

Climatology of the United States

No. 20

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: FORTUNA 1 W, ND

1971-2000

COOP ID: 323196

Climate Division: ND 1

NWS Call Sign:

Elevation: 2,350 Feet Lat: 48° 55N

Lon: 103° 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	15.5	-4.3	5.6	46	1964	1	20.3	1990	-44	1982	11	-12.7	1982	1844	0	.0	.0	.0	26.0	31.0	18.1
Feb	23.4	3.7	13.6	64	1992	28	27.3	1998	-39+	1996	2	-3.3	1979	1440	0	.0	.0	.5	18.9	28.1	11.1
Mar	35.1	14.8	25.0	74+	1978	31	36.5	1986	-24+	1989	2	15.4	1996	1242	0	.0	.0	4.7	12.7	30.1	5.2
Apr	52.4	28.0	40.2	90	1980	21	48.1	1980	-11+	1975	2	30.0	1979	744	0	.0	@	17.0	2.3	20.9	.5
May	65.9	40.2	53.1	100	1980	23	60.8	1977	18	1984	7	46.5	1979	382	12	@	.3	28.0	.1	5.7	.0
Jun	74.8	49.5	62.2	103	1988	11	74.0	1988	28	1969	12	56.6	1985	159	73	.2	1.8	29.8	.0	.1	.0
Jul	80.5	53.6	67.1	102+	1989	9	72.6	1989	38+	1981	26	59.8	1992	72	134	.2	4.2	31.0	.0	.0	.0
Aug	79.9	51.6	65.8	105	1983	7	73.5	1983	31+	1992	25	59.2	1977	111	134	.2	4.5	31.0	.0	.1	.0
Sep	67.0	40.5	53.8	102	1976	7	60.6	1998	19	1974	30	46.8	1984	354	17	@	1.1	27.7	.0	5.1	.0
Oct	53.7	28.8	41.3	91	1992	2	46.2	1973	-5	1984	30	37.5	1991	737	0	.0	@	19.9	1.7	20.8	.2
Nov	32.9	14.5	23.7	73	1999	1	35.7	1999	-26+	1996	24	10.2	1985	1240	0	.0	.0	4.0	14.0	28.9	4.1
Dec	20.6	1.5	11.1	53	1979	5	25.2	1997	-45	1983	23	-6.6	1983	1673	0	.0	.0	.1	23.1	31.0	13.0
Ann	50.1	26.9	38.5	105	Aug 1983	7	74.0	Jun 1988	-45	Dec 1983	23	-12.7	Jan 1982	9998	370	.6	11.9	193.7	98.8	201.8	52.2

+ 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: 1963-2001

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

032-A

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Climate Division: ND 1

NWS Call Sign:

Elevation: 2,350 Feet Lat: 48°55N

Lon: 103°49W

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	.34	.24	.65	1995	17	1.32	1989	.00+	1998	2.6	1.0	.2	.0	.00	.00	.04	.11	.18	.25	.34	.44	.58	.80	1.03
Feb	.36	.23	.75	1998	26	1.45	1998	.00	1984	3.3	1.1	.1	.0	.01	.04	.09	.14	.20	.27	.35	.45	.58	.81	1.04
Mar	.76	.68	1.10	1976	2	1.94	1975	.10	1986	4.4	2.6	.3	.1	.11	.17	.28	.38	.49	.61	.75	.93	1.16	1.54	1.90
Apr	.99	.80	1.10	1985	20	4.07	1975	.00+	1987	4.4	2.5	.6	.1	.00	.10	.28	.44	.60	.78	.98	1.23	1.57	2.13	2.68
May	1.98	1.83	2.15	1965	6	4.82	1978	.00	1997	7.9	5.5	1.1	.2	.31	.58	.92	1.19	1.46	1.74	2.06	2.43	2.92	3.69	4.41
Jun	2.87	2.45	2.80	1995	24	6.05	1976	.80	1982	9.1	6.7	2.0	.5	.89	1.16	1.57	1.91	2.25	2.60	2.99	3.44	4.02	4.93	5.77
Jul	2.71	1.93	5.75	1990	3	9.12	1990	.31	1984	7.5	4.8	1.5	.6	.31	.52	.90	1.27	1.68	2.13	2.66	3.31	4.20	5.67	7.09
Aug	1.62	1.48	2.00	1990	18	4.63	1985	.03	1971	5.3	3.6	1.1	.2	.12	.23	.44	.66	.91	1.19	1.54	1.97	2.58	3.59	4.59
Sep	1.33	1.25	2.18	1978	12	4.72	1978	.00	1990	5.1	3.2	.8	.2	.06	.17	.37	.56	.77	1.01	1.29	1.64	2.11	2.91	3.69
Oct	.85	.50	2.00	1997	24	2.77	1998	.00+	1993	2.7	1.9	.5	.2	.00	.00	.11	.24	.39	.56	.77	1.04	1.42	2.06	2.71
Nov	.33	.30	1.17	1993	24	1.17	1993	.00+	1999	2.3	1.3	.1	@	.00	.00	.08	.15	.21	.27	.34	.42	.54	.71	.88
Dec	.39	.33	1.37	1982	3	1.54	1982	.00+	1997	3.5	1.3	.1	.1	.00	.00	.11	.18	.26	.33	.41	.51	.64	.83	1.03
Ann	14.53	14.43	5.75	Jul 1990	3	9.12	Jul 1990	.00+	Nov 1999	58.1	35.5	8.4	2.2	8.69	9.75	11.15	12.23	13.22	14.18	15.19	16.33	17.73	19.79	21.61

+ 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: 1963-2001

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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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Station: FORTUNA 1 W, ND

COOP ID: 323196

Climate Division: ND 1

NWS Call Sign:

Elevation: 2,350 Feet

Lat: 48°55N

Lon: 103°49W

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	5.3	4.0	5	6	8.0	1995	17	17.0	1989	20	1982	25	15	1982	2.0	1.7	.7	.2	.0	-9.9	-9.9	-9.9	-9.9
Feb	3.7	3.0	6	4	8.0	1998	26	11.0	1994	23	1976	1	19	1976	2.4	1.6	.4	.2	.0	-9.9	-9.9	-9.9	-9.9
Mar	5.4	4.0	4	0	11.0	1976	2	19.0	1976	38	1976	11	21	1976	2.0	1.6	.8	.2	.1	-9.9	-9.9	-9.9	-9.9
Apr	1.8	.0	#	0	7.0	1972	17	7.0+	2000	15	1974	5	2	1974	.6	.6	.3	.2	.0	.1	.0	.0	.0
May	.7	.0	#	0	11.0	1983	13	13.0	1983	11	1983	13	#+	1986	.2	.2	.1	@	@	.2	.1	.1	.1
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	.1	.0	0	0	1.5	1984	24	1.5	1984	0	0	0	0	0	@	@	.0	.0	.0	.0	.0	.0	.0
Oct	1.0	.0	#	0	12.0	1985	8	12.0	1985	12	1985	8	#+	1985	.3	.3	.2	.2	@	.2	.1	.1	.1
Nov	4.0	3.0	#	0	11.0	1996	20	13.0	1996	7	1981	23	2	1985	1.1	1.1	.4	.2	.1	-9.9	-9.9	-9.9	-9.9
Dec	4.2	4.0	1	#	12.0	1998	5	13.0	1998	8+	1981	3	7	1981	2.1	1.6	.3	.1	.1	-9.9	-9.9	-9.9	-9.9
Ann	26.2	18.0	N/A	N/A	12.0+	Dec 1998	5	19.0	Mar 1976	38	Mar 1976	11	21	Mar 1976	10.7	8.7	3.2	1.3	.3	-9.9	-9.9	-9.9	-9.9

+ 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

Complete documentation available from:

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No. 20
1971-2000**

Station: FORTUNA 1 W, ND

COOP ID: 323196

Climate Division: ND 1

NWS Call Sign:

Elevation: 2,350 Feet

Lat: 48° 55N

Lon: 103° 49W

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	5/10
32	5/28	5/24	5/21	5/18	5/16	5/13	5/11	5/08	5/03
28	5/19	5/15	5/12	5/09	5/07	5/04	5/02	4/28	4/24
24	5/10	5/05	5/02	4/29	4/27	4/24	4/21	4/18	4/13
20	4/28	4/24	4/20	4/17	4/15	4/12	4/09	4/06	4/01
16	4/17	4/13	4/09	4/06	4/04	4/01	3/29	3/26	3/21
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	8/23	8/28	8/31	9/03	9/06	9/08	9/11	9/15	9/19
32	9/02	9/06	9/10	9/13	9/15	9/18	9/21	9/24	9/29
28	9/14	9/18	9/21	9/24	9/27	9/29	10/02	10/06	10/10
24	9/19	9/24	9/28	10/02	10/05	10/08	10/12	10/16	10/21
20	9/26	10/02	10/06	10/10	10/14	10/18	10/22	10/26	11/01
16	10/07	10/13	10/17	10/20	10/24	10/27	10/30	11/04	11/09
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	124	116	110	106	101	97	92	86	78
32	142	135	130	126	122	118	114	109	102
28	163	156	151	146	142	138	134	129	122
24	185	176	170	165	161	156	151	145	137
20	207	198	192	187	182	176	171	165	156
16	223	216	211	206	202	198	193	188	181

* 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

Complete documentation available from:
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Station: FORTUNA 1 W, ND

COOP ID: 323196

Climate Division: ND 1 NWS Call Sign: Elevation: 2,350 Feet Lat: 48° 55N Lon: 103° 49W

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	1844	1440	1242	744	382	159	72	111	354	737	1240	1673	9998
60	1689	1300	1087	598	253	82	23	51	232	582	1090	1518	8505
57	1596	1216	994	514	188	48	11	29	169	490	1000	1425	7680
55	1534	1160	932	459	150	32	6	19	132	428	940	1363	7155
50	1379	1027	788	333	77	10	0	5	62	281	790	1208	5960
32	849	574	327	56	1	0	0	0	0	18	331	686	2842

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	28	57	107	303	654	904	1086	1046	653	304	81	35	5258
55	0	0	0	16	90	247	379	352	95	1	0	0	1180
57	0	0	0	10	66	203	321	299	72	0	0	0	971
60	0	0	0	4	38	146	241	228	44	0	0	0	701
65	0	0	0	0	12	73	134	134	17	0	0	0	370
70	0	0	0	0	2	27	59	65	5	0	0	0	158

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	10	133	411	663	837	798	435	155	14	0	0	0	10	143	554	1217	2054	2852	3287	3442	3456	3456
45	0	0	1	69	277	514	682	643	300	75	2	0	0	0	1	70	347	861	1543	2186	2486	2561	2563	2563
50	0	0	0	30	162	367	528	489	182	30	0	0	0	0	0	30	192	559	1087	1576	1758	1788	1788	1788
55	0	0	0	9	86	232	373	342	100	9	0	0	0	0	0	9	95	327	700	1042	1142	1151	1151	1151
60	0	0	0	1	34	124	225	209	47	1	0	0	0	0	0	1	35	159	384	593	640	641	641	641
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	1	11	103	259	396	521	499	273	123	11	0	0	1	12	115	374	770	1291	1790	2063	2186	2197	2197

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. 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