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: CHACO CANYON NATL MON, NM **COOP ID: 291647**

Climate Division: NM 1 **NWS Call Sign:** **Elevation: 6,174 Feet** **Lat: 36˚02N** **Lon: 107˚55W**

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	42.9	13.2	28.1	69	1986	29	34.8	1993	-37	1971	7	21.6	1977	1147	0	.0	.0	7.1	4.1	30.1	4.6
Feb	49.3	19.3	34.3	70	1972	20	39.2	1995	-26	1989	7	29.6	1974	860	0	.0	.0	14.0	1.1	26.6	1.1
Mar	57.9	23.8	40.9	85	1981	25	45.4	1989	-12	1971	3	36.9	1987	748	0	.0	.0	25.3	.1	27.0	.1
Apr	66.5	29.4	48.0	86	1996	25	52.1	2000	1	1981	3	43.2	1973	512	0	.0	.0	28.2	.0	19.6	.0
May	75.8	38.5	57.2	96	1958	28	62.9	1996	10	1962	1	53.7	1971	254	11	.0	.4	30.9	.0	7.9	.0
Jun	86.4	47.4	66.9	103	1981	23	71.3	1974	25	1971	1	62.4	1983	53	109	.1	9.4	30.0	.0	1.2	.0
Jul	89.9	55.4	72.7	104	1979	26	75.0	1978	33	1968	1	69.2	1983	2	238	.2	17.4	31.0	.0	.0	.0
Aug	87.2	53.9	70.6	101	1949	1	73.9	1995	28	1968	24	68.7	1987	5	176	@	9.5	31.0	.0	.0	.0
Sep	80.3	44.9	62.6	99+	1948	1	65.9	1997	19	1974	29	59.1	1985	112	39	.0	1.5	30.0	.0	2.2	.0
Oct	68.7	32.1	50.4	87+	1950	13	53.3	1972	7+	1989	31	46.8	1984	454	0	.0	.0	29.7	.0	16.6	.0
Nov	53.8	21.5	37.7	77	1952	2	41.4	1978	-35	1976	28	31.6	1992	820	0	.0	.0	19.5	.4	26.3	.3
Dec	44.2	13.9	29.1	67	1999	1	35.1	1980	-38	1961	12	19.0	1990	1115	0	.0	.0	8.7	2.9	30.0	3.4
Ann	66.9	32.8	49.9	104	Jul 1979	26	75.0	Jul 1978	-38	Dec 1961	12	19.0	Dec 1990	6082	573	.3	38.2	285.4	8.6	187.5	9.5

\+ 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

(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

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	.60	.43	1.02	1989	24	1.87	1989	.00+	1994
Feb	.54	.42	1.01	1982	2	1.92	1982	.00	1984
Mar	.65	.48	1.10	2000	31	3.17	2000	.00+	1997
Apr	.52	.42	.91	1949	1	2.36	1985	.00+	1993
May	.68	.48	2.23	1982	26	2.81	1982	.00	1996
Jun	.46	.23	.69	1991	11	2.19	1991	.00+	1993
Jul	1.19	1.09	2.26	1998	27	3.99	1998	.04	1993
Aug	1.36	1.25	1.30	1997	4	2.95	1993	.40	1975
Sep	1.17	.97	2.80	1982	12	3.66	1982	.01	1979
Oct	1.05	.84	1.60	1969	22	5.88	1972	.00+	1999
Nov	.77	.62	1.56	1986	4	3.29	1986	.00+	1989
Dec	.53	.43	.70	1961	16	1.38	1983	.00	1981
Ann	9.52	8.71	2.80	Sep 1982	12	5.88	Oct 1972	.00+	Oct 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.3	2.0	.1	@
Feb	4.1	1.7	.2	@
Mar	4.5	1.9	.3	@
Apr	3.3	1.7	.1	.0
May	4.0	1.8	.3	.1
Jun	3.4	1.3	.2	.0
Jul	6.9	3.2	.5	.1
Aug	8.0	4.0	.5	.1
Sep	5.9	3.2	.6	.2
Oct	5.0	3.0	.4	.1
Nov	4.1	2.3	.4	.1
Dec	4.4	2.0	.1	.0
Ann	57.9	28.1	3.7	.7

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	.03	.11	.19	.29	.41	.55	.73	.99	1.43	1.86
Feb	.01	.04	.11	.18	.27	.37	.49	.66	.88	1.27	1.66
Mar	.00	.02	.10	.19	.30	.43	.58	.79	1.08	1.58	2.09
Apr	.00	.00	.05	.14	.23	.34	.47	.64	.88	1.28	1.68
May	.01	.04	.11	.20	.31	.44	.60	.82	1.12	1.64	2.17
Jun	.00	.00	.03	.09	.17	.27	.39	.55	.78	1.19	1.59
Jul	.11	.20	.36	.52	.70	.91	1.15	1.45	1.86	2.55	3.23
Aug	.40	.53	.72	.89	1.05	1.22	1.41	1.63	1.91	2.36	2.78
Sep	.12	.21	.37	.54	.71	.91	1.14	1.42	1.81	2.46	3.09
Oct	.00	.00	.22	.39	.57	.78	1.02	1.32	1.71	2.38	3.04
Nov	.00	.04	.15	.26	.39	.54	.72	.95	1.27	1.81	2.34
Dec	.01	.05	.12	.20	.28	.38	.50	.64	.85	1.19	1.54
Ann	5.61	6.31	7.24	7.97	8.63	9.27	9.95	10.71	11.65	13.04	14.26

+ 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

Complete documentation available from:
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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	3.3	2.7	1	#
Feb	2.8	2.0	#	#
Mar	1.7	.4	#	#
Apr	.5	.0	#	0
May	#	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.5	.0	#	0
Nov	1.8	.4	#	0
Dec	2.0	.8	#	#
Ann	12.6	6.3	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	7.7	1987	16	7.7	1987	7	1991	1	3	1987
Feb	8.5	1987	26	11.6	1986	10	1986	10	2	1996
Mar	4.0	1971	2	17.0	1973	5	1987	2	1	1987
Apr	5.0	1991	26	5.0	1991	1	1995	9	#+	1997
May	#	1971	23	#	1971	11	1978	6	1	1978
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	6.0	1972	31	6.4	1972	6	1972	31	#+	1997
Nov	9.0	1976	26	11.0	1976	8	1991	16	#+	1998
Dec	4.0	1971	13	8.5	1987	8	1990	27	3	1990
Ann	9.0	Nov 1976	26	17.0	Mar 1973	11	May 1978	6	3+	Dec 1990

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.1	1.2	.3	.1	.0
Feb	1.4	1.0	.3	.1	.0
Mar	1.0	.7	.2	.0	.0
Apr	.5	.3	@	@	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.2	.1	.1	.1	.0
Nov	.9	.6	.1	.1	.0
Dec	1.8	1.2	.3	.0	.0
Ann	7.9	5.1	1.3	.4	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	3.5	1.9	.8	.0
Feb	1.3	.5	.2	.0
Mar	.8	.2	.1	.0
Apr	@	.0	.0	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.2	.1	.1	.0
Nov	.6	.2	@	.0
Dec	2.2	.7	.0	.0
Ann	8.6	3.6	1.2	.0

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	6/28	6/23	6/20	6/17	6/14	6/11	6/08	6/04	5/30
32	6/23	6/16	6/11	6/07	6/02	5/29	5/25	5/19	5/12
28	6/04	5/28	5/23	5/19	5/15	5/11	5/07	5/02	4/25
24	5/24	5/18	5/13	5/09	5/05	5/01	4/27	4/23	4/16
20	5/17	5/09	5/04	4/29	4/25	4/20	4/15	4/10	4/02
16	4/28	4/21	4/16	4/11	4/07	4/03	3/30	3/24	3/17

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	9/05	9/09	9/12	9/15	9/17	9/19	9/22	9/24	9/28
32	9/13	9/17	9/20	9/23	9/26	9/28	10/01	10/04	10/08
28	9/18	9/23	9/26	9/29	10/01	10/04	10/06	10/10	10/14
24	9/25	9/30	10/04	10/07	10/10	10/13	10/16	10/20	10/25
20	10/07	10/13	10/17	10/20	10/24	10/27	10/31	11/04	11/10
16	10/17	10/23	10/28	10/31	11/04	11/07	11/11	11/15	11/21

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	111	105	101	98	94	91	88	84	78
32	137	130	124	119	115	110	105	99	92
28	164	155	149	143	138	133	128	122	113
24	182	173	167	162	157	152	147	141	132
20	212	202	194	188	182	176	169	162	151
16	238	228	221	215	210	204	198	192	182

***** 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	1147	860	748	512	254	53	2	5	112	454	820	1115	6082
60	992	720	593	364	135	14	0	0	39	302	670	960	4789
57	899	636	500	280	81	5	0	0	16	219	580	867	4083
55	837	580	438	228	54	2	0	0	8	169	520	805	3641
50	682	440	288	119	14	0	0	0	1	72	371	650	2637
32	196	44	5	0	0	0	0	0	0	0	30	174	449

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	72	108	280	478	780	1046	1259	1194	917	570	201	83	6988
55	0	0	0	16	121	358	546	481	234	25	0	0	1781
57	0	0	0	8	86	301	484	419	183	13	0	0	1494
60	0	0	0	2	46	220	391	326	116	4	0	0	1105
65	0	0	0	0	11	109	238	176	39	0	0	0	573
70	0	0	0	0	1	39	104	60	7	0	0	0	211

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	2	19	97	258	533	804	1005	947	677	337	60	2	2	21	118	376	909	1713	2718	3665	4342	4679	4739	4741
45	0	1	30	137	381	654	850	792	527	202	15	0	0	1	31	168	549	1203	2053	2845	3372	3574	3589	3589
50	0	0	5	59	238	504	695	637	380	94	0	0	0	0	5	64	302	806	1501	2138	2518	2612	2612	2612
55	0	0	0	15	113	355	540	482	240	24	0	0	0	0	0	15	128	483	1023	1505	1745	1769	1769	1769
60	0	0	0	0	40	215	385	327	115	4	0	0	0	0	0	0	40	255	640	967	1082	1086	1086	1086
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	24	56	144	257	407	537	637	607	466	303	100	19	24	80	224	481	888	1425	2062	2669	3135	3438	3538	3557

(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