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: MONTPELIER AP, VT **COOP ID: 435278**

Climate Division: VT 1 **NWS Call Sign: MPV** **Elevation: 1,126 Feet** **Lat: 44˚12N** **Lon: 72˚35W**

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	25.3	7.5	16.4	66	1950	4	27.3	1990	-34	1981	4	6.4	1971	1507	0	.0	.0	.8	22.7	30.1	9.6
Feb	28.3	9.7	19.0	61	1981	19	29.0	1981	-29	1967	13	8.1	1979	1287	0	.0	.0	.9	19.8	27.1	6.9
Mar	38.1	20.1	29.1	77	1977	30	36.8	1977	-18	1967	19	21.1	1984	1114	0	.0	.0	4.4	8.9	27.8	1.8
Apr	51.1	32.1	41.6	90+	1976	18	47.3	1976	2	1954	5	34.6	1971	703	0	.0	.1	15.0	.9	16.8	.0
May	65.4	43.3	54.4	90+	1962	18	62.0	1975	20	1966	3	49.2	1997	342	11	.0	@	29.1	.0	2.8	.0
Jun	73.3	51.9	62.6	95	1995	19	66.6	1976	29	1958	7	57.6	1980	113	41	.0	.5	30.0	.0	@	.0
Jul	78.1	56.5	67.3	97	1977	20	72.1	1975	35	1965	7	62.8	1992	33	104	.0	1.3	31.0	.0	.0	.0
Aug	75.6	54.5	65.1	97	1975	2	68.7	1973	31	1965	31	61.8	1987	65	67	.0	.5	31.0	.0	.0	.0
Sep	66.8	46.3	56.6	91	1960	8	60.2	1971	20	1963	24	53.2	1995	255	2	.0	.0	29.4	.0	1.3	.0
Oct	55.1	36.1	45.6	84	1950	2	51.7	1971	14	1972	20	40.2	1972	601	0	.0	.0	22.6	.1	10.7	.0
Nov	42.1	27.5	34.8	76	1950	2	41.7	1975	-7	1949	27	30.1	1972	906	0	.0	.0	7.3	5.2	21.3	.1
Dec	30.5	14.4	22.5	67	2001	6	30.4	1996	-27	1980	26	5.0	1989	1319	0	.0	.0	1.4	18.6	29.3	5.2
Ann	52.5	33.3	42.9	97+	Jul 1977	20	72.1	Jul 1975	-34	Jan 1981	4	5.0	Dec 1989	8245	225	.0	2.4	202.9	76.2	167.2	23.6

\+ 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

Issue Date: February 2004

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Precipitation (inches)

Precipitation Totals

	Means/ Medians(1)		Extremes							Mean Number of Days (3)				Precipitation Probabilities (1)									
										Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution									
Month	Mean	Median	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	2.76	2.76	2.30	1978	9	6.88	1978	.21	1981	14.9	6.4	1.7	.4	.59	.85	1.25	1.62	1.99	2.38	2.82	3.35	4.05	5.17	6.22
Feb	1.96	1.91	1.79	1974	22	6.27	1981	.39	1987	10.6	5.0	1.1	.2	.57	.76	1.04	1.28	1.52	1.76	2.03	2.35	2.76	3.41	4.00
Mar	2.48	2.52	2.14	1990	20	3.47	1971	.64	1981	12.5	6.2	1.5	.4	1.32	1.52	1.79	2.00	2.20	2.39	2.59	2.83	3.11	3.55	3.93
Apr	2.55	2.54	1.68	1970	2	5.52	1996	.63	1999	11.8	6.4	1.2	.3	.91	1.15	1.50	1.79	2.07	2.36	2.67	3.03	3.49	4.21	4.86
May	3.32	3.16	3.90	1981	12	7.66	1984	.61	1975	12.0	7.3	1.8	.6	.90	1.21	1.69	2.11	2.53	2.96	3.44	4.00	4.74	5.90	6.98
Jun	3.48	2.94	3.68	1952	1	7.64	1998	.72	1995	11.9	7.3	2.1	.6	1.17	1.50	1.99	2.39	2.79	3.19	3.63	4.15	4.81	5.83	6.78
Jul	3.26	3.18	2.25	1961	2	5.91	1984	1.06	1982	11.6	6.6	1.8	.5	1.60	1.88	2.26	2.56	2.84	3.12	3.42	3.76	4.19	4.83	5.40
Aug	4.01	3.88	3.78	1989	5	10.69	1989	1.32	1984	10.9	7.0	2.7	.9	1.32	1.70	2.25	2.73	3.19	3.66	4.18	4.78	5.56	6.76	7.88
Sep	3.32	3.04	3.75	1960	12	7.08	1999	1.29	1972	10.6	6.5	2.3	.3	1.27	1.58	2.03	2.39	2.74	3.09	3.48	3.92	4.49	5.36	6.15
Oct	3.12	2.95	3.02	1956	8	6.76	1995	.78	1994	11.2	6.5	1.8	.7	1.07	1.36	1.79	2.16	2.51	2.87	3.26	3.72	4.30	5.21	6.05
Nov	3.04	3.08	2.07	1990	10	5.59	1988	1.33	1978	13.6	6.8	1.9	.3	1.44	1.70	2.06	2.35	2.62	2.89	3.18	3.51	3.93	4.55	5.12
Dec	2.61	2.18	2.62	2000	17	6.32	1973	1.09	1999	14.8	6.5	1.1	.3	.94	1.18	1.54	1.84	2.12	2.41	2.73	3.10	3.57	4.29	4.96
Ann	35.91	35.64	3.90	May 1981	12	10.69	Aug 1989	.21	Jan 1981	146.4	78.5	21.0	5.5	27.62	29.27	31.36	32.93	34.31	35.64	37.00	38.49	40.28	42.86	45.07

\+ 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

Complete documentation available from:
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Climate Division: VT 1 **NWS Call Sign: MPV** **Elevation: 1,126 Feet** **Lat: 44°12N** **Lon: 72°35W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	24.6	21.0	10	8
Feb	17.6	17.9	11	9
Mar	16.6	14.0	6	5
Apr	6.7	4.4	1	2
May	#	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	0	0
Oct	.9	#	#	0
Nov	10.5	9.7	1	0
Dec	21.3	19.0	6	4
Ann	98.2	86.0	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	16.0	1983	16	53.0	1978	44	1971	31	36	1971
Feb	12.6	1993	16	39.0	1993	50+	1971	10	42	1971
Mar	17.8	1993	13	43.7	1971	70+	1971	9	43	1971
Apr	16.0	1975	3	25.4	1975	24+	1975	6	8	1971
May	#	1996	28	#+	1996	#+	1977	9	#	1996
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	#	1992	30	#+	1992	0	0	0	0	0
Oct	5.0	1987	4	7.8	1987	4	1987	5	#	1988
Nov	20.0	1971	25	34.3	1971	26	1971	30	4	1971
Dec	17.0	1978	25	47.0	1978	33	1978	26	17	1981
Ann	20.0	Nov 1971	25	53.0	Jan 1978	70+	Mar 1971	9	43	Mar 1971

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	11.5	7.3	2.6	1.5	.1
Feb	8.8	5.2	2.0	.9	.2
Mar	7.4	4.6	1.6	1.0	.2
Apr	3.2	2.1	.8	.4	.1
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	.8	.3	@	@	.0
Nov	5.5	2.9	1.2	.7	.1
Dec	10.7	6.7	2.6	1.4	.1
Ann	47.9	29.1	10.8	5.9	.8

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	28.7	24.1	19.9	12.8
Feb	26.0	21.8	19.0	12.2
Mar	23.0	17.7	13.6	7.3
Apr	7.3	4.2	2.5	.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
Nov	7.7	3.8	1.8	.6
Dec	23.8	17.6	13.3	7.0
Ann	116.8	89.2	70.1	40.8

+ 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	6/17	6/10	6/05	6/01	5/28	5/24	5/20	5/15	5/08
32	5/26	5/21	5/17	5/14	5/11	5/08	5/05	5/01	4/26
28	5/14	5/09	5/05	5/02	4/29	4/26	4/23	4/19	4/14
24	4/25	4/21	4/18	4/15	4/13	4/10	4/07	4/04	3/31
20	4/17	4/13	4/10	4/07	4/05	4/03	3/31	3/28	3/24
16	4/10	4/06	4/03	3/31	3/29	3/27	3/24	3/21	3/17

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	8/30	9/04	9/09	9/12	9/16	9/19	9/22	9/27	10/02
32	9/13	9/19	9/24	9/28	10/01	10/05	10/09	10/13	10/20
28	9/27	10/03	10/07	10/11	10/14	10/17	10/21	10/25	10/31
24	10/05	10/12	10/17	10/21	10/25	10/29	11/03	11/08	11/14
20	10/16	10/23	10/28	11/01	11/05	11/09	11/13	11/18	11/24
16	11/04	11/09	11/13	11/15	11/18	11/21	11/24	11/27	12/02

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	139	129	121	115	110	104	98	91	81
32	169	160	154	148	143	137	132	125	116
28	192	184	177	172	167	162	157	151	142
24	219	211	205	200	195	190	185	179	171
20	236	228	222	218	213	209	204	198	190
16	253	246	242	237	234	230	226	221	214

***** 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	1507	1287	1114	703	342	113	33	65	255	601	906	1319	8245
60	1352	1147	959	554	216	40	5	13	127	448	756	1164	6781
57	1259	1063	866	467	154	17	0	3	71	360	666	1071	5997
55	1197	1007	804	411	119	9	0	1	45	304	606	1009	5512
50	1042	867	649	280	55	1	0	0	11	182	457	854	4398
32	506	384	168	20	0	0	0	0	0	4	66	360	1508

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	23	21	77	307	693	919	1095	1025	738	426	151	64	5539
55	0	0	0	8	99	238	382	312	93	13	0	0	1145
57	0	0	0	5	72	186	320	253	59	7	0	0	902
60	0	0	0	2	40	119	231	170	25	2	0	0	589
65	0	0	0	0	11	41	104	67	2	0	0	0	225
70	0	0	0	0	2	8	29	15	0	0	0	0	54

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	2	2	19	132	452	687	857	782	498	210	56	3	2	4	23	155	607	1294	2151	2933	3431	3641	3697	3700
45	0	0	6	68	305	537	702	627	353	112	24	0	0	0	6	74	379	916	1618	2245	2598	2710	2734	2734
50	0	0	2	30	182	389	547	472	217	46	6	0	0	0	2	32	214	603	1150	1622	1839	1885	1891	1891
55	0	0	0	15	91	251	392	320	112	16	2	0	0	0	0	15	106	357	749	1069	1181	1197	1199	1199
60	0	0	0	6	38	132	245	180	47	2	0	0	0	0	0	6	44	176	421	601	648	650	650	650
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	13	86	264	414	549	484	288	115	30	0	0	0	13	99	363	777	1326	1810	2098	2213	2243	2243

(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