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: GIBSON DAM, MT **COOP ID: 243489**

Climate Division: MT 4 **NWS Call Sign:** **Elevation: 4,590 Feet** **Lat: 47˚36N** **Lon: 112˚45W**

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	31.6	10.5	21.1	62	1992	31	32.6	1986	-42	1957	25	5.3	1979	1363	0	.0	.0	2.7	11.5	27.6	8.0
Feb	36.4	14.5	25.5	64+	1995	25	35.4	1991	-39	1989	4	9.6	1989	1108	0	.0	.0	4.8	6.5	25.2	4.7
Mar	42.0	19.5	30.8	71+	1994	31	39.2	1986	-31	1951	8	23.1	1996	1062	0	.0	.0	9.0	4.0	27.1	2.0
Apr	50.4	26.7	38.6	81	1987	28	44.7	1987	-9	1954	2	27.6	1975	794	0	.0	.0	17.4	1.1	22.3	.2
May	59.3	35.0	47.2	85	1986	30	50.9	1993	-1	1954	2	42.6	1996	554	0	.0	.0	26.7	.1	9.6	.0
Jun	67.6	41.9	54.8	91	1988	20	61.9	1988	26	1969	13	51.2	1998	313	6	.0	.1	29.4	.0	1.2	.0
Jul	75.8	45.8	60.8	97+	2000	31	65.7	1985	30	1998	22	52.9	1993	163	32	.0	1.2	30.9	.0	.1	.0
Aug	76.1	44.9	60.5	100	1961	5	66.1	1971	26	1998	25	55.7	1987	180	41	.0	1.3	30.9	.0	.5	.0
Sep	66.1	36.3	51.2	95	1948	2	56.4	1990	9+	2000	23	43.6	1985	420	6	.0	.2	27.6	@	6.2	.0
Oct	55.1	29.6	42.4	88	1992	2	46.0	1978	-10	1991	30	35.3	1984	703	0	.0	.0	22.6	.8	16.8	.2
Nov	39.1	20.4	29.8	73	1962	3	40.4	1999	-35	1970	22	11.2	1985	1058	0	.0	.0	7.0	5.1	23.8	2.3
Dec	32.9	13.9	23.4	65	1980	16	32.1	1999	-39	1983	24	7.0	1983	1289	0	.0	.0	2.2	11.0	27.4	5.3
Ann	52.7	28.3	40.5	100	Aug 1961	5	66.1	Aug 1971	-42	Jan 1957	25	5.3	Jan 1979	9007	85	.0	2.8	211.2	40.1	187.8	22.7

\+ 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

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	.89	.72	1.24	1959	28	2.50	1974	.00	1995
Feb	.70	.66	.72	1970	27	2.11	1986	.01	1984
Mar	.83	.74	3.78	1961	27	2.03	1983	.17	1999
Apr	1.45	1.27	3.04	1951	30	3.59	1971	.10	1977
May	2.97	2.40	3.38	1962	25	6.97	1981	.73	1973
Jun	2.82	2.35	7.07	1964	8	5.99	1975	.73	1973
Jul	1.60	.96	3.37	1989	13	6.22	1987	.00	1973
Aug	1.82	1.62	4.04	1971	30	5.19	1985	.28	2000
Sep	1.43	1.03	2.05	1986	18	5.32	1985	.12	1990
Oct	1.04	.85	1.80	1949	18	3.40	1975	.00	1976
Nov	.87	.91	1.49	1961	25	2.16	1989	.02	1992
Dec	.86	.72	1.20	1955	22	2.67	1977	.08	1997
Ann	17.28	16.49	7.07	Jun 1964	8	6.97	May 1981	.00+	Jan 1995

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.9	2.9	.2	.0
Feb	6.5	2.2	.2	.0
Mar	8.0	3.1	.2	.0
Apr	8.2	4.0	.7	.1
May	11.5	6.8	1.6	.5
Jun	11.0	6.7	1.5	.4
Jul	8.0	4.0	.6	.2
Aug	8.3	4.4	.9	.1
Sep	7.4	3.9	.7	.2
Oct	5.7	3.1	.5	.0
Nov	6.8	3.2	.3	.0
Dec	6.6	3.2	.2	.0
Ann	95.9	47.5	7.6	1.5

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	.08	.18	.32	.45	.59	.73	.90	1.10	1.37	1.81	2.23
Feb	.05	.10	.19	.28	.39	.51	.66	.84	1.10	1.54	1.97
Mar	.21	.29	.41	.52	.62	.74	.86	1.00	1.20	1.50	1.78
Apr	.24	.36	.57	.77	.98	1.20	1.46	1.77	2.18	2.86	3.51
May	.82	1.10	1.53	1.90	2.27	2.65	3.07	3.58	4.23	5.25	6.21
Jun	.74	1.00	1.41	1.77	2.13	2.50	2.92	3.41	4.05	5.06	6.00
Jul	.05	.16	.38	.61	.87	1.16	1.51	1.95	2.57	3.60	4.61
Aug	.34	.50	.76	1.01	1.26	1.53	1.84	2.21	2.71	3.51	4.26
Sep	.12	.21	.40	.60	.82	1.07	1.37	1.74	2.26	3.13	3.99
Oct	.05	.14	.30	.45	.61	.80	1.01	1.28	1.65	2.26	2.85
Nov	.09	.15	.27	.39	.52	.67	.84	1.06	1.36	1.86	2.34
Dec	.11	.18	.30	.42	.54	.68	.85	1.05	1.33	1.78	2.21
Ann	10.62	11.84	13.44	14.67	15.79	16.89	18.03	19.31	20.88	23.20	25.23

+ 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

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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	11.7	11.4	3	2
Feb	10.2	10.2	3	2
Mar	9.7	7.0	1	1
Apr	6.4	4.4	1	#
May	1.1	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.2	.0	0	0
Sep	.9	.0	#	0
Oct	5.1	2.0	#	#
Nov	7.4	5.0	1	#
Dec	12.0	9.5	2	1
Ann	64.7	49.5	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	12.0	1975	26	36.3	1972	22	1979	21	13	1979
Feb	15.0	1987	23	30.5	1986	22	1986	18	13	1979
Mar	13.0	1983	18	29.0	1974	19	1983	18	5	1985
Apr	16.0	1975	4	29.0	1975	16	1975	4	5	1975
May	10.0	1983	9	10.0	1983	10	1983	9	1	1983
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	4.0	1992	23	5.5	1992	0	0	0	0	0
Sep	12.0	1973	14	12.0	1973	14	1984	23	3	1984
Oct	14.0	1971	15	24.0	1971	14	1975	22	2	1984
Nov	12.0	1976	25	22.5	1978	16	1978	19	8	1978
Dec	16.0	1984	23	37.5	1977	16	1984	24	10	1978
Ann	16.0+	Dec 1984	23	37.5	Dec 1977	22+	Feb 1986	18	13+	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.1	4.0	1.4	.7	.2
Feb	4.4	3.3	.9	.5	.1
Mar	4.1	3.3	1.1	.5	.1
Apr	2.4	2.1	.9	.5	@
May	.3	.3	.2	.1	@
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.1	.1	@	.0	.0
Sep	.2	.2	.1	@	@
Oct	1.5	1.2	.5	.2	@
Nov	3.8	3.1	1.0	.4	.1
Dec	4.2	3.2	1.5	.7	.1
Ann	27.1	20.8	7.6	3.6	.6

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	17.0	11.7	8.2	4.0
Feb	12.4	9.7	7.3	3.7
Mar	9.7	5.5	2.8	.7
Apr	3.0	1.9	1.3	.4
May	.3	.2	@	@
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.2	.2	.1	@
Oct	2.0	1.0	.7	.1
Nov	7.6	4.8	3.1	1.0
Dec	14.5	10.1	6.9	2.0
Ann	66.7	45.1	30.4	11.9

+ 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	7/15	7/10	7/06	7/02	6/29	6/26	6/23	6/19	6/13
32	6/22	6/16	6/12	6/08	6/05	6/01	5/29	5/25	5/19
28	5/30	5/25	5/20	5/17	5/13	5/10	5/06	5/02	4/26
24	5/12	5/06	5/02	4/29	4/26	4/22	4/19	4/15	4/10
20	4/26	4/21	4/17	4/14	4/11	4/08	4/05	4/01	3/27
16	4/22	4/16	4/13	4/09	4/06	4/03	3/31	3/27	3/22

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	8/13	8/18	8/22	8/25	8/27	8/30	9/02	9/06	9/11
32	8/29	9/02	9/05	9/08	9/10	9/13	9/16	9/19	9/23
28	9/09	9/15	9/19	9/22	9/26	9/29	10/02	10/06	10/12
24	9/20	9/26	9/30	10/04	10/08	10/11	10/15	10/19	10/25
20	9/24	10/01	10/05	10/09	10/13	10/17	10/21	10/26	11/01
16	10/07	10/14	10/19	10/23	10/27	10/31	11/04	11/09	11/16

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	79	72	67	63	59	54	50	45	38
32	122	113	107	102	97	92	87	80	72
28	163	153	146	140	135	129	123	116	106
24	189	181	175	169	164	159	154	148	139
20	211	202	195	190	184	179	173	167	157
16	231	221	215	209	203	198	192	185	175

***** 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	1363	1108	1062	794	554	313	163	180	420	703	1058	1289	9007
60	1208	968	907	644	399	184	73	91	284	548	908	1134	7348
57	1115	884	814	554	309	122	36	52	213	455	818	1041	6413
55	1053	828	752	496	252	88	20	34	171	394	758	979	5825
50	902	696	597	356	130	29	3	9	87	252	620	834	4515
32	417	278	149	39	1	0	0	0	0	11	209	360	1464

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	78	94	110	235	470	683	892	884	576	331	141	94	4588
55	0	0	0	2	9	81	200	205	57	2	0	0	556
57	0	0	0	0	3	55	153	161	39	0	0	0	411
60	0	0	0	0	1	27	97	107	21	0	0	0	253
65	0	0	0	0	0	6	32	41	6	0	0	0	85
70	0	0	0	0	0	0	7	11	1	0	0	0	19

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	17	36	108	272	476	675	661	397	196	38	12	12	29	65	173	445	921	1596	2257	2654	2850	2888	2900
45	0	0	6	48	151	329	520	506	260	100	13	1	0	0	6	54	205	534	1054	1560	1820	1920	1933	1934
50	0	0	0	12	63	192	366	356	146	41	0	0	0	0	0	12	75	267	633	989	1135	1176	1176	1176
55	0	0	0	1	19	90	221	212	66	11	0	0	0	0	0	1	20	110	331	543	609	620	620	620
60	0	0	0	0	1	33	100	98	18	0	0	0	0	0	0	0	1	34	134	232	250	250	250	250
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	2	7	30	91	186	294	433	426	276	144	20	0	2	9	39	130	316	610	1043	1469	1745	1889	1909	1909

(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