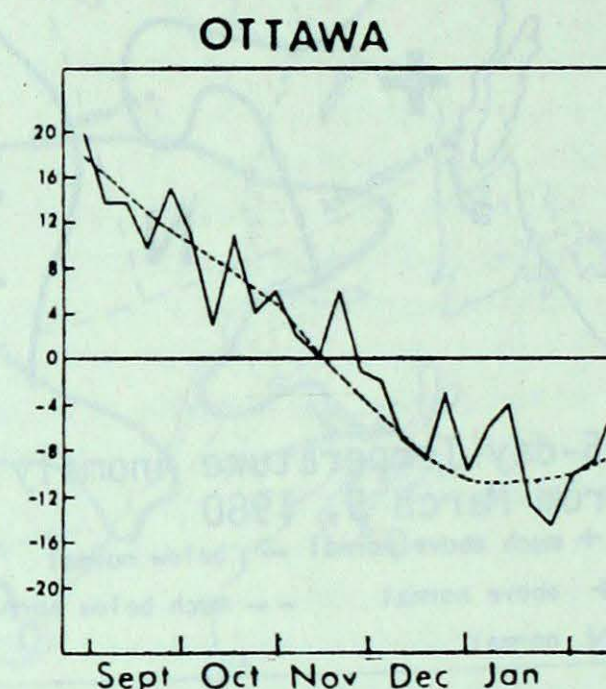
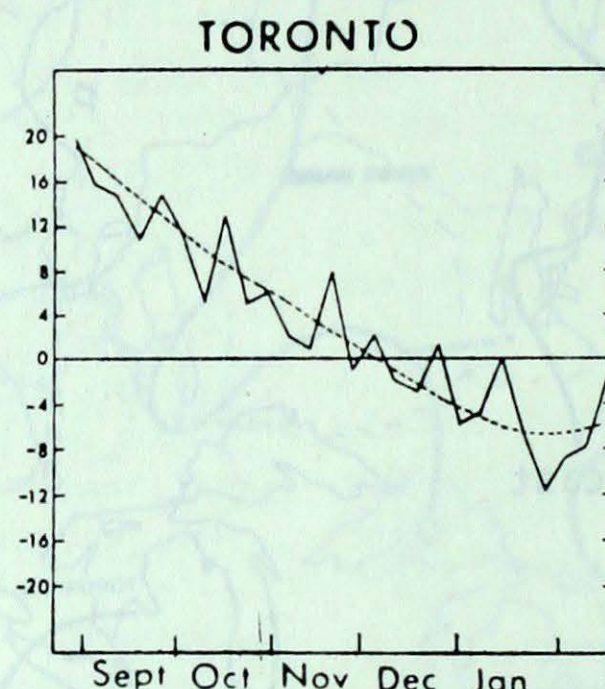
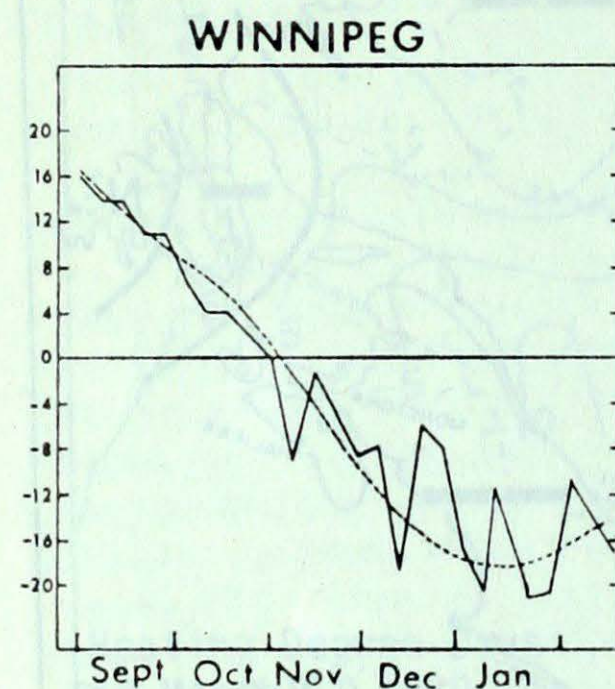
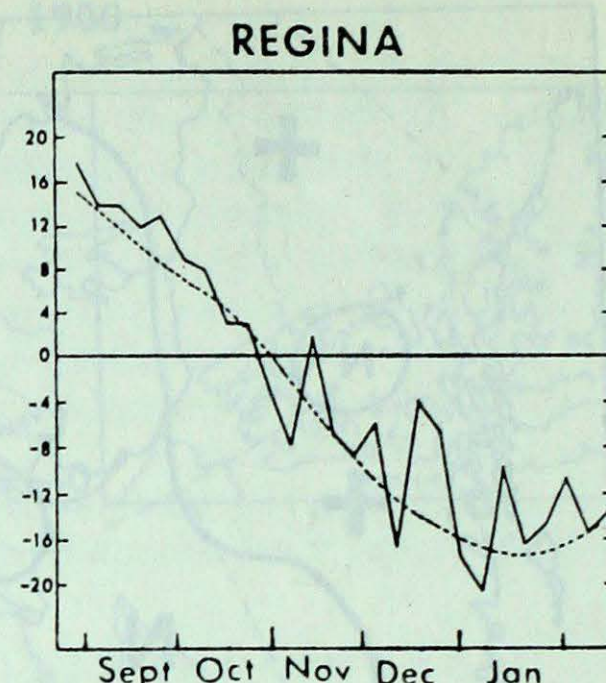
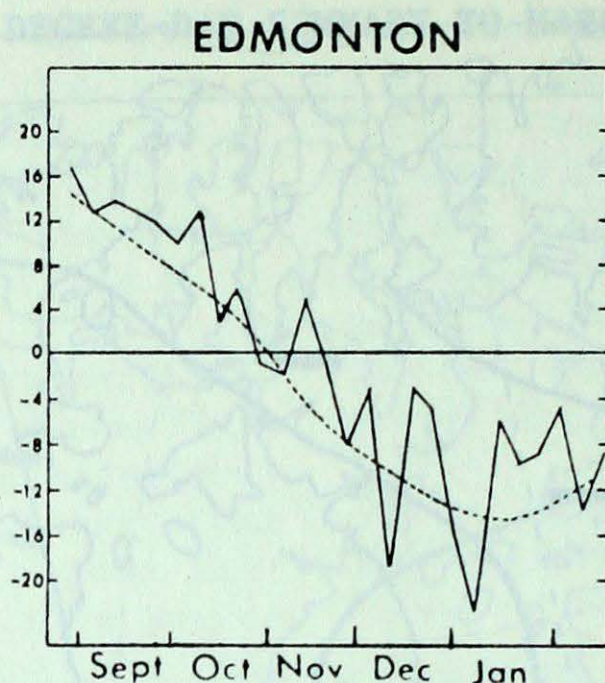
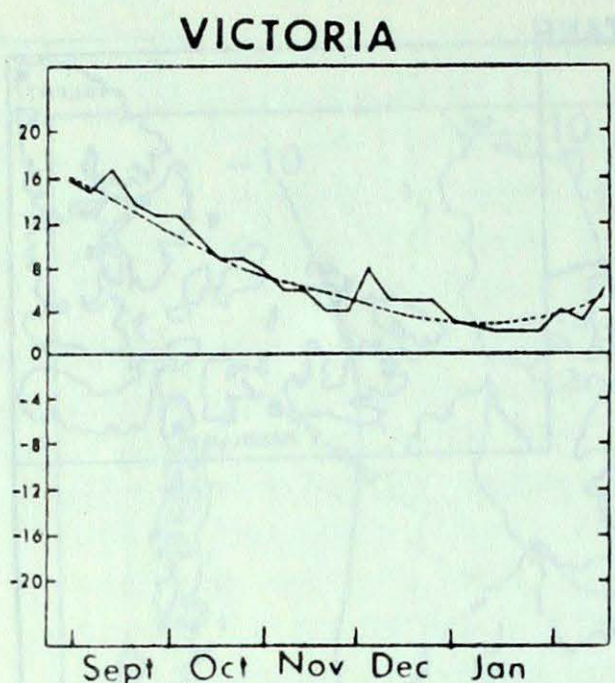
Each temperature class is designed to contain 20% of the historically observed 15 day means pertinent to specific location and time of year:

StationCurrent Temperature Anomaly Forecast

<u>Station</u>	<u>Current Temperature Anomaly Forecast</u>
Whitehorse	Above Normal From 1.2° to 4.1° above Normal
Victoria	Above Normal From 0.3° to 1.2° above Normal
Vancouver	Above Normal From 0.4° to 1.3° above Normal
Edmonton	Above Normal From 1.1° to 3.8° above Normal
Regina	Below Normal From 1.1° to 3.8° below Normal
Winnipeg	Much Below Normal More than 3.4° below Normal
Thunder Bay	Much Below Normal More than 2.6° below Normal
Toronto	Much Below Normal More than 2.2° below Normal
Ottawa	Much Below Normal More than 2.3° below Normal
Montreal	Much Below Normal More than 2.3° below Normal
Quebec	Much Below Normal More than 2.4° below Normal
Fredericton	Much Below Normal More than 2.4° below Normal
Halifax	Much Below Normal More than 1.7° below Normal
Charlottetown	Much Below Normal More than 2.1° below Normal
St. John's	Above Normal From 0.6° to 1.9° above Normal
Goose Bay	Much Below Normal More than 3.6° below Normal
Frobisher Bay	Much Below Normal More than 4.7° below Normal
Inuvik, NWT	Above Normal From 1.1° to 3.8° above Normal

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

8  
**SEPTEMBER 1979 TO FEBRUARY 1980 FLUCTUATIONS OF WEEKLY MEAN TEMPERATURES  
 ACROSS CANADA**

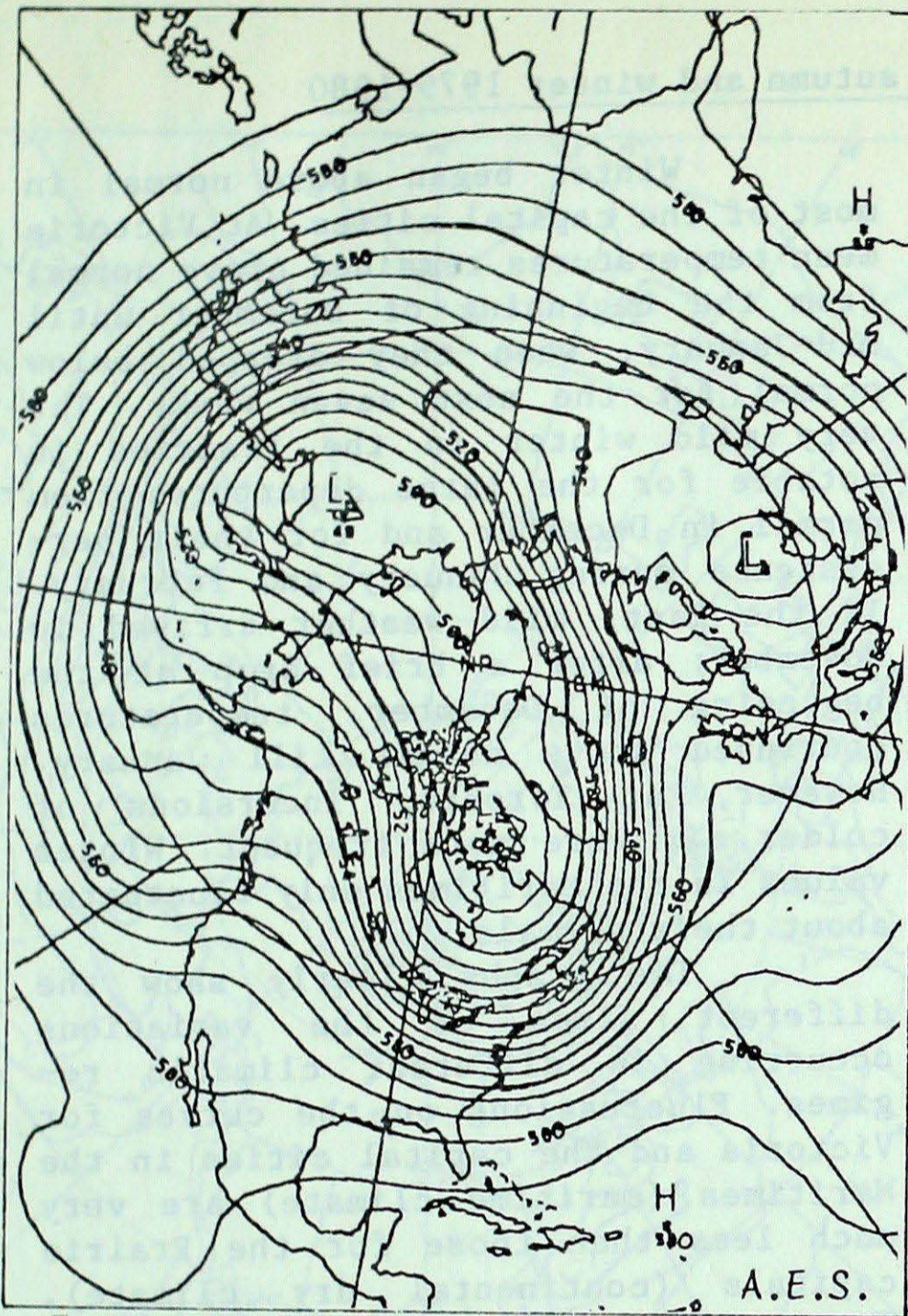


— actual weekly mean temperature

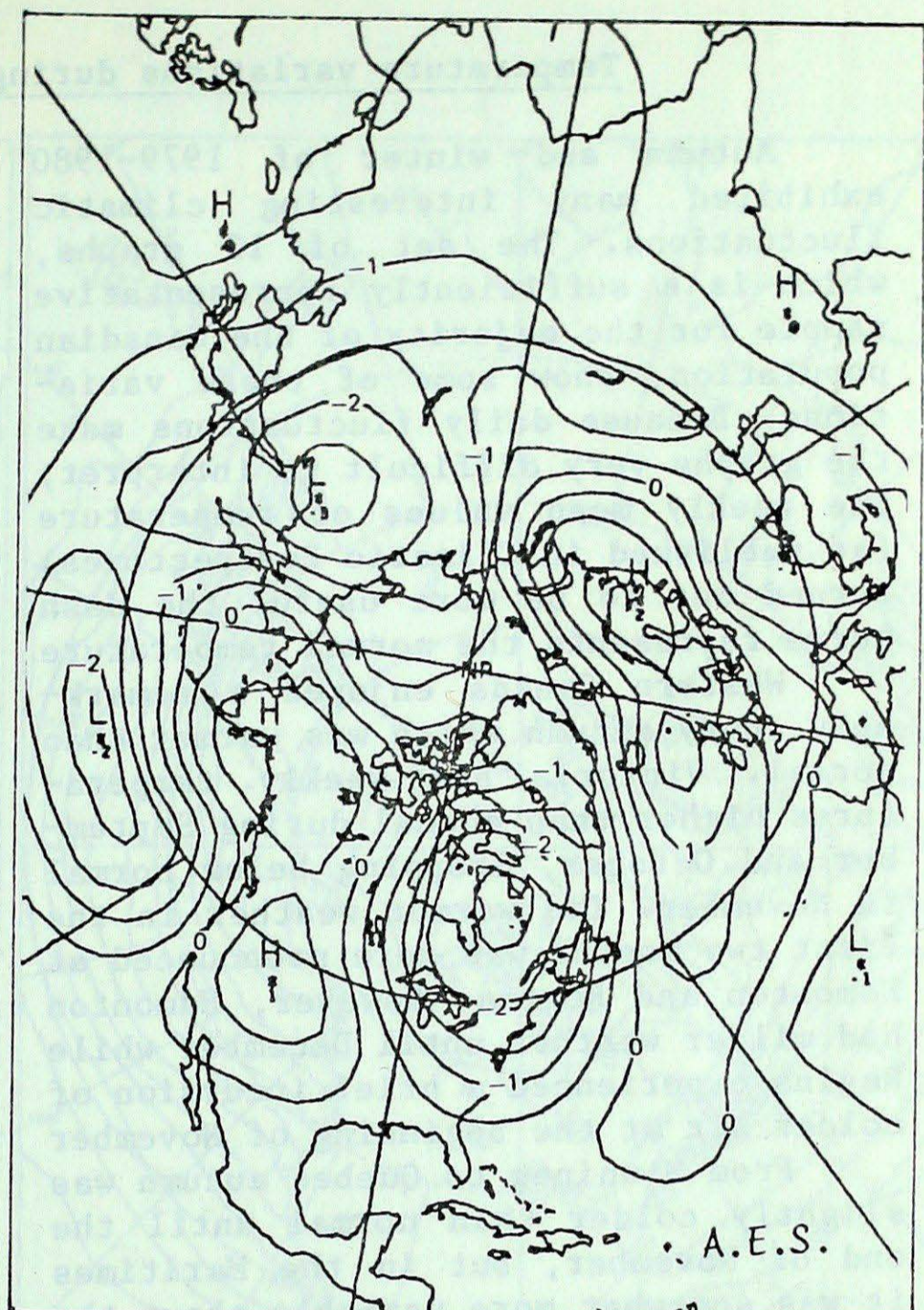
--- normal temperatures



## Atmospheric Circulation Features



7-day Mean 50 kPa Height Map (in dams.)  
February 24 to March 2 1980



7-day Mean 50 kPa Height Anomaly  
(in 5 dam.intervals)  
February 25 to March 2, 1980

The upper atmospheric flow followed through from last week, maintaining its strong north-south component.

A major 50 kPa ridge remained quasi-stationary over British Columbia and Alberta while a long-wave trough and an associated deep closed upper low dominated eastern Canada. This resulted in a northwesterly flow across central regions which strongly influenced the past week's weather.

Extremely cold Arctic air started moving southeastwards from the Northwest Territories early in the period. A large cold high pressure cell, with record-breaking pressure readings in excess of 105.0 kPa, slowly crossed the Prairie Provinces arriving in the Great Lakes Basin by the week-end. Under mostly clear skies, temperatures were well below normal for the week so that numerous cold temperature records were

broken from Saskatchewan eastwards. However, to the lee of large bodies of open water clouds and snow squalls were common.

Snowfall amounts in central Canada were generally light and variable, since the storm track was shifted south of the border. Above normal precipitation amounts only fell in British Columbia (mostly as rain) and in Newfoundland. Storms tracked northeastward along the east coast, passing just south of the Maritimes and across the island of Newfoundland. Even though Nova Scotia did not receive the full impact of these storms, on February 28, 10 - 40 cm of new snow was measured. Newfoundland was the hardest hit by heavy snow. On the average 40 cm of new snow was reported, with 90 cm falling at Hopedale.

Andy Radomski

Temperature variations during autumn and winter 1979-1980

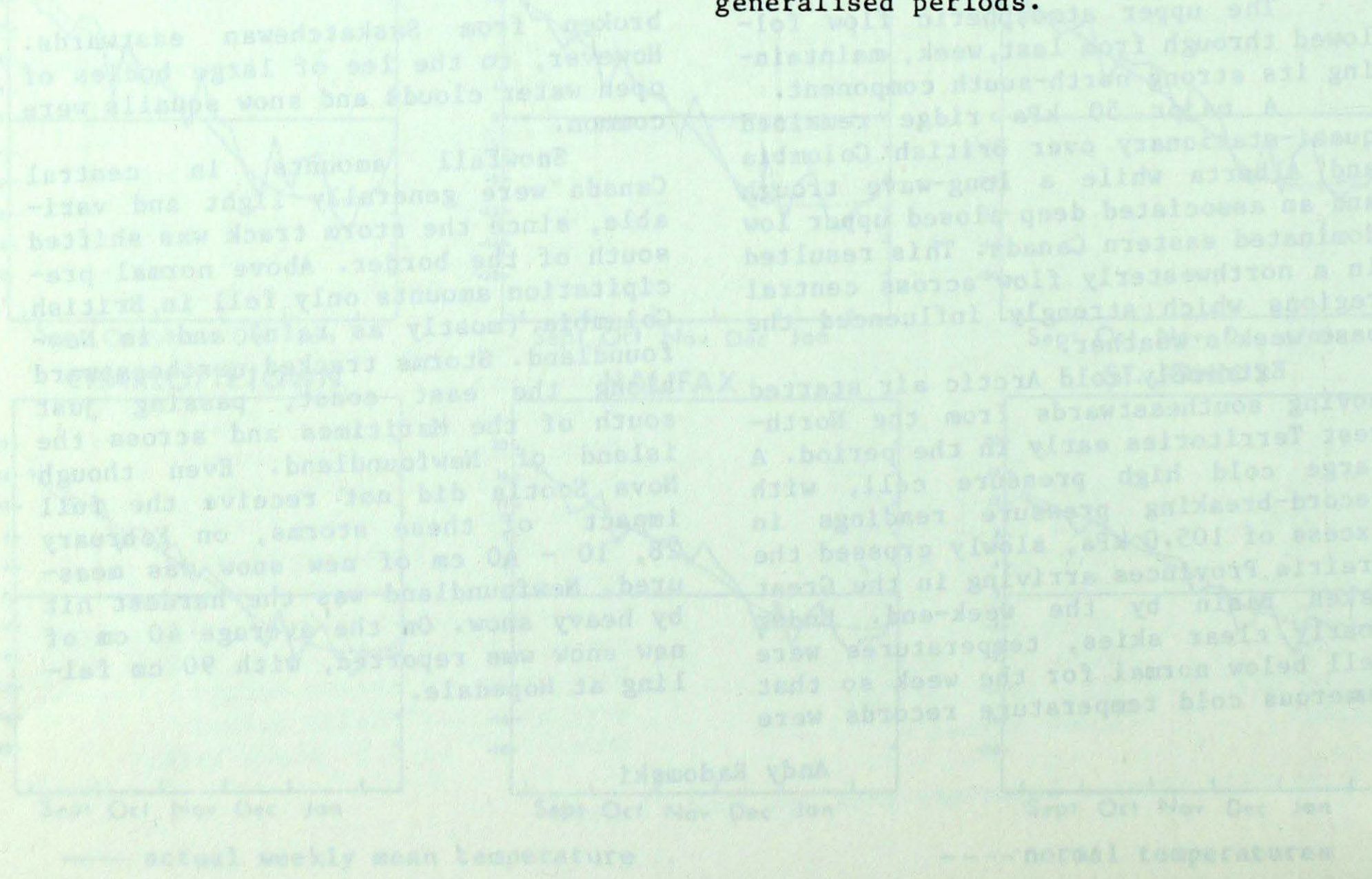
Autumn and winter of 1979-1980 exhibited many interesting climatic fluctuations. The set of 12 graphs, which is a sufficiently representative sample for the majority of the Canadian population, show some of those variations. Because daily fluctuations make the graphs very difficult to interpret, the weekly mean values of temperature (as published in Climatic Perspectives) turned out to be more useful the dash curve represents the normal temperature

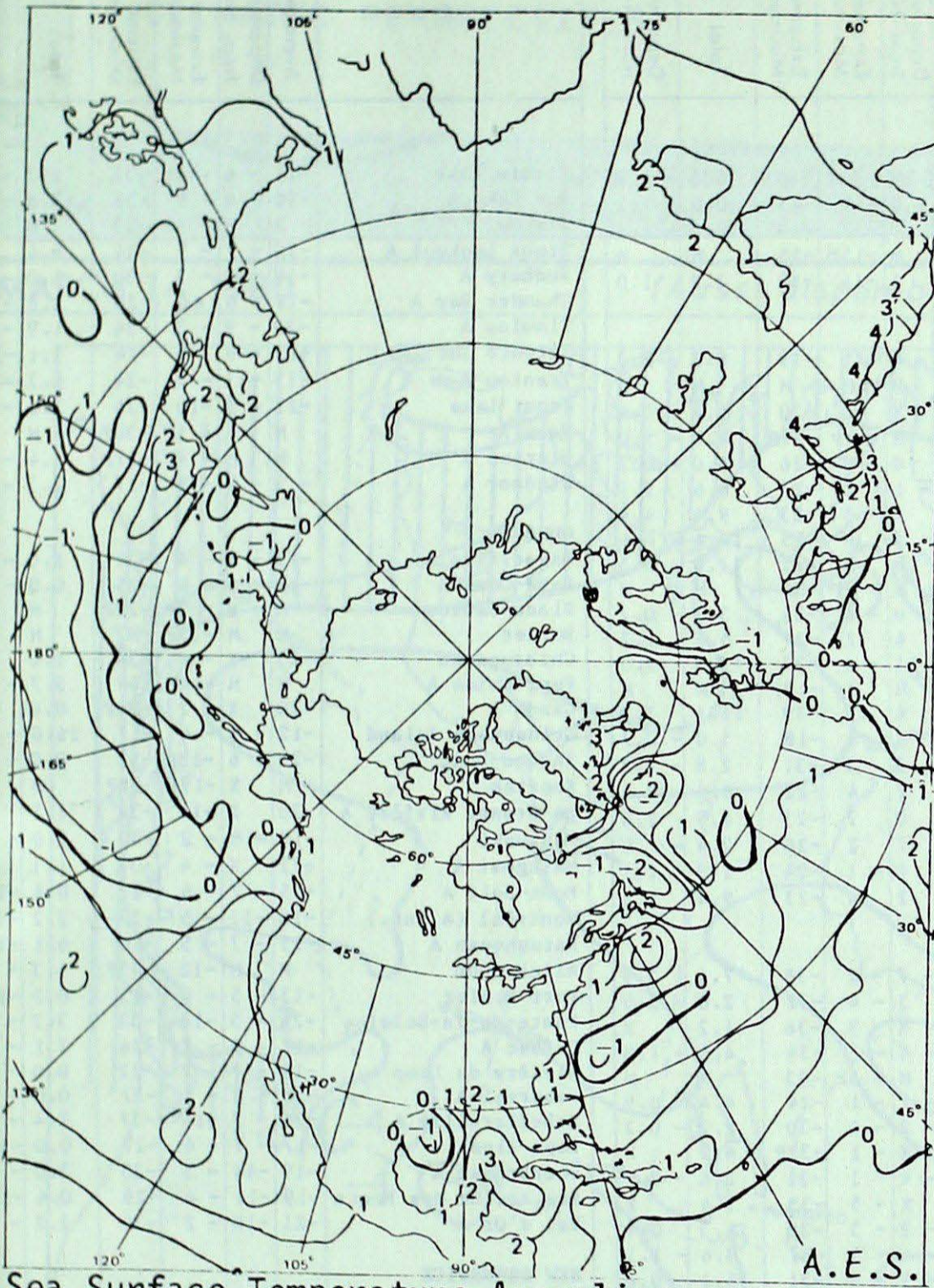
Western Canada enjoyed a remarkably sunny autumn which was warmer than normal. Victoria had weekly temperatures higher than normal during September and October, dropping below normal in November. The warmer weather in the first two months was more pronounced at Edmonton and Regina. However, Edmonton had milder weather until December while Regina experienced a brief incursion of colder air at the beginning of November

From Winnipeg to Quebec autumn was slightly colder than normal until the end of November, but in the Maritimes it was somewhat more variable about the average.

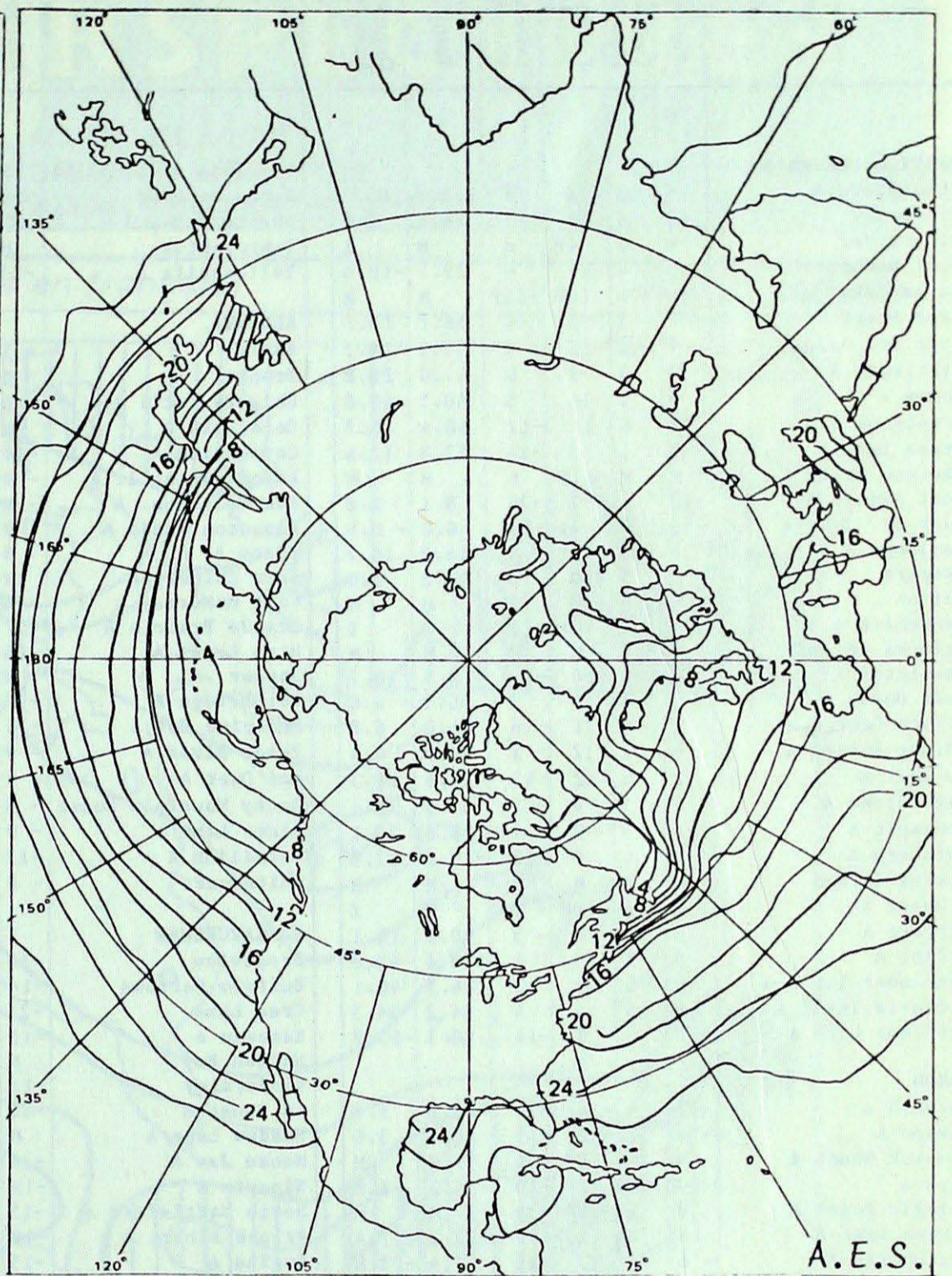
Winter began above normal in most of the capital cities. At Victoria mean temperatures remained above normal from the beginning of December until mid-January, when they dropped below normal for the next seven weeks. The very mild winter in the Prairies is notable for the large departures from normal in December and for their persistence during January and February. In the East, mild weather arrived in November; after a brief drop at the beginning of December, temperatures continued above normal till January. However, at Toronto, incursions of colder air were more frequent. Winter values in the Maritimes only fluctuated about their normals.

The graphs clearly show the different sizes of the variations occurring in different climatic regimes. Fluctuations on the curves for Victoria and the capital cities in the Maritimes (maritime climate) are very much less than those for the Prairie capitals (continental dry climate). These graphs show that the temperature fluctuations are perhaps not as striking as the impressions left behind by one or a few individual but easily generalised periods.





Sea Surface Temperature Anomalies for February, 1980



Monthly Mean Sea Temperature for February, 1980  
(Note: Normals based on 1951-70 period)

