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: OLNEY, MT **COOP ID: 246218**

Climate Division: MT 1 **NWS Call Sign:** **Elevation: 3,165 Feet** **Lat: 48˚33N** **Lon: 114˚34W**

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	26.4	9.2	17.8	49+	1989	30	26.0	1994	-35	1996	30	1.4	1979	1463	0	.0	.0	.0	17.8	30.7	6.6
Feb	34.1	12.3	23.2	62+	1995	25	29.9+	1991	-40	1989	3	9.8	1989	1170	0	.0	.0	1.1	7.9	27.7	3.9
Mar	43.6	19.8	31.7	70	1986	27	37.2	1992	-24	1976	2	26.2	1976	1032	0	.0	.0	9.0	1.7	29.3	1.1
Apr	54.5	26.6	40.6	86	1987	28	44.9	1987	-1	1975	1	34.9	1997	735	0	.0	.0	22.5	@	23.9	@
May	64.3	34.4	49.4	93+	1986	31	54.6	1993	16	1973	1	45.2	1996	485	0	.0	.3	30.0	.0	13.2	.0
Jun	71.7	40.5	56.1	96	1974	19	60.6	1974	24+	1973	11	52.7	1999	272	5	.0	.8	29.9	.0	3.7	.0
Jul	79.3	43.3	61.3	101	1985	9	67.6	1985	28+	1999	4	55.0	1993	155	41	.1	4.7	31.0	.0	.6	.0
Aug	79.0	41.8	60.4	100+	1967	18	64.1	1971	26+	1992	29	55.8	1980	171	28	.0	4.8	31.0	.0	1.6	.0
Sep	68.1	33.6	50.9	98	1967	1	56.3	1998	12+	2000	23	46.4	1971	427	2	.0	.4	29.4	.0	12.7	.0
Oct	53.4	25.4	39.4	80	1980	8	44.0	1988	-8	1991	29	36.3	1972	794	0	.0	.0	21.3	.4	23.7	.2
Nov	34.6	18.9	26.8	65	1999	13	33.8	1999	-25	1993	23	12.4	1985	1147	0	.0	.0	1.7	8.0	27.8	1.5
Dec	26.8	12.3	19.6	52+	1980	27	27.5	1979	-44	1990	29	7.6	1983	1410	0	.0	.0	.1	19.7	30.6	4.6
Ann	53.0	26.5	39.8	101	Jul 1985	9	67.6	Jul 1985	-44	Dec 1990	29	1.4	Jan 1979	9261	76	.1	11.0	207.0	55.5	225.5	17.9

\+ 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: 1962-2001

(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	2.39	2.18	1.64	1964	25	5.94	1974	.03	1985
Feb	2.01	1.71	1.74	1982	13	4.70	1982	.20	1994
Mar	1.34	1.25	.77	1963	30	2.59	1971	.31	1994
Apr	1.37	1.37	1.60	1983	25	3.00	1983	.21	1999
May	2.31	2.02	1.78	1998	27	7.06	1996	.59	1987
Jun	2.68	2.72	2.02	1967	22	6.81	1995	.21	1978
Jul	1.79	1.36	1.90	1987	22	7.10	1993	.07	1973
Aug	1.49	1.24	1.33	1998	1	4.50	1976	.02	1988
Sep	1.23	1.11	1.15	1985	12	4.71	1986	.05	1990
Oct	1.42	1.26	.83	1994	27	4.42	1995	.05	1974
Nov	2.39	2.58	1.75	1989	11	5.17	1973	.20	1993
Dec	2.25	2.16	1.24	1989	4	4.95	1990	.20	1986
Ann	22.67	22.83	2.02	Jun 1967	22	7.10	Jul 1993	.02	Aug 1988

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.3	7.2	.9	.2
Feb	9.6	5.7	1.0	.2
Mar	10.2	5.1	.1	.0
Apr	8.7	4.7	.4	.1
May	11.6	7.0	1.2	.2
Jun	10.9	7.1	1.4	.4
Jul	8.0	4.9	.9	.2
Aug	7.2	4.4	.8	.1
Sep	7.2	3.9	.7	@
Oct	7.6	4.6	.5	.0
Nov	11.6	6.9	1.1	.3
Dec	11.5	6.9	1.2	.1
Ann	116.4	68.4	10.2	1.8

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	.45	.67	1.02	1.34	1.67	2.02	2.43	2.91	3.56	4.59	5.58
Feb	.37	.55	.85	1.12	1.40	1.70	2.04	2.45	3.00	3.88	4.72
Mar	.33	.45	.65	.82	.99	1.18	1.38	1.62	1.94	2.45	2.92
Apr	.39	.52	.71	.89	1.05	1.23	1.42	1.65	1.95	2.42	2.86
May	.52	.74	1.08	1.38	1.69	2.01	2.37	2.81	3.38	4.28	5.14
Jun	.59	.84	1.24	1.59	1.95	2.32	2.75	3.26	3.93	5.00	6.00
Jul	.19	.32	.57	.82	1.09	1.39	1.74	2.18	2.78	3.78	4.75
Aug	.17	.29	.50	.71	.93	1.17	1.46	1.82	2.30	3.10	3.88
Sep	.12	.21	.38	.55	.73	.94	1.19	1.50	1.93	2.64	3.33
Oct	.16	.27	.46	.66	.87	1.11	1.39	1.73	2.20	2.98	3.73
Nov	.54	.76	1.11	1.43	1.74	2.08	2.45	2.90	3.49	4.42	5.31
Dec	.47	.68	1.01	1.31	1.61	1.93	2.30	2.74	3.32	4.25	5.13
Ann	15.18	16.60	18.44	19.84	21.10	22.32	23.59	25.00	26.72	29.24	31.42

\+ 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: 1962-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	21.3	15.7	26	23
Feb	17.2	11.6	26	26
Mar	3.1	2.1	15	16
Apr	2.8	.5	2	#
May	#	.0	#	0
Jun	.3	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.1	.0	#	0
Oct	.8	.0	#	0
Nov	15.0	8.0	3	2
Dec	18.5	17.6	15	15
Ann	79.1	55.5	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	12.0	1982	23	67.1	1982	77	1991	9	55	1991
Feb	16.0	1986	16	43.9	1986	65	1985	10	55	1985
Mar	8.0	1982	27	10.3	1996	40	1972	5	32	1974
Apr	4.5	2000	14	11.0+	1989	30	1975	4	14	1975
May	#	2000	13	#+	2000	#+	2000	13	#+	2000
Jun	3.0	1995	6	6.0	1995	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	1.0	1972	28	1.5	1972	#	1997	6	#	1997
Oct	8.0	1984	28	8.5	1994	12	1984	28	2	1984
Nov	8.0	1983	25	48.3	1988	18	1973	25	12	1994
Dec	20.0	1996	30	37.0	1980	61	1996	30	36	1990
Ann	20.0	Dec 1996	30	67.1	Jan 1982	77	Jan 1991	9	55+	Jan 1991

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.8	6.2	2.8	1.8	.2
Feb	5.1	4.2	2.5	1.1	.2
Mar	3.6	2.9	1.5	.7	.0
Apr	.8	.8	.3	.0	.0
May	.0	.0	.0	.0	.0
Jun	.1	.1	.1	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	.1	.0	.0	.0
Oct	.7	.6	.2	.1	.0
Nov	4.8	4.0	2.2	1.5	.0
Dec	7.4	5.2	3.1	1.9	.6
Ann	30.4	24.1	12.7	7.1	1.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	1.8	1.2	1.0	.1
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.2	@	@	.0
Nov	-9.9	-9.9	-9.9	-9.9
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	8/02	7/28	7/24	7/21	7/18	7/16	7/12	7/09	7/04
32	7/17	7/10	7/05	7/01	6/27	6/23	6/19	6/14	6/07
28	6/25	6/17	6/12	6/08	6/04	5/30	5/26	5/21	5/13
24	5/25	5/20	5/17	5/14	5/11	5/08	5/06	5/02	4/28
20	5/08	5/02	4/28	4/24	4/21	4/17	4/14	4/10	4/04
16	4/26	4/19	4/14	4/09	4/05	4/01	3/28	3/23	3/16

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	8/02	8/06	8/09	8/11	8/13	8/15	8/18	8/21	8/24
32	8/12	8/17	8/20	8/23	8/26	8/29	8/31	9/04	9/09
28	8/25	8/30	9/03	9/06	9/09	9/12	9/16	9/20	9/25
24	9/09	9/14	9/18	9/21	9/24	9/27	9/30	10/04	10/09
20	9/18	9/25	9/29	10/03	10/07	10/10	10/14	10/19	10/25
16	9/28	10/06	10/11	10/16	10/20	10/24	10/29	11/04	11/11

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	42	36	32	29	25	22	18	14	8
32	82	74	68	64	59	55	50	44	37
28	123	114	108	102	97	92	87	80	71
24	159	151	145	140	135	131	126	120	112
20	198	188	180	174	168	162	156	148	138
16	232	220	211	204	197	190	183	174	162

***** 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	1463	1170	1032	735	485	272	155	171	427	794	1147	1410	9261
60	1308	1030	877	585	332	145	71	77	286	639	997	1255	7602
57	1215	946	784	495	246	87	35	40	210	546	907	1162	6673
55	1153	890	722	435	193	57	20	23	165	484	847	1100	6089
50	998	750	567	291	90	13	4	4	75	330	697	945	4764
32	473	286	105	10	0	0	0	0	0	13	227	415	1529

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	32	41	96	265	538	723	909	880	565	242	70	28	4389
55	0	0	0	0	19	91	216	191	41	0	0	0	558
57	0	0	0	0	9	61	169	145	26	0	0	0	410
60	0	0	0	0	2	28	111	90	11	0	0	0	242
65	0	0	0	0	0	5	41	28	2	0	0	0	76
70	0	0	0	0	0	0	10	5	0	0	0	0	15

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	0	8	108	328	513	692	674	362	101	4	0	0	0	8	116	444	957	1649	2323	2685	2786	2790	2790
45	0	0	0	47	187	363	537	519	222	32	0	0	0	0	0	47	234	597	1134	1653	1875	1907	1907	1907
50	0	0	0	13	90	228	383	366	117	7	0	0	0	0	0	13	103	331	714	1080	1197	1204	1204	1204
55	0	0	0	1	31	113	237	222	41	0	0	0	0	0	0	1	32	145	382	604	645	645	645	645
60	0	0	0	0	6	46	113	104	7	0	0	0	0	0	0	0	6	52	165	269	276	276	276	276
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	22	123	255	351	468	471	297	112	3	0	0	0	22	145	400	751	1219	1690	1987	2099	2102	2102

(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