

Climatology of the United States

No. 20

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: DEFIANCE, OH

1971-2000

COOP ID: 332098

Climate Division: OH 1

NWS Call Sign:

Elevation: 700 Feet Lat: 41° 17N Lon: 84° 23W

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	31.2	17.1	24.2	64+	1997	5	34.6	1990	-22+	1982	18	11.4	1977	1265	0	.0	.0	1.8	15.7	28.8	4.9
Feb	35.1	19.6	27.4	73	2000	26	36.9	1998	-19	1982	11	14.3	1978	1055	0	.0	.0	3.2	12.1	25.3	4.1
Mar	46.0	28.6	37.3	82+	1945	28	44.5	1973	-7+	1948	12	28.4	1984	859	0	.0	.0	11.1	3.8	23.3	.3
Apr	58.9	38.4	48.7	89	1985	23	55.4	1985	4	1982	7	42.8	1975	492	2	.0	.0	23.1	.1	10.3	.0
May	71.0	49.4	60.2	94+	1962	19	67.6	1982	24	1966	10	53.9	1997	215	66	.0	.8	30.3	.0	.8	.0
Jun	80.4	59.2	69.8	104	1988	26	74.1	1971	37+	1966	1	64.9	1992	25	170	.1	3.9	30.0	.0	.0	.0
Jul	84.2	63.3	73.8	106	1936	14	77.6	1999	43+	1950	1	70.5	1984	1	272	.2	6.7	31.0	.0	.0	.0
Aug	81.9	61.1	71.5	102	1948	26	76.8	1995	31	1948	29	67.1	1992	15	216	.0	3.6	31.0	.0	.0	.0
Sep	75.0	53.7	64.4	100+	1939	15	69.9	1978	29+	1974	23	59.7	1975	88	68	.0	1.3	30.0	.0	.1	.0
Oct	62.7	42.4	52.6	92	1951	5	61.2	1971	17	1952	21	46.7	1988	397	11	.0	.0	27.8	.0	5.4	.0
Nov	48.5	33.3	40.9	82	1950	1	46.8	1975	0+	1958	30	34.2	1976	723	0	.0	.0	13.5	1.5	18.0	.0
Dec	36.3	23.2	29.8	70+	1998	7	39.8	1982	-19+	1989	23	16.4	1989	1094	0	.0	.0	3.7	10.4	26.8	1.8
Ann	59.3	40.8	50.1	106	Jul 1936	14	77.6	Jul 1999	-22+	Jan 1982	18	11.4	Jan 1977	6229	805	.3	16.3	236.5	43.6	138.8	11.1

+ 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/normal/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1936-2001

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

028-A

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NWS Call Sign:

Elevation: 700 Feet Lat: 41°17N

Lon: 84°23W

Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	1.92	1.79	1.93	1996	19	3.92	1996	.53	1980	11.3	5.3	.9	.2	.59	.78	1.05	1.28	1.51	1.74	2.00	2.30	2.69	3.30	3.86
Feb	1.84	1.54	2.19	1997	27	5.77	1990	.07	1987	9.2	4.8	.9	.2	.33	.49	.76	1.01	1.26	1.54	1.86	2.24	2.75	3.57	4.35
Mar	2.65	2.53	1.90	1997	14	4.96	1973	.31	1981	11.2	6.4	1.7	.3	.94	1.19	1.55	1.85	2.14	2.44	2.77	3.15	3.63	4.38	5.07
Apr	3.30	3.12	4.10	1977	23	6.58	1999	1.02	1997	12.1	7.3	1.9	.5	1.27	1.57	2.01	2.37	2.72	3.07	3.45	3.89	4.45	5.31	6.10
May	3.62	3.69	3.02	1968	16	6.37	1997	1.25	1994	12.0	7.8	2.5	.6	1.60	1.92	2.37	2.74	3.08	3.43	3.80	4.22	4.75	5.56	6.30
Jun	3.78	3.43	2.77	1946	12	12.00	1981	.53	1984	10.4	6.7	2.5	1.1	1.02	1.38	1.93	2.41	2.88	3.37	3.91	4.56	5.40	6.72	7.95
Jul	3.89	3.65	3.37	1997	9	7.65	1986	.80	1974	9.3	6.3	2.7	1.1	1.16	1.53	2.08	2.56	3.02	3.51	4.04	4.67	5.49	6.76	7.94
Aug	3.21	2.97	2.97	1997	17	7.67	1998	.77	1971	9.2	5.9	2.1	.7	.91	1.22	1.68	2.08	2.47	2.87	3.32	3.85	4.54	5.63	6.63
Sep	3.23	2.93	3.10	1950	1	7.83	1972	.58	1998	9.0	6.0	2.4	.6	.69	.99	1.47	1.90	2.33	2.79	3.31	3.93	4.75	6.05	7.29
Oct	2.59	2.13	3.89	1988	18	7.00	1991	.68	1982	10.3	5.5	1.4	.4	.80	1.04	1.41	1.73	2.03	2.35	2.70	3.11	3.64	4.46	5.22
Nov	2.93	2.73	3.23	1966	9	7.75	1982	.41	1976	12.2	6.4	1.9	.6	.72	1.00	1.43	1.80	2.18	2.58	3.02	3.54	4.23	5.32	6.34
Dec	2.64	2.48	2.74	1966	8	6.23	1990	.77	1976	12.7	6.5	1.8	.3	.92	1.17	1.53	1.84	2.13	2.43	2.75	3.14	3.62	4.38	5.07
Ann	35.60	36.28	4.10	Apr 1977	23	12.00	Jun 1981	.07	Feb 1987	128.9	74.9	22.7	6.6	27.33	28.98	31.06	32.63	34.01	35.33	36.69	38.18	39.97	42.55	44.76

+ 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: 1936-2001

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

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Station: DEFIANCE, OH

COOP ID: 332098

Climate Division: OH 1

NWS Call Sign:

Elevation: 700 Feet

Lat: 41°17N

Lon: 84°23W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	7.1	7.0	3	2	6.0	1978	26	26.0	1978	19	1978	31	8	1981	5.1	2.9	.7	.1	.0	14.4	9.5	4.9	1.3
Feb	6.2	6.3	3	1	7.0	1982	4	19.0	1982	21	1978	21	20	1978	3.9	2.1	.5	.2	.0	12.8	8.4	5.6	2.2
Mar	2.5	2.0	#	#	4.0	1977	22	8.0	1977	15	1978	1	6	1978	1.9	1.1	.3	.0	.0	2.9	1.2	.6	.4
Apr	.4	.0	#	0	5.5	1994	7	5.5	1994	4	1994	7	1	1994	.3	.2	.1	@	.0	.1	.0	.0	.0
May	#	.0	#	0	#	1989	7	#+	1989	#	1989	7	#	1989	.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	.1	.0	#	0	1.0	1992	21	1.0	1992	#	1980	28	#	1980	.1	@	.0	.0	.0	.0	.0	.0	.0
Nov	1.3	1.0	#	#	3.0	1977	28	4.5+	1980	3	1978	27	1	1997	1.2	.6	.1	.0	.0	1.1	.1	.0	.0
Dec	7.2	6.3	1	1	12.0	1973	20	18.0	1977	15	1977	12	5+	2000	3.7	2.1	.4	.2	@	5.9	3.5	1.5	.5
Ann	24.8	22.6	N/A	N/A	12.0	Dec 1973	20	26.0	Jan 1978	21	Feb 1978	21	20	Feb 1978	16.2	9.0	2.1	.5	@	37.2	22.7	12.6	4.4

+ 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

Complete documentation available from:

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NWS Call Sign:

Elevation: 700 Feet

Lat: 41° 17N

Lon: 84° 23W

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	5/19	5/14	5/11	5/08	5/05	5/02	4/29	4/26	4/21
32	5/11	5/05	5/01	4/27	4/24	4/21	4/17	4/13	4/07
28	4/27	4/22	4/19	4/17	4/14	4/12	4/09	4/06	4/01
24	4/17	4/13	4/10	4/07	4/05	4/03	3/31	3/28	3/24
20	4/08	4/03	3/30	3/26	3/23	3/20	3/17	3/13	3/07
16	3/31	3/25	3/21	3/17	3/14	3/11	3/07	3/03	2/25
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	9/22	9/26	9/29	10/02	10/05	10/07	10/10	10/13	10/18
32	10/01	10/06	10/11	10/14	10/17	10/21	10/24	10/29	11/03
28	10/12	10/18	10/22	10/25	10/29	11/01	11/04	11/09	11/14
24	10/23	10/30	11/04	11/08	11/11	11/15	11/19	11/24	11/30
20	11/01	11/08	11/13	11/18	11/22	11/26	12/01	12/06	12/13
16	11/15	11/22	11/26	11/30	12/04	12/08	12/12	12/17	12/24
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	171	165	160	156	152	148	144	139	133
32	204	194	187	181	176	170	164	157	148
28	222	213	207	202	197	192	186	180	172
24	246	237	230	225	220	215	209	203	194
20	272	262	255	249	243	237	231	224	214
16	287	279	274	269	265	260	256	250	242

* 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

Complete documentation available from:

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Climate Division: OH 1

NWS Call Sign:

Elevation: 700 Feet Lat: 41°17N Lon: 84°23W

Degree Days to Selected Base Temperatures (°F)													
Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1265	1055	859	492	215	25	1	15	88	397	723	1094	6229
60	1110	915	704	349	126	6	0	2	31	266	573	939	5021
57	1017	831	613	270	85	2	0	0	14	199	485	846	4362
55	955	775	556	221	62	1	0	0	7	160	427	788	3952
50	801	639	414	120	25	0	0	0	1	84	294	643	3021
32	317	225	78	1	0	0	0	0	0	0	27	222	870

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	75	94	243	500	874	1134	1295	1224	970	637	294	152	7492
55	0	0	7	31	223	445	582	511	287	84	4	4	2178
57	0	0	2	19	183	387	520	449	233	61	2	0	1856
60	0	0	0	8	131	300	427	358	161	35	0	0	1420
65	0	0	0	2	66	170	272	216	68	11	0	0	805
70	0	0	0	0	26	71	133	105	19	2	0	0	356

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	8	15	93	273	607	878	1031	966	719	388	123	25	8	23	116	389	996	1874	2905	3871	4590	4978	5101	5126
45	0	4	50	163	454	728	876	811	569	254	66	10	0	4	54	217	671	1399	2275	3086	3655	3909	3975	3985
50	0	1	23	93	314	578	721	656	422	149	28	4	0	1	24	117	431	1009	1730	2386	2808	2957	2985	2989
55	0	0	7	45	195	429	566	501	285	76	10	0	0	0	7	52	247	676	1242	1743	2028	2104	2114	2114
60	0	0	2	20	103	291	412	347	170	31	1	0	0	0	2	22	125	416	828	1175	1345	1376	1377	1377
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	10	62	172	372	571	695	642	449	230	69	12	0	10	72	244	616	1187	1882	2524	2973	3203	3272	3284

(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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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 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/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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