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: MIDDLEBOURNE 3 ESE, WV **COOP ID: 465963**

Climate Division: WV 2 **NWS Call Sign:** **Elevation: 782 Feet** **Lat: 39˚28N** **Lon: 80˚52W**

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	38.5	19.0	28.8	79	1950	26	38.1	1974	-34+	1994	19	14.2	1977	1124	0	.0	.0	6.8	9.2	26.2	2.4
Feb	43.0	20.6	31.8	78	2000	27	40.4	1976	-18	1996	6	17.9	1978	930	0	.0	.0	9.5	5.6	23.1	1.8
Mar	53.4	28.1	40.8	87	1950	28	49.9	1973	-8	1980	3	33.4	1996	752	0	.0	.0	19.5	1.3	19.6	.2
Apr	64.1	36.5	50.3	91	1986	28	55.1	1985	10	1964	1	44.9	1997	441	1	.0	.1	27.1	.0	10.5	.0
May	73.1	47.4	60.3	94	1962	18	68.4	1991	22+	1966	10	54.0	1997	193	45	.0	.3	30.9	.0	1.8	.0
Jun	80.5	56.6	68.6	98+	1952	27	72.0	1987	31	1966	2	63.4	1992	32	139	.0	1.5	30.0	.0	@	.0
Jul	84.0	61.9	73.0	103	1988	16	76.0+	1999	37	1988	1	69.5	2000	2	248	.2	5.3	31.0	.0	.0	.0
Aug	82.4	60.2	71.3	101	1955	5	75.5+	1995	38+	1965	29	68.0	1982	11	206	@	3.4	31.0	.0	.0	.0
Sep	76.4	53.2	64.8	103	1953	4	68.6	1978	29	1966	16	61.6	1995	75	69	.0	.9	30.0	.0	.1	.0
Oct	65.7	39.7	52.7	93+	1951	4	60.7	1971	15	1952	21	44.9	1988	392	10	.0	.0	29.6	.0	7.0	.0
Nov	53.7	31.2	42.5	85+	1948	6	48.9	1985	-1	1958	30	34.5	1976	676	0	.0	.0	19.0	.3	16.3	.0
Dec	43.1	24.1	33.6	78	1982	3	42.2	1982	-21	1989	22	19.6	1989	973	0	.0	.0	9.6	5.4	23.7	.9
Ann	63.2	39.9	51.5	103+	Jul 1988	16	76.0+	Jul 1999	-34+	Jan 1994	19	14.2	Jan 1977	5601	718	.2	11.5	274.0	21.8	128.3	5.3

+ 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: 1948-2001

(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	3.32	3.18	1.73	1994	28	6.96	1994	.88	1981
Feb	3.02	2.95	2.92	2000	19	5.87	2000	.85	1977
Mar	3.84	3.27	2.54	1997	2	8.89	1997	1.44	1971
Apr	3.48	3.47	2.21	1989	29	6.04	1973	1.30	1971
May	4.67	4.68	2.33	1974	12	8.10	1996	1.89	1991
Jun	4.27	3.78	3.66	1974	21	11.73	1998	1.31	1988
Jul	4.78	4.38	2.90+	1980	9	9.21	1996	1.88	1998
Aug	4.30	3.97	3.75	1995	6	10.28	1975	.81	1981
Sep	3.62	3.09	3.39	1971	13	10.98	1971	.64	1984
Oct	3.09	3.01	2.92	1954	16	6.62	1976	1.11	1994
Nov	3.58	3.34	3.40	1985	5	10.70	1985	.55	1976
Dec	3.26	2.93	2.08	1949	13	7.49	1978	1.50	1989
Ann	45.23	43.79	3.75	Aug 1995	6	11.73	Jun 1998	.55	Nov 1976

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	15.4	8.5	1.9	.5
Feb	12.7	7.2	1.8	.3
Mar	13.5	8.9	2.8	.6
Apr	13.9	8.6	2.2	.5
May	13.8	9.6	3.5	.8
Jun	11.8	8.1	3.0	1.0
Jul	12.2	8.7	3.3	1.1
Aug	11.0	7.8	2.8	1.0
Sep	10.7	6.4	2.3	1.1
Oct	10.5	6.7	2.2	.5
Nov	11.6	8.0	2.4	.8
Dec	14.0	8.3	1.8	.5
Ann	151.1	96.8	30.0	8.7

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	1.12	1.44	1.90	2.29	2.66	3.04	3.47	3.96	4.59	5.57	6.47
Feb	1.03	1.32	1.73	2.09	2.42	2.77	3.15	3.59	4.16	5.04	5.85
Mar	1.61	1.96	2.45	2.85	3.23	3.61	4.03	4.50	5.10	6.01	6.84
Apr	1.56	1.87	2.30	2.65	2.97	3.30	3.65	4.05	4.56	5.33	6.02
May	1.98	2.40	3.00	3.48	3.94	4.40	4.89	5.46	6.18	7.28	8.27
Jun	1.31	1.71	2.32	2.84	3.34	3.87	4.44	5.12	6.00	7.36	8.63
Jul	2.30	2.71	3.27	3.73	4.15	4.56	5.01	5.52	6.16	7.12	7.99
Aug	1.49	1.90	2.49	2.99	3.46	3.95	4.49	5.11	5.90	7.14	8.27
Sep	1.04	1.38	1.90	2.35	2.79	3.25	3.76	4.35	5.13	6.34	7.47
Oct	1.00	1.30	1.73	2.10	2.45	2.82	3.22	3.69	4.30	5.24	6.11
Nov	1.29	1.63	2.11	2.52	2.91	3.31	3.75	4.25	4.90	5.89	6.81
Dec	1.38	1.67	2.09	2.43	2.75	3.07	3.41	3.81	4.31	5.08	5.78
Ann	36.03	37.89	40.23	41.98	43.51	44.97	46.47	48.11	50.07	52.88	55.28

\+ 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: 1948-2001
(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	10.2	8.0	2	1	12.5	1994	5	34.5	1978	23	1994	21	11	1994	5.7	4.1	1.3	.4	.1	9.4	5.5	3.2	.6
Feb	6.4	5.0	1	1	6.0	1979	12	20.5	1979	14	1979	19	9	1978	3.3	2.8	.7	.1	.0	6.4	3.7	2.6	.7
Mar	3.8	2.3	#	#	11.0	1993	14	14.0	1994	17	1993	15	3	1978	1.7	1.4	.4	.1	@	2.1	1.1	.6	.1
Apr	.7	#	#	0	12.0	1987	4	12.0	1987	12	1987	4	1	1987	.1	.1	.1	@	@	.2	.1	.1	.1
May	.0	.0	0	0	.0	0	0	.0	0	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	#	1972	18	#	1972	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.9	.0	#	#	4.0	1971	24	4.5	1977	4	1971	24	#+	2000	.5	.4	.1	.0	.0	.6	.1	.0	.0
Dec	2.5	2.0	#	#	4.0	1981	18	9.2	2000	6	1993	29	1+	2000	2.5	1.6	.1	.0	.0	3.5	.6	.0	.0
Ann	24.5	17.3	N/A	N/A	12.5	Jan 1994	5	34.5	Jan 1978	23	Jan 1994	21	11	Jan 1994	13.8	10.4	2.7	.6	.1	22.2	11.1	6.5	1.5

+ 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	5/31	5/26	5/22	5/19	5/16	5/13	5/09	5/05	4/30
32	5/20	5/15	5/12	5/09	5/07	5/04	5/01	4/28	4/23
28	5/11	5/06	5/02	4/29	4/26	4/23	4/20	4/16	4/11
24	4/24	4/19	4/15	4/12	4/10	4/07	4/04	3/31	3/26
20	4/11	4/07	4/03	3/31	3/28	3/25	3/22	3/19	3/14
16	4/03	3/26	3/21	3/16	3/11	3/07	3/02	2/25	2/17

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	9/27	9/30	10/02	10/04	10/07	10/09	10/13
32	9/30	10/03	10/06	10/08	10/11	10/13	10/15	10/18	10/21
28	10/08	10/13	10/16	10/19	10/22	10/25	10/28	10/31	11/05
24	10/18	10/23	10/27	10/30	11/02	11/05	11/08	11/12	11/17
20	10/29	11/03	11/06	11/09	11/12	11/14	11/17	11/20	11/25
16	11/09	11/16	11/22	11/26	11/30	12/05	12/09	12/15	12/22

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	155	150	146	142	139	135	132	128	122
32	174	168	163	160	156	153	149	145	138
28	195	189	185	181	178	175	171	167	162
24	226	219	214	210	205	201	197	192	185
20	249	242	236	232	228	224	219	214	207
16	291	282	275	269	263	258	252	245	235

***** 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	1124	930	752	441	193	32	2	11	75	392	676	973	5601
60	969	790	597	298	101	7	0	0	24	261	527	818	4392
57	876	706	508	220	61	2	0	0	10	195	441	728	3747
55	815	650	451	174	41	1	0	0	5	157	386	672	3352
50	672	520	313	82	12	0	0	0	1	82	257	528	2467
32	240	147	35	0	0	0	0	0	0	0	19	149	590

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	138	142	306	550	875	1097	1269	1218	984	642	333	199	7753
55	1	0	9	33	203	407	556	505	299	85	10	9	2117
57	0	0	4	20	161	349	494	443	244	61	5	4	1785
60	0	0	0	7	108	263	401	350	168	34	1	0	1332
65	0	0	0	1	45	139	248	206	69	10	0	0	718
70	0	0	0	0	14	52	114	94	17	1	0	0	292

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	37	57	170	360	652	879	1040	995	770	427	181	68	37	94	264	624	1276	2155	3195	4190	4960	5387	5568	5636
45	16	24	95	241	497	729	885	840	620	289	101	36	16	40	135	376	873	1602	2487	3327	3947	4236	4337	4373
50	2	8	47	143	351	579	730	685	472	168	48	13	2	10	57	200	551	1130	1860	2545	3017	3185	3233	3246
55	0	0	21	75	221	430	575	530	329	85	16	2	0	0	21	96	317	747	1322	1852	2181	2266	2282	2284
60	0	0	4	35	116	287	420	377	202	32	3	0	0	0	4	39	155	442	862	1239	1441	1473	1476	1476
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	29	46	130	255	417	583	709	673	498	277	119	43	29	75	205	460	877	1460	2169	2842	3340	3617	3736	3779

(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