



DECEMBER 2013 LOCAL CLIMATOLOGICAL DATA NOAA, National Climatic Data Center

RICHMOND, VA
RICHMOND INTERNATIONAL AIRPORT (KRIC)
 Lat:37° 30'N Long: 77° 19'W Elev (Ground) 164 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			
2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	22	23				
01	55	27	41	-4	28	34	24	0	BR HZ	0		0.0	0.00	30.03	30.19	0.6	22	1.3	13	22	10	23	01	
02	59	30	45	1	30	37	20	0	BR	0		0.0	0.00	29.75	29.93	0.5	17	0.7	10	20	9	20	02	
03	59	32	46	2	36	41	19	0	BR HZ	0		0.0	0.00	29.75	29.96	2.2	18	2.4	14	17	12	18	03	
04	58	47	53	10	49	51	12	0	RA BR HZ	0		0.0	0.06	29.86	30.07	3.0	16	3.4	18	14	10	17	04	
05	66	53	60	17	58	59	5	0	RA DZ BR	0		0.0	0.05	29.88	30.07	7.2	19	7.4	29	18	22	19	05	
06	71	45	58	15	55	57	7	0	RA BR	0		0.0	T	29.82	30.01	0.9	32	10.6	24	36	20	35	06	
07	45	35	40	-3	33	38	25	0	RA BR	0		0.0	0.36	30.11	30.36	10.2	01	10.7	24	36	20	36	07	
08	35	32	34	-8	28	32	31	0	RA DZ FZRA PL BR	0		T	0.97	30.29	30.46	7.8	01	8.4	21	02	17	02	08	
09	42	33	38	-4	35	37	27	0	RA DZ BR	0		0.0	0.37	29.97	30.15	2.9	23	4.9	15	21	12	21	09	
10	39	29	34	-8	34	36	31	0	RA DZ BR	0		0.0	0.24	29.88	30.11	2.5	34	5.5	17	34	13	34	10	
11	46	26	36	-5	22	31	29	0		0		0.0	0.00	30.14	30.34	3.9	23	4.9	14	23	12	23	11	
12	39	24	32	-9	19	28	33	0		0		0.0	0.00	30.15	30.36	2.3	36	4.6	23	01	17	01	12	
13	48	23	36	-5	16	29	29	0		0		0.0	0.00	30.11	30.31	5.6	24	6.4	18	26	14	25	13	
14	47	35	41	0	33	38	24	0	RA DZ BR	0		0.0	0.98	29.97	30.12	2.1	09	6.7	22	27	18	27	14	
15	54	36	45	5	32	39	20	0	RA BR	0		0.0	T	29.60	29.82	8.0	27	8.6	22	30	18	31	15	
16	48	30	39	-1	27	34	26	0		0		0.0	0.00	29.91	30.12	2.9	25	5.2	14	10	10	11	16	
17	54	31	43	3	34	39	22	0	RA BR	0		0.0	0.46	29.85	30.03	3.4	24	5.6	26	32	21	30	17	
18	46	30	38	-2	27	34	27	0	BR	0		0.0	0.00	29.96	30.18	4.4	27	6.7	23	28	17	27	18	
19	63	29	46	6	25	37	19	0		0		0.0	0.00	30.03	30.22	8.1	20	8.3	25	21	20	22	19	
20	66	41	54	15	42	48	11	0		0		0.0	0.00	29.96	30.15	10.3	20	10.5	29	22	24	22	20	
21	72	50	61	22	53	57	4	0		0		0.0	0.00	29.88	30.07	12.1	20	12.4	28	22	23	21	21	
22	76*	62	69*	30	62	64	0	4	RA BR	0		0.0	0.67	29.83	30.02	12.4	20	13.2	38*	20	31*	20	22	
23	67	43	55	16	55	57	10	0	RA BR	0		0.0	0.60	29.85	30.06	1.0	24	11.6	31	35	25	35	23	
24	45	28	37	-1	22	32	28	0		0		0.0	0.00	30.06	30.29	12.1	34	12.8	26	35	21	35	24	
25	35	22	29*	-9	12	23	36	0		0		0.0	0.00	30.32	30.52	3.3	01	5.2	22	22	18	36	25	
26	50	21*	36	-2	21	29	29	0		0		0.0	0.00	30.12	30.33	2.9	24	3.7	18	23	14	22	26	
27	52	25	39	1	22	32	26	0		0		0.0	0.00	30.21	30.41	2.2	20	2.8	13	20	12	21	27	
28	62	27	45	7	24	36	20	0		0		0.0	0.00	30.12	30.30	5.4	21	5.7	22	22	17	22	28	
29	56	43	50	12	44	46	15	0	RA BR	0		0.0	1.35	29.70	29.85	4.0	22	9.1	29	12	23	13	29	
30	55	38	47	10	35	41	18	0		0		0.0	0.00	29.81	30.04	3.6	33	7.2	17	02	15	02	30	
31	51	30	41	4	25	34	24	0	SN	0		T	T	30.01	30.23	3.3	25	6.1	23	29	18	25	31	

53.6	34.1	43.8	☼	33.5	39.7	21.0	0.1	< MONTHLY AVERAGES TOTALS >				T	6.11	29.97	30.16	2.2	24	6.9	< MONTHLY AVERAGES			
2.9	2.7	2.8		-----DEPARTURE FROM NORMAL ----->								2.85	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3									
DEGREE DAYS								GREATEST 24-HR PRECIPITATION : 1.35 DATE : 29				SEA LEVEL PRESSURE				DATE TIME						
MONTHLY				SEASON TO DATE				GREATEST 24-HR SNOWFALL : T DATE : 31+				MAXIMUM : 30.60 25 1040										
TOTAL DEPARTURE				TOTAL DEPARTURE				GREATEST SNOW DEPTH : 0 DATE :				MINIMUM : 29.62 29 1254										
HEATING :		651 -92		1291 -128				NUMBER OF ->		MAXIMUM TEMP >= 90 : 0		MINIMUM TEMP <= 32 : 18		PRECIPITATION >= 0.01 INCH : 11								
COOLING :		4 3		1682 133				DAYS WITH		MAXIMUM TEMP <= 32 : 0		MINIMUM TEMP <= 0 : 0		PRECIPITATION >= 0.10 INCH : 9								
										THUNDERSTORMS : 0		HEAVY FOG : 0		SNOWFALL >= 1.0 INCH : 0								

**DECEMBER 2013
RICHMOND, VA**

HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

RICHMOND, VA (KRIC)
DECEMBER 2013

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	0.00	0.00	
02													02												02	0.00	0.00	
03													03												03	0.00	0.00	
04				T	0.03	0.03		T					04												04	0.06	0.06	
05												T	0.05	05	T										05	0.05	0.05	
06														06										T	06	T	T	
07	0.05	0.14	0.07	0.05	0.01	0.04								07										T	07	0.36	0.36	
08						T		T	0.03	0.03	0.15	0.04	0.05	08	0.04	0.04	0.03	0.30	0.24	0.01				T	08	0.97	0.97	
09	T	T	T	0.05	0.13	0.07	0.03	0.06	0.01	T	T	T	09	0.01	T	0.01								T	09	0.37	0.37	
10						T		T	0.01	T	0.12	0.05	0.05	10	0.01	T	T								10	0.24	0.24	
11														11											11	0.00	0.00	
12														12											12	0.00	0.00	
13														13											13	0.00	0.00	
14														14	0.01	0.04	0.07	0.14	0.23	0.18	0.18	0.09	0.04	T	14	0.98	0.98	
15				T	T	T		T						15											15	T	T	
16														16											16	0.00	0.00	
17														17											17	0.46	0.46	
18														18						T	0.02	0.19	0.23	0.02	18	0.00	0.00	
19														19											19	0.00	0.00	
20														20											20	0.00	0.00	
21														21											21	0.00	0.00	
22													0.17	22	0.16	0.10	0.02	0.02	0.11	0.07	0.01	0.01	T		22	0.67	0.67	
23			T	0.13	T	T		T	0.10	0.11	0.08		T	23	0.01	0.02	0.01	T	0.07	0.03	0.04	T	T	T	23	0.60	0.60	
24														24											24	0.00	0.00	
25														25											25	0.00	0.00	
26														26											26	0.00	0.00	
27														27											27	0.00	0.00	
28														28											28	0.00	0.00	
29	T	0.04	0.03	0.03	0.04	0.01	0.04	0.10	0.08	0.13	0.21	0.30	29	0.32	0.02									29	1.35	1.35		
30														30											30	0.00	0.00	
31					T	T								31											31	T	T	

* 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)	0.09	0.14	0.18	0.22	0.29	0.35	0.44	0.54	0.62	0.71	0.79	0.87
Ending Date	08	29	08	29	29	29	29	29	29	29	29	29
Ending Time (Hr/Min)	1559	1234	1607	1233	1238	1238	1238	1238	1238	1238	1238	1238

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.

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).

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	
VC In the Vicinity	UP Unkown Precipitation		GL Glaze

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

RICHMOND, VA DECEMBER 2013

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet.

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.

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

NORMALS ARE FOR THE YEARS 1981-2010

ADDITIONAL NOTES & ERRATA:

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

Beginning with the January 2013 LCD, monthly mean temperature calculations have changed to the National Data Stewardship Team standard. Monthly maximum and minimum temperature are not rounded until after monthly mean temperature is calculated. This is the most accurate outcome, but may be slightly different from the mean derived from rounded monthly maximum and minimum.

Date	VISIBILITY (MILES)	
	MINIMUM	MAXIMUM
01	6.00	10.00
02	6.00	10.00
03	6.00	10.00
04	2.00	8.00
05	2.00	7.00
06	4.00	10.00
07	4.00	10.00
08	2.00	10.00
09	1.75	10.00
10	0.25	10.00
11	10.00	10.00
12	10.00	10.00
13	10.00	10.00
14	2.00	10.00
15	4.00	10.00
16	10.00	10.00
17	4.00	10.00
18	4.00	10.00
19	10.00	10.00
20	10.00	10.00
21	10.00	10.00
22	1.25	10.00
23	2.50	10.00
24	10.00	10.00
25	10.00	10.00
26	10.00	10.00
27	9.00	10.00
28	10.00	10.00
29	1.75	10.00
30	10.00	10.00
31	7.00	10.00
AVGS	6.11	9.84
MINIMUM VISIBILITY (MILES)		
	<= .25	<= 3.0 >= 7.0
	1	9 14

OBSERVATIONS AT 3-HOURLY INTERVALS

RICHMOND, VA
DECEMBER 2013 KRIC

WBAN # 13740

Table with columns for Hour (LST), Sky Cover, Ceiling, Visibility, Weather, Temperature (F), Wind (MPH), Pressure (Inches, HG) for Dec 13, 14, 15, 16, 17, 18, and Dec 19, 20, 21, 22, 23, 24.

OBSERVATIONS AT 3-HOURLY INTERVALS

RICHMOND, VA

DECEMBER 2013

KRIC

WBAN # 13740

HOUR (LST)	SKY COVER	CEILING 100's of FT.	VISIBILITY (MILES)	WEATHER	TEMPERATURE °F			RELATIVE HUMIDITY (PCT)	WIND		PRESSURE (INCHES, HG)	
					DRY BULB	DEW POINT	WET BULB		SPEED (MPH)	DIRECTION Tens of Deg	STATION	SEA LEVEL
SUNRISE: 0722 DEC 25 SUNSET: 1657												
01	CLR	NC	10.00		27	6	21	41	15	36	30.29	30.49
04	CLR	NC	10.00		24	8	20	50	13	01	30.32	30.52
07	CLR	NC	10.00		22	9	19	57	7	36	30.36	30.56
10	CLR	NC	10.00		27	10	22	49	8	01	30.40	30.60
13	CLR	NC	10.00		33	10	26	38	0	00	30.34	30.54
16	CLR	NC	10.00		34	11	27	38	6	16	30.31	30.51
19	FEW	300	10.00		28	15	24	58	3	13	30.29	30.49
22	CLR	NC	10.00		27	18	24	69	0	00	30.26	30.45
SUNRISE: 0722 DEC 26 SUNSET: 1657												
01	CLR	NC	10.00		22	18	21	85	0	00	30.21	30.40
04	FEW	250	10.00		24	20	23	84	0	00	30.15	30.35
07	BKN	170	10.00		27	21	25	78	3	25	30.13	30.33
10	SCT	250	10.00		35	21	30	57	8	24	30.15	30.35
13	SCT	250	10.00		49	19	38	31	9	25	30.06	30.26
16	FEW	250	10.00		50	20	38	30	9	31	30.07	30.27
19	FEW	300	10.00		35	24	31	64	0	00	30.12	30.32
22	CLR	NC	10.00		31	24	29	76	0	00	30.17	30.37
SUNRISE: 0723 DEC 27 SUNSET: 1658												
01	CLR	NC	10.00		31	23	28	72	0	00	30.19	30.38
04	CLR	NC	10.00		26	22	25	84	3	20	30.21	30.40
07	FEW	250	10.00		27	23	26	85	0	00	30.23	30.43
10	FEW	250	10.00		42	23	35	47	0	00	30.28	30.48
13	SCT	250	10.00		50	17	38	27	5	25	30.22	30.42
16	SCT	250	10.00		50	18	38	28	8	22	30.18	30.38
19	FEW	300	10.00		39	23	33	53	3	13	30.20	30.40
22	CLR	NC	10.00		36	21	31	55	5	18	30.21	30.40
SUNRISE: 0723 DEC 28 SUNSET: 1659												
01	CLR	NC	10.00		35	20	30	54	0	00	30.19	30.39
04	CLR	NC	10.00		31	21	28	67	3	19	30.17	30.37
07	FEW	300	10.00		30	20	27	66	6	19	30.17	30.37
10	BKN	300	10.00		42	24	35	49	5	22	30.18	30.37
13	BKN	300	10.00		58	22	43	25	11	23	30.09	30.29
16	BKN	250	10.00		58	22	43	25	10	22	30.06	30.26
19	OVC	210	10.00		47	27	39	46	5	18	30.05	30.25
22	OVC	160	10.00		46	29	39	51	6	18	30.02	30.22
SUNRISE: 0723 DEC 29 SUNSET: 1659												
01	OVC	080	10.00	-RA	47	33	41	59	10	21	29.99	30.18
04	OVC	110	9.00	-RA	43	41	42	93	0	00	29.89	30.08
07	OVC	060	6.00	-RA BR	43	42	43	97	5	12	29.79	29.98
10	OVC	015	2.00	-RA BR	50	48	49	93	16	13	29.61	29.80
13	OVC	027	3.00	-RA BR	52	51	51	97	18	30	29.44	29.62
16	SCT	250	10.00		53	47	50	80	15	26	29.45	29.65
19	SCT	110	10.00		51	45	48	80	10	25	29.56	29.76
22	CLR	NC	10.00		48	42	45	80	7	28	29.65	29.84
SUNRISE: 0723 DEC 30 SUNSET: 1700												
01	CLR	NC	10.00		42	38	40	85	6	21	29.70	29.89
04	CLR	NC	10.00		45	38	42	77	8	25	29.73	29.93
07	BKN	220	10.00		43	37	40	80	6	27	29.78	29.97
10	OVC	210	10.00		48	38	43	68	6	25	29.84	30.04
13	OVC	250	10.00		55	37	47	51	10	28	29.84	30.03
16	OVC	210	10.00		48	37	43	66	7	01	29.90	30.09
19	OVC	210	10.00		43	32	38	65	10	03	29.92	30.12
22	OVC	036	10.00		40	29	36	65	6	02	29.99	30.18

HOUR (LST)	SKY COVER	CEILING 100's of FT.	VISIBILITY (MILES)	WEATHER	TEMPERATURE °F			RELATIVE HUMIDITY (PCT)	WIND		PRESSURE (INCHES, HG)	
					DRY BULB	DEW POINT	WET BULB		SPEED (MPH)	DIRECTION Tens of Deg	STATION	SEA LEVEL
SUNRISE: 0724 DEC 31 SUNSET: 1701												
01	OVC	035	10.00		38	28	34	68	6	01	29.98	30.17
04	OVC	075	10.00		37	26	33	65	3	06	29.97	30.17
07	BKN	090	10.00		35	27	32	72	0	00	30.01	30.20
10	SCT	250	10.00		39	30	35	70	10	18	30.04	30.23
13	SCT	250	10.00		47	25	38	42	16	25	29.98	30.18
16	FEW	250	10.00		50	19	38	29	14	28	29.98	30.18
19	FEW	250	10.00		42	18	33	38	6	31	30.07	30.27
22	CLR	NC	10.00		33	22	29	64	3	24	30.13	30.33

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.

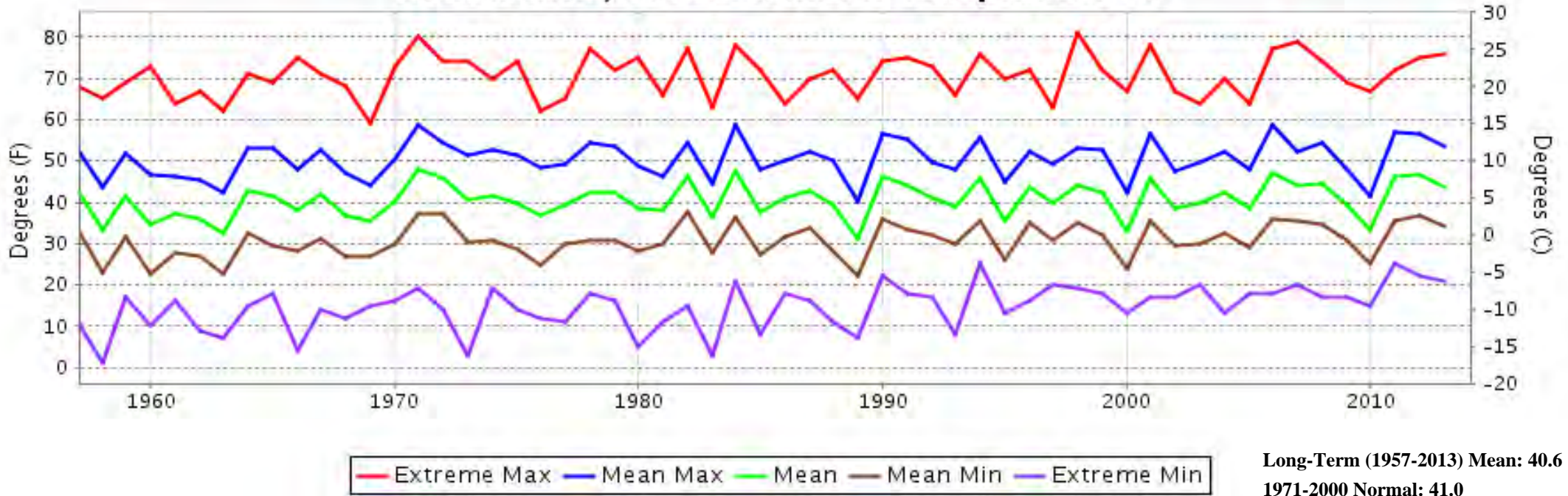
& = Original observation contained additional weather elements.

See page 3 for additional notes.

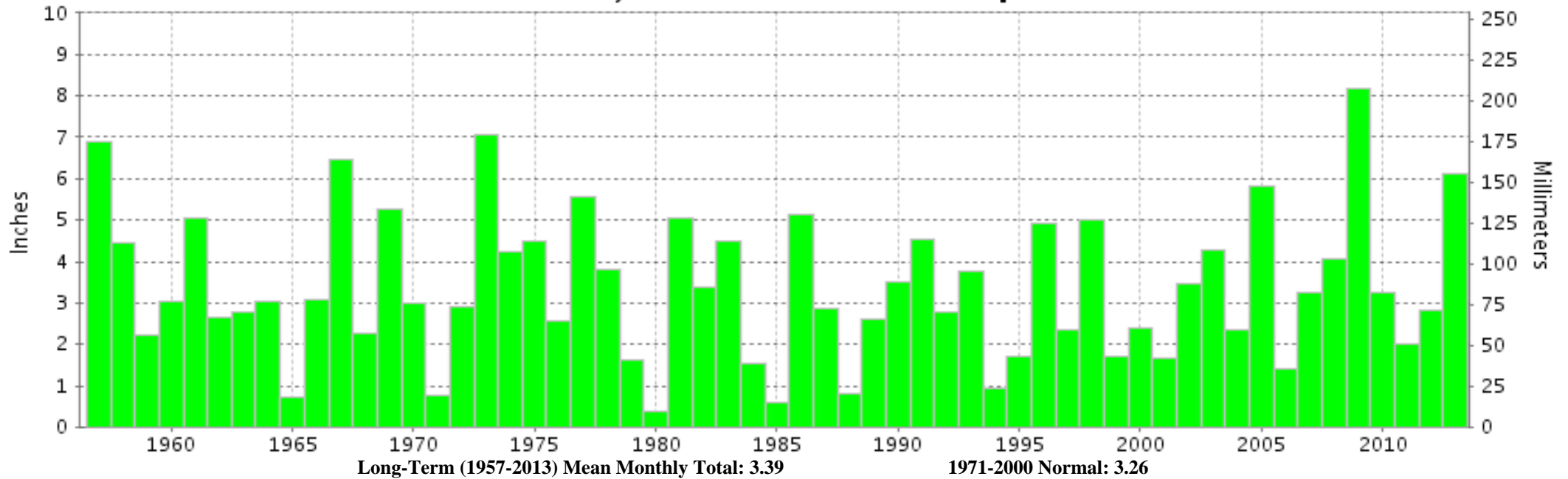
SUMMARY BY HOUR

HOUR (LST)	AVERAGES								RESULTANT WIND (MPH)	
	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	PRESSURE (Inches, HG)		VISIBILITY (Miles)	WIND SPEED (MPH)	SPEED	DIRECTION
					STATION	SEA LEVEL				
01	40	33	37	76	29.97	30.16	8.59	6	1	25
02	40	33	37	77	29.97	30.16	8.50	5	1	25
03	39	33	37	78	29.98	30.17	8.52	5	1	24
04	39	33	37	78	29.97	30.17	8.46	6	2	26
05	39	33	37	79	29.97	30.16	8.58	5	2	25
06	39	32	36	79	29.97	30.17	8.65	6	1	24
07	39	33	36	79	29.98	30.18	8.39	6	2	25
08	39	33	37	80	29.99	30.19	7.87	6	2	25
09	42	34	39	76	30.00	30.20	7.92	7	1	24
10	45	34	41	69	30.00	30.20	8.79	8	2	26
11	48	34	42	62	30.00	30.19	8.98	8	3	26
12	50	34	43	57	29.97	30.16	8.61	9	4	26
13	51	34	44	56	29.95	30.14	8.65	10	6	27
14	51	34	44	56	29.93	30.13	9.02	10	4	26
15	51	34	44	55	29.93	30.12	8.94	9	5	26
16	51	34	44	56	29.94	30.13	8.85	8	4	26
17	48	34	42	60	29.95	30.14	8.82	7	2	26
18	46	34	41	67	29.96	30.15	8.85	6	1	24
19	44	35	40	70	29.97	30.16	9.19	7	1	24
20	44	35	40	72	29.97	30.17	9.06	6	1	20
21	43	34	39	74	29.98	30.17	9.00	6	1	25
22	42	33	39	73	29.98	30.17	9.08	5	2	25
23	41	33	38	73	29.98	30.18	8.87	6	2	25
24	40	32	37	75	29.98	30.17	8.71	6	1	25

RICHMOND, VA DECEMBER Temperatures



RICHMOND, VA DECEMBER Precipitation





**DECEMBER 2013
RICHMOND, VA**

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

I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA-National Weather Service / Department Of Transportation-Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.

A handwritten signature in black ink, appearing to read "Thomas R. Karl".

DIRECTOR

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