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: DOUBLE FOUR RANCH, WY **COOP ID: 482680**

Climate Division: WY 8 **NWS Call Sign:** **Elevation: 6,199 Feet** **Lat: 42˚11N** **Lon: 105˚24W**

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	33.9	13.2	23.6	57+	1981	23	30.9	1986	-33	1984	18	11.2	1979	1284	0	.0	.0	1.3	11.9	29.7	5.3
Feb	37.8	16.1	27.0	64	1962	11	33.4	1992	-37	1996	2	15.6	1989	1066	0	.0	.0	3.7	7.2	26.8	3.4
Mar	45.6	21.7	33.7	73	1960	27	40.5	1986	-24+	1980	1	28.6	1980	973	0	.0	.0	11.6	3.3	28.0	.8
Apr	53.8	27.1	40.5	82	1959	30	46.1	1981	-16+	1975	2	33.3	1983	736	0	.0	.0	20.0	1.0	23.3	.2
May	63.5	34.9	49.2	92	1964	20	53.9	1994	9	1964	5	44.2	1983	489	0	.0	.0	27.9	.1	10.9	.0
Jun	74.7	41.6	58.2	98+	1969	4	63.7	1988	20	1951	2	53.4	1993	222	16	.0	.7	29.8	.0	1.9	.0
Jul	81.6	47.0	64.3	100	1954	12	69.9	1976	29	1995	3	59.8	1993	87	65	.0	3.8	31.0	.0	.2	.0
Aug	80.6	45.4	63.0	96+	1979	5	67.7	1973	25	1993	31	59.6	1978	109	47	.0	1.6	31.0	.0	.5	.0
Sep	71.2	36.6	53.9	94+	2001	4	60.2	1998	-1	1985	30	49.9	1985	338	5	.0	.4	28.6	.1	9.2	@
Oct	58.9	28.5	43.7	87	1975	6	46.3	1999	-2	1991	31	38.3	1984	661	0	.0	.0	24.6	.6	21.2	.1
Nov	43.2	21.0	32.1	72	1999	7	41.6	1999	-22	1993	25	23.0	2000	986	0	.0	.0	10.0	5.5	25.9	1.3
Dec	35.1	14.5	24.8	61	1981	9	33.6	1980	-41	1990	22	13.2	1983	1246	0	.0	.0	2.2	10.4	29.1	4.1
Ann	56.7	29.0	42.8	100	Jul 1954	12	69.9	Jul 1976	-41	Dec 1990	22	11.2	Jan 1979	8197	133	.0	6.5	221.7	40.1	206.7	15.2

\+ 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: 1948-2001

(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	.41	.37	.80	1949	10	1.03	1980	.00	1989
Feb	.54	.38	1.02	1993	10	1.93	2000	.00	1983
Mar	.94	.80	.90	1975	31	2.76	1983	.15	1995
Apr	2.00	1.74	1.93	1984	20	5.71	1999	.32	1987
May	2.86	2.35	3.80	1971	5	8.10	1971	.35	1985
Jun	2.07	1.88	3.89	1965	10	5.52	1991	.15	1980
Jul	1.72	1.64	2.27	1953	29	3.95	1984	.42	2000
Aug	1.41	1.11	1.87	1997	5	4.01	1976	.07	1973
Sep	1.19	.91	3.00	1973	11	4.11	1973	.00	1977
Oct	.96	.91	1.10	1978	22	2.48	1998	.11	1988
Nov	.75	.65	1.31	1967	2	2.75	1983	.00	1984
Dec	.58	.49	1.40	1955	3	1.75	1973	.00	1986
Ann	15.43	14.96	3.89	Jun 1965	10	8.10	May 1971	.00+	Jan 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.5	1.6	.0	.0
Feb	4.4	1.9	.1	@
Mar	6.0	3.0	.3	.0
Apr	8.0	4.8	1.1	.2
May	10.2	6.6	1.5	.5
Jun	8.4	4.7	1.1	.3
Jul	9.5	5.3	.8	.1
Aug	7.4	3.8	.4	.1
Sep	5.6	3.0	.6	.1
Oct	4.8	2.6	.4	@
Nov	4.8	2.7	.2	@
Dec	4.5	2.1	.2	.0
Ann	78.1	42.1	6.7	1.3

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
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.03	.07	.13	.19	.26	.33	.40	.50	.63	.85	1.05
Feb	.03	.07	.15	.23	.32	.42	.53	.67	.86	1.18	1.48
Mar	.16	.24	.38	.51	.64	.79	.95	1.15	1.41	1.84	2.25
Apr	.42	.60	.90	1.16	1.43	1.72	2.05	2.44	2.95	3.78	4.56
May	.54	.80	1.21	1.60	1.99	2.42	2.90	3.48	4.25	5.49	6.66
Jun	.32	.50	.80	1.08	1.38	1.70	2.07	2.52	3.13	4.11	5.06
Jul	.53	.70	.94	1.15	1.35	1.56	1.79	2.06	2.41	2.95	3.45
Aug	.19	.30	.50	.70	.90	1.13	1.40	1.72	2.16	2.88	3.57
Sep	.09	.22	.41	.58	.77	.96	1.19	1.47	1.84	2.45	3.03
Oct	.21	.30	.44	.56	.69	.83	.98	1.16	1.40	1.79	2.15
Nov	.06	.14	.26	.37	.49	.61	.75	.93	1.16	1.55	1.91
Dec	.04	.09	.19	.27	.36	.46	.57	.71	.90	1.21	1.51
Ann	10.49	11.43	12.64	13.56	14.39	15.19	16.02	16.94	18.06	19.69	21.11

+ 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: 1948-2001
(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	9.0	7.5	5	2	10.0	1984	14	24.2	1980	29	1984	14	22	1984	4.2	3.5	1.1	.4	@	16.5	10.3	7.3	3.5
Feb	9.0	8.0	4	2	12.0	1990	13	24.1	1993	27	1993	26	18	1993	3.8	3.4	.9	.4	.1	15.6	12.1	8.7	3.5
Mar	10.3	7.0	2	1	10.0	1983	18	37.0	1983	24	1993	1	12	1980	4.1	3.5	1.5	.6	.2	9.7	6.5	4.6	2.3
Apr	11.4	12.0	1	#	16.0	1984	20	33.5	1999	24	1983	4	7	1983	3.7	3.4	1.3	.7	.2	4.1	2.5	1.6	.8
May	3.6	.0	#	0	20.0	1983	17	28.0	1978	25	1978	7	3	1978	.9	.9	.5	.2	.1	.8	.5	.3	.1
Jun	.3	.0	#	0	4.0	1979	8	6.0	1979	4	1979	8	#	1979	.1	.1	@	.0	.0	.1	.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	1.7	.0	#	0	8.0	1974	12	15.0	2000	9	2000	23	1+	2000	.6	.4	.2	.2	.0	.5	.2	.2	.0
Oct	4.5	3.0	#	#	10.0	1975	23	19.0	1995	18	1995	23	2	1995	1.5	1.4	.5	.3	.1	1.8	1.0	.7	.2
Nov	10.8	9.3	2	1	22.0	1979	20	40.0	1983	25	1979	22	11	1979	4.0	3.4	1.4	.5	.1	10.4	7.5	4.4	1.0
Dec	12.3	9.8	4	2	16.0	1987	27	28.0	1987	23+	1985	11	18	1983	4.0	3.7	1.5	.5	.2	17.3	13.1	9.3	4.2
Ann	72.9	56.6	N/A	N/A	22.0	Nov 1979	20	40.0	Nov 1983	29	Jan 1984	14	22	Jan 1984	26.9	23.7	8.9	3.8	1.0	76.8	53.8	37.1	15.6

+ 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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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	7/21	7/14	7/09	7/05	7/01	6/27	6/23	6/18	6/11
32	7/02	6/25	6/19	6/15	6/10	6/06	6/01	5/27	5/20
28	6/06	5/31	5/27	5/24	5/21	5/17	5/14	5/10	5/04
24	5/16	5/12	5/09	5/06	5/03	5/01	4/28	4/25	4/20
20	5/06	5/01	4/27	4/23	4/20	4/17	4/14	4/10	4/05
16	4/24	4/19	4/15	4/11	4/08	4/05	4/02	3/29	3/24

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	8/07	8/12	8/16	8/20	8/23	8/26	8/29	9/02	9/08
32	8/20	8/26	8/30	9/02	9/06	9/09	9/13	9/17	9/23
28	9/04	9/08	9/12	9/14	9/17	9/19	9/22	9/25	9/29
24	9/13	9/18	9/21	9/24	9/26	9/29	10/02	10/05	10/09
20	9/21	9/27	10/01	10/05	10/08	10/11	10/15	10/19	10/25
16	10/03	10/08	10/12	10/16	10/19	10/22	10/26	10/30	11/05

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	79	70	63	57	52	47	41	35	25
32	115	105	98	92	87	81	75	68	58
28	136	130	126	122	118	115	111	107	100
24	161	156	152	148	145	142	139	135	130
20	197	188	181	175	170	165	159	152	143
16	219	210	204	198	193	188	183	176	167

***** 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	1284	1066	973	736	489	222	87	109	338	661	986	1246	8197
60	1129	926	818	586	338	113	25	36	206	506	836	1091	6610
57	1036	842	725	497	253	66	9	15	140	413	746	998	5740
55	974	786	663	439	202	43	4	7	103	352	686	936	5195
50	819	646	508	301	99	10	0	1	37	209	541	781	3952
32	309	199	77	20	0	0	0	0	0	4	136	284	1029

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	47	57	127	273	534	784	1001	961	656	366	140	61	5007
55	0	0	0	3	23	137	291	255	69	1	0	0	779
57	0	0	0	0	12	100	235	201	46	0	0	0	594
60	0	0	0	0	3	57	157	129	22	0	0	0	368
65	0	0	0	0	0	16	65	47	5	0	0	0	133
70	0	0	0	0	0	2	15	9	0	0	0	0	26

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	5	37	114	304	550	759	716	432	178	42	6	0	5	42	156	460	1010	1769	2485	2917	3095	3137	3143
45	0	0	8	45	173	404	604	561	290	81	12	0	0	0	8	53	226	630	1234	1795	2085	2166	2178	2178
50	0	0	0	9	73	261	449	406	169	25	0	0	0	0	0	9	82	343	792	1198	1367	1392	1392	1392
55	0	0	0	0	19	136	296	257	74	3	0	0	0	0	0	0	19	155	451	708	782	785	785	785
60	0	0	0	0	0	51	154	123	20	0	0	0	0	0	0	0	0	51	205	328	348	348	348	348
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	6	43	111	220	372	499	485	328	171	38	2	0	6	49	160	380	752	1251	1736	2064	2235	2273	2275

(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