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: TWIN LAKES, CA **COOP ID: 049105**

Climate Division: CA 2 **NWS Call Sign:** **Elevation: 8,000 Feet** **Lat: 38˚43N** **Lon: 120˚02W**

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	38.2	17.8	28.0	68	1977	18	34.5+	1986	-22	1952	1	21.4	1979	1148	0	.0	.0	4.1	8.7	30.6	.9
Feb	38.9	17.3	28.1	76	1980	11	34.1	1995	-24	1949	12	22.6	1990	1034	0	.0	.0	3.9	6.8	27.4	.9
Mar	41.4	19.8	30.6	70+	2000	14	37.5	1994	-15+	1956	6	23.2	1991	1051	0	.0	.0	6.5	4.2	30.0	.5
Apr	46.2	23.5	34.9	72+	1999	20	42.2	1992	-10	1975	7	23.7	1975	905	0	.0	.0	13.4	1.7	26.6	.1
May	54.3	30.2	42.3	79+	1999	26	49.8	1992	2	1974	18	33.3	1977	705	0	.0	@	22.6	.6	19.5	.0
Jun	62.6	37.8	50.2	83	1985	17	57.5	1985	10	1955	1	44.3	1980	446	2	.0	.1	28.0	.0	6.5	.0
Jul	70.7	43.7	57.2	95+	1998	20	61.7	1994	19	1997	1	53.1	1993	250	9	.0	.4	30.9	.0	1.5	.0
Aug	70.3	44.3	57.3	89	1981	6	62.5	1981	23	1997	2	50.3	1976	251	12	.0	.3	30.9	.0	1.5	.0
Sep	64.6	39.0	51.8	84	1950	1	55.8	1979	10	1948	26	44.2	1986	398	2	.0	.0	28.1	@	4.2	.0
Oct	55.3	31.2	43.3	78+	1980	2	51.7	1988	6+	1956	29	37.0	1984	675	0	.0	.0	23.1	.6	16.8	.0
Nov	43.9	22.7	33.3	72	1966	1	42.7	1995	-4+	1975	29	23.5	1994	951	0	.0	.0	9.8	3.8	26.4	.2
Dec	39.0	18.5	28.8	70	1980	16	35.8	1980	-18	1948	24	20.4	1971	1124	0	.0	.0	5.3	6.7	29.9	.9
Ann	52.1	28.8	40.5	95+	Jul 1998	20	62.5	Aug 1981	-24	Feb 1949	12	20.4	Dec 1971	8938	25	.0	.8	206.6	33.1	220.9	3.5

\+ 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: 1948-2000

(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	7.89	6.50	5.77	1963	31	22.13	1997	.23	1991
Feb	7.52	6.09	5.37	1963	1	23.06	1986	.25	1988
Mar	6.67	5.53	3.89	1982	31	18.79	1995	.85	1997
Apr	3.30	3.15	3.11	1967	18	9.64	1982	.47	1977
May	2.30	1.91	2.50+	1996	16	6.65	1998	.07	1985
Jun	1.20	.94	2.76	1970	27	4.40	1997	.00+	1994
Jul	.63	.33	2.75	1974	9	4.00	1974	.00+	2000
Aug	.61	.32	2.90	1965	12	2.86	1976	.00+	2000
Sep	1.40	.93	1.70	1961	16	4.85	1982	.00+	1995
Oct	2.84	2.09	3.51	1962	13	8.78	1975	.00	1995
Nov	5.84	4.47	4.82	1950	18	17.80	1983	.12	1995
Dec	6.25	5.03	6.01	1955	23	16.62	1996	.06	1989
Ann	46.45	41.79	6.01	Dec 1955	23	23.06	Feb 1986	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.5	9.5	4.9	2.7
Feb	10.3	9.1	4.8	2.7
Mar	10.7	9.5	4.5	2.3
Apr	8.5	6.5	2.1	.6
May	6.5	5.0	1.5	.4
Jun	4.3	2.8	.7	.1
Jul	2.6	1.4	.3	.1
Aug	2.4	1.1	.3	.1
Sep	4.1	2.7	1.0	.4
Oct	5.7	4.5	1.9	.8
Nov	9.0	7.4	3.4	1.9
Dec	9.6	8.0	3.7	1.9
Ann	84.2	67.5	29.1	14.0

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	.84	1.43	2.52	3.62	4.80	6.13	7.69	9.63	12.29	16.68	20.97
Feb	.91	1.51	2.57	3.61	4.73	5.96	7.41	9.19	11.61	15.59	19.45
Mar	1.02	1.59	2.55	3.47	4.43	5.48	6.68	8.15	10.11	13.32	16.39
Apr	.64	.93	1.42	1.87	2.32	2.80	3.36	4.02	4.90	6.32	7.66
May	.26	.44	.76	1.08	1.42	1.81	2.25	2.80	3.55	4.79	6.00
Jun	.00	.12	.33	.52	.72	.94	1.19	1.49	1.90	2.58	3.24
Jul	.00	.00	.01	.07	.16	.29	.47	.71	1.08	1.73	2.42
Aug	.00	.00	.03	.09	.19	.31	.48	.70	1.03	1.62	2.23
Sep	.00	.00	.13	.35	.60	.90	1.26	1.72	2.38	3.48	4.59
Oct	.09	.31	.70	1.11	1.56	2.08	2.70	3.48	4.55	6.36	8.14
Nov	.42	.79	1.54	2.34	3.24	4.27	5.51	7.09	9.28	12.96	16.61
Dec	.36	.72	1.48	2.32	3.28	4.41	5.79	7.55	10.02	14.23	18.42
Ann	25.17	28.87	33.83	37.76	41.35	44.90	48.66	52.90	58.16	66.02	72.99

\+ 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: 1948-2000
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	73.3	71.5	44	51
Feb	79.0	78.0	56	65
Mar	65.4	69.0	68	75
Apr	30.2	26.3	61	68
May	9.2	7.0	13	0
Jun	1.4	.0	#	0
Jul	.0	.0	0	0
Aug	#	.0	#	0
Sep	1.3	.0	#	0
Oct	11.0	7.3	#	0
Nov	34.4	24.0	4	#
Dec	61.0	51.0	20	19
Ann	366.2	334.1	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	46.0	1982	4	150.5	1982	136	1983	27	97	1983
Feb	32.0	1986	19	202.0	1998	150	1983	18	135	1983
Mar	32.0	1991	25	166.0	1995	199	1983	24	173	1983
Apr	30.0	1974	24	68.0+	1978	170	1983	1	161	1983
May	24.0	1995	14	37.0+	1998	106	1975	6	74	1975
Jun	8.0	1980	4	8.0	1980	34	1975	2	5	1975
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	#	1976	15	#+	1976	#	1973	27	#	1973
Sep	7.0	1985	10	14.0	1986	#+	1978	7	#+	1978
Oct	20.0	1985	21	35.5	1975	14	1975	11	3	1975
Nov	25.0	1982	18	110.0	1984	38	1973	24	19	1973
Dec	48.0	1978	18	160.0	1992	80	1971	31	58	1983
Ann	48.0	Dec 1978	18	202.0	Feb 1998	199	Mar 1983	24	173	Mar 1983

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	10.1	9.8	7.5	5.5	3.2
Feb	9.2	9.0	7.0	5.0	3.2
Mar	9.1	9.0	7.2	5.1	2.9
Apr	5.8	5.6	3.5	2.2	.8
May	2.6	2.3	1.5	.8	.2
Jun	.6	.6	.3	.1	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.6	.5	.2	.1	.0
Oct	2.5	2.3	1.6	1.0	.2
Nov	6.8	6.6	4.6	3.0	1.4
Dec	8.5	8.3	6.1	4.6	2.1
Ann	55.8	54.0	39.5	27.4	14.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	-9.9	-9.9	-9.9	-9.9
May	-9.9	-9.9	-9.9	-9.9
Jun	.2	.1	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	3.1	2.2	1.5	.3
Nov	-9.9	-9.9	-9.9	-9.9
Dec	-9.9	-9.9	-9.9	-9.9
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	7/31	7/24	7/19	7/15	7/11	7/07	7/03	6/28	6/21
32	7/23	7/15	7/09	7/04	6/30	6/25	6/20	6/14	6/06
28	7/09	7/01	6/26	6/21	6/17	6/12	6/07	6/02	5/25
24	6/18	6/10	6/05	5/31	5/26	5/22	5/17	5/11	5/03
20	6/10	6/01	5/25	5/20	5/15	5/09	5/04	4/27	4/18
16	5/23	5/14	5/08	5/02	4/27	4/22	4/16	4/10	4/01

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	8/03	8/09	8/14	8/18	8/21	8/25	8/29	9/03	9/09
32	8/13	8/21	8/27	9/01	9/06	9/10	9/15	9/21	9/29
28	8/27	9/06	9/13	9/19	9/25	9/30	10/06	10/14	10/24
24	9/14	9/24	9/30	10/06	10/12	10/17	10/23	10/30	11/08
20	10/03	10/11	10/17	10/22	10/27	10/31	11/05	11/11	11/20
16	10/18	10/25	10/29	11/02	11/05	11/09	11/13	11/17	11/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	74	63	54	47	40	34	27	18	7
32	108	94	84	75	67	59	51	41	27
28	139	125	115	107	99	92	83	74	60
24	174	162	153	145	138	131	123	114	101
20	202	189	180	172	164	157	149	139	127
16	222	212	204	198	192	186	179	172	161

***** 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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1148	1034	1051	905	705	446	250	251	398	675	951	1124	8938
60	993	894	912	755	552	308	129	132	261	522	801	969	7228
57	900	810	819	665	463	233	77	82	189	435	711	876	6260
55	838	754	757	606	406	189	49	54	148	378	651	814	5644
50	683	614	603	465	273	102	12	14	69	250	507	659	4251
32	172	147	146	92	21	1	0	0	0	17	111	177	884

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	47	37	102	177	338	547	781	784	594	365	151	77	4000
55	0	0	0	1	11	46	118	125	52	13	0	0	366
57	0	0	0	0	6	29	83	91	32	7	0	0	248
60	0	0	0	0	1	14	42	48	15	2	0	0	122
65	0	0	0	0	0	2	9	12	2	0	0	0	25
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	1	0	7	46	166	365	573	565	399	185	33	2	1	1	8	54	220	585	1158	1723	2122	2307	2340	2342
45	0	0	0	12	78	233	419	411	260	91	5	0	0	0	0	12	90	323	742	1153	1413	1504	1509	1509
50	0	0	0	0	28	123	269	262	145	33	0	0	0	0	0	0	28	151	420	682	827	860	860	860
55	0	0	0	0	4	49	135	130	54	6	0	0	0	0	0	0	4	53	188	318	372	378	378	378
60	0	0	0	0	0	15	47	45	6	0	0	0	0	0	0	0	0	15	62	107	113	113	113	113
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	7	2	15	53	131	246	364	360	260	142	36	8	7	9	24	77	208	454	818	1178	1438	1580	1616	1624

(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