

# Climatology of the United States

## No. 20

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

**Station: YELLOWSTONE PARK MAMMOTH, WY 1971-2000**

**COOP ID: 489905**

**Climate Division: WY 1**

**NWS Call Sign:**

**Elevation: 6,230 Feet Lat: 44° 59N**

**Lon: 110° 42W**

### 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	29.2	8.6	18.9	50	1974	17	27.5	1981	-36+	1963	12	6.2	1979	1430	0	.0	.0	@	17.7	30.5	6.6
Feb	34.1	11.5	22.8	56	1995	22	31.6	1991	-35+	1989	4	10.8	1989	1182	0	.0	.0	.8	10.4	27.6	4.4
Mar	40.4	17.7	29.1	66	1999	20	38.0	1992	-25	1956	11	21.5	1975	1114	0	.0	.0	4.9	5.1	29.0	1.6
Apr	48.9	25.4	37.2	78+	1987	29	44.1	1987	1+	1997	12	25.6	1975	835	0	.0	.0	13.8	1.3	23.2	.0
May	58.9	33.9	46.4	85	1987	16	52.6	1994	6	1950	2	40.6	1975	578	0	.0	.0	25.0	@	11.1	.0
Jun	69.3	41.1	55.2	92	1988	25	62.4	1988	21+	1976	30	48.5	1998	306	11	.0	.1	29.4	.0	1.7	.0
Jul	78.6	46.4	62.5	95+	2000	31	67.2	1998	21	1976	14	54.6	1993	136	58	.0	1.7	31.0	.0	.3	.0
Aug	77.9	45.1	61.5	96	2000	1	66.1	1971	24	1968	31	56.3	1976	164	56	.0	1.0	31.0	.0	.6	.0
Sep	66.8	35.8	51.3	92+	1998	6	58.6	1998	9	1985	29	45.8	1986	416	5	.0	.1	27.5	.2	8.1	.0
Oct	53.8	27.1	40.5	80+	1992	3	47.3	1988	-8	1991	30	34.9	1984	761	0	.0	.0	20.6	1.0	20.1	.1
Nov	37.3	16.9	27.1	66+	1999	7	38.3	1999	-27	1959	13	17.9	1985	1137	0	.0	.0	4.2	9.3	27.4	1.7
Dec	29.2	8.7	19.0	52	1962	16	26.6	1980	-35	1990	22	6.5	1978	1429	0	.0	.0	.1	18.0	30.3	5.9
Ann	52.0	26.5	39.3	96	Aug 2000	1	67.2	Jul 1998	-36+	Jan 1963	12	6.2	Jan 1979	9488	130	.0	2.9	188.3	63.0	209.9	20.3

+ 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/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: 1948-2001

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

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### 1971-2000

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COOP ID: 489905

Climate Division: WY 1

NWS Call Sign:

Elevation: 6,230 Feet Lat: 44°59N

Lon: 110°42W

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	.88	.77	.90	1968	11	3.24	1972	.05	1981	10.8	3.2	.2	.0	.10	.16	.28	.41	.54	.69	.86	1.08	1.37	1.86	2.34
Feb	.64	.53	.70	1972	8	1.84	1978	.16	1977	9.0	2.3	.1	.0	.18	.24	.34	.41	.49	.57	.66	.77	.90	1.11	1.31
Mar	1.08	.81	2.10	1979	1	3.05	1974	.26	1973	8.9	3.7	.2	.1	.25	.35	.51	.65	.79	.94	1.11	1.31	1.57	1.98	2.38
Apr	1.09	.97	1.00	1982	11	2.73	1993	.07	1979	9.1	3.7	.3	@	.19	.28	.44	.59	.74	.91	1.10	1.33	1.64	2.14	2.62
May	2.01	2.06	1.86	1988	7	3.66	1991	.12	1979	13.0	5.7	.8	.1	.54	.73	1.02	1.28	1.53	1.79	2.08	2.43	2.88	3.59	4.25
Jun	1.93	1.66	1.50	1976	21	4.76	1998	.49	1988	12.0	5.7	.8	.1	.57	.76	1.03	1.27	1.50	1.74	2.01	2.32	2.72	3.36	3.94
Jul	1.59	1.43	1.21	1983	10	3.57	1987	.37	1990	10.2	4.8	.6	.1	.44	.59	.82	1.02	1.21	1.42	1.65	1.92	2.27	2.82	3.33
Aug	1.44	1.36	2.25	1982	30	4.21	1982	.14	1988	10.1	4.1	.6	@	.23	.35	.56	.76	.96	1.19	1.44	1.75	2.17	2.84	3.49
Sep	1.29	1.23	1.25	1961	11	3.17	1972	.05	1979	8.3	3.6	.6	.0	.13	.22	.40	.58	.77	.99	1.25	1.57	2.01	2.75	3.47
Oct	.95	.73	1.16	1981	7	2.33	1989	.00	1987	7.6	2.9	.3	@	.13	.25	.41	.54	.68	.82	.98	1.17	1.42	1.81	2.19
Nov	.94	.90	.90	1960	18	1.96	1998	.29	1972	9.1	3.1	.2	.0	.26	.35	.49	.61	.72	.84	.98	1.13	1.34	1.66	1.96
Dec	.79	.71	1.70	1955	23	1.91	1978	.02	1986	9.6	2.5	.1	.0	.13	.20	.31	.42	.53	.65	.80	.97	1.20	1.57	1.92
Ann	14.63	14.19	2.25	Aug 1982	30	4.76	Jun 1998	.00	Oct 1987	117.7	45.3	4.8	.4	11.22	11.90	12.76	13.41	13.97	14.52	15.08	15.70	16.44	17.50	18.41

+ 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:  
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Station: YELLOWSTONE PARK MAMMOTH, WY

COOP ID: 489905

Climate Division: WY 1

NWS Call Sign:

Elevation: 6,230 Feet

Lat: 44° 59N

Lon: 110° 42W

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	11.0	9.5	8	7	12.0	1998	12	32.7	1972	23+	1972	13	17	1979	8.1	5.5	1.1	.2	@	28.1	26.7	20.2	5.1
Feb	9.5	8.8	8	8	8.5	1985	9	21.1	1980	25	1979	23	19	1979	6.0	3.9	.7	.2	.0	23.9	22.0	17.7	9.6
Mar	10.9	9.8	5	3	18.0	1979	1	23.0	1979	42	1979	2	22	1979	6.1	4.1	1.4	.5	.1	15.2	9.6	5.7	2.8
Apr	6.1	4.6	1	#	8.0	1984	11	20.0	1991	13	1979	4	5	1975	3.7	2.5	.7	.3	.0	4.0	2.2	1.3	.2
May	2.3	.6	#	#	10.0	1988	7	11.0	1988	10	1988	7	1	1988	1.1	.8	.4	.1	@	1.1	.4	.1	@
Jun	.1	.0	#	0	2.0	1998	3	2.0	1998	2	1998	3	#+	1998	.1	.1	.0	.0	.0	.1	.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	#	1992	24	#	1992	#	1992	24	#	1992	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.3	.0	#	0	3.5	2000	22	4.5	2000	4	2000	22	#+	2000	.2	.1	@	.0	.0	.1	@	.0	.0
Oct	3.5	1.5	#	#	12.0	1991	23	25.0	1991	20	1991	24	3	1991	2.1	1.4	.3	.1	@	2.2	.7	.3	.1
Nov	9.1	8.1	2	2	9.0	1993	23	19.0	1975	13	1985	30	7	1985	6.3	3.8	1.1	.3	.0	12.4	6.7	3.1	.1
Dec	9.6	8.4	4	4	8.5	1994	4	22.2	1971	17	1994	5	11	1978	6.7	4.7	1.0	.2	.0	24.6	16.8	8.4	.7
Ann	62.4	51.3	N/A	N/A	18.0	Mar 1979	1	32.7	Jan 1972	42	Mar 1979	2	22	Mar 1979	40.4	26.9	6.7	1.9	.1	111.7	85.1	56.8	18.6

+ 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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**COOP ID: 489905**

**Climate Division: WY 1**

**NWS Call Sign:**

**Elevation: 6,230 Feet**

**Lat: 44° 59N**

**Lon: 110° 42W**

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	7/18	7/12	7/08	7/04	6/30	6/27	6/23	6/18	6/12
32	6/28	6/22	6/17	6/13	6/09	6/05	6/01	5/27	5/20
28	6/13	6/05	5/31	5/26	5/21	5/17	5/12	5/06	4/28
24	5/29	5/22	5/17	5/13	5/09	5/04	4/30	4/25	4/18
20	5/15	5/10	5/06	5/03	4/30	4/27	4/23	4/20	4/14
16	5/03	4/27	4/22	4/18	4/14	4/10	4/06	4/01	3/25
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	8/08	8/15	8/20	8/24	8/28	9/01	9/05	9/10	9/16
32	8/24	8/30	9/03	9/06	9/10	9/13	9/16	9/21	9/26
28	9/03	9/08	9/12	9/15	9/18	9/21	9/24	9/28	10/03
24	9/14	9/20	9/24	9/28	10/01	10/05	10/08	10/12	10/18
20	9/24	10/01	10/06	10/10	10/14	10/17	10/21	10/26	11/02
16	10/03	10/10	10/15	10/19	10/23	10/27	11/01	11/05	11/12
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	87	77	70	64	58	52	46	39	29
32	121	111	104	98	92	87	81	74	64
28	148	138	131	124	119	113	107	99	89
24	175	165	157	151	145	139	133	125	115
20	190	182	176	171	166	162	157	151	143
16	220	210	203	198	192	187	181	174	164

\* 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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**NWS Call Sign:**

**Elevation: 6,230 Feet Lat: 44° 59N**

**Lon: 110° 42W**

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	1430	1182	1114	835	578	306	136	164	416	761	1137	1429	9488
60	1275	1042	959	685	425	185	59	81	281	606	987	1274	7859
57	1182	958	866	595	338	127	29	46	210	513	897	1181	6942
55	1120	902	804	536	283	95	17	30	168	452	837	1119	6363
50	965	762	650	395	164	37	2	8	84	306	687	964	5024
32	434	293	184	55	3	0	0	0	0	19	225	432	1645

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	28	35	92	210	448	695	944	915	580	280	79	27	4333
55	0	0	0	1	15	100	248	232	58	1	0	0	655
57	0	0	0	0	8	72	198	186	40	0	0	0	504
60	0	0	0	0	2	40	135	128	20	0	0	0	325
65	0	0	0	0	0	11	58	56	5	0	0	0	130
70	0	0	0	0	0	2	16	17	1	0	0	0	36

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	11	80	251	492	731	692	386	148	15	0	0	0	11	91	342	834	1565	2257	2643	2791	2806	2806
45	0	0	0	29	139	345	576	537	255	70	0	0	0	0	0	29	168	513	1089	1626	1881	1951	1951	1951
50	0	0	0	10	61	218	422	384	145	23	0	0	0	0	0	10	71	289	711	1095	1240	1263	1263	1263
55	0	0	0	0	20	113	274	241	67	3	0	0	0	0	0	0	20	133	407	648	715	718	718	718
60	0	0	0	0	0	44	142	119	21	0	0	0	0	0	0	0	0	44	186	305	326	326	326	326
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	12	70	171	314	467	454	275	122	10	0	0	0	12	82	253	567	1034	1488	1763	1885	1895	1895

(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)