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: ENGLISH 4 S, IN **COOP ID: 122660**

Climate Division: IN 8 **NWS Call Sign:** **Elevation: 510 Feet** **Lat: 38˚17N** **Lon: 86˚28W**

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	41.3	21.1	31.2	72	1986	21	40.5+	1998	-31	1977	17	16.1	1977	1048	0	.0	.0	7.7	7.4	25.2	2.7
Feb	48.3	24.3	36.3	79	1972	29	44.9	1976	-15	1985	3	23.2	1978	804	0	.0	.0	12.9	3.7	21.5	1.7
Mar	58.7	32.5	45.6	85+	1981	31	54.4	1973	-10	1978	5	38.7	1996	600	0	.0	.0	23.4	.4	16.9	.1
Apr	68.9	40.6	54.8	91	1989	26	60.5	1981	15	1982	7	49.7	1982	314	6	.0	.1	28.8	.0	7.6	.0
May	77.4	49.4	63.4	97	1975	22	69.6	1991	25	1976	4	59.2	1997	131	81	.0	.6	31.0	.0	1.4	.0
Jun	84.8	58.5	71.7	102	1988	25	75.0	1971	36+	1972	1	67.6	1982	9	209	.1	5.2	30.0	.0	.0	.0
Jul	88.3	63.2	75.8	104	1983	22	78.7	1993	41	1988	2	72.0	1984	0	332	.3	12.4	31.0	.0	.0	.0
Aug	87.1	61.1	74.1	102	1983	20	79.4	1983	35	1986	29	69.7	1992	3	285	.1	9.5	31.0	.0	.0	.0
Sep	80.9	53.2	67.1	98	1999	4	71.6	1972	28	1983	24	62.7	1974	56	118	.0	3.4	30.0	.0	.3	.0
Oct	70.4	40.7	55.6	90	1971	1	61.6	1971	14+	1981	24	46.9	1987	312	19	.0	@	30.5	.0	7.9	.0
Nov	57.1	33.8	45.5	84+	1987	1	52.4	1985	1	1976	30	37.0	1976	586	0	.0	.0	21.1	.3	14.8	.0
Dec	45.6	25.3	35.5	76+	1982	2	45.1	1971	-21	1989	22	22.8	2000	916	0	.0	.0	11.1	4.3	21.9	1.0
Ann	67.4	42.0	54.7	104	Jul 1983	22	79.4	Aug 1983	-31	Jan 1977	17	16.1	Jan 1977	4779	1050	.5	31.2	288.5	16.1	117.5	5.5

\+ 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: 1969-2001

(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	3.68	3.58	5.50	2000	3	9.07	1982	.57	1981
Feb	3.50	3.32	4.30	2000	18	7.98	2000	.92	1978
Mar	4.79	4.58	3.01	1991	22	9.99	1997	1.82	1971
Apr	4.73	4.33	3.82	1996	29	9.86	1996	1.27	1976
May	5.06	4.00	4.00	1983	13	14.23	1983	1.92	1991
Jun	4.80	4.00	3.85	1979	9	9.79	1979	.86	1988
Jul	4.24	4.40	4.00	1979	27	12.64	1979	.31	1994
Aug	3.89	4.12	2.95	1995	5	7.47	1977	.44	1991
Sep	3.56	3.43	2.55	1996	16	8.96	1996	.40	1998
Oct	3.13	2.68	3.53	1977	1	7.99	1983	.62	1992
Nov	4.35	4.60	2.93	1997	30	8.96	1979	1.45	1976
Dec	3.99	3.51	2.65	1984	21	9.29	1990	.74	1976
Ann	49.72	49.62	5.50	Jan 2000	3	14.23	May 1983	.31	Jul 1994

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.2	6.9	2.5	.7
Feb	11.1	6.6	2.1	.8
Mar	12.9	8.8	3.3	1.3
Apr	12.6	8.1	3.2	1.2
May	11.9	8.3	3.6	1.2
Jun	11.0	7.8	3.0	1.3
Jul	9.3	6.5	2.7	1.2
Aug	8.8	5.6	2.9	1.1
Sep	9.2	5.6	2.4	1.0
Oct	9.7	5.1	2.1	.9
Nov	11.7	7.6	3.1	1.2
Dec	11.9	7.3	2.8	1.0
Ann	132.3	84.2	33.7	12.9

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	1.00	1.35	1.88	2.34	2.80	3.28	3.81	4.44	5.26	6.54	7.74
Feb	1.01	1.34	1.84	2.28	2.70	3.15	3.63	4.21	4.96	6.13	7.23
Mar	1.88	2.32	2.95	3.47	3.97	4.47	5.01	5.64	6.44	7.67	8.78
Apr	1.59	2.04	2.69	3.25	3.78	4.34	4.94	5.64	6.55	7.95	9.24
May	1.50	1.98	2.70	3.32	3.93	4.56	5.26	6.08	7.14	8.80	10.34
Jun	1.27	1.73	2.42	3.03	3.63	4.26	4.96	5.79	6.88	8.58	10.17
Jul	.94	1.33	1.95	2.51	3.07	3.67	4.34	5.14	6.20	7.88	9.47
Aug	.98	1.34	1.91	2.41	2.91	3.43	4.01	4.70	5.61	7.03	8.37
Sep	.75	1.08	1.60	2.07	2.55	3.06	3.63	4.32	5.23	6.68	8.05
Oct	.73	1.02	1.48	1.89	2.30	2.73	3.22	3.80	4.56	5.77	6.91
Nov	1.49	1.90	2.50	3.01	3.49	3.99	4.54	5.17	5.99	7.25	8.42
Dec	1.28	1.66	2.22	2.70	3.16	3.64	4.16	4.77	5.56	6.79	7.92
Ann	36.11	38.77	42.16	44.73	47.00	49.20	51.46	53.96	56.98	61.35	65.12

\+ 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: 1969-2001
(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	4.9	.5	1	#	6.0	1978	17	24.0	1978	14	1978	17	9	1977	1.1	.9	.3	.1	.0	3.3	2.6	2.4	1.7
Feb	3.1	.5	1	#	10.0	1998	5	24.0	1998	15	1998	7	4	1985	.9	.8	.1	.1	.1	1.3	.9	.8	.3
Mar	.8	#	#	0	4.0	1978	3	6.0	1978	14	1996	20	2	1996	.2	.2	.1	.0	.0	.5	.4	.2	.1
Apr	.0	.0	#	0	1.0	1973	10	1.0	1973	1	1973	10	#+	2000	@	@	.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	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	#	.0	#	0	#	1989	19	#	1989	1	1993	30	#+	1993	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.3	.0	#	0	2.5	1971	23	4.5	1971	4	1977	27	#+	1997	.2	.1	.0	.0	.0	.1	@	.0	.0
Dec	.8	.0	#	#	3.0	1973	20	5.0	1973	7	1984	6	2+	2000	.5	.4	.1	.0	.0	.3	@	.0	.0
Ann	9.9	1.0	N/A	N/A	10.0	Feb 1998	5	24.0+	Feb 1998	15	Feb 1998	7	9	Jan 1977	2.9	2.4	.6	.2	.1	5.5	3.9	3.4	2.1

+ 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	6/02	5/26	5/21	5/17	5/14	5/10	5/06	5/01	4/25
32	5/18	5/13	5/10	5/06	5/03	4/30	4/27	4/24	4/18
28	4/30	4/26	4/22	4/19	4/17	4/14	4/11	4/08	4/04
24	4/19	4/15	4/12	4/09	4/07	4/04	4/02	3/29	3/25
20	4/10	4/05	4/01	3/29	3/26	3/22	3/19	3/15	3/10
16	3/27	3/20	3/16	3/11	3/07	3/04	2/27	2/22	2/16

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	9/14	9/18	9/22	9/24	9/27	9/30	10/03	10/06	10/11
32	9/27	9/30	10/03	10/05	10/07	10/09	10/11	10/13	10/17
28	10/02	10/06	10/09	10/11	10/13	10/16	10/18	10/21	10/25
24	10/13	10/19	10/23	10/26	10/29	11/02	11/05	11/09	11/15
20	10/21	10/27	11/01	11/05	11/09	11/12	11/16	11/21	11/28
16	11/01	11/08	11/13	11/18	11/22	11/26	11/30	12/05	12/12

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	158	150	145	140	136	131	126	121	113
32	171	166	162	159	156	152	149	145	140
28	198	191	187	183	179	175	171	167	160
24	224	217	213	209	205	201	197	193	186
20	252	244	238	232	227	222	217	211	202
16	283	275	269	263	259	254	248	242	234

***** 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	1048	804	600	314	131	9	0	3	56	312	586	916	4779
60	893	664	454	187	60	1	0	0	17	194	440	761	3671
57	802	584	369	126	32	0	0	0	7	136	357	677	3090
55	748	533	316	92	20	0	0	0	4	105	304	619	2741
50	603	405	203	33	5	0	0	0	0	46	190	479	1964
32	203	90	13	0	0	0	0	0	0	0	9	127	442

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	178	210	436	682	973	1190	1355	1305	1052	730	413	235	8759
55	10	9	26	84	280	500	642	592	366	122	18	13	2662
57	2	4	17	57	230	440	580	530	309	92	11	10	2282
60	0	0	9	29	165	351	487	437	229	56	3	0	1766
65	0	0	0	6	81	209	332	285	118	19	0	0	1050
70	0	0	0	1	29	92	183	151	45	4	0	0	505

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	48	93	236	448	727	949	1110	1062	813	486	222	79	48	141	377	825	1552	2501	3611	4673	5486	5972	6194	6273
45	23	48	144	311	572	799	955	907	663	343	131	41	23	71	215	526	1098	1897	2852	3759	4422	4765	4896	4937
50	5	25	79	194	419	649	800	752	515	217	71	20	5	30	109	303	722	1371	2171	2923	3438	3655	3726	3746
55	0	6	40	109	276	499	645	597	369	120	33	7	0	6	46	155	431	930	1575	2172	2541	2661	2694	2701
60	0	0	14	49	157	351	490	442	237	55	10	0	0	0	14	63	220	571	1061	1503	1740	1795	1805	1805
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	34	69	172	300	478	637	753	718	539	338	148	49	34	103	275	575	1053	1690	2443	3161	3700	4038	4186	4235

(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