

Climatology of the United States

No. 20

Station: COLUMBUS, MT

1971-2000

COOP ID: 241938

Climate Division: MT 5

NWS Call Sign:

Elevation: 3,585 Feet Lat: 45° 38N

Lon: 109° 16W

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	35.8	9.9	22.9	67	1974	16	33.9	1986	-37	1963	19	6.1	1979	1307	0	.0	.0	5.0	10.1	29.7	8.2
Feb	42.5	15.1	28.8	72	1992	27	38.9	1991	-35+	1996	2	14.6	1989	1014	0	.0	.0	9.9	5.8	26.3	4.3
Mar	50.8	23.0	36.9	83	1986	29	45.7	1986	-28	1955	5	29.6	1975	872	0	.0	.0	18.1	2.1	26.4	1.2
Apr	60.0	30.7	45.4	87+	1992	29	52.9	1987	-1	1982	8	36.3	1975	590	0	.0	.0	24.9	.4	16.2	.1
May	69.3	39.4	54.4	93	1949	13	59.6	1987	9	1954	2	50.0	1975	337	6	.0	.4	29.8	.0	3.7	.0
Jun	78.8	47.0	62.9	101+	1990	30	71.8	1988	28	1951	3	58.2	1998	127	65	.1	4.1	29.9	.0	.2	.0
Jul	86.2	52.0	69.1	107	1949	24	73.2	2000	34+	1972	19	62.2	1993	35	162	.7	11.4	31.0	.0	.0	.0
Aug	85.1	50.3	67.7	106	1961	3	72.4	1971	31+	1992	26	62.7	1974	61	145	.2	10.0	31.0	.0	.1	.0
Sep	74.2	40.7	57.5	102	1950	4	65.3	1998	18	2000	24	53.2	1972	249	24	.0	1.6	29.3	.0	3.3	.0
Oct	62.5	31.0	46.8	92	1992	1	51.9	1988	-9	1991	30	42.1	1984	566	0	.0	@	27.0	.4	15.9	.1
Nov	45.4	20.4	32.9	76+	1999	12	43.1	1999	-33	1959	13	18.1	1985	963	0	.0	.0	12.0	4.4	26.1	1.8
Dec	37.0	12.0	24.5	70	1980	16	34.1	1999	-42	1983	24	7.0	1983	1257	0	.0	.0	5.3	8.9	29.7	5.5
Ann	60.6	31.0	45.8	107	Jul 1949	24	73.2	Jul 2000	-42	Dec 1983	24	6.1	Jan 1979	7378	402	1.0	27.5	253.2	32.1	177.6	21.2

+ 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/normal/usnormals.html

Issue Date: February 2004

(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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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: COLUMBUS, MT

COOP ID: 241938

Climate Division: MT 5

NWS Call Sign:

Elevation: 3,585 Feet Lat: 45°38N

Lon: 109°16W

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.71	.57	.80	1962	7	2.24	1978	.00	1983	4.8	2.4	.3	.0	.06	.14	.26	.36	.47	.58	.71	.87	1.08	1.43	1.75
Feb	.62	.49	1.00	1986	17	2.37	1986	.01	1992	4.6	2.1	.1	@	.04	.07	.15	.23	.33	.44	.57	.74	.99	1.40	1.80
Mar	1.11	1.01	.97	1980	31	2.62	1980	.12	1978	7.0	4.2	.4	.0	.35	.45	.61	.74	.87	1.00	1.15	1.32	1.55	1.90	2.22
Apr	1.88	1.87	1.90	1986	26	3.95	1991	.14	1977	8.4	5.3	.9	.3	.35	.51	.79	1.05	1.31	1.59	1.91	2.29	2.80	3.63	4.41
May	2.91	2.72	2.57+	1988	7	8.00	1981	.92	1979	10.2	6.1	1.9	.5	1.01	1.28	1.68	2.02	2.35	2.68	3.04	3.47	4.01	4.85	5.62
Jun	1.91	1.53	2.84	1969	25	5.14	1982	.35	1987	8.8	5.0	1.1	.2	.41	.59	.87	1.12	1.38	1.65	1.96	2.32	2.81	3.58	4.32
Jul	1.34	1.05	2.45	1975	4	3.89	1978	.07	1988	6.7	3.4	.6	.2	.12	.22	.40	.58	.79	1.02	1.29	1.63	2.10	2.89	3.65
Aug	1.06	1.03	1.20	1974	20	2.93	1974	.00	1988	5.8	3.0	.6	.1	.07	.18	.35	.50	.67	.85	1.06	1.31	1.66	2.23	2.78
Sep	1.46	1.31	2.16	1978	18	4.87	1978	.00	1979	5.5	3.4	.9	.2	.11	.26	.50	.71	.94	1.18	1.46	1.80	2.26	3.01	3.73
Oct	1.33	1.04	2.73	1974	31	3.37	1975	.00	1987	4.9	3.4	.8	.2	.15	.31	.54	.73	.92	1.13	1.36	1.64	2.01	2.60	3.17
Nov	.68	.67	.76	1997	8	2.00	1978	.09	1992	3.9	2.4	.2	.0	.14	.20	.30	.40	.49	.59	.70	.83	1.01	1.29	1.56
Dec	.66	.58	.70	1963	17	1.61	1975	.04	1976	4.9	2.6	.2	.0	.12	.18	.28	.37	.46	.56	.67	.80	.98	1.28	1.55
Ann	15.67	15.42	2.84	Jun 1969	25	8.00	May 1981	.00+	Aug 1988	75.5	43.3	8.0	1.7	10.44	11.42	12.70	13.68	14.56	15.41	16.30	17.28	18.48	20.23	21.76

+ 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

Climatography of the United States

No. 20 1971-2000

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Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
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Station: COLUMBUS, MT

COOP ID: 241938

Climate Division: MT 5

NWS Call Sign:

Elevation: 3,585 Feet

Lat: 45° 38N

Lon: 109° 16W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	5.3	5.5	4	3	10.0	1972	2	10.8	1979	21	1978	31	17	1979	2.4	2.2	1.0	.4	.1	-9.9	-9.9	-9.9	-9.9
Feb	8.3	5.0	3	1	13.0	1986	17	20.5	1988	28	1978	18	20	1978	2.3	1.8	.9	.3	.1	2.0	1.9	.3	.0
Mar	8.8	9.0	1	#	9.0	2000	8	25.0	1980	19	1978	6	7	1978	1.9	1.8	1.5	.5	.0	-9.9	-9.9	-9.9	-9.9
Apr	3.0	.0	#	0	7.0	1982	4	15.8	1991	16	1973	20	2	1982	.6	.6	.4	.1	.0	.8	.7	.7	.3
May	1.0	.0	0	0	10.0	1983	12	15.0	1983	14	1983	12	2	1983	.2	.2	.1	.1	.1	.1	.1	.1	@
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.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	.6	.0	0	0	6.0	1984	24	10.0	1984	11	1983	19	1	1983	.1	.1	.1	@	.0	.0	.0	.0	.0
Oct	3.2	.0	#	0	12.0	1980	16	15.0	1980	14	1980	17	1	1981	.5	.5	.4	.3	@	.6	.6	.4	.1
Nov	3.8	3.5	1	#	12.0	1972	27	12.0	1972	14	1985	30	8	1978	1.3	1.2	.7	.2	.1	2.7	2.1	.9	.2
Dec	11.3	12.0	3	1	8.0	1989	21	22.8	1989	23	1978	8	14	1978	2.8	2.7	1.3	.6	.0	-9.9	-9.9	-9.9	-9.9
Ann	45.3	35.0	N/A	N/A	13.0	Feb 1986	17	25.0	Mar 1980	28	Feb 1978	18	20	Feb 1978	12.1	11.1	6.4	2.5	.4	-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

Complete documentation available from:

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No. 20 1971-2000

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COOP ID: 241938

Climate Division: MT 5

NWS Call Sign:

Elevation: 3,585 Feet

Lat: 45° 38N

Lon: 109° 16W

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	6/23	6/17	6/13	6/10	6/06	6/03	5/31	5/27	5/21
32	6/01	5/27	5/23	5/20	5/17	5/14	5/11	5/07	5/02
28	5/19	5/14	5/11	5/08	5/05	5/03	4/30	4/26	4/22
24	5/03	4/29	4/26	4/23	4/21	4/19	4/16	4/13	4/09
20	4/25	4/19	4/15	4/12	4/08	4/05	4/02	3/29	3/23
16	4/19	4/13	4/07	4/03	3/30	3/26	3/22	3/17	3/10
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	9/02	9/05	9/08	9/10	9/11	9/13	9/15	9/18	9/21
32	9/09	9/13	9/16	9/18	9/20	9/22	9/25	9/27	10/01
28	9/16	9/20	9/23	9/26	9/29	10/01	10/04	10/07	10/12
24	9/24	9/29	10/04	10/07	10/10	10/14	10/17	10/22	10/27
20	10/07	10/12	10/16	10/19	10/22	10/25	10/29	11/02	11/07
16	10/16	10/21	10/25	10/29	11/01	11/04	11/07	11/11	11/17
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	114	108	104	100	96	93	89	84	78
32	140	135	131	128	125	122	119	116	111
28	164	158	153	149	146	142	138	133	127
24	189	183	179	175	172	168	165	160	154
20	218	211	205	201	196	192	187	182	174
16	238	230	224	219	215	210	205	200	192

* 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

Complete documentation available from:

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Climate Division: MT 5

NWS Call Sign:

Elevation: 3,585 Feet Lat: 45° 38N Lon: 109° 16W

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	1307	1014	872	590	337	127	35	61	249	566	963	1257	7378
60	1152	874	717	446	205	55	8	20	141	412	813	1102	5945
57	1059	793	624	363	141	28	2	9	90	321	723	1009	5162
55	999	743	564	311	106	17	0	4	64	264	668	947	4687
50	855	612	421	197	43	3	0	0	20	142	528	802	3623
32	386	234	69	9	0	0	0	0	0	3	151	334	1186

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	102	144	220	409	693	928	1151	1106	764	460	178	100	6255
55	2	9	2	21	86	255	438	398	138	7	5	0	1361
57	0	3	0	13	59	206	377	340	105	3	0	0	1106
60	0	0	0	6	30	143	291	258	65	1	0	0	794
65	0	0	0	0	6	65	162	145	24	0	0	0	402
70	0	0	0	0	0	21	74	66	6	0	0	0	167

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	8	24	80	217	474	711	925	877	552	272	51	13	8	32	112	329	803	1514	2439	3316	3868	4140	4191	4204
45	1	4	28	117	326	561	770	722	407	151	20	2	1	5	33	150	476	1037	1807	2529	2936	3087	3107	3109
50	0	0	7	53	195	411	615	567	272	63	1	0	0	0	7	60	255	666	1281	1848	2120	2183	2184	2184
55	0	0	0	16	95	267	460	415	152	21	0	0	0	0	0	16	111	378	838	1253	1405	1426	1426	1426
60	0	0	0	1	31	145	307	267	67	3	0	0	0	0	0	1	32	177	484	751	818	821	821	821
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	13	41	88	184	313	451	582	560	378	225	53	14	13	54	142	326	639	1090	1672	2232	2610	2835	2888	2902

(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:
www.ncdc.noaa.gov/oa/climate/normal/usnormals.html

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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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