OKLAHOMA
MONTHLY SUMMARY
JUNE 1990

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JUNE 1990 OKLAHOMA SUMMARY

The generally cool, wet weather that Oklahoma experienced during the first five months of 1990 was replaced in June by a stifling heat reminiscent of August's past. Temperatures reached above the 100 degree mark somewhere in the state on 25 days during the month. Only on June 2 did temperatures stay below 90 degrees throughout the state. As a result, the overall state-averaged temperature of 81.3 degrees ties with 1918 as the 6th warmest June in the state's history and is the warmest June in Oklahoma since 1953. Across each of the state's 9 climate divisions (CD's) temperatures averaged 2.2 to 4.4 degrees above the 30-year normals for June. Departures from the established normals at individual stations ranged from +1 degree at Ardmore to +5.7 degrees at Guthrie.

Previous rains which had kept the state green, but had also wreaked havoc due to flooding in April and May, ended for the most part in June. The wheat harvest proceeded with minimal interruption, and clean-up work from spring floods and tornadoes continued. Although some locally heavy rainfalls were recorded, precipitation for the month was well below normal. The state-average rainfall was 1.85", the 10th driest June on record for the state and the driest June since 1954. Departures from normal in the CD's ranged from -1.18" in CD's 3 and 8, to -2.9" in CD 2. Despite the below normal rainfall in June, 1990 state-averaged precipitation for the first six months of 1990 is the third largest since record-keeping began in 1892. The lack of rainfall, in combination with the greater than normal heat, created a demand for water that exceeded the storage capacity in a number of localities. As a result, several communities imposed water rationing during a period of plentiful supply, as indicated by full reservoirs and streams.

A cold front associated with a vigorous upper air trough worked its way through the state during the first three days of the month, producing thunderstorms, high winds and pea-sized hail. Unofficial reports on June 1 indicated that up to 4" of rain fell overnight at Martha in Jackson County. Mangum reported 2.64" during the same period. As the weather system moved east during the next two days, Broken Bow received 5.5" on June 2 and 3. The 2nd also turned out to be the coolest day of the month, statewide, as no station reported a high temperature above 87 degrees.

Five stations in western Oklahoma, led by Buffalo with 103, broke the 100 degree mark on June 5. Despite passage through the state of weak weather disturbances which produced scattered rainfall, the heat remained for the rest of the month. From June 5 through June 22, at least one station, always in the west or north central portions of the state broke 100 degrees each day. Scattered thunderstorms from June 8-10 produced rainfall amounts in excess of an inch over northern portions of the state. Thunderstorms in the west on June 14 and 15 produced as much as 3.24" near Hammon in Roger Mills County and 3" at Thomas in Custer County.

A weak cold front moved through the state from June 19-22 setting off scattered thunderstorms that produced rainfall in excess of 3" at several locations, mainly in northeastern Oklahoma. The largest totals occurred in Osage County where Pawhuska reported 5.26" during a 48-hour period that ended on the evening of June 22. Another observer at Pawhuska reported 4.4" in the 24 hours ending at 7 a.m. on June 21. Reports from the morning of June 22 included 3.9" at Wynona, 3.35" west of Bartlesville, and 3.2" in Craig County north of Vinita. The front lowered temperatures slightly. On June 23 no reporting station reached 100 degrees with Guymon reporting the state's high for the day of 98 degrees.

Widely scattered thunderstorms occurred in parts of southern and central Oklahoma on the evening of June 26. The Chickasaw National Recreation Area at Sulphur reported 2.08" and Seminole 2.03" of rainfall on the morning of June 27. Temperatures in western Oklahoma, however, soared during the last week of the month. Chattanooga in southern Comanche County reported 108 degrees on June 26 and 27. Weatherford on June 27 and Buffalo on June 28 matched those readings which were the high temperatures for the month across the state.

H. L. Johnson

An upper level storm system dominated Oklahoma weather during the final three days of May. Instability associated with the system aided tornado development in Beaver County on May 29. Straight line winds estimated at 90 miles per hour damaged several structures in Hobart and 80-mph winds snapped tree limbs in Lone Wolf. Quarter-sized hail fell over much of western Oklahoma where several stations reported 1 to 3" rainfall accumulations. The persistent system produced a severe thunderstorm with a possible tornado in Harmon County on May 31.

R. J. Sladewski

Figure 1. May 1990 percent of normal precipitation.

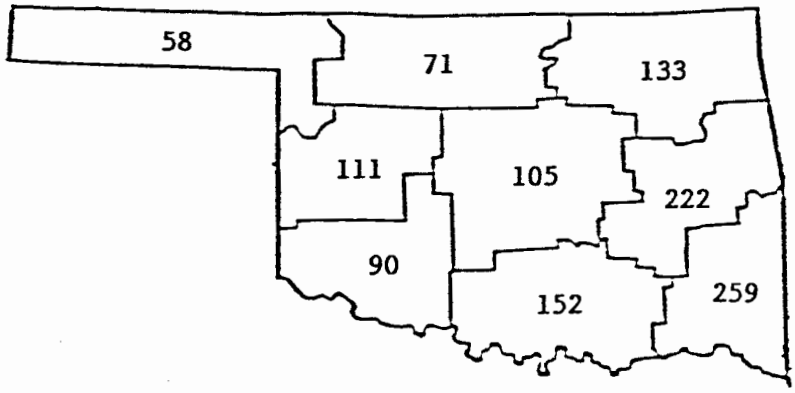
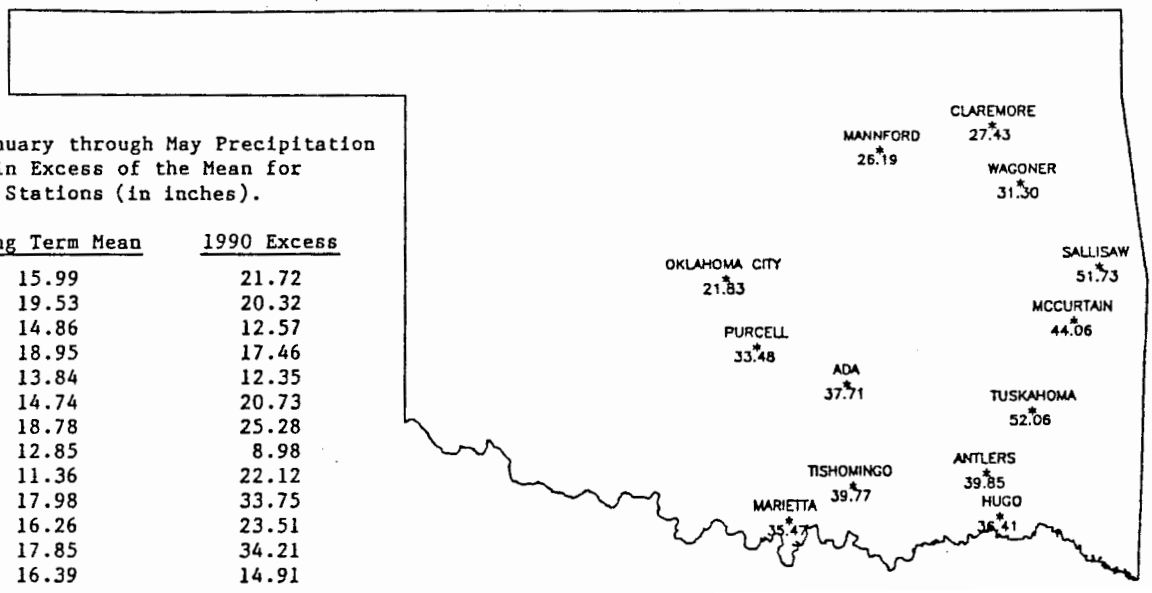


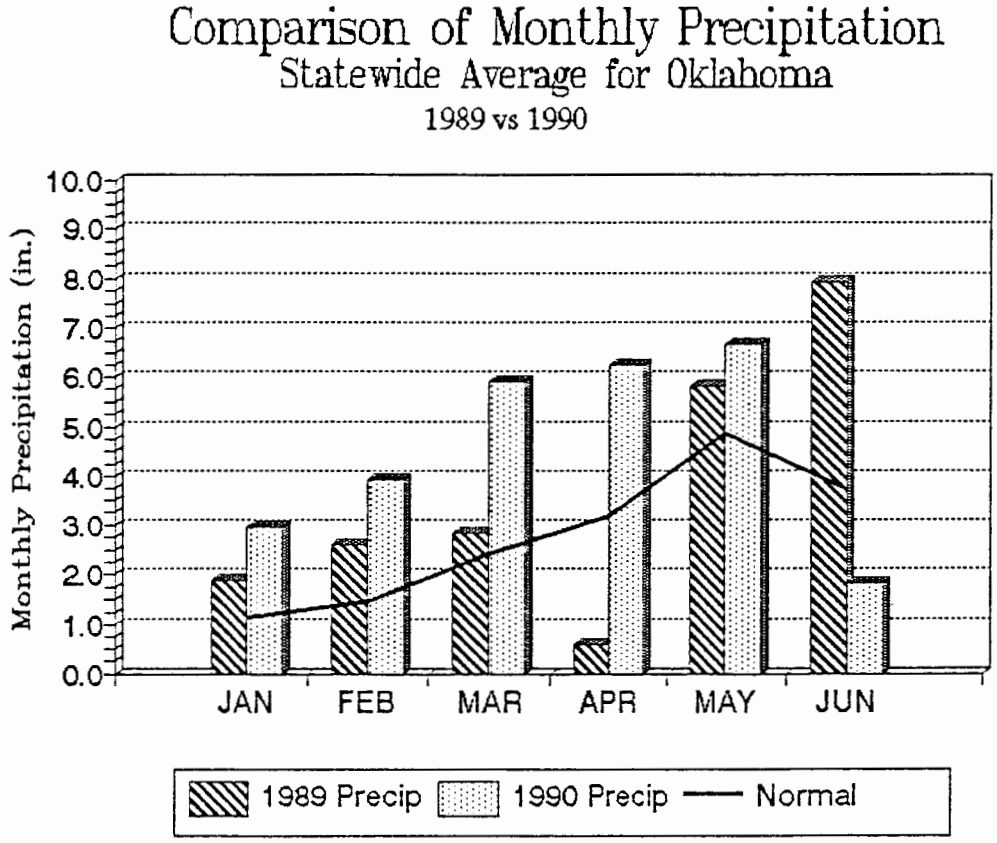
Figure 2. January-May 1990 record precipitation accumulations for selected Oklahoma stations. (Period of Record = 1948-1990)

Long Term Mean January through May Precipitation and 1990 Amounts in Excess of the Mean for Selected Oklahoma Stations (in inches).

Station	Long Term Mean	1990 Excess
Ada	15.99	21.72
Antlers	19.53	20.32
Claremore	14.86	12.57
Hugo	18.95	17.46
Mannford	13.84	12.35
Marietta	14.74	20.73
McCurtain	18.78	25.28
Oklahoma City	12.85	8.98
Purcell	11.36	22.12
Sallisaw	17.98	33.75
Tishomingo	16.26	23.51
Tuskahoma	17.85	34.21
Wagoner	16.39	14.91



The two members of the OCS staff who have been most responsible for writing the Monthly Summary for the last several years have left the Oklahoma Climatological Survey to accept new challenges. Ellen Cooter, who as the Assistant State Climatologist had served as Editor-in-Chief of the Summary since its inception, has left to join the National Oceanic and Atmospheric Administration in North Carolina. Bob Sladewski, who took over the writing of the summary article about three years ago and who prepared most of the graphics has accepted a position in private industry. We who remain at the OCS wish to commend them both for their good work and to wish them well in their new endeavors. They and the high quality of their work will be missed.



The extreme variability of climate in Oklahoma is well illustrated by comparing monthly precipitation totals during the first six months of 1990 with those of the same months of 1989, a year that ranked as the 15th wettest January-June. In 1989, a wetter than normal winter was followed by a very dry April. Rainfall in May was slightly above normal and June was the wettest on record at several locations. Precipitation over the state in the first five months of 1990 was very much above normal, but June turned out to be very dry.

June 1990 percent of normal precipitation.

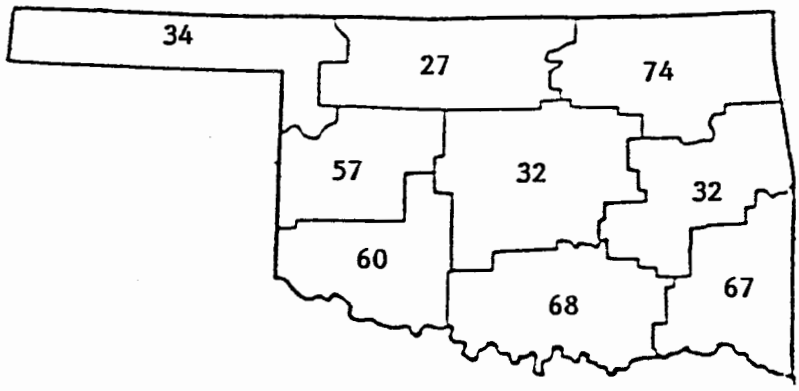


TABLE OF 1989/1990 COMPARISONS

Station	June Temperatures (F) 1989	1990	June Precipitation (in.) 1989	1990
Arnett	69.8	79.2	8.47	.68
Enid	74.5	83.1	6.81	.15
Mutual	69.8	80.5	7.06	.48
Tulsa	75.1	82.6	5.16	1.08
Elk City	72.4	81.7	10.42	1.70
Oklahoma City	74.5	82.1	15.20	1.25
McAlester	75.4	80.4	8.38	1.79
Altus Irr Sta	75.6	83.9	7.66	2.61
Durant	74.6	80.0	10.01	2.90
Ada	74.4	80.1	8.34	1.73
Antlers	75.2	80.2	7.52	3.14

EXTREMES

Variable	Station	Division	Observation	Date
Minimum temperature (F)	Goodwell	1	46	3
Maximum temperature (F)	Buffalo	1	108	28
	Weatherford	4	108	27
	Chattanooga	7	108	27
Maximum 24-hour precipitation	Pawhuska-2	3	4.40"	22

NEXRAD: DEVELOPED, USED FIRST AND ADMINISTERED IN OKLAHOMA

It was nearly 20 years ago that a new generation of radar technology was conceived on the University of Oklahoma's North Campus at the National Severe Storms Laboratory. Now, in the summer of 1990, the Nation is only months away from reaping benefits from decades of applied research in radar meteorology.

Even though a prototype of the new generation weather radar (termed NEXRAD or, more technically, the WSR-88D) was tested operationally in Norman during five months of 1989, official NEXRAD operations from Twin Lakes (in northeast Cleveland County) begin during the late spring of 1991. Thereafter, NEXRAD operations will be commissioned at Frederick (late 1991), at Inola east of Tulsa (mid 1992), and at Enid (fall of 1993).

By 1996, when the last nationwide installation will be completed, the NEXRAD network will consist of 175 Doppler weather radar sites distributed throughout the Nation and at 17 overseas sites. Each site will be administered via NEXRAD's Operational Support Facility that has been established in Norman.

While many understand NEXRAD capabilities to pinpoint developing tornadoes, the major dividend from NEXRAD operations probably lies in its remote sensing capabilities as a water management tool. Whether real rainfall patterns are intense and bring disaster or meager and create hardships, NEXRAD capabilities to measure details in unfolding precipitation events offer a sharable data set upon which to base:

* a new generation of urban flood warning systems;
* better management of flood control reservoirs;
* harvest projections using numerous crops growth models; and
* drought assessment using rainfall footprints measured every 6 minutes.

The Oklahoma Climatological Survey actively is attempting to exploit NEXRAD capabilities to benefit the Oklahoma economy through:

* cooperative efforts between OSU, OU and the Department of Public Safety to develop an environmental information dissemination system;

* cooperative efforts with the City of Tulsa to transition their unique flood-warning system into the NEXRAD era and, thereafter, across the entire state of Oklahoma; and

* the hiring of two new professional staff members to assist in mapping the true climatology of precipitation in Oklahoma.

Thus, as NEXRAD installations continue, readers of the Monthly Summary will note a new emphasis in hydroclimatology at the Oklahoma Climatological Survey.

JUNE 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	79.2	30	3.5	101.	27	53.	2	.0	-7.0	426.0	98.0	.685	30	-2.61	.34	22
BEAVER	593	1	78.9	30	2.7	107.	29	47.	4	4.0	-6.0	420.5	74.5	.921	30	-1.92	.36	22
BOISE CITY 2 E	908	1	78.0	30	4.5	103.	28	49.	4	.0	-10.0	390.5	125.5	1.201	30	-.79	.90	9
BUFFALO	1243	1	82.2	30	3.8	108.	28	47.	4	.0	-6.0	516.5	108.5	1.820	30	-1.78	.95	21
FARGO	3070	1	*****	0	*****	****	0	****	0	******	******	******	******	.750	30	-2.46	.49	22
GAGE FAA APT	3407	1	80.8	30	4.2	103.	26	50.	4	.0	.0	475.0	122.0	1.162	30	-1.61	.51	22
GATE	3489	1	81.6	30	*****	106.	30	51.	2	.0	******	499.0	******	.961	30	*****	.66	22
GOODWELL RES ST	3628	1	78.6	30	4.0	107.	29	46.	3	3.0	-8.0	411.0	112.0	.552	30	-1.75	.33	22
GUYMON	3835	1	79.9	28	*****	107.	28	48.	3	2.0	******	418.5	******	.852	29	*****	.39	22
HOOKER	4298	1	79.6	27	*****	107.	29	49.	2	.0	******	395.0	******	.290	30	-2.66	.19	22
KENTON	4766	1	76.8	30	3.1	105.	29	47.	3	.0	-14.0	353.5	78.5	.740	30	-1.08	.44	10
LAVERNE	5045	1	*****	0	*****	****	0	****	0	******	******	******	******	1.172	30	-1.80	.41	22
OPTIMA LAKE	6740	1	78.9	30	*****	107.	29	48.	3	.0	******	417.5	******	.701	30	*****	.38	22
RANGE	7412	1	*****	0	*****	****	0	****	0	******	******	******	******	.650	30	*****	.40	9
REGNIER	7534	1	*****	0	*****	****	0	****	0	******	******	******	******	1.010	30	-.79	.51	10
TURPIN 4 SSE	9017	1	79.7	27	*****	106.	29	49.	2	.0	******	396.5	******	.580	30	*****	.30	20

JUNE 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	82.8	30	4.7	104.	30	52.	3	.0	-5.0	534.5	136.5	.160	30	-3.64	.16	16
VANCE AFB	302	2	*****	0	*****	****	0	****	0	******	******	******	******	.718	30	*****	.65	22
BILLINGS	755	2	82.0	30	*****	102.	30	51.	4	.0	******	509.5	******	.790	30	-3.32	.69	22
BLACKWELL 2E	818	2	82.4	30	*****	104.	19	52.	4	.0	******	522.0	******	.905	30	*****	.83	22
BRAMAN	1075	2	*****	0	*****	****	0	****	0	******	******	******	******	.451	30	*****	.43	22
CHEROKEE	1724	2	84.3	30	5.3	104.	29	53.	4	.0	.0	577.5	160.5	1.710	30	-2.28	1.13	9
ENID	2912	2	83.1	30	4.6	101.	28	55.	4	.0	.0	541.5	136.5	.150	30	-3.97	.12	17
FT SUPPLY DAM	3304	2	79.5	30	2.6	103.	27	50.	4	.0	-6.0	435.5	72.5	.811	30	-2.13	.38	22
FREEDOM	3358	2	82.0	30	*****	103.	28	49.	4	.0	******	509.5	******	.810	30	*****	.47	22
GREAT SALT PLNS	3740	2	84.6	30	*****	107.	30	58.	4	.0	******	586.5	******	.720	22	*****	.67	22
HARDY	3909	2	*****	0	*****	****	0	****	0	******	******	******	******	1.521	30	*****	1.52	23
HELENA 1 SSE	4019	2	81.3	30	*****	104.	27	51.	4	.0	******	488.0	******	.723	30	-3.23	.56	22
JEFFERSON	4573	2	82.7	30	4.0	104.	29	48.	3	.0	.0	530.5	119.5	.600	30	-3.38	.49	21
LAMONT	5013	2	*****	0	*****	****	0	****	0	******	******	******	******	.340	30	*****	.31	22
MEDFORD	5768	2	*****	0	*****	****	0	****	0	******	******	******	******	.640	30	*****	.61	21
MORRISON	6065	2	*****	0	*****	****	0	****	0	******	******	******	******	2.280	30	*****	1.59	22
MUTUAL	6139	2	80.5	30	3.3	105.	27	49.	3	.0	-6.0	466.0	94.0	.480	30	-2.69	.26	16
NEWKIRK	6278	2	81.3	30	3.8	100.	20	54.	4	.0	.0	490.5	115.5	1.000	30	-3.59	.89	22
ORIENTA	6751	2	*****	0	*****	****	0	****	0	******	******	******	******	1.040	30	*****	.45	21
PERRY	7012	2	82.7	28	*****	101.	19	55.	4	.0	******	496.0	******	1.560	28	*****	1.39	22
PONCA CITY FAA	7201	2	82.8	30	5.6	102.	19	52.	4	.0	.0	533.5	167.5	1.732	30	-2.44	1.70	22
RED ROCK 1 NNE	7505	2	*****	0	*****	****	0	****	0	******	******	******	******	2.700	30	-1.33	2.28	22
WAYNOKA	9404	2	82.6	30	4.1	104.	26	49.	4	.0	.0	528.0	123.0	.430	30	-3.32	.27	22
WOODWARD	9760	2	*****	0	*****	****	0	****	0	******	******	******	******	.664	30	*****	.46	22

JUNE 1990 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	79.2	30	*****	97.	19	51.	3	.0	******	425.0	******	3.322	30	-1.22	2.26	22
BARTLESVILLE ZW	548	3	81.2	30	4.2	100.	19	54.	4	.0	.0	486.0	126.0	3.852	30	-.24	3.25	22
BIXBY	782	3	79.6	30	2.7	98.	20	53.	3	.0	.0	438.0	77.0	1.931	30	-2.81	1.42	10
BURBANK	1256	3	*****	0	*****	****	0	****	0	******	******	******	******	4.054	30	*****	3.76	21
CHELSEA 4 S	1717	3	*****	0	*****	****	0	****	0	******	******	******	******	4.370	30	*****	2.62	22
CLAREMORE	1828	3	79.0	30	2.7	96.	20	52.	3	.0	.0	420.0	81.0	2.924	30	-1.71	1.77	22
CLEVELAND 5 WSW	1902	3	81.0	28	*****	98.	19	54.	4	.0	******	449.0	******	1.451	30	*****	1.05	22
FORAKER	3250	3	*****	0	*****	****	0	****	0	******	******	******	******	2.911	30	-1.28	2.58	22
HOLLOW	4258	3	*****	0	*****	****	0	****	0	******	******	******	******	6.050	30	1.47	2.50	15
HOMINY	4289	3	*****	0	*****	****	0	****	0	******	******	******	******	2.750	30	-1.40	1.80	22
HULAH DAM	4393	3	78.8	30	3.2	98.	30	51.	4	.0	.0	414.0	91.0	1.161	30	-3.20	.81	22
JAY TOWER	4567	3	77.4	21	*****	96.	18	52.	3	.0	******	260.5	******	4.390	30	*****	1.94	22
KANSAS 1 ESE	4672	3	76.3	28	*****	91.	18	54.	4	.0	******	316.0	******	2.365	29	*****	.94	22
KEYSTONE DAM	4812	3	79.6	30	*****	98.	20	51.	3	.0	******	436.5	******	1.573	30	*****	1.29	22
LENAPAH	5118	3	*****	0	*****	****	0	****	0	******	******	******	******	6.292	30	*****	2.00	14
MANNFORD 6 NW	5522	3	81.5	30	*****	100.	19	52.	3	.0	******	495.5	******	1.210	30	-2.67	.99	22
MARAMEC	5540	3	*****	0	*****	****	0	****	0	******	******	******	******	2.110	30	-1.79	1.43	22
MIAMI	5855	3	76.8	30	.6	91.	19	54.	5	.0	-7.0	355.0	12.0	4.510	30	-.37	1.42	15
NOWATA	6485	3	78.8	29	2.3	95.	19	55.	3	.0	.0	399.5	50.5	5.220	30	.44	2.50	20
ONETA 1 WNW	6713	3	*****	0	*****	****	0	****	0	******	******	******	******	.751	30	*****	.41	22
PAWHUSKA	6935	3	79.8	30	3.3	98.	19	52.	4	.0	.0	445.5	97.5	5.813	30	1.50	3.18	22
PAWHUSKA	6937	3	*****	0	*****	****	0	****	0	******	******	******	******	5.012	30	*****	4.40	22
PAWNEE	6940	3	*****	0	*****	****	0	****	0	******	******	******	******	1.380	30	-2.64	.83	22
PRYOR 6 N	7309	3	75.9	14	*****	92.	11	54.	4	.0	******	153.0	******	4.314	30	-.36	2.18	22
RALSTON	7390	3	81.9	30	*****	101.	18	52.	3	.0	******	508.5	******	3.122	30	-1.27	2.85	22
RAMONA 4 N	7394	3	*****	0	*****	****	0	****	0	******	******	******	******	3.210	30	*****	1.65	22
SKIATOOK	8258	3	*****	0	*****	****	0	****	0	******	******	******	******	2.150	30	-2.16	1.12	22
SPAVINAW	8380	3	78.9	30	*****	93.	19	55.	4	.0	******	417.5	******	3.920	30	-.86	2.37	22
TULSA WSO APT	8992	3	82.6	30	4.9	98.	19	57.	3	.0	.0	526.5	145.5	1.083	30	-3.49	.48	22
UPPER SPAVINAW	9101	3	75.4	24	*****	97.	16	47.	23	4.5	******	253.0	******	3.402	29	*****	2.18	22
VINITA 2 N	9203	3	78.7	27	*****	94.	19	53.	4	.0	******	370.0	******	6.320	30	1.45	3.20	22
WAGONER	9247	3	80.3	30	3.1	96.	18	56.	4	.0	.0	460.0	94.0	.571	30	-4.52	.44	22
WANN	9298	3	*****	0	*****	****	0	****	0	******	******	******	******	4.290	25	*****	2.58	15
WYNONA	9792	3	83.2	30	*****	99.	18	60.	4	.0	******	546.5	******	4.384	30	*****	3.90	22

JUNE 1990 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	80.2	30	2.5	102.	27	50.	3	.0	.0	455.5	74.5	1.651	30	-2.05	1.37	16
CHEYENNE	1738	4	*****	0	*****	****	0	****	0	******	******	******	******	2.250	30	*****	1.62	16
CLINTON	1909	4	83.9	30	5.5	105.	26	52.	3	.0	.0	566.0	164.0	2.181	30	-1.17	1.46	16
COLONY	2039	4	*****	0	*****	****	0	****	0	******	******	******	******	1.410	30	*****	.42	1
CORDELL	2125	4	*****	0	*****	****	0	****	0	******	******	******	******	1.711	30	-1.36	.98	16
ELK CITY 1 E	2849	4	81.7	30	*****	102.	27	56.	4	.0	******	501.0	******	1.702	30	-1.62	1.13	16
ERICK 4 E	2944	4	80.9	29	3.2	102.	26	53.	4	.0	.0	461.5	76.5	2.191	30	-.78	1.02	16
GEARY	3497	4	80.9	28	*****	100.	26	57.	5	.0	******	446.5	******	1.200	30	-2.61	.70	2
HAMMON 1 NNE	3871	4	80.0	30	1.9	101.	27	52.	4	.0	-6.0	449.0	50.0	3.930	30	.97	3.24	15
LEEDEY	5090	4	*****	0	*****	****	0	****	0	******	******	******	******	1.390	30	-1.85	1.12	16
MACKIE 4 NNW	5463	4	*****	0	*****	****	0	****	0	******	******	******	******	2.690	30	*****	1.69	18
MORAVIA 2 NNE	6035	4	*****	0	*****	****	0	****	0	******	******	******	******	1.573	30	-1.42	1.05	1
OKEENE	6629	4	82.8	30	3.8	103.	26	51.	3	.0	.0	532.5	112.5	1.400	30	-2.57	.51	22
REITROP	7565	4	*****	0	*****	****	0	****	0	******	******	******	******	1.840	30	*****	1.20	1
REYDON	7579	4	80.6	30	*****	101.	26	50.	4	.0	******	466.5	******	3.241	30	-.07	2.50	16
SAYRE	7952	4	*****	0	*****	****	0	****	0	******	******	******	******	.930	30	-2.24	.32	16
SWEETWATER 2 E	8652	4	*****	0	*****	****	0	****	0	******	******	******	******	1.740	30	*****	1.24	15
TALOGA	8708	4	81.4	30	3.9	104.	27	49.	2	.0	.0	491.5	116.5	.550	30	-2.72	.45	16
THOMAS	8815	4	*****	0	*****	****	0	****	0	******	******	******	******	3.500	30	*****	3.00	15
VICI	9172	4	*****	0	*****	****	0	****	0	******	******	******	******	.772	30	*****	.51	16
WATONGA	9364	4	81.9	30	*****	103.	26	51.	3	.0	******	506.5	******	2.150	30	-1.62	1.10	16
WEATHERFORD	9422	4	82.2	30	3.9	108.	27	53.	3	.0	.0	516.0	117.0	1.653	30	-1.98	.52	22

JUNE 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	******	******	******	******	1.260	30	*****	.53	2
ARCADIA	288	5	*****	0	*****	****	0	****	0	******	******	******	******	2.140	30	*****	.67	24
TINKER AFB	325	5	*****	0	*****	****	0	****	0	******	******	******	******	.441	29	*****	.18	24
BLANCHARD 2 SSW	830	5	81.2	30	*****	98.	26	57.	3	.0	******	486.0	******	.960	30	*****	.46	1
BRISTOW	1144	5	80.8	30	3.6	98.	25	50.	3	.0	.0	473.0	107.0	.601	30	-3.76	.47	22
CHANDLER	1684	5	80.9	29	3.4	98.	19	54.	3	.0	.0	461.0	86.0	.780	30	-3.02	.40	3
CHICKASHA EX ST	1750	5	82.2	30	3.4	101.	25	54.	4	.0	.0	516.5	102.5	1.920	30	-1.17	.85	2
COX CITY 1 E	2196	5	*****	0	*****	****	0	****	0	******	******	******	******	2.850	30	*****	1.80	1
CRESCENT	2242	5	*****	0	*****	****	0	****	0	******	******	******	******	1.120	30	*****	.43	21
CUSHING	2318	5	80.6	28	*****	98.	20	57.	3	.0	******	435.5	******	2.160	30	-2.13	.77	27
EL RENO 1 N	2818	5	81.9	30	4.5	101.	26	55.	3	.0	.0	508.5	136.5	.920	30	-2.71	.52	2
GUTHRIE	3821	5	83.6	30	5.7	101.	17	54.	3	.0	.0	559.0	172.0	.761	30	-3.20	.34	22
HENNESSEY 2 SE	4055	5	82.4	28	*****	102.	28	53.	4	.0	******	487.0	******	1.310	30	-2.59	.58	22
INGALLS	4489	5	*****	0	*****	****	0	****	0	******	******	******	******	2.354	30	*****	1.00	22
KINGFISHER 2 SE	4861	5	82.1	30	3.5	101.	26	52.	3	.0	.0	512.5	104.5	.803	30	-2.96	.28	22
KONAWA	4915	5	*****	0	*****	****	0	****	0	******	******	******	******	2.880	30	-.84	1.54	27
MARSHALL	5589	5	*****	0	*****	****	0	****	0	******	******	******	******	1.050	30	-2.95	.47	22
MEEKER 4 W	5779	5	80.2	30	3.0	97.	25	52.	3	.0	.0	454.5	88.5	1.030	30	-2.67	.31	27
MULHALL	6110	5	*****	0	*****	****	0	****	0	******	******	******	******	1.070	30	*****	.73	22
NORMAN 3 S	6386	5	82.7	30	*****	103.	25	56.	4	.0	******	532.0	******	1.041	30	-2.58	.39	3
OILTON 2 SE	6616	5	*****	0	*****	****	0	****	0	******	******	******	******	1.050	30	*****	.85	21
OKEMAH	6638	5	80.8	30	3.7	98.	19	58.	3	.0	.0	472.5	109.5	.770	30	-3.70	.47	22
OKLAHOMA CTY WS	6661	5	82.1	30	5.1	99.	26	58.	4	.0	.0	513.0	153.0	1.252	30	-2.62	.84	2
PIEDMONT	7068	5	*****	0	*****	****	0	****	0	******	******	******	******	1.170	30	*****	.43	2
PRAGUE	7264	5	*****	0	*****	****	0	****	0	******	******	******	******	1.310	30	-2.47	.68	27
PURCELL 5 SW	7327	5	80.7	30	2.7	98.	25	54.	2	.0	.0	471.5	81.5	.410	30	-3.18	.15	24
SEMINOLE	8042	5	81.7	30	3.2	100.	18	55.	3	.0	.0	500.0	95.0	3.380	30	-.42	2.03	27
SHAWNEE	8110	5	*****	0	*****	****	0	****	0	******	******	******	******	1.091	30	-2.86	.30	3
STELLA	8479	5	*****	0	*****	****	0	****	0	******	******	******	******	.830	30	*****	.52	3
STILLWATER 2 W	8501	5	81.1	30	4.1	98.	20	52.	3	.0	.0	482.0	122.0	1.011	30	-2.91	.72	22
STROUD 1 N	8563	5	*****	0	*****	****	0	****	0	******	******	******	******	.400	29	*****	.14	3
TECUMSEH	8751	5	*****	0	*****	****	0	****	0	******	******	******	******	.990	30	*****	.43	27
TROUSDALE	8960	5	*****	0	*****	****	0	****	0	******	******	******	******	1.320	30	*****	.41	24
UNION CITY 1 SE	9086	5	*****	0	*****	****	0	****	0	******	******	******	******	.750	30	-3.46	.33	1
WELTY 1 SSE	9479	5	*****	0	*****	****	0	****	0	******	******	******	******	.150	30	*****	.10	22
WEWOKA	9575	5	*****	0	*****	****	0	****	0	******	******	******	******	2.350	30	-1.86	1.19	27

JUNE 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	******	******	******	******	1.941	30	*****	.75	22
BOYNTON	1027	6	*****	0	*****	****	0	****	0	******	******	******	******	1.051	30	*****	.90	22
CALVIN	1391	6	*****	0	*****	****	0	****	0	******	******	******	******	1.161	30	-3.37	.41	21
CHECOTAH	1711	6	*****	0	*****	****	0	****	0	******	******	******	******	.771	30	-3.28	.47	22
CLAYTON 11 WNW	1858	6	*****	0	*****	****	0	****	0	******	******	******	******	1.640	30	*****	.95	3
DEWAR 2 NE	2485	6	*****	0	*****	****	0	****	0	******	******	******	******	.500	30	-3.57	.32	10
DUSTIN	2690	6	*****	0	*****	****	0	****	0	******	******	******	******	.720	30	*****	.41	22
EUFAULA	2993	6	82.5	30	*****	98.	19	58.	3	.0	******	524.0	******	1.240	30	-2.88	.66	22
HANNA	3884	6	80.0	30	*****	96.	19	54.	3	.0	******	450.5	******	1.981	30	-2.01	.94	3
HASKELL	3956	6	*****	0	*****	****	0	****	0	******	******	******	******	1.370	30	-3.45	.96	22
HOLDENVILLE	4235	6	79.4	30	1.9	97.	19	54.	23	.0	.0	431.0	56.0	1.210	30	-2.62	.37	3
LAKE EUFAULA	4975	6	80.1	29	*****	96.	21	56.	3	.0	******	438.0	******	.460	29	*****	.46	3
LYONS 2 N	5437	6	*****	0	*****	****	0	****	0	******	******	******	******	2.070	30	-2.39	1.40	10
MARBLE CITY	5546	6	*****	0	*****	****	0	****	0	******	******	******	******	.812	30	*****	.65	22
MCALESTER FAA	5664	6	80.4	30	2.6	97.	20	55.	4	.0	.0	463.5	79.5	1.790	30	-1.87	.93	22
MCCURTAIN 1 SE	5693	6	81.0	30	*****	98.	20	52.	3	.0	******	480.0	******	1.270	30	-3.01	.50	22
MUSKOGEE	6130	6	80.4	30	2.9	95.	19	57.	4	.0	.0	463.0	88.0	.960	30	-3.64	.86	21
OKMULGEE W W	6670	6	79.5	28	*****	97.	28	52.	3	.0	******	405.5	******	1.401	30	-3.31	.80	10
OKTAHA 2 NE	6678	6	*****	0	*****	****	0	****	0	******	******	******	******	1.030	30	*****	.68	22
QUINTON	7372	6	*****	0	*****	****	0	****	0	******	******	******	******	1.622	30	-2.41	.77	22
SALLISAW 2 NE	7862	6	79.1	30	1.7	96.	19	52.	3	.0	.0	422.0	50.0	1.152	30	-3.18	.68	22
SCIPIO	7979	6	*****	0	*****	****	0	****	0	******	******	******	******	.650	30	*****	.45	22
SCRAPER	7993	6	*****	0	*****	****	0	****	0	******	******	******	******	2.820	30	*****	1.03	22
SHORT	8170	6	*****	0	*****	****	0	****	0	******	******	******	******	.890	30	*****	.80	22
STILWELL 1 NE	8506	6	77.1	30	*****	93.	18	50.	3	.0	******	362.0	******	2.705	30	-1.78	1.87	11
TAHLEQUAH	8677	6	78.8	30	2.8	96.	18	50.	3	.0	.0	415.5	82.5	1.341	30	-3.29	.79	22
WEBBERS FALLS	9445	6	78.9	30	1.8	96.	20	52.	3	.0	.0	416.0	53.0	2.490	30	-1.60	1.76	11
WESTVILLE	9523	6	*****	0	*****	****	0	****	0	******	******	******	******	1.550	30	*****	.60	22
WETUMKA 3 NE	9571	6	*****	0	*****	****	0	****	0	******	******	******	******	.623	30	-3.70	.37	22

JUNE 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	84.2	30	3.7	106.	26	59.	4	.0	.0	576.5	111.5	2.610	30	-.33	1.81	1
ALTUS DAM	184	7	84.4	30	*****	106.	27	60.	5	.0	******	581.0	******	1.840	30	-1.64	1.16	1
ANADARKO	224	7	82.0	22	*****	103.	28	53.	3	.0	******	374.0	******	1.720	30	-1.74	1.03	1
APACHE	260	7	*****	0	*****	****	0	****	0	******	******	******	******	1.410	30	*****	.68	1
ALTUS AFB	447	7	*****	0	*****	****	0	****	0	******	******	******	******	2.664	29	*****	1.89	1
CARNEGIE 2 ENE	1504	7	82.8	30	3.6	106.	26	54.	4	.0	.0	534.0	108.0	.940	30	-2.14	.63	1
CHATTANOOGA	1706	7	84.3	30	4.4	108.	27	57.	23	.0	.0	578.5	131.5	1.700	30	-1.10	1.04	1
DUNCAN 12 W	2668	7	*****	0	*****	****	0	****	0	******	******	******	******	1.780	30	*****	1.01	1
FREDERICK	3353	7	82.5	26	*****	104.	27	61.	4	.0	******	455.5	******	2.160	26	*****	1.10	1
GRANDFIELD 4 NW	3709	7	*****	0	*****	****	0	****	0	******	******	******	******	2.590	30	-.59	1.94	1
HOBART FAA APT	4204	7	83.3	30	4.4	106.	26	55.	3	.0	.0	548.0	131.0	2.011	30	-.89	.82	2
HOLLIS	4249	7	84.0	30	3.0	107.	27	56.	4	.0	.0	569.5	89.5	1.500	30	-1.48	.75	1
LAWTON	5063	7	83.8	30	4.8	105.	27	59.	2	.0	.0	564.0	144.0	1.160	30	-2.41	.60	2
FORT SILL	5068	7	82.3	30	*****	103.	26	61.	4	.0	******	520.5	******	1.311	30	-2.26	1.00	1
LOOKEBA 2 ENE	5329	7	*****	0	*****	****	0	****	0	******	******	******	******	1.390	30	*****	.58	2
MANGUM RES STA	5509	7	83.3	30	3.4	107.	26	63.	23	.0	.0	547.5	103.5	3.470	30	.62	2.64	1
RANDLETT 9 E	7403	7	*****	0	*****	****	0	****	0	******	******	******	******	2.310	30	*****	1.71	1
ROOSEVELT	7727	7	*****	0	*****	****	0	****	0	******	******	******	******	2.010	30	-1.28	.98	1
SEDAN	8016	7	*****	0	*****	****	0	****	0	******	******	******	******	1.100	30	*****	.83	1
VINSON 3 WNW	9212	7	*****	0	*****	****	0	****	0	******	******	******	******	1.990	30	-.84	1.29	1
WALTERS	9278	7	83.0	29	3.0	105.	25	57.	2	.0	.0	523.0	73.0	1.530	30	-2.06	1.01	1
WICHITA MT WLR	9629	7	80.8	30	3.2	103.	27	51.	4	.5	.5	476.0	95.0	1.800	30	-1.66	.85	1
WILLOW	9668	7	*****	0	*****	****	0	****	0	******	******	******	******	2.951	30	*****	1.88	1

JUNE 1990 SUMMARY FOR SOUTH CENTRAL DIVISION (CD8)

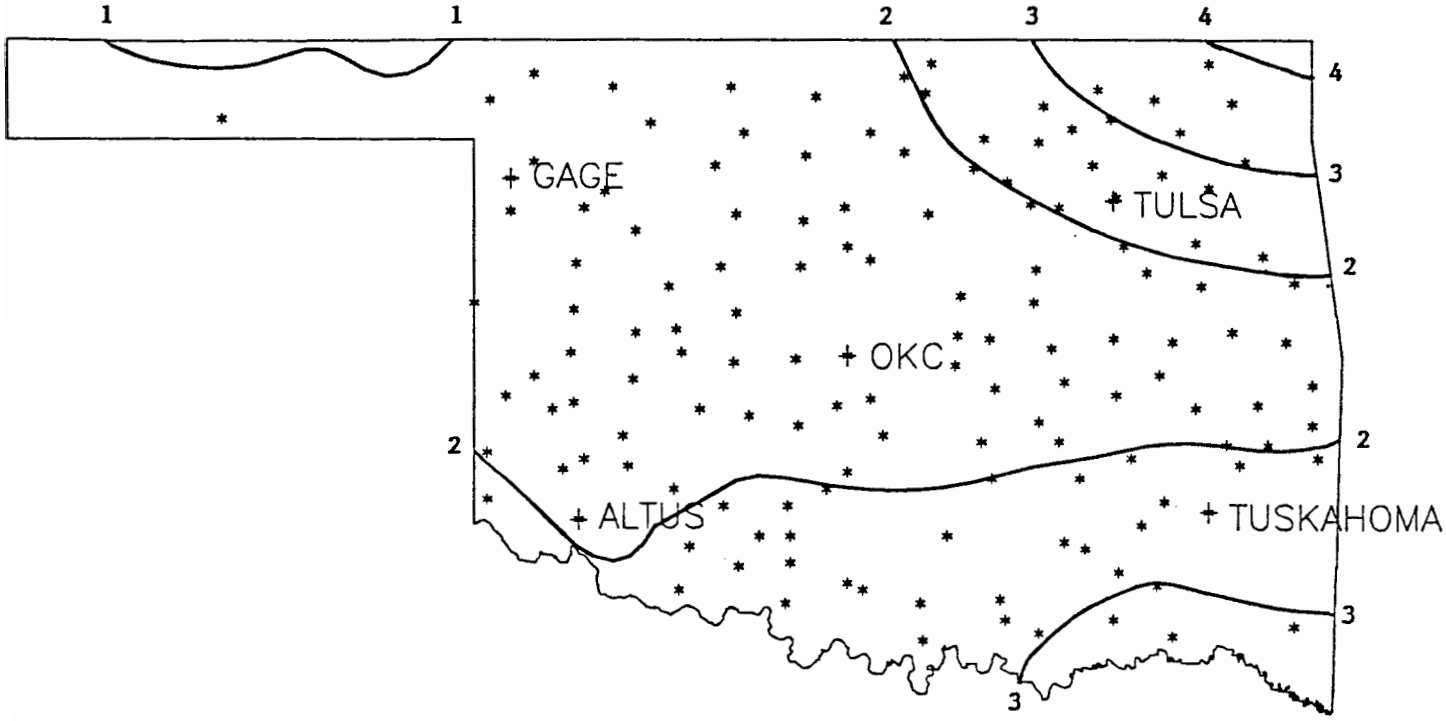
NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	MAX DAY	MIN TEMP	MIN DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	MAX DAY
ADA	17	8	79.9	30	2.2	98.	18	57.	4	.0	.0	447.5	66.5	1.732	30	-2.00	.51	1
ALLEN	147	8	*****	0	*****	****	0	****	0	******	******	******	******	2.600	30	*****	1.00	24
ARDMORE	292	8	81.3	30	1.0	98.	20	59.	2	.0	.0	490.0	31.0	3.350	30	.08	1.40	27
ATOKA DAM	394	8	81.0	29	*****	100.	21	61.	2	.0	******	465.0	******	2.060	30	*****	1.00	25
BOKCHITO	917	8	*****	0	*****	****	0	****	0	******	******	******	******	2.550	30	*****	1.10	2
CANEY	1437	8	82.6	30	*****	100.	20	62.	4	.0	******	527.0	******	3.280	30	*****	1.10	3
CENTRAHOMA	1648	8	*****	0	*****	****	0	****	0	******	******	******	******	1.450	30	*****	.60	24
CHICKASAW NRA	1745	8	79.8	30	*****	99.	21	56.	4	.0	******	442.5	******	5.400	30	*****	2.08	27
COLEMAN	2011	8	*****	0	*****	****	0	****	0	******	******	******	******	2.190	30	*****	.60	24
COMANCHE	2054	8	*****	0	*****	****	0	****	0	******	******	******	******	2.470	30	*****	1.05	1
DAISY 4 ENE	2354	8	*****	0	*****	****	0	****	0	******	******	******	******	1.290	30	-3.19	1.01	24
DUNCAN	2660	8	81.6	30	2.6	101.	27	57.	2	.0	.0	496.5	76.5	1.980	30	-1.48	1.01	1
DURANT USDA	2678	8	80.0	30	*****	100.	21	58.	23	.0	******	450.5	******	2.900	30	-.82	1.03	3
ELMORE CITY	2872	8	*****	0	*****	****	0	****	0	******	******	******	******	1.600	30	*****	.59	1
GRADY	3688	8	*****	0	*****	****	0	****	0	******	******	******	******	2.090	30	*****	1.03	1
HEALDTON	4001	8	81.8	30	*****	100.	20	57.	2	.0	******	505.0	******	1.040	30	-2.67	.49	1
HENNEPIN	4052	8	*****	0	*****	****	0	****	0	******	******	******	******	2.460	30	*****	1.14	24
KETCHUM RANCH	4780	8	*****	0	*****	****	0	****	0	******	******	******	******	1.230	30	*****	.60	1
KINGSTON	4865	8	*****	0	*****	****	0	****	0	******	******	******	******	3.771	30	.15	1.72	25
LEHIGH	5108	8	*****	0	*****	****	0	****	0	******	******	******	******	2.083	30	*****	1.26	3
LINDSAY 2 W	5216	8	81.1	30	*****	98.	21	56.	4	.0	******	482.0	******	1.540	30	-1.87	1.14	1
LOCO 6 SE	5247	8	*****	0	*****	****	0	****	0	******	******	******	******	.930	30	*****	.43	1
MADILL	5468	8	81.6	30	2.7	99.	20	58.	4	.0	.0	497.5	80.5	2.560	30	-1.29	1.30	2
MARIETTA	5563	8	81.7	30	3.0	100.	20	58.	2	.0	.0	500.5	89.5	5.321	30	1.69	1.33	25
MARLOW 1 WSW	5581	8	82.0	30	*****	103.	26	57.	23	.0	******	509.5	******	2.150	30	-1.67	1.36	1
MCGEE CREEK DAM	5713	8	80.3	30	*****	99.	21	59.	4	.0	******	460.0	******	3.400	30	*****	1.60	3
PAULS VALLEY	6926	8	81.3	30	1.8	99.	25	55.	4	.0	.0	488.5	53.5	1.250	30	-2.12	.80	1
TISHOMINGO NWLR	8884	8	81.8	29	*****	100.	20	58.	23	.0	******	487.0	******	3.910	30	.45	1.93	24
TUSSY	9032	8	*****	0	*****	****	0	****	0	******	******	******	******	1.370	30	*****	.42	1
WAURIKA	9395	8	83.7	30	3.6	105.	25	58.	2	.0	.0	561.5	108.5	1.872	30	-1.38	1.63	1
WAURIKA DAM	9399	8	83.4	22	*****	104.	27	56.	4	.0	******	405.5	******	1.830	24	*****	1.27	1

JUNE 1990 SUMMARY FOR SOUTHEAST DIVISION (CD9)

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
ANTLERS	256	9	80.2	30	2.7	98.	20	58.	24	.0	.0	455.5	80.5	3.140	30	-.83	1.63	2
BATTIEST 1 SSW	567	9	78.1	30	*****	98.	20	55.	23	.0	******	391.5	******	2.500	30	*****	1.15	3
BEAR MT TWR	584	9	81.1	13	*****	99.	20	61.	4	.0	******	209.5	******	2.010	29	*****	1.59	2
BENGAL	670	9	*****	0	*****	****	0	****	0	******	******	******	******	2.191	30	*****	1.00	27
BOSWELL 4 NNW	980	9	81.5	30	*****	99.	20	59.	23	.0	******	496.0	******	4.002	30	.38	1.59	25
BROKEN BOW 1 N	1162	9	*****	0	*****	****	0	****	0	******	******	******	******	5.990	30	2.18	3.10	2
BROKEN BOW DAM	1168	9	78.4	30	*****	99.	21	56.	6	.0	******	402.0	******	3.670	30	*****	2.40	1
CARNASAW TWR	1499	9	*****	0	*****	****	0	****	0	******	******	******	******	4.210	30	.18	3.20	2
CARTER TWR	1544	9	*****	0	*****	****	0	****	0	******	******	******	******	2.160	30	-1.69	.95	2
FANSHAWE	3065	9	*****	0	*****	****	0	****	0	******	******	******	******	2.530	30	-1.68	1.25	27
FLAGPOLE TWR	3169	9	*****	0	*****	****	0	****	0	******	******	******	******	1.750	30	*****	1.10	3
HEAVENER 1 SE	4008	9	*****	0	*****	****	0	****	0	******	******	******	******	2.370	30	-1.63	.90	26
HEE MT TWR	4017	9	*****	0	*****	****	0	****	0	******	******	******	******	2.510	30	*****	1.20	2
HUGO	4384	9	80.8	30	2.1	99.	21	61.	4	.0	.0	472.5	61.5	2.650	30	-1.87	1.28	3
IDABEL	4451	9	79.1	30	1.2	97.	21	60.	5	.5	.5	424.5	37.5	6.560	30	2.87	2.80	4
POTEAU W W	7254	9	79.9	30	*****	98.	20	55.	4	.0	******	447.5	******	1.540	30	*****	1.10	21
SOBAL TOWER	8305	9	80.3	26	*****	97.	25	62.	3	.0	******	399.0	******	.130	30	-3.83	.07	27
SPIRO	8416	9	*****	0	*****	****	0	****	0	******	******	******	******	1.200	30	-2.35	.52	11
TUSKAHOMA	9023	9	80.5	30	*****	100.	20	55.	23	.0	******	464.5	******	2.801	30	*****	1.15	3
VALLIANT 3 W	9118	9	*****	0	*****	****	0	****	0	******	******	******	******	3.801	30	.10	1.26	2
WILBURTON 9 ENE	9634	9	79.6	30	2.6	98.	20	54.	3	.0	.0	439.0	79.0	1.451	30	-2.49	.60	21

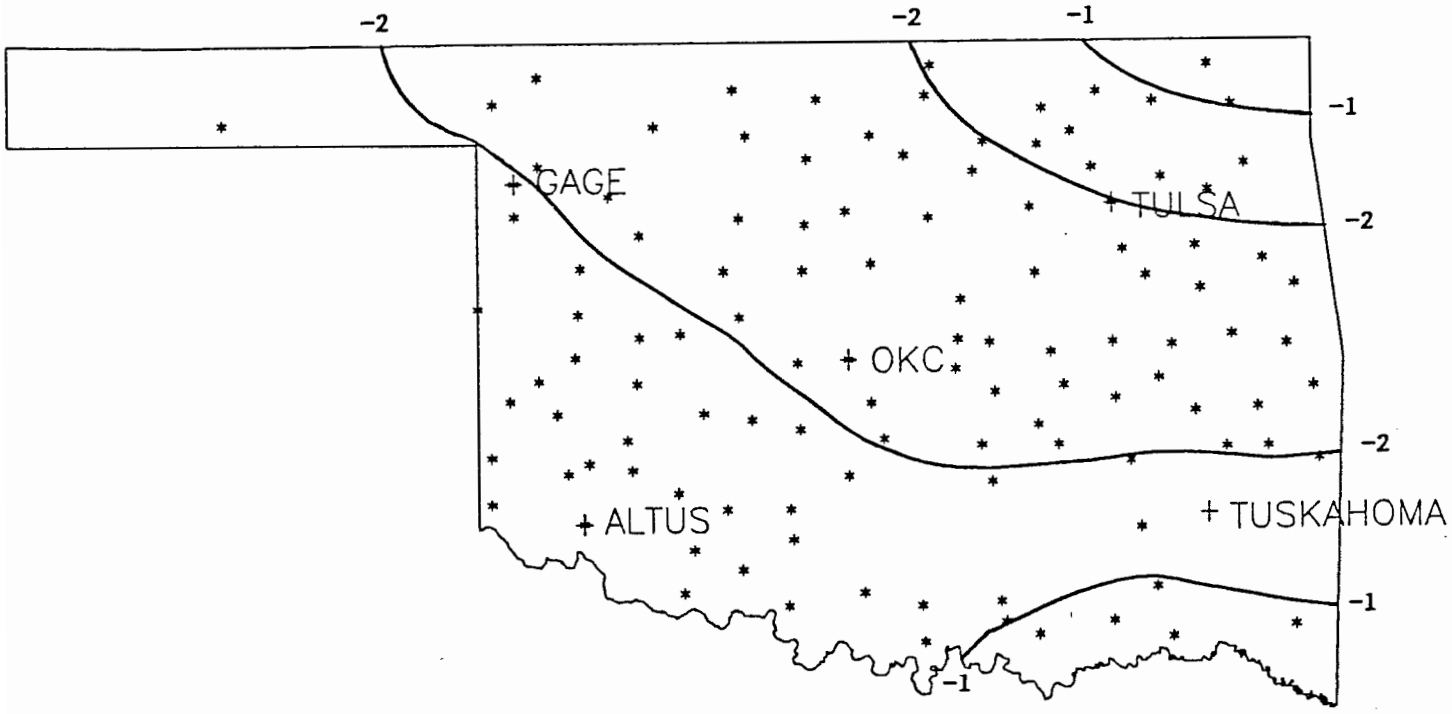
JUNE 1990 CLIMATE DIVISION SUMMARY

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	79.5	9	3.9	108.0	28	46.0	3	.8	-7.7	434.4	109.1	.88	15	-1.81	.95	21
2	82.3	14	4.3	107.0	30	48.0	3	.0	-1.7	518.1	127.6	.94	22	-2.93	2.28	22
3	80.1	15	3.5	101.0	18	47.0	23	.0	-1.3	451.6	101.2	3.29	31	-1.17	4.40	22
4	81.5	10	3.5	108.0	27	49.0	2	.0	-.8	494.6	101.5	1.89	22	-1.48	3.24	15
5	81.6	14	3.9	103.0	25	50.0	3	.0	.0	495.9	114.9	1.32	34	-2.57	2.03	27
6	79.8	11	2.5	98.0	20	50.0	3	.0	.0	442.3	75.0	1.38	28	-2.89	1.87	11
7	83.3	11	3.7	108.0	27	51.0	4	.0	.0	547.1	109.4	1.86	21	-1.32	2.64	1
8	81.3	16	2.2	105.0	25	55.0	4	.0	.0	488.2	63.0	2.39	30	-1.23	2.08	27
9	79.8	9	2.0	100.0	20	54.0	3	.1	.1	443.7	60.4	2.86	20	-1.03	3.20	2



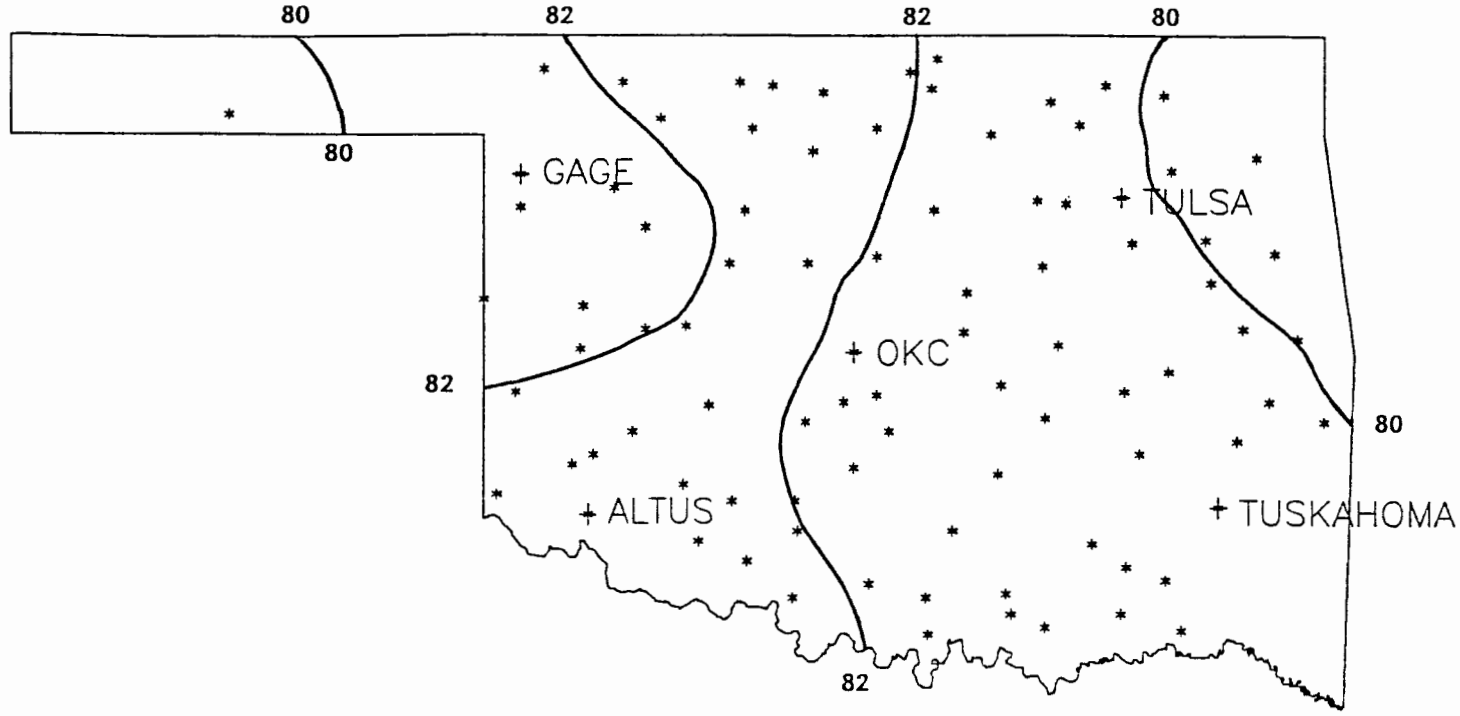
JUNE 1990 TOTAL PRECIPITATION

(Inches)



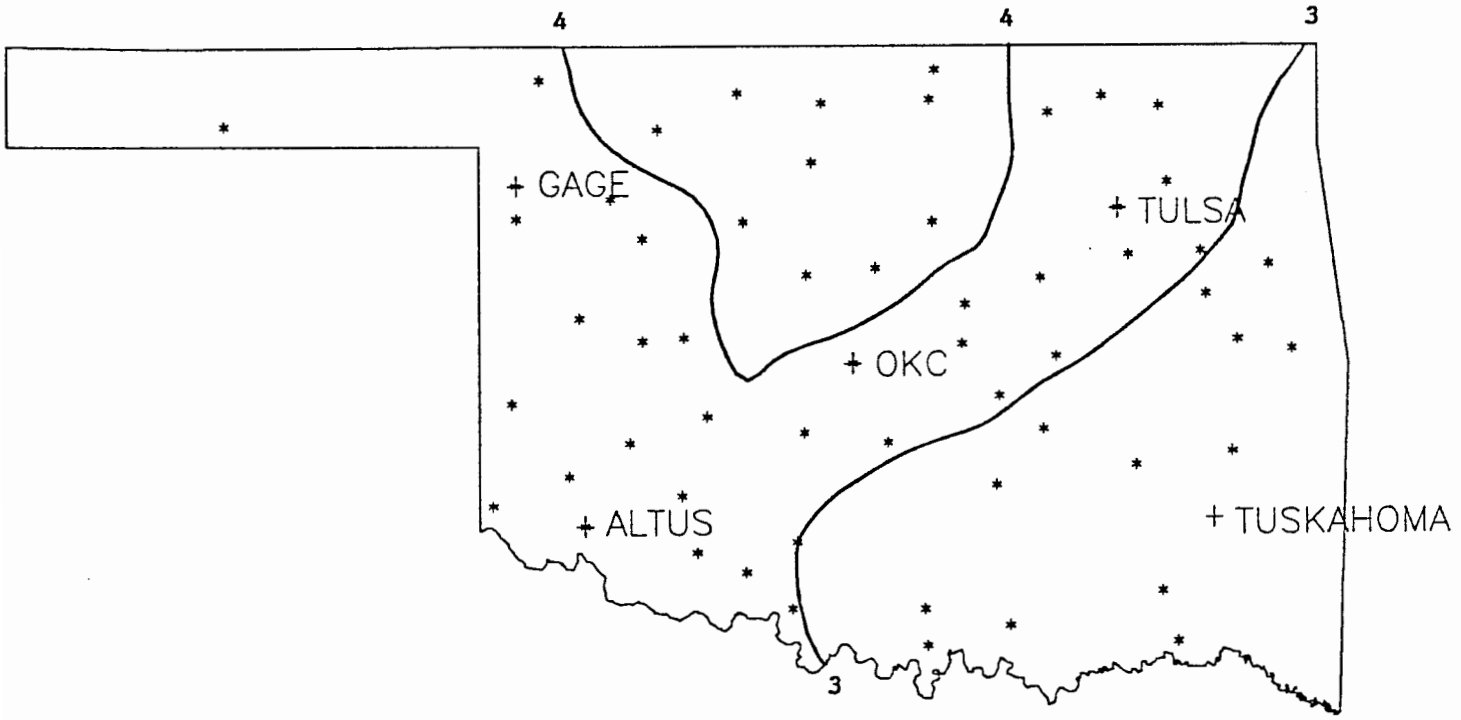
JUNE 1990 DEVIATION FROM NORMAL PRECIPITATION

(Inches)



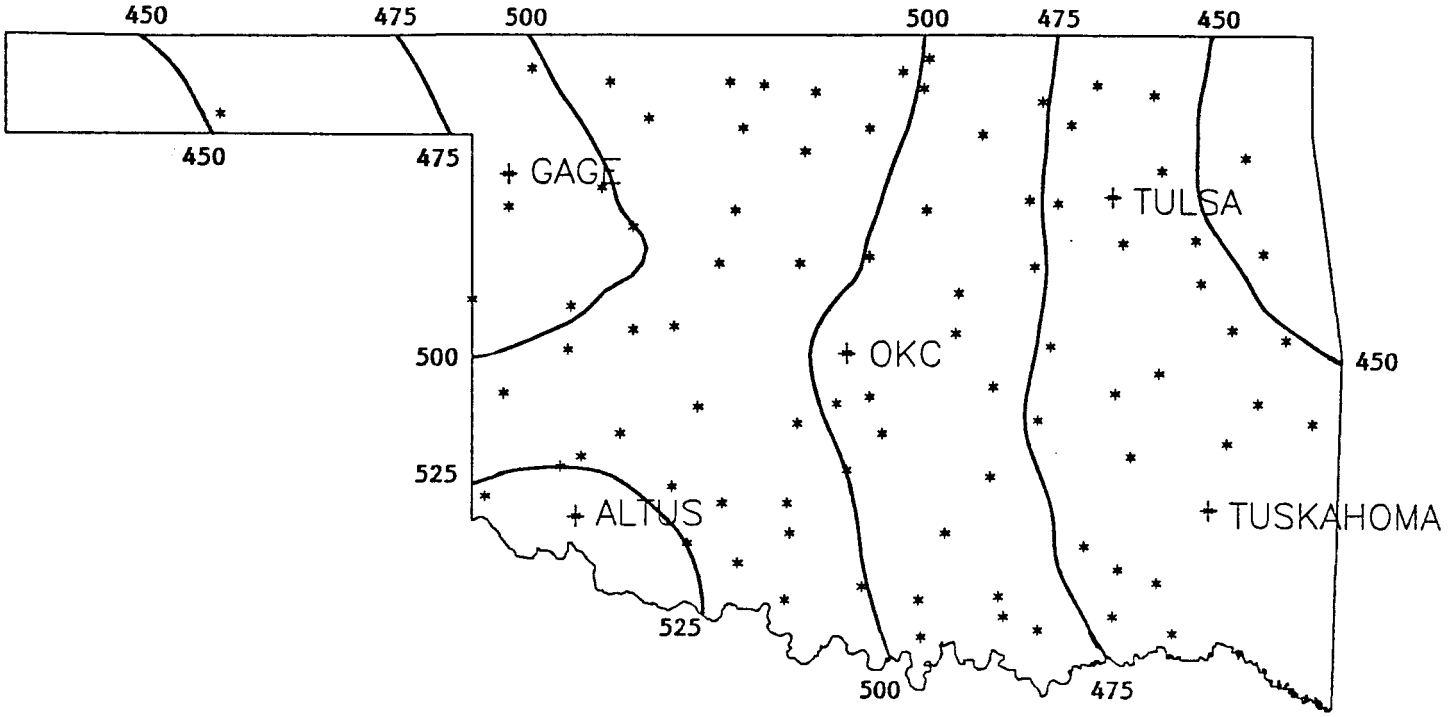
JUNE 1990 AVERAGE MONTHLY TEMPERATURES

(Degrees F)

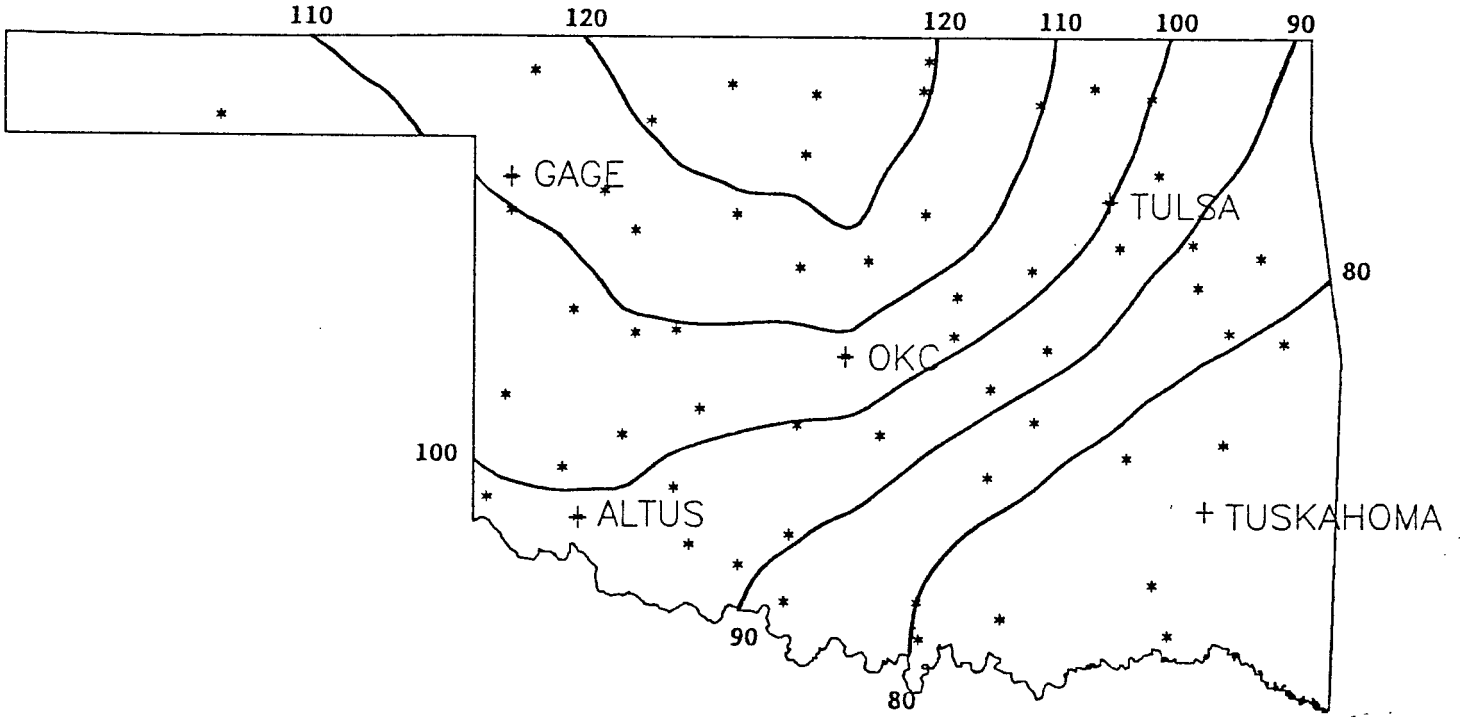


JUNE 1990 DEVIATION FROM NORMAL TEMPERATURES

(Degrees F)

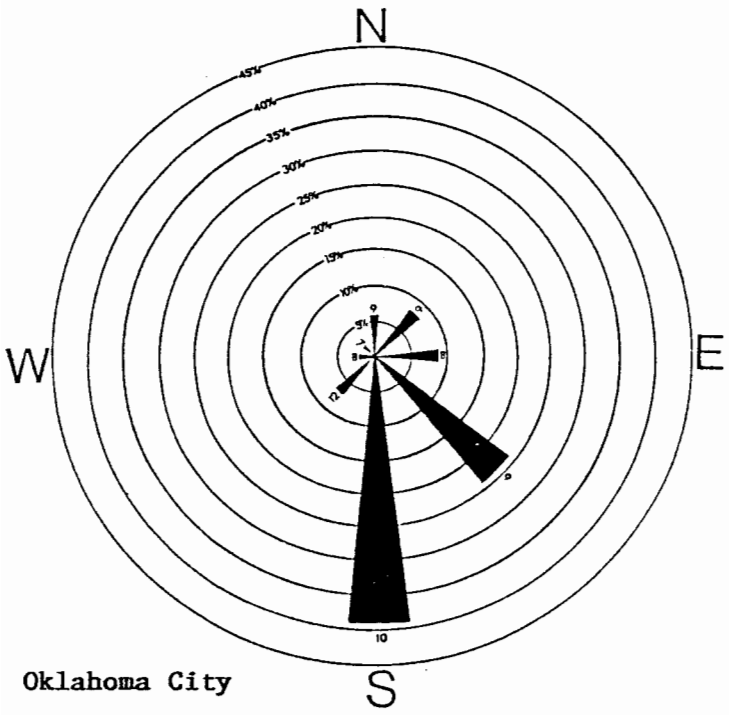


JUNE 1990 COOLING DEGREE DAYS

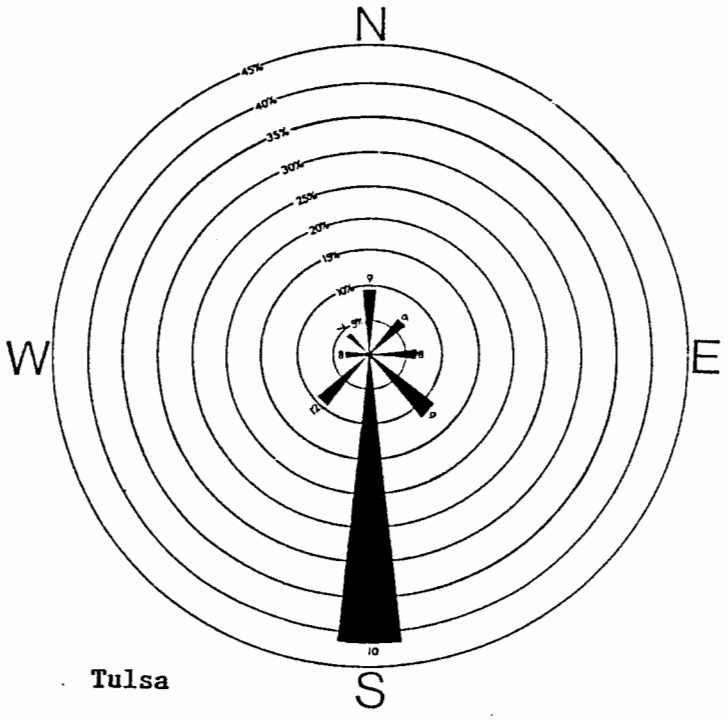


JUNE 1990 DEVIATION FROM NORMAL COOLING DEGREE DAYS

August 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

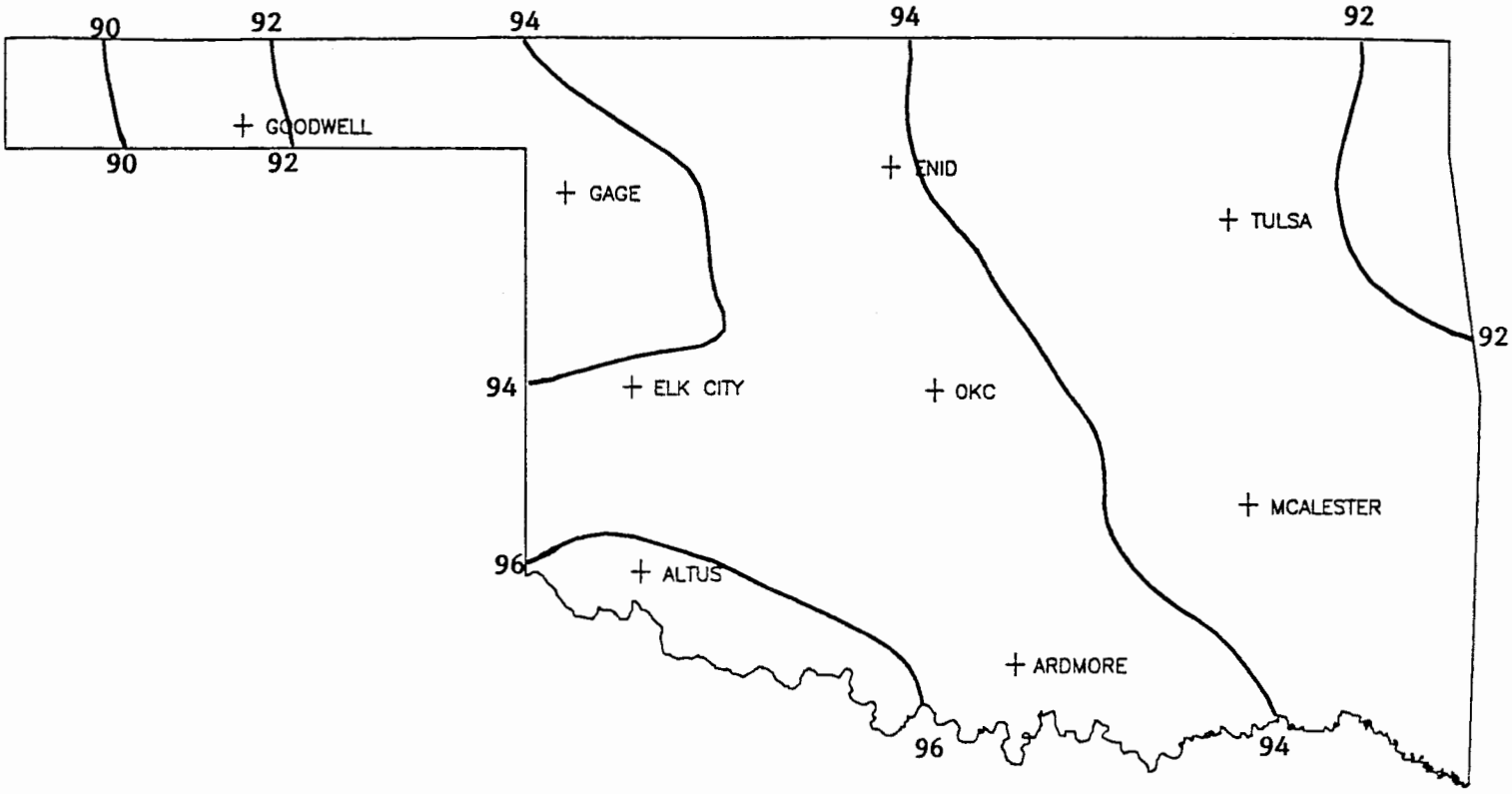
AUGUST 1990 SUNRISE AND SUNSET

Oklahoma City

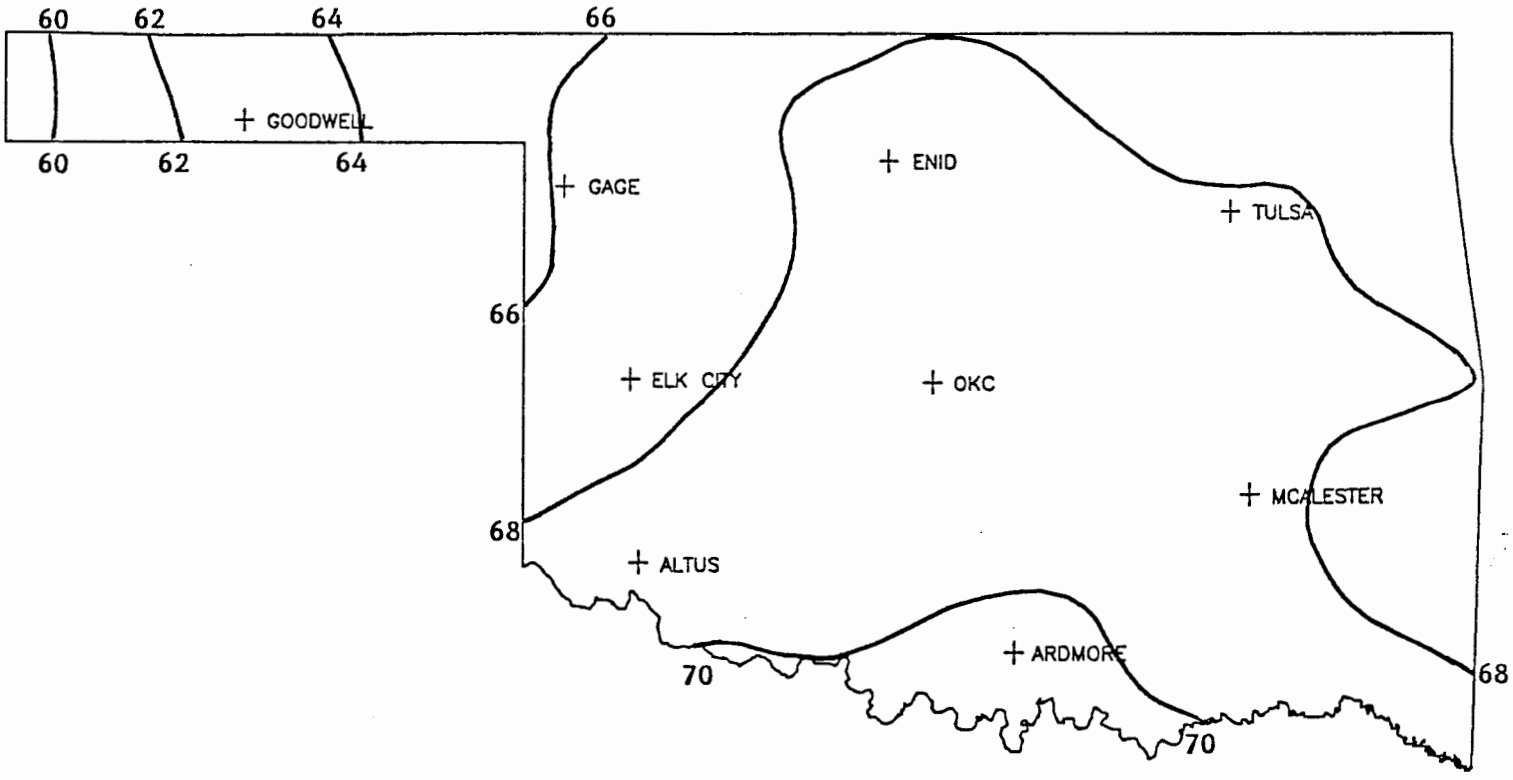
DATE	SUNRISE	SUNSET	DAYLIGHT
900801	6:39AM	8:34PM LT	13:55
900802	6:40AM	8:34PM LT	13:54
900803	6:41AM	8:33PM LT	13:52
900804	6:41AM	8:32PM LT	13:51
900805	6:42AM	8:31PM LT	13:49
900806	6:43AM	8:30PM LT	13:47
900807	6:43AM	8:29PM LT	13:46
900808	6:44AM	8:28PM LT	13:44
900809	6:45AM	8:27PM LT	13:42
900810	6:46AM	8:26PM LT	13:41
900811	6:46AM	8:25PM LT	13:39
900812	6:47AM	8:24PM LT	13:37
900813	6:48AM	8:23PM LT	13:35
900814	6:49AM	8:22PM LT	13:33
900815	6:49AM	8:21PM LT	13:31
900816	6:50AM	8:20PM LT	13:30
900817	6:51AM	8:18PM LT	13:28
900818	6:51AM	8:17PM LT	13:26
900819	6:52AM	8:16PM LT	13:24
900820	6:53AM	8:15PM LT	13:22
900821	6:54AM	8:14PM LT	13:20
900822	6:54AM	8:12PM LT	13:18
900823	6:55AM	8:11PM LT	13:16
900824	6:56AM	8:10PM LT	13:14
900825	6:57AM	8: 9PM LT	13:12
900826	6:57AM	8: 7PM LT	13:10
900827	6:58AM	8: 6PM LT	13: 8
900828	6:59AM	8: 5PM LT	13: 6
900829	6:59AM	8: 3PM LT	13: 4
900830	7: 0AM	8: 2PM LT	13: 2
900831	7: 1AM	8: 1PM LT	12:60

Tulsa

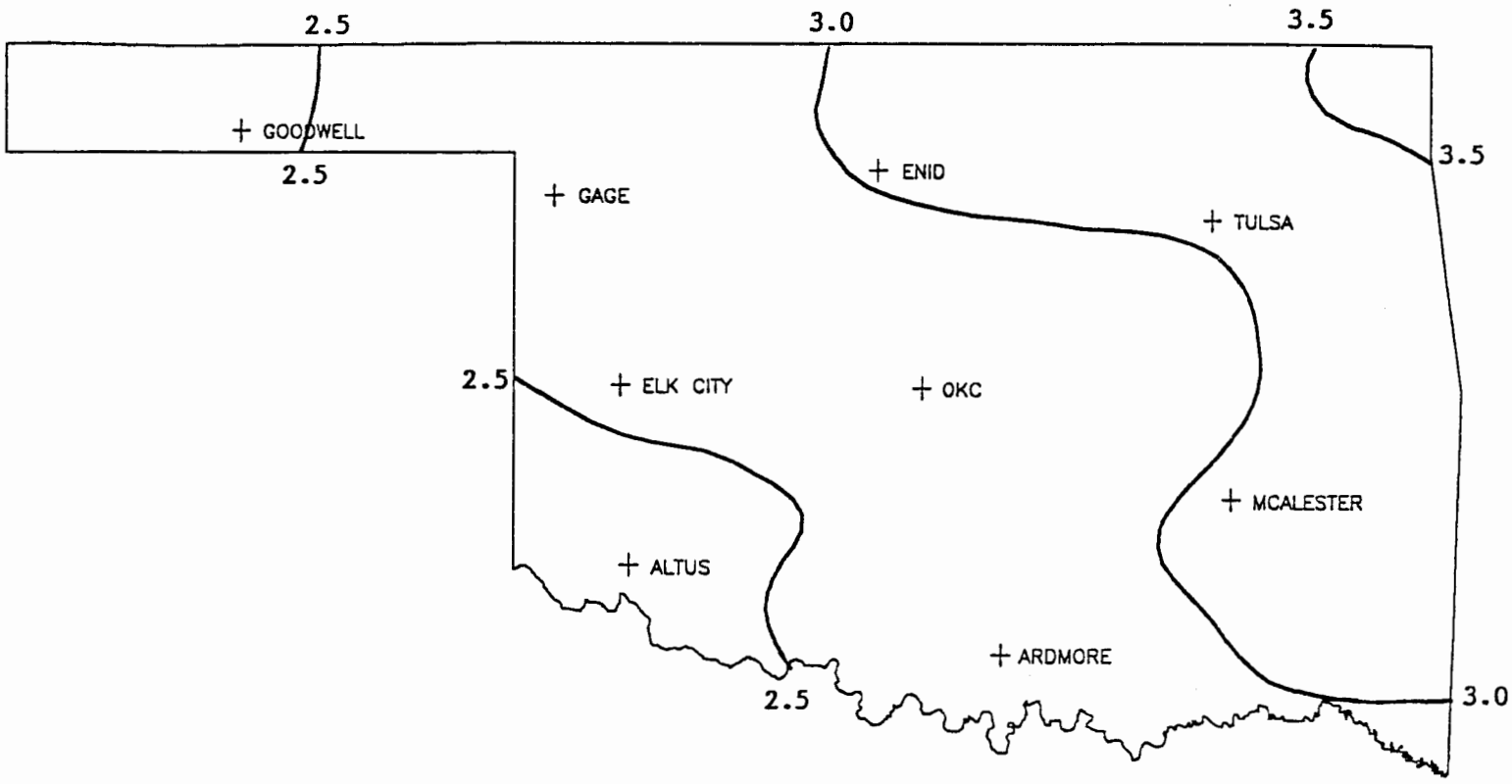
DATE	SUNRISE	SUNSET	DAYLIGHT
900801	6:31AM	8:29PM LT	13:59
900802	6:31AM	8:28PM LT	13:57
900803	6:32AM	8:28PM LT	13:55
900804	6:33AM	8:27PM LT	13:54
900805	6:34AM	8:26PM LT	13:52
900806	6:34AM	8:25PM LT	13:50
900807	6:35AM	8:24PM LT	13:49
900808	6:36AM	8:23PM LT	13:47
900809	6:37AM	8:22PM LT	13:45
900810	6:37AM	8:21PM LT	13:43
900811	6:38AM	8:20PM LT	13:42
900812	6:39AM	8:19PM LT	13:40
900813	6:40AM	8:18PM LT	13:38
900814	6:40AM	8:16PM LT	13:36
900815	6:41AM	8:15PM LT	13:34
900816	6:42AM	8:14PM LT	13:32
900817	6:43AM	8:13PM LT	13:30
900818	6:44AM	8:12PM LT	13:28
900819	6:44AM	8:10PM LT	13:26
900820	6:45AM	8: 9PM LT	13:24
900821	6:46AM	8: 8PM LT	13:22
900822	6:47AM	8: 7PM LT	13:20
900823	6:47AM	8: 5PM LT	13:18
900824	6:48AM	8: 4PM LT	13:16
900825	6:49AM	8: 3PM LT	13:14
900826	6:50AM	8: 1PM LT	13:12
900827	6:50AM	8: 0PM LT	13:10
900828	6:51AM	7:59PM LT	13: 8
900829	6:52AM	7:57PM LT	13: 6
900830	6:53AM	7:56PM LT	13: 3
900831	6:53AM	7:55PM LT	13: 1



30-YEAR MEAN AUGUST DAILY MAXIMUM TEMPERATURE



30-YEAR MEAN AUGUST DAILY MINIMUM TEMPERATURE



30-YEAR MEAN AUGUST PRECIPITATION

30- and 90-DAY NATIONAL WEATHER SERVICE OUTLOOK

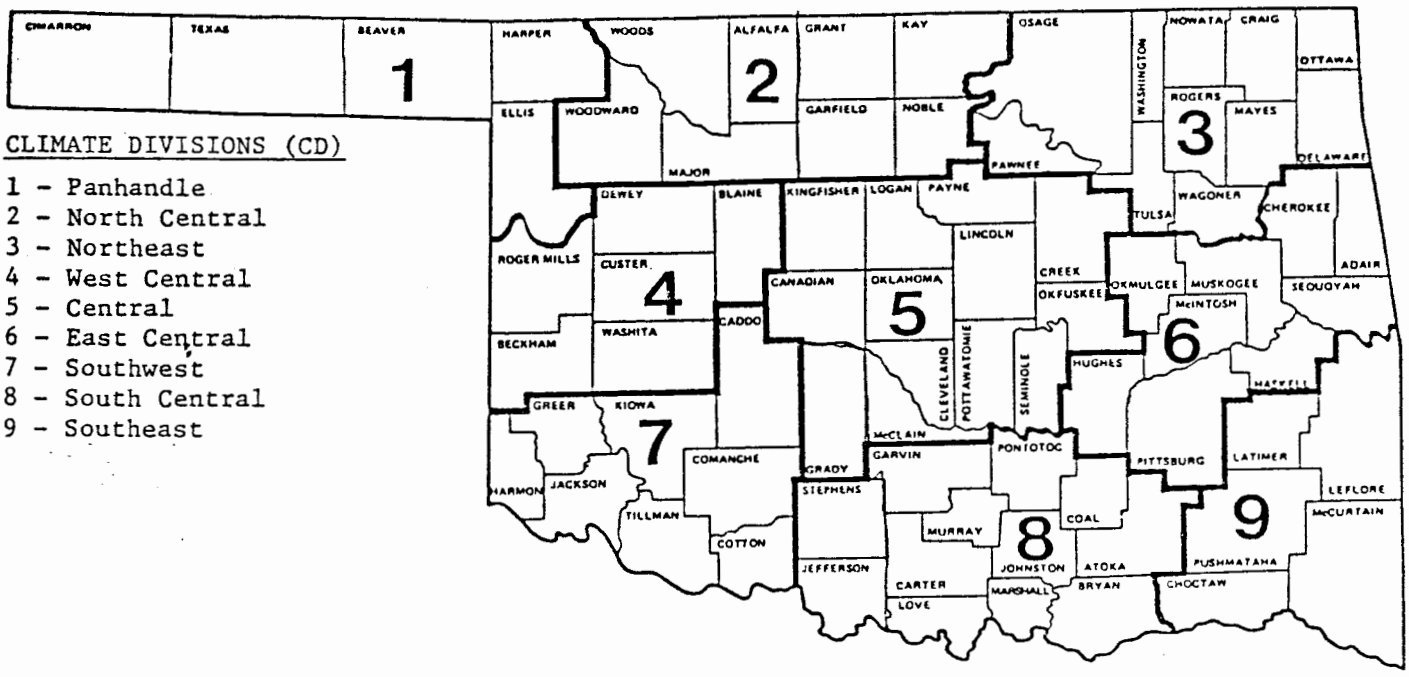
30-DAY OUTLOOK (MID-JULY TO MID-AUGUST)

Precipitation - Above Normal Northeast, Near Normal Elsewhere
Temperature - Below Normal East, Near Normal Elsewhere

90-DAY OUTLOOK (JULY-SEPTEMBER)

Precipitation - Near Normal Statewide
Temperature - Near 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.

AUGUST 1990

CLIMATE CALENDAR

The data on this calendar are for Oklahoma City. Normal values are calculated for the period 1948-1986. Extremes are found for the period of record (1924-present).

Normal	1	Actual
93.5	max	
70.5	min	
.039	pcpn	
0	HDD	
17	CDD	
Highest Max		108-1980
Lowest Max		73-1950
Lowest Min		58-1971
Highest Min		83-1934
Greatest pcpn		1.44-1989

Normal	2	Actual
93.4	max	
70.2	min	
.031	pcpn	
0	HDD	
17	CDD	
Highest Max		110-1980
Lowest Max		81-1989
Lowest Min		57-1971
Highest Min		81-1932
Greatest pcpn		1.01-1927

Normal	3	Actual
94.1	max	
70.6	min	
.015	pcpn	
0	HDD	
18	CDD	
Highest Max		106-1930
Lowest Max		78-1927
Lowest Min		59-1973
Highest Min		80-1943
Greatest pcpn		.47-1933

Normal	4	Actual
92.4	max	
70.4	min	
.097	pcpn	
0	HDD	
17	CDD	
Highest Max		104-1937
Lowest Max		75-1978
Lowest Min		58-1973
Highest Min		82-1980
Greatest pcpn		1.32-1985

Normal	5	Actual
94.1	max	
70.5	min	
.040	pcpn	
0	HDD	
18	CDD	
Highest Max		106-1964
Lowest Max		81-1978
Lowest Min		60-1949
Highest Min		79-1970
Greatest pcpn		.60-1976

Normal	6	Actual
95.0	max	
71.7	min	
.112	pcpn	
0	HDD	
19	CDD	
Highest Max		106-1929
Lowest Max		76-1971
Lowest Min		62-1949
Highest Min		80-1962
Greatest pcpn		1.38-1965

Normal	7	Actual
94.4	max	
70.9	min	
.136	pcpn	
0	HDD	
18	CDD	
Highest Max		107-1946
Lowest Max		76-1989
Lowest Min		60-1989
Highest Min		82-1951
Greatest pcpn		2.15-1939

Normal	8	Actual
93.4	max	
70.5	min	
.103	pcpn	
0	HDD	
17	CDD	
Highest Max		106-1970
Lowest Max		78-1989
Lowest Min		54-1989
Highest Min		82-1951
Greatest pcpn		1.27-1952

Normal	9	Actual
93.2	max	
69.8	min	
.131	pcpn	
0	HDD	
17	CDD	
Highest Max		109-1936
Lowest Max		75-1927
Lowest Min		59-1989
Highest Min		80-1970
Greatest pcpn		1.19-1974

Normal	10	Actual
93.1	max	
70.2	min	
.090	pcpn	
0	HDD	
17	CDD	
Highest Max		112-1936
Lowest Max		71-1989
Lowest Min		63-1989
Highest Min		81-1936
Greatest pcpn		1.18-1977

Normal	11	Actual
92.9	max	
69.8	min	
.025	pcpn	
0	HDD	
17	CDD	
Highest Max		113-1936
Lowest Max		73-1968
Lowest Min		59-1931
Highest Min		82-1936
Greatest pcpn		.75-1929

Normal	12	Actual
93.2	max	
69.1	min	
.046	pcpn	
0	HDD	
16	CDD	
Highest Max		110-1936
Lowest Max		78-1989
Lowest Min		56-1967
Highest Min		83-1936
Greatest pcpn		.55-1961

Normal	13	Actual
93.5	max	
70.2	min	
.068	pcpn	
0	HDD	
17	CDD	
Highest Max		107-1936
Lowest Max		73-1989
Lowest Min		54-1967
Highest Min		83-1936
Greatest pcpn		1.67-1989

Normal	14	Actual
92.9	max	
70.9	min	
.102	pcpn	
0	HDD	
17	CDD	
Highest Max		106-1956
Lowest Max		68-1989
Lowest Min		60-1967
Highest Min		79-1943
Greatest pcpn		1.93-1989

Normal	15	Actual
93.0	max	
70.7	min	
.208	pcpn	
0	HDD	
17	CDD	
Highest Max		107-1956
Lowest Max		77-1940
Lowest Min		61-1963
Highest Min		81-1954
Greatest pcpn		2.69-1945

Normal	16	Actual
93.9	max	
71.2	min	
.054	pcpn	
0	HDD	
18	CDD	
Highest Max		107-1956
Lowest Max		79-1964
Lowest Min		64-1963
Highest Min		81-1934
Greatest pcpn		1.42-1981

Normal	17	Actual
93.2	max	
70.6	min	
.035	pcpn	
0	HDD	
17	CDD	
Highest Max		105-1956
Lowest Max		76-1932
Lowest Min		62-1942
Highest Min		82-1934
Greatest pcpn		.93-1932

Normal	18	Actual
92.3	max	
69.8	min	
.128	pcpn	
0	HDD	
16	CDD	
Highest Max		103-1984
Lowest Max		78-1927
Lowest Min		57-1943
Highest Min		81-1934
Greatest pcpn		2.87-1966

Normal	19	Actual
90.7	max	
69.0	min	
.101	pcpn	
0	HDD	
15	CDD	
Highest Max		106-1934
Lowest Max		75-1927
Lowest Min		56-1932
Highest Min		80-1936
Greatest pcpn		.87-1977

Normal	20	Actual
91.4	max	
68.7	min	
.090	pcpn	
0	HDD	
15	CDD	
Highest Max		104-1934
Lowest Max		67-1950
Lowest Min		56-1950
Highest Min		81-1934
Greatest pcpn		1.38-1937

Normal	21	Actual
92.2	max	
68.7	min	
.110	pcpn	
0	HDD	
16	CDD	
Highest Max		103-1984
Lowest Max		80-1951
Lowest Min		51-1956
Highest Min		81-1934
Greatest pcpn		1.40-1983

Normal	22	Actual
91.3	max	
68.7	min	
.032	pcpn	
0	HDD	
15	CDD	
Highest Max		101-1936
Lowest Max		76-1961
Lowest Min		56-1956
Highest Min		79-1948
Greatest pcpn		3.17-1934

Normal	23	Actual
91.2	max	
68.1	min	
.068	pcpn	
0	HDD	
15	CDD	
Highest Max		105-1980
Lowest Max		70-1966
Lowest Min		59-1949
Highest Min		78-1936
Greatest pcpn		2.27-1934

Normal	24	Actual
91.9	max	
68.3	min	
.065	pcpn	
0	HDD	
15	CDD	
Highest Max		105-1963
Lowest Max		73-1966
Lowest Min		55-1961
Highest Min		78-1936
Greatest pcpn		.87-1987

Normal	25	Actual
91.5	max	
68.2	min	
.025	pcpn	
0	HDD	
15	CDD	
Highest Max		102-1988
Lowest Max		72-1934
Lowest Min		58-1966
Highest Min		78-1936
Greatest pcpn		1.81-1934

Normal	26	Actual
91.9	max	
67.9	min	
.069	pcpn	
0	HDD	
15	CDD	
Highest Max		101-1938
Lowest Max		76-1934
Lowest Min		55-1962
Highest Min		78-1936
Greatest pcpn		.63-1987

Normal	27	Actual
91.4	max	
68.7	min	
.075	pcpn	
0	HDD	
15	CDD	
Highest Max		103-1984
Lowest Max		69-1987
Lowest Min		58-1944
Highest Min		78-1936
Greatest pcpn		1.53-1941

Normal	28	Actual
90.6	max	
68.0	min	
.066	pcpn	
0	HDD	
15	CDD	
Highest Max		104-1982
Lowest Max		68-1988
Lowest Min		52-1944
Highest Min		78-1938
Greatest pcpn		1.28-1959

Normal	29	Actual
90.8	max	
68.1	min	
.081	pcpn	
0	HDD	
15	CDD	
Highest Max		106-1984
Lowest Max		70-1935
Lowest Min		53-1988
Highest Min		75-1937
Greatest pcpn		2.33-1935

Normal	30	Actual
91.4	max	
68.3	min	
.042	pcpn	
0	HDD	
15	CDD	
Highest Max		105-1947
Lowest Max		74-1968
Lowest Min		54-1946
Highest Min		75-1956
Greatest pcpn		1.32-1928

Normal	31	Actual
89.1	max	
67.6	min	
.171	pcpn	
0	HDD	
14	CDD	
Highest Max		104-1947
Lowest Max		72-1986
Lowest Min		57-1988
Highest Min		76-1952
Greatest pcpn		2.35-1966

AUGUST AVERAGES

Temperature	:	92.5°F
Precipitation	:	2.45"
Heating Degree Days:		0
Cooling Degree Days:		505