

Local Climatological Data

Annual Summary With Comparative Data

1983

RICHMOND, VIRGINIA



Narrative Climatological Summary

Richmond is located in east-central Virginia at the head of navigation on the James River and along a line separating the Coastal Plains (Tidewater Virginia) from the Piedmont. The Blue Ridge Mountains lie about 90 miles to the west and the Chesapeake Bay 60 miles to the east. Elevations range from a few feet above sea level along the river to a little over 300 feet in parts of the west section of the City.

The climate might be classified as modified continental. Summers are warm and humid and winters generally mild. The mountains to the west act as a partial barrier to outbreaks of cold, continental air in winter, the coldest air being delayed long enough to be modified, then further warmed as it subsides in its approach to Richmond. The open waters of the Chesapeake Bay and Atlantic Ocean contribute to the humid summers and mild winters. The coldest weather normally occurs in late December and in January, when low temperatures usually average in the upper twenties and the high temperatures in the upper forties. Temperatures seldom lower to zero. The record lowest temperature of minus 12° was recorded at the Airport in January 1940. The record high temperature of 107° occurred in August 1918 at Chimborazo Park.

Precipitation is rather uniformly distributed throughout the year. However, dry periods lasting several weeks do occur, especially in autumn when long periods of pleasant, mild weather are most common. There is considerable variability in total monthly amounts from year to year so that no one month can be depended upon to be normal. Snow has been recorded during seven of the twelve months. Falls of four inches or more occur on an average of once a year. Snow usually remains on the ground only one or two days at a time, but on one occasion it remained 21 days (January 23 to February 13, 1948). Ice storms (freezing rain or glaze) are not uncommon in winter, but they are seldom severe enough to do any considerable damage. A notable exception was the

spectacular glaze storm of January 27-28, 1943, when nearly one inch of ice accumulation caused heavy damage to trees and overhead transmission lines of all kinds. There have been more recent ice storms that caused damage, but they did not compare to the 1943 storm.

The James River reaches tidewater at Richmond where flooding has occurred in every month of the year, most frequently in March and least in July. Hurricanes and less severe storms of tropical origin have been responsible for most of the flooding during the summer and early fall months. The flood of record at Richmond was Agnes in June 1972, which produced on the 23rd crests 6 1/2 feet above old high water marks dating back 200 years. Agnes was followed closely by serious flooding on October 7, 1972, and preceded by Camille on August 22, 1969, which is now the fourth greatest flood of record. In 1955, three hurricanes brought record rainfall to Richmond within a six-week period. The most noteworthy of these were Hurricanes Connie and Diane that brought heavy rains five days apart.

Damaging storms occur mainly from snow and freezing rain in winter and from hurricanes, tornadoes, and severe thunderstorms in other seasons. Damage may be from wind, flooding, or rain, or from any combination of these. Tornadoes are infrequent but some notable occurrences have been observed within the Richmond area. The highest wind recorded has been 68 m.p.h. with a peak gust of 79 m.p.h. at the time of Hurricane Hazel, October 15, 1954.

The dates of the last freeze in spring and of the first in autumn mark the limits of the growing season for most crops. The average growing season is 216 days. May 11, 1966, has been the latest date in spring when a temperature of 32° or lower was recorded; October 3, 1974, was the earliest date in autumn.

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NATIONAL ENVIRONMENTAL SATELLITE,
DATA, AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, N.C.

Meteorological Data For The Current Year

Station: RICHMOND, VIRGINIA # 13740 R.E. BYRD INTERNATIONAL AP. Standard time used: EASTERN Latitude: 37° 30' N Longitude: 77° 20' W Elevation (ground): 164 feet Year: 1983

Month	Temperature °F						Degree days Base 65 °F		Precipitation in inches						Relative humidity, pct.				Wind				Number of days								Average station pressure mb						
	Averages			Extremes			Heating	Cooling	Water equivalent			Snow, ice pellets			Hour		Resultant		Fastest mile		Precipitation		Sunrise to sunset		Temperature °F		Elev. feet m.s.l.										
	Daily maximum	Daily minimum	Monthly	Highest	Lowest	Date			Total	Greatest in 24 hrs.	Date	Total	Greatest in 24 hrs.	Date	Hour	Hour	Direction	Speed m.p.h.	Direction	Date	Precipitation	Percent of possible sunshine	Clear	Partly cloudy	Cloudy	90° and above		32° and below									
JAN	45.4	30.2	37.8	60	7	16	19	836	0	1.59	0.72	22-23	0.1	0.1	15	79	86	64	68	33	3.6	8.2	57	5.8	10	8	13	8	0	0	0	0	0	19	0	1013.2	
FEB	47.7	30.4	39.1	72	22	19	13	718	0	3.95	1.85	10-11	21.4	16.8	10-11	77	84	52	67	34	4.5	9.2	29	6.3	8	6	14	7	0	0	0	0	1	19	0	1010.8	
MAR	59.8	41.0	50.4	81	26	26	26	485	0	6.04	2.40	21	0.0	0.0		75	82	59	62	34	3.1	10.7	62	7.7	17	13	9	0	0	0	0	0	0	0	0	1004.4	
APR	66.4	45.8	56.1	86	26	32	21	282	21	5.21	2.51	15	T	0.0	19	78	81	52	62	24	2.1	9.9	65	6.2	13	10	0	0	0	0	0	0	0	1	0	1005.1	
MAY	77.3	54.8	66.1	88	15	42	9	69	108	2.50	0.83	22	0.0	0.0		83	84	52	60	19	3.4	9.3	74	6.2	8	7	16	10	0	0	0	0	0	0	0	1009.5	
JUN	85.7	65.4	75.6	93	28	53	2	2	325	5.46	2.98	20-21	0.0	0.0		86	85	56	67	13	2.0	6.9	78	5.2	12	7	11	10	0	0	5	0	0	0	0	1010.2	
JUL	91.5	67.2	79.4	99	3	54	8	0	452	0.51	0.35	19	0.0	0.0		84	82	45	55	25	1.3	7.0	88	4.9	10	14	7	5	0	0	0	0	0	0	0	1010.2	
AUG	89.8	65.5	77.7	102	22	51	15	1	405	0.97	0.34	9	0.0	0.0		94	94	52	69	15	1.0	7.3	37	5.6	10	8	13	9	0	0	10	0	0	0	0	0	1010.5
SEP	80.9	56.6	68.8	100	11	37	23	86	207	3.05	1.33	29-30	0.0	0.0		91	95	52	72	34	1.8	7.9	23	6.5	10	6	11	8	0	0	3	1	10	0	0	1012.9	
OCT	67.8	48.3	58.1	85	4	32	31	236	27	4.02	1.52	22-23	0.0	0.0		90	93	62	79	02	1.7	7.8	29	5.1	6	18	10	0	0	2	1	0	0	2	0	0	1014.9
NOV	60.4	37.6	49.0	73	3	27	18	475	0	5.63	2.12	24-25	0.1	0.1	25	80	82	51	68	23	3.1	8.1	34	5.6	8	9	13	7	0	0	0	0	0	0	0	1008.8	
DEC	44.5	27.9	36.2	63	6	3	25	887	0	4.50	1.26	12-13	T	0.0	27	71	79	56	63	30	2.2	9.6	63	6.2	10	5	16	11	0	0	0	0	6	20	0	1014.6	
YEAR	68.1	47.6	57.9	102	22	3	25	4037	1547	43.43	2.98	20-21	21.6	16.8	10-11	82	85	55	66	30	0.9	8.5	70	5.9	111	92	162	110	3	34	15	58	8	73	0	1010.5	

Normals, Means, And Extremes

Month	Temperatures °F						Normal Degree days Base 65 °F		Precipitation in inches						Relative humidity pct.				Wind				Mean number of days								Average station pressure mb													
	Normal			Extremes			Heating	Cooling	Water equivalent			Snow, ice pellets			Hour		Fastest mile		Precipitation		Sunrise to sunset		Temperature °F		Elev. feet m.s.l.																			
	Daily maximum	Daily minimum	Monthly	Record highest	Year	Record lowest			Year	Normal	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Maximum monthly	Year	Maximum in 24 hrs.	Year	Mean speed m.p.h.	Prevaling direction	Direction	Year		Pct. of possible sunshine	Clear	Partly cloudy	Cloudy	90° and above	32° and below													
(a)				54		54				46		46		46		46		46	49	49	49	49	35	15	31	31	33	38	38	38	38	38	46	46	46	54	54	54	54	54	54	11		
J	46.7	26.5	36.6	80	1950	-12	1940	880	0	3.23	7.97	1978	0.64	1981	3.31	1962	28.5	1940	21.6	1940	77	81	57	69	8.0	S	43	NW	1971	53	6.4	8	7	16	10	1	*	3	0	3	21	*	1012.3	
F	49.6	28.1	38.9	83	1932	-10	1936	731	0	3.13	5.97	1979	0.48	1978	2.67	1979	21.4	1983	16.8	1983	74	79	52	63	8.5	NNE	45	SW	1951	57	6.1	9	6	13	9	1	*	2	0	2	19	*	1022.5	
M	58.5	35.8	47.2	93	1938	-11	1960	552	0	3.57	8.04	1975	0.94	1966	2.40	1983	19.7	1960	12.1	1962	73	78	49	59	9.0	W	42	SE	1952	60	6.3	8	8	15	11	1	*	0	*	10	0	1010.1		
A	70.6	45.1	57.9	96	1976	25	1977	226	13	2.90	5.32	1952	0.64	1963	2.60	1978	2.0	1940	74	76	45	55	8.8	S	40	NW	1972	64	6.1	8	9	13	9	*	0	1	0	2	0	0	1009.7			
M	77.9	54.2	66.1	100	1941	31	1956	65	99	3.55	8.87	1972	0.87	1965	3.08	1981	0.0	0.0	84	80	51	65	7.7	SSW	45	N	1962	64	6.3	7	10	14	11	0	0	6	2	3	0	*	0	0	1008.9	
J	84.8	62.2	73.5	104	1952	40	1967	0	258	3.60	9.24	1938	0.38	1980	4.61	1963	0.0	0.0	87	82	54	67	7.2	S	52	NW	1952	68	6.0	7	12	11	10	0	0	7	2	9	0	0	0	1009.7		
J	88.4	67.2	77.8	105	1977	51	1965	0	397	5.14	18.87	1945	0.51	1983	5.73	1969	0.0	0.0	89	85	56	71	6.6	SSW	56	NW	1955	67	6.1	7	12	12	11	0	9	2	13	0	0	0	0	1010.1		
A	87.1	66.4	76.8	102	1983	46	1934	0	366	5.01	14.10	1955	0.52	1943	8.79	1955	0.0	0.0	90	89	57	76	6.3	S	54	W	1964	66	6.0	7	12	12	10	0	7	3	11	0	0	0	1011.4			
S	81.0	59.3	70.2	103	1954	35	1974	24	180	3.52	10.98	1975	0.26	1978	3.82	1955	0.0	0.0	90	90	56	78	6.6	S	45	SE	1952	64	5.7	9	9	12	8	0	3	5	0	0	0	0	1011.7			
O	70.9	46.7	58.6	99	1941	21	1962	221	23	3.74	9.39	1971	0.30	1963	6.50	1961	7	1979	87	89	53	77	6.9	NNE	68	SE	1954	61	5.4	12	7	12	7	0	1	3	*	0	2	0	0	1013.0		
N	60.9	37.3	48.9	86	1974	10	1933	483	0	3.29	7.64	1959	0.36	1965	4.07	1956	7.3	1953	7.3	1953	80	84	51	70	7.4	S	38	NW	1977	58	5.7	10	7	13	8	*	1	2	0	*	10	0	0	1012.9
D	50.2	29.6	39.9	80	1971	-1	1942	778	0	3.39	7.07	1973	0.40	1980	3.16	1958	12.5	1958	7.5	1966	78	81	55	70	7.6	SW	40	SW	1968	53	6.2	10	6	15	9	1	*	3	0	2	20	*	1013.2	
YR	68.8	46.5	57.7	105	1977	-12	1940	3960	1336	44.07	18.87	1945	0.26	1978	8.79	1955	28.5	1940	21.6	1940	82	83	53	68	7.6	S	68	SE	1954	62	6.0	102	105	158	113	4	37	28	42	7	85	1	1011.3	

NOTE: NORMAL COOLING DEGREE DATA PUBLISHED IN THE 1982 ANNUAL WERE FOR THE 1951-1980 PERIOD.

NORMALS, MEANS, AND EXTREMES TABLE NOTE(S):

- (a) Length of record, years, through the current year unless otherwise noted, based on January data.
 (b) 70° and above at Alaskan stations.
 * Less than one half.
 † Trace.
 BLANK entries denote missing or unreported data.

NORMALS - Based on record for the 1951-1980 period.
 MEANS - Length of record in (a) is for complete data years.
 EXTREMES - Length of record in (a) may be for other than complete or consecutive data years. Date is the most recent in cases of multiple occurrence.
 WIND DIRECTION - Numerals indicate tens of degrees clockwise from true north. 00 indicates calm.
 FASTEST MILE WIND - Speed is fastest observed 1-minute value when direction is in tens of degrees.

Means and extremes above are from existing and comparable exposures. Annual extremes have been exceeded at other sites in the locality as follows:
Temperature Highest: 107 in Aug. 1918.
Precipitation Minimum monthly : 0.11 in Nov. 1890+.

Average Temperature

Table with columns: Year, Jan, Feb, Mar, Apr, May, June, July, Aug, Sept, Oct, Nov, Dec, Annual. Rows from 1944 to 1983, plus RECORD MEAN and MIN.

Heating Degree Days

RICHMOND, VA

Table with columns: Season, July, Aug, Sept, Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, June, Total. Rows from 1963-64 to 1983-84.

Cooling Degree Days

Table with columns: Year, Jan, Feb, Mar, Apr, May, June, July, Aug, Sept, Oct, Nov, Dec, Total. Rows from 1969 to 1983.

Precipitation

Table with columns: Year, Jan, Feb, Mar, Apr, May, June, July, Aug, Sept, Oct, Nov, Dec, Annual. Rows from 1944 to 1983, plus RECORD MEAN.

Snowfall

Table with columns: Season, July, Aug, Sept, Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, June, Total. Rows from 1944-45 to 1983-84.

Indicates a station move or relocation of instruments. See Station Location table.

Record mean values above are means through the current year for the period beginning in 1930 for temperature, 1938 for precipitation and snowfall. Data are from airport locations.

STATION LOCATION

RICHMOND, VIRGINIA

Location	Occupied from	Occupied to	Airline distance and direction from previous location	Latitude North	Longitude West	Elevation above										* Type M = AMOS T = AUTOB	Remarks	
						Sea level	Ground											Hygrothermometer
							Ground at temperature site	Wind instruments	Extreme thermometers	Psychrometer	Sunshine Switch	Tipping bucket rain gage	Weighing rain gage	8" rain gage	Automatic Observing Equipment †			
COOPERATIVE																		
High elevation in East Richmond	1/1880	2/1893				Est. 150										W. H. Pleasants; exact address unknown.		
Near Southern RR Bridge	3/1893	3/1895				Est. 35										A. J. Duesberry, River Observer.		
Westbrook Farms	4/1895	10/1897	4 mi. N	27° 36'	77° 24'	196										Capt. J. C. Shafer; temperatures only		
CITY																		
State Library Building Capitol Square	9/18/95	5/22/97	4 mi. S	37° 32'	77° 27'	142										Section Center; no observations		
Chamber of Commerce Building, Ninth & Main Streets	5/22/97	5/31/00	3/8 mi. SW	37° 32'	77° 27'	104	107	98	98		89		89			Observational Program begun 10/5/97.		
Times Building 10th & Bank Streets	5/31/00	6/30/05	1/8 mi. NE	37° 32'	77° 27'	115	92	82	82		76		76					
Mutual Assurance Bldg. Ninth & Main Streets	6/30/05	1/30/10	1/8 mi. SW	37° 32'	77° 27'	104	154	145	145		138		138					
Weather Bureau Building Chimborazo Park 3301 E Broad Street	1/30/10	7/01/53	1-1/2 mi. E	37° 32'	77° 25'	162	53	11	11		3	a4	3			Climatological observations were continuous at City Office sites 10/5/97 through 6/30/53. a - At this site 9/24/42 to 4/19/46 and after 6/1/50.		
AIRPORT																		
WB-CAA Building	7/15/25	9/24/42	None	37° 30'	77° 20'	158	#	5	5				3			CAA to 8/3/30. WBAS 8/3/30 to 5/26/35 and 7/14/38 to 9/24/42. # - 40 feet 8/3/30 to 5/26/35, estimated 40 feet 5/26/35 to 7/14/38 and estimated 50 feet to 9/24/42.		
Army Hangar (Operations Annex)	9/24/42	4/19/46	1/2 mi. NNW	37° 30'	77° 20'	156	55	5	5				3			AF operation.		
Old Airport Administration Building	4/19/46	6/01/50	1/3 mi. SSE	37° 30'	77° 20'	156	46	5	5				4			WBAS reopened.		
Byrd Field † New Terminal Building † R. E. Byrd International Airport effective 2/18/71	6/01/50	Present	4/5 mi. N	37° 30'	77° 20'	c164	b20 g33	d6	d6	760	e19	f19	e19	a4	NA	a - Installed 2700 feet ENE of thermometer site 6/26/59. b - 67 feet to 1/11/61. c - 162 feet to 6/26/59. d - Discontinued 6/26/59. e - 3 feet to 10/9/69. % - Commissioned 11/19/63. f - Installed on roof 1/1/80. g - Minor move 12/2/82.		

SUBSCRIPTION:

Price and ordering information available through: National Climatic Data Center, Federal Building, Asheville, North Carolina 28801, ATTN: Publications.

I certify that this is an official publication of the National Oceanic and Atmospheric Administration, and is compiled from records received at the National Climatic Data Center, Asheville, North Carolina 28801.

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National Climatic Data Center

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