

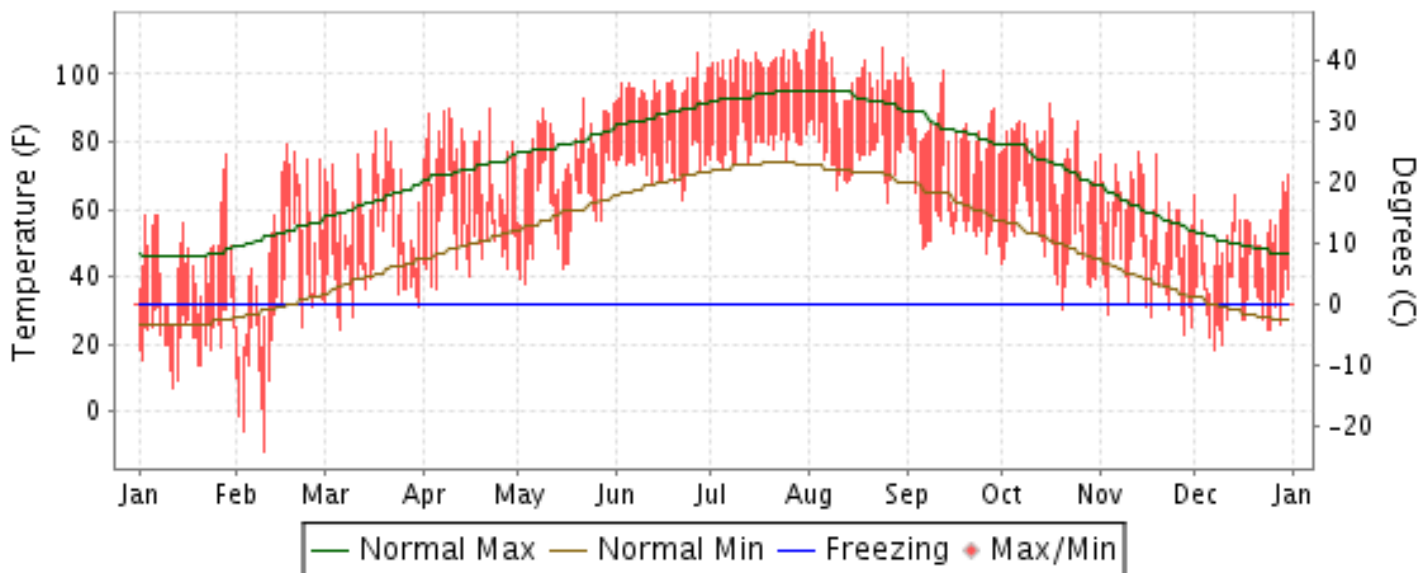


# 2011 LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA

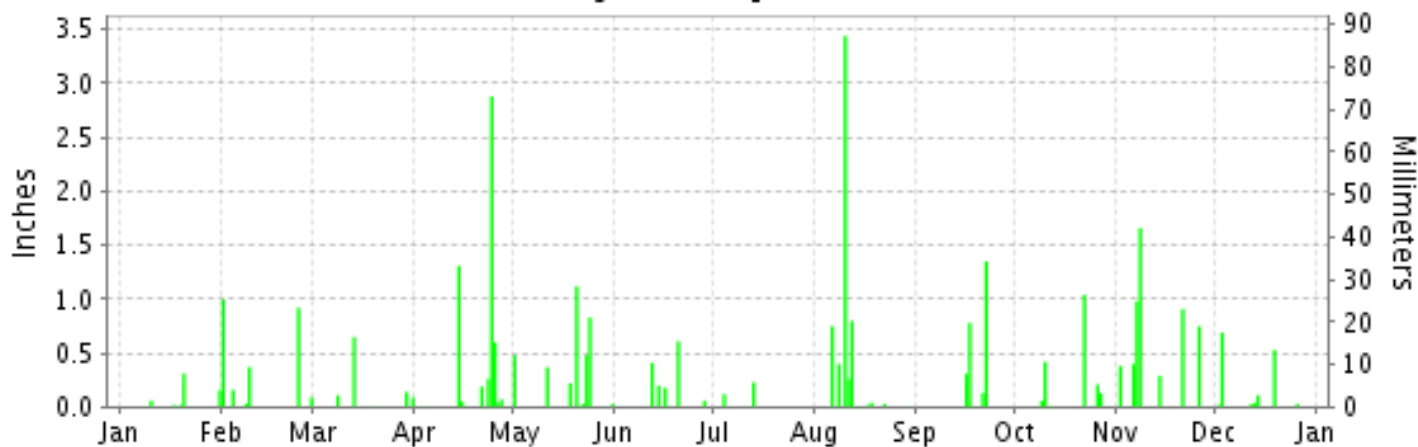
ISSN 0198-4071

## TULSA, OKLAHOMA (KTUL)

### Daily Max/Min Temperature



### Daily Precipitation



### Daily Station Pressure



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NATIONAL  
CLIMATIC DATA CENTER  
ASHEVILLE, NORTH CAROLINA

*Thomas R. Karl*  
DIRECTOR  
NATIONAL CLIMATIC DATA CENTER

# METEOROLOGICAL DATA FOR 2011

## TULSA (KTUL)

LATITUDE: 36° 11'N      LONGITUDE: -95° 53'W      ELEVATION (FT): GRND: 650 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	46.0	50.0	62.6	75.2	78.5	95.6	103.0	99.9	83.4	76.8	61.1	52.5	73.7	
	HIGHEST DAILY MAXIMUM	76	79	84	90	93	106	107	113	102	91	77	70	113	
	DATE OF OCCURRENCE	29	17	20	22+	22	27	31+	03	01	16	13	31	AUG 03	
	MEAN DAILY MINIMUM	22.2	27.1	42.4	51.6	58.7	73.2	78.7	75.3	57.9	50.0	40.6	32.4	50.8	
	LOWEST DAILY MINIMUM	7	-12	24	36	38	63	72	62	47	30	23	18	-12	
	DATE OF OCCURRENCE	12	10	06	05	03	22	05	26	26	20	28	07	FEB 10	
	AVERAGE DRY BULB	34.1	38.6	52.5	63.4	68.6	84.4	90.9	87.6	70.7	63.4	50.9	42.5	62.3	
	MEAN WET BULB	29.5	34.9	45.8	54.5	60.8	71.8	73.7	72.5	59.3	53.4	45.5	37.5	53.3	
	MEAN DEW POINT	21.5	28.6	38.3	45.8	55.5	65.5	65.5	65.1	50.8	44.8	38.7	30.9	45.9	
	NUMBER OF DAYS WITH:														
	MAXIMUM >= 90°	0	0	0	2	3	29	31	29	6	1	0	0	0	101
	MAXIMUM <= 32°	5	7	0	0	0	0	0	0	0	0	0	0	0	12
MINIMUM <= 32°	30	16	5	0	0	0	0	0	0	1	9	14	75		
MINIMUM <= 0°	0	3	0	0	0	0	0	0	0	0	0	0	0	3	
H/C	HEATING DEGREE DAYS	951	743	410	126	91	0	0	0	23	130	424	693	3591	
	COOLING DEGREE DAYS	0	9	28	86	212	588	808	706	200	88	6	0	2731	
RH	MEAN (PERCENT)	64	68	62	57	66	55	46	52	54	55	66	68	59	
	HOUR 00 LST	70	73	66	61	73	62	50	59	63	64	70	73	65	
	HOUR 06 LST	77	78	74	71	77	72	67	71	75	74	76	78	74	
	HOUR 12 LST	54	62	56	47	56	44	36	42	41	41	57	60	50	
	HOUR 18 LST	55	58	53	47	57	42	31	38	37	42	62	59	48	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG(VISBY <= 1/4 MI)	2	1	0	0	0	0	0	1	0	0	2	0	6	
	THUNDERSTORMS	1	2	4	9	8	8	7	10	4	4	3	1	61	
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.)	29.38	29.35	29.29	29.07	29.13	29.11	29.16	29.14	29.28	29.31	29.30	29.45	29.25	
	MEAN SEA-LEVEL PRESS. (IN.)	30.12	30.08	30.01	29.78	29.84	29.81	29.86	29.83	29.99	30.02	30.03	30.18	29.96	
WINDS	RESULTANT SPEED (MPH)	1.8	0.2	1.5	4.1	6.1	9.1	6.1	4.4	2.3	2.4	3.4	0.8	2.8	
	RES. DIR. (TENS OF DEGS.)	31	08	13	19	17	17	15	15	05	16	19	20	17	
	MEAN SPEED (MPH)	7.8	9.8	10.7	12.8	12.1	12.0	8.6	8.0	7.0	8.0	11.4	8.2	9.7	
	PREVAIL.DIR.(TENS OF DEGS.)	31	17	17	17	17	17	17	17	04	14	17	17	17	
	MAXIMUM 2-MINUTE WIND														
	SPEED (MPH)	29	31	32	38	46	39	33	40	25	40	35	37	46	
	DIR. (TENS OF DEGS.)	34	18	17	18	24	17	35	31	17	02	17	18	24	
	DATE OF OCCURRENCE	07	20	22	03	24	20	03	10	18	22	18	31	MAY 24	
	MAXIMUM 3-SECOND WIND:														
	SPEED (MPH)	35	41	41	49	64	48	40	53	35	47	45	44	64	
DIR. (TENS OF DEGS.)	33	16	19	18	25	17	35	33	01	02	17	17	25		
DATE OF OCCURRENCE	07	20	11	03	24	20	03	10	04	22	18	31	MAY 24		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	0.57	2.57	1.00	5.41	3.58	1.47	0.36	5.76	2.58	1.87	5.37	1.45	31.99	
	GREATEST 24-HOUR (IN.)	0.33	1.00	0.65	3.15	1.12	0.61	0.23	3.50	1.48	1.04	2.21	0.71	3.50	
	DATE OF OCCURRENCE	19-20	01	13	24-25	20	20	13	10-11	21-22	22	07-08	02-03	AUG 10-11	
	NUMBER OF DAYS WITH:														
	PRECIPITATION 0.01	5	6	5	9	10	6	3	10	5	6	7	7	79	
PRECIPITATION 0.10	2	4	3	5	6	4	2	5	4	4	7	3	49		
PRECIPITATION 1.00	0	1	0	2	1	0	0	1	1	1	1	0	8		
SNOWFALL	SNOW,ICE PELLETS,HAIL														
	TOTAL (IN.)	3.6	22.5	0.0	T	T	0.0	0.0	0.0	T	0.0	0.0	T	26.1	
	GREATEST 24-HOUR (IN.)	2.0	13.2	0.0	T	T	0.0	0.0	0.0	T	0.0	0.0	T	13.2	
	DATE OF OCCURRENCE	20	01		25+	24				17			23+	FEB 01	
	MAXIMUM SNOW DEPTH (IN.)	2	14	0	0	0	0	0	0	0	0	0	0	14	
	DATE OF OCCURRENCE	21	05+											FEB 05+	
NUMBER OF DAYS WITH:															
SNOWFALL >= 1.0	1	3	0	0	0	0	0	0	0	0	0	0	4		

# NORMALS, MEANS, AND EXTREMES TULSA (KTUL)

LATITUDE:  
36° 11'N

LONGITUDE:  
-95° 53'W

ELEVATION (FT):  
GRND: 650 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	71.4
	MEAN DAILY MAXIMUM	70	46.6	51.8	61.4	71.9	79.4	87.3	93.4	92.9	84.1	74.2	60.4	50.0	71.1
	HIGHEST DAILY MAXIMUM	72	79	90	96	102	97	106	112	113	109	98	87	80	113
	YEAR OF OCCURRENCE		1950	1996	1974	1972	2006	2011	1954	2011	1939	1979	1945	1966	AUG 2011
	MEAN OF EXTREME MAXS.	70	69.5	74.8	83.3	87.8	91.0	96.2	102.0	102.3	96.5	89.3	79.0	70.9	86.9
	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	70	26.2	30.4	38.8	49.5	59.0	67.5	72.5	70.9	62.1	50.8	38.8	29.8	49.7
	LOWEST DAILY MINIMUM	72	-8	-12	-3	22	35	49	51	50	35	18	10	-8	-12
	YEAR OF OCCURRENCE		1947	2011	1948	1957	2005	1954	1971	2009	1984	1993	1976	1989	FEB 2011
	MEAN OF EXTREME MINS.	70	7.4	12.5	20.5	33.1	44.1	55.9	62.5	59.9	46.6	34.2	22.3	11.6	34.2
	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	70	36.5	41.1	50.1	60.7	69.2	77.5	83.0	81.9	73.1	62.5	49.6	39.9	60.4
	MEAN WET BULB	28	31.7	35.4	43.1	51.6	61.8	69.3	71.9	70.9	63.8	53.6	43.1	34.2	52.5
	MEAN DEW POINT	28	28.3	31.5	39.0	47.9	59.3	67.2	69.4	68.4	61.3	50.7	39.7	30.6	49.4
	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	65	69	68	68	70	67
	HOURLY 00 LST	30	73	70	68	69	78	79	72	73	77	76	75	75	74
	HOURLY 06 LST	30	79	78	76	78	86	86	82	83	86	83	81	80	82
	HOURLY 12 LST	30	61	57	54	52	59	59	54	52	58	55	59	61	57
	HOURLY 18 LST	30	60	55	51	49	57	57	50	49	56	56	61	63	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)	48	2.0	1.3	0.8	0.4	0.5	0.4	0.2	0.2	0.6	1.1	1.2	1.5	10.2
	THUNDERSTORMS	64	0.8	1.3	3.5	5.8	8.3	7.8	6.0	5.7	4.8	2.8	1.6	1.0	49.4
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)	28	29.41	29.37	29.29	29.22	29.21	29.21	29.25	29.26	29.29	29.32	29.35	29.41	29.30
	MEAN SEA-LEVEL PRES. (IN)	28	30.15	30.11	30.02	29.93	29.91	29.91	29.95	29.96	30.00	30.04	30.08	30.14	30.02
WINDS	MEAN SPEED (MPH)	28	9.3	9.6	10.8	11.0	9.9	9.3	8.8	8.0	8.0	8.7	9.7	9.1	9.4
	PREVAIL.DIR(TENS OF DEGS)	38	19	19	19	19	19	19	19	19	19	19	19	19	19
	MAXIMUM 2-MINUTE: SPEED (MPH)	19	37	41	46	55	46	54	51	46	39	43	44	38	55
	DIR. (TENS OF DEGS)		30	20	18	34	24	32	19	25	27	24	29	34	34
	YEAR OF OCCURRENCE		2008	2000	1997	1993	2011	2008	1993	2006	1999	2007	1998	2009	APR 1993
	MAXIMUM 3-SECOND SPEED (MPH)	19	54	53	55	63	64	61	55	56	49	63	55	48	64
	DIR. (TENS OF DEGS)		31	21	16	34	25	31	19	32	27	24	17	34	25
YEAR OF OCCURRENCE		2008	2000	1997	1993	2011	2008	1993	2009	1999	2007	2005	2009	MAY 2011	
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)	72	6.65	5.73	11.94	9.33	18.00	11.17	11.39	8.78	18.81	16.51	7.57	8.70	18.81
	YEAR OF OCCURRENCE		1949	1985	1973	2008	1943	1948	1994	2003	1971	1941	1946	1984	SEP 1971
	MINIMUM MONTHLY (IN)	72	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)	72	2.25	4.34	3.17	4.58	9.27	5.01	7.54	5.37	7.25	5.80	5.14	3.27	9.27
	YEAR OF OCCURRENCE		1946	1985	2004	1964	1984	1941	1963	1989	2007	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	0.*	0.6	1.9	9.2
	MAXIMUM MONTHLY (IN)	70	12.7	22.5	14.1	1.7	T	T	T	T	T	0.3	10.5	11.4	22.5
	YEAR OF OCCURRENCE		1979	2011	1994	1957	2011	2009	1994		2011	1993	2006	2000	FEB 2011
	MAXIMUM IN 24 HOURS (IN)	70	9.0	13.2	12.9	1.7	T	T	T	0.0	T	0.3	4.0	8.8	13.2
	YEAR OF OCCURRENCE		1944	2011	1994	1957	2011	2009	1994	1994	2011	1993	1972	1954	FEB 2011
	MAXIMUM SNOW DEPTH (IN)	63	11	14	10	T	0	0	0	0	0	0	3	8	14
	YEAR OF OCCURRENCE		1988	2011	1968	1993							2001	1954	FEB 2011
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) 2011 TULSA (KTUL)**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
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
2004	2.36	1.20	6.16	5.97	3.07	6.41	8.62	1.62	0.82	8.51	3.92	0.84	49.50
2005	3.69	1.93	1.21	2.80	1.61	3.94	1.62	5.91	3.09	1.58	0.31	0.52	28.21
2006	0.72	0.35	2.80	5.83	3.04	5.85	4.41	4.06	2.01	1.31	3.58	4.27	38.23
2007	2.27	1.23	3.07	2.25	10.03	9.17	6.10	0.69	10.82	3.04	0.54	3.88	53.09
2008	0.88	2.01	4.73	9.33	9.61	9.43	4.64	4.59	4.40	2.75	1.96	1.77	56.10
2009	0.68	2.28	5.02	4.34	6.80	3.51	2.84	3.76	8.29	6.14	0.58	1.88	46.12
2010	2.36	2.03	3.25	2.08	5.23	7.07	4.67	1.19	2.85	1.23	1.96	0.55	34.47
2011	0.57	2.57	1.00	5.41	3.58	1.47	0.36	5.76	2.58	1.87	5.37	1.45	31.99
POR= 69 YRS	1.49	1.82	2.98	3.95	5.64	4.83	3.31	3.14	4.28	3.65	2.60	2.05	39.74

WBAN : 13968

**AVERAGE TEMPERATURE (°F) 2011 TULSA (KTUL)**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
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
2004	38.6	39.9	54.8	60.3	71.8	75.1	79.1	77.0	74.9	64.9	51.6	42.4	60.9
2005	38.9	45.8	50.7	61.1	69.3	79.6	82.5	83.0	77.2	63.0	54.3	38.7	62.0
2006	48.5	41.8	54.5	66.8	71.5	78.2	84.7	85.9	71.1	61.2	51.5	43.2	63.2
2007	36.5	40.6	60.7	57.9	70.6	77.0	81.3	85.4	75.2	64.8	52.2	38.6	61.7
2008	38.5	41.1	51.4	59.0	70.4	78.3	83.7	80.8	71.5	61.7	50.8	39.4	60.6
2009	36.9	46.4	52.9	59.2	67.4	81.2	81.0	79.4	70.7	55.9	54.9	34.6	60.0
2010	33.7	36.3	50.4	63.7	69.7	81.9	84.5	85.5	75.1	63.3	51.8	38.7	61.2
2011	34.1	38.6	52.5	63.4	68.6	84.4	90.9	87.6	70.7	63.4	50.9	42.5	62.3
POR= 70 YRS	36.5	41.1	50.1	60.7	69.2	77.5	83.0	81.9	73.1	62.5	49.6	39.9	60.4

**HEATING DEGREE DAYS (base 65°F) 2011 TULSA (KTUL)**

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
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
2003-04	0	0	32	113	414	661	814	722	322	178	49	0	3305
2004-05	0	0	0	74	395	695	804	531	442	151	59	0	3151
2005-06	0	0	7	164	342	808	505	646	354	78	32	0	2936
2006-07	0	0	12	191	397	669	878	676	186	262	6	0	3277
2007-08	0	0	0	111	394	807	818	693	419	205	34	0	3481
2008-09	0	0	4	145	431	787	867	516	397	224	54	0	3425
2009-10	0	1	12	284	304	934	963	798	453	100	35	0	3884
2010-11	0	0	12	95	392	808	951	743	410	126	91	0	3628
2011-	0	0	23	130	424	693							

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**COOLING DEGREE DAYS (base 65°F) 2011 TULSA (KTUL)**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
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
2004	3	0	14	42	269	309	444	381	302	81	0	0	1845
2005	0	0	6	40	198	443	552	564	381	108	28	0	2320
2006	0	1	35	142	241	404	617	655	201	80	4	1	2381
2007	0	0	62	54	188	367	511	639	314	111	15	0	2261
2008	4	6	3	32	207	405	591	496	205	51	12	0	2012
2009	0	2	28	59	136	490	503	453	194	9	8	0	1882
2010	0	0	9	67	186	514	607	642	324	48	1	0	2398
2011	0	9	28	86	212	588	808	706	200	88	6	0	2731

**SNOWFALL (inches) 2011 TULSA (KTUL)**

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
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
2003-04	0.0	0.0	0.0	0.0	T	5.2	1.0	1.6	0.0	T	0.0	0.0	7.8
2004-05	0.0	0.0	0.0	0.0	T	T	2.0	T	0.0	T	0.0	0.0	2.0
2005-06	0.0	0.0	0.0	0.0	T	2.2	1.2	2.1	1.5	T	T	0.0	7.0
2006-07	0.0	0.0	0.0	0.0	10.5	0.3	4.3	0.1	T	0.4	0.0	0.0	15.6
2007-08	0.0	0.0	0.0	T	T	0.5	2.4	0.3	0.3	0.0	0.0	0.0	3.5
2008-09	0.0	0.0	0.0	0.0	T	0.4	1.6	0.0	10.4	T	T	T	12.4
2009-10	0.0	0.0	0.0	0.0	T	7.4	7.3	2.4	5.7	T	0.0	0.0	22.8
2010-11	0.0	0.0	0.0	0.0	T	T	3.6	22.5	0.0	T	T	0.0	26.1
2011-	0.0	0.0	T	0.0	0.0	T							
POR= 68 YRS	T	0.0	T	T	0.6	1.8	3.1	2.5	1.9	T	T	T	9.9

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. 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.</p>	<p>GENERAL CONTINUED: 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. 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. STATION HISTORY STOPPED WITH THE 2009 ANNUAL. IF YOU NEED HISTORY GO TO "MULTI-NETWORK MEDADATA SYSTEM", URL IS: <a href="https://mi3.ncdc.noaa.gov/mi3qry/login.cfm">https://mi3.ncdc.noaa.gov/mi3qry/login.cfm</a> SNOWFALL STOPPED MONTH &amp; YEAR INDICATED ABOVE. NO FURTHER YEARS INCLUDED UNLESS RESTARTED.</p> <p><b>NOTE:</b> The "Period of Record:(POR) for all "averages" is based on the "Summary of the Day First Order Station" and "Cooperative Summary of the Day" archives.</p>
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# 2011 TULSA OKLAHOMA (KTUL)

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 History

TULSA, OK

NAME	Begin Date	End Date	Latitude	Longitude	Elevation Feet	Relocation	Platform
TULSA INTL AP	2010-12-15	Present	36° 11'	-95° 53'	650		AIRSAMPLE, ASOS, COOP
TULSA MUNICIPAL AP	1956-01-01	1963-11-12	36° 12'	-95° 54'	679		AIRWAYS, COOP
TULSA INTL AP	1963-11-12	1969-01-01	36° 12'	-95° 54'	679		AIRWAYS, COOP
TULSA INTL AP	1996-02-26	2006-07-25	36° 11'	-95° 53'	650		ASOS, COOP
TULSA MUNICIPAL AP	1930-03-07	1946-08-01	36° 12'	-95° 54'			AIRWAYS
TULSA INTL AP	1969-01-01	1970-01-01	36° 12'	-95° 54'	679		COOP, WXSVC
TULSA INTL AP	2006-07-25	2010-12-15	36° 11'	-95° 53'	650		AIRSAMPLE, ASOS, COOP
TULSA INTL AP	1970-01-01	1992-10-01	36° 12'	-95° 54'	650		COOP, WXSVC
TULSA MUNICIPAL AP	1946-08-01	1956-01-01	36° 12'	-95° 54'	676		AIRWAYS, COOP
TULSA INTL AP	1992-10-01	1995-09-18	36° 11'	-95° 53'	650	1 MI E	ASOS, COOP
TULSA INTL AP	1995-09-18	1996-02-26	36° 11'	-95° 53'	650		ASOS, COOP

# Element History

Element	Begin Date	End Date	Frequency	Time Of Observation	Equipment *	Equipment * Modifications	Equipment Exposure
TEMP	1988-02-01	1992-10-01	DAILY	2400			
TEMP	1992-10-01	2006-07-25	DAILY	2400	HYGR		
TEMP	2006-07-25	2010-12-15	DAILY	2400	HYGR		
PRECIP	2006-07-25	2010-12-15	DAILY	2400	PCPNX		
MAX/MINTEM	1988-02-01	1992-10-01	ONCE DAILY	0800	PALMER		
PRECIP	1982-01-01	1988-02-01	HOURLY	2400	UNIV	RCRD	
MAX/MINTEM	1992-10-01	1995-09-22	ONCE DAILY	0800	PALMER		
PRECIP	1992-10-01	2006-07-25	HOURLY	2400	TB	RCRD	
PRECIP	1930-03-07	1982-01-01	DAILY	2400	UNIV	RCRD	
PRECIP	1982-01-01	1988-02-01	DAILY	2400	UNIV	RCRD	
PRECIP	1988-02-01	1992-10-01	HOURLY	2400	UNIV	RCRD	
PRECIP	1992-10-01	2006-07-25	DAILY	2400	TB	RCRD	
PRECIP	2006-07-25	2010-12-15	HOURLY	2400	TB	RCRD	
PRECIP	2010-12-15	Present	DAILY	2400	PCPN1		
TEMP	1930-03-07	1982-01-01	DAILY	2400			
TEMP	1982-01-01	1988-02-01	DAILY	2400			
PRECIP	1988-02-01	1992-10-01	DAILY	2400	UNIV	RCRD	
TEMP	2010-12-15	Present	DAILY	2400	HYGR		
PRECIP	2010-12-15	Present	HOURLY	2400	TB	RCRD	

\* For explanation of codes and abbreviations see Station Metadata link below.

Other Station Information can be found at:

ASOS Implementation by NWS: <http://www.nws.noaa.gov/ops2/Surface/asosimplementation.htm>

Station Metadata website: <http://www.ncdc.noaa.gov/homr>

INQUIRES/COMMENTS CALL: (828) 271-4800, option 2

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Email : [ncdc.info@noaa.gov](mailto:ncdc.info@noaa.gov)

NOAA/National Climatic Data Center

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151 Patton Avenue

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Visit our Web Site for other weather data: [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)