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: LINCOLN RANGER STN, MT **COOP ID: 245040**

Climate Division: MT 4 **NWS Call Sign:** **Elevation: 4,575 Feet** **Lat: 46˚57N** **Lon: 112˚39W**

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	30.3	10.8	20.6	56	1998	29	29.4	1994	-48	1950	3	3.2	1979	1378	0	.0	.0	.5	15.0	29.8	7.6
Feb	36.2	15.5	25.9	62	1996	21	34.0	1995	-44	1956	16	10.2	1989	1096	0	.0	.0	2.2	7.6	26.3	4.7
Mar	44.3	21.6	33.0	72	1978	29	40.7	1992	-40	1955	25	26.6	1975	993	0	.0	.0	9.7	2.5	28.4	1.5
Apr	54.2	27.3	40.8	84	1952	25	46.8	1987	-5+	1982	8	31.0	1975	728	0	.0	.0	19.7	.3	23.6	.1
May	63.5	33.7	48.6	91	1986	30	54.0	1993	8	1954	2	43.1	1996	509	0	.0	.1	28.4	.0	13.6	.0
Jun	71.8	39.6	55.7	94	1988	26	62.4	1988	19	1951	3	50.5	1995	287	8	.0	.7	29.9	.0	3.8	.0
Jul	80.0	42.7	61.4	100	1973	10	66.2	1985	24	1959	8	55.8	1993	156	42	@	3.8	30.9	.0	1.4	.0
Aug	80.5	41.1	60.8	102	1961	4	66.2	1971	21	1992	25	54.5	1980	169	38	@	3.9	31.0	.0	3.0	.0
Sep	69.7	33.2	51.5	98	1950	3	55.8	1998	6	1965	17	46.0	1984	410	3	.0	.6	28.6	.1	15.1	.0
Oct	56.4	27.3	41.9	84	1957	1	47.0	1988	-13	1971	29	36.6	1984	719	0	.0	.0	22.7	.5	23.2	.1
Nov	38.6	19.6	29.1	68	1999	12	37.7	1999	-45	1959	16	14.5	1985	1078	0	.0	.0	4.5	6.7	27.5	2.6
Dec	31.3	12.5	21.9	55	1990	9	30.1	1993	-48	1990	22	6.2	1983	1337	0	.0	.0	.4	14.5	29.8	6.1
Ann	54.7	27.1	40.9	102	Aug 1961	4	66.2+	Jul 1985	-48+	Dec 1990	22	3.2	Jan 1979	8860	91	.0	9.1	208.5	47.2	225.5	22.7

\+ 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

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Climate Division: MT 4 **NWS Call Sign:** **Elevation: 4,575 Feet** **Lat: 46˚57N** **Lon: 112˚39W**

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	1.93	1.63	1.10	1997	4	5.94	1971	.41	1995
Feb	1.30	1.08	.88	1950	24	3.19	1986	.26	1973
Mar	1.09	1.17	1.11	1955	23	2.60	1989	.14	1994
Apr	1.34	1.15	1.74	1975	26	4.54	1975	.06	1977
May	2.30	1.95	2.00	1983	9	5.46	1980	.70	1973
Jun	2.00	1.88	2.28	2001	3	5.17	1998	.23	1985
Jul	1.28	.90	2.18	1983	10	3.95	1983	.04	1973
Aug	1.59	1.33	1.52	1999	12	4.83	1989	.31	2000
Sep	1.29	1.33	1.71	1973	8	3.78	1985	.09	1987
Oct	1.30	1.20	1.27	2000	1	3.75	1975	.11	1978
Nov	1.37	1.42	1.34	1964	25	2.55	1990	.30	1979
Dec	1.98	1.88	1.50	1977	2	5.37	1977	.17	1993
Ann	18.77	18.89	2.28	Jun 2001	3	5.94	Jan 1971	.04	Jul 1973

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.3	6.2	.8	.1
Feb	9.6	4.7	.3	.0
Mar	9.5	4.0	.2	.0
Apr	8.8	4.1	.4	.1
May	11.7	6.9	.9	.2
Jun	11.0	6.1	.8	.1
Jul	7.9	3.9	.4	.1
Aug	8.5	4.7	.7	.1
Sep	8.0	3.9	.6	@
Oct	7.1	4.2	.4	.1
Nov	9.1	5.2	.3	.0
Dec	11.0	6.6	.8	.1
Ann	113.5	60.5	6.6	.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	.43	.61	.90	1.15	1.41	1.68	1.98	2.34	2.82	3.58	4.30
Feb	.30	.42	.61	.78	.95	1.13	1.33	1.58	1.89	2.40	2.88
Mar	.27	.37	.53	.67	.81	.96	1.12	1.32	1.58	1.98	2.36
Apr	.20	.31	.51	.69	.88	1.09	1.33	1.63	2.03	2.68	3.30
May	.73	.95	1.27	1.55	1.82	2.09	2.39	2.75	3.20	3.91	4.57
Jun	.46	.65	.94	1.20	1.46	1.74	2.05	2.42	2.90	3.67	4.40
Jul	.10	.18	.34	.52	.71	.94	1.21	1.55	2.03	2.82	3.61
Aug	.31	.45	.68	.90	1.12	1.35	1.62	1.94	2.36	3.05	3.70
Sep	.18	.28	.47	.65	.84	1.04	1.28	1.58	1.98	2.63	3.26
Oct	.16	.26	.44	.62	.82	1.03	1.28	1.59	2.01	2.70	3.37
Nov	.39	.52	.71	.88	1.05	1.22	1.42	1.64	1.94	2.40	2.83
Dec	.39	.57	.86	1.13	1.40	1.69	2.02	2.41	2.94	3.78	4.57
Ann	12.10	13.34	14.96	16.20	17.32	18.41	19.55	20.81	22.36	24.63	26.62

\+ 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

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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	18.6	19.8	12	12
Feb	14.6	12.0	13	12
Mar	9.5	8.1	9	6
Apr	7.5	5.3	2	#
May	1.1	.0	#	0
Jun	#	.0	#	0
Jul	#	.0	0	0
Aug	.0	.0	0	0
Sep	.5	.0	#	0
Oct	2.4	1.5	#	#
Nov	10.7	8.8	2	1
Dec	20.9	18.7	7	6
Ann	85.8	74.2	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	12.0	1979	13	38.0	1971	42	1979	15	30	1979
Feb	12.0	1986	15	33.8	1986	40	1979	7	31	1979
Mar	8.0	1981	30	19.1	1979	35	1972	5	22	1982
Apr	22.0	1975	26	39.0	1975	26	1982	4	15	1982
May	10.0	1983	9	15.0	1983	14	1983	10	1	1983
Jun	#	1989	20	#	1989	1	1995	6	#	1995
Jul	#	1972	19	#	1972	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	3.0	1983	19	6.0	1983	3	1983	30	#+	1995
Oct	7.0	1975	22	16.5	1984	6	1984	28	2	1984
Nov	10.0	1978	17	29.5	1978	21	1978	20	7	1978
Dec	10.0	1977	2	55.1	1977	24	1984	28	21	1978
Ann	22.0	Apr 1975	26	55.1	Dec 1977	42	Jan 1979	15	31	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	9.1	6.3	2.2	.8	.1
Feb	6.2	4.7	1.5	.5	@
Mar	5.6	4.0	1.0	.2	.0
Apr	2.5	1.9	.9	.3	@
May	.6	.4	.1	.1	@
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	.1	.1	.0	.0
Oct	1.3	1.1	.3	@	.0
Nov	4.8	3.3	1.2	.2	@
Dec	8.7	6.5	2.2	.8	.1
Ann	38.9	28.3	9.5	2.9	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	30.1	28.5	26.4	18.7
Feb	23.5	22.6	19.7	15.2
Mar	20.2	17.8	15.4	10.5
Apr	4.6	2.8	2.0	.9
May	.6	.2	.2	.1
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.2	.1	.0	.0
Oct	1.8	.9	.2	.0
Nov	10.5	6.3	4.5	.6
Dec	25.3	21.9	17.1	8.7
Ann	116.8	101.1	85.5	54.7

+ 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	8/08	8/01	7/27	7/23	7/19	7/15	7/10	7/05	6/28
32	7/29	7/20	7/14	7/08	7/03	6/28	6/23	6/17	6/08
28	7/04	6/24	6/17	6/11	6/06	5/31	5/25	5/18	5/08
24	5/25	5/18	5/14	5/10	5/06	5/03	4/29	4/24	4/18
20	5/10	5/04	4/30	4/26	4/22	4/19	4/15	4/10	4/04
16	4/28	4/21	4/15	4/10	4/06	4/01	3/28	3/22	3/14

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	7/30	8/02	8/05	8/07	8/09	8/12	8/14	8/17	8/21
32	8/03	8/08	8/12	8/15	8/18	8/21	8/25	8/28	9/03
28	8/17	8/22	8/26	8/30	9/02	9/05	9/08	9/12	9/18
24	9/03	9/08	9/12	9/15	9/18	9/21	9/24	9/27	10/02
20	9/16	9/22	9/26	9/30	10/03	10/06	10/10	10/14	10/19
16	9/23	10/01	10/06	10/11	10/15	10/19	10/24	10/29	11/05

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	46	37	31	26	21	16	11	5	0
32	78	67	59	52	45	39	32	24	13
28	126	113	103	95	88	80	72	63	49
24	160	151	144	139	133	128	123	116	107
20	189	180	173	168	163	158	153	146	137
16	224	213	205	198	191	185	178	169	158

***** 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	1378	1096	993	728	509	287	156	169	410	719	1078	1337	8860
60	1223	956	838	578	358	163	71	80	270	564	928	1182	7211
57	1130	872	745	490	274	106	36	43	196	471	838	1089	6290
55	1068	816	683	433	221	75	21	26	152	409	778	1027	5709
50	913	676	529	298	116	23	4	6	67	259	632	872	4395
32	406	251	103	23	1	0	0	0	0	8	199	377	1368

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	51	79	133	285	515	711	909	892	583	312	111	63	4644
55	0	0	0	6	22	96	217	205	45	0	0	0	591
57	0	0	0	3	13	67	170	160	29	0	0	0	442
60	0	0	0	0	4	34	112	104	13	0	0	0	267
65	0	0	0	0	0	8	42	38	3	0	0	0	91
70	0	0	0	0	0	1	11	9	0	0	0	0	21

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	0	23	110	289	488	680	653	354	131	12	0	0	0	23	133	422	910	1590	2243	2597	2728	2740	2740
45	0	0	0	46	165	340	525	498	221	52	4	0	0	0	0	46	211	551	1076	1574	1795	1847	1851	1851
50	0	0	0	13	78	203	370	347	117	14	0	0	0	0	0	13	91	294	664	1011	1128	1142	1142	1142
55	0	0	0	0	26	101	223	202	45	3	0	0	0	0	0	0	26	127	350	552	597	600	600	600
60	0	0	0	0	3	39	102	89	11	0	0	0	0	0	0	0	3	42	144	233	244	244	244	244
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	24	110	226	342	467	464	305	137	12	0	0	0	24	134	360	702	1169	1633	1938	2075	2087	2087

(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