



DECEMBER 2002

LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

RICHMOND, VA

R.E.BYRD INTERNATIONAL AP (RIC)
 Lat: 37°30' N Long: 77°19' W Elev (Ground): 164 Feet
 Time Zone: EASTERN WBAN: 13740 ISSN #:0198-537X

DATE	TEMPERATURE °F						DEG DAYS BASE 65°		WEATHER	SNOW/ICE ON GND(IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND SPEED = MPH DIR = TENS OF DEGREES						DATE		
	MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	HEATING	COOLING		0700 LST	1300 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	MAXIMUM					
																			5-SEC		2-MIN			
1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
01	41	27	34	-11	14	28	31	0			0.0	0.00	29.83	30.02	9.9	27	11.2	26	32	21	28	01		
02	51	24	38	-6	20	32	27	0			0.0	0.00	29.84	30.03	11.5	22	11.8	25	21	21	21	02		
03	44	18	31	-13	12	26	34	0			0.0	0.00	30.13	30.33	10.0	01	11.2	38	36	29	01	03		
04	32	17*	25*	-18	11	22	40	0	SN FZFG BR		1.0	0.13	30.32	30.52	4.0	02	5.0	13	04	12	02	04		
05	32	25	29	-14	28	29	36	0	RA FZRA FZDZ SN BR		4.0	0.72	29.88	30.08	6.7	36	7.7	17	33	15	33	05		
06	37	23	30	-13	25	28	35	0	BCFG BR		0.0	0.00	30.03	30.23	2.0	35	2.5	12	01	10	01	06		
07	41	19	30	-13	25	28	35	0	FG+ FZFG BR		0.0	0.00	30.10	30.30	4.8	21	5.7	14	19	13	19	07		
08	52	27	40	-2	29	35	25	0	BR		0.0	0.00	30.06	30.26	2.9	25	6.4	20	36	16	01	08		
09	39	27	33	-9	17	27	32	0			0.0	0.00	30.34	30.54	6.3	03	7.1	25	02	20	02	09		
10	37	26	32	-10	24	29	33	0			0.0	0.00	30.08	30.28	5.9	03	6.2	16	03	14	02	10		
11	37	31	34	-7	34	34	31	0	RA DZ FZRA SN BR		0.0	0.72	29.80	29.99	7.2	33	9.8	21	01	16	02	11		
12	50	34	42	1	37	39	23	0	BR		0.0	0.00	30.00	30.19	2.2	32	4.9	13	25	10	01	12		
13	40	32	36	-5	37	37	29	0	RA DZ BR UP		0.0	0.53	29.76	29.95	4.7	03	6.4	25	07	21	07	13		
14	52	39	46	5	37	41	19	0	DZ BR		0.0	T	29.40	29.59	12.8	26	14.0	30	26	25	27	14		
15	54	29	42	2	30	38	23	0			0.0	0.00	29.70	29.89	7.4	25	7.7	22	25	18	25	15		
16	52	33	43	3	28	37	22	0			0.0	0.00	29.72	29.91	7.8	32	11.9	28	32	23	36	16		
17	42	28	35	-5	23	30	30	0			0.0	0.00	30.12	30.32	5.4	04	6.1	17	03	14	03	17		
18	45	32	39	-1	26	33	26	0			0.0	0.00	30.25	30.45	3.1	08	4.4	15	12	14	12	18		
19	57	36	47	7	45	46	18	0	RA DZ BR		0.0	0.03	29.94	30.13	4.9	19	5.2	17	18	16	18	19		
20	63	44	54*	15	50	54	11	0	RA BR		0.0	0.18	29.44	29.63	9.9	23	14.7	33	27	29	26	20		
21	55	37	46	7	26	38	19	0			0.0	0.00	29.70	29.89	14.1	23	14.4	35	23	28	23	21		
22	62	33	48	9	33	42	17	0			0.0	0.00	29.70	29.89	10.2	24	11.4	30	26	25	25	22		
23	51	35	43	4	27	38	22	0			0.0	0.00	29.86	30.05	10.1	24	10.5	23	23	20	23	23		
24	47	35	41	3	33	37	24	0	RA BR		0.0	0.57	29.78	29.97	4.7	06	7.5	18	05	15	08	24		
25	45	34	40	2	32	35	25	0	RA DZ BR		0.0	0.54	29.34	29.53	11.1	29	13.4	38*	27	29*	27	25		
26	46	30	38	0	23	32	27	0			0.0	0.00	29.93	30.13	7.4	31	9.4	26	32	22	34	26		
27	41	26	34	-4	21	28	31	0			0.0	0.00	30.08	30.28	1.5	04	2.1	12	03	10	02	27		
28	48	24	36	-2	24	32	29	0	BR		0.0	0.00	29.94	30.14	5.3	25	6.5	20	16	16	26	28		
29	53	29	41	3	29	36	24	0			0.0	0.00	29.96	30.15	1.6	10	3.8	13	06	10	06	29		
30	57	28	43	6	39	40	22	0	BR		0.0	0.00	30.06	30.25	4.1	15	4.8	17	17	15	18	30		
31	67*	35	51	14	44	48	14	0	RA BR		0.0	0.03	29.90	30.09	7.6	20	8.1	28	21	22	21	31		
MONTHLY AVERAGES										TOTALS-->		5.0	3.45	29.90	30.10	2.8	27	8.1	<-- MONTHLY AVERAGES					
DEPARTURE FROM NORMAL												0.33		SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3										
DEGREE DAYS										GREATEST 24-HR PRECIPITATION: 1.11 DATE :24-25				SEA LEVEL PRESSURE				DATE		TIME				
MONTHLY TOTAL DEPARTURE										GREATEST 24-HR SNOWFALL: 4.0 DATE :05				MAXIMUM				: 30.63		09 1054				
SEASON TO DATE TOTAL DEPARTURE										GREATEST SNOW DEPTH:				MINIMUM				: 29.36		25 1254				
HEATING: 814 66 1540 69										NUMBER OF DAYS WITH		MAXIMUM TEMP ≥ 90: 0		MINIMUM TEMP ≤ 32: 20		PRECIPITATION ≥ 0.01 INCH : 9								
COOLING: 0 -1 1764 329												MAXIMUM TEMP ≤ 32 : 2		MINIMUM TEMP ≤ 0 : 0		PRECIPITATION ≥ 0.10 INCH : 7								
												THUNDERSTORMS : 0		HEAVY FOG : 1		SNOWFALL ≥ 1.0 INCH : 2								

DECEMBER 2002
RICHMOND, VA

HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

RICHMOND, VA

DECEMBER 2002

RIC

WBAN # 13740

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note)	2400 LST	
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24			Water	Equiv.
01													01												01		0.00		
02													02												02		0.00		
03													03												03		0.00		
04													04												04		0.13		
05	0.08	0.12	0.05	0.07	0.07	0.06	0.10	0.05	0.09	0.03	T	T	05	T	T										05		0.72		
06													06												06		0.00		
07													07												07		0.00		
08													08												08		0.00		
09													09												09		0.00		
10													10												10		0.00		
11													11	0.01	T	T	T								11		0.72		
12													12												12		0.00		
13													13	0.09	0.08	0.06	0.03	0.07	0.08	0.04	T	T	T	0.01	T	13		0.53	
14	T												14												14		T		
15													15												15		0.00		
16													16												16		0.00		
17													17												17		0.00		
18													18												18		0.00		
19													19				T	0.02	T	T				0.01	T	19		0.03	
20													20			T	T								20		0.18		
21													21												21		0.00		
22													22												22		0.00		
23													23												23		0.00		
24													24	0.12	0.09	0.02	0.01	0.02	0.06	0.05	0.03	0.05	0.04	0.03	0.02	24		0.57	
25	T	T	0.01	T	0.05	0.13	0.10	0.18	0.07				25												25		0.54		
26													26												26		0.00		
27													27												27		0.00		
28													28												28		0.00		
29													29												29		0.00		
30													30												30		0.00		
31													31												31		0.03		

MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)	.06	.10	.13	.15	.21	.28	.34	.41	.50	.52	.55	.57
Ending Date	25	11	11	11	11	11	11	11	11	11	11	11
Ending Time (Hour/Min)	0757	1045	1045	1051	1049	1051	1105	1051	1105	1124	1138	1138

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. 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.

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		
	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	SQ Squalls
PR Partial	RA Rain	PY Spray	SS Sandstorm
SH Shower(s)	SG Snow Grains	SA Sand	GL Glaze
TS Thunderstorm	SN Snow	VA Volcanic Ash	
VC In the Vicinity	UP Unknown Precipitation		

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

RICHMOND, VA DECEMBER 2002

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:

DATE	SUNSHINE		CLOUDINESS (OKTAS)				VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR–SS		MN–MN		MINIMUM	MAXIMUM	
			CEILOMETER	SATELLITE	CEILOMETER	SATELLITE			
01							10.00	10.00	
02							10.00	10.00	
03							10.00	10.00	
04							.50	10.00	
05							.75	10.00	
06							5.00	10.00	
07							.06	10.00	
08							4.00	10.00	
09							10.00	10.00	
10							10.00	10.00	
11							1.00	10.00	
12							1.75	10.00	
13							1.50	10.00	
14							1.00	10.00	
15							10.00	10.00	
16							10.00	10.00	
17							10.00	10.00	
18							10.00	10.00	
19							1.25	10.00	
20							1.50	10.00	
21							10.00	10.00	
22							10.00	10.00	
23							10.00	10.00	
24							2.00	10.00	
25							2.00	10.00	
26							10.00	10.00	
27							7.00	10.00	
28							5.00	10.00	
29							10.00	10.00	
30							4.00	10.00	
31							4.00	10.00	
MONTHLY AVGS							5.88	10.00	
SUNSHINE (MINUTES)									
Total: Possible: Percent Possible:									
NUMBER OF DAYS WITH:									
SKY CONDITION									
CLR PTLY CLDY CLOUDY MISSING									
31									
MINIMUM VISIBILITY (MILES)									
<=0.25 <=3.0 >=7.0									
1 11 15									

OBSERVATIONS AT 3-HOURLY INTERVALS

RICHMOND, VA

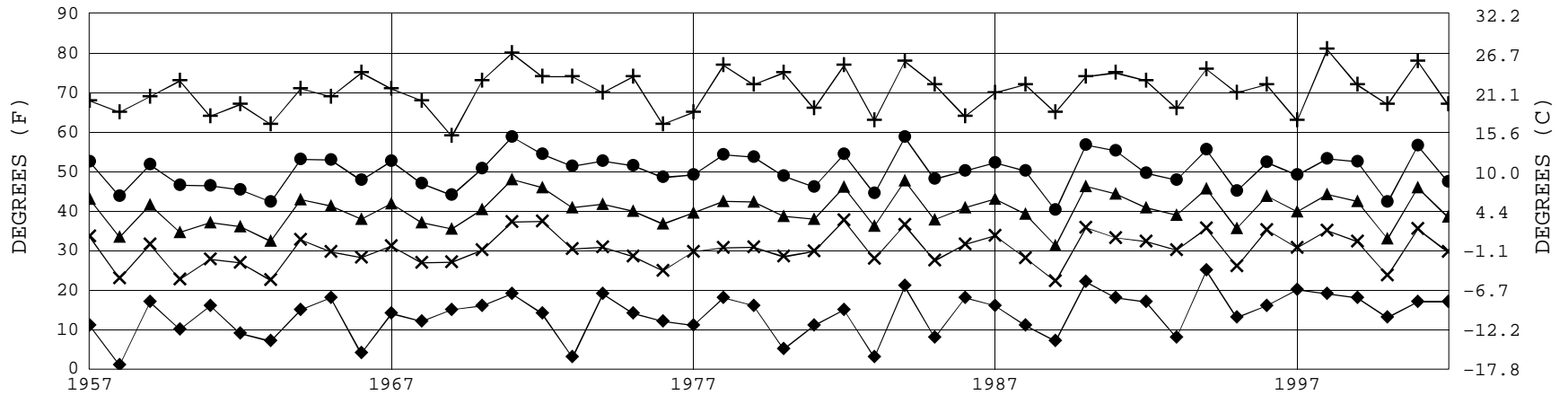
DECEMBER 2002

RIC

WBAN # 13740

HOUR (LST)	SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)		HOUR (LST)	SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)				
	SKY COVER	CEILING 100'S OF FT		OBSERVATION TIME (LST)	EFF CLD AMT	RELATIVE HUMIDITY (PCT)	DRY BULB	DEW POINT	WET BULB	SPEED (MPH)	DIRECTION TENS OF DEG		STATION	SEA LEVEL		SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT	RELATIVE HUMIDITY (PCT)	DRY BULB	DEW POINT	WET BULB	SPEED (MPH)	DIRECTION TENS OF DEG	STATION
SUNRISE: 0722 DEC 25 SUNSET: 1657												SUNRISE: 0724 DEC 31 SUNSET: 1701														
01	OVC	005		6.00	-RA BR	35	35	35	100	10	01	29.50	29.68	01	BKN	200		7.00	40	40	40	100	5	21	29.97	30.16
04	OVC	003		4.00	-DZ BR	36	36	36	100	7	02	29.37	29.56	04	OVC	200		8.00	39	39	39	100	7	20	29.94	30.14
07	OVC	006		2.50	+RA BR	35	35	35	100	8	31	29.24	29.42	07	OVC	200		10.00	38	37	38	97	7	19	29.94	30.14
10	OVC	008		10.00		36	36	36	100	9	29	29.22	29.40	10	OVC	250		10.00	47	42	45	83	6	19	29.97	30.16
13	OVC	015		10.00		40	39	40	97	13	27	29.17	29.36	13	BKN	250		10.00	62	38	50	41	10	22	29.87	30.07
16	BKN	045		10.00		43	29	37	58	20	28	29.27	29.46	16	SCT	NC		10.00	64	45	54	50	12	19	29.83	30.02
19	CLR	NC		10.00		37	23	32	57	15	26	29.40	29.59	19	BKN	140		10.00	57	50	53	78	9	18	29.85	30.04
22	SCT	NC		10.00		36	23	31	59	13	26	29.52	29.70	22	OVC	080		10.00	56	56	56	100	3	16	29.84	30.03
SUNRISE: 0722 DEC 26 SUNSET: 1658												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, VV = 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.																										
01	SCT	NC		10.00		36	23	31	59	12	30	29.61	29.80	01	SCT	NC		10.00	29	22	27	75	0	00	30.10	30.30
04	FEW	NC		10.00		36	24	32	62	14	29	29.72	29.92	04	CLR	NC		10.00	28	20	25	72	0	00	30.13	30.32
07	CLR	NC		10.00		35	23	31	61	10	30	29.86	30.06	07	SCT	NC		10.00	28	19	25	69	0	00	30.13	30.33
10	CLR	NC		10.00		39	25	34	57	14	32	29.99	30.19	10	SCT	NC		10.00	33	22	29	64	6	05	30.17	30.37
13	CLR	NC		10.00		44	22	36	41	12	32	29.97	30.16	13	FEW	NC		10.00	38	21	32	51	5	VR	30.07	30.27
16	FEW	NC		10.00		45	20	36	37	10	27	30.00	30.20	16	FEW	NC		10.00	40	22	33	49	0	00	30.04	30.24
19	CLR	NC		10.00		34	23	30	64	6	13	30.02	30.22	19	CLR	NC		10.00	32	22	29	66	0	00	30.01	30.21
22	CLR	NC		10.00		33	21	29	61	7	04	30.07	30.27	22	FEW	NC		8.00	28	23	26	81	0	00	30.02	30.22
SUNRISE: 0723 DEC 27 SUNSET: 1658												SUMMARY BY HOUR														
AVERAGES												RESULTANT WIND (MPH)														
HOURS (LST)												CEILOMETER														
EFF CLD AMT												DRY BULB														
DEW POINT												WET BULB														
RELATIVE HUMIDITY												PRESSURE (INCHES, HG)														
STATION												SEA LEVEL														
VISIBILITY (MILES)												WIND SPEED (MPH)														
WIND SPEED (MPH)												SPEED														
DIRECTION												DIRECTION														
01						36	28	33	75	29.89	30.09	8.54	7	3	27											
02						35	27	32	76	29.89	30.09	8.29	7	2	29											
03						34	27	32	77	29.90	30.10	8.37	6	2	26											
04						34	28	32	80	29.90	30.09	8.24	7	2	28											
05						34	28	32	79	29.89	30.09	8.15	6	2	28											
06						33	27	31	80	29.90	30.09	8.31	6	1	26											
07						33	28	31	81	29.91	30.11	8.13	7	1	27											
08						34	28	32	79	29.93	30.12	7.93	8	2	26											
09						36	28	33	74	29.93	30.13	8.35	9	2	30											
10						39	29	35	69	29.94	30.14	8.83	10	2	30											
11						41	28	37	63	29.93	30.13	9.01	10	4	28											
12						43	29	38	60	29.91	30.10	9.19	10	5	28											
13						44	28	38	58	29.88	30.08	9.19	10	4	28											
14						45	28	39	55	29.87	30.07	9.23	10	5	27											
15						46	28	39	54	29.87	30.06	9.34	11	5	27											
16						45	28	38	56	29.87	30.07	9.54	9	4	27											
17						43	28	37	59	29.88	30.08	9.03	9	4	27											
18						41	28	36	64	29.89	30.08	8.97	7	2	27											
19						40	29	36	68	29.90	30.09	9.00	8	3	24											
20						39	29	35	71	29.90	30.10	9.00	8	2	24											
21						38	29	35	73	29.91	30.10	8.81	7	3	25											
22						38	30	35	75	29.91	30.10	8.56	7	2	27											
23						38	30	34	76	29.91	30.10	8.25	8	2	26											
24						37	30	34	78	29.90	30.10	8.31	7	2	26											

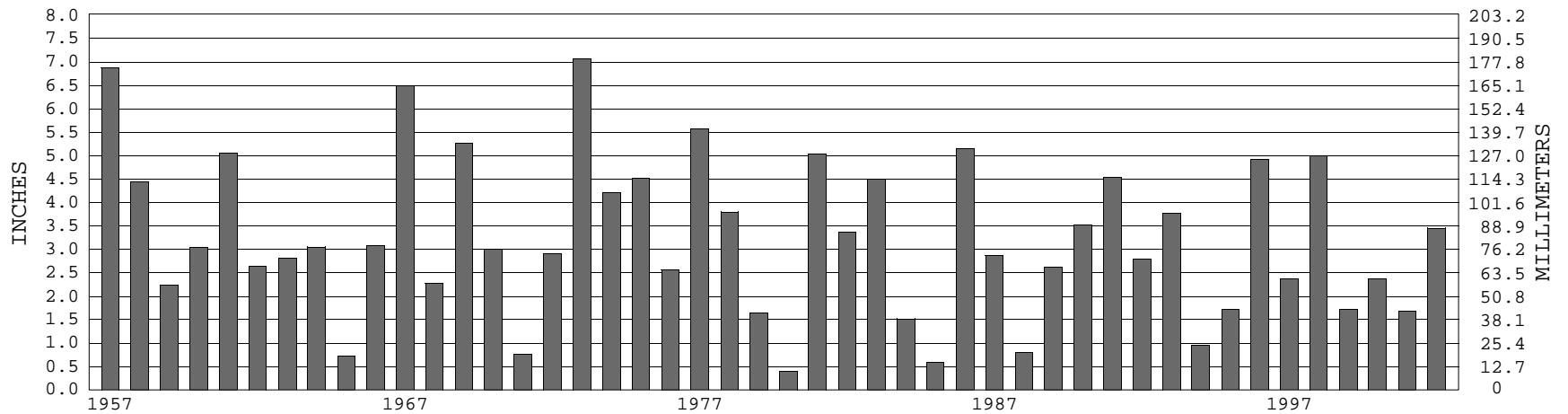
RICHMOND, VA DECEMBER TEMPERATURES



+ Extreme Max. ● Mean Max. ▲ Mean × Mean Min. ◆ Extreme Min.

Long-Term (1957-2002) Mean: 40.2 1961-1990 Normal: 40.4

RICHMOND, VA DECEMBER PRECIPITATION



Long-Term (1957-2002) Mean Monthly Total: 3.25

1961-1990 Normal: 3.12



DECEMBER 2002

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.

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