

Climatology of the United States

No. 20

1971-2000

Station: TRACY PUMPING PLANT, CA

COOP ID: 049001

Climate Division: CA 5

NWS Call Sign:

Elevation: 61 Feet

Lat: 37° 48N

Lon: 121° 35W

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	55.6	38.5	47.1	70+	1998	17	52.5	1995	18+	1963	13	41.4	1972	556	0	.0	.0	24.8	.0	6.8	.0
Feb	62.4	41.3	51.9	77	1977	17	56.2	1991	23	1989	6	47.9	1989	368	0	.0	.0	27.4	.0	2.2	.0
Mar	67.2	44.8	56.0	88+	1988	27	60.6	1972	25+	1971	2	51.3	1985	291	10	.0	.0	30.9	.0	.2	.0
Apr	73.5	48.2	60.9	97	1996	30	66.1	1990	31+	1967	1	54.1	1975	167	42	.0	.7	30.0	.0	.0	.0
May	80.0	53.5	66.8	105	1984	28	74.8	1992	34	1968	13	60.4	1977	84	138	.6	5.8	31.0	.0	.0	.0
Jun	87.3	57.4	72.4	112	1961	15	78.1	1981	37	1988	6	66.9	1982	11	231	3.5	12.5	30.0	.0	.0	.0
Jul	92.5	60.2	76.4	112+	1972	13	80.8	1988	44	1966	8	72.0	1987	0	352	5.5	20.7	31.0	.0	.0	.0
Aug	91.8	59.9	75.9	111	1971	10	79.5	1992	42	1956	4	71.8	1976	0	337	4.4	18.5	31.0	.0	.0	.0
Sep	88.0	58.3	73.2	109+	1988	5	77.2	1984	40+	1968	20	67.9	1986	7	252	1.3	12.3	30.0	.0	.0	.0
Oct	79.2	52.8	66.0	102	1980	4	70.2	1991	30	1971	30	61.7	1971	71	101	.1	3.2	31.0	.0	@	.0
Nov	65.1	44.9	55.0	85	1955	10	62.1	1995	24	1993	26	50.0	1982	307	7	.0	.0	29.6	.0	1.1	.0
Dec	55.6	38.4	47.0	74+	1995	1	53.0	1995	17	1990	26	42.1	1985	559	0	.0	.0	25.3	@	7.8	.0
Ann	74.9	49.9	62.4	112+	Jul 1972	13	80.8	Jul 1988	17	Dec 1990	26	41.4	Jan 1972	2421	1470	15.4	73.7	352.0	@	18.1	.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: 1955-2001

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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	2.61	2.15	2.80	1982	4	5.86	1993	.22	1991	10.5	5.9	1.5	.4	.21	.38	.73	1.09	1.49	1.94	2.49	3.18	4.13	5.72	7.30	
Feb	2.31	2.25	2.10	1987	13	7.27	1998	.16	1995	8.9	5.5	1.4	.3	.20	.36	.66	.98	1.33	1.74	2.21	2.81	3.64	5.02	6.39	
Mar	1.97	1.66	1.18	1986	8	5.89	1983	.05	1972	9.0	5.4	1.1	.1	.13	.25	.49	.76	1.07	1.42	1.84	2.38	3.14	4.42	5.69	
Apr	.73	.61	1.10	1983	28	2.91	1983	.03	1997	4.1	2.1	.2	@	.11	.17	.27	.37	.48	.60	.73	.90	1.12	1.48	1.83	
May	.45	.09	1.15	1971	2	3.15	1998	.00+	1992	2.3	1.1	.3	@	.00	.00	.00	.00	.02	.10	.23	.43	.76	1.38	2.03	
Jun	.10	.00	1.28	1964	8	.76	1988	.00+	1999	.7	.3	@	.0	.00	.00	.00	.00	.00	.00	.01	.06	.14	.32	.51	
Jul	.04	.00	.62	1980	2	.62	1980	.00+	2000	.2	.2	@	.0	.00	.00	.00	.00	.00	.00	.00	.00	.01	.13	.28	
Aug	.06	.00	.60	1968	21	.73	1976	.00+	2000	.4	.2	@	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.39	
Sep	.25	.01	2.45	1959	18	2.20	1982	.00+	1997	1.0	.4	.2	.0	.00	.00	.00	.00	.00	.00	.04	.16	.38	.83	1.34	
Oct	.72	.50	2.75	1962	13	3.87	2000	.00+	1995	2.8	1.6	.4	.1	.00	.00	.08	.20	.33	.48	.66	.89	1.22	1.75	2.28	
Nov	1.61	1.02	1.67	1970	29	4.93	1983	.00+	1995	7.0	3.9	1.2	.2	.00	.09	.33	.57	.84	1.15	1.52	1.98	2.63	3.72	4.79	
Dec	1.66	1.49	2.50	1955	23	4.67	1995	.05	1989	8.3	4.4	.8	.2	.18	.30	.53	.76	1.01	1.29	1.62	2.03	2.58	3.51	4.41	
Ann	12.51	10.83	2.80	Jan 1982	4	7.27	Feb 1998	.00+	Aug 2000	55.2	31.0	7.1	1.3	5.48	6.61	8.17	9.44	10.63	11.83	13.12	14.60	16.47	19.30	21.86	

+ 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

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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	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	4/04	3/25	3/17	3/11	3/05	2/26	2/20	2/12	2/02
32	3/08	2/25	2/17	2/10	2/03	1/27	1/20	1/11	12/29
28	2/11	2/01	1/25	1/18	1/11	1/04	12/25	0/00	0/00
24	1/16	1/04	12/23	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	11/02	11/08	11/12	11/16	11/19	11/22	11/26	11/30	12/06
32	11/11	11/19	11/24	11/29	12/03	12/08	12/13	12/18	12/28
28	11/26	12/04	12/10	12/16	12/21	12/28	1/06	0/00	0/00
24	12/17	12/31	1/13	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	297	284	275	266	259	251	243	233	220
32	>365	335	318	308	299	290	281	271	258
28	>365	>365	>365	>365	351	336	325	313	299
24	>365	>365	>365	>365	>365	>365	>365	>365	356
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
65	556	368	291	167	84	11	0	0	7	71	307	559	2421
60	403	231	165	82	32	2	0	0	0	22	182	404	1523
57	317	156	109	45	16	0	0	0	0	8	122	317	1090
55	261	112	77	28	9	0	0	0	0	4	89	260	840
50	145	37	23	7	1	0	0	0	0	0	33	141	387
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	467	556	743	865	1077	1210	1375	1360	1235	1053	690	465	11096
55	15	25	107	203	373	520	662	647	545	344	89	12	3542
57	9	12	76	160	318	460	600	585	485	286	62	7	3060
60	2	3	40	107	241	372	507	492	395	207	32	1	2399
65	0	0	10	42	138	231	352	337	252	101	7	0	1470
70	0	0	1	12	64	116	205	189	130	36	1	0	754

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	217	349	497	622	830	977	1139	1124	981	796	437	222	217	566	1063	1685	2515	3492	4631	5755	6736	7532	7969	8191
45	98	207	342	472	675	827	984	969	831	641	288	101	98	305	647	1119	1794	2621	3605	4574	5405	6046	6334	6435
50	32	87	194	323	520	677	829	814	681	486	157	31	32	119	313	636	1156	1833	2662	3476	4157	4643	4800	4831
55	2	22	76	181	366	527	674	659	531	332	63	1	2	24	100	281	647	1174	1848	2507	3038	3370	3433	3434
60	0	0	19	84	224	378	519	504	381	189	10	0	0	0	19	103	327	705	1224	1728	2109	2298	2308	2308
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	100	184	271	366	507	608	714	714	627	491	238	101	100	284	555	921	1428	2036	2750	3464	4091	4582	4820	4921

(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/normal/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 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
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