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: CHARLESTOWN 5 NNW, IN **COOP ID: 121425**

Climate Division: IN 9 **NWS Call Sign:** **Elevation: 550 Feet** **Lat: 38˚29N** **Lon: 85˚42W**

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	41.2	21.4	31.3	72	1967	24	41.4	1990	-28	1994	19	16.8	1977	1045	0	.0	.0	7.7	7.4	24.0	1.4
Feb	47.1	24.2	35.7	78	1972	29	44.5	1976	-15	1996	4	23.4	1980	821	0	.0	.0	12.4	4.0	19.7	.7
Mar	57.7	32.3	45.0	84	1986	31	52.7	1976	-3	1980	3	36.9	1978	619	0	.0	.0	23.0	.6	13.7	.1
Apr	68.0	40.6	54.3	90	1985	27	59.6	1981	21+	1972	8	48.5	1983	328	7	.0	@	28.6	.0	4.1	.0
May	77.2	50.4	63.8	95	1988	21	70.0	1991	28	1966	10	59.2	1971	135	97	.0	.6	31.0	.0	.4	.0
Jun	84.7	58.8	71.8	102+	1988	25	74.9	1971	39	1966	1	66.8	1974	9	211	.1	6.1	30.0	.0	.0	.0
Jul	88.5	63.0	75.8	104	1999	30	80.6	1980	47	1962	27	72.5	1979	0	333	.4	13.1	31.0	.0	.0	.0
Aug	87.2	61.1	74.2	102	1962	20	79.8	1980	41	1986	29	69.4	1992	5	290	.2	10.5	31.0	.0	.0	.0
Sep	80.6	53.3	67.0	98+	1964	9	71.3	1998	33	1993	30	61.9	1974	61	120	.0	3.1	30.0	.0	.0	.0
Oct	70.1	42.2	56.2	90	1963	11	63.8	1971	18	1976	28	50.1	1987	295	21	.0	.0	30.6	.0	3.2	.0
Nov	56.6	34.1	45.4	82	1965	4	51.3	1985	9	1964	22	38.5	1976	590	0	.0	.0	22.5	.2	10.4	.0
Dec	45.2	25.4	35.3	73	1998	7	43.8	1971	-17	1989	22	22.7	1989	921	0	.0	.0	11.1	3.9	20.7	.4
Ann	67.0	42.2	54.7	104	Jul 1999	30	80.6	Jul 1980	-28	Jan 1994	19	16.8	Jan 1977	4829	1079	.7	33.4	288.9	16.1	96.2	2.6

\+ 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: 1962-2001

(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	3.10	3.28	3.00	2000	3	5.02	1982	.53	1981
Feb	2.80	2.49	3.67	2000	18	6.59	1989	.39	1978
Mar	4.31	3.74	5.10	1964	9	10.59	1997	1.02	2000
Apr	4.20	3.39	3.00	1996	29	9.49	1996	.94	1976
May	5.26	4.51	4.01	1984	6	10.73	1990	1.93	1987
Jun	3.89	3.59	3.30	1964	18	9.43	1973	.59	1988
Jul	4.19	3.67	4.62	1973	21	9.76	1979	.00	1998
Aug	3.99	3.88	3.75	1992	8	8.55	1974	.10	1999
Sep	3.05	2.85	3.05	1979	14	8.84	1979	.00	1998
Oct	2.87	2.47	4.02	1977	1	8.92	1983	.00	2000
Nov	3.83	3.63	1.96	1996	25	7.15	1979	.64	1976
Dec	3.98	3.83	2.40	1966	9	9.39	1990	.50	1976
Ann	45.47	44.73	5.10	Mar 1964	9	10.73	May 1990	.00+	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.7	6.0	2.0	.5
Feb	7.7	5.5	2.0	.5
Mar	10.3	7.8	3.1	.8
Apr	10.9	7.8	3.1	1.1
May	10.8	8.5	3.6	1.4
Jun	8.1	6.1	2.7	1.2
Jul	8.2	6.0	2.7	1.3
Aug	7.1	5.6	2.8	1.3
Sep	7.3	5.7	1.9	.7
Oct	6.5	5.1	2.1	.8
Nov	9.4	6.6	2.8	1.4
Dec	9.3	6.8	2.8	1.2
Ann	104.3	77.5	31.6	12.2

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	.97	1.27	1.70	2.08	2.44	2.81	3.22	3.70	4.32	5.29	6.19
Feb	.59	.85	1.26	1.64	2.01	2.41	2.86	3.41	4.12	5.26	6.35
Mar	1.39	1.80	2.40	2.92	3.41	3.93	4.49	5.15	6.00	7.32	8.54
Apr	1.37	1.77	2.36	2.86	3.34	3.83	4.38	5.02	5.84	7.11	8.29
May	1.99	2.48	3.18	3.76	4.32	4.89	5.50	6.21	7.12	8.51	9.79
Jun	1.03	1.40	1.96	2.45	2.94	3.45	4.02	4.69	5.56	6.94	8.22
Jul	.51	1.03	1.74	2.33	2.94	3.58	4.30	5.17	6.32	8.15	9.89
Aug	.92	1.29	1.87	2.40	2.92	3.47	4.09	4.83	5.81	7.35	8.81
Sep	.81	1.25	1.74	2.13	2.49	2.85	3.24	3.70	4.27	5.16	5.98
Oct	.64	1.04	1.52	1.90	2.26	2.63	3.03	3.50	4.10	5.03	5.90
Nov	1.17	1.54	2.08	2.54	2.99	3.46	3.98	4.58	5.37	6.59	7.72
Dec	1.11	1.49	2.06	2.56	3.05	3.56	4.12	4.79	5.65	7.01	8.27
Ann	32.53	35.03	38.24	40.68	42.84	44.93	47.08	49.46	52.35	56.53	60.15

\+ 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: 1962-2001
(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	#	.0	#	0	#	1997	25	#+	1997	#+	1997	25	#+	1997	.0	.0	.0	.0	.0	.0	.0	.0	.0
Feb	.1	-99.9	1	0	.3	1973	20	.3	1973	25	1998	6	4	1998	.1	.0	.0	.0	.0	-9.9	-9.9	-9.9	-9.9
Mar	.8	.0	#	0	4.5	1975	10	4.5	1975	4	1996	19	#	1996	.0	.0	.0	.0	.0	.0	.0	.0	.0
Apr	#	.0	0	0	#	1992	1	#+	1992	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	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	#	1985	5	#	1985	.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	.0	.0	#	0	.0	0	0	.0	0	3	1993	30	#	1993	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	#	.0	0	0	#	1977	27	#+	1977	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	#	.0	#	0	#	1997	7	#	1997	7	1990	27	#+	1997	.0	.0	.0	.0	.0	.0	.0	.0	.0
Ann	.9	-9.9	N/A	N/A	4.5	Mar 1975	10	4.5	Mar 1975	25	Feb 1998	6	4	Feb 1998	.1	.0	.0	.0	.0	-9.9	-9.9	-9.9	-9.9

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	5/18	5/13	5/09	5/06	5/03	4/30	4/26	4/23	4/17
32	5/08	5/01	4/26	4/22	4/18	4/14	4/10	4/05	3/30
28	4/24	4/17	4/12	4/07	4/03	3/30	3/26	3/20	3/13
24	4/10	4/03	3/29	3/25	3/21	3/17	3/13	3/08	3/01
20	3/24	3/18	3/13	3/10	3/06	3/03	2/27	2/22	2/16
16	3/15	3/08	3/03	2/27	2/23	2/20	2/16	2/11	2/04

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	9/25	9/29	10/02	10/05	10/07	10/10	10/12	10/15	10/19
32	10/04	10/10	10/14	10/18	10/22	10/25	10/29	11/02	11/08
28	10/12	10/19	10/24	10/28	11/01	11/05	11/09	11/14	11/20
24	10/27	11/02	11/07	11/11	11/14	11/18	11/22	11/26	12/02
20	11/09	11/15	11/20	11/24	11/28	12/01	12/05	12/10	12/17
16	11/18	11/25	11/30	12/04	12/08	12/12	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	176	170	165	161	157	153	149	144	137
32	212	203	197	191	186	181	175	169	160
28	238	229	222	216	211	206	200	193	184
24	266	256	249	243	237	232	226	218	209
20	290	281	276	270	266	261	256	250	242
16	312	303	297	292	287	282	276	270	261

***** 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	1045	821	619	328	135	9	0	5	61	295	590	921	4829
60	890	682	474	201	65	1	0	0	19	179	442	766	3719
57	800	604	390	139	37	0	0	0	8	124	359	679	3140
55	745	552	337	105	24	0	0	0	4	93	305	621	2786
50	600	425	223	42	7	0	0	0	0	39	188	478	2002
32	201	105	19	0	0	0	0	0	0	0	8	118	451

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	179	208	423	669	985	1192	1356	1308	1050	748	408	220	8746
55	10	10	28	84	297	502	643	595	364	128	16	10	2687
57	2	6	19	58	247	442	581	533	307	97	9	6	2307
60	0	0	10	31	182	353	488	440	229	59	3	0	1795
65	0	0	0	7	97	211	333	290	120	21	0	0	1079
70	0	0	0	1	40	95	189	158	48	5	0	0	536

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	57	101	244	478	774	1010	1166	1118	858	552	245	88	57	158	402	880	1654	2664	3830	4948	5806	6358	6603	6691
45	31	48	149	342	619	860	1011	963	708	405	148	43	31	79	228	570	1189	2049	3060	4023	4731	5136	5284	5327
50	5	22	80	218	465	710	856	808	558	264	77	18	5	27	107	325	790	1500	2356	3164	3722	3986	4063	4081
55	0	4	36	125	320	560	701	653	412	154	36	3	0	4	40	165	485	1045	1746	2399	2811	2965	3001	3004
60	0	0	14	60	191	411	546	498	273	75	8	0	0	0	14	74	265	676	1222	1720	1993	2068	2076	2076
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	34	64	159	302	506	687	803	763	572	353	138	49	34	98	257	559	1065	1752	2555	3318	3890	4243	4381	4430

(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