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: CHELSEA, VT **COOP ID: 431360**

Climate Division: VT 1 **NWS Call Sign:** **Elevation: 800 Feet** **Lat: 43˚59N** **Lon: 72˚27W**

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	26.7	1.1	13.9	66	1950	4	23.7	1990	-37	1957	15	3.4	1982	1584	0	.0	.0	.7	20.2	30.7	15.2
Feb	30.7	2.1	16.4	62	1997	23	26.3	1981	-34+	1962	2	6.8	1979	1361	0	.0	.0	1.2	15.2	27.9	14.1
Mar	40.1	14.3	27.2	79	1977	31	34.3	1973	-32	1950	4	21.5	1984	1172	0	.0	.0	5.5	6.9	29.5	5.3
Apr	52.8	27.1	40.0	90	1990	29	45.5	1987	-5	1954	1	33.6	1975	751	0	.0	@	16.6	.5	22.0	.0
May	66.9	37.8	52.4	93+	1977	23	57.5	1975	16	1956	9	46.5	1997	394	2	.0	.3	29.2	.0	9.1	.0
Jun	75.5	46.9	61.2	95+	1953	22	65.7	1976	25	1964	6	57.9	1985	134	19	.0	.7	30.0	.0	1.0	.0
Jul	80.1	51.5	65.8	98+	1953	19	69.1	1994	32+	1962	6	61.9	1992	49	73	.0	1.9	31.0	.0	.0	.0
Aug	77.7	50.0	63.9	99	1975	3	68.0	1973	27	1965	31	60.4	1982	82	47	.0	.8	31.0	.0	.3	.0
Sep	68.8	41.8	55.3	93	1953	3	59.9	1999	15+	1963	24	50.0	1978	294	3	.0	.1	29.9	.0	5.3	.0
Oct	56.8	31.1	44.0	85	1951	6	51.1	1971	10	1972	20	38.2	1974	654	0	.0	.0	23.5	.0	18.3	.0
Nov	43.4	23.5	33.5	77	1950	3	38.6	1999	-10	1951	28	29.1	1976	948	0	.0	.0	8.0	3.5	24.4	.2
Dec	31.2	9.6	20.4	68	1998	8	28.4	1996	-32	1980	26	2.4	1989	1382	0	.0	.0	1.1	15.5	30.2	7.7
Ann	54.2	28.1	41.2	99	Aug 1975	3	69.1	Jul 1994	-37	Jan 1957	15	2.4	Dec 1989	8805	144	.0	3.8	207.7	61.8	198.7	42.5

\+ 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: 1948-2000

(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	3.08	2.79	2.13	1986	27	6.67	1978	.31	1981
Feb	2.15	2.08	2.04	1974	23	6.26	1981	.23	1987
Mar	2.79	3.00	1.93	1984	14	4.27	1999	.79	1981
Apr	2.91	2.81	2.24	1988	29	5.48	1973	.60	1999
May	3.49	3.35	2.36	1999	20	8.55	1984	.79	1977
Jun	3.50	3.24	3.05	1952	2	9.19	1998	.77+	1995
Jul	3.81	3.64	3.32	1973	1	9.48	1996	1.04	1977
Aug	4.01	3.73	2.65	1993	17	8.97	1983	1.71	1980
Sep	3.54	3.19	4.71	1999	17	8.28	1999	.88	1972
Oct	3.37	3.22	2.58	1996	21	6.76	1995	.42	1994
Nov	3.30	3.01	2.39	1983	5	8.31	1983	1.46	1978
Dec	2.81	2.57	2.25	1952	12	6.99	1973	.94	1989
Ann	38.76	37.88	4.71	Sep 1999	17	9.48	Jul 1996	.23	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.3	6.6	2.3	.6
Feb	9.4	5.1	1.4	.3
Mar	10.6	6.5	1.6	.4
Apr	11.1	6.8	1.5	.5
May	12.0	7.5	2.1	.5
Jun	12.6	8.5	2.2	.5
Jul	12.2	7.5	2.7	.7
Aug	11.8	7.7	2.7	1.2
Sep	11.0	6.7	2.2	.7
Oct	11.4	6.9	2.4	.7
Nov	11.8	7.1	2.0	.5
Dec	12.4	6.8	1.8	.3
Ann	137.6	83.7	24.9	6.9

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	.78	1.07	1.52	1.91	2.30	2.72	3.18	3.72	4.44	5.56	6.62
Feb	.62	.83	1.13	1.40	1.66	1.93	2.23	2.58	3.04	3.76	4.42
Mar	1.29	1.53	1.87	2.15	2.40	2.66	2.93	3.24	3.63	4.23	4.76
Apr	1.16	1.43	1.81	2.13	2.42	2.72	3.05	3.42	3.90	4.63	5.29
May	.98	1.32	1.82	2.25	2.68	3.12	3.61	4.19	4.95	6.13	7.23
Jun	1.03	1.36	1.86	2.29	2.71	3.15	3.63	4.20	4.93	6.08	7.14
Jul	1.60	1.95	2.43	2.83	3.21	3.58	3.99	4.46	5.06	5.96	6.79
Aug	1.64	2.00	2.52	2.95	3.36	3.76	4.21	4.72	5.36	6.35	7.24
Sep	1.18	1.52	2.01	2.43	2.83	3.24	3.69	4.22	4.90	5.95	6.92
Oct	.92	1.24	1.73	2.15	2.57	3.01	3.49	4.06	4.81	5.97	7.07
Nov	1.54	1.82	2.22	2.54	2.84	3.14	3.46	3.82	4.28	4.97	5.60
Dec	.87	1.13	1.53	1.87	2.20	2.55	2.93	3.37	3.94	4.83	5.66
Ann	29.85	31.63	33.88	35.56	37.05	38.48	39.94	41.54	43.48	46.25	48.63

\+ 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: 1948-2000
(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	20.6	18.4	11	12
Feb	15.2	14.2	14	16
Mar	15.2	13.3	11	11
Apr	4.9	3.0	2	#
May	.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	#	0
Oct	.2	.0	#	0
Nov	6.3	5.0	1	#
Dec	16.8	16.1	6	6
Ann	79.2	70.0	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	13.0	1990	30	43.8	1978	34	1979	21	23	1979
Feb	15.0	1988	13	35.9	1993	33	1971	8	27+	1979
Mar	22.0	1984	14	46.1	1971	47	1971	8	36	1971
Apr	11.0	1974	10	16.5	1975	28	1971	1	15	1971
May	.6	1977	10	1.1	1977	1	1977	9	#+	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	12	1976	27	#	1976
Oct	2.0	1987	5	2.0	1987	2	1987	5	#+	1997
Nov	16.0	1971	26	31.4	1971	20	1971	30	7	1971
Dec	16.0	1996	8	46.3	1972	23	1972	23	16	1972
Ann	22.0	Mar 1984	14	46.3	Dec 1972	47	Mar 1971	8	36	Mar 1971

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	9.9	5.9	2.3	1.1	.2
Feb	7.7	4.3	1.6	.6	.2
Mar	6.5	3.9	1.5	.7	.3
Apr	2.6	1.4	.7	.2	@
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	.2	.1	.0	.0	.0
Nov	3.5	2.1	.6	.3	@
Dec	9.1	5.2	2.0	1.0	.1
Ann	39.6	22.9	8.7	3.9	.8

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	26.6	24.6	22.4	13.5
Feb	26.4	23.4	19.8	13.1
Mar	24.0	21.5	17.1	9.7
Apr	4.2	2.4	1.4	.3
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	.2	.0	.0	.0
Nov	6.5	2.6	1.0	.0
Dec	23.6	18.3	13.6	5.3
Ann	111.5	92.8	75.3	41.9

+ 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	7/06	6/30	6/25	6/21	6/17	6/13	6/09	6/05	5/29
32	6/18	6/12	6/08	6/05	6/02	5/29	5/26	5/22	5/16
28	5/28	5/24	5/20	5/18	5/15	5/13	5/10	5/06	5/02
24	5/14	5/10	5/07	5/04	5/02	4/29	4/27	4/24	4/20
20	4/29	4/25	4/22	4/19	4/17	4/14	4/12	4/08	4/04
16	4/19	4/14	4/11	4/09	4/06	4/04	4/01	3/29	3/25

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	8/15	8/21	8/26	8/30	9/02	9/06	9/10	9/14	9/20
32	8/29	9/03	9/06	9/09	9/12	9/15	9/18	9/21	9/26
28	9/20	9/24	9/26	9/28	9/30	10/02	10/04	10/07	10/10
24	9/23	9/29	10/03	10/07	10/10	10/13	10/17	10/21	10/27
20	10/05	10/11	10/14	10/18	10/21	10/24	10/27	10/31	11/05
16	10/18	10/25	10/30	11/03	11/07	11/11	11/15	11/20	11/26

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	107	97	89	83	76	70	64	56	46
32	125	117	111	106	102	97	92	87	79
28	152	147	144	140	137	134	131	127	122
24	184	176	170	165	161	156	151	145	137
20	206	199	194	190	186	182	178	173	167
16	238	229	224	219	214	209	204	198	190

***** 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	1584	1361	1172	751	394	134	49	82	294	654	948	1382	8805
60	1429	1221	1017	601	253	46	7	19	163	499	798	1227	7280
57	1336	1137	924	512	180	19	0	5	102	409	708	1134	6466
55	1274	1081	862	454	139	9	0	2	70	351	648	1072	5962
50	1119	941	707	315	63	1	0	0	22	219	498	917	4802
32	578	451	212	25	0	0	0	0	0	5	76	409	1756

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	17	14	64	263	631	875	1047	988	699	375	118	50	5141
55	0	0	0	3	57	194	334	277	79	7	0	0	951
57	0	0	0	1	36	144	272	218	51	4	0	0	726
60	0	0	0	0	16	81	186	139	22	1	0	0	445
65	0	0	0	0	2	19	73	47	3	0	0	0	144
70	0	0	0	0	0	1	14	7	0	0	0	0	22

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	0	11	107	398	642	808	751	474	185	43	2	0	0	11	118	516	1158	1966	2717	3191	3376	3419	3421
45	0	0	4	51	261	492	653	596	329	94	16	0	0	0	4	55	316	808	1461	2057	2386	2480	2496	2496
50	0	0	0	19	145	347	498	442	200	40	4	0	0	0	0	19	164	511	1009	1451	1651	1691	1695	1695
55	0	0	0	8	69	212	344	294	108	10	0	0	0	0	0	8	77	289	633	927	1035	1045	1045	1045
60	0	0	0	0	27	105	206	164	43	0	0	0	0	0	0	0	27	132	338	502	545	545	545	545
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	20	94	272	415	523	487	308	134	32	1	0	0	20	114	386	801	1324	1811	2119	2253	2285	2286

(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