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: JOPLIN, MT **COOP ID: 244512**

Climate Division: MT 3 **NWS Call Sign:** **Elevation: 3,325 Feet** **Lat: 48˚34N** **Lon: 110˚46W**

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	28.4	6.3	17.4	66	1992	31	31.6	1992	-42	1950	25	.4	1982	1477	0	.0	.0	1.2	15.7	30.3	11.7
Feb	34.7	11.6	23.2	72	1992	27	36.0	1977	-35	1994	8	8.8	1989	1172	0	.0	.0	4.2	10.8	27.4	7.3
Mar	44.5	20.7	32.6	74	1999	25	41.4	1986	-26	1960	3	24.7	1996	1004	0	.0	.0	11.5	5.5	28.6	1.9
Apr	57.4	30.0	43.7	88	1980	20	52.4	1987	-11	1975	6	32.2	1975	639	0	.0	.0	22.2	1.1	19.0	.1
May	67.8	39.2	53.5	94	1980	21	59.4	1988	9	1954	2	48.1	1996	362	4	.0	.3	29.5	.0	5.9	.0
Jun	75.6	46.5	61.1	101	1984	30	69.5	1988	26	1969	13	56.8	1976	162	43	.1	1.7	30.0	.0	.3	.0
Jul	83.2	50.7	67.0	103	1960	22	72.0	1985	32	1973	2	59.1	1993	62	122	.1	6.4	31.0	.0	@	.0
Aug	82.8	50.2	66.5	106	1961	5	73.2	1971	28	1992	25	60.8	1980	97	144	.3	6.6	31.0	.0	.1	.0
Sep	71.6	40.1	55.9	98+	1998	7	64.4	1998	17	2000	23	46.8	1985	308	34	.0	.9	28.4	.0	4.7	.0
Oct	59.3	30.9	45.1	88	1992	1	48.8	1986	-14	1991	29	40.3	1972	616	0	.0	.0	24.5	.9	16.8	.3
Nov	40.7	18.2	29.5	75	1999	12	38.1	1999	-25+	1985	28	10.2	1985	1067	0	.0	.0	7.2	7.8	27.4	2.9
Dec	30.9	9.5	20.2	62+	1987	3	32.6	1999	-48	1983	24	.6	1983	1388	0	.0	.0	1.8	14.1	30.3	7.9
Ann	56.4	29.5	43.0	106	Aug 1961	5	73.2	Aug 1971	-48	Dec 1983	24	.4	Jan 1982	8354	347	.5	15.9	222.5	55.9	190.8	32.1

+ 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

Issue Date: February 2004

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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	.25	.21	.35	1952	20	1.08	1971	.00+	1983
Feb	.18	.14	.70	1958	26	.63	1978	.00+	2000
Mar	.42	.33	1.60	1953	13	1.44	1981	.00+	1999
Apr	.69	.47	1.12	1960	24	2.19	1975	.00	1988
May	1.99	1.75	2.21	1980	25	4.79	1974	.41	1988
Jun	2.01	1.71	3.50	1962	12	7.02	1995	.30	1985
Jul	1.21	.81	1.55	1970	13	5.11	1993	.03	1984
Aug	1.25	1.28	2.28	1968	15	3.17	1989	.00+	2000
Sep	.88	.63	1.65	1985	12	4.05	1985	.00	1990
Oct	.46	.38	.95	1999	27	1.78	1992	.00+	1987
Nov	.29	.27	.40+	1989	12	.88	1989	.00+	2000
Dec	.23	.14	.41	1966	21	1.45	1989	.00+	1999
Ann	9.86	9.77	3.50	Jun 1962	12	7.02	Jun 1995	.00+	Nov 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	2.8	1.2	.0	.0
Feb	2.4	.8	.0	.0
Mar	3.8	1.3	.1	@
Apr	4.7	2.2	.2	.1
May	7.3	5.0	1.2	.3
Jun	8.3	5.5	1.1	.2
Jul	5.8	3.8	.6	.1
Aug	5.8	3.8	.6	.1
Sep	4.4	2.5	.4	.1
Oct	2.8	1.6	.1	.0
Nov	2.5	1.3	.0	.0
Dec	2.8	1.0	.0	.0
Ann	53.4	30.0	4.3	.9

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	.01	.04	.08	.12	.17	.23	.30	.40	.58	.76
Feb	.00	.02	.06	.08	.11	.14	.18	.22	.28	.37	.46
Mar	.00	.00	.15	.22	.29	.36	.44	.53	.65	.84	1.03
Apr	.03	.10	.20	.30	.41	.53	.67	.84	1.08	1.48	1.86
May	.41	.60	.89	1.15	1.42	1.70	2.03	2.41	2.92	3.74	4.51
Jun	.42	.61	.90	1.17	1.44	1.73	2.05	2.44	2.96	3.78	4.55
Jul	.07	.14	.29	.46	.64	.86	1.12	1.46	1.93	2.74	3.54
Aug	.00	.22	.48	.67	.87	1.07	1.30	1.56	1.92	2.48	3.02
Sep	.05	.13	.26	.39	.53	.68	.87	1.09	1.39	1.90	2.38
Oct	.00	.04	.12	.19	.27	.35	.45	.57	.74	1.01	1.28
Nov	.00	.00	.00	.14	.21	.27	.33	.40	.49	.62	.74
Dec	.00	.00	.03	.06	.10	.15	.21	.28	.39	.58	.76
Ann	5.10	5.91	7.01	7.88	8.68	9.48	10.32	11.28	12.47	14.26	15.85

\+ 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:
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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	4.4	2.8	2	#
Feb	2.3	2.0	2	#
Mar	3.0	2.0	1	#
Apr	1.8	.0	#	0
May	.3	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.4	.0	#	0
Nov	2.8	#	#	#
Dec	4.4	4.5	1	#
Ann	19.4	11.3	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	5.0	1972	11	13.0	1978	20	1978	31	13	1978
Feb	4.0	1982	22	7.0	1978	26	1978	16	20	1978
Mar	5.0	1979	27	8.0	1975	13	1978	7	7	1978
Apr	6.0	1979	4	12.0	1975	12	1975	9	3	1975
May	3.0	1982	29	4.0	1982	3	1982	29	#+	1997
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	.0	0	0	.0	0	0	0	0	0	0
Oct	2.0	1971	16	4.0	1984	4	1984	30	#+	2000
Nov	4.0	1976	25	10.8	1978	8	1978	24	5	1978
Dec	7.0	1982	13	12.0	1977	9	1971	31	5	1978
Ann	7.0	Dec 1982	13	13.0	Jan 1978	26	Feb 1978	16	20	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.9	1.8	.4	.1	.0
Feb	1.4	1.4	.2	.0	.0
Mar	1.2	1.2	.2	@	.0
Apr	.8	.8	.2	@	.0
May	.1	.1	.1	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.2	.2	.0	.0	.0
Nov	.7	.6	.3	.0	.0
Dec	1.5	1.3	.3	.1	.0
Ann	7.8	7.4	1.7	.2	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	10.7	5.7	4.4	2.0
Feb	8.2	5.3	2.7	1.6
Mar	4.9	2.4	1.2	.4
Apr	1.4	.8	.5	.1
May	.1	@	.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	.0
Nov	2.3	1.7	1.1	.0
Dec	6.5	4.2	2.3	.0
Ann	34.3	20.1	12.2	4.1

+ 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	6/29	6/23	6/18	6/14	6/10	6/06	6/02	5/28	5/22
32	6/10	6/04	5/31	5/28	5/25	5/22	5/18	5/14	5/09
28	5/22	5/18	5/14	5/12	5/09	5/06	5/03	4/30	4/26
24	5/08	5/02	4/29	4/25	4/22	4/19	4/16	4/12	4/07
20	4/28	4/22	4/18	4/15	4/12	4/09	4/05	4/01	3/27
16	4/20	4/15	4/11	4/08	4/05	4/02	3/30	3/26	3/21

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	8/20	8/25	8/29	9/01	9/04	9/07	9/10	9/14	9/19
32	9/02	9/07	9/10	9/13	9/15	9/18	9/21	9/24	9/28
28	9/09	9/13	9/17	9/19	9/22	9/24	9/27	9/30	10/04
24	9/17	9/22	9/26	9/29	10/02	10/06	10/09	10/13	10/18
20	9/27	10/03	10/08	10/12	10/16	10/19	10/23	10/28	11/03
16	10/11	10/17	10/21	10/24	10/27	10/30	11/03	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	109	101	95	90	85	80	75	69	61
32	132	126	121	117	113	109	105	100	93
28	155	148	143	139	135	131	127	122	116
24	187	178	172	167	162	157	152	146	138
20	213	204	197	191	186	181	175	168	159
16	226	218	213	208	204	200	195	190	183

***** 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	1477	1172	1004	639	362	162	62	97	308	616	1067	1388	8354
60	1322	1038	849	496	226	77	17	42	199	462	917	1233	6878
57	1233	960	756	413	159	42	7	24	145	370	827	1140	6076
55	1174	908	695	360	121	26	2	16	114	311	776	1080	5583
50	1031	777	550	243	52	6	0	4	53	179	635	939	4469
32	554	381	145	21	0	0	0	0	0	6	235	464	1806

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	101	134	164	372	665	871	1083	1070	715	412	157	99	5843
55	8	16	1	22	74	207	372	372	139	5	8	2	1226
57	4	12	0	14	49	163	315	318	110	2	0	0	987
60	0	6	0	7	24	108	232	244	75	1	0	0	697
65	0	0	0	0	4	43	122	144	34	0	0	0	347
70	0	0	0	0	0	12	48	70	13	0	0	0	143

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	1	9	33	168	417	631	826	816	475	214	27	1	1	10	43	211	628	1259	2085	2901	3376	3590	3617	3618
45	0	0	10	86	273	481	671	661	334	118	9	0	0	0	10	96	369	850	1521	2182	2516	2634	2643	2643
50	0	0	0	37	155	332	516	506	212	52	1	0	0	0	0	37	192	524	1040	1546	1758	1810	1811	1811
55	0	0	0	13	73	200	362	359	114	16	0	0	0	0	0	13	86	286	648	1007	1121	1137	1137	1137
60	0	0	0	2	26	101	223	222	49	4	0	0	0	0	0	2	28	129	352	574	623	627	627	627
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	11	44	139	277	392	519	516	322	170	25	0	0	11	55	194	471	863	1382	1898	2220	2390	2415	2415

(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