

Climatology of the United States

No. 20

1971-2000

Station: AMES 8 WSW, IA

COOP ID: 130200

Climate Division: IA 5

NWS Call Sign:

Elevation: 1,099 Feet Lat: 42°01N

Lon: 93°46W

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	27.4	9.6	18.5	60	1981	24	31.2	1990	-26	1970	21	5.6	1979	1441	0	.0	.0	1.0	19.3	30.5	8.8
Feb	33.6	16.0	24.8	67	1981	17	35.1	1987	-28	1996	2	11.4	1979	1126	0	.0	.0	3.5	12.9	26.2	4.7
Mar	46.8	27.3	37.1	90	1986	29	44.0	2000	-11	1998	12	28.1	1975	868	0	.0	@	12.7	4.8	22.2	.6
Apr	61.5	38.1	49.8	97	1980	22	56.7	1977	8+	1975	3	43.4	1983	463	6	.0	.2	24.6	.3	8.0	.0
May	72.7	49.8	61.3	100	1967	25	68.3	1977	27+	1966	10	56.1	1997	181	65	.0	.5	30.9	.0	.6	.0
Jun	81.6	59.2	70.4	101	1985	8	74.9	1971	38	1969	3	65.2	1982	19	180	.1	3.6	30.0	.0	.0	.0
Jul	84.3	63.2	73.8	101+	1977	4	78.2	1977	44	1971	30	68.7	1992	5	278	.2	7.2	31.0	.0	.0	.0
Aug	82.1	60.8	71.5	102	1988	17	78.3	1983	40	1967	31	66.0	1992	19	219	.2	4.6	31.0	.0	.0	.0
Sep	76.2	52.2	64.2	98	2000	1	70.0	1998	29+	1972	30	58.6	1993	104	79	.0	2.0	29.9	.0	.5	.0
Oct	63.9	40.5	52.2	95	1997	3	57.2	1971	13	1972	19	46.8	1976	401	3	.0	.2	28.3	.1	6.9	.0
Nov	45.2	27.3	36.3	80	1999	13	45.7	1999	-7	1977	26	28.4	1991	863	0	.0	.0	11.4	4.6	21.3	.4
Dec	31.2	14.9	23.1	66+	1984	28	30.3	1979	-24	1989	23	8.5	1983	1301	0	.0	.0	2.0	14.8	30.0	4.9
Ann	58.9	38.2	48.6	102	Aug 1988	17	78.3	Aug 1983	-28	Feb 1996	2	5.6	Jan 1979	6791	830	.5	18.3	236.3	56.8	146.2	19.4

+ 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: 1964-2001

(3) Derived from 1971-2000 serially complete daily data

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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: AMES 8 WSW, IA

COOP ID: 130200

Climate Division: IA 5

NWS Call Sign:

Elevation: 1,099 Feet Lat: 42°01N

Lon: 93°46W

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	.74	.77	1.18	1966	2	1.86	1982	.00+	1981	5.1	1.9	.3	@	.00	.08	.21	.33	.45	.58	.73	.92	1.17	1.58	1.98
Feb	.86	.59	2.00	1976	21	3.45	1971	.17+	1996	5.3	2.5	.3	.1	.12	.18	.31	.43	.55	.69	.85	1.05	1.31	1.75	2.17
Mar	2.05	2.00	1.68	1993	30	5.01	1990	.14	1994	7.9	4.3	1.4	.4	.26	.43	.72	1.00	1.31	1.64	2.03	2.51	3.16	4.23	5.26
Apr	3.50	3.03	2.69	1968	23	9.17	1991	.82	2000	11.1	7.0	2.5	.7	.90	1.23	1.74	2.19	2.63	3.10	3.61	4.23	5.03	6.29	7.48
May	4.35	4.13	4.71	1970	13	9.47	1974	1.00	1981	11.7	8.1	2.9	1.1	1.24	1.65	2.28	2.82	3.35	3.90	4.51	5.23	6.17	7.64	9.00
Jun	5.01	4.76	4.02	1966	12	10.79	1998	.58	1992	10.6	7.5	3.3	1.6	1.52	1.99	2.70	3.32	3.91	4.53	5.20	6.00	7.03	8.64	10.13
Jul	4.43	3.96	4.65	1993	9	16.39	1993	1.10	1976	9.2	6.8	3.0	1.4	1.08	1.50	2.15	2.72	3.29	3.89	4.56	5.36	6.40	8.06	9.61
Aug	4.33	4.07	5.59	1988	22	12.60	1987	.25	1976	8.9	6.0	2.6	1.5	.60	.95	1.57	2.18	2.81	3.50	4.30	5.29	6.62	8.79	10.89
Sep	3.09	2.61	2.43	2001	8	8.11	1973	.34	1976	8.2	5.6	2.4	.8	.78	1.07	1.52	1.92	2.31	2.73	3.19	3.74	4.45	5.58	6.65
Oct	2.67	2.86	2.81	1973	11	6.25	1983	.27	1988	8.3	5.2	1.7	.6	.42	.64	1.03	1.40	1.78	2.20	2.67	3.26	4.04	5.31	6.53
Nov	1.98	1.95	2.00	1992	1	5.45	1983	.01	1976	7.7	4.3	1.2	.4	.20	.34	.61	.89	1.19	1.52	1.92	2.42	3.09	4.22	5.32
Dec	1.06	.84	1.47	1982	5	4.17	1982	.13	1989	5.9	2.8	.7	.1	.15	.23	.39	.53	.69	.86	1.06	1.30	1.63	2.16	2.68
Ann	34.07	35.54	5.59	Aug 1988	22	16.39	Jul 1993	.00+	Jan 1981	99.9	62.0	22.3	8.7	20.94	23.34	26.49	28.93	31.14	33.30	35.56	38.08	41.19	45.76	49.77

+ 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: 1964-2001

(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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Climate Division: IA 5

NWS Call Sign:

Elevation: 1,099 Feet

Lat: 42°01N

Lon: 93°46W

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	6.2	6.0	3	3	9.0	1971	4	17.2	1971	17	1979	31	11	1971	4.5	2.3	.7	.3	.0	16.7	10.6	5.5	1.4
Feb	6.8	6.6	3	2	10.2	1997	4	15.4	1997	22	1979	11	16	1979	3.6	2.2	.7	.4	@	13.8	8.9	5.2	.8
Mar	4.9	3.5	1	#	12.0	1998	8	16.5	1984	13	1983	27	4	1998	2.6	1.5	.5	.2	@	5.2	2.7	1.5	.2
Apr	2.1	.2	#	#	9.0	1973	9	15.9	1973	12	1973	9	1	1982	1.2	.6	.3	.1	.0	.8	.2	.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	5.4	1997	26	5.4	1997	4	1997	26	#+	1999	.3	.1	@	@	.0	.2	.1	.0	.0
Nov	2.5	2.0	#	#	6.0	1983	23	9.8	1983	8	1991	25	2	1991	1.9	1.1	.3	@	.0	2.9	1.2	.3	.0
Dec	6.5	6.0	2	1	9.1	1990	3	15.7	1977	15	2000	31	9+	2000	4.1	2.4	.7	.3	.0	13.3	6.6	3.1	.2
Ann	29.3	24.3	N/A	N/A	12.0	Mar 1998	8	17.2	Jan 1971	22	Feb 1979	11	16	Feb 1979	18.2	10.2	3.2	1.3	@	52.9	30.3	15.7	2.6

+ 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	5/16	5/12	5/09	5/06	5/04	5/01	4/29	4/26	4/22
32	5/09	5/05	5/01	4/28	4/26	4/23	4/20	4/16	4/12
28	4/20	4/16	4/14	4/12	4/10	4/08	4/06	4/03	3/31
24	4/16	4/12	4/09	4/07	4/04	4/02	3/30	3/28	3/24
20	4/12	4/07	4/03	3/31	3/28	3/25	3/22	3/18	3/13
16	4/05	3/30	3/25	3/21	3/18	3/14	3/10	3/05	2/27
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	9/18	9/22	9/25	9/27	9/29	10/01	10/04	10/07	10/10
32	9/22	9/27	9/30	10/03	10/06	10/09	10/12	10/15	10/20
28	10/05	10/09	10/12	10/14	10/17	10/19	10/21	10/24	10/28
24	10/15	10/20	10/23	10/26	10/29	11/01	11/05	11/08	11/13
20	10/23	10/28	11/01	11/05	11/08	11/11	11/14	11/18	11/23
16	10/30	11/05	11/09	11/13	11/16	11/19	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	162	157	154	151	148	145	142	138	133
32	182	175	171	166	163	159	155	150	143
28	204	199	195	192	189	186	183	180	175
24	227	220	215	211	207	204	200	195	188
20	246	239	233	228	224	220	215	209	202
16	271	262	254	248	243	237	231	224	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	1441	1126	868	463	181	19	5	19	104	401	863	1301	6791
60	1286	986	713	327	98	3	0	3	40	260	713	1146	5575
57	1193	902	622	255	62	1	0	0	19	189	624	1053	4920
55	1131	849	567	211	44	0	0	0	10	147	567	991	4517
50	977	719	425	121	15	0	0	0	1	69	431	839	3597
32	476	309	89	3	0	0	0	0	0	1	94	360	1332

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	58	106	244	536	907	1151	1295	1223	965	626	222	83	7416
55	0	3	9	54	238	461	582	510	285	59	5	0	2206
57	0	0	2	38	194	402	520	449	234	39	2	0	1880
60	0	0	0	20	137	314	427	358	165	18	0	0	1439
65	0	0	0	6	65	180	278	219	79	3	0	0	830
70	0	0	0	1	23	79	145	111	28	0	0	0	387

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	17	104	329	672	925	1063	986	736	400	82	6	0	17	121	450	1122	2047	3110	4096	4832	5232	5314	5320
45	0	3	56	217	517	775	908	831	586	266	38	2	0	3	59	276	793	1568	2476	3307	3893	4159	4197	4199
50	0	0	23	126	370	625	753	676	439	162	16	0	0	0	23	149	519	1144	1897	2573	3012	3174	3190	3190
55	0	0	7	64	236	475	598	521	306	84	3	0	0	0	7	71	307	782	1380	1901	2207	2291	2294	2294
60	0	0	1	28	129	327	443	366	189	34	0	0	0	0	1	29	158	485	928	1294	1483	1517	1517	1517
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	13	72	209	410	612	724	659	469	245	51	5	0	13	85	294	704	1316	2040	2699	3168	3413	3464	3469

(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/normal/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