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: MORGANTOWN HART AP, WV **COOP ID: 466202**

Climate Division: WV 2 **NWS Call Sign: MGW** **Elevation: 1,240 Feet** **Lat: 39˚39N** **Lon: 79˚55W**

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	38.4	22.0	30.2	75	1950	25	40.3	1998	-20	1972	16	16.7	1977	1079	0	.0	.0	6.8	10.7	24.9	1.4
Feb	42.3	24.2	33.3	77	2000	26	40.7	1998	-10	1973	17	19.3	1978	890	0	.0	.0	8.7	7.4	21.3	.7
Mar	52.4	31.8	42.1	86	1966	23	48.1	1977	4+	1972	4	35.8	1978	710	0	.0	.0	17.5	2.1	17.2	.0
Apr	63.2	40.2	51.7	92	1976	18	56.7	1994	14	1985	10	46.0	1975	402	2	.0	.1	25.5	.2	6.6	.0
May	72.4	49.7	61.1	91+	1962	16	68.8	1991	27+	1963	2	55.1	1976	185	62	.0	.3	30.7	.0	.6	.0
Jun	79.9	57.7	68.8	97+	1967	13	73.0	1994	30	1972	11	62.5	1972	37	151	.0	1.6	30.0	.0	@	.0
Jul	83.6	62.1	72.9	101	1966	2	77.0	1999	41	1988	1	68.3	1976	6	249	@	5.1	31.0	.0	.0	.0
Aug	82.1	61.0	71.6	99+	1953	31	77.9	1995	38	1982	29	67.3	1982	13	217	.0	3.1	31.0	.0	.0	.0
Sep	75.5	54.3	64.9	102	1953	3	68.7	1971	30	1983	24	60.7	1975	72	69	.0	.6	30.0	.0	.1	.0
Oct	64.5	43.1	53.8	90	1951	3	60.5	1971	17	1969	24	47.5	1988	357	9	.0	.0	28.7	.0	3.4	.0
Nov	53.0	35.1	44.1	83+	1948	5	50.6	1985	3	1958	30	36.9	1976	628	0	.0	.0	17.7	1.0	12.9	.0
Dec	43.0	26.8	34.9	77+	1966	9	42.9	1984	-13	1983	25	21.9	1989	933	0	.0	.0	9.6	6.4	21.6	.5
Ann	62.5	42.3	52.5	102	Sep 1953	3	77.9	Aug 1995	-20	Jan 1972	16	16.7	Jan 1977	5312	759	@	10.8	267.2	27.8	108.6	2.6

\+ 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

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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	2.87	2.51	1.52	1974	10	6.14	1999	.97	1981
Feb	2.69	2.38	2.71	2000	18	5.29	1989	.78	1987
Mar	3.73	3.83	2.17	1967	6	7.08	1994	1.50	1987
Apr	3.54	3.69	1.82	1994	10	5.94	1984	1.14	1971
May	4.17	3.92	2.82	1956	27	7.13	1985	1.84	1993
Jun	4.12	3.51	2.75	1972	23	9.42	1972	1.08	1992
Jul	4.22	3.86	4.33	1996	18	11.87	1996	1.36	1995
Aug	4.04	3.45	5.01	1956	5	9.72	1980	1.01	1993
Sep	3.50	2.89	2.65	1967	28	7.08	1996	.77	1985
Oct	2.83	2.68	4.20	1979	9	7.31	1979	.75	1982
Nov	3.35	3.36	3.49	1985	4	10.87	1985	.86	1976
Dec	3.07	2.73	2.24	1990	18	7.26	1990	1.30	1989
Ann	42.13	41.45	5.01	Aug 1956	5	11.87	Jul 1996	.75	Oct 1982

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	15.3	7.7	1.6	.4
Feb	12.9	6.6	1.6	.3
Mar	14.2	8.6	2.7	.4
Apr	13.2	8.5	2.1	.6
May	13.6	8.7	3.0	.9
Jun	12.5	8.4	3.1	.7
Jul	11.1	7.8	3.1	.9
Aug	10.5	7.0	2.8	.9
Sep	10.3	7.4	2.2	.6
Oct	10.3	6.2	1.8	.5
Nov	12.6	7.6	2.0	.4
Dec	13.9	7.2	2.0	.3
Ann	150.4	91.7	28.0	6.9

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	.93	1.21	1.61	1.95	2.28	2.61	2.99	3.42	3.98	4.85	5.65
Feb	.80	1.06	1.44	1.77	2.09	2.43	2.79	3.23	3.78	4.66	5.47
Mar	1.66	1.99	2.45	2.83	3.18	3.53	3.91	4.35	4.90	5.73	6.48
Apr	1.55	1.87	2.31	2.67	3.01	3.35	3.71	4.13	4.65	5.46	6.18
May	2.19	2.53	2.99	3.35	3.69	4.02	4.37	4.77	5.27	6.01	6.68
Jun	1.37	1.76	2.34	2.82	3.29	3.77	4.30	4.92	5.71	6.94	8.07
Jul	1.46	1.86	2.44	2.93	3.40	3.88	4.40	5.02	5.80	7.02	8.13
Aug	1.24	1.63	2.20	2.69	3.17	3.66	4.20	4.84	5.67	6.95	8.14
Sep	1.29	1.61	2.09	2.48	2.86	3.24	3.66	4.14	4.76	5.71	6.58
Oct	.91	1.18	1.58	1.91	2.24	2.58	2.95	3.38	3.94	4.81	5.62
Nov	1.05	1.37	1.84	2.25	2.64	3.04	3.48	4.00	4.67	5.72	6.68
Dec	1.29	1.57	1.96	2.28	2.58	2.89	3.22	3.59	4.07	4.80	5.46
Ann	32.54	34.46	36.88	38.69	40.29	41.82	43.39	45.11	47.19	50.16	52.71

\+ 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	11.2	8.3	2	1	17.8	1994	4	38.8	1994	25+	1996	12	8	1978	7.2	3.8	.9	.3	.1	11.6	7.4	5.2	1.1
Feb	7.3	5.9	1	1	8.6	1983	11	20.6	1972	17+	1979	20	9	1979	5.8	2.6	.6	.2	.0	9.3	4.8	2.6	.6
Mar	5.2	3.7	#	1	20.0	1993	13	25.0	1993	21+	1993	15	2+	1999	3.5	1.4	.5	.3	@	4.4	1.6	1.0	.2
Apr	.9	#	#	0	9.3	1987	4	13.3	1987	11	1987	5	1	1987	.5	.3	.1	@	.0	.3	.1	.1	@
May	#	.0	#	0	#	1989	25	#	1989	0	0	0	#	1999	.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	1.2	1993	31	1.2	1993	#+	1974	3	0	0	.1	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.3	.4	#	0	6.0	1984	18	6.5	1987	10	1995	15	1	1995	1.3	.3	.1	.1	.0	1.1	.3	.1	@
Dec	4.4	2.8	#	0	11.4	1973	9	22.8	1973	10	1992	12	2+	1989	3.6	1.6	.3	.1	@	5.8	1.9	.5	@
Ann	30.4	21.1	N/A	N/A	20.0	Mar 1993	13	38.8	Jan 1994	25+	Jan 1996	12	9	Feb 1979	22.0	10.0	2.5	1.0	.1	32.5	16.1	9.5	1.9

+ 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	5/25	5/20	5/16	5/13	5/09	5/06	5/03	4/29	4/24
32	5/18	5/12	5/07	5/04	4/30	4/27	4/23	4/18	4/12
28	4/28	4/23	4/19	4/16	4/13	4/10	4/06	4/03	3/28
24	4/15	4/11	4/07	4/04	4/02	3/30	3/27	3/23	3/19
20	4/06	4/01	3/28	3/24	3/21	3/18	3/14	3/11	3/05
16	3/31	3/23	3/18	3/13	3/09	3/04	2/28	2/22	2/15

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	9/20	9/24	9/28	10/01	10/04	10/06	10/09	10/13	10/17
32	10/01	10/07	10/11	10/14	10/18	10/21	10/25	10/29	11/03
28	10/15	10/20	10/23	10/26	10/29	11/01	11/04	11/07	11/12
24	10/25	10/31	11/05	11/08	11/12	11/15	11/19	11/23	11/29
20	11/04	11/11	11/16	11/20	11/24	11/28	12/02	12/07	12/14
16	11/18	11/25	11/29	12/03	12/07	12/11	12/15	12/19	12/26

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	166	159	154	150	146	142	138	134	127
32	197	187	181	175	170	165	159	152	143
28	222	214	208	203	199	194	189	183	175
24	246	238	233	228	223	219	214	208	201
20	276	266	259	253	247	242	236	229	219
16	300	291	284	278	273	267	262	255	246

***** 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	1079	890	710	402	185	37	6	13	72	357	628	933	5312
60	924	750	557	261	99	9	0	1	21	227	480	778	4107
57	831	666	471	187	61	4	0	0	8	163	396	692	3479
55	772	611	413	143	41	2	0	0	4	127	341	634	3088
50	629	481	282	62	13	0	0	0	0	59	219	491	2236
32	212	124	29	0	0	0	0	0	0	0	12	129	506

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	157	159	342	590	900	1104	1266	1227	987	675	374	219	8000
55	3	1	13	44	228	415	553	514	301	89	13	11	2185
57	0	0	8	27	185	357	491	452	245	63	8	7	1843
60	0	0	1	11	130	273	398	359	168	34	2	0	1376
65	0	0	0	2	62	151	249	217	69	9	0	0	759
70	0	0	0	0	22	65	121	106	17	1	0	0	332

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	49	73	185	380	667	882	1036	1002	762	448	209	79	49	122	307	687	1354	2236	3272	4274	5036	5484	5693	5772
45	23	34	116	257	514	732	881	847	612	307	127	38	23	57	173	430	944	1676	2557	3404	4016	4323	4450	4488
50	6	14	63	160	367	582	726	692	464	185	64	18	6	20	83	243	610	1192	1918	2610	3074	3259	3323	3341
55	1	1	32	88	240	434	571	537	326	97	33	4	1	2	34	122	362	796	1367	1904	2230	2327	2360	2364
60	0	0	10	42	133	289	416	384	196	40	10	0	0	0	10	52	185	474	890	1274	1470	1510	1520	1520
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	29	41	118	236	410	585	709	675	489	257	116	43	29	70	188	424	834	1419	2128	2803	3292	3549	3665	3708

(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