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: PAINESVILLE 4 NW, OH **COOP ID: 336389**

Climate Division: OH 3 **NWS Call Sign:** **Elevation: 600 Feet** **Lat: 41˚45N** **Lon: 81˚18W**

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	34.5	20.6	27.6	70	1950	25	37.3	1990	-19	1994	19	12.1	1977	1161	0	.0	.0	3.2	13.2	26.9	1.5
Feb	36.7	21.6	29.2	76	2000	26	36.6	1998	-9	1963	26	16.4	1978	1004	0	.0	.0	4.1	11.2	24.2	1.0
Mar	46.0	29.0	37.5	82+	1998	30	44.7	1973	0	1980	1	28.2	1984	854	0	.0	.0	10.5	3.9	21.0	@
Apr	56.3	38.8	47.6	91	1986	28	53.6	1985	17	1982	8	41.2	1975	524	0	.0	@	20.7	.2	6.9	.0
May	67.6	49.6	58.6	92+	1996	20	64.4	1991	25	1963	24	53.1	1997	228	29	.0	.1	30.4	.0	.1	.0
Jun	76.6	58.9	67.8	98	1988	25	71.1	1973	37	1966	2	63.0	1992	39	122	.0	.9	30.0	.0	.0	.0
Jul	81.2	63.8	72.5	96+	1990	5	77.0	1999	43+	1968	4	69.9	1992	2	234	.0	1.8	31.0	.0	.0	.0
Aug	79.7	62.8	71.3	96	1951	31	76.0	1995	39	1982	29	68.0	1992	9	202	.0	.8	31.0	.0	.0	.0
Sep	73.9	56.5	65.2	96+	1959	9	69.0	1998	33	1989	27	61.1	1975	63	69	.0	.1	30.0	.0	.0	.0
Oct	63.0	46.1	54.6	91	1951	4	59.5	1971	24	1988	31	49.0	1976	332	8	.0	.0	29.0	.0	1.1	.0
Nov	50.9	36.8	43.9	81+	1961	3	49.0	1975	5	1976	30	35.3	1976	633	0	.0	.0	15.2	.4	9.8	.0
Dec	39.8	26.8	33.3	75	1982	3	42.1	1982	-11	1983	25	21.8	1989	982	0	.0	.0	5.2	6.7	22.1	.4
Ann	58.9	42.6	50.8	98	Jun 1988	25	77.0	Jul 1999	-19	Jan 1994	19	12.1	Jan 1977	5831	664	.0	3.7	240.3	35.6	112.1	2.9

\+ 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: 1950-2001

(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	2.32	1.84	2.25	1995	16	5.37	1998	.42	1980
Feb	1.80	1.72	2.10	1997	27	3.95	1976	.11	1987
Mar	2.76	2.67	1.97	1985	29	5.32	1985	.68	1990
Apr	3.31	3.01	3.64	2000	8	6.50	2000	1.51	1982
May	3.05	2.51	2.44	1953	22	7.39	1989	.91	1998
Jun	3.78	3.81	2.62	1986	11	6.42	1986	1.10	1979
Jul	3.20	3.09	4.00	1968	17	7.60	1992	.67	1991
Aug	3.78	3.72	2.41	1987	22	8.46	1975	1.31	1989
Sep	4.00	3.85	2.75	1979	14	12.26	1996	1.03	1985
Oct	3.27	3.35	3.50	1954	15	5.55	1988	1.53	1984
Nov	3.56	3.19	2.37	1985	5	8.99	1985	.76	1976
Dec	3.02	2.67	2.31	1979	25	5.79	1977	1.22	1976
Ann	37.85	38.10	4.00	Jul 1968	17	12.26	Sep 1996	.11	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	15.2	7.0	.8	.2
Feb	12.3	5.4	.6	.1
Mar	12.9	7.1	1.8	.3
Apr	14.1	7.8	1.8	.3
May	12.5	7.1	2.0	.4
Jun	11.7	7.1	2.7	.9
Jul	10.1	6.2	2.3	.8
Aug	10.5	6.9	2.7	1.0
Sep	11.2	7.2	2.7	.9
Oct	13.1	7.9	1.9	.3
Nov	15.3	8.9	1.9	.6
Dec	15.9	8.5	1.6	.2
Ann	154.8	87.1	22.8	6.0

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	.61	.83	1.16	1.46	1.75	2.05	2.39	2.80	3.32	4.15	4.92
Feb	.48	.65	.91	1.14	1.37	1.60	1.86	2.17	2.57	3.20	3.78
Mar	1.09	1.34	1.71	2.01	2.29	2.58	2.89	3.26	3.72	4.42	5.06
Apr	1.31	1.61	2.05	2.41	2.75	3.09	3.46	3.89	4.44	5.28	6.04
May	.96	1.25	1.68	2.05	2.40	2.77	3.18	3.65	4.26	5.22	6.10
Jun	1.58	1.92	2.41	2.80	3.18	3.56	3.97	4.44	5.03	5.94	6.76
Jul	1.05	1.35	1.80	2.18	2.54	2.92	3.33	3.81	4.43	5.40	6.28
Aug	1.36	1.72	2.23	2.66	3.07	3.50	3.95	4.49	5.17	6.22	7.18
Sep	1.09	1.47	2.05	2.55	3.05	3.57	4.14	4.82	5.71	7.10	8.40
Oct	1.60	1.88	2.26	2.56	2.84	3.13	3.43	3.77	4.19	4.83	5.41
Nov	1.17	1.50	2.00	2.42	2.83	3.25	3.71	4.25	4.95	6.02	7.02
Dec	1.45	1.71	2.07	2.35	2.62	2.88	3.17	3.49	3.90	4.51	5.05
Ann	29.59	31.25	33.34	34.91	36.28	37.60	38.95	40.43	42.21	44.76	46.94

\+ 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: 1950-2001
(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	9.6	8.4	3	2	12.2	1996	3	24.7	1999	21	1999	15	9	1977	8.1	4.2	.9	.3	@	12.6	8.1	4.6	1.6
Feb	7.0	5.7	2	2	12.5	1984	28	16.3	1980	15	1984	29	7	1985	5.7	2.8	.7	.2	.0	9.6	5.1	2.8	.9
Mar	5.5	3.6	1	#	11.0	1987	31	21.5	1993	12+	1993	15	6	1984	3.2	1.9	.7	.2	@	3.2	1.5	.6	.1
Apr	.4	.0	#	0	10.0	1982	6	10.0	1982	7	1987	1	#+	2000	.6	.3	.1	.1	@	.1	@	@	.0
May	#	.0	0	0	#	1986	2	#	1986	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	0	#	1989	22	#+	1989	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.0	#	#	#	8.0	1996	14	9.0	1991	16	1996	14	3	1996	1.5	.7	.3	.1	.0	1.0	.4	.2	.0
Dec	10.3	6.4	2	1	8.0	1991	4	30.8	1983	21	1977	11	7	1989	6.6	3.2	.9	.3	.0	6.8	4.1	2.4	.8
Ann	33.8	24.1	N/A	N/A	12.5	Feb 1984	28	30.8	Dec 1983	21+	Jan 1999	15	9	Jan 1977	25.7	13.1	3.6	1.2	@	33.3	19.2	10.6	3.4

+ 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

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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	5/16	5/11	5/08	5/05	5/02	4/30	4/27	4/23	4/19
32	5/02	4/28	4/26	4/23	4/21	4/19	4/17	4/15	4/11
28	4/20	4/15	4/12	4/09	4/07	4/04	4/02	3/29	3/25
24	4/14	4/09	4/06	4/03	3/31	3/28	3/25	3/22	3/17
20	4/05	3/31	3/27	3/24	3/22	3/19	3/16	3/12	3/07
16	3/29	3/21	3/14	3/09	3/04	2/28	2/22	2/16	2/08

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	10/05	10/10	10/14	10/17	10/21	10/24	10/27	10/31	11/05
32	10/14	10/19	10/23	10/26	10/29	11/01	11/05	11/08	11/13
28	10/27	11/02	11/05	11/09	11/12	11/15	11/18	11/22	11/28
24	11/09	11/15	11/20	11/23	11/27	11/30	12/04	12/08	12/14
20	11/20	11/27	12/02	12/06	12/09	12/13	12/17	12/22	12/28
16	11/30	12/06	12/10	12/13	12/16	12/20	12/23	12/27	1/02

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	193	185	180	175	171	166	162	156	149
32	211	204	199	194	190	186	181	176	169
28	241	233	227	223	218	214	209	204	196
24	260	253	248	244	240	236	232	227	220
20	284	277	271	266	262	258	253	248	240
16	315	305	298	292	286	280	274	267	257

***** 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	1161	1004	854	524	228	39	2	9	63	332	633	982	5831
60	1006	864	699	378	124	9	0	0	16	203	485	827	4611
57	913	780	608	296	79	3	0	0	5	141	398	734	3957
55	851	724	550	245	55	1	0	0	2	106	344	677	3555
50	706	587	409	138	18	0	0	0	0	45	219	533	2655
32	257	182	73	2	0	0	0	0	0	0	11	145	670

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	119	102	243	468	824	1073	1255	1217	996	699	368	186	7550
55	0	0	7	21	166	384	542	504	309	93	11	5	2042
57	0	0	3	12	128	326	480	442	251	65	5	0	1712
60	0	0	0	4	81	242	387	349	172	35	1	0	1271
65	0	0	0	0	29	122	234	202	69	8	0	0	664
70	0	0	0	0	7	43	103	88	16	1	0	0	258

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	21	25	102	261	585	844	1018	978	766	461	179	45	21	46	148	409	994	1838	2856	3834	4600	5061	5240	5285
45	7	9	54	157	433	694	863	823	616	316	100	22	7	16	70	227	660	1354	2217	3040	3656	3972	4072	4094
50	0	0	29	90	288	544	708	668	466	189	48	6	0	0	29	119	407	951	1659	2327	2793	2982	3030	3036
55	0	0	10	42	172	395	553	513	322	98	16	1	0	0	10	52	224	619	1172	1685	2007	2105	2121	2122
60	0	0	2	16	93	253	398	358	191	40	3	0	0	0	2	18	111	364	762	1120	1311	1351	1354	1354
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	8	19	67	141	330	545	704	663	480	240	81	24	8	27	94	235	565	1110	1814	2477	2957	3197	3278	3302

(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