

U.S. Department of Agriculture  
**WEATHER BUREAU**  
Charles F. Marvin, Chief

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**Annual  
Meteorological  
Summary**

WITH COMPARATIVE DATA

—1923—

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RICHMOND, VIRGINIA

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BY  
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Meteorologist

LOCAL OFFICE, U. S. WEATHER BUREAU  
RICHMOND, Va. FEBY. 29, 1924.

### Annual Meteorological Summary, 1923.

MONTH.	TEMPERATURE.						PRECIPITATION.			Relative humidity. per cent.	Percentage of Sunshine.	WIND.			NUMBER OF DAYS.																								
	Mean.			Extremes.			Total.	Maximum in 24 hours.	Date.			Snowfall.	Average hourly velocity.	Prevailing direction.	Maximum.			Winds 40 miles per hour or more.	Clear.	Partly cloudy.	Cloudy.	Precipitation. (.01 in. or more.)	Thunderstorms.	Dense fog.	Snow.	Max. temp.		Min. temp.											
	Maximum.	Minimum.	Monthly.	Maximum.	Date.	Minimum.									Date.	Velocity.	Direction.									Date.	32 degrees and below.	50 degrees and above.	32 degrees and below.	Zero and below.									
January.....	49	31	46	68	21	21	11	4.61	1.46	1	0.5	75	41	27	SW	14	0	0	0	13	13	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0			
February.....	45	26	37	65	2	15	17	3.00	0.75	26-27	5.0	74	49	27	NW	15	0	0	0	12	11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
March.....	66	36	48	81	23	32	20	5.88	2.31	16-17	0.0	67	68	27	SW	13	1	1	1	18	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
April.....	67	44	56	83	20	19	1	3.96	1.88	28-29	0.0	61	66	10	NE	5	2	2	2	18	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
May.....	76	53	64	85	20	25	10	1.16	0.74	20-21	0.0	63	70	20	SE	12	1	1	1	13	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
June.....	87	65	76	97	23	34	10	2.00	1.06	11-12	0.0	65	76	24	SW	7	0	0	0	13	15	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
July.....	87	66	76	97	21	30	1	10.87	7.26	30-31	0.0	75	66	20	NE	36	1	1	1	12	11	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
August.....	84	66	75	94	15	24	22	6.41	2.53	11	0.0	82	46	11	SW	5	0	0	0	11	12	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
September.....	80	62	71	87	4	18	18	4.25	1.47	5	0.0	82	56	10	NE	5	0	0	0	10	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
October.....	63	47	58	80	14	28	23	2.16	0.92	23	0.0	74	63	23	NE	23	0	0	0	15	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
November.....	56	38	47	67	22	27	10	2.20	0.82	23-24	0.0	75	47	23	NE	5	0	0	0	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
December.....	58	38	48	74	22	24	15	2.28	0.76	4-5	1.0	75	52	6	SW	6	2	2	2	13	7	11	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
Year.....	68.1	47.9	58.0	97	Jul. 21	Feb. 15	Feb. 17	48.96	7.26	July 30-31	6.5	72	58	7.9	NE	45	SW.	Mar. 12	8	148	115	102	117	39	13	1	4	26	67	0	0	0	0	0	0	0			

RICHMOND, VIRGINIA.

Miscellaneous Extremes And Averages.

MONTH	Temperature 1880-1923.				Precipitation, 1871-1923.				Average percentage of Sunshine, 1903-1923.
	Warmest Month.		Coldest Month.		Wettest Month.		Driest Month.		
	Mean.	Year.	Mean.	Year.	Amount.	Year.	Amount.	Year.	
January.....	48.5	1890	28.0	1918	5.81	1918	0.55	1876	49
February.....	49.9	1890	31.2	1905	8.32	1873	0.85	1901	55
March.....	57.6	1921	39.5	1885	8.78	1891	1.10	1915	59
April.....	63.3	1891	50.4	1907	8.59	1889	1.06	1880	65
May.....	74.6	1896	60.6	1920	9.13	1889	0.60	1911	57
June.....	78.8	1875†	68.4	1907	8.72	1916	1.29	1877	64
July.....	82.3	1857	72.8	1896	14.01	1889	0.57	1911	66
August.....	82.9	1900	73.0	1880	10.40	1908	0.45	1896	62
September.....	78.8	1881	65.2	1917	10.41	1888	0.15	1884	66
October.....	67.2	1919	52.7	1880	8.51	1890	0.11	1874	64
November.....	54.8	1902	42.2	1880	6.69	1920	0.11	1830	65
December.....	51.7	1889	30.0	1917	7.10	1905	0.57	1889	48
Year.....	82.9	Aug. 1900	23.0	Jan. 1918	14.01	July 1889	0.11	Oct. 1874 Nov 1890	60

Extremes of Temperature.

MONTH.	TEMPERATURE.					
	Max.	Year.	Day.	Min.	Year.	Day.
January.....	78	1907	7	- 1	1912 †	14
February.....	76	1918	28	- 3	1899	10
March.....	94	1907	29	14	1916	4
April.....	96	1915	27	19	1923	1
May.....	95	1914	27	35	1923	10
June.....	100	1914	12	46	1913	10
July.....	100	1911	7	54	1918	3
August.....	107	1918	6	49	1923	22
September.....	100	1899	6	41	1914	29
October.....	94	1919	10	28	1917	31
November.....	84	1900††	23	19	1901	29
December.....	74	1912	6	- 2	1917	30
Annual....	107	1918	Aug. 6	- 3	1899	Feb. 10

Extremes of Precipitation and Wind.

Month.	PRECIPITATION (24 hours.).			WIND (Velocity).			
	Max.	Year.	Day.	Max.	Dir.	Year.	Day.
January.....	2.66	1921	9-10	61	SW	1913	3
February.....	3.30	1920	3-4	61	SW	1909	10
March.....	3.59	1903	21-22	54	S	1913	27
April.....	5.33	1910	17-18	52	NW	1909	5
May.....	2.39	1907	6- 7	53	S	1909	1
June.....	3.26	1918	25-26	60	NW	1917	24
July.....	7.26	1923	30-31	45	S	1906	22
August.....	3.45	1922	26-27	55	NW	1915	1
September.....	3.21	1907	22-23	45	NW	1911	12
October.....	2.95	1906	21-22	52	NW	1917	5
November.....	2.77	1902	18	46	S	1905*	29
December.....	2.52	1909	12-13 July	53	S	1907	23
Annual.	7.26	1923	30,31	61	SW	1909	Feb. 10

\*Also 1897. † Also 1918, 4th. \*Also sw. 1916, 23rd; 1918, 18th. †† Also 1919, lat

RICHMOND, VIRGINIA.

Daily Mean Maximum Temperatures.  
(October 5, 1897, to December 31, 1923.)

Day of month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
1	48.1	43.5	52.9	60.9	74.5	80.0	87.3	85.7	84.1	73.3	65.3	53.6	67.5
2	47.9	46.8	54.4	62.7	75.4	81.5	88.6	86.6	84.6	74.3	67.8	52.0	68.3
3	47.8	45.2	54.5	60.4	74.3	81.6	89.4	86.9	85.7	73.6	66.9	51.3	67.4
4	44.3	46.3	52.7	61.9	72.6	81.0	87.7	86.0	85.0	75.5	62.3	48.4	66.8
5	46.1	42.7	52.9	55.3	72.2	80.2	86.8	86.0	85.6	76.6	62.0	49.3	67.0
6	48.1	44.1	52.3	65.0	74.0	80.5	86.9	87.5	81.6	75.0	60.8	50.7	67.5
7	49.6	45.5	53.0	65.1	74.5	82.5	86.5	86.5	85.0	72.7	60.0	51.7	67.9
8	48.5	43.2	54.5	62.1	73.8	81.5	87.7	87.1	85.9	71.1	61.7	52.4	67.5
9	47.1	43.5	55.7	62.1	75.8	80.6	86.2	87.1	82.2	72.6	61.2	50.2	67.1
10	46.0	44.4	57.4	62.8	73.9	81.5	87.6	87.6	82.1	72.1	61.5	49.5	67.2
11	48.0	45.4	56.3	66.1	76.2	82.5	88.3	87.8	81.3	74.2	60.7	47.4	67.9
12	47.7	47.4	58.2	67.8	76.4	83.9	87.5	86.3	82.2	71.5	59.0	48.4	68.0
13	42.3	47.6	61.5	66.0	77.9	81.9	88.5	85.5	80.6	69.2	57.1	51.0	67.2
14	45.2	50.1	58.0	64.1	76.1	81.8	86.6	85.5	76.7	68.8	58.0	48.5	66.4
15	48.5	47.6	56.8	65.0	76.3	82.0	88.9	84.4	78.3	72.4	56.9	46.2	67.0
16	47.3	46.2	57.3	67.1	78.8	82.3	89.3	84.9	79.4	74.0	56.8	44.1	67.3
17	44.8	46.1	57.2	68.8	77.2	82.5	88.8	85.5	78.9	71.5	56.7	46.2	67.1
18	46.7	47.2	58.8	70.1	78.3	81.8	89.0	84.8	79.3	71.7	58.7	46.5	67.7
19	48.0	47.5	61.1	69.0	78.5	81.9	87.1	84.9	79.4	71.7	59.6	45.3	67.7
20	50.5	49.2	61.7	69.4	78.6	85.6	87.9	86.6	78.7	69.1	59.8	44.8	68.4
21	55.9	47.5	57.9	69.2	70.0	86.5	88.6	85.7	79.3	68.6	60.3	48.0	68.6
22	54.2	50.1	61.4	70.7	79.5	86.2	85.5	85.1	78.1	68.3	59.1	46.7	68.8
23	50.5	50.7	62.9	69.9	79.1	86.5	87.7	84.7	79.0	67.7	57.9	51.2	68.9
24	47.0	49.6	62.5	71.9	78.1	86.8	87.4	86.7	79.1	64.8	53.5	47.8	67.9
25	45.5	47.9	61.4	70.8	78.1	86.6	87.2	85.6	78.1	68.2	53.6	45.2	67.5
26	45.5	50.6	66.3	72.2	78.2	86.4	84.2	84.7	77.2	68.0	53.5	43.3	67.8
27	46.9	51.7	67.3	70.1	80.1	86.9	86.2	87.8	76.9	68.9	54.1	47.9	68.2
28	45.9	53.3	64.2	69.0	80.7	85.7	84.4	81.9	75.0	66.1	49.4	4.0	67.4
29	44.4		61.0	73.1	80.5	85.7	88.0	83.0	77.6	64.9	52.4	46.6	68.2
30	46.6		69.3	76.3	81.4	85.9	88.1	85.6	75.8	63.8	53.3	46.1	68.1
31	44.5		62.7	80.0		87.3	84.1			64.4		48.2	67.3
Means....	47.4	47.2	58.6	67.2	77.1	83.4	87.6	85.6	80.3	70.0	58.5	48.2	67.6

Seasonal Snowfall 1897-1923.

Season.	November.	December.	January.	February.	March.	April.	Season.	Greatest 24-hour Snowfall.	Depth on Ground at 8 pm.
1897-1898	0.0	0.0	3.0	T.	T.	2.0	5.0	3.0	T.
1898-1899	2.8	T.	8.0	20.2	5.0	T.	34.0	7.5	17.7
1899-1900	0.0	2.1	0.3	6.2	5.8	T.	14.4	4.8	4.5
1900-1901	T.	7.2	5.5	1.0	1.4	T.	15.1	7.2	4.2
1901-1902	0.0	1.0	5.0	9.8	0.0	T.	15.8	6.0	3.6
1902-1903	0.0	1.1	0.9	0.2	0.0	0.0	2.2	1.1	0.3
1903-1904	0.4	0.9	10.7	8.4	T.	0.0	20.4	5.2	8.2
1904-1905	1.8	3.5	6.5	2.2	T.	T.	19.0	3.8	5.0
1905-1906	T.	1.3	0.7	7.0	6.4	0.0	15.4	4.3	4.3
1906-1907	1.9	T.	3.1	9.8	6.4	T.	21.5	3.4	3.7
1907-1908	T.	T.	3.2	7.8	2.3	0.0	13.8	3.2	2.4
1908-1909	T.	17.2	0.2	4.1	3.8	0.0	25.3	17.2	10.8
1909-1910	T.	3.3	1.8	0.7	5.9	0.0	11.7	4.0	1.0
1910-1911	0.0	6.7	2.6	T.	4.0	0.0	7.3	2.2	2.4
1911-1912	0.0	T.	8.9	1.7	11.3	0.0	21.9	7.0	5.0
1912-1913	2.0	0.2	0.4	3.1	0.0	0.0	5.7	2.7	2.4
1913-1914	0.0	T.	T.	10.8	15.8	0.2	26.8	7.8	5.0
1914-1915	0.0	5.4	0.2	1.6	0.3	10.0	17.5	10.0	7.1
1915-1916	0.0	0.6	2.6	1.9	4.4	T.	9.5	3.6	3.6
1916-1917	T.	9.1	T.	0.8	T.	T.	9.9	5.3	6.2
1917-1918	T.	15.3	14.4	1.3	0.0	2.7	33.7	9.4	9.4
1918-1919	0.0	T.	T.	0.0	0.0	0.0		T.	1.1
1919-1920	0.0	6.0	T.	3.6	T.		9.6	6.0	6.0
1920-1921	0.0	0.0	T.	1.0	0.0	1.0	1.0	1.0	T.
1921-1922	0.0	T.	22.1	5.3	0.1	0.0	27.5	10.3	18.0
1922-1923	0.0	0.2	0.5	5.0	0.0	0.0	5.7	5.0	5.0
Means.....	0.3	3.1	3.9	4.4	2.8	0.6	5.1	5.4	5.2

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RICHMOND, VIRGINIA

James River at Richmond.

1923.

Average height of water during the year, with departure from the normal.

	Average height.	Dep. from normal.		Average height.	Dep. from normal.
1923.			1923.		
Jan.	1.6	+0.2	July	-0.1	-0.1
Feb.	1.9	+0.1	Aug.	1.0	+0.8
Mar.	3.4	+1.4	Sept.	0.2	0.0
Apr.	1.6	+1.2	Oct.	-0.3	-0.8
May	1.2	0.0	Nov.	0.1	-0.3
June	0.4	-0.6	Dec.	0.8	-0.1

Highest and Lowest Stages of Water Recorded in each month of the year 1923.

	High-est.	Low-est.		High-est.	Low-est.
1922.			1922.		
Jan.	3.6	0.5	July	1.5	-0.6
Feb.	2.7	1.0	Aug.	1.8	-0.2
Mar.	12.1	1.5	Sept.	1.3	-0.5
Apr.	2.0	1.3	Oct.	0.1	-0.7
May	1.7	0.8	Nov.	1.0	-0.4
June	1.3	-0.4	Dec.	2.0	0.0

All data recorded to feet and tenths.

1893-1923.

Highest and Lowest Stages of Water Recorded at Richmond, Va. By months and years--Weather Bureau record only.

	Highest.	Year.	Lowest.	Year.
Jan.	20.5	1902.	-2.0	1900
Feb.	22.0	1899.	-1.7	1904
Mar.	20.5	1899.	-0.8	1901-3
Apr.	14.0	1901.	-1.3	1900
May	19.3	1901.	-1.2	1900
June	14.7	1903-7.	-1.3	1900
July	12.1	1919.	-1.2	1900-1
Aug.	11.7	1903.	-1.2	1900
Sept.	12.5	1893.	-2.8	1899
Oct.	18.7	1906.	-1.4	1904
Nov.	11.4	1900.	-2.8	1899
Dec.	23.2	1901.	-2.8	1899

All data recorded to feet and tenths.

Notable Floods Occurring at Richmond, Va.

October, 1870, 27.0 feet; November, 1877, 28.6 feet; April, 1886, 24.3 feet; July, 1886, 17.2 feet; August, 1889, 22.5 feet; June, 1889, 25.4 feet; January, 1895, 18.2; February, 1899, 22.0; March, 1899, 20.5; May 1901, 19.3; December 1901, 23.2; March 1902, 19.0; October 1906, 18.7; March 1912, 17.8; May 1912, 17.5; March 1913, 17.5; January 1919, 17.2.

MISCELLANEOUS DATA FOR 1923.

Barometric pressure, reduced to sea-level: Mean, 30.06 inches; highest, 30.88 inches, Dec. 15; lowest, 29.17 inches, March 7.

Temperature.—Greatest daily range, 42, Mar. 12; least daily range, 3, Feb. 6; greatest monthly range, 64 in Apr.; least monthly range, 37 in July.

Precipitation.—Longest period without a trace of precipitation, 25 days, Sept. 24 to Oct. 18, inclusive. Greatest number of consecutive days with precipitation, trace or more, 8 days, July 30-Aug. 6.

Snow.—Greatest snowfall in 24 hours, 5.0 inches Feb. 5; greatest depth of snow on ground measured at 8 p. m. 6.0 inches Feb. 6; last snow of winter occurred on Feb. 20; first snow of winter occurred on Dec. 14.

Frost.—Last killing frost in spring, April 1, 4 days earlier than the average date; first killing frost in autumn, Nov. 1, two days later than the average date.

Thunderstorms.—First, Jan. 8; last, Dec. 5.

Hail—None

#### HISTORICAL DATA.

The Richmond office of the United States Weather Bureau was opened September 23, 1896; it was located in the State Library Building, Capitol Square Park. Subsequent locations were: Chamber of Commerce Building, then situated at the southwest corner of Ninth and Main streets, from October 5, 1897, to May 31, 1900; Times (now Times Dispatch) Building, then standing at the southeast corner 10th and Bank Streets, from June 1, 1900, to June 30, 1905; Mutual Assurance Building, southeast corner of Ninth and Main streets, from July 1, 1905, to January 29, 1910; U. S. Weather Bureau Building, Chimborazo Park, from January 30, 1910, to date. "Station" elevation of barometers 144 feet above m.s.l.; present elevation of barometers 168.6 feet above m.s.l.

Prior to beginning of record by the Weather Bureau, observations were taken by an employee of the Richmond, Fredericksburg and Potomac R. R. Company by direction of its president, Major E. T. D. Myers. In August 1875, the raingage location was on the roof of the Company's passenger station, which was situated at the northwest corner of Eighth and Broad streets, where the Colonial theatre now stands. On September 1, 1875, the raingage was removed to the Company's shops and subsequent record by the Company was continued there until shortly after the Weather Bureau record was begun, the observer being the Company's storekeeper. In January 1880, daily observation of temperature, precipitation, wind direction and state of weather, together with notes of miscellaneous phenomena, was begun by Mr. William H. Pleasants, and continued until January, 1893. Mr. A. J. Duesberry next took over the work and carried it on until August, 1895, when record lapse until begun by the Weather Bureau early in October, 1897. Richmond is the central station of the Virginia Climatological Service of the Weather Bureau. As such it has on file copies of all records known to have been kept in the State. It has general supervision of the work of the Virginia Section of the U. S. Weather Bureau.