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: SAN FRANCISCO INTL AP, CA **COOP ID: 047769**

Climate Division: CA 4 **NWS Call Sign: SFO** **Elevation: 8 Feet** **Lat: 37˚37N** **Lon: 122˚24W**

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	55.9	42.9	49.4	71+	1976	30	53.2	1986	26	1949	5	45.2	1982	482	0	.0	.0	28.8	.0	.4	.0
Feb	59.3	45.5	52.4	77	1986	26	55.8	1986	30+	1950	1	48.0	1989	354	0	.0	.0	27.7	.0	.1	.0
Mar	61.2	46.8	54.0	85	1952	25	57.3	1978	31	1966	3	50.8	1985	339	0	.0	.0	30.9	.0	.0	.0
Apr	64.3	48.1	56.2	92+	1989	8	60.1	1989	36	1955	27	50.8	1975	266	4	.0	.2	30.0	.0	.0	.0
May	66.8	50.5	58.7	97	1984	27	64.4	1997	39	1950	3	55.5	1999	201	10	.0	.4	31.0	.0	.0	.0
Jun	69.9	52.9	61.4	106	1961	14	65.0	1981	43	1954	1	58.5	1991	120	21	@	1.0	30.0	.0	.0	.0
Jul	71.1	54.5	62.8	105	1988	17	64.9	1992	44	1951	29	60.5	1971	77	23	@	.6	31.0	.0	.0	.0
Aug	71.7	55.5	63.6	100	1993	1	66.9	1997	45+	1955	30	60.3	1986	56	26	.0	.3	31.0	.0	.0	.0
Sep	72.7	55.1	63.9	103	1971	14	69.0	1984	41	1950	30	60.7	1989	62	38	.1	1.1	30.0	.0	.0	.0
Oct	69.7	52.4	61.0	99	1987	5	64.7	1992	37	1949	20	56.8	1971	131	20	.0	.4	31.0	.0	.0	.0
Nov	62.0	47.5	54.7	85+	1967	2	58.4	1995	31	1954	30	49.9	1994	298	0	.0	.0	30.0	.0	.0	.0
Dec	56.1	43.0	49.5	75+	1958	12	53.9	1996	24	1972	9	45.0	1972	476	0	.0	.0	29.2	.0	.8	.0
Ann	65.1	49.6	57.3	106	Jun 1961	14	69.0	Sep 1984	24	Dec 1972	9	45.0	Dec 1972	2862	142	.1	4.0	360.6	.0	1.3	.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	4.45	3.57	5.59	1982	4	11.26	1993	.24	1991
Feb	4.01	3.64	2.92	1998	2	13.64	1998	.26	1971
Mar	3.26	2.77	1.99	1978	8	8.75	1995	.05	1988
Apr	1.18	.84	2.30	1958	2	4.50	1978	.00	1977
May	.38	.14	1.53	1957	20	2.37	1998	.00+	1992
Jun	.11	.03	.81	1967	2	.60+	1995	.00+	1996
Jul	.03	.00	.35	1977	2	.35	1977	.00+	2000
Aug	.07	.00	.56	1997	19	.66	1976	.00+	1998
Sep	.20	.08	2.29	1959	18	1.24	1989	.00+	1997
Oct	1.04	.69	2.62	1962	13	5.24	1972	.00	1978
Nov	2.49	1.66	2.39	1973	30	7.94	1973	.02	1995
Dec	2.89	2.60	3.16	1995	11	6.97	1996	.01	1989
Ann	20.11	18.83	5.59	Jan 1982	4	13.64	Feb 1998	.00+	Jul 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.0	7.6	3.0	1.4
Feb	10.3	7.2	2.9	1.1
Mar	10.9	6.6	2.5	.6
Apr	5.8	2.9	.6	.1
May	3.1	1.1	.1	@
Jun	1.1	.4	@	.0
Jul	.3	.1	.0	.0
Aug	.6	.3	@	.0
Sep	1.6	.7	.1	.0
Oct	3.6	1.8	.7	.3
Nov	7.9	4.6	1.7	.5
Dec	9.0	5.5	2.0	.6
Ann	65.2	38.8	13.6	4.6

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	.44	.76	1.37	1.99	2.66	3.42	4.32	5.43	6.96	9.51	11.99
Feb	.35	.63	1.17	1.72	2.33	3.02	3.85	4.88	6.31	8.69	11.02
Mar	.24	.45	.87	1.32	1.82	2.40	3.09	3.96	5.17	7.20	9.21
Apr	.04	.12	.28	.45	.64	.85	1.11	1.44	1.89	2.64	3.39
May	.00	.00	.00	.03	.08	.16	.27	.42	.65	1.06	1.48
Jun	.00	.00	.00	.00	.00	.03	.06	.11	.19	.32	.45
Jul	.00	.00	.00	.00	.00	.00	.00	.00	.03	.11	.20
Aug	.00	.00	.00	.00	.00	.00	.00	.00	.06	.23	.44
Sep	.00	.00	.00	.00	.03	.09	.15	.24	.36	.57	.78
Oct	.01	.04	.14	.27	.43	.63	.89	1.23	1.72	2.58	3.46
Nov	.06	.15	.39	.69	1.06	1.53	2.13	2.92	4.08	6.11	8.18
Dec	.24	.43	.81	1.21	1.65	2.16	2.76	3.52	4.57	6.32	8.05
Ann	9.25	11.01	13.45	15.43	17.27	19.11	21.09	23.34	26.18	30.47	34.34

\+ 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	#	1989	8	#+	1989	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Feb	#	.0	0	0	#	1996	24	#+	1996	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	#	1988	27	#+	1988	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	#	.0	N/A	N/A	#+	Feb 1996	24	#+	Feb 1996	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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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	2/24	2/13	2/05	1/29	1/22	1/16	1/08	12/30	12/12
32	1/23	1/12	12/30	0/00	0/00	0/00	0/00	0/00	0/00
28	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
24	0/00	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	11/24	12/05	12/12	12/19	12/26	1/02	1/10	1/21	0/00
32	12/21	1/06	1/27	0/00	0/00	0/00	0/00	0/00	0/00
28	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
24	0/00	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	>365	363	343	333	324	316	306	294
32	>365	>365	>365	>365	>365	>365	>365	>365	351
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	482	354	339	266	201	120	77	56	62	131	298	476	2862
60	328	216	196	135	91	29	10	10	20	41	171	326	1573
57	241	140	122	78	46	7	0	1	6	13	105	241	1000
55	186	98	84	48	25	2	0	0	3	5	71	187	709
50	82	27	20	8	3	0	0	0	0	0	18	85	243
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	544	574	685	730	834	892	967	992	968	910	690	549	9335
55	6	18	36	70	128	202	254	279	278	199	52	7	1529
57	2	7	16	40	82	145	192	217	218	142	28	2	1091
60	0	1	4	17	40	74	104	126	132	75	8	0	581
65	0	0	0	4	10	21	23	26	38	20	0	0	142
70	0	0	0	1	2	6	5	3	10	4	0	0	31

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	305	373	443	501	595	662	728	755	737	671	460	316	305	678	1121	1622	2217	2879	3607	4362	5099	5770	6230	6546
45	157	230	289	351	440	512	573	600	587	516	310	165	157	387	676	1027	1467	1979	2552	3152	3739	4255	4565	4730
50	55	99	146	203	285	362	418	445	437	361	165	53	55	154	300	503	788	1150	1568	2013	2450	2811	2976	3029
55	3	21	40	78	135	212	263	290	287	209	55	7	3	24	64	142	277	489	752	1042	1329	1538	1593	1600
60	0	0	0	21	46	79	113	137	141	83	7	0	0	0	0	21	67	146	259	396	537	620	627	627
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	111	152	191	237	295	356	415	444	432	366	210	117	111	263	454	691	986	1342	1757	2201	2633	2999	3209	3326

(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