



OCTOBER 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

OCTOBER 2002
RICHMOND, VA

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	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
01	81	58	70	6	64	66	0	5	BR			0.0	0.00	30.00	30.18	4.1	20	4.7	17	21	14	20	01		
02	87	64	76	13	66	69	0	11	BR HZ			0.0	0.00	29.91	30.09	2.0	24	2.8	14	26	12	26	02		
03	88	67	78	15	68	71	0	13	BR HZ			0.0	0.00	29.85	30.04	0.4	32	2.5	15	05	10	02	03		
04	85	65	75	13	69	71	0	10	BR HZ			0.0	0.00	29.84	30.02	7.1	16	7.9	23	18	18	18	04		
05	89*	66	78*	16	65	70	0	13	RA BR HZ			0.0	T	29.81	29.99	4.7	29	10.4	31	01	25	02	05		
06	73	57	65	3	56	60	0	0				0.0	0.00	30.00	30.18	5.0	06	7.7	22	02	17	02	06		
07	82	60	71	10	59	63	0	6	BR			0.0	0.00	29.85	30.03	3.6	34	8.2	29	01	22	02	07		
08	68	54	61	0	44	52	4	0				0.0	0.00	30.05	30.24	7.8	03	8.5	20	04	16	02	08		
09	70	52	61	0	53	56	4	0	RA			0.0	T	30.07	30.27	3.9	02	4.3	10	01	9	03	09		
10	72	59	66	5	63	64	0	1	RA BR			0.0	0.71	30.04	30.23	4.3	02	4.8	9	36	9	04	10		
11	70	65	68	8	67	67	0	3	RA BR			0.0	1.17	29.91	30.09	6.8	08	7.7	22	12	16	11	11		
12	74	62	68	8	65	66	0	3	RA DZ BR			0.0	0.05	29.90	30.08	6.8	01	6.9	17	36	15	01	12		
13	73	61	67	8	62	64	0	2	BR			0.0	0.00	29.94	30.13	3.3	34	5.3	35*	01	31*	01	13		
14	63	45	54	-5	43	49	11	0				0.0	0.00	30.09	30.28	9.4	03	10.0	33	01	26	01	14		
15	61	44	53	-5	50	52	12	0	RA BR			0.0	0.25	29.85	30.04	8.4	03	8.5	17	04	14	04	15		
16	62	50	56	-2	56	57	9	0	RA DZ FG+ BCFG BR			0.0	0.66	29.47	29.65	7.5	35	8.9	28	01	21	01	16		
17	65	49	57	-1	49	52	8	0	RA BCFG			0.0	T	29.77	29.95	2.5	31	5.7	18	30	14	29	17		
18	62	38	50	-8	41	46	15	0	BR			0.0	0.00	30.01	30.20	0.4	17	2.9	14	29	12	29	18		
19	68	43	56	-2	48	52	9	0	RA			0.0	T	29.89	30.08	10.8	21	11.2	26	19	21	20	19		
20	64	55	60	3	53	56	5	0	RA			0.0	T	29.82	30.01	1.0	36	6.7	15	24	13	24	20		
21	56	48	52	-4	50	51	13	0	RA BR			0.0	0.26	29.93	30.12	4.8	02	5.1	18	01	14	02	21		
22	62	45	54	-2	48	50	11	0	RA BCFG			0.0	0.02	30.01	30.20	1.6	36	2.7	9	31	8	10	22		
23	70	43	57	1	48	52	8	0	BR			0.0	0.00	30.07	30.26	2.3	05	3.5	13	05	10	06	23		
24	60	50	55	0	48	51	10	0				0.0	0.00	30.14	30.33	8.1	03	8.6	15	01	14	04	24		
25	59	46	53	-2	51	52	12	0	RA BR			0.0	0.60	30.03	30.22	6.4	02	7.8	17	01	14	32	25		
26	72	51	62	7	56	57	3	0	RA FG+ BR			0.0	0.21	29.78	29.97	2.2	32	4.9	16	31	14	31	26		
27	65	54	60	6	50	54	5	0				0.0	0.00	29.95	30.14	2.2	08	3.7	13	06	10	07	27		
28	56	47	52	-2	48	50	13	0	RA DZ BR			0.0	1.02	29.91	30.10	7.9	05	8.5	21	02	16	01	28		
29	48	44	46	-8	45	46	19	0	RA DZ BR			0.0	0.71	29.84	30.03	8.9	02	9.7	22	02	18	02	29		
30	45	40	43*	-11	42	42	22	0	RA DZ BR			0.0	0.43	29.71	29.90	10.5	36	11.0	21	36	16	36	30		
31	51	36*	44	-10	39	41	21	0				0.0	0.00	29.89	30.08	7.3	35	7.5	21	36	17	01	31		
< MONTHLY AVERAGES											TOTALS->					<- MONTHLY AVERAGES									
-1.5											5.0					1.7									
DEGREE DAYS											GREATEST 24-HR PRECIPITATION: 1.52 DATE: 10-11														
MONTHLY TOTAL DEPARTURE											GREATEST 24-HR SNOWFALL: 0.0 DATE:														
SEASON TO DATE TOTAL DEPARTURE											GREATEST SNOW DEPTH: DATE:														
HEATING: 214 -11											MAXIMUM TEMP ≥ 90: 0														
COOLING: 67 34											MINIMUM TEMP ≤ 32: 0														
1763 335											PRECIPITATION ≥ 0.01 INCH: 12														
											PRECIPITATION ≥ 0.10 INCH: 10														
											THUNDERSTORMS: 0														
											HEAVY FOG: 2														
											SNOWFALL ≥ 1.0 INCH: 0														

SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3

HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

RICHMOND, VA

OCTOBER 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		0.00		
05	T	T											05												05		T		
06													06												06		0.00		
07													07												07		0.00		
08													08												08		0.00		
09													09			T									09		T		
10													10		T	T	0.01	0.07	0.18	0.09	0.12	0.04	0.04	0.05	0.11	10		0.71	
11	0.03	0.15	0.07	0.01	0.04	0.04	0.06	0.03	0.06	0.06	0.02	0.09	11	0.03	0.03	0.06	0.04	0.02	0.06	0.02	0.07	0.04	0.02	0.07	0.05	11		1.17	
12	0.02	0.01	T	T	0.02		T	T	T				12												12		0.05		
13													13												13		0.00		
14													14												14		0.00		
15													15				0.01	0.01	0.02	0.01	0.11	0.03	0.01	0.04	15	0.24	0.25		
16	0.02	0.16	0.05	0.17	0.05	0.02	0.07	0.05	0.03	0.01	T	T	16	0.01	0.01		0.01	T						16		0.66			
17													17				T								17		T		
18													18												18		0.00		
19													19											T	19		T		
20													20	T	T								T	T	20		T		
21		T	T	0.03	0.04	0.05	0.04	0.01	0.04	0.02	0.03		21												21		0.26		
22				T	0.01	0.01							22												22		0.02		
23													23												23		0.00		
24													24												24		0.00		
25					T	T	T	0.01	0.03	0.01	T	T	25	T	T					T	0.01	T	0.25	0.29	25		0.60		
26	0.14	0.03	0.04										26												26		0.21		
27													27												27		0.00		
28											0.10	0.28	28	0.23	0.36	0.03	T	T	T	0.01	T	T	0.01	T	28		1.02		
29	T	T	T	0.02	0.03	0.07	0.03	0.11	0.05	0.05	0.13	0.21	29	0.04	0.04	T	0.01	0.01	0.02	0.05	0.02	0.08	0.06	0.03	0.01	29		0.71	
30	T	T	T								0.02	0.01	30	0.02	T					T					30	0.42	0.43		
31													31												31		0.00		

MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)	.08	.12	.16	.19	.23	.29	.37	.46	.53	.60	.73	.88
Ending Date	25	25	25	25	25	25	28	25	26	26	28	28
Ending Time (Hour/Min)	2252	2252	2252	2257	2302	2302	1352	2348	0001	0019	1349	1352

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 OCTOBER 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							5.00	10.00	
02							2.50	10.00	
03							4.00	10.00	
04							1.75	10.00	
05							4.00	10.00	
06							10.00	10.00	
07							5.00	10.00	
08							10.00	10.00	
09							10.00	10.00	
10							1.50	10.00	
11							1.25	10.00	
12							2.00	10.00	
13							3.00	10.00	
14							10.00	10.00	
15							2.50	10.00	
16							.75	10.00	
17							10.00	10.00	
18							5.00	10.00	
19							10.00	10.00	
20							10.00	10.00	
21							2.50	10.00	
22							8.00	10.00	
23							4.00	10.00	
24							10.00	10.00	
25							1.00	10.00	
26							.25	10.00	
27							9.00	10.00	
28							1.00	10.00	
29							1.00	10.00	
30							1.00	10.00	
31							8.00	10.00	
MONTHLY AVGS							5.02	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 14 11									

OBSERVATIONS AT 3-HOURLY INTERVALS

RICHMOND, VA

OCTOBER 2002

RIC

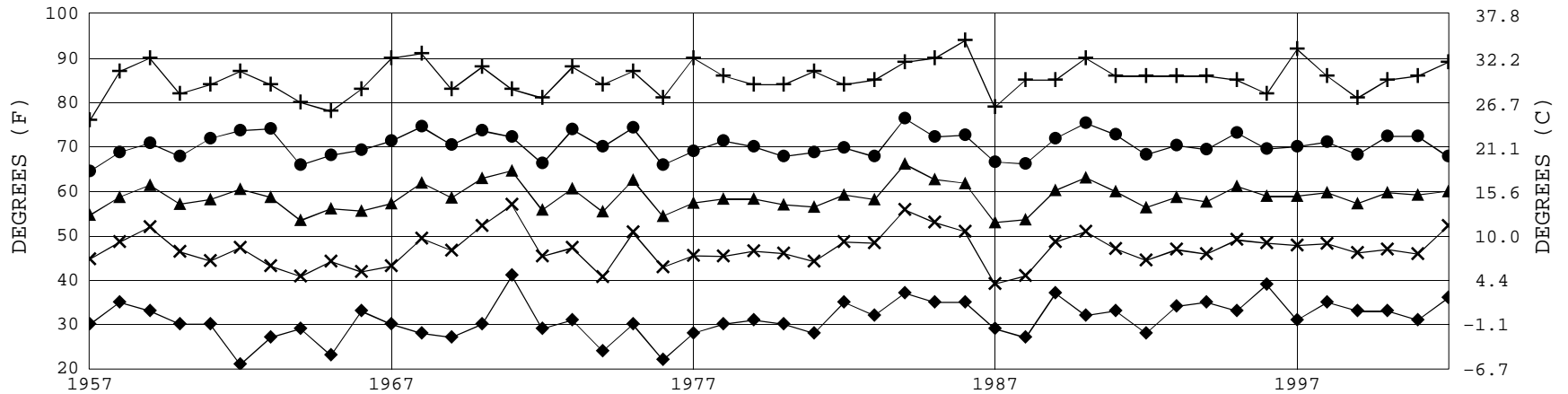
WBAN # 13740

HOUR (LST)	SATELLITE						TEMPERATURE °F				WIND	PRESSURE (INCHES, HG)		HOUR (LST)	SATELLITE						TEMPERATURE °F				WIND	PRESSURE (INCHES, HG)					
	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT Oktas	VISIBILITY (MILES)	WEATHER	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)		SPEED (MPH)	DIRECTION TENS OF DEG		STATION	SEA LEVEL	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT Oktas	VISIBILITY (MILES)	WEATHER	DRY BULB	DEW POINT		WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL
01	OVC	039			10.00		51	48	50	89	9	03	30.12	30.31	01	OVC	010			10.00		40	39	40	97	12	35	29.76	29.96		
04	OVC	050			10.00		49	46	48	90	10	01	30.10	30.29	04	OVC	010			10.00		40	39	40	97	9	33	29.81	30.00		
07	OVC	020			3.00	BR	47	46	47	97	10	01	30.12	30.32	07	OVC	010			10.00		41	39	40	93	12	35	29.87	30.06		
10	OVC	005			1.00	-RA BR	48	48	48	100	8	36	30.13	30.32	10	OVC	032			10.00		45	38	42	77	18	36	29.91	30.11		
13	OVC	004			2.50	-RA BR	52	52	52	100	8	01	30.07	30.26	13	OVC	025			10.00		46	38	42	73	12	01	29.89	30.08		
16	OVC	023			6.00	BR	54	54	54	100	7	04	29.99	30.18	16	BKN	030			10.00		49	38	44	66	6	33	29.89	30.09		
19	OVC	031			10.00		57	56	56	96	3	06	29.92	30.11	19	SCT	NC			10.00		42	39	41	89	0	00	29.94	30.14		
22	OVC	013			8.00		59	58	58	96	0	00	29.84	30.03	22	SCT	NC			10.00		38	37	38	97	0	00	29.95	30.15		
01	OVC	003			3.00	-RA BR	53	53	53	100	3	29	29.79	29.98	3-HOURLY OBSERVATION NOTES																
04	OVC	003			10.00		52	52	52	100	3	31	29.77	29.96	Sky Cover is the amount of the sky obscured. CLR or SKC = 0, FEW = 1/8-2/8,																
07	VV	001			0.25	FG	51	51	51	100	6	28	29.75	29.94	SCT = 3/8-4/8, BKN = 5/8-7/8, OVC = 8/8, VV = Vertical Visibility = 8/8.																
10	BKN	250			10.00		57	55	56	93	5	28	29.76	29.96	Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.																
13	OVC	250			10.00		68	59	63	73	6	32	29.73	29.92	NC = No ceiling detected.																
16	OVC	250			10.00		71	58	63	63	5	36	29.75	29.94	& = Original observation contained additional weather elements.																
19	OVC	055			10.00		63	60	61	90	5	06	29.80	29.99	See page 3 for additional notes.																
22	BKN	035			10.00		61	57	59	87	6	05	29.85	30.04																	
01	BKN	040			10.00		59	54	56	83	3	01	29.88	30.08																	
04	OVC	045			10.00		57	52	54	83	6	02	29.92	30.11																	
07	OVC	060			10.00		55	50	52	83	3	04	29.97	30.16																	
10	FEW	NC			10.00		60	48	54	65	6	06	30.00	30.19																	
13	BKN	048			10.00		65	48	56	54	0	00	29.94	30.14																	
16	BKN	060			10.00		63	50	56	63	3	19	29.92	30.11																	
19	SCT	NC			10.00		57	52	54	83	3	13	29.95	30.14																	
22	OVC	075			10.00		55	51	53	87	3	15	29.95	30.14																	
01	OVC	060			9.00		55	52	53	90	0	00	29.94	30.13																	
04	OVC	050			8.00		53	51	52	93	3	06	29.94	30.13																	
07	OVC	048			10.00		53	47	50	80	7	06	29.94	30.14																	
10	OVC	025			10.00		55	44	50	67	9	04	29.93	30.12																	
13	OVC	050			1.75	+RA BR	49	49	49	100	9	06	29.87	30.06																	
16	OVC	012			2.00	BR	50	50	50	100	9	04	29.84	30.03																	
19	OVC	006			1.00	-DZ BR	48	48	48	100	12	02	29.88	30.08																	
22	OVC	006			1.00	-DZ BR	48	48	48	100	10	05	29.91	30.10																	
01	OVC	025			1.00	BR	47	46	46	97	10	01	29.91	30.10																	
04	OVC	025			2.00	BR	48	47	47	96	7	01	29.91	30.10																	
07	OVC	034			7.00		48	45	47	89	10	03	29.91	30.10																	
10	OVC	022			10.00		47	40	44	77	9	05	29.88	30.08																	
13	OVC	006			2.00	RA BR	44	44	44	100	10	03	29.85	30.04																	
16	OVC	004			1.00	-RA BR	46	46	46	100	9	05	29.75	29.95																	
19	OVC	004			1.00	-RA BR	47	47	47	100	9	35	29.75	29.94																	
22	OVC	006			7.00	-RA	47	47	47	100	14	02	29.73	29.93																	
01	OVC	006			2.00	-DZ BR	44	43	44	96	13	03	29.74	29.94																	
04	OVC	005			2.00	-RA BR	44	44	44	100	5	02	29.71	29.91																	
07	OVC	008			2.00	-RA	43	43	43	100	9	36	29.69	29.89																	
10	OVC	009			2.00	RA BR	43	42	43	97	12	35	29.71	29.90																	
13	OVC	008			3.00	-RA BR	43	42	43	97	12	35	29.66	29.85																	
16	OVC	006			1.00	-DZ BR	43	42	43	97	10	35	29.66	29.85																	
19	OVC	006			2.50	-DZ BR	40	40	40	100	12	34	29.71	29.91																	
22	OVC	006			10.00		40	39	40	97	12	36	29.75	29.95																	

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)	DIRECTION	
							STATION	SEA LEVEL				
01			56	53	54	89	29.91	30.10	7.82	6	4	1
02			56	53	54	89	29.91	30.10	7.60	6	4	36
03			56	53	54	91	29.90	30.09	7.87	6	3	1
04			55	53	54	91	29.91	30.10	7.55	6	4	1
05			55	52	54	91	29.91	30.10	7.00	7	4	1
06			55	52	54	91	29.92	30.11	7.40	6	3	2
07			55	52	54	91	29.93	30.12	6.98	6	3	1
08			57	53	55	88	29.94	30.13	7.15	7	3	1
09			59	54	56	82	29.95	30.14	7.68	7	4	2
10			62	54	57	76	29.94	30.13	8.42	8	4	2
11			64	54	58	73	29.94	30.12	8.73	7	3	35
12			65	54	59	71	29.92	30.11	8.82	7	3	2
13			66	54	59	69	29.90	30.09	8.69	7	3	2
14			66	54	59	69	29.88	30.07	8.60	8	2	2
15			66	55	59	70	29.88	30.07	8.60	8	2	2
16			65	55	59	71	29.87	30.07	8.35	7	2	3
17			64	55	59	75	29.88	30.07	8.32	7	2	2
18			61	55	58	82	29.89	30.08	8.42	5	3	4
19			60	55	57	85	29.90	30.09	8.39	5	3	4
20			59	55	57	87	29.90	30.09	8.23	7	3	4
21			58	54	56	88	29.91	30.10	8.11	6	3	3
22			58	54	56	87	29.91	30.10	8.19	6	4	3
23			57	53	55	88	29.91	30.10	7.65	7	4	2
24			56	53	54	89	29.91	30.10	7.31	6	3	2

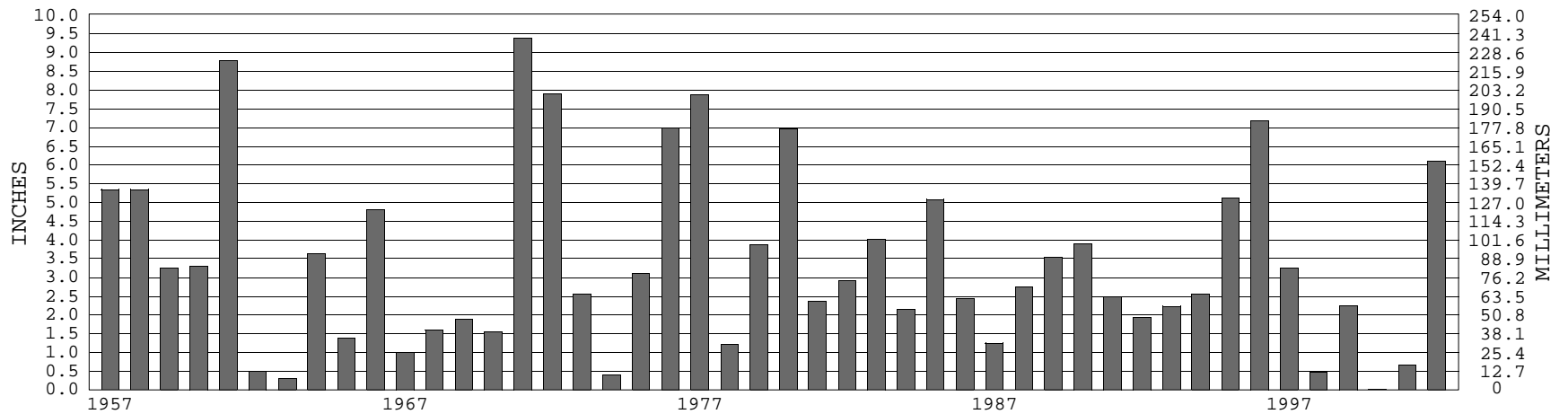
RICHMOND, VA OCTOBER TEMPERATURES



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

Long-Term (1957-2002) Mean: 58.7 1961-1990 Normal: 58.3

RICHMOND, VA OCTOBER PRECIPITATION



Long-Term (1957-2002) Mean Monthly Total: 3.42

1961-1990 Normal: 3.60



OCTOBER 2002

RICHMOND, VA

LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

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