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: BALCH POWER HOUSE, CA **COOP ID: 040449**

Climate Division: CA 5 **NWS Call Sign:** **Elevation: 1,720 Feet** **Lat: 36˚55N** **Lon: 119˚05W**

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	52.5	37.4	45.0	69+	1981	22	51.3	1986	24	1987	16	41.5	1972	621	0	.0	.0	21.5	.0	5.6	.0
Feb	58.1	39.6	48.9	79	1977	18	55.7	1991	22	1989	6	44.0	1998	453	0	.0	.0	24.8	.0	2.4	.0
Mar	63.2	42.1	52.7	83	1966	31	59.1	1972	27	1976	3	47.0	1973	389	6	.0	.0	29.8	.0	1.0	.0
Apr	69.8	45.6	57.7	91	1981	30	64.6	1989	23	2001	7	50.8	1975	255	35	.0	.2	29.7	.0	.5	.0
May	77.6	52.4	65.0	100+	2001	31	72.5	1997	22	1986	7	55.6	1998	134	133	@	2.6	31.0	.0	.1	.0
Jun	86.2	59.3	72.8	105+	1994	28	78.2	1981	35	1976	11	62.4	1998	35	267	.7	11.1	30.0	.0	.0	.0
Jul	93.2	66.3	79.8	107+	2001	4	84.7	1996	39	1976	1	72.7	1983	2	459	4.1	23.6	31.0	.0	.0	.0
Aug	93.3	66.6	80.0	110	1996	14	83.7	1996	50	1986	17	74.6	1976	0	463	4.3	23.2	31.0	.0	.0	.0
Sep	88.0	61.9	75.0	109	1975	5	81.1	1991	31	1975	20	67.5	1986	11	309	1.3	14.7	30.0	.0	.1	.0
Oct	77.3	53.1	65.2	102	2001	1	71.7	1991	32	1971	29	59.7	1984	114	119	.1	3.3	30.9	.0	@	.0
Nov	60.0	43.2	51.6	84	1966	1	56.6	1995	23	1986	8	46.9	1994	406	3	.0	.0	27.8	.0	.7	.0
Dec	52.1	37.6	44.9	68+	1986	19	49.6	1977	18	1972	9	40.1	1971	625	0	.0	.0	21.8	.1	5.0	.0
Ann	72.6	50.4	61.6	110	Aug 1996	14	84.7	Jul 1996	18	Dec 1972	9	40.1	Dec 1971	3045	1794	10.5	78.7	339.3	.1	15.4	.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: 1950-2001

(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	6.10	6.83	6.95	1969	19	15.50	1997	.04	1976
Feb	5.69	4.18	4.31	1986	13	16.74	1986	.89	1997
Mar	5.38	4.69	4.67	1995	10	15.43	1995	.00	1972
Apr	2.36	1.85	4.21	1982	11	8.24	1982	.05	1997
May	1.17	.43	2.40	1996	16	5.42	1998	.00	1985
Jun	.48	.05	2.02	1998	7	5.49	1998	.00+	1994
Jul	.17	.00	2.51	1992	12	3.87	1992	.00+	2000
Aug	.05	.00	.32	1988	31	.32	1988	.00+	2000
Sep	.94	.18	3.37	1976	11	5.21	1982	.00+	1996
Oct	1.59	1.24	3.00	1992	30	4.41	1992	.00+	1995
Nov	3.22	2.42	5.74	1950	19	9.10	1983	.01	1992
Dec	3.83	3.31	5.51	1955	23	12.57	1996	.00+	1999
Ann	30.98	28.43	6.95	Jan 1969	19	16.74	Feb 1986	.00+	Aug 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.6	6.6	4.1	2.2
Feb	8.7	6.9	4.1	2.1
Mar	10.0	7.6	3.8	1.7
Apr	6.8	4.2	1.7	.5
May	3.6	2.3	.7	.2
Jun	1.4	.8	.4	.1
Jul	.6	.3	.1	.1
Aug	.5	.2	.0	.0
Sep	2.3	1.4	.5	.2
Oct	3.5	2.4	1.0	.5
Nov	6.3	4.4	2.3	.9
Dec	6.7	5.0	2.3	1.2
Ann	59.0	42.1	21.0	9.7

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	.33	.66	1.39	2.20	3.14	4.25	5.60	7.35	9.80	13.98	18.16
Feb	.75	1.21	2.02	2.81	3.65	4.57	5.64	6.96	8.74	11.66	14.48
Mar	.31	.82	1.66	2.45	3.28	4.21	5.30	6.63	8.45	11.44	14.34
Apr	.09	.20	.46	.77	1.13	1.56	2.11	2.81	3.82	5.56	7.31
May	.00	.02	.10	.22	.38	.61	.90	1.32	1.94	3.07	4.24
Jun	.00	.00	.00	.00	.00	.04	.16	.37	.75	1.51	2.35
Jul	.00	.00	.00	.00	.00	.00	.00	.01	.12	.51	.91
Aug	.00	.00	.00	.00	.00	.00	.00	.01	.07	.17	.28
Sep	.00	.00	.00	.00	.06	.22	.49	.91	1.58	2.85	4.21
Oct	.00	.00	.17	.39	.65	.98	1.38	1.91	2.66	3.97	5.29
Nov	.11	.25	.59	1.00	1.49	2.09	2.84	3.83	5.24	7.70	10.19
Dec	.00	.46	1.17	1.78	2.40	3.08	3.86	4.78	6.05	8.11	10.09
Ann	14.09	16.82	20.60	23.67	26.53	29.40	32.48	35.99	40.42	47.12	53.16

\+ 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: 1950-2001
(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	2.0	1974	1	2.0	1974	1	1979	31	#	1979	@	@	.0	.0	.0	.0	.0	.0	.0
Feb	.0	.0	1	0	.1	1971	28	.1	1971	22	1982	28	20	1982	.1	.0	.0	.0	.0	.0	.0	.0	.0
Mar	.0	.0	0	0	.5	1973	20	.5	1973	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	.1	.0	#	0	3.0	1972	8	3.0	1972	3	1972	8	#+	1990	@	@	@	.0	.0	.2	@	.0	.0
Ann	.2	.0	N/A	N/A	3.0	Dec 1972	8	3.0	Dec 1972	22	Feb 1982	28	20	Feb 1982	.1	@	@	.0	.0	.2	@	.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	5/11	4/30	4/22	4/15	4/09	4/03	3/27	3/19	3/08
32	4/18	4/02	3/22	3/13	3/04	2/23	2/14	2/03	1/19
28	2/27	2/12	2/01	1/21	1/11	12/28	12/05	0/00	0/00
24	1/03	12/06	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	10/28	11/04	11/09	11/13	11/18	11/22	11/26	12/01	12/08
32	11/05	11/15	11/22	11/28	12/03	12/09	12/15	12/21	12/31
28	11/30	12/11	12/19	12/27	1/04	1/14	2/01	0/00	0/00
24	12/14	1/16	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	262	248	238	230	222	214	205	196	182
32	327	306	293	282	272	262	251	239	222
28	>365	>365	>365	>365	>365	349	334	321	307
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	621	453	389	255	134	35	2	0	11	114	406	625	3045
60	466	315	252	155	68	12	0	0	2	52	266	470	2058
57	373	236	182	108	40	6	0	0	0	28	192	379	1544
55	312	186	143	80	28	3	0	0	0	18	148	321	1239
50	173	88	66	32	10	0	0	0	0	4	65	187	625
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	402	471	641	770	1022	1222	1481	1486	1288	1029	587	398	10797
55	1	13	71	161	336	535	768	773	598	333	45	6	3640
57	0	7	48	128	287	478	706	711	539	282	29	2	3217
60	0	2	24	85	221	394	613	618	451	212	13	0	2633
65	0	0	6	35	133	267	459	463	309	119	3	0	1794
70	0	0	0	13	67	164	313	309	186	57	0	0	1109

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	173	271	401	539	782	984	1241	1249	1050	790	356	182	173	444	845	1384	2166	3150	4391	5640	6690	7480	7836	8018
45	67	148	255	393	627	834	1086	1094	900	635	215	70	67	215	470	863	1490	2324	3410	4504	5404	6039	6254	6324
50	17	60	132	259	475	684	931	939	750	480	107	10	17	77	209	468	943	1627	2558	3497	4247	4727	4834	4844
55	0	16	50	143	328	534	776	784	600	335	37	0	0	16	66	209	537	1071	1847	2631	3231	3566	3603	3603
60	0	0	9	63	196	388	621	629	451	203	7	0	0	0	9	72	268	656	1277	1906	2357	2560	2567	2567
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	65	132	219	315	486	641	814	819	684	493	163	67	65	197	416	731	1217	1858	2672	3491	4175	4668	4831	4898

(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