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 LOCK & DAM, WV **COOP ID: 466212**

Climate Division: WV 2 **NWS Call Sign:** **Elevation: 825 Feet** **Lat: 39˚37N** **Lon: 79˚58W**

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	39.2	22.3	30.8	80	1950	25	40.2	1990	-21	1982	17	17.0	1977	1061	0	.0	.0	6.9	8.9	25.9	1.6
Feb	43.1	24.3	33.7	85+	1951	1	41.1	1990	-11	1979	11	22.4	1978	876	0	.0	.0	9.1	6.0	22.1	1.2
Mar	53.3	31.9	42.6	86	1950	27	50.3	1973	-3	1980	3	35.4	1980	694	0	.0	.0	18.8	1.3	18.2	.1
Apr	64.2	40.3	52.3	91+	1976	18	57.7	1985	14	1976	12	47.4	1980	385	2	.0	.1	27.2	.0	8.1	.0
May	72.7	49.9	61.3	93+	1949	5	68.5	1991	6	1951	2	56.7	1994	171	57	.0	.1	30.9	.0	1.0	.0
Jun	80.2	58.6	69.4	97	1953	21	72.2	1994	31	1972	11	62.0	1972	27	159	.0	1.7	30.0	.0	@	.0
Jul	83.4	63.5	73.5	100	1949	6	78.2	1999	42+	1960	8	70.1	2000	4	267	.0	4.5	31.0	.0	.0	.0
Aug	82.1	62.1	72.1	101	1948	28	76.9	1995	36	1982	29	68.4	1982	10	230	.1	3.0	31.0	.0	.0	.0
Sep	75.8	55.8	65.8	106	1953	2	71.6	1998	30	1957	28	63.1	1984	58	82	.0	.8	30.0	.0	@	.0
Oct	65.0	43.7	54.4	96	1998	20	60.5	1984	15	1972	20	47.6	1980	348	18	.0	.0	29.3	.0	3.8	.0
Nov	53.6	35.0	44.3	87	1948	5	52.4	1985	2	1958	30	36.1	1976	621	0	.0	.0	18.8	.4	14.6	.0
Dec	43.7	27.0	35.4	78	1982	3	43.9	1982	-15	1983	25	22.3	1989	919	0	.0	.0	9.9	5.1	23.1	.5
Ann	63.0	42.9	53.0	106	Sep 1953	2	78.2	Jul 1999	-21	Jan 1982	17	17.0	Jan 1977	5174	815	.1	10.2	272.9	21.7	116.8	3.4

\+ 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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Climate Division: WV 2 **NWS Call Sign:** **Elevation: 825 Feet** **Lat: 39˚37N** **Lon: 79˚58W**

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	3.27	2.98	1.64	1974	11	6.29	1978	.96	1981
Feb	2.88	2.63	3.00	2000	19	5.76	2000	1.00	1978
Mar	3.82	3.99	2.01	1985	30	7.50	1994	1.35	1990
Apr	3.71	3.59	1.75	1994	11	5.80	1972	.95	1971
May	4.37	4.76	2.90	1998	25	6.64	1996	1.38	1993
Jun	4.04	3.80	3.03	1972	23	9.20	1972	.98	1991
Jul	4.24	3.93	3.75	1996	19	10.59	1996	.76	1998
Aug	3.96	3.28	4.62	1948	5	11.40	1980	.97	1981
Sep	3.35	2.68	2.55	1996	17	6.33+	1996	.82	1985
Oct	2.87	2.82	3.85	1954	16	8.30	1976	.68	1982
Nov	3.53	3.43	3.56	1985	5	10.93	1985	.81	1976
Dec	3.26	2.96	1.67	1990	19	7.88	1990	1.51	1998
Ann	43.30	42.23	4.62	Aug 1948	5	11.40	Aug 1980	.68	Oct 1982

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	16.2	8.3	1.7	.5
Feb	13.9	7.2	1.3	.3
Mar	14.4	9.0	2.6	.6
Apr	14.3	9.1	2.4	.5
May	13.8	9.1	3.0	1.0
Jun	11.8	8.4	2.8	.8
Jul	11.2	8.0	3.2	.9
Aug	10.7	7.2	2.9	1.0
Sep	10.2	7.0	2.3	.7
Oct	10.2	6.5	1.8	.5
Nov	13.3	7.9	2.2	.5
Dec	15.9	7.7	2.1	.3
Ann	155.9	95.4	28.3	7.6

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	1.09	1.40	1.86	2.24	2.61	2.99	3.41	3.90	4.52	5.49	6.39
Feb	.92	1.20	1.60	1.95	2.28	2.62	3.00	3.44	4.01	4.89	5.71
Mar	1.77	2.11	2.57	2.94	3.29	3.63	4.00	4.43	4.96	5.77	6.49
Apr	1.67	2.00	2.46	2.83	3.17	3.52	3.89	4.31	4.85	5.65	6.38
May	2.01	2.39	2.92	3.36	3.76	4.16	4.59	5.08	5.70	6.63	7.48
Jun	1.10	1.49	2.07	2.58	3.08	3.60	4.19	4.87	5.77	7.17	8.48
Jul	1.22	1.62	2.23	2.76	3.27	3.81	4.40	5.10	6.01	7.43	8.75
Aug	1.10	1.47	2.04	2.54	3.02	3.53	4.10	4.76	5.63	6.99	8.26
Sep	1.18	1.49	1.95	2.34	2.71	3.09	3.50	3.98	4.60	5.55	6.42
Oct	.93	1.20	1.60	1.94	2.28	2.62	2.99	3.43	4.00	4.88	5.69
Nov	1.22	1.56	2.04	2.45	2.84	3.24	3.68	4.19	4.85	5.86	6.80
Dec	1.40	1.69	2.11	2.44	2.76	3.07	3.41	3.81	4.30	5.06	5.74
Ann	33.66	35.59	38.03	39.85	41.46	43.00	44.58	46.31	48.39	51.37	53.93

\+ 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	6.6	5.0	2	1	6.0	1971	1	21.0	1978	20	1994	20	8	1994	2.3	1.6	.6	.2	.0	4.9	2.5	1.1	.0
Feb	5.3	4.5	1	#	7.0	1977	20	9.5	1978	15	1979	19	8	1979	1.7	1.4	.3	.2	.0	4.5	2.6	2.1	.0
Mar	1.9	.0	#	#	5.0	1971	4	8.5	1971	13	1993	14	3	1978	1.0	.7	.1	.1	.0	1.5	.6	.5	.0
Apr	.1	.0	#	0	1.0	1973	11	2.0	1973	1	1973	11	#+	1975	.1	.1	.0	.0	.0	@	.0	.0	.0
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	#	1972	19	#	1972	#	1972	19	#	1972	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.3	.0	#	0	3.0	1971	25	4.0	1971	3	1971	25	#+	1989	.3	.2	@	.0	.0	.1	@	.0	.0
Dec	1.7	1.0	#	#	3.1	1972	1	7.0	1973	6	1992	11	2	1993	1.0	.8	.1	.0	.0	1.6	.1	.0	.0
Ann	15.9	10.5	N/A	N/A	7.0	Feb 1977	20	21.0	Jan 1978	20	Jan 1994	20	8+	Jan 1994	6.4	4.8	1.1	.5	.0	12.6	5.8	3.7	.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	5/27	5/22	5/18	5/14	5/11	5/07	5/04	4/30	4/24
32	5/19	5/13	5/08	5/04	5/01	4/27	4/23	4/18	4/12
28	5/10	5/04	4/29	4/25	4/21	4/17	4/13	4/08	4/02
24	4/22	4/16	4/12	4/08	4/05	4/01	3/28	3/24	3/18
20	4/11	4/04	3/30	3/26	3/22	3/18	3/14	3/09	3/02
16	3/30	3/22	3/17	3/13	3/09	3/04	2/28	2/23	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	9/19	9/25	9/28	10/02	10/05	10/08	10/11	10/15	10/20
32	10/01	10/07	10/10	10/14	10/17	10/20	10/23	10/27	11/02
28	10/13	10/18	10/22	10/26	10/29	11/01	11/05	11/09	11/15
24	10/25	10/30	11/04	11/07	11/11	11/14	11/18	11/22	11/28
20	10/29	11/06	11/12	11/17	11/22	11/26	12/01	12/07	12/15
16	11/13	11/21	11/26	12/01	12/06	12/11	12/16	12/22	12/30

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	172	163	157	151	146	141	136	130	121
32	198	188	181	174	169	163	157	149	139
28	220	210	203	196	190	185	178	171	160
24	249	239	231	225	219	213	207	200	190
20	278	267	258	251	244	237	230	222	210
16	309	296	287	279	272	265	257	248	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	1061	876	694	385	171	27	4	10	58	348	621	919	5174
60	906	736	543	248	86	5	0	0	16	227	475	764	4006
57	813	652	457	176	50	2	0	0	6	167	393	675	3391
55	751	598	400	135	33	1	0	0	3	134	340	618	3013
50	609	469	273	59	9	0	0	0	0	68	222	475	2184
32	193	117	28	0	0	0	0	0	0	0	14	114	466

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	156	164	357	607	908	1122	1286	1243	1014	693	384	217	8151
55	1	2	16	52	228	433	573	530	327	114	19	9	2304
57	0	0	11	33	184	374	511	468	270	85	12	4	1952
60	0	0	4	15	127	288	418	375	190	52	5	0	1474
65	0	0	0	2	57	159	267	230	82	18	0	0	815
70	0	0	0	0	18	66	133	113	21	4	0	0	355

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	39	52	172	373	658	876	1030	985	765	443	190	68	39	91	263	636	1294	2170	3200	4185	4950	5393	5583	5651
45	16	21	97	245	504	726	875	830	615	297	107	31	16	37	134	379	883	1609	2484	3314	3929	4226	4333	4364
50	1	5	45	145	354	576	720	675	465	175	47	11	1	6	51	196	550	1126	1846	2521	2986	3161	3208	3219
55	0	0	17	76	222	427	565	520	322	87	17	1	0	0	17	93	315	742	1307	1827	2149	2236	2253	2254
60	0	0	3	30	116	283	410	367	190	33	2	0	0	0	3	33	149	432	842	1209	1399	1432	1434	1434
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	28	42	119	245	409	577	704	667	488	265	113	39	28	70	189	434	843	1420	2124	2791	3279	3544	3657	3696

(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