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: ELDORA, IA **COOP ID: 132573**

Climate Division: IA 5 **NWS Call Sign:** **Elevation: 1,144 Feet** **Lat: 42˚22N** **Lon: 93˚06W**

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	24.9	6.6	15.8	61	1981	25	28.2	1990	-27+	1970	21	4.1	1979	1527	0	.0	.0	.6	21.3	30.8	10.2
Feb	31.1	12.8	22.0	66+	1981	18	33.3	1987	-29+	1996	2	8.7	1979	1205	0	.0	.0	2.4	15.1	27.1	5.9
Mar	43.7	24.5	34.1	87	1986	30	42.4	2000	-27	1962	1	24.6	1975	958	0	.0	.0	9.8	5.8	23.7	.9
Apr	58.0	35.8	46.9	98	1980	23	53.6	1977	6+	1982	6	41.0	1975	545	2	.0	.1	22.4	.5	9.6	.0
May	70.8	48.1	59.5	94+	1967	26	67.1	1977	27	1961	1	52.6	1997	228	56	.0	.8	30.4	.0	.6	.0
Jun	80.3	58.1	69.2	104	1988	22	74.2	1988	40+	1993	1	63.4	1982	34	159	.2	3.9	30.0	.0	.0	.0
Jul	83.9	62.2	73.1	103	1989	11	77.1	1999	45+	1971	30	67.8	1992	7	257	.4	7.4	31.0	.0	.0	.0
Aug	81.4	59.9	70.7	108	1988	16	76.9	1983	39	1958	25	65.3	1992	28	202	.4	4.5	31.0	.0	.0	.0
Sep	74.2	50.4	62.3	98+	1984	2	68.3	1998	28+	1974	22	56.7	1993	135	53	.0	1.7	29.9	.0	.6	.0
Oct	61.6	38.5	50.1	94+	1963	5	55.9	1971	17+	1997	27	44.8	1987	466	2	.0	.2	27.1	@	8.6	.0
Nov	43.4	25.1	34.3	81	1968	1	43.3	1999	-13	1977	26	27.0	1996	923	0	.0	.0	10.3	5.7	22.8	.6
Dec	29.3	12.4	20.9	66	2001	6	28.8	1998	-23	1983	24	6.0	1983	1370	0	.0	.0	1.3	17.3	29.9	6.0
Ann	56.9	36.2	46.6	108	Aug 1988	16	77.1	Jul 1999	-29+	Feb 1996	2	4.1	Jan 1979	7426	731	1.0	18.6	226.2	65.7	153.7	23.6

\+ 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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1949-2001

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

Issue Date: February 2004

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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	.94	.87	1.16	1967	25	2.77	1982	.06	1976
Feb	.94	.96	1.55	1976	21	3.38	1971	.03	1987
Mar	2.02	1.81	1.76	1993	30	4.99	1993	.09	1994
Apr	3.18	2.82	3.65	1976	18	7.22	1976	.72	1980
May	4.42	4.00	3.23	1966	23	9.06	1983	1.30	1977
Jun	5.45	4.87	4.38	1997	21	12.39	1998	.99	1988
Jul	3.99	4.38	5.25	1969	8	8.21	1993	.90	1997
Aug	4.22	4.05	4.40	1954	26	13.74	1993	.13	1984
Sep	3.10	2.54	7.45	1950	20	6.68	1985	.59	1976
Oct	2.64	2.46	2.95	1973	11	7.22	1998	.22	1992
Nov	2.12	2.23	2.02	1991	1	5.26	1992	.02	1976
Dec	1.15	1.08	1.25	1973	5	2.59	1982	.23	1989
Ann	34.17	32.99	7.45	Sep 1950	20	13.74	Aug 1993	.02	Nov 1976

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.1	2.7	.5	.0
Feb	5.4	2.7	.3	.1
Mar	8.0	4.7	1.3	.3
Apr	9.9	6.4	1.9	.5
May	12.0	8.1	3.0	1.0
Jun	11.0	7.7	3.7	1.7
Jul	9.5	6.6	2.9	1.0
Aug	9.5	6.4	2.6	1.4
Sep	8.0	5.9	2.0	.6
Oct	7.4	4.7	1.7	.6
Nov	7.9	4.2	1.3	.3
Dec	6.6	3.1	.6	.1
Ann	101.3	63.2	21.8	7.6

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	.16	.24	.38	.51	.64	.79	.95	1.15	1.42	1.85	2.26
Feb	.09	.16	.29	.42	.56	.72	.91	1.15	1.47	2.01	2.53
Mar	.36	.54	.84	1.11	1.39	1.70	2.04	2.46	3.02	3.92	4.77
Apr	.95	1.25	1.71	2.10	2.47	2.87	3.30	3.81	4.47	5.50	6.46
May	1.55	1.96	2.57	3.08	3.57	4.07	4.61	5.25	6.06	7.32	8.48
Jun	1.70	2.22	2.98	3.64	4.28	4.94	5.67	6.52	7.62	9.34	10.92
Jul	1.08	1.45	2.03	2.53	3.03	3.55	4.12	4.80	5.69	7.08	8.39
Aug	.74	1.11	1.73	2.30	2.89	3.53	4.26	5.15	6.33	8.23	10.04
Sep	.78	1.08	1.53	1.92	2.32	2.73	3.19	3.74	4.46	5.59	6.65
Oct	.37	.59	.97	1.33	1.72	2.14	2.62	3.22	4.03	5.34	6.61
Nov	.22	.38	.67	.97	1.29	1.65	2.07	2.59	3.31	4.49	5.65
Dec	.26	.36	.53	.68	.84	1.00	1.18	1.40	1.68	2.14	2.57
Ann	22.09	24.34	27.27	29.53	31.55	33.52	35.58	37.87	40.66	44.77	48.35

\+ 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: 1949-2001
(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	8.7	7.5	5	3
Feb	7.1	7.0	5	3
Mar	4.7	4.8	2	1
Apr	1.9	.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
Nov	3.5	2.8	1	#
Dec	7.5	5.8	3	2
Ann	33.5	27.9	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	12.5	1971	4	28.0	1982	27	1979	31	16	1979
Feb	8.0	1994	23	19.1	1972	29	1979	9	25	1979
Mar	6.0	1975	7	11.4	1998	13+	1993	23	7	1975
Apr	6.0	1973	9	11.0	1973	10	1973	10	1	1982
May	.0	0	0	.0	0	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	2.6	1997	27	2.6	1997	3	1997	27	#+	1997
Nov	8.0	1972	14	11.3	1986	11	1986	20	3	1986
Dec	8.4	1994	7	29.7	2000	21	2000	29	11+	2000
Ann	12.5	Jan 1971	4	29.7	Dec 2000	29	Feb 1979	9	25	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.5	3.1	1.0	.4	.1
Feb	3.4	2.6	.8	.3	.0
Mar	2.2	1.7	.7	.3	.0
Apr	.9	.8	.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	@	@	.0	.0	.0
Nov	1.7	1.3	.4	.2	.0
Dec	4.0	3.0	1.0	.2	.0
Ann	16.7	12.5	4.1	1.5	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	22.7	15.2	10.3	3.5
Feb	19.2	14.1	10.0	4.0
Mar	8.2	5.8	3.8	.9
Apr	1.1	.5	.3	@
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
Nov	4.2	2.1	1.0	.1
Dec	17.7	11.5	6.9	1.5
Ann	73.2	49.2	32.3	10.0

+ 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	5/15	5/11	5/08	5/06	5/04	5/01	4/29	4/26	4/22
32	5/08	5/04	5/01	4/28	4/26	4/23	4/20	4/17	4/13
28	4/23	4/19	4/15	4/13	4/10	4/08	4/05	4/02	3/29
24	4/17	4/12	4/09	4/07	4/04	4/02	3/30	3/27	3/23
20	4/09	4/04	3/31	3/28	3/25	3/22	3/19	3/15	3/10
16	4/05	3/30	3/25	3/21	3/17	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	9/24	9/27	9/29	10/01	10/03	10/06	10/09
32	9/22	9/27	9/30	10/03	10/06	10/08	10/11	10/14	10/19
28	10/02	10/07	10/11	10/14	10/17	10/20	10/24	10/28	11/02
24	10/14	10/19	10/23	10/27	10/30	11/02	11/06	11/10	11/16
20	10/26	10/31	11/04	11/07	11/09	11/12	11/15	11/19	11/23
16	11/04	11/09	11/12	11/15	11/18	11/21	11/24	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	163	157	153	150	147	144	141	137	132
32	181	174	170	166	162	159	155	151	144
28	209	202	197	193	189	185	181	176	169
24	229	222	217	212	208	204	200	195	188
20	251	243	238	233	228	224	219	214	206
16	271	262	256	250	245	240	234	228	219

***** 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	1527	1205	958	545	228	34	7	28	135	466	923	1370	7426
60	1372	1065	803	402	135	8	0	6	58	321	773	1215	6158
57	1279	981	710	323	92	3	0	2	30	244	683	1122	5469
55	1217	925	650	273	69	1	0	0	17	198	625	1060	5035
50	1062	793	508	167	28	0	0	0	3	106	485	906	4058
32	543	361	129	6	0	0	0	0	0	2	117	412	1570

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	39	80	194	452	851	1116	1273	1198	908	562	185	65	6923
55	0	0	2	30	207	427	560	485	235	45	2	0	1993
57	0	0	0	20	168	369	498	424	188	29	0	0	1696
60	0	0	0	9	118	284	405	336	126	12	0	0	1290
65	0	0	0	2	56	159	257	202	53	2	0	0	731
70	0	0	0	0	21	69	131	103	15	0	0	0	339

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	8	73	266	624	891	1043	967	698	353	71	5	0	8	81	347	971	1862	2905	3872	4570	4923	4994	4999
45	0	0	33	165	472	741	888	812	549	225	29	1	0	0	33	198	670	1411	2299	3111	3660	3885	3914	3915
50	0	0	14	91	327	592	733	657	404	131	12	0	0	0	14	105	432	1024	1757	2414	2818	2949	2961	2961
55	0	0	5	44	203	445	578	502	273	65	2	0	0	0	5	49	252	697	1275	1777	2050	2115	2117	2117
60	0	0	1	16	109	303	424	348	161	26	0	0	0	0	1	17	126	429	853	1201	1362	1388	1388	1388
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	3	52	167	376	581	706	641	438	220	49	3	0	3	55	222	598	1179	1885	2526	2964	3184	3233	3236

(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