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: GREENFIELD, IN **COOP ID: 123527**

Climate Division: IN 5 **NWS Call Sign:** **Elevation: 865 Feet** **Lat: 39˚47N** **Lon: 85˚45W**

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	33.6	16.8	25.2	70	1950	25	35.6	1990	-29	1985	20	9.5	1977	1235	0	.0	.0	3.1	14.0	28.1	4.1
Feb	38.8	20.2	29.5	73	2000	26	38.8	1998	-19	1982	11	14.3	1978	994	0	.0	.0	6.0	9.3	24.2	2.5
Mar	49.9	29.9	39.9	84	1986	31	47.0	1973	-6	1980	3	31.6	1984	778	0	.0	.0	15.0	2.6	18.9	.2
Apr	61.8	40.4	51.1	87+	1960	25	56.9	1985	16	1982	7	46.9	1997	420	3	.0	.0	25.2	@	6.2	.0
May	72.9	51.4	62.2	93+	1962	18	69.4	1987	28+	1963	1	56.7	1997	177	87	.0	.6	30.8	.0	.3	.0
Jun	81.8	60.5	71.2	103	1988	26	75.1	1984	39+	1956	2	66.2	1972	20	205	.1	4.5	30.0	.0	.0	.0
Jul	85.4	64.4	74.9	103	1954	14	78.5	1983	46	1972	6	72.0	1971	0	306	.2	7.4	31.0	.0	.0	.0
Aug	83.6	62.2	72.9	101+	1988	18	78.1	1983	41+	1965	29	68.4	1992	11	255	.1	4.6	31.0	.0	.0	.0
Sep	77.5	54.6	66.1	100+	1953	2	70.2	1986	31	1995	23	61.4	1974	69	101	.0	1.8	30.0	.0	.1	.0
Oct	65.4	42.5	54.0	91	1951	4	61.6	1971	19	1976	28	48.1	1988	357	14	.0	@	28.9	.0	4.3	.0
Nov	51.1	32.9	42.0	81	1950	1	47.4	1999	-2	1950	25	33.7	1976	690	0	.0	.0	15.8	1.1	15.7	.0
Dec	38.6	22.6	30.6	72+	1982	3	40.1	1982	-19+	1989	22	18.2	1989	1067	0	.0	.0	5.4	8.5	25.5	1.6
Ann	61.7	41.5	51.6	103+	Jun 1988	26	78.5	Jul 1983	-29	Jan 1985	20	9.5	Jan 1977	5818	971	.4	18.9	252.2	35.5	123.3	8.4

\+ 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/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

Issue Date: February 2004

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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	2.47	2.11	2.78	1959	21	5.71	1982	.27	1981
Feb	2.37	2.32	2.50	1965	10	6.84	1971	.42	1978
Mar	3.33	3.06	2.22	1964	9	6.29	1991	1.16	1972
Apr	4.07	3.95	3.80	1984	23	8.80	1996	1.09	1971
May	4.69	4.13	3.41	1989	23	10.70	1996	1.10	1988
Jun	4.48	4.16	3.85	1992	18	10.51	1998	.40	1988
Jul	4.85	4.79	4.15	1977	17	11.45	1987	.49	1974
Aug	4.01	3.37	5.20	1968	10	11.25	1980	1.00	1987
Sep	3.16	2.18	3.72	1955	23	8.03	1996	.40	1998
Oct	3.05	2.71	4.10	1991	26	8.92	1986	.75	1982
Nov	3.88	3.19	3.60	1955	16	9.72	1985	.77	1976
Dec	3.07	2.90	2.62	1990	30	7.76	1990	.34	1976
Ann	43.43	43.27	5.20	Aug 1968	10	11.45	Jul 1987	.27	Jan 1981

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.2	5.9	1.6	.3
Feb	9.5	5.2	1.7	.4
Mar	11.2	7.1	2.1	.7
Apr	13.8	8.0	2.5	.8
May	12.6	8.5	3.5	1.1
Jun	11.3	7.7	2.7	1.0
Jul	9.7	7.1	3.3	1.6
Aug	9.7	6.1	2.7	1.2
Sep	8.3	5.5	2.3	.9
Oct	10.0	5.8	1.7	.6
Nov	11.9	6.8	2.8	.9
Dec	11.6	6.3	2.1	.5
Ann	130.8	80.0	29.0	10.0

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	.65	.88	1.24	1.56	1.87	2.19	2.55	2.98	3.54	4.42	5.25
Feb	.56	.78	1.13	1.44	1.74	2.07	2.43	2.87	3.43	4.34	5.19
Mar	1.26	1.57	2.02	2.39	2.74	3.10	3.49	3.94	4.52	5.40	6.21
Apr	1.52	1.90	2.45	2.90	3.34	3.78	4.26	4.82	5.53	6.62	7.62
May	1.45	1.90	2.56	3.13	3.68	4.25	4.88	5.62	6.57	8.05	9.43
Jun	1.10	1.52	2.17	2.75	3.32	3.93	4.61	5.42	6.47	8.15	9.72
Jul	1.42	1.89	2.58	3.17	3.76	4.36	5.03	5.82	6.84	8.43	9.91
Aug	.99	1.37	1.95	2.47	2.98	3.53	4.13	4.85	5.79	7.28	8.67
Sep	.51	.78	1.24	1.68	2.12	2.61	3.17	3.85	4.76	6.24	7.66
Oct	.81	1.10	1.54	1.93	2.31	2.71	3.16	3.68	4.37	5.46	6.47
Nov	.98	1.34	1.91	2.41	2.90	3.42	4.00	4.69	5.59	7.02	8.35
Dec	.84	1.14	1.58	1.96	2.34	2.74	3.18	3.69	4.37	5.43	6.41
Ann	32.39	34.57	37.33	39.41	41.26	43.03	44.85	46.86	49.28	52.77	55.77

\+ 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	5.4	3.4	2	1
Feb	3.0	2.0	1	#
Mar	1.5	.9	#	#
Apr	.2	.0	#	0
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	.1	.0	#	0
Nov	.9	.0	#	0
Dec	3.0	1.6	1	#
Ann	14.1	7.9	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	10.5	1999	2	14.0	1996	15	1996	8	6	1996
Feb	6.0	1993	26	13.5	1993	11	1982	9	5	1982
Mar	5.0	1999	9	5.3	1999	8	1984	1	2	1984
Apr	1.3	1994	7	1.3	1994	3	1982	9	#+	1996
May	.0	0	0	.0	0	0	0	0	0	0
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	1989	19	2.8	1989	3	1989	19	#	1989
Nov	5.1	1996	9	5.1	1996	5	1996	9	1	1997
Dec	10.8	1973	20	19.8	1973	12	1977	9	3	2000
Ann	10.8	Dec 1973	20	19.8	Dec 1973	15	Jan 1996	8	6	Jan 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.8	1.8	.5	.2	@
Feb	2.4	.7	.1	.1	.0
Mar	1.3	.6	.1	@	.0
Apr	.3	.1	.0	.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	@	@	.0	.0	.0
Nov	.6	.2	.1	@	.0
Dec	2.4	1.1	.3	.2	@
Ann	10.8	4.5	1.1	.5	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	6.3	3.9	2.0	.0
Feb	2.3	.7	.6	.0
Mar	1.2	.5	.2	.0
Apr	@	.0	.0	.0
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	.1	@	.0	.0
Nov	.6	.2	@	.0
Dec	2.7	1.4	.6	.1
Ann	13.2	6.7	3.4	.1

+ 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	5/15	5/10	5/07	5/04	5/02	4/29	4/26	4/23	4/19
32	5/07	5/02	4/28	4/25	4/22	4/19	4/15	4/12	4/07
28	4/21	4/17	4/14	4/11	4/09	4/06	4/04	4/01	3/28
24	4/11	4/07	4/03	4/01	3/29	3/26	3/24	3/20	3/16
20	4/02	3/28	3/24	3/21	3/19	3/16	3/13	3/10	3/05
16	3/25	3/18	3/14	3/10	3/06	3/02	2/26	2/21	2/15

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	9/24	9/28	10/01	10/04	10/06	10/08	10/11	10/14	10/18
32	9/29	10/05	10/08	10/12	10/15	10/18	10/21	10/25	10/30
28	10/15	10/20	10/23	10/27	10/29	11/01	11/04	11/08	11/13
24	10/23	10/29	11/02	11/05	11/08	11/12	11/15	11/19	11/24
20	11/03	11/10	11/15	11/20	11/24	11/28	12/02	12/08	12/15
16	11/17	11/24	11/29	12/03	12/07	12/11	12/16	12/21	12/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	174	168	164	160	157	153	150	146	140
32	195	188	183	179	175	171	167	163	156
28	222	215	211	207	203	199	195	190	184
24	245	238	232	228	224	219	215	210	202
20	274	265	259	254	249	244	239	233	225
16	298	291	285	280	276	271	266	261	253

***** 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	1235	994	778	420	177	20	0	11	69	357	690	1067	5818
60	1080	854	623	281	97	5	0	1	23	232	541	912	4649
57	987	770	538	207	62	2	0	0	9	169	454	819	4017
55	925	716	480	163	43	1	0	0	5	133	400	761	3627
50	779	586	344	78	16	0	0	0	1	66	270	617	2757
32	310	202	55	0	0	0	0	0	0	0	24	204	795

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	98	132	300	572	934	1176	1329	1267	1022	680	324	161	7995
55	0	3	12	46	264	486	616	554	337	100	10	4	2432
57	0	0	8	30	220	427	554	492	281	74	4	0	2090
60	0	0	0	14	163	340	461	400	205	44	1	0	1628
65	0	0	0	3	87	205	306	255	101	14	0	0	971
70	0	0	0	0	38	99	163	134	36	3	0	0	473

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	21	38	145	358	693	945	1091	1030	789	450	165	40	21	59	204	562	1255	2200	3291	4321	5110	5560	5725	5765
45	5	12	80	236	540	795	936	875	639	310	93	17	5	17	97	333	873	1668	2604	3479	4118	4428	4521	4538
50	0	3	44	143	392	645	781	720	491	197	49	5	0	3	47	190	582	1227	2008	2728	3219	3416	3465	3470
55	0	0	22	74	258	495	626	565	349	105	16	0	0	0	22	96	354	849	1475	2040	2389	2494	2510	2510
60	0	0	3	33	149	349	471	410	222	50	5	0	0	0	3	36	185	534	1005	1415	1637	1687	1692	1692
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	4	25	91	214	425	631	750	702	510	273	92	19	4	29	120	334	759	1390	2140	2842	3352	3625	3717	3736

(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