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: PAWNEE CITY, NE **COOP ID: 256570**

Climate Division: NE 9 **NWS Call Sign:** **Elevation: 1,210 Feet** **Lat: 40˚07N** **Lon: 96˚09W**

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	34.3	13.3	23.8	73	1981	24	35.2	1992	-29	1915	28	8.1	1979	1276	0	.0	.0	5.5	12.1	28.4	4.5
Feb	41.1	18.5	29.8	84	1972	29	40.6	1976	-28	1905	13	16.3	1989	986	0	.0	.0	9.6	7.8	23.0	2.4
Mar	52.2	28.6	40.4	95	1907	25	46.8	1977	-20	1913	2	32.3	1998	762	0	.0	@	19.1	1.5	17.1	.3
Apr	63.3	40.0	51.7	96+	1989	26	60.7	1981	3	1920	5	45.8	1983	408	7	.0	.6	27.3	@	4.5	.0
May	74.5	52.3	63.4	105+	1934	31	68.9	1977	22	1907	4	58.1	1997	126	76	.0	1.2	31.0	.0	.2	.0
Jun	84.4	61.4	72.9	109	1980	27	78.8	1971	38	1956	1	68.0	1992	11	249	.7	10.1	30.0	.0	.0	.0
Jul	89.2	66.4	77.8	115	1934	15	84.4	1974	41+	1972	5	73.8	1992	0	397	3.2	17.2	31.0	.0	.0	.0
Aug	87.4	63.4	75.4	117	1936	13	84.7	1983	38	1915	30	69.2	1992	12	334	2.4	15.1	31.0	.0	.0	.0
Sep	79.0	53.8	66.4	110	1922	1	71.9	1998	25	1916	29	60.0	1993	74	116	.2	5.8	29.9	.0	.4	.0
Oct	67.7	41.4	54.6	98	1947	5	59.0	1971	-1	1925	30	49.3	1987	330	6	.0	.3	29.3	@	4.3	.0
Nov	50.9	28.6	39.8	83+	1999	14	48.3	1999	-6	1925	8	31.9	1991	757	0	.0	.0	16.7	2.3	16.8	.1
Dec	38.3	17.9	28.1	77	1964	23	33.9+	1998	-25	1989	23	10.1	1983	1144	0	.0	.0	6.9	8.0	27.5	2.9
Ann	63.5	40.5	52.0	117	Aug 1936	13	84.7	Aug 1983	-29	Jan 1915	28	8.1	Jan 1979	5886	1185	6.5	50.3	267.3	31.7	122.2	10.2

+ 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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1902-2001

(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	.78	.82	1.53	1937	8	2.03	1979	.00+	1987
Feb	.88	.69	3.25	1928	6	2.48	1973	.03	1977
Mar	2.34	1.93	2.50	1927	31	7.32	1987	.00+	1994
Apr	2.83	2.32	3.60	1904	25	8.06	1984	.11	1989
May	4.06	3.93	4.45	1929	31	9.08	1995	.84	1988
Jun	4.27	3.61	6.31	1965	29	9.34	1979	1.11	1972
Jul	4.29	3.31	5.00	1911	23	25.20	1993	.16	1974
Aug	3.79	3.34	3.70	1952	29	10.71	1977	.27	1976
Sep	3.73	2.68	8.20	1958	4	11.05	1973	.69	1971
Oct	2.28	2.30	4.00	1918	26	5.44	1971	.00	1988
Nov	1.85	1.62	3.87	1909	12	5.02	1998	.00+	1989
Dec	1.05	.71	2.00	1913	5	3.10	1981	.02	1976
Ann	32.15	30.72	8.20	Sep 1958	4	25.20	Jul 1993	.00+	Mar 1994

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.1	2.5	.2	.0
Feb	3.8	2.3	.6	.1
Mar	6.3	4.3	1.9	.7
Apr	7.6	5.3	2.0	.6
May	8.8	6.9	2.9	1.1
Jun	6.9	5.6	3.0	1.5
Jul	7.0	5.6	3.0	1.2
Aug	7.0	5.5	2.4	1.3
Sep	6.4	5.3	2.4	1.2
Oct	5.0	3.8	1.6	.6
Nov	4.4	3.2	1.5	.4
Dec	3.8	2.4	.7	.2
Ann	71.1	52.7	22.2	8.9

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	.00	.00	.29	.42	.55	.68	.83	1.00	1.21	1.57	1.90
Feb	.09	.15	.27	.40	.53	.68	.86	1.08	1.38	1.88	2.37
Mar	.00	.18	.56	.93	1.32	1.76	2.27	2.90	3.78	5.24	6.66
Apr	.51	.76	1.18	1.56	1.96	2.38	2.87	3.46	4.24	5.49	6.69
May	1.19	1.57	2.15	2.65	3.14	3.65	4.21	4.87	5.73	7.07	8.31
Jun	1.36	1.76	2.36	2.88	3.37	3.88	4.45	5.10	5.95	7.27	8.50
Jul	.41	.72	1.30	1.90	2.55	3.28	4.15	5.23	6.71	9.19	11.60
Aug	.60	.92	1.47	1.99	2.54	3.13	3.81	4.63	5.74	7.55	9.27
Sep	.62	.94	1.48	2.00	2.52	3.10	3.76	4.56	5.63	7.36	9.02
Oct	.10	.29	.62	.95	1.31	1.72	2.20	2.80	3.62	4.99	6.33
Nov	.00	.22	.56	.86	1.16	1.49	1.86	2.31	2.92	3.92	4.88
Dec	.08	.15	.29	.43	.59	.78	1.00	1.27	1.65	2.30	2.93
Ann	19.61	21.90	24.91	27.24	29.35	31.42	33.58	36.00	38.98	43.37	47.22

\+ 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: 1902-2001
(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	5.9	4.1	1	#
Feb	4.7	6.0	2	#
Mar	3.2	1.7	#	0
Apr	.7	.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	0
Oct	.3	.0	#	0
Nov	1.2	.0	#	0
Dec	4.0	2.0	#	#
Ann	20.0	13.8	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	8.0	1975	3	19.5	1975	12	1971	6	5	1993
Feb	8.0	1976	21	11.5	1983	17	1978	14	12	1979
Mar	11.3	1998	8	13.2	1998	13	1998	11	3	1998
Apr	6.5	1997	12	13.1	1997	10	1997	12	1	1997
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	.0	0	0	.0	0	0	0	0	0	0
Oct	5.0	1996	23	5.0	1996	2	1996	23	#+	1997
Nov	8.0	1972	13	11.0	1972	8	1975	27	2	1972
Dec	11.0	1983	21	20.0	1983	8	1981	17	3	2000
Ann	11.3	Mar 1998	8	20.0	Dec 1983	17	Feb 1978	14	12	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.7	2.1	.8	.3	.0
Feb	2.0	1.4	.6	.2	.0
Mar	1.2	1.0	.3	.2	@
Apr	.3	.2	.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	.1	.1	@	@	.0
Nov	.5	.4	.2	@	.0
Dec	2.2	1.5	.5	.1	@
Ann	9.0	6.7	2.5	.8	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	7.1	3.7	1.9	.0
Feb	2.9	1.3	.3	.0
Mar	2.2	1.5	.8	.4
Apr	.3	.2	.1	@
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	.0	.0	.0
Nov	.2	.1	.0	.0
Dec	3.2	1.7	.7	.0
Ann	16.0	8.5	3.8	.4

+ 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	5/15	5/09	5/05	5/02	4/29	4/26	4/23	4/19	4/14
32	5/05	4/29	4/25	4/22	4/19	4/16	4/12	4/08	4/03
28	4/22	4/17	4/13	4/10	4/07	4/04	3/31	3/27	3/22
24	4/11	4/06	4/02	3/30	3/27	3/24	3/20	3/17	3/11
20	4/02	3/27	3/23	3/19	3/16	3/12	3/08	3/04	2/26
16	3/28	3/21	3/16	3/11	3/07	3/03	2/26	2/21	2/13

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	9/18	9/22	9/25	9/28	10/01	10/03	10/06	10/09	10/13
32	9/21	9/27	10/02	10/05	10/09	10/13	10/16	10/21	10/27
28	10/02	10/09	10/14	10/18	10/21	10/25	10/29	11/03	11/09
24	10/16	10/22	10/27	10/31	11/03	11/07	11/11	11/16	11/22
20	10/27	11/02	11/07	11/11	11/15	11/19	11/23	11/28	12/05
16	11/04	11/10	11/15	11/19	11/23	11/27	12/01	12/06	12/12

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	171	165	161	157	154	150	147	142	136
32	190	184	180	176	173	169	165	161	155
28	223	214	208	202	197	192	186	180	171
24	247	238	232	226	221	216	210	204	195
20	271	262	255	249	244	239	233	226	217
16	292	281	273	267	260	254	248	240	229

***** 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	1276	986	762	408	126	11	0	12	74	330	757	1144	5886
60	1121	846	608	276	56	1	0	2	25	200	610	989	4734
57	1029	771	521	208	31	0	0	0	10	137	526	896	4129
55	968	718	463	168	19	0	0	0	5	103	471	835	3750
50	824	589	327	88	5	0	0	0	0	44	343	691	2911
32	357	227	46	1	0	0	0	0	0	0	61	252	944

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	104	165	307	590	973	1228	1420	1345	1032	699	295	132	8290
55	2	13	11	67	279	538	707	632	347	88	15	2	2701
57	0	9	7	47	228	478	645	570	293	61	9	0	2347
60	0	0	1	26	161	389	552	479	217	31	3	0	1859
65	0	0	0	7	76	249	397	334	116	6	0	0	1185
70	0	0	0	1	26	132	254	206	51	1	0	0	671

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	18	69	197	443	774	1030	1208	1149	845	514	159	27	18	87	284	727	1501	2531	3739	4888	5733	6247	6406	6433
45	2	31	117	311	619	880	1053	994	697	374	89	9	2	33	150	461	1080	1960	3013	4007	4704	5078	5167	5176
50	0	9	61	201	467	730	898	839	550	245	41	1	0	9	70	271	738	1468	2366	3205	3755	4000	4041	4042
55	0	2	29	110	319	580	743	684	406	141	12	0	0	2	31	141	460	1040	1783	2467	2873	3014	3026	3026
60	0	1	7	52	187	431	588	529	274	65	3	0	0	1	8	60	247	678	1266	1795	2069	2134	2137	2137
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	17	53	141	274	490	683	811	771	550	325	103	26	17	70	211	485	975	1658	2469	3240	3790	4115	4218	4244

(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