

HISTORICAL SOCIETY NOTES AND DOCUMENTS

A COMPARATIVE ANALYSIS OF PITTSBURGH WINTERS (1885-1886 to 1971-1972)

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WAS last winter severe or mild? Are winters in general more severe or less severe than they once were? To answer these questions some other questions must first be answered. What constitutes the winter season? Is a severe or mild winter determined by the amount and duration of snowfall, the number of days with severe or mild temperatures, or a combination of the above factors?

Winter for the entire continental United States officially begins with the winter solstice (on or about December 21) and ends with the spring equinox (on or about March 21). Since these dates serve as parameters for such a large latitudinal range, they are obviously unrealistic for much of the United States.

Analytic Techniques

In this study an attempt is made to analyze and compare the winter half of eighty-six years (1885-1886 through 1971-1972) for the Pittsburgh, Pennsylvania, area.¹ In the Pittsburgh region snow or low temperatures often occur in November and extend (one or both) through April; for this reason this six-month period is used.² When using the November through April period, early winters and late springs are taken into account.

The average six-month temperatures and six-month total snowfalls are plotted for each year on figure 1. The vertical axis represents the average snowfall in inches for the eighty-six-year period, and the horizontal axis represents the average six-month temperature for the

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1 Data for the years 1885-86 to 1929-30 was obtained from records at the National Weather Service office in Pittsburgh.

2 U.S. Department of Commerce, *Local Climatological Data, Pittsburgh, 1967-1971*.

Extremely mild cold seasons are those which are plotted two or more standard deviations from the means in the lower right quadrant and include the years 1889-1890, 1918-1919, 1931-1932, 1948-1949, and 1949-1950 (figure 1). Mild cold seasons fall between one and one-half and two standard deviations from the means in the lower right quadrant. These years are as follows: 1902-1903, 1920-1921, 1952-1953, and 1953-1954.

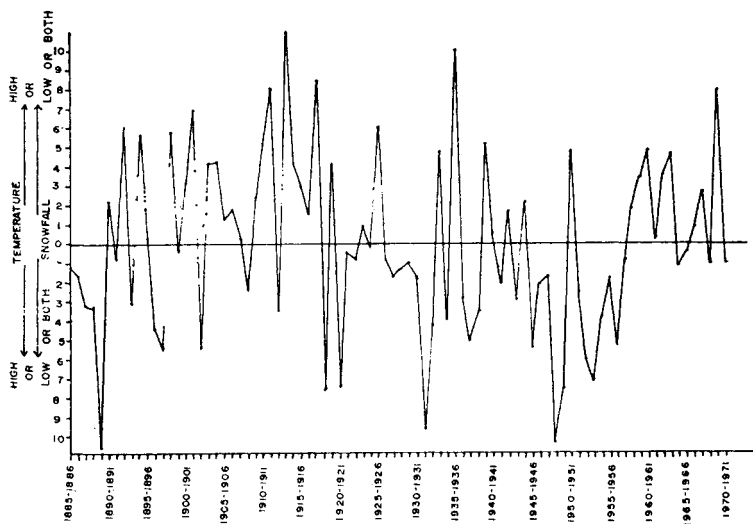
Figure 1 also reveals that the cold season which had the lowest average temperature was 1911-1912 and that the most snowfall was recorded during 1913-1914. The highest average temperature occurred during 1948-1949, and the least snow fell during 1918-1919. Also interesting to note are the years 1903-1904 (upper right quadrant) and 1890-1891 (lower left quadrant). These years best fit the description of cold with little snow and warm with excessive snow respectively. The years 1961-1962 and 1965-1966 most closely approach the point where the means for both snowfall and temperature meet.

To attempt to answer the question whether cold seasons are in general more severe or less severe than they once were, another technique is employed (figure 2). Here the cold season's (November through April) average temperatures and snowfall amounts have been

FIGURE 2

TEMPERATURE-SNOWFALL INDEX

PITTSBURGH



combined and converted to an index for each year. Yearly indices are derived by calculating the combined distance a given year lies from the mean for both temperature and snowfall as shown on figure 1. An extreme of either temperature or snowfall has a profound influence upon the index for a given year. Consequently, figure 2 reflects only the relative position for the various years; and, therefore, it can be used only for interpreting trends which have occurred.

Summary and Conclusions

The statement has often been made that cold seasons in the Pittsburgh region have become more severe over the past few years (1960s and early 1970s). This statement appears to be valid when the 1960s and early 1970s are compared with the preceding thirty-year period. The 1930s, 40s, and 50s were a relatively mild period. However, when the 1960s and early 70s are compared with the 1890s and early 1900s, the 1960s and early 70s do not appear to be so severe.

Based upon the trends shown on figure 2, old timers appear to be correct when they say that cold seasons in the Pittsburgh region were once more severe than those of the present. It can be seen that the Pittsburgh area has experienced only normal, or slightly below normal, cold seasons from the late 1950s through the remaining period covered by this study.