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: FARGO HECTOR AP, ND **COOP ID: 322859**

Climate Division: ND 6 **NWS Call Sign: FAR** **Elevation: 900 Feet** **Lat: 46˚56N** **Lon: 96˚49W**

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	15.9	-2.3	6.8	53+	1944	20	21.3	1990	-36	1951	29	-7.0	1982	1808	0	.0	.0	@	27.1	31.0	17.5
Feb	22.8	5.4	14.1	66	1958	25	28.0	1998	-39	1996	1	-1.4	1979	1441	0	.0	.0	.3	20.2	27.8	11.1
Mar	35.3	19.0	27.2	78+	1967	30	36.6	1973	-34	1948	10	17.4	1996	1185	0	.0	.0	3.7	11.3	27.0	3.9
Apr	54.5	32.4	43.5	100	1980	21	51.3	1987	-7	1975	1	36.0	1975	652	3	@	.2	19.4	1.0	16.0	.1
May	69.5	45.3	57.4	98	1964	21	66.5	1977	17	1946	12	50.4	1979	271	33	.0	.8	29.8	.0	3.0	.0
Jun	77.4	54.5	66.0	100	1995	17	73.6	1988	30	1969	20	59.0	1982	73	104	@	2.3	30.0	.0	.0	.0
Jul	82.2	59.0	70.6	106	1988	5	75.6	1989	36	1967	3	64.0	1992	17	191	.3	4.5	31.0	.0	.0	.0
Aug	81.0	57.0	69.0	106	1976	18	73.3	1976	33+	1982	27	62.3	1977	37	162	.4	4.5	31.0	.0	.0	.0
Sep	69.9	46.1	58.0	102	1959	8	63.9	1998	19	1965	26	53.7	1985	245	38	.0	1.2	29.3	.0	1.7	.0
Oct	56.1	34.4	45.3	93	1963	5	50.8	1973	5	1951	31	39.3	1976	614	2	.0	.1	22.3	.6	12.9	.0
Nov	35.2	18.7	27.0	74	1990	1	37.1	1999	-24+	1985	29	15.2	1985	1137	0	.0	.0	4.1	12.8	27.2	2.2
Dec	20.8	4.2	12.5	57+	1962	16	23.5	1997	-32	1967	31	-.4	1983	1612	0	.0	.0	.2	24.4	30.9	12.8
Ann	51.7	31.1	41.5	106+	Jul 1988	5	75.6	Jul 1989	-39	Feb 1996	1	-7.0	Jan 1982	9092	533	.7	13.6	201.1	97.4	177.5	47.6

\+ 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: 1942-2001

(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	.76	.78	.94	1996	17	1.85	1989	.11	1981
Feb	.59	.53	.88	1946	5	1.74	1979	.13	1973
Mar	1.17	1.04	1.12	2000	8	2.62	1995	.19	1986
Apr	1.37	1.00	1.79	1942	27	5.28	1986	.01	1988
May	2.61	2.35	4.02	1977	4	7.34	1998	.46	1976
Jun	3.51	2.62	4.64	2000	19	11.72	2000	.58	1972
Jul	2.88	2.76	4.42	1993	15	7.71	1993	.46	1988
Aug	2.52	2.33	4.72	1943	8	6.46	1974	.18	1984
Sep	2.18	1.91	3.37	1957	2	6.50	1999	.13	1974
Oct	1.97	1.58	3.10	1982	9	7.03	1982	.05	1986
Nov	1.06	.90	1.62	1960	28	4.58	1977	.00	1999
Dec	.57	.58	.73	1960	5	1.51	1972	.07	1997
Ann	21.19	20.39	4.72	Aug 1943	8	11.72	Jun 2000	.00	Nov 1999

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.3	2.3	.2	.0
Feb	7.3	1.7	.1	.0
Mar	8.2	3.2	.6	@
Apr	8.0	3.8	.7	.2
May	9.8	5.3	1.6	.6
Jun	11.0	6.2	2.0	.8
Jul	9.9	5.6	1.6	.7
Aug	9.2	4.6	1.3	.6
Sep	7.8	4.3	1.5	.6
Oct	7.3	3.9	1.2	.3
Nov	6.7	2.7	.5	.1
Dec	8.0	1.5	.1	.0
Ann	102.5	45.1	11.4	3.9

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	.12	.18	.29	.40	.51	.63	.77	.93	1.16	1.52	1.87
Feb	.11	.16	.24	.32	.41	.50	.60	.72	.88	1.15	1.40
Mar	.35	.46	.63	.77	.91	1.06	1.22	1.41	1.65	2.04	2.40
Apr	.07	.14	.29	.48	.69	.94	1.24	1.64	2.20	3.17	4.13
May	.59	.84	1.22	1.56	1.90	2.27	2.67	3.16	3.80	4.82	5.78
Jun	.57	.87	1.38	1.86	2.36	2.90	3.52	4.28	5.30	6.94	8.52
Jul	.52	.78	1.20	1.59	1.99	2.43	2.92	3.52	4.31	5.59	6.81
Aug	.52	.75	1.12	1.46	1.80	2.16	2.57	3.07	3.72	4.76	5.74
Sep	.35	.54	.86	1.16	1.47	1.80	2.19	2.66	3.29	4.31	5.29
Oct	.09	.19	.41	.67	.97	1.33	1.78	2.36	3.18	4.59	6.01
Nov	.04	.13	.28	.44	.60	.79	1.02	1.30	1.69	2.34	2.98
Dec	.12	.17	.25	.33	.41	.49	.58	.70	.84	1.08	1.31
Ann	12.87	14.39	16.38	17.93	19.32	20.69	22.13	23.74	25.71	28.63	31.19

\+ 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: 1942-2001
(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	12.2	11.2	7	6	16.3	1982	22	31.5	1989	30+	1989	13	19	1989	9.9	3.0	1.0	.4	.2	27.5	22.8	18.7	6.5
Feb	6.8	6.2	7	6	6.4	1979	22	19.5	1979	24+	1994	14	20	1997	6.9	2.1	.6	.2	.0	23.5	20.0	17.4	7.8
Mar	8.7	7.6	4	3	12.0	1997	3	26.2	1997	32	1997	4	23	1997	6.1	2.4	1.1	.4	.1	18.3	14.2	10.3	4.4
Apr	2.3	2.1	#	0	7.5	1994	26	10.9	1994	8+	1996	2	1+	1996	1.9	.7	.2	.1	.0	2.2	1.2	.4	.0
May	.0	.0	#	0	.8	1979	5	.8	1979	1	1979	5	#	1996	.1	.0	.0	.0	.0	@	.0	.0	.0
Jun	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	1979	.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	#	1995	21	#+	1995	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.6	.0	#	0	2.7	1972	29	3.8+	1972	2+	1981	21	#	1992	.7	.3	.0	.0	.0	.3	.0	.0	.0
Nov	7.5	5.3	1	1	12.0	1977	20	24.2	1977	17+	1985	30	7	1977	5.8	2.1	.8	.3	@	10.0	5.2	2.2	1.1
Dec	7.9	7.0	3	3	8.5	1988	26	18.5	1972	19+	1985	2	11	1977	8.6	2.4	.6	.2	.0	21.7	13.7	8.1	2.9
Ann	46.0	39.4	N/A	N/A	16.3	Jan 1982	22	31.5	Jan 1989	32	Mar 1997	4	23	Mar 1997	40.0	13.0	4.3	1.6	.3	103.5	77.1	57.1	22.7

+ 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	5/29	5/26	5/23	5/21	5/19	5/17	5/15	5/12	5/09
32	5/21	5/17	5/14	5/12	5/10	5/07	5/05	5/02	4/28
28	5/16	5/11	5/08	5/05	5/02	4/30	4/27	4/23	4/19
24	5/07	5/01	4/26	4/22	4/18	4/14	4/10	4/05	3/29
20	4/19	4/14	4/10	4/07	4/04	4/02	3/30	3/26	3/21
16	4/15	4/10	4/06	4/03	3/31	3/28	3/25	3/22	3/17

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	9/06	9/09	9/12	9/14	9/17	9/19	9/21	9/24	9/28
32	9/16	9/20	9/23	9/25	9/27	9/29	10/01	10/04	10/07
28	9/19	9/24	9/28	10/01	10/05	10/08	10/11	10/15	10/20
24	9/26	10/02	10/06	10/10	10/13	10/16	10/20	10/24	10/30
20	10/12	10/17	10/21	10/24	10/27	10/30	11/03	11/06	11/12
16	10/24	10/28	10/31	11/03	11/05	11/08	11/10	11/13	11/18

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	136	131	126	123	120	116	113	109	103
32	158	151	147	143	140	136	132	128	121
28	176	169	163	159	154	150	146	140	133
24	201	193	187	182	178	173	168	162	154
20	226	219	214	209	205	201	196	191	184
16	240	232	227	222	218	214	209	204	197

***** 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	1808	1441	1185	652	271	73	17	37	245	614	1137	1612	9092
60	1651	1285	1018	503	170	34	6	15	128	458	991	1473	7732
57	1558	1201	925	420	120	17	0	6	80	369	901	1380	6977
55	1496	1145	863	368	92	10	0	3	55	312	841	1318	6503
50	1341	1005	714	251	41	2	0	0	16	189	694	1163	5416
32	804	547	263	25	0	0	0	0	0	9	251	642	2541

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	1	12	79	361	785	1017	1197	1149	783	425	73	5	5887
55	0	0	0	23	156	333	484	437	160	23	0	0	1616
57	0	0	0	16	121	278	423	376	125	15	0	0	1354
60	0	0	0	9	79	203	332	290	83	7	0	0	1003
65	0	0	0	3	33	104	191	162	38	2	0	0	533
70	0	0	0	1	10	40	85	72	14	0	0	0	222

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	17	181	551	788	960	909	553	222	20	0	0	0	17	198	749	1537	2497	3406	3959	4181	4201	4201
45	0	0	3	103	405	638	805	754	407	126	9	0	0	0	3	106	511	1149	1954	2708	3115	3241	3250	3250
50	0	0	0	54	272	489	650	599	274	62	1	0	0	0	0	54	326	815	1465	2064	2338	2400	2401	2401
55	0	0	0	22	163	342	495	444	167	24	0	0	0	0	0	22	185	527	1022	1466	1633	1657	1657	1657
60	0	0	0	9	82	211	341	302	87	9	0	0	0	0	0	9	91	302	643	945	1032	1041	1041	1041
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	9	122	340	496	630	587	333	137	12	0	0	0	9	131	471	967	1597	2184	2517	2654	2666	2666

(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