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: IMPERIAL, CA **COOP ID: 044223**

Climate Division: CA 7 **NWS Call Sign:** **Elevation: -64 Feet** **Lat: 32˚51N** **Lon: 115˚34W**

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	69.0	41.4	55.2	90	1971	19	60.1	1986	21+	1950	4	50.6	1979	309	4	.0	@	31.0	.0	.9	.0
Feb	73.4	45.3	59.4	96	1986	27	64.3	1995	28+	1985	1	55.8	1975	172	13	.0	.3	28.0	.0	.3	.0
Mar	77.8	49.4	63.6	99+	1988	27	68.8	1972	32+	1971	3	58.7+	1977	116	73	.0	2.5	31.0	.0	@	.0
Apr	84.8	54.4	69.6	105	1989	7	75.6	1989	41+	1999	10	61.6	1975	47	186	.9	10.7	30.0	.0	.0	.0
May	92.4	60.7	76.6	114	1983	28	82.5	1997	45	1964	7	70.5	1977	7	365	5.9	22.1	31.0	.0	.0	.0
Jun	101.8	68.2	85.0	119	1970	25	88.7	1978	50	1976	10	80.6	1982	0	600	21.8	28.6	30.0	.0	.0	.0
Jul	105.3	75.2	90.3	121	1995	28	92.7	1980	61+	1996	1	88.0	1991	0	783	29.3	31.0	31.0	.0	.0	.0
Aug	104.3	76.0	90.2	118	1993	1	94.0	1995	60	1956	3	86.7	1979	0	780	27.6	30.8	31.0	.0	.0	.0
Sep	99.6	70.7	85.2	118+	1950	1	90.3	1995	54+	1954	30	79.7	1985	0	606	18.1	28.3	30.0	.0	.0	.0
Oct	89.1	59.7	74.4	110+	1980	2	79.5	1988	36	1971	30	68.1	1971	12	303	3.4	16.8	31.0	.0	.0	.0
Nov	77.0	47.6	62.3	98	1950	3	68.4	1995	32	1958	17	56.8	1994	129	48	.0	1.1	30.0	.0	.0	.0
Dec	68.7	40.7	54.7	90	1958	3	59.4	1980	21	1990	23	50.4	1971	323	3	.0	.0	31.0	.0	1.4	.0
Ann	86.9	57.4	72.2	121	Jul 1995	28	94.0	Aug 1995	21+	Dec 1990	23	50.4	Dec 1971	1115	3764	107.0	172.2	365.0	.0	2.6	.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

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	.48	.15	.90	1993	16	3.45	1993	.00+	2000
Feb	.39	.22	.90	1988	2	1.41	1980	.00+	1989
Mar	.34	.11	.92	1983	2	1.85	1992	.00+	1999
Apr	.08	.00	.58	1965	3	.47+	1999	.00+	2000
May	.04	.00	.70	1994	24	.72	1994	.00+	2000
Jun	.00	.00	.01+	1997	7	.01+	1997	.00+	2000
Jul	.13	.01	1.17	1968	6	.76	1984	.00+	2000
Aug	.32	.08	2.20	1977	15	3.87	1977	.00+	1997
Sep	.36	.03	2.35	1976	10	2.84	1976	.00+	1996
Oct	.28	.00	1.96	1986	10	2.59	1986	.00+	1999
Nov	.19	.03	1.12	1967	26	.90	1985	.00+	1999
Dec	.41	.12	2.28	1982	9	2.40	1982	.00+	2000
Ann	3.02	2.82	2.35	Sep 1976	10	3.87	Aug 1977	.00+	Dec 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.9	1.2	.3	.0
Feb	2.7	1.1	.2	.0
Mar	2.3	.9	.2	.0
Apr	.6	.2	.0	.0
May	.4	.1	@	.0
Jun	.1	.0	.0	.0
Jul	.7	.2	.1	.0
Aug	1.7	.7	.1	.1
Sep	1.2	.6	.3	.1
Oct	1.1	.6	.1	.1
Nov	1.2	.4	.1	.0
Dec	2.4	.9	.2	@
Ann	17.3	6.9	1.6	.3

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	.00	.00	.01	.05	.12	.22	.36	.54	.82	1.32	1.85
Feb	.00	.00	.01	.06	.12	.20	.31	.46	.67	1.04	1.43
Mar	.00	.00	.00	.00	.04	.12	.23	.38	.60	1.00	1.41
Apr	.00	.00	.00	.00	.00	.00	.00	.05	.13	.27	.40
May	.00	.00	.00	.00	.00	.00	.00	.00	.02	.13	.26
Jun	**	**	**	**	**	**	**	**	**	**	**
Jul	.00	.00	.00	.00	.00	.00	.02	.09	.20	.42	.66
Aug	.00	.00	.00	.00	.03	.08	.17	.31	.54	.96	1.42
Sep	.00	.00	.00	.00	.00	.02	.10	.26	.54	1.11	1.77
Oct	.00	.00	.00	.00	.00	.00	.04	.18	.43	.93	1.47
Nov	.00	.00	.00	.00	.00	.03	.10	.19	.33	.58	.84
Dec	.00	.00	.00	.00	.03	.11	.24	.43	.71	1.24	1.80
Ann	.82	1.10	1.54	1.92	2.29	2.68	3.12	3.63	4.30	5.35	6.33

\+ 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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Feb	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Mar	.0	.0	0	0	.0	0	0	.0	0	0	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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	.0	.0	N/A	N/A	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.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	2/22	2/12	2/04	1/29	1/23	1/17	1/10	1/01	12/16
32	2/05	1/24	1/15	1/05	12/25	0/00	0/00	0/00	0/00
28	1/07	12/23	0/00	0/00	0/00	0/00	0/00	0/00	0/00
24	0/00	0/00	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	11/18	11/26	12/02	12/07	12/12	12/17	12/23	12/31	0/00
32	12/11	12/19	12/25	1/01	1/10	0/00	0/00	0/00	0/00
28	12/28	1/17	0/00	0/00	0/00	0/00	0/00	0/00	0/00
24	0/00	0/00	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	>365	>365	338	326	318	310	302	294	282
32	>365	>365	>365	>365	>365	>365	364	338	319
28	>365	>365	>365	>365	>365	>365	>365	>365	>365
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	309	172	116	47	7	0	0	0	0	12	129	323	1115
60	173	76	45	15	1	0	0	0	0	2	52	186	550
57	110	37	20	7	0	0	0	0	0	0	25	122	321
55	77	20	12	3	0	0	0	0	0	0	13	88	213
50	21	2	0	0	0	0	0	0	0	0	2	26	51
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	718	765	979	1129	1380	1590	1806	1803	1596	1313	909	704	14692
55	83	140	278	442	667	900	1093	1090	906	600	233	78	6510
57	53	101	225	385	605	840	1031	1028	846	538	184	50	5886
60	23	56	156	304	513	750	938	935	756	447	121	22	5021
65	4	13	73	186	365	600	783	780	606	303	48	3	3764
70	0	1	24	100	230	450	628	625	456	180	13	0	2707

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	518	607	777	931	1183	1403	1607	1601	1397	1109	710	502	518	1125	1902	2833	4016	5419	7026	8627	10024	11133	11843	12345
45	367	462	622	781	1028	1253	1452	1446	1247	954	560	347	367	829	1451	2232	3260	4513	5965	7411	8658	9612	10172	10519
50	215	320	467	631	873	1103	1297	1291	1097	799	410	203	215	535	1002	1633	2506	3609	4906	6197	7294	8093	8503	8706
55	92	183	315	481	718	953	1142	1136	947	644	262	86	92	275	590	1071	1789	2742	3884	5020	5967	6611	6873	6959
60	23	77	175	335	563	803	987	981	797	490	139	17	23	100	275	610	1173	1976	2963	3944	4741	5231	5370	5387
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	321	373	490	592	744	849	987	1000	881	715	447	312	321	694	1184	1776	2520	3369	4356	5356	6237	6952	7399	7711

(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