

# Climatology of the United States

No. 20

1971-2000

Station: ISABELLA 1 W, MN

COOP ID: 214068

Climate Division: MN 3

NWS Call Sign:

Elevation: 2,010 Feet Lat: 47° 37N

Lon: 91° 23W

## 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	.0	.0	.0	51	1981	25	.0	0	-42	1972	15	.0	0	0	0	.0	.0	@	28.4	31.0	19.1
Feb	.0	.0	.0	57	1958	26	.0	0	-43	1996	2	.0	0	0	0	.0	.0	.4	21.2	28.1	13.1
Mar	.0	.0	.0	66	2000	8	.0	0	-34	1962	1	.0	0	0	0	.0	.0	2.3	14.3	30.2	6.3
Apr	.0	.0	.0	85+	1987	19	.0	0	-9	1995	4	.0	0	0	0	.0	.0	15.8	1.5	25.2	.4
May	.0	.0	.0	92	1964	23	.0	0	9+	1967	3	.0	0	0	0	.0	@	27.3	.1	9.6	.0
Jun	.0	.0	.0	98	1995	19	.0	0	22	1964	1	.0	0	0	0	.0	.4	29.7	.0	1.4	.0
Jul	.0	.0	.0	95	1983	15	.0	0	33	1987	14	.0	0	0	0	.0	.7	31.0	.0	.0	.0
Aug	.0	.0	.0	96	1991	14	.0	0	27+	1986	27	.0	0	0	0	.0	.3	31.0	.0	.2	.0
Sep	.0	.0	.0	93	1983	2	.0	0	20	1991	27	.0	0	0	0	.0	.1	28.1	.0	4.6	.0
Oct	.0	.0	.0	81+	1963	1	.0	0	-8	1976	27	.0	0	0	0	.0	.0	17.0	.8	20.0	.1
Nov	.0	.0	.0	75	1999	9	.0	0	-25	1958	30	.0	0	0	0	.0	.0	2.2	15.8	28.4	2.8
Dec	.0	.0	.0	52	1982	3	.0	0	-40	1989	20	.0	0	0	0	.0	.0	.1	26.9	30.9	14.3
Ann	.0	.0	.0	98	Jun 1995	19	-99.9	0	-43	Feb 1996	2	99.9	0	0	0	.0	1.5	184.9	109.0	209.6	56.1

+ 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: 1957-2001

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

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# 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: ISABELLA 1 W, MN

COOP ID: 214068

Climate Division: MN 3

NWS Call Sign:

Elevation: 2,010 Feet Lat: 47°37N

Lon: 91°23W

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	1.23	.92	1.44+	1997	6	6.96	1982	.00	1987	8.3	2.8	.2	.2	.11	.25	.45	.63	.82	1.02	1.25	1.52	1.89	2.49	3.06
Feb	.83	.64	1.06+	2001	26	2.75	1998	.07	1990	6.4	2.1	.2	.1	.11	.17	.29	.41	.53	.66	.82	1.01	1.28	1.70	2.12
Mar	1.49	1.23	3.54	1966	4	5.68	1979	.16	1992	6.2	3.0	.3	.1	.26	.39	.61	.82	1.02	1.25	1.51	1.82	2.23	2.90	3.54
Apr	1.89	1.84	2.42	2001	23	4.16	1981	.36	1988	7.2	4.4	1.3	.1	.57	.75	1.02	1.25	1.47	1.71	1.97	2.27	2.66	3.27	3.84
May	3.09	3.16	2.04	1973	25	6.05	1987	.90	1990	10.6	6.8	1.8	.6	1.16	1.45	1.86	2.20	2.53	2.87	3.23	3.65	4.19	5.02	5.78
Jun	4.06	3.50	5.28	1971	17	8.19	1976	1.32	1995	13.6	8.5	2.7	.7	1.41	1.80	2.36	2.83	3.28	3.74	4.24	4.83	5.58	6.75	7.82
Jul	4.11	4.07	3.80	1999	5	8.62	1993	.69	1989	12.8	8.7	2.7	.6	1.46	1.84	2.40	2.88	3.33	3.79	4.29	4.87	5.62	6.78	7.84
Aug	4.04	3.40	3.75	1972	16	12.12	1988	.70	1976	11.9	7.4	2.8	.7	1.11	1.49	2.08	2.59	3.08	3.61	4.18	4.87	5.76	7.16	8.46
Sep	3.59	3.32	2.71	1999	26	7.51	1977	.95	1976	13.2	7.5	2.2	.7	1.46	1.79	2.25	2.64	3.00	3.36	3.76	4.21	4.79	5.67	6.47
Oct	2.82	2.13	3.00	1977	11	7.69	1971	.79	1989	9.6	5.6	1.3	.6	.64	.91	1.32	1.69	2.06	2.46	2.90	3.43	4.12	5.22	6.26
Nov	1.77	1.70	1.33	1997	4	3.86	1988	.47	1990	7.9	3.6	.6	.1	.58	.75	1.00	1.21	1.41	1.61	1.84	2.11	2.45	2.98	3.47
Dec	1.09	1.08	1.04	1982	30	2.48	1996	.27	1997	7.3	2.7	.3	.1	.32	.43	.58	.72	.85	.98	1.13	1.31	1.54	1.89	2.23
Ann	30.01	29.89	5.28	Jun 1971	17	12.12	Aug 1988	.00	Jan 1987	115.0	63.1	16.4	4.6	21.98	23.55	25.56	27.07	28.41	29.71	31.04	32.51	34.29	36.86	39.07

+ 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: 1957-2001

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

Complete documentation available from:

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Station: ISABELLA 1 W, MN

COOP ID: 214068

Climate Division: MN 3

NWS Call Sign:

Elevation: 2,010 Feet

Lat: 47°37N

Lon: 91°23W

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	4.1	-99.9	20	20	16.5	1982	25	16.5	1982	40	1996	29	32	1989	4.9	3.8	1.4	.6	.1	-9.9	-9.9	-9.9	-9.9
Feb	3.5	-99.9	23	22	6.5	1979	23	17.5	1971	43	1996	28	34	1996	3.0	2.4	.8	.2	.0	-9.9	-9.9	-9.9	-9.9
Mar	6.6	-99.9	21	22	21.0	1971	15	33.0	1971	49	1971	16	36	1976	2.5	1.9	.6	.2	.1	-9.9	-9.9	-9.9	-9.9
Apr	5.9	3.0	7	2	12.0	1994	29	22.5	1972	42	1971	4	26	1972	1.6	1.5	.8	.4	.1	-9.9	-9.9	-9.9	-9.9
May	.4	.0	#	0	5.0	1984	1	5.0	1984	10	1996	1	1	1996	.3	.3	.1	@	.0	.4	.2	.1	.0
Jun	.0	.0	#	0	1.0	1998	2	1.0	1998	1	1998	2	#	1998	@	@	.0	.0	.0	.1	.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	3.0	1985	30	3.0	1985	1	1995	22	#	1995	.1	@	@	.0	.0	.1	.0	.0	.0
Oct	1.6	.7	#	#	11.0	1995	24	11.0	1995	11	1995	24	2	1995	.9	.5	.1	.1	.0	.4	.1	.0	.0
Nov	6.0	-99.9	5	4	11.0	1975	12	11.9	1971	24	1991	8	20	1985	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Dec	5.8	-99.9	11	10	8.2	1972	31	17.3	1972	27+	1995	14	24	1991	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Ann	34.1	-9.9	N/A	N/A	21.0	Mar 1971	15	33.0	Mar 1971	49	Mar 1971	16	36	Mar 1976	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9

+ 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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**NWS Call Sign:**

**Elevation: 2,010 Feet**

**Lat: 47°37N**

**Lon: 91°23W**

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	7/13	7/06	6/30	6/25	6/20	6/16	6/11	6/05	5/28
32	6/21	6/15	6/11	6/07	6/04	5/31	5/28	5/23	5/18
28	6/04	5/29	5/25	5/22	5/18	5/15	5/12	5/08	5/02
24	5/21	5/15	5/12	5/08	5/05	5/02	4/29	4/25	4/19
20	5/09	5/04	4/30	4/27	4/23	4/20	4/17	4/13	4/08
16	4/27	4/22	4/19	4/16	4/14	4/11	4/08	4/05	3/31
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	8/11	8/18	8/22	8/26	8/30	9/03	9/07	9/11	9/18
32	8/30	9/04	9/07	9/10	9/13	9/16	9/19	9/22	9/27
28	9/10	9/15	9/18	9/22	9/24	9/27	10/01	10/04	10/09
24	9/22	9/27	10/01	10/04	10/07	10/10	10/13	10/17	10/22
20	10/04	10/09	10/13	10/17	10/20	10/23	10/26	10/30	11/04
16	10/14	10/19	10/23	10/26	10/29	11/01	11/04	11/08	11/13
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	104	92	84	77	70	63	56	48	36
32	124	116	110	105	101	96	91	85	77
28	153	144	138	133	128	124	118	112	104
24	177	169	163	159	154	149	145	139	131
20	201	193	188	183	179	174	170	164	157
16	222	214	208	202	198	193	188	182	173

\* 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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**Elevation: 2,010 Feet    Lat: 47°37N    Lon: 91°23W**

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	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0
65	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0

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	0	3	86	350	581	743	686	388	118	8	0	0	0	3	89	439	1020	1763	2449	2837	2955	2963	2963
45	0	0	0	36	222	433	588	531	258	55	2	0	0	0	0	36	258	691	1279	1810	2068	2123	2125	2125
50	0	0	0	15	125	290	433	378	143	17	0	0	0	0	0	15	140	430	863	1241	1384	1401	1401	1401
55	0	0	0	3	63	167	282	235	66	1	0	0	0	0	0	3	66	233	515	750	816	817	817	817
60	0	0	0	0	25	80	153	114	25	0	0	0	0	0	0	0	25	105	258	372	397	397	397	397
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	2	79	230	358	460	422	226	79	6	0	0	0	2	81	311	669	1129	1551	1777	1856	1862	1862

(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.

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| <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)