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: LONGMONT 2 ESE, CO **COOP ID: 055116**

Climate Division: CO 4 **NWS Call Sign:** **Elevation: 4,950 Feet** **Lat: 40˚10N** **Lon: 105˚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	42.1	12.0	27.1	75	1982	27	36.7	1986	-34+	1963	13	15.9	1979	1177	0	.0	.0	10.7	7.4	30.4	5.1
Feb	46.6	17.2	31.9	77+	1986	25	39.1	1976	-36	1951	1	17.6	1989	927	0	.0	.0	12.7	4.6	27.3	2.2
Mar	54.4	24.3	39.4	85	1997	21	47.1	1986	-18	1960	3	35.0	1980	796	0	.0	.0	20.5	1.9	27.3	.4
Apr	62.2	31.8	47.0	88+	1989	23	54.5	1981	-7	1975	2	40.5	1997	539	0	.0	.0	24.7	.4	15.6	.1
May	71.9	42.1	57.0	96+	2000	30	61.1	1977	18	1989	1	50.8	1995	262	14	.0	.9	29.8	.0	2.3	.0
Jun	83.0	50.6	66.8	106	1994	27	71.6	1977	29	1998	6	62.1	1998	62	116	.5	8.7	29.9	.0	@	.0
Jul	88.9	55.4	72.2	106	1973	7	75.4	1980	40+	1994	8	68.8	1992	3	224	1.4	15.7	31.0	.0	.0	.0
Aug	86.9	53.4	70.2	104	1995	8	74.7	1983	37	1992	27	66.1	1992	18	178	.4	12.9	31.0	.0	.0	.0
Sep	78.3	44.1	61.2	100+	1995	4	66.6	1998	18	1985	30	56.2	1971	168	55	.1	4.7	29.2	.0	2.0	.0
Oct	66.8	32.5	49.7	90+	1996	12	53.3	1979	0	1969	13	42.9	1984	477	0	.0	.1	27.6	.3	14.8	.0
Nov	51.3	21.6	36.5	80+	1999	9	44.5	1999	-22	1950	10	28.3	1985	858	0	.0	.0	16.7	3.0	27.5	.7
Dec	43.7	13.5	28.6	73+	1998	3	38.8	1980	-31	1990	22	16.2	1983	1128	0	.0	.0	11.1	5.4	30.4	3.9
Ann	64.7	33.2	49.0	106+	Jun 1994	27	75.4	Jul 1980	-36	Feb 1951	1	15.9	Jan 1979	6415	587	2.4	43.0	274.9	23.0	177.6	12.4

\+ 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	.42	.38	.75	1973	20	1.35	1996	.01	1983
Feb	.37	.29	.78	1957	28	1.45	1987	.00+	1992
Mar	1.21	.91	2.04	1992	9	4.69	1983	.11	1989
Apr	2.01	1.92	2.70	1967	14	5.15	1999	.10	1982
May	2.41	1.92	4.04	1957	9	7.00	1995	.08	1974
Jun	1.64	1.53	2.38	1972	6	4.27	1995	.01	1971
Jul	1.11	.92	1.52	1983	11	3.00	1999	.06	1989
Aug	1.39	1.22	1.74	1951	3	4.77	1992	.00	1971
Sep	1.38	1.25	1.60	1976	19	3.83	1971	.00	1992
Oct	.81	.67	1.84	1978	22	2.79	1984	.00	1995
Nov	.83	.75	.84+	1987	15	2.46	1983	.02	1976
Dec	.57	.38	.72	1973	24	1.73	1987	.00	1991
Ann	14.15	13.43	4.04	May 1957	9	7.00	May 1995	.00+	Oct 1995

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.6	1.5	@	.0
Feb	3.4	1.5	@	.0
Mar	5.1	3.1	.7	.3
Apr	7.3	4.7	1.2	.3
May	9.2	5.1	1.3	.7
Jun	6.9	3.8	.9	.3
Jul	6.7	3.5	.5	.1
Aug	6.8	3.0	1.0	.3
Sep	6.3	3.6	.7	.1
Oct	4.5	2.3	.3	.1
Nov	4.3	2.4	.5	.0
Dec	3.6	1.5	.3	.0
Ann	67.7	36.0	7.4	2.2

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	.04	.07	.13	.18	.25	.32	.41	.51	.66	.91	1.15
Feb	.00	.05	.13	.19	.25	.31	.38	.46	.58	.76	.94
Mar	.20	.31	.48	.65	.82	1.00	1.22	1.47	1.82	2.38	2.91
Apr	.36	.53	.83	1.10	1.38	1.69	2.04	2.45	3.01	3.91	4.78
May	.32	.51	.86	1.19	1.54	1.93	2.39	2.94	3.70	4.93	6.12
Jun	.09	.19	.38	.61	.86	1.16	1.52	1.98	2.63	3.74	4.85
Jul	.21	.31	.47	.62	.77	.94	1.13	1.35	1.65	2.13	2.59
Aug	.08	.21	.43	.63	.85	1.09	1.37	1.72	2.19	2.96	3.71
Sep	.05	.16	.36	.57	.78	1.03	1.33	1.70	2.21	3.06	3.89
Oct	.03	.09	.21	.33	.46	.60	.77	.99	1.29	1.79	2.28
Nov	.05	.10	.20	.32	.44	.59	.77	1.00	1.32	1.86	2.40
Dec	.01	.05	.12	.20	.29	.40	.53	.69	.92	1.30	1.69
Ann	9.43	10.32	11.47	12.36	13.15	13.92	14.72	15.61	16.69	18.27	19.65

\+ 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	6.5	5.5	1	1
Feb	4.2	3.1	#	#
Mar	5.8	6.0	#	#
Apr	4.8	2.5	#	0
May	.5	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.7	.0	#	0
Oct	1.3	.0	#	0
Nov	7.1	3.0	#	#
Dec	6.6	4.5	1	#
Ann	37.5	24.6	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	8.0	1973	20	13.8	1980	11	1971	3	3	1974
Feb	6.0	1971	20	13.8	1987	8	1971	21	2	1971
Mar	9.0	1988	31	12.5	1988	15	1992	10	2	1992
Apr	12.0	1977	3	19.0	1973	10	1986	3	1	1997
May	4.0	1973	1	8.0	1979	3	1973	1	#+	1979
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	6.0	1971	17	10.0	1971	9	1971	18	1	1971
Oct	11.0	1997	25	12.0	1997	12	1997	26	1	1997
Nov	12.0	1979	20	21.5	1979	9	1985	15	4	1985
Dec	27.0	1982	25	32.0	1982	14	1985	10	7	1985
Ann	27.0	Dec 1982	25	32.0	Dec 1982	15	Mar 1992	10	7	Dec 1985

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.2	1.6	.6	.2	.0
Feb	2.1	1.4	.4	.1	.0
Mar	2.0	1.5	.7	.2	.0
Apr	1.7	1.3	.6	.2	@
May	.2	.2	.1	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.2	.1	.1	.1	.0
Oct	.5	.4	.1	.1	@
Nov	2.1	1.6	.7	.3	.1
Dec	2.5	1.9	.7	.3	.1
Ann	13.5	10.0	4.0	1.5	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	7.5	4.1	2.3	.1
Feb	4.2	1.1	.5	.0
Mar	2.2	.8	.3	.0
Apr	1.5	1.0	.2	.1
May	.1	.1	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.3	.3	.1	.0
Oct	.5	.1	.1	.1
Nov	3.9	1.9	1.2	.0
Dec	5.0	3.4	2.2	.2
Ann	25.2	12.8	6.9	.5

+ 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	5/31	5/26	5/22	5/19	5/17	5/14	5/11	5/07	5/02
32	5/18	5/13	5/10	5/07	5/05	5/02	4/29	4/26	4/22
28	5/08	5/03	4/30	4/27	4/24	4/22	4/19	4/15	4/10
24	5/01	4/26	4/23	4/20	4/17	4/14	4/11	4/07	4/02
20	4/21	4/14	4/09	4/05	4/01	3/28	3/24	3/19	3/13
16	4/12	4/05	3/31	3/27	3/23	3/19	3/15	3/10	3/03

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	9/10	9/14	9/17	9/19	9/21	9/23	9/25	9/28	10/02
32	9/15	9/19	9/23	9/25	9/28	9/30	10/03	10/06	10/10
28	9/22	9/28	10/02	10/05	10/08	10/11	10/15	10/19	10/24
24	9/28	10/04	10/08	10/12	10/16	10/19	10/23	10/27	11/02
20	10/09	10/15	10/19	10/23	10/27	10/30	11/03	11/07	11/14
16	10/26	10/30	11/03	11/05	11/08	11/10	11/13	11/16	11/21

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	145	139	134	130	127	123	119	114	108
32	165	158	153	149	145	141	137	132	125
28	189	181	176	171	166	162	157	151	144
24	204	196	190	186	181	177	172	166	159
20	234	225	218	213	208	203	197	191	182
16	255	246	240	235	229	224	219	212	204

***** 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	1177	927	796	539	262	62	3	18	168	477	858	1128	6415
60	1022	787	641	396	144	19	0	3	84	326	708	973	5103
57	929	703	548	315	91	7	0	1	49	240	618	880	4381
55	867	647	486	264	64	4	0	0	32	190	558	818	3930
50	713	516	338	157	21	0	0	0	8	86	421	670	2930
32	245	142	21	3	0	0	0	0	0	0	79	224	714

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	91	139	247	454	775	1044	1243	1183	876	547	212	120	6931
55	0	0	0	25	126	358	530	470	218	23	0	0	1750
57	0	0	0	16	91	301	468	409	176	12	0	0	1473
60	0	0	0	7	51	223	375	318	121	4	0	0	1099
65	0	0	0	0	14	116	224	178	55	0	0	0	587
70	0	0	0	0	2	46	95	71	18	0	0	0	232

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	16	40	110	263	539	813	1005	944	648	332	82	25	16	56	166	429	968	1781	2786	3730	4378	4710	4792	4817
45	1	12	53	155	392	663	850	789	506	209	36	5	1	13	66	221	613	1276	2126	2915	3421	3630	3666	3671
50	0	1	13	76	255	515	695	634	365	104	8	0	0	1	14	90	345	860	1555	2189	2554	2658	2666	2666
55	0	0	1	30	142	370	540	480	238	38	1	0	0	0	1	31	173	543	1083	1563	1801	1839	1840	1840
60	0	0	0	5	62	235	386	327	130	9	0	0	0	0	0	5	67	302	688	1015	1145	1154	1154	1154
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	35	65	130	213	350	506	623	590	425	282	99	47	35	100	230	443	793	1299	1922	2512	2937	3219	3318	3365

(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