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: SUNSHINE 3 NE, WY **COOP ID: 488758**

Climate Division: WY 4 **NWS Call Sign:** **Elevation: 6,300 Feet** **Lat: 44˚04N** **Lon: 108˚58W**

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	33.8	5.8	19.8	65	1965	17	29.5	1981	-36	1980	28	3.9	1979	1402	0	.0	.0	3.7	11.0	30.5	9.3
Feb	38.0	9.2	23.6	65	1971	13	31.3	1991	-39	1989	3	9.5	1989	1160	0	.0	.0	5.4	6.9	28.0	5.8
Mar	43.3	16.3	29.8	72	1966	31	38.3	1986	-31	1965	18	22.2	1996	1091	0	.0	.0	10.6	4.2	30.7	2.1
Apr	50.3	23.0	36.7	78+	2000	29	43.4	1987	-9	1973	9	29.9	1975	850	0	.0	.0	18.4	1.4	26.3	.4
May	60.0	32.3	46.2	86	1972	31	51.0	1987	2	1967	4	41.4	1995	585	0	.0	.0	26.7	.1	16.2	.0
Jun	70.3	39.5	54.9	98	1977	7	61.5	1988	22	2000	1	48.4	1998	311	7	.0	.2	29.5	.0	4.0	.0
Jul	77.7	44.2	61.0	93+	1998	19	65.0	1988	27	1986	6	53.3	1993	159	34	.0	.8	31.0	.0	.5	.0
Aug	77.0	43.6	60.3	93	1979	5	66.1	1971	25+	1985	21	55.9	1993	173	28	.0	.3	31.0	.0	1.3	.0
Sep	66.8	34.4	50.6	87+	1998	8	57.5	1998	-5	1965	18	44.5	1985	435	3	.0	.0	27.8	.2	11.6	@
Oct	56.4	25.5	41.0	81	1992	1	46.7	1988	-10	1991	30	36.3	1971	745	0	.0	.0	23.7	.9	26.2	.3
Nov	41.3	13.9	27.6	69+	2001	10	37.9	1999	-28	1975	30	16.5	1985	1121	0	.0	.0	8.8	6.8	29.3	3.3
Dec	34.6	7.1	20.9	68	1980	16	32.6	1980	-40+	1990	21	8.9	1983	1369	0	.0	.0	4.1	10.7	30.6	7.9
Ann	54.1	24.6	39.4	98	Jun 1977	7	66.1	Aug 1971	-40+	Dec 1990	21	3.9	Jan 1979	9401	72	.0	1.3	220.7	42.2	235.2	29.1

\+ 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: 1963-2001

(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	.37	.29	.68	1995	27	1.27	1975	.00+	1985
Feb	.33	.23	.69	1978	20	1.14	1978	.00	1990
Mar	.94	.70	1.18	1981	27	2.42	1981	.04	1999
Apr	1.60	1.39	1.75	1976	26	4.13	1971	.40+	1996
May	2.90	2.43	2.15	1978	18	8.76	1978	.48	1984
Jun	2.02	1.58	1.89	1992	15	5.24	1992	.52+	1996
Jul	1.60	1.43	1.30	1975	7	3.54	1981	.12	1974
Aug	1.27	1.24	1.26	1973	31	4.46	1972	.05	1995
Sep	1.46	1.34	1.42	1990	20	4.63	1982	.00+	1979
Oct	1.07	.79	1.42	1971	17	3.49	1994	.00+	1987
Nov	.63	.44	1.00+	1975	18	1.83	1987	.00+	1999
Dec	.47	.22	.87	1987	23	1.76	1992	.00+	1991
Ann	14.66	15.20	2.15	May 1978	18	8.76	May 1978	.00+	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.7	1.5	.1	.0
Feb	2.9	1.4	.1	.0
Mar	5.0	3.3	.3	@
Apr	6.5	4.8	.8	.2
May	8.4	6.3	1.9	.5
Jun	8.4	6.0	1.1	.2
Jul	6.9	4.7	.7	.1
Aug	5.8	4.1	.7	@
Sep	4.9	3.5	1.1	.2
Oct	3.8	3.1	.6	.1
Nov	3.2	2.1	.2	.1
Dec	2.8	1.7	.1	.0
Ann	61.3	42.5	7.7	1.4

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	.00	.00	.11	.18	.24	.31	.38	.47	.59	.78	.96
Feb	.02	.05	.10	.15	.20	.26	.32	.41	.53	.72	.91
Mar	.14	.21	.35	.48	.61	.76	.94	1.15	1.43	1.90	2.34
Apr	.33	.48	.71	.93	1.14	1.37	1.63	1.95	2.36	3.02	3.65
May	.53	.79	1.22	1.61	2.01	2.45	2.94	3.54	4.33	5.61	6.82
Jun	.37	.55	.85	1.12	1.40	1.70	2.05	2.46	3.02	3.90	4.75
Jul	.16	.28	.50	.73	.97	1.24	1.56	1.95	2.50	3.40	4.28
Aug	.19	.30	.49	.66	.84	1.04	1.27	1.55	1.93	2.54	3.13
Sep	.00	.15	.41	.64	.88	1.14	1.45	1.82	2.33	3.17	3.98
Oct	.00	.17	.38	.55	.71	.89	1.10	1.33	1.65	2.17	2.67
Nov	.00	.04	.14	.24	.34	.46	.60	.77	1.01	1.41	1.81
Dec	.00	.02	.09	.16	.23	.32	.43	.57	.77	1.09	1.42
Ann	9.20	10.20	11.52	12.54	13.46	14.35	15.29	16.34	17.62	19.50	21.16

\+ 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: 1963-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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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	6.7	5.3	3	1	8.0	1972	12	17.0	1980	18	1979	25	18	1979	2.3	2.1	1.1	.3	.0	5.1	2.2	1.1	.1
Feb	4.8	4.0	2	1	6.0	1978	20	12.0	1978	10	1994	1	7	1993	2.5	2.2	.6	.2	.0	5.5	3.3	3.2	.0
Mar	10.9	8.0	2	#	15.0	1980	31	31.0+	1981	16	1998	8	10	1973	3.1	2.9	1.7	.8	.2	2.4	1.1	.5	.1
Apr	14.5	13.0	1	1	18.0	1980	2	42.0	1974	30	1974	13	10	1979	3.1	2.9	1.6	.7	.3	3.4	2.3	1.0	.2
May	7.5	3.0	#	#	16.0	1978	18	58.0	1978	10	1979	9	10	1979	1.3	1.3	1.0	.5	.2	.7	.3	.1	.0
Jun	.5	.0	#	0	4.0	1974	7	4.8	1995	4+	1995	9	#+	1998	.2	.2	.1	.0	.0	.2	.1	.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	3.4	.0	#	0	12.0	1982	29	21.0	1984	10	2000	23	1	2000	.6	.6	.5	.3	.1	.4	.2	.1	.1
Oct	9.4	6.0	#	#	24.0	1989	28	40.0	1989	16	1980	16	2	1997	1.7	1.6	1.0	.6	.1	1.5	.9	.5	.1
Nov	8.1	6.2	1	1	12.0	1973	1	26.0	1991	18	1983	26	8	1983	2.4	2.0	1.1	.5	.1	3.9	2.6	.8	.2
Dec	6.1	4.0	3	#	14.0	1992	12	25.0	1992	18	1992	13	17	1985	2.2	2.0	.9	.4	@	3.3	2.2	1.9	1.4
Ann	71.9	49.5	N/A	N/A	24.0	Oct 1989	28	58.0	May 1978	30	Apr 1974	13	18	Jan 1979	19.4	17.8	9.6	4.3	1.0	26.4	15.2	9.2	2.2

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	7/28	7/21	7/16	7/12	7/08	7/04	6/30	6/25	6/18
32	7/14	7/07	7/02	6/27	6/23	6/19	6/15	6/09	6/02
28	6/26	6/18	6/13	6/08	6/04	5/30	5/25	5/20	5/12
24	6/04	5/29	5/25	5/22	5/18	5/15	5/11	5/07	5/01
20	5/23	5/17	5/12	5/08	5/05	5/01	4/27	4/23	4/17
16	5/11	5/05	5/01	4/27	4/24	4/21	4/17	4/13	4/07

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	8/01	8/07	8/11	8/15	8/19	8/22	8/26	8/31	9/06
32	8/14	8/20	8/24	8/28	8/31	9/04	9/07	9/12	9/17
28	8/24	8/30	9/03	9/07	9/10	9/13	9/17	9/21	9/27
24	9/09	9/14	9/17	9/20	9/23	9/25	9/28	10/02	10/06
20	9/17	9/22	9/25	9/28	10/01	10/04	10/07	10/11	10/15
16	9/22	9/28	10/02	10/06	10/10	10/13	10/17	10/22	10/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	68	59	52	46	41	36	30	23	14
32	94	85	79	74	68	63	58	51	43
28	125	115	109	103	98	92	87	80	71
24	150	142	136	131	127	122	117	111	103
20	172	164	158	153	149	144	139	133	125
16	195	186	179	174	168	163	157	151	141

***** 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	1402	1160	1091	850	585	311	159	173	435	745	1121	1369	9401
60	1247	1020	936	700	431	185	72	80	297	590	971	1214	7743
57	1154	936	843	610	341	124	36	42	224	497	881	1121	6809
55	1092	880	781	550	284	90	21	25	180	436	821	1059	6219
50	937	740	626	406	160	32	4	5	93	290	671	904	4868
32	414	279	150	51	2	0	0	0	0	14	215	398	1523

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	35	43	81	191	440	686	898	878	558	292	83	52	4237
55	0	0	0	0	9	86	206	190	48	1	0	0	540
57	0	0	0	0	4	60	159	145	32	0	0	0	400
60	0	0	0	0	1	30	102	89	15	0	0	0	237
65	0	0	0	0	0	7	34	28	3	0	0	0	72
70	0	0	0	0	0	0	8	5	0	0	0	0	13

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	2	4	17	83	238	478	668	636	361	137	21	2	2	6	23	106	344	822	1490	2126	2487	2624	2645	2647
45	0	0	0	32	133	332	513	481	230	57	3	0	0	0	0	32	165	497	1010	1491	1721	1778	1781	1781
50	0	0	0	7	52	206	358	326	122	14	0	0	0	0	0	7	59	265	623	949	1071	1085	1085	1085
55	0	0	0	0	10	104	214	183	52	0	0	0	0	0	0	0	10	114	328	511	563	563	563	563
60	0	0	0	0	0	36	92	70	11	0	0	0	0	0	0	0	0	36	128	198	209	209	209	209
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	1	13	33	92	198	335	450	439	284	151	30	4	1	14	47	139	337	672	1122	1561	1845	1996	2026	2030

(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