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: WELLSBURG WTR TRMT PL, WV **COOP ID: 469368**

Climate Division: WV 1 **NWS Call Sign:** **Elevation: 660 Feet** **Lat: 40˚17N** **Lon: 80˚37W**

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	37.2	19.9	28.6	76	1950	25	38.8	1990	-22	1963	29	13.6	1977	1130	0	.0	.0	4.9	10.5	26.0	1.6
Feb	41.4	21.4	31.4	77+	2000	26	40.1	1998	-12+	1955	4	19.0	1979	940	0	.0	.0	7.3	6.8	22.2	1.0
Mar	51.2	28.9	40.1	87	1950	27	46.5	1973	-2+	1960	7	33.5	1984	773	0	.0	.0	16.5	1.4	18.8	@
Apr	62.8	37.8	50.3	90+	1954	21	54.9	1986	9	1982	6	45.2	1971	442	1	.0	@	26.8	.0	8.6	.0
May	73.2	48.6	60.9	93+	1949	5	68.7	1991	24	1970	7	55.8	1997	187	58	.0	.1	30.9	.0	.8	.0
Jun	80.8	57.5	69.2	99+	1952	26	72.4	1991	31+	1949	8	64.3	1972	23	148	.0	2.2	30.0	.0	@	.0
Jul	84.3	62.0	73.2	102	1954	14	77.0	1999	38	1963	9	69.2	2000	5	257	.1	5.4	31.0	.0	.0	.0
Aug	82.7	60.1	71.4	101	1953	30	76.3	1995	37	1965	29	67.8	1992	13	212	.0	2.6	31.0	.0	.0	.0
Sep	76.3	53.4	64.9	103	1953	2	68.5	1973	24	1956	21	61.5	1974	73	69	.0	.7	30.0	.0	@	.0
Oct	65.1	42.0	53.6	90	1951	3	58.4	1985	16	1952	21	46.9	1976	363	9	.0	.0	29.4	.0	4.1	.0
Nov	52.9	32.9	42.9	86	1961	3	48.9	1985	-6	1958	30	34.3	1976	664	0	.0	.0	17.3	.6	14.3	.0
Dec	42.0	25.4	33.7	77	1982	4	40.8	1982	-15	1951	17	21.5	1989	969	0	.0	.0	7.7	6.1	23.3	.5
Ann	62.5	40.8	51.7	103	Sep 1953	2	77.0	Jul 1999	-22	Jan 1963	29	13.6	Jan 1977	5582	754	.1	11.0	262.8	25.4	118.1	3.1

\+ 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: 1948-2001

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

Issue Date: February 2004

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Climate Division: WV 1 **NWS Call Sign:** **Elevation: 660 Feet** **Lat: 40˚17N** **Lon: 80˚37W**

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	2.72	2.30	1.80	1986	20	9.40	1999	.54	1981
Feb	2.33	2.27	2.16	1975	24	5.09	1975	.00	1987
Mar	3.19	3.07	1.67	1954	1	5.99	1997	1.24	1979
Apr	3.23	3.31	1.80	1981	12	6.71	1981	.21	1971
May	4.50	4.47	2.95	1971	6	12.37	1989	1.57	1972
Jun	4.13	4.08	2.75	1950	25	8.25	1980	1.41	1991
Jul	4.47	4.12	3.70	1980	22	9.22	1980	1.69	1973
Aug	3.47	2.95	3.19	1969	19	11.22	1975	1.22	1986
Sep	2.92	2.87	3.49	1962	2	7.09	1974	.35	1985
Oct	2.59	2.57	2.67	1954	15	5.38	1983	.83+	1999
Nov	3.13	2.91	2.80	1985	5	14.56	1985	.56	2000
Dec	2.81	2.42	1.61	1978	9	6.31	1978	.81	1988
Ann	39.49	37.94	3.70	Jul 1980	22	14.56	Nov 1985	.00	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	12.2	6.6	1.3	.2
Feb	10.2	5.7	1.2	.3
Mar	12.7	7.6	1.7	.2
Apr	12.7	7.5	2.0	.3
May	13.7	9.0	2.7	.7
Jun	11.5	7.2	2.2	.6
Jul	11.3	7.1	2.3	1.0
Aug	10.6	6.8	2.5	.8
Sep	9.9	6.2	2.0	.5
Oct	10.7	6.3	1.8	.3
Nov	12.5	7.7	1.8	.5
Dec	12.6	6.8	1.6	.4
Ann	140.6	84.5	23.1	5.8

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	.63	.88	1.28	1.64	1.99	2.37	2.79	3.29	3.95	5.00	5.99
Feb	.51	.83	1.22	1.53	1.83	2.13	2.45	2.84	3.33	4.10	4.81
Mar	1.46	1.74	2.13	2.44	2.74	3.03	3.35	3.71	4.16	4.84	5.46
Apr	.99	1.29	1.75	2.14	2.52	2.92	3.36	3.87	4.53	5.56	6.52
May	1.55	1.97	2.59	3.12	3.62	4.13	4.70	5.35	6.19	7.50	8.70
Jun	1.65	2.03	2.57	3.02	3.44	3.86	4.33	4.86	5.54	6.57	7.52
Jul	1.97	2.37	2.92	3.38	3.80	4.23	4.68	5.21	5.87	6.88	7.79
Aug	1.09	1.42	1.91	2.33	2.74	3.16	3.62	4.16	4.86	5.94	6.95
Sep	.80	1.07	1.49	1.86	2.22	2.60	3.02	3.51	4.16	5.17	6.12
Oct	.86	1.11	1.47	1.78	2.07	2.37	2.70	3.09	3.59	4.36	5.07
Nov	.79	1.09	1.54	1.94	2.34	2.76	3.22	3.78	4.50	5.64	6.71
Dec	1.13	1.39	1.76	2.06	2.34	2.63	2.95	3.31	3.77	4.47	5.11
Ann	29.71	31.65	34.10	35.94	37.57	39.14	40.75	42.52	44.65	47.73	50.38

\+ 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	8.1	8.6	2	1	6.0	1978	18	23.5	1978	18	1978	21	6	1978	3.3	2.3	.6	.1	.0	10.5	6.5	3.2	.6
Feb	4.6	3.5	2	1	4.5	1971	8	12.0	1979	10	1979	19	10	1979	1.8	1.3	.3	.0	.0	6.5	3.1	1.8	.0
Mar	3.0	1.0	#	#	7.0	1972	3	10.5	1971	10	1971	4	1+	1999	1.2	.8	.4	.2	.0	2.2	1.1	.5	.1
Apr	.5	.0	#	0	4.2	1985	9	4.2	1985	6	1987	4	#+	1987	.2	.2	.1	.0	.0	.2	.1	.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	0	#	1974	2	#+	1974	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.2	.0	#	#	7.0	1980	18	7.0	1980	7	1980	18	1	1980	.7	.4	.2	.1	.0	1.2	.4	.2	.0
Dec	2.6	2.6	#	#	4.0	1977	9	6.5	1976	5	1973	21	1	1984	1.5	.9	.2	.0	.0	2.7	.4	.0	.0
Ann	20.0	15.7	N/A	N/A	7.0+	Nov 1980	18	23.5	Jan 1978	18	Jan 1978	21	10	Feb 1979	8.7	5.9	1.8	.4	.0	23.3	11.6	5.7	.7

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	5/21	5/17	5/14	5/11	5/08	5/05	5/01	4/25
32	5/18	5/12	5/08	5/04	5/01	4/28	4/24	4/20	4/14
28	4/30	4/26	4/23	4/20	4/17	4/15	4/12	4/09	4/04
24	4/19	4/14	4/10	4/07	4/05	4/02	3/30	3/26	3/21
20	4/08	4/02	3/30	3/26	3/23	3/20	3/16	3/12	3/07
16	3/31	3/24	3/19	3/15	3/11	3/07	3/02	2/25	2/18

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	9/22	9/27	9/30	10/03	10/05	10/08	10/11	10/14	10/19
32	10/02	10/07	10/11	10/14	10/17	10/21	10/24	10/28	11/02
28	10/14	10/20	10/23	10/27	10/30	11/02	11/05	11/09	11/14
24	10/23	10/29	11/03	11/07	11/11	11/15	11/19	11/24	11/30
20	11/04	11/11	11/16	11/20	11/24	11/28	12/02	12/08	12/15
16	11/21	11/28	12/03	12/07	12/11	12/15	12/19	12/24	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	170	162	156	151	147	142	137	132	124
32	193	185	179	174	169	164	159	153	145
28	214	207	203	199	195	191	187	182	175
24	245	237	230	225	220	215	209	203	194
20	272	263	256	251	245	240	234	228	219
16	298	290	284	279	274	269	264	258	250

***** 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	1130	940	773	442	187	23	5	13	73	363	664	969	5582
60	975	800	618	299	100	4	0	0	22	233	516	814	4381
57	882	716	526	222	62	1	0	0	8	168	431	721	3737
55	820	660	470	175	43	0	0	0	4	131	377	662	3342
50	678	530	329	82	14	0	0	0	0	63	251	519	2466
32	243	155	38	0	0	0	0	0	0	0	19	132	587

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	136	138	288	549	895	1114	1276	1222	986	669	345	186	7804
55	0	0	7	34	224	425	563	509	300	87	13	2	2164
57	0	0	1	21	182	366	501	447	244	62	7	0	1831
60	0	0	0	8	127	279	408	355	168	33	2	0	1380
65	0	0	0	1	58	148	257	212	69	9	0	0	754
70	0	0	0	0	20	54	126	101	18	1	0	0	320

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	51	154	354	661	877	1024	981	711	430	173	55	35	86	240	594	1255	2132	3156	4137	4848	5278	5451	5506
45	12	19	86	232	507	727	869	826	561	289	97	25	12	31	117	349	856	1583	2452	3278	3839	4128	4225	4250
50	1	7	44	134	360	577	714	671	413	167	47	7	1	8	52	186	546	1123	1837	2508	2921	3088	3135	3142
55	0	0	19	67	228	427	559	516	278	84	16	0	0	0	19	86	314	741	1300	1816	2094	2178	2194	2194
60	0	0	3	27	124	281	404	361	159	33	3	0	0	0	3	30	154	435	839	1200	1359	1392	1395	1395
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	22	33	103	231	419	577	691	663	437	261	106	33	22	55	158	389	808	1385	2076	2739	3176	3437	3543	3576

(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