



JULY 2003

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

JULY 2003
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	82	68	75	-2	68	70	0	10	RA BR			0.0	T	29.93	30.11	2.0	06	5.9	28	20	23	20	01	
02	74	67	71	-6	69	69	0	6	RA BR			0.0	0.99	29.76	29.95	6.2	12	6.9	20	08	16	13	02	
03	77	71	74	-3	70	71	0	9	RA DZ BR			0.0	0.02	29.65	29.83	2.9	22	7.1	15	20	14	21	03	
04	92	66	79	2	70	73	0	14	HZ			0.0	0.00	29.79	29.97	7.0	23	7.5	20	24	16	24	04	
05	94	73	84*	7	72	76	0	19	BR HZ			0.0	0.00	29.79	29.97	10.7	23	11.6	24	23	20	23	05	
06	92	73	83	6	72	75	0	18	TSRA RA BR HZ			0.0	0.06	29.80	29.99	8.3	23	9.2	31	28	23	27	06	
07	92	72	82	5	73	76	0	17				0.0	0.00	29.82	30.00	9.2	23	10.2	22	24	18	24	07	
08	92	73	83	6	73	75	0	18	RA BR			0.0	0.08	29.83	30.01	4.1	27	7.3	22	28	15	30	08	
09	95*	70	83	6	74	76	0	18	TS TSRA RA BR			0.0	0.42	29.77	29.95	5.2	24	6.6	37	28	26	28	09	
10	94	67	81	3	73	75	0	16	RA			0.0	T	29.72	29.90	5.2	19	5.9	18	22	16	22	10	
11	89	72	81	3	72	75	0	16				0.0	0.00	29.67	29.85	12.9	23	13.3	28	23	24	27	11	
12	88	67	78	0	66	70	0	13	RA BR			0.0	0.01	29.81	29.99	7.4	22	8.2	24	22	18	25	12	
13	84	67	76	-2	67	70	0	11	TSRA RA BR			0.0	0.10	29.92	30.11	2.0	08	6.8	17	14	14	13	13	
14	82	65	74	-4	67	69	0	9	RA			0.0	0.04	29.97	30.16	2.9	06	4.8	15	05	13	05	14	
15	89	66	78	0	69	72	0	13	BR			0.0	0.00	29.92	30.11	4.4	16	4.7	16	19	14	19	15	
16	92	71	82	4	74	76	0	17	RA BR HZ			0.0	0.01	29.82	30.00	6.1	22	8.1	20	25	17	29	16	
17	88	70	79	1	67	71	0	14				0.0	0.00	29.91	30.10	5.1	01	6.8	18	02	15	01	17	
18	91	67	79	0	70	73	0	14	TS TSRA BR			0.0	0.42	29.84	30.02	3.8	18	7.3	23	01	18	06	18	
19	85	68	77	-2	70	72	0	12	TSRA BR HZ			0.0	0.35	29.81	29.99	2.5	03	6.5	25	13	22	13	19	
20	90	69	80	1	72	73	0	15	TS TSRA GR GS FG+ BR HZ			T	1.38	29.83	30.02	4.2	15	6.5	36	15	29	15	20	
21	90	71	81	2	74	76	0	16	BR HZ			0.0	0.00	29.71	29.89	10.9	20	11.2	24	22	21	21	21	
22	91	70	81	2	74	75	0	16	TS TSRA RA FG+ BR HZ SQ			0.0	2.06	29.64	29.82	9.0	21	11.4	48*	19	31	20	22	
23	79	69	74	-5	72	72	0	9	TSRA RA BR			0.0	0.41	29.71	29.90	10.0	20	10.4	24	17	21	16	23	
24	83	65	74	-4	67	69	0	9	RA BR			0.0	0.01	29.87	30.06	3.2	23	4.9	14	30	12	28	24	
25	85	64*	75	-3	68	70	0	10	BR			0.0	0.00	30.06	30.25	3.1	11	4.0	14	14	10	15	25	
26	88	66	77	-1	70	72	0	12	BR			0.0	0.00	30.08	30.27	4.1	21	4.8	17	23	14	23	26	
27	92	72	82	4	74	76	0	17				0.0	0.00	29.87	30.06	11.1	22	11.4	25	22	21	23	27	
28	91	72	82	4	74	76	0	17	TS TSRA RA BR HZ			0.0	0.66	29.70	29.89	6.0	24	8.1	38	33	32*	33	28	
29	78	68	73	-5	70	71	0	8	RA BR			0.0	0.21	29.79	29.97	5.8	06	6.9	14	07	13	01	29	
30	70	66	68*	-10	68	68	0	3	RA DZ BR			0.0	2.03	29.92	30.11	7.5	03	8.1	18	02	15	04	30	
31	81	68	75	-3	71	72	0	10	FG+ BR			0.0	0.00	29.93	30.12	2.5	10	5.0	10	14	8	14	31	
MONTHLY AVERAGES										TOTALS-->				<-- MONTHLY AVERAGES										
DEPARTURE FROM NORMAL														SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3										
DEGREE DAYS										GREATEST 24-HR PRECIPITATION: 2.21 DATE :22-23				SEA LEVEL PRESSURE				DATE TIME						
MONTHLY TOTAL DEPARTURE										GREATEST 24-HR SNOWFALL: T DATE :20				MAXIMUM : 30.33				26 0754						
SEASON TO DATE TOTAL DEPARTURE										GREATEST SNOW DEPTH: DATE :				MINIMUM : 29.77				03 0454						
HEATING: 0 0 0 0										NUMBER OF DAYS WITH =>				MAXIMUM TEMP ≥ 90: 14				MINIMUM TEMP ≤ 32: 0						
COOLING: 406 -9 728 -113														MAXIMUM TEMP ≤ 32: 0				MINIMUM TEMP ≤ 0: 0						
														THUNDERSTORMS: 9				HEAVY FOG: 3						
														PRECIPITATION ≥ 0.01 INCH: 18				PRECIPITATION ≥ 0.10 INCH: 11						
																		SNOWFALL ≥ 1.0 INCH: 0						

HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

RICHMOND, VA

JULY 2003

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							T					01			T	
02												0.04	02	0.10	0.11	0.12	0.23	0.13	0.01	0.02	T	0.02	T		02			0.99	
03													03			T	T	0.01	T					03			0.02		
04													04											04			0.00		
05													05											05			0.00		
06													06							T	0.05	0.01		06			0.06		
07													07											07			0.00		
08						T	0.05				T	T	08						0.03	T				08			0.08		
09													09			0.36	0.01	0.04	0.01					09			0.42		
10													10										T	10			T		
11													11											11			0.00		
12													12											12			0.01		
13													13									0.04	0.03	0.03	13			0.10	
14	T			T	0.02	0.01			0.01				14											14			0.04		
15													15											15			0.00		
16													16			0.01								16			0.01		
17													17											17			0.00		
18													18									0.02	T	0.40	18			0.42	
19	0.35	T											19											19			0.35		
20													20				0.13	1.25						20			1.38		
21													21											21			0.00		
22													22				0.02	0.06	0.04	1.05	0.35	0.08	0.38	0.05	0.01	0.02	2.06		
23	0.10	0.01	T					T	0.01	0.03	T	T	23			T	T					0.19	0.07		23			0.41	
24													24												24	0.00		0.01	
25													25												25			0.00	
26													26												26			0.00	
27													27												27			0.00	
28													28												28			0.66	
29							0.05	T	T		0.61	0.23	0.05	29				T	0.01	0.03	0.03	0.06	T	0.02	T	0.02	0.05	0.21	
30	0.20	0.02	T	T	0.02	0.01	0.02	0.27	0.59	0.61	0.23	0.05	30		T										30			2.03	
31													31		0.01										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)	.43	.72	.85	.88	1.02	1.28	1.37	1.38	1.40	1.40	1.48	1.70
Ending Date	22	22	22	22	20	20	22	22	22	22	30	22
Ending Time (Hour/Min)	1731	1734	1735	1741	1629	1634	1813	1834	1853	1921	1007	2021

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 JULY 2003

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							1.00	10.00	
03							1.75	10.00	
04							5.00	10.00	
05							5.00	10.00	
06							4.00	10.00	
07							7.00	10.00	
08							1.75	10.00	
09							.75	10.00	
10							8.00	10.00	
11							10.00	10.00	
12							5.00	10.00	
13							4.00	10.00	
14							7.00	10.00	
15							1.75	10.00	
16							5.00	10.00	
17							8.00	10.00	
18							1.50	10.00	
19							2.50	10.00	
20							.00	8.00	
21							1.50	8.00	
22							1.00	10.00	
23							2.50	10.00	
24							5.00	10.00	
25							5.00	10.00	
26							1.50	10.00	
27							7.00	10.00	
28							1.00	10.00	
29							1.50	10.00	
30							.75	10.00	
31							.25	10.00	
MONTHLY AVGS							4.20	9.84	
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 12 6									

OBSERVATIONS AT 3-HOURLY INTERVALS

RICHMOND, VA

JULY 2003

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 Oktas	VISIBILITY (MILES)	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)	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)
SUNRISE: 0452				JUL 01				SUNSET: 1934				SUNRISE: 0455				JUL 07				SUNSET: 1933					
01	OVC	200		10.00	73	67	69	81	7	22	29.94	30.13	01	OVC	150		7.00	74	72	73	94	10	21	29.81	30.00
04	OVC	200		9.00	73	68	70	84	6	36	29.93	30.12	04	OVC	150		9.00	73	71	72	94	8	21	29.80	29.98
07	OVC	250		7.00	73	68	70	84	8	06	29.96	30.15	07	BKN	250		10.00	75	72	73	90	6	25	29.83	30.02
10	OVC	250		10.00	77	67	70	71	7	04	29.97	30.16	10	SCT	NC		10.00	86	72	76	63	12	24	29.83	30.02
13	OVC	250		10.00	81	67	72	62	5	VR	29.95	30.14	13	SCT	NC		10.00	89	75	79	63	14	22	29.81	30.00
16	OVC	200		10.00	81	70	74	69	7	03	29.89	30.08	16	BKN	200		10.00	90	73	78	58	16	22	29.77	29.95
19	OVC	042		9.00	78	71	73	79	6	10	29.88	30.07	19	SCT	NC		10.00	87	74	78	65	8	23	29.80	29.99
22	OVC	140		10.00	70	65	67	84	3	07	29.88	30.07	22	CLR	NC		10.00	79	74	75	85	8	20	29.84	30.03
SUNRISE: 0452				JUL 02				SUNSET: 1934				SUNRISE: 0455				JUL 08				SUNSET: 1933					
01	OVC	200		10.00	68	66	67	93	3	15	29.86	30.05	01	CLR	NC		10.00	80	73	75	79	9	27	29.81	29.99
04	OVC	080		7.00	68	67	67	96	5	19	29.84	30.03	04	FEW	NC		10.00	77	68	71	74	7	28	29.82	30.01
07	OVC	019		5.00	68	67	67	96	5	16	29.85	30.03	07	OVC	090		10.00	74	71	72	91	6	22	29.86	30.05
10	OVC	130		2.00	71	70	70	96	5	10	29.83	30.02	10	OVC	120		10.00	80	71	74	74	13	29	29.92	30.11
13	OVC	014		1.75	70	69	69	97	10	10	29.79	29.97	13	BKN	250		10.00	86	73	77	65	12	24	29.83	30.02
16	OVC	006		1.00	68	68	68	100	10	08	29.70	29.89	16	SCT	NC		10.00	91	72	78	54	13	31	29.82	30.00
19	OVC	015		3.00	70	70	70	100	10	11	29.66	29.85	19	BKN	050		5.00	83	79	80	88	6	05	29.77	29.96
22	OVC	010		6.00	71	71	71	100	10	13	29.63	29.82	22	BKN	055		8.00	78	76	77	93	5	14	29.81	29.99
SUNRISE: 0453				JUL 03				SUNSET: 1934				SUNRISE: 0456				JUL 09				SUNSET: 1933					
01	BKN	017		6.00	72	72	72	100	3	15	29.59	29.78	01	BKN	250		7.00	80	76	77	87	5	27	29.78	29.96
04	OVC	019		10.00	72	71	71	97	8	17	29.59	29.78	04	SCT	NC		5.00	76	76	76	100	0	00	29.77	29.96
07	OVC	009		1.75	71	71	71	100	6	16	29.61	29.80	07	SCT	NC		7.00	79	76	77	90	0	00	29.80	29.99
10	BKN	042		10.00	74	70	71	88	9	18	29.62	29.81	10	SCT	NC		9.00	88	77	80	70	6	25	29.80	29.99
13	OVC	023		10.00	74	69	71	85	10	20	29.65	29.83	13	SCT	NC		10.00	94	74	80	52	7	VR	29.75	29.94
16	OVC	015		4.00	72	70	71	94	10	34	29.65	29.84	16	BKN	120		10.00	91	72	78	54	14	24	29.70	29.88
19	OVC	012		7.00	71	69	70	94	7	33	29.67	29.85	19	OVC	022		8.00	73	73	73	100	12	25	29.75	29.94
22	OVC	007		5.00	72	70	71	94	7	29	29.73	29.92	22	OVC	250		10.00	71	70	70	96	7	23	29.77	29.96
SUNRISE: 0453				JUL 04				SUNSET: 1934				SUNRISE: 0457				JUL 10				SUNSET: 1933					
01	OVC	150		10.00	70	68	69	93	6	28	29.74	29.93	01	SCT	NC		10.00	69	69	69	100	3	16	29.74	29.93
04	BKN	250		9.00	67	67	67	100	5	18	29.75	29.94	04	SCT	NC		10.00	68	68	68	100	3	21	29.73	29.91
07	SCT	NC		10.00	72	68	69	87	5	26	29.79	29.98	07	SCT	NC		10.00	74	71	72	91	0	00	29.77	29.96
10	BKN	150		7.00	82	71	75	69	7	24	29.81	30.00	10	FEW	NC		10.00	80	73	75	79	5	19	29.78	29.96
13	FEW	NC		8.00	90	71	77	54	8	25	29.80	29.98	13	BKN	035		9.00	85	76	79	75	5	VR	29.73	29.92
16	CLR	NC		10.00	91	66	74	44	10	22	29.76	29.95	16	SCT	NC		10.00	89	76	80	65	10	19	29.66	29.85
19	CLR	NC		6.00	86	72	76	63	8	22	29.77	29.96	19	SCT	NC		10.00	85	76	78	75	7	17	29.64	29.83
22	CLR	NC		5.00	80	73	75	79	8	22	29.81	30.00	22	BKN	250		10.00	77	73	74	88	12	18	29.66	29.85
SUNRISE: 0454				JUL 05				SUNSET: 1934				SUNRISE: 0457				JUL 11				SUNSET: 1932					
01	CLR	NC		6.00	79	70	73	74	14	21	29.77	29.96	01	OVC	250		10.00	75	73	74	94	9	20	29.63	29.81
04	CLR	NC		7.00	73	69	70	87	10	22	29.81	29.99	04	BKN	250		10.00	74	71	72	91	15	22	29.61	29.80
07	CLR	NC		5.00	78	71	73	79	10	24	29.81	30.00	07	BKN	015		10.00	76	73	74	91	13	22	29.64	29.83
10	CLR	NC		7.00	87	73	77	63	13	22	29.80	29.98	10	BKN	150		10.00	83	73	76	72	16	24	29.66	29.85
13	FEW	NC		9.00	92	73	78	54	17	23	29.79	29.98	13	BKN	100		10.00	87	72	77	61	18	25	29.66	29.85
16	FEW	NC		10.00	92	72	78	52	13	23	29.75	29.94	16	SCT	NC		10.00	89	70	76	53	17	24	29.64	29.83
19	SCT	NC		6.00	86	76	79	72	8	20	29.76	29.95	19	BKN	250		10.00	85	71	75	63	15	24	29.67	29.85
22	FEW	NC		7.00	82	74	76	77	10	28	29.79	29.98	22	BKN	250		10.00	78	70	73	76	12	24	29.74	29.93
SUNRISE: 0454				JUL 06				SUNSET: 1934				SUNRISE: 0458				JUL 12				SUNSET: 1932					
01	FEW	NC		5.00	78	70	73	76	9	21	29.78	29.97	01	BKN	070		10.00	72	70	71	94	6	20	29.77	29.96
04	CLR	NC		6.00	76	70	72	82	9	26	29.78	29.97	04	CLR	NC		7.00	69	69	69	100	5	17	29.76	29.94
07	CLR	NC		6.00	78	71	73	79	8	22	29.82	30.01	07	FEW	NC		7.00	73	69	70	87	6	VR	29.80	29.99
10	FEW	NC		8.00	86	74	77	67	9	26	29.82	30.00	10	CLR	NC		10.00	81	64	70	57	10	23	29.84	30.02
13	FEW	NC		7.00	91	74	79	57	10	20	29.80	29.98	13	FEW	NC		10.00	86	63	71	46	13	21	29.81	30.00
16	SCT	NC		6.00	88	74	78	63	14	21	29.77	29.95	16	SCT	NC		10.00	87	64	72	46	13	22	29.79	29.98
19	OVC	095		8.00	78	72	74	82	15	27	29.80	29.99	19	SCT	NC		10.00	79	68	72	69	7	20	29.79	29.98
22	OVC	150		10.00	75	72	73	90	6	23	29.82	30.01	22	OVC	120		10.00	76	66	70	72	7	20	29.84	30.03

OBSERVATIONS AT 3-HOURLY INTERVALS

RICHMOND, VA

JULY 2003

RIC

WBAN # 13740

HOUR (LST)	SKY COVER		CEILING 100'S OF FT	SATELLITE		OBSERVATION TIME (LST)	EFF CLD AMT Okta	VISIBILITY (MILES)	WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)		HOUR (LST)	SKY COVER		CEILING 100'S OF FT	SATELLITE		OBSERVATION TIME (LST)	EFF CLD AMT Okta	VISIBILITY (MILES)	WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)		
	DRY BULB	DEW POINT		WET BULB	RELATIVE HUMIDITY (PCT)					SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)		SPEED (MPH)	DIRECTION TENS OF DEG		STATION	SEA LEVEL					DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	
SUNRISE: 0459										JUL 13				SUNSET: 1931				SUNRISE: 0503										JUL 19				SUNSET: 1928				
01	BKN	150						10.00		72	66	68	82	9	26	29.86	30.04	01	OVC	020						3.00	TSRA	BR	68	68	68	100	18	12	29.77	29.95
04	OVC	200						10.00		70	65	67	84	3	30	29.85	30.03	04	BKN	006						4.00	BR		68	68	68	100	5	19	29.77	29.96
07	BKN	200						10.00		70	66	67	87	3	26	29.93	30.12	07	SCT	NC						4.00	BR		71	71	71	100	7	29	29.79	29.98
10	BKN	200						10.00		78	64	69	62	7	09	29.96	30.15	10	OVC	150						8.00			76	70	72	82	10	36	29.82	30.01
13	BKN	250						10.00		81	67	72	62	6	02	29.94	30.13	13	BKN	027						9.00			81	70	74	69	8	35	29.83	30.02
16	BKN	100						10.00		82	66	71	58	7	10	29.92	30.11	16	BKN	250						10.00			83	68	73	61	7	05	29.78	29.97
19	OVC	250						10.00		78	69	72	74	8	14	29.93	30.12	19	SCT	NC						6.00	HZ		78	71	73	79	5	10	29.81	30.00
22	OVC	024						5.00	-TSRA BR	71	71	71	100	9	14	29.97	30.16	22	FEW	NC						4.00	BR		72	71	71	97	0	00	29.83	30.02
SUNRISE: 0459										JUL 14				SUNSET: 1931				SUNRISE: 0504										JUL 20				SUNSET: 1928				
01	OVC	021						9.00		71	71	71	100	5	09	29.96	30.15	01	SCT	NC						3.00	BR		71	71	71	100	0	00	29.84	30.03
04	OVC	060						9.00	-RA	66	64	65	93	3	18	29.97	30.16	04	SCT	NC						2.50	BR		69	69	69	100	6	02	29.82	30.01
07	OVC	150						10.00		67	66	66	97	7	01	29.96	30.14	07	OVC	014						3.00	BR		71	69	70	94	0	00	29.87	30.06
10	OVC	250						10.00		71	66	68	84	6	09	30.01	30.20	10	BKN	028						4.00	HZ		80	73	75	79	7	17	29.87	30.06
13	BKN	250						10.00		79	67	71	67	3	VR	29.99	30.18	13	SCT	NC						5.00	HZ		85	71	75	63	6	13	29.82	30.01
16	OVC	250						10.00		81	67	72	62	3	VR	29.95	30.14	16	OVC	030						1.25	TSRA		74	68	70	82	18	34	29.80	29.99
19	SCT	NC						10.00		77	68	71	74	3	17	29.94	30.13	19	BKN	049						4.00	BR		74	73	73	97	5	11	29.80	29.99
22	BKN	035						10.00		72	71	71	97	5	06	29.99	30.18	22	FEW	NC						3.00	BR		74	74	74	100	8	15	29.81	30.00
SUNRISE: 0460										JUL 15				SUNSET: 1931				SUNRISE: 0504										JUL 21				SUNSET: 1927				
01	SCT	NC						9.00		69	68	68	96	5	14	29.97	30.16	01	CLR	NC						5.00	BR		74	73	73	97	7	17	29.78	29.97
04	CLR	NC						7.00		66	66	66	100	0	00	29.95	30.14	04	CLR	NC						3.00	BR		71	71	71	100	5	19	29.75	29.94
07	FEW	NC						4.00	BR	70	70	70	100	0	00	29.97	30.16	07	CLR	NC						3.00	BR		75	74	74	96	7	20	29.76	29.95
10	SCT	NC						10.00		79	68	72	69	0	00	29.97	30.16	10	SCT	NC						5.00	HZ		84	76	78	77	15	21	29.75	29.93
13	SCT	NC						10.00		83	69	74	63	8	14	29.93	30.11	13	SCT	NC						6.00	HZ		89	75	79	63	15	23	29.71	29.90
16	FEW	NC						9.00		85	69	74	59	9	17	29.86	30.05	16	SCT	NC						7.00			89	73	78	59	15	21	29.66	29.84
19	BKN	250						10.00		81	71	74	72	8	16	29.84	30.03	19	BKN	200						6.00	HZ		83	74	77	74	9	19	29.64	29.82
22	CLR	NC						10.00		75	72	73	90	9	16	29.87	30.06	22	FEW	NC						6.00	HZ		80	75	77	85	10	19	29.65	29.83
SUNRISE: 0501										JUL 16				SUNSET: 1930				SUNRISE: 0505										JUL 22				SUNSET: 1927				
01	CLR	NC						8.00		73	73	73	100	9	18	29.86	30.04	01	CLR	NC						5.00	BR		78	75	76	90	13	19	29.64	29.83
04	CLR	NC						6.00	BR	72	72	72	100	7	17	29.81	29.99	04	SCT	NC						6.00	BR		77	74	75	90	13	20	29.63	29.81
07	BKN	250						6.00	BR	74	73	73	97	13	19	29.82	30.01	07	SCT	NC						4.00	BR		78	76	77	93	15	21	29.65	29.83
10	FEW	NC						9.00		86	75	78	70	14	22	29.81	29.99	10	SCT	NC						9.00			85	75	78	72	16	22	29.65	29.84
13	BKN	045						10.00		89	74	78	61	9	27	29.80	29.99	13	BKN	150						10.00			89	75	79	63	15	23	29.63	29.81
16	BKN	250						9.00		91	73	78	56	6	28	29.77	29.96	16	BKN	150						10.00			81	75	77	82	12	16	29.60	29.79
19	OVC	250						6.00	HZ	84	79	80	85	8	18	29.81	30.00	19	OVC	013						7.00	-TSRA		72	71	71	97	10	31	29.64	29.83
22	OVC	250						7.00		78	76	77	93	0	00	29.83	30.01	22	OVC	034						6.00	-RA BR		70	70	70	100	5	14	29.64	29.83
SUNRISE: 0501										JUL 17				SUNSET: 1930				SUNRISE: 0506										JUL 23				SUNSET: 1926				
01	OVC	250						9.00		77	73	74	88	7	29	29.85	30.04	01	OVC	028						5.00	-RA BR		71	71	71	100	6	21	29.64	29.83
04	BKN	250						10.00		75	65	69	71	10	03	29.87	30.05	04	OVC	150						7.00			71	71	71	100	8	20	29.65	29.84
07	OVC	060						10.00		75	66	69	74	9	01	29.94	30.13	07	OVC	008						8.00			71	71	71	100	13	21	29.70	29.88
10	CLR	NC						10.00		81	64	70	57	8	04	29.95	30.13	10	OVC	120						9.00	-RA		73	72	72	96	13	23	29.73	29.92
13	CLR	NC						10.00		85	65	72	51	3	VR	29.93	30.11	13	OVC	200						10.00			77	72	74	85	13	21	29.73	29.92
16	FEW	NC						10.00		87	66	73	50	8	01	29.89	30.08	16	BKN	150						10.00			77	73	74	88	13	17	29.70	29.89
19	FEW	NC						10.00		81	68	72	65	6	03	29.89	30.08	19	OVC	150						10.00			75	72	73	90	12	17	29.72	29.91
22	CLR	NC						10.00		74	70	71	88	0	00	29.92	30.11	22	OVC	060						7.00	-TSRA		71	71	71	100	12	18	29.73	29.92
SUNRISE: 0502										JUL 18				SUNSET: 1929				SUNRISE: 0507										JUL 24				SUNSET: 1925				
01	CLR	NC						8.00		69	68	68	96	0	00	29.91	30.10	01	OVC	150						5.00	BR		68	68	68	100	9	22	29.76	29.95
04	CLR	NC						5.00	BR	68	67	67	96	0	00	29.87	30.06	04	SCT	NC						6.00	BR		66	66	66	100	5	18	29.77	29.96
07	FEW	NC						3.00	BR	72	71	71	97	6	16	29.90	30.09	07	OVC	150						9.00			68	68	68	100	8	23	29.83	30.02
10	FEW	NC						9.00		85	72	76	65	8	20	29.88	30.06	10	OVC	250						10.00			75	69	71	82	7	34	29.85	30.04
13	SCT	NC						10.00		89	70	76	53	9	21	2																				

OBSERVATIONS AT 3-HOURLY INTERVALS

RICHMOND, VA

JULY 2003

RIC

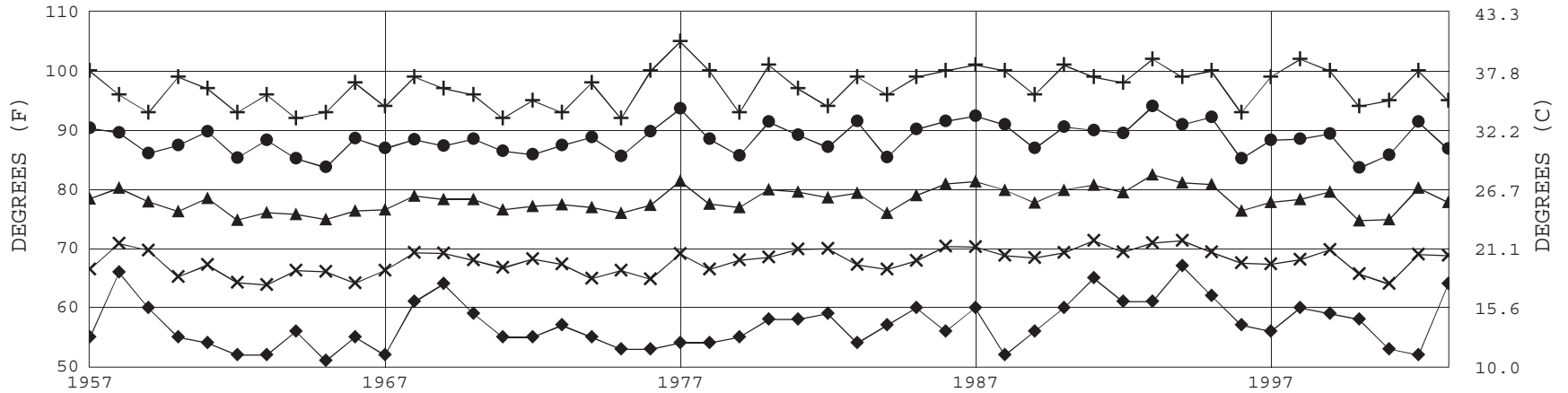
WBAN # 13740

HOUR (LST)	SKY COVER		CEILING 100'S OF FT	SATELLITE		VISIBILITY (MILES)	WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)		HOUR (LST)	SKY COVER		CEILING 100'S OF FT	SATELLITE		VISIBILITY (MILES)	WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)																	
	DRY BULB	DEW POINT		WET BULB	RELATIVE HUMIDITY (PCT)			SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)		SPEED (MPH)	DIRECTION TENS OF DEG		STATION	SEA LEVEL																										
SUNRISE: 0507								JUL 25								SUNSET: 1924								SUNRISE: 0512								JUL 31								SUNSET: 1919							
01	CLR	NC				9.00		69	68	68	96	0	00	29.98	30.16	01	OVC	002				1.50	BR		68	68	68	100	6	01	29.94	30.13															
04	CLR	NC				7.00		65	65	65	100	5	13	29.99	30.18	04	OVC	001				1.00	BR		68	68	68	100	5	35	29.94	30.13															
07	FEW	NC				8.00		71	68	69	90	0	00	30.05	30.24	07	OVC	001				0.25	BR		69	69	69	100	6	05	29.96	30.15															
10	BKN	250				10.00		80	67	71	64	6	09	30.09	30.28	10	OVC	020				10.00			74	70	71	88	5	12	29.97	30.16															
13	BKN	250				10.00		84	66	72	55	3	VR	30.09	30.28	13	OVC	032				10.00			78	71	73	79	5	08	29.95	30.14															
16	BKN	250				10.00		82	68	73	63	5	09	30.06	30.24	16	OVC	035				9.00			79	71	74	77	5	18	29.91	30.10															
19	SCT	NC				10.00		78	71	73	79	6	13	30.08	30.27	19	SCT	NC				9.00			76	73	74	91	6	10	29.89	30.08															
22	CLR	NC				9.00		72	70	71	94	6	14	30.10	30.29	22	BKN	050				8.00			74	73	73	97	7	13	29.90	30.09															
SUNRISE: 0508								JUL 26								SUNSET: 1924								3-HOURLY OBSERVATION NOTES																							
01	CLR	NC				9.00		69	68	68	96	0	00	30.10	30.29	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.																															
04	CLR	NC				5.00	BR	67	67	67	100	0	00	30.11	30.30	Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.																															
07	CLR	NC				1.75	BR	72	72	72	100	3	19	30.14	30.33	NC = No ceiling detected.																															
10	FEW	NC				9.00		82	71	75	69	3	VR	30.14	30.33	& = Original observation contained additional weather elements.																															
13	SCT	NC				10.00		85	69	74	59	7	21	30.08	30.27	See page 3 for additional notes.																															
16	SCT	NC				10.00		87	68	74	53	10	21	30.05	30.24																																
19	FEW	NC				10.00		81	72	75	74	5	18	30.02	30.20																																
22	CLR	NC				8.00		73	72	72	96	5	18	30.00	30.19																																
SUNRISE: 0509								JUL 27								SUNSET: 1923																															
01	CLR	NC				7.00		73	73	73	100	8	20	29.99	30.17																																
04	CLR	NC				9.00		73	73	73	100	6	21	29.97	30.15																																
07	SCT	NC				10.00		76	73	74	91	8	23	29.97	30.15																																
10	SCT	NC				10.00		84	74	77	72	12	23	29.93	30.12																																
13	SCT	NC				10.00		91	74	79	57	13	23	29.86	30.04																																
16	SCT	NC				10.00		91	73	78	56	16	22	29.79	29.97																																
19	SCT	NC				10.00		85	75	78	72	9	20	29.77	29.95																																
22	OVC	150				10.00		83	74	77	74	13	22	29.79	29.98																																
SUNRISE: 0510								JUL 28								SUNSET: 1922																															
01	CLR	NC				10.00		79	73	75	82	12	22	29.73	29.92																																
04	CLR	NC				10.00		77	74	75	90	10	24	29.72	29.91																																
07	BKN	250				8.00		78	73	75	85	7	23	29.73	29.91																																
10	BKN	250				8.00		86	74	77	67	7	23	29.73	29.92																																
13	SCT	NC				8.00		91	75	79	59	12	23	29.71	29.89																																
16	BKN	250				7.00		90	76	80	63	10	22	29.64	29.83																																
19	OVC	029				8.00	TS	83	75	77	77	24	35	29.68	29.87																																
22	OVC	150				10.00		73	73	73	100	0	00	29.70	29.89																																
SUNRISE: 0511								JUL 29								SUNSET: 1921																															
01	BKN	010				7.00		72	72	72	100	7	35	29.68	29.86																																
04	OVC	011				6.00	BR	72	72	72	100	8	01	29.70	29.88																																
07	OVC	006				2.00	RA BR	71	71	71	100	8	02	29.75	29.94																																
10	OVC	030				10.00		73	69	70	87	12	08	29.78	29.97																																
13	OVC	040				10.00		76	69	71	79	3	07	29.80	29.99																																
16	OVC	110				10.00		76	70	72	82	7	09	29.79	29.98																																
19	OVC	026				5.00	-RA BR	72	72	72	100	5	07	29.83	30.02																																
22	OVC	065				10.00	-RA	70	70	70	100	6	11	29.87	30.06																																
SUNRISE: 0511								JUL 30								SUNSET: 1920																															
01	OVC	050				6.00	-RA BR	66	66	66	100	0	00	29.88	30.07																																
04	OVC	050				10.00	-RA	67	67	67	100	7	04	29.86	30.05																																
07	OVC	028				9.00	-RA	67	67	67	100	9	36	29.90	30.09																																
10	OVC	015				2.00	+RA BR	68	68	68	100	10	05	29.93	30.12																																
13	OVC	009				10.00		69	69	69	100	12	02	29.94	30.13																																
16	OVC	008				10.00		70	70	70	100	10	03	29.92	30.11																																
19	OVC	006				6.00	BR	69	69	69	100	7	03	29.94	30.13																																
22	OVC	007				7.00		68	68	68	100	8	36	29.94	30.13																																

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			73	70	71	93	29.82	30.01	7.40	7	4	21	
02			72	70	71	94	29.81	30.00	7.40	6	3	21	
03			71	69	70	94	29.81	30.00	7.47	6	2	23	
04			71	69	70	94	29.81	30.00	7.18	6	3	21	
05			71	69	69	95	29.82	30.01	6.70	5	2	22	
06			71	69	70	95	29.84	30.02	5.81	6	3	22	
07			73	70	71	92	29.84	30.03	6.51	6	3	22	
08			75	71	72	86	29.85	30.04	7.64	7	2	22	
09			78	71	73	79	29.85	30.04	8.42	9	3	23	
10			80	71	74	75	29.85	30.04	8.55	9	4	22	
11			82	71	74	71	29.85	30.04	8.90	8	3	21	
12			83	70	74	67	29.84	30.03	9.02	8	4	21	
13			84	71	75	65	29.83	30.02	9.12	8	5	22	
14			85	70	75	63	29.82	30.01	9.15	10	5	23	
15			85	70	75	64	29.81	29.99	8.89	9	5	21	
16			84	70	75	65	29.80	29.98	8.78	11	4	22	
17			83	71	75	68	29.79	29.98	8.35	9	5	21	
18			82	71	74	72	29.79	29.98	8.32	9	4	20	
19			79	72	74	80	29.80	29.99	7.97	8	2	20	
20			77	72	73	86	29.81	30.00	8.15	8	4	19	
21			75	72	73	89	29.82	30.01	8.21	6	3	17	
22			74	71	72	92	29.83	30.02	7.94	7	3	18	
23			74	71	72	92	29.83	30.01	7.74	6	3	19	
24			73	71	71	93	29.82	30.01	7.18	6	4	20	

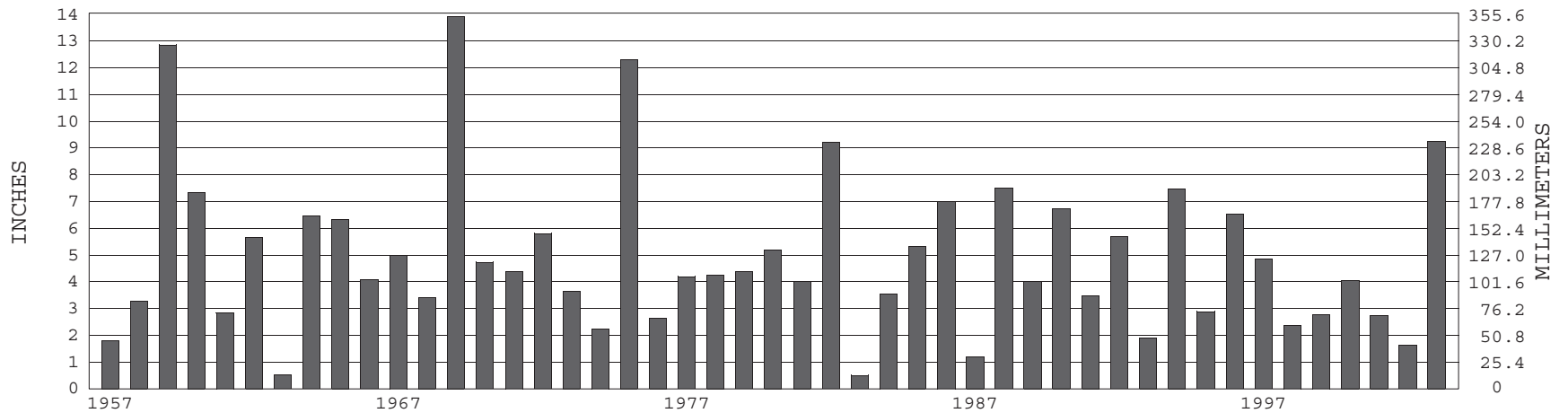
RICHMOND, VA JULY TEMPERATURES



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

Long-Term (1957-2003) Mean: 78.2 1961-1990 Normal: 77.9

RICHMOND, VA JULY PRECIPITATION



Long-Term (1957-2003) Mean Monthly Total: 4.93

1961-1990 Normal: 4.67



JULY 2003

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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