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"HOT DAY TEMPERATURES" AT CANADIAN AIRPORTS

In the International Air Transport Association meeting of November 1958, dealing on Turbine Aircraft Runway Length requirements, it was proposed and adopted by the members that a new formula for obtaining hot day temperatures be used. This formula is as follows:

> "Use the temperature which will not be exceeded on 85% of the days of the hottest month of the year, i.e., - take the mean of the daily maxima for the hottest month of the year and add one standard deviation".

At the suggestion of Trans-Canada Air Lines and working from a list of stations provided by that organization, the Climatology Division of the Meteorological Branch computed "hot day temperatures" using the above stated formula. The table attached shows the period of record used at each station, the number of years in the record, the mean daily maximum for the hottest month of the year, the standard deviation of these values and the resulting "hot day temperature". Some values have been estimated where the period of record was too short to compute a proper value and at some cities data from non airport observing sites were used.

For each station the mean daily maximum temperature was abstracted for the warmest month of each year which is usually July. These values were meaned or averaged and then the standard deviation was obtained by finding the square root of the square of the difference of each annual value from the overall mean divided by the number of years in the record less one. The "hot day temperature" has been defined as the sum of the mean value and one standard deviation.

Examination of the data will reveal that the resulting values are in the low 80's in the southern Prairie Provinces and southern Ontario, Quebec, and New Brunswick. Values in coastal regions are usually lower than in the continental interior, and are generally in the range 70 to 75.

During the period under study from 1937 to 1958 some summers brought unusual temperatures to different parts of the country. July 1947 was exceptionally warm on the southern Prairies, July 1952 was hot in Quebec and the Maritime Provinces, July 1955 was one of the hottest months on record in central Ontario and July 1958 was the warmest month on record along the Pacific Coast of British Columbia. On the other hand, even the warmest month was relatively cool in 1952 in Alberta, in 1954 in British Columbia, and 1956 in Quebec. The presence of one or more of these exceptionally warm or cold seasons increases the standard deviation considerably when the period of record is relatively short as it was in this study.

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MKT:dmp
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Station	Temperature Record Period	Years	Daily Maximum for Hottest Month of Year Mean °F	Standard Deviation °F	"Hot day Temperature" °F
Abbotsford	1944-1958	14	74.5	3.5	78.0
Bagotville	1943-1958	15	74.7	2.9	77.6
Brandon	1941-1958	12	78.8	2.6	81.4
Calgary	1938-1958	21	74.8	2.8	77.6
Earlton	1939-1958	20	76.0	2.8	78.8
Edmonton	1938-1958	21	74.2	2.1	76.3
Ft.William/Pt.Arthur	1942-1958	17	75.3	2.1	77.4
Fredericton Exp.Farm	1938-1958	21	78.1	2.7	80.8
Gander	1937-1958	22	72.5	2.3	74.8
Goose	1942-1958	17	70.3	2.6	72.9
Halifax/Dartmouth	1943-1958	15	72.1	2.2	74.3
Lethbridge	1938-1958	21	80.4	2.6	83.0
London	1940-1958	18	80.4	2.7	83.1
Medicine Hat	1938-1958	21	83.0	2.7	85.7
Moncton	1940-1958	19	76.7	2.8	79.5
Montreal/Dorval	1942-1958	17	79.9	2.5	82.4
North Bay	1939-1958	20	75.3	2.6	77.9
Ottawa/Uplands	1939-1958	20	80.4	2.8	83.2
Quebec/Ancienne Lorette	1943-1958	16	77.3	3.0	80.3
Regina	1937-1958	21	79.8	3.0	82.8
Rouyn				Estimated	78.0
Saint John Observatory	1938-1958	21	70.9	2.3	73.2
St. John's/Torbay	1942-1958	17	69.0	2.3	71.3
Saskatoon	1941-1958	18	78.8	3.6	82.4
Sault Ste.Marie				Estimated	76.0
Seven Islands	1945-1958	14	68.1	2.5	70.6
Stephenville	1942-1957	16	68.2	1.8	70.0
Sudbury Town	1947-1954	11	76.5	2.7	79.2
Swift Current	1938-1958	21	79.2	3.1	82.3
Sydney	1941-1958	18	74.6	2.3	76.9
Timmins				Estimated	78.0
Toronto/Malton	1938-1958	21	81.5	2.6	84.1
Val d'Or				Estimated	78.0
Vancouver	1939-1958	19	72.3	2.2	74.5
Victoria/Patricia Bay	1940-1958	18	71.9	2.8	74.7
Windsor	1940-1958	18	83.0	2.3	85.3
Winnipeg	1938-1958	21	79.6	2.4	82.0
Yarmouth	1940-1958	19	69.6	1.9	71.5
Yorkton	1941-1958	17	76.8	2.7	79.5