

Climatology of the United States

No. 20

1971-2000

Station: BUFFALO NIAGARA INTL, NY

COOP ID: 301012

Climate Division: NY 9

NWS Call Sign: BUF

Elevation: 705 Feet

Lat: 42° 56N

Lon: 78° 44W

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	31.1	17.8	24.5	72	1950	25	33.1	1990	-16	1982	17	14.0	1977	1256	0	.0	.0	1.9	16.8	27.9	1.9
Feb	33.2	18.6	25.9	71	2000	26	34.2	1984	-20+	1961	2	15.2	1979	1110	0	.0	.0	2.5	14.3	25.4	1.1
Mar	42.5	26.1	34.3	81	1945	26	42.7	1973	-7	1984	8	27.5	1984	961	0	.0	.0	8.4	7.0	23.0	.2
Apr	54.1	36.4	45.3	94	1990	28	49.9	1991	4	1944	25	39.5	1975	594	4	.0	@	18.9	.6	9.8	.0
May	66.4	47.7	57.0	90+	1991	23	63.6	1991	25	1926	4	50.6	1997	268	28	.0	.1	29.5	.0	.3	.0
Jun	74.8	56.9	65.8	98	1938	9	69.1	1995	36	1972	11	61.7	1980	65	101	.0	.5	30.0	.0	.0	.0
Jul	79.6	62.1	70.8	97+	1995	15	74.3	1999	43	1945	11	66.1	1992	8	203	.0	1.5	31.0	.0	.0	.0
Aug	77.8	60.5	69.1	99	1948	27	72.5	1980	38+	1982	29	64.9	1982	21	158	.0	.6	31.0	.0	.0	.0
Sep	70.1	52.9	61.5	98	1953	3	65.3	1971	32+	1991	30	58.2	1975	149	50	.0	@	30.0	.0	@	.0
Oct	58.9	42.6	50.7	92	1927	2	58.6	1971	20	1965	29	46.1	1972	442	4	.0	.0	25.5	.0	3.0	.0
Nov	46.7	33.7	40.2	80	1961	3	46.8	1975	7	1958	30	34.0	1976	737	0	.0	.0	11.5	2.1	14.0	.0
Dec	36.0	23.6	29.8	74	1982	3	37.5	1982	-10	1980	25	17.1	1989	1081	0	.0	.0	3.4	10.8	25.2	.6
Ann	55.9	39.9	47.9	99	Aug 1948	27	74.3	Jul 1999	-20+	Feb 1961	2	14.0	Jan 1977	6692	548	.0	2.7	223.6	51.6	128.6	3.8

+ 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/normal/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1922-2001

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

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Precipitation (inches)

		Precipitation Totals								Mean Number of Days (3)				Precipitation Probabilities (1)											
														Probability that the monthly/annual precipitation will be equal to or less than the indicated amount											
Means/ Medians(1)		Extremes								Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels											
														These values were determined from the incomplete gamma distribution											
Month	Mean	Med-ian	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	3.16	2.67	3.11	1934	28	6.88	1982	1.11	1981	19.8	9.0	1.4	.3	1.07	1.37	1.81	2.18	2.53	2.90	3.30	3.77	4.37	5.29	6.15	
Feb	2.42	2.24	2.08	1954	16	5.90	1990	.85	1987	17.2	7.1	.9	.2	.95	1.17	1.49	1.76	2.01	2.26	2.54	2.86	3.26	3.88	4.45	
Mar	2.99	2.93	2.62	1936	17	5.97	1991	1.33	1995	15.7	7.8	1.7	.3	1.40	1.66	2.02	2.31	2.58	2.85	3.14	3.47	3.88	4.51	5.07	
Apr	3.04	2.98	1.66	1990	10	5.83	1991	1.33	1985	13.6	7.8	1.9	.3	1.34	1.61	1.99	2.30	2.59	2.88	3.19	3.55	4.00	4.69	5.31	
May	3.35	3.41	3.41	1986	19	7.22	1989	1.35	1987	12.6	7.1	2.4	.6	1.43	1.74	2.16	2.51	2.83	3.16	3.51	3.92	4.43	5.21	5.92	
Jun	3.82	3.46	5.01	1987	22	8.36	1987	.86	1991	11.9	7.5	2.4	.8	1.23	1.59	2.13	2.59	3.03	3.48	3.98	4.57	5.32	6.49	7.57	
Jul	3.14	3.00	3.38	1963	29	8.93	1992	.93	1989	10.5	6.1	2.1	.7	.87	1.17	1.62	2.02	2.40	2.81	3.25	3.78	4.46	5.54	6.54	
Aug	3.87	3.55	3.88	1963	7	10.67	1977	1.65	1976	10.5	6.9	2.9	1.0	1.57	1.92	2.43	2.84	3.23	3.63	4.06	4.55	5.18	6.13	7.01	
Sep	3.84	3.79	4.89	1979	14	8.99	1977	1.20	1985	11.6	7.2	2.5	1.0	1.38	1.74	2.26	2.70	3.12	3.55	4.01	4.56	5.25	6.33	7.31	
Oct	3.19	3.05	3.00	1945	1	6.08	1988	.87	1984	12.8	7.4	2.3	.4	1.19	1.49	1.92	2.27	2.61	2.96	3.33	3.77	4.32	5.18	5.96	
Nov	3.92	4.05	2.31	2000	20	9.75	1985	1.55	1978	15.8	9.3	2.1	.6	1.71	2.06	2.55	2.95	3.33	3.70	4.11	4.57	5.16	6.04	6.85	
Dec	3.80	3.55	1.81	1922	28	8.71	1990	1.54	1998	19.4	10.0	2.1	.4	1.72	2.06	2.52	2.90	3.25	3.61	3.99	4.42	4.97	5.80	6.55	
Ann	40.54	39.93	5.01	Jun 1987	22	10.67	Aug 1977	.85	Feb 1987	171.4	93.2	24.7	6.6	32.48	34.12	36.17	37.70	39.05	40.33	41.64	43.08	44.80	47.26	49.36	

+ 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: 1922-2001

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Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	24.0	17.3	6	3	18.3	1982	11	68.3	1977	38+	1977	31	26	1977	16.7	7.5	2.5	.9	.3	20.8	15.8	12.5	6.7
Feb	18.4	18.4	5	4	18.4	1984	28	34.6	1995	42+	1977	7	23	1977	14.0	5.6	1.5	.6	.1	19.8	13.7	10.0	4.2
Mar	12.4	11.9	1	2	15.1	1992	11	29.3	1993	20	1984	1	8	1984	9.7	3.5	1.2	.3	.1	10.2	5.8	3.0	1.1
Apr	3.6	2.4	#	1	6.4	1982	6	15.0	1975	12	1975	5	2	1975	3.7	1.0	.4	.1	.0	1.6	.7	.5	.1
May	.3	.0	#	0	7.9	1989	7	7.9	1989	4	1989	7	#	2000	.2	.0	@	@	.0	@	@	.0	.0
Jun	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	1989	.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	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.3	.0	#	0	2.8	1993	31	3.1	1972	2	1972	19	#	1972	.3	.1	.0	.0	.0	@	.0	.0	.0
Nov	11.0	9.7	1	0	24.9	2000	20	45.6	2000	25	2000	21	5	2000	6.0	2.7	1.0	.6	.1	4.7	2.3	1.2	.4
Dec	25.4	19.9	3	2	33.9	1995	10	68.4	1985	28	1995	11	11	1976	14.7	6.5	2.5	1.1	.2	15.6	10.0	7.2	2.9
Ann	95.4	79.6	N/A	N/A	33.9	Dec 1995	10	68.4	Dec 1985	42+	Feb 1977	7	26	Jan 1977	65.3	26.9	9.1	3.6	.8	72.7	48.3	34.4	15.4

+ Also occurred on an earlier date(s) #Denotes trace amounts

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-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	5/22	5/18	5/14	5/12	5/09	5/07	5/04	5/01	4/26
32	5/06	5/02	4/29	4/26	4/24	4/22	4/19	4/16	4/12
28	4/24	4/20	4/18	4/16	4/14	4/12	4/09	4/07	4/03
24	4/16	4/12	4/09	4/06	4/04	4/01	3/29	3/26	3/22
20	4/06	4/02	3/30	3/28	3/26	3/24	3/22	3/19	3/15
16	3/31	3/27	3/24	3/22	3/19	3/17	3/15	3/12	3/08
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	9/22	9/26	9/30	10/02	10/05	10/08	10/10	10/14	10/18
32	10/05	10/10	10/13	10/16	10/19	10/22	10/24	10/28	11/02
28	10/19	10/24	10/27	10/30	11/02	11/05	11/08	11/11	11/16
24	10/31	11/05	11/09	11/12	11/15	11/18	11/21	11/25	11/30
20	11/14	11/18	11/22	11/25	11/28	12/01	12/04	12/07	12/12
16	11/23	11/27	12/01	12/04	12/07	12/09	12/12	12/16	12/21
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	167	161	156	152	148	144	140	136	129
32	196	189	185	181	177	173	169	165	158
28	221	214	209	205	202	198	194	189	182
24	248	240	234	230	225	221	216	210	202
20	264	258	253	249	246	243	239	235	229
16	282	275	270	265	262	258	253	248	241

* 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)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Below 65	1256	1110	961	594	268	65	8	21	149	442	737	1081	6692
60	1102	955	797	445	163	17	0	1	43	298	593	936	5350
57	1009	871	704	359	112	6	0	0	18	221	503	843	4646
55	947	815	642	304	84	3	0	0	9	175	444	781	4204
50	792	675	493	183	34	0	0	0	1	86	304	632	3200
32	290	237	97	4	0	0	0	0	0	0	21	193	842

Cooling Degree Days (1)

Base	Cooling Degree Days (1)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Above 32	47	55	167	406	783	1024	1214	1158	891	586	273	91	6695
55	0	0	5	27	144	339	501	445	223	53	8	1	1746
57	0	0	3	20	111	283	439	384	177	34	5	1	1457
60	0	0	1	11	71	205	346	293	118	16	2	0	1063
65	0	0	0	4	28	101	203	158	50	4	0	0	548
70	0	0	0	1	7	35	85	58	15	1	0	0	202

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	9	13	68	212	544	794	976	919	657	355	121	28	9	22	90	302	846	1640	2616	3535	4192	4547	4668	4696
45	2	2	34	120	390	644	821	764	508	224	58	7	2	4	38	158	548	1192	2013	2777	3285	3509	3567	3574
50	0	0	14	62	257	494	666	609	363	122	28	2	0	0	14	76	333	827	1493	2102	2465	2587	2615	2617
55	0	0	4	29	148	348	511	454	229	54	8	0	0	0	4	33	181	529	1040	1494	1723	1777	1785	1785
60	0	0	0	13	76	213	357	303	123	16	0	0	0	0	0	13	89	302	659	962	1085	1101	1101	1101
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	2	7	44	117	310	500	659	609	389	175	55	9	2	9	53	170	480	980	1639	2248	2637	2812	2867	2876

(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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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