



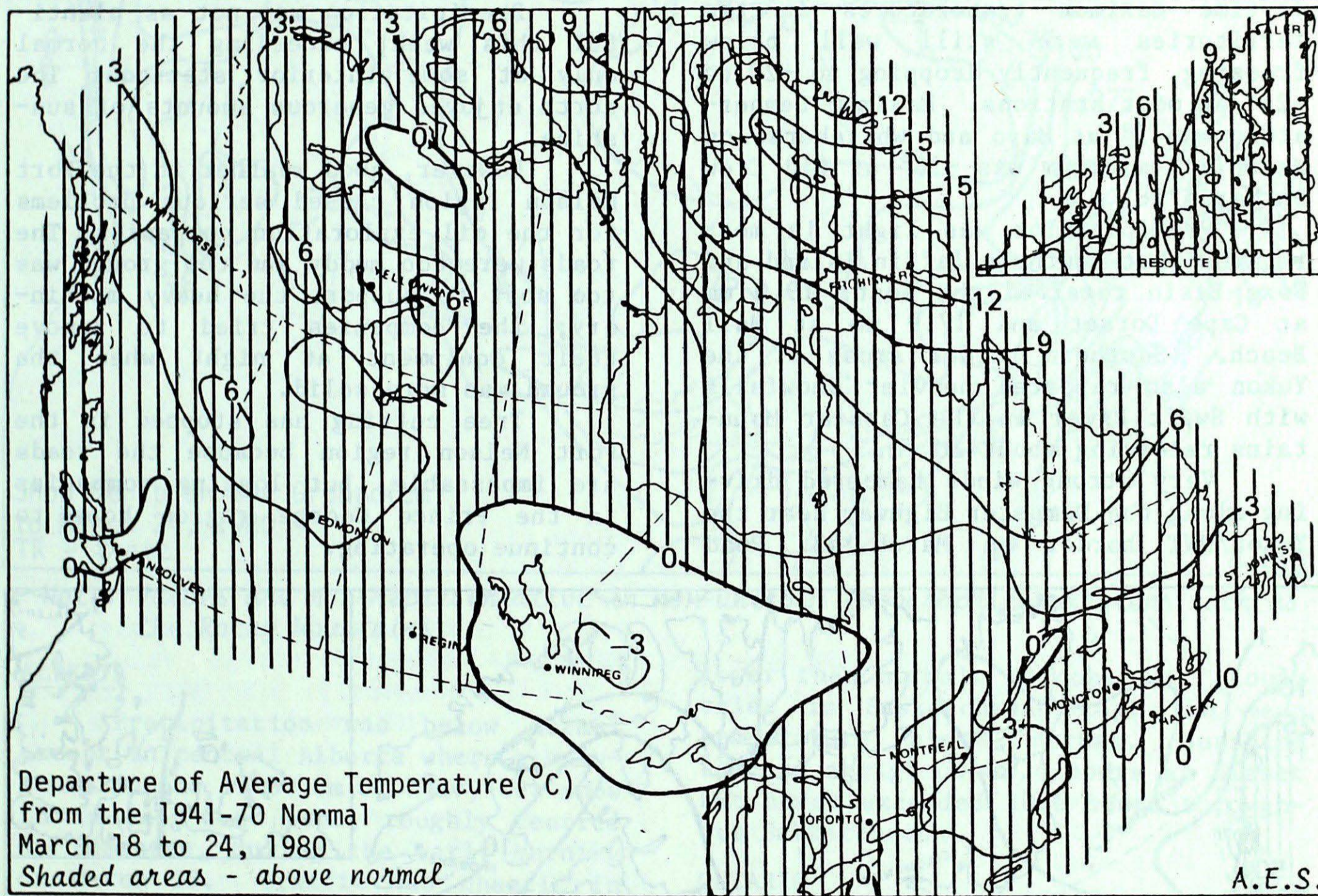
# CLIMATIC PERSPECTIVES NON-CIRCULATING

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

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## WEATHER HIGHLIGHTS FOR THE WEEK - MARCH 18 - 24, 1980

### Spring Storms Batter Eastern Canada

Spring storms were notable across Canada. Many basements and streets were flooded in the Saint John area where a new rainfall record of 74 mm was set. The Truro area had numerous power blackouts and floods. On the 23rd, Nova Scotia and eastern Prince Edward Island were battered with snow and strong winds which downed power lines. Over 150 travellers on Wentworth Valley highways were forced to seek shelter in private residences or other lodgings.

Eastern Ontario was hit on March 21 with heavy rain and strong winds up to 100 km/h. Major flooding caused \$10 million damage to Port Hope.

Wet snow plugged traffic on the 23rd in the Edmonton area. Temperatures ranged from  $16^{\circ}$  at Castlegar, Kamloops and Penticton to  $-41^{\circ}$  at Eureka.

Two CN ferries, were stuck fast in ice about 15 km from Sydney Harbour, where two icebreakers were making little headway to free them.

**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

Encouraging signs of spring have appeared in the Arctic, as all stations but one reported above normal mean temperatures and the Yukon enjoyed bright sunny weather. Highest departures from normal were centred over mid Baffin Island (+16°), and over southern MacKenzie District (almost +7°). However, daytime maximum temperatures in the Territories were still well below freezing, frequently dropping to -20 to -25° at most stations. Maximum temperature was 5° at Mayo and Whitehorse on March 21; minimum was -36° at Old Crow on March 18.

Precipitation was light in most regions, but southern Baffin Island and Foxe Basin received the most: 19.0 mm at Cape Dorset and 17.9 mm at Hall Beach. Southern border areas of the Yukon also reported heavier snowfalls with Swift River in the Cassiar Mountains receiving about 20 cm.

Very strong winds hampered driving along the Dempster Highway near the Yukon/NWT border on March 23. Road

signs were blown down and many vehicles had difficulty remaining on the road.

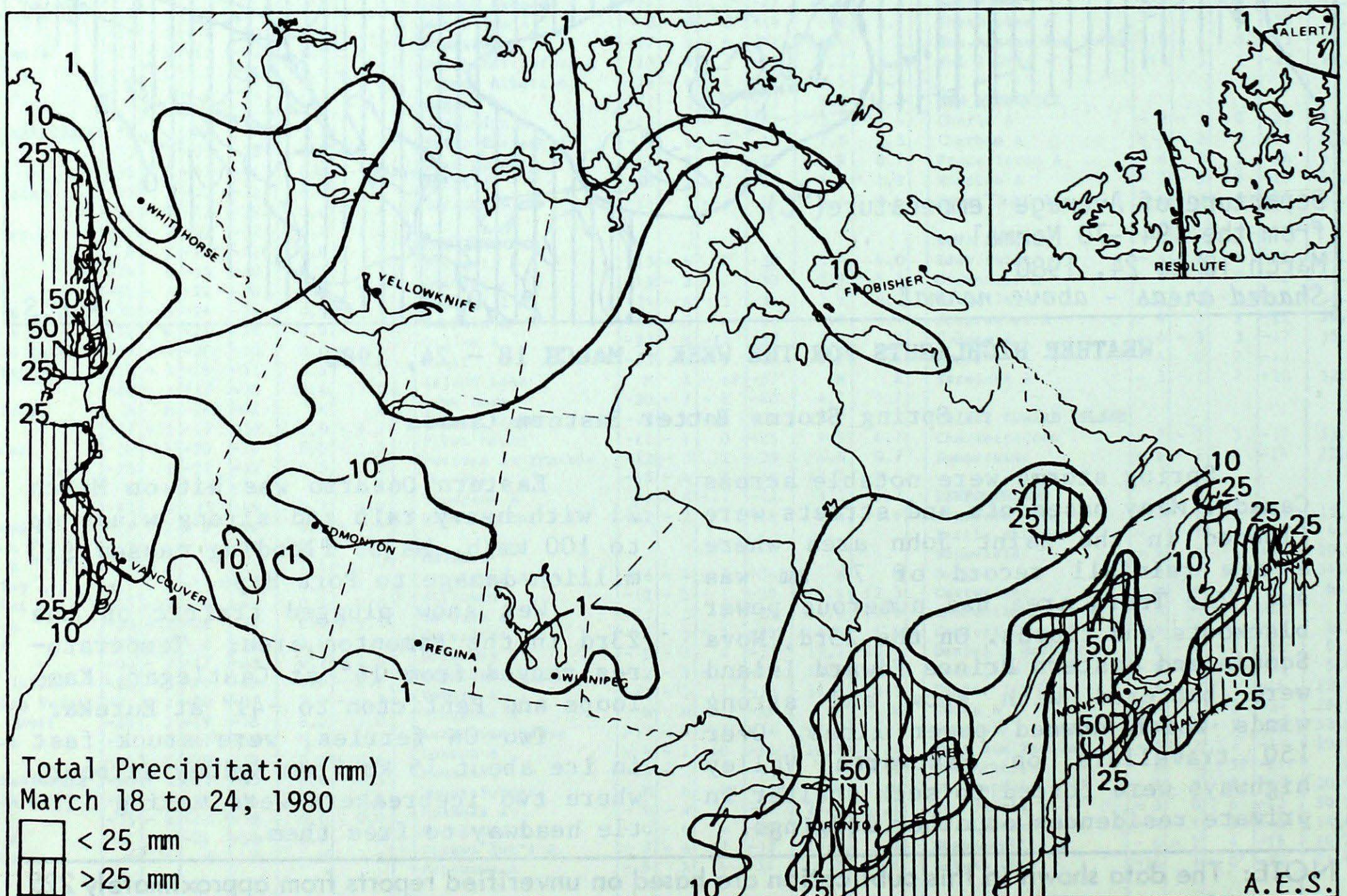
## BRITISH COLUMBIA

The weather grew warm again, and with a few exceptions average temperatures for the week rose above normal. The sun helped the mercury to reach 16° at Castlegar, Kamloops and Penticton.

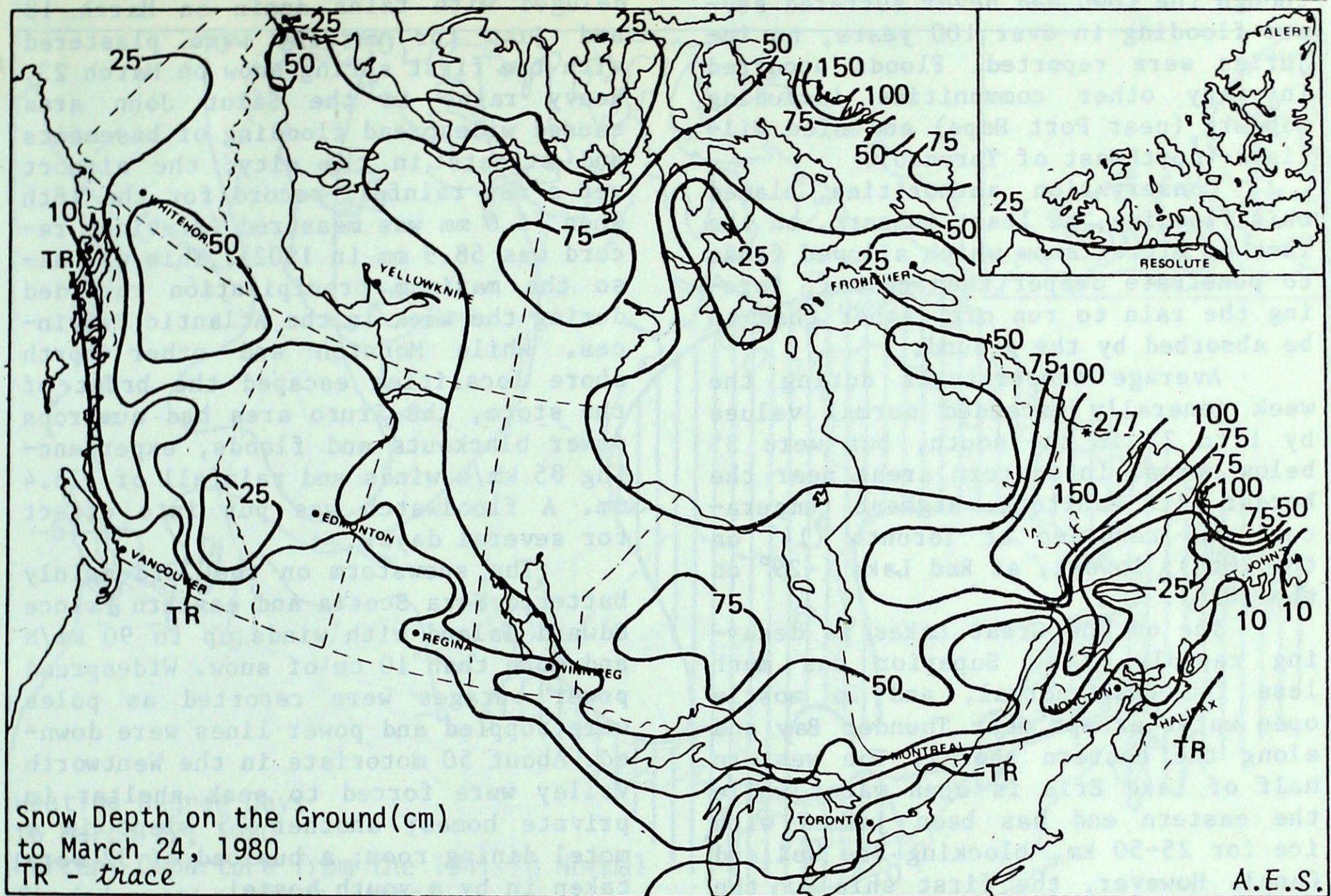
Precipitation was not as plentiful this week, exceeding the normal only at some interior stations. The north enjoyed generous amounts of sunshine.

However, good weather in the Fort Nelson region caused serious problems for the oil exploration companies. The roads were too muddy and the ground was too soft to support the heavy machinery; the companies tried to remove their equipment at night when the ground was more solid.

Tree cutting has stopped in the Fort Nelson region because the roads are impassable, but logging companies in the Prince George region hope to continue operating.



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



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#### ALBERTA

Precipitation was below normal except in central Alberta where a snow-storm dumped 15-30 cm of heavy wet snow in an east-west band, roughly centred on Edmonton, during the early morning on March 23. Traffic was chaotic in the city while highways leading into it were not fit to travel until mid-day. The week's maximum precipitation of 21.3 mm was reported at Vermilion.

The entire province experienced above normal temperatures during the week even in far northern areas. Temperatures ranged from 11° at Lethbridge on the 22nd to -21° at Fort Chipewyan on the 21st.

#### SASKATCHEWAN AND MANITOBA

The Prairies experienced variable weather this week. Precipitation was above normal in Saskatchewan, but was relatively infrequent in Manitoba; Meadow Lake recorded the week's maximum of 19.6 mm.

Very sunny weather in Manitoba was also accompanied by temperatures

lower than normal. In contrast, cloudy skies in Saskatchewan kept the mean temperature above normal. Sunshine reached a high of 60.4 hours at Bisset but never exceeded 30.6 hours throughout Saskatchewan.

#### ONTARIO

"Mother Nature" was less than kind to Ontario during the week when wet snow, heavy rain and near 100 km/h winds swept through the province. On March 17th 10-15 mm of rain fell in southern Ontario, and up to 35 mm of snow and rain in the North Bay area. Minor flooding occurred in many places. However, the worst was yet to come as very heavy rains (20-50 mm) fell on the 21st in most sections east of the Sault. Eastern Ontario was hardest hit with Kingston recording 53.4 mm. Wind damage was substantial as northwest winds peaked to almost 100 km/h. The overall result was major flooding along the north shore of Lake Ontario, most notably at Port Hope, 100 km east of Toronto, where the swollen Ganaraska

River caused \$10 million damage. Even though the town had never suffered severe flooding in over 100 years, no injuries were reported. Floods occurred in many other communities including Cobourg (near Port Hope) and Glen Williams (northwest of Toronto).

Conservation authorities blamed this flooding, at least in part, on the lack of winter snow which allowed frost to penetrate deeper than normal, forcing the rain to run off rather than to be absorbed by the ground.

Average temperatures during the week generally exceeded normal values by 1 to 2° in the south, but were 3° below normal in western areas near the border with Manitoba. Highest temperature was recorded at Toronto (14° on the 20th); lowest, at Red Lake (-29° on the 18th).

Ice on the Great Lakes is decaying rapidly. Lake Superior has much less ice than normal, and is mostly open water except near Thunder Bay and along the eastern shores. The western half of Lake Erie is open water while the eastern end has been jammed with ice for 25-50 km, blocking the Welland Canal. However, the first ship of the year entered the canal on March 24 at St. Catharines.

Ice breakers are assisting ships near Thunder Bay, Sault Ste. Marie and in Lake Erie.

#### QUEBEC

Mild weather heralded the arrival of spring throughout the entire province. Mean temperatures for the week were above normal, with departures of more than 8° in the north. The mercury rose to 11° at Sherbrooke and Val d'Or on March 20. Some northern stations reported record high temperatures.

After beginning the week with snow, except for rain at a few places, southern Quebec had a brief period of sunshine before withstanding a new storm on March 21 and 22. On the 18th 58.6 mm of precipitation fell at Gaspé, while on the 21st, 35.8 mm fell at Val d'Or.

The Seaway opened as predicted on March 24st, the earliest date in its history.

#### ATLANTIC PROVINCES

Barely recovering from last

week's storms, some maritime areas were deluged with rains again on March 18 and just for variety were plastered with the first spring snow on March 23. Heavy rains in the Saint John area caused widespread flooding of basements and streets in the city; the airport set a new rainfall record for the 18th when 74.0 mm was measured (previous record was 58.9 mm in 1902). This was also the maximum precipitation recorded during the week in the Atlantic Provinces. While Moncton and other north shore localities escaped the brunt of the storm, the Truro area had numerous power blackouts and floods, experiencing 85 km/h winds and rainfall of 23.4 mm. A floodwatch was put into effect for several days.

The snowstorm on the 23rd mainly battered Nova Scotia and eastern Prince Edward Island with winds up to 90 km/h and more than 10 cm of snow. Widespread power outages were reported as poles were toppled and power lines were downed. About 50 motorists in the Wentworth Valley were forced to seek shelter in private homes; another 75 slept in a motel dining room; a busload of 32 were taken in by a youth hostel.

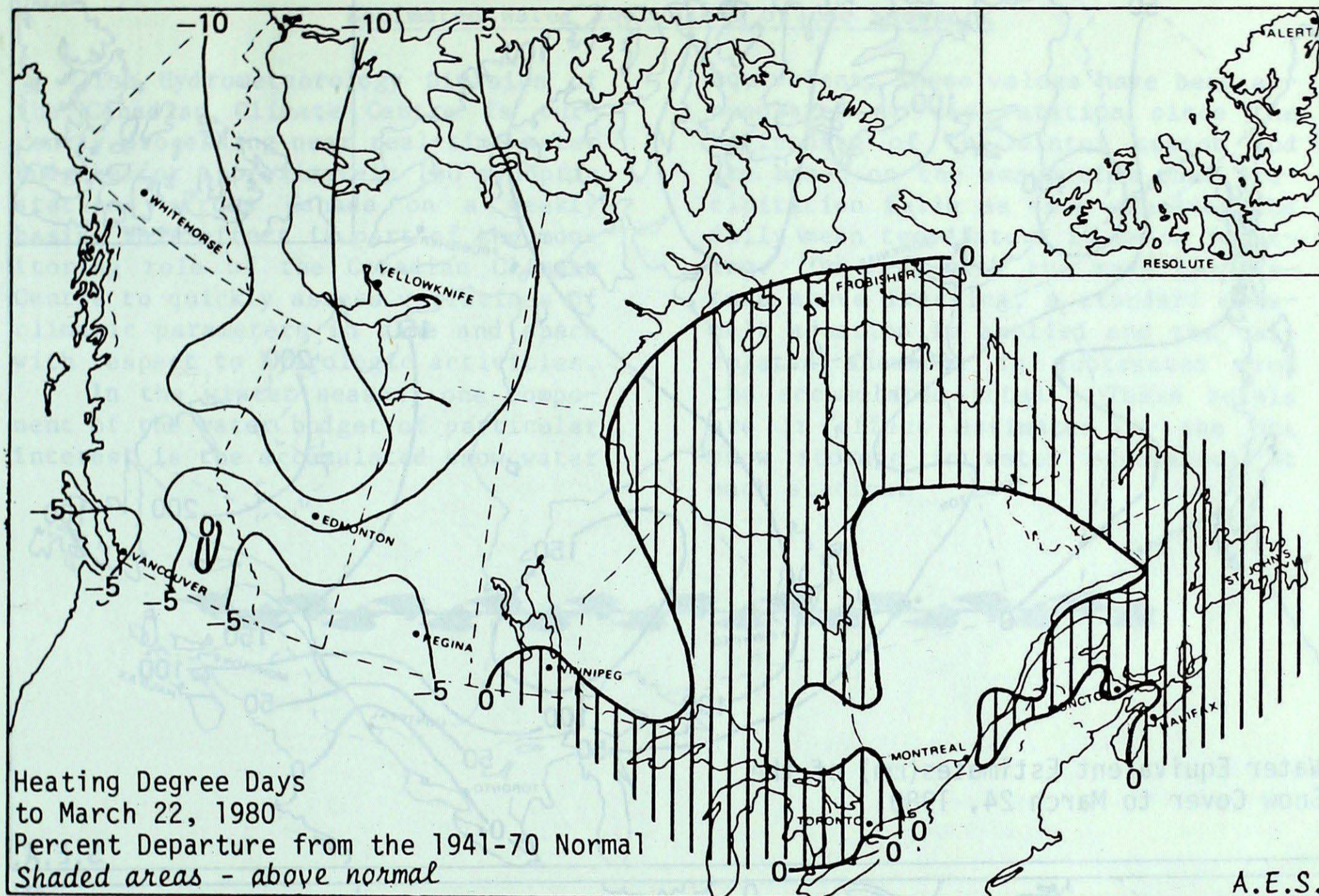
Mean temperatures were above normal everywhere with few exceptions. The Maritimes exceeded normal values by 1 to 2°; Labrador, by 6 to 9°. Temperatures during the week ranged from 11° at Greenwood on the 18th to -14° at Charlo on the 21st.

At the end of the week two CN marine ferries, the Marine Atlantica carrying 142 passengers, and the rail-car ferry Frederick Carter, were stuck fast in the ice about 15 km off Low Point at the entrance to Sydney Harbour. Two icebreakers could make little headway through the ice which had been jammed by the northeast winds and piled up to a thickness of 5 m.

The Gulf of St. Lawrence has less ice cover than normal and plenty of open water. Ice is decaying rapidly almost everywhere.

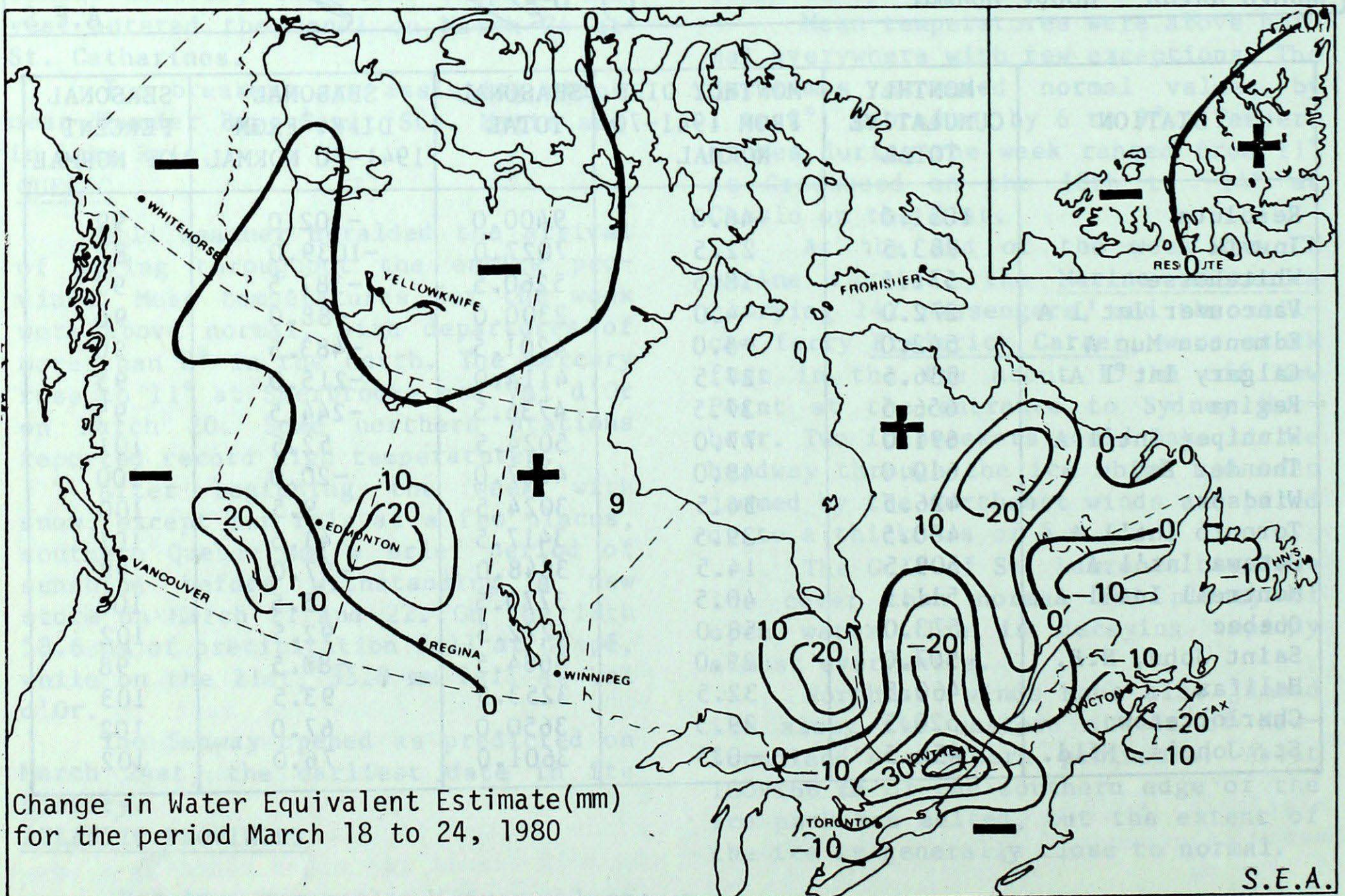
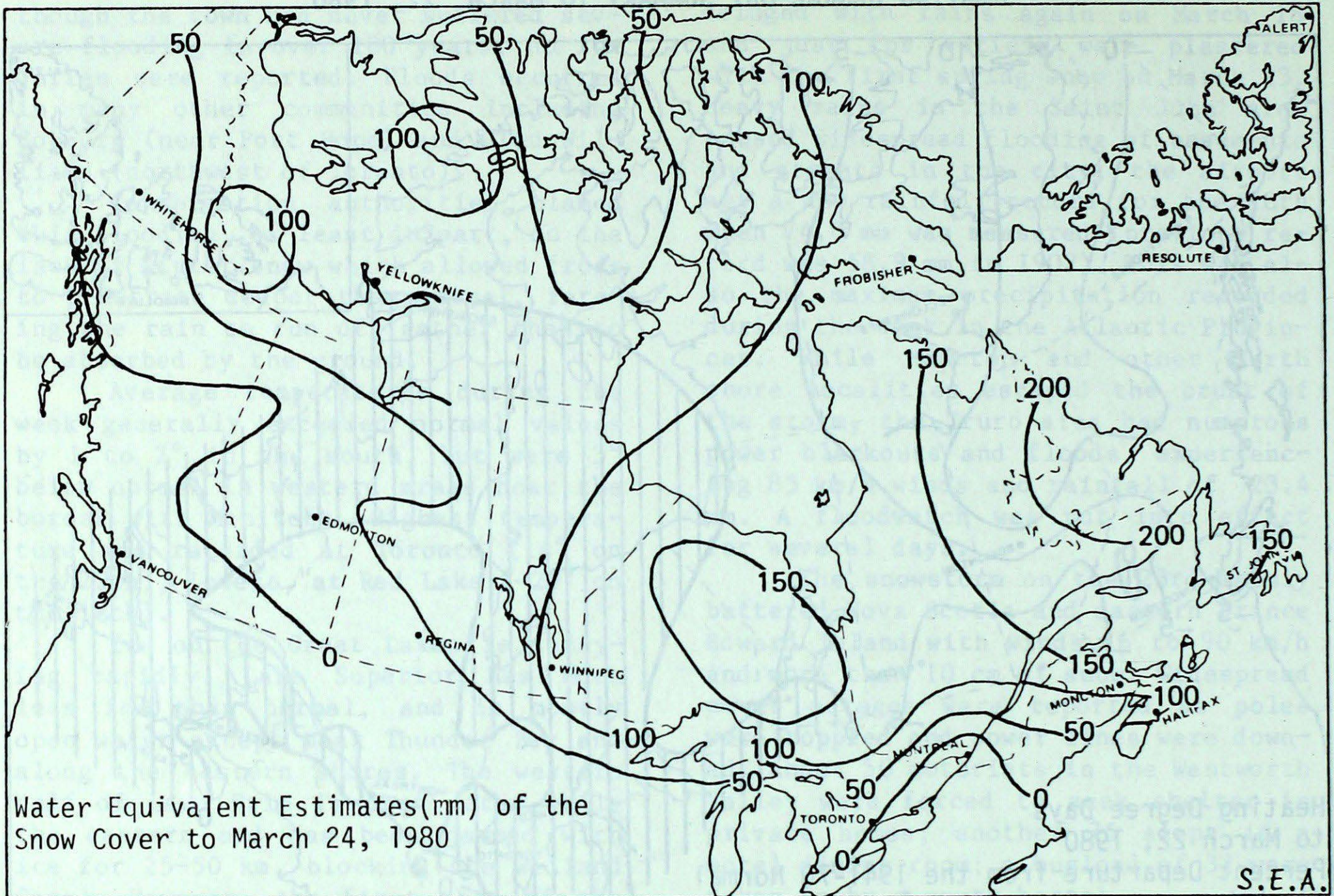
Northeast winds have also jammed ice along the eastern shores of Newfoundland's northern peninsula. About 100-160 km of the southern edge of the ice pack has melted, but the extent of the ice is generally close to normal.

## HEATING DEGREE-DAY SUMMARY TO MARCH 22, 1980



STATION	MONTHLY CUMULATIVE TOTAL	MONTHLY DIFF. FROM 1941-70 NORMAL	SEASONAL TOTAL	SEASONAL DIFF. FROM 1941-70 NORMAL	SEASONAL PERCENT OF NORMAL
Resolute	1051.0	-48.0	9400.0	-102.0	99
Inuvik	983.5	22.5	7027.0	-1039.0	87
Whitehorse	571.5	-18.5	5260.5	-387.5	93
Vancouver Int'l A	272.0	-4.0	2300.0	-88.0	96
Edmonton Mun A	542.0	-5.0	4201.5	-483.5	90
Calgary Int'l A	536.5	27.5	4114.0	-215.0	95
Regina	656.5	37.5	4736.5	-244.5	95
Winnipeg Int'l A	691.0	77.0	5024.5	52.5	101
Thunder Bay	610.0	48.0	4667.0	-20.0	100
Windsor	426.5	36.5	3024.5	9.5	100
Toronto Int'l A	480.5	39.5	3417.5	41.5	101
Ottawa Int'l A	509.5	14.5	3848.0	-97.0	98
Montreal Int'l A	511.5	40.5	3770.5	15.5	100
Quebec	573.0	58.0	4272.5	92.5	102
Saint John, N.B.	507.0	29.0	3684.5	-80.5	98
Halifax	460.5	32.5	3253.5	93.5	103
Charlottetown	520.5	39.5	3650.0	67.0	102
St. John's, Nfld.	456.5	-0.5	3601.0	76.0	102

Water Equivalent of Snowpack



## Estimated Water Equivalent of the Snowpack

The Hydrometeorology Division of the Canadian Climate Centre is currently processing near real-time water budgets for approximately 160 synoptic stations across Canada on a weekly basis. This effort is part of the monitoring role of the Canadian Climate Centre to quickly assess variations of climatic parameters in time and space with respect to hydrologic activities.

In the winter season, one component of the water budget of particular interest is the accumulated snow water

equivalent. These values have been accumulated at each station since the beginning of the winter season and are based on the assumption that precipitation falls as snow whenever the daily mean temperature is below freezing. On days with the mean temperature above freezing, a standard snowmelt equation is applied and the calculated snowmelt is subtracted from the accumulated total. These totals are in effect estimates of the net snow storage in water equivalent at each station.



### CLIMATIC PERSPECTIVES

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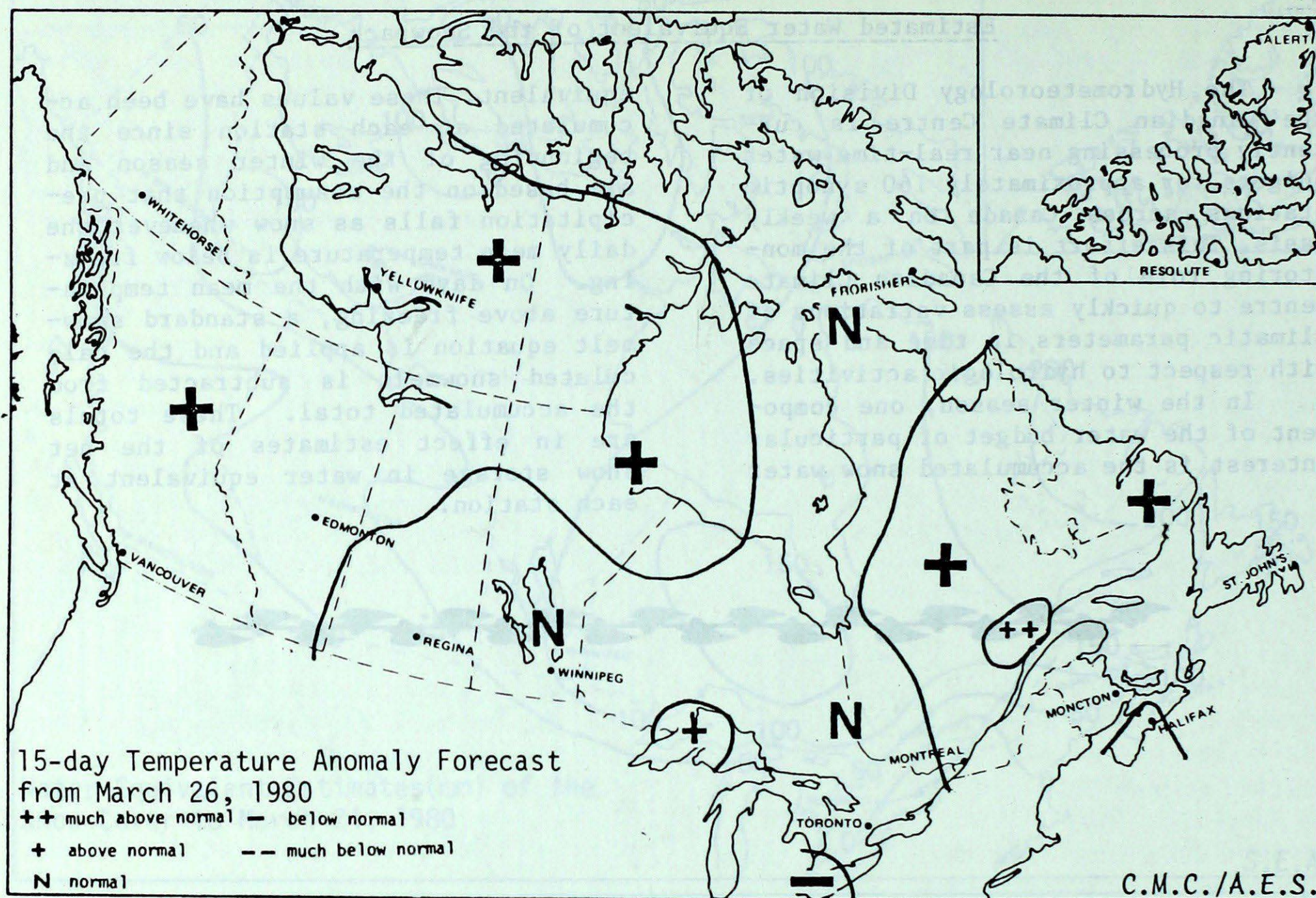
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## 15 DAY TEMPERATURE ANOMALY FORECAST

Forecast Method

Analogue technique based on point prediction at 70 Canadian stations.

Temperature Scale

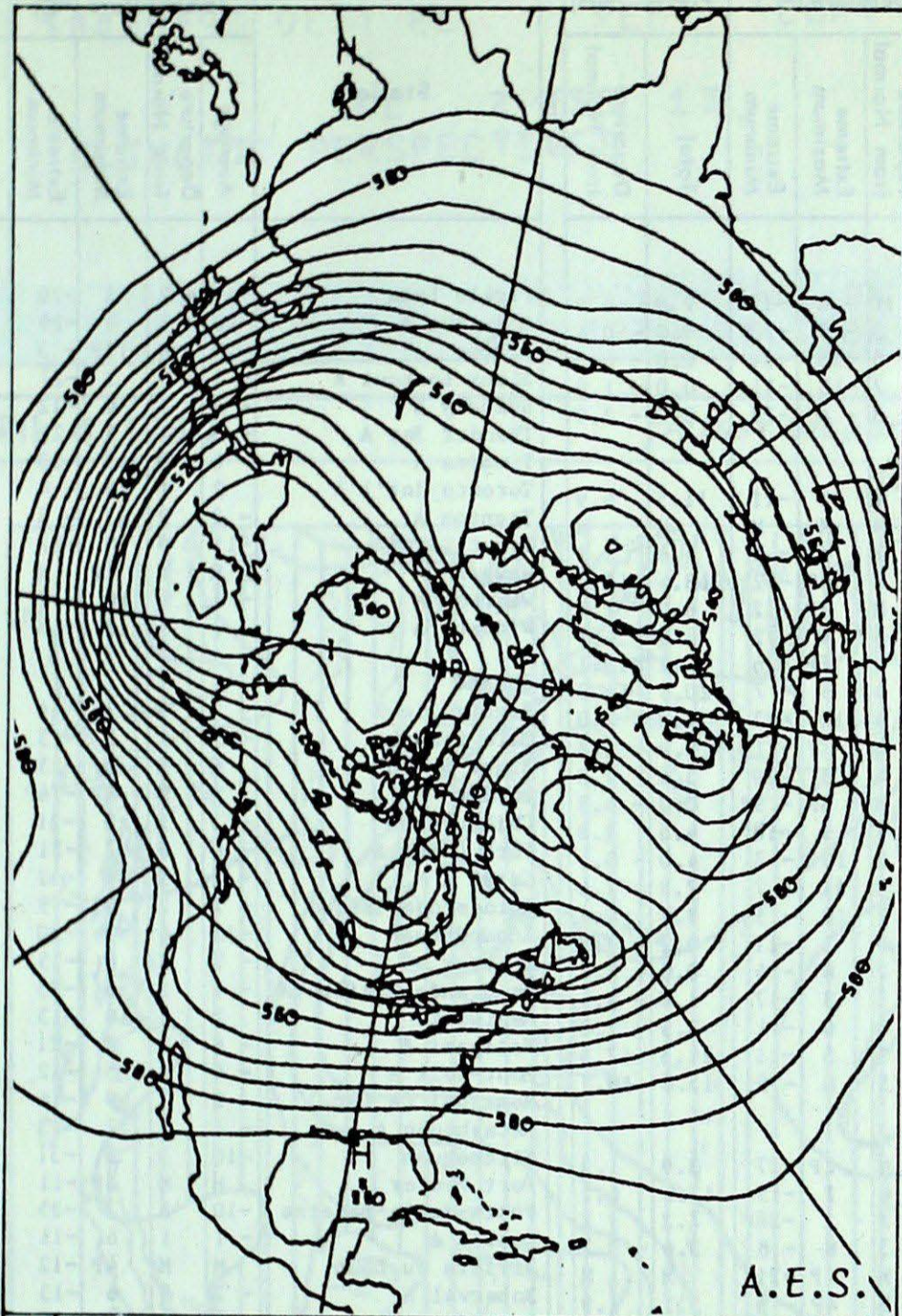
Each temperature class is designed to contain 20% of the historically observed 15 day means pertinent to specific location and time of year:

<u>Station</u>	<u>Current Temperature Anomaly Forecast</u>	
Whitehorse	Above Normal	From 0.9° to 2.9° above Normal
Victoria	Above Normal	From 0.3° to 0.9° above Normal
Vancouver	Above Normal	From 0.3° to 1.0° above Normal
Edmonton	Above Normal	From 0.9° to 3.1° above Normal
Regina	Near Normal	Within 1.0° of Normal
Winnipeg	Near Normal	Within 0.9° of Normal
Thunder Bay	Above Normal	From 0.7° to 2.2° above Normal
Toronto	Near Normal	Within 0.6° of Normal
Ottawa	Above Normal	From 0.6° to 2.0° above Normal
Montreal	Above Normal	From 0.6° to 1.9° above Normal
Quebec	Above Normal	From 0.5° to 1.8° above Normal
Fredericton	Above Normal	From 0.5° to 1.8° above Normal
Halifax	Near Normal	Within 0.4° of Normal
Charlottetown	Above Normal	From 0.5° to 1.8° above Normal
St. John's	Above Normal	From 0.5° to 1.6° above Normal
Goose Bay	Above Normal	From 0.8° to 2.8° above Normal
Frobisher Bay	Near Normal	Within 1.2° of Normal
Inuvik	Above Normal	From 1.1° to 3.7° above Normal

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



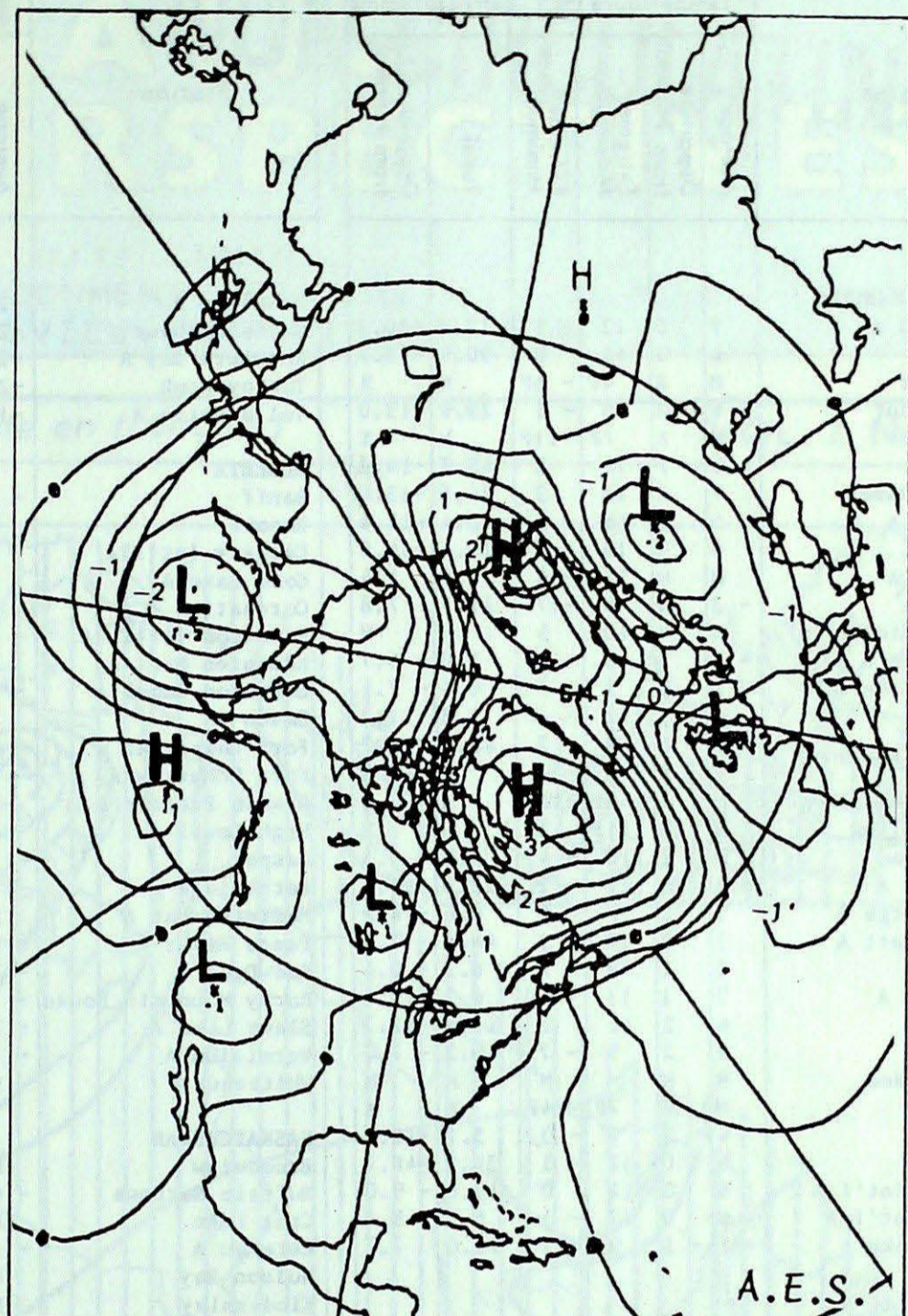
## Atmospheric Circulation Features



7-day Mean 50 kPa Height Map (in dams)  
March 17 to 23, 1980

The upper atmospheric circulation became very complex during the week, containing numerous sharp perturbations and weak but significant closed lows which formed and moved across the continent.

The seven-day mean steering flow at 50 kPa was generally west to east, with weak cyclonic curvature in a trough in the vicinity of Hudson Bay. On the average, a flat upper ridge dominated western Canada, resulting in generally fair spring-like weather; however, an upper closed low remained over eastern Canada, producing poor weather in many areas.



7-day Mean 50 kPa Height Anomaly (in 5 dam intervals) for March 17 to 23, 1980

Low pressure systems in the Canadian Prairies and the American Midwest moved along storm tracks which converged upon southern Ontario and Quebec, and the Atlantic Provinces. Strong low pressure systems developed at the surface, releasing energy through heavy rains and snowfalls, and very strong winds. The brunt of this week's weather was borne by the Lower Great Lakes, the St. Lawrence Valley and the Maritimes which suffered numerous floods, widespread property damage, and traffic disruptions.

Andy Radomski



TEMPERATURE AND PRECIPITATION DATA FOR THE WEEK ENDING 0600 G.M.T. MARCH 25, 1980.

Table with columns: Station, Temperature (°C) (Average, Departure from Normal, Extreme Maximum, Extreme Minimum, Total), and Precip. (mm) (Departure from Normal). Rows include stations in BRITISH COLUMBIA, YUKON, NORTHWEST TERRITORIES, and parts of ALBERTA.

Table with columns: Station, Temperature (°C) (Average, Departure from Normal, Extreme Maximum, Extreme Minimum, Total), and Precip. (mm) (Departure from Normal). Rows include stations in ALBERTA, SASKATCHEWAN, MANITOBA, and ONTARIO.

Table with columns: Station, Temperature (°C) (Average, Departure from Normal, Extreme Maximum, Extreme Minimum, Total), and Precip. (mm) (Departure from Normal). Rows include stations in QUEBEC, NEW BRUNSWICK, NOVA SCOTIA, PRINCE EDWARD ISLAND, and NEWFOUNDLAND.

P = extreme value based on less than 7 days

X = no normal due to short period

M = not available at press time