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: ANGWIN PAC UNION COL, CA **COOP ID: 040212**

Climate Division: CA 1 **NWS Call Sign:** **Elevation: 1,715 Feet** **Lat: 38˚34N** **Lon: 122˚26W**

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	53.2	39.3	46.3	75+	1962	8	50.1	1984	19+	1969	29	42.1	1987	582	0	.0	.0	21.3	@	5.8	.0
Feb	56.0	39.9	48.0	78+	1977	15	54.2	1991	20+	1989	6	43.3	1989	478	0	.0	.0	22.2	.1	4.2	.0
Mar	59.1	40.6	49.9	83	1996	17	55.3	1988	23	1971	5	45.0	1985	470	0	.0	.0	27.5	.0	3.9	.0
Apr	65.8	42.9	54.4	91	1989	8	60.0	1987	25+	1971	21	49.0	1975	326	7	.0	.1	29.1	.0	1.8	.0
May	72.9	46.8	59.9	101	1984	27	64.9	1992	27	1964	6	52.9	1998	203	43	@	1.1	31.0	.0	.3	.0
Jun	80.4	51.3	65.9	106	1961	15	72.8	1981	33	1952	12	59.2	1980	73	99	.4	6.0	30.0	.0	.0	.0
Jul	85.6	55.0	70.3	110	1972	15	74.7	1988	32	1975	4	65.3	1987	13	177	1.0	10.6	31.0	.0	@	.0
Aug	85.0	54.3	69.7	107+	1971	11	74.3	1998	37	1978	2	66.0	1985	16	160	1.0	10.2	31.0	.0	.0	.0
Sep	80.8	53.4	67.1	108+	1955	2	71.9	1974	32	1971	30	59.9	1985	55	119	.2	5.0	30.0	.0	@	.0
Oct	72.3	49.6	61.0	99	1980	3	66.2	1991	27	1971	29	55.0	1984	173	48	@	1.3	31.0	.0	.2	.0
Nov	59.1	42.0	50.6	86+	1967	2	58.4	1976	24	1977	19	43.8	1994	438	6	.0	.0	26.9	.0	2.4	.0
Dec	53.0	38.3	45.7	75+	1958	11	50.1	1989	14	1972	9	38.8	1971	599	0	.0	.0	21.4	.1	6.6	.0
Ann	68.6	46.1	57.4	110	Jul 1972	15	74.7	Jul 1988	14	Dec 1972	9	38.8	Dec 1971	3426	659	2.6	34.3	332.4	.2	25.2	.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/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	8.47	8.36	5.85	1967	21	28.29	1995	.48	1976
Feb	7.75	6.15	7.40	1986	17	28.49	1986	.29	1971
Mar	6.21	4.47	6.14	1995	9	19.12	1983	.05	1988
Apr	2.27	2.08	3.08	1982	11	7.43	1982	.15	1977
May	1.14	.44	2.14	1957	18	5.09	1998	.00+	1992
Jun	.26	.07	1.42	1967	2	1.66	1993	.00+	1998
Jul	.05	.00	1.11	1974	9	1.12	1974	.00+	2000
Aug	.10	.00	.78	1965	12	1.42	1976	.00+	2000
Sep	.62	.22	3.94	1959	18	3.08	1982	.00+	1995
Oct	2.17	1.54	6.80	1962	12	5.94	1979	.00+	1995
Nov	5.48	4.21	4.98	1977	21	17.33	1973	.24+	1995
Dec	6.15	5.02	6.42	1955	19	17.95	1996	.00	1989
Ann	40.67	38.49	7.40	Feb 1986	17	28.49	Feb 1986	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.8	9.5	4.8	2.6
Feb	11.8	8.8	4.9	2.8
Mar	12.0	8.9	3.9	1.9
Apr	7.1	4.7	1.4	.4
May	4.1	2.3	.8	.2
Jun	1.4	.7	.1	.1
Jul	.3	.1	@	@
Aug	.7	.3	.0	.0
Sep	2.4	1.3	.4	.1
Oct	5.2	3.1	1.4	.8
Nov	9.9	6.7	3.4	1.7
Dec	11.2	7.6	3.5	1.9
Ann	78.9	54.0	24.6	12.5

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	.70	1.28	2.39	3.57	4.86	6.33	8.09	10.30	13.36	18.48	23.52
Feb	.52	1.00	1.98	3.04	4.23	5.61	7.28	9.40	12.36	17.35	22.30
Mar	.45	.85	1.65	2.50	3.45	4.55	5.86	7.53	9.85	13.76	17.62
Apr	.20	.36	.66	.98	1.32	1.72	2.18	2.77	3.58	4.92	6.25
May	.00	.00	.03	.14	.31	.53	.84	1.28	1.93	3.11	4.34
Jun	.00	.00	.00	.00	.03	.09	.17	.29	.47	.77	1.09
Jul	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	.32
Aug	.00	.00	.00	.00	.00	.00	.00	.01	.09	.33	.62
Sep	.00	.00	.00	.00	.10	.25	.45	.71	1.09	1.77	2.45
Oct	.00	.16	.51	.85	1.21	1.61	2.10	2.69	3.51	4.88	6.22
Nov	.27	.55	1.19	1.92	2.76	3.76	4.99	6.58	8.83	12.67	16.53
Dec	.37	.97	1.93	2.83	3.79	4.84	6.07	7.59	9.64	13.01	16.28
Ann	17.20	20.89	26.06	30.30	34.28	38.30	42.63	47.61	53.90	63.49	72.19

\+ 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	1.0	.0	#	0	7.5	1979	30	8.0	1973	24	1974	4	4	1974	.2	.2	.1	.1	.0	.1	.1	@	.0
Feb	.1	.0	#	0	1.0	1976	5	1.0	1976	#	1971	27	#	1971	@	@	.0	.0	.0	.0	.0	.0	.0
Mar	.4	.0	#	0	10.2	1976	2	10.2	1976	4	1982	17	#+	1985	@	@	@	@	@	.0	.0	.0	.0
Apr	#	.0	0	0	#	1980	21	#	1980	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
May	#	.0	0	0	#	1980	24	#+	1980	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	#	1971	16	#	1971	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	#	.0	0	0	#	1977	21	#	1977	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.3	.0	#	0	2.0	1971	27	3.0	1971	2	1971	27	#+	1984	.3	.2	.0	.0	.0	.2	.0	.0	.0
Ann	1.8	.0	N/A	N/A	10.2	Mar 1976	2	10.2	Mar 1976	24	Jan 1974	4	4	Jan 1974	.5	.4	.1	.1	@	.3	.1	@	.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	6/06	5/27	5/21	5/15	5/09	5/04	4/28	4/21	4/12
32	5/28	5/13	5/02	4/23	4/15	4/06	3/28	3/17	3/02
28	4/06	3/19	3/06	2/22	2/11	1/31	1/17	12/30	0/00
24	2/06	1/14	12/23	11/20	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	10/21	10/28	11/01	11/06	11/10	11/14	11/18	11/23	11/30
32	10/28	11/08	11/17	11/23	11/30	12/06	12/13	12/21	1/02
28	11/08	11/25	12/07	12/17	12/27	1/07	1/19	2/04	0/00
24	12/08	12/23	1/07	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	217	206	197	190	184	177	170	162	151
32	288	267	253	240	229	217	204	190	169
28	>365	>365	>365	350	322	303	285	267	244
24	>365	>365	>365	>365	>365	>365	>365	>365	307
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)

Base — Heating Degree Days (1)

Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	582	478	470	326	203	73	13	16	55	173	438	599	3426
60	427	339	326	197	110	23	1	1	15	86	303	445	2273
57	335	260	245	136	68	10	0	0	6	51	232	356	1699
55	277	210	198	102	46	5	0	0	2	34	189	299	1362
50	146	107	106	38	15	0	0	0	0	9	105	171	697
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	441	446	554	671	863	1016	1187	1167	1054	898	558	424	9279
55	5	12	39	84	196	331	474	454	366	219	57	10	2247
57	1	7	24	57	156	276	412	392	310	174	39	5	1853
60	0	1	11	28	106	199	320	300	229	117	21	1	1333
65	0	0	0	7	43	99	177	160	119	48	6	0	659
70	0	0	0	0	14	34	73	62	46	14	0	0	243

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	196	225	302	432	623	787	953	933	827	657	320	186	196	421	723	1155	1778	2565	3518	4451	5278	5935	6255	6441
45	85	111	169	289	468	637	798	778	677	503	187	76	85	196	365	654	1122	1759	2557	3335	4012	4515	4702	4778
50	27	45	74	166	317	487	643	623	527	351	87	24	27	72	146	312	629	1116	1759	2382	2909	3260	3347	3371
55	1	13	24	80	189	341	489	468	377	216	33	1	1	14	38	118	307	648	1137	1605	1982	2198	2231	2232
60	0	0	2	32	100	211	335	313	235	113	7	0	0	0	2	34	134	345	680	993	1228	1341	1348	1348
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	71	99	151	251	385	499	605	590	521	387	150	76	71	170	321	572	957	1456	2061	2651	3172	3559	3709	3785

(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