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: KEARNEY 4 NE, NE **COOP ID: 254335**

Climate Division: NE 5 **NWS Call Sign:** **Elevation: 2,130 Feet** **Lat: 40˚44N** **Lon: 99˚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	33.8	11.0	22.4	77	1990	11	34.0	1986	-22+	1963	28	8.6	1979	1321	0	.0	.0	4.8	12.8	30.7	7.2
Feb	39.6	15.5	27.6	79+	1972	29	37.0	1976	-21+	1981	11	14.9+	1979	1048	0	.0	.0	8.6	9.1	26.8	3.9
Mar	49.3	24.6	37.0	94	1943	30	45.5	1986	-21	1960	3	29.9	1996	869	0	.0	.0	16.3	3.6	24.1	.8
Apr	61.0	35.4	48.2	96	1939	23	56.8	1981	0	1936	2	41.6	1983	506	2	.0	.6	24.7	.3	11.4	.0
May	70.5	47.9	59.2	103	1934	29	64.6	1977	22	1967	2	52.8	1995	217	37	@	.9	30.6	.0	.9	.0
Jun	81.2	58.4	69.8	108	1988	22	75.4	1988	35	1935	6	63.6	1982	40	185	.9	7.1	29.9	.0	.0	.0
Jul	85.7	63.7	74.7	114	1936	24	79.3	1980	42	1990	14	68.4	1992	4	306	1.6	13.5	31.0	.0	.0	.0
Aug	83.7	61.3	72.5	111	1934	8	80.8	1983	40+	1992	27	66.7	1992	21	253	.8	10.1	31.0	.0	.0	.0
Sep	76.3	50.7	63.5	107	1931	6	69.5	1998	19	1984	29	57.8	1993	113	68	.1	4.6	29.7	.0	1.0	.0
Oct	64.8	37.9	51.4	95+	1938	12	55.1	1975	6	1997	27	46.4	1987	423	1	.0	.2	27.9	.2	8.8	.0
Nov	47.2	24.4	35.8	83+	1980	6	44.6	1999	-13+	1976	29	25.5	1985	875	0	.0	.0	14.4	4.1	25.0	.5
Dec	36.6	15.1	25.9	77	1964	24	33.3	1979	-30	1989	23	7.6	1983	1215	0	.0	.0	5.9	10.6	30.6	3.1
Ann	60.8	37.2	49.0	114	Jul 1936	24	80.8	Aug 1983	-30	Dec 1989	23	7.6	Dec 1983	6652	852	3.4	37.0	254.8	40.7	159.3	15.5

\+ 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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1931-2001

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

Issue Date: February 2004

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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	.54	.52	1.40	1996	18	1.64	1996	.00+	1986
Feb	.61	.43	1.45	1971	19	2.20	1971	.00	1996
Mar	2.05	1.71	3.20	1987	17	6.63	1987	.02	1994
Apr	2.43	1.97	3.50	1943	11	7.58	1984	.05	1989
May	4.12	3.89	3.67	1952	27	8.20	1996	.87	1992
Jun	3.72	3.22	5.95	1989	25	9.28	1975	.57	1978
Jul	3.43	2.98	4.14	1943	3	9.94	1993	.13	1997
Aug	2.90	2.74	4.07	1972	1	6.67	1999	.47	1976
Sep	2.03	1.47	3.04	1942	3	8.10	1973	.06	1984
Oct	1.54	1.40	2.22	1969	5	4.75	1984	.01	1988
Nov	1.22	1.18	1.40+	1996	16	3.09	1975	.00+	1989
Dec	.61	.44	2.53	1933	2	1.74	1972	.00	1976
Ann	25.20	24.05	5.95	Jun 1989	25	9.94	Jul 1993	.00+	Feb 1996

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.8	1.6	.2	@
Feb	3.5	1.5	.3	@
Mar	6.8	4.3	1.2	.4
Apr	7.9	4.7	1.6	.5
May	11.4	7.6	3.2	.9
Jun	9.0	6.0	2.3	1.1
Jul	8.9	5.9	2.4	1.0
Aug	8.3	4.9	2.0	.8
Sep	6.5	3.7	1.1	.5
Oct	5.5	2.8	1.1	.3
Nov	5.5	3.1	.7	.2
Dec	3.6	1.8	.2	.0
Ann	80.7	47.9	16.3	5.7

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	.07	.17	.25	.34	.43	.54	.67	.85	1.14	1.42
Feb	.02	.07	.16	.24	.34	.45	.59	.75	.98	1.37	1.75
Mar	.12	.24	.49	.76	1.08	1.45	1.90	2.47	3.28	4.65	6.01
Apr	.28	.47	.81	1.15	1.51	1.91	2.38	2.96	3.75	5.05	6.32
May	1.46	1.84	2.41	2.88	3.33	3.79	4.30	4.89	5.64	6.80	7.87
Jun	.85	1.20	1.74	2.23	2.72	3.24	3.82	4.51	5.42	6.87	8.23
Jul	.58	.87	1.37	1.85	2.33	2.86	3.46	4.19	5.16	6.75	8.26
Aug	.66	.93	1.36	1.74	2.12	2.52	2.97	3.51	4.22	5.35	6.41
Sep	.17	.30	.57	.85	1.16	1.51	1.93	2.46	3.20	4.43	5.64
Oct	.07	.15	.33	.53	.77	1.05	1.40	1.85	2.49	3.58	4.68
Nov	.00	.12	.33	.52	.72	.94	1.20	1.51	1.94	2.65	3.34
Dec	.02	.07	.16	.25	.34	.45	.58	.75	.97	1.35	1.72
Ann	17.06	18.60	20.59	22.11	23.47	24.80	26.17	27.69	29.54	32.24	34.59

\+ 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: 1931-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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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	5.0	4.3	1	0
Feb	3.8	2.5	1	0
Mar	4.2	4.0	#	0
Apr	1.9	.0	#	0
May	.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.2	.0	0	0
Oct	.8	.0	#	0
Nov	4.7	3.0	#	0
Dec	5.7	3.0	1	0
Ann	26.3	16.8	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	7.0	1994	27	13.0	1988	8	1975	3	3+	1975
Feb	9.0	1994	22	18.0	1994	13+	1978	15	6	1978
Mar	10.0	1971	25	12.0	1980	12	1971	25	1+	1998
Apr	5.0	1984	30	13.0	1984	5	1997	12	#	1997
May	.0	0	0	.0	0	0	0	0	#	1999
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	6.0	1985	29	6.0	1985	0	0	0	0	0
Oct	5.5	1997	26	5.5	1997	4+	1997	27	#	1997
Nov	9.1	2000	12	19.5	1975	9+	2000	12	3	2000
Dec	12.0	1974	15	23.0	1972	14	1974	15	4+	1975
Ann	12.0	Dec 1974	15	23.0	Dec 1972	14	Dec 1974	15	6	Feb 1978

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.7	2.0	.6	.3	.0
Feb	1.9	1.6	.6	.3	.0
Mar	2.0	1.6	.6	.3	.1
Apr	.8	.7	.3	.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
Oct	.2	.2	.1	.1	.0
Nov	1.6	1.5	.8	.3	.0
Dec	2.4	2.0	.9	.4	@
Ann	11.6	9.6	3.9	1.8	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	7.7	2.9	1.4	.0
Feb	6.0	3.7	1.9	.5
Mar	3.5	1.7	.8	.1
Apr	.4	.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	.1	.1	.0	.0
Nov	2.1	1.1	.6	.0
Dec	4.4	1.4	.9	.3
Ann	24.2	11.1	5.6	.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

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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	5/25	5/20	5/16	5/13	5/11	5/08	5/05	5/01	4/26
32	5/15	5/10	5/07	5/04	5/01	4/28	4/25	4/21	4/16
28	5/04	4/29	4/26	4/23	4/20	4/17	4/15	4/11	4/07
24	4/22	4/17	4/14	4/11	4/08	4/05	4/02	3/29	3/24
20	4/15	4/10	4/07	4/04	4/01	3/29	3/26	3/23	3/18
16	4/09	4/02	3/28	3/24	3/20	3/16	3/12	3/07	2/28

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	9/18	9/21	9/24	9/26	9/28	10/01	10/03	10/07
32	9/19	9/23	9/27	9/30	10/02	10/05	10/08	10/11	10/16
28	9/29	10/05	10/08	10/12	10/15	10/18	10/21	10/25	10/31
24	10/08	10/13	10/17	10/21	10/24	10/27	10/31	11/04	11/10
20	10/13	10/19	10/24	10/29	11/01	11/05	11/10	11/15	11/21
16	10/22	10/28	11/02	11/06	11/10	11/14	11/18	11/23	11/30

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	157	150	145	141	138	134	130	125	118
32	173	166	162	158	154	150	146	141	134
28	199	191	186	181	177	173	168	163	155
24	220	212	207	203	199	194	190	185	178
20	237	229	223	218	214	209	204	198	190
16	264	254	247	240	235	229	222	215	205

***** 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	1321	1048	869	506	217	40	4	21	113	423	875	1215	6652
60	1166	908	714	365	117	12	0	5	43	276	725	1060	5391
57	1073	829	621	287	74	5	0	1	20	198	635	967	4710
55	1011	777	561	239	52	2	0	0	10	153	579	905	4289
50	860	647	418	139	17	0	0	0	1	70	440	755	3347
32	377	264	73	3	0	0	0	0	0	0	95	289	1101

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	79	140	226	488	843	1135	1324	1255	945	601	209	98	7343
55	0	9	2	34	182	447	611	542	265	40	3	0	2135
57	0	5	0	22	142	389	549	481	214	24	0	0	1826
60	0	0	0	10	92	307	456	392	148	8	0	0	1413
65	0	0	0	2	37	185	306	253	68	1	0	0	852
70	0	0	0	0	10	95	169	141	24	0	0	0	439

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	4	34	114	315	628	917	1096	1026	724	384	84	13	4	38	152	467	1095	2012	3108	4134	4858	5242	5326	5339
45	0	11	59	199	476	767	941	871	576	259	35	0	0	11	70	269	745	1512	2453	3324	3900	4159	4194	4194
50	0	1	25	117	332	617	786	716	432	152	12	0	0	1	26	143	475	1092	1878	2594	3026	3178	3190	3190
55	0	0	6	61	205	470	631	561	302	71	0	0	0	0	6	67	272	742	1373	1934	2236	2307	2307	2307
60	0	0	0	28	108	327	477	407	187	26	0	0	0	0	0	28	136	463	940	1347	1534	1560	1560	1560
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	18	46	103	215	380	595	728	674	464	265	80	21	18	64	167	382	762	1357	2085	2759	3223	3488	3568	3589

(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.
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