

# Climatography of the United States

No. 20

1971-2000

Station: AURORA, NE

COOP ID: 250445

Climate Division: NE 6

NWS Call Sign:

Elevation: 1,785 Feet Lat: 40° 52N

Lon: 98° 00W

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	32.8	11.5	22.2	70+	1990	11	32.4	1992	-21+	1982	10	8.5	1979	1328	0	.0	.0	3.6	14.4	30.6	6.5
Feb	38.8	17.0	27.9	79	1995	26	37.0	1976	-20	1996	2	12.7	1979	1039	0	.0	.0	7.9	9.9	26.0	3.4
Mar	49.4	26.3	37.9	89+	1986	30	44.1	1986	-11	1978	4	30.7	1975	843	0	.0	.0	15.6	3.8	22.1	.5
Apr	62.2	37.3	49.8	95	1989	27	57.8	1981	10	1975	3	43.4	1983	462	4	.0	.5	24.6	.3	7.6	.0
May	72.5	49.3	60.9	100+	1967	25	66.6	1977	25	1967	2	54.3	1995	187	61	.0	.9	30.7	.0	.3	.0
Jun	83.2	59.1	71.2	107	1988	22	76.3	1988	39	1998	4	66.5	1982	25	209	.7	7.5	30.0	.0	.0	.0
Jul	87.0	64.0	75.5	106	1995	13	80.2	1974	47+	1990	13	70.1	1992	1	326	1.5	12.3	31.0	.0	.0	.0
Aug	84.8	61.8	73.3	108	1983	17	81.4	1983	44+	1985	10	68.4	1992	14	271	.6	9.2	31.0	.0	.0	.0
Sep	77.4	51.7	64.6	101	1970	6	70.3	1998	24	1984	29	59.0	1993	95	80	.0	4.0	29.7	.0	.6	.0
Oct	65.4	39.1	52.3	93	1975	13	55.8	1971	4	1997	27	47.5	1976	397	1	.0	.2	27.7	.2	6.2	.0
Nov	47.5	25.9	36.7	83	1980	7	47.5	1999	-9	1976	28	28.5	1985	849	0	.0	.0	13.6	4.0	22.3	.3
Dec	35.7	15.6	25.7	78	1964	23	33.3	1999	-28	1989	23	7.5	1983	1220	0	.0	.0	5.0	11.5	30.1	3.2
Ann	61.4	38.2	49.8	108	Aug 1983	17	81.4	Aug 1983	-28	Dec 1989	23	7.5	Dec 1983	6460	952	2.8	34.6	250.4	44.1	145.8	13.9

+ 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](http://www.ncdc.noaa.gov/oa/climate/normals/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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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: AURORA, NE**

**COOP ID: 250445**

**Climate Division: NE 6**

**NWS Call Sign:**

**Elevation: 1,785 Feet Lat: 40°52N**

**Lon: 98°00W**

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	.64	.58	1.14	1960	15	1.92	1992	.00+	1986	4.7	2.1	.3	.0	.00	.07	.19	.29	.40	.51	.64	.80	1.02	1.37	1.71
Feb	.65	.55	1.76	1971	19	2.88	1971	.01+	1996	4.6	2.1	.3	@	.04	.08	.16	.25	.35	.47	.61	.79	1.04	1.47	1.90
Mar	2.26	2.06	2.93	1981	29	9.16	1987	.02	1994	7.1	4.7	1.3	.5	.12	.25	.51	.82	1.16	1.57	2.07	2.72	3.62	5.17	6.71
Apr	3.10	2.85	2.96	1977	13	7.40	1984	.24	1989	8.8	5.3	2.1	.8	.59	.87	1.32	1.74	2.17	2.63	3.15	3.77	4.61	5.95	7.22
May	4.68	4.73	3.77	1950	8	9.93	1982	.94	1994	11.7	7.6	3.3	1.3	1.45	1.90	2.56	3.13	3.68	4.25	4.87	5.61	6.56	8.04	9.41
Jun	4.19	4.42	6.40	1980	4	10.69	1980	.72	1978	8.8	5.8	2.6	1.2	.87	1.25	1.86	2.43	2.99	3.59	4.28	5.10	6.18	7.91	9.55
Jul	3.36	3.12	5.75	1950	9	8.12	1993	.57	1974	8.9	6.0	2.3	.8	.77	1.08	1.58	2.02	2.46	2.92	3.45	4.07	4.90	6.20	7.43
Aug	3.19	2.71	3.47	1954	7	7.65	1977	.39	1976	8.5	5.3	2.3	.8	.66	.95	1.42	1.84	2.27	2.73	3.25	3.87	4.69	6.01	7.25
Sep	2.59	1.99	3.65	1989	9	8.02	1989	.25	1980	6.8	4.5	1.6	.5	.24	.42	.77	1.13	1.52	1.97	2.50	3.16	4.07	5.59	7.08
Oct	1.94	1.78	2.65	1968	16	4.81	1986	.00	1988	6.1	3.8	1.2	.5	.10	.27	.57	.85	1.16	1.49	1.89	2.39	3.06	4.17	5.25
Nov	1.70	1.65	2.40	1975	20	4.12	1983	.02	1980	5.9	3.3	1.2	.4	.12	.22	.44	.67	.93	1.23	1.60	2.06	2.71	3.81	4.89
Dec	.79	.70	1.20	1953	3	2.70	1973	.03	1976	4.5	2.0	.4	.1	.08	.14	.25	.36	.48	.62	.77	.97	1.24	1.68	2.11
Ann	29.09	31.00	6.40	Jun 1980	4	10.69	Jun 1980	.00+	Oct 1988	86.4	52.5	18.9	6.9	19.98	21.72	23.96	25.67	27.20	28.68	30.21	31.91	33.97	36.98	39.59

+ 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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**COOP ID: 250445**

**Climate Division: NE 6**

**NWS Call Sign:**

**Elevation: 1,785 Feet**

**Lat: 40° 52N**

**Lon: 98° 00W**

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	5.4	5.1	3	1	7.5	1971	3	14.0	1979	20	1974	11	13	1974	3.7	2.1	.8	.3	.0	8.5	4.2	2.6	.1
Feb	5.7	4.6	2	1	10.0	1984	18	19.0	1978	16	1993	27	11	1993	3.2	2.0	.6	.2	@	9.7	6.6	4.1	1.8
Mar	6.0	5.0	1	1	11.5	1984	19	17.0	1987	16	1993	3	13	1987	2.6	1.9	.8	.4	.1	4.7	2.4	1.4	.5
Apr	2.1	1.0	#	#	8.0	1997	12	14.0	1997	10	1997	12	1	1997	.8	.7	.3	.1	.0	.7	.2	@	@
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	.2	.0	#	0	2.5	1985	29	4.5	1985	1	1985	30	#	1985	.1	.1	.0	.0	.0	@	.0	.0	.0
Oct	.9	.0	#	0	12.5	1997	26	12.5	1997	12	1997	26	1	1997	.3	.2	.1	.1	@	.3	.2	.1	.1
Nov	4.9	2.4	#	#	10.0	1983	28	18.8	1975	14	1987	29	5	1991	2.5	1.6	.4	.3	@	2.5	.8	.3	@
Dec	7.0	5.4	2	1	11.0	1974	15	30.5	1973	20	1983	31	15	1983	3.3	2.0	1.0	.3	.1	8.7	4.0	1.8	.0
Ann	32.2	23.5	N/A	N/A	12.5	Oct 1997	26	30.5	Dec 1973	20+	Dec 1983	31	15	Dec 1983	16.5	10.6	4.0	1.7	.2	35.1	18.4	10.3	2.5

+ 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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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	5/10	5/07	5/04	5/01	4/28	4/25	4/22	4/17
32	5/07	5/02	4/29	4/26	4/23	4/20	4/17	4/13	4/08
28	4/23	4/18	4/15	4/13	4/10	4/08	4/05	4/02	3/29
24	4/14	4/10	4/07	4/04	4/02	3/31	3/28	3/25	3/21
20	4/08	4/02	3/29	3/26	3/23	3/19	3/16	3/12	3/06
16	3/30	3/24	3/20	3/16	3/13	3/10	3/06	3/02	2/25
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	9/17	9/21	9/24	9/27	9/30	10/02	10/05	10/08	10/12
32	9/25	9/30	10/04	10/08	10/11	10/14	10/17	10/21	10/27
28	10/04	10/09	10/13	10/17	10/20	10/23	10/26	10/30	11/05
24	10/15	10/20	10/24	10/28	10/31	11/03	11/06	11/10	11/15
20	10/23	10/29	11/02	11/06	11/10	11/13	11/17	11/21	11/27
16	10/31	11/07	11/12	11/16	11/19	11/23	11/27	12/02	12/08
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	172	164	159	155	151	147	142	137	130
32	189	183	178	174	170	167	163	158	151
28	213	206	200	196	192	188	183	178	170
24	230	223	218	215	211	207	203	199	192
20	257	248	242	236	231	226	221	215	206
16	277	268	261	256	251	245	240	233	224

\* 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

Complete documentation available from:

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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	1328	1039	843	462	187	25	1	14	95	397	849	1220	6460
60	1173	899	688	324	101	6	0	2	33	253	699	1065	5243
57	1080	822	596	250	64	2	0	0	14	178	609	972	4587
55	1018	770	536	206	45	1	0	0	7	135	552	910	4180
50	867	639	394	114	15	0	0	0	0	59	415	762	3265
32	380	261	65	1	0	0	0	0	0	0	82	300	1089

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	75	146	245	533	896	1174	1348	1280	976	627	223	102	7625
55	0	11	3	48	228	484	635	567	292	50	3	0	2321
57	0	7	1	32	185	426	573	505	240	31	0	0	2000
60	0	0	0	16	129	340	480	414	169	12	0	0	1560
65	0	0	0	4	61	209	326	271	80	1	0	0	952
70	0	0	0	0	22	107	187	152	29	0	0	0	497

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	42	128	342	673	954	1117	1053	751	415	94	11	7	49	177	519	1192	2146	3263	4316	5067	5482	5576	5587
45	0	12	68	228	519	804	962	898	608	284	41	1	0	12	80	308	827	1631	2593	3491	4099	4383	4424	4425
50	0	2	34	131	373	654	807	743	461	171	15	0	0	2	36	167	540	1194	2001	2744	3205	3376	3391	3391
55	0	1	8	70	239	505	652	588	321	87	3	0	0	1	9	79	318	823	1475	2063	2384	2471	2474	2474
60	0	0	3	31	129	358	497	434	205	34	0	0	0	0	3	34	163	521	1018	1452	1657	1691	1691	1691
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	12	40	97	218	405	619	751	700	476	269	74	16	12	52	149	367	772	1391	2142	2842	3318	3587	3661	3677

(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](http://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](http://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"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
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## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)