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: MARTINSBURG RGNL AP, WV **COOP ID: 465707**

Climate Division: WV 6 **NWS Call Sign: MRB** **Elevation: 531 Feet** **Lat: 39˚24N** **Lon: 77˚59W**

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	41.4	22.6	32.0	80	1932	14	41.4+	1998	-18	1994	21	21.3	1977	1024	0	.0	.0	5.5	7.4	25.9	1.0
Feb	45.5	25.0	35.3	83	1997	27	43.1	1976	-10	1934	28	24.9	1978	833	0	.0	.0	8.4	4.3	21.7	.3
Mar	55.3	32.8	44.1	88	1998	30	49.8	1977	-3	1993	15	37.2	1984	649	0	.0	.0	18.4	.7	15.4	@
Apr	66.3	41.5	53.9	96	1941	21	59.4	1994	19+	1969	1	48.9	1975	336	3	.0	.3	27.5	.0	4.4	.0
May	75.5	51.0	63.3	100	1934	21	70.4	1991	26	1966	11	58.8	1994	130	76	.0	1.5	31.0	.0	.1	.0
Jun	84.0	59.7	71.9	106	1934	30	74.9	1994	36+	1930	1	67.2	1972	8	213	.1	5.6	30.0	.0	.0	.0
Jul	88.3	64.8	76.6	112	1936	11	81.4	1999	41	1943	1	72.3	1971	0	358	.7	11.1	31.0	.0	.0	.0
Aug	86.4	62.9	74.7	108	1930	5	79.5	1980	40+	1982	29	69.6	1992	7	305	.3	8.2	31.0	.0	.0	.0
Sep	79.2	55.4	67.3	103+	1932	1	73.8	1998	29+	1947	28	63.9	1975	45	114	@	2.3	30.0	.0	.1	.0
Oct	67.8	43.2	55.5	98+	1927	2	61.7	1984	17	1969	24	50.2	1987	306	12	.0	.0	30.1	.0	3.6	.0
Nov	56.5	34.8	45.7	86	1974	1	50.9	1985	6	1930	29	40.1	1996	581	0	.0	.0	20.0	.2	12.7	.0
Dec	45.8	26.9	36.4	78+	1951	7	43.1	1984	-12	1983	25	24.4	1989	888	0	.0	.0	9.2	3.9	22.2	.1
Ann	66.0	43.4	54.7	112	Jul 1936	11	81.4	Jul 1999	-18	Jan 1994	21	21.3	Jan 1977	4807	1081	1.1	29.0	272.1	16.5	106.1	1.4

\+ 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: 1926-2001

(3) Derived from 1971-2000 serially complete daily data

Issue Date: February 2004

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Climate Division: WV 6 **NWS Call Sign: MRB** **Elevation: 531 Feet** **Lat: 39˚24N** **Lon: 77˚59W**

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	2.73	2.42	1.87	1948	1	6.35	1996	.48	1981
Feb	2.40	2.11	2.91	1984	14	5.84	1998	.48	1977
Mar	3.51	3.62	2.31	1993	4	7.79	1993	.82	1995
Apr	3.14	2.77	4.00	1937	26	7.79	1983	.16	1985
May	4.19	3.69	3.55	1975	31	9.68	1988	.37	1977
Jun	3.49	3.47	3.47	1975	27	8.03	1972	.68	1994
Jul	3.73	3.79	3.07	1981	2	8.70	1996	.36	1983
Aug	3.40	2.86	3.90	1933	24	7.15	1978	.72	1981
Sep	3.52	2.38	3.64	1966	14	9.35	1975	.50	1986
Oct	3.40	2.98	4.15	1942	15	9.50	1990	.29	2000
Nov	3.14	2.91	3.33	1997	7	7.82	1997	.31	1998
Dec	2.74	2.51	3.75	1974	1	6.39	1974	.62	1971
Ann	39.39	38.35	4.15	Oct 1942	15	9.68	May 1988	.16	Apr 1985

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.0	6.2	1.9	.4
Feb	9.2	5.6	1.3	.4
Mar	10.5	6.7	2.5	.8
Apr	10.2	6.3	2.2	.5
May	12.3	7.8	2.7	1.0
Jun	10.5	6.9	2.2	.8
Jul	10.2	6.7	2.5	.9
Aug	9.1	5.9	2.3	.9
Sep	8.8	5.8	2.4	1.0
Oct	8.3	5.1	2.3	1.0
Nov	9.2	5.7	1.9	.9
Dec	9.3	5.5	1.9	.4
Ann	117.6	74.2	26.1	9.0

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	.74	.99	1.39	1.73	2.07	2.43	2.82	3.29	3.90	4.85	5.74
Feb	.56	.78	1.13	1.45	1.76	2.09	2.46	2.90	3.49	4.41	5.28
Mar	1.15	1.49	1.98	2.39	2.79	3.21	3.66	4.19	4.87	5.93	6.91
Apr	.71	1.00	1.46	1.87	2.29	2.73	3.22	3.81	4.59	5.83	7.00
May	1.03	1.43	2.04	2.58	3.12	3.68	4.32	5.07	6.05	7.61	9.07
Jun	.89	1.22	1.72	2.17	2.62	3.08	3.60	4.22	5.02	6.29	7.48
Jul	.88	1.23	1.78	2.27	2.75	3.26	3.84	4.52	5.42	6.85	8.19
Aug	.94	1.26	1.75	2.18	2.60	3.04	3.52	4.09	4.84	6.01	7.09
Sep	.51	.81	1.31	1.80	2.31	2.87	3.51	4.30	5.36	7.09	8.75
Oct	.58	.88	1.38	1.84	2.32	2.84	3.43	4.15	5.11	6.66	8.15
Nov	.60	.89	1.35	1.77	2.20	2.66	3.19	3.82	4.66	6.00	7.28
Dec	.72	.97	1.37	1.72	2.06	2.42	2.83	3.30	3.92	4.90	5.81
Ann	28.89	30.94	33.56	35.54	37.29	38.98	40.72	42.64	44.96	48.32	51.20

\+ 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: 1926-2001
(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	8.2	5.8	2	1
Feb	7.0	4.7	1	1
Mar	4.4	2.6	#	0
Apr	.5	.0	#	0
May	.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.0	.0	#	0
Nov	1.5	.0	#	0
Dec	3.5	1.1	#	0
Ann	25.1	14.2	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	26.8	1996	7	38.3	1996	24+	1996	14	8	1996
Feb	26.0	1983	11	29.0	1983	26	1983	12	8	1978
Mar	13.8	1993	13	23.0	1999	14+	1993	15	3+	1993
Apr	4.0	1971	6	4.5	1987	3	1982	9	#	1987
May	.0	0	0	.0	0	0	0	0	#	2000
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	1.0	1979	10	1.0	1979	1	1979	10	#	1979
Nov	11.0	1971	24	15.0	1995	11+	1971	25	1	1971
Dec	9.0	1989	24	14.6	1973	11	1990	28	1+	1995
Ann	26.8	Jan 1996	7	38.3	Jan 1996	26	Feb 1983	12	8+	Jan 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.4	2.7	1.1	.6	.1
Feb	2.3	1.9	.9	.5	@
Mar	1.6	1.1	.6	.3	.1
Apr	.2	.2	.1	.0	.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	.0	.0	.0	.0	.0
Nov	.6	.5	.1	.1	.1
Dec	1.8	1.1	.4	.2	.0
Ann	9.9	7.5	3.2	1.7	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	10.4	6.4	3.7	1.2
Feb	8.3	5.5	3.2	.7
Mar	3.2	2.0	1.1	.2
Apr	.1	@	.0	.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	@	.0	.0	.0
Nov	.7	.3	.1	.1
Dec	3.1	.9	.4	.1
Ann	25.8	15.1	8.5	2.3

+ 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

Complete documentation available from:
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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	5/18	5/13	5/09	5/06	5/03	4/30	4/27	4/23	4/18
32	5/04	4/29	4/25	4/22	4/19	4/17	4/14	4/10	4/05
28	4/16	4/11	4/07	4/04	4/02	3/30	3/27	3/23	3/18
24	4/09	4/04	4/01	3/29	3/26	3/24	3/21	3/18	3/13
20	3/29	3/23	3/19	3/15	3/12	3/08	3/04	2/28	2/22
16	3/20	3/12	3/07	3/02	2/26	2/22	2/17	2/12	2/04

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	9/23	9/27	9/30	10/03	10/06	10/08	10/11	10/14	10/18
32	10/03	10/09	10/12	10/16	10/19	10/22	10/25	10/29	11/03
28	10/15	10/19	10/22	10/25	10/28	10/30	11/02	11/06	11/10
24	10/28	11/02	11/06	11/09	11/12	11/15	11/18	11/22	11/27
20	11/06	11/13	11/17	11/21	11/25	11/28	12/02	12/07	12/13
16	11/25	12/02	12/07	12/11	12/15	12/19	12/24	12/29	1/05

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	176	169	164	159	155	151	146	141	133
32	206	198	192	186	182	177	171	165	157
28	228	221	217	212	209	205	201	196	189
24	250	243	238	234	230	226	222	217	210
20	284	275	268	263	258	252	247	240	231
16	322	312	304	298	292	286	279	272	261

***** 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	1024	833	649	336	130	8	0	7	45	306	581	888	4807
60	869	693	495	202	58	1	0	0	10	183	434	733	3678
57	776	609	408	135	31	0	0	0	3	125	352	642	3081
55	718	554	352	97	19	0	0	0	1	93	299	586	2719
50	574	423	224	34	4	0	0	0	0	38	185	443	1925
32	171	82	12	0	0	0	0	0	0	0	7	93	365

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	170	173	386	657	969	1196	1380	1321	1059	729	417	228	8685
55	4	0	12	65	274	506	667	608	371	109	18	8	2642
57	0	0	7	42	224	446	605	546	313	78	11	2	2274
60	0	0	1	19	159	357	512	453	229	44	4	0	1778
65	0	0	0	3	76	213	358	305	114	12	0	0	1081
70	0	0	0	0	26	96	215	173	40	1	0	0	551

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	35	58	183	408	712	945	1122	1063	809	468	201	62	35	93	276	684	1396	2341	3463	4526	5335	5803	6004	6066
45	17	26	97	276	557	795	967	908	659	321	115	30	17	43	140	416	973	1768	2735	3643	4302	4623	4738	4768
50	2	9	49	159	404	645	812	753	510	196	56	10	2	11	60	219	623	1268	2080	2833	3343	3539	3595	3605
55	0	2	20	84	263	495	657	598	365	101	21	3	0	2	22	106	369	864	1521	2119	2484	2585	2606	2609
60	0	0	6	36	144	348	502	443	229	44	6	1	0	0	6	42	186	534	1036	1479	1708	1752	1758	1759
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	25	44	118	245	436	629	763	721	519	284	119	40	25	69	187	432	868	1497	2260	2981	3500	3784	3903	3943

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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