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: GOSHEN 3 W, IN **COOP ID: 123418**

Climate Division: IN 2 **NWS Call Sign:** **Elevation: 875 Feet** **Lat: 41˚33N** **Lon: 85˚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	31.5	17.0	24.3	68+	1950	25	35.9	1990	-24	1984	21	10.8	1977	1263	0	.0	.0	1.7	17.0	28.5	3.9
Feb	36.1	20.0	28.1	73+	1999	11	37.3	1998	-20	1963	26	13.9	1978	1035	0	.0	.0	3.1	11.5	24.2	2.6
Mar	47.6	29.2	38.4	81+	1981	31	45.3	1973	-8	1967	1	28.8	1984	826	0	.0	.0	12.4	3.2	20.1	.2
Apr	60.8	38.7	49.8	88	1980	22	55.9+	1985	1	1982	7	44.5	1982	461	3	.0	.0	24.1	.1	8.0	.0
May	72.5	49.2	60.9	92+	1962	18	68.5	1977	26	1966	10	54.9	1997	202	73	.0	.6	30.7	.0	.8	.0
Jun	81.3	58.8	70.1	102	1988	25	74.6	1971	35	1956	2	66.3	1972	25	177	.1	3.5	30.0	.0	.0	.0
Jul	84.5	62.8	73.7	101+	1955	27	77.2	1983	41	2001	2	70.3	2000	2	269	.1	5.6	31.0	.0	.0	.0
Aug	82.3	61.1	71.7	101	1964	2	78.3	1995	37+	1965	29	67.2	1992	15	222	.0	2.6	31.0	.0	.0	.0
Sep	75.8	53.6	64.7	101+	1953	1	69.9	1978	28	1951	29	59.3	1975	82	72	.0	1.0	30.0	.0	.1	.0
Oct	63.8	42.9	53.4	89+	1953	3	60.6	1971	18+	1952	21	47.1	1987	371	10	.0	.0	28.1	.0	4.4	.0
Nov	49.8	33.6	41.7	80	1950	1	47.4	1975	-5	1950	25	34.1	1976	699	0	.0	.0	13.7	1.6	15.5	.0
Dec	36.4	23.0	29.7	69+	1982	2	39.1	1982	-18	1983	24	16.5	2000	1094	0	.0	.0	3.5	10.9	25.8	1.6
Ann	60.2	40.8	50.5	102	Jun 1988	25	78.3	Aug 1995	-24	Jan 1984	21	10.8	Jan 1977	6075	826	.2	13.3	239.3	44.3	127.4	8.3

\+ 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: 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	1.84	1.80	1.82+	1960	12	4.10	1999	.36	1981
Feb	1.77	1.57	2.42	1954	16	5.37	1990	.42	1996
Mar	2.73	2.47	2.31	1985	28	6.00	1976	.49	1981
Apr	3.38	3.27	3.18	1988	6	6.93	1999	.51	1971
May	3.39	3.48	2.93	1996	10	6.77	1996	.60	1994
Jun	4.05	3.61	3.48	1993	9	9.48	1993	.77	1988
Jul	3.49	2.97	5.70	1981	26	9.84	1981	.53	1974
Aug	3.97	3.46	4.28	1979	20	11.68	1979	.95	1974
Sep	3.58	3.27	2.72	1991	12	9.97	1972	.00	1979
Oct	2.89	2.49	3.05	1991	25	7.47	1991	.74	1994
Nov	2.83	2.66	2.18	1996	7	5.99	1985	.78	1998
Dec	2.67	2.49	2.58	1990	29	5.28	1990	.46	1995
Ann	36.59	37.08	5.70	Jul 1981	26	11.68	Aug 1979	.00	Sep 1979

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.6	4.9	.8	.3
Feb	9.0	5.2	.7	.2
Mar	10.3	6.5	1.6	.4
Apr	11.2	7.6	2.0	.7
May	10.2	6.7	2.3	.6
Jun	9.3	6.7	2.8	1.0
Jul	8.3	5.6	2.3	.9
Aug	8.8	6.3	2.7	1.2
Sep	8.8	6.3	2.6	.9
Oct	9.2	5.7	1.8	.6
Nov	10.3	6.6	1.7	.6
Dec	11.5	6.7	1.4	.5
Ann	117.5	74.8	22.7	7.9

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	.46	.64	.90	1.14	1.37	1.62	1.90	2.22	2.65	3.32	3.95
Feb	.46	.63	.88	1.11	1.33	1.57	1.83	2.13	2.53	3.17	3.76
Mar	.89	1.15	1.53	1.85	2.17	2.49	2.85	3.26	3.80	4.63	5.39
Apr	1.25	1.56	2.02	2.40	2.76	3.13	3.53	4.00	4.59	5.51	6.35
May	1.25	1.56	2.02	2.40	2.77	3.14	3.54	4.01	4.61	5.53	6.37
Jun	1.29	1.67	2.24	2.73	3.20	3.68	4.22	4.84	5.65	6.91	8.07
Jul	.91	1.24	1.74	2.19	2.63	3.09	3.60	4.21	5.01	6.27	7.44
Aug	1.19	1.56	2.13	2.62	3.09	3.58	4.13	4.76	5.59	6.88	8.08
Sep	.72	1.23	1.83	2.31	2.77	3.25	3.77	4.38	5.17	6.40	7.54
Oct	.85	1.13	1.54	1.90	2.24	2.60	3.00	3.47	4.08	5.04	5.92
Nov	1.01	1.27	1.66	1.98	2.30	2.61	2.96	3.36	3.88	4.68	5.41
Dec	.82	1.08	1.45	1.78	2.09	2.42	2.78	3.19	3.74	4.58	5.36
Ann	27.52	29.31	31.59	33.30	34.82	36.27	37.76	39.41	41.39	44.25	46.70

\+ 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)

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	11.7	9.6	3	2	14.0	1978	26	36.6	1978	28	1978	27	11+	1999	7.8	3.5	1.0	.4	.1	18.0	12.7	9.5	3.7
Feb	7.3	7.6	4	2	6.5	1985	11	17.0	1985	23	1978	5	20	1978	5.7	3.2	.7	.1	.0	14.7	11.4	7.8	4.1
Mar	4.9	3.5	1	#	9.0	1977	22	16.6	1977	19	1978	5	11	1978	3.3	1.6	.5	.2	.0	5.0	3.2	1.6	.5
Apr	1.1	.3	#	0	6.0	1982	6	9.0	1982	4	1994	6	#+	2000	.8	.4	.1	@	.0	.2	.1	.0	.0
May	#	.0	0	0	#	1989	6	#	1989	0	0	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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.4	.0	#	0	8.0	1989	19	8.0	1989	5	1989	19	#+	1989	.2	.1	@	@	.0	.1	.1	@	.0
Nov	3.9	3.5	#	#	5.0	1977	12	14.0	1977	5	1977	27	1	1996	2.8	1.7	.3	@	.0	1.8	.6	.1	.0
Dec	10.2	9.0	2	1	8.0	1980	29	35.9	2000	17	2000	30	10	2000	6.3	3.4	1.0	.2	.0	10.2	6.0	3.5	1.2
Ann	39.5	33.5	N/A	N/A	14.0	Jan 1978	26	36.6	Jan 1978	28	Jan 1978	27	20	Feb 1978	26.9	13.9	3.6	.9	.1	50.0	34.1	22.5	9.5

+ 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	5/24	5/19	5/15	5/12	5/10	5/07	5/04	5/01	4/26
32	5/13	5/08	5/05	5/02	4/29	4/26	4/24	4/20	4/15
28	4/27	4/23	4/20	4/17	4/14	4/12	4/09	4/06	4/02
24	4/18	4/14	4/11	4/08	4/06	4/03	4/01	3/29	3/24
20	4/10	4/05	4/01	3/29	3/26	3/23	3/19	3/16	3/10
16	4/03	3/27	3/22	3/18	3/14	3/11	3/06	3/02	2/23

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	9/19	9/24	9/27	9/30	10/03	10/05	10/08	10/11	10/16
32	9/28	10/03	10/07	10/11	10/14	10/17	10/20	10/24	10/29
28	10/09	10/15	10/20	10/23	10/27	10/30	11/03	11/07	11/13
24	10/25	10/30	11/03	11/07	11/10	11/13	11/17	11/21	11/26
20	11/03	11/09	11/13	11/17	11/21	11/25	11/28	12/03	12/09
16	11/17	11/23	11/28	12/01	12/05	12/09	12/13	12/17	12/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	165	158	153	149	145	141	137	132	125
32	184	178	174	170	167	163	160	155	149
28	218	210	204	199	194	190	185	179	171
24	240	232	227	222	218	213	209	203	196
20	266	257	250	245	240	234	229	222	213
16	292	282	276	270	265	260	254	248	238

***** 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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1263	1035	826	461	202	25	2	15	82	371	699	1094	6075
60	1108	895	671	320	116	6	0	2	27	241	549	939	4874
57	1015	811	580	244	77	2	0	0	11	176	461	846	4223
55	953	755	523	198	56	1	0	0	6	139	403	789	3823
50	801	620	383	105	22	0	0	0	1	67	272	645	2916
32	326	213	64	1	0	0	0	0	0	0	22	226	852

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	85	102	261	533	894	1142	1291	1230	981	662	313	155	7649
55	0	0	8	40	237	453	578	517	296	88	5	5	2227
57	0	0	3	26	196	394	516	455	242	63	2	0	1897
60	0	0	0	12	142	308	423	364	168	35	0	0	1452
65	0	0	0	3	73	177	269	222	72	10	0	0	826
70	0	0	0	0	30	77	133	111	21	2	0	0	374

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	7	19	112	306	643	901	1044	979	728	406	138	26	7	26	138	444	1087	1988	3032	4011	4739	5145	5283	5309
45	2	5	62	191	491	751	889	824	578	273	75	11	2	7	69	260	751	1502	2391	3215	3793	4066	4141	4152
50	0	0	34	108	342	601	734	669	431	160	34	4	0	0	34	142	484	1085	1819	2488	2919	3079	3113	3117
55	0	0	11	54	217	452	579	514	293	79	14	0	0	0	11	65	282	734	1313	1827	2120	2199	2213	2213
60	0	0	2	23	121	309	424	360	175	34	3	0	0	0	2	25	146	455	879	1239	1414	1448	1451	1451
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	1	11	70	182	399	598	711	660	459	231	70	9	1	12	82	264	663	1261	1972	2632	3091	3322	3392	3401

(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