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: GUTTENBERG L & D 10, IA **COOP ID: 133517**

Climate Division: IA 3 **NWS Call Sign:** **Elevation: 624 Feet** **Lat: 42˚47N** **Lon: 91˚06W**

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	26.7	8.3	17.5	59	1981	25	29.2	1990	-36	1951	30	3.7	1977	1473	0	.0	.0	.6	19.7	30.2	9.2
Feb	33.3	14.4	23.9	64+	1981	17	36.0	1998	-38	1996	3	11.2	1978	1154	0	.0	.0	2.1	12.4	26.2	5.3
Mar	45.2	26.5	35.9	87	1986	29	43.4+	2000	-30	1962	1	26.1	1975	905	0	.0	.0	10.0	4.0	22.0	.8
Apr	59.4	38.7	49.1	97	1980	22	56.0	1977	7	1982	6	42.3	1975	481	4	.0	.1	23.8	.2	6.6	.0
May	71.7	50.3	61.0	95	1998	28	67.8	1977	28+	1950	1	55.6	1997	187	63	.0	.4	30.8	.0	.2	.0
Jun	81.2	59.7	70.5	101	1988	21	74.7	1988	40+	1964	16	64.8	1982	21	184	@	3.0	30.0	.0	.0	.0
Jul	85.1	64.1	74.6	102	1995	13	78.9	1999	46+	1967	4	69.8	1992	3	300	.2	6.3	31.0	.0	.0	.0
Aug	82.9	61.9	72.4	103	1948	28	78.9	1995	40	1986	28	68.1	1992	16	245	.1	3.9	31.0	.0	.0	.0
Sep	74.5	53.2	63.9	98	1955	9	69.0	1978	27+	1949	29	58.7	1993	101	66	.0	1.1	30.0	.0	.2	.0
Oct	62.2	41.6	51.9	94	1997	3	58.3	1971	14	1972	19	46.2	1988	411	4	.0	.1	27.6	.0	4.6	.0
Nov	44.7	28.4	36.6	78+	1950	1	44.7	1999	-11	1977	26	29.4	1976	854	0	.0	.0	10.5	3.7	19.2	.2
Dec	31.4	15.6	23.5	65+	1984	28	31.5	1998	-29	2000	25	11.2	2000	1286	0	.0	.0	1.3	14.6	29.1	4.8
Ann	58.2	38.6	48.4	103	Aug 1948	28	78.9+	Jul 1999	-38	Feb 1996	3	3.7	Jan 1977	6892	866	.3	14.9	228.7	54.6	138.3	20.3

\+ 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: 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	1.09	1.07	1.03	1996	19	3.10	1979	.18	1981
Feb	1.14	1.03	1.22	1986	5	3.58	1971	.00	1987
Mar	2.01	1.72	2.93	1998	31	5.30	1998	.24	1994
Apr	3.25	3.07	2.30	1984	30	7.27	1973	1.33	1971
May	3.80	3.84	3.30	1999	17	7.18	1999	.49	1981
Jun	4.42	4.41	4.50	1991	15	8.02	1997	.45	1988
Jul	4.12	3.77	5.70	1968	17	8.98	1993	1.03	1988
Aug	4.36	3.69	2.78	1966	21	9.20	1990	.81	1984
Sep	3.01	2.96	4.32	1961	13	6.86	1972	.20	1979
Oct	2.17	2.35	2.04	1967	8	5.13	1984	.10	1994
Nov	2.23	2.13	1.77	1992	21	5.10	1992	.11	1976
Dec	1.32	1.20	1.34	1973	5	2.53+	1987	.15	1998
Ann	32.92	32.75	5.70	Jul 1968	17	9.20	Aug 1990	.00	Feb 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.7	3.5	.4	@
Feb	6.2	3.5	.5	.1
Mar	8.1	4.7	1.2	.2
Apr	11.1	7.1	2.1	.6
May	11.3	7.7	2.5	.7
Jun	10.1	7.2	3.1	1.2
Jul	9.3	7.1	2.8	.9
Aug	9.8	7.1	2.8	1.2
Sep	9.1	5.6	2.3	.7
Oct	8.1	4.6	1.5	.4
Nov	9.0	5.0	1.2	.4
Dec	8.0	3.8	.6	.1
Ann	107.8	66.9	21.0	6.5

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	.27	.38	.53	.67	.81	.96	1.12	1.31	1.57	1.96	2.34
Feb	.04	.12	.28	.45	.63	.84	1.08	1.39	1.82	2.54	3.25
Mar	.40	.58	.88	1.15	1.42	1.72	2.05	2.45	2.98	3.83	4.64
Apr	1.18	1.49	1.93	2.29	2.65	3.00	3.39	3.85	4.43	5.32	6.14
May	1.25	1.61	2.14	2.59	3.02	3.47	3.96	4.54	5.28	6.42	7.48
Jun	.97	1.38	2.03	2.61	3.20	3.83	4.53	5.37	6.48	8.25	9.92
Jul	1.22	1.62	2.20	2.71	3.20	3.71	4.28	4.94	5.80	7.15	8.39
Aug	1.17	1.58	2.21	2.77	3.31	3.88	4.51	5.26	6.24	7.77	9.20
Sep	.57	.84	1.28	1.69	2.10	2.55	3.05	3.66	4.47	5.77	7.01
Oct	.41	.60	.92	1.21	1.51	1.84	2.20	2.64	3.23	4.18	5.07
Nov	.44	.65	.97	1.27	1.58	1.90	2.27	2.71	3.30	4.24	5.13
Dec	.28	.40	.59	.77	.95	1.14	1.35	1.61	1.95	2.49	3.01
Ann	24.21	25.92	28.09	29.74	31.19	32.59	34.04	35.63	37.55	40.33	42.73

\+ 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	10.8	8.3	6	3
Feb	5.8	5.9	6	4
Mar	4.4	3.0	2	#
Apr	1.4	.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	.2	.0	#	0
Nov	2.2	.0	#	0
Dec	8.1	5.2	3	2
Ann	32.9	22.4	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	1996	27	33.5	1979	35	1979	31	21	1979
Feb	6.0	1992	15	13.5	1975	36	1979	9	30	1979
Mar	8.0	1991	13	12.6	1993	20	1979	3	12	1979
Apr	8.0	1973	9	15.0	1973	15	1973	10	1	1975
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	4.0	1997	27	4.0	1997	4	1997	27	#	1997
Nov	5.0	1991	24	8.0	1986	8	1986	20	2	1991
Dec	8.0	1994	7	38.0	2000	28	2000	31	13	2000
Ann	12.0	Jan 1996	27	38.0	Dec 2000	36	Feb 1979	9	30	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.3	3.7	1.4	.4	.1
Feb	3.1	2.5	.6	.2	.0
Mar	1.7	1.4	.5	.3	.0
Apr	.4	.4	.2	.1	.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
Nov	1.2	.9	.4	.1	.0
Dec	4.0	2.8	1.1	.3	.0
Ann	15.7	11.7	4.2	1.4	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	23.0	17.0	12.8	7.9
Feb	19.1	13.0	10.7	5.3
Mar	5.4	3.5	2.8	1.7
Apr	.7	.4	.2	.1
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
Nov	2.2	1.0	.4	.0
Dec	18.7	11.9	6.5	1.9
Ann	69.1	46.8	33.4	16.9

+ 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	5/12	5/08	5/04	5/01	4/28	4/24	4/20	4/15
32	5/03	4/28	4/25	4/22	4/19	4/16	4/13	4/10	4/05
28	4/23	4/18	4/15	4/13	4/11	4/08	4/06	4/03	3/30
24	4/14	4/10	4/06	4/04	4/01	3/29	3/26	3/23	3/18
20	4/08	4/03	3/30	3/26	3/23	3/20	3/17	3/13	3/08
16	4/03	3/28	3/23	3/18	3/15	3/11	3/06	3/02	2/23

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	9/21	9/24	9/27	9/29	10/01	10/03	10/06	10/08	10/12
32	9/27	10/01	10/05	10/08	10/11	10/14	10/17	10/20	10/25
28	10/07	10/13	10/17	10/20	10/24	10/27	10/31	11/04	11/10
24	10/22	10/27	10/30	11/02	11/05	11/08	11/11	11/14	11/19
20	10/26	11/01	11/06	11/09	11/13	11/17	11/21	11/25	12/02
16	11/04	11/10	11/14	11/18	11/22	11/25	11/29	12/04	12/10

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	172	166	161	156	153	149	144	139	133
32	194	187	182	178	174	170	166	161	154
28	219	211	205	200	196	191	186	180	172
24	239	232	226	222	217	213	208	203	196
20	262	252	246	240	234	228	223	216	206
16	283	272	264	258	251	245	239	231	220

***** 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	1473	1154	905	481	187	21	3	16	101	411	854	1286	6892
60	1318	1014	750	343	101	4	0	2	37	274	704	1131	5678
57	1225	930	659	269	65	1	0	0	16	203	614	1038	5020
55	1163	874	601	224	46	0	0	0	8	161	556	976	4609
50	1008	741	459	130	16	0	0	0	1	82	418	825	3680
32	504	316	105	3	0	0	0	0	0	1	80	349	1358

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	55	87	223	516	900	1153	1320	1252	955	617	216	86	7380
55	0	0	6	46	232	463	607	539	273	65	3	0	2234
57	0	0	2	31	189	404	545	477	221	44	1	0	1914
60	0	0	0	16	133	317	452	387	152	22	0	0	1479
65	0	0	0	4	63	184	300	245	66	4	0	0	866
70	0	0	0	0	23	83	162	131	20	0	0	0	419

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	9	79	311	669	920	1076	1008	723	389	80	8	0	9	88	399	1068	1988	3064	4072	4795	5184	5264	5272
45	0	1	40	196	514	770	921	853	573	255	36	3	0	1	41	237	751	1521	2442	3295	3868	4123	4159	4162
50	0	1	17	108	363	620	766	698	427	146	12	0	0	1	18	126	489	1109	1875	2573	3000	3146	3158	3158
55	0	0	7	53	227	471	611	543	290	74	3	0	0	0	7	60	287	758	1369	1912	2202	2276	2279	2279
60	0	0	1	22	125	323	457	388	174	29	0	0	0	0	1	23	148	471	928	1316	1490	1519	1519	1519
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	2	49	180	402	608	739	682	449	215	43	3	0	2	51	231	633	1241	1980	2662	3111	3326	3369	3372

(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