

OKLAHOMA MONTHLY SUMMARY October 1988

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OCTOBER 1988 OKLAHOMA SUMMARY

Persistent northwesterly flow in the upper atmosphere over Oklahoma resulted in the 15th coolest and 26th driest October in the last 97 years. During most of the month an upper level high pressure ridge west of the State steered strong storm systems north of Oklahoma and suppressed development of the Pacific low and its delivery of moisture into the State. Most stations recorded more raindays than normal, but monthly precipitation totals were generally less than the long term average (see Table 1). In the absence of the heavy fall rainfall frequently associated with tropical systems, Oklahoma CD precipitation averages ranged from 36% to 77% of normal (see Map 1). Consequently, the portion of soil moisture supplies in the inadequate category rose from 15% to 55% during the month. The dry weather facilitated field work, however, and wheat seeding was 3 weeks ahead of the 5-year average. Progress of soybean and peanut harvesting approached normal by month's end.

A very strong upper level low moved over Oklahoma on October 1, delivering precipitation Statewide. A remarkable hail event occurred when severe thunderstorms in Grady and Stephens Counties produced hail accumulations one foot deep. The hail destroyed 150 acres of cotton in Stephens County.

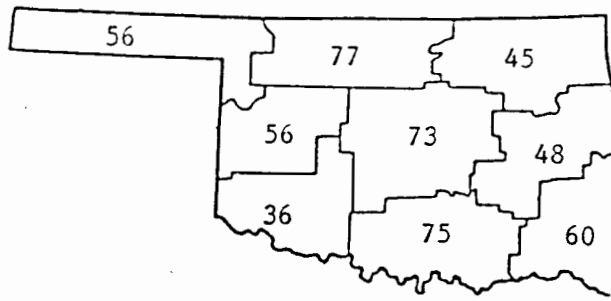
The development of a ridge following the frontal passage supported the flow of cooler air into the State. Temperatures ranged from 9 (SE) to 15 (NE) degrees below normal during the week ending October 9. Southerly surface winds eventually warmed the State and high temperatures reached the 80's by the middle of the month (16th-18th) when most stations recorded their highest readings. A cold air mass abruptly displaced the warmer air on the 18th and 19th and resulted in several 15 to 25 degree one-day drops in high temperatures.

Another frontal system during the last few days of the month delivered rainfall totals of over 1" to several stations in the southern one-third of the State and lesser amounts elsewhere. The northwestern one-third of Oklahoma reported the State's first fall frost when cooler air behind the front entered the area (see Table 2).

Table 1. Comparisons of October 1988 and long-term mean October number of raindays* and rainfall amounts for selected Oklahoma stations.

CD	Station	October 1988 Raindays	Long-Term Mean October Raindays	October 1988 Precipitation
1	Arnett	3	2	1.31
2	Perry	4	3	1.39
3	Bixby	3	3	1.12
4	Clinton	6	3	1.31
5	Oklahoma City	5	3	1.90
6	Eufaula	5	3	1.74
7	Altus Irr Sta	4	3	.90
8	Pauls Valley	5	4	2.29
9	Hugo	8	4	3.02

* For this study: days on which at least .10" of rain was recorded.



Map 1. Percent of Normal Precipitation by CD.
(October)

Table 2. October 1988 first freeze data. Six Oklahoma stations experienced freezing temperatures in October. Below is a list of the dates and temperatures of these frosts along with the long term mean first fall frost dates (where available).

CD	Station	First 1988 Freeze Date	Temperature	Long-Term Mean First Freeze Date
1	Buffalo	26	32	20
1	Gage	28	31	21
1	Goodwell	28	27	20
1	Guymon	29	31	NA
2	Freedom	28	31	NA
2	Waynoka	28	31	25

TABLE OF 1987/1988 COMPARISONS

Station	October Temperatures (F)		October Precipitation (in.)	
	1987	1988	1987	1988
Arnett	56.7	56.2	.374	1.310
Enid	59.5	58.6	.262	2.050
Mutual	57.1	56.8	*	1.300
Tulsa	59.0	59.1	1.352	1.434
Elk City	60.6	60.0	.191	.364
Oklahoma City	60.6	60.2	1.824	1.906
McAlester	60.2	61.5	2.531	1.733
Altus Irr. Sta.	63.1	63.1	2.302	.901
Durant	59.2	60.5	3.550	3.130
Ada	60.1	60.7	1.580	3.652
Antlers	60.3	61.1	4.170	2.980

EXTREMES

Variable	Station	Division	Observation	Date
Minimum temperature (F)	Boise City	1	10	20
Maximum temperature (F)	Mangum Res.	7	95	18
Maximum 24-hour precipitation	Hennepin	8	2.82"	1

FALL COLORS*

Color appears in leaves as trees prepare for winter dormancy. Shedding the leaves enables trees to conserve water during the relatively dry months of winter. Not only is there less precipitation during winter months, what little moisture is present is often frozen and thus not available for use by the tree. If leaves remained on most trees, ice formation resulting from freezing temperatures could rupture tender leaf tissue. Accumulations of ice and snow on leaves could snap over-burdened branches. By adopting the deciduous habit most broadleaf species have found an effective way to deal with winter's cold and ice.

As day length gradually shortens in the fall, color appears. Chlorophyll, the dominant green pigment which transforms sunlight, carbon dioxide and water into plant food, diminishes in the leaves at the end of the growing season. As the green fades, the yellow, orange and brown pigments already present are unmasked. If weather conditions are ideal - warm, sunny days and cool nights - red pigments develop in the foliage of some species. Frost, contrary to popular belief, ends rather than begins the formation of colorful pigments. The delayed frost this year is affording Oklahomans an extended opportunity to view nature's artwork. The technicolor finale of the growing season ends when the leaves fall, the pigments decompose, or both.

Fall color intensity varies dramatically from year to year, species to species, and individual to individual. Although the exact timing changes from year to year, the sequence of change, from species to species is fairly predictable. Sumac and black walnut are among the first to color, sugar maple and red oak change late in the sequence.

Like hair color in humans, leaf color can vary greatly from individual to individual, affected by a number of genetic and environmental factors. One thing is certain; the best way to select a tree at a nursery for your yard is to pick the colorful tree in the fall when others of its kind are changing. If you choose one that tends to color late, you could be stuck with a tree that may not color soon enough to avoid the killing frost.

Color descriptions are tricky. People see color differently and the terms we use to describe color are not precise, but there are reasonably accurate terms that permit us to describe color according to three of its measurable properties - hue, lightness and saturation. For example, crimson is often used to describe one variation in the fall color of white oak foliage. Crimson is not just a synonym of red. Crimson is defined as a dark (lightness), strong (saturation), red(hue). The word scarlet, often used to describe red oak leaves, is defined as a very bright (lightness), strong (saturation), red(hue). Admittedly, it is more fun to argue over the meaning of burnt orange and wine-colored than to describe colors as objectively as possible. Careful use of these terms makes descriptions of tree foliage a lot more meaningful.

*Adapted from "Tell Autumn Trees by Color", by Robert W. Fluchel, Education Consultant, Missouri Conservationist, October, 1988.

OCTOBER 1988 SUMMARY FOR NORTHWEST DIVISION (CD1)

NAME	ID	CD	DEV						HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV FROM NORM	DEV FROM NORM	24-HR MAX	DAY	
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	TEMP DAY										
ARNEIT	332	1	56.2	31	-3.6	85.	18	33.	29	280.5	73.5	8.5	-37.5	1.310	31	-.50	.67	7
BEAVER	593	1	55.6	31	-3.6	87.	23	23.	29	296.0	77.0	6.0	-34.0	.300	31	-.92	.15	20
BOISE CITY 2 E	908	1	56.5	31	-.9	88.	23	10.	20	268.5	19.5	4.0	-10.0	.130	31	-.70	.10	5
BUFFALO	1243	1	59.4	31	-2.7	90.	17	27.	28	203.5	48.5	31.0	-34.0	1.020	31	-.93	.40	7
FARGO	3070	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.950	31	-.72	.57	7
GAGE FAA APT	3407	1	58.0	31	-1.7	85.	22	31.	28	239.0	37.0	22.5	-15.5	1.062	31	-.53	.46	5
GOODWELL RES	ST3628	1	55.4	31	-3.0	86.	17	27.	28	303.0	72.0	5.5	-21.5	.121	31	-.83	.03	31
GUYMON	3835	1	57.9	28	*****	87.	22	27.	28	222.0	*****	24.0	*****	.051	28	*****	.03	6
HOOKER	4298	1	56.0	31	-2.8	87.	17	29.	28	287.0	61.0	7.5	-26.5	.060	31	-1.05	.04	7
KENTON	4766	1	55.9	31	-1.6	86.	23	27.	28	282.0	32.0	.5	-17.5	.040	31	-.86	.02	7
LAVERNE	5045	1	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.820	31	-.69	.34	20
OPTIMA LAKE	6740	1	55.4	30	*****	88.	23	27.	28	294.5	*****	6.0	*****	.010	30	*****	.01	6
TURPIN 4 SSE	9017	1	55.1	31	*****	87.	17	28.	28	310.5	*****	2.5	*****	.080	31	*****	.06	7

OCTOBER 1988 SUMMARY FOR NORTH CENTRAL DIVISION (CD2)

NAME	ID	CD	DEV						HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV FROM NORM	DEV FROM NORM	24-HR MAX	DAY	
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	TEMP DAY										
ALVA 1 ENE	194	2	57.5	31	-4.6	91.	17	31.	28	244.5	90.5	12.5	-51.5	3.660	31	2.09	1.31	1
VANCE AFB	302	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.745	30	*****	.74	2
BILLINGS	755	2	57.6	31	*****	83.	18	35.	29	246.5	*****	16.5	*****	1.602	31	-.87	.70	6
BLACKWELL 2E	818	2	57.0	31	*****	86.	17	34.	28	259.0	*****	12.0	*****	1.752	31	*****	.67	6
BRAMAN	1075	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.980	31	*****	.87	6
CEDARDALE	1620	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.161	31	*****	.54	20
CHEROKEE	1724	2	59.8	31	-2.4	87.	18	37.	28	187.5	36.5	26.0	-38.0	2.320	31	.50	1.05	1
ENID	2912	2	58.6	31	-4.3	85.	17	36.	28	218.0	84.0	20.5	-48.5	2.050	31	-.76	.71	2
FT SUPPLY DAM	3304	2	55.7	31	-5.6	86.	18	35.	29	290.0	126.0	3.0	-46.0	1.670	31	.24	.67	7
FREEDOM	3358	2	57.6	31	*****	89.	17	31.	28	246.0	*****	16.0	*****	1.220	31	*****	.42	7
GREAT SALT PLNS	3740	2	57.6	31	*****	88.	18	36.	29	246.5	*****	18.5	*****	2.490	23	*****	.85	2
HARDY	3909	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.716	31	*****	1.16	5
HELENA 1 SSE	4019	2	56.4	31	*****	86.	18	35.	29	275.0	*****	7.5	*****	2.790	31	.67	.80	7
JEFFERSON	4573	2	59.0	31	-3.4	90.	17	34.	26	211.5	67.5	25.0	-38.0	2.380	31	-.17	.80	1
LAMONT	5013	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.671	31	*****	.71	6
MEDFORD	5768	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.070	31	*****	.70	5
MORRISON	6065	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.431	31	*****	.62	6
MUTUAL	6139	2	56.6	31	-4.3	86.	18	33.	29	269.5	94.5	10.5	-37.5	1.300	31	-.22	.38	5
NEWKIRK	6278	2	58.2	31	-3.7	85.	17	36.	28	231.5	74.5	19.5	-41.5	2.361	31	-.41	1.00	6
ORIENTA	6751	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.560	31	*****	.49	7
PERRY	7012	2	59.7	31	-3.8	87.	18	39.	28	175.5	50.5	12.5	-66.5	1.390	31	-1.24	.59	7
PONCA CITY FAA	7201	2	59.4	30	-1.5	87.	18	38.	19	194.5	15.5	25.5	-25.5	1.732	30	*****	.82	6
RED ROCK 1 NNE	7505	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.771	31	-.70	.95	6
RENFROW	7556	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.080	31	-.24	.65	2
WAYNOKA	9404	2	57.8	30	-4.4	87.	17	31.	28	238.5	80.5	23.5	-47.5	1.490	31	-.22	.57	7
WOODWARD	9760	2	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.551	31	*****	.60	20

OCTOBER 1988 SUMMARY FOR NORTHEAST DIVISION (CD3)

NAME	ID	CD	DEV							HEAT DEG	DEV FROM	COOL DEG	DEV FROM	TOT PPT	DEV OBS	DEV FROM	DEV MAX	24-HR DAY
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	TEMP DAY	DAY									
BARNSDALL	535	3	57.2	31	*****	86.	18	34.	12	257.0	*****	15.5	*****	1.302	31	-1.77	.95	6
BARTLESVILLE ZW	548	3	57.3	31	-4.3	89.	17	34.	12	254.5	94.5	15.5	-38.5	1.350	31	-1.86	.95	6
BIXBY	782	3	57.0	31	-4.7	88.	17	36.	12	263.0	91.0	14.5	-55.5	1.121	31	-2.04	.61	7
BURBANK	1256	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.780	31	*****	1.01	5
CHELSEA 4 S	1717	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.420	31	*****	.76	6
CLAREMORE	1828	3	56.7	31	-4.7	88.	18	36.	24	270.0	90.0	14.0	-54.0	1.135	31	-2.28	.80	6
CLEVELAND 5 WSW	1902	3	59.0	27	*****	89.	17	36.	12	179.5	*****	17.5	*****	1.500	31	*****	1.50	8
HOLLOW	4258	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.260	31	-2.27	.36	23
HOMINY	4289	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.090	31	-.86	1.27	6
HULAH DAM	4393	3	54.6	21	*****	87.	18	34.	27	229.0	*****	10.5	*****	.000	21	*****	.00	31
JAY TOWER	4567	3	58.4	31	*****	86.	17	36.	28	226.5	*****	21.0	*****	1.490	31	*****	.33	23
KANSAS 1 ESE	4672	3	57.1	31	*****	84.	17	36.	31	263.0	*****	17.5	*****	1.405	31	*****	.50	23
KEYSTONE DAM	4812	3	56.8	27	*****	88.	18	35.	12	232.5	*****	10.0	*****	1.145	27	*****	.77	6
LENAPAH	5118	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.070	31	*****	.63	6
MANNFORD 6 NW	5522	3	58.8	31	*****	89.	17	34.	12	216.0	*****	25.0	*****	1.321	31	*****	.74	6
MARAMEC	5540	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.290	31	-1.87	.72	6
MIAMI	5855	3	54.9	31	-6.5	84.	17	34.	12	325.0	151.0	11.5	-51.5	1.460	31	-2.28	.51	23
NOWATA	6485	3	57.0	31	-4.8	87.	17	36.	28	265.5	108.5	18.5	-39.5	1.002	31	-2.30	.80	6
ONETA 1 WNW	6713	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.131	31	*****	.70	6
PAWHUSKA	6935	3	57.9	31	-3.6	87.	17	35.	12	239.0	78.0	17.5	-35.5	1.973	31	-.96	.78	5
PAWHUSKA	6937	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.890	31	*****	1.15	6
PAWNEE	6940	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.630	31	-1.09	.90	6
PRYOR 6 N	7309	3	55.4	31	-6.0	87.	18	35.	13	306.0	139.0	8.5	-46.5	1.194	31	-2.58	.72	6
QUAPAW	7358	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.510	31	-3.15	.50	23
RALSTON	7390	3	59.4	31	*****	88.	17	35.	28	197.5	*****	23.5	*****	1.911	31	-.78	1.22	6
RAMONA 4 N	7394	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.480	31	*****	1.10	6
SKIATOOK	8258	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.580	31	-1.61	.96	6
SPAVINAW	8380	3	59.0	31	*****	84.	18	40.	28	206.5	*****	20.5	*****	1.216	31	-2.43	.56	6
TULSA WSO APT	8992	3	59.1	30	-3.5	88.	18	40.	28	191.5	45.5	14.0	-58.0	1.434	31	-1.98	1.08	6
UPPER SPAVINAW	9101	3	60.4	30	*****	92.	16	38.	31	182.5	*****	43.5	*****	2.402	31	*****	.70	16
VINITA 2 N	9203	3	57.5	30	-3.7	85.	17	33.	28	242.5	66.5	19.0	-39.0	1.530	30	*****	.52	23
WAGONER	9247	3	59.3	31	-3.8	87.	17	38.	12	201.5	60.5	25.0	-57.0	1.473	31	-1.63	1.09	6
WANN	9298	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.080	31	*****	.61	6
WYNONA	9792	3	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.432	31	*****	.80	6

OCTOBER 1988 SUMMARY FOR WEST CENTRAL DIVISION (CD4)

NAME	ID	CD	DEV							HEAT DEG	DEV FROM	COOL DEG	DEV FROM	TOT PPT	DEV OBS	DEV FROM	DEV MAX	24-HR DAY
			MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	TEMP DAY	DAY									
CANTON DAM	1445	4	56.0	27	*****	86.	18	36.	19	251.0	*****	9.0	*****	2.030	27	*****	.80	20
CHEYENNE	1738	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.422	31	*****	.70	6
CLINTON	1909	4	62.0	31	-.2	93.	17	38.	28	143.0	-2.0	48.5	-9.5	1.312	31	-1.39	.42	7
COLONY	2039	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.680	31	*****	.77	30
CORDELL	2125	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.983	31	-1.60	.63	31
ELK CITY 1 E	2849	4	60.0	31	*****	89.	18	39.	29	177.5	*****	22.0	*****	.364	31	-1.63	.16	7
ERICK 4 E	2944	4	59.9	31	-1.9	90.	17	36.	19	183.0	38.0	25.5	-19.5	.382	31	-1.82	.28	8
GEARY	3497	4	58.9	31	-3.7	87.	17	36.	28	211.0	71.0	20.5	-45.5	2.230	31	-.20	1.50	7
HAMMON 1 NNE	3871	4	55.9	31	-5.4	87.	18	34.	19	293.0	123.0	9.5	-46.5	2.140	31	.24	1.25	7
LEEDEY	5090	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.351	31	.59	1.45	7
MACKIE 4 NNW	5463	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.830	31	*****	.43	7
MORAVIA 2 NNE	6035	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.512	31	-1.91	.16	30
OKEENE	6629	4	59.3	31	-4.1	88.	17	36.	28	194.5	72.5	18.5	-54.5	2.000	31	-.12	.65	20
RETROP	7565	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.663	31	*****	.44	31
REYDON	7579	4	59.5	31	*****	86.	17	34.	19	194.0	*****	24.0	*****	.434	31	-1.25	.15	7
SAYRE	7952	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.300	31	-1.83	.10	8
SWEETWATER 2 E	8652	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.231	31	*****	.12	6
TALOGA	8708	4	57.8	31	-3.2	88.	17	31.	28	237.5	69.5	13.5	-30.5	1.652	31	-.21	.79	7
THOMAS	8815	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.680	31	*****	1.60	7
VICI	9172	4	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.201	31	*****	.35	7
WATONGA	9364	4	58.8	31	*****	88.	17	37.	28	218.0	*****	24.5	*****	2.811	31	.59	1.70	7
WEATHERFORD	9422	4	58.1	31	-4.6	90.	18	36.	29	238.0	104.0	23.0	-40.0	1.633	31	-1.10	.72	7

OCTOBER 1988 SUMMARY FOR CENTRAL DIVISION (CD5)

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	PPT						
AMBER	200	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	2.670	31	*****	1.10	2		
ARCADIA	288	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	3.251	31	*****	1.80	7		
TINKER AFB	325	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	2.057	31	*****	1.00	7		
BLANCHARD 2 SSW	830	5	61.4	29	*****	88.	17	42.	12	135.5	*****	30.5	*****	*****	2.361	31	*****	.82	20		
BRISTOW	1144	5	59.4	31	-3.9	88.	17	35.	12	199.5	63.5	25.5	-59.5	*****	1.541	31	-1.00	.65	7		
CHANDLER	1684	5	59.6	31	-3.7	87.	17	38.	12	192.0	63.0	24.5	-52.5	*****	1.212	31	-1.22	.94	7		
CHICKASHA EX ST1	1750	5	58.3	31	-4.9	90.	17	38.	24	222.0	94.0	15.5	-56.5	*****	2.650	31	-.06	1.03	2		
COX CITY 1 E	2196	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	3.030	31	*****	1.15	30		
CRESCENT	2242	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.870	31	*****	.73	7		
CUSHING	2318	5	57.0	28	*****	88.	18	39.	31	235.5	*****	12.0	*****	*****	1.542	31	-1.14	.94	7		
EL RENO 1 N	2818	5	59.7	31	-2.7	88.	17	37.	28	187.5	47.5	24.0	-35.0	*****	2.770	31	-.11	1.01	7		
GUTHRIE	3821	5	60.9	31	-2.1	88.	17	39.	28	162.5	23.5	35.0	-42.0	*****	1.080	31	-1.58	.56	20		
HENNESSEY 2 SE	4055	5	58.9	31	-3.9	88.	17	37.	28	210.0	69.0	21.5	-51.5	*****	2.650	31	.54	.64	7		
INGALLS	4489	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.692	31	*****	.70	6		
KINGFISHER 2 SE	4861	5	59.1	31	-3.8	89.	17	36.	28	206.5	77.5	22.5	-41.5	*****	2.720	31	.28	1.55	7		
KONAWA	4915	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.731	31	-1.86	.95	20		
MARSHALL	5589	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.230	31	-1.37	.58	2		
MEEKER 4 W	5779	5	59.5	30	-3.0	86.	17	37.	12	191.5	41.5	26.0	-47.0	*****	2.550	30	*****	1.70	7		
MULHALL	6110	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.581	31	*****	.61	7		
NORMAN 3 S	6386	5	60.4	31	*****	90.	17	39.	12	173.0	*****	30.5	*****	*****	1.842	31	-.79	.91	20		
OILTON 2 SE	6616	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.370	31	*****	.63	6		
OKEMAH	6638	5	59.2	31	-4.3	85.	17	40.	28	199.0	74.0	18.5	-60.5	*****	2.013	31	-.86	1.25	7		
OKLAHOMA CITY WS	6661	5	60.2	31	-2.1	88.	18	42.	28	174.5	29.5	27.0	-34.0	*****	1.906	31	-.80	.74	20		
PERKINS	7003	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.440	31	-1.71	.57	7		
PIEDMONT	7068	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	3.690	31	*****	2.20	7		
PRAGUE	7264	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	2.392	31	-.48	1.64	7		
PURCELL 5 SW	7327	5	60.5	31	-2.4	87.	17	36.	12	167.5	32.5	28.5	-41.5	*****	3.283	31	.10	.80	20		
SEMINOLE	8042	5	61.3	31	-3.3	87.	18	38.	12	148.5	48.5	35.0	-53.0	*****	2.980	31	.13	1.29	7		
SHAWNEE	8110	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	3.142	31	-.06	1.56	7		
STELLA	8479	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	2.730	31	*****	.96	20		
STILLWATER 2 W	8501	5	56.7	31	-5.2	86.	18	36.	29	269.5	111.5	12.0	-50.0	*****	1.561	31	-1.34	.61	7		
STROUD 1 N	8563	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.930	31	*****	.74	7		
TECUMSEH	8751	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	2.160	31	*****	.88	7		
TROUSDALE	8960	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.440	31	*****	1.18	14		
UNION CITY 1 SE	9086	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.982	31	-1.11	.72	2		
WELTY 1 SSE	9479	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	1.720	31	*****	.95	7		
WEWOKA	9575	5	*****	0	*****	****	0	****	0	*****	*****	*****	*****	*****	2.311	31	-.67	1.02	7		

OCTOBER 1988 SUMMARY FOR EAST CENTRAL DIVISION (CD6)

NAME	ID	CD	DEV						HEAT		DEV		COOL		DEV		TOT	NUM	FROM	MAX	24-HR	DAY
			MEAN	NUM	FROM	MAX	MIN	DAY	TEMP	DAY	DEG	FROM	DEG	FROM	PPT	OBS						
ASHLAND	364	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.710	31	*****	.60	20				
BEGGS	631	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.490	31	*****	.71	8				
BOYNTON	1027	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.271	31	*****	.46	7				
CALVIN	1391	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.864	31	-1.85	.75	20				
CHECOTAH	1711	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.373	31	-2.07	.44	7				
DEWAR 2 NE	2485	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.570	31	-1.69	.80	7				
DUSTIN	2690	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.920	31	*****	1.25	7				
EUFULA	2993	6	60.9	31	*****	86.	17	41.	12	158.5	*****	32.5	*****	1.740	31	-1.67	.65	7				
HANNA	3884	6	60.2	31	*****	87.	17	36.	12	178.5	*****	31.0	*****	2.080	31	-1.19	.78	7				
HARTSHORNE	3946	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.691	31	*****	.84	8				
HASKELL	3956	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.062	31	-2.01	.56	6				
HOLDENVILLE	4235	6	60.4	31	-3.7	87.	17	37.	12	169.5	54.5	28.0	-59.0	2.371	31	-1.17	.75	7				
LYONS 2 N	5437	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.750	31	-2.33	.75	22				
MCALISTER FAA	5664	6	61.5	31	-1.7	87.	18	38.	12	147.5	14.5	40.0	-38.0	1.733	31	-2.17	.70	20				
MCCURTAIN 1 SE	5693	6	62.1	31	*****	88.	17	37.	12	132.0	*****	43.5	*****	1.333	31	-1.98	.48	20				
MUSKOGEE	6130	6	59.8	31	-3.1	88.	17	36.	12	186.0	46.0	25.5	-49.5	1.360	31	-1.98	.36	6				
OKMULGEE W W	6670	6	58.2	27	*****	88.	17	35.	12	204.5	*****	20.5	*****	1.465	27	****	.87	7				
OKTAHA 2 NE	6678	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.270	31	*****	.46	6				
QUINTON	7372	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.555	31	-2.05	.80	7				
SALLISAW 2 NE	7862	6	58.5	31	-4.9	87.	17	34.	24	211.0	85.0	10.0	-66.0	1.622	31	-2.24	.70	6				
SCIPIO	7979	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.360	31	*****	.89	7				
SCRAPER	7993	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.710	31	*****	.93	23				
SHORT	8170	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.833	31	*****	.31	6				
STILLWELL 1 NE	8506	6	57.2	31	*****	85.	17	34.	12	257.0	*****	16.5	*****	1.671	31	-1.61	.51	23				
TAHLEQUAH	8677	6	58.7	31	-3.2	87.	17	36.	24	221.0	52.0	25.0	-48.0	1.563	31	-1.83	.65	6				
WEBBERS FALLS	9445	6	58.2	31	-3.8	90.	18	34.	13	236.0	84.0	25.0	-34.0	1.300	31	-2.45	.40	6				
WESTVILLE	9523	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.960	31	*****	.97	23				
WEIUMKA 3 NE	9571	6	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.396	31	-.73	1.23	7				

OCTOBER 1988 SUMMARY FOR SOUTHWEST DIVISION (CD7)

NAME	ID	CD	DEV						HEAT		DEV		COOL		DEV		TOT	NUM	FROM	MAX	24-HR	DAY
			MEAN	NUM	FROM	MAX	MIN	DAY	TEMP	DAY	DEG	FROM	DEG	FROM	PPT	OBS						
ALTUS IRR STA	179	7	63.1	31	-1.5	93.	18	40.	12	103.5	-3.5	45.5	-49.5	.901	31	-1.65	.40	30				
ALTUS DAM	184	7	60.5	31	*****	93.	18	41.	25	175.0	*****	36.0	*****	.672	31	-2.03	.28	8				
ANADARKO	224	7	58.4	28	*****	88.	18	34.	24	200.5	*****	17.0	*****	1.560	28	*****	.97	31				
APACHE	260	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.410	31	*****	.53	8				
ALTUS AFB	447	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.422	30	*****	.16	1				
CARNEGIE 2 ENE	1504	7	60.3	31	-2.9	90.	17	36.	24	188.0	62.0	42.0	-29.0	.870	31	-1.32	.38	31				
CHATTAHOOGA	1706	7	63.1	31	-1.2	93.	17	39.	24	106.5	5.5	46.5	-32.5	.512	31	-2.26	.41	31				
DUNCAN 12 W	2668	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.504	31	*****	1.33	31				
FREDERICK	3353	7	61.6	31	-4.0	91.	18	44.	12	129.5	36.5	24.0	-88.0	.350	31	-2.11	.25	31				
GRANDFIELD 4 NW3709	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.770	31	-2.07	.60	31					
HOBART FAA APT	4204	7	60.5	31	-1.9	92.	18	40.	19	170.0	28.0	31.5	-29.5	1.048	31	-1.47	.51	1				
HOLLIS	4249	7	62.1	29	*****	94.	17	37.	29	117.5	*****	32.0	*****	.082	29	*****	.08	9				
LAWTON	5063	7	59.5	31	-4.5	91.	17	41.	11	191.0	76.0	21.5	-62.5	1.025	31	-1.82	.91	30				
FORT SILL	5068	7	60.6	31	*****	90.	17	46.	24	165.5	*****	28.0	*****	.995	31	-1.85	.89	30				
LOOKEBA 2 ENE	5329	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.200	31	*****	.33	31				
MANGUM RES STA	5509	7	60.9	31	-2.9	95.	18	38.	24	129.5	11.5	3.0	-78.0	.342	31	-2.30	.25	31				
RANDLETT 9 E	7403	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.943	31	*****	.86	31				
ROOSEVELT	7727	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.160	31	-1.32	.54	31				
SEDAN	8016	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.461	31	*****	1.36	30				
SNYDER	8299	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.582	31	-1.78	.35	31				
VINSON 3 WNW	9212	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.420	31	-1.85	.17	31				
WALTERS	9278	7	63.1	31	-1.7	91.	18	39.	24	107.0	-9.0	48.5	-61.5	.900	31	-2.02	.50	30				
WICHITA MT WLR	9629	7	59.9	31	-2.8	91.	18	36.	25	188.5	49.5	29.5	-38.5	.940	31	-1.79	.65	31				
WILLOW	9668	7	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.632	31	*****	.31	8				

OCTOBER 1988 SUMMARY FOR SOUTH CENTRAL DIVISION (CD8)

NAME	ID CD	DEV							HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV			
		MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	TEMP DAY	DAY						NUM OBS	FROM NORM	MAX	24-HR DAY
ADA	17 8	60.7	31	-3.7	87.	17	39.	12	158.0	39.0	24.0	-76.0	3.652	31	-.27	2.50	20
ALLEN	147 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.100	31	*****	.80	28
ARDMORE	292 8	63.3	31	-3.6	88.	17	43.	24	101.5	32.5	50.0	-78.0	3.290	31	-.11	1.08	27
ATOKA DAM	394 8	61.0	29	*****	89.	18	40.	24	140.0	*****	23.0	*****	1.890	29	*****	.62	31
BOKCHITO	917 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.250	31	*****	.90	31
CANEY	1437 8	60.9	31	*****	84.	25	41.	12	158.0	*****	30.0	*****	2.050	31	*****	.40	28
CENTRAHOMA	1648 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.600	31	*****	1.50	20
CHICKASAW NRA	1745 8	59.9	31	*****	87.	18	36.	12	190.0	*****	33.0	*****	2.390	31	*****	.61	31
COLEMAN	2011 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.470	31	*****	1.25	28
COMANCHE	2054 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.170	31	*****	1.09	31
DAISY 4 ENE	2354 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.294	31	.48	1.75	28
DUNCAN	2660 8	60.5	31	-4.3	90.	18	40.	31	166.5	61.5	26.0	-73.0	2.120	31	-.83	1.54	31
DURANT USDA	2678 8	60.5	31	*****	87.	18	38.	13	169.0	*****	28.0	*****	3.130	31	-.34	1.18	28
ELMORE CITY	2872 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.862	31	*****	1.20	7
FARRIS 3 WNW	3083 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.440	31	*****	1.45	28
GRADY	3688 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.922	31	*****	.77	30
HEALDTON	4001 8	61.7	31	*****	89.	17	38.	24	142.5	*****	40.5	*****	3.220	31	.10	.99	31
HENNEPIN	4052 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.532	31	*****	2.82	1
KETCHUM RANCH	4780 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.813	31	*****	1.20	1
KINGSTON	4865 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.360	31	-1.28	.75	31
LEHIGH	5108 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.152	31	*****	.88	20
LINDSAY 2 W	5216 8	61.1	30	*****	87.	17	37.	12	146.5	*****	29.0	*****	3.092	30	*****	1.24	1
LOCO 6 SE	5247 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.153	31	*****	1.14	2
MADILL	5468 8	62.7	30	-2.6	88.	17	41.	12	119.0	26.0	49.0	-53.0	3.610	30	*****	1.90	28
MARIETTA	5563 8	63.5	31	-1.9	88.	17	42.	24	103.0	11.0	56.5	-48.5	4.002	31	.97	1.14	26
MARLOW 1 WSW	5581 8	61.0	31	*****	90.	17	37.	12	159.0	*****	36.0	*****	2.131	31	-.82	1.56	31
MCGEE CREEK DAM	5713 8	61.0	31	*****	90.	18	40.	24	150.0	*****	27.0	*****	3.580	31	*****	1.60	28
OSWALT	6787 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.750	31	*****	.75	26
PAULS VALLEY	6926 8	62.0	31	-2.3	88.	17	38.	12	128.0	23.0	35.0	-48.0	2.292	31	-1.28	1.00	31
PONITOC	7214 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	.750	31	-3.03	.75	6
TISHOMINGO NWLR	8884 8	60.6	30	*****	87.	17	34.	24	159.0	*****	26.5	*****	2.360	30	*****	1.14	28
TUSSY	9032 8	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.723	31	*****	1.35	31
WAURIKA	9395 8	63.8	31	-1.7	92.	17	39.	24	99.5	5.5	63.0	-46.0	.662	31	-2.03	.66	31
WAURIKA DAM	9399 8	60.8	26	*****	92.	16	42.	13	125.5	*****	16.5	*****	1.264	26	*****	.96	31

OCTOBER 1988 SUMMARY FOR SOUTHEAST DIVISION (CD9)

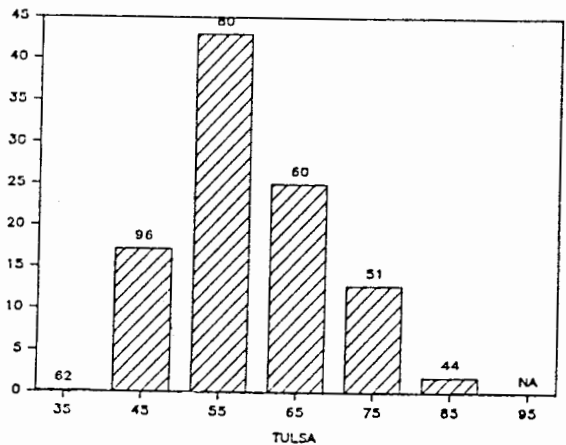
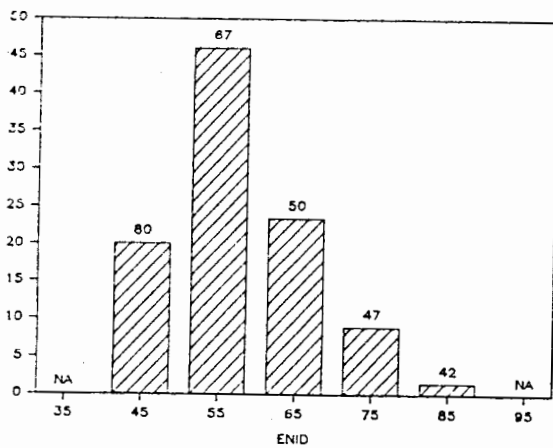
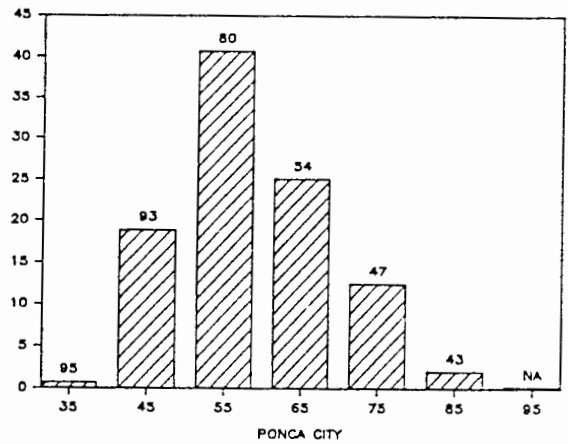
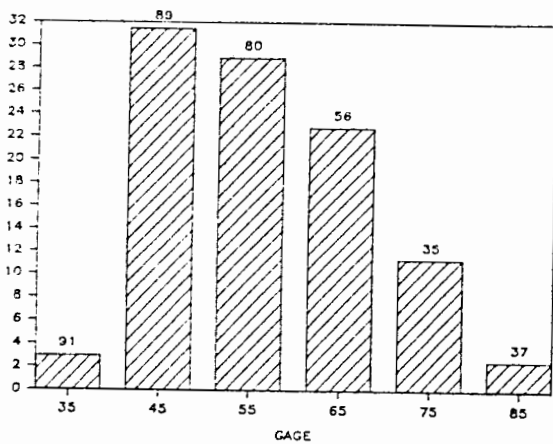
NAME	ID CD	DEV							HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	DEV			
		MEAN TEMP	NUM OBS	FROM NORM	MAX TEMP	MIN DAY	TEMP DAY	DAY						NUM OBS	FROM NORM	MAX	24-HR DAY
ANTLERS	256 9	61.3	28	*****	88.	17	36.	12	127.5	*****	24.0	*****	2.980	28	*****	.93	20
BATTLEST 1 SSW	567 9	60.2	30	*****	86.	18	35.	24	166.0	*****	20.5	*****	3.250	31	*****	1.14	21
BEAR MT TWR	584 9	61.0	31	*****	87.	19	40.	24	141.5	*****	17.5	*****	4.520	31	.39	1.32	28
BENGAL	670 9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.940	31	*****	.73	20
BOSWELL 4 NNW	980 9	62.0	31	*****	88.	17	38.	24	130.0	*****	36.5	*****	2.123	31	-1.58	.77	28
BROKEN BOW 1 N	1162 9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.080	31	-.75	.95	28
BROKEN BOW DAM	1168 9	60.4	31	*****	87.	17	38.	24	160.0	*****	18.0	*****	5.350	31	*****	1.69	21
CARNASAW TWR	1499 9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	5.670	30	*****	1.45	28
CARTER TWR	1544 9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	4.760	31	.18	1.04	20
FANSHAWE	3065 9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.711	31	-1.37	.38	8
HEAVENER 1 SE	4008 9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	2.740	31	-.56	.82	28
HEE MT TWR	4017 9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.980	31	*****	.82	24
HUGO	4384 9	63.6	31	-1.6	87.	18	42.	24	89.5	-4.5	45.5	-55.5	3.022	31	-.92	1.24	28
IDABEL	4451 9	61.2	31	-2.9	86.	18	41.	25	144.5	29.5	26.5	-60.5	5.030	31	1.19	1.43	28
POTEAU W W	7254 9	59.0	31	*****	87.	17	34.	12	211.0	*****	23.5	*****	1.152	31	*****	.52	19
SMITHVILLE 1 W	8285 9	57.8	31	*****	87.	17	30.	13	231.0	*****	8.0	*****	3.180	31	*****	1.00	21
SPIRO	8416 9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	1.300	31	-2.01	.35	20
TUSKAHOMA	9023 9	61.5	31	*****	88.	16	33.	12	148.5	*****	39.0	*****	3.150	31	*****	.87	28
VALLIANT 3 W	9118 9	*****	0	*****	****	0	****	0	*****	*****	*****	*****	3.960	31	.34	1.35	28

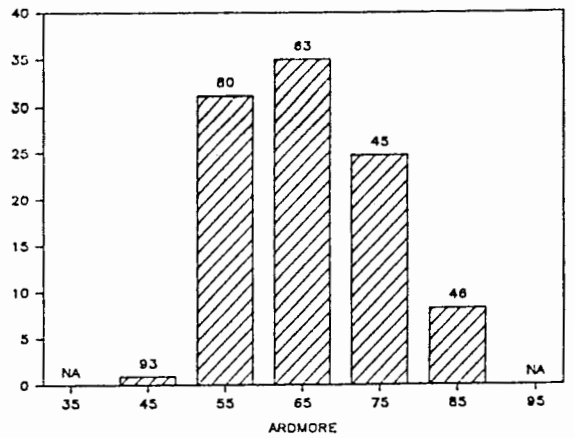
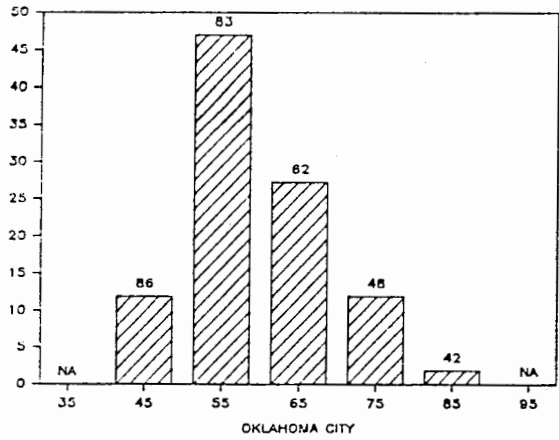
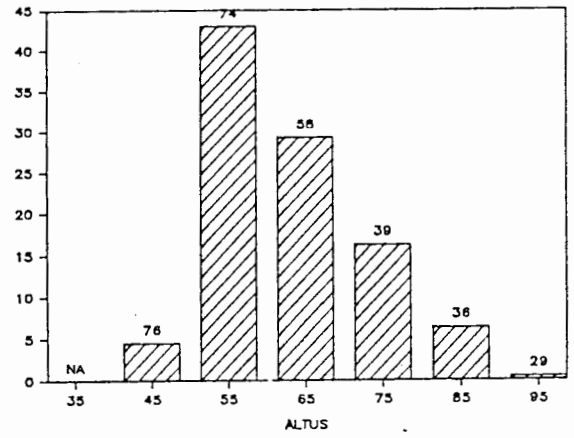
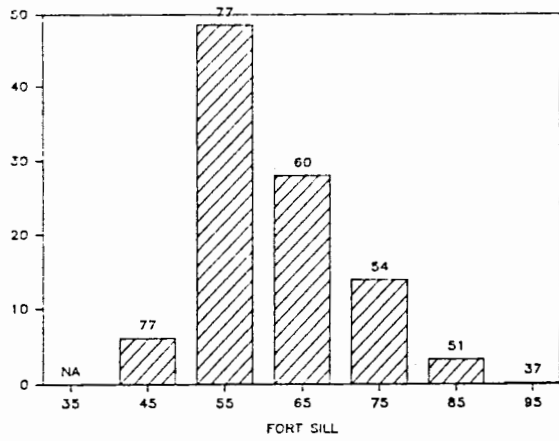
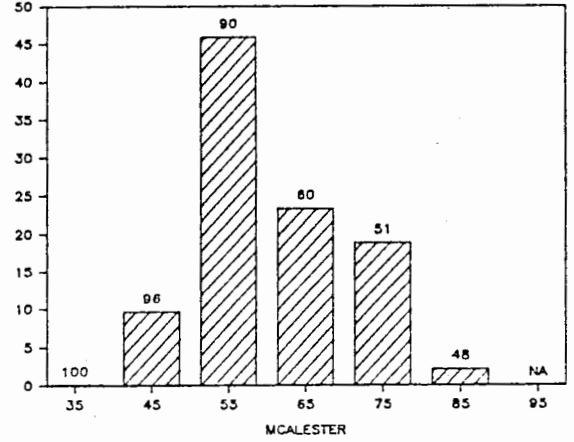
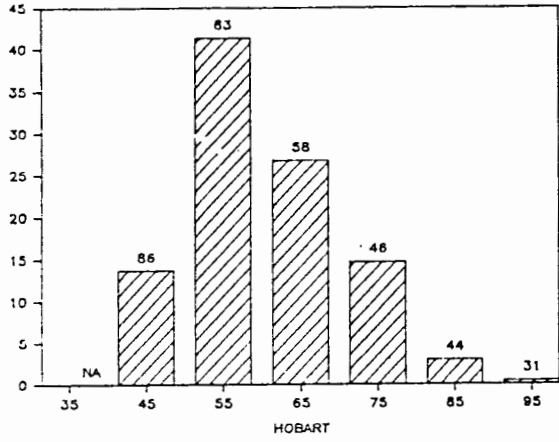
OCTOBER 1988 CLIMATE DIVISION SUMMARY

CLIMATE DIV	MEAN TEMP	NUM STA	DEV			HEAT			DEV			DEV			24-HR DAY	
			FROM NORM	MAX TEMP	MIN TEMP	DEGREE DAY	DEGREE DAYS	FROM NORM	DEGREE DAYS	FROM NORM	TOT PPT	NUM STA	FROM NORM	MAX		
1	56.4	10	-2.8	90.0	17	10.0	20	276.5	59.1	9.4	-25.9	.54	11	-.82	.67	7
2	57.9	15	-4.1	91.0	17	31.0	28	235.6	81.5	16.6	-45.3	1.87	23	-.32	1.31	1
3	57.8	17	-3.9	92.0	16	33.0	28	241.6	75.8	19.1	-43.3	1.43	31	-1.85	1.50	8
4	59.0	10	-3.2	93.0	17	31.0	28	208.9	62.8	23.0	-36.5	1.32	21	-.86	1.70	7
5	59.6	14	-3.4	90.0	17	35.0	12	193.1	57.0	24.7	-47.4	2.15	36	-.66	2.20	7
6	59.8	10	-3.2	90.0	18	34.0	13	189.7	50.7	27.7	-47.6	1.65	27	-1.75	1.25	7
7	61.2	11	-2.7	95.0	18	34.0	24	150.4	32.7	32.4	-50.2	.94	21	-1.65	1.36	30
8	61.5	15	-3.7	92.0	16	34.0	24	143.3	46.6	36.9	-66.8	2.62	29	-.76	2.82	1
9	60.7	9	-3.5	88.0	16	30.0	13	158.0	47.0	26.1	-62.6	3.19	17	-.59	1.69	21

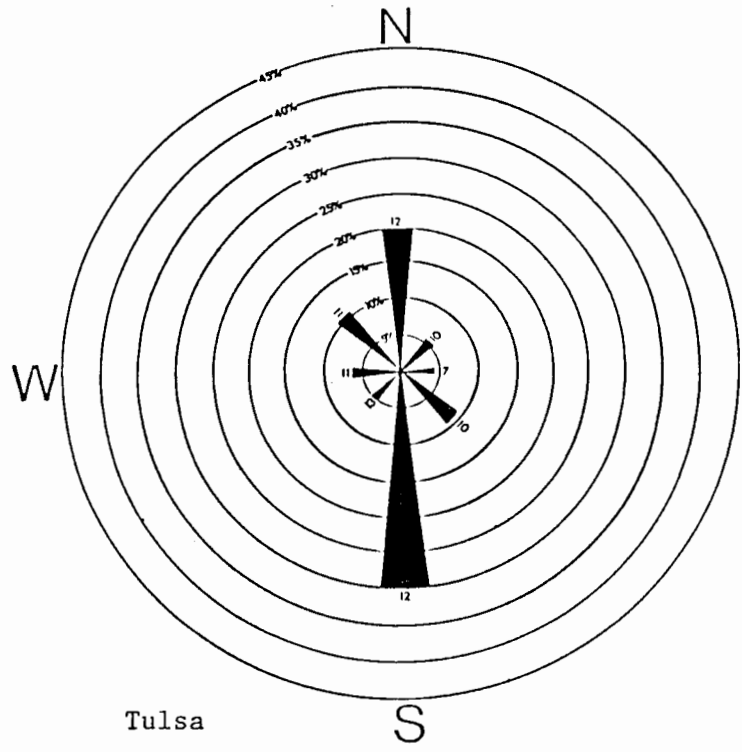
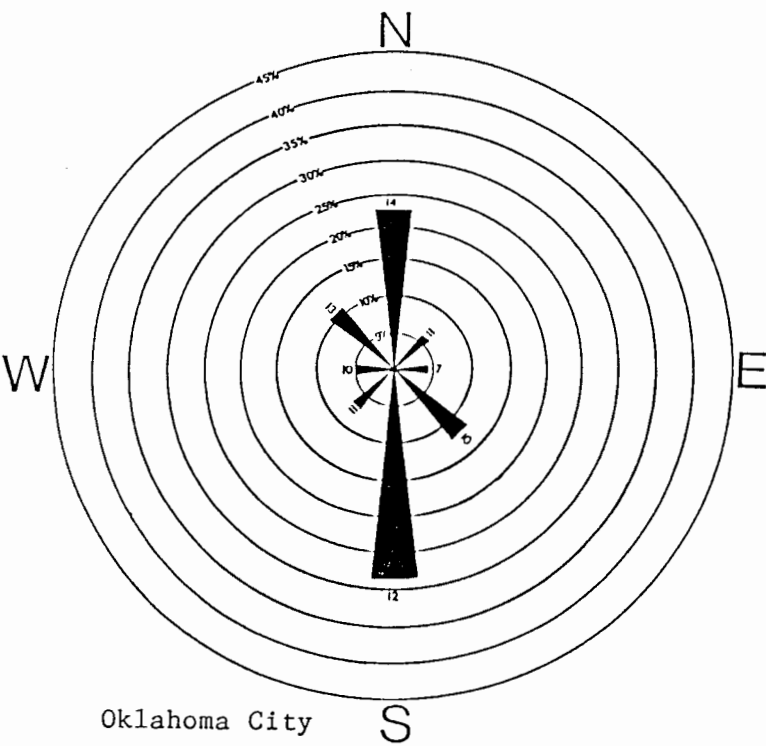
The following graphs present October 1988 hourly temperature and corresponding relative humidity information for 10 Oklahoma stations. The height of each bar represents the percentage of the hours in the month when the temperature was observed within the category given below the axis (45 = 40 to 49, 55 = 50 to 59, etc.). The number above each bar is the median relative humidity associated with the temperature category below it.

Example: Approximately 27% of Oklahoma City's hourly temperature values ranged from 60 to 69 degrees. The median relative humidity associated with this temperature class was 62%.





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 of 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 1988 SUNRISE AND SUNSET

Oklahoma City

DATE	SUNRISE	SUNSET	HOURS OF DAYLIGHT
881201	7:20AM	5:21PM LT	10: 0
881202	7:21AM	5:21PM LT	9: 60
881203	7:22AM	5:20PM LT	9: 59
881204	7:23AM	5:20PM LT	9: 58
881205	7:23AM	5:20PM LT	9: 57
881206	7:24AM	5:20PM LT	9: 56
881207	7:25AM	5:20PM LT	9: 55
881208	7:26AM	5:21PM LT	9: 55
881209	7:27AM	5:21PM LT	9: 54
881210	7:27AM	5:21PM LT	9: 54
881211	7:28AM	5:21PM LT	9: 53
881212	7:29AM	5:21PM LT	9: 53
881213	7:29AM	5:21PM LT	9: 52
881214	7:30AM	5:22PM LT	9: 52
881215	7:31AM	5:22PM LT	9: 51
881216	7:31AM	5:22PM LT	9: 51
881217	7:32AM	5:23PM LT	9: 51
881218	7:32AM	5:23PM LT	9: 51
881219	7:33AM	5:23PM LT	9: 50
881220	7:33AM	5:24PM LT	9: 50
881221	7:34AM	5:24PM LT	9: 50
881222	7:34AM	5:25PM LT	9: 50
881223	7:35AM	5:25PM LT	9: 50
881224	7:35AM	5:26PM LT	9: 50
881225	7:36AM	5:26PM LT	9: 51
881226	7:36AM	5:27PM LT	9: 51
881227	7:36AM	5:27PM LT	9: 51
881228	7:37AM	5:28PM LT	9: 51
881229	7:37AM	5:29PM LT	9: 52
881230	7:37AM	5:29PM LT	9: 52
881231	7:37AM	5:30PM LT	9: 52

Tulsa

DATE	SUNRISE	SUNSET	HOURS OF DAYLIGHT
881201	7:15AM	5:12PM LT	9: 57
881202	7:16AM	5:12PM LT	9: 56
881203	7:17AM	5:12PM LT	9: 55
881204	7:18AM	5:12PM LT	9: 54
881205	7:19AM	5:12PM LT	9: 53
881206	7:19AM	5:12PM LT	9: 52
881207	7:20AM	5:12PM LT	9: 52
881208	7:21AM	5:12PM LT	9: 51
881209	7:22AM	5:12PM LT	9: 50
881210	7:22AM	5:12PM LT	9: 50
881211	7:23AM	5:12PM LT	9: 49
881212	7:24AM	5:12PM LT	9: 48
881213	7:25AM	5:13PM LT	9: 48
881214	7:25AM	5:13PM LT	9: 48
881215	7:26AM	5:13PM LT	9: 47
881216	7:26AM	5:13PM LT	9: 47
881217	7:27AM	5:14PM LT	9: 47
881218	7:28AM	5:14PM LT	9: 46
881219	7:28AM	5:15PM LT	9: 46
881220	7:29AM	5:15PM LT	9: 46
881221	7:29AM	5:15PM LT	9: 46
881222	7:30AM	5:16PM LT	9: 46
881223	7:30AM	5:16PM LT	9: 46
881224	7:31AM	5:17PM LT	9: 46
881225	7:31AM	5:17PM LT	9: 46
881226	7:31AM	5:18PM LT	9: 47
881227	7:32AM	5:19PM LT	9: 47
881228	7:32AM	5:19PM LT	9: 47
881229	7:32AM	5:20PM LT	9: 48
881230	7:32AM	5:20PM LT	9: 48
881231	7:33AM	5:21PM LT	9: 48



30-YEAR MEAN DECEMBER PRECIPITATION

NATIONAL WEATHER SERVICE 30 and 90-DAY OUTLOOK

30-DAY OUTLOOK (NOVEMBER)

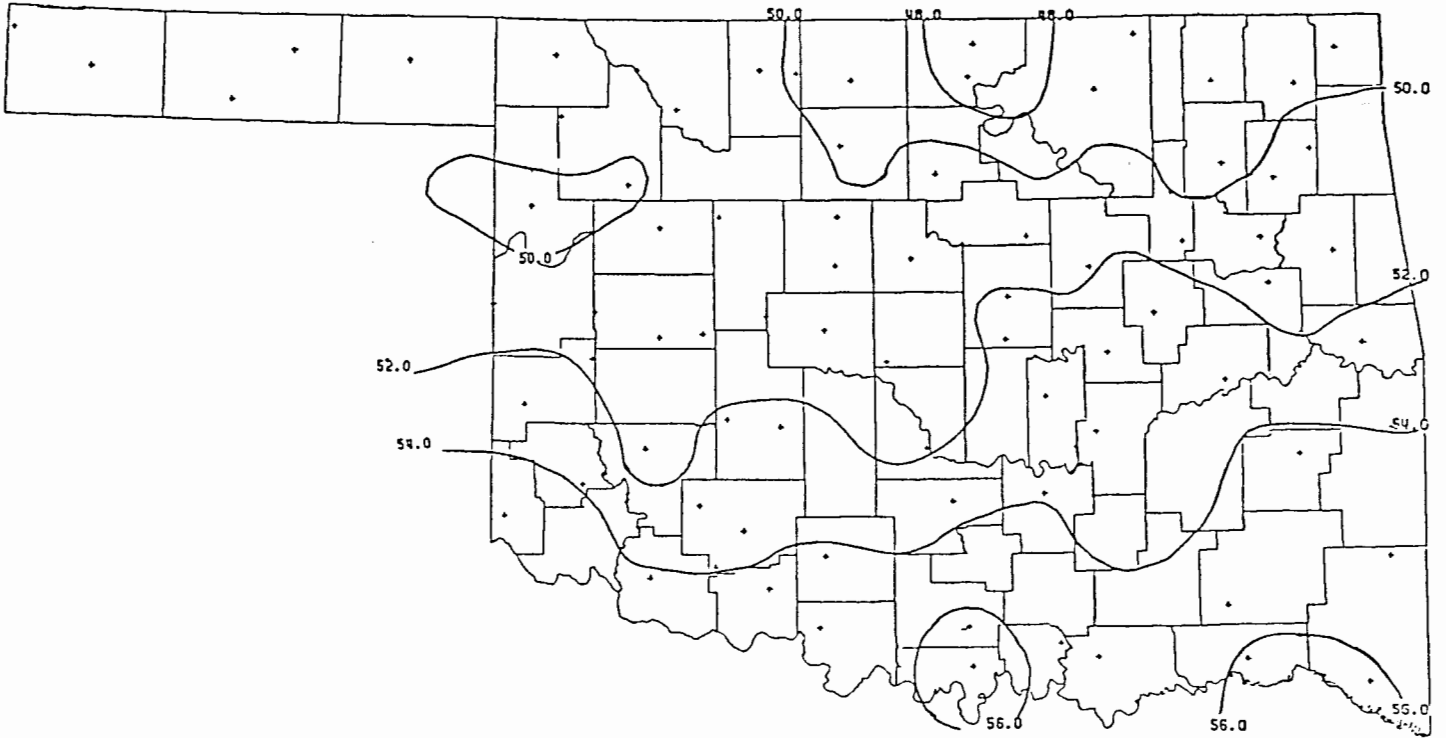
Precipitation - Near normal in the southwestern one-third
and above normal elsewhere.

Temperature - Near normal Statewide.

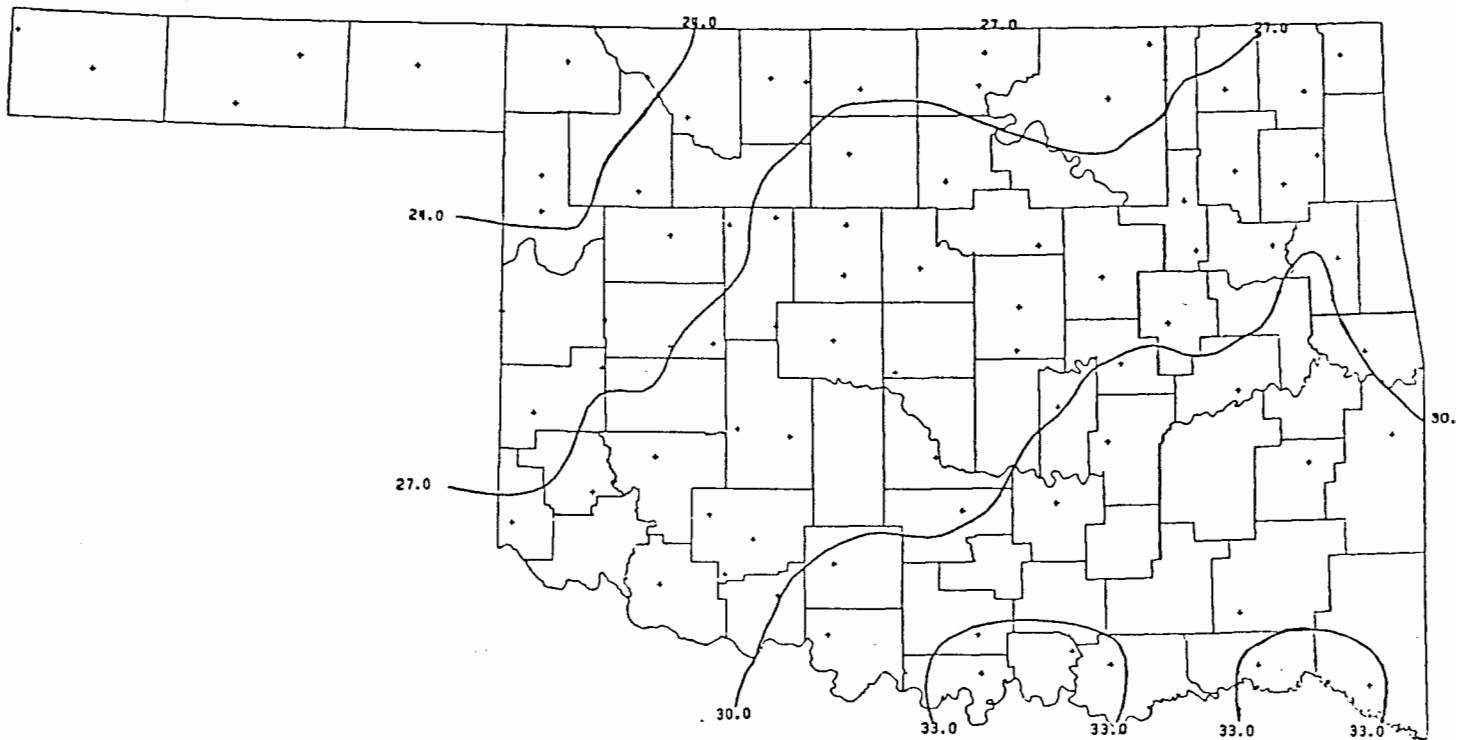
90-DAY OUTLOOK (NOVEMBER-JANUARY)

Precipitation - Below normal in the southeastern one-half
and near normal elsewhere.

Temperature - Near normal Statewide.

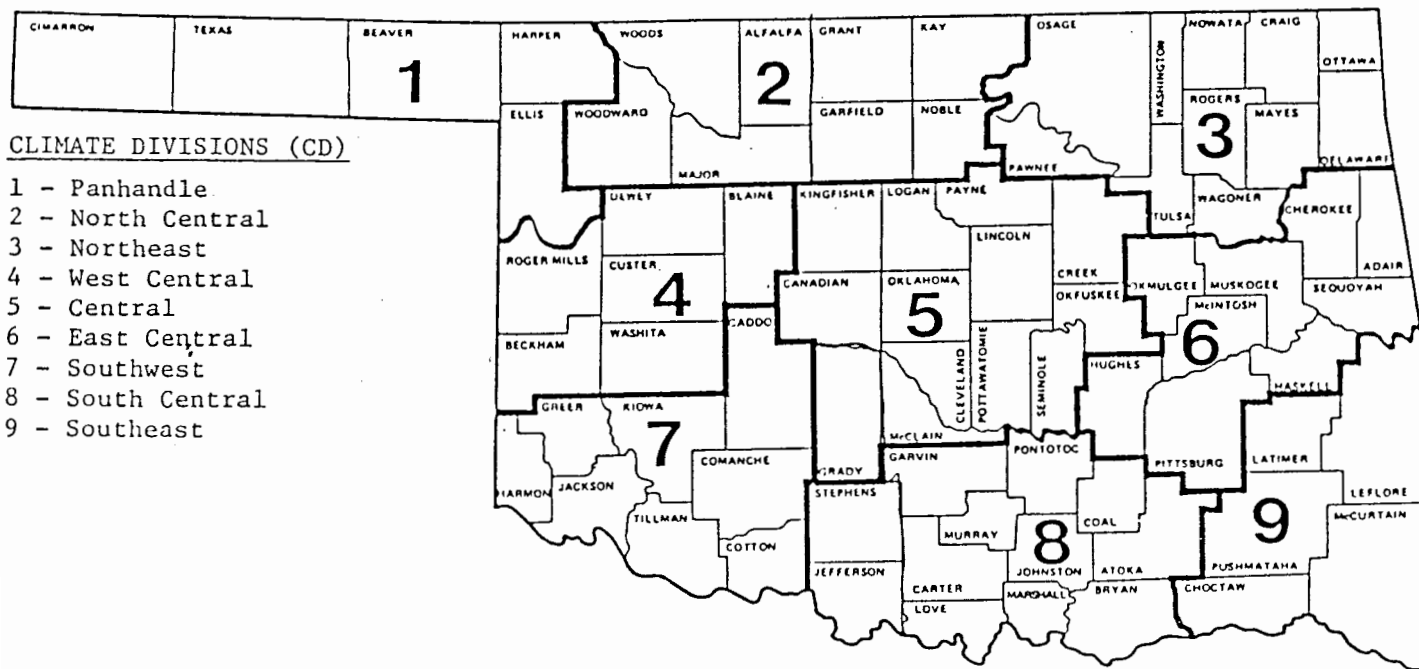


30-YEAR MEAN DECEMBER DAILY MAXIMUM TEMPERATURE



30-YEAR MEAN DECEMBER DAILY MINIMUM TEMPERATURE

O K L A H O M A



CLIMATE DIVISIONS (CD)

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

EXPLANATION OF TABLES

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

Station Name:

Station Identification Number: These are usually assigned by the National Climatic Data Center.

Climate Division: See the figure above.

Number of Temperature Observations: These are the actual number of temperature reports recorded at the station during the current month. Missing observations may result in artificially high or low mean monthly temperatures.

Deviation from Normal: The deviation of the observed mean monthly temperature from the monthly station normal. A positive value indicates the month was warmer than normal. A negative value indicates the month was cooler than normal. Normal monthly temperatures may be calculated by subtracting the deviation from the observed temperature.

Maximum Daily Maximum: The maximum daily maximum temperature observed during the current month and year and the day which it occurred.

Minimum Daily Minimum: The minimum daily minimum temperature observed during the current month and year and the day which it occurred.

Heating Degree Days: HDD are calculated each day of the month for which there is a temperature report and summed. They are a qualitative measure of how much heat was required to maintain a comfortable indoor temperature. Missing observations may result in an artificially high or low value. For February 1984 HDD would be calculated as:

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

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.

