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: TRIPOLI, IA **COOP ID: 138339**

Climate Division: IA 3 **NWS Call Sign:** **Elevation: 960 Feet** **Lat: 42˚49N** **Lon: 92˚16W**

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	23.1	4.4	13.8	58	1981	24	26.5	1990	-32	1970	21	.6	1977	1590	0	.0	.0	.4	22.6	30.8	11.8
Feb	29.5	11.2	20.4	66	1981	16	32.7	1998	-32	1996	2	8.6	1979	1250	0	.0	.0	1.3	15.2	26.9	6.9
Mar	42.4	23.6	33.0	84	1986	30	41.5	2000	-27	1962	1	23.1	1975	992	0	.0	.0	8.6	6.1	24.3	1.4
Apr	57.4	35.6	46.5	96	1980	22	54.0	1977	0	1982	5	40.9	1975	556	1	.0	.1	22.4	.4	10.5	@
May	70.1	47.3	58.7	94	1998	29	66.6	1977	25	1989	6	53.4	1997	240	44	.0	.5	30.7	.0	.9	.0
Jun	79.7	57.4	68.6	102	1980	26	73.6	1971	36	1993	1	63.4	1982	35	141	.1	2.7	30.0	.0	.0	.0
Jul	82.9	61.2	72.1	101	1955	30	76.0	1983	43	1971	31	66.1	1992	10	230	.1	5.0	31.0	.0	.0	.0
Aug	80.9	58.8	69.9	104	1988	18	75.8	1983	38	1950	20	64.2	1992	34	184	.1	3.1	31.0	.0	.0	.0
Sep	73.2	49.3	61.3	98	1955	9	66.1	1998	25	1949	29	55.4	1993	153	41	.0	1.1	29.9	.0	.8	.0
Oct	60.9	37.8	49.4	93	1997	4	56.3	1971	10	1972	19	43.5	1988	487	2	.0	.1	27.0	@	9.0	.0
Nov	42.4	24.6	33.5	79	1999	9	42.7	1999	-15	1977	26	25.6	1996	946	0	.0	.0	9.5	5.4	22.8	.8
Dec	28.2	11.3	19.8	65	2001	6	27.8	1998	-28+	2000	25	6.4	1985	1403	0	.0	.0	.9	18.6	30.3	6.6
Ann	55.9	35.2	45.6	104	Aug 1988	18	76.0	Jul 1983	-32+	Feb 1996	2	.6	Jan 1977	7696	643	.3	12.6	222.7	68.3	156.3	27.5

\+ 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	1.00	.85	1.55	1967	24	1.95	1997	.22	1991
Feb	.93	.77	1.55	1961	18	3.29	1971	.00	1996
Mar	2.15	2.24	1.80	1951	12	4.80	1990	.02	1994
Apr	3.71	3.59	5.50	1951	29	8.55	1991	1.15	1997
May	4.40	4.31	5.53	1999	17	10.73	1982	1.33	1994
Jun	4.95	4.71	4.35	1951	26	9.75	1998	1.71	1989
Jul	4.51	4.39	5.15	1968	17	9.12	1999	.92	1975
Aug	5.17	4.03	5.50	1981	31	15.26	1979	.45	1971
Sep	3.18	2.56	3.10	2001	8	7.23	1972	.41	1979
Oct	2.61	2.63	3.40	1970	9	5.73	1998	.16	1975
Nov	2.41	2.47	3.10	1991	1	5.86	1991	.05	1976
Dec	1.25	1.14	1.30	1973	4	3.36	1982	.28+	1998
Ann	36.27	36.80	5.53	May 1999	17	15.26	Aug 1979	.00	Feb 1996

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.4	3.8	.3	@
Feb	5.3	3.2	.4	.1
Mar	7.8	5.4	1.3	.4
Apr	10.0	7.8	2.6	.7
May	11.4	8.7	3.1	1.0
Jun	9.8	7.9	3.7	1.5
Jul	9.4	7.2	3.1	1.2
Aug	9.0	7.1	3.5	1.7
Sep	7.9	5.7	2.4	.7
Oct	7.6	5.4	1.9	.6
Nov	7.9	5.3	1.6	.7
Dec	6.5	4.3	.5	.1
Ann	99.0	71.8	24.4	8.7

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	.28	.37	.52	.64	.76	.89	1.03	1.20	1.41	1.75	2.07
Feb	.03	.09	.22	.35	.50	.67	.88	1.14	1.50	2.11	2.72
Mar	.34	.53	.84	1.14	1.44	1.78	2.16	2.62	3.25	4.26	5.23
Apr	1.30	1.65	2.16	2.59	3.00	3.42	3.87	4.41	5.09	6.14	7.11
May	1.57	1.98	2.58	3.08	3.56	4.06	4.59	5.22	6.02	7.25	8.38
Jun	1.87	2.33	2.99	3.54	4.07	4.60	5.18	5.86	6.71	8.03	9.24
Jul	1.40	1.83	2.46	3.01	3.54	4.09	4.69	5.40	6.31	7.73	9.05
Aug	.87	1.32	2.07	2.78	3.51	4.30	5.21	6.31	7.78	10.16	12.44
Sep	.78	1.08	1.54	1.96	2.36	2.80	3.28	3.85	4.60	5.78	6.89
Oct	.52	.75	1.14	1.49	1.84	2.22	2.66	3.18	3.86	4.97	6.01
Nov	.36	.57	.91	1.25	1.60	1.98	2.41	2.95	3.67	4.83	5.96
Dec	.23	.35	.53	.70	.87	1.06	1.27	1.53	1.87	2.41	2.94
Ann	24.82	27.00	29.82	31.97	33.88	35.74	37.67	39.81	42.41	46.19	49.48

\+ 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	6.9	6.0	5	3
Feb	6.7	5.7	7	3
Mar	5.1	5.0	2	#
Apr	2.4	.5	#	#
May	#	.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
Nov	4.0	2.8	1	#
Dec	7.4	7.0	4	3
Ann	32.6	27.0	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	12.0	1996	27	18.0	1979	28	1979	31	17	1979
Feb	8.0	1971	22	19.1	1971	31	1979	12	27	1979
Mar	7.0	1971	18	12.7	1975	15	1979	2	9	1978
Apr	11.3	1973	9	17.5	1973	17	1973	9	2	1973
May	#	1989	6	#	1989	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	2.7	1997	27	2.7	1997	2	1997	27	#+	1997
Nov	9.0	1992	26	17.0	1986	15	1986	20	3	1991
Dec	9.0	1985	1	18.7	1985	31	2000	31	16	1985
Ann	12.0	Jan 1996	27	19.1	Feb 1971	31+	Dec 2000	31	27	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.8	3.3	.7	.3	.1
Feb	3.2	2.1	.6	.3	.0
Mar	2.4	2.0	.6	.2	.0
Apr	.9	.7	.4	.1	@
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	.1	.1	.0	.0	.0
Nov	2.1	1.4	.7	.2	.0
Dec	4.4	3.1	.9	.3	.0
Ann	17.9	12.7	3.9	1.4	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	16.3	12.0	5.2	.6
Feb	-9.9	-9.9	-9.9	-9.9
Mar	3.3	2.3	1.2	.5
Apr	.7	.4	.1	.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	.0
Nov	2.6	1.8	.9	.1
Dec	10.9	7.8	3.0	.0
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	5/22	5/17	5/14	5/11	5/09	5/06	5/04	5/01	4/26
32	5/12	5/07	5/04	5/01	4/28	4/25	4/22	4/19	4/14
28	4/28	4/23	4/20	4/17	4/14	4/12	4/09	4/06	4/01
24	4/18	4/14	4/12	4/09	4/07	4/05	4/03	3/31	3/27
20	4/12	4/08	4/05	4/03	3/31	3/29	3/27	3/24	3/20
16	4/07	4/02	3/29	3/25	3/22	3/19	3/15	3/11	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	9/14	9/18	9/20	9/23	9/25	9/27	9/29	10/02	10/06
32	9/22	9/26	9/29	10/01	10/03	10/06	10/08	10/11	10/15
28	9/29	10/04	10/08	10/11	10/14	10/17	10/20	10/24	10/29
24	10/15	10/20	10/23	10/26	10/29	11/01	11/04	11/07	11/12
20	10/21	10/26	10/29	11/01	11/03	11/06	11/09	11/12	11/17
16	10/31	11/05	11/09	11/13	11/16	11/20	11/23	11/27	12/03

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	154	148	144	141	138	135	132	128	122
32	176	170	165	161	158	154	150	146	139
28	204	196	191	186	182	177	173	167	160
24	221	215	211	207	204	201	197	193	187
20	235	228	224	220	216	213	209	204	198
16	265	256	249	244	239	233	228	221	212

***** 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	1590	1250	992	556	240	35	10	34	153	487	946	1403	7696
60	1435	1110	837	412	142	8	0	9	68	342	796	1248	6407
57	1342	1026	744	331	96	3	0	2	36	264	706	1155	5705
55	1280	970	683	281	72	1	0	0	22	217	647	1093	5266
50	1125	833	539	173	29	0	0	0	4	120	506	938	4267
32	601	389	142	6	0	0	0	0	0	3	127	438	1706

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	34	63	173	441	827	1096	1243	1173	878	540	172	58	6698
55	0	0	1	26	186	407	530	460	210	41	2	0	1863
57	0	0	0	17	149	349	468	400	164	26	0	0	1573
60	0	0	0	7	101	264	375	314	106	11	0	0	1178
65	0	0	0	1	44	141	230	184	41	2	0	0	643
70	0	0	0	0	15	56	113	91	10	0	0	0	285

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	6	66	259	601	870	1012	938	662	331	61	4	0	6	72	331	932	1802	2814	3752	4414	4745	4806	4810
45	0	0	27	156	448	720	857	783	516	209	24	1	0	0	27	183	631	1351	2208	2991	3507	3716	3740	3741
50	0	0	9	82	310	570	702	628	369	114	8	0	0	0	9	91	401	971	1673	2301	2670	2784	2792	2792
55	0	0	3	35	188	422	547	473	244	51	2	0	0	0	3	38	226	648	1195	1668	1912	1963	1965	1965
60	0	0	0	13	95	280	392	321	138	20	0	0	0	0	0	13	108	388	780	1101	1239	1259	1259	1259
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	41	160	366	565	682	622	414	199	37	2	0	1	42	202	568	1133	1815	2437	2851	3050	3087	3089

(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