

# Climatology of the United States

## No. 20

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, North Carolina 28801  
www.ncdc.noaa.gov

Station: GRAND ISLAND CTR NE AP, NE

1971-2000

COOP ID: 253395

Climate Division: NE 5

NWS Call Sign: GRI

Elevation: 1,840 Feet Lat: 40° 58N

Lon: 98° 19W

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	32.6	12.2	22.4	76	1990	10	33.6	1992	-29	1912	12	6.9	1979	1310	0	.0	.0	4.2	14.3	30.6	6.4
Feb	38.6	17.7	28.2	80	1995	25	37.7	1991	-25	1905	13	13.2	1979	1031	0	.0	.0	8.2	10.0	26.0	3.7
Mar	49.5	27.0	38.3	90+	1986	29	45.7	1986	-21	1960	4	29.9	1975	819	1	.0	.1	16.0	3.6	21.9	.6
Apr	61.9	37.8	49.9	98	1902	20	57.7	1981	-1	1936	2	43.1	1983	452	11	.0	.7	25.1	.3	8.1	.0
May	71.9	49.3	60.6	104	1934	29	66.2	1977	22	1909	1	54.3	1995	175	48	@	1.0	30.7	.0	.5	.0
Jun	83.0	59.1	71.1	108+	1946	15	76.5	1988	36+	1943	4	65.3	1982	23	218	.8	7.7	30.0	.0	.0	.0
Jul	87.1	64.4	75.8	117	1936	24	81.5	1974	42	1971	30	69.5	1992	3	349	2.4	13.0	31.0	.0	.0	.0
Aug	84.8	62.3	73.6	112	1934	8	81.8	1983	38	1928	24	68.2	1974	7	285	1.1	10.1	31.0	.0	.0	.0
Sep	76.9	51.8	64.4	109	1931	6	71.6	1998	20	1920	30	59.5	1993	114	107	.2	4.8	29.7	.0	.5	.0
Oct	64.6	39.3	52.0	96	1947	5	55.3	1975	6	1925	28	46.5	1976	401	8	.0	.3	27.8	.1	6.3	.0
Nov	46.8	25.9	36.4	88	1915	7	45.8	1999	-11	1976	28	26.7	1985	843	0	.0	.0	13.6	3.9	23.1	.4
Dec	35.3	15.9	25.6	80	1939	6	32.6	1999	-26	1989	22	7.7	1983	1207	0	.0	.0	5.6	11.6	30.1	3.3
Ann	61.1	38.6	49.9	117	Jul 1936	24	81.8	Aug 1983	-29	Jan 1912	12	6.9	Jan 1979	6385	1027	4.5	37.7	252.9	43.8	147.1	14.4

+ 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](http://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: 1900-2001

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

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**COOP ID: 253395**

**Climate Division: NE 5**

**NWS Call Sign: GRI**

**Elevation: 1,840 Feet Lat: 40°58N**

**Lon: 98°19W**

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	.54	.47	1.25	1947	29	1.40	1992	.00	1986	5.7	1.8	.2	.0	.05	.12	.21	.29	.37	.45	.55	.67	.82	1.08	1.32
Feb	.68	.46	1.91	1971	18	3.39	1971	.02	1996	5.6	2.0	.3	.1	.04	.09	.17	.26	.37	.49	.64	.83	1.09	1.54	1.98
Mar	2.04	1.76	1.98	1979	21	6.63	1987	.04	1994	7.6	4.2	1.3	.4	.12	.24	.49	.77	1.09	1.45	1.90	2.47	3.27	4.62	5.97
Apr	2.61	2.47	2.61	1964	25	7.34	1984	.09	1989	9.0	4.9	1.8	.5	.44	.67	1.05	1.41	1.78	2.18	2.63	3.19	3.93	5.13	6.27
May	4.07	4.07	4.95	1905	13	8.88	1982	.46	1994	11.3	6.9	2.9	1.1	1.16	1.55	2.13	2.64	3.13	3.65	4.22	4.90	5.77	7.15	8.43
Jun	3.72	3.94	4.18	1990	15	8.21	1990	.50	1978	9.3	5.8	2.2	1.1	.78	1.12	1.66	2.16	2.66	3.20	3.80	4.53	5.48	7.01	8.46
Jul	3.14	2.77	4.65	1950	8	10.38	1993	.85	1980	9.4	5.6	2.1	.7	.90	1.20	1.65	2.04	2.42	2.82	3.26	3.77	4.44	5.49	6.47
Aug	3.08	2.38	4.12	1977	30	8.73	1977	.66	1971	8.0	5.2	2.0	.9	.68	.96	1.41	1.82	2.23	2.66	3.15	3.74	4.50	5.73	6.89
Sep	2.43	1.53	5.62	1977	1	8.39	1973	.01	1998	7.0	4.4	1.5	.5	.14	.27	.56	.89	1.26	1.70	2.24	2.93	3.89	5.54	7.18
Oct	1.51	1.49	2.85	1914	6	3.49	1984	.01	1988	5.9	3.2	1.0	.3	.10	.19	.38	.58	.81	1.08	1.41	1.83	2.41	3.39	4.37
Nov	1.41	1.27	2.60	1996	16	3.77	1983	.03	1989	5.8	2.9	.9	.3	.10	.19	.38	.57	.79	1.04	1.33	1.71	2.24	3.12	4.00
Dec	.66	.49	1.60	1913	6	2.11	1991	.04+	1996	5.2	1.8	.3	.1	.05	.09	.17	.26	.36	.48	.62	.80	1.04	1.45	1.86
Ann	25.89	25.65	5.62	Sep 1977	1	10.38	Jul 1993	.00	Jan 1986	89.8	48.7	16.5	6.0	17.30	18.92	21.03	22.64	24.08	25.48	26.93	28.55	30.52	33.39	35.90

+ 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: 1900-2001

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

Complete documentation available from:

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**Climate Division: NE 5**

**NWS Call Sign: GRI**

**Elevation: 1,840 Feet**

**Lat: 40° 58N**

**Lon: 98° 19W**

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	5.4	2	1	9.0	1988	19	17.5	1993	18	1974	11	10	1974	5.5	2.0	.5	.1	.0	14.4	8.9	3.8	.6
Feb	5.7	5.2	1	1	12.1	1984	18	17.9	1978	14	1984	19	6+	1979	4.2	2.0	.5	.1	@	11.2	5.5	3.1	.6
Mar	6.9	5.1	1	1	12.1	1977	19	20.5	1984	14	1984	19	2+	1993	3.4	1.7	.8	.4	.1	4.6	2.5	1.4	.1
Apr	1.4	.0	#	0	5.5	1984	2	9.0	1984	3+	1995	12	#	1995	1.1	.4	.1	@	.0	.6	.1	.0	.0
May	#	.0	#	0	#	1994	1	#+	1994	0	0	0	#	2000	.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	3.8	1985	29	3.8	1985	1	1985	29	#	1985	.1	.1	.1	.0	.0	@	.0	.0	.0
Oct	1.0	.0	#	0	8.8	1991	31	9.8	1991	6+	1997	27	1	1997	.4	.1	.1	.1	.0	.4	.1	.1	.0
Nov	4.8	3.6	#	0	10.2	1983	27	17.1	1983	14	1983	28	2+	1991	2.9	1.5	.4	.2	@	4.6	1.7	1.3	.2
Dec	6.6	4.8	1	1	11.1	1974	14	26.0	1973	18	1983	28	12	1983	4.2	1.7	.7	.4	.1	10.2	5.1	3.2	.9
Ann	32.8	24.1	N/A	N/A	12.1+	Feb 1984	18	26.0	Dec 1973	18+	Dec 1983	28	12	Dec 1983	21.8	9.5	3.2	1.3	.2	46.0	23.9	12.9	2.4

+ 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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**Lat: 40° 58N**

**Lon: 98° 19W**

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	5/17	5/13	5/10	5/08	5/06	5/03	5/01	4/28	4/24
32	5/10	5/05	5/02	4/29	4/26	4/23	4/20	4/17	4/12
28	4/29	4/24	4/20	4/17	4/14	4/11	4/08	4/04	3/30
24	4/17	4/13	4/10	4/07	4/04	4/02	3/30	3/27	3/23
20	4/11	4/06	4/02	3/30	3/27	3/24	3/21	3/17	3/12
16	4/01	3/26	3/22	3/19	3/16	3/13	3/09	3/05	2/28
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	9/14	9/18	9/21	9/24	9/26	9/29	10/01	10/04	10/09
32	9/23	9/28	10/02	10/05	10/08	10/11	10/14	10/17	10/22
28	10/01	10/06	10/10	10/13	10/16	10/18	10/22	10/25	10/30
24	10/09	10/15	10/20	10/23	10/27	10/30	11/03	11/07	11/13
20	10/18	10/24	10/29	11/02	11/05	11/09	11/13	11/17	11/24
16	10/25	11/01	11/06	11/10	11/14	11/18	11/22	11/27	12/04
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	160	154	150	146	143	139	135	131	125
32	183	177	172	168	164	160	156	151	145
28	202	196	191	188	184	180	176	172	165
24	226	218	213	209	204	200	196	190	183
20	248	239	233	228	223	218	212	206	197
16	267	258	252	247	242	238	232	226	218

\* 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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**Lon: 98° 19W**

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	1310	1031	819	452	175	23	3	7	114	401	843	1207	6385
60	1166	892	674	322	102	6	0	3	41	262	710	1066	5244
57	1073	817	582	248	64	2	0	1	19	187	620	973	4586
55	1013	764	523	203	45	1	0	0	10	144	563	911	4177
50	864	634	381	112	15	0	0	0	1	64	425	762	3258
32	388	262	60	1	0	0	0	0	0	0	86	297	1094

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	50	109	271	552	899	1184	1369	1304	986	636	218	66	7644
55	0	0	9	63	219	495	656	591	317	77	3	0	2430
57	0	0	6	47	173	436	594	529	267	54	2	0	2108
60	0	0	3	29	116	350	501	437	201	30	1	0	1668
65	0	0	1	11	48	218	349	285	107	8	0	0	1027
70	0	0	0	3	14	111	207	158	50	2	0	0	545

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	9	39	127	336	662	954	1130	1065	757	409	91	14	9	48	175	511	1173	2127	3257	4322	5079	5488	5579	5593
45	0	12	68	222	507	804	975	910	608	275	41	1	0	12	80	302	809	1613	2588	3498	4106	4381	4422	4423
50	0	0	31	131	357	654	820	755	463	167	13	0	0	0	31	162	519	1173	1993	2748	3211	3378	3391	3391
55	0	0	8	66	226	504	665	600	325	82	4	0	0	0	8	74	300	804	1469	2069	2394	2476	2480	2480
60	0	0	2	32	120	361	511	446	208	30	0	0	0	0	2	34	154	515	1026	1472	1680	1710	1710	1710
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	15	42	100	216	401	622	756	708	480	266	78	19	15	57	157	373	774	1396	2152	2860	3340	3606	3684	3703

(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.  
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.

- 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/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)