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: WANATAH 2 WNW, IN **COOP ID: 129222**

Climate Division: IN 1 **NWS Call Sign:** **Elevation: 735 Feet** **Lat: 41˚27N** **Lon: 86˚56W**

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	30.3	13.3	21.8	65	1967	25	33.7	1990	-26	1999	5	8.5	1977	1340	0	.0	.0	1.6	18.0	29.2	5.7
Feb	35.5	17.7	26.6	72	2000	26	36.2	1998	-21	1978	7	12.2	1978	1076	0	.0	.0	3.1	12.0	25.3	3.9
Mar	46.6	27.9	37.3	82	1986	30	44.6	1973	-6	1978	5	28.3	1984	860	0	.0	.0	11.0	3.8	22.1	.3
Apr	58.8	37.2	48.0	90	1986	26	54.6	1977	10	1972	8	42.6	1997	512	2	.0	@	22.6	.1	9.2	.0
May	70.9	47.8	59.4	94	1964	23	68.2	1977	26+	1966	10	52.6	1997	238	62	.0	1.0	30.3	.0	1.3	.0
Jun	80.4	57.5	69.0	105	1988	26	73.0	1971	33	1998	6	64.4	1982	33	151	.1	4.1	30.0	.0	.0	.0
Jul	83.5	61.1	72.3	101+	1980	21	75.7	1983	42	1979	18	69.2	1996	5	231	.2	6.0	31.0	.0	.0	.0
Aug	81.4	59.1	70.3	101	1988	17	76.6	1995	38+	1965	29	65.5	1992	27	190	.1	2.9	31.0	.0	.0	.0
Sep	75.2	51.1	63.2	96	1999	6	67.9	1978	27	1999	25	58.6	1993	111	55	.0	1.3	30.0	.0	.3	.0
Oct	63.4	40.3	51.9	89+	1963	7	60.0	1971	18	1988	30	46.7	1987	412	5	.0	.0	27.7	.0	6.3	.0
Nov	48.5	31.3	39.9	77+	1974	1	46.3	1975	2+	1976	29	32.2	1976	753	0	.0	.0	12.7	1.8	17.8	.0
Dec	35.6	20.0	27.8	70	1982	3	37.7	1982	-20+	1983	24	15.3	2000	1155	0	.0	.0	3.3	11.0	27.4	2.8
Ann	59.2	38.7	49.0	105	Jun 1988	26	76.6	Aug 1995	-26	Jan 1999	5	8.5	Jan 1977	6522	696	.4	15.3	234.3	46.7	138.9	12.7

\+ 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: 1961-2001

(3) Derived from 1971-2000 serially complete daily data

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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	1.72	1.62	1.91	1965	23	4.33	1975	.28	1986
Feb	1.58	1.36	1.92	1985	23	4.44	1990	.03	1987
Mar	2.75	2.66	1.88	1998	9	5.89	1976	.72	1981
Apr	3.61	3.64	2.15	1975	19	6.45	1983	.51	1971
May	3.71	3.70	2.15	1997	19	6.33	1997	.54	1992
Jun	4.35	3.94	3.82	1961	8	9.80	1993	.73	1988
Jul	4.07	3.88	5.83	1983	2	8.98	1983	1.53	1975
Aug	3.76	3.61	4.10	1990	18	8.40	1990	.00	1999
Sep	3.67	3.12	3.42	1965	15	8.04	1992	.03	1979
Oct	2.89	2.55	2.12	1988	18	8.22	1991	1.25	1982
Nov	3.41	3.01	3.53	1990	28	8.92	1985	1.12	1999
Dec	2.50	2.18	3.45	1965	25	5.36	1971	.29	1989
Ann	38.02	37.45	5.83	Jul 1983	2	9.80	Jun 1993	.00	Aug 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.0	4.3	.9	.2
Feb	9.8	4.3	.7	.3
Mar	11.7	6.4	1.9	.3
Apr	12.9	7.6	2.5	.9
May	11.9	7.0	2.4	1.1
Jun	10.5	6.9	2.9	1.1
Jul	9.9	6.4	2.7	1.0
Aug	9.7	6.3	2.3	1.1
Sep	9.8	6.3	2.4	1.0
Oct	10.9	6.2	1.7	.5
Nov	12.0	7.0	1.8	.8
Dec	12.1	6.0	1.2	.5
Ann	132.2	74.7	23.4	8.8

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	.34	.49	.75	.98	1.21	1.46	1.75	2.09	2.54	3.27	3.96
Feb	.25	.39	.62	.83	1.06	1.31	1.59	1.93	2.40	3.15	3.87
Mar	.97	1.23	1.61	1.93	2.23	2.54	2.88	3.27	3.78	4.55	5.27
Apr	1.19	1.53	2.04	2.46	2.87	3.30	3.76	4.30	5.00	6.08	7.08
May	1.19	1.54	2.06	2.50	2.93	3.38	3.87	4.44	5.17	6.32	7.38
Jun	1.37	1.79	2.40	2.92	3.43	3.95	4.53	5.21	6.08	7.43	8.69
Jul	1.75	2.12	2.63	3.05	3.44	3.84	4.27	4.76	5.37	6.31	7.16
Aug	1.02	1.56	2.16	2.64	3.07	3.52	4.00	4.55	5.26	6.34	7.33
Sep	.59	.91	1.44	1.95	2.47	3.04	3.69	4.48	5.55	7.27	8.93
Oct	1.04	1.31	1.70	2.03	2.35	2.67	3.02	3.42	3.94	4.74	5.48
Nov	.98	1.30	1.79	2.22	2.63	3.06	3.54	4.10	4.83	5.98	7.04
Dec	.56	.79	1.16	1.49	1.82	2.17	2.56	3.04	3.66	4.65	5.58
Ann	29.50	31.21	33.36	34.98	36.40	37.76	39.16	40.69	42.53	45.18	47.44

\+ 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: 1961-2001
(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	8.9	5.4	4	3
Feb	8.5	6.3	4	2
Mar	5.6	4.8	1	#
Apr	1.1	.4	#	#
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	.4	.0	#	0
Nov	3.3	2.2	#	#
Dec	7.5	6.6	2	1
Ann	35.3	25.7	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	1979	14	22.4	1984	25	1979	28	13	1979
Feb	10.6	1973	16	23.1	1985	26	1979	12	20	1979
Mar	7.5	1991	13	26.0	1993	17	1978	4	7	1978
Apr	6.0	1975	3	6.0	1975	6	1975	3	#+	2000
May	.5	1976	3	.5	1976	#+	1997	1	#+	1997
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	4.0	1989	20	4.7	1989	2+	1993	31	#+	1993
Nov	6.5	1974	14	13.0	1977	7	1977	28	1	1997
Dec	10.0	1981	17	18.9	1973	16	2000	21	8	2000
Ann	10.6	Feb 1973	16	26.0	Mar 1993	26	Feb 1979	12	20	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.6	3.1	1.2	.6	.0
Feb	5.2	2.7	.9	.3	@
Mar	3.7	1.7	.7	.2	.0
Apr	1.0	.3	.1	.1	.0
May	@	.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	.3	.1	@	.0	.0
Nov	2.1	1.3	.4	@	.0
Dec	5.4	2.4	1.0	.4	@
Ann	24.3	11.6	4.3	1.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	12.7	6.6	4.1	1.0
Feb	9.9	5.1	2.3	.8
Mar	4.9	2.5	1.2	.0
Apr	.4	.1	.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	.1	.0	.0	.0
Nov	2.5	1.1	.3	.0
Dec	10.0	5.9	3.0	1.2
Ann	40.5	21.3	11.0	3.0

+ 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	6/03	5/28	5/24	5/20	5/17	5/14	5/10	5/06	4/30
32	5/17	5/12	5/09	5/06	5/03	4/30	4/27	4/23	4/19
28	5/02	4/28	4/24	4/21	4/18	4/16	4/13	4/09	4/04
24	4/18	4/14	4/11	4/09	4/07	4/05	4/02	3/30	3/27
20	4/11	4/06	4/02	3/30	3/27	3/24	3/21	3/17	3/12
16	4/02	3/27	3/22	3/18	3/14	3/10	3/06	3/01	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	9/13	9/17	9/20	9/23	9/26	9/28	10/01	10/04	10/09
32	9/24	9/29	10/02	10/05	10/08	10/11	10/14	10/17	10/22
28	10/05	10/11	10/15	10/18	10/21	10/24	10/27	10/31	11/06
24	10/20	10/26	10/30	11/03	11/06	11/09	11/13	11/17	11/22
20	11/02	11/08	11/12	11/16	11/19	11/23	11/26	12/01	12/07
16	11/11	11/17	11/22	11/26	11/30	12/04	12/08	12/13	12/20

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	153	146	140	135	131	126	122	116	108
32	176	169	165	161	157	154	150	145	139
28	207	200	194	189	185	181	176	170	163
24	233	226	221	217	212	208	204	199	192
20	257	250	245	240	236	232	228	222	215
16	287	278	271	266	260	255	250	243	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	1340	1076	860	512	238	33	5	27	111	412	753	1155	6522
60	1185	936	705	368	145	9	0	6	42	275	603	1000	5274
57	1092	852	613	289	101	3	0	1	19	204	515	907	4596
55	1030	796	554	240	77	2	0	0	10	163	458	845	4175
50	875	659	412	137	34	0	0	0	1	83	323	701	3225
32	378	240	73	2	0	0	0	0	0	0	38	258	989

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	62	89	236	482	847	1109	1250	1186	935	616	275	126	7213
55	0	0	4	30	211	420	537	473	255	66	4	0	2000
57	0	0	1	19	173	362	475	412	204	45	2	0	1693
60	0	0	0	9	124	277	382	324	136	23	0	0	1275
65	0	0	0	2	62	151	231	190	55	5	0	0	696
70	0	0	0	0	25	61	104	93	14	0	0	0	297

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	6	17	97	273	604	873	1008	947	699	381	118	23	6	23	120	393	997	1870	2878	3825	4524	4905	5023	5046
45	0	4	51	168	454	723	853	792	550	250	63	7	0	4	55	223	677	1400	2253	3045	3595	3845	3908	3915
50	0	0	27	96	314	573	698	637	404	148	30	2	0	0	27	123	437	1010	1708	2345	2749	2897	2927	2929
55	0	0	9	49	199	429	543	482	272	73	10	0	0	0	9	58	257	686	1229	1711	1983	2056	2066	2066
60	0	0	1	21	110	291	389	328	160	32	3	0	0	0	1	22	132	423	812	1140	1300	1332	1335	1335
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	11	60	165	368	567	679	631	445	228	68	6	0	11	71	236	604	1171	1850	2481	2926	3154	3222	3228

(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