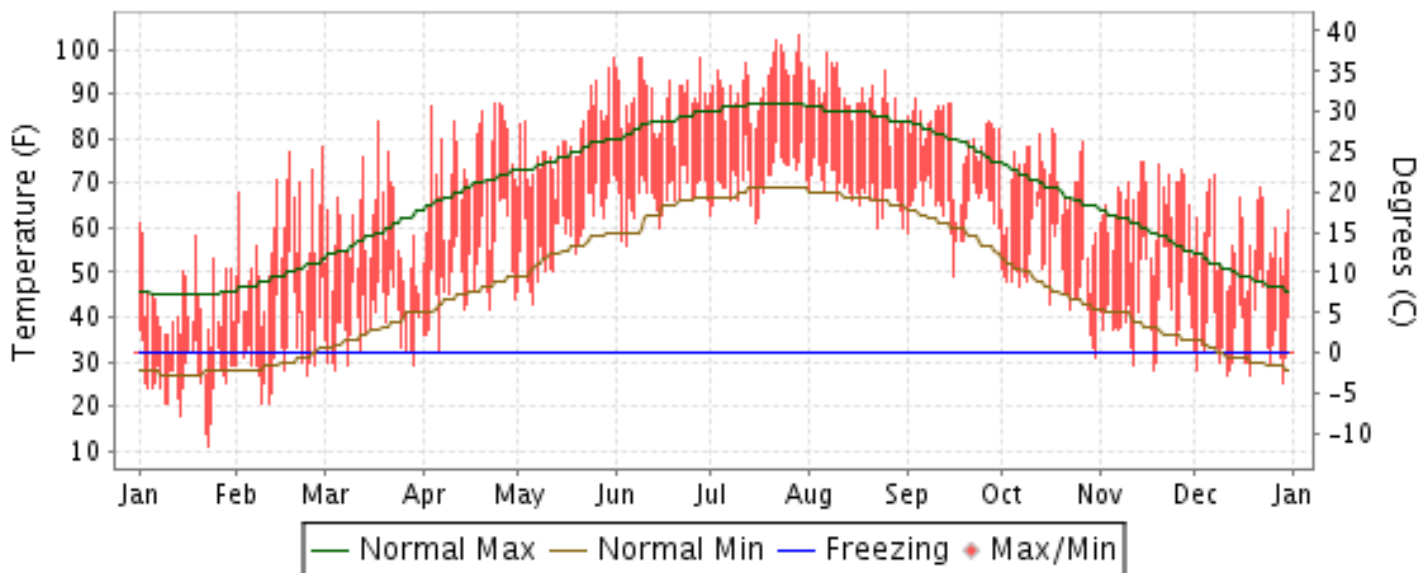


2011 LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA

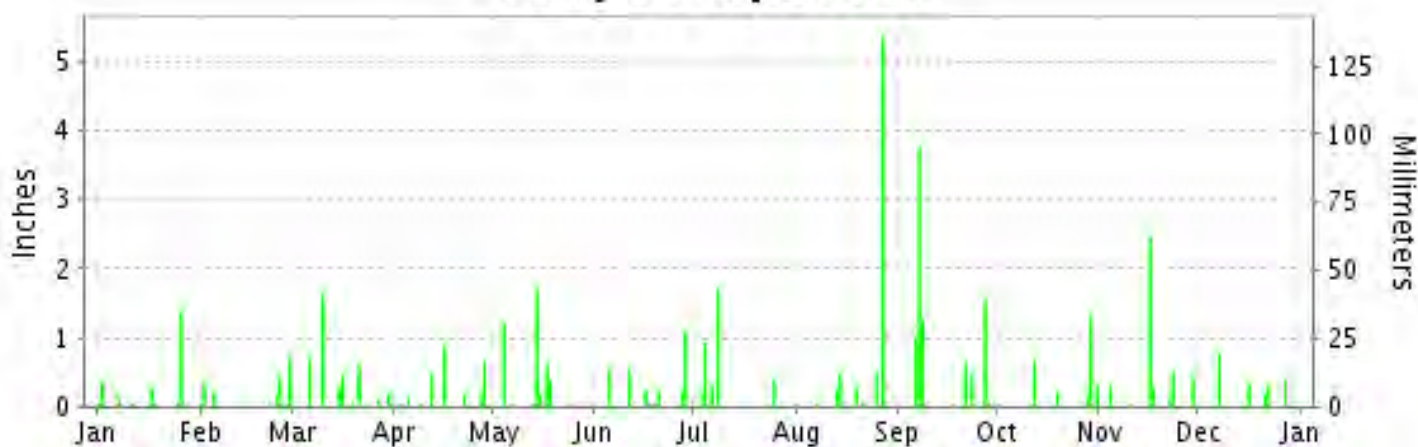
ISSN 0198-5361

RICHMOND, VIRGINIA (KRIC)

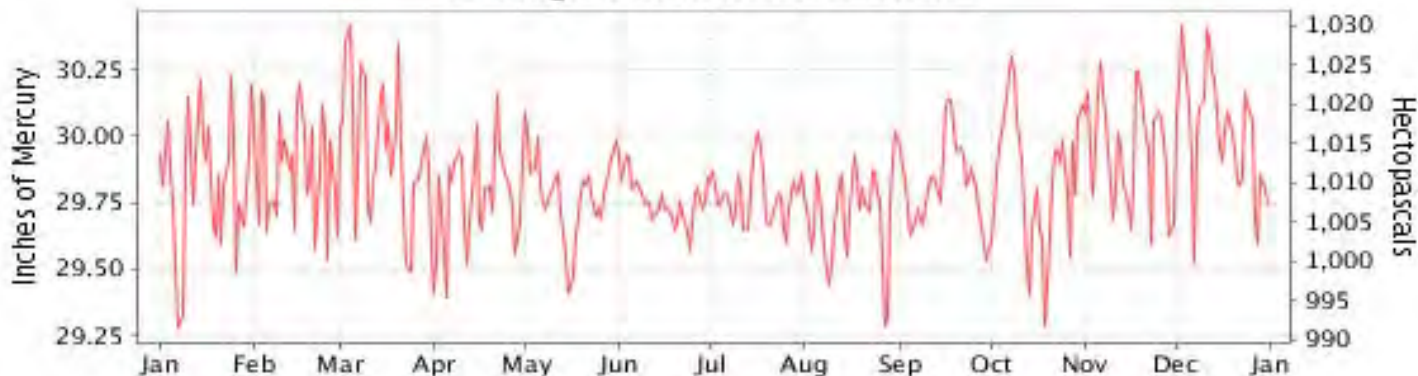
Daily Max/Min Temperature



Daily Precipitation



Daily Station Pressure



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NATIONAL
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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 2011

RICHMOND (KRIC)

LATITUDE: 37° 30'N LONGITUDE: -77° 19'W ELEVATION (FT): GRND: 164 BARO: 167 TIME ZONE: EASTERN (UTC -5) WBAN: 13740

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	42.8	56.5	58.9	73.6	80.0	88.9	92.8	89.5	80.6	69.3	65.0	57.1	71.3	
	HIGHEST DAILY MAXIMUM	61	78	84	88	98	98	103	99	89	82	75	72	103	
	DATE OF OCCURRENCE	01	28	18	25+	31	28+	29	07+	04	17	15+	07	JUL 29	
	MEAN DAILY MINIMUM	25.9	33.1	38.4	49.9	58.2	67.2	71.1	68.4	64.5	49.4	41.9	35.5	50.3	
	LOWEST DAILY MINIMUM	11	21	28	32	43	56	61	60	49	31	28	25	11	
	DATE OF OCCURRENCE	23	11+	04	06	06	04	15	31+	16	31	18	29	JAN 23	
	AVERAGE DRY BULB	34.4	44.8	48.7	61.8	69.1	78.1	82.0	79.0	72.6	59.4	53.5	46.3	60.8	
	MEAN WET BULB	30.5	37.8	42.5	54.3	62.0	68.3	72.9	70.0	67.0	53.1	47.6	41.8	54.0	
	MEAN DEW POINT	22.4	26.5	33.7	47.2	57.5	62.9	68.9	65.3	64.2	47.8	41.8	35.4	47.8	
	NUMBER OF DAYS WITH:														
	MAXIMUM >= 90°	0	0	0	0	4	14	23	13	0	0	0	0	0	54
MAXIMUM <= 32°	2	0	0	0	0	0	0	0	0	0	0	0	0	2	
MINIMUM <= 32°	27	16	8	1	0	0	0	0	0	1	3	14	70		
MINIMUM <= 0°	0	0	0	0	0	0	0	0	0	0	0	0	0		
H/C	HEATING DEGREE DAYS	942	559	500	170	35	0	0	0	17	197	340	573	3333	
	COOLING DEGREE DAYS	0	1	1	81	169	398	531	439	250	28	2	0	1900	
RH	MEAN (PERCENT)	65	55	61	62	71	64	68	68	79	70	70	67	67	
	HOUR 01 LST	72	66	72	75	86	80	84	83	89	82	80	76	79	
	HOUR 07 LST	74	69	68	70	74	66	72	71	85	79	81	79	74	
	HOUR 13 LST	51	38	44	46	50	44	46	48	64	48	49	48	48	
	HOUR 19 LST	64	52	60	61	72	67	72	69	82	74	72	69	68	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG(VISBY <= 1/4 MI)	2	1	0	1	1	1	0	2	3	2	3	2	18	
	THUNDERSTORMS	1	0	4	3	5	7	8	8	5	1	1	0	43	
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.)	29.84	29.88	29.94	29.77	29.78	29.76	29.77	29.71	29.83	29.85	29.95	30.01	29.84	
	MEAN SEA-LEVEL PRESS. (IN.)	30.04	30.08	30.13	29.97	29.97	29.94	29.95	29.90	30.01	30.03	30.15	30.21	30.03	
WINDS	RESULTANT SPEED (MPH)	1.7	3.5	0.6	5.5	2.7	1.6	1.7	0.6	1.1	1.9	2.5	2.1	1.6	
	RES. DIR. (TENS OF DEGS.)	33	26	06	21	19	25	19	27	14	27	22	23	23	
	MEAN SPEED (MPH)	6.2	8.9	8.4	10.4	6.5	6.3	5.4	7.3	5.2	6.8	7.5	6.6	7.1	
	PREVAIL.DIR.(TENS OF DEGS.)	32	21	02	19	18	20	19	18	18	23	20	19	19	
	MAXIMUM 2-MINUTE WIND														
	SPEED (MPH)	25	39	41	41	39	38	37	46	33	30	33	51	51	
	DIR. (TENS OF DEGS.)	29	31	20	24	22	34	35	35	36	36	34	29	29	
	DATE OF OCCURRENCE	08	25	23	05	24	11	03	27	15	27	23	07	DEC 07	
	MAXIMUM 3-SECOND WIND:														
	SPEED (MPH)	32	52	61	58	52	47	53	70	47	40	47	64	70	
DIR. (TENS OF DEGS.)	30	28	25	24	22	05	16	34	36	36	33	31	34		
DATE OF OCCURRENCE	08	25	10	05	24	11	04	27	15	27	23	07	AUG 27		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	2.48	2.09	4.28	2.63	4.35	3.03	3.63	7.10	8.95	2.79	4.18	2.03	47.54	
	GREATEST 24-HOUR (IN.)	1.45	0.77	1.63	0.90	1.74	1.08	1.73	5.37	3.77	1.46	2.57	0.78	5.37	
	DATE OF OCCURRENCE	25-26	27-28	10	16	14	28	08-09	27-28	06-07	28-29	16-17	07	AUG 27-28	
	NUMBER OF DAYS WITH:														
	PRECIPITATION 0.01	11	8	12	10	9	9	9	11	10	9	7	6	111	
PRECIPITATION 0.10	4	5	7	6	5	6	5	5	6	5	6	5	65		
PRECIPITATION 1.00	1	0	1	0	2	1	1	1	4	1	1	0	13		
SNOWFALL	SNOW,ICE PELLETS,HAIL														
	TOTAL (IN.)	2.7	0.1	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	
	GREATEST 24-HOUR (IN.)	2.0	0.1	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	
	DATE OF OCCURRENCE	07	10	27										JAN 07	
	MAXIMUM SNOW DEPTH (IN.)	2	T	0	0	0	0	0	0	0	0	0	0	2	
	DATE OF OCCURRENCE	08	10+											JAN 08	
NUMBER OF DAYS WITH:															
SNOWFALL >= 1.0	1	0	0	0	0	0	0	0	0	0	0	0	1		

NORMALS, MEANS, AND EXTREMES RICHMOND (KRIC)

LATITUDE: 37° 30'N **LONGITUDE:** -77° 19'W **ELEVATION (FT):** GRND: 164 BARO: 167 **TIME ZONE:** EASTERN (UTC -5) **WBAN: 13740**

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	45.3	49.3	58.4	68.9	76.2	83.6	87.5	85.7	79.7	69.3	59.7	49.7	67.8
	MEAN DAILY MAXIMUM	91	47.3	50.4	59.0	69.6	77.6	85.1	88.5	86.8	80.9	70.6	60.5	50.2	68.9
	HIGHEST DAILY MAXIMUM	82	81	83	93	96	100	104	105	104	103	99	86	81	105
	YEAR OF OCCURRENCE		2002	1932	1938	1990	1941	1952	2010	2007	1954	1941	1993	1998	JUL 2010
	MEAN OF EXTREME MAXS.	91	69.5	71.2	80.3	88.1	91.1	96.1	97.6	96.2	93.2	85.5	77.7	70.1	84.7
	NORMAL DAILY MINIMUM	30	27.6	29.7	37.0	45.3	54.6	63.3	68.3	66.8	59.9	47.2	38.4	31.1	47.4
	MEAN DAILY MINIMUM	91	28.4	29.9	36.8	45.6	54.9	63.6	68.2	66.9	60.3	48.0	38.8	30.9	47.7
	LOWEST DAILY MINIMUM	82	-12	-10	10	23	31	40	51	46	35	21	10	-1	-12
	YEAR OF OCCURRENCE		1940	1936	2009	1985	1956	1967	1965	1934	1974	1962	1933	1942	JAN 1940
	MEAN OF EXTREME MINS.	91	10.4	14.5	21.5	30.9	41.1	51.3	58.1	56.2	45.9	32.6	23.2	15.0	33.4
	NORMAL DRY BULB	30	36.4	39.5	47.7	57.1	65.4	73.5	77.9	76.3	69.8	58.3	49.0	40.4	57.6
	MEAN DRY BULB	91	37.9	40.2	47.9	57.6	66.3	74.5	78.3	76.9	70.6	59.3	49.7	40.6	58.3
	MEAN WET BULB	28	32.2	33.7	40.3	49.3	58.3	66.5	70.4	69.4	63.4	52.8	43.9	35.4	51.3
	MEAN DEW POINT	28	28.5	30.0	36.3	45.4	55.5	64.4	68.8	67.8	61.5	50.4	40.5	31.7	48.4
	NORMAL NO. DAYS WITH: MAXIMUM >= 90	30	0.0	0.0	*	0.8	1.9	8.2	15.0	10.9	3.6	0.3	0.0	0.0	40.7
	MAXIMUM <= 32	30	3.5	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	7.2
MINIMUM <= 32	30	21.6	18.3	10.3	1.9	*	0.0	0.0	0.0	0.0	1.3	9.2	18.3	80.9	
MINIMUM <= 0	30	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	
H/C	NORMAL HEATING DEG. DAYS	30	873	705	528	254	80	8	0	1	27	225	470	748	3919
	NORMAL COOLING DEG. DAYS	30	0	1	8	33	107	277	415	367	187	33	6	1	1435
RH	NORMAL (PERCENT)	30	69	66	63	62	70	72	74	76	76	74	70	69	70
	HOURLY 01 LST	30	75	73	72	73	83	86	88	90	89	87	80	76	81
	HOURLY 07 LST	30	80	79	78	76	81	83	85	89	90	89	84	81	83
	HOURLY 13 LST	30	57	53	50	46	53	54	56	57	57	53	52	56	54
	HOURLY 19 LST	30	67	62	57	54	63	66	68	72	75	76	69	68	66
S	PERCENT POSSIBLE SUNSHINE	46	54	58	62	66	65	69	68	66	65	63	59	54	62
W/O	MEAN NO. DAYS WITH: HEAVY FOG (VISIBY <= 1/4 MI)	48	2.5	2.0	1.5	1.4	1.8	1.3	1.3	1.9	2.1	2.5	2.2	2.4	22.9
	THUNDERSTORMS	91	0.3	0.3	1.5	2.3	5.0	6.3	8.1	6.1	2.6	0.8	0.6	0.2	34.1
CLOUDINESS	MEAN: SUNRISE-SUNSET (OKTAS)														
	MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH: CLEAR	1	2.0	1.0	9.0		9.0	10.0							
	PARTLY CLOUDY			1.0	5.0		4.0	8.0							
CLOUDY	1	7.0	4.0	10.0		8.0	1.0								
PR	MEAN STATION PRESSURE (IN)	28	29.92	29.90	29.87	29.80	29.82	29.80	29.82	29.84	29.88	29.91	29.93	29.94	29.87
	MEAN SEA-LEVEL PRES. (IN)	28	30.12	30.10	30.07	29.99	30.01	29.99	30.00	30.03	30.07	30.10	30.12	30.13	30.06
WINDS	MEAN SPEED (MPH)	28	8.3	8.6	9.2	9.1	8.0	7.4	7.0	6.5	6.9	6.9	7.6	7.7	7.8
	PREVAIL. DIR. (TENS OF DEGS)	36	01	36	21	20	22	21	20	20	36	01	36	21	20
	MAXIMUM 2-MINUTE: SPEED (MPH)	16	38	44	48	46	43	45	47	46	46	37	36	51	51
	DIR. (TENS OF DEGS)		31	28	24	33	27	26	31	35	09	10	30	29	29
	YEAR OF OCCURRENCE		2000	2008	2008	1999	2009	2000	2007	2011	2003	1996	2003	2011	DEC 2011
	MAXIMUM 3-SECOND SPEED (MPH)	16	48	63	61	58	63	55	58	70	72	46	47	64	72
	DIR. (TENS OF DEGS)		31	29	25	24	26	27	21	34	10	10	33	31	10
	YEAR OF OCCURRENCE		2000	2008	2011	2011	2009	2000	2008	2011	2003	1996	2011	2011	SEP 2003
PRECIPITATION	NORMAL (IN)	30	3.55	2.98	4.09	3.18	3.96	3.54	4.67	4.18	3.98	3.60	3.06	3.12	43.91
	MAXIMUM MONTHLY (IN)	74	7.97	5.97	8.65	8.32	8.87	9.93	18.87	16.30	16.60	9.39	9.60	8.16	18.87
	YEAR OF OCCURRENCE		1978	1979	1984	2008	1972	2004	1945	2004	1999	1971	2009	2009	JUL 1945
	MINIMUM MONTHLY (IN)	74	0.64	0.48	0.20	0.64	0.87	0.38	0.51	0.52	.08	0.01	0.17	0.40	0.01
	YEAR OF OCCURRENCE		1981	1978	2006	1963	1965	1980	1983	1943	2005	2000	2001	1980	OCT 2000
	MAXIMUM IN 24 HOURS (IN)	74	3.31	2.67	3.43	3.54	3.40	4.61	5.73	8.79	6.52	6.50	4.07	3.16	8.79
	YEAR OF OCCURRENCE		1962	1979	1992	2008	2003	1963	1969	1955	1999	1961	1956	1958	AUG 1955
	NORMAL NO. DAYS WITH: PRECIPITATION >= 0.01	30	10.7	9.5	10.5	9.2	11.0	9.6	11.1	9.0	8.7	7.5	8.1	9.7	114.6
	PRECIPITATION >= 1.00	30	1.0	0.7	1.0	0.8	1.0	0.8	1.3	1.2	1.2	1.2	0.8	0.5	11.5
SNOWFALL	NORMAL (IN)	30	4.3	4.8	1.4	0.*	0.0	0.0	0.0	0.0	0.0	0.*	0.3	1.6	12.4
	MAXIMUM MONTHLY (IN)	72	28.5	21.4	19.7	2.0	T	0.0	T	0.0	T	T	7.3	12.5	28.5
	YEAR OF OCCURRENCE		1940	1983	1960	1940	2007		2003		2008	1979	1953	1958	JAN 1940
	MAXIMUM IN 24 HOURS (IN)	72	21.6	16.8	12.1	2.0	T	0.0	T	0.0	T	T	7.3	7.5	21.6
	YEAR OF OCCURRENCE		1940	1983	1962	1940	1994		2003		2008	1979	1953	1966	JAN 1940
	MAXIMUM SNOW DEPTH (IN)	80	18	20	13	1	0	0	0	0	0	0	6	9	20
	YEAR OF OCCURRENCE		1922	1922	1980	1964							1938	1958	FEB 1922
	NORMAL NO. DAYS WITH: SNOWFALL >= 1.0	30	1.1	1.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	3.5

PRECIPITATION (inches) 2011 RICHMOND (KRIC)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1982	2.76	4.44	3.74	2.97	3.48	3.97	9.21	4.39	2.55	2.90	2.70	3.37	46.48
1983	1.59	3.95	6.04	5.21	2.50	5.46	0.51	0.97	3.05	4.02	5.63	4.50	43.43
1984	3.98	3.97	8.65	5.92	4.52	2.01	3.55	4.58	1.86	2.14	3.34	1.52	46.04
1985	3.54	3.20	1.80	0.65	2.36	4.01	5.31	10.58	4.97	5.09	6.99	0.58	49.08
1986	2.69	2.67	1.16	1.16	3.15	1.30	7.01	6.75	0.63	2.43	2.46	5.15	36.56
1987	5.53	2.57	1.65	7.31	2.94	6.29	1.20	1.11	4.43	1.25	3.13	2.86	40.27
1988	2.53	3.08	1.98	2.55	4.81	2.25	7.50	2.95	1.74	2.74	4.34	0.79	37.26
1989	1.88	4.34	5.00	4.27	5.02	5.85	4.00	4.89	5.33	3.54	3.00	2.62	49.74
1990	2.84	2.38	2.54	2.81	6.85	0.97	6.74	5.76	1.92	3.90	1.70	3.52	41.93
1991	3.62	1.09	5.87	0.87	0.91	6.24	3.47	3.32	2.69	2.50	0.67	4.53	35.78
1992	1.57	2.89	5.87	2.21	4.95	2.28	5.68	6.40	2.35	1.94	2.62	2.79	41.55
1993	4.48	2.88	7.24	3.23	4.66	1.75	1.91	3.89	2.97	2.23	3.24	3.77	42.25
1994	3.10	4.38	7.92	2.70	2.49	1.73	7.46	2.54	3.99	2.56	3.99	0.95	43.81
1995	3.15	1.14	3.00	1.98	4.33	1.85	2.89	2.59	3.82	5.11	2.87	1.71	34.44
1996	4.65	2.97	2.71	2.88	3.18	4.35	6.51	4.40	6.87	7.18	3.52	4.91	54.13
1997	1.93	3.71	2.96	3.94	1.36	2.21	4.85	1.41	0.82	3.25	5.33	2.36	34.13
1998	6.85	5.76	6.72	4.32	3.72	4.41	2.37	1.89	3.94	0.47	1.30	5.00	46.75
1999	4.70	1.47	4.04	2.60	2.75	6.29	2.77	2.00	16.60	2.25	1.01	1.72	48.20
2000	3.96	1.60	3.67	4.78	3.03	6.07	4.05	8.28	3.60	0.01	1.72	2.38	43.15
2001	2.06	2.55	3.77	2.14	2.03	6.53	2.73	5.08	2.14	0.65	0.17	1.67	31.52
2002	3.58	0.82	4.48	2.33	3.49	1.56	1.63	3.18	2.88	6.09	4.28	3.45	37.77
2003	2.18	4.21	5.92	4.38	8.59	3.87	9.26	4.66	10.12	2.43	3.39	4.28	63.29
2004	1.55	1.87	2.22	3.42	3.06	9.93	6.42	16.30	6.14	1.95	3.27	2.37	58.50
2005	3.42	1.39	3.99	2.05	4.22	1.19	9.28	2.56	0.08	3.74	3.81	5.81	41.54
2006	2.89	1.47	0.20	2.18	3.24	7.85	4.57	5.99	9.52	6.12	6.67	1.42	52.12
2007	3.46	2.06	2.66	3.62	3.69	5.22	1.69	6.81	1.11	3.54	0.80	3.24	37.90
2008	0.96	3.41	3.50	8.32	5.10	3.64	4.05	5.73	5.94	1.32	3.51	4.07	49.55
2009	1.49	0.74	4.26	2.56	3.71	4.32	3.39	4.04	2.46	3.59	9.60	8.16	48.32
2010	3.60	2.82	6.17	1.59	2.62	0.82	1.19	3.92	6.49	2.14	1.27	3.26	35.89
2011	2.48	2.09	4.28	2.63	4.35	3.03	3.63	7.10	8.95	2.79	4.18	2.03	47.54
POR= 91 YRS	3.28	2.86	3.69	3.14	3.67	3.78	5.00	4.89	3.72	3.09	2.99	3.17	43.28

WBAN : 13740

AVERAGE TEMPERATURE (°F) 2011 RICHMOND (KRIC)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1982	31.6	41.7	49.1	55.9	70.4	73.4	78.6	75.0	69.8	59.2	51.9	46.1	58.6
1983	37.8	39.1	50.4	56.1	66.1	75.6	79.4	77.7	68.8	58.1	49.0	36.2	57.9
1984	32.6	44.5	43.6	55.8	65.4	77.7	76.0	77.0	67.5	66.1	46.6	47.7	58.4
1985	32.6	40.2	49.7	62.0	68.0	74.3	79.0	77.5	70.8	62.6	56.6	37.8	59.3
1986	36.2	39.3	50.0	59.2	66.9	76.1	80.9	74.2	70.8	61.8	49.1	40.9	58.8
1987	34.7	37.0	47.1	54.3	67.3	75.8	81.3	78.5	72.3	52.9	51.3	43.0	58.0
1988	32.3	39.1	47.9	56.0	65.8	72.8	79.9	79.8	68.4	53.6	50.6	39.2	57.1
1989	42.3	39.6	47.9	55.8	64.1	76.1	77.7	75.3	70.8	60.2	49.3	31.3	57.5
1990	46.3	48.0	52.1	57.9	65.8	75.0	79.9	76.3	69.5	63.1	52.6	46.3	61.1
1991	40.2	44.0	50.8	60.2	72.1	75.3	80.7	78.6	71.6	59.9	49.6	44.3	60.6
1992	40.7	42.7	47.2	57.8	61.7	70.8	79.5	73.7	70.3	56.3	50.6	40.9	57.7
1993	41.4	37.8	45.9	55.9	67.7	75.0	82.5	78.5	72.5	58.6	50.9	39.0	58.8
1994	33.4	40.2	48.9	63.2	63.2	78.0	81.1	75.4	69.2	57.6	52.6	45.6	59.0
1995	40.7	38.7	50.2	58.1	65.8	74.1	80.8	78.9	69.1	61.1	44.2	35.6	58.1
1996	34.1	37.8	43.2	57.9	64.8	75.1	76.4	74.3	70.1	58.9	43.2	43.8	56.6
1997	37.7	43.7	49.6	53.6	62.9	71.4	77.8	75.8	70.3	58.9	46.5	39.9	57.3
1998	43.2	44.2	48.5	58.0	67.4	74.0	78.3	78.3	74.2	59.7	49.5	44.2	60.0
1999	42.0	42.2	45.2	57.7	65.5	72.3	79.6	77.9	68.5	57.2	52.9	42.4	58.6
2000	36.3	43.4	52.0	56.4	68.0	75.4	74.7	74.9	67.5	59.7	46.1	33.0	57.3
2001	37.1	42.3	45.2	58.2	65.2	75.0	74.9	78.2	67.8	59.1	54.6	46.0	58.6
2002	42.1	42.7	49.1	60.5	65.4	76.0	80.2	79.3	71.8	60.0	47.7	38.5	59.4
2003	33.7	36.7	49.6	56.9	63.5	72.7	77.8	78.3	70.0	58.1	53.9	39.6	57.6
2004	33.4	38.7	50.0	59.1	73.1	74.5	78.7	75.7	71.6	60.2	52.6	42.4	59.2
2005	40.1	42.1	45.2	58.5	63.4	76.2	81.7	80.6	75.6	61.9	53.1	38.6	59.8
2006	45.1	40.3	49.8	60.2	65.4	74.9	81.5	80.7	69.9	59.8	53.7	47.3	60.7
2007	43.5	35.5	51.7	57.1	67.5	75.8	78.7	80.4	72.6	66.9	49.5	44.0	60.3
2008	40.0	43.5	50.9	59.5	65.5	79.0	79.1	77.2	71.9	58.8	48.9	44.5	59.9
2009	35.3	42.2	46.8	58.9	68.2	75.5	77.0	79.9	70.0	59.0	53.0	39.4	58.8
2010	36.0	35.3	51.9	62.3	70.3	81.1	82.8	79.9	74.6	61.1	50.0	33.3	59.9
2011	34.4	44.8	48.7	61.8	69.1	78.1	82.0	79.0	72.6	59.4	53.5	46.3	60.8
POR= 91 YRS	37.9	40.2	47.9	57.6	66.3	74.5	78.3	76.9	70.6	59.3	49.7	40.6	58.3

HEATING DEGREE DAYS (base 65°F) 2011 RICHMOND (KRIC)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1982-83	0	6	10	213	399	585	836	718	445	282	69	2	3565
1983-84	0	1	86	236	475	887	994	589	657	282	93	3	4303
1984-85	0	0	73	57	546	531	997	692	484	177	35	5	3597
1985-86	0	0	31	114	257	838	886	713	465	187	78	3	3572
1986-87	0	16	24	172	476	741	931	777	550	317	57	0	4061
1987-88	0	0	5	370	409	677	1008	746	527	279	79	32	4132
1988-89	0	0	27	361	425	794	696	709	546	293	108	0	3959
1989-90	0	3	38	181	468	1036	574	472	436	258	50	3	3519
1990-91	0	0	33	146	365	574	762	582	443	193	27	1	3126
1991-92	0	0	25	190	458	637	749	640	545	261	142	10	3657
1992-93	0	0	37	275	427	739	724	757	585	280	24	0	3848
1993-94	0	0	26	213	436	799	973	687	497	130	120	0	3881
1994-95	0	0	11	232	365	595	750	731	453	236	72	1	3446
1995-96	0	0	28	166	620	905	952	782	669	247	122	8	4499
1996-97	0	0	10	193	652	654	840	589	472	337	117	45	3909
1997-98	0	0	19	247	547	771	667	575	536	232	50	7	3651
1998-99	0	0	10	173	457	652	710	631	606	237	60	7	3543
1999-00	0	0	29	249	362	693	882	620	404	257	45	2	3543
2000-01	0	0	61	190	561	983	858	631	605	244	67	0	4200
2001-02	0	0	57	213	312	582	704	616	490	210	101	1	3286
2002-03	0	0	0	214	512	814	962	785	470	257	98	7	4119
2003-04	0	0	13	216	341	779	974	756	461	238	25	1	3804
2004-05	0	0	6	178	370	695	770	634	608	214	102	3	3580
2005-06	0	0	2	150	359	810	612	686	481	173	84	3	3360
2006-07	0	0	16	197	339	543	662	821	421	264	64	0	3327
2007-08	0	0	12	80	458	643	767	620	430	193	63	0	3266
2008-09	0	0	9	218	476	631	913	633	567	226	56	0	3729
2009-10	0	0	5	204	351	787	889	828	399	143	48	0	3654
2010-11	0	0	1	158	442	976	942	559	500	170	35	0	3783
2011-	0	0	17	197	340	573							

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COOLING DEGREE DAYS (base 65°F) 2011 RICHMOND (KRIC)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1982	0	0	0	13	181	259	428	323	157	43	13	7	1424
1983	0	0	0	23	108	325	452	405	207	27	0	0	1547
1984	0	0	0	10	114	392	346	381	154	100	0	2	1499
1985	0	4	20	94	139	290	441	392	213	51	10	0	1654
1986	0	0	8	19	142	344	498	308	205	79	6	0	1609
1987	0	0	0	2	136	329	513	427	227	0	3	0	1637
1988	0	0	3	16	108	269	466	465	137	12	0	0	1476
1989	0	3	24	27	88	341	403	331	218	42	4	0	1481
1990	0	1	43	51	81	312	470	356	177	96	0	2	1589
1991	0	0	10	53	254	316	494	428	227	40	3	0	1825
1992	0	0	0	51	48	192	457	275	202	12	3	0	1240
1993	0	0	0	14	112	307	547	426	261	20	18	0	1705
1994	0	0	5	80	70	396	507	332	142	9	2	2	1545
1995	1	0	0	35	105	281	495	437	157	52	3	0	1566
1996	0	0	0	40	123	315	360	293	173	12	0	0	1316
1997	0	0	4	2	59	244	406	341	182	65	0	0	1303
1998	2	0	32	26	131	282	420	418	292	15	0	12	1630
1999	1	0	0	24	82	231	460	409	140	13	2	0	1362
2000	0	0	5	6	143	320	305	313	141	33	0	0	1266
2001	0	0	0	45	79	307	314	414	149	38	7	0	1353
2002	3	0	6	83	122	340	478	451	213	67	1	0	1764
2003	0	0	0	20	56	246	406	418	172	9	15	0	1342
2004	0	0	3	66	284	293	433	336	210	36	5	0	1666
2005	3	0	0	26	55	346	521	492	328	60	7	0	1838
2006	0	0	17	34	103	308	519	492	171	41	7	3	1695
2007	0	0	16	36	148	332	431	488	247	146	0	0	1844
2008	0	6	1	34	84	425	443	386	224	33	1	1	1638
2009	0	0	8	48	160	322	378	470	160	23	0	0	1569
2010	0	0	0	66	218	490	559	470	295	47	0	0	2145
2011	0	1	1	81	169	398	531	439	250	28	2	0	1900

SNOWFALL (inches) 2011 RICHMOND (KRIC)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1982-83	0.0	0.0	0.0	0.0	0.0	7.9	0.1	21.4	0.0	T	0.0	0.0	29.4
1983-84	0.0	0.0	0.0	0.0	0.1	T	1.1	2.8	0.3	0.0	0.0	0.0	4.3
1984-85	0.0	0.0	0.0	0.0	0.0	T	8.3	T	T	0.0	0.0	0.0	8.3
1985-86	0.0	0.0	0.0	0.0	0.0	1.3	3.3	4.4	T	T	0.0	0.0	9.0
1986-87	0.0	0.0	0.0	0.0	0.0	0.0	15.8	5.3	0.7	T	0.0	0.0	21.8
1987-88	0.0	0.0	0.0	0.0	4.5	T	8.1	T	T	T	0.0	0.0	12.6
1988-89	0.0	0.0	0.0	0.0	0.0	1.8	T	13.6	T	T	T	0.0	15.4
1989-90	0.0	0.0	0.0	0.0	1.1	9.9	0.0	T	T	0.2	0.0	0.0	11.2
1990-91	0.0	0.0	0.0	0.0	0.0	T	T	1.9	T	0.0	0.0	0.0	1.9
1991-92	0.0	0.0	0.0	0.0	0.1	T	0.0	0.8	T	T	0.0	0.0	0.9
1992-93	0.0	0.0	0.0	0.0	0.0	0.0	0.5	5.3	3.5	T	0.0	0.0	9.3
1993-94	0.0	0.0	0.0	0.0	0.0	5.1	2.2	1.7	0.7	0.0	T	0.0	9.7
1994-95	0.0	0.0	0.0	0.0	0.0	T	3.1	T	0.8	0.0	0.0	0.0	3.9
1995-96	0.0	0.0	0.0	0.0	T		12.3						
1996-97					T	1.0	0.7	1.0	T	T	0.0	0.0	
1997-98	0.0	0.0	0.0	0.0									
1998-99													
1999-00							15.2	0.2					
2000-01							0.3	2.5	0.5	0.0	0.0	0.0	
2001-02	0.0	0.0	0.0	0.0	0.0	0.0	8.7	T	T	0.0	0.0	0.0	8.7
2002-03	0.0	0.0	0.0	0.0	0.0	5.0	5.9	6.0	0.1	0.0	0.0	0.0	17.0
2003-04	T	0.0	0.0	0.0	0.0	T	4.9	1.4	0.0	0.0	0.0	0.0	6.3
2004-05	0.0	0.0	0.0	0.0	0.0	1.3	2.1	2.0	0.3	0.0	0.0	0.0	5.7
2005-06	0.0	0.0	0.0	0.0	T	4.4	T	3.2	0.9	T	0.0	0.0	8.5
2006-07	0.0	0.0	0.0	0.0	0.0	0.0	T	0.3	0.0	1.0	T	0.0	1.3
2007-08	0.0	0.0	0.0	0.0	0.0	T	0.8	T	T	0.0	0.0	0.0	0.8
2008-09	0.0	0.0	T	0.0	T	T	T	0.3	6.3	0.0	0.0	0.0	6.6
2009-10	0.0	0.0	0.0	0.0	0.0	7.4	10.4	9.8	0.4	0.0	0.0	0.0	28.0
2010-11	0.0	0.0	0.0	0.0	0.0	8.0	2.7	0.1	T	0.0	0.0	0.0	10.8
2011-	0.0	0.0	0.0	0.0	0.0	0.0							
POR= 87 YRS	T	0.0	T	0.0	0.4	2.1	4.4	3.6	1.9	0.1	T	0.0	12.5

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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. 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 EIGHTHS(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: https://mi3.ncdc.noaa.gov/mi3qry/login.cfm 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 the "Summary of the Day First Order Station" and "Cooperative Summary of the Day" archives.</p>
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2011 RICHMOND VIRGINIA (KRIC)

Richmond is located in east-central Virginia at the head of navigation on the James River and along a line separating the Coastal Plains (Tidewater Virginia) from the Piedmont. The Blue Ridge Mountains lie about 90 miles to the west and the Chesapeake Bay 60 miles to the east. Elevations range from a few feet above sea level along the river to a little over 300 feet in parts of the western section of the city.

The climate might be classified as modified continental. Summers are warm and humid and winters generally mild. The mountains to the west act as a partial barrier to outbreaks of cold, continental air in winter. The cold winter air is delayed long enough to be modified, then further warmed as it subsides in its approach to Richmond. The open waters of the Chesapeake Bay and Atlantic Ocean contribute to the humid summers and mild winters. The coldest weather normally occurs in late December and January, when low temperatures usually average in the upper 20s, and the high temperatures in the upper 40s. Temperatures seldom lower to zero, but there have been several occurrences of below zero temperatures. Summertime high temperatures above 100 degrees are not uncommon, but do not occur every year.

Precipitation is rather uniformly distributed throughout the year. However, dry periods lasting several weeks do occur, especially in autumn when long periods of pleasant, mild weather are most common. There is considerable variability in total monthly amounts from year to year. Snow usually remains on the ground only one or two days at a time. Ice storms (freezing rain or glaze) are not uncommon, but they are seldom severe enough to do any considerable damage. A notable exception was the spectacular glaze storm of January 27-28, 1943, when nearly 1 inch of ice accumulation caused heavy damage to trees and overhead transmission lines.

The James River reaches tidewater at Richmond where flooding may occur in every month of the year, most frequently in March and least in July. Hurricanes and tropical storms have been responsible for most of the flooding during the summer and early fall months. Hurricanes passing near Richmond have produced record rainfalls. In 1955, three hurricanes brought record rainfall to Richmond within a six-week period. The most noteworthy of these were Hurricanes Connie and Diane that brought heavy rains five days apart.

Damaging storms occur mainly from snow and freezing rain in winter and from hurricanes, tornadoes, and severe thunderstorms in other seasons. Damage may be from wind, flooding, or rain, or from any combination of these. Tornadoes are infrequent but some notable occurrences have been observed within the Richmond area.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is October 26 and the average last occurrence in the spring is April 10.

Station History

RICHMOND, VA

NAME	Begin Date	End Date	Latitude	Longitude	Elevation Feet	Relocation	Platform
RICHMOND BYRD FIELD	1950-01-01	1971-01-01	37° 30'	-77° 19'	180		AIRWAYS, COOP
RICHMOND BYRD FIELD	1971-01-01	1971-02-18	37° 30'	-77° 19'	164		AIRWAYS, COOP
RICHMOND R E BYRD INTL AP	1971-02-18	1973-01-01	37° 30'	-77° 19'	164		AIRWAYS, COOP
RICHMOND R E BYRD INTL AP	1995-09-14	1995-10-01	37° 30'	-77° 19'	164		COOP
BYRD	1928-08-01	1928-11-30	37° 30'	-77° 19'			AIRWAYS
BYRD	1935-08-01	1935-09-30	37° 30'	-77° 19'			AIRWAYS
BYRD	1937-01-01	1939-03-31	37° 30'	-77° 19'			AIRWAYS
RICHMOND R E BYRD INTL AP	1992-12-10	1995-09-14	37° 31'	-77° 19'	164		COOP
BYRD	1940-01-01	1942-09-24	37° 30'	-77° 19'			AIRWAYS
BYRD	1930-02-01	1930-12-31	37° 30'	-77° 19'			AIRWAYS
RICHMOND BYRD FIELD	1942-09-24	1942-12-31	37° 30'	-77° 19'			AIRWAYS
RICHMOND R E BYRD INTL AP	1973-01-01	1981-12-31	37° 30'	-77° 19'	164		COOP, WXSVC
RICHMOND INTL AP	1995-10-01	2005-03-14	37° 30'	-77° 19'	164		ASOS, COOP
RICHMOND INTL AP	2005-03-14	Present	37° 30'	-77° 19'	164		ASOS, COOP
RICHMOND BYRD FIELD	1946-04-01	1948-01-01	37° 30'	-77° 19'			AIRWAYS
RICHMOND R E BYRD INTL AP	1981-12-31	1992-12-10	37° 30'	-77° 19'	164		COOP
RICHMOND BYRD FIELD	1948-01-01	1950-01-01	37° 30'	-77° 19'	167		AIRWAYS, COOP

Element History

Element	Begin Date	End Date	Frequency	Time Of Observation	Equipment *	Equipment * Modifications	Equipment Exposure
PRECIP	1995-07-01	1995-09-14	DAILY	2400	UNIV	RCRD	
TEMP	1995-09-14	2005-03-14	DAILY	2400	HYGR		
PRECIP	2005-03-14	2011-10-13	DAILY	2400	PCPN1		
TEMP	1991-01-01	1995-07-01	DAILY	2400	HYGR		
PRECIP	1995-07-01	1995-09-14	HOURLY	2400	UNIV	RCRD	
PRECIP	2005-03-14	2011-10-13	HOURLY	2400	TB	RCRD	
PRECIP	1928-08-01	1942-12-31	DAILY	2400	UNIV	RCRD	
PRECIP	1952-06-01	1991-01-01	HOURLY	2400			
TEMP	1995-07-01	1995-09-14	DAILY	2400	HYGR		
PRECIP	1995-09-14	2005-03-14	HOURLY	2400	TB	RCRD	
TEMP	1952-06-01	1991-01-01	DAILY	2400			
TEMP	1928-08-01	1942-12-31	DAILY	2400			
TEMP	2011-10-13	Present	DAILY	2400	ATEMP		
PRECIP	1946-04-01	1952-06-01	DAILY	2400	UNIV	RCRD	
PRECIP	1991-01-01	1995-07-01	DAILY	2400	UNIV	RCRD	
PRECIP	1991-01-01	1995-07-01	HOURLY	2400			
TEMP	2005-03-14	2011-10-13	DAILY	2400	HYGR		
PRECIP	2011-10-13	Present	DAILY	2400	PCPNX		
PRECIP	1995-09-14	2005-03-14	DAILY	2400			
PRECIP	2011-10-13	Present	HOURLY	2400	AHTB	RCRD;HTD	
TEMP	1946-04-01	1952-06-01	DAILY	2400			
PRECIP	1952-06-01	1991-01-01	DAILY	2400	UNIV	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

Fax Number : (828) 271-4876

TDD : (828) 271-4010

Email : ncdc.info@noaa.gov

NOAA/National Climatic Data Center

Attn: User Engagement & Services Branch

151 Patton Avenue

Asheville, NC 28801-5001

Visit our Web Site for other weather data: www.ncdc.noaa.gov