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: LEITER 9 N, WY **COOP ID: 485506**

Climate Division: WY 5 **NWS Call Sign:** **Elevation: 4,160 Feet** **Lat: 44˚51N** **Lon: 106˚17W**

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	31.9	11.2	21.6	63	1992	31	33.2	1981	-34	1997	12	5.6	1979	1346	0	.0	.0	2.1	12.8	30.3	7.6
Feb	38.4	16.8	27.6	71	1995	24	38.4	1992	-35	1996	2	13.6	1989	1048	0	.0	.0	5.7	7.9	26.5	3.7
Mar	47.7	24.3	36.0	78	1986	28	44.3	1986	-17	1989	4	28.0	1996	899	0	.0	.0	15.3	3.7	26.1	1.0
Apr	57.7	32.6	45.2	88	1980	21	52.2	1987	6	1986	14	37.7	1975	595	0	.0	.0	22.3	.9	15.1	.0
May	67.7	41.7	54.7	94+	1988	29	60.7	1994	15	1967	1	50.1	1996	333	13	.0	.3	29.5	.0	3.5	.0
Jun	78.2	50.4	64.3	105	1988	23	75.7	1988	31	1969	13	58.6	1975	122	102	.6	4.0	29.8	.0	.0	.0
Jul	87.6	57.0	72.3	108+	1989	8	76.8	2000	38	1987	12	63.0	1993	27	254	2.1	14.1	31.0	.0	.0	.0
Aug	87.1	55.9	71.5	105	1979	5	78.2	1983	36+	1992	30	65.8	1977	38	240	1.0	13.7	31.0	.0	.0	.0
Sep	75.0	45.6	60.3	104	1978	5	68.0	1998	12	1984	25	54.2	1986	203	62	.3	3.4	29.0	.1	2.1	.0
Oct	61.0	34.3	47.7	90+	1992	2	51.1	1988	-13	1991	30	43.0	1984	539	0	.0	.1	25.7	.5	11.6	@
Nov	43.1	22.0	32.6	77+	1999	4	44.8	1999	-20+	1985	27	15.4	1985	973	0	.0	.0	10.2	6.0	25.6	1.6
Dec	34.1	13.7	23.9	68	1973	1	32.3	1999	-36+	1990	22	6.6	1983	1275	0	.0	.0	3.3	11.2	29.8	5.0
Ann	59.1	33.8	46.5	108+	Jul 1989	8	78.2	Aug 1983	-36+	Dec 1990	22	5.6	Jan 1979	7398	671	4.0	35.6	234.9	43.1	170.6	18.9

+ 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: 1964-2001

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

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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	.53	.51	.99	1965	29	1.50	1971	.10	1992
Feb	.39	.36	.52	1986	4	.99+	1978	.06	1992
Mar	.89	.89	.70	1995	12	1.87	1992	.11	1978
Apr	1.82	1.57	1.90	1974	20	4.38	1999	.47	1987
May	2.45	1.99	2.20	1978	18	9.42	1978	.04	1998
Jun	2.47	2.34	2.35	1993	7	6.22	1993	.73	1978
Jul	1.47	1.11	1.74	1981	25	4.17	1993	.11	1988
Aug	1.04	.96	1.74	1965	20	2.83	1987	.16	2000
Sep	1.41	1.19	1.65	1986	1	4.60	1986	.07	1975
Oct	1.46	1.30	1.81	1996	26	4.71	1994	.16	1978
Nov	.74	.76	.71	1978	9	1.71	1991	.16	1981
Dec	.57	.53	.58	1989	14	1.70	1989	.07	1991
Ann	15.24	15.23	2.35	Jun 1993	7	9.42	May 1978	.04	May 1998

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.3	1.7	@	.0
Feb	6.1	1.3	@	.0
Mar	8.8	2.9	.2	.0
Apr	9.7	5.2	.9	.1
May	10.3	5.9	1.5	.3
Jun	10.2	6.0	1.3	.4
Jul	7.0	3.9	.7	.3
Aug	5.1	2.8	.5	.2
Sep	6.3	3.9	.8	.1
Oct	6.6	4.1	.7	.2
Nov	7.5	2.6	.2	.0
Dec	7.3	1.9	@	.0
Ann	92.2	42.2	6.8	1.6

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	.09	.14	.22	.29	.36	.44	.54	.65	.80	1.04	1.27
Feb	.09	.12	.18	.23	.29	.34	.40	.48	.58	.73	.88
Mar	.26	.34	.47	.58	.69	.80	.92	1.06	1.25	1.54	1.81
Apr	.45	.63	.89	1.13	1.36	1.60	1.88	2.20	2.63	3.30	3.93
May	.42	.63	.99	1.33	1.67	2.05	2.47	2.99	3.68	4.80	5.87
Jun	.83	1.07	1.41	1.70	1.98	2.27	2.58	2.95	3.42	4.15	4.82
Jul	.16	.27	.48	.68	.90	1.15	1.44	1.79	2.28	3.09	3.87
Aug	.19	.29	.44	.58	.72	.88	1.05	1.27	1.55	2.00	2.43
Sep	.28	.41	.61	.80	1.00	1.20	1.43	1.72	2.09	2.68	3.25
Oct	.32	.46	.67	.87	1.06	1.27	1.50	1.78	2.14	2.72	3.27
Nov	.27	.34	.44	.52	.60	.69	.78	.88	1.02	1.23	1.42
Dec	.11	.16	.24	.32	.40	.48	.57	.69	.84	1.09	1.32
Ann	10.75	11.61	12.73	13.58	14.33	15.06	15.81	16.65	17.66	19.13	20.40

\+ 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: 1964-2001
(3) Derived from 1971-2000 serially complete daily data

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Climate Division: WY 5 **NWS Call Sign:** **Elevation: 4,160 Feet** **Lat: 44°51N** **Lon: 106°17W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	8.7	6.9	5	4
Feb	6.3	6.6	3	2
Mar	10.4	9.4	1	1
Apr	8.3	5.8	1	#
May	1.3	.0	#	0
Jun	#	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	1.4	.0	#	0
Oct	4.4	3.0	#	#
Nov	8.1	9.1	1	1
Dec	8.9	8.3	3	3
Ann	57.8	49.1	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	6.5	1972	2	22.0	1977	20	1979	17	18	1979
Feb	6.0	1986	4	14.4	1978	20	1978	2	15	1979
Mar	6.5	1977	25	22.1	1977	11+	1996	8	5	1979
Apr	14.0	1997	5	26.0	1984	19	1984	27	5	1997
May	11.0	1986	9	12.0	1986	6	1984	1	#+	1995
Jun	#	1998	4	#	1998	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	9.0	1984	23	16.0	1984	7	1984	24	1	1984
Oct	10.0	1996	26	14.5+	1996	10	1996	26	1	1996
Nov	7.5	1975	24	14.0	1991	10	1978	14	5	1985
Dec	7.5	1989	14	25.4	1989	20	1989	22	13	1978
Ann	14.0	Apr 1997	5	26.0	Apr 1984	20+	Dec 1989	22	18	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.3	3.4	.6	.2	.0
Feb	5.6	2.5	.5	@	.0
Mar	6.8	3.8	1.1	.2	.0
Apr	3.8	2.7	1.1	.4	.1
May	.5	.4	.1	.1	@
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.7	.5	.1	@	.0
Oct	2.1	1.7	.5	.1	@
Nov	5.6	3.2	.8	.1	.0
Dec	6.7	3.3	.8	.1	.0
Ann	39.1	21.5	5.6	1.2	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	23.2	16.2	9.9	3.1
Feb	14.9	9.1	6.1	2.6
Mar	7.2	3.4	1.4	.2
Apr	2.2	1.4	.8	.3
May	.1	.1	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.2	.1	.1	.0
Oct	1.1	.6	.3	@
Nov	9.5	5.2	2.2	.1
Dec	20.2	13.0	8.5	1.7
Ann	78.6	49.1	29.3	8.0

+ 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

Complete documentation available from:
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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	6/08	6/03	5/31	5/27	5/24	5/21	5/18	5/15	5/09
32	5/26	5/22	5/19	5/16	5/14	5/11	5/09	5/06	5/02
28	5/10	5/06	5/03	4/30	4/27	4/25	4/22	4/19	4/15
24	4/30	4/25	4/22	4/20	4/17	4/15	4/12	4/09	4/05
20	4/21	4/16	4/12	4/08	4/05	4/02	3/29	3/25	3/19
16	4/16	4/09	4/03	3/29	3/25	3/20	3/15	3/10	3/02

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	9/03	9/08	9/11	9/14	9/17	9/20	9/23	9/26	10/01
32	9/13	9/17	9/20	9/23	9/26	9/28	10/01	10/04	10/09
28	9/18	9/23	9/27	10/01	10/04	10/08	10/11	10/15	10/21
24	9/23	9/30	10/04	10/08	10/12	10/16	10/19	10/24	10/30
20	10/09	10/15	10/19	10/23	10/26	10/30	11/02	11/07	11/12
16	10/18	10/23	10/27	10/31	11/03	11/07	11/10	11/14	11/20

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	135	128	123	119	115	111	107	102	95
32	152	146	141	138	134	131	127	123	117
28	182	174	168	164	159	155	150	144	136
24	204	194	188	182	177	172	166	159	150
20	229	220	214	209	204	199	194	188	179
16	250	240	234	228	223	218	212	206	196

***** 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	1346	1048	899	595	333	122	27	38	203	539	973	1275	7398
60	1191	908	744	450	208	57	8	13	113	385	823	1120	6020
57	1098	824	651	366	147	31	2	5	73	296	736	1027	5256
55	1036	768	589	313	113	20	1	3	51	241	681	965	4781
50	887	639	444	197	49	5	0	0	17	125	542	815	3720
32	403	241	76	8	0	0	0	0	0	3	168	341	1240

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	80	118	200	402	703	970	1250	1225	848	487	185	88	6556
55	0	0	0	18	103	300	537	515	210	13	8	0	1704
57	0	0	0	11	75	251	477	455	171	6	3	0	1449
60	0	0	0	4	43	186	390	370	122	2	0	0	1117
65	0	0	0	0	13	102	254	240	62	0	0	0	671
70	0	0	0	0	3	45	148	139	25	0	0	0	360

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	15	68	218	467	743	1010	992	619	284	53	10	0	15	83	301	768	1511	2521	3513	4132	4416	4469	4479
45	0	2	24	121	322	593	855	837	476	167	18	1	0	2	26	147	469	1062	1917	2754	3230	3397	3415	3416
50	0	0	4	56	201	444	700	682	342	88	3	0	0	0	4	60	261	705	1405	2087	2429	2517	2520	2520
55	0	0	0	19	101	300	545	528	221	30	0	0	0	0	0	19	120	420	965	1493	1714	1744	1744	1744
60	0	0	0	4	43	178	394	375	124	9	0	0	0	0	0	4	47	225	619	994	1118	1127	1127	1127
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	13	64	158	291	459	640	624	395	203	45	5	0	13	77	235	526	985	1625	2249	2644	2847	2892	2897

(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