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: COLUMBUS 3 NE, NE **COOP ID: 251825**

Climate Division: NE 6 **NWS Call Sign:** **Elevation: 1,450 Feet** **Lat: 41˚28N** **Lon: 97˚20W**

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	31.5	11.9	21.7	69+	1990	10	32.4	1992	-26	1963	27	7.7	1979	1342	0	.0	.0	2.7	15.8	30.7	6.8
Feb	37.8	17.7	27.8	76	1995	25	36.4	1976	-20+	1996	2	13.5	1979	1044	0	.0	.0	6.1	10.9	26.0	3.7
Mar	49.7	27.8	38.8	91	1986	28	44.0	1985	-11	1978	4	31.0	1998	814	0	.0	.1	14.6	4.0	21.2	.4
Apr	62.8	39.2	51.0	96	1989	26	59.9	1981	4	1975	3	43.7	1983	428	8	.0	.7	24.7	.2	7.2	.0
May	73.7	51.0	62.4	102	1967	24	69.1	1977	26	1967	2	56.7	1995	155	73	.0	1.1	30.8	.0	.5	.0
Jun	84.1	60.8	72.5	108	1988	21	78.1	1988	38	1951	4	66.5	1982	19	243	.7	8.2	30.0	.0	.0	.0
Jul	87.9	65.4	76.7	110	1995	12	81.2+	1980	41	1971	30	69.8	1992	2	363	1.8	13.2	31.0	.0	.0	.0
Aug	85.3	63.5	74.4	105+	1983	16	81.3	1983	37	1950	20	68.3	1974	13	304	.6	9.1	31.0	.0	.0	.0
Sep	77.3	53.3	65.3	102	1955	8	71.3	1998	24	1984	29	59.0	1974	100	109	.0	3.9	29.7	.0	.4	.0
Oct	64.2	40.9	52.6	93+	1990	5	56.1	1975	14	1993	31	47.7	1972	390	2	.0	.2	27.5	.2	5.5	.0
Nov	45.7	26.7	36.2	79	1960	25	45.9	1999	-14	1964	30	27.1	1985	865	0	.0	.0	11.8	4.4	22.3	.4
Dec	34.1	16.0	25.1	68+	1980	17	32.1	1979	-24+	1989	22	6.7	1983	1239	0	.0	.0	3.4	13.5	30.0	3.8
Ann	61.2	39.5	50.4	110	Jul 1995	12	81.3	Aug 1983	-26	Jan 1963	27	6.7	Dec 1983	6411	1102	3.1	36.5	243.3	49.0	143.8	15.1

\+ 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

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Issue Date: February 2004

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Precipitation (inches)

Precipitation Totals

Means/Medians(1)

Month	Mean	Median
Jan	.53	.47
Feb	.73	.62
Mar	1.99	1.82
Apr	2.83	2.54
May	4.42	3.98
Jun	4.21	3.94
Jul	3.61	3.35
Aug	3.20	2.16
Sep	2.66	1.90
Oct	2.01	1.85
Nov	1.56	1.44
Dec	.74	.61
Ann	28.49	28.14

Extremes

Month	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	1.25	1949	3	1.37	1973	.00	1986
Feb	1.59	1971	18	3.00	1971	.09	1974
Mar	1.95	1987	17	7.56	1987	.00	1994
Apr	2.87	1991	12	7.51	1978	.32	1990
May	3.66	1951	30	8.87	1996	1.21	1994
Jun	3.73	1963	24	9.83	1990	.62	1972
Jul	3.53	1996	16	10.78	1993	.73	1974
Aug	5.97	1981	5	11.48	1981	.79	1971
Sep	4.19	1972	11	9.24	1972	.19	1980
Oct	3.29	1968	16	5.35	1984	.06	1975
Nov	1.89	1996	16	4.85	1983	.00	1976
Dec	1.25	1972	30	2.14	1982	.18	1980
Ann	5.97	Aug 1981	5	11.48	Aug 1981	.00+	Mar 1994

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.3	1.6	.2	.0
Feb	4.9	2.1	.2	.1
Mar	6.9	4.3	1.2	.4
Apr	8.4	5.6	1.8	.6
May	11.1	7.7	3.1	1.4
Jun	9.6	6.5	3.0	1.1
Jul	8.5	5.8	2.7	.9
Aug	7.9	4.9	2.0	.8
Sep	7.2	4.4	1.5	.7
Oct	6.0	4.1	1.3	.4
Nov	5.4	3.1	.9	.4
Dec	5.2	2.1	.2	.1
Ann	85.4	52.2	18.1	6.9

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	.04	.09	.18	.26	.34	.43	.53	.66	.83	1.10	1.37
Feb	.10	.16	.26	.36	.47	.59	.72	.89	1.11	1.48	1.83
Mar	.06	.21	.48	.77	1.09	1.45	1.88	2.43	3.19	4.47	5.74
Apr	.41	.65	1.06	1.45	1.86	2.31	2.82	3.46	4.31	5.69	7.02
May	1.58	2.00	2.60	3.10	3.58	4.08	4.62	5.24	6.05	7.28	8.42
Jun	.93	1.32	1.94	2.50	3.05	3.64	4.31	5.11	6.15	7.82	9.40
Jul	.87	1.21	1.74	2.21	2.67	3.17	3.72	4.38	5.24	6.60	7.89
Aug	.45	.71	1.17	1.62	2.08	2.59	3.18	3.91	4.89	6.48	8.02
Sep	.27	.47	.84	1.21	1.61	2.06	2.59	3.25	4.15	5.65	7.11
Oct	.17	.31	.58	.86	1.16	1.51	1.92	2.44	3.16	4.36	5.53
Nov	.05	.17	.39	.62	.87	1.15	1.49	1.91	2.49	3.47	4.44
Dec	.17	.24	.35	.44	.54	.65	.76	.90	1.09	1.38	1.65
Ann	18.45	20.32	22.76	24.64	26.32	27.96	29.67	31.57	33.90	37.31	40.28

\+ 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
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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	4.3	3.2	3	2
Feb	5.5	5.5	3	1
Mar	3.7	2.0	1	1
Apr	1.2	.0	#	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	0	0
Oct	.8	.0	#	0
Nov	3.4	2.5	#	#
Dec	5.0	4.5	2	1
Ann	23.9	17.7	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	6.0	1993	20	9.5+	1975	23	1984	2	13	1984
Feb	12.0	1984	18	14.0	1984	15	1979	21	14	1979
Mar	8.0	1987	28	10.5	1991	12	1979	4	4	1979
Apr	5.0	1977	3	7.0	1997	6	1997	11	#+	1999
May	.0	0	0	.0	0	0	0	0	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	#	1985	29	#	1985	0	0	0	0	0
Oct	9.3	1991	31	10.8	1991	11	1991	31	#+	1997
Nov	15.0	1983	27	20.5	1983	17	1983	30	4	1991
Dec	6.0	1983	20	13.0	1981	24	1983	31	19	1983
Ann	15.0	Nov 1983	27	20.5	Nov 1983	24	Dec 1983	31	19	Dec 1983

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.2	1.7	.5	.1	.0
Feb	2.9	2.3	.4	.2	@
Mar	1.8	1.5	.6	.3	.0
Apr	.7	.6	.1	.1	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.3	.3	.1	@	.0
Nov	1.9	1.4	.4	.1	@
Dec	3.2	2.0	.8	.1	.0
Ann	14.0	9.8	2.9	.9	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	14.6	8.3	4.4	1.6
Feb	11.5	7.7	5.2	2.6
Mar	4.8	2.4	1.4	.4
Apr	.6	.2	@	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.2	@	@	@
Nov	3.0	1.2	.5	.3
Dec	12.1	6.2	4.0	1.2
Ann	46.8	26.0	15.5	6.1

+ 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	5/16	5/12	5/08	5/05	5/02	4/30	4/27	4/23	4/18
32	5/10	5/05	5/01	4/28	4/25	4/22	4/19	4/15	4/10
28	4/23	4/19	4/15	4/13	4/10	4/08	4/05	4/02	3/28
24	4/13	4/09	4/06	4/04	4/01	3/30	3/28	3/25	3/21
20	4/06	4/01	3/28	3/25	3/22	3/19	3/15	3/12	3/06
16	3/30	3/24	3/20	3/17	3/14	3/10	3/07	3/03	2/25

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	9/14	9/19	9/22	9/25	9/28	9/30	10/03	10/06	10/11
32	9/22	9/27	10/01	10/04	10/07	10/10	10/13	10/17	10/22
28	10/03	10/08	10/12	10/15	10/18	10/21	10/24	10/28	11/02
24	10/11	10/17	10/22	10/26	10/30	11/03	11/07	11/11	11/18
20	10/22	10/29	11/02	11/06	11/09	11/13	11/17	11/21	11/27
16	10/29	11/05	11/10	11/14	11/18	11/21	11/26	11/30	12/07

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	167	160	155	151	147	144	140	135	128
32	187	179	174	169	165	160	155	150	142
28	211	204	199	194	190	186	182	177	169
24	231	224	219	215	211	207	202	197	191
20	256	248	242	237	232	227	222	216	208
16	271	263	258	253	248	244	239	233	225

***** 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	1342	1044	814	428	155	19	2	13	100	390	865	1239	6411
60	1187	904	659	296	78	4	0	2	41	247	715	1084	5217
57	1094	822	568	227	46	1	0	0	20	174	625	991	4568
55	1032	771	512	186	31	0	0	0	12	131	569	929	4173
50	880	641	371	102	9	0	0	0	2	56	431	779	3271
32	393	255	59	1	0	0	0	0	0	0	93	310	1111

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	74	135	268	571	941	1214	1384	1314	999	636	219	95	7850
55	0	7	8	65	259	524	671	601	321	54	4	0	2514
57	0	3	2	46	212	465	609	540	269	35	0	0	2181
60	0	0	0	26	151	378	516	449	200	15	0	0	1735
65	0	0	0	8	73	243	363	304	109	2	0	0	1102
70	0	0	0	1	27	133	223	179	50	0	0	0	613

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	1	28	117	351	698	980	1146	1072	765	404	79	6	1	29	146	497	1195	2175	3321	4393	5158	5562	5641	5647
45	0	6	63	229	544	830	991	917	617	274	31	0	0	6	69	298	842	1672	2663	3580	4197	4471	4502	4502
50	0	0	27	139	396	680	836	762	471	164	11	0	0	0	27	166	562	1242	2078	2840	3311	3475	3486	3486
55	0	0	7	72	261	530	681	607	334	85	1	0	0	0	7	79	340	870	1551	2158	2492	2577	2578	2578
60	0	0	1	36	147	386	526	454	215	31	0	0	0	0	1	37	184	570	1096	1550	1765	1796	1796	1796
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	4	28	88	218	425	648	770	724	486	250	54	8	4	32	120	338	763	1411	2181	2905	3391	3641	3695	3703

(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