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: MOOSE, WY **COOP ID: 486428**

Climate Division: WY 2 **NWS Call Sign:** **Elevation: 6,470 Feet** **Lat: 43˚39N** **Lon: 110˚43W**

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	25.4	.9	13.2	50	1974	17	20.8	1981	-46	1979	1	-.1	1979	1607	0	.0	.0	@	22.9	30.8	15.4
Feb	30.9	2.8	16.9	55	1963	5	25.4	1995	-42	1982	5	8.3	1985	1348	0	.0	.0	.3	14.6	28.2	12.9
Mar	39.6	12.4	26.0	61	1986	28	33.9	1986	-25+	1965	18	16.3	1976	1210	0	.0	.0	2.6	4.8	30.7	5.2
Apr	49.2	21.8	35.5	75+	1992	30	41.2	1992	-10	1970	1	27.9	1975	886	0	.0	.0	13.1	.3	28.0	.4
May	60.6	31.0	45.8	81+	1986	31	50.8	1992	7+	1988	2	40.8	1975	595	0	.0	.0	26.1	.0	19.1	.0
Jun	70.8	37.4	54.1	90+	2001	30	60.8	1988	20	1966	5	49.8	1998	332	5	.0	.1	29.6	.0	6.6	.0
Jul	79.1	42.0	60.6	95+	2001	5	64.6	1998	26	1986	6	51.6	1993	168	29	.0	.8	31.0	.0	1.3	.0
Aug	78.3	41.1	59.7	96	2000	1	63.6	1971	22	1992	26	55.0	1993	180	15	.0	.8	31.0	.0	2.9	.0
Sep	68.6	33.5	51.1	88+	2001	5	56.3	1990	9+	1983	21	46.7	1971	419	0	.0	.0	28.5	.0	16.5	.0
Oct	55.2	24.5	39.9	82	1992	2	46.8	1988	-3	1991	30	35.2	1984	780	0	.0	.0	21.3	.4	28.5	.1
Nov	37.1	14.2	25.7	67	1999	7	32.0	1999	-20+	1993	26	18.6	2000	1181	0	.0	.0	3.6	9.3	29.4	5.0
Dec	25.5	2.0	13.8	53	1995	2	22.5	1980	-43	1978	31	2.9	1990	1590	0	.0	.0	.1	22.6	30.7	16.9
Ann	51.7	22.0	36.9	96	Aug 2000	1	64.6	Jul 1998	-46	Jan 1979	1	-.1	Jan 1979	10296	49	.0	1.7	187.2	74.9	252.7	55.9

\+ 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: 1958-2001

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

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Climate Division: WY 2 **NWS Call Sign:** **Elevation: 6,470 Feet** **Lat: 43˚39N** **Lon: 110˚43W**

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	2.56	2.50	1.53	1971	17	5.79	1996	.42+	1992
Feb	2.11	1.99	4.00	2000	12	5.04	2000	.25	1991
Mar	1.65	1.61	1.40	1965	26	4.19	1989	.20	1992
Apr	1.43	1.38	1.22	1965	19	3.92	1998	.24	1987
May	2.02	1.61	1.15	1963	9	4.85	1980	.57	1973
Jun	1.70	1.63	1.20	1999	3	4.77	1998	.33	1986
Jul	1.41	1.06	1.50	1984	26	3.64	1987	.27	1994
Aug	1.43	1.17	2.50	1978	23	4.18	1978	.16	1992
Sep	1.32	1.19	1.43	1966	14	3.91	1985	.06	1987
Oct	1.26	1.22	.85	1972	11	2.76	1975	.08	1999
Nov	2.21	1.91	1.42	1977	26	5.29	1973	.13	1976
Dec	2.46	2.02	1.51	1964	23	7.81	1996	.60+	1986
Ann	21.56	20.63	4.00	Feb 2000	12	7.81	Dec 1996	.06	Sep 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	15.9	8.4	.9	.1
Feb	12.4	6.7	.8	@
Mar	11.3	5.5	.5	@
Apr	9.3	4.9	.4	@
May	11.5	6.1	.9	.0
Jun	9.8	5.1	.7	.2
Jul	8.4	4.1	.6	.2
Aug	9.2	4.3	.6	.1
Sep	8.2	4.3	.6	@
Oct	7.8	4.0	.5	.0
Nov	11.9	6.6	1.0	.2
Dec	14.0	7.6	1.0	.1
Ann	129.7	67.6	8.5	.9

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	.70	.94	1.31	1.63	1.95	2.28	2.65	3.09	3.66	4.55	5.38
Feb	.51	.71	1.02	1.29	1.57	1.85	2.17	2.56	3.06	3.85	4.59
Mar	.29	.44	.68	.91	1.14	1.39	1.67	2.02	2.47	3.21	3.92
Apr	.42	.56	.76	.94	1.11	1.29	1.49	1.72	2.02	2.50	2.94
May	.58	.78	1.07	1.32	1.56	1.82	2.10	2.43	2.86	3.54	4.17
Jun	.55	.71	.95	1.15	1.35	1.55	1.77	2.03	2.37	2.89	3.37
Jul	.25	.37	.58	.77	.97	1.18	1.43	1.72	2.12	2.75	3.36
Aug	.26	.39	.60	.79	.99	1.21	1.45	1.75	2.14	2.77	3.38
Sep	.16	.26	.45	.63	.82	1.04	1.30	1.61	2.04	2.74	3.42
Oct	.21	.32	.51	.68	.86	1.05	1.27	1.54	1.90	2.48	3.04
Nov	.42	.62	.94	1.24	1.54	1.87	2.24	2.69	3.29	4.24	5.15
Dec	.54	.77	1.13	1.46	1.78	2.13	2.52	2.98	3.60	4.57	5.50
Ann	13.98	15.39	17.24	18.66	19.94	21.18	22.48	23.92	25.69	28.27	30.53

\+ 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: 1958-2001
(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	39.0	39.4	29	27
Feb	27.0	21.3	35	34
Mar	16.6	16.0	31	32
Apr	9.3	7.7	13	10
May	3.2	2.0	1	#
Jun	.1	.0	0	0
Jul	.0	.0	0	0
Aug	#	.0	0	0
Sep	.3	.0	#	0
Oct	4.8	4.0	#	#
Nov	27.1	30.5	5	5
Dec	33.2	27.6	17	18
Ann	160.6	148.5	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	16.0	1996	28	77.4	1996	56	1997	29	46	1979
Feb	12.0	1974	1	59.0	1975	64	1978	12	54	1978
Mar	14.0	1971	17	33.0	1975	60	1998	12	49	1976
Apr	9.0	1976	26	30.1	1975	48	1975	10	41	1975
May	7.0	1988	1	13.0	1988	30	1975	1	10	1975
Jun	2.0	1976	14	2.0	1976	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	#	1975	1	#	1975	0	0	0	0	0
Sep	5.0	1978	18	5.0	1978	1	1977	23	#+	2000
Oct	8.0	1975	26	22.5	1975	13	1975	27	3	1975
Nov	20.0	1989	26	53.6	1988	29	1985	25	14	1988
Dec	15.0	1981	30	104.2	1996	41	1996	29	29	1978
Ann	20.0	Nov 1989	26	104.2	Dec 1996	64	Feb 1978	12	54	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	14.7	11.3	5.1	2.5	.3
Feb	11.4	8.2	4.2	1.6	.3
Mar	9.0	6.5	2.3	.8	@
Apr	5.1	3.1	.9	.3	.0
May	1.8	1.2	.4	.1	.0
Jun	.1	@	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.2	.1	@	@	.0
Oct	2.1	1.4	.6	.3	.0
Nov	8.8	6.7	3.2	1.3	.3
Dec	12.2	9.9	4.4	2.2	.2
Ann	65.4	48.4	21.1	9.1	1.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	15.5	14.8	14.1	11.6
May	1.5	.6	.3	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	@	.0	.0	.0
Oct	2.2	.9	.3	.0
Nov	16.1	11.2	9.6	5.4
Dec	-9.9	-9.9	-9.9	-9.9
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	7/30	7/26	7/22	7/20	7/17	7/14	7/12	7/08	7/04
32	7/19	7/15	7/11	7/08	7/05	7/03	6/30	6/26	6/21
28	7/05	6/27	6/22	6/17	6/13	6/09	6/04	5/29	5/22
24	6/06	5/31	5/27	5/23	5/19	5/16	5/12	5/07	5/01
20	5/19	5/14	5/10	5/07	5/04	5/02	4/28	4/25	4/20
16	5/08	5/03	4/29	4/27	4/24	4/21	4/18	4/15	4/10

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	42	36	31	27	23	20	16	11	4
32	73	65	59	54	49	44	39	33	24
28	113	103	95	89	83	77	70	63	52
24	146	138	132	127	123	118	114	108	100
20	168	161	156	151	147	143	139	133	126
16	193	185	179	174	170	165	161	155	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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1607	1348	1210	886	595	332	168	180	419	780	1181	1590	10296
60	1452	1208	1055	736	440	200	77	76	275	625	1031	1435	8610
57	1359	1124	962	646	348	135	39	36	197	532	941	1342	7661
55	1297	1068	900	586	289	99	22	19	151	471	881	1280	7063
50	1142	928	745	439	158	35	4	2	64	319	731	1125	5692
32	594	434	237	64	1	0	0	0	0	14	234	578	2156

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	9	10	50	168	429	662	885	859	572	256	43	11	3954
55	0	0	0	0	4	72	194	165	33	0	0	0	468
57	0	0	0	0	2	48	148	119	18	0	0	0	335
60	0	0	0	0	0	23	93	67	6	0	0	0	189
65	0	0	0	0	0	5	29	15	0	0	0	0	49
70	0	0	0	0	0	0	6	1	0	0	0	0	7

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	39	209	424	634	601	326	88	0	0	0	0	0	39	248	672	1306	1907	2233	2321	2321	2321
45	0	0	0	11	101	281	480	447	198	29	0	0	0	0	0	11	112	393	873	1320	1518	1547	1547	1547
50	0	0	0	0	34	153	327	296	97	3	0	0	0	0	0	0	34	187	514	810	907	910	910	910
55	0	0	0	0	1	65	184	155	27	0	0	0	0	0	0	0	1	66	250	405	432	432	432	432
60	0	0	0	0	0	14	68	53	3	0	0	0	0	0	0	0	0	14	82	135	138	138	138	138
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	0	56	182	322	459	446	293	133	7	0	0	0	0	56	238	560	1019	1465	1758	1891	1898	1898

(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