

Climatology of the United States

No. 20

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: MARTINEZ WATER PLANT, CA

1971-2000

COOP ID: 045378

Climate Division: CA 4

NWS Call Sign:

Elevation: 40 Feet

Lat: 38°01N

Lon: 122°07W

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	53.7	38.8	46.3	71+	1984	26	51.1	1995	25+	1984	14	41.0	1972	582	0	.0	.0	25.6	.0	4.0	.0
Feb	59.5	41.8	50.7	80	1985	22	54.1	1986	26+	1989	8	47.0	1989	402	0	.0	.0	27.5	.1	1.5	.0
Mar	64.3	44.3	54.3	88	1988	26	58.4	1988	29	1971	2	50.1	1991	335	2	.0	.0	31.0	.0	.1	.0
Apr	70.9	46.1	58.5	98	1996	30	62.5	1987	29	1999	4	52.0	1975	212	17	.0	.6	30.0	.0	.1	.0
May	77.7	49.7	63.7	104+	1997	18	70.8	1997	34	1976	12	58.9	1998	106	66	.2	3.9	31.0	.0	.0	.0
Jun	83.9	53.8	68.9	110+	2000	15	76.2	1981	31	1976	30	64.7	1982	28	143	1.9	9.0	30.0	.0	@	.0
Jul	87.4	54.9	71.2	115	1972	14	74.9	1996	41	1979	7	67.8	1987	4	195	2.5	14.3	31.0	.0	.0	.0
Aug	86.6	55.0	70.8	107+	1998	4	74.0	1998	42	1970	23	68.2	1987	5	185	2.2	13.4	31.0	.0	.0	.0
Sep	83.3	53.8	68.6	108	1971	14	74.0	1984	41+	1987	27	63.5	1986	33	139	.7	8.2	30.0	.0	.0	.0
Oct	75.5	49.5	62.5	103	1980	3	66.7	1991	34	1971	30	58.6	1971	115	37	.1	1.9	31.0	.0	.0	.0
Nov	62.7	43.3	53.0	82	1997	2	58.8	1995	25	1985	13	48.5	1994	362	2	.0	.0	29.7	.0	.7	.0
Dec	54.5	38.5	46.5	74	1999	20	52.3	1995	19	1990	22	41.6	1990	573	0	.0	.0	25.8	.0	4.4	.0
Ann	71.7	47.5	59.6	115	Jul 1972	14	76.2	Jun 1981	19	Dec 1990	22	41.0	Jan 1972	2757	786	7.6	51.3	353.6	.1	10.8	.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

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1970-2001

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

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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	4.25	3.51	4.38	1982	5	10.38	1995	.33	1984	11.7	7.4	2.9	1.1	.40	.70	1.28	1.87	2.51	3.24	4.10	5.19	6.67	9.14	11.57
Feb	3.81	3.35	3.22	1998	3	12.18	1998	.13	1995	10.2	6.9	2.8	1.0	.24	.47	.94	1.46	2.04	2.72	3.55	4.60	6.08	8.58	11.06
Mar	3.24	2.40	2.30	1982	31	10.00	1995	.00	1988	9.8	6.7	2.3	.6	.18	.48	.98	1.46	1.97	2.53	3.19	4.00	5.10	6.92	8.69
Apr	1.04	.80	1.48	1982	11	4.10	1982	.04	1985	5.2	3.0	.5	.1	.04	.10	.21	.35	.51	.70	.94	1.24	1.68	2.43	3.18
May	.46	.15	1.53	1996	16	2.66	1998	.00+	1992	2.8	1.3	.1	.1	.00	.00	.00	.02	.08	.18	.31	.51	.80	1.33	1.88
Jun	.12	.01	1.28	1995	16	1.37	1995	.00+	1999	.8	.3	@	@	.00	.00	.00	.00	.00	.00	.03	.10	.20	.40	.61
Jul	.02	.00	.26	1974	8	.28	1974	.00+	2000	.3	.1	.0	.0	**	**	**	**	**	**	**	**	**	**	**
Aug	.08	.00	.65	1997	20	.71	1983	.00+	2000	.4	.3	.1	.0	.00	.00	.00	.00	.00	.00	.00	.00	.04	.23	.49
Sep	.24	.08	.95	1983	30	1.23	1989	.00+	1996	1.5	.7	.1	.0	.00	.00	.00	.00	.01	.06	.14	.26	.42	.72	1.04
Oct	.94	.81	2.00	1991	26	2.99	1972	.00+	1995	3.3	2.2	.6	.1	.00	.04	.16	.30	.45	.64	.86	1.14	1.55	2.24	2.92
Nov	2.59	2.01	3.78	1994	6	6.86	1994	.04	1995	7.9	5.0	1.8	.5	.07	.17	.42	.74	1.13	1.62	2.23	3.05	4.23	6.30	8.42
Dec	2.79	2.36	2.34	1995	12	6.82	1996	.00	1989	9.5	5.8	1.9	.6	.32	.67	1.14	1.53	1.94	2.37	2.85	3.44	4.21	5.44	6.61
Ann	19.58	18.68	4.38	Jan 1982	5	12.18	Feb 1998	.00+	Aug 2000	63.4	39.7	13.1	4.1	9.26	10.96	13.29	15.17	16.92	18.67	20.53	22.66	25.33	29.37	32.99

+ 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: 1970-2001

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

Complete documentation available from:
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Lon: 122°07W

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	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	#	1972	12	#	1972	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	#	.0	N/A	N/A	#	Dec 1972	12	#	Dec 1972	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	4/25	4/09	3/29	3/19	3/10	2/28	2/18	2/07	1/22
32	3/27	3/10	2/25	2/14	2/03	1/23	1/11	12/27	11/28
28	1/28	1/17	1/08	12/29	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	10/31	11/06	11/11	11/15	11/18	11/22	11/26	11/30	12/07
32	11/11	11/22	11/30	12/07	12/14	12/21	12/29	1/10	0/00
28	12/11	12/27	1/11	1/30	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	301	282	270	260	250	241	231	220	205
32	>365	>365	349	329	315	302	288	274	254
28	>365	>365	>365	>365	>365	>365	>365	>365	341
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)													
Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	582	402	335	212	106	28	4	5	33	115	362	573	2757
60	427	263	194	108	38	5	0	0	7	37	226	419	1724
57	339	185	124	63	16	1	0	0	1	15	157	332	1233
55	281	136	87	39	9	0	0	0	0	6	119	275	952
50	155	50	24	9	1	0	0	0	0	1	49	153	442
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	Ann
32	441	522	690	795	983	1105	1214	1203	1096	946	631	450	10076
55	9	14	65	144	278	415	501	490	406	239	59	12	2632
57	5	6	39	108	224	356	439	428	347	185	38	7	2182
60	0	1	16	63	152	270	346	335	263	115	16	1	1578
65	0	0	2	17	66	143	195	185	139	37	2	0	786
70	0	0	0	3	18	56	73	66	57	6	0	0	279

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	233	342	482	585	764	892	999	992	889	728	417	234	233	575	1057	1642	2406	3298	4297	5289	6178	6906	7323	7557
45	107	205	327	435	609	742	844	837	739	573	270	113	107	312	639	1074	1683	2425	3269	4106	4845	5418	5688	5801
50	32	84	178	286	454	592	689	682	589	418	134	33	32	116	294	580	1034	1626	2315	2997	3586	4004	4138	4171
55	2	19	63	153	301	442	534	527	439	266	48	1	2	21	84	237	538	980	1514	2041	2480	2746	2794	2795
60	0	0	7	55	158	293	379	372	289	128	7	0	0	0	7	62	220	513	892	1264	1553	1681	1688	1688
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	95	174	262	352	467	550	618	616	559	443	223	108	95	269	531	883	1350	1900	2518	3134	3693	4136	4359	4467

(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:

www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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
- 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 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
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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