U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

Climatography of the United States No. 20 1971-2000

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

Station: HALF MOON BAY, CA **COOP ID: 043714**

Climate Division: CA 4 **NWS Call Sign:** **Elevation: 16 Feet** **Lat: 37˚28N** **Lon: 122˚27W**

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	58.0	43.4	50.7	74	1962	10	54.5	1986	27	1949	11	46.4	1972	443	0	.0	.0	30.6	.0	.4	.0
Feb	58.8	44.3	51.6	78	1986	27	56.3	1992	28	1989	5	46.1	1989	376	0	.0	.0	27.7	@	.3	.0
Mar	59.1	44.6	51.9	83	2000	31	56.5	1992	30	1991	16	48.2	1991	391	0	.0	.0	31.0	.0	1.1	.0
Apr	60.7	44.8	52.8	87	1989	6	57.8	1992	32	1976	1	48.5	1975	368	0	.0	.0	30.0	.0	@	.0
May	61.3	47.5	54.4	90+	1975	29	58.2	1997	35+	1991	19	50.0	1991	328	0	.0	.0	31.0	.0	.0	.0
Jun	63.4	49.9	56.7	94	2000	14	59.5	1992	37	1991	1	53.3	1991	250	0	.0	@	30.0	.0	.0	.0
Jul	64.6	52.0	58.3	81+	1991	2	61.9	1992	40+	1993	8	53.7	1971	210	2	.0	.0	31.0	.0	.0	.0
Aug	65.6	53.2	59.4	94	1968	29	62.6+	1997	41+	1981	27	56.6	1975	177	3	.0	.0	31.0	.0	.0	.0
Sep	66.5	52.0	59.3	94	1983	11	63.4	1983	38	1950	30	56.2	1975	176	4	.0	.1	30.0	.0	.0	.0
Oct	65.0	48.8	56.9	94	1985	4	60.4	1983	35+	1971	2	52.0	1971	254	2	.0	.1	31.0	.0	.0	.0
Nov	61.6	45.7	53.7	87	1966	1	59.1	1997	30+	1955	21	49.6	1994	341	0	.0	.0	30.0	.0	.0	.0
Dec	58.2	43.4	50.8	79	1958	4	54.3	2000	18	1983	3	45.8	1971	440	0	.0	.0	30.2	.0	.7	.0
Ann	61.9	47.5	54.7	94+	Jun 2000	14	63.4	Sep 1983	18	Dec 1983	3	45.8	Dec 1971	3754	11	.0	.2	363.5	@	2.5	.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/normals/usnormals.html

(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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Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	5.55	5.04	5.33	1982	4	12.13	1998	.26	1984
Feb	4.91	4.54	2.92	1998	3	15.70	1998	.26	1995
Mar	4.36	3.83	2.80	1982	31	13.05	1983	.12	1988
Apr	1.77	1.76	2.31	1953	27	5.02	1982	.13	1985
May	.79	.39	1.28+	1998	28	4.01	1998	.00+	1982
Jun	.26	.23	1.12	1967	2	.84	1992	.00+	1981
Jul	.16	.11	.60	1974	8	1.01	1974	.00+	1987
Aug	.27	.16	.72	1997	20	1.56	1976	.00+	1978
Sep	.44	.23	2.56	1959	19	2.20	1986	.00+	1987
Oct	1.82	1.24	4.90	1962	13	6.90	1972	.05	1978
Nov	3.53	2.83	2.83	1982	18	9.86	1984	.30	1995
Dec	4.10	3.62	2.80	1955	23	9.46	1983	.03	1989
Ann	27.96	25.53	5.33	Jan 1982	4	15.70	Feb 1998	.00+	Sep 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.0	8.4	3.6	1.7
Feb	11.5	7.7	3.2	1.4
Mar	12.6	8.0	3.1	1.0
Apr	8.0	3.8	1.0	.3
May	5.6	1.9	.4	.1
Jun	3.5	.8	@	.0
Jul	4.2	.2	@	.0
Aug	4.9	.6	.1	.0
Sep	4.7	1.0	.2	.1
Oct	7.3	2.8	1.2	.5
Nov	10.0	5.6	2.3	1.0
Dec	10.3	6.9	2.9	1.0
Ann	94.6	47.7	18.0	7.1

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.61	1.02	1.79	2.57	3.40	4.33	5.42	6.78	8.63	11.69	14.67
Feb	.43	.77	1.42	2.10	2.85	3.70	4.71	5.99	7.74	10.66	13.54
Mar	.42	.73	1.32	1.93	2.59	3.33	4.21	5.31	6.82	9.33	11.79
Apr	.18	.31	.55	.80	1.07	1.36	1.72	2.15	2.75	3.75	4.72
May	.00	.01	.08	.18	.31	.46	.66	.93	1.32	2.00	2.70
Jun	.00	.00	.04	.08	.13	.19	.25	.33	.44	.61	.79
Jul	.00	.00	.00	.03	.06	.10	.15	.20	.27	.39	.51
Aug	.00	.01	.05	.09	.13	.18	.24	.32	.44	.63	.82
Sep	.00	.00	.03	.10	.18	.27	.39	.54	.75	1.12	1.50
Oct	.07	.15	.35	.58	.86	1.20	1.62	2.17	2.96	4.32	5.69
Nov	.30	.54	1.01	1.50	2.04	2.65	3.38	4.30	5.56	7.67	9.75
Dec	.48	.80	1.37	1.95	2.56	3.23	4.03	5.01	6.34	8.54	10.68
Ann	14.23	16.56	19.72	22.23	24.55	26.86	29.31	32.09	35.56	40.76	45.40

\+ 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

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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

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	#	1972	12	#	1972	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

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

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

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	4/28	4/11	3/30	3/20	3/10	3/01	2/18	2/05	1/16
32	3/07	2/12	1/24	1/01	0/00	0/00	0/00	0/00	0/00
28	2/02	12/19	0/00	0/00	0/00	0/00	0/00	0/00	0/00
24	12/23	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
20	0/00	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	11/03	11/16	11/25	12/02	12/10	12/17	12/25	1/04	1/19
32	12/09	12/27	1/12	1/30	0/00	0/00	0/00	0/00	0/00
28	12/23	1/28	0/00	0/00	0/00	0/00	0/00	0/00	0/00
24	3/09	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
20	0/00	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	>365	321	301	286	273	261	248	233	213
32	>365	>365	>365	>365	>365	>365	>365	361	306
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

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Degree Days to Selected Base Temperatures (˚F)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	443	376	391	368	328	250	210	177	176	254	341	440	3754
60	289	239	257	222	180	112	81	57	61	120	199	290	2107
57	204	163	175	143	105	54	33	17	21	64	125	205	1309
55	151	118	128	100	68	26	14	6	8	36	87	156	898
50	57	41	46	27	12	1	0	0	0	5	23	65	277
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	580	548	616	622	695	740	815	849	818	771	649	583	8286
55	17	23	31	32	49	77	116	141	136	94	47	25	788
57	8	11	16	15	24	44	73	90	89	60	25	13	468
60	1	3	5	4	7	12	28	37	39	23	8	5	172
65	0	0	0	0	0	0	2	3	4	2	0	0	11
70	0	0	0	0	0	0	0	0	0	0	0	0	0

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	348	358	375	392	455	502	575	614	587	541	429	353	348	706	1081	1473	1928	2430	3005	3619	4206	4747	5176	5529
45	199	214	225	242	300	352	420	459	437	386	279	205	199	413	638	880	1180	1532	1952	2411	2848	3234	3513	3718
50	72	87	92	99	147	202	265	304	287	232	137	79	72	159	251	350	497	699	964	1268	1555	1787	1924	2003
55	11	25	19	24	32	68	112	150	141	93	37	19	11	36	55	79	111	179	291	441	582	675	712	731
60	0	0	0	0	0	4	11	30	29	25	3	0	0	0	0	0	0	4	15	45	74	99	102	102
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	150	156	164	175	190	224	268	310	302	270	201	156	150	306	470	645	835	1059	1327	1637	1939	2209	2410	2566

(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:
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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.
Compete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normals/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 are 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.

a. Temperature/ Precipitation Tables
   1. 1971-2000 Monthly Normals
   2. Cooperative Summary of the Day
   3. National Weather Service station records
   4. 1971-2000 serially complete daily data

b. Degree Day Table
   1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals
   2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data

c. Snow Tables
   1. Snow Climatology
   2. Cooperative Summary of the Day

d. Freeze Data Table
   1971-2000 serially complete daily data

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normals.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normals/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