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: EUREKA RANGER STN, MT **COOP ID: 242827**

Climate Division: MT 1 **NWS Call Sign:** **Elevation: 2,532 Feet** **Lat: 48˚54N** **Lon: 115˚04W**

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	29.7	15.3	22.5	58+	1968	22	34.9	1994	-35	1963	11	.1	1979	1317	0	.0	.0	.5	15.8	27.6	5.9
Feb	37.9	20.3	29.1	66	1995	24	37.5	1991	-30	1996	2	16.3	1989	1005	0	.0	.0	2.6	6.5	24.0	3.0
Mar	48.8	27.0	37.9	72	1966	29	43.3	1986	-14	1989	3	32.8	1996	841	0	.0	.0	14.6	1.0	23.1	.3
Apr	59.5	33.0	46.3	89	1987	28	51.1	1987	8	1975	1	41.0	1975	564	0	.0	.0	26.2	@	14.2	.0
May	68.8	40.5	54.7	94+	2001	23	60.7	1993	22+	1973	1	49.5	1996	326	5	.0	.4	30.9	.0	3.7	.0
Jun	76.1	46.6	61.4	97+	1992	23	67.7	1992	27	1973	11	55.3	1981	156	47	.0	2.4	30.0	.0	.3	.0
Jul	84.2	49.9	67.1	104	1994	24	73.8	1985	30	1962	3	60.7	1993	67	131	.6	9.8	31.0	.0	.0	.0
Aug	84.1	48.8	66.5	105	1994	14	70.6	1971	30+	1973	19	60.5	1980	68	113	.3	9.6	31.0	.0	.1	.0
Sep	72.9	40.7	56.8	98	1967	1	64.0	1998	18+	2000	23	51.0	1986	275	29	.0	1.3	29.6	.0	4.1	.0
Oct	57.7	32.6	45.2	86+	1991	10	49.7	1974	2	1991	30	40.2	1972	616	0	.0	.0	24.3	.3	15.8	.0
Nov	39.9	25.8	32.9	68	1999	12	40.1	1999	-23	1985	28	17.0	1985	964	0	.0	.0	3.7	6.0	22.0	1.1
Dec	30.7	18.0	24.4	55+	1980	17	32.7	1979	-50	1968	30	10.4	1983	1260	0	.0	.0	.4	16.2	27.5	3.7
Ann	57.5	33.2	45.4	105	Aug 1994	14	73.8	Jul 1985	-50	Dec 1968	30	.1	Jan 1979	7459	325	.9	23.5	224.8	45.8	162.4	14.0

\+ 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: 1960-2001

(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	1.14	1.05	.69	1981	24	2.14+	1974	.13	1985
Feb	.78	.74	.82	1986	15	2.04	1986	.10	1998
Mar	.78	.73	.70	1964	5	1.99	1983	.06	1973
Apr	.93	.82	1.03	1998	24	2.07	1983	.13	1973
May	1.85	1.63	1.36	1998	27	5.54	1998	.52	1983
Jun	2.10	1.90	1.48	1993	1	5.33	1995	.49	1979
Jul	1.50	1.18	1.29	1987	22	4.65	1993	.00	1979
Aug	1.26	1.05	1.47	1966	27	4.41	1989	.21	1981
Sep	1.07	1.08	1.70	1985	12	4.02	1985	.00	1990
Oct	.99	.87	.76+	1984	26	2.44	1972	.09	1974
Nov	1.27	1.17	1.15	1989	12	2.63	1996	.22	1975
Dec	1.15	1.02	1.03	1964	22	2.97	1996	.18	1997
Ann	14.82	13.50	1.70	Sep 1985	12	5.54	May 1998	.00+	Sep 1990

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.7	3.7	.2	.0
Feb	8.2	2.7	.1	.0
Mar	8.5	2.8	.1	.0
Apr	7.1	3.1	.3	@
May	10.4	5.3	1.0	.1
Jun	10.4	5.7	.9	.3
Jul	7.7	4.1	.7	.1
Aug	6.7	3.4	.6	.1
Sep	7.1	3.4	.4	.1
Oct	7.5	3.2	.3	.0
Nov	10.3	4.0	.4	@
Dec	10.4	3.7	.2	.0
Ann	105.0	45.1	5.2	.7

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	.26	.37	.53	.68	.83	.99	1.17	1.38	1.66	2.11	2.53
Feb	.19	.27	.38	.48	.58	.68	.80	.94	1.12	1.41	1.68
Mar	.13	.20	.31	.42	.53	.65	.79	.96	1.18	1.55	1.90
Apr	.30	.38	.52	.63	.74	.85	.97	1.12	1.30	1.59	1.86
May	.41	.58	.85	1.10	1.34	1.60	1.89	2.24	2.70	3.43	4.12
Jun	.64	.84	1.13	1.39	1.64	1.90	2.18	2.51	2.94	3.62	4.24
Jul	.08	.22	.45	.67	.91	1.17	1.48	1.85	2.37	3.21	4.04
Aug	.26	.38	.56	.73	.90	1.08	1.29	1.53	1.86	2.38	2.87
Sep	.05	.14	.30	.46	.63	.82	1.04	1.32	1.70	2.33	2.94
Oct	.18	.27	.41	.55	.68	.83	1.00	1.21	1.48	1.92	2.34
Nov	.31	.42	.61	.78	.94	1.11	1.31	1.54	1.84	2.33	2.78
Dec	.26	.37	.54	.69	.84	1.00	1.18	1.40	1.68	2.13	2.55
Ann	9.06	10.11	11.50	12.57	13.54	14.49	15.48	16.59	17.96	19.98	21.75

\+ 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: 1960-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

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	10.7	7.6	4	3	8.0	1978	4	29.0	1978	19	1991	10	12	1993	7.0	4.2	1.4	.4	.0	17.9	12.6	7.9	2.6
Feb	6.9	5.7	3	1	10.0	1986	15	23.5	1975	19	1986	16	10	1993	4.9	2.7	.8	.4	@	10.6	6.4	4.4	1.4
Mar	3.8	2.1	#	#	7.0	1975	13	18.0	1975	12	1993	2	2	1993	2.6	1.5	.4	.1	.0	2.2	.8	.5	.0
Apr	1.2	.1	#	0	4.0	1977	1	6.0	1982	4	2000	14	#+	2000	1.0	.6	.1	.0	.0	.1	.1	.0	.0
May	.1	.0	#	0	2.0	1996	1	2.0	1996	#	1999	8	#	1999	@	@	.0	.0	.0	.0	.0	.0	.0
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	.1	.0	0	0	2.0	1972	27	2.0	1972	0	0	0	0	0	@	@	.0	.0	.0	.0	.0	.0	.0
Oct	.4	.0	#	0	2.0	1984	27	7.2	1984	1+	1996	19	#+	1996	.3	.3	.0	.0	.0	.2	.0	.0	.0
Nov	6.1	3.8	1	#	9.0	1993	22	32.7	1996	21	1996	22	7	1996	4.1	1.8	.9	.3	.0	5.8	2.7	1.5	.6
Dec	10.9	10.3	3	2	12.0	1980	4	40.0	1996	31	1996	30	12	1996	7.2	4.1	1.3	.5	.1	17.6	10.1	7.2	1.4
Ann	40.2	29.6	N/A	N/A	12.0	Dec 1980	4	40.0	Dec 1996	31	Dec 1996	30	12+	Dec 1996	27.1	15.2	4.9	1.7	.1	54.4	32.7	21.5	6.0

+ 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	7/04	6/26	6/21	6/16	6/12	6/07	6/02	5/28	5/20
32	6/09	6/03	5/30	5/26	5/23	5/19	5/15	5/11	5/05
28	5/21	5/15	5/10	5/06	5/03	4/29	4/25	4/20	4/14
24	5/01	4/26	4/22	4/19	4/16	4/13	4/09	4/05	3/31
20	4/24	4/17	4/13	4/09	4/05	4/01	3/29	3/24	3/18
16	4/13	4/04	3/28	3/23	3/17	3/12	3/07	2/28	2/19

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	8/20	8/25	8/29	9/01	9/04	9/07	9/11	9/14	9/20
32	8/30	9/05	9/09	9/12	9/15	9/18	9/21	9/25	10/01
28	9/13	9/18	9/22	9/25	9/28	10/01	10/05	10/09	10/14
24	9/22	9/28	10/03	10/07	10/10	10/14	10/18	10/22	10/28
20	10/01	10/09	10/14	10/19	10/23	10/27	10/31	11/06	11/13
16	10/19	10/27	11/03	11/08	11/13	11/17	11/23	11/29	12/07

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	110	101	95	89	84	79	74	67	58
32	138	130	124	119	115	110	105	99	91
28	173	164	158	153	148	143	138	131	123
24	203	194	188	182	177	172	166	159	150
20	232	221	213	206	200	193	187	179	168
16	279	265	255	247	239	232	223	214	200

***** 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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1317	1005	841	564	326	156	67	68	275	616	964	1260	7459
60	1162	865	686	414	192	73	21	22	168	461	814	1105	5983
57	1069	781	593	328	127	39	10	9	116	370	724	1012	5178
55	1011	725	531	272	92	23	5	4	88	311	666	950	4678
50	867	593	381	151	31	5	0	1	36	179	527	796	3567
32	400	196	35	0	0	0	0	0	0	4	144	317	1096

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	106	115	217	427	703	881	1087	1068	744	411	169	80	6008
55	4	0	0	9	82	214	379	360	141	5	2	0	1196
57	0	0	0	4	55	170	322	302	110	2	0	0	965
60	0	0	0	1	27	114	240	222	72	1	0	0	677
65	0	0	0	0	5	47	131	113	29	0	0	0	325
70	0	0	0	0	0	14	56	42	9	0	0	0	121

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	12	57	209	461	647	842	824	503	191	26	1	2	14	71	280	741	1388	2230	3054	3557	3748	3774	3775
45	0	0	14	102	313	497	687	669	357	98	7	0	0	0	14	116	429	926	1613	2282	2639	2737	2744	2744
50	0	0	0	42	176	349	532	514	229	35	0	0	0	0	0	42	218	567	1099	1613	1842	1877	1877	1877
55	0	0	0	12	82	209	378	359	123	9	0	0	0	0	0	12	94	303	681	1040	1163	1172	1172	1172
60	0	0	0	1	31	106	234	221	54	0	0	0	0	0	0	1	32	138	372	593	647	647	647	647
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	2	48	159	297	401	523	520	342	138	7	0	0	2	50	209	506	907	1430	1950	2292	2430	2437	2437

(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

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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