

Climatology of the United States

No. 20

1971-2000

Station: TOLEDO 3 N, IA

COOP ID: 138296

Climate Division: IA 5

NWS Call Sign:

Elevation: 940 Feet Lat: 42°02N Lon: 92°35W

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	26.5	6.9	16.7	60+	1981	25	27.8	1989	-30	1963	21	4.2	1979	1497	0	.0	.0	.7	19.8	30.6	10.3
Feb	32.8	13.0	22.9	67	1981	19	34.4	1998	-34	1996	3	9.4	1979	1179	0	.0	.0	3.4	13.7	26.3	6.1
Mar	45.3	24.8	35.1	88	1986	30	43.0	1973	-31	1962	1	25.1	1975	928	0	.0	.0	11.5	4.4	23.2	.9
Apr	59.0	35.7	47.4	95	1980	23	53.6	1977	5	1982	6	41.2	1975	530	1	.0	.1	23.0	.3	10.2	.0
May	70.9	47.1	59.0	94	1967	26	66.5	1977	26+	1961	1	53.8	1997	229	44	.0	.3	30.7	.0	1.2	.0
Jun	80.4	57.1	68.8	101+	1988	21	73.7	1971	36	1993	1	64.4	1982	32	144	.1	3.2	30.0	.0	.0	.0
Jul	84.7	61.0	72.9	101+	1955	30	76.6	1983	41	1972	5	67.6	1992	8	251	.2	7.5	31.0	.0	.0	.0
Aug	82.4	58.4	70.4	103+	1988	1	77.1	1983	38	1950	20	64.9	1992	36	203	.4	5.4	31.0	.0	.0	.0
Sep	75.1	48.4	61.8	100	1953	28	66.6	1998	23	1974	23	55.6	1974	142	43	.0	1.5	30.0	.0	1.0	.0
Oct	63.0	36.7	49.9	95	1953	2	55.6	1971	10	1997	27	43.7+	1988	473	2	.0	.1	27.7	@	9.4	.0
Nov	45.8	25.0	35.4	82	1968	1	43.4	1999	-10+	1976	30	27.7	1991	889	0	.0	.0	11.9	4.1	22.1	.3
Dec	31.2	12.6	21.9	69	1998	5	29.9	1982	-26	1985	19	8.5	2000	1337	0	.0	.0	2.0	14.7	29.6	5.7
Ann	58.1	35.6	46.9	103+	Aug 1988	1	77.1	Aug 1983	-34	Feb 1996	3	4.2	Jan 1979	7280	688	.7	18.1	232.9	57.0	153.6	23.3

+ 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/normal/usnormals.html

Issue Date: February 2004

(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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No. 20 1971-2000

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: TOLEDO 3 N, IA

COOP ID: 138296

Climate Division: IA 5

NWS Call Sign:

Elevation: 940 Feet Lat: 42°02N

Lon: 92°35W

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	1.04	1.03	1.60	1960	12	2.58	1996	.03+	1987	6.0	3.1	.5	.1	.12	.20	.35	.49	.65	.82	1.02	1.27	1.61	2.17	2.72
Feb	1.09	.84	1.15	1961	18	2.21	1997	.10	1987	5.7	3.0	.6	@	.18	.27	.43	.58	.74	.91	1.10	1.34	1.65	2.16	2.65
Mar	2.19	1.66	2.10+	1977	12	5.62	1998	.26	1981	7.6	4.6	1.5	.4	.29	.47	.78	1.09	1.41	1.76	2.17	2.68	3.36	4.48	5.56
Apr	3.33	2.94	3.14	1991	29	9.53	1991	.82	1980	10.1	6.8	2.3	.7	.85	1.16	1.65	2.07	2.50	2.94	3.44	4.02	4.79	6.00	7.14
May	4.46	3.86	2.72	1990	25	10.07	1974	.69	1981	12.3	8.6	3.1	1.1	1.31	1.73	2.37	2.92	3.46	4.02	4.63	5.36	6.30	7.78	9.15
Jun	5.10	4.87	4.77	1982	15	11.83	1998	.90	1988	10.9	7.4	3.5	1.6	1.58	2.06	2.78	3.40	4.00	4.62	5.30	6.10	7.14	8.75	10.24
Jul	4.39	3.65	5.47	1962	14	14.65	1993	.17	1991	8.8	6.5	2.9	1.3	.59	.94	1.57	2.18	2.82	3.53	4.35	5.36	6.73	8.96	11.12
Aug	4.45	3.07	5.85	1977	16	14.73	1977	.61	1984	8.7	6.3	2.7	1.2	.64	1.01	1.65	2.27	2.91	3.62	4.44	5.44	6.79	8.99	11.10
Sep	3.36	3.33	3.34	1989	8	7.27	1986	.64	1979	8.1	5.9	2.3	.9	.87	1.18	1.67	2.10	2.52	2.97	3.47	4.05	4.82	6.04	7.17
Oct	2.58	2.36	2.90	1970	9	8.01	1998	.18	1999	7.0	5.0	1.9	.5	.35	.56	.92	1.28	1.66	2.08	2.56	3.15	3.95	5.26	6.52
Nov	2.27	1.94	3.93	1958	18	6.22	1992	.04	1976	7.9	4.5	1.2	.6	.26	.43	.75	1.06	1.40	1.78	2.22	2.77	3.52	4.76	5.96
Dec	1.19	1.20	1.22	1982	28	2.72	1982	.15	1999	6.0	3.3	.6	@	.26	.37	.55	.71	.86	1.03	1.22	1.45	1.74	2.22	2.67
Ann	35.45	34.62	5.85	Aug 1977	16	14.73	Aug 1977	.03+	Jan 1987	99.1	65.0	23.1	8.4	21.67	24.19	27.49	30.06	32.37	34.64	37.02	39.68	42.94	47.76	51.99

+ 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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Station: TOLEDO 3 N, IA

COOP ID: 138296

Climate Division: IA 5

NWS Call Sign:

Elevation: 940 Feet

Lat: 42°02N

Lon: 92°35W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										Snow Fall >= Thresholds					Snow Depth >= Thresholds			
Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	8.4	7.0	3	2	11.0	1971	4	25.0	1979	16	1979	30	9	1979	3.7	2.9	1.0	.4	@	16.2	11.0	6.2	1.6
Feb	5.7	6.0	3	2	8.0	1972	10	16.0	1972	15	1979	9	12	1979	3.1	2.2	.7	.3	.0	13.2	8.5	4.2	1.0
Mar	4.0	3.0	1	#	6.8	1999	9	16.0	1984	9+	1998	9	3	1998	2.1	1.5	.5	.1	.0	5.3	2.1	.7	.0
Apr	1.4	.0	#	#	8.0	1973	9	12.0	1973	12	1973	10	1	1982	.5	.4	.2	.1	.0	.9	.4	.3	.1
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.3	.0	#	0	6.7	1997	27	7.2	1997	7	1997	27	1	1997	.1	.1	@	@	.0	.2	.1	.1	.0
Nov	2.3	1.0	#	#	7.0	1972	14	7.7	1991	7	1990	7	2	1972	1.1	.8	.3	.1	.0	2.2	.9	.3	.0
Dec	7.0	4.8	2	2	10.1	1994	7	27.0	2000	26	2000	31	13	2000	3.1	2.5	.8	.3	@	10.9	7.0	3.9	1.4
Ann	29.1	21.8	N/A	N/A	11.0	Jan 1971	4	27.0	Dec 2000	26	Dec 2000	31	13	Dec 2000	13.7	10.4	3.5	1.3	@	48.9	30.0	15.7	4.1

+ 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	5/26	5/21	5/18	5/14	5/12	5/09	5/06	5/02	4/27
32	5/13	5/08	5/05	5/02	4/29	4/26	4/23	4/20	4/15
28	5/03	4/27	4/23	4/20	4/17	4/14	4/10	4/06	4/01
24	4/19	4/16	4/13	4/11	4/09	4/07	4/05	4/03	3/31
20	4/10	4/06	4/03	3/31	3/29	3/26	3/24	3/21	3/17
16	4/06	3/31	3/26	3/23	3/19	3/16	3/12	3/08	3/02
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	9/11	9/16	9/19	9/21	9/24	9/26	9/29	10/02	10/07
32	9/20	9/25	9/28	10/01	10/03	10/06	10/09	10/12	10/16
28	9/27	10/03	10/08	10/11	10/15	10/18	10/22	10/26	11/01
24	10/07	10/14	10/18	10/22	10/25	10/29	11/02	11/06	11/12
20	10/18	10/25	10/29	11/02	11/05	11/09	11/13	11/17	11/23
16	10/30	11/05	11/09	11/13	11/16	11/19	11/23	11/27	12/02
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	153	147	142	138	135	131	127	122	116
32	176	169	164	160	156	153	148	144	137
28	203	195	190	185	180	175	171	165	157
24	218	211	206	202	198	194	190	185	178
20	244	236	230	225	221	216	211	205	197
16	268	259	252	246	241	236	230	223	214

* 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	1497	1179	928	530	229	32	8	36	142	473	889	1337	7280
60	1342	1039	773	385	132	7	0	10	60	330	739	1182	5999
57	1249	955	680	304	88	2	0	4	30	253	650	1089	5304
55	1187	899	620	254	64	1	0	1	17	207	593	1027	4870
50	1032	770	477	146	24	0	0	0	3	115	454	874	3895
32	516	349	109	2	0	0	0	0	0	3	101	387	1467

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	42	93	204	463	838	1101	1266	1190	891	555	202	73	6918
55	0	0	1	25	189	412	553	478	219	47	3	0	1927
57	0	0	0	15	150	354	491	419	172	30	1	0	1632
60	0	0	0	6	101	269	398	333	111	14	0	0	1232
65	0	0	0	1	44	144	251	203	43	2	0	0	688
70	0	0	0	0	14	56	127	108	11	0	0	0	316

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	13	85	274	615	885	1045	979	695	361	84	6	0	13	98	372	987	1872	2917	3896	4591	4952	5036	5042
45	0	1	42	171	464	735	890	824	547	234	37	3	0	1	43	214	678	1413	2303	3127	3674	3908	3945	3948
50	0	0	15	91	319	586	735	669	402	133	13	0	0	0	15	106	425	1011	1746	2415	2817	2950	2963	2963
55	0	0	6	45	193	436	580	515	270	71	3	0	0	0	6	51	244	680	1260	1775	2045	2116	2119	2119
60	0	0	1	16	102	296	428	361	166	30	0	0	0	0	1	17	119	415	843	1204	1370	1400	1400	1400
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	11	59	175	376	579	709	651	445	234	56	4	0	11	70	245	621	1200	1909	2560	3005	3239	3295	3299

(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:

www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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