

Climatology of the United States

No. 20

1971-2000

Station: WASHINGTON, IA

COOP ID: 138688

Climate Division: IA 9

NWS Call Sign:

Elevation: 690 Feet Lat: 41° 17N Lon: 91° 42W

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	29.1	11.0	20.1	70	1989	31	32.1	1989	-26+	1912	12	7.4	1979	1393	0	.0	.0	2.0	16.4	29.1	6.4
Feb	35.4	16.7	26.1	76	1930	24	36.4	1998	-29	1905	13	13.4	1979	1090	0	.0	.0	5.0	10.5	23.9	3.2
Mar	48.6	28.0	38.3	89	1986	29	45.1	1973	-16	1962	1	30.2	1975	829	0	.0	.0	15.2	2.6	18.1	.2
Apr	62.2	40.0	51.1	94	1930	10	57.2	1977	7	1899	1	45.0	1983	423	6	.0	.1	26.2	.1	5.2	.0
May	72.6	51.3	62.0	103	1934	31	68.7	1977	24	1907	4	56.9	1997	164	69	.0	.6	30.8	.0	.1	.0
Jun	81.8	60.8	71.3	107	1936	29	76.7	1971	35	1903	12	66.4	1982	16	205	.2	5.1	30.0	.0	.0	.0
Jul	86.3	65.2	75.8	113	1936	15	79.8	1983	45	1947	22	71.6	1992	0	333	.6	11.6	31.0	.0	.0	.0
Aug	84.1	62.8	73.5	109	1930	3	81.6	1983	37	1901	23	67.6	1992	16	278	.8	7.7	31.0	.0	.0	.0
Sep	76.8	53.4	65.1	102	1933	9	70.2	1998	23	1942	28	60.0	1993	89	91	@	2.7	30.0	.0	.2	.0
Oct	65.1	42.0	53.6	96	1938	4	61.2	1971	6	1925	30	47.7	1988	363	8	.0	.1	29.2	.0	4.3	.0
Nov	47.4	28.7	38.1	79+	1915	7	44.8	1975	-7	1898	26	31.2	1976	808	0	.0	.0	13.9	2.1	17.0	.2
Dec	33.8	17.2	25.5	71	1998	4	33.3	1982	-25	1924	28	12.0	1983	1225	0	.0	.0	3.2	11.3	27.6	3.6
Ann	60.3	39.8	50.0	113	Jul 1936	15	81.6	Aug 1983	-29	Feb 1905	13	7.4	Jan 1979	6416	990	1.6	27.9	247.5	43.0	125.5	13.6

+ 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: 1893-2001

(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: WASHINGTON, IA

COOP ID: 138688

Climate Division: IA 9

NWS Call Sign:

Elevation: 690 Feet Lat: 41°17N

Lon: 91°42W

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	1.21	1.10	2.15	1897	4	2.93	1996	.01	1981	7.0	3.7	.6	@	.16	.25	.43	.59	.77	.97	1.20	1.48	1.86	2.48	3.09
Feb	1.12	.93	2.00	2001	9	4.08	1997	.02	1987	6.0	3.5	.5	@	.16	.25	.41	.57	.73	.91	1.12	1.37	1.72	2.28	2.82
Mar	2.26	1.84	4.41	1916	26	5.48	1998	.27	1981	7.8	5.0	1.2	.4	.47	.68	1.01	1.32	1.62	1.94	2.31	2.75	3.33	4.26	5.14
Apr	3.02	2.58	3.34	1981	12	7.24	1973	.56	1985	9.3	6.1	1.9	.6	.71	1.00	1.44	1.83	2.22	2.64	3.11	3.66	4.39	5.54	6.63
May	4.45	3.42	3.72	1908	18	11.49	1996	1.03	1992	10.7	7.5	3.2	1.2	1.11	1.53	2.18	2.75	3.32	3.92	4.59	5.38	6.42	8.06	9.60
Jun	4.11	3.76	6.35	1930	14	9.94	1990	.83	1992	10.0	7.1	2.7	1.0	1.35	1.74	2.32	2.80	3.27	3.76	4.29	4.91	5.70	6.94	8.08
Jul	4.15	3.85	5.80	1924	24	11.33	1993	.45	1975	9.3	6.8	2.9	1.2	.69	1.05	1.66	2.23	2.81	3.45	4.18	5.07	6.25	8.17	10.01
Aug	3.91	4.25	7.35	1943	3	8.55	1993	1.10	1971	8.9	6.8	2.5	1.0	1.29	1.66	2.20	2.66	3.11	3.57	4.07	4.66	5.42	6.59	7.68
Sep	3.75	3.44	4.05	1992	10	9.56	1992	.04	1979	8.0	6.2	2.5	1.1	.65	.98	1.52	2.04	2.56	3.14	3.79	4.58	5.64	7.34	8.97
Oct	2.61	2.22	4.28	1927	2	7.19	1998	.25	1975	7.4	5.1	1.7	.5	.45	.68	1.06	1.42	1.78	2.18	2.63	3.18	3.91	5.09	6.21
Nov	2.36	2.32	5.00	1933	25	6.36	1983	.04	1989	7.7	5.1	1.6	.4	.30	.49	.83	1.15	1.50	1.88	2.33	2.88	3.62	4.84	6.02
Dec	1.67	1.50	3.17	1971	15	5.58	1971	.26	1976	7.1	4.2	.9	.2	.37	.52	.77	.99	1.21	1.45	1.71	2.03	2.45	3.13	3.76
Ann	34.62	33.27	7.35	Aug 1943	3	11.49	May 1996	.01	Jan 1981	99.2	67.1	22.2	7.6	23.08	25.26	28.08	30.24	32.18	34.06	36.02	38.19	40.84	44.71	48.08

+ 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: 1893-2001

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

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Station: WASHINGTON, IA

COOP ID: 138688

Climate Division: IA 9

NWS Call Sign:

Elevation: 690 Feet

Lat: 41° 17N

Lon: 91° 42W

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	6.8	6.0	3	2	9.0	1971	4	24.0	1979	28	1979	31	19	1979	3.8	3.1	.9	.2	.0	17.3	11.3	6.2	2.5
Feb	5.3	4.0	3	2	6.2	1994	23	16.9	1994	32	1979	12	26	1979	2.6	2.2	.6	.2	.0	13.4	9.1	6.1	1.2
Mar	2.5	1.0	#	#	5.0	1972	29	11.0	1984	12	1979	1	5	1978	1.3	1.0	.4	.1	.0	4.0	1.9	.9	.3
Apr	1.2	.0	#	0	9.2	1997	12	11.0	1997	9	1997	12	1	1997	.5	.4	.2	@	.0	.5	.3	.1	.0
May	.0	.0	0	0	1.0	1994	1	1.0	1994	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	.2	.0	#	0	4.9	1997	27	4.9	1997	5	1997	27	#+	1997	.1	.1	@	.0	.0	.1	@	@	.0
Nov	1.5	.1	#	#	5.0	1974	30	7.0	1974	5	1975	27	1	1995	.8	.7	.2	@	.0	1.8	.4	.1	.0
Dec	5.3	3.4	1	#	8.0	1990	3	20.7	1997	10	1985	22	6	1985	2.7	2.3	.6	.2	.0	10.0	6.1	3.2	.1
Ann	22.8	14.5	N/A	N/A	9.2	Apr 1997	12	24.0	Jan 1979	32	Feb 1979	12	26	Feb 1979	11.8	9.8	2.9	.7	.0	47.1	29.1	16.6	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

Complete documentation available from:

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Elevation: 690 Feet

Lat: 41° 17N

Lon: 91° 42W

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	5/13	5/09	5/05	5/03	4/30	4/28	4/25	4/22	4/18
32	4/27	4/23	4/20	4/18	4/15	4/13	4/10	4/08	4/03
28	4/18	4/15	4/12	4/10	4/09	4/07	4/05	4/03	3/30
24	4/13	4/09	4/06	4/04	4/01	3/30	3/28	3/25	3/21
20	4/06	4/01	3/28	3/25	3/22	3/19	3/15	3/12	3/06
16	3/28	3/22	3/17	3/13	3/09	3/05	3/01	2/25	2/18
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	9/19	9/23	9/26	9/29	10/02	10/04	10/07	10/10	10/15
32	9/26	10/01	10/05	10/09	10/12	10/15	10/18	10/22	10/27
28	10/07	10/13	10/17	10/21	10/24	10/28	11/01	11/05	11/11
24	10/19	10/25	10/28	11/01	11/04	11/07	11/10	11/14	11/19
20	10/27	11/02	11/06	11/09	11/12	11/16	11/19	11/23	11/29
16	11/07	11/13	11/17	11/20	11/24	11/27	11/30	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	171	165	161	157	154	150	147	142	137
32	200	192	187	183	179	174	170	165	158
28	219	212	207	202	198	194	190	185	177
24	235	228	224	219	216	212	208	203	196
20	261	252	245	240	235	230	225	218	209
16	286	277	270	264	259	253	248	241	232

* 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	1393	1090	829	423	164	16	0	16	89	363	808	1225	6416
60	1238	950	674	289	84	3	0	3	32	233	658	1070	5234
57	1145	866	583	219	51	1	0	0	14	167	570	977	4593
55	1083	810	527	177	34	0	0	0	7	130	513	915	4196
50	929	682	386	94	11	0	0	0	1	61	377	768	3309
32	433	275	68	1	0	0	0	0	0	0	64	306	1147

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	62	109	262	574	928	1179	1356	1285	992	668	246	104	7765
55	0	0	8	61	250	489	643	572	310	85	4	0	2422
57	0	0	2	42	204	429	581	510	257	60	2	0	2087
60	0	0	0	22	144	342	488	420	184	33	0	0	1633
65	0	0	0	6	69	205	333	278	91	8	0	0	990
70	0	0	0	1	25	97	190	160	34	1	0	0	508

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	7	32	141	394	732	981	1141	1067	798	472	126	15	7	39	180	574	1306	2287	3428	4495	5293	5765	5891	5906
45	0	8	80	268	577	831	986	912	648	331	70	4	0	8	88	356	933	1764	2750	3662	4310	4641	4711	4715
50	0	0	39	162	424	681	831	757	499	207	31	3	0	0	39	201	625	1306	2137	2894	3393	3600	3631	3634
55	0	0	19	88	282	531	676	602	359	115	9	0	0	0	19	107	389	920	1596	2198	2557	2672	2681	2681
60	0	0	6	39	165	383	521	449	232	54	3	0	0	0	6	45	210	593	1114	1563	1795	1849	1852	1852
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	3	20	92	242	454	662	779	725	517	284	68	7	3	23	115	357	811	1473	2252	2977	3494	3778	3846	3853

(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