

Climatology of the United States

No. 20

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SAN RAFAEL CIVIC CENTER, CA

1971-2000

COOP ID: 047880

Climate Division: CA 1

NWS Call Sign:

Elevation: 120 Feet Lat: 38°00N Lon: 122°32W

Temperature (° F)																					
Mean (1)				Extremes										Degree Days (1) Base Temp 65		Mean Number of Days (3)					
Month	Daily Max	Daily Min	Mean	Highest Daily(2)	Year	Day	Highest Month(1) Mean	Year	Lowest Daily(2)	Year	Day	Lowest Month(1) Mean	Year	Heating	Cooling	Max >= 100	Max >= 90	Max >= 50	Max <= 32	Min <= 32	Min <= 0
Jan	56.2	41.3	48.8	82	1962	9	52.6	1978	26	1949	5	44.1	1985	504	0	.0	.0	27.7	.0	.9	.0
Feb	61.0	43.8	52.4	80	1964	19	55.5	1988	26+	1989	7	47.5	1989	353	0	.0	.0	27.5	.0	.6	.0
Mar	64.2	45.2	54.7	88	1952	25	58.8	1972	24+	1977	14	50.5	1999	319	1	.0	.0	30.8	.0	.1	.0
Apr	68.5	46.8	57.7	92	1996	30	61.4	1992	29	1976	1	52.9	1975	226	5	.0	.2	29.9	.0	.1	.0
May	72.5	49.6	61.1	100+	1976	13	66.8	1997	31+	1976	22	56.8	1999	157	35	.1	1.5	31.0	.0	.4	.0
Jun	77.6	53.0	65.3	110+	1961	15	71.8	1981	40+	1993	5	61.7	1982	65	73	.6	3.4	30.0	.0	.0	.0
Jul	80.9	54.5	67.7	109	1972	13	71.4	1988	34	1975	2	64.1	1994	20	104	.6	4.0	31.0	.0	.0	.0
Aug	81.2	54.8	68.0	105	1998	3	70.8	1998	41	1996	6	65.3	1973	9	102	.2	4.2	31.0	.0	.0	.0
Sep	79.7	53.9	66.8	109	1958	6	71.9	1984	40+	1985	2	61.8	1986	46	99	.4	4.8	30.0	.0	.0	.0
Oct	74.4	50.6	62.5	106	1980	2	65.4	1983	34	1974	6	58.8	1975	108	30	.2	1.4	31.0	.0	.0	.0
Nov	63.6	45.6	54.6	88	1980	4	58.7	1980	30	1974	30	49.0	1994	314	2	.0	.0	29.8	.0	.4	.0
Dec	56.5	41.3	48.9	79	1967	26	52.9	1981	20	1990	22	44.0	1985	500	0	.0	.0	26.8	@	1.7	.0
Ann	69.7	48.4	59.0	110+	Jun 1961	15	71.9	Sep 1984	20	Dec 1990	22	44.0	Dec 1985	2621	451	2.1	19.5	356.5	@	4.2	.0

+ Also occurred on an earlier date(s)

@ Denotes mean number of days greater than 0 but less than .05

Complete documentation available from: www.ncdc.noaa.gov/oa/climate/normal/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1948-2001

(3) Derived from 1971-2000 serially complete daily data

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Elevation: 120 Feet Lat: 38°00N

Lon: 122°32W

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	7.38	6.95	7.47	1967	21	24.11	1995	.35	1976	11.7	8.6	4.6	2.3	.63	1.14	2.12	3.14	4.26	5.54	7.07	8.98	11.62	16.04	20.38
Feb	7.14	5.61	5.24	1950	4	22.69	1998	.16	1971	11.0	7.7	4.5	2.4	.35	.73	1.56	2.51	3.62	4.92	6.52	8.59	11.51	16.51	21.51
Mar	4.89	3.60	3.99	1953	19	14.17	1983	.00	1988	10.7	7.8	3.7	1.5	.27	.73	1.48	2.20	2.97	3.82	4.81	6.03	7.70	10.45	13.12
Apr	1.75	1.45	3.70	1953	27	4.42	1982	.12	1990	5.9	3.6	1.2	.4	.18	.31	.55	.79	1.05	1.35	1.70	2.14	2.73	3.73	4.69
May	.70	.14	2.00	1957	18	4.57	1998	.00+	1992	2.9	1.5	.4	.1	.00	.00	.00	.03	.11	.25	.44	.73	1.17	2.01	2.89
Jun	.12	.01	1.97	1967	2	.79	1995	.00+	1998	.9	.4	@	.0	.00	.00	.00	.00	.00	.00	.04	.11	.21	.39	.57
Jul	.06	.00	1.36	1974	8	1.56	1974	.00+	2000	.2	.1	@	@	**	**	**	**	**	**	**	**	**	**	**
Aug	.08	.00	.75	1965	11	1.07	1997	.00+	2000	.5	.3	.1	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.16	.54
Sep	.34	.07	4.39	1959	18	2.68	1977	.00+	1996	1.8	.8	.2	@	.00	.00	.00	.00	.00	.04	.14	.30	.56	1.06	1.60
Oct	1.65	1.03	3.43	1969	15	6.98	1972	.00+	1999	3.9	2.2	1.3	.5	.00	.02	.16	.36	.61	.94	1.36	1.92	2.75	4.21	5.72
Nov	4.86	3.39	6.50	1977	21	18.69	1973	.08	1995	9.1	5.8	3.2	1.6	.12	.29	.75	1.34	2.07	2.98	4.15	5.70	7.95	11.92	15.98
Dec	5.32	4.23	8.74	1995	11	15.40	1995	.00	1989	9.9	6.3	3.3	1.8	.25	.72	1.52	2.30	3.13	4.07	5.18	6.55	8.43	11.55	14.59
Ann	34.29	32.70	8.74	Dec 1995	11	24.11	Jan 1995	.00+	Aug 2000	68.5	45.1	22.5	10.6	13.99	17.13	21.57	25.22	28.67	32.16	35.93	40.28	45.78	54.20	61.85

+ Also occurred on an earlier date(s)

Denotes amounts of a trace

@ Denotes mean number of days greater than 0 but less than .05

** Statistics not computed because less than six years out of thirty had measurable precipitation

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1948-2001

(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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Climate Division: CA 1

NWS Call Sign:

Elevation: 120 Feet

Lat: 38°00N

Lon: 122°32W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										Snow Fall >= Thresholds					Snow Depth >= Thresholds			
Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Feb	#	.0	0	0	#	1976	5	#	1976	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Mar	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Apr	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	#	.0	N/A	N/A	#	Feb 1976	5	#	Feb 1976	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0

+ Also occurred on an earlier date(s) #Denotes trace amounts

@ Denotes mean number of days greater than 0 but less than .05

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

(1) Derived from Snow Climatology and 1971-2000 daily data

(2) Derived from 1971-2000 daily data

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Climate Division: CA 1

NWS Call Sign:

Elevation: 120 Feet

Lat: 38°00N

Lon: 122°32W

Freeze Data									
Spring Freeze Dates (Month/Day)									
Temp (F)	Probability of later date in spring (thru Jul 31) than indicated(*)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	5/16	4/26	4/11	3/30	3/18	3/06	2/22	2/07	1/18
32	4/15	3/20	2/28	2/11	1/24	1/05	12/10	0/00	0/00
28	3/21	1/21	11/05	0/00	0/00	0/00	0/00	0/00	0/00
24	1/24	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
20	12/29	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
16	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
Fall Freeze Dates (Month/Day)									
Temp (F)	Probability of earlier date in fall (beginning Aug 1) than indicated(*)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	11/01	11/13	11/21	11/28	12/05	12/12	12/19	12/28	1/08
32	11/19	12/03	12/14	12/23	1/02	1/12	1/27	0/00	0/00
28	12/08	1/24	3/28	0/00	0/00	0/00	0/00	0/00	0/00
24	12/31	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
20	3/12	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
16	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	331	307	290	275	261	248	233	216	192
32	>365	>365	>365	>365	>365	343	307	277	242
28	>365	>365	>365	>365	>365	>365	>365	>365	365
24	>365	>365	>365	>365	>365	>365	>365	>365	>365
20	>365	>365	>365	>365	>365	>365	>365	>365	>365
16	>365	>365	>365	>365	>365	>365	>365	>365	>365

* Probability of observing a temperature as cold, or colder, later in the spring or earlier in the fall than the indicated date.

0/00 Indicates that the probability of occurrence of threshold temperature is less than the indicated probability.

Derived from 1971-2000 serially complete daily data

Complete documentation available from:

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Degree Days to Selected Base Temperatures (°F)													
Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	504	353	319	226	157	65	20	9	46	108	314	500	2621
60	349	218	179	103	69	15	1	0	9	29	180	350	1502
57	261	144	112	54	33	5	0	0	2	9	116	265	1001
55	204	103	78	29	18	2	0	0	0	3	82	213	732
50	91	32	19	4	3	0	0	0	0	0	27	110	286
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	519	571	704	769	901	998	1107	1116	1044	946	677	523	9875
55	10	30	69	109	206	310	394	403	354	236	70	23	2214
57	5	15	42	73	159	253	332	341	296	180	44	13	1753
60	0	5	16	33	102	173	240	248	213	107	18	5	1160
65	0	0	1	5	35	73	104	102	99	30	2	0	451
70	0	0	0	0	8	17	23	15	30	4	0	0	97

Growing Degree Units (2)																								
Base	Growing Degree Units (Monthly)												Growing Degree Units (Accumulated Monthly)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
40	288	371	463	541	662	772	874	879	822	717	453	296	288	659	1122	1663	2325	3097	3971	4850	5672	6389	6842	7138
45	146	233	309	391	509	622	719	724	672	562	306	157	146	379	688	1079	1588	2210	2929	3653	4325	4887	5193	5350
50	49	104	164	246	355	472	564	569	522	407	167	55	49	153	317	563	918	1390	1954	2523	3045	3452	3619	3674
55	4	23	55	119	209	322	409	414	372	253	66	6	4	27	82	201	410	732	1141	1555	1927	2180	2246	2252
60	0	0	5	35	93	180	254	259	225	118	14	0	0	0	5	40	133	313	567	826	1051	1169	1183	1183
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	119	176	234	298	378	463	543	553	505	421	228	124	119	295	529	827	1205	1668	2211	2764	3269	3690	3918	4042

(1) Derived from the 1971-2000 Monthly Normals

(2) Derived from 1971-2000 serially complete daily data

Note: For corn, temperatures below 50 are set to 50, and temperatures above 86 are set to 86

Complete documentation available from:

www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

Notes

- a. The monthly means are simple arithmetic averages computed by summing the monthly values for the period 1971-2000 and dividing by thirty. Prior to averaging, the data are adjusted if necessary to compensate for data quality issues, station moves or changes in station reporting practices. Missing months are replaced by estimates based on neighboring stations.
- b. The median is defined as the middle value in an ordered set of values. The median is being provided for the snow and precipitation elements because the mean can be a misleading value for precipitation normals.
- c. Only observed validated values were used to select the extreme daily values.
- d. Extreme monthly temperature/precipitation means were selected from the monthly normals data.
Monthly snow extremes were calculated from daily values quality controlled to be consistent with the Snow Climatology.
- e. Degree Days were derived using the same techniques as the 1971-2000 normals.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/usnormals.html
- f. Mean "number of days statistics" for temperature and precipitation were calculated from a serially complete daily data set.
Documentation of the serially complete data set is available from the link below:
- g. Snowfall and snow depth statistics were derived from the Snow Climatology.
Documentation for the Snow Climatology project is available from the link under references.

Data Sources for Tables

Several different data sources were used to create the Clim20 climate summaries. In some cases the daily extremes appear inconsistent with the monthly extremes and or the mean number of days statistics. For example, a high daily extreme value may not be reflected in the highest monthly value or the mean number of days threshold that is less than and equal to the extreme value. Some of these difference are caused by different periods of record. Daily extremes are derived from the station's entire period of record while the serial data and normals data were for the 1971-2000 period. Therefore extremes observed before 1971 would not be included in the 1971-2000 normals or the 1971-2000 serial daily data set. Inconsistencies can also occur when monthly values are adjusted to reflect the current observing conditions or were replaced during the 1971-2000 Monthly Normals processing and are not reconciled with the Summary of the Day data.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html
Snow Climatology Project Description, www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html
Eischeid, J. K., P. Pasteris, H. F. Diaz, M. Plantico, and N. Lott, 2000: Creating a serially complete, national daily time series of temperature and precipitation for the Western United States. J. Appl. Meteorol., 39, 1580-1591,
www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf