

2004

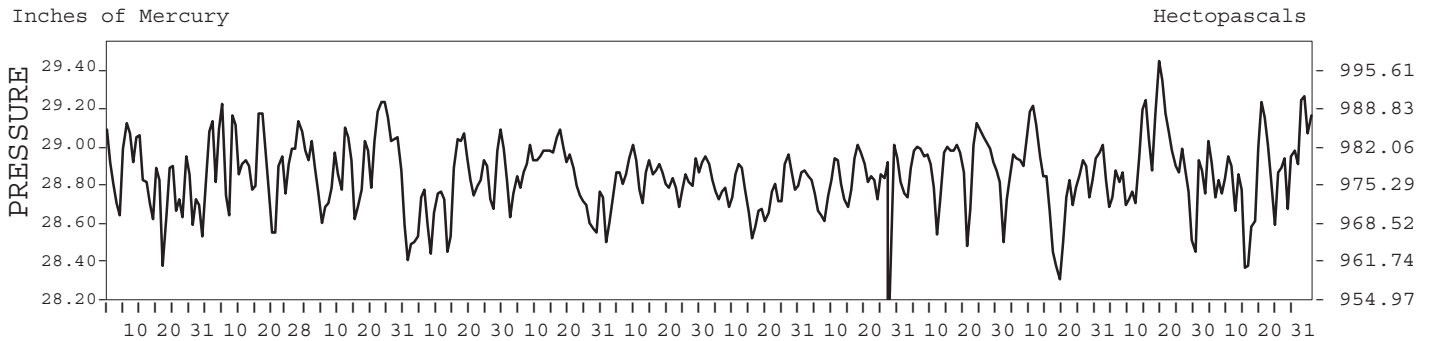
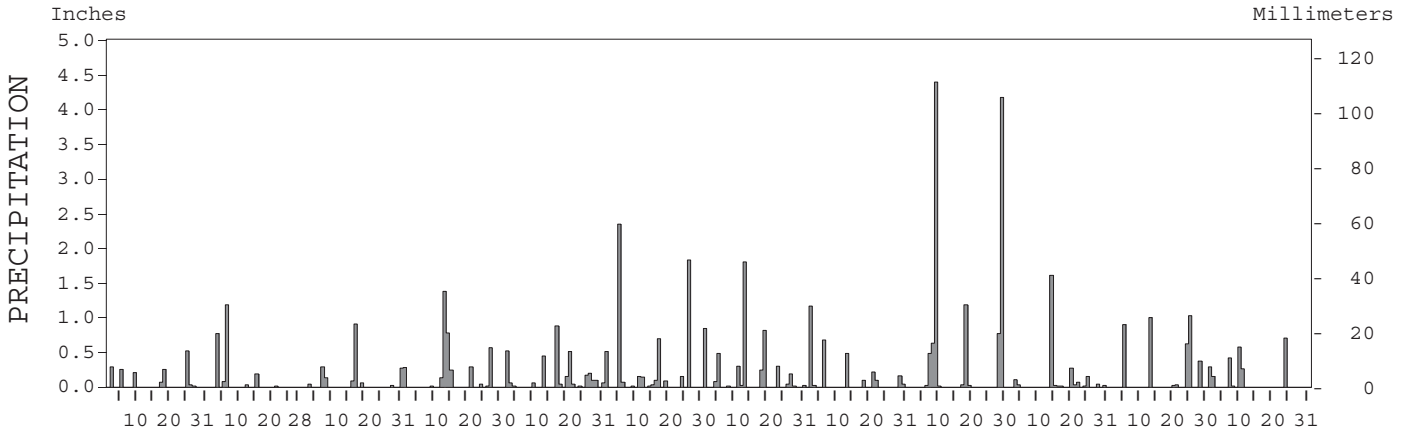
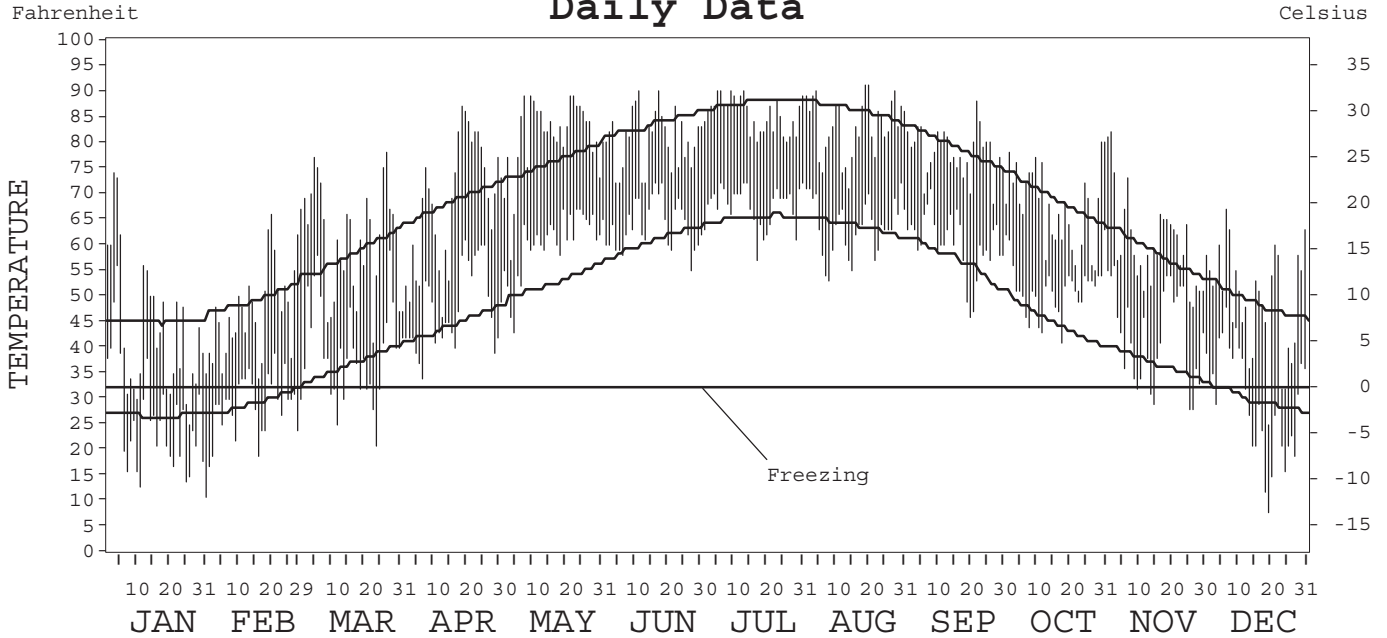
LOCAL CLIMATOLOGICAL DATA  
ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 0198-5388

ROANOKE,  
VIRGINIA (ROA)

Daily Data



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*Thomas R. Karl*

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE	NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NORTH CAROLINA	DIRECTOR NATIONAL CLIMATIC DATA CENTER
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# METEOROLOGICAL DATA FOR 2004

## ROANOKE, VA (ROA)

LATITUDE: 37° 19' 01" N      LONGITUDE: 79° 58' 27" W      ELEVATION (FT): GRND: 1189      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	43.4	48.0	60.8	68.5	81.1	80.7	85.4	83.1	78.0	67.2	60.5	49.3	67.2	
	HIGHEST DAILY MAXIMUM	74	67	78	87	89	90	90	91	88	80	82	67	91	
	DATE OF OCCURRENCE	03	29	26	18	22+	17+	13+	20+	22	31+	02	07	AUG 20+	
	MEAN DAILY MINIMUM	25.8	28.9	39.5	47.6	60.4	63.8	67.6	63.6	60.2	51.4	42.2	29.6	48.4	
	LOWEST DAILY MINIMUM	11	17	21	34	43	55	57	53	46	41	28	8	8	
	DATE OF OCCURRENCE	31	01	23	06	04	27	17	08	20	18	27+	20	DEC 20	
	AVERAGE DRY BULB	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	
	MEAN WET BULB	30.0	32.5	43.4	49.5	63.6	65.9	68.4		63.0	53.8	45.7			
	MEAN DEW POINT	20.4	22.0	34.1	40.6	59.3	62.3	64.4		59.0	49.6	38.6			
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	0	2	4	4	0	0	0	0	0	10
MAXIMUM ≤ 32°	7	0	0	0	0	0	0	0	0	0	0	3	0	10	
MINIMUM ≤ 32°	25	20	9	0	0	0	0	0	0	0	5	18	0	77	
MINIMUM ≤ 0°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
H/C	HEATING DEGREE DAYS	935	762	454	243	26	0	0	1	10	182	410	782	3805	
	COOLING DEGREE DAYS	0	0	3	44	211	224	365	271	142	14	6	0	1280	
RH	MEAN (PERCENT)	58	55	57	56	71	74	70	71	73	75	64	58	65	
	HOUR 01 LST	61	65	62	61	81	83	82	84	83	84	68	61	73	
	HOUR 07 LST	63	66	71	67	79	84	81	84	85	86	75	66	76	
	HOUR 13 LST	55	44	48	48	56	61	54	55	59	63	53	49	54	
	HOUR 19 LST	56	48	52	50	65	69	63	65	69	71	61	53	60	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	1	1	0	1	2	1	1	2	0	1	1	1	12	
	THUNDERSTORMS	0	0	0	3	15	6	7	6	1	1	0	2	41	
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.)	28.79	28.92	28.90	28.74	28.82	28.82	28.76		28.87	28.81	28.91	28.86		
	MEAN SEA-LEVEL PRESS. (IN.)	30.07	30.19	30.15	29.98		30.05	29.97		30.10	30.05	30.16			
WINDS	RESULTANT SPEED (MPH)	6.9	3.0	3.3	3.9	2.3	1.5	1.8		1.6	1.0	1.5	4.9		
	RES. DIR. (TENS OF DEGS.)	29	31	28	29	25	28	03		07	23	31	29		
	MEAN SPEED (MPH)	9.4	6.2	7.8	8.2	6.2	5.4	5.4	4.0	5.1	4.1	4.7	7.2	6.1	
	PREVAIL. DIR. (TENS OF DEGS.)	30	30	29	30	27	28	29	26	13	14	30	30	30	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	39	31	44	35	30	30	28	23	30	28	37	37	44	
	DIR. (TENS OF DEGS.)	30	31	32	29	31	33	32	05	32	28	29	28	32	
	DATE OF OCCURRENCE	15	07	07	04	26+	01	10+	01	17	16	25	01	MAR 07	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	47	40	51	45	41	38	33	30	40	38	45	53	53	
DIR. (TENS OF DEGS.)	31	31	31	29	24	32	04	25	31	29	31	28	28		
DATE OF OCCURRENCE	28+	07	07	04	02	01	18+	20	17	16	25	01	DEC 01		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	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	
	GREATEST 24-HOUR (IN.)	0.55	1.25	1.00	1.39	0.88	2.41	1.82	1.17	4.93	1.61	1.15	0.71	4.93	
	DATE OF OCCURRENCE	25-26	05-06	15-16	11-12	16	04-05	11-12	01	07-08	13	23-24	23	SEP 07-08	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	8	6	9	9	17	13	13	9	10	13	8	6	121	
PRECIPITATION ≥ 0.10	5	3	5	6	10	8	7	7	6	4	6	5	72		
PRECIPITATION ≥ 1.00	0	1	0	1	0	2	1	1	3	1	2	0	12		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)	7.9	4.4	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	12.3	
	GREATEST 24-HOUR (IN.)	4.0	2.4	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	4.0	
	DATE OF OCCURRENCE	25	03	10									19+	JAN 25	
	MAXIMUM SNOW DEPTH (IN.)	4	3	0	0	0	0	0	0	0	0	0	0	4	
	DATE OF OCCURRENCE	30+	03											JAN 30+	
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0	2	2	0	0	0	0	0	0	0	0	0	0	4		

# NORMALS, MEANS, AND EXTREMES

## ROANOKE, VA (ROA)

LATITUDE: 37° 19' 01" N      LONGITUDE: 79° 58' 27" W      ELEVATION (FT): GRND: 1189      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	45.0	49.1	57.9	68.0	75.9	83.3	87.5	86.0	78.8	68.6	58.0	48.6	67.2
	MEAN DAILY MAXIMUM	57	45.1	48.6	57.1	67.8	76.1	83.3	87.0	85.4	78.7	68.7	57.6	47.7	66.9
	HIGHEST DAILY MAXIMUM	57	79	80	87	95	96	100	104	105	101	93	83	80	105
	YEAR OF OCCURRENCE		2002	1985	1986	1957	1962	1959	1954	1983	1954	1951	1950	1998	AUG 1983
	MEAN OF EXTREME MAXS.	57	66.1	69.4	77.9	85.6	89.3	93.3	95.7	94.4	91.2	83.1	75.1	67.1	82.3
	NORMAL DAILY MINIMUM	30	26.6	29.0	36.5	44.2	52.3	60.4	64.9	63.4	56.6	44.6	36.6	29.6	45.4
	MEAN DAILY MINIMUM	57	27.0	28.8	35.7	44.7	53.1	61.0	65.5	64.2	57.2	45.8	37.0	29.4	45.8
	LOWEST DAILY MINIMUM	57	-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.	57	8.9	12.7	19.8	28.8	38.7	47.9	55.1	53.7	41.9	30.4	21.0	12.4	30.9
	NORMAL DRY BULB	30	35.8	39.1	47.2	56.1	64.1	71.9	76.2	74.7	67.7	56.6	47.3	39.1	56.3
	MEAN DRY BULB	57	36.0	38.7	46.4	56.2	64.8	72.0	76.3	74.8	68.0	57.1	47.2	38.6	56.3
	MEAN WET BULB	20	31.6	34.3	40.5	48.7	57.7	65.3	69.0	68.1	58.9	51.4	42.5	32.0	50.0
	MEAN DEW POINT	20	22.9	25.2	31.1	40.3	52.3	61.3	65.0	64.6	55.1	45.6	35.4	24.4	43.6
	NORMAL NO. DAYS WITH:														
MAXIMUM ≥ 90°	30	0.0	0.0	0.0	0.4	0.6	5.2	10.8	8.1	2.3	0.0	0.0	0.0	27.4	
MAXIMUM ≤ 32°	30	4.4	2.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.3	9.7	
MINIMUM ≤ 32°	30	22.3	19.0	11.5	2.5	0.1	0.0	0.0	0.0	0.0	2.2	10.3	19.3	87.2	
MINIMUM ≤ 0°	30	0.4	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	
H/C	NORMAL HEATING DEG. DAYS	30	911	741	569	290	107	13	1	2	48	276	528	798	4284
	NORMAL COOLING DEG. DAYS	30	0	0	4	20	74	217	355	309	136	17	2	0	1134
RH	NORMAL (PERCENT)	30	63	61	58	58	67	70	71	73	74	69	66	65	66
	HOUR 01 LST	30	69	66	65	65	78	83	84	86	87	81	73	70	76
	HOUR 07 LST	30	71	71	71	71	80	82	84	88	89	84	77	73	78
	HOUR 13 LST	30	54	51	49	47	53	55	55	56	58	52	53	55	53
	HOUR 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)	57	2.6	2.7	2.0	1.0	1.7	1.0	1.3	1.5	2.4	1.9	2.1	2.3	22.5
	THUNDERSTORMS	57	0.1	0.2	1.1	2.9	6.3	6.6	8.3	6.4	2.6	0.9	0.4	0.1	35.9
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)	31	28.82	28.81	28.77	28.75	28.77	28.78	28.81	28.84	28.86	28.87	28.86	28.84	28.82
	MEAN SEA-LEVEL PRES. (IN)	20	30.11	30.10	30.05	30.00	29.99	30.00	30.02	30.05	30.07	30.12	30.12	30.13	30.06
WINDS	MEAN SPEED (MPH)	45	9.3	9.1	9.5	9.3	7.5	6.7	6.4	6.0	5.9	6.5	7.6	8.4	7.7
	PREVAIL. DIR (TENS OF DEGS)	29	30	30	30	30	30	27	27	27	13	30	30	30	30
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	8	44	40	44	39	39	36	40	34	36	37	40	38	44
	DIR. (TENS OF DEGS)		28	26	32	30	31	30	04	32	35	30	30	30	32
	YEAR OF OCCURRENCE		2000	2003	2004	1999	2002	2002	1997	1997	2003	2003	2003	2002	MAR 2004
	MAXIMUM 5-SECOND:														
SPEED (MPH)	8	53	52	53	51	51	45	47	49	45	49	55	53	55	
DIR. (TENS OF DEGS)		28	27	29	29	26	30	04	28	29	27	18	28	18	
YEAR OF OCCURRENCE		2000	2003	1997	1999	2001	2002	1997	1997	1999	2003	2003	2004	NOV 2003	
PRECIPITATION	NORMAL (IN)	30	3.23	3.08	3.84	3.61	4.24	3.68	4.00	3.74	3.85	3.15	3.21	2.86	42.49
	MAXIMUM MONTHLY (IN)	57	7.97	8.00	7.91	11.35	10.11	10.32	10.09	9.54	11.72	9.89	12.36	7.10	12.36
	YEAR OF OCCURRENCE		1998	1998	1993	1987	2003	1995	1989	1984	2004	1990	1985	1948	NOV 1985
	MINIMUM MONTHLY (IN)	57	0.29	0.56	0.43	0.48	1.04	0.62	0.45	0.74	0.15	0.02	0.44	0.18	0.02
	YEAR OF OCCURRENCE		1981	1968	1966	1976	1997	1986	1977	1995	1991	2000	1960	1965	OCT 2000
	MAXIMUM IN 24 HOURS (IN)	57	3.64	3.32	3.09	5.57	3.99	3.98	2.74	5.22	6.60	6.41	6.63	3.40	6.63
	YEAR OF OCCURRENCE		1995	1994	1998	1978	1973	1972	1989	1985	1987	1968	1985	1948	NOV 1985
	NORMAL NO. DAYS WITH:														
PRECIPITATION ≥ 0.01	30	10.1	9.8	10.8	10.1	12.2	10.4	11.5	9.6	8.9	7.8	8.3	9.4	118.9	
PRECIPITATION ≥ 1.00	30	0.7	0.6	0.9	0.8	1.0	0.8	1.1	1.2	1.0	1.0	0.8	0.4	10.3	
SNOWFALL	NORMAL (IN)	30	6.1	7.6	3.0	0.5	0.*	0.0	0.0	0.0	0.*	0.8	2.9	20.9	
	MAXIMUM MONTHLY (IN)	50	41.2	27.6	30.3	7.3	T	T	0.0	0.0	T	1.0	13.8	22.6	41.2
	YEAR OF OCCURRENCE		1966	1960	1960	1971	1990	1989			1953	1957	1968	1966	JAN 1966
	MAXIMUM IN 24 HOURS (IN)	50	22.2	18.4	17.4	7.3	T	T	0.0	0.0	T	1.0	10.0	16.4	22.2
	YEAR OF OCCURRENCE		1996	1983	1960	1971	1990	1989			1953	1957	1968	1969	JAN 1996
	MAXIMUM SNOW DEPTH (IN)	49	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	1.4	1.7	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	5.1	

PRECIPITATION (inches) 2004 ROANOKE, VA (ROA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1975	3.59	3.05	7.80	2.04	6.65	1.54	5.15	5.68	6.46	3.01	1.77	3.67	50.41
1976	2.16	1.27	4.54	0.48	6.13	5.20	1.24	2.20	3.17	9.72	1.31	2.59	40.01
1977	1.46	0.73	2.61	3.50	1.52	2.41	0.45	2.29	2.71	4.70	6.46	2.49	31.33
1978	6.12	0.65	5.92	7.54	4.85	2.05	4.83	6.33	0.52	0.78	2.55	3.15	45.29
1979	5.27	5.37	3.38	3.99	2.65	5.78	3.97	3.37	9.18	3.56	3.77	1.13	51.42
1980	4.10	0.67	5.41	5.51	2.66	1.81	5.18	2.87	1.66	2.30	1.78	0.60	34.55
1981	0.29	2.43	2.30	1.75	4.56	2.49	2.86	1.32	4.52	3.90	0.68	3.79	30.89
1982	3.76	4.75	2.33	2.01	4.83	4.99	3.98	5.20	2.67	4.13	3.65	2.53	44.83
1983	1.28	4.12	6.41	7.95	3.17	2.38	1.67	2.23	1.52	7.73	4.26	5.61	48.33
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
POR= 57 YRS	2.94	3.15	3.66	3.63	3.95	3.61	3.76	3.86	3.59	3.07	2.91	2.95	41.08

WBAN : 13741

AVERAGE TEMPERATURE (°F) 2004 ROANOKE, VA (ROA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1975	39.6	40.4	42.2	52.9	66.5	71.5	74.5	77.0	66.6	60.0	51.1	38.8	56.8
1976	33.4	46.7	50.8	57.4	62.3	70.0	74.0	72.1	65.2	50.3	40.2	34.3	54.7
1977	23.6	36.6	52.5	58.9	68.1	71.1	79.7	77.8	70.4	53.6	48.5	35.9	56.4
1978	27.8	29.5	44.2	56.3	63.8	72.7	76.0	77.5	71.4	54.0	49.5	39.5	55.2
1979	31.4	29.4	48.6	55.7	63.8	69.3	73.5	74.0	66.3	54.6	49.6	40.9	54.8
1980	37.5	34.0	43.5	56.7	64.8	70.0	78.1	76.8	71.5	55.5	45.4	38.7	56.0
1981	32.0	38.2	43.1	58.6	60.9	74.0	76.1	73.4	66.1	53.7	45.2	32.8	54.5
1982	28.7	38.1	44.8	50.8	67.5	70.1	75.5	72.3	65.8	57.4	47.8	42.4	55.1
1983	35.6	36.5	47.0	52.4	61.0	70.1	77.0	77.9	68.1	57.1	47.1	34.9	55.4
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
POR= 57 YRS	36.1	38.8	46.5	56.6	64.8	72.1	76.3	74.8	68.0	57.1	47.3	38.6	56.4

HEATING DEGREE DAYS (base 65°F) 2004 ROANOKE, VA (ROA)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1975-76	0	0	59	173	415	809	973	523	438	271	126	22	3809
1976-77	0	3	47	452	735	945	1275	786	385	203	56	23	4910
1977-78	0	0	18	350	496	896	1147	989	637	261	112	4	4910
1978-79	0	0	29	335	461	784	1037	992	512	279	88	15	4532
1979-80	3	9	49	329	458	738	848	893	656	266	78	14	4341
1980-81	0	0	30	301	582	807	1016	744	672	212	158	3	4525
1981-82	0	0	58	357	589	991	1121	746	618	421	51	3	4955
1982-83	0	6	61	264	509	695	904	792	551	381	157	14	4334
1983-84	1	0	87	246	531	924	966	614	664	336	123	6	4498
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-	0	1	10	182	410	782							

WBAN : 13741

COOLING DEGREE DAYS (base 65°F) 2004 ROANOKE, VA (ROA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1975	0	0	0	5	108	213	301	379	114	27	5	0	1152
1976	0	0	8	53	49	179	285	230	58	1	0	0	863
1977	0	0	7	28	158	214	461	400	185	4	7	0	1464
1978	0	0	0	7	79	243	347	391	228	2	0	0	1297
1979	0	0	10	7	56	150	273	296	97	12	1	0	902
1980	0	0	0	21	78	171	412	374	231	13	0	0	1300
1981	0	0	2	26	39	278	350	267	97	13	0	0	1072
1982	0	0	0	0	137	165	332	242	90	35	0	0	1001
1983	0	0	0	11	41	172	382	407	188	10	0	0	1211
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

SNOWFALL (inches) 2004 ROANOKE, VA (ROA)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1975-76	0.0	0.0	0.0	0.0	T	0.1	T	T	2.2	0.0	0.0	0.0	2.3
1976-77	0.0	0.0	0.0	0.0	2.4	6.4	8.9	1.5	T	T	0.0	0.0	19.2
1977-78	0.0	0.0	0.0	T	2.4	0.4	14.5	9.6	10.4	0.0	0.0	0.0	37.3
1978-79	0.0	0.0	0.0	0.0	1.6	T	3.0	19.3	T	0.0	0.0	0.0	23.9
1979-80	0.0	0.0	0.0	0.3	T	0.2	15.1	4.2	12.0	T	0.0	0.0	31.8
1980-81	0.0	0.0	0.0	T	T	T	1.4	T	10.4	0.0	0.0	0.0	11.8
1981-82	0.0	0.0	0.0	0.0	4.0	3.9	8.4	12.2	0.5	1.9	0.0	0.0	30.9
1982-83	0.0	0.0	0.0	T	0.0	6.2	3.8	24.3	0.3	0.4	0.0	0.0	35.0
1983-84	0.0	0.0	0.0	0.0	T	0.6	7.2	1.5	0.3	0.2	0.0	0.0	9.8
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			
1996-97													
1997-98													
1998-99													
1999-00													
2000-01													
2001-02													
2002-03													
2003-04							7.9	4.4	T	0.0	0.0	0.0	
2004-	0.0	0.0	0.0	0.0	0.0	T							
POR= 49 YRS	0.0	0.0	T	0.0	1.5	3.9	6.6	6.8	3.6	0.4	T	T	22.8

WBAN : 13741

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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## 2004 ROANOKE, VIRGINIA (ROA)

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 LOCATION

ROANOKE, VIRGINIA

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											
							GROUND	WIND	EXTREME	PSYCHROMETER	SUNSHINE	TIPPING GAUGE	WEIGHING	RAIN	8 INCH			HYGROMETER
*NOTE:																		
<u>AIRPORT</u>																		
No. 1 Hangar Woodrum Field	3/15/36	?/?/38	4.2 mi. NNW of P.O.	37°19'	79°58'	1174	30	5							4	CAA Airways Communication Station commissioned 3/15/36.		
CAA Watch House	?/?/38	3/28/41		37°19'	79°58'	1180	26	5	5						4	CAA Watch House moved 3/28/41.		
CAA Watch House	3/28/41	1/25/44	400 ft. NW	37°19'	79°58'	1184	26	5	5						4	Trees 100 feet high 200 feet North affecting winds from N or NW.		
CAA Control Tower	1/25/44	7/22/47	200' NW	37°19'	79°58'	1190	52	5	5						3			
Canaday House	7/22/47	7/17/52	100' E	37°10'	79°58'	1192	52	5	5				3	3		First Order Weather Bureau Station established 7/22/47.		
Administration Building Woodrum Airport	7/17/52	05/01/96	200' W	37°19'	79°58'	c1149	a30	d23	e23			19	19	b5		a. 60 feet to 8/10/64 and 20 feet to 3/30/66. b. Commissioned 1400 feet SW of thermometer site 8/10/64. c. 1174 feet to 8/10/64. d. Removed 8/10/64. e. Standby status 8/10/64.		
Woodrum Airport	05/01/96	Present		37°19'	79°58'	f1189									S	ASOS Commissioned 05/01/96 f. Ground elevation.		

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\* NOTES: For earlier station history see previous edition.