

# Climatology of the United States

## No. 20

### 1971-2000

**Station: MORRO BAY FIRE DEPT, CA**

**COOP ID: 045866**

**Climate Division: CA 4**

**NWS Call Sign:**

**Elevation: 115 Feet**

**Lat: 35° 22N**

**Lon: 120° 51W**

### 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	61.9	42.0	52.0	89	1976	17	55.0	1986	23	1993	3	48.7	1987	404	0	.0	.0	30.9	.0	1.5	.0
Feb	62.4	43.8	53.1	87	1995	21	57.8	1995	25	1990	14	49.1	1990	347	0	.0	.0	27.9	.0	.9	.0
Mar	62.4	44.4	53.4	92	1988	26	57.8	1978	28	1969	4	49.0	1977	345	0	.0	@	30.8	.0	.1	.0
Apr	63.4	45.0	54.2	100	1989	7	58.5	1996	33+	1972	9	49.7	1975	324	0	@	.2	30.0	.0	.0	.0
May	62.8	47.5	55.2	98	1970	16	59.6	1997	33+	1977	6	50.5	1991	306	0	.0	.1	31.0	.0	.0	.0
Jun	64.3	50.2	57.3	101	1976	25	60.5	1985	39+	1992	14	53.4	1991	233	0	.1	.3	30.0	.0	.0	.0
Jul	65.2	52.3	58.8	89	1970	1	61.9	1983	35	1984	1	56.3	1975	196	1	.0	.0	31.0	.0	.0	.0
Aug	66.0	53.3	59.7	94	1962	28	64.0	1997	40+	1992	24	57.2	1989	174	8	.0	.0	31.0	.0	.0	.0
Sep	67.7	52.6	60.2	102	1984	8	69.3	1984	41	1992	8	56.5	1989	174	28	.1	.7	30.0	.0	.0	.0
Oct	68.6	49.9	59.3	99	1964	21	64.9	1983	37+	1991	29	56.1	1971	189	11	.0	.4	31.0	.0	.0	.0
Nov	66.1	45.6	55.9	92	1967	2	60.0	1997	31+	1992	14	51.9	1994	276	2	.0	@	30.0	.0	.2	.0
Dec	62.3	41.8	52.1	81	1980	30	57.0	1977	22	1990	22	47.6	1971	401	0	.0	.0	30.7	.0	2.3	.0
Ann	64.4	47.4	55.9	102	Sep 1984	8	69.3	Sep 1984	22	Dec 1990	22	47.6	Dec 1971	3369	50	.2	1.7	364.3	.0	5.0	.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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1959-2001

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

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**Lon: 120°51W**

### Precipitation (inches)

		Precipitation Totals								Mean Number of Days (3)				Precipitation Probabilities (1)											
														Probability that the monthly/annual precipitation will be equal to or less than the indicated amount											
Means/Medians(1)		Extremes								Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels											
														These values were determined from the incomplete gamma distribution											
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95	
Jan	3.49	2.51	2.80	1973	18	11.78	1995	.02	1976	8.9	6.3	2.6	.8	.18	.37	.79	1.25	1.79	2.43	3.21	4.21	5.62	8.03	10.44	
Feb	3.69	2.50	2.63	1996	5	11.28	1998	.10	1997	8.8	6.3	2.5	1.0	.18	.38	.81	1.30	1.87	2.55	3.37	4.44	5.95	8.53	11.11	
Mar	3.66	3.10	8.82	1995	11	18.29	1995	.00	1997	8.2	5.8	2.3	1.0	.05	.23	.65	1.14	1.72	2.42	3.28	4.40	5.99	8.74	11.50	
Apr	1.12	.71	2.55	1982	10	3.77	1978	.03	1973	4.4	2.9	.6	.1	.05	.10	.22	.37	.54	.75	1.00	1.33	1.81	2.62	3.44	
May	.34	.07	1.22	1998	4	2.46	1998	.00+	1999	2.1	.9	.2	@	.00	.00	.00	.00	.01	.07	.17	.33	.59	1.06	1.56	
Jun	.07	.00	.63	1995	16	.77	1995	.00+	1999	.7	.2	@	.0	.00	.00	.00	.00	.00	.00	.00	.03	.09	.23	.39	
Jul	.03	.00	.52	1966	30	.40	1980	.00+	2000	.6	.1	.0	.0	.00	.00	.00	.00	.00	.00	.00	.01	.04	.10	.17	
Aug	.09	.00	.78	1976	20	1.60	1976	.00+	2000	.6	.2	.1	.0	.00	.00	.00	.00	.00	.00	.00	.02	.08	.28	.47	
Sep	.37	.08	1.20	1976	29	2.72	1976	.00+	1996	2.0	.7	.3	.2	.00	.00	.00	.00	.03	.10	.20	.36	.62	1.12	1.65	
Oct	.70	.53	1.75	1996	30	2.01	1996	.00+	1995	3.1	1.8	.3	.1	.00	.01	.08	.17	.28	.42	.60	.83	1.17	1.76	2.37	
Nov	1.54	1.25	1.66	1970	26	5.31	1997	.00	1992	5.4	3.7	1.1	.1	.02	.08	.24	.44	.68	.97	1.34	1.83	2.53	3.74	4.97	
Dec	2.51	1.85	3.08	1962	16	6.98	1996	.00	1989	6.3	4.2	1.8	.7	.07	.25	.59	.95	1.35	1.81	2.37	3.07	4.05	5.70	7.33	
Ann	17.61	17.07	8.82	Mar 1995	11	18.29	Mar 1995	.00+	Aug 2000	51.1	33.1	11.8	4.0	6.94	8.57	10.88	12.80	14.61	16.46	18.46	20.76	23.69	28.18	32.27	

+ 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: 1959-2001

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

Complete documentation available from:  
[www.ncdc.noaa.gov/oa/climate/normals/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html)

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NWS Call Sign:

Elevation: 115 Feet

Lat: 35° 22N

Lon: 120° 51W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	1	1979	30	#	1979	.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	#	1972	8	#	1972	#	1972	8	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	#	.0	N/A	N/A	#	Dec 1972	8	#	Dec 1972	1	Jan 1979	30	#	Jan 1979	.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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<b>Freeze Data</b>									
<b>Spring Freeze Dates (Month/Day)</b>									
<b>Temp (F)</b>	<b>Probability of later date in spring (thru Jul 31) than indicated(*)</b>								
	<b>.10</b>	<b>.20</b>	<b>.30</b>	<b>.40</b>	<b>.50</b>	<b>.60</b>	<b>.70</b>	<b>.80</b>	<b>.90</b>
<b>36</b>	5/08	4/20	4/08	3/28	3/18	3/07	2/23	2/08	1/11
<b>32</b>	3/03	2/11	1/26	1/10	12/18	0/00	0/00	0/00	0/00
<b>28</b>	1/29	12/23	0/00	0/00	0/00	0/00	0/00	0/00	0/00
<b>24</b>	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
<b>20</b>	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
<b>16</b>	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
<b>Fall Freeze Dates (Month/Day)</b>									
<b>Temp (F)</b>	<b>Probability of earlier date in fall (beginning Aug 1) than indicated(*)</b>								
	<b>.10</b>	<b>.20</b>	<b>.30</b>	<b>.40</b>	<b>.50</b>	<b>.60</b>	<b>.70</b>	<b>.80</b>	<b>.90</b>
<b>36</b>	10/31	11/18	12/01	12/12	12/22	1/02	1/14	1/30	2/28
<b>32</b>	11/21	12/07	12/20	1/03	1/22	0/00	0/00	0/00	0/00
<b>28</b>	1/02	2/01	0/00	0/00	0/00	0/00	0/00	0/00	0/00
<b>24</b>	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
<b>20</b>	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
<b>16</b>	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
<b>Freeze Free Period</b>									
<b>Temp (F)</b>	<b>Probability of longer than indicated freeze free period (Days)</b>								
	<b>.10</b>	<b>.20</b>	<b>.30</b>	<b>.40</b>	<b>.50</b>	<b>.60</b>	<b>.70</b>	<b>.80</b>	<b>.90</b>
<b>36</b>	>365	>365	310	288	272	259	246	232	213
<b>32</b>	>365	>365	>365	>365	>365	>365	319	297	281
<b>28</b>	>365	>365	>365	>365	>365	>365	>365	>365	>365
<b>24</b>	>365	>365	>365	>365	>365	>365	>365	>365	>365
<b>20</b>	>365	>365	>365	>365	>365	>365	>365	>365	>365
<b>16</b>	>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

Complete documentation available from:

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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
65	404	347	345	324	306	233	196	174	174	189	276	401	3369
60	252	202	217	181	163	99	67	63	84	80	144	253	1805
57	167	133	143	108	95	45	22	23	44	36	85	173	1074
55	118	95	104	72	61	21	8	10	26	18	55	127	715
50	35	29	33	14	11	1	0	0	6	1	12	47	189
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Base	Cooling Degree Days (1)												
	Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
32	619	589	663	666	717	757	828	857	845	845	716	622	8724
55	23	41	54	48	65	88	123	154	181	150	81	36	1044
57	11	22	31	24	36	52	75	105	139	106	51	19	671
60	2	8	12	7	12	16	27	52	88	56	20	7	307
65	0	0	0	0	0	0	0	1	8	28	11	2	50
70	0	0	0	0	0	0	0	0	7	1	0	0	8

### 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	387	396	434	443	478	532	591	617	616	610	491	388	387	783	1217	1660	2138	2670	3261	3878	4494	5104	5595	5983
45	233	251	279	293	323	382	436	462	466	455	341	237	233	484	763	1056	1379	1761	2197	2659	3125	3580	3921	4158
50	100	123	135	148	174	232	281	307	316	301	195	107	100	223	358	506	680	912	1193	1500	1816	2117	2312	2419
55	24	36	40	47	51	87	126	152	166	151	80	28	24	60	100	147	198	285	411	563	729	880	960	988
60	2	5	4	11	6	16	27	33	55	54	27	1	2	7	11	22	28	44	71	104	159	213	240	241
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	204	200	213	220	219	246	287	313	322	328	263	210	204	404	617	837	1056	1302	1589	1902	2224	2552	2815	3025

(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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)