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: MORRISVILLE 4 SSW, VT **COOP ID: 435376**

Climate Division: VT 1 **NWS Call Sign: MVL** **Elevation: 760 Feet** **Lat: 44˚31N** **Lon: 72˚38W**

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	24.8	1.5	13.2	64	1995	17	24.9	1990	-39	1994	28	-.3	1981	1607	0	.0	.0	.6	21.7	30.5	12.7
Feb	27.9	2.8	15.4	63	1997	23	26.0	1981	-37	1967	13	3.1	1979	1390	0	.0	.0	1.0	17.6	27.6	12.0
Mar	38.2	14.7	26.5	79	1977	31	34.6	1973	-22+	1995	3	19.3	1984	1195	0	.0	.0	4.5	9.0	28.6	3.6
Apr	51.9	27.8	39.9	88	1976	20	47.5	1987	-2	1965	1	33.6	1972	755	0	.0	.0	16.4	.6	21.8	.0
May	66.5	39.5	53.0	93+	1975	23	60.0	1975	17	1972	8	46.3	1997	376	4	.0	.3	29.1	.0	5.6	.0
Jun	75.0	49.3	62.2	95	1988	16	66.1	1976	28	1971	1	58.8	1985	113	27	.0	.6	30.0	.0	.4	.0
Jul	79.3	53.8	66.6	97+	1966	3	70.0	1975	34	1969	8	62.7	2000	38	86	.0	1.0	31.0	.0	.0	.0
Aug	76.8	51.1	64.0	95	1988	4	68.7	1973	32	1976	31	61.0	1982	79	47	.0	.5	31.0	.0	@	.0
Sep	67.9	43.3	55.6	92	1973	5	60.2	1971	20	1963	24	50.7	1978	285	2	.0	.1	29.7	.0	2.9	.0
Oct	55.9	32.1	44.0	86	1963	7	50.8	1971	5+	1972	19	38.2	1972	653	0	.0	.0	22.2	.0	13.7	.0
Nov	42.1	24.5	33.3	73	1975	9	38.2+	1999	-8	1989	24	27.7	1980	952	0	.0	.0	6.7	3.8	22.5	.2
Dec	29.8	10.2	20.0	64+	1998	8	28.5	1996	-33	1980	26	1.6	1989	1396	0	.0	.0	1.0	16.7	30.0	6.8
Ann	53.0	29.2	41.1	97+	Jul 1966	3	70.0	Jul 1975	-39	Jan 1994	28	-.3	Jan 1981	8839	166	.0	2.5	203.2	69.4	183.6	35.3

\+ 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: 1962-2001

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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	2.89	2.69	2.03	1996	28	6.30	1978	.35	1981
Feb	2.09	1.90	1.12	1972	4	4.98	1981	.18	1978
Mar	2.91	2.99	2.10	1975	20	4.50	1998	.77	1987
Apr	3.26	3.17	2.60	1968	25	6.67	1983	.50	1999
May	3.56	3.17	2.90	1989	7	8.81	1989	.67	1977
Jun	3.70	3.43	2.80	1972	16	9.32	1973	.53	1995
Jul	4.26	4.01	2.70	1965	18	8.34	1998	2.26	1977
Aug	4.78	4.83	4.28	1995	6	7.50	1995	1.71	1999
Sep	3.80	3.67	4.20	1999	17	7.45	1999	1.64	1972
Oct	3.56	3.33	2.34	1995	22	7.60	1995	.68	1994
Nov	3.41	3.24	1.70	1979	27	6.21	1983	1.55	1978
Dec	3.18	2.81	2.25	1973	21	8.04	1973	.14	1988
Ann	41.40	41.58	4.28	Aug 1995	6	9.32	Jun 1973	.14	Dec 1988

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	13.8	6.7	1.7	.3
Feb	10.6	5.8	1.2	.2
Mar	12.8	7.2	1.5	.4
Apr	12.4	8.0	1.8	.4
May	13.6	8.8	2.8	.6
Jun	13.5	9.0	2.8	.7
Jul	11.4	7.9	2.6	.5
Aug	14.8	9.7	3.2	1.0
Sep	12.1	8.0	2.5	.9
Oct	12.8	8.0	2.7	.7
Nov	13.3	7.7	1.7	.4
Dec	14.6	7.5	1.6	.3
Ann	155.7	94.3	26.1	6.4

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	.90	1.18	1.58	1.93	2.27	2.62	3.00	3.45	4.03	4.94	5.78
Feb	.57	.77	1.07	1.34	1.59	1.86	2.16	2.52	2.98	3.70	4.37
Mar	1.30	1.56	1.92	2.21	2.48	2.76	3.05	3.39	3.81	4.46	5.04
Apr	1.24	1.55	1.98	2.34	2.68	3.03	3.41	3.85	4.40	5.26	6.04
May	.94	1.28	1.79	2.25	2.69	3.16	3.68	4.30	5.10	6.36	7.54
Jun	1.22	1.57	2.08	2.52	2.94	3.38	3.86	4.42	5.14	6.25	7.28
Jul	2.19	2.54	3.02	3.40	3.75	4.10	4.47	4.89	5.41	6.19	6.89
Aug	2.21	2.63	3.21	3.68	4.11	4.55	5.01	5.55	6.21	7.23	8.14
Sep	1.64	1.98	2.46	2.85	3.22	3.59	3.98	4.44	5.02	5.90	6.69
Oct	1.32	1.66	2.13	2.53	2.91	3.30	3.72	4.21	4.84	5.80	6.68
Nov	1.95	2.21	2.55	2.82	3.07	3.31	3.57	3.85	4.21	4.74	5.20
Dec	.72	1.01	1.48	1.90	2.32	2.76	3.26	3.86	4.64	5.89	7.07
Ann	32.40	34.21	36.48	38.19	39.69	41.12	42.59	44.20	46.14	48.92	51.29

\+ 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: 1962-2001
(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	21.6	20.0	13	12
Feb	18.7	17.0	15	15
Mar	18.6	16.9	12	11
Apr	7.4	5.5	2	#
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	.4	.0	#	0
Nov	10.0	8.7	1	1
Dec	23.8	17.4	6	4
Ann	100.5	85.5	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	12.0	1990	30	43.9	1978	37	1979	21	28	1979
Feb	16.0	1995	5	36.0	1972	34	2000	19	32	1987
Mar	18.0	1994	4	42.0	1971	50	1971	11	33	1971
Apr	13.0	2000	10	23.0	1975	28	1975	4	11	1975
May	.4	1978	1	.4	1978	#	1978	2	#	1978
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	2.0	1979	9	2.5	1979	2	1979	9	#+	2000
Nov	17.0	1971	25	27.0	1971	19	1971	30	4	1989
Dec	11.0	1978	26	46.8	1978	30	1978	28	16	1995
Ann	18.0	Mar 1994	4	46.8	Dec 1978	50	Mar 1971	11	33	Mar 1971

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	11.9	7.6	3.4	1.2	.2
Feb	8.1	5.2	2.1	1.0	.1
Mar	8.6	5.6	2.0	1.0	.3
Apr	3.3	2.1	.8	.3	.1
May	.1	.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	.6	.2	.0	.0	.0
Nov	5.6	3.1	.9	.4	.1
Dec	11.9	7.7	2.4	1.0	.1
Ann	50.1	31.5	11.6	4.9	.9

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	-9.9	-9.9	-9.9	-9.9
Apr	4.8	3.2	2.1	.9
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	.3	.0	.0	.0
Nov	8.1	4.3	2.3	.3
Dec	23.3	16.2	12.9	7.2
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	6/24	6/18	6/13	6/09	6/06	6/02	5/29	5/25	5/18
32	6/05	5/31	5/27	5/23	5/20	5/17	5/14	5/10	5/04
28	5/24	5/19	5/15	5/12	5/09	5/06	5/03	4/29	4/24
24	5/07	5/03	4/29	4/26	4/23	4/21	4/18	4/14	4/10
20	4/24	4/19	4/16	4/12	4/10	4/07	4/04	3/31	3/26
16	4/15	4/10	4/07	4/04	4/01	3/30	3/27	3/24	3/19

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	8/24	8/28	9/01	9/03	9/06	9/08	9/11	9/14	9/19
32	9/09	9/14	9/17	9/20	9/23	9/25	9/28	10/02	10/06
28	9/20	9/24	9/27	9/29	10/02	10/04	10/07	10/10	10/14
24	9/30	10/05	10/09	10/12	10/15	10/18	10/21	10/25	10/30
20	10/13	10/18	10/23	10/26	10/30	11/02	11/06	11/10	11/16
16	10/29	11/03	11/07	11/10	11/13	11/16	11/19	11/23	11/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	115	107	101	96	91	87	82	76	68
32	143	137	132	128	125	121	117	112	106
28	167	160	154	149	145	141	136	130	123
24	194	187	182	178	174	170	165	160	153
20	225	217	211	207	202	198	193	188	180
16	246	239	234	229	225	221	216	211	203

***** 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	1607	1390	1195	755	376	113	38	79	285	653	952	1396	8839
60	1452	1250	1040	605	239	35	5	17	155	500	802	1241	7341
57	1359	1166	947	517	170	13	0	4	96	411	712	1148	6543
55	1297	1110	885	459	131	6	0	1	66	354	652	1086	6047
50	1142	970	730	322	60	0	0	0	21	225	502	931	4903
32	603	481	230	30	0	0	0	0	0	8	76	429	1857

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	18	15	58	265	651	904	1072	991	708	378	114	56	5230
55	0	0	0	4	70	220	359	279	84	11	0	0	1027
57	0	0	0	2	46	167	297	220	53	6	0	0	791
60	0	0	0	0	22	99	208	140	23	2	0	0	494
65	0	0	0	0	4	27	86	47	2	0	0	0	166
70	0	0	0	0	0	2	19	7	0	0	0	0	28

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	1	2	16	115	410	683	840	765	492	208	49	2	1	3	19	134	544	1227	2067	2832	3324	3532	3581	3583
45	0	0	4	56	270	533	685	610	349	111	14	0	0	0	4	60	330	863	1548	2158	2507	2618	2632	2632
50	0	0	1	21	155	385	530	455	217	50	4	0	0	0	1	22	177	562	1092	1547	1764	1814	1818	1818
55	0	0	0	11	77	247	376	305	109	14	0	0	0	0	0	11	88	335	711	1016	1125	1139	1139	1139
60	0	0	0	3	30	130	231	167	46	1	0	0	0	0	0	3	33	163	394	561	607	608	608	608
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	13	93	262	424	544	479	298	128	25	0	0	1	14	107	369	793	1337	1816	2114	2242	2267	2267

(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