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: BURLINGTON AP, IA **COOP ID: 131063**

Climate Division: IA 9 **NWS Call Sign: BRL** **Elevation: 692 Feet** **Lat: 40˚47N** **Lon: 91˚07W**

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	.0	.0	.0	70	1989	31	.0	0	-24	1957	14	.0	0	0	0	.0	.0	2.0	15.4	29.2	5.6
Feb	.0	.0	.0	71+	1954	15	.0	0	-26	1996	3	.0	0	0	0	.0	.0	4.6	10.3	26.1	1.0
Mar	.0	.0	.0	84	1991	26	.0	0	-13	1960	5	.0	0	0	0	.0	.0	14.5	2.5	19.0	.1
Apr	.0	.0	.0	88+	1952	29	.0	0	18	1950	13	.0	0	0	0	.0	.0	28.1	.0	2.1	.0
May	.0	.0	.0	94	1956	12	.0	0	31	1954	4	.0	0	0	0	.0	.4	30.9	.0	.1	.0
Jun	.0	.0	.0	103	1988	25	.0	0	41	1956	2	.0	0	0	0	.1	2.5	30.0	.0	.0	.0
Jul	.0	.0	.0	103+	1956	1	.0	0	48+	1950	14	.0	0	0	0	.4	8.8	31.0	.0	.0	.0
Aug	.0	.0	.0	102	1988	17	.0	0	41	1950	20	.0	0	0	0	.4	5.9	31.0	.0	.0	.0
Sep	.0	.0	.0	100	2000	1	.0	0	31	1995	22	.0	0	0	0	@	1.0	30.0	.0	.1	.0
Oct	.0	.0	.0	93	1953	2	.0	0	18	1952	29	.0	0	0	0	.0	@	30.0	.0	3.3	.0
Nov	.0	.0	.0	82	1999	8	.0	0	-2	1991	8	.0	0	0	0	.0	.0	13.9	1.6	18.6	@
Dec	.0	.0	.0	69	1991	8	.0	0	-22	1989	23	.0	0	0	0	.0	.0	3.0	10.3	27.7	3.0
Ann	.0	.0	.0	103+	Jun 1988	25	-99.9	0	-26	Feb 1996	3	99.9	0	0	0	.9	18.6	249.0	40.1	126.2	9.7

+ 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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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	1.13	.99	1.96	1955	5	2.61	1995	.09	1981
Feb	1.51	1.33	1.49+	1994	19	4.69	1997	.53	1987
Mar	2.87	2.57	2.13	1990	14	5.69+	1998	.49	1981
Apr	3.69	3.93	4.36	1950	24	6.89	1973	.94	1985
May	4.37	3.81	2.53	1996	27	11.96	1996	.92	1992
Jun	3.87	3.31	4.15	1950	18	9.22	1990	.32	1991
Jul	4.29	3.86	3.87	1995	4	10.70	1992	.84	1991
Aug	3.94	3.54	4.21	1952	15	9.25	1977	.58	2000
Sep	3.93	3.59	5.93	1961	13	9.67	1986	.07	1979
Oct	2.75	2.38	2.04	1991	4	6.64	1998	.74	1987
Nov	2.48	2.31	1.72	1990	27	6.57	1985	.19	1999
Dec	2.11	1.98	1.95	1987	15	5.53	1982	.21	1976
Ann	36.94	36.15	5.93	Sep 1961	13	11.96	May 1996	.07	Sep 1979

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.9	3.3	.5	.1
Feb	8.1	3.6	.7	.1
Mar	11.0	6.0	1.6	.5
Apr	12.5	7.2	2.5	.9
May	10.3	6.9	2.4	.8
Jun	7.9	4.7	2.1	1.1
Jul	10.3	6.5	2.7	1.3
Aug	11.1	6.4	2.7	1.0
Sep	8.2	5.9	2.2	.8
Oct	7.7	4.5	1.5	.6
Nov	9.5	5.3	1.6	.3
Dec	9.2	4.3	1.1	.4
Ann	114.7	64.6	21.6	7.9

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	.21	.31	.48	.63	.79	.95	1.14	1.37	1.67	2.16	2.62
Feb	.44	.58	.80	.98	1.16	1.35	1.56	1.81	2.13	2.64	3.10
Mar	.64	.91	1.33	1.71	2.09	2.49	2.95	3.49	4.20	5.34	6.42
Apr	1.23	1.58	2.09	2.53	2.95	3.38	3.85	4.40	5.11	6.21	7.23
May	1.18	1.60	2.23	2.78	3.32	3.89	4.52	5.26	6.24	7.76	9.19
Jun	.80	1.15	1.72	2.24	2.76	3.32	3.95	4.70	5.70	7.30	8.82
Jul	1.10	1.50	2.13	2.68	3.22	3.79	4.42	5.18	6.16	7.72	9.17
Aug	1.23	1.60	2.16	2.64	3.10	3.58	4.10	4.72	5.52	6.76	7.90
Sep	.92	1.29	1.86	2.38	2.89	3.43	4.04	4.76	5.71	7.22	8.63
Oct	.78	1.04	1.43	1.78	2.11	2.46	2.85	3.30	3.90	4.83	5.69
Nov	.41	.63	.99	1.33	1.68	2.06	2.49	3.02	3.73	4.87	5.97
Dec	.45	.64	.95	1.23	1.51	1.81	2.15	2.56	3.10	3.95	4.76
Ann	25.78	27.92	30.67	32.77	34.63	36.44	38.30	40.37	42.88	46.53	49.70

\+ 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	6.8	7.0	2	2
Feb	5.8	3.5	2	1
Mar	1.6	2.0	#	#
Apr	.1	#	#	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
Nov	1.1	.4	#	#
Dec	5.1	5.1	1	1
Ann	20.5	18.0	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	#	9999	99	11.7	1996	8	1995	23	4	1991
Feb	#	9999	99	13.3	1994	9	1993	27	4	1989
Mar	#	9999	99	4.8	1993	6	1993	1	1	1993
Apr	#	9999	99	.7	1993	#	1993	2	#	1993
May	#	9999	99	#	9999	0	0	0	0	0
Jun	#	9999	99	#	9999	0	0	0	0	0
Jul	#	9999	99	#	9999	0	0	0	0	0
Aug	#	9999	99	#	9999	0	0	0	0	0
Sep	#	9999	99	#	9999	0	0	0	0	0
Oct	#	9999	99	#+	1996	0	0	0	0	0
Nov	#	9999	99	3.8	1991	3	1993	28	1	1991
Dec	#	9999	99	10.6	1989	9	1989	22	4	1989
Ann	#+	Dec 9999	99	13.3	Feb 1994	9+	Feb 1993	27	4+	Jan 1991

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.2	2.2	.8	.3	.0
Feb	3.8	2.5	.6	.2	@
Mar	2.4	1.7	.7	.3	@
Apr	1.0	.7	.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	.2	.2	.1	.0	.0
Nov	1.7	1.2	.3	.1	.0
Dec	4.0	2.6	.7	.1	.0
Ann	17.3	11.1	3.4	1.1	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	11.3	5.5	2.4	.0
Feb	10.3	5.4	3.1	.4
Mar	3.2	1.9	1.1	.3
Apr	.9	.2	.1	.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	.1	.0	.0	.0
Nov	2.0	.6	.2	.0
Dec	10.7	6.8	4.0	1.2
Ann	38.5	20.4	10.9	1.9

+ 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	5/09	5/04	4/30	4/27	4/24	4/21	4/17	4/14	4/08
32	4/22	4/16	4/12	4/08	4/05	4/02	3/29	3/25	3/19
28	4/11	4/07	4/05	4/02	3/31	3/29	3/27	3/25	3/21
24	4/05	4/01	3/29	3/26	3/24	3/21	3/18	3/15	3/11
20	3/30	3/24	3/21	3/18	3/15	3/12	3/08	3/05	2/27
16	3/23	3/16	3/10	3/06	3/01	2/25	2/20	2/15	2/07

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	9/26	9/30	10/03	10/06	10/08	10/11	10/14	10/17	10/21
32	9/30	10/06	10/10	10/14	10/17	10/21	10/25	10/29	11/04
28	10/11	10/18	10/23	10/27	11/01	11/05	11/09	11/14	11/21
24	10/28	11/04	11/08	11/12	11/16	11/20	11/24	11/28	12/05
20	11/09	11/15	11/19	11/23	11/27	11/30	12/04	12/09	12/15
16	11/17	11/23	11/27	11/30	12/03	12/06	12/10	12/14	12/19

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	186	180	175	171	167	163	159	154	148
32	222	213	206	200	195	189	183	177	167
28	239	230	224	219	214	208	203	197	188
24	262	253	247	242	237	232	226	220	212
20	281	273	267	261	257	252	246	240	232
16	304	294	287	282	276	271	265	258	249

***** 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	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0
65	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0

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	6	21	131	356	715	968	1127	1061	781	465	113	19	6	27	158	514	1229	2197	3324	4385	5166	5631	5744	5763
45	0	5	68	216	560	818	972	906	631	318	49	5	0	5	73	289	849	1667	2639	3545	4176	4494	4543	4548
50	0	2	36	111	407	668	817	751	482	184	17	2	0	2	38	149	556	1224	2041	2792	3274	3458	3475	3477
55	0	0	14	39	265	518	662	596	333	90	4	0	0	0	14	53	318	836	1498	2094	2427	2517	2521	2521
60	0	0	3	11	152	369	507	441	197	39	2	0	0	0	3	14	166	535	1042	1483	1680	1719	1721	1721
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	2	19	85	200	437	662	775	727	490	273	71	6	2	21	106	306	743	1405	2180	2907	3397	3670	3741	3747

(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