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: HANCOCK EXP FARM, WI **COOP ID: 473405**

Climate Division: WI 5 **NWS Call Sign:** **Elevation: 1,076 Feet** **Lat: 44˚07N** **Lon: 89˚32W**

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	21.5	3.0	12.3	59	1944	25	25.2	1990	-43	1951	30	-.3	1977	1635	0	.0	.0	.2	23.2	30.8	11.8
Feb	27.7	8.7	18.2	63	2000	27	30.6	1998	-40	1928	25	7.8	1978	1311	0	.0	.0	1.0	15.8	27.3	7.7
Mar	39.0	21.0	30.0	84	1986	29	38.4+	2000	-39	1962	1	22.9	1984	1086	0	.0	.0	6.8	6.2	25.8	2.5
Apr	54.8	33.3	44.1	90+	1980	23	50.6	1977	-3	1928	9	37.2	1975	629	1	.0	.1	22.2	.4	13.9	@
May	67.7	45.2	56.5	105	1934	31	64.8	1977	18	1966	10	49.9	1997	301	36	.0	.3	30.6	.0	2.9	.0
Jun	76.6	54.8	65.7	106	1933	27	70.6	1988	29+	1964	1	59.9	1982	71	92	@	2.3	30.0	.0	.0	.0
Jul	80.0	59.2	69.6	112+	1936	14	73.5	1983	37	1929	19	64.5	1992	20	164	.1	4.1	31.0	.0	.0	.0
Aug	77.2	57.3	67.3	105	1948	24	72.8	1995	33+	1986	28	63.0	1986	50	120	.1	1.8	31.0	.0	.0	.0
Sep	69.2	48.7	59.0	100	1922	6	66.5	1998	16	1974	22	53.2	1993	208	27	.0	.4	29.9	.0	1.2	.0
Oct	57.7	37.8	47.8	91	1976	1	55.5	1971	0	1925	30	41.9	1987	535	1	.0	.1	25.8	@	9.1	.0
Nov	40.2	24.1	32.2	78	1933	1	40.8	1999	-19	1950	25	24.3	1995	986	0	.0	.0	7.9	5.6	23.0	.6
Dec	26.2	10.3	18.3	62	2001	5	26.1	1982	-32	1983	19	6.8	1983	1450	0	.0	.0	.8	19.3	29.9	7.2
Ann	53.2	33.6	43.4	112+	Jul 1936	14	73.5	Jul 1983	-43	Jan 1951	30	-.3	Jan 1977	8282	441	.2	9.1	217.2	70.5	163.9	29.8

\+ 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: 1903-2001

(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	.95	.88	1.20	1909	29	2.61	1996	.08	1981
Feb	.90	.91	2.00	1922	22	2.61	1981	.13	1982
Mar	2.00	1.86	2.80	1917	6	4.54	1973	.22	1978
Apr	2.97	2.80	2.45	1917	19	5.94	1999	.54	1989
May	3.41	3.06	3.46	1970	31	7.26	1989	.68	1981
Jun	3.81	3.69	5.04	1940	22	8.08	1990	1.16	1988
Jul	4.17	3.59	5.75	1997	17	10.66	1999	.83	1975
Aug	4.29	3.89	3.95	1940	18	9.16	1980	.79	1976
Sep	3.62	2.87	4.14	1978	12	10.78	1986	.42	1976
Oct	2.28	2.13	3.34	1959	24	4.91	1984	.41	1975
Nov	2.17	1.95	2.25	1934	28	5.41	1982	.08	1976
Dec	1.05	.88	1.60	1966	19	2.20	1992	.30	1986
Ann	31.62	32.09	5.75	Jul 1997	17	10.78	Sep 1986	.08+	Jan 1981

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.0	3.2	.2	.1
Feb	6.8	2.8	.4	@
Mar	8.3	5.1	1.2	.3
Apr	10.1	6.1	2.2	.5
May	10.8	6.7	2.2	.7
Jun	10.9	7.4	2.8	.9
Jul	10.4	6.8	2.8	1.1
Aug	10.5	7.3	3.2	1.1
Sep	10.4	6.6	2.4	.9
Oct	8.9	5.8	1.4	.1
Nov	9.1	5.0	1.2	.4
Dec	8.3	3.2	.3	.0
Ann	113.5	66.0	20.3	6.1

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	.23	.32	.46	.58	.70	.83	.98	1.15	1.38	1.74	2.08
Feb	.18	.26	.39	.51	.63	.76	.91	1.09	1.33	1.72	2.08
Mar	.40	.58	.87	1.14	1.41	1.71	2.04	2.44	2.96	3.81	4.62
Apr	.88	1.16	1.58	1.95	2.30	2.67	3.08	3.56	4.18	5.15	6.06
May	.99	1.32	1.80	2.23	2.64	3.07	3.54	4.10	4.82	5.95	7.00
Jun	1.21	1.58	2.11	2.57	3.01	3.47	3.97	4.56	5.32	6.50	7.59
Jul	1.33	1.73	2.31	2.81	3.30	3.80	4.34	4.99	5.81	7.10	8.29
Aug	1.30	1.71	2.32	2.84	3.35	3.88	4.46	5.14	6.02	7.39	8.67
Sep	.65	.97	1.50	2.00	2.50	3.04	3.66	4.41	5.41	7.01	8.54
Oct	.77	.99	1.30	1.57	1.83	2.09	2.38	2.72	3.15	3.82	4.44
Nov	.37	.56	.87	1.17	1.48	1.81	2.18	2.64	3.26	4.25	5.19
Dec	.25	.35	.51	.64	.78	.92	1.08	1.27	1.52	1.92	2.29
Ann	23.87	25.41	27.35	28.82	30.11	31.35	32.63	34.03	35.72	38.16	40.25

\+ 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: 1903-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

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	13.5	13.3	8	8	12.0	1988	20	34.0	1996	28	1996	31	19	1971	7.2	4.8	1.5	.5	.1	26.6	20.3	16.9	7.1
Feb	9.6	9.5	9	8	7.0	1983	2	22.2	1975	28	1996	3	20	1979	5.4	3.7	1.1	.3	.0	25.1	20.4	16.0	9.1
Mar	9.8	8.3	4	3	18.0	1997	14	32.5	1997	28	1997	14	11	1975	4.1	3.3	1.2	.6	.1	12.5	8.8	5.6	2.3
Apr	3.4	1.0	#	#	8.0	1973	9	22.0	1993	8	1973	9	1	1996	1.3	1.0	.5	.2	.0	2.1	1.1	.2	.0
May	.1	.0	0	0	2.0	1990	10	2.0	1990	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	#	.0	0	0	#	1985	24	#	1985	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.6	.0	#	0	4.0	1990	10	6.0	1990	4	1990	10	#+	1995	.3	.2	.1	.0	.0	.1	.1	.0	.0
Nov	5.1	4.1	1	#	10.0	1992	26	15.5	1988	9	1992	26	2	1991	2.9	2.1	.7	.2	@	4.7	2.2	1.1	.0
Dec	9.6	9.0	5	3	11.0	1990	3	23.6	1977	27	2000	28	17	1985	6.3	4.4	1.3	.4	@	21.2	13.6	9.1	1.9
Ann	51.7	45.2	N/A	N/A	18.0	Mar 1997	14	34.0	Jan 1996	28+	Mar 1997	14	20	Feb 1979	27.5	19.5	6.4	2.2	.2	92.3	66.5	48.9	20.4

+ 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

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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	6/01	5/29	5/26	5/22	5/19	5/15	5/09
32	5/27	5/22	5/18	5/16	5/13	5/10	5/07	5/04	4/29
28	5/15	5/10	5/07	5/04	5/01	4/28	4/25	4/22	4/17
24	5/01	4/26	4/23	4/20	4/17	4/15	4/12	4/09	4/04
20	4/21	4/17	4/15	4/12	4/10	4/08	4/05	4/03	3/30
16	4/17	4/12	4/09	4/06	4/03	4/01	3/29	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	9/08	9/12	9/15	9/17	9/20	9/22	9/24	9/27	10/01
32	9/16	9/20	9/23	9/25	9/28	9/30	10/02	10/05	10/09
28	9/23	9/28	10/01	10/04	10/06	10/09	10/12	10/15	10/20
24	10/01	10/07	10/12	10/16	10/19	10/23	10/27	10/31	11/07
20	10/13	10/19	10/23	10/26	10/30	11/02	11/05	11/10	11/15
16	10/19	10/26	10/31	11/04	11/07	11/11	11/15	11/20	11/26

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	134	128	123	120	116	113	109	105	98
32	154	148	144	140	137	134	130	126	120
28	177	170	166	161	158	154	150	145	138
24	207	199	193	189	184	180	175	169	161
20	222	215	210	206	202	198	194	189	182
16	241	233	227	222	217	212	207	201	193

***** 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	1635	1311	1086	629	301	71	20	50	208	535	986	1450	8282
60	1480	1171	931	484	194	23	4	12	109	387	836	1295	6926
57	1387	1087	838	400	141	10	0	4	66	305	746	1202	6186
55	1325	1031	776	348	112	5	0	1	45	255	686	1140	5724
50	1170	891	624	229	55	1	0	0	13	149	541	985	4658
32	634	425	186	14	0	0	0	0	0	4	139	470	1872

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	21	38	123	376	758	1011	1167	1093	809	494	144	43	6077
55	0	0	0	19	157	326	454	382	164	32	0	0	1534
57	0	0	0	12	125	270	392	322	125	19	0	0	1265
60	0	0	0	6	84	194	302	237	78	8	0	0	909
65	0	0	0	1	36	92	164	120	27	1	0	0	441
70	0	0	0	0	13	29	69	44	6	0	0	0	161

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	3	48	228	574	813	962	892	619	309	57	2	0	3	51	279	853	1666	2628	3520	4139	4448	4505	4507
45	0	0	22	136	424	663	807	737	471	190	25	0	0	0	22	158	582	1245	2052	2789	3260	3450	3475	3475
50	0	0	11	72	286	513	652	582	333	104	5	0	0	0	11	83	369	882	1534	2116	2449	2553	2558	2558
55	0	0	3	36	173	366	497	427	207	48	1	0	0	0	3	39	212	578	1075	1502	1709	1757	1758	1758
60	0	0	0	14	89	228	343	278	114	15	0	0	0	0	0	14	103	331	674	952	1066	1081	1081	1081
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	33	157	365	525	633	585	386	184	28	0	0	1	34	191	556	1081	1714	2299	2685	2869	2897	2897

(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