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: BUFFALO BILL DAM, WY **COOP ID: 481175**

Climate Division: WY 4 **NWS Call Sign:** **Elevation: 5,156 Feet** **Lat: 44˚30N** **Lon: 109˚11W**

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	35.1	18.6	26.9	61	1953	13	37.1	1986	-28	1979	5	9.6	1979	1184	0	.0	.0	3.8	9.2	25.9	4.2
Feb	39.2	22.7	31.0	65+	1958	22	40.2	1991	-36	1989	3	17.2	1989	954	0	.0	.0	5.3	5.9	21.6	2.3
Mar	45.4	28.2	36.8	76	1988	22	43.6	1986	-21	1956	11	32.0	1976	874	0	.0	.0	11.5	2.9	21.0	.5
Apr	52.0	34.5	43.3	79	1962	19	49.7	1987	12+	1999	5	34.6	1975	653	0	.0	.0	19.0	.9	11.9	.0
May	60.2	42.3	51.3	84	1969	27	55.9	1994	19+	1967	4	46.7	1975	427	0	.0	.0	27.8	@	2.2	.0
Jun	68.0	49.0	58.5	93	1970	27	65.8	1988	29+	1998	6	53.4	1982	209	15	.0	.1	29.6	.0	.7	.0
Jul	74.4	55.0	64.7	94	2000	24	70.2	1988	39	1996	8	60.8	1997	79	70	.0	.6	31.0	.0	.0	.0
Aug	75.5	55.6	65.6	96	2001	8	70.0	1994	34	1992	27	60.7	1974	67	83	.0	.4	31.0	.0	.0	.0
Sep	68.1	48.6	58.4	90+	2000	18	64.8	1998	21	1965	18	52.0	1986	231	31	.0	.1	28.7	.1	1.0	.0
Oct	57.7	39.3	48.5	83	2001	1	53.3	1988	7	1991	30	42.8	1984	513	0	.0	.0	25.4	.6	7.5	.0
Nov	43.3	28.6	36.0	72	1999	1	46.6	1999	-18	1955	16	21.9	1985	871	0	.0	.0	10.0	4.0	20.2	1.0
Dec	36.3	21.1	28.7	65	1981	9	36.1	1980	-27	1990	21	13.3	1983	1126	0	.0	.0	4.8	8.8	25.5	2.7
Ann	54.6	37.0	45.8	96	Aug 2001	8	70.2	Jul 1988	-36	Feb 1989	3	9.6	Jan 1979	7188	199	.0	1.2	227.9	32.4	137.5	10.7

\+ 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

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: BUFFALO BILL DAM, WY

COOP ID: 481175

Climate Division: WY 4 **NWS Call Sign:** **Elevation: 5,156 Feet** **Lat: 44˚30N** **Lon: 109˚11W**

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	.42	.23	1.27	1975	26	1.86	1975	.02	1983
Feb	.37	.29	.74	2000	28	1.70	1986	.00+	1992
Mar	.61	.51	.84	1968	18	1.61	1980	.09	1978
Apr	1.29	.94	3.25	1964	25	4.06	1971	.06	1985
May	2.17	1.81	2.53	1978	18	9.01	1978	.36	1973
Jun	1.66	1.31	2.53	2001	13	6.81	1992	.17	1978
Jul	.96	.86	.95	1951	10	2.51	1997	.05	1979
Aug	.72	.64	1.21	1960	16	2.42	1972	.08	1995
Sep	1.09	.76	1.59	1961	19	3.07	1991	.07	1979
Oct	.89	.70	1.08+	1978	25	4.82	1994	.00	1999
Nov	.47	.40	2.02	1948	26	1.17	1973	.01	1999
Dec	.27	.19	.73	1964	23	1.07	1978	.00+	1998
Ann	10.92	10.88	3.25	Apr 1964	25	9.01	May 1978	.00+	Oct 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.1	1.4	@	@
Feb	3.9	1.1	.1	.0
Mar	5.5	2.1	.1	.0
Apr	7.1	3.1	.5	.1
May	10.0	5.1	1.2	.4
Jun	9.4	3.8	.6	.3
Jul	8.0	3.0	.3	.0
Aug	7.6	2.7	@	.0
Sep	6.3	3.1	.6	.2
Oct	4.6	2.2	.4	.1
Nov	4.6	1.6	.1	.0
Dec	4.0	.9	.0	.0
Ann	75.1	30.1	3.9	1.1

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	.03	.05	.10	.16	.23	.30	.39	.51	.67	.95	1.23
Feb	.00	.03	.09	.15	.21	.28	.36	.45	.59	.81	1.03
Mar	.12	.17	.26	.34	.43	.52	.62	.74	.91	1.17	1.42
Apr	.11	.20	.37	.55	.74	.97	1.23	1.57	2.04	2.81	3.58
May	.35	.54	.86	1.15	1.46	1.80	2.18	2.65	3.27	4.28	5.25
Jun	.22	.35	.59	.82	1.07	1.34	1.65	2.03	2.55	3.40	4.22
Jul	.13	.21	.35	.48	.62	.77	.95	1.17	1.47	1.95	2.42
Aug	.16	.23	.33	.43	.52	.63	.74	.87	1.05	1.34	1.61
Sep	.11	.19	.34	.50	.66	.85	1.06	1.33	1.70	2.32	2.92
Oct	.04	.12	.25	.38	.52	.68	.87	1.10	1.42	1.95	2.47
Nov	.05	.08	.15	.21	.28	.36	.45	.57	.73	.99	1.24
Dec	.00	.02	.06	.10	.15	.20	.26	.34	.44	.62	.79
Ann	6.68	7.46	8.47	9.26	9.98	10.68	11.41	12.22	13.23	14.71	16.01

\+ 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Services

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: BUFFALO BILL DAM, WY **COOP ID: 481175**

Climate Division: WY 4 **NWS Call Sign:** **Elevation: 5,156 Feet** **Lat: 44°30N** **Lon: 109°11W**

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	4.4	1.9	2	1	20.0	1975	26	20.0	1975	24	1975	27	7	1979	2.7	1.7	.4	.2	@	6.3	2.6	1.9	.2
Feb	3.2	1.3	1	#	6.0	1971	3	12.0	1994	12	1975	9	9	1975	2.1	1.0	.3	.2	.0	3.7	1.0	.1	.0
Mar	6.4	4.5	#	#	8.0	1980	31	20.3	1977	10	1989	3	2	1980	2.5	1.7	.7	.3	.0	2.6	1.1	.4	.1
Apr	3.1	.0	#	0	14.0	1991	12	26.0	1973	18	1984	27	2	1991	1.2	1.0	.4	.2	@	1.0	.5	.2	.1
May	.0	.0	#	0	1.0	1981	7	1.0	1981	2	1984	1	#+	1984	@	@	.0	.0	.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	.2	.0	#	0	6.0	1984	23	6.0	1984	#	2000	21	#	2000	@	@	@	@	.0	.0	.0	.0	.0
Oct	.9	.0	#	0	6.0	1989	29	6.0	1989	3	1991	31	#+	1996	.6	.4	.1	@	.0	.1	.0	.0	.0
Nov	3.4	3.1	#	#	9.0	1973	1	12.0	1973	9	1973	1	3	1980	1.8	1.0	.3	.1	.0	1.8	.6	.2	.0
Dec	3.6	3.2	2	#	5.0	1972	3	10.3	1972	18	1984	2	18	1984	2.4	1.3	.3	.1	.0	2.0	.2	.0	.0
Ann	25.2	14.0	N/A	N/A	20.0	Jan 1975	26	26.0	Apr 1973	24	Jan 1975	27	18	Dec 1984	13.3	8.1	2.5	1.1	@	17.5	6.0	2.8	.4

+ 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: BUFFALO BILL DAM, WY **COOP ID: 481175**

Climate Division: WY 4 **NWS Call Sign:** **Elevation: 5,156 Feet** **Lat: 44˚30N** **Lon: 109˚11W**

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	6/17	6/09	6/04	5/30	5/26	5/22	5/17	5/12	5/04
32	6/04	5/27	5/21	5/16	5/12	5/07	5/03	4/27	4/19
28	5/20	5/11	5/04	4/29	4/23	4/18	4/12	4/06	3/28
24	5/06	4/28	4/23	4/18	4/13	4/09	4/04	3/29	3/21
20	4/22	4/14	4/08	4/03	3/29	3/25	3/19	3/13	3/05
16	4/12	4/03	3/27	3/22	3/16	3/11	3/06	2/27	2/18

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	9/04	9/10	9/14	9/17	9/20	9/23	9/27	10/01	10/06
32	9/18	9/24	9/28	10/02	10/05	10/08	10/12	10/16	10/22
28	9/24	9/30	10/05	10/09	10/13	10/16	10/20	10/25	10/31
24	10/02	10/09	10/15	10/19	10/23	10/27	11/01	11/06	11/13
20	10/18	10/25	10/30	11/03	11/07	11/11	11/15	11/20	11/27
16	10/23	10/30	11/04	11/09	11/13	11/17	11/21	11/26	12/03

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	146	136	129	122	117	111	104	97	87
32	176	165	158	151	145	139	133	125	114
28	209	196	187	179	171	164	156	147	134
24	229	216	207	200	192	185	178	169	156
20	255	244	236	228	222	215	208	200	189
16	274	263	254	247	241	234	227	218	207

***** 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: BUFFALO BILL DAM, WY **COOP ID: 481175**

Climate Division: WY 4 **NWS Call Sign:** **Elevation: 5,156 Feet** **Lat: 44˚30N** **Lon: 109˚11W**

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	1184	954	874	653	427	209	79	67	231	513	871	1126	7188
60	1029	814	719	503	281	102	21	17	130	360	721	971	5668
57	936	730	626	417	202	57	8	6	84	273	638	878	4855
55	878	674	564	361	157	35	3	3	59	220	582	817	4353
50	734	544	415	231	71	7	0	0	19	110	446	673	3250
32	293	164	48	9	0	0	0	0	0	2	110	237	863

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	133	134	197	346	596	796	1014	1039	790	512	229	134	5920
55	5	0	0	8	40	141	304	328	159	17	11	1	1014
57	0	0	0	4	23	103	246	270	124	8	7	0	785
60	0	0	0	0	9	58	167	188	80	2	0	0	504
65	0	0	0	0	0	15	70	83	31	0	0	0	199
70	0	0	0	0	0	2	16	21	9	0	0	0	48

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	18	33	71	166	377	565	792	807	568	309	76	23	18	51	122	288	665	1230	2022	2829	3397	3706	3782	3805
45	1	3	25	80	237	415	637	652	426	190	31	2	1	4	29	109	346	761	1398	2050	2476	2666	2697	2699
50	0	0	2	29	121	275	482	497	293	98	11	0	0	0	2	31	152	427	909	1406	1699	1797	1808	1808
55	0	0	0	4	46	146	329	342	177	41	0	0	0	0	0	4	50	196	525	867	1044	1085	1085	1085
60	0	0	0	0	9	55	181	199	87	9	0	0	0	0	0	0	9	64	245	444	531	540	540	540
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	1	10	39	89	188	298	485	502	329	168	31	2	1	11	50	139	327	625	1110	1612	1941	2109	2140	2142

(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

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