

U. S. DEPARTMENT OF COMMERCE/WEATHER BUREAU  
 IN COOPERATION WITH Consumers Public Power District  
 CLIMATOGRAPHY OF THE UNITED STATES NO. 20 - 25  
**CLIMATOLOGICAL SUMMARY**



LATITUDE 42° 27'  
 LONGITUDE 98° 38'  
 ELEV. (GROUND) 1975

MEANS AND EXTREMES FOR PERIOD 1932 - 1961

Month	Temperature (°F)								** Mean degree days	Precipitation Totals (Inches)							Mean number of days					Month			
	Means				Extremes					Mean	Greatest daily	Year	Snow, Sleet			Precip. .10 inch or more	Temperatures		32° and below	32° and below	0° and below				
	Daily maximum	Daily minimum	Monthly	Record highest	Year	Record lowest	Year	Mean					Maximum monthly	Year	Greatest daily		Year	90° and above					32° and below	32° and below	
(a)	29	29	29	29	29	29	29	11	29	29															
Jan.	32.4	9.9	21.2	66	1944	-25	1959	1353	.53	1.05	1949	5.3	16.0	1937	10.0	1937	1	0	15	30	8				Jan.
Feb.	35.0	12.6	23.8	75	1958	-32	1936	1101	.72	.96	1955	6.4	19.0	1936	9.0	1938	2	0	12	27	6				Feb.
Mar.	45.4	22.7	34.1	91	1943	-21	1960	1024	1.41	2.60	1949	9.7	31.5	1949	18.0	1949	4	*	7	26	2				Mar.
Apr.	60.6	35.6	48.1	92	1939+	-5	1936	544	2.20	1.85	1935	2.9	10.0	1945	9.0	1960	5	*	*	12	*				Apr.
May	71.6	47.3	59.5	107	1934	20	1954	216	3.23	1.88	1942	0.3	4.0	1947	3.0	1947	7	1	*	2	0				May
June	81.7	57.3	69.5	107	1937	34	1956	43	4.06	3.05	1947	0	0				7	7	0	0	0				June
July	89.9	62.9	76.4	112	1936	43	1952	4	2.49	4.84	1937	0	0		0		5	15	0	0	0				July
Aug.	88.1	61.3	74.7	110	1936	37	1935	5	2.34	3.28	1933	0	0		0		4	14	0	0	0				Aug.
Sept.	78.3	50.7	64.5	104	1933	24	1945	141	1.94	3.78	1946	T	1.5	1934	1.5	1934	4	5	0	1	0				Sept.
Oct.	66.8	38.8	52.8	96	1947	10	1936	421	1.12	2.95	1946	0.1	T	1957+	T	1957+	2	*	*	7	0				Oct.
Nov.	48.2	24.4	36.3	81	1955	-19	1959	870	.72	1.35	1948	4.0	16.0	1940	12.0	1948	2	0	4	24	1				Nov.
Dec.	37.4	15.8	26.7	76	1939	-18	1951	1215	.46	1.03	1945	4.8	17.0	1948	12.0	1953	2	0	11	30	4				Dec.
Year	61.3	36.6	49.0	112	1936	-32	1936	6937	21.22	4.84	1937	33.5	31.5	1949	18.0	1949	45	42	49	159	21				Year

(a) Average length of record, years.

+ Also on earlier dates, months, or years.

T Trace, an amount too small to measure.

\* Less than one half.

\*\* Base 65°F

CLIMATE OF O'NEILL, NEBRASKA

O'Neill, the county seat, lies in the east-central portion of Holt County. Holt, one of the larger counties, is located in the north-central part of Nebraska near the eastern end of the sandhills. There is a steady increase in elevation from 1400 feet along the Niobrara River in the northeast corner to 2400 feet in the southwest corner of the county. Winds from the east through the north have a pronounced upslope flow. The county is drained by the Niobrara and Elkhorn rivers.

The climate is typical of that normally found at this latitude near the center of a large continent. The average annual precipitation is between 21 and 22 inches, but the variations from the average are large. Out of 58 years of record, 7 show less than 16 inches of precipitation and 8 more than 28 inches. Temperature changes are frequent, both day to day and season to season. These changes coupled with low humidities when the temperatures are either very high or very low result in an invigorating climate.

The majority of the land in Holt County is devoted to grazing and the raising of hay. A small percentage of the land is planted to grains and sorghums. Water for the few acres that are under irrigation is supplied mainly from wells.

**WINTER:** Precipitation is generally light and as a rule occurs as snow during periods when the weather is turning colder. Normally only 8% of the annual precipitation falls during the winter months. However, in some seasons (fall, winter, and spring) the total snowfall is very heavy. In the 1948-1949 season the snowfall amounted to 83.6 inches and the 1949-1950 season had 56.7 inches. The snow is often accompanied by high winds that blow it into huge drifts.

O'Neill is in the path of most of the outbreaks of cold air that move down from northwestern Canada. The extremely cold air that is associated with these outbreaks usually remains over the area only a short time before it is replaced by warmer air from the west. In about 45% of the winters the lowest temperature falls into the 10° below to 19° below zero range, in most of the other years it drops into the 20° below to 33° below zero range. Day-time temperatures of 70 or above have been reported in every month of the year. However, in most years the highest is in the 50-64 degree range during January and in the 55-69 degree range during the months of December and February.

**SPRING:** The weather is extremely variable during the spring, frequently alternating between spells of warm humid days and those of the winter's cold dry ones. This is especially true early in March; and then the changes gradually diminish in the frequency and severity as the spring advances. The temperature has reached as high as 91° in March and as low as 21° below zero. In about 2 years out of 10 temperatures of 10°

below zero or lower are recorded in March; and in 7 out of 10 years the high is in the 70° to 84° range. In about 8 to 9 years out of 10, April's lowest temperature is between 10° and 24°, - May's between 25° and 39°. In a like number of years the highest in April is between 75° and 89° and in May between 85° and 99°.

Much of the March precipitation falls as snow; about 7 Aprils out of 10 have some snow, and on a few occasions snow has fallen in May. Thunderstorms account for an increasing proportion of the precipitation as spring advances.

**SUMMER:** Nearly all of the summer precipitation occurs during showers and thunderstorms. At times the showers become heavy and may be accompanied by hail and damaging winds. The infiltration rate of most of the soils in the vicinity of O'Neill is rather high which helps alleviate the runoff problems associated with heavy downpours.

In most years the highest temperature in June is between 90° and 104° and in July and August between 95° and 109°. In about one summer out of 6 the temperature fails to reach 100 degrees.

**FALL:** There are occasional outbreaks of cool air from the north by the latter part of August. These cool periods become increasingly frequent during the autumn season. Both the thunderstorm activity and the amount of precipitation received drop off rapidly. There are many sunny pleasant days and cool nights. The highest temperature reached in September in the majority of years is in the 90° - 104° range, falling to the 80° - 94° range in October and the 65° - 79° range in November. Temperatures ordinarily drop into the 30's at night sometime in September, the 20's in October, and the teens in November. The first zero reading of the fall occurs before the end of November in about two years out of five.

**WIND:** The prevailing direction is south to southeast from May through September and northwest the remainder of the year. Spring and early summer are the windiest times of the year. Occasional very strong winds of short duration are associated with thunderstorms during the spring summer. Fall has many days with light winds. In the winter months the higher winds occur with the outbreak of cold air following the passage of a deep low pressure system through the area.

**EXTREMES OF RECORD:** The lowest temperature in 55 years of record in O'Neill is 33° below on February 10, 1899. The highest, 112° on July 16 and 17, 1936. The wettest month in 58 years of record is 10.95", June 1947. The wettest year 31.90", 1929. The driest year 11.24", 1894.

(over)

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Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1932	19.4	28.6	29.6	32.6	62.6	71.0	78.1	75.8	65.3	49.8	37.8	22.6	49.4
1933	33.8	22.2	37.0	48.8	57.4	79.4	78.6	70.7	71.8	53.2	41.2	29.9	52.0
1934	30.8	29.9	37.3	42.3	71.4	74.4	83.0	76.6	59.6	57.6	41.6	25.5	53.3
1935	23.1	34.3	41.6	44.2	52.0	66.6	81.4	75.8	65.4	50.2	33.8	26.6	49.4
1936	11.5	1.5	39.0	45.8	65.2	71.5	85.6	80.6	69.6	51.0	37.0	28.1	48.9
1937	7.6	20.4	33.4	45.8	62.4	69.0	79.5	80.9	67.2	51.4	34.0	26.0	48.2
1938	25.4	22.8	41.1	49.8	56.4	68.5	75.2	77.0	66.0	58.4	32.4	30.0	50.4
1939	32.8	19.0	40.0	54.1	67.4	70.7	81.4	74.0	71.6	54.0	41.7	35.0	53.1
1940	9.6	24.6	34.0	47.9	60.0	70.8	79.8	79.0	70.4	59.5	31.2	29.0	49.2
1941	24.3	23.8	32.8	51.0	63.8	68.5	75.8	75.0	64.6	—	40.6	34.8	—
1942	27.2	24.1	35.5	51.8	56.2	67.8	75.0	73.7	68.2	51.2	36.2	24.8	48.5
1943	14.2	31.3	29.2	39.6	53.6	68.2	75.6	74.2	60.7	51.2	34.2	28.2	48.0
1944	27.9	24.6	33.4	44.1	53.0	67.8	75.5	72.7	61.8	53.2	32.1	27.2	47.2
1945	22.2	24.6	34.4	44.1	53.0	61.2	72.2	72.6	61.8	53.8	32.2	27.2	47.2
1946	26.8	29.3	44.8	55.4	55.2	69.5	73.4	71.1	62.6	49.7	33.9	28.6	50.2
1947	26.5	19.8	30.7	44.2	55.4	65.0	74.2	79.6	65.8	58.4	31.6	26.0	48.1
1948	19.4	21.7	33.0	48.7	60.1	67.4	75.0	74.2	68.8	52.2	34.3	22.1	48.7
1949	7.2	15.8	30.3	48.7	61.9	69.7	75.5	74.4	60.5	50.8	44.1	24.3	47.0
1950	10.6	21.8	28.0	42.6	55.8	68.8	69.1	70.0	62.2	56.3	—	—	—
1951	—	—	—	—	—	—	—	—	—	—	—	—	—
1952	22.1	32.2	29.7	49.3	59.1	74.0	76.2	72.4	66.2	49.0	35.0	26.0	49.3
1953	26.1	26.7	37.2	42.7	57.1	72.0	74.6	74.2	65.3	56.2	41.3	26.2	49.9
1954	18.8	40.8	30.7	51.0	54.6	69.7	78.5	72.9	65.0	48.3	42.2	30.2	50.2
1955	23.8	18.3	33.4	55.6	65.7	65.7	80.0	78.6	67.3	53.6	29.5	17.8	48.9
1956	18.3	20.9	34.3	42.0	60.5	74.4	—	74.6	66.0	58.5	36.6	30.9	—
1957	13.8	29.2	33.6	45.7	57.2	66.9	78.2	74.4	61.2	50.1	36.0	33.6	48.3
1958	27.2	18.7	28.8	47.2	62.5	66.8	70.4	73.8	64.7	46.5	—	25.0	—
1959	19.2	19.6	37.5	47.4	59.0	72.8	72.8	76.8	61.0	46.5	29.2	34.3	47.8
1960	18.2	15.7	21.7	47.7	57.5	66.3	72.8	72.1	62.0	51.3	37.6	25.0	45.7
1961	22.8	32.4	36.5	44.1	57.1	69.1	74.6	73.9	59.4	52.1	35.7	20.3	48.2

CLIMATE OF O'NEILL, NEBRASKA (continued)

**FREEZE PROBABILITIES:** The average date of the last 32° temperature in the spring is May 5, and the first in the fall is October 1. There is a 90% chance that the last 32° or lower temperature in the spring will occur after April 19, 70% chance that it will occur after April 29, 30% after May 12, and only 10% after May 21. In the fall there is a 10% chance that the first 32° or lower temperature will occur before September 17th, 30% before September 26th, 70% before October 7th, and 90% before October 16th.

**PRECIPITATION PROBABILITIES:** There is only about 5% chance of receiving .60 inch in a particular week's time in January, climbing to 5% chance by the first week in February, 13% by March 1st, 24% by April 1st, 42% by May 1st, 54% by June 1st and then starting a decline reaching 37% by July 1st and a low of 31% during the 3rd week of July before climbing to a secondary peak of 43% during the second week in August. This is followed by a rather sharp decline to about 30% in early September and then a steady fall to 20% by October 1st, 12% November 1st and 8% by December 1st.

Based upon 58 years of record out of the period 1891-1961, one year in ten has:

	Equal to or: Less than	More than	Equal to or: Less than	More than
January	.07	.95	October	.08
February	.13	1.45	November	.10
March	.37	2.50	December	.05
April	.60	5.47	Annual	15.55
May	1.14	5.62		29.33
June	1.33	6.68		
July	.65	4.18		
August	.94	4.53		
September	.58	3.96		

Richard E. Myers  
State Climatologist  
Weather Bureau  
Lincoln, Nebraska

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1932	.60	1.21	.78	1.83	3.19	6.61	2.96	3.28	.64	.86	.70	.48	22.58
1933	.46	.40	1.80	1.24	2.52	.72	2.75	4.53	1.17	.86	.43	.48	16.52
1934	.46	.50	2.11	.06	1.34	4.36	1.89	1.03	2.00	.59	.87	.25	15.55
1935	.51	.85	5.97	4.88	4.88	4.97	.87	1.32	.51	.53	1.09	.45	22.31
1936	.88	1.45	1.02	1.19	4.12	2.68	.44	1.41	.56	.48	.57	.51	11.15
1937	1.33	.16	.72	1.60	3.25	2.70	6.63	1.76	.53	1.67	.75	.71	21.00
1938	.55	.75	1.71	2.94	4.28	3.67	2.28	2.69	2.18	.68	.44	.42	17.64
1939	.34	.99	.99	1.47	1.84	2.47	1.79	2.02	1.08	.53	.71	.80	17.32
1940	.49	.69	2.90	3.26	.05	2.79	1.90	.86	.69	1.80	1.17	.78	21.88
1941	.80	.58	.56	4.09	1.74	3.50	2.39	2.11	3.57	2.02	.10	.10	22.26
1942	.80	.79	2.16	6.50	3.88	3.88	.83	2.43	3.96	.20	.11	.09	21.73
1943	.27	.27	.46	2.65	1.34	4.48	.92	2.80	2.39	1.55	.47	.32	17.60
1944	1.60	.87	.58	3.03	5.74	5.33	2.47	2.47	2.79	1.21	.94	.32	26.14
1945	.22	.80	2.42	2.40	4.70	3.88	1.74	3.72	1.72	.04	.26	1.03	18.83
1946	.27	.49	3.19	1.18	4.40	2.47	3.01	1.08	6.39	4.71	1.49	.35	29.33
1947	.72	.20	.37	1.95	2.29	10.95	.65	2.39	1.18	.98	1.57	.54	23.79
1948	.18	.23	.34	2.01	1.02	8.30	3.77	3.83	2.75	.83	1.67	.53	25.46
1949	.66	1.06	5.58	1.42	4.03	3.35	.86	4.01	2.02	1.57	.31	.40	26.48
1950	.60	1.06	2.85	.55	4.12	3.32	4.25	3.10	3.94	—	—	—	—
1951	—	—	—	—	—	—	—	—	—	—	—	—	—
1952	.51	.84	1.54	1.77	4.01	1.51	1.00	2.59	.45	.00	1.21	.74	16.17
1953	.27	1.48	.81	4.85	5.37	2.88	4.22	1.05	.45	.39	1.15	.06	23.98
1954	.03	.81	1.82	2.29	2.60	4.88	1.39	2.20	2.66	1.64	.28	.05	20.35
1955	.50	1.51	1.18	2.05	2.05	5.55	1.20	2.20	2.60	.42	.04	.74	18.72
1956	.50	.36	.57	2.43	.65	3.13	2.66	2.06	.65	1.05	.99	.27	15.32
1957	.07	.05	1.57	1.65	4.74	5.35	3.14	1.29	2.61	2.22	.90	.36	23.95
1958	.26	1.12	.41	3.30	2.55	2.08	9.17	1.35	1.41	.71	.57	.09	22.31
1959	.68	.58	1.92	1.19	3.77	2.85	2.51	4.75	1.98	3.40	1.41	1.15	26.19
1960	.58	1.29	1.71	4.13	5.39	5.47	1.42	3.46	2.10	.42	.86	.35	27.18
1961	.20	.32	1.45	.60	3.81	3.22	3.05	3.00	3.16	2.01	.94	.48	22.24

Amount is wholly or partially estimated.

STATION HISTORY

The earliest weather observations of record at O'Neill were made by Mr. P. C. Corrigan in 1897. Records began again in 1890 and have continued to date. However, a number of breaks appear in the record including the periods 1905-1912, 1911-1915, 1916, and 1951. Changes in official observers have been rather frequent, nine having served since the turn of the century. Many of these observers have furnished excellent records. Mr. Harry Bowen served for nineteen years and Mr. Elmer Bowen for fourteen years. The observations are currently being taken at Radio Station KRXK.