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: ANDERSON, MO **COOP ID: 230164**

Climate Division: MO 4 **NWS Call Sign:** **Elevation: 1,050 Feet** **Lat: 36˚39N** **Lon: 94˚26W**

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	44.4	22.3	33.4	78	1950	25	42.2	1990	-21	1984	19	20.5	1979	982	0	.0	.0	12.0	5.4	25.2	1.6
Feb	50.8	26.8	38.8	86	1996	22	48.1	1976	-21	1996	4	27.4	1978	735	0	.0	.0	15.6	3.0	20.3	.7
Mar	60.3	35.5	47.9	90	1974	31	52.3	1974	-1	1980	2	41.8	1996	530	0	.0	@	25.2	.5	12.8	@
Apr	69.8	44.1	57.0	93+	1987	18	64.0	1981	6	1957	13	51.4	1983	255	14	.0	.2	29.2	.0	4.3	.0
May	75.7	53.2	64.5	93	1951	31	69.5	1987	27+	1963	1	59.8	1976	104	86	.0	.1	31.0	.0	.3	.0
Jun	82.9	61.6	72.3	101	1953	19	75.9	1971	39	1956	2	68.9	1992	11	230	.0	4.1	30.0	.0	.0	.0
Jul	88.4	66.1	77.3	112	1954	14	82.7	1980	44	1972	6	73.6	1989	0	380	1.2	14.2	31.0	.0	.0	.0
Aug	87.6	64.1	75.9	108	1956	17	81.0	2000	42	1986	29	69.3	1992	6	342	1.0	13.1	31.0	.0	.0	.0
Sep	79.4	57.1	68.3	104	2000	2	75.4	1998	27	1984	30	60.9	1974	59	155	.2	3.8	30.0	.0	.2	.0
Oct	70.4	45.4	57.9	96	1953	1	62.0	1971	13	1952	29	51.2	1976	237	18	.0	.2	30.4	.0	3.8	.0
Nov	57.7	35.2	46.5	86+	1980	8	53.7	1999	0	1976	29	39.1	1976	557	0	.0	.0	22.9	.4	13.3	@
Dec	47.5	25.7	36.6	80+	1951	31	43.3	1984	-18	1983	30	22.8	1983	881	0	.0	.0	14.6	3.3	23.1	.7
Ann	67.9	44.8	56.4	112	Jul 1954	14	82.7	Jul 1980	-21+	Feb 1996	4	20.5	Jan 1979	4357	1225	2.4	35.7	302.9	12.6	103.3	3.0

\+ 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: 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	2.00	1.75	3.24	1990	17	5.63	1990	.00	1986
Feb	2.01	1.70	3.04	1997	21	6.02	1990	.30	1996
Mar	3.75	3.22	3.01	1985	30	10.79	1973	1.13	1991
Apr	4.14	3.33	4.30	1965	3	9.09	1983	.21	1989
May	4.75	4.40	4.03	1961	7	8.79	1990	2.14	1972
Jun	4.58	4.63	5.48	2001	3	8.57	1999	.93	1988
Jul	3.21	3.32	4.35	1993	6	7.97	1976	.36	1990
Aug	3.50	3.46	4.00	1980	14	6.84	1979	.00+	2000
Sep	4.76	3.88	5.14	1986	30	12.18	1986	.42	1979
Oct	3.49	2.63	3.80	1998	5	9.11	1984	.89	1978
Nov	4.41	3.98	3.60	1972	1	8.26	1992	.28	1976
Dec	3.01	2.65	2.64	1992	14	6.89	1990	.22	1996
Ann	43.61	42.32	5.48	Jun 2001	3	12.18	Sep 1986	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.6	3.9	1.3	.4
Feb	5.8	4.0	1.4	.4
Mar	8.0	6.5	3.0	1.0
Apr	7.8	6.5	2.9	1.2
May	9.4	7.9	3.5	1.1
Jun	7.8	6.8	2.8	1.4
Jul	5.7	4.4	1.9	.9
Aug	6.0	4.9	2.3	1.2
Sep	7.2	6.2	3.0	1.5
Oct	6.4	5.1	2.4	1.1
Nov	6.4	5.3	3.0	1.5
Dec	6.3	4.6	2.3	.8
Ann	82.4	66.1	29.8	12.5

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	.12	.32	.63	.93	1.24	1.58	1.98	2.47	3.13	4.22	5.28
Feb	.40	.59	.88	1.15	1.42	1.72	2.05	2.44	2.97	3.81	4.62
Mar	1.13	1.48	2.02	2.48	2.92	3.39	3.90	4.50	5.27	6.48	7.61
Apr	.92	1.30	1.91	2.45	3.00	3.59	4.24	5.03	6.06	7.70	9.26
May	2.37	2.77	3.32	3.75	4.15	4.55	4.98	5.46	6.06	6.97	7.78
Jun	1.37	1.80	2.46	3.02	3.57	4.13	4.76	5.50	6.45	7.94	9.32
Jul	.50	.77	1.24	1.68	2.14	2.64	3.22	3.92	4.86	6.39	7.86
Aug	.00	1.08	1.81	2.32	2.79	3.25	3.76	4.34	5.09	6.24	7.30
Sep	.94	1.37	2.07	2.71	3.36	4.06	4.85	5.80	7.06	9.09	11.01
Oct	.78	1.10	1.61	2.07	2.53	3.02	3.57	4.23	5.09	6.47	7.77
Nov	.90	1.30	1.95	2.54	3.14	3.77	4.50	5.36	6.51	8.35	10.09
Dec	.52	.78	1.22	1.63	2.05	2.51	3.03	3.67	4.51	5.88	7.19
Ann	31.20	33.61	36.68	39.02	41.09	43.10	45.16	47.45	50.21	54.23	57.69

\+ 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	3.5	2.0	1	#
Feb	2.9	1.0	#	#
Mar	2.2	.0	#	#
Apr	.0	.0	#	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.0	.0	#	0
Nov	1.1	.0	#	0
Dec	2.3	1.0	#	#
Ann	12.0	4.0	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	7.0	1977	10	16.0	1977	8	1979	31	5	1979
Feb	7.0	1980	8	12.5	1975	12	1975	24	3	1978
Mar	15.0	1999	14	16.0	1999	15	1999	14	2	1989
Apr	.5	1973	9	.5	1973	1	1973	9	#+	1994
May	.0	0	0	.0	0	0	0	0	0	0
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	.0	0	0	.0	0	0	0	0	0	0
Oct	.5	1993	30	.5	1993	1	1993	30	#	1993
Nov	5.0	1971	23	8.0	1975	5	1975	27	#+	2000
Dec	9.0	2000	13	10.0	1983	13	2000	14	3	2000
Ann	15.0	Mar 1999	14	16.0+	Mar 1999	15	Mar 1999	14	5	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.1	1.7	.6	.1	.0
Feb	1.5	1.0	.4	.2	.0
Mar	.8	.6	.2	.1	.1
Apr	@	.0	.0	.0	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	@	.0	.0	.0	.0
Nov	.4	.4	.2	.1	.0
Dec	1.4	1.0	.4	@	.0
Ann	6.2	4.7	1.8	.5	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	5.3	3.1	1.3	.0
Feb	3.8	1.8	.8	@
Mar	1.1	.4	.2	.2
Apr	@	.0	.0	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	@	.0	.0	.0
Nov	.5	.2	.1	.0
Dec	3.0	1.7	.4	@
Ann	13.7	7.2	2.8	.2

+ 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	5/17	5/11	5/08	5/04	5/01	4/28	4/24	4/20	4/15
32	5/06	5/02	4/28	4/25	4/22	4/19	4/16	4/13	4/08
28	4/23	4/18	4/15	4/12	4/09	4/06	4/03	3/31	3/26
24	4/12	4/07	4/03	3/30	3/27	3/24	3/20	3/17	3/11
20	4/07	3/31	3/26	3/22	3/18	3/14	3/10	3/05	2/26
16	3/21	3/14	3/08	3/04	2/27	2/23	2/18	2/13	2/05

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	9/22	9/26	9/29	10/02	10/04	10/06	10/09	10/12	10/16
32	9/26	10/01	10/04	10/07	10/10	10/12	10/15	10/18	10/23
28	10/11	10/17	10/20	10/24	10/27	10/30	11/02	11/06	11/12
24	10/22	10/29	11/02	11/06	11/09	11/13	11/17	11/21	11/27
20	10/31	11/07	11/12	11/16	11/20	11/24	11/28	12/03	12/10
16	11/08	11/15	11/21	11/26	11/30	12/05	12/10	12/15	12/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	175	168	163	159	155	151	147	142	135
32	188	182	177	173	170	166	162	158	152
28	221	214	209	204	200	196	191	186	179
24	249	241	236	231	227	222	217	212	204
20	275	265	258	252	246	241	235	227	218
16	307	296	288	282	275	269	263	255	244

***** 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	982	735	530	255	104	11	0	6	59	237	557	881	4357
60	827	598	382	141	41	1	0	1	19	125	415	726	3276
57	736	520	296	89	19	0	0	0	8	75	333	640	2716
55	681	468	244	62	11	0	0	0	4	51	283	582	2386
50	536	345	138	18	2	0	0	0	0	14	176	442	1671
32	150	64	4	0	0	0	0	0	0	0	10	98	326

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	191	254	496	748	1005	1209	1403	1359	1087	803	443	240	9238
55	8	13	24	120	302	519	690	646	401	141	26	11	2901
57	2	9	14	88	249	459	628	584	345	104	16	7	2505
60	0	4	6	50	177	370	535	492	266	60	8	1	1969
65	0	0	0	14	86	230	380	342	155	18	0	0	1225
70	0	0	0	2	30	115	230	207	77	3	0	0	664

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	57	127	297	527	773	988	1174	1130	863	574	255	91	57	184	481	1008	1781	2769	3943	5073	5936	6510	6765	6856
45	29	70	188	385	618	838	1019	975	713	426	154	45	29	99	287	672	1290	2128	3147	4122	4835	5261	5415	5460
50	10	33	105	255	465	688	864	820	563	284	85	19	10	43	148	403	868	1556	2420	3240	3803	4087	4172	4191
55	1	12	49	148	313	538	709	665	420	170	41	4	1	13	62	210	523	1061	1770	2435	2855	3025	3066	3070
60	0	2	19	74	184	388	554	510	287	82	11	0	0	2	21	95	279	667	1221	1731	2018	2100	2111	2111
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	51	100	206	344	497	674	796	763	570	366	166	67	51	151	357	701	1198	1872	2668	3431	4001	4367	4533	4600

(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