Environment Canada Imaging Cover Page

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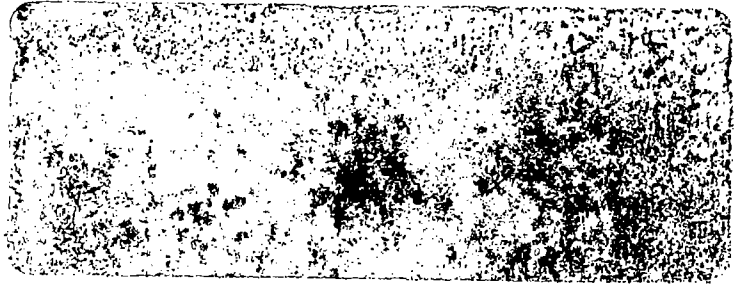


CDS #4–69

CANADA – DEPARTMENT OF TRANSPORT – METEOROLOGICAL BRANCH

CLIMATIC DATA FOR THE DAY OF THE ECLIPSE

MARCH 7 – 1970

by F.D. MANNING

On March 7, 1970, a total eclipse of the sun will occur over a strip of Nova Scotia and Newfoundland. In addition to professional astronomers, many amateurs are interested in making observations on the eclipse. The accompanying tables and figures have been produced to show normal climatic conditions in Nova Scotia and Newfoundland during that part of the year and to show the path of the eclipse. The eclipse times are expressed in Atlantic Standard Time in every instance.

At Halifax, north of the path of totality, the sun will be at an elevation of 30° and mid-eclipse will occur at 2:55 p.m. Atlantic Standard Time with the duration being about 2.2 minutes.

A favourite track of storm centres in March passes just south of Nova Scotia and Newfoundland. An average of five such storms occur each March producing considerable cloudiness. Water temperatures are in the range of 30° to 35°F, and ice coverage averages over five-tenths from Sydney, N.S. northward to off the east coast of Newfoundland. Relatively warm southerly winds over this area result in extensive fog and low stratus conditions.

On the average there are about 120 to 140 hours of bright sunshine during March in Nova Scotia and about 100 in Newfoundland. The area of Halifax is a little less cloudy on the whole and reports the most bright sunshine of all the stations along the eclipse path.

Table 1 shows values of temperature and precipitation over the period from March 1 to 15, based on the period 1931 to 1960. These values indicate normal climatic conditions for that portion of the month, including the day of the eclipse, unless indicated. A day with measurable rain is one on which 1/100th of an inch or more has fallen, and a day with snow is one on which at least 1/10th of an inch of newly fallen snow was recorded.

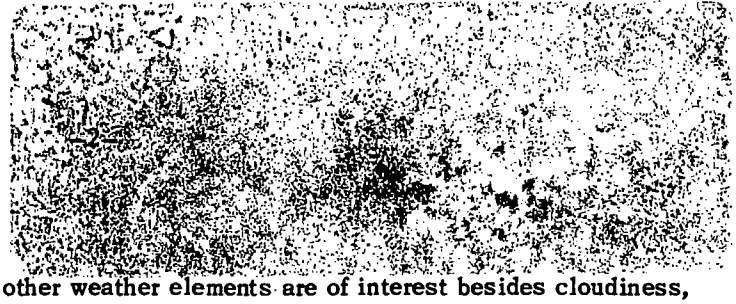
Probably the greatest interest in eclipse weather is centered on the amount of cloudiness. Table 2 shows percentage frequency of cloudiness and is based on the period 1931 to 1960.

If the cloudiness is in the range 0 to 2/10ths, the sky is practically clear and the chance of seeing the eclipse is very good.

If the cloudiness is in the range 3 to 7/10ths, the sky is about half covered with cloud and the chance of seeing the eclipse is 50–50.

If the cloudiness is in the range 8 to 10/10ths, then most of the sky is covered by cloud and the chance of seeing the eclipse is rather remote.

Table 3 has been interpolated from hourly observations taken over the 10–year period 1957 to 1966, and is an attempt to give mean frequency values of various weather parameters at 1500 AST.



In making astronomical observations, other weather elements are of interest besides cloudiness, temperature and precipitation. For instance, strong winds may cause instrumental vibrations if observations are being made from equipment installed out of doors thus affecting the performance of the instrument used. Table 4 has also been interpolated from Hourly Data Summaries and shows the percentage frequency of of winds of 20 miles per hour or over for March. This will give an indication of the likelihood of strong winds, although the actual threshold at which wind speed begins to adversely affect the resulting data will obviously depend upon the type of equipment used and a number of other factors.

Table 5 gives means of dry– and wet–bulb temperatures at 1500 AST for March. As in Tables 3 and 4, these data have been taken from Hourly Data Summaries.

In summary, it can be said that on an average early March day there is a greater probability for warmer, drier and less cloudy conditions in the area from Cape Sable, on the southern tip of Nova Scotia to Halifax than there is in any other area along the path of the eclipse in Canada. It should be pointed out, however, that these are average conditions and that movements of weather systems over the area on March 7, 1970, could produce weather ranging from heavy overcast to bright sunny conditions along the path. The reader is advised to read or listen to the weather forecasts for a few days in advance of the eclipse.

26/9/69

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TABLE 1

**Average Temperature and Precipitation Values for March 1 to 15.
Temperature and Precipitation Extremes for March as a whole.**

	HALFIAX	SYDNEY	ST. JOHN'S	GANDER
Mean daily max. temp. °F	37	30	31	30
Mean daily min. temp. °F	23	19	20	16
Max. temp. on record °F (March)	70	65	67	56
Min. temp. on record °F (March)	–10	–24	–14	–14
Total average rainfall (inches)	0.50	1.25	1.20	0.50
Total average snowfall (inches)	15.0	10.0	16.0	11.3
% of days with measurable rain	29	26	29	19
% of days with measurable snow	29	35	48	48
Max. precip. in 24 hours (inches - March)	2.49	3.50	2.90	2.37

TABLE 2

Percentage Frequency of Cloudiness for March

	HALIFAX	SYDNEY	ST. JOHN'S	GANDER
0–2 tenths	29	23	16	20
3–7 tenths	12	14	13	11
8–10 tenths	59	63	71	69

TABLE 3

Percentage of hours when various weather elements were observed at 1500 AST in March.

	HALIFAX	SYDNEY	ST. JOHN'S	GANDER
Rain	6	8	12	12
Freezing Rain or Drizzle	1	1	4	2
Snow	18	19	31	39
Fog (Vsby 6 mi. or less)	13	13	24	18
Thunderstorms	Nil	Nil	Nil	Nil

TABLE 4

Percentage Frequency of Winds of 20 mph or over for March

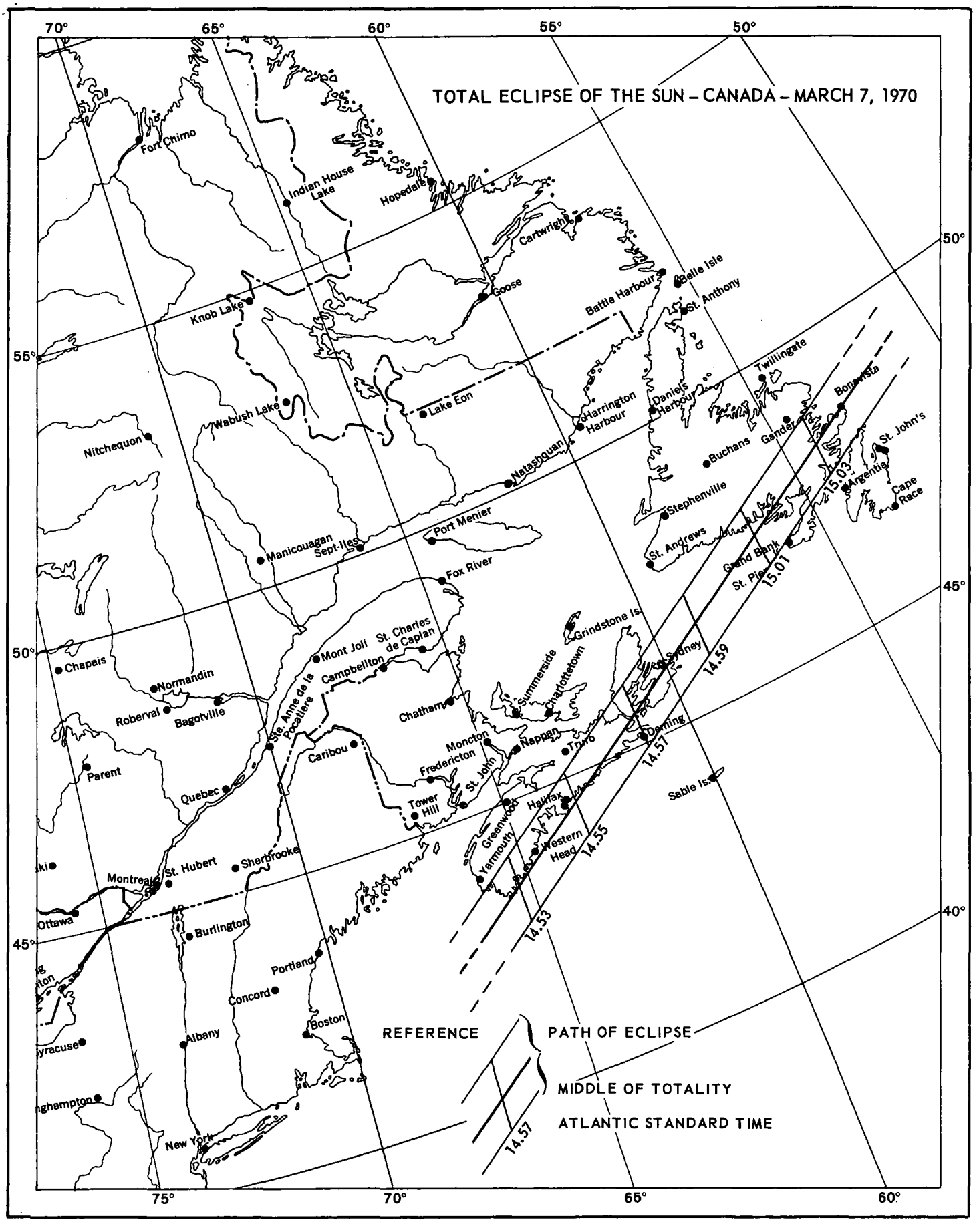
Halifax	29
Sydney	28
St. John's	35
Gander	31

TABLE 5

Means of Dry- and Wet-Bulb Temps at 1500 AST. March

	DRY-BULB	WET-BULB
Halifax	34.7	31.4
Sydney	31.4	29.4
St. John's	29.5	28.2
Gander	29.5	27.8

NOTE: All extremes of temperature and precipitation are based on a combination of observations at the airports and city sites from the period of record to 1967.


TOTAL ECLIPSE OF THE SUN – CANADA – MARCH 7, 1970
70°
65°
60°
55°
50°
75°
70°
65°
60°
55°
50°
45°
40°
Fort Chimo
Indian House Lake
Hopedale
Cartwright
Goose
Battle Harbour
Belle Isle
St. Anthony
Knob Lake
Lake Eon
Wabush Lake
Nitchequon
Natashquan
Harrington Harbour
Daniel's Harbour
Twillingate
Bonavista
Gander
Buchans
St. John's
Argentia
Cape Race
Stephenville
St. Andrews
Port Menier
Manicouagan
Sept-Iles
Fox River
Grand Bank
St. Pierre
15.03
15.01
14.59
14.57
14.55
14.53
Grindstone Is
Sydney
Mont Joli
St. Charles de Caplan
Campbellton
Chapais
Normandin
Roberval
Bagotville
Ste. Anne de la Pocatiere
Chatham
Summerside
Charlottetown
Caribou
Moncton
Fredericton
St. John
Nappan
Truro
Deming
Parent
Quebec
Tower Hill
Halifax
Sable Is.
Greenwood
Yarmouth
Western Head
Montreal
St. Hubert
Sherbrooke
Ottawa
Burlington
Portland
Concord
Boston
Albany
New York
REFERENCE
PATH OF ECLIPSE
MIDDLE OF TOTALITY
ATLANTIC STANDARD TIME
14.57