# OKLAHOMA
# MONTHLY SUMMARY
# SEPTEMBER 1989

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## SEPTEMBER 1989 OKLAHOMA SUMMARY

Temperatures early in September,this year's summer-autumn transitional month, contrasted sharply with those of the latter half of the month (see Figure 1). On the first many stations recorded their first 100-degree readings of 1989. One of these stations, Oklahoma City, later recorded a record-breaking low temperature as unseasonally cool Arctic air dominated the last three weeks of the month. The cool spell produced the earliest fall freeze (32 degrees) ever recorded at several sites (see Table 1). The month ranked as the fourth coolest September on record, extending the string of consecutive months of below normal temperatures to four (see The Extremely Cool and Wet Summer of 1989 feature). Widespread and active frontal storms during the first half of the month accounted for above normal precipitation across most of the State.

Temperatures topped 100 degrees over the southern two-thirds of the State on September 1 when sunshine further heated an already warm air mass. The heating combined with unstable conditions to aid the development of severe thunderstorms along a cold front. The storms dropped dime to quarter size hail on several central and western Oklahoma counties, and over 2 inches of rain in southeastern Oklahoma.

The frontal disturbance weakened rapidly, allowing a quick return of warm moist air to the State. On September 4, a surface low pressure system produced widespread rainfall of .5 to 2 inches over the northern two-thirds of the State.

The leading edge of a large mass of Arctic air entered Oklahoma September 9. Maximum temperatures dropped by 10 to 15 degrees between September 9 and 10 under the influence of this cold air. A stronger surge of cold air followed a violent frontal passage on September 12. A tornado struck Henryetta where winds destroyed several mobile homes and damaged over 20 houses. Rainfall exceeded 1 inch at numerous stations Statewide, and local totals in excess of 5 inches were reported at Arcadia (6.80") and Tinker AFB (5.49"). Three-day rainfall accumulations exceeded 4 inches over much of the State. Cottonwood Creek flooded in Guthrie forcing 20 families to evacuate their homes. Cool air and cloudiness associated with this rainfall produced several days of lower temperatures. Many stations broke records of daily low maximum temperatures by several degrees on September 13 through 15 as temperatures reached only into the 50's (see Table 2). During the 7-day period ending the 16th, Oklahoma City's average maximum temperature of 68.5 degrees resembled typical late October readings.

Clearing skies and southerly winds gradually restored near-normal, 80-85 degree readings by September 17. A second Arctic air mass, however, entered the State on September 22. Daily high temperatures in the 60's Statewide approached record low maximums on subsequent days. Scattered freezing temperatures occurred as far south as Tuskahoma on the morning of September 24. Frost damage appeared limited to cotton in Washita County and late-planted soybeans.

Temperatures climbed daily during a warming trend through the end of September, finally reaching into the low to mid 80's across the State. A weak low pressure system produced rain showers over southeastern Oklahoma on the 29th and 30th. This was the State's only precipitation recorded during the second half of the month. The overall dry weather accommodated wheat-planting efforts, but stunted peanut growth.

-R. J. Sladewski

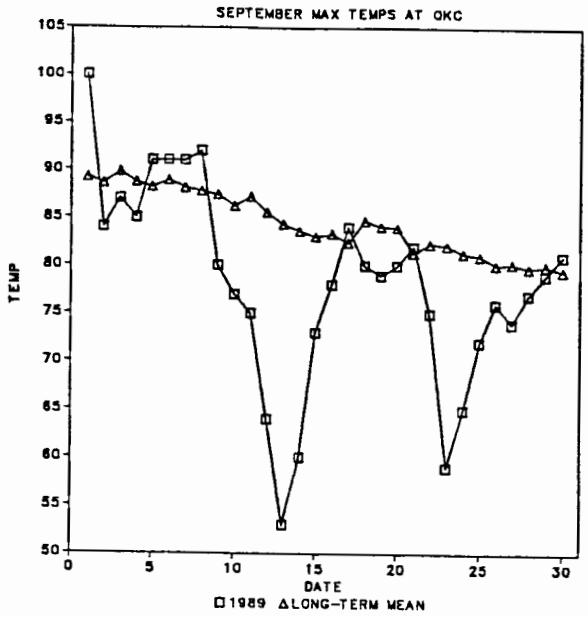



Figure 1: The sharp contrast of daily maximum temperatures between the first and middle of the month is quite evident. The arrival and persistence of Arctic air masses is also apparent.

Table 1: Early frost dates of 1989 compared to the earliest occurrences ever recorded for selected Oklahoma stations (1948-1989).

| CD | STATION | 1989 DATE | PREVIOUS | YEAR |
|---|---|---|---|---|
| 1 | Buffalo | 9/24 | 9/28 | 1967 |
| 2 | Mutual | 9/25 | 9/30 | 1985 |
| 3 | Bartlesville | 9/24 | 9/30 | 1984 |
| 4 | Erick | 9/24 | 9/21 | 1984 |
| 7 | Carnegie | 9/24 | 9/30 | 1984 |
| 9 | Tuskahoma | 9/24 | 10/1 | 1984 |

Table 2: Record-breaking low daily maximum temperatures for selected Oklahoma stations (1948-1989).

| | | SEPTEMBER 1989 | | PREVIOUS RECORD | |
|---|---|---|---|---|---|
| CD | STATION | DATE | TEMP | TEMP | YEAR |
| 1 | Buffalo | 13* | 51 | 64 | 1950 |
| 2 | Ponca City | 13+ | 54 | 64 | 1970 |
| 3 | Tulsa | 13+ | 55 | 66 | 1974 |
| 4 | Elk City | 13+ | 57 | 65 | 1950 |
| 5 | Oklahoma City | 14+ | 53 | 61 | 1975 |
| 6 | McAlester | 13 | 60 | 62 | 1975 |
| 7 | Hobart | 13 | 53 | 56 | 1975 |
| 8 | Duncan | 14 | 55 | 58 | 1975 |
| 9 | Antlers | 14 | 61 | 70 | 1949 |

* = One of 3 consecutive record-breaking days.
+ = One of 2 consecutive record-breaking days.

## THE EXTREMELY COOL AND WET SUMMER OF 1989

June, July and August 1989 have gone into the record book as comprising one of the coolest and wettest summers ever recorded in Oklahoma.

The past summer ranks as the sixth wettest in 98 years -- 15.01 inches of rainfall -- and is the soggiest since 1950. Rainfall totals at reporting stations across the state varied from slightly above to nearly two-and-one-half times normal seasonal levels.

The majority of the summer rainfall was received during June, when a series of weather systems during the first two weeks of the month tapped moisture from the Gulf of Mexico.

In late July and early August, rain associated with the remnants of Hurricane Chantel continued the trend of above-average precipitation. The state's observing stations reported some precipitation on an average of 30 days during the summer, exceeding the 30-year average by six days.

The 1989 state average temperature of 76.5 degrees was the coolest since 1915 and ranks as the third coolest in the state since 1892. Cooler than normal weather persisted throughout June, July and August.

Prolonged hot spells were cut short by unusual surges of cool Canadian air, producing temperatures 5 to 20 degrees below 30-year daily normals. Cloudy conditions associated with the remnants of Hurricanes Allison and Chantel also contributed to unusually cool temperatures.

Cool, moist weather prevailed during much of September. Consequently, the 4-month (June-September) temperature average of 75.2 degrees ranks second only to 1915's 75.0 degrees. The 4-month precipitation total ranks as the 4th highest since 1892.

FIGURE 1

OKLAHOMA SUMMER SEASON PRECIPITATION

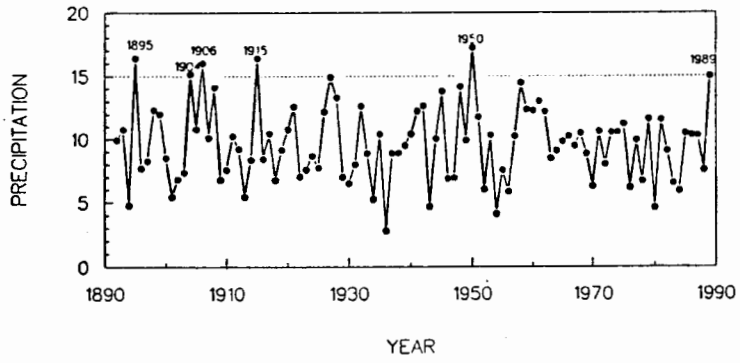
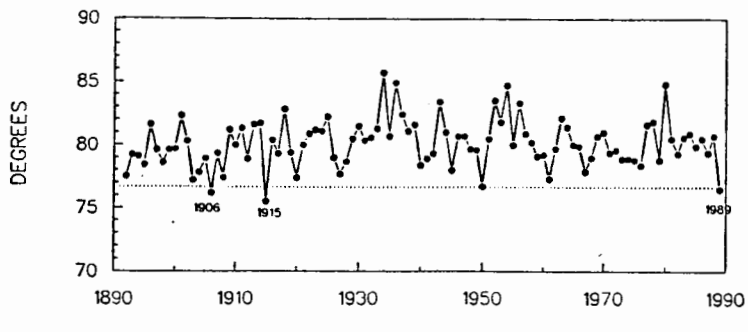



FIGURE 2

OKLAHOMA MEAN SUMMER TEMPERATURES



**SEPTEMBER 1989**
**PERCENT OF MEAN PRECIPITATION**

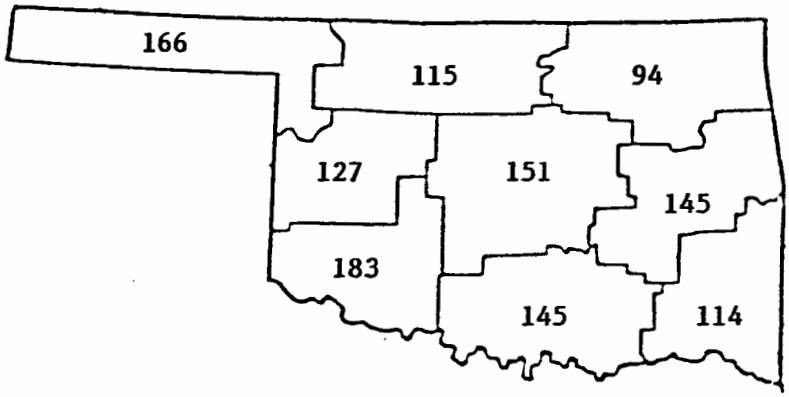



**TABLE OF 1988/1989 COMPARISONS**

| Station | September Temperature (F) 88 | 89 | September Precipitation (in.) 88 | 89 |
|---|---|---|---|---|
| ARNETT | 68.8 | 66.3 | 4.72 | 5.35 |
| ENID | * | * | * | * |
| MUTUAL | 70.1 | 66.7 | 2.23 | 2.95 |
| TULSA | 73.4 | 69.4 | 5.35 | 3.23 |
| ELK CITY | 71.5 | 68.2 | 10.87 | 2.49 |
| OKLAHOMA CITY | 73.7 | 68.3 | 3.94 | 4.51 |
| MCALESTER | 75.3 | 69.8 | 2.50 | 9.68 |
| ALTUS IRR. STA. | 74.4 | 71.2 | 5.96 | 5.26 |
| DURANT | 75.1 | 70.0 | 3.28 | 8.03 |
| ADA | 74.9 | 70.0 | 3.66 | 8.61 |
| ANTLERS | * | 70.8 | * | 5.53 |

**EXTREMES**

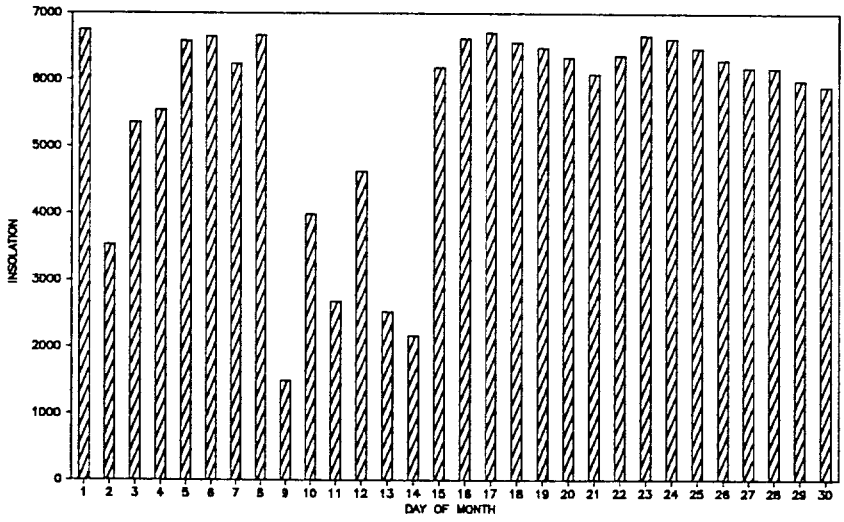
| Variable | Station | Divison | Observation | Date |
|---|---|---|---|---|
| Minimum temperature (F) | Gage | 1 | 29 | 24 |
| | Freedom | 2 | 29 | 24 |
| | Hammon | 4 | 29 | 25 |
| | Reydon | 4 | 29 | 23 |
| Maximum temperature (F) | Weatherford | 4 | 107 | 2 |
| | Wichita Mt | 7 | 107 | 5 |
| Maximum 24-hour preciptitation | Arcadia | 5 | 6.80" | 13 |

## INSOLATION DATA AVAILABLE

The University of Oklahoma's School of Meteorology is observing and archiving incoming solar radiation data as part of a cooperative effort with the Agricultural Research Service, USDA at Durant, OK. The observation site, operated continuously since September 1987, is located at Max Westheimer Airport in Norman. The data are representative of central Oklahoma and available through the Oklahoma Climatological Survey. The table and chart below depict the September 1989 daily observations.

**September 1989 Daily Insolation Data for Norman, OK**
**(Insolation units are watt-hours per square meter per day)**

| DATE | INSOLATION AMOUNT |
|---|---|
| 1 | 6752.6 |
| 2 | 3526.7 |
| 3 | 5355.9 |
| 4 | 5540.0 |
| 5 | 6585.9 |
| 6 | 6652.3 |
| 7 | 6245.9 |
| 8 | 6670.3 |
| 9 | 1498.5 |
| 10 | 3991.4 |
| 11 | 2684.2 |
| 12 | 4629.5 |
| 13 | 2527.6 |
| 14 | 2165.1 |
| 15 | 6188.7 |
| 16 | 6623.1 |
| 17 | 6711.7 |
| 18 | 6562.3 |
| 19 | 6486.7 |
| 20 | 6343.4 |
| 21 | 6087.8 |
| 22 | 6372.3 |
| 23 | 6668.9 |
| 24 | 6621.7 |
| 25 | 6473.7 |
| 26 | 6298.7 |
| 27 | 6183.4 |
| 28 | 6177.3 |
| 29 | 5996.4 |
| 30 | 5903.9 |



## SEPTEMBER 1989 SUMMARY FOR NORTHWEST DIVISION (CD1)

| NAME | ID | CD | MEAN TEMP | NUM OBS | DEV FROM NORM | MAX TEMP | DAY | MIN TEMP | DAY | HEAT DEG DAY | DEV FROM NORM | COOL DEG DAY | DEV FROM NORM | TOT PPT | NUM OBS | DEV FROM NORM | MAX 24-HR | DAY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARNEITT | 332 | 1 | 66.3 | 30 | -4.6 | 97. | 4 | 34. | 25 | 118.5 | 87.5 | 159.0 | -49.0 | 5.350 | 30 | 3.44 | 2.46 | 13 |
| BEAVER | 593 | 1 | 66.8 | 30 | -4.1 | 98. | 7 | 34. | 25 | 121.0 | 90.0 | 174.5 | -33.5 | 1.980 | 30 | .46 | .86 | 13 |
| BOISE CITY 2 E | 908 | 1 | 66.6 | 30 | -1.5 | 95. | 3 | 36. | 14 | 91.5 | 54.5 | 140.0 | 10.0 | 1.902 | 30 | .34 | .50 | 12 |
| BUFFALO | 1243 | 1 | 68.3 | 30 | -4.8 | 99. | 7 | 30. | 24 | 79.0 | 60.0 | 179.5 | -85.5 | 2.760 | 30 | -.04 | 1.10 | 12 |
| FARGO | 3070 | 1 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.421 | 30 | 1.60 | 1.37 | 13 |
| GAGE FAA APT | 3407 | 1 | 67.4 | 30 | -3.9 | 97. | 6 | 29. | 24 | 103.0 | 77.0 | 174.5 | -40.5 | 3.052 | 30 | 1.45 | 1.20 | 13 |
| GATE | 3489 | 1 | 67.8 | 29 | ***** | 99. | 7 | 35. | 24 | 108.0 | ****** | 188.0 | ****** | 2.742 | 30 | ***** | 1.08 | 13 |
| GOODWELL RES ST | 3628 | 1 | 65.5 | 30 | -4.0 | 97. | 7 | 36. | 24 | 125.5 | 86.5 | 141.5 | -32.5 | 1.843 | 30 | .57 | 1.22 | 11 |
| GUYMON | 3835 | 1 | 66.2 | 27 | ***** | 97. | 8 | 38. | 24 | 103.5 | ****** | 135.5 | ****** | 1.292 | 29 | ***** | .68 | 11 |
| HOOKER | 4298 | 1 | 66.7 | 30 | -3.2 | 98. | 7 | 35. | 25 | 123.5 | 94.5 | 175.0 | -1.0 | 1.173 | 30 | -.45 | .41 | 11 |
| KENTON | 4766 | 1 | 65.0 | 30 | -3.9 | 95. | 4 | 36. | 14 | 128.5 | 96.5 | 128.0 | -21.0 | 2.452 | 30 | .94 | 1.08 | 12 |
| LAVERNE | 5045 | 1 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.462 | 30 | .45 | 1.70 | 13 |
| OPTIMA LAKE | 6740 | 1 | 66.6 | 30 | ***** | 99. | 7 | 34. | 24 | 113.0 | ****** | 162.0 | ****** | 1.872 | 30 | ***** | .76 | 11 |
| RANGE | 7412 | 1 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.041 | 30 | ***** | 1.10 | 12 |
| REGNIER | 7534 | 1 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 1.862 | 30 | .45 | 1.04 | 12 |
| TURPIN 4 SSE | 9017 | 1 | 66.0 | 29 | ***** | 97. | 7 | 36. | 24 | 126.0 | ****** | 154.5 | ****** | 1.230 | 29 | ***** | .43 | 12 |

## SEPTEMBER 1989 SUMMARY FOR NORTH CENTRAL DIVISION (CD2)

| NAME | ID | CD | MEAN TEMP | NUM OBS | DEV FROM NORM | MAX TEMP | DAY | MIN TEMP | DAY | HEAT DEG DAY | DEV FROM NORM | COOL DEG DAY | DEV FROM NORM | TOT PPT | NUM OBS | DEV FROM NORM | MAX 24-HR | DAY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ALVA 1 ENE | 194 | 2 | 68.8 | 30 | -4.4 | 96. | 6 | 31. | 24 | 63.5 | 43.5 | 178.0 | -88.0 | 2.620 | 30 | .15 | 1.49 | 13 |
| VANCE AFB | 302 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 1.730 | 30 | ***** | 1.03 | 13 |
| BILLINGS | 755 | 2 | 66.9 | 30 | ***** | 90. | 1 | 33. | 24 | 90.0 | ****** | 146.5 | ****** | 3.800 | 30 | -.42 | 2.38 | 13 |
| BLACKWELL 2E | 818 | 2 | 67.8 | 30 | ***** | 94. | 8 | 35. | 24 | 75.5 | ****** | 160.0 | ****** | 3.523 | 30 | ***** | 2.05 | 13 |
| BRAMAN | 1075 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.700 | 30 | ***** | 1.56 | 13 |
| CEDARDALE | 1620 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 1.530 | 30 | ***** | .76 | 11 |
| CHEROKEE | 1724 | 2 | 69.2 | 30 | -4.3 | 96. | 9 | 34. | 24 | 70.0 | 55.0 | 196.5 | -73.5 | 4.640 | 30 | 1.97 | 1.85 | 4 |
| ENID | 2912 | 2 | 68.8 | 29 | -5.0 | 96. | 1 | 35. | 24 | 71.5 | 56.5 | 182.0 | -97.0 | 3.090 | 30 | -.12 | 2.26 | 13 |
| FT SUPPLY DAM | 3304 | 2 | 68.3 | 30 | -3.8 | 96. | 2 | 43. | 24 | 101.0 | 76.0 | 201.5 | -39.5 | 3.520 | 30 | 1.55 | 1.91 | 13 |
| FREEDOM | 3358 | 2 | 67.6 | 30 | ***** | 96. | 7 | 29. | 24 | 81.0 | ****** | 159.5 | ****** | 3.340 | 30 | ***** | 1.81 | 13 |
| GREAT SALT PLNS | 3740 | 2 | 69.0 | 29 | ***** | 97. | 1 | 36. | 24 | 81.0 | ****** | 196.0 | ****** | 4.030 | 29 | ***** | 1.74 | 13 |
| HARDY | 3909 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.814 | 30 | ***** | 4.26 | 5 |
| HELENA 1 SSE | 4019 | 2 | 67.5 | 30 | ***** | 97. | 2 | 35. | 24 | 98.0 | ****** | 173.0 | ****** | 4.200 | 30 | 1.33 | 3.10 | 13 |
| JEFFERSON | 4573 | 2 | 68.6 | 30 | -5.0 | 94. | 8 | 31. | 24 | 77.5 | 62.5 | 185.0 | -88.0 | 4.480 | 30 | 1.35 | 1.86 | 12 |
| LAMONT | 5013 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.671 | 30 | ***** | 1.98 | 13 |
| MEDFORD | 5768 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.650 | 30 | ***** | 1.85 | 12 |
| MORRISON | 6065 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.412 | 31 | ***** | 2.08 | 13 |
| MUTUAL | 6139 | 2 | 66.6 | 30 | -5.7 | 96. | 7 | 31. | 25 | 121.0 | 103.0 | 168.5 | -68.5 | 2.950 | 30 | .47 | 2.10 | 13 |
| NEWKIRK | 6278 | 2 | 67.8 | 30 | -5.0 | 94. | 2 | 37. | 24 | 76.5 | 54.5 | 160.5 | -95.5 | 3.521 | 30 | -.02 | 1.84 | 12 |
| ORIENTA | 6751 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.280 | 30 | ***** | 1.44 | 13 |
| PERRY | 7012 | 2 | 66.5 | 30 | -7.7 | 93. | 6 | 34. | 25 | 85.0 | 70.0 | 130.0 | -161.0 | 5.300 | 30 | 1.56 | 2.24 | 4 |
| PONCA CITY FAA | 7201 | 2 | 68.2 | 30 | -4.1 | 93. | 8 | 35. | 24 | 80.5 | 52.5 | 177.0 | -70.0 | 5.050 | 30 | 1.21 | 3.34 | 13 |
| RED ROCK 1 NNE | 7505 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.990 | 30 | .27 | 1.75 | 13 |
| RENFROW | 7556 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.650 | 30 | 1.44 | 1.98 | 13 |
| WAYNOKA | 9404 | 2 | 68.2 | 30 | -5.2 | 95. | 6 | 30. | 24 | 82.0 | 66.0 | 179.0 | -89.0 | 2.190 | 30 | -.31 | 1.44 | 12 |
| WOODWARD | 9760 | 2 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.471 | 30 | ***** | 1.41 | 13 |

# SEPTEMBER 1989 SUMMARY FOR NORTHEAST DIVISION (CD3)

| NAME | ID | CD | MEAN TEMP | NUM OBS | DEV FROM NORM | MAX TEMP | DAY | MIN TEMP | DAY | HEAT DEG DAY | DEV FROM NORM | COOL DEG DAY | DEV FROM NORM | TOT PPT | NUM OBS | DEV FROM NORM | MAX 24-HR | DAY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BARNSDALL | 535 | 3 | 66.3 | 30 | ***** | 91. | 8 | 33. | 24 | 101.5 | ****** | 140.5 | ****** | 6.023 | 30 | 1.30 | 3.30 | 6 |
| BARTLESVILLE 2W | 548 | 3 | 67.5 | 30 | -5.3 | 95. | 1 | 32. | 24 | 84.5 | 66.5 | 159.0 | -93.0 | 4.081 | 30 | -.05 | 1.90 | 6 |
| BIXBY | 782 | 3 | 66.5 | 25 | ***** | 95. | 2 | 35. | 25 | 92.5 | ****** | 130.5 | ****** | 4.480 | 30 | .13 | 3.70 | 13 |
| BURBANK | 1256 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.350 | 30 | ***** | 2.00 | 13 |
| CHELSEA 4 S | 1717 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.140 | 30 | ***** | 2.55 | 13 |
| CLAREMORE | 1828 | 3 | 67.3 | 30 | -5.4 | 95. | 1 | 34. | 25 | 98.0 | 72.0 | 166.0 | -91.0 | 3.880 | 30 | .00 | 2.83 | 13 |
| CLEVELAND 5 WSW | 1902 | 3 | 68.6 | 28 | ***** | 93. | 8 | 33. | 24 | 71.0 | ****** | 173.0 | ****** | 2.110 | 30 | ***** | .71 | 13 |
| FORAKER | 3250 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 7.250 | 30 | 3.17 | 4.03 | 6 |
| HOLLOW | 4258 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.700 | 30 | -2.14 | 1.02 | 13 |
| HOMINY | 4289 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.231 | 30 | -.25 | 2.66 | 13 |
| HULAH DAM | 4393 | 3 | 66.5 | 29 | -5.5 | 94. | 1 | 32. | 24 | 102.5 | 73.5 | 146.5 | -92.5 | 4.770 | 30 | .94 | 2.30 | 6 |
| JAY TOWER | 4567 | 3 | 66.6 | 27 | ***** | 93. | 1 | 32. | 24 | 87.0 | ****** | 129.0 | ****** | 2.931 | 30 | ***** | 2.00 | 13 |
| KANSAS 1 ESE | 4672 | 3 | 67.0 | 29 | ***** | 91. | 1 | 34. | 24 | 71.0 | ****** | 129.0 | ****** | 3.742 | 30 | ***** | 1.34 | 13 |
| KEYSTONE DAM | 4812 | 3 | 67.2 | 30 | ***** | 95. | 2 | 34. | 24 | 96.0 | ****** | 163.0 | ****** | 4.172 | 30 | ***** | 2.99 | 13 |
| LENAPAH | 5118 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.820 | 30 | ***** | 1.20 | 13 |
| MANNFORD 6 NW | 5522 | 3 | 67.4 | 30 | ***** | 95. | 8 | 32. | 25 | 78.0 | ****** | 149.0 | ****** | 3.880 | 30 | -.35 | 2.72 | 13 |
| MARAMEC | 5540 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.321 | 30 | .40 | 2.79 | 13 |
| MIAMI | 5855 | 3 | 65.8 | 30 | -6.8 | 90. | 8 | 33. | 24 | 92.5 | 65.5 | 116.0 | -139.0 | 4.080 | 30 | -.52 | 1.16 | 9 |
| NOWATA | 6485 | 3 | 66.6 | 30 | -6.3 | 95. | 1 | 34. | 24 | 95.5 | 74.5 | 143.5 | -114.5 | 3.390 | 30 | -.92 | 1.65 | 13 |
| ONETA 1 WNW | 6713 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.150 | 30 | ***** | 3.24 | 13 |
| PAWHUSKA | 6935 | 3 | 67.4 | 30 | -5.2 | 92. | 3 | 33. | 24 | 90.0 | 66.0 | 162.5 | -89.5 | 6.050 | 30 | 1.94 | 3.07 | 5 |
| PAWHUSKA | 6937 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.721 | 30 | ***** | 2.95 | 6 |
| PAWNEE | 6940 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.990 | 30 | -.38 | 1.92 | 13 |
| PRYOR 6 N | 7309 | 3 | 64.5 | 23 | ***** | 95. | 1 | 33. | 25 | 100.0 | ****** | 89.5 | ****** | 3.732 | 24 | ***** | 2.50 | 13 |
| QUAPAW | 7358 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.054 | 30 | .25 | 1.50 | 14 |
| RALSTON | 7390 | 3 | 68.9 | 30 | ***** | 95. | 1 | 33. | 24 | 64.0 | ****** | 180.5 | ****** | 3.530 | 30 | -.33 | 2.30 | 13 |
| RAMONA 4 N | 7394 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.442 | 30 | ***** | 2.12 | 6 |
| SKIATOOK | 8258 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.660 | 30 | 1.33 | 3.02 | 13 |
| SPAVINAW | 8380 | 3 | 68.8 | 30 | ***** | 92. | 1 | 38. | 24 | 61.5 | ****** | 175.5 | ****** | 3.324 | 30 | -1.06 | 1.90 | 13 |
| TULSA WSO APT | 8992 | 3 | 69.4 | 30 | -4.4 | 94. | 8 | 38. | 24 | 61.5 | 43.5 | 194.5 | -87.5 | 3.232 | 30 | -1.14 | 2.50 | 13 |
| UPPER SPAVINAW | 9101 | 3 | 70.3 | 30 | ***** | 96. | 7 | 38. | 24 | 59.5 | ****** | 219.5 | ****** | 3.603 | 30 | ***** | 1.33 | 13 |
| VINITA 2 N | 9203 | 3 | 66.2 | 28 | ***** | 94. | 8 | 33. | 24 | 95.0 | ****** | 128.5 | ****** | 2.930 | 30 | -1.82 | 2.00 | 13 |
| WAGONER | 9247 | 3 | 68.8 | 30 | -5.1 | 94. | 1 | 35. | 24 | 60.5 | 43.5 | 174.5 | -109.5 | 3.123 | 30 | -.97 | 2.08 | 13 |
| WANN | 9298 | 3 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.270 | 30 | ***** | 1.24 | 12 |
| WYNONA | 9792 | 3 | 69.7 | 30 | ***** | 94. | 2 | 39. | 24 | 51.5 | ****** | 192.0 | ****** | 5.001 | 30 | ***** | 2.75 | 12 |

# SEPTEMBER 1989 SUMMARY FOR WEST CENTRAL DIVISION (CD4)

| NAME | ID | CD | MEAN TEMP | NUM OBS | DEV FROM NORM | MAX TEMP | DAY | MIN TEMP | DAY | HEAT DEG DAY | DEV FROM NORM | COOL DEG DAY | DEV FROM NORM | TOT PPT | NUM OBS | DEV FROM NORM | MAX 24-HR | DAY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CANTON DAM | 1445 | 4 | 66.8 | 30 | -6.6 | 97. | 1 | 30. | 24 | 111.0 | 96.0 | 166.0 | -101.0 | 4.340 | 30 | 1.21 | 2.06 | 13 |
| CHEYENNE | 1738 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.340 | 30 | ***** | 2.12 | 13 |
| CLINTON | 1909 | 4 | 72.2 | 30 | -1.4 | 105. | 1 | 33. | 24 | 46.0 | 30.0 | 260.5 | -13.5 | 4.250 | 30 | 1.25 | 2.02 | 13 |
| COLONY | 2039 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.820 | 30 | ***** | 2.07 | 13 |
| CORDELL | 2125 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.980 | 30 | 1.18 | 2.09 | 13 |
| ELK CITY 1 E | 2849 | 4 | 68.2 | 29 | ***** | 98. | 1 | 34. | 24 | 68.5 | ****** | 160.5 | ****** | 2.490 | 30 | -.09 | 1.28 | 13 |
| ERICK 4 E | 2944 | 4 | 68.8 | 30 | -4.3 | 99. | 1 | 31. | 24 | 77.0 | 64.0 | 190.5 | -65.5 | 1.591 | 30 | -1.22 | 1.26 | 13 |
| HAMMON 1 NNE | 3871 | 4 | 65.8 | 30 | -6.8 | 97. | 4 | 29. | 25 | 144.5 | 122.5 | 167.0 | -80.0 | 2.012 | 30 | -.70 | 1.60 | 12 |
| GEARY | 3497 | 4 | 68.3 | 29 | -5.5 | 97. | 1 | 35. | 24 | 68.5 | 49.5 | 164.0 | -119.0 | 6.950 | 30 | 3.73 | 3.35 | 13 |
| LEEDEY | 5090 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.400 | 30 | .17 | 2.10 | 13 |
| MACKIE 4 NNW | 5463 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.000 | 30 | ***** | 1.60 | 13 |
| MORAVIA 2 NNE | 6035 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.300 | 30 | .53 | 1.86 | 13 |
| OKEENE | 6629 | 4 | 69.0 | 30 | -5.3 | 94. | 9 | 33. | 24 | 68.5 | 51.5 | 189.0 | -107.0 | 6.390 | 30 | 3.46 | 2.72 | 4 |
| RETROP | 7565 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.450 | 30 | ***** | 2.25 | 13 |
| REYDON | 7579 | 4 | 68.9 | 30 | ***** | 101. | 5 | 29. | 23 | 79.5 | ****** | 196.5 | ****** | 1.450 | 30 | -.89 | .94 | 12 |
| SAYRE | 7952 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.590 | 30 | .15 | 1.32 | 13 |
| SWEETWATER 2 E | 8652 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 1.701 | 30 | ***** | 1.33 | 13 |
| TALOGA | 8708 | 4 | 67.6 | 30 | -5.0 | 96. | 7 | 30. | 25 | 88.5 | 69.5 | 165.0 | -82.0 | 6.070 | 30 | 3.44 | 3.05 | 4 |
| THOMAS | 8815 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.910 | 30 | ***** | 1.76 | 2 |
| VICI | 9172 | 4 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.760 | 30 | ***** | 1.82 | 13 |
| WATONGA | 9364 | 4 | 68.3 | 30 | ***** | 95. | 1 | 33. | 24 | 79.0 | ****** | 178.5 | ****** | 4.031 | 30 | 1.08 | 1.75 | 13 |
| WEATHERFORD | 9422 | 4 | 69.1 | 30 | -4.6 | 107. | 2 | 33. | 25 | 93.0 | 78.0 | 215.0 | -61.0 | 4.681 | 30 | 1.40 | 1.70 | 13 |

# SEPTEMBER 1989 SUMMARY FOR CENTRAL DIVISION (CD5)

| NAME | ID | CD | MEAN TEMP | NUM OBS | DEV FROM NORM | MAX TEMP | DAY | MIN TEMP | DAY | HEAT DEG DAY | DEV FROM NORM | COOL DEG DAY | DEV FROM NORM | TOT PPT | NUM OBS | DEV FROM NORM | MAX 24-HR | DAY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AMBER | 200 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.120 | 30 | ***** | 2.64 | 13 |
| ARCADIA | 288 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 10.910 | 30 | ***** | 6.80 | 13 |
| TINKER AFB | 325 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.760 | 30 | ***** | 5.49 | 13 |
| BLANCHARD 2 SSW | 830 | 5 | 69.5 | 30 | ***** | 100. | 1 | 36. | 24 | 60.0 | ****** | 195.0 | ****** | 5.390 | 30 | ***** | 2.44 | 2 |
| BRISTOW | 1144 | 5 | 67.8 | 30 | -5.9 | 97. | 1 | 34. | 24 | 79.5 | 57.5 | 163.0 | -120.0 | 4.042 | 30 | .04 | 2.94 | 13 |
| CHANDLER | 1684 | 5 | 67.6 | 29 | -6.5 | 95. | 1 | 37. | 25 | 72.0 | 54.0 | 146.0 | -145.0 | 5.751 | 30 | 1.96 | 4.22 | 13 |
| CHICKASHA EX ST | 1750 | 5 | 70.2 | 30 | -3.7 | 101. | 1 | 35. | 24 | 59.0 | 46.0 | 216.0 | -64.0 | 5.300 | 30 | 1.82 | 2.40 | 13 |
| COX CITY 1 E | 2196 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.002 | 30 | ***** | 2.35 | 13 |
| CRESCENT | 2242 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.420 | 30 | ***** | 2.46 | 13 |
| CUSHING | 2318 | 5 | 67.8 | 30 | -5.8 | 96. | 1 | 36. | 24 | 75.5 | 55.5 | 158.0 | -120.0 | 6.261 | 30 | 2.37 | 4.10 | 13 |
| EL RENO 1 N | 2818 | 5 | 68.8 | 30 | -4.6 | 99. | 1 | 36. | 24 | 71.0 | 56.0 | 184.5 | -82.5 | 6.060 | 30 | 2.45 | 3.55 | 13 |
| GUTHRIE | 3821 | 5 | 69.9 | 30 | -4.2 | 97. | 1 | 36. | 24 | 58.5 | 43.5 | 207.0 | -81.0 | 4.481 | 30 | .50 | 3.02 | 13 |
| HENNESSEY 2 SE | 4055 | 5 | 69.0 | 30 | -4.9 | 97. | 2 | 34. | 24 | 68.5 | 54.5 | 189.5 | -91.5 | 2.903 | 30 | -.49 | 2.51 | 13 |
| INGALLS | 4489 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.311 | 30 | ***** | 3.02 | 13 |
| KINGFISHER 2 SE | 4861 | 5 | 68.2 | 30 | -6.0 | 94. | 1 | 34. | 24 | 76.5 | 62.5 | 171.0 | -119.0 | 4.420 | 30 | .82 | 2.41 | 13 |
| KONAWA | 4915 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 7.031 | 30 | 2.91 | 2.66 | 2 |
| MARSHALL | 5589 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.250 | 30 | -.26 | 2.37 | 13 |
| MEEKER 4 W | 5779 | 5 | 67.4 | 29 | -6.3 | 97. | 1 | 33. | 24 | 86.0 | 69.0 | 154.5 | -123.5 | 6.350 | 29 | ***** | 4.78 | 13 |
| MULHALL | 6110 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.960 | 30 | ***** | 2.73 | 13 |
| NORMAN 3 S | 6386 | 5 | 69.8 | 29 | ***** | 103. | 1 | 36. | 24 | 60.5 | ****** | 200.0 | ****** | 3.941 | 30 | .21 | 2.10 | 13 |
| OILTON 2 SE | 6616 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.470 | 23 | ***** | 1.90 | 17 |
| OKEMAH | 6638 | 5 | 69.6 | 30 | -4.5 | 99. | 1 | 37. | 24 | 51.5 | 34.5 | 189.0 | -101.0 | 6.330 | 30 | 2.53 | 3.60 | 13 |
| OKLAHOMA CTY WS | 6661 | 5 | 68.3 | 30 | -5.0 | 100. | 1 | 36. | 24 | 77.0 | 62.0 | 177.5 | -86.5 | 4.513 | 30 | 1.10 | 3.43 | 13 |
| PERKINS | 7003 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.970 | 30 | .75 | 3.54 | 13 |
| PIEDMONT | 7068 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 8.190 | 30 | ***** | 5.02 | 13 |
| PRAGUE | 7264 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.950 | 30 | 3.16 | 3.65 | 13 |
| PURCELL 5 SW | 7327 | 5 | 68.9 | 30 | -5.3 | 102. | 1 | 36. | 25 | 69.5 | 57.5 | 188.0 | -100.0 | 6.200 | 30 | 2.23 | 3.00 | 2 |
| SEMINOLE | 8042 | 5 | 70.0 | 30 | -5.2 | 100. | 2 | 37. | 24 | 50.0 | 40.0 | 201.0 | -115.0 | 5.300 | 30 | 1.28 | 2.20 | 13 |
| SHAWNEE | 8110 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 8.610 | 30 | 4.87 | 4.53 | 13 |
| STELLA | 8479 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.130 | 30 | ***** | 4.08 | 13 |
| STILLWATER 2 W | 8501 | 5 | 68.0 | 30 | -5.1 | 97. | 1 | 33. | 24 | 93.5 | 75.5 | 183.5 | -77.5 | 4.860 | 30 | .93 | 2.60 | 13 |
| STROUD 1 N | 8563 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.434 | 30 | ***** | 2.75 | 13 |
| TECUMSEH | 8751 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.330 | 30 | ***** | 2.32 | 13 |
| TROUSDALE | 8960 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.200 | 30 | ***** | 2.57 | 2 |
| UNION CITY 1 SE | 9086 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.200 | 30 | 2.44 | 4.75 | 13 |
| WELTY 1 SSE | 9479 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.800 | 30 | ***** | 3.60 | 13 |
| WEWOKA | 9575 | 5 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.300 | 30 | 2.18 | 3.05 | 2 |

## SEPTEMBER 1989 SUMMARY FOR EAST CENTRAL DIVISION (CD6)

| NAME | ID | CD | MEAN TEMP | NUM OBS | DEV FROM NORM | MAX TEMP | DAY | MIN TEMP | DAY | HEAT DEG DAY | DEV FROM NORM | COOL DEG DAY | DEV FROM NORM | TOT PPT | NUM OBS | DEV FROM NORM | MAX 24-HR | DAY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASHLAND | 364 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.600 | 30 | ***** | 2.35 | 2 |
| BEGGS | 631 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.750 | 30 | ***** | 2.18 | 12 |
| BOYNTON | 1027 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.432 | 30 | ***** | 1.30 | 13 |
| CALVIN | 1391 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 7.120 | 30 | 2.80 | 2.10 | 2 |
| CHECOTAH | 1711 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 8.090 | 30 | 3.63 | 5.57 | 13 |
| CLAYTON 11 WNW | 1858 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.640 | 30 | ***** | 1.50 | 10 |
| DEWAR 2 NE | 2485 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.740 | 30 | 1.43 | 4.05 | 13 |
| DUSTIN | 2690 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 10.740 | 30 | ***** | 5.47 | 13 |
| EUFAULA | 2993 | 6 | 69.7 | 30 | ***** | 98. | 3 | 42. | 24 | 51.0 | ****** | 193.0 | ****** | 9.890 | 30 | 5.69 | 5.10 | 13 |
| HANNA | 3884 | 6 | 68.8 | 30 | ***** | 99. | 1 | 37. | 25 | 66.0 | ****** | 181.5 | ****** | 10.473 | 30 | 6.31 | 4.01 | 13 |
| HARTSHORNE | 3946 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 9.091 | 30 | ***** | 2.90 | 3 |
| HASKELL | 3956 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.120 | 30 | -.85 | 2.34 | 13 |
| HOLDENVILLE | 4235 | 6 | 69.0 | 30 | -5.6 | 98. | 1 | 36. | 24 | 61.0 | 50.0 | 182.0 | -117.0 | 5.170 | 30 | 1.17 | 2.17 | 13 |
| LAKE EUFAULA | 4975 | 6 | 70.0 | 30 | ***** | 101. | 2 | 38. | 24 | 57.0 | ****** | 206.0 | ****** | 7.150 | 30 | ***** | 3.50 | 13 |
| LYONS 2 N | 5437 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.000 | 30 | .74 | 3.20 | 13 |
| MARBLE CITY | 5546 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.772 | 30 | ***** | 2.05 | 14 |
| MCALESTER FAA | 5664 | 6 | 69.8 | 30 | -4.4 | 103. | 1 | 38. | 24 | 54.0 | 38.0 | 197.5 | -94.5 | 9.680 | 30 | 4.72 | 1.84 | 2 |
| MCCURTAIN 1 SE | 5693 | 6 | 69.9 | 30 | ***** | 100. | 1 | 33. | 24 | 58.0 | ****** | 204.5 | ****** | 4.882 | 30 | .42 | 1.75 | 14 |
| MUSKOGEE | 6130 | 6 | 69.8 | 30 | -4.3 | 97. | 1 | 36. | 24 | 53.5 | 36.5 | 199.0 | -94.0 | 2.160 | 30 | -1.96 | 1.03 | 12 |
| OKMULGEE W W | 6670 | 6 | 67.4 | 30 | -6.1 | 98. | 1 | 36. | 25 | 81.0 | 65.0 | 154.0 | -117.0 | 3.091 | 30 | -.71 | 1.61 | 13 |
| OKTAHA 2 NE | 6678 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.940 | 30 | ***** | 3.54 | 13 |
| QUINTON | 7372 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.271 | 30 | 1.86 | 1.73 | 11 |
| SALLISAW 2 NE | 7862 | 6 | 70.2 | 30 | -4.0 | 101. | 1 | 33. | 24 | 51.0 | 41.0 | 207.5 | -78.5 | 3.421 | 30 | -.99 | 1.52 | 14 |
| SCIPIO | 7979 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 8.470 | 30 | ***** | 2.95 | 2 |
| SCRAPER | 7993 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.280 | 30 | ***** | 1.53 | 13 |
| SHORT | 8170 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.420 | 30 | ***** | 1.93 | 10 |
| STILWELL 1 NE | 8506 | 6 | 67.9 | 30 | ***** | 94. | 1 | 32. | 24 | 72.0 | ****** | 160.0 | ****** | 4.672 | 30 | .36 | 2.59 | 14 |
| TAHLEQUAH | 8677 | 6 | 68.1 | 30 | -4.8 | 95. | 1 | 33. | 24 | 74.5 | 50.5 | 168.5 | -92.5 | 5.481 | 30 | 1.14 | 2.30 | 13 |
| WEBBERS FALLS | 9445 | 6 | 68.5 | 30 | -5.0 | 102. | 2 | 35. | 25 | 72.5 | 57.5 | 178.0 | -92.0 | 10.120 | 30 | 5.78 | 5.60 | 13 |
| WESTVILLE | 9523 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.490 | 30 | ***** | 2.52 | 14 |
| WETUMKA 3 NE | 9571 | 6 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 11.233 | 30 | 7.21 | 6.05 | 13 |

## SEPTEMBER 1989 SUMMARY FOR SOUTHWEST DIVISION (CD7)

| NAME | ID | CD | MEAN TEMP | NUM OBS | DEV FROM NORM | MAX TEMP | DAY | MIN TEMP | DAY | HEAT DEG DAY | DEV FROM NORM | COOL DEG DAY | DEV FROM NORM | TOT PPT | NUM OBS | DEV FROM NORM | MAX 24-HR | DAY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ALTUS IRR STA | 179 | 7 | 71.2 | 30 | -4.2 | 103. | 1 | 35. | 24 | 48.0 | 41.0 | 234.0 | -85.0 | 5.260 | 30 | 2.41 | 3.50 | 13 |
| ALTUS DAM | 184 | 7 | 71.8 | 30 | ***** | 103. | 2 | 42. | 26 | 63.0 | ****** | 267.0 | ****** | 5.710 | 30 | 2.97 | 4.00 | 13 |
| ANADARKO | 224 | 7 | 66.9 | 20 | ***** | 100. | 1 | 29. | 24 | 71.5 | ****** | 110.0 | ****** | 6.340 | 30 | 3.00 | 2.84 | 2 |
| APACHE | 260 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 2.850 | 30 | ***** | 1.75 | 9 |
| ALTUS AFB | 447 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.801 | 30 | ***** | 2.75 | 13 |
| CARNEGIE 2 ENE | 1504 | 7 | 69.8 | 30 | -4.6 | 103. | 1 | 31. | 24 | 70.0 | 56.0 | 215.0 | -81.0 | 7.470 | 30 | 4.11 | 4.07 | 13 |
| CHATTANOOGA | 1706 | 7 | 71.8 | 30 | -3.8 | 104. | 2 | 37. | 24 | 41.0 | 33.0 | 246.5 | -82.5 | 6.290 | 30 | 3.22 | 3.52 | 13 |
| DUNCAN 12 W | 2668 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.850 | 30 | ***** | 3.80 | 13 |
| FREDERICK | 3353 | 7 | 71.9 | 30 | -4.7 | 102. | 5 | 44. | 24 | 47.5 | 40.5 | 254.0 | -101.0 | 4.520 | 30 | 1.52 | 2.30 | 13 |
| GRANDFIELD 4 NW | 3709 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.610 | 30 | 1.16 | 3.10 | 13 |
| HOBART FAA APT | 4204 | 7 | 69.9 | 30 | -3.9 | 101. | 1 | 35. | 24 | 66.0 | 50.0 | 212.0 | -68.0 | 7.160 | 30 | 4.29 | 3.33 | 13 |
| HOLLIS | 4249 | 7 | 70.7 | 30 | -4.6 | 101. | 1 | 35. | 25 | 53.5 | 47.5 | 224.5 | -90.5 | 3.441 | 30 | .76 | 2.90 | 13 |
| LAWTON | 5063 | 7 | 70.0 | 30 | -5.1 | 102. | 1 | 40. | 23 | 67.0 | 61.0 | 216.5 | -92.5 | 5.810 | 30 | 2.83 | 2.92 | 12 |
| FORT SILL | 5068 | 7 | 70.3 | 30 | ***** | 102. | 1 | 42. | 24 | 51.5 | ****** | 210.5 | ****** | 5.061 | 30 | 2.08 | 1.39 | 13 |
| LOOKEBA 2 ENE | 5329 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.040 | 30 | ***** | 2.22 | 13 |
| MANGUM RES STA | 5509 | 7 | 70.5 | 30 | -4.4 | 101. | 1 | 33. | 24 | 53.0 | 47.0 | 218.5 | -84.5 | 5.900 | 30 | 3.12 | 4.58 | 13 |
| RANDLETT 9 E | 7403 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.751 | 30 | ***** | 3.00 | 13 |
| ROOSEVELT | 7727 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.390 | 30 | 1.61 | 2.85 | 13 |
| SEDAN | 8016 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.800 | 30 | ***** | 2.29 | 13 |
| SNYDER | 8299 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.150 | 30 | 2.34 | 3.58 | 13 |
| VINSON 3 WNW | 9212 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.710 | 30 | .84 | 3.05 | 13 |
| WALTERS | 9278 | 7 | 71.6 | 30 | -4.6 | 103. | 4 | 37. | 24 | 45.0 | 32.0 | 243.5 | -105.5 | 6.930 | 30 | 3.67 | 3.25 | 13 |
| WICHITA MT WLR | 9629 | 7 | 70.8 | 30 | -2.8 | 107. | 5 | 38. | 24 | 66.0 | 53.0 | 241.5 | -32.5 | 5.310 | 30 | 2.20 | 3.10 | 13 |
| WILLOW | 9668 | 7 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.190 | 30 | ***** | 2.72 | 13 |

## SEPTEMBER 1989 SUMMARY FOR SOUTH CENTRAL DIVISION (CD8)

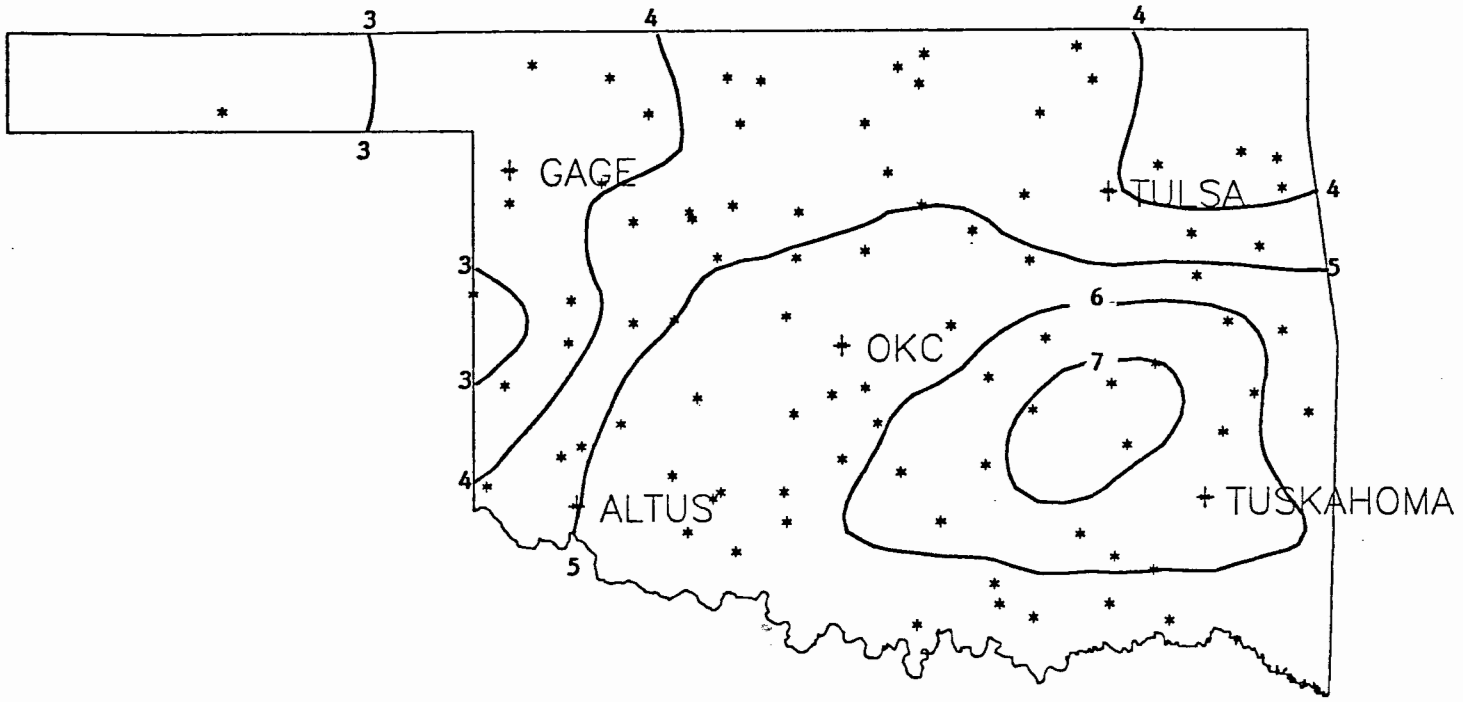
| NAME | ID | CD | MEAN TEMP | NUM OBS | DEV FROM NORM | MAX TEMP | DAY | MIN TEMP | DAY | HEAT DEG DAY | DEV FROM NORM | COOL DEG DAY | DEV FROM NORM | TOT PPT | NUM OBS | DEV FROM NORM | MAX 24-HR | DAY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADA | 17 | 8 | 70.0 | 30 | -4.6 | 99. | 1 | 36. | 24 | 52.5 | 40.5 | 203.5 | -96.5 | 8.612 | 30 | 4.60 | 3.82 | 2 |
| ALLEN | 147 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 9.801 | 30 | ***** | 3.20 | 11 |
| ARDMORE | 292 | 8 | 72.3 | 24 | ***** | 100. | 1 | 40. | 24 | 34.0 | ****** | 210.0 | ****** | 4.531 | 30 | .60 | 2.11 | 13 |
| ATOKA DAM | 394 | 8 | 71.2 | 30 | ***** | 102. | 2 | 42. | 24 | 49.5 | ****** | 235.0 | ****** | 4.350 | 30 | ***** | 2.20 | 11 |
| BOKCHITO | 917 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.650 | 30 | ***** | 3.00 | 12 |
| CANEY | 1437 | 8 | 71.2 | 30 | ***** | 100. | 1 | 40. | 24 | 38.5 | ****** | 225.5 | ****** | 6.390 | 30 | ***** | 2.27 | 13 |
| CENTRAHOMA | 1648 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.740 | 30 | ***** | 2.03 | 13 |
| CHICKASAW NRA | 1745 | 8 | 68.9 | 30 | ***** | 101. | 2 | 34. | 24 | 85.0 | ****** | 203.5 | ****** | 6.790 | 30 | ***** | 2.80 | 11 |
| COMANCHE | 2054 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.690 | 30 | ***** | 2.88 | 13 |
| DAISY 4 ENE | 2354 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 7.151 | 30 | 1.45 | 2.06 | 4 |
| DUNCAN | 2660 | 8 | 70.5 | 30 | -5.2 | 101. | 2 | 41. | 25 | 55.5 | 47.5 | 221.0 | -108.0 | 6.620 | 30 | 2.97 | 3.50 | 13 |
| DURANT USDA | 2678 | 8 | 70.0 | 30 | ***** | 99. | 2 | 38. | 24 | 62.0 | ****** | 211.5 | ****** | 8.030 | 30 | 2.42 | 3.82 | 13 |
| ELMORE CITY | 2872 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.400 | 30 | ***** | 1.90 | 11 |
| FARRIS 3 WNW | 3083 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.800 | 30 | ***** | 1.73 | 11 |
| GRADY | 3688 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 10.530 | 30 | ***** | 4.07 | 11 |
| HEALDTON | 4001 | 8 | 71.0 | 30 | ***** | 103. | 1 | 38. | 25 | 47.5 | ****** | 226.5 | ****** | 4.680 | 30 | .59 | 2.29 | 13 |
| HENNEPIN | 4052 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.260 | 30 | ***** | 1.82 | 10 |
| KETCHUM RANCH | 4780 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.030 | 30 | ***** | 1.60 | 13 |
| KINGSTON | 4865 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.220 | 30 | .55 | 1.65 | 13 |
| LEHIGH | 5108 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.443 | 30 | ***** | 1.90 | 13 |
| LINDSAY 2 W | 5216 | 8 | 69.8 | 30 | ***** | 101. | 1 | 35. | 24 | 63.5 | ****** | 206.5 | ****** | 4.500 | 30 | .70 | 2.50 | 13 |
| LOCO 6 SE | 5247 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.280 | 30 | ***** | 2.32 | 10 |
| MADILL | 5468 | 8 | 70.9 | 30 | -5.0 | 101. | 1 | 37. | 26 | 64.0 | 57.0 | 242.0 | -92.0 | 4.720 | 30 | .12 | 2.23 | 13 |
| MARIETTA | 5563 | 8 | 72.5 | 30 | -3.4 | 103. | 1 | 42. | 24 | 31.0 | 21.0 | 256.0 | -81.0 | 3.990 | 30 | .00 | 1.96 | 13 |
| MARLOW 1 WSW | 5581 | 8 | 70.5 | 30 | ***** | 102. | 1 | 33. | 24 | 58.0 | ****** | 224.0 | ****** | 4.630 | 30 | .97 | 1.80 | 13 |
| MCGEE CREEK DAM | 5713 | 8 | 71.1 | 30 | ***** | 100. | 2 | 41. | 25 | 44.5 | ****** | 227.0 | ****** | 6.640 | 30 | ***** | 1.90 | 13 |
| OSWALT | 6787 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 8.770 | 30 | ***** | 4.02 | 12 |
| PAULS VALLEY | 6926 | 8 | 69.9 | 30 | -5.7 | 101. | 1 | 34. | 24 | 62.0 | 53.0 | 210.0 | -117.0 | 6.730 | 30 | 3.06 | 2.25 | 11 |
| PONTOTOC | 7214 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.800 | 30 | -.32 | 2.10 | 13 |
| TISHOMINGO NWLR | 8884 | 8 | 70.9 | 30 | ***** | 102. | 1 | 37. | 25 | 55.5 | ****** | 232.0 | ****** | 6.711 | 30 | 1.84 | 3.21 | 13 |
| TUSSY | 9032 | 8 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.740 | 30 | ***** | 1.64 | 3 |
| WAURIKA | 9395 | 8 | 73.2 | 30 | -3.3 | 104. | 1 | 40. | 24 | 27.0 | 21.0 | 271.5 | -79.5 | 6.850 | 30 | 3.45 | 2.83 | 13 |
| WAURIKA DAM | 9399 | 8 | 72.7 | 28 | ***** | 104. | 2 | 39. | 28 | 38.0 | ****** | 254.5 | ****** | 7.161 | 29 | ***** | 3.50 | 13 |

## SEPTEMBER 1989 SUMMARY FOR SOUTHEAST DIVISION (CD9)

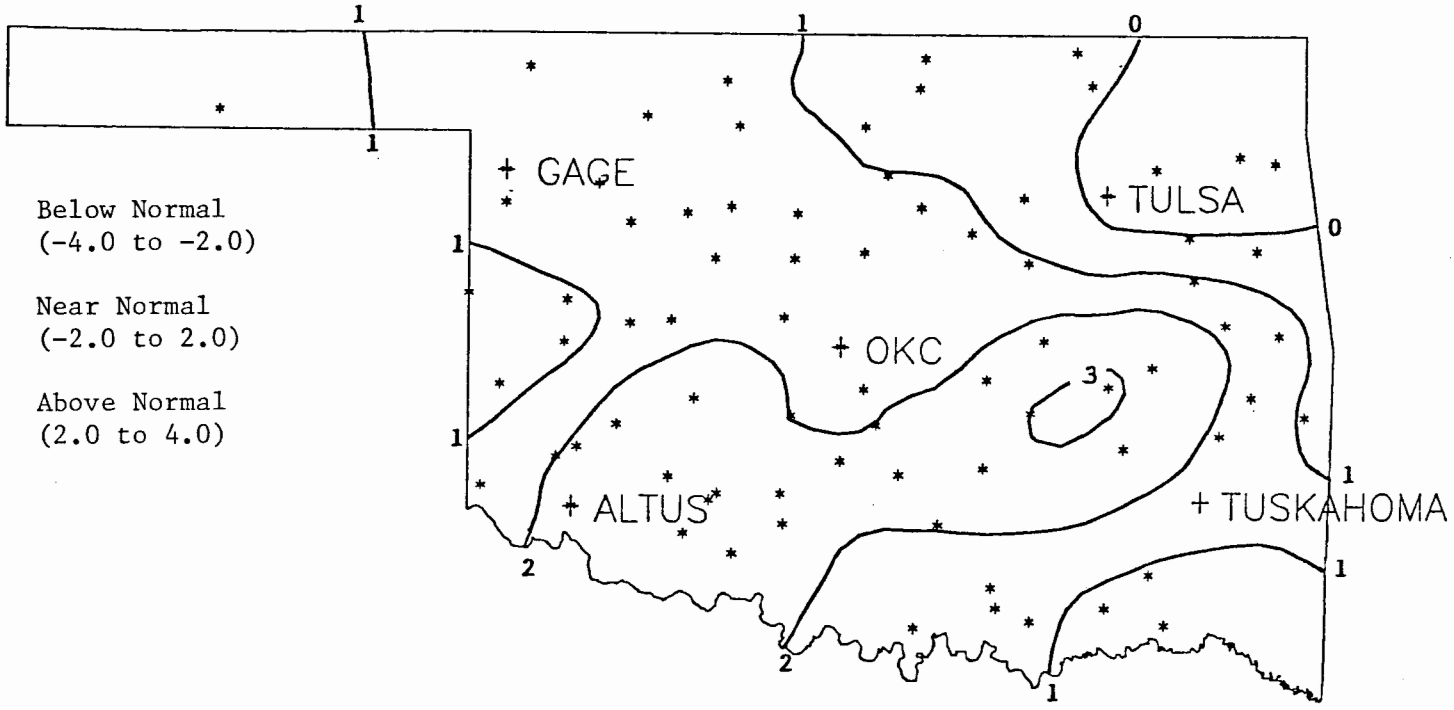
| NAME | ID | CD | MEAN TEMP | NUM OBS | DEV FROM NORM | MAX TEMP | DAY | MIN TEMP | DAY | HEAT DEG DAY | DEV FROM NORM | COOL DEG DAY | DEV FROM NORM | TOT PPT | NUM OBS | DEV FROM NORM | MAX 24-HR | DAY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANTLERS | 256 | 9 | 70.7 | 30 | -3.7 | 100. | 1 | 37. | 25 | 49.0 | 40.0 | 219.5 | -71.5 | 5.530 | 30 | .26 | 2.22 | 13 |
| BEAR MT TWR | 584 | 9 | 70.4 | 29 | ***** | 100. | 1 | 36. | 24 | 40.5 | ****** | 198.5 | ****** | 4.940 | 27 | ***** | 1.67 | 30 |
| BENGAL | 670 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.503 | 30 | ***** | 1.85 | 3 |
| BOSWELL 4 NNW | 980 | 9 | 71.6 | 30 | ***** | 101. | 1 | 38. | 24 | 37.0 | ****** | 234.5 | ****** | 4.860 | 30 | -.05 | 2.00 | 13 |
| BROKEN BOW 1 N | 1162 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.750 | 30 | 1.03 | 2.85 | 3 |
| BROKEN BOW DAM | 1168 | 9 | 70.9 | 30 | ***** | 98. | 1 | 42. | 24 | 24.0 | ****** | 200.0 | ****** | 5.070 | 30 | ***** | 1.34 | 13 |
| CARNASAW TWR | 1499 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.350 | 30 | -.64 | 1.20 | 3 |
| CARTER TWR | 1544 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.280 | 30 | 1.32 | 2.32 | 3 |
| FANSHAWE | 3065 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.340 | 30 | 1.66 | 1.82 | 2 |
| FLAGPOLE TWR | 3169 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 6.700 | 30 | ***** | 2.39 | 11 |
| HEAVENER 1 SE | 4008 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.160 | 30 | .64 | 2.20 | 2 |
| HEE MT TWR | 4017 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 3.600 | 30 | ***** | 1.46 | 10 |
| HUGO | 4384 | 9 | 71.6 | 30 | -4.2 | 98. | 2 | 41. | 26 | 35.5 | 35.5 | 234.0 | -94.0 | 4.500 | 30 | -.65 | 1.66 | 13 |
| POTEAU W W | 7254 | 9 | 68.8 | 30 | ***** | 101. | 1 | 34. | 24 | 65.0 | ****** | 178.5 | ****** | 4.560 | 30 | ***** | 1.82 | 1 |
| SOBAL TOWER | 8305 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 10.610 | 25 | ***** | 4.50 | 2 |
| SPIRO | 8416 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 4.530 | 30 | .50 | 1.37 | 10 |
| TUSKAHOMA | 9023 | 9 | 69.9 | 30 | ***** | 102. | 1 | 32. | 24 | 59.5 | ****** | 206.5 | ****** | 6.950 | 30 | ***** | 2.07 | 14 |
| VALLIANT 3 W | 9118 | 9 | ***** | 0 | ***** | **** | 0 | **** | 0 | ****** | ****** | ****** | ****** | 5.450 | 30 | .47 | 1.46 | 30 |
| WILBURTON 9 ENE | 9634 | 9 | 69.6 | 30 | -4.1 | 105. | 1 | 33. | 24 | 53.0 | 37.0 | 190.0 | -87.0 | 5.362 | 30 | .42 | 1.20 | 9 |

## SEPTEMBER 1989 CLIMATE DIVISION SUMMARY

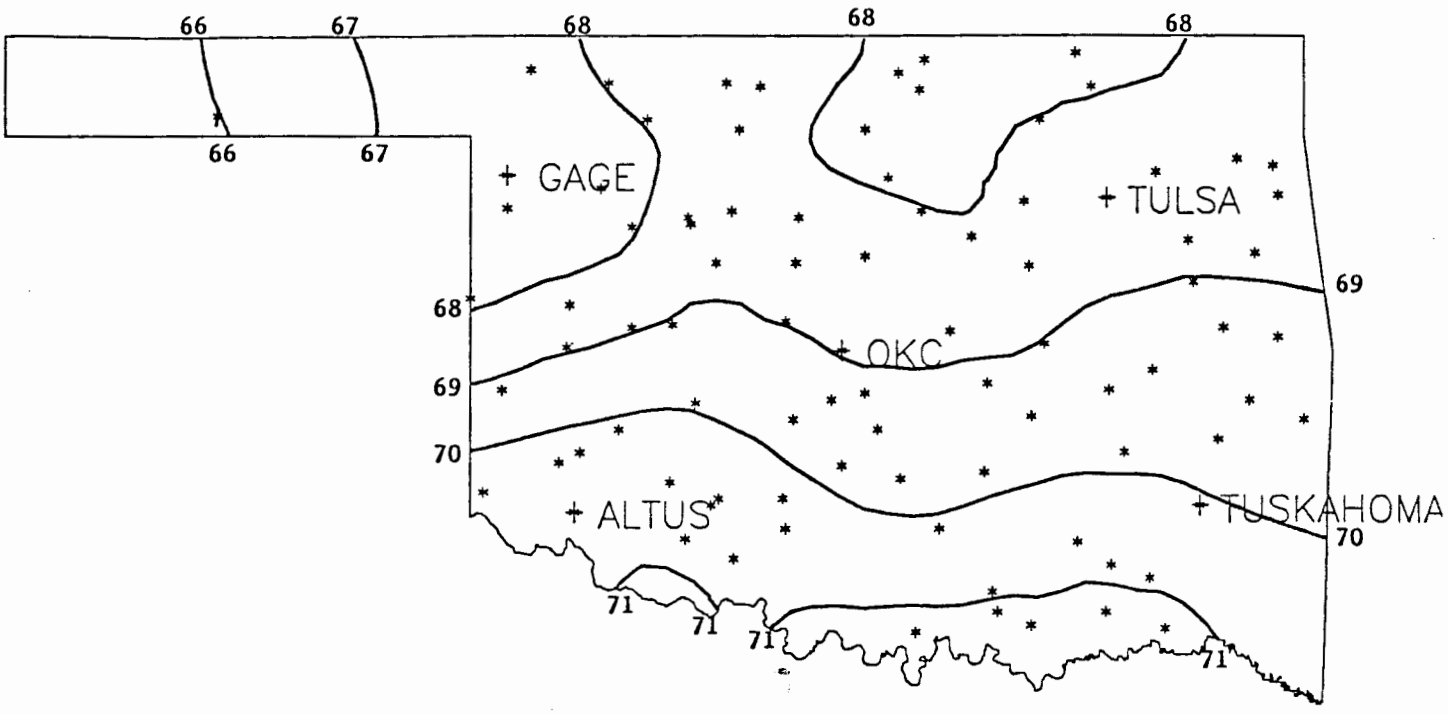
| CLIMATE DIV | MEAN TEMP | NUM STA | DEV FROM NORM | MAX TEMP | DAY | MIN TEMP | DAY | HEAT DEGREE DAYS | DEV FROM NORM | COOL DEGREE DAYS | DEV FROM NORM | TOT PPT | NUM STA | DEV FROM NORM | MAX 24-HR | DAY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 66.6 | 11 | -3.7 | 99.0 | 7 | 29.0 | 24 | 112.5 | 82.0 | 161.5 | -29.1 | 2.49 | 14 | .76 | 2.46 | 13 |
| 2 | 68.0 | 15 | -5.1 | 97.0 | 2 | 29.0 | 24 | 83.6 | 64.7 | 172.9 | -89.9 | 3.60 | 25 | .50 | 4.26 | 5 |
| 3 | 67.8 | 16 | -5.0 | 96.0 | 7 | 32.0 | 25 | 79.3 | 56.3 | 163.2 | -94.0 | 4.16 | 34 | -.14 | 4.03 | 6 |
| 4 | 68.4 | 11 | -4.9 | 107.0 | 2 | 29.0 | 23 | 84.0 | 67.0 | 186.6 | -81.7 | 3.57 | 22 | .78 | 3.35 | 13 |
| 5 | 68.8 | 16 | -5.1 | 103.0 | 1 | 33.0 | 24 | 69.3 | 53.6 | 182.7 | -99.8 | 5.62 | 35 | 1.81 | 6.80 | 13 |
| 6 | 69.1 | 12 | -4.8 | 103.0 | 1 | 32.0 | 24 | 62.6 | 47.1 | 186.0 | -95.8 | 6.21 | 31 | 1.94 | 6.05 | 13 |
| 7 | 70.9 | 12 | -4.2 | 107.0 | 5 | 29.0 | 24 | 56.0 | 46.0 | 232.0 | -79.6 | 5.14 | 24 | 2.14 | 4.58 | 13 |
| 8 | 70.8 | 15 | -5.1 | 104.0 | 2 | 33.0 | 24 | 53.1 | 45.6 | 226.4 | -109.2 | 6.06 | 32 | 1.81 | 4.07 | 11 |
| 9 | 70.4 | 8 | -4.2 | 105.0 | 1 | 32.0 | 24 | 45.4 | 37.1 | 207.7 | -91.0 | 5.38 | 17 | .47 | 4.50 | 2 |



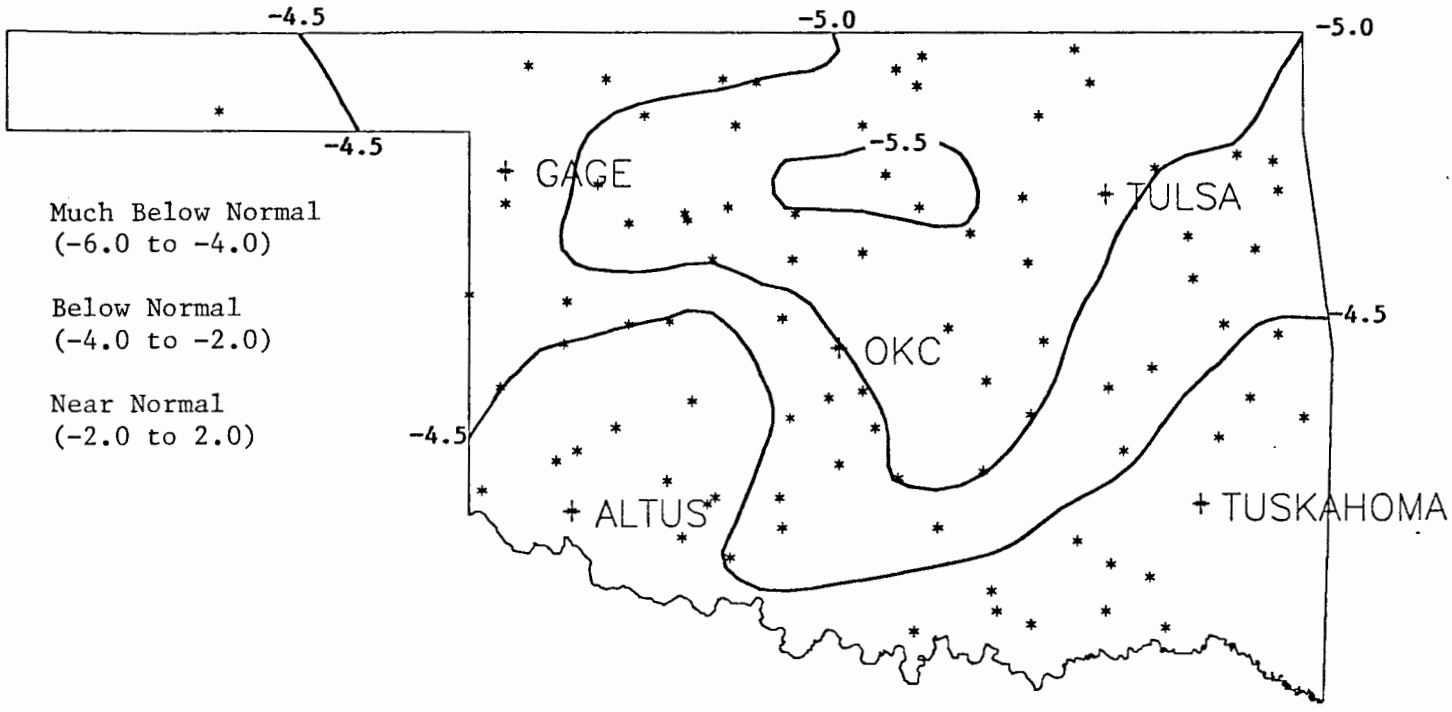

**SEPTEMBER 1989 TOTAL PRECIPITATION**
**(Inches)**



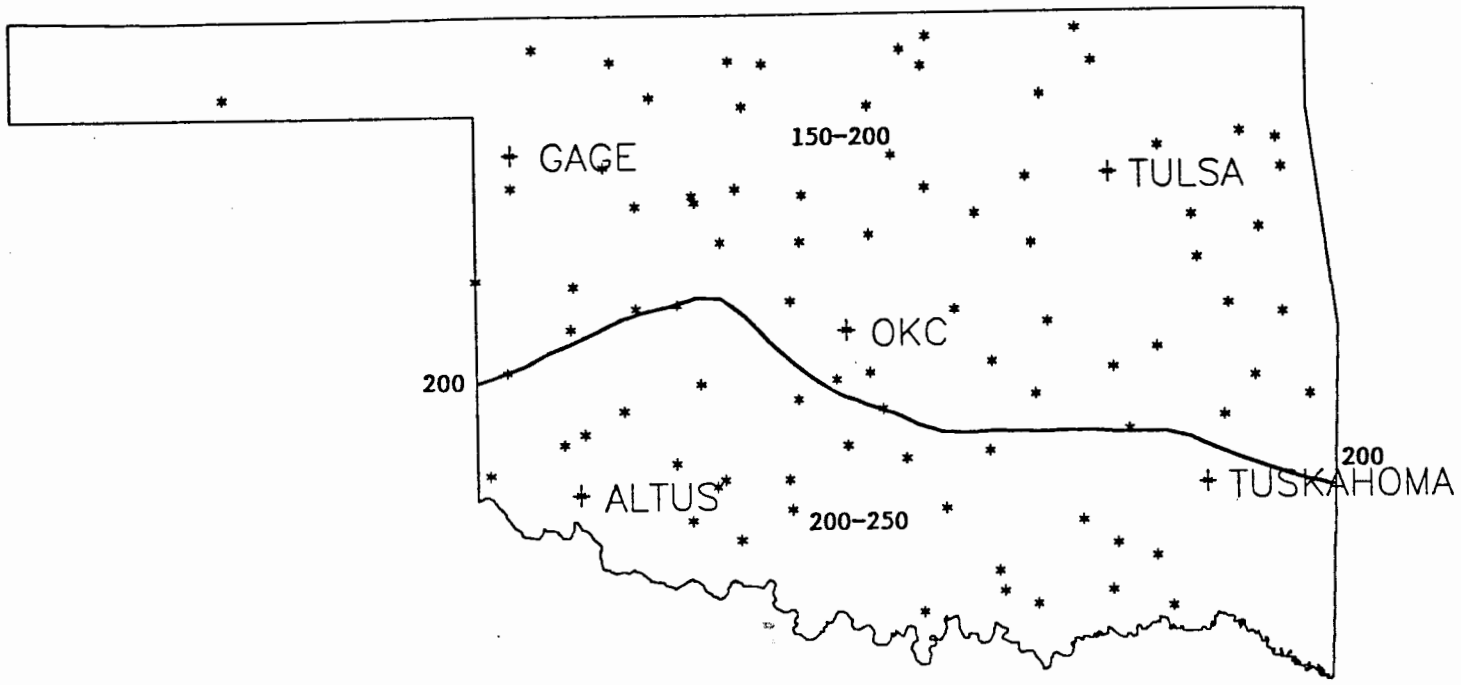

**SEPTEMBER 1989 DEVIATION FROM NORMAL PRECIPITATION**
**(Inches)**



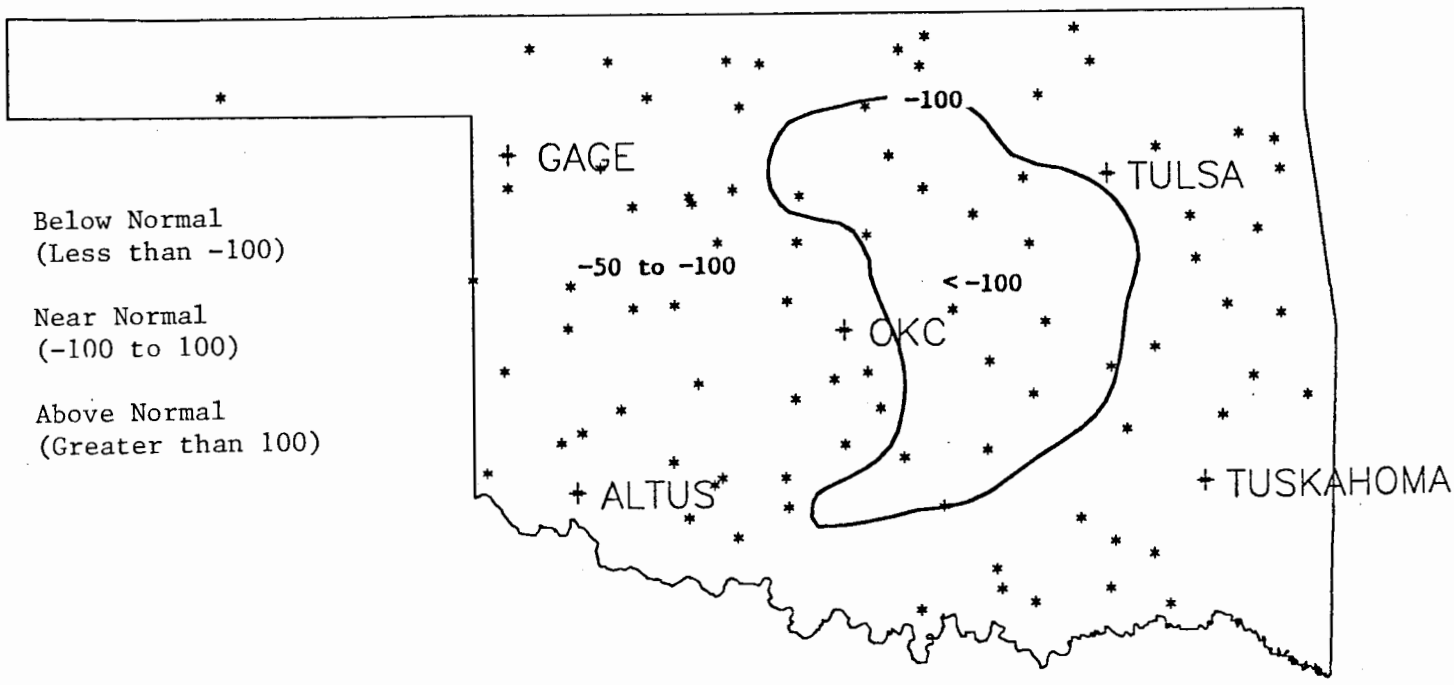

**SEPTEMBER 1989 AVERAGE MONTHLY TEMPERATURES**
**(Degrees F)**




**SEPTEMBER 1989 DEVIATION FROM NORMAL TEMPERATURES**
**(Degrees F)**

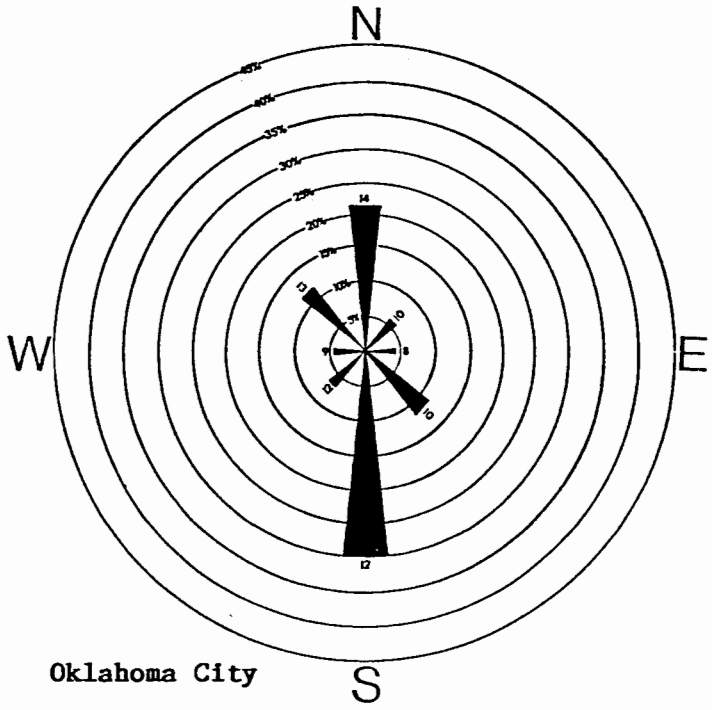


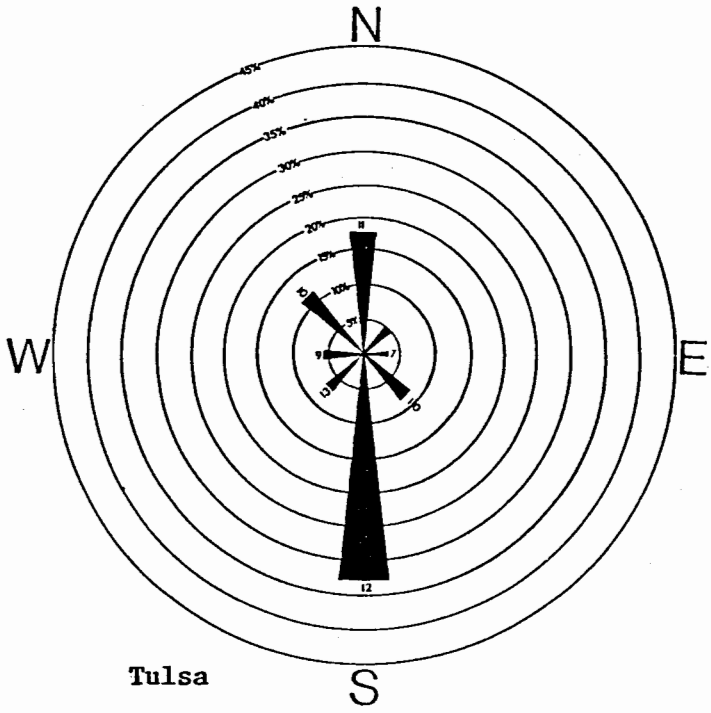

**SEPTEMBER 1989 COOLING DEGREE DAYS**




**SEPTEMBER 1989 DEVIATION FROM NORMAL COOLING DEGREE DAYS**

November wind roses for Oklahoma City and Tulsa for 10-year (1965-1974) mean winds (data adapted from NOAA Airport Climatology Series). Percents represent the percentage for winds coming from a direction. The numbers at the end of the bars indicate the average speed (miles per hour) of winds from that direction.



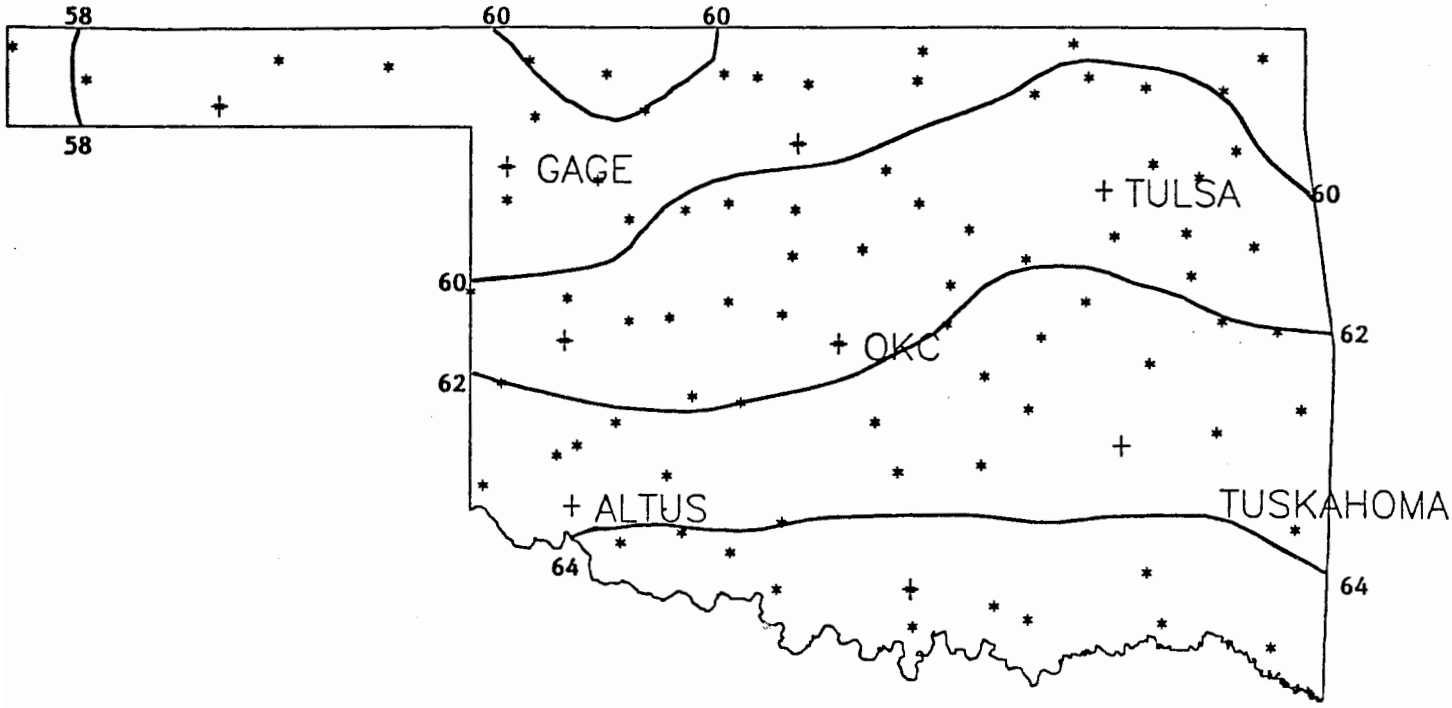

## NOVEMBER 1989 SUNRISE AND SUNSET

### Oklahoma City

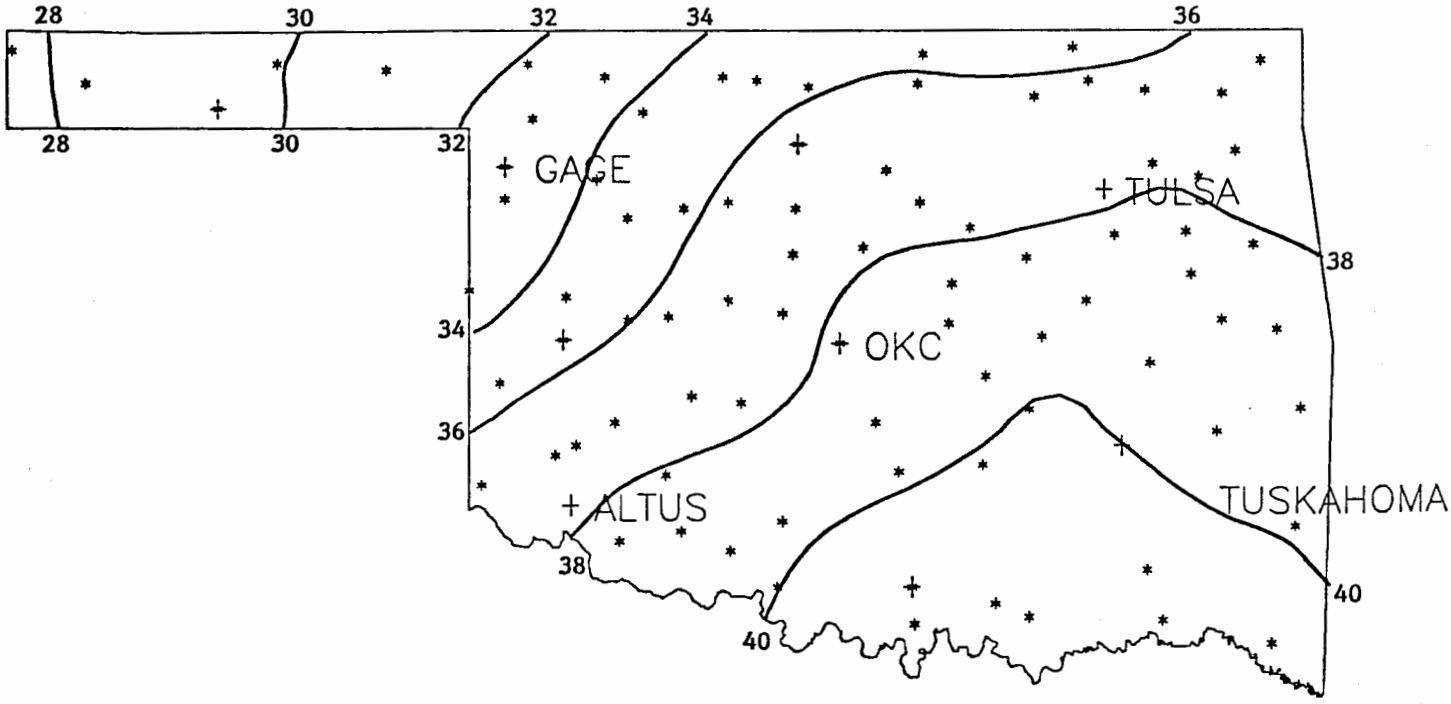
| DATE | SUNRISE | SUNSET | DAYLIGHT |
|---|---|---|---|
| 891101 | 6:51AM | 5:38PM LT | 10:47 |
| 891102 | 6:52AM | 5:37PM LT | 10:45 |
| 891103 | 6:52AM | 5:36PM LT | 10:43 |
| 891104 | 6:53AM | 5:35PM LT | 10:41 |
| 891105 | 6:54AM | 5:34PM LT | 10:39 |
| 891106 | 6:55AM | 5:33PM LT | 10:38 |
| 891107 | 6:56AM | 5:32PM LT | 10:36 |
| 891108 | 6:57AM | 5:31PM LT | 10:34 |
| 891109 | 6:58AM | 5:31PM LT | 10:32 |
| 891110 | 6:59AM | 5:30PM LT | 10:31 |
| 891111 | 7: 0AM | 5:29PM LT | 10:29 |
| 891112 | 7: 1AM | 5:29PM LT | 10:27 |
| 891113 | 7: 2AM | 5:28PM LT | 10:26 |
| 891114 | 7: 3AM | 5:27PM LT | 10:24 |
| 891115 | 7: 4AM | 5:27PM LT | 10:22 |
| 891116 | 7: 5AM | 5:26PM LT | 10:21 |
| 891117 | 7: 6AM | 5:25PM LT | 10:19 |
| 891118 | 7: 7AM | 5:25PM LT | 10:18 |
| 891119 | 7: 8AM | 5:24PM LT | 10:16 |
| 891120 | 7: 9AM | 5:24PM LT | 10:15 |
| 891121 | 7:10AM | 5:24PM LT | 10:13 |
| 891122 | 7:11AM | 5:23PM LT | 10:12 |
| 891123 | 7:12AM | 5:23PM LT | 10:11 |
| 891124 | 7:13AM | 5:22PM LT | 10: 9 |
| 891125 | 7:14AM | 5:22PM LT | 10: 8 |
| 891126 | 7:15AM | 5:22PM LT | 10: 7 |
| 891127 | 7:16AM | 5:22PM LT | 10: 6 |
| 891128 | 7:17AM | 5:21PM LT | 10: 5 |
| 891129 | 7:18AM | 5:21PM LT | 10: 4 |
| 891130 | 7:18AM | 5:21PM LT | 10: 2 |

### Tulsa

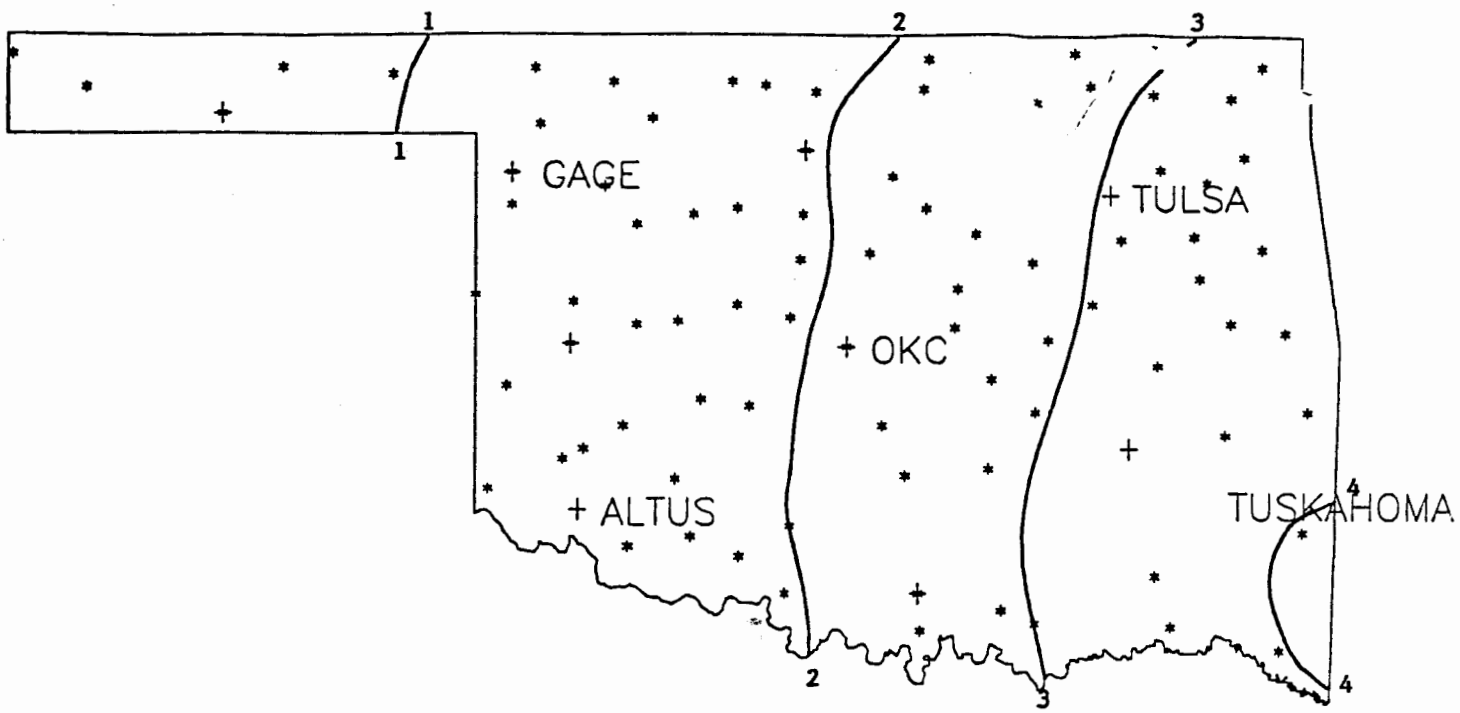
| DATE | SUNRISE | SUNSET | DAYLIGHT |
|---|---|---|---|
| 891101 | 6:45AM | 5:30PM LT | 10:45 |
| 891102 | 6:46AM | 5:29PM LT | 10:43 |
| 891103 | 6:47AM | 5:28PM LT | 10:41 |
| 891104 | 6:48AM | 5:27PM LT | 10:39 |
| 891105 | 6:49AM | 5:26PM LT | 10:37 |
| 891106 | 6:50AM | 5:25PM LT | 10:35 |
| 891107 | 6:51AM | 5:24PM LT | 10:33 |
| 891108 | 6:52AM | 5:23PM LT | 10:31 |
| 891109 | 6:53AM | 5:23PM LT | 10:30 |
| 891110 | 6:54AM | 5:22PM LT | 10:28 |
| 891111 | 6:55AM | 5:21PM LT | 10:26 |
| 891112 | 6:56AM | 5:20PM LT | 10:24 |
| 891113 | 6:57AM | 5:20PM LT | 10:23 |
| 891114 | 6:58AM | 5:19PM LT | 10:21 |
| 891115 | 6:59AM | 5:18PM LT | 10:19 |
| 891116 | 7: 0AM | 5:18PM LT | 10:18 |
| 891117 | 7: 1AM | 5:17PM LT | 10:16 |
| 891118 | 7: 2AM | 5:17PM LT | 10:15 |
| 891119 | 7: 3AM | 5:16PM LT | 10:13 |
| 891120 | 7: 4AM | 5:16PM LT | 10:12 |
| 891121 | 7: 5AM | 5:15PM LT | 10:10 |
| 891122 | 7: 6AM | 5:15PM LT | 10: 9 |
| 891123 | 7: 7AM | 5:14PM LT | 10: 7 |
| 891124 | 7: 8AM | 5:14PM LT | 10: 6 |
| 891125 | 7: 9AM | 5:14PM LT | 10: 5 |
| 891126 | 7:10AM | 5:13PM LT | 10: 3 |
| 891127 | 7:11AM | 5:13PM LT | 10: 2 |
| 891128 | 7:12AM | 5:13PM LT | 10: 1 |
| 891129 | 7:13AM | 5:12PM LT | 9:60 |
| 891130 | 7:13AM | 5:12PM LT | 9:59 |




30-YEAR MEAN NOVEMBER MAXIMUM TEMPERATURE




30-YEAR MEAN NOVEMBER DAILY MINIMUM TEMPERATURE




**30-YEAR MEAN NOVEMBER PRECIPITATION**

## 30- and 90-DAY NATIONAL WEATHER SERVICE OUTLOOK

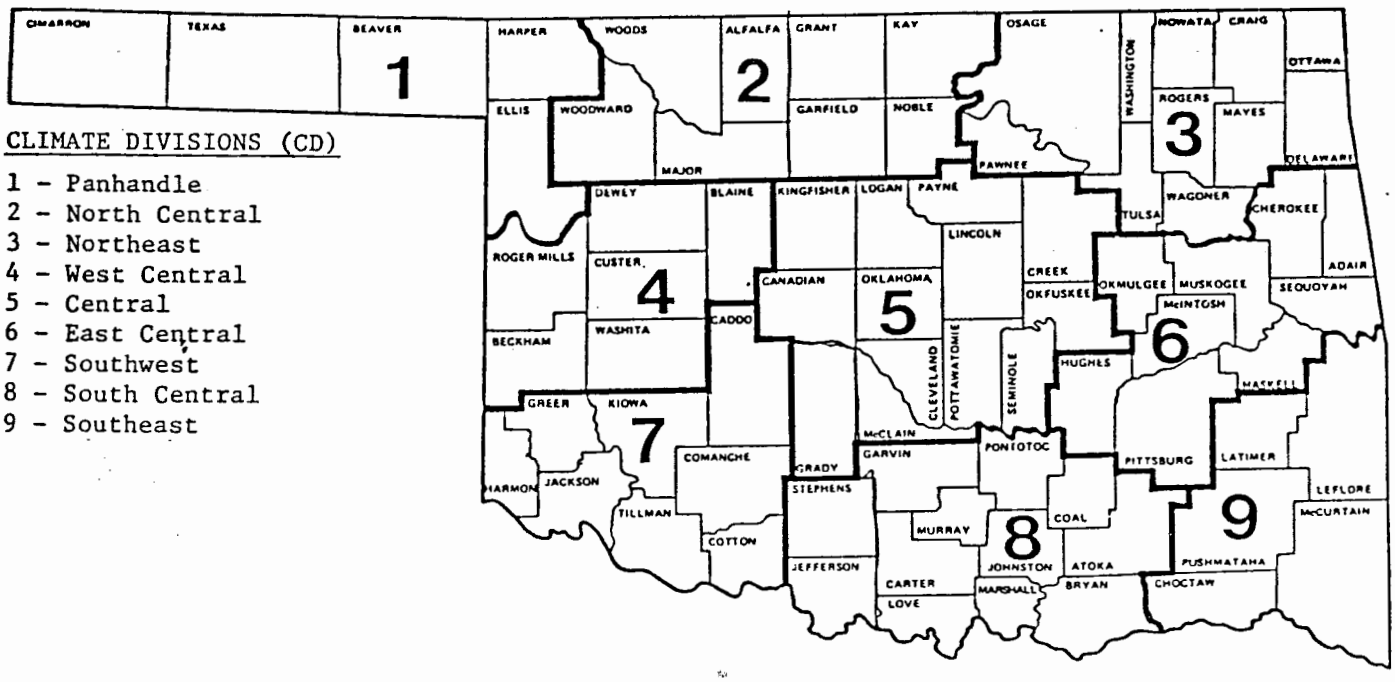
### 30-DAY OUTLOOK (OCTOBER)

Precipitation - Near Normal Statewide
Temperature - Below Normal Statewide

### 90-DAY OUTLOOK (OCTOBER-DECEMBER)

Precipitation - Near Normal Statewide
Temperature - Below Normal Statewide

# O K L A H O M A




CLIMATE DIVISIONS (CD)

1 - Panhandle
2 - North Central
3 - Northeast
4 - West Central
5 - Central
6 - East Central
7 - Southwest
8 - South Central
9 - Southeast

## EXPLANATION OF TABLES

Two kinds of tables appear in this summary. The first is a set of tables containing all reporting stations grouped by climate division. The figure above shows the locations of the climate divisions. Each table contains the following information for each station:

Station Name:

Station Identification Number: These are usually assigned by the National Climatic Data Center.

Climate Division: See the figure above.

Number of Temperature Observations: These are the actual number of temperature reports recorded at the station during the current month. Missing observations may result in artificially high or low mean monthly temperatures.

Deviation from Normal: The deviation of the observed mean monthly temperature from the monthly station normal. A positive value indicates the month was warmer than normal. A negative value indicates the month was cooler than normal. Normal monthly temperatures may be calculated by subtracting the deviation from the observed temperature.

Maximum Daily Maximum: The maximum daily maximum temperature observed during the current month and year and the day which it occurred.

Minimum Daily Minimum: The minimum daily minimum temperature observed during the current month and year and the day which it occurred.

Heating Degree Days: HDD are calculated each day of the month for which there is a temperature report and summed. They are a qualitative measure of how much heat was required to maintain a comfortable indoor temperature. Missing observations may result in an artificially high or low value. For February 1984 HDD would be calculated as:

$$\sum_{i=1}^{29} 65-((TMAX_i + TMIN_i)/2)$$

Deviation from Normal Heating Degree Days: A positive value indicates higher than normal heating requirements for the month as a whole. A negative value indicates lower than normal heating requirements for the month as a whole. Normal HDD may be calculated by subtracting the deviation from observed HDD.

Cooling Degree Days: CDD are calculated each day of the month for which there is a temperature report and summed. They are a proxy measure of how much cooling was required to maintain a comfortable indoor temperature. Missing observations may result in an artificially high or low value. For June, CDD would be calculated as:

$$\sum_{i=1}^{30} ((TMAX_i + TMIN_i)/2)-65$$

Deviation from Normal Cooling Degree Days: A positive value indicates higher than normal cooling requirements for the month as a whole. A negative value indicates lower than normal cooling requirements for the month as a whole. Normal cooling degree days may be found by subtracting the deviation from the observed cooling degree days.

Total Precipitation: Often incorrectly referred to as mean precipitation, this value is the sum of all precipitation reported during the month at a station. If snow occurred, it is to be melted and its water equivalent recorded.

Number of Precipitation Observations: The number of days a rain or no-rain observation was reported. Missing observations frequently result in artificially low total precipitation values.

Deviation from Normal Precipitation: A positive value indicates more rain than normal was received. A negative value indicates less than was expected rainfall was received. Normal rainfall may be calculated by subtracting the deviation from monthly total.

Maximum 24-Hour Report and Day: The maximum amount of precipitation recorded during the station's 24-hour observation period for the current month and year and the day on which it was recorded.

The second set of tables contain similar information but are the average or extreme over all the stations reporting in each climate division.

## EXPLANATION OF MAPS

To give a Statewide perspective, a series of maps is produced each month from the information contained in the station tables. Each map is calculated using between 50 and 200 observations. Only stations with complete monthly records are used. Each observation is put into one of three categories and assigned a plus (+), minus (-), or a dot (.). The minus is the lowest numeric category, the dot is the middle and the plus the highest numeric category. If a map location has no report, a value is estimated. Each map is accompanied by its own legend. The categories will vary from month to month throughout the year. The categories for the deviations from normal maps will always remain constant. This is to facilitate comparisons between months and across years.

**NOVEMBER 1989**

**CLIMATE CALENDAR**

The data on this calendar are for Oklahoma City. Normal values are calculated for the period 1948-1987. Extremes are found for the period of record (1924-present).

| Normal | 1 | Actual |
|---|---|---|
| 67.1 | max | |
| 45.2 | min | |
| .054 | pcpn | |
| 9 | HDD | |
| 1 | CDD | |
| Highest Max | | 84-1982 |
| Lowest Max | | 35-1951 |
| Lowest Min | | 29-1966 |
| Highest Min | | 68-1982 |
| Greatest pcpn | | 1.05-1981 |

| Normal | 2 | Actual |
|---|---|---|
| 63.1 | max | |
| 42.2 | min | |
| .093 | pcpn | |
| 12 | HDD | |
| 0 | CDD | |
| Highest Max | | 81-1978 |
| Lowest Max | | 31-1951 |
| Lowest Min | | 22-1966 |
| Highest Min | | 62-1983 |
| Greatest pcpn | | 1.51-1951 |

| Normal | 3 | Actual |
|---|---|---|
| 61.6 | max | |
| 40.9 | min | |
| .092 | pcpn | |
| 14 | HDD | |
| 0 | CDD | |
| Highest Max | | 82-1931 |
| Lowest Max | | 40-1954 |
| Lowest Min | | 21-1939 |
| Highest Min | | 61-1959 |
| Greatest pcpn | | 1.51-1964 |

| Normal | 4 | Actual |
|---|---|---|
| 63.5 | max | |
| 40.9 | min | |
| .098 | pcpn | |
| 13 | HDD | |
| 0 | CDD | |
| Highest Max | | 81-1978 |
| Lowest Max | | 47-1956 |
| Lowest Min | | 23-1936 |
| Highest Min | | 56-1964 |
| Greatest pcpn | | 2.17-1986 |

| Normal | 5 | Actual |
|---|---|---|
| 61.8 | max | |
| 41.2 | min | |
| .049 | pcpn | |
| 13 | HDD | |
| 0 | CDD | |
| Highest Max | | 81-1945 |
| Lowest Max | | 35-1951 |
| Lowest Min | | 23-1951 |
| Highest Min | | 59-1965 |
| Greatest pcpn | | .99-1946 |

| Normal | 6 | Actual |
|---|---|---|
| 62.9 | max | |
| 41.4 | min | |
| .041 | pcpn | |
| 13 | HDD | |
| 0 | CDD | |
| Highest Max | | 85-1945 |
| Lowest Max | | 39-1959 |
| Lowest Min | | 20-1959 |
| Highest Min | | 59-1965 |
| Greatest pcpn | | .68-1978 |

| Normal | 7 | Actual |
|---|---|---|
| 63.5 | max | |
| 41.2 | min | |
| .026 | pcpn | |
| 13 | HDD | |
| 0 | CDD | |
| Highest Max | | 86-1980 |
| Lowest Max | | 44-1968 |
| Lowest Min | | 26-1959 |
| Highest Min | | 61-1966 |
| Greatest pcpn | | 1.03-1944 |

| Normal | 8 | Actual |
|---|---|---|
| 63.9 | max | |
| 41.4 | min | |
| .065 | pcpn | |
| 12 | HDD | |
| 0 | CDD | |
| Highest Max | | 87-1980 |
| Lowest Max | | 40-1953 |
| Lowest Min | | 23-1955 |
| Highest Min | | 66-1966 |
| Greatest pcpn | | .33-1981 |

| Normal | 9 | Actual |
|---|---|---|
| 62.1 | max | |
| 39.6 | min | |
| .017 | pcpn | |
| 14 | HDD | |
| 0 | CDD | |
| Highest Max | | 82-1988 |
| Lowest Max | | 37-1958 |
| Lowest Min | | 25-1955 |
| Highest Min | | 60-1984 |
| Greatest pcpn | | 1.15-1977 |

| Normal | 10 | Actual |
|---|---|---|
| 62.0 | max | |
| 38.2 | min | |
| .022 | pcpn | |
| 15 | HDD | |
| 0 | CDD | |
| Highest Max | | 81-1980 |
| Lowest Max | | 33-1950 |
| Lowest Min | | 20-1950 |
| Highest Min | | 58-1964 |
| Greatest pcpn | | 1.17-1937 |

| Normal | 11 | Actual |
|---|---|---|
| 63.0 | max | |
| 38.9 | min | |
| .009 | pcpn | |
| 14 | HDD | |
| 0 | CDD | |
| Highest Max | | 79-1949 |
| Lowest Max | | 43-1968 |
| Lowest Min | | 19-1950 |
| Highest Min | | 63-1982 |
| Greatest pcpn | | 1.10-1988 |

| Normal | 12 | Actual |
|---|---|---|
| 63.2 | max | |
| 39.1 | min | |
| .046 | pcpn | |
| 14 | HDD | |
| 0 | CDD | |
| Highest Max | | 78-1938 |
| Lowest Max | | 33-1976 |
| Lowest Min | | 19-1986 |
| Highest Min | | 58-1951 |
| Greatest pcpn | | .99-1957 |

| Normal | 13 | Actual |
|---|---|---|
| 63.6 | max | |
| 39.6 | min | |
| .066 | pcpn | |
| 13 | HDD | |
| 0 | CDD | |
| Highest Max | | 80-1967 |
| Lowest Max | | 28-1986 |
| Lowest Min | | 12-1940 |
| Highest Min | | 61-1973 |
| Greatest pcpn | | 1.51-1985 |

| Normal | 14 | Actual |
|---|---|---|
| 61.0 | max | |
| 40.6 | min | |
| .049 | pcpn | |
| 14 | HDD | |
| 0 | CDD | |
| Highest Max | | 79-1973 |
| Lowest Max | | 30-1959 |
| Lowest Min | | 15-1959 |
| Highest Min | | 63-1973 |
| Greatest pcpn | | 1.13-1985 |

| Normal | 15 | Actual |
|---|---|---|
| 61.3 | max | |
| 39.9 | min | |
| .114 | pcpn | |
| 14 | HDD | |
| 0 | CDD | |
| Highest Max | | 80-1965 |
| Lowest Max | | 37-1978 |
| Lowest Min | | 15-1940 |
| Highest Min | | 61-1971 |
| Greatest pcpn | | 1.70-1968 |

| Normal | 16 | Actual |
|---|---|---|
| 59.0 | max | |
| 39.2 | min | |
| .029 | pcpn | |
| 16 | HDD | |
| 0 | CDD | |
| Highest Max | | 82-1941 |
| Lowest Max | | 33-1955 |
| Lowest Min | | 14-1932 |
| Highest Min | | 64-1958 |
| Greatest pcpn | | 3.94-1931 |

| Normal | 17 | Actual |
|---|---|---|
| 58.9 | max | |
| 37.0 | min | |
| .083 | pcpn | |
| 17 | HDD | |
| 0 | CDD | |
| Highest Max | | 77-1966 |
| Lowest Max | | 32-1959 |
| Lowest Min | | 11-1959 |
| Highest Min | | 54-1975 |
| Greatest pcpn | | 1.70-1984 |

| Normal | 18 | Actual |
|---|---|---|
| 58.3 | max | |
| 37.7 | min | |
| .067 | pcpn | |
| 17 | HDD | |
| 0 | CDD | |
| Highest Max | | 80-1930 |
| Lowest Max | | 37-1972 |
| Lowest Min | | 17-1951 |
| Highest Min | | 57-1979 |
| Greatest pcpn | | 1.37-1964 |

| Normal | 19 | Actual |
|---|---|---|
| 59.4 | max | |
| 36.6 | min | |
| .104 | pcpn | |
| 17 | HDD | |
| 0 | CDD | |
| Highest Max | | 78-1979 |
| Lowest Max | | 34-1972 |
| Lowest Min | | 18-1937 |
| Highest Min | | 60-1977 |
| Greatest pcpn | | 1.70-1934 |

| Normal | 20 | Actual |
|---|---|---|
| 58.5 | max | |
| 34.7 | min | |
| .049 | pcpn | |
| 18 | HDD | |
| 0 | CDD | |
| Highest Max | | 79-1982 |
| Lowest Max | | 35-1972 |
| Lowest Min | | 19-1937 |
| Highest Min | | 59-1979 |
| Greatest pcpn | | 1.74-1979 |

| Normal | 21 | Actual |
|---|---|---|
| 58.4 | max | |
| 35.3 | min | |
| .023 | pcpn | |
| 18 | HDD | |
| 0 | CDD | |
| Highest Max | | 80-1927 |
| Lowest Max | | 31-1964 |
| Lowest Min | | 20-1964 |
| Highest Min | | 53-1966 |
| Greatest pcpn | | 1.17-1931 |

| Normal | 22 | Actual |
|---|---|---|
| 59.1 | max | |
| 35.8 | min | |
| .040 | pcpn | |
| 17 | HDD | |
| 0 | CDD | |
| Highest Max | | 78-1966 |
| Lowest Max | | 38-1957 |
| Lowest Min | | 18-1926 |
| Highest Min | | 60-1966 |
| Greatest pcpn | | 1.54-1931 |

| Normal | 23 | Actual |
|---|---|---|
| 57.3 | max | |
| 34.6 | min | |
| .028 | pcpn | |
| 19 | HDD | |
| 0 | CDD | |
| Highest Max | | 79-1973 |
| Lowest Max | | 35-1970 |
| Lowest Min | | 19-1950 |
| Highest Min | | 60-1966 |
| Greatest pcpn | | 1.62-1931 |

| Normal | 24 | Actual |
|---|---|---|
| 55.2 | max | |
| 34.6 | min | |
| .083 | pcpn | |
| 20 | HDD | |
| 0 | CDD | |
| Highest Max | | 76-1942 |
| Lowest Max | | 36-1950 |
| Lowest Min | | 15-1950 |
| Highest Min | | 60-1966 |
| Greatest pcpn | | .77-1944 |

| Normal | 25 | Actual |
|---|---|---|
| 59.9 | max | |
| 37.2 | min | |
| .071 | pcpn | |
| 16 | HDD | |
| 0 | CDD | |
| Highest Max | | 84-1965 |
| Lowest Max | | 39-1982 |
| Lowest Min | | 20-1950 |
| Highest Min | | 62-1966 |
| Greatest pcpn | | 2.01-1940 |

| Normal | 26 | Actual |
|---|---|---|
| 57.7 | max | |
| 35.5 | min | |
| .142 | pcpn | |
| 18 | HDD | |
| 0 | CDD | |
| Highest Max | | 78-1970 |
| Lowest Max | | 32-1952 |
| Lowest Min | | 13-1975 |
| Highest Min | | 50-1966 |
| Greatest pcpn | | .97-1935 |

| Normal | 27 | Actual |
|---|---|---|
| 51.0 | max | |
| 32.0 | min | |
| .065 | pcpn | |
| 23 | HDD | |
| 0 | CDD | |
| Highest Max | | 76-1927 |
| Lowest Max | | 33-1958 |
| Lowest Min | | 16-1976 |
| Highest Min | | 56-1960 |
| Greatest pcpn | | 1.28-1982 |

| Normal | 28 | Actual |
|---|---|---|
| 49.6 | max | |
| 30.1 | min | |
| .014 | pcpn | |
| 25 | HDD | |
| 0 | CDD | |
| Highest Max | | 81-1949 |
| Lowest Max | | 30-1952 |
| Lowest Min | | 15-1976 |
| Highest Min | | 48-1962 |
| Greatest pcpn | | .54-1968 |

| Normal | 29 | Actual |
|---|---|---|
| 52.8 | max | |
| 30.0 | min | |
| .008 | pcpn | |
| 23 | HDD | |
| 0 | CDD | |
| Highest Max | | 80-1927 |
| Lowest Max | | 34-1974 |
| Lowest Min | | 13-1976 |
| Highest Min | | 51-1975 |
| Greatest pcpn | | .61-1930 |

| Normal | 30 | Actual |
|---|---|---|
| 54.3 | max | |
| 31.6 | min | |
| .026 | pcpn | |
| 22 | HDD | |
| 0 | CDD | |
| Highest Max | | 74-1933 |
| Lowest Max | | 38-1983 |
| Lowest Min | | 13-1976 |
| Highest Min | | 56-1970 |
| Greatest pcpn | | .47-1985 |

## NOVEMBER AVERAGES

| | |
|---|---|
| Temperature | : 48.8 |
| Precipitation | : 1.67" |
| Heating Degree Days: | 483 |
| Cooling Degree Days: | 1 |