

Climatography of the United States

No. 20

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

Station: VALLEY CITY 3 NNW, ND

1971-2000

COOP ID: 328937

Climate Division: ND 6

NWS Call Sign:

Elevation: 1,210 Feet Lat: 46° 57N

Lon: 98° 01W

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	16.3	-4.9	5.7	52	1990	27	22.2	1990	-42+	1994	16	-9.2	1982	1840	0	.0	.0	.1	25.8	31.0	19.3
Feb	23.5	2.3	12.9	64+	1958	26	26.4	1987	-44	1994	10	-3.7	1979	1459	0	.0	.0	.5	19.1	28.1	13.1
Mar	35.4	15.6	25.5	76	1963	28	34.4	2000	-32	1980	1	16.1	1996	1225	0	.0	.0	3.9	11.3	29.2	5.1
Apr	53.2	28.8	41.0	96	1980	22	48.3	1987	-13+	1975	4	31.0	1975	720	1	.0	.2	18.3	1.7	20.3	.3
May	68.1	42.1	55.1	99	1964	21	64.0	1977	15	1967	2	47.7	1979	330	23	.0	.5	29.1	.0	5.3	.0
Jun	75.8	51.7	63.8	100+	1995	18	71.1	1988	30	1969	20	57.3	1982	114	77	@	1.6	30.0	.0	.0	.0
Jul	80.8	56.2	68.5	104	1988	7	73.0	1989	34+	1967	4	62.4	1992	35	143	.2	3.5	31.0	.0	.0	.0
Aug	79.9	53.3	66.6	102+	1982	3	71.5	1983	28	1964	13	59.4	1977	74	123	.2	3.7	31.0	.0	.0	.0
Sep	69.5	42.6	56.1	102	1983	3	62.4	1998	11	1965	26	51.5	1984	285	16	.1	1.1	29.2	.0	4.1	.0
Oct	56.5	30.9	43.7	93	1992	2	49.4	1973	3+	1991	31	36.4	1976	661	0	.0	@	22.1	.5	18.0	.0
Nov	35.6	16.3	26.0	75+	1999	1	36.6	1999	-31	1964	30	13.5	1985	1172	0	.0	.0	4.8	12.6	28.4	2.9
Dec	21.6	2.2	11.9	61	1969	1	24.0	1997	-37+	1990	27	-2.2	1983	1646	0	.0	.0	.3	23.3	31.0	13.5
Ann	51.4	28.1	39.7	104	Jul 1988	7	73.0	Jul 1989	-44	Feb 1994	10	-9.2	Jan 1982	9561	383	.5	10.6	200.3	94.3	195.4	54.2

+ 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: 1948-2001

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

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NWS Call Sign:

Elevation: 1,210 Feet Lat: 46°57N

Lon: 98°01W

Precipitation (inches)

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	.54	.52	.67	1988	31	1.37	1988	.04	1990	6.2	1.8	@	.0	.06	.11	.18	.26	.34	.43	.53	.66	.83	1.12	1.40
Feb	.46	.38	.95	2000	26	1.51	1998	.05	1973	5.3	1.8	.1	.0	.06	.10	.16	.23	.30	.37	.46	.57	.71	.96	1.19
Mar	.80	.73	1.43	1966	3	1.94	1977	.00	1986	6.0	2.6	.3	.0	.08	.17	.30	.42	.54	.66	.81	.98	1.21	1.59	1.94
Apr	1.22	.88	1.40	1997	6	5.60	1986	.06	1980	6.2	3.1	.6	.1	.10	.19	.35	.52	.70	.92	1.17	1.49	1.93	2.67	3.39
May	2.60	2.54	1.64	1987	21	4.64	1991	.60	1976	8.8	5.6	1.9	.5	.76	1.01	1.38	1.70	2.01	2.34	2.70	3.12	3.67	4.53	5.33
Jun	3.27	2.90	2.98	1959	27	6.98	1993	.52	1973	9.4	6.8	2.0	.6	.93	1.24	1.71	2.12	2.51	2.93	3.39	3.93	4.63	5.74	6.76
Jul	2.75	2.23	5.46	1993	16	8.77	1993	.31	1976	8.4	5.6	1.6	.6	.59	.85	1.25	1.62	1.98	2.38	2.82	3.34	4.04	5.15	6.20
Aug	2.43	2.25	3.80	1964	21	6.30	1980	.36	1984	7.3	4.8	1.7	.6	.60	.82	1.18	1.49	1.80	2.13	2.50	2.94	3.51	4.42	5.27
Sep	2.10	1.67	3.88	1992	2	5.06	1996	.17	1976	6.7	4.4	1.2	.4	.25	.41	.71	1.00	1.31	1.66	2.06	2.56	3.24	4.36	5.45
Oct	1.53	1.10	1.60	1971	2	5.43	1982	.12	1989	5.7	3.4	1.0	.4	.09	.17	.36	.57	.80	1.08	1.41	1.84	2.45	3.48	4.51
Nov	.80	.71	1.55	1952	18	2.18	2000	.00+	1999	5.8	2.5	.3	.1	.00	.14	.30	.43	.55	.68	.83	1.00	1.22	1.58	1.93
Dec	.39	.29	1.00	1963	7	.89	1993	.09+	1999	5.2	1.4	.1	.0	.08	.12	.18	.23	.28	.34	.40	.48	.58	.74	.90
Ann	18.89	17.79	5.46	Jul 1993	16	8.77	Jul 1993	.00+	Nov 1999	81.0	43.8	10.8	3.3	13.01	14.14	15.58	16.69	17.67	18.62	19.61	20.70	22.03	23.97	25.65

+ 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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Station: VALLEY CITY 3 NNW, ND

COOP ID: 328937

Climate Division: ND 6

NWS Call Sign:

Elevation: 1,210 Feet

Lat: 46°57N

Lon: 98°01W

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	7.2	7.5	6	6	8.5	1989	7	18.0	1971	20	1982	25	15	1982	5.7	3.4	1.0	.2	.0	-9.9	-9.9	-9.9	-9.9
Feb	6.1	5.4	7	6	5.5	1979	23	18.9	1979	28	1979	25	19	1979	4.7	2.3	.6	.1	.0	-9.9	-9.9	-9.9	-9.9
Mar	5.8	5.4	3	1	9.0	1996	24	18.0	1975	25	1979	9	22	1979	3.9	2.5	.5	.2	.0	14.1	9.3	7.3	2.1
Apr	2.2	.5	#	0	12.0	1986	15	14.5	1986	14	1975	1	5	1975	1.2	.8	.2	.2	@	2.0	1.4	1.3	.4
May	.1	.0	0	0	1.5	1979	5	2.5	1979	0	0	0	0	0	.1	.1	.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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.4	.0	#	0	2.0	1990	18	2.0	1990	5	1971	31	#+	1996	.2	.2	.0	.0	.0	.1	.0	.0	.0
Nov	5.2	4.1	1	#	9.0	1985	26	18.8	1985	18	1985	26	4	1986	3.9	2.5	.6	.2	.0	7.0	5.0	2.5	.8
Dec	5.5	4.7	3	1	11.5	1988	27	14.5	1988	18	1985	4	13	1977	4.5	2.5	.3	.1	@	20.0	8.6	5.3	1.9
Ann	32.5	27.6	N/A	N/A	12.0	Apr 1986	15	18.9	Feb 1979	28	Feb 1979	25	22	Mar 1979	24.2	14.3	3.2	1.0	@	-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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Climate Division: ND 6

NWS Call Sign:

Elevation: 1,210 Feet

Lat: 46° 57N

Lon: 98° 01W

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	6/05	6/01	5/28	5/26	5/23	5/21	5/18	5/15	5/11
32	5/24	5/19	5/17	5/14	5/12	5/09	5/07	5/04	4/30
28	5/17	5/13	5/10	5/08	5/05	5/03	5/01	4/28	4/24
24	5/10	5/04	5/01	4/28	4/25	4/22	4/19	4/15	4/10
20	4/27	4/22	4/19	4/16	4/13	4/10	4/07	4/04	3/30
16	4/18	4/13	4/09	4/06	4/04	4/01	3/29	3/25	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	9/01	9/05	9/08	9/10	9/12	9/15	9/17	9/20	9/24
32	9/10	9/14	9/17	9/19	9/21	9/23	9/26	9/28	10/02
28	9/17	9/22	9/25	9/27	9/30	10/02	10/05	10/08	10/12
24	9/23	9/28	10/02	10/06	10/09	10/12	10/15	10/19	10/25
20	10/05	10/11	10/14	10/18	10/21	10/24	10/27	10/31	11/05
16	10/13	10/19	10/23	10/26	10/30	11/02	11/06	11/10	11/16
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	131	124	119	115	111	107	103	98	92
32	150	144	139	135	132	128	124	120	113
28	164	158	154	150	147	144	140	136	130
24	191	182	176	171	166	162	157	151	142
20	212	204	199	194	190	185	181	175	168
16	233	224	218	213	208	204	199	193	184

* 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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NWS Call Sign:

Elevation: 1,210 Feet Lat: 46° 57N

Lon: 98° 01W

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	1840	1459	1225	720	330	114	35	74	285	661	1172	1646	9561
60	1685	1319	1070	574	213	48	7	25	169	506	1022	1491	8129
57	1592	1235	977	490	156	24	1	11	113	415	932	1398	7344
55	1530	1179	915	436	123	15	0	6	82	355	872	1336	6849
50	1375	1039	762	312	61	3	0	1	30	222	724	1181	5710
32	844	578	295	45	0	0	0	0	0	11	273	655	2701

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	27	43	93	315	716	953	1131	1072	722	374	91	32	5569
55	0	0	0	17	126	277	418	365	114	5	0	0	1322
57	0	0	0	11	97	227	357	309	84	2	0	0	1087
60	0	0	0	5	61	161	271	229	50	0	0	0	777
65	0	0	0	1	23	77	143	123	16	0	0	0	383
70	0	0	0	0	6	25	59	51	4	0	0	0	145

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	1	10	140	477	716	887	833	493	182	15	0	0	1	11	151	628	1344	2231	3064	3557	3739	3754	3754
45	0	0	1	74	336	566	732	678	351	96	3	0	0	0	1	75	411	977	1709	2387	2738	2834	2837	2837
50	0	0	0	37	213	418	577	523	226	44	0	0	0	0	0	37	250	668	1245	1768	1994	2038	2038	2038
55	0	0	0	15	116	277	423	369	130	13	0	0	0	0	0	15	131	408	831	1200	1330	1343	1343	1343
60	0	0	0	5	56	159	272	226	63	2	0	0	0	0	0	5	61	220	492	718	781	783	783	783
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	11	116	308	444	572	529	311	143	17	0	0	0	11	127	435	879	1451	1980	2291	2434	2451	2451

(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