Ninety Years of Weather Reporting in Northwest Minnesota

Russ Severson

Minnesota Report 182—1982
Agricultural Experiment Station
University of Minnesota

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INTRODUCTION

Weather--one of the most dynamic forces of nature--touches the life of every individual; it affects water supplies, food, shelter, and sometimes destroys life itself. Because of weather's great importance, weather records have been kept at the Northwest Experiment Station for over 65 years. This is the second publication describing weather at Crookston. Dr. Olaf Soine compiled the first publication in 1966 entitled "Fifty Years of Weather at the Northwest Experiment Station." Weather records for the years 1890-1915 from an observation point within the city of Crookston were used to complete the 90-year summary.

The purpose of this bulletin is to disseminate climatological data in an organized form to a variety of individuals and groups. Various determinations have been calculated with the aid of the computer programs developed by the University of Minnesota, St. Paul Campus Computer Center. The 90 years of weather data also had to be entered into files for the computer to summarize and manipulate. This time-consuming task was completed by Dr. Donald Baker of the climatology section of the Soil Science Dept., University of Minnesota. The resulting individual data, means and extremes were then organized by the author to publish this report. Hopefully, this publication will be a useful reference to the local newspapers, radio stations, farmers, power and fuel companies, agribusinesses and other interested individuals and groups.

WEATHER STATION HISTORY

According to weather records from the Minnesota Climatological Office in St. Paul, weather observations commenced in Crookston during May of 1885 with H. A. Mason as weather observer. Due to missing data, the weather records for 1885 through 1889 were not included in this bulletin. John Ross assumed the weather observation duties during October, 1889, and maintained the records through August of 1893. At that time, A. G. Andersen became the weather observer and recorded climatological information for the next 29 years. Norman C. Schreiter took over observations in May of 1921 and served through February of 1923 at which time the Crookston reporting station was terminated.

There was a transitional period from June, 1915, through February, 1923, where both the Northwest Experiment Station and the Crookston weather station were submitting reports. F. L. Keunard was the first weather observer for the Northwest Experiment Station. Keunard served in this position from June, 1915, through March, 1918, at which time R. O. Westby became the observer. Westby observed weather at the station through March of 1919. R. R. Smith took over the duties August of 1919 through July of 1921. E. R. Clark observed the weather from July, 1921, through March of 1923. Clark became the first official weather observer in the spring of 1922 when the weather observation reports were given official recognition by the U.S. Weather Bureau and the experiment station was appointed cooperating observer for the corn and wheat district. Weather observations were telegraphed to the Weather Bureau Office in Minneapolis each morning from April 1 to October 1.

The Northwest Experiment Station became the sole observation point March 1, 1923 with the termination of the Crookston station. The Northwest Experiment Station is located about 2 miles north of Crookston, approximately in the center of the Red River Valley, at a latitude of 47° 48', a longitude of 96° 37' and a ground elevation of 888.34 feet.

In accordance with U.S. Weather Bureau standards, maximum and minimum temperature to the nearest degree, precipitation to the nearest one-hundreth inch and snowfall to the nearest one-tenth inch have been recorded daily at 5 p.m. with official equipment provided by the U.S. Weather Bureau. Raymond S. Dunham was appointed official weather observer March 1, 1923 and continued in that capacity for 31 years until he was transferred to the Agronomy Department at St. Paul in 1945. Dr. Olaf Soine assumed the responsibility for weather observations July 1, 1945. Soine took daily observations for 29 years until his retirement July 1, 1974. Russ Severson took over as regular weather observer July 1, 1974, and continues in that position.

The combined 89 years of dedicated service provided by Andersen, Dunham, and Soine to the U.S. Weather Bureau and National Weather Service has provided the Crookston area and the state the national climatologists with extremely valuable weather data. Without their dedicated service, the publication of this bulletin would have been impossible. In 1980, President Carter exemplified this deciation during a visit by Edward H. Stoll, a cooperative weather observer fo 76 years, to the nation's capitol. President Carter stated during that visit, "Mr. Stoll set an example of brilliant service and was a representative of thousands of weather observers who serve our nation without adequate recognition." Mr. Stoll replied during the visit "Service is the rent that you pay for the space that you occupy as you go through life. You owe service to somebody else, not just yourself. I feel if you have some information you should share it with your friends and with the public. You know ..... whatever talent you have is God given and it's given to you to use."

FACTORS INFLUENCING CROOKSTON WEATHER

The surrounding topography of Crookston is a nearly level to slightly undulating lake plain formed from glacial Lake Agassiz, a huge ancient lake, which after gradually receding northward, left behind a vast basin drained by the Red River of the North. The lake plain in the Crookston area extends from the North Dakota border eastward for approximately 20 miles where it meets the beach ridges and outwash areas. The lacustrine soil materials in the Red River Vasin are a result of the latest ice age. Calcareous, gray, and buff glacial till from the Mankato substage of the late Wisconsin glaciation is overlaid by sediments of glacial Lake Agassiz. These sediments range from deep water clay close to the Red River of the North and become progressively coarser to the east, grading to silt, very fine sand, and sand and gravel in the slopes and beach ridges near shore.

The nature of the fine-textured lake plain soils and topography combination creates a surface drainage problem, especially during spring thaws and periods of high rainfall. The Red Lake River is the primary tributary of the Red River of the North responsible for draining the Crookston area.

Earl Kuenast, the Minnesota State Climatologist, Division of Waters, Department of Natural Resources, has summarized the climate around Crookston by stating. "Located near the center of the North American continent, Crookston has a continental climate. Warm summers are a result of the long hours of sun radiation at fairly high altitudes above the horizon. The greatest amount of precipitation occurs during summer, when the southerly winds bring up the low-level moist air from the Gulf of Mexico. Cold winters are a result of relatively low incoming radiation from the sun and advection of the polar and arctic air from the north out of Canada. The frequency and duration of cold spells depend on the amount of cold air and the period of time it is advected in from the north."

The topography, because it is so level, has virtually no effect upon the weather. It does permit higher wind movement to reach closer to the surface as a result of the nearly level plain. With the Gulf of Mexico being the primary moisture soucre, precipitation can be very variable as a result of the long path the weather systems must travel. Precipitation is also confined to relatively brief periods because the winds have to be just right. During the winter months the weather systems drop out of the north bringing down extremely cold air which creates as severe winter weather as any place in the United States and more severe than even Montana or Western North Dakota because of this path.

AN AVERAGE YEAR AT CROOKSTON

Yearly climatic fluctuations around Crookston make describing an average year a very difficult task. With the help of dedicated weather observers over the past 90 years, the weather data were summarized and averages determined. From the 1890-1979 weather records, the following averages were tabulated:

Precipitation

Calendar year (January 1 - December 31)	
Total precipitation	20.68 inches
April to August precipitation	13.71 inches
Number of days with 0.10 inches of rain or more	47 days
" " " " 0.50 " " " " "	11 days
" " " " 1.00 " " " " "	3 days

Temperature

Calendar year (January 1 - December 31)	
Annual Mean	39.5°F
June, July, August Mean	67.1°F
December, January, February Mean	7.7°F
Average date of last 32°F spring low temperature	May 19
" " " first " " " "	September 21
Period free of 32°F or lower temperatures	125 days
" " " 28°F " " "	149 days
Number of days minimum temperature 32°F and above	185 days
" " " " " 0°F " "	63 days
Number of days maximum temperature 90°F and above	12 days

SEASONAL EXTREMES AT CROOKSTON

Extremes in temperature and precipitation are of great interest to a wide variety of people and also the news media and many organizations involved with water and flood prediction. The following list of weather extremes are extracted and calculated from the 1890-1979 weather records at Crookston.

Precipitation

Highest annual	32.87 (1941)
Lowest annual	9.97 (1936)
Highest May-July	18.37 (1968)
Lowest May-July	2.46 (1910)
Highest May-September	26.01 (1941)
Lowest May-September	6.06 (1936)
Highest May 15-October 14	22.61 (1968)
Lowest May 15-October 14	5.51 (1936)
Highest month	9.66 (June, 1895)
Lowest month	0 (7 months)
Highest day	5.85 (August 31, 1908)

Temperature

Coldest year, mean	33.7^{o} F. (1893)
Warmest year, mean	45.0^{o} F. (1931)
Coldest December-February	-4.2^{o} F. (1935-1936)
Warmest December-February	19.6^{o} F. (1930-1931)
Coldest June-August	62.8^{o} F. (1915)
Warmest June-August	71.0^{o} F. (1933)
Coldest month	-13.9^{o} F. (February, 1936)
Warmest month	78.7^{o} F. (July, 1936)
Coldest day	-51.0^{o} F. (February 15, 1936)
Warmest day	106.0^{o} F. (July 28, 1917)
Last spring low temperature of 32^{o} F.	(June 20, 1940)
First fall low temperature of 32^{o} F.	(August 13, 1964)
Longest period free of 32^{o} F. or lower temperature	(167 days 1922)
Shortest period free of 32^{o} F. or lower temperature	(69 days 1964)

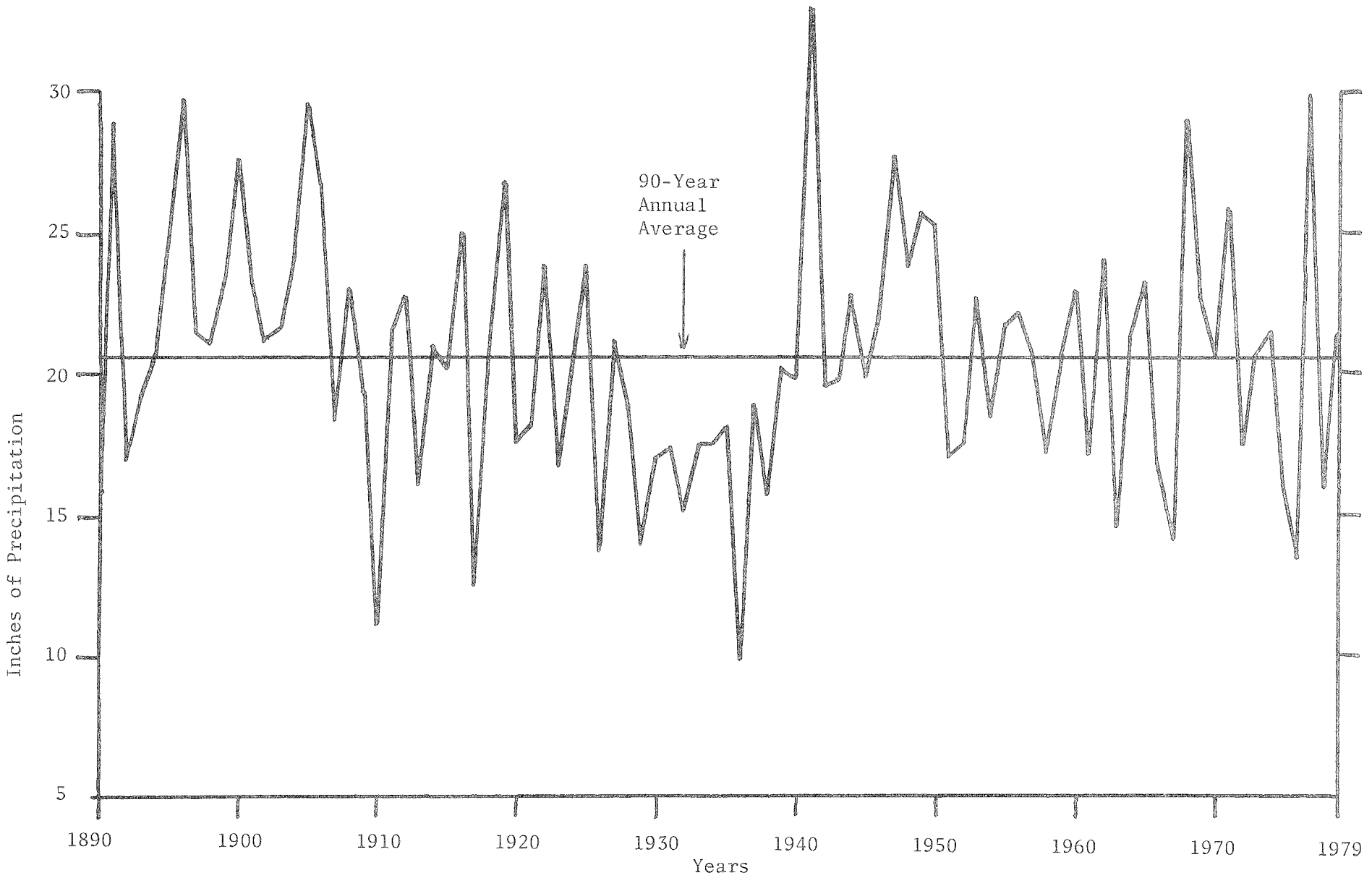


Figure 1. Total annual precipitation, 1890-1979.

PRECIPITATION

The geographic location of Crookston in the heart of the Red River Valley makes both rain and snow the most important types of precipitation. Agriculturally, the term "million dollar rain" has been used many times to describe precipitation at critical periods of the growing season. On the other hand, large amounts of snow during the winter coupled with snow or rain in the early spring make the valley residents quite nervous with the potential for severe flooding due to the unusually flat terrain. Total precipitation, rainfall, and snow have been collected and measured daily. Rainfall is measured to the nearest 0.01 inch of water while snowfall is measured as inches of snow to the nearest 0.1 inch, and then melted and measured to the nearest 0.01 inch of water.

During 1890-1979 the total annual precipitation averaged 20.68 inches and varied from a low of 9.97 inches in 1936 to a high of 32.87 inches in 1941. In 43 of these years, precipitation averages were above 20.68 inches, but in 47 of the years they were below. According to figure 1, precipitation fluctuated greatly during the entire period. The longest consecutive period of above normal precipitation was 1894-1906. The longest consecutive period of below normal precipitation was 1928-1940.

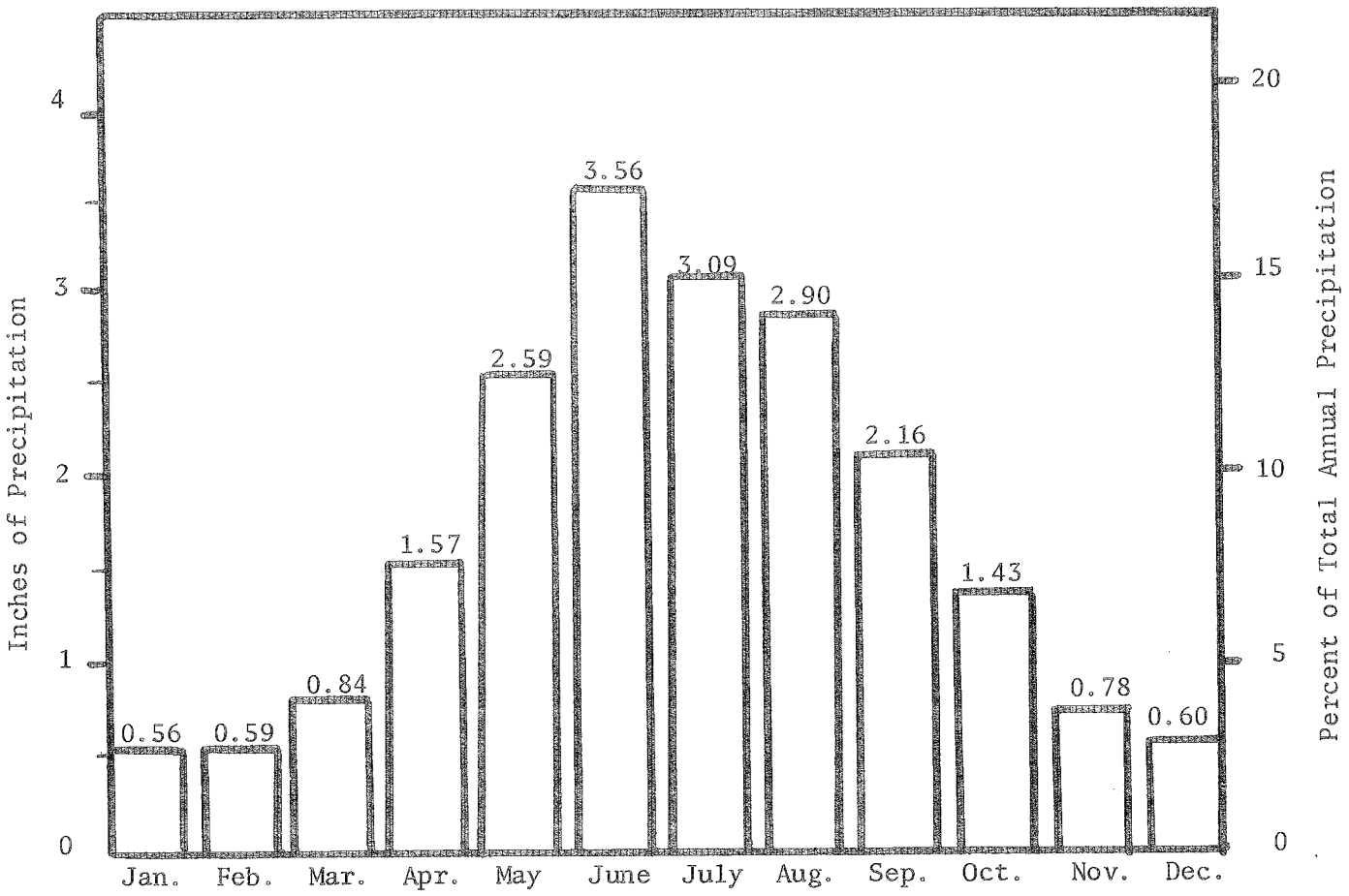


Figure 2. Average monthly distribution of precipitation, 1890-1979.

The average monthly distribution of precipitation from 1890-1979 is shown in Figure 2. 66.2% of the total precipitation was recorded during the growing season April through August. The winter months of December, January and February received only 8.5% of the total precipitation. June received the most precipitation, 17.2% of the total.

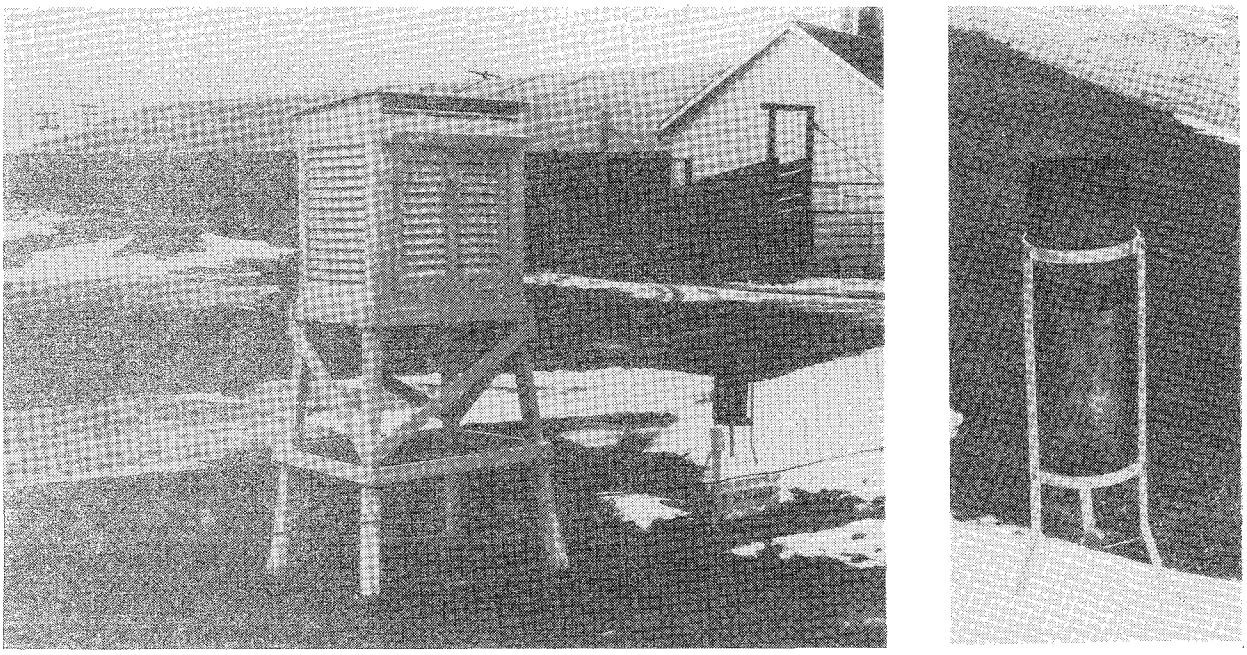
Table 1. Average precipitation (inches) for each day of each month, 1890-1979, with monthly totals and percent of total.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	.02	.02	.02	.02	.09	.12	.08	.08	.10	.07	.04	.01
2	.03	.02	.03	.03	.08	.10	.14	.09	.11	.05	.04	.01
3	.01	.02	.03	.06	.06	.09	.15	.05	.07	.04	.02	.02
4	.01	.02	.02	.03	.07	.15	.12	.08	.06	.04	.02	.02
5	.02	.02	.03	.05	.08	.11	.14	.08	.08	.08	.03	.02
6	.01	.02	.02	.06	.07	.17	.15	.17	.08	.05	.02	.02
7	.01	.01	.04	.06	.04	.18	.06	.08	.07	.07	.03	.02
8	.01	.02	.02	.07	.09	.14	.07	.08	.10	.06	.03	.04
9	.02	.02	.03	.04	.07	.10	.11	.12	.07	.04	.02	.01
10	.01	.02	.02	.03	.06	.11	.04	.11	.14	.10	.02	.02
11	.02	.02	.02	.04	.17	.10	.14	.09	.06	.06	.03	.03
12	.01	.02	.03	.05	.07	.13	.22	.05	.07	.04	.04	.02
13	.01	.04	.02	.06	.04	.11	.13	.10	.11	.04	.03	.01
14	.02	.02	.04	.05	.12	.08	.10	.08	.10	.03	.03	.02
15	.03	.02	.03	.04	.11	.17	.07	.15	.05	.04	.03	.04
16	.02	.02	.03	.06	.08	.14	.12	.06	.05	.04	.03	.02
17	.02	.03	.02	.04	.07	.07	.07	.12	.03	.04	.03	.02
18	.02	.01	.01	.06	.10	.08	.08	.05	.10	.05	.04	.02
19	.02	.01	.04	.02	.06	.12	.13	.07	.11	.04	.02	.02
20	.03	.02	.04	.07	.06	.12	.13	.07	.05	.03	.04	.02
21	.02	.03	.02	.07	.06	.14	.09	.08	.04	.06	.03	.02
22	.01	.02	.03	.03	.10	.08	.06	.10	.06	.03	.01	.02
23	.01	.03	.02	.05	.16	.09	.10	.10	.06	.04	.02	.02
24	.03	.02	.02	.05	.06	.09	.05	.10	.12	.02	.02	.01
25	.02	.02	.05	.07	.07	.14	.09	.06	.06	.05	.05	.02
26	.02	.02	.04	.07	.13	.07	.10	.09	.05	.02	.03	.02
27	.02	.02	.03	.07	.06	.20	.08	.10	.04	.02	.01	.02
28	.02	.01	.05	.11	.07	.09	.11	.07	.05	.05	.02	.03
29	.03	.03	.02	.06	.09	.09	.06	.09	.05	.03	.01	.02
30	.03	---	.02	.07	.09	.18	.07	.14	.07	.07	.01	.02
31	.02	---	.02	---	.10	---	.03	.19	---	.06	---	.03
Total	.56	.59	.84	1.57	2.59	3.56	3.09	2.90	2.16	1.43	.78	.60
Percent of Total	2.7	2.9	4.1	7.6	12.5	17.2	14.9	14.0	10.5	6.9	3.8	2.9

Table 1 gives the average precipitation for each day of each month, 1890-1979, with monthly totals and percent of total. The months January, February, March, November and December all have daily precipitation averages ranging from .01 to .05 inches. The major precipitation is received during the months of April through October. The greatest average daily precipitation occurred June 27 (.20), due in part to 4.20 inches recorded on this date in 1960, as can be seen by referring to Table 2.

Table 2 lists the maximum inches of precipitation for each day of each month and the year it was recorded from 1890 through 1979. In a few instances, the same amount of precipitation was recorded for the same calendar date in different years indicated by a + sign. However, the most recent year is recorded in the table. The largest 24-hour precipitation total was recorded August 31, 1908 with 5.85 inches of rain. The lowest maximum precipitation was 0.08 inches of melted snow on January 7, 1927.

The actual monthly and annual precipitation amounts together with 10-year averages and a 90-year average are presented in Table 3. The greatest amount of precipitation recorded for any one month was 9.66 inches of rain in June of 1895. Contrarily there were 9 months during the 90 years where no precipitation occurred. August of 1915 was the only month of the nine receiving zero precipitation during the growing season. The other eight all occurred during the late fall or winter. Referring to the 90-year average, the mean annual precipitation is 20.68 inches with the major portion occurring during the growing season.



Temperature, precipitation, and ground frost recording instruments are located on station grounds at Crookston (left). Official U.S. Weather Bureau precipitation gauge (right).

Table 2. Maximum inches of precipitation for each day of each month and year recorded 1890-1979.

Day	Jan.	Feb.	Mar.	Apr.	May	June
1	0.35 (1941)	0.50 (1922)	0.65 (1908)	0.47 (1950)	1.09 (1949)	2.01 (1969)
2	0.90 (1907)	0.60 (1904)	0.66 (1953)	0.80 (1908)	1.26 (1927)	1.25 (1965)
3	0.20 (1894)	0.23 (1960)	1.23 (1970)	0.90 (1894)	0.75 (1950)	1.25 (1895)
4	0.24 (1949)	0.32 (1943)	0.50 (1896)	0.60 (1927)	1.33 (1896)	3.53 (1947)
5	0.48 (1949)	0.80 (1908)	0.90 (1896)	1.05 (1929)	1.20 (1949)	0.83 (1966)
6	0.24 (1937)	1.28 (1946)	0.23 (1956)+	1.02 (1965)	1.07 (1950)	3.45 (1895)
7	0.08 (1927)	0.30 (1911)	0.83 (1944)	1.00 (1904)	0.61 (1919)	3.81 (1941)
8	0.20 (1901)	0.52 (1939)	1.02 (1892)	1.10 (1904)	1.43 (1891)	1.39 (1964)
9	0.20 (1927)	0.38 (1939)	0.50 (1898)	0.96 (1969)	0.98 (1931)	1.10 (1920)
10	0.31 (1929)	0.58 (1943)	0.40 (1899)	1.08 (1965)	0.95 (1905)	1.25 (1907)
11	0.40 (1890)	0.50 (1921)	0.70 (1904)	1.79 (1945)	4.60 (1922)	1.61 (1966)
12	0.38 (1936)	1.00 (1908)	0.55 (1977)	0.70 (1979)	1.60 (1905)	2.06 (1928)
13	0.30 (1911)	0.80 (1897)	0.20 (1917)+	1.57 (1906)	0.97 (1924)	1.47 (1952)
14	0.35 (1953)	0.50 (1897)	0.76 (1973)	0.69 (1941)	3.82 (1941)	1.55 (1957)
15	0.40 (1896)	0.61 (1962)	0.90 (1902)	0.50 (1896)	1.53 (1969)	2.33 (1954)
16	0.40 (1920)	0.50 (1898)	1.42 (1941)	1.09 (1924)	1.50 (1896)	1.30 (1928)
17	0.50 (1918)	0.60 (1897)	0.45 (1912)	1.10 (1896)	1.53 (1892)	0.73 (1904)
18	0.30 (1906)	0.20 (1955)	0.30 (1903)	1.20 (1894)	1.11 (1949)	1.20 (1906)
19	0.27 (1979)	0.24 (1948)	0.57 (1968)	0.33 (1970)	0.70 (1918)	0.80 (1913)+
20	0.50 (1918)+	0.62 (1891)	0.90 (1894)	0.87 (1967)	1.24 (1891)	1.56 (1979)
21	0.26 (1952)	0.50 (1894)	0.50 (1914)	1.79 (1974)	1.43 (1898)	2.21 (1927)
22	0.17 (1952)	0.20 (1927)	0.50 (1953)+	0.70 (1904)	1.00 (1905)	1.57 (1934)
23	0.38 (1949)	0.72 (1979)	0.39 (1931)	0.50 (1904)	3.96 (1925)	1.20 (1898)
24	0.54 (1950)	0.89 (1977)	0.55 (1922)	1.63 (1979)	0.80 (1943)+	1.60 (1907)
25	0.40 (1899)	0.31 (1936)	1.00 (1900)	0.90 (1937)	0.92 (1943)	1.29 (1950)
26	0.40 (1920)	0.51 (1930)	0.56 (1950)	2.08 (1924)	2.08 (1977)	0.60 (1967)
27	0.40 (1916)	0.50 (1902)	0.50 (1922)	1.45 (1901)	1.45 (1934)	4.20 (1960)
28	0.50 (1916)	0.20 (1902)	1.00 (1905)	1.48 (1942)	1.12 (1931)	1.87 (1977)
29	0.60 (1916)	0.40 (1896)	0.47 (1916)	0.75 (1918)	2.22 (1970)	1.23 (1909)
30	1.00 (1896)		0.30 (1946)	1.35 (1937)	1.63 (1899)	1.94 (1946)
31	0.70 (1893)		0.53 (1916)		1.90 (1937)	

+ Previous years than the one recorded with the same precipitation.

Table 2. (Continued) Maximum inches of precip.

Day	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.02 (1898)	1.00 (1955)	1.17 (1973)	1.12 (1971)	0.95 (1974)	0.50 (1922)
2	5.40 (1919)	2.04 (1941)	3.12 (1953)	1.97 (1891)	0.85 (1922)	0.25 (1947)
3	1.37 (1948)	0.76 (1962)	1.26 (1971)	0.91 (1926)	0.47 (1896)	0.36 (1951)
4	1.05 (1958)	1.54 (1903)	1.20 (1900)	1.12 (1926)	0.57 (1948)	0.30 (1922)
5	2.40 (1895)	1.03 (1907)	1.39 (1969)	1.33 (1939)	1.28 (1956)	0.66 (1960)
6	2.10 (1899)	3.22 (1891)	1.27 (1969)	0.94 (1950)	0.70 (1922)	0.39 (1966)
7	0.98 (1962)	1.73 (1896)	2.07 (1970)	1.10 (1901)	0.40 (1966)	0.60 (1916)
8	0.96 (1955)+	1.96 (1944)	2.42 (1962)	1.34 (1959)	0.68 (1915)	1.10 (1945)
9	1.45 (1976)	3.00 (1944)	1.11 (1925)	1.26 (1958)	0.80 (1977)	0.40 (1903)
10	0.86 (1962)	1.53 (1918)	2.65 (1916)	2.50 (1949)	0.50 (1919)	0.40 (1906)
11	2.80 (1963)	2.95 (1941)	2.14 (1950)	1.91 (1961)	0.77 (1964)	0.50 (1920)
12	2.16 (1963)	0.57 (1958)	1.22 (1978)	0.61 (1930)	1.62 (1940)	0.40 (1908)
13	1.61 (1920)	1.59 (1957)	1.11 (1972)	1.31 (1890)	0.50 (1895)	0.23 (1965)
14	1.25 (1937)	1.30 (1905)	0.88 (1936)	0.82 (1975)	0.89 (1944)	0.50 (1906)
15	2.15 (1959)	2.44 (1978)	0.77 (1900)	0.50 (1904)+	1.00 (1909)	0.50 (1906)
16	3.13 (1968)	0.57 (1918)	0.52 (1968)	1.09 (1934)	0.50 (1906)	0.49 (1946)
17	0.93 (1957)	1.32 (1935)	1.00 (1923)	1.00 (1971)	0.60 (1906)	0.52 (1977)
18	1.37 (1978)	1.15 (1902)	1.62 (1977)	0.73 (1898)	1.11 (1952)	0.33 (1939)
19	2.25 (1897)	1.98 (1939)	2.12 (1946)	0.83 (1932)	0.60 (1977)	0.50 (1921)
20	2.60 (1897)	0.93 (1901)	1.05 (1924)+	1.25 (1934)	0.54 (1892)	0.30 (1912)
21	1.24 (1924)	0.83 (1972)+	1.41 (1973)	2.00 (1900)	0.48 (1931)	0.60 (1894)
22	1.36 (1914)	1.46 (1893)	0.70 (1894)	0.95 (1931)	0.30 (1970)	0.36 (1962)
23	1.99 (1923)	1.86 (1933)	0.90 (1964)+	1.22 (1914)	0.60 (1903)	0.28 (1933)
24	0.82 (1937)	2.88 (1932)	1.90 (1912)	0.43 (1975)	0.44 (1905)	0.10 (1945)+
25	1.36 (1971)	1.79 (1959)	0.70 (1933)	0.90 (1902)	0.91 (1892)	0.40 (1912)
26	2.52 (1906)	2.25 (1895)	1.60 (1964)	0.40 (1895)	0.35 (1922)	0.30 (1904)
27	0.93 (1935)	1.28 (1903)	0.60 (1895)	0.80 (1931)	0.20 (1911)	0.40 (1916)
28	3.82 (1905)	1.13 (1927)	0.59 (1899)	0.98 (1940)	0.50 (1905)	0.45 (1940)
29	1.72 (1919)	1.34 (1928)	0.96 (1965)	0.66 (1940)	0.25 (1944)	0.52 (1978)
30	2.25 (1979)	2.84 (1956)	2.94 (1971)	1.20 (1960)	0.15 (1919)	0.51 (1920)
31	0.53 (1931)	5.85 (1908)		1.45 (1979)		0.50 (1920)

+Previous years than the one recorded with the same precipitation.

Table 3. Inches of precipitation, monthly and annual, 1890-1979.

Year	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1890	15.85	0.60	0.70	0.11	0.24	1.26	3.50	2.34	1.81	2.20	2.92	0.17	0.0
Avg.	15.85	0.60	0.70	0.11	0.24	1.26	3.50	2.34	1.81	2.20	2.92	0.17	0.0
1891	28.85	0.22	1.63	0.49	1.29	2.90	3.64	5.39	5.23	4.09	2.81	1.02	0.14
1892	17.01	0.46	0.44	1.15	1.95	3.51	1.70	2.92	2.39	0.29	0.11	2.08	0.01
1893	19.10	1.48	1.01	0.50	0.0	2.54	3.86	2.82	2.52	1.34	1.43	0.05	1.55
1894	20.57	0.75	1.25	2.10	4.06	1.55	2.23	1.37	2.28	1.18	2.80	0.40	0.60
1895	24.11	0.30	0.35	0.30	1.19	1.72	9.66	4.62	3.00	1.25	0.40	1.32	0.0
1896	29.70	1.58	0.97	2.45	4.73	8.13	2.95	1.05	3.13	2.29	1.12	1.30	0.0
1897	21.54	0.37	2.30	0.94	0.39	1.21	3.93	8.45	1.15	1.02	1.33	0.20	0.25
1898	20.99	0.17	0.52	1.15	0.69	3.09	5.83	3.31	2.47	2.22	1.14	0.35	0.05
1899	23.38	0.50	0.05	0.55	1.92	5.16	3.73	4.30	3.32	1.03	2.05	0.44	0.33
1900	27.55	0.32	0.60	1.33	1.59	0.77	1.07	3.68	7.51	5.08	4.95	0.45	0.20
10-Year Avg.	23.28	0.61	0.91	1.10	1.78	3.06	3.86	3.79	3.30	1.98	1.81	0.76	0.31
1901	23.46	0.35	0.40	0.20	2.45	0.26	7.41	4.71	2.60	2.32	2.00	0.0	0.76
1902	21.18	0.11	0.73	1.91	1.41	3.25	3.05	2.92	3.24	1.27	2.42	0.42	0.45
1903	21.64	0.65	0.20	0.80	0.98	3.74	0.70	1.79	4.86	3.78	2.02	0.82	1.30
1904	24.23	0.25	1.80	2.61	3.80	2.09	3.92	2.02	1.94	2.12	2.98	0.10	0.60
1905	29.60	0.75	0.40	1.85	1.27	5.82	2.84	6.17	5.66	2.27	1.18	0.99	0.40
1906	26.18	1.20	0.10	0.38	2.56	4.16	3.21	4.87	2.92	1.59	1.11	2.18	1.90
1907	18.38	1.80	0.10	0.60	1.21	0.98	5.14	2.38	2.15	2.71	0.83	0.08	0.40
1908	23.09	0.05	2.22	1.50	1.79	4.38	1.42	0.83	7.34	0.56	1.37	0.58	1.05
1909	19.40	0.64	0.17	0.70	1.08	0.75	3.71	3.90	3.38	1.56	0.81	1.20	1.50
1910	11.18	0.10	0.45	0.72	2.13	0.66	0.62	1.18	1.42	2.60	0.45	0.45	0.40
10-Year Avg.	21.83	0.59	0.66	1.13	1.87	2.61	3.20	3.08	3.55	2.08	1.52	0.68	0.88
1911	21.35	0.70	1.20	0.10	2.25	3.81	4.00	1.78	3.27	1.23	1.01	1.58	0.42
1912	22.84	0.55	0.35	0.70	1.64	2.16	2.41	2.92	3.62	6.39	0.42	0.08	1.60
1913	16.19	0.37	0.08	1.15	1.13	1.04	1.84	4.60	0.89	2.86	1.89	0.24	0.10
1914	21.04	0.95	0.33	1.25	1.72	0.78	5.33	4.56	2.30	0.67	2.22	0.51	0.42
1915	20.11	0.21	0.55	0.13	0.93	3.06	8.01	2.98	0.0	1.73	0.49	1.17	0.85
1916	24.86	1.96	0.53	2.12	1.64	2.75	4.18	2.24	3.55	3.58	0.67	0.02	1.62
1917	12.65	0.43	1.15	0.30	1.49	0.24	2.08	2.07	0.67	1.68	1.56	0.21	0.77
1918	20.46	1.13	0.18	0.05	2.64	2.59	2.37	3.49	4.39	0.48	1.76	0.98	0.40
1919	26.89	0.30	0.43	0.54	1.63	3.85	2.64	8.83	3.86	1.94	0.75	1.80	0.32
1920	17.62	1.76	0.30	0.24	0.70	2.07	3.65	2.14	0.47	2.57	0.92	0.55	2.25
10-Year Avg.	20.40	0.84	0.51	0.66	1.58	2.23	3.65	3.56	2.30	2.31	1.17	0.71	0.87

Table 3. Inches of precipitation, monthly and annual, 1890-1979. (Continued)

Year	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1921	18.58	0.55	1.15	1.30	0.86	2.23	2.69	3.02	2.29	2.25	0.89	0.45	0.90
1922	23.87	0.65	1.40	1.75	0.95	6.65	1.77	3.45	1.20	1.65	0.0	2.65	1.75
1923	16.76	0.09	0.32	0.19	1.10	1.32	3.34	5.62	1.63	1.98	0.39	0.43	0.35
1924	20.66	0.34	0.0	0.32	5.10	2.81	1.58	2.64	1.65	3.49	2.24	0.05	0.44
1925	23.79	0.09	0.25	0.31	2.79	4.60	6.82	0.86	1.46	5.66	0.58	0.25	0.12
1926	13.90	0.20	0.05	0.05	0.14	2.16	3.43	1.28	1.49	0.65	3.51	0.72	0.22
1927	21.16	0.35	0.49	0.35	1.93	4.40	4.83	2.35	4.17	0.25	1.36	0.26	0.42
1928	18.89	0.07	0.0	0.77	0.64	1.18	6.58	2.21	4.14	1.71	0.65	0.60	0.34
1929	14.06	0.35	0.17	0.31	1.77	1.94	1.28	2.23	1.16	1.33	2.48	0.53	0.51
1930	17.13	0.09	0.68	0.15	0.80	4.12	2.17	1.69	0.52	2.77	2.10	1.88	0.16
10-Year Avg.	18.88	0.28	0.45	0.55	1.61	3.14	3.45	2.53	1.97	2.17	1.42	0.78	0.52
1931	17.29	0.06	0.09	0.70	0.05	3.09	2.64	3.06	1.07	2.33	2.59	1.51	0.10
1932	15.21	0.22	0.54	0.36	1.46	2.23	1.80	1.49	3.60	1.04	1.82	0.52	0.13
1933	17.47	0.64	0.02	0.47	1.23	3.05	3.00	1.50	2.43	2.36	0.75	0.65	1.37
1934	17.45	0.18	0.12	0.46	0.68	2.78	4.95	2.32	0.97	1.28	2.55	0.57	0.59
1935	18.12	0.68	0.05	1.04	1.77	1.20	2.90	4.47	3.80	0.68	0.30	0.87	0.36
1936	9.97	0.63	0.93	1.24	0.28	1.41	1.80	0.52	0.91	1.42	0.16	0.32	0.35
1937	18.79	0.91	0.75	0.22	4.26	4.13	1.41	3.95	1.79	0.37	0.08	0.26	0.66
1938	15.82	0.32	0.90	0.37	1.77	4.66	1.20	2.96	1.40	0.43	0.42	0.98	0.41
1939	20.32	0.46	1.28	0.69	0.66	0.69	3.35	1.92	4.71	3.70	2.45	0.05	0.36
1940	19.80	0.10	0.63	0.91	2.08	1.30	1.02	4.24	2.14	1.51	2.26	2.55	1.06
10-Year Avg.	17.02	0.42	0.53	0.65	1.42	2.45	2.41	2.64	2.28	1.51	1.34	0.83	0.54
1941	32.87	0.75	0.39	2.26	2.34	5.29	7.44	1.12	8.02	4.14	0.83	0.14	0.15
1942	19.48	0.21	0.20	2.21	1.73	2.67	1.18	2.73	5.60	1.22	0.17	0.53	1.03
1943	19.81	0.51	1.51	1.39	1.83	2.87	2.50	3.33	2.62	1.44	0.81	0.78	0.22
1944	22.86	0.42	0.08	1.63	0.32	2.46	4.54	1.41	8.24	0.69	0.36	2.51	0.20
1945	19.95	0.62	0.23	1.13	2.86	0.78	2.60	2.66	2.57	4.11	0.52	0.23	1.64
1946	22.02	0.45	1.76	0.92	1.14	2.21	5.41	1.24	2.62	3.22	1.72	0.52	0.81
1947	27.68	0.38	1.05	0.63	2.33	3.26	7.17	3.46	3.06	2.53	1.27	2.05	0.49
1948	23.82	0.62	1.11	1.27	1.47	1.29	4.67	5.73	4.19	0.52	0.63	1.34	0.98
1949	25.75	1.96	0.80	0.71	0.12	5.48	5.16	3.72	0.91	0.80	4.33	0.68	1.08
1950	25.24	1.40	0.19	2.29	2.30	4.60	3.76	1.25	1.39	4.72	1.99	0.90	0.45
10-Year Avg.	23.95	0.73	0.73	1.44	1.64	3.09	4.44	2.66	3.92	2.34	1.26	0.97	0.70

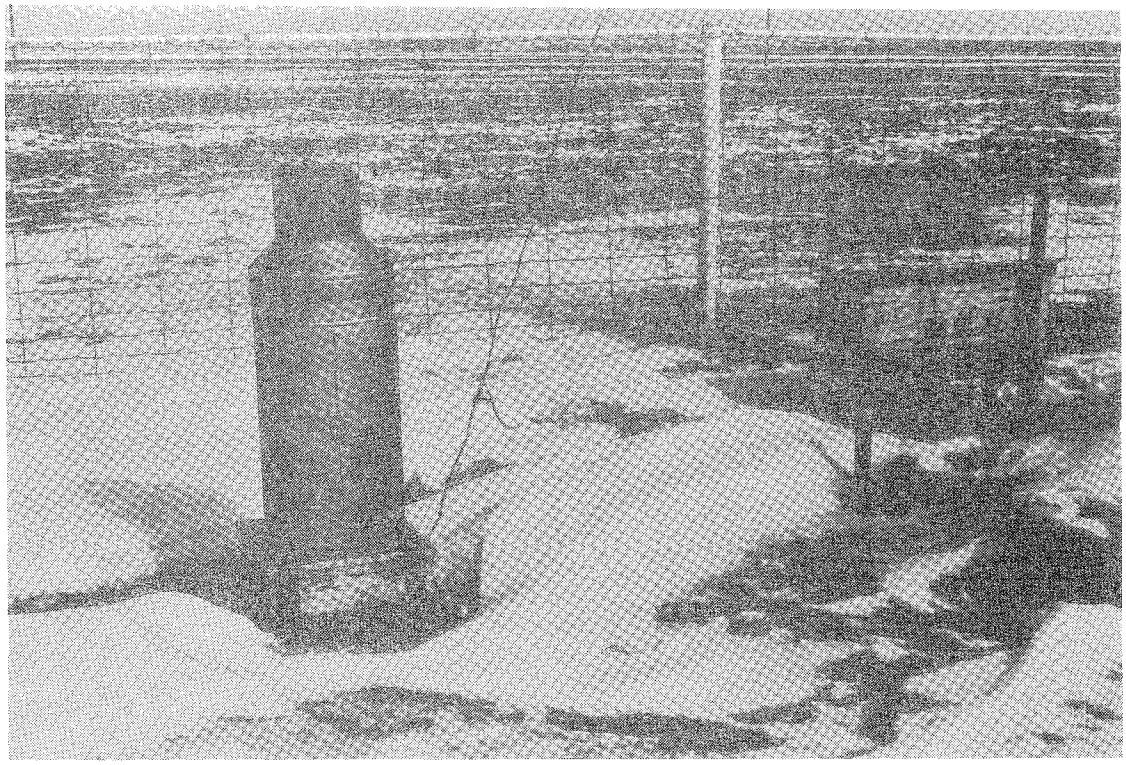
Table 3. Inches of precipitation, monthly and annual, 1890-1979. (Continued)

Year	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951	17.15	0.53	0.58	1.16	1.13	0.92	1.55	0.65	7.04	1.37	0.50	0.60	1.12
1952	17.64	0.66	0.19	0.34	0.69	0.36	4.77	5.75	2.44	0.45	0.17	1.52	0.30
1953	22.73	0.67	0.41	1.37	1.91	3.02	3.78	2.47	2.08	4.32	1.26	0.62	0.82
1954	18.55	0.96	0.23	1.67	1.57	1.88	3.74	2.76	2.11	2.04	0.59	0.74	0.26
1955	21.81	0.37	0.77	1.05	1.27	3.46	3.29	5.18	2.55	1.58	0.45	1.40	0.44
1956	22.16	1.15	0.27	0.94	0.81	3.10	4.09	2.70	5.08	0.25	1.82	1.44	0.51
1957	20.67	0.32	0.43	0.14	0.97	1.58	4.97	1.81	3.63	3.95	1.86	0.94	0.07
1958	17.26	0.21	0.09	0.23	0.46	0.46	3.69	5.91	0.96	0.85	2.04	1.95	0.41
1959	20.76	0.20	0.37	0.21	0.44	2.48	2.10	3.96	6.13	1.20	2.75	0.58	0.34
1960	22.98	0.34	0.40	0.28	0.81	2.23	7.08	4.32	3.10	1.38	1.80	0.42	0.82
10-Year Avg.	20.17	0.54	0.37	0.74	1.01	1.95	3.91	3.55	3.51	1.74	1.32	1.02	0.51
1961	17.20	0.29	0.37	0.28	1.16	0.90	1.73	3.00	1.80	4.95	2.25	0.11	0.36
1962	24.07	1.18	1.33	0.70	0.48	5.75	2.92	4.07	2.45	3.69	0.59	0.41	0.50
1963	14.66	0.04	0.24	0.25	1.93	1.57	1.59	5.96	1.91	0.32	0.30	0.29	0.26
1964	21.18	0.13	0.26	0.72	2.67	1.57	5.25	2.19	1.76	4.47	0.46	0.93	0.77
1965	23.25	0.22	0.19	0.28	3.34	4.00	4.24	2.27	1.40	4.77	1.27	0.56	0.71
1966	17.23	0.16	0.23	0.67	1.25	1.31	4.49	3.17	3.72	0.67	0.34	0.41	0.81
1967	14.34	1.07	0.55	0.55	2.24	0.78	4.25	0.31	0.70	1.29	1.15	0.26	1.19
1968	29.07	0.48	0.15	1.32	1.64	3.16	8.86	6.35	3.62	1.90	1.02	0.10	0.47
1969	22.79	1.56	0.47	0.12	1.22	2.72	4.58	2.62	3.73	3.59	1.53	0.08	0.57
1970	20.84	0.31	0.23	1.64	1.39	5.40	3.70	1.02	0.92	2.82	1.55	1.14	0.72
10-Year Avg.	20.46	0.54	0.40	0.65	1.73	2.72	4.16	3.10	2.20	2.85	1.05	0.43	0.64
1971	25.98	0.63	0.25	0.69	0.62	2.99	3.06	3.96	2.36	5.88	4.79	0.42	0.33
1972	17.59	0.55	0.46	0.59	1.35	1.46	2.31	3.85	2.79	2.46	1.02	0.21	0.54
1973	20.59	0.18	0.12	1.15	0.59	1.93	1.99	1.76	3.40	6.69	1.38	0.94	0.46
1974	21.56	0.40	0.19	0.43	3.33	2.58	1.98	2.97	5.80	0.07	2.05	1.55	0.21
1975	16.09	0.77	0.19	0.80	2.51	0.83	4.49	0.43	1.54	1.05	2.76	0.56	0.16
1976	13.48	0.95	0.38	1.01	0.74	0.38	4.18	1.91	2.77	0.24	0.61	0.04	0.27
1977	29.85	0.49	1.21	0.90	0.98	5.91	3.68	3.32	3.15	3.92	2.03	2.80	1.46
1978	16.10	0.14	0.07	0.15	0.65	1.49	2.24	3.73	4.20	1.66	0.24	0.62	0.91
1979	21.44	0.37	1.77	0.95	3.54	2.04	2.47	4.65	2.34	0.68	1.86	0.72	0.05
9-Year Avg.	20.30	0.50	0.52	0.74	1.59	2.18	2.93	2.95	3.15	2.52	1.86	0.87	0.49
90-Year Avg.	20.68	0.56	0.59	0.84	1.57	2.59	3.56	3.09	2.90	2.16	1.43	0.78	0.60

GROWING SEASON PRECIPITATION

The following three figures (Figures 3, 4 and 5) and Table 4 describe three growing seasons for various crops in northwestern Minnesota. The small grain season is illustrated in Figure 3, the sugarbeet season in Figure 4, and the sunflower and corn growing season in Figure 5. Over the past 90 years, the average precipitation for small grains, from May 1 through July 31, is 9.26 inches. The growing season for sugarbeets, May 1 through September 31, averaged 14.33 inches. The sunflower and corn season, May 15 through October 14, averaged 13.98 inches. Table 4 lists the inches of precipitation yearly and seasonal for the three previously mentioned growing seasons from 1890 through 1979. Table 4 also lists the number of days with total precipitation greater than 0.1 inch, 0.5 inch and 1.00 inch. The largest amount of precipitation received during the small grain season was 18.37 inches in 1968 while the least amount was measured in 1910 with only 2.46 inches. For the sugarbeet season, 1941 had the largest amount of precipitation with 26.01 inches recorded. The top precipitation for the sunflower and corn season occurred during 1968.

1936 marked the smallest amount of precipitation for sugarbeet production with 6.06 inches. The top precipitation for the sunflower and corn season occurred during 1968 with 22.61 inches and again 1936 held low honors with 5.51 inches of precipitation recorded. The average number of days with precipitation greater than 0.1, 0.5 and 1.00 inch are 47, 11 and 3 respectively. The greatest number of days with 0.1, 0.5 and 1.00 inch occurred in 1896 (70 days), 1900 (24 days) and 1905 (8 days) respectively. The three years listed above also were well above normal in total yearly precipitation as can be noted in Table 4.



Automatic rain guage, frost-depth tube, and soil temperature recording equipment are located in a weather station east of the station grounds.

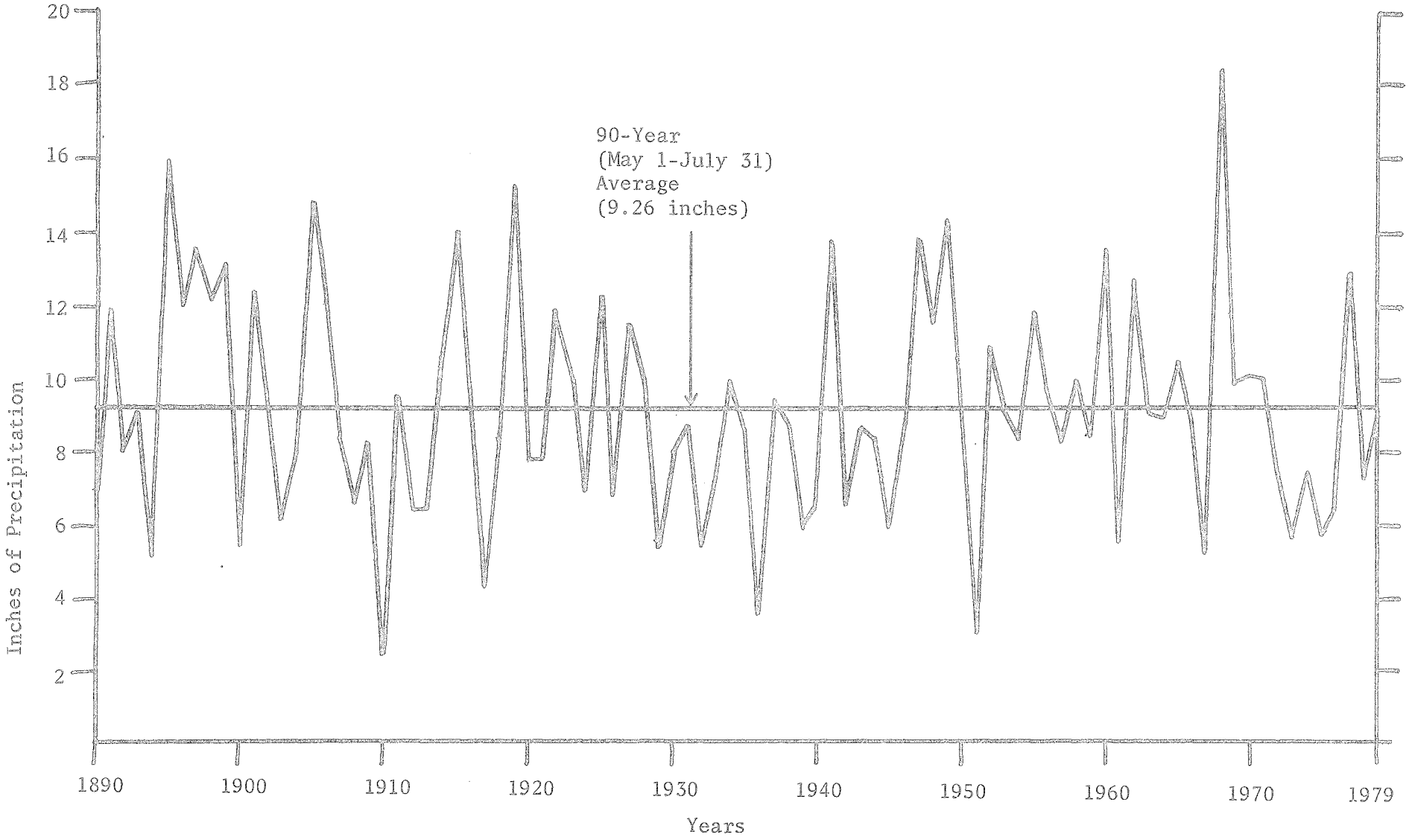


Figure 3. Total May 1-July 31 seasonal precipitation, 1890-1979.

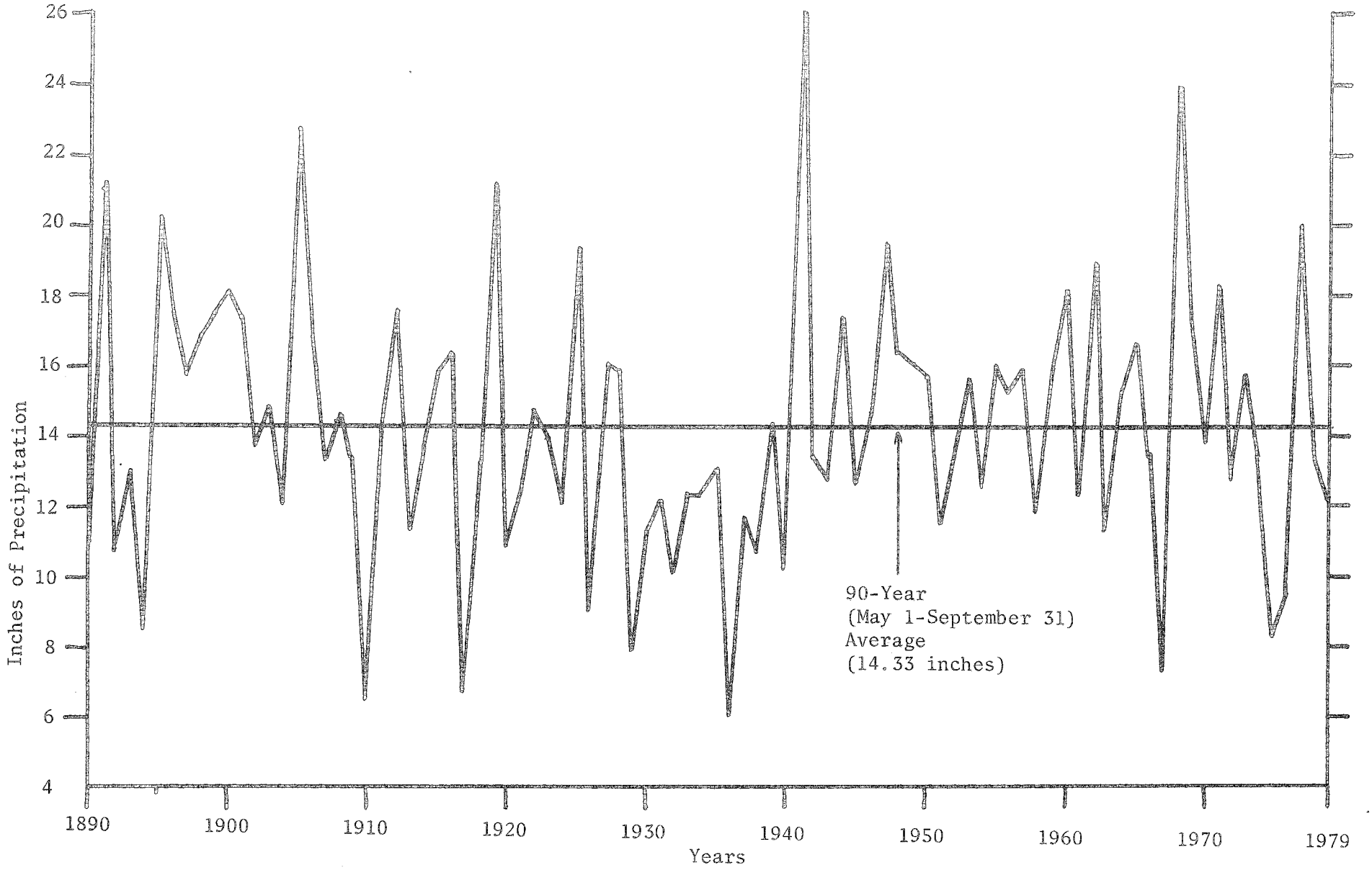


Figure 4. Total May 1-September 31 seasonal precipitation, 1890-1979.

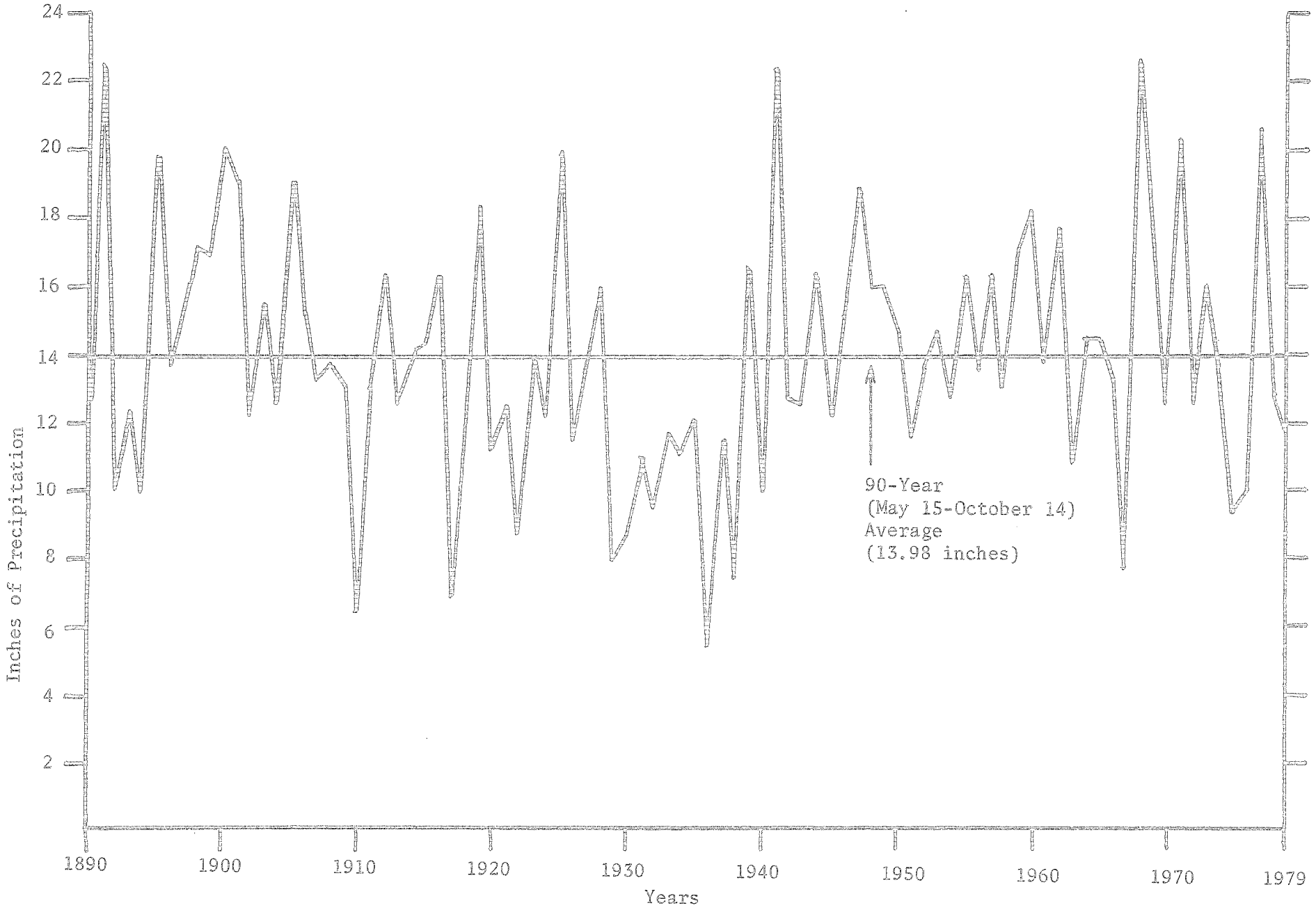


Figure 5. Total May 15-October 14 seasonal precipitation, 1890-1979.

Table 4. Total annual and seasonal inches of precipitation, 1890-1979.

Year	Yearly Total	Small Grain Season (May 1-July 31)	Sugarbeet Season (May 1-Sept. 31)	Sunflower-Corn Season (May 15-Oct. 1)	Days with total precipitation 0.1 inches or more	Days with total precipitation 0.5 inches or more	Days with total precipitation 1.00 inches or more
1890	15.85	7.10	11.11	12.73	43	9	2
Avg.	15.85	7.10	11.11	12.73	43	9	2
1891	28.85	11.93	21.25	22.45	54	16	8
1892	17.01	8.13	10.81	10.00	39	10	4
1893	19.10	9.22	13.08	12.39	42	14	4
1894	20.57	5.15	8.61	10.01	50	18	3
1895	24.11	16.00	20.25	19.73	48	14	5
1896	29.70	12.13	17.55	13.73	70	20	6
1897	21.54	13.59	15.76	15.62	46	17	3
1898	20.99	12.23	16.92	17.14	47	20	5
1899	23.38	13.19	17.54	16.91	57	17	3
1900	27.55	5.52	18.11	20.04	53	24	6
10-Year Avg.	23.28	10.71	15.99	15.80	50	17	4
1901	23.46	12.38	17.30	19.00	52	18	7
1902	21.18	9.22	13.73	12.29	49	15	6
1903	21.64	6.23	14.87	15.57	56	13	5
1904	24.23	8.03	12.09	12.59	56	21	3
1905	29.60	14.83	22.76	19.04	55	17	8
1906	26.18	12.24	16.75	15.20	60	19	4
1907	18.38	8.50	13.36	13.23	45	11	5
1908	23.09	6.63	14.53	13.78	51	10	3
1909	19.40	8.36	13.30	13.10	57	9	5
1910	11.18	2.46	6.48	6.48	36	4	2
10-Year Avg.	21.83	8.89	14.52	14.03	51	13	4
1911	21.35	9.59	14.09	13.00	61	9	3
1912	22.84	7.49	17.50	16.29	56	14	2
1913	16.19	7.48	11.23	12.59	39	7	3
1914	21.04	10.67	13.64	13.98	49	13	5
1915	20.11	14.05	15.78	14.32	48	8	3
1916	24.86	9.17	16.30	16.26	59	16	2
1917	12.65	4.39	6.74	6.86	44	6	0
1918	20.46	8.45	13.32	13.06	44	14	2

Table 4. (Continued)

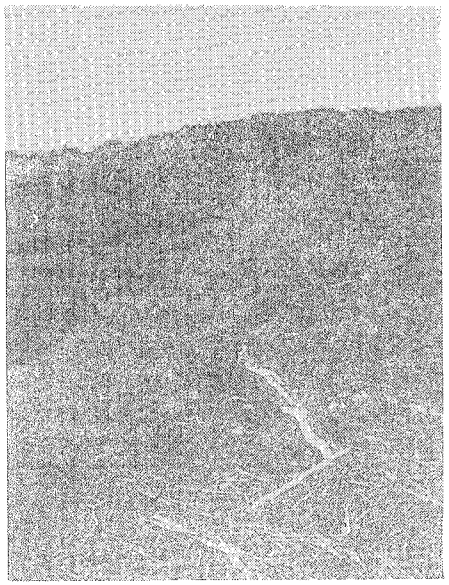
Year	Yearly Total	Small Grain Season (May 1- July 31)	Sugarbeet Season (May 1- Sept. 31)	Sunflower-Corn Season (May 15- Oct. 1)	Days with total precip-itation 0.1 inches or more	Days with total precip-itation 0.5 inches or more	Days with total precip-itation 1.00 inches or more
1919	26.89	15.32	21.12	18.36	50	13	4
1920	17.62	7.86	10.90	11.22	49	9	3
10-Year Avg.	20.40	9.45	14.06	13.59	49	10	2
1921	18.58	7.94	12.48	12.49	53	14	2
1922	23.87	11.87	14.72	8.77	58	18	3
1923	16.76	10.28	13.89	13.96	35	10	5
1924	20.66	7.03	12.17	12.18	44	12	4
1925	23.79	12.28	19.40	19.87	43	14	6
1926	13.90	6.87	9.01	11.56	35	8	2
1927	21.16	11.58	16.00	13.55	51	12	4
1928	18.89	9.97	15.82	15.90	39	10	5
1929	14.06	5.45	7.94	7.96	35	7	3
1930	17.13	7.98	11.27	8.81	43	13	2
10-Year Avg.	18.88	9.12	13.27	12.50	43	11	3
1931	17.29	8.79	12.19	10.99	41	11	1
1932	15.21	5.52	10.16	9.47	36	7	1
1933	17.47	7.55	12.34	11.70	41	10	1
1934	17.45	10.05	12.30	11.18	35	12	6
1935	18.12	8.57	13.05	12.15	43	11	2
1936	9.97	3.73	6.06	5.51	27	5	0
1937	18.79	9.49	11.65	11.46	44	11	3
1938	15.82	8.82	10.65	7.48	42	10	0
1939	20.32	5.96	14.37	16.50	44	14	5
1940	19.80	6.56	10.21	9.83	43	11	2
10-Year Avg.	17.02	7.50	11.30	10.63	39	10	2
1941	32.87	13.85	26.01	22.28	57	16	6
1942	19.48	6.58	13.40	12.78	46	11	4
1943	19.81	8.70	12.76	12.59	45	11	4
1944	22.86	8.41	17.34	16.32	53	9	3
1945	19.95	6.04	12.72	12.36	54	9	2

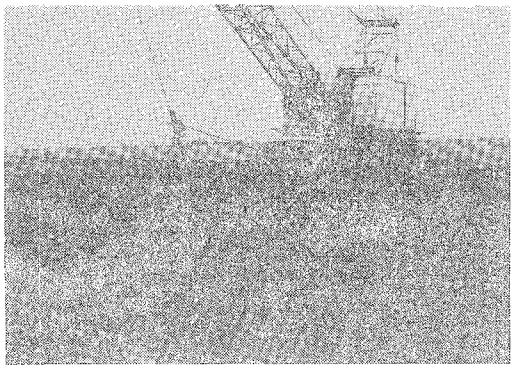
Table 4. (Continued)

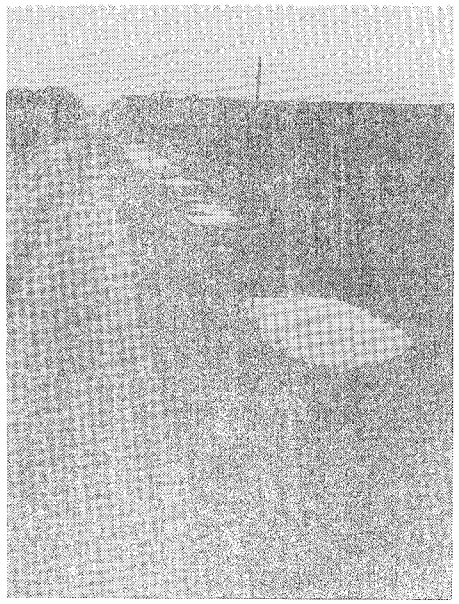
Year	Yearly Total	Small Grain Season (May 1- July 31)	Sugarbeet Season (May 1- Sept. 31)	Sunflower-Corn Season (May 15- Oct. 1)	Days with total precipitation 0.1 inches or more	Days with total precipitation 0.5 inches or more	Days with total precipitation 1.00 inches or more
1946	22.02	8.86	14.70	15.13	54	8	5
1947	27.68	13.89	19.48	18.87	61	14	3
1948	23.82	11.69	16.40	16.02	56	14	5
1949	25.75	14.36	16.07	16.02	52	13	6
1950	25.24	9.61	15.72	14.65	59	14	4
10-Year Avg.	23.95	10.20	16.46	15.70	53	11	4
1951	17.15	3.12	11.53	11.62	44	6	2
1952	17.64	10.88	13.77	13.67	31	11	5
1953	22.73	9.27	15.67	14.64	50	14	2
1954	18.55	8.38	12.53	12.73	47	6	3
1955	21.81	11.93	16.06	16.29	51	14	2
1956	22.16	9.89	15.22	13.61	44	12	6
1957	20.67	8.36	15.94	16.31	47	10	3
1958	17.26	10.06	11.87	13.10	38	11	4
1959	20.76	8.54	15.87	16.96	46	12	4
1960	22.98	13.63	18.11	18.24	41	12	5
10-Year Avg.	20.17	9.41	14.66	14.72	43	10	3
1961	17.20	5.63	12.38	13.73	42	10	3
1962	24.07	12.74	18.88	17.72	52	12	3
1963	14.66	9.12	11.35	10.89	31	4	2
1964	21.18	9.01	15.24	14.50	52	14	3
1965	23.25	10.51	16.68	14.48	61	10	4
1966	17.23	8.97	13.36	13.28	37	10	3
1967	14.34	5.34	7.33	7.75	37	6	1
1968	29.07	18.37	23.89	22.61	53	18	5
1969	22.79	9.92	17.24	18.22	43	12	7
1970	20.84	10.12	13.86	12.67	44	8	4
10-Year Avg.	20.46	9.97	15.02	14.58	45	10	3
1971	25.98	10.01	18.25	20.26	50	13	6
1972	17.59	7.62	12.87	12.62	36	9	3

Table 4. (Continued)

Year	Yearly Total	Small Grain Season (May 1- July 31)	Sugarbeet Season (May 1- Sept. 31)	Sunflower-Corn Season (May 15- Oct. 1)	Days with total precipitation 0.1 inches or more	Days with total precipitation 0.5 inches or more	Days with total precipitation 1.00 inches or more
1973	20.59	5.68	15.77	16.05	49	11	4
1974	21.56	7.53	13.40	13.75	47	12	5
1975	16.09	5.75	8.34	9.36	51	9	0
1976	13.48	6.47	9.48	10.04	38	4	3
1977	29.85	12.91	19.98	20.61	63	22	3
1978	16.10	7.46	13.32	12.83	35	11	4
1979	21.44	9.16	12.18	11.80	45	10	5
9-Year Avg.	20.30	8.07	13.73	14.15	46	11	3
90-Year Avg.	20.68	9.26	14.33	13.97	47	11	3







Water erosion along the Red River of the North may destroy valuable soil during spring floods (left). Wind erosion can deposit large quantities of soil in major drainage ditches (right). Large, costly equipment is required to clean and maintain these waterways (above). (Photos provided by Soil Conservation Service, Crookston.)

TEMPERATURE

Humans, animals, plants, as well as machines, can be severely affected by temperature extremes. Through history, temperature measurements have been correlated with the effect on the human body to predict critical levels for heat exhaustion or hypothermia. Plant and animal warnings have also been issued with storm forecasting based on previous temperature records. Owners of automobiles, tractors and other vehicles also have determined a critical temperature level at which auxilliary heat is needed to successfully start a vehicle. These are only a few examples showing the need to record daily temperatures. Both maximum and minimum temperatures are recorded once daily on official Weather Bureau thermometers. Both instruments are located in an official thermometer shelter at Weather Bureau regulation height which enables air temperatures to be registered uniformly throughout the world. The maximum and minimum temperatures for each month and year were averaged to obtain the mean temperature for each month or year.

The average annual temperature together with the 90-year average are illustrated in Figure 6. The extreme fluctuation above and below the mean annual temperature of 39.5°F indicates the changeable climate of the Crookston region. The coldest year was recorded in 1893 with a mean temperature of 33.7°F. Contrarily, the warmest year recorded occurred in 1931 with a mean temperature of 45.0°F. It appears the first 30 years of this record were below normal and the remaining 60 years above normal in regard to average temperature with the exception of a few years in each period.

Tables 5, 6 and 7 present the average daily temperature, average maximum temperature and average minimum temperature for each day of each month, respectively. From Table 5, January 26 and 27 can be considered the coldest days of the year with an average daily temperature of 1.0°F. July 11 marks the date of the warmest day of the year with an average reading of 70.8°F. The highest average maximum temperature of 83.9°F occurred on July 26. The lowest average maximum temperature of 10.5°F occurred on January 26 according to Table 6. The lowest average minimum temperature in the past 90 years was -9.6°F on the 27th of January. The highest average minimum temperature was 58.8°F on July 11.

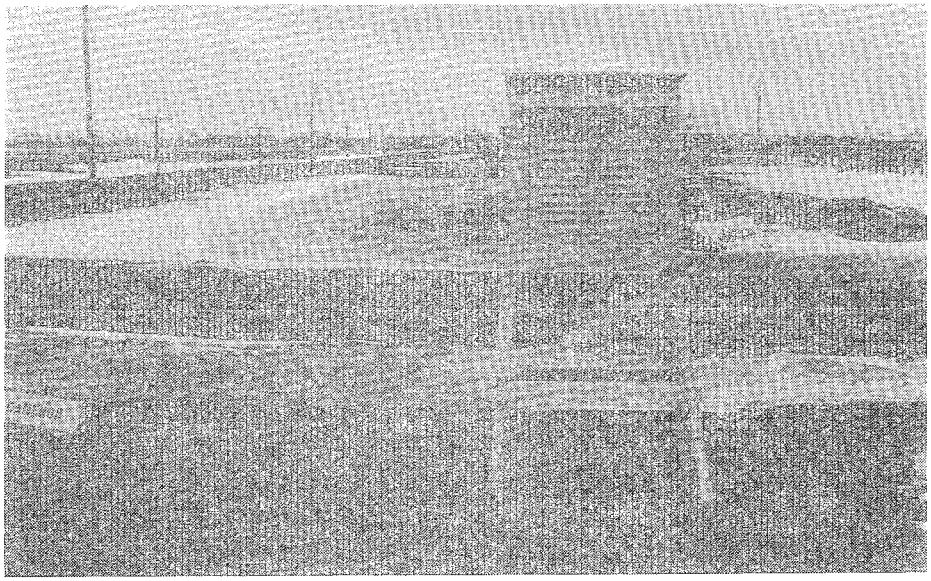
The average monthly temperature with 10-year averages and a 90-year average for 1890 through 1979 are presented in Table 8. The lowest average monthly temperature on record was measured during Feb., 1936 with an average temperature of -13.9°F. The highest average monthly temperature of 78.7°F was recorded in July of 1936. July is the warmest month and January the coldest month with mean monthly temperatures of 69.6°F and 3.7°F, respectively.

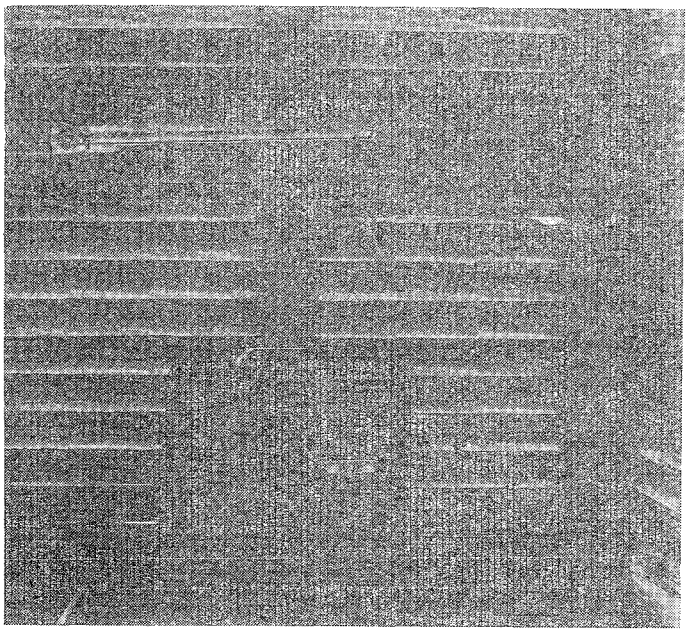
The highest maximum temperature for each calendar date and the year recorded are presented in Table 9. The record high temperature of 106°F was recorded July 28, 1917. The highest temperatures recorded for December, January and February are 56°F, 57°F and 63°F, respectively.

The lowest maximum temperature for each day of each month and year recorded are given in Table 10. January 23, 1936 marks the lowest maximum temperature with a reading of -28°F. There have been five months reported where the lowest maximum temperature was below zero.

Table 11 presents the highest minimum temperature for each day of each month and the year it was recorded. On July 17, 1894 the temperature never dropped below 82°F to set the record highest minimum temperature.

The lowest minimum temperature for each calendar date and the year recorded are presented in Table 12. The record low temperature of -51°F was set February 15, 1936. January, February, March, November and December all have recorded minimum temperatures below zero with the exception of November 1 and 3.





Temperature recording instruments are housed in a shelter on the experiment station grounds (above). The shelter contains a maximum and a minimum thermometer and a continuous recording thermometer with a seven-day chart (left).

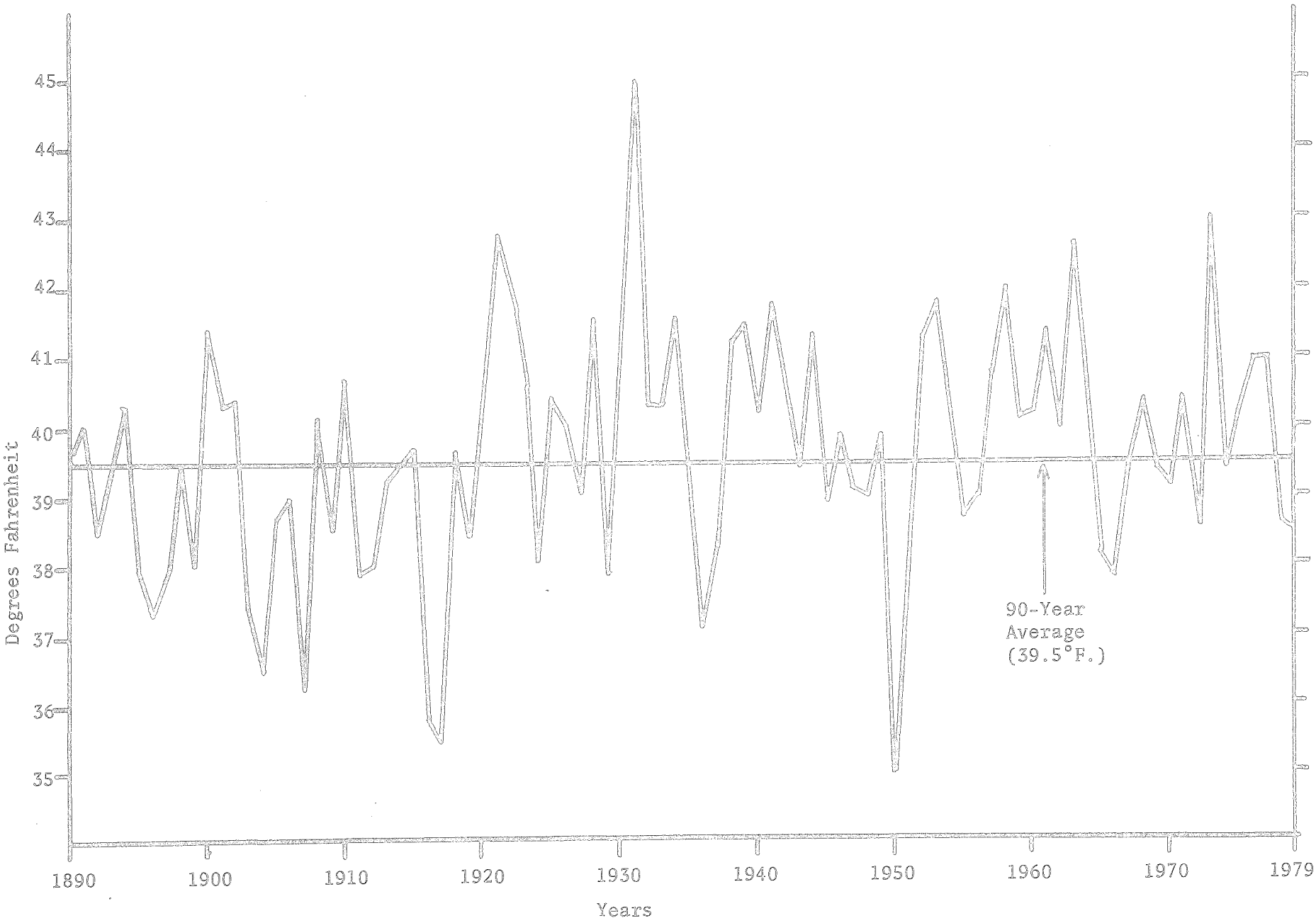


Figure 6. Average annual temperature (°F) 1890-1979.

Table 5. Average daily temperature (^{o}F) for each day of each month, 1890-1979.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.5	1.3	15.4	32.5	49.2	60.1	67.3	69.0	64.6	52.5	36.0	15.6
2	3.7	2.1	15.1	32.0	48.7	60.7	67.4	69.1	64.1	52.8	34.9	16.5
3	4.0	4.1	16.2	33.8	48.8	61.3	67.7	68.0	63.5	53.5	35.8	17.1
4	3.8	4.9	15.0	35.4	50.2	62.2	68.3	68.8	63.1	51.8	34.8	16.4
5	3.5	6.1	15.8	35.9	51.0	61.8	68.7	69.5	63.5	50.5	35.0	15.8
6	4.4	5.8	15.9	35.9	49.8	61.3	69.6	69.6	62.1	49.0	33.6	14.5
7	3.9	3.8	16.3	36.0	51.5	60.9	70.4	69.2	61.6	48.5	31.9	14.0
8	6.1	4.4	18.3	36.6	50.8	61.5	69.6	68.8	61.1	48.4	30.7	12.9
9	5.6	5.6	18.8	37.2	50.9	62.5	68.8	68.6	60.3	47.7	30.7	12.8
10	4.5	7.0	20.3	39.3	51.0	62.5	69.7	67.2	59.9	48.1	29.7	12.0
11	5.0	7.0	20.4	39.6	51.4	63.8	70.8	67.1	58.9	47.5	29.4	12.2
12	3.4	9.7	21.4	39.9	51.4	64.3	70.3	68.1	58.6	46.9	29.2	12.0
13	5.0	8.9	19.5	40.3	52.4	64.5	70.1	68.6	57.8	47.3	27.1	9.5
14	4.0	7.2	19.8	42.5	53.3	65.6	69.1	68.4	57.7	47.2	27.1	10.7
15	2.7	6.1	20.4	42.1	53.5	65.0	69.8	69.2	57.0	47.6	27.0	12.0
16	2.3	8.8	21.2	42.6	55.3	65.1	70.2	68.2	56.7	46.4	27.4	11.4
17	3.0	9.3	22.5	43.8	56.6	65.6	70.0	67.4	57.6	45.1	27.8	10.5
18	3.5	7.4	24.1	43.6	56.6	65.3	70.0	67.6	57.3	44.6	26.4	11.6
19	5.2	7.8	24.7	44.4	55.8	65.8	69.9	67.4	56.3	43.6	25.2	11.1
20	5.2	9.3	25.9	45.0	55.3	64.9	69.9	67.6	56.1	44.3	25.2	10.6
21	4.0	9.1	26.4	45.2	56.4	64.8	70.4	66.6	55.3	44.3	22.9	11.3
22	3.1	11.2	28.0	44.7	58.7	65.2	70.0	66.2	54.4	43.1	20.8	12.6
23	2.8	12.4	29.1	45.7	57.8	66.7	70.2	65.9	54.3	41.1	20.8	11.2
24	4.0	11.9	28.7	45.9	58.1	66.5	70.0	65.7	53.0	41.2	20.8	9.9
25	2.4	12.2	28.7	46.3	58.6	66.3	70.7	66.2	52.2	41.0	21.8	8.3
26	1.0	13.6	27.2	46.2	58.7	66.8	71.0	64.9	51.5	39.8	20.7	8.4
27	1.0	14.4	28.1	47.1	58.2	67.5	70.2	65.6	50.8	39.1	18.5	6.5
28	3.1	13.6	29.6	47.5	59.7	67.8	69.8	65.3	51.2	38.3	18.1	8.2
29	2.1	12.7	30.9	47.4	59.8	67.7	69.3	64.3	51.2	38.6	17.8	8.6
30	3.3		31.3	48.3	59.9	67.5	68.6	64.2	51.4	38.6	17.0	8.0
31	2.9		32.0		60.6		68.9	64.2		37.3		6.2
Avg.	3.7	8.1	22.9	41.4	54.6	64.4	69.6	67.4	57.5	45.3	26.7	11.5

Table 6. Average maximum temperature (°F) for each day of each month, 1890-1979.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	14.1	10.9	25.8	42.1	60.7	72.3	79.4	81.5	76.6	64.4	44.5	24.3
2	12.7	12.2	25.0	41.1	61.3	72.6	79.4	81.6	76.5	64.4	44.1	25.1
3	13.5	14.2	26.0	43.2	61.8	73.4	79.2	81.7	76.5	65.2	44.6	25.4
4	13.3	15.1	26.2	44.9	63.4	74.0	80.1	82.0	75.9	63.3	43.7	25.3
5	12.5	16.0	26.8	45.5	63.8	73.8	80.5	82.6	75.8	61.7	44.3	24.3
6	13.8	15.3	26.4	45.2	62.0	72.8	81.3	82.1	73.9	60.1	42.4	23.1
7	13.8	14.5	26.9	46.0	64.2	73.3	82.2	81.2	73.5	59.5	40.2	22.2
8	16.1	14.7	29.0	46.6	63.7	73.7	82.0	81.8	73.4	59.6	39.5	21.1
9	15.7	16.3	28.7	47.4	64.1	73.8	81.2	81.0	72.0	59.7	39.1	21.3
10	14.8	17.3	30.5	49.7	63.2	74.4	82.0	79.4	71.7	59.1	38.4	21.3
11	14.2	17.3	30.8	50.2	64.2	75.8	82.8	79.9	70.7	58.1	37.5	21.5
12	13.2	20.1	31.3	50.4	64.3	76.6	82.2	81.0	70.2	57.8	37.2	20.4
13	14.9	19.6	29.5	51.1	65.2	76.5	82.2	81.4	69.0	58.2	34.7	18.4
14	14.2	17.5	29.1	54.1	66.0	78.0	81.0	81.7	68.8	58.0	35.2	19.2
15	12.4	17.1	30.7	53.5	66.7	76.7	81.9	82.0	68.4	58.6	35.2	20.8
16	13.0	20.1	31.8	53.6	69.6	76.7	82.2	81.0	68.2	57.4	36.0	20.2
17	13.1	19.4	32.1	55.6	69.6	77.3	82.1	80.2	70.2	55.9	35.6	19.2
18	14.0	18.1	33.9	54.6	68.6	77.1	82.1	80.4	69.4	55.7	34.2	20.4
19	15.0	18.2	34.0	56.0	68.0	78.2	82.5	80.2	68.0	54.8	33.1	20.2
20	14.8	19.5	35.6	56.6	68.2	76.8	82.1	80.6	67.8	54.8	33.1	19.2
21	14.1	19.6	36.5	57.0	69.4	76.3	82.7	79.2	66.9	55.2	30.8	20.2
22	13.3	21.8	37.5	55.9	71.6	77.1	82.7	78.0	65.6	53.6	29.2	21.1
23	13.0	23.0	39.0	57.5	70.7	78.3	82.8	78.4	65.7	51.9	29.3	20.5
24	14.0	22.0	38.7	57.7	71.0	78.4	82.6	78.1	64.3	51.8	29.5	19.1
25	11.8	23.2	37.5	58.4	71.5	78.2	83.4	78.4	64.2	51.4	30.3	17.8
26	10.5	23.5	37.1	58.1	70.9	78.7	83.9	77.4	63.4	49.6	29.0	18.7
27	11.7	24.3	37.8	59.5	71.5	79.5	82.2	78.1	63.4	49.2	26.4	16.1
28	14.1	24.8	39.2	59.7	72.7	79.6	83.0	77.3	63.0	47.8	26.3	18.6
29	12.7	23.0	39.8	58.9	72.3	79.6	82.2	76.9	63.1	48.0	26.6	17.7
30	13.9		40.6	60.0	72.7	79.2	80.9	76.3	63.8	47.8	26.3	18.2
31	13.2		41.6		72.2		81.8	76.5		46.5		16.5
Avg.	13.6	18.4	32.8	52.3	63.0	76.3	81.8	79.9	69.3	56.1	35.2	20.6

Table 7. Average minimum temperature (°F) for each day of each month, 1890-1979.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	-3.2	-8.3	4.9	22.9	37.6	47.9	55.2	56.6	52.6	40.6	27.4	7.0
2	-5.4	-7.9	5.2	22.8	36.1	48.9	55.3	56.6	51.8	41.1	25.8	7.9
3	-5.5	-5.9	6.4	24.4	35.9	49.2	56.1	54.2	50.4	41.7	27.1	8.9
4	-5.6	-5.4	3.7	26.0	37.0	50.3	56.4	55.7	50.3	40.4	25.9	7.5
5	-5.5	-3.7	4.7	26.2	38.2	49.8	57.0	56.4	51.3	39.4	25.8	7.3
6	-5.0	-3.8	5.4	26.7	37.6	49.9	57.9	57.2	50.2	38.0	24.9	5.8
7	-6.1	-6.9	5.8	26.0	38.9	48.5	58.6	57.1	49.6	37.5	23.6	5.9
8	-3.9	-5.9	7.6	26.6	37.9	49.4	57.2	55.9	48.8	37.3	21.9	4.7
9	-4.4	-5.0	9.0	27.0	37.8	51.2	56.5	56.3	48.5	35.6	22.3	4.2
10	-5.7	-3.3	10.1	29.0	38.8	50.5	57.5	54.9	48.1	37.1	21.0	2.7
11	-4.3	-3.3	10.1	29.1	38.6	51.7	58.8	54.3	47.0	37.0	21.3	2.9
12	-6.3	-0.7	11.6	29.4	38.6	51.9	58.4	55.1	47.0	36.0	21.2	3.5
13	-4.9	-1.7	9.6	29.5	39.6	52.6	58.0	55.8	46.7	36.3	19.4	0.6
14	-6.2	-3.1	10.4	30.9	40.6	53.2	57.3	55.2	46.5	36.4	19.1	2.2
15	-7.1	-4.9	10.1	30.7	40.3	53.3	57.8	56.4	45.6	36.6	18.8	3.2
16	-8.4	-2.4	10.6	31.7	40.9	53.6	58.2	55.5	45.2	35.3	18.8	2.7
17	-7.1	-0.8	13.0	31.9	43.7	54.0	57.8	54.5	45.0	34.2	19.9	1.7
18	-6.9	-3.3	14.4	32.5	44.5	53.5	57.9	54.8	45.1	33.5	18.5	2.8
19	-4.6	-2.7	15.4	32.8	43.7	53.5	57.3	54.6	44.7	32.4	17.3	2.1
20	-4.4	-1.0	16.2	33.5	42.5	53.0	57.8	54.6	44.4	33.7	17.3	2.0
21	-6.0	-1.4	16.4	33.4	43.4	53.3	58.1	54.0	43.6	33.4	14.9	2.3
22	-7.1	0.5	18.5	33.4	45.7	53.4	57.3	54.3	43.1	32.5	12.5	4.1
23	-7.5	1.8	19.2	34.0	44.9	55.1	57.5	53.5	42.8	30.3	12.4	2.0
24	-5.9	1.7	18.8	34.1	45.3	54.6	57.3	53.4	41.6	30.6	12.0	0.7
25	-7.0	1.2	20.0	34.3	45.8	54.4	58.1	54.1	40.2	30.5	13.3	-1.2
26	-8.5	3.8	17.4	34.4	46.5	54.8	58.1	52.4	39.5	30.1	12.4	-1.9
27	-9.6	4.6	18.4	34.8	44.8	55.5	58.2	53.2	38.2	29.1	10.5	-3.1
28	-7.9	2.4	19.9	35.3	46.7	56.1	56.7	53.3	39.4	28.9	9.9	-2.2
29	-8.5	2.4	22.0	35.8	47.4	55.8	56.4	51.7	39.2	29.2	8.9	-0.4
30	-7.4		22.1	36.6	47.2	55.8	56.3	52.1	39.1	29.5	7.6	-2.2
31	-7.3		22.4		49.0		56.0	52.0		28.0		-4.1
Avg.	-6.2	-2.3	12.9	30.5	41.8	52.5	57.3	54.7	45.5	34.6	18.4	2.6

Table 8. Average monthly and annual temperatures (°F), 1890-1979.

Year	Annual	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1890	39.6	-0.4	3.1	17.6	45.6	49.1	69.4	70.7	64.9	55.6	45.4	33.0	19.5
Avg.	39.6	-0.4	3.1	17.6	45.6	49.1	69.4	70.7	64.9	55.6	45.4	33.0	19.5
1891	40.0	14.2	4.2	14.8	47.5	55.2	64.8	65.4	66.6	62.3	45.2	21.0	16.4
1892	38.5	0.0	10.7	25.4	38.5	48.0	64.1	70.7	69.0	61.5	49.3	20.6	3.5
1893	33.7	-4.5	-6.8	11.8	32.6	51.9	69.5	69.4	65.0	55.3	39.1	19.1	-0.8
1894	40.3	-1.7	7.0	26.3	43.4	55.8	70.3	73.8	67.2	56.7	43.3	22.1	16.9
1895	37.9	-3.9	4.4	21.5	49.4	55.8	61.6	66.1	64.8	56.7	40.8	22.1	13.7
1896	37.3	1.8	12.7	15.2	40.9	59.8	66.7	67.7	64.5	53.3	40.8	10.6	12.6
1897	37.9	-0.7	5.2	13.6	42.3	55.8	61.4	70.0	63.6	63.7	47.6	20.9	9.6
1898	39.5	14.3	12.2	24.8	43.0	54.5	62.0	67.2	64.4	57.5	39.1	23.6	9.3
1899	38.0	3.4	0.8	10.7	40.5	52.9	63.2	67.7	65.7	54.4	44.8	35.9	13.5
1900	41.4	13.7	2.2	19.1	51.3	59.0	66.3	67.0	71.8	56.9	51.1	21.0	14.1
10-Year Avg.	38.4	3.7	5.3	18.3	42.9	54.9	65.0	68.5	66.3	57.8	44.1	21.7	10.9
1901	40.3	6.0	6.1	24.7	44.5	58.0	62.8	71.5	67.1	55.8	47.2	26.4	11.2
1902	40.4	11.6	13.6	31.2	40.4	57.2	60.1	68.9	64.5	53.6	43.9	28.5	9.8
1903	37.4	6.8	3.7	23.2	41.7	55.5	63.1	66.4	62.7	51.3	45.5	21.6	5.5
1904	36.5	0.0	-5.5	16.6	36.1	54.6	63.5	64.8	62.1	53.3	45.7	33.3	11.5
1905	38.7	-1.0	5.9	28.1	38.8	50.8	60.5	66.7	67.3	60.7	40.4	29.9	13.7
1906	39.0	9.5	2.9	17.1	46.1	51.0	63.5	67.9	66.5	62.8	43.4	27.1	7.5
1907	36.2	-5.3	8.2	21.0	31.2	42.8	63.8	67.6	64.2	51.3	41.8	28.1	18.4
1908	40.1	12.2	11.9	17.0	41.7	52.0	63.3	70.0	64.4	61.0	44.3	30.1	12.8
1909	38.5	3.6	6.9	22.9	34.0	52.4	65.0	69.2	69.2	58.4	43.5	28.4	6.9
1910	40.7	8.6	2.6	37.7	44.6	50.0	70.0	70.9	64.2	56.1	48.2	23.0	9.5
10-Year Avg.	38.8	5.2	5.6	23.9	39.9	52.4	63.6	68.4	65.2	56.4	44.4	27.6	10.7
1911	37.9	-4.2	5.4	26.5	41.3	56.9	68.9	66.8	63.5	54.1	43.4	16.1	14.0
1912	38.0	-10.8	7.9	16.9	43.7	55.9	64.1	68.2	63.4	53.8	44.3	31.9	16.1
1913	39.2	-1.2	4.1	14.0	46.5	51.0	67.3	66.8	68.7	57.4	39.0	33.8	21.2
1914	39.5	11.9	-4.7	23.2	38.3	56.5	64.3	73.4	63.9	59.4	50.7	28.8	5.3
1915	39.7	1.9	16.5	23.8	49.1	51.9	58.4	64.6	65.2	56.4	45.9	27.5	14.4
1916	35.8	-4.6	0.1	16.9	37.7	51.9	60.0	75.7	66.5	55.3	38.7	28.2	1.6
1917	35.4	-4.7	-2.9	21.5	38.2	52.6	60.6	70.8	65.0	56.3	32.3	34.3	-1.0
1918	39.6	-3.0	7.3	33.7	40.6	52.4	63.5	66.4	67.6	50.0	45.2	31.6	18.2
1919	38.4	14.2	5.9	18.1	39.6	57.4	68.4	71.7	66.9	58.3	36.0	16.0	5.7
1920	40.3	-1.0	8.0	21.6	33.0	56.0	65.5	69.2	69.0	61.3	51.8	30.7	17.8
10-Year Avg.	38.4	-0.2	4.8	21.6	40.8	54.3	64.1	69.3	66.0	56.2	42.7	27.9	11.3

Table 8. Average monthly and annual temperatures (°F), 1890-1979. (Continued)

Year	Annual	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1921	42.8	14.6	16.3	20.9	44.9	57.0	69.8	73.7	68.3	59.7	48.3	23.5	15.2
1922	42.1	7.5	4.2	26.8	45.1	62.4	66.6	68.1	70.8	60.5	47.1	35.0	9.2
1923	41.0	10.4	3.1	15.1	38.5	56.4	69.2	72.4	63.0	60.5	44.6	35.7	20.3
1924	38.1	-0.7	15.5	26.7	40.4	46.8	61.2	66.4	65.3	55.9	51.7	26.5	1.0
1925	40.4	6.1	12.5	27.4	48.9	53.5	62.9	67.4	70.0	59.8	34.8	27.5	12.6
1926	40.0	13.6	18.8	23.5	43.1	59.9	60.5	69.1	66.4	54.7	42.8	20.4	5.9
1927	39.0	7.2	11.8	30.7	42.9	50.3	63.1	66.6	64.0	59.2	47.3	22.5	0.4
1928	41.6	11.4	17.3	25.3	37.8	58.4	60.3	69.1	66.3	54.6	45.0	31.5	21.2
1929	37.9	-8.4	2.0	30.1	43.5	50.5	63.3	70.4	67.9	54.5	46.5	23.3	9.4
1930	41.5	-2.6	18.4	24.8	45.7	54.3	65.3	71.9	71.1	58.1	43.3	29.9	16.9
10-Year Avg.	40.4	5.9	12.0	25.1	43.1	55.0	64.2	69.5	67.3	57.8	45.1	27.6	11.2
1931	45.0	17.0	25.6	27.4	44.6	53.5	67.8	70.9	67.5	63.5	49.5	32.4	19.2
1932	40.3	11.6	10.7	18.0	43.4	57.2	69.2	71.6	69.9	57.8	40.3	23.2	9.6
1933	40.3	9.8	5.6	26.5	40.4	57.0	71.5	72.2	69.3	61.4	40.4	23.3	4.4
1934	41.6	11.4	10.6	23.0	42.7	63.0	64.2	69.8	66.6	53.6	48.8	33.4	9.5
1935	39.0	-1.9	21.9	26.7	39.2	51.4	60.7	74.3	67.2	56.0	45.2	15.9	9.8
1936	37.1	-9.0	-13.9	21.0	33.1	61.5	64.4	78.7	69.4	60.3	40.9	23.5	13.3
1937	38.2	-9.0	4.9	20.0	39.9	57.4	63.8	70.2	72.6	58.5	42.9	26.2	9.2
1938	41.2	3.6	8.3	34.0	42.5	52.1	63.4	68.9	70.6	60.8	51.6	22.8	13.9
1939	41.5	8.2	-3.4	19.8	40.0	62.2	64.6	72.8	70.9	59.3	41.4	34.6	24.5
1940	40.2	3.8	13.8	18.9	37.9	54.0	62.0	70.6	66.5	62.8	51.0	23.7	16.4
10-Year Avg.	40.4	4.5	8.3	23.5	40.4	56.9	65.2	72.0	69.1	59.4	45.2	25.9	13.0
1941	41.8	9.0	6.5	21.5	45.5	59.0	66.1	71.9	67.5	56.8	45.8	30.2	18.9
1942	40.6	15.5	11.9	32.0	46.3	50.8	61.3	66.8	66.0	52.5	47.7	27.2	6.6
1943	39.4	-2.2	11.0	17.1	42.6	50.3	62.7	72.0	67.3	53.8	48.5	28.4	19.1
1944	41.3	19.3	11.4	19.3	39.8	57.1	63.7	67.8	66.1	56.1	47.2	32.3	15.0
1945	38.9	9.5	13.3	34.5	39.2	47.3	59.3	66.9	66.7	53.4	43.3	26.0	5.9
1946	39.9	6.0	5.9	33.5	46.4	51.4	63.0	70.3	65.7	55.7	41.9	26.6	10.2
1947	39.1	12.5	6.6	22.2	38.2	49.3	60.5	70.0	70.4	54.6	52.3	20.8	9.3
1948	39.0	1.7	4.4	17.2	40.5	54.6	62.6	69.4	68.0	62.2	47.4	29.3	9.6
1949	39.9	3.3	1.2	26.9	43.9	55.2	64.0	69.4	71.1	54.3	45.0	33.0	9.0
1950	35.0	-9.5	5.0	17.9	30.1	49.2	62.0	66.5	63.2	58.8	46.3	21.9	6.2
10-Year Avg.	39.5	6.5	7.7	24.2	41.2	52.4	62.5	69.1	67.2	55.8	46.5	27.6	11.0

Table 8. Average monthly and annual temperatures (°F), 1890-1979. (Continued)

Year	Annual	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1951	37.3	1.8	12.7	18.4	39.2	58.4	60.4	68.2	64.3	53.7	43.3	19.3	6.7
1952	41.3	0.9	17.6	23.0	47.2	55.9	65.1	67.9	66.2	59.6	41.6	31.1	19.1
1953	41.8	10.5	14.9	27.1	38.1	53.9	62.9	67.4	70.6	56.1	51.5	32.9	13.5
1954	39.9	-4.5	23.4	23.1	37.5	48.7	63.3	69.7	65.6	55.7	44.3	32.8	18.7
1955	38.7	6.3	4.4	12.3	47.6	58.1	63.9	71.9	70.9	56.5	47.3	18.6	4.2
1956	39.0	5.5	3.1	17.2	34.8	53.7	69.4	66.5	67.2	54.2	51.0	30.5	14.1
1957	40.8	0.5	10.1	26.0	42.1	56.3	61.9	73.8	68.2	55.2	45.4	28.2	19.8
1958	42.0	16.6	11.9	30.4	45.7	58.5	60.3	67.0	67.9	59.3	48.5	28.3	7.2
1959	40.1	0.0	5.6	28.3	42.0	55.0	66.9	70.4	70.3	57.7	40.2	19.0	23.1
1960	40.2	7.8	11.4	16.4	41.2	55.5	63.5	70.1	70.8	60.0	47.1	29.0	8.8
10-Year Avg.	40.1	4.6	11.5	22.2	41.5	55.4	63.8	69.3	68.2	56.8	46.0	27.0	13.5
1961	41.4	6.1	16.2	33.0	37.0	53.0	67.5	68.5	72.1	56.6	47.1	29.5	8.8
1962	40.0	1.6	4.2	21.2	38.9	54.8	65.3	67.6	69.6	56.4	50.0	32.6	15.6
1963	42.6	1.0	10.4	31.9	44.3	53.0	69.1	71.9	69.4	62.5	57.0	33.1	5.7
1964	40.3	12.8	16.1	19.2	43.2	58.4	62.5	71.1	65.0	56.5	45.8	29.2	3.2
1965	38.2	-1.8	7.0	15.0	41.9	54.5	64.0	68.3	67.0	48.9	47.6	25.4	18.6
1966	37.8	-9.1	3.2	27.5	36.8	51.0	65.7	72.4	66.6	59.7	46.0	22.4	9.2
1967	39.5	6.8	1.2	24.3	38.3	51.1	62.9	68.2	67.0	62.1	45.0	29.4	15.2
1968	40.4	5.3	6.7	32.2	43.3	48.6	63.3	68.7	66.9	60.1	47.2	31.8	10.1
1969	39.4	-1.7	11.4	13.6	44.5	56.5	58.3	69.0	73.8	60.0	40.7	29.9	16.0
1970	39.1	0.0	8.7	13.1	38.1	52.9	69.4	73.0	70.2	60.0	46.9	27.3	7.5
10-Year Avg.	39.9	2.1	8.5	23.1	40.6	53.4	64.8	69.9	68.8	58.3	47.3	29.1	11.0
1971	40.4	-3.5	11.3	25.2	44.0	55.0	67.8	66.0	69.4	59.6	48.3	28.4	11.3
1972	38.6	-0.1	2.7	22.5	40.3	60.4	66.8	67.1	70.5	56.8	43.9	26.9	4.3
1973	43.0	10.5	15.7	36.9	43.3	55.9	66.6	68.9	72.5	57.1	51.5	25.4	9.6
1974	40.1	-1.0	9.3	20.9	41.2	51.7	65.8	74.0	65.4	55.2	47.5	29.5	19.3
1975	40.5	9.5	8.7	17.1	36.2	56.9	64.4	72.7	67.4	56.0	49.9	31.3	13.4
1976	41.1	6.0	19.8	20.6	47.0	56.8	68.0	70.8	72.3	61.0	40.9	24.5	5.1
1977	41.2	-3.2	15.6	30.9	49.2	66.8	65.3	71.2	62.1	57.4	47.8	24.9	5.1
1978	38.8	-2.2	3.3	21.5	41.9	60.0	64.5	69.3	69.2	63.2	46.2	20.5	5.8
1979	37.4	-7.7	0.0	19.3	34.2	48.7	64.7	70.2	65.1	61.2	44.5	25.0	21.2
9-Year Avg.	40.1	0.9	9.6	23.9	41.9	56.9	66.0	70.0	68.2	58.6	46.7	26.3	10.6
90-Year Avg.	39.4	3.7	8.1	22.9	41.4	54.6	64.4	69.6	67.4	57.5	45.3	26.7	11.5

Table 9. Highest maximum temperature for each day of each month and year recorded, 1890-1979.

Day	Jan.	Feb.	Mar.	Apr.	May	June
1	41 (1927)	38 (1952)	47 (1918)	71 (1963)	88 (1952)+	93 (1939)
2	41 (1944)	39 (1962)	52 (1905)	72 (1910)	91 (1959)	94 (1948)
3	36 (1944)	38 (1967)+	50 (1905)	75 (1921)	91 (1959)	93 (1968)
4	35 (1898)	47 (1925)	48 (1949)	75 (1930)+	91 (1952)	92 (1968)+
5	57 (1902)	45 (1963)	47 (1925)	74 (1930)	97 (1926)	93 (1939)
6	39 (1928)	45 (1963)	49 (1892)	74 (1900)	97 (1926)	97 (1959)
7	44 (1914)	41 (1898)	51 (1892)	79 (1931)	94 (1891)	99 (1959)
8	44 (1900)	48 (1898)	50 (1898)	78 (1931)	89 (1895)	96 (1959)
9	45 (1958)	45 (1898)	50 (1902)	79 (1977)	88 (1928)	92 (1973)+
10	44 (1958)	42 (1928)	50 (1977)+	82 (1925)	86 (1976)+	95 (1956)
11	40 (1958)	42 (1977)	53 (1902)	81 (1955)	89 (1906)	94 (1956)+
12	42 (1928)	42 (1898)	60 (1910)	80 (1968)	94 (1900)	104 (1893)
13	43 (1899)	42 (1935)+	53 (1914)	80 (1910)	92 (1932)	97 (1893)+
14	43 (1899)	40 (1935)+	52 (1935)	80 (1942)	90 (1932)	100 (1893)
15	40 (1942)	45 (1931)+	57 (1927)	84 (1926)	90 (1926)	94 (1933)
16	43 (1942)	46 (1931)	57 (1910)	77 (1913)	87 (1918)+	98 (1933)
17	41 (1972)+	41 (1971)	61 (1938)	80 (1890)	91 (1972)	98 (1933)
18	38 (1944)	42 (1930)	62 (1910)	77 (1973)	90 (1901)	101 (1933)
19	45 (1900)	45 (1930)	62 (1910)	80 (1952)+	94 (1948)+	99 (1933)
20	47 (1944)	48 (1930)	57 (1946)	85 (1926)	88 (1972)	99 (1910)
21	46 (1900)	47 (1930)	69 (1910)	83 (1926)	99 (1964)	99 (1910)
22	47 (1900)	48 (1958)	65 (1945)	78 (1942)	92 (1955)+	91 (1922)+
23	47 (1942)	55 (1958)	76 (1910)	83 (1942)	94 (1928)	96 (1910)
24	45 (1944)	54 (1958)	68 (1945)	83 (1891)	91 (1967)	96 (1936)
25	43 (1944)	63 (1958)	66 (1945)	87 (1891)	89 (1977)+	99 (1900)
26	37 (1947)	55 (1958)	67 (1946)	79 (1977)	95 (1931)	95 (1890)
27	40 (1892)	49 (1895)	78 (1946)	90 (1952)	97 (1977)	98 (1910)
28	40 (1892)	53 (1905)	74 (1946)	92 (1952)	93 (1969)+	98 (1970)
29	43 (1890)	48 (1932)	66 (1963)	88 (1952)+	96 (1939)	100 (1912)
30	41 (1892)		74 (1967)	87 (1952)	101 (1939)	99 (1921)
31	42 (1952)		78 (1963)		98 (1939)	
90-Year Record	57	63	78	92	101	104

+ Previous years than the one indicated with the same temperature.

Table 9. (Continued) Highest maximum temperature

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	101 (1921)	98 (1930)	97 (1894)	86 (1976)+	66 (1978)	54 (1962)
2	95 (1921)	100 (1946)	94 (1960)	87 (1892)	67 (1978)	51 (1962)
3	91 (1949)	96 (1893)	95 (1976)	85 (1937)	65 (1978)	53 (1941)
4	92 (1940)+	99 (1947)	92 (1979)+	84 (1975)	71 (1975)	54 (1941)
5	93 (1940)	98 (1931)+	96 (1978)	86 (1920)	71 (1975)	47 (1939)
6	100 (1936)	98 (1941)	96 (1978)+	85 (1909)	65 (1975)	52 (1939)
7	102 (1936)	97 (1963)+	98 (1931)	86 (1975)	64 (1975)	56 (1939)
8	102 (1936)	100 (1958)	95 (1978)	83 (1975)	69 (1931)	45 (1939)
9	100 (1936)	98 (1949)	95 (1978)+	84 (1938)	63 (1937)	51 (1939)
10	105 (1936)	92 (1958)+	90 (1931)	83 (1938)+	66 (1909)	49 (1939)
11	105 (1936)	94 (1969)	99 (1931)	82 (1934)	58 (1954)	47 (1928)
12	105 (1936)	95 (1978)	90 (1952)	82 (1956)	58 (1934)	51 (1939)
13	103 (1936)	101 (1965)	91 (1927)	82 (1934)	55 (1973)+	45 (1913)
14	100 (1936)	100 (1965)	90 (1897)	80 (1962)	62 (1939)	46 (1890)
15	99 (1931)	99 (1952)	87 (1891)	80 (1962)	62 (1953)	43 (1913)
16	101 (1936)	96 (1971)	89 (1979)	80 (1963)+	59 (1934)	52 (1962)+
17	101 (1932)	97 (1945)	90 (1892)	80 (1910)	67 (1953)	48 (1939)
18	100 (1932)	100 (1976)	90 (1891)	76 (1945)	55 (1953)+	45 (1943)+
19	99 (1932)	100 (1976)	88 (1970	78 (1953)	64 (1917)	47 (1890)
20	98 (1918)	99 (1976)	88 (1970)+	79 (1953)	60 (1890)	47 (1890)
21	101 (1893)	99 (1976)	93 (1891)	81 (1947)	55 (1904)	41 (1890)
22	98 (1940)	97 (1947)	93 (1936)	75 (1963)+	51 (1890)	46 (1890)
23	97 (1941)	95 (1925)	87 (1937)	79 (1963)	51 (1939)	40 (1899)
24	95 (1932)+	97 (1976)	83 (1930)	71 (1973)+	49 (1942)	44 (1957)
25	101 (1931)	97 (1976)	91 (1938)	72 (1901)+	50 (1914)	43 (1943)
26	99 (1941)	95 (1937)	90 (1892)	74 (1955)	51 (1962)	40 (1959)+
27	101 (1941)	95 (1953)+	87 (1974)	72 (1944)+	50 (1899)	40 (1928)
28	106 (1917)	95 (1925)	90 (1952)	71 (1944)	51 (1890)	38 (1962)+
29	98 (1975)	96 (1969)	90 (1892)	71 (1891)	50 (1914)	49 (1897)
30	100 (1929)	93 (1972)	86 (1976)	72 (1950)	49 (1969)	42 (1897)
31	96 (1936)	93 (1921)		69 (1950)		38 (1904)
90-year Record	106	101	99	87	71	56

+ Previous years than the one indicated with the same temperature.

Table 10. Lowest maximum temperature (°F) for each day of each month and year recorded, 1890-1979.

Day	Jan.	Feb.	Mar.	Apr.	May	June
1	-16 (1974)	-26 (1893)	-6 (1916)	16 (1936)	35 (1909)	47 (1945)
2	-17 (1911)+	-20 (1893)	0 (1893)	18 (1954)	30 (1907)	50 (1897)
3	-18 (1896)	-20 (1907)+	-3 (1917)	20 (1954)+	32 (1954)	48 (1951)
4	-20 (1896)	-21 (1895)	-6 (1919)	25 (1954)+	38 (1944)	49 (1935)
5	-20 (1912)	-24 (1936)	2 (1893)	16 (1916)	38 (1931)	49 (1944)
6	-20 (1912)	-22 (1936)	-1 (1955)	20 (1979)	35 (1907)	40 (1901)
7	-17 (1966)	-21 (1936)	4 (1932)	18 (1936)	40 (1950)	53 (1937)
8	-15 (1894)	-26 (1899)	4 (1944)	25 (1950)	41 (1955)	53 (1915)
9	-20 (1912)	-18 (1899)	-3 (1948)	27 (1962)	36 (1907)	54 (1908)
10	-25 (1912)	-23 (1899)	-8 (1948)	30 (1950)+	38 (1946)	47 (1947)
11	-25 (1912)	-16 (1914)	2 (1956)	27 (1940)	39 (1946)	55 (1941)
12	-13 (1916)	-19 (1936)	2 (1896)	26 (1907)	42 (1901)	54 (1942)
13	-21 (1916)	-10 (1949)	-4 (1897)	22 (1950)	40 (1907)	54 (1917)
14	-23 (1892)	-11 (1939)	-5 (1897)	31 (1904)	42 (1946)	61 (1917)
15	-18 (1972)	-22 (1936)	-4 (1897)	22 (1904)	41 (1916)	57 (1905)
16	-17 (1977)	-20 (1936)	6 (1893)	23 (1907)	45 (1942)	56 (1915)
17	-18 (1967)	-14 (1903)	1 (1902)	27 (1953)	41 (1890)	56 (1915)
18	-20 (1970)+	-18 (1966)	5 (1923)	29 (1949)	45 (1890)	55 (1944)
19	-17 (1943)	-10 (1894)	10 (1912)	28 (1928)	38 (1968)	62 (1902)
20	-22 (1943)	-10 (1939)	12 (1913)	35 (1941)+	38 (1931)	58 (1902)
21	-18 (1954)	-8 (1939)	6 (1906)	33 (1893)	45 (1953)+	57 (1942)
22	-20 (1936)	-10 (1914)	10 (1940)	25 (1967)	55 (1963)	55 (1942)
23	-28 (1936)	-10 (1904)	-4 (1974)	32 (1967)	42 (1968)	61 (1905)
24	-24 (1904)	-10 (1950)	8 (1923)	38 (1949)+	51 (1974)+	65 (1897)
25	-14 (1918)+	-10 (1919)	8 (1894)	30 (1937)	46 (1943)	60 (1907)
26	-20 (1893)	-12 (1919)	14 (1904)	32 (1950)	47 (1943)	58 (1925)
27	-15 (1966)+	-11 (1962)	15 (1899)	33 (1907)	42 (1965)	58 (1914)
28	-25 (1966)	-12 (1962)	11 (1970)	34 (1950)	48 (1947)	65 (1943)
29	-18 (1966)+	-8 (1916)	10 (1969)	37 (1966)	53 (1910)	55 (1891)
30	-20 (1918)		12 (1907)	33 (1909)	52 (1907)	58 (1945)
31	-16 (1917)		16 (1936)		47 (1946)	
90-Year Record	-28	-26	-6	16	30	40

+ Previous year than the one indicated with the same temperature.

Table 10. (Continued) Lowest maximum temperature

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	57 (1968)	64 (1903)	56 (1946)	43 (1974)+	17 (1935)	-16 (1896)
2	60 (1915)	63 (1907)	56 (1974)+	44 (1950)	17 (1951)+	-10 (1896)
3	60 (1915)	67 (1978)	56 (1918)	43 (1950)	18 (1951)+	-1 (1964)
4	63 (1915)+	65 (1907)	57 (1935)	40 (1898)	17 (1951)	-2 (1898)
5	67 (1904)	70 (1912)	58 (1965)	42 (1952)	17 (1935)	0 (1936)+
6	66 (1908)	62 (1921)	50 (1911)	42 (1976)+	19 (1959)+	-11 (1936)
7	61 (1922)	65 (1909)	55 (1946)+	36 (1917)	14 (1936)	-11 (1893)
8	66 (1895)	64 (1917)	51 (1941)	39 (1925)	13 (1966)	-9 (1927)
9	66 (1958)	64 (1914)	51 (1928)	35 (1959)	17 (1902)	-15 (1977)
10	67 (1951)	64 (1913)+	52 (1962)	37 (1935)	15 (1894)	-13 (1893)
11	70 (1975)+	63 (1951)	50 (1902)	33 (1917)	8 (1911)	-5 (1945)
12	67 (1913)	64 (1964)	46 (1890)	33 (1917)+	8 (1911)	-12 (1917)
13	63 (1952)	66 (1908)	46 (1903)	37 (1937)	8 (1911)	-21 (1917)
14	65 (1961)	64 (1979)	47 (1956)	36 (1909)	8 (1940)	-17 (1901)
15	63 (1906)	64 (1897)	42 (1903)	38 (1897)	6 (1932)	-11 (1926)
16	64 (1937)	66 (1944)	50 (1918)+	32 (1952)	14 (1903)	-6 (1963)
17	63 (1915)	63 (1935)+	45 (1901)	30 (1930)	10 (1903)	-11 (1897)
18	63 (1895)	66 (1975)	46 (1918)	27 (1930)	1 (1894)	-10 (1929)+
19	70 (1915)+	63 (1907)	49 (1918)	30 (1917)+	-5 (1896)	-23 (1916)
20	64 (1895)	65 (1902)	45 (1945)	28 (1913)	0 (1896)	-18 (1916)
21	63 (1948)	60 (1916)+	46 (1912)	32 (1913)	-2 (1896)	-12 (1916)
22	67 (1949)	61 (1906)	46 (1895)	30 (1917)	5 (1892)	-10 (1945)
23	63 (1897)	58 (1940)	44 (1942)	26 (1936)	-1 (1900)+	-10 (1892)
24	67 (1911)	50 (1914)	37 (1912)	29 (1933)	3 (1977)	-12 (1914)
25	67 (1918)+	53 (1914)	40 (1942)+	30 (1976)	3 (1977)	-18 (1933)
26	67 (1918)	55 (1911)	40 (1934)	29 (1936)	-1 (1919)	-16 (1934)
27	65 (1905)	59 (1946)+	39 (1941)	22 (1919)	0 (1891)	-19 (1917)
28	66 (1971)	60 (1907)+	40 (1908)+	20 (1925)	-5 (1896)	-21 (1917)
29	63 (1903)	55 (1892)	41 (1894)	23 (1917)+	-15 (1896)	-8 (1934)
30	63 (1903)	58 (1904)	44 (1908)	27 (1917)	-16 (1896)	-15 (1893)
31	66 (1931)	59 (1974)+		25 (1911)		-16 (1973)
90-Year Record	57	50	37	20	-16	-23

+ Previous year than the one indicated with the same temperature.

Table 11. Highest minimum temperature (^{O}F) for each day of each month and year recorded, 1890-1979.

Day	Jan.	Feb.	Mar.	Apr.	May	June
1	27 (1941)	27 (1924)	30 (1924)	44 (1958)	59 (1955)	66 (1923)
2	28 (1964)	27 (1931)	33 (1961)	46 (1928)	57 (1951)	66 (1944)
3	30 (1927)	31 (1962)	33 (1894)	40 (1958)+	62 (1941)	66 (1948)
4	25 (1926)	30 (1925)	33 (1918)	43 (1929)	61 (1941)	66 (1963)
5	27 (1902)	26 (1960)	32 (1925)	42 (1973)	61 (1941)	65 (1932)
6	27 (1928)	27 (1925)	32 (1973)	43 (1925)	67 (1926)	73 (1939)
7	27 (1963)	25 (1928)	35 (1973)	44 (1963)+	65 (1896)	67 (1959)
8	27 (1963)	23 (1935)	34 (1968)	48 (1900)	61 (1897)	65 (1972)+
9	23 (1902)	26 (1976)	36 (1903)	42 (1977)+	65 (1896)	74 (1894)
10	28 (1958)	25 (1921)	35 (1973)	45 (1976)	63 (1922)	65 (1970)+
11	24 (1928)	27 (1908)	33 (1977)+	43 (1955)	60 (1922)	71 (1956)
12	32 (1928)	32 (1908)	34 (1929)	52 (1941)	60 (1977)	75 (1894)
13	26 (1960)	33 (1935)	36 (1964)	45 (1941)	65 (1958)	70 (1894)
14	30 (1906)	33 (1935)	36 (1973)	52 (1976)	65 (1932)	71 (1979)
15	26 (1969)	28 (1976)	42 (1927)	53 (1963)	63 (1977)	73 (1973)
16	29 (1931)	28 (1971)	34 (1946)	54 (1963)	61 (1903)	65 (1919)+
17	20 (1972)	30 (1976)	38 (1968)	53 (1977)	64 (1903)	71 (1923)+
18	32 (1944)	32 (1951)	36 (1921)	55 (1931)	67 (1972)	70 (1933)
19	32 (1914)	34 (1930)	35 (1918)+	53 (1973)	68 (1941)	72 (1933)
20	24 (1919)+	31 (1899)	38 (1946)	60 (1900)	60 (1902)	70 (1909)
21	32 (1908)	34 (1930)	46 (1926)	54 (1900)	65 (1964)	73 (1910)
22	20 (1942)	33 (1930)	37 (1902)	50 (1957)+	65 (1966)	71 (1923)
23	33 (1909)	32 (1931)	45 (1910)	52 (1957)+	61 (1900)	72 (1922)+
24	32 (1944)	33 (1958)	45 (1945)	54 (1900)	68 (1967)	72 (1910)
25	32 (1968)	33 (1951)	48 (1945)	59 (1894)	65 (1977)	71 (1936)+
26	26 (1944)	40 (1958)	46 (1945)	55 (1901)	65 (1978)	72 (1901)+
27	24 (1891)	36 (1933)	41 (1968)	60 (1974)	63 (1934)+	71 (1931)
28	21 (1931)	37 (1932)	45 (1946)	58 (1896)	71 (1969)	74 (1963)
29	26 (1942)	30 (1924)	47 (1963)	55 (1952)	70 (1937)	75 (1963)
30	29 (1931)		50 (1967)	60 (1894)	64 (1919)	76 (1931)
31	22 (1935)		42 (1963)		70 (1934)	
90-Year Record	33	40	50	60	71	76

+ Previous year than the one indicated with the same temperature.

Table 11. (Continued) Highest minimum temperature

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	75 (1919)+	73 (1936)	74 (1921)	59 (1973)+	47 (1938)	34 (1909)
2	73 (1921)	71 (1964)	70 (1929)	64 (1897)	45 (1964)+	32 (1973)+
3	70 (1935)	67 (1909)	70 (1960)	64 (1914)	49 (1956)	40 (1941)
4	70 (1938)+	72 (1947)	70 (1897)	64 (1914)	46 (1948)	33 (1941)
5	71 (1910)	72 (1947)	71 (1960)	58 (1955)	44 (1977)+	29 (1920)
6	71 (1937)	72 (1941)+	74 (1970)	55 (1973)+	50 (1977)	32 (1951)
7	75 (1936)	72 (1937)	76 (1976)	60 (1975)	50 (1977)	32 (1935)
8	78 (1936)	70 (1949)	70 (1897)	60 (1975)+	44 (1963)	30 (1952)
9	73 (1936)	68 (1976)+	70 (1964)	53 (1923)	39 (1964)	34 (1939)
10	80 (1936)	70 (1947)+	65 (1972)+	62 (1938)	40 (1909)	28 (1896)
11	81 (1936)	72 (1936)+	71 (1931)	59 (1947)	42 (1964)	34 (1921)
12	79 (1936)	71 (1969)	70 (1952)	60 (1943)	41 (1937)	33 (1921)
13	74 (1936)+	73 (1978)	70 (1952)	62 (1956)	43 (1923)	30 (1921)
14	74 (1901)	73 (1922)	71 (1927)	61 (1963)+	43 (1944)	33 (1928)
15	71 (1901)	77 (1937)	65 (1968)+	57 (1962)	43 (1931)	32 (1928)
16	71 (1975)	71 (1972)	67 (1908)	60 (1947)	42 (1931)	32 (1895)
17	82 (1894)	72 (1960)	67 (1963)	55 (1947)	41 (1953)	31 (1977)+
18	74 (1957)+	73 (1916)	67 (1964)	53 (1929)	35 (1922)	32 (1957)
19	80 (1932)	79 (1976)	64 (1941)+	61 (1956)	34 (1934)+	27 (1890)
20	71 (1935)	77 (1976)	66 (1914)	59 (1920)	35 (1962)+	30 (1979)
21	71 (1941)	68 (1972)+	69 (1914)	61 (1953)	35 (1966)+	27 (1979)
22	71 (1965)	72 (1947)	66 (1940)	50 (1963)	31 (1966)+	32 (1931)
23	71 (1920)	74 (1947)	71 (1930)	53 (1923)	36 (1954)	29 (1928)
24	73 (1960)	70 (1976)	62 (1917)	52 (1973)	34 (1942)	25 (1963)
25	72 (1917)	65 (1974)+	61 (1923)	55 (1970)	33 (1944)	30 (1940)
26	76 (1931)	71 (1953)	58 (1938)	50 (1931)	34 (1962)	32 (1959)
27	72 (1929)	69 (1953)	62 (1979)	45 (1964)+	41 (1962)	32 (1959)
28	73 (1941)	75 (1937)	63 (1898)	49 (1900)	36 (1962)	26 (1940)
29	74 (1917)	74 (1969)	64 (1905)	50 (1977)+	34 (1914)+	32 (1897)
30	75 (1975)	68 (1939)+	65 (1905)	54 (1977)	35 (1932)	27 (1931)+
31	75 (1975)	69 (1966)		45 (1948)		27 (1940)
90-Year Record	82	77	76	64	50	40

+ Previous year than the one indicated with the same temperature.

Table 12. Lowest minimum temperature (°F) for each day of each month and year recorded, 1890-1979.

Day	Jan.	Feb.	Mar.	Apr.	May	June
1	-31 (1974)	-45 (1893)	-30 (1962)	-8 (1970)	16 (1958)	27 (1964)
2	-33 (1904)	-37 (1893)	-29 (1916)	-7 (1899)	14 (1907)	29 (1910)
3	-33 (1919)	-38 (1895)	-28 (1893)	-3 (1975)+	6 (1967)	29 (1928)
4	-36 (1896)	-37 (1895)	-28 (1917)	1 (1970)	19 (1891)	31 (1964)
5	-36 (1924)	-40 (1936)	-25 (1890)	-4 (1936)	20 (1929)	33 (1897)
6	-35 (1968)	-42 (1936)	-29 (1955)	-10 (1979)	21 (1954)	30 (1953)+
7	-32 (1974)+	-38 (1936)	-24 (1955)+	-9 (1936)	18 (1976)	31 (1901)
8	-35 (1973)	-40 (1899)	-24 (1891)	8 (1928)	18 (1955)	34 (1938)
9	-34 (1930)	-38 (1899)	-28 (1948)	10 (1911)	22 (1945)	33 (1915)
10	-32 (1979)	-33 (1899)	-39 (1948)	13 (1973)	20 (1907)+	35 (1903)
11	-39 (1912)	-36 (1914)	-29 (1948)	7 (1940)	19 (1946)	35 (1900)
12	-38 (1913)+	-36 (1936)	-25 (1896)	0 (1950)	17 (1946)	38 (1969)+
13	-39 (1979)+	-33 (1916)	-30 (1896)	1 (1950)	21 (1918)	36 (1969)+
14	-38 (1916)	-35 (1936)	-33 (1897)	5 (1893)	25 (1945)+	36 (1958)
15	-39 (1971)	-51 (1936)	-35 (1897)	7 (1921)	26 (1967)+	38 (1961)+
16	-43 (1977)	-42 (1936)	-19 (1891)	11 (1961)	20 (1961)	37 (1976)
17	-35 (1977)	-30 (1956)	-21 (1939)	9 (1953)	25 (1930)+	39 (1915)
18	-44 (1892)	-38 (1966)	-22 (1923)	16 (1953)	26 (1929)	37 (1926)
19	-38 (1892)	-38 (1966)	-18 (1893)	4 (1928)	22 (1968)	34 (1940)
20	-34 (1970)	-34 (1939)	-21 (1955)	17 (1966)	27 (1892)	31 (1940)
21	-41 (1954)	-28 (1966)	-18 (1893)	11 (1945)	24 (1924)	36 (1902)
22	-39 (1936)	-33 (1914)	-14 (1940)	17 (1909)	25 (1963)	40 (1959)
23	-36 (1948)+	-32 (1914)	-16 (1974)+	11 (1918)	18 (1968)	35 (1967)
24	-39 (1936)	-33 (1955)	-15 (1955)	18 (1919)	26 (1930)	39 (1958)
25	-32 (1904)	-36 (1950)	-17 (1893)	15 (1958)	26 (1893)	39 (1926)
26	-37 (1893)	-37 (1897)	-18 (1964)	18 (1933)+	26 (1961)	37 (1929)
27	-37 (1895)	-28 (1962)	-18 (1955)	11 (1909)	27 (1907)	41 (1925)
28	-39 (1966)	-34 (1897)	-14 (1964)	15 (1909)	24 (1947)	39 (1923)
29	-35 (1965)	-24 (1916)	-15 (1969)	9 (1958)	21 (1903)	40 (1959)+
30	-33 (1950)+		-14 (1975)	19 (1903)	29 (1964)+	38 (1892)
31	-30 (1918)+		-8 (1969)		23 (1968)	
90-Year Record	-44	-51	-39	-9	6	27

+ Previous years than the one indicated with the same temperature.

Table 12. (Continued) Lowest minimum temperature

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	39 (1954)	38 (1927)	34 (1946)	25 (1961)	0 (1951)+	-32 (1896)
2	40 (1945)	41 (1971)+	32 (1946)	23 (1974)+	-5 (1935)	-29 (1896)
3	39 (1967)	39 (1972)	32 (1974)	22 (1965)+	1 (1936)	-24 (1964)+
4	38 (1967)	41 (1923)	34 (1903)	16 (1935)	-7 (1919)	-18 (1964)
5	41 (1965)	45 (1957)+	33 (1929)+	14 (1935)	-8 (1951)	-17 (1964)
6	42 (1908)	45 (1976)	31 (1934)	19 (1954)	-1 (1935)	-22 (1972)
7	42 (1891)	42 (1904)	34 (1979)	19 (1952)	-13 (1936)	-24 (1936)
8	41 (1922)	42 (1927)	33 (1956)	18 (1917)	-9 (1892)	-22 (1919)
9	43 (1968)	37 (1890)	30 (1917)	16 (1897)	-3 (1933)	-26 (1909)
10	41 (1945)	37 (1967)	29 (1917)	15 (1935)+	-2 (1979)	-32 (1977)
11	38 (1890)	41 (1968)	26 (1955)	19 (1893)	-11 (1935)	-24 (1945)
12	38 (1926)	39 (1898)	29 (1902)	12 (1917)	-6 (1911)	-25 (1893)
13	39 (1950)	31 (1964)	26 (1923)	13 (1917)	-11 (1919)	-29 (1901)
14	42 (1930)	36 (1968)	26 (1956)	19 (1923)	-11 (1919)	-31 (1901)
15	41 (1912)	39 (1979)	29 (1949)	19 (1943)	-20 (1911)	-30 (1901)
16	41 (1912)	39 (1924)	27 (1973)	10 (1952)	-14 (1933)	-26 (1919)
17	41 (1924)	38 (1890)	23 (1959)	9 (1952)	-12 (1891)	-25 (1901)+
18	42 (1891)	38 (1932)	18 (1929)	11 (1972)	-9 (1894)	-29 (1929)
19	41 (1951)	39 (1967)+	25 (1938)	7 (1916)	-16 (1896)	-35 (1916)
20	41 (1944)+	36 (1950)	25 (1973)	10 (1916)	-13 (1921)+	-35 (1916)
21	39 (1947)	37 (1950)	20 (1913)	10 (1913)	-18 (1978)+	-31 (1963)
22	45 (1925)+	33 (1890)	20 (1974)	5 (1936)	-24 (1896)	-31 (1945)
23	43 (1953)	34 (1891)	25 (1976)+	3 (1917)	-24 (1893)	-33 (1892)
24	44 (1920)+	34 (1923)	23 (1951)	3 (1917)	-23 (1893)	-29 (1937)
25	44 (1900)	38 (1950)	23 (1893)	9 (1933)	-19 (1893)	-35 (1933)
26	43 (1962)	35 (1915)	11 (1893)	-2 (1919)	-22 (1919)	-33 (1933)
27	41 (1925)	35 (1941)	20 (1893)	6 (1976)+	-19 (1919)	-30 (1924)
28	43 (1925)	32 (1965)+	21 (1945)+	-1 (1919)	-30 (1893)	-38 (1933)
29	42 (1925)	36 (1915)	22 (1945)+	4 (1919)	-30 (1896)	-33 (1917)
30	41 (1971)	33 (1931)	23 (1920)	9 (1906)	-29 (1896)	-32 (1976)
31	41 (1903)	33 (1935)		10 (1906)		-32 (1978)+
90-Year Record	38	31	11	-2	-30	-38

+ Previous year than the one indicated with the same temperature.

DEGREE DAYS

Temperature has been regarded as the most important factor influencing plant growth. Degree days are frequently used to represent cumulative amounts of heat or energy recorded during a season. Growing degree days are used to predict various stages of plant growth or development. Cooling degree days are calculated to determine energy requirements for cooling buildings during the summer months. Heating degree days are used to determine power and fuel requirements to heatbuildings during the winter.

The mathematical computation of growing degree days is:

$$GGD = \Sigma (\overline{T} - Tb)$$

where $\overline{T}$ = average daily temperature

Tb = base temperature for a crop representing the lowest temperature at which plant growth occurs

Σ = indicates that the difference between $\overline{T}$ - Tb is to be summed cumulatively day by day. Negative values are ignored in summation. Zero is the value assigned to any day when the mean temperature is equal to or less than the base temperature.

Each crop has a different base temperature. Some of the more commonly used base temperatures are as follows:

Alfalfa	50^{o}	Potatoes	45^{o}
Barley	$40\text{-}43^{o}$	Soybeans	50^{o}
Corn	$50\text{-}55^{o}$	Spring Wheat	$37\text{-}43^{o}$
Dry Beans	55^{o}	Sugarbeets	40^{o}
Oats	$40\text{-}43^{o}$	Sunflower	50^{o}

Growing degree days based on base temperatures of 40^{o}F, 45^{o}F, 50^{o}, and 55^{o}F for each of the 90 years are presented in Table 13. Using the base 40^{o}F column fromTable 13 as an example for small grains and sugarbeets, there appears to be a large year to year fluctuation of growing degree days. The record extremes were 2736 GDD in 1964 and 4268 GDD during 1922 with the long-time average of 3499.

Cooling degree days are based on reducing the temperatures of buildings when the air temperature is above 75^{o}F. From Table 13 there were two years, 1915 and 1950, where the CDD were zero. The 90-year average for CDD is 18. The warmest year on record was 1936 with 95 CDD accumulated. The computation for cooling degree days is:

$$CDD = \Sigma (Tb - \overline{T})$$

where $\overline{T}$ = average daily temperature

Tb = base temperature of 75^{o}F

Σ = indicates that the difference between Tb and $\overline{T}$ is summed cumulatively day by day. Negative values are ignored and the heating season is for a July 1-June 30 year instead of a calendar year.

Table 13. Number of days maximum temperature was $\geq 90^{o}F$, growing degree days, cooling degree days and heating degree days, 1890-1979.

Year	Days ≥ 90 Max	Degree Days: Growing T-Base 40	Growing T-Base 45	Growing T-Base 50	Growing T-Base 55	Cooling T-Base 75	Heating T-Base 65	Corn T-Base 50-86
1890	20	3304	2584	1935	1344	17	6083	2064
1891	10	3766	2918	2114	1408	12	8873	2262
1892	17	3420	2673	1999	1392	14	9558	2162
1893	23	2869	2280	1730	1226	12	10832	1882
1894	20	3728	2999	2315	1681	50	10335	2320
1895	1	3436	2601	1844	1160	1	9655	1974
1896	6	3441	2681	1942	1281	7	9857	2020
1897	5	3385	2640	1952	1333	20	10658	2100
1898	1	2998	2250	1595	1025	5	9024	1780
1899	3	3307	2522	1795	1145	1	10527	1969
1900	9	3894	3107	2352	1636	13	8727	2333
1901	9	3595	2843	2123	1473	30	9166	2164
1902	2	3041	2326	1663	1082	4	8857	1816
1903	3	2985	2252	1577	983	4	9582	1787
1904	1	2952	2219	1539	927	1	10947	1705
1905	0	3475	2658	1886	1182	1	9633	2061
1906	10	3749	2874	2064	1343	13	9387	2153
1907	1	2837	2176	1558	1002	7	10293	1771
1908	7	3574	2783	2033	1358	16	9379	2137
1909	4	3713	2909	2143	1441	9	9588	2337
1910	20	3342	2596	1922	1361	34	8995	1991
1911	5	3543	2746	1991	1311	16	9706	2083
1912	7	3378	2562	1821	1185	18	10504	1980
1913	10	3578	2807	2105	1466	12	9749	2131
1914	10	3908	3052	2239	1506	25	9283	2399
1915	0	3298	2427	1655	1032	0	9071	1806
1916	11	3313	2586	1919	1321	49	10316	2061
1917	10	2891	2220	1605	1084	14	10751	1830
1918	6	3076	2348	1682	1092	1	10013	1855
1919	12	3891	3072	2319	1640	21	9137	2446
1920	7	3731	2953	2206	1510	8	10593	2374
1921	25	4152	3301	2504	1782	34	8133	2523
1922	7	4268	3373	2517	1750	20	8836	2604
1923	12	3503	2778	2110	1484	29	9245	2250
1924	4	3100	2304	1598	994	3	8849	1939
1925	12	3760	2906	2129	1448	11	8976	2256
1926	14	3403	2659	1948	1302	10	8872	2062
1927	2	3290	2498	1785	1172	10	9593	1994
1928	5	3395	2627	1900	1236	8	9395	2135
1929	20	3297	2554	1900	1332	16	9345	2061
1930	24	3905	3075	2317	1631	19	9336	2395
1931	26	4084	3242	2447	1728	46	7990	2501
1932	21	3845	3063	2349	1683	31	8490	2401
1933	22	4192	3350	2564	1836	35	9426	2643
1934	17	3394	2700	2044	1445	17	9260	2130

Table 13. Continued

Year	Days ≥ 90 Max	Degree Days: Growing T-Base 40	Growing T-Base 45	Growing T-Base 50	Growing T-Base 55	Cooling T-Base 75	Heating T-Base 65	Corn T-Base 50-86
1935	13	3085	2398	1790	1255	29	9168	1940
1936	32	4138	3359	2627	1949	95	11120	2677
1937	16	3561	2822	2156	1543	42	10116	2270
1938	10	3517	2742	2006	1361	17	9280	2126
1939	34	4109	3318	2564	1842	26	9388	2571
1940	10	3219	2513	1847	1260	21	9009	2019
1941	17	3904	3094	2329	1644	39	8930	2331
1942	2	3257	2482	1763	1135	3	8313	1871
1943	6	3142	2435	1810	1252	8	10011	1941
1944	4	3530	2706	1950	1278	5	8756	2139
1945	9	2844	2161	1542	1019	6	8659	1769
1946	5	3035	2354	1732	1179	13	9397	1820
1947	13	3276	2557	1890	1307	22	9704	2036
1948	11	3732	2915	2138	1412	11	9961	2310
1949	10	3488	2746	2046	1419	17	9198	2152
1950	4	3110	2376	1680	1067	0	10479	1925
1951	7	3306	2538	1808	1137	4	9748	2038
1952	12	3624	2834	2094	1422	13	9605	2177
1953	7	3374	2653	1973	1348	11	8774	2140
1954	3	3152	2425	1772	1192	6	9027	1968
1955	12	3696	2932	2219	1587	23	9209	2246
1956	7	3187	2509	1871	1299	6	10323	2050
1957	10	3618	2843	2096	1424	23	9001	2240
1958	10	3672	2808	2018	1315	8	8208	2276
1959	18	3515	2804	2137	1543	14	9341	2215
1960	10	3806	3003	2255	1569	31	9454	2439
1961	28	3664	2902	2191	1553	7	8740	2362
1962	4	3449	2688	1977	1333	8	9652	2099
1963	13	4236	3357	2535	1798	30	8601	2726
1964	15	2736	2141	1584	1101	21	8392	1685
1965	6	2930	2292	1699	1147	9	10136	1817
1966	11	3409	2713	2058	1458	32	10025	2218
1967	11	3476	2716	2019	1365	11	9770	2235
1968	6	3426	2645	1921	1266	4	8915	2093
1969	18	3804	2957	2195	1527	28	9502	2336
1970	28	3881	3119	2402	1751	35	9710	2474
1971	10	3645	2852	2119	1447	9	9300	2257
1972	15	3826	3031	2279	1579	24	9571	2394
1973	20	3674	2922	2213	1558	21	8690	2289
1974	11	3140	2460	1863	1319	29	9538	1926
1975	10	3361	2655	1992	1377	35	9221	2151
1976	24	4059	3248	2508	1812	39	8572	2538
1977	8	4085	3205	2354	1563	22	9105	2375
1978	14	3944	3137	2364	1655	27	9811	2493
1979	5	3265	2559	1916	1321	13	10691	2072
90-Yr Avg.	12	3499	2734	2023	1406	18	9419	2258

Heating degree days for the 90-year period averaged 9419. The winter with the largest heating requirement was 1935-36 with heating degree days of 11,120. The warmest winter period was during 1930-31 with only 7990 heating degree days recorded. The value of 6083 HDD listed for 1890 is only for the period of Jan. 1 through July 1 of 1890 due to missing values for 1889.

During 1970 the seed corn industry modified the method for calculating growing degree days for field corn. The industry method assumes both a base minimum temperature of 50°F and a base maximum temperature of 86°F. It was determined that the optimum growing temperature for corn is about 86°F depending on stage of growth and other environment factors. The computation for corn growing degree days is:

$$\text{Corn GDD} = \frac{\Sigma\, T\ \text{max}\ (\leq 86^{\circ}F) + T\ \text{min}\ (\geq 50^{\circ}F)}{2} - 50^{\circ}F$$

Where T max = daily maximum temperature but not below 50°F

T min = daily minimum temperature but not below 50°F

Σ = indicates that the daily values are summed cumulatively day by day from March 1 through October 10

The 90-year average for corn GDD was 2258. The maximum corn GDD of 2677 was recorded in 1936. The lowest corn GDD recorded was 1685 in 1964.

VARIOUS COLD TEMPERATURE DETERMINATIONS

Dates of the last spring and first fall occurrence of 32°F and 28°F are critical dates for crop production. Low temperatures of 32°F may injure tender crops but a lower temperature of 28°F generally will kill most vegetation. Dates of last spring and first fall occurrence of 32°F and 28°F are given in Table 14.

The average date of the last spring occurrence of 32°F was May 19 while the average first fall occurrence of 32°F was September 21. The period of time free of 32°F averaged 125 days and varied from a low of 69 days in 1964 to a high of 167 days in 1922. The latest spring low temperature of 32°F occurred on June 20, 1940. The earliest fall low temperature of 32°F occurred August 13, 1964.

The average date of the last spring occurrence of 28°F was May 8 while the average first fall occurrence of 28°F was October 2. This period free of low temperatures averaged 149 days and varied from a low of 101 days in 1964 to a high of 175 days in 1900. The latest 28°F spring occurrence was recorded June 1, 1964, and the earliest fall occurrence of 28°F was recorded September 11 of 1955 and 1964.

The number of days that the minimum temperature was 32°F or 0°F and below is also presented in Table 14. The average number of days that the minimum temperature was 32°F and below was 185 days, ranging from a low of 167 days in 1914-1915 and 1931-1932 to a high of 205 days in 1906-1907. The long-time average for number of days the minimum temperature was 0°F and below was 63 days, with 26 days as the fewest in 1930-1931 and 94 days as the greatest in 1892-1893.

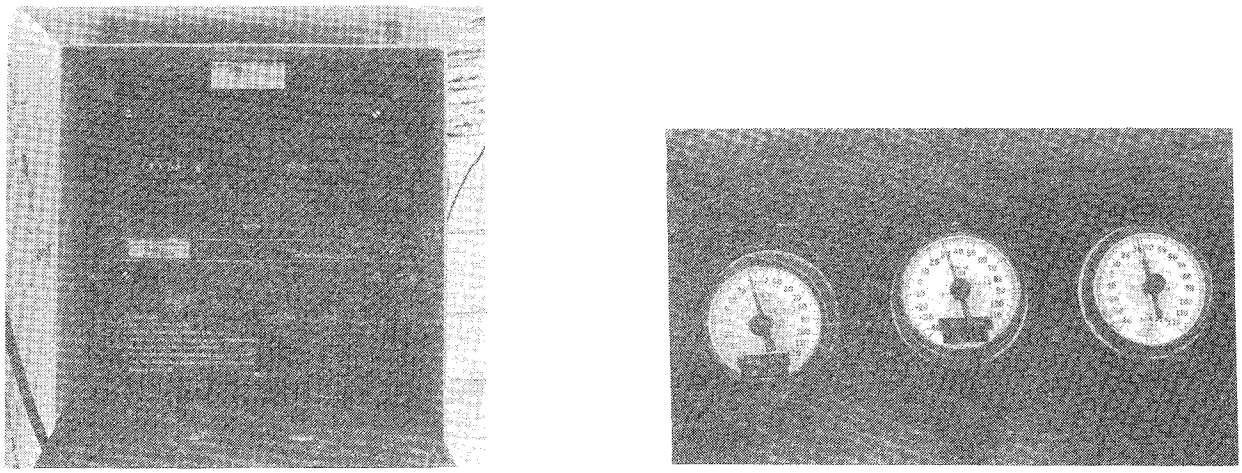
Table 14. Dates of last spring and first fall occurrence of 32°F and 28°F, length of period free of 32°F or lower and 28°F and lower, and number of days minimum and maximum temperatures were ≤ 32°F or ≤ 0°F.

Year	Low Temperatures ≤ 32°F			Low Temperatures ≤ 28°F			Total No. Days Minimum Temp.		Longest Consecutive No. Days Maximum Temp.	
	Last Spring Occurrence	First Fall Occurrence	Days Between	Last Spring Occurrence	First Fall Occurrence	Days Between	≤ 32°F	≤ 0°F	≤ 32°F	≤ 0°F
1890	5/27	9/13	108	5/20	10/17	149	126	57	24	6
1891	5/25	9/29	126	5/5	10/15	162	182	56	26	2
1892	5/21	9/25	126	5/20	10/19	151	186	70	30	8
1893	5/28	8/28	91	5/25	9/25	122	203	94	96	8
1894	5/8	9/11	125	4/21	9/17	148	197	85	20	5
1895	5/21	9/23	124	5/21	9/23	124	176	69	61	11
1896	4/22	9/19	149	4/17	9/19	154	188	65	31	4
1897	6/7	9/19	103	5/31	10/9	130	186	72	66	6
1898	5/11	9/9	120	5/11	10/6	147	180	53	30	3
1899	5/14	9/25	133	5/13	9/29	138	186	85	24	15
1900	5/9	9/17	130	5/9	11/1	175	181	60	30	2
1901	6/7	9/18	102	4/18	9/18	152	170	60	21	3
1902	5/9	9/12	125	4/29	10/9	162	170	37	30	3
1903	5/29	9/14	107	5/29	10/5	128	184	55	17	4
1904	4/20	9/20	152	4/20	9/20	152	187	89	50	5
1905	5/25	10/11	138	4/30	10/16	168	180	63	31	4
1906	5/9	10/9	152	5/7	10/10	155	181	63	20	3
1907	5/27	9/25	120	5/27	9/25	120	205	72	37	5
1908	5/5	9/28	145	5/3	10/11	160	197	49	19	1
1909	5/10	10/11	153	5/4	10/11	159	196	47	37	7
1910	6/2	9/12	101	5/13	10/20	159	170	53	47	3
1911	5/12	9/24	134	5/3	10/21	170	184	70	89	6
1912	4/29	9/25	148	4/27	9/29	154	175	78	66	17
1913	5/13	9/21	130	4/27	9/21	146	192	73	48	3
1914	5/14	10/13	151	5/14	10/14	152	189	50	27	9
1915	5/18	10/5	139	4/13	10/5	174	167	55	35	9
1916	5/19	9/15	118	5/1	9/29	150	181	70	70	8
1917	5/27	9/9	104	4/27	10/8	163	194	82	38	8
1918	5/26	9/19	115	5/26	9/20	116	194	64	51	8
1919	5/5	10/7	154	5/5	10/10	157	182	35	43	5
1920	5/2	9/30	150	4/29	9/30	153	199	86	70	8
1921	5/15	10/2	139	5/3	10/19	168	176	42	26	0
1922	4/26	10/11	167	4/21	10/11	172	168	61	32	3
1923	5/16	9/13	119	5/16	9/13	119	174	62	23	2
1924	6/6	10/7	122	5/25	11/2	160	203	41	33	7
1925	5/17	10/2	137	5/17	10/6	141	169	55	36	5
1926	5/22	9/12	112	5/19	9/22	125	200	37	20	1
1927	5/15	9/25	132	4/24	9/25	153	188	62	25	3
1928	6/3	9/23	111	5/12	9/26	136	191	58	37	5
1929	5/23	9/17	116	5/23	9/17	116	192	61	66	8
1930	5/29	9/28	121	5/24	9/28	126	185	58	37	3
1931	5/22	10/5	135	5/7	10/11	156	184	26	15	1
1932	5/17	9/17	122	5/1	10/5	156	167	47	37	2
1933	5/20	10/4	136	5/9	10/4	147	190	58	39	3
1934	5/24	9/6	104	5/22	9/21	121	195	59	34	5
1935	6/6	9/9	94	4/30	9/27	149	182	36	26	6

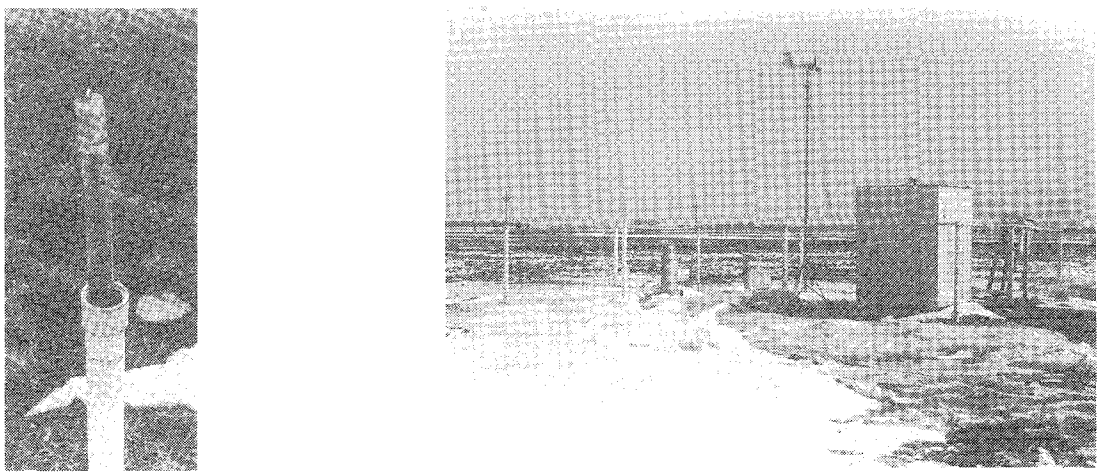
Table 14. Continued

Year	Low Temperatures ≤ 32°F: Last Spring Occurrence	Low Temperatures ≤ 32°F: First Fall Occurrence	Low Temperatures ≤ 32°F: Days Between	Low Temperatures ≤ 28°F: Last Spring Occurrence	Low Temperatures ≤ 28°F: First Fall Occurrence	Low Temperatures ≤ 28°F: Days Between	Total No. Days Minimum Temp. ≤ 32°F	Total No. Days Minimum Temp. ≤ 0°F	Longest Consecutive No. Days Maximum Temp. ≤ 32°F	Longest Consecutive No. Days Maximum Temp. ≤ 0°F
1936	5/13	9/27	136	4/29	9/29	152	198	88	78	38
1937	5/9	9/12	125	4/25	10/7	164	191	71	55	6
1938	5/23	9/18	117	4/22	9/19	149	182	62	32	3
1939	5/12	9/23	133	5/12	9/25	135	181	71	68	5
1940	6/20	9/11	82	5/2	9/25	145	197	44	42	2
1941	5/9	9/25	138	4/22	10/10	170	171	54	31	4
1942	5/14	9/19	127	5/5	9/19	136	180	39	29	2
1943	5/14	9/10	118	5/12	10/15	155	194	74	44	10
1944	5/7	10/1	146	5/7	10/9	154	197	36	22	1
1945	5/29	9/15	108	5/14	9/28	136	185	46	25	2
1946	6/1	9/2	92	5/15	10/11	148	192	61	58	3
1947	5/30	9/22	114	5/28	9/22	116	200	59	24	2
1948	5/28	10/1	125	5/9	10/1	144	188	77	64	5
1949	5/27	9/14	109	4/24	9/28	156	182	64	38	4
1950	5/15	10/2	139	5/1	10/4	155	201	83	37	7
1951	5/11	9/24	135	5/10	9/24	136	178	70	34	7
1952	5/17	9/19	124	5/16	10/2	138	193	70	54	7
1953	6/6	9/21	106	5/16	10/6	142	202	37	31	1
1954	5/30	9/22	114	5/10	10/2	144	194	50	30	7
1955	5/8	9/10	124	5/8	9/11	125	179	62	52	3
1956	5/15	9/14	121	5/1	9/14	135	204	82	37	3
1957	5/9	9/20	133	5/9	9/23	136	174	63	21	3
1958	5/22	9/30	130	5/4	10/5	153	184	35	30	1
1959	5/22	9/10	110	4/26	9/17	143	184	67	61	3
1960	5/11	9/29	140	5/11	10/11	152	201	54	30	2
1961	5/29	9/28	121	5/26	9/28	124	196	46	23	4
1962	5/6	9/19	135	5/6	9/20	136	181	63	28	7
1963	5/25	10/11	138	5/22	10/11	141	180	55	27	6
1964	6/4	8/13	69	6/1	9/11	101	178	52	16	3
1965	5/28	8/28	91	5/19	9/25	128	181	85	72	8
1966	5/14	9/17	125	5/10	9/25	137	192	62	39	9
1967	5/21	9/27	128	5/15	9/27	134	193	73	23	3
1968	5/31	9/27	118	5/31	10/4	125	189	56	34	8
1969	5/20	9/30	132	5/12	10/19	159	181	68	73	4
1970	5/26	9/27	123	5/5	9/27	144	189	66	42	6
1971	5/12	9/18	128	5/11	10/28	169	177	63	75	3
1972	5/8	9/27	141	5/7	10/6	151	178	75	24	5
1973	5/17	9/16	121	5/17	9/16	121	186	49	31	5
1974	5/6	9/3	119	4/9	9/22	165	178	56	69	6
1975	5/15	9/13	120	4/10	10/1	173	182	54	26	2
1976	5/17	9/21	126	5/7	9/23	138	169	53	49	3
1977	5/7	10/2	147	4/25	10/15	172	180	61	51	5
1978	5/1	9/27	148	4/21	10/7	168	171	82	81	3
1979	5/21	9/21	122	5/15	10/12	149	190	88	115	6
90-Year Avg.	5/19	9/21	125	5/8	10/2	149	185	63	42	5

Table 14 also presented the longest consecutive number of days the maximum temperature did not exceed 32°F or 0°F. The average number of consecutive days with temperatures 32°F and less was 42 days. The average number of days with temperatures 0°F and less was 5 days. The greatest number of consecutive days where the temperature was 32°F and lower was 115 days in 1978-1979. The greatest number of consecutive days where the temperature was 0°F and lower occurred during 1935-1936 with 38 days.



Instrument used to record solar radiation (left). Maximum and minimum dial thermometers used to measure soil temperatures at 2-, 4-, and 8-inch depths (right).



Frost-depth gauge furnished by the U.S. Army Corps of Engineers to monitor ground frost (left). View of the weather station located east of the experiment station grounds (right).

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