

APRIL 1996
 RICHMOND, VA
 R.E.BYRD INTERNATIONAL AP.

LOCAL CLIMATOLOGICAL DATA

published by: National Climatic Data Center



LATITUDE: 37° 30' N LONGITUDE: 77° 20' W

ELEVATION (GROUND): 164 FEET

TIME ZONE: EASTERN STANDARD ISSN # 0198-537X
 WBAN # 13740

DATE	TEMPERATURE ° F						DEG DAYS BASE 65°		SIGNIFICANT WEATHER	SNOW/ICE ON GND(IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND SPEED = MPH DIR = TENS OF DEGREES				SUNSHINE		CLOUDINESS							
	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 WIND SPEED	RES DIR	AVERAGE SPEED	MAXIMUM				TOTAL MINUTES	PERCENT POSSIBLE	SR-SS		MN-MN		
																			5-SEC		2-MIN				CEILOMETER TENTHS	SATELLITE TENTHS	CEILOMETER TENTHS	SATELLITE TENTHS	
	DEPTH	WATER EQUIV	SNOW-FALL	WATER EQUIV	SPEED	DIR	SPEED	DIR																					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
01	58	46	52	-1	50	51	13	0	RF				0.89	29.55	29.75	6.9	2	9.2	29	34	24	35	252	33	10		10		
02	57	39	48	-5	28	40	17	0	RF				0.05	29.78	29.98	15.2	35	15.4	36	36	28	36	753	99	0		2		
03	75	38	57	3	33	47	8	0					0.00	29.76	29.96	8.5	22	9.3	26	21	20	23	761	100					
04	82	50	66	12	39	53	0	1		0		0.0	0.00	29.58	29.78	9.7	22	10.5	26	19	21	22	725	95	0		0		
05	66	41	54	0	37	45	11	0		0		0.0	0.00	29.74	29.94	10.6	0	11.7	28	01	23	36	470	61	6		4		
06	44	37	41	-14	34	38	24	0	RF	0		0.0	0.16	29.80	30.01	5.0	3	6.1	13	11	10	11	42	5	9		8		
07	52	34	43	-12	29	37	22	0	FH	0		0.0	0.00	29.69	29.90	9.1	33	9.7	23	36	20	36	652	84					
08	55	29*	42	-13	27	37	23	0	RF			0.0	0.16	29.82	30.02	4.0	22	6.0	24	21	17	20	625	81	6		5		
09	42	37	40*	-15	36	38	25	0	RF+H			0.33	0.33	29.64	29.85	6.4	34	7.8	31	34	26	34	117	15	10		10		
10	53	34	44	-12	24	36	21	0				0.00	0.00	29.72	29.92	11.7	30	12.6	34	26	26	30	685	88	4		4		
11	72	39	56	0	29	44	9	0				0.00	T	29.74	29.95	10.5	25	11.3	26	25	22	25	582	75	0		0		
12	84	52	68	12	40	54	0	3	R			T	29.62	29.82	10.4	22	10.8	24	19	20	20	663	85	2		2			
13	85	56	71	14	48	58	0	6				0.00	0.00	29.53	29.73	8.8	21	9.8	28	22	24	23	730	93	0		0		
14	79	51	65	8	48	55	0	0	RFH			T	29.70	29.91	4.7	2	7.3	24	25	18	02	736	93	1		1			
15	68	47	58	1	50	53	7	0	RF			0.13	0.13	29.76	29.96	9.8	12	12.6	31	18	26	18	542	69	7		6		
16	68	44	56	-1	45	51	9	0	RF			0.18	0.18	29.53	29.73	11.1	26	13.8	51	25	38	24	526	66	8		6		
17	63	40	52	-6	29	42	13	0				0.00	0.00	29.86	30.06	9.9	27	11.0	28	24	22	25	808	100					
18	76	34	55	-3	37	48	10	0				0.00	0.00	29.92	30.12	5.1	15	5.8	17	12	15	12	779	98					
19	74	55	65	7	52	58	0	0	R			T	29.84	30.04	13.5	20	13.8	30	20	24	19	766	96						
20	81	61	71	13	59	63	0	6				0.00	0.00	29.79	29.99	14.8	20	15.2	39	21	30	22	665	83					
21	74	59	67	8	58	62	0	2	R			T	29.92	30.12	5.6	23	6.6	21	21	17	20	661	82	3		1			
22	88*	58	73	14	56	63	0	8				0.00	0.00	29.91	30.11	11.8	21	12.4	32	21	28	22	810	100	0		0		
23	85	56	71	11	58	64	0	6	RF	0		0.12	0.12	29.70	29.90	15.4	22	18.4	49	26	40	27	670	83	3		3		
24	67	43	55	-5	32	44	10	0		0		0.00	0.00	29.87	30.07	7.5	29	10.5	26	32	23	32	810	100	0		0		
25	78	43	61	1	39	51	4	0	H			0.00	0.00	29.74	29.94	14.2	20	14.7	38	21	31	19	650	80	1		1		
26	68	56	62	1	55	57	3	0	RF			0.11	0.11	29.49	29.69	13.2	20	13.9	41	21	23	20	437	54	6		5		
27	67	46	57	-4	37	48	8	0	R			T	29.79	29.98	3.4	32	6.4	21	25	16	30	754	92	1		1			
28	76	42	59	-2	45	52	6	0				0.00	0.00	30.05	30.26	7.4	15	8.5	22	17	16	18	783	95	0		1		
29	86	60	73*	12	62	66	0	8	TR			T	29.81	30.01	13.6	19	14.3	41	23	33	24	495	60	6		5			
30	72	49	61	0	58	60	4	0	RF			0.75	0.75	29.58	29.78	10.6	20	14.0	45	26	34	25		8			6		
MONTHLY AVERAGES											29.74	29.94	4.7	23	11.0	MONTHLY AVERAGES				4	3								
DEPARTURE		25.2		-2.1		MONTHLY		DEGREE DAYS		TOTAL SNOWFALL:		TOTAL PRECIPITATION:		2.88		SUNSHINE TOTALS:		17949		PERCENT		TOTAL POSSIBLE :		18845		POSSIBLE: 95			
HEATING:		247		6		TOTAL DEPARTURE		4369		TOTAL DEPARTURE		467		GREATEST 24-HR PRECIPITATION:		0.89		DATE		01		WIND		SPEED		DIRECTION		DATE	
COOLING:		40		30		40		30		GREATEST 24-HR SNOWFALL:		GREATEST SNOW DEPTH:		PRECIPITATION ≥ 0.01 INCH :		10		PRECIPITATION ≥ 0.10 INCH :		9		NUMBER OF		DAYS WITH		←			
NUMBER OF DAYS WITH →		CLEAR		PARTLY CLOUDY		CLOUDY		MAXIMUM TEMP ≥ 90 :		0		MINIMUM TEMP ≤ 32 :		1		PRECIPITATION ≥ 0.01 INCH :		10		PRECIPITATION ≥ 0.10 INCH :		9		NUMBER OF		DAYS WITH		←	

APRIL 1996
 RICHMOND, VA

HOURLY PRECIPITATION (WATER EQUIVALENT IN INCHES)

APRIL 1996
RICHMOND, VA

WBAN # 13740

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12		
01	0.03	0.04	0.03	0.01	0.02	0.05	0.16	0.38	0.10	0.04	0.02	T	01	T									T	0.01	T	01	
02	0.01	0.03	0.01										02													02	
03													03													03	
04													04													04	
05													05													05	
06													06	0.02	0.01	0.02	0.03	0.02	0.01	T	T	0.02	T			06	
07													07													07	
08													08													08	
09	0.05	0.03	0.02	0.03	0.05	0.04	0.03	0.01	0.01	T	T	0.03	09	0.02	0.02	0.01	0.01	T	T			T	0.01	0.03	0.06	0.05	* 0.15
10													10													10	* 0.36
11													11													11	
12													12													12	
13													13													13	
14													14													14	
15													15													15	
16													16													16	
17													17													17	
18													18													18	
19													19	T	T											19	
20													20													20	
21													21	T												21	
22													22													22	
23													23													23	
24													24													24	
25													25													25	
26													26	T	T	0.03									0.01	26	
27	T	T	T										27													27	
28													28													28	
29													29													29	
30													30	T	0.21	0.01	0.06	T								30	

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* The sum of the hourly totals follows the * when it disagrees with the daily total on page 1. NWS does not edit ASOS hourly precipitation but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

MAXIMUM SHORT DURATION PRECIPITATION (MSDP) **

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)												
ENDED: DATE												
ENDED: TIME												

** NCDC derives MSDP data from one-minute ASOS data. The MSDP data are not printed when inconsistent with ASOS hourly totals.

The time indicated is the ending time of the interval.
Date and time are not entered for trace amounts.

REFERENCE NOTES :

WFO = WEATHER FORECAST OFFICE.
 ASOS = AUTOMATED SURFACE OBSERVING SYSTEM.
 * = EXTREME FOR THE MONTH (LAST OCCURRENCE IF MORE THAN ONE).
 T = TRACE PRECIPITATION AMOUNT.
 + = ALSO OCCURS ON EARLIER DATES.
 F+ = HEAVY FOG, VISIBILITY .25 MILES OR LESS.
 BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.
 THE HEATING DEGREE DAY SEASON BEGINS JULY 1.
 THE COOLING DEGREE DAY SEASON BEGINS JANUARY 1.
 CEILOMETER (30-SECOND) DATA ARE USED TO DERIVE CLOUDINESS AT OR BELOW 12,000 FEET. THIS CLOUDINESS IS THE MEAN CLOUD COVER DETECTED DURING THE TIME INTERVAL (HOUR, SUNRISE TO SUNSET, OR MIDNIGHT TO MIDNIGHT).
 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. 50 x 50 KM).
 SKY CONDITION IS BASED ON THE SUM (NOT TO EXCEED 10) 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 - 3 TENTHS, PARTLY CLOUDY = 4 - 7 TENTHS, AND CLOUDY = 8 - 10 TENTHS.
 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' INDICATES CALM.
 SR-SS = SUNRISE TO SUNSET. MN-MN = MIDNIGHT TO MIDNIGHT.
 SNOWFALL IS FOR THE 24-HOUR PERIOD ENDING AT THE TIME INDICATED IN COLUMN HEADING.
 WATER EQUIVALENT OF SNOW ON THE GROUND IS REPORTED ONLY WHEN THE DEPTH IS 2 OR MORE INCHES.
 H, F, F+, P-, R, S, AND ZR ARE REPORTED FROM ASOS AUTOMATED SENSORS. OTHER WEATHER TYPES MAY BE ADDED TO THE REPORT BY STATION PERSONNEL OR BE PROVIDED BY THE WEATHER FORECAST OFFICE (WFO).

A HAIL	GL GLAZE	SG SNOW GRAINS
BD BLOWING DUST	H HAZE	SP SNOW PELLETS
BN BLOWING SAND	IC ICE CRYSTALS	T THUNDER
BS BLOWING SNOW	IF ICE FOG	V VOLCANIC ASH
BY BLOWING SPRAY	IP ICE PELLETS	ZL FREEZING DRIZZLE
D DUST	K SMOKE	ZR FREEZING RAIN
F FOG	L DRIZZLE	& TORNADO
F+ HEAVY FOG	P- UNKN. PRECIP.	&C FUNNEL CLOUD
GF GROUND FOG	R RAIN	&W WATERSPOUT
	S SNOW	

NORMALS ARE FOR THE YEARS 1961 - 1990.
 A HEATING (COOLING) DEGREE DAY IS THE DIFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65°F.
 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 THE MOISTURE CONTENT WAS INCREASED TO 100% RELATIVE HUMIDITY.

TEMPERATURE - HUMIDITY INDEX (STEADMAN, 1979)

TEMPERATURE ° F	RELATIVE HUMIDITY (PERCENT)										
	0	10	20	30	40	50	60	70	80	90	100
120	107	116	130	148							
115	103	111	120	135	151						APPARENT TEMPERATURE
110	99	105	112	123	137	150					
105	95	100	105	113	123	135	149				
100	91	95	99	104	110	120	132	144			
95	87	90	93	96	101	107	114	124	136		
90	83	85	87	90	93	96	100	106	113	122	
85	78	80	82	84	86	88	90	93	97	102	108
80	73	75	77	78	79	81	82	85	86	88	91
75	69	70	72	73	74	75	76	77	78	79	80
70	64	65	66	67	68	69	70	70	71	71	72

WIND CHILL EQUIVALENT TEMPERATURE (SIPLE & PASSEL, 1945)

TEMPERATURE ° F	WIND VELOCITY (MPH)									
	4	5	10	15	20	25	30	35	40	45
45	45	43	34	29	26	23	21	20	19	18
40	40	37	26	23	19	16	13	12	11	10
35	35	32	22	16	12	8	6	4	3	2
30	30	27	16	9	4	1	-2	-4	-5	-6
25	25	22	10	2	-3	-7	-10	-12	-13	-14
20	20	16	3	-5	-10	-15	-18	-20	-21	-22
15	15	11	-3	-11	-17	-22	-25	-27	-29	-30
10	10	6	-9	-18	-24	-29	-33	-35	-37	-38
5	5	0	-15	-25	-31	-36	-41	-43	-45	-46
0	0	-5	-22	-31	-39	-44	-49	-52	-53	-54
-5	-5	-10	-27	-38	-46	-51	-56	-58	-60	-62
-10	-10	-15	-34	-45	-53	-59	-64	-67	-69	-70
-15	-15	-21	-40	-51	-60	-66	-71	-74	-76	-78
-20	-20	-26	-46	-58	-67	-74	-79	-82	-84	-85
-25	-25	-31	-52	-65	-74	-81	-86	-89	-92	-93
-30	-30	-36	-58	-72	-81	-88	-93	-97	-100	-102

ADDITIONAL INFORMATION :

OBSERVATIONS AT 3-HOURLY INTERVALS

APRIL 1996
RICHMOND, VA

WBAN # 13740

HOUR (LST)	12K FEET		SATELLITE > 12K FT		TEMPERATURE °F					WIND		PRESSURE (INCHES, HG)		HOUR (LST)	12K FEET		SATELLITE > 12K FT		TEMPERATURE °F					WIND		PRESSURE (INCHES, HG)																								
					100'S OF FT			VISIBILITY (MILES)		WEATHER	DRY BULB	DEW POINT	WET BULB						RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	100'S OF FT			WEATHER	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL															
	CEILOMETER TENTHS	CELLING	OBSERVATION TIME (LST)	EFF. CLD AMT TENTHS	LOWEST CLOUD TOP	HIGHEST CLOUD TOP	100'S OF FT	100'S OF FT	100'S OF FT		100'S OF FT	VISIBILITY (MILES)	WEATHER		DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	CEILOMETER TENTHS	CELLING	OBSERVATION TIME (LST)	EFF. CLD AMT TENTHS		LOWEST CLOUD TOP	HIGHEST CLOUD TOP	100'S OF FT	100'S OF FT	100'S OF FT	100'S OF FT	VISIBILITY (MILES)	WEATHER	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL							
01	10	4												01	10	6																																		
04	10	2												04	10	6																																		
07	10	16												07	10	6																																		
10	10	6												10	10	6																																		
13	10	6												13	10	6																																		
16	10	12												16	10	12																																		
19	10	15												19	10	15																																		
22	10	10												22	10	10																																		

SUPPLEMENTARY HOURLY PRECIPITATION

UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

APRIL 1996
RICHMOND, VA

LATITUDE 37° 30'N
LONGITUDE 77° 19'W

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12		
01	0.03	0.03	0.03	0.01	0.04	0.06	0.14	0.31	0.13	0.04	0.02	T	01												01	0.84	
02	0.01	0.03	0.01										02												02	0.05	
03													03												03	0.00	
04													04												04	0.00	
05													05												05	0.00	
06													06	0.02	0.01	0.01	0.03	0.02	T						06	0.11	
07													07												07	0.00	
08													08							0.01	0.02	0.06	0.05	08	0.14		
09	0.04	0.03	0.03	0.03	0.05	0.04	0.03	0.03	0.02	0.02		0.01	09	0.03	0.01	T								09	0.37		
10													10											10	0.00		
11													11											11	0.00		
12													12											12	0.00		
13													13											13	0.00		
14													14											14	0.00		
15													15				0.04	0.01	0.02	T	0.04			15	0.11		
16					0.10	0.03	0.02						16			0.02								16	0.17		
17													17											17	0.00		
18									0.02				18											18	0.02		
19													19											19	0.00		
20													20											20	0.00		
21													21											21	0.00		
22													22											22	0.00		
23													23				0.06	0.03	0.01	T			23	0.10			
24													24											24	0.00		
25											0.06		25	T	T	0.02								25	0.08		
26													26											26	0.00		
27													27											27	0.00		
28													28											28	0.00		
29													29											29	0.00		
30					0.10	0.12	0.07	0.02	0.03	0.04	0.01		30	T	0.23	0.01	0.05						30	0.68			
PUBLISHED BY: NCDC, ASHEVILLE, NC.																							MONTHLY TOTAL		2.67		

SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.08	0.13	0.15	0.18	0.23	0.31	0.39	0.48	0.54	0.58	0.63	0.64
ENDED: DATE	30	01	01	01	01	01	01	01	01	01	01	01
ENDED: TIME	0612	0717	0757	0801	0811	0753	0807	0823	0823	0823	0823	0823

The time indicated is the ending time of the interval.
Date and time are not entered for trace amounts.

The National Weather Service has determined that the ASOS Heated Tipping-Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data.
M = Missing Data.

* = Data distribution unknown.
First HPD value that follows is the total accumulated amount.

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Kenneth D Haden

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