

CLIMATOLOGICAL DATA.

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GENERAL SUMMARY.

January was a cold and wet month in California. Freezing temperatures were recorded on many mornings in the interior valleys, and temperatures below zero occurred frequently in the Sierra Nevada Mountains and in the northeastern plateau region. The average precipitation for the State was 25 per cent above the normal, and the heaviest for any January in the last five years. Rain fell somewhere in the State on every day of the month. Torrential rains fell in northern California on several days during the latter half of the month. Heavy snow fell in the Sierra Nevada Mountains, and so there was slight loss of moisture due to evaporation or run-off. The snow pack in the Sierras was greater than in the past five years. It was a cloudy and gloomy month, and sunshine was markedly deficient. No extensive damage from destructive winds was reported. Streams in northern and central California maintained high stages throughout the month; flood stages were reached on the 17th-18th-30th-31st, but no serious damage occurred.

Agriculture was more or less dormant. Frequent rainfall and wet soil prevented much field work from being accomplished. For these reasons the acreage seeded to wheat, barley and oats was less than in previous years. Deficient sunshine and persistent low temperatures retarded the germination and growth of winter growing grains; some fields showed injury from too much moisture and inadequate sunshine. The bulk of last year's rice crop remained unharvested, and doubt exists as to the amount that can later be salvaged. Green feed for stock was plentiful, and the condition of livestock was excellent in all portions of the State. Winter vegetables were harvested in large quantities in the warmer portions; much land was prepared for sugar beets in the southern counties, and some seeding was done; in the Imperial Valley cantaloupes were planted and the picking of cotton was completed. Fruit trees were in healthy condition and almonds came into bloom near the close of the month. Severe frost between the 9th and 12th did serious damage to truck crops, and slightly injured lemons, but oranges escaped damage. Navel oranges in southern California matured in large quantities during the month, and were harvested under excellent weather conditions.

A. H. P.

PRESSURE.

The mean sea-level pressure, determined from the records of 10 regular Weather Bureau stations, was 30.12 inches. The highest was 30.53 inches at Independence on the 14th; the lowest was 29.46 inches at Point Reyes on the 18th; the range for the State was 1.12 inches.

TEMPERATURE.

The monthly mean temperature for the State, as shown by the records of 100 stations, was 44.8°, which is 1.0° below the normal. The highest monthly mean was 54.1°, at Los Angeles; and the lowest was 25.2°, at Summit. The highest temperature, 84°, occurred at El Cajon on the 14th; and the lowest, -15°, occurred at Madeline on the 21st. The range for the State was 99°.

PRECIPITATION.

The average precipitation for the State, as shown by the records of 250 stations, was 6.79 inches, or 1.38 inches above the normal. The greatest monthly amount was 27.17 inches, at Inskip; and the least monthly amount was 0.15 inch, at Mecca. The greatest amount in 24 hours was 4.83 inches at Upper Mattole on the 29th.

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.....	90	88	89	88	30
Fresno.....	85	68	76	138	45
Independence.....	68	45	56	182	59
Los Angeles.....	77	69	73	212	67
Mount Tamalpais.....	83	86	86	139	45
Red Bluff.....	78	70	76	132	43
Sacramento.....	78	86	80	140	46
San Diego.....	75	73	76	213	67
San Francisco.....	75	66	72	143	47
San Jose.....	73	73	73	143	47
San Luis Obispo.....	73	58	66	186	59

WIND MOVEMENT.—(Miles.)

Stations.	Total mov. for month.	Ave. hr. velocity.	Maximum velocity.	Direction.	Date.	Prev. dir.
Eureka.....	5,957	8.0	43	n.	9	se.
Fresno.....	4,269	5.9	30	nw.	9	se.
Independence.....	4,743	6.4	28	n.	17	nw.
Los Angeles.....	4,561	6.1	28	s.	17	se.
Mount Tamalpais.....	17,602	23.7	70	n.	10	nw.
Point Reyes.....	17,923	24.1	86	s.	21	se.
Red Bluff.....	6,290	8.5	43	n.	9	nw.
Sacramento.....	6,915	9.3	44	se.	30	se.
San Diego.....	4,149	5.6	38	s.	18	nw.
San Francisco.....	7,369	9.9	51	n.	9	se.
San Jose.....	.....	.....	.....	.....	.....	.....
San Luis Obispo.....	3,667	4.9	24	s.	17	n.

COMPARATIVE DATA FOR JANUARY.

Year	Mean temp.	Ave. precip.	Year	Mean temp.	Ave. precip.	Year	Mean temp.	Ave. precip.	Year	Mean temp.	Ave. precip.
1898.....	41.0	1.75	1904.....	45.8	1.44	1910.....	41.9	6.92	1916.....	39.8	15.61
1899.....	46.4	1.20	1905.....	48.3	3.04	1911.....	45.7	1.87	1917.....	39.3	2.71
1900.....	47.9	3.03	1906.....	47.5	1.55	1912.....	47.7	2.05	1918.....	46.3	1.14
1901.....	43.8	1.68	1907.....	49.9	3.42	1913.....	41.6	1.58	1919.....	46.4	2.69
1902.....	44.5	1.45	1908.....	46.7	.....	1914.....	46.9	7.04	1920.....	48.5	0.85
1903.....	46.6	2.96	1909.....	47.8	2.33	1915.....	44.2	5.00	1921.....	44.8	6.79

Daily evaporation (inches) and wind movement (miles) for January.

Stations.	Data.	Day of Month.																															
		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	Total
Chula Vista**.....	Evaporation.....	.080	.081	.040	.046	.048	.093	.099	.145	.106	.086	.076	.091	.089	.141	.160	.065	.108	.063	.052	.143	.091	.073	.057	.081	.063	.046	.080	.115	.091	.079	.106	2.694
	Wind movement.....	50	50	60	61	55	87	82	77	104	101	73	92	80	67	71	84	138	72	85	84	81	107	45	88	41	41	101	84	69	77	85	2,392
Dodgeland*.....	Evaporation.....	.013	.052	.024	.001	.092	.010	.008	.037	.040	.015	.076	.012	.052	.079	.012	.009	.000	.000	.006	.065	.012	.029	.044	.000	.111	.000	.094	.001	.000	.054	0.888	
	Wind movement.....	89	7	18	30	90	48	15	45	25	175	89	18	41	24	4	24	36	107	58	53	94	86	41	47	50	15	127	67	40	144	18	1,725
Oakdale (near)*.....	Evaporation.....	.049	.021	.034	.023	.053	.000	.034	.018	.028	*	.105	.049	.084	.034	.000	.078	.000	.053	.000	.063	.031	.139	.023	.079	.038	.019	.040	.121	.045	1.261		
	Wind movement.....	100	70	90	95	115	190	70	90	80	70	150	90	100	120	60	70	330	230	260	170	130	50	160	280	150	200	300	140	70	370	60	4,460
Tahoe**.....	Evaporation.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Wind movement.....

* Observations taken at 7 a. m.; ** at 8 a. m. † Included in the next following entry.

Climatological Data for January, 1921.

Table with columns: Stations, Counties, Elevation, Length of record, Temperature (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range, Total), Precipitation (Total, Departure from normal, Greatest in 24 hours, Snowfall, Precipitation of 1/4 inch or more, Clear, Partly cloudy, Cloudy), Number of days, Prevailing direction of wind, Observers.

Daily Temperature for January, 1921.

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 Abbotts, Aguanga, Amago, Angiola, Antelope Valley, Arroyohead Springs, Auberry, Auburn, Avalon, Bardad, 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, Colgate, Crockett, Cuyamaca, Deer Creek, Del Monte, Denair, De Sable, Dinuba, Dobbins (near), Downville, Dudley, Dudleys, East Park, Edison, Electra, Emigrant Gap, Escondido-2, Fairmont, Firebaugh, Fort Bragg, Fort Ross, Friant, Georgetown, Giant Forest, Glacier Point, Glennville, Gray Mountain, Happy Camp, Hayfork, Head Dam, Helen Mine, Hetch Hetchy, Hot Springs, Hulville (near), Huntington Lake, Idria, Jenny Lind, Jolon, Julian, Kennedy Mine, Kentfield, Kernville, King City, Knights Landing, Lake Eleanor, Lakeport, Lake Spaulding, Lake Tahoe, Las Plumas, Lathrop, Le Grand, Livermore, Livingston, Liano, Lompoc, Los Alamos, Los Gatos, Lytle Creek, Madeline, Maricopa, Mariposa, Markleville, Melones, Merced Falls, Mesa Grande, Middlewater, 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, Portola, Priest Valley, Quincy, Reedley, Represa, Rio Vista, Ruth, St. Helena, St. John, San Miguel Island, Santa Ana River, Santa Clara, Santa Maria, Santa Monica, Seven Oaks, Shield's Ranch, Shively, Sierraville, Sonora, Spaulding, Standing, Sterling, Storey, Tamarack, Tejon Rancho, Three Rivers, Trona, Turlock, Tustin (near), Twin Lakes, Upper Valley, Walnut Creek, Warner Springs, Wasco, Wasioja, West Branch, West Point, Westwood, Wrights, Yorba Linda.

* Data obtained from 3-inch rain gage.

SNOWFALL IN THE MOUNTAINS.

Prior to January 1, 1921, snowfall had been heavy in the Sierra Nevada Mountains, moderately heavy in the northern portion of the Coast Range, and light in the elevated portions of southern California.

Heavy snow fell throughout the Sierra Nevada during January, and most of it fell during the latter half of the month. As the month was colder than normal, and temperatures below freezing prevailed in the mountains, there was little melting, and there was slight loss of moisture through evaporation or run-off. The greatest snowfall reported was that for Twin Lakes, Alpine County, altitude 7,970 feet, where 266 inches fell. A total of 134 inches fell during four days, January 18-21, inclusive. If the snow on the ground at this station was typical of that of the higher Sierras generally, there will be an abundance of water available next summer, for the snow on the ground was 144 inches deep at the close of the month. Moreover, the bottom snow was very compact and had almost the density of ice for the first two feet. There was more snow on the ground in the Sierras at the close of January than on any other similar date in the last five years. The seasonal precipitation to February 1 was well above normal in northern California and throughout the Sierra Nevada.

Moderately heavy snow fell in the Siskiyou Mountains and in the Coast Range, particularly in the northern portion. Much of this remained on the ground at the close of the month. Snow fell at low levels on several occasions, and there was light snowfall at certain valley stations where snowfall is a rare phenomenon.

In the elevated portions of southern California the snowfall was deficient everywhere except in the San Bernardino Mountains, where it was moderately heavy. The seasonal precipitation to the close of January was far below normal throughout most of southern California, in marked contrast to the condition which prevailed there a year previously.

There is every reason to feel optimistic concerning the water supply which will be available for use in northern and central California during the summer of 1921. At the close of January the snow pack in the Sierras was the best in five years, both in volume and in density. While the conditions in southern California are not so favorable, there remains ample time before the close of the present wet season for the deficit to be overcome.

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COMPARATIVE SNOWFALL DATA FOR JANUARY.

(Amount on the Ground.)

	FORDYCE DAM.			SUMMIT.			TAMARACK.		
	1st.	15th.	End of mo.	1st.	15th.	End of mo.	1st.	15th.	End of mo.
1907.....	58	106	94	45	142	148	125	175	180
1908.....	69	63	68	87	72	87	75	94	104
1909.....	25	68	107	28	90	172	35	150	190
1910.....	60	78	67	54	87	68	72	96	106
1911.....	0	99	124	4	136	218	24	130	810
1912.....	49	39	59	60	46	41	44	50	55
1913.....	28	73	78	17	79	88	40	98	118
1914.....	63	95	107	80	132	192	116	178	274
1915.....	30	59	67	24	56	80	26	50	116
1916.....	54	140	161	44	178	215	62	158	203
1917.....	37	68	73	79	74	85	87	82	65
1918.....	0	15	8	0	26	2	8	25	20
1919.....	22	24	44	16	10	42	30	22	35
1920.....	34	33	32	37	43	32	28	28	20
1921.....	54	55	112	66	66	130			

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.
Klamath Watershed.					
<i>Siskiyou County.</i>					
Yreka.....	2,625	7		0	2
<i>Trinity County.</i>					
Hayfork.....	2,300	19		0	2
Ruth.....	2,925	14		0	0
Weaverville.....	2,162	7		T.	T.
Mountain Lakes.					
<i>Inyo County.</i>					
Bishop Creek.....	8,390	73	+21	1	30
Independence.....	3,907	5		0	0
<i>Lassen County.</i>					
Madeline.....	5,270	24	+2	8	13
Standish.....	4,000	6		0	0
<i>Modoc County.</i>					
Alturas.....	4,400				
Cedarville.....	4,675	12	-3	1	1
Fort Bidwell.....	4,375	16		1	3
<i>Nevada County.</i>					
Grass Valley.....	2,690	5		0	0
Nevada City.....	2,850	10	+1	0	0
North Bloomfield.....	3,214	14	-1	0	T.
<i>Placer County.</i>					
Tahoe.....	6,230	55	-40	27	64
<i>Mono County.</i>					
Shields Ranch.....	3,500	28		0	4
Sacramento Watershed.					
<i>Alpine County.</i>					
Markleeville.....	5,525	29		0	11
Tamarack.....	8,000				
Twin Lakes.....	7,970	266		96	144
<i>Butte County.</i>					
De Saba.....	2,500	21	+3	0	6
Inskip.....	4,975	128	+50	37	117
West Branch.....	3,216	40	-6	0	23
<i>Nevada County.</i>					
Deer Creek.....	3,700	39	-15	T.	24
Fordyce Dam.....	6,500	109	+11	55	112
Lake Spaulding.....	4,600	110	+52	27	79
<i>Placer County.</i>					
Blue Canon.....	4,695	88	+34	8	62
Emigrant Gap.....	5,230	98	+44	18	78
Summit.....	7,017	107	+28	66	130
<i>Plumas County.</i>					
Canon Dam.....	4,570	66		16	67
Chester.....	4,550	96	+22	21	64
La Porte.....	5,000	70	+7	29	82
Portola.....	4,832	39		1	22
Quincy.....	3,400	30	+1	T.	9
<i>Sierra County.</i>					
Downieville.....	3,150	20	-15	0	1
Sierraville.....	5,000	29	-21	0	20
<i>Siskiyou County.</i>					
McCloud.....	3,270	78	+16	10	50
Sisson.....	3,555	85	+48	0	48
<i>Yuba County.</i>					
Camptonville.....	3,500	32	0	0	6
San Joaquin Watershed.					
<i>Calaveras County.</i>					
Calaveras Ranger Station.....	3,400				
<i>Fresno County.</i>					
Camp Seven.....	6,980	88		21	62
Cascada.....	4,900	33		0	6
Hume.....	5,300				
Huntington Lake.....	6,950	73		25	66
<i>Kern County.</i>					
Glennville.....	3,300	10	+6	0	0
<i>Mariposa County.</i>					
Dudley's.....	3,000	10		0	0
Glacier Point.....	7,000	69		16	79
Yosemite.....	3,945	31	-8	4	21
<i>Tulare County.</i>					
Hot Springs.....	3,300	0	-2	0	0
Springville.....	4,000	26	+11	0	2
<i>Tuolumne County.</i>					
Hetch Hetchy.....	3,665	23	+12	0	5
Lake Eleanor.....	4,700	58	+7	T.	28
Mountains of Southern California.					
<i>Cuyamaca</i>					
Julian.....	4,677	6	-2	0	0
Mount Wilson.....	4,222			T.	5
Nellie.....	5,704	16			
Seven Oaks.....	5,350	10		0	0
Squirrel Inn.....	5,000	11	-3	0	0
	5,280	56	+47	0	19