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: LINDBERGH LAKE, MT **COOP ID: 245043**

Climate Division: MT 1 **NWS Call Sign:** **Elevation: 4,320 Feet** **Lat: 47˚25N** **Lon: 113˚43W**

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	28.8	13.5	21.2	55+	1992	31	30.0	1994	-38	1962	21	3.6	1979	1359	0	.0	.0	.2	17.6	30.5	6.0
Feb	34.7	16.9	25.8	61	1995	24	33.3	1991	-40	1989	3	11.8	1989	1098	0	.0	.0	1.3	8.7	27.6	3.3
Mar	41.9	22.6	32.3	70	1978	29	39.7	1992	-29	1960	2	27.3	1976	1015	0	.0	.0	6.7	2.9	29.4	1.0
Apr	50.9	28.9	39.9	81+	1987	28	46.1	1987	3	1975	1	33.0	1975	754	0	.0	.0	16.3	.2	21.9	.0
May	60.3	36.6	48.5	87+	1993	12	54.7	1993	21+	1972	2	43.4	1974	514	0	.0	.0	26.9	.0	8.3	.0
Jun	68.1	43.3	55.7	97	1970	25	61.5	1988	26	1969	13	51.3+	1981	289	9	.0	.4	29.4	.0	.9	.0
Jul	76.2	47.7	62.0	101	1960	19	68.6	1985	28	1979	2	54.6	1993	154	59	.0	2.1	31.0	.0	.2	.0
Aug	76.5	47.0	61.8	102+	1961	5	67.1	1971	28	1992	25	54.3	1980	163	63	.0	2.1	30.9	.0	.2	.0
Sep	66.1	38.9	52.5	96	1967	5	60.4	1998	17	2000	23	46.5	1985	387	12	.0	.3	28.0	.0	5.2	.0
Oct	52.4	31.3	41.9	83+	1992	2	48.2	1988	-3	1991	30	37.9	1984	718	0	.0	.0	19.0	.6	17.5	@
Nov	35.5	22.7	29.1	65	1999	12	37.6	1999	-31	1959	16	16.2	1985	1077	0	.0	.0	2.4	9.6	27.2	1.3
Dec	28.5	14.7	21.6	55	1965	4	30.3	1980	-39	1964	17	10.0	1983	1344	0	.0	.0	.3	19.2	30.2	3.7
Ann	51.7	30.3	41.0	102+	Aug 1961	5	68.6	Jul 1985	-40	Feb 1989	3	3.6	Jan 1979	8872	143	.0	4.9	192.4	58.8	199.1	15.3

\+ 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: 1959-2001

(3) Derived from 1971-2000 serially complete daily data

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Climate Division: MT 1 **NWS Call Sign:** **Elevation: 4,320 Feet** **Lat: 47˚25N** **Lon: 113˚43W**

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	3.11	2.92	2.06	1971	30	7.90	1971	.25	1981
Feb	2.30	2.25	1.83	1976	26	4.61	1982	.39	1998
Mar	1.92	1.78	1.23	1965	22	5.15	1974	.64	1999
Apr	1.69	1.66	1.11	1989	6	3.78	1996	.28	1977
May	2.36	2.11	1.53	1980	23	4.95	1980	1.14	1973
Jun	2.35	2.33	1.75	1964	8	4.12	1998	.44	1979
Jul	1.37	1.40	1.43	1965	12	3.06	1987	.00	1973
Aug	1.42	1.38	1.19	1979	31	3.03	1975	.03	2000
Sep	1.57	1.35	1.33	1986	9	5.47	1985	.00	1990
Oct	1.83	1.63	2.30	1988	16	4.48	1975	.24	1987
Nov	3.04	2.88	1.44	1976	25	6.25	1989	.74	1979
Dec	3.22	2.89	3.16	1979	15	8.25	1977	.65	1997
Ann	26.18	25.57	3.16	Dec 1979	15	8.25	Dec 1977	.00+	Sep 1990

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	18.4	9.6	1.1	.2
Feb	14.5	7.5	.7	.1
Mar	14.8	7.3	.2	.0
Apr	11.9	5.2	.6	@
May	14.2	7.6	.9	.1
Jun	13.4	7.0	1.3	.1
Jul	8.2	4.4	.6	.1
Aug	8.0	4.4	.5	.1
Sep	9.2	4.6	.7	.1
Oct	10.8	5.4	.8	.1
Nov	16.8	8.9	1.0	.2
Dec	18.0	9.7	1.1	.2
Ann	158.2	81.6	9.5	1.3

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	.83	1.12	1.57	1.97	2.36	2.77	3.22	3.76	4.46	5.56	6.59
Feb	.69	.91	1.24	1.52	1.79	2.08	2.39	2.76	3.24	3.98	4.67
Mar	.67	.85	1.11	1.34	1.55	1.77	2.01	2.28	2.64	3.19	3.70
Apr	.42	.57	.82	1.04	1.26	1.48	1.74	2.04	2.44	3.06	3.65
May	1.09	1.30	1.59	1.82	2.03	2.25	2.48	2.74	3.07	3.57	4.02
Jun	.95	1.17	1.48	1.73	1.96	2.20	2.46	2.76	3.14	3.72	4.25
Jul	.12	.27	.49	.69	.90	1.12	1.38	1.69	2.10	2.77	3.42
Aug	.28	.41	.61	.81	1.00	1.21	1.45	1.73	2.11	2.72	3.29
Sep	.15	.33	.59	.82	1.05	1.30	1.59	1.94	2.40	3.15	3.87
Oct	.37	.54	.81	1.05	1.30	1.56	1.86	2.22	2.70	3.46	4.18
Nov	1.03	1.32	1.74	2.10	2.44	2.79	3.17	3.62	4.19	5.08	5.90
Dec	.95	1.25	1.71	2.11	2.50	2.90	3.35	3.87	4.55	5.61	6.59
Ann	18.97	20.37	22.17	23.53	24.74	25.90	27.10	28.42	30.02	32.34	34.35

\+ 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: 1959-2001
(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	34.7	31.6	25	22	18.6	1982	23	79.3	1982	57	1978	30	52	1978	15.9	10.6	4.1	1.6	.3	30.5	30.5	30.5	30.5
Feb	21.9	23.3	29	27	13.0	1981	14	42.0	1986	60	1975	9	53	1975	10.8	7.0	2.8	1.0	@	27.8	27.8	27.8	27.8
Mar	19.7	17.7	27	21	11.0	1974	19	52.0	1974	65	1997	13	54	1997	10.1	6.8	2.1	.9	.1	29.4	29.0	28.6	26.6
Apr	6.6	5.2	16	11	9.0	1973	6	17.2	1994	56	1975	8	49	1975	4.4	2.7	.8	.2	.0	16.5	14.6	13.2	8.6
May	1.7	.8	1	#	5.0	1989	24	8.0	1978	34	1975	1	14	1975	1.2	.8	.2	@	.0	1.4	1.2	1.1	.9
Jun	#	.0	#	0	#	1996	18	#+	1996	#+	1996	18	#+	1996	.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	1.2	1992	23	1.2	1992	#	1992	23	#	1992	@	@	.0	.0	.0	.0	.0	.0	.0
Sep	.1	.0	#	0	2.5	1972	27	2.5	1972	4	1972	28	#+	1999	.1	@	.0	.0	.0	@	.0	.0	.0
Oct	4.6	3.0	#	#	8.0	1984	27	24.9	1984	10	1984	27	2	1984	2.5	1.6	.4	.2	.0	1.7	1.1	.6	@
Nov	22.8	20.4	4	4	17.0	1986	11	47.5	1975	29	1996	27	12	1996	10.8	6.6	2.7	1.3	.2	18.3	14.6	9.0	2.9
Dec	30.9	26.7	13	12	18.0	1977	23	73.7	1996	55	1977	30	33	1978	15.0	9.5	4.0	1.8	.3	29.9	28.8	26.3	19.7
Ann	143.0	128.7	N/A	N/A	18.6	Jan 1982	23	79.3	Jan 1982	65	Mar 1997	13	54	Mar 1997	70.8	45.6	17.1	7.0	.9	155.5	147.6	137.1	117.0

+ 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	7/11	7/04	6/29	6/25	6/22	6/18	6/14	6/09	6/02
32	6/25	6/17	6/11	6/06	6/02	5/28	5/23	5/17	5/09
28	5/31	5/25	5/20	5/16	5/13	5/09	5/05	4/30	4/24
24	5/03	4/28	4/25	4/22	4/19	4/16	4/13	4/10	4/05
20	4/20	4/15	4/12	4/09	4/06	4/04	4/01	3/28	3/23
16	4/15	4/08	4/03	3/30	3/26	3/22	3/18	3/13	3/06

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	8/15	8/20	8/24	8/28	8/31	9/03	9/06	9/10	9/16
32	8/29	9/03	9/06	9/09	9/12	9/15	9/18	9/22	9/27
28	9/07	9/12	9/16	9/19	9/22	9/25	9/29	10/02	10/08
24	9/24	9/29	10/02	10/05	10/08	10/11	10/14	10/18	10/23
20	9/30	10/08	10/13	10/17	10/22	10/26	10/30	11/04	11/12
16	10/17	10/24	10/28	11/01	11/05	11/09	11/13	11/17	11/24

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	97	88	81	75	69	64	58	51	42
32	134	123	115	108	102	96	89	81	70
28	158	149	143	137	132	127	121	114	105
24	193	186	180	176	172	167	163	157	150
20	225	215	209	203	198	192	186	180	170
16	252	242	235	229	223	218	212	205	195

***** 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	1359	1098	1015	754	514	289	154	163	387	718	1077	1344	8872
60	1204	958	860	604	364	166	73	82	260	563	927	1189	7250
57	1111	874	767	514	279	110	39	47	194	470	837	1096	6338
55	1049	818	705	455	227	79	24	31	156	409	777	1034	5764
50	894	678	550	312	121	25	7	10	80	263	627	879	4446
32	384	232	96	15	0	0	0	0	0	8	179	355	1269

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	48	59	104	252	510	710	928	923	615	314	92	34	4589
55	0	0	0	1	23	98	239	240	81	2	0	0	684
57	0	0	0	0	14	69	192	195	59	1	0	0	530
60	0	0	0	0	5	36	134	137	35	0	0	0	347
65	0	0	0	0	0	9	59	63	12	0	0	0	143
70	0	0	0	0	0	1	19	21	3	0	0	0	44

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	9	93	303	501	712	703	406	138	11	0	0	0	9	102	405	906	1618	2321	2727	2865	2876	2876
45	0	0	0	32	177	352	557	548	267	64	0	0	0	0	0	32	209	561	1118	1666	1933	1997	1997	1997
50	0	0	0	12	87	211	402	397	154	18	0	0	0	0	0	12	99	310	712	1109	1263	1281	1281	1281
55	0	0	0	0	37	113	257	254	73	2	0	0	0	0	0	0	37	150	407	661	734	736	736	736
60	0	0	0	0	5	44	136	132	24	0	0	0	0	0	0	0	5	49	185	317	341	341	341	341
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	21	84	198	304	447	447	274	101	3	0	0	0	21	105	303	607	1054	1501	1775	1876	1879	1879

(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