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: RUSH 1 N, CO **COOP ID: 057287**

Climate Division: CO 1 **NWS Call Sign:** **Elevation: 6,010 Feet** **Lat: 38˚52N** **Lon: 104˚06W**

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	37.3	10.8	24.1	71	1967	11	35.6	1986	-27	1963	12	14.0	1979	1271	0	.0	.0	8.6	7.7	30.6	4.3
Feb	41.4	14.4	27.9	76	1962	11	37.9	2000	-22+	1985	2	17.9	1978	1039	0	.0	.0	11.2	5.1	27.2	2.3
Mar	47.4	20.3	33.9	82	1963	28	41.2	1986	-11	1965	19	28.7	1980	965	0	.0	.0	17.8	2.7	28.4	.4
Apr	56.2	28.4	42.3	86	1989	22	49.4	2000	-3	1975	2	36.2	1983	681	0	.0	.0	24.5	1.0	19.9	.1
May	65.4	38.2	51.8	97+	2000	30	59.8	2000	12	1978	7	45.5	1995	415	5	.0	.1	29.4	@	5.5	.0
Jun	76.5	47.6	62.1	102+	1971	25	65.9	1988	32+	1998	6	57.2	1982	133	45	.1	2.5	29.9	.0	.2	.0
Jul	82.3	52.9	67.6	104	1964	4	72.4	2000	39	1994	8	64.1	1992	35	116	.1	7.0	31.0	.0	1.0	.0
Aug	79.5	51.4	65.5	103	1969	9	72.2	2000	36	1993	31	62.0	1992	68	83	.0	2.7	31.0	.0	.9	.0
Sep	71.5	42.1	56.8	100	1959	8	62.7	2000	12	1985	29	52.7	1993	255	10	.0	.5	29.2	.0	2.8	.0
Oct	61.0	31.3	46.2	90+	1967	3	50.4	1999	-4	1993	30	38.8	1984	584	0	.0	.0	27.8	.5	16.3	.1
Nov	46.4	19.1	32.8	79	1999	9	47.1	1999	-16	1976	27	24.4	1979	968	0	.0	.0	14.1	4.5	27.5	.8
Dec	39.0	12.4	25.7	75+	1965	4	36.3	1980	-25+	1990	22	14.8	1983	1218	0	.0	.0	9.3	7.3	30.5	3.0
Ann	58.7	30.7	44.7	104	Jul 1964	4	72.4	Jul 2000	-27	Jan 1963	12	14.0	Jan 1979	7632	259	.2	12.8	263.8	28.8	190.8	11.0

\+ 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: 1924-2001

(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	.25	.20	.77	1939	8	.67	1987	.00+	1995
Feb	.19	.12	.54	1987	15	1.29	1987	.00+	1992
Mar	.76	.61	1.00	2000	30	2.80	2000	.00	1986
Apr	1.40	1.19	1.85	1999	29	8.68	1999	.06	1982
May	2.30	2.22	3.00	1935	30	6.63	1987	.66	1974
Jun	2.13	1.86	2.20	1937	25	4.13	1992	.36	1976
Jul	2.81	2.73	2.95	1977	20	7.23	1998	.90	1995
Aug	2.29	1.93	3.65	1957	3	4.99	1994	.72	1990
Sep	1.00	.85	3.47	1942	1	4.00	1976	.00+	1983
Oct	.68	.48	1.80	1960	18	2.64	1994	.00+	1992
Nov	.45	.44	.81	1928	28	1.22	1991	.00+	1989
Dec	.27	.20	.80	1979	27	1.43	1979	.00+	1980
Ann	14.53	13.94	3.65	Aug 1957	3	8.68	Apr 1999	.00+	Jan 1995

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.1	.7	.0	.0
Feb	1.8	.6	.1	.0
Mar	4.3	2.3	.5	.1
Apr	5.5	3.7	.7	.2
May	7.7	5.4	1.4	.3
Jun	6.8	4.8	1.4	.5
Jul	8.3	5.8	1.7	.7
Aug	7.9	5.4	1.3	.4
Sep	5.1	2.8	.6	.1
Oct	3.0	1.7	.3	.1
Nov	2.8	1.5	.1	.0
Dec	1.6	.7	.1	.0
Ann	56.9	35.4	8.2	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	.00	.00	.06	.11	.15	.20	.25	.32	.40	.54	.68
Feb	.00	.00	.03	.06	.09	.13	.18	.23	.31	.45	.58
Mar	.06	.14	.27	.38	.50	.62	.77	.94	1.18	1.57	1.94
Apr	.13	.23	.42	.61	.83	1.07	1.35	1.71	2.20	3.02	3.82
May	.59	.80	1.14	1.43	1.73	2.03	2.37	2.78	3.31	4.15	4.93
Jun	.64	.85	1.15	1.41	1.66	1.93	2.22	2.56	3.00	3.69	4.33
Jul	.92	1.18	1.58	1.91	2.23	2.56	2.93	3.35	3.90	4.74	5.53
Aug	.77	.99	1.30	1.57	1.83	2.10	2.39	2.72	3.16	3.83	4.45
Sep	.00	.11	.29	.45	.62	.80	1.00	1.25	1.59	2.14	2.68
Oct	.00	.05	.16	.26	.38	.50	.66	.85	1.11	1.54	1.97
Nov	.00	.14	.23	.30	.36	.42	.49	.56	.66	.81	.95
Dec	.00	.02	.07	.11	.16	.21	.26	.34	.43	.60	.76
Ann	8.75	9.80	11.19	12.26	13.23	14.19	15.19	16.31	17.69	19.73	21.52

\+ 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: 1924-2001
(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	3.4	2.5	1	#	6.0	1971	2	8.0	1984	10	1990	20	5	1990	.9	.8	.5	.2	.0	-9.9	-9.9	-9.9	-9.9
Feb	2.0	1.8	#	#	3.6	1995	11	5.0	1971	5	1989	6	1	1995	.8	.8	.1	.0	.0	-9.9	-9.9	-9.9	-9.9
Mar	5.8	2.0	#	#	12.0	1998	18	17.8	2000	23	1982	4	1+	2000	1.4	.9	.3	.2	.1	-9.9	-9.9	-9.9	-9.9
Apr	2.1	.0	#	0	10.5	1999	4	19.0	1999	10	1999	4	1+	1999	.9	.8	.3	.2	.1	.3	.2	.1	.1
May	.3	.0	#	0	4.3	1995	17	4.3	1995	3	1990	3	#+	2000	.1	.1	.1	.0	.0	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.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	.7	.0	#	0	8.0	1971	17	8.0	1971	1	1995	21	#	1995	.2	.2	@	@	.0	.0	.0	.0	.0
Oct	1.9	.0	#	0	28.0	1997	26	28.0	1997	11	1991	31	1	1991	.2	.2	.1	.1	.1	.1	.1	.0	.0
Nov	3.7	2.8	#	#	9.0	1985	14	15.0	1993	11	1991	2	3	1991	1.6	1.2	.6	.2	.0	2.8	.9	.5	.0
Dec	3.0	3.0	#	#	7.0	1984	13	7.0	1984	8	1988	16	2	1988	.9	.6	.4	.1	.0	-9.9	-9.9	-9.9	-9.9
Ann	22.9	12.1	N/A	N/A	28.0	Oct 1997	26	28.0	Oct 1997	23	Mar 1982	4	5	Jan 1990	7.0	5.6	2.4	1.0	.3	-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	6/20	6/13	6/08	6/04	5/31	5/27	5/23	5/19	5/12
32	6/13	6/05	5/31	5/26	5/21	5/17	5/12	5/07	4/29
28	5/31	5/23	5/18	5/13	5/09	5/04	4/29	4/24	4/16
24	5/25	5/16	5/09	5/04	4/29	4/23	4/18	4/11	4/03
20	5/19	5/10	5/03	4/27	4/22	4/16	4/11	4/04	3/25
16	5/09	4/29	4/21	4/15	4/08	4/02	3/27	3/19	3/09

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	138	127	120	114	108	102	95	88	78
32	159	146	138	130	123	116	109	100	88
28	181	168	158	150	143	135	127	118	105
24	205	190	179	170	162	153	144	134	119
20	227	211	199	189	180	170	161	149	133
16	254	236	223	212	202	192	181	168	150

***** 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	1271	1039	965	681	415	133	35	68	255	584	968	1218	7632
60	1116	899	810	532	277	56	6	18	137	430	818	1063	6162
57	1023	815	717	445	205	28	1	6	83	340	728	970	5361
55	961	759	655	389	164	16	0	2	56	284	668	908	4862
50	806	619	501	259	83	3	0	0	15	162	527	753	3728
32	301	184	77	15	0	0	0	0	0	5	134	258	974

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	53	69	135	325	613	902	1104	1038	745	443	156	63	5646
55	0	0	0	9	63	228	391	327	111	10	0	0	1139
57	0	0	0	5	43	180	330	268	78	4	0	0	908
60	0	0	0	1	21	118	242	187	42	1	0	0	612
65	0	0	0	0	5	45	116	83	10	0	0	0	259
70	0	0	0	0	0	10	37	23	1	0	0	0	71

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	12	23	65	188	420	700	873	811	562	277	62	16	12	35	100	288	708	1408	2281	3092	3654	3931	3993	4009
45	0	3	24	99	281	550	718	656	420	162	24	3	0	3	27	126	407	957	1675	2331	2751	2913	2937	2940
50	0	0	5	42	158	404	564	503	280	74	3	0	0	0	5	47	205	609	1173	1676	1956	2030	2033	2033
55	0	0	0	12	70	263	413	354	166	22	0	0	0	0	0	12	82	345	758	1112	1278	1300	1300	1300
60	0	0	0	0	19	141	265	212	74	2	0	0	0	0	0	0	19	160	425	637	711	713	713	713
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	28	46	85	167	288	444	564	524	373	233	75	36	28	74	159	326	614	1058	1622	2146	2519	2752	2827	2863

(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