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: HEART MOUNTAIN, WY **COOP ID: 484411**

Climate Division: WY 4 **NWS Call Sign:** **Elevation: 4,790 Feet** **Lat: 44˚42N** **Lon: 108˚57W**

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	32.5	11.2	21.9	68	1953	11	32.1	1983	-34+	1963	12	3.6	1979	1337	0	.0	.0	2.9	13.0	30.0	8.6
Feb	39.8	16.6	28.2	71	1982	21	37.4	1991	-38	1989	3	8.9	1989	1031	0	.0	.0	7.4	7.0	26.9	4.2
Mar	49.4	23.9	36.7	80+	1986	28	46.0	1986	-23	1955	25	27.1	1996	878	0	.0	.0	16.2	2.4	27.0	1.1
Apr	59.3	31.9	45.6	87	1987	28	53.5	1987	1	1966	20	36.2	1975	583	0	.0	.0	24.3	.5	17.8	.0
May	68.1	40.8	54.5	93	1987	8	60.4	1987	14+	1967	4	49.6	1996	336	8	.0	.2	29.4	.0	5.1	.0
Jun	78.1	48.3	63.2	101	1954	23	72.3	1988	28+	1951	3	56.2	1998	131	76	.0	3.1	29.9	.0	.3	.0
Jul	84.1	53.1	68.6	101	1955	18	73.1	1988	34	1952	7	60.7	1993	37	150	@	7.0	31.0	.0	.0	.0
Aug	83.0	51.9	67.5	100+	1983	7	73.1	1983	32+	1992	25	62.4	1980	59	134	@	4.7	31.0	.0	.1	.0
Sep	72.9	43.1	58.0	97	1950	4	64.1	1998	12+	1985	30	53.1	1985	236	26	.0	.6	28.9	.1	4.5	.0
Oct	60.5	34.1	47.3	85+	1970	4	53.0	1988	-10	1971	30	43.1	1971	549	0	.0	.0	25.8	.6	15.7	.1
Nov	43.2	22.3	32.8	74	1999	13	43.5	1999	-25	1959	16	17.3	1985	968	0	.0	.0	10.0	5.6	26.3	2.1
Dec	34.1	13.6	23.9	68+	1980	27	32.9	1976	-36+	1990	22	7.4	1983	1276	0	.0	.0	3.6	12.2	30.0	6.2
Ann	58.8	32.6	45.7	101+	Jul 1955	18	73.1+	Jul 1988	-38	Feb 1989	3	3.6	Jan 1979	7421	394	.0	15.6	240.4	41.4	183.7	22.3

\+ 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: 1949-2001

(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	.29	.19	.57	1998	11	.87+	1998	.00	1988
Feb	.24	.19	.45	2000	25	.73	1978	.00+	1992
Mar	.60	.54	.80	1977	29	2.55	1977	.00	1999
Apr	.86	.68	1.35	1963	27	2.23	1971	.04	1985
May	1.88	1.80	2.48	1988	7	4.25	1981	.18	1976
Jun	1.32	1.24	3.17	2001	13	3.43	1992	.06	1978
Jul	1.09	.95	1.67	1951	10	2.96	1997	.02	1996
Aug	.59	.47	1.37	1965	20	2.15	1972	.06	1975
Sep	.90	.74	1.33	1961	19	2.51	1991	.07	1993
Oct	.77	.59	.92	1974	31	2.22	1975	.06	1988
Nov	.39	.28	.75	1990	2	.95	1978	.05	1976
Dec	.26	.18	1.00	1996	25	1.16	1996	.00	1986
Ann	9.19	9.40	3.17	Jun 2001	13	4.25	May 1981	.00+	Mar 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.5	.7	@	.0
Feb	4.1	.8	.0	.0
Mar	5.7	2.1	.2	.0
Apr	6.2	2.8	.2	@
May	9.5	4.8	1.2	.2
Jun	8.5	4.0	.6	.1
Jul	7.6	3.5	.3	@
Aug	5.9	2.3	.1	.0
Sep	5.9	2.6	.4	.1
Oct	4.8	2.5	.2	.0
Nov	4.3	1.3	.1	.0
Dec	4.1	.7	@	@
Ann	71.1	28.1	3.3	.4

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	.02	.05	.09	.14	.18	.23	.29	.35	.45	.60	.75
Feb	.00	.00	.07	.11	.15	.20	.25	.31	.38	.51	.64
Mar	.05	.12	.22	.31	.40	.49	.60	.74	.91	1.20	1.48
Apr	.09	.15	.27	.39	.52	.66	.83	1.05	1.34	1.83	2.31
May	.37	.54	.82	1.07	1.32	1.60	1.91	2.29	2.79	3.58	4.34
Jun	.19	.29	.48	.67	.86	1.07	1.31	1.61	2.01	2.67	3.30
Jul	.13	.21	.36	.51	.68	.86	1.07	1.33	1.69	2.27	2.85
Aug	.10	.15	.24	.32	.40	.49	.60	.72	.89	1.17	1.43
Sep	.09	.16	.28	.41	.54	.69	.87	1.10	1.40	1.91	2.40
Oct	.08	.14	.24	.35	.46	.59	.75	.93	1.19	1.62	2.04
Nov	.06	.10	.15	.21	.26	.32	.39	.47	.58	.76	.94
Dec	.01	.04	.07	.11	.15	.20	.25	.32	.41	.56	.70
Ann	6.09	6.67	7.42	8.00	8.51	9.02	9.54	10.12	10.83	11.86	12.77

+ 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: 1949-2001
(3) Derived from 1971-2000 serially complete daily data

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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	5.7	4.0	2	1	12.0	1998	11	18.0	1998	16	2000	12	6	1987	2.5	1.6	.4	.2	.1	8.6	5.4	3.5	.5
Feb	4.3	3.2	1	#	6.0	1994	24	11.5	1994	7	1981	9	4	1989	2.3	1.5	.5	.1	.0	3.2	1.5	.6	.0
Mar	8.4	6.3	1	#	8.0	1977	29	25.5	1977	6+	1996	7	4	1983	3.2	2.4	.8	.3	.0	2.3	1.2	.2	.0
Apr	4.0	2.0	#	0	8.0	1976	26	16.9	1991	16	1991	14	3	1991	1.5	1.4	.5	.1	.0	1.0	.6	.4	.2
May	.1	.0	#	0	3.0	1973	1	3.0	1973	6	1983	12	#+	1991	@	@	@	.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	.6	.0	0	0	9.0	2000	22	11.0	2000	18	1982	14	2	1982	.1	.1	.1	@	.0	.1	.1	.1	.0
Oct	3.6	.8	#	#	12.0	1992	14	19.2	1991	12	1971	2	6	1971	1.0	.8	.5	.2	@	1.1	.8	.6	.0
Nov	4.4	3.8	1	#	8.0	1997	25	10.0+	1997	16	1986	14	9	1986	2.5	1.8	.5	.1	.0	4.6	1.2	.5	.0
Dec	4.3	4.0	2	1	18.0	1996	25	18.0	1996	20	1996	27	12	1985	2.7	2.3	.3	.1	@	7.5	2.0	.1	.0
Ann	35.4	24.1	N/A	N/A	18.0	Dec 1996	25	25.5	Mar 1977	20	Dec 1996	27	12	Dec 1985	15.8	11.9	3.6	1.1	.1	28.4	12.8	6.0	.7

+ 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	6/27	6/20	6/15	6/10	6/06	6/02	5/28	5/23	5/15
32	6/07	6/01	5/28	5/25	5/21	5/18	5/15	5/10	5/05
28	5/23	5/18	5/15	5/12	5/09	5/06	5/03	4/29	4/24
24	5/08	5/03	4/29	4/26	4/22	4/19	4/16	4/12	4/07
20	4/26	4/20	4/16	4/12	4/09	4/05	4/02	3/28	3/22
16	4/23	4/15	4/10	4/05	4/01	3/28	3/23	3/18	3/10

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	8/24	8/30	9/03	9/06	9/09	9/12	9/15	9/19	9/24
32	9/04	9/08	9/11	9/14	9/16	9/19	9/22	9/25	9/29
28	9/11	9/16	9/20	9/23	9/25	9/28	10/01	10/05	10/10
24	9/23	9/29	10/03	10/06	10/09	10/13	10/16	10/20	10/26
20	9/28	10/04	10/08	10/12	10/15	10/19	10/23	10/27	11/02
16	10/07	10/13	10/18	10/22	10/26	10/29	11/02	11/07	11/13

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	124	114	106	100	94	89	82	75	65
32	137	131	126	121	117	113	109	104	97
28	161	154	148	143	139	135	130	124	117
24	194	185	179	174	169	164	159	153	145
20	216	207	200	194	189	184	178	171	162
16	237	226	219	213	207	201	194	187	177

***** 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	1337	1031	878	583	336	131	37	59	236	549	968	1276	7421
60	1182	891	723	439	205	60	9	18	130	395	818	1121	5991
57	1089	807	630	357	142	32	2	7	82	305	733	1028	5214
55	1027	756	570	305	106	20	1	4	57	251	677	966	4740
50	875	625	426	193	43	5	0	0	17	134	538	817	3673
32	386	237	71	9	0	0	0	0	0	4	167	345	1219

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	72	130	216	416	695	936	1135	1098	780	478	189	92	6237
55	0	5	1	22	89	265	423	389	146	12	9	0	1361
57	0	0	0	14	62	217	362	330	112	4	4	0	1105
60	0	0	0	6	32	155	276	248	70	1	0	0	788
65	0	0	0	0	8	76	150	134	26	0	0	0	394
70	0	0	0	0	1	27	64	56	7	0	0	0	155

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	4	17	67	207	442	683	873	835	526	246	43	8	4	21	88	295	737	1420	2293	3128	3654	3900	3943	3951
45	0	3	26	118	302	533	718	680	384	141	15	1	0	3	29	147	449	982	1700	2380	2764	2905	2920	2921
50	0	0	6	55	174	386	563	525	257	62	3	0	0	0	6	61	235	621	1184	1709	1966	2028	2031	2031
55	0	0	0	19	88	248	408	371	143	20	0	0	0	0	0	19	107	355	763	1134	1277	1297	1297	1297
60	0	0	0	3	31	132	256	225	65	3	0	0	0	0	0	3	34	166	422	647	712	715	715	715
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	2	23	71	173	294	436	552	537	360	194	38	7	2	25	96	269	563	999	1551	2088	2448	2642	2680	2687

(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