Environment Canada Imaging Cover Page

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CLIMATIC DATA FOR THE DAY OF THE ECLIPSE JULY 20, 1963

On July 20, 1963 a total eclipse of the sun will occur which is of particular interest to the people of Canada because the path of totality will pass diagonally across the country. In addition to the efforts of professional astronomers, a large number of amateur astronomers in Canada and the United States are interested in making observations on the eclipse when it occurs. The accompanying tables were originally compiled for Dr. C.S. Beales, the Dominion Astronomer, on behalf of the Joint Permanent Eclipse Committee of the International Astronomical Union and because of the great interest evinced by others, are being reproduced here. Figure 1, which was prepared at the Dominion Observatory, shows the path of the eclipse across Canada. The eclipse times given below are in Universal Time, which is the same as Greenwich Civil Time.

Table 1 shows some general July values which may be of interest to those camping out along the path of totality, much of which is in relatively sparsely inhabited territory. The values given cover the whole month of July and indicate normal climatic conditions for that portion of the month including the day of the eclipse. It will be noticed that mean temperatures are fairly comfortable at any point of the path, and the risk of rain occurring on any day in July varies from 8/31 at Uranium City, Saskatchewan to 16/31 at Moosonee, Ontario.

Probably the greatest interest in eclipse weather is centred on the amount of cloudiness. Table 2 is based on a sampling of the three hours bracketing the time of the eclipse and the 11-day period centred on July 20. The study extended over a 10-year period. The columns may be interpreted as follows:

If the cloudiness is in the range 0-3/10, the sky is practically clear and the chance of seeing the eclipse, very good.
If the cloudiness is in the range 4-6/10, 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 7-10/10, then most of the sky is covered by cloud and the chance of a successful observation of the eclipse is rather remote.

In making astronomical observations, other weather elements are of interest besides cloudiness and temperature. For instance, if the observations are being made from an outdoor instrument, then strong winds may cause vibrations which would affect the performance of the instruments used. The first column of table 3, which is based on the same sampling as table 2, gives the percentage frequency of winds of 20 m.p.h. or more. This will give an indication of the likelihood of strong winds, although the actual threshold at which wind speed begins to adversely affect the results will obviously depend on the type of equipment used and a number of other factors.

If the air is unduly moist, there may be difficulties with condensation on surfaces of the instruments. The next column of table 3 therefore shows the percentage frequency of occurrence of a relative humidity of 80% or over. The last two columns of table 3 give the percentage frequency of occurrence jointly of all the conditions required for the best observations. Condition A gives the percentage frequency of occurrence of a low cloud amount and a low wind speed together with no fog. It might be noted that in general fog is very uncommon at the time of day in which the eclipse occurs at most of the stations along the route. Condition B refers to the occurrence of low cloudiness, low wind speed and a relative humidity below 80%.

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Table 4 gives the percentage frequency of occurrence of dry bulb temperatures in various ten degree ranges for the time of eclipse. As in tables 2 and 3 the data are based on a sampling of the three hours including the eclipse time and the eleven days including the eclipse date. Thus the temperature data of table 4 refers more specifically to the time of eclipse than that of table 1 which is based on temperatures throughout the day and throughout the month.

TABLE 1

JULY NORMAL VALUES

Station	Mean Max °F	Mean Min °F	Mean Temp °F	Mean Rainfall Inches	Mean No. of Days With Rain
Snag, Y.T.	70	44	57	2.61	15
Whitehorse, Y.T.	67	45	56	1.63	10
Watson Lake, Y.T.	70	47	59	1.89	12
Fort Simpson, N.W.T.	75	50	62	1.94	11
Hay River, N.W.T.	70	50	60	1.32	9
Fort Resolution, N.W.T.	70	51	61	1.13	9
Fort Smith, N.W.T.	75	48	61	1.99	10
Uranium City, Sask.	71	52	62	1.63	8
Brochet, Man.	68	51	60	2.87	12
Gillam, Man.	71	48	59	3.00	11
Trout Lake, Ont.	70	52	61	3.96	15
Lansdowne House, Ont.	73	54	64	3.76	14
Moosonee, Ont.	71	48	59	2.94	16
Val d'Or, Que.	73	52	62	4.25	12
Quebec, Que.	77	56	67	4.15	13
Megantic, Que.	75	53	64	4.37	13
Yarmouth, N.S.	69	54	62	3.04	9

TABLE 2

PERCENTAGE FREQUENCY OF CLOUDINESS

Station	Range in Tenths 0-3	4-6	7-10	No. of Hours Sampled
Snag, Y.T.	16	14	70	330
Whitehorse, Y.T.	10	12	78	330
Watson Lake, Y.T.	11	13	76	330
Fort Simpson, N.W.T.	14	22	64	220
Hay River, N.W.T.	29	17	54	330
Fort Resolution, N.W.T.	28	17	55	330
Fort Smith, N.W.T.	9	19	72	330
Beaverlodge Lake, Alta.	25	20	55	128
Brochet, Man.	18	15	67	330
Gillam, Man.	13	25	62	110
Trout Lake, Ont.	28	14	59	302
Lansdowne House, Ont.	24	16	60	88
Moosonee, Ont.	23	15	62	66
Val d'Or, Que.	18	24	58	294
Quebec, Que.	28	16	56	330
Megantic, Que.	25	20	55	330
Yarmouth, N.S.	35	13	52	330

TABLE 3

PERCENTAGE FREQUENCY

Station	Winds of 20 m.p.h. or over	Relative Humidity 80% or over	Condition *A	Condition **B
Snag, Y.T.	T	14	16	13
Whitehorse, Y.T.	1	T	10	9
Watson Lake, Y.T.	2	12	11	9
Fort Simpson, N.W.T.	1	4	14	14
Hay River, N.W.T.	2	26	29	26
Fort Resolution, N.W.T.	11	17	28	28
Fort Smith, N.W.T.	2	11	9	8
Beaverlodge Lake, Alta.	1	6	25	14
Brochet, Man.	10	18	18	13
Gillam, Man.	8	9	13	14
Trout Lake, Ont.	7	11	28	29
Lansdowne, Ont.	11	15	24	24
Moosonee, Ont.	9	15	23	23
Val d'Or, Que.	1	18	18	18
Quebec, Que.	8	17	28	29
Megantic, Que.	8	23	25	23
Yarmouth, N.S.	3	67	33	15

*A - Cloud in the range 0-3 tenths inclusive with wind speed less than 30 m.p.h. and no fog reported.

**B - Conditions A and in addition relative humidity less than 80% (no relative humidity data was available for 1952).

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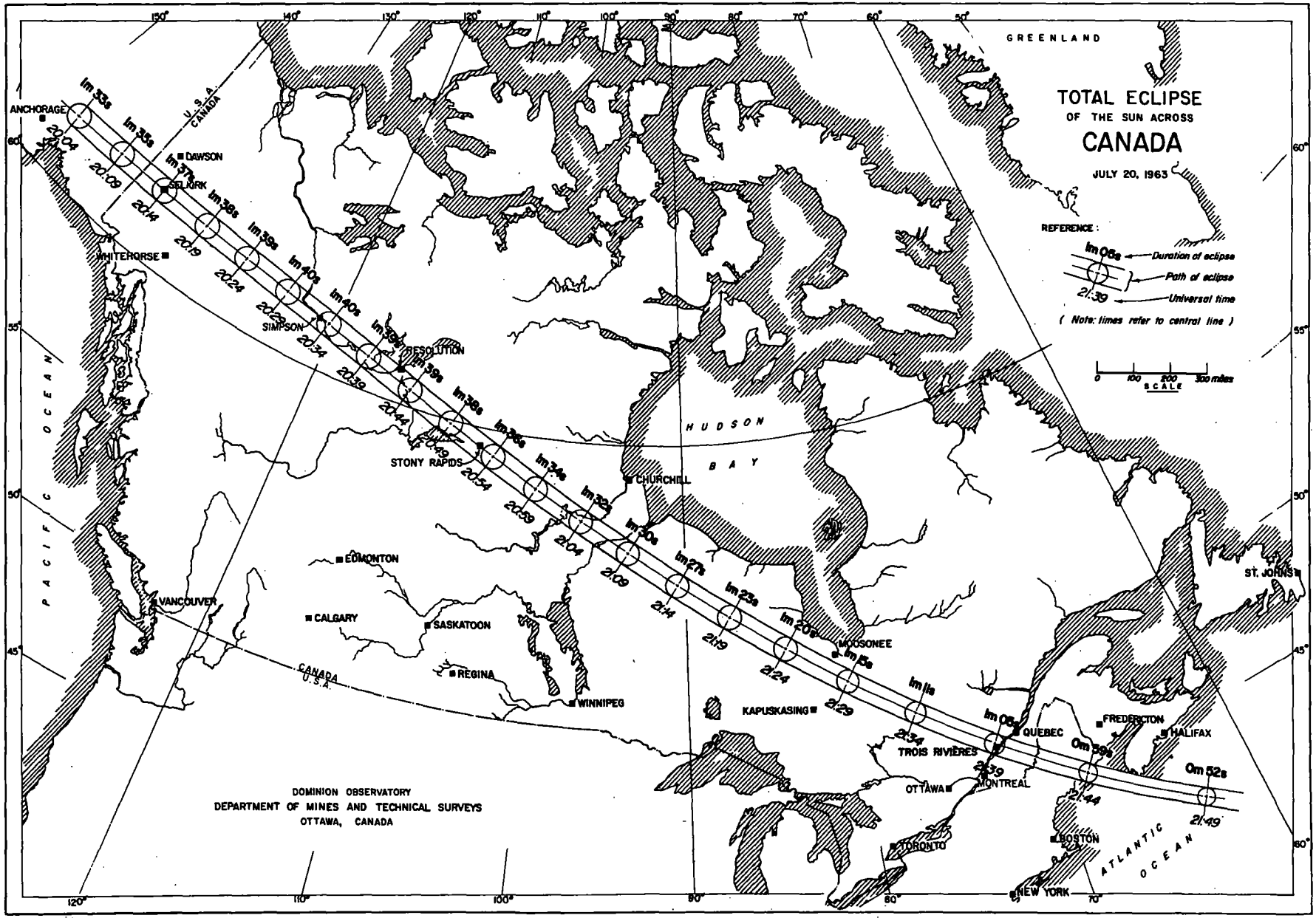
TABLE 4

PERCENTAGE FREQUENCY OF OCCURRENCE OF DRY BULB TEMPERATURES

Station	40-49	50-59	60-69	70-79	80-89	90
Snag, Y.T.	2	31	48	18	1	
Whitehorse, Y.T.	2	34	48	16	T	
Watson Lake, Y.T.	1	18	58	21	2	
Fort Simpson, N.W.T.	2	11	36	47	4	
Hay River, N.W.T.	2	23	44	29	2	
Fort Resolution, N.W.T.	2	22	45	30	1	
Fort Smith, N.W.T.	1	13	30	45	11	
Beaverlodge Lake, Alta.		19	30	44	7	
Brochet, Man.	2	20	40	31	7	
Gillam, Man.	1	9	32	39	15	4
Trout Lake, Ont.	1	11	31	46	10	1
Lansdowne House, Ont.		6	29	50	14	1
Moosonee, Ont.		11	39	33	15	2
Val d'Or, Que.		7	33	42	18	
Quebec, Que.		4	28	47	20	1
Megantic, Que.	1	7	40	44	8	1
Yarmouth, N.S.		20	74	6		


TOTAL ECLIPSE
OF THE SUN ACROSS
CANADA
JULY 20, 1963
REFERENCE :
Duration of eclipse
Path of eclipse
Universal time
(Note: times refer to central line)
SCALE
0 100 200 300 miles
GREENLAND
PACIFIC OCEAN
HUDSON BAY
ATLANTIC OCEAN
U.S.A.
CANADA
ANCHORAGE
DAWSON
WHITEHORSE
SIMPSON
RESOLUTION
STONY RAPIDS
CHURCHILL
EDMONTON
CALGARY
SASKATOON
REGINA
VANCOUVER
WINNIPEG
KAPUSKASING
MOOSONEE
QUEBEC
TROIS RIVIERES
MONTREAL
OTTAWA
TORONTO
FREDERICTON
HALIFAX
ST. JOHNS
BOSTON
NEW YORK
DOMINION OBSERVATORY
DEPARTMENT OF MINES AND TECHNICAL SURVEYS
OTTAWA, CANADA