

OKLAHOMA MONTHLY SUMMARY OCTOBER 1989

TABLE OF CONTENTS

October 1989 Oklahoma Summary.....	2
Table of October 1988/1989 Comparisons.....	3
October 1989 Data Summary Tables.....	6
October 1989 State Map Summary.....	12
December Climatological Normals.....	15
30- and 90-Day National Weather Service Outlook..	17
Explanation of Tables and Maps.....	18
December 1989 Climate Calendar.....	20

OCTOBER 1989 OKLAHOMA SUMMARY

October Statewide temperature averaged above normal for the first time since April 1989. Despite a frost-producing, very cool week during the middle of the month, Oklahoma experienced its first October with above normal temperatures since 1983, and only its second of the decade. Precipitation amounts varied greatly across the State but averaged below normal (see Map 1). Only two weather systems produced significant precipitation.

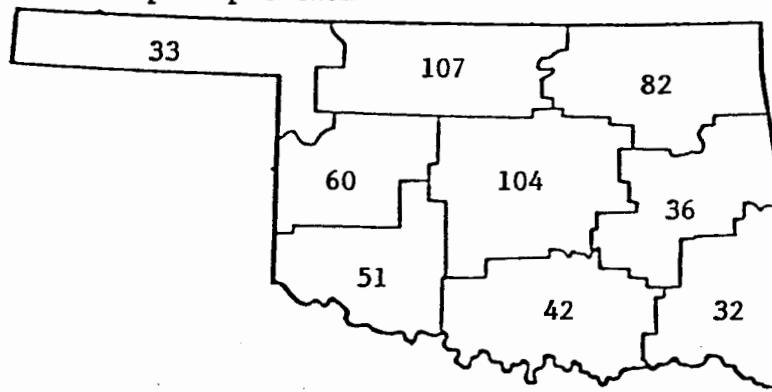
A fast-moving cold front produced powerful thunderstorms in western Oklahoma on October 5. Thunderstorm winds in excess of 80 mph on October 6 uprooted trees and damaged businesses and mobile homes in Grady County. Many stations in the State's northwestern half reported over an inch of rain, including over 3 inches at some north central stations. Several area stations received no other measurable precipitation throughout October. The front also brought 10 to 15 degree cooler air into the State. Slightly below normal temperatures persisted until October 9 when another warm air mass boosted temperatures Statewide.

Below normal temperatures returned on the 16th when the leading edge of the coldest Arctic air mass of the season entered Oklahoma. Temperatures dropped sharply behind the front. Many stations experienced their lowest temperatures of the month and two consecutive frosts on the 19th and 20th of October. Five-day temperatures averaged 10 to 15 degrees below normal through October 20 (see Fig. 1). Precipitation was limited to .10 to .50 inches in southeastern Oklahoma where the front encountered moisture from the remnants of Hurricane Jerry.

The prolonged dry weather caused soil moisture to drop to its lowest level since mid-spring, and slowed development of late-maturing row crops. Finally, a violent cold front delivered valuable precipitation to much of the State on October 29 and 30. Rainfall amounts exceeding 2 inches in CD's 3, 5, 7 and 8 ended a rainless period of over 45 days at some locations. The State-averaged topsoil moisture level rose over 30%. The powerful storm system also produced a tornado in Tillman County on the 29th, and three reported funnels in Kiowa County. Golfball-size hail was reported in Greer and Jackson Counties. Storm damage included downed power lines and uprooted trees in Stephens County.

R. J. Sladewski

Map 1. October 1989 percent of normal precipitation.



Oklahoma City's mean daily temperature remained above normal during most of October. The cold air mass on the 19th, however, did produce temperatures which were over 20 degrees below normal.

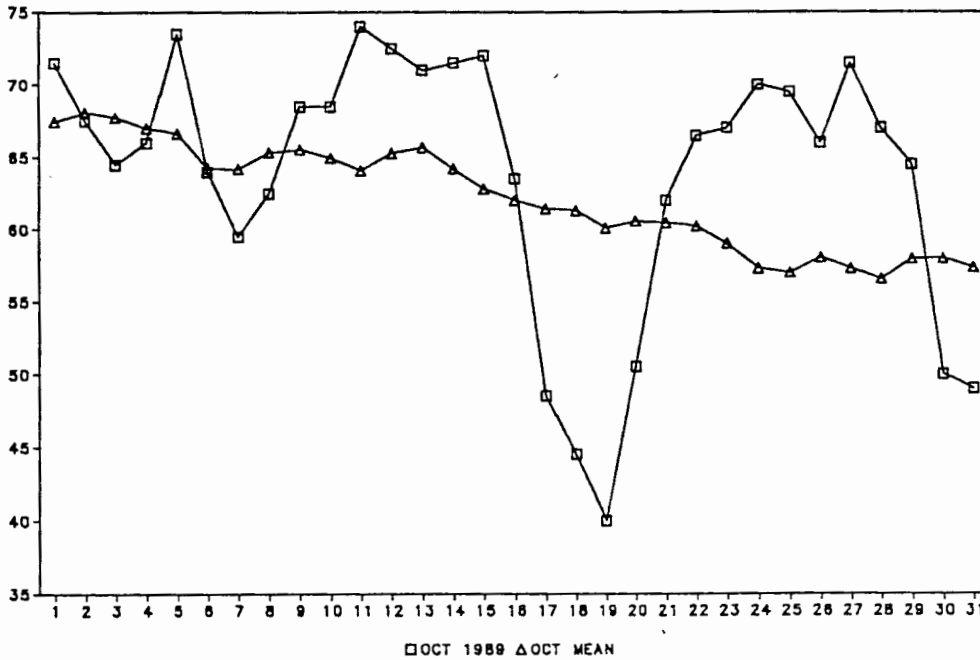


Fig. 1. Oklahoma City October daily temperature long-term mean compared to 1989.

TABLE OF 1988/1989 COMPARISONS

Station	October Temperature (F)		October Precipitation (in.)	
	88	89	88	89
ARNETT	56.2	61.2	1.31	1.51
ENID	58.6	63.7	2.05	3.35
MUTUAL	56.6	*	1.30	*
TULSA	59.1	64.8	1.43	2.80
ELK CITY	60.0	63.5	.36	1.71
OKLAHOMA CITY	60.2	63.8	1.90	3.28
MCALESTER	61.5	66.1	1.73	.89
ALTUS IRR. STA.	63.1	66.6	.90	.80
DURANT	60.5	65.0	3.13	1.54
ADA	60.7	64.2	3.65	1.92
ANTLERS	61.3	65.6	2.98	.99

EXTREMES

Variable	Station	Divison	Observation	Date
Minimum temperature (F)	Sallisaw	6	18	20
Maximum temperature (F)	Reydon	4	100	1
Maximum 24-hour precipitation	Hardy	2	3.40"	6

TORNADO CLIMATOLOGY INFORMATION AVAILABLE

The Oklahoma Climatological Survey recently developed software which analyzes the National tornado database provided by the National Severe Storms Forecast Center. The resulting tornado climatology provides valuable tabular and graphical information regarding movement, intensity of the tornadoes, dollar damage estimates, and date, time and duration of the event. One popular product is the county tornado map (see Map 2). The solid lines represent tornado path and the asterisks indicate the path endpoint. The boundary, in this case, is Osage County, OK. Similar maps along with accompanying data tables for the entire U.S., by county, state or region can be purchased from the Survey. Price list available on request.

Map 2. Osage County, OK Tornado Path Map, 1950-1988.

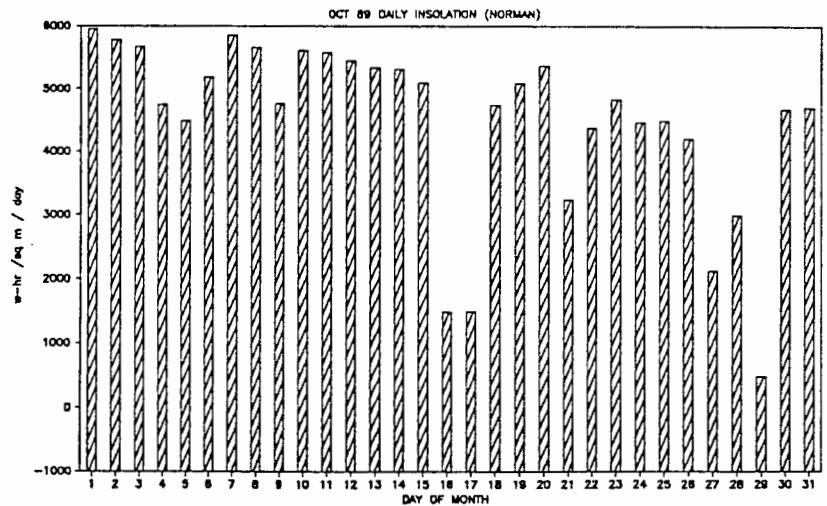


INSOLATION DATA AVAILABLE

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 October 1989 daily observations.

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

DATE	INSOLATION AMOUNT
1	5951.71
2	5783.10
3	5673.38
4	4744.20
5	4494.20
6	5191.43
7	5852.82
8	5656.99
9	4759.48
10	5609.77
11	5582.27
12	5450.04
13	5341.99
14	5315.88
15	5093.93
16	1488.51
17	1491.57
18	4741.70
19	5090.32
20	5366.43
21	3239.75
22	4373.09
23	4830.59
24	4463.65
25	4486.70
26	4202.26
27	2127.41
28	2988.36
29	485.45
30	4672.26
31	4700.04



OCTOBER 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	PPT						
ARNEIT	332	1	61.2	31	1.4	97.	2	26.	20	176.0	-31.0	58.5	12.5	1.510	31	-.30	1.09	6		
BEAVER	593	1	58.4	31	-.8	95.	14	19.	20	245.5	26.5	41.5	1.5	.090	31	-1.13	.09	6		
BOISE CITY 2 E	908	1	58.2	31	.8	90.	13	20.	19	235.5	-13.5	26.0	12.0	.052	31	-.78	.05	16		
BUFFALO	1243	1	63.2	31	1.1	96.	1	20.	20	149.5	-5.5	92.5	27.5	.280	31	-1.67	.18	6		
FARGO	3070	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.700	31	-.97	.70	6		
GAGE FAA APT	3407	1	61.7	31	2.0	98.	1	20.	20	181.5	-20.5	79.0	41.0	.391	31	-1.20	.39	6		
GATE	3489	1	60.7	31	*****	95.	16	25.	19	194.5	*****	61.0	*****	.150	31	*****	.12	6		
GOODWELL RES	ST3628	1	58.1	31	-.3	95.	14	21.	19	241.5	10.5	28.5	1.5	.034	31	-.92	.03	6		
GUYMON	3835	1	59.2	27	*****	96.	13	23.	19	201.0	*****	45.5	*****	.001	30	*****	.00	6		
HOOKER	4298	1	59.0	31	.2	96.	14	23.	19	227.5	1.5	42.5	8.5	.002	31	-1.11	.00	17		
KENTON	4766	1	55.8	31	-1.7	91.	1	19.	19	310.0	60.0	23.5	5.5	.390	31	-.51	.14	4		
LAVERNE	5045	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.191	31	-1.32	.14	6		
OPTIMA LAKE	6740	1	58.3	31	*****	96.	14	22.	20	237.0	*****	29.5	*****	.040	30	*****	.04	6		
RANGE	7412	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.091	31	*****	.09	6		
REGNIER	7534	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.230	31	-.53	.19	16		
TURPIN 4 SSE	9017	1	58.1	30	*****	96.	2	21.	20	245.0	*****	37.0	*****	.030	31	*****	.03	6		

OCTOBER 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	PPT						
ALVA	193	2	62.4	31	*****	97.	1	25.	19	162.0	*****	82.5	*****	.300	31	*****	.30	29		
VANCE AFB	302	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.632	30	*****	1.46	6		
BILLINGS	755	2	62.4	31	*****	88.	15	28.	31	148.0	*****	68.5	*****	3.581	31	1.11	2.70	6		
BLACKWELL 2E	818	2	62.8	31	*****	91.	1	28.	20	147.0	*****	80.0	*****	4.133	31	*****	2.93	6		
BRAMAN	1075	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.891	31	*****	2.34	6		
CHEROKEE	1724	2	63.5	31	1.3	96.	2	26.	19	145.0	-6.0	98.0	34.0	1.250	31	-.57	1.05	5		
ENID	2912	2	63.7	31	.8	93.	1	27.	19	138.0	4.0	98.0	29.0	3.350	31	.54	1.89	6		
FREEDOM	3358	2	61.6	31	*****	96.	1	19.	20	183.5	*****	78.5	*****	.210	31	*****	.21	6		
GREAT SALT PLNS	3740	2	62.2	30	*****	96.	2	26.	20	162.0	*****	78.5	*****	2.911	24	*****	2.20	6		
HARDY	3909	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.802	31	*****	3.40	6		
HELENA 1 SSE	4019	2	60.7	31	*****	93.	2	27.	31	182.0	*****	48.5	*****	1.433	31	-.69	1.43	6		
JEFFERSON	4573	2	60.7	26	*****	95.	1	24.	20	164.0	*****	51.5	*****	.440	31	-2.11	.31	29		
LAMONT	5013	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.980	31	*****	1.72	6		
MEDFORD	5768	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.810	31	*****	.41	29		
MORRISON	6065	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.420	31	*****	1.52	30		
MUTUAL	6139	2	61.0	31	.1	96.	2	23.	19	185.5	10.5	60.5	12.5	.930	31	-.59	.93	6		
NEWKIRK	6278	2	62.6	31	.7	90.	11	27.	19	158.0	1.0	84.0	23.0	3.700	31	.93	3.15	6		
ORIENTA	6751	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.630	31	*****	.63	6		
PERRY	7012	2	62.2	31	-1.3	85.	25	21.	31	151.5	26.5	66.0	-13.0	2.530	31	-.10	1.54	30		
PONCA CITY FAA	7201	2	63.5	31	2.6	92.	11	27.	20	145.5	-33.5	98.5	47.5	4.441	31	1.84	2.74	6		
RED ROCK 1 NNE	7505	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.540	31	2.07	2.30	6		
RENFROW	7556	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.851	31	1.53	2.05	6		
WAYNOKA	9404	2	62.6	31	.4	97.	1	23.	31	166.0	8.0	90.5	19.5	1.420	31	-.29	1.11	6		
WOODWARD	9760	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.550	31	*****	.55	6		

OCTOBER 1989 SUMMARY FOR NORTHEAST DIVISION (CD3)

NAME	ID CD	DEV						HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV			24-HR DAY	
		MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	MAX DAY						NUM OBS	FROM NORM	MAX		
BARNSDALL	535 3	61.1	31	*****	91.	11	20.	20	174.5	*****	55.0	*****	2.581	31	-.49	1.82	30
BARTLESVILLE 2W	548 3	62.5	31	.9	92.	11	25.	20	152.5	-7.5	75.5	21.5	4.091	31	.88	2.50	30
BIXBY	782 3	61.9	31	.2	89.	13	23.	20	152.5	-19.5	56.5	-13.5	2.660	31	-.50	1.51	30
BURBANK	1256 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.641	31	*****	1.73	6
CHELSEA 4 S	1717 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.480	31	*****	1.72	30
CLAREMORE	1828 3	62.5	31	1.1	90.	12	23.	21	157.0	-23.0	78.0	10.0	2.354	31	-1.07	1.43	30
CLEVELAND 5 WSW	1902 3	63.2	25	*****	93.	11	25.	20	128.0	*****	84.0	*****	2.850	31	*****	2.10	30
FORAKER	3250 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.950	31	2.85	3.22	6
HOLLOW	4258 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.870	31	-1.66	.90	30
HOMINY	4289 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.902	31	-.05	1.94	30
HULAH DAM	4393 3	59.8	27	*****	91.	12	21.	20	192.0	*****	51.0	*****	5.960	28	*****	3.00	30
JAY TOWER	4567 3	62.3	30	*****	88.	13	24.	20	147.0	*****	66.5	*****	3.110	30	*****	1.84	6
KANSAS 1 ESE	4672 3	62.2	31	*****	87.	13	25.	20	147.0	*****	60.0	*****	1.862	31	*****	1.52	30
KEYSTONE DAM	4812 3	61.1	28	*****	90.	12	28.	20	161.0	*****	53.0	*****	3.340	29	*****	1.73	30
LENAPAH	5118 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.060	31	*****	1.80	30
MANNFORD 6 NW	5522 3	65.0	30	*****	93.	11	22.	20	109.5	*****	110.0	*****	3.520	31	.88	1.99	30
MARAMEC	5540 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.831	31	-.33	1.85	30
MIAMI	5855 3	61.4	31	-.0	89.	14	23.	21	167.5	-6.5	54.5	-8.5	2.071	31	-1.67	.92	30
NOWATA	6485 3	62.0	31	.2	90.	11	30.	31	148.5	-8.5	56.0	-2.0	1.791	31	-1.51	1.15	30
ONETA 1 WNW	6713 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.060	31	*****	1.26	30
PAWHUSKA	6935 3	61.8	31	.3	91.	11	24.	20	169.5	8.5	71.0	18.0	4.062	31	1.13	2.17	30
PAWHUSKA	6937 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.551	31	*****	1.85	30
PAWNEE	6940 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.950	31	.23	1.90	30
PRYOR 6 N	7309 3	60.5	31	-.9	89.	12	21.	21	177.5	10.5	38.5	-16.5	1.816	31	-1.95	1.20	30
QUAPAW	7358 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.300	31	-1.36	1.55	30
RALSTON	7390 3	63.8	31	*****	94.	11	22.	20	136.5	*****	99.5	*****	3.051	31	.36	1.50	30
RAMONA 4 N	7394 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.280	31	*****	1.55	30
SKIATOOK	8258 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.480	31	-.71	1.34	30
SPAVINAW	8380 3	64.4	31	*****	87.	12	27.	20	124.5	*****	106.0	*****	2.631	31	-1.02	1.92	30
TULSA WSO APT	8992 3	64.8	31	2.2	92.	11	33.	20	118.0	-28.0	110.5	38.5	2.804	31	-.61	1.45	30
UPPER SPAVINAW	9101 3	64.9	31	*****	93.	12	29.	20	122.5	*****	120.5	*****	1.732	31	*****	1.02	30
VINITA 2 N	9203 3	61.7	31	.5	88.	11	21.	20	165.5	-10.5	64.5	6.5	2.290	31	-1.43	1.22	30
WAGONER	9247 3	65.1	31	2.0	90.	11	26.	20	118.0	-23.0	120.5	38.5	1.612	31	-1.49	1.19	30
WANN	9298 3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.210	31	*****	2.00	30
WYONNA	9792 3	64.5	31	*****	93.	11	30.	19	126.5	*****	111.5	*****	3.033	31	*****	2.20	30

OCTOBER 1989 SUMMARY FOR WEST CENTRAL DIVISION (CD4)

NAME	ID CD	DEV						HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV			24-HR DAY	
		MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	MAX DAY						NUM OBS	FROM NORM	MAX		
CANTON DAM	1445 4	61.8	30	-.8	94.	2	26.	31	167.5	22.5	70.0	-1.0	.840	30	*****	.83	6
CHEYENNE	1738 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.000	31	*****	1.00	6
CLINTON	1909 4	64.8	31	2.6	98.	14	26.	31	111.0	-34.0	105.5	47.5	2.740	31	.04	1.90	6
COLONY	2039 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.480	31	*****	1.52	6
CORDELL	2125 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.532	31	-1.05	.90	6
ELK CITY 1 E	2849 4	63.5	31	*****	94.	1	27.	19	118.0	*****	72.5	*****	1.712	31	-.28	1.67	6
ERICK 4 E	2944 4	63.5	31	1.7	97.	1	24.	20	119.5	-25.5	72.5	27.5	1.070	31	-1.13	1.07	6
GEARY	3497 4	61.8	27	*****	91.	1	28.	19	147.0	*****	60.5	*****	1.270	27	*****	.77	6
HAMMON 1 NNE	3871 4	58.6	31	-2.7	94.	2	17.	30	227.0	57.0	28.5	-27.5	.740	31	-1.16	.74	6
LEEDEY	5090 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.000	31	-.76	1.00	6
MACKIE 4 NNW	5463 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.350	31	*****	.35	6
MORAVIA 2 NNE	6035 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.570	31	-1.85	.57	6
OKEENE	6629 4	63.4	31	.0	95.	1	27.	19	137.5	15.5	89.0	16.0	1.450	31	-.67	1.05	6
RETROP	7565 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.570	31	*****	1.35	6
REYDON	7579 4	63.3	31	*****	100.	1	25.	19	137.5	*****	84.0	*****	.850	31	-.83	.85	6
SAYRE	7952 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.550	31	-.58	1.55	6
SWEETWATER 2 E	8652 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.401	31	*****	1.33	13
TALOGA	8708 4	62.3	31	1.3	95.	1	20.	31	150.5	-17.5	65.5	21.5	.510	31	-1.35	.51	6
THOMAS	8815 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.570	31	*****	.57	9
VICI	9172 4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.640	31	*****	.60	6
WATONGA	9364 4	63.4	31	*****	92.	1	26.	19	143.5	*****	92.5	*****	1.632	31	-.59	.86	6
WEATHERFORD	9422 4	63.3	31	.6	94.	2	28.	20	143.0	9.0	91.0	28.0	2.301	31	-.43	1.45	6

OCTOBER 1989 SUMMARY FOR CENTRAL DIVISION (CD5)

NAME	ID	CD	DEV				MIN		HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV NUM OBS	FROM NORM	MAX 24-HR	DAY	
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	DAY	DAY										
AMBER	200	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.960	31	*****	1.14	6
ARCADIA	288	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.850	31	*****	2.27	30
TINKER AFB	325	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.344	31	*****	2.12	30
BLANCHARD 2 SSW	830	5	65.9	30	*****	91.	11	29.	20	91.5	*****	117.5	*****	2.101	31	*****	1.03	6
BRISTOW	1144	5	64.2	31	.9	91.	11	23.	20	122.5	-13.5	98.0	13.0	3.493	31	.95	2.35	30
CHANDLER	1684	5	64.6	30	1.3	91.	11	27.	19	108.0	-21.0	95.5	18.5	3.331	30	*****	2.00	30
CHICKASHA EX ST1750	5	5	65.2	31	2.0	92.	11	25.	20	117.5	-10.5	123.5	51.5	2.440	31	-.27	1.36	30
COX CITY 1 E	2196	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.003	31	*****	2.00	30
CRESCENT	2242	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.630	31	*****	1.22	30
CUSHING	2318	5	63.2	31	.8	91.	12	29.	19	140.0	-10.0	84.5	15.5	1.250	31	-1.43	1.25	6
EL RENO 1 N	2818	5	64.2	31	1.8	91.	11	28.	19	126.0	-14.0	100.5	41.5	1.890	31	-.99	1.00	6
GUTHRIE	3821	5	65.1	30	2.1	91.	12	27.	20	118.0	-21.0	121.0	44.0	3.410	31	.75	2.40	30
HENNESSEY 2 SE	4055	5	64.2	31	1.4	94.	2	27.	19	125.0	-16.0	100.0	27.0	2.730	31	.62	1.22	30
INGALLS	4489	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.783	31	*****	1.90	30
KINGFISHER 2 SE4861	5	5	63.7	31	.8	92.	11	27.	19	130.0	1.0	88.5	24.5	1.970	31	-.47	1.00	6
KONAWA	4915	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.530	31	-2.06	1.39	30
MARSHALL	5589	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.460	31	.86	2.40	30
MEEKER 4 W	5779	5	64.1	31	1.6	90.	11	28.	20	119.0	-31.0	90.5	17.5	4.210	31	1.43	2.09	6
MULHALL	6110	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.570	31	*****	2.42	30
NORMAN 3 S	6386	5	65.2	31	*****	93.	11	29.	20	113.5	*****	120.0	*****	2.763	31	.13	1.56	30
OILTON 2 SE	6616	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.260	31	*****	2.06	30
OKEMAH	6638	5	64.4	30	.9	90.	11	30.	19	111.0	-14.0	92.5	13.5	3.320	30	*****	2.44	30
OKLAHOMA CITY WS6661	5	5	63.8	31	1.5	90.	11	30.	19	122.0	-23.0	84.0	23.0	3.282	31	.57	1.82	6
PERKINS	7003	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.390	31	.24	1.72	6
PIEDMONT	7068	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.420	31	*****	1.44	30
PRAGUE	7264	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.900	31	.03	1.15	6
PURCELL 5 SW	7327	5	64.5	31	1.6	92.	11	22.	20	118.0	-17.0	103.5	33.5	2.970	31	-.21	2.30	30
SEMINOLE	8042	5	65.3	31	.7	92.	11	27.	20	105.5	5.5	115.5	27.5	2.550	31	-.30	1.72	30
SHAWNEE	8110	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.640	31	.44	2.14	30
STELLA	8479	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.520	31	*****	1.27	6
STILLWATER 2 W	8501	5	62.6	31	.7	90.	12	24.	20	154.0	-4.0	79.0	17.0	2.821	31	-.08	1.59	30
STROUD 1 N	8563	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.921	31	*****	1.71	30
TECUMSEH	8751	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.400	31	*****	.97	30
TROUSDALE	8960	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.520	31	*****	1.65	30
UNION CITY 1 SE9086	5	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.561	31	.47	1.82	6
WELTY 1 SSE	9479	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.981	31	*****	1.90	30
WEWOKA	9575	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.781	31	-1.20	1.00	30

OCTOBER 1989 SUMMARY FOR EAST CENTRAL DIVISION (CD6)

NAME	ID	CD	DEV				MIN	HEAT				TOT	DEV					
			MEAN	NUM	FROM	MAX		DEG	DEV	COOL	DEV		NUM	FROM	MAX			
			TEMP	OBS	NORM	TEMP	DAY	TEMP	DAY	DEG	FROM	DEG	FROM	PPT	OBS	NORM	24-HR	DAY
ASHLAND	364	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.951	31	*****	.91	30
BEGGS	631	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.271	31	*****	1.57	30
BOYNTON	1027	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.650	31	*****	.80	30
CALVIN	1391	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.224	31	-2.49	1.15	30
CHECOTAH	1711	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.952	31	-2.49	.57	30
CLAYTON 11 WNW	1858	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.250	31	*****	1.25	30
DEWAR 2 NE	2485	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.250	31	-1.01	1.30	30
DUSTIN	2690	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.780	31	*****	.43	6
EUFULA	2993	6	64.1	31	*****	87.	11	33.	20	109.5	*****	80.5	*****	.822	31	-2.59	.62	30
HANNA	3884	6	63.7	31	*****	91.	11	25.	20	113.5	*****	74.5	*****	1.651	31	-1.62	1.01	30
HARTSHORNE	3946	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.821	31	*****	.95	30
HASKELL	3956	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.743	31	-1.33	1.07	30
HOLDENVILLE	4235	6	64.5	31	.4	92.	11	25.	20	113.0	-2.0	97.0	10.0	1.621	31	-1.92	1.29	30
LYONS 2 N	5437	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.280	31	-1.80	.69	6
MARBLE CITY	5546	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.711	31	*****	.44	30
MCALESTER FAA	5664	6	66.1	31	2.9	90.	12	25.	20	106.5	-26.5	141.0	63.0	.894	31	-3.01	.83	30
MCCURTAIN 1 SE	5693	6	65.5	31	*****	93.	11	24.	19	109.0	*****	124.5	*****	.804	31	-2.51	.70	30
MUSKOGEE	6130	6	65.0	31	2.1	89.	12	31.	19	110.5	-29.5	110.5	35.5	1.150	31	-2.19	.60	30
OKMULGEE W W	6670	6	62.2	29	*****	92.	11	23.	20	139.0	*****	57.0	*****	2.532	29	*****	1.53	30
OKTAHA 2 NE	6678	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.960	31	*****	1.12	6
QUINTON	7372	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.845	31	-2.76	.60	30
SALLISAW 2 NE	7862	6	63.5	31	.1	91.	11	18.	20	134.5	8.5	88.5	12.5	1.001	31	-2.86	.68	30
SCIPIO	7979	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.850	31	*****	.75	30
SCRAPER	7993	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.250	31	*****	.75	30
SHORT	8170	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.720	31	*****	.53	30
STILWELL 1 NE	8506	6	63.5	31	*****	88.	12	24.	20	141.0	*****	95.0	*****	1.294	31	-1.99	.51	7
TAHLEQUAH	8677	6	63.4	31	1.5	90.	12	23.	20	138.5	-30.5	89.5	16.5	.871	31	-2.52	.49	30
WEBBERS FALLS	9445	6	63.7	31	1.7	91.	13	23.	20	138.5	-13.5	97.5	38.5	.821	31	-2.93	.44	30
WESTVILLE	9523	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.120	31	*****	.83	30
WETUMKA 3 NE	9571	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.713	31	-1.42	.98	30

OCTOBER 1989 SUMMARY FOR SOUTHWEST DIVISION (CD7)

NAME	ID	CD	DEV				MIN	HEAT				TOT	DEV					
			MEAN	NUM	FROM	MAX		DEG	DEV	COOL	DEV		NUM	FROM	MAX			
			TEMP	OBS	NORM	TEMP	DAY	TEMP	DAY	DEG	FROM	DEG	FROM	PPT	OBS	NORM	24-HR	DAY
ALTUS IRR STA	179	7	66.6	31	2.0	99.	1	25.	19	94.0	-13.0	145.0	50.0	.800	31	-1.75	.60	30
ALTUS DAM	184	7	65.7	31	*****	98.	2	27.	19	125.5	*****	146.5	*****	2.500	31	-.20	2.22	30
ANADARKO	224	7	63.4	23	*****	91.	11	21.	20	86.5	*****	49.5	*****	2.850	24	*****	1.85	30
APACHE	260	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.530	31	*****	2.38	30
ALTUS AFB	447	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.322	31	*****	.18	6
CARNEGIE 2 ENE	1504	7	65.3	31	2.1	94.	1	24.	20	110.5	-15.5	120.0	49.0	2.770	31	.58	2.03	5
CHATTANOOGA	1706	7	66.6	30	2.3	95.	2	25.	20	74.5	-26.5	123.5	44.5	.711	30	*****	.71	30
DUNCAN 12 W	2668	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.301	31	*****	1.30	30
FREDERICK	3353	7	65.5	31	-1	96.	2	28.	18	108.5	15.5	125.5	13.5	1.430	31	-1.03	1.40	30
GRANDFIELD 4 NW3709	7	*****	0	*****	****	0	****	0	0	*****	*****	*****	*****	1.390	31	-1.45	1.30	30
HOBART FAA APT	4204	7	65.4	31	3.0	95.	1	27.	19	109.0	-33.0	120.0	59.0	1.451	31	-1.07	1.01	6
HOLLIS	4249	7	65.6	31	1.6	99.	1	20.	31	90.5	-19.5	109.5	30.5	.000	31	-2.25	.00	31
LAWTON	5063	7	64.3	30	.3	93.	2	31.	19	115.0	.0	95.5	11.5	.472	31	-2.38	.47	29
FORT SILL	5068	7	66.0	31	*****	92.	11	35.	31	99.5	*****	129.5	*****	.522	31	-2.33	.50	29
LOOKEBA 2 ENE	5329	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.300	31	*****	2.48	6
MANGUM RES STA	5509	7	65.6	31	1.8	98.	1	24.	19	109.5	-8.5	128.0	47.0	1.510	31	-1.11	1.33	30
RANDLETT 9 E	7403	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.192	31	*****	1.19	30
ROOSEVELT	7727	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.430	31	-2.05	.35	29
SEDAN	8016	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.901	31	*****	.78	30
SNYDER	8299	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.630	31	-1.73	.55	22
VINSON 3 WNW	9212	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.410	31	-1.86	.41	6
WALTERS	9278	7	66.7	31	1.9	93.	11	26.	20	92.5	-23.5	146.5	36.5	2.280	31	-.64	2.07	29
WICHITA MT WLR	9629	7	65.1	31	2.4	93.	12	26.	20	117.0	-22.0	120.5	52.5	1.600	31	-1.13	1.52	30
WILLOW	9668	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.620	31	*****	.58	6

OCTOBER 1989 SUMMARY FOR SOUTH CENTRAL DIVISION (CD8)

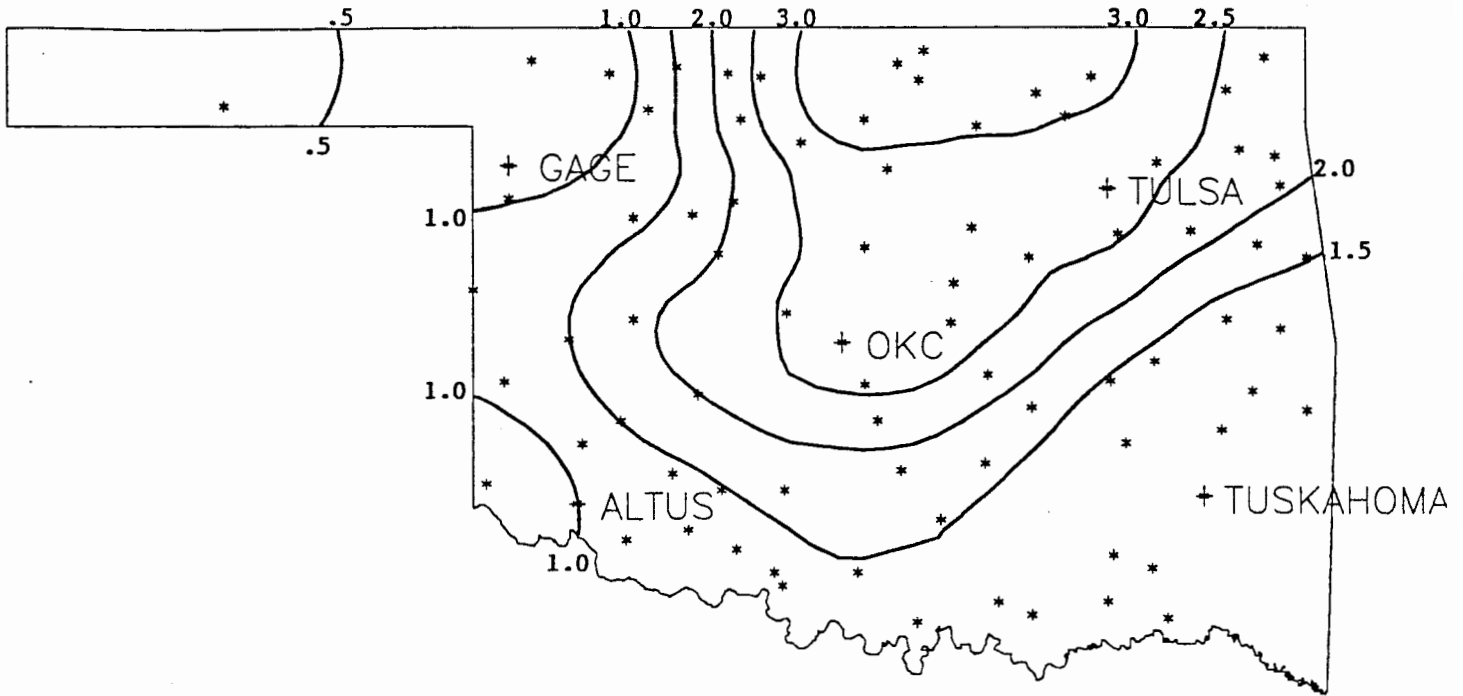
NAME	ID	CD	DEV				HEAT		DEV		COOL		DEV		TOT	NUM	FROM	MAX	24-HR	DAY
			MEAN	NUM	FROM	MAX	DEG	FROM	DEG	FROM	DEG	FROM	DEG	FROM						
ADA	17	8	64.5	31	.1	91.	11	29.	20	102.0	-17.0	87.0	-13.0	1.920	31	-2.00	1.91	30		
ALLEN	147	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.400	31	*****	1.40	30		
ARDMORE	292	8	66.6	31	-.3	91.	11	29.	20	91.0	22.0	141.0	13.0	.500	31	-2.90	.50	30		
ATOKA DAM	394	8	65.2	29	*****	92.	13	27.	20	110.0	*****	116.0	*****	.870	31	*****	.87	30		
BOKCHITO	917	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.000	31	*****	1.00	30		
CANEY	1437	8	65.9	31	*****	92.	11	30.	20	95.5	*****	122.0	*****	1.090	31	*****	.98	30		
CENTRAHOMA	1648	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.100	31	*****	1.10	30		
CHICKASAW NRA	1745	8	64.2	31	*****	92.	12	24.	21	144.0	*****	118.0	*****	1.450	31	*****	1.24	30		
COLEMAN	2011	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.451	31	*****	.45	30		
COMANCHE	2054	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.191	31	*****	2.07	30		
DAISY 4 ENE	2354	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.861	31	-2.95	.86	30		
DUNCAN	2660	8	64.8	29	*****	92.	13	28.	20	110.0	*****	105.0	*****	2.760	29	*****	2.43	30		
DURANT USDA	2678	8	65.0	31	*****	93.	12	27.	21	109.5	*****	108.5	*****	1.540	31	-1.93	1.28	30		
ELMORE CITY	2872	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.402	31	*****	2.20	30		
FARRIS 3 WNW	3083	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.000	31	*****	.98	30		
GRADY	3688	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.880	31	*****	.83	30		
HEALDTON	4001	8	65.1	31	*****	93.	11	23.	20	105.5	*****	109.5	*****	1.090	31	-2.03	.65	30		
HENNEPIN	4052	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.040	31	*****	2.33	30		
KETCHUM RANCH	4780	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.680	31	*****	2.10	30		
KINGSTON	4865	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.220	31	-2.42	.95	30		
LEHIGH	5108	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.103	31	*****	1.10	30		
LINDSAY 2 W	5216	8	62.3	24	*****	89.	1	23.	20	120.5	*****	54.5	*****	1.441	24	*****	.92	30		
LOCO 6 SE	5247	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.751	31	*****	.62	30		
MADILL	5468	8	66.0	31	.7	93.	11	28.	20	90.0	-3.0	122.5	20.5	1.060	31	-2.51	.95	30		
MARIETTA	5563	8	67.1	31	1.7	94.	11	30.	20	89.0	-3.0	155.0	50.0	1.830	31	-1.20	1.65	30		
MARLOW 1 WSW	5581	8	66.6	31	*****	95.	11	25.	20	95.0	*****	145.5	*****	1.411	31	-1.54	1.27	30		
MCGEE CREEK DAM	5713	8	65.7	31	*****	91.	13	29.	20	105.0	*****	125.5	*****	.940	31	*****	.87	30		
OSWALT	6787	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.320	31	*****	1.32	30		
PAULS VALLEY	6926	8	65.8	30	1.4	93.	11	23.	20	100.0	-5.0	122.5	39.5	2.280	31	-1.29	2.00	30		
PONTOTOC	7214	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.050	31	-2.73	1.05	30		
TISHOMINGO NWLR	8884	8	65.2	27	*****	94.	11	24.	20	97.5	*****	102.0	*****	1.030	31	-2.60	.89	30		
TUSSY	9032	8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.330	31	*****	2.15	30		
WAURIKA	9395	8	67.0	31	1.5	94.	11	28.	20	88.0	-6.0	149.0	40.0	.981	31	-1.71	.98	30		
WAURIKA DAM	9399	8	65.4	30	*****	93.	12	31.	21	108.0	*****	120.0	*****	1.050	31	*****	.90	30		

OCTOBER 1989 SUMMARY FOR SOUTHEAST DIVISION (CD9)

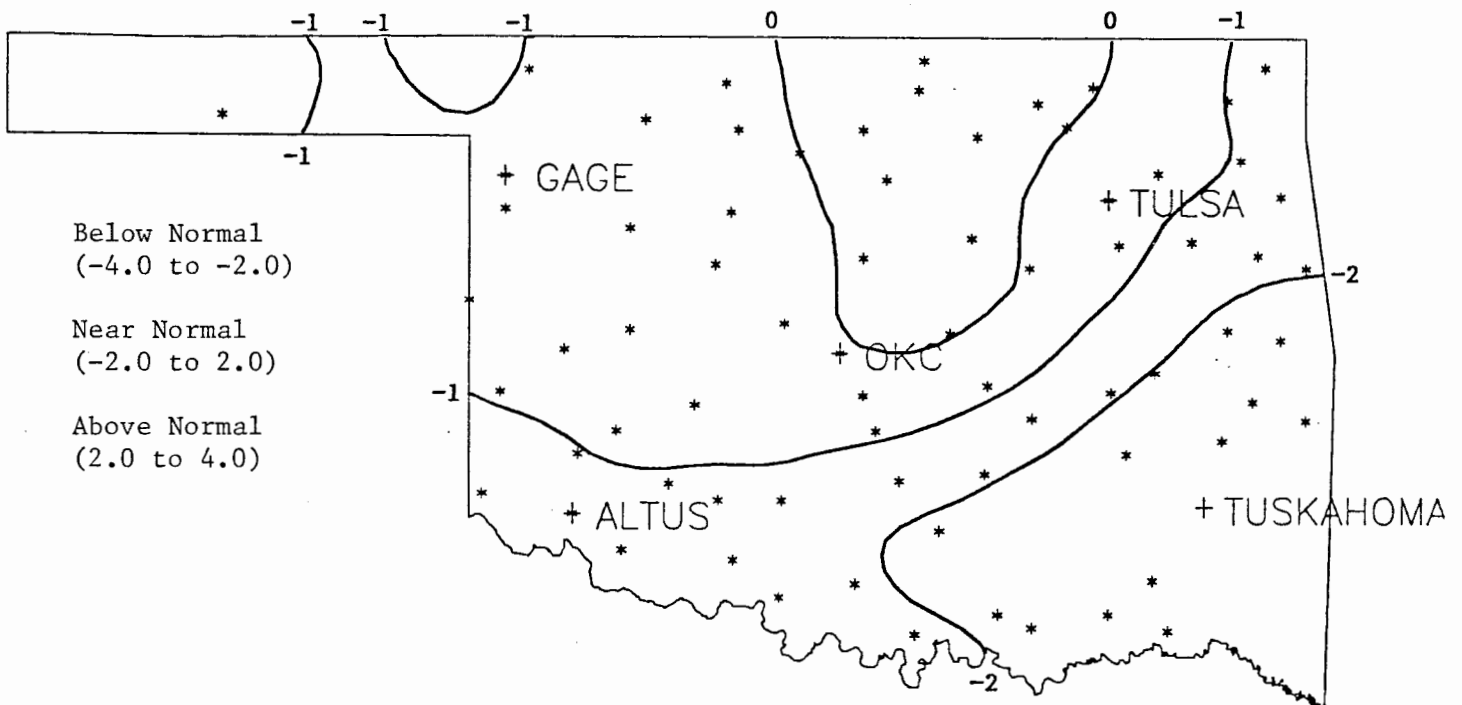
NAME	ID	CD	DEV					HEAT		DEV		COOL		DEV		TOT PPT	NUM OBS	FROM NORM	MAX	24-HR DAY
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	DEG DAY	FROM NORM	DEG DAY	FROM NORM	DEG DAY	FROM NORM	FROM NORM						
ANTILERS	256	9	65.6	31	2.1	91.	12	24.	20	91.5	-32.5	111.5	33.5	.990	31	-2.92	.77	30		
BATTIEST 1 SSW	567	9	62.7	29	*****	90.	2	22.	20	124.0	*****	58.5	*****	1.460	29	*****	1.25	30		
BEAR MT TWR	584	9	64.9	26	*****	91.	2	25.	20	98.0	*****	95.0	*****	.980	29	*****	.72	30		
BENGAL	670	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.210	31	*****	.95	30		
BOSWELL 4 NNW	980	9	66.8	31	*****	93.	11	25.	20	82.0	*****	138.5	*****	1.302	31	-2.40	.95	30		
BROKEN BOW 1 N	1162	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.370	31	-2.46	.74	30		
BROKEN BOW DAM	1168	9	62.9	31	*****	91.	3	25.	19	134.5	*****	70.0	*****	1.290	31	*****	.67	29		
CARNASAW TWR	1499	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.010	31	-3.13	.73	30		
CARTER TWR	1544	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.260	31	-3.32	1.01	30		
FANSHAWE	3065	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.060	31	-2.02	.78	30		
FLAGPOLE TWR	3169	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.840	31	*****	.84	30		
HEAVENER 1 SE	4008	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.310	31	-1.99	.95	30		
HEE MT TWR	4017	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.550	31	*****	1.02	30		
HUGO	4384	9	66.6	31	1.4	92.	2	29.	20	82.5	-11.5	132.5	31.5	1.390	31	-2.55	1.05	30		
IDABEL	4451	9	64.4	31	.3	92.	3	28.	21	114.0	-1.0	94.5	7.5	1.900	31	-1.94	.84	7		
JADIE TOWER	4560	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.350	31	*****	.67	30		
POTEAU W W	7254	9	62.0	30	*****	92.	11	23.	19	154.5	*****	65.0	*****	.670	30	*****	.59	29		
SMITHVILLE 1 W	8285	9	61.0	31	*****	92.	2	16.	20	166.0	*****	42.0	*****	1.370	31	*****	1.08	30		
SOBAL TOWER	8305	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.830	31	-3.23	.74	30		
SPIRO	8416	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.871	31	-2.44	.70	30		
TUSKAHOMA	9023	9	66.0	31	*****	91.	11	19.	20	107.0	*****	139.0	*****	1.271	31	*****	1.11	30		
VALLIANT 3 W	9118	9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.050	31	-2.57	.78	30		
WILBURTON 9 ENE9634	9	64.1	31	1.3	91.	11	23.	20	119.5	-21.5	91.0	18.0	1.003	31	-2.55	.85	29			

OCTOBER 1989 CLIMATE DIVISION SUMMARY

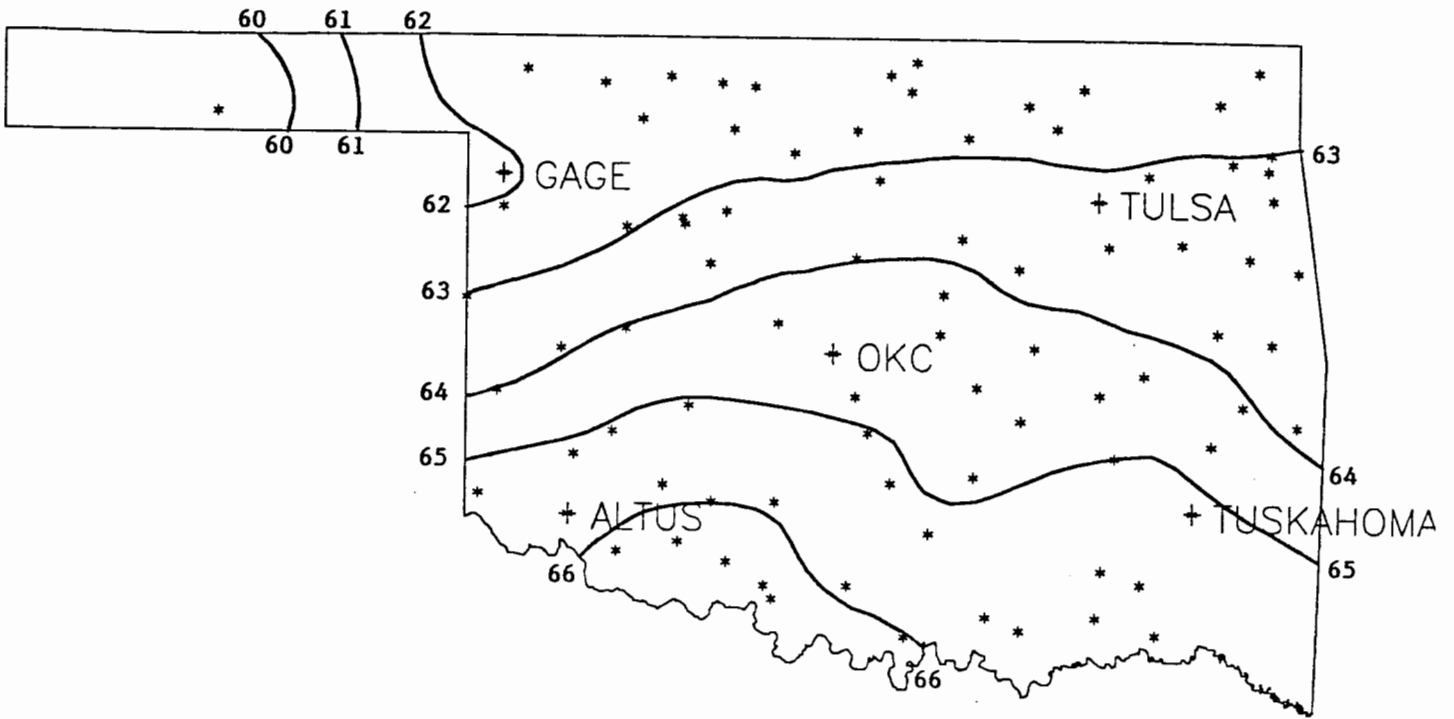
CLIMATE DIV	MEAN TEMP	NUM STA	DEV					HEAT DEGREE		DEV		COOL DEGREE		DEV		TOT PPT	NUM STA	FROM NORM	MAX	24-HR DAY
			FROM NORM	MAX TEMP	MIN DAY	DEGREE DAYS	FROM NORM	DEGREE DAYS	FROM NORM	DEGREE DAYS	FROM NORM	FROM NORM								
1	59.3	11	.2	98.0	1	19.0	19	222.1	4.8	47.2	12.0	.30	14	-1.00	1.09	6				
2	62.4	13	.3	97.0	1	19.0	20	159.5	6.7	79.4	16.1	2.37	22	.08	3.40	6				
3	62.9	18	1.3	94.0	11	20.0	20	145.3	-20.6	80.8	18.4	2.79	32	-.45	3.22	6				
4	62.8	10	.6	100.0	1	17.0	30	145.5	-.6	77.1	17.6	1.33	20	-.85	1.90	6				
5	64.4	16	1.5	94.0	2	22.0	20	120.1	-16.0	100.9	28.8	2.78	35	-.03	2.44	30				
6	64.3	10	1.4	93.0	11	18.0	20	121.4	-17.6	99.8	24.6	1.25	29	-2.15	1.57	30				
7	65.7	12	1.8	99.0	1	20.0	31	103.8	-13.8	125.8	43.3	1.33	22	-1.25	2.48	6				
8	65.8	13	.5	95.0	11	23.0	20	101.7	5.0	125.1	21.4	1.37	32	-2.00	2.43	30				
9	64.4	9	.5	93.0	11	16.0	20	116.8	-1.7	98.2	13.5	1.21	20	-2.57	1.25	30				



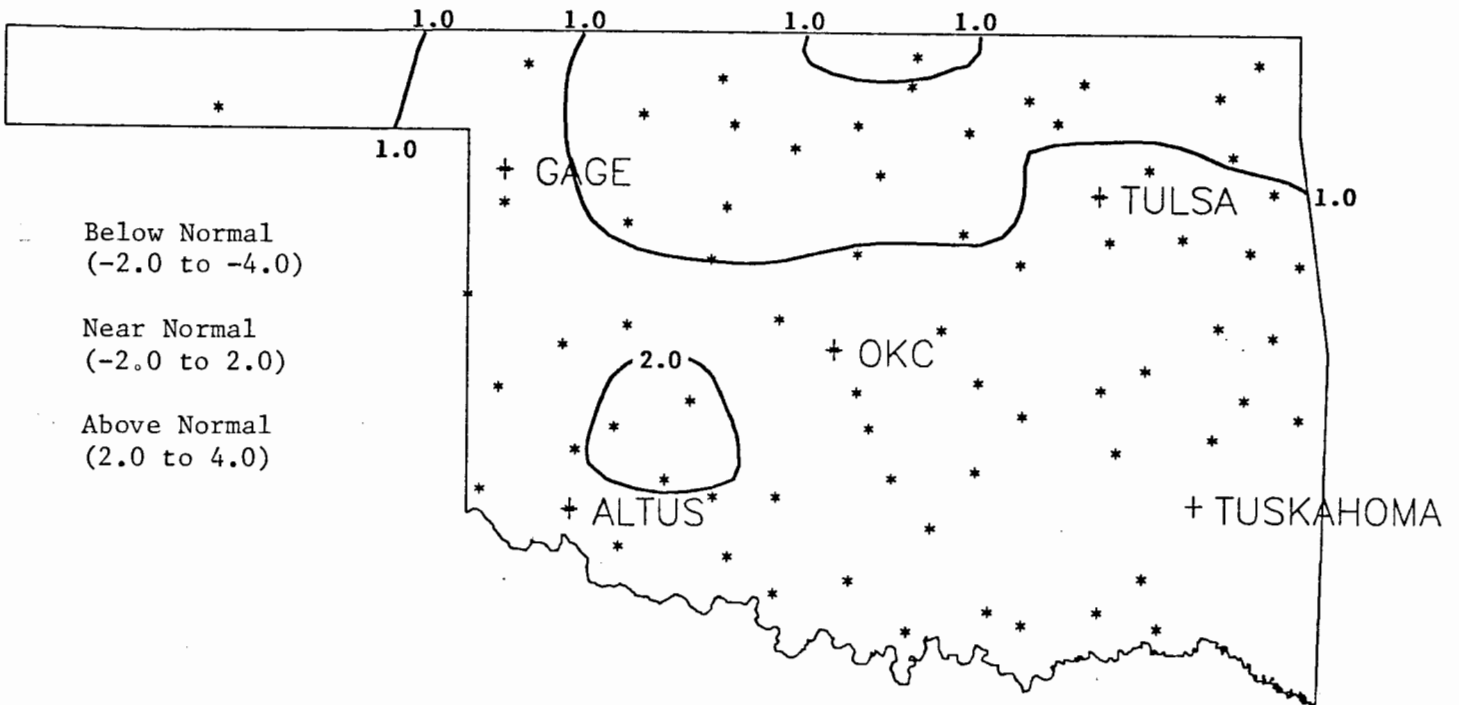
OCTOBER 1989 TOTAL PRECIPITATION
(Inches)



OCTOBER 1989 DEVIATION FROM NORMAL PRECIPITATION
(Inches)



OCTOBER 1989 AVERAGE MONTHLY TEMPERATURES
(Degrees F)

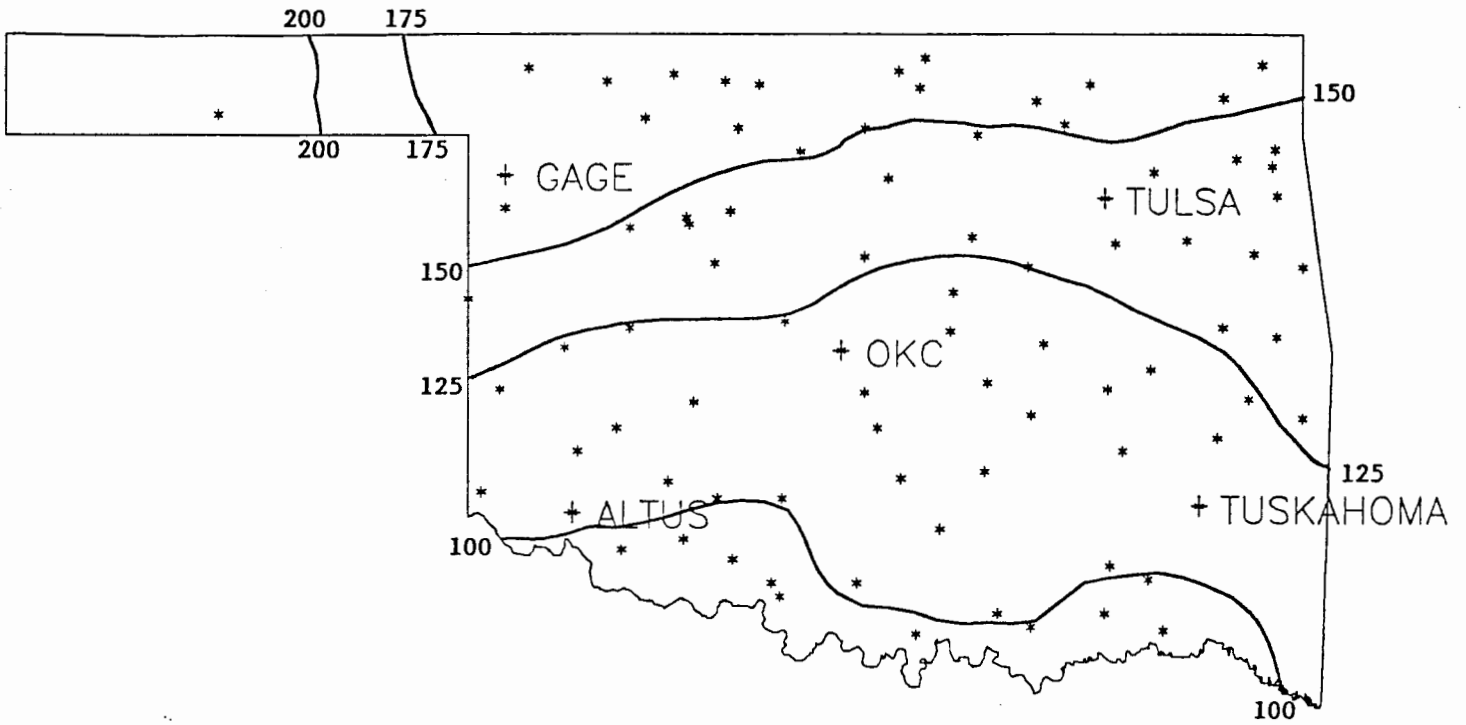


Below Normal
(-2.0 to -4.0)

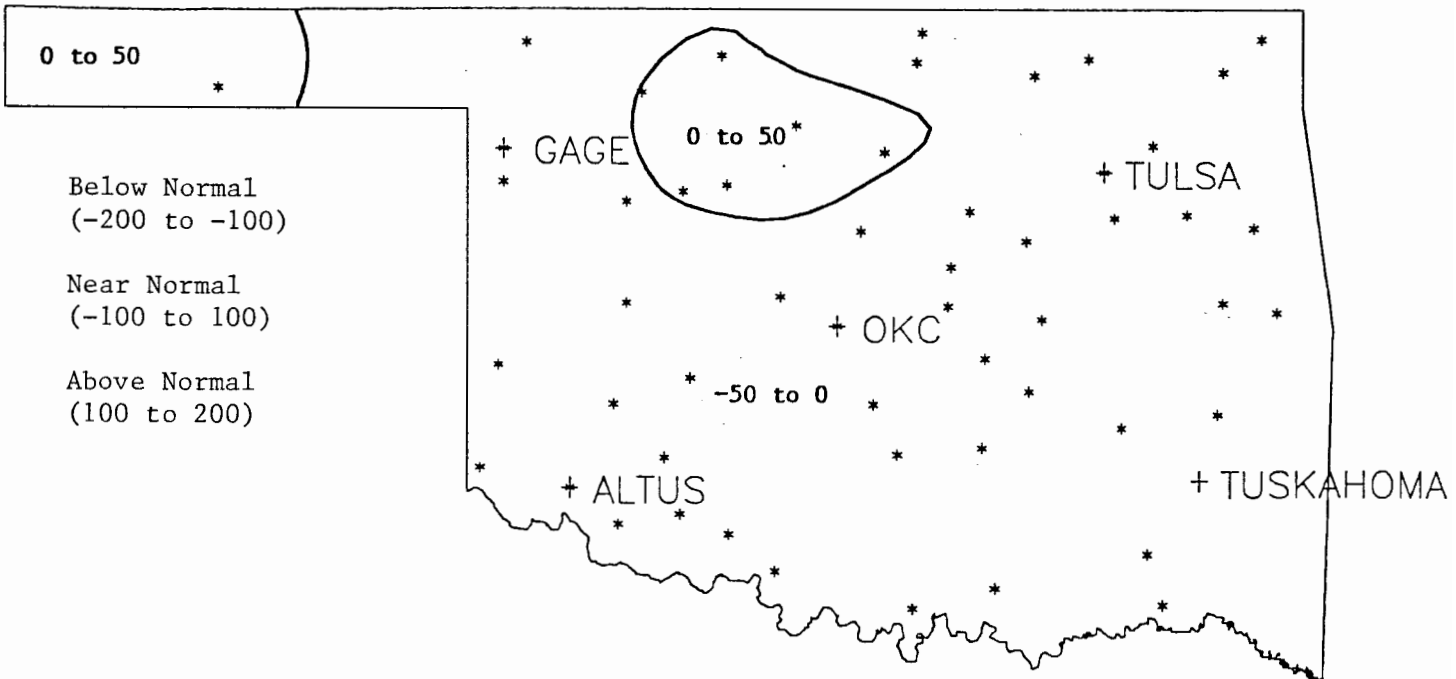
Near Normal
(-2.0 to 2.0)

Above Normal
(2.0 to 4.0)

OCTOBER 1989 DEVIATION FROM NORMAL TEMPERATURES
(Degrees F)

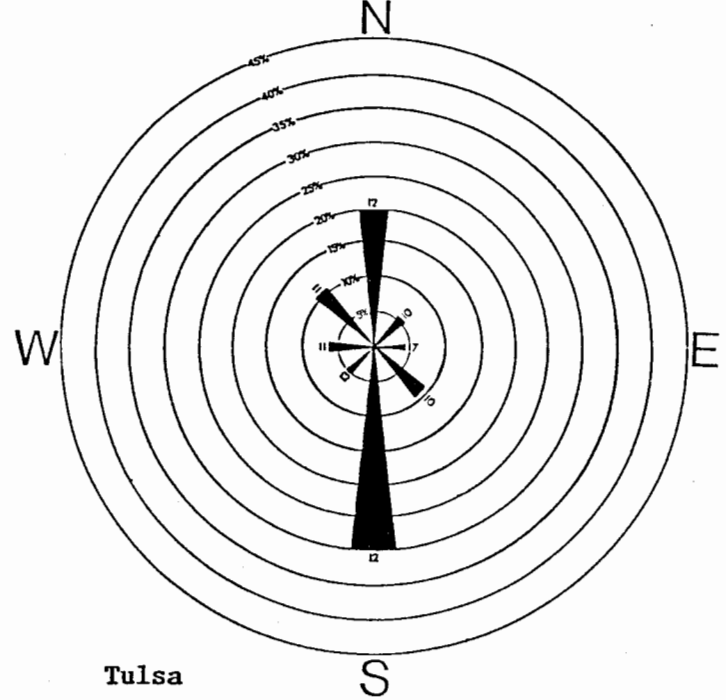
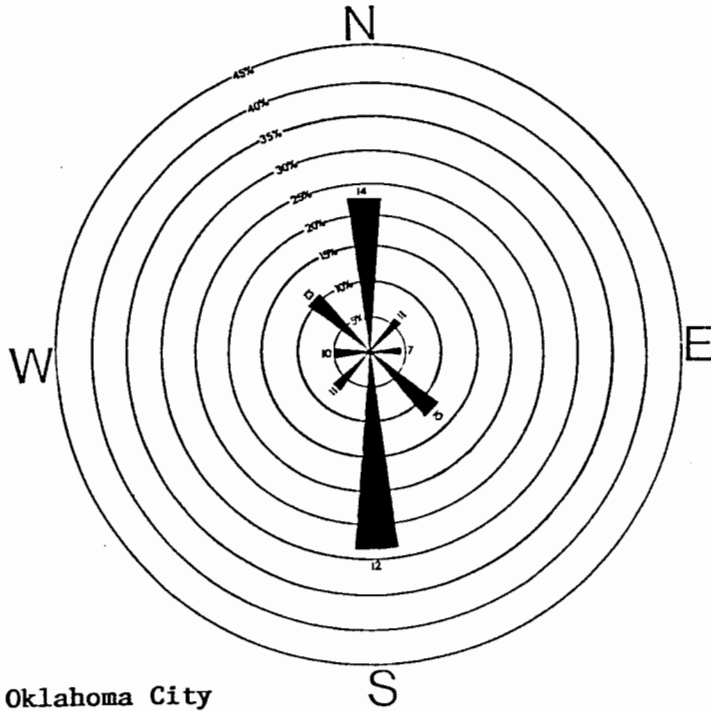


OCTOBER 1989 HEATING DEGREE DAYS



OCTOBER 1989 DEVIATION FROM NORMAL HEATING DEGREE DAYS

December 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.



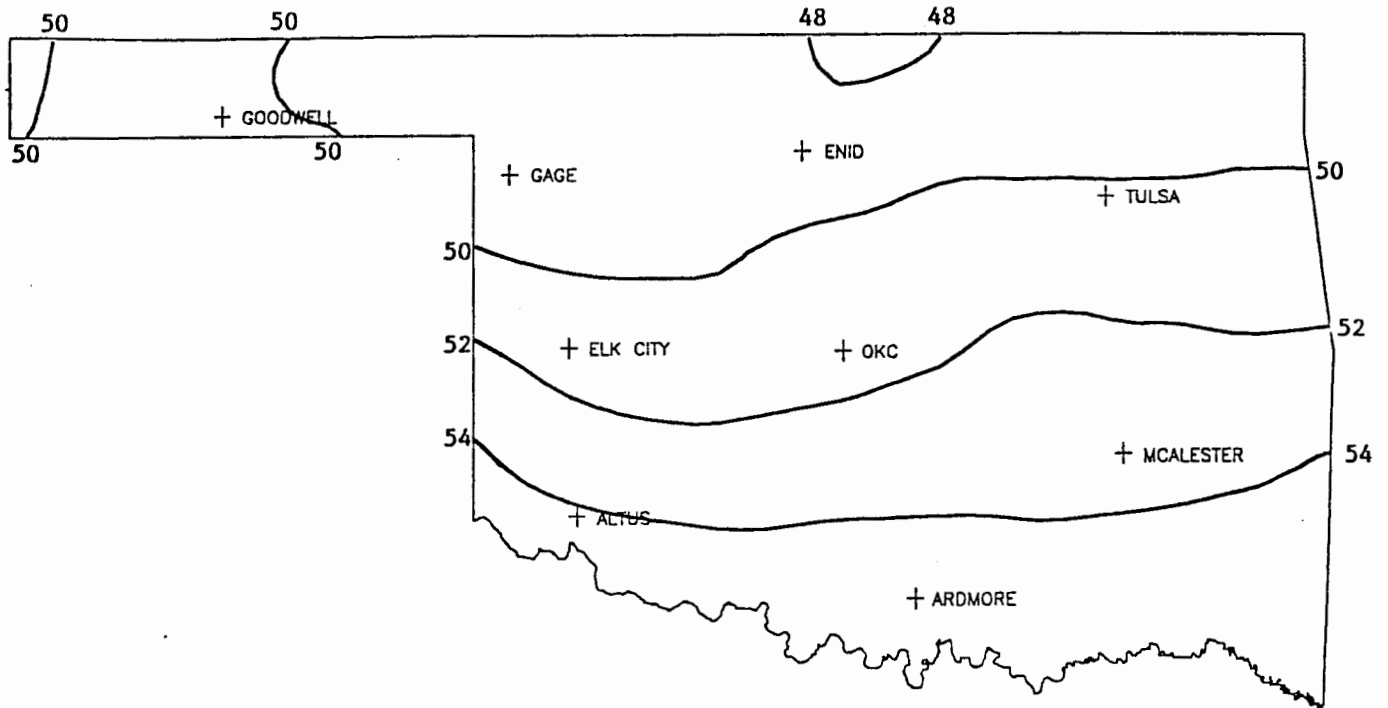
DECEMBER 1989 SUNRISE AND SUNSET

Oklahoma City

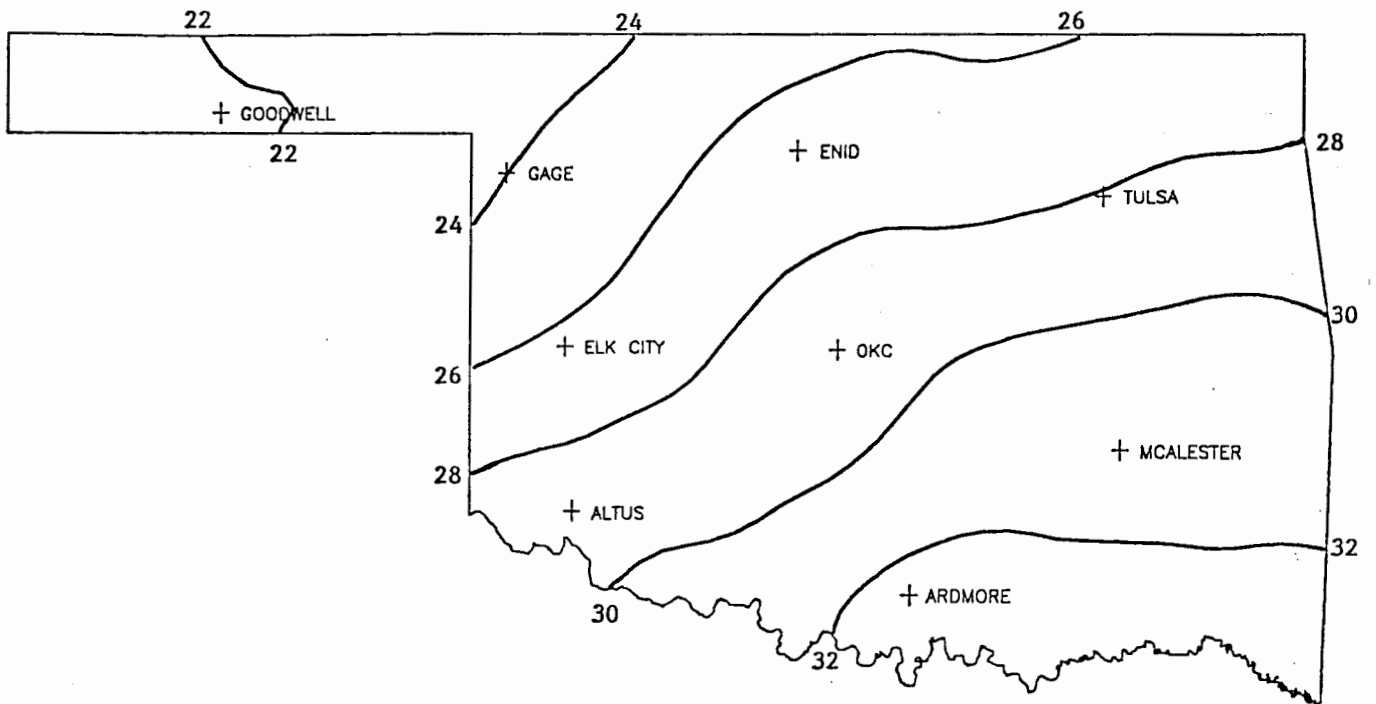
DATE	SUNRISE	SUNSET	DAYLIGHT
891201	7:19AM	5:21PM LT	10: 1
891202	7:20AM	5:21PM LT	10: 0
891203	7:21AM	5:21PM LT	9: 60
891204	7:22AM	5:20PM LT	9: 59
891205	7:23AM	5:20PM LT	9: 58
891206	7:23AM	5:20PM LT	9: 57
891207	7:24AM	5:20PM LT	9: 56
891208	7:25AM	5:20PM LT	9: 55
891209	7:26AM	5:21PM LT	9: 55
891210	7:27AM	5:21PM LT	9: 54
891211	7:27AM	5:21PM LT	9: 54
891212	7:28AM	5:21PM LT	9: 53
891213	7:29AM	5:21PM LT	9: 53
891214	7:29AM	5:21PM LT	9: 52
891215	7:30AM	5:22PM LT	9: 52
891216	7:31AM	5:22PM LT	9: 51
891217	7:31AM	5:22PM LT	9: 51
891218	7:32AM	5:23PM LT	9: 51
891219	7:32AM	5:23PM LT	9: 51
891220	7:33AM	5:23PM LT	9: 50
891221	7:33AM	5:24PM LT	9: 50
891222	7:34AM	5:24PM LT	9: 50
891223	7:34AM	5:25PM LT	9: 50
891224	7:35AM	5:25PM LT	9: 50
891225	7:35AM	5:26PM LT	9: 50
891226	7:36AM	5:26PM LT	9: 51
891227	7:36AM	5:27PM LT	9: 51
891228	7:36AM	5:27PM LT	9: 51
891229	7:37AM	5:28PM LT	9: 51
891230	7:37AM	5:29PM LT	9: 52
891231	7:37AM	5:29PM LT	9: 52

Tulsa

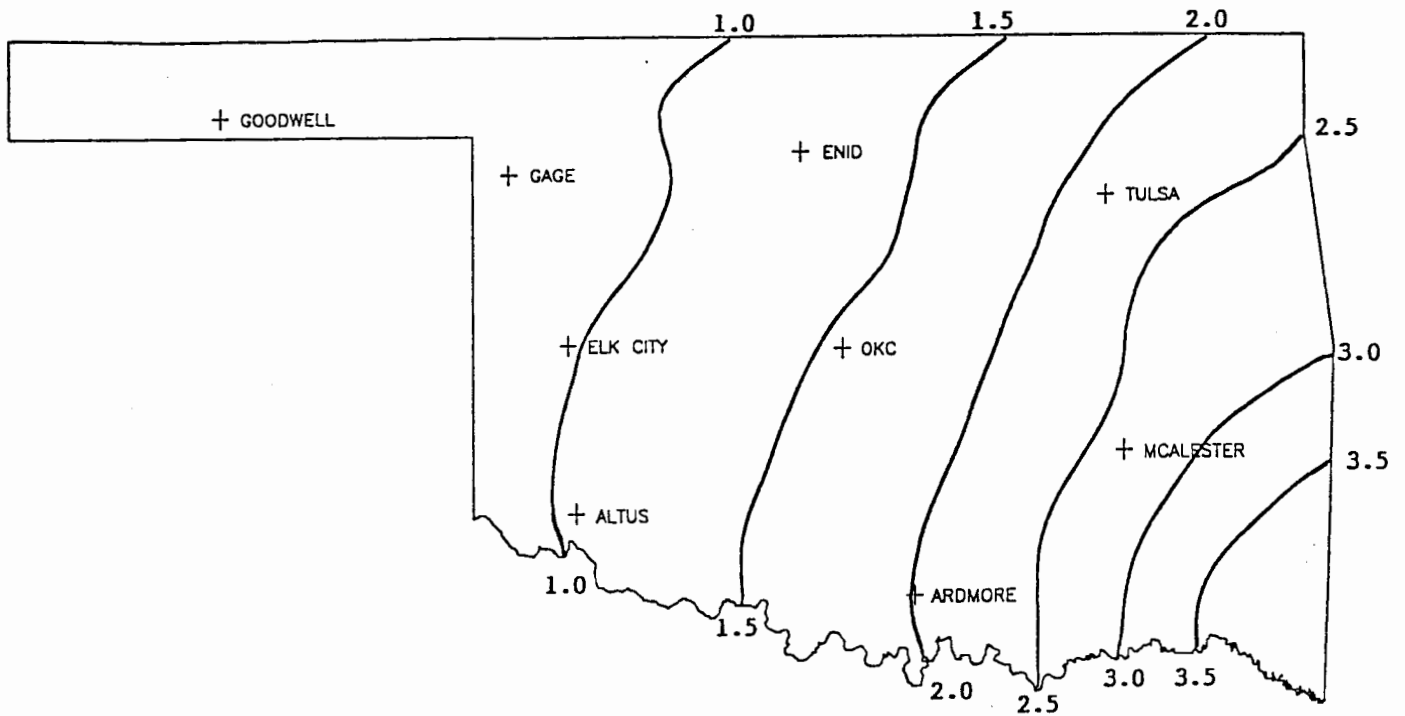
DATE	SUNRISE	SUNSET	DAYLIGHT
891201	7:14AM	5:12PM LT	9: 58
891202	7:15AM	5:12PM LT	9: 57
891203	7:16AM	5:12PM LT	9: 56
891204	7:17AM	5:12PM LT	9: 55
891205	7:18AM	5:12PM LT	9: 54
891206	7:19AM	5:12PM LT	9: 53
891207	7:19AM	5:12PM LT	9: 52
891208	7:20AM	5:12PM LT	9: 52
891209	7:21AM	5:12PM LT	9: 51
891210	7:22AM	5:12PM LT	9: 50
891211	7:22AM	5:12PM LT	9: 50
891212	7:23AM	5:12PM LT	9: 49
891213	7:24AM	5:12PM LT	9: 48
891214	7:25AM	5:13PM LT	9: 48
891215	7:25AM	5:13PM LT	9: 48
891216	7:26AM	5:13PM LT	9: 47
891217	7:26AM	5:13PM LT	9: 47
891218	7:27AM	5:14PM LT	9: 47
891219	7:28AM	5:14PM LT	9: 46
891220	7:28AM	5:15PM LT	9: 46
891221	7:29AM	5:15PM LT	9: 46
891222	7:29AM	5:15PM LT	9: 46
891223	7:30AM	5:16PM LT	9: 46
891224	7:30AM	5:16PM LT	9: 46
891225	7:31AM	5:17PM LT	9: 46
891226	7:31AM	5:17PM LT	9: 46
891227	7:31AM	5:18PM LT	9: 47
891228	7:32AM	5:19PM LT	9: 47
891229	7:32AM	5:19PM LT	9: 47
891230	7:32AM	5:20PM LT	9: 48
891231	7:32AM	5:20PM LT	9: 48



30-YEAR MEAN DECEMBER MAXIMUM TEMPERATURE



30-YEAR MEAN DECEMBER DAILY MINIMUM TEMPERATURE



30-YEAR MEAN DECEMBER PRECIPITATION

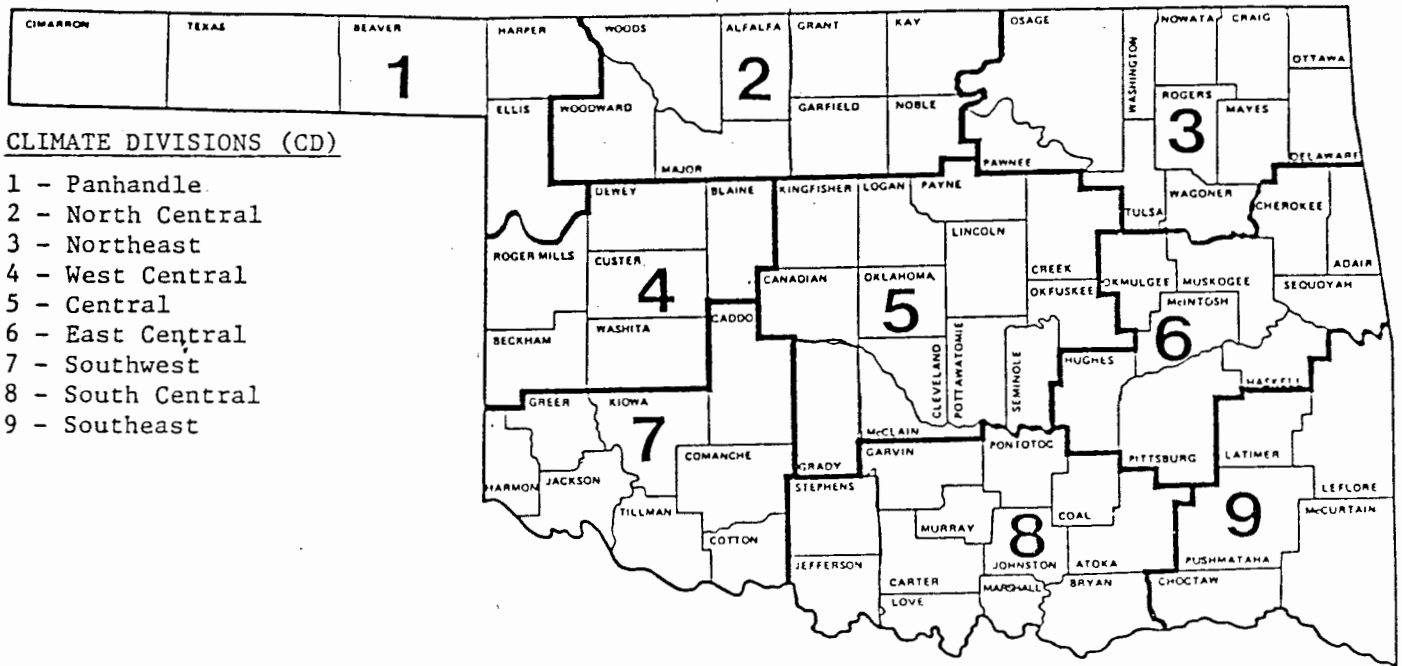
30- and 90-DAY NATIONAL WEATHER SERVICE OUTLOOK

30-DAY OUTLOOK (MID-NOVEMBER-MID-DECEMBER)

Precipitation - Near Normal Statewide
Temperature - Near Normal Statewide

90-DAY OUTLOOK (NOVEMBER-JANUARY)

Precipitation - Above Normal in Eastern Oklahoma
Near Normal Elsewhere
Temperature - Below Normal Statewide



CLIMATE DIVISIONS (CD)

- 1 - Panhandle
- 2 - North Central
- 3 - Northeast
- 4 - West Central
- 5 - Central
- 6 - East Central
- 7 - Southwest
- 8 - South Central
- 9 - Southeast

EXPLANATION OF TABLES

Two kinds of tables appear in this summary. The first is a set of tables containing all reporting stations grouped by climate division. The figure above shows the locations of the climate divisions. Each table contains the following information for each station:

- Station Name:
- Station Identification Number: These are usually assigned by the National Climatic Data Center.
- Climate Division: See the figure above.
- Number of Temperature Observations: These are the actual number of temperature reports recorded at the station during the current month. Missing observations may result in artificially high or low mean monthly temperatures.
- Deviation from Normal: The deviation of the observed mean monthly temperature from the monthly station normal. A positive value indicates the month was warmer than normal. A negative value indicates the month was cooler than normal. Normal monthly temperatures may be calculated by subtracting the deviation from the observed temperature.
- Maximum Daily Maximum: The maximum daily maximum temperature observed during the current month and year and the day which it occurred.
- Minimum Daily Minimum: The minimum daily minimum temperature observed during the current month and year and the day which it occurred.
- Heating Degree Days: HDD are calculated each day of the month for which there is a temperature report and summed. They are a qualitative measure of how much heat was required to maintain a comfortable indoor temperature. Missing observations may result in an artificially high or low value. For February 1984 HDD would be calculated as:

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

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.

DECEMBER 1989

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	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual
54.7 max	---	55.5 max	---	56.4 max	---	55.4 max	---	55.7 max	---	51.8 max	---	52.6 max	---
33.3 min	---	33.2 min	---	32.7 min	---	33.9 min	---	33.8 min	---	32.3 min	---	30.6 min	---
.018 pcpn	---	.068 pcpn	---	.025 pcpn	---	.032 pcpn	---	.045 pcpn	---	.020 pcpn	---	.045 pcpn	---
21 HDD	---	20 HDD	---	20 HDD	---	20 HDD	---	20 HDD	---	23 HDD	---	23 HDD	---
0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---
Highest Max	76-1983	Highest Max	77-1975	Highest Max	74-1975	Highest Max	75-1954	Highest Max	77-1975	Highest Max	77-1939	Highest Max	80-1966
Lowest Max	20-1985	Lowest Max	24-1985	Lowest Max	30-1978	Lowest Max	25-1972	Lowest Max	32-1937	Lowest Max	19-1972	Lowest Max	24-1950
Lowest Min	12-1985	Lowest Min	10-1985	Lowest Min	17-1978	Lowest Min	16-1978	Lowest Min	10-1950	Lowest Min	5-1950	Lowest Min	5-1950
Highest Min	57-1933	Highest Min	56-1931	Highest Min	52-1961	Highest Min	51-1956	Highest Min	59-1980	Highest Min	63-1980	Highest Min	62-1980
Greatest pcpn	.57-1958	Greatest pcpn	1.59-1953	Greatest pcpn	1.39-1947	Greatest pcpn	2.59-1930	Greatest pcpn	1.00-1935	Greatest pcpn	1.99-1926	Greatest pcpn	1.23-1980
Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual
50.1 max	---	48.3 max	---	50.0 max	---	49.4 max	---	48.6 max	---	47.6 max	---	48.9 max	---
30.1 min	---	28.6 min	---	29.4 min	---	28.5 min	---	27.2 min	---	27.4 min	---	28.2 min	---
.075 pcpn	---	.012 pcpn	---	.081 pcpn	---	.025 pcpn	---	.011 pcpn	---	.054 pcpn	---	.080 pcpn	---
25 HDD	---	26 HDD	---	25 HDD	---	26 HDD	---	27 HDD	---	27 HDD	---	26 HDD	---
0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---
Highest Max	71-1970	Highest Max	71-1939	Highest Max	72-1939	Highest Max	75-1939	Highest Max	75-1973	Highest Max	77-1948	Highest Max	74-1933
Lowest Max	26-1927	Lowest Max	21-1932	Lowest Max	24-1972	Lowest Max	21-1961	Lowest Max	17-1932	Lowest Max	17-1958	Lowest Max	18-1926
Lowest Min	7-1927	Lowest Min	10-1978	Lowest Min	11-1977	Lowest Min	8-1932	Lowest Min	6-1932	Lowest Min	6-1958	Lowest Min	6-1958
Highest Min	61-1946	Highest Min	56-1946	Highest Min	58-1965	Highest Min	52-1946	Highest Min	47-1984	Highest Min	62-1929	Highest Min	64-1948
Greatest pcpn	1.50-1980	Greatest pcpn	.85-1943	Greatest pcpn	1.06-1960	Greatest pcpn	1.07-1946	Greatest pcpn	1.19-1928	Greatest pcpn	.41-1928	Greatest pcpn	1.52-1984
Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual
48.0 max	---	51.0 max	---	50.8 max	---	49.5 max	---	50.0 max	---	49.7 max	---	48.8 max	---
27.5 min	---	27.8 min	---	28.4 min	---	28.6 min	---	28.8 min	---	28.0 min	---	26.5 min	---
.067 pcpn	---	.029 pcpn	---	.044 pcpn	---	.033 pcpn	---	.045 pcpn	---	.043 pcpn	---	.029 pcpn	---
27 HDD	---	25 HDD	---	25 HDD	---	26 HDD	---	25 HDD	---	26 HDD	---	27 HDD	---
0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---
Highest Max	75-1948	Highest Max	73-1939	Highest Max	75-1939	Highest Max	69-1982	Highest Max	75-1978	Highest Max	73-1966	Highest Max	68-1966
Lowest Max	26-1926	Lowest Max	21-1932	Lowest Max	21-1965	Lowest Max	19-1983	Lowest Max	9-1983	Lowest Max	21-1983	Lowest Max	11-1983
Lowest Min	6-1926	Lowest Min	10-1932	Lowest Min	2-1979	Lowest Min	5-1964	Lowest Min	3-1983	Lowest Min	4-1983	Lowest Min	-2-1983
Highest Min	59-1929	Highest Min	56-1929	Highest Min	45-1939	Highest Min	47-1939	Highest Min	54-1978	Highest Min	50-1967	Highest Min	51-1941
Greatest pcpn	.69-1959	Greatest pcpn	.56-1931	Greatest pcpn	1.68-1959	Greatest pcpn	.83-1933	Greatest pcpn	1.10-1987	Greatest pcpn	.43-1972	Greatest pcpn	.83-1942
Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual
51.5 max	---	51.0 max	---	49.4 max	---	47.7 max	---	49.3 max	---	49.6 max	---	48.1 max	---
28.7 min	---	30.1 min	---	27.7 min	---	26.6 min	---	27.3 min	---	28.2 min	---	29.7 min	---
.016 pcpn	---	.033 pcpn	---	.096 pcpn	---	.030 pcpn	---	.017 pcpn	---	.056 pcpn	---	.067 pcpn	---
25 HDD	---	24 HDD	---	26 HDD	---	28 HDD	---	26 HDD	---	26 HDD	---	26 HDD	---
0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---
Highest Max	70-1933	Highest Max	70-1955	Highest Max	86-1955	Highest Max	71-1950	Highest Max	68-1968	Highest Max	75-1946	Highest Max	72-1947
Lowest Max	9-1983	Lowest Max	10-1983	Lowest Max	3-1983	Lowest Max	13-1983	Lowest Max	25-1983	Lowest Max	26-1983	Lowest Max	23-1983
Lowest Min	-3-1983	Lowest Min	1-1983	Lowest Min	0-1983	Lowest Min	-1-1983	Lowest Min	11-1983	Lowest Min	15-1938	Lowest Min	8-1983
Highest Min	47-1979	Highest Min	57-1965	Highest Min	50-1955	Highest Min	49-1936	Highest Min	56-1936	Highest Min	56-1946	Highest Min	56-1984
Greatest pcpn	2.01-1932	Greatest pcpn	1.80-1932	Greatest pcpn	1.34-1965	Greatest pcpn	1.05-1987	Greatest pcpn	1.15-1940	Greatest pcpn	1.06-1927	Greatest pcpn	1.85-1979
Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual
48.5 max	---	45.7 max	---	45.4 max	---	47.7 max	---	49.3 max	---	49.6 max	---	48.1 max	---
28.4 min	---	26.7 min	---	25.9 min	---	28.4 min	---	27.3 min	---	28.2 min	---	29.7 min	---
.035 pcpn	---	.028 pcpn	---	.097 pcpn	---	.030 pcpn	---	.017 pcpn	---	.056 pcpn	---	.067 pcpn	---
26 HDD	---	29 HDD	---	29 HDD	---	28 HDD	---	26 HDD	---	26 HDD	---	26 HDD	---
0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---	0 CDD	---
Highest Max	76-1951	Highest Max	88-1927	Highest Max	79-1951	Highest Max	71-1950	Highest Max	68-1968	Highest Max	75-1946	Highest Max	72-1947
Lowest Max	20-1983	Lowest Max	21-1978	Lowest Max	17-1978	Lowest Max	13-1983	Lowest Max	25-1983	Lowest Max	26-1983	Lowest Max	23-1983
Lowest Min	3-1983	Lowest Min	1-1927	Lowest Min	1-1927	Lowest Min	-1-1983	Lowest Min	11-1983	Lowest Min	15-1938	Lowest Min	8-1983
Highest Min	63-1984	Highest Min	55-1965	Highest Min	55-1965	Highest Min	49-1936	Highest Min	56-1936	Highest Min	56-1946	Highest Min	56-1984
Greatest pcpn	.23-1972	Greatest pcpn	.30-1974	Greatest pcpn	1.03-1984	Greatest pcpn	1.05-1987	Greatest pcpn	1.15-1940	Greatest pcpn	1.06-1927	Greatest pcpn	1.85-1979

DECEMBER AVERAGES

Temperature : 39.7
Precipitation : 1.36"
Heating Degree Days: 775
Cooling Degree Days: 0