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: DENTON, MT **COOP ID: 242347**

Climate Division: MT 4 **NWS Call Sign:** **Elevation: 3,610 Feet** **Lat: 47˚19N** **Lon: 109˚56W**

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	31.3	3.3	17.3	70	1981	22	32.2	1986	-47	1996	30	-2.0	1979	1479	0	.0	.0	4.8	11.6	29.0	10.6
Feb	37.5	9.0	23.3	72	1992	27	34.8	1991	-45	1996	2	7.3	1989	1169	0	.0	.0	8.0	7.7	26.4	6.7
Mar	45.4	16.9	31.2	77	1999	25	40.0	1986	-35+	1989	4	21.8	1996	1050	0	.0	.0	15.0	3.8	28.5	2.4
Apr	55.8	26.3	41.1	88	1980	20	48.3	1987	-14	1982	8	29.3	1975	718	0	.0	.0	23.3	.8	21.2	.3
May	65.1	35.8	50.5	93	1980	22	54.7	1988	16+	1967	4	45.8	1974	451	0	.0	.2	29.2	.0	9.5	.0
Jun	74.1	43.4	58.8	99	1984	29	66.7	1988	24	1969	13	54.8	1998	208	19	.0	1.5	30.0	.0	1.6	.0
Jul	81.3	46.3	63.8	102	1963	22	68.1+	1985	28+	1999	17	56.7	1993	107	68	.1	6.3	31.0	.0	.2	.0
Aug	81.7	45.5	63.6	104+	1983	6	69.2	1971	22	1992	25	58.1	1987	128	84	.3	6.8	31.0	.0	.7	.0
Sep	70.4	36.0	53.2	99	1983	1	60.2	1998	12	1972	29	46.8	1985	365	11	.0	1.3	28.4	.1	9.0	.0
Oct	59.0	25.8	42.4	89+	1992	1	46.0	1979	-22	1991	30	37.8	1984	701	0	.0	.0	25.4	.5	21.1	.2
Nov	42.7	14.5	28.6	78	1975	5	36.8	1999	-33	1985	23	10.9	1985	1091	0	.0	.0	11.5	5.2	27.3	3.4
Dec	34.2	6.6	20.4	69	1962	15	31.5	1999	-50	1983	24	-1.6	1983	1382	0	.0	.0	5.5	9.8	29.3	8.1
Ann	56.5	25.8	41.2	104+	Aug 1983	6	69.2	Aug 1971	-50	Dec 1983	24	-2.0	Jan 1979	8849	182	.4	16.1	243.1	39.5	203.8	31.7

\+ 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

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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	.50	.39	.70	1975	18	1.52	1971	.02	1973
Feb	.34	.29	1.00	1959	4	.86	1982	.00	1990
Mar	.70	.67	1.15	1950	6	1.61	1991	.14	1994
Apr	1.16	1.10	1.45	1975	26	2.54	1995	.31	1981
May	2.70	2.60	3.34	1953	29	7.95	1981	.68	1984
Jun	2.65	2.49	2.49	1979	19	5.44	1993	.27	1974
Jul	1.91	1.68	2.55	1978	4	7.01	1993	.05	1996
Aug	1.78	1.58	2.10	1974	20	4.87	1985	.29	1996
Sep	1.48	1.17	2.00	1978	12	4.65	1985	.00	1990
Oct	.92	.81	1.40	1975	13	2.43	1975	.05	1987
Nov	.48	.49	.85	1959	14	1.13	1991	.08	1972
Dec	.50	.35	.74	1967	25	1.70	1989	.09	1979
Ann	15.12	14.08	3.34	May 1953	29	7.95	May 1981	.00+	Sep 1990

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.2	1.6	.1	.0
Feb	4.3	1.0	@	.0
Mar	6.4	2.7	.1	@
Apr	6.4	3.5	.3	.1
May	9.3	6.5	1.5	.3
Jun	10.3	6.3	1.4	.3
Jul	6.8	4.4	1.0	.2
Aug	6.6	4.4	1.0	.3
Sep	6.1	3.7	.7	.2
Oct	4.8	2.8	.4	.1
Nov	4.8	1.7	.1	.0
Dec	5.2	1.7	@	.0
Ann	76.2	40.3	6.6	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	.04	.08	.14	.21	.29	.37	.48	.61	.79	1.09	1.39
Feb	.04	.08	.13	.18	.23	.28	.34	.42	.51	.67	.82
Mar	.17	.23	.33	.43	.52	.61	.72	.85	1.02	1.29	1.54
Apr	.28	.39	.56	.71	.86	1.02	1.19	1.40	1.68	2.12	2.53
May	.82	1.08	1.46	1.79	2.11	2.44	2.81	3.24	3.79	4.66	5.46
Jun	.78	1.03	1.41	1.74	2.05	2.38	2.75	3.18	3.73	4.60	5.41
Jul	.16	.29	.54	.81	1.10	1.43	1.82	2.32	3.01	4.15	5.28
Aug	.27	.42	.67	.92	1.18	1.46	1.78	2.18	2.71	3.57	4.41
Sep	.11	.26	.50	.71	.94	1.19	1.47	1.82	2.29	3.06	3.80
Oct	.16	.24	.37	.50	.63	.77	.93	1.12	1.37	1.79	2.18
Nov	.09	.13	.20	.27	.33	.40	.49	.59	.72	.94	1.14
Dec	.06	.10	.17	.24	.32	.40	.49	.61	.76	1.02	1.27
Ann	9.25	10.32	11.72	12.81	13.80	14.76	15.77	16.90	18.29	20.34	22.14

+ 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

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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	8.2	7.8	3	1
Feb	7.0	6.5	3	1
Mar	10.6	11.3	2	1
Apr	2.3	.0	1	#
May	.9	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	#	0
Sep	.5	.0	#	0
Oct	1.9	.0	#	#
Nov	3.9	3.0	1	#
Dec	9.4	8.0	2	1
Ann	44.7	36.6	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	18.0	1972	2	19.5	1978	26	1978	31	15	1978
Feb	8.0	1982	22	14.0+	1986	36	1972	6	26	1972
Mar	11.0	1991	17	20.0	1989	18	1979	2	15	1978
Apr	9.0	1995	9	12.0	1982	20	1973	22	8	1977
May	10.0	1983	10	15.0	1983	15	1983	12	2	1983
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	2	1992	23	#	1992
Sep	5.0	1973	14	5.0+	1984	5+	1984	27	#+	1985
Oct	7.0	1985	7	10.0	1981	8	1985	8	1	1985
Nov	7.0	1975	24	10.0	1983	12	1985	30	5	1985
Dec	10.0	1984	23	24.0	1984	14+	1983	28	9	1985
Ann	18.0	Jan 1972	2	24.0	Dec 1984	36	Feb 1972	6	26	Feb 1972

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.8	3.3	1.3	.4	.1
Feb	2.8	2.1	.5	.2	.0
Mar	2.9	2.5	.9	.3	.1
Apr	.8	.8	.4	.1	.0
May	.1	.1	.1	.1	@
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.2	.2	.1	@	.0
Oct	.5	.5	.2	.1	.0
Nov	2.0	1.8	.5	.2	.0
Dec	2.8	2.4	.7	.3	@
Ann	15.9	13.7	4.7	1.7	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	5.4	2.5	1.5	.2
Mar	-9.9	-9.9	-9.9	-9.9
Apr	1.0	.6	.2	.0
May	.2	.2	.2	.1
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.1	.1	@	.0
Oct	.5	.2	.1	.0
Nov	2.4	1.4	.6	.0
Dec	-9.9	-9.9	-9.9	-9.9
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	7/30	7/22	7/17	7/12	7/07	7/03	6/28	6/23	6/15
32	7/07	6/30	6/24	6/20	6/15	6/11	6/06	6/01	5/24
28	6/12	6/05	5/31	5/26	5/22	5/18	5/13	5/08	5/01
24	5/22	5/17	5/13	5/10	5/07	5/04	5/01	4/27	4/22
20	5/12	5/07	5/03	4/30	4/28	4/25	4/22	4/18	4/13
16	4/25	4/21	4/18	4/16	4/14	4/12	4/09	4/06	4/03

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	8/03	8/09	8/12	8/16	8/19	8/22	8/25	8/29	9/04
32	8/16	8/21	8/25	8/28	8/31	9/03	9/06	9/10	9/15
28	8/29	9/03	9/07	9/10	9/13	9/16	9/19	9/23	9/28
24	9/11	9/15	9/18	9/21	9/23	9/26	9/28	10/01	10/06
20	9/20	9/25	9/28	10/01	10/04	10/07	10/10	10/13	10/18
16	9/29	10/04	10/07	10/10	10/13	10/16	10/19	10/23	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	71	61	54	48	42	36	30	23	13
32	103	94	87	81	76	71	65	59	50
28	140	130	124	118	113	108	102	96	87
24	160	153	147	143	139	134	130	125	117
20	176	170	166	162	159	155	152	147	142
16	198	192	188	185	182	179	175	171	166

***** 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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1479	1169	1050	718	451	208	107	128	365	701	1091	1382	8849
60	1324	1029	895	571	303	104	37	57	237	546	941	1227	7271
57	1232	945	802	485	221	60	16	31	172	453	851	1134	6402
55	1175	897	740	429	174	38	9	20	134	392	791	1072	5871
50	1032	765	588	300	82	9	0	5	60	243	654	933	4671
32	552	352	151	32	0	0	0	0	0	9	235	458	1789

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	96	107	124	304	573	802	985	979	636	330	134	99	5169
55	6	8	0	11	33	149	281	286	80	1	0	0	855
57	1	0	0	7	19	112	226	235	58	0	0	0	658
60	0	0	0	2	7	66	154	168	33	0	0	0	430
65	0	0	0	0	0	19	68	84	11	0	0	0	182
70	0	0	0	0	0	4	19	30	3	0	0	0	56

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	13	20	44	155	367	590	766	760	439	194	40	11	13	33	77	232	599	1189	1955	2715	3154	3348	3388	3399
45	0	1	12	79	226	440	611	605	300	101	15	1	0	1	13	92	318	758	1369	1974	2274	2375	2390	2391
50	0	0	0	28	120	293	456	452	179	41	3	0	0	0	0	28	148	441	897	1349	1528	1569	1572	1572
55	0	0	0	7	49	166	306	301	87	10	0	0	0	0	0	7	56	222	528	829	916	926	926	926
60	0	0	0	0	12	71	171	166	28	0	0	0	0	0	0	0	12	83	254	420	448	448	448	448
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	14	33	63	151	268	386	496	500	333	192	54	17	14	47	110	261	529	915	1411	1911	2244	2436	2490	2507

(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