OKLAHOMA

MONTHLY SUMMARY

November 1988

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NOVEMBER 1988 OKLAHOMA SUMMARY

November storms produced a mix of large hail, destructive winds, duststorms, snow and unconfirmed tornadoes. Monthly precipitation amounts averaged close to or above normal Statewide, while ranging tremendously from .51" to 5.67" within CD-8 alone. All CD's reported above normal monthly temperatures. The warmer air in the first half of the month delayed the first frost at many sites.

Only two stations, both in CD8, reported precipitation during the first week of the month. The dry weather facilitated row crop harvesting but, in combination with strong winds, it also lowered soil moisture supplies to late-summer levels.

The first significant storm system of November arrived as a cold front on the 9th, delivering 1/4 to 1/2 inch of rain to most stations in the eastern one-third of the State. Strong thunderstorms produced 60 mph winds and walnut-size hail in the Muskogee area.

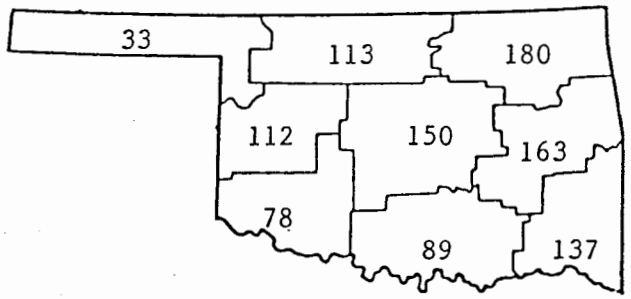
Another frontal system delivered precipitation nearly Statewide on the 12th. Many stations in all CD's except 1 and 9 reported precipitation amounts in excess of 1". Most central and northeastern stations reported over 2". The rains alleviated a severe moisture stress situation which had already resulted in the loss of some wheat.

An unusual and destructive storm system struck the State on the 15th as an intense upper-level low approached. A surface cold front ahead of the low generated winds over 60 mph over much of the State and produced a visibility-reducing duststorm. Winds attaining a speed of 96 mph in Clinton shattered numerous automobile and hospital windows. Strong winds fanned a devastating Altus fire which destroyed over $2 million of cotton and 29 houses and businesses. Strong winds, possibly associated with tornadoes, caused $250,000 damage in Hennessey and approximately $150,000 in Leflore County. Tulsa, Bryan and Oklahoma Counties reported hail from the system. Despite the storm's vigorous nature, rainfall amounts averaged less than .50" Statewide.

Much cooler air followed the front into the State. Freezing temperatures spread Statewide and many stations recorded their first fall freeze on the 16th or 17th. These dates are 2 to 3 weeks later than long-term means (see Table 1).

Another cold front lowered temperatures further as it crossed the State on the 19th. The front produced up to 5" of snow in northwestern Oklahoma and 1/2 to 2 inches across the northern third of the State. Thunderstorms in central and southern sections produced rainfall over much of the area. Reported amounts included Taloga 1.20", Sallisaw 2.45", Altus .52", Lehigh 3.10" and Tuskahoma 1.08". Many stations recorded their lowest temperatures of the month on the 20th or 21st.

After several mornings of below-freezing readings, warmer air began returning to the State. Only a few stations still recorded freezing temperatures on the 25th. Highs reached the 70's in the southern two-thirds of the State before a vigorous cold front cooled the State again. The instability along the front, resulting from the displacement of the warm air from the surface, aided the development of hail-producing thunderstorms. Ardmore reported baseball-sized hail, and hail covered the ground in sections of Murray and Johnston Counties. Fog reduced visibility to less than 100 feet in much of southern Oklahoma.



Percent of normal precipitation by CD. (November 1988)

Table 1. Comparison of 1988 first fall freeze dates and long-term mean dates.

		FIRST FREEZE DATES				
		1988		LONG-TERM MEAN		APPROXIMATE PERCENTAGE OF YEARS IN WHICH FREEZE OCCURS AFTER
CD	STATION	MONTH	DAY	MONTH	DAY	THE 1988 DATE
2	Jefferson	Nov	8	Oct	24	< 10
3	Claremore	Nov	17	Oct	24	< 10
4	Clinton	Nov	16	Oct	28	< 10
5	Hennessey	Nov	16	Oct	30	< 10
6	Eufaula	Nov	21	Oct	31	< 10
7	Hobart	Nov	16	Nov	1	10-25
8	Ada	Nov	21	Nov	5	10
9	Hugo	Nov	17	Nov	5	10-25

TABLE OF 1987/1988 COMPARISONS

	November Temperatures (F)		November Precipitation (in.)	
Station	1987	1988	1987	1988
Arnett	47.3	47.3	.541	.762
Enid	49.9	50.0	1.671	1.740
Mutual	47.6	47.1	.380	.631
Tulsa	52.9	52.7	5.172	4.384
Elk City	45.6	50.3	1.572	1.773
Oklahoma City	51.7	51.9	1.926	2.432
McAlester	53.1	53.9	6.574	3.870
Altus Irr. Sta.	53.3	52.8	.220	.460
Durant	52.7	53.9	5.380	2.430
Ada	52.5	52.4	3.512	2.431
Antlers	54.0	54.2	7.170	3.100

EXTREMES

Variable	Station	Division	Observation	Date
Minimum temperature (F)	Kenton	1	11	30
Maximum temperature (F)	Altus Irr.	7	90	9
Maximum 24-hour precipitation	Jadie Tw.	9	4.51"	19

NOVEMBER 1988 SUMMARY FOR NORTHWEST DIVISION (CD1)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	DAY	MIN TEMP	DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	DAY
ARNETT	332	1	47.3	30	1.6	84.	15	18.	28	530.5	-48.5	.0	.0	.762	30	-.33	.27	19
BEAVER	593	1	45.4	30	.8	84.	15	12.	28	587.5	-24.5	.0	.0	.040	30	-.85	.04	26
BOISE CITY 2 E	908	1	46.7	30	2.8	80.	3	14.	20	550.0	-83.0	.0	.0	.250	30	-.38	.20	19
BUFFALO	1243	1	48.3	30	1.3	89.	1	15.	28	503.5	-36.5	3.5	3.5	.200	30	-1.13	.10	26
FARGO	3070	1	*****	0	*****	****	0	****	0	******	******	******	******	.641	30	-.38	.32	20
GAGE FAA APT	3407	1	48.7	30	3.4	85.	14	15.	28	492.5	-98.5	4.5	4.5	.401	30	-.44	.35	19
GATE	3489	1	48.8	30	*****	87.	14	17.	27	496.0	******	8.5	******	.060	30	*****	.05	26
GOODWELL RES ST	3628	1	46.0	30	1.7	83.	4	15.	28	570.5	-50.5	.0	.0	.035	30	-.61	.03	25
GUYMON	3835	1	47.4	26	*****	82.	4	17.	21	457.5	******	.5	******	.071	30	*****	.07	16
HOOKER	4298	1	46.6	30	2.5	82.	4	16.	28	552.0	-75.0	.0	.0	.100	30	-.66	.08	16
KENTON	4766	1	45.6	30	1.7	80.	9	11.	30	581.0	-52.0	.0	.0	.100	30	-.43	.08	19
LAVERNE	5045	1	*****	0	*****	****	0	****	0	******	******	******	******	.172	30	-.82	.13	20
OPTIMA LAKE	6740	1	46.4	26	*****	83.	15	15.	28	483.5	******	.0	******	.090	30	*****	.05	26
REGNIER	7534	1	*****	0	*****	****	0	****	0	******	******	******	******	.280	30	-.23	.25	15
TURPIN 4 SSE	9017	1	45.4	30	*****	83.	15	15.	28	588.5	******	.0	******	.000	30	*****	.00	30

NOVEMBER 1988 SUMMARY FOR NORTH CENTRAL DIVISION (CD2)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	DAY	MIN TEMP	DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	DAY
ALVA 1 ENE	194	2	48.0	28	*****	87.	1	19.	21	477.0	******	.0	******	.900	30	-.30	.69	20
VANCE AFB	302	2	*****	0	*****	****	0	****	0	******	******	******	******	2.391	27	*****	1.07	12
BILLINGS	755	2	49.3	30	*****	78.	2	12.	22	470.0	******	.0	******	2.752	30	.86	1.42	20
BLACKWELL 2E	818	2	47.8	30	*****	79.	1	12.	21	516.5	******	2.0	******	2.343	30	*****	1.24	12
BRAMAN	1075	2	*****	0	*****	****	0	****	0	******	******	******	******	2.101	30	*****	1.08	20
CEDARDALE	1620	2	*****	0	*****	****	0	****	0	******	******	******	******	1.180	30	*****	.83	20
CHEROKEE	1724	2	49.5	30	2.2	82.	1	20.	28	466.0	-65.0	.0	.0	1.300	30	.02	.50	15
ENID	2912	2	50.0	30	1.5	77.	9	20.	21	451.5	-43.5	.5	.5	1.740	30	-.04	.81	12
FREEDOM	3358	2	47.3	30	*****	85.	1	13.	28	529.5	******	.0	******	.370	30	*****	.37	20
GREAT SALT PLNS	3740	2	49.0	29	*****	82.	2	22.	29	463.0	******	.0	******	.790	23	*****	.31	20
HARDY	3909	2	*****	0	*****	****	0	****	0	******	******	******	******	2.071	30	*****	1.10	11
HELENA 1 SSE	4019	2	46.3	30	*****	79.	2	17.	21	559.5	******	.0	******	.910	30	-.63	.47	20
JEFFERSON	4573	2	48.5	30	.7	81.	1	13.	21	494.5	-21.5	.0	.0	1.471	30	-.45	.53	11
LAMONT	5013	2	*****	0	*****	****	0	****	0	******	******	******	******	2.630	30	*****	1.22	20
MEDFORD	5768	2	*****	0	*****	****	0	****	0	******	******	******	******	1.531	30	*****	.56	15
MORRISON	6065	2	*****	0	*****	****	0	****	0	******	******	******	******	2.820	30	*****	1.54	20
MUTUAL	6139	2	47.1	30	.5	83.	2	17.	21	538.0	-14.0	.0	.0	.631	30	-.52	.25	20
NEWKIRK	6278	2	49.8	30	2.4	78.	1	19.	21	459.5	-68.5	5.0	5.0	2.921	30	.98	1.34	20
ORIENTA	6751	2	*****	0	*****	****	0	****	0	******	******	******	******	.620	30	*****	.42	12
PERRY	7012	2	51.3	30	1.7	80.	9	17.	21	416.0	-46.0	5.5	5.5	2.530	30	.73	1.50	20
PONCA CITY FAA	7201	2	50.3	29	3.7	79.	2	13.	21	435.5	-116.5	9.5	9.5	1.702	30	-.35	.98	12
RED ROCK 1 NNE	7505	2	*****	0	*****	****	0	****	0	******	******	******	******	3.260	30	1.54	1.94	20
RENFROW	7556	2	*****	0	*****	****	0	****	0	******	******	******	******	1.960	30	.26	.82	11
WAYNOKA	9404	2	47.6	30	-.3	84.	1	13.	21	521.5	8.5	.0	.0	.750	29	*****	.55	20
WOODWARD	9760	2	*****	0	*****	****	0	****	0	******	******	******	******	.761	30	*****	.66	20

NOVEMBER 1988 SUMMARY FOR NORTHEAST DIVISION (CD3)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	DAY	MIN TEMP	DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	DAY
BARNSDALL	535	3	50.0	30	*****	81.	9	21.	21	451.0	******	2.5	******	5.313	30	2.99	2.40	12
BARTLESVILLE 2W	548	3	51.0	30	2.7	83.	9	21.	28	424.5	-76.5	5.5	5.5	4.350	30	2.10	1.75	12
BIXBY	782	3	49.1	30	.4	81.	10	23.	29	476.5	-12.5	.0	.0	5.190	30	2.46	2.25	12
BURBANK	1256	3	*****	0	*****	****	0	****	0	******	******	******	******	3.801	30	*****	1.62	11
CHELSEA 4 S	1717	3	*****	0	*****	****	0	****	0	******	******	******	******	6.160	30	*****	2.15	12
CLAREMORE	1828	3	49.7	30	1.3	81.	10	22.	29	459.5	-38.5	.0	.0	4.691	30	1.90	2.03	12
CLEVELAND 5 WSW	1902	3	52.0	26	*****	83.	9	20.	21	346.0	******	9.0	******	3.310	26	*****	3.15	12
HOLLOW	4258	3	*****	0	*****	****	0	****	0	******	******	******	******	4.650	30	1.66	2.00	12
HOMINY	4289	3	*****	0	*****	****	0	****	0	******	******	******	******	4.312	30	2.25	2.16	12
HULAH DAM	4393	3	49.2	20	*****	82.	10	20.	28	316.0	******	.0	******	4.840	30	2.65	2.41	20
JAY TOWER	4567	3	53.8	28	*****	78.	4	24.	21	322.0	******	9.0	******	3.700	30	*****	2.00	12
KANSAS 1 ESE	4672	3	51.0	30	*****	76.	2	21.	28	421.5	******	.0	******	5.174	30	*****	2.20	12
KEYSTONE DAM	4812	3	51.3	20	*****	81.	10	23.	21	273.5	******	.0	******	4.290	29	*****	1.75	21
LENAPAH	5118	3	*****	0	*****	****	0	****	0	******	******	******	******	5.590	30	*****	2.00	12
MANNFORD 6 NW	5522	3	51.8	29	*****	83.	9	21.	28	391.0	******	7.5	******	4.601	29	*****	2.11	12
MARAMEC	5540	3	*****	0	*****	****	0	****	0	******	******	******	******	5.260	30	3.25	2.30	18
MIAMI	5855	3	50.8	30	2.4	78.	10	22.	29	427.0	-71.0	.0	.0	5.010	30	2.06	2.41	12
NOWATA	6485	3	50.6	30	2.0	79.	9	22.	28	432.5	-59.5	.5	.5	4.880	30	2.33	2.10	12
ONETA 1 WNW	6713	3	*****	0	*****	****	0	****	0	******	******	******	******	5.130	30	*****	2.27	12
PAWHUSKA	6935	3	50.5	30	2.5	80.	9	20.	21	438.0	-72.0	4.5	4.5	4.322	30	2.29	1.33	20
PAWHUSKA	6937	3	*****	0	*****	****	0	****	0	******	******	******	******	4.070	30	*****	1.65	20
PAWNEE	6940	3	*****	0	*****	****	0	****	0	******	******	******	******	3.670	30	1.79	1.86	20
PRYOR 6 N	7309	3	48.9	30	.7	78.	10	22.	29	484.5	-19.5	1.0	1.0	4.711	30	1.81	2.02	12
QUAPAW	7358	3	*****	0	*****	****	0	****	0	******	******	******	******	6.250	30	3.37	2.20	12
RALSTON	7390	3	51.0	30	*****	83.	9	19.	21	424.5	******	5.5	******	2.640	30	.69	1.15	12
RAMONA 4 N	7394	3	*****	0	*****	****	0	****	0	******	******	******	******	3.480	30	*****	2.16	12
SKIATOOK	8258	3	*****	0	*****	****	0	****	0	******	******	******	******	4.820	30	2.47	1.97	12
SPAVINAW	8380	3	52.4	28	*****	77.	2	24.	28	360.5	******	6.5	******	4.562	30	1.35	1.67	12
TULSA WSO APT	8992	3	52.7	30	3.5	78.	3	25.	21	378.0	-96.0	7.5	7.5	4.384	30	1.82	1.86	12
UPPER SPAVINAW	9101	3	53.6	28	*****	82.	2	22.	28	340.0	******	21.0	******	5.061	28	*****	2.24	12
VINITA 2 N	9203	3	51.8	30	3.9	78.	2	22.	28	398.0	-115.0	2.5	2.5	5.910	30	2.95	2.07	12
WAGONER	9247	3	53.3	30	3.3	80.	9	24.	28	354.5	-92.5	5.0	5.0	5.181	30	1.98	2.73	12
WANN	9298	3	*****	0	*****	****	0	****	0	******	******	******	******	4.540	30	*****	1.76	12
WYNONA	9792	3	*****	0	*****	****	0	****	0	******	******	******	******	3.103	30	*****	1.95	12

NOVEMBER 1988 SUMMARY FOR WEST CENTRAL DIVISION (CD4)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	DAY	MIN TEMP	DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	DAY
CANTON DAM	1445	4	50.8	21	*****	78.	4	19.	21	298.5	******	.0	******	1.032	21	*****	.54	21
CHEYENNE	1738	4	*****	0	*****	****	0	****	0	******	******	******	******	1.250	30	*****	.95	12
CLINTON	1909	4	52.6	30	4.1	82.	2	18.	21	375.5	-119.5	3.5	3.5	1.780	30	.31	1.20	12
COLONY	2039	4	*****	0	*****	****	0	****	0	******	******	******	******	2.140	30	*****	1.84	12
CORDELL	2125	4	*****	0	*****	****	0	****	0	******	******	******	******	1.760	30	.37	1.05	12
ELK CITY 1 E	2849	4	50.3	30	*****	85.	14	20.	20	445.0	******	5.0	******	1.773	30	.41	1.15	12
ERICK 4 E	2944	4	50.7	30	2.3	84.	14	22.	28	433.0	-65.0	4.5	4.5	1.680	30	.69	.83	20
GEARY	3497	4	49.9	28	*****	79.	9	21.	28	421.5	******	.0	******	1.150	29	*****	1.15	12
HAMMON 1 NNE	3871	4	47.8	30	.3	83.	3	19.	28	517.5	-7.5	.0	.0	1.890	30	.50	1.00	20
LEEDEY	5090	4	*****	0	*****	****	0	****	0	******	******	******	******	1.050	30	-.28	.65	20
MACKIE 4 NNW	5463	4	*****	0	*****	****	0	****	0	******	******	******	******	.800	30	*****	.42	20
MORAVIA 2 NNE	6035	4	*****	0	*****	****	0	****	0	******	******	******	******	1.040	30	-.01	.72	12
OKEENE	6629	4	50.3	30	1.2	79.	1	23.	28	444.0	-33.0	3.5	3.5	1.540	30	-.06	.92	12
RETROP	7565	4	*****	0	*****	****	0	****	0	******	******	******	******	1.430	30	*****	.76	20
REYDON	7579	4	49.7	29	*****	84.	1	16.	21	443.5	******	.5	******	.983	29	*****	.45	19
SAYRE	7952	4	*****	0	*****	****	0	****	0	******	******	******	******	1.060	30	-.03	.75	12
SWEETWATER 2 E	8652	4	*****	0	*****	****	0	****	.0	******	******	******	******	1.280	30	*****	.66	11
TALOGA	8708	4	48.4	30	1.4	80.	1	12.	21	499.0	-41.0	.0	.0	2.081	30	.61	1.20	20
THOMAS	8815	4	*****	0	*****	****	0	****	0	******	******	******	******	1.120	30	*****	.64	12
VICI	9172	4	*****	0	*****	****	0	****	0	******	******	******	******	.550	30	*****	.38	20
WATONGA	9364	4	50.2	30	*****	79.	9	21.	28	447.5	******	2.0	******	1.680	30	.26	.92	12
WEATHERFORD	9422	4	49.5	30	.5	82.	10	22.	28	466.5	-16.5	.0	.0	.710	30	-.65	.55	12

NOVEMBER 1988 SUMMARY FOR CENTRAL DIVISION (CD5)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	DAY	MIN TEMP	DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	DAY
AMBER	200	5	*****	0	*****	****	0	****	0	******	******	******	******	2.110	30	*****	1.55	12
ARCADIA	288	5	*****	0	*****	****	0	****	0	******	******	******	******	2.951	30	*****	1.85	12
TINKER AFB	325	5	*****	0	*****	****	0	****	0	******	******	******	******	3.773	28	*****	2.70	12
BLANCHARD 2 SSW	830	5	50.9	27	*****	82.	9	22.	28	387.0	******	7.0	******	1.631	30	*****	1.09	12
BRISTOW	1144	5	52.1	30	2.4	82.	9	21.	21	394.5	-69.5	6.5	1.5	4.622	30	2.29	2.52	12
CHANDLER	1684	5	52.0	30	1.6	82.	9	23.	28	396.5	-46.5	6.0	6.0	3.110	30	1.02	1.70	11
CHICKASHA EX ST	1750	5	50.4	30	.4	83.	9	21.	28	439.0	-11.0	.0	.0	1.580	30	.03	1.02	12
COX CITY 1 E	2196	5	*****	0	*****	****	0	****	0	******	******	******	******	1.750	30	*****	1.05	11
CRESCENT	2242	5	*****	0	*****	****	0	****	0	******	******	******	******	2.000	30	*****	1.50	13
CUSHING	2318	5	50.5	30	1.6	82.	11	25.	28	435.5	-47.5	1.0	1.0	4.170	30	2.16	2.34	12
EL RENO 1 N	2818	5	51.5	26	*****	82.	9	31.	27	354.0	******	3.5	******	1.910	30	.27	1.60	12
GUTHRIE	3821	5	52.2	30	2.9	82.	9	21.	28	391.0	-80.0	7.5	7.5	3.451	30	1.65	2.75	12
HENNESSEY 2 SE	4055	5	49.7	30	1.2	80.	9	20.	28	460.0	-35.0	1.5	1.5	1.660	30	.03	.88	12
INGALLS	4489	5	*****	0	*****	****	0	****	0	******	******	******	******	3.713	30	*****	2.00	12
KINGFISHER 2 SE	4861	5	50.1	30	1.2	82.	9	22.	28	450.0	-33.0	4.0	4.0	1.830	30	.30	.92	12
KONAWA	4915	5	*****	0	*****	****	0	****	0	******	******	******	******	3.460	30	1.32	1.24	26
MARSHALL	5589	5	*****	0	*****	****	0	****	0	******	******	******	******	2.430	30	.80	1.26	12
MEEKER 4 W	5779	5	51.7	30	2.4	82.	9	22.	21	405.0	-66.0	5.0	5.0	3.020	30	.97	1.90	12
MULHALL	6110	5	*****	0	*****	****	0	****	0	******	******	******	******	2.112	30	*****	1.29	12
NORMAN 3 S	6386	5	52.7	30	*****	83.	9	24.	28	382.5	******	14.0	******	2.181	30	.14	1.30	12
OILTON 2 SE	6616	5	*****	0	*****	****	0	****	0	******	******	******	******	4.470	30	*****	1.90	12
OKEMAH	6638	5	52.4	22	*****	79.	9	25.	28	281.0	******	3.5	******	4.931	30	2.49	2.96	12
OKLAHOMA CITY WS	6661	5	51.9	30	3.1	78.	14	26.	28	399.5	-86.5	7.0	7.0	2.432	30	.90	1.70	12
PERKINS	7003	5	*****	0	*****	****	0	****	0	******	******	******	******	3.240	30	1.17	1.98	12
PIEDMONT	7068	5	*****	0	*****	****	0	****	0	******	******	******	******	1.800	30	*****	1.14	12
PRAGUE	7264	5	*****	0	*****	****	0	****	0	******	******	******	******	4.151	30	1.94	2.25	12
PURCELL 5 SW	7327	5	51.6	30	2.0	82.	9	21.	28	410.0	-57.0	7.5	7.5	2.850	30	.79	1.80	12
SEMINOLE	8042	5	53.9	30	2.2	81.	9	24.	28	340.0	-64.0	7.5	2.5	4.120	30	1.60	2.00	12
SHAWNEE	8110	5	*****	0	*****	****	0	****	0	******	******	******	******	4.910	30	2.57	2.47	12
STELLA	8479	5	*****	0	*****	****	0	****	0	******	******	******	******	2.530	30	*****	1.41	12
STILLWATER 2 W	8501	5	48.9	30	-.0	81.	11	20.	21	489.0	6.0	5.0	5.0	3.451	30	1.67	1.58	12
STROUD 1 N	8563	5	*****	0	*****	****	0	****	0	******	******	******	******	4.400	30	*****	2.02	12
TECUMSEH	8751	5	*****	0	*****	****	0	****	0	******	******	******	******	2.280	30	*****	1.28	12
TROUSDALE	8960	5	*****	0	*****	****	0	****	0	******	******	******	******	2.940	30	*****	2.03	12
UNION CITY 1 SE	9086	5	*****	0	*****	****	0	****	0	******	******	******	******	2.802	30	.74	2.67	12
WELTY 1 SSE	9479	5	*****	0	*****	****	0	****	0	******	******	******	******	3.870	30	*****	2.45	12
WEWOKA	9575	5	*****	0	*****	****	0	****	0	******	******	******	******	3.770	30	1.54	1.34	12

NOVEMBER 1988 SUMMARY FOR EAST CENTRAL DIVISION (CD6)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	MAX DAY	MIN TEMP	MIN DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	MAX DAY
ASHLAND	364	6	*****	0	*****	****	0	****	0	******	******	******	******	3.320	30	*****	1.62	20
BEGGS	631	6	*****	0	*****	****	0	****	0	******	******	******	******	4.910	30	*****	2.37	12
BOYNTON	1027	6	*****	0	*****	****	0	****	0	******	******	******	******	5.570	30	*****	2.75	12
CHECOTAH	1711	6	*****	0	*****	****	0	****	0	******	******	******	******	4.032	30	1.19	1.38	20
DEWAR 2 NE	2485	6	*****	0	*****	****	0	****	0	******	******	******	******	4.130	30	1.44	1.92	12
EUFAULA	2993	6	53.3	30	*****	78.	9	26.	28	354.0	******	3.5	******	4.290	30	1.33	1.40	20
HANNA	3884	6	52.7	30	*****	79.	9	24.	28	376.5	******	6.0	******	4.250	30	1.31	1.24	12
HARTSHORNE	3946	6	*****	0	*****	****	0	****	0	******	******	******	******	5.541	30	*****	1.94	20
HASKELL	3956	6	*****	0	*****	****	0	****	0	******	******	******	******	8.040	30	5.15	3.65	13
HOLDENVILLE	4235	6	53.0	30	1.6	81.	9	21.	28	366.0	-47.0	6.5	6.5	3.421	30	1.02	1.05	12
LAKE EUFAULA	4975	6	53.5	30	*****	80.	10	27.	21	351.0	******	6.5	******	4.320	30	*****	1.28	20
LYONS 2 N	5437	6	*****	0	*****	****	0	****	0	******	******	******	******	4.661	30	1.71	2.22	11
MCALESTER FAA	5664	6	53.9	29	3.1	78.	8	24.	28	336.0	-97.0	14.0	7.0	3.870	30	.80	1.48	19
MCCURTAIN 1 SE	5693	6	54.7	30	*****	81.	2	22.	28	319.0	******	9.5	******	5.230	30	1.65	1.85	26
MUSKOGEE	6130	6	53.1	29	3.0	81.	2	23.	21	350.5	-96.5	4.5	4.5	7.281	30	4.30	2.70	12
OKMULGEE W W	6670	6	50.8	29	.2	81.	9	21.	22	414.0	-18.0	1.0	1.0	6.200	30	3.57	3.01	12
OKTAHA 2 NE	6678	6	*****	0	*****	****	0	****	0	******	******	******	******	4.571	30	*****	1.74	12
QUINTON	7372	6	*****	0	*****	****	0	****	0	******	******	******	******	4.312	30	1.07	1.74	19
SALLISAW 2 NE	7862	6	51.3	30	.6	80.	2	21.	21	413.0	-21.0	3.5	-1.5	5.821	30	2.41	2.45	20
SCIPIO	7979	6	*****	0	*****	****	0	****	0	******	******	******	******	3.970	30	*****	1.22	20
SCRAPER	7993	6	*****	0	*****	****	0	****	0	******	******	******	******	5.410	30	*****	2.25	11
SHORT	8170	6	*****	0	*****	****	0	****	0	******	******	******	******	7.480	30	*****	2.40	26
STILWELL 1 NE	8506	6	51.7	30	*****	76.	2	22.	28	403.5	******	4.0	******	5.523	30	2.27	1.74	12
TAHLEQUAH	8677	6	51.7	30	5.4	78.	2	22.	28	400.5	-75.5	1.5	-3.5	5.350	30	2.15	2.10	12
WEBBERS FALLS	9445	6	51.2	30	1.9	81.	3	22.	22	415.0	-56.0	.0	.0	3.720	30	.73	1.23	20
WESTVILLE	9523	6	*****	0	*****	****	0	****	0	******	******	******	******	5.440	30	*****	1.82	12
WETUMKA 3 NE	9571	6	*****	0	*****	****	0	****	0	******	******	******	******	3.803	30	1.03	1.48	12

NOVEMBER 1988 SUMMARY FOR SOUTHWEST DIVISION (CD7)

NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	MAX DAY	MIN TEMP	MIN DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	MAX DAY
ALTUS IRR STA	179	7	52.7	30	1.5	90.	9	18.	28	377.5	-36.5	8.0	8.0	.460	30	-.56	.43	19
ALTUS DAM	184	7	52.2	30	*****	88.	10	20.	28	388.5	******	4.5	******	1.031	30	.01	.52	20
ANADARKO	224	7	51.4	24	*****	82.	9	18.	28	331.0	******	5.0	******	1.920	26	*****	1.41	12
APACHE	260	7	*****	0	*****	****	0	****	0	******	******	******	******	1.741	30	*****	1.04	12
ALTUS AFB	447	7	*****	0	*****	****	0	****	0	******	******	******	******	.522	28	*****	.19	20
CARNEGIE 2 ENE	1504	7	51.0	30	1.5	85.	9	20.	28	430.0	-35.0	11.0	11.0	2.630	30	1.31	2.03	12
CHATTANOOGA	1706	7	52.3	30	1.4	86.	9	18.	28	388.0	-35.0	8.0	8.0	.710	30	-.66	.44	12
DUNCAN 12 W	2668	7	*****	0	*****	****	0	****	0	******	******	******	******	1.062	30	*****	.96	12
FREDERICK	3353	7	53.0	30	.8	88.	10	23.	28	362.0	-27.0	2.0	-3.0	.420	30	-.99	.22	12
GRANDFIELD 4 NW	3709	7	*****	0	*****	****	0	****	0	******	******	******	******	.480	30	-1.07	.42	12
HOBART FAA APT	4204	7	50.6	30	2.1	78.	14	21.	28	434.0	-61.0	1.0	1.0	1.923	30	.84	.81	12
HOLLIS	4249	7	51.3	28	*****	86.	14	19.	28	385.0	******	2.5	******	.370	30	-.51	.33	20
LAWTON	5063	7	51.8	30	.8	85.	9	23.	27	400.5	-27.5	3.0	3.0	1.120	30	-.63	.82	11
FORT SILL	5068	7	51.3	30	*****	84.	9	22.	28	414.0	******	4.0	******	.774	30	-.98	.37	11
LOOKEBA 2 ENE	5329	7	*****	0	*****	****	0	****	0	******	******	******	******	1.860	30	*****	1.34	12
MANGUM RES STA	5509	7	52.0	30	1.8	89.	9	13.	28	395.0	-49.0	6.0	6.0	.821	30	-1.38	.49	19
RANDLETT 9 E	7403	7	*****	0	*****	****	0	****	0	******	******	******	******	.811	30	*****	.67	12
ROOSEVELT	7727	7	*****	0	*****	****	0	****	0	******	******	******	******	1.040	30	-.20	.59	12
SEDAN	8016	7	*****	0	*****	****	0	****	0	******	******	******	******	1.330	30	*****	.85	12
SNYDER	8299	7	*****	0	*****	****	0	****	0	******	******	******	******	.841	30	-.39	.51	12
VINSON 3 WNW	9212	7	*****	0	*****	****	0	****	0	******	******	******	******	.610	30	-.41	.39	20
WALTERS	9278	7	53.1	30	1.4	85.	9	22.	28	368.0	-47.0	11.0	5.0	1.240	30	-.59	.96	12
WICHITA MT WLR	9629	7	51.3	30	1.8	82.	10	17.	29	411.5	-53.5	.0	.0	.800	30	-.74	.40	20
WILLOW	9668	7	*****	0	*****	****	0	****	0	******	******	******	******	.921	30	*****	.60	20

NOVEMBER 1988 SUMMARY FOR SOUTH CENTRAL DIVISION (CD8)

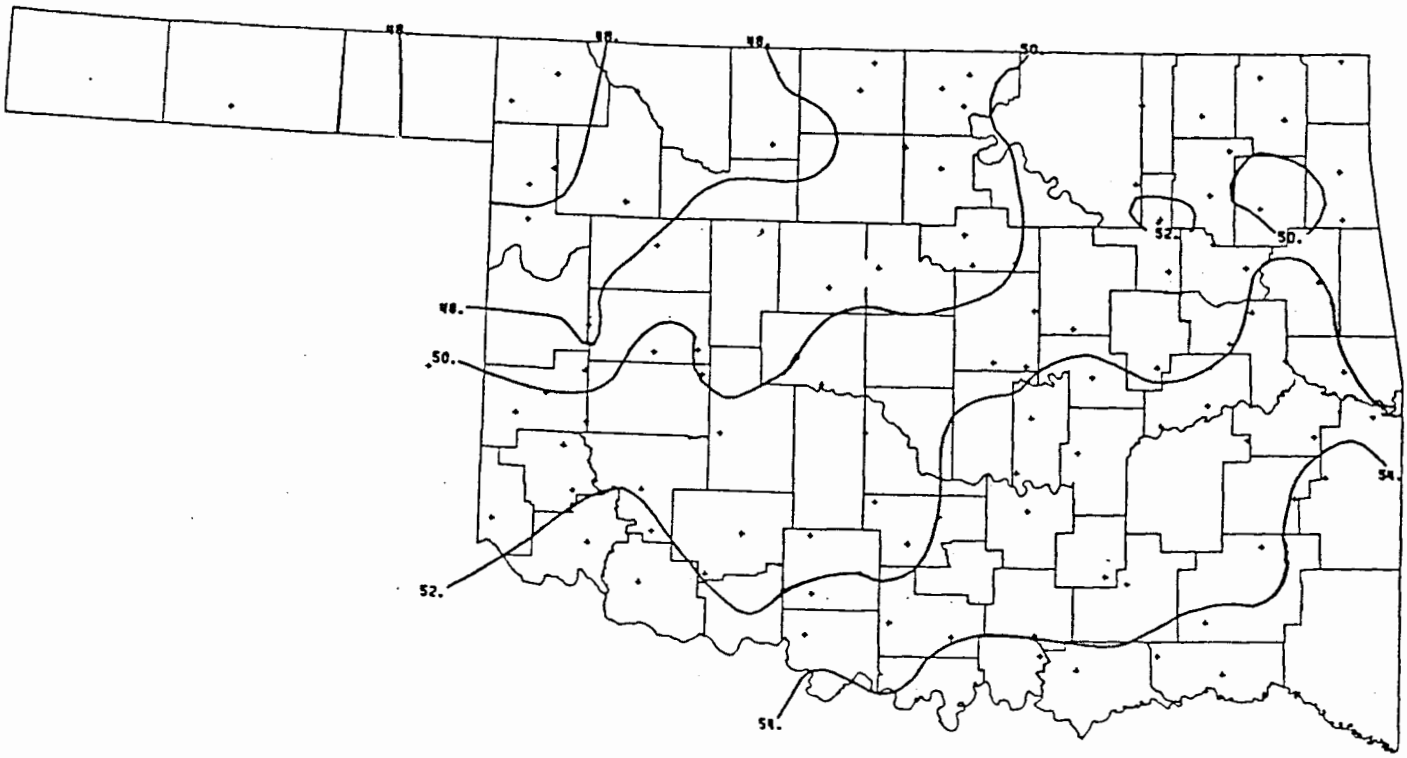
NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	MAX DAY	MIN TEMP	MIN DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	MAX DAY
ADA	17	8	52.4	30	.6	80.	9	24.	28	378.5	-25.5	.0	-8.0	2.431	30	-.12	.88	26
ALLEN	147	8	*****	0	*****	****	0	****	0	******	******	******	******	3.700	30	*****	1.10	26
ARDMORE	292	8	54.8	30	.5	80.	10	26.	28	317.5	-12.5	13.0	4.0	1.730	30	-.51	.95	19
ATOKA DAM	394	8	53.4	28	*****	79.	10	27.	28	328.5	******	4.0	******	3.162	30	*****	1.45	21
BOKCHITO	917	8	*****	0	*****	****	0	****	0	******	******	******	******	2.900	30	*****	1.50	20
CANEY	1437	8	54.4	30	*****	80.	7	29.	28	332.0	******	14.5	******	2.350	30	*****	.82	20
CENTRAHOMA	1648	8	*****	0	*****	****	0	****	0	******	******	******	******	2.450	30	*****	1.00	19
CHICKASAW NRA	1745	8	52.0	30	*****	80.	10	21.	28	391.5	******	.0	******	1.910	30	*****	.90	26
COLEMAN	2011	8	*****	0	*****	****	0	****	0	******	******	******	******	3.480	30	*****	.90	19
COMANCHE	2054	8	*****	0	*****	****	0	****	0	******	******	******	******	1.080	30	*****	.54	12
DAISY 4 ENE	2354	8	*****	0	*****	****	0	****	0	******	******	******	******	2.571	30	-.79	1.42	16
DUNCAN	2660	8	52.7	30	.7	84.	10	23.	28	371.5	-25.5	1.5	-5.5	1.560	30	-.34	.98	12
DURANT USDA	2678	8	53.5	30	*****	80.	8	26.	22	346.5	******	2.5	******	2.430	30	-.37	.87	20
ELMORE CITY	2872	8	*****	0	*****	****	0	****	0	******	******	******	******	1.701	30	*****	.70	11
FARRIS 3 WNW	3083	8	*****	0	*****	****	0	****	0	******	******	******	******	3.650	30	*****	1.27	26
GRADY	3688	8	*****	0	*****	****	0	****	0	******	******	******	******	1.430	30	*****	.54	26
HEALDTON	4001	8	52.9	30	*****	83.	9	22.	28	376.0	******	12.5	******	1.330	30	-.71	.46	12
HENNEPIN	4052	8	*****	0	*****	****	0	****	0	******	******	******	******	1.741	30	*****	.78	19
KETCHUM RANCH	4780	8	*****	0	*****	****	0	****	0	******	******	******	******	1.270	30	*****	.50	19
KINGSTON	4865	8	*****	0	*****	****	0	****	0	******	******	******	******	2.970	30	.44	.95	20
LEHIGH	5108	8	*****	0	*****	****	0	****	0	******	******	******	******	5.670	30	*****	3.10	20
LINDSAY 2 W	5216	8	51.1	30	*****	82.	9	22.	28	420.5	******	4.5	******	.851	30	-1.23	.41	19
LOCO 6 SE	5247	8	*****	0	*****	****	0	****	0	******	******	******	******	1.100	30	*****	.32	5
MADILL	5468	8	54.7	30	1.7	80.	9	27.	28	322.0	-44.0	12.0	6.0	2.770	30	.31	1.35	19
MARIETTA	5563	8	55.2	30	2.3	81.	9	26.	28	308.5	-62.5	14.5	6.5	2.440	30	-.02	1.23	26
MARLOW 1 WSW	5581	8	52.5	30	*****	84.	9	19.	28	385.5	******	9.5	******	1.391	30	-.56	.93	12
MCGEE CREEK DAM	5713	8	52.8	30	*****	80.	8	25.	29	367.0	******	.5	******	3.890	30	*****	1.00	20
OSWALT	6787	8	*****	0	*****	****	0	****	0	******	******	******	******	1.230	30	*****	.55	25
PAULS VALLEY	6926	8	52.7	30	1.3	82.	9	22.	28	378.0	-35.0	7.5	7.5	1.631	30	-.54	.68	12
PONTOTOC	7214	8	*****	0	*****	****	0	****	0	******	******	******	******	3.700	30	.81	1.65	26
TISHOMINGO NWLR	8884	8	53.8	28	*****	81.	7	22.	28	325.0	******	12.5	******	2.800	30	.31	1.36	20
TUSSY	9032	8	*****	0	*****	****	0	****	0	******	******	******	******	1.390	30	*****	.64	12
WAURIKA	9395	8	54.2	30	1.6	87.	9	20.	28	329.5	-49.5	6.0	-1.0	.512	30	-1.42	.43	19
WAURIKA DAM	9399	8	52.5	27	*****	83.	15	22.	28	342.0	******	4.5	******	1.160	27	*****	.45	20

NOVEMBER 1988 SUMMARY FOR SOUTHEAST DIVISION (CD9)

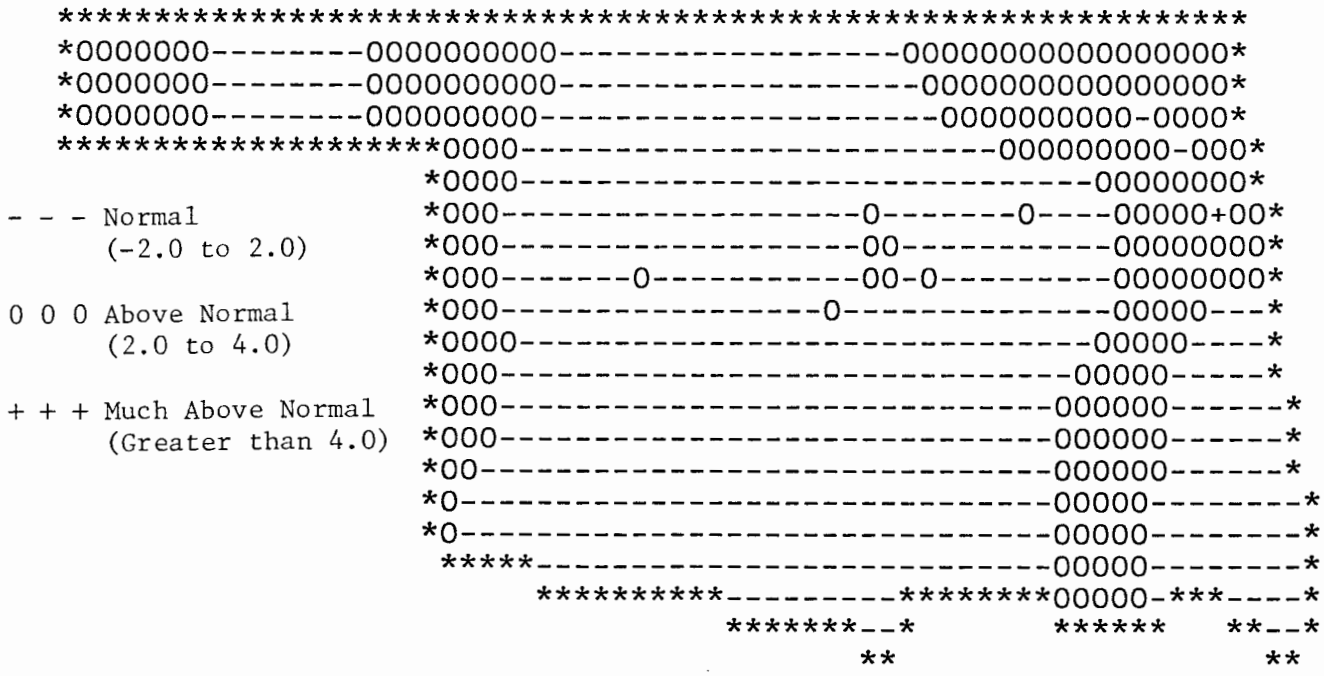
NAME	ID	CD	MEAN TEMP	NUM OBS	DEV FROM NORM	MAX TEMP	MAX DAY	MIN TEMP	MIN DAY	HEAT DEG DAY	DEV FROM NORM	COOL DEG DAY	DEV FROM NORM	TOT PPT	NUM OBS	DEV FROM NORM	MAX 24-HR	MAX DAY
ANTLERS	256	9	54.2	30	2.4	80.	8	25.	23	332.0	-68.0	8.0	8.0	3.100	30	-.08	.98	12
BATTIEST 1 SSW	567	9	51.7	30	*****	78.	7	23.	22	404.5	******	4.0	******	7.612	30	*****	2.00	19
BEAR MT TWR	584	9	53.5	26	*****	80.	7	24.	21	300.5	******	2.0	******	6.750	27	*****	2.07	24
BENGAL	670	9	*****	0	*****	****	0	****	0	******	******	******	******	6.000	30	*****	1.64	26
BOSWELL 4 NNW	980	9	54.7	30	*****	82.	7	24.	22	316.0	******	8.0	******	3.321	30	.30	1.03	20
BROKEN BOW 1 N	1162	9	*****	0	*****	****	0	****	0	******	******	******	******	9.500	30	5.48	3.77	19
BROKEN BOW DAM	1168	9	53.1	30	*****	79.	14	27.	28	357.5	******	1.0	******	8.900	30	*****	2.98	26
BUFFALO TWR	1251	9	*****	0	*****	****	0	****	0	******	******	******	******	4.190	30	*****	1.25	12
CARNASAW TWR	1499	9	*****	0	*****	****	0	****	0	******	******	******	******	8.360	30	4.08	2.98	26
CARTER TWR	1544	9	*****	0	*****	****	0	****	0	******	******	******	******	7.630	30	3.81	2.25	26
FANSHAWE	3065	9	*****	0	*****	****	0	****	0	******	******	******	******	5.160	30	1.21	1.20	20
HEAVENER 1 SE	4008	9	*****	0	*****	****	0	****	0	******	******	******	******	4.891	30	1.20	1.72	25
HEE MT TWR	4017	9	*****	0	*****	****	0	****	0	******	******	******	******	7.170	30	*****	2.15	26
HUGO	4384	9	55.5	30	2.1	82.	7	27.	28	296.0	-61.0	10.0	1.0	5.200	30	1.94	2.08	26
IDABEL	4451	9	52.7	30	.1	80.	8	29.	29	370.5	-9.5	.5	-7.5	7.781	30	3.95	2.20	26
JADIE TOWER	4560	9	*****	0	*****	****	0	****	0	******	******	******	******	8.120	30	*****	4.51	19
POTEAU W W	7254	9	59.1	8	*****	79.	2	33.	7	51.0	******	3.5	******	5.720	30	*****	1.85	19
SMITHVILLE 1 W	8285	9	49.6	30	*****	77.	9	19.	23	465.5	******	3.0	******	3.782	28	*****	1.59	18
SPIRO	8416	9	*****	0	*****	****	0	****	0	******	******	******	******	5.410	30	1.56	1.56	20
TUSKAHOMA	9023	9	53.9	30	*****	81.	7	21.	22	346.5	******	14.0	******	3.910	30	*****	1.08	20
VALLIANT 3 W	9118	9	*****	0	*****	****	0	****	0	******	******	******	******	5.900	30	2.30	2.28	26

NOVEMBER 1988 CLIMATE DIVISION SUMMARY

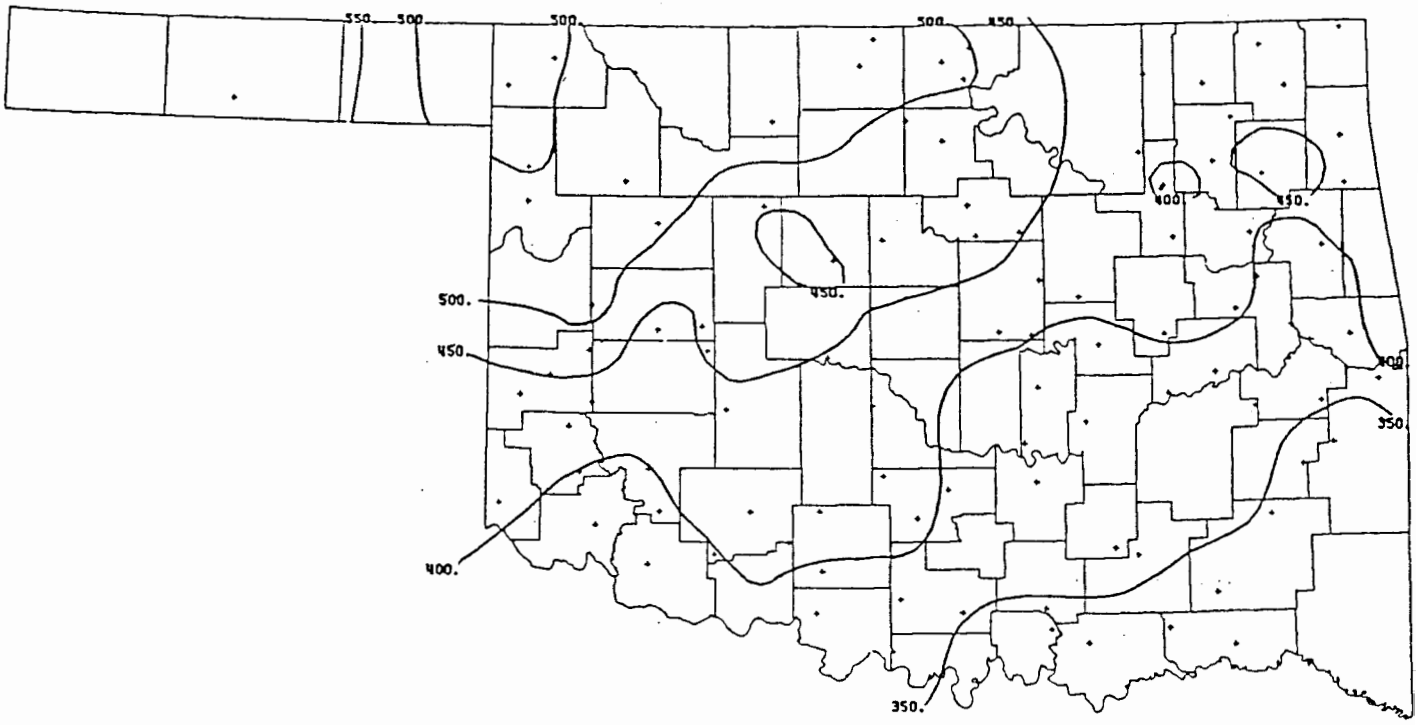
CLIMATE DIV	MEAN TEMP	NUM STA	DEV FROM NORM	MAX TEMP	DAY	MIN TEMP	DAY	HEAT DEGREE DAYS	DEV FROM NORM	COOL DEGREE DAYS	DEV FROM NORM	TOT PPT	NUM STA	DEV FROM NORM	MAX 24-HR	DAY
1	46.9	10	2.0	89.0	1	11.0	30	545.2	-59.3	1.6	1.6	.21	15	-.63	.35	19
2	48.8	13	1.1	87.0	1	12.0	21	486.2	-33.4	1.7	1.7	1.75	22	.13	1.94	20
3	50.9	14	2.4	83.0	9	19.0	21	425.8	-70.9	3.0	3.0	4.66	30	2.12	3.15	12
4	49.9	9	1.6	85.0	14	12.0	21	452.4	-47.9	2.1	2.1	1.40	19	.08	1.84	12
5	51.4	13	1.8	83.0	9	20.0	21	414.8	-51.2	5.6	4.9	3.02	36	1.03	2.96	12
6	52.6	12	2.7	81.0	3	21.0	21	374.9	-68.8	5.0	2.6	4.98	27	1.99	3.65	13
7	51.9	11	1.5	90.0	9	13.0	28	397.2	-42.4	5.3	4.3	1.05	22	-.35	2.03	12
8	53.3	14	.7	87.0	9	19.0	28	358.9	-21.1	7.0	.6	2.28	33	-.11	3.10	20
9	53.2	8	.6	82.0	7	19.0	23	361.1	-17.9	6.1	.4	6.20	19	2.52	4.51	19



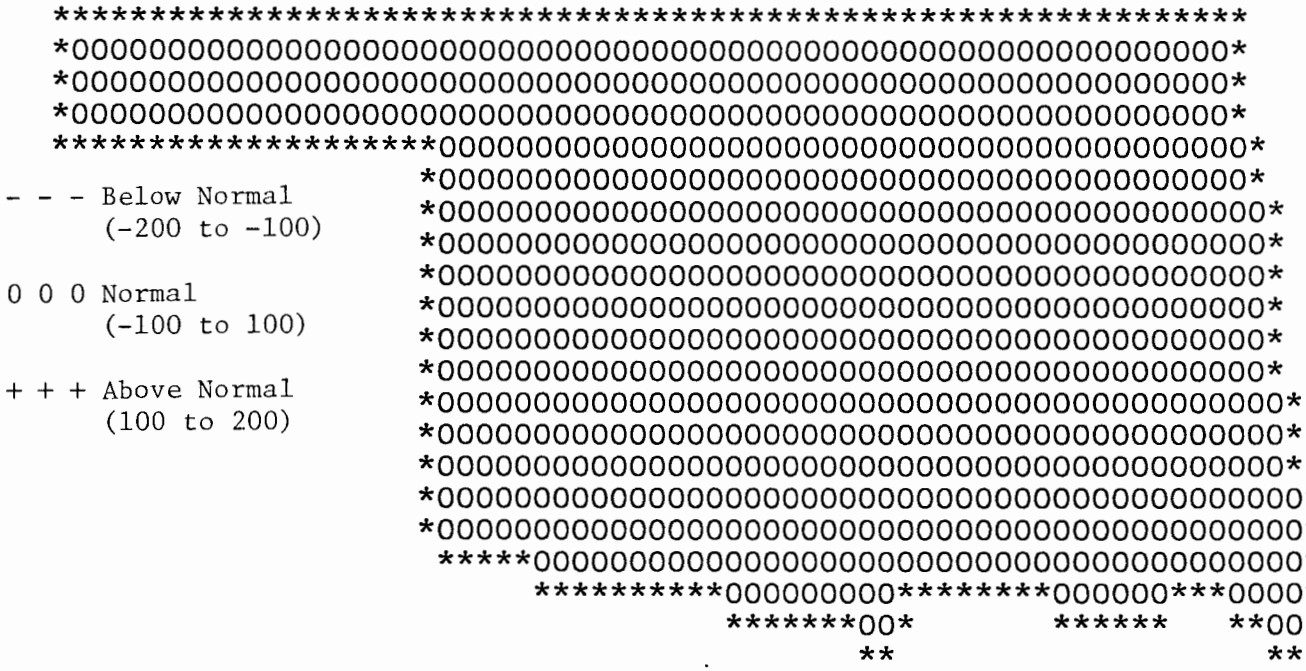
NOVEMBER 1988 AVERAGE MONTHLY TEMPERATURE
(Degrees F)



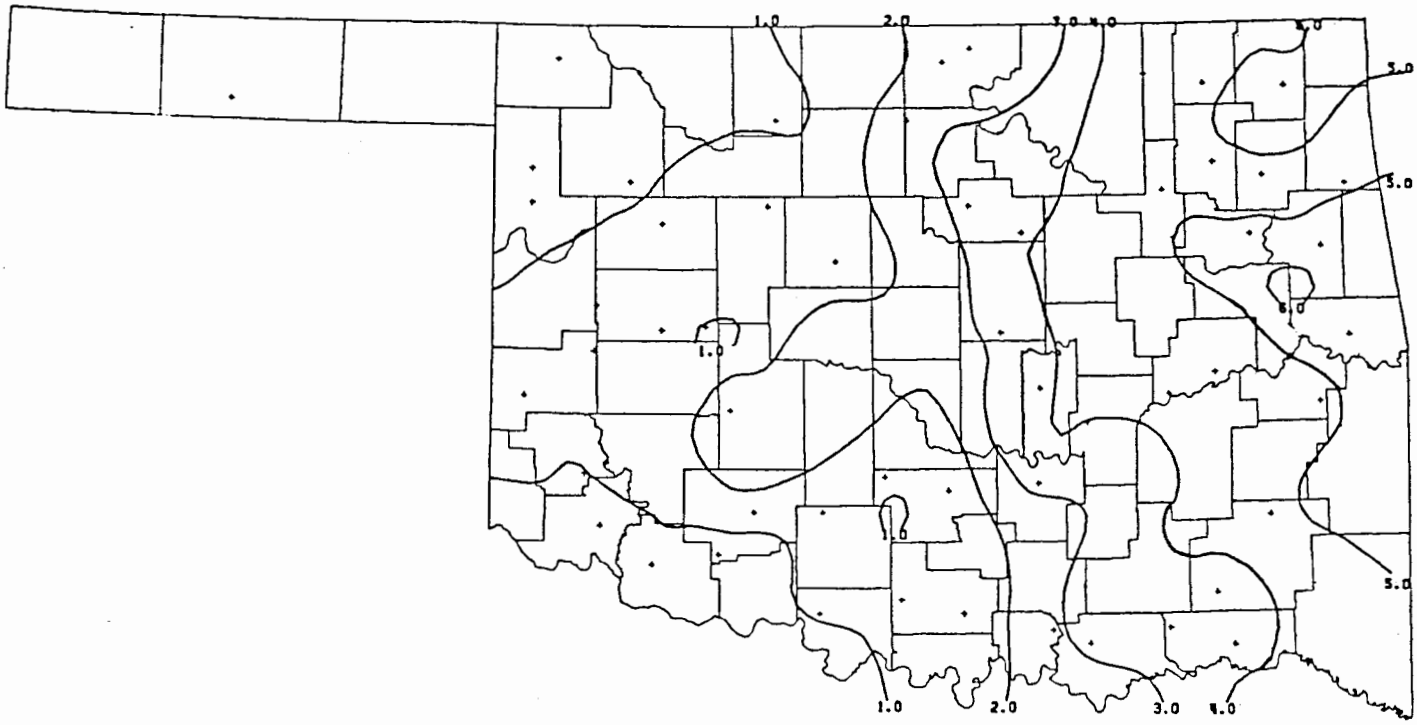
NOVEMBER 1988 DEVIATION FROM NORMAL TEMPERATURES



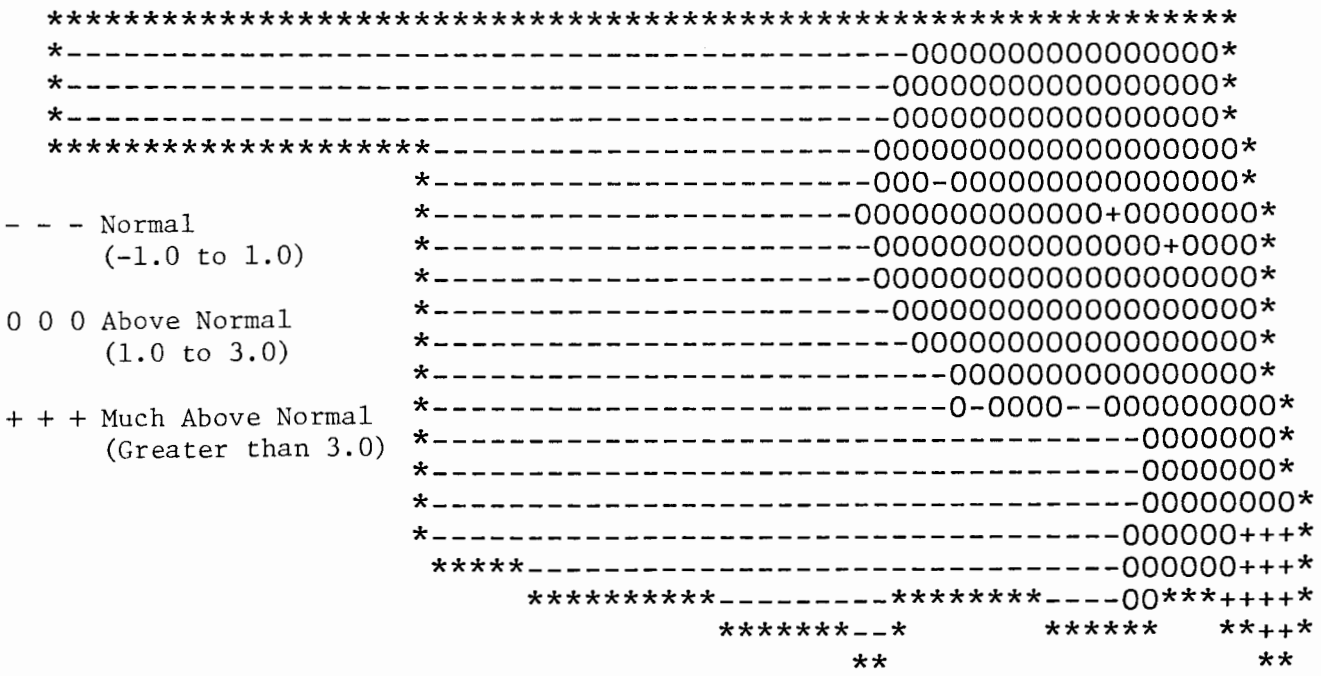
NOVEMBER 1988 TOTAL HEATING DEGREE DAYS



NOVEMBER 1988 DEVIATION FROM NORMAL HEATING DEGREE DAYS



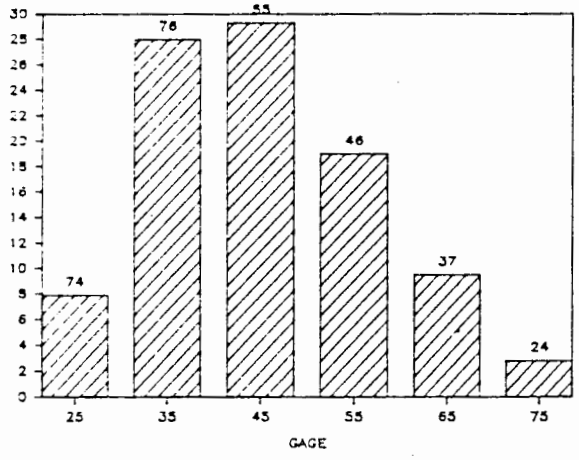
NOVEMBER 1988 TOTAL PRECIPITATION
(Inches)

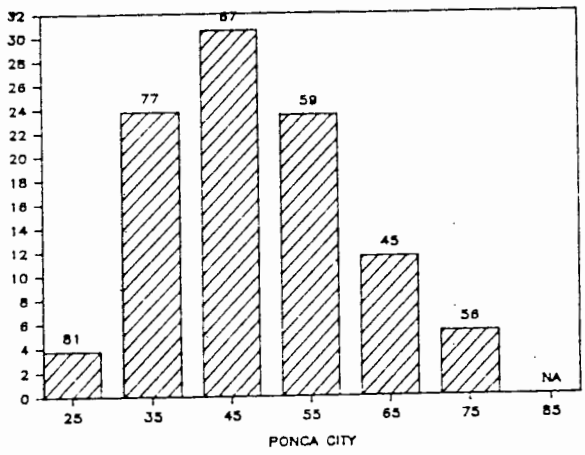


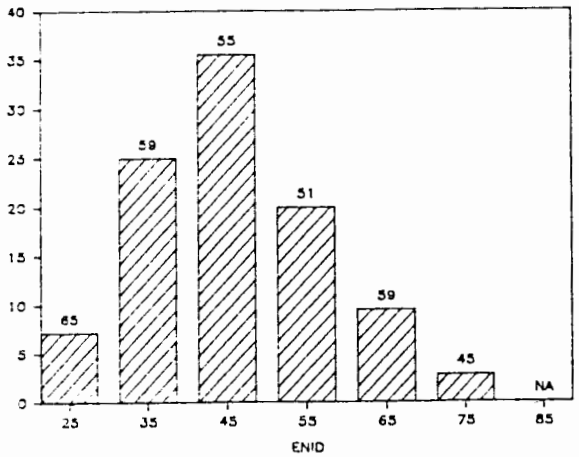
NOVEMBER 1988 DEVIATION FROM NORMAL PRECIPITATION

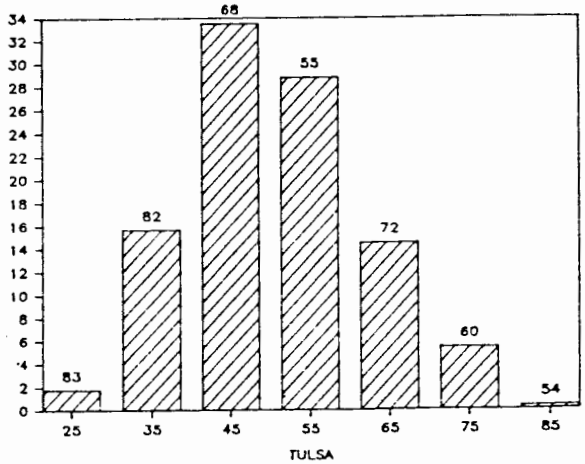
The following graphs present November 1988 hourly temperature and corresponding relative humidity information for 10 Oklahoma stations. The height of each bar represents the percentage of the hours in the month when the temperature was observed within the category given below the axis (45 = 40 to 49,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

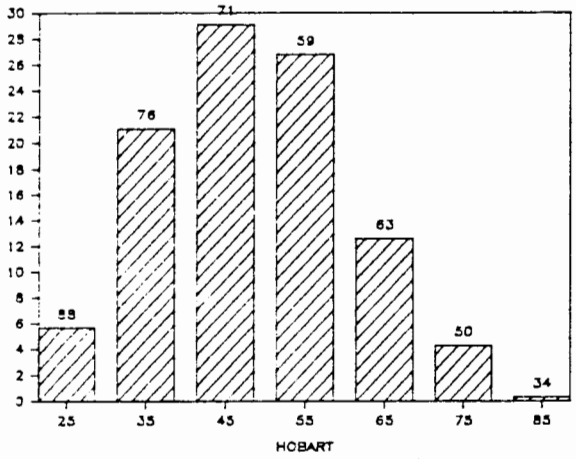
Example: Approximately 11% of Oklahoma City's hourly temperature values ranged from 60 to 69 degrees. The median relative humidity associated with this temperature class was 67%.

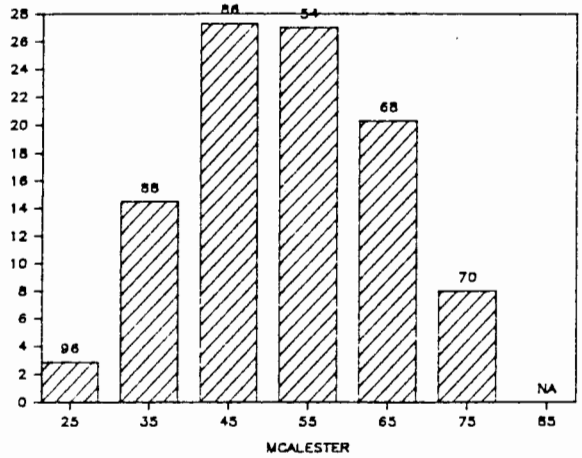


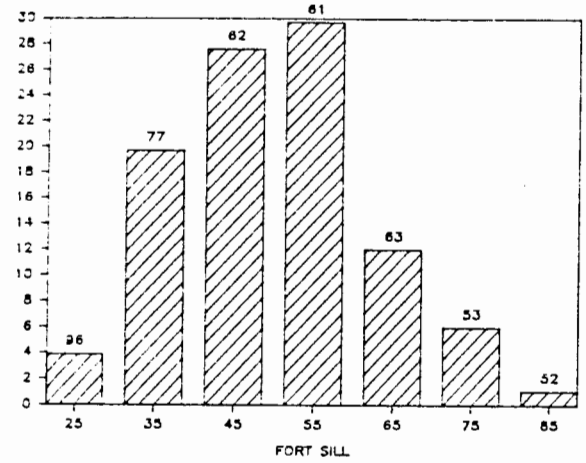







30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
58
76
71
69
63
50
34
25
35
45
55
65
75
85
HOBART


28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
96
86
86
84
68
70
NA
25
35
45
55
65
75
85
MCALESTER


30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
96
77
82
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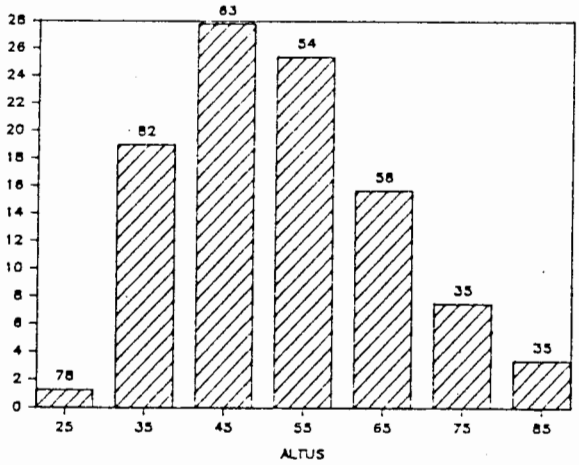
52
25
35
45
55
65
75
85
FORT SILL


28
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24
22
20
18
16
14
12
10
8
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4
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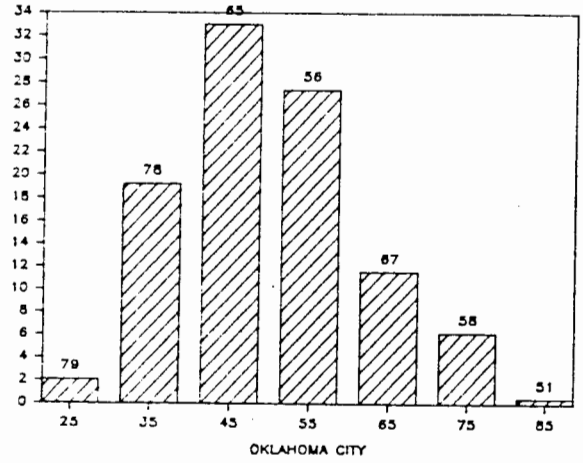
0
78
82
83
84
58
35
35
25
35
45
55
65
75
85
ALTUS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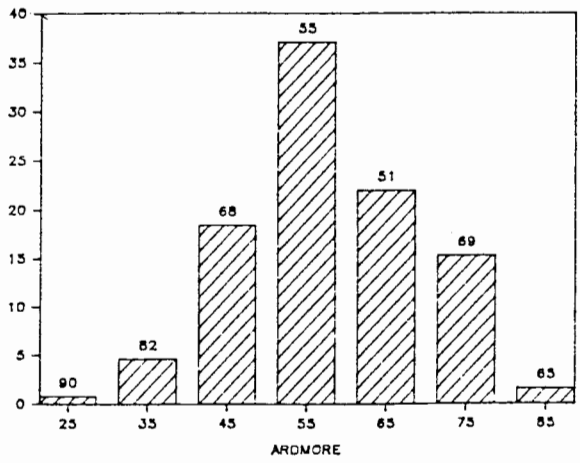
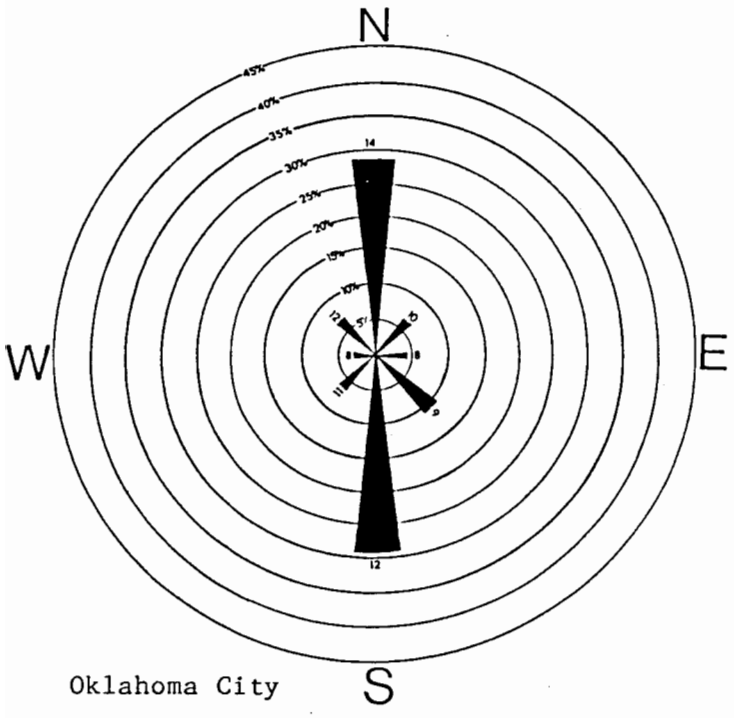
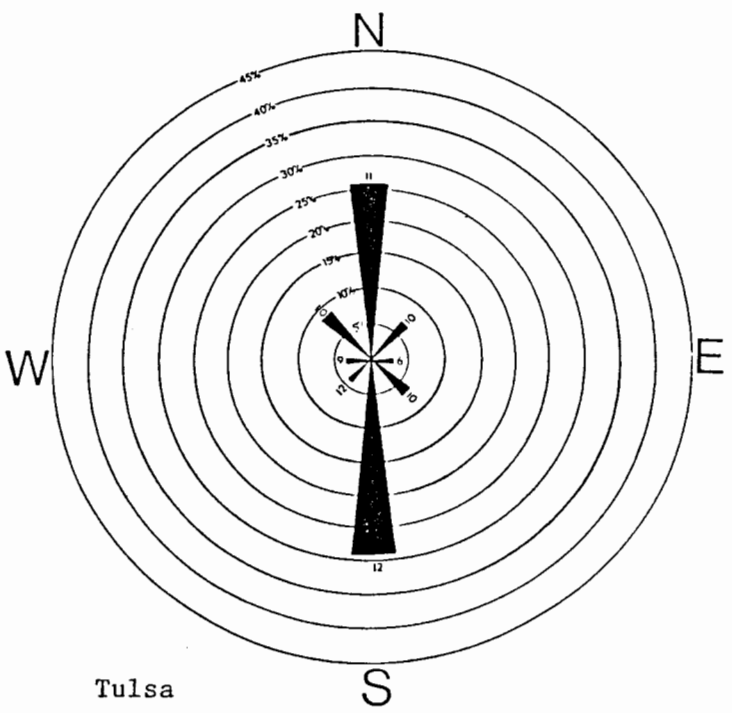
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
79
78
83
66
67
58
51
25
35
45
55
65
75
85
OKLAHOMA CITY


40
35
30
25
20
15
10
5
0
90
82
68
93
81
69
63
25
35
45
55
65
75
85
ARDMORE

January 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.





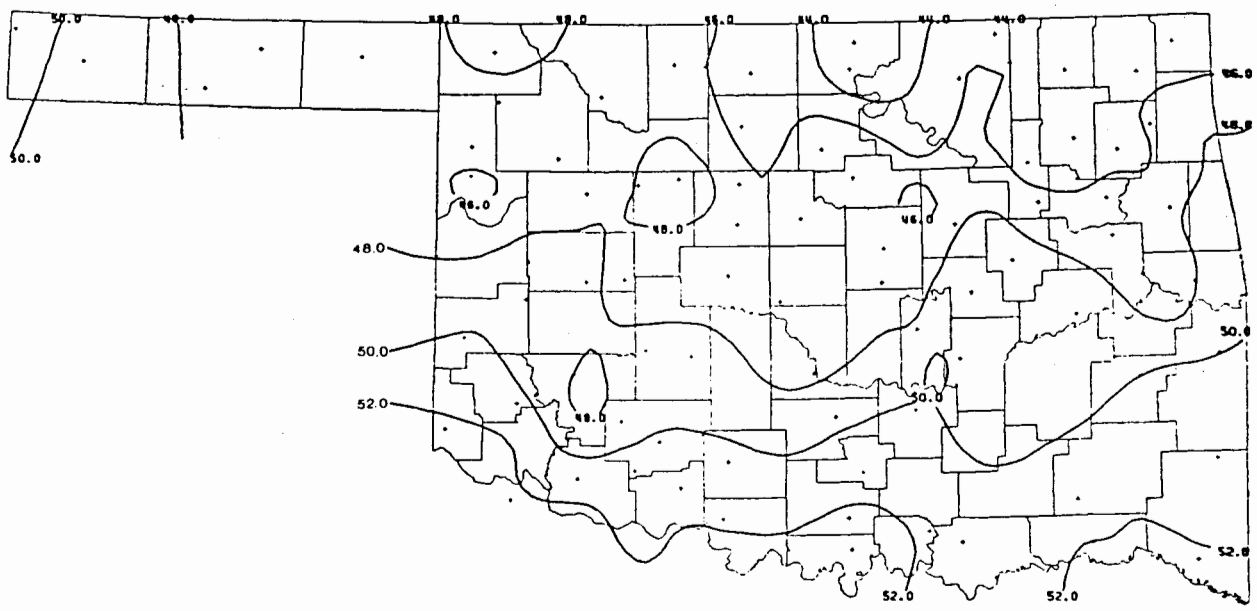
JANUARY 1989 SUNRISE AND SUNSET

Oklahoma City

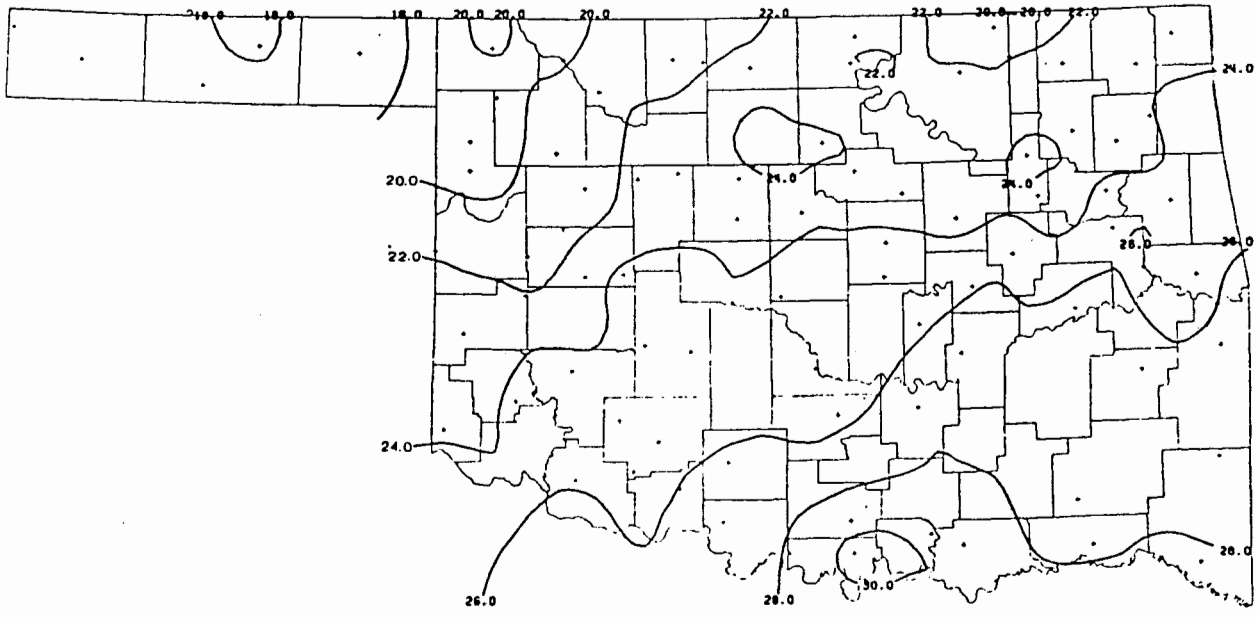
DATE	SUNRISE	SUNSET	DAYLIGHT
890101	7:38AM	5:30PM LT	9:53
890102	7:38AM	5:31PM LT	9:53
890103	7:38AM	5:31PM LT	9:54
890104	7:38AM	5:32PM LT	9:54
890105	7:38AM	5:33PM LT	9:55
890106	7:38AM	5:34PM LT	9:56
890107	7:38AM	5:35PM LT	9:56
890108	7:38AM	5:35PM LT	9:57
890109	7:38AM	5:36PM LT	9:58
890110	7:38AM	5:37PM LT	9:59
890111	7:38AM	5:38PM LT	9:60
890112	7:38AM	5:39PM LT	10: 1
890113	7:38AM	5:40PM LT	10: 2
890114	7:38AM	5:40PM LT	10: 3
890115	7:38AM	5:41PM LT	10: 4
890116	7:37AM	5:42PM LT	10: 5
890117	7:37AM	5:43PM LT	10: 6
890118	7:37AM	5:44PM LT	10: 7
890119	7:37AM	5:45PM LT	10: 8
890120	7:36AM	5:46PM LT	10:10
890121	7:36AM	5:47PM LT	10:11
890122	7:35AM	5:48PM LT	10:12
890123	7:35AM	5:49PM LT	10:14
890124	7:35AM	5:50PM LT	10:15
890125	7:34AM	5:51PM LT	10:17
890126	7:34AM	5:52PM LT	10:18
890127	7:33AM	5:53PM LT	10:20
890128	7:32AM	5:54PM LT	10:21
890129	7:32AM	5:55PM LT	10:23
890130	7:31AM	5:56PM LT	10:24
890131	7:31AM	5:57PM LT	10:26

Tulsa

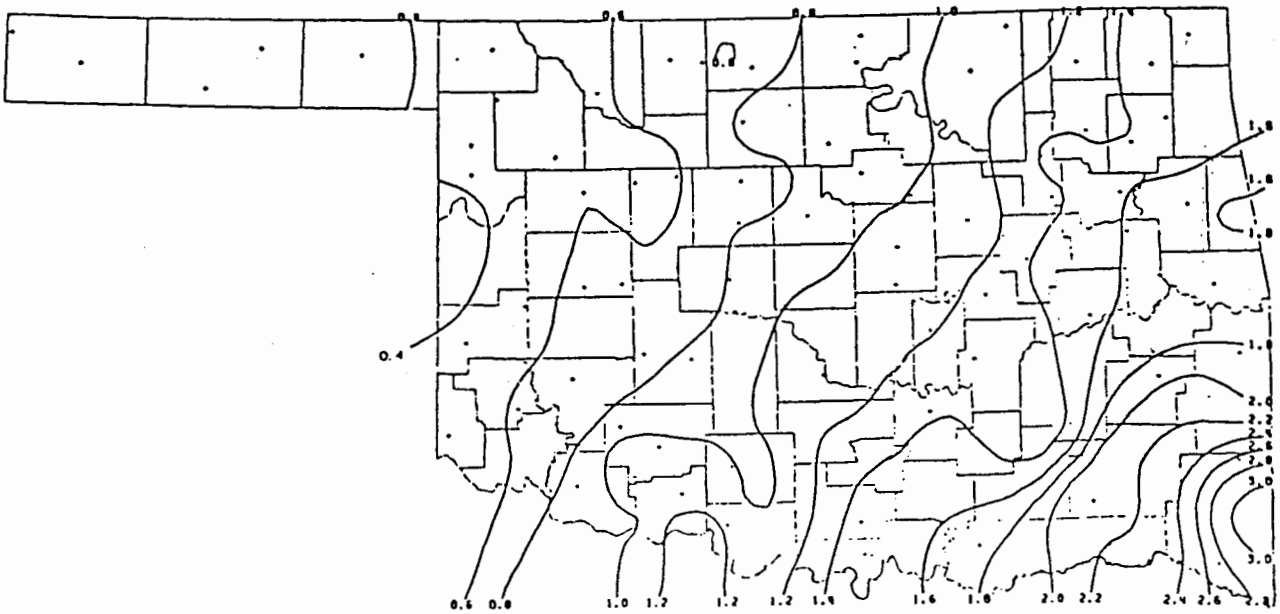
DATE	SUNRISE	SUNSET	DAYLIGHT
890101	7:33AM	5:21PM LT	9:48
890102	7:33AM	5:22PM LT	9:49
890103	7:33AM	5:23PM LT	9:50
890104	7:33AM	5:23PM LT	9:50
890105	7:33AM	5:24PM LT	9:51
890106	7:33AM	5:25PM LT	9:52
890107	7:33AM	5:26PM LT	9:52
890108	7:33AM	5:27PM LT	9:53
890109	7:33AM	5:27PM LT	9:54
890110	7:33AM	5:28PM LT	9:55
890111	7:33AM	5:29PM LT	9:56
890112	7:33AM	5:30PM LT	9:57
890113	7:33AM	5:31PM LT	9:58
890114	7:33AM	5:32PM LT	9:59
890115	7:33AM	5:33PM LT	10: 0
890116	7:32AM	5:34PM LT	10: 1
890117	7:32AM	5:34PM LT	10: 2
890118	7:32AM	5:35PM LT	10: 4
890119	7:31AM	5:36PM LT	10: 5
890120	7:31AM	5:37PM LT	10: 6
890121	7:31AM	5:38PM LT	10: 8
890122	7:30AM	5:39PM LT	10: 9
890123	7:30AM	5:40PM LT	10:10
890124	7:29AM	5:41PM LT	10:12
890125	7:29AM	5:42PM LT	10:13
890126	7:28AM	5:43PM LT	10:15
890127	7:28AM	5:44PM LT	10:16
890128	7:27AM	5:45PM LT	10:18
890129	7:27AM	5:46PM LT	10:20
890130	7:26AM	5:47PM LT	10:21
890131	7:25AM	5:48PM LT	10:23



30-YEAR MEAN JANUARY DAILY MAXIMUM TEMPERATURE



30-YEAR MEAN JANUARY DAILY MINIMUM TEMPERATURE



30-YEAR MEAN JANUARY PRECIPITATION

NATIONAL WEATHER SERVICE 30 AND 90-DAY OUTLOOK

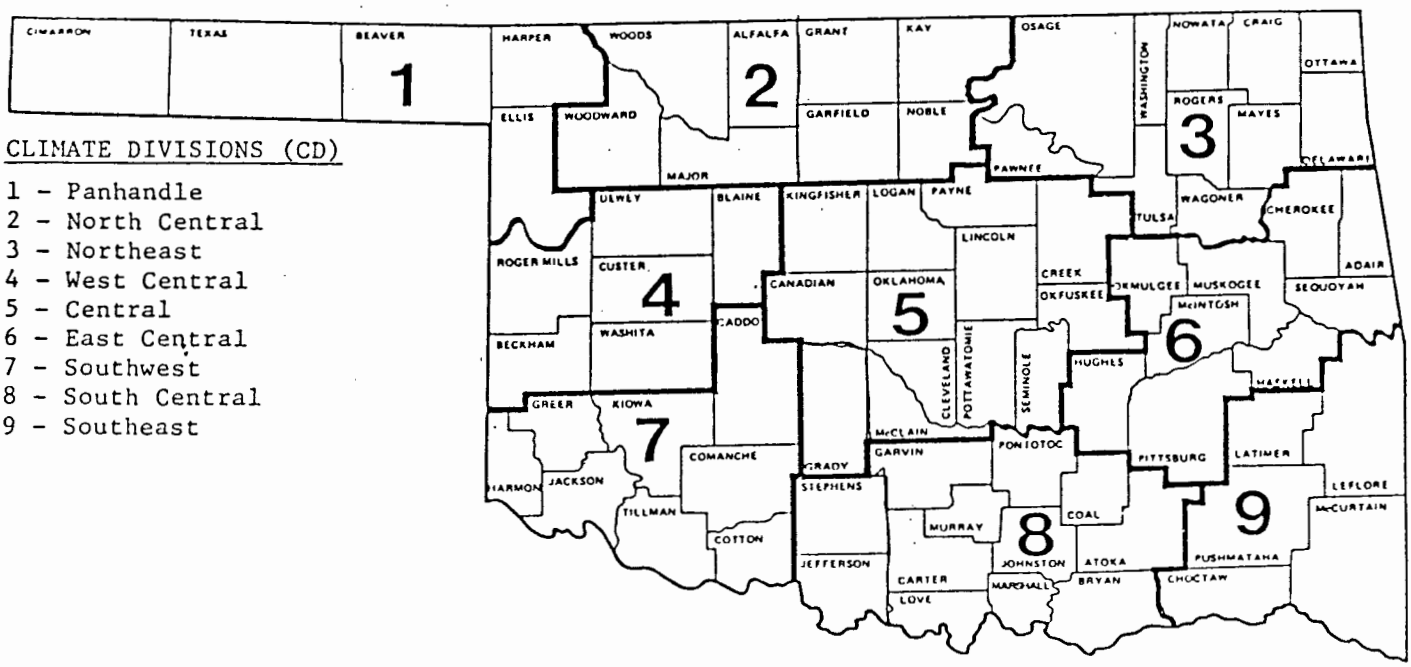
30-DAY OUTLOOK (DECEMBER)

Precipitation - Near normal Statewide.
Temperature - Below normal Statewide.

90-DAY OUTLOOK (DECEMBER-FEBRUARY)

Precipitation - Slightly below normal southwest third. Near normal elsewhere.
Temperature - Near normal Statewide.

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:

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

Deviation from Normal Heating Degree Days: A positive value indicates higher than normal heating requirements for the month as a whole. A negative value indicates lower than normal heating requirements for the month as a whole. Normal HDD may be calculated by subtracting the deviation from observed HDD.

Cooling Degree Days: CDD are calculated each day of the month for which there is a temperature report and summed. They are a proxy measure of how much cooling was required to maintain a comfortable indoor temperature. Missing observations may result in an artificially high or low value. For June, CDD would be calculated as:

$$\sum_{i=1}^{30} ((TMAX_i + TMIN_i)/2)-65$$

Deviation from Normal Cooling Degree Days: A positive value indicates higher than normal cooling requirements for the month as a whole. A negative value indicates lower than normal cooling requirements for the month as a whole. Normal cooling degree days may be found by subtracting the deviation from the observed cooling degree days.

Total Precipitation: Often incorrectly referred to as mean precipitation, this value is the sum of all precipitation reported during the month at a station. If snow occurred, it is to be melted and its water equivalent recorded.

Number of Precipitation Observations: The number of days a rain or no-rain observation was reported. Missing observations frequently result in artificially low total precipitation values.

Deviation from Normal Precipitation: A positive value indicates more rain than normal was received. A negative value indicates less than was expected rainfall was received. Normal rainfall may be calculated by subtracting the deviation from monthly total.

Maximum 24-Hour Report and Day: The maximum amount of precipitation recorded during the station's 24-hour observation period for the current month and year and the day on which it was recorded.

The second set of tables contain similar information but are the average or extreme over all the stations reporting in each climate division.

EXPLANATION OF MAPS

To give a Statewide perspective, a series of maps is produced each month from the information contained in the station tables. Each map is calculated using between 50 and 200 observations. Only stations with complete monthly records are used. Each observation is put into one of three categories and assigned a plus (+), minus (-), or a dot (.). The minus is the lowest numeric category, the dot is the middle and the plus the highest numeric category. If a map location has no report, a value is estimated. Each map is accompanied by its own legend. The categories will vary from month to month throughout the year. The categories for the deviations from normal maps will always remain constant. This is to facilitate comparisons between months and across years.

JANUARY 1989

CLIMATE CALENDAR

The data on this calendar are for Oklahoma City. Normal values are calculated for the period 1950-1979. Extremes are found for the period of record (1924-present).

Normal	1	Actual
46.6	max	
26.8	min	
.026	pcpn	
28	HDD	
0	CDD	
Highest Max		72-1943
Lowest Max		13-1979
Lowest Min		2-1928
Highest Min		51-1966
Greatest pcpn		.50-1966

Normal	2	Actual
46.0	max	
26.8	min	
.098	pcpn	
28	HDD	
0	CDD	
Highest Max		70-1964
Lowest Max		21-1928
Lowest Min		3-1979
Highest Min		56-1950
Greatest pcpn		1.01-1951

Normal	3	Actual
45.4	max	
23.9	min	
.076	pcpn	
30	HDD	
0	CDD	
Highest Max		71-1939
Lowest Max		11-1947
Lowest Min		1-1959
Highest Min		50-1955
Greatest pcpn		.83-1973

Normal	4	Actual
44.0	max	
25.0	min	
.030	pcpn	
30	HDD	
0	CDD	
Highest Max		72-1927
Lowest Max		11-1959
Lowest Min		-7-1947
Highest Min		60-1955
Greatest pcpn		1.81-1932

Normal	5	Actual
45.0	max	
25.0	min	
.055	pcpn	
30	HDD	
0	CDD	
Highest Max		71-1927
Lowest Max		22-1940
Lowest Min		-2-1959
Highest Min		43-1965
Greatest pcpn		1.00-1962

Normal	6	Actual
44.9	max	
23.2	min	
.010	pcpn	
31	HDD	
0	CDD	
Highest Max		67-1927
Lowest Max		20-1979
Lowest Min		6-1968
Highest Min		47-1965
Greatest pcpn		1.02-1934

Normal	7	Actual
44.7	max	
24.4	min	
.008	pcpn	
30	HDD	
0	CDD	
Highest Max		73-1965
Lowest Max		16-1937
Lowest Min		2-1968
Highest Min		54-1965
Greatest pcpn		.93-1943

Normal	8	Actual
46.1	max	
22.6	min	
.002	pcpn	
30	HDD	
0	CDD	
Highest Max		70-1954
Lowest Max		11-1937
Lowest Min		-4-1988
Highest Min		49-1939
Greatest pcpn		1.45-1935

Normal	9	Actual
43.6	max	
22.7	min	
.014	pcpn	
32	HDD	
0	CDD	
Highest Max		68-1935
Lowest Max		9-1977
Lowest Min		-2-1977
Highest Min		45-1966
Greatest pcpn		.43-1930

Normal	10	Actual
42.6	max	
22.3	min	
.016	pcpn	
32	HDD	
0	CDD	
Highest Max		72-1928
Lowest Max		13-1962
Lowest Min		-3-1977
Highest Min		47-1928
Greatest pcpn		.59-1949

Normal	11	Actual
43.6	max	
22.3	min	
.006	pcpn	
32	HDD	
0	CDD	
Highest Max		73-1928
Lowest Max		16-1963
Lowest Min		-1-1962
Highest Min		45-1928
Greatest pcpn		.39-1949

Normal	12	Actual
45.9	max	
25.9	min	
.038	pcpn	
29	HDD	
0	CDD	
Highest Max		73-1935
Lowest Max		11-1963
Lowest Min		-3-1963
Highest Min		51-1960
Greatest pcpn		.78-1927

Normal	13	Actual
47.1	max	
25.9	min	
.014	pcpn	
28	HDD	
0	CDD	
Highest Max		78-1928
Lowest Max		26-1927
Lowest Min		-1-1963
Highest Min		49-1952
Greatest pcpn		.15-1951

Normal	14	Actual
46.8	max	
25.6	min	
.022	pcpn	
29	HDD	
0	CDD	
Highest Max		75-1928
Lowest Max		17-1979
Lowest Min		1-1979
Highest Min		50-1928
Greatest pcpn		.37-1946

Normal	15	Actual
48.2	max	
24.0	min	
.008	pcpn	
29	HDD	
0	CDD	
Highest Max		73-1952
Lowest Max		14-1930
Lowest Min		1-1972
Highest Min		53-1969
Greatest pcpn		1.07-1932

Normal	16	Actual
46.6	max	
24.7	min	
.032	pcpn	
29	HDD	
0	CDD	
Highest Max		75-1935
Lowest Max		11-1930
Lowest Min		0-1930
Highest Min		52-1938
Greatest pcpn		.45-1978

Normal	17	Actual
48.9	max	
26.8	min	
.030	pcpn	
27	HDD	
0	CDD	
Highest Max		68-1951
Lowest Max		8-1930
Lowest Min		-9-1930
Highest Min		51-1973
Greatest pcpn		1.61-1926

Normal	18	Actual
47.3	max	
25.3	min	
.085	pcpn	
28	HDD	
0	CDD	
Highest Max		72-1951
Lowest Max		12-1943
Lowest Min		-9-1930
Highest Min		47-1935
Greatest pcpn		1.07-1968

Normal	19	Actual
43.8	max	
26.1	min	
.052	pcpn	
30	HDD	
0	CDD	
Highest Max		73-1951
Lowest Max		12-1962
Lowest Min		-3-1984
Highest Min		48-1954
Greatest pcpn		1.28-1980

Normal	20	Actual
47.3	max	
25.1	min	
.013	pcpn	
28	HDD	
0	CDD	
Highest Max		65-1964
Lowest Max		19-1978
Lowest Min		1-1985
Highest Min		46-1973
Greatest pcpn		.28-1980

Normal	21	Actual
46.8	max	
27.0	min	
.094	pcpn	
28	HDD	
0	CDD	
Highest Max		71-1933
Lowest Max		13-1954
Lowest Min		-2-1935
Highest Min		53-1933
Greatest pcpn		1.40-1932

Normal	22	Actual
47.3	max	
26.1	min	
.022	pcpn	
28	HDD	
0	CDD	
Highest Max		79-1967
Lowest Max		16-1962
Lowest Min		-8-1930
Highest Min		49-1967
Greatest pcpn		.34-1927

Normal	23	Actual
45.3	max	
24.8	min	
.008	pcpn	
30	HDD	
0	CDD	
Highest Max		73-1942
Lowest Max		13-1963
Lowest Min		-1-1963
Highest Min		51-1967
Greatest pcpn		.89-1949

Normal	24	Actual
50.6	max	
26.7	min	
.004	pcpn	
26	HDD	
0	CDD	
Highest Max		80-1950
Lowest Max		13-1940
Lowest Min		-1-1963
Highest Min		44-1967
Greatest pcpn		.37-1949

Normal	25	Actual
51.6	max	
28.5	min	
.050	pcpn	
25	HDD	
0	CDD	
Highest Max		76-1952
Lowest Max		16-1949
Lowest Min		5-1940
Highest Min		58-1944
Greatest pcpn		.61-1967

Normal	26	Actual
47.9	max	
28.3	min	
.020	pcpn	
27	HDD	
0	CDD	
Highest Max		72-1953
Lowest Max		20-1957
Lowest Min		8-1963
Highest Min		53-1944
Greatest pcpn		.64-1983

Normal	27	Actual
46.8	max	
25.1	min	
.007	pcpn	
29	HDD	
0	CDD	
Highest Max		71-1969
Lowest Max		17-1961
Lowest Min		3-1963
Highest Min		43-1968
Greatest pcpn		.62-1985

Normal	28	Actual
47.4	max	
25.6	min	
.006	pcpn	
28	HDD	
0	CDD	
Highest Max		69-1986
Lowest Max		21-1948
Lowest Min		5-1948
Highest Min		50-1978
Greatest pcpn		09-1945

Normal	29	Actual
47.3	max	
24.4	min	
.028	pcpn	
29	HDD	
0	CDD	
Highest Max		72-1971
Lowest Max		13-1966
Lowest Min		3-1951
Highest Min		50-1988
Greatest pcpn		.89-1938

Normal	30	Actual
46.3	max	
25.4	min	
.061	pcpn	
29	HDD	
0	CDD	
Highest Max		73-1931
Lowest Max		17-1949
Lowest Min		2-1966
Highest Min		55-1988
Greatest pcpn		1.02-1975

Normal	31	Actual
48.6	max	
27.6	min	
.020	pcpn	
27	HDD	
0	CDD	
Highest Max		72-1986
Lowest Max		11-1985
Lowest Min		-1-1979
Highest Min		47-1986
Greatest pcpn		.47-1941