

U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
 IN COOPERATION WITH PONCA CITY CHAMBER OF COMMERCE
 CLIMATOGRAPHY OF THE UNITED STATES NO. 20 - 34

LATITUDE 36° 42'
 LONGITUDE 97° 05'
 ELEV. (GROUND) 1019 feet

CLIMATOLOGICAL SUMMARY

STATION PONCA CITY, OKLAHOMA
 Revised May 1963

Means for Period 1931 - 1960; Extremes 1931 - 1962

| 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 | | | | | |
| | 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 | | 0° and below |
| | | | | | | | | | | | | | | | | | | | | | | |
| (a) | 30 | 30 | 30 | 32 | | 32 | | 30 | 30 | 32 | | 30 | 32 | 32 | | 30 | 30 | 30 | 30 | 30 | | |
| Jan. | 47.8 | 26.4 | 37.1 | 80 | 1950 | -11 | 1947 | 865 | 1.04 | 1.50 | 1947 | 2.5 | 18.9 | 1949 | 6.0 | 1949 | 2 | 0 | 4 | 22 | 1 | Jan. |
| Feb. | 53.2 | 29.8 | 41.5 | 87 | 1962 | -9 | 1933 | 658 | 1.23 | 1.64 | 1951 | 2.1 | 14.5 | 1960 | 6.5 | 1960 | 3 | 0 | 2 | 17 | * | Feb. |
| Mar. | 61.2 | 36.3 | 49.1 | 94 | 1940 | -2 | 1948 | 508 | 1.92 | 1.92 | 1933 | 1.3 | 9.0 | 1942 | 5.0 | 1958 | 4 | * | 1 | 12 | * | Mar. |
| Apr. | 73.0 | 42.0 | 60.5 | 97 | 1955+ | 18 | 1938 | 177 | 3.13 | 2.14 | 1957 | .3 | 7.0 | 1938 | 7.0 | 1938 | 5 | 1 | 0 | 2 | 0 | Apr. |
| May | 81.1 | 57.3 | 69.2 | 101 | 1939 | 31 | 1954 | 37 | 4.71 | 4.30 | 1937 | 0 | 0 | 0 | 0 | 0 | 7 | 4 | 0 | * | 0 | May |
| June | 90.8 | 66.7 | 78.8 | 109 | 1953 | 41 | 1950 | 0 | 4.43 | 4.45 | 1942 | 0 | 0 | 0 | 0 | 0 | 6 | 18 | 0 | 0 | 0 | June |
| July | 96.0 | 71.0 | 83.5 | 116 | 1936 | 52 | 1952+ | 0 | 3.60 | 5.60 | 1945 | 0 | 0 | 0 | 0 | 0 | 4 | 25 | 0 | 0 | 0 | July |
| Aug. | 95.9 | 70.4 | 83.2 | 116 | 1936 | 50 | 1956+ | 0 | 3.09 | 3.40 | 1941 | 0 | 0 | 0 | 0 | 0 | 4 | 25 | 0 | 0 | 0 | Aug. |
| Sept. | 87.7 | 62.1 | 74.9 | 109 | 1947+ | 36 | 1939 | 12 | 3.52 | 5.36 | 1961 | 0 | 0 | 0 | 0 | 0 | 5 | 13 | 0 | 0 | 0 | Sept. |
| Oct. | 76.5 | 51.3 | 63.9 | 98 | 1947 | 25 | 1957 | 146 | 2.41 | 4.95 | 1955 | T | T | 1941 | T | 1941 | 4 | 2 | 0 | 1 | 0 | Oct. |
| Nov. | 60.5 | 37.3 | 46.9 | 86 | 1937 | 3 | 1959 | 483 | 1.70 | 2.76 | 1931 | 0.3 | 6.0 | 1951 | 3.0 | 1951 | 3 | 0 | 1 | 10 | 0 | Nov. |
| Dec. | 50.8 | 29.7 | 40.2 | 80 | 1955 | -4 | 1958 | 769 | 1.33 | 2.80 | 1933 | 1.5 | 11.5 | 1943 | 6.4 | 1932 | 2 | 0 | 2 | 20 | * | Dec. |
| Year | 72.9 | 48.9 | 60.9 | 116 | Aug. 1936+ | -11 | Jan. 1947 | 3655 | 32.11 | 5.60 | July 1945 | 8.0 | 18.9 | Jan. 1949 | 7.0 | Apr. 1938 | 49 | 88 | 10 | 84 | 1 | 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 computed from mean monthly temperature rather than the actual degree-day averages.

CLIMATE OF PONCA CITY, OKLAHOMA

Ponca City is located in southeastern Kay County in north-central Oklahoma about 22 miles south of the northern boundary of Oklahoma. The Arkansas River is the eastern boundary of Kay County and flows south about one mile east of Ponca City. The Chikaskia and Salt Fork Rivers join about 10 miles southwest of Ponca City and they in turn flow into the Arkansas River about 10 miles south of Ponca City. Ponca Lake located five miles northeast of Ponca City covers 700 acres but has no effect on the climate of Ponca City. The surface of the land is level black loam soil. Many large trees grow in the City and along the streams and rivers.

The prevailing climate is relatively temperate and is of continental origin. The weather from day to day is governed by air masses and pressure systems characteristic of the Great Plains Region. These air mass movements cause distinct fluctuations and pronounced seasonal variations in most all of the weather elements; especially noticeable are those of temperature and precipitation. Cold Canadian air often invades the area during the winter months and occasionally is severe causing rather low temperatures, whereas during the summer months the south and west winds sometimes cause long periods of hot and dry weather. Although wind, humidity, and sunshine records are not kept for Ponca City, averages of data kept at stations in adjacent areas represent good approximations, namely: the prevailing wind direction is southerly with an average speed of 12 to 15 miles per hour, relative humidities average near 80% during early morning hours to near 50% during the afternoon hours, and the percent of possible sunshine averages near 65% and ranges from near 50% in winter to near 80% in summer.

The spring season of March, April, and May is the period of many variables and rapid changes including cold, warm, windy, fair and stormy. The greatest number of tornadoes and severe local storms occur during this period. Although local blowing dust and the severe dust storms of the Southwestern Great Plains sometimes damage the farmlands of Kay County, the effects in Ponca City are more annoying rather than damaging. During this season 50% of the annual precipitation and 20% of the annual snowfall occurred.

Only once during this period of record has a significant amount of snow and/or sleet been recorded in April, namely April 7, 1938, when 7 inches fell in one 24-hour period.

The summer season of June, July, and August receives a high percent of possible sunshine resulting in quite warm temperatures and occasionally rather long periods without rain which is characteristic of the southwest. Temperatures of 100° or higher occur on an average of 24 days per year; however, the suspected discomfort is considerably lessened by the good prevailing breezes and accompanying low humidities. The greatest number of consecutive days when the temperature was 100° or higher was 26 in July and August 1936; however, the greatest number in any one year was 64 in 1936. Slightly more rainfall was recorded during the summer season which was 35% of the annual total, and it occurred mostly as showers and thunderstorms.

The fall season of September, October, and November is the long pleasant transition period between the extremes of summer and the cold spells of winter. It is the period of many tranquil days with a high percent of possible sunshine and a lower frequency of occurrence of rain. During the season, 24% of the annual rainfall was recorded, and although the frequency of occurrence is less, the individual storm amounts are usually greater. Snowfall for this season was only 4% of the annual total, and all significant amounts fell in November.

The winter season of December, January, and February is considered mild with numerous outbreaks of cold air; however, few are severe and last only a few days. Evidence of this is shown by the fact that on the average only 10 days per year have maximum temperature readings of 32° or less, and that only 14 of the past 32 years have had below zero readings. The longest period of severe cold was in January 1940 when 9 consecutive days of below freezing temperatures were recorded. During the winter season 11% of the annual precipitation and 76% of the annual snowfall was recorded.

The average growing season in Ponca City is 210 days, with the average date of last freeze as April 5, and the average date of first fall freeze as October 31, (Continued under Total Precipitation Table)

Total Precipitation (Inches)

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Ann'l |
|------|------|------|------|------|-------|-------|-------|------|-------|------|------|-------|-------|
| 1931 | .86 | 1.47 | 2.48 | 3.47 | 5.78 | 3.26 | 3.77 | 2.76 | .89 | 1.76 | 7.79 | .20 | 34.49 |
| 1932 | 2.59 | 1.60 | 2.63 | 2.86 | 5.98 | 5.38 | 3.72 | 2.68 | 1.89 | 1.60 | 4.16 | 34.19 | 30.18 |
| 1933 | 1.57 | 2.93 | 2.55 | 2.55 | 2.74 | 1.13 | 2.35 | 7.61 | 2.25 | 2.38 | .77 | 3.36 | 29.25 |
| 1934 | 1.42 | .82 | 2.97 | 4.07 | 4.98 | 2.26 | .21 | 2.10 | 4.59 | 2.46 | 2.86 | 1.60 | 30.95 |
| 1935 | 1.08 | 1.11 | 2.81 | 2.97 | 7.60 | 3.60 | .14 | .86 | 4.31 | 2.16 | 3.66 | 1.74 | 31.94 |
| 1936 | .33 | .01 | .00 | .44 | 3.94 | 4.88 | .26 | .30 | 4.66 | 2.11 | .40 | 1.40 | 18.73 |
| 1937 | 1.03 | .33 | 1.57 | 1.75 | 6.62 | 4.23 | 1.80 | 1.15 | 3.44 | 1.25 | 1.46 | 27.39 | 30.46 |
| 1938 | 1.37 | 2.10 | 2.57 | 1.49 | 6.90 | 3.46 | 3.48 | 5.04 | 2.79 | .07 | 3.34 | 30.46 | 30.46 |
| 1939 | 1.75 | .50 | 1.63 | 1.70 | 3.93 | 7.28 | 1.52 | 4.84 | .07 | 1.47 | .98 | 26.95 | 31.16 |
| 1940 | 1.19 | 1.99 | .37 | 4.27 | 2.98 | 2.02 | 3.00 | 5.32 | 4.19 | .83 | 4.05 | .95 | 31.16 |
| 1941 | 1.31 | 1.57 | .81 | 5.48 | 3.45 | 4.40 | 2.55 | 5.92 | 5.25 | 9.35 | 1.26 | 1.86 | 43.21 |
| 1942 | .65 | 2.18 | 1.37 | 7.89 | 1.91 | 8.32 | 3.83 | 5.23 | 2.92 | .39 | 2.37 | 37.38 | 37.38 |
| 1943 | .13 | .55 | 1.49 | 1.66 | 10.49 | 4.19 | 2.21 | 5.09 | 2.89 | .01 | 2.65 | 32.18 | 32.18 |
| 1944 | .37 | 1.03 | 2.43 | 5.51 | 2.15 | 6.87 | 3.47 | 5.34 | 7.66 | 1.61 | 3.39 | 2.84 | 42.67 |
| 1945 | .76 | .63 | 5.04 | 7.12 | .69 | 5.28 | 6.76 | .75 | 10.81 | .47 | P | .31 | 39.62 |
| 1946 | 2.49 | 1.55 | 3.29 | 1.65 | 4.03 | 2.63 | 1.43 | .97 | 2.19 | 2.20 | 2.21 | .55 | 25.15 |
| 1947 | 1.66 | 1.16 | 1.85 | 8.21 | 6.14 | 2.94 | 2.57 | 1.86 | 1.47 | .24 | 1.30 | 1.43 | 30.03 |
| 1948 | 1.14 | 1.00 | 3.63 | 2.49 | 3.91 | 3.18 | 3.26 | 4.87 | .49 | .67 | 4.03 | 1.46 | 32.15 |
| 1949 | 5.73 | 1.68 | 1.69 | 2.07 | 6.83 | 2.55 | 2.68 | 5.13 | 2.18 | .00 | 1.44 | .74 | 34.58 |
| 1950 | .36 | .99 | .21 | .46 | 6.66 | 3.00 | 10.38 | 5.54 | .59 | 1.25 | .45 | P | 29.89 |
| 1951 | 1.20 | 3.44 | .64 | 2.36 | 6.30 | 9.23 | 8.28 | 1.35 | 6.00 | 4.21 | 3.02 | .14 | 46.17 |
| 1952 | .22 | 1.10 | 3.39 | 3.39 | .83 | 3.49 | 1.97 | 3.19 | .34 | .00 | 2.65 | 1.27 | 21.86 |
| 1953 | .02 | 1.76 | 3.17 | 2.38 | 2.99 | 3.65 | 5.20 | .72 | 1.11 | 1.72 | 1.74 | 1.28 | 25.73 |
| 1954 | .63 | 1.67 | .34 | 3.96 | 2.47 | 2.24 | .04 | 3.49 | 4.22 | .02 | .02 | .43 | 30.17 |
| 1955 | .71 | 1.54 | .94 | 1.87 | 10.73 | 2.71 | .70 | 2.75 | 2.35 | 6.44 | .00 | .08 | 30.82 |
| 1956 | .45 | 1.13 | .77 | 1.12 | 2.81 | 1.48 | 3.01 | .73 | 1.91 | 1.46 | 1.47 | 1.47 | 16.83 |
| 1957 | .85 | 1.40 | 2.39 | 6.87 | 11.96 | 14.19 | .91 | .30 | 4.93 | 1.61 | 2.67 | .77 | 49.45 |
| 1958 | 1.39 | .94 | 4.72 | 2.46 | 1.33 | 8.41 | 5.83 | 5.34 | 5.80 | .07 | 1.65 | 38.46 | 38.46 |
| 1959 | 1.10 | .88 | 2.35 | 2.85 | 3.94 | 2.25 | 11.65 | 5.47 | 8.56 | .09 | 2.30 | 42.56 | 42.56 |
| 1960 | .93 | 2.15 | 1.01 | .55 | 3.35 | 1.86 | 9.05 | 7.53 | 1.34 | 2.09 | .24 | 2.34 | 34.44 |
| 1961 | .00 | 2.08 | 1.77 | 2.55 | 6.14 | 2.43 | 7.40 | 4.66 | 7.45 | 5.32 | 3.66 | 1.09 | 44.55 |
| 1962 | .30 | .46 | .93 | 1.74 | 2.54 | 3.70 | 4.49 | 2.73 | 3.61 | 2.81 | 1.27 | 1.81 | 26.99 |

Continued - CLIMATE OF PONCA CITY, OKLAHOMA

The latest spring freeze occurred May 3, 1954, when a 31°F temperature was recorded, and the earliest fall freeze occurred October 7, 1952, when a 27°F temperature was recorded. Variation in the length of the growing season has ranged from 177 days in 1954 to 246 days in 1946.

During the past 88 years there have been 39 tornadoes reported in Kay County. Of these, only five were sighted in or near Ponca City, and resulted in little if any damage, no injuries, and only five deaths as a result of the tornado on April 28, 1893. Although four of the tornadoes that struck Kay County resulted in damage of over \$100,000 each, only one would be considered a major disaster, namely that which struck Blackwell on May 25, 1956, which resulted in 20 deaths, 280 injuries, and \$6,000,000 property damage.

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Average Temperature (°F)

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Ann'l |
|------|------|------|------|------|------|------|------|------|-------|------|------|------|-------|
| 1931 | 43.7 | 46.9 | 44.6 | 56.8 | 64.8 | 80.2 | 83.6 | 80.2 | 82.2 | 68.4 | 54.4 | 45.0 | 62.6 |
| 1932 | 38.2 | 47.8 | 52.0 | 61.4 | 69.6 | 76.0 | 83.7 | 81.1 | 78.0 | 62.6 | 52.7 | 43.0 | 60.0 |
| 1933 | 44.9 | 47.0 | 43.6 | 64.0 | 71.8 | 82.9 | 79.1 | 78.0 | 76.4 | 62.6 | 49.0 | 41.3 | 63.0 |
| 1934 | 40.8 | 43.8 | 42.8 | 61.2 | 67.1 | 84.2 | 85.8 | 86.1 | 82.1 | 67.4 | 48.5 | 44.6 | 63.0 |
| 1935 | 40.8 | 45.8 | 57.0 | 67.3 | 75.5 | 84.6 | 85.9 | 85.8 | 72.8 | 66.7 | 52.2 | 37.8 | 60.8 |
| 1936 | 33.4 | 31.4 | 56.2 | 61.2 | 72.4 | 82.2 | 89.4 | 90.6 | 77.2 | 59.8 | 47.8 | 43.4 | 61.9 |
| 1937 | 28.8 | 39.2 | 45.6 | 60.0 | 70.4 | 78.1 | 84.0 | 87.1 | 75.0 | 61.4 | 45.5 | 37.0 | 59.5 |
| 1938 | 40.9 | 44.0 | 57.5 | 60.0 | 69.4 | 78.3 | 84.2 | 85.8 | 76.4 | 69.6 | 49.0 | 41.3 | 63.0 |
| 1939 | 43.4 | 37.2 | 53.6 | 59.3 | 72.1 | 78.8 | 86.1 | 83.0 | 81.6 | 67.4 | 48.5 | 44.6 | 63.0 |
| 1940 | 21.4 | 39.3 | 51.1 | 59.8 | 68.2 | 77.5 | 82.2 | 79.4 | 73.9 | 68.0 | 45.5 | 42.3 | 59.1 |
| 1941 | 40.0 | 40.2 | 45.9 | 62.2 | 72.0 | 76.0 | 83.0 | 83.3 | 74.8 | 63.4 | 48.9 | 43.4 | 61.1 |
| 1942 | 36.2 | 39.2 | 51.2 | 63.2 | 68.2 | 77.2 | 82.3 | 80.7 | 71.6 | 62.7 | 52.0 | 38.2 | 60.3 |
| 1943 | 36.4 | 46.6 | 45.4 | 64.4 | 65.6 | 80.1 | 84.8 | 87.8 | 72.6 | 60.8 | 49.8 | 35.6 | 60.8 |
| 1944 | 39.4 | 43.6 | 47.6 | 57.5 | 70.0 | 80.0 | 82.2 | 83.0 | 73.2 | 65.6 | 52.2 | 36.0 | 60.9 |
| 1945 | 38.0 | 39.8 | 55.1 | 58.2 | 66.6 | 75.2 | 80.4 | 82.0 | 73.5 | 60.7 | 50.6 | 33.0 | 59.4 |
| 1946 | 37.6 | 47.8 | 57.4 | 65.6 | 65.4 | 78.4 | 84.6 | 83.2 | 72.6 | 65.2 | 49.1 | 45.3 | 62.7 |
| 1947 | 38.7 | 38.1 | 44.6 | 58.4 | 67.6 | 78.0 | 81.8 | 86.2 | 75.0 | 70.7 | 48.2 | 40.6 | 60.8 |
| 1948 | 31.8 | 36.3 | 44.2 | 66.6 | 69.7 | 78.4 | 81.5 | 80.8 | 75.7 | 62.0 | 48.8 | 43.0 | 59.9 |
| 1949 | 30.1 | 40.5 | 47.6 | 60.7 | 71.8 | 80.1 | 83.5 | 79.3 | 69.3 | 62.3 | 54.0 | 40.8 | 60.3 |
| 1950 | 27.7 | 44.5 | 47.5 | 57.8 | 69.4 | 76.9 | 75.9 | 75.1 | 71.9 | 68.0 | 46.4 | 39.1 | 59.2 |
| 1951 | 39.0 | 43.1 | 47.3 | 57.1 | 68.6 | 75.5 | 81.5 | 84.1 | 70.9 | 62.2 | 42.5 | 37.9 | 59.1 |
| 1952 | 42.1 | 45.8 | 57.3 | 68.4 | 68.9 | 73.6 | 81.5 | 83.3 | 73.6 | 59.1 | 46.3 | 35.2 | 60.0 |
| 1953 | 43.7 | 43.7 | 52.7 | 55.9 | 66.9 | 85.6 | 80.8 | 80.5 | 77.4 | 63.7 | 49.6 | 39.6 | 61.6 |
| 1954 | 36.8 | 51.6 | 47.3 | 66.6 | 65.0 | 80.6 | 81.4 | 87.4 | 79.4 | 64.3 | 52.1 | 40.6 | 63.6 |
| 1955 | 39.2 | 49.8 | 49.8 | 65.0 | 70.1 | 73.2 | 84.8 | 80.8 | 76.6 | 61.3 | 48.7 | 41.7 | 61.6 |
| 1956 | 33.9 | 39.7 | 50.9 | 56.9 | 72.0 | 79.7 | 85.9 | 88.4 | 79.4 | 69.7 | 48.7 | 41.7 | 62.2 |
| 1957 | 32.5 | 45.3 | 47.7 | 57.8 | 67.8 | 76.5 | 86.1 | 83.4 | 71.2 | 59.1 | 46.9 | 46.7 | 60.1 |
| 1958 | 37.0 | 36.3 | 50.8 | 58.3 | 71.7 | 78.5 | 81.9 | 81.1 | 73.8 | 65.1 | 53.4 | 47.5 | 59.8 |
| 1959 | 34.0 | 51.8 | 50.8 | 68.7 | 72.4 | 78.3 | 79.1 | 82.8 | 74.2 | 59.6 | 45.1 | 44.9 | 60.2 |
| 1960 | 36.3 | 34.8 | 39.0 | 64.3 | 67.9 | 78.7 | 79.8 | 80.5 | 76.1 | 55.6 | 52.5 | 37.1 | 59.4 |
| 1961 | 35.2 | 43.3 | 52.3 | 59.2 | 67.0 | 76.0 | 80.5 | 79.0 | 70.6 | 63.2 | 46.2 | 36.2 | 59.1 |
| 1962 | 31.9 | 43.0 | 48.4 | 59.8 | 76.7 | 73.9 | 82.2 | 83.9 | 72.4 | 66.2 | 49.8 | 39.7 | 61.0 |

STATION HISTORY

Ponca City station was established February 11, 1892, and was located at several residences in the City at Latitude 36° 42' and Longitude 97° 05' with a ground elevation of 1003 feet until July 31, 1897, when the station was closed. No instrument shelter was provided, so thermometers were mounted on the north side of the house. Segments of this early record are missing.

On February 7, 1930, the station was re-established one block east of the Post Office on the roof of the Central Fire Station at coordinates 36° 42' Latitude and 97° 05' Longitude, with the elevation of 1019 feet. The location is just east of the business district and has residences on the other three sides with many large trees in the vicinity. The observer, Mr. Kenneth Long, Fire Chief, has served since September 1, 1935. On February 14, 1952, the recording rain gage was moved from the Civil Aeronautics Administration observing station at the Airport and was added to the observational program of the Ponca City substation.