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: KREMMLING, CO **COOP ID: 054664**

Climate Division: CO 2 **NWS Call Sign:** **Elevation: 7,390 Feet** **Lat: 40˚03N** **Lon: 106˚23W**

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	25.8	-2.2	11.8	55	1950	21	21.0	2000	-46	1974	4	-2.6	1984	1650	0	.0	.0	.3	19.2	30.8	17.3
Feb	29.8	1.1	15.5	61	1981	19	25.6	1995	-49	1951	1	5.3	1974	1388	0	.0	.0	1.1	12.4	28.1	12.1
Mar	41.1	16.3	28.7	68	1974	18	34.5	1999	-29	1965	3	20.9	1980	1125	0	.0	.0	7.9	3.2	30.4	2.3
Apr	51.9	24.2	38.1	76+	1992	30	43.0	1992	-13	1973	8	31.7	1983	808	0	.0	.0	19.7	.4	27.7	.1
May	62.9	32.2	47.6	84+	2000	30	50.8	1992	9+	1972	2	43.7	1983	541	0	.0	.0	28.5	.0	19.1	.0
Jun	74.2	38.6	56.4	91	1970	26	61.4	1988	20+	1965	7	52.5	1982	264	6	.0	.2	29.9	.0	5.1	.0
Jul	79.6	44.0	61.8	94+	1971	13	64.4	1998	26+	1968	1	58.8+	1993	115	15	.0	1.0	31.0	.0	.6	.0
Aug	78.1	42.4	60.3	93	1969	8	63.5	1983	22+	1968	24	57.3	1975	157	8	.0	.3	31.0	.0	1.6	.0
Sep	70.3	33.9	52.1	88+	1998	8	56.6	1998	11	1971	19	47.6	1971	388	0	.0	.0	29.5	.0	13.3	.0
Oct	58.7	23.4	41.1	79+	1980	1	45.6	1987	-12	1975	25	36.2	1976	741	0	.0	.0	25.5	.5	27.6	.1
Nov	40.0	13.2	26.6	69	1980	10	33.0	1995	-31	1952	27	18.4	1979	1153	0	.0	.0	7.7	6.3	29.4	3.7
Dec	28.2	.9	14.6	60	1949	5	26.4	1980	-39	1948	25	4.8	1978	1563	0	.0	.0	1.0	17.9	30.8	15.0
Ann	53.4	22.3	37.9	94+	Jul 1971	13	64.4	Jul 1998	-49	Feb 1951	1	-2.6	Jan 1984	9893	29	.0	1.5	213.1	59.9	244.5	50.6

\+ 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: 1948-2001

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

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Climate Division: CO 2 **NWS Call Sign:** **Elevation: 7,390 Feet** **Lat: 40°03N** **Lon: 106°23W**

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	.72	.65	1.00	1971	13	1.86	1980	.09	1981
Feb	.53	.35	1.10	1993	20	2.24	1986	.00	1988
Mar	.68	.66	.61	1993	28	1.57	1993	.00	1988
Apr	.86	.83	1.20	1986	3	1.83	1995	.00	1987
May	1.43	1.31	2.00	1990	15	3.61	1995	.25	1974
Jun	.96	1.06	1.18	1970	11	2.01	1979	.00	1987
Jul	1.38	1.05	1.23	1984	22	4.06	1973	.20	1994
Aug	1.42	1.19	.97	1984	29	3.30	1984	.50	1995
Sep	1.19	1.04	.97	1997	20	3.21	1997	.05	1979
Oct	.83	.72	1.20	1985	8	2.55	1985	.00	1976
Nov	.82	.66	1.70	1985	9	4.01	1985	.00	1987
Dec	.66	.51	1.50	1951	30	3.38	1983	.07	1997
Ann	11.48	11.22	2.00	May 1990	15	4.06	Jul 1973	.00+	Mar 1988

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.1	2.3	.1	@
Feb	6.9	2.1	.2	@
Mar	7.1	2.7	.1	.0
Apr	6.8	2.9	.2	.1
May	9.8	4.2	.6	.1
Jun	7.3	2.8	.3	.0
Jul	9.5	4.2	.4	@
Aug	10.3	4.5	.5	.0
Sep	9.0	3.8	.4	.0
Oct	5.9	2.6	.4	.1
Nov	7.2	2.7	.2	.1
Dec	6.9	2.0	.2	.1
Ann	94.8	36.8	3.6	.5

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	.11	.17	.28	.38	.48	.59	.72	.88	1.09	1.43	1.77
Feb	.02	.06	.13	.21	.29	.39	.51	.65	.85	1.18	1.51
Mar	.18	.27	.38	.47	.55	.63	.72	.82	.95	1.16	1.34
Apr	.12	.23	.38	.50	.62	.75	.89	1.06	1.28	1.63	1.96
May	.38	.51	.72	.90	1.08	1.27	1.48	1.72	2.05	2.56	3.03
Jun	.20	.34	.50	.63	.75	.88	1.01	1.17	1.38	1.70	2.00
Jul	.31	.44	.64	.83	1.01	1.20	1.42	1.68	2.02	2.56	3.07
Aug	.44	.58	.78	.95	1.12	1.29	1.48	1.70	1.99	2.43	2.85
Sep	.21	.32	.49	.65	.82	1.00	1.20	1.45	1.78	2.31	2.81
Oct	.08	.18	.32	.44	.56	.69	.84	1.02	1.27	1.66	2.03
Nov	.11	.21	.35	.47	.58	.71	.84	1.01	1.22	1.56	1.89
Dec	.09	.14	.24	.33	.42	.53	.65	.80	1.01	1.34	1.67
Ann	7.69	8.40	9.33	10.04	10.67	11.29	11.93	12.64	13.51	14.78	15.88

+ 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	12.6	9.9	6	6
Feb	8.9	8.2	6	4
Mar	8.1	8.5	2	1
Apr	4.8	4.5	#	#
May	1.2	.0	#	0
Jun	.1	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.2	.0	#	0
Oct	3.3	.6	#	#
Nov	7.1	6.8	1	1
Dec	10.1	7.6	3	2
Ann	56.4	46.1	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	1996	31	32.5	1980	30	1980	29	22	1984
Feb	10.0	1975	10	25.0	1975	28	1980	1	14+	1996
Mar	6.2	1981	30	23.7	1981	15	1993	11	10	1993
Apr	6.0	1975	1	14.4	1991	6+	1998	17	1	1995
May	7.0	1983	17	11.2	1983	5	1983	17	#+	2000
Jun	3.0	1976	14	3.0	1976	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	1.5	1982	29	1.5+	1986	1	2000	24	#+	2000
Oct	10.0	1975	23	13.9	1984	7	1991	25	1	1996
Nov	12.0	1985	9	17.9	1996	20	1985	10	7	1985
Dec	14.5	1983	24	40.9	1983	23	1983	30	8	1983
Ann	14.5	Dec 1983	24	40.9	Dec 1983	30	Jan 1980	29	22	Jan 1984

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	8.2	4.2	1.4	.5	.1
Feb	5.8	3.1	.5	.3	.1
Mar	5.1	3.0	.6	.3	.0
Apr	2.9	1.4	.5	.3	.0
May	.6	.3	.1	.1	.0
Jun	@	@	@	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.2	.1	.0	.0	.0
Oct	1.8	1.0	.4	.1	.1
Nov	5.9	2.9	.7	.3	.1
Dec	6.3	2.9	.7	.3	.1
Ann	36.8	18.9	4.9	2.2	.5

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	23.0	18.3	14.2	7.3
Feb	19.0	14.4	10.9	5.5
Mar	8.3	4.4	1.8	.8
Apr	2.4	.7	.3	.0
May	.3	.1	@	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	@	.0	.0	.0
Oct	1.2	.6	.1	.0
Nov	9.1	3.9	1.5	.5
Dec	17.2	10.4	6.2	.1
Ann	80.5	52.8	35.0	14.2

+ 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	8/03	7/27	7/22	7/18	7/15	7/11	7/07	7/02	6/26
32	7/10	7/04	6/30	6/26	6/23	6/19	6/16	6/12	6/06
28	6/17	6/11	6/07	6/03	5/31	5/28	5/24	5/20	5/14
24	6/09	6/02	5/27	5/23	5/19	5/14	5/10	5/05	4/27
20	5/22	5/16	5/12	5/09	5/05	5/02	4/28	4/24	4/19
16	5/08	5/02	4/28	4/24	4/21	4/17	4/13	4/09	4/03

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	61	50	43	36	29	23	16	8	0
32	100	90	82	76	70	64	58	50	40
28	128	120	114	109	104	99	94	88	79
24	150	141	135	129	124	119	114	107	98
20	170	163	157	153	149	144	140	134	127
16	198	189	183	177	172	167	162	156	147

***** 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	1650	1388	1125	808	541	264	115	157	388	741	1153	1563	9893
60	1495	1248	970	658	386	140	30	52	243	586	1003	1408	8219
57	1402	1164	877	568	295	84	9	19	166	493	913	1315	7305
55	1340	1108	815	508	238	55	3	8	122	431	853	1253	6734
50	1185	968	660	364	116	13	0	0	44	282	703	1098	5433
32	647	488	195	34	0	0	0	0	0	11	221	553	2149

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	20	24	92	215	483	732	923	875	602	293	58	12	4329
55	0	0	0	0	7	98	213	170	35	0	0	0	523
57	0	0	0	0	3	66	157	119	19	0	0	0	364
60	0	0	0	0	1	32	85	58	6	0	0	0	182
65	0	0	0	0	0	6	15	8	0	0	0	0	29
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	8	68	255	493	684	627	378	105	3	0	0	0	8	76	331	824	1508	2135	2513	2618	2621	2621
45	0	0	0	15	130	344	529	472	237	32	0	0	0	0	0	15	145	489	1018	1490	1727	1759	1759	1759
50	0	0	0	0	45	205	374	317	115	4	0	0	0	0	0	0	45	250	624	941	1056	1060	1060	1060
55	0	0	0	0	4	94	221	167	38	0	0	0	0	0	0	0	4	98	319	486	524	524	524	524
60	0	0	0	0	0	20	87	51	7	0	0	0	0	0	0	0	0	20	107	158	165	165	165	165
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	22	103	241	384	483	457	327	167	24	0	0	0	22	125	366	750	1233	1690	2017	2184	2208	2208

(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