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: BOWMAN DAM, CA **COOP ID: 041018**

Climate Division: CA 2 **NWS Call Sign:** **Elevation: 5,383 Feet** **Lat: 39˚27N** **Lon: 120˚39W**

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	45.0	26.4	35.7	68+	1989	31	41.2	1986	1	1949	23	30.5	1995	909	0	.0	.0	10.7	1.7	25.3	.0
Feb	45.8	25.9	35.9	70+	1995	24	41.6	1977	-2	1950	2	31.2	1998	816	0	.0	.0	10.2	2.0	23.4	.0
Mar	47.5	27.8	37.7	75	1966	31	43.5	1972	4	1966	3	29.6	1991	831	0	.0	.0	14.7	1.3	24.5	.0
Apr	53.8	31.6	42.7	79	1987	28	49.9	1987	8	1967	28	33.9	1975	669	0	.0	.0	19.9	.3	16.5	.0
May	62.3	38.2	50.3	91	2001	23	58.8	1992	17	1975	5	42.1	1977	465	7	.0	.0	26.6	.0	6.4	.0
Jun	72.1	45.8	59.0	95+	1959	22	64.2	1981	25	1988	8	53.6	1980	209	28	.0	.3	29.4	.0	.8	.0
Jul	79.4	51.8	65.6	98	1988	21	70.2	1994	32	1987	18	59.4	1983	85	103	.0	1.5	31.0	.0	@	.0
Aug	79.6	52.3	66.0	98	1981	8	70.9	1996	30	1989	30	59.8	1976	76	105	.0	2.0	31.0	.0	.1	.0
Sep	73.9	47.9	60.9	97	1988	5	66.3	1974	28+	1986	28	52.0	1986	176	53	.0	.5	29.4	.0	.5	.0
Oct	64.3	40.6	52.5	90	1980	2	61.9	1988	18	1971	28	45.6	1984	404	15	.0	@	27.1	.1	4.0	.0
Nov	51.2	31.4	41.3	78+	1976	3	50.5	1976	11	1977	19	31.5	1994	711	0	.0	.0	16.3	.6	16.5	.0
Dec	45.5	26.7	36.1	72+	1980	17	43.3	1989	1	1990	21	29.4	1987	896	0	.0	.0	11.3	2.5	24.1	.0
Ann	60.0	37.2	48.6	98+	Jul 1988	21	70.9	Aug 1996	-2	Feb 1950	2	29.4	Dec 1987	6247	311	.0	4.3	257.6	8.5	142.1	.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

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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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	12.04	9.82	7.92	1997	2	35.73	1995	.46	1984
Feb	11.04	9.48	6.85	1960	8	27.99	1986	.58	1988
Mar	10.34	7.60	5.68	1986	8	33.22	1995	1.32	1994
Apr	4.49	3.78	3.57	1953	27	12.41	1995	.86	1977
May	3.35	2.22	4.78	1996	16	13.42	1996	.20	1985
Jun	1.22	.87	2.56	1971	26	4.21	1992	.00	1986
Jul	.37	.07	2.69	1974	8	5.33	1974	.00+	2000
Aug	.57	.33	1.78	1976	15	3.92	1976	.00+	2000
Sep	1.56	1.19	2.62	1959	18	7.55	1986	.00+	1999
Oct	4.22	3.26	7.60	1962	13	11.37	1975	.00	1995
Nov	9.04	6.56	6.42	1988	23	27.48	1981	.73	1995
Dec	9.73	6.40	9.92	1955	22	40.80	1996	.00	1989
Ann	67.97	63.46	9.92	Dec 1955	22	40.80	Dec 1996	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.7	10.0	6.2	3.8
Feb	10.7	8.9	5.9	3.8
Mar	12.5	10.6	6.0	3.5
Apr	9.0	6.7	3.2	1.3
May	6.9	5.1	2.1	.8
Jun	3.2	2.3	.7	.2
Jul	.9	.4	.2	.1
Aug	1.8	1.1	.4	.1
Sep	3.3	2.4	1.0	.6
Oct	5.7	4.6	2.1	1.3
Nov	9.3	7.8	5.1	3.1
Dec	9.6	8.1	5.2	3.4
Ann	84.6	68.0	38.1	22.0

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	1.07	1.91	3.52	5.20	7.02	9.10	11.57	14.67	18.93	26.05	33.04
Feb	1.73	2.67	4.28	5.80	7.38	9.10	11.07	13.49	16.72	21.96	26.99
Mar	1.67	2.56	4.06	5.48	6.95	8.56	10.39	12.63	15.62	20.48	25.13
Apr	.87	1.28	1.94	2.54	3.16	3.82	4.57	5.47	6.66	8.58	10.40
May	.23	.44	.87	1.33	1.84	2.44	3.15	4.06	5.33	7.47	9.59
Jun	.02	.09	.24	.41	.60	.83	1.11	1.47	1.98	2.86	3.73
Jul	.00	.00	.00	.00	.00	.04	.13	.29	.58	1.14	1.79
Aug	.00	.00	.00	.00	.05	.17	.34	.59	.98	1.69	2.44
Sep	.00	.00	.00	.23	.52	.87	1.31	1.88	2.70	4.11	5.52
Oct	.05	.24	.70	1.25	1.92	2.72	3.73	5.04	6.92	10.18	13.46
Nov	.95	1.62	2.86	4.12	5.48	7.01	8.80	11.04	14.09	19.15	24.09
Dec	.32	1.05	2.40	3.81	5.36	7.13	9.25	11.92	15.61	21.81	27.93
Ann	34.59	40.25	47.93	54.06	59.69	65.31	71.27	78.03	86.47	99.12	110.43

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	38.9	30.5	24	19
Feb	48.9	51.0	36	35
Mar	44.5	45.0	38	32
Apr	19.7	16.5	21	12
May	4.9	3.0	4	#
Jun	.3	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.3	.0	#	0
Oct	2.0	.0	#	0
Nov	22.0	19.0	4	2
Dec	38.2	26.0	12	8
Ann	219.7	191.0	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	22.0	1983	27	90.0	1973	95	1971	14	71	1971
Feb	40.0	1985	8	108.0	1975	107	1993	23	73	1993
Mar	26.0	1995	23	106.0	1985	126	1995	24	81	1983
Apr	16.0	1974	24	60.0	1978	102	1975	7	79	1975
May	8.0	1979	7	23.0	1980	80	1983	6	46	1983
Jun	4.0	1988	7	6.0	1988	4	1988	7	#	1988
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	5.0	1971	30	5.0	1971	2	1971	30	#	1971
Oct	11.0	1989	25	16.0	1989	14	1989	25	2	1989
Nov	22.0	1985	10	73.0	1985	38	1985	11	16	1994
Dec	38.0	1971	25	110.0	1971	69	1971	25	44	1994
Ann	40.0	Feb 1985	8	110.0	Dec 1971	126	Mar 1995	24	81	Mar 1983

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.6	6.6	4.5	2.8	1.2
Feb	6.8	6.8	5.1	3.3	1.5
Mar	7.9	7.9	5.4	3.2	1.1
Apr	4.3	4.3	2.6	1.4	.5
May	1.8	1.7	1.0	.3	.0
Jun	.1	.1	@	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	.1	.1	@	.0
Oct	.6	.6	.3	.2	.1
Nov	4.0	4.0	2.6	1.5	.6
Dec	5.8	5.7	3.8	2.4	1.0
Ann	38.0	37.8	25.4	15.1	6.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	25.8	24.1	21.9	18.9
Feb	25.0	24.3	23.4	22.5
Mar	26.7	26.4	25.2	23.1
Apr	10.5	9.9	9.4	8.5
May	1.6	.9	.4	@
Jun	@	@	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	@	.0	.0	.0
Oct	.6	.4	.2	.1
Nov	8.2	6.9	5.9	4.0
Dec	18.9	16.2	14.1	11.4
Ann	117.3	109.1	100.5	88.5

+ 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	6/29	6/22	6/17	6/13	6/09	6/05	5/31	5/26	5/20
32	6/21	6/13	6/08	6/03	5/29	5/25	5/20	5/15	5/07
28	5/30	5/23	5/18	5/13	5/09	5/04	4/30	4/24	4/17
24	5/19	5/09	5/03	4/27	4/22	4/17	4/11	4/05	3/27
20	5/03	4/23	4/15	4/09	4/02	3/27	3/20	3/12	2/27
16	4/08	3/27	3/18	3/10	3/03	2/23	2/15	2/06	1/22

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	9/14	9/21	9/27	10/01	10/06	10/10	10/15	10/20	10/28
32	9/23	10/02	10/08	10/14	10/19	10/24	10/29	11/04	11/13
28	10/11	10/18	10/23	10/28	10/31	11/04	11/09	11/14	11/21
24	10/25	11/02	11/07	11/12	11/16	11/21	11/26	12/01	12/09
20	11/07	11/17	11/24	11/30	12/05	12/11	12/17	12/24	1/05
16	11/14	11/27	12/06	12/14	12/22	12/29	1/07	1/17	2/01

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	142	134	128	123	118	114	109	103	95
32	176	164	156	148	142	135	127	119	107
28	209	197	189	182	175	168	161	153	141
24	245	232	223	215	208	200	192	183	171
20	304	280	266	256	247	238	228	217	202
16	>365	328	312	301	290	281	270	259	243

***** 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	909	816	831	669	465	209	85	76	176	404	711	896	6247
60	754	676	692	522	326	111	28	23	93	275	565	741	4806
57	661	592	599	439	253	69	12	10	56	210	480	648	4029
55	599	536	540	384	210	47	7	5	38	172	426	587	3551
50	445	396	395	258	122	14	0	0	12	95	299	441	2477
32	46	34	49	20	3	0	0	0	0	2	34	68	256

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	159	142	225	341	568	809	1042	1051	867	636	312	196	6348
55	0	0	3	15	62	166	336	344	215	93	15	1	1250
57	0	0	0	9	43	128	279	286	173	69	9	0	996
60	0	0	0	3	23	80	202	206	120	41	4	0	679
65	0	0	0	0	7	28	103	105	53	15	0	0	311
70	0	0	0	0	0	7	38	37	17	3	0	0	102

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	45	43	70	159	347	580	807	810	636	405	126	48	45	88	158	317	664	1244	2051	2861	3497	3902	4028	4076
45	10	12	24	72	224	433	652	655	490	275	58	11	10	22	46	118	342	775	1427	2082	2572	2847	2905	2916
50	0	0	0	30	121	294	497	501	348	160	17	0	0	0	0	30	151	445	942	1443	1791	1951	1968	1968
55	0	0	0	2	52	174	346	347	217	77	1	0	0	0	0	2	54	228	574	921	1138	1215	1216	1216
60	0	0	0	0	14	79	207	205	113	28	0	0	0	0	0	0	14	93	300	505	618	646	646	646
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	30	38	58	112	220	352	512	512	388	244	81	39	30	68	126	238	458	810	1322	1834	2222	2466	2547	2586

(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