



LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA

RICHMOND, VIRGINIA

1973

U.S. DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
ENVIRONMENTAL DATA SERVICE

USB FILE COPY

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 classed 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 4 inches or more occur on an average of once a year. Snow usually remains on the ground only 1 or 2 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, 1948, when heavy damage was done to trees and overhead transmission lines of all kinds.

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 and one half 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 6-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 at 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 5, 1965, has been the earliest date in autumn.

METEOROLOGICAL DATA FOR THE CURRENT YEAR

Station: RICHMOND, VIRGINIA

B.-E.-BYRD INTERNATIONAL AP.

Standard time used: EASTERN

Latitude: 37° 30' N Longitude:

Elevation (ground) : 164 feet

Year: 1973

Month	Temperature						(Base 65°)		Precipitation						Relative humidity				Wind &				Number of days																
	Averages			Extremes					Snow, Ice pellets			Hour		Hour		Hour		Resultant		Fastest mile		Sunrise to sunset			Temperatures														
	Daily maximum	Daily minimum	Monthly	Highest	Date	Lowest	Total	Greatest in 24 hrs.	Date	Total	Greatest in 24 hrs.	Date	01	07	13	19	Direction	Speed	Direction	#	Percent of possible sunshine	Average sky cover sunrise to sunset	Clear	Partly cloudy	Cloudy	Thunderstorms	Heavy fog	90° and above	32° and below	10° and below	Average daily solar radiation - Langley								
JAN	49.1	26.0	37.6	72	1	10	843	0	2,66	0.82	28-29	74	83	48	05	30	1.0	7.2	25	NW	29	57	6.4	7	11	13	11	1	0	0	0	0							
FEB	49.5	27.5	38.5	67	14	21	18+	735	3,11	1-2	71	77	48	05	26	8.4	8.4	26	Z	17*	44	5.0	9	9	12	12	1	0	0	0	0								
MAR	62.5	42.6	52.6	67	14	22	1	394	3,44	0.73	31+	1,4	1,4	21-22	83	88	63	70	36	0.8	8.0	35	17	44	5.0	4	4	22	16	1	0	0	0	0					
APR	69.3	46.5	57.9	87	22	28	12	247	4,58	1.36	25-26	77	77	47	56	24	2.4	8.7	33	SW	10	66	6.6	5	7	18	8	0	3	3	2	0							
MAY	76.6	53.6	65.1	88	28	38	18+	79	91	3,56	1.07	20	0.0	0.0	83	81	51	63	22	2.5	7.9	29	17	63	6.6	4	5	15	12	11	0	0	0	0					
JUN	85.7	66.3	76.0	91	11+	56	2	338	2,45	0.88	28-29	0.0	0.0	89	83	59	70	19	3.1	7.2	35	NE	3	67	6.4	6	13	11	8	0	7	3	0						
JUL	87.4	67.3	77.4	93	21+	57	12	0	391	3,64	1.46	10-11	0.0	0.0	90	87	60	71	18	2.3	6.7	42	NW	11	74	6.4	7	11	13	8	0	0	0	0					
AUG	87.6	67.4	77.5	96	12	60	24+	0	395	4,34	1.81	20-21	0.0	0.0	94	95	61	79	18	0.8	5.6	23	NW	14*	72	5.8	11	9	11	8	0	0	4	1					
SEP	82.7	60.9	72.3	94	1	47	11	5	231	1,82	1.07	14	0.0	0.0	93	92	59	79	06	1.2	5.9	24	SW	2	69	5.9	7	14	9	8	0	6	5	5					
OCT	73.9	47.2	60.6	88	5	31	18	163	32	2.56	1.11	2	0.0	0.0	86	88	50	76	36	0.6	6.5	22	SW	29	73	4.5	15	9	7	5	0	0	0	0					
NOV	65.1	37.4	51.3	82	27	42	7	414	9	1,27	0.72	5	0.0	0.0	72	80	42	59	25	3.1	8.0	32	SW	28	64	5.4	10	10	10	6	0	0	0	0					
DEC	51.3	30.3	40.8	74	5+	3	18	744	2	7.07	2.23	8-9	9.9	4.9	11	80	84	58	74	32	1.0	7.8	28	SW	5	44	6.8	8	18	13	3	3	1	3	0				
YEAR	70.1	47.8	59.0	96	AUG.	12	3	DEC.	3624	1544	40.50	2.23	8-9	DEC.	11	83	85	54	69	24	0.8	7.3	42	NW	JUL.	11	64	6.2	94	115	156	110	5	40	29	32	7	80	0

NORMALS, MEANS, AND EXTREMES

Means and extremes above are from existing and comparable exposures. Annual extremes have been exceeded at other sites in the locality as follows:

(a) Length of record, years, based on January data.
Other months may be for more or fewer years if there have been breaks in the record.

(b) there have been breaks
Climatological normal

(b) Climatological normals (1941-1970).
• Less than one half.

+ Also on earlier dates, months, or years.
T Trace an amount too small to measure.

— Trace, an amount too small
Below zero temperatures

‡ $\geq 70^\circ$ at Alaskan station

The prevailing direction for wind in the Normals.

The prevailing direction for wind in the Normal, Means, and Extremes table is from records through 1963.

Unless otherwise indicated, dimensional units used in this bulletin are: temperature in degrees F.; precipitation, including snowfall, in inches; wind movement in miles per hour; and relative humidity in percent. Heating degree day totals are the sums of negative departures of average daily temperatures from 65° F. Cooling degree day totals are the sums of positive departures of average daily temperatures from 65° F. Sleet was included in snowfall totals beginning with July 1948. The term

"Ice pellets" includes solid grains of ice (sleet) and particles consisting of snow pellets encased in a thin layer of ice. Heavy fog reduces visibility to 1/4 mile or less.

Sky cover is expressed in a range of 0 for no clouds or obscuring phenomena to 10 for complete sky cover. The number of clear days is based on average cloudiness 0-3, partly cloudy days 4-7, and

cover. The number of clear days is based on average cloudiness 0-3, partly cloudy days 4-7, and cloudy days 8-10 tenths.

Solar radiation data are the averages of direct and diffuse radiation on a horizontal surface. The langley denotes one gram calorie per square centimeter.

& Figures instead of letters in a direction column indicate direction in tens of degrees from true North; i.e., 09 - East, 18 - South, 27 - West, 36 - North, and 00 - Calm. Resultant wind is the vector sum of wind directions and speeds divided by the number of observations. If figures appear in the direction column under "Fastest mile" the corresponding speeds are fastest observed 1-minute values.

To 8 compass points only.

AVERAGE TEMPERATURE

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1934	42.6	28.2	42.8	56.3	66.2	76.6	79.7	74.9	71.3	56.3	49.5	38.4	56.9
1935	34.5	38.7	51.9	53.5	62.9	73.6	77.2	75.3	67.6	58.3	51.5	31.6	56.4
1936	31.4	33.7	51.2	53.1	66.5	73.7	79.7	76.5	71.6	59.8	46.3	40.1	57.0
1937	46.0	38.3	43.3	55.3	65.8	76.0	76.8	77.2	66.0	55.0	46.2	38.4	57.0
1938	37.2	43.1	53.6	59.9	64.9	71.6	76.8	78.3	68.4	57.7	49.9	40.3	58.5
1939	41.6	44.6	48.8	56.0	66.9	76.4	75.7	77.1	71.8	59.0	44.8	39.8	58.6
1940	24.2	38.2	43.3	52.4	65.0	74.7	76.0	73.6	66.2	55.8	47.4	42.5	54.9
1941	35.2	34.2	40.8	59.8	66.8	73.0	78.3	75.8	72.2	64.7	48.7	41.9	57.6
#1942	34.2	35.2	48.0	58.8	65.5	75.2	79.4	75.2	71.3	60.8	50.0	37.1	57.9
1943	40.0	41.5	47.0	53.9	69.0	79.2	78.5	78.4	68.4	57.3	47.5	38.6	58.3
1944	38.6	40.4	45.2	56.2	71.6	76.4	77.7	75.4	71.2	57.9	48.2	36.1	57.9
1945	34.2	40.8	58.6	61.4	63.9	75.7	76.2	75.2	73.6	57.8	49.6	33.4	58.4
#1946	38.0	41.7	53.8	57.2	65.8	72.8	75.4	72.6	70.0	60.9	52.9	43.4	58.8
1947	44.5	33.5	40.0	57.5	67.0	72.2	74.8	78.5	70.1	63.7	46.6	38.4	57.2
1948	31.1	39.8	50.8	57.7	66.3	74.4	78.2	75.7	68.6	56.2	52.9	42.0	57.8
1949	45.2	46.5	48.6	55.7	60.0	75.2	80.1	76.6	67.4	62.5	49.0	42.4	55.6
#1950	49.7	40.7	44.4	54.7	65.0	74.2	76.8	75.5	68.2	61.2	47.3	36.1	57.8
1951	40.8	41.3	46.8	56.6	64.6	74.3	78.6	76.0	70.0	61.6	44.7	42.0	58.1
1952	42.4	42.2	46.3	58.1	65.4	77.6	76.4	69.2	55.2	49.4	39.2	34.0	58.5
1953	42.9	43.4	48.3	58.0	71.5	75.2	79.9	77.3	70.0	60.7	48.5	42.5	59.9
1954	38.0	44.9	47.0	61.2	63.0	74.6	78.6	76.8	74.4	62.3	46.1	38.2	58.8
1955	35.8	40.1	50.2	60.8	67.2	70.1	81.3	78.7	70.6	59.5	46.4	34.8	58.0
1956	36.0	43.0	46.3	55.5	65.0	74.7	77.8	76.5	67.9	60.9	47.6	48.9	58.3
1957	35.2	42.7	61.5	57.8	76.2	78.4	74.6	71.9	54.6	50.3	43.0	35.7	58.7
1958	34.6	33.0	42.3	57.5	65.7	71.3	80.2	76.4	69.1	58.7	51.2	33.4	56.2
1959	37.3	41.6	47.3	59.3	69.4	74.8	77.9	79.0	70.8	61.4	47.3	41.6	59.0
1960	38.8	39.3	35.9	61.0	74.9	73.7	76.3	77.5	59.3	57.1	50.1	34.6	56.6
1961	33.5	42.2	50.8	53.0	63.6	72.8	78.5	77.1	73.5	58.1	50.1	37.1	57.5
1962	36.6	39.7	45.0	57.5	70.6	74.0	74.8	74.6	66.2	60.5	47.2	36.1	56.9
1963	31.9	32.3	50.8	59.2	64.0	72.0	76.1	75.7	65.5	58.6	50.1	32.4	56.1
1964	38.1	37.2	47.6	52.4	66.4	73.1	75.8	73.1	67.1	53.4	51.5	42.9	56.8
1965	38.6	38.8	43.0	53.9	69.6	70.7	74.9	75.9	70.7	56.1	48.2	41.3	56.6
1966	31.1	37.7	47.5	52.8	63.1	71.4	76.4	74.6	67.2	55.5	49.5	38.0	55.4
1967	40.9	34.8	46.6	58.8	60.7	72.1	76.6	75.5	65.2	57.6	44.0	41.9	56.2
1968	33.9	34.2	52.0	58.8	64.7	74.7	78.9	78.9	70.9	61.9	51.3	37.0	58.1
1969	33.9	36.8	42.3	57.6	65.5	75.7	78.3	75.1	68.1	58.5	46.8	35.5	56.2
1970	30.1	37.1	42.9	58.2	69.1	75.7	78.3	78.0	74.8	62.9	49.9	40.4	58.1
1971	33.8	39.5	44.5	55.0	63.3	74.7	76.6	75.3	71.4	64.6	48.5	48.0	57.9
1972	40.7	37.6	47.2	56.2	64.6	70.1	77.1	72.7	70.1	55.8	47.9	45.9	57.4
1973	37.6	38.5	52.6	57.9	65.1	76.0	77.4	77.5	72.3	60.6	51.3	40.8	59.0
RECORD	37.7	39.3	46.8	56.9	66.1	74.1	77.5	76.1	70.0	58.9	48.6	39.6	57.6
MEAN	47.6	49.9	58.1	69.3	78.0	85.2	87.9	86.2	80.9	70.8	60.1	49.6	68.6
MAX	27.8	28.6	35.4	44.4	54.2	62.9	67.3	65.9	59.1	47.0	37.0	29.3	46.8
MIN													

HEATING DEGREE DAYS

RICHMOND, VIRGINIA													
Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1934-35	0	9	3	262	443	417	920	734	403	356	105	0	402
1935-36	0	0	40	223	413	1034	1038	933	422	372	60	13	4548
1936-37	0	0	17	199	364	748	742	668	283	78	1	3890	
1937-38	0	0	75	321	556	820	876	622	379	204	91	11	3935
1938-39	0	0	38	228	462	778	724	551	327	288	120	0	3716
1939-40	3	0	5	250	610	785	1265	777	673	380	91	3	4842
1940-41	2	0	74	286	475	924	862	595	224	92	13	4021	
1941-42	0	3	13	521	510	691	995	854	529	222	13	3982	
#1942-43	0	2	52	104	459	849	753	652	578	356	63	0	3868
1943-44	0	0	57	251	392	808	819	710	639	280	17	0	4113
1944-45	0	2	21	236	476	873	950	670	253	162	27	3795	
#1945-46	0	0	3	229	456	986	849	643	350	257	76	11	3860
1945-47	0	5	21	161	270	669	833	770	249	94	10	3862	
1947-48	0	0	81	98	258	822	1049	733	469	250	48	3	4111
1948-49	0	0	28	279	733	712	615	525	295	67	3	3942	
#1949-50	0	0	94	134	478	700	483	670	327	85	2	3568	
1950-51	0	0	60	138	528	886	730	660	559	267	76	0	3923
1951-52	0	0	22	161	408	800	692	559	579	233	58	1	3718
1952-53	0	1	19	166	440	792	680	598	309	234	7	6	3622
1953-54	0	0	28	152	488	691	629	556	253	183	151	1	3632
1954-55	0	0	5	220	361	826	898	690	450	155	67	12	3684
1955-56	0	0	9	186	555	928	896	821	578	223	107	10	4223
1956-57	0	0	75	219	493	916	800	566	203	623	76	0	4072
1957-58	0	0	50	311	436	874	861	795	204	624	76	0	4187
1958-59	0	0	24	212	409	847	840	750	212	612	44	10	3923
1959-60	0	0	36	217	341	907	1076	778	677	231	51	0	4272
1960-61	0	0	24	25	439	936	971	632	461	390	106	7	4223
1961-62	0	0	27	218	459	860	875	702	623	276	32	0	4072
1962-63	0	0	17	175	526	891	887	824	434	218	102	1	4189
1963-64	0	0	71	197	439	1004	826	801	537	306	74	12	4267
1964-65	0	0	32	252	402	976	909	726	674	339	17	34	4161
#1965-66	0	0	0	0	0	0	0	0	0	0	0	0	14.2
1966-67	0	0	0	0	0	0	0	0	0	0	0	0	23.1
1967-68	0	0	0	0	0	0	0	0	0	0	0	0	26.2
1968-69	0	0	0	0	0	0	0	0	0	0	0	0	21.1
1969-70	0	0	0	0	0	0	0	0	0	0	0	0	18.8
1970-71	0	0	0	12	124	445	756	960	709	627	295	104	3 4035
1971-72	0	0	0	11	69	512	526	748	788	554	286	58	21 3573
1972-73	0	0	0	17	285	513	588	843	735	394	247	79	0 3701
1973-74	0	0	5	163	414	744	744	0.0	0.0	0.0	0.0	0.0	
RECORD	2.85	3.10	3.36	2.87	3.68	3.88	5.68	5.07	3.41	3.25	3.20	3.15	43.50

Record mean values above (not adjusted for instrument location changes listed in the Station Location table) are means for the period beginning in 1930 for temperature and 1938 for precipitation.

Indicates a break in the data sequence during the year, or season, due to a station move or relocation of instruments. See Station Location table. Data are from Airport locations.

STATION LOCATION

RICHMOND, VIRGINIA

Location	Occupied from	Occupied to	Ailine distance and direction from previous location	Latitude	Longitude	Ground at tem- perature site	Elevation above Ground							Sea level	Remarks	
							Sea level	Wind instruments	Extreme thermometers	Psychrometer	Telpsychrometer	Tipping bucket rain gage	Weighing rain gage	8" rain gage	Hygrometer	
<u>COOPERATIVE</u>																
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
<u>CITY</u>																
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			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. Observational program at Airport 7/1/39 to 9/24/42 and after 4/19/46. a - At this site 9/24/42 to 4/19/46 and after 6/1/50.
<u>AIRPORT</u>																
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 Interna- tional Airport effective 2/18/71	6/01/50	Present	4/5 mi. N	37° 30'	77° 20'	c164	b20	d6	d6	e19		e19	a4			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.

Requests for additional climatic information should be addressed to: Director, National Climatic Center, Federal Building, Asheville, N. C. 28801

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