

OKLAHOMA MONTHLY SUMMARY SEPTEMBER 1990

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SEPTEMBER 1990 OKLAHOMA SUMMARY

Oklahoma experienced its 24th wettest and 16th warmest September since 1892. Statewide precipitation for the month averaged 4.56 inches, exceeding normal for the month by .99 inch. Total precipitation for the first nine months of 1990 is 37.03 inches, 10.88 inches above normal. The year-to-date precipitation is the 6th largest in the state's history. Temperatures averaged 76.4 degrees for the month, exceeding the 30-year normal by 2.8 degrees.

Maximum temperatures in excess of 100 degrees were common over the state through the first 10 days of the month. Some schools closed due to the heat, while others re-scheduled classes to avoid the hottest part of the day. Rainfall was spotty and very sparse through the first week. A series of disturbances in the upper atmosphere passed through the state from September 7 through the 11th, producing scattered showers. Especially notable were 2.39 inches reported at Billings and 1.52 inches at Perry for the 24 hours ending the morning of the 11th. Rain in north central Oklahoma was general enough to break the dry spell which had plagued the region since spring. Thunderstorms on the 10th produced golfball sized hail at Cedar Springs in Major County and at various locations in Grant and Kay Counties.

A weak cold front moved into the state on September 16 producing scattered thunderstorms, one of which dropped golfball sized hail northwest of Ardmore. Eufaula and Antlers each reported rain in excess of 4 inches on the 16th and 17th. The front stalled in southeastern Oklahoma and retreated to the north as a warm front.

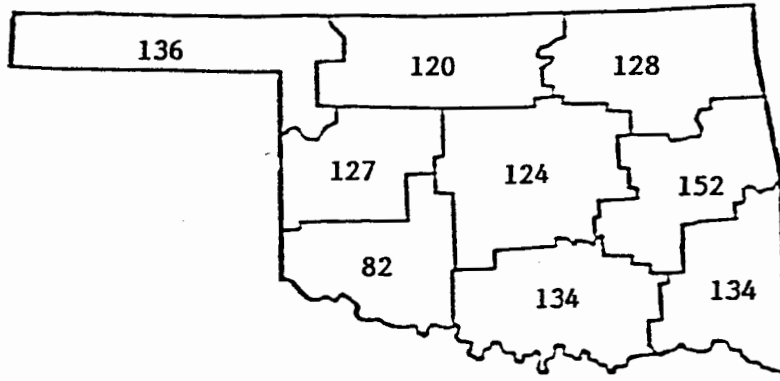
A stronger cold front entered the state on September 19, becoming stationary across central Oklahoma for several days until more cool air arrived on the 21st. Heavy rains were common in central, southern and eastern Oklahoma from the 16th through the 22nd. Daily rainfall reports included 6.04 inches at Prague, 5.79 inches at Oklahoma City (along with 5.41 inches at Tinker Air Force Base, leading to local flooding in the metropolitan area), 5.61 inches at Wagoner and 5.60 inches at Meeker. Daily rainfall amounts in excess of 3 inches were common throughout the period.

The cooler air finally moved on through the state on September 22. Morning low temperatures in the low 40's and upper 30's were common from the 23rd through the 25th. Summer-like weather made one last return from the 26th through the 28th as temperatures over much of northwestern Oklahoma topped 95 degrees with Buffalo reporting 104 on the 26th and 102 on the 27th. A significant cold front moved through the state on the 28th and 29th, producing 2-inch rains at Spavinaw and Morrison and over an inch at many other locations. High temperatures in northwestern Oklahoma were only in the mid-to-low 60's at month's end.

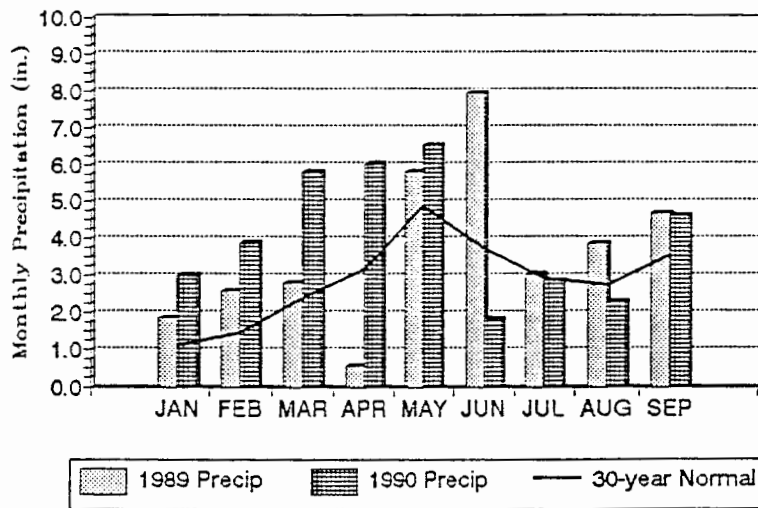
Howard L. Johnson

OCS welcomes Climatologist Mark Shafer to its permanent staff. Mark recently completed the requirements for a Master of Science in Meteorology degree at the University of Oklahoma. He will maintain and upgrade the OCS data base, answer user requests, contribute to the monthly summary and participate in OCS research projects.

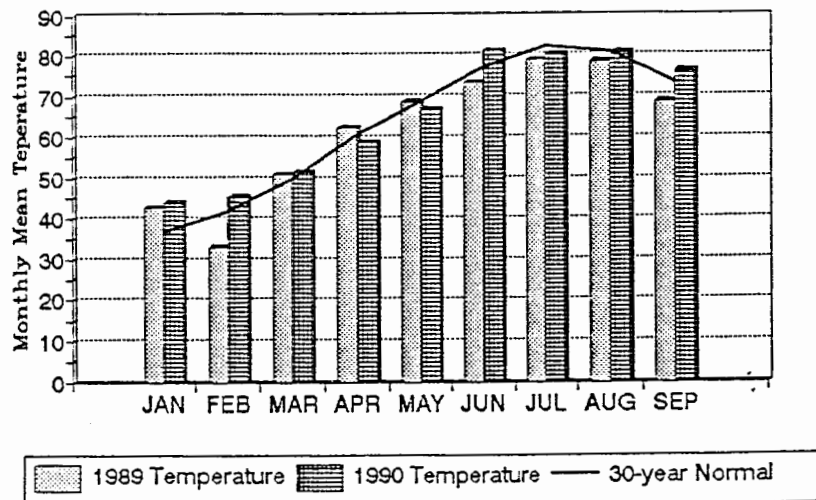
September 1990 percent of normal precipitation.



Comparison of Monthly Precipitation
Statewide Average for Oklahoma



Comparison of Monthly Temperature
Statewide Average for Oklahoma



AUTUMN WARM SPELLS: SOME NOTABLE EVENTS

As Oklahoma moves toward another winter, people begin to look for warm spells embedded within the general cooling trend, in hopes of enjoying one last gasp of summer. Such warm spells are not uncommon to Oklahoma. The colloquial term for these warm spells is 'Indian Summer', but it is also known by many other names. In England, for example, it is referred to as 'St. Martin's Summer', or 'St. Luke's Summer'. The origin of the term used in America likely dates back to around 1778, and is related to the Native American's utilization of the late autumn warmth to increase their food supplies for the winter.

The strict definition of 'Indian Summer' is a period of abnormally warm weather occurring in mid to late autumn, following the first killing frost, and preferably following an extended period of cool temperatures. In Oklahoma, the first frost usually comes late in the year, so less restrictive definitions are sometimes applied.

Autumn records from the past decade were used to locate warm spells following the first 'cold snap' of the season, avoiding the restrictive requirement of a killing frost. Once a cold snap was located, subsequent periods of warmth were checked for (a) duration of at least six days, and (b) maximum temperatures peaking at ten degrees or more above the daily normal. Warm spells meeting these criteria were then classified as 'Indian Summers'.

Warm spells were found to occur ranging from early November to late December. Most years had more than one episode, although several years had only one or even none. Several more notable events are listed in Table 1. A localized warm spell was also observed in Tuskahoma in December 1984. A period of above normal temperatures occurred over a 26 day period (December 6-31), with only a one-day break on the 19th. During the period, maximum temperatures ran as much as 19 degrees above normal. The rest of the state observed occasional periods of extreme warmth, but were unable to sustain the warmth over such an extended period of time.

TABLE 1. LARGEST OBSERVED DEPARTURE FROM NORMAL OF MAXIMUM TEMPERATURES

	1980	1982	1988	1989
	Oct 31-Nov 13	DEC 13-24	DEC 17-26	NOV 4-14
Gage	25	14	21	22
Altus	22	18	20	16
Oklahoma City	23	21	18	18
Tulsa	23	23	18	23
Tuskahoma	15	17	17	18

TABLE OF 1989/1990 COMPARISONS

Station	September Temperatures (F)		September Precipitation (in.)	
	1989	1990	1989	1990
Arnett	66.3	72.9	5.35	4.03
Enid	68.8	77.7	3.09	2.71
Mutual	66.6	74.6	2.95	1.97
Tulsa	69.4	78.6	3.23	4.29
Elk City	68.2	75.7	2.49	3.88
Oklahoma City	68.3	77.2	4.51	7.28
McAlester	69.8	77.3	9.68	5.00
Altus Irr Sta	71.2	77.2	5.26	1.47
Durant	70.0	77.5	8.03	7.35
Ada	70.0	77.2	8.61	6.91
Antlers	70.7	77.3	5.53	7.48

EXTREMES

Variable	Station	Division	Observation	Date
Minimum temperature (F)	Bartlesville	3	38	24
	Hulah Dam	3	38	24
	Smithville	9	38	24
Maximum temperature (F)	GSP Dam	2	109	2
	Weatherford	4	109	2
Maximum 24-hour precipitation	Prague	5	6.04"	21

SEPTEMBER 1990 SUMMARY FOR NORTHWEST DIVISION (CD1)

NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	FROM	MAX	DAY
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	FROM	DEG	FROM	PPT	OBS					
ARNETT	332	1	72.9	30	2.0	100.	2	44.	24	25.0	-6.0	262.5	54.5	4.034	30	2.12	1.86	21		
BEAVER	593	1	73.8	30	2.8	103.	2	43.	23	22.0	-9.0	284.5	76.5	2.262	30	.74	.60	29		
BOISE CITY 2 E	908	1	70.8	30	2.7	95.	1	41.	23	15.0	-22.0	188.0	58.0	1.732	30	.17	.48	19		
BUFFALO	1243	1	77.8	30	4.6	108.	1	40.	23	4.5	-14.5	387.0	122.0	2.070	30	-.73	1.00	29		
FARGO	3070	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.582	30	2.76	2.97	21		
GAGE FAA APT	3407	1	73.6	30	2.3	101.	1	44.	23	17.5	-8.5	275.0	60.0	2.512	30	.91	1.05	21		
GATE	3489	1	74.8	30	*****	105.	2	44.	23	22.0	*****	314.5	*****	1.442	30	*****	.74	29		
GOODWELL RES	ST3628	1	72.2	30	2.7	101.	1	42.	24	28.0	-11.0	245.0	71.0	2.783	30	1.51	.72	11		
GUYMON	3835	1	73.8	29	*****	101.	1	44.	23	16.0	*****	272.5	*****	4.170	29	*****	1.51	21		
HOOKEE	4298	1	73.2	30	3.3	100.	2	45.	23	21.5	-7.5	267.5	91.5	4.360	30	2.74	1.22	19		
KENTON	4766	1	70.5	30	1.6	96.	1	43.	23	25.5	-6.5	190.0	41.0	2.320	30	.81	.92	19		
LAVERNE	5045	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.514	30	-.50	.67	29		
OPTIMA LAKE	6740	1	73.1	30	*****	101.	1	45.	23	20.0	*****	263.5	*****	2.554	30	*****	.86	21		
REGNIER	7534	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.352	30	-.06	.70	19		
TURPIN 4 SSE	9017	1	72.7	30	*****	100.	1	44.	23	21.5	*****	251.5	*****	2.711	30	*****	1.38	29		

SEPTEMBER 1990 SUMMARY FOR NORTH CENTRAL DIVISION (CD2)

NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	FROM	MAX	DAY
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	FROM	DEG	FROM	PPT	OBS					
ALVA	193	2	76.8	30	*****	108.	1	45.	24	12.5	*****	366.0	*****	2.070	30	*****	.73	21		
VANCE AFB	302	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.363	30	*****	.75	20		
BILLINGS	755	2	75.5	30	*****	106.	1	42.	23	16.0	*****	330.0	*****	5.251	30	1.03	2.39	11		
BLACKWELL 2E	818	2	76.3	30	*****	107.	1	45.	23	10.5	*****	350.0	*****	5.210	30	*****	1.35	21		
CHEROKEE	1724	2	77.6	30	4.1	107.	1	47.	24	6.0	-9.0	382.5	112.5	3.330	30	.66	1.00	20		
ENID	2912	2	77.7	30	3.9	106.	1	46.	23	9.0	-6.0	391.0	112.0	2.710	30	-.50	1.37	11		
FT SUPPLY DAM	3304	2	73.3	30	1.1	101.	2	42.	23	25.5	.5	273.5	32.5	1.831	30	-.14	.65	29		
FREEDOM	3358	2	74.9	30	*****	103.	1	44.	23	8.0	*****	304.0	*****	4.220	30	*****	1.48	29		
GREAT SALT PLNS	3740	2	78.4	30	*****	109.	2	49.	24	6.5	*****	407.5	*****	1.502	27	*****	.33	20		
HARDY	3909	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.990	30	*****	3.65	20		
HELENA 1 SSE	4019	2	75.1	30	*****	107.	2	46.	23	15.0	*****	319.0	*****	2.250	30	-.62	.68	20		
JEFFERSON	4573	2	76.0	30	2.4	107.	1	40.	23	12.5	-2.5	342.0	69.0	3.000	30	-.13	.91	27		
LAMONT	5013	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.160	30	*****	.78	21		
MEDFORD	5768	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.521	30	*****	1.37	10		
MORRISON	6065	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.650	30	*****	2.00	30		
MUTUAL	6139	2	74.6	30	2.3	106.	2	45.	24	18.0	.0	306.0	69.0	1.970	30	-.51	.69	17		
NEWKIRK	6278	2	76.6	30	3.8	106.	1	44.	23	7.5	-14.5	356.0	100.0	7.371	30	3.83	3.51	21		
ORIENTA	6751	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.110	30	*****	1.18	17		
PERRY	7012	2	77.4	30	3.2	105.	1	46.	23	2.0	-13.0	374.0	83.0	5.250	30	1.51	1.52	11		
PONCA CITY FAA	7201	2	76.3	30	4.0	102.	1	46.	24	10.5	-17.5	348.5	101.5	6.032	30	2.19	2.67	21		
RED ROCK 1 NNE	7505	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.430	30	-.29	.65	29		
WAYNOKA	9404	2	75.3	30	1.9	105.	1	43.	23	14.5	-1.5	323.5	55.5	1.740	30	-.76	.50	17		
WOODWARD	9760	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.802	30	*****	.67	11		

SEPTEMBER 1990 SUMMARY FOR NORTHEAST DIVISION (CD3)

NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	FROM	MAX	24-HR	DAY
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	FROM	DEG	FROM	DEG	FROM						
BARNSDALL	535	3	75.3	30	*****	102.	6	39.	24	12.5	*****	321.5	*****	3.501	30	-1.22	1.84	30			
BARTLESVILLE ZW	548	3	76.2	30	3.4	103.	6	38.	24	11.0	-7.0	348.0	96.0	3.673	30	-.46	2.33	21			
BIXBY	782	3	75.2	30	2.5	102.	1	41.	25	18.5	-2.5	325.5	73.5	5.131	30	.78	2.47	21			
BURBANK	1256	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.010	30	*****	2.59	20			
CHELSEA 4 S	1717	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.870	30	*****	3.31	21			
CLAREMORE	1828	3	75.8	30	3.1	103.	1	40.	25	20.0	-6.0	342.5	85.5	3.563	30	-.32	2.58	21			
CLEVELAND 5 WSW	1902	3	76.9	30	*****	102.	5	42.	24	6.0	*****	364.0	*****	4.612	30	*****	2.75	21			
FORAKER	3250	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.331	30	3.25	3.90	21			
HOMINY	4289	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.690	30	.21	2.58	21			
HULAH DAM	4393	3	75.3	20	*****	104.	3	38.	24	11.0	*****	217.5	*****	3.162	30	-.67	1.77	21			
JAY TOWER	4567	3	77.1	30	*****	104.	1	39.	24	10.5	*****	373.0	*****	7.580	30	*****	4.00	20			
KANSAS 1 ESE	4672	3	75.6	30	*****	100.	6	41.	24	15.0	*****	333.5	*****	6.750	29	*****	5.10	21			
KEYSTONE DAM	4812	3	75.1	30	*****	104.	1	42.	24	16.0	*****	319.0	*****	6.520	30	*****	2.15	21			
LENAPAH	5118	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.250	30	*****	3.45	21			
MANNFORD 6 NW	5522	3	76.6	30	*****	103.	6	40.	24	10.0	*****	357.5	*****	8.930	30	4.70	3.72	19			
MARAMEC	5540	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.861	30	2.94	2.63	21			
MIAMI	5855	3	76.5	30	3.9	101.	5	45.	23	4.5	-22.5	349.0	94.0	4.353	30	-.25	2.37	21			
NOWATA	6485	3	75.8	30	2.9	102.	6	42.	24	11.0	-10.0	334.5	76.5	6.920	30	2.61	2.85	21			
ONETA 1 WNW	6713	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.290	30	*****	2.06	21			
PAWHUSKA	6935	3	75.6	30	3.0	101.	1	39.	24	9.5	-14.5	327.0	75.0	3.100	30	-1.01	1.42	21			
PAWNEE	6940	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.140	30	.77	1.16	30			
PRYOR 6 N	7309	3	74.8	30	2.2	103.	7	40.	25	22.0	-2.0	316.5	64.5	5.032	30	.87	2.40	21			
RALSTON	7390	3	77.0	30	*****	107.	1	40.	24	7.5	*****	368.5	*****	3.130	30	-.73	1.00	21			
RAMONA 4 N	7394	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.850	30	*****	2.60	21			
SKIATOOK	8258	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.740	30	.41	2.51	21			
SPAVINAW	8380	3	77.7	30	*****	102.	1	44.	24	9.0	*****	391.0	*****	7.880	30	3.50	3.35	21			
TULSA WSO APT	8992	3	78.6	30	4.8	103.	6	47.	24	9.0	-9.0	417.0	135.0	4.292	30	-.08	1.59	21			
UPPER SPAVINAW	9101	3	75.6	30	*****	102.	5	43.	24	17.5	*****	335.0	*****	6.792	30	*****	4.70	21			
VINITA 2 N	9203	3	75.7	30	3.4	102.	6	40.	24	14.5	-12.5	335.0	89.0	7.050	30	2.30	3.28	21			
WAGONER	9247	3	77.6	30	3.7	102.	6	45.	24	8.5	-8.5	385.0	101.0	7.052	30	2.96	5.61	21			
WANN	9298	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.270	30	*****	1.24	21			
WYONNA	9792	3	79.1	30	*****	103.	7	46.	24	8.0	*****	431.5	*****	3.722	30	*****	1.41	21			

SEPTEMBER 1990 SUMMARY FOR WEST CENTRAL DIVISION (CD4)

NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	FROM	MAX	24-HR	DAY
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	FROM	DEG	FROM	DEG	FROM						
CANTON DAM	1445	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.780	30	1.65	1.93	20			
CHEYENNE	1738	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.711	30	*****	1.55	20			
CLINTON	1909	4	77.3	30	3.7	106.	1	47.	23	4.5	-11.5	372.0	98.0	3.520	30	.52	1.02	20			
COLONY	2039	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.850	30	*****	.91	20			
CORDELL	2125	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.132	30	2.33	2.53	19			
ELK CITY 1 E	2849	4	75.7	30	*****	102.	1	46.	23	7.0	*****	329.0	*****	3.883	30	1.30	1.08	30			
ERICK 4 E	2944	4	74.7	30	1.6	101.	1	48.	25	9.0	-4.0	300.5	44.5	3.241	30	.43	1.20	30			
GEARY	3497	4	74.4	28	*****	102.	1	46.	24	8.0	*****	270.5	*****	1.870	30	-1.35	1.07	17			
HAMON 1 NNE	3871	4	73.8	30	1.3	102.	2	45.	23	13.0	-9.0	275.5	28.5	4.330	30	1.62	1.26	11			
LEEDY	5090	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.430	30	2.20	1.57	20			
MACKIE 4 NNW	5463	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.000	30	*****	1.38	22			
MORAVIA 2 NNE	6035	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.510	30	.74	1.44	30			
OKEENE	6629	4	76.5	30	2.2	105.	1	46.	23	10.0	-7.0	354.5	58.5	2.940	30	.01	2.28	20			
REITROP	7565	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.520	30	*****	1.55	19			
SAYRE	7952	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.612	30	1.17	1.34	19			
REYDON	7579	4	74.7	30	*****	101.	1	46.	23	7.0	*****	299.0	*****	4.622	30	2.28	1.92	19			
SWEETWATER 2 E	8652	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.420	30	*****	2.70	18			
TALOGA	8708	4	75.0	30	2.4	104.	1	44.	23	13.0	-6.0	312.0	65.0	4.152	30	1.52	1.87	20			
THOMAS	8815	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.880	30	*****	1.10	17			
VICI	9172	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.211	30	*****	1.12	17			
WATONGA	9364	4	75.8	30	*****	105.	1	46.	23	15.0	*****	337.5	*****	3.561	30	.61	1.37	20			
WEATHERFORD	9422	4	76.4	30	2.7	109.	2	46.	24	17.5	2.5	358.5	82.5	4.341	30	1.06	1.59	19			

SEPTEMBER 1990 SUMMARY FOR CENTRAL DIVISION (CD5)

NAME	ID	CD	DEV				MIN		HEAT		DEV		COOL		DEV		TOT	NUM	FROM	MAX	24-HR	DAY
			MEAN	NUM	FROM	MAX	DAY	TEMP	DAY	DEG	FROM	DEG	FROM	DEG	FROM	PPT						
AMBER	200	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	4.360	30	*****	1.78	21			
ARCADIA	288	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	4.800	30	*****	2.80	21			
TINKER AFB	325	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	6.780	28	*****	5.41	21			
BLANCHARD 2 SSW	830	5	76.2	29	*****	100.	1	47.	24	7.0	*****	332.0	*****	3.783	30	*****	1.81	20				
BRISTOW	1144	5	76.7	30	3.0	103.	1	42.	24	8.5	-13.5	360.5	77.5	7.713	30	3.71	4.85	21				
CHANDLER	1684	5	77.0	30	2.9	103.	1	44.	24	8.5	-9.5	368.5	77.5	5.250	30	1.46	3.00	21				
CHICKASHA EX ST1750	5	76.1	30	2.2	102.	1	45.	24	7.0	-6.0	339.0	59.0	2.760	30	-.72	.77	21					
COX CITY 1 E	2196	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.401	31	*****	1.25	21				
CRESCENT	2242	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.360	30	*****	1.35	21				
CUSHING	2318	5	77.3	29	3.7	106.	1	47.	24	1.0	-19.0	359.0	81.0	4.170	30	.28	1.65	21				
EL RENO 1 N	2818	5	76.4	30	3.0	102.	1	47.	23	10.5	-4.5	352.0	85.0	5.390	30	1.78	1.98	21				
GUTHRIE	3821	5	78.7	30	4.6	107.	1	46.	24	4.5	-10.5	415.0	127.0	1.690	30	-2.29	.87	21				
HENNESSEY 2 SE	4055	5	76.6	30	2.7	105.	1	46.	23	9.0	-5.0	358.0	77.0	2.910	30	-.48	1.10	20				
INGALLS	4489	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.791	30	*****	3.06	19				
KINGFISHER 2 SE	4861	5	76.6	30	2.4	104.	1	46.	23	11.5	-2.5	360.5	70.5	2.580	30	-1.02	.98	17				
KONAWA	4915	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.570	30	1.45	2.00	18				
MARSHALL	5589	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.180	30	-1.33	1.11	20				
MEEKER 4 W	5779	5	76.2	30	2.5	100.	1	44.	24	9.0	-8.0	344.5	66.5	7.710	30	3.85	5.60	20				
MULHALL	6110	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.740	30	*****	1.04	21				
NORMAN 3 S	6386	5	76.5	30	*****	103.	1	44.	24	11.0	*****	355.5	*****	3.370	30	-.36	1.04	17				
OILTON 2 SE	6616	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.600	30	*****	3.25	21				
OKEMAH	6638	5	77.6	30	3.5	101.	6	46.	24	7.0	-10.0	384.5	94.5	7.980	30	4.18	2.80	21				
OKLAHOMA CITY WS6661	5	77.2	30	3.9	100.	1	48.	24	10.0	-5.0	375.5	111.5	7.281	30	3.87	5.79	21					
PERKINS	7003	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.420	30	.20	1.86	21				
PIEDMONT	7068	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.610	30	*****	.75	21				
PRAGUE	7264	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	9.282	30	5.49	6.04	21				
PURCELL 5 SW	7327	5	76.5	30	2.3	104.	1	42.	24	8.5	-3.5	354.0	66.0	4.801	30	.83	1.90	17				
SEMINOLE	8042	5	78.2	30	3.0	105.	1	43.	24	7.0	-3.0	402.0	86.0	4.150	30	.13	1.52	18				
SHAWNEE	8110	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.371	30	.63	1.77	21				
STELLA	8479	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.280	30	*****	.87	21				
STILLWATER 2 W	8501	5	77.4	30	4.3	106.	1	45.	24	9.5	-8.5	380.5	119.5	3.830	30	-.10	1.21	11				
STROUD 1 N	8563	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.332	30	*****	3.30	21				
TECUMSEH	8751	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.201	30	*****	1.09	18				
TROUSDALE	8960	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.610	30	*****	1.35	18				
UNION CITY 1 SE9086	5	*****	0	*****	****	0	****	0	0	*****	*****	*****	*****	5.700	30	1.94	3.03	21				
WELTY 1 SSE	9479	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.111	30	*****	3.15	21				
WENOKA	9575	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.410	30	-1.71	1.32	18				

SEPTEMBER 1990 SUMMARY FOR EAST CENTRAL DIVISION (CD6)

NAME	ID	CD	DEV						HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV NUM OBS	DEV FROM NORM	DEV 24-HR MAX	DAY	
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	MAX TEMP										
ASHLAND	364	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.150	30	*****	3.00	21
BEGGS	631	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.450	30	*****	3.58	21
BOYNTON	1027	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.710	30	*****	3.80	21
CALVIN	1391	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.300	30	-1.02	1.72	21
CHECOTAH	1711	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.040	30	.58	1.60	17
CLAYTON 11 WNW	1858	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.530	30	*****	1.96	18
DEWAR 2 NE	2485	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.870	30	2.56	2.25	20
DUSTIN	2690	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.800	30	*****	3.75	17
EUFULA	2993	6	78.4	30	*****	100.	6	48.	24	4.5	*****	405.5	*****	10.521	30	6.32	4.37	17
HANNA	3884	6	76.5	30	*****	101.	6	41.	24	9.5	*****	355.5	*****	7.541	30	3.38	2.59	17
HARTSHORNE	3946	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.452	30	*****	2.28	21
HASKELL	3956	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.940	30	1.97	3.41	21
HOLDENVILLE	4235	6	76.3	30	1.8	102.	1	41.	24	10.0	-1.0	350.5	51.5	4.750	30	.75	1.08	18
LAKE EUFULA	4975	6	77.6	30	*****	101.	1	47.	24	5.5	*****	382.5	*****	6.300	30	*****	2.23	21
LYONS 2 N	5437	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.270	30	1.01	3.05	21
MARBLE CITY	5546	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.383	30	*****	.80	11
MCALESTER FAA	5664	6	77.3	30	3.1	101.	7	48.	24	10.0	-6.0	377.5	85.5	5.000	30	.04	1.93	21
MCCURTAIN 1 SE	5693	6	77.3	30	*****	103.	5	40.	24	8.0	*****	376.5	*****	10.081	30	5.62	2.85	17
MUSKOGEE	6130	6	77.3	30	3.1	102.	6	41.	24	8.0	-9.0	378.0	85.0	5.720	30	1.60	3.34	20
OKMULGEE W W	6670	6	74.5	30	1.0	103.	1	42.	24	17.5	1.5	303.5	32.5	7.341	27	*****	2.83	21
OKTAHA 2 NE	6678	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.151	30	*****	1.25	17
QUINTON	7372	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	11.330	30	6.92	4.03	17
SALLISAW 2 NE	7862	6	76.5	30	2.3	101.	6	40.	24	5.5	-4.5	351.5	65.5	4.062	30	-.35	1.60	22
SCIPIO	7979	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.720	30	*****	2.08	20
SCRAPER	7993	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.370	30	*****	4.45	21
SHORT	8170	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.250	30	*****	.62	21
STILLWELL 1 NE	8506	6	75.0	30	*****	101.	6	39.	24	16.0	*****	315.0	*****	7.222	30	2.91	3.98	21
TAHLEQUAH	8677	6	76.8	30	3.8	103.	6	39.	24	13.5	-10.5	366.0	105.0	7.300	30	2.96	4.70	21
WEBBERS FALLS	9445	6	76.3	30	2.8	103.	7	42.	25	17.0	2.0	356.0	86.0	5.720	30	1.38	1.48	22
WESTVILLE	9523	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.800	30	*****	4.35	21
WEYUMKA 3 NE	9571	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.923	30	2.90	2.00	20

SEPTEMBER 1990 SUMMARY FOR SOUTHWEST DIVISION (CD7)

NAME	ID	CD	DEV						HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV NUM OBS	DEV FROM NORM	DEV 24-HR MAX	DAY	
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	MAX TEMP										
ALTUS IRR STA	179	7	77.2	30	1.8	104.	1	52.	24	1.5	-5.5	368.5	49.5	1.470	30	-1.38	.50	17
ALTUS DAM	184	7	77.2	30	*****	105.	2	51.	24	5.0	*****	370.5	*****	2.330	30	-.41	.74	12
ANADARKO	224	7	75.8	30	1.3	102.	1	43.	24	9.0	-4.0	332.0	34.0	3.350	30	.01	1.31	21
APACHE	260	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.780	30	*****	1.43	20
ALTUS AFB	447	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.713	30	*****	.49	21
CARNEGIE 2 ENE	1504	7	76.4	30	2.0	104.	1	47.	24	4.0	-10.0	345.5	49.5	4.391	30	1.03	3.60	21
CHATTANOOGA	1706	7	78.0	30	2.3	104.	1	47.	24	5.0	-3.0	395.5	66.5	2.320	30	-.75	.92	17
DUNCAN 12 W	2668	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.070	30	*****	.88	20
FREDERICK	3353	7	76.3	30	-.3	101.	1	51.	23	2.0	-5.0	340.0	-15.0	.951	30	-2.05	.43	16
GRANDFIELD 4 NW	3709	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.100	30	-2.35	.60	17
HOBART FAA APT	4204	7	76.0	30	2.2	105.	1	47.	24	12.5	-3.5	341.5	61.5	3.062	30	.19	1.47	21
HOLLIS	4249	7	76.6	29	1.3	102.	1	52.	25	2.5	-3.5	340.0	25.0	2.491	30	-.19	1.67	30
LAWTON	5063	7	76.8	30	1.7	100.	2	47.	24	9.0	3.0	362.5	53.5	2.030	29	*****	.95	16
FORT SILL	5068	7	76.6	30	*****	98.	1	50.	24	6.5	*****	355.5	*****	1.980	30	-1.00	.72	17
LOOKEBA 2 ENE	5329	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.910	30	*****	1.75	21
MANGUM RES STA	5509	7	75.5	30	.6	103.	1	49.	24	4.0	-2.0	318.0	15.0	3.050	30	.27	.82	8
ROOSEVELT	7727	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.250	30	-.53	1.24	21
SEDAN	8016	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.150	31	*****	.80	21
VINSON 3 WNW	9212	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.150	30	-.72	.90	30
WALTERS	9278	7	77.6	30	1.4	103.	1	47.	24	10.0	-3.0	388.0	39.0	3.081	30	-.18	1.05	19
WICHITA MT WLR	9629	7	75.6	30	1.9	102.	4	42.	24	5.0	-8.0	323.5	49.5	3.450	30	.34	2.60	20
WILLOW	9668	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.090	30	*****	1.34	30

SEPTEMBER 1990 SUMMARY FOR SOUTH CENTRAL DIVISION (CD8)

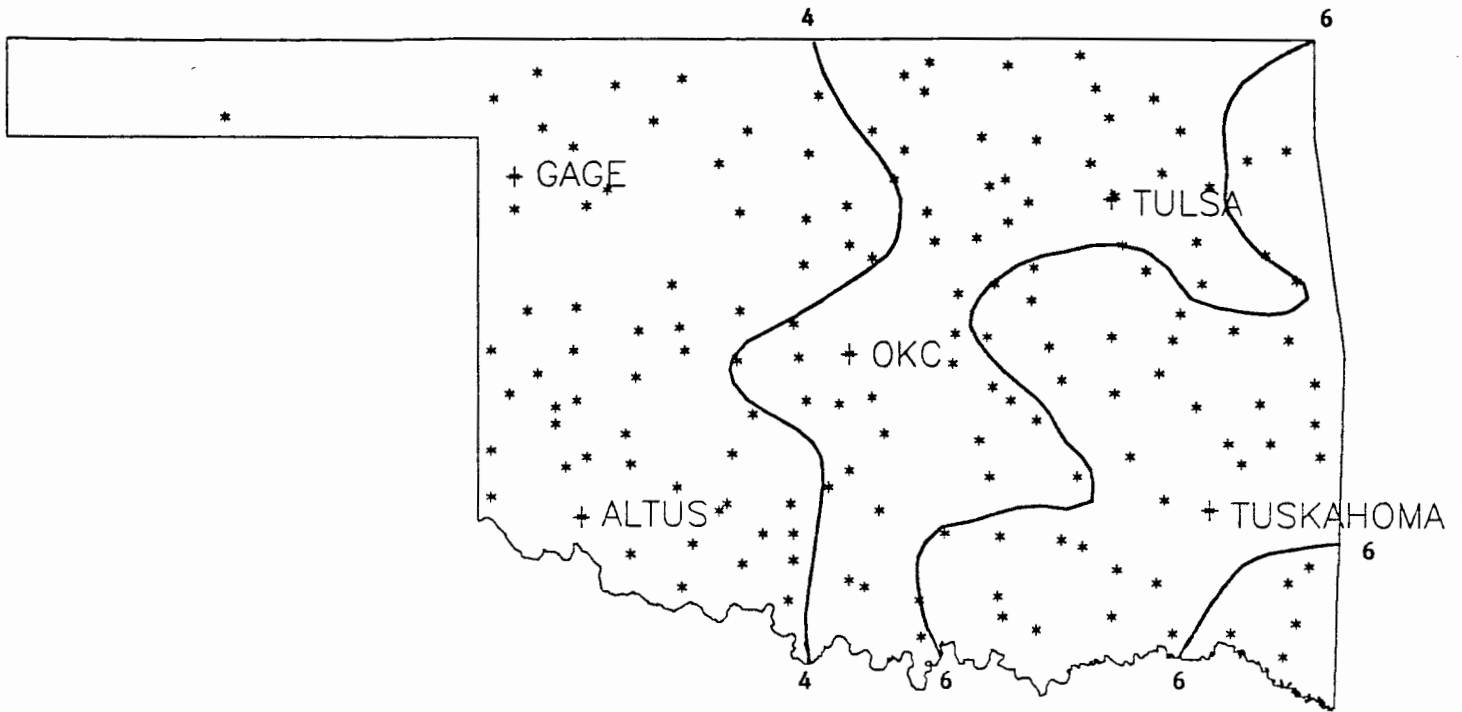
NAME	ID	CD	DEV						HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV FROM NORM	MAX 24-HR	DAY		
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	DAY TEMP										
ADA	17	8	77.2	30	2.6	99.	10	44.	24	7.5	-4.5	373.0	73.0	6.910	30	2.90	2.80	21
ALLEN	147	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.420	30	*****	1.65	19
ARDMORE	292	8	78.2	30	1.0	102.	1	47.	24	6.0	6.0	401.0	30.0	6.160	30	2.23	2.44	21
ATOKA DAM	394	8	79.3	30	*****	105.	1	44.	24	13.0	*****	442.0	*****	4.681	30	*****	1.03	20
BOKCHITO	917	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.250	30	*****	3.50	20
CANEY	1437	8	77.8	30	*****	102.	6	46.	24	7.5	*****	391.0	*****	9.060	30	*****	3.55	22
CENTRAHOMA	1648	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	9.950	30	*****	5.25	20
CHICKASAW NRA	1745	8	76.3	30	*****	104.	1	42.	24	16.5	*****	356.5	*****	8.881	30	*****	4.03	21
COLEMAN	2011	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.620	30	*****	3.00	22
COMANCHE	2054	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.122	30	*****	.90	18
DAISY 4 ENE	2354	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.052	30	.35	1.70	18
DUNCAN	2660	8	76.9	30	1.2	102.	2	47.	24	11.0	3.0	369.0	40.0	2.500	30	-1.15	.82	17
DURANT USDA	2678	8	77.5	30	*****	106.	1	42.	25	16.5	*****	392.5	*****	7.350	30	1.74	2.88	20
ELMORE CITY	2872	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.360	30	*****	2.00	18
FARRIS 3 WNW	3083	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	11.490	30	*****	3.53	22
GRADY	3688	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.571	30	*****	2.27	22
HEALDTON	4001	8	77.2	28	*****	101.	7	44.	24	9.5	*****	352.0	*****	8.590	30	4.50	3.41	19
HENNEPIN	4052	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.990	30	*****	2.27	18
KETCHUM RANCH	4780	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.041	30	*****	2.35	17
KINGSTON	4865	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.070	30	.40	1.81	19
LEHIGH	5108	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.021	30	*****	1.10	22
LINDSAY 2 W	5216	8	75.4	30	*****	98.	5	44.	25	8.5	*****	322.0	*****	5.392	30	1.59	1.10	21
LOCO 6 SE	5247	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.551	30	*****	1.81	18
MADILL	5468	8	77.3	30	1.4	102.	5	44.	25	11.0	4.0	380.0	46.0	6.950	30	2.35	1.80	21
MARLETTA	5563	8	78.4	30	2.5	101.	7	46.	24	6.0	-4.0	407.5	70.5	3.781	30	-.21	.69	22
MARLOW 1 WSW	5581	8	77.0	30	*****	101.	1	43.	24	13.5	*****	373.5	*****	2.110	30	-1.55	.50	18
MCREE CREEK DAM5713	8	77.9	30	*****	108.	8	43.	25	15.0	*****	403.0	*****	9.960	30	*****	3.24	22	
PAULS VALLEY	6926	8	76.7	30	1.1	103.	1	43.	24	9.5	.5	360.0	33.0	4.831	29	*****	1.12	17
PONTOTOC	7214	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.620	30	.50	1.45	20
TISHOMINGO NWLR8884	8	76.4	27	*****	102.	7	41.	24	12.0	*****	319.5	*****	7.882	30	3.01	3.31	22	
TUSSY	9032	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.640	30	*****	2.49	18
WAURIKA	9395	8	78.4	30	1.9	101.	6	47.	24	5.0	-1.0	406.0	55.0	2.280	30	-1.12	1.32	18
WAURIKA DAM	9399	8	77.6	30	*****	103.	1	46.	24	10.0	*****	388.5	*****	2.030	30	*****	.63	17

SEPTEMBER 1990 SUMMARY FOR SOUTHEAST DIVISION (CD9)

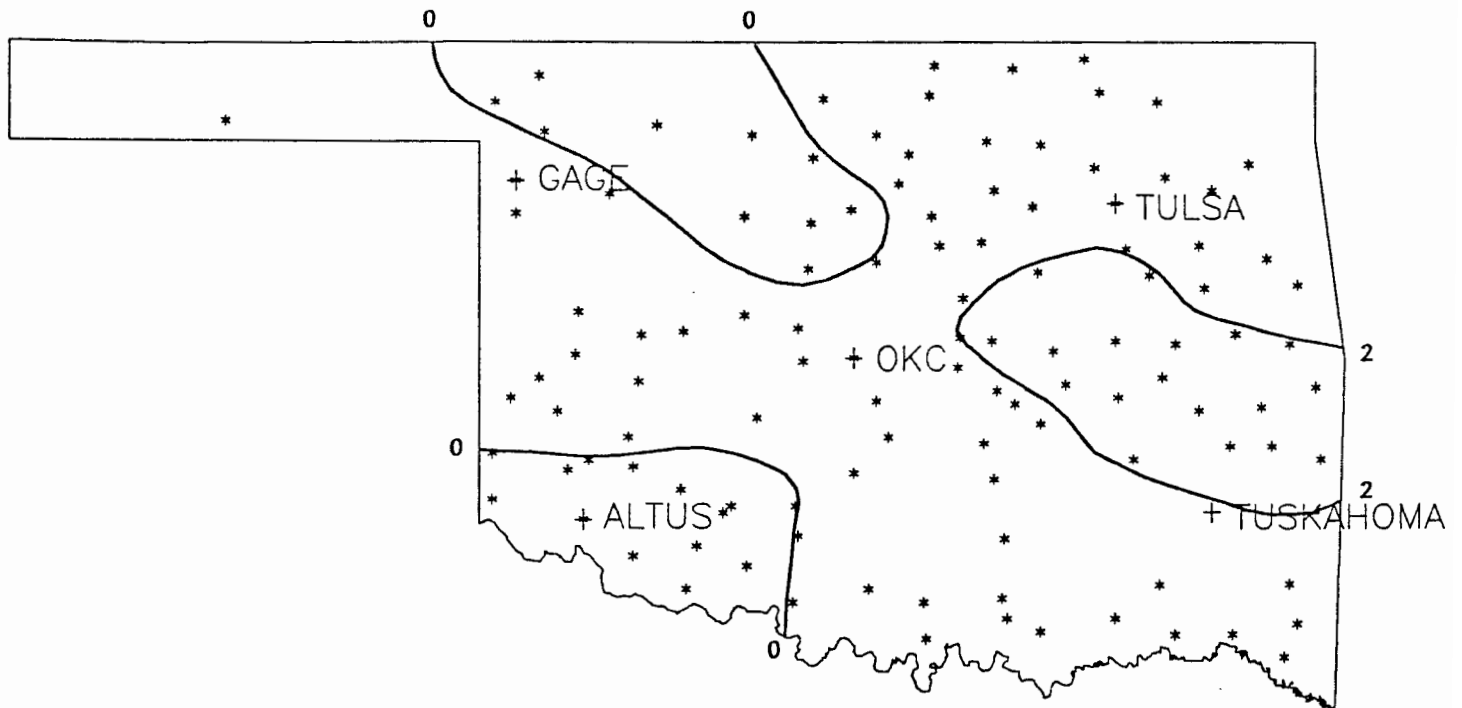
NAME	ID	CD	DEV						HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV FROM NORM	MAX 24-HR	DAY		
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	DAY TEMP										
ANTLERS	256	9	77.3	30	2.8	102.	6	42.	24	7.5	-1.5	375.0	84.0	7.480	30	2.21	3.25	17
BATTIEST 1 SSW	567	9	74.6	30	*****	99.	6	39.	24	16.5	*****	304.0	*****	5.210	30	*****	2.01	23
BEAR MT TWR	584	9	79.0	19	*****	104.	6	45.	24	.5	*****	266.5	*****	3.890	22	*****	1.37	18
BENGAL	670	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	10.191	30	*****	3.21	17
BOSWELL 4 NNW	980	9	78.1	30	*****	103.	6	42.	24	6.5	*****	400.0	*****	7.301	30	2.39	2.58	20
BROKEN BOW 1 N	1162	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.440	30	.72	1.80	18
BROKEN BOW DAM	1168	9	76.1	30	*****	103.	5	45.	28	10.5	*****	344.0	*****	3.280	30	*****	1.10	17
CARNASAW TWR	1499	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.890	30	-2.10	1.08	18
CANTER TWR	1544	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.320	30	-.64	1.17	20
FANSHAWE	3065	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.170	30	2.49	1.32	21
FLAGPOLE TWR	3169	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.160	30	*****	1.43	22
HEAVENER 1 SE	4008	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.670	30	4.15	2.68	22
HEE MT TWR	4017	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.850	30	*****	.89	20
HUGO	4384	9	78.6	30	2.8	102.	7	45.	24	5.5	5.5	412.5	84.5	5.072	30	-.08	2.50	18
IDABEL	4451	9	77.6	30	2.7	102.	7	44.	25	13.5	7.5	392.5	89.5	3.130	30	-1.40	1.42	18
JADIE TOWER	4560	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.810	30	*****	1.17	21
POTEAU W W	7254	9	76.8	30	*****	102.	2	42.	25	17.0	*****	372.0	*****	7.720	30	*****	2.22	19
SMITHVILLE 1 W	8285	9	75.0	28	*****	101.	5	38.	24	13.0	*****	294.0	*****	4.523	21	*****	1.30	22
SPIRO	8416	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.030	30	2.00	2.04	22
TUSKAHOMA	9023	9	76.3	30	*****	101.	6	41.	24	10.0	*****	348.0	*****	7.040	30	*****	1.79	20
VALLIANT 3 W	9118	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.631	30	1.65	3.15	18
WILBURTON 9 ENE9634	9	76.8	30	3.2	103.	6	39.	24	10.0	-6.0	365.5	88.5	6.100	30	1.16	1.60	19	

SEPTEMBER 1990 CLIMATE DIVISION SUMMARY

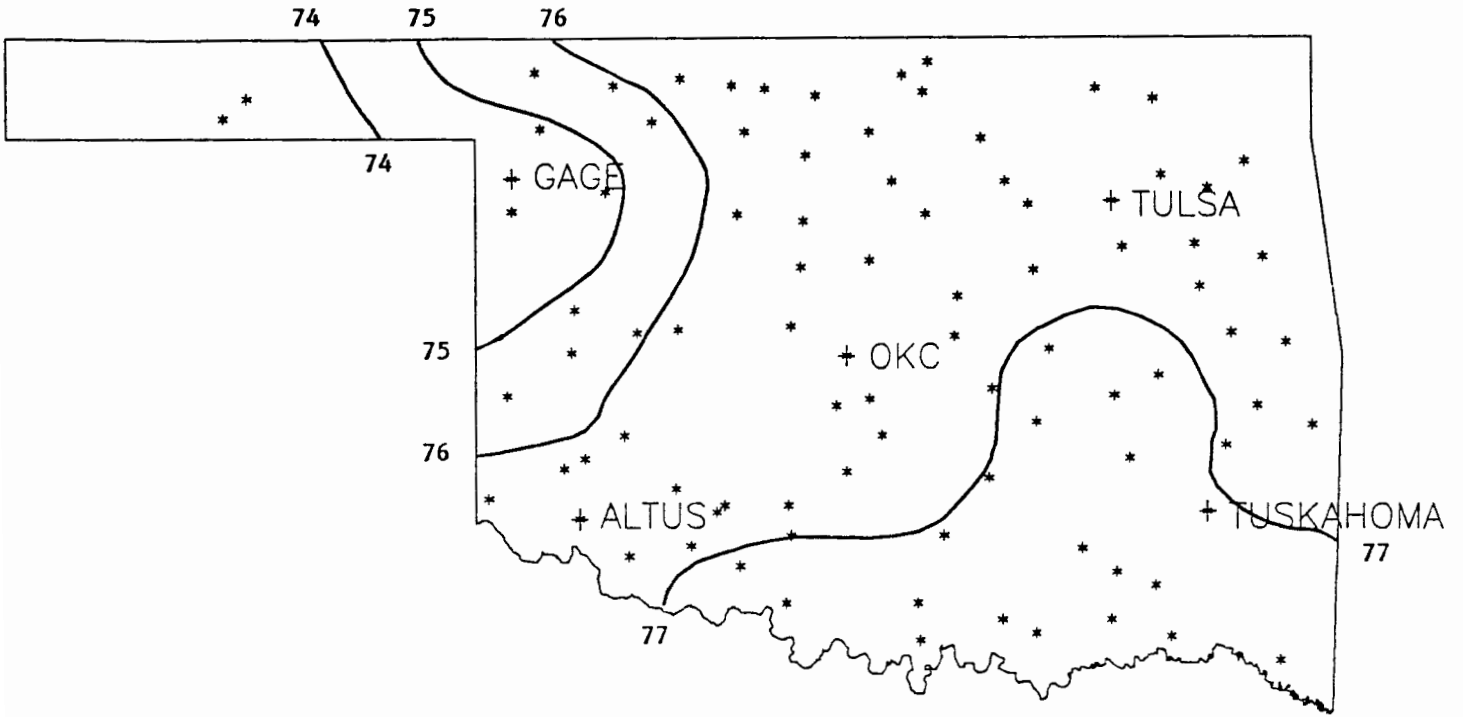
CLIMATE DIV	MEAN TEMP	NUM STA	DEV		MIN DAY	TEMP	DAY	HEAT		DEV	COOL		DEV	TOT PPT	NUM STA	DEV	
			FROM NORM	MAX				DEGREE	FROM NORM		DEGREE	FROM NORM				MAX	24-HR DAY
1	73.3	12	2.9	108.0	1	40.0	23	19.9	-10.6	266.8	76.2	2.59	14	.86	2.97	21	
2	76.1	15	3.0	109.0	2	40.0	23	11.6	-7.2	344.9	82.5	3.78	22	.64	3.65	20	
3	76.4	20	3.6	107.0	1	38.0	24	12.0	-10.9	353.7	96.5	5.30	31	1.05	5.61	21	
4	75.5	9	2.2	109.0	2	44.0	23	10.7	-6.3	326.5	58.3	3.80	22	1.01	2.70	18	
5	76.9	16	3.1	107.0	1	42.0	24	8.1	-7.6	365.1	82.6	4.62	36	.82	6.04	21	
6	76.6	12	2.8	103.0	7	39.0	24	10.4	-5.2	359.8	78.1	6.39	30	2.12	4.70	21	
7	76.6	13	1.5	105.0	1	42.0	24	5.8	-4.1	352.4	40.8	2.58	21	-.43	3.60	21	
8	77.5	15	1.6	108.0	8	41.0	24	10.4	3.0	384.4	48.8	5.76	32	1.51	5.25	20	
9	76.9	9	2.2	104.0	6	38.0	24	10.8	3.0	368.2	68.4	5.87	20	1.03	3.25	17	



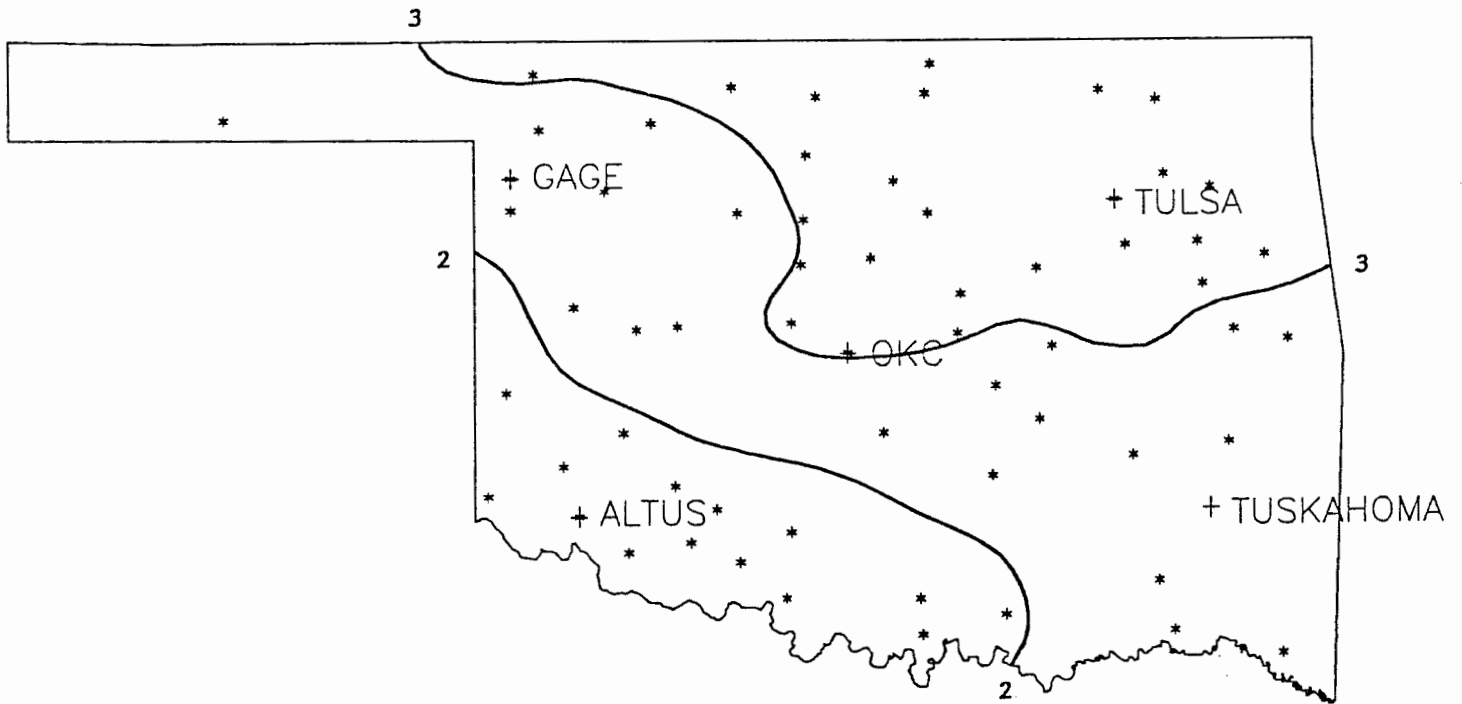
SEPTEMBER 1990 TOTAL PRECIPITATION
(Inches)



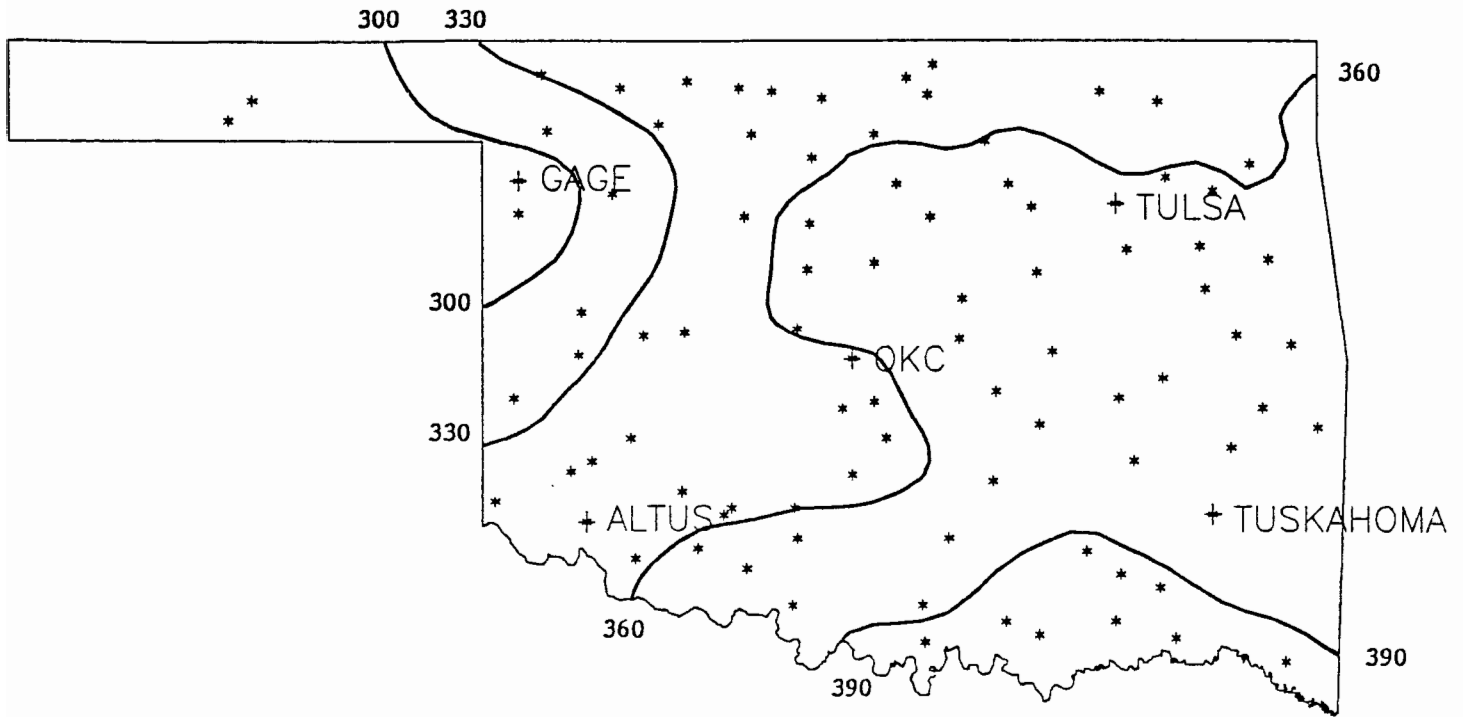
SEPTEMBER 1990 DEVIATION FROM NORMAL PRECIPITATION
(Inches)



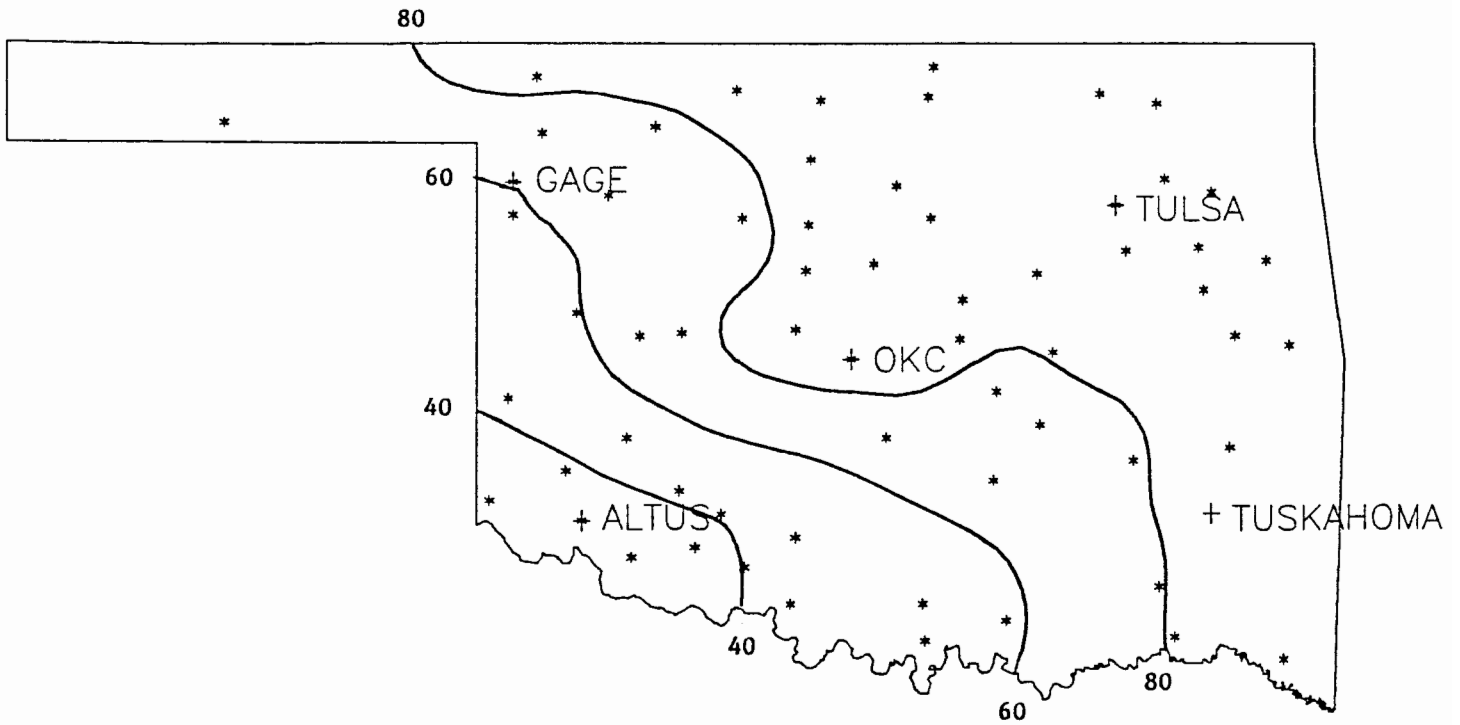
SEPTEMBER 1990 AVERAGE MONTHLY TEMPERATURES
(Degrees F)



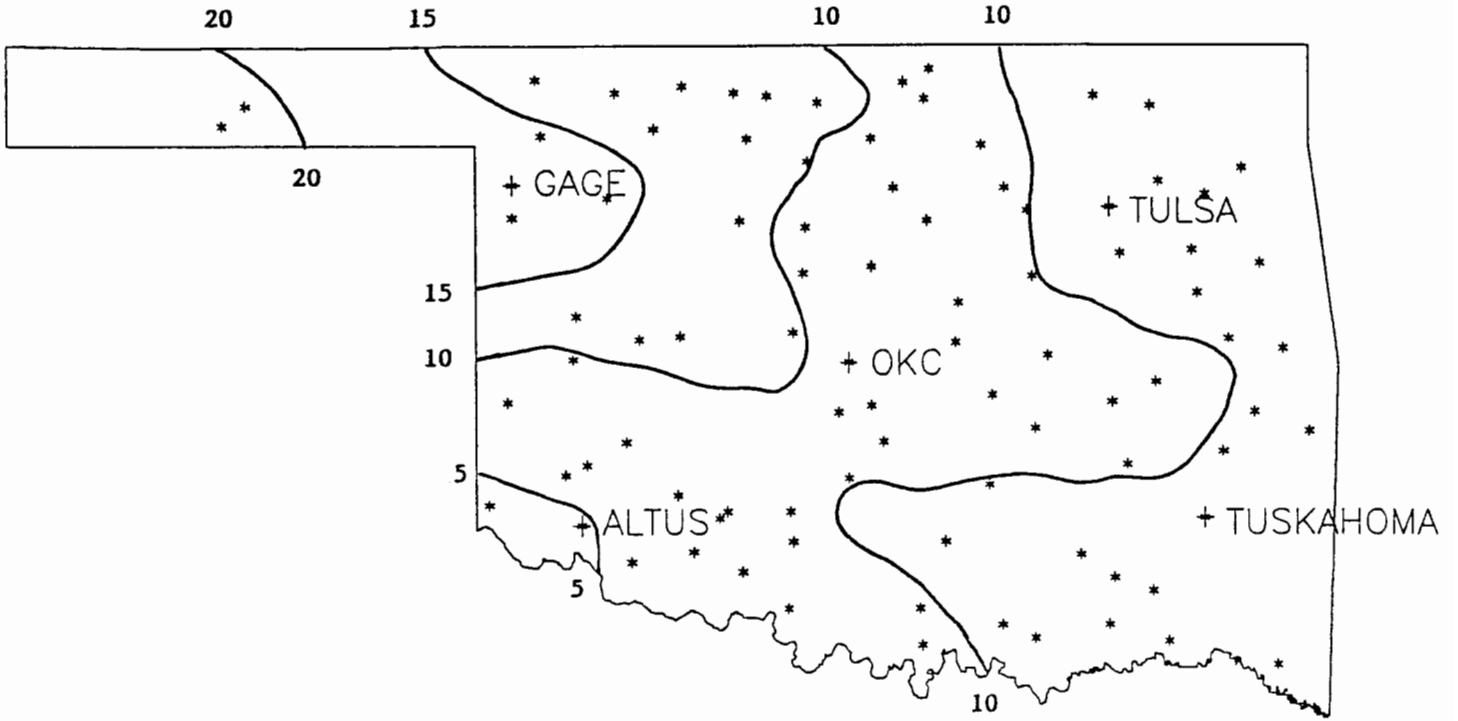
SEPTEMBER 1990 DEVIATION FROM NORMAL TEMPERATURES
(Degrees F)



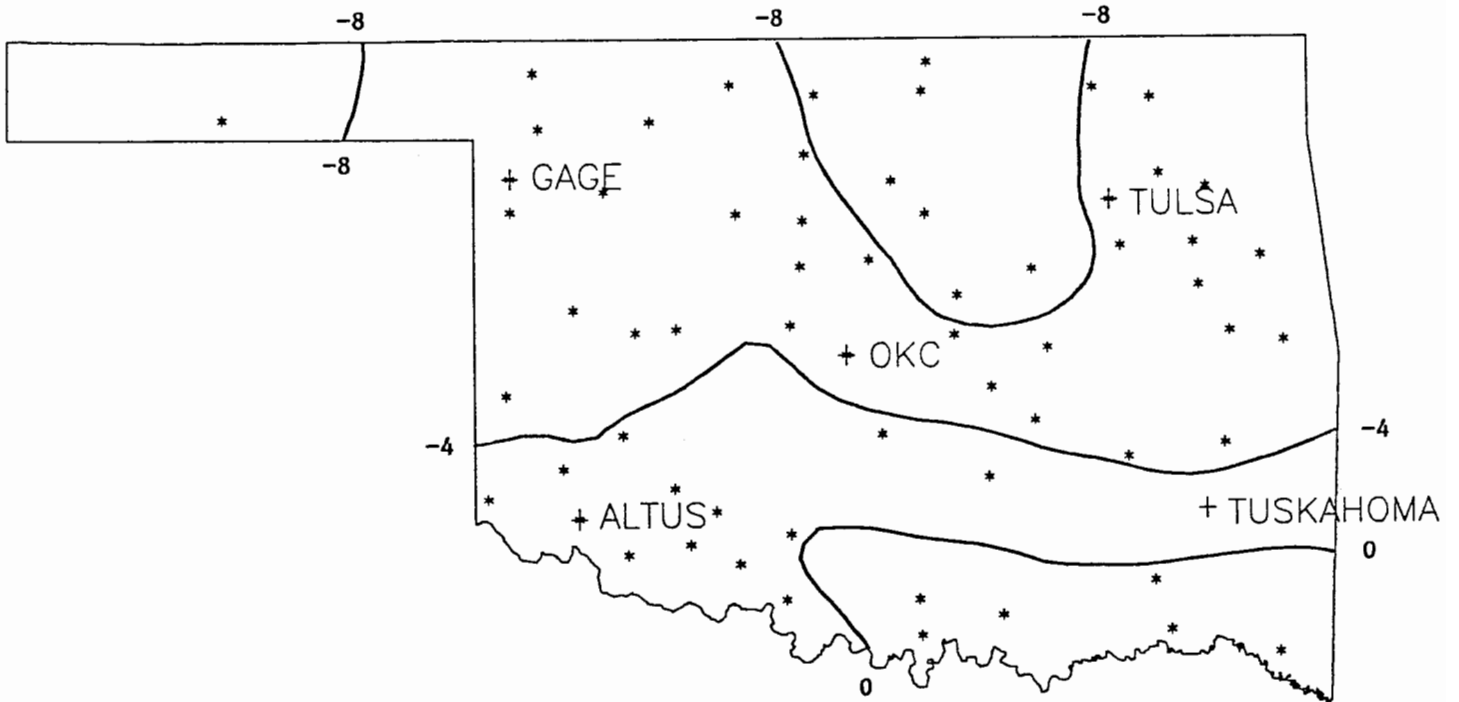
SEPTEMBER 1990 COOLING DEGREE DAYS



SEPTEMBER 1990 DEVIATION FROM NORMAL COOLING DEGREE DAYS

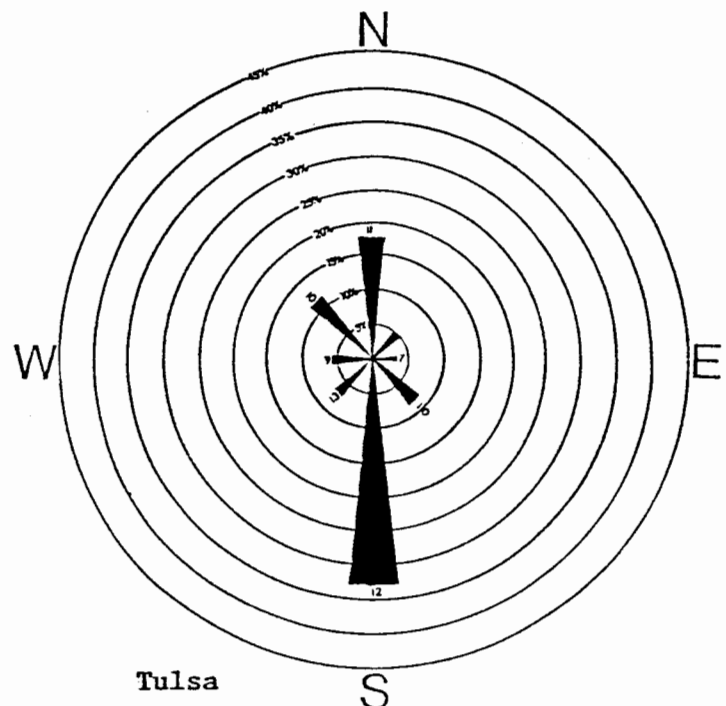
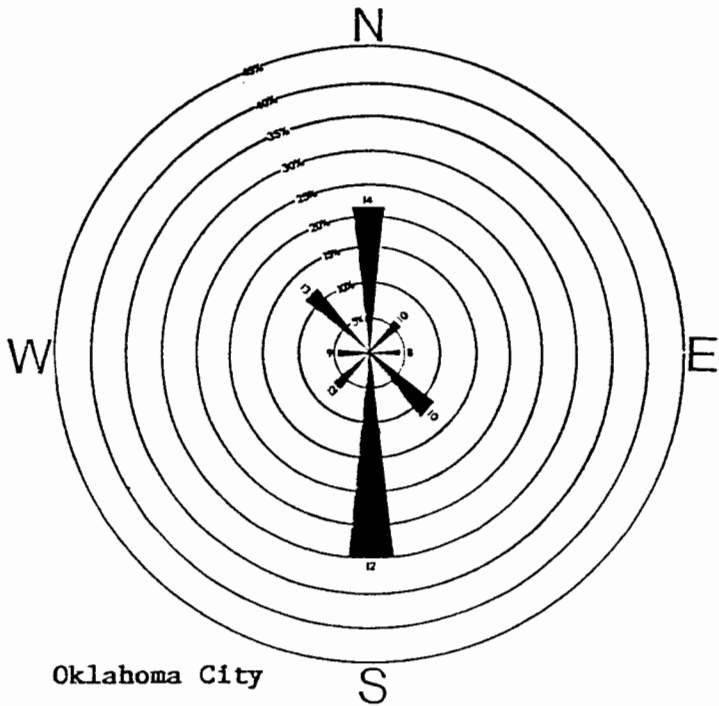


SEPTEMBER 1990 HEATING DEGREE DAYS



SEPTEMBER 1990 DEVIATION FROM NORMAL HEATING DEGREE DAYS

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



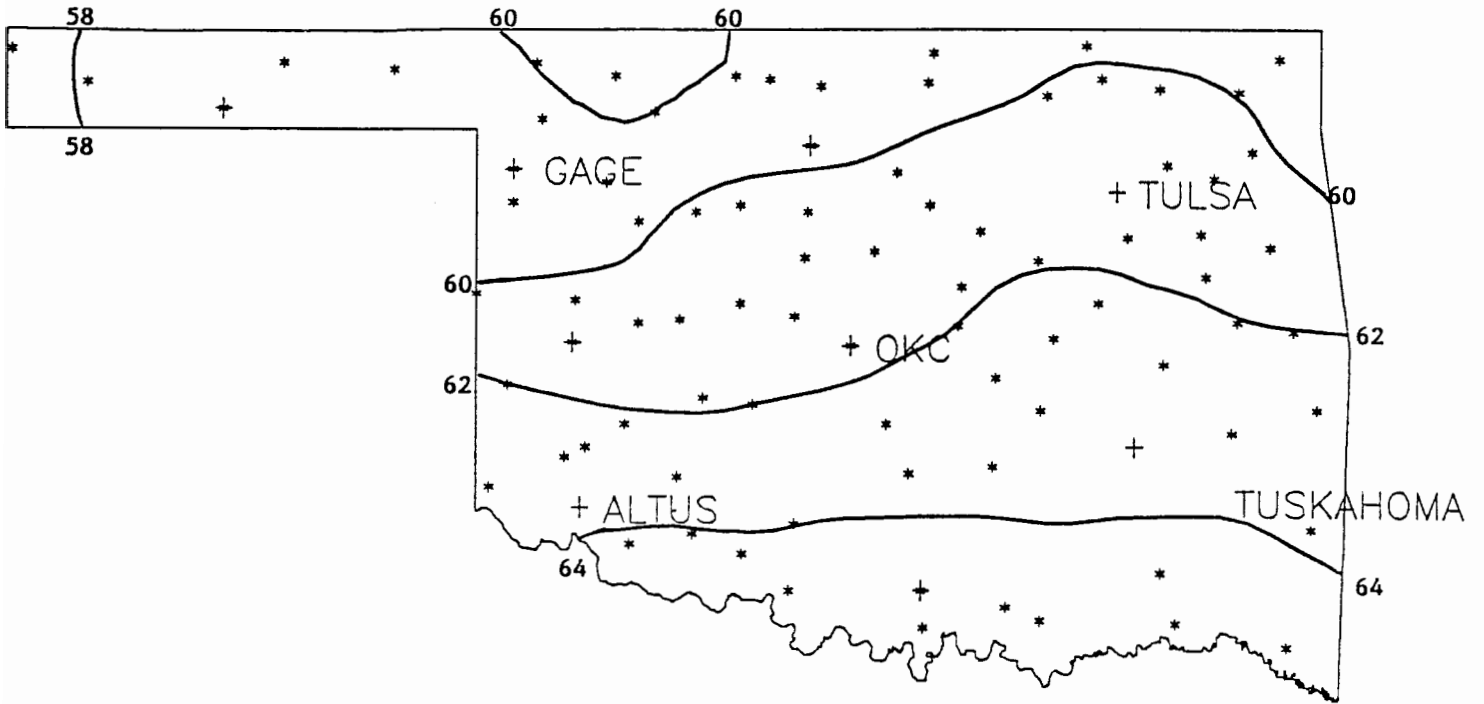
NOVEMBER 1990 SUNRISE AND SUNSET

Oklahoma City

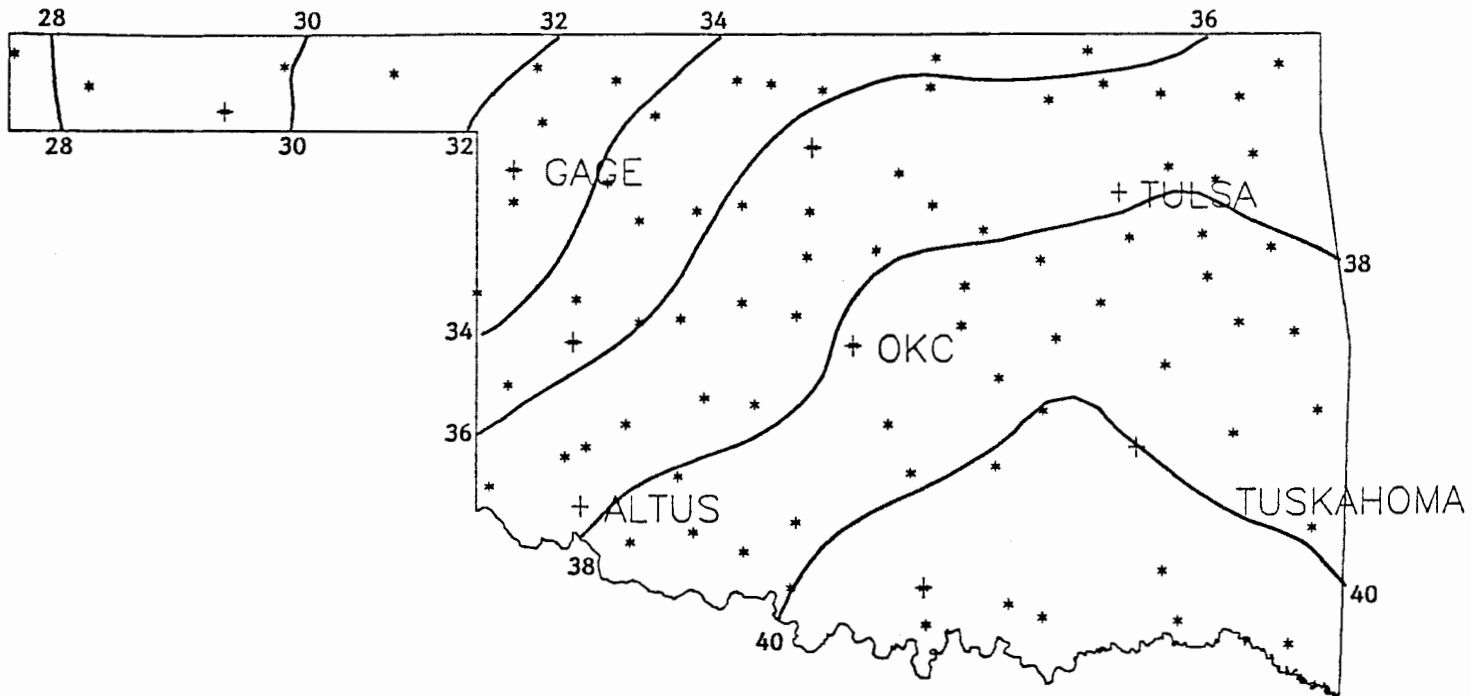
DATE	SUNRISE	SUNSET	DAYLIGHT
901101	6:51AM	5:38PM LT	10:47
901102	6:52AM	5:37PM LT	10:45
901103	6:52AM	5:36PM LT	10:43
901104	6:53AM	5:35PM LT	10:41
901105	6:54AM	5:34PM LT	10:39
901106	6:55AM	5:33PM LT	10:38
901107	6:56AM	5:32PM LT	10:36
901108	6:57AM	5:31PM LT	10:34
901109	6:58AM	5:31PM LT	10:32
901110	6:59AM	5:30PM LT	10:31
901111	7: 0AM	5:29PM LT	10:29
901112	7: 1AM	5:29PM LT	10:27
901113	7: 2AM	5:28PM LT	10:26
901114	7: 3AM	5:27PM LT	10:24
901115	7: 4AM	5:27PM LT	10:22
901116	7: 5AM	5:26PM LT	10:21
901117	7: 6AM	5:25PM LT	10:19
901118	7: 7AM	5:25PM LT	10:18
901119	7: 8AM	5:24PM LT	10:16
901120	7: 9AM	5:24PM LT	10:15
901121	7:10AM	5:24PM LT	10:13
901122	7:11AM	5:23PM LT	10:12
901123	7:12AM	5:23PM LT	10:11
901124	7:13AM	5:22PM LT	10: 9
901125	7:14AM	5:22PM LT	10: 8
901126	7:15AM	5:22PM LT	10: 7
901127	7:16AM	5:22PM LT	10: 6
901128	7:17AM	5:21PM LT	10: 5
901129	7:18AM	5:21PM LT	10: 4
901130	7:18AM	5:21PM LT	10: 2

Tulsa

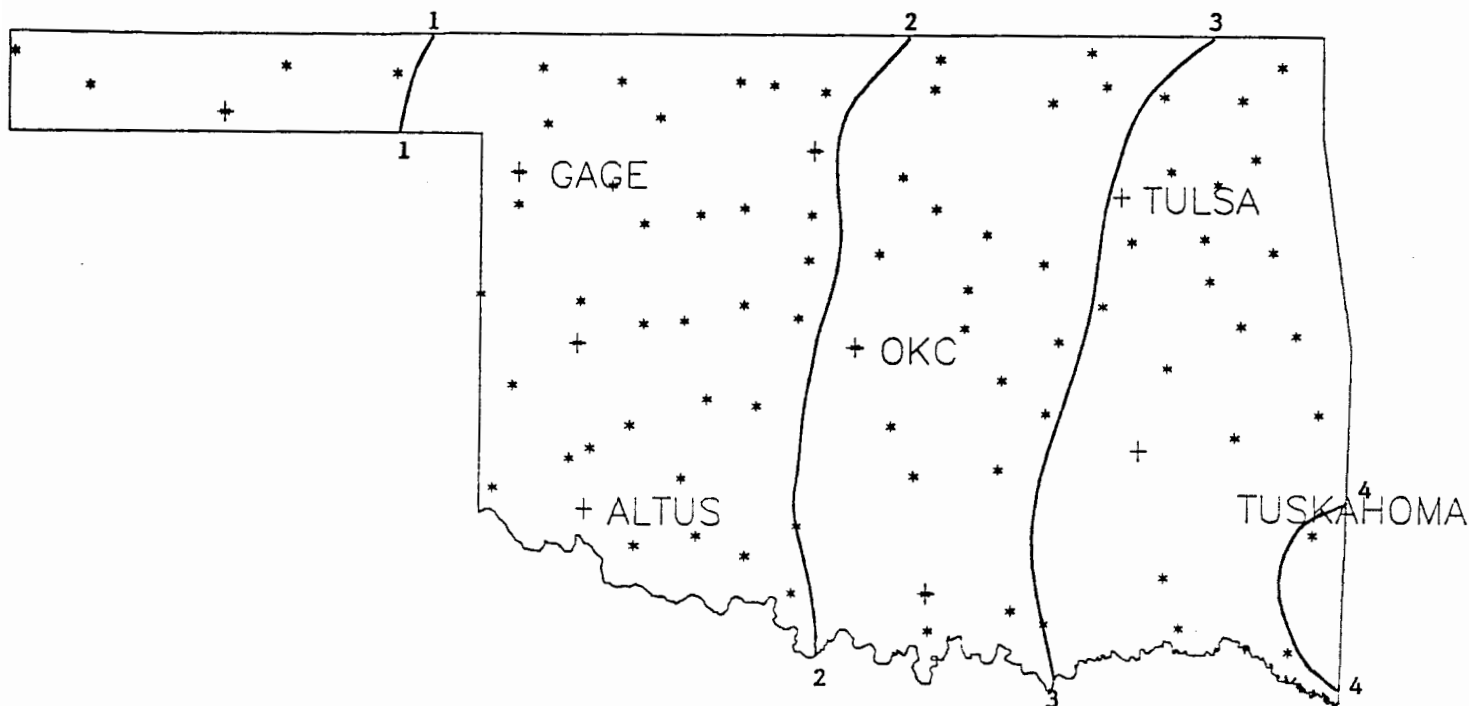
DATE	SUNRISE	SUNSET	DAYLIGHT
901101	6:45AM	5:30PM LT	10:45
901102	6:46AM	5:29PM LT	10:43
901103	6:47AM	5:28PM LT	10:41
901104	6:48AM	5:27PM LT	10:39
901105	6:49AM	5:26PM LT	10:37
901106	6:50AM	5:25PM LT	10:35
901107	6:51AM	5:24PM LT	10:33
901108	6:52AM	5:23PM LT	10:31
901109	6:53AM	5:23PM LT	10:30
901110	6:54AM	5:22PM LT	10:28
901111	6:55AM	5:21PM LT	10:26
901112	6:56AM	5:20PM LT	10:24
901113	6:57AM	5:20PM LT	10:23
901114	6:58AM	5:19PM LT	10:21
901115	6:59AM	5:18PM LT	10:19
901116	7: 0AM	5:18PM LT	10:18
901117	7: 1AM	5:17PM LT	10:16
901118	7: 2AM	5:17PM LT	10:15
901119	7: 3AM	5:16PM LT	10:13
901120	7: 4AM	5:16PM LT	10:12
901121	7: 5AM	5:15PM LT	10:10
901122	7: 6AM	5:15PM LT	10: 9
901123	7: 7AM	5:14PM LT	10: 7
901124	7: 8AM	5:14PM LT	10: 6
901125	7: 9AM	5:14PM LT	10: 5
901126	7:10AM	5:13PM LT	10: 3
901127	7:11AM	5:13PM LT	10: 2
901128	7:12AM	5:13PM LT	10: 1
901129	7:13AM	5:12PM LT	9:60
901130	7:13AM	5:12PM LT	9:59



30-YEAR MEAN NOVEMBER MAXIMUM TEMPERATURE



30-YEAR MEAN NOVEMBER DAILY MINIMUM TEMPERATURE



30-YEAR MEAN NOVEMBER PRECIPITATION

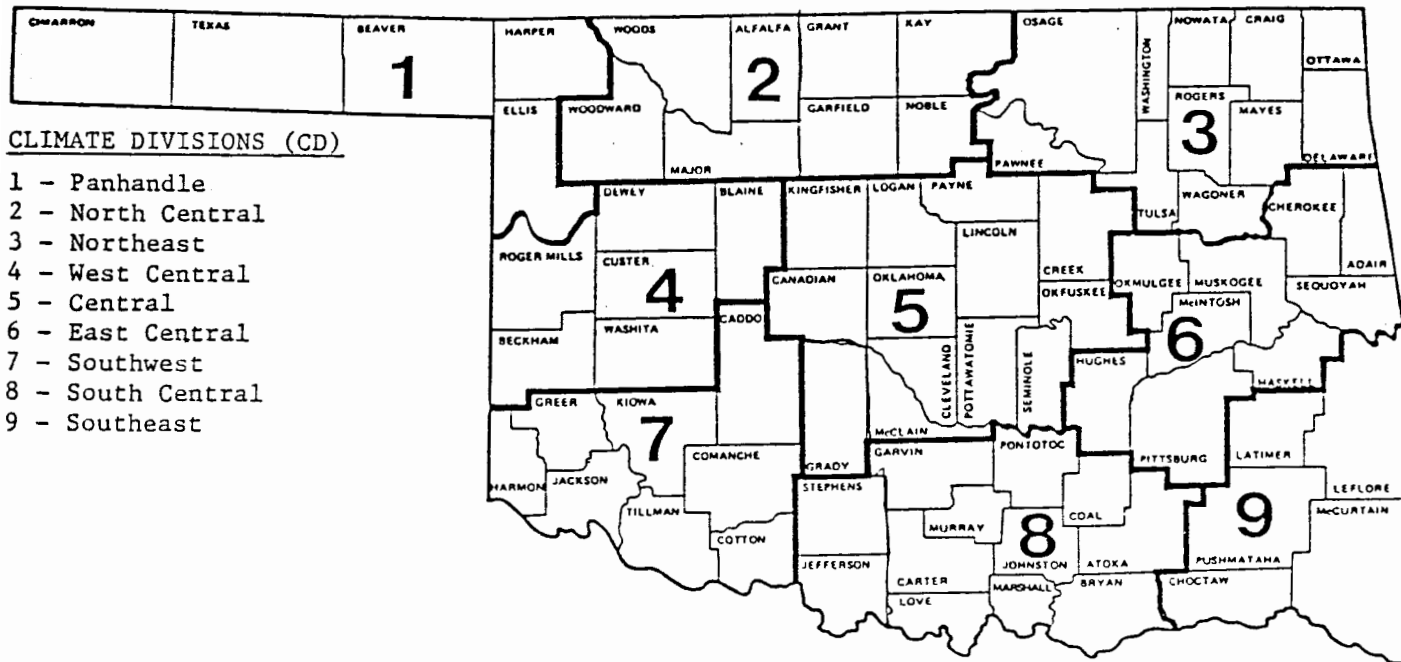
30- and 90-DAY NATIONAL WEATHER SERVICE OUTLOOK

30-DAY OUTLOOK (MID-OCTOBER TO MID-NOVEMBER)

Precipitation - Below Normal Statewide
Temperature - Above Normal Statewide

90-DAY OUTLOOK (OCTOBER-DECEMBER)

Precipitation - Near Normal Statewide
Temperature - Near Normal Statewide



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.

CLIMATE CALENDAR - OKLAHOMA CITY

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 67.1 max 45.2 min .054 pcpn 9 HDD 1 CDD	Actual 84-1982 Highest Max 35-1951 Lowest Max 29-1966 Lowest Min 68-1982 Highest Min Greatest pcpn 1.05-1981	Normal 63.1 max 42.2 min .093 pcpn 12 HDD 0 CDD	Actual 81-1978 Highest Max 31-1951 Lowest Max 22-1966 Lowest Min 62-1983 Highest Min Greatest pcpn 1.51-1951	Normal 61.6 max 40.9 min .092 pcpn 14 HDD 0 CDD	Actual 82-1931 Highest Max 40-1954 Lowest Max 21-1939 Lowest Min 61-1959 Highest Min Greatest pcpn 1.51-1964	Normal 63.5 max 40.9 min .098 pcpn 13 HDD 0 CDD	Actual 81-1978 Highest Max 47-1956 Lowest Max 23-1936 Lowest Min 56-1964 Highest Min Greatest pcpn 2.17-1986	Normal 61.8 max 41.2 min .049 pcpn 13 HDD 0 CDD	Actual 81-1945 Highest Max 35-1951 Lowest Max 23-1951 Lowest Min 59-1965 Highest Min Greatest pcpn .99-1946	Normal 62.9 max 41.4 min .041 pcpn 13 HDD 0 CDD	Actual 85-1945 Highest Max 39-1959 Lowest Max 20-1979 Lowest Min 59-1965 Highest Min Greatest pcpn .68-1978	Normal 63.5 max 41.2 min .076 pcpn 13 HDD 0 CDD	Actual 86-1980 Highest Max 44-1968 Lowest Max 26-1959 Lowest Min 61-1966 Highest Min Greatest pcpn 1.03-1944
Normal 63.9 max 41.4 min .065 pcpn 12 HDD 0 CDD	Actual 87-1980 Highest Max 40-1953 Lowest Max 23-1935 Lowest Min 66-1966 Highest Min Greatest pcpn .33-1981	Normal 62.1 max 39.6 min .017 pcpn 14 HDD 0 CDD	Actual 82-1988 Highest Max 37-1958 Lowest Max 25-1955 Lowest Min 60-1984 Highest Min Greatest pcpn 1.15-1977	Normal 62.0 max 38.2 min .022 pcpn 15 HDD 0 CDD	Actual 81-1980 Highest Max 33-1950 Lowest Max 20-1950 Lowest Min 58-1964 Highest Min Greatest pcpn 1.17-1937	Normal 63.0 max 38.9 min .009 pcpn 14 HDD 0 CDD	Actual 81-1989 Highest Max 43-1968 Lowest Max 19-1950 Lowest Min 63-1982 Highest Min Greatest pcpn 1.10-1988	Normal 63.2 max 39.1 min .046 pcpn 14 HDD 0 CDD	Actual 78-1989 Highest Max 33-1976 Lowest Max 19-1986 Lowest Min 58-1951 Highest Min Greatest pcpn .99-1957	Normal 63.6 max 39.6 min .066 pcpn 13 HDD 0 CDD	Actual 80-1987 Highest Max 28-1966 Lowest Max 12-1940 Lowest Min 61-1989 Highest Min Greatest pcpn 1.51-1985	Normal 61.0 max 40.6 min .049 pcpn 14 HDD 0 CDD	Actual 79-1973 Highest Max 30-1959 Lowest Max 15-1959 Lowest Min 63-1973 Highest Min Greatest pcpn 1.13-1985
Normal 61.3 max 39.9 min .114 pcpn 14 HDD 0 CDD	Actual 80-1965 Highest Max 37-1978 Lowest Max 15-1940 Lowest Min 61-1971 Highest Min Greatest pcpn 1.70-1968	Normal 59.0 max 39.2 min .029 pcpn 16 HDD 0 CDD	Actual 82-1941 Highest Max 33-1955 Lowest Max 14-1932 Lowest Min 64-1928 Highest Min Greatest pcpn 3.94-1931	Normal 58.9 max 37.0 min .083 pcpn 17 HDD 0 CDD	Actual 77-1966 Highest Max 32-1959 Lowest Max 11-1959 Lowest Min 54-1975 Highest Min Greatest pcpn 1.70-1984	Normal 58.3 max 37.7 min .067 pcpn 17 HDD 0 CDD	Actual 80-1930 Highest Max 37-1972 Lowest Max 17-1951 Lowest Min 57-1979 Highest Min Greatest pcpn 1.37-1964	Normal 59.4 max 36.6 min .104 pcpn 17 HDD 0 CDD	Actual 78-1979 Highest Max 34-1972 Lowest Max 18-1937 Lowest Min 60-1977 Highest Min Greatest pcpn 1.70-1934	Normal 58.5 max 34.7 min .049 pcpn 18 HDD 0 CDD	Actual 79-1982 Highest Max 31-1972 Lowest Max 19-1937 Lowest Min 59-1979 Highest Min Greatest pcpn 1.74-1979	Normal 58.4 max 35.3 min .073 pcpn 18 HDD 0 CDD	Actual 80-1927 Highest Max 31-1964 Lowest Max 20-1964 Lowest Min 53-1966 Highest Min Greatest pcpn 1.17-1931
Normal 59.1 max 35.8 min .040 pcpn 17 HDD 0 CDD	Actual 78-1966 Highest Max 38-1937 Lowest Max 18-1926 Lowest Min 60-1966 Highest Min Greatest pcpn 1.54-1931	Normal 57.3 max 34.6 min .028 pcpn 19 HDD 0 CDD	Actual 79-1973 Highest Max 35-1970 Lowest Max 19-1950 Lowest Min 60-1966 Highest Min Greatest pcpn 1.62-1931	Normal 55.2 max 34.6 min .083 pcpn 20 HDD 0 CDD	Actual 76-1942 Highest Max 36-1950 Lowest Max 15-1950 Lowest Min 60-1966 Highest Min Greatest pcpn .77-1944	Normal 59.9 max 37.2 min .071 pcpn 16 HDD 0 CDD	Actual 84-1965 Highest Max 39-1982 Lowest Max 20-1950 Lowest Min 62-1966 Highest Min Greatest pcpn 2.01-1940	Normal 57.7 max 35.5 min .142 pcpn 18 HDD 0 CDD	Actual 78-1970 Highest Max 32-1952 Lowest Max 13-1975 Lowest Min 50-1966 Highest Min Greatest pcpn .97-1935	Normal 51.0 max 32.0 min .065 pcpn 23 HDD 0 CDD	Actual 76-1927 Highest Max 33-1938 Lowest Max 16-1976 Lowest Min 56-1960 Highest Min Greatest pcpn 1.28-1982	Normal 49.6 max 30.1 min .014 pcpn 25 HDD 0 CDD	Actual 81-1949 Highest Max 30-1952 Lowest Max 15-1976 Lowest Min 48-1962 Highest Min Greatest pcpn .54-1968
Normal 52.8 max 30.0 min .008 pcpn 23 HDD 0 CDD	Actual 80-1927 Highest Max 34-1974 Lowest Max 13-1976 Lowest Min 51-1975 Highest Min Greatest pcpn .61-1930	Normal 54.3 max 31.6 min .026 pcpn 22 HDD 0 CDD	Actual 74-1933 Highest Max 38-1983 Lowest Max 13-1976 Lowest Min 56-1970 Highest Min Greatest pcpn .47-1985	Normal 55.3 max 31.6 min .026 pcpn 22 HDD 0 CDD	Actual 74-1933 Highest Max 38-1983 Lowest Max 13-1976 Lowest Min 56-1970 Highest Min Greatest pcpn .47-1985	Normal 54.3 max 31.6 min .026 pcpn 22 HDD 0 CDD	Actual 74-1933 Highest Max 38-1983 Lowest Max 13-1976 Lowest Min 56-1970 Highest Min Greatest pcpn .47-1985	Normal 54.3 max 31.6 min .026 pcpn 22 HDD 0 CDD	Actual 74-1933 Highest Max 38-1983 Lowest Max 13-1976 Lowest Min 56-1970 Highest Min Greatest pcpn .47-1985	Normal 54.3 max 31.6 min .026 pcpn 22 HDD 0 CDD	Actual 74-1933 Highest Max 38-1983 Lowest Max 13-1976 Lowest Min 56-1970 Highest Min Greatest pcpn .47-1985	Normal 54.3 max 31.6 min .026 pcpn 22 HDD 0 CDD	Actual 74-1933 Highest Max 38-1983 Lowest Max 13-1976 Lowest Min 56-1970 Highest Min Greatest pcpn .47-1985

NOVEMBER AVERAGES

Temperature : 48.8°F
Precipitation : 1.67"
Heating Degree Days: 483
Cooling Degree Days: 1