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: RIDGEWAY 1 S, MT **COOP ID: 247034**

Climate Division: MT 7 **NWS Call Sign:** **Elevation: 3,320 Feet** **Lat: 45˚30N** **Lon: 104˚27W**

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	28.8	3.8	16.3	68	1981	23	29.3	1981	-38	1963	19	-1.2	1979	1510	0	.0	.0	1.0	15.8	30.9	11.6
Feb	35.1	10.9	23.0	69	1982	21	33.2	1999	-39	1989	2	8.0	1978	1176	0	.0	.0	4.0	10.3	27.8	6.6
Mar	43.9	19.7	31.8	77	1999	26	40.2	1986	-36	1996	8	21.5	1996	1029	0	.0	.0	11.1	5.8	28.6	2.3
Apr	56.8	30.8	43.8	90	1980	21	51.3	1987	-6	1997	11	36.8	1997	637	0	.0	@	21.5	.9	17.5	.1
May	67.3	40.8	54.1	97	1980	22	60.3	1988	12	1967	4	48.5	1974	352	13	.0	.2	29.5	.0	4.9	.0
Jun	76.4	50.1	63.3	101+	1988	20	75.8	1988	26	1974	1	57.6	1998	138	85	.2	2.5	30.0	.0	.3	.0
Jul	83.7	55.4	69.6	108	1981	6	75.3	1988	35+	1992	3	59.9	1992	50	191	.9	8.8	31.0	.0	.0	.0
Aug	83.3	53.4	68.4	105	1957	11	76.2	1983	28	1992	25	61.1	1977	71	175	.3	8.1	31.0	.0	.1	.0
Sep	71.8	41.8	56.8	103+	1978	5	65.0	1998	10	1984	25	50.2	1974	283	36	.1	2.2	28.8	@	4.8	.0
Oct	59.1	30.6	44.9	93	1963	4	47.7	1997	-22	1991	30	39.4	1991	624	0	.0	@	24.4	.4	17.8	.1
Nov	41.8	17.4	29.6	80	1999	7	40.0	1999	-28+	1977	21	14.1	1985	1062	0	.0	.0	9.0	7.0	28.2	2.8
Dec	32.2	7.0	19.6	65+	1998	1	29.8	1999	-51	1989	22	1.5	1983	1407	0	.0	.0	2.5	13.8	30.8	8.1
Ann	56.7	30.1	43.4	108	Jul 1981	6	76.2	Aug 1983	-51	Dec 1989	22	-1.2	Jan 1979	8339	500	1.5	21.8	223.8	54.0	191.7	31.6

\+ 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: 1952-2001

(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	.46	.30	.92	1963	23	1.83	1997	.00+	2000
Feb	.35	.22	.54	1971	3	1.33	1979	.00+	1996
Mar	.70	.46	.74	1966	3	4.02	1987	.00	1978
Apr	1.48	1.27	1.18	1994	26	4.77	1984	.23	1988
May	2.43	1.84	2.45	1962	22	7.45	1975	.40	1980
Jun	2.51	2.16	3.01	1976	14	5.64	1976	1.08	1979
Jul	1.75	1.42	2.40	1956	30	4.83	1993	.22	1971
Aug	1.11	1.01	1.78	1999	11	2.95	1999	.00	1994
Sep	1.20	1.01	1.65	1971	5	4.83	1986	.00	1990
Oct	1.24	.78	2.32	1994	6	4.25	1994	.00	1987
Nov	.56	.46	2.00	2000	1	2.22	2000	.00+	1990
Dec	.44	.27	1.09	1990	26	1.25	1972	.00+	2000
Ann	14.23	14.64	3.01	Jun 1976	14	7.45	May 1975	.00+	Dec 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.1	1.4	@	.0
Feb	2.4	1.0	@	.0
Mar	3.5	1.8	.1	.0
Apr	5.8	4.0	.8	.1
May	8.0	5.9	1.3	.4
Jun	8.4	5.8	1.4	.4
Jul	6.0	4.3	.8	.2
Aug	4.3	3.0	.5	.1
Sep	4.0	2.8	.7	.3
Oct	4.1	2.9	.8	.2
Nov	3.2	1.9	.1	.1
Dec	2.2	1.1	.1	@
Ann	55.0	35.9	6.6	1.8

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	.05	.15	.24	.33	.45	.58	.77	1.07	1.38
Feb	.00	.00	.04	.09	.15	.23	.31	.43	.59	.85	1.12
Mar	.02	.08	.18	.28	.39	.52	.67	.86	1.13	1.57	2.01
Apr	.19	.31	.52	.73	.94	1.18	1.46	1.80	2.27	3.03	3.76
May	.36	.56	.91	1.25	1.60	1.98	2.43	2.97	3.70	4.90	6.04
Jun	1.06	1.29	1.61	1.87	2.11	2.36	2.63	2.94	3.33	3.93	4.46
Jul	.21	.35	.59	.84	1.10	1.39	1.72	2.14	2.71	3.65	4.55
Aug	.15	.30	.49	.64	.80	.96	1.15	1.37	1.66	2.12	2.56
Sep	.04	.14	.31	.48	.67	.89	1.14	1.47	1.91	2.66	3.39
Oct	.05	.16	.34	.52	.72	.94	1.20	1.53	1.98	2.72	3.45
Nov	.00	.00	.10	.21	.31	.43	.55	.71	.93	1.27	1.61
Dec	.00	.00	.04	.12	.21	.30	.41	.55	.74	1.05	1.36
Ann	8.36	9.41	10.81	11.90	12.88	13.86	14.88	16.02	17.43	19.52	21.36

\+ 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: 1952-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Snow (inches)

Snow Totals

Means/Medians (1)

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	5.8	6.0	#	#	6.0	1977	4	15.0+	1999	#+	2000	24	#+	2000	2.5	2.5	.6	.2	.0	-9.9	-9.9	-9.9	-9.9
Feb	3.1	2.0	#	#	6.0	1971	3	13.0	1971	#+	2000	25	#+	2000	1.5	1.4	.4	.1	.0	-9.9	-9.9	-9.9	-9.9
Mar	6.7	5.0	#	0	6.0	1982	17	22.0	1998	#+	2000	30	#+	2000	1.9	1.9	.9	.2	.0	-9.9	-9.9	-9.9	-9.9
Apr	3.0	.0	#	0	12.0	1975	8	16.0+	1994	#+	2000	6	#+	2000	1.1	1.1	.5	.2	.1	-9.9	-9.9	-9.9	-9.9
May	.6	.0	#	0	9.0	1983	12	9.0	1983	#	2000	12	#	2000	.1	.1	.1	@	.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	.6	.0	#	0	9.0	1984	23	16.0	1984	#	2000	23	#	2000	.2	.2	.1	@	.0	.0	.0	.0	.0
Oct	2.0	.0	#	0	6.0	1992	15	9.0+	1991	#+	1996	26	#+	1996	.7	.7	.4	.1	.0	-9.9	-9.9	-9.9	-9.9
Nov	4.7	4.3	#	0	10.0	1994	18	15.0	1978	2	1983	29	#+	1995	2.2	2.0	.6	.2	@	-9.9	-9.9	-9.9	-9.9
Dec	5.0	4.0	#	0	10.0	1983	4	16.0	1985	#+	1999	21	#+	1999	1.9	1.8	.8	.5	.1	-9.9	-9.9	-9.9	-9.9
Ann	31.5	21.3	N/A	N/A	12.0	Apr 1975	8	22.0	Mar 1998	2	Nov 1983	29	#+	Sep 2000	12.1	11.7	4.4	1.5	.2	-9.9	-9.9	-9.9	-9.9

+ 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	6/29	6/21	6/15	6/10	6/05	5/31	5/26	5/20	5/12
32	6/07	6/01	5/28	5/24	5/20	5/17	5/13	5/08	5/02
28	5/21	5/16	5/12	5/09	5/06	5/03	4/30	4/26	4/21
24	5/15	5/09	5/04	5/01	4/27	4/24	4/20	4/15	4/09
20	5/04	4/28	4/24	4/20	4/17	4/14	4/10	4/06	3/31
16	4/15	4/10	4/07	4/04	4/02	3/30	3/27	3/24	3/19

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	123	113	105	99	93	87	81	73	63
32	141	132	126	121	116	111	105	99	91
28	163	155	149	144	139	134	129	123	115
24	186	177	170	165	160	154	149	142	133
20	196	188	183	178	174	169	165	159	151
16	224	217	212	207	203	199	195	190	182

***** 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	1510	1176	1029	637	352	138	50	71	283	624	1062	1407	8339
60	1355	1036	874	489	226	67	17	28	176	470	912	1252	6902
57	1262	959	781	404	163	38	8	15	124	378	822	1159	6113
55	1200	908	719	349	128	25	3	9	95	318	762	1097	5613
50	1050	776	572	226	59	7	0	2	41	184	624	946	4487
32	552	371	155	11	0	0	0	0	0	5	214	455	1763

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	66	119	149	364	684	937	1164	1127	743	404	142	72	5971
55	1	12	1	12	98	271	454	422	148	4	0	0	1423
57	0	7	0	7	72	224	397	367	117	2	0	0	1193
60	0	0	0	3	41	163	312	287	80	0	0	0	886
65	0	0	0	0	13	85	191	175	36	0	0	0	500
70	0	0	0	0	3	34	104	93	13	0	0	0	247

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	6	41	184	450	707	936	901	536	219	31	1	0	6	47	231	681	1388	2324	3225	3761	3980	4011	4012
45	0	0	10	101	308	557	781	746	397	119	11	0	0	0	10	111	419	976	1757	2503	2900	3019	3030	3030
50	0	0	2	48	182	408	626	592	268	55	1	0	0	0	2	50	232	640	1266	1858	2126	2181	2182	2182
55	0	0	0	19	91	270	473	441	158	16	0	0	0	0	0	19	110	380	853	1294	1452	1468	1468	1468
60	0	0	0	4	37	152	328	293	79	3	0	0	0	0	0	4	41	193	521	814	893	896	896	896
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	10	46	142	285	441	602	577	356	185	40	4	0	10	56	198	483	924	1526	2103	2459	2644	2684	2688

(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