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: MC CLOUD, CA **COOP ID: 045449**

Climate Division: CA 2 **NWS Call Sign:** **Elevation: 3,280 Feet** **Lat: 41˚15N** **Lon: 122˚08W**

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	47.1	24.4	35.8	69+	1994	19	40.5	1986	-8	1962	22	31.0	1973	906	0	.0	.0	11.4	.8	26.9	@
Feb	49.5	26.8	38.2	79	1986	28	44.7	1995	-12	1989	5	32.5	1989	752	0	.0	.0	12.6	.5	23.9	.1
Mar	53.8	29.3	41.6	84	1986	4	47.2	1986	4	1974	8	36.5	1975	727	0	.0	.0	18.9	@	23.6	.0
Apr	61.0	32.6	46.8	90	1981	30	53.3	1990	14	1953	8	38.2	1975	545	0	.0	@	24.3	.0	16.0	.0
May	70.5	38.5	54.5	100+	1986	31	61.8	1992	18	1988	1	47.6	1977	335	11	.1	1.2	29.7	.0	6.2	.0
Jun	79.3	45.0	62.2	102	1987	26	68.0	1977	22	1950	7	57.1	1980	131	46	.2	4.7	29.9	.0	.6	.0
Jul	87.4	49.2	68.3	106	1988	21	73.1	1988	31	1955	17	62.9	1983	44	145	1.3	13.2	31.0	.0	.0	.0
Aug	87.2	47.2	67.2	107+	1981	10	70.3	1988	28	1951	31	62.4	1976	37	106	1.5	13.0	31.0	.0	.0	.0
Sep	81.0	42.0	61.5	106	1955	4	66.6	1975	21	1950	30	54.9	1986	157	53	.4	6.0	29.9	.0	1.2	.0
Oct	69.8	34.9	52.4	96	1980	3	59.4	1988	14+	1955	31	47.1	1984	398	7	.0	1.2	29.3	.0	12.0	.0
Nov	53.8	28.7	41.3	83	1966	2	49.0	1976	4	1955	15	33.1	1994	713	0	.0	.0	18.2	.1	23.4	.0
Dec	47.4	24.8	36.1	72	1958	3	41.6	1980	-9	1990	21	29.2	1990	896	0	.0	.0	11.2	.7	28.0	.3
Ann	65.7	35.3	50.5	107+	Aug 1981	10	73.1	Jul 1988	-12	Feb 1989	5	29.2	Dec 1990	5641	368	3.5	39.3	277.4	2.1	161.8	.4

\+ 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

Means/Medians(1)

Month	Mean	Median
Jan	8.82	7.28
Feb	8.28	6.00
Mar	7.64	6.57
Apr	3.28	3.04
May	2.33	1.60
Jun	.97	.53
Jul	.28	.19
Aug	.42	.21
Sep	1.15	.76
Oct	2.78	2.14
Nov	6.13	3.93
Dec	6.98	5.46
Ann	49.06	46.00

Extremes

Month	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	5.33	1995	9	32.57	1995	.28	1984
Feb	4.05	1956	21	29.25	1998	.10	1988
Mar	4.27	1958	21	22.97	1983	.54	1988
Apr	2.77	1965	16	8.48	1982	.18	1985
May	4.17	1990	23	10.72	1990	.01	1992
Jun	2.12	2001	27	4.10	1992	.00+	1979
Jul	.86	1987	18	1.39	1974	.00+	1999
Aug	2.12	1954	28	3.42	1976	.00+	1998
Sep	4.45	1957	27	4.81	1986	.00+	1999
Oct	3.81	1950	28	8.46	1989	.00	1978
Nov	4.68	1961	25	18.68	1984	.58	1995
Dec	4.96	1955	22	20.23	1996	.03	1989
Ann	5.33	Jan 1995	9	32.57	Jan 1995	.00+	Sep 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.8	10.0	5.7	2.9
Feb	11.7	9.2	5.4	3.2
Mar	12.4	10.0	5.3	2.5
Apr	9.2	6.2	2.3	.8
May	7.0	4.7	1.5	.4
Jun	3.8	2.2	.5	.2
Jul	1.6	.9	.1	.0
Aug	1.9	1.1	.3	.1
Sep	3.2	2.2	.8	.3
Oct	5.9	4.1	1.7	.8
Nov	10.5	8.1	4.0	2.3
Dec	11.2	8.5	4.5	2.4
Ann	91.2	67.2	32.1	15.9

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	.67	1.24	2.38	3.60	4.95	6.51	8.37	10.72	13.99	19.47	24.89
Feb	.53	1.03	2.06	3.19	4.46	5.94	7.74	10.03	13.22	18.63	24.01
Mar	1.00	1.62	2.71	3.77	4.89	6.13	7.57	9.34	11.73	15.65	19.44
Apr	.39	.64	1.10	1.56	2.05	2.59	3.22	4.01	5.07	6.83	8.54
May	.04	.11	.31	.57	.92	1.36	1.92	2.70	3.83	5.85	7.93
Jun	.00	.04	.17	.32	.48	.67	.90	1.19	1.60	2.30	3.00
Jul	.00	.00	.00	.00	.08	.15	.24	.35	.50	.75	.99
Aug	.00	.00	.00	.00	.05	.16	.30	.48	.75	1.22	1.69
Sep	.00	.00	.00	.12	.30	.55	.88	1.33	1.99	3.17	4.36
Oct	.04	.19	.52	.90	1.34	1.87	2.51	3.35	4.53	6.56	8.59
Nov	.38	.74	1.49	2.33	3.27	4.37	5.71	7.41	9.80	13.85	17.88
Dec	.39	.79	1.63	2.57	3.65	4.91	6.45	8.43	11.20	15.92	20.62
Ann	22.68	26.98	32.92	37.72	42.19	46.67	51.47	56.95	63.83	74.24	83.62

\+ 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	11.2	6.0	6	2
Feb	13.7	7.5	4	2
Mar	9.3	2.0	2	1
Apr	1.8	.0	#	0
May	.0	.0	#	0
Jun	#	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.2	.0	#	0
Nov	5.4	2.5	#	#
Dec	18.0	6.3	2	1
Ann	59.6	24.3	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	26.0	1972	27	38.0	1996	61	1993	10	42	1993
Feb	31.0	1975	1	62.5	1975	42	1975	2	21	1993
Mar	16.0	1983	24	42.5	1975	21	1991	26	7	1983
Apr	10.0	1982	2	15.0+	1982	22	1982	2	4	1982
May	.8	1975	4	.8	1975	1	1998	27	#+	1998
Jun	#	1975	24	#	1975	0	0	0	0	0
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	2.0	1971	31	2.5	1984	2	1971	31	#+	1984
Nov	16.0	1984	28	25.3	1994	16	1977	22	3	1994
Dec	27.0	1992	31	96.9	1992	60	1992	31	16	1971
Ann	31.0	Feb 1975	1	96.9	Dec 1992	61	Jan 1993	10	42	Jan 1993

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.5	3.6	1.7	.9	.3
Feb	3.5	3.1	1.7	1.0	.4
Mar	2.9	2.4	1.2	.8	.2
Apr	.8	.6	.1	.1	@
May	.1	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.2	.1	.0	.0	.0
Nov	1.8	1.3	.6	.3	.1
Dec	3.5	3.0	1.5	.9	.4
Ann	17.3	14.1	6.8	4.0	1.4

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	11.6	8.8	7.4	5.5
Feb	6.8	4.8	3.6	2.0
Mar	4.3	3.1	2.1	.6
Apr	.4	.1	@	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.1	.0	.0	.0
Nov	1.5	.7	.4	.1
Dec	6.7	4.8	3.5	1.8
Ann	31.4	22.3	17.0	10.0

+ 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	7/10	7/03	6/28	6/24	6/20	6/17	6/13	6/08	6/01
32	6/15	6/10	6/07	6/04	6/01	5/29	5/26	5/23	5/18
28	5/25	5/19	5/15	5/11	5/08	5/05	5/01	4/27	4/21
24	5/06	4/28	4/22	4/17	4/12	4/07	4/02	3/27	3/19
20	4/17	4/04	3/25	3/17	3/10	3/03	2/23	2/13	2/01
16	3/18	3/04	2/21	2/12	2/04	1/26	1/17	1/05	12/19

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	8/28	9/03	9/07	9/11	9/14	9/18	9/21	9/25	10/01
32	9/17	9/22	9/26	9/30	10/03	10/06	10/09	10/13	10/18
28	9/30	10/05	10/09	10/13	10/16	10/19	10/23	10/27	11/01
24	10/16	10/22	10/27	10/31	11/04	11/07	11/11	11/16	11/23
20	10/30	11/07	11/12	11/17	11/21	11/26	11/30	12/05	12/13
16	11/14	11/25	12/02	12/09	12/16	12/23	12/30	1/09	1/26

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	110	101	95	90	85	80	75	69	60
32	146	138	132	127	123	118	113	108	100
28	182	174	169	165	160	156	151	146	139
24	238	227	218	211	205	198	191	183	172
20	302	286	274	265	255	246	237	225	209
16	>365	360	339	325	314	303	292	279	262

***** 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	906	752	727	545	335	131	44	37	157	398	713	896	5641
60	751	612	572	402	207	53	11	6	78	263	563	741	4259
57	658	528	480	321	146	25	4	1	44	193	475	648	3523
55	596	472	420	270	112	14	1	0	29	153	417	586	3070
50	441	336	279	163	48	2	0	0	8	74	282	434	2067
32	44	22	12	4	0	0	0	0	0	0	17	50	149

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	161	194	309	449	698	906	1124	1092	886	632	294	177	6922
55	0	0	3	25	97	230	412	379	224	72	4	0	1446
57	0	0	1	16	69	181	353	318	180	50	2	0	1170
60	0	0	0	7	37	119	267	231	123	27	0	0	811
65	0	0	0	0	11	46	145	106	53	7	0	0	368
70	0	0	0	0	1	12	63	31	16	1	0	0	124

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	29	49	111	230	455	666	879	849	645	386	99	29	29	78	189	419	874	1540	2419	3268	3913	4299	4398	4427
45	0	10	40	124	308	519	724	694	495	248	35	0	0	10	50	174	482	1001	1725	2419	2914	3162	3197	3197
50	0	0	5	56	188	374	569	539	350	134	7	0	0	0	5	61	249	623	1192	1731	2081	2215	2222	2222
55	0	0	0	16	95	242	416	385	219	59	0	0	0	0	0	16	111	353	769	1154	1373	1432	1432	1432
60	0	0	0	0	39	128	268	240	112	19	0	0	0	0	0	0	39	167	435	675	787	806	806	806
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	43	57	103	187	322	438	550	535	443	309	92	41	43	100	203	390	712	1150	1700	2235	2678	2987	3079	3120

(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