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: FREMONT, NE **COOP ID: 253050**

Climate Division: NE 6 **NWS Call Sign:** **Elevation: 1,180 Feet** **Lat: 41˚26N** **Lon: 96˚28W**

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	31.7	10.4	21.1	72	1981	24	32.2	1990	-27	1974	12	8.4	1979	1362	0	.0	.0	3.2	14.3	30.0	6.4
Feb	38.1	15.7	26.9	77	1972	28	37.4	1987	-20+	1996	2	13.1	1979	1067	0	.0	.0	7.2	9.7	24.9	3.1
Mar	50.1	25.9	38.0	90	1986	30	44.1	1986	-13+	1962	1	29.9	1984	837	0	.0	@	16.5	2.8	19.9	.4
Apr	63.5	37.6	50.6	95+	1994	18	57.5	1981	3	1975	3	43.6	1983	440	5	.0	.5	26.4	.2	6.3	.0
May	74.5	50.3	62.4	100+	1967	25	67.8	1977	24	1976	3	57.8	1995	151	70	.0	1.5	30.9	.0	.5	.0
Jun	84.2	60.0	72.1	108	1953	18	76.3	1988	39+	1969	13	67.4	1982	13	226	.3	8.5	30.0	.0	.0	.0
Jul	87.7	64.7	76.2	112	1954	13	80.9	1974	44	1972	5	70.9	1992	0	347	1.4	13.0	31.0	.0	.0	.0
Aug	84.9	61.6	73.3	109	1955	27	79.4	1983	39	1950	20	68.0	1992	13	268	.6	9.5	31.0	.0	.0	.0
Sep	77.8	51.9	64.9	105+	2000	3	71.4	1998	24	1984	29	60.0	1993	90	85	.1	4.0	29.8	.0	.4	.0
Oct	65.8	39.2	52.5	96	1963	5	56.0	1971	11	1993	31	46.5	1976	390	3	.0	.2	28.8	.1	5.6	.0
Nov	47.9	26.4	37.2	84	1999	13	46.8	1999	-10	1964	30	29.3	1991	835	0	.0	.0	13.7	3.1	19.8	.2
Dec	34.5	15.2	24.9	70	1998	1	31.6	1987	-24+	1989	23	7.0	1983	1246	0	.0	.0	4.2	11.3	29.2	3.5
Ann	61.7	38.2	50.0	112	Jul 1954	13	80.9	Jul 1974	-27	Jan 1974	12	7.0	Dec 1983	6444	1004	2.4	37.2	252.7	41.5	136.6	13.6

\+ 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

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	.79	.61	1.81	1949	3	2.01	1975	.00+	1986
Feb	.77	.56	2.15	1971	22	3.63	1971	.05	1974
Mar	2.21	1.72	2.73	1987	23	7.29	1987	.00	1988
Apr	2.83	2.47	2.60	1959	19	6.69	1984	.22	1990
May	4.34	4.08	3.55	1977	21	10.80	1982	1.28	1997
Jun	4.36	4.25	5.64	1963	24	9.88	1991	1.22	1976
Jul	3.36	2.79	4.40	1985	19	7.93	1993	.08	1974
Aug	3.23	3.15	5.21	1959	2	9.12	1977	.25	1990
Sep	3.10	2.30	4.57	1989	4	8.05	1989	.31	1980
Oct	2.23	2.05	3.76	1980	16	7.04	1984	.04	1999
Nov	1.64	1.25	3.19	1977	9	4.03	1975	.00	1976
Dec	.94	.77	2.06	1984	16	3.14	1984	.25	1976
Ann	29.80	30.13	5.64	Jun 1963	24	10.80	May 1982	.00+	Mar 1988

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.6	2.4	.2	.1
Feb	4.9	2.2	.2	.1
Mar	7.3	4.9	1.5	.5
Apr	8.8	6.0	2.1	.6
May	10.9	7.7	3.1	1.0
Jun	9.4	6.9	2.8	1.2
Jul	9.0	6.2	1.9	.7
Aug	7.9	5.3	1.8	1.0
Sep	6.9	5.0	2.0	.9
Oct	6.1	4.3	1.3	.5
Nov	5.6	3.4	1.0	.3
Dec	5.1	2.5	.5	.1
Ann	86.5	56.8	18.4	7.0

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	.00	.16	.32	.45	.56	.69	.83	.98	1.19	1.53	1.84
Feb	.07	.13	.23	.34	.45	.59	.74	.94	1.21	1.66	2.10
Mar	.15	.37	.72	1.05	1.39	1.76	2.20	2.73	3.45	4.62	5.76
Apr	.64	.90	1.32	1.69	2.06	2.46	2.90	3.44	4.13	5.25	6.29
May	1.25	1.66	2.28	2.82	3.35	3.89	4.50	5.21	6.14	7.59	8.94
Jun	1.19	1.60	2.23	2.78	3.32	3.88	4.51	5.25	6.21	7.73	9.14
Jul	.47	.74	1.22	1.69	2.18	2.72	3.34	4.10	5.13	6.81	8.43
Aug	.51	.78	1.25	1.70	2.16	2.67	3.24	3.95	4.89	6.43	7.90
Sep	.48	.75	1.20	1.62	2.07	2.55	3.10	3.78	4.69	6.16	7.58
Oct	.15	.29	.57	.87	1.21	1.61	2.09	2.71	3.56	5.00	6.43
Nov	.12	.29	.55	.79	1.04	1.32	1.64	2.03	2.55	3.40	4.22
Dec	.23	.31	.45	.57	.69	.82	.96	1.13	1.36	1.71	2.04
Ann	19.80	21.68	24.12	25.99	27.67	29.30	30.99	32.87	35.17	38.52	41.44

\+ 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	6.0	5.1	2	2
Feb	6.5	6.0	2	1
Mar	6.1	5.5	1	#
Apr	2.2	.0	#	#
May	#	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.5	.0	#	0
Nov	4.1	3.5	#	#
Dec	6.6	5.8	2	1
Ann	32.0	25.9	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	11.0	1971	3	16.0	1993	14	1984	1	6	1984
Feb	16.0	1971	22	21.0	1971	16	1971	22	8	1979
Mar	10.0	1985	31	15.5	1984	14	1978	7	4	1978
Apr	10.0	1992	21	14.0	1997	12	1997	12	1	1997
May	#	1994	1	#	1994	#	1994	1	#	1994
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	0	0	0	0	0
Oct	4.0	1980	28	4.0+	1991	4+	1991	31	#+	1997
Nov	11.0	1972	14	11.0+	1983	14	1991	7	5	1991
Dec	8.0	1984	14	16.0	2000	18	1983	28	11	1983
Ann	16.0	Feb 1971	22	21.0	Feb 1971	18	Dec 1983	28	11	Dec 1983

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.4	2.6	.9	.2	@
Feb	3.0	2.4	.8	.3	@
Mar	2.3	1.8	.8	.4	.1
Apr	.7	.5	.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	.1	.0	.0
Nov	1.6	1.3	.6	.3	@
Dec	3.5	2.6	.9	.3	.0
Ann	14.7	11.4	4.4	1.6	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	15.7	9.3	5.7	.7
Feb	11.2	7.8	4.2	.6
Mar	5.2	3.1	1.9	.5
Apr	.8	.5	.2	.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	.1	.0	.0
Nov	3.6	1.9	.9	.5
Dec	11.5	7.3	4.3	1.2
Ann	48.2	30.0	17.2	3.6

+ 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	5/12	5/08	5/05	5/03	4/30	4/28	4/26	4/23	4/19
32	5/09	5/04	4/30	4/27	4/24	4/21	4/18	4/14	4/09
28	4/28	4/23	4/19	4/16	4/13	4/10	4/07	4/04	3/30
24	4/15	4/11	4/08	4/05	4/03	3/31	3/29	3/26	3/22
20	4/07	4/02	3/29	3/25	3/22	3/19	3/16	3/12	3/06
16	3/28	3/23	3/19	3/16	3/13	3/10	3/07	3/03	2/26

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	9/14	9/18	9/21	9/24	9/26	9/28	9/30	10/03	10/07
32	9/21	9/27	9/30	10/04	10/07	10/10	10/13	10/17	10/22
28	10/01	10/06	10/10	10/13	10/16	10/19	10/22	10/25	10/30
24	10/12	10/18	10/22	10/26	10/30	11/02	11/06	11/10	11/16
20	10/21	10/27	10/31	11/04	11/07	11/10	11/14	11/18	11/24
16	11/01	11/07	11/12	11/15	11/19	11/23	11/26	12/01	12/07

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	164	158	154	151	148	144	141	137	131
32	187	179	174	169	165	160	156	150	142
28	206	198	193	189	185	181	176	171	164
24	232	224	218	214	209	205	200	194	186
20	253	245	239	234	229	224	219	213	205
16	273	265	260	255	250	246	241	235	227

***** 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	1362	1067	837	440	151	13	0	13	90	390	835	1246	6444
60	1207	927	682	305	74	2	0	2	32	250	685	1091	5257
57	1114	847	592	233	43	0	0	0	13	179	597	998	4616
55	1052	796	536	191	29	0	0	0	7	137	540	936	4224
50	900	665	395	104	8	0	0	0	0	63	404	785	3324
32	411	275	75	1	0	0	0	0	0	0	79	314	1155

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	72	132	261	557	942	1203	1370	1279	985	636	233	91	7761
55	0	8	9	56	258	513	657	566	302	60	5	0	2434
57	0	4	4	39	211	454	595	504	248	39	2	0	2100
60	0	0	0	20	148	365	502	412	177	18	0	0	1642
65	0	0	0	5	70	226	347	268	85	3	0	0	1004
70	0	0	0	1	25	113	206	148	31	0	0	0	524

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	4	41	145	388	726	989	1143	1073	789	453	107	12	4	45	190	578	1304	2293	3436	4509	5298	5751	5858	5870
45	0	12	78	265	571	839	988	918	641	314	50	3	0	12	90	355	926	1765	2753	3671	4312	4626	4676	4679
50	0	2	36	161	418	689	833	763	494	197	19	0	0	2	38	199	617	1306	2139	2902	3396	3593	3612	3612
55	0	0	8	85	279	539	678	608	352	101	4	0	0	0	8	93	372	911	1589	2197	2549	2650	2654	2654
60	0	0	2	38	160	394	523	454	232	43	0	0	0	0	2	40	200	594	1117	1571	1803	1846	1846	1846
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	7	35	104	248	456	657	774	722	512	287	73	13	7	42	146	394	850	1507	2281	3003	3515	3802	3875	3888

(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