U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
IN COOPERATION WITH STATE BANK OF WORTHINGTON
CLIMATOGRAPHY OF THE UNITED STATES NO. 20 -- 21

LATITUDE 43°37'
LONGITUDE 95°36'
ELEV. (GROUND) 1593 Feet

CLIMATOLOGICAL SUMMARY

STATION WORTHINGTON, MINNESOTA

MEANS AND EXTREMES FOR PERIOD 1930-1959

Month	Temperature (°F) Means: Daily maximum	Daily minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	** Mean degree days	Precipitation Totals (Inches): Mean	Greatest daily	Year	Snow, Sleet: Mean	Maximum monthly	Year	Greatest daily	Year	Mean number of days: Precip. .10 inch or more	Temperatures Max. 90° and above	Max. 32° and below	Min. 32° and below	Min. 0° and below	Month
(a)	30	30	30	30		30		10	30	30		30	30		30		30	30	30	30	30	
Jan.	23.5	5.3	14.4	62	1944	-30	1936	1628	0.61	1.17	1947	6.8	28.3	1947	16.0	1947	2	0	23	31	12	Jan.
Feb.	27.9	9.1	18.5	65	1958	-30	1933	1311	0.77	1.22	1954	10.4	22.5	1936	11.0	1936	2	0	17	28	8	Feb.
Mar.	38.4	19.9	29.2	81	1939	-19	1948	1190	1.66	1.61	1933	11.1	29.2	1932	10.5	1937	4	0	10	28	2	Mar.
Apr.	56.1	33.9	45.0	88	1931	7	1936	650	2.00	2.13	1955	2.2	7.5	1947	3.5	1949	5	0	1	14	0	Apr.
May	67.2	45.0	56.1	100	1934	22	1946	298	3.38	2.24	1959	0.4	6.0	1938	4.3	1938	7	1	0	2	0	May
June	78.3	56.8	67.6	102	1937	34	1945	67	4.94	4.67	1938	0	0		0		8	4	0	0	0	June
July	84.8	61.4	73.1	110	1936	45	1941	13	3.22	2.91	1939	0	0		0		6	8	0	0	0	July
Aug.	79.5	59.4	69.5	107	1936	36	1935	27	3.57	2.62	1957	0	0		0		6	6	0	0	0	Aug.
Sept.	72.9	49.5	61.2	99	1939+	22	1942	186	2.69	4.41	1938	0.1	1.5	1945	1.5	1945	5	2	0	1	0	Sept.
Oct.	60.9	38.1	49.5	88	1938+	13	1936	505	1.56	1.75	1957	0.3	6.5	1937	6.5	1937	3	0	*	8	0	Oct.
Nov.	41.4	23.3	32.4	78	1950	-10	1937	1044	1.15	2.00	1930	5.6	16.5	1948	7.5	1946	3	0	8	25	1	Nov.
Dec.	28.9	12.2	20.6	65	1939	-26	1933	1404	0.72	0.70	1936	6.5	16.1	1945	7.5	1955	2	0	18	31	6	Dec.
Year	55.0	34.5	44.8	110	1936	-30	1933 1936	8193	26.27	4.67	1938	43.4	28.3	1947	16.0	1947	53	21	77	168	29	Year

(a) Average length of record, years.

T Trace, an amount too small to measure.

** Base 65°F

+ Also on earlier dates, months, or years.

* Less than one half.

CLIMATE OF WORTHINGTON, MINNESOTA

Worthington, county seat of Nobles County, is located in southwestern Minnesota about 10 miles from the Iowa line and 40 miles from the South Dakota border.

The topography is a gently undulating upland plain covered with glacial drift of variable thickness. The city is located near a drainage divide. To the west and south water flows into the Rock River, a tributary of the Missouri River. To the east and north flow is into the Des Moines River, a tributary of the Mississippi River. Lake Okabena about 1000 acres in area borders the southwest edge of the city. Worthington has a continental climate as is typical of a location near the center of a great land mass. The winters are cold with moderate snowfall and the summers warm with precipitation at its maximum. Day to day weather does not lack variety. Frequent, and at times pronounced, changes take place as large scale air masses move through the region on their journey eastward.

Slightly under 18 inches, or about 68 per cent, of the annual precipitation falls during the growing season May through September. Measurable precipitation of 0.01 inch or more can be expected on 95 days during the year, 53 of which will have 0.10 inch or more. Five days during the year can be expected to have one inch or more. There have been considerable variation from the annual average with the least of record 14.49 inches in 1910 and the most 40.50 inches in 1938. The greatest precipitation in any one month was 12.68 inches in May of 1903 and the greatest for a 24 hour period, 8.00 inches on August 20, 1913. Rainfall intensities of 1.25 inch in one hour and 3.00 inches in 24 hours can be expected to occur about once in two years. On the average 45 thunderstorms can be expected each year, some with hail and high winds. Only six tornadoes have been reported in Nobles County during the 44 years of 1916-1959.

The first measurable snowfall occurs in October in about one out of six years with the last occurrence usually in April. However, there have been snows in May with the most noteworthy a six inch fall on May 7-8, 1938. The greatest snowfall in any one year was 68.2 inches in 1951 and the greatest in any one winter 69.3 inches in 1928-1929. January 1929 was the snowiest month with a total of 33.5 inches.

The mean temperature of the winter months of December, January and February is 17.8 degrees. Readings of zero or below can be expected on an average of 29 days during the year. The coldest month on record was January of 1912 when the average temperature was 2 degrees below zero, 25.5 degrees below the normal. The lowest temperature ever recorded was 37 below zero on February 9, 1899. The mean temperature of the summer months of June, July and August is 70 degrees. While summers are warm, the days are not uncomfortable for any prolonged period. Ninety degree temperatures can be expected on about 21 days. Temperatures of 100 degrees are observed with only 35 occurrences in the last 30 years. Of this number 16 were recorded during the unusually warm summer of 1936 with the mercury reaching 110 degrees on July 17.

Wind, humidity and cloud observations have not been made at Worthington but are made at Sioux Falls, S. D., 60 miles west. The following information based on the Sioux Falls record can be considered as fairly representative of conditions at Worthington. The average wind speed is about 11 miles per hour with the highest monthly average, 13.6 mph, in April. From November through May the prevailing direction is northwesterly and southerly the remaining months. Noon time humidity averages 56 per cent, ranging from 52 per cent in July to 66 per cent in March. During a typical year 104 clear, 105 partly cloudy and 156 cloudy days can be expected.

Warm summers, a favorable distribution of sufficient rainfall and exceptionally rich soils have made farming and industries associated with the processing and transportation of farm products the main economy of the area. The principal crops are corn, oats, soy beans and hay.

The following table gives the probability that the temperature indicated will occur on or after a given date in the spring; on or before a given date in the fall.

	PROBABILITY			
TEMPERATURE	20%	50%	80%	DAYS BETWEEN 50% PROBABILITY
32°F	5/16- 9/26	5/ 7-10/ 5	4/28-10/14	151
24°F	4/26-10/12	4/14-10/23	4/ 6-11/ 3	192
16°F	4/ 6-10/30	3/28-11/10	3/18-11/20	227
40°F	6/ 5- 8/30	5/26- 9/12	5/16- 9/25	109
50°F	-	6/19- 7/21	-	32

The latest occurrence of a temperature of 32°F is June 6 and the earliest in the fall September 7.

Joseph H. Strub, Jr.
Weather Bureau State Climatologist
Weather Bureau Office
Minneapolis, Minnesota

Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1930	7.2	31.8	34.4	50.4	57.8	67.2	76.7	73.9	62.4	48.3	37.8	26.0	47.8
1931	28.6	33.9	33.8	50.5	56.3	74.1	75.0	71.6	70.2	54.3	38.9	29.5	51.4
1932	16.0	22.0	23.4	47.6	60.0	70.2	74.2	71.0	60.7	47.7	30.8	17.7	45.1
1933	27.9	15.1	31.6	46.0	57.3	75.6	74.6	68.5	66.6	47.1	32.4	18.2	46.7
1934	20.0	21.4	30.5	46.3	69.4	71.1	74.1	67.7	56.2	54.9	39.4	18.1	47.4
1935	14.7	28.0	37.0	43.7	53.0	64.2	78.3	71.9	63.2	46.4	27.4	18.8	45.6
1936	4.2	- 1.6	32.2	42.0	63.0	66.8	80.7	74.2	65.0	46.4	31.0	23.2	43.9
1937	4.4	15.0	28.4	43.6	60.3	66.0	74.8	76.4	63.4	46.4	31.4	16.7	43.9
1938	14.2	19.0	37.6	47.6	55.6	67.9	74.4	74.8	65.3	57.0	32.2	22.8	47.4
1939	23.6	12.7	32.8	45.4	66.0	69.8	74.6	70.0	66.4	48.6	39.4	30.8	48.3
1940	7.2	20.7	26.8	42.1	56.6	68.4	75.0	68.8	65.4	54.8	27.1	24.0	44.7
1941	17.8	16.0	27.8	49.4	64.2	68.0	73.4	72.8	62.4	49.9	35.3	26.8	47.0
1942	19.0	19.8	33.0	50.0	54.6	66.0	70.4	69.0	55.6	48.1	33.0	14.8	44.4
1943	7.1	20.2	23.8	44.7	53.1	67.4	73.0	70.4	55.9	48.1	29.5	23.0	43.0
1944	27.3	20.0	23.6	40.3	61.0	67.8	69.6	68.2	59.8	49.8	35.8	18.8	45.2
1945	17.2	20.3	37.4	42.4	50.3	60.1	69.4	68.7	58.8	48.5	29.6	12.7	43.0
1946	15.3	18.4	40.8	50.1	53.2	66.2	72.0	67.2	57.9	48.4	31.2	22.2	45.2
1947	20.6	12.9	27.0	41.0	52.8	62.6	71.6	76.6	62.3	56.5	27.4	17.4	44.1
1948	11.8	15.5	26.5	50.0	57.0	64.8	72.7	71.2	66.2	48.7	32.8	18.3	44.7
1949	10.1	11.9	2[illegible].3	44.1	59.9	68.8	73.9	71.8	56.2	49.2	37.5	20.3	44.3
1950	6.1	17.5	23.9	36.4	53.8	66.8	67.6	65.8	60.9	52.0	28.1	14.1	41.1
1951	16.2	19.7	17.4	38.9	59.5	62.2	69.4	67.8	54.5	47.1	26.2	15.3	40.8
1952	11.4	24.6	27.7	46.9	57.1	69.5	72.2	68.6	61.6	44.5	34.9	21.5	44.7
1953	15.5	20.6	30.4	39.3	56.0	68.8	71.2	71.5	60.8	54.7	37.3	20.1	45.5
1954	9.4	31.4	25.9	45.9	51.8	69.0	73.7	69.2	60.7	46.3	37.5	22.4	45.3
1955	15.9	11.5	25.4	52.6	62.0	64.7	77.0	75.8	61.1	48.9	23.1	10.5	44.1
1956	10.6	11.4	23.8	40.0	57.2	72.1	68.8	69.4	58.3	54.4	30.0	22.0	43.2
1957	7.1	19.9	28.1	43.3	53.8	65.1	75.7	67.6	56.9	46.6	32.0	27.1	43.6
1958	21.9	14.1	29.1	44.8	58.9	61.0	68.2	71.3	62.2	50.6	34.6	15.5	44.4
1959	9.9	12.0	30.9	44.3	58.3	69.8	70.4	73.0	59.6	41.6	22.6	28.1	43.4
*1960	12.6	14.8	14.6	44.0	54.9	63.7	71.1	70.0	61.5	49.4	35.6		

*Not included in Means and Extremes Table

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1930	1.24	0.72	2.09	0.85	5.46	6.25	2.20	0.75	4.26	1.16	1.22	0.19	26.39
1931	0.07	0.05	0.78	1.35	1.52	2.66	2.48	2.97	3.62	1.87	3.54	1.27	22.18
1932	1.81	0.42	2.18	1.13	3.93	3.41	2.62	3.56	1.77	0.73	0.50	0.51	22.57
1933	0.62	0.43	3.71	1.56	3.45	2.86	4.22	5.16	5.20	0.59	0.18	0.75	28.73
1934	0.66	0.10	0.69	1.39	0.20	5.99	4.17	5.31	3.18	2.00	1.03	0.40	25.12
1935	0.59	0.86	1.13	3.78	3.09	4.46	1.78	5.14	1.27	1.12	1.78	1.10	26.10
1936	0.81	1.70	2.36	1.66	3.37	2.04	0.86	3.96	1.89	1.02	0.39	1.57	21.63
1937	0.94	0.42	1.61	3.10	4.49	2.88	3.31	4.40	1.73	1.91	0.24	1.09	26.12
1938	0.72	1.74	1.48	2.40	7.28	7.86	3.21	2.40	11.16	0.32	1.16	0.77	40.50
1939	0.34	0.85	0.43	1.82	2.51	5.48	6.35	4.18	0.68	1.26	0.03	0.34	24.27
1940	T	0.82	1.96	2.75	1.20	5.67	0.34	2.77	0.70	2.81	2.72	0.76	22.50
1941	0.61	0.78	1.14	4.08	0.61	5.72	2.69	2.07	5.05	2.91	1.69	0.87	28.22
1942	0.19	0.41	4.55	1.26	6.36	5.57	4.14	4.52	4.66	0.80	0.51	0.50	33.47
1943	0.70	0.42	1.30	0.57	4.29	9.19	7.10	4.99	1.44	1.74	1.39	0.02	33.15
1944	0.94	1.35	0.81	2.38	4.83	5.00	6.04	6.90	2.41	0.52	1.56	0.09	32.83
1945	0.36	1.31	1.16	2.11	5.18	5.09	5.51	1.06	2.30	0.11	0.69	1.86	26.65
1946	0.43	0.85	2.97	0.87	2.85	6.14	2.64	0.76	5.10	3.22	1.37	0.42	27.62
1947	1.89	0.34	0.37	4.80	1.80	6.03	0.30	2.39	1.32	3.16	2.75	0.74	25.89
1948	0.06	1.29	0.64	2.55	2.37	4.78	5.78	1.95	1.91	1.68	2.29	0.71	27.01
1949	1.20	0.03	3.32	0.53	2.24	5.58	2.50	1.63	3.00	2.54	0.17	0.77	23.51
1950	0.68	0.35	1.38	0.89	3.65	3.54	4.98	0.61	3.10	1.20	0.47	0.39	21.24
1951	0.48	1.72	3.18	1.78	4.10	5.54	2.80	3.72	2.92	1.48	0.23	0.96	28.91
1952	1.16	0.72	1.28	0.93	1.80	5.54	1.71	3.39	1.17	0	0.54	0.42	18.66
1953	0.55	1.53	2.33	4.12	4.45	6.51	4.19	5.44	1.18	0.38	1.36	1.74	33.78
1954	0.26	1.42	2.33	2.07	1.98	6.20	3.30	4.45	3.97	2.18	0.18	0.57	28.91
1955	0.37	0.83	0.79	3.82	1.05	2.28	1.88	4.31	0.91	1.42	0.28	0.99	18.93
1956	0.41	0.31	1.34	1.35	4.11	2.02	3.48	4.04	0.44	1.44	2.90	0.35	22.19
1957	0.07	0.33	1.41	1.36	3.54	6.52	2.80	6.75	1.32	3.52	1.43	0.20	29.25
1958	0.05	0.23	0.43	2.04	0.83	4.67	2.69	1.17	0.98	0.14	1.13	0.19	14.55
1959	0.16	0.76	0.67	0.55	8.82	2.61	0.51	6.42	3.30	3.65	0.88	1.04	29.37
*1960	0.44	0.20	1.07	3.71	6.99	2.70	2.82	4.72	5.41	0.49	1.00		

*Not included in Means and Extremes Table

STATION HISTORY

Weather observations at Worthington were first taken December 13, 1893. The observers and dates each served are as follows:

E. L. Porter	December 13, 1893–August 31, 1903
C. W. Davis	April 24, 1904–September 30, 1904
D. Bergstresser	October 1, 1904–September 30, 1905
W. J. Carpenter	October 1, 1905–June 12, 1910
M. P. Mann	June 13, 1910–September 18, 1934
J. C. Moberg	September 19, 1934–September 30, 1934
G. F. Goodsell	October 1, 1934–September 30, 1936
J. V. Westerlund	October 1, 1936 - Present

The equipment at the station includes self registering maximum and minimum thermometers housed in a standard instrument shelter and a rain gage giving 24 hour amounts of precipitation. In July of 1940 a recording rain gage was installed. This gage records precipitation on a graph giving not only amounts but the actual time precipitation fell.

STATION HISTORY - Cont'd.

All records are on file at the Weather Bureau Office, Minneapolis. The earlier records included prevailing wind direction and cloudiness, as well as temperature and precipitation. Published records prior to 1910 are found in a number of different publications. Since 1910 the records have been published in the "Minnesota Climatological Data Bulletin". The record from the recording rain gage is published in the bulletin "Hourly Precipitation Data, Minnesota". Summarized climatological data for Worthington, as well as other Minnesota stations, can be found in the "Climatic Summary of the United States, Section 45, Southwestern Minnesota" for the years prior to 1931. For the years 1931-1952 the record is found in the publication "Climatic Summary of the United States, Minnesota No. 17".