

OKLAHOMA MONTHLY SUMMARY SEPTEMBER 1989

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SEPTEMBER 1989 OKLAHOMA SUMMARY

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

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

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

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

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

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

-R. J. Sladewski

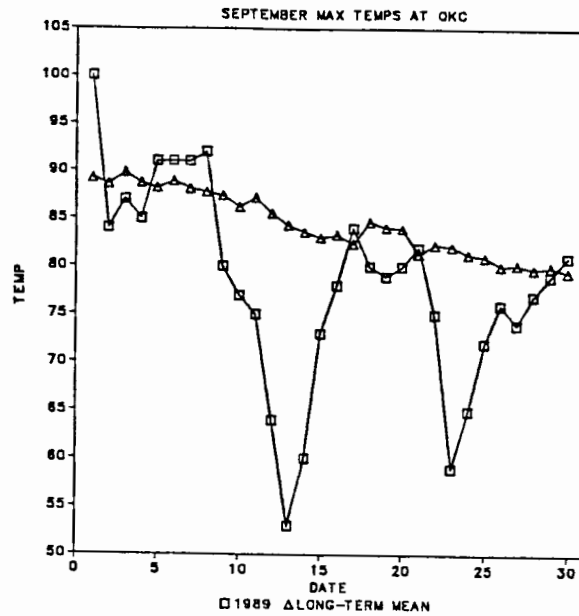


Figure 1: The sharp contrast of daily maximum temperatures between the first and middle of the month is quite evident. The arrival and persistence of Arctic air masses is also apparent.

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

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

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

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

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

THE EXTREMELY COOL AND WET SUMMER OF 1989

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

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

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

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

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

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

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

FIGURE 1

OKLAHOMA SUMMER SEASON PRECIPITATION

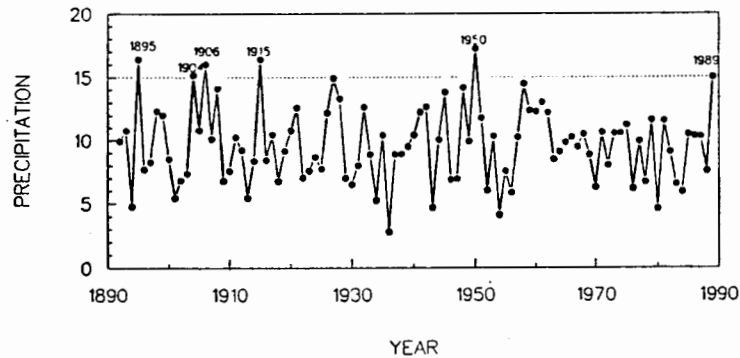
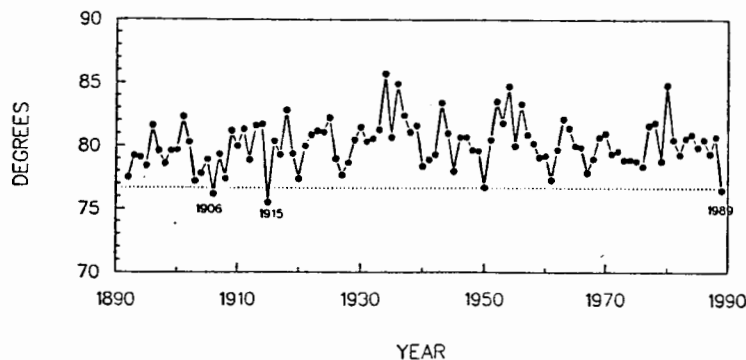


FIGURE 2

OKLAHOMA MEAN SUMMER TEMPERATURES



SEPTEMBER 1989
PERCENT OF MEAN PRECIPITATION

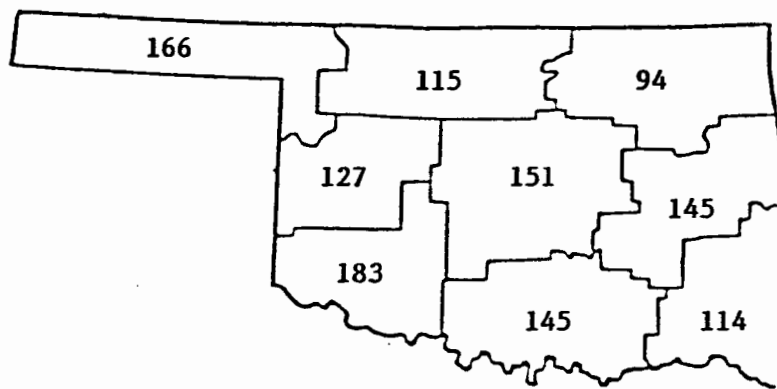


TABLE OF 1988/1989 COMPARISONS

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

EXTREMES

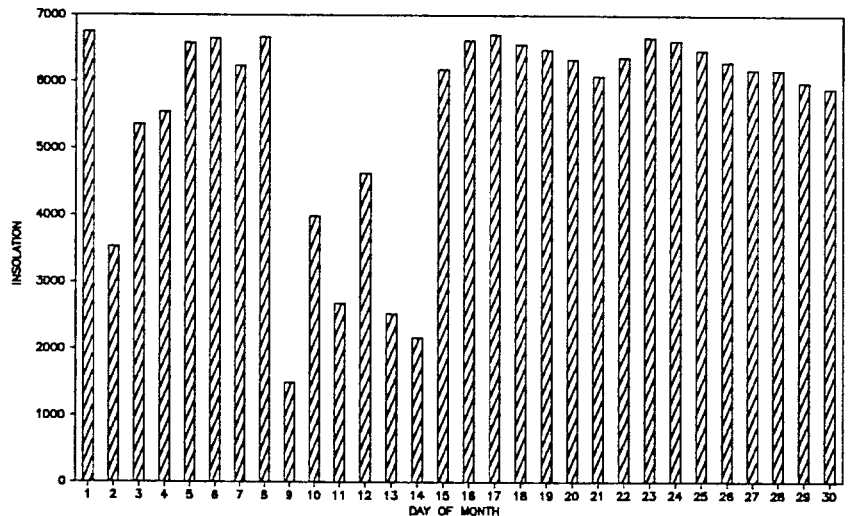
Variable	Station	Divison	Observation	Date
Minimum temperature (F)	Gage	1	29	24
	Freedom	2	29	24
	Hammon	4	29	25
	Reydon	4	29	23
Maximum temperature (F)	Weatherford	4	107	2
	Wichita Mt	7	107	5
Maximum 24-hour precipitation	Arcadia	5	6.80"	13

INSOLATION DATA AVAILABLE

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

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

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



SEPTEMBER 1989 SUMMARY FOR NORTHWEST DIVISION (CD1)

NAME	ID	CD	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						
ARNETT	332	1	66.3	30	-4.6	97.	4	34.	25	118.5	87.5	159.0	-49.0	5.350	30	3.44	2.46	13			
BEAVER	593	1	66.8	30	-4.1	98.	7	34.	25	121.0	90.0	174.5	-33.5	1.980	30	.46	.86	13			
BOISE CITY 2 E	908	1	66.6	30	-1.5	95.	3	36.	14	91.5	54.5	140.0	10.0	1.902	30	.34	.50	12			
BUFFALO	1243	1	68.3	30	-4.8	99.	7	30.	24	79.0	60.0	179.5	-85.5	2.760	30	-.04	1.10	12			
FARGO	3070	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.421	30	1.60	1.37	13			
GAGE FAA APT	3407	1	67.4	30	-3.9	97.	6	29.	24	103.0	77.0	174.5	-40.5	3.052	30	1.45	1.20	13			
GATE	3489	1	67.8	29	*****	99.	7	35.	24	108.0	*****	188.0	*****	2.742	30	*****	1.08	13			
GOODWELL RES	ST3628	1	65.5	30	-4.0	97.	7	36.	24	125.5	86.5	141.5	-32.5	1.843	30	.57	1.22	11			
GUYMON	3835	1	66.2	27	*****	97.	8	38.	24	103.5	*****	135.5	*****	1.292	29	*****	.68	11			
HOOKER	4298	1	66.7	30	-3.2	98.	7	35.	25	123.5	94.5	175.0	-1.0	1.173	30	-.45	.41	11			
KENTON	4766	1	65.0	30	-3.9	95.	4	36.	14	128.5	96.5	128.0	-21.0	2.452	30	.94	1.08	12			
LAVERNE	5045	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.462	30	.45	1.70	13			
OPTIMA LAKE	6740	1	66.6	30	*****	99.	7	34.	24	113.0	*****	162.0	*****	1.872	30	*****	.76	11			
RANGE	7412	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.041	30	*****	1.10	12			
REGNIER	7534	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.862	30	.45	1.04	12			
TURPIN 4 SSE	9017	1	66.0	29	*****	97.	7	36.	24	126.0	*****	154.5	*****	1.230	29	*****	.43	12			

SEPTEMBER 1989 SUMMARY FOR NORTH CENTRAL DIVISION (CD2)

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

SEPTEMBER 1989 SUMMARY FOR NORTHEAST DIVISION (CD3)

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

SEPTEMBER 1989 SUMMARY FOR WEST CENTRAL DIVISION (CD4)

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

SEPTEMBER 1989 SUMMARY FOR CENTRAL DIVISION (CD5)

NAME	ID	CD	DEV				MIN		HEAT	DEV	COOL	DEV	TOT	NUM	FROM	MAX	24-HR	DAY
			MEAN	NUM	FROM	MAX	DAY	TEMP	DAY	DEG	FROM	DEG						
AMBER	200	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.120	30	*****	2.64	13
ARCADIA	288	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	10.910	30	*****	6.80	13
TINKER AFB	325	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.760	30	*****	5.49	13
BLANCHARD 2 SSW	830	5	69.5	30	*****	100.	1	36.	24	60.0	*****	195.0	*****	5.390	30	*****	2.44	2
BRISTOW	1144	5	67.8	30	-5.9	97.	1	34.	24	79.5	57.5	163.0	-120.0	4.042	30	.04	2.94	13
CHANDLER	1684	5	67.6	29	-6.5	95.	1	37.	25	72.0	54.0	146.0	-145.0	5.751	30	1.96	4.22	13
CHICKASHA EX ST1750	5	70.2	30	-3.7	101.	1	35.	24	59.0	46.0	216.0	-64.0	5.300	30	1.82	2.40	13	
COX CITY 1 E	2196	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.002	30	*****	2.35	13
CRESCENT	2242	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.420	30	*****	2.46	13
CUSHING	2318	5	67.8	30	-5.8	96.	1	36.	24	75.5	55.5	158.0	-120.0	6.261	30	2.37	4.10	13
EL RENO 1 N	2818	5	68.8	30	-4.6	99.	1	36.	24	71.0	56.0	184.5	-82.5	6.060	30	2.45	3.55	13
GUTHRIE	3821	5	69.9	30	-4.2	97.	1	36.	24	58.5	43.5	207.0	-81.0	4.481	30	.50	3.02	13
HENNESSEY 2 SE	4055	5	69.0	30	-4.9	97.	2	34.	24	68.5	54.5	189.5	-91.5	2.903	30	-.49	2.51	13
INGALLS	4489	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.311	30	*****	3.02	13
KINGFISHER 2 SE4861	5	68.2	30	-6.0	94.	1	34.	24	76.5	62.5	171.0	-119.0	4.420	30	.82	2.41	13	
KONAWA	4915	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.031	30	2.91	2.66	2
MARSHALL	5589	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.250	30	-.26	2.37	13
MEEKER 4 W	5779	5	67.4	29	-6.3	97.	1	33.	24	86.0	69.0	154.5	-123.5	6.350	29	****	4.78	13
MULHALL	6110	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.960	30	*****	2.73	13
NORMAN 3 S	6386	5	69.8	29	*****	103.	1	36.	24	60.5	*****	200.0	*****	3.941	30	.21	2.10	13
OILTON 2 SE	6616	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.470	23	*****	1.90	17
OKEMAH	6638	5	69.6	30	-4.5	99.	1	37.	24	51.5	34.5	189.0	-101.0	6.330	30	2.53	3.60	13
OKLAHOMA CTY WS6661	5	68.3	30	-5.0	100.	1	36.	24	77.0	62.0	177.5	-86.5	4.513	30	1.10	3.43	13	
PERKINS	7003	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.970	30	.75	3.54	13
PIEDMONT	7068	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.190	30	*****	5.02	13
PRAGUE	7264	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.950	30	3.16	3.65	13
PURCELL 5 SW	7327	5	68.9	30	-5.3	102.	1	36.	25	69.5	57.5	188.0	-100.0	6.200	30	2.23	3.00	2
SEMINOLE	8042	5	70.0	30	-5.2	100.	2	37.	24	50.0	40.0	201.0	-115.0	5.300	30	1.28	2.20	13
SHAWNEE	8110	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.610	30	4.87	4.53	13
STELLA	8479	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.130	30	*****	4.08	13
STILLWATER 2 W	8501	5	68.0	30	-5.1	97.	1	33.	24	93.5	75.5	183.5	-77.5	4.860	30	.93	2.60	13
STROUD 1 N	8563	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.434	30	*****	2.75	13
TECUMSEH	8751	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.330	30	*****	2.32	13
TROUSDALE	8960	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.200	30	*****	2.57	2
UNION CITY 1 SE9086	5	*****	0	*****	****	0	****	0	0	*****	*****	*****	*****	6.200	30	2.44	4.75	13
WELTY 1 SSE	9479	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.800	30	*****	3.60	13
WEWOKA	9575	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.300	30	2.18	3.05	2

SEPTEMBER 1989 SUMMARY FOR EAST CENTRAL DIVISION (CD6)

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

SEPTEMBER 1989 SUMMARY FOR SOUTHWEST DIVISION (CD7)

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

SEPTEMBER 1989 SUMMARY FOR SOUTH CENTRAL DIVISION (CD8)

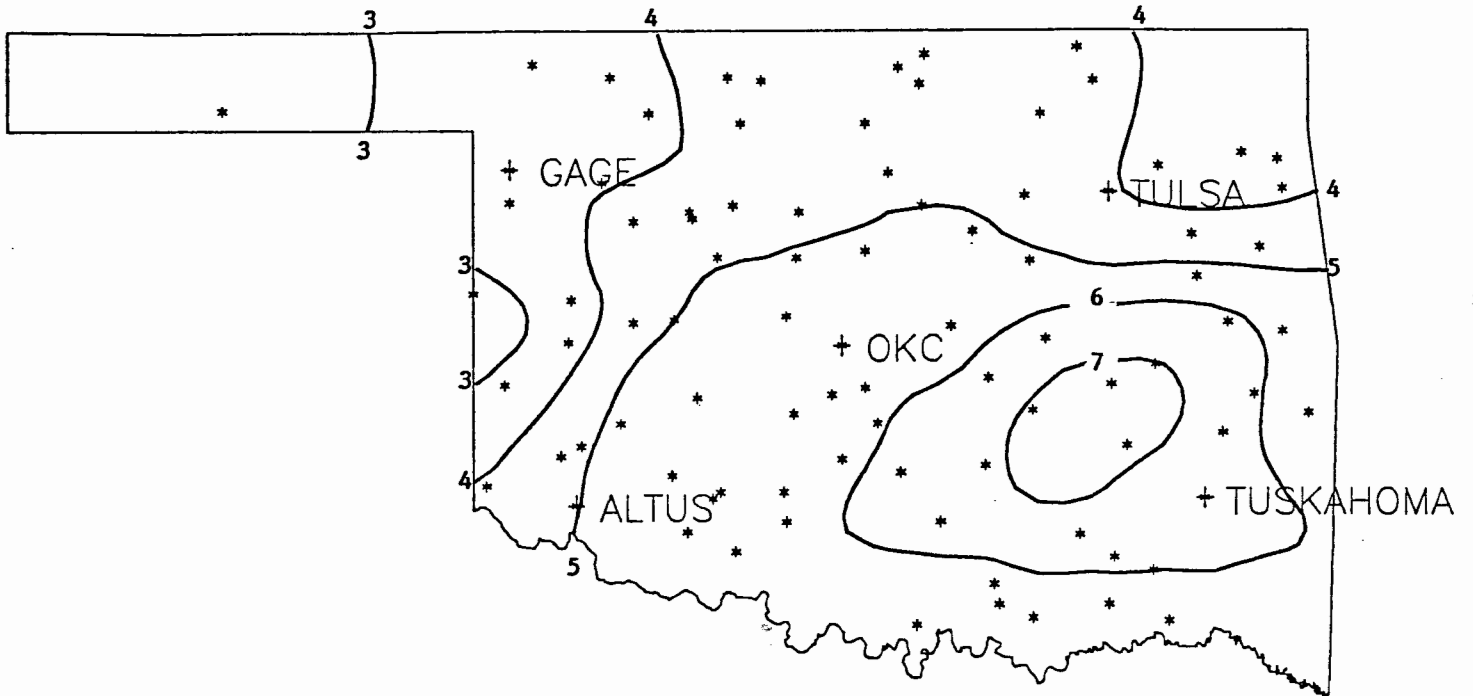
NAME	ID CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	FROM	MAX	24-HR	DAY
		MEAN	NUM	FROM	MAX	MIN	DEG	DAY	FROM	DEG	DAY	FROM	DEG	DAY						
ADA	17 8	70.0	30	-4.6	99.	1	36.	24	52.5	40.5	203.5	-96.5	8.612	30	4.60	3.82	2			
ALLEN	147 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	9.801	30	*****	3.20	11			
ARDMORE	292 8	72.3	24	*****	100.	1	40.	24	34.0	*****	210.0	*****	4.531	30	.60	2.11	13			
ATOKA DAM	394 8	71.2	30	*****	102.	2	42.	24	49.5	*****	235.0	*****	4.350	30	*****	2.20	11			
BOKCHITO	917 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.650	30	*****	3.00	12			
CANEY	1437 8	71.2	30	*****	100.	1	40.	24	38.5	*****	225.5	*****	6.390	30	*****	2.27	13			
CENTRAHOMA	1648 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.740	30	*****	2.03	13			
CHICKASAW NRA	1745 8	68.9	30	*****	101.	2	34.	24	85.0	*****	203.5	*****	6.790	30	*****	2.80	11			
COMANCHE	2054 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.690	30	*****	2.88	13			
DAISY 4 ENE	2354 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	7.150	30	1.45	2.06	4			
DUNCAN	2660 8	70.5	30	-5.2	101.	2	41.	25	55.5	47.5	221.0	-108.0	6.620	30	2.97	3.50	13			
DURANT USDA	2678 8	70.0	30	*****	99.	2	38.	24	62.0	*****	211.5	*****	8.030	30	2.42	3.82	13			
ELMORE CITY	2872 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.400	30	*****	1.90	11			
FARRIS 3 WNW	3083 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	6.800	30	*****	1.73	11			
GRADY	3688 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	10.530	30	*****	4.07	11			
HEALDTON	4001 8	71.0	30	*****	103.	1	38.	25	47.5	*****	226.5	*****	4.680	30	.59	2.29	13			
HENNEPIN	4052 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.260	30	*****	1.82	10			
KETCHUM RANCH	4780 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.030	30	*****	1.60	13			
KINGSTON	4865 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.220	30	.55	1.65	13			
LEHIGH	5108 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.443	30	*****	1.90	13			
LINDSAY 2 W	5216 8	69.8	30	*****	101.	1	35.	24	63.5	*****	206.5	*****	4.500	30	.70	2.50	13			
LOCO 6 SE	5247 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.280	30	*****	2.32	10			
MADILL	5468 8	70.9	30	-5.0	101.	1	37.	26	64.0	57.0	242.0	-92.0	4.720	30	.12	2.23	13			
MARIETTA	5563 8	72.5	30	-3.4	103.	1	42.	24	31.0	21.0	256.0	-81.0	3.990	30	.00	1.96	13			
MARLOW 1 WSW	5581 8	70.5	30	*****	102.	1	33.	24	58.0	*****	224.0	*****	4.630	30	.97	1.80	13			
MCGEE CREEK DAM	5713 8	71.1	30	*****	100.	2	41.	25	44.5	*****	227.0	*****	6.640	30	*****	1.90	13			
OSWALT	6787 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	8.770	30	*****	4.02	12			
PAULS VALLEY	6926 8	69.9	30	-5.7	101.	1	34.	24	62.0	53.0	210.0	-117.0	6.730	30	3.06	2.25	11			
PONTOTOC	7214 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.800	30	-.32	2.10	13			
TISHOMINGO NWLR	8884 8	70.9	30	*****	102.	1	37.	25	55.5	*****	232.0	*****	6.711	30	1.84	3.21	13			
TUSSY	9032 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.740	30	*****	1.64	3			
WAURIKA	9395 8	73.2	30	-3.3	104.	1	40.	24	27.0	21.0	271.5	-79.5	6.850	30	3.45	2.83	13			
WAURIKA DAM	9399 8	72.7	28	*****	104.	2	39.	28	38.0	*****	254.5	*****	7.161	29	*****	3.50	13			

SEPTEMBER 1989 SUMMARY FOR SOUTHEAST DIVISION (CD9)

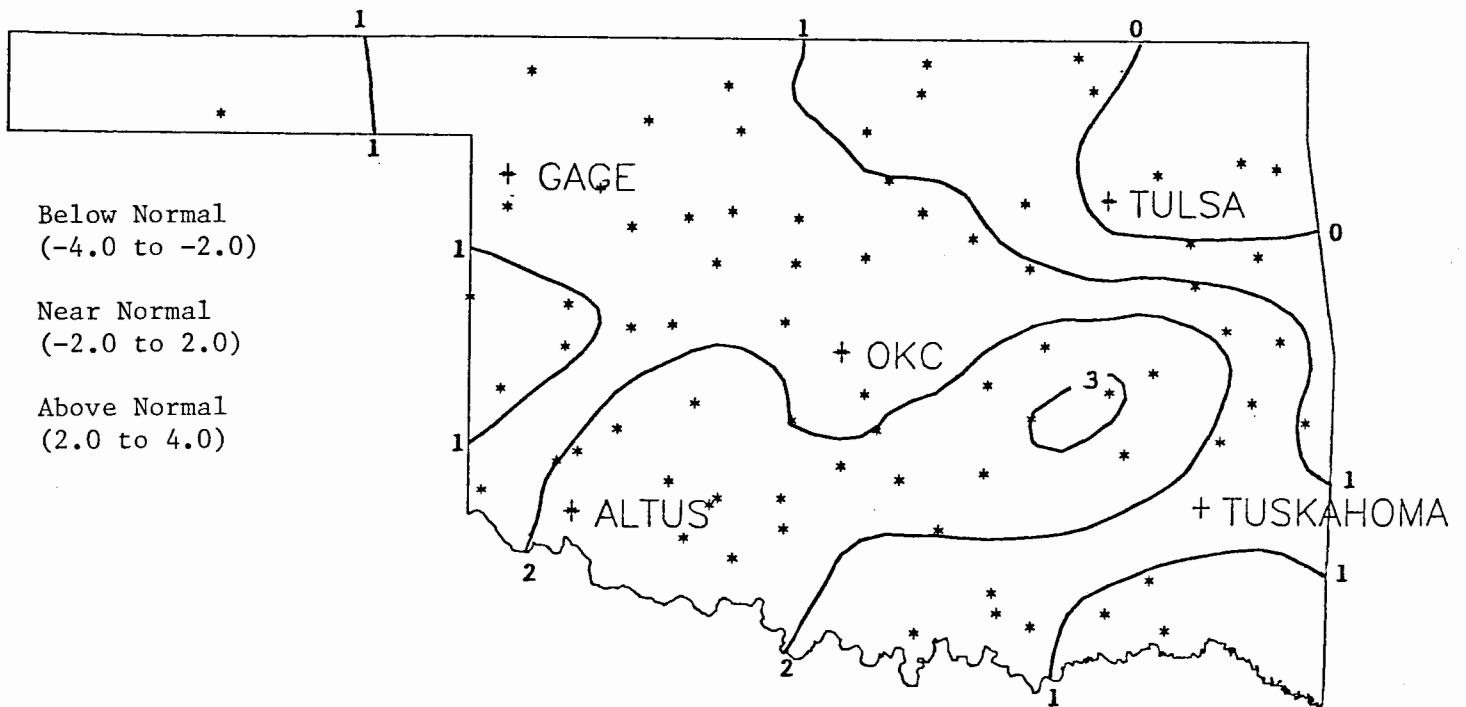
NAME	ID CD	DEV					HEAT		DEV		COOL		DEV		TOT	NUM	FROM	MAX	24-HR	DAY
		MEAN	NUM	FROM	MAX	MIN	DEG	DAY	FROM	DEG	DAY	FROM	DEG	DAY						
ANTILERS	256 9	70.7	30	-3.7	100.	1	37.	25	49.0	40.0	219.5	-71.5	5.530	30	.26	2.22	13			
BEAR MT TWR	584 9	70.4	29	*****	100.	1	36.	24	40.5	*****	198.5	*****	4.940	27	*****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

SEPTEMBER 1989 CLIMATE DIVISION SUMMARY

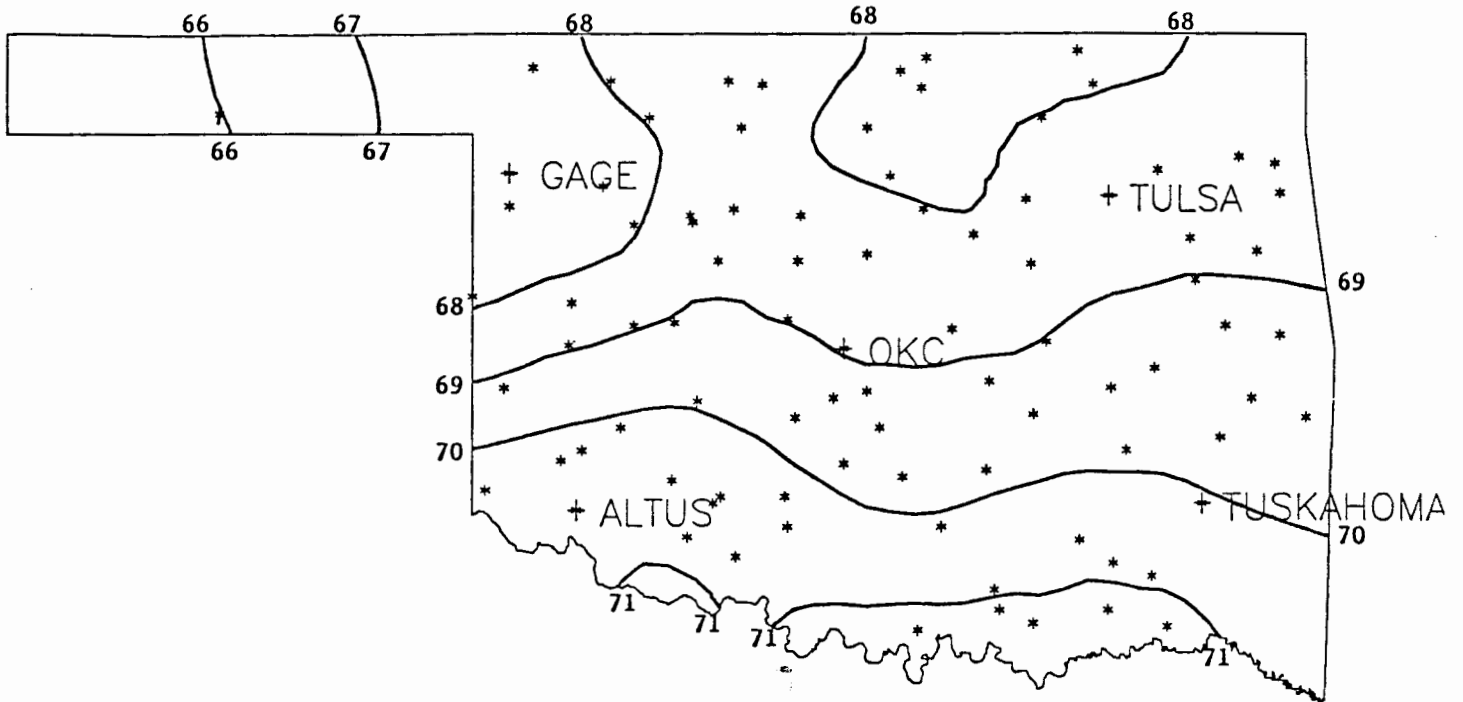
CLIMATE DIV	MEAN TEMP	NUM STA	DEV		MIN			HEAT DEGREE		DEV		COOL DEGREE		DEV		TOT PPT	NUM STA	DEV	
			FROM NORM	MAX TEMP	DAY	TEMP	DAY	DAYS	FROM NORM	DAYS	FROM NORM	TOT	FROM NORM	MAX 24-HR	DAY				
1	66.6	11	-3.7	99.0	7	29.0	24	112.5	82.0	161.5	-29.1	2.49	14	.76	2.46	13			
2	68.0	15	-5.1	97.0	2	29.0	24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



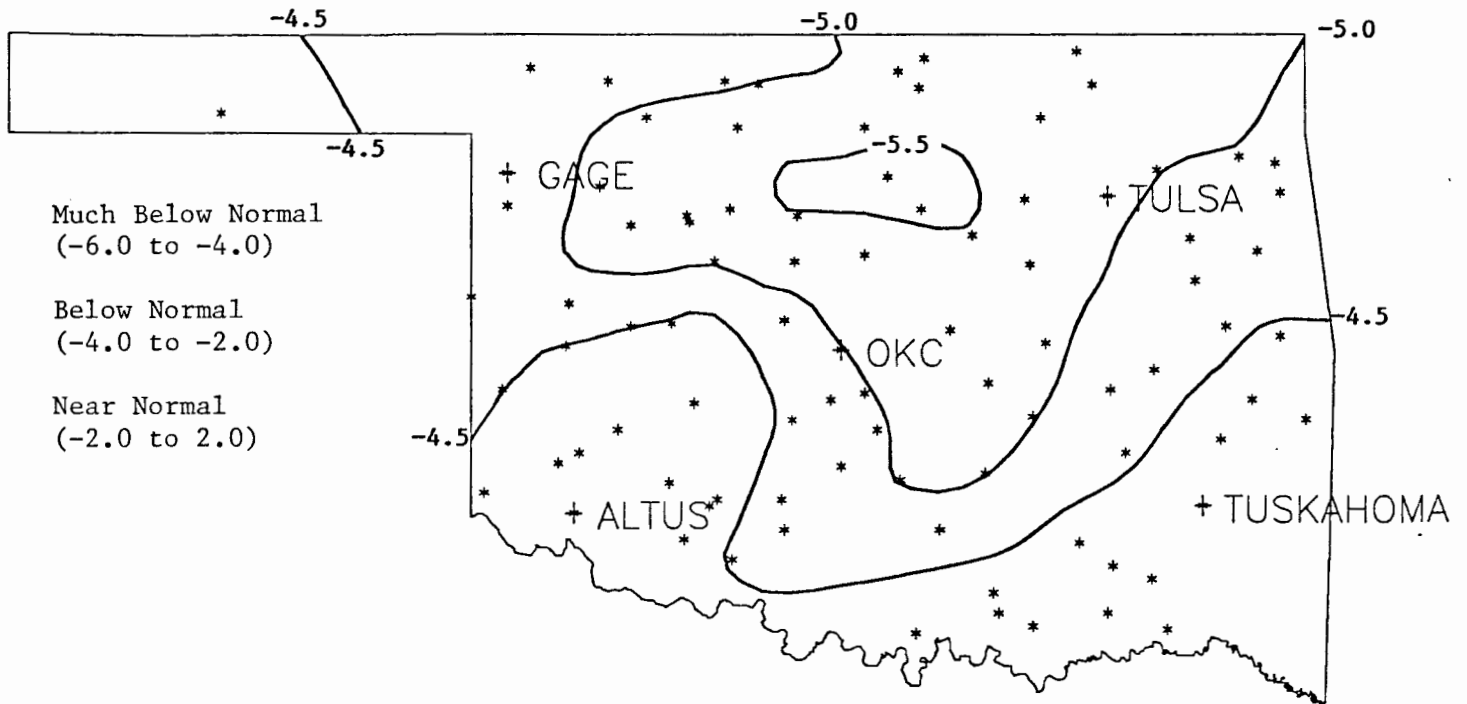
SEPTEMBER 1989 TOTAL PRECIPITATION
(Inches)



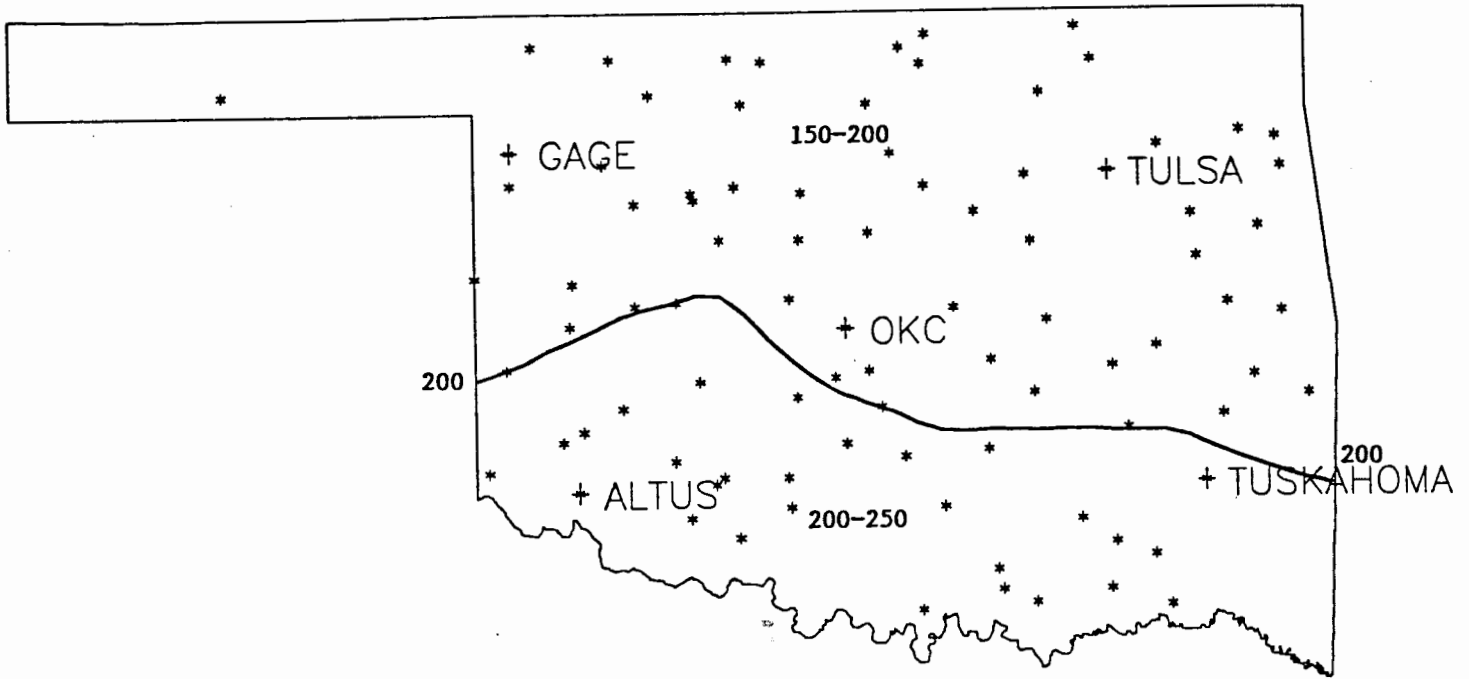
SEPTEMBER 1989 DEVIATION FROM NORMAL PRECIPITATION
(Inches)



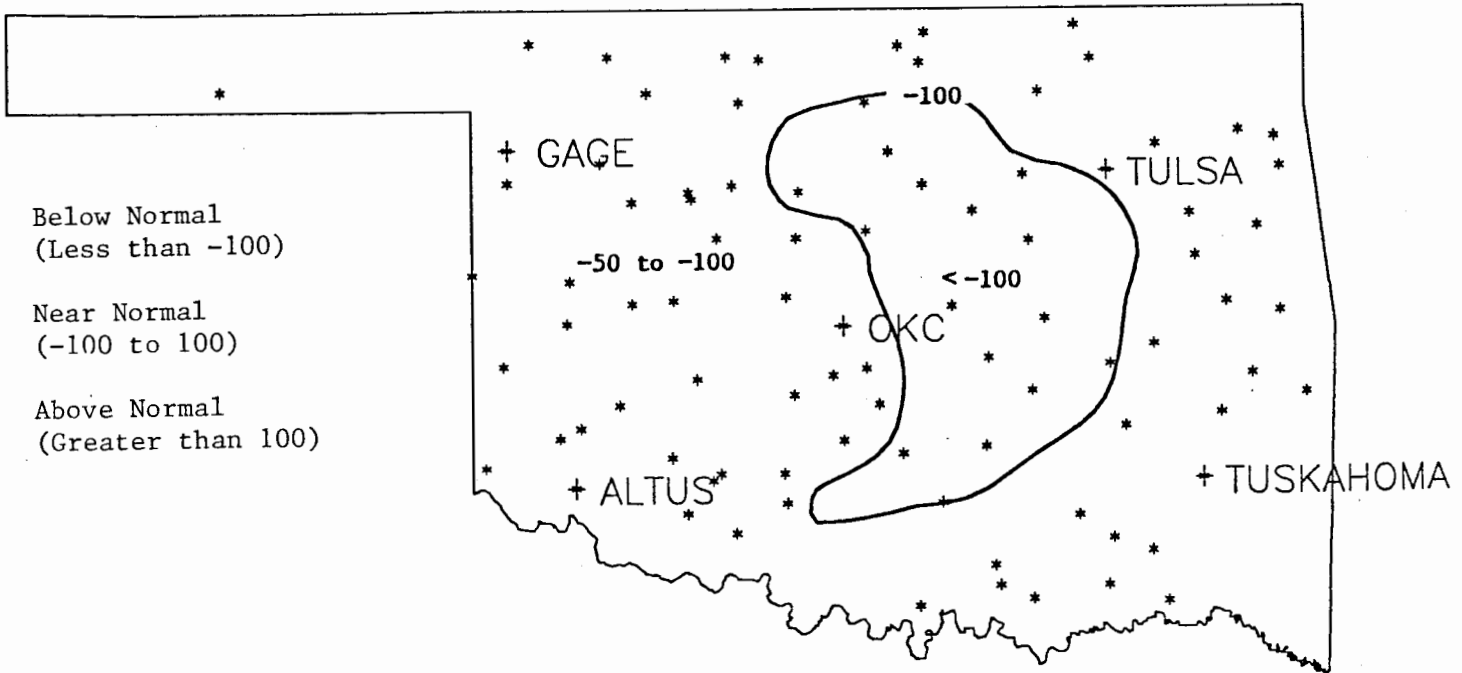
SEPTEMBER 1989 AVERAGE MONTHLY TEMPERATURES
(Degrees F)



SEPTEMBER 1989 DEVIATION FROM NORMAL TEMPERATURES
(Degrees F)

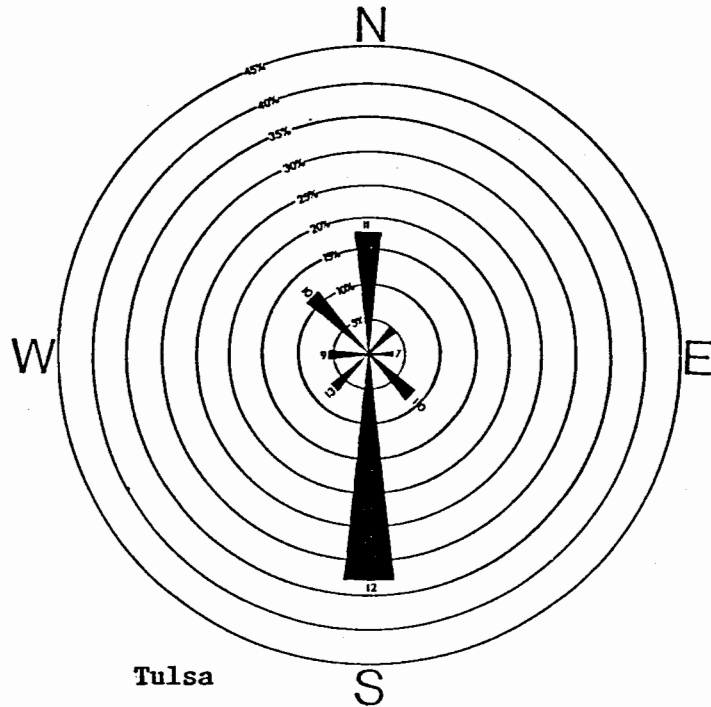
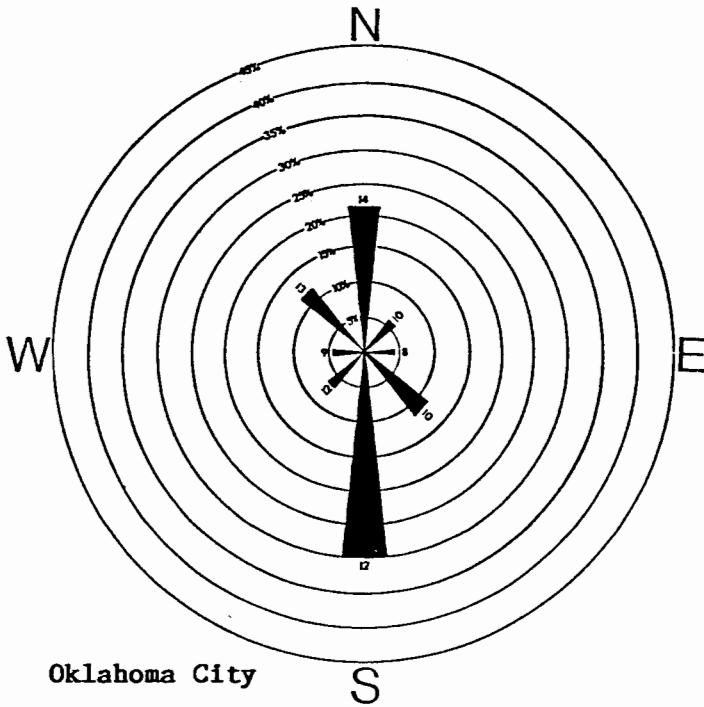


SEPTEMBER 1989 COOLING DEGREE DAYS



SEPTEMBER 1989 DEVIATION FROM NORMAL COOLING DEGREE DAYS

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



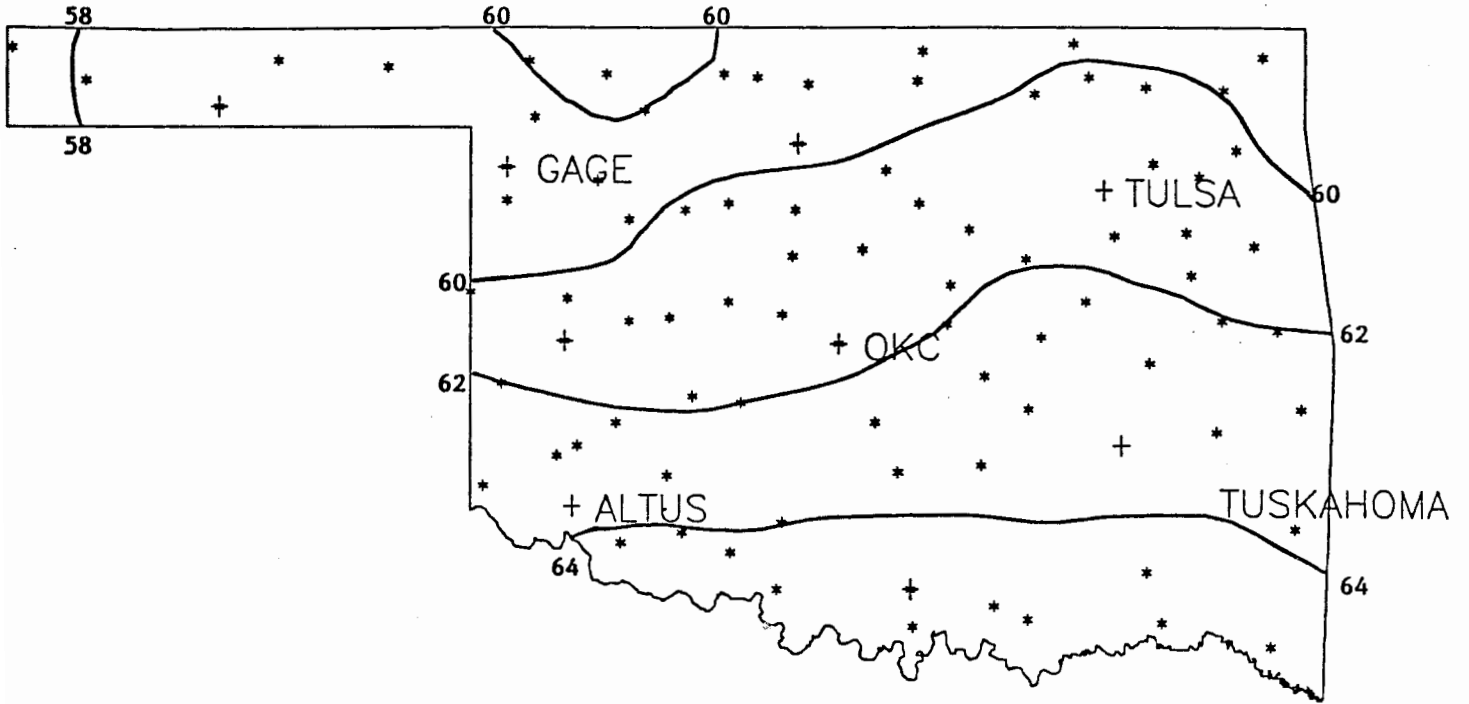
NOVEMBER 1989 SUNRISE AND SUNSET

Oklahoma City

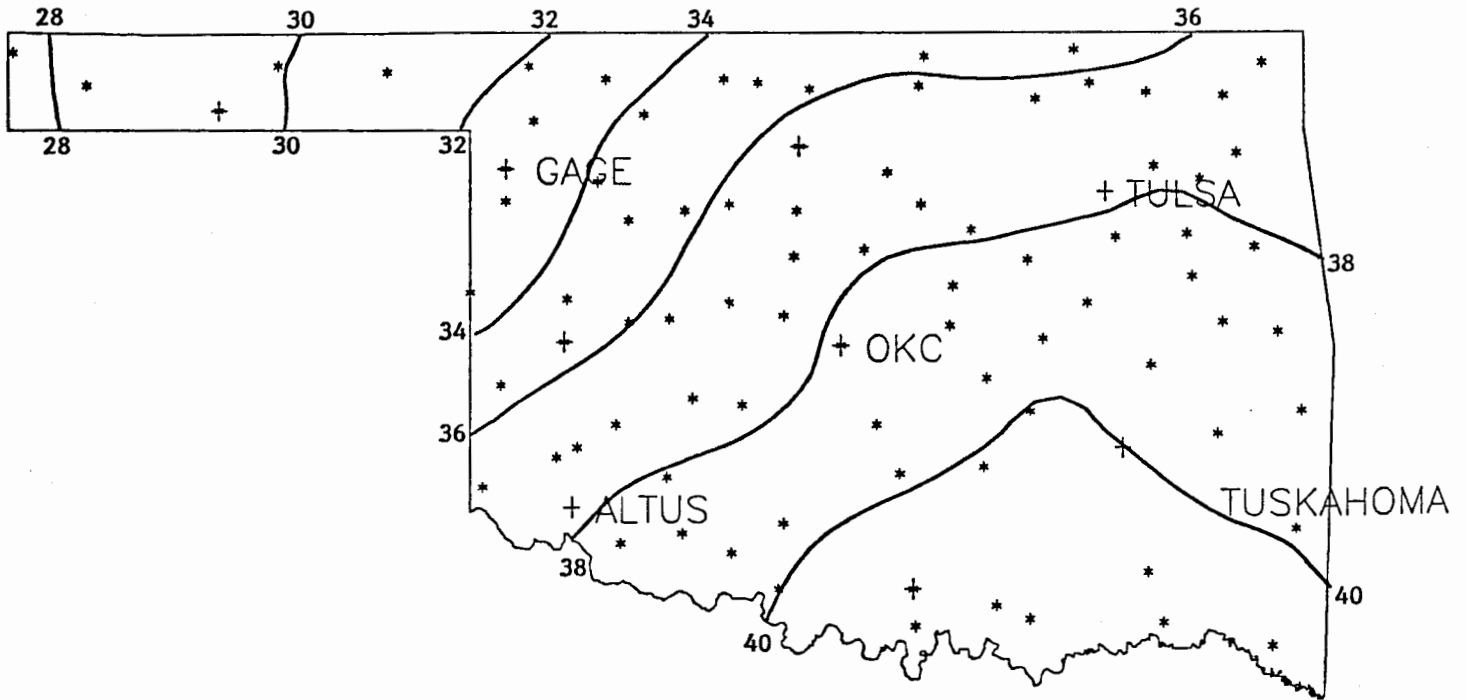
DATE	SUNRISE	SUNSET	DAYLIGHT
891101	6:51AM	5:38PM LT	10:47
891102	6:52AM	5:37PM LT	10:45
891103	6:52AM	5:36PM LT	10:43
891104	6:53AM	5:35PM LT	10:41
891105	6:54AM	5:34PM LT	10:39
891106	6:55AM	5:33PM LT	10:38
891107	6:56AM	5:32PM LT	10:36
891108	6:57AM	5:31PM LT	10:34
891109	6:58AM	5:31PM LT	10:32
891110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

Tulsa

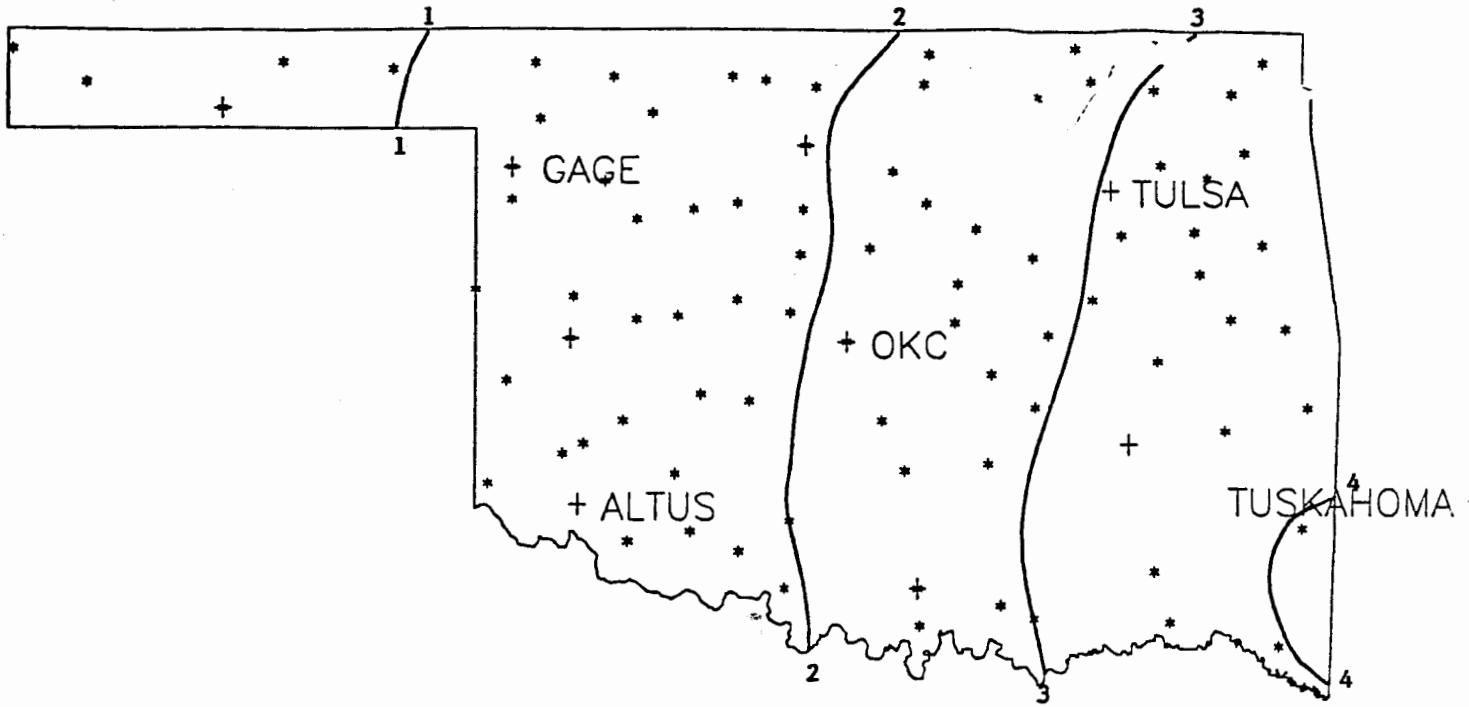
DATE	SUNRISE	SUNSET	DAYLIGHT
891101	6:45AM	5:30PM LT	10:45
891102	6:46AM	5:29PM LT	10:43
891103	6:47AM	5:28PM LT	10:41
891104	6:48AM	5:27PM LT	10:39
891105	6:49AM	5:26PM LT	10:37
891106	6:50AM	5:25PM LT	10:35
891107	6:51AM	5:24PM LT	10:33
891108	6:52AM	5:23PM LT	10:31
891109	6:53AM	5:23PM LT	10:30
891110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



30-YEAR MEAN NOVEMBER MAXIMUM TEMPERATURE



30-YEAR MEAN NOVEMBER DAILY MINIMUM TEMPERATURE



30-YEAR MEAN NOVEMBER PRECIPITATION

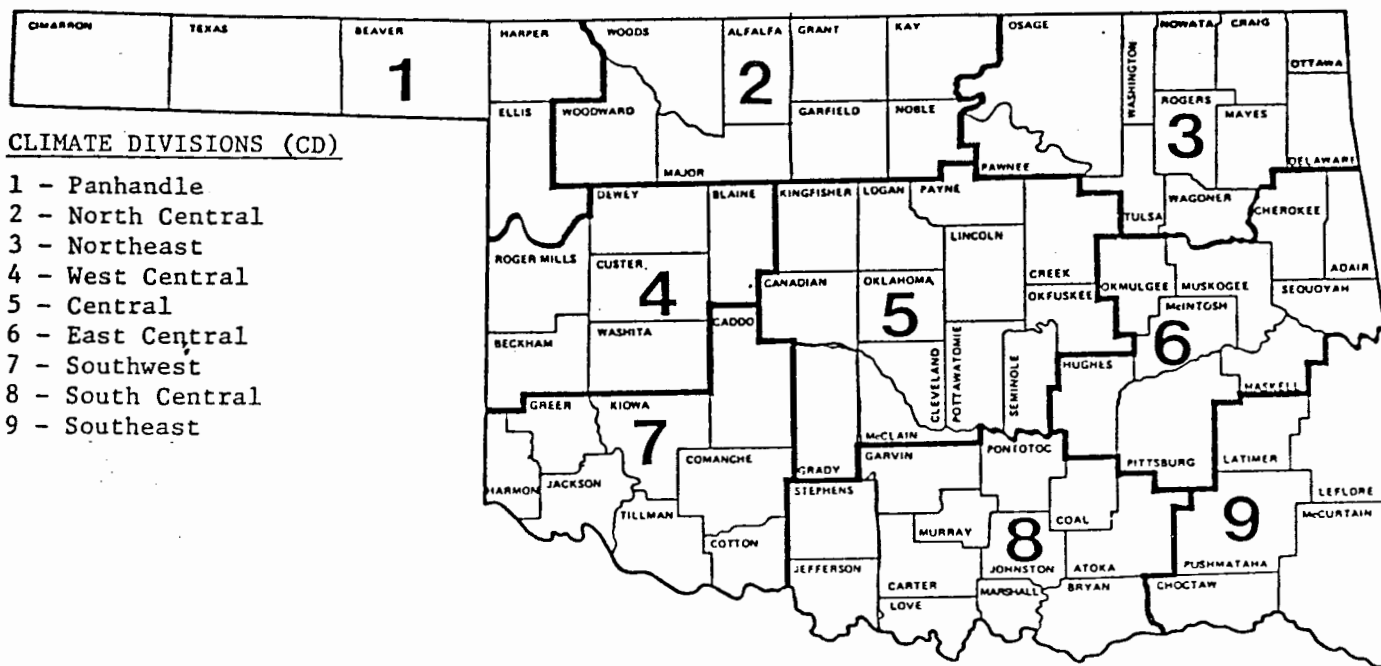
30- and 90-DAY NATIONAL WEATHER SERVICE OUTLOOK

30-DAY OUTLOOK (OCTOBER)

Precipitation - Near Normal Statewide
Temperature - Below Normal Statewide

90-DAY OUTLOOK (OCTOBER-DECEMBER)

Precipitation - Near Normal Statewide
Temperature - Below Normal Statewide



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:

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

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

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).

1		2		3		4		5		6		7	
Normal	67.1 max	63.1 max	61.6 max	63.5 max	61.8 max	63.9 max	62.9 max	63.5 max	62.9 max	61.8 max	63.9 max	62.9 max	63.5 max
Actual	—	—	—	—	—	—	—	—	—	—	—	—	—
min	45.2 min	42.2 min	40.9 min	40.9 min	41.2 min	41.2 min	41.4 min	41.2 min	41.4 min	41.2 min	41.4 min	41.4 min	41.2 min
pcpn	.054 pcpn	.093 pcpn	.092 pcpn	.098 pcpn	.049 pcpn	.049 pcpn	.041 pcpn	.041 pcpn	.041 pcpn	.049 pcpn	.041 pcpn	.041 pcpn	.026 pcpn
HDD	9 HDD	12 HDD	14 HDD	13 HDD	13 HDD	13 HDD	13 HDD	13 HDD	13 HDD	13 HDD	13 HDD	13 HDD	13 HDD
CDD	1 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD
Highest Max	84-1982	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max
Lowest Max	35-1951	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max
Lowest Min	29-1966	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min
Highest Min	68-1982	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min
Greatest pcpn	1.03-1981	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn
Actual	87-1980	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual
Normal	63.9 max	62.1 max	62.0 max	63.0 max	63.2 max	63.0 max	63.0 max	63.2 max	63.0 max	63.2 max	63.0 max	63.0 max	61.0 max
Actual	—	—	—	—	—	—	—	—	—	—	—	—	—
min	41.4 min	39.6 min	38.2 min	39.6 min	39.1 min	39.1 min	39.6 min	39.1 min	39.6 min	39.1 min	39.6 min	39.6 min	40.6 min
pcpn	.065 pcpn	.017 pcpn	.022 pcpn	.009 pcpn	.046 pcpn	.009 pcpn	.009 pcpn	.046 pcpn	.046 pcpn	.046 pcpn	.046 pcpn	.066 pcpn	.049 pcpn
HDD	12 HDD	14 HDD	15 HDD	14 HDD	14 HDD	14 HDD	14 HDD	14 HDD	14 HDD	14 HDD	14 HDD	13 HDD	14 HDD
CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD
Highest Max	87-1980	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max
Lowest Max	40-1953	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max
Lowest Min	23-1955	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min
Highest Min	66-1966	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min
Greatest pcpn	.33-1981	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn
Actual	80-1965	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual
Normal	61.3 max	59.0 max	58.9 max	58.3 max	59.4 max	58.3 max	58.3 max	59.4 max	58.3 max	59.4 max	58.3 max	58.5 max	58.4 max
Actual	—	—	—	—	—	—	—	—	—	—	—	—	—
min	39.9 min	37.0 min	37.0 min	37.7 min	36.6 min	37.7 min	37.7 min	36.6 min	36.6 min	36.6 min	36.6 min	34.7 min	35.3 min
pcpn	.114 pcpn	.029 pcpn	.083 pcpn	.067 pcpn	.104 pcpn	.067 pcpn	.067 pcpn	.104 pcpn	.104 pcpn	.104 pcpn	.067 pcpn	.049 pcpn	.023 pcpn
HDD	14 HDD	16 HDD	17 HDD	17 HDD	17 HDD	17 HDD	17 HDD	17 HDD	17 HDD	17 HDD	17 HDD	18 HDD	18 HDD
CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD
Highest Max	80-1965	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max
Lowest Max	37-1978	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max
Lowest Min	15-1940	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min
Highest Min	61-1971	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min
Greatest pcpn	1.70-1968	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn
Actual	80-1965	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual
Normal	59.1 max	57.3 max	55.2 max	59.9 max	57.7 max	59.9 max	59.9 max	57.7 max	57.7 max	57.7 max	57.7 max	51.0 max	49.6 max
Actual	—	—	—	—	—	—	—	—	—	—	—	—	—
min	35.8 min	34.6 min	34.6 min	37.2 min	35.5 min	37.2 min	37.2 min	35.5 min	35.5 min	35.5 min	35.5 min	32.0 min	30.1 min
pcpn	.040 pcpn	.028 pcpn	.083 pcpn	.071 pcpn	.142 pcpn	.071 pcpn	.071 pcpn	.142 pcpn	.142 pcpn	.142 pcpn	.065 pcpn	.065 pcpn	.014 pcpn
HDD	17 HDD	19 HDD	20 HDD	16 HDD	18 HDD	16 HDD	16 HDD	18 HDD	18 HDD	18 HDD	23 HDD	23 HDD	25 HDD
CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD
Highest Max	78-1966	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max
Lowest Max	38-1957	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max
Lowest Min	18-1926	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min
Highest Min	60-1966	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min
Greatest pcpn	1.54-1931	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn
Actual	80-1927	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual
Normal	52.8 max	54.3 max	52.2 max	59.9 max	57.7 max	59.9 max	59.9 max	57.7 max	57.7 max	57.7 max	57.7 max	51.0 max	49.6 max
Actual	—	—	—	—	—	—	—	—	—	—	—	—	—
min	30.0 min	31.6 min	31.6 min	37.2 min	35.5 min	37.2 min	37.2 min	35.5 min	35.5 min	35.5 min	35.5 min	32.0 min	30.1 min
pcpn	.008 pcpn	.026 pcpn	.026 pcpn	.026 pcpn	.142 pcpn	.026 pcpn	.026 pcpn	.142 pcpn	.142 pcpn	.142 pcpn	.065 pcpn	.065 pcpn	.014 pcpn
HDD	23 HDD	22 HDD	20 HDD	16 HDD	18 HDD	16 HDD	16 HDD	18 HDD	18 HDD	18 HDD	23 HDD	23 HDD	25 HDD
CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD	0 CDD
Highest Max	80-1927	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max	Highest Max
Lowest Max	34-1974	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max	Lowest Max
Lowest Min	13-1976	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min	Lowest Min
Highest Min	51-1975	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min	Highest Min
Greatest pcpn	.61-1930	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn	Greatest pcpn
Actual	81-1949	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual

NOVEMBER AVERAGES

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