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: COLUMBIA CITY, IN **COOP ID: 121739**

Climate Division: IN 3 **NWS Call Sign:** **Elevation: 850 Feet** **Lat: 41˚09N** **Lon: 85˚29W**

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	30.6	14.4	22.5	66	1995	14	33.6	1990	-24+	1985	20	8.0	1977	1318	0	.0	.0	1.8	16.6	29.1	5.4
Feb	34.9	17.4	26.2	72+	1999	12	36.9	1998	-16	1982	11	12.9	1978	1088	0	.0	.0	3.0	12.2	25.2	4.0
Mar	46.1	27.1	36.6	80	1986	31	44.1	1973	-6	1984	9	27.3	1984	881	0	.0	.0	11.0	4.0	22.7	.3
Apr	58.4	37.4	47.9	88	1986	27	53.8	1985	7	1982	7	42.8	1975	515	1	.0	.0	23.3	.2	9.8	.0
May	70.3	48.4	59.4	91+	1975	21	66.3	1991	27+	1966	10	53.1	1997	229	54	.0	.2	30.4	.0	.7	.0
Jun	79.3	57.9	68.6	103	1988	26	72.8	1991	36	1998	8	64.0	1972	35	143	@	2.2	30.0	.0	.0	.0
Jul	82.9	61.5	72.2	101+	1980	16	76.8	1999	44+	1972	6	69.0	1996	6	229	.1	4.8	31.0	.0	.0	.0
Aug	80.8	59.2	70.0	98+	1983	20	75.8	1995	36+	1965	29	65.5	1992	24	179	.0	2.1	31.0	.0	.0	.0
Sep	74.4	51.4	62.9	95+	1978	9	67.4	1978	27	1995	23	58.2	1975	109	47	.0	.8	30.0	.0	.4	.0
Oct	62.1	39.9	51.0	88+	1963	7	59.1	1971	17+	1988	30	44.4	1987	440	6	.0	.0	27.5	.0	7.0	.0
Nov	48.2	31.2	39.7	77	1975	7	45.1	1975	5+	1976	29	32.3	1976	759	0	.0	.0	13.1	1.8	17.8	.0
Dec	35.6	20.5	28.1	70	1982	3	37.5	1982	-22	1989	22	15.7	1989	1146	0	.0	.0	3.6	10.8	27.0	2.2
Ann	58.6	38.9	48.8	103	Jun 1988	26	76.8	Jul 1999	-24+	Jan 1985	20	8.0	Jan 1977	6550	659	.1	10.1	235.7	45.6	139.7	11.9

\+ 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	2.12	1.83	1.85	1950	3	4.57	1993	.49	1986
Feb	1.80	1.55	1.92	1949	14	5.32	1990	.00	1987
Mar	2.90	2.73	1.96	1997	14	4.97	1977	.55	1981
Apr	3.67	3.16	2.54	1981	14	7.49	1994	1.50	1971
May	3.70	3.61	3.19	1968	16	6.84	1997	.81	1988
Jun	4.44	3.55	4.48	1981	14	11.60	1986	1.04	1988
Jul	3.82	4.01	3.41	1964	8	7.42	1997	.28	1974
Aug	3.58	2.95	2.94	2001	23	9.10	1990	1.42	1983
Sep	3.52	3.04	3.20	1999	29	8.34	1993	.47	1998
Oct	2.80	2.33	2.39	1998	7	8.14	1991	.90	1994
Nov	3.31	3.10	4.35	1966	9	7.57	1982	.70	1980
Dec	2.86	2.77	2.92	1966	8	6.31	1990	.83	1976
Ann	38.52	38.73	4.48	Jun 1981	14	11.60	Jun 1986	.00	Feb 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.5	5.6	1.1	.3
Feb	10.5	4.9	.8	.3
Mar	11.7	6.9	1.9	.3
Apr	12.4	7.6	2.4	.7
May	12.1	7.6	2.5	.7
Jun	10.9	7.5	3.0	1.3
Jul	10.4	6.7	2.6	1.0
Aug	10.0	6.7	2.5	.9
Sep	9.0	6.2	2.2	.9
Oct	10.0	6.2	1.7	.6
Nov	11.6	6.9	2.3	.6
Dec	14.1	7.0	1.7	.3
Ann	135.2	79.8	24.7	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	.62	.82	1.12	1.38	1.64	1.91	2.20	2.54	2.99	3.69	4.34
Feb	.27	.50	.81	1.06	1.31	1.58	1.87	2.22	2.67	3.39	4.07
Mar	1.10	1.37	1.76	2.08	2.38	2.70	3.04	3.43	3.93	4.70	5.40
Apr	1.60	1.93	2.39	2.76	3.12	3.47	3.85	4.29	4.84	5.68	6.44
May	1.47	1.82	2.30	2.70	3.08	3.46	3.87	4.35	4.96	5.89	6.73
Jun	1.24	1.66	2.30	2.86	3.40	3.97	4.60	5.34	6.31	7.83	9.25
Jul	.89	1.25	1.81	2.31	2.81	3.34	3.93	4.63	5.56	7.03	8.42
Aug	1.28	1.62	2.10	2.51	2.90	3.30	3.74	4.25	4.90	5.90	6.82
Sep	.78	1.10	1.62	2.08	2.55	3.04	3.60	4.27	5.15	6.55	7.87
Oct	.94	1.21	1.60	1.92	2.24	2.56	2.92	3.33	3.86	4.69	5.44
Nov	1.03	1.34	1.81	2.21	2.60	3.00	3.44	3.96	4.63	5.67	6.64
Dec	1.07	1.34	1.72	2.04	2.34	2.65	2.99	3.38	3.88	4.65	5.35
Ann	30.34	31.98	34.06	35.61	36.97	38.28	39.61	41.07	42.83	45.35	47.50

\+ 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	9.4	9.4	3	2
Feb	8.2	6.1	3	1
Mar	4.0	3.9	1	#
Apr	1.0	.0	#	#
May	#	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.3	.0	#	0
Nov	2.3	1.3	#	#
Dec	7.5	6.4	1	1
Ann	32.7	27.1	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	9.0	1978	26	29.4	1978	20	1978	27	7	1984
Feb	10.0	1982	1	24.7	1982	17	1978	5	14	1978
Mar	7.0	1983	21	13.4	1984	14	1978	3	5	1978
Apr	6.0	1982	6	10.3	1982	6	1982	6	1	1982
May	#	1976	4	#	1976	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	2.5	1989	20	6.0	1989	1	1980	28	#+	1980
Nov	6.0	1974	14	11.9	1977	6	1974	14	1	1997
Dec	11.0	1973	20	18.4	1981	13	1973	21	3	1983
Ann	11.0	Dec 1973	20	29.4	Jan 1978	20	Jan 1978	27	14	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.6	3.4	.8	.3	.0
Feb	5.8	2.6	.7	.2	@
Mar	3.1	1.4	.4	.1	.0
Apr	.9	.3	.1	@	.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	.2	.1	.0	.0	.0
Nov	1.5	.9	.2	@	.0
Dec	6.1	2.6	.6	.2	@
Ann	25.2	11.3	2.8	.8	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	15.7	10.3	6.8	.6
Feb	13.7	9.1	5.3	2.5
Mar	4.7	2.4	1.0	.3
Apr	.6	.2	.1	.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	@	.0	.0	.0
Nov	1.6	.5	.1	.0
Dec	8.5	3.9	1.9	.4
Ann	44.8	26.4	15.2	3.8

+ 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	5/27	5/22	5/19	5/16	5/13	5/10	5/07	5/03	4/28
32	5/11	5/07	5/04	5/01	4/29	4/26	4/24	4/21	4/16
28	5/02	4/27	4/24	4/21	4/18	4/16	4/13	4/09	4/05
24	4/19	4/14	4/11	4/08	4/06	4/03	3/31	3/28	3/23
20	4/09	4/04	4/01	3/29	3/26	3/24	3/21	3/17	3/13
16	4/07	3/31	3/27	3/22	3/18	3/14	3/10	3/05	2/26

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	9/17	9/21	9/24	9/27	9/29	10/02	10/05	10/08	10/12
32	9/23	9/28	10/02	10/05	10/08	10/10	10/13	10/17	10/22
28	10/05	10/11	10/15	10/19	10/23	10/26	10/30	11/03	11/09
24	10/19	10/24	10/28	11/01	11/04	11/07	11/10	11/14	11/19
20	11/04	11/10	11/14	11/17	11/20	11/23	11/27	12/01	12/07
16	11/11	11/18	11/22	11/26	11/30	12/04	12/08	12/13	12/19

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	156	150	146	142	139	135	132	127	121
32	177	172	168	164	161	158	154	150	145
28	210	202	196	191	187	182	177	171	163
24	232	225	220	215	211	207	203	198	191
20	260	253	247	243	238	234	229	224	216
16	285	275	268	262	256	250	244	237	227

***** 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	1318	1088	881	515	229	35	6	24	109	440	759	1146	6550
60	1163	948	726	370	135	8	0	4	40	302	609	991	5296
57	1070	864	633	288	91	3	0	0	18	230	520	898	4615
55	1008	808	573	239	67	2	0	0	10	187	461	836	4191
50	853	672	431	132	27	0	0	0	2	102	322	692	3233
32	364	251	81	1	0	0	0	0	0	1	30	252	980

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	69	87	224	478	848	1098	1246	1178	928	591	261	129	7137
55	0	0	3	25	203	410	533	465	248	64	2	0	1953
57	0	0	0	15	164	351	471	403	196	44	1	0	1645
60	0	0	0	6	115	267	378	314	128	23	0	0	1231
65	0	0	0	1	54	143	229	179	47	6	0	0	659
70	0	0	0	0	20	56	104	83	10	0	0	0	273

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	9	16	95	271	597	859	1003	940	697	367	124	23	9	25	120	391	988	1847	2850	3790	4487	4854	4978	5001
45	3	3	51	164	447	709	848	785	547	236	64	9	3	6	57	221	668	1377	2225	3010	3557	3793	3857	3866
50	0	1	27	93	307	559	693	630	401	137	28	3	0	1	28	121	428	987	1680	2310	2711	2848	2876	2879
55	0	0	8	44	189	413	538	475	269	67	10	0	0	0	8	52	241	654	1192	1667	1936	2003	2013	2013
60	0	0	2	17	97	270	383	325	155	25	1	0	0	0	2	19	116	386	769	1094	1249	1274	1275	1275
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	1	11	61	166	362	565	679	622	440	222	66	10	1	12	73	239	601	1166	1845	2467	2907	3129	3195	3205

(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