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: UPPER SANDUSKY, OH **COOP ID: 338534**

Climate Division: OH 2 **NWS Call Sign:** **Elevation: 854 Feet** **Lat: 40˚50N** **Lon: 83˚17W**

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	32.1	16.4	24.3	71	1950	25	34.3	1990	-23+	1994	20	10.1	1977	1264	0	.0	.0	2.4	15.0	28.2	3.7
Feb	36.2	18.9	27.6	73	2000	27	37.2	1998	-16+	1985	4	13.5	1978	1049	0	.0	.0	4.1	10.7	24.3	2.1
Mar	47.4	27.7	37.6	82+	1986	31	45.2	1973	-8+	1984	10	27.8	1984	851	0	.0	.0	13.1	3.3	20.5	.2
Apr	59.6	37.5	48.6	90	1942	30	55.0	1985	9	1982	7	42.4	1975	495	1	.0	.0	24.1	.1	8.8	.0
May	71.1	49.2	60.2	95	1962	17	68.1	1991	25	1966	10	54.4	1997	212	62	.0	.7	30.7	.0	.7	.0
Jun	80.1	58.8	69.5	104	1988	26	73.4	1991	37	1972	11	64.7	1972	29	162	.1	3.1	30.0	.0	.0	.0
Jul	84.0	62.6	73.3	104	1936	14	77.1	1999	36	1957	6	70.3	2000	1	259	.1	5.8	31.0	.0	.0	.0
Aug	82.0	60.2	71.1	103	1936	19	76.6	1995	35	1940	25	67.5	1976	15	205	.0	3.5	31.0	.0	.0	.0
Sep	75.9	52.9	64.4	101	1953	2	69.0	1978	28+	1974	23	60.0	1975	83	64	.0	1.2	30.0	.0	.2	.0
Oct	63.6	41.5	52.6	93	1953	3	60.1	1971	18	1988	31	46.2	1988	395	8	.0	.0	28.2	.0	5.1	.0
Nov	49.5	32.5	41.0	82	1950	1	47.0	1975	-2	1958	30	33.1	1976	720	0	.0	.0	14.8	1.4	15.9	.0
Dec	37.3	22.7	30.0	72	1982	3	38.8	1982	-20	1989	23	16.7	1989	1086	0	.0	.0	4.6	9.5	25.2	1.3
Ann	59.9	40.1	50.0	104+	Jun 1988	26	77.1	Jul 1999	-23+	Jan 1994	20	10.1	Jan 1977	6200	761	.2	14.3	244.0	40.0	128.9	7.3

\+ 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: 1936-2001

(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	1.79	2.20	1937	14	4.63	1978	.53	1983
Feb	1.78	1.79	2.25	1959	10	4.03	1990	.07	1987
Mar	2.60	2.38	2.16	1939	12	5.32	1973	1.03	1981
Apr	3.42	3.14	2.06	1972	20	6.70	1972	1.27	1971
May	3.99	4.35	3.16	1973	26	7.64	1973	.66	1988
Jun	3.77	3.70	5.49	1937	21	9.34	1981	.60	1991
Jul	4.19	3.92	2.97	1977	1	10.46	1992	.19	1974
Aug	3.33	3.21	4.21	1981	31	6.12	1979	.46	1989
Sep	3.08	2.86	3.74	1981	2	9.18	1981	.47	1998
Oct	2.21	2.11	2.46	1995	6	5.05	1983	.34	1982
Nov	3.05	2.54	2.36	1955	16	8.06	1985	.30	1976
Dec	2.64	2.46	2.05	1990	30	6.27	1990	.80	1976
Ann	36.18	36.20	5.49	Jun 1937	21	10.46	Jul 1992	.07	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.9	5.6	1.0	.3
Feb	9.0	4.7	.9	.2
Mar	10.8	6.4	1.6	.3
Apr	11.6	8.1	2.0	.7
May	11.0	7.9	2.4	.9
Jun	9.9	6.9	2.8	1.0
Jul	9.5	6.8	3.1	1.4
Aug	9.2	6.2	2.3	.7
Sep	8.4	5.7	2.0	.8
Oct	8.6	5.7	1.3	.1
Nov	10.8	7.2	1.9	.5
Dec	12.1	6.7	1.6	.3
Ann	121.8	77.9	22.9	7.2

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	.63	.83	1.13	1.40	1.65	1.91	2.20	2.55	2.99	3.68	4.33
Feb	.41	.58	.84	1.07	1.30	1.55	1.83	2.16	2.60	3.29	3.94
Mar	1.03	1.27	1.61	1.89	2.16	2.43	2.72	3.06	3.49	4.14	4.74
Apr	1.43	1.74	2.18	2.54	2.87	3.21	3.58	4.00	4.54	5.35	6.09
May	1.33	1.71	2.27	2.74	3.19	3.65	4.16	4.76	5.53	6.71	7.81
Jun	1.20	1.56	2.09	2.54	2.98	3.43	3.92	4.50	5.25	6.41	7.49
Jul	1.22	1.62	2.22	2.74	3.24	3.77	4.35	5.03	5.92	7.31	8.60
Aug	1.00	1.32	1.79	2.20	2.59	3.00	3.46	3.99	4.68	5.75	6.75
Sep	.72	1.00	1.45	1.86	2.26	2.69	3.16	3.73	4.48	5.67	6.79
Oct	.64	.85	1.16	1.44	1.70	1.98	2.29	2.65	3.12	3.85	4.53
Nov	.79	1.08	1.52	1.91	2.30	2.70	3.15	3.68	4.38	5.48	6.51
Dec	.94	1.19	1.55	1.85	2.14	2.43	2.76	3.13	3.61	4.35	5.02
Ann	26.76	28.61	30.96	32.74	34.31	35.82	37.38	39.09	41.16	44.15	46.73

\+ 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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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	9.1	6.9	3	1	8.0	1995	21	33.9	1978	23	1978	31	10	1978	5.7	3.3	1.0	.3	.0	13.7	7.9	5.2	2.5
Feb	7.2	6.7	3	1	11.5	1979	26	19.2	1979	24	1978	6	18	1978	3.9	2.2	.6	.2	@	11.7	7.9	5.6	2.5
Mar	4.1	4.0	1	#	11.0	1973	18	11.0	1973	14	1978	5	6	1978	2.2	1.1	.4	.2	@	3.5	1.7	1.2	.5
Apr	1.2	.0	#	0	7.0	1982	6	12.5	1982	9	1982	9	1	1994	.6	.4	.2	.1	.0	.3	.2	.1	.0
May	.0	.0	0	0	1.0	1989	7	1.0	1989	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	.1	.0	0	0	1.0	1972	19	1.0	1972	0	0	0	0	0	.1	@	.0	.0	.0	.0	.0	.0	.0
Nov	1.5	.4	#	0	4.0	1981	21	5.5+	1997	3	1981	21	#+	1996	1.2	.6	.1	.0	.0	.8	.1	.0	.0
Dec	6.8	5.6	1	#	9.0	1995	20	23.7	1977	20	1977	10	5	1977	4.0	2.3	.7	.3	.0	5.9	2.9	1.5	.5
Ann	30.0	23.6	N/A	N/A	11.5	Feb 1979	26	33.9	Jan 1978	24	Feb 1978	6	18	Feb 1978	17.7	9.9	3.0	1.1	@	35.9	20.7	13.6	6.0

+ 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	5/19	5/15	5/12	5/10	5/07	5/05	5/03	4/30	4/26
32	5/13	5/08	5/05	5/02	4/30	4/27	4/24	4/21	4/16
28	4/28	4/24	4/21	4/19	4/16	4/14	4/12	4/09	4/05
24	4/18	4/14	4/10	4/08	4/05	4/03	3/31	3/28	3/24
20	4/08	4/03	3/30	3/27	3/24	3/21	3/17	3/14	3/08
16	4/01	3/25	3/20	3/16	3/12	3/08	3/04	2/27	2/21

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	9/21	9/25	9/28	9/30	10/03	10/05	10/07	10/10	10/14
32	9/28	10/03	10/06	10/09	10/12	10/15	10/18	10/22	10/27
28	10/09	10/15	10/19	10/23	10/26	10/29	11/02	11/06	11/12
24	10/20	10/26	10/30	11/03	11/07	11/10	11/14	11/18	11/24
20	11/03	11/10	11/15	11/19	11/24	11/28	12/02	12/07	12/14
16	11/17	11/23	11/27	12/01	12/04	12/07	12/11	12/15	12/21

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	163	158	154	151	148	144	141	137	132
32	184	178	173	169	165	161	157	152	146
28	215	207	201	196	192	188	183	177	169
24	238	230	224	219	215	210	205	199	191
20	271	262	255	249	244	239	233	227	217
16	290	282	276	271	266	262	256	251	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

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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	1264	1049	851	495	212	29	1	15	83	395	720	1086	6200
60	1109	909	696	352	122	7	0	1	27	262	571	931	4987
57	1016	825	605	272	81	3	0	0	11	195	483	838	4329
55	954	769	548	224	59	1	0	0	6	156	426	776	3919
50	800	635	407	122	23	0	0	0	1	80	293	633	2994
32	322	226	75	1	0	0	0	0	0	0	27	208	859

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	81	101	247	497	873	1124	1280	1213	971	637	297	145	7466
55	0	0	7	30	220	435	567	500	287	79	5	0	2130
57	0	0	2	18	179	376	505	438	232	56	2	0	1808
60	0	0	0	8	127	290	412	347	158	31	0	0	1373
65	0	0	0	1	62	162	259	205	64	8	0	0	761
70	0	0	0	0	24	68	123	96	16	1	0	0	328

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	12	29	124	310	638	893	1039	981	739	410	148	34	12	41	165	475	1113	2006	3045	4026	4765	5175	5323	5357
45	3	9	68	193	484	743	884	826	591	271	81	16	3	12	80	273	757	1500	2384	3210	3801	4072	4153	4169
50	0	2	35	111	339	593	729	671	441	164	39	3	0	2	37	148	487	1080	1809	2480	2921	3085	3124	3127
55	0	0	12	59	213	445	574	516	303	85	15	0	0	0	12	71	284	729	1303	1819	2122	2207	2222	2222
60	0	0	5	26	118	303	419	362	180	37	4	0	0	0	5	31	149	452	871	1233	1413	1450	1454	1454
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	2	14	76	192	388	587	705	653	473	248	78	15	2	16	92	284	672	1259	1964	2617	3090	3338	3416	3431

(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