

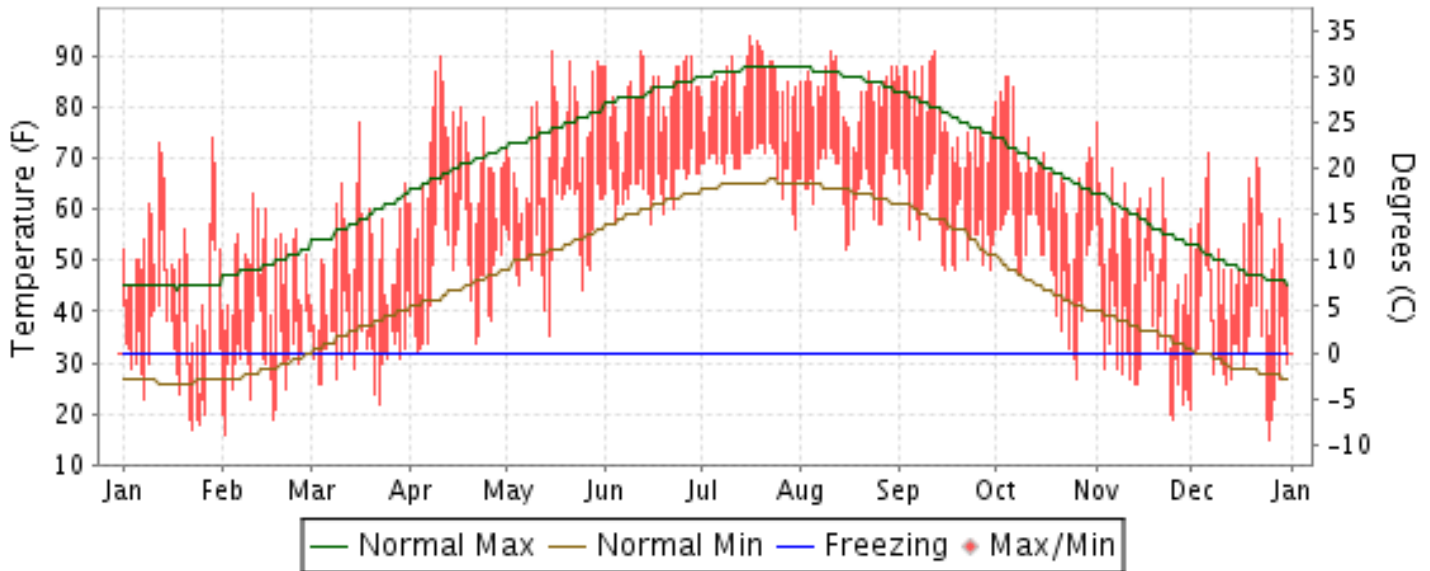


2013 LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA

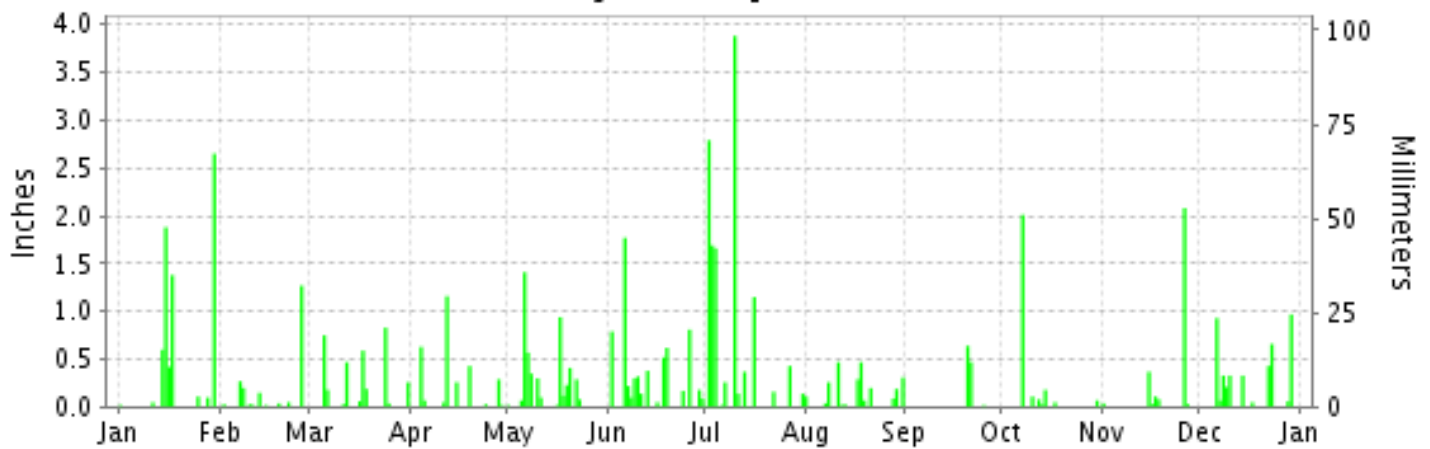
ISSN 0198-5388

ROANOKE, VIRGINIA (KROA)

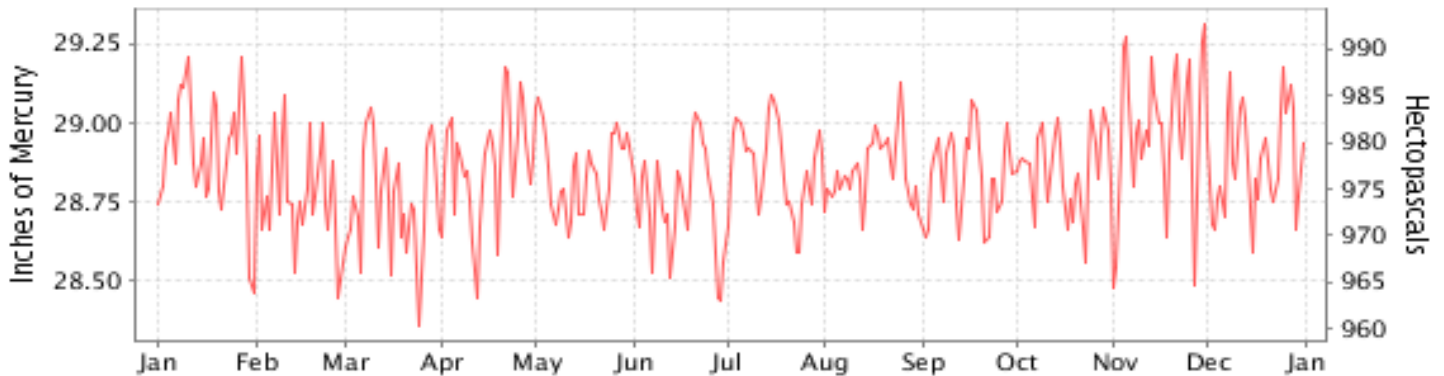
Daily Max/Min Temperature



Daily Precipitation



Daily Station Pressure



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NATIONAL
OCEANIC AND
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NATIONAL
ENVIRONMENTAL SATELLITE, DATA
AND INFORMATION SERVICE

NATIONAL
CLIMATIC DATA CENTER
ASHEVILLE, NORTH CAROLINA

Thomas R. Karl
DIRECTOR
NATIONAL CLIMATIC DATA CENTER

METEOROLOGICAL DATA FOR 2013

ROANOKE (KROA)

LATITUDE: 37° 19'N LONGITUDE: 79° 58'W ELEVATION (FT): GRND: 1175 BARO: 1192 TIME ZONE: EASTERN (UTC -5) WBAN: 13741

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	50.3	48.0	51.4	69.2	74.4	82.9	85.1	83.2	78.3	69.0	53.9	52.0	66.5	
	HIGHEST DAILY MAXIMUM	74	63	77	90	91	91	94	91	91	86	77	71	94	
	DATE OF OCCURRENCE	29	11	16	10	15	12	16	10	12	05+	01	06	JUL 16	
	MEAN DAILY MINIMUM	33.0	30.5	33.1	47.1	54.5	64.3	68.9	64.9	57.3	49.2	34.4	32.6	47.5	
	LOWEST DAILY MINIMUM	17	16	22	32	35	57	56	52	48	27	19	15	15	
	DATE OF OCCURRENCE	23	02	22	03	14	15+	30	15	29	26	25	25	DEC 25	
	AVERAGE DRY BULB	41.7	39.3	42.2	58.2	64.4	73.6	77.0	74.0	67.8	59.1	44.1	42.3	57.0	
	MEAN WET BULB	36.2	32.6	34.9	49.5	56.9	66.4	69.9	66.8	61.2	53.5	37.9	37.2	50.3	
	MEAN DEW POINT	27.6	21.9	23.6	39.8	50.4	62.6	66.6	63.4	56.9	48.5	28.0	29.2	43.2	
	NUMBER OF DAYS WITH:														
	MAXIMUM >= 90°	0	0	0	1	1	4	7	2	2	0	0	0	0	17
	MAXIMUM <= 32°	2	1	0	0	0	0	0	0	0	0	0	0	0	3
MINIMUM <= 32°	15	18	13	1	0	0	0	0	0	2	16	17	82		
MINIMUM <= 0°	0	0	0	0	0	0	0	0	0	0	0	0	0		
H/C	HEATING DEGREE DAYS	716	714	699	242	117	1	0	1	35	214	624	695	4058	
	COOLING DEGREE DAYS	0	0	0	43	107	266	382	291	127	38	2	0	1256	
RH	MEAN (PERCENT)	61	54	52	54	64	71	75	74	72	71	56	64	64	
	HOUR 01 LST	64	60	59	63	75	83	86	87	87	83	64	71	74	
	HOUR 07 LST	68	61	59	65	68	75	80	80	81	81	67	72	71	
	HOUR 13 LST	51	46	43	41	50	58	60	56	53	53	43	52	51	
	HOUR 19 LST	61	51	49	49	65	71	75	72	71	68	54	61	62	
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG(VISBY <= 1/4 MI)	4	0	1	2	1	3	1	1	0	1	2	1	17	
	THUNDERSTORMS	0	0	1	3	7	7	9	4	1	1	0	1	34	
PR	MEAN STATION PRESS. (IN.)	28.92	28.77	28.75	28.87	28.85	28.75	28.86	28.85	28.83	28.85	28.97	28.89	28.85	
	MEAN SEA-LEVEL PRESS. (IN.)	30.20	30.05	30.02	30.11	30.09	29.97	30.08	30.08	30.07	30.10	30.25	30.16	30.10	
WINDS	RESULTANT SPEED (MPH)	3.6	5.1	6.0	2.0	0.5	1.5	1.1	0.7	0.3	1.5	3.4	3.4	2.1	
	RES. DIR. (TENS OF DEGS.)	28	29	30	22	24	25	14	27	29	33	30	28	29	
	MEAN SPEED (MPH)	6.8	8.3	9.1	7.4	6.4	5.4	5.0	4.2	3.9	4.7	6.8	6.1	6.2	
	PREVAIL.DIR.(TENS OF DEGS.)	30	30	31	13	30	27	11	27	13	03	32	29	31	
	MAXIMUM 2-MINUTE WIND														
	SPEED (MPH)	33	31	40	31	38	49	43	30	26	31	31	35	49	
	DIR. (TENS OF DEGS.)	24	31	31	30	25	28	05	32	31	32	30	30	28	
	DATE OF OCCURRENCE	30	12	16	13	10	26	16	11	13	23	07	17	JUN 26	
	MAXIMUM 3-SECOND WIND:														
	SPEED (MPH)	46	44	49	41	55	71	61	36	33	39	43	47	71	
DIR. (TENS OF DEGS.)	23	31	31	26	26	28	06	02	32	32	32	31	28		
DATE OF OCCURRENCE	30	04	16	01	10	26	16	31	13	23	18	31	JUN 26		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	7.21	2.08	3.40	2.94	4.91	6.49	12.73	2.55	1.13	2.54	2.74	4.38	53.10	
	GREATEST 24-HOUR (IN.)	2.65	1.27	0.93	1.21	1.69	1.79	3.88	0.76	0.64	2.01	2.09	1.07	3.88	
	DATE OF OCCURRENCE	30	26	05-06	11-12	06-07	06-07	10	17-18	20	07	26-27	22-23	JUL 10	
	NUMBER OF DAYS WITH:														
PRECIPITATION 0.01	9	10	10	9	14	18	16	13	3	8	7	12	129		
PRECIPITATION 0.10	7	4	7	5	10	13	11	8	2	3	3	8	81		
PRECIPITATION 1.00	3	1	0	1	1	1	5	0	0	1	1	0	14		
SNOWFALL	SNOW,ICE PELLETS,HAIL	5.0	4.0	8.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T	18.0	
	TOTAL (IN.)	3.5	2.0	5.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T	5.0	
	GREATEST 24-HOUR (IN.)	17	07	24	04							27+	24+	MAR 24	
	DATE OF OCCURRENCE	3	2	5	1	0	0	0	0	0	0	0	0	5	
	MAXIMUM SNOW DEPTH (IN.)	17	07	24	04									MAR 24	
	NUMBER OF DAYS WITH:														
SNOWFALL >= 1.0	2	2	2	1	0	0	0	0	0	0	0	0	7		

NORMALS, MEANS, AND EXTREMES ROANOKE (KROA)

LATITUDE:
37° 19'N

LONGITUDE:
79° 58'W

ELEVATION (FT):
GRND: 1175 BARO: 1192

TIME ZONE:
EASTERN (UTC -5)

WBAN: 13741

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	45.6	49.3	58.0	68.0	75.7	83.4	87.0	85.8	78.5	68.9	58.6	47.9	67.2
	MEAN DAILY MAXIMUM	66	45.5	48.7	57.3	68.1	76.1	83.4	87.1	85.7	78.8	68.7	57.7	47.9	67.1
	HIGHEST DAILY MAXIMUM	66	79	80	87	95	96	104	104	105	101	93	83	80	105
	YEAR OF OCCURRENCE		2002	1985	1986	1957	2011	2012	1954	1983	1954	1951	1950	1998	AUG 1983
	MEAN OF EXTREME MAXS.	66	66.4	69.2	78.1	85.9	89.3	93.6	95.7	94.6	91.1	83.4	75.3	67.5	82.5
	NORMAL DAILY MINIMUM	30	27.5	29.8	36.7	45.3	53.4	62.3	66.3	65.0	57.6	46.5	37.7	30.1	46.5
	MEAN DAILY MINIMUM	66	27.3	29.1	36.1	45.0	53.5	61.3	65.8	64.6	57.3	46.1	37.0	29.8	46.1
	LOWEST DAILY MINIMUM	66	-11	-1	9	20	31	39	47	42	34	22	9	-4	-11
	YEAR OF OCCURRENCE		1985	1996	1996	1985	1966	1977	1988	1986	1983	1976	1950	1983	JAN 1985
	MEAN OF EXTREME MINS.	66	9.5	13.1	20.4	29.3	38.6	48.6	55.4	54.2	42.4	30.5	21.4	13.2	31.4
	NORMAL DRY BULB	30	36.6	39.6	47.3	56.7	64.6	72.9	76.7	75.4	68.1	57.7	48.1	39.0	56.9
	MEAN DRY BULB	66	36.4	38.9	46.7	56.6	64.8	72.5	76.4	75.1	68.1	57.4	47.4	38.9	56.6
	MEAN WET BULB	30	29.6	31.3	37.9	46.5	56.2	64.0	67.5	66.6	60.5	49.7	40.0	32.4	48.5
	MEAN DEW POINT	30	26.0	27.7	33.9	42.8	53.8	62.3	66.0	65.1	58.8	47.2	36.8	28.8	45.8
	NORMAL NO. DAYS WITH: MAXIMUM >= 90	30	0.0	0.0	0.0	0.2	0.5	4.9	9.7	7.6	2.2	0.1	0.0	0.0	25.2
	MAXIMUM <= 32	30	3.5	1.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	6.9
MINIMUM <= 32	30	20.6	17.4	9.7	1.8	0.0	0.0	0.0	0.0	0.0	1.3	8.3	18.8	77.9	
MINIMUM <= 0	30	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	
H/C	NORMAL HEATING DEG. DAYS	30	882	713	552	275	101	11	0	1	48	248	507	806	4144
	NORMAL COOLING DEG. DAYS	30	0	0	5	24	87	246	361	324	139	21	1	0	1208
RH	NORMAL (PERCENT)	30	63	61	58	58	67	71	71	73	74	69	66	65	66
	HOURLY 01 LST	30	69	66	65	65	78	83	85	86	87	81	73	70	76
	HOURLY 07 LST	30	71	71	71	71	80	82	84	88	89	84	77	73	78
	HOURLY 13 LST	30	54	51	49	47	53	55	55	56	58	52	53	55	53
	HOURLY 19 LST	30	60	56	52	49	59	64	65	66	70	64	61	61	61
S	PERCENT POSSIBLE SUNSHINE														
W/O	MEAN NO. DAYS WITH: HEAVY FOG(VISBY <= 1/4 MI)	50	2.1	2.1	1.5	0.9	1.3	0.9	1.2	1.2	1.5	1.4	1.6	1.9	17.6
	THUNDERSTORMS	66	0.2	0.3	1.1	3.0	6.1	6.8	8.1	6.3	2.4	0.8	0.4	0.2	35.7
CLOUDINESS	MEAN: SUNRISE-SUNSET (OKTAS)	48	5.1	5.0	5.0	4.8	5.0	4.8	4.7	4.6	4.5	3.9	4.6	4.8	4.7
	MIDNIGHT-MIDNIGHT (OKTAS)	32	4.7	4.6	4.7	4.3	4.5	4.3	4.3	4.2	4.2	3.7	4.3	4.6	4.4
	MEAN NO. DAYS WITH: CLEAR	49	8.1	7.6	8.1	8.5	7.4	7.1	6.9	7.8	9.6	12.8	8.8	8.7	101.4
	PARTLY CLOUDY	49	7.7	7.1	8.4	8.8	10.5	11.9	13.0	12.4	8.8	7.5	8.4	7.9	112.4
	CLOUDY	49	15.2	13.6	14.4	12.7	13.0	11.1	11.1	10.8	11.6	10.7	12.8	14.4	151.4
PR	MEAN STATION PRESSURE(IN)	30	28.83	28.81	28.79	28.75	28.77	28.78	28.80	28.82	28.84	28.85	28.87	28.86	28.81
	MEAN SEA-LEVEL PRES. (IN)	30	30.11	30.09	30.05	29.99	30.01	30.00	30.02	30.04	30.08	30.10	30.13	30.13	30.06
WINDS	MEAN SPEED (MPH)	30	8.1	8.0	8.3	8.0	6.6	5.9	5.6	5.1	5.1	5.7	6.6	7.2	6.7
	PREVAIL.DIR.(TENS OF DEGS)	38	31	31	31	31	31	28	28	28	14	31	31	31	31
	MAXIMUM 2-MINUTE: SPEED (MPH)	17	44	52	44	47	39	67	53	39	49	44	40	40	67
	DIR. (TENS OF DEGS)		28	28	32	30	31	34	31	32	33	30	30	30	34
	YEAR OF OCCURRENCE		2000	2008	2004	2006	2002	2012	2011	2010	2010	2012	2003	2008	JUN 2012
	MAXIMUM 3-SECOND SPEED (MPH)	17	53	67	53	60	55	81	75	53	58	60	55	59	81
	DIR. (TENS OF DEGS)		28	28	31	30	26	34	30	32	29	28	18	30	34
YEAR OF OCCURRENCE		2000	2008	2007	2006	2013	2012	2011	2010	2010	2012	2003	2008	JUN 2012	
PRECIPITATION	NORMAL (IN)	30	2.92	2.89	3.46	3.37	4.06	3.83	4.04	3.56	3.89	2.89	3.40	2.94	41.25
	MAXIMUM MONTHLY (IN)	66	7.97	8.00	7.91	11.35	10.11	10.32	12.73	9.54	11.72	9.89	12.36	8.22	12.73
	YEAR OF OCCURRENCE		1998	1998	1993	1987	2003	1995	2013	1984	2004	1990	1985	2009	JUL 2013
	MINIMUM MONTHLY (IN)	66	0.29	0.56	0.35	0.48	1.04	0.62	0.45	0.74	0.15	0.02	0.18	0.18	0.02
	YEAR OF OCCURRENCE		1981	1968	2006	1976	1997	1986	1977	1995	1991	2000	2007	1965	OCT 2000
	MAXIMUM IN 24 HOURS (IN)	66	3.64	3.32	3.09	5.57	3.99	4.78	3.88	5.22	6.60	6.41	6.63	3.40	6.63
	YEAR OF OCCURRENCE		1995	1994	1998	1978	1973	2006	2013	1985	1987	1968	1985	1948	NOV 1985
	NORMAL NO. DAYS WITH: PRECIPITATION >= 0.01	30	8.7	9.4	10.4	10.3	12.1	10.8	11.8	9.3	8.4	7.7	8.0	9.0	115.9
PRECIPITATION >= 1.00	30	0.7	0.7	0.7	0.5	0.9	0.9	1.0	1.0	1.1	0.8	1.0	0.5	9.8	
SNOWFALL	NORMAL (IN)	30	5.2	5.3	1.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.5	16.6
	MAXIMUM MONTHLY (IN)	59	41.2	27.6	30.3	7.3	T	T	T	T	T	1.0	13.8	22.6	41.2
	YEAR OF OCCURRENCE		1966	1960	1960	1971	2011	2011	2011	2012	2011	1957	1968	1966	JAN 1966
	MAXIMUM IN 24 HOURS (IN)	59	22.2	18.4	17.4	7.3	T	T	T	T	T	1.0	10.0	16.4	22.2
	YEAR OF OCCURRENCE		1996	1983	1960	1971	2011	2011	2011	2012	2011	1957	1968	1969	JAN 1996
	MAXIMUM SNOW DEPTH (IN)	58	23	18	17	3	0	0	0	0	0	0	8	15	23
	YEAR OF OCCURRENCE		1987	1983	1960	1987							1950	1969	JAN 1987
NORMAL NO. DAYS WITH: SNOWFALL >= 1.0	30	1.1	1.2	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9	3.9	

PRECIPITATION (inches) 2013 ROANOKE (KROA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1984	1.35	4.85	4.30	3.97	4.49	2.34	4.17	9.54	2.69	1.42	2.67	1.84	43.63
1985	2.45	3.64	1.80	1.75	6.89	2.08	4.18	8.67	1.26	3.77	12.36	0.85	49.70
1986	0.93	2.87	1.36	1.67	4.15	0.62	2.83	4.31	3.04	2.76	3.73	5.48	33.75
1987	4.53	4.55	4.11	11.35	2.68	0.71	3.21	1.08	11.09	1.10	5.00	2.16	51.57
1988	1.87	1.07	0.88	3.40	2.76	3.66	3.75	4.30	3.01	1.26	2.42	1.28	29.66
1989	1.31	2.04	2.96	2.54	6.46	7.76	10.09	1.65	8.94	4.13	3.86	2.60	54.34
1990	2.33	2.76	3.42	2.07	7.45	0.83	3.80	4.42	1.86	9.89	1.08	3.79	43.70
1991	3.55	2.10	7.58	2.49	2.88	2.42	7.22	2.31	0.15	0.04	2.51	3.81	37.06
1992	2.51	3.75	2.54	4.89	6.06	6.87	1.73	2.38	2.07	1.90	5.60	2.62	42.92
1993	3.77	3.44	7.91	2.77	2.37	2.49	1.24	1.04	4.58	2.15	2.60	5.27	39.63
1994	4.52	5.34	5.67	5.59	1.69	1.99	7.07	4.22	0.76	1.84	1.53	2.41	42.63
1995	7.28	1.88	1.31	0.79	4.55	10.32	2.34	0.74	2.04	3.49	3.39	2.32	40.45
1996	6.87	2.12	3.75	1.76	4.58	7.65	2.63	6.40	10.14	1.57	4.75	2.72	54.94
1997	2.18	2.21	3.12	2.51	1.04	5.43	3.38	2.22	3.43	1.50	2.65	2.37	32.04
1998	7.97	8.00	5.20	4.58	4.47	2.03	0.86	6.17	1.10	1.47	0.85	2.32	45.02
1999	3.70	2.14	2.77	2.70	2.27	0.85	5.96	2.63	7.38	1.24	2.09	2.46	36.19
2000	2.08	1.69	2.86	5.71	2.67	4.57	7.16	3.16	5.88	0.02	2.08	1.67	39.55
2001	1.79	0.90	4.48	0.81	4.67	1.51	3.13	2.02	2.12	0.43	0.60	2.48	24.94
2002	1.77	0.71	4.00	1.89	2.67	1.40	3.09	2.21	3.54	5.03	4.25	3.16	33.72
2003	1.44	5.80	3.52	4.99	10.11	6.31	5.16	4.03	4.32	1.49	4.14	2.95	54.26
2004	1.63	2.27	2.09	3.45	3.87	6.47	4.31	2.97	11.72	2.38	4.26	2.13	47.55
2005	2.15	2.20	3.72	2.63	2.15	5.07	4.96	3.72	0.23	5.05	3.63	2.36	37.87
2006	3.56	1.56	0.35	3.00	1.46	8.51	1.92	2.35	3.21	5.33	4.22	1.98	37.45
2007	2.40	2.23	3.32	2.60	2.59	2.62	3.22	1.50	1.11	5.33	0.18	2.76	29.86
2008	0.96	1.86	2.27	4.94	2.08	4.64	3.67	4.65	2.20	1.87	1.92	2.25	33.31
2009	2.72	1.22	3.47	3.20	6.87	4.54	5.84	4.43	3.14	2.69	7.44	8.22	53.78
2010	4.61	2.07	3.96	1.35	5.35	1.28	5.73	5.00	6.92	1.69	3.47	1.99	43.42
2011	0.82	2.20	4.23	5.33	3.79	3.51	3.76	1.45	7.39	4.06	4.30	4.19	45.03
2012	1.69	2.21	3.52	3.04	4.03	3.25	3.14	3.99	3.60	1.30	0.61	2.58	32.96
2013	7.21	2.08	3.40	2.94	4.91	6.49	12.73	2.55	1.13	2.54	2.74	4.38	53.10
POR= 66 YRS	2.92	3.00	3.57	3.27	3.90	3.69	3.96	3.83	3.56	3.14	2.98	3.03	40.85

WBAN : 13741

AVERAGE TEMPERATURE (°F) 2013 ROANOKE (KROA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1984	33.6	43.6	43.3	54.2	63.1	74.2	73.2	74.4	64.1	64.3	46.0	47.1	56.8
1985	31.3	38.6	50.3	61.9	67.1	72.7	76.5	73.8	68.4	60.3	55.4	35.1	57.6
1986	35.2	38.3	47.2	58.8	63.9	74.2	78.8	72.4	68.9	59.0	47.4	38.5	56.9
1987	34.2	36.9	46.6	53.2	67.1	75.0	79.3	77.8	68.9	51.5	49.6	41.4	56.8
1988	30.8	37.9	47.5	55.4	63.4	70.9	77.1	77.5	66.0	51.2	46.7	38.9	55.3
1989	41.3	38.2	47.4	54.3	61.2	73.7	75.9	74.1	68.1	58.5	46.0	29.6	55.7
1990	43.7	45.9	51.5	56.0	64.3	72.6	76.8	74.6	68.4	59.2	52.2	43.8	59.1
1991	39.3	42.7	49.2	57.5	69.6	73.5	77.9	74.8	69.3	59.4	46.8	42.4	58.5
1992	39.6	41.5	46.5	55.5	60.2	68.4	77.0	72.1	68.0	55.5	46.3	38.5	55.8
1993	39.7	36.0	42.1	54.5	65.6	71.9	80.3	76.8	68.6	55.3	47.3	36.2	56.2
1994	30.6	39.4	46.7	60.9	60.6	75.1	77.6	73.9	66.9	56.7	51.4	43.0	56.9
1995	38.5	36.9	50.1	56.8	64.4	72.0	76.9	78.6	67.5	58.5	43.2	35.5	56.6
1996	33.7	38.2	41.7	56.3	65.2	72.8	74.4	73.3	66.1	58.0	41.0	40.2	55.1
1997	35.8	43.0	49.7	52.5	60.3	69.2	76.1	73.4	67.7	56.3	43.6	38.3	55.5
1998	41.2	42.2	45.8	56.5	67.1	73.5	77.5	75.9	73.6	59.0	49.0	43.4	58.7
1999	39.8	42.0	44.0	58.2	64.3	72.3	79.2	75.5	66.4	55.7	52.8	42.5	57.7
2000	35.3	43.5	51.7	54.8	67.6	73.8	73.3	72.9	65.9	59.4	44.2	31.1	56.1
2001	37.0	42.9	43.4	59.5	64.8	73.3	74.3	76.9	66.5	56.9	53.2	44.3	57.8
2002	42.0	40.9	48.2	58.8	64.0	74.5	78.0	77.0	70.7	57.6	46.3	37.7	58.0
2003	33.1	35.7	49.6	56.8	62.6	69.6	75.1	76.4	66.7	56.1	52.2	37.9	56.0
2004	34.6	38.5	50.2	58.1	70.8	72.3	76.5	73.4	69.1	59.3	51.4	39.5	57.8
2005	40.5	41.7	44.1	56.8	62.2	72.8	77.8	77.6	71.2	60.2	49.9	36.9	57.6
2006	43.6	39.6	48.6	60.9	63.4	72.2	77.6	78.4	65.2	55.4	50.3	45.1	58.4
2007	41.2	34.2	53.2	56.0	67.6	74.4	75.7	82.2	71.5	63.6	48.3	43.5	59.3
2008	37.5	41.6	49.4	57.0	64.2	75.9	76.1	74.2	69.7	58.2	46.0	41.8	57.6
2009	35.9	42.2	48.3	57.5	65.4	74.1	73.3	76.1	68.8	57.3	51.5	37.3	57.3
2010	33.5	33.1	49.8	60.9	67.8	78.2	79.3	77.2	71.2	60.6	47.3	31.4	57.5
2011	34.7	43.2	47.5	60.1	66.1	75.8	80.2	77.8	68.8	56.9	50.5	44.0	58.8
2012	41.4	44.3	57.4	58.1	69.0	72.7	80.8	75.2	68.3	57.2	44.9	44.7	59.5
2013	41.7	39.3	42.2	58.2	64.4	73.6	77.0	74.0	67.8	59.1	44.1	42.3	57.0
POR= 66 YRS	36.4	38.9	46.7	56.6	64.8	72.5	76.4	75.2	68.1	57.4	47.4	38.9	56.6

HEATING DEGREE DAYS (base 65°F) 2013 ROANOKE (KROA)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1984-85	0	0	120	74	565	549	1041	734	471	168	39	11	3772
1985-86	0	0	55	171	282	918	917	739	551	206	115	1	3955
1986-87	0	22	22	231	523	813	950	782	562	352	58	0	4315
1987-88	0	0	18	412	455	723	1055	778	535	289	101	46	4412
1988-89	1	0	53	423	543	802	726	743	556	340	172	0	4359
1989-90	0	3	63	234	560	1091	654	528	441	297	77	3	3951
1990-91	0	0	38	200	381	652	787	618	486	245	36	4	3447
1991-92	0	0	49	194	539	695	777	677	567	290	172	18	3978
1992-93	0	2	55	290	552	813	777	807	698	310	52	12	4368
1993-94	0	0	52	300	529	886	1061	709	559	172	176	4	4448
1994-95	0	0	22	261	401	675	815	779	454	258	93	0	3758
1995-96	0	0	54	226	647	908	965	771	717	283	118	6	4695
1996-97	0	0	52	221	712	762	898	610	467	369	175	49	4315
1997-98	1	0	32	294	634	819	730	629	615	255	46	22	4077
1998-99	0	0	10	184	473	662	775	638	646	223	61	8	3680
1999-00	5	3	38	289	357	689	913	619	414	301	44	5	3677
2000-01	2	0	86	190	617	1046	863	612	666	221	66	4	4373
2001-02	4	0	70	263	345	638	712	667	516	232	129	0	3576
2002-03	0	0	8	263	558	838	983	813	468	260	113	16	4320
2003-04	0	0	37	272	384	830	935	762	454	243	26	0	3943
2004-05	0	1	10	182	410	782	751	647	640	251	113	9	3796
2005-06	0	0	11	186	447	864	658	704	506	153	123	3	3655
2006-07	0	0	65	296	435	612	731	854	393	297	76	4	3763
2007-08	0	0	21	137	494	659	847	671	477	246	79	0	3631
2008-09	0	2	12	231	565	712	895	630	527	257	79	0	3910
2009-10	0	0	18	237	398	852	966	890	465	161	58	0	4045
2010-11	0	0	20	154	528	1037	934	604	543	190	68	0	4078
2011-12	0	0	33	253	427	648	723	594	250	226	28	6	3188
2012-13	0	0	34	256	597	625	716	714	699	242	117	1	4001
2013-	0	1	35	214	624	695							

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COOLING DEGREE DAYS (base 65°F) 2013 ROANOKE (KROA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1984	0	0	0	20	71	290	260	301	101	56	0	0	1099
1985	0	1	18	78	112	247	365	280	163	34	3	0	1301
1986	0	0	4	24	84	282	438	257	145	48	0	0	1282
1987	0	0	0	4	130	306	450	403	140	0	0	0	1433
1988	0	0	0	7	58	232	386	395	90	1	0	0	1169
1989	0	0	17	27	61	265	344	293	163	38	0	0	1208
1990	0	0	29	34	61	238	377	305	145	27	3	0	1219
1991	0	0	2	29	188	267	407	311	185	28	1	0	1418
1992	0	0	2	12	29	125	377	230	152	4	0	0	931
1993	0	0	0	2	78	226	481	374	166	8	6	0	1341
1994	0	0	0	57	45	317	397	286	84	9	3	0	1198
1995	0	0	0	20	80	220	375	427	134	30	0	0	1286
1996	0	1	0	30	130	247	300	263	93	10	0	0	1074
1997	0	0	0	1	36	181	353	264	121	31	0	0	987
1998	0	0	24	5	120	282	394	344	276	7	0	0	1452
1999	0	0	0	26	47	233	451	336	86	9	0	0	1188
2000	0	0	10	4	131	277	269	253	121	25	0	0	1090
2001	0	0	0	64	67	259	301	377	121	20	0	0	1209
2002	3	0	0	53	105	292	409	378	187	44	1	0	1472
2003	0	0	0	22	42	160	321	360	96	5	8	0	1014
2004	0	0	3	44	211	224	365	271	142	14	6	0	1280
2005	0	0	0	11	37	247	403	399	201	44	0	0	1342
2006	0	0	5	35	79	225	398	420	77	16	1	0	1256
2007	0	0	32	34	163	292	341	537	225	101	0	0	1725
2008	0	0	0	14	64	333	352	292	158	27	0	0	1240
2009	0	0	15	37	96	280	266	353	137	6	0	0	1190
2010	0	0	0	43	156	400	452	386	215	25	0	0	1677
2011	0	0	6	50	109	334	482	403	156	9	0	0	1549
2012	0	0	19	27	156	244	497	325	138	17	0	0	1423
2013	0	0	0	43	107	266	382	291	127	38	2	0	1256

SNOWFALL (inches) 2013 ROANOKE (KROA)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1984-85	0.0	0.0	0.0	0.0	T	0.8	2.7	1.2	1.3	T	0.0	0.0	6.0
1985-86	0.0	0.0	0.0	0.0	0.0	1.2	1.7	7.1	T	T	0.0	0.0	10.0
1986-87	0.0	0.0	0.0	0.0	T	T	27.9	19.1	2.7	6.3	0.0	0.0	56.0
1987-88	0.0	0.0	0.0	0.0	1.7	T	6.7	T	T	T	0.0	0.0	8.4
1988-89	0.0	0.0	0.0	T	0.0	3.8	0.7	9.1	0.2	0.2	T	T	14.0
1989-90	0.0	0.0	0.0	0.0	3.3	11.1	T	0.2	1.5	0.0	T	0.0	16.1
1990-91	0.0	0.0	0.0	0.0	0.0	0.8	T	T	0.4	0.0	0.0	0.0	1.2
1991-92	0.0	0.0	0.0	0.0	T	T	0.4	2.2	0.5	1.9	0.0	0.0	5.0
1992-93	0.0	0.0	0.0	0.0	T	0.9	0.1	10.7	16.0	0.3	0.0	0.0	28.0
1993-94	0.0	0.0	0.0	T	T	6.2	5.2	1.8	3.1	T	0.0	0.0	16.3
1994-95	0.0	0.0	0.0	0.0	T	0.0	9.6	1.2	1.0	0.0	0.0	0.0	11.8
1995-96	0.0	0.0	0.0	0.0	0.4	10.2	28.2	17.1	0.1	T	0.0	0.0	56.0
1996-97	0.0	0.0	0.0	T	0.0	4.0	T	0.0	0.0	0.0	0.0	0.0	4.0
1997-98	0.0	0.0	0.0	0.0	0.0	6.5	4.4	T	T	0.0	0.0	0.0	10.9
1998-99	0.0	0.0	0.0	0.0	0.0	T	2.5	T	4.5	0.0	0.0	0.0	7.0
1999-00	0.0	0.0	0.0	0.0	T	0.0	10.5	0.1	0.0	T	0.0	0.0	10.6
2000-01	0.0	0.0	0.0	0.0	T	3.6	0.2	4.0	0.5	T	0.0	0.0	8.3
2001-02	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.5	0.0	0.0	0.0	0.0	4.1
2002-03	0.0	0.0	0.0	0.0	T	5.8	3.9	8.8	7.0	0.0	0.0	0.0	25.5
2003-04	0.0	0.0	0.0	T	0.0	9.6	7.9	4.4	T	0.0	0.0	0.0	21.9
2004-05	0.0	0.0	0.0	0.0	0.0	T	3.0	9.9	3.2	0.0	0.0	0.0	16.1
2005-06	0.0	0.0	0.0	0.0	0.4	3.7	T	5.9	T	0.0	0.0	0.0	10.0
2006-07	0.0	0.0	T	0.0	0.0	T	T	3.4	T	T	0.0	0.0	3.4
2007-08	0.0	0.0	0.0	0.0	0.0	0.9	4.0	T	T	0.0	0.0	0.0	4.9
2008-09	0.0	0.0	0.0	0.0	0.4	T	0.0	0.4	3.6	0.0	0.0	0.0	4.4
2009-10	0.0	0.0	0.0	0.0	T	19.0	9.9	13.7	0.5	0.0	0.0	0.0	43.1
2010-11	0.0	T	0.0	0.0	0.0	7.2	2.4	0.6	0.2	0.0	T	T	10.4
2011-12	T	0.0	T	T	0.0	0.0	0.4	5.5	0.2	T	0.0	0.0	6.1
2012-13	0.0	T	0.0	T	0.0	0.3	5.0	4.0	8.0	1.0	0.0	0.0	18.3
2013-	0.0	0.0	0.0	0.0	T	T							
POR= 66 YRS	T	T	T	T	1.0	3.8	5.7	6.4	3.1	0.3	T	T	20.3

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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. 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 CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS.</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</p>	<p>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 EIGHTHS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER. STATION HISTORY STOPPED WITH THE 2009 ANNUAL. IF YOU NEED STATION HISTORY INFORMATION GO TO "Historical Observing Metadata Repository", URL IS: http://www.ncdc.noaa.gov/homr/ SNOWFALL STOPPED MONTH & YEAR INDICATED ABOVE. NO FURTHER YEARS INCLUDED UNLESS RESTARTED.</p> <p>NOTE: The "Period of Record:(POR)" for all "averages" is based on "Summary of the Day First Order Station" and "Cooperative Summary of the Day" archives.</p>
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2013 ROANOKE VIRGINIA (KROA)

The climate of Roanoke is relatively mild. Roanoke is nestled among mountains which interrupt the Great Valley, extending from northernmost Virginia southwestward into east Tennessee. This location, at a point where the valley is pinched between the Blue Ridges and the Alleghenies, offers a natural barrier to the winter cold as it moves southward. It is also far enough inland that hurricanes lose much of their destructive force before reaching Roanoke. Finally, the rough terrain is an inhospitable breeding ground for tornadic activity. The elevation in the vicinity usually produces cool summer nights that make a light cover comfortable for sleeping. Although past records show extremes over 100 degrees and below zero, many years pass without either extreme being threatened.

Roanoke is located near the headwaters of the Roanoke River, which flows in a general southeasterly direction. Numerous creeks and small streams from nearby mountainous areas empty

into the Roanoke River. The usual low water stage is 1 to 1.5 feet, and flood stage is 10 feet. Some low-lying streets in Roanoke and nearby Salem have to be blocked off during 7 to 8 foot stages, but damage is minor until the river overflows its banks. The highest stage on record exceeds 19 feet. Damage has been widespread on occasion and has amounted to several million dollars in the city of Roanoke alone.

The growing season averages 190 days. The average date of the last freezing temperature in spring is mid-April and the average date of the first freezing date in the fall is late October.

Rainfall is well apportioned throughout the year. Droughts are so infrequent that quoting actual records would be difficult. Snow usually falls each winter, ranging from only a trace to more than 60 inches.

Station History

ROANOKE, VA

NAME	Begin Date	End Date	Latitude	Longitude	Elevation Feet	Relocation	Platform
ROANOKE WOODRUM AP	1981-12-31	1996-05-01	37° 19'	-79° 58'	1149		COOP
ROANOKE REGIONAL AP	1996-05-01	2011-10-26	37° 19'	-79° 58'	1175		ASOS, COOP
ROANOKE REGIONAL AP	2011-10-26	Present	37° 19'	-79° 58'	1175		ASOS, COOP
ROANOKE WOODRUM FIELD	1952-01-01	1958-12-01	37° 19'	-79° 58'	1149		AIRWAYS, COOP
ROANOKE WOODRUM FIELD	1948-01-01	1952-01-01	37° 19'	-79° 58'	1201		AIRWAYS, COOP
ROANOKE WOODRUM AP	1958-12-01	1964-12-01	37° 19'	-79° 58'	1149		AIRWAYS, COOP
WOODRUM	1936-01-01	1936-03-15	37° 19'	-79° 58'			AIRWAYS
ROANOKE WOODRUM AP	1971-12-01	1981-12-31	37° 19'	-79° 58'	1149		COOP, WXSVC
ROANOKE WOODRUM FIELD	1936-03-15	1948-01-01	37° 19'	-79° 58'			AIRWAYS
WOODRUM	1934-07-01	1935-07-31	37° 19'	-79° 58'			AIRWAYS
ROANOKE MUNICIPAL AP	1964-12-01	1969-01-01	37° 19'	-79° 58'	1149		AIRWAYS, COOP
ROANOKE MUNICIPAL AP	1969-01-01	1971-12-01	37° 19'	-79° 58'	1149		COOP, WXSVC

Element History

Element	Begin Date	End Date	Frequency	Time Of Observation	Equipment *	Equipment * Modifications	Equipment Exposure
PRECIP	1964-08-01	1987-01-01	HOURLY	2400			
PRECIP	1987-01-01	1995-07-01	DAILY	2400	UNIV	RCRD	ROOF
TEMP	2009-07-10	2011-10-26	DAILY	2400	HYGR		
PRECIP	2011-10-26	Present	HOURLY	2400	AHTB	RCRD;HTD	
TEMP	1964-08-01	1987-01-01	DAILY	2400			
PRECIP	1995-07-01	1996-05-01	DAILY	2400	UNIV	RCRD	ROOF
TEMP	1996-05-01	2009-07-10	DAILY	2400	HYGR		
PRECIP	2009-07-10	2011-10-26	DAILY	2400	PCPN1		
PRECIP	2011-10-26	Present	DAILY	2400	PCPNX		
TEMP	2011-10-26	Present	DAILY	2400	ATEMP		
PRECIP	1964-08-01	1987-01-01	DAILY	2400	UNIV	RCRD	ROOF
TEMP	1995-07-01	1996-05-01	DAILY	2400	HYGR		ROOF
PRECIP	1996-05-01	2009-07-10	HOURLY	2400	TB	RCRD	
TEMP	1934-07-01	1964-08-01	DAILY	2400			
PRECIP	1934-07-01	1964-08-01	DAILY	2400	UNIV	RCRD	ROOF
TEMP	1987-01-01	1995-07-01	DAILY	2400	HYGR		ROOF
PRECIP	1995-07-01	1996-05-01	HOURLY	2400	UNIV	RCRD	ROOF
SNOWDEPTH	2011-10-26	Present	DAILY	2400	SNOWSTICK		
PRECIP	1987-01-01	1995-07-01	HOURLY	2400			
PRECIP	1996-05-01	2009-07-10	DAILY	2400	TB	RCRD	
PRECIP	2009-07-10	2011-10-26	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>

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