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: HILLSBORO, WI **COOP ID: 473654**

Climate Division: WI 7 **NWS Call Sign:** **Elevation: 940 Feet** **Lat: 43˚39N** **Lon: 90˚20W**

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	24.1	2.8	13.5	59	1981	26	26.8	1990	-44	1963	15	-1.3	1977	1598	0	.0	.0	.4	22.0	30.7	12.6
Feb	30.6	8.8	19.7	61+	2000	27	32.6	1998	-40	1996	3	7.0	1979	1268	0	.0	.0	1.0	15.1	27.3	6.6
Mar	42.2	21.8	32.0	83	1986	29	40.2	1973	-38	1962	1	25.2	1984	1024	0	.0	.0	8.0	5.1	26.6	2.0
Apr	56.5	33.2	44.9	91	1980	23	52.0	1977	-14	1969	10	39.1	1975	605	1	.0	@	22.0	.2	13.9	.0
May	68.9	44.3	56.6	92+	1980	23	64.1	1977	19	1966	10	50.4	1997	290	28	.0	.2	30.4	.0	2.8	.0
Jun	78.1	54.0	66.1	100	1988	21	70.1	1971	32+	1972	10	59.7	1982	64	95	@	2.0	30.0	.0	@	.0
Jul	82.2	59.0	70.6	100+	1995	14	74.5	1977	41+	1997	8	64.9	1992	20	193	.1	5.0	31.0	.0	.0	.0
Aug	79.7	56.6	68.2	101	1988	17	74.3	1995	33	1964	14	63.1	1992	47	146	.1	2.3	31.0	.0	.0	.0
Sep	71.2	47.3	59.3	96	1978	9	63.8	1978	23	1967	29	53.7	1993	194	21	.0	.7	29.9	.0	1.5	.0
Oct	59.7	35.8	47.8	92	1963	6	56.5	1971	11	1988	29	41.2	1988	538	2	.0	.0	26.1	.0	11.5	.0
Nov	43.0	24.0	33.5	75	1964	3	41.1	1999	-10	1996	27	26.6+	1996	946	0	.0	.0	9.2	4.4	24.5	.6
Dec	29.3	10.1	19.7	64+	2001	6	28.2	1998	-33	1983	18	7.8	1983	1403	0	.0	.0	1.0	17.2	30.3	6.9
Ann	55.5	33.1	44.3	101	Aug 1988	17	74.5	Jul 1977	-44	Jan 1963	15	-1.3	Jan 1977	7997	486	.2	10.2	220.0	64.0	169.1	28.7

\+ 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: 1948-2001

(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	1.02	.80	.98	1967	25	2.42	1996	.10	1981
Feb	1.01	.88	1.23	1971	19	3.53	1971	.10	1995
Mar	2.00	1.68	2.09	1998	31	4.30	1998	.27	1994
Apr	3.41	3.00	3.20	1981	4	7.21	1981	.50	1997
May	3.58	3.56	3.33	2000	18	7.06	1973	.78	1981
Jun	4.06	3.23	3.91	1996	17	10.30	1990	.72	1976
Jul	4.13	4.08	3.16	1980	20	7.93	1999	1.35	1990
Aug	4.28	3.85	4.15	1959	27	13.81	1980	.59	1976
Sep	3.77	3.20	3.37	1994	10	11.31	1992	.71	1982
Oct	2.39	2.43	2.96	1965	21	8.21	1984	.74	1988
Nov	2.20	2.11	2.41	1982	11	5.50	1982	.00	1976
Dec	1.12	1.02	1.00	1959	28	2.69	1982	.13	1993
Ann	32.97	34.04	4.15	Aug 1959	27	13.81	Aug 1980	.00	Nov 1976

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.8	3.2	.3	.0
Feb	6.1	2.9	.4	@
Mar	8.1	4.8	1.1	.3
Apr	10.5	6.6	2.1	.8
May	10.0	6.7	2.2	.7
Jun	10.5	7.3	2.8	1.1
Jul	8.9	6.1	2.8	1.1
Aug	10.2	6.9	2.5	1.2
Sep	9.5	6.0	2.4	1.1
Oct	8.6	5.1	1.6	.4
Nov	8.9	4.6	1.4	.3
Dec	7.8	3.1	.4	.0
Ann	106.9	63.3	20.0	7.0

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	.22	.31	.46	.60	.73	.88	1.04	1.24	1.50	1.92	2.31
Feb	.13	.21	.35	.49	.64	.80	.99	1.23	1.55	2.07	2.58
Mar	.43	.62	.91	1.18	1.44	1.73	2.05	2.43	2.93	3.74	4.50
Apr	1.04	1.36	1.84	2.26	2.67	3.09	3.55	4.09	4.79	5.89	6.91
May	1.19	1.53	2.03	2.45	2.86	3.28	3.74	4.27	4.96	6.03	7.01
Jun	1.14	1.52	2.10	2.61	3.11	3.63	4.20	4.88	5.76	7.15	8.44
Jul	1.44	1.83	2.40	2.88	3.33	3.80	4.32	4.91	5.68	6.86	7.95
Aug	1.16	1.57	2.19	2.73	3.26	3.81	4.43	5.16	6.11	7.60	8.99
Sep	.54	.86	1.40	1.92	2.47	3.06	3.75	4.60	5.74	7.60	9.39
Oct	.68	.91	1.25	1.55	1.84	2.14	2.47	2.87	3.38	4.19	4.93
Nov	.40	.70	1.07	1.37	1.66	1.96	2.30	2.69	3.21	4.01	4.76
Dec	.20	.30	.47	.62	.77	.94	1.13	1.36	1.66	2.16	2.62
Ann	24.06	25.80	28.02	29.70	31.18	32.62	34.10	35.73	37.70	40.55	43.00

\+ 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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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	10.4	9.4	6	5
Feb	7.8	6.7	5	3
Mar	7.8	6.7	3	1
Apr	1.7	.0	1	#
May	#	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.2	.0	#	0
Nov	3.4	2.6	1	#
Dec	7.0	5.4	4	2
Ann	38.3	30.8	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	12.0	1971	4	23.0	1996	22	1971	17	19	1971
Feb	9.0	1994	23	21.0	1994	27	1971	13	22	1971
Mar	9.0	1997	14	24.0	1975	20	1975	29	14	1975
Apr	4.0	1993	16	12.5	1993	21	1975	2	11	1975
May	#	1997	1	#+	1997	#+	1997	1	#+	1997
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	3.0	1992	20	3.0	1992	3	1992	20	#+	2000
Nov	6.0	1992	26	9.3	1996	8	1996	23	2	1996
Dec	11.0	1985	1	22.6	1990	16	1985	1	12	1985
Ann	12.0	Jan 1971	4	24.0	Mar 1975	27	Feb 1971	13	22	Feb 1971

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.6	4.4	1.0	.3	.1
Feb	4.4	3.0	.9	.1	.0
Mar	3.8	2.8	1.0	.4	.0
Apr	.8	.7	.2	.0	.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	.0	.0	.0
Oct	.1	.1	@	.0	.0
Nov	2.4	1.6	.4	.2	.0
Dec	5.1	3.2	1.0	.2	@
Ann	23.2	15.8	4.5	1.2	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	20.8	16.1	11.2	4.9
Feb	17.8	13.6	9.3	1.2
Mar	9.9	7.8	6.1	2.2
Apr	1.8	1.3	.9	.5
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	@	@	.0	.0
Nov	3.7	2.1	.8	.0
Dec	16.1	8.2	2.6	1.1
Ann	70.1	49.1	30.9	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	6/11	6/05	5/31	5/27	5/24	5/20	5/16	5/12	5/05
32	5/30	5/24	5/20	5/16	5/13	5/10	5/06	5/02	4/26
28	5/13	5/08	5/04	5/01	4/28	4/25	4/22	4/18	4/13
24	4/24	4/20	4/17	4/14	4/12	4/10	4/07	4/04	3/31
20	4/18	4/14	4/11	4/08	4/06	4/04	4/01	3/29	3/25
16	4/09	4/04	3/31	3/28	3/24	3/21	3/18	3/14	3/09

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	9/09	9/12	9/15	9/17	9/19	9/21	9/23	9/25	9/29
32	9/20	9/24	9/26	9/28	9/30	10/02	10/04	10/06	10/09
28	9/23	9/28	10/02	10/05	10/07	10/10	10/13	10/17	10/21
24	10/04	10/10	10/14	10/18	10/22	10/25	10/29	11/02	11/08
20	10/15	10/21	10/25	10/28	11/01	11/04	11/08	11/12	11/18
16	10/27	11/02	11/06	11/10	11/13	11/17	11/21	11/25	12/01

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	136	129	125	121	117	114	110	105	98
32	157	151	147	143	139	135	132	127	121
28	180	174	169	165	162	158	154	150	143
24	215	207	201	196	192	187	182	177	169
20	228	221	216	212	208	204	200	195	188
16	260	251	244	238	233	228	222	216	206

***** 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	1598	1268	1024	605	290	64	20	47	194	538	946	1403	7997
60	1443	1128	869	458	179	19	4	12	93	393	796	1248	6642
57	1350	1044	776	375	127	7	0	4	53	312	706	1155	5909
55	1288	988	714	322	98	4	0	1	34	263	647	1093	5452
50	1133	848	568	204	44	0	0	0	8	160	502	938	4405
32	611	397	153	9	0	0	0	0	0	7	112	434	1723

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	36	53	152	395	762	1021	1197	1122	817	493	156	54	6258
55	0	0	0	18	146	334	484	410	161	37	1	0	1591
57	0	0	0	11	113	278	422	350	120	24	0	0	1318
60	0	0	0	4	73	200	333	266	70	11	0	0	957
65	0	0	0	1	28	95	193	146	21	2	0	0	486
70	0	0	0	0	8	30	93	65	3	0	0	0	199

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	2	47	214	539	798	964	892	602	280	48	3	0	2	49	263	802	1600	2564	3456	4058	4338	4386	4389
45	0	0	21	121	388	648	809	737	453	169	19	0	0	0	21	142	530	1178	1987	2724	3177	3346	3365	3365
50	0	0	9	60	252	498	654	582	313	86	4	0	0	0	9	69	321	819	1473	2055	2368	2454	2458	2458
55	0	0	3	26	143	349	499	428	192	39	0	0	0	0	3	29	172	521	1020	1448	1640	1679	1679	1679
60	0	0	0	11	69	215	345	277	101	9	0	0	0	0	0	11	80	295	640	917	1018	1027	1027	1027
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	36	152	342	512	640	582	379	185	34	1	0	0	36	188	530	1042	1682	2264	2643	2828	2862	2863

(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