

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

CALIFORNIA SECTION.

EDWARD A. BEALS, District Forecaster.

VOL. XXII. SAN FRANCISCO, OCTOBER, 1918. No. 10.

GENERAL SUMMARY.

Unseasonably warm weather prevailed in California during October. The mean temperature for the State as a whole was almost 2° above the normal, while the average precipitation was much below the normal. Hot spells accompanied by desiccating winds occurred throughout the State from the 10th-14th and from the 29th-31st. No killing frosts formed until near the close of the month, and these were limited to the interior valleys. Rainfall was deficient everywhere except at a few places where heavy local showers occurred. The snowfall in the mountains was relatively light. Streams maintained low stages throughout the month. More than the usual amount of sunshine was received, while the wind movement was about normal. Fog was of frequent occurrence along the coast. During a severe thunderstorm at Fresno on the 1st, lightning caused a fire which destroyed a dwelling. On the night of the 1st-2d., another thunderstorm of extraordinary violence, accompanied by torrential rain and destructive lightning, was experienced in the extreme northern portion of the Sacramento Valley. Within a period of about six hours Redding received a rainfall of more than five inches, while Kennett received over four inches. This storm did great damage to telephone wires and power lines, and numerous landslides and washouts occurred along the roads. Railway transportation across the Siskiyou Mountains was seriously interrupted.

Agriculturally, the weather during October was generally favorable. Much field work was accomplished, fall plowing was general and the sowing of winter growing grains progressed rapidly. As a result of the general rains which fell during the preceding month the soil was soft and in good condition for plowing. The curing of fruit and the harvesting of late crops were largely completed. Because of the late arrival of killing frosts the season for truck crops and garden vegetables ended satisfactorily. As a result of the deficient precipitation, however, pastures dried rapidly, and at the close of the month rain was urgently needed. Green feed in the mountains and foothills was still abundant, but in the lowlands it was scarce. Large crops of apples and pears were gathered during the month. Intermittent showers during the first week did further damage to drying raisins in the San Joaquin Valley. At the close of the month the condition of lemons was above the 10-year average. The new crop of oranges began to mature during the month, and a much larger production than that of last year is anticipated. Good progress was made in the gathering of sugar beets. While the rice harvest was progressing rapidly at the close of the month it was feared that the late-sown rice would not mature. Agricultural interests are well satisfied with the weather conditions which have prevailed during the growing season just closed.

A. H. P.

PRESSURE.

The mean sea level pressure, determined from the records of twelve regular Weather Bureau stations, was 30.00 inches. The highest was 30.25 inches at Eureka on the 28th; the lowest was 29.73 inches at San Diego on the 18th; the range for the State was 0.52 inch.

TEMPERATURE.

The monthly mean temperature for the State, as shown by the records of 100 stations, was 62.9°, which is 1.8° above the normal. The highest monthly mean was 77.0° at Indio; and the lowest was 45.6° at Summit. The highest temperature, 105°, occurred at Azusa on the 12th; and the lowest, 18°, occurred at Summit on the 16th, and at Alturas and Madeline on the 23d. The range for the State was 87°.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 223 stations, was 1.02 inches, or 0.43 inch below the normal. The greatest monthly amount was 6.23 inches, at Redding. Eleven stations reported no precipitation. The greatest amount in 24 hours was 5.20 inches at Redding on the 1st-2d.

RELATIVE HUMIDITY, SUNSHINE AND CLOUDINESS.

Stations.	Relative humidity. (Per cent.)			Sunshine.	
	5 a. m.	5 p. m.	Mean.	Actual No. of hours	Per cent of possible.
Eureka	93	83	88	163	47
Fresno	74	38	56	304	84
Independence	59	33	46	232	87
Los Angeles	73	57	65	252	72
Mount Tamalpais	56	54	55	263	76
Red Bluff	75	39	57	260	76
Sacramento	81	44	62	278	81
San Diego	80	68	74	219	62
San Francisco	81	66	74	279	80
San Jose	59	59	59	248	68
San Luis Obispo	72	54	63	267	76

WIND MOVEMENT.—(Miles.)

Stations.	Total mov. for month.	Ave. hr. velocity.	Maximum velocity.	Direction.	Date.	Prev. dir.
Eureka	3,705	5.0	29	n.	18	n.
Fresno	4,394	5.9	28	sw.	1	nw.
Independence	3,994	5.4	27	nw.	25	nw.
Los Angeles	3,858	5.2	19	ne.	18	ne.
Mount Tamalpais	10,383	14.0	50	s.	14	nw.
Point Reyes	12,923	17.4	46	nw.	17	nw.
Red Bluff	3,799	5.1	29	nw.	18	nw.
Sacramento	5,094	6.8	33	n.	18	se.
San Diego	4,172	5.6	22	s.	19	nw.
San Francisco	4,678	6.3	30	ne.	19	sw.
San Jose	3,371	4.5	24	n.	18	nw.
San Luis Obispo	3,060	4.1	22	ne.	1	nw.

COMPARATIVE DATA FOR OCTOBER.

Year.	Mean temp.	Ave. precip.	Year.	Mean temp.	Ave. precip.	Year.	Mean temp.	Ave. precip.	Year.	Mean temp.	Ave. precip.
1897	58.5	1.79	1903	64.0	0.49	1909	60.2	1.66	1915	62.3	0.14
1898	51.0	0.59	1904	61.6	2.74	1910	61.9	0.83	1916	55.0	1.91
1899	58.1	3.50	1905	60.7	0.12	1911	59.1	0.58	1917	64.4	0.01
1900	58.8	2.34	1906	63.4	0.09	1912	57.1	0.36	1918	62.9	1.02
1901	62.2	1.50	1907	62.0	1.56	1913	61.9	0.08			
1902	60.7	1.78	1908	58.3	1.37	1914	60.2	1.60			

The departures from the normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete reports are used in determining section or division means.
 † Also on other dates. a, b, c, etc., indicate respectively, 1, 2, 3, etc., days missing from the record.

Daily evaporation (inches) and wind movement (miles) for October, 1918.

Stations.	Data.	Day of Month.																															Monthly.
		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	
Chula Vista**1	Evaporation	198	203	045	072	131	153	062	026	144	172	145	151	148	117	176	179	203	197	196	150	153	153	089	137	171	237	145	153	236	250	249	4,846
	Wind movement	74	115	269	98	75	93	77	280	125	99	74	85	97	85	102	100	104	91	117	114	83	71	70	78	87	86	76	68	61	70	55	2,682
Dodgeland*2	Evaporation	114	208	162	190	129	063	174	130	153	114	111	125	132	173	119	068	085	214	251	256	143	130	079	228	232	224	108	121	228	129	101	4,725
	Wind movement	32	59	48	41	79	102	69	33	21	23	22	20	19	35	95	103	54	106	108	92	34	44	56	80	120	100	20	30	90	28	21	1,778
Oakdale (near)*3	Evaporation	022	115	132	147	149	088	174	163	219	171	156	171	186	194	142	082	158	193	213	221	206	118	124	153	174	222	203	144	269	132	123	4,964
	Wind movement	67	82	77	102	125	64	101	49	171	62	67	43	50	53	104	78	107	102	90	83	73	119	110	59	96	116	66	97	151	47	48	2,659
Tahoe**4	Evaporation	025	125	121	1	170	135	105	095	093	075	065	105	135	120	040	†	095	075	190	†	145	110	095	115	120	150	135	115	080	070	040	3,255
	Wind movement	46	53	3	41	99	62	64	52	55	57	45	46	44	77	77	73	29	36	193	262	79	64	62	64	71	47	69	63	69	48	49	2,131

* Observation taken at 7 a. m.; ** at 8 a. m. † Included in next following entry.
 1 Ele. 9 ft.; 10 miles SE of San Diego. 2 Ele. 125 ft.; 16 miles SW of Chico. 3 Ele. 215 ft.; Woodward Reservoir, 8 miles N of Oakdale. 4 Ele. 6230 feet; float in Lake Tahoe.

Climatological Data for October, 1918.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahr.						Precipitation, in inches.				Number of days.			Observers			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Snowfall (unmelted), inch or more.	Precipitation 0.1 inch or more.	Clear.		Partly cloudy.	Cloudy.	Prevailing direction of wind.
Alturas	Modoc	4,400	14	50.5	+1.9	85	11	18	23	51	1.04	+0.24	0.40	0	8	17	12	2	w.	Prof. C. B. Towle.
Antioch	Contra Costa	46	39	63.6	+0.2	90	13	32	24	38	0.15	-0.55	0.15	0	1	23	6	2	s.	C. G. McDaniel.
Atascadero	San Luis Obispo	837	30	60.6	.....	96	12	28	26	54	0.75	.....	0.75	0	1	17	12	2	nw.	Colony Holding Corp.
Avalon	Los Angeles	30	30	72.0	+6.4	103	12	47	17	46	0.26	-0.75	0.33	0	2	18	7	6	ne	The Banning Co.
Azusa	Kern	540	16	66.8	+1.3	100	13	40	421	45	0.03	-0.33	0.03	0	1	24	1	6	ne	C. C. Hillis.
Bakersfield	San Bernardino	404	29	65.1	+1.1	99	2	34	26	41	-0.78	+0.27	0.50	0	3	26	2	3	w.	Santa Fe Co.
Barstow	Alameda	2,105	31	63.4	+4.1	91	12	47	26	33	0.14	-1.35	0.13	0	2	26	2	3	sw.	State University.
Berkeley	Santa Barbara	155	5	64.8	.....	92	13	40	426	38	0.63	.....	0.63	0	1	26	4	1	n.	Union Sugar Co.
Betteravia	Placer	4,695	19	49.2	-3.8	79	12	24	18	49	2.70	-1.22	1.70	0	4	21	3	7	n.	Southern Pacific Co.
Blue Canon	Riverside	268	9	71.3	.....	103	2	37	26	50	0.07	.....	0.05	0	2	24	1	6	n.	C. L. Suits.
Blithe	San Diego	110	2	67.6	.....	96	31	41	26	45	0.64	.....	0.27	0	5	19	8	4	w.	R. M. Allen.
Bonita	Mendocino	2,000	18	62.1	+5.9	89	2	33	26	45	2.55	-3.26	1.03	0	3	26	0	5	n.	A. J. Hann.
Branscomb	Imperial	-105	8	74.4	.....	102	2	41	27	49	0.02	.....	0.02	0	1	25	4	2	sw.	M. D. Witter
Brawley	Calaveras	3,400	2	56.9	.....	81	12	33	17	35	0.95	.....	0.55	0	6	21	3	7	sw.	U. S. Forest Service.
Calaveras Ranger Sta.	Imperial	0	13	174.6	+2.3	100	1	44	27	37	3.70	-0.16	T.	0	0	22	4	5	n.	H. M. Rouse.
Calexico	Yuba	3,500	11	60.8	.....	86	6	40	16	38	3.00	.....	1.05	0	7	17	5	9	n.	Pacific Gas & Electric Co.
Cameronville (near)	Modoc	4,675	24	51.9	+1.9	80	11	26	26	36	0.90	-0.17	0.32	0	7	18	8	5	sw.	T. H. Johnstone.
Cedarville	Butte	189	48	62.8	-1.6	89	13	35	25	44	0.88	-0.32	0.33	0	5	24	6	1	se.	U. S. Bureau Plant Ind.
Chico	Los Angeles	1,200	26	66.2	+1.8	102	12	40	18	47	0.35	-0.67	0.31	0	2	15	12	4	w.	Prof. F. P. Brackett.
Clovermont	Sonoma	340	16	64.4	+2.0	91	11	40	25	41	0.82	-1.04	0.52	0	3	24	1	6	s.	John O. Ogle.
Cloxford	Placer	2,421	47	62.0	+2.5	87	13	37	22	36	1.51	-0.77	0.74	0	5	23	3	5	sw.	Southern Pacific Co.
Corona	Riverside	615	4	70.2	.....	101	12	44	27	44	0.21	.....	0.17	0	3	19	7	5	nw.	T. C. Sius.
Crescent City	Del Norte	125	4	57.5	+4.1	85	25	35	18	38	3.54	-1.55	1.48	0	7	18	9	4	nw.	Thos. E. Peacock.
Davis	Yolo	51	46	63.6	-1.3	89	12	35	26	46	0.28	-0.47	0.23	0	2	23	6	2	w.	S. H. Beckett.
Downville	Sierra	3,150	7	56.4	.....	81	12	30	26	39	3.36	.....	1.27	0	8	22	6	3	s.	J. T. Mason.
Durham	Butte	160	23	59.7	-2.6	82	13	40	425	37	0.95	-0.32	0.35	0	4	22	1	8	s.	R. W. Durham.
El Cajon	San Diego	482	19	69.7	+4.2	104	12	40	27	54	0.82	+0.32	0.24	0	6	24	4	3	sw.	Philip L. Kessler.
Elsinore	Riverside	1,800	2	70.5	.....	102	1	42	27	49	0.63	.....	0.43	0	2	13	0	18	se.	W. L. Wilhite.
Esccondido	San Diego	657	24	67.6	+5.0	100	12	40	27	49	0.70	+0.17	0.39	0	7	15	7	9	w.	A. R. Moon.
EUREKA	Humboldt	64	32	54.2	+1.1	89	19	43	25	22	1.00	-1.65	0.55	0	9	6	11	14	n.	U. S. Weather Bureau.
Folsom	Sacramento	252	45	66.3	+2.7	95	12	45	724	38	0.48	-0.78	0.25	0	2	17	3	11	e.	G. I. Marvin.
Fontana	San Bernardino	1,325	6	68.5	.....	98	31	42	27	47	0.93	.....	0.39	0	4	24	2	5	sw.	Fontana Land Co.
Fort Bidwell	Modoc	4,375	29	50.2	-0.4	79	12	33	25	45	1.43	+0.47	0.35	0	6	11	12	8	sw.	C. R. DeCloux.
FRESNO	Fresno	2,393	31	65.7	+2.0	94	19	45	25	33	0.11	-0.61	0.10	0	2	24	4	3	nw.	U. S. Weather Bureau.
Grass Valley	Nevada	2,690	46	60.4	.....	94	12	28	116	52	0.75	-2.05	0.49	0	4	22	5	4	w.	Mrs. J. M. Wentworth.
Greenland Ranch	Inyo	-178	7	71.9	.....	100	2	40	27	39	0.01	.....	0.61	0	1	20	0	11	n.	O. A. Denton.
Hanford	Kings	249	18	67.0	+3.3	84	14	42	15	36	0.12	-0.16	0.12	0	1	26	0	5	sw.	Dr. F. J. Kinley.
Healdsburg	Sonoma	110	25	63.6	+2.2	91	12	37	26	49	0.50	-1.77	0.35	0	2	23	0	8	nw.	Dr. F. J. Kinley.
Hollister	San Benito	284	44	60.5	-0.1	86	12	38	724	35	0.20	-0.50	0.15	0	2	24	4	3	nw.	Grangers' Union.
INDIAPENDENCE	Inyo	3,957	22	60.1	+0.8	84	11	32	26	36	0.35	+0.62	0.34	0	2	19	10	2	nw.	U. S. Weather Bureau.
Inskip	Butte	4,975	11	53.9	.....	74	11	32	16	20	3.70	.....	1.33	0	7	17	5	9	n.	Pacific Gas & Electric Co.
Kennett	Shasta	730	6	65.9	.....	94	11	42	18	39	5.78	.....	4.41	0	4	19	8	4	sw.	A. J. Reef.
King City	Monterey	333	31	70.0	+9.6	100	11	35	19	58	T.	-0.71	T.	0	0	29	0	2	n.	Southern Pacific Co.
La Porte	Plumas	5,000	24	47.4	-1.3	64	11	32	116	24	4.39	-0.52	1.06	0	6	23	0	8	n.	C. W. Hendel.
Lemon Cove	Tulare	600	23	66.4	-1.0	91	14	42	117	35	0.45	-0.30	0.43	0	2	25	4	2	nw.	T. E. Bence.
Lick Observatory	Santa Clara	4,209	29	57.1	+2.1	80	12	38	16	18	0.40	-1.28	0.20	0	4	27	0	4	n.	The Director.
Lindsay	Tulare	384	4	64.8	.....	96	13	36	26	44	0.05	.....	0.05	0	1	16	12	3	nw.	Basil Prior.
Lone Pine	Inyo	3,728	13	57.8	+1.3	82	11	29	26	44	0.78	+0.44	0.78	0	1	21	10	0	s.	G. F. Marsh.
LOS ANGELES	Los Angeles	293	41	71.1	+6.5	95	11	52	24	37	T.	-0.77	T.	0	0	19	8	4	ne.	U. S. Weather Bureau.
McCloud	Siskiyou	3,270	8	52.5	.....	83	11	26	23	45	3.86	.....	1.73	0	5	17	2	12	s.	McCloud River Lbr. Co.
Madelaine	Lassen	5,270	9	48.2	.....	79	12	18	23	47	1.53	.....	0.63	0	8	16	7	8	nw.	J. H. Williams.
Marysville	Yuba	67	47	64.4	-0.9	85	19	33	20	46	0.15	-0.94	0.15	0	1	21	4	3	s.	Southern Pacific Co.
Mecca	Riverside	-185	12	75.5	+3.2	97	10	39	27	50	T.	-0.33	T.	0	0	16	13	2	sw.	E. A. Palmer.
Merced	Merced	173	44	63.8	-1.0	92	12	40	724	39	0.49	-0.01	0.34	0	2	24	4	3	nw.	Santa Fe Co.
MOUNT TAMALPAIS	Marin	2,375	19	60.8	+2.1	82	12	44	22	23	0.45	-1.47	0.24	0	4	18	7	6	nw.	U. S. Weather Bureau.
Mount Wilson	Los Angeles	5,704	1	59.5	.....	79	11	36	17	24	0.58	.....	0.37	0	3	20	6	5	sw.	Wendell P. Hoge.
Napa	Napa	20	41	57.5	-4.5	97	12	34	426	47	0.43	-0.76	0.28	0	2	22	8	1	sw.	State Hospital
Needles	San Bernardino	477	26	73.5	+1.8	102	11	40	427	47	0.13	+0.01	0.07	0	2	21	4	6	sw.	Santa Fe Co.
Nevada City	Nevada	2,850	26	56.8	+1.1	87	12	23	25	42	1.50	-0.98	0.67	0	7	22	3	6	sw.	B. H. Preston.
Newman	Stanislaus	91	29	63.8	-1.0	83	13	40	116	22	0.11	-0.50	0.09	0	2	22	3	8	n.	E. S. Wengenheim.
Oakland	Alameda	356	42	62.4	+4.0	82	11	49	115	22	0.15	-1.40	0.14	0	3	20	3	8	n.	Chabot Observatory.
Orland	Glenn	250	36	65.2	+1.2	88	12	42	26	38	0.66	-0.30	0.39	0	3	20	3	8	n.	U. S. Rec. Service.
Orville (near)	Butte	250	34	66.1	+1.0	95	13	40	17	38	0.34	-1.09	0.18	0	4	21	3	7	sw.	E. D. Fairchild.
Pasadena	Los Angeles	1,038	28	63.1	+3.3	100	12	43	427	50	0.02	-0.96	0.02	0	1	20	2	2	sw.	R. P. Hamlin.
Paso Robles	San Luis Obispo	800	31	63.0	+3.6	99	14	32	26	51	0.49	-0.44	0.46	0						

Daily Precipitation for October, 1918.

Stations.	Watersheds.	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			
Alturas	Sacramento	.13	.24		.04	.14									.03	.40	.04																		1.04
Antioch	San Joaquin	.15																																	0.15
Atascadero	Coast	.75																																	0.75
Avalon	Ocean		T.		.23	.03																													0.26
Azusa	Coast																																		0.03
Bakersfield	San Joaquin	.03																																	0.78
Barstow	Desert			.50	.16																														0.14
Berkeley	Coast					.13																													0.63
Betteravia	do	.63																																	2.70
Blue Canon	Sacramento		.25	.25		.50																													0.07
Blythe	Colorado																																		0.64
Bonita	Coast			T.	.04	.20	.27	T.	T.	.11																									2.55
Branscomb	do										.50	1.03	1.02																						0.02
Brawley	Imperial Valley																																		0.95
Cataveros R. S.	San Joaquin	.07	.01			.18																													T.
Calexico	Imperial Valley			T.																															3.30
Camptonville	San Joaquin	.80	.35	.05		.75	.29																												0.90
Cedarville	Mountain Lakes	.13	.13	.08		.12																													0.88
Chico	Sacramento		.04	.33		.18																													0.35
Claremont	Coast				.31	.04																													0.82
Cloverdale	do				T.	.52	.41																												1.51
Colfax	Sacramento	.16	.05	.15																															0.21
Corona	Coast		.17	.02	.02																														3.54
Crescent City	do		T.	.13	.33	1.48	.15																											0.28	
Davis	Sacramento					.23																													3.36
Downieville	do	.15	.55	.61		.20	.20																											0.95	
Durham	do		.35			.20	.15																												0.82
El Cajon	Coast			.24	.22	.15				.09	.09																								0.83
Elsinore	do			.40	.43																														0.70
Escondido	do			.06	.39	.09	T.			.06	.04																								1.00
EUREKA***	do		.09	.06	.06	.17																											.01		0.48
Folsom	Sacramento																																		0.93
Fontana	Coast			.39	.32	.21	.01																												1.43
Fort Bidwell	Mountain Lakes		.35	.02		.35																													0.11
FRESNO***	San Joaquin	.10	.01			T.																													0.75
Grass Valley	Sacramento	.06	.15	.05		.49																													0.01
Greenland Ranch	Desert																																		0.12
Hanford	San Joaquin	.12																																	0.60
Healdsburg	Coast					.15																													0.20
Hollister	do	.15				.05																													0.85
INDEPENDENCE***	Owens																																		3.70
Inskip	Sacramento	.43	.63			.65	.46																												5.78
Kennett	do		4.41			.01	.71																												T.
King City	Coast																																		4.39
La Porte	Sacramento		.93	1.06	T.	.73	.35																												0.45
Lemon Cove	San Joaquin	.02	.43																																0.40
Lick Observatory	Coast	.01				.18	.20																												0.05
Lindsay	San Joaquin		.05																																0.78
Loie Pine	Owens	T.																																	T.
LOS ANGELES***	Coast			T.																															3.86
McCloud	Sacramento	1.73	.23			.80																													1.53
Madeline	Mountain Lakes	.15	.05	.25	.15	.25																													0.15
Marysville	Sacramento				.15																														T.
Mecca	Desert			T.		T.																													T.
Merced	San Joaquin	.34	.15																																0.49
Mt. TAMALPAIS***	Coast	T.			.04	.17																													0.45
Mount Wilson	do			.37	.18	.03																													0.58
Napa	do					.15																													0.43
Needles	Colorado			T.																															0.13
Nevada City	Sacramento	.02	.15	.23		.30	.10																												1.50
Newman	San Joaquin	.09																																	0.11
Oakland	Coast	.01				.14																													0.15
Oroville	Sacramento		.39			.20																													0.66
Oroville (near)	do	.03				.18																													0.34
Pasadena	Coast			.02																															0.02
Paso Robles	do	.03	.46			.16																													0.49
Petaluma	do																																		0.63
Placerville	Sacramento	.46	.08	.50		.10	.38																												1.93
Point Reyes***	Coast	.09			.12	.24																													0.63
Pomona	do				.20	.06																													0.26
Porterville	San Joaquin			.56																															0.56
Portola	Sacramento		.03																																

Daily Temperature for October, 1918.

Table with 32 columns (Stations 1-31, Mean) and 32 rows (Bakersfield to Stockton). Each row contains temperature data for each station and a mean value.

SUPPLEMENTAL PRECIPITATION TABLE.

Table with 12 columns (Stations, Watersheds, Precip. inches) and 32 rows (Abbotts to De Sable). Lists precipitation data for various locations and watersheds.