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: CRESCENT LAKE NAT WLR, NE **COOP ID: 252000**

Climate Division: NE 1 **NWS Call Sign:** **Elevation: 3,820 Feet** **Lat: 41˚46N** **Lon: 102˚26W**

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	38.5	13.2	25.9	74	1982	27	34.4	1990	-33	1963	19	8.9	1979	1214	0	.0	.0	6.3	9.7	30.5	7.0
Feb	44.4	18.6	31.5	80	1962	11	39.1	1991	-29	1962	28	18.6	1978	939	0	.0	.0	10.9	6.7	26.9	3.9
Mar	52.0	26.4	39.2	85	1978	30	45.8	1986	-27	1960	3	33.2	1998	800	0	.0	.0	17.3	3.3	26.0	.8
Apr	61.7	35.1	48.4	91+	1989	23	55.6	1981	-14	1975	2	42.5	1983	499	0	.0	.1	24.0	.7	15.1	@
May	71.0	45.7	58.4	93	2000	29	64.1	1994	15	1954	2	51.9	1995	231	24	.0	.2	29.9	.0	2.6	.0
Jun	81.1	54.5	67.8	102+	2001	30	74.0	1988	27	1969	2	63.0	1982	52	136	.1	3.9	29.9	.0	.1	.0
Jul	87.8	60.3	74.1	105	1954	11	77.6	1974	38+	1971	30	68.8	1992	3	282	1.2	12.9	31.0	.0	.0	.0
Aug	86.3	58.5	72.4	103	1959	11	78.5	1983	36+	1993	31	68.0	1992	13	241	.1	10.3	31.0	.0	.0	.0
Sep	77.9	47.8	62.9	99+	1998	4	70.3	1998	11+	1984	29	57.4	1993	132	67	.0	3.4	29.4	@	2.7	.0
Oct	66.1	35.9	51.0	92	1989	1	55.6	1974	-8	1991	31	47.2	1976	434	0	.0	.1	26.7	.3	14.7	@
Nov	49.6	24.5	37.1	82	1999	8	47.5	1999	-15	1993	25	25.8	1985	840	0	.0	.0	14.7	4.5	26.5	1.1
Dec	41.1	15.6	28.4	75	1980	27	36.2	1999	-37	1990	22	12.1	1983	1137	0	.0	.0	8.3	8.2	30.5	4.8
Ann	63.1	36.3	49.8	105	Jul 1954	11	78.5	Aug 1983	-37	Dec 1990	22	8.9	Jan 1979	6294	750	1.4	30.9	259.4	33.4	175.6	17.6

\+ 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: 1948-2001

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

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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	.31	.29	.90	1952	23	.76	1994	.00+	1989
Feb	.37	.23	.66	1987	27	1.42	1987	.00+	1996
Mar	.97	.67	1.54	2000	8	2.38	1973	.00	1985
Apr	1.76	1.55	2.04	2000	30	4.18	1999	.39	1989
May	3.21	2.77	2.75	1951	30	8.06	1987	1.24	1992
Jun	2.80	2.62	2.53	1977	7	6.02	1991	.52	1989
Jul	2.26	2.22	3.05	1965	18	5.00	1979	.21	1989
Aug	1.80	1.40	2.33	2000	3	4.13	1993	.42	1984
Sep	1.71	1.57	2.85	1973	11	7.44	1973	.25	1981
Oct	1.06	.89	1.68	1953	21	3.46	1998	.00	1999
Nov	.62	.52	1.12	1982	11	1.48	1983	.00	1997
Dec	.30	.24	.65	1978	2	1.17	1978	.01	1995
Ann	17.17	17.07	3.05	Jul 1965	18	8.06	May 1987	.00+	Oct 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.4	1.0	.0	.0
Feb	3.6	1.2	.1	.0
Mar	5.7	2.8	.4	.2
Apr	7.7	4.2	1.0	.3
May	11.1	6.4	2.2	.6
Jun	9.6	5.9	1.9	.5
Jul	8.8	4.9	1.5	.4
Aug	7.4	3.9	1.1	.3
Sep	6.3	3.4	1.0	.3
Oct	5.1	2.7	.7	.1
Nov	3.7	1.8	.3	@
Dec	3.5	1.0	@	.0
Ann	75.9	39.2	10.2	2.7

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	.00	.04	.10	.15	.20	.25	.31	.39	.49	.65	.81
Feb	.00	.01	.06	.11	.17	.24	.33	.45	.62	.90	1.19
Mar	.07	.17	.32	.47	.62	.78	.97	1.20	1.51	2.02	2.50
Apr	.45	.61	.87	1.10	1.32	1.56	1.82	2.13	2.54	3.18	3.79
May	1.21	1.51	1.94	2.29	2.63	2.98	3.36	3.80	4.35	5.21	6.00
Jun	.93	1.19	1.58	1.91	2.23	2.56	2.92	3.34	3.88	4.72	5.50
Jul	.45	.65	.99	1.29	1.60	1.93	2.30	2.75	3.35	4.31	5.21
Aug	.39	.56	.82	1.06	1.30	1.55	1.84	2.18	2.63	3.35	4.04
Sep	.17	.29	.53	.77	1.02	1.31	1.66	2.08	2.67	3.64	4.59
Oct	.07	.18	.35	.50	.67	.85	1.05	1.31	1.65	2.22	2.76
Nov	.03	.08	.17	.27	.36	.48	.61	.77	.99	1.36	1.72
Dec	.04	.06	.10	.14	.19	.24	.30	.37	.46	.62	.78
Ann	12.18	13.15	14.39	15.33	16.17	16.97	17.81	18.73	19.85	21.48	22.88

\+ 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	5.1	3.8	1	1	8.0	1988	19	13.5	1976	13	1979	31	12	1979	3.8	2.0	.6	.2	.0	9.4	5.1	2.3	.0
Feb	4.2	2.7	1	#	10.0	1992	17	14.7	1978	13	1979	2	7	1979	3.2	1.8	.4	.2	@	5.7	2.8	1.6	.1
Mar	7.7	6.0	1	#	18.0	1975	27	25.5	1975	12	1980	29	3	1990	3.6	2.5	.9	.3	.1	4.5	2.2	1.1	.2
Apr	3.4	2.0	#	#	14.0	1975	1	14.0	1975	14	1980	3	3	1980	1.4	1.0	.3	.2	@	1.4	.6	.3	.2
May	.4	.0	#	0	5.0	1979	9	8.0	1979	2	1979	9	#+	1990	.2	.1	.1	@	.0	.1	.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	.6	.0	#	0	8.0	2000	25	8.0	2000	4	1985	29	#+	1995	.2	.2	.1	@	.0	.1	@	.0	.0
Oct	2.0	.2	#	0	12.0	1973	11	12.0	1973	6	1991	31	1	1991	.8	.6	.2	.1	@	.4	.2	.1	.0
Nov	5.5	3.0	1	#	10.0	1972	1	20.0	1972	13	1979	29	10	1972	2.3	1.8	.7	.2	.1	3.4	1.8	1.1	.4
Dec	4.2	3.3	1	#	10.0	1978	2	16.7	1978	14	1978	2	10	1978	3.4	1.6	.4	.1	@	7.2	3.9	1.9	.2
Ann	33.1	21.0	N/A	N/A	18.0	Mar 1975	27	25.5	Mar 1975	14+	Apr 1980	3	12	Jan 1979	18.9	11.6	3.7	1.3	.2	32.2	16.6	8.4	1.1

+ 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	6/11	6/05	6/01	5/28	5/24	5/21	5/17	5/12	5/06
32	5/25	5/20	5/17	5/14	5/11	5/08	5/05	5/02	4/27
28	5/13	5/09	5/06	5/03	5/01	4/29	4/26	4/23	4/19
24	5/04	4/30	4/26	4/23	4/21	4/18	4/15	4/12	4/07
20	4/23	4/18	4/14	4/11	4/08	4/06	4/03	3/30	3/25
16	4/15	4/09	4/05	4/02	3/30	3/26	3/23	3/19	3/13

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

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	137	129	123	118	113	108	103	97	89
32	156	149	144	139	135	130	126	120	113
28	176	167	161	156	152	147	142	136	128
24	196	188	183	178	174	169	164	159	151
20	215	207	202	197	192	187	182	176	168
16	244	234	227	221	215	209	203	196	186

***** 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	1214	939	800	499	231	52	3	13	132	434	840	1137	6294
60	1059	799	645	354	124	15	0	2	57	283	690	982	5010
57	966	718	552	272	76	6	0	0	29	201	607	890	4317
55	904	667	491	222	52	3	0	0	17	153	550	832	3891
50	753	536	348	118	15	0	0	0	3	64	413	688	2938
32	287	175	38	0	0	0	0	0	0	0	92	257	849

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	96	160	261	491	816	1074	1303	1252	926	590	242	143	7354
55	0	7	2	23	155	387	590	539	252	29	10	5	1999
57	0	3	0	13	117	330	528	477	204	15	7	1	1695
60	0	0	0	5	72	249	435	386	142	5	0	0	1294
65	0	0	0	0	24	136	282	241	67	0	0	0	750
70	0	0	0	0	5	58	147	123	24	0	0	0	357

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	9	35	100	252	526	792	1014	961	637	317	73	17	9	44	144	396	922	1714	2728	3689	4326	4643	4716	4733
45	0	10	46	150	378	642	859	806	493	196	30	2	0	10	56	206	584	1226	2085	2891	3384	3580	3610	3612
50	0	1	15	79	245	492	704	651	353	100	7	0	0	1	16	95	340	832	1536	2187	2540	2640	2647	2647
55	0	0	1	31	134	351	549	496	233	40	0	0	0	0	1	32	166	517	1066	1562	1795	1835	1835	1835
60	0	0	0	10	60	218	396	344	133	9	0	0	0	0	0	10	70	288	684	1028	1161	1170	1170	1170
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	20	48	104	192	334	502	650	621	419	252	83	35	20	68	172	364	698	1200	1850	2471	2890	3142	3225	3260

(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

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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