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: RAPELJE 4 S, MT **COOP ID: 246862**

Climate Division: MT 5 **NWS Call Sign:** **Elevation: 4,125 Feet** **Lat: 45˚55N** **Lon: 109˚15W**

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	36.2	12.6	24.4	70	1953	11	36.2	1986	-41+	1957	25	9.1	1979	1260	0	.0	.0	5.2	10.3	28.3	8.3
Feb	41.4	16.3	28.9	72	1932	27	39.5	1991	-45	1936	15	12.6	1989	1012	0	.0	.0	9.1	6.5	25.4	4.8
Mar	48.5	22.5	35.5	80+	1978	30	44.6	1986	-30+	1989	4	26.9	1996	915	0	.0	.0	15.8	3.5	27.0	1.7
Apr	57.9	30.1	44.0	88+	1939	29	51.6	1987	-11	1936	2	34.8	1975	631	0	.0	.0	23.4	.8	19.0	.1
May	67.1	38.4	52.8	98+	1934	28	58.1	1987	-1	1954	2	48.0	1974	383	3	.0	.3	29.1	.0	6.2	.0
Jun	77.3	46.2	61.8	106	1919	27	71.2	1988	24	1951	3	56.2	1998	154	57	.2	4.3	29.9	.0	.3	.0
Jul	85.4	51.5	68.5	108+	1931	21	73.0	1985	30	1912	16	59.3	1993	61	167	1.4	12.4	31.0	.0	.0	.0
Aug	85.0	50.7	67.9	105+	1961	5	74.2	1971	26	1910	25	61.7	1974	75	163	.8	11.8	31.0	.0	.1	.0
Sep	73.8	41.5	57.7	103	1950	4	65.7	1998	10	1926	24	51.4	1985	257	37	.1	2.9	28.9	.1	3.9	.0
Oct	61.5	32.4	47.0	93	1992	1	51.1	1988	-15	1919	25	42.1	1984	561	0	.0	@	26.6	.5	15.0	.2
Nov	44.8	21.7	33.3	79+	1915	5	44.7	1999	-34	1959	13	14.8	1985	952	0	.0	.0	11.6	4.9	25.3	2.0
Dec	37.7	14.8	26.3	69+	1957	11	36.8	1999	-39	1923	31	8.5	1983	1202	0	.0	.0	5.6	9.1	28.4	5.5
Ann	59.7	31.6	45.7	108+	Jul 1931	21	74.2	Aug 1971	-45	Feb 1936	15	8.5	Dec 1983	7463	427	2.5	31.7	247.2	35.7	178.9	22.6

\+ 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: 1908-2001

(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	.63	.50	1.30	1972	2	1.83	1972	.00	1983
Feb	.54	.40	.91	1975	7	2.31	1975	.00	1977
Mar	1.02	.86	.95	1992	8	3.27	1989	.16	1999
Apr	1.66	1.52	2.40	1955	4	4.63	1991	.15	1980
May	2.69	2.20	3.05	1988	7	7.92	1981	.78	1984
Jun	1.94	1.77	2.10	1969	25	5.08	1982	.43	1979
Jul	1.71	1.37	3.50	1994	6	5.85	1993	.00	1988
Aug	1.28	1.02	1.99	1933	27	5.21	1990	.00+	1996
Sep	1.35	1.26	1.63	1994	14	3.74	1978	.00	1979
Oct	1.25	.94	2.43	1974	31	3.63	1975	.00	1999
Nov	.69	.62	.98	1959	11	2.53	1978	.00	1992
Dec	.55	.39	.70	1955	23	1.51	1978	.03+	1999
Ann	15.31	15.23	3.50	Jul 1994	6	7.92	May 1981	.00+	Oct 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.0	2.0	.2	.1
Feb	3.6	1.9	.1	.0
Mar	5.9	3.2	.4	.0
Apr	7.3	4.8	.8	.2
May	7.8	6.1	1.7	.4
Jun	7.2	5.4	1.1	.2
Jul	5.7	4.1	1.0	.2
Aug	4.8	3.3	.7	.2
Sep	4.8	3.3	.8	.2
Oct	4.1	2.8	.7	.2
Nov	4.2	2.3	.2	.0
Dec	3.9	2.0	.1	.0
Ann	63.3	41.2	7.8	1.7

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	.05	.12	.23	.32	.41	.52	.63	.78	.97	1.27	1.57
Feb	.02	.06	.14	.21	.30	.40	.51	.66	.86	1.20	1.54
Mar	.22	.31	.46	.60	.74	.88	1.05	1.24	1.51	1.92	2.32
Apr	.22	.36	.60	.83	1.07	1.34	1.65	2.03	2.55	3.40	4.21
May	.69	.95	1.34	1.68	2.02	2.38	2.78	3.25	3.86	4.83	5.74
Jun	.49	.67	.95	1.20	1.45	1.71	2.00	2.34	2.79	3.50	4.17
Jul	.08	.23	.48	.73	1.00	1.30	1.66	2.10	2.71	3.71	4.70
Aug	.00	.14	.37	.57	.78	1.01	1.28	1.60	2.03	2.75	3.45
Sep	.18	.36	.58	.77	.97	1.17	1.39	1.66	2.02	2.58	3.11
Oct	.12	.26	.47	.65	.84	1.04	1.27	1.55	1.92	2.52	3.09
Nov	.04	.11	.21	.31	.42	.54	.68	.85	1.08	1.46	1.83
Dec	.05	.08	.16	.23	.32	.41	.53	.67	.87	1.20	1.53
Ann	9.43	10.51	11.92	13.01	14.00	14.97	15.98	17.11	18.49	20.54	22.33

+ 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: 1908-2001
(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	10.9	8.0	3	1
Feb	9.0	7.0	3	1
Mar	14.4	9.0	2	1
Apr	7.7	7.0	1	#
May	2.2	.0	#	0
Jun	#	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	1.6	.0	#	0
Oct	5.2	4.0	#	#
Nov	10.2	8.5	2	1
Dec	9.1	7.0	2	1
Ann	70.3	50.5	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	18.0	1972	2	26.0+	1978	20	1993	12	9	1993
Feb	12.0	1975	7	30.0	1975	25	1975	10	18	1975
Mar	15.0	1985	2	47.0	1989	20	1980	31	9	1989
Apr	14.0	1982	7	19.0	1982	18	1980	1	6	1982
May	12.0	1981	11	13.0	1983	12	1981	11	1	1995
Jun	#	1998	3	#	1998	#	1998	3	#	1998
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	1.0	1992	24	1.0	1992	0	0	0	0	0
Sep	18.0	1983	19	18.0	1983	14	1983	19	1	1983
Oct	18.0	1993	8	18.0+	1993	18	1993	8	2	1993
Nov	14.0	1973	1	29.0	1985	24	1978	18	17	1973
Dec	11.0	1996	25	23.0	1978	18+	1996	29	10	1983
Ann	18.0+	Oct 1993	8	47.0	Mar 1989	25	Feb 1975	10	18	Feb 1975

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.7	3.6	1.5	.8	.1
Feb	3.3	3.2	1.4	.3	.1
Mar	3.8	3.8	2.1	1.0	.2
Apr	1.9	1.9	1.1	.7	.2
May	.5	.5	.3	.2	.1
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	@	@	.0	.0	.0
Sep	.3	.3	.2	.1	@
Oct	1.2	1.2	.7	.3	.1
Nov	2.9	2.9	1.8	.5	.1
Dec	3.3	3.2	1.6	.8	@
Ann	20.9	20.6	10.7	4.7	.9

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	1.8	1.0	.2	.0
Mar	-9.9	-9.9	-9.9	-9.9
Apr	1.8	1.4	1.0	.3
May	.2	.2	.1	.1
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.3	.3	.1	.1
Oct	1.2	1.0	.4	.2
Nov	4.1	3.0	1.5	.2
Dec	3.2	1.7	.7	.1
Ann	-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	7/06	6/28	6/23	6/18	6/13	6/08	6/03	5/28	5/20
32	6/07	6/02	5/29	5/26	5/23	5/20	5/17	5/14	5/09
28	5/22	5/17	5/13	5/10	5/07	5/04	5/01	4/27	4/22
24	5/09	5/05	5/01	4/29	4/26	4/24	4/21	4/18	4/14
20	4/27	4/22	4/19	4/17	4/14	4/12	4/09	4/06	4/02
16	4/19	4/13	4/08	4/04	4/01	3/28	3/24	3/20	3/14

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	112	103	97	91	86	81	75	69	60
32	135	128	123	119	115	111	107	102	95
28	164	157	151	147	142	138	133	128	120
24	180	173	169	165	161	158	154	149	142
20	205	198	193	188	184	180	175	170	163
16	237	228	222	216	211	206	201	195	186

***** 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	1260	1012	915	631	383	154	61	75	257	561	952	1202	7463
60	1105	872	760	484	244	74	20	29	154	407	802	1047	5998
57	1016	795	667	399	173	41	10	15	105	316	718	954	5209
55	960	743	606	345	132	25	5	9	77	259	662	895	4718
50	815	612	463	223	58	6	0	1	29	138	523	753	3621
32	368	239	92	12	0	0	0	0	0	3	158	309	1181

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	131	151	201	371	644	892	1129	1111	769	465	196	130	6190
55	10	11	2	14	63	228	421	407	157	9	10	3	1335
57	4	7	0	8	41	183	364	351	124	4	6	0	1092
60	0	0	0	3	19	126	281	272	83	1	0	0	785
65	0	0	0	0	3	57	167	163	37	0	0	0	427
70	0	0	0	0	0	19	85	84	13	0	0	0	201

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	32	68	183	417	671	901	885	553	277	59	19	17	49	117	300	717	1388	2289	3174	3727	4004	4063	4082
45	1	8	29	101	275	521	746	730	411	163	24	1	1	9	38	139	414	935	1681	2411	2822	2985	3009	3010
50	0	0	6	47	154	374	591	575	277	85	7	0	0	0	6	53	207	581	1172	1747	2024	2109	2116	2116
55	0	0	1	16	68	236	439	422	170	34	0	0	0	0	1	17	85	321	760	1182	1352	1386	1386	1386
60	0	0	0	1	24	125	288	274	82	10	0	0	0	0	0	1	25	150	438	712	794	804	804	804
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	13	35	72	157	286	425	557	555	374	213	49	16	13	48	120	277	563	988	1545	2100	2474	2687	2736	2752

(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