

**Subsection 1.—Investigations of Weather Cycles Made by the Dominion Observatory\***

It has long been known that auroral displays and terrestrial magnetism fluctuate with the eleven-year sunspot cycle. This was explained a third of a century ago as due to the fluctuation in ultra-violet light from the sun thus causing a variation in the ionization of the upper atmosphere. The changing ionization causes variations in the development of haziness and cloudiness thus inducing fluctuations in the weather and in living conditions. This view is still maintained; and with this rational theory as to causes, numerous investigations of fluctuations in meteorology and forms of life have been made. A short outline of some of the results is given herewith.

Temperature records in Canada show, in the mean, higher values at sunspot minimum than at maximum. Some of the prairie stations exhibit ranges as high as 4°F. in the mean sunspot cycle. However, since the records cover a short span of years a smoothing formula is used, thus:  $0.25(a+2b+c)$  where b is the mean value for the year of the cycle in question and a and c the values for the year before and the year after. This gives a conservative value for the range.

In the following table the smoothed mean eleven-year cycles in temperature are given for 13 stations in Canada. The years are for sunspot minima, 1 year after, 2 years after, and so on. The mean cycle for these stations shows the progressive influence of the sunspot cycle, the excess at minimum over maximum averaging 1.4°F.

TEMPERATURES, SMOOTHED MEAN ELEVEN-YEAR CYCLES

Year.....	0	1	2	3	4	5	6	7	8	9	10	11	Range F.°
<i>St. John's, Newfoundland, 1872-1920</i>													
41.4	40.9	40.4	40.5	40.4	40.2	40.3	40.4	40.6	40.7	40.4	40.8	40.8	1.2
<i>Charlottetown, Prince Edward Island, 1873-1925</i>													
42.4	42.0	41.4	41.0	40.7	40.8	41.0	41.2	41.4	41.7	42.0	42.4	42.4	1.7
<i>Halifax, Nova Scotia, 1874-1928</i>													
44.1	43.3	43.3	43.0	42.8	43.2	43.4	43.4	43.7	43.7	43.8	44.3	44.3	1.5
<i>Southwest Point, Anticosti, 1882-1920</i>													
35.4	34.8	34.3	34.4	34.2	34.0	34.3	35.0	35.7	35.7	35.1	35.1	35.1	1.4
<i>Montreal, Quebec, 1873-1925</i>													
42.8	42.6	42.7	42.2	41.5	41.9	42.2	42.0	42.1	42.5	42.7	42.8	42.8	1.3
<i>Toronto, Ontario, 1873-1925</i>													
46.0	45.7	45.5	45.0	44.7	44.8	44.7	44.7	45.2	45.6	45.8	46.1	46.1	1.4
<i>Winnipeg, Manitoba, 1873-1925</i>													
36.7	35.8	34.9	34.1	33.9	34.2	34.2	34.4	34.6	34.6	35.2	36.3	36.3	2.8
<i>Prince Albert, Saskatchewan, 1885-1925</i>													
33.6	33.3	32.7	32.0	32.2	33.0	32.8	32.3	32.2	32.1	32.0	32.9	32.9	1.6
<i>Edmonton, Alberta, 1883-1925</i>													
38.4	37.7	37.1	36.4	36.3	36.3	35.8	35.6	35.8	35.8	36.3	37.9	37.9	2.8
<i>Calgary, Alberta, 1884-1925</i>													
39.5	39.1	38.6	37.9	38.1	38.6	38.3	38.1	37.9	37.3	37.1	38.5	38.5	1.6
<i>Kamloops, British Columbia, 1891-1925</i>													
47.3	47.8	47.5	46.8	47.2	47.9	47.1	46.7	46.8	46.6	46.4	46.8	46.8	1.1
<i>Barkerville, British Columbia, 1888-1925</i>													
36.1	35.9	35.6	34.8	35.0	35.6	34.9	34.2	34.6	35.1	35.5	36.1	36.1	1.9
<i>Victoria, British Columbia, 1891-1925</i>													
50.1	50.0	50.0	49.5	49.2	49.3	49.3	49.2	49.1	49.1	49.4	50.0	50.0	1.0
Mean.....	41.1	40.7	40.3	39.8	39.7	40.1	39.9	39.7	40.0	40.0	40.1	40.7	1.4

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