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: DRUMMOND AVIATION, MT **COOP ID: 242500**

Climate Division: MT 1 **NWS Call Sign: 3DU** **Elevation: 4,000 Feet** **Lat: 46˚38N** **Lon: 113˚11W**

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	30.6	11.6	21.1	57	1971	19	32.6	1994	-35+	1979	30	-.4	1979	1360	0	.0	.0	.7	13.1	29.8	6.9
Feb	37.8	15.7	26.8	67	1995	24	35.3	1991	-39	1982	5	10.9	1989	1071	0	.0	.0	3.6	6.2	26.8	3.7
Mar	48.2	22.5	35.4	78	1978	29	41.5	1986	-23	1989	4	29.6	1989	919	0	.0	.0	13.9	1.6	28.0	.7
Apr	58.4	28.2	43.3	84	1977	24	49.0	1987	5+	1997	12	36.0	1975	651	0	.0	.0	23.4	.0	21.0	.0
May	66.8	35.4	51.1	93+	1986	30	55.0	1993	9	1999	8	45.5	1996	431	1	.0	.3	29.8	.0	10.4	.0
Jun	75.2	42.3	58.8	97	1988	25	64.3	1988	20	1999	10	53.4	1998	210	21	.0	1.9	30.0	.0	1.9	.0
Jul	83.7	44.8	64.3	102	2000	30	69.2	1975	27+	1999	3	56.7	1993	99	76	.1	8.0	31.0	.0	.7	.0
Aug	83.2	43.9	63.6	101	1983	6	68.3	1983	22	1992	25	59.0	1993	104	60	.2	7.8	30.9	.0	.8	.0
Sep	72.2	36.1	54.2	96+	1998	3	60.9	1990	13	1970	14	49.3	1971	333	7	.0	.9	29.3	.0	10.0	.0
Oct	58.3	28.1	43.2	83	2001	1	48.7	1988	-3	1971	29	40.4	1971	676	0	.0	.0	25.1	.2	21.9	.1
Nov	39.6	19.7	29.7	73	1999	12	36.8	1989	-22	1985	23	18.6	1985	1060	0	.0	.0	6.0	5.6	27.0	2.1
Dec	30.0	12.2	21.1	59	1987	6	29.9	1980	-43	1983	23	5.3	1983	1362	0	.0	.0	.8	15.5	29.9	5.5
Ann	57.0	28.4	42.7	102	Jul 2000	30	69.2	Jul 1975	-43	Dec 1983	23	-.4	Jan 1979	8276	165	.3	18.9	224.5	42.2	208.2	19.0

\+ 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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Climate Division: MT 1 **NWS Call Sign: 3DU** **Elevation: 4,000 Feet** **Lat: 46˚38N** **Lon: 113˚11W**

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	.79	.78	.75	1982	23	1.90	1972	.08	1981
Feb	.61	.64	.50	1975	7	1.21+	1986	.07	1977
Mar	.75	.65	.55	1979	17	2.38	1982	.24	1988
Apr	.98	.89	1.31	1975	26	2.81	1975	.01	1977
May	1.96	1.77	1.41	1980	23	6.01	1980	.53	1992
Jun	1.66	1.64	1.42	2001	4	3.76	1980	.23	1979
Jul	1.15	1.23	1.43	1983	10	3.00	1987	.04	1979
Aug	1.29	1.23	1.42	1985	2	3.72	1985	.07	2000
Sep	1.06	.88	1.33	1995	8	3.45	1985	.00	1979
Oct	.77	.64	1.26	2000	1	3.23	1975	.01	1978
Nov	.79	.77	.75	1996	19	2.00	1995	.16	1979
Dec	.80	.63	.95	1996	25	2.63	1996	.08	1997
Ann	12.61	11.98	1.43	Jul 1983	10	6.01	May 1980	.00	Sep 1979

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.5	2.6	.1	.0
Feb	8.3	2.2	@	.0
Mar	9.3	2.7	@	.0
Apr	9.2	3.2	.2	@
May	10.8	5.8	.8	.2
Jun	9.8	4.8	.8	.1
Jul	6.9	3.4	.5	.1
Aug	7.7	3.9	.6	.1
Sep	6.6	3.1	.4	.1
Oct	6.3	2.7	.2	@
Nov	9.7	2.7	.1	.0
Dec	10.7	2.6	.1	.0
Ann	105.8	39.7	3.8	.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	.14	.21	.33	.43	.54	.66	.80	.96	1.18	1.54	1.88
Feb	.10	.16	.24	.33	.41	.51	.61	.74	.92	1.20	1.47
Mar	.21	.28	.38	.48	.57	.67	.77	.90	1.06	1.32	1.56
Apr	.17	.26	.40	.53	.67	.82	.99	1.19	1.46	1.90	2.31
May	.57	.76	1.04	1.28	1.52	1.76	2.03	2.36	2.77	3.42	4.03
Jun	.43	.59	.83	1.04	1.25	1.47	1.71	2.00	2.38	2.97	3.53
Jul	.06	.13	.27	.42	.60	.81	1.06	1.39	1.85	2.63	3.40
Aug	.14	.24	.42	.60	.79	1.01	1.26	1.57	2.00	2.71	3.40
Sep	.10	.22	.39	.54	.70	.88	1.07	1.31	1.63	2.14	2.64
Oct	.07	.12	.22	.33	.45	.58	.74	.94	1.22	1.68	2.14
Nov	.19	.26	.38	.48	.58	.69	.81	.95	1.14	1.44	1.72
Dec	.16	.24	.35	.46	.57	.69	.82	.98	1.19	1.52	1.84
Ann	7.70	8.60	9.77	10.69	11.51	12.32	13.16	14.11	15.27	16.99	18.50

\+ 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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Climate Division: MT 1 **NWS Call Sign: 3DU** **Elevation: 4,000 Feet** **Lat: 46˚38N** **Lon: 113˚11W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	7.6	6.9	4	3
Feb	5.6	5.7	3	2
Mar	5.3	4.4	1	#
Apr	3.9	1.4	#	#
May	1.9	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.1	.0	#	0
Sep	.5	.0	#	0
Oct	1.5	1.1	#	0
Nov	5.7	4.4	1	#
Dec	7.8	6.6	3	2
Ann	39.9	30.5	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	9.9	1982	23	22.7	1982	20	1997	9	18	1997
Feb	6.2	1975	7	12.1	1986	16	1982	12	10	1979
Mar	5.2	1982	24	24.0	1982	11	1993	1	4	1989
Apr	16.4	1975	26	33.4	1975	8	1975	27	1	1975
May	12.0	1988	30	12.6	1988	2	1988	30	#+	1988
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	3.0	1992	23	3.0	1992	2	1992	23	#	1992
Sep	3.4	1983	19	7.8	1983	#+	1984	23	#+	1984
Oct	9.4	1975	21	11.0	1975	4	1981	13	#+	1993
Nov	8.7	1996	19	15.6	1975	11	1973	8	3+	2000
Dec	9.7	1996	25	25.6	1996	31	1996	29	11	1996
Ann	16.4	Apr 1975	26	33.4	Apr 1975	31	Dec 1996	29	18	Jan 1997

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	8.4	2.7	.4	.1	.0
Feb	6.0	2.0	.3	@	.0
Mar	5.9	1.8	.4	@	.0
Apr	3.0	1.0	.3	.1	@
May	.8	.3	.2	.1	.1
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	@	@	@	.0	.0
Sep	.3	.2	.1	.0	.0
Oct	1.2	.4	.1	.1	.0
Nov	5.5	2.2	.3	.1	.0
Dec	8.4	2.3	.3	.1	.0
Ann	39.5	12.9	2.4	.6	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	19.8	12.4	6.7	2.0
Feb	11.1	6.4	3.5	1.2
Mar	3.8	1.1	.5	.2
Apr	.6	.2	.1	.0
May	@	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	@	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.3	.1	.0	.0
Nov	7.2	2.3	.5	.1
Dec	16.2	8.0	4.9	1.0
Ann	59.0	30.5	16.2	4.5

+ 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	7/27	7/20	7/15	7/11	7/07	7/03	6/28	6/23	6/16
32	7/12	7/03	6/27	6/21	6/16	6/11	6/05	5/30	5/21
28	6/18	6/10	6/05	5/31	5/27	5/22	5/17	5/12	5/04
24	5/24	5/18	5/15	5/11	5/08	5/05	5/01	4/27	4/22
20	5/16	5/09	5/04	4/29	4/25	4/21	4/17	4/11	4/04
16	5/03	4/25	4/19	4/15	4/10	4/06	4/01	3/26	3/19

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	8/04	8/10	8/14	8/17	8/20	8/23	8/27	8/31	9/05
32	8/19	8/24	8/28	8/31	9/03	9/06	9/09	9/12	9/17
28	8/30	9/04	9/08	9/11	9/14	9/17	9/20	9/24	9/29
24	9/12	9/16	9/20	9/23	9/25	9/28	10/01	10/04	10/09
20	9/19	9/24	9/28	10/01	10/04	10/07	10/11	10/15	10/20
16	10/01	10/07	10/12	10/16	10/20	10/24	10/28	11/02	11/09

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	70	61	55	49	44	39	33	27	18
32	114	101	92	85	78	71	63	54	42
28	140	130	122	116	110	104	97	89	79
24	165	156	150	145	140	135	130	123	115
20	193	182	174	168	161	155	149	141	130
16	220	211	204	198	192	187	181	174	164

***** 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	1360	1071	919	651	431	210	99	104	333	676	1060	1362	8276
60	1205	931	764	501	283	107	34	36	205	521	910	1207	6704
57	1112	847	671	413	203	63	15	15	141	428	820	1114	5842
55	1050	791	609	356	157	40	8	8	104	366	760	1052	5301
50	900	657	455	225	69	10	0	1	39	218	610	897	4081
32	412	239	66	7	0	0	0	0	0	4	178	390	1296

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	74	92	171	346	593	802	1000	979	664	351	109	51	5232
55	0	0	0	5	36	152	295	273	78	1	0	0	840
57	0	0	0	2	21	114	240	219	54	0	0	0	650
60	0	0	0	0	8	69	166	146	29	0	0	0	418
65	0	0	0	0	1	21	76	60	7	0	0	0	165
70	0	0	0	0	0	4	22	14	1	0	0	0	41

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	3	38	153	355	573	759	740	439	163	21	0	0	3	41	194	549	1122	1881	2621	3060	3223	3244	3244
45	0	0	7	69	219	423	604	585	297	72	6	0	0	0	7	76	295	718	1322	1907	2204	2276	2282	2282
50	0	0	0	21	111	274	451	431	173	22	0	0	0	0	0	21	132	406	857	1288	1461	1483	1483	1483
55	0	0	0	2	44	152	301	278	79	2	0	0	0	0	0	2	46	198	499	777	856	858	858	858
60	0	0	0	0	8	67	163	143	25	0	0	0	0	0	0	0	8	75	238	381	406	406	406	406
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	9	54	154	269	383	506	502	342	167	16	0	0	9	63	217	486	869	1375	1877	2219	2386	2402	2402

(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