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: JOHN MARTIN DAM, CO **COOP ID: 054388**

Climate Division: CO 1 **NWS Call Sign:** **Elevation: 3,814 Feet** **Lat: 38˚04N** **Lon: 102˚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	42.6	13.0	27.8	79	1982	26	38.2	1986	-27+	1984	19	17.4	1979	1154	0	.0	.0	11.3	6.4	30.8	3.3
Feb	50.3	18.4	34.4	82+	1970	18	42.1	1999	-22	1996	5	23.9	1978	859	0	.0	.0	16.0	3.8	26.9	1.7
Mar	58.8	26.2	42.5	90+	1967	29	48.2	1986	-22	1948	11	36.4	1984	698	0	.0	.0	24.6	.9	22.4	.1
Apr	67.9	35.6	51.8	95	1981	26	59.0	1981	12	1997	13	44.5	1984	406	8	.0	.5	27.3	.1	9.5	.0
May	76.4	46.1	61.3	101+	2000	30	66.2	1998	21	1967	1	56.5	1995	157	41	.2	3.9	30.5	.0	.9	.0
Jun	88.1	56.2	72.2	107+	1980	27	76.7	1981	37+	1954	3	65.8	1983	17	230	3.6	16.0	30.0	.0	.0	.0
Jul	93.6	61.1	77.4	110+	2001	7	81.6	1980	34	1978	7	74.1	1996	0	384	8.1	23.6	31.0	.0	.0	.0
Aug	91.4	59.3	75.4	107+	1969	13	80.6	2000	35	1992	27	70.1	1992	3	324	4.3	21.3	31.0	.0	.0	.0
Sep	82.7	49.2	66.0	104+	2000	6	72.1	1998	25	1983	21	60.6	1993	72	101	1.0	10.9	29.7	.0	.7	.0
Oct	71.7	36.0	53.9	98	1979	8	57.8	1979	4	1993	30	48.0	1984	349	2	.0	1.4	29.4	.2	9.9	.0
Nov	55.3	23.2	39.3	87	1987	2	46.6	1999	-12	1976	29	30.3	1972	773	0	.0	.0	20.5	1.8	25.8	.4
Dec	44.9	14.8	29.9	78	1941	3	36.4	1980	-22+	1983	30	17.4	1983	1090	0	.0	.0	13.2	5.1	30.5	2.5
Ann	68.6	36.6	52.7	110+	Jul 2001	7	81.6	Jul 1980	-27+	Jan 1984	19	17.4+	Dec 1983	5578	1090	17.2	77.6	294.5	18.3	157.4	8.0

\+ 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: 1941-2001

(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	.19	.18	.86	1960	14	.76	1990	.00	1998
Feb	.33	.12	1.26	1971	18	1.64	1987	.00+	1999
Mar	.76	.53	1.45	1953	31	2.66	1973	.00+	1986
Apr	1.08	.91	1.84	1978	30	3.76	1980	.00	1974
May	2.16	1.86	3.75	1964	29	5.78	1977	.55+	1991
Jun	1.85	1.44	2.90	1995	29	6.65	1995	.21	1976
Jul	2.40	1.93	4.13	1990	11	7.44	1990	.52	1987
Aug	2.02	1.94	2.86	1999	2	5.68	1997	.05	1974
Sep	1.12	.84	3.20	1988	15	4.80	1988	.00	1974
Oct	.80	.54	2.00	1965	17	2.81	1997	.00+	1980
Nov	.46	.36	1.69	1998	2	1.79	1998	.00+	1995
Dec	.30	.17	2.00	1982	24	2.64	1982	.00+	1999
Ann	13.47	13.61	4.13	Jul 1990	11	7.44	Jul 1990	.00+	Dec 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.4	.6	.1	.0
Feb	2.2	.8	.2	@
Mar	3.6	1.7	.4	@
Apr	4.4	2.4	.7	.1
May	7.4	4.0	1.5	.4
Jun	6.2	3.4	.9	.4
Jul	7.2	4.1	1.2	.4
Aug	5.4	3.3	1.1	.5
Sep	4.4	2.3	.6	.1
Oct	3.0	1.7	.4	.1
Nov	2.6	1.0	.1	@
Dec	2.1	.6	@	@
Ann	50.9	25.9	7.2	2.0

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	.01	.02	.04	.07	.10	.14	.18	.24	.31	.44	.57
Feb	.00	.00	.02	.05	.10	.16	.25	.37	.55	.86	1.20
Mar	.00	.02	.09	.19	.31	.46	.65	.90	1.26	1.89	2.53
Apr	.04	.12	.27	.43	.60	.79	1.03	1.33	1.74	2.42	3.10
May	.41	.60	.91	1.21	1.50	1.83	2.19	2.63	3.21	4.15	5.04
Jun	.25	.40	.66	.92	1.19	1.48	1.83	2.26	2.83	3.77	4.68
Jul	.44	.65	1.01	1.33	1.67	2.03	2.43	2.93	3.59	4.64	5.65
Aug	.17	.31	.57	.85	1.16	1.51	1.93	2.45	3.18	4.39	5.59
Sep	.03	.12	.27	.43	.61	.82	1.06	1.37	1.80	2.52	3.23
Oct	.00	.01	.06	.15	.27	.43	.63	.92	1.34	2.09	2.86
Nov	.00	.00	.03	.11	.19	.30	.42	.57	.79	1.15	1.52
Dec	.00	.00	.03	.07	.11	.18	.25	.36	.50	.76	1.02
Ann	8.27	9.22	10.46	11.43	12.30	13.16	14.05	15.05	16.28	18.08	19.67

\+ 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: 1941-2001
(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	1.5	1.0	1	#	12.0	1990	22	12.0+	1990	12	1990	23	3	1990	1.0	.6	.3	.1	.1	1.9	1.2	.6	.3
Feb	1.4	-99.9	#	#	3.0	1982	1	7.0	1982	11	1990	28	2	1984	.3	.3	.1	.0	.0	.1	.0	.0	.0
Mar	.6	.0	1	#	4.0	1972	28	4.0	1972	14	1987	30	10	1987	.2	.1	.1	.0	.0	.1	.1	.0	.0
Apr	.0	.0	#	0	.5	1994	5	.5	1994	2	1973	7	1	1973	.1	.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	#	1984	19	#	1984	.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	2	1995	21	#	1995	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.0	.0	#	0	.0	0	0	.0	0	22	1997	28	1	1997	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.6	.0	#	0	11.0	1975	19	11.3	1975	13	1991	4	1	1991	.3	.2	.2	.1	.1	.1	.1	.0	.0
Dec	1.9	.3	#	#	4.3	1985	11	5.5	1984	6	1990	31	2	1972	.5	.3	.1	.0	.0	.2	.2	.0	.0
Ann	7.0	-9.9	N/A	N/A	12.0	Jan 1990	22	12.0+	Jan 1990	22	Oct 1997	28	10	Mar 1987	2.4	1.5	.8	.2	.2	2.4	1.6	.6	.3

+ 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	5/18	5/14	5/11	5/08	5/06	5/03	5/01	4/28	4/24
32	5/13	5/08	5/05	5/02	4/29	4/27	4/24	4/20	4/16
28	4/25	4/22	4/19	4/17	4/14	4/12	4/10	4/07	4/04
24	4/19	4/15	4/11	4/09	4/06	4/04	4/01	3/29	3/24
20	4/10	4/06	4/02	3/30	3/27	3/24	3/21	3/18	3/13
16	4/04	3/28	3/23	3/19	3/15	3/11	3/07	3/02	2/24

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	9/12	9/17	9/21	9/24	9/27	9/30	10/03	10/06	10/11
32	9/22	9/27	9/30	10/03	10/06	10/09	10/11	10/15	10/20
28	9/29	10/04	10/08	10/11	10/14	10/16	10/20	10/23	10/28
24	10/12	10/17	10/21	10/24	10/27	10/30	11/02	11/06	11/11
20	10/23	10/27	10/30	11/02	11/05	11/07	11/10	11/13	11/18
16	11/03	11/07	11/10	11/13	11/15	11/18	11/20	11/23	11/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	164	157	152	147	143	139	135	130	123
32	178	171	166	163	159	155	151	146	140
28	200	194	189	185	181	178	174	169	163
24	224	217	212	207	203	199	195	190	183
20	241	235	230	226	222	218	214	209	203
16	268	260	254	249	244	240	235	229	221

***** 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	1154	859	698	406	157	17	0	3	72	349	773	1090	5578
60	999	719	543	274	71	3	0	0	22	209	623	935	4398
57	906	635	451	206	39	0	0	0	8	140	536	842	3763
55	844	584	390	166	24	0	0	0	4	102	479	780	3373
50	692	454	251	87	6	0	0	0	0	40	345	629	2504
32	231	113	10	0	0	0	0	0	0	0	50	185	589

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	100	178	335	592	906	1203	1407	1344	1020	676	267	118	8146
55	0	5	3	68	217	513	694	631	333	65	6	0	2535
57	0	0	1	48	170	454	632	569	278	41	3	0	2196
60	0	0	0	26	110	366	539	476	202	17	0	0	1736
65	0	0	0	8	41	230	384	324	101	2	0	0	1090
70	0	0	0	0	9	121	234	186	40	0	0	0	590

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	17	68	202	407	707	994	1184	1121	820	462	124	32	17	85	287	694	1401	2395	3579	4700	5520	5982	6106	6138
45	2	26	107	280	555	844	1029	966	673	325	56	4	2	28	135	415	970	1814	2843	3809	4482	4807	4863	4867
50	0	6	46	169	407	694	874	811	525	200	19	0	0	6	52	221	628	1322	2196	3007	3532	3732	3751	3751
55	0	0	13	88	266	546	719	656	383	107	2	0	0	0	13	101	367	913	1632	2288	2671	2778	2780	2780
60	0	0	1	35	149	396	564	502	256	41	0	0	0	0	1	36	185	581	1145	1647	1903	1944	1944	1944
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	49	100	200	301	446	615	739	705	515	362	141	60	49	149	349	650	1096	1711	2450	3155	3670	4032	4173	4233

(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