

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

CALIFORNIA SECTION.

EDWARD A. BEALS, District Forecaster.

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GENERAL SUMMARY.

The feature of the weather of March was the abundant and well distributed precipitation. Based upon records from a large number of stations, the average precipitation for the State was 5.79 inches, or 22 per cent above the normal for March. Heavy snow fell in the elevated regions. It was the wettest March in nine years, and more rain fell than in any other month in more than a year. The marked deficiency during the early part of the present season was so great, however, that the generous precipitation of March did not bring the seasonal amount up to normal anywhere in the State. At the close of the month the seasonal precipitation was less than 50 per cent of the normal throughout the northern half of the State. It was a windy and stormy month. At Point Reyes the wind velocity exceeded 40 miles per hour on 20 days of the month, culminating with a maximum velocity of 90 miles per hour from the northwest on the 31st. Less than the usual amount of sunshine was received. Scattered light hail fell on several occasions, but did no damage. Frosts were of frequent occurrence in the agricultural portions of the State, and a severe freeze on the morning of the 26th did considerable damage to deciduous fruit in the Sacramento Valley. Streams maintained low stages throughout the month.

The timely rains were highly beneficial from an agricultural viewpoint. Orchards were revived, truck crops thrived, pastures and ranges improved, and grazing cattle found ample fresh feed. There was extensive planting of summer growing crops. Much land was also prepared for late planting. Deciduous fruit completed blossoming under generally favorable weather conditions. There was a good set of fruit, but frost and high winds reduced the size of the prospective crops somewhat. Citrus fruit thrived, the harvesting and shipping of lemons and Navel oranges continued, and the picking of Valencia oranges was begun. Citrus fruits were everywhere in excellent condition, and the trees bloomed heavily. Winter growing vegetables in the Imperial Valley were harvested in large quantities. The only unfavorable features of the weather were the cold nights and the desiccating northerly winds, which caused the soil to become crusted. At the close of the month the agricultural situation was generally satisfactory, with the exception of the prospect of a serious shortage of irrigation water in northern California during the coming summer.

A. H. P.

PRESSURE.

The mean sea level pressure, determined from the records of twelve regular Weather Bureau stations, was 30.01 inches. The highest was 30.50 inches at Independence on the 12th; the lowest was 29.41 inches at Point Reyes on the 22d; the range for the State was 1.09 inches.

TEMPERATURE.

The monthly mean temperature for the State, as shown by the records of 100 stations, was 49.3°, which is 2.5° below the normal. The highest monthly mean was 61.5°, at Indio; and the lowest was 25.2°, at Summit. The highest temperature, 88°, occurred at Blythe on the 13th and 20th; and the lowest, -2° occurred at Portola on the 3d. The range for the State was 90°.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 247 stations, was 5.79 inches, or 1.05 inches above the normal. The greatest monthly amount was 15.94 inches, at Inskip. No rain fell at Brawley. The greatest amount in 24 hours was 3.00 inches at Placerville on the 1st.

RELATIVE HUMIDITY, SUNSHINE AND CLOUDINESS.

Stations.	Relative humidity. (Per cent.)			Sunshine.	
	5 a. m.	5 p. m.	Mean.	Actual No. of hours	Percent of possible.
Eureka	88	76	82	205	55
Fresno	86	52	69	279	75
Independence	59	24	42	298	80
Los Angeles	73	61	70	267	72
Mount Tamalpais	82	80	81	244	66
Red Bluff	85	51	68	190	52
Sacramento	87	59	78	252	68
San Diego	83	69	76	240	65
San Francisco	82	65	74	264	71
San Jose	83	68	75	245	66
San Luis Obispo	80	64	72	250	67

WIND MOVEMENT.—(Miles.)

Stations.	Total mov. for month.	Ave. hr. velocity.	Maximum velocity.	Direction.	Date.	Prev. dir.
Eureka	6,154	9.3	36	n.	30	se.
Fresno	4,977	6.7	42	nw.	31	nw.
Independence	5,493	7.4	35	nw.	14	nw.
Los Angeles	5,282	7.1	35	nw.	14	ne.
Mount Tamalpais	14,612	19.6	83	nw.	13	nw.
Point Reyes	13,428	24.8	90	nw.	31	nw.
Red Bluff	4,608	6.2	36	nw.	30	se.
Sacramento	6,163	8.3	40	nw.	31	se.
San Diego	5,021	6.7	34	s.	22	w.
San Francisco	7,598	10.2	34	nw.	31	w.
San Jose	4,522	6.1	30	nw.	14	w.
San Luis Obispo	3,586	4.8	22	ne.	5	n.

COMPARATIVE DATA FOR MARCH.

Year.	Mean temp.	Ave. precip.	Year.	Mean temp.	Ave. precip.	Year.	Mean temp.	Ave. precip.	Year.	Mean temp.	Ave. precip.
1897	48.0	3.98	1903	50.9	5.80	1909	48.5	3.56	1915	53.1	2.33
1898	48.8	0.66	1904	51.1	8.52	1910	54.7	2.43	1916	53.0	3.38
1899	51.2	6.10	1905	54.7	5.42	1911	52.7	6.02	1917	45.7	1.58
1900	55.7	2.35	1906	50.8	9.19	1912	48.6	5.17	1918	51.5	5.75
1901	53.0	1.01	1907	49.0	10.67	1913	49.6	2.06	1919	49.0	3.47
1902	49.7	3.39	1908	51.8	1.49	1914	55.0	1.16	1920	49.3	5.79

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 March, 1920.

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	.197	.197	.173	.151	.136	.119	.122	.128	.215	.154	.146	.182	.143	.137	.179	.225	.173	.177	.159	.160	.129	.061	.097	.200	.245	.113	.189	.169	.152	.174	.117	4.919
	Wind movement	.199	.161	.95	.88	.71	.78	.76	.88	.196	.119	.83	.70	.81	.101	.121	.193	.98	.83	.87	.105	.165	.190	.72	.138	.171	.219	.93	.85	.87	.99	.171	3.683
Dodgeland**2	Evaporation	.009	.151	.061	.070	.121	.102	.130	.141	.214	.110	.090	.125	.085	.160	.055	.060	.090	.091	.089	.034	0	.080	.085	.085	.085	.126	.092	.132	.124	.166	.250	3.138
	Wind movement	.30	.100	.50	.39	.25	.45	.30	.50	.80	.90	.30	.40	.20	.55	.115	.110	.40	.30	.30	.40	.100	.150	.10	.20	.120	.59	.90	.30	.40	.40	.120	1.810
Oakdale (near)*3	Evaporation	.036	.040	.163	.072	.067	.108	.087	.102	.057	0	.065	.122	.056	.087	.084	0	.182	.128	.155	.148	.102	.034	0	.038	.230	.003	.171	.166	.189	.202	.245	3.254
	Wind movement	.50	.90	.100	.50	.50	.90	.100	.30	.100	.160	.90	.70	.40	.80	.90	.160	.130	.70	.60	.30	.180	.350	.130	.90	.60	.150	.20	.80	.50	.50	.110	3.030
Tahoe**4	Evaporation	.....	.....	.090	.080	.130	.120	.090	.110	.....	.080	.050	.150	.....	.....	.060	.140	.120	.....	.....	.090	.....	.....	.....	.....	.....	.....	.....	.040	.040	.150	.....	
	Wind movement	.....	.....	.308	.76	.42	.47	.39	.46	.47	.60	.56	.39	.28	.91	.....	.170	.55	.30	.46	.43	.41	.34	.78	.92	.....	.125	.94	.28	.31	.92	.....	

\* 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 March, 1920.

Table with columns: Stations, Counties, Elevation, Length of record, Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range, Total, Departure from normal, Greatest in 24 hours, Snowfall (unmelted), Precipitation 0.1 inch or more, Clear, Partly cloudy, Cloudy, Prevailing direction of wind, Observers.



Daily Temperature for March, 1920.

Table with columns for Stations, 1-31, and Mean. Rows list various California cities like Bakersfield, Calexico, Chico, Escondido, Eureka, Fresno, Independence, Los Angeles, Merced, Mount Tamalpais, Oakland, Orland, Oroville, Paso Robles, Point Reyes, Pomona, Porterville, Red Bluff, Redlands, Sacramento, San Bernardino, San Diego, San Francisco, San Jose, San Luis Obispo, Santa Barbara, Santa Rosa, and Stockton.

SUPPLEMENTAL PRECIPITATION TABLE.

Table with columns for Stations, Watersheds, and Precip. in inches. Rows list various locations and watersheds such as Abbots, Aguanga, Angiola, Antelope Valley, Arrowhead Springs, Auberry, Auburn, Avalon, Azusa, Bagdad, Barrett Dam, Beaumont, Beaumont (near), Bellota, Benson's Ferry, Betteravia, Big Bar, Big Sur, Bishop Creek, Calaveras R. S., Campbell, Campo, Camptonville, Canon Dam, Cascada, Cedarville, Centerville Pwr. H., Chester, China Flat, Churn Creek, Clovis, Coalinga, Colzate, Crockett, Cuyamaca, Deer Creek, Del Monte, Denair, De Sable, Dinuba, Dobbins (near), Downville, Dudley, Dudleys, East Park, Edison, Electra, Emigrant Gap, Fairmont, Firebaugh, Fordyce Dam, Fort Bragg, Fort Ross, Friant, Georgetown, Glacier Point, Glennville, Goffs, Gray Mountain, Happy Camp, Hayfork, Head Dam, Helen Mine, Helen Hetchy, Hullville (near), Huntington Lake, Idria, Jenny Lind, Jolon, Julian, Kennedy Mine, Kentfield, Kernville, Kernville, King City, Knights Landing, La Jolla, Lake Eleanor, Lakeport, Lake Spaulding, Las Plumas, Lathrop, La Verne, Le Grand, Livermore, Llano, Lompoc, Los Alamos, Los Gatos, Lytle Creek, Madeline, Maricopa, Mariposa, Markleville, Melones, Merced Falls, Mesa Grande, Middewater, Mill Creek-1, Mill Creek-2, Milo, Milton (near), Mokelumne Hill, Monroeville, Montague, Nellie, Nicolaus, North Bloomfield, North Fork, Oak Grove, Orleans, Ozena, Parkfield, Paso Robles-2, Pattiway, Peachland, Piedra, Point Loma, Priest Valley, Quincy, Reedley, Represa, Rio Vista, Ruth, St. John, San Miguel Island, San Pedro, Santa Ana River, Santa Clara, Santa Maria, Santa Monica, Seven Oaks, Shovel's Ranch, Shively, Sierraville, Sonora, Springville (near), Standish, Stanwood, Sterling, Storey, Tamarack, Tejon Rancho, Three Rivers, Troma, Truckee, Turlock, Tustin (near), Twin Lakes, Twin Valley, Upper Mattole, Yreaville, Walnut Creek, Warner Springs, Wasco, Wasioja, West Branch, West Point, Wrights, Yorba Linda.

\* Data obtained from 3-inch rain gage.

**SNOWFALL IN THE MOUNTAINS.**

At the close of February there was no snow on the ground in the Coast Ranges or in the mountains of southern California. In the Sierra Nevada Mountains the amounts varied from 5 inches, at the 5,000-foot level, to 50 inches, at the 8,000-foot level. There was everywhere a deficiency of the densely packed snow usually to be found in large amounts at that time of the year, and which in past years has served as the principal source of the summer water supply.

Abundant snow fell during March in the elevated portions of the State. The Coast Ranges were snow-covered on several occasions, and in the mountains of southern California about 35 inches of snow fell at the 5,000-foot level. In the Sierra Nevada Mountains the snowfall varied from 10 inches, at the 2,000-foot level, to 130 inches, at the 8,000-foot level. Throughout the Sierras the snowfall was about 25 per cent above the normal for March. However, because of the markedly deficient snowfall during the early part of the present season, the danger of a water shortage next summer was not removed. The amount of snow on the ground at the close of March was everywhere less than normal in depth. Moreover, it was not well packed, and for this reason it was comparatively low in water content. Without causing an appreciable run-off, it showed a tendency to disappear rapidly under the desiccating, northerly winds, which were of frequent occurrence. Streams maintained low stages, and in some places the flow was not much above that usually to be found in midsummer. It now appears certain that there will be a marked shortage of water for hydroelectric power and irrigation purposes in central and northern California during the summer of 1920. Not only will the total run-off from the mountain watersheds be less than normal, but an early delivery into the streams is also to be expected on account of the light density and the lateness of the snowfall. The utmost conservation of water is recommended, particularly in the Sacramento Valley.

A. H. P.

**COMPARATIVE SNOWFALL DATA FOR MARCH.**

(Amount on the Ground.)

	FORDYCE DAM.			SUMMIT.			TAMARACK.		
	1st.	15th.	End of mo.	1st.	15th.	End of mo.	1st.	15th.	End of mo.
1907.....	98	119	154	104	191	282	101	210	348
1908.....	105	87	75	116	130	60	131	126	84
1909.....	151	116	126	201	196	191	256	255	253
1910.....	72	58	71	65	38	68	101	82	90
1911.....	128	154	124	222	276	188	443	440	338
1912.....	45	80	67	26	81	53	44	79	62
1913.....	89	72	82	52	42	50	115	103	107
1914.....	130	113	108	178	140	124	271	255	258
1915.....	133	117	100	182	153	119	185	161	143
1916.....	165	148	133	151	139	120	192	179	160
1917.....	114	114	110	125	143	114	152	153	125
1918.....	127	106	82	102	114	78	116	120	100
1919.....	122	135	103	142	147	109	144	140	102
1920.....	54	58	67	53	65	76	60	56	87

T. means trace.

**Snowfall Data. [In inches.]**

WATERSHED, COUNTY, STATION.	Elevation, feet.	Total snow-fall.	Compr'd with normal.	Am't on ground 15th.	Am't on ground end mo.
<b>Klamath Watershed.</b>					
<i>Siskiyou County.</i>					
Yreka.....	2,625	2	.....	0	0
<i>Trinity County.</i>					
Hayfork.....	2,300	2	.....	2	0
Ruth.....	2,925	24	.....	8	0
Weaverville.....	2,162	4	.....	4	0
<b>Mountain Lakes.</b>					
<i>Inyo County.</i>					
Bishop Creek.....	8,390	45	+13	12	17
Independence.....	3,907	0	.....	0	0
Lone Pine.....	3,728	0	.....	0	0
<i>Lassen County.</i>					
Madeline.....	5,270	.....	.....	.....	.....
Standish.....	4,000	10	.....	0	0
<i>Modoc County.</i>					
Alturas.....	4,400	.....	.....	.....	.....
Cedarville.....	4,675	9	- 5	0	0
Fort Bidwell.....	4,375	18	.....	4	0
<i>Nevada County.</i>					
Grass Valley.....	2,690	14	.....	0	0
Nevada City.....	2,850	11	+ 2	0	0
North Bloomfield.....	3,214	14	- 2	1	0
Truckee.....	5,817	.....	.....	.....	.....
<i>Placer County.</i>					
Tahoe.....	6,230	55	.....	30	28
<b>Sacramento Watershed.</b>					
<i>Butte County.</i>					
De Sabla.....	2,500	10	- 3	3	0
Inskip.....	4,975	86	+38	34	36
West Branch.....	3,216	21	+ 3	4	0
<i>Nevada County.</i>					
Deer Creek.....	3,700	56	+24	2	0
Fordyce Dam.....	6,500	102	+16	58	67
Lake Spaulding.....	4,600	82	+15	12	12
<i>Placer County.</i>					
Blue Canon.....	4,695	84	+30	17	4
Emigrant Gap.....	5,230	115	+61	5	18
Summit.....	7,017	111	+64	65	76
<i>Plumas County.</i>					
Canon Dam.....	4,570	48	.....	23	20
Chester.....	4,550	52	+26	15	13
La Porte.....	5,000	70	+ 9	18	25
Portola.....	4,832	37	.....	13	0
Quincy.....	3,400	26	+ 6	T.	T.
<i>Sierra County.</i>					
Downieville.....	3,150	34	+25	T.	0
Sierraville.....	5,000	32	+16	0	0
<i>Siskiyou County.</i>					
McCloud.....	3,270	6	-10	4	0
Sisson.....	3,555	18	- 4	4	0
<i>Yuba County.</i>					
Camptonville.....	3,500	40	+25	3	0
<b>San Joaquin Watershed.</b>					
<i>Alpine County.</i>					
Markleeville.....	5,525	17	.....	0	0
Tamarack.....	8,000	96	0	56	87
Twin Lakes.....	7,970	130	.....	109	120
<i>Calaveras County.</i>					
Calaveras Ranger Station.....	3,400	35	.....	0	0
<i>Fresno County.</i>					
Camp Seven.....	6,980	80	.....	41	64
Cascada.....	4,900	64	.....	1	0
Hume.....	5,300	.....	.....	.....	.....
Huntington Lake.....	6,950	101	.....	39	57
Stevenson Creek.....	4,250	.....	.....	.....	.....
<i>Kern County.</i>					
Glennville.....	3,300	4	0	0	0
<i>Mariposa County.</i>					
Glacier Point.....	.....	57	.....	50	58
Yosemite.....	3,945	40	+20	T.	T.
<i>Tulare County.</i>					
Hot Springs.....	3,300	1	- 3	0	0
Springville.....	4,000	46	+32	T.	1
<i>Tuolumne County.</i>					
Hetch Hetchy.....	3,665	62	+42	0	0
Lake Eleanor.....	4,700	71	+35	0	4
<b>Mountains of Southern California.</b>					
Cuyamaca.....	4,677	24	+14	0	0
Julian.....	4,222	14	.....	0	0
Mount Wilson.....	5,704	27	.....	0	6
Nellie.....	5,350	22	.....	0	3
Seven Oaks.....	5,000	35	+25	0	0
Squirrel Inn.....	5,280	29	+18	0	3