

U. S. DEPARTMENT OF AGRICULTURE
WEATHER BUREAU

CLIMATOLOGICAL SERVICE

DISTRICT No. 11. CALIFORNIA

PROF. ALEXANDER G. McADIE
DISTRICT EDITOR

REPORT FOR JUNE, 1911

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CLIMATOLOGICAL DATA FOR JUNE, 1911.

DISTRICT NO. 11, CALIFORNIA.

Prof. ALEXANDER G. McADIE, District Editor.

GENERAL SUMMARY.

June, 1911, was a cool month. The whole spring was marked by continued cool and cloudy weather and the present month, although the first of the summer months, was essentially more like a spring month than a summer month. While there was considerable cloudiness and much fog along the coast, comparatively little rain fell. There were no other unusual climatic features. A heavy snow cover left from March and April storms melted steadily during the month of June, and while the rivers at many points were higher than usual and the high stage continued longer than usual, there were no floods. Owing to the uniform melting and the absence of any general disturbance, conditions, which in an ordinary June would have been critical, were passed without any great loss or damage. If a warm rain of a day's duration had fallen about the middle of the month there would probably have been overflows, broken levees, flooded fields, and much interference with transportation.

There was no unusually warm weather; occasional high temperatures were reported, but there was no prolonged hot spell.

At the beginning of the month there was about 38 inches of snow on the ground at levels of 6,000 to 7,000 feet. By the 12th of the month the bare ground was visible and within a week snow remained only in patches and on the high peaks and in steep ravines facing northeast. The month was in striking contrast to June, 1910, in the matter of water supply. There was an abundance of water available for all purposes, whereas in 1910 the supply of visible storage water was the smallest known for many years. It is worth noting that during last June sand bars could be seen in some of the navigable rivers, whereas during the current June in the same localities the rivers day after day were bank full and at times dangerously high.

There was more sunshine than usual in some localities and less in others. Along the coast, especially at San Francisco, there was quite a deficiency.

No noteworthy features connected with pressure distribution occurred, except that the month began with the North Pacific summer high farther north than usual. Over the southern half of the Pacific slope and the Great Basin, while the pressure was low, it was not sufficiently low to call for comment. At this season of the year there is generally a well-marked depression in southern California, extending over the Valley of the Colorado. This condition, probably connected with the heat of the region, existed during the present month, but in less marked degree than is generally the case. Thunderstorms occurred in the Sierra, and during one period, June 6-7, these shower conditions prevailed in the Great Valley of California and even reached the coast. A change in pressure distribution occurred about June 10, and dry, clear weather with northeast winds lasted for about 60 hours, the pressure distribution then reverting to the

earlier type. Severe electrical storms were reported in the Siskiyou Mountains on June 14. These were sufficiently severe to interfere with all telegraphic service from central California north to Oregon. During the remainder of the month the weather was generally clear, with no features of special interest, except the prevalence of afternoon thunderstorms in the Sierra, and these were confined mostly to the period between June 18 to 21.

TEMPERATURE.

The mean temperature for the State was nearly 2° below the normal, making the month as above stated a cold month, and while not the coldest on record, colder than any June since 1908. Only three Junes have been as cold and in no case has the month been more than a fraction of a degree colder.

The following table gives the means and departures for each June from 1897 to 1911, inclusive:

Year.	Mean.	Departure.	Year.	Mean.	Departure.
	°F.	°F.		°F.	°F.
1897.....	69.8	+1.2	1905.....	67.5	-1.1
1898.....	71.3	+2.7	1906.....	66.7	-1.9
1899.....	71.5	+2.9	1907.....	66.1	-2.5
1900.....	71.4	+2.8	1908.....	66.0	-2.6
1901.....	70.5	+1.9	1909.....	68.1	-0.5
1902.....	70.2	+1.6	1910.....	67.3	-1.3
1903.....	70.9	+2.3	1911.....	66.7	-1.9
1904.....	71.1	+2.5			

The highest temperature reported at any station was 113° at Palm Springs on the 11th. This was 8° lower than the highest temperature reported during June, 1910. The lowest temperature during the month was 18°, which occurred at Tamarack on the 23d. This was almost the same as the lowest temperature reported during the preceding year. The highest monthly mean was 91.3° at Bagdad; whereas the highest monthly mean for the same month during the preceding year was 93.2° at the same place. The lowest monthly mean was 41.6° at Tamarack, which may be compared with the lowest monthly mean for June, 1910, namely, 45.2° at McDowell.

PRECIPITATION.

June, 1911, was a dry month. With one exception (June, 1910) it was the driest June for six years. The rainfall consisted mostly of afternoon showers in the mountain sections and occasional rains at night along the southern coast and that part of the northern coast above Cape Mendocino. There was only one period when the rain was general and that was on the 6th and 7th. The average monthly precipitation for the State was 0.15 inch.

The following table gives the average and departure from the normal for each June from 1897 to 1911, inclusive:

Year.	Mean.	Departure.	Year.	Mean.	Departure.
	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	<i>Inches.</i>
1897.....	0.46	+0.13	1905.....	0.07	-0.26
1898.....	.25	-.08	1906.....	1.05	+.72
1899.....	.57	+.24	1907.....	1.02	+.69
1900.....	.19	-.14	1908.....	.17	-.16
1901.....	.01	-.32	1909.....	.19	-.14
1902.....	.10	-.23	1910.....	.05	-.28
1903.....	.07	-.26	1911.....	.15	-.18
1904.....	.04	-.29			

The greatest monthly rainfall was 1.30 inches at Hornbrook. Last year the greatest monthly amount was 2.10 inches at Monumental. There was no rainfall at nearly half of the stations reporting. The distribution of the rain geographically was irregular, and except in case of one general storm, the rainfall was in the form of showers, and places close together did not report rain at the same time. The heaviest 24-hour rainfall was 1.05 inches at Hornbrook.

SNOWFALL.

The month was one of comparatively little snowfall. It is not unusual to have some snow in the Sierras during the first half of June and occasional flurries during the last portion. There was little snow during the present month and no reinforcement of the snow cover. The cover was, however, of large extent and considerable depth—i. e., several feet at the beginning of the month. As stated above the depth decreased steadily and there was a fairly uniform rate of melting of about 4 inches a day, except between June 7 and 12, when the rate somewhat exceeded this. At the close of the month, while all lower levels were free from snow, the higher peaks remained clothed with snow which, with the soaked ground, gave every indication of a supply of water ample to meet the needs of the summer and early fall months.

SUNSHINE.

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

Stations.	Hours.	Percentage of possible.	Stations.	Hours.	Percentage of possible.
Eureka.....	179	40	Sacramento.....	332	74
Fresno.....	424	96	San Diego.....	235	55
Los Angeles.....	275	65	San Francisco.....	230	52
Mount Tamalpais.....	393	89	San Jose.....	345	78
Red Bluff.....	361	80	San Luis Obispo.....	254	58

If we add the total hours of sunshine for the 10 Weather Bureau stations in California for the months of June, 1910 and 1911, we find that during the current year there is nearly 400 hours less sunshine than during the preceding year. There was a marked deficiency in sunshine at the coast stations.

THUNDERSTORM.

At Hornbrook a very heavy thunderstorm, claimed to be the heaviest in the history of the town, occurred on June 14 at 4.10 p. m., lasting until 5.40 p. m. One and five one-hundredths inches of rain fell in 1 hour and 30 minutes. Electric power lines were knocked down.

NOTE ON THE WIND MOVEMENT AT POINT REYES LIGHT DURING JUNE, 1911.

By Mr. JAMES JONES, Observer.

High winds were frequent and prolonged, as is usual at this season. The gale that began on the 27th, however, is worthy of special notice.

During the 72 hours beginning at midnight of the 26th-27th 4,113 miles were recorded, an average of 57.1 miles per hour.

During the 24 hours beginning at 9 p. m. of the 28th, the period of highest velocity, 1,586 miles were recorded, an average of 66.1 miles per hour.

The highest velocity for five minutes was 79 miles per hour, and the greatest number of miles actually recorded in any hour was 75.

While the gale was in progress the regular diurnal oscillations of pressure were slightly intensified and frequently interrupted by short but rapid variations.

Many of the shingles were blown off of the office roof during the gale. Spray from the ocean was driven so high up around the rocks that a rainbow at least 400 feet high was visible each afternoon.

NOTES ON THE RIVERS OF THE SACRAMENTO AND SAN JOAQUIN WATERSHEDS DURING THE MONTH OF JUNE, 1911.

By Mr. H. J. ANDREE, Observer.

The rivers of both watersheds were higher than usual for this month. This condition was due not so much to excessive snowfall during the winter and spring, but primarily to the fact that April and May were cold months, and left a greater portion of the snow than usual to be melted by the warm weather in June. At the end of the month the waters in the two main streams and all of their tributaries were falling rapidly.

Sacramento watershed.—The rivers of this watershed averaged from 1 foot to nearly 2 feet above their usual June stages and, excepting June, 1906, were the highest for this period since the records have been kept, the excess being more marked in the lower portion of the stream from Monroeville to Rio Vista. The lowlands were overflowed, as usual, during June.

At Sacramento the river stood at 20.8 feet on the 1st, and rose steadily, reaching a stage of 21.5 feet on the 13th, from which time it fell gradually to 18 feet on the 30th. At Colusa the highest water, 10.6 feet, was recorded on the 4th, and the lowest, 5.2 feet, on the 30th, while at Red Bluff the river fell from 5 feet on the 3d to 2.4 feet on the 30th.

San Joaquin watershed.—The main stream averaged 4 feet above the normal, while the tributaries were from 0.7 of a foot to 4.5 feet above. Without exception, the San Joaquin and its tributaries carried more water than in any June during the past five years.

At Lathrop the San Joaquin rose from a stage of 16.4 feet on the 1st to 19.2 feet on the 24th, which is 2.2 feet above flood stage. At Firebaugh the lowest reading, 9.2 feet, was reported on the 3d, and the highest, 13.6 feet, on the 24th, the latter being 1.6 feet above flood stage. At Pollasky the lowest water was 3.8 feet on the 1st, and the highest was 7.8 feet on the 22d.

There were three breaks in the levee in the vicinity of Lathrop, where the observer states that approximately 15,000 acres of land were flooded, much of which was planted to wheat and barley. The estimated cost of repairing the levee is \$12,000, and the damage to crops about \$20,000. At the crest of the flood the water was 3.2 feet higher than at any previous high water.

The damage in the immediate vicinity of Firebaugh was not great, although about 45 sections of grazing land were flooded for two weeks, but without loss of stock. A large break occurred in the levee on Temple River opposite Los Palos Colony, flooding 40 sections of farming land, which, it is estimated, caused a loss of about \$500,000, besides \$5,000 that it will cost to repair the levee.

TABLE I.—Climatological data for June, 1911. 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 cloudy days), Sky, Prevailing wind direction, Observers. The table lists numerous stations across California with their respective climatological data for June 1911.

TABLE 1.—Climatological data for June, 1911. 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.	
<i>California—Contd.</i>																					
Sisson	Siskiyou	3,555	22	57.4	- 6.0	84	14	33	24	39	.31	- .42	.09	T.	4	9	5	16	n.	Southern Pacific Co.	
Soledad**	Monterey	188	37	71.2	+ 5.7	95	30	50	1	8	.00	-.06	.00	T.	0	30	0	0	s.	Do.	
Southeast Farallon	San Francisco	30	8	51.2	.....	59	25	47	5	3	.00	.....	.00	0	0	8	9	13	nw.	U. S. Weather Bureau.
Sonora	Tuolumne	1,825	23	70.0	.....	96	11	48	1†	42	.07	-.25	.07	0	1	29	0	1	sw.	Chas. P. Jones.
Squirrel Inn	San Bernardino	5,280	1	61.1	.....	84	11†	41	21†	29	.00	.....	.00	0	0	29	1	0	sw.	A. D. Frantz.
Stirling City	Butte	3,525	7	67.4	.....	92	19†	40	23†	40	.35	.....	.35	0	1	20	10	0	se.	Butte Co. R. R. Co.
Stockton (S. H.)	San Joaquin	23	40	67.8	- 2.1	94	18†	46	22	36	T.	-.09	T.	0	0	23	1	1	nw.	State Hospital.	
Storey	Madera	296	11	72.0	- 2.3	100	18†	44	24	46	.00	-.02	.00	0	0	30	0	0	nw.	Santa Fe Co.	
Suisun**	Solano	20	31	63.5	.....	78	20†	54	18	.....	.00	.....	.00	0	0	0	0	0	.....	Southern Pacific Co.
Summerdale	Mariposa	5,270	15	60.0	- 1.0	89	12	40	1†	33	.00	-.39	.00	0	0	22	7	1	.....	J. H. Lowry.
Summit	Placer	7,017	38	56.5	+ 3.3	76	13†	35	30	28	.04	-.54	.04	0	1	25	4	1	w.	Southern Pacific Co.	
Susanville	Lassen	4,175	22	61.0	- 2.9	88	11	35	24	41	.27	-.31	.14	0	3	19	8	3	sw.	James Braham.	
Tamarack	Alpine	8,000	5	41.6	.....	71	15	18	23†	50	1.10	.....	.65	0	2	24	3	3	sw.	William Bennett.
Tehachapi**	Kern	3,964	34	73.0	+ 3.6	94	11	55	2	.....	.00	-.10	.00	0	0	0	0	0	.....	Southern Pacific Co.
Tehama**	Tehama	220	40	75.4	- 2.2	100	11†	60	1†	.....	T.	-.30	T.	0	0	28	0	2	.....	Do.
Tejon Rancho	Kern	1,500	9	67.8*	.....	94	13	47	15	40	.00	.....	.00	0	0	0	0	0	.....	S. E. Bailey.
Three Rivers	Tulare	870	1	72.2	.....	101	11	44	24	43	.03	.....	.03	0	1	25	4	1	sw.	E. D. Barton.
Towle	Placer	3,704	25	Southern Pacific Co.
Tracy**	San Joaquin	64	31	77.0	+ 1.1	94	18†	62	1	.....	.02	-.16	.02	0	1	21	5	4	nw.	Do.
Ukiah	Mendocino	620	13	66.4	- 1.3	95	11	41	4	46	.48	+ .15	.45	0	2	23	5	2	nw.	Dr. Geo. McCowen.	
Upland	San Bernardino	1,750	14	67.1	+ .3	98	12	43	10	41	.00	-.17	.00	0	0	30	0	0	w.	A. P. Harwood.	
Upper Lake	Lake	1,350	26	68.6	+ 2.4	94	11†	43	22	40	.28	+ .01	.23	0	2	24	4	2	nw.	C. M. Hammond.	
Vacaville	Solano	175	23	68.4	- 3.5	100	18	46	24†	47	T.	-.17	T.	0	0	23	6	1	sw.	G. O. Coburn.	
Valley Springs**	Calaveras	673	22	72.0	- 2.5	100	26	56	21†	.....	.00	-.30	.00	0	0	28	0	2	nw.	Southern Pacific Co.
Visalia	Tulare	334	23	67.4	- 6.6	101	12	39	5†	54	.00	-.16	.00	0	0	25	5	0	.....	Santa Fe Co.
Warner Springs	San Diego	3,165	3	64.4	.....	95	11	40	3†	40	.02	.....	.02	0	1	29	1	0	.....	Mrs. F. S. Sandford.
Wasco	Kern	336	11	71.2	- 6.1	103	18†	37	2	55	.00	-.00	.00	0	0	30	0	0	.....	Santa Fe Co.
Watsonville	Santa Cruz	23	15	57.8	- 4.6	82	7	38	22	39	.09	-.08	.09	0	1	5	19	6	s.	Spreckels Sugar Co.	
Weitchpec	Humboldt	1,700	1	60.0	.....	94	10	38	24	40	.04	.....	.02	0	2	23	4	3	s.	M. E. Lathrop.
Westley**	Stanislaus	90	22	75.5	- 2.4	96	26	60	6†	.....	.13	+ .04	.13	0	1	28	0	2	.....	Southern Pacific Co.
Wheatland	Yuba	84	24	70.4	- 1.5	96	18	48	9†	38	.01	+ .18	.01	0	1	19	7	4	s.	Wm. Lumbard.	
Willows	Glenn	136	32	L. G. Stiles.
Yosemite	Mariposa	3,945	7	63.4	.....	95	26	29	1†	54	.00	.....	.00	0	0	30	0	0	e.	J. P. Kelley.

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 June, 1911. 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	
<i>California—Contd.</i>																																T.
Tulare.....	San Joaquin.....						T.																								T.	
Tustin (near).....	Coast.....							T.																							T.	
Ukiah.....	do.....	.03						.45																							0.48	
Upland.....	do.....																														0.00	
Upper Lake.....	Sacramento.....		.05				T.	.23																							0.28	
Upper Mattole.....	Coast.....																										T.			T.	T.	
Vacaville.....	Sacramento.....						T.																								T.	
Valley Springs.....	San Joaquin.....																														T.	
Visalia.....	do.....																														T.	
Warner Springs.....	Coast.....					.02																									0.00	
Wasco.....	San Joaquin.....																														0.00	
Watsonville.....	Coast.....							.09																							0.09	
Weitchpec.....	Klamath.....						.02	.02														T.									0.04	
West Branch.....	Sacramento.....	.06						.13	.29																						0.48	
Westley.....	San Joaquin.....							.13																							0.13	
West Point.....	do.....							.15																							0.15	
West Saticoy.....	Coast.....						T.																								T.	
Wheatland.....	Sacramento.....							.01																							T.	
Willows.....	do.....																														T.	
Yosemite.....	San Joaquin.....																														0.00	

* Precipitation included in that of the next measurement.
 ‡ Separate dates of falls not recorded.

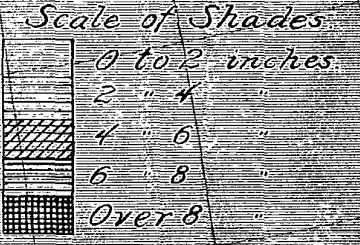
||| Precipitation for the 24 hours ending on the morning when it is measured.
 T. Precipitation is less than 0.01 inch rain or melted snow.

TABLE 3.—Maximum and minimum temperatures for June, 1911. District No. 11, California.

Table with columns for Date, Lakeview, Oreg., and various California locations (Alturas, Barstow, Branscomb, Brawley, Colusa, Eureka, Fresno, Independence, Los Angeles, Mount Tamalpais, Nevada City, Porterville, Red Bluff). Each location has Max. and Min. temperature columns for 30 days and a Mean (Mns.) row at the bottom.

Table with columns for Date and various California locations (Redlands, Sacramento, San Diego, San Francisco, San Jose, San Luis Obispo, Santa Barbara, Santa Rosa, Sisson, Stockton, Summit, Susanville, Yosemite). Each location has Max. and Min. temperature columns for 30 days and a Mean (Means.....) row at the bottom.

a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.
§ Data are from standard instruments not supplied by the U. S. Weather Bureau.
§§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.



Departure of the Mean Temperature from the Normal, June, 1911.

