



DECEMBER 2008 LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

RICHMOND, VA
RICHMOND INTERNATIONAL AIRPORT (KRIC)
 Lat:37° 30'N Long: 77° 19'W Elev (Ground) 163 Feet
 Time Zone : EASTERN WBAN: 13740 ISSN#: 0198-537X



Date 1	Temperature °F						Deg Days BASE 65°		WEATHER 10	SNOW/ICE ON GND(IN)		PRECIPITATION ON GND(IN)		PRESSURE (INCHES OF HG)		WIND SPEED = MPH DIR = TENS OF DEGREES								Date 24
	MAXIMUM 2	MINIMUM 3	AVERAGE 4	DEP FROM NORMAL 5	AVERAGE DEW PT 6	AVERAGE WET BULB 7	HEATING 8	COOLING 9		0700 LST	1300 LST	2400 LST	2400 LST	AVERAGE STATION 15	AVERAGE SEA LEVEL 16	RESULTANT SPEED 17	RES DIR 18	AVERAGE SPEED 19	MAXIMUM					
																			3-SEC		2-MIN			
01	53	39	46	1	37	42	19	0	RA			0.0	T	29.46	29.72	14.0	24	14.3	36	24	30	24	01	
02	48	30	39	-5	27	34	26	0				0.0	0.00	29.93	30.16	3.3	25	4.5	16	32	14	32	02	
03	51	25	38	-6	25	33	27	0				0.0	0.00	30.12	30.31	4.4	22	4.7	16	24	13	24	03	
04	59	34	47	4	33	41	18	0	RA			0.0	T	29.97	30.17	8.6	23	10.7	25	23	21	22	04	
05	46	28	37	-6	25	34	28	0	RA			0.0	T	30.06	30.26	5.9	03	6.6	22	03	17	03	05	
06	44	24	34	-9	25	31	31	0	RA SN BR			T	0.03	29.87	30.09	0.6	35	3.9	17	06	10	19	06	
07	42	22	32	-11	15	28	33	0	BR			0.0	0.00	29.80	30.04	8.9	31	9.5	37	34	29	32	07	
08	37	22	30	-12	13	25	35	0				0.0	0.00	30.20	30.42	1.5	15	3.1	15	20	10	20	08	
09	64	34	49	7	38	45	16	0				0.0	0.00	30.13	30.30	9.1	19	9.2	30	19	22	20	09	
10	71	61	66*	24	59	62	0	1	RA BR			0.0	0.20	29.83	30.00	13.1	21	14.1	33	20	24	21	10	
11	63	43	53	12	50	51	12	0	RA BR			0.0	2.62	29.62	29.78	3.8	03	7.4	25	32	18	31	11	
12	52	36	44	3	33	39	21	0	RA BR			0.0	0.16	29.54	29.81	8.3	34	9.3	25	31	21	31	12	
13	43	27	35	-6	21	29	30	0				0.0	0.00	30.16	30.39	1.8	01	2.5	16	01	13	02	13	
14	51	29	40	-1	31	37	25	0				0.0	0.00	30.30	30.51	3.9	20	4.1	16	21	14	21	14	
15	73	45	59	19	51	56	6	0				0.0	0.00	30.17	30.36	11.8	21	12.1	32	22	26	21	15	
16	63	39	51	11	42	43	14	0	RA DZ BR			0.0	0.55	30.19	30.40	6.3	04	8.8	28	06	22	03	16	
17	54	37	46	6	43	45	19	0	RA DZ BR			0.0	0.04	29.99	30.19	3.4	25	6.1	21	24	15	22	17	
18	51	45	48	8	40	44	17	0	RA DZ			0.0	T	30.09	30.30	3.4	09	3.9	17	09	12	08	18	
19	65	44	55	15	49	51	10	0	RA FG+ BR			0.0	0.08	29.82	29.96	6.4	21	9.1	22	24	16	25	19	
20	62	38	50	11	38	42	15	0	BR			0.0	0.00	29.77	29.98	6.4	07	7.5	20	07	15	07	20	
21	49	33	41	2	27	35	24	0	RA BR			0.0	0.36	29.58	29.77	6.9	33	9.2	25	30	18	30	21	
22	32	21	27	-12	2	21	38	0				0.0	0.00	30.10	30.30	12.4	31	13.3	37	30	28	31	22	
23	37	17*	27*	-12	12	23	38	0				0.0	0.00	30.45	30.66	2.7	18	4.3	18	16	13	19	23	
24	65	35	50	12	41	46	15	0	RA			0.0	0.02	30.14	30.28	9.7	22	9.9	32	23	26	22	24	
25	64	37	51	13	34	45	14	0	RA			0.0	T	30.04	30.29	2.8	32	6.8	30	25	23	26	25	
26	45	29	37	-1	29	35	28	0	RA			0.0	T	30.32	30.52	0.9	04	2.7	12	09	8	07	26	
27	58	42	50	12	48	49	15	0	RA DZ BR			0.0	0.01	30.17	30.35	6.3	21	6.7	16	21	13	21	27	
28	74*	55	65	27	54	59	0	0	RA BR			0.0	T	29.91	30.09	11.3	25	13.5	43	24	33	24	28	
29	57	42	50	12	29	41	15	0				0.0	0.00	29.88	30.06	2.8	28	4.9	16	26	14	25	29	
30	57	40	49	12	21	37	16	0				0.0	0.00	29.78	29.96	5.1	25	6.7	16	28	13	30	30	
31	54	24	39	2	19	33	26	0				0.0	0.00	29.62	29.85	11.5	32	16.8	49*	33	38*	32	31	

54.3	34.7	44.5	☼	32.6	39.9	20.4	0.0	< MONTHLY AVERAGES TOTALS >				T	4.07	29.96	30.16	2.9	25	7.9	< MONTHLY AVERAGES			
4.6	3.6	4.1		-----DEPARTURE FROM NORMAL -----								0.95	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3									

DEGREE DAYS				GREATEST 24-HR PRECIPITATION : 2.68 DATE : 10-11				SEA LEVEL PRESSURE							
MONTHLY				GREATEST 24-HR SNOWFALL : T DATE : 06				MAXIMUM : 30.75 DATE 23 TIME 1054							
TOTAL DEPARTURE				GREATEST SNOW DEPTH :				MINIMUM : 29.47 DATE 12 TIME 0354							
SEASON TO DATE				NUMBER OF -> DAYS WITH				MAXIMUM TEMP >= 90 : 0				MINIMUM TEMP <= 32 : 12			
HEATING : 631 COOLING : 1				TOTAL DEPARTURE 1334 TOTAL DEPARTURE 1638				MAXIMUM TEMP <= 32 : 1				PRECIPITATION >= 0.01 INCH : 10			
								THUNDERSTORMS : 0				HEAVY FOG : 1			
												PRECIPITATION >= 0.10 INCH : 5			
												SNOWFALL >= 1.0 INCH : 0			

**DECEMBER 2008
RICHMOND, VA**

HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

RICHMOND, VA (KRIC)
DECEMBER 2008

WBAN # 13740

Date	FOR HOUR (LST) ENDING AT												Date	FOR HOUR (LST) ENDING AT												Date	Sum of Hourly Data	2400 LST Water Equiv.
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24			
01													01												01	T	T	
02													02												02	0.00	0.00	
03													03												03	0.00	0.00	
04													04												04	T	T	
05	T	T											05												05	T	T	
06													06												06	0.03	0.03	
07													07												07	0.00	0.00	
08													08												08	0.00	0.00	
09													09												09	0.00	0.00	
10		T	T	T	T								10												10	0.20	0.20	
11	0.23	0.02	0.03	0.02	0.10	0.12	0.05	0.03	0.03	0.13	0.05	0.23	11	0.20	0.05	0.07	0.16	0.12	0.13	0.15	0.32	0.08	0.01	0.26	0.03	11	2.62	2.62
12	T	T	T	0.03	0.04	0.09	T						12												12	0.16	0.16	
13													13												13	0.00	0.00	
14													14												14	0.00	0.00	
15													15												15	0.00	0.00	
16		T	T	T	0.16	0.13	0.07	T	0.02	0.01	0.02	0.02	16	0.04	0.01	0.01	0.01	0.01	0.01	T	0.01	T	T	0.01	0.01	16	0.55	0.55
17	T	T	T	T	0.03	0.01	T	T	T	T			17												17	0.04	0.04	
18	T												18				T	T							18	T	T	
19							T	0.01	0.02	0.03	T	0.02	19	T											19	0.08	0.08	
20													20												20	0.00	0.00	
21	T	T		0.01	0.07	0.05	0.04	0.12	0.07				21												21	0.36	0.36	
22													22												22	0.00	0.00	
23													23												23	0.00	0.00	
24								0.01	0.01				24											T	24	0.02	0.02	
25	T												25												25	T	T	
26										0.01	T		26			T	T	T			T				26	T	T	
27	T	T	T	T									27												27	0.01	0.01	
28													28												28	T	T	
29													29												29	0.00	0.00	
30													30												30	0.00	0.00	
31													31												31	0.00	0.00	

* Indicates sum of Hourly and Daily disagree.

MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)	0.10	0.19	0.20	0.21	0.24	0.29	0.34	0.45	0.50	0.53	0.55	0.60
Ending Date	11	11	11	11	11	11	11	11	11	11	11	11
Ending Time (Hr/Min)	2207	2208	2210	2218	1912	1928	1937	2002	2018	2018	2040	2002

Note : The hourly and daily precipitation totals are printed in the last 2 columns and hi-lighted in red when they disagree. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

Date and time are not entered for TRACE amounts.

REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

* = Extreme for the month (last occurrence if more than one).

T = Trace precipitation amount.

+ = also occurs on earlier date.

FG+ = Heavy fog, visibility .25 miles or less.

BLANK entries denote missing or unreported data.

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1971-2000

WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	SQ Squalls
SH Shower(s)	SG Snow Grains	SA Sand	SS Sandstorm
TS Thunderstorm	SN Snow	VA Volcanic Ash	GL Glaze
VC In the Vicinity	UP Unkown Precipitation		

Intensity (as indicated on pages 4 to 6):
'+' = Heavy '' = Moderate '-' = Light

RICHMOND, VA DECEMBER 2008

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled to saturation at constant pressure by evaporation of water into it.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

ADDITIONAL NOTES:

Station Augmentation-SANDSTON COOP
Lat/Lon:37.54417/-77.27583 Elevation:165
Distance:4 MI Dir:E
Augmented Elements:Temp, Precip, Snow
Equipment:MMTS, SRG, Snowboard

Date	SUNSHINE		CLOUDINESS (OKTAS)				VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS		MN-MN		MINIMUM	MAXIMUM	
			Sky Cover	Satellite	Sky Cover	Satellite			
01							10.00	10.00	
02							10.00	10.00	
03							9.00	10.00	
04							10.00	10.00	
05							10.00	10.00	
06							4.00	10.00	
07							4.00	10.00	
08							10.00	10.00	
09							10.00	10.00	
10							2.00	10.00	
11							1.50	10.00	
12							4.00	10.00	
13							8.00	10.00	
14							10.00	10.00	
15							10.00	10.00	
16							2.00	10.00	
17							2.00	10.00	
18							10.00	10.00	
19							0.12	10.00	
20							0.75	10.00	
21							2.50	10.00	
22							10.00	10.00	
23							10.00	10.00	
24							10.00	10.00	
25							10.00	10.00	
26							9.00	10.00	
27							2.00	10.00	
28							3.00	10.00	
29							10.00	10.00	
30							10.00	10.00	
31							10.00	10.00	
MONTHLY AVGS							6.90	10.00	
SUNSHINE (Minutes)									
Total : 0			Possible : 17909						
Percent Possible : 0									
NUMBER OF DAYS WITH : SKY CONDITION									
Clear		Partly CLDY		Cloudy		Missing			
MINIMUM VISIBILITY (MILES)									
<= .25		<= 3.0				>= 7.0			
1		9				19			

OBSERVATIONS AT 3-HOURLY INTERVALS

HOUR (LST)	SKY COVER	CEILING 100's of FT.	SATELLITE		WEATHER	TEMPERATURE °F			WIND RELATIVE HUMIDITY (PCT)	WIND SPEED (MPH) DIRECTION Tens of Deg	PRESSURE (INCHES, HG)		
			Observation Time (LST)	Eff Clid Amt Oktas		VISIBILITY (MILES)	DRY BULB	DEW POINT			WET BULB	STATION	SEA LEVEL
SUNRISE: 0722 DEC 25 SUNSET: 1657													
01	BKN	070				63	58	60	84	16	24	29.84	30.03
04	SCT	070				57	53	55	87	9	27	29.93	30.12
07	SCT	200				52	41	47	66	3	31	30.01	30.20
10	SCT	250				56	26	43	32	10	32	30.10	30.29
13	CLR	NC				60	23	44	24	7	02	30.09	30.28
16	SCT	250				58	25	44	28	6	03	30.12	30.31
19	BKN	250				46	29	39	52	5	09	30.22	30.41
22	SCT	250				40	28	35	62	5	09	30.28	30.47
SUNRISE: 0722 DEC 26 SUNSET: 1657													
01	CLR	NC				36	27	33	70	6	07	30.32	30.51
04	CLR	NC				32	25	30	75	3	03	30.34	30.53
07	BKN	250				30	25	28	82	7	05	30.35	30.55
10	OVC	250				37	27	33	67	0	00	30.39	30.58
13	OVC	250				44	26	37	49	0	00	30.33	30.53
16	OVC	070				44	29	38	56	3	21	30.31	30.50
19	OVC	045				42	36	39	79	3	19	30.31	30.51
22	OVC	020				43	37	40	79	3	22	30.30	30.49
SUNRISE: 0723 DEC 27 SUNSET: 1658													
01	OVC	015			-DZ BR	43	40	42	89	3	23	30.25	30.45
04	OVC	009			BR	43	42	43	96	0	00	30.23	30.42
07	OVC	033			BR	43	41	42	93	5	21	30.21	30.41
10	OVC	012			BR	47	45	46	93	8	22	30.21	30.41
13	BKN	017				53	49	51	86	8	22	30.13	30.33
16	OVC	110				58	52	55	81	9	20	30.08	30.27
19	OVC	007				55	53	54	93	8	20	30.10	30.29
22	OVC	009				57	54	55	90	10	21	30.07	30.26
SUNRISE: 0723 DEC 28 SUNSET: 1659													
01	OVC	005			BR	57	55	56	93	7	22	30.02	30.21
04	OVC	004			BR	59	58	58	97	8	21	29.99	30.18
07	OVC	023			BR	60	58	59	93	9	20	29.95	30.14
10	BKN	250				65	58	61	78	21	23	29.92	30.11
13	BKN	250				72	57	63	59	18	24	29.81	30.00
16	OVC	034				70	58	63	66	17	26	29.81	30.00
19	OVC	050				66	56	60	70	13	30	29.87	30.06
22	BKN	150				61	39	50	44	13	33	29.89	30.09
SUNRISE: 0723 DEC 29 SUNSET: 1659													
01	SCT	150				52	34	44	50	5	32	29.91	30.10
04	SCT	065				46	38	42	74	0	00	29.91	30.11
07	BKN	150				45	32	40	60	6	04	29.94	30.13
10	SCT	150				50	29	41	44	6	06	29.95	30.15
13	FEW	150				54	27	43	35	5	28	29.87	30.06
16	CLR	NC				56	24	43	29	10	31	29.83	30.02
19	CLR	NC				44	27	37	51	7	25	29.84	30.03
22	CLR	NC				43	24	36	47	7	23	29.76	29.96
SUNRISE: 0723 DEC 30 SUNSET: 1700													
01	CLR	NC				45	21	36	39	10	25	29.73	29.92
04	CLR	NC				42	22	35	45	7	26	29.76	29.96
07	CLR	NC				42	22	35	45	10	26	29.82	30.02
10	FEW	250				50	22	39	33	7	27	29.85	30.05
13	BKN	200				56	15	40	20	6	30	29.79	29.99
16	SCT	250				56	16	41	21	3	19	29.78	29.97
19	CLR	NC				44	24	36	45	5	19	29.77	29.96
22	CLR	NC				43	26	36	51	6	19	29.69	29.88

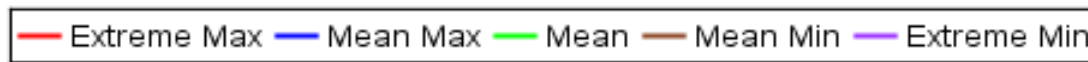
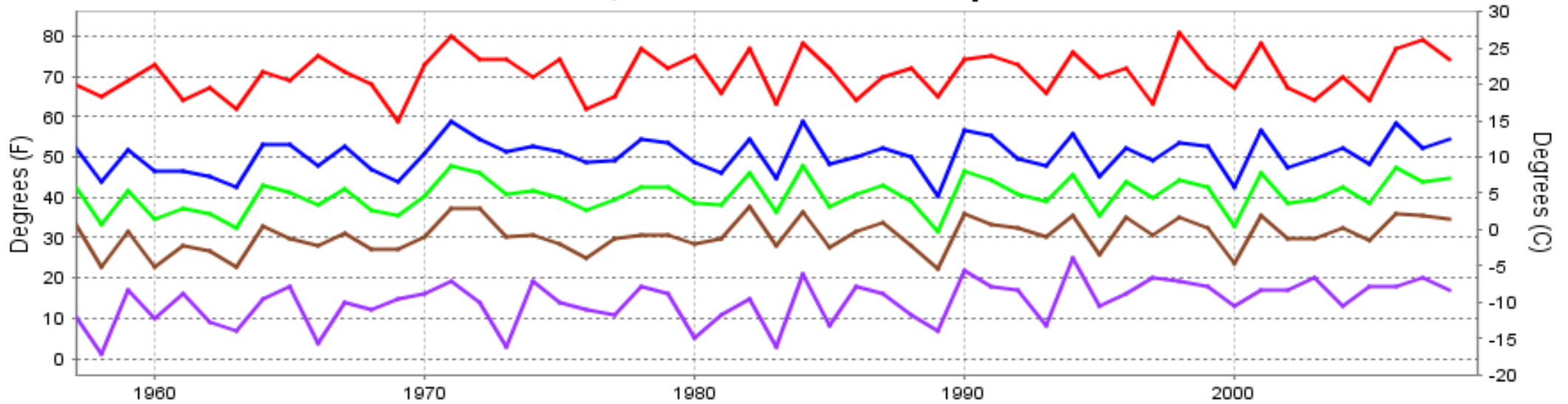
HOUR (LST)	SKY COVER	CEILING 100's of FT.	SATELLITE		WEATHER	TEMPERATURE °F			WIND RELATIVE HUMIDITY (PCT)	WIND SPEED (MPH) DIRECTION Tens of Deg	PRESSURE (INCHES, HG)		
			Observation Time (LST)	Eff Clid Amt Oktas		VISIBILITY (MILES)	DRY BULB	DEW POINT			WET BULB	STATION	SEA LEVEL
SUNRISE: 0724 DEC 31 SUNSET: 1701													
01	FEW	150				46	31	40	56	14	21	29.53	29.72
04	CLR	NC				43	32	38	65	10	23	29.42	29.61
07	FEW	150				43	31	38	63	7	23	29.39	29.58
10	FEW	080				54	22	41	29	28	32	29.45	29.65
13	SCT	070				47	12	35	24	32	32	29.62	29.81
16	SCT	070				39	11	30	31	20	35	29.75	29.95
19	BKN	060				35	9	27	34	16	34	29.92	30.12
22	CLR	NC				28	6	22	39	11	01	30.02	30.22

3-HOURLY OBSERVATION NOTES
 Sky Cover is the amount of the sky obscured. CLR or SKC = 0, FEW = 1/8-2/8, SCT = 3/8-4/8, BKN = 5/8-7/8, OVC = 8/8, W = Vertical Visibility = 8/8
 Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.
 NC = No Ceiling detected.
 & = Original observation contained additional weather elements.
 See page 3 for additional notes.

SUMMARY BY HOUR

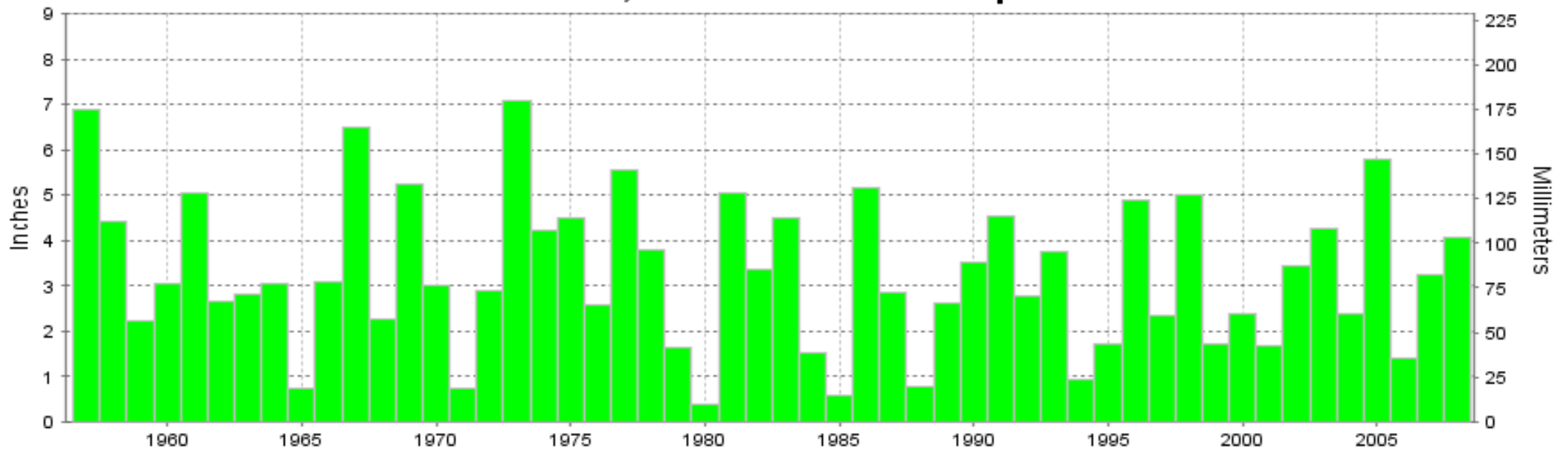
HOUR (LST)	AVERAGES									RESULTANT WIND (MPH)		
	CEILOMETER	EFF CLD AMT	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	PRESSURE (Inches, HG)		VISIBILITY (Miles)	WIND SPEED (MPH)	SPEED	DIRECTION
							STATION	SEA LEVEL				
01			43	34	40	73	29.95	30.15	8.90	8	3	27
02			42	34	39	74	29.95	30.15	8.81	7	3	27
03			41	34	38	76	29.96	30.16	8.62	7	3	27
04			41	34	38	78	29.96	30.15	8.50	6	2	27
05			40	33	38	77	29.96	30.16	8.06	7	2	27
06			40	33	37	76	29.97	30.16	8.52	7	1	27
07			39	32	37	77	29.98	30.18	8.75	7	1	26
08			40	32	37	75	29.99	30.19	9.02	7	2	27
09			42	33	39	70	30.01	30.20	9.38	8	2	27
10			44	32	39	65	30.02	30.21	9.22	10	3	27
11			46	32	41	61	30.01	30.21	9.30	10	4	27
12			48	31	41	57	29.99	30.18	9.19	11	6	27
13			50	32	43	54	29.96	30.16	9.43	11	5	27
14			50	31	43	52	29.95	30.14	9.47	11	5	27
15			51	31	43	52	29.95	30.14	9.31	10	5	27
16			50	32	43	53	29.95	30.15	9.40	10	4	27
17			48	32	42	56	29.96	30.16	9.27	9	3	27
18			46	33	41	61	29.97	30.17	9.42	8	3	27
19			45	33	40	63	29.98	30.18	9.45	8	2	27
20			45	33	40	65	29.99	30.18	9.23	7	2	27
21			44	33	40	66	29.99	30.18	8.97	6	3	27
22			44	33	40	66	29.99	30.18	8.87	7	3	27
23			43	33	39	70	29.99	30.18	8.90	7	2	27
24			42	33	39	71	29.99	30.18	8.65	7	2	27

RICHMOND, VA DECEMBER Temperatures



Long-Term (1957-2008) Mean: 40.5
1971-2000 Normal: 40.4

RICHMOND, VA DECEMBER Precipitation



Long-Term (1957-2008) Mean Monthly Total: 3.28

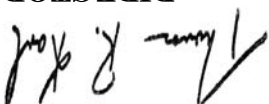
1971-2000 Normal: 3.12



**DECEMBER 2008
RICHMOND, VA**

**LOCAL CLIMATOLOGICAL DATA
NOAA, National Climatic Data Center**

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