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: BURLINGTON INTL AP, VT **COOP ID: 431081**

Climate Division: VT 2 **NWS Call Sign: BTV** **Elevation: 330 Feet** **Lat: 44˚28N** **Lon: 73˚09W**

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	9.3	18.0	66	1995	15	29.3	1990	-30	1957	15	6.6	1994	1457	0	.0	.0	1.0	20.7	29.4	9.2
Feb	29.0	10.9	19.9	62	1981	19	32.3	1981	-30	1979	12	6.9	1979	1273	0	.0	.0	.9	17.0	26.2	7.5
Mar	39.6	21.8	30.7	84+	1946	29	38.0	1973	-24	1938	4	21.8	1984	1063	0	.0	.0	6.2	8.0	25.2	1.6
Apr	53.3	33.6	43.5	91+	1976	18	48.6	1991	2	1972	7	36.3	1972	642	3	.0	.1	18.0	.6	13.9	.0
May	67.8	45.2	56.5	93	1977	22	62.9	1975	24	1966	3	51.4	1997	283	23	.0	.6	30.1	.0	1.6	.0
Jun	76.5	54.7	65.6	100	1995	19	70.5	1999	30	1921	2	60.4	1982	77	96	@	1.4	30.0	.0	.0	.0
Jul	81.4	59.8	70.6	100	1995	14	75.4	1975	39	1962	6	65.8	1992	17	192	@	3.1	31.0	.0	.0	.0
Aug	78.4	58.1	68.2	101	1944	11	72.8	1973	35+	1965	31	65.5	1976	38	139	.0	1.1	31.0	.0	.0	.0
Sep	68.9	49.9	59.4	95	1931	11	64.5	1999	25	1963	24	54.9	1978	203	35	.0	.2	29.8	.0	.6	.0
Oct	56.4	38.9	47.7	85+	1947	17	54.6	1971	15	1972	20	43.2	1972	538	1	.0	.0	23.6	.0	8.6	.0
Nov	44.0	30.3	37.1	75+	1948	6	42.9	1975	-3	1938	26	32.0	1980	834	0	.0	.0	8.6	3.9	18.1	.0
Dec	32.3	17.3	24.8	67+	1941	5	32.7	1996	-29+	1933	29	7.1	1989	1240	0	.0	.0	1.7	14.5	27.5	3.8
Ann	54.5	35.8	45.2	101	Aug 1944	11	75.4	Jul 1975	-30+	Feb 1979	12	6.6	Jan 1994	7665	489	.0	6.5	211.9	64.7	151.1	22.1

\+ 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: 1920-2001

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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	2.22	2.02	2.11	1998	8	5.15	1998	.42	1989
Feb	1.67	1.56	1.75	1981	2	5.38	1981	.21	1978
Mar	2.32	2.40	3.50	1948	7	3.81	1998	.80	1996
Apr	2.88	2.61	1.41	1942	15	6.55	1983	.73	1999
May	3.32	3.14	2.26	1955	23	6.31	1983	.29	1977
Jun	3.43	3.31	4.45	1942	14	8.66	1998	.82	1995
Jul	3.97	3.68	2.69	1985	15	9.31	1998	1.23	1979
Aug	4.01	4.14	3.62	1998	11	7.30	1989	1.47	1996
Sep	3.83	3.48	3.11	1983	21	10.26	1999	1.50	1988
Oct	3.12	2.96	4.19	1932	6	5.99	1990	.78	1974
Nov	3.06	3.04	3.75	1927	3	6.85	1983	.95	1978
Dec	2.22	1.81	2.58	1950	4	5.95	1973	.37	1998
Ann	36.05	34.02	4.45	Jun 1942	14	10.26	Sep 1999	.21	Feb 1978

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	15.8	5.7	1.1	.2
Feb	11.2	4.3	.9	.1
Mar	13.8	6.3	1.3	.1
Apr	12.7	7.3	1.8	.1
May	13.9	7.7	2.1	.5
Jun	13.3	7.6	2.1	.5
Jul	12.2	8.1	2.4	1.0
Aug	12.9	8.2	2.7	.9
Sep	12.4	7.1	2.5	.8
Oct	12.4	6.9	1.9	.7
Nov	14.0	7.4	1.7	.4
Dec	15.2	5.7	.9	.2
Ann	159.8	82.3	21.4	5.5

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	.54	.74	1.07	1.36	1.64	1.95	2.28	2.69	3.22	4.05	4.84
Feb	.40	.55	.80	1.01	1.23	1.46	1.71	2.02	2.42	3.05	3.64
Mar	1.22	1.41	1.66	1.87	2.05	2.23	2.43	2.65	2.92	3.33	3.70
Apr	1.05	1.32	1.70	2.03	2.34	2.66	3.01	3.41	3.92	4.71	5.44
May	.99	1.30	1.78	2.19	2.58	3.00	3.45	3.99	4.68	5.77	6.77
Jun	1.05	1.37	1.86	2.28	2.68	3.11	3.57	4.11	4.82	5.92	6.94
Jul	1.89	2.23	2.70	3.08	3.44	3.79	4.16	4.59	5.13	5.94	6.67
Aug	1.77	2.13	2.63	3.03	3.41	3.79	4.21	4.68	5.27	6.17	6.99
Sep	1.42	1.78	2.29	2.72	3.13	3.55	4.01	4.54	5.21	6.25	7.20
Oct	1.17	1.46	1.88	2.23	2.56	2.89	3.26	3.68	4.23	5.06	5.82
Nov	1.32	1.59	1.98	2.29	2.59	2.88	3.20	3.57	4.04	4.74	5.38
Dec	.63	.84	1.16	1.44	1.71	1.99	2.30	2.67	3.15	3.90	4.60
Ann	26.66	28.51	30.85	32.62	34.19	35.70	37.25	38.96	41.03	44.01	46.58

\+ 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: 1920-2001
(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	21.4	21.5	6	5	13.4	1983	16	42.4	1978	29	1978	22	14	1971	15.1	5.8	2.2	.9	.1	24.7	18.1	15.1	7.9
Feb	14.3	11.9	7	6	16.8	1995	4	26.9	1988	21+	1986	5	16+	1986	9.6	3.8	1.6	.7	.1	23.9	18.9	15.2	8.9
Mar	14.3	12.7	4	3	15.7	1994	3	33.1	1971	31+	1993	14	20	1971	9.3	4.0	1.4	.7	.2	16.4	12.0	9.4	4.6
Apr	6.2	3.4	#	1	14.3	2000	9	21.3	1983	13+	2000	10	2+	1975	3.7	1.6	.5	.2	.1	2.8	1.5	.8	.1
May	.0	.0	#	0	.7	1983	9	.7	1983	0	0	0	#	2000	.1	.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	.1	1992	30	.1	1992	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.3	.0	#	0	2.6	2000	29	3.0	2000	3+	2000	30	#	2000	.4	.1	.0	.0	.0	.1	.1	.0	.0
Nov	7.2	5.9	#	0	9.8	1980	18	19.2	1971	9	1971	26	2	1997	5.9	2.1	.7	.3	.0	4.9	2.1	.9	.0
Dec	17.3	15.0	3	2	16.9	1978	25	44.0	1995	19+	1995	22	9+	1995	12.1	5.3	1.4	.6	.1	17.7	10.5	6.7	2.2
Ann	81.0	70.4	N/A	N/A	16.9	Dec 1978	25	44.0	Dec 1995	31+	Mar 1993	14	20	Mar 1971	56.2	22.7	7.8	3.4	.6	90.5	63.2	48.1	23.7

+ 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	6/02	5/28	5/24	5/21	5/18	5/15	5/12	5/08	5/03
32	5/20	5/16	5/13	5/11	5/08	5/06	5/03	4/30	4/26
28	5/04	4/30	4/28	4/26	4/25	4/23	4/21	4/19	4/16
24	4/25	4/20	4/17	4/14	4/12	4/09	4/07	4/04	3/30
20	4/16	4/11	4/08	4/05	4/03	3/31	3/29	3/26	3/21
16	4/11	4/06	4/02	3/30	3/27	3/24	3/21	3/17	3/12

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	9/12	9/17	9/20	9/22	9/25	9/27	9/30	10/03	10/08
32	9/23	9/27	9/29	10/01	10/03	10/05	10/07	10/10	10/13
28	9/30	10/05	10/09	10/13	10/16	10/19	10/23	10/27	11/01
24	10/15	10/21	10/25	10/28	11/01	11/04	11/07	11/12	11/17
20	11/01	11/05	11/08	11/10	11/13	11/15	11/17	11/20	11/24
16	11/07	11/12	11/16	11/20	11/23	11/26	11/29	12/03	12/09

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	147	141	137	133	129	126	122	117	111
32	164	158	154	151	147	144	141	137	131
28	192	186	181	177	174	170	166	162	155
24	222	215	210	206	202	198	194	189	182
20	239	233	230	226	223	220	216	212	207
16	264	256	250	245	240	235	230	224	215

***** 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	1457	1273	1063	642	283	77	17	38	203	538	834	1240	7665
60	1302	1122	908	498	163	17	1	3	85	387	686	1092	6264
57	1209	1038	815	412	109	6	0	0	47	302	596	999	5533
55	1147	982	753	357	80	2	0	0	30	250	536	937	5074
50	992	842	599	232	31	0	0	0	7	140	388	786	4017
32	468	376	157	12	0	0	0	0	0	1	44	313	1371

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	26	31	120	359	762	1007	1194	1123	822	488	207	50	6189
55	0	0	3	20	129	323	482	411	172	28	4	0	1572
57	0	0	2	14	97	269	420	350	133	19	2	0	1306
60	0	0	1	8	60	195	329	263	87	9	1	0	953
65	0	0	0	3	23	96	192	139	35	1	0	0	489
70	0	0	0	0	7	36	82	53	10	0	0	0	188

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	4	43	174	526	777	954	885	588	268	80	9	2	6	49	223	749	1526	2480	3365	3953	4221	4301	4310
45	1	0	16	95	375	627	799	730	440	154	37	1	1	1	17	112	487	1114	1913	2643	3083	3237	3274	3275
50	0	0	6	46	240	477	644	575	298	78	15	0	0	0	6	52	292	769	1413	1988	2286	2364	2379	2379
55	0	0	2	22	134	333	490	420	177	34	4	0	0	0	2	24	158	491	981	1401	1578	1612	1616	1616
60	0	0	0	8	64	203	338	270	93	8	0	0	0	0	0	8	72	275	613	883	976	984	984	984
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	24	105	305	489	635	576	347	136	35	4	0	0	24	129	434	923	1558	2134	2481	2617	2652	2656

(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