

Climatology of the United States

No. 20 1971-2000

Station: BAUDETTE, MN

COOP ID: 210515

Climate Division: MN 2

NWS Call Sign: BDE

Elevation: 1,075 Feet

Lat: 48° 43N

Lon: 94° 37W

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	14.9	-7.3	3.8	50	1942	23	16.4	1990	-49	1996	20	-8.0	1979	1898	0	.0	.0	.0	27.6	31.0	20.6
Feb	24.0	-.3	11.9	59	1958	26	28.7	1998	-47	1933	8	-.1	1979	1489	0	.0	.0	.3	19.7	28.0	14.8
Mar	36.1	12.9	24.5	75	1946	27	34.7	2000	-45	1962	1	14.8	1996	1256	0	.0	.0	3.6	10.9	28.7	6.8
Apr	53.0	29.0	41.0	91+	1980	21	50.3	1987	-19	1975	2	31.5	1996	721	1	.0	.1	18.4	1.4	19.7	.4
May	67.9	42.6	55.3	96	1939	30	64.2	1977	12	1967	3	47.3	1979	333	32	.0	.4	29.2	.0	5.0	.0
Jun	75.3	51.9	63.6	98+	1988	8	69.4	1995	20	1970	27	57.7	1982	110	69	.0	1.1	30.0	.0	@	.0
Jul	79.5	56.7	68.1	103	1936	13	72.6	1983	36+	1977	9	61.3	1992	42	137	.0	2.2	31.0	.0	.0	.0
Aug	77.7	54.5	66.1	101	1983	7	72.5	1983	28+	1982	28	59.9	1977	79	114	@	1.7	31.0	.0	.1	.0
Sep	67.2	44.6	55.9	95	1983	2	61.0	1998	18+	1956	20	51.4	1993	283	10	.0	.3	29.1	.0	2.5	.0
Oct	54.0	34.4	44.2	86+	1992	2	50.0	1973	-8	1936	26	38.9	1976	645	0	.0	.0	20.8	.5	13.6	.0
Nov	33.6	18.4	26.0	75	1975	5	36.1	1999	-29	1985	29	16.4	1985	1171	0	.0	.0	3.5	13.6	27.6	2.8
Dec	19.3	.8	10.1	54	1962	1	22.4	1997	-45	1955	19	-1.7	1983	1704	0	.0	.0	@	25.7	30.8	15.1
Ann	50.2	28.2	39.2	103	Jul 1936	13	72.6	Jul 1983	-49	Jan 1996	20	-8.0	Jan 1979	9731	363	@	5.8	196.9	99.4	187.0	60.5

+ 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: 1932-2001

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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	.56	.47	.80	1956	28	2.32	1987	.13	1983	5.6	2.1	.1	.0	.10	.15	.23	.31	.38	.47	.57	.69	.84	1.10	1.34
Feb	.41	.29	.80	1932	11	1.27	1996	.02	1982	4.4	1.4	.1	.0	.04	.07	.12	.18	.24	.31	.39	.49	.63	.87	1.09
Mar	.66	.67	1.15	1970	3	1.76	1988	.02	1984	5.5	2.3	.1	.0	.06	.10	.19	.28	.38	.49	.63	.80	1.04	1.43	1.82
Apr	1.17	.98	2.04	1957	20	3.67	1979	.00	1988	6.0	3.2	.7	.1	.11	.25	.44	.61	.78	.97	1.19	1.44	1.79	2.35	2.88
May	2.62	2.16	2.65	1998	16	6.08	1999	.60	1976	9.8	5.9	1.5	.4	.71	.96	1.33	1.67	1.99	2.33	2.71	3.16	3.74	4.65	5.51
Jun	3.69	3.43	3.51	1968	6	7.48	1981	.92	1987	11.9	7.8	2.3	.7	1.41	1.75	2.24	2.65	3.03	3.43	3.86	4.35	4.98	5.95	6.84
Jul	3.38	3.17	5.00	1937	15	6.45	1994	1.37	2000	10.4	6.9	2.3	.7	1.66	1.95	2.34	2.66	2.95	3.24	3.55	3.90	4.34	5.01	5.60
Aug	3.34	2.81	5.05	2001	1	7.85	1974	.72	1991	9.6	6.3	1.9	.8	.81	1.13	1.62	2.05	2.48	2.93	3.44	4.04	4.83	6.08	7.25
Sep	2.68	2.48	2.30	1991	8	9.07	1991	.35	1998	10.1	5.9	1.9	.6	.56	.81	1.20	1.56	1.92	2.30	2.74	3.26	3.95	5.05	6.10
Oct	2.14	1.90	3.00	1971	1	7.60	1971	.21	1992	8.8	5.1	1.2	.3	.33	.52	.83	1.12	1.43	1.76	2.14	2.61	3.23	4.25	5.22
Nov	1.11	.93	1.30	1977	9	3.73	2000	.03	1976	6.6	3.3	.5	@	.14	.23	.39	.55	.71	.89	1.10	1.35	1.70	2.27	2.82
Dec	.58	.56	1.30	1933	15	1.73	1983	.00	1979	5.9	2.2	.1	.0	.05	.12	.21	.30	.39	.48	.58	.71	.88	1.16	1.43
Ann	22.34	22.15	5.05	Aug 2001	1	9.07	Sep 1991	.00+	Apr 1988	94.6	52.4	12.7	3.6	16.67	17.79	19.20	20.27	21.22	22.12	23.06	24.09	25.33	27.12	28.66

+ 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: 1932-2001

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

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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	8.7	7.8	14	12	8.0	1987	31	22.0	1975	31	1975	31	30	1979	4.9	4.0	.9	.2	.0	-9.9	-9.9	-9.9	-9.9
Feb	8.0	9.0	14	14	7.0	1977	24	15.0	1992	29	1996	29	29	1996	3.5	2.5	.8	.2	.0	-9.9	-9.9	-9.9	-9.9
Mar	4.1	3.5	8	6	6.5	1994	17	10.0	1979	31	1972	11	24	1997	2.6	2.0	.7	.1	.0	-9.9	-9.9	-9.9	-9.9
Apr	2.3	1.5	1	#	8.0	1996	25	9.5	1972	19	1996	5	12	1996	1.1	.9	.4	.2	.0	.8	.2	.1	.0
May	#	.0	#	0	#	1997	14	#+	1997	#+	1997	14	#+	1997	.0	.0	.0	.0	.0	.0	.0	.0	.0
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	2.0	1995	22	2.0	1995	2	1984	25	#+	1995	@	@	.0	.0	.0	.0	.0	.0	.0
Oct	1.0	.0	#	0	4.0	1996	18	5.0	2000	3	1993	30	#+	2000	.6	.5	.1	.0	.0	.1	.1	.0	.0
Nov	5.8	5.0	2	1	12.0	1977	21	14.2	1983	14	1985	30	9	1995	4.5	3.6	1.0	.3	@	-9.9	-9.9	-9.9	-9.9
Dec	8.3	7.3	7	5	8.0	1996	12	14.0	1990	26	1996	23	24	1978	5.2	3.4	1.0	.2	.0	-9.9	-9.9	-9.9	-9.9
Ann	38.3	34.1	N/A	N/A	12.0	Nov 1977	21	22.0	Jan 1975	31+	Jan 1975	31	30	Jan 1979	22.4	16.9	4.9	1.2	@	-9.9	-9.9	-9.9	-9.9

+ 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	6/16	6/11	6/07	6/03	5/31	5/28	5/25	5/21	5/16
32	5/28	5/24	5/21	5/18	5/16	5/13	5/11	5/08	5/04
28	5/17	5/13	5/09	5/06	5/04	5/01	4/28	4/25	4/20
24	5/07	5/03	4/29	4/26	4/23	4/20	4/17	4/14	4/09
20	4/23	4/20	4/17	4/14	4/12	4/10	4/07	4/04	3/31
16	4/18	4/14	4/11	4/09	4/06	4/04	4/01	3/29	3/25
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	8/27	9/01	9/04	9/07	9/10	9/12	9/15	9/19	9/23
32	9/10	9/14	9/17	9/19	9/21	9/24	9/26	9/29	10/03
28	9/15	9/21	9/25	9/29	10/02	10/05	10/09	10/13	10/19
24	9/29	10/05	10/08	10/12	10/15	10/18	10/21	10/25	10/30
20	10/11	10/17	10/21	10/25	10/28	10/31	11/04	11/08	11/14
16	10/20	10/25	10/29	11/01	11/04	11/06	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	125	116	110	105	101	96	91	85	77
32	145	139	135	131	128	124	121	116	110
28	172	164	159	155	151	146	142	137	129
24	199	191	184	179	174	169	163	157	148
20	221	213	208	203	198	194	189	184	176
16	232	225	219	215	211	207	202	197	190

* 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	1898	1489	1256	721	333	110	42	79	283	645	1171	1704	9731
60	1743	1349	1101	576	221	44	10	27	161	490	1021	1549	8292
57	1650	1265	1008	492	166	22	2	12	103	400	931	1456	7507
55	1588	1209	946	438	134	13	0	6	73	343	871	1394	7015
50	1433	1069	793	314	71	3	0	0	23	216	723	1239	5884
32	888	598	318	46	1	0	0	0	0	12	268	708	2839

Cooling Degree Days (1)

Base	Cooling Degree Days (1)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Above													
32	13	32	85	316	723	949	1118	1058	717	391	87	27	5516
55	0	0	0	18	143	271	405	351	100	8	0	0	1296
57	0	0	0	12	113	220	346	295	70	4	0	0	1060
60	0	0	0	6	75	153	260	217	38	1	0	0	750
65	0	0	0	1	32	69	137	114	10	0	0	0	363
70	0	0	0	0	11	20	56	46	2	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	9	142	487	713	869	811	483	192	15	0	0	0	9	151	638	1351	2220	3031	3514	3706	3721	3721
45	0	0	0	73	347	563	714	656	340	101	7	0	0	0	0	73	420	983	1697	2353	2693	2794	2801	2801
50	0	0	0	31	219	414	559	501	213	42	0	0	0	0	0	31	250	664	1223	1724	1937	1979	1979	1979
55	0	0	0	13	127	271	404	350	112	13	0	0	0	0	0	13	140	411	815	1165	1277	1290	1290	1290
60	0	0	0	0	60	148	256	209	50	2	0	0	0	0	0	0	60	208	464	673	723	725	725	725
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	5	109	311	442	559	514	296	119	9	0	0	0	5	114	425	867	1426	1940	2236	2355	2364	2364

(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