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: TUSTIN IRVINE RANCH, CA **COOP ID: 049087**

Climate Division: CA 6 **NWS Call Sign:** **Elevation: 235 Feet** **Lat: 33˚42N** **Lon: 117˚45W**

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	67.6	41.4	54.5	90+	1976	17	58.7	1997	18	1937	21	48.9	1972	331	6	.0	@	30.9	.0	1.6	.0
Feb	68.6	43.2	55.9	92+	1995	20	60.9	1995	25	1953	21	51.0	1990	259	4	.0	.1	28.0	@	.4	.0
Mar	69.2	45.4	57.3	98	1997	19	62.8	1998	26	1936	25	53.2	1991	255	15	.0	.3	31.0	.0	.1	.0
Apr	73.4	48.4	60.9	106	1989	6	65.9	1989	31	1953	11	54.0	1975	156	33	.1	1.3	30.0	.0	.0	.0
May	74.9	53.5	64.2	105	1942	20	72.9	1997	34	1975	6	59.9	1971	99	74	.2	1.1	31.0	.0	.0	.0
Jun	79.3	56.8	68.1	109	1979	10	73.0	1981	40+	1953	3	62.0	1982	37	129	.5	2.3	30.0	.0	.0	.0
Jul	83.8	60.4	72.1	105	1960	20	77.0	1984	44+	1948	7	68.3	1987	6	225	.1	4.9	31.0	.0	.0	.0
Aug	85.4	60.8	73.1	110	1997	5	79.6	1998	43+	1979	31	68.9	1979	11	262	1.0	7.5	31.0	.0	.0	.0
Sep	84.0	58.8	71.4	111	1963	26	80.6	1997	39	1948	26	65.3	1986	29	220	1.6	7.5	30.0	.0	.0	.0
Oct	79.1	53.1	66.1	108+	1997	17	72.1	1999	29+	1971	29	60.3	1972	71	104	.4	3.5	31.0	.0	@	.0
Nov	73.3	44.8	59.1	105	1997	2	65.9	1997	25	1938	11	54.2	1994	201	23	.1	.6	30.0	.0	.3	.0
Dec	68.2	40.4	54.3	97	1980	30	58.8	1997	24	1968	21	47.3	1971	339	7	.0	.1	31.0	.0	1.9	.0
Ann	75.6	50.6	63.1	111	Sep 1963	26	80.6	Sep 1997	18	Jan 1937	21	47.3	Dec 1971	1794	1102	4.0	29.2	364.9	@	4.3	.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: 1927-2001

(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	2.96	2.35	4.52	1956	26	12.56	1993	.00+	1976
Feb	3.07	2.51	4.00	1937	7	14.85	1998	.00	1984
Mar	2.79	2.53	2.96	1995	6	8.72	1983	.00	1997
Apr	.77	.42	1.87	1965	1	3.39	1983	.00+	1997
May	.28	.06	1.82	1977	9	2.50	1998	.00+	1999
Jun	.10	.00	1.36	1993	5	1.36	1993	.00+	2000
Jul	.01	.00	.12	1965	30	.15	1992	.00+	2000
Aug	.14	.00	1.14	1977	17	2.10	1977	.00+	2000
Sep	.34	.01	3.07	1939	25	1.78	1976	.00+	1999
Oct	.40	.18	1.27	1940	26	2.29	1987	.00+	1999
Nov	1.22	.75	3.26	1996	22	5.24	1996	.00+	1999
Dec	1.79	1.11	5.17	1997	6	6.84	1997	.00+	2000
Ann	13.87	12.28	5.17	Dec 1997	6	14.85	Feb 1998	.00+	Dec 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.3	5.0	2.0	.9
Feb	5.7	4.4	2.3	.8
Mar	6.1	4.7	1.9	.6
Apr	2.9	1.7	.5	.2
May	1.5	.7	.2	@
Jun	.4	.1	.1	@
Jul	.3	.0	.0	.0
Aug	.4	.3	.1	@
Sep	1.2	.6	.3	.1
Oct	2.1	1.0	.3	.1
Nov	3.1	2.2	.8	.3
Dec	4.5	3.4	1.3	.3
Ann	34.5	24.1	9.8	3.3

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	.00	.14	.54	.97	1.46	2.04	2.73	3.61	4.85	6.96	9.05
Feb	.04	.18	.52	.93	1.41	2.00	2.73	3.68	5.03	7.38	9.75
Mar	.04	.18	.51	.89	1.33	1.86	2.52	3.36	4.57	6.63	8.71
Apr	.00	.00	.04	.13	.25	.41	.61	.89	1.30	2.02	2.76
May	.00	.00	.00	.00	.02	.06	.14	.26	.46	.84	1.25
Jun	.00	.00	.00	.00	.00	.00	.00	.00	.05	.30	.56
Jul	**	**	**	**	**	**	**	**	**	**	**
Aug	.00	.00	.00	.00	.00	.00	.00	.00	.03	.34	.83
Sep	.00	.00	.00	.00	.00	.00	.10	.29	.58	1.11	1.67
Oct	.00	.00	.00	.00	.06	.16	.29	.46	.71	1.15	1.59
Nov	.00	.00	.00	.14	.38	.66	1.02	1.48	2.13	3.26	4.37
Dec	.00	.06	.26	.51	.80	1.15	1.59	2.15	2.96	4.35	5.75
Ann	4.40	5.72	7.67	9.33	10.94	12.60	14.42	16.56	19.32	23.61	27.57

+ 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: 1927-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

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	4/05	3/23	3/13	3/05	2/24	2/16	2/06	1/24	0/00
32	2/16	2/04	1/26	1/17	1/08	12/29	12/09	0/00	0/00
28	1/13	12/22	0/00	0/00	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	11/10	11/16	11/21	11/25	11/29	12/03	12/08	12/15	0/00
32	11/18	12/02	12/13	12/23	1/03	1/16	2/07	0/00	0/00
28	12/19	1/11	0/00	0/00	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	>365	327	303	289	279	269	259	248	233
32	>365	>365	>365	>365	>365	358	330	311	291
28	>365	>365	>365	>365	>365	>365	>365	>365	>365
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	331	259	255	156	99	37	6	11	29	71	201	339	1794
60	194	138	139	71	33	8	0	1	8	21	102	205	920
57	131	85	89	35	14	2	0	0	2	8	60	142	568
55	97	56	60	20	8	0	0	0	0	3	38	108	390
50	32	12	17	4	0	0	0	0	0	0	10	40	115
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	698	669	783	867	997	1082	1242	1274	1181	1056	812	691	11352
55	82	81	130	198	292	392	529	561	491	346	160	86	3348
57	54	54	97	153	236	334	467	499	434	289	122	58	2797
60	25	22	54	98	162	250	374	407	350	208	74	28	2052
65	6	4	15	33	74	129	225	262	220	104	23	7	1102
70	0	0	2	8	21	50	102	141	123	38	4	0	489

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	467	481	552	638	762	855	1005	1040	958	833	592	463	467	948	1500	2138	2900	3755	4760	5800	6758	7591	8183	8646
45	314	336	397	488	607	705	850	885	808	678	442	309	314	650	1047	1535	2142	2847	3697	4582	5390	6068	6510	6819
50	172	197	245	339	452	555	695	730	658	523	292	165	172	369	614	953	1405	1960	2655	3385	4043	4566	4858	5023
55	68	82	114	200	297	405	540	575	508	369	155	62	68	150	264	464	761	1166	1706	2281	2789	3158	3313	3375
60	18	25	32	85	153	256	385	420	358	220	56	10	18	43	75	160	313	569	954	1374	1732	1952	2008	2018
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	292	287	318	380	458	546	674	694	617	522	369	300	292	579	897	1277	1735	2281	2955	3649	4266	4788	5157	5457

(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