

# Climatography of the United States

## No. 20

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, North Carolina 28801  
www.ncdc.noaa.gov

Station: WHEATLAND 4 N, WY

1971-2000

COOP ID: 489615

Climate Division: WY 8

NWS Call Sign:

Elevation: 4,638 Feet Lat: 42°07N

Lon: 104°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	41.0	16.1	28.6	70	1982	26	38.7	1986	-36	1979	7	13.4	1979	1131	0	.0	.0	8.5	7.3	26.7	5.4
Feb	45.5	19.6	32.6	74+	1962	11	40.4	1999	-33	1936	8	20.4	1989	909	0	.0	.0	11.5	4.5	23.2	2.9
Mar	53.6	25.4	39.5	81+	1986	30	47.0	1986	-25	1948	11	34.4	1980	790	0	.0	.0	19.7	2.0	24.2	.4
Apr	61.9	31.6	46.8	90	1949	28	52.7	1981	-22	1975	2	40.2	1983	548	0	.0	.0	24.7	.3	15.7	@
May	71.1	40.8	56.0	97	1969	27	61.5	1994	13	1983	12	49.9	1995	292	12	.0	.4	30.0	.0	3.8	.0
Jun	82.1	49.5	65.8	106	1954	23	73.7	1988	28	1951	2	61.4	1993	79	103	.4	6.9	30.0	.0	.1	.0
Jul	89.0	55.1	72.1	107	1982	22	75.0	2000	35	1915	4	67.7	1992	7	225	1.8	15.2	31.0	.0	.0	.0
Aug	87.5	53.2	70.4	103+	2001	5	75.2	1983	35	1965	31	66.1	1974	19	186	.3	12.5	31.0	.0	.0	.0
Sep	78.3	43.4	60.9	101+	2001	4	67.0	1998	12+	1985	30	56.2	1974	166	43	@	3.5	29.3	.0	3.3	.0
Oct	66.3	33.8	50.1	90	1922	3	53.3	1983	-9	1991	31	46.1	1984	463	0	.0	.0	28.1	.2	13.8	.1
Nov	50.2	24.7	37.5	81	1999	7	48.4	1999	-18+	2000	12	26.3	2000	828	0	.0	.0	15.7	3.1	22.4	1.0
Dec	42.2	17.6	29.9	76+	1915	22	38.1	1980	-39	1989	22	16.5	1983	1089	0	.0	.0	9.4	6.0	26.3	3.8
Ann	64.1	34.2	49.2	107	Jul 1982	22	75.2	Aug 1983	-39	Dec 1989	22	13.4	Jan 1979	6321	569	2.5	38.5	268.9	23.4	159.5	13.6

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

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1915-2001

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

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### 1971-2000

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COOP ID: 489615

Climate Division: WY 8

NWS Call Sign:

Elevation: 4,638 Feet Lat: 42°07N

Lon: 104°57W

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	.22	.14	.76	1921	24	.67	1978	.00+	1992	3.4	.8	@	.0	.00	.02	.06	.09	.13	.17	.22	.28	.36	.49	.62
Feb	.30	.27	.75	2000	17	1.21	2000	.00+	1977	2.8	1.4	.1	.0	.00	.01	.06	.10	.15	.21	.28	.37	.50	.72	.93
Mar	.63	.32	1.25	1990	6	2.05	1983	.06	1974	4.4	1.9	.2	@	.05	.09	.17	.25	.35	.46	.59	.76	.99	1.39	1.78
Apr	1.46	1.27	3.10	1925	1	4.05	1971	.15	1992	6.1	3.9	.8	.2	.35	.48	.70	.89	1.08	1.28	1.51	1.77	2.13	2.69	3.21
May	2.47	2.02	3.57	1971	5	6.93	1995	.44	1973	8.9	5.7	1.2	.4	.61	.84	1.20	1.52	1.84	2.17	2.55	2.99	3.58	4.50	5.37
Jun	1.99	1.54	2.42	1986	13	5.60	1986	.04	1980	7.2	4.3	1.3	.3	.18	.32	.59	.87	1.17	1.51	1.92	2.42	3.12	4.28	5.42
Jul	1.78	1.42	1.80	1984	22	5.92	1984	.11	1989	6.6	3.9	1.1	.3	.32	.47	.73	.98	1.22	1.49	1.80	2.17	2.66	3.46	4.22
Aug	1.25	1.20	1.95	1978	1	3.25	1998	.08	1995	6.0	3.1	.7	.2	.22	.33	.51	.68	.86	1.05	1.27	1.53	1.88	2.45	2.99
Sep	1.27	.88	2.71	1973	11	4.61	1982	.00	1977	5.7	3.3	.7	.1	.04	.14	.31	.50	.70	.93	1.21	1.55	2.04	2.84	3.64
Oct	.87	.80	2.03	1995	22	2.77	1998	.05	1973	4.5	2.2	.5	.1	.09	.15	.27	.40	.53	.68	.85	1.07	1.36	1.85	2.33
Nov	.52	.43	1.32	1979	20	2.07	1983	.00+	1984	3.2	1.6	.3	@	.00	.04	.13	.21	.29	.39	.51	.65	.85	1.17	1.49
Dec	.28	.24	.90	1915	15	.90	1987	.00	1991	2.7	1.0	.1	.0	.01	.03	.07	.11	.16	.21	.27	.35	.45	.63	.81
Ann	13.04	12.73	3.57	May 1971	5	6.93	May 1995	.00+	Jan 1992	61.5	33.1	7.0	1.6	8.01	8.94	10.15	11.09	11.94	12.77	13.64	14.61	15.80	17.57	19.11

+ 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: 1915-2001

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

Complete documentation available from:  
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**Station: WHEATLAND 4 N, WY**

**COOP ID: 489615**

**Climate Division: WY 8**

**NWS Call Sign:**

**Elevation: 4,638 Feet**

**Lat: 42°07N**

**Lon: 104°57W**

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	4.4	3.0	1	#	6.0	1972	12	22.5	1980	12	1988	5	6	1988	3.3	2.7	.6	.1	.0	6.0	2.3	1.0	.4
Feb	5.3	3.5	1	#	8.0	1993	10	17.0	1993	8	1990	14	3	1993	2.4	2.1	.7	.2	.0	4.9	2.3	1.2	.0
Mar	6.0	3.9	#	#	18.0	1990	6	19.0	1980	16	1990	6	4	1989	2.8	2.4	.7	.2	.1	2.8	1.1	.5	.1
Apr	4.0	2.8	#	#	6.0	1973	19	13.0	1973	6	1991	12	1	1973	1.9	1.6	.6	.1	.0	1.3	.4	.1	.0
May	.9	.0	#	0	8.0	1983	17	10.0	1983	2	1983	17	#+	1999	.4	.4	.1	@	.0	.1	.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	1.0	.0	#	0	10.0	2000	22	12.0	2000	9	2000	22	#+	2000	.4	.3	.1	.1	@	.2	.1	.1	.0
Oct	2.2	1.0	#	#	8.0	1975	23	14.0	1997	13	1997	25	1	1997	.9	.7	.3	.2	.0	.9	.4	.2	.1
Nov	5.5	2.8	1	#	26.0	1979	20	31.0	1979	24	1979	21	6	1979	2.5	2.1	.7	.4	.1	3.7	1.7	.9	.4
Dec	6.5	6.0	1	1	9.5	1975	16	17.0	1987	15	1987	27	4	1985	3.2	2.7	.7	.4	.0	6.4	2.9	1.2	.2
Ann	35.8	23.0	N/A	N/A	26.0	Nov 1979	20	31.0	Nov 1979	24	Nov 1979	21	6+	Jan 1988	17.8	15.0	4.5	1.7	.2	26.3	11.2	5.2	1.2

+ 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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**NWS Call Sign:**

**Elevation: 4,638 Feet**

**Lat: 42° 07N**

**Lon: 104° 57W**

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	6/15	6/09	6/05	6/02	5/29	5/26	5/22	5/18	5/13
32	5/30	5/25	5/21	5/18	5/15	5/12	5/09	5/05	4/30
28	5/14	5/10	5/07	5/04	5/01	4/29	4/26	4/23	4/18
24	5/06	5/01	4/28	4/25	4/22	4/20	4/17	4/14	4/09
20	4/25	4/20	4/17	4/14	4/11	4/08	4/05	4/02	3/28
16	4/20	4/13	4/09	4/05	4/01	3/28	3/24	3/19	3/12
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	9/08	9/11	9/13	9/15	9/17	9/19	9/22	9/26
32	9/10	9/14	9/16	9/19	9/21	9/23	9/25	9/28	10/01
28	9/18	9/22	9/25	9/27	9/30	10/02	10/04	10/07	10/12
24	9/26	10/01	10/04	10/08	10/11	10/14	10/17	10/21	10/26
20	10/05	10/10	10/14	10/17	10/21	10/24	10/27	10/31	11/05
16	10/10	10/16	10/21	10/25	10/28	11/01	11/05	11/09	11/15
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	130	122	117	112	108	104	99	93	86
32	147	140	136	132	128	124	120	116	109
28	169	163	158	154	151	147	143	138	132
24	192	185	179	175	171	166	162	156	149
20	217	208	202	197	192	187	182	175	167
16	236	227	220	215	210	205	199	193	184

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

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**Elevation: 4,638 Feet    Lat: 42°07N**

**Lon: 104°57W**

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	1131	909	790	548	292	79	7	19	166	463	828	1089	6321
60	976	769	635	402	170	28	0	3	77	310	678	934	4982
57	883	685	542	319	112	12	0	1	42	223	595	841	4255
55	823	629	481	266	81	7	0	0	25	172	539	779	3802
50	679	500	335	155	29	1	0	0	5	73	404	628	2809
32	243	136	24	2	0	0	0	0	0	1	86	186	678

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	135	151	257	444	742	1014	1242	1190	867	560	248	121	6971
55	2	0	0	19	110	330	529	477	202	18	11	0	1698
57	0	0	0	11	79	276	467	416	158	8	7	0	1422
60	0	0	0	4	44	202	374	325	104	2	0	0	1055
65	0	0	0	0	12	103	225	186	43	0	0	0	569
70	0	0	0	0	2	39	102	79	12	0	0	0	234

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	34	52	112	243	502	781	999	949	632	341	110	38	34	86	198	441	943	1724	2723	3672	4304	4645	4755	4793
45	10	18	52	136	352	631	844	794	484	215	53	13	10	28	80	216	568	1199	2043	2837	3321	3536	3589	3602
50	0	2	19	62	218	483	689	639	346	108	22	3	0	2	21	83	301	784	1473	2112	2458	2566	2588	2591
55	0	0	1	22	114	334	535	484	217	44	3	0	0	0	1	23	137	471	1006	1490	1707	1751	1754	1754
60	0	0	0	3	46	204	382	330	116	10	0	0	0	0	0	3	49	253	635	965	1081	1091	1091	1091
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	27	44	113	199	332	491	625	601	428	268	84	34	27	71	184	383	715	1206	1831	2432	2860	3128	3212	3246

(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> |
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## 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)