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: ROCHESTER, VT **COOP ID: 436893**

Climate Division: VT 1 **NWS Call Sign:** **Elevation: 830 Feet** **Lat: 43˚52N** **Lon: 72˚48W**

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	28.7	5.6	17.2	62	1995	17	28.4	1990	-32+	1994	27	6.9	1982	1484	0	.0	.0	.8	19.3	30.3	11.8
Feb	32.1	6.5	19.3	64	1997	23	28.3	1984	-28+	1979	18	9.5	1993	1280	0	.0	.0	1.5	14.4	27.6	10.9
Mar	40.9	17.2	29.1	81	1998	31	35.9	1973	-17	1980	2	23.8	1984	1114	0	.0	.0	6.5	6.5	28.6	3.7
Apr	53.2	29.6	41.4	91	1990	29	45.7	1986	1	1982	7	35.0	1975	709	0	.0	@	17.0	.4	21.0	.0
May	67.1	39.9	53.5	92+	1975	24	58.8	1975	21	1966	3	48.8	1997	361	5	.0	.3	29.3	.0	6.8	.0
Jun	75.0	48.9	62.0	93	1994	19	66.9	1976	30	1986	3	56.9	1989	126	34	.0	.6	29.9	.0	.3	.0
Jul	79.6	53.6	66.6	95+	1966	4	69.8	1999	35	1969	8	62.2	1992	35	85	.0	1.3	31.0	.0	.0	.0
Aug	77.3	52.4	64.9	98	1975	3	69.2	1973	33+	1965	31	61.8	1987	63	59	.0	.6	31.0	.0	.0	.0
Sep	69.6	44.5	57.1	94	1999	4	62.9	1999	23	1989	25	51.8	1988	247	7	.0	.2	29.9	.0	2.3	.0
Oct	58.5	33.8	46.2	84	1979	23	52.9	1971	9+	1964	8	39.0	1988	585	0	.0	.0	24.6	.0	15.1	.0
Nov	45.3	26.1	35.7	75	1982	4	41.7	1979	-1+	1989	24	30.7	1971	879	0	.0	.0	9.5	2.5	22.8	.1
Dec	33.4	13.4	23.4	68	2001	7	32.0	1998	-30	1980	26	5.3	1989	1290	0	.0	.0	2.2	13.7	29.3	5.8
Ann	55.1	31.0	43.0	98	Aug 1975	3	69.8	Jul 1999	-32+	Jan 1994	27	5.3	Dec 1989	8173	190	.0	3.0	213.2	56.8	184.1	32.3

\+ 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: 1948-2001

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

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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	3.89	3.65	2.15	1959	22	8.34	1979	.59	1981
Feb	2.81	2.49	2.62	1974	23	8.46	1981	.34	1987
Mar	3.56	3.74	2.32	1984	14	5.46	1999	1.02	1981
Apr	3.71	3.61	3.43	1988	29	7.61	1983	.55	1999
May	4.22	3.59	3.53	1984	30	11.82	1984	1.01	1975
Jun	4.25	3.94	3.52	1973	30	12.71	1998	1.31	1995
Jul	4.28	3.64	3.70	2000	16	9.76	2000	.91	1993
Aug	4.80	4.96	3.30	1989	5	7.92	1983	1.72	1999
Sep	4.24	4.16	5.33	1999	16	8.61	1999	1.26	1972
Oct	4.14	3.30	3.18	1996	21	8.81	1995	.99	1974
Nov	3.98	4.03	2.75	1972	9	7.76	1972	1.73	1976
Dec	3.72	3.50	3.05	2000	17	8.42	1983	1.08	1989
Ann	47.60	46.78	5.33	Sep 1999	16	12.71	Jun 1998	.34	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.5	7.2	2.8	1.0
Feb	8.1	6.1	1.9	.7
Mar	9.8	7.0	2.3	.9
Apr	10.2	7.6	2.4	.8
May	12.9	8.9	2.8	.6
Jun	12.6	8.1	2.8	.8
Jul	11.6	8.3	2.8	.9
Aug	12.1	8.7	3.0	1.2
Sep	11.6	7.3	2.7	1.2
Oct	11.7	7.3	2.8	1.1
Nov	11.2	7.7	3.0	.8
Dec	10.7	7.5	2.9	.8
Ann	133.0	91.7	32.2	10.8

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	1.25	1.62	2.17	2.63	3.08	3.54	4.05	4.65	5.41	6.60	7.71
Feb	.83	1.09	1.49	1.84	2.18	2.53	2.92	3.38	3.97	4.90	5.76
Mar	1.57	1.89	2.33	2.69	3.03	3.37	3.74	4.15	4.68	5.49	6.21
Apr	1.51	1.85	2.33	2.73	3.10	3.48	3.89	4.36	4.96	5.88	6.71
May	1.20	1.60	2.21	2.74	3.25	3.79	4.38	5.08	5.99	7.41	8.73
Jun	1.21	1.61	2.22	2.75	3.27	3.81	4.40	5.11	6.02	7.46	8.80
Jul	1.41	1.81	2.41	2.92	3.41	3.91	4.46	5.11	5.94	7.22	8.41
Aug	2.16	2.58	3.17	3.65	4.10	4.55	5.03	5.59	6.28	7.34	8.29
Sep	1.55	1.95	2.52	3.00	3.46	3.93	4.43	5.02	5.78	6.94	8.00
Oct	1.32	1.71	2.29	2.79	3.27	3.76	4.31	4.94	5.77	7.04	8.23
Nov	1.87	2.21	2.69	3.08	3.44	3.80	4.18	4.62	5.17	6.00	6.75
Dec	1.22	1.58	2.10	2.54	2.96	3.40	3.88	4.44	5.16	6.28	7.31
Ann	37.03	39.15	41.83	43.83	45.59	47.28	49.01	50.91	53.19	56.47	59.27

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	21.6	19.6	10	8
Feb	16.9	16.5	13	10
Mar	17.1	15.0	10	7
Apr	4.7	2.5	1	#
May	#	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	#	0
Oct	.3	.0	#	0
Nov	7.2	5.0	1	#
Dec	19.5	16.0	5	4
Ann	87.3	74.6	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	18.0	1990	30	50.0	1987	36	1978	22	23	1976
Feb	23.0	1978	7	38.0	1988	48	1978	8	37	1978
Mar	30.0	1984	14	56.5	1971	53	1971	12	38	1971
Apr	14.0	1974	10	18.0	1979	26	1971	1	13	1971
May	#	1986	4	#+	1986	#+	1986	4	#+	1986
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	#	1987	4	#	1987
Oct	3.0	1987	5	3.0	1987	3	1987	5	#+	2000
Nov	14.0	1971	26	32.7	1971	21	1971	30	3	1971
Dec	13.0	1978	26	52.0	1978	32	1978	30	13	1972
Ann	30.0	Mar 1984	14	56.5	Mar 1971	53	Mar 1971	12	38	Mar 1971

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.2	6.3	2.6	1.4	.4
Feb	5.6	5.0	2.0	1.1	.3
Mar	4.4	3.8	2.1	1.2	.3
Apr	1.7	1.4	.6	.3	.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	.2	.2	@	.0	.0
Nov	2.5	2.1	.8	.4	.1
Dec	6.0	5.6	2.5	1.3	.3
Ann	27.6	24.4	10.6	5.7	1.5

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	26.2	24.0	21.5	14.5
Feb	24.2	22.0	18.4	13.6
Mar	19.1	17.1	14.4	9.7
Apr	4.5	3.3	2.3	1.1
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	.2	@	.0	.0
Nov	5.1	2.5	1.2	.3
Dec	20.1	14.0	10.5	5.7
Ann	99.4	82.9	68.3	44.9

+ 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	6/20	6/15	6/11	6/08	6/06	6/03	5/31	5/27	5/23
32	6/03	5/29	5/26	5/23	5/21	5/18	5/16	5/12	5/08
28	5/16	5/13	5/10	5/08	5/06	5/04	5/01	4/29	4/25
24	5/02	4/27	4/24	4/21	4/19	4/16	4/13	4/10	4/05
20	4/24	4/19	4/16	4/13	4/10	4/07	4/04	4/01	3/27
16	4/15	4/11	4/07	4/05	4/02	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	8/29	9/03	9/06	9/09	9/12	9/15	9/17	9/21	9/26
32	9/17	9/20	9/23	9/25	9/27	9/29	10/01	10/04	10/07
28	9/21	9/26	9/29	10/03	10/06	10/08	10/12	10/15	10/21
24	10/01	10/07	10/11	10/14	10/17	10/20	10/24	10/28	11/02
20	10/17	10/22	10/26	10/30	11/02	11/05	11/09	11/13	11/19
16	10/30	11/04	11/09	11/12	11/15	11/19	11/22	11/26	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	119	111	106	102	97	93	89	83	76
32	144	139	135	132	129	125	122	118	113
28	167	162	158	155	152	149	146	142	137
24	200	193	189	185	181	177	173	169	162
20	226	219	214	209	205	201	197	192	184
16	249	242	236	231	227	222	218	212	204

***** 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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1484	1280	1114	709	361	126	35	63	247	585	879	1290	8173
60	1329	1140	959	559	225	47	4	12	129	434	729	1135	6702
57	1236	1056	866	470	158	21	0	3	78	348	639	1042	5917
55	1174	1000	804	412	119	11	0	1	53	294	579	980	5427
50	1019	860	649	276	51	1	0	0	15	177	430	825	4303
32	483	379	170	15	0	0	0	0	0	4	55	342	1448

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	22	24	79	297	667	899	1073	1019	750	442	166	76	5514
55	0	0	0	4	73	219	360	306	113	19	0	0	1094
57	0	0	0	2	49	169	298	246	78	11	0	0	853
60	0	0	0	0	24	106	209	163	39	5	0	0	546
65	0	0	0	0	5	34	85	59	7	0	0	0	190
70	0	0	0	0	0	6	17	10	0	0	0	0	33

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	0	2	21	122	426	664	833	776	516	224	60	7	0	2	23	145	571	1235	2068	2844	3360	3584	3644	3651
45	0	0	4	58	283	514	678	621	367	125	23	0	0	0	4	62	345	859	1537	2158	2525	2650	2673	2673
50	0	0	2	27	166	369	523	467	234	54	7	0	0	0	2	29	195	564	1087	1554	1788	1842	1849	1849
55	0	0	0	9	84	232	368	318	129	17	2	0	0	0	0	9	93	325	693	1011	1140	1157	1159	1159
60	0	0	0	3	32	123	222	181	58	2	0	0	0	0	0	3	35	158	380	561	619	621	621	621
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	26	100	280	421	536	496	326	158	40	4	0	0	26	126	406	827	1363	1859	2185	2343	2383	2387

(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