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: GRAND LAKE 6 SSW, CO **COOP ID: 053500**

Climate Division: CO 2 **NWS Call Sign:** **Elevation: 8,288 Feet** **Lat: 40˚11N** **Lon: 105˚52W**

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	27.0	.9	14.0	49	1950	21	21.0	1981	-46	1962	10	6.1	1979	1582	0	.0	.0	.0	22.8	31.0	14.8
Feb	31.7	2.5	17.1	53+	1962	11	23.7	1995	-42	1985	1	10.4	1974	1341	0	.0	.0	.1	14.1	28.2	12.7
Mar	39.2	11.5	25.4	58+	1999	25	30.9	1999	-30	1965	3	20.3	1977	1229	0	.0	.0	2.9	6.1	30.9	4.8
Apr	47.4	20.2	33.8	73	1992	30	39.7	1992	-17	1975	2	26.2	1983	937	0	.0	.0	13.4	1.9	29.2	.9
May	58.7	29.7	44.2	76+	1969	27	48.6	2000	12+	1991	1	38.8	1983	645	0	.0	.0	26.3	@	22.7	.0
Jun	69.2	36.3	52.8	88	1954	23	57.2	1977	21	1990	1	49.5	1975	367	0	.0	.0	29.6	.0	6.2	.0
Jul	74.3	41.9	58.1	87	1998	20	61.4	1998	27	1982	3	55.2	1993	217	1	.0	.0	31.0	.0	.4	.0
Aug	72.8	41.0	56.9	85+	1987	5	59.9	2000	25	1992	27	54.2	1974	251	0	.0	.0	31.0	.0	1.4	.0
Sep	66.1	34.2	50.2	83+	1998	5	55.3	1998	14	1959	30	46.0	1971	446	0	.0	.0	29.0	.0	11.6	.0
Oct	54.9	25.1	40.0	74+	1992	2	43.2	1988	-3	1993	30	35.8	1984	774	0	.0	.0	23.5	.7	27.1	@
Nov	38.9	15.8	27.4	65	1971	10	32.2	1999	-22	1976	28	20.3	2000	1129	0	.0	.0	4.7	7.7	29.6	1.8
Dec	29.2	5.8	17.5	58	1971	24	27.2	1980	-35	1990	23	11.5	1978	1472	0	.0	.0	.2	20.2	31.0	10.3
Ann	50.8	22.1	36.5	88	Jun 1954	23	61.4	Jul 1998	-46	Jan 1962	10	6.1	Jan 1979	10390	1	.0	.0	191.7	73.5	249.3	45.3

\+ 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	1.01	.85	.78	1951	29	2.43	1980	.20	1981
Feb	.83	.65	.72	1986	20	2.21	1986	.23	1982
Mar	.91	.82	.69+	1983	15	2.51	1983	.27	1998
Apr	1.30	1.31	1.32	2000	23	2.58	1986	.40	1979
May	1.56	1.54	1.43	1969	7	3.88	1995	.30	1974
Jun	1.20	1.11	1.20	1984	8	3.31	1984	.00	1986
Jul	1.67	1.66	1.53	1997	31	3.87	1998	.43	1978
Aug	1.57	1.67	1.19	1983	12	3.03	1983	.26	1985
Sep	1.19	1.08	1.28	1993	30	2.94	1993	.18	1979
Oct	1.03	.90	1.45	1969	3	2.71	1998	.05	2000
Nov	.91	.77	1.12	1985	9	2.75	1985	.37	1999
Dec	.80	.69	1.33	1951	30	3.13	1983	.07	1997
Ann	13.98	13.78	1.53	Jul 1997	31	3.88	May 1995	.00	Jun 1986

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	14.4	3.3	.1	.0
Feb	11.6	2.8	.1	.0
Mar	13.4	3.3	.1	.0
Apr	12.4	4.3	.3	@
May	13.6	5.2	.4	@
Jun	9.5	3.8	.4	@
Jul	13.6	5.4	.7	.1
Aug	13.6	5.3	.5	@
Sep	10.7	3.7	.4	.1
Oct	8.4	3.5	.3	@
Nov	11.5	3.2	.1	@
Dec	12.5	3.0	@	.0
Ann	145.2	46.8	3.4	.2

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	.26	.36	.50	.63	.76	.89	1.04	1.22	1.45	1.81	2.15
Feb	.20	.28	.40	.50	.61	.73	.85	1.00	1.20	1.52	1.81
Mar	.34	.42	.54	.65	.74	.84	.95	1.07	1.23	1.47	1.69
Apr	.46	.58	.76	.91	1.05	1.20	1.36	1.54	1.78	2.14	2.48
May	.48	.63	.85	1.04	1.23	1.42	1.62	1.87	2.19	2.68	3.14
Jun	.19	.35	.56	.72	.89	1.06	1.25	1.48	1.77	2.24	2.68
Jul	.52	.67	.91	1.11	1.31	1.51	1.73	1.99	2.33	2.86	3.35
Aug	.53	.68	.90	1.08	1.26	1.44	1.64	1.87	2.17	2.63	3.05
Sep	.29	.40	.58	.73	.88	1.04	1.22	1.44	1.72	2.16	2.57
Oct	.16	.25	.40	.54	.69	.85	1.03	1.26	1.56	2.05	2.52
Nov	.32	.40	.53	.63	.74	.84	.95	1.08	1.25	1.51	1.75
Dec	.15	.22	.34	.45	.56	.68	.81	.97	1.19	1.53	1.86
Ann	10.10	10.85	11.82	12.55	13.19	13.82	14.46	15.17	16.03	17.28	18.35

\+ 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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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	16.3	12.6	15	14	8.0	1979	4	44.5	1980	35	1979	31	31	1979	9.6	6.8	1.8	.4	.0	-9.9	-9.9	-9.9	-9.9
Feb	12.1	11.1	16	18	19.5	1986	20	29.0	1980	37	1979	9	34	1979	6.6	4.8	1.2	.6	.1	-9.9	-9.9	-9.9	-9.9
Mar	13.5	11.0	17	18	8.0	1972	3	22.1	1974	34+	1979	26	33	1979	8.1	6.2	1.2	.4	.0	-9.9	-9.9	-9.9	-9.9
Apr	10.6	9.0	7	2	23.0	1986	3	28.1	1986	38	1986	3	32	1984	4.7	3.8	1.3	.4	.1	5.9	5.5	5.1	4.3
May	2.7	.0	#	0	6.0	1973	6	18.0	1979	30	1984	2	9	1984	1.1	1.0	.4	.2	.0	.7	.3	.2	.0
Jun	1.1	.0	#	0	12.0	1974	8	14.0	1974	2	1976	12	#	1976	.2	.2	.1	.1	.1	.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	.6	.0	#	0	4.0	1971	17	4.0	1971	1	1984	25	#+	1984	.4	.3	.1	.0	.0	@	.0	.0	.0
Oct	1.9	1.5	#	0	5.0	1985	8	5.0	1985	3	1984	18	#+	1985	.9	.8	.3	.1	.0	.1	.0	.0	.0
Nov	10.4	8.8	2	1	12.0	1985	9	20.0	1977	16	1977	30	7	1985	5.4	4.5	1.5	.4	.0	6.4	4.3	2.9	1.1
Dec	8.8	7.5	6	5	10.0	1982	24	19.0	1981	31	1983	28	19+	1985	6.0	4.9	1.4	.5	.1	-9.9	-9.9	-9.9	-9.9
Ann	78.0	61.5	N/A	N/A	23.0	Apr 1986	3	44.5	Jan 1980	38	Apr 1986	3	34	Feb 1979	43.0	33.3	9.3	3.1	.4	-9.9	-9.9	-9.9	-9.9

+ 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	8/01	7/27	7/23	7/20	7/17	7/14	7/11	7/07	7/02
32	7/13	7/06	7/02	6/28	6/25	6/21	6/18	6/13	6/07
28	6/22	6/17	6/14	6/11	6/08	6/05	6/02	5/30	5/25
24	5/27	5/22	5/19	5/16	5/13	5/10	5/07	5/04	4/29
20	5/17	5/12	5/09	5/06	5/03	5/01	4/28	4/25	4/20
16	5/08	5/03	4/29	4/26	4/23	4/20	4/17	4/13	4/08

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	7/29	8/03	8/06	8/10	8/13	8/16	8/19	8/23	8/29
32	8/11	8/17	8/21	8/25	8/28	8/31	9/04	9/08	9/14
28	8/31	9/05	9/09	9/12	9/15	9/18	9/21	9/25	9/30
24	9/16	9/19	9/22	9/24	9/26	9/28	9/30	10/03	10/06
20	9/21	9/27	10/01	10/04	10/07	10/11	10/14	10/18	10/24
16	10/02	10/08	10/13	10/17	10/21	10/25	10/29	11/02	11/09

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	51	43	36	31	26	21	16	10	1
32	89	81	74	69	64	58	53	47	38
28	119	112	107	102	98	94	90	85	78
24	152	146	142	139	135	132	128	124	118
20	177	170	165	160	156	152	148	142	135
16	204	196	190	185	180	176	171	165	157

***** 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	1582	1341	1229	937	645	367	217	251	446	774	1129	1472	10390
60	1427	1201	1074	787	490	223	86	112	298	619	979	1317	8613
57	1334	1117	981	697	397	147	37	54	214	526	889	1224	7617
55	1272	1061	919	637	336	105	16	28	163	464	829	1162	6992
50	1117	921	764	488	194	32	1	3	64	310	679	1007	5580
32	559	418	234	83	2	0	0	0	0	9	188	453	1946

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	0	1	29	136	380	623	808	772	544	258	49	4	3604
55	0	0	0	0	1	38	111	87	16	0	0	0	253
57	0	0	0	0	0	20	69	51	7	0	0	0	147
60	0	0	0	0	0	6	25	16	2	0	0	0	49
65	0	0	0	0	0	0	1	0	0	0	0	0	1
70	0	0	0	0	0	0	0	0	0	0	0	0	0

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	0	0	0	20	166	392	570	533	314	82	0	0	0	0	0	20	186	578	1148	1681	1995	2077	2077	2077
45	0	0	0	0	60	246	415	378	178	19	0	0	0	0	0	0	60	306	721	1099	1277	1296	1296	1296
50	0	0	0	0	8	117	260	224	70	0	0	0	0	0	0	0	8	125	385	609	679	679	679	679
55	0	0	0	0	0	32	111	88	13	0	0	0	0	0	0	0	0	32	143	231	244	244	244	244
60	0	0	0	0	0	0	20	9	0	0	0	0	0	0	0	0	0	0	20	29	29	29	29	29
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	0	38	160	298	387	362	250	111	9	0	0	0	0	38	198	496	883	1245	1495	1606	1615	1615

(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