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: STANLEY 3 NNW, ND **COOP ID: 328276**

Climate Division: ND 3 **NWS Call Sign:** **Elevation: 2,280 Feet** **Lat: 48˚21N** **Lon: 102˚25W**

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	15.6	-4.2	5.7	48	1987	13	20.1	1990	-41	1996	19	-12.9	1982	1840	0	.0	.0	.0	25.7	31.0	18.1
Feb	22.8	3.4	13.1	60+	1992	28	26.4	1998	-42	1996	2	-3.4	1979	1454	0	.0	.0	.3	19.1	28.2	12.4
Mar	35.0	13.9	24.5	74	1966	30	34.7	1986	-30	1962	1	14.3	1996	1257	0	.0	.0	3.9	12.2	30.2	6.0
Apr	52.0	26.7	39.4	90+	2001	29	46.8	1987	-15	1975	2	29.1	1975	769	0	.0	@	16.8	2.0	22.4	.4
May	66.1	38.9	52.5	95	1988	30	59.5	1977	15+	1967	3	46.7	1974	398	10	.0	.4	28.3	@	7.2	.0
Jun	74.7	48.4	61.6	102+	1988	28	73.0	1988	30	1964	1	55.5	1985	170	67	.1	1.7	29.9	.0	.2	.0
Jul	80.2	52.6	66.4	105+	1988	28	71.2	1989	34	1967	13	59.2	1993	79	122	.2	3.8	31.0	.0	.0	.0
Aug	80.0	50.2	65.1	110	1949	7	70.5	1984	30	1950	19	57.2	1977	116	119	.4	4.9	30.9	.0	.1	.0
Sep	67.6	39.5	53.6	100+	1998	5	60.9	1998	16+	1983	23	47.5	1984	361	17	.1	1.1	27.6	.0	5.3	.0
Oct	54.2	28.4	41.3	92+	1997	3	44.4	1994	-3+	1991	31	36.5	1972	734	0	.0	.1	19.8	1.3	21.1	.1
Nov	33.8	14.4	24.1	74+	1999	8	35.6	1999	-30	1964	29	12.0	1985	1228	0	.0	.0	4.0	14.0	29.0	4.2
Dec	20.5	1.1	10.8	54	1969	1	24.3	1997	-47+	1983	24	-7.6	1983	1680	0	.0	.0	.2	23.2	30.9	14.1
Ann	50.2	26.1	38.2	110	Aug 1949	7	73.0	Jun 1988	-47+	Dec 1983	24	-12.9	Jan 1982	10086	335	.8	12.0	192.7	97.5	205.6	55.3

\+ 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	.57	.59	.49	1989	7	1.21	1982	.09	1979
Feb	.49	.40	.85	1951	28	2.09	1998	.08	1990
Mar	.87	.75	.77	1956	27	2.07	1975	.12	1994
Apr	1.59	1.41	1.53	1953	24	5.16	1975	.26+	1987
May	2.58	2.10	2.08+	1990	27	5.75	1972	.35	1984
Jun	3.88	3.30	3.25	1956	18	9.41	1971	1.09	1997
Jul	2.94	2.69	2.43	1999	15	10.68	1993	.55	1984
Aug	2.13	1.86	1.83	1974	21	6.15	1972	.04	1971
Sep	2.15	1.87	3.13	1959	22	5.21	1977	.36	1976
Oct	1.23	.94	1.25	1971	2	3.94	1982	.04	1990
Nov	.76	.73	.77	2000	2	1.56	2000	.05	1999
Dec	.54	.50	.52	1950	25	1.58	1977	.06	1986
Ann	19.73	20.00	3.25	Jun 1956	18	10.68	Jul 1993	.04+	Oct 1990

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.0	2.0	.0	.0
Feb	6.7	1.6	.1	.0
Mar	7.7	2.7	.1	.0
Apr	8.2	4.1	.8	.2
May	10.4	6.4	1.2	.3
Jun	13.2	8.1	2.4	.6
Jul	10.6	6.5	1.7	.5
Aug	9.3	5.3	1.2	.3
Sep	9.6	5.3	1.1	.3
Oct	6.6	3.1	.7	.1
Nov	6.7	2.5	.1	.0
Dec	7.3	1.7	.0	.0
Ann	104.3	49.3	9.4	2.3

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	.16	.21	.29	.37	.44	.51	.59	.69	.81	1.00	1.19
Feb	.06	.10	.17	.24	.31	.39	.49	.60	.76	1.02	1.27
Mar	.20	.28	.41	.52	.64	.76	.90	1.06	1.27	1.62	1.94
Apr	.29	.43	.67	.88	1.10	1.34	1.61	1.94	2.38	3.08	3.74
May	.60	.84	1.22	1.56	1.89	2.25	2.65	3.13	3.76	4.76	5.70
Jun	1.17	1.54	2.09	2.56	3.02	3.50	4.03	4.65	5.46	6.71	7.88
Jul	.74	1.02	1.45	1.83	2.20	2.60	3.03	3.56	4.24	5.31	6.32
Aug	.38	.57	.88	1.17	1.47	1.79	2.16	2.60	3.19	4.14	5.05
Sep	.50	.70	1.01	1.29	1.58	1.88	2.21	2.61	3.14	3.98	4.76
Oct	.10	.19	.35	.52	.71	.93	1.18	1.50	1.95	2.69	3.42
Nov	.14	.21	.32	.42	.53	.64	.77	.93	1.14	1.47	1.79
Dec	.12	.17	.25	.32	.39	.46	.55	.65	.78	.99	1.19
Ann	12.70	14.01	15.72	17.04	18.22	19.38	20.58	21.92	23.56	25.96	28.06

\+ 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)

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	7.6	6.2	9	7	8.0	1989	7	20.0	1989	26	1982	31	24	1997	6.7	4.4	.6	.1	.0	28.6	23.4	17.4	9.8
Feb	5.7	5.0	8	7	7.0	1998	25	21.7	1998	30	1982	13	24	1982	5.1	3.0	.3	.1	.0	21.0	16.6	13.1	6.7
Mar	9.4	8.1	6	4	12.0	1976	2	27.7	1975	27	1979	4	19	1982	5.7	4.3	1.0	.3	@	15.4	10.1	7.5	3.0
Apr	5.4	3.5	2	#	9.0	1984	27	20.0	1975	27	1975	9	15	1975	2.7	2.2	.7	.2	.0	4.2	2.6	1.7	1.2
May	1.0	.0	#	#	6.0	1974	14	7.0	1983	6	1984	1	1	1984	.4	.4	.1	.1	.0	.5	.2	@	.0
Jun	.0	.0	#	0	.5	1998	2	.5	1998	#	1998	2	#	1998	@	.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	.5	.0	#	0	4.0	1972	26	4.0+	1984	3	1972	26	#+	2000	.2	.2	.1	.0	.0	.2	@	.0	.0
Oct	2.8	.8	#	#	8.0	1991	29	14.0	1984	10	1985	8	2	1985	1.5	1.0	.3	.2	.0	1.8	.7	.3	@
Nov	6.3	5.0	2	2	8.0	1975	29	17.5	1975	15	1996	28	7	1996	4.8	3.4	.8	.2	.0	13.2	8.1	4.9	1.1
Dec	6.6	6.5	5	4	4.0	1974	23	14.0	1988	25	1996	31	19	1996	5.7	3.3	.3	.0	.0	25.8	18.6	12.8	2.5
Ann	45.3	35.1	N/A	N/A	12.0	Mar 1976	2	27.7	Mar 1975	30	Feb 1982	13	24+	Jan 1997	32.8	22.2	4.2	1.2	@	110.7	80.3	57.7	24.3

+ 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	6/13	6/07	6/03	5/30	5/27	5/24	5/20	5/16	5/11
32	5/31	5/26	5/23	5/20	5/17	5/15	5/12	5/09	5/04
28	5/18	5/14	5/11	5/09	5/06	5/04	5/02	4/29	4/25
24	5/10	5/06	5/03	4/30	4/27	4/25	4/22	4/19	4/14
20	5/04	4/28	4/24	4/21	4/17	4/14	4/11	4/07	4/01
16	4/22	4/17	4/13	4/10	4/07	4/05	4/02	3/29	3/24

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	8/22	8/27	8/31	9/03	9/07	9/10	9/13	9/17	9/22
32	8/31	9/05	9/08	9/12	9/15	9/18	9/21	9/24	9/30
28	9/13	9/17	9/21	9/24	9/26	9/29	10/02	10/05	10/10
24	9/19	9/25	9/29	10/03	10/06	10/09	10/12	10/16	10/22
20	9/27	10/03	10/08	10/12	10/15	10/19	10/22	10/27	11/02
16	10/05	10/11	10/16	10/20	10/24	10/28	11/01	11/05	11/12

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	123	115	110	106	102	97	93	88	81
32	142	134	128	124	119	115	110	105	97
28	161	155	150	146	142	138	134	130	123
24	181	174	169	165	161	156	152	147	140
20	205	196	190	185	180	175	170	164	155
16	224	216	209	204	199	194	188	182	173

***** 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	1840	1454	1257	769	398	170	79	116	361	734	1228	1680	10086
60	1685	1314	1102	621	267	91	26	53	239	579	1078	1525	8580
57	1592	1230	1009	536	199	55	12	30	177	486	988	1432	7746
55	1530	1174	947	481	160	38	7	20	140	425	928	1370	7220
50	1375	1034	798	350	83	13	0	5	68	278	778	1215	5997
32	851	578	331	59	1	0	0	0	0	14	310	694	2838

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	34	48	97	280	635	887	1065	1026	646	303	72	37	5130
55	0	0	0	11	82	234	360	332	96	1	0	0	1116
57	0	0	0	7	59	192	303	281	73	0	0	0	915
60	0	0	0	2	33	138	224	211	45	0	0	0	653
65	0	0	0	0	10	67	122	119	17	0	0	0	335
70	0	0	0	0	2	25	50	53	5	0	0	0	135

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	121	405	650	825	785	425	146	12	0	0	0	11	132	537	1187	2012	2797	3222	3368	3380	3380
45	0	0	1	59	273	501	670	630	290	75	2	0	0	0	1	60	333	834	1504	2134	2424	2499	2501	2501
50	0	0	0	25	163	357	516	476	178	30	0	0	0	0	0	25	188	545	1061	1537	1715	1745	1745	1745
55	0	0	0	8	82	224	362	327	93	7	0	0	0	0	0	8	90	314	676	1003	1096	1103	1103	1103
60	0	0	0	1	34	112	221	195	41	1	0	0	0	0	0	1	35	147	368	563	604	605	605	605
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	1	12	106	262	392	514	490	279	119	13	0	0	1	13	119	381	773	1287	1777	2056	2175	2188	2188

(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