

2003

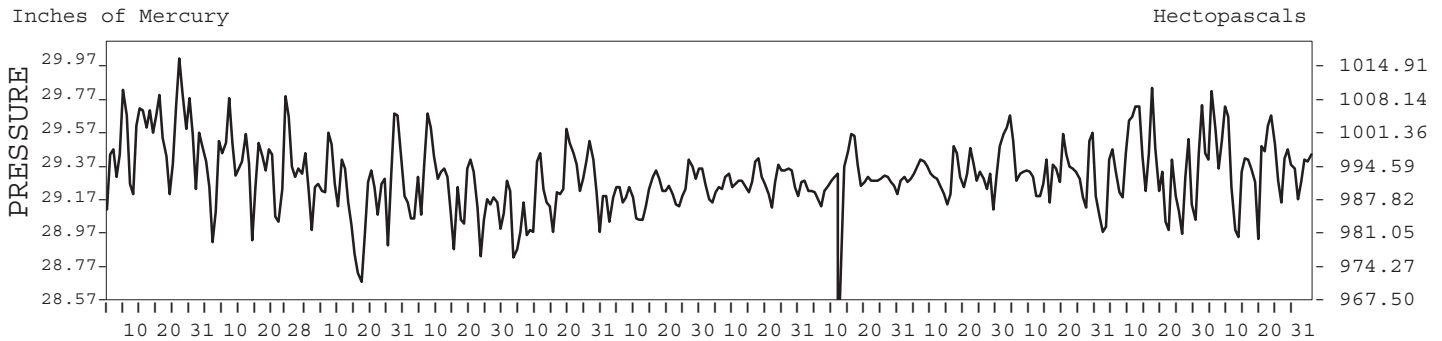
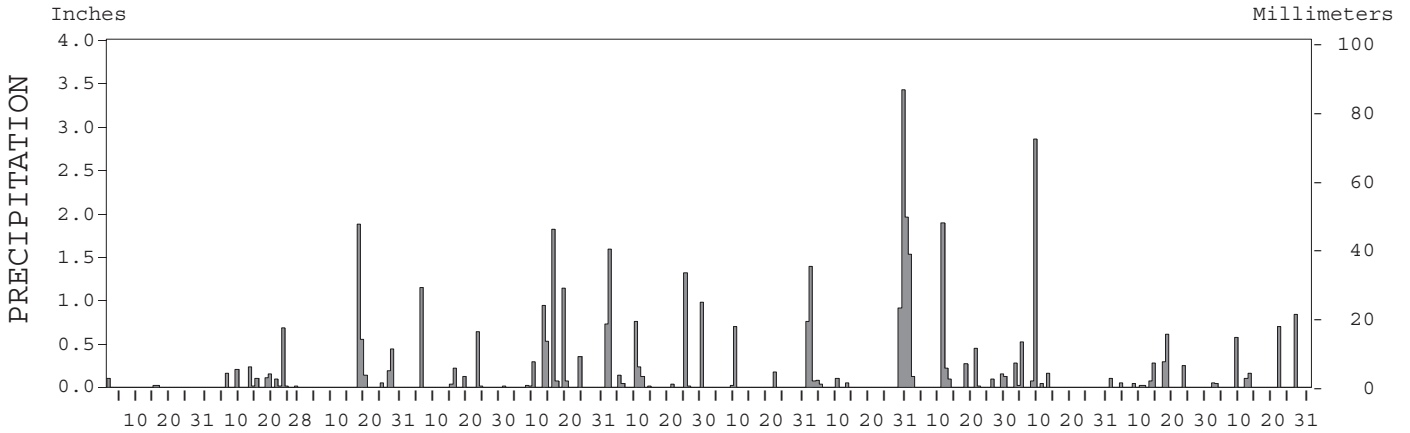
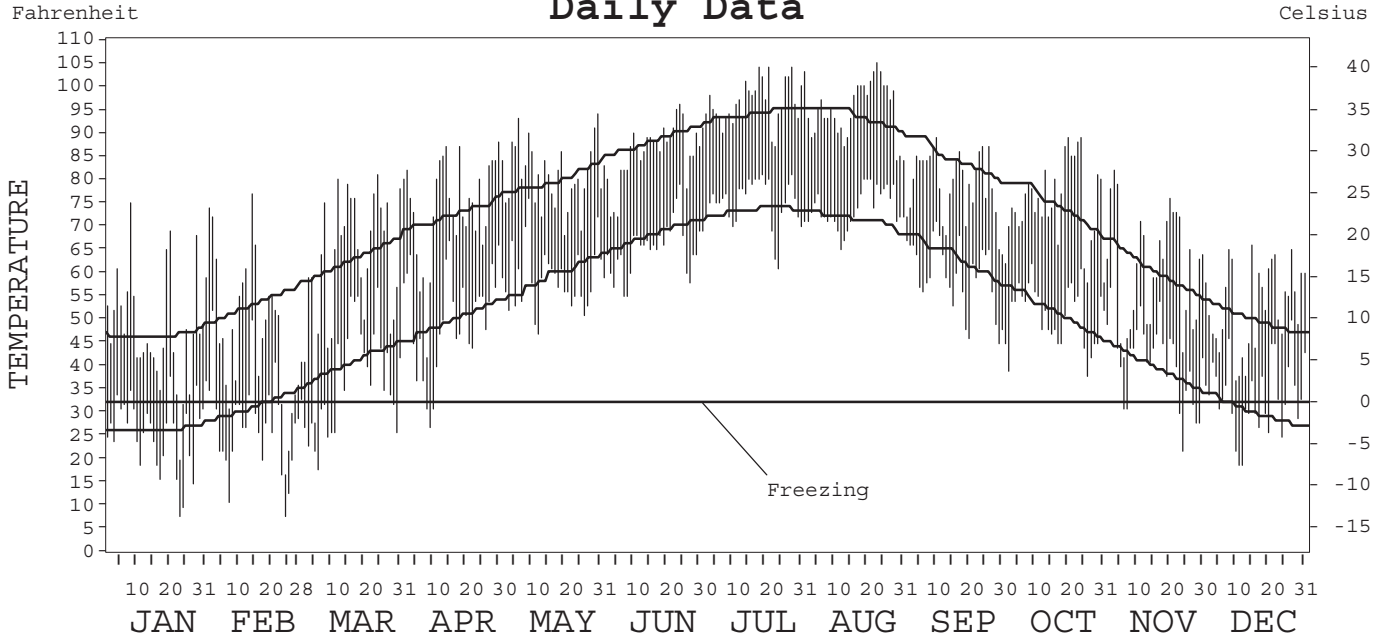
LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 0198-4071

TULSA, OKLAHOMA (TUL)

Daily Data



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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
 NATIONAL CLIMATIC DATA CENTER
 ASHEVILLE, NORTH CAROLINA
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METEOROLOGICAL DATA FOR 2003

TULSA, OK (TUL)

LATITUDE: 36° 11' 51" N LONGITUDE: 95° 53' 11" W ELEVATION (FT): GRND: 739 BARO: 742 TIME ZONE: CENTRAL (UTC + 6) WBAN: 13968

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	48.0	47.9	62.3	73.9	81.0	85.6	96.3	95.1	79.0	74.9	61.1	53.0	71.5	
	HIGHEST DAILY MAXIMUM	75	77	81	88	94	96	104	105	89	89	82	66	105	
	DATE OF OCCURRENCE	08	14	24	30	30	24	28+	23	10	24+	03	15	AUG 23	
	MEAN DAILY MINIMUM	25.9	27.5	37.0	49.9	58.8	65.1	74.8	73.7	59.5	51.0	41.7	33.7	49.9	
	LOWEST DAILY MINIMUM	8	8	18	27	47	55	61	65	45	38	22	19	8	
	DATE OF OCCURRENCE	23	24	06	09	12	08+	24	12	29	26	24	12+	FEB 24	
	AVERAGE DRY BULB	37.0	37.7	49.7	61.9	69.9	75.4	85.6	84.4	69.3	63.0	51.4	43.4	60.7	
	MEAN WET BULB	32.8	35.1	44.9	55.6	64.5	69.2	74.8		62.9	56.5	46.5	38.1		
	MEAN DEW POINT	26.0	30.6	39.7	50.0	60.7	65.7	69.6		59.0	51.6	40.6	30.2		
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	4	7	29	25	0	0	0	0	0	65
	MAXIMUM ≤ 32°	2	5	1	0	0	0	0	0	0	0	0	0	0	8
	MINIMUM ≤ 32°	26	22	12	3	0	0	0	0	0	0	7	14	84	
MINIMUM ≤ 0°	0	0	0	0	0	0	0	0	0	0	0	0	0		
H/C	HEATING DEGREE DAYS	864	758	474	155	11	0	0	0	32	113	414	661	3482	
	COOLING DEGREE DAYS	0	0	5	71	170	316	645	608	165	57	13	0	2050	
RH	MEAN (PERCENT)	68	77	71	67	74	74	61	65	73	70	70	63	69	
	HOUR 00 LST	76	81	77	78	84	84	66	72	83	79	74	69	77	
	HOUR 06 LST	82	88	86	84	89	91	81	84	87	86	80	70	84	
	HOUR 12 LST	55	71	62	55	61	60	52	54	60	55	61	55	58	
	HOUR 18 LST	57	67	57	55	62	59	45	52	65	57	64	57	58	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	0	2	1	0	1	0	0	0	2	3	2	0	11	
	THUNDERSTORMS	0	1	2	3	6	7	2	7	2	1	2	1	34	
CLOUDINESS	SUNRISE-SUNSET: (OKTAS)														
	CEILOMETER (≤ 12,000 FT.)														
	SATELLITE (> 12,000 FT.)														
	MIDNIGHT-MIDNIGHT: (OKTAS)														
	CEILOMETER (≤ 12,000 FT.)														
SATELLITE (> 12,000 FT.)															
NUMBER OF DAYS WITH:															
CLEAR															
PARTLY CLOUDY															
CLOUDY															
PR	MEAN STATION PRESS. (IN.)	29.51	29.34	29.20	29.19	29.19	29.19	29.25		29.31	29.29	29.35	29.36		
	MEAN SEA-LEVEL PRESS. (IN.)	30.25	30.07	29.92	29.90	29.89	29.89	29.94		30.02	30.00	30.07	30.09		
WINDS	RESULTANT SPEED (MPH)	1.6	1.7	1.4	4.8	1.1	3.2	3.1		0.9	1.1	2.7	2.6		
	RES. DIR. (TENS OF DEGS.)	33	36	21	20	11	16	18		15	20	20	22		
	MEAN SPEED (MPH)	9.4	8.4	9.4	11.9	8.8	8.0	9.2	6.7	7.9	7.5	10.0	10.9	9.0	
	PREVAIL. DIR. (TENS OF DEGS.)	19	36	18	18	14	18	19	18	36	18	18	18	18	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	33	28	37	35	32	30	32	40	25	29	31	33	40	
	DIR. (TENS OF DEGS.)	33	19	20	28	19	34	02	36	33	35	19	33	36	
	DATE OF OCCURRENCE	16	02	25	16	04	25+	22	01	18	13+	23+	09	AUG 01	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	39	35	46	41	38	37	41	48	30	35	41	44	48	
DIR. (TENS OF DEGS.)	32	35	21	28	31	33	01	35	19	18	18	33	35		
DATE OF OCCURRENCE	16	23	25	16	16+	25+	22	01	16+	30+	23+	09	AUG 01		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	0.14	1.76	3.25	2.17	5.25	5.96	0.89	8.78	4.94	3.95	1.73	2.46	41.28	
	GREATEST 24-HOUR (IN.)	0.10	0.68	2.14	1.15	1.88	2.32	0.70	4.85	1.89	2.93	0.83	0.84	4.85	
	DATE OF OCCURRENCE	01	23	18-19	06	16-17	01-02	10	30-31	11	08-09	17-18	27	AUG 30-31	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	3	12	6	6	11	12	3	10	11	7	10	7	98	
PRECIPITATION ≥ 0.10	1	7	5	4	6	8	2	6	8	4	5	5	61		
PRECIPITATION ≥ 1.00	0	0	1	1	2	2	0	3	2	1	0	0	12		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)	1.0	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	5.2	16.7	
	GREATEST 24-HOUR (IN.)	1.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	3.4	7.0	
	DATE OF OCCURRENCE	01	23									13	09	FEB 23	
	MAXIMUM SNOW DEPTH (IN.)	1	5	0	0	0	0	0	0	0	0	0	3	5	
	DATE OF OCCURRENCE	02+	24										10	FEB 24	
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0	1	2	0	0	0	0	0	0	0	0	0	2	5		

NORMALS, MEANS, AND EXTREMES

TULSA, OK (TUL)

LATITUDE: 36° 11' 51" N LONGITUDE: 95° 53' 11" W ELEVATION (FT): GRND: 739 BARO: 742 TIME ZONE: CENTRAL (UTC + 6) WBAN: 13968

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	46.5	52.9	62.4	72.1	79.6	88.0	93.8	93.2	84.1	74.0	60.0	49.6	71.3
	MEAN DAILY MAXIMUM	67	46.8	52.3	61.0	72.1	79.3	87.4	93.3	92.8	84.6	74.6	60.2	50.1	71.2
	HIGHEST DAILY MAXIMUM	64	79	90	96	102	96	103	112	110	109	98	87	80	112
	YEAR OF OCCURRENCE		1950	1996	1974	1972	1985	1953	1954	1970	1939	1979	1945	1966	JUL 1954
	MEAN OF EXTREME MAXS.	55	68.9	74.5	82.9	88.0	90.8	96.0	102.0	102.1	96.6	89.5	78.7	70.9	86.7
	NORMAL DAILY MINIMUM	30	26.3	31.1	40.3	49.5	59.0	67.9	73.1	71.2	62.9	51.1	39.3	29.8	50.1
	MEAN DAILY MINIMUM	67	26.4	30.7	38.5	49.6	58.7	67.5	72.2	70.5	62.3	50.9	38.6	30.1	49.7
	LOWEST DAILY MINIMUM	64	-8	-11	-3	22	35	49	51	52	35	18	10	-8	-11
	YEAR OF OCCURRENCE		1947	1996	1948	1957	1961	1954	1971	1988	1984	1993	1976	1989	FEB 1996
	MEAN OF EXTREME MINS.	55	6.8	12.3	20.2	33.2	44.4	55.5	62.4	59.7	46.3	34.3	22.3	11.5	34.1
	NORMAL DRY BULB	30	36.4	42.0	51.4	60.8	69.3	78.0	83.5	82.2	73.5	62.6	49.7	39.7	60.8
	MEAN DRY BULB	67	36.7	41.4	49.9	60.9	69.1	77.5	82.8	81.7	73.3	62.7	49.3	40.0	60.4
	MEAN WET BULB	57	32.3	36.5	43.4	53.0	62.3	69.8	72.7	71.3	65.1	54.9	43.6	35.5	53.4
	MEAN DEW POINT	57	25.7	29.6	35.8	46.3	58.0	66.1	68.5	66.8	60.4	49.2	37.5	29.2	47.8
NORMAL NO. DAYS WITH:															
MAXIMUM ≥ 90°	30	0.0	*	0.1	0.4	2.1	12.7	23.8	22.4	9.2	1.0	0.0	0.0	71.7	
MAXIMUM ≤ 32°	30	5.3	2.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.9	11.4	
MINIMUM ≤ 32°	30	22.5	15.2	6.8	0.6	0.0	0.0	0.0	0.0	0.0	0.5	7.7	18.9	72.2	
MINIMUM ≤ 0°	30	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.9	
H/C	NORMAL HEATING DEG. DAYS	30	898	658	437	179	38	1	0	0	29	152	468	782	3642
	NORMAL COOLING DEG. DAYS	30	0	1	10	50	163	385	568	524	277	64	6	1	2049
RH	NORMAL (PERCENT)	30	68	65	63	62	70	70	64	64	69	68	68	70	67
	HOUR 00 LST	30	73	70	68	69	78	79	72	72	77	76	74	75	74
	HOUR 06 LST	30	79	78	76	78	86	86	82	83	86	83	81	80	82
	HOUR 12 LST	30	61	57	54	52	59	59	54	52	58	55	58	61	57
	HOUR 18 LST	30	60	55	51	48	57	57	50	49	56	56	61	62	55
S	PERCENT POSSIBLE SUNSHINE	53	54	55	58	59	59	69	76	74	68	65	56	53	62
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	64	2.1	1.6	0.9	0.2	0.4	0.3	0.2	0.1	0.6	1.1	1.2	1.7	10.4
	THUNDERSTORMS	64	0.7	1.3	3.4	6.0	8.7	8.1	5.5	5.9	5.0	3.1	1.6	0.9	50.2
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	1	6.4	5.6	5.2	6.0	5.2	2.8	3.2	2.7	5.6	3.5	4.8	4.0	4.6
	MIDNIGHT-MIDNIGHT (OKTAS)	1	6.4	5.6	6.4	6.0	4.8	2.4	2.8	2.8	4.0	3.5	4.8	4.8	4.5
	MEAN NO. DAYS WITH:														
	CLEAR	3	5.0	8.3	8.0	9.5	9.7	10.7	13.5	15.0	7.5	10.0	7.0	9.0	113.2
PARTLY CLOUDY	3	3.7	3.3	1.0	1.0	3.7	8.0	6.5	5.0	3.5	3.5	1.0	5.0	45.2	
CLOUDY	3	8.3	7.3	8.7	10.5	8.7	3.7	4.0	4.5	4.5	6.5	9.5	7.0	83.2	
PR	MEAN STATION PRESSURE (IN)	29	29.42	29.37	29.25	29.23	29.20	29.22	29.26	29.28	29.31	29.34	29.34	29.41	29.30
	MEAN SEA-LEVEL PRES. (IN)	57	30.15	30.10	29.99	29.95	29.93	29.92	29.96	29.98	30.00	30.05	30.08	30.13	30.02
WINDS	MEAN SPEED (MPH)	44	10.3	10.6	11.7	11.8	10.7	9.7	9.3	8.6	8.9	9.6	10.4	10.2	10.2
	PREVAIL. DIR (TENS OF DEGS)	30	18	18	18	18	18	18	18	18	18	18	18	18	18
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	11	37	41	46	55	41	49	51	40	39	38	44	36	55
	DIR. (TENS OF DEGS)		18	20	18	34	30	28	19	36	27	35	29	33	34
	YEAR OF OCCURRENCE		1996	2000	1997	1993	2001	1998	1993	2003	1999	2001	1998	2000	APR 1993
	MAXIMUM 5-SECOND:														
SPEED (MPH)	11	47	53	55	63	48	61	55	51	49	46	52	47	63	
DIR. (TENS OF DEGS)		19	21	16	34	29	28	19	29	27	30	29	21	34	
YEAR OF OCCURRENCE		1996	2000	1997	1993	2001	1998	1993	2001	1999	1994	1998	2002	APR 1993	
PRECIPITATION	NORMAL (IN)	30	1.60	1.95	3.57	3.95	6.11	4.72	2.96	2.85	4.76	4.05	3.47	2.43	42.42
	MAXIMUM MONTHLY (IN)	64	6.65	5.73	11.94	9.23	18.00	11.17	11.39	8.78	18.81	16.51	7.57	8.70	18.81
	YEAR OF OCCURRENCE		1949	1985	1973	1947	1943	1948	1994	2003	1971	1941	1946	1984	SEP 1971
	MINIMUM MONTHLY (IN)	64	0.00	0.16	0.08	0.34	1.17	0.53	0.03	0.01	T	T	0.01	0.10	0.00
	YEAR OF OCCURRENCE		1993	1996	1971	1989	1988	1963	1954	2000	1948	1952	1949	1996	JAN 1993
	MAXIMUM IN 24 HOURS (IN)	64	2.25	4.34	2.72	4.58	9.27	5.01	7.54	5.37	6.39	5.80	5.14	3.27	9.27
	YEAR OF OCCURRENCE		1946	1985	1998	1964	1984	1941	1963	1989	1940	1983	1974	1984	MAY 1984
	NORMAL NO. DAYS WITH:														
PRECIPITATION ≥ 0.01	30	6.5	6.5	9.4	8.9	10.4	9.2	6.0	6.8	8.2	7.3	7.0	6.4	92.6	
PRECIPITATION ≥ 1.00	30	0.3	0.4	1.1	1.2	1.8	1.4	1.0	0.9	1.6	1.4	1.1	0.6	12.8	
SNOWFALL	NORMAL (IN)	30	3.0	2.3	1.4	0.*	0.0	0.0	0.0	0.0	0.*	0.6	1.9	9.2	
	MAXIMUM MONTHLY (IN)	62	12.7	10.5	14.1	1.7	T	T	T	0.0	T	0.3	5.6	11.4	14.1
	YEAR OF OCCURRENCE		1979	2003	1994	1957	1991	1994	1994	1994	1990	1993	1972	2000	MAR 1994
	MAXIMUM IN 24 HOURS (IN)	62	9.0	7.0	12.9	1.7	T	T	T	0.0	T	0.3	4.0	8.8	12.9
	YEAR OF OCCURRENCE		1944	2003	1994	1957	1991	1994	1994	1994	1990	1993	1972	1954	MAR 1994
	MAXIMUM SNOW DEPTH (IN)	55	11	6	10	T	0	0	0	0	0	0	3	8	11
	YEAR OF OCCURRENCE		1988	1949	1968	1993							2001	1954	JAN 1988
NORMAL NO. DAYS WITH:															
SNOWFALL ≥ 1.0	30	1.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	3.1	

PRECIPITATION (inches) 2003 TULSA, OK (TUL)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1974	0.79	3.17	2.62	3.65	6.94	7.88	0.55	5.30	11.78	6.40	7.30	2.88	59.26
1975	2.61	3.44	5.45	2.20	7.22	6.75	2.14	3.52	3.34	1.47	3.53	3.04	44.71
1976	0.21	0.84	3.95	8.27	6.75	1.87	4.37	1.17	2.60	2.65	0.68	0.55	33.91
1977	1.43	1.57	5.58	2.05	5.72	6.69	2.00	4.86	5.57	2.75	2.31	0.93	41.46
1978	0.81	2.84	2.99	7.14	9.28	6.06	0.36	1.37	0.13	0.95	5.48	0.78	38.19
1979	2.07	0.81	3.97	4.47	6.15	8.90	2.68	4.77	0.28	2.20	5.60	0.45	42.35
1980	2.07	1.32	3.59	3.44	7.23	5.57	0.09	2.34	3.47	2.05	0.79	1.37	33.33
1981	0.69	1.63	1.67	1.90	6.70	3.31	6.22	2.47	3.11	6.73	2.25	0.20	36.88
1982	3.58	0.67	1.04	1.28	9.30	4.13	1.65	1.42	2.95	1.22	4.61	3.39	35.24
1983	2.95	1.98	2.19	3.88	6.85	1.47	0.58	0.65	2.11	9.33	2.14	0.61	34.74
1984	1.00	1.95	6.72	2.44	11.25	1.72	0.48	1.96	2.77	6.98	2.80	8.70	48.77
1985	1.24	5.74	5.39	5.62	4.19	7.63	2.38	1.91	3.29	6.26	6.27	1.39	51.31
1986	0.00	1.22	2.28	5.10	6.97	4.23	1.15	3.96	8.36	5.53	2.99	0.97	42.76
1987	2.21	4.72	2.20	0.70	10.02	2.31	4.20	3.72	3.52	1.27	5.17	5.87	45.91
1988	1.11	1.03	6.52	3.18	1.17	0.58	4.20	2.43	5.37	1.43	4.38	1.82	33.22
1989	2.94	2.26	3.14	0.34	3.95	5.16	4.09	6.69	3.32	2.80	0.15	0.26	35.10
1990	2.93	4.14	6.51	5.31	5.21	1.08	0.24	1.83	4.19	2.15	2.41	2.94	38.94
1991	1.47	0.38	1.02	2.58	5.11	3.64	0.35	1.17	6.15	5.12	1.98	4.57	33.54
1992	0.48	1.32	1.37	4.75	5.65	8.41	2.12	3.09	2.66	3.53	4.83	5.21	43.42
1993		2.86	2.76	4.59	6.86	3.79	2.42	2.29	6.90	1.13	1.69	1.76	
1994	0.68	2.21	3.35	6.57	2.81	2.73	11.39	4.12	3.60	3.68	7.10	1.21	49.45
1995	0.93	0.57	1.83	5.92	10.73	9.84	2.55	1.44	4.96	1.05	0.25	1.77	41.84
1996	0.47	0.16	2.07	1.40	2.14	3.64	3.22	1.34	5.04	5.60	7.16	0.10	32.34
1997	0.27	3.41	1.39	4.09	1.66	5.77	5.64	7.89	3.06	2.07	1.63	4.32	41.20
1998	3.49	0.30	7.30	4.54	2.52	3.36	4.31	1.67	5.13	9.14	3.26	1.58	46.60
1999	3.03	1.25	3.55	7.20	9.55	5.21	0.40	0.42	9.70	1.75	1.32	5.10	48.48
2000	0.89	1.33	3.77	2.71	7.01	6.25	6.58	0.01	1.10	6.32	3.51	1.62	41.10
2001	2.09	2.62	0.77	1.19	6.32	3.04	0.51	2.26	1.95	2.81	3.33	2.25	29.14
2002	2.67	0.90	2.39	3.71	5.21	2.86	2.18	3.55	1.24	3.33	0.45	2.74	31.23
2003	0.14	1.76	3.25	2.17	5.25	5.96	0.89	8.78	4.94	3.95	1.73	2.46	41.28
POR= 67 YRS	1.57	1.81	2.87	3.97	5.52	4.61	3.18	3.07	4.19	3.56	2.64	2.08	39.07

WBAN : 13968

AVERAGE TEMPERATURE (°F) 2003 TULSA, OK (TUL)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1974	34.1	43.7	55.2	61.8	72.1	73.8	85.4	78.3	64.7	63.0	49.1	39.7	60.1
1975	39.9	36.9	45.3	60.4	69.1	76.0	81.2	82.2	69.2	63.2	50.8	40.1	59.5
1976	37.2	51.1	51.9	61.5	63.0	75.0	81.4	79.7	72.8	56.1	43.1	37.1	59.2
1977	26.9	46.6	55.0	64.4	72.6	81.0	84.8	81.7	75.6	62.2	51.1	39.0	61.7
1978	24.9	29.4	47.5	63.5	68.3	77.6	87.8	84.3	80.6	63.5	51.6	38.0	59.8
1979	23.1	30.2	52.4	61.0	68.7	77.8	83.4	81.8	74.7	66.2	47.5	44.4	59.3
1980	38.6	37.1	48.3	61.1	70.6	82.5	91.7	89.7	78.3	61.5	50.5	42.3	62.7
1981	37.6	43.6	53.3	68.0	65.9	80.0	85.9	79.4	73.9	60.9	51.4	38.5	61.5
1982	33.6	38.2	55.3	59.3	72.9	74.7	84.2	85.3	74.6	63.4	50.6	44.4	61.4
1983	39.1	42.9	49.0	55.4	67.0	76.6	84.7	88.1	77.4	64.5	52.9	26.7	60.4
1984	34.4	46.4	48.3	58.0	67.5	80.1	82.0	82.7	71.5	63.8	50.4	44.7	60.8
1985	30.2	35.9	54.7	63.3	70.6	75.8	82.9	81.7	74.6	63.1	47.8	34.5	59.6
1986	42.8	43.2	55.0	62.6	69.4	79.7	86.6	78.2	74.7	61.0	43.6	40.0	61.4
1987	36.0	45.4	51.5	63.2	74.1	78.9	81.9	83.1	72.4	59.3	51.6	41.4	61.6
1988	34.8	39.3	49.3	59.5	71.0	79.9	82.6	83.0	73.2	58.5	51.7	43.4	60.5
1989	43.4	31.9	49.3	63.3	69.2	74.8	80.2	80.4	68.7	64.0	52.7	31.6	59.1
1990	46.1	46.1	53.2	59.6	67.4	82.1	83.2	83.5	78.3	61.2	56.4	38.5	63.0
1991	34.7	48.3	55.1	63.8	73.7	80.0	84.9	82.9	72.7	64.3	45.8	44.6	62.6
1992	42.8	50.1	54.9	61.6	67.6	74.7	81.8	76.6	72.8	60.8	45.9	38.6	60.7
1993	35.7	37.8	46.8	55.8	66.0	76.8	84.4	83.5	68.6	56.2	44.5	42.3	58.2
1994	35.2	39.0	52.9	60.4	67.4	80.5	79.3	78.4	70.9	63.4	52.0	42.7	60.2
1995	39.4	44.2	51.5	58.3	65.5	74.1	82.3	84.6	70.5	62.8	48.8	39.4	60.1
1996	35.4	43.0	45.4	59.2	72.9	78.5	81.6	79.8	70.0	61.4	44.9	42.1	59.5
1997	35.9	44.1	52.4	55.9	66.9	75.5	81.7	78.3	73.9	62.0	46.0	39.3	59.3
1998	40.1	44.8	46.7	57.8	72.9	79.9	85.4	84.1	80.8	63.0	53.4	40.8	62.5
1999	39.0	50.0	48.8	61.5	68.1	75.4	84.4	84.6	69.8	62.3	57.7	43.4	62.1
2000	40.0	48.0	53.2	59.5	70.8	74.4	81.4	86.8	75.7	66.2	43.8	28.6	60.7
2001	35.3	41.3	47.1	66.4	70.6	78.2	87.4	85.2	71.9	62.0	55.2	43.6	62.0
2002	40.3	42.1	47.2	62.4	67.2	78.3	82.7	83.0	76.3	58.0	48.7	42.7	60.7
2003	37.0	37.7	49.7	61.9	69.9	75.4	85.6	84.4	69.3	63.0	51.4	43.4	60.7
POR= 68 YRS	36.8	41.5	49.9	60.9	69.0	77.5	82.7	81.8	73.2	62.7	49.3	40.1	60.4

HEATING DEGREE DAYS (base 65°F) 2003 TULSA, OK (TUL)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1974-75	0	0	74	94	473	777	773	780	610	205	19	0	3805
1975-76	0	0	57	146	429	762	855	402	407	126	109	0	3293
1976-77	0	0	16	317	648	858	1173	511	309	99	1	0	3932
1977-78	0	0	1	118	412	801	1236	989	541	110	67	0	4275
1978-79	0	0	0	121	406	834	1293	972	391	164	47	0	4228
1979-80	0	0	0	90	525	632	812	801	513	154	22	0	3549
1980-81	0	0	13	172	438	703	843	598	360	48	58	0	3233
1981-82	0	0	23	178	402	817	967	747	322	208	11	5	3680
1982-83	0	0	23	146	437	635	794	611	492	321	50	0	3509
1983-84	0	0	19	89	378	1179	941	533	509	229	47	0	3924
1984-85	0	0	73	130	438	628	1073	809	330	103	7	0	3591
1985-86	0	0	46	111	510	936	680	602	322	127	13	0	3347
1986-87	0	0	5	148	632	771	893	544	413	149	0	0	3555
1987-88	0	0	1	189	416	727	928	739	483	187	9	0	3679
1988-89	0	0	8	218	393	662	663	921	487	155	53	0	3560
1989-90	0	0	67	126	375	1029	580	527	376	194	54	0	3328
1990-91	0	0	8	172	271	813	933	459	327	83	17	0	3083
1991-92	0	0	35	121	570	628	682	423	311	156	53	0	2979
1992-93	0	0	9	151	565	812	903	755	556	280	57	0	4088
1993-94	0	0	40	294	611	695	917	721	387	186	56	0	3907
1994-95	0	0	25	126	390	683	783	574	436	219	70	0	3306
1995-96	0	0	79	112	480	786	911	640	604	204	19	0	3835
1996-97	0	0	26	152	594	701	896	579	393	275	40	0	3656
1997-98	0	0	3	195	563	791	764	558	581	225	12	6	3698
1998-99	0	0	0	109	344	747	798	415	496	134	18	0	3061
1999-00	0	0	38	130	238	664	770	487	363	183	23	2	2898
2000-01	0	0	26	100	628	1121	914	657	546	93	18	0	4103
2001-02	0	0	20	142	298	660	760	634	544	146	57	0	3261
2002-03	0	0	0	268	491	686	864	758	474	155	11	0	3707
2003-	0	0	32	113	414	661							

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COOLING DEGREE DAYS (base 65°F) 2003 TULSA, OK (TUL)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1974	0	0	47	48	232	270	641	419	71	40	2	0	1770
1975	0	0	9	77	156	335	509	542	192	97	12	0	1929
1976	0	6	7	28	52	307	520	461	256	48	0	0	1685
1977	0	1	6	84	248	486	619	525	327	38	0	0	2334
1978	0	0	7	73	180	388	713	605	476	79	14	0	2535
1979	0	0	9	48	167	388	577	527	298	137	6	0	2157
1980	0	0	0	43	200	533	833	774	419	69	6	4	2881
1981	0	5	4	145	96	456	658	452	296	57	1	0	2170
1982	0	0	28	44	266	300	601	637	319	106	10	5	2316
1983	0	0	3	40	120	353	615	725	396	80	20	0	2352
1984	0	0	0	25	132	464	534	556	272	100	9	2	2094
1985	0	0	19	59	185	333	564	523	340	57	0	0	2080
1986	0	0	20	60	157	448	676	415	303	31	0	0	2110
1987	0	0	2	102	290	421	532	567	230	18	19	0	2181
1988	0	0	2	30	200	454	555	564	262	23	1	0	2091
1989	0	0	6	107	191	300	475	483	183	105	14	0	1864
1990	0	0	17	38	137	521	571	581	416	63	21	0	2365
1991	0	0	29	53	293	458	622	562	274	108	3	0	2402
1992	0	0	5	63	140	298	526	369	251	29	0	0	1681
1993	0	0	1	7	95	360	609	579	153	27	0	0	1831
1994	0	0	21	55	135	470	452	424	212	82	8	0	1859
1995	0	0	24	26	97	282	545	618	252	50	0	0	1894
1996	0	6	0	37	273	410	522	463	183	49	0	0	1943
1997	3	0	9	10	106	321	524	420	278	108	0	0	1779
1998	0	0	18	16	264	459	640	598	480	53	5	2	2535
1999	0	2	0	35	118	318	607	616	190	57	25	0	1968
2000	0	0	2	26	211	290	517	684	353	143	1	0	2227
2001	0	2	0	139	197	401	700	630	236	56	10	3	2374
2002	0	0	1	75	132	405	557	563	348	60	8	0	2149
2003	0	0	5	71	170	316	645	608	165	57	13	0	2050

SNOWFALL (inches) 2003 TULSA, OK (TUL)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1974-75	0.0	0.0	0.0	0.0	1.7	T	T	3.0	1.8	T	0.0	0.0	6.5
1975-76	0.0	0.0	0.0	0.0	0.8	1.3	T	T	T	0.0	0.0	0.0	2.1
1976-77	0.0	0.0	0.0	0.0	0.5	T	10.5	0.3	0.0	0.0	0.0	0.0	11.3
1977-78	0.0	0.0	0.0	0.0	T	0.0	5.4	6.3	T	0.0	0.0	0.0	11.7
1978-79	0.0	0.0	0.0	0.0	0.0	2.8	12.7	3.4	0.0	T	0.0	0.0	18.9
1979-80	0.0	0.0	0.0	0.0	T	0.0	0.4	3.8	T	0.0	0.0	0.0	4.2
1980-81	0.0	0.0	0.0	0.0	T	0.0	T	0.9	T	0.0	0.0	0.0	0.9
1981-82	0.0	0.0	0.0	0.0	0.0	T	0.3	5.6	T	0.0	0.0	0.0	5.9
1982-83	0.0	0.0	0.0	0.0	T	T	3.8	1.4	T	0.0	0.0	0.0	5.2
1983-84	0.0	0.0	0.0	0.0	T	3.0	4.6	0.2	T	0.0	0.0	0.0	7.8
1984-85	0.0	0.0	0.0	0.0	0.0	6.6	3.3	4.3	0.0	0.0	0.0	0.0	14.2
1985-86	0.0	0.0	0.0	0.0	T	2.5	0.0	4.9	0.0	0.0	0.0	0.0	7.4
1986-87	0.0	0.0	0.0	0.0	0.0	0.0	8.7	4.6	0.0	0.0	0.0	0.0	13.3
1987-88	0.0	0.0	0.0	0.0	T	6.7	11.0	T	0.5	0.0	0.0	0.0	18.2
1988-89	0.0	0.0	0.0	0.0	0.4	2.7	3.4	0.3	9.7	0.0	0.0	0.0	16.5
1989-90	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.2	0.0	0.0	0.0	2.2
1990-91	0.0	0.0	0.0	0.0	0.0	4.6	T	1.4	T	0.0	T	0.0	6.0
1991-92	0.0	0.0	0.0	0.0	0.2	0.1	0.8	0.0	T	T	0.0	0.0	1.1
1992-93	0.0	0.0	0.0	0.0	3.5	1.1	0.8	6.7	T	T	0.0	0.0	12.1
1993-94	0.0	0.0	0.0	0.3	0.0	0.0	T	T	14.1	T	0.0	T	14.4
1994-95	T	0.0	0.0	0.0	T	0.0	1.8	T	6.3	0.0	0.0	0.0	8.1
1995-96	0.0	0.0	0.0	0.0	1.8	T	1.0	5.0	0.0	0.0	0.0	0.0	7.8
1996-97	0.0	0.0	0.0	T	T	T	5.9	0.3	0.0	T	0.0	0.0	6.2
1997-98	T	0.0	0.0	0.0	T	0.6	4.0	0.0	T	0.0	0.0	0.0	4.6
1998-99	0.0	0.0	0.0	0.0	0.0	T	3.3	0.0	5.9	0.0	0.0	0.0	9.2
1999-00	0.0	0.0	0.0	0.0	0.0	T	7.1	0.0	2.2	0.0	0.0	0.0	9.3
2000-01	0.0	0.0	0.0	T	2.1	11.4	1.4	T	0.0	0.0	0.0	0.0	14.9
2001-02	0.0	0.0	0.0	0.0	3.0	T	T	1.0	6.4	0.0	0.0	0.0	10.4
2002-03	0.0	0.0	0.0	0.0	0.0	8.9	1.0	10.5	0.0	0.0	0.0	0.0	20.4
2003-	0.0	0.0	0.0	0.0	T	5.2							
POR= 68 YRS	T	0.0	0.0	T	0.4	1.8	3.1	2.4	1.9	T	T	T	9.6

WBAN : 13968

REFERENCE NOTES:

<p>PAGE 1: THE TEMPERATURE GRAPH SHOWS NORMAL MAXIMUM AND NORMAL MINIMUM DAILY TEMPERATURES (SOLID CURVES) AND THE ACTUAL DAILY HIGH AND LOW TEMPERATURES (VERTICAL BARS).</p> <p>PAGE 2 AND 3: H/C INDICATES HEATING AND COOLING DEGREE DAYS. RH INDICATES RELATIVE HUMIDITY W/O INDICATES WEATHER AND OBSTRUCTIONS S INDICATES SUNSHINE. PR INDICATES PRESSURE. CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS(OKTAS).</p> <p>GENERAL: T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE. + INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES. BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA. NORMALS ARE 30-YEAR AVERAGES (1971 - 2000). ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM. PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH. POR (PERIOD OF RECORD) BEGINS WITH THE JANUARY DATA MONTH AND IS THE NUMBER OF YEARS USED TO COMPUTE THE MEAN. INDIVIDUAL MONTHS WITHIN THE POR MAY BE MISSING. WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS, THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED. 0.* OR * INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05. CLOUDINESS FOR ASOS STATIONS DIFFERS FROM THE NON-ASOS OBSERVATION TAKEN BY A HUMAN OBSERVER. ASOS STATION CLOUDINESS IS BASED ON TIME-AVERAGED CEILOMETER DATA FOR CLOUDS AT OR BELOW 12,000 FEET AND ON SATELLITE DATA FOR CLOUDS ABOVE 12,000 FEET. THE NUMBER OF DAYS WITH CLEAR, PARTLY CLOUDY, AND CLOUDY CONDITIONS FOR ASOS STATIONS IS THE SUM OF THE CEILOMETER AND SATELLITE DATA FOR THE SUNRISE TO SUNSET PERIOD.</p>	<p>GENERAL CONTINUED: CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS. WHEN AT LEAST ONE OF THE ELEMENTS (CEILOMETER OR SATELLITE) IS MISSING, THE DAILY CLOUDINESS IS NOT COMPUTED. WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM. "36" INDICATES TRUE NORTH. RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION. AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2. SNOWFALL DATA COMPRISE ALL FORMS OF FROZEN PRECIPITATION, INCLUDING HAIL. A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65° F. DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR. DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY. WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY.</p> <p>ON JULY 1, 1996, THE NATIONAL WEATHER SERVICE BEGAN USING THE "METAR" OBSERVATION CODE THAT WAS ALREADY EMPLOYED BY MOST OTHER NATIONS OF THE WORLD. THE MOST NOTICEABLE DIFFERENCE IN THIS ANNUAL PUBLICATION WILL BE THE CHANGE IN UNITS FROM TENTHS TO EIGHTS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER.</p>
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2003
TULSA,
OKLAHOMA (TUL)

The city of Tulsa lies along the Arkansas River at an elevation of 700 feet above sea level. The surrounding terrain is gently rolling.

At latitude 36 degrees, Tulsa is far enough north to escape the long periods of heat in summer, yet far enough south to miss the extreme cold of winter. The influence of warm moist air from the Gulf of Mexico is often noted, due to the high humidity, but the climate is essentially continental characterized by rapid changes in temperature. Generally the winter months are mild. Temperatures occasionally fall below zero but only last a very short time. Temperatures of 100 degrees or higher are often experienced from late July to early September, but are usually accompanied by low relative humidity and a good southerly breeze. The fall season is long with a great number of pleasant, sunny days and cool, bracing nights.

Rainfall is ample for most agricultural pursuits and is distributed favorably throughout the year. Spring is the wettest season, having an abundance of rain in the form of showers and thunderstorms.

The steady rains of fall are a contrast to the spring and summer showers and provide a good supply of moisture and more ideal conditions for the growth of winter grains and pastures. The greatest amounts of snow are received in January and early March. The snow is usually light and only remains on the ground for brief periods.

The average date of the last 32 degree temperature occurrence is late March and the average date of the first 32 degree occurrence is early November. The average growing season is 216 days.

The Tulsa area is occasionally subjected to large hail and violent windstorms which occur mostly during spring and early summer, although occurrences have been noted throughout the year.

Prevailing surface winds are southerly during most of the year. Heavy fogs are infrequent. Sunshine is abundant. The prevalence of good flying weather throughout the year has contributed to the development of Tulsa as an aviation center.

STATION LOCATION

TULSA, OKLAHOMA

LOCATION	Occupied From	Occupied To	Airline Distances and Directions from previous Location	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE										AUTOMATIC OBSERVING EQUIPMENT * REMARKS
						SEA LEVEL	GROUND								HYGRO THERMOMETER	
							GROUND	WIND INSTRUMENT	EXTREME THERMOMETER	PSYCHROMETER	SUNSHINE SWITCH	TIPPING BUCKET	WINDHINDING	8 INCH RAIN GAGE		
*NOTE: <u>AIRPORT</u> General Aviation Bldg. International Airport	11/5/69	10/1/92	900' W	36°12'	95°54'	650	g23	m4	m4	19 j5 k7	h16 j4	4 k4	4	g4 i4 n4	g. Not moved 11/5/69. h. Added 6/1/78. i. Minor change 7/2/82. j. Moved to field 7/2/82. k. Minor adjustment 6/14/83. m. Installed 6/20/83. n. Type change 11/28/84.	
International Airport	10/01/92	Present	NA	36°12'	95°53'	o739								S	ASOS Commissioned 10/01/92 o. Ground Elevation	

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* NOTES: For earlier station history see previous edition.