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: EKALAKA, MT **COOP ID: 242689**

Climate Division: MT 7 **NWS Call Sign:** **Elevation: 3,425 Feet** **Lat: 45˚53N** **Lon: 104˚33W**

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	29.8	8.0	18.9	65+	1992	31	29.9	1992	-44	1954	20	2.7	1979	1429	0	.0	.0	1.3	15.4	30.1	10.0
Feb	35.9	13.8	24.9	66+	1995	24	34.3	1992	-43	1936	15	10.0	1989	1124	0	.0	.0	4.6	9.4	26.7	5.3
Mar	45.1	20.9	33.0	83	1910	22	41.3	1986	-32	1960	3	22.8	1996	992	0	.0	.0	12.5	5.3	27.2	2.0
Apr	57.5	30.9	44.2	90	1926	30	51.0	1987	-11	1899	1	36.6	1997	624	0	.0	.0	22.2	.8	17.1	.2
May	68.3	41.1	54.7	98+	1934	28	61.3	1977	8+	1954	3	49.0	1996	336	16	.0	.2	29.6	@	4.8	.0
Jun	77.7	50.4	64.1	105+	1988	20	76.6	1988	27	1919	1	57.4	1998	127	99	.2	2.7	29.9	.0	.3	.0
Jul	85.5	55.9	70.7	108+	1936	5	75.2	1988	30	1945	1	61.6	1993	41	218	1.0	9.8	31.0	.0	.0	.0
Aug	84.4	55.0	69.7	108	1949	7	77.0	1983	26	1974	31	61.0	1974	61	206	.2	9.0	31.0	.0	.1	.0
Sep	72.7	44.1	58.4	103+	1978	5	66.0	1998	13+	1958	30	52.5	1984	247	49	.1	2.0	28.8	.0	3.8	.0
Oct	59.4	33.5	46.5	92	1922	3	50.7	1973	-15	1991	30	42.3	1991	576	0	.0	.0	24.0	.5	14.1	@
Nov	41.7	20.6	31.2	78	1909	2	42.3	1999	-30	1955	13	16.0	1985	1016	0	.0	.0	8.5	7.3	26.5	2.3
Dec	32.9	11.3	22.1	66+	1987	4	31.1	1979	-43	1989	21	3.2	1983	1331	0	.0	.0	2.6	13.1	30.0	7.2
Ann	57.6	32.1	44.9	108+	Aug 1949	7	77.0	Aug 1983	-44	Jan 1954	20	2.7	Jan 1979	7904	588	1.5	23.7	226.0	51.8	180.7	27.0

\+ 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: 1896-2001

(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	.59	.46	1.23	1997	4	1.63	1997	.04	1974
Feb	.51	.37	.69	1998	25	2.01	1978	.00	1992
Mar	.81	.67	1.10	1977	29	2.11	1998	.06+	1981
Apr	1.85	1.89	1.55	1999	21	3.71	1989	.21	1977
May	2.69	2.19	2.72	1955	3	7.72	1982	.20	1998
Jun	3.16	2.67	3.68	1967	7	8.13	1971	1.14	1988
Jul	1.90	1.47	2.35	1997	13	9.03	1993	.24	1976
Aug	1.27	1.20	2.33	1910	14	3.35	1984	.05	1971
Sep	1.52	1.09	2.48	1971	5	5.12	1971	.09	1993
Oct	1.59	1.15	2.51	1971	2	5.50	1994	.16	1987
Nov	.79	.68	2.38	2000	1	3.56	2000	.04	1987
Dec	.57	.48	.51	1984	23	1.37	1989	.03	1994
Ann	17.25	16.84	3.68	Jun 1967	7	9.03	Jul 1993	.00	Feb 1992

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.8	2.0	.1	@
Feb	6.0	1.4	.1	.0
Mar	7.6	2.7	.2	@
Apr	8.9	4.3	1.0	.3
May	11.1	6.0	1.4	.3
Jun	10.4	6.0	2.1	.6
Jul	7.4	3.9	1.2	.4
Aug	6.8	3.2	.7	.2
Sep	6.7	3.3	.8	.4
Oct	7.0	3.3	.9	.3
Nov	7.0	2.5	.2	@
Dec	7.7	1.8	@	.0
Ann	94.4	40.4	8.7	2.5

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	.08	.13	.21	.29	.38	.48	.59	.72	.91	1.21	1.50
Feb	.02	.06	.14	.21	.29	.38	.49	.62	.80	1.11	1.41
Mar	.12	.18	.30	.41	.53	.66	.81	.99	1.24	1.64	2.03
Apr	.27	.43	.70	.95	1.22	1.51	1.84	2.25	2.81	3.70	4.57
May	.42	.65	1.04	1.41	1.79	2.21	2.70	3.29	4.08	5.36	6.60
Jun	1.12	1.42	1.85	2.21	2.56	2.91	3.30	3.75	4.32	5.21	6.03
Jul	.23	.38	.65	.91	1.19	1.50	1.87	2.32	2.93	3.93	4.90
Aug	.21	.32	.51	.68	.86	1.06	1.28	1.55	1.91	2.49	3.05
Sep	.11	.21	.41	.62	.85	1.12	1.44	1.85	2.42	3.37	4.31
Oct	.21	.34	.57	.79	1.02	1.28	1.58	1.94	2.44	3.25	4.04
Nov	.09	.15	.26	.37	.49	.62	.77	.97	1.23	1.67	2.09
Dec	.06	.10	.18	.26	.34	.44	.55	.69	.89	1.21	1.53
Ann	10.47	11.70	13.33	14.59	15.72	16.84	18.01	19.32	20.93	23.30	25.39

+ 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: 1896-2001
(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	2.3	-99.9	4	3
Feb	3.3	-99.9	1	#
Mar	2.3	-99.9	5	1
Apr	2.8	-99.9	1	0
May	.2	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.1	.0	#	0
Oct	.8	.0	#	0
Nov	7.6	5.9	1	#
Dec	1.8	-99.9	2	#
Ann	21.2	-9.9	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	3.0	1996	17	9.0	1999	12	1972	29	10	1972
Feb	7.0	1998	25	10.0	2000	13	1998	28	4	1984
Mar	4.5	1998	29	4.5	1998	22	1977	29	22	1977
Apr	14.0	1997	5	14.0	1997	24	1984	27	5	1997
May	2.5	1999	11	2.5	1999	12	1983	12	#+	1999
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	1.5	2000	22	1.5	2000	2	1985	23	#+	2000
Oct	4.0	1979	21	4.0	1979	2	1985	8	#+	1999
Nov	10.0	1994	17	20.9	2000	15+	2000	19	9	2000
Dec	7.0	1983	4	7.0	1983	12	1984	23	8	2000
Ann	14.0	Apr 1997	5	20.9	Nov 2000	24	Apr 1984	27	22	Mar 1977

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	-9.9	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9	-9.9
Mar	1.9	1.2	.1	.0	.0
Apr	.6	.5	.3	.1	.1
May	.1	.1	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	.1	.0	.0	.0
Oct	.5	.3	.1	.0	.0
Nov	-9.9	-9.9	-9.9	-9.9	-9.9
Dec	-9.9	-9.9	-9.9	-9.9	-9.9
Ann	-9.9	-9.9	-9.9	-9.9	-9.9

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	.7	.5	.3	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.1	.0	.0	.0
Oct	.0	.0	.0	.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	6/27	6/19	6/14	6/09	6/05	5/31	5/27	5/21	5/14
32	6/06	6/01	5/28	5/24	5/21	5/18	5/15	5/11	5/05
28	5/19	5/14	5/11	5/08	5/05	5/02	4/29	4/26	4/21
24	5/09	5/04	5/01	4/28	4/25	4/23	4/20	4/16	4/12
20	4/26	4/21	4/18	4/15	4/12	4/10	4/07	4/03	3/30
16	4/22	4/16	4/11	4/08	4/04	3/31	3/27	3/23	3/17

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	123	113	106	100	95	89	83	76	66
32	140	132	127	122	118	113	109	103	95
28	164	157	152	148	144	140	136	131	124
24	185	177	171	166	162	157	153	147	139
20	209	200	194	189	184	179	174	168	159
16	233	223	215	209	203	197	191	183	173

***** 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	1429	1124	992	624	336	127	41	61	247	576	1016	1331	7904
60	1274	984	837	478	212	60	13	24	148	422	866	1176	6494
57	1181	900	744	393	152	33	7	13	101	331	776	1083	5714
55	1119	850	682	339	117	22	2	7	75	272	722	1021	5228
50	970	719	536	218	53	6	0	1	29	145	582	873	4132
32	480	314	131	10	0	0	0	0	0	3	193	395	1526

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	74	114	162	376	703	962	1200	1169	792	450	166	87	6255
55	0	6	0	14	108	294	489	463	177	6	6	0	1563
57	0	0	0	8	80	245	431	407	143	3	0	0	1317
60	0	0	0	3	47	182	345	324	100	1	0	0	1002
65	0	0	0	0	16	99	218	206	49	0	0	0	588
70	0	0	0	0	4	42	124	118	20	0	0	0	308

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	2	11	50	191	461	723	949	913	549	244	40	3	2	13	63	254	715	1438	2387	3300	3849	4093	4133	4136
45	0	1	20	105	318	573	794	758	411	137	12	0	0	1	21	126	444	1017	1811	2569	2980	3117	3129	3129
50	0	0	3	50	197	426	639	605	282	64	2	0	0	0	3	53	250	676	1315	1920	2202	2266	2268	2268
55	0	0	0	18	103	287	485	451	173	23	0	0	0	0	0	18	121	408	893	1344	1517	1540	1540	1540
60	0	0	0	6	41	167	335	305	94	5	0	0	0	0	0	6	47	214	549	854	948	953	953	953
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	12	52	151	301	454	610	592	356	178	36	3	0	12	64	215	516	970	1580	2172	2528	2706	2742	2745

(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/normals/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.
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