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: CHEYENNE MUNICIPAL AP, WY **COOP ID: 481675**

Climate Division: WY 8 **NWS Call Sign: CYS** **Elevation: 6,115 Feet** **Lat: 41˚09N** **Lon: 104˚48W**

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	37.1	14.8	25.9	66	1982	26	36.1	1986	-30	1930	17	16.0	1979	1197	0	.0	.0	5.4	9.1	28.8	4.2
Feb	40.5	17.2	28.8	71	1962	11	35.7	1992	-34	1936	8	16.4	1989	1001	0	.0	.0	7.7	6.7	26.2	2.5
Mar	46.4	22.0	34.2	74	1986	28	41.3	1986	-21	1943	2	29.1	1975	939	0	.0	.0	13.7	4.1	26.8	.6
Apr	54.4	28.7	41.6	83	1992	30	48.8	1981	-8	1975	1	34.1	1983	686	0	.0	.0	20.0	1.6	18.4	.1
May	64.4	38.3	51.3	91	2000	29	56.4	1994	13	1917	6	45.3	1995	414	1	.0	@	27.9	@	3.8	.0
Jun	75.4	47.5	61.5	100	1954	23	67.0	1988	25	1951	2	56.7	1982	136	41	.0	1.0	29.7	.0	@	.0
Jul	81.9	53.4	67.7	100	1939	11	72.2	2000	33	1915	4	63.6	1972	29	126	.0	4.9	31.0	.0	.0	.0
Aug	79.8	52.0	65.9	96+	1979	6	70.6	1995	36	1975	25	62.4	1977	42	86	.0	2.0	31.0	.0	.0	.0
Sep	70.3	42.9	56.6	95	1995	1	64.0	1998	8	1985	30	51.6	1985	255	19	.0	.4	28.6	.2	2.1	.0
Oct	58.2	32.5	45.4	83+	1992	1	49.1	1988	-1	1991	31	38.8	1984	593	0	.0	.0	24.4	.8	12.2	.1
Nov	44.5	22.1	33.3	75	1999	15	44.0	1999	-21	1916	13	25.2	1985	936	0	.0	.0	11.9	5.2	24.7	.8
Dec	38.1	16.1	27.1	69	1939	5	37.2	1980	-28+	1990	22	14.1	1983	1160	0	.0	.0	6.5	8.9	28.6	3.2
Ann	57.6	32.3	44.9	100+	Jun 1954	23	72.2	Jul 2000	-34	Feb 1936	8	14.1	Dec 1983	7388	273	.0	8.3	237.8	36.6	171.6	11.5

\+ 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: 1915-2001

(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	.45	.36	1.32	1949	3	2.71	1980	.02	1983
Feb	.44	.30	1.57	1953	19	1.26	1989	.00	1983
Mar	1.05	.94	1.29	1946	14	3.65	1990	.17	1982
Apr	1.55	1.30	2.45	1929	24	5.02	1999	.34	1992
May	2.48	2.33	2.00	1942	2	6.00	1995	.11	1974
Jun	2.12	1.92	3.06	1926	14	4.58	1995	.07	1980
Jul	2.26	2.13	3.41	1973	19	5.01	1973	.64	1993
Aug	1.82	1.67	6.06	1985	1	6.64	1985	.27	1973
Sep	1.43	.99	2.69	1973	8	4.52	1973	.01	1992
Oct	.75	.51	1.19	1947	15	1.85	1993	.06	1973
Nov	.64	.44	1.63	1979	20	2.48	1979	.05	1971
Dec	.46	.46	1.28	1925	13	1.50	1979	.01	1996
Ann	15.45	15.52	6.06	Aug 1985	1	6.64	Aug 1985	.00	Feb 1983

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.6	1.4	.1	@
Feb	5.9	1.1	.1	.0
Mar	9.1	3.1	.4	.0
Apr	10.3	4.0	.6	.2
May	12.5	6.0	1.4	.4
Jun	10.4	5.3	1.3	.3
Jul	11.3	5.4	1.3	.3
Aug	11.2	4.7	.7	.1
Sep	8.1	3.5	.9	.2
Oct	6.6	2.6	.2	.0
Nov	6.8	1.7	.2	@
Dec	6.1	1.5	.1	@
Ann	103.9	40.3	7.3	1.5

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	.05	.08	.15	.21	.28	.35	.44	.55	.71	.95	1.20
Feb	.01	.04	.10	.16	.23	.31	.41	.53	.71	1.00	1.29
Mar	.18	.27	.42	.57	.72	.88	1.06	1.28	1.58	2.06	2.52
Apr	.27	.41	.64	.85	1.06	1.30	1.56	1.89	2.32	3.01	3.68
May	.51	.74	1.10	1.43	1.77	2.13	2.53	3.02	3.66	4.69	5.67
Jun	.42	.61	.92	1.21	1.50	1.81	2.16	2.58	3.14	4.04	4.89
Jul	.84	1.06	1.36	1.61	1.85	2.10	2.37	2.68	3.07	3.68	4.24
Aug	.48	.65	.91	1.15	1.38	1.62	1.88	2.20	2.61	3.26	3.87
Sep	.10	.18	.36	.56	.78	1.03	1.34	1.74	2.29	3.21	4.13
Oct	.10	.16	.27	.38	.49	.61	.75	.92	1.16	1.54	1.91
Nov	.06	.11	.19	.28	.38	.49	.62	.78	1.00	1.37	1.73
Dec	.05	.08	.15	.21	.28	.36	.45	.56	.72	.97	1.22
Ann	10.27	11.25	12.52	13.49	14.36	15.21	16.09	17.07	18.26	20.01	21.53

\+ 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: 1915-2001
(3) Derived from 1971-2000 serially complete daily data

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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	7.3	6.2	1	1	12.7	1992	7	35.5	1980	23	1980	28	7	1980	6.1	2.4	.6	.2	.1	12.4	5.9	3.2	.3
Feb	6.9	4.9	1	1	7.5	1995	10	23.3	1995	12	1989	5	4	1980	6.0	2.3	.7	.2	.0	8.4	3.5	2.1	.2
Mar	12.7	11.0	1	1	11.5	1979	18	39.2	1990	19	1990	8	5	1990	8.4	3.7	1.2	.6	.1	8.2	4.3	2.4	.4
Apr	9.1	7.8	#	1	17.3	1984	20	31.8	1984	15	1984	21	2+	1997	6.3	2.4	1.0	.4	.1	4.4	2.1	.9	.2
May	2.5	.9	#	1	11.1	1978	6	18.3	1978	12	1978	7	1	1978	1.5	.7	.2	.1	@	.5	.2	.2	.1
Jun	.0	.0	#	0	.6	1998	5	.7	1998	0	0	0	#	1997	.1	.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	1.6	.0	#	0	6.4	2000	24	11.8	2000	8	2000	24	#	2000	.9	.5	.2	.1	.0	.5	.2	.1	.0
Oct	4.1	3.2	#	0	7.9	1990	7	16.8	1990	9	1997	26	1	1997	3.3	1.3	.4	.2	.0	1.5	.7	.4	.0
Nov	8.4	5.5	1	0	19.8	1979	20	31.1	1979	26+	1979	23	8	1979	6.3	2.5	.7	.3	.1	8.1	3.0	1.4	.6
Dec	7.3	6.6	1	1	11.6	1979	27	16.1	1987	17	1979	1	4+	1992	6.3	2.3	.6	.2	@	11.8	4.6	2.4	.4
Ann	59.9	46.1	N/A	N/A	19.8	Nov 1979	20	39.2	Mar 1990	26+	Nov 1979	23	8	Nov 1979	45.2	18.1	5.6	2.3	.4	55.8	24.5	13.1	2.2

+ 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	6/14	6/09	6/05	6/02	5/30	5/27	5/24	5/20	5/15
32	5/26	5/21	5/17	5/14	5/12	5/09	5/06	5/02	4/27
28	5/14	5/09	5/06	5/03	5/01	4/29	4/26	4/23	4/18
24	5/09	5/04	4/30	4/27	4/24	4/21	4/18	4/14	4/09
20	4/29	4/23	4/19	4/15	4/12	4/08	4/05	4/01	3/26
16	4/20	4/13	4/08	4/04	3/31	3/27	3/23	3/18	3/11

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	129	123	118	115	111	107	103	99	92
32	158	150	145	141	137	133	128	123	116
28	180	172	166	162	157	152	147	142	134
24	201	191	184	178	172	167	160	153	144
20	220	211	204	198	193	187	181	174	165
16	237	229	223	217	213	208	202	196	188

***** 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	1197	1001	939	686	414	136	29	42	255	593	936	1160	7388
60	1056	873	799	553	281	70	5	18	161	453	801	1020	6090
57	963	789	706	467	204	38	1	7	108	362	711	927	5283
55	901	733	644	410	160	23	0	3	79	303	651	865	4772
50	746	593	490	279	75	5	0	0	29	170	508	710	3605
32	259	170	73	21	0	0	0	0	0	2	115	235	875

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	73	95	180	332	614	896	1125	1080	773	463	172	84	5887
55	0	0	1	8	52	228	413	369	155	19	1	0	1246
57	0	0	0	4	32	180	353	309	116	11	0	0	1005
60	0	0	0	1	13	116	264	222	69	3	0	0	688
65	0	0	0	0	1	41	126	86	19	0	0	0	273
70	0	0	0	0	0	8	38	20	3	0	0	0	69

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	16	26	61	158	382	664	885	841	547	257	67	19	16	42	103	261	643	1307	2192	3033	3580	3837	3904	3923
45	0	0	21	78	245	516	730	686	407	148	27	2	0	0	21	99	344	860	1590	2276	2683	2831	2858	2860
50	0	0	2	33	133	370	575	531	274	67	3	0	0	0	2	35	168	538	1113	1644	1918	1985	1988	1988
55	0	0	0	10	57	233	421	377	161	21	0	0	0	0	0	10	67	300	721	1098	1259	1280	1280	1280
60	0	0	0	0	13	122	273	229	75	2	0	0	0	0	0	0	13	135	408	637	712	714	714	714
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	14	27	56	121	237	407	564	531	345	181	55	18	14	41	97	218	455	862	1426	1957	2302	2483	2538	2556

(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