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: WASHINGTON 1 NNW, IN **COOP ID: 129253**

Climate Division: IN 7 **NWS Call Sign:** **Elevation: 510 Feet** **Lat: 38˚40N** **Lon: 87˚12W**

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	38.7	23.1	30.9	76	1943	24	42.1	1990	-18+	1985	20	16.3	1977	1057	0	.0	.0	6.2	9.6	24.1	1.6
Feb	45.0	27.2	36.1	76+	1972	29	45.3	1976	-14+	1905	13	21.4	1978	808	0	.0	.0	10.6	5.2	18.3	.9
Mar	56.3	36.1	46.2	89	1929	24	54.3	1973	-4	1960	5	38.7	1984	584	0	.0	.0	21.5	.7	12.8	@
Apr	67.4	45.1	56.3	91	1925	24	62.4	1977	19	1923	1	50.0	1983	279	16	.0	.0	28.5	.0	3.3	.0
May	76.7	55.0	65.9	100+	1911	26	72.5	1977	28	1966	10	61.6	1981	104	130	.0	1.1	31.0	.0	@	.0
Jun	85.1	63.9	74.5	107	1936	29	78.1	1971	38	1903	13	69.5	1982	5	289	.1	7.2	30.0	.0	.0	.0
Jul	88.3	67.5	77.9	113	1930	28	81.3	1983	48	1911	26	75.2	1979	0	400	.3	12.2	31.0	.0	.0	.0
Aug	86.4	65.7	76.1	108+	1930	7	82.2	1995	42	1965	29	71.8	1992	3	345	.1	9.0	31.0	.0	.0	.0
Sep	80.1	58.2	69.2	106	1925	6	74.1	1998	29	1928	26	64.1	1974	34	159	.0	3.1	30.0	.0	.0	.0
Oct	68.8	46.9	57.9	96	1922	4	64.9	1971	18	1925	29	50.7	1987	255	33	.0	.0	30.3	.0	2.6	.0
Nov	55.2	37.8	46.5	88	1909	22	52.9	1999	0	1950	25	38.5	1976	556	1	.0	.0	19.5	.4	10.1	.0
Dec	43.2	27.8	35.5	75	1982	2	44.4	1984	-19+	1989	22	22.4	1989	915	0	.0	.0	8.8	5.4	20.3	.8
Ann	65.9	46.2	56.1	113	Jul 1930	28	82.2	Aug 1995	-19+	Dec 1989	22	16.3	Jan 1977	4600	1373	.5	32.6	278.4	21.3	91.5	3.3

\+ 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: 1901-2001

(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	2.82	2.66	5.03	1937	14	7.59	1982	.46	1981
Feb	2.69	2.24	2.99	1945	26	5.39	1989	.50	1978
Mar	4.15	3.71	5.83	1913	25	8.97	1989	1.18	2000
Apr	4.23	3.50	3.00	1903	12	8.76	1996	1.13	1971
May	5.52	4.64	4.04	1995	18	12.34	1981	1.20	1988
Jun	4.16	3.94	3.88	1990	7	9.31	1990	.68	1988
Jul	4.94	4.56	3.03	1958	15	11.73	1979	.57	1997
Aug	3.84	3.35	4.53	1951	29	7.92	1974	1.24	1999
Sep	2.90	2.40	4.62	1954	20	9.70	1993	.47	1995
Oct	3.10	2.57	5.68	1919	27	7.41	1983	1.40	1992
Nov	4.36	3.97	4.64	1993	14	10.84	1985	.42	1999
Dec	3.40	3.12	2.81	1982	25	8.56	1982	.57	1976
Ann	46.11	46.85	5.83	Mar 1913	25	12.34	May 1981	.42	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.9	6.2	1.8	.5
Feb	7.8	5.1	1.7	.6
Mar	11.6	8.1	2.8	.9
Apr	11.7	8.0	3.0	1.1
May	11.8	8.5	3.9	1.5
Jun	9.9	6.8	2.7	1.1
Jul	8.5	6.6	3.3	1.7
Aug	8.2	5.6	2.8	1.1
Sep	7.2	5.0	2.0	.7
Oct	7.8	5.1	2.3	.8
Nov	9.7	6.7	3.2	1.5
Dec	9.8	6.9	2.4	.8
Ann	113.9	78.6	31.9	12.3

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	.74	1.01	1.42	1.78	2.13	2.50	2.92	3.41	4.05	5.06	6.00
Feb	.81	1.07	1.45	1.78	2.10	2.43	2.79	3.22	3.77	4.64	5.44
Mar	1.34	1.74	2.32	2.81	3.29	3.79	4.33	4.96	5.78	7.05	8.22
Apr	1.38	1.78	2.37	2.87	3.36	3.86	4.41	5.05	5.87	7.16	8.34
May	1.84	2.36	3.13	3.78	4.41	5.05	5.76	6.58	7.64	9.29	10.81
Jun	1.23	1.63	2.22	2.73	3.23	3.75	4.32	5.00	5.87	7.23	8.50
Jul	1.02	1.47	2.19	2.85	3.52	4.23	5.03	6.00	7.28	9.33	11.26
Aug	1.35	1.71	2.24	2.68	3.10	3.54	4.01	4.56	5.26	6.35	7.35
Sep	.55	.80	1.23	1.62	2.02	2.45	2.94	3.53	4.31	5.57	6.77
Oct	1.08	1.37	1.80	2.16	2.50	2.85	3.24	3.69	4.27	5.16	5.98
Nov	1.17	1.58	2.21	2.77	3.31	3.88	4.51	5.26	6.24	7.77	9.21
Dec	1.12	1.45	1.92	2.32	2.71	3.11	3.54	4.05	4.71	5.73	6.67
Ann	33.43	35.90	39.06	41.45	43.57	45.61	47.72	50.05	52.86	56.94	60.45

\+ 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: 1901-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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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	4.5	1.5	1	#
Feb	2.7	.9	1	#
Mar	1.1	.0	#	#
Apr	.1	.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	.4	.0	#	0
Dec	2.3	1.0	#	#
Ann	11.2	3.4	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	6.7	1979	7	23.8	1977	14	1977	24	9	1977
Feb	7.0	1993	25	14.6	1993	12	1977	1	3	1985
Mar	7.8	1996	19	7.8	1975	11	1996	20	1	1996
Apr	2.0	1982	8	2.0	1982	0	0	0	0	0
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	2.6	1993	30	2.6	1993	#	1989	19	#	1989
Nov	3.9	1975	27	3.9	1975	3	1977	27	#+	1997
Dec	8.0	1973	20	9.0	1973	8	1973	21	2	1989
Ann	8.0	Dec 1973	20	23.8	Jan 1977	14	Jan 1977	24	9	Jan 1977

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.7	1.6	.5	.1	.0
Feb	1.7	.9	.3	.2	.0
Mar	.6	.4	.2	.2	.0
Apr	@	@	.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	.2	.1	.1	.0	.0
Dec	1.3	.9	.2	.1	.0
Ann	6.5	3.9	1.3	.6	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	5.8	3.3	1.5	.7
Feb	3.8	2.4	1.4	.1
Mar	.8	.3	.3	@
Apr	.0	.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	.0	.0	.0	.0
Nov	.2	@	.0	.0
Dec	2.5	1.2	.6	.0
Ann	13.1	7.2	3.8	.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	5/12	5/07	5/03	4/29	4/26	4/23	4/20	4/16	4/10
32	4/25	4/21	4/18	4/15	4/13	4/10	4/08	4/05	4/01
28	4/17	4/12	4/08	4/05	4/02	3/31	3/28	3/24	3/19
24	4/08	4/03	3/30	3/26	3/23	3/20	3/17	3/13	3/07
20	3/28	3/21	3/16	3/11	3/07	3/03	2/27	2/22	2/15
16	3/15	3/08	3/02	2/25	2/21	2/16	2/11	2/06	1/29

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	9/29	10/02	10/06	10/09	10/12	10/15	10/18	10/24
32	10/06	10/11	10/14	10/18	10/21	10/24	10/27	10/31	11/05
28	10/17	10/22	10/26	10/29	11/02	11/05	11/08	11/12	11/17
24	10/30	11/04	11/09	11/12	11/15	11/19	11/22	11/27	12/02
20	11/09	11/15	11/20	11/24	11/27	12/01	12/05	12/10	12/16
16	11/23	11/28	12/02	12/06	12/09	12/12	12/16	12/20	12/26

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	189	181	175	169	165	160	155	148	140
32	209	203	198	194	190	186	182	178	171
28	234	227	221	217	212	208	204	198	191
24	258	251	245	241	237	232	228	222	215
20	291	282	275	270	264	259	253	247	238
16	315	307	301	295	291	286	281	275	266

***** 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	1057	808	584	279	104	5	0	3	34	255	556	915	4600
60	902	672	440	163	46	1	0	0	8	150	413	764	3559
57	812	595	357	108	25	0	0	0	3	101	332	678	3011
55	757	542	306	79	16	0	0	0	1	75	281	620	2677
50	613	418	197	28	4	0	0	0	0	30	174	481	1945
32	211	108	15	0	0	0	0	0	0	0	8	131	473

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	177	224	454	727	1049	1275	1423	1365	1116	801	442	239	9292
55	10	14	32	116	352	585	710	652	427	163	25	15	3101
57	3	10	21	85	299	525	648	590	368	127	16	11	2703
60	0	4	11	50	227	435	555	497	283	82	7	3	2154
65	0	0	0	16	130	289	400	345	159	33	1	0	1373
70	0	0	0	3	62	157	245	205	69	9	0	0	750

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	45	96	253	494	807	1042	1181	1121	885	561	247	81	45	141	394	888	1695	2737	3918	5039	5924	6485	6732	6813
45	22	48	158	355	652	892	1026	966	735	412	151	39	22	70	228	583	1235	2127	3153	4119	4854	5266	5417	5456
50	6	19	93	237	497	742	871	811	585	275	86	19	6	25	118	355	852	1594	2465	3276	3861	4136	4222	4241
55	1	5	44	136	351	592	716	656	436	167	41	4	1	6	50	186	537	1129	1845	2501	2937	3104	3145	3149
60	0	0	17	69	216	442	561	501	302	84	14	0	0	0	17	86	302	744	1305	1806	2108	2192	2206	2206
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	24	51	151	301	520	715	821	781	586	342	134	40	24	75	226	527	1047	1762	2583	3364	3950	4292	4426	4466

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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