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: ATKINSON, NE **COOP ID: 250420**

Climate Division: NE 2 **NWS Call Sign:** **Elevation: 2,110 Feet** **Lat: 42˚32N** **Lon: 98˚59W**

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	31.1	11.2	21.2	71	1981	25	32.8	1992	-35	1912	12	5.8	1978	1361	0	.0	.0	3.9	14.2	30.1	8.1
Feb	37.4	17.1	27.3	77	1995	21	37.1	1999	-33	1936	16	13.5	1978	1056	0	.0	.0	7.6	10.3	25.7	4.4
Mar	47.7	25.5	36.6	92	1943	30	43.4	2000	-18+	1998	11	28.8	1998	880	0	.0	.0	15.0	4.3	23.5	.9
Apr	60.3	36.0	48.2	98	1910	28	56.4	1981	-6+	1936	4	41.9	1983	508	3	.0	.4	24.2	.5	11.4	.0
May	71.1	47.3	59.2	98+	1967	25	65.4	1977	18	1911	2	54.4	1995	216	37	.0	.4	30.6	.0	1.1	.0
Jun	81.1	56.8	69.0	107+	1988	21	75.6	1988	35+	1928	10	64.1	1982	38	156	.4	5.1	30.0	.0	.0	.0
Jul	86.3	61.7	74.0	112	1940	24	79.3	1974	41+	1971	30	67.0	1992	9	289	1.6	12.0	31.0	.0	.0	.0
Aug	85.0	60.0	72.5	109	1934	4	78.5	1983	34	1911	28	66.9	1992	18	251	.7	10.3	31.0	.0	.0	.0
Sep	76.3	49.8	63.1	106+	1931	9	70.6	1998	14	1926	25	58.2	1993	127	69	.1	4.5	29.7	.0	1.2	.0
Oct	63.4	37.9	50.7	99	1947	5	55.3	1973	-1	1925	28	44.6	1976	445	1	.0	.3	27.6	.3	8.7	.0
Nov	44.2	24.7	34.5	83	1909	4	45.7	1999	-18	1940	14	20.6	1985	916	0	.0	.0	12.1	5.5	23.2	1.0
Dec	33.6	14.8	24.2	73	1998	2	32.5	1999	-29	1989	22	5.9	1983	1266	0	.0	.0	5.0	12.3	29.7	4.8
Ann	59.8	36.9	48.4	112	Jul 1940	24	79.3	Jul 1974	-35	Jan 1912	12	5.8	Jan 1978	6840	806	2.8	33.0	247.7	47.4	154.6	19.2

\+ 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: 1906-2001

(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	.52	.36	1.50	1982	23	1.82	1982	.07	1981
Feb	.64	.58	1.20+	1915	5	2.47	1984	.00	1982
Mar	1.70	1.30	3.19	1949	30	6.62	1987	.11	1994
Apr	2.62	2.44	2.50	1911	30	5.99	1984	.60	1981
May	3.68	3.29	3.12	1917	26	7.73	1991	1.10	1975
Jun	3.65	3.06	3.00	1977	23	7.12	1994	.70	1995
Jul	3.45	3.27	3.60	1908	12	7.56	1972	.58	1974
Aug	2.44	2.30	5.00	1990	23	7.17	1990	.03	2000
Sep	2.43	1.86	4.50	1986	17	9.21	1986	.55	1980
Oct	1.84	1.84	2.85	1911	6	5.93	1998	.03	1999
Nov	1.18	1.18	1.69	1960	28	3.27	1983	.05	1999
Dec	.54	.38	1.61	1953	3	2.47	1982	.00+	1991
Ann	24.69	24.70	5.00	Aug 1990	23	9.21	Sep 1986	.00+	Dec 1991

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.8	1.5	.1	@
Feb	4.2	2.1	.3	@
Mar	6.6	3.9	1.3	.2
Apr	8.8	6.2	1.7	.3
May	9.9	7.3	2.5	.8
Jun	9.6	7.0	2.4	1.0
Jul	8.5	6.1	2.4	.9
Aug	7.2	4.7	1.5	.6
Sep	6.6	4.6	1.5	.6
Oct	5.5	3.8	1.2	.5
Nov	4.4	2.9	.8	.3
Dec	3.3	1.7	.1	.1
Ann	78.4	51.8	15.8	5.3

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	.06	.10	.17	.25	.32	.41	.51	.63	.80	1.08	1.34
Feb	.05	.11	.22	.31	.41	.51	.64	.79	.99	1.32	1.64
Mar	.16	.28	.51	.74	1.00	1.29	1.64	2.07	2.67	3.66	4.63
Apr	.70	.95	1.33	1.66	1.98	2.33	2.71	3.16	3.74	4.66	5.52
May	1.31	1.65	2.16	2.58	2.98	3.40	3.85	4.37	5.04	6.08	7.03
Jun	1.15	1.50	2.01	2.45	2.88	3.32	3.80	4.37	5.10	6.25	7.30
Jul	.90	1.23	1.73	2.17	2.60	3.06	3.56	4.16	4.94	6.17	7.33
Aug	.27	.45	.79	1.13	1.50	1.91	2.39	2.98	3.80	5.14	6.45
Sep	.40	.61	.96	1.30	1.64	2.02	2.45	2.97	3.67	4.80	5.89
Oct	.14	.26	.50	.76	1.04	1.36	1.75	2.24	2.92	4.06	5.18
Nov	.08	.16	.31	.47	.65	.86	1.11	1.43	1.88	2.63	3.37
Dec	.00	.03	.10	.18	.27	.37	.50	.66	.88	1.26	1.63
Ann	16.13	17.73	19.82	21.42	22.86	24.26	25.71	27.33	29.31	32.21	34.75

\+ 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: 1906-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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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	5.3	4.5	2	1
Feb	5.5	4.3	2	1
Mar	6.8	5.8	1	#
Apr	4.0	2.0	#	#
May	.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.1	.0	#	0
Oct	1.0	.0	#	0
Nov	6.6	3.5	1	#
Dec	5.7	3.8	2	1
Ann	35.0	23.9	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	15.0	1982	23	15.5	1975	25	1988	22	12	1988
Feb	10.0	1984	18	19.0	1984	18+	1988	11	14	1979
Mar	10.0	1984	17	15.5+	1998	18	1987	25	3	1998
Apr	8.0	1994	29	16.0	1984	13	1995	12	1	1998
May	.0	0	0	.0	0	#	1994	1	#	1994
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	3.0	1985	29	3.0	1985	#	1995	20	#	1995
Oct	6.0	1982	19	6.0+	1982	9	1995	24	1	1995
Nov	12.0	1985	15	25.0	1983	12	2000	21	6+	2000
Dec	10.0	1983	20	19.0	1978	13	1982	27	7	1985
Ann	15.0	Jan 1982	23	25.0	Nov 1983	25	Jan 1988	22	14	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.8	2.2	.6	.2	@
Feb	2.7	2.1	.6	.2	@
Mar	3.3	2.7	1.0	.4	@
Apr	1.2	1.1	.7	.3	.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
Oct	.5	.4	.2	@	.0
Nov	2.3	2.1	.8	.4	.1
Dec	2.9	2.5	.7	.3	@
Ann	15.7	13.1	4.6	1.8	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	8.0	3.9	1.6	.1
Feb	8.5	5.2	4.1	1.0
Mar	5.1	2.6	1.0	.0
Apr	1.3	.8	.5	.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	.4	.2	@	.0
Nov	3.9	2.3	1.6	.6
Dec	9.1	5.8	2.4	.3
Ann	36.3	20.8	11.2	2.1

+ 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	5/20	5/16	5/13	5/11	5/08	5/06	5/04	5/01	4/27
32	5/13	5/09	5/07	5/04	5/02	4/30	4/27	4/24	4/20
28	5/09	5/03	4/29	4/26	4/23	4/20	4/16	4/12	4/07
24	4/29	4/23	4/19	4/16	4/13	4/10	4/06	4/02	3/28
20	4/14	4/10	4/06	4/04	4/01	3/29	3/26	3/23	3/18
16	4/09	4/04	3/31	3/28	3/25	3/22	3/19	3/15	3/10

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	9/15	9/17	9/20	9/22	9/24	9/26	9/28	10/02
32	9/15	9/20	9/24	9/27	9/30	10/03	10/06	10/10	10/15
28	9/21	9/27	10/01	10/05	10/09	10/12	10/16	10/20	10/26
24	10/06	10/10	10/13	10/16	10/19	10/21	10/24	10/27	10/31
20	10/13	10/19	10/23	10/27	10/30	11/02	11/06	11/10	11/16
16	10/19	10/25	10/30	11/02	11/06	11/10	11/14	11/18	11/25

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	152	146	142	139	136	132	129	125	120
32	173	165	159	155	150	146	141	136	128
28	193	184	178	173	168	163	158	152	144
24	209	202	196	192	188	184	180	175	168
20	236	227	221	216	212	207	202	196	187
16	251	242	236	230	225	220	215	208	199

***** 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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1361	1056	880	508	216	38	9	18	127	445	916	1266	6840
60	1206	916	725	368	118	9	0	3	54	297	766	1111	5573
57	1113	839	632	290	75	3	0	1	27	219	679	1018	4896
55	1054	787	572	243	53	1	0	0	16	173	623	956	4478
50	910	657	428	143	18	0	0	0	3	84	486	808	3537
32	435	274	77	3	0	0	0	0	0	2	132	337	1260

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	97	142	221	488	844	1108	1303	1255	932	580	206	94	7270
55	3	11	2	37	185	419	590	542	257	38	8	0	2092
57	1	7	0	24	145	361	528	481	209	23	4	0	1783
60	0	0	0	12	94	278	435	391	146	8	0	0	1364
65	0	0	0	3	37	156	289	251	69	1	0	0	806
70	0	0	0	0	10	71	161	137	25	0	0	0	404

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	35	107	299	620	887	1079	1027	714	377	79	13	7	42	149	448	1068	1955	3034	4061	4775	5152	5231	5244
45	0	7	57	188	466	737	924	872	566	252	33	2	0	7	64	252	718	1455	2379	3251	3817	4069	4102	4104
50	0	0	22	106	325	587	769	717	426	147	9	0	0	0	22	128	453	1040	1809	2526	2952	3099	3108	3108
55	0	0	5	51	197	438	614	562	292	70	3	0	0	0	5	56	253	691	1305	1867	2159	2229	2232	2232
60	0	0	0	26	101	294	459	411	183	26	0	0	0	0	0	26	127	421	880	1291	1474	1500	1500	1500
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	10	33	87	201	384	574	713	675	455	253	64	16	10	43	130	331	715	1289	2002	2677	3132	3385	3449	3465

(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