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: SAINT HELENA, CA **COOP ID: 047643**

Climate Division: CA 1 **NWS Call Sign:** **Elevation: 225 Feet** **Lat: 38˚30N** **Lon: 122˚28W**

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	58.0	37.8	47.9	83	1962	8	52.7	1984	16	1937	9	44.0	1972	531	0	.0	.0	28.6	.0	8.9	.0
Feb	62.5	40.3	51.4	84+	1971	11	55.1	1995	22+	1950	2	46.3	1989	381	0	.0	.0	27.3	.1	3.8	.0
Mar	66.3	41.8	54.1	90	1966	31	58.2	1997	24+	1971	5	50.2	1991	343	3	.0	.0	30.6	.0	1.5	.0
Apr	73.0	44.2	58.6	98	1981	29	63.4	1987	27	1953	8	51.9	1975	216	23	.0	.7	29.9	.0	.5	.0
May	79.2	48.0	63.6	105	1950	29	69.6	1997	30	1979	23	57.7	1977	115	72	.4	4.2	31.0	.0	.1	.0
Jun	85.5	52.1	68.8	110	1976	27	74.1	1981	36	1952	12	65.2	1980	21	134	2.0	9.1	30.0	.0	.0	.0
Jul	89.3	53.9	71.6	115+	1972	14	76.4	1996	39	1955	5	68.9+	1987	5	210	2.8	13.5	31.0	.0	.0	.0
Aug	88.3	53.6	71.0	111+	1993	2	74.9	1996	32	1978	9	67.9	1976	5	190	2.8	12.9	31.0	.0	.0	.0
Sep	85.6	51.6	68.6	113	1955	2	73.1	1997	35+	1934	26	63.4	1986	26	134	1.7	9.7	30.0	.0	.0	.0
Oct	77.7	47.2	62.5	104	1933	5	65.4	1991	23	1946	29	58.1	1971	116	37	.3	3.3	31.0	.0	.1	.0
Nov	65.1	41.6	53.4	92+	1966	1	58.8	1995	23+	1961	17	48.2	1994	352	3	.0	.1	29.9	.0	2.6	.0
Dec	58.4	36.7	47.6	83	1967	27	51.5	1996	11	1932	11	42.4	1972	541	0	.0	.0	28.2	.0	9.9	.0
Ann	74.1	45.7	59.9	115+	Jul 1972	14	76.4	Jul 1996	11	Dec 1932	11	42.4	Dec 1972	2652	806	10.0	53.5	358.5	.1	27.4	.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: 1931-2001

(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	7.46	6.76	6.83	1967	21	23.30	1995	.48	1976
Feb	7.10	5.38	5.80	1986	16	25.60	1986	.26	1971
Mar	5.31	3.90	6.40	1995	9	16.83	1995	.34	1994
Apr	1.74	1.75	3.25	1982	10	6.82	1982	.05	1973
May	.68	.16	1.91	1996	16	4.06	1996	.00+	1997
Jun	.17	.03	1.61	1967	2	1.35	1993	.00+	1998
Jul	.04	.00	1.01	1974	8	1.08	1974	.00+	2000
Aug	.08	.00	.73	1997	20	.80	1976	.00+	2000
Sep	.41	.10	3.66	1959	18	1.95	1982	.00+	2000
Oct	1.84	1.30	5.58	1962	12	5.13	1979	.00+	1995
Nov	4.83	3.69	5.19	1977	21	15.25	1973	.12	1986
Dec	5.22	4.51	5.76	1955	19	14.53	1992	.00	1989
Ann	34.88	30.69	6.83	Jan 1967	21	25.60	Feb 1986	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.6	8.6	4.9	2.4
Feb	10.8	8.3	4.7	2.8
Mar	10.5	7.7	3.7	1.5
Apr	5.8	3.7	1.2	.3
May	3.6	1.7	.5	.2
Jun	.8	.5	.1	@
Jul	.1	.1	@	@
Aug	.5	.3	@	.0
Sep	1.7	1.1	.2	.0
Oct	4.1	2.8	1.4	.7
Nov	9.2	6.6	3.5	1.7
Dec	9.7	7.0	3.3	1.9
Ann	68.4	48.4	23.5	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	.64	1.15	2.14	3.17	4.31	5.60	7.14	9.08	11.76	16.23	20.63
Feb	.50	.95	1.85	2.83	3.91	5.17	6.69	8.61	11.29	15.80	20.26
Mar	.49	.87	1.58	2.32	3.12	4.04	5.12	6.47	8.33	11.43	14.46
Apr	.10	.20	.41	.65	.92	1.23	1.62	2.11	2.79	3.96	5.12
May	.00	.00	.00	.04	.13	.25	.44	.71	1.14	1.93	2.78
Jun	.00	.00	.00	.00	.00	.00	.06	.15	.29	.54	.79
Jul	**	**	**	**	**	**	**	**	**	**	**
Aug	.00	.00	.00	.00	.00	.00	.00	.01	.08	.27	.49
Sep	.00	.00	.00	.00	.00	.09	.23	.44	.73	1.26	1.81
Oct	.00	.12	.40	.68	.99	1.34	1.75	2.27	2.98	4.18	5.36
Nov	.22	.47	1.02	1.66	2.40	3.28	4.38	5.79	7.79	11.23	14.69
Dec	.25	.72	1.50	2.27	3.09	4.01	5.09	6.43	8.26	11.29	14.24
Ann	14.71	17.87	22.32	25.96	29.37	32.83	36.55	40.83	46.24	54.49	61.97

\+ 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	.2	.0	#	0
Feb	#	.0	0	0
Mar	.2	.0	#	0
Apr	.0	.0	0	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	.0	.0	0	0
Nov	.0	.0	0	0
Dec	.0	.0	0	0
Ann	.4	.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	3.0	1974	3	4.0	1974	2	1973	8	#+	1974
Feb	#	1976	5	#	1976	0	0	0	0	0
Mar	4.0	1976	2	4.0	1976	1	1976	2	#	1976
Apr	.0	0	0	.0	0	0	0	0	0	0
May	.0	0	0	.0	0	0	0	0	0	0
Jun	.0	0	0	.0	0	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	.0	0	0	.0	0	0	0	0	0	0
Nov	.0	0	0	.0	0	0	0	0	0	0
Dec	.0	0	0	.0	0	0	0	0	0	0
Ann	4.0	Mar 1976	2	4.0+	Mar 1976	2	Jan 1973	8	#+	Mar 1976

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.1	.1	@	.0	.0
Feb	.0	.0	.0	.0	.0
Mar	@	@	@	.0	.0
Apr	.0	.0	.0	.0	.0
May	.0	.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	.0	.0	.0	.0	.0
Nov	.0	.0	.0	.0	.0
Dec	.0	.0	.0	.0	.0
Ann	.1	.1	@	.0	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.1	.0	.0	.0
Feb	.0	.0	.0	.0
Mar	@	.0	.0	.0
Apr	.0	.0	.0	.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	.0	.0	.0	.0
Nov	.0	.0	.0	.0
Dec	.0	.0	.0	.0
Ann	.1	.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	5/10	4/30	4/22	4/16	4/09	4/03	3/28	3/20	3/10
32	4/21	4/04	3/24	3/14	3/04	2/23	2/13	2/01	1/16
28	2/24	2/11	2/02	1/25	1/17	1/09	12/30	12/17	0/00
24	1/26	1/12	1/01	12/19	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	10/23	10/29	11/02	11/06	11/10	11/13	11/17	11/21	11/27
32	10/29	11/08	11/15	11/21	11/27	12/03	12/09	12/16	12/27
28	11/20	11/29	12/06	12/12	12/18	12/24	1/01	1/12	0/00
24	12/08	12/21	1/03	1/19	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	252	238	229	221	213	206	198	188	175
32	333	303	287	274	263	252	241	228	209
28	>365	>365	364	345	331	320	309	297	281
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	531	381	343	216	115	21	5	5	26	116	352	541	2652
60	376	247	205	115	46	3	0	0	4	39	218	388	1641
57	287	173	137	70	22	0	0	0	0	16	151	301	1157
55	229	130	101	46	13	0	0	0	0	7	114	246	886
50	110	52	34	13	2	0	0	0	0	1	47	130	389
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	492	543	684	797	980	1104	1228	1207	1098	944	642	482	10201
55	8	28	72	153	279	414	515	494	408	238	66	14	2689
57	4	15	46	117	226	354	453	432	348	185	43	8	2231
60	0	5	20	72	157	266	360	339	262	115	20	2	1618
65	0	0	3	23	72	134	210	190	134	37	3	0	806
70	0	0	0	5	21	46	86	72	49	6	0	0	285

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	239	325	427	547	728	867	983	972	867	700	397	237	239	564	991	1538	2266	3133	4116	5088	5955	6655	7052	7289
45	108	188	276	397	573	717	828	817	717	545	252	114	108	296	572	969	1542	2259	3087	3904	4621	5166	5418	5532
50	29	79	143	252	418	567	673	662	567	390	128	34	29	108	251	503	921	1488	2161	2823	3390	3780	3908	3942
55	0	18	47	126	271	419	518	507	418	239	46	1	0	18	65	191	462	881	1399	1906	2324	2563	2609	2610
60	0	0	7	46	143	273	363	353	270	117	7	0	0	0	7	53	196	469	832	1185	1455	1572	1579	1579
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	131	184	251	343	450	532	603	599	530	435	237	142	131	315	566	909	1359	1891	2494	3093	3623	4058	4295	4437

(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