Station: TEN SLEEP 16 SSE, WY

## 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

Lon: 107°22W

**COOP ID: 488858** 

**Climate Division: WY 4** Elevation: 4,680 Feet Lat: 43°49N

**NWS Call Sign:** 

Temperature (°F) Degree Days (1) Mean (1) Mean Number of Days (3) **Extremes** Base Temp 65 Max Max Max Max Min Min Highest Lowest Daily Daily Highest Lowest Month(1) Month(1) Cooling >= >= >= <= <= <= Month Mean Year Day Year Year Day Year Heating Max Min Daily(2) Daily(2) Mean Mean 100 90 50 32 32 0 31.8 -2.2 14.8 61 1981 24 28.3 1981 -45 1963 12 -3.8 1979 1557 0 .0 .0 1.5 13.8 31.0 16.9 Jan 22 38.6 5.9 22.3 1982 32.2 1992 -46 1985 2 9.6 1989 1198 0 .0 .0 4.9 7.0 28.1 9.6 Feb 66 Mar 47.6 19.0 33.3 77 1978 31 41.5 1986 -24+1989 5 25.6 1996 984 0 .0 .0 14.3 3.3 30.2 2.0 27.3 1975 Apr 57.2 42.3 85+ 1987 29 47.8 1987 -1 1975 2 36.1 682 0 .0 .0 21.6 .5 23.2 .1 May 66.8 36.6 51.7 91+ 1987 16 56.7 1987 17 1967 4 47.3 1983 414 2 .0 .1 28.5 .0 8.4 .0 45.3 1974 27 2 54.9 @ 78.2 61.8 100 26 69.4 1988 1984 1998 161 64 4.3 29.6 .0 .5 .0 Jun Jul 87.0 50.3 68.7 103 1981 7 72.9 1976 31 1972 4 60.9 1993 43 .4 13.8 31.0 (a) 156 .0 0. 1987 85.7 47.5 66.6 103 1979 6 71.5 1971 30 +1993 31 61.8 61 110 .1 9.9 31.0 .0 .1 .0 Aug 2 Sep 73.4 36.4 54.9 97+ 1983 61.6 1998 12 +1984 26 50.3 1984 315 13 .0 1.7 28.3 .1 8.9 .0 47.7 31 39.0 1984 24.5 Oct 60.4 25.9 43.2 88 1980 1 1973 -8 1991 679 0 .0 .0 .6 26.5 .1 44.1 13.2 28.7 2001 5 39.5 1999 -31 1975 30 15.0 1985 1091 0 .0 .0 10.4 5.5 29.6 4.7 Nov 76 Dec 34.1 1.1 17.6 65 1999 1 27.1 1980 -51 1990 22 1.9 1983 1469 0 .0 .0 3.4 12.1 30.9 14.4 Jul Jul Dec Jan 58.7 25.5 42.2 103 +1981 7 72.9 1976 -51 1990 22 -3.8 1979 8654 345 .5 29.8 229.0 42.9 217.4 47.8 Ann

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

Issue Date: February 2004 089-A

<sup>+</sup> Also occurred on an earlier date(s)

<sup>@</sup> Denotes mean number of days greater than 0 but less than .05

<sup>(1)</sup> From the 1971-2000 Monthly Normals

<sup>(2)</sup> Derived from station's available digital record: 1955-2001

<sup>(3)</sup> Derived from 1971-2000 serially complete daily data

## 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

**COOP ID: 488858** 

Station: TEN SLEEP 16 SSE, WY

Climate Division: WY 4 NWS Call Sign: Elevation: 4,680 Feet Lat: 43°49N Lon: 107°22W

										Pı	recipi	tation	(incl	nes)										
	Mo	ans/	P	recip	itatio	on Total	s			М	ean N	Numbo Pays (3		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										
		ans(1)				Extremes	5			Daily Precipitation				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	.63	.54	.91	1962	8	1.57	1997	.00	1992	6.3	2.2	.1	.0	.08	.16	.27	.36	.45	.54	.65	.78	.95	1.22	1.47
Feb	.50	.39	.80	1961	3	1.35	1986	.12	1974	6.0	2.0	.1	.0	.14	.19	.26	.32	.38	.44	.51	.60	.70	.87	1.02
Mar	1.09	.97	.81+	1992	18	2.19	1996	.25	1979	7.7	3.6	.2	.0	.38	.49	.64	.76	.88	1.00	1.14	1.29	1.49	1.80	2.09
Apr	1.53	1.67	3.28	1978	28	4.11	1978	.16	1987	8.1	4.3	.6	.1	.36	.51	.73	.93	1.13	1.34	1.57	1.85	2.21	2.79	3.34
May	2.27	2.21	1.80	1978	18	5.64	1978	.51	1994	9.8	5.4	1.4	.3	.67	.88	1.20	1.48	1.76	2.04	2.35	2.72	3.20	3.95	4.64
Jun	1.67	1.52	1.48	1991	7	3.34	1993	.05	1971	8.5	4.4	1.1	.2	.32	.47	.72	.94	1.17	1.42	1.69	2.03	2.47	3.19	3.87
Jul	.96	.75	1.49	1997	20	3.65	1997	.06	1976	6.3	2.6	.4	.1	.05	.10	.21	.34	.49	.66	.87	1.15	1.54	2.20	2.87
Aug	.70	.59	1.43	1968	10	1.97	1999	.04	1975	5.2	2.0	.2	@	.05	.10	.19	.28	.39	.52	.66	.85	1.11	1.55	1.99
Sep	1.31	1.36	1.33	1957	13	3.16	1982	.15	1993	6.1	3.4	.7	.1	.20	.31	.50	.68	.87	1.07	1.31	1.60	1.99	2.63	3.24
Oct	1.30	1.08	1.15	1956	24	3.39	1971	.16	1987	6.6	3.9	.7	@	.24	.35	.54	.72	.90	1.09	1.31	1.58	1.94	2.51	3.05
Nov	.76	.76	.79	1967	2	1.65	1983	.14	1981	6.1	2.7	.3	.0	.23	.30	.41	.50	.59	.68	.79	.91	1.07	1.31	1.54
Dec	.66	.53	1.29	1982	2	2.48	1982	.15	1976	6.5	2.0	.2	@	.12	.18	.28	.37	.46	.56	.67	.80	.98	1.27	1.54
Ann	13.38	13.45	3.28	Apr 1978	28	5.64	May 1978	.00	Jan 1992	83.2	38.5	6.0	.8	9.16	9.96	10.99	11.78	12.49	13.17	13.87	14.66	15.61	17.00	18.21

<sup>+</sup> Also occurred on an earlier date(s)

Complete documentation available from:

www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

<sup>#</sup> Denotes amounts of a trace

<sup>@</sup> Denotes mean number of days greater than 0 but less than .05

<sup>\*\*</sup> Statistics not computed because less than six years out of thirty had measurable precipitation

<sup>(1)</sup> From the 1971-2000 Monthly Normals

<sup>(2)</sup> Derived from station's available digital record: 1955-2001

<sup>(3)</sup> Derived from 1971-2000 serially complete daily data

# 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

**COOP ID: 488858** 

Station: TEN SLEEP 16 SSE, WY

Climate Division: WY 4 NWS Call Sign: Elevation: 4,680 Feet Lat: 43°49N Lon: 107°22W

										Snov	w (incl	hes)													
						Sn	ow To	tals							Mean Number of Days (1)										
	Mean	s/Medi	ians (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	10.1	9.6	8	8	14.0	1997	10	26.2	1978	22	1979	22	18	1979	6.8	3.9	1.2	.4	@	28.2	26.4	23.3	11.9		
Feb	7.0	6.1	8	8	8.0	1977	23	17.7	1986	20+	1993	28	17+	1993	5.8	3.1	.7	.2	.0	26.2	24.9	21.2	10.1		
Mar	11.0	8.6	4	2	8.0	1996	24	27.0	1998	24	1998	12	15	1998	5.6	4.1	1.3	.3	.0	13.4	9.9	6.7	2.8		
Apr	5.6	3.7	#	#	11.0	1984	26	16.0	1975	13	1984	26	2	1999	2.8	2.1	.6	.2	@	2.9	1.2	.7	.1		
May	1.7	.0	#	#	6.5	1988	7	14.5	1975	8	1983	12	1	1983	.7	.7	.2	.1	.0	.6	.3	.2	.0		
Jun	#	.0	#	0	#	1998	4	#+	1998	#+	1998	4	#+	1998	.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	6.0	1985	28	6.0	1985	6	1985	28	#+	2000	.3	.3	.1	@	.0	.4	.1	.1	.0		
Oct	4.6	3.0	#	#	10.0	1991	28	21.6	1971	10	1991	28	2	1996	1.7	1.4	.6	.3	@	2.4	1.2	.8	@		
Nov	9.0	8.2	2	2	9.0	1998	7	16.4	1983	10+	1983	26	5	1978	5.0	3.3	.9	.4	.0	13.8	9.1	3.9	.1		
Dec	9.9	8.0	4	3	11.0	1982	2	30.7	1989	19	1978	5	14	1978	6.5	3.9	1.1	.4	.1	23.9	18.5	12.2	3.6		
Ann	59.5	47.2	N/A	N/A	14.0	Jan 1997	10	30.7	Dec 1989	24	Mar 1998	12	18	Jan 1979	35.2	22.8	6.7	2.3	.1	111.8	91.6	69.1	28.6		

<sup>+</sup> Also occurred on an earlier date(s) #Denotes trace amounts

- (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

<sup>@</sup> Denotes mean number of days greater than 0 but less than .05

<sup>-9/-9.9</sup> represents missing values Annual statistics for Mean/Median snow depths are not appropriate

### Climatography of the United States No. 20 1971-2000

Elevation: 4,680 Feet

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**COOP ID: 488858** 

Lon: 107°22W

Lat: 43°49N

Station: TEN SLEEP 16 SSE, WY

**Climate Division: WY 4 NWS Call Sign:** 

				Freez	e Data					
			Spri	ng Freeze D	ates (Month/	/Day)				
Temp (F)		P	robability of	later date i	n spring (thr	ru Jul 31) tha	n indicated	(*)		
remp (r)	.10	.20	.30	.40	.50	.60	.70	.80	.90	
36	6/30	6/23	6/19	6/15	6/12	6/08	6/04	5/31	5/25	
32	6/14	6/08	6/04	5/31	5/28	5/25	5/21	5/17	5/11	
28	5/23	5/18	5/15	5/12	5/09	5/06	5/03	4/30	4/25	
24	5/15	5/09	5/05	5/02	4/29	4/26	4/22	4/18	4/13	
20	4/29	4/24	4/20	4/17	4/14	4/11	4/08	4/04	3/30	
16	4/23	4/16	4/12	4/08	4/04	4/01	3/28	3/24	3/17	
			Fal	l Freeze Da	tes (Month/D	Day)	•	•	-1	
Temp (F) Probability of earlier date in fall (beginning Aug 1) than indicated(*)										
remb (r)	.10	.20	.30	.40	.50	.60	.70	.80	.90	
36	8/16	8/22	8/26	8/29	9/02	9/05	9/09	9/13	9/18	
32	8/30	9/04	9/07	9/10	9/13	9/16	9/19	9/23	9/28	
28	9/10	9/14	9/17	9/19	9/22	9/24	9/26	9/29	10/03	
24	9/17	9/22	9/26	9/29	10/02	10/05	10/08	10/12	10/17	
20	9/22	9/28	10/02	10/06	10/10	10/13	10/17	10/21	10/27	
16	10/08	10/13	10/17	10/20	10/23	10/27	10/30	11/03	11/08	
1		•		Freeze F	ree Period	1		1	1	
Tomp (F)			Probability	of longer th	an indicated	freeze free p	eriod (Days)	)		
Temp (F)	.10	.20	.30	.40	.50	.60	.70	.80	.90	
36	104	96	91	86	81	77	72	66	59	
32	127	120	116	111	108	104	100	95	88	
28	153	147	142	138	135	131	127	123	117	
24	178	170	165	160	155	151	146	141	133	
20	200	193	187	182	178	173	169	163	155	
16	230	220	213	207	201	196	190	183	173	

<sup>\*</sup> 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:

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**COOP ID: 488858** 

Station: TEN SLEEP 16 SSE, WY

Climate Division: WY 4 NWS Call Sign: Elevation: 4,680 Feet Lat: 43°49N Lon: 107°22W

	Degree Days to Selected Base Temperatures (°F)														
Base						Heatin	g Degree l	Days (1)							
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann		
65	1557	1198	984	682	414	161	43	61	315	679	1091	1469	8654		
60	1402	1058	829	532	269	81	12	18	195	524	941	1314	7175		
57	1309	974	736	443	193	47	4	7	135	431	851	1221	6351		
55	1247	918	674	386	148	31	2	3	101	371	791	1159	5831		
50	1092	778	520	251	63	9	0	0	41	229	646	1004	4633		
32	569	329	100	10	0	0	0	0	0	7	214	492	1721		

Base						Coolin	g Degree I	Days (1)					
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	35	56	139	318	611	892	1136	1072	688	352	113	46	5458
55	0	0	0	4	46	233	425	362	99	2	0	0	1171
57	0	0	0	1	29	190	365	304	72	1	0	0	962
60	0	0	0	0	12	133	280	222	42	0	0	0	689
65	0	0	0	0	2	64	156	110	13	0	0	0	345
70	0	0	0	0	0	23	71	39	3	0	0	0	136

	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	2	37	146	379	660	894	833	467	170	23	0	0	2	39	185	564	1224	2118	2951	3418	3588	3611	3611
45	0	0	8	70	243	513	739	678	329	81	1	0	0	0	8	78	321	834	1573	2251	2580	2661	2662	2662
50	0	0	0	25	135	368	584	523	209	22	0	0	0	0	0	25	160	528	1112	1635	1844	1866	1866	1866
55	0	0	0	6	58	235	432	371	111	3	0	0	0	0	0	6	64	299	731	1102	1213	1216	1216	1216
60	0	0	0	0	14	126	284	225	43	0	0	0	0	0	0	0	14	140	424	649	692	692	692	692
Base				Gro	wing De	gree Unit	s for Co	rn (Mont	thly)						Gr	owing D	egree Ur	its for C	orn (Acc	umulate	d Month	ly)		
50/86	0	11	59	149	275	423	559	532	358	194	45	6	0	11	70	219	494	917	1476	2008	2366	2560	2605	2611

(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

#### 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

- c. Snow Tables
  - 1. Snow Climatology
  - 2. Cooperative Summary of the Day
- d. Freeze Data Table

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

### 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