

# Climatology of the United States

No. 20

1971-2000

Station: AFTON, WY

COOP ID: 480027

Climate Division: WY 2

NWS Call Sign:

Elevation: 6,210 Feet Lat: 42°44N

Lon: 110°56W

## 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	27.3	1.7	14.5	54	1974	16	22.1	1998	-46	1979	1	1.8	1979	1566	0	.0	.0	@	18.1	30.9	12.4
Feb	32.4	5.9	19.2	56	1958	20	27.3	1995	-40	1982	5	11.1	1985	1283	0	.0	.0	.6	10.2	28.1	8.9
Mar	40.4	14.9	27.7	68	1970	17	35.5	1992	-22	1976	5	19.0	1976	1158	0	.0	.0	4.7	2.1	30.7	2.2
Apr	50.1	23.5	36.8	78	1977	23	43.1	1992	-3	1975	2	29.2	1975	846	0	.0	.0	17.2	.2	27.0	.2
May	61.3	31.9	46.6	85+	1969	24	51.6	1992	9	1988	2	42.3	1975	570	0	.0	.0	27.8	.0	17.0	.0
Jun	71.7	38.1	54.9	94+	1988	27	61.1	1988	19	1976	18	50.4	1998	309	6	.0	.4	29.8	.0	5.4	.0
Jul	79.9	43.1	61.5	95+	2001	5	64.6+	1989	26	1981	8	53.6	1993	146	37	.0	2.0	31.0	.0	.9	.0
Aug	79.3	41.8	60.6	96	2000	1	65.7	2000	21	1974	21	56.7	1993	166	29	.0	1.5	31.0	.0	2.3	.0
Sep	69.3	33.1	51.2	93	1967	5	58.9	1990	11	1983	20	45.5	1986	415	2	.0	.1	29.1	.0	13.8	.0
Oct	57.6	23.4	40.5	83	1992	1	46.4	1988	-2	1991	30	34.8	1984	760	0	.0	.0	24.8	.3	27.1	.1
Nov	39.0	13.8	26.4	70	1976	6	35.1	1999	-22	1979	30	18.5	2000	1158	0	.0	.0	6.6	6.7	29.2	2.8
Dec	28.0	2.8	15.4	58	1995	1	22.2	1996	-38	1972	11	7.9	1990	1538	0	.0	.0	.4	18.4	30.8	12.2
Ann	53.0	22.8	37.9	96	Aug 2000	1	65.7	Aug 2000	-46	Jan 1979	1	1.8	Jan 1979	9915	74	.0	4.0	203.0	56.0	243.2	38.8

+ 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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1957-2001

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

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**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: AFTON, WY**

**COOP ID: 480027**

**Climate Division: WY 2**

**NWS Call Sign:**

**Elevation: 6,210 Feet Lat: 42°44N**

**Lon: 110°56W**

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	1.51	1.32	.84	1980	14	3.70	1980	.44	1992	12.0	6.0	.3	.0	.52	.66	.87	1.05	1.21	1.39	1.58	1.80	2.08	2.52	2.92
Feb	1.19	1.14	.95	1960	8	3.64	1986	.36	1991	9.3	4.4	.2	.0	.38	.49	.66	.80	.94	1.08	1.24	1.42	1.66	2.02	2.36
Mar	1.44	1.36	1.10	1984	18	3.14	1989	.41	1987	9.7	4.5	.5	@	.54	.68	.87	1.03	1.18	1.34	1.51	1.70	1.95	2.33	2.68
Apr	1.65	1.55	1.12	1982	12	4.37	1986	.28	1996	9.1	5.3	.6	.1	.37	.53	.77	.98	1.20	1.43	1.69	2.00	2.41	3.06	3.67
May	2.19	1.92	1.60	1966	10	5.48	1981	.00	1998	11.4	6.9	.8	@	.62	.93	1.28	1.55	1.81	2.06	2.33	2.65	3.05	3.67	4.23
Jun	1.49	1.51	1.71	1964	7	3.24	1998	.31	1996	8.1	4.5	.5	.1	.33	.47	.69	.89	1.09	1.29	1.53	1.81	2.18	2.77	3.32
Jul	1.42	1.31	1.34	1982	29	3.79	1982	.04	1988	6.9	3.7	.9	.2	.10	.19	.37	.57	.78	1.04	1.34	1.72	2.26	3.16	4.06
Aug	1.26	1.22	1.60	1967	3	2.91	1977	.00	1996	7.0	3.6	.7	.1	.19	.35	.57	.74	.92	1.10	1.31	1.55	1.87	2.38	2.86
Sep	1.61	1.39	1.51	1984	23	4.54	1982	.00+	1975	7.3	4.2	.7	.1	.00	.27	.59	.85	1.10	1.36	1.66	2.01	2.48	3.23	3.94
Oct	1.49	1.35	1.15	1991	28	3.59	1994	.04	1978	7.9	4.5	.6	@	.20	.32	.54	.74	.96	1.20	1.48	1.83	2.29	3.05	3.78
Nov	1.46	1.27	1.00	1958	14	3.62	1983	.07	1976	10.0	5.3	.3	.0	.32	.45	.67	.86	1.05	1.26	1.49	1.77	2.13	2.72	3.27
Dec	1.43	1.10	1.18	1964	23	5.21	1977	.13	1986	10.6	4.6	.3	@	.19	.30	.51	.71	.92	1.15	1.42	1.75	2.20	2.94	3.65
Ann	18.14	17.82	1.71	Jun 1964	7	5.48	May 1981	.00+	May 1998	109.3	57.5	6.4	.6	11.61	12.83	14.41	15.63	16.73	17.80	18.91	20.16	21.68	23.91	25.87

+ 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: 1957-2001

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

Complete documentation available from:  
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**Station: AFTON, WY**

**COOP ID: 480027**

**Climate Division: WY 2**

**NWS Call Sign:**

**Elevation: 6,210 Feet**

**Lat: 42° 44N**

**Lon: 110° 56W**

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	16.6	16.2	14	15	8.0	1981	26	26.9	1981	32	1974	12	27+	1979	8.7	6.8	2.0	.6	.0	-9.9	-9.9	-9.9	-9.9
Feb	11.1	10.7	16	15	12.0	1976	17	27.0	1978	40	1978	16	32+	1979	5.7	4.4	1.2	.4	.1	-9.9	-9.9	-9.9	-9.9
Mar	13.0	11.7	10	9	12.0	1994	23	31.5	1985	37	1978	1	25	1985	5.1	3.8	1.5	.5	@	14.9	13.5	12.0	7.8
Apr	5.2	2.6	2	#	8.0	1983	3	21.7	1983	20	1976	1	10	1973	2.3	1.6	.8	.1	.0	3.6	2.9	2.2	1.1
May	1.1	.0	#	0	5.5	1988	1	8.5	1988	5	1988	1	#+	2000	.7	.6	.1	@	.0	.5	.1	@	.0
Jun	#	.0	0	0	#	1993	7	#	1993	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	.3	.0	#	0	2.5	1982	29	2.5	1982	2	2000	24	#+	2000	.3	.2	.0	.0	.0	.1	.0	.0	.0
Oct	2.6	.7	#	0	8.0	1991	28	10.0	1975	8	1991	28	2	1998	1.3	.9	.2	.1	.0	1.3	.6	.3	.0
Nov	11.8	10.3	2	2	8.0	1985	13	27.9	1983	20	1975	30	7	1985	6.5	4.6	1.3	.5	.0	-9.9	-9.9	-9.9	-9.9
Dec	15.4	12.0	7	7	12.0	1977	2	40.3	1981	22	1975	1	16	1985	7.6	6.0	1.8	.6	@	24.2	18.8	17.1	9.3
Ann	77.1	64.2	N/A	N/A	12.0+	Mar 1994	23	40.3	Dec 1981	40	Feb 1978	16	32+	Feb 1979	38.2	28.9	8.9	2.8	.1	-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	8/01	7/27	7/24	7/21	7/18	7/15	7/12	7/09	7/04
32	7/19	7/13	7/09	7/06	7/02	6/29	6/26	6/22	6/16
28	6/28	6/21	6/15	6/11	6/07	6/02	5/29	5/24	5/16
24	6/08	5/31	5/26	5/21	5/17	5/13	5/09	5/03	4/26
20	5/28	5/20	5/14	5/09	5/04	4/30	4/25	4/19	4/11
16	5/04	4/27	4/22	4/18	4/14	4/10	4/06	4/01	3/26
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	7/29	8/03	8/06	8/10	8/13	8/16	8/19	8/23	8/29
32	8/07	8/14	8/18	8/22	8/26	8/30	9/02	9/07	9/13
28	8/22	8/28	9/01	9/05	9/08	9/11	9/15	9/19	9/25
24	9/01	9/07	9/11	9/14	9/18	9/21	9/25	9/29	10/05
20	9/14	9/20	9/24	9/28	10/01	10/04	10/08	10/12	10/18
16	10/01	10/07	10/10	10/14	10/17	10/20	10/23	10/27	11/01
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	50	41	35	30	25	20	15	9	0
32	82	72	65	59	54	48	42	35	26
28	121	111	104	98	93	87	81	74	65
24	152	142	135	129	123	117	111	103	93
20	181	170	162	155	149	143	136	128	117
16	208	200	194	189	185	180	175	169	161

\* 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	1566	1283	1158	846	570	309	146	166	415	760	1158	1538	9915
60	1411	1143	1003	696	415	180	62	74	274	605	1008	1383	8254
57	1318	1059	910	606	324	118	29	37	199	512	918	1290	7320
55	1256	1003	848	547	267	84	16	21	155	450	858	1228	6733
50	1101	863	693	406	142	27	2	3	69	300	708	1073	5387
32	555	371	188	58	1	0	0	0	0	15	232	520	1940

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	13	12	53	202	455	687	915	886	577	278	64	5	4147
55	0	0	0	1	8	81	218	194	42	0	0	0	544
57	0	0	0	0	2	55	168	148	26	0	0	0	399
60	0	0	0	0	0	27	108	91	11	0	0	0	237
65	0	0	0	0	0	6	37	29	2	0	0	0	74
70	0	0	0	0	0	0	8	5	0	0	0	0	13

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	1	73	253	470	685	658	381	138	8	0	0	0	1	74	327	797	1482	2140	2521	2659	2667	2667
45	0	0	0	25	132	326	530	503	246	57	0	0	0	0	0	25	157	483	1013	1516	1762	1819	1819	1819
50	0	0	0	3	53	194	375	350	129	12	0	0	0	0	0	3	56	250	625	975	1104	1116	1116	1116
55	0	0	0	0	10	89	228	203	45	1	0	0	0	0	0	0	10	99	327	530	575	576	576	576
60	0	0	0	0	0	25	97	81	9	0	0	0	0	0	0	0	0	25	122	203	212	212	212	212
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	8	85	217	360	489	477	329	178	21	0	0	0	8	93	310	670	1159	1636	1965	2143	2164	2164

(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:  
[www.ncdc.noaa.gov/oa/climate/normals/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html)

## 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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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 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.

- |   |   |
|---|---|
| <ol style="list-style-type: none"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
|---|---|

## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)