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: RATON FILTER PLANT, NM **COOP ID: 297279**

Climate Division: NM 2 **NWS Call Sign:** **Elevation: 6,932 Feet** **Lat: 36˚55N** **Lon: 104˚26W**

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	45.1	17.8	31.5	74	1997	3	38.7	1986	-26	1963	12	22.0	1979	1040	0	.0	.0	11.5	4.7	30.0	1.0
Feb	48.3	20.7	34.5	72	1972	29	40.9	1995	-14	1982	5	29.1	1985	854	0	.0	.0	14.3	2.9	25.8	.6
Mar	53.7	25.5	39.6	79	1989	9	46.0	1989	-4	1960	1	35.3	1984	787	0	.0	.0	20.6	1.2	24.7	.0
Apr	60.4	32.3	46.4	83	1989	21	52.1	1981	6	1957	8	38.9	1973	560	0	.0	.0	24.8	.4	14.5	.0
May	69.0	41.9	55.5	92	2000	30	62.2	1996	20+	1954	2	50.8	1995	308	11	.0	.2	29.9	.0	2.7	.0
Jun	78.6	51.2	64.9	97	1994	26	70.9	1990	31	1975	11	59.7	1983	86	83	.0	1.6	30.0	.0	@	.0
Jul	82.9	55.2	69.1	95+	1980	5	73.7	1980	41	1970	6	66.5	1972	8	133	.0	2.7	31.0	.0	.0	.0
Aug	80.2	54.0	67.1	93	1995	6	70.8	2000	40	1987	29	64.6	1974	30	95	.0	.6	31.0	.0	.0	.0
Sep	74.3	47.1	60.7	91	1960	6	65.6	1998	24+	1985	29	56.7	1974	157	28	.0	.0	29.5	.0	1.0	.0
Oct	65.3	37.0	51.2	86	2000	2	54.1	1992	5	1993	30	43.2	1984	429	1	.0	.0	28.7	.3	7.7	.0
Nov	53.0	27.0	40.0	78	1980	9	48.3	1999	-8	1976	28	31.6	1972	751	0	.0	.0	18.7	1.5	21.7	@
Dec	45.9	19.8	32.9	75	1955	24	40.9	1980	-10	1996	18	25.1	1983	996	0	.0	.0	12.0	4.0	28.4	1.0
Ann	63.1	35.8	49.5	97	Jun 1994	26	73.7	Jul 1980	-26	Jan 1963	12	22.0	Jan 1979	6006	351	.0	5.1	282.0	15.0	156.5	2.6

\+ 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: 1953-2001

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

Issue Date: February 2004

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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	.49	.38	.85	1999	22	1.42	1979	.03+	1998
Feb	.49	.23	1.14	1997	24	2.68	1987	.00+	1991
Mar	1.01	.93	1.05	2000	31	2.71	1981	.00	1989
Apr	1.22	.84	1.91	1976	30	4.20	1999	.02	1992
May	2.60	2.08	5.63	1955	19	6.95	1995	.00	1998
Jun	1.98	1.94	3.68	1965	18	4.38	1986	.30	1998
Jul	2.75	2.93	2.87	1999	6	5.32	1990	.65	1987
Aug	3.68	3.72	2.68	1991	11	6.37	1991	1.00	1980
Sep	1.64	1.48	2.15	1973	27	3.89	1989	.06	1992
Oct	1.21	.73	1.90	1957	19	3.95	2000	.00+	1995
Nov	.68	.57	1.58	1953	6	1.56	1978	.00+	1999
Dec	.57	.55	.97	1999	4	1.70	1973	.02	1996
Ann	18.32	17.91	5.63	May 1955	19	6.95	May 1995	.00+	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.0	1.5	.1	.0
Feb	3.2	1.3	.2	@
Mar	5.8	2.9	.4	@
Apr	6.1	3.4	.5	.2
May	9.1	5.8	1.5	.6
Jun	9.0	5.3	1.4	.1
Jul	11.4	6.7	1.6	.4
Aug	12.5	7.8	2.3	.7
Sep	7.3	4.1	.9	.2
Oct	4.6	2.8	.8	.2
Nov	4.2	2.1	.3	.0
Dec	3.9	1.9	.1	.0
Ann	81.1	45.6	10.1	2.4

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	.04	.08	.14	.21	.28	.37	.47	.60	.78	1.07	1.36
Feb	.00	.00	.03	.09	.16	.26	.39	.56	.82	1.29	1.77
Mar	.10	.22	.38	.53	.68	.84	1.02	1.24	1.54	2.01	2.46
Apr	.07	.14	.28	.45	.63	.85	1.12	1.47	1.96	2.79	3.62
May	.29	.60	1.03	1.41	1.79	2.19	2.65	3.21	3.94	5.11	6.23
Jun	.48	.67	.96	1.21	1.47	1.74	2.04	2.40	2.86	3.61	4.30
Jul	.77	1.03	1.42	1.77	2.11	2.46	2.85	3.31	3.91	4.85	5.72
Aug	1.39	1.73	2.22	2.63	3.02	3.42	3.85	4.35	4.99	5.97	6.86
Sep	.29	.43	.67	.90	1.13	1.37	1.66	2.00	2.46	3.20	3.90
Oct	.00	.00	.19	.38	.59	.83	1.12	1.49	2.00	2.86	3.71
Nov	.00	.14	.28	.39	.49	.60	.72	.85	1.03	1.32	1.59
Dec	.04	.08	.15	.23	.32	.42	.54	.69	.90	1.25	1.60
Ann	11.58	12.83	14.45	15.71	16.84	17.94	19.09	20.37	21.95	24.26	26.28

\+ 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: 1953-2001
(3) Derived from 1971-2000 serially complete daily data

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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	6.3	4.7	1	#
Feb	5.0	2.2	1	#
Mar	5.8	4.0	#	#
Apr	3.2	2.5	#	#
May	.5	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.2	.0	#	0
Oct	1.3	.0	#	0
Nov	4.3	4.0	#	#
Dec	5.8	5.0	#	#
Ann	32.4	22.4	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	14.0	1990	19	24.2	1979	18	1990	19	3	1979
Feb	14.0	1990	19	27.0	1990	20	1990	21	8	1979
Mar	14.0	1977	11	30.5	1973	14	1977	11	2	1982
Apr	6.4	1973	3	13.0	1980	6	1973	3	1	1980
May	7.0	1978	3	7.0	1978	5	1978	3	#+	1990
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	3.0	1971	18	3.0+	1984	2	1971	18	#+	1973
Oct	7.0	1979	31	13.4	1979	8	1979	31	1	1979
Nov	7.0	1975	19	16.4	1972	9	1975	20	2	1972
Dec	10.0	1973	24	24.5	1973	12	1973	25	3	1987
Ann	14.0+	Feb 1990	19	30.5	Mar 1973	20	Feb 1990	21	8	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.8	2.1	.9	.3	.1
Feb	2.0	1.3	.5	.3	@
Mar	2.6	1.9	.8	.3	.1
Apr	1.6	1.1	.6	.1	.0
May	.1	.1	.1	@	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	.1	.1	.0	.0
Oct	.6	.4	.2	.1	.0
Nov	2.0	1.6	.6	.3	.0
Dec	2.8	2.2	.8	.3	.1
Ann	14.6	10.8	4.6	1.7	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	2.8	1.5	.9	.2
Feb	1.8	.8	.3	.2
Mar	1.7	.7	.3	.1
Apr	.7	.4	.1	.0
May	.1	.1	@	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	@	.0	.0	.0
Oct	.3	.2	.1	.0
Nov	1.5	.6	.2	.0
Dec	3.0	1.3	.6	.2
Ann	11.9	5.6	2.5	.7

+ 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	6/06	5/31	5/27	5/23	5/20	5/16	5/12	5/08	5/02
32	5/21	5/17	5/14	5/11	5/08	5/06	5/03	4/30	4/25
28	5/12	5/07	5/03	4/30	4/27	4/24	4/21	4/17	4/12
24	5/01	4/26	4/22	4/19	4/16	4/13	4/09	4/06	3/31
20	4/22	4/16	4/12	4/09	4/06	4/02	3/30	3/26	3/20
16	4/16	4/08	4/03	3/29	3/24	3/19	3/15	3/09	3/01

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	9/15	9/19	9/23	9/25	9/28	9/30	10/03	10/06	10/10
32	9/21	9/26	9/29	10/02	10/05	10/08	10/11	10/14	10/19
28	9/26	10/02	10/06	10/09	10/13	10/16	10/20	10/24	10/30
24	10/10	10/16	10/20	10/24	10/28	10/31	11/04	11/09	11/15
20	10/21	10/26	10/30	11/02	11/05	11/09	11/12	11/16	11/21
16	11/01	11/06	11/10	11/13	11/17	11/20	11/23	11/27	12/02

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	156	147	141	135	130	125	120	114	105
32	167	161	156	153	149	145	141	137	131
28	189	182	177	172	168	164	160	155	148
24	215	208	203	198	194	190	186	181	174
20	234	227	222	217	213	209	205	199	192
16	262	253	247	242	237	232	227	220	212

***** 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	1040	854	787	560	308	86	8	30	157	429	751	996	6006
60	885	714	632	415	183	30	0	4	67	281	601	841	4653
57	792	630	539	333	124	13	0	1	34	202	514	748	3930
55	730	574	478	281	92	7	0	0	19	156	457	686	3480
50	575	434	333	170	36	1	0	0	3	69	321	532	2474
32	122	64	22	5	0	0	0	0	0	0	33	91	337

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	104	135	258	435	727	987	1149	1088	861	595	272	117	6728
55	0	0	1	21	106	305	436	375	190	37	6	0	1477
57	0	0	0	13	76	251	374	314	144	21	3	0	1196
60	0	0	0	5	42	178	281	224	88	7	0	0	825
65	0	0	0	0	11	83	133	95	28	1	0	0	351
70	0	0	0	0	2	26	33	19	5	0	0	0	85

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	25	50	111	237	486	749	904	846	629	367	121	40	25	75	186	423	909	1658	2562	3408	4037	4404	4525	4565
45	6	14	44	134	338	599	749	691	480	235	57	9	6	20	64	198	536	1135	1884	2575	3055	3290	3347	3356
50	0	1	13	60	198	449	594	536	339	124	16	0	0	1	14	74	272	721	1315	1851	2190	2314	2330	2330
55	0	0	0	18	99	305	440	381	203	46	1	0	0	0	0	18	117	422	862	1243	1446	1492	1493	1493
60	0	0	0	0	36	171	285	228	99	9	0	0	0	0	0	0	36	207	492	720	819	828	828	828
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	38	58	107	185	307	467	583	536	388	252	102	42	38	96	203	388	695	1162	1745	2281	2669	2921	3023	3065

(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