

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: CARLSBAD CAVERNS, NM

1971-2000

COOP ID: 291480

Climate Division: NM 7

NWS Call Sign:

Elevation: 4,405 Feet Lat: 32° 32N

Lon: 103° 56W

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	55.3	32.8	44.1	81+	1950	21	50.7	2000	-4	1962	11	36.0	1979	650	0	.0	.0	22.5	1.6	15.0	@
Feb	59.8	36.4	48.1	84+	1989	26	55.5	2000	1	1951	1	41.7	1978	474	0	.0	.0	23.1	1.1	9.9	.0
Mar	66.9	42.0	54.5	90	1989	12	59.5	1974	10	1948	11	49.3	1987	331	4	.0	@	29.3	.2	4.8	.0
Apr	74.5	48.6	61.6	95+	1989	22	66.7	1986	21	1983	8	55.2	1997	154	50	.0	.9	29.3	@	1.3	.0
May	82.5	57.4	70.0	106	2000	25	79.0	1996	34	1978	3	65.5	1976	49	202	.3	6.2	30.9	.0	.0	.0
Jun	90.0	63.7	76.9	110	1994	28	83.8	1994	41	1964	24	71.4	1986	6	360	2.9	17.3	30.0	.0	.0	.0
Jul	90.3	65.5	77.9	106+	1951	8	83.4	1980	46	1983	4	71.4	1975	0	399	1.7	18.7	31.0	.0	.0	.0
Aug	88.2	64.7	76.5	103+	1951	8	82.1	1999	52	1988	29	71.1	1971	4	358	.4	14.9	31.0	.0	.0	.0
Sep	82.1	59.4	70.8	100+	1948	6	77.5	1977	34	1995	23	62.8	1974	34	205	.0	5.8	29.8	.0	.0	.0
Oct	74.0	51.1	62.6	97	2000	2	67.4	1979	15	1991	31	56.1	1976	138	62	.0	1.2	30.1	.0	.5	.0
Nov	63.5	40.9	52.2	86+	1950	1	58.4	1981	8+	1976	28	45.2	1972	394	10	.0	.0	26.4	.3	6.2	.0
Dec	56.3	34.1	45.2	81	1958	8	50.4	1981	2+	1983	25	38.8	1989	614	0	.0	.0	22.7	1.5	13.8	.0
Ann	73.6	49.7	61.7	110	Jun 1994	28	83.8	Jun 1994	-4	Jan 1962	11	36.0	Jan 1979	2848	1650	5.3	65.0	336.1	4.7	51.5	@

+ 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

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1948-2001

(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	.42	.33	1.20	1968	21	1.49	1981	.00	1989	3.5	1.5	@	.0	.01	.04	.09	.15	.22	.29	.39	.51	.67	.96	1.24
Feb	.49	.29	1.08	1973	22	2.44	1987	.00+	1999	3.2	1.5	.3	@	.00	.00	.01	.08	.16	.26	.40	.57	.83	1.28	1.74
Mar	.26	.13	.96	1968	20	1.28	1977	.00+	1991	2.4	.9	.1	.0	.00	.01	.03	.07	.11	.16	.22	.31	.43	.65	.87
Apr	.53	.34	4.55	1954	25	1.87	1985	.00+	1991	2.8	1.4	.3	.1	.00	.00	.05	.12	.21	.32	.45	.63	.89	1.34	1.80
May	1.50	1.20	3.55	1965	31	4.93	1992	.00+	2000	5.4	3.2	.9	.3	.00	.15	.42	.66	.91	1.18	1.49	1.87	2.40	3.25	4.08
Jun	2.25	1.18	3.52	1984	28	16.93	1986	.00	1998	6.1	3.8	1.2	.4	.02	.10	.32	.60	.95	1.38	1.93	2.66	3.71	5.55	7.43
Jul	2.10	1.96	3.02	1988	20	5.15	1976	.05	1994	7.1	4.2	1.3	.5	.18	.33	.61	.90	1.22	1.58	2.02	2.56	3.31	4.57	5.80
Aug	2.65	2.01	4.67	1966	23	7.07	1984	.20	1976	8.2	4.9	1.8	.7	.35	.57	.94	1.31	1.70	2.13	2.62	3.23	4.06	5.41	6.71
Sep	3.64	3.35	5.63	1980	26	12.37	1978	.00+	2000	7.8	4.9	2.3	1.2	.00	.40	1.06	1.65	2.24	2.89	3.65	4.54	5.78	7.80	9.75
Oct	1.28	1.25	3.56	1954	7	3.65	1983	.00+	1995	5.6	2.8	.9	.3	.00	.01	.10	.24	.43	.68	1.01	1.47	2.14	3.36	4.62
Nov	.55	.45	1.12	1968	27	1.62	1986	.00+	1999	3.0	1.5	.3	.0	.00	.00	.04	.13	.24	.36	.50	.68	.93	1.35	1.78
Dec	.57	.25	.94	1982	11	3.56	1991	.00+	1985	3.0	1.6	.4	.0	.00	.00	.02	.10	.20	.33	.48	.69	.98	1.49	2.02
Ann	16.24	15.55	5.63	Sep 1980	26	16.93	Jun 1986	.00+	Sep 2000	58.1	32.2	9.8	3.5	8.01	9.38	11.26	12.77	14.16	15.55	17.03	18.71	20.82	23.98	26.82

+ 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: 1948-2001

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

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Elevation: 4,405 Feet

Lat: 32° 32N

Lon: 103° 56W

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	1.6	1.0	#	0	5.5	1971	4	6.0	1981	5	1971	4	1	1971	.7	.5	.1	@	.0	.6	.2	@	.0
Feb	1.3	.0	#	0	6.3	1973	22	11.5	1973	6	1973	22	1	1980	.7	.4	.2	@	.0	.6	.3	@	.0
Mar	.3	.0	#	0	2.0	1977	5	4.0	1987	4	1987	30	#+	1996	.2	.2	.0	.0	.0	.1	.1	.0	.0
Apr	#	.0	0	0	#	1973	8	#+	1973	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	.2	.0	#	0	3.0	1976	29	4.0	1976	3+	1980	28	#+	1980	.1	.1	@	.0	.0	.1	@	.0	.0
Nov	.4	.0	#	0	4.0	1976	28	8.0	1976	3	1976	14	#+	1980	.2	.1	.1	.0	.0	.1	.1	.0	.0
Dec	1.5	.0	#	0	18.0	1987	15	21.0	1987	1	1978	8	#+	2000	.6	.3	.2	.1	.1	.1	.0	.0	.0
Ann	5.3	1.0	N/A	N/A	18.0	Dec 1987	15	21.0	Dec 1987	6	Feb 1973	22	1+	Feb 1980	2.5	1.6	.6	.1	.1	1.6	.7	@	.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

Complete documentation available from:

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Elevation: 4,405 Feet

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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	4/23	4/18	4/14	4/11	4/08	4/05	4/02	3/29	3/24
32	4/21	4/14	4/09	4/04	3/31	3/27	3/23	3/18	3/11
28	4/07	3/31	3/26	3/21	3/17	3/13	3/09	3/04	2/24
24	4/05	3/24	3/16	3/09	3/03	2/25	2/18	2/10	1/29
20	3/12	3/01	2/21	2/14	2/08	2/01	1/25	1/15	12/29
16	2/25	2/14	2/06	1/30	1/24	1/17	1/10	12/31	12/14
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	10/08	10/14	10/18	10/22	10/25	10/28	11/01	11/05	11/11
32	10/23	10/29	11/02	11/05	11/09	11/12	11/16	11/20	11/25
28	11/01	11/08	11/12	11/16	11/20	11/23	11/27	12/02	12/08
24	11/10	11/17	11/22	11/26	12/01	12/05	12/09	12/14	12/21
20	11/12	11/21	11/27	12/03	12/08	12/14	12/20	12/28	1/11
16	11/26	12/06	12/14	12/20	12/27	1/03	1/10	1/21	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	222	214	208	204	199	195	190	184	176
32	248	239	232	227	222	216	211	204	196
28	277	267	259	253	247	241	234	227	216
24	312	298	288	280	272	264	255	245	231
20	>365	338	322	312	303	295	286	276	263
16	>365	>365	355	343	334	326	318	308	296

* 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	650	474	331	154	49	6	0	4	34	138	394	614	2848
60	500	344	195	72	16	0	0	0	9	61	266	460	1923
57	414	269	130	38	7	0	0	0	3	33	201	372	1467
55	358	224	95	23	4	0	0	0	1	21	163	315	1204
50	233	133	33	5	0	0	0	0	0	5	87	187	683
32	14	4	0	0	0	0	0	0	0	0	0	2	20

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	387	454	696	886	1176	1344	1422	1377	1161	947	606	412	10868
55	18	31	78	219	467	654	709	664	472	255	79	11	3657
57	12	20	51	174	408	594	647	602	415	205	57	7	3192
60	5	10	23	118	325	504	554	509	331	141	32	1	2553
65	0	0	4	50	202	360	399	358	205	62	10	0	1650
70	0	0	0	15	111	228	257	219	111	19	2	0	962

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	204	279	465	655	937	1113	1182	1138	926	708	387	224	204	483	948	1603	2540	3653	4835	5973	6899	7607	7994	8218
45	107	173	328	510	782	963	1027	983	776	558	258	128	107	280	608	1118	1900	2863	3890	4873	5649	6207	6465	6593
50	49	95	206	373	627	813	872	828	630	409	155	59	49	144	350	723	1350	2163	3035	3863	4493	4902	5057	5116
55	16	39	110	242	476	663	717	673	485	273	78	20	16	55	165	407	883	1546	2263	2936	3421	3694	3772	3792
60	1	11	48	138	330	513	562	519	343	156	27	1	1	12	60	198	528	1041	1603	2122	2465	2621	2648	2649
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	136	180	291	415	610	728	792	765	614	440	235	148	136	316	607	1022	1632	2360	3152	3917	4531	4971	5206	5354

(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 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. 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