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: HINCKLEY, MN **COOP ID: 213793**

Climate Division: MN 6 **NWS Call Sign:** **Elevation: 1,035 Feet** **Lat: 45˚59N** **Lon: 92˚53W**

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	18.3	-2.5	7.9	53	1981	25	21.3	1990	-41+	1951	30	-3.7	1977	1771	0	.0	.0	@	26.9	31.0	18.1
Feb	25.8	4.3	15.1	58	1981	19	29.5	1998	-35+	1989	4	2.8	1989	1399	0	.0	.0	.4	18.6	27.8	12.3
Mar	37.6	18.2	27.9	73	1987	8	37.2	1973	-38	1962	1	19.1	1996	1150	0	.0	.0	4.2	9.0	28.3	3.9
Apr	53.8	31.4	42.6	94	1980	22	50.1	1987	-2	1995	4	35.6	1975	673	0	.0	@	18.5	.8	17.9	.1
May	67.4	42.8	55.1	93+	1959	2	63.7	1977	15	1967	3	48.7	1997	330	22	.0	.1	29.6	.0	4.6	.0
Jun	75.8	51.8	63.8	99+	1988	21	69.1	1988	30+	1951	4	59.2	1985	98	63	.0	1.1	30.0	.0	.2	.0
Jul	80.3	56.8	68.6	102+	1988	16	73.5	1988	37+	1972	4	62.3	1992	33	143	.2	2.6	31.0	.0	.0	.0
Aug	78.2	54.1	66.2	102	1947	5	70.7	1983	33+	1976	29	61.9	1977	69	105	.0	1.4	31.0	.0	.0	.0
Sep	68.3	43.9	56.1	96	1976	8	62.4	1998	20+	1976	24	51.0	1993	279	13	.0	.2	29.4	.0	3.0	.0
Oct	55.6	33.4	44.5	88	1992	3	50.3	1973	10+	1988	30	38.8	1976	635	0	.0	.0	22.3	.1	15.4	.0
Nov	37.7	20.3	29.0	73	1978	4	37.4	1999	-22	1964	30	21.5	1985	1079	0	.0	.0	4.7	10.1	27.3	1.9
Dec	23.2	4.5	13.9	59+	1998	4	25.5	1997	-40	1983	19	.8	1983	1586	0	.0	.0	.2	23.5	31.0	13.0
Ann	51.8	29.9	40.9	102+	Jul 1988	16	73.5	Jul 1988	-41+	Jan 1951	30	-3.7	Jan 1977	9102	346	.2	5.4	201.3	89.0	186.5	49.3

\+ 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: 1937-2001

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

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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	1.03	.80	1.83	1997	6	3.50	1975	.06	1981
Feb	.78	.63	1.00	1965	10	2.35	1981	.07	1997
Mar	1.73	1.73	1.67	1977	12	4.42	1977	.58	1987
Apr	2.31	2.08	3.15	2001	23	6.30	1986	.29	1987
May	3.35	3.22	3.10	1979	10	7.78	1991	1.44	1994
Jun	4.27	4.11	4.31	1957	22	10.08	1984	1.02	1988
Jul	4.53	4.31	4.28	1972	22	8.87	1972	.99	1989
Aug	4.18	4.17	4.25	1940	1	9.76	1995	.64	1996
Sep	3.27	2.93	3.05	1984	24	7.19	1986	.69	1976
Oct	2.69	2.47	3.28	1949	8	7.29	1971	.31	1976
Nov	2.09	1.83	1.74	1982	20	5.30	1991	.16	1976
Dec	1.01	.97	1.92	1968	13	2.75	1982	.26	1979
Ann	31.24	31.32	4.31	Jun 1957	22	10.08	Jun 1984	.06	Jan 1981

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.3	3.2	.3	.1
Feb	6.1	2.1	.4	.0
Mar	7.8	4.6	1.0	.2
Apr	9.4	5.7	1.7	.3
May	11.0	6.8	2.4	.6
Jun	11.9	7.5	3.2	1.1
Jul	11.6	7.5	2.8	1.2
Aug	10.4	6.7	2.9	1.1
Sep	10.7	6.2	2.0	.8
Oct	9.6	5.0	1.9	.7
Nov	8.8	4.6	1.3	.4
Dec	7.9	3.3	.3	.1
Ann	113.5	63.2	20.2	6.6

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	.15	.24	.39	.53	.68	.84	1.02	1.25	1.56	2.06	2.54
Feb	.09	.14	.25	.36	.48	.61	.76	.95	1.21	1.64	2.05
Mar	.56	.73	.97	1.18	1.38	1.58	1.81	2.07	2.41	2.93	3.42
Apr	.44	.65	.99	1.30	1.62	1.96	2.35	2.81	3.44	4.43	5.38
May	1.37	1.67	2.11	2.47	2.80	3.15	3.51	3.94	4.48	5.31	6.06
Jun	1.74	2.13	2.69	3.14	3.57	4.00	4.47	5.01	5.70	6.74	7.69
Jul	1.75	2.17	2.77	3.27	3.74	4.22	4.74	5.34	6.11	7.28	8.35
Aug	1.30	1.70	2.29	2.79	3.28	3.79	4.35	5.01	5.86	7.18	8.40
Sep	.90	1.21	1.68	2.09	2.49	2.91	3.38	3.93	4.65	5.78	6.83
Oct	.50	.74	1.13	1.49	1.87	2.27	2.73	3.28	4.01	5.19	6.32
Nov	.34	.52	.83	1.11	1.41	1.73	2.10	2.55	3.15	4.12	5.06
Dec	.22	.31	.46	.59	.73	.87	1.03	1.22	1.48	1.88	2.26
Ann	22.19	23.94	26.18	27.88	29.40	30.86	32.37	34.04	36.06	39.00	41.54

\+ 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: 1937-2001
(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	10.1	8.5	12	12
Feb	7.3	5.2	13	12
Mar	10.0	8.9	8	6
Apr	3.1	2.2	1	#
May	.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.6	.0	#	0
Nov	10.7	8.5	2	1
Dec	11.1	10.0	6	6
Ann	52.9	43.3	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	14.0	1982	23	28.7	1975	30	1982	23	24	1997
Feb	11.0	1990	16	17.5	1979	34	1971	15	28	1971
Mar	11.0	1999	9	26.0	1985	31	1979	6	22	1975
Apr	8.0	1983	15	17.5	1983	24	1975	1	9	1975
May	.5	1979	5	.5	1979	1	1979	5	#+	1989
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	2.8	1987	22	6.8	1987	3	1987	22	#+	1997
Nov	15.0	1991	1	45.0	1991	22	1991	10	14	1991
Dec	14.0	1982	28	24.4	1982	24	1983	16	18	1983
Ann	15.0	Nov 1991	1	45.0	Nov 1991	34	Feb 1971	15	28	Feb 1971

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.1	4.0	1.3	.4	.1
Feb	5.1	2.7	.7	.2	@
Mar	4.4	3.1	1.3	.6	@
Apr	1.5	1.0	.3	.1	.0
May	.1	.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	.5	.4	.0	.0	.0
Nov	4.2	3.0	1.0	.5	.1
Dec	7.4	4.3	1.2	.3	@
Ann	30.3	18.5	5.8	2.1	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	16.1	11.6	9.9	7.7
Apr	3.5	2.4	1.6	.6
May	@	.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	@	.0	.0
Nov	8.5	3.9	1.5	.2
Dec	22.3	14.1	12.0	1.8
Ann	-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

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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	6/15	6/10	6/06	6/03	5/31	5/28	5/24	5/21	5/15
32	6/01	5/27	5/23	5/20	5/17	5/14	5/11	5/07	5/02
28	5/18	5/13	5/10	5/07	5/04	5/01	4/28	4/24	4/19
24	5/05	4/29	4/25	4/22	4/19	4/16	4/12	4/08	4/03
20	4/22	4/18	4/15	4/12	4/10	4/07	4/04	4/01	3/28
16	4/13	4/09	4/06	4/04	4/02	3/30	3/28	3/25	3/21

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	8/26	9/01	9/05	9/09	9/12	9/15	9/19	9/23	9/29
32	9/12	9/16	9/18	9/21	9/23	9/25	9/27	9/30	10/04
28	9/19	9/22	9/25	9/27	9/29	10/01	10/04	10/06	10/10
24	9/23	9/29	10/03	10/07	10/10	10/14	10/17	10/22	10/27
20	10/09	10/14	10/19	10/22	10/25	10/28	11/01	11/05	11/11
16	10/18	10/23	10/27	10/31	11/03	11/06	11/10	11/14	11/19

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	128	119	113	108	104	99	94	88	79
32	146	140	136	132	128	124	120	116	110
28	166	160	155	151	148	144	141	136	130
24	198	190	184	179	174	169	164	158	149
20	220	212	207	202	198	194	189	184	176
16	237	230	224	219	215	210	206	200	192

***** 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	1771	1399	1150	673	330	98	33	69	279	635	1079	1586	9102
60	1616	1259	995	526	212	35	7	21	162	481	929	1431	7674
57	1523	1175	902	441	156	16	0	8	107	391	839	1338	6896
55	1461	1119	840	386	123	8	0	4	77	334	779	1276	6407
50	1306	979	687	262	60	1	0	0	27	206	631	1121	5280
32	763	512	231	22	0	0	0	0	0	7	194	597	2326

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	15	37	104	339	716	955	1133	1059	724	396	105	34	5617
55	0	0	0	14	126	273	420	349	111	9	0	0	1302
57	0	0	0	8	96	220	358	292	80	4	0	0	1058
60	0	0	0	4	60	150	272	211	46	1	0	0	744
65	0	0	0	0	22	63	143	105	13	0	0	0	346
70	0	0	0	0	6	16	58	37	2	0	0	0	119

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	16	159	469	709	878	811	491	195	22	0	0	0	16	175	644	1353	2231	3042	3533	3728	3750	3750
45	0	0	6	84	326	560	723	656	349	101	7	0	0	0	6	90	416	976	1699	2355	2704	2805	2812	2812
50	0	0	0	41	204	413	568	502	219	45	0	0	0	0	0	41	245	658	1226	1728	1947	1992	1992	1992
55	0	0	0	15	109	273	413	348	122	18	0	0	0	0	0	15	124	397	810	1158	1280	1298	1298	1298
60	0	0	0	2	50	151	264	207	53	2	0	0	0	0	0	2	52	203	467	674	727	729	729	729
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	11	113	297	443	568	516	302	124	12	0	0	0	11	124	421	864	1432	1948	2250	2374	2386	2386

(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