OKLAHOMA
MONTHLY SUMMARY
MARCH 1990

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MARCH 1990 OKLAHOMA SUMMARY

Three major storm systems produced numerous widespread hailstorms, dangerously icy roads, several tornadoes, damaging floods and record breaking March precipitation totals. Most stations in the southeastern one-half of Oklahoma received two to three times their average March precipitation (see Map 1), with several monthly totals exceeding 8 inches. The State-averaged precipitation of 5.93" ranks 1990 as the second wettest March on record (see Table 1). The month combined with the above normal precipitation totals of January and February to produce the wettest first quarter in Oklahoma (see Table 2). Nearly three consecutive weeks of temperatures which were several degrees above normal were offset slightly by a several-day, late-month cold surge and Statewide freeze. Average monthly temperatures ranged from .6 to 3.0 degrees above normal.

Oklahoma's first major storm system of the month arrived on March 6. An intensifying upper level disturbance and its associated surface cold front produced strong thunderstorms which struck the western one-half of the State. Marble-size hail accumulated to 1" depths in Gage. Cleveland County reported quarter-size hail. Weaker storms delivered rainfall amounts of less than .25" to much of southwestern Oklahoma, boosting soil moisture levels and aiding winter wheat development.

The components of a spring-like severe storm situation aligned as a prelude to a very wet and violently stormy 3-day period which began March 10. A strong upper level disturbance moved toward Oklahoma from the west. Strong southerly and southeasterly winds ahead of this system delivered warm, moist gulf air. A dry line, a boundary between relatively dry and moist air masses which can act like a front, developed west of the State. On March 10, instability ahead of the main upper level system supported the development of powerful thunderstorms. These storms delivered 1 to 2 inches of rain to many sites while moving eastward through Oklahoma. The dry line aided additional thunderstorm development on March 11. Two-day precipitation totals exceeding 4 inches produced flooding in many areas. Sixty-two Skiatook area homes were evacuated due to flooding along Bird Creek. Many families evacuated their homes in the Okmulgee area as the Deep Fork River crested at near record levels. Sand Creek and Caney River flooding forced evacuations and road closings in the Bartlesville area.

The most powerful storms struck on March 13. Strong upper level winds, very unstable air and abundant moisture combined to unleash at least 10 tornadoes over a north-south strip of central Oklahoma (see Map 2). Although no deaths were reported, tornadoes destroyed a dozen homes in McClain County. Cleveland County estimated its tornado damage at $500,000. Baseball-size hail was reported in Jefferson County and nickel to golfball size hail accompanied severe storms in central, southwestern and northeastern Oklahoma.

Temperatures fell to near-normal levels behind the storm system but climbed back into the 70's over most of the State within 1 to 2 days. The several-day warm spell ended on March 22 as a surge of much cooler air followed the passage of a cold front through the State. Severe frontal thunderstorms produced quarter inch hail in Comanche and Kiowa Counties on March 23. Smaller hail reportedly covered the ground in parts of Logan County. Freezing rain iced roads in northern Oklahoma and contributed to five traffic fatalities. High temperatures behind the front reached only the 30's across northern and southern sections of the State on March 24, and 25 respectively. All CD's experienced a morning freeze while under the influence of this Canadian air mass. Although the State can expect late March freezes one out of two years, the advanced development of this year's winter wheat crop, in response to unusually mild and wet weather, left it susceptible to freeze damage. Subsequent inspections of the wheat crop and of fruit trees will determine the extent of losses.

-R. J. Sladewski

TABLE 1

Oklahoma's 5 greatest March Statewide precipitation total since 1892.

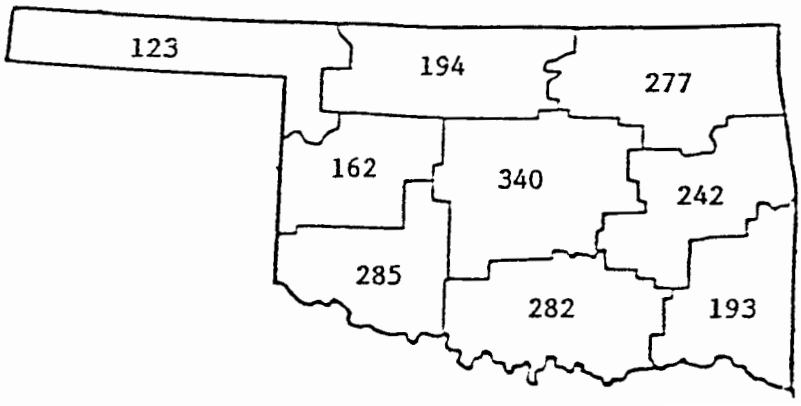
RANK	YEAR	PRECIPITATION AMOUNTS
1.	1973	7.46"
2.	1990	5.93"
3.	1945	5.38"
4.	1985	4.90"
5.	1988	4.40"

TABLE 2

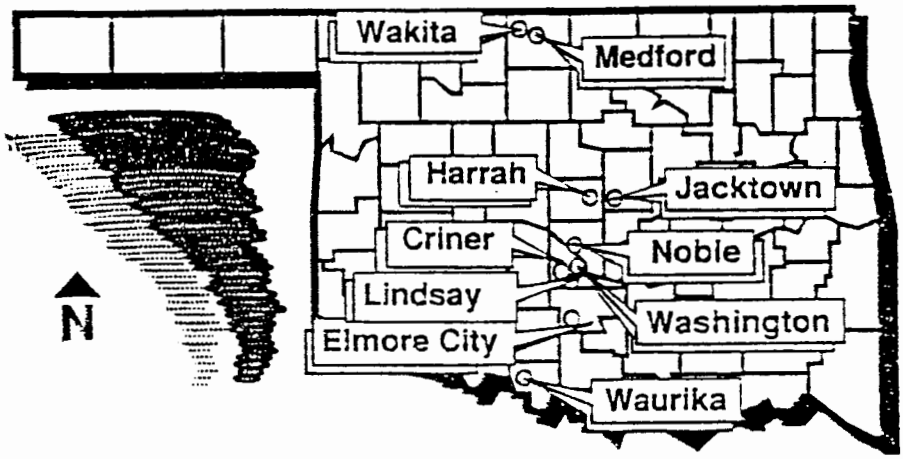
Oklahoma's 5 wettest first quarters (January-March) since 1892.

RANK	YEAR	PCPT
1.	1990	12.83"
2.	1973	11.67"
3.	1938	10.57"
4.	1985	10.29"
5.	1945	10.20"

Map 1. March 1990 percent of normal precipitation



Map 2. Preliminary Tornado Reports of March 13, 1990



Source: Daily Oklahoman News, Oklahoma City

TABLE OF 1989/1990 COMPARISONS

Station	March Temperature (F) 1989	1990	March Precipitation (in.) 1989	1990
Arnett	48.3	47.1	1.33	1.43
Enid	*	51.0	*	4.07
Mutual	49.2	46.5	2.29	1.87
Tulsa	50.5	53.8	3.14	7.21
Elk City	51.1	51.0	4.60	1.73
Oklahoma City	52.3	53.2	2.72	4.76
McAlester	52.2	54.9	4.08	7.40
Altus Irr Sta	56.5	53.6	2.36	4.06
Durant	52.1	53.9	5.84	9.83
Ada	52.2	53.1	3.32	8.59
Antlers	53.9	55.8	3.64	8.29

EXTREMES

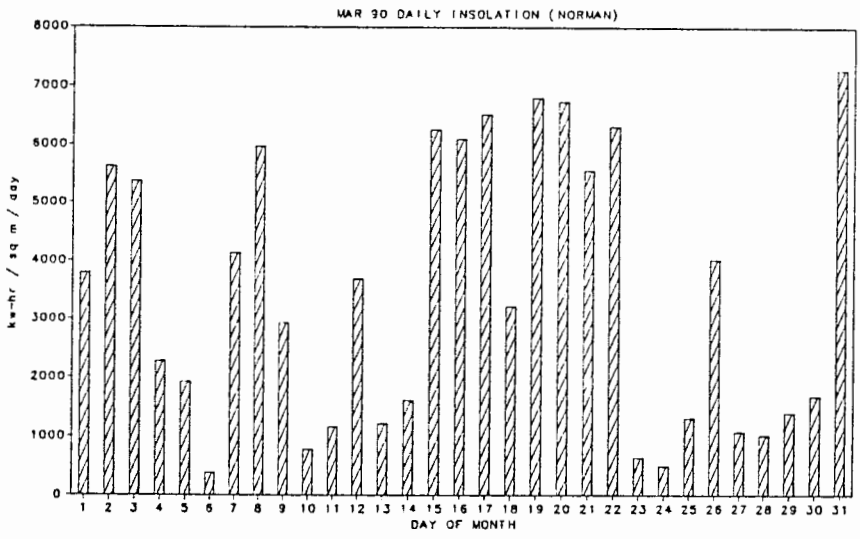
Variable	Station	Division	Observation	Date
Minimum temperature (F)	Kenton	1	9	1
Maximum temperature (F)	Upper Spavinaw	3	85	12
	Hollis	7	85	21
Maximum 24-hour precipitation	Idabel	9	7.39"	31

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 March 1990 daily observations.

March 1990 Daily Insolation Data for Norman, OK
(Insolation units are watt-hours per square meter per day)

DATE	INSOLATION AMOUNT
1	3796.97
2	5624.21
3	5368.93
4	2279.07
5	1923.38
6	384.53
7	4133.64
8	5970.05
9	2935.86
10	778.37
11	1159.87
12	3694.75
13	1216.09
14	1608.37
15	6260.33
16	6100.05
17	6520.61
18	3223.36
19	6800.89
20	6734.78
21	5559.49
22	6313.38
23	641.78
24	496.09
25	1313.95
26	4028.37
27	1076.76
28	1020.04
29	1392.71
30	1679.18
31	7288.95



Springtime in Oklahoma - Tornadoes
by Howard L. Johnson

Tornadoes are violent and all-too-often deadly columns of rotating air associated with very strong thunderstorms. Disastrous tornadic events such as the famous Woodward tornadoes of 1948 and the Blackwell tornado in 1955 have led to an indelible association between Oklahoma weather and tornadoes.

The most active tornadic years in the state since 1950 have been 1957 with 107 confirmed tornadoes and 1982 with 101. Other years with over 90 reported tornadoes were 1960 (98) and 1983 (93). In each of those years, there were more tornadoes during May than any other month. An amazing 61 tornadoes were reported in the state on 11 days during May of 1960. In May of 1982 there were 56 tornadoes. The least active year thus far has been 1988, a year with only 17 tornadoes, including five each in March and November.

Although tornadoes can occur in any month of the year provided that the underlying atmospheric conditions are suitable, the three months of April, May, and June have accounted for three-quarters of the tornadoes reported in the state since 1950. May has produced 36 percent of the state's tornadoes. Twenty-two percent of all tornadoes have occurred in April with another 16 percent have come in June.

Tornadoes occur during all hours of the day, but are most frequent during the late afternoon and evening hours. Historically, Oklahoma has experienced about 85 percent of its tornadoes between noon and midnight. Approximately 50 percent of them have struck from 4 to 8 P.M. (CST).

A vast majority of the stronger tornadoes move from the south, southwest or west. Movement from the southwest toward the northeast preferred. Occasionally, a tornado will move toward the west, but such events are very rare.

Tornado activity within the state has been rather low for the past three years, but no inference should be drawn regarding the prospects for the 1990 storm season. Preliminary data indicate that the tornado activity in March 1990 places that month among the five most active Marches of the past 40 years. Only time will tell whether that is indicative of an active spring reminiscent of the early 1980's or whether the past month was an anomalous occurrence during a relatively quiescent period in our state's weather history.

MARCH 1990 SUMMARY FOR NORTHWEST DIVISION (CD1)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	MAX DAY	MIN TEMP	MIN DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	MAX DAY
ARNETT	332	1	47.1	31	1.7	80.	22	20.	25	554.0	-60.0	.0	-6.0	1.432	31	.13	.47	30
BEAVER	593	1	45.1	31	-.2	81.	10	17.	2	618.0	1.0	.0	-6.0	.744	31	-.43	.40	30
BOISE CITY 2 E	908	1	44.7	31	.6	78.	9	15.	1	630.0	-18.0	.0	.0	.405	31	-.41	.20	29
BUFFALO	1243	1	50.6	31	2.6	81.	13	18.	1	459.0	-82.0	13.0	-1.0	1.010	31	-.70	.35	13
FARGO	3070	1	*****	0	*****	****	0	****	0	******	******	******	******	1.642	31	.35	.50	30
GAGE FAA APT	3407	1	49.6	31	3.7	82.	21	21.	24	484.0	-115.0	7.0	.0	3.594	31	2.41	1.33	14
GATE	3489	1	47.7	31	*****	80.	14	19.	24	537.5	******	1.0	******	1.443	31	*****	.69	7
GOODWELL RES	ST3628	1	44.2	31	-.6	81.	10	18.	24	645.0	13.0	.0	-6.0	.639	31	-.14	.43	30
GUYMON	3835	1	48.0	26	*****	82.	9	19.	24	441.0	******	.0	******	.723	28	*****	.42	30
HOOKER	4298	1	44.9	31	-.3	82.	10	19.	24	623.0	2.0	.0	-7.0	.743	31	-.49	.43	30
KENTON	4766	1	42.7	31	-1.3	79.	10	9.	1	692.5	41.5	.0	.0	.651	31	-.11	.45	30
LAVERNE	5045	1	*****	0	*****	****	0	****	0	******	******	******	******	1.311	31	-.23	.46	14
OPTIMA LAKE	6740	1	45.1	31	*****	80.	10	19.	24	617.0	******	.0	******	.842	31	*****	.48	30
RANGE	7412	1	*****	0	*****	****	0	****	0	******	******	******	******	.872	31	*****	.52	29
REGNIER	7534	1	*****	0	*****	****	0	****	0	******	******	******	******	.353	31	-.33	.31	29
TURPIN 4 SSE	9017	1	44.7	31	*****	79.	10	19.	25	628.0	******	.0	******	.610	31	*****	.55	30

MARCH 1990 SUMMARY FOR NORTH CENTRAL DIVISION (CD2)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	MAX DAY	MIN TEMP	MIN DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	MAX DAY
ALVA 1 ENE	194	2	50.3	31	2.9	81.	10	19.	1	461.0	-97.0	5.5	-6.5	1.210	31	-.41	.53	7
VANCE AFB	302	2	*****	0	*****	****	0	****	0	******	******	******	******	3.225	31	*****	1.07	11
BILLINGS	755	2	48.9	31	*****	76.	10	23.	2	502.5	******	2.5	******	4.952	31	2.88	1.22	14
BLACKWELL 2E	818	2	49.0	31	*****	78.	10	19.	1	500.0	******	2.5	******	4.602	31	*****	1.35	11
BRAMAN	1075	2	*****	0	*****	****	0	****	0	******	******	******	******	3.911	31	*****	1.31	11
CHEROKEE	1724	2	50.6	31	2.4	78.	12	19.	1	456.5	-76.5	10.0	-2.0	1.921	31	-.01	.75	6
ENID	2912	2	51.0	31	1.9	78.	9	23.	24	443.5	-63.5	8.5	-5.5	4.070	31	2.18	1.02	11
FREEDOM	3358	2	50.0	31	*****	81.	13	17.	1	471.5	******	8.0	******	1.161	31	*****	.32	30
GREAT SALT PLNS	3740	2	49.5	31	*****	82.	10	20.	1	491.5	******	10.5	******	2.391	22	*****	1.15	7
HARDY	3909	2	*****	0	*****	****	0	****	0	******	******	******	******	5.175	31	*****	1.60	10
HELENA 1 SSE	4019	2	47.1	31	*****	77.	10	22.	25	555.0	******	1.0	******	3.373	31	1.45	1.50	7
JEFFERSON	4573	2	50.2	31	2.1	79.	9	20.	2	466.5	-66.5	8.0	-1.0	3.460	31	1.53	.85	6
LAMONT	5013	2	*****	0	*****	****	0	****	0	******	******	******	******	3.941	31	*****	1.00	11
MEDFORD	5768	2	*****	0	*****	****	0	****	0	******	******	******	******	3.672	31	*****	.96	6
MORRISON	6065	2	*****	0	*****	****	0	****	0	******	******	******	******	6.730	31	*****	4.08	11
MUTUAL	6139	2	46.5	31	-.3	77.	10	21.	25	575.0	1.0	1.5	-7.5	1.872	31	.29	.83	30
NEWKIRK	6278	2	50.0	31	2.5	78.	9	19.	1	474.5	-79.5	10.5	-.5	4.182	31	2.20	1.34	14
ORIENTA	6751	2	*****	0	*****	****	0	****	0	******	******	******	******	1.850	31	*****	.56	7
PERRY	7012	2	40.1	31	-9.8	65.	12	14.	2	772.0	289.0	.0	-15.0	6.040	31	3.68	2.47	11
PONCA CITY FAA	7201	2	50.9	31	4.4	79.	9	24.	24	444.0	-136.0	5.5	-1.5	6.522	31	4.42	2.00	11
RED ROCK 1 NNE	7505	2	*****	0	*****	****	0	****	0	******	******	******	******	5.580	31	3.33	1.88	11
RENFROW	7556	2	*****	0	*****	****	0	****	0	******	******	******	******	3.391	31	1.48	.80	14
WAYNOKA	9404	2	49.7	31	.9	80.	13	19.	1	480.0	-38.0	7.0	-9.0	1.320	31	-.31	.52	7
WOODWARD	9760	2	*****	0	*****	****	0	****	0	******	******	******	******	1.342	31	*****	.49	30

MARCH 1990 SUMMARY FOR NORTHEAST DIVISION (CD3)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	MAX DAY	MIN TEMP	MIN DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	MAX DAY
BARNSDALL	535	3	50.6	31	*****	80.	13	19.	2	458.0	******	12.5	******	8.031	30	*****	2.24	11
BARTLESVILLE 2W	548	3	51.2	31	2.4	82.	12	19.	2	444.5	-71.5	17.0	3.0	7.722	31	5.00	2.33	11
BIXBY	782	3	50.4	31	1.6	82.	13	24.	2	467.5	-46.5	15.0	3.0	9.261	31	6.57	2.47	12
BURBANK	1256	3	*****	0	*****	****	0	****	0	******	******	******	******	6.597	31	*****	2.92	11
CHELSEA 4 S	1717	3	*****	0	*****	****	0	****	0	******	******	******	******	8.910	31	*****	2.50	12
CLAREMORE	1828	3	50.7	31	2.6	83.	13	21.	3	462.0	-72.0	19.5	9.5	8.470	31	5.31	2.50	12
FORAKER	3250	3	*****	0	*****	****	0	****	0	******	******	******	******	6.100	31	3.71	2.37	11
HOLLOW	4258	3	*****	0	*****	****	0	****	0	******	******	******	******	7.311	31	4.17	1.76	15
HOMINY	4289	3	*****	0	*****	****	0	****	0	******	******	******	******	8.303	31	5.48	2.48	11
HULAH DAM	4393	3	49.0	22	*****	82.	12	16.	2	361.0	******	9.5	******	6.652	25	*****	2.06	10
JAY TOWER	4567	3	52.5	29	*****	82.	13	23.	2	379.5	******	17.0	******	7.560	29	*****	1.30	14
KANSAS 1 ESE	4672	3	51.7	31	*****	79.	12	24.	2	419.5	******	8.5	******	8.124	31	*****	1.80	15
KEYSTONE DAM	4812	3	50.5	31	*****	83.	10	20.	2	467.5	******	19.5	******	8.042	26	*****	3.64	12
LENAPAH	5118	3	*****	0	*****	****	0	****	0	******	******	******	******	7.490	30	*****	1.56	11
MANNFORD 6 NW	5522	3	52.2	30	*****	82.	9	19.	2	395.0	******	10.5	******	8.480	30	*****	2.72	11
MARAMEC	5540	3	*****	0	*****	****	0	****	0	******	******	******	******	8.114	31	5.66	3.08	11
MIAMI	5855	3	51.7	31	3.5	81.	12	20.	2	421.5	-109.5	8.5	-1.5	8.630	31	5.19	1.74	15
NOWATA	6485	3	50.3	31	1.9	82.	12	21.	2	462.5	-61.5	6.0	-4.0	7.460	31	4.19	1.30	15
ONETA 1 WNW	6713	3	*****	0	*****	****	0	****	0	******	******	******	******	9.780	31	*****	2.51	12
PAWHUSKA	6935	3	50.8	31	2.2	80.	12	19.	2	454.0	-67.0	13.5	1.5	8.902	31	6.22	4.17	11
PAWHUSKA	6937	3	*****	0	*****	****	0	****	0	******	******	******	******	8.790	31	*****	3.06	11
PAWNEE	6940	3	*****	0	*****	****	0	****	0	******	******	******	******	7.024	31	4.54	3.12	11
PRYOR 6 N	7309	3	49.8	31	1.3	82.	13	20.	2	488.0	-39.0	17.0	2.0	8.664	31	5.55	2.20	12
RALSTON	7390	3	52.2	31	*****	82.	12	20.	2	410.5	******	13.5	******	7.663	31	5.14	3.10	11
RAMONA 4 N	7394	3	*****	0	*****	****	0	****	0	******	******	******	******	7.690	31	*****	1.89	14
SKIATOOK	8258	3	*****	0	*****	****	0	****	0	******	******	******	******	7.550	31	4.72	1.59	14
SPAVINAW	8380	3	53.3	31	*****	79.	12	25.	2	380.5	******	17.0	******	7.961	31	4.83	2.00	12
TULSA WSO APT	8992	3	53.8	31	4.5	83.	12	28.	2	365.5	-134.5	18.0	4.0	7.211	31	4.07	1.65	15
UPPER SPAVINAW	9101	3	50.5	28	*****	85.	12	18.	2	420.0	******	14.5	******	8.543	31	*****	2.05	7
VINITA 2 N	9203	3	51.1	31	3.0	80.	12	19.	2	443.5	-90.5	13.5	3.5	8.680	31	5.14	1.92	12
WAGONER	9247	3	54.0	31	3.5	83.	12	25.	2	361.5	-104.5	21.0	5.0	7.332	31	3.94	2.02	12
WANN	9298	3	*****	0	*****	****	0	****	0	******	******	******	******	8.151	31	*****	2.60	11
WYNONA	9792	3	54.6	31	*****	83.	12	22.	24	350.5	******	27.0	******	7.725	31	*****	2.49	11

MARCH 1990 SUMMARY FOR WEST CENTRAL DIVISION (CD4)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	MAX DAY	MIN TEMP	MIN DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	MAX DAY
CANTON DAM	1445	4	46.5	26	*****	77.	13	22.	25	480.5	******	.0	******	3.250	26	*****	1.30	7
CHEYENNE	1738	4	*****	0	*****	****	0	****	0	******	******	******	******	2.380	31	*****	.87	30
CLINTON	1909	4	52.5	31	3.0	82.	13	23.	24	398.5	-94.5	12.5	-.5	1.754	31	.05	.63	30
COLONY	2039	4	*****	0	*****	****	0	****	0	******	******	******	******	4.730	31	*****	2.93	11
CORDELL	2125	4	*****	0	*****	****	0	****	0	******	******	******	******	3.072	31	1.44	1.65	11
ELK CITY 1 E	2849	4	51.0	31	*****	79.	13	22.	24	440.5	******	6.0	******	1.733	31	.21	.94	30
ERICK 4 E	2944	4	51.4	24	*****	82.	21	23.	24	331.5	******	5.5	******	1.992	31	.58	.94	30
GEARY	3497	4	55.7	26	*****	80.	9	26.	24	259.0	******	16.5	******	3.700	28	*****	2.45	11
HAMMON 1 NNE	3871	4	46.3	31	-2.6	78.	13	21.	25	578.5	63.5	.0	-16.0	2.652	31	1.09	1.25	30
LEEDEY	5090	4	*****	0	*****	****	0	****	0	******	******	******	******	2.020	31	.68	.55	29
MACKIE 4 NNW	5463	4	*****	0	*****	****	0	****	0	******	******	******	******	1.390	31	*****	.67	30
MORAVIA 2 NNE	6035	4	*****	0	*****	****	0	****	0	******	******	******	******	2.132	31	.60	.78	30
OKEENE	6629	4	50.5	31	.6	77.	13	23.	24	451.5	-30.5	3.0	-11.0	2.860	31	1.04	.81	11
RETROP	7565	4	*****	0	*****	****	0	****	0	******	******	******	******	2.430	31	*****	.83	11
REYDON	7579	4	51.4	31	*****	82.	21	21.	24	430.0	******	8.5	******	1.372	31	-.03	.72	29
SAYRE	7952	4	*****	0	*****	****	0	****	0	******	******	******	******	1.770	31	.49	.92	30
SWEETWATER 2 E	8652	4	*****	0	*****	****	0	****	0	******	******	******	******	1.452	31	*****	.74	29
TALOGA	8708	4	49.9	31	1.6	80.	13	21.	2	475.0	-53.0	5.5	-4.5	2.132	31	.51	.68	30
THOMAS	8815	4	*****	0	*****	****	0	****	0	******	******	******	******	4.090	31	*****	1.25	7
VICI	9172	4	*****	0	*****	****	0	****	0	******	******	******	******	2.320	31	*****	.88	30
WATONGA	9364	4	50.5	31	*****	78.	12	22.	24	451.5	******	3.5	******	3.221	31	1.44	1.02	11
WEATHERFORD	9422	4	49.6	30	-.3	79.	14	21.	25	467.5	-14.5	4.5	-9.5	3.173	31	1.58	1.52	11

MARCH 1990 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	******	******	******	******	5.590	31	*****	2.01	14
ARCADIA	288	5	*****	0	*****	****	0	****	0	******	******	******	******	4.690	31	*****	1.57	11
TINKER AFB	325	5	*****	0	*****	****	0	****	0	******	******	******	******	5.284	31	*****	1.61	11
BLANCHARD 2 SSW	830	5	53.2	30	*****	80.	12	26.	24	366.0	******	12.5	******	6.102	31	*****	1.88	14
BRISTOW	1144	5	52.4	31	1.9	81.	12	22.	3	410.5	-55.5	20.5	3.5	9.731	31	7.18	2.19	14
CHANDLER	1684	5	52.6	30	1.9	81.	12	25.	2	389.0	-72.0	16.0	-1.0	10.040	31	7.75	2.54	14
CHICKASHA EX ST	1750	5	51.6	31	.0	79.	22	26.	24	421.5	-13.5	6.5	-12.5	6.420	31	4.48	1.96	11
COX CITY 1 E	2196	5	*****	0	*****	****	0	****	0	******	******	******	******	7.350	31	*****	1.70	14
CRESCENT	2242	5	*****	0	*****	****	0	****	0	******	******	******	******	7.230	31	*****	4.38	11
CUSHING	2318	5	49.7	29	*****	80.	13	25.	25	454.5	******	10.0	******	8.362	29	*****	3.50	11
EL RENO 1 N	2818	5	51.8	31	2.3	78.	12	24.	24	418.5	-74.5	9.0	-4.0	8.090	31	6.24	3.09	11
GUTHRIE	3821	5	53.5	31	3.7	82.	9	24.	2	376.5	-107.5	20.0	7.0	12.481	31	10.47	4.90	11
HENNESSEY 2 SE	4055	5	50.5	31	1.6	76.	9	23.	24	455.0	-57.0	4.0	-9.0	4.800	31	2.94	1.77	11
INGALLS	4489	5	*****	0	*****	****	0	****	0	******	******	******	******	7.167	31	*****	2.23	11
KINGFISHER 2 SE	4861	5	51.4	31	1.8	79.	9	24.	24	432.0	-58.0	9.5	-2.5	5.990	31	4.23	2.92	11
KONAWA	4915	5	*****	0	*****	****	0	****	0	******	******	******	******	6.983	31	4.09	1.93	12
MEEKER 4 W	5779	5	52.1	31	2.0	80.	9	25.	2	407.5	-67.5	8.5	-4.5	7.380	31	4.95	2.43	13
MULHALL	6110	5	*****	0	*****	****	0	****	0	******	******	******	******	8.170	31	*****	4.39	11
NORMAN 3 S	6386	5	52.7	31	*****	82.	22	27.	25	391.0	******	8.5	******	8.676	31	6.35	3.35	14
OKEMAH	6638	5	53.3	31	2.2	82.	12	26.	25	377.5	-72.5	15.0	-4.0	8.750	31	6.05	1.87	12
OKLAHOMA CITY WS	6661	5	53.2	31	4.1	79.	12	26.	24	376.0	-130.0	10.5	-2.5	4.763	31	2.69	1.46	11
PERKINS	7003	5	*****	0	*****	****	0	****	0	******	******	******	******	6.780	31	4.37	2.12	11
PIEDMONT	7068	5	*****	0	*****	****	0	****	0	******	******	******	******	7.120	31	*****	3.80	11
PRAGUE	7264	5	*****	0	*****	****	0	****	0	******	******	******	******	8.011	31	5.50	2.30	14
PURCELL 5 SW	7327	5	53.1	31	2.7	80.	12	26.	2	383.0	-92.0	13.0	-10.0	8.752	31	6.38	2.00	12
SEMINOLE	8042	5	54.3	31	1.9	81.	12	27.	24	357.5	-53.5	26.5	5.5	9.821	31	7.24	1.84	12
SHAWNEE	8110	5	*****	0	*****	****	0	****	0	******	******	******	******	7.821	31	5.31	1.56	11
STELLA	8479	5	*****	0	*****	****	0	****	0	******	******	******	******	8.710	31	*****	2.89	14
STILLWATER 2 W	8501	5	49.8	31	1.0	78.	13	22.	2	477.5	-37.5	6.0	-6.0	7.172	31	4.98	3.34	11
STROUD 1 N	8563	5	*****	0	*****	****	0	****	0	******	******	******	******	9.142	31	*****	1.83	12
TECUMSEH	8751	5	*****	0	*****	****	0	****	0	******	******	******	******	8.010	31	*****	1.94	12
TROUSDALE	8960	5	*****	0	*****	****	0	****	0	******	******	******	******	8.910	31	*****	2.09	14
UNION CITY 1 SE	9086	5	*****	0	*****	****	0	****	0	******	******	******	******	6.900	31	4.53	2.68	11
WELTY 1 SSE	9479	5	*****	0	*****	****	0	****	0	******	******	******	******	9.701	31	*****	2.65	14
WEWOKA	9575	5	*****	0	*****	****	0	****	0	******	******	******	******	8.431	31	5.71	2.07	12

MARCH 1990 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	******	******	******	******	9.550	31	*****	1.77	12
BEGGS	631	6	*****	0	*****	****	0	****	0	******	******	******	******	8.640	31	*****	2.65	12
BOYNTON	1027	6	*****	0	*****	****	0	****	0	******	******	******	******	8.282	31	*****	2.75	12
CALVIN	1391	6	*****	0	*****	****	0	****	0	******	******	******	******	9.282	31	5.90	2.75	11
CHECOTAH	1711	6	*****	0	*****	****	0	****	0	******	******	******	******	8.773	31	5.43	2.47	12
CLAYTON 11 WNW	1858	6	*****	0	*****	****	0	****	0	******	******	******	******	8.230	31	*****	2.02	15
DEWAR 2 NE	2485	6	*****	0	*****	****	0	****	0	******	******	******	******	8.820	31	5.70	2.43	12
DUSTIN	2690	6	*****	0	*****	****	0	****	0	******	******	******	******	10.020	31	*****	3.83	12
EUFAULA	2993	6	54.8	31	*****	82.	12	30.	3	338.0	******	22.5	******	10.272	31	6.30	2.55	12
HANNA	3884	6	53.1	31	*****	81.	12	26.	20	383.0	******	15.0	******	9.963	31	6.27	2.65	12
HARTSHORNE	3946	6	*****	0	*****	****	0	****	0	******	******	******	******	6.993	31	*****	2.11	15
HASKELL	3956	6	*****	0	*****	****	0	****	0	******	******	******	******	8.060	31	4.89	1.80	12
HOLDENVILLE	4235	6	53.4	31	1.7	81.	12	26.	3	374.5	-55.5	16.0	-2.0	7.312	31	4.33	2.22	12
LAKE EUFAULA	4975	6	53.2	31	*****	84.	13	29.	2	388.0	******	21.0	******	8.622	31	*****	1.48	15
LYONS 2 N	5437	6	*****	0	*****	****	0	****	0	******	******	******	******	7.541	31	3.60	1.98	11
MARBLE CITY	5546	6	*****	0	*****	****	0	****	0	******	******	******	******	9.162	31	*****	2.07	15
MCALESTER FAA	5664	6	54.9	31	3.6	82.	12	26.	20	340.5	-100.5	28.5	11.5	7.401	31	3.55	1.65	12
MCCURTAIN 1 SE	5693	6	54.9	31	*****	82.	12	25.	20	345.0	******	32.5	******	6.785	31	2.87	1.85	15
MUSKOGEE	6130	6	53.6	31	2.5	82.	12	23.	20	369.5	-78.5	16.5	-.5	8.630	31	5.39	2.48	11
OKTAHA 2 NE	6678	6	*****	0	*****	****	0	****	0	******	******	******	******	6.620	31	*****	2.15	12
QUINTON	7372	6	*****	0	*****	****	0	****	0	******	******	******	******	8.214	31	4.52	1.97	15
SALLISAW 2 NE	7862	6	53.8	31	2.5	83.	12	24.	3	367.0	-75.0	18.5	.5	10.861	31	7.06	2.20	12
SCIPIO	7979	6	*****	0	*****	****	0	****	0	******	******	******	******	9.540	31	*****	2.08	12
SCRAPER	7993	6	*****	0	*****	****	0	****	0	******	******	******	******	7.100	31	*****	1.85	15
SHORT	8170	6	*****	0	*****	****	0	****	0	******	******	******	******	8.660	31	*****	2.16	12
STILWELL 1 NE	8506	6	52.8	31	*****	80.	12	23.	20	391.0	******	13.0	******	7.772	31	4.07	2.20	15
TAHLEQUAH	8677	6	52.8	31	2.8	82.	12	22.	2	397.0	-83.0	18.0	3.0	8.150	31	4.51	1.65	15
WEBBERS FALLS	9445	6	52.5	31	3.3	82.	13	26.	3	405.5	-95.5	19.0	8.0	8.710	31	5.12	1.63	15
WESTVILLE	9523	6	*****	0	*****	****	0	****	0	******	******	******	******	8.531	31	*****	1.75	15
WETUMKA 3 NE	9571	6	*****	0	*****	****	0	****	0	******	******	******	******	10.068	31	6.95	2.55	12

MARCH 1990 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	53.6	31	1.1	81.	21	28.	24	365.0	-42.0	10.5	-8.5	4.060	31	2.78	2.80	11
ALTUS DAM	184	7	51.3	31	*****	80.	22	27.	25	438.0	******	14.5	******	3.880	31	2.58	1.84	11
ANADARKO	224	7	49.4	27	*****	79.	12	18.	26	425.0	******	2.5	******	4.511	31	2.65	2.33	11
APACHE	260	7	*****	0	*****	****	0	****	0	******	******	******	******	5.690	31	*****	1.62	12
ALTUS AFB	447	7	*****	0	*****	****	0	****	0	******	******	******	******	3.623	31	*****	2.52	11
CARNEGIE 2 ENE	1504	7	52.2	31	1.4	80.	12	24.	2	401.5	-53.5	5.5	-8.5	5.130	31	3.48	2.99	11
CHATTANOOGA	1706	7	53.5	31	1.2	79.	12	28.	24	369.0	-43.0	11.0	-8.0	4.440	31	2.70	1.84	11
DUNCAN 12 W	2668	7	*****	0	*****	****	0	****	0	******	******	******	******	5.880	31	*****	2.55	14
FREDERICK	3353	7	52.9	27	*****	81.	13	26.	24	334.5	******	9.0	******	5.721	27	*****	1.76	10
GRANDFIELD 4 NW	3709	7	*****	0	*****	****	0	****	0	******	******	******	******	2.790	31	1.02	.99	11
HOBART FAA APT	4204	7	52.2	31	2.9	78.	13	26.	25	403.0	-94.0	7.0	-3.0	5.162	31	3.89	3.81	11
HOLLIS	4249	7	52.8	30	.5	85.	21	25.	24	369.5	-43.5	5.0	-15.0	2.363	30	*****	1.25	29
LAWTON	5063	7	52.9	30	.9	79.	12	27.	24	373.0	-51.0	10.0	-11.0	4.440	31	2.61	1.82	10
FORT SILL	5068	7	54.0	31	*****	80.	12	28.	24	359.5	******	17.5	******	4.436	31	2.61	1.50	10
LOOKEBA 2 ENE	5329	7	*****	0	*****	****	0	****	0	******	******	******	******	6.300	31	*****	4.00	11
MANGUM RES STA	5509	7	53.8	31	1.9	78.	22	33.	26	350.5	-75.5	4.0	-16.0	3.030	31	1.85	1.81	11
RANDLETT 9 E	7403	7	*****	0	*****	****	0	****	0	******	******	******	******	4.840	31	*****	1.26	11
ROOSEVELT	7727	7	*****	0	*****	****	0	****	0	******	******	******	******	4.340	31	3.02	2.85	11
SEDAN	8016	7	*****	0	*****	****	0	****	0	******	******	******	******	6.172	31	*****	3.70	11
VINSON 3 WNW	9212	7	*****	0	*****	****	0	****	0	******	******	******	******	1.730	31	.45	.78	30
WALTERS	9278	7	54.4	27	*****	80.	12	28.	25	301.5	******	15.5	******	3.831	27	*****	1.35	11
WICHITA MT WLR	9629	7	49.7	31	-1.2	79.	23	24.	25	478.0	21.0	5.0	-15.0	5.010	31	3.12	2.37	11
WILLOW	9668	7	*****	0	*****	****	0	****	0	******	******	******	******	3.125	31	*****	.96	11

MARCH 1990 SUMMARY FOR SOUTH CENTRAL DIVISION (CD8)

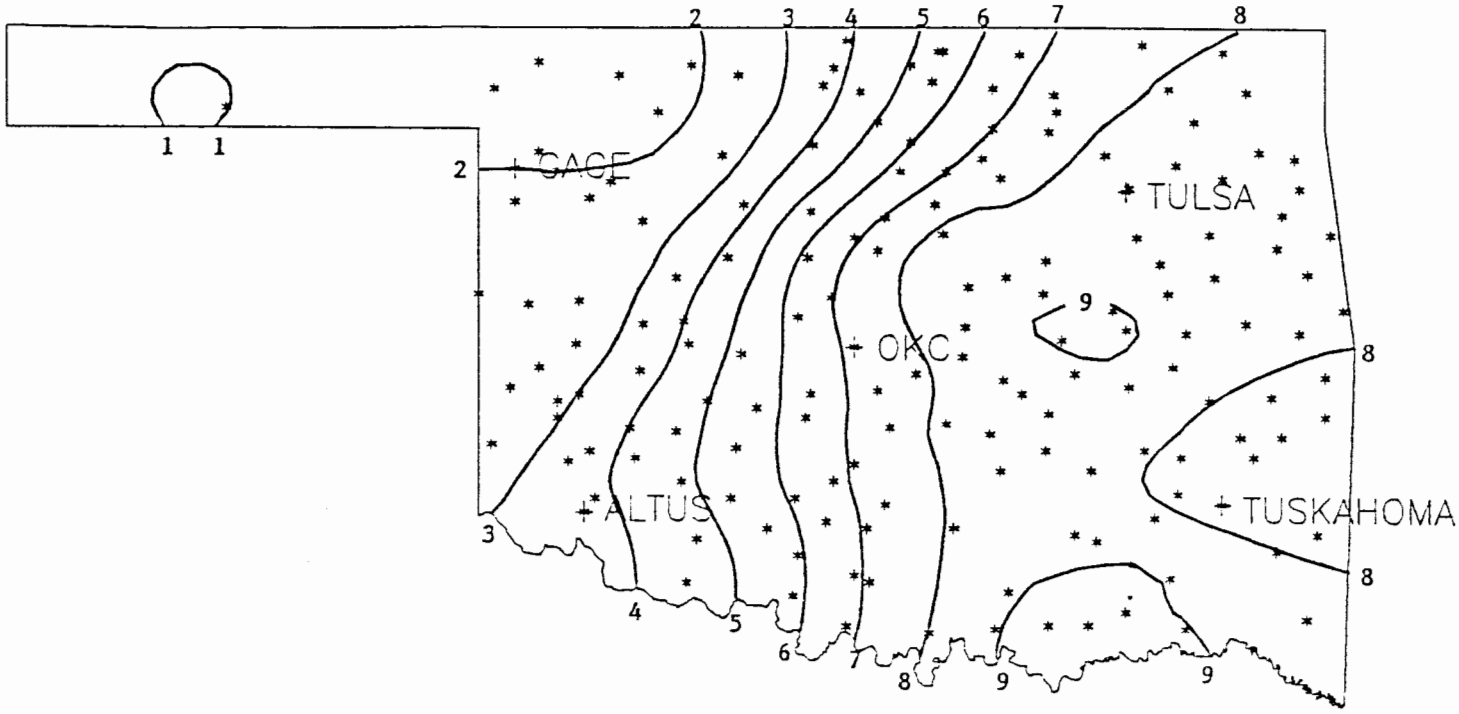
NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	DAY	MIN TEMP	DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	DAY
ADA	17	8	52.1	31	-.3	80.	12	28.	25	410.0	-3.0	11.0	-12.0	8.590	31	5.69	1.69	12
ALLEN	147	8	*****	0	*****	****	0	****	0	******	******	******	******	9.450	31	*****	2.30	12
ATOKA DAM	394	8	53.7	31	*****	81.	11	28.	3	373.5	******	23.5	******	7.200	31	*****	1.88	12
BOKCHITO	917	8	*****	0	*****	****	0	****	0	******	******	******	******	11.800	31	*****	2.50	28
CANEY	1437	8	55.4	31	*****	80.	12	30.	3	326.5	******	30.0	******	8.530	31	*****	2.00	12
CENTRAHOMA	1648	8	*****	0	*****	****	0	****	0	******	******	******	******	5.500	31	*****	2.00	14
CHICKASAW NRA	1745	8	51.7	31	*****	81.	13	26.	3	423.5	******	10.5	******	9.360	31	*****	2.30	12
COLEMAN	2011	8	*****	0	*****	****	0	****	0	******	******	******	******	6.760	31	*****	1.75	28
COMANCHE	2054	8	*****	0	*****	****	0	****	0	******	******	******	******	5.731	31	*****	1.16	12
DAISY 4 ENE	2354	8	*****	0	*****	****	0	****	0	******	******	******	******	8.435	31	4.59	2.28	15
DUNCAN	2660	8	52.1	31	-.9	79.	13	28.	25	412.0	16.0	11.0	-13.0	6.151	30	*****	1.43	11
DURANT USDA	2678	8	53.9	31	*****	80.	10	27.	20	364.0	******	19.0	******	9.830	31	6.56	2.10	28
ELMORE CITY	2872	8	*****	0	*****	****	0	****	0	******	******	******	******	7.782	31	*****	2.50	13
FARRIS 3 WNW	3083	8	*****	0	*****	****	0	****	0	******	******	******	******	9.290	31	*****	2.68	12
GRADY	3688	8	*****	0	*****	****	0	****	0	******	******	******	******	6.490	31	*****	1.63	12
HEALDTON	4001	8	54.4	31	*****	81.	12	28.	25	347.0	******	19.5	******	7.030	31	4.57	1.31	11
HENNEPIN	4052	8	*****	0	*****	****	0	****	0	******	******	******	******	6.901	31	*****	1.87	12
KETCHUM RANCH	4780	8	*****	0	*****	****	0	****	0	******	******	******	******	6.342	31	*****	2.40	11
KINGSTON	4865	8	*****	0	*****	****	0	****	0	******	******	******	******	7.962	31	4.80	2.50	12
LEHIGH	5108	8	*****	0	*****	****	0	****	0	******	******	******	******	7.807	31	*****	2.20	12
LINDSAY 2 W	5216	8	53.2	31	*****	79.	13	27.	2	381.5	******	14.5	******	6.083	31	3.82	1.52	12
LOCO 6 SE	5247	8	*****	0	*****	****	0	****	0	******	******	******	******	5.921	31	*****	2.03	12
MADILL	5468	8	54.7	31	1.1	80.	12	29.	20	339.5	-38.5	21.0	-4.0	6.281	31	3.27	2.10	11
MARIETTA	5563	8	55.6	31	1.8	81.	8	30.	25	309.0	-62.0	19.0	-5.0	9.281	31	6.53	1.98	12
MARLOW 1 WSW	5581	8	53.5	31	*****	81.	12	24.	2	372.0	******	16.5	******	6.691	31	4.69	1.78	14
MCGEE CREEK DAM	5713	8	54.3	31	*****	81.	13	28.	20	356.5	******	25.0	******	9.150	31	*****	2.35	12
OSWALT	6787	8	*****	0	*****	****	0	****	0	******	******	******	******	9.240	31	*****	3.52	12
PAULS VALLEY	6926	8	53.5	31	.9	81.	12	23.	1	374.0	-31.0	18.5	-2.5	10.192	31	7.89	4.30	14
TISHOMINGO NWLR	8884	8	54.8	29	*****	78.	12	27.	3	310.5	******	15.5	******	9.050	31	5.88	3.13	12
TUSSY	9032	8	*****	0	*****	****	0	****	0	******	******	******	******	6.780	31	*****	1.81	14
WAURIKA	9395	8	55.8	31	1.6	83.	12	29.	25	309.0	-55.0	24.5	-5.5	5.860	31	3.92	1.75	14
WAURIKA DAM	9399	8	53.6	30	*****	81.	13	30.	25	358.0	******	16.0	******	5.712	30	*****	1.20	14

MARCH 1990 SUMMARY FOR SOUTHEAST DIVISION (CD9)

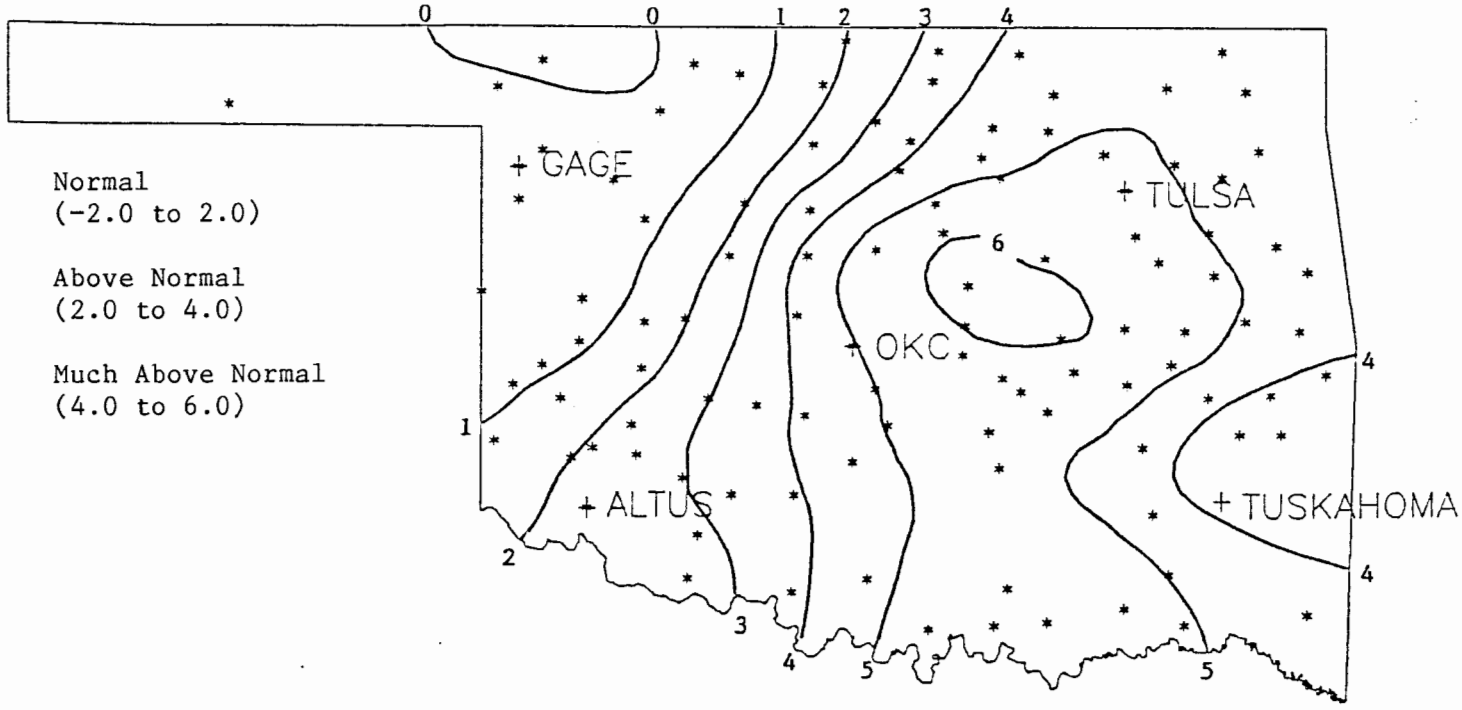
NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	DAY	MIN TEMP	DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	DAY
ANTLERS	256	9	55.8	31	3.0	80.	10	26.	20	304.5	-93.5	18.5	-1.5	8.290	31	4.72	2.00	14
BATTIEST 1 SSW	567	9	54.5	31	*****	77.	10	24.	20	337.0	******	12.0	******	8.911	31	*****	1.92	7
BEAR MT TWR	584	9	56.4	24	*****	77.	10	27.	18	211.0	******	4.5	******	8.770	31	4.33	2.06	8
BENGAL	670	9	*****	0	*****	****	0	****	0	******	******	******	******	6.861	31	*****	1.88	15
BOSWELL 4 NNW	980	9	57.7	31	*****	81.	12	31.	20	261.5	******	35.0	******	10.634	31	7.31	2.75	7
BROKEN BOW 1 N	1162	9	*****	0	*****	****	0	****	0	******	******	******	******	9.221	31	4.75	3.05	8
BROKEN BOW DAM	1168	9	55.2	31	*****	80.	10	27.	19	321.0	******	17.5	******	8.910	31	*****	3.02	7
CARTER TWR	1544	9	*****	0	*****	****	0	****	0	******	******	******	******	6.360	31	1.79	1.78	8
FANSHAWE	3065	9	*****	0	*****	****	0	****	0	******	******	******	******	6.610	31	2.19	1.83	15
FLAGPOLE TWR	3169	9	*****	0	*****	****	0	****	0	******	******	******	******	8.980	31	*****	2.60	12
HEAVENER 1 SE	4008	9	*****	0	*****	****	0	****	0	******	******	******	******	5.501	31	1.35	1.30	7
HEE MT TWR	4017	9	*****	0	*****	****	0	****	0	******	******	******	******	7.841	31	*****	2.56	8
HUGO	4384	9	56.1	31	1.5	80.	10	30.	20	292.0	-55.0	16.5	-7.5	7.792	31	3.99	1.80	15
IDABEL	4451	9	55.4	30	1.5	80.	11	29.	20	311.5	-52.5	23.5	3.5	14.733	30	*****	7.39	31
JADIE TOWER	4560	9	*****	0	*****	****	0	****	0	******	******	******	******	10.570	31	*****	5.60	8
POTEAU W W	7254	9	54.0	31	*****	81.	12	24.	3	362.5	******	21.0	******	6.393	31	*****	1.62	14
SMITHVILLE 1 W	8285	9	53.4	31	*****	77.	10	19.	3	367.5	******	7.0	******	7.484	31	*****	1.78	7
SOBAL TOWER	8305	9	55.5	31	*****	79.	10	34.	20	304.5	******	10.0	******	8.161	20	*****	2.01	31
SPIRO	8416	9	*****	0	*****	****	0	****	0	******	******	******	******	6.680	31	2.54	1.62	15
TUSKAHOMA	9023	9	55.8	31	*****	80.	12	23.	20	312.0	******	26.5	******	7.392	31	*****	2.00	15
VALLIANT 3 W	9118	9	*****	0	*****	****	0	****	0	******	******	******	******	9.521	31	5.31	2.08	15
WILBURTON 9 ENE	9634	9	55.0	31	3.2	82.	12	25.	20	333.5	-93.5	23.5	5.5	5.500	31	1.42	1.70	14

MARCH 1990 CLIMATE DIVISION SUMMARY

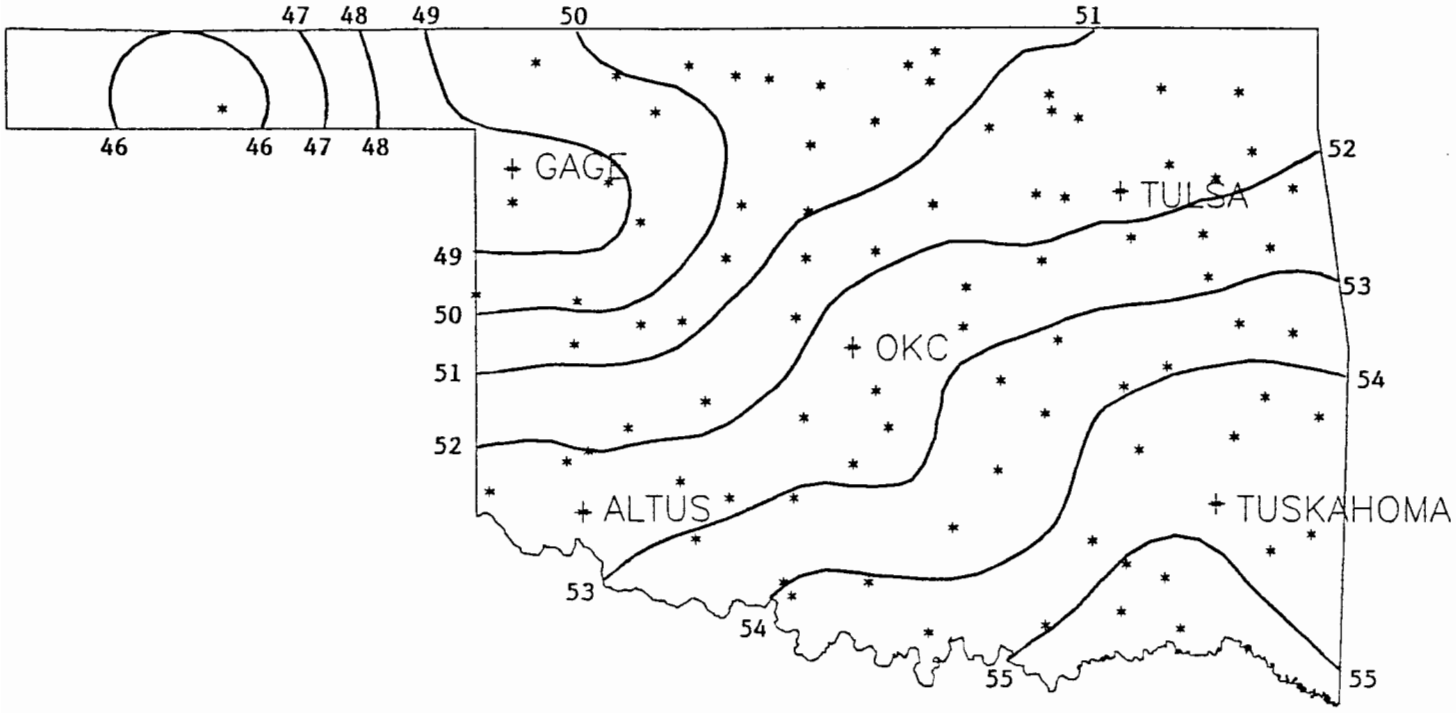
CLIMATE DIV	MEAN TEMP	NUM STA	DEV FROM NORM	MAX TEMP	DAY	MIN TEMP	DAY	HEAT DEGREE DAYS	DEV FROM NORM	COOL DEGREE DAYS	DEV FROM NORM	TOT PPT	NUM STA	DEV FROM NORM	MAX 24-HR	DAY
1	46.0	11	.7	82.0	10	9.0	1	589.8	-25.6	1.9	-3.8	1.09	15	-.05	1.33	14
2	48.8	14	.8	82.0	10	14.0	2	506.7	-31.1	5.8	-5.9	3.63	23	1.70	4.08	11
3	51.7	17	3.2	85.0	12	16.0	2	426.6	-95.6	15.1	3.1	8.02	27	5.11	4.17	11
4	50.2	8	.9	82.0	21	21.0	25	461.6	-38.1	5.4	-7.7	2.43	20	.86	2.93	11
5	52.4	15	2.3	82.0	12	22.0	2	402.6	-76.3	12.4	-3.5	7.68	34	5.35	4.90	11
6	53.6	11	2.9	84.0	13	22.0	2	372.6	-84.4	20.0	4.0	8.55	30	5.02	3.83	12
7	52.6	10	.8	85.0	21	18.0	26	390.7	-37.0	9.0	-10.0	4.43	20	2.86	4.00	11
8	53.8	15	.6	83.0	12	23.0	1	363.7	-24.1	18.6	-5.9	7.84	30	5.14	4.30	14
9	55.3	11	2.0	82.0	12	19.0	3	318.9	-65.1	19.2	-1.3	7.91	20	3.78	7.39	31



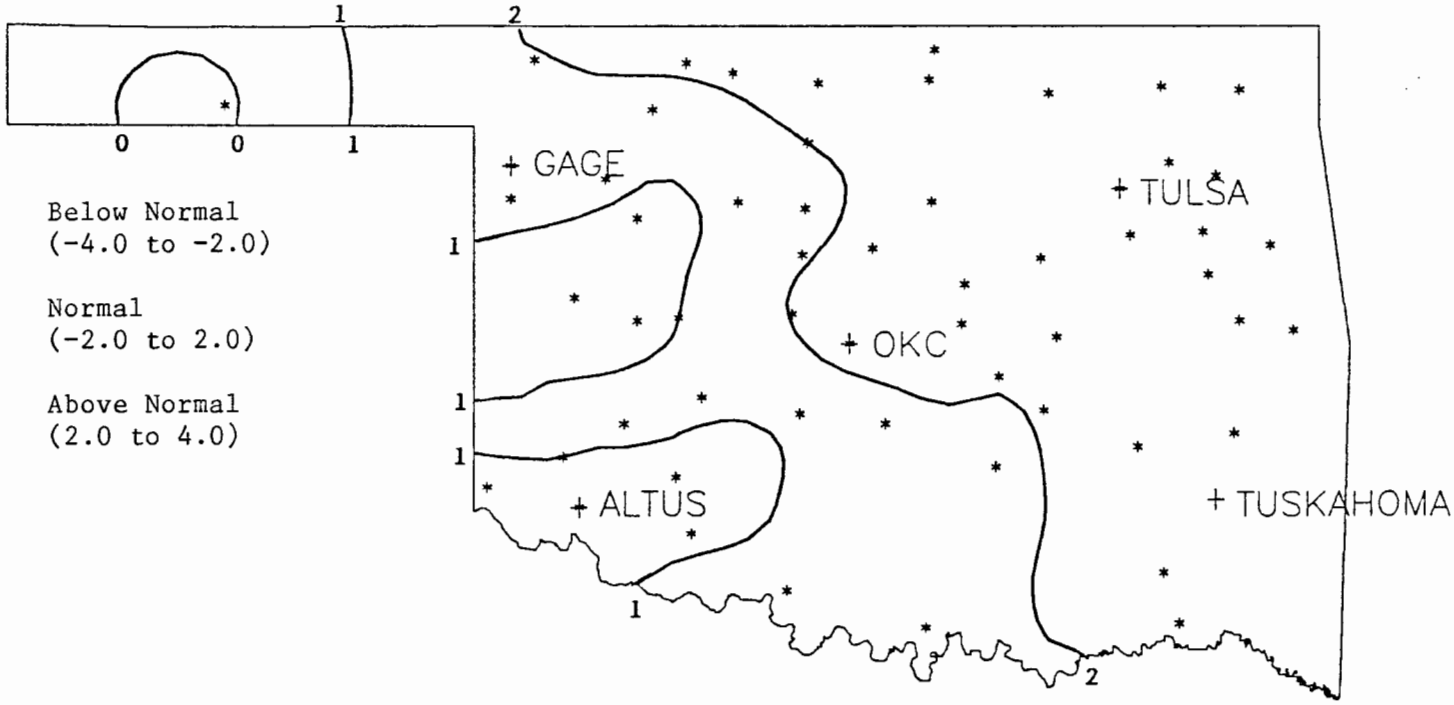
MARCH 1990 TOTAL PRECIPITATION
(Inches)



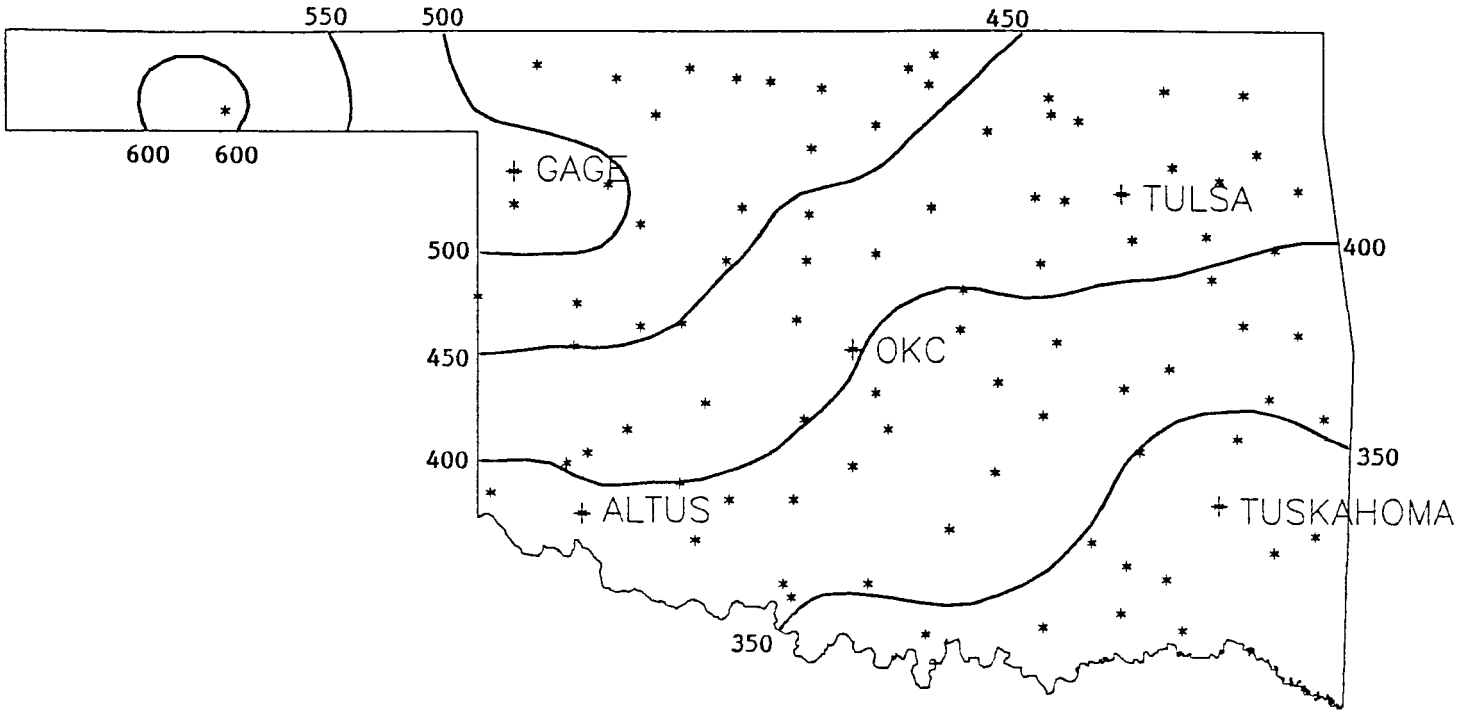
MARCH 1990 DEVIATION FROM NORMAL PRECIPITATION
(Inches)



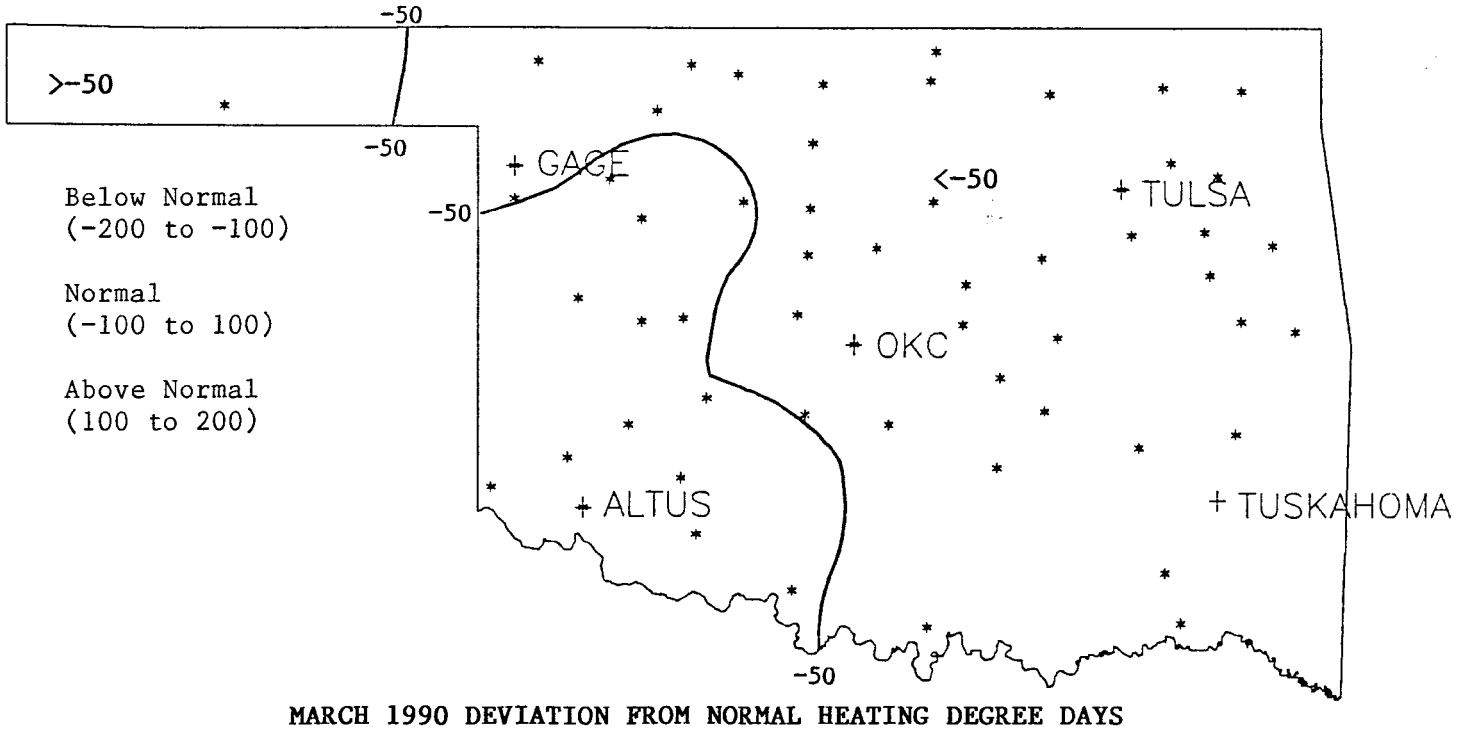
MARCH 1990 AVERAGE MONTHLY TEMPERATURES
(Degrees F)



MARCH 1990 DEVIATION FROM NORMAL TEMPERATURES
(Degrees F)

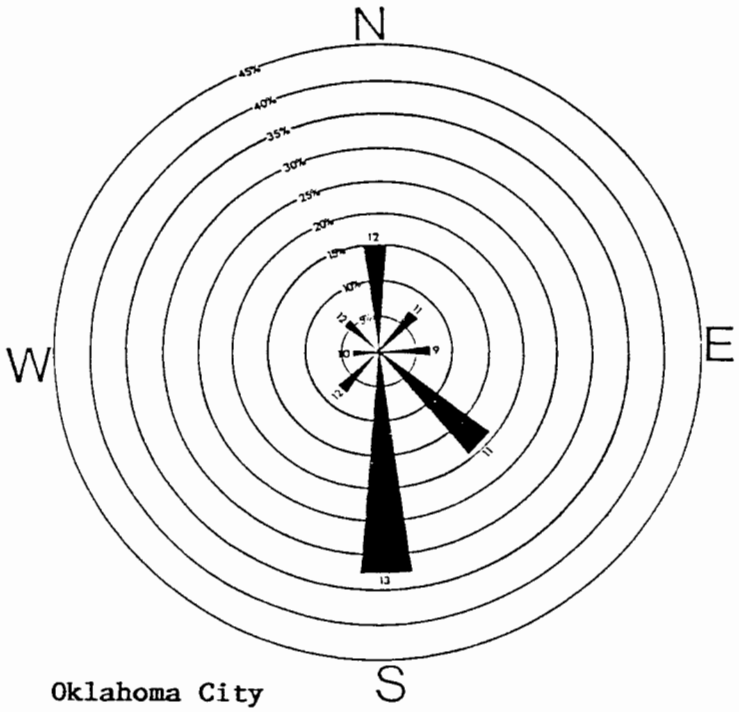


MARCH 1990 HEATING DEGREE DAYS

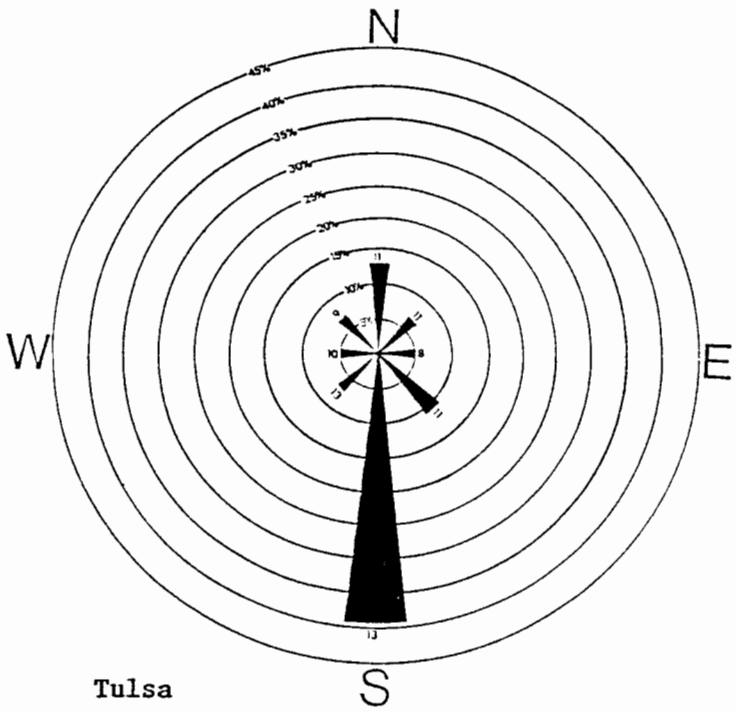


MARCH 1990 DEVIATION FROM NORMAL HEATING DEGREE DAYS

May wind roses for Oklahoma City and Tulsa for 10-year (1965-1974) mean winds (data adapted from NOAA Airport Climatology Series). Percents represent the percentages 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.



Oklahoma City



Tulsa

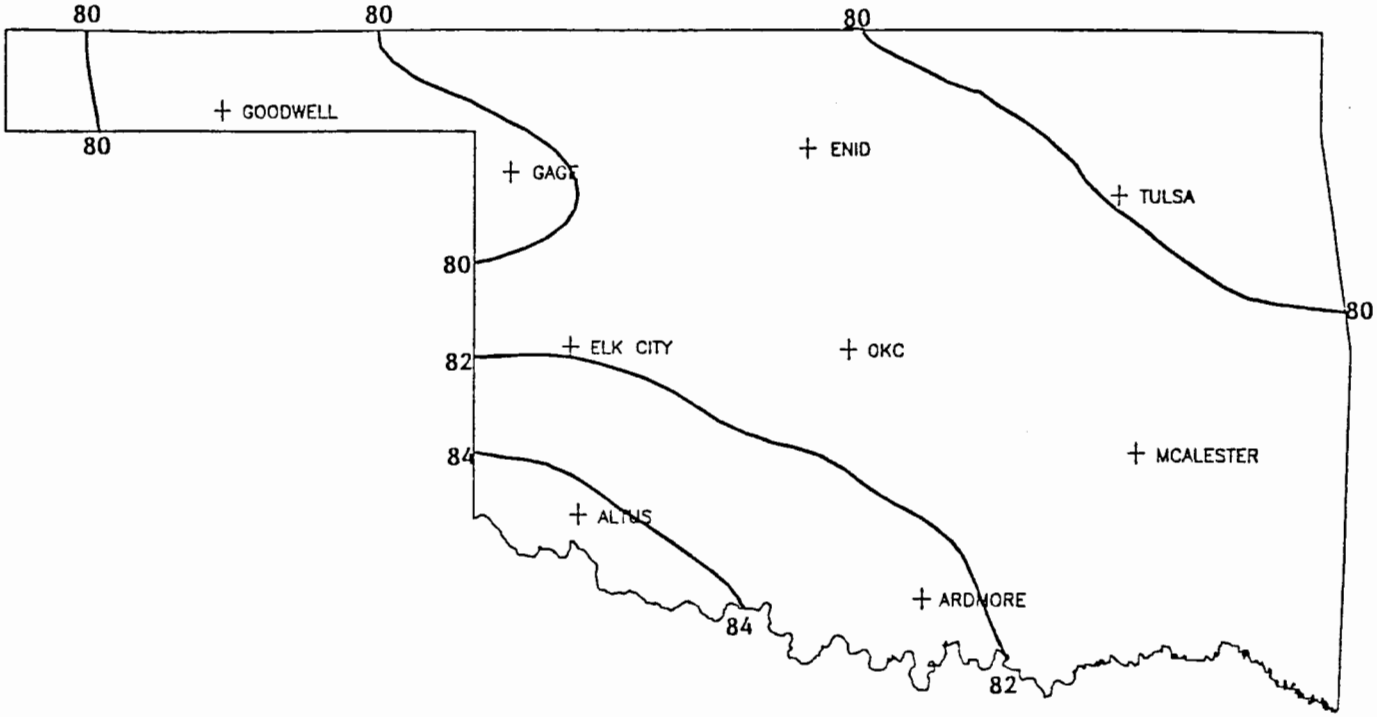
MAY 1990 SUNRISE AND SUNSET

Oklahoma City

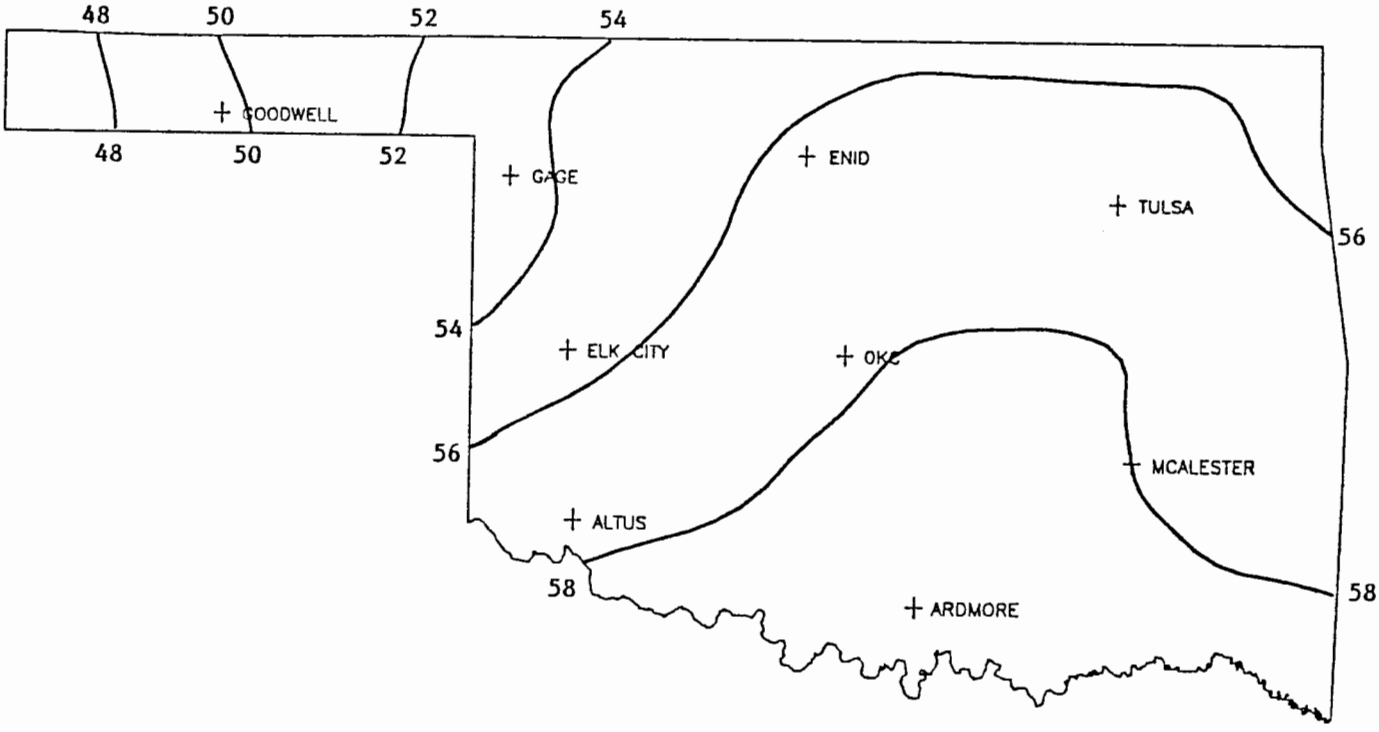
DATE	SUNRISE	SUNSET	DAYLIGHT
900501	6:40AM	8:14PM LT	13:34
900502	6:39AM	8:15PM LT	13:36
900503	6:38AM	8:16PM LT	13:38
900504	6:37AM	8:17PM LT	13:40
900505	6:36AM	8:18PM LT	13:41
900506	6:35AM	8:18PM LT	13:43
900507	6:34AM	8:19PM LT	13:45
900508	6:33AM	8:20PM LT	13:47
900509	6:33AM	8:21PM LT	13:48
900510	6:32AM	8:22PM LT	13:50
900511	6:31AM	8:22PM LT	13:52
900512	6:30AM	8:23PM LT	13:53
900513	6:29AM	8:24PM LT	13:55
900514	6:28AM	8:25PM LT	13:56
900515	6:28AM	8:25PM LT	13:58
900516	6:27AM	8:26PM LT	13:59
900517	6:26AM	8:27PM LT	14: 1
900518	6:26AM	8:28PM LT	14: 2
900519	6:25AM	8:28PM LT	14: 4
900520	6:24AM	8:29PM LT	14: 5
900521	6:24AM	8:30PM LT	14: 6
900522	6:23AM	8:31PM LT	14: 7
900523	6:23AM	8:31PM LT	14: 9
900524	6:22AM	8:32PM LT	14:10
900525	6:22AM	8:33PM LT	14:11
900526	6:21AM	8:33PM LT	14:12
900527	6:21AM	8:34PM LT	14:13
900528	6:20AM	8:35PM LT	14:15
900529	6:20AM	8:35PM LT	14:16
900530	6:19AM	8:36PM LT	14:17
900531	6:19AM	8:37PM LT	14:18

Tulsa

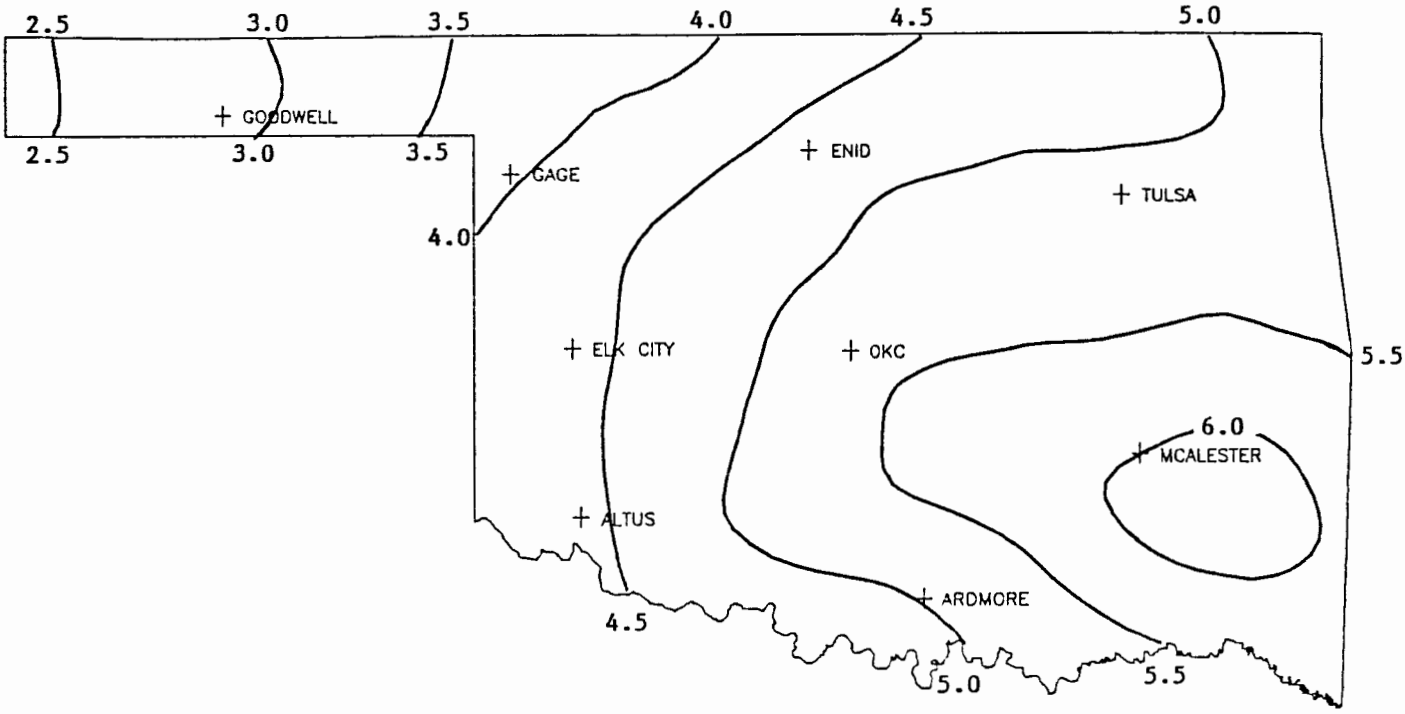
DATE	SUNRISE	SUNSET	DAYLIGHT
900501	6:32AM	8: 9PM LT	13:37
900502	6:31AM	8:10PM LT	13:39
900503	6:30AM	8:11PM LT	13:41
900504	6:29AM	8:11PM LT	13:42
900505	6:28AM	8:12PM LT	13:44
900506	6:27AM	8:13PM LT	13:46
900507	6:26AM	8:14PM LT	13:48
900508	6:25AM	8:15PM LT	13:50
900509	6:24AM	8:15PM LT	13:51
900510	6:23AM	8:16PM LT	13:53
900511	6:22AM	8:17PM LT	13:55
900512	6:22AM	8:18PM LT	13:56
900513	6:21AM	8:19PM LT	13:58
900514	6:20AM	8:19PM LT	13:60
900515	6:19AM	8:20PM LT	14: 1
900516	6:18AM	8:21PM LT	14: 3
900517	6:18AM	8:22PM LT	14: 4
900518	6:17AM	8:23PM LT	14: 6
900519	6:16AM	8:23PM LT	14: 7
900520	6:16AM	8:24PM LT	14: 8
900521	6:15AM	8:25PM LT	14:10
900522	6:14AM	8:26PM LT	14:11
900523	6:14AM	8:26PM LT	14:12
900524	6:13AM	8:27PM LT	14:14
900525	6:13AM	8:28PM LT	14:15
900526	6:12AM	8:28PM LT	14:16
900527	6:12AM	8:29PM LT	14:17
900528	6:11AM	8:30PM LT	14:18
900529	6:11AM	8:31PM LT	14:20
900530	6:11AM	8:31PM LT	14:21
900531	6:10AM	8:32PM LT	14:22



30-YEAR MEAN MAY DAILY MAXIMUM TEMPERATURE



30-YEAR MEAN MAY DAILY MINIMUM TEMPERATURE



30-YEAR MEAN MAY PRECIPITATION

30- and 90-DAY NATIONAL WEATHER SERVICE OUTLOOK

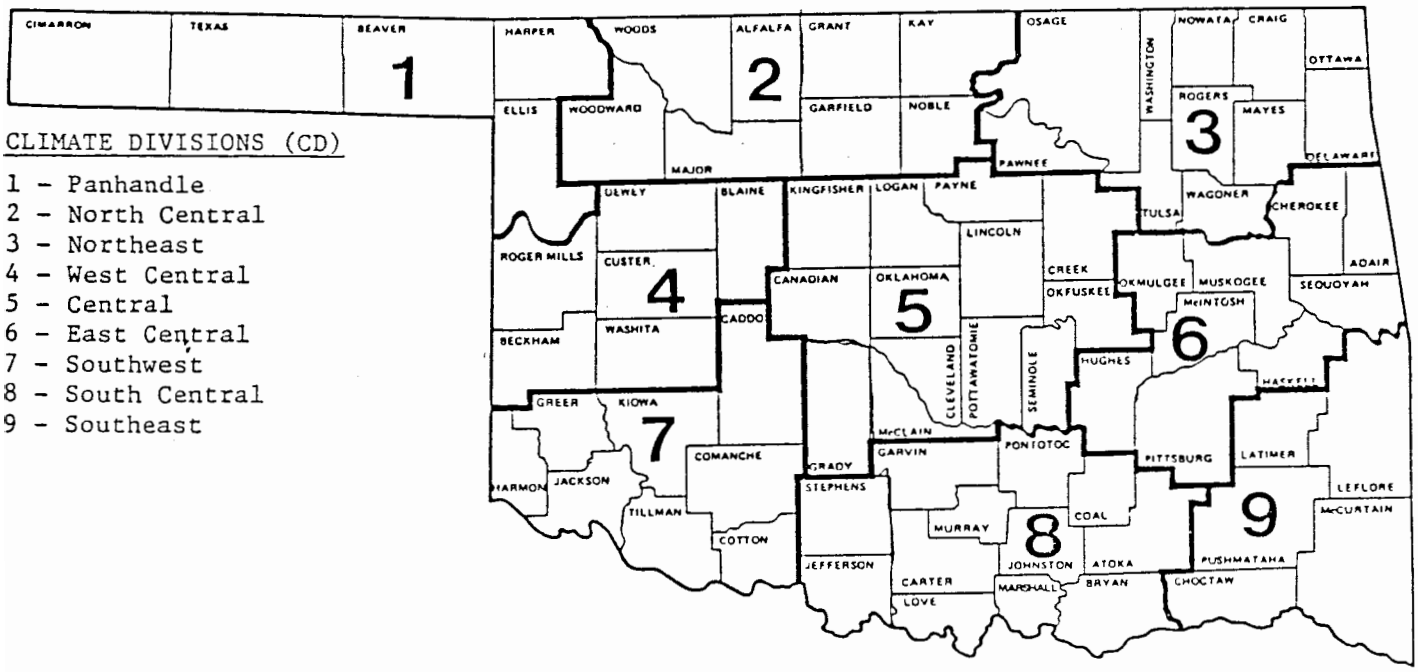
30-DAY OUTLOOK (MID-APRIL to MID-MAY)

Precipitation - Near Normal Statewide
Temperature - Below Normal Statewide

90-DAY OUTLOOK (APRIL-JUNE)

Precipitation - Near Normal Statewide
Temperature - Above 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.

MAY 1990

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
73.3	max	
52.8	min	
.092	pcpn	
3	HDD	
2	CDD	
Highest Max		93-1948
Lowest Max		53-1966
Lowest Min		39-1963
Highest Min		65-1959
Greatest pcpn		1.63-1954

Normal	2	Actual
74.3	max	
52.3	min	
.124	pcpn	
3	HDD	
2	CDD	
Highest Max		94-1943
Lowest Max		52-1954
Lowest Min		39-1961
Highest Min		69-1959
Greatest pcpn		1.53-1975

Normal	3	Actual
74.9	max	
54.1	min	
.102	pcpn	
3	HDD	
3	CDD	
Highest Max		92-1940
Lowest Max		49-1978
Lowest Min		32-1954
Highest Min		70-1949
Greatest pcpn		2.48-1979

Normal	4	Actual
77.4	max	
54.3	min	
.120	pcpn	
2	HDD	
3	CDD	
Highest Max		90-1943
Lowest Max		44-1935
Lowest Min		36-1954
Highest Min		70-1949
Greatest pcpn		1.71-1941

Normal	5	Actual
77.3	max	
57.8	min	
.159	pcpn	
1	HDD	
4	CDD	
Highest Max		94-1940
Lowest Max		50-1935
Lowest Min		40-1935
Highest Min		69-1940
Greatest pcpn		1.58-1967

Normal	6	Actual
77.2	max	
56.1	min	
.103	pcpn	
2	HDD	
4	CDD	
Highest Max		94-1954
Lowest Max		61-1960
Lowest Min		37-1944
Highest Min		70-1986
Greatest pcpn		2.61-1930

Normal	7	Actual
77.1	max	
55.0	min	
.059	pcpn	
2	HDD	
3	CDD	
Highest Max		88-1934
Lowest Max		58-1972
Lowest Min		42-1938
Highest Min		71-1927
Greatest pcpn		1.60-1968

Normal	8	Actual
77.9	max	
54.8	min	
.117	pcpn	
2	HDD	
4	CDD	
Highest Max		92-1989
Lowest Max		50-1943
Lowest Min		38-1938
Highest Min		70-1927
Greatest pcpn		3.09-1959

Normal	9	Actual
77.8	max	
56.6	min	
.157	pcpn	
2	HDD	
4	CDD	
Highest Max		90-1927
Lowest Max		55-1943
Lowest Min		44-1969
Highest Min		70-1963
Greatest pcpn		3.37-1943

Normal	10	Actual
75.5	max	
56.7	min	
.332	pcpn	
2	HDD	
4	CDD	
Highest Max		96-1967
Lowest Max		53-1954
Lowest Min		42-1946
Highest Min		71-1963
Greatest pcpn		1.43-1934

Normal	11	Actual
76.8	max	
56.2	min	
.077	pcpn	
3	HDD	
4	CDD	
Highest Max		93-1963
Lowest Max		54-1954
Lowest Min		37-1981
Highest Min		70-1933
Greatest pcpn		4.30-1929

Normal	12	Actual
76.9	max	
55.8	min	
.161	pcpn	
2	HDD	
4	CDD	
Highest Max		90-1986
Lowest Max		60-1966
Lowest Min		39-1979
Highest Min		72-1956
Greatest pcpn		3.11-1967

Normal	13	Actual
76.9	max	
56.3	min	
.188	pcpn	
2	HDD	
4	CDD	
Highest Max		95-1984
Lowest Max		49-1953
Lowest Min		39-1971
Highest Min		68-1974
Greatest pcpn		2.58-1983

Normal	14	Actual
77.7	max	
55.5	min	
.152	pcpn	
2	HDD	
4	CDD	
Highest Max		92-1952
Lowest Max		55-1934
Lowest Min		41-1953
Highest Min		68-1974
Greatest pcpn		2.48-1986

Normal	15	Actual
78.5	max	
57.0	min	
.134	pcpn	
2	HDD	
5	CDD	
Highest Max		90-1931
Lowest Max		47-1945
Lowest Min		39-1942
Highest Min		70-1948
Greatest pcpn		2.73-1980

Normal	16	Actual
80.6	max	
58.3	min	
.193	pcpn	
1	HDD	
5	CDD	
Highest Max		92-1966
Lowest Max		56-1945
Lowest Min		41-1945
Highest Min		75-1974
Greatest pcpn		1.81-1986

Normal	17	Actual
78.9	max	
58.7	min	
.358	pcpn	
1	HDD	
5	CDD	
Highest Max		96-1966
Lowest Max		63-1935
Lowest Min		39-1945
Highest Min		74-1974
Greatest pcpn		3.17-1951

Normal	18	Actual
80.1	max	
58.5	min	
.112	pcpn	
1	HDD	
5	CDD	
Highest Max		95-1956
Lowest Max		65-1957
Lowest Min		45-1976
Highest Min		72-1938
Greatest pcpn		1.05-1951

Normal	19	Actual
80.5	max	
58.2	min	
.239	pcpn	
1	HDD	
6	CDD	
Highest Max		96-1973
Lowest Max		66-1955
Lowest Min		46-1971
Highest Min		71-1933
Greatest pcpn		3.35-1955

Normal	20	Actual
79.1	max	
58.7	min	
.298	pcpn	
1	HDD	
5	CDD	
Highest Max		93-1956
Lowest Max		63-1942
Lowest Min		43-1981
Highest Min		73-1933
Greatest pcpn		2.74-1979

Normal	21	Actual
81.3	max	
59.9	min	
.158	pcpn	
1	HDD	
7	CDD	
Highest Max		95-1953
Lowest Max		56-1968
Lowest Min		47-1942
Highest Min		73-1953
Greatest pcpn		1.60-1987

Normal	22	Actual
81.2	max	
60.8	min	
.188	pcpn	
0	HDD	
7	CDD	
Highest Max		98-1939
Lowest Max		58-1963
Lowest Min		42-1931
Highest Min		74-1953
Greatest pcpn		2.62-1975

Normal	23	Actual
80.7	max	
60.5	min	
.214	pcpn	
1	HDD	
6	CDD	
Highest Max		99-1939
Lowest Max		60-1935
Lowest Min		48-1963
Highest Min		72-1953
Greatest pcpn		3.09-1952

Normal	24	Actual
80.3	max	
61.0	min	
.125	pcpn	
0	HDD	
6	CDD	
Highest Max		94-1939
Lowest Max		63-1947
Lowest Min		42-1935
Highest Min		72-1989
Greatest pcpn		1.90-1957

Normal	25	Actual
82.0	max	
61.5	min	
.160	pcpn	
0	HDD	
7	CDD	
Highest Max		93-1962
Lowest Max		69-1976
Lowest Min		47-1947
Highest Min		72-1937
Greatest pcpn		1.49-1968

Normal	26	Actual
81.4	max	
60.6	min	
.314	pcpn	
1	HDD	
7	CDD	
Highest Max		95-1953
Lowest Max		57-1950
Lowest Min		49-1968
Highest Min		71-1953
Greatest pcpn		2.00-1959

Normal	27	Actual
81.4	max	
59.6	min	
.399	pcpn	
0	HDD	
6	CDD	
Highest Max		96-1927
Lowest Max		64-1976
Lowest Min		43-1961
Highest Min		76-1927
Greatest pcpn		5.38-1987

Normal	28	Actual
81.0	max	
61.1	min	
.216	pcpn	
0	HDD	
7	CDD	
Highest Max		91-1926
Lowest Max		62-1932
Lowest Min		43-1947
Highest Min		71-1942
Greatest pcpn		2.33-1987

Normal	29	Actual
82.4	max	
61.2	min	
.311	pcpn	
0	HDD	
7	CDD	
Highest Max		94-1985
Lowest Max		62-1947
Lowest Min		39-1947
Highest Min		73-1989
Greatest pcpn		5.63-1970

Normal	30	Actual
83.0	max	
62.4	min	
.193	pcpn	
0	HDD	
8	CDD	
Highest Max		104-1985
Lowest Max		66-1975
Lowest Min		45-1947
Highest Min		74-1974
Greatest pcpn		2.30-1929

Normal	31	Actual
81.9	max	
62.8	min	
.209	pcpn	
0	HDD	
8	CDD	
Highest Max		98-1928
Lowest Max		69-1964
Lowest Min		48-1975
Highest Min		74-1949
Greatest pcpn		1.64-1968

MAY AVERAGES

Temperature	:	68.4
Precipitation	:	5.76"
Heating Degree Days:		41
Cooling Degree Days:		156