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: HETCH HETCHY, CA **COOP ID: 043939**

Climate Division: CA 5 **NWS Call Sign:** **Elevation: 3,870 Feet** **Lat: 37˚58N** **Lon: 119˚47W**

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	48.0	30.3	39.2	72	1975	19	44.6	1986	-1+	1937	22	33.8	1982	802	0	.0	.0	12.9	.3	20.4	.0
Feb	52.5	31.4	42.0	78+	1986	27	49.0	1995	1	1932	3	35.1	1990	646	0	.0	.0	17.3	.4	16.3	.0
Mar	56.1	33.7	44.9	80	1966	31	52.3	1997	11	1951	3	37.6	1991	623	0	.0	.0	22.4	.1	13.5	.0
Apr	62.1	37.8	50.0	86+	1989	8	56.5	1987	16	1933	18	41.1	1975	458	7	.0	.0	25.5	.0	6.1	.0
May	69.2	44.0	56.6	95	1984	29	64.0	1992	25+	1967	1	47.9	1977	292	31	.0	.1	29.2	.0	1.1	.0
Jun	77.8	50.6	64.2	99	1961	22	69.7	2000	31	1999	3	59.1	1998	100	75	.0	1.6	29.8	.0	@	.0
Jul	84.6	56.2	70.4	103	1961	20	75.3	1988	41+	1999	6	64.6	1983	20	188	@	6.0	31.0	.0	.0	.0
Aug	84.7	56.0	70.4	104	1933	14	73.8	1994	31	1999	30	63.3	1976	20	186	.1	6.5	31.0	.0	@	.0
Sep	79.3	51.2	65.3	100	1955	3	69.7	1991	32+	1948	26	58.4	1986	91	100	.0	2.3	29.9	.0	.0	.0
Oct	70.2	43.1	56.7	93+	1980	3	63.5	1988	23+	1971	30	50.3	1984	290	31	.0	.3	29.9	.0	1.9	.0
Nov	55.9	34.6	45.3	83+	1955	10	53.2	1995	10	1931	28	36.7	1994	593	1	.0	.0	21.5	.1	11.0	.0
Dec	47.9	30.2	39.1	69	1998	17	44.3	2000	2	1972	9	32.0	1971	805	0	.0	.0	14.1	.9	19.7	.0
Ann	65.7	41.6	53.7	104	Aug 1933	14	75.3	Jul 1988	-1+	Jan 1937	22	32.0	Dec 1971	4740	619	.1	16.8	294.5	1.8	90.0	.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: 1931-2001

(3) Derived from 1971-2000 serially complete daily data

Issue Date: February 2004

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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	6.38	4.82	4.39	1963	31	16.76	1997	.21	1984
Feb	6.10	4.87	5.45	1963	1	17.06	1986	.70	1997
Mar	5.82	4.74	4.20	1995	11	16.89	1995	.23	1972
Apr	2.99	2.35	2.67	1935	8	9.40	1978	.29	1977
May	1.77	1.49	2.20	1996	16	7.14	1998	.06+	1985
Jun	.82	.65	1.83	1963	11	2.53	1998	.00+	1994
Jul	.28	.00	2.49	1992	12	3.56	1992	.00+	2000
Aug	.21	.05	1.83	1965	15	1.70	1975	.00+	1998
Sep	.95	.24	3.55	1959	19	4.22	1978	.00+	1995
Oct	2.20	2.22	2.95	1945	30	6.68	1975	.00	1995
Nov	4.44	3.95	6.74	1950	19	14.05	1983	.00	1995
Dec	4.63	3.86	5.80	1955	23	15.34	1996	.00	1989
Ann	36.59	29.94	6.74	Nov 1950	19	17.06	Feb 1986	.00+	Jul 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.9	8.0	4.4	2.4
Feb	9.2	7.2	3.9	2.2
Mar	11.6	8.8	4.1	1.9
Apr	7.8	5.5	2.1	.8
May	5.9	4.0	1.2	.3
Jun	2.9	1.9	.6	.1
Jul	1.1	.5	.1	.1
Aug	1.4	.4	.1	@
Sep	3.2	1.8	.6	.2
Oct	5.1	3.4	1.5	.8
Nov	7.2	5.5	3.0	1.2
Dec	7.9	6.2	2.9	1.5
Ann	73.2	53.2	24.5	11.5

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	.42	.81	1.61	2.48	3.46	4.60	5.98	7.73	10.18	14.31	18.41
Feb	.66	1.12	1.97	2.82	3.73	4.76	5.95	7.45	9.48	12.84	16.12
Mar	.64	1.08	1.89	2.70	3.57	4.55	5.69	7.11	9.05	12.25	15.37
Apr	.40	.65	1.07	1.49	1.93	2.41	2.97	3.65	4.58	6.10	7.57
May	.09	.18	.39	.62	.89	1.22	1.61	2.12	2.85	4.08	5.32
Jun	.00	.00	.13	.32	.48	.65	.84	1.06	1.36	1.83	2.31
Jul	.00	.00	.00	.00	.00	.00	.01	.08	.31	.77	1.43
Aug	.00	.00	.00	.00	.01	.06	.12	.21	.36	.62	.89
Sep	.00	.00	.02	.10	.22	.41	.67	1.04	1.60	2.64	3.75
Oct	.02	.12	.36	.64	.99	1.41	1.94	2.63	3.62	5.33	7.07
Nov	.18	.55	1.19	1.84	2.54	3.34	4.28	5.45	7.07	9.76	12.40
Dec	.17	.53	1.18	1.85	2.59	3.43	4.42	5.67	7.40	10.29	13.13
Ann	17.40	20.56	24.91	28.41	31.65	34.91	38.37	42.33	47.29	54.77	61.50

\+ 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: 1931-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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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	6.2	6.1	3	2
Feb	8.1	3.5	2	1
Mar	10.1	6.2	1	1
Apr	3.4	.0	#	#
May	.1	.0	#	0
Jun	.0	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	#	.0	0	0
Nov	1.5	.0	1	0
Dec	5.4	.7	1	#
Ann	34.8	16.5	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	11.5	1982	2	18.0	1997	23+	1993	11	14	1993
Feb	13.0	1996	22	24.0	1996	22	1975	4	9	1975
Mar	18.0	1991	25	69.1	1991	21	1991	25	6	1991
Apr	16.5	1975	6	37.0	1975	24	1975	6	5	1975
May	2.0	1980	10	2.0	1980	2	1980	10	#+	1983
Jun	.2	1999	3	.2	1999	2	1999	3	#	1999
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	#	1971	16	#	1971	0	0	0	0	0
Nov	10.0	1994	26	23.5	1978	16	1994	27	6	1994
Dec	10.0	1988	24	23.0	1972	20	1988	31	8	1971
Ann	18.0	Mar 1991	25	69.1	Mar 1991	24	Apr 1975	6	14	Jan 1993

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.4	2.1	1.1	.8	.1
Feb	2.6	2.5	1.5	.8	.2
Mar	2.1	1.9	1.2	.7	.1
Apr	1.0	.8	.4	.2	.1
May	@	@	.0	.0	.0
Jun	@	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.0	.0	.0	.0	.0
Nov	.8	.7	.3	.2	@
Dec	2.1	1.7	1.0	.7	.1
Ann	11.0	9.7	5.5	3.4	.6

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	7.4	4.9	3.0	.8
Feb	5.0	3.4	2.0	.7
Mar	3.5	2.2	1.5	.5
Apr	1.3	.8	.5	.3
May	@	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.0	.0	.0	.0
Nov	1.4	.7	.5	.1
Dec	4.9	3.2	2.2	.7
Ann	23.5	15.2	9.7	3.1

+ 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	6/09	6/01	5/26	5/21	5/16	5/11	5/06	4/30	4/22
32	5/26	5/16	5/09	5/03	4/28	4/22	4/16	4/09	3/30
28	4/28	4/18	4/10	4/04	3/30	3/24	3/18	3/10	2/28
24	4/12	3/27	3/16	3/06	2/25	2/16	2/06	1/25	1/06
20	3/15	2/26	2/13	2/01	1/21	1/09	12/24	11/26	0/00
16	2/10	1/26	1/12	12/28	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	9/23	10/02	10/08	10/13	10/18	10/23	10/28	11/03	11/11
32	10/08	10/16	10/21	10/26	10/31	11/04	11/09	11/15	11/23
28	11/03	11/09	11/14	11/18	11/22	11/25	11/29	12/04	12/10
24	11/14	11/24	12/01	12/08	12/13	12/20	12/26	1/04	1/20
20	11/19	12/06	12/18	12/29	1/09	1/21	2/06	0/00	0/00
16	12/14	12/30	1/13	2/01	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	191	178	169	161	154	147	139	130	117
32	228	213	203	194	185	177	168	158	143
28	274	261	252	244	236	229	221	211	198
24	>365	338	316	301	289	277	265	251	233
20	>365	>365	>365	>365	352	331	314	297	275
16	>365	>365	>365	>365	>365	>365	>365	>365	329

***** 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	802	646	623	458	292	100	20	20	91	290	593	805	4740
60	647	506	474	324	184	38	3	3	35	181	447	650	3492
57	554	423	389	252	133	18	0	0	17	128	365	557	2836
55	492	370	334	210	103	10	0	0	10	99	313	496	2437
50	342	244	214	124	46	2	0	0	2	44	198	350	1566
32	16	11	11	2	0	0	0	0	0	0	8	26	74

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	238	289	411	541	762	965	1191	1189	998	764	406	244	7998
55	0	5	21	58	152	286	478	476	318	149	21	1	1965
57	0	2	14	41	120	234	416	414	265	117	13	0	1636
60	0	0	6	23	78	164	326	324	193	76	6	0	1196
65	0	0	0	7	31	75	188	186	100	31	1	0	619
70	0	0	0	0	11	23	87	86	37	10	0	0	254

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	66	120	192	319	524	735	956	947	768	530	195	69	66	186	378	697	1221	1956	2912	3859	4627	5157	5352	5421
45	14	49	95	197	379	585	801	792	618	382	96	11	14	63	158	355	734	1319	2120	2912	3530	3912	4008	4019
50	0	14	36	100	248	437	646	637	470	249	33	0	0	14	50	150	398	835	1481	2118	2588	2837	2870	2870
55	0	0	2	36	135	300	491	482	325	135	8	0	0	0	2	38	173	473	964	1446	1771	1906	1914	1914
60	0	0	0	8	60	172	337	331	197	57	0	0	0	0	0	8	68	240	577	908	1105	1162	1162	1162
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	44	85	128	205	320	458	621	612	483	330	120	38	44	129	257	462	782	1240	1861	2473	2956	3286	3406	3444

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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