

U. S. DEPARTMENT OF AGRICULTURE  
WEATHER BUREAU

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CHIEF

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# CLIMATOLOGICAL SERVICE

DISTRICT No. 11, CALIFORNIA

PROF. ALEXANDER G. McADIE  
DISTRICT EDITOR

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REPORT FOR AUGUST, 1913

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# CLIMATOLOGICAL DATA FOR AUGUST, 1913.

## DISTRICT NO. 11, CALIFORNIA.

Local Forecaster G. H. WILLSON, Acting District Editor.

### GENERAL SUMMARY.

August, 1913, was not at all like the usual August in California. Instead of the normal dry and warm weather with an abundance of sunshine throughout the great valley and mountain regions, the weather while warm was sultry and often somewhat oppressive, with less than the usual sunshine, and there were numerous thunderstorms and showers. Along the coast there was a marked absence of the usual cool fogs and instead a large number of warm and sunny days. With the exception of August, 1901, the mean temperature for the entire State was the highest since the State-wide records began in 1897. There were two periods of very warm weather, one from the 5th to the 8th, and the other and longer one from the 20th to the 30th. No maximum temperature records were broken during these warm spells, although they ranged from 100° to 112° in the interior. There was a cool period from the 10th to the 18th, when most of the minimum temperatures occurred.

The average rainfall for the entire State was nearly four times the normal, and was the greatest recorded for any August. A notable feature of the month was the large number of thunderstorms in the mountain regions, especially in the extreme northeastern portion and in the southern Sierra and Cuyamaca Mountains. The heaviest rainfalls occurred at the higher levels, where it is impossible to maintain stations, but visitors to the regions reported the thunderstorms more numerous and the rains heavier than any they had ever before experienced in those localities. The following notes are taken from some of the cooperative observers' reports:

*Alturas.*—There were 10 thunderstorms during the month and nearly four times the usual rainfall.—Prof. C. B. TOWLE.

*Campo.*—Thunderstorms have occurred in the higher mountain belt throughout the entire month. In some localities the rainfall has amounted to 6 inches in a week. It was the wettest August in years.—A. CAMPBELL.

*Glennville.*—Thunderstorms occurred daily from the 20th to the end of the month. On the 27th, 1.40 inches of rain fell in 40 minutes.—C. H. LIKELY.

*Hot Springs.*—On the 27th, there were heavy thunderstorms and cloud-bursts all along the summit.—A. B. PATTERSON.

### TEMPERATURE.

The mean temperature for the State was 2° above the normal. The following table gives the means and departures for each August from 1897 to 1913, inclusive:

Year.	Mean.	Departure.	Year.	Mean.	Departure.
1897.....	° F. 73.9	+1.1	1906.....	° F. 73.6	+0.8
1898.....	74.5	+1.7	1907.....	71.0	-1.8
1899.....	70.8	-2.0	1908.....	73.3	+0.5
1900.....	71.0	-1.8	1909.....	72.1	-0.7
1901.....	75.6	+2.8	1910.....	72.5	-0.3
1902.....	71.8	-1.0	1911.....	70.1	-2.7
1903.....	72.6	-0.2	1912.....	70.2	-2.6
1904.....	73.9	+1.1	1913.....	74.8	+2.0
1905.....	73.4	+0.6			

The highest temperature recorded at any station was 124° at Greenland Ranch on the 24th. The lowest temperature was 23° at Greenville on the 15th, which is 3° higher than the lowest recorded during the same month last year.

### PRECIPITATION.

The following table gives the average precipitation and departure from the normal for each August from 1897 to 1913, inclusive:

Year.	Average.	Departure.	Year.	Average.	Departure.
	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	<i>Inches.</i>
1897.....	0.03	-0.05	1906.....	0.13	+0.05
1898.....	0.02	-0.06	1907.....	0.11	+0.03
1899.....	0.11	+0.03	1908.....	0.12	+0.04
1900.....	0.02	-0.06	1909.....	0.19	+0.11
1901.....	0.12	+0.04	1910.....	0.01	-0.07
1912.....	0.06	-0.02	1911.....	0.00	-0.08
1903.....	0.02	-0.06	1912.....	0.06	-0.02
1904.....	0.17	+0.09	1913.....	0.30	+0.22
1905.....	0.03	-0.05			

The rainfall was unusually heavy, especially in the mountain districts where heavy thunderstorms occurred frequently. The greatest recorded monthly amount was 3.63 at Springville, and the greatest 24-hourly amount was 1.61 at Glennville. There was no rainfall at 63 stations.

The following table gives the hours of sunshine and the percentages of the possible:

Stations.	Hours.	Per cent of possible.	Stations.	Hours.	Per cent of possible.
Eureka.....	203	48	Sacramento.....	389	92
Fresno.....	374	89	San Diego.....	318	77
Los Angeles.....	322	78	San Francisco.....	295	70
Mount Tamalpais.....	370	88	San Jose.....	357	85
Red Bluff.....	371	87	San Luis Obispo.....	322	77

### NOTES ON THE RIVERS OF THE SACRAMENTO AND LOWER SAN JOAQUIN WATERSHEDS DURING THE MONTH OF AUGUST, 1913.

By N. R. TAYLOR, Local Forecaster.

*Sacramento watershed.*—All streams in the drainage basin of the Sacramento continued to fall slowly during the month and were lower generally than during any preceding August of which there is a record.

The Sacramento River itself was probably the lowest that has ever been recorded during the month in question. At Kennett it was 0.9, Colusa, 0.4, and Sacramento City, 0.3 foot below the lowest average stages ever recorded during any period. At Sacramento City an extreme low-water stage of 3.3 feet was reached on the 30th, which is 0.8 foot below any authentic record during the past 50 years.

The tidal influence was felt in the Sacramento for about 10 miles above the mouth of the American and, on several days, amounted to as much as 1.5 feet at Sacramento City.

Some rain fell in the high regions of the Sierra Nevada, and a few light showers occurred in parts of the valley floor, but in no case was there any effect in the run-off noted.

Numerous sand bars were uncovered in the Sacramento above Sacramento City. Below the city, however, there was little or no interruption in navigation on account of low water, which indicates that the river below the mouth of the American has scoured since the low-water season of 1912.

*Lower San Joaquin watershed.*—The extreme low-water stages for this watershed were reached during the last decade of the preceding month. Since then there has been little change, except that there was a slight rise in the Tuolumne River on the 30th, due to heavy rains in the upper reaches of that stream. There was no rain along the course of the trunk stream or in the lower reaches of its tributaries.

NOTES ON STREAMS AND WEATHER OF THE UPPER SAN JOAQUIN WATERSHED.

By W. E. BONNETT, Local Forecaster.

The streams of the Upper San Joaquin watershed continued at very low stages until near the close of the month when rises unusual for this time of the year occurred in

all of them. In the Kaweah the rise amounted to 2 feet, in the Kings, 3.2 feet, and about the same amount in the San Joaquin itself, while the Merced showed a rise of 0.7 foot.

In the valley floor the rainfall was not considerable, but rains in excessive amounts occurred in the mountains, especially from the 21st to the end of the month, when they were of daily occurrence. This resulted in the unusual phenomenon of the streams running full for several days at a time in a season of scant water supply and at a time of the year when the streams ordinarily are at extremely low stages. This altogether unexpected addition to the water supply was quite welcome, and will make an additional cutting of alfalfa, which otherwise would not have been obtained on lands dependent on ditch water for irrigation.

The temperature for the month was considerably above the normal, the excess being wholly due to high minima, the persistent unsettled condition of the weather and the humid state of the air preventing the normal nocturnal radiation. From the 21st to the close of the month it was unusually sultry and the minimum at Fresno did not go below 73°. No similar period of heat with such duration is found in the 26 years of record. Two cases of sunstroke were reported in the press, although cases of this kind had been practically unknown hitherto.



TABLE 1.—Climatological data for August, 1913. District No. 11—Continued.

Table with columns: Stations, Counties, Elevation, Length of record, Temperature (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range), Precipitation (Total, Departure from normal, Greatest in 24 hours, Total snowfall, Number of rainy days, Number of clear days, Number of partly cloudy days, Number of overcast days), Sky, Prevailing wind direction, Observers. The table lists 100 stations across various California counties, including Inyo, Kern, Riverside, Amador, Tuolumne, Shasta, Marin, Monterey, Plumas, Merced, Tulare, Santa Clara, Alameda, Lassen, Los Angeles, Santa Clara, Siskiyou, Modoc, Lake, Butte, Imperial, Kern, Yuba, Riverside, San Mateo, Merced, Kern, Amador, Calaveras, Stanislaus, Kern, Calaveras, Ventura, Siskiyou, Monterey, Kern, Marin, Napa, San Bernardino, San Diego, Nevada, Los Angeles, Stanislaus, Nevada, North Bloomfield, Madera, Stanislaus, San Diego, Alameda, San Diego, Ventura, Glenn, Humboldt, Butte, Fresno, Riverside, Los Angeles, San Luis Obispo, Sonoma, Napa, El Dorado, San Francisco, Marin, Los Angeles, Tulare, Plumas, Tehama, Shasta, San Bernardino, Fresno, San Bernardino, Placer, Humboldt, Sacramento, Napa, Monterey, San Bernardino, San Diego, San Francisco, Riverside, Santa Clara, San Luis Obispo, San Mateo, San Miguel, Santa Barbara, Fresno, Santa Barbara, Santa Clara, Santa Cruz, and San Luis Obispo. Each station entry provides detailed climatic data for August 1913.

TABLE 1.—Climatological data for August, 1913. District No. 11—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.			
California—Continued.																					
Santa Monica	Los Angeles	110	28	63.5	- 4.9	82	4	50	10†	27	0.00	- 0.04	0.00	0	0	22	8	1	w.	F. E. Hill.	
Santa Rosa	Sonoma	181	24	68.6	+ 3.4	101	6	44	3†	52	0.00	- 0.01	0.00	0	0	14	11	6	.....	S. P. Co.	
Selma**	Fresno	311	27	85.3	+ 0.8	108	24	63	15†	35	0.00	.....	0.00	0	0	31	0	0	.....	Do.	
Seven Oaks	San Bernardino	5,000	3	63.8	.....	88	5	39	14	35	1.43	.....	0.38	0	9	10	5	16	w.	M. Lewis.	
Sierra Madre	Los Angeles	4,400	16	76.0	+ 3.4	100	4	54	16†	32	0.00	- 0.07	0.00	0	0	23	5	3	s.	Mrs. A. E. Gregory.	
Sierra	Sierra	5,000	3	63.2	.....	94	7	30	14	54	1.60	.....	1.10	0	2	21	6	4	sw.	C. D. Johnson.	
Sisson	Siskiyou	3,555	24	64.8	- 3.8	94	24	37	14	45	0.38	+ 0.05	0.23	0	2	26	1	4	n.	S. P. Co.	
Soledad**	Monterey	188	39	76.7	+ 11.6	95	20†	64	10†	.....	0.23	+ 0.23	0.23	0	1	23	0	8	n.	Do.	
Sonora	Tuolumne	1,825	2	75.8	.....	101	7†	50	16	39	T.	- 0.04	T.	0	0	25	6	0	w.	Chas. P. Jones.	
S. E. Farallon	San Francisco	30	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	U. S. Weather Bureau.	
Springville	Tulare	4,000	6	71.6	.....	99	3	47	15	41	3.63	.....	1.33	0	3	16	8	7	.....	D. L. Wishon.	
Squirrel Inn	San Bernardino	5,280	3	67.2	.....	85	4†	46	18	27	0.08	.....	0.08	0	1	17	14	0	s.	A. D. Frantz.	
Stanwood	Butte	2,140	9	79.1	.....	103	7	58	31	34	0.02	.....	0.02	0	1	31	0	0	n.	Cal. Gas & Elect.	
Stirling City	do	3,525	9	78.6	.....	103	24	54	13†	41	0.20	.....	0.20	0	1	29	0	2	se.	Butte Co. R. R. Co.	
Stockton (S. H.)	San Joaquin	23	42	76.2	+ 3.7	105	23	53	15	39	0.00	- 0.01	0.00	0	0	23	7	1	nw.	State Hospital.	
Storey	Madera	296	13	79.2	+ 2.2	107	24	50	16	47	0.00	- 0.00	0.00	0	0	31	0	0	.....	Santa Fe Co.	
Suisun**	Solano	20	33	78.4	+ 7.7	104	6	62	14	.....	0.00	- 0.03	0.00	0	0	23	0	8	sw.	S. P. Co.	
Sulphur Banks	Lake	1,350	1	76.0	.....	102	7†	50	15	46	T.	.....	T.	0	0	9	8	4	w.	L. S. Lorenzen.	
Summit Placer	Placer	7,017	40	59.1	- 1.2	80	7	32	16	36	0.15	+ 0.04	0.15	0	1	14	0	17	s.	S. P. Co.	
Susanville	Lassen	4,175	24	70.8	+ 1.8	99	24†	41	16	53	0.69	+ 0.44	0.40	0	4	20	6	5	.....	C. M. Penry.	
Tamarack	Alpine	8,000	7	55.2	.....	80	6	30	27†	48	1.65	+ 1.10	0.37	0	9	10	21	0	sw.	Cal Gas & Elect.	
Tehachay**	Kern	3,964	26	77.7	+ 3.2	96	20†	65	15	.....	0.38	+ 0.23	0.32	0	2	.....	.....	.....	.....	S. P. Co.	
Tehama	Tehama	220	42	85.2	+ 3.9	106	24	60	15	.....	0.00	- 0.04	0.00	0	0	25	4	2	n.	Do.	
Tejon Rancho	Kern	1,500	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	S. E. Bailey.	
Three Rivers	Tulare	870	3	79.1	.....	107	24	50	14	45	0.45	.....	0.45	0	1	14	17	0	sw.	J. H. Pierce.	
Towle	Placer	3,704	27	64.8	- 3.7	100	7	52	17	35	0.07	+ 0.06	0.05	0	2	27	2	2	ne.	S. P. Co.	
Tracy**	San Joaquin	64	33	84.4	+ 6.9	110	24	62	14	.....	0.00	- 0.01	0.00	0	0	.....	.....	.....	.....	Do.	
Ukiah	Mendocino	620	20	74.6	+ 3.9	111	7†	44	15	54	T.	- 0.01	T.	0	0	20	11	0	nw.	Dr. Geo. McCowen.	
Upper Lake	Lake	1,350	28	74.8	+ 1.7	107	7	42	15	51	T.	- 0.04	T.	0	0	24	6	1	nw.	C. M. Hammond.	
Vacaville	Solano	175	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	G. O. Coburn.	
Valley Springs**	Cala Veras	673	24	81.2	+ 3.3	110	24	62	13	.....	0.00	- 0.01	0.00	0	0	28	3	0	nw.	S. P. Co.	
Visalia	Tulare	334	25	76.2	- 2.2	108	7†	42	15	57	0.00	0.00	0.00	0	0	28	0	3	.....	Santa Fe Co.	
Warner Springs	San Diego	3,165	5	73.0	.....	94	23	44	16	39	2.10	.....	0.64	0	8	15	16	0	.....	Mrs. F. S. Sandford.	
Wasco	Kern	336	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Santa Fe Co.	
Watsonville	Santa Cruz	23	17	65.4	+ 3.2	94	6	41	14†	41	0.07	+ 0.06	0.07	0	1	10	18	3	w.	Spreckels Sugar Co.	
Weaverville	Trinity	2,162	1	71.2	.....	100	24	40	19	52	0.07	- 0.04	0.07	0	1	25	1	3	.....	U. S. Forest Service.	
Weitchpec	Humboldt	1,700	3	70.0	.....	99	7	40	14	44	0.17	.....	0.14	0	2	27	4	0	s.	M. E. Lathrop.	
Westley**	Stanislaus	90	24	83.3	+ 4.1	110	24	60	13	.....	0.00	0.00	0.00	0	0	31	0	0	n.	S. P. Co.	
Wheatland	Yuba	84	25	78.7	+ 3.6	108	7	54	15	42	T.	- 0.03	T.	0	0	19	9	3	nw.	Wm. Lumbard.	
Willows	Glenn	136	34	82.2	+ 0.6	112	7†	50	13	47	T.	- 0.03	T.	0	0	28	3	0	se.	E. C. Mills.	
Yorba Linda	Orange	.....	.....	73.0	.....	100	5	50	16	44	T.	.....	T.	0	0	30	1	0	w.	E. J. Walker.	
Yosemite	Mariposa	3,945	9	69.4	.....	101	8	32	18	65	1.09	.....	0.56	0	0	8	17	4	10	s.	J. P. Kelly.

\* a, b, c, etc., indicate respectively 1, 2, 3, etc., days missing from the record.  
 \*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.  
 † Also on other dates.  
 T. Precipitation is less than 0.01 inch rain or melted snow.









TABLE 2.—Daily precipitation for August, 1913. District No. 11—Continued.

Stations.	Watershed.	Day of month.																														Total.						
		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	30		31					
<i>California—Contd.</i>																																						
Ukiah.....	Coast.....																																					T.
Upper Lake.....	Sacramento.....																																			T.		
Upper Mattole.....	Coast.....																						.01													T.		
Vacaville.....	Sacramento.....																																				T.	
Valley Springs.....	San Joaquin.....																																					
Visalia.....	do.....																																					
Warner Springs.....	Coast.....				.34	.03		T.	.64														.10		.18		.02	.61							T.	.18		
Wasco.....	San Joaquin.....																																					
Watsonville.....	Coast.....																																					
Weaverville.....	do.....	T.										T.											.07														.07	
Weitchpec.....	Klamath.....	T.																					.03														.17	
West Branch.....	Sacramento.....											.02																									.24	
Westley.....	San Joaquin.....																																				.00	
West Point.....	do.....	T.				.01																															.01	
West Saticoy.....	Coast.....																																					
Wheatland.....	Sacramento.....	T.										T.																									T.	
Willows.....	do.....	T.																																			T.	
Yorba Linda.....	Coast.....																																				T.	
Yosemite.....	San Joaquin.....							T.			.02																										T.	
																																					.09	

\* Precipitation included in that of the next measurement.  
 † Separate dates of falls not recorded.  
 †† Precipitation for the 24 hours ending on the morning when it is measured.  
 T. Precipitation is less than 0.01 inch rain or melted snow.

TABLE 3.—Maximum and minimum temperatures at selected stations for August, 1913. District No. 11, California.

Table with columns for Date, Lakeview, Oreg., and various California stations (Alturas, Barstow, Branscomb, Brawley, Colusa, Eureka, Fresno, Independence, Los Angeles, Mount Tamalpais, Nevada City, Portersville, Red Bluff). Rows show daily temperature data from August 1 to 31, including maximum and minimum values for each station, and a summary row for the month.

Table with columns for Date and various California stations (Redlands, Sacramento, San Diego, San Francisco, San Jose, San Luis Obispo, Santa Barbara, Santa Rosa, Sisson, Stockton, Summit, Susanville, Yosemite). Rows show daily temperature data from August 1 to 31, including maximum and minimum values for each station, and a summary row for the month.

a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record. §§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

# Total Precipitation, August, 1913.



# Departure of the Mean Temperature from the Normal, August, 1913.

