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: PLEVNA, MT **COOP ID: 246601**

Climate Division: MT 7 **NWS Call Sign:** **Elevation: 2,780 Feet** **Lat: 46˚25N** **Lon: 104˚31W**

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	28.2	3.3	15.8	66+	1992	31	28.8	1981	-52	1916	12	-.7	1979	1527	0	.0	.0	1.3	15.7	30.7	12.0
Feb	34.9	10.6	22.8	70+	1992	29	34.2	1998	-45	1936	15	6.5	1989	1183	0	.0	.0	5.1	9.9	27.6	6.4
Mar	45.4	19.6	32.5	80	1946	27	42.3	1986	-32	1996	8	23.2	1996	1008	0	.0	.0	13.0	5.2	28.4	2.5
Apr	58.4	30.0	44.2	92	1926	30	51.7	1987	-9	1997	8	37.2	1975	625	0	.0	@	23.2	.6	18.2	.2
May	69.3	40.6	55.0	100	1934	29	61.7	1988	7	1954	3	47.9	1974	331	20	.0	.8	29.9	@	4.9	.0
Jun	79.3	49.5	64.4	110	1988	20	78.4	1988	23	1919	2	58.3	1998	127	109	.9	4.6	30.0	.0	.3	.0
Jul	87.2	54.6	70.9	111	1936	6	75.1	1988	35	1972	4	62.7	1993	34	218	2.5	14.2	31.0	.0	.0	.0
Aug	86.3	52.6	69.5	110	1949	8	75.1	1971	27	1941	28	61.7	1974	62	199	1.7	13.5	31.0	.0	.2	.0
Sep	74.7	41.9	58.3	105	1978	5	66.2	1998	12+	1995	21	52.6	1984	248	46	.3	3.6	29.0	.0	4.2	.0
Oct	60.8	30.9	45.9	94+	1963	5	49.5	1979	-16	1925	29	41.7	1991	593	0	.0	.2	25.5	.5	16.8	.1
Nov	41.9	17.9	29.9	79+	1999	7	40.5	1999	-32	1985	28	14.4	1985	1053	0	.0	.0	9.3	6.8	28.2	2.7
Dec	31.5	6.8	19.2	68	1939	5	28.7	1979	-45	1989	21	.3	1983	1420	0	.0	.0	2.8	13.8	30.7	9.0
Ann	58.2	29.9	44.0	111	Jul 1936	6	78.4	Jun 1988	-52	Jan 1916	12	-.7	Jan 1979	8211	592	5.4	36.9	231.1	52.5	190.2	32.9

\+ 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: 1910-2001

(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	.55	.50	1.02	1921	19	1.80	1983	.00+	1974
Feb	.44	.28	1.28	1998	25	2.49	1998	.00+	1992
Mar	.77	.56	1.06	1994	23	3.18	1983	.12	1981
Apr	1.38	1.01	1.61	1991	26	4.50	1989	.00	1980
May	2.28	1.71	2.83	1933	23	5.08	1982	.28	1980
Jun	2.43	2.24	2.66	1930	1	5.07	1971	.09	1988
Jul	1.77	1.63	2.39	1993	3	7.64	1993	.00+	1980
Aug	1.44	1.15	2.50	1999	12	3.55	1998	.04	2000
Sep	1.37	.96	3.00	1973	2	5.27	1973	.09	1997
Oct	1.25	.75	2.30	1971	2	4.76	1971	.16+	1987
Nov	.59	.48	2.25	2000	1	3.14	2000	.00+	1976
Dec	.42	.36	1.00	1922	29	1.21	1977	.00+	1991
Ann	14.69	14.34	3.00	Sep 1973	2	7.64	Jul 1993	.00+	Feb 1992

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.6	2.1	.1	.0
Feb	2.9	1.4	.2	@
Mar	5.2	1.9	.2	.1
Apr	5.7	3.2	.7	.2
May	9.1	5.9	1.3	.3
Jun	9.0	5.5	1.3	.4
Jul	6.9	4.0	1.0	.3
Aug	5.4	3.1	.7	.3
Sep	5.2	3.3	.7	.2
Oct	4.9	2.9	.8	.3
Nov	4.4	1.8	.1	@
Dec	4.3	1.5	@	.0
Ann	67.6	36.6	7.1	2.1

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	.00	.06	.16	.24	.33	.43	.54	.68	.87	1.18	1.48
Feb	.00	.00	.00	.09	.19	.30	.42	.56	.76	1.09	1.41
Mar	.07	.13	.23	.34	.46	.59	.75	.94	1.21	1.65	2.09
Apr	.07	.19	.39	.60	.81	1.06	1.34	1.70	2.18	2.99	3.77
May	.49	.70	1.04	1.34	1.65	1.97	2.34	2.77	3.35	4.27	5.14
Jun	.45	.67	1.02	1.35	1.69	2.05	2.46	2.96	3.62	4.68	5.69
Jul	.00	.34	.70	.98	1.25	1.54	1.85	2.21	2.71	3.49	4.23
Aug	.17	.28	.48	.69	.90	1.14	1.42	1.76	2.23	3.01	3.76
Sep	.12	.21	.40	.59	.80	1.03	1.32	1.67	2.16	2.98	3.78
Oct	.10	.18	.35	.52	.71	.93	1.19	1.52	1.98	2.75	3.51
Nov	.00	.00	.15	.25	.35	.46	.59	.75	.96	1.30	1.63
Dec	.00	.04	.12	.18	.25	.33	.42	.52	.67	.91	1.14
Ann	8.54	9.64	11.10	12.24	13.28	14.30	15.37	16.58	18.07	20.27	22.21

\+ 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: 1910-2001
(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	6.2	5.5	5	4
Feb	4.2	2.5	4	2
Mar	4.8	4.0	2	1
Apr	3.1	1.3	#	#
May	1.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.5	.0	#	0
Oct	1.2	.5	#	0
Nov	3.7	2.3	1	1
Dec	4.7	3.8	4	2
Ann	29.4	19.9	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	9.0	1995	16	15.0	1989	30	1986	30	28	1986
Feb	7.0	1978	5	20.0+	1998	32	1986	19	30	1986
Mar	13.0	1994	23	14.2	1982	19	1998	5	13	1998
Apr	9.0	1989	28	17.0	1989	12	1984	30	3	1997
May	14.0	1983	12	15.0	1983	9	1983	12	1	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	0	0	0	0	0
Sep	6.0	1972	25	6.0	1972	3	1984	22	#	1984
Oct	5.0	1976	18	5.0+	1991	3+	1996	21	1	1991
Nov	5.0	1978	13	10.8	2000	13	1985	30	7	2000
Dec	7.0	1977	30	16.5	1977	18	1985	30	15	1985
Ann	14.0	May 1983	12	20.0+	Feb 1998	32	Feb 1986	19	30	Feb 1986

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.6	2.2	.7	.3	.0
Feb	2.3	1.6	.4	.1	.0
Mar	2.8	2.0	.7	.2	@
Apr	1.0	.9	.5	.1	.0
May	.3	.3	.1	@	@
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	.1	.1	.1	.0
Oct	.8	.5	.2	@	.0
Nov	2.5	1.5	.5	.1	.0
Dec	3.5	1.8	.4	.2	.0
Ann	16.9	10.9	3.6	1.1	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	22.8	14.4	8.8	.6
Feb	11.7	6.0	3.5	1.2
Mar	6.7	3.9	2.6	1.3
Apr	1.2	.8	.2	.0
May	.2	.1	.1	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.1	.1	.0	.0
Oct	.9	.3	.0	.0
Nov	7.3	4.6	2.9	.4
Dec	15.9	9.1	6.5	2.1
Ann	66.8	39.3	24.6	5.6

+ 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	6/25	6/18	6/12	6/08	6/04	5/30	5/26	5/21	5/14
32	6/06	5/30	5/26	5/21	5/18	5/14	5/10	5/05	4/28
28	5/21	5/16	5/13	5/10	5/07	5/04	5/01	4/28	4/23
24	5/13	5/07	5/04	4/30	4/27	4/24	4/21	4/17	4/12
20	4/29	4/23	4/19	4/16	4/13	4/10	4/07	4/03	3/28
16	4/21	4/15	4/11	4/08	4/04	4/01	3/29	3/24	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	8/19	8/25	8/29	9/02	9/05	9/09	9/12	9/16	9/22
32	9/01	9/06	9/09	9/12	9/15	9/18	9/21	9/24	9/29
28	9/10	9/15	9/18	9/21	9/24	9/26	9/29	10/02	10/07
24	9/15	9/22	9/27	10/01	10/06	10/10	10/14	10/19	10/27
20	9/29	10/05	10/09	10/13	10/16	10/20	10/24	10/28	11/03
16	10/07	10/13	10/18	10/21	10/25	10/29	11/01	11/06	11/12

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	121	111	104	98	93	87	81	74	64
32	145	136	130	124	119	114	109	103	94
28	160	153	147	143	139	135	130	125	118
24	180	173	168	164	160	157	153	148	141
20	208	200	195	190	186	181	176	171	163
16	231	221	214	208	203	197	191	185	175

***** 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	1527	1183	1008	625	331	127	34	62	248	593	1053	1420	8211
60	1372	1043	853	478	211	62	11	24	148	439	903	1265	6809
57	1279	966	760	393	152	36	3	12	100	347	813	1172	6033
55	1218	915	699	339	119	24	1	7	74	288	759	1110	5553
50	1069	783	553	218	55	7	0	1	28	157	619	959	4449
32	572	376	147	10	0	0	0	0	0	4	219	466	1794

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	68	117	162	376	712	972	1206	1160	788	434	156	69	6220
55	1	11	1	14	118	306	494	454	172	5	5	0	1581
57	0	6	0	8	89	258	434	397	138	2	0	0	1332
60	0	0	0	3	55	194	349	316	96	1	0	0	1014
65	0	0	0	0	20	109	218	199	46	0	0	0	592
70	0	0	0	0	5	50	121	111	18	0	0	0	305

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	8	54	204	490	756	981	942	572	247	38	2	0	8	62	266	756	1512	2493	3435	4007	4254	4292	4294
45	0	0	17	113	346	606	826	787	430	137	11	0	0	0	17	130	476	1082	1908	2695	3125	3262	3273	3273
50	0	0	3	54	218	458	671	632	299	63	0	0	0	0	3	57	275	733	1404	2036	2335	2398	2398	2398
55	0	0	0	21	119	315	516	478	185	21	0	0	0	0	0	21	140	455	971	1449	1634	1655	1655	1655
60	0	0	0	4	52	189	366	328	99	5	0	0	0	0	0	4	56	245	611	939	1038	1043	1043	1043
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	12	59	169	324	479	618	591	386	204	42	2	0	12	71	240	564	1043	1661	2252	2638	2842	2884	2886

(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