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: MONTPELIER, OH **COOP ID: 335438**

Climate Division: OH 1 **NWS Call Sign:** **Elevation: 860 Feet** **Lat: 41˚35N** **Lon: 84˚36W**

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	31.0	14.2	22.6	69	1950	25	33.4	1990	-25	1984	22	9.6	1977	1315	0	.0	.0	1.5	17.1	29.6	5.6
Feb	35.2	16.3	25.8	71+	2000	26	35.4	1998	-22	1973	17	10.9	1978	1100	0	.0	.0	2.4	12.2	26.8	4.1
Mar	46.4	25.5	36.0	82+	1939	24	42.6	1973	-7	1978	2	26.8	1978	901	0	.0	.0	10.6	3.8	24.7	.3
Apr	59.7	35.3	47.5	89	1942	30	54.0	1985	8	1982	7	41.5	1975	525	1	.0	.0	22.7	.1	12.2	.0
May	72.3	46.2	59.3	94	1942	29	66.6	1991	25	1966	10	52.4	1997	236	57	.0	.7	30.4	.0	1.6	.0
Jun	81.7	56.1	68.9	104	1988	26	73.0	1991	36	1972	11	64.5	1972	33	150	.1	3.6	30.0	.0	.0	.0
Jul	85.5	60.4	73.0	108	1936	14	76.9	1999	43+	2001	2	70.1	1992	2	249	.2	6.2	31.0	.0	.0	.0
Aug	83.2	58.4	70.8	105	1947	6	76.9	1995	36	1982	29	67.2	1992	20	199	.1	3.1	31.0	.0	.0	.0
Sep	76.1	50.2	63.2	102+	1953	2	67.1	1998	28+	1976	25	58.3	1975	107	51	.0	1.1	30.0	.0	.6	.0
Oct	63.2	38.8	51.0	92	1951	4	59.2	1971	18+	1988	31	45.7	1987	439	6	.0	.0	27.6	.0	8.8	.0
Nov	48.8	30.4	39.6	81	1950	1	44.2	1999	-1	1950	24	32.8	1976	761	0	.0	.0	12.6	1.6	20.2	.0
Dec	36.3	20.6	28.5	69+	2001	6	37.0	1982	-19	1983	24	16.6	1989	1133	0	.0	.0	3.0	10.7	28.2	2.1
Ann	60.0	37.7	48.9	108	Jul 1936	14	76.9+	Jul 1999	-25	Jan 1984	22	9.6	Jan 1977	6572	713	.4	14.7	232.8	45.5	152.7	12.1

+ 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/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

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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	1.93	1.88	2.02	1947	30	4.21	1999	.46	1981
Feb	1.90	1.52	2.31	1949	15	5.42	1990	.00	1987
Mar	2.86	2.79	2.20	1954	25	5.61	1985	.80	1981
Apr	3.55	3.73	3.62	1956	29	6.04	1981	1.11	1971
May	3.68	3.59	2.61	1959	23	7.95	2000	1.17	1988
Jun	3.71	3.78	3.89	1937	21	7.26	2000	.63	1988
Jul	3.42	3.03	3.94	1950	20	7.60	1992	.64	1974
Aug	3.67	3.51	3.16	1991	20	10.25	1998	.51	1976
Sep	3.17	2.86	2.71	1958	16	6.24	1993	.27	1998
Oct	2.55	2.18	2.45	1949	12	6.50	1991	.93	1982
Nov	3.10	2.79	3.62	1982	2	7.64	1982	.77	1976
Dec	2.63	2.55	3.10	1965	25	6.09	1990	.65	1995
Ann	36.17	36.80	3.94	Jul 1950	20	10.25	Aug 1998	.00	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.4	5.2	1.0	.2
Feb	7.1	4.8	1.0	.3
Mar	9.7	6.9	1.8	.4
Apr	11.4	8.1	2.1	.6
May	10.9	7.3	2.5	.9
Jun	9.1	6.5	2.6	.9
Jul	9.3	6.8	2.3	.7
Aug	8.9	6.7	2.5	.7
Sep	8.6	5.8	2.3	.9
Oct	9.1	5.6	1.6	.4
Nov	9.7	6.4	2.1	.4
Dec	9.9	6.8	1.5	.3
Ann	112.1	76.9	23.3	6.7

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	.54	.72	1.00	1.24	1.48	1.73	2.00	2.33	2.75	3.41	4.03
Feb	.28	.52	.85	1.11	1.38	1.66	1.97	2.34	2.82	3.59	4.31
Mar	1.16	1.42	1.79	2.10	2.38	2.68	2.99	3.36	3.82	4.52	5.16
Apr	1.54	1.86	2.31	2.67	3.01	3.36	3.73	4.15	4.68	5.50	6.23
May	1.47	1.81	2.29	2.69	3.06	3.45	3.86	4.33	4.94	5.87	6.71
Jun	1.26	1.61	2.12	2.55	2.97	3.40	3.87	4.42	5.12	6.21	7.21
Jul	1.16	1.48	1.96	2.36	2.74	3.14	3.57	4.07	4.72	5.72	6.64
Aug	.97	1.32	1.85	2.32	2.78	3.26	3.80	4.43	5.26	6.57	7.79
Sep	.84	1.14	1.60	2.00	2.40	2.82	3.28	3.83	4.55	5.68	6.74
Oct	.83	1.07	1.43	1.73	2.03	2.33	2.66	3.05	3.55	4.32	5.04
Nov	1.04	1.33	1.76	2.13	2.48	2.84	3.23	3.69	4.28	5.20	6.04
Dec	.80	1.05	1.42	1.74	2.05	2.38	2.73	3.15	3.68	4.52	5.30
Ann	28.72	30.23	32.12	33.53	34.77	35.96	37.18	38.50	40.10	42.38	44.33

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	9.7	9.0	3	2
Feb	7.6	7.3	3	2
Mar	3.9	2.0	1	#
Apr	.9	.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	.2	.0	#	0
Nov	1.8	1.0	#	#
Dec	10.7	8.5	1	1
Ann	34.8	27.8	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	12.0	1978	26	21.0	1999	21	1978	27	11	1977
Feb	12.0	1988	12	27.0	1982	23	1978	5	21	1978
Mar	9.0	1983	21	14.0	1999	21	1978	6	17	1978
Apr	8.0	1982	6	8.0	1982	8	1982	6	1	1982
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	2.0	1989	20	3.0	1989	2	1992	20	#+	1997
Nov	4.0	1975	27	6.0	1975	6	1975	27	1	1997
Dec	9.0	1977	6	30.5	2000	16	1977	12	6	2000
Ann	12.0+	Feb 1988	12	30.5	Dec 2000	23	Feb 1978	5	21	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.2	4.0	1.4	.4	.1
Feb	3.3	3.1	1.3	.3	.1
Mar	1.7	1.6	.6	.3	.0
Apr	.3	.3	.1	@	.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	.1	.1	.0	.0	.0
Nov	1.1	1.0	.3	.0	.0
Dec	3.5	3.1	1.3	.5	.0
Ann	14.2	13.2	5.0	1.5	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	14.7	11.8	7.1	1.2
Feb	11.2	9.8	5.7	1.2
Mar	3.8	2.6	1.4	.1
Apr	.5	.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	1.7	.7	.1	.0
Dec	7.4	4.7	2.7	.5
Ann	39.4	29.7	17.1	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	5/29	5/23	5/20	5/17	5/14	5/11	5/08	5/04	4/29
32	5/15	5/11	5/07	5/05	5/02	4/30	4/27	4/24	4/20
28	5/03	4/28	4/25	4/22	4/19	4/16	4/13	4/10	4/05
24	4/19	4/15	4/12	4/09	4/07	4/04	4/01	3/29	3/25
20	4/11	4/07	4/04	4/01	3/29	3/27	3/24	3/21	3/16
16	4/03	3/30	3/26	3/23	3/21	3/18	3/15	3/11	3/07

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	9/16	9/20	9/23	9/26	9/28	9/30	10/03	10/06	10/10
32	9/22	9/27	10/01	10/04	10/07	10/09	10/12	10/16	10/21
28	10/03	10/08	10/12	10/16	10/19	10/22	10/25	10/29	11/04
24	10/17	10/23	10/28	10/31	11/04	11/07	11/11	11/15	11/21
20	10/29	11/04	11/09	11/12	11/16	11/19	11/23	11/27	12/03
16	11/13	11/19	11/23	11/26	11/29	12/02	12/05	12/09	12/15

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	154	148	144	140	137	133	130	125	120
32	175	168	164	160	156	153	149	144	138
28	207	198	192	187	182	177	172	166	157
24	233	225	220	215	211	206	201	196	188
20	250	244	239	235	231	227	223	218	211
16	273	266	261	257	253	249	244	240	233

***** 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	1315	1100	901	525	236	33	2	20	107	439	761	1133	6572
60	1160	960	746	380	141	8	0	3	39	301	611	978	5327
57	1067	876	653	297	97	3	0	0	18	229	522	885	4647
55	1005	820	592	246	73	2	0	0	10	186	463	823	4220
50	850	681	448	137	30	0	0	0	2	100	323	677	3248
32	356	252	85	1	0	0	0	0	0	1	28	234	957

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	64	76	207	467	844	1107	1270	1202	934	590	257	124	7142
55	0	0	1	22	204	419	557	489	254	63	2	0	2011
57	0	0	0	12	166	360	495	427	202	43	1	0	1706
60	0	0	0	5	117	275	402	337	133	23	0	0	1292
65	0	0	0	1	57	150	249	199	51	6	0	0	713
70	0	0	0	0	22	59	115	96	11	0	0	0	303

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	5	11	75	248	579	845	996	932	672	337	106	20	5	16	91	339	918	1763	2759	3691	4363	4700	4806	4826
45	0	2	39	144	427	695	841	777	522	209	52	6	0	2	41	185	612	1307	2148	2925	3447	3656	3708	3714
50	0	0	20	77	287	545	686	622	377	115	21	2	0	0	20	97	384	929	1615	2237	2614	2729	2750	2752
55	0	0	5	35	171	396	531	467	243	55	5	0	0	0	5	40	211	607	1138	1605	1848	1903	1908	1908
60	0	0	0	13	89	261	377	315	141	19	0	0	0	0	0	13	102	363	740	1055	1196	1215	1215	1215
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	7	57	161	356	545	663	616	424	216	64	8	0	7	64	225	581	1126	1789	2405	2829	3045	3109	3117

(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