



LATITUDE 40° 01' N  
 LONGITUDE 105° 17' W  
 ELEV. (GROUND) 5385 ft.

CLIMATOLOGICAL SUMMARY

STATION BOULDER, COLORADO

MEANS AND EXTREMES FOR PERIOD 1931 - 1960

Month	Temperature (°F)							** Mean degree days	Precipitation Totals (Inches)						Mean number of days					Month				
	Means			Extremes					Mean	Greatest daily	Year	Snow, Sleet			Precip. .10 inch or more	Temperatures		0° and above	32° and below		32° and below	0° and below		
	Daily maximum	Daily minimum	Monthly	Record highest	Year	Record lowest	Year					Mean	Maximum monthly	Year		Greatest daily	Year						Max.	Min.
(a)	30	30		30		30		30	30	30		30	30		30	30	30	30	30					
Jan.	44.6	20.7	32.7	72	1953	-16	1937+	1000	.72	.59	1949	10.9	35.0	1948	9.0	1947+	2	0	5	27	2	Jan.		
Feb.	46.7	22.6	34.7	79	1954	-28	1936	850	.83	1.38	1931	10.8	25.3	1956	14.0	1931	2	0	4	23	1	Feb.		
Mar.	51.8	26.8	39.3	79	1946+	-13	1932	800	1.75	1.80	1944	17.3	41.1	1944	19.0	1944	5	0	3	22	1	Mar.		
April	61.5	35.8	48.7	85	1949+	4	1938+	490	2.75	3.31	1957	14.3	44.0	1957	20.6	1957	5	0	*	10	0	Apr.		
May	70.0	44.7	57.4	93	1954	21	1946	260	3.36	2.60	1957	2.8	26.7	1931	11.8	1931	6	*	*	2	0	May		
June	81.3	53.7	67.5	104	1954	30	1951	60	1.89	3.40	1949	0.1	2.2	1951	1.5	1951	5	6	0	*	0	0	June	
July	87.4	59.8	73.6	104	1954	44	1952+	0	1.41	1.73	1945	0	0	-	0	-	4	13	0	0	0	0	July	
Aug.	85.6	58.6	72.1	102	1936	42	1932	10	1.64	3.06	1951	0	0	-	0	-	4	10	0	0	0	0	Aug.	
Sept.	78.3	50.3	64.3	97	1959+	23	1945	80	1.25	2.38	1938	1.0	10.9	1959	10.4	1959	3	3	0	1	0	0	Sept.	
Oct.	67.3	40.2	53.8	90	1953+	16	1935	360	1.39	2.10	1942	4.3	23.0	1942	19.0	1942	3	*	*	6	0	0	Oct.	
Nov.	53.8	28.9	41.4	79	1950+	-3	1950+	710	.96	.95	1950	11.5	46.7	1946	15.5	1946	3	0	2	19	*	0	Nov.	
Dec.	47.5	24.1	35.8	74	1957	-19	1932	910	.62	1.10	1933	8.0	18.1	1960	8.1	1947	2	0	3	25	1	1	Dec.	
Year	64.7	38.9	51.8	104	July 1954+	-28	Feb. 1936	5530	18.57	3.40	June 1949	81.0	46.7	Nov. 1946	20.6	April 1957	44	32	17	135	5	Year		

(a) Average length of record, years.

+ Also on earlier dates, months, or years.

† Trace, an amount too small to measure.

\* Less than one half.

\*\* Base 65°F

CLIMATE OF BOULDER, COLORADO

Boulder is located at the mouth of Boulder Canyon where Boulder Creek emerges from the foothills of the Rocky Mountains into the plains. Elevations within the city range from 5300 to 5600 feet, and slope gradually eastward to just under 5000 feet at the South Platte River, a distance of 20 miles. The front ranges of the Rocky Mountain foothills rise abruptly at the western edge of the city, reaching over 6500 feet elevation within a distance of two miles to the west, and 7000 to 8000 feet elevation within a distance of two miles to the southwest. The Continental Divide, with elevations from 12,000 to over 13,000 feet, reaches its easternmost point about 20 miles airline west of Boulder.

The climate of Boulder is profoundly affected by the presence of the mountains to the west. It is in a region of rapid transition from a high plains climate to a mountain climate. Among the important mountain effects are increased precipitation and reduced annual and daily temperature ranges. The wide variation over short distances in the area is indicated by comparison with Longmont, about 15 miles northeast, at an elevation of about 5000 feet. The average annual snowfall at Boulder is over twice that at Longmont; the average annual precipitation is 6 inches more; the average January daily minimum temperature is 10 degrees higher; the average July maximum temperature is 1 degree lower. Smaller but similar differences may be noted in comparison of climates at Boulder and Denver, about 25 miles southeast.

Winter temperatures are modified by the frequent occurrence of warm downslope winds from the west. The low frequency of 5 days per year of zero or below temperatures is the result also of good drainage for cold air to lower elevations, tending to prevent the buildup of a cold air layer at the ground on calm clear winter nights. Summer afternoon temperatures are often modified by frequent afternoon cloudiness and thunderstorms over and near the mountains.

The highest temperature ever recorded at Boulder was 104 degrees in June and July 1951. Summer afternoon temperatures reach 100 degrees about one year in three. The warmest month on record was July 1954, with 78.3 degrees average temperature. The lowest temperature on record was 33 degrees below zero in January 1930. In about one year in five the lowest temperature does not reach as low as zero. The coldest month on record was January 1930, with 16.4 degrees average temperature.

Precipitation is light in winter, 16% of the annual total falling in November through February, and is heaviest in the spring of the year, 52% falling in March through June on the average. The greatest monthly total precipitation was 9.27 inches in May 1957, the least was zero inches in October 1934 and January 1931. The greatest daily precipitation values given in the table above have been exceeded in

January 1920, .90 inches; March 1909, 2.67 inches; September 1902, 4.00 inches; October 1916, 2.50 inches; December 1913, 1.47 inches.

Annual snowfall totals have varied from 36.4 inches in 1904 to 123.8 inches in 1959. The greatest seasonal total was 112.9 inches in the winter of 1908-1909. The greatest monthly total of snowfall on record at Boulder was 52.5 inches in December 1913. The high snowfall averages relative to areas just to the east are the result of the higher average precipitation, particularly in the early spring months when precipitation often falls in the form of heavy snow which melts rapidly. The highest monthly average snowfall amounts are in March and April, when temperatures are usually high enough to remove snow cover quickly. Even in midwinter, the frequent occurrence of warm days usually removes any snow cover in a short time, so that in spite of the higher total of snowfall, the average period of snow cover at Boulder is not appreciably greater than at drier areas to the east.

Wind records in the Boulder area are limited, but indicate the prevailing direction is from the west through the year. More complete wind records made at Denver are not reliable as indicators of Boulder conditions because of the strong influence of mountains on local wind regimes. Although shielded to some extent from the plains winds, the area is subject to strong down-canyon winds which may become severe enough at times to cause minor damage to buildings and structures. These often affect only very small areas. Relative humidity in the Boulder area is similar to that for Denver, averaging in the afternoons 30% to 35% in summer, 40% to 50% in winter, and in the early morning 55% to 60% in winter, and 60% to 70% in summer.

The average date of the last freezing temperature in spring at Boulder is May 9, of the first in fall is October 4. The average freeze-free period is 148 days, ranging in individual years from about 110 days to near 200 days. Degree-day means given in the table are useful for determining heating requirements for buildings. Degree-days are computed by subtracting the average temperature for each day from 65 degrees, the base temperature. Daily totals are accumulated to obtain monthly and annual totals. The number of degree-days is zero for days with average temperature 65 degrees or higher.

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M82.2/173  
 4587cl  
 2055  
 Colorado

Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1931	35.4	36.1	37.2	48.2	55.5	70.2	74.9	71.6	66.6	54.2	38.1	34.7	52.1
1932	29.7	29.0	32.8	50.6	59.2	71.8	72.8	71.3	63.2	49.6	43.4	23.8	50.0
1933	36.3	37.6	43.6	46.2	54.8	70.1	76.6	69.4	66.5	57.4	46.4	42.8	53.4
1934	38.0	37.0	43.5	51.7	64.2	70.1	72.7	71.3	63.9	57.1	44.4	36.8	54.7
1935	38.7	38.0	45.0	45.7	49.4	64.8	73.2	71.3	63.2	51.3	36.6	33.8	50.8
1936	32.0	26.4	41.8	50.0	59.8	69.1	75.2	72.0	63.6	49.2	42.5	35.2	51.4
1937	18.0	32.7	37.9	47.8	58.2	63.6	72.4	73.9	65.0	53.2	40.4	32.6	49.6
1938	33.7	35.6	41.3	48.5	53.4	65.8	71.3	72.6	64.4	53.9	35.6	32.1	50.7
1939	31.6	25.9	41.4	48.7	59.5	68.3	73.5	68.6	63.1	51.4	41.4	39.2	51.2
1940	23.4	34.4	42.6	45.5	57.8	68.3	71.5	68.2	61.2	52.8	34.7	32.2	43.5
1941	28.1	34.7	33.9	42.6	57.7	62.2	69.2	67.2	57.2	47.6	42.2	33.9	48.4
1942	26.5	23.8	33.9	49.1	54.4	63.7	72.2	69.8	60.2	49.4	42.7	37.2	48.9
1943	33.8	39.7	35.5	46.2	52.4	65.4	72.9	70.6	61.4	52.8	41.9	34.0	51.5
1944	31.8	33.2	33.2	42.1	56.7	64.1	68.9	70.6	58.8	53.4	41.7	32.5	49.0
1945	33.6	33.4	40.6	41.4	56.0	60.3	70.8	70.4	58.8	54.4	42.8	31.2	49.4
1946	32.8	37.4	45.3	55.0	51.2	67.2	72.0	69.2	61.9	47.8	37.0	38.4	51.4
1947	32.6	31.2	36.5	46.4	55.0	62.0	73.6*	75.8	69.4	57.6	34.9	37.0	51.0
1948	31.0	31.0	35.2	53.2	60.1	68.2	75.2	75.0	69.7	55.0	39.9	33.3	52.3
1949	31.0	34.1	42.1	49.3	60.4	69.7	75.0	73.9	62.0	51.3	35.1	37.0	53.0
1950	32.9	42.2	41.2	49.8	55.5	69.3	71.4	71.9	62.0	62.0	40.2	40.2	53.4
1951	31.5	37.9	37.5	46.7	59.3	62.4	74.9	72.0	63.5	51.6	40.6	31.8	50.8
1952	36.0	38.1	39.3	51.0	58.7	74.7	75.9	72.5	68.6	57.3	37.2	36.4	53.6
1953	43.5	36.8	46.1	45.2	55.3	71.9	75.8	73.6	69.8	57.6	46.1	35.5	54.8
1954	39.8	47.6	37.2	55.9	58.3	71.5	78.3	75.0	68.0	47.5	39.7	37.0	56.1
1955	31.0	29.9	38.4	52.8	60.6	65.1	76.6	75.0	66.6	57.0	38.9	37.0	52.4
1956	31.4	30.9	42.7	49.2	62.0	75.0	74.2	72.0	69.4	58.4	41.3	39.8	54.4
1957	27.6	42.1	40.7	43.6	55.1	67.9	75.8	73.8	63.4	53.5	40.3	44.1	52.3
1958	37.0	39.7	33.5	46.4	64.3	70.3	71.7	73.0	65.8	56.2	42.6	37.3	53.3
1959	32.6	31.6	40.5	47.0	57.1	70.6	71.9	74.0	60.4	49.6	40.6	39.0	51.2
1960	31.3	28.4	40.3	52.3	59.6	71.0	74.6	73.9	66.4	43.5	43.9	35.5	52.6

\*Estimated

## STATION HISTORY

The first recorded weather observations for Boulder were made for several months in 1893 to 1895. Records are essentially complete from 1897 to the present. Station locations were at various points in the western part of the city to 1912, near the University of Colorado campus from 1912 to 1936, and on the University campus from 1936 to 1947. The weather observations have been made since 1947 by the Boulder Fire Department, on the roof of the old Central Fire Station at the western edge of the main business district until 1958, and on the grounds of the New Central Fire Station north of the business district since 1958. The Fire Department has operated a weather station also at the South Side Fire Station since July 1958. Weather observations have been taken under the direction of Fire Chiefs F. A. Johnson, 1947 to 1956, F. J. Johnson, 1956 to November 1960, and George Korse after November 1960.

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1931	0	1.81	1.59	1.60	3.67	2.18	1.07	.53	.20	.71	.85	.02	44.23
1932	.33	1.06	1.47	2.01	1.10	1.08	1.55	1.17	.10	1.00	.42	.56	11.85
1933	.93	1.26	1.28	4.15	3.94	.30	.55	2.46	.00	0	.80	.40	16.08
1934	.10	1.9	1.63	4.15	3.11	1.90	.24	1.02	1.02	0	.84	.22	14.02
1935	.08	.51	.14	2.80	7.04	.80	.33	.21	1.40	1.46	.78	.01	16.44
1936	.24	.38	2.88	1.25	2.75	2.85	.99	3.73	1.86	2.71	.25	.36	20.25
1937	.34	.58	.83	2.01	2.31	3.91	.82	.91	.69	.58	.44	.16	15.58
1938	.60	2.59	4.42	4.38	4.38	2.82	3.31	1.32	5.21	.68	2.13	1.04	29.09
1939	.83	.88	1.68	1.94	1.74	.84	.27	.94	.69	.99	.05	.26	21.11
1940	1.54	1.11	1.58	2.05	2.57	.83	1.87	1.47	5.50	.60	.75	.42	20.29
1941	1.12	.29	2.92	4.08	2.07	1.53	2.51	2.54	2.22	3.13	.71	.87	23.99
1942	1.19	1.85	.93	6.94	1.80	3.22	.57	1.66	1.16	6.04	.41	.46	26.23
1943	.10	.33	1.19	1.36	4.85	1.17	2.35	3.08	.72	.01	.96	.34	15.75
1944	.90	.40	3.19	6.81	1.77	.96	1.92	.84	.95	.45	.33	.30	18.85
1945	1.26	.66	1.07	4.12	3.86	2.05	2.35	3.86	.69	1.46	.61	.66	22.85
1946	1.00	1.18	.71	.89	3.55	1.33	1.51	2.19	1.32	2.17	.11	.11	18.44
1947	.57	1.16	2.66	1.34	4.35	4.07	.83*	1.37	.72	3.74	1.23	.66	22.70
1948	2.50	.70	3.32	2.00	1.24	2.35	1.11	.32	.26	1.52	.98	.54	17.11
1949	1.66	.17	2.54	2.17	3.69	7.40	1.16	.36	.26	1.52	.29	.29	21.22
1950	.99	.26	.41	2.95	3.49	.89	.79	.21	1.55	.39	1.97	.26	14.16
1951	1.12	1.01	2.40	2.73	1.93	2.63	1.40	7.49	.88	2.77	1.51	.54	27.41
1952	.01	.48	2.26	3.29	4.45	.77	2.84	2.19	.42	2.77	1.71	.17	17.35
1953	.46	.92	1.50	2.22	2.69	1.33	.92	1.07	.01	.42	1.14	.17	16.01
1954	.48	.95	1.16	.83	1.33	1.16	1.73	.83	1.37	.42	.67	.68	10.91
1955	.39	1.11	2.14	.22	2.49	1.88	1.33	1.50	1.05	.56	1.42	.86	15.25
1956	.44	1.53	1.59	1.46	3.67	1.90	2.50	2.24	.02	.50	1.83	.80	18.45
1957	1.05	1.28	.63	6.85	9.27	.93	.92	1.97	.85	2.48	1.12	.75	27.43
1958	.74	.53	2.80	3.19	4.17	2.05	1.99	.82	1.05	.56	.63	.08	19.28
1959	1.01	1.29	1.91	2.08	3.73	.64	.82	1.35	3.01	2.18	.72	.11	18.85
1960	.51	1.04	.72	1.90	3.79	1.03	1.28	.41	.67	2.38	.27	1.27	15.30

\*Estimated