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: CALIFORNIA, MO **COOP ID: 231189**

Climate Division: MO 3 **NWS Call Sign:** **Elevation: 870 Feet** **Lat: 38˚38N** **Lon: 92˚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	38.3	17.3	27.8	78	1967	23	41.0	1990	-17	1982	10	14.3	1977	1153	0	.0	.0	7.8	8.9	26.0	2.7
Feb	44.8	22.3	33.6	82	1972	29	42.8	1976	-14	1979	9	19.8	1978	881	0	.0	.0	11.8	5.1	20.4	1.2
Mar	55.8	32.1	44.0	85+	1986	29	49.3	1991	-10	1960	5	35.3	1984	652	0	.0	.0	22.1	.8	13.2	.1
Apr	65.8	41.7	53.8	92+	1987	21	60.7	1981	19	1975	3	45.9	1983	346	8	.0	.2	27.9	@	3.1	.0
May	74.9	52.6	63.8	94+	1972	22	70.4	1991	30	1976	3	59.3	1976	129	89	.0	.4	30.9	.0	@	.0
Jun	83.3	61.7	72.5	103+	1988	25	76.5	1991	43	1993	5	67.8	1982	10	235	.2	6.8	30.0	.0	.0	.0
Jul	89.1	66.6	77.9	109+	1980	31	86.0	1980	48	1972	7	74.8	1996	0	397	1.6	17.2	31.0	.0	.0	.0
Aug	88.1	64.9	76.5	108+	1980	2	82.8	1983	45	1986	28	71.5	1992	5	361	1.7	15.1	31.0	.0	.0	.0
Sep	80.1	55.6	67.9	104	1954	4	73.2	1998	30	1984	30	60.4	1974	61	146	.1	5.7	30.0	.0	@	.0
Oct	69.3	44.2	56.8	96	1976	2	62.5	1971	22+	1993	31	50.6	1976	271	16	.0	.4	30.4	.0	2.2	.0
Nov	54.2	32.3	43.3	85	1964	2	51.9	1990	-1	1991	8	35.7	1976	653	0	.0	.0	19.9	.9	11.7	@
Dec	42.4	22.5	32.5	75	1991	8	37.9	1971	-21	1989	23	16.9	1983	1009	0	.0	.0	10.3	5.3	23.2	1.3
Ann	65.5	42.8	54.2	109+	Jul 1980	31	86.0	Jul 1980	-21	Dec 1989	23	14.3	Jan 1977	5170	1252	3.6	45.8	283.1	21.0	99.8	5.3

\+ 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: 1954-2001

(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	1.56	1.45	1.72	2001	29	4.04	1999	.07	1986
Feb	1.95	1.71	2.63	1997	21	4.85	1997	.04	1991
Mar	3.20	2.91	2.05	1969	23	9.62	1973	.30	1971
Apr	4.03	3.85	4.63	1994	11	14.25	1994	.50	2000
May	5.34	5.17	4.34	1995	18	12.82	1995	1.12	1980
Jun	3.83	2.90	4.65	1969	22	9.63	1998	.54	1988
Jul	3.74	3.76	7.23	1993	7	13.77	1993	.56	1977
Aug	3.47	2.99	2.73	1989	21	9.28	1982	.54	1973
Sep	3.88	3.00	3.55	1978	13	12.67	1986	.26	1976
Oct	3.39	2.94	5.29	1969	12	8.36	1998	.94	1992
Nov	3.54	2.77	3.05	1983	2	9.88	1992	.36	1989
Dec	2.30	1.98	3.30	1982	2	8.45	1982	.32	1976
Ann	40.23	39.19	7.23	Jul 1993	7	14.25	Apr 1994	.04	Feb 1991

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.1	4.0	1.0	.3
Feb	6.3	4.1	1.1	.5
Mar	8.6	6.0	2.2	.8
Apr	10.3	7.2	2.4	1.1
May	10.8	7.6	3.4	1.6
Jun	8.8	6.3	2.5	1.0
Jul	7.5	5.2	2.4	1.3
Aug	6.8	5.3	2.4	1.2
Sep	7.4	5.4	2.3	1.3
Oct	7.5	5.7	2.6	.9
Nov	8.0	5.7	2.4	1.0
Dec	6.6	4.5	1.3	.6
Ann	94.7	67.0	26.0	11.6

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	.19	.32	.54	.75	.98	1.24	1.54	1.90	2.40	3.22	4.01
Feb	.23	.38	.65	.92	1.21	1.54	1.91	2.38	3.02	4.08	5.10
Mar	.84	1.14	1.61	2.01	2.42	2.84	3.31	3.86	4.59	5.73	6.79
Apr	1.02	1.40	1.98	2.50	3.01	3.55	4.16	4.87	5.80	7.28	8.66
May	1.71	2.22	2.97	3.61	4.22	4.86	5.56	6.38	7.43	9.08	10.59
Jun	.76	1.11	1.67	2.18	2.70	3.26	3.89	4.66	5.66	7.28	8.82
Jul	.68	1.01	1.55	2.06	2.58	3.15	3.79	4.56	5.59	7.26	8.84
Aug	.71	1.03	1.54	2.00	2.47	2.97	3.54	4.22	5.12	6.56	7.92
Sep	.56	.88	1.44	1.98	2.54	3.15	3.87	4.74	5.92	7.83	9.68
Oct	1.00	1.32	1.80	2.22	2.63	3.05	3.52	4.07	4.78	5.89	6.93
Nov	.61	.92	1.43	1.92	2.42	2.95	3.57	4.32	5.31	6.92	8.46
Dec	.41	.61	.95	1.26	1.58	1.93	2.32	2.80	3.44	4.46	5.44
Ann	26.52	29.09	32.43	35.00	37.29	39.53	41.85	44.44	47.59	52.21	56.23

\+ 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: 1954-2001
(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	4.6	2.5	1	0
Feb	3.4	3.5	#	0
Mar	1.8	.0	#	0
Apr	.2	.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	1.4	.0	#	0
Dec	2.2	1.0	#	#
Ann	13.6	7.0	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	6.0	1987	9	20.0	1987	12	1979	31	7	1979
Feb	9.0	1978	13	9.5	1975	13	1979	2	6	1979
Mar	8.8	2000	11	12.0	1978	5	1974	23	#+	1996
Apr	5.0	1980	14	5.0	1980	#+	1997	13	#+	1997
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	8.0	1972	19	8.5	1972	7	1975	26	1	1975
Dec	6.0	1981	22	8.0	1978	13	1987	31	2+	2000
Ann	9.0	Feb 1978	13	20.0	Jan 1987	13+	Dec 1987	31	7	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.0	1.5	.5	.1	.0
Feb	1.3	1.0	.8	.2	.0
Mar	.6	.5	.3	.1	.0
Apr	.1	@	@	@	.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	.4	.3	.1	.1	.0
Dec	1.0	1.0	.2	.1	.0
Ann	5.4	4.3	1.9	.6	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	4.7	3.5	2.6	.5
Feb	3.3	1.9	1.0	.6
Mar	.4	.1	.1	.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	.3	.2	.2	.0
Dec	2.2	1.5	.3	.0
Ann	10.9	7.2	4.2	1.1

+ 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	5/07	5/02	4/29	4/26	4/23	4/20	4/17	4/14	4/09
32	4/20	4/16	4/13	4/11	4/09	4/07	4/04	4/02	3/29
28	4/13	4/09	4/06	4/04	4/01	3/30	3/27	3/24	3/20
24	4/07	4/02	3/29	3/26	3/23	3/20	3/16	3/13	3/07
20	3/27	3/20	3/16	3/11	3/07	3/03	2/27	2/22	2/15
16	3/20	3/12	3/06	3/02	2/25	2/21	2/16	2/10	2/03

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	9/25	9/30	10/04	10/07	10/10	10/13	10/17	10/20	10/26
32	10/07	10/13	10/17	10/20	10/23	10/26	10/30	11/03	11/09
28	10/18	10/24	10/28	10/31	11/03	11/06	11/10	11/13	11/19
24	10/30	11/05	11/09	11/12	11/15	11/19	11/22	11/26	12/02
20	11/05	11/11	11/16	11/20	11/23	11/27	12/01	12/05	12/11
16	11/16	11/23	11/28	12/02	12/06	12/09	12/13	12/18	12/25

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	190	183	178	174	170	166	162	157	150
32	215	209	204	200	197	193	189	185	179
28	233	227	222	219	215	212	208	204	198
24	261	253	247	242	237	232	227	221	213
20	287	278	271	265	260	255	249	243	234
16	316	305	296	289	283	276	269	261	249

***** 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	1153	881	652	346	129	10	0	5	61	271	653	1009	5170
60	998	744	504	219	60	1	0	0	20	154	506	854	4060
57	906	666	418	155	33	0	0	0	8	100	423	763	3472
55	847	613	363	120	21	0	0	0	4	72	369	706	3115
50	704	486	242	53	5	0	0	0	0	26	249	562	2327
32	270	153	23	0	0	0	0	0	0	0	24	169	639

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	139	196	394	653	983	1215	1420	1380	1075	767	362	183	8767
55	4	13	21	82	291	525	707	667	390	126	17	7	2850
57	1	9	14	58	241	465	645	605	334	92	11	2	2477
60	0	3	7	31	175	376	552	512	255	54	3	0	1968
65	0	0	0	8	89	235	397	361	146	16	0	0	1252
70	0	0	0	1	35	117	247	224	70	3	0	0	697

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	44	108	272	503	799	1035	1225	1179	897	590	237	70	44	152	424	927	1726	2761	3986	5165	6062	6652	6889	6959
45	15	57	176	365	644	885	1070	1024	747	440	150	34	15	72	248	613	1257	2142	3212	4236	4983	5423	5573	5607
50	4	25	104	246	490	735	915	869	598	300	84	11	4	29	133	379	869	1604	2519	3388	3986	4286	4370	4381
55	0	7	56	149	340	585	760	714	452	185	40	3	0	7	63	212	552	1137	1897	2611	3063	3248	3288	3291
60	0	2	22	79	211	435	605	559	320	99	12	0	0	2	24	103	314	749	1354	1913	2233	2332	2344	2344
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	33	75	176	310	509	707	833	804	591	365	145	44	33	108	284	594	1103	1810	2643	3447	4038	4403	4548	4592

(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