



JULY 1997

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	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
01	82	70	76	-1	70	71	0	11	RA BR	0		0.0	0.02	29.72	29.92	4.9	14	5.3	15	17	11	17	01				
02	85	70	78	1	72	73	0	13	RA BR HZ	0		0.0	0.34	29.62	29.82	3.3	15	3.8	16	32	14	32	02				
03	96	70	83	6	69	73	0	18	BR	0		0.0	0.00	29.52	29.72	8.4	22	9.9	26	27	20	26	03				
04	96	65	81	4	63	70	0	16	TSRA	0		0.0	T	29.57	29.77	8.6	25	9.3	26	24	22	23	04				
05	81	68	75	-2	60	66	0	10		0		0.0	0.00	29.77	29.97	5.1	05	7.0	21	03	18	02	05				
06	86	62	74	-3	62	67	0	9		0		0.0	0.00	29.87	30.07	3.7	09	5.4	20	11	15	11	06				
07	88	66	77	-1	66	70	0	12	BR	0		0.0	0.00	29.91	30.11	2.2	05	4.0	11	11	9	01	07				
08	92	65	79	1	63	69	0	14	BR HZ	0		0.0	0.00	29.92	30.12	4.9	14	5.6	17	15	14	14	08				
09	93	69	81	3	67	72	0	16	TS TSRA BR HZ	0		0.0	0.14	29.77	29.96	5.8	20	8.3	34	01	30*	02	09				
10	83	64	74	-4	66	69	0	9	TS RA BR HZ	0		0.0	0.02	29.86	30.06	6.3	03	7.1	22	01	18	01	10				
11	86	60	73	-5	59	65	0	8		0		0.0	0.00	29.98	30.18	4.1	05	5.4	20	02	13	03	11				
12	90	60	75	-3	59	65	0	10		0		0.0	0.00	29.93	30.13	0.4	18	4.6	15	02	13	02	12				
13	93	66	80	2	61	68	0	15		0		0.0	0.00	29.81	30.00	1.8	20	3.8	13	36	10	01	13				
14	96	67	82	4	64	70	0	17	HZ	0		0.0	0.00	29.76	29.96	3.3	19	4.6	18	31	11	22	14				
15	99*	71	85*	7	68	73	0	20	BR HZ	0		0.0	0.00	29.76	29.96	6.9	21	8.0	22	23	18	22	15				
16	95	71	83	5	70	73	0	18	TS TSRA RA BR HZ	0		0.0	0.74	29.80	30.00	1.8	25	6.0	34	30	28	31	16				
17	91	69	80	2	70	73	0	15	BR HZ	0		0.0	0.00	29.74	29.94	3.8	21	5.2	17	20	15	19	17				
18	95	72	84	6	68	74	0	19	BR HZ	0		0.0	0.00	29.68	29.88	5.0	20	6.7	17	21	14	23	18				
19	94	73	84	6	69	73	0	19	RA BR HZ	0		0.0	T	29.71	29.90	2.8	34	4.6	18	03	15	01	19				
20	78	71	75	-3	66	69	0	10	HZ	0		0.0	0.00	29.88	30.08	5.7	06	7.8	20	04	16	04	20				
21	91	71	81	3	72	75	0	16	BR HZ	0		0.0	0.00	29.86	30.06	5.5	20	6.0	22	22	18	21	21				
22	93	70	82	3	73	74	0	17	TS TSRA RA FG BR HZ	0		0.0	2.04	29.84	30.04	1.9	20	6.1	37*	17	29	17	22				
23	81	72	77	-2	73	74	0	12	RA BR HZ	0		0.0	0.32	29.87	30.07	4.6	16	5.2	13	19	11	19	23				
24	74	65	70	-9	70	70	0	5	RA DZ FG BR	0		0.0	1.23	29.81	30.01	8.7	36	9.4	24	36	20	36	24				
25	80	63	72	-7	65	67	0	7	DZ BR	0		0.0	T	29.85	30.06	3.4	33	4.9	15	36	11	01	25				
26	87	66	77	-2	70	73	0	12	BR HZ	0		0.0	0.00	29.77	29.97	3.9	20	4.7	15	20	11	23	26				
27	93	73	83	4	75	77	0	18	BR HZ	0		0.0	0.00	29.68	29.87	5.5	21	6.1	15	27	11	28	27				
28	94	74	84	6	76	78	0	19	BR HZ	0		0.0	0.00	29.66	29.86	1.8	21	4.6	14	22	13	21	28				
29	85	68	77	-1	66	70	0	12		0		0.0	0.00	29.80	30.00	8.0	01	8.6	21	36	16	36	29				
30	77	60	69*	-9	57	62	0	4		0		0.0	0.00	30.00	30.20	5.9	03	6.3	17	04	14	04	30				
31	84	56*	70	-8	56	62	0	5		0		0.0	0.00	30.05	30.25	3.6	04	5.5	18	05	16	05	31				
										< MONTHLY AVERAGES				TOTALS-->						<- MONTHLY AVERAGES							
										<----- DEPARTURE FROM NORMAL ----->										- .18				SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3			
DEGREE DAYS										GREATEST 24-HR PRECIPITATION: 2.36 DATE: 22-23				SEA LEVEL PRESSURE DATE TIME													
MONTHLY TOTAL DEPARTURE										GREATEST 24-HR SNOWFALL: 0.0 DATE:				MAXIMUM : 30.28 31 1058													
SEASON TO DATE TOTAL DEPARTURE										GREATEST SNOWFALL: 0 DATE:				MINIMUM : 29.66 03 1739													
HEATING: 0 0 0 0										NUMBER OF DAYS WITH =>				MAXIMUM TEMP ≥ 90: 16				MINIMUM TEMP ≤ 32: 0				PRECIPITATION ≥ 0.01 INCH : 8					
COOLING: 406 3 715 -60														MAXIMUM TEMP ≤ 32 : 0				MINIMUM TEMP ≤ 0 : 0				PRECIPITATION ≥ 0.10 INCH : 6					
														THUNDERSTORMS : 5				HEAVY FOG : 0				SNOWFALL ≥ 1.0 INCH : 0					

JULY 1997
RICHMOND, VA

HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

RICHMOND, VA

JULY 1997

RIC

WBAN # 13740

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note 2)	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					T	T			T	T			01			T	0.01	0.01				T			01		0.02		
02	0.01	0.02	0.01	0.02	0.01								02		0.25	0.02									02		0.34		
03													03												03		0.00		
04													04									T	T	T	04		T		
05													05												05		0.00		
06													06												06		0.00		
07													07												07		0.00		
08													08												08		0.00		
09													09									0.07	0.05	0.02	09		0.14		
10	0.02	T	T										10												10		0.02		
11													11												11		0.00		
12													12												12		0.00		
13													13												13		0.00		
14													14												14		0.00		
15													15												15		0.00		
16													16		0.31	0.26	T	0.09	0.02	0.06	T	T			16		0.74		
17													17												17		0.00		
18													18												18		0.00		
19													19					T							19		T		
20													20												20		0.00		
21													21												21		0.00		
22													22			0.89	0.44	0.40	0.22	0.08	0.01				22		2.04		
23					0.24	0.06	0.01	T		0.01		T	23		T	T	T	T	T	T					23		0.32		
24	0.03	0.02	T	T	T	T	0.42	0.25	0.04	0.06	0.21	0.16	24	0.04	T	T							T		24		1.23		
25	T	T	T	T	T	T							25												25		T		
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		0.00		

MAXIMUM SHORT DURATION PRECIPITATION (See Note 1)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note 1: NCDC derives these data from one-minute ASOS values. The table is not printed when inconsistent with ASOS hourly totals.

Note 2: 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 1961 – 1990

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	PE 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 1997

Ceilorometer (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 at constant pressure by evaporation of moisture into it, to 100% relative humidity.

ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)				VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS		MN-MN		MINIMUM	MAXIMUM	
			CEILOMETER	SATELLITE	CEILOMETER	SATELLITE			
01							6.00	10.00	
02							2.00	10.00	
03							6.00	10.00	
04							10.00	10.00	
05							10.00	10.00	
06							10.00	10.00	
07							6.00	10.00	
08							2.50	10.00	
09							3.00	10.00	
10							2.00	10.00	
11							8.00	10.00	
12							10.00	10.00	
13							7.00	10.00	
14							6.00	9.00	
15							3.00	6.00	
16							1.50	6.00	
17							2.50	8.00	
18							3.00	10.00	
19							4.00	10.00	
20							5.00	10.00	
21							2.00	10.00	
22							.50	10.00	
23							2.00	10.00	
24							.50	10.00	
25							6.00	10.00	
26							4.00	8.00	
27							2.50	7.00	
28							2.00	10.00	
29							10.00	10.00	
30							10.00	10.00	
31							10.00	10.00	
MONTHLY AVGS							5.06	9.48	
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									
0 14 9									

OBSERVATIONS AT 3-HOURLY INTERVALS

RICHMOND, VA

JULY 1997

RIC

WBAN # 13740

HOUR (LST)	≤ 12K FEET		SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)		HOUR (LST)	≤ 12K FEET		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)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL						
SUNRISE: 0452						JUL 01						SUNSET: 1934						SUNRISE: 0455						JUL 07						SUNSET: 1933					
01	BKN	060			10.00	72	67	69	84	7	15	29.82	30.02	01	CLR	NC			10.00	69	65	66	87	0	00	29.86	30.06								
04	BKN	060			10.00	70	67	68	90	6	14	29.78	29.98	04	OVC	010			9.00	69	66	67	90	0	00	29.89	30.09								
07	OVC	060			8.00	71	68	69	90	3	15	29.77	29.97	07	BKN	250			8.00	71	67	68	87	3	09	29.92	30.12								
10	OVC	050			7.00	74	71	72	91	7	15	29.76	29.96	10	SCT	NC			10.00	83	68	73	61	7	VR	29.93	30.13								
13	OVC	050			8.00	81	71	74	72	7	12	29.70	29.90	13	BKN	049			10.00	85	65	72	51	6	VR	29.92	30.11								
16	OVC	080			8.00	77	70	72	79	3	20	29.66	29.86	16	BKN	047			10.00	86	66	73	51	7	10	29.88	30.08								
19	OVC	055			10.00	75	72	73	90	8	12	29.66	29.86	19	OVC	250			10.00	82	64	70	55	7	02	29.91	30.10								
22	BKN	120			10.00	72	69	70	91	5	14	29.67	29.86	22	BKN	250			8.00	74	68	70	82	3	08	29.94	30.14								
SUNRISE: 0453						JUL 02						SUNRISE: 0456						JUL 08						SUNSET: 1933											
01	OVC	070			7.00	71	69	70	94	3	16	29.65	29.85	01	CLR	NC			5.00	BR	69	67	68	93	0	00	29.95	30.15							
04	OVC	050			7.00	70	70	70	100	3	05	29.61	29.81	04	CLR	NC			5.00	BR	66	64	65	93	0	00	29.94	30.14							
07	OVC	040			7.00	71	71	71	100	3	16	29.64	29.84	07	CLR	NC			2.50	BR	72	70	71	94	0	00	29.98	30.18							
10	OVC	009			3.00	77	71	73	82	0	00	29.65	29.85	10	SCT	NC			10.00	86	60	69	42	8	12	29.98	30.18								
13	BKN	035			7.00	82	71	75	69	0	00	29.63	29.83	13	SCT	NC			10.00	89	59	70	36	6	15	29.95	30.15								
16	BKN	080			7.00	79	74	75	85	8	15	29.60	29.80	16	SCT	NC			10.00	90	60	71	37	10	14	29.90	30.10								
19	SCT	NC			10.00	77	72	74	85	6	15	29.59	29.79	19	FEW	NC			10.00	83	62	70	49	8	12	29.87	30.06								
22	SCT	NC			10.00	73	72	72	96	0	00	29.63	29.83	22	CLR	NC			8.00	76	65	69	69	8	15	29.87	30.06								
SUNRISE: 0453						JUL 03						SUNRISE: 0456						JUL 09						SUNSET: 1933											
01	CLR	NC			6.00	72	71	71	97	5	17	29.59	29.79	01	CLR	NC			7.00	72	69	70	91	3	17	29.84	30.04								
04	SCT	NC			10.00	71	70	70	96	5	19	29.55	29.75	04	CLR	NC			6.00	BR	71	68	69	90	5	17	29.80	30.00							
07	FEW	NC			7.00	74	72	73	94	7	18	29.56	29.76	07	SCT	NC			5.00	HZ	74	69	71	85	6	18	29.81	30.01							
10	FEW	NC			9.00	86	73	77	65	12	20	29.56	29.75	10	FEW	NC			8.00	86	67	73	53	8	17	29.80	29.99								
13	SCT	NC			9.00	93	72	78	50	14	24	29.50	29.70	13	BKN	100			8.00	91	65	74	42	10	18	29.76	29.96								
16	SCT	NC			10.00	94	67	75	41	15	26	29.47	29.67	16	OVC	150			9.00	91	65	74	42	13	17	29.69	29.89								
19	CLR	NC			10.00	92	64	73	40	12	24	29.48	29.67	19	BKN	120			8.00	86	67	73	53	12	19	29.69	29.88								
22	CLR	NC			10.00	82	63	70	53	7	24	29.51	29.71	22	OVC	080			8.00	71	68	69	90	6	33	29.74	29.94								
SUNRISE: 0454						JUL 04						SUNRISE: 0457						JUL 10						SUNSET: 1932											
01	CLR	NC			10.00	78	58	66	50	7	28	29.51	29.71	01	OVC	060			10.00	71	68	69	90	5	29	29.75	29.94								
04	CLR	NC			10.00	66	61	63	84	0	00	29.55	29.74	04	OVC	003			4.00	BR	71	70	70	96	3	05	29.75	29.95							
07	BKN	250			10.00	79	60	67	52	6	29	29.57	29.77	07	OVC	005			2.00	BR	71	70	70	96	10	01	29.80	30.00							
10	SCT	NC			10.00	89	60	70	38	16	24	29.60	29.80	10	BKN	010			2.00	HZ	74	69	71	85	15	01	29.87	30.07							
13	SCT	NC			10.00	93	60	72	33	16	26	29.59	29.78	13	BKN	120			10.00	79	65	70	62	9	05	29.89	30.09								
16	SCT	NC			10.00	95	63	74	35	16	23	29.55	29.74	16	BKN	045			10.00	80	63	69	56	9	06	29.89	30.09								
19	CLR	NC			10.00	91	65	73	42	9	24	29.54	29.74	19	SCT	NC			10.00	76	64	68	67	6	07	29.91	30.11								
22	BKN	035			10.00	83	69	74	63	20	23	29.64	29.84	22	CLR	NC			10.00	69	62	65	78	5	03	29.95	30.15								
SUNRISE: 0454						JUL 05						SUNRISE: 0458						JUL 11						SUNSET: 1932											
01	BKN	250			10.00	77	66	70	69	9	05	29.63	29.83	01	CLR	NC			10.00	64	60	62	87	3	01	29.95	30.14								
04	CLR	NC			10.00	74	58	64	57	8	03	29.69	29.89	04	CLR	NC			10.00	62	59	60	90	0	00	29.97	30.17								
07	OVC	080			10.00	73	60	65	64	9	02	29.77	29.96	07	FEW	NC			10.00	67	62	64	84	9	02	30.00	30.20								
10	BKN	050			10.00	76	60	66	58	12	02	29.80	30.00	10	SCT	NC			10.00	79	58	66	49	9	06	30.02	30.22								
13	BKN	250			10.00	79	59	67	50	9	04	29.79	29.99	13	SCT	NC			10.00	84	57	67	40	9	02	29.99	30.19								
16	CLR	NC			10.00	80	58	66	47	6	07	29.77	29.97	16	SCT	NC			10.00	86	57	68	37	7	05	29.95	30.14								
19	BKN	250			10.00	77	59	66	54	6	11	29.79	29.99	19	SCT	NC			10.00	80	57	66	45	6	05	29.94	30.14								
22	SCT	NC			10.00	71	63	66	76	6	14	29.84	30.04	22	CLR	NC			10.00	69	60	64	73	5	15	29.98	30.18								
SUNRISE: 0455						JUL 06						SUNRISE: 0458						JUL 12						SUNSET: 1932											
01	SCT	NC			10.00	66	63	64	90	0	00	29.83	30.03	01	SCT	NC			10.00	65	60	62	84	0	00	29.98	30.18								
04	SCT	NC			10.00	63	60	61	90	0	00	29.84	30.04	04	CLR	NC			10.00	63	59	61	87	0	00	29.98	30.18								
07	SCT	NC			10.00	70	62	65	76	6	05	29.88	30.08	07	SCT	NC			10.00	71	62	66	73	7	27	30.00	30.19								
10	BKN	250			10.00	79	64	69	60	8	06	29.90	30.10	10	OVC	250			10.00	81	60	68	49	6	23	29.99	30.19								
13	BKN	250			10.00	84	61	69	46	6	14	29.88	30.08	13	BKN	250			10.00	87	55	67	34	6	23	29.94	30.14								
16	BKN	250			10.00	84	62	70	48	7	12	29.86	30.06	16	SCT	NC			10.00	89	54	67	30	10	03	29.87	30.07								
19	BKN	250			10.00	78	60	67	54	9	10	29.85	30.05	19	CLR	NC			10.00	83	58	67	43	5	08	29.86	30.06								
22	SCT	NC			10.00	72	63	66	73	6	12	29.88	30.08	22	CLR	NC			10.00	73	61	66	66	7	14	29.88	30.08								

OBSERVATIONS AT 3-HOURLY INTERVALS

RICHMOND, VA

JULY 1997

RIC

WBAN # 13740

HOUR (LST)	≤ 12K FEET		SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)		HOUR (LST)	≤ 12K FEET		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)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL						
																														WEATHER	WEATHER				
SUNRISE: 0459						JUL 13						SUNSET: 1931						SUNRISE: 0503						JUL 19						SUNSET: 1928					
01	CLR	NC			10.00	69	59	63	70	7	19	29.87	30.07	01	BKN	250			8.00	80	68	72	67	9	22	29.64	29.84								
04	CLR	NC			10.00	67	60	63	79	5	21	29.84	30.04	04	BKN	250			6.00	76	69	71	79	0	00	29.65	29.85								
07	SCT	NC			10.00	72	61	65	69	8	25	29.85	30.05	07	BKN	250			6.00	78	70	73	76	5	35	29.70	29.90								
10	BKN	250			10.00	85	61	70	45	5	VR	29.85	30.04	10	BKN	130			10.00	86	67	73	53	6	01	29.73	29.93								
13	BKN	070			10.00	92	59	71	33	7	VR	29.80	29.99	13	SCT	NC			8.00	92	67	75	44	8	32	29.71	29.91								
16	BKN	080			10.00	90	59	70	35	3	VR	29.76	29.95	16	BKN	060			9.00	90	65	73	44	6	33	29.68	29.87								
19	SCT	NC			9.00	86	63	71	46	3	09	29.75	29.95	19	SCT	NC			6.00	82	70	74	67	3	VR	29.71	29.91								
22	CLR	NC			7.00	74	66	69	76	3	17	29.77	29.96	22	CLR	NC			5.00	77	72	74	85	0	00	29.77	29.96								
SUNRISE: 0460						JUL 14						SUNSET: 1931						SUNRISE: 0504						JUL 20						SUNSET: 1928					
01	CLR	NC			8.00	73	64	67	74	3	19	29.78	29.97	01	SCT	NC			5.00	74	68	70	82	6	34	29.79	29.99								
04	CLR	NC			9.00	70	63	66	79	0	00	29.77	29.97	04	SCT	NC			8.00	75	68	70	79	6	01	29.80	30.00								
07	CLR	NC			7.00	73	64	67	74	7	20	29.81	30.00	07	BKN	150			10.00	72	59	64	64	12	05	29.88	30.08								
10	CLR	NC			7.00	85	66	72	53	5	23	29.81	30.01	10	OVC	023			10.00	75	61	66	61	7	08	29.93	30.13								
13	SCT	NC			7.00	92	62	72	37	5	15	29.76	29.95	13	OVC	022			10.00	76	65	69	69	7	06	29.94	30.14								
16	SCT	NC			6.00	95	62	73	34	6	16	29.72	29.91	16	OVC	024			10.00	78	68	71	71	8	11	29.89	30.09								
19	SCT	NC			6.00	89	64	72	43	8	21	29.71	29.91	19	OVC	022			10.00	76	69	71	79	8	11	29.88	30.08								
22	CLR	NC			6.00	78	67	71	69	3	15	29.75	29.95	22	BKN	035			10.00	73	69	70	87	7	12	29.91	30.11								
SUNRISE: 0500						JUL 15						SUNSET: 1930						SUNRISE: 0505						JUL 21						SUNSET: 1927					
01	CLR	NC			6.00	75	66	69	74	6	17	29.76	29.96	01	OVC	021			10.00	72	69	70	91	0	00	29.91	30.10								
04	CLR	NC			5.00	72	66	68	82	7	20	29.75	29.95	04	OVC	007			10.00	73	70	71	90	0	00	29.89	30.09								
07	CLR	NC			4.00	75	68	70	79	6	20	29.78	29.98	07	OVC	006			2.50	74	72	73	94	3	16	29.90	30.10								
10	CLR	NC			5.00	89	68	75	50	6	20	29.79	29.99	10	OVC	015			5.00	81	74	76	79	3	VR	29.90	30.10								
13	BKN	065			6.00	95	68	76	41	13	21	29.77	29.97	13	BKN	027			6.00	88	74	78	63	9	20	29.85	30.05								
16	FEW	NC			6.00	97	65	75	35	13	24	29.73	29.93	16	BKN	036			7.00	90	74	79	59	15	22	29.81	30.01								
19	SCT	NC			5.00	93	67	75	42	8	24	29.74	29.93	19	OVC	120			10.00	84	70	74	63	10	22	29.83	30.02								
22	SCT	NC			5.00	81	70	74	69	6	18	29.77	29.97	22	BKN	250			8.00	77	72	74	85	7	19	29.83	30.03								
SUNRISE: 0501						JUL 16						SUNSET: 1930						SUNRISE: 0505						JUL 22						SUNSET: 1926					
01	CLR	NC			5.00	78	70	73	76	3	20	29.78	29.98	01	CLR	NC			6.00	76	73	74	91	7	21	29.81	30.01								
04	FEW	NC			5.00	76	69	71	79	6	23	29.77	29.96	04	FEW	NC			7.00	74	72	73	94	6	20	29.81	30.00								
07	CLR	NC			3.00	78	69	72	74	5	23	29.82	30.01	07	BKN	250			8.00	78	74	75	87	8	26	29.84	30.04								
10	CLR	NC			6.00	89	70	76	53	7	02	29.82	30.01	10	SCT	NC			8.00	85	74	77	70	5	VR	29.84	30.03								
13	BKN	050			5.00	92	71	77	51	7	05	29.78	29.98	13	BKN	036			7.00	90	74	79	59	8	36	29.79	29.99								
16	OVC	040			6.00	74	69	71	85	15	32	29.79	29.99	16	BKN	025			3.00	72	71	71	97	7	08	29.82	30.02								
19	OVC	110			2.00	72	71	71	97	0	00	29.81	30.01	19	BKN	033			10.00	72	72	72	100	7	16	29.89	30.09								
22	OVC	130			5.00	73	70	71	90	7	23	29.81	30.01	22	OVC	004			5.00	72	72	72	100	0	00	29.87	30.06								
SUNRISE: 0502						JUL 17						SUNSET: 1929						SUNRISE: 0506						JUL 23						SUNSET: 1926					
01	BKN	130			4.00	72	70	71	94	3	27	29.79	29.99	01	OVC	014			7.00	72	72	72	100	5	12	29.87	30.07								
04	OVC	140			3.00	70	69	69	97	6	19	29.78	29.98	04	OVC	017			5.00	72	72	72	100	0	00	29.87	30.07								
07	SCT	NC			3.00	71	69	70	94	6	20	29.78	29.98	07	OVC	008			2.00	72	72	72	100	5	14	29.88	30.08								
10	FEW	NC			5.00	81	72	75	74	5	VR	29.78	29.98	10	OVC	004			6.00	76	73	74	91	6	16	29.90	30.10								
13	SCT	NC			6.00	88	70	76	55	6	VR	29.74	29.93	13	OVC	010			2.00	78	73	75	85	9	19	29.88	30.08								
16	SCT	NC			7.00	89	70	76	53	10	20	29.69	29.89	16	OVC	070			9.00	79	73	75	82	8	16	29.85	30.05								
19	BKN	250			7.00	85	70	75	61	8	21	29.69	29.89	19	OVC	080			6.00	78	74	75	87	0	00	29.85	30.05								
22	SCT	NC			6.00	76	72	73	88	6	20	29.71	29.91	22	OVC	070			6.00	75	74	74	96	7	15	29.87	30.07								
SUNRISE: 0502						JUL 18						SUNSET: 1929						SUNRISE: 0507						JUL 24						SUNSET: 1925					
01	SCT	NC			5.00	78	71	73	79	6	25	29.71	29.91	01	OVC	060			6.00	74	73	73	97	0	00	29.84	30.04								
04	SCT	NC			5.00	77	70	72	79	5	26	29.70	29.90	04	OVC	006			4.00	74	74	74	100	0	00	29.81	30.01								
07	FEW	NC			4.00	78	71	73	79	3	31	29.71	29.91	07	OVC	003			0.50	73	73	73	100	9	35	29.83	30.02								
10	CLR	NC			10.00	90	68	75	49	3	VR	29.73	29.93	10	OVC	003			2.00	71	71	71	100	9	04	29.78	29.98								
13	SCT	NC			10.00	92	65	74	41	7	20	29.69	29.89	13	OVC	005			10.00	72	71	71	97	16	36	29.74	29.94								
16	SCT	NC			10.00	94	66	75	40	12	17	29.63	29.83	16	OVC	003			1.00	70	69	69	97	12	35	29.77	29.97								
19	BKN	250			8.00	86	70	75	59	10	19	29.62	29.82	19	OVC	005			0.75	67	67	67	100	14	36	29.82	30.01								
22	BKN	250			9.00	83	67	72	59	10	21	29.66	29.86	22	OVC	013			9.00	66	63	64	90	12	01	29.86	30.06								

OBSERVATIONS AT 3-HOURLY INTERVALS

RICHMOND, VA

JULY 1997

RIC

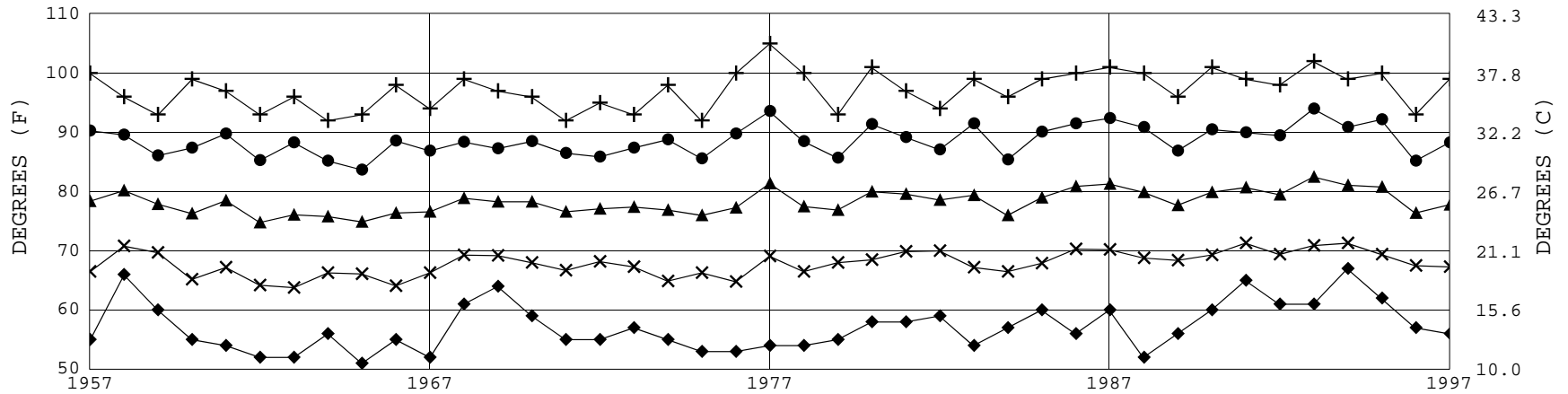
WBAN # 13740

HOUR (LST)	≤ 12K FEET		SATELLITE		WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES, HG)		HOUR (LST)	≤ 12K FEET		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)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL				
SUNRISE: 0508						JUL 25						SUNSET: 1924						SUNRISE: 0513						JUL 31						SUNSET: 1919					
01	OVC	008		8.00		64	63	63	96	10	34	29.86	30.06	01	CLR	NC		10.00		60	57	58	90	5	33	30.04	30.24								
04	OVC	005		8.00	DZ	63	62	62	97	9	35	29.86	30.06	04	CLR	NC		10.00		58	56	57	93	0	00	30.04	30.24								
07	SCT	NC		10.00		66	62	64	87	9	01	29.89	30.09	07	FEW	NC		10.00		64	57	60	78	6	35	30.07	30.27								
10	BKN	020		10.00		73	64	67	74	6	31	29.88	30.08	10	SCT	NC		10.00		77	55	64	47	7	05	30.08	30.28								
13	BKN	027		10.00		77	65	69	66	6	35	29.85	30.05	13	SCT	NC		10.00		82	55	66	40	7	VR	30.06	30.25								
16	OVC	032		10.00		78	65	70	64	5	33	29.83	30.03	16	SCT	NC		10.00		83	54	65	37	8	09	30.03	30.22								
19	SCT	NC		10.00		75	68	70	79	6	14	29.83	30.03	19	SCT	NC		10.00		78	57	65	48	5	09	30.03	30.23								
22	CLR	NC		10.00		70	68	69	93	3	23	29.85	30.05	22	SCT	NC		10.00		68	59	63	73	3	20	30.06	30.26								
SUNRISE: 0509						JUL 26						SUNSET: 1923						3-HOURLY OBSERVATION NOTES																	
01	CLR	NC		5.00	BR	69	67	68	93	0	00	29.82	30.02	Sky Cover is the amount of the sky obscured. CLR = 0, FEW = 1/8-2/8, SCT = 3/8-4/8, BKN = 5/8-7/8, OVC = 8/8, VV = Vertical Visibilty = 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.																					
04	CLR	NC		5.00	BR	67	66	66	97	0	00	29.80	30.00																						
07	CLR	NC		5.00	BR	71	68	69	90	3	25	29.83	30.03																						
10	SCT	NC		7.00		81	69	73	67	9	21	29.82	30.02																						
13	SCT	NC		5.00	HZ	84	70	74	63	7	23	29.77	29.96																						
16	SCT	NC		5.00	HZ	86	73	77	65	9	17	29.72	29.92																						
19	CLR	NC		4.00	HZ	82	74	76	77	0	00	29.72	29.92																						
22	SCT	NC		5.00	BR	77	73	74	88	7	19	29.73	29.93																						
SUNRISE: 0509						JUL 27						SUNSET: 1922																							
01	SCT	NC		5.00	BR	75	72	73	90	6	20	29.73	29.92																						
04	SCT	NC		4.00	BR	74	72	73	94	5	18	29.70	29.89																						
07	OVC	200		4.00	BR	77	73	74	88	8	21	29.71	29.91																						
10	BKN	250		5.00	HZ	85	75	78	72	3	VR	29.70	29.90																						
13	BKN	250		6.00	HZ	90	75	79	62	7	22	29.67	29.86																						
16	BKN	250		5.00	HZ	91	76	80	61	7	22	29.64	29.83																						
19	SCT	NC		5.00	HZ	87	79	81	77	6	19	29.64	29.84																						
22	CLR	NC		6.00	HZ	83	78	79	85	5	24	29.67	29.87																						
SUNRISE: 0510						JUL 28						SUNSET: 1922																							
01	FEW	NC		5.00	BR	79	77	78	94	0	00	29.67	29.86																						
04	CLR	NC		4.00	BR	77	76	76	96	0	00	29.64	29.83																						
07	BKN	250		3.00	BR	79	77	78	94	6	26	29.69	29.89																						
10	OVC	250		8.00		89	75	79	63	3	12	29.70	29.90																						
13	OVC	045		8.00		92	76	80	60	5	VR	29.69	29.88																						
16	BKN	250		5.00	HZ	94	73	79	51	8	24	29.64	29.83																						
19	BKN	250		6.00	HZ	87	78	81	75	7	21	29.63	29.83																						
22	SCT	NC		7.00		83	77	79	82	10	02	29.67	29.86																						
SUNRISE: 0511						JUL 29						SUNSET: 1921																							
01	OVC	250		10.00		78	73	75	85	7	34	29.68	29.88																						
04	FEW	NC		10.00		76	72	73	88	10	36	29.68	29.87																						
07	BKN	120		10.00		76	69	71	79	12	36	29.76	29.96																						
10	OVC	250		10.00		79	67	71	67	10	01	29.83	30.03																						
13	BKN	250		10.00		85	59	69	42	10	34	29.82	30.01																						
16	BKN	250		10.00		85	60	69	43	7	34	29.81	30.01																						
19	SCT	NC		10.00		79	62	68	56	3	07	29.85	30.05																						
22	CLR	NC		10.00		71	65	67	81	5	05	29.90	30.10																						
SUNRISE: 0512						JUL 30						SUNSET: 1920																							
01	SCT	NC		10.00		69	62	65	78	8	05	29.92	30.12																						
04	BKN	075		10.00		69	59	63	70	9	03	29.95	30.15																						
07	OVC	090		10.00		67	54	60	63	8	03	30.01	30.21																						
10	OVC	150		10.00		69	58	62	68	8	36	30.05	30.25																						
13	OVC	150		10.00		75	54	63	48	9	06	30.03	30.23																						
16	BKN	250		10.00		76	53	63	45	3	08	30.00	30.20																						
19	SCT	NC		10.00		73	56	63	55	3	08	30.01	30.21																						
22	SCT	NC		10.00		63	59	61	87	3	13	30.05	30.25																						

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			72	67	69	85	29.79	29.99	7.68	4	1	23
02			71	67	68	86	29.79	29.99	7.87	4	1	23
03			71	67	68	88	29.79	29.99	7.71	4	1	23
04			70	66	68	88	29.79	29.99	7.39	3	0	0
05			69	66	67	89	29.80	30.00	7.19	4	1	3
06			70	67	68	89	29.81	30.01	6.40	5	1	6
07			73	67	69	83	29.82	30.02	6.50	6	1	33
08			76	67	70	76	29.83	30.03	7.03	6	1	31
09			79	67	71	69	29.83	30.03	7.50	6	1	36
10			81	67	72	64	29.83	30.03	7.84	6	1	6
11			83	66	72	59	29.83	30.03	7.94	6	0	0
12			85	66	72	55	29.82	30.01	8.23	7	1	8
13			86	66	73	53	29.80	30.00	8.32	7	1	25
14			86	66	72	53	29.79	29.99	8.27	8	1	9
15			85	65	72	54	29.78	29.98	7.97	8	2	21
16			85	65	72	54	29.77	29.97	8.16	9	2	18
17			85	66	72	57	29.77	29.97	8.21	7	3	19
18			84	66	72	59	29.77	29.97	8.10	9	3	18
19			81	67	71	64	29.78	29.98	8.15	6	2	16
20			78	68	71	72	29.79	29.98	8.44	5	2	14
21			76	68	70	77	29.80	30.00	8.42	5	2	17
22			74	68	70	80	29.81	30.01	8.16	6	2	18
23			73	67	69	83	29.81	30.01	7.87	5	2	19
24			73	68	69	85	29.80	29.99	7.70	4	1	21

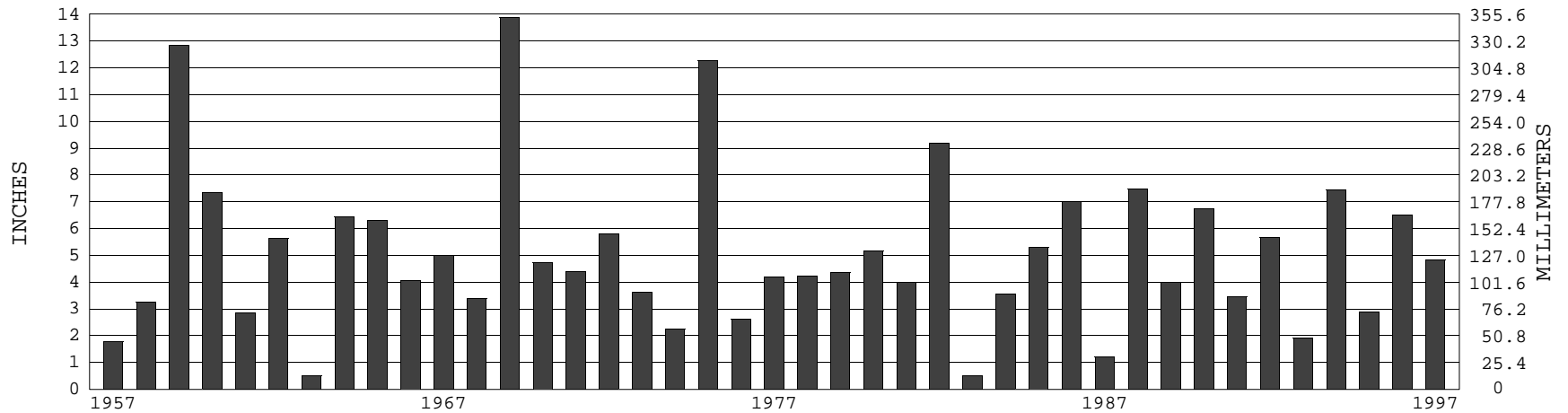
RICHMOND, VA JULY TEMPERATURES



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

Long-Term (1957-1997) Mean: 78.3 1961-1990 Normal: 78.0

RICHMOND, VA JULY PRECIPITATION



Long-Term (1957-1997) Mean Monthly Total: 5.10

1961-1990 Normal: 5.03



JULY 1997
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.

ACTING DIRECTOR

NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at
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