

OKLAHOMA MONTHLY SUMMARY SEPTEMBER 1993

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MONTHLY SUMMARY FOR SEPTEMBER 1993

September average temperatures were below normal at most Oklahoma reporting stations, in contrast to the stifling heat experienced by the state during the previous month. Precipitation was below normal in the west, but well above normal in most parts of eastern Oklahoma.

The statewide average temperature for the month was 70.5 degrees (2.5 degrees below normal) and the monthly total precipitation, averaged statewide, was 5.38 inches (1.44 inches above normal), giving 1993 the 9th coolest and 17th wettest September in the state's 102 years of climatological record. For the year to date, the state's average temperature is a full degree below normal (17th coolest) and the average precipitation of 33.14 inches is 6.05 inches above normal (13th wettest).

The most significant weather-related occurrence during the month was flooding along the Neosho and Spring Rivers that forced the evacuation of more than 350 people in Miami, Quapaw and Wyandotte. Heavy rains in northeastern Oklahoma, southeastern Kansas and southwestern Missouri were responsible for the flooding. Localized flooding was reported at various times during the month in numerous locations in the eastern half of the state.

Although no triple-digit temperatures were reported, daily maximum temperatures from 95 to 99 degrees were reported on 16 different days. Buffalo reached 99 degrees twice (on the 5th and 21st) and Antlers and Atoka Dam reported 99 degree temperatures once each early in the month. The first freezing temperatures of the fall season were reported on the 15th at Freedom, Gage and Hammon, apparently the earliest first-freeze in the state since at least 1947.

Precipitation was reported somewhere in the state each of the first 10 days in the month. Thunderstorm winds estimated to be 75 miles per hour downed power lines and some trees in Woodward. Trousdale (Pottawatomie County) reported 3.01 inches of rain on the 2nd and 4.04 inches on the 4th. Large hail was reported southwest of Keyes (Cimarron County) on the 5th. Welty (northern Okfuskee County) reported 4 inches of rain on the 8th.

A major and well-organized frontal system, combined with the moisture from the remnants of Hurricane Lidia wreaked havoc on much of the state just prior to mid-month. Daily precipitation reports from the 12th through the 14th included 7.94 inches at Dustin (Hughes County), 7.47 inches at Muskogee, 8.14 inches at Boynton (Muskogee County), 8.16 inches at Ada, 7.60 inches near Wetumka (Hughes County) and 7.57 inches at Hanna (McIntosh County). Many other areas in east central Oklahoma experienced local flooding, including Okemah (Okfuskee County), Dewar (Okmulgee County), the Tulsa metropolitan area and portions of Cherokee, Adair and Delaware Counties. What were probably small tornadoes were reported near Tishomingo and Bearden. Damage from thunderstorm winds were reported in several areas.

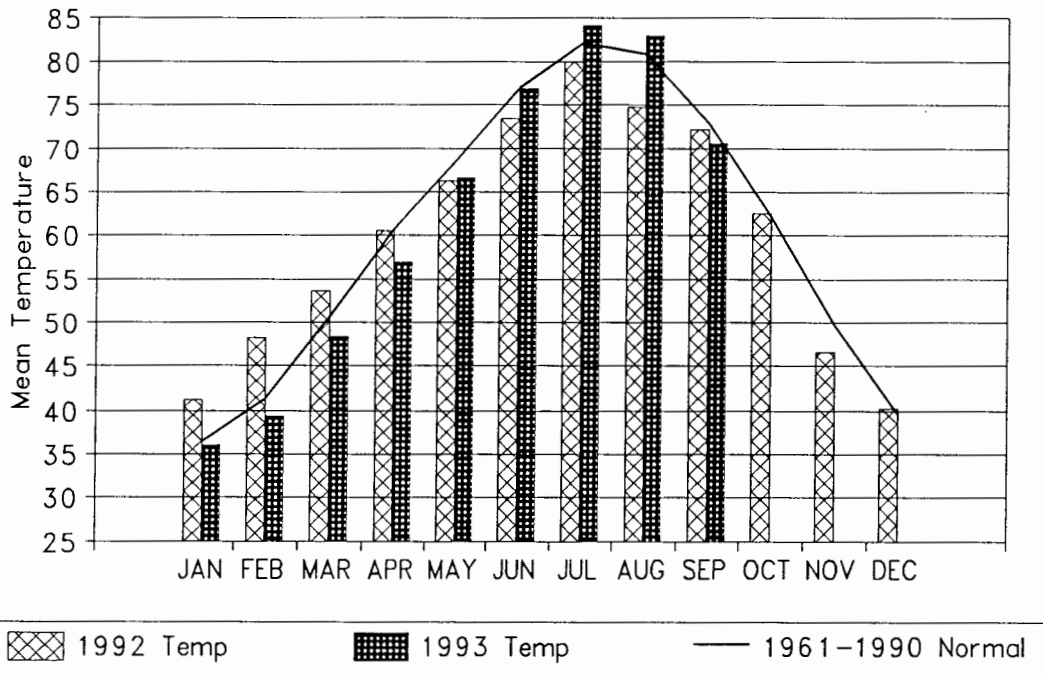
Cold air that followed the passage of the front brought the early freeze in parts of northwestern Oklahoma and established new record low temperatures for several dates in Oklahoma City and Tulsa.

Another strong frontal system moved through the state on the 18th and 19th, touching off thunderstorms that deposited 3.20 inches of rain at Lehigh (Coal County), reported 3-inch hailstones west of Elmwood (Beaver County) and heavy precipitation in the Lawton area that led to street flooding there and in Cache. Possible small tornadoes were reported south of Davenport (Lincoln County) and east of Beggs (Okmulgee County).

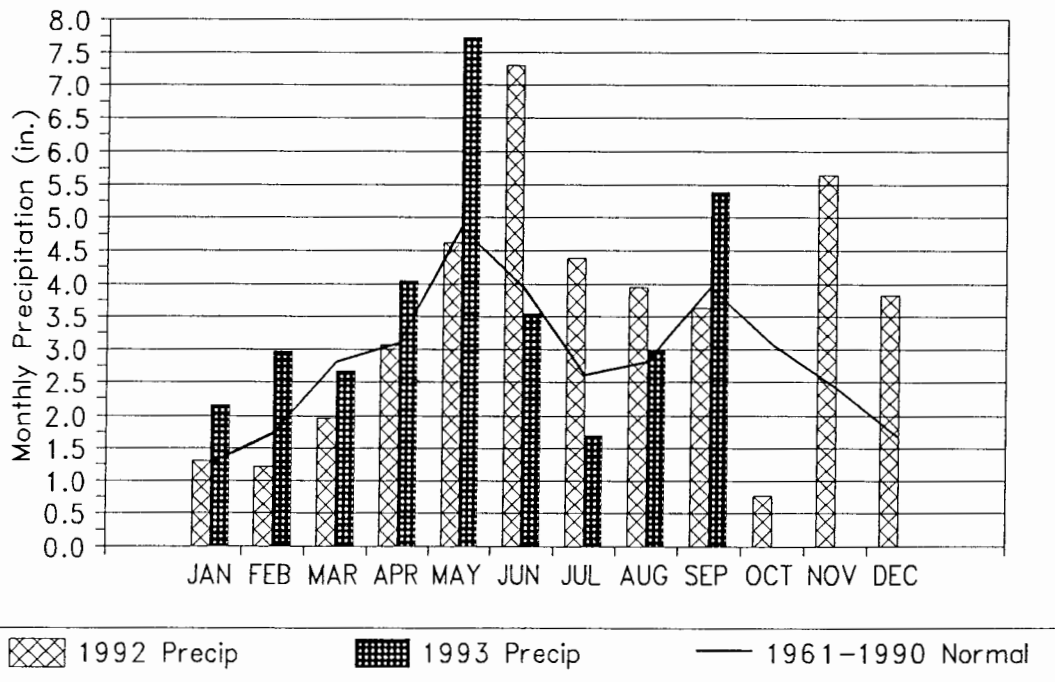
Beginning on the 24th, a slow-moving system, mostly in southern Kansas, caused overnight rains which produced street flooding in Bartlesville and other flooding in Craig, Nowata and Ottawa Counties. Hollow (Craig County) reported 6.50 inches of rain and Nowata reported 5.77 inches. Even greater rainfall in southeastern Kansas (Pittsburg reportedly received 18 inches in 24 hours) and southwest Missouri (as much as 15 inches), led to flooding along streams and rivers in the tri-state area. While serious, the flooding in Ottawa County was reportedly well below the record flood of 1951.

Howard L. Johnson

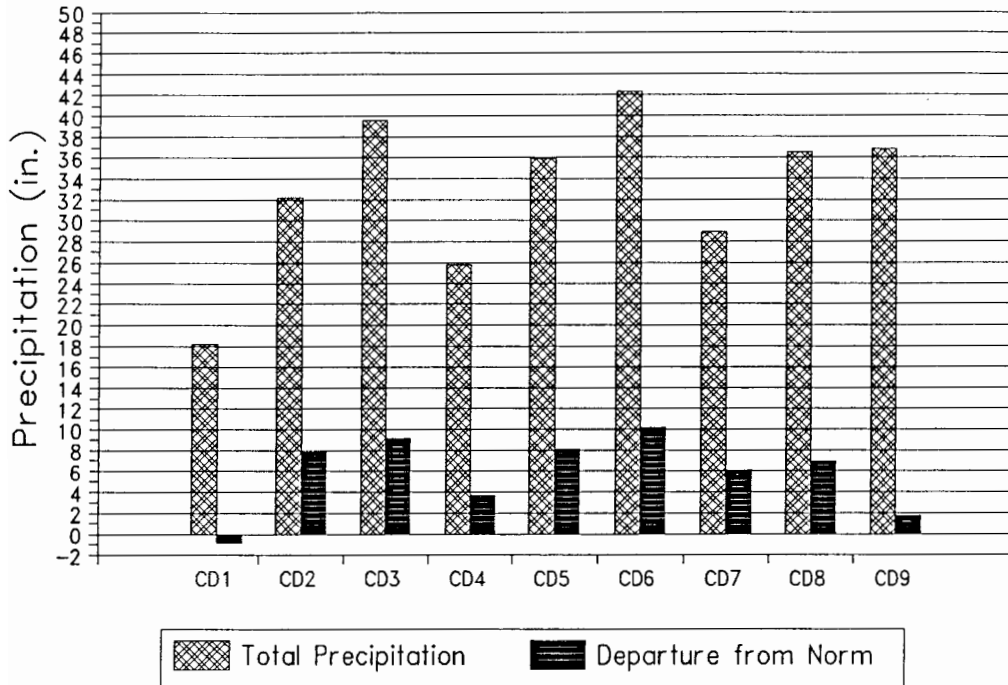
1992 and 1993 STATEWIDE TEMPERATURES Monthly Averages



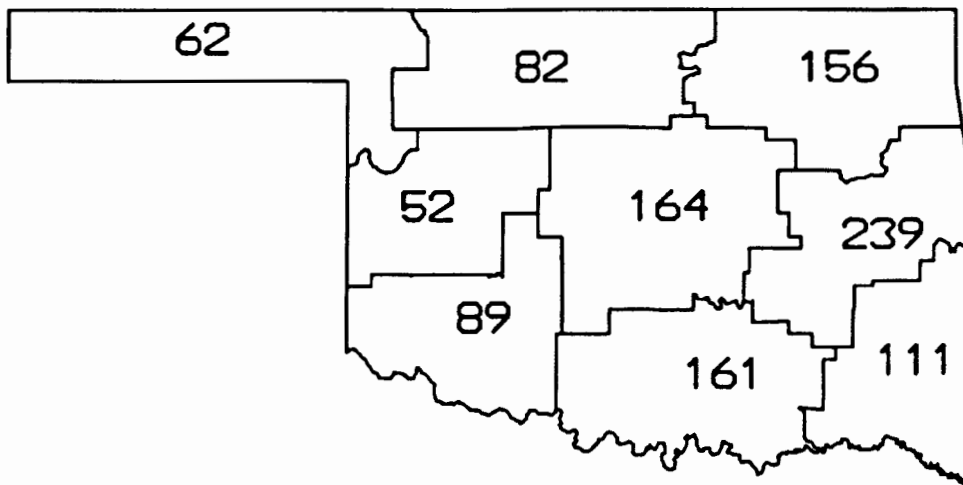
1992 and 1993 STATEWIDE PRECIPITATION Monthly Totals



CD Averaged Precipitation 1993 January through September Totals



CD PERCENT OF NORMAL PRECIPITATION



SEPTEMBER 1993

EXTREME VALUES OF TEMPERATURE AND PRECIPITATION IN EACH CLIMATE DIVISION
SEPTEMBER, 1993

CD	MAX			MIN			24-HOUR			MONTHLY	
	TEMP	DATE	LOCATION	TEMP	DATE	LOCATION	PRECIP	DATE	LOCATION	PRECIP	LOCATION
1	99	5	BUFFALO	32	15	GAGE	1.21	8	ARNETT	2.78	ARNETT
	99	21	BUFFALO								
2	98	2	ALVA	28	15	FREEDOM	2.64	14	RED ROCK	6.08	PERRY
	98	21	ALVA								
	98	23	FREEDOM								
	98	22	JEFFERSON								
3	94	2	BARTLESVILLE	36	15	MIAMI	6.72	14	ONETA	13.56	HOLLOW
	94	2	MANNFORD								
4	97	22	ERICK	30	15	HAMMON	1.40	8	LEEDEY	3.43	TALOGA
	97	2	REYDON								
	97	22	REYDON								
	97	23	REYDON								
5	97	11	HENNESSEY	39	15	STILLWATER	6.68	14	OKEMAH	13.65	OKEMAH
				39	16	STILLWATER					
6	98	3	LAKE EUFAULA	38	15	TAHLEQUAH	8.20	14	BOYNTON	15.48	DUSTIN
	98	3	WEBBERS FALL								
7	97	2	CHATTANOOGA	37	15	WICHITA MT WLR	2.95	14	WALTERS	5.92	WALTERS
	97	3	CHATTANOOGA								
	97	22	HOLLIS								
	97	2	FORT SILL								
8	99	3	ATOKA DAM	39	16	CANEY	8.16	14	ADA	12.49	ADA
9	99	2	ANTLERS	41	17	BATTIEST	3.75	14	TUSKAHOMA	8.95	TUSKAHOMA
	99	3	BEAR MT TWR	41	27	POTEAU					
	99	3	BROKEN BOW DA								
	99	3	POTEAU								

TABLE OF 1992/1993 COMPARISONS

Station	September Temperature (°F)		September Precipitation (in.)	
	1992	1993	1992	1993
Arnett	70.0	65.4	0.06	2.78
Enid	72.4	70.0	4.45	2.16
Mutual	71.2	67.6	0.05	1.74
Tulsa	73.4	69.3	3.38	6.87
Elk City	72.6	70.9	1.11	1.23
Oklahoma City	72.5	69.7	2.92	7.05
McAlester	73.9	73.4	7.85	8.32
Altus Irr Sta	74.1	72.7	1.38	3.29
Durant	72.3	71.8	6.05	6.15
Ada	71.4	70.6	5.61	12.49
Hugo	73.4	74.5	6.93	3.25

EXTREMES

Variable	Station	Division	Observation	Date
Minimum temperature (°F)	Freedom	2	28	16
Maximum temperature (°F)	Buffalo	1	99	21
	Atoka Dam	8	99	3
	Antlers	9	99	2
	Bear Mt Twr	9	99	3
	Bkn Bow Dam	9	99	3
	Poteau	9	99	3
	Maximum 24-hour precipitation	Boynton	6	8.20"

SEPTEMBER 1993 SUMMARY FOR NORTHWEST DIVISION (CD1)

NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	DEV	MAX	DAY
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	FROM	DEG	FROM	PPT	OBS					
ARNETT	332	1	65.4	26	*****	93.	23	37.	15	64.0	*****	73.5	*****	2.782	27	*****	1.21	8		
BEAVER	593	1	66.7	30	-3.0	96.	22	35.	15	73.5	42.5	125.0	-47.0	.620	30	-1.20	.23	8		
BOISE CITY 2 E	908	1	67.7	30	-.1	93.	11	36.	14	34.5	2.5	115.0	-1.0	.392	30	-1.44	.32	7		
BUFFALO	1243	1	71.8	30	-1.1	99.	21	33.	15	19.5	6.5	223.5	-26.5	1.810	30	-1.27	.60	25		
FARGO	3070	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.231	30	-.04	1.08	23		
GAGE FAA APT	3407	1	69.0	30	-2.6	95.	30	32.	15	40.5	22.5	161.5	-54.5	1.212	30	-.78	.46	25		
GATE	3489	1	68.2	30	-3.0	97.	6	40.	15	59.5	42.5	156.0	-47.0	2.013	30	-.08	.81	8		
GOODWELL RES ST	3628	1	65.8	30	-2.3	95.	22	38.	15	73.5	34.5	98.5	-33.5	2.050	30	.37	1.00	25		
GUYMON	3835	1	69.7	25	*****	97.	4	37.	15	33.0	*****	151.5	*****	1.920	27	*****	1.00	25		
HOOVER	4298	1	66.8	30	-2.7	97.	13	40.	15	62.5	28.5	115.5	-53.5	.632	30	-1.42	.27	6		
KENTON	4766	1	67.6	29	.9	95.	13	40.	15	33.5	-15.5	110.0	10.0	.141	30	-1.71	.07	2		
LAVERNE	5045	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.271	30	-.75	.74	25		
OPTIMA LAKE	6740	1	67.0	30	*****	96.	13	35.	15	69.0	*****	130.0	*****	2.412	30	*****	.75	25		
REGNIER	7534	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.432	30	-1.27	.43	8		
TURPIN 4 SSE	9017	1	66.7	30	*****	96.	13	39.	15	64.0	*****	113.5	*****	1.531	29	*****	.79	25		

SEPTEMBER 1993 SUMMARY FOR NORTH CENTRAL DIVISION (CD2)

NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	DEV	MAX	DAY
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	FROM	DEG	FROM	PPT	OBS					
ALVA	193	2	70.6	30	*****	98.	21	36.	15	27.0	*****	194.5	*****	1.710	30	*****	.80	25		
VANCE AFB	302	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.074	29	*****	.35	25		
BILLINGS	755	2	67.6	30	-4.8	93.	23	39.	15	46.0	26.0	122.5	-119.5	2.112	30	-2.43	.90	13		
BLACKWELL 2E	818	2	68.7	30	-4.1	94.	22	41.	15	40.0	23.0	152.0	-99.0	3.550	30	-.53	.99	25		
BRAMAN	1075	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.771	30	*****	.91	3		
CEDARDALE	1620	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.223	30	*****	.52	8		
CHEROKEE	1724	2	71.0	30	-2.8	97.	22	37.	16	31.5	20.5	210.5	-64.5	2.030	30	-1.03	.78	25		
ENID	2912	2	70.0	30	-3.4	95.	22	41.	15	31.0	18.0	180.5	-84.5	2.160	30	-1.32	.72	3		
FT SUPPLY DAM	3304	2	66.6	30	-3.8	94.	23	34.	16	63.0	41.0	111.5	-72.5	1.773	30	-.54	.94	25		
FREEDOM	3358	2	66.4	30	-6.3	98.	23	28.	16	69.5	55.5	112.0	-133.0	2.220	30	-.37	1.19	25		
GREAT SALT PLNS	3740	2	68.3	30	-3.8	97.	23	37.	16	47.5	30.5	145.0	-85.0	1.993	30	-1.34	.96	25		
HARDY	3909	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.424	30	*****	2.07	24		
HELENA 1 SSE	4019	2	67.9	30	-3.6	95.	23	39.	16	43.5	24.5	131.5	-82.5	2.033	30	-1.20	1.05	3		
JEFFERSON	4573	2	70.0	30	-3.3	98.	22	38.	15	30.5	19.5	179.5	-80.5	2.210	30	-1.48	.66	24		
LAMONT	5013	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.830	30	*****	.96	25		
MEDFORD	5768	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.650	30	*****	.80	24		
MORRISON	6065	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.200	30	*****	1.65	14		
MUTUAL	6139	2	67.6	30	-3.6	98.	23	35.	16	53.5	34.5	131.0	-74.0	1.740	30	-.91	1.01	8		
NEWKIRK	6278	2	68.8	30	-3.9	92.	22	41.	27	40.5	26.5	155.0	-90.0	5.090	30	.82	1.72	25		
ORIENTA	6751	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.360	30	-1.70	.56	3		
PERRY	7012	2	73.5	30	-.1	94.	22	47.	27	6.0	-8.0	260.0	-12.0	6.080	30	1.70	2.30	14		
PONCA CITY FAA	7201	2	70.3	30	-1.8	94.	22	43.	15	25.0	2.0	182.5	-53.5	3.253	30	-1.09	1.02	13		
RED ROCK 1 NNE	7505	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.920	30	1.69	2.64	14		
WAYNOKA	9404	2	69.4	30	-3.5	97.	22	33.	15	36.5	22.5	168.0	-83.0	2.080	30	-.49	1.00	25		
WOODWARD	9760	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.381	30	1.04	1.62	3		

SEPTEMBER 1993 SUMMARY FOR NORTHEAST DIVISION (CD3)

NAME	ID	CD	DEV				HEAT				COOL				DEV			
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	DEG DAY	FROM NORM	DEG DAY	DEG DAY	FROM NORM	TOT PPT	NUM OBS	FROM NORM	MAX 24-HR	DAY	
BARNSDALL	535	3	67.9	30	-4.9	92.	2	39.	27	48.0	24.0	134.5	-123.5	6.251	30	.64	1.78	14
BARTLESVILLE 2W	548	3	68.5	30	-4.3	94.	2	40.	17	45.5	29.5	149.5	-100.5	7.621	30	3.05	3.17	25
BIXBY	782	3	68.1	30	-3.4	92.	3	42.	16	49.5	28.5	142.0	-74.0	8.580	30	3.87	4.17	14
BURBANK	1256	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.751	30	4.09	4.06	13
CHELSEA 4 S	1717	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.590	30	*****	3.77	14
CLAREMORE	1828	3	67.1	30	-4.9	92.	3	41.	27	59.5	35.5	121.5	-112.5	5.210	30	.76	3.25	14
CLEVELAND 5 WSW	1902	3	69.8	30	*****	92.	2	41.	15	32.5	*****	175.0	*****	4.680	30	*****	1.69	14
FORAKER	3250	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.880	30	4.04	3.78	13
HOLLOW	4258	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	13.560	30	8.53	6.50	25
HOMINY	4289	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.201	30	.08	1.87	14
HULAH DAM	4393	3	66.0	21	*****	92.	23	40.	15	56.5	*****	78.5	*****	6.750	30	2.21	2.72	25
JAY TOWER	4567	3	66.7	30	*****	92.	3	40.	27	70.5	*****	122.5	*****	11.490	30	*****	6.40	14
KANSAS 1 ESE	4672	3	68.7	30	-2.9	92.	2	41.	27	43.0	22.0	155.0	-64.0	8.623	30	3.18	4.55	14
KEYSTONE DAM	4812	3	67.4	30	-4.1	90.	23	41.	16	48.5	25.5	121.0	-97.0	6.721	30	1.95	1.84	14
LENAPAH	5118	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.860	30	*****	3.16	25
MANNFORD 6 NW	5522	3	69.5	30	-3.1	94.	2	40.	27	42.0	17.0	176.5	-76.5	4.470	30	-.09	1.45	14
MARAMEC	5540	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.570	30	-1.12	1.52	14
MIAMI	5855	3	65.8	30	-5.3	92.	13	36.	15	80.5	49.5	103.0	-108.0	13.270	30	8.20	6.00	25
NOWATA	6485	3	68.2	30	-4.2	92.	12	41.	14	55.0	35.0	151.5	-90.5	8.771	30	3.42	5.77	25
ONETA 1 WNW	6713	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	11.410	30	*****	6.72	14
PAWHUSKA	6935	3	68.4	30	-3.9	92.	2	39.	15	47.0	26.0	150.0	-90.0	8.611	30	3.68	4.51	25
PAWNEE	6940	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.230	30	-.81	1.18	14
PRYOR 6 N	7309	3	66.6	30	-4.6	92.	3	41.	27	65.5	36.5	113.5	-101.5	9.151	30	4.40	4.44	14
RALSTON	7390	3	68.4	30	-4.4	92.	2	39.	15	41.0	22.0	143.5	-109.5	5.050	30	.38	1.40	13
RAMONA 4 N	7394	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.352	30	*****	3.22	26
SKIATOOK	8258	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.070	30	1.22	1.88	14
SPAVINAW	8380	3	71.3	30	-2.4	90.	3	43.	27	24.5	12.5	212.5	-60.5	8.482	30	3.70	5.00	14
TULSA WSO APT	8992	3	69.3	30	-4.0	93.	2	42.	15	40.5	20.5	170.0	-99.0	6.871	30	2.17	3.17	14
UPPER SPAVINAW	9101	3	72.1	18	*****	92.	2	40.	15	18.5	*****	146.5	*****	9.290	30	*****	6.10	14
VINITA 2 N	9203	3	67.5	26	*****	91.	12	39.	17	50.0	*****	115.5	*****	9.480	29	*****	4.80	14
WAGONER	9247	3	70.1	30	-3.3	92.	2	41.	15	33.0	19.0	186.0	-80.0	11.772	30	7.21	6.42	14
WANN	9298	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.111	30	*****	3.82	25
WYONOA	9792	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.983	30	*****	1.70	14

SEPTEMBER 1993 SUMMARY FOR WEST CENTRAL DIVISION (CD4)

NAME	ID	CD	DEV				HEAT				COOL				DEV			
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	DEG DAY	FROM NORM	DEG DAY	DEG DAY	FROM NORM	TOT PPT	NUM OBS	FROM NORM	MAX 24-HR	DAY	
CANTON DAM	1445	4	67.6	30	-4.3	95.	23	38.	16	45.0	29.0	121.5	-101.5	1.990	30	-1.19	.58	25
CHEYENNE	1738	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.820	30	-2.14	.56	25
CLINTON	1909	4	71.1	30	-2.8	95.	22	38.	15	22.5	9.5	205.5	-74.5	2.820	30	-.91	.78	3
COLONY	2039	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.841	30	*****	.53	3
CORDELL	2125	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.442	30	-2.17	.87	3
ELK CITY 1 E	2849	4	70.9	30	-1.3	94.	22	39.	15	23.0	10.0	199.5	-29.5	1.231	30	-2.05	.76	3
ERICK 4 E	2944	4	70.4	30	-2.0	97.	22	35.	15	26.0	13.0	188.5	-46.5	.682	30	-2.54	.64	8
GEARY	3497	4	71.1	30	-1.6	93.	22	46.	16	18.0	2.0	201.0	-46.0	3.130	30	-.67	1.36	8
HAMMON 1 NNE	3871	4	66.1	21	*****	96.	23	30.	15	56.0	*****	79.0	*****	.840	30	-2.25	.38	3
LEEDEY	5090	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.300	30	-.41	1.40	8
MACKIE 4 NNW	5463	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.640	30	*****	.64	25
MORAVIA 2 NNE	6035	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.520	30	-1.89	1.10	8
OKEENE	6629	4	70.7	30	-3.0	96.	22	38.	15	24.5	11.5	195.5	-78.5	1.670	30	-2.02	.84	25
RETROP	7565	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.710	30	*****	.80	8
REYDON	7579	4	71.5	30	.7	97.	23	34.	15	20.0	2.0	214.5	22.5	.672	30	-2.36	.42	25
SAYRE	7952	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.610	30	-2.43	.19	19
SWEETWATER 2 E	8652	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.201	30	*****	1.10	7
TALOGA	8708	4	69.5	30	-2.6	97.	22	33.	15	35.5	21.5	171.5	-55.5	3.432	30	.46	1.28	25
THOMAS	8815	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.690	30	*****	.71	2
VICI	9172	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.781	30	-.86	.72	25
WATONGA	9364	4	70.0	30	-2.7	94.	22	39.	15	29.0	13.0	180.0	-67.0	2.853	30	-.52	.85	8
WEATHERFORD	9422	4	69.6	30	-2.5	95.	23	40.	16	27.5	9.5	166.0	-65.0	2.003	30	-1.74	.52	3

SEPTEMBER 1993 SUMMARY FOR CENTRAL DIVISION (CD5)

NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	DEV	MAX	DAY
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	FROM	DEG	FROM	FROM	FROM					
			TEMP	OBS	NORM	TEMP	DAY	TEMP	DAY	DAY	NORM	DAY	NORM	DAY	NORM	PPT	OBS	NORM	24-HR	DAY
AMBER	200	5	****	0	****	****	0	****	0	****	****	****	****	****	****	4.430	30	****	1.38	14
ARCADIA	288	5	****	0	****	****	0	****	0	****	****	****	****	****	****	4.320	31	****	2.50	14
TINKER AFB	325	5	****	0	****	****	0	****	0	****	****	****	****	****	****	6.443	29	****	2.60	8
BLANCHARD 2 SSW	830	5	72.0	30	-2.0	95.	2	43.	15	22.0	11.0	232.0	-49.0	****	6.741	30	2.58	2.88	14	
BRISTOW	1144	5	70.1	30	-2.9	93.	2	41.	16	30.5	11.5	183.5	-75.5	****	8.422	30	3.78	2.60	8	
CHANDLER	1684	5	71.2	26	****	93.	2	43.	16	17.5	****	178.0	****	****	8.431	30	4.18	3.13	8	
CHICKASHA EX ST	1750	5	71.1	30	-2.5	95.	2	42.	16	26.0	14.0	208.0	-62.0	****	4.892	30	1.09	1.43	14	
COX CITY 1 E	2196	5	****	0	****	****	0	****	0	****	****	****	****	****	5.720	30	****	2.25	14	
CRESCENT	2242	5	****	0	****	****	0	****	0	****	****	****	****	****	6.630	31	****	3.47	13	
CUSHING	2318	5	68.5	29	-4.0	92.	4	43.	16	37.5	22.5	139.0	-101.0	****	5.960	28	****	2.00	14	
EL RENO 1 N	2818	5	70.8	30	-2.0	92.	22	43.	15	26.0	13.0	201.5	-45.5	****	4.820	30	.69	1.67	14	
GUTHRIE	3821	5	71.8	30	-2.4	96.	3	42.	15	24.5	10.5	227.5	-62.5	****	7.520	30	3.21	3.70	14	
HENNESSEY 4 ESE	4055	5	69.5	29	-3.7	97.	11	44.	16	30.5	18.5	162.0	-96.0	****	2.891	30	-1.17	.86	25	
INGALLS	4489	5	****	0	****	****	0	****	0	****	****	****	****	****	3.910	30	****	1.41	14	
KINGFISHER 2 SE	4861	5	69.6	30	-4.3	94.	2	42.	15	30.0	20.0	167.0	-110.0	****	5.371	30	1.25	1.57	13	
KONAWA	4915	5	****	0	****	****	0	****	0	****	****	****	****	****	10.480	30	6.04	6.10	14	
MARSHALL	5589	5	****	0	****	****	0	****	0	****	****	****	****	****	3.610	30	-.22	1.05	13	
MEEKER 4 W	5779	5	68.9	28	****	90.	2	42.	16	38.5	****	148.0	****	****	6.160	30	1.87	1.72	13	
MULHALL	6110	5	****	0	****	****	0	****	0	****	****	****	****	****	5.630	30	****	1.89	13	
NORMAN 3 S	6386	5	71.0	30	-3.0	96.	2	41.	16	26.5	16.5	205.5	-74.5	****	6.222	30	2.13	2.39	14	
OILTON 2 SE	6616	5	****	0	****	****	0	****	0	****	****	****	****	****	2.820	22	****	1.06	2	
OKEMAH	6638	5	71.6	30	-1.7	94.	2	44.	15	22.0	7.0	219.5	-44.5	****	13.650	30	9.39	6.68	14	
OKLAHOMA CTY WS	6661	5	69.7	30	-3.3	94.	2	44.	16	28.5	13.5	170.5	-84.5	****	7.051	30	3.21	3.16	8	
PERKINS	7003	5	****	0	****	****	0	****	0	****	****	****	****	****	5.550	30	1.15	2.00	14	
PIEDMONT	7068	5	****	0	****	****	0	****	0	****	****	****	****	****	6.850	30	****	2.65	14	
PRAGUE	7264	5	****	0	****	****	0	****	0	****	****	****	****	****	4.930	30	.45	1.80	8	
PURCELL 5 SW	7327	5	72.2	30	-2.0	94.	2	40.	15	18.5	5.5	234.5	-54.5	****	4.772	30	.41	2.00	13	
SEMINOLE	8042	5	72.3	30	-2.5	94.	3	43.	16	19.5	10.5	237.5	-65.5	****	6.490	30	2.10	1.96	25	
SHAWNEE	8110	5	****	0	****	****	0	****	0	****	****	****	****	****	6.740	30	2.52	2.34	14	
STELLA	8479	5	****	0	****	****	0	****	0	****	****	****	****	****	7.540	30	****	2.77	8	
STILLWATER 2 W	8501	5	68.1	30	-4.0	93.	3	39.	16	45.5	28.5	138.0	-92.0	****	4.670	30	.38	1.91	14	
STROUD 1 N	8563	5	****	0	****	****	0	****	0	****	****	****	****	****	7.951	30	****	2.65	20	
TECUMSEH	8751	5	****	0	****	****	0	****	0	****	****	****	****	****	8.980	30	****	2.35	14	
TROUSDALE	8960	5	****	0	****	****	0	****	0	****	****	****	****	****	8.190	30	****	4.04	4	
UNION CITY 1 SE	9086	5	****	0	****	****	0	****	0	****	****	****	****	****	4.781	30	.55	1.38	13	
WELTY 1 SSE	9479	5	****	0	****	****	0	****	0	****	****	****	****	****	10.172	30	****	4.00	8	
WEWOKA	9575	5	****	0	****	****	0	****	0	****	****	****	****	****	11.750	30	7.43	4.96	14	

SEPTEMBER 1993 SUMMARY FOR EAST CENTRAL DIVISION (CD6)

NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	DEV	MAX	DAY
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	FROM	DEG	FROM	FROM	FROM					
			TEMP	OBS	NORM	TEMP	DAY	TEMP	DAY	DAY	NORM	DAY	NORM	DAY	NORM	PPT	OBS	NORM	24-HR	DAY
ASHLAND	364	6	****	0	****	****	0	****	0	****	****	****	****	****	****	11.600	30	****	5.90	14
BEGGS	631	6	****	0	****	****	0	****	0	****	****	****	****	****	****	10.300	30	****	4.72	14
BOYNTON	1027	6	****	0	****	****	0	****	0	****	****	****	****	****	****	12.092	30	****	8.20	14
CALVIN	1391	6	****	0	****	****	0	****	0	****	****	****	****	****	****	12.470	30	8.03	7.53	13
CHECOTAH	1711	6	****	0	****	****	0	****	0	****	****	****	****	****	****	13.311	30	8.43	6.70	14
CLAYTON 14 WNW	1858	6	****	0	****	****	0	****	0	****	****	****	****	****	****	8.970	30	****	3.77	14
DEWAR 2 NE	2485	6	****	0	****	****	0	****	0	****	****	****	****	****	****	15.110	30	10.57	7.10	14
DUSTIN	2690	6	****	0	****	****	0	****	0	****	****	****	****	****	****	15.480	30	****	7.94	12
EUFULA	2993	6	72.6	29	-2.1	95.	2	47.	15	18.5	8.5	239.0	-62.0	****	7.010	30	2.44	2.00	14	
HANNA	3884	6	71.0	30	-2.6	92.	3	43.	16	27.5	15.5	208.0	-62.0	****	14.311	30	9.73	7.57	14	
HARTSHORNE	3946	6	****	0	****	****	0	****	0	****	****	****	****	****	****	8.810	30	****	4.35	14
HASKELL	3956	6	****	0	****	****	0	****	0	****	****	****	****	****	****	10.650	30	6.26	5.85	14
HOLDENVILLE	4235	6	71.1	30	-2.7	93.	2	42.	16	28.0	18.0	211.5	-62.5	****	13.450	30	9.38	6.76	14	
LAKE EUFAULA	4975	6	69.6	28	****	98.	3	41.	16	36.5	****	166.0	****	****	9.520	26	****	3.93	14	
LYONS 2 N	5437	6	****	0	****	****	0	****	0	****	****	****	****	****	****	10.561	30	5.74	5.04	14
MARBLE CITY	5546	6	****	0	****	****	0	****	0	****	****	****	****	****	****	10.043	30	****	4.10	14
MCALESTER FAA	5664	6	73.4	30	-.3	97.	2	45.	27	22.5	6.5	276.0	-1.0	****	8.323	30	3.46	3.51	14	
MCCURTAIN 1 SE	5693	6	72.3	30	-1.7	95.	2	45.	17	25.0	11.0	243.5	-40.5	****	8.040	30	3.28	2.30	14	
MUSKOGEE	6130	6	70.9	30	-2.6	93.	2	43.	15	32.5	17.5	211.0	-59.0	****	11.570	30	7.06	7.47	13	
OKMULGEE W W	6670	6	67.4	30	-4.5	92.	3	42.	17	58.5	37.5	132.0	-96.0	****	11.031	30	7.12	6.87	14	
OKTAHA 2 NE	6678	6	****	0	****	****	0	****	0	****	****	****	****	****	****	11.180	30	****	6.54	14
QUINTON	7372	6	****	0	****	****	0	****	0	****	****	****	****	****	****	9.701	30	5.12	4.60	14
SALLISAW 2 NE	7862	6	71.8	30	-2.0	94.	2	43.	27	14.0	3.0	219.0	-56.0	****	6.501	30	1.99	2.96	14	
SCIPPIO	7979	6	****	0	****	****	0	****	0	****	****	****	****	****	****	13.090	30	****	7.10	14
SCRAPER	7993	6	****	0	****	****	0	****	0	****	****	****	****	****	****	10.270	30	****	6.10	14
TAHLEQUAH	8677	6	69.8	30	-2.7	92.	2	38.	15	40.0	13.0	185.0	-67.0	****	9.900	30	4.91	5.80	14	
WEBBERS FALLS	9445	6	69.4	30	-3.4	98.	3	42.	16	49.0	33.0	182.0	-68.0	****	10.081	30	5.47	4.50	14	
WESTVILLE	9523	6	****	0	****	****	0	****	0	****	****	****	****	****	****	10.462	30	****	6.42	14
WETUMKA 3 NE	9571	6	****	0	****	****	0	****	0	****	****	****	****	****	****	13.300	30	8.72	7.60	14

SEPTEMBER 1993 SUMMARY FOR SOUTHWEST DIVISION (CD7)

NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	DEV	MAX	DAY
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	FROM	DEG	FROM	FROM	NORM					
ALTUS IRR STA	179	7	72.7	30	-2.4	95.	22	41.	15	16.0	10.0	248.0	-61.0	3.290	30	-.15	1.01	7		
ALTUS DAM	184	7	70.0	30	-4.0	96.	23	39.	28	32.0	24.0	182.5	-95.5	2.170	30	-1.26	.75	8		
ANADARKO	224	7	69.9	30	-3.8	93.	2	40.	15	33.5	20.5	181.0	-93.0	3.282	30	-.43	1.13	3		
APACHE	260	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.230	30	.48	1.20	12		
ALTUS AFB	447	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.312	29	*****	.80	13		
CARNEGIE 2 ENE	1504	7	71.8	30	-2.1	94.	22	39.	15	21.0	9.0	224.5	-54.5	2.140	30	-1.89	1.12	13		
CHATTANOOGA	1706	7	74.6	30	-.7	97.	3	43.	15	15.0	8.0	303.0	-13.0	3.570	30	-.10	1.21	14		
DUNCAN 11 W	2668	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.810	30	*****	1.51	13		
FREDERICK	3353	7	70.9	30	-3.6	92.	24	43.	15	23.5	16.5	201.5	-90.5	2.920	30	-.66	.85	14		
GRANDFIELD 4 NW	3709	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.150	30	.12	1.52	1		
HEADRICK	3998	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.110	30	*****	1.07	24		
HOBART FAA APT	4204	7	71.6	30	-2.3	94.	21	44.	15	23.0	13.0	219.5	-57.5	4.612	30	1.06	1.62	14		
HOLLIS	4249	7	72.4	30	-2.1	97.	22	41.	15	16.0	10.0	237.0	-54.0	1.301	30	-1.83	.54	13		
LAWTON	5063	7	71.4	30	-2.6	96.	3	43.	15	25.5	17.5	216.5	-61.5	4.750	30	1.09	1.76	20		
FORT SILL	5068	7	72.7	30	****	97.	2	45.	15	18.0	*****	250.0	*****	4.895	30	*****	.98	13		
LOOKEBA 2 ENE	5329	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.002	30	-.35	2.40	13		
MANGUM RES STA	5509	7	71.8	30	-2.8	94.	22	39.	15	17.5	11.5	223.0	-74.0	3.380	30	.00	1.59	8		
RANDLETT 9 E	7403	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.070	30	*****	2.28	14		
ROOSEVELT	7727	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.180	30	-1.15	.86	8		
SEDAN	8016	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.801	30	*****	.57	16		
SNYDER	8299	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.563	30	-.01	.96	8		
VINSON 3 WNW	9212	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.431	30	-2.77	.25	14		
WALTERS	9278	7	74.0	30	-1.5	97.	2	44.	16	14.5	5.5	284.5	-39.5	5.920	30	1.67	2.95	14		
WICHITA MT WLR	9629	7	69.2	30	-3.2	93.	3	37.	15	41.5	28.5	166.5	-68.5	3.240	30	-.79	1.02	25		
WILLOW	9668	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.441	30	*****	.90	8		

SEPTEMBER 1993 SUMMARY FOR SOUTH CENTRAL DIVISION (CD8)

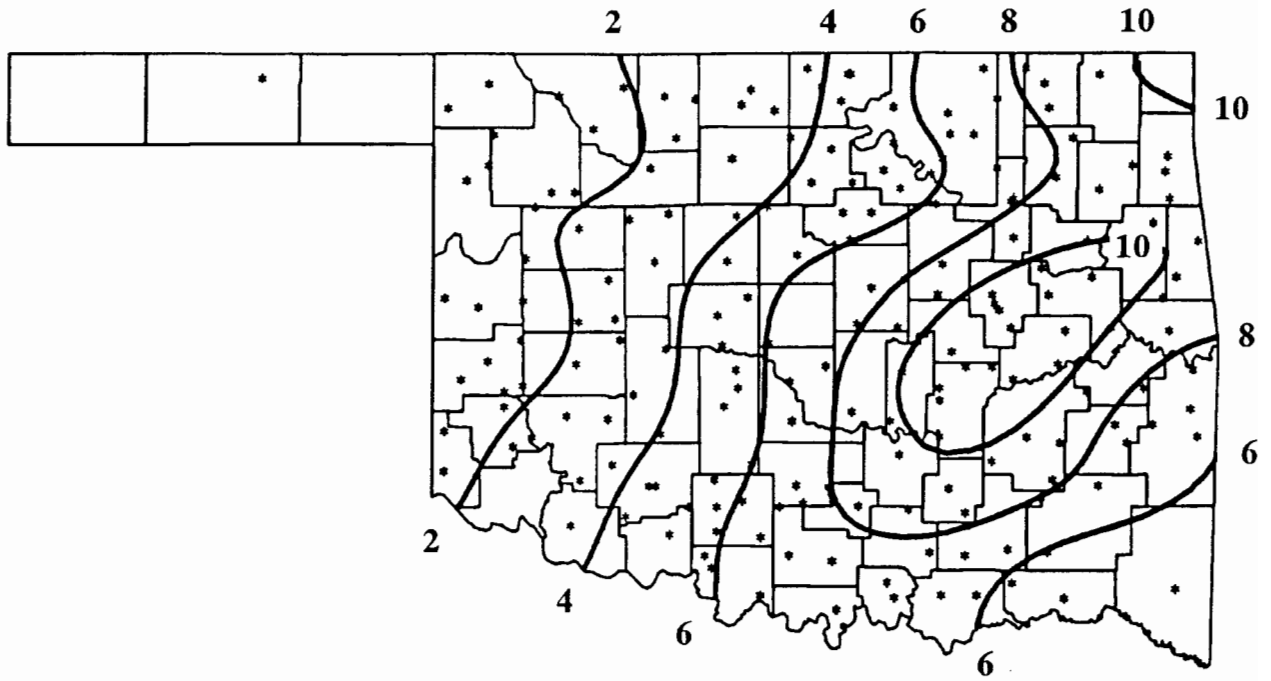
NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	DEV	MAX	DAY
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	FROM	DEG	FROM	FROM	NORM					
ADA	17	8	70.6	30	-3.3	92.	2	43.	15	28.5	20.5	195.0	-77.0	12.490	30	8.03	8.16	14		
ALLEN	147	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.860	30	*****	2.50	14		
ARDMORE	292	8	73.7	30	-2.5	93.	3	46.	15	13.0	8.0	272.5	-68.5	6.150	30	1.98	4.00	13		
ATOKA DAM	394	8	72.8	21	*****	99.	3	47.	16	21.0	*****	184.0	*****	8.470	21	*****	3.40	14		
BOKCHITO	917	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.940	30	*****	4.00	14		
CANEY	1437	8	73.1	30	****	97.	2	39.	16	26.0	*****	268.5	*****	6.970	30	*****	3.38	14		
CENTRAHOMA	1648	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	10.650	30	*****	5.00	14		
CHICKASAW NRA	1745	8	70.8	30	-2.8	92.	3	41.	16	37.5	23.5	212.5	-59.5	11.360	30	6.72	7.26	14		
COLEMAN	2011	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.430	30	*****	4.25	14		
COMANCHE	2054	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.460	30	2.98	3.25	14		
DAISY 4 ENE	2354	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.240	30	2.68	3.82	13		
DUNCAN	2660	8	71.8	30	-2.4	95.	3	45.	16	19.5	10.5	223.5	-61.5	6.100	30	1.69	3.05	14		
DURANT USDA	2678	8	71.8	30	-2.1	96.	3	42.	17	31.5	21.5	235.5	-41.5	6.150	30	.74	3.23	14		
ELMORE CITY	2872	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.810	30	*****	4.30	13		
FARRIS 3 WNW	3083	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.780	30	3.91	3.12	14		
GRADY	3688	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.920	30	*****	5.00	13		
HEALDTON	4001	8	72.9	30	-1.8	96.	2	41.	16	21.0	13.0	259.0	-40.0	7.750	30	3.21	4.88	14		
HENNEPIN	4052	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.661	30	*****	4.90	14		
KETCHUM RANCH	4780	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.140	30	*****	3.20	14		
KINGSTON	4865	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.330	30	3.55	4.10	14		
LEHIGH	5108	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	9.901	30	*****	3.50	14		
LINDSAY 2 W	5216	8	71.2	28	****	93.	3	40.	14	27.5	*****	201.5	*****	4.321	29	*****	1.98	14		
LOCO 6 SE	5247	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.480	30	*****	5.09	14		
MADILL	5468	8	73.2	29	-2.2	95.	3	43.	17	20.0	12.0	259.0	-61.0	6.250	30	1.43	4.02	12		
MARIETTA	5563	8	74.6	30	-.8	97.	2	45.	15	13.0	5.0	302.0	-18.0	6.730	30	2.54	4.70	14		
MARLOW 1 WSW	5581	8	72.7	29	-1.0	97.	2	42.	15	12.0	2.0	235.5	-35.5	4.410	30	.08	1.85	25		
MCGEE CREEK DAM	5713	8	72.0	30	****	98.	3	46.	15	27.0	*****	238.0	*****	9.050	30	*****	3.44	14		
PAULS VALLEY	6926	8	72.3	30	-2.3	94.	2	40.	16	20.5	11.5	239.0	-58.0	7.340	30	3.29	4.95	14		
PONTOTOC	7214	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.090	30	4.09	4.66	13		
TISHOMINGO NWLR	8884	8	71.8	19	****	97.	2	41.	16	24.5	*****	153.0	*****	7.710	22	*****	4.30	14		
TUSSY	9032	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.661	30	*****	2.15	14		
WAURIKA	9395	8	73.6	30	-2.1	98.	2	44.	16	15.5	15.5	274.5	-51.5	3.300	30	-.61	2.50	13		
WAURIKA DAM	9399	8	72.9	30	****	98.	3	46.	16	15.5	*****	254.0	*****	7.450	30	*****	5.60	14		

SEPTEMBER 1993 SUMMARY FOR SOUTHEAST DIVISION (CD9)

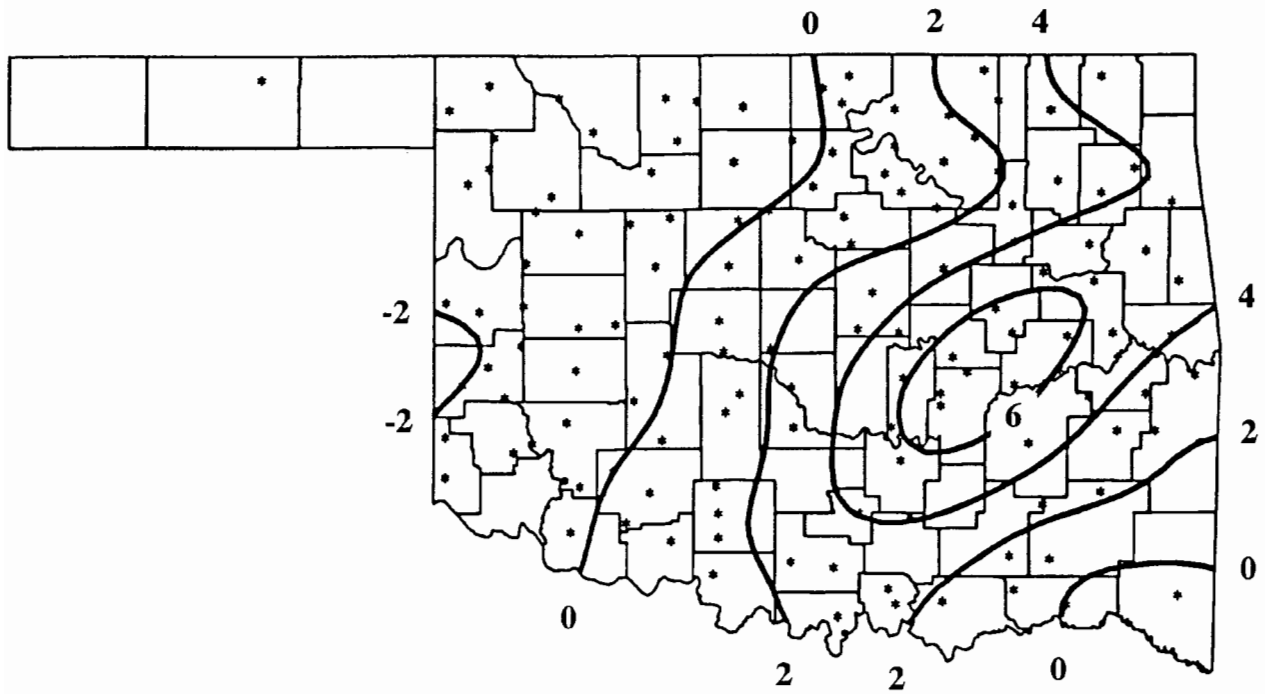
NAME	ID	CD	DEV				HEAT				COOL				DEV			
			MEAN	NUM	FROM	MAX	MIN	DEG	FROM	DEG	DEG	FROM	TOT	NUM	FROM	MAX		
			TEMP	OBS	NORM	TEMP	DAY	TEMP	DAY	DAY	NORM	DAY	NORM	PPT	OBS	NORM	24-HR	DAY
ANTLERS	256	9	72.4	24	*****	99.	2	45.	17	21.0	*****	199.0	*****	.600	30	-4.21	.60	3
BATTIEST 1 SSW	567	9	69.8	30	*****	97.	2	41.	17	37.5	*****	182.0	*****	4.260	30	*****	.92	3
BEAR MT TWR	584	9	73.5	30	-.9	99.	3	45.	16	22.0	14.0	277.0	-13.0	3.230	29	*****	1.69	14
BENGAL	670	9	*****	0	*****	*****	0	****	0	*****	*****	*****	*****	5.451	30	*****	1.99	14
BOSWELL 4 NNW	980	9	73.0	30	-1.5	98.	2	44.	17	21.5	12.5	261.0	-33.0	5.600	30	1.13	3.09	14
BROKEN BOW 1 N	1162	9	*****	0	*****	*****	0	****	0	*****	*****	*****	*****	2.870	30	-1.67	.55	15
BROKEN BOW DAM	1168	9	73.5	30	-.2	99.	3	46.	17	15.0	7.0	269.5	.5	3.681	28	*****	.85	25
CARNASAW TWR	1499	9	*****	0	*****	*****	0	****	0	*****	*****	*****	*****	3.370	30	-1.22	.76	15
CARTER TWR	1544	9	*****	0	*****	*****	0	****	0	*****	*****	*****	*****	4.480	30	-.31	.86	20
FANSHAW	3065	9	*****	0	*****	*****	0	****	0	*****	*****	*****	*****	5.820	30	1.14	1.40	14
HEAVENER 1 SE	4008	9	*****	0	*****	*****	0	****	0	*****	*****	*****	*****	5.050	30	.48	1.25	14
HEE MT TWR	4017	9	*****	0	*****	*****	0	****	0	*****	*****	*****	*****	4.632	30	.01	1.03	9
HUGO	4384	9	74.5	30	-.7	98.	21	46.	15	15.0	9.0	299.5	-12.5	3.251	30	-1.28	1.30	14
IDABEL	4451	9	74.1	30	.2	98.	3	46.	15	15.5	7.5	289.0	14.0	3.352	30	-.84	.75	26
POTEAU W W	7254	9	71.9	30	****	99.	3	41.	27	21.5	*****	229.0	*****	4.730	30	*****	1.40	13
SMITHVILLE 1 W	8285	9	69.3	30	-2.5	96.	2	42.	27	34.0	13.0	164.5	-60.5	5.902	30	1.33	2.00	15
SPIRO	8416	9	*****	0	*****	*****	0	****	0	*****	*****	*****	*****	6.890	30	2.85	1.72	20
TUSKAHOMA	9023	9	72.5	30	-1.7	98.	2	42.	15	25.0	12.0	250.0	-39.0	8.951	30	3.77	3.75	14
VALLIANT 3 W	9118	9	*****	0	*****	*****	0	****	0	*****	*****	*****	*****	3.430	30	-1.54	.85	14
WILBURTON 9 ENE9634	9		71.8	30	-1.1	96.	2	42.	16	24.5	9.5	228.5	-23.5	7.350	30	2.46	2.43	13

SEPTEMBER 1993 CLIMATE DIVISION SUMMARY

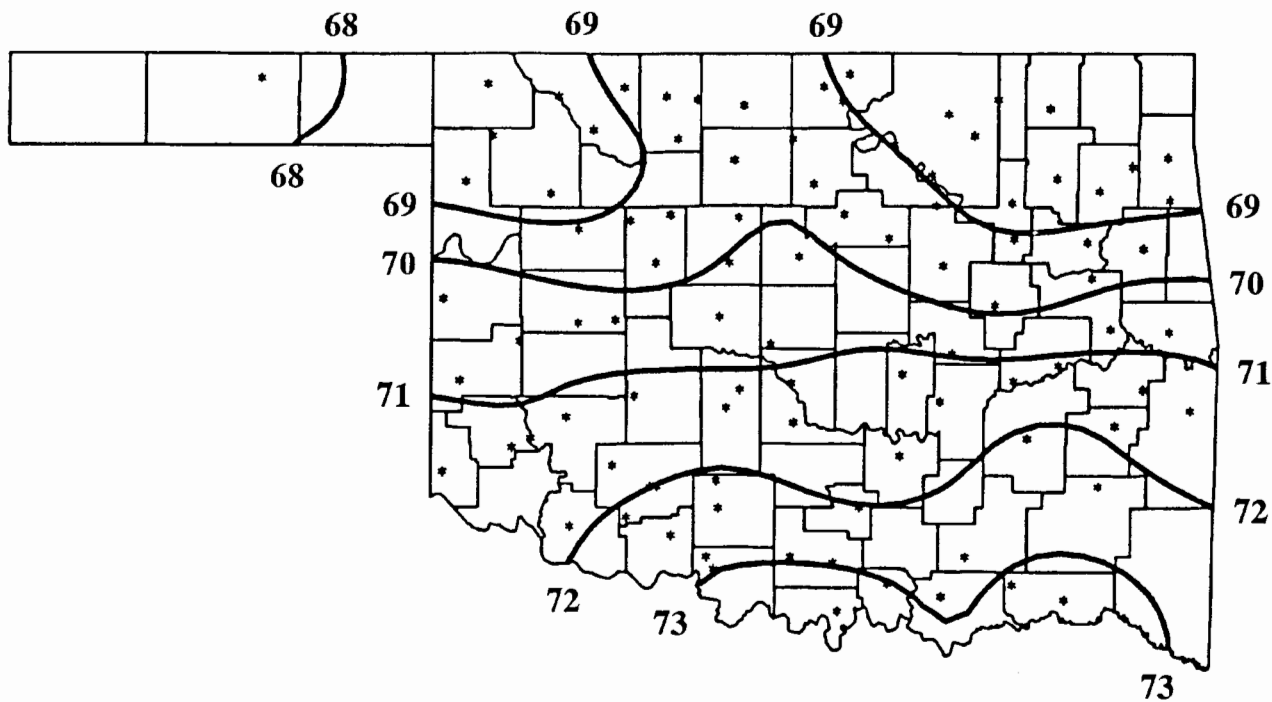
CLIMATE	MEAN	NUM	DEV				HEAT				COOL				DEV			
			FROM	MAX	MIN	DEGREE	FROM	DEGREE	FROM	DEGREE	FROM	TOT	NUM	FROM	MAX			
DIV	TEMP	STA	NORM	TEMP	DAY	TEMP	DAY	DAYS	NORM	DAYS	NORM	PPT	STA	NORM	24-HR	DAY		
1	67.7	10	-2.0	99.0	21	32.0	15	53.0	24.3	134.9	-35.5	1.27	12	-.81	1.21	8		
2	69.1	15	-3.4	98.0	23	28.0	16	39.4	23.2	162.4	-78.2	2.87	24	-.55	2.64	14		
3	68.3	17	-3.9	94.0	2	36.0	15	48.6	27.0	148.7	-89.3	7.79	32	2.92	6.72	14		
4	70.2	10	-2.2	97.0	22	30.0	15	27.1	12.0	184.4	-54.8	1.68	22	-1.59	1.40	8		
5	70.6	14	-2.8	97.0	11	39.0	16	27.7	14.1	194.7	-71.8	6.65	34	2.44	6.68	14		
6	71.0	10	-2.4	98.0	3	38.0	15	31.5	16.3	210.7	-57.4	10.99	28	6.42	8.20	14		
7	71.8	13	-2.5	97.0	2	37.0	15	22.8	14.2	226.0	-61.0	3.30	24	-.37	2.95	14		
8	72.6	14	-2.0	99.0	3	39.0	16	21.5	12.7	247.8	-48.7	7.43	30	2.87	8.16	14		
9	72.4	10	-1.5	99.0	3	41.0	27	23.1	12.3	245.0	-31.6	4.78	18	.11	3.75	14		



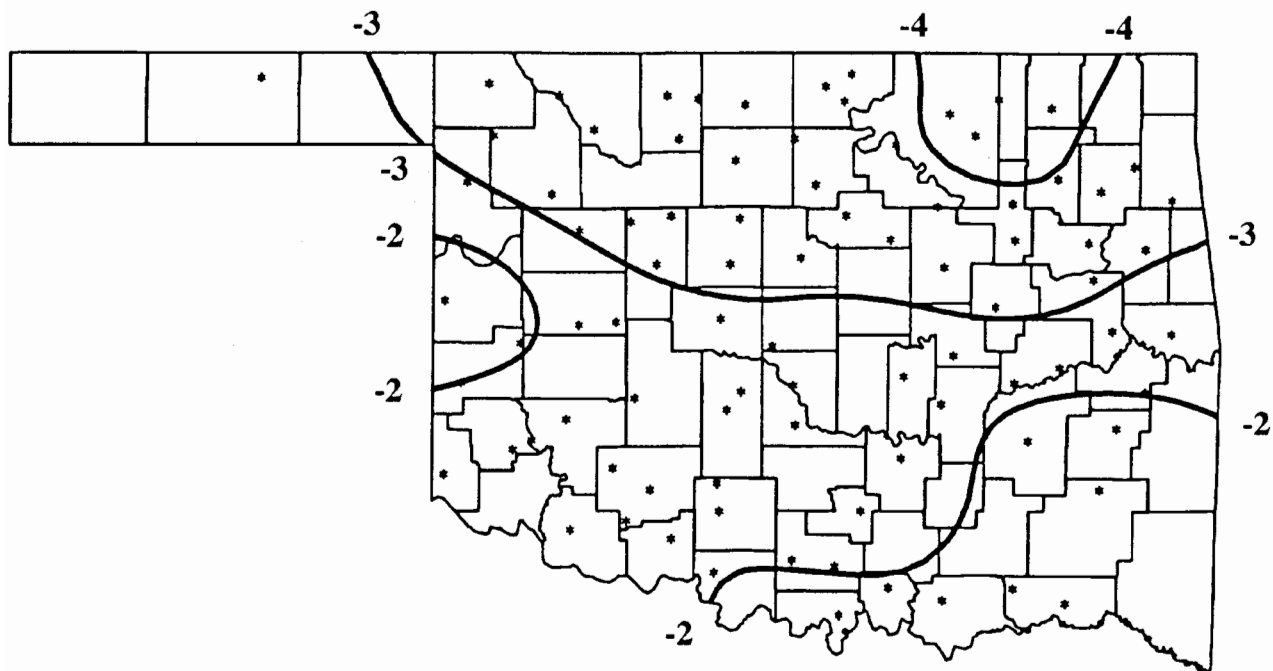
SEPTEMBER 1993 TOTAL PRECIPITATION
(Inches)



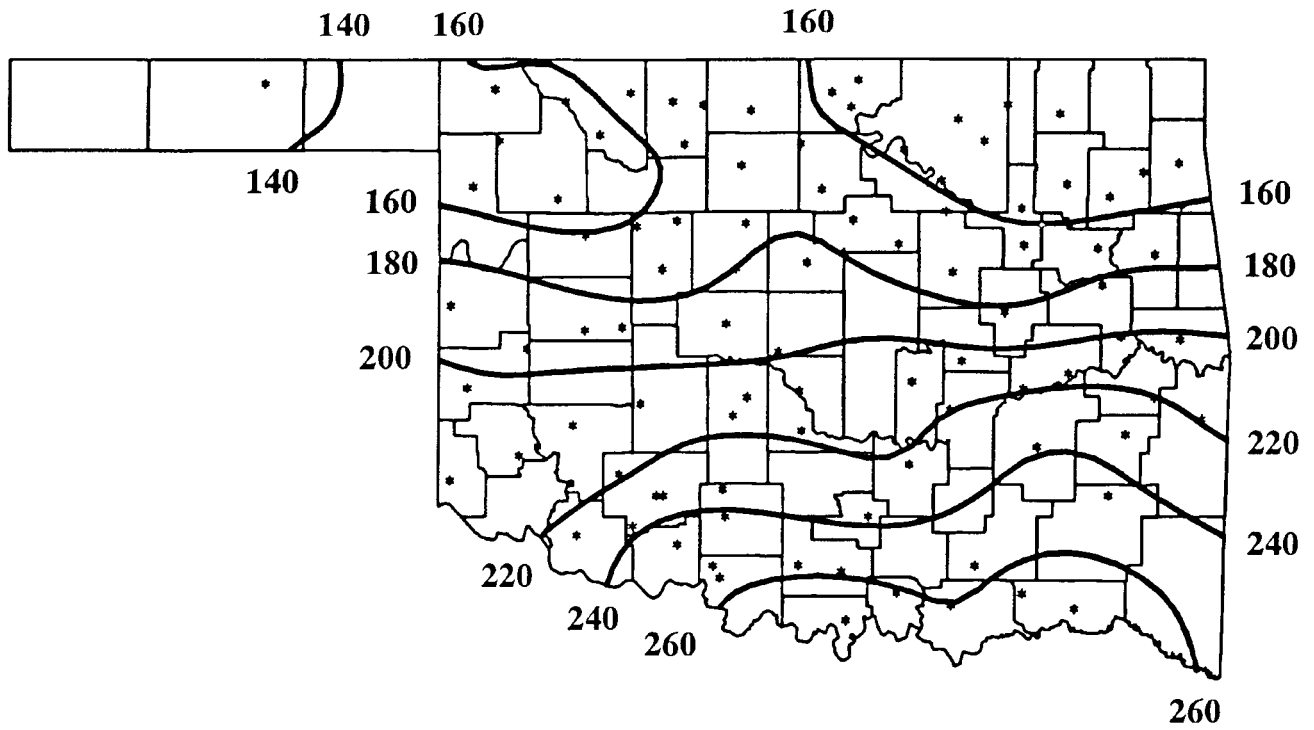
SEPTEMBER 1993 DEVIATION FROM NORMAL PRECIPITATION
(Inches)



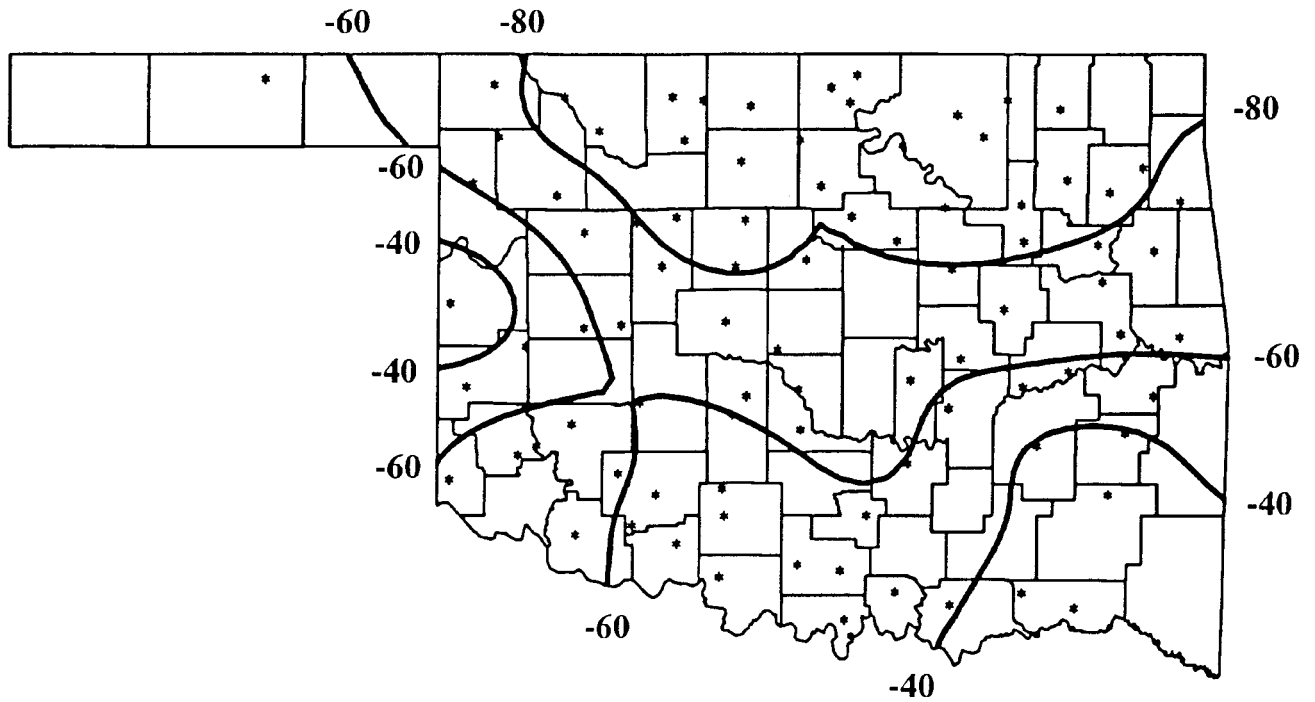
SEPTEMBER 1993 AVERAGE MONTHLY TEMPERATURES
(Degrees F)



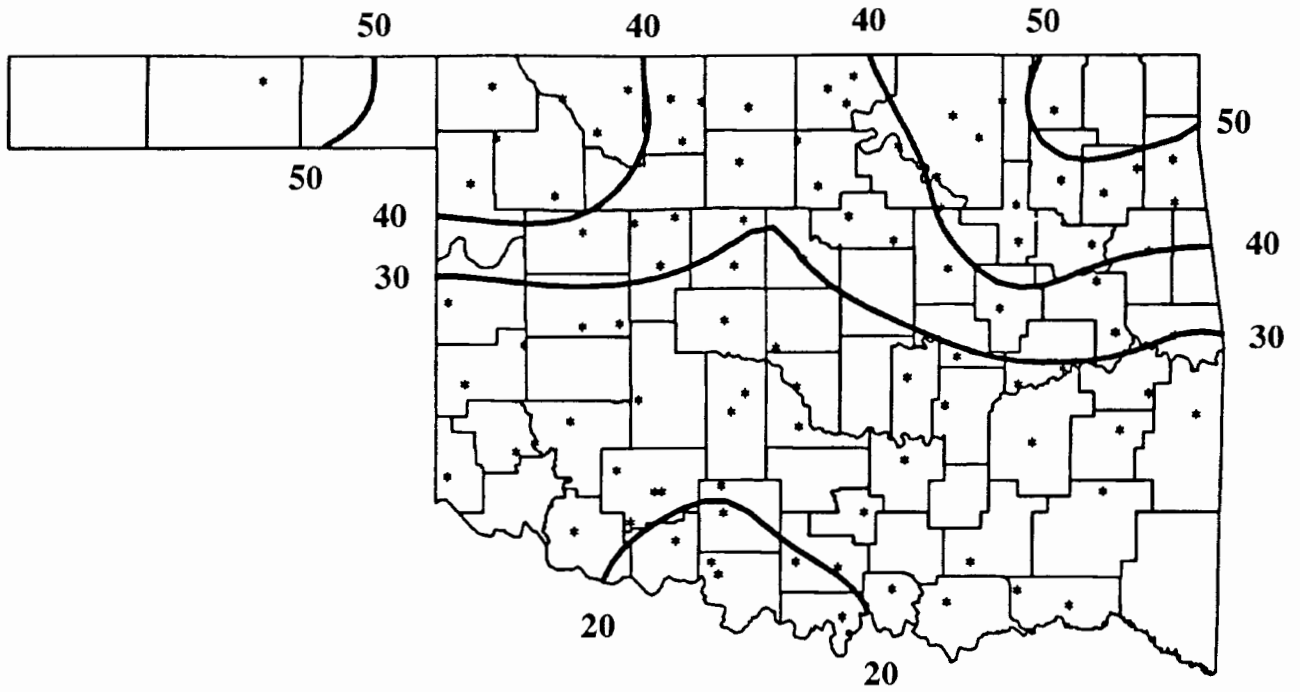
SEPTEMBER 1993 DEVIATION FROM NORMAL TEMPERATURES
(Degrees F)



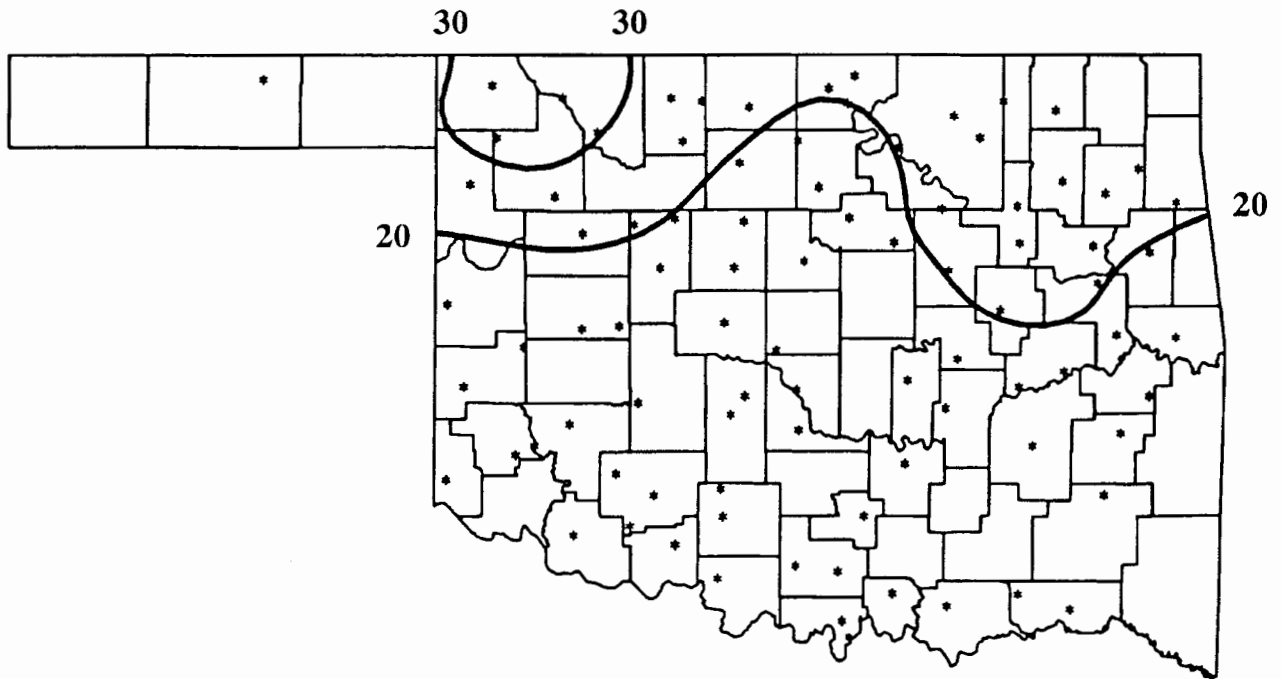
SEPTEMBER 1993 COOLING DEGREE DAYS



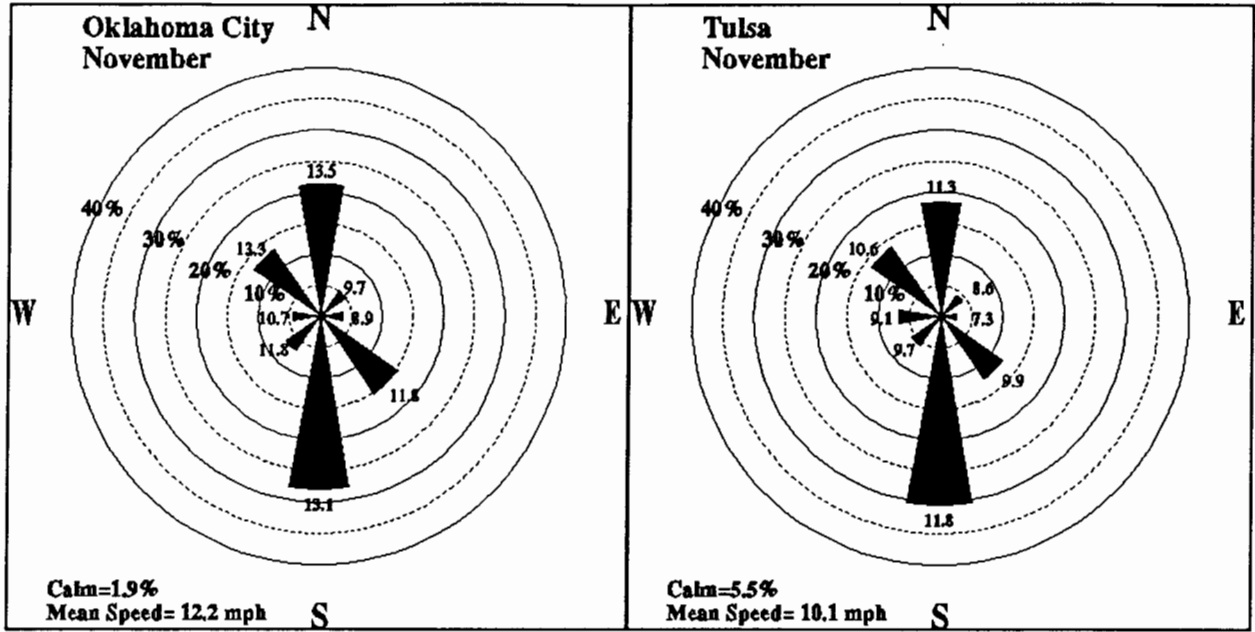
SEPTEMBER 1993 DEVIATION FROM NORMAL COOLING DEGREE DAYS



SEPTEMBER 1993 HEATING DEGREE DAYS



SEPTEMBER 1993 DEVIATION FROM NORMAL HEATING DEGREE DAYS



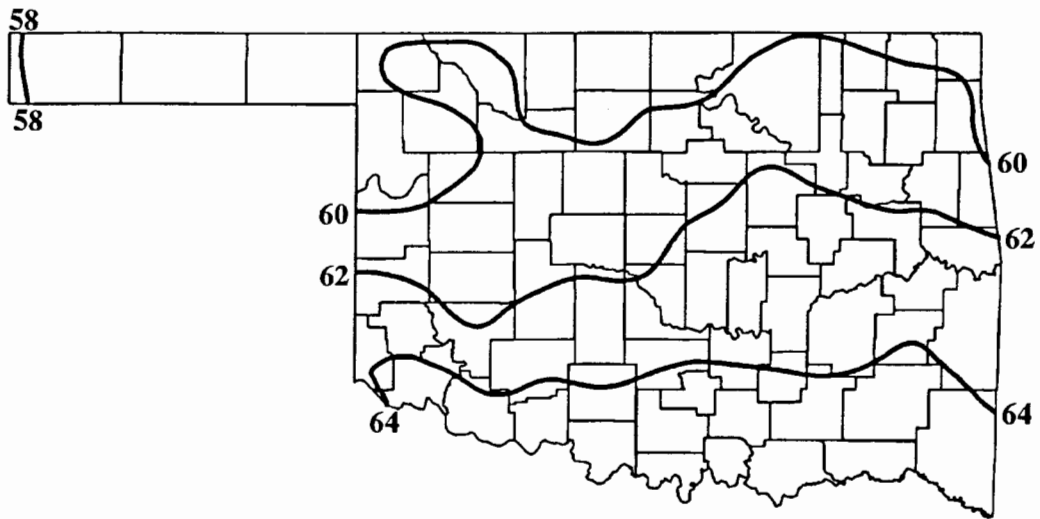
November Wind Roses for Oklahoma City and Tulsa. Percents represent the frequency of winds from each direction. The numbers at the ends of the bars indicate the average wind speed (miles per hour) from that direction.

NOVEMBER 1993 SUNRISE AND SUNSET

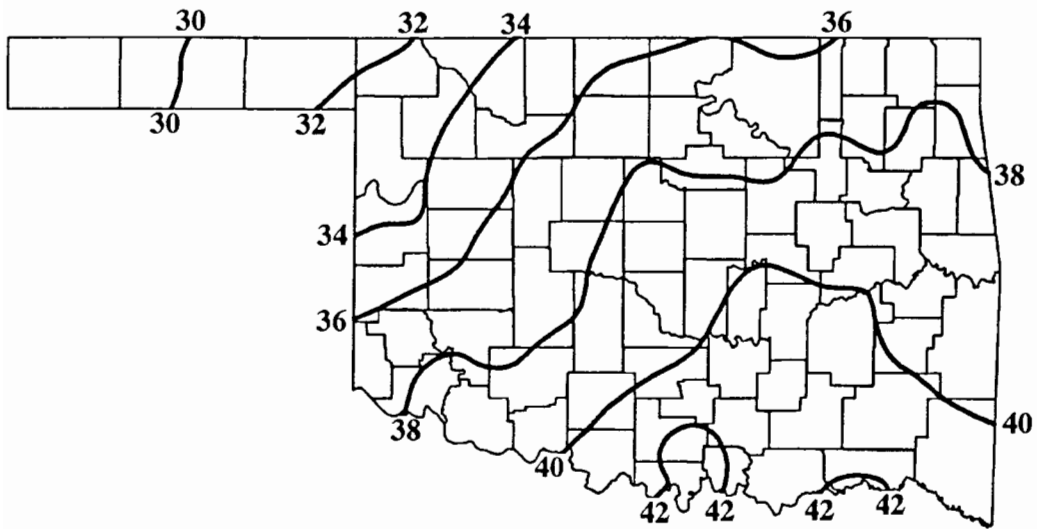
OKLAHOMA CITY

TULSA

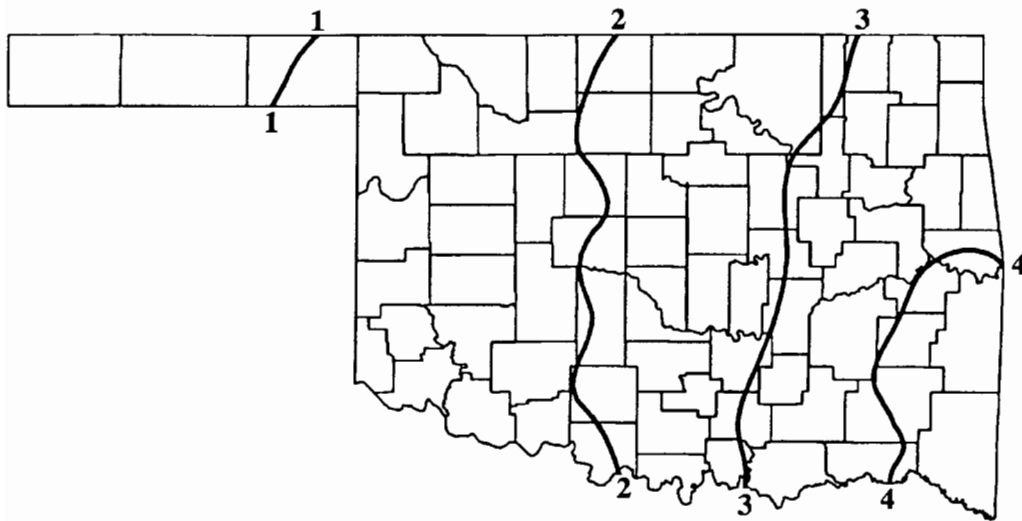
DATE	SUNRISE	SUNSET	DAYLIGHT	DATE	SUNRISE	SUNSET	DAYLIGHT
9311 1	6:51AM	5:38PM CST	10 hrs 47 mins	9311 1	6:45AM	5:30PM CST	10 hrs 45 mins
9311 2	6:52AM	5:37PM CST	10 hrs 45 mins	9311 2	6:46AM	5:29PM CST	10 hrs 43 mins
9311 3	6:52AM	5:36PM CST	10 hrs 43 mins	9311 3	6:47AM	5:28PM CST	10 hrs 41 mins
9311 4	6:53AM	5:35PM CST	10 hrs 41 mins	9311 4	6:48AM	5:27PM CST	10 hrs 39 mins
9311 5	6:54AM	5:34PM CST	10 hrs 39 mins	9311 5	6:49AM	5:26PM CST	10 hrs 37 mins
9311 6	6:55AM	5:33PM CST	10 hrs 38 mins	9311 6	6:50AM	5:25PM CST	10 hrs 35 mins
9311 7	6:56AM	5:32PM CST	10 hrs 36 mins	9311 7	6:51AM	5:24PM CST	10 hrs 33 mins
9311 8	6:57AM	5:31PM CST	10 hrs 34 mins	9311 8	6:52AM	5:23PM CST	10 hrs 31 mins
9311 9	6:58AM	5:31PM CST	10 hrs 32 mins	9311 9	6:53AM	5:23PM CST	10 hrs 30 mins
931110	6:59AM	5:30PM CST	10 hrs 31 mins	931110	6:54AM	5:22PM CST	10 hrs 28 mins
931111	7: 0AM	5:29PM CST	10 hrs 29 mins	931111	6:55AM	5:21PM CST	10 hrs 26 mins
931112	7: 1AM	5:29PM CST	10 hrs 27 mins	931112	6:56AM	5:20PM CST	10 hrs 24 mins
931113	7: 2AM	5:28PM CST	10 hrs 26 mins	931113	6:57AM	5:20PM CST	10 hrs 23 mins
931114	7: 3AM	5:27PM CST	10 hrs 24 mins	931114	6:58AM	5:19PM CST	10 hrs 21 mins
931115	7: 4AM	5:27PM CST	10 hrs 22 mins	931115	6:59AM	5:18PM CST	10 hrs 19 mins
931116	7: 5AM	5:26PM CST	10 hrs 21 mins	931116	7: 0AM	5:18PM CST	10 hrs 18 mins
931117	7: 6AM	5:25PM CST	10 hrs 19 mins	931117	7: 1AM	5:17PM CST	10 hrs 16 mins
931118	7: 7AM	5:25PM CST	10 hrs 18 mins	931118	7: 2AM	5:17PM CST	10 hrs 15 mins
931119	7: 8AM	5:24PM CST	10 hrs 16 mins	931119	7: 3AM	5:16PM CST	10 hrs 13 mins
931120	7: 9AM	5:24PM CST	10 hrs 15 mins	931120	7: 4AM	5:16PM CST	10 hrs 12 mins
931121	7:10AM	5:24PM CST	10 hrs 13 mins	931121	7: 5AM	5:15PM CST	10 hrs 10 mins
931122	7:11AM	5:23PM CST	10 hrs 12 mins	931122	7: 6AM	5:15PM CST	10 hrs 9 mins
931123	7:12AM	5:23PM CST	10 hrs 11 mins	931123	7: 7AM	5:14PM CST	10 hrs 7 mins
931124	7:13AM	5:22PM CST	10 hrs 9 mins	931124	7: 8AM	5:14PM CST	10 hrs 6 mins
931125	7:14AM	5:22PM CST	10 hrs 8 mins	931125	7: 9AM	5:14PM CST	10 hrs 5 mins
931126	7:15AM	5:22PM CST	10 hrs 7 mins	931126	7:10AM	5:13PM CST	10 hrs 3 mins
931127	7:16AM	5:22PM CST	10 hrs 6 mins	931127	7:11AM	5:13PM CST	10 hrs 2 mins
931128	7:17AM	5:21PM CST	10 hrs 5 mins	931128	7:12AM	5:13PM CST	10 hrs 1 mins
931129	7:18AM	5:21PM CST	10 hrs 4 mins	931129	7:13AM	5:12PM CST	10 hrs 0 mins
931130	7:18AM	5:21PM CST	10 hrs 2 mins	931130	7:13AM	5:12PM CST	9 hrs 59 mins



November Normal Daily Maximum Temperatures (°F)



November Normal Daily Minimum Temperatures (°F)



November Normal Monthly Precipitation (inches)

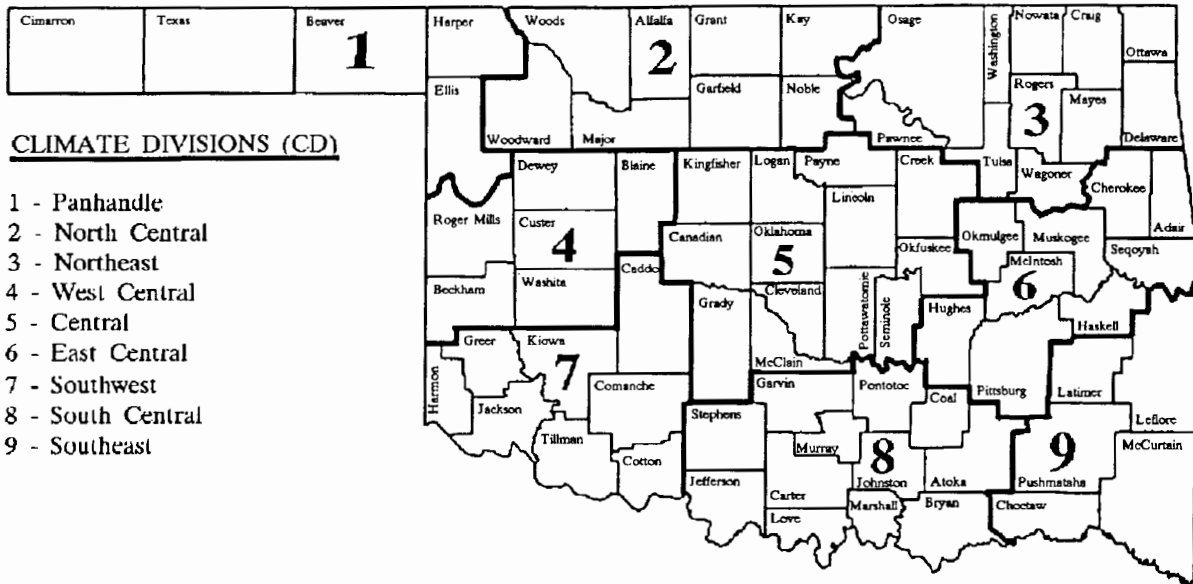
90-DAY NATIONAL WEATHER SERVICE OUTLOOK

(OCTOBER 1993 - DECEMBER 1993)

Precipitation - Greater Than Normal Statewide

Temperature - Above Normal Statewide

OKLAHOMA



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 the average temperature for the day exceeds 65 degrees. Daily values are summed to arrive at a monthly total. 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 the average temperature for the day is less than 65 degrees. Daily values are summed to give a monthly total. 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.

OKLAHOMA CITY CLIMATE CALENDAR

The data on this calendar are for Oklahoma City. Normal values are calculated for the period 1961-1990. Extremes are found for the period of record (1891-present).

November 1993

Normal 1		Normal 2		Normal 3		Normal 4		Normal 5		Normal 6		Normal 7	
67.4 max	Actual	63.4 max	Actual	62.1 max	Actual	63.2 max	Actual	62.0 max	Actual	63.4 max	Actual	63.4 max	Actual
45.3 min		42.6 min		40.8 min		41.1 min		41.3 min		41.4 min		41.3 min	
.05 ppt		.09 ppt		.10 ppt		.10 ppt		.05 ppt		.04 ppt		.02 ppt	
9 hdd		12 hdd		14 hdd		13 hdd		13 hdd		13 hdd		13 hdd	
1 cdd		0 cdd		0 cdd		0 cdd		0 cdd		0 cdd		0 cdd	
Highest Max	83-1916	Highest Max	83-1924	Highest Max	84-1909	Highest Max	83-1921	Highest Max	87-1891	Highest Max	85-1980	Highest Max	86-1980
Lowest Max	34-1951	Lowest Max	31-1951	Lowest Max	36-1936	Lowest Max	40-1990	Lowest Max	34-1951	Lowest Max	39-1959	Lowest Max	41-1953
Lowest Min	28-1912	Lowest Min	22-1965	Lowest Min	21-1939	Lowest Min	23-1935	Lowest Min	23-1951	Lowest Min	20-1959	Lowest Min	26-1959
Highest Min	65-1935	Highest Min	65-1938	Highest Min	61-1959	Highest Min	58-1916	Highest Min	64-1924	Highest Min	63-1945	Highest Min	62-1916
Greatest ppt	1.05-1981	Greatest ppt	1.51-1974	Greatest ppt	1.51-1964	Greatest ppt	2.17-1986	Greatest ppt	1.09-1946	Greatest ppt	2.14-1995	Greatest ppt	1.71-1920
Normal 8													
63.7 max	Actual	62.7 max	Actual	62.7 max	Actual	63.7 max	Actual	63.9 max	Actual	64.4 max	Actual	64.4 max	Actual
41.4 min		39.8 min		38.6 min		39.4 min		39.7 min		40.3 min		40.3 min	
.08 ppt		.02 ppt		.02 ppt		.03 ppt		.06 ppt		.06 ppt		.05 ppt	
13 hdd		14 hdd		15 hdd		14 hdd		13 hdd		13 hdd		14 hdd	
0 cdd		0 cdd		0 cdd		0 cdd		0 cdd		0 cdd		0 cdd	
Highest Max	87-1980	Highest Max	82-1968	Highest Max	81-1980	Highest Max	83-1911	Highest Max	79-1910	Highest Max	80-1967	Highest Max	79-1973
Lowest Max	39-1936	Lowest Max	37-1950	Lowest Max	33-1950	Lowest Max	33-1935	Lowest Max	29-1940	Lowest Max	28-1986	Lowest Max	29-1940
Lowest Min	21-1996	Lowest Min	25-1965	Lowest Min	20-1950	Lowest Min	17-1911	Lowest Min	14-1911	Lowest Min	12-1940	Lowest Min	14-1916
Highest Min	66-1966	Highest Min	61-1939	Highest Min	60-1982	Highest Min	61-1922	Highest Min	62-1902	Highest Min	61-1989	Highest Min	66-1987
Greatest ppt	1.42-1995	Greatest ppt	1.15-1977	Greatest ppt	1.17-1937	Greatest ppt	1.10-1988	Greatest ppt	1.18-1922	Greatest ppt	3.22-1909	Greatest ppt	1.56-1924
Normal 15													
61.8 max	Actual	58.5 max	Actual	59.0 max	Actual	58.4 max	Actual	59.7 max	Actual	59.0 max	Actual	59.0 max	Actual
40.2 min		38.9 min		36.6 min		38.1 min		37.1 min		35.5 min		35.7 min	
.11 ppt		.03 ppt		.08 ppt		.06 ppt		.11 ppt		.05 ppt		.02 ppt	
14 hdd		17 hdd		17 hdd		17 hdd		17 hdd		18 hdd		18 hdd	
0 cdd		0 cdd		0 cdd		0 cdd		0 cdd		0 cdd		0 cdd	
Highest Max	84-1903	Highest Max	82-1941	Highest Max	80-1896	Highest Max	80-1930	Highest Max	82-1998	Highest Max	78-1989	Highest Max	80-1927
Lowest Max	32-1932	Lowest Max	31-1937	Lowest Max	30-1903	Lowest Max	35-1903	Lowest Max	31-1937	Lowest Max	25-1906	Lowest Max	29-1926
Lowest Min	15-1940	Lowest Min	14-1932	Lowest Min	9-1994	Lowest Min	13-1903	Lowest Min	18-1937	Lowest Min	19-1937	Lowest Min	14-1998
Highest Min	61-1971	Highest Min	64-1968	Highest Min	61-1896	Highest Min	64-1934	Highest Min	63-1913	Highest Min	60-1990	Highest Min	69-1902
Greatest ppt	2.43-1990	Greatest ppt	3.94-1931	Greatest ppt	1.70-1984	Greatest ppt	2.14-1999	Greatest ppt	4.46-1899	Greatest ppt	1.74-1979	Greatest ppt	1.48-1916
Normal 22													
59.1 max	Actual	57.6 max	Actual	56.2 max	Actual	60.5 max	Actual	57.9 max	Actual	51.6 max	Actual	51.6 max	Actual
35.8 min		34.6 min		35.1 min		37.7 min		36.0 min		32.0 min		29.9 min	
.04 ppt		.03 ppt		.08 ppt		.07 ppt		.13 ppt		.06 ppt		.01 ppt	
18 hdd		19 hdd		19 hdd		16 hdd		18 hdd		23 hdd		25 hdd	
0 cdd		0 cdd		0 cdd		0 cdd		0 cdd		0 cdd		0 cdd	
Highest Max	78-1982	Highest Max	79-1973	Highest Max	84-1965	Highest Max	84-1965	Highest Max	81-1910	Highest Max	82-1905	Highest Max	81-1949
Lowest Max	27-1998	Lowest Max	29-1895	Lowest Max	32-1918	Lowest Max	30-1895	Lowest Max	31-1992	Lowest Max	26-1896	Lowest Max	26-1911
Lowest Min	15-1998	Lowest Min	19-1960	Lowest Min	16-1950	Lowest Min	20-1960	Lowest Min	13-1976	Lowest Min	16-1976	Lowest Min	14-1896
Highest Min	60-1966	Highest Min	60-1966	Highest Min	60-1966	Highest Min	62-1966	Highest Min	62-1990	Highest Min	63-1927	Highest Min	68-1927
Greatest ppt	1.54-1931	Greatest ppt	1.62-1931	Greatest ppt	1.14-1973	Greatest ppt	2.01-1940	Greatest ppt	1.80-1982	Greatest ppt	1.30-1908	Greatest ppt	1.44-1908
Normal 29													
53.0 max	Actual	54.5 max	Actual	53.0 max	Actual	53.0 max	Actual	53.0 max	Actual	53.0 max	Actual	53.0 max	Actual
30.0 min		31.9 min		30.0 min		30.0 min		30.0 min		30.0 min		30.0 min	
.01 ppt		.02 ppt		.02 ppt		.02 ppt		.02 ppt		.02 ppt		.02 ppt	
24 hdd		22 hdd		22 hdd		22 hdd		22 hdd		22 hdd		22 hdd	
0 cdd		0 cdd		0 cdd		0 cdd		0 cdd		0 cdd		0 cdd	
Highest Max	80-1927	Highest Max	74-1946	Highest Max	74-1946	Highest Max	74-1946	Highest Max	81-1910	Highest Max	82-1905	Highest Max	81-1949
Lowest Max	28-1997	Lowest Max	32-1895	Lowest Max	32-1895	Lowest Max	32-1895	Lowest Max	31-1992	Lowest Max	26-1896	Lowest Max	26-1911
Lowest Min	11-1911	Lowest Min	13-1976	Lowest Min	13-1976	Lowest Min	13-1976	Lowest Min	13-1976	Lowest Min	16-1976	Lowest Min	14-1896
Highest Min	64-1933	Highest Min	60-1933	Highest Min	60-1933	Highest Min	60-1933	Highest Min	62-1990	Highest Min	63-1927	Highest Min	68-1927
Greatest ppt	.61-1930	Greatest ppt	.72-1909	Greatest ppt	.72-1909	Greatest ppt	.72-1909	Greatest ppt	1.80-1982	Greatest ppt	1.30-1908	Greatest ppt	1.44-1908

NOVEMBER AVERAGES

TEMPERATURE : 49.0°F
 PRECIPITATION : 1.68"
 HEATING DEGREE DAYS : 485
 COOLING DEGREE DAYS : 1

The data on this calendar are for Tulsa. Normal values are calculated for the period 1948-1991. Temperature extremes are for the period 1905-1992; precipitation extremes are for the period 1948-1992.

TULSA CLIMATE CALENDAR

NOVEMBER 1993

Normal 1	Actual	Normal 2	Actual	Normal 3	Actual	Normal 4	Actual	Normal 5	Actual	Normal 6	Actual	Normal 7	Actual						
69.0 max 46.0 min .09 ppt 8 hdd 1 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	85-1916 37-1951 25-1991 64-1987 1,27-1954	65.0 max 44.0 min .17 ppt 11 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	89-1909 36-1991 20-1965 65-1963 2,82-1974	63.0 max 41.0 min .02 ppt 13 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	88-1909 36-1991 16-1991 67-1963 3,20-1974	64.0 max 42.0 min .08 ppt 12 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	86-1914 39-1951 21-1991 60-1987 1,25-1956	62.0 max 41.0 min .02 ppt 13 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	87-1914 34-1951 25-1976 60-1965 32-1957	62.0 max 41.0 min .06 ppt 14 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	87-1945 39-1959 20-1959 60-1965 90-1964	63.0 max 41.0 min .03 ppt 13 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	86-1980 41-1951 22-1991 60-1965 63-1957						
Normal 8	Actual	Normal 9	Actual	Normal 10	Actual	Normal 11	Actual	Normal 12	Actual	Normal 13	Actual	Normal 14	Actual						
64.0 max 43.0 min .09 ppt 12 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	84-1980 41-1991 16-1991 67-1966 1,45-1977	63.0 max 40.0 min .04 ppt 13 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	82-1934 42-1950 23-1965 58-1964 55-1974	63.0 max 39.0 min .06 ppt 14 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	89-1949 37-1950 21-1960 62-1949 63-1966	62.0 max 39.0 min .03 ppt 14 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	85-1989 31-1986 17-1950 60-1949 1,57-1992	63.0 max 40.0 min .09 ppt 13 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	84-1910 30-1988 16-1911 62-1951 2,64-1972	65.0 max 39.0 min .07 ppt 13 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	84-1910 30-1988 12-1940 62-1989 1,80-1985	62.0 max 41.0 min .06 ppt 14 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	79-1989 33-1959 13-1916 62-1968 1,08-1976						
Normal 15	Actual	Normal 16	Actual	Normal 17	Actual	Normal 18	Actual	Normal 19	Actual	Normal 20	Actual	Normal 21	Actual						
63.0 max 42.0 min .25 ppt 13 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	82-1950 38-1976 11-1940 63-1964 2,50-1964	61.0 max 40.0 min .06 ppt 15 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	83-1963 37-1965 14-1932 65-1968 1,49-1978	60.0 max 39.0 min .14 ppt 16 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	80-1969 32-1959 11-1969 59-1975 1,24-1952	58.0 max 39.0 min .09 ppt 16 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	82-1930 37-1972 19-1951 60-1985 1,26-1964	60.0 max 38.0 min .17 ppt 16 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	81-1908 36-1972 14-1937 61-1979 1,65-1963	58.0 max 36.0 min .20 ppt 18 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	81-1989 38-1972 16-1937 62-1979 4,59-1979	58.0 max 35.0 min .03 ppt 18 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	79-1927 34-1964 18-1964 53-1960 70-1961						
Normal 22	Actual	Normal 23	Actual	Normal 24	Actual	Normal 25	Actual	Normal 26	Actual	Normal 27	Actual	Normal 28	Actual						
59.0 max 37.0 min .07 ppt 17 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	79-1966 38-1971 16-1929 62-1066 90-1082	58.0 max 35.0 min .02 ppt 18 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	78-1974 33-1970 17-1970 63-1968 36-1962	56.0 max 35.0 min .16 ppt 20 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	80-1965 36-1960 14-1960 61-1966 2,54-1973	60.0 max 37.0 min .07 ppt 16 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	84-1965 38-1976 17-1950 61-1966 1,03-1966	57.0 max 36.0 min .11 ppt 18 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	89-1965 30-1976 18-1976 66-1960 1,56-1962	52.0 max 33.0 min .08 ppt 23 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	77-1927 35-1986 16-1938 66-1960 1,13-1082	50.0 max 31.0 min .03 ppt 25 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	81-1949 28-1976 13-1976 60-1961 63-1966						
Normal 29	Actual	Normal 30	Actual	NOVEMBER AVERAGES															
53.0 max 30.0 min .05 ppt 23 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	82-1927 36-1979 10-1976 54-1975 1,08-1975	54.0 max 31.0 min .03 ppt 23 hdd 0 cdd Highest Max Lowest Max Lowest Min Highest Min Greatest ppt	76-1933 33-1974 13-1964 55-1970 73-1961	TEMPERATURE : 49.3°F															
PRECIPITATION										: 2.62"									
HEATING DEGREE DAYS										: 472									
COOLING DEGREE DAYS										: 2									