

# Climatology of the United States

## No. 20

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

Station: COLDWATER, KS

1971-2000

COOP ID: 141704

Climate Division: KS 8

NWS Call Sign:

Elevation: 2,083 Feet Lat: 37° 16N

Lon: 99° 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	44.9	20.8	32.9	84	1986	20	43.0	1986	-15	1984	19	18.3	1979	997	0	.0	.0	13.1	6.7	27.8	1.4
Feb	52.3	25.9	39.1	90	1981	20	48.3	1999	-14+	1982	6	24.4	1978	730	2	.0	@	16.6	3.5	20.1	.7
Mar	61.2	34.1	47.7	92+	1998	25	54.6	1986	-4	1960	3	40.7	1984	539	2	.0	.2	24.2	.7	14.0	.0
Apr	70.6	43.4	57.0	100	1989	23	64.9	1981	17	1997	12	47.6	1983	271	30	@	1.0	28.7	@	3.4	.0
May	78.5	53.4	66.0	103+	1996	23	72.0	1996	26	1954	3	60.4	1995	92	120	.2	2.8	30.9	.0	.1	.0
Jun	88.0	62.9	75.5	110	1953	13	80.8	1994	42+	1979	10	69.2	1982	11	324	1.8	12.9	30.0	.0	.0	.0
Jul	93.8	67.8	80.8	113	1954	14	86.0	1980	49	1952	8	78.1	1989	0	489	6.2	23.2	31.0	.0	.0	.0
Aug	92.4	66.3	79.4	112	1964	6	85.0	1983	47	1950	20	74.1	1992	2	447	4.2	21.3	31.0	.0	.0	.0
Sep	84.2	58.0	71.1	107	1984	10	78.4	1998	29	1985	30	64.2	1974	28	211	1.1	10.0	29.9	.0	.1	.0
Oct	73.2	46.3	59.8	100	1954	4	63.3	1979	15	1993	30	53.9	1976	187	24	.0	1.2	30.2	.1	1.7	.0
Nov	57.7	32.9	45.3	89	1980	8	55.1	1999	3	1975	26	39.1	1972	592	0	.0	.0	22.3	.8	14.7	.0
Dec	47.4	23.8	35.6	85	1955	24	41.0	1988	-17	1989	22	18.1	1983	910	0	.0	.0	14.5	3.9	26.3	.7
Ann	70.4	44.6	57.5	113	Jul 1954	14	86.0	Jul 1980	-17	Dec 1989	22	18.1	Dec 1983	4359	1649	13.5	72.6	302.4	15.7	108.2	2.8

+ 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](http://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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Station: COLDWATER, KS

COOP ID: 141704

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NWS Call Sign:

Elevation: 2,083 Feet Lat: 37°16N

Lon: 99°20W

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	.70	.62	1.22	1999	30	2.17	1973	.00+	1986	3.3	2.2	.3	@	.00	.07	.19	.30	.41	.54	.69	.87	1.11	1.52	1.92
Feb	.88	.61	1.36+	2000	25	3.53	1971	.00+	1999	3.0	2.0	.6	.3	.00	.00	.03	.16	.31	.50	.74	1.06	1.50	2.27	3.06
Mar	2.00	1.45	2.20	1987	17	8.17	1973	.00	1986	5.2	4.2	1.3	.4	.03	.14	.37	.65	.96	1.34	1.81	2.41	3.27	4.74	6.21
Apr	2.05	1.71	2.36	1976	28	5.97	1976	.04	1996	4.7	3.6	1.5	.5	.25	.41	.70	.98	1.29	1.62	2.02	2.50	3.16	4.24	5.30
May	3.82	3.49	4.22	1949	16	10.69	1978	.51	1973	7.2	5.9	2.9	1.2	.72	1.06	1.62	2.14	2.67	3.23	3.88	4.66	5.69	7.35	8.93
Jun	3.92	3.66	4.40	1958	25	8.59	1985	.05	1998	6.8	5.5	2.8	1.2	.57	.90	1.47	2.01	2.57	3.19	3.91	4.79	5.96	7.88	9.73
Jul	3.19	3.07	4.24	1950	18	8.19	1979	.47	1976	5.2	4.3	2.1	1.0	.60	.89	1.35	1.79	2.23	2.70	3.24	3.89	4.75	6.14	7.46
Aug	3.05	1.92	4.70	1968	17	10.49	1996	.14	1975	5.6	4.2	2.2	.9	.30	.52	.93	1.36	1.82	2.34	2.95	3.72	4.77	6.53	8.24
Sep	2.26	2.26	3.36	1959	24	7.80	1973	.00	1998	4.5	3.9	1.5	.8	.05	.20	.49	.81	1.17	1.59	2.10	2.74	3.65	5.19	6.71
Oct	2.00	1.47	3.83	1968	16	6.73	1971	.00	1989	4.0	3.2	1.2	.5	.05	.19	.46	.74	1.06	1.43	1.88	2.44	3.23	4.57	5.89
Nov	1.36	.95	3.00	1996	17	4.24	1981	.00+	1999	3.1	2.4	.9	.3	.00	.00	.25	.50	.76	1.03	1.34	1.73	2.25	3.08	3.90
Dec	.90	.59	1.99	1997	24	4.11	1984	.00	1976	2.6	1.8	.5	.1	.03	.09	.22	.35	.49	.66	.85	1.10	1.45	2.03	2.61
Ann	26.13	25.76	4.70	Aug 1968	17	10.69	May 1978	.00+	Nov 1999	55.2	43.2	17.8	7.2	18.58	20.04	21.91	23.33	24.59	25.81	27.07	28.46	30.15	32.60	34.72

+ 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

Complete documentation available from:

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**Station: COLDWATER, KS**

**COOP ID: 141704**

**Climate Division: KS 8**

**NWS Call Sign:**

**Elevation: 2,083 Feet**

**Lat: 37°16N**

**Lon: 99°20W**

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	4.2	2.8	1	#	8.0	1988	7	16.5	1973	12	1988	7	6	1979	2.5	1.8	.4	.1	.0	1.9	.8	.3	.1
Feb	4.0	1.3	1	#	13.0	1971	22	27.1	1971	24	1971	22	6	1982	1.8	1.3	.6	.3	.1	1.5	.8	.4	.0
Mar	3.3	1.0	#	#	9.0	1983	23	14.0	1983	9	1983	23	1	1999	1.4	1.1	.4	.2	.0	1.2	.7	.3	.0
Apr	.6	.0	#	0	5.5	1973	8	6.5	1973	6	1973	8	#+	1997	.3	.2	.1	@	.0	.2	.1	.1	.0
May	.0	.0	#	0	.0	0	0	.0	0	1	1998	25	#+	1998	.0	.0	.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	#	1995	22	#	1995	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.1	.0	#	0	1.0	1991	31	1.0+	1993	1	1991	31	#	1991	.1	.1	.0	.0	.0	@	.0	.0	.0
Nov	2.0	.5	#	0	14.0	1992	25	17.0	1992	14	1992	25	1	1992	.8	.7	.3	@	@	.6	.2	.1	@
Dec	3.5	3.0	#	#	9.0	1997	24	12.5	1987	8	1997	24	2	1971	1.7	1.4	.4	.1	.0	1.8	.4	.2	.0
Ann	17.7	8.6	N/A	N/A	14.0	Nov 1992	25	27.1	Feb 1971	24	Feb 1971	22	6+	Feb 1982	8.6	6.6	2.2	.7	.1	7.2	3.0	1.4	.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

Complete documentation available from:

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**Lat: 37° 16N**

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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	5/10	5/05	5/01	4/28	4/25	4/22	4/19	4/16	4/10
32	4/26	4/22	4/18	4/16	4/13	4/11	4/08	4/05	3/31
28	4/18	4/13	4/10	4/07	4/04	4/02	3/30	3/26	3/22
24	4/08	4/04	3/31	3/29	3/26	3/23	3/20	3/17	3/13
20	4/01	3/26	3/21	3/17	3/13	3/10	3/06	3/01	2/23
16	3/23	3/15	3/09	3/04	2/27	2/22	2/17	2/12	2/03
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	9/22	9/28	10/02	10/06	10/09	10/12	10/16	10/20	10/26
32	10/01	10/08	10/12	10/16	10/19	10/23	10/26	10/31	11/06
28	10/20	10/24	10/27	10/30	11/01	11/04	11/07	11/10	11/14
24	10/28	11/02	11/06	11/09	11/12	11/15	11/19	11/22	11/28
20	11/01	11/08	11/13	11/17	11/21	11/25	11/29	12/04	12/11
16	11/08	11/16	11/21	11/26	11/30	12/05	12/09	12/15	12/22
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	186	179	174	170	166	162	158	153	146
32	211	203	198	193	188	184	179	173	165
28	229	223	218	214	210	207	203	198	192
24	249	243	238	234	231	227	223	218	212
20	277	269	263	257	252	247	242	236	227
16	309	298	289	282	275	269	261	253	241

\* 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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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	997	730	539	271	92	11	0	2	28	187	592	910	4359
60	843	599	397	166	37	2	0	0	6	86	450	755	3341
57	753	522	316	117	18	0	0	0	1	48	369	665	2809
55	694	473	267	89	10	0	0	0	0	31	318	606	2488
50	552	358	165	38	2	0	0	0	0	8	208	464	1795
32	163	86	9	0	0	0	0	0	0	0	17	101	376

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	189	284	494	750	1052	1304	1512	1468	1173	860	415	214	9715
55	7	27	39	149	349	614	799	755	483	178	26	6	3432
57	4	20	26	117	295	554	737	693	424	133	17	2	3022
60	1	13	14	76	220	466	644	600	339	78	8	0	2459
65	0	2	2	30	120	324	489	447	211	24	0	0	1649
70	0	0	0	10	53	200	335	300	113	4	0	0	1015

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	55	133	293	525	811	1072	1273	1225	941	620	225	66	55	188	481	1006	1817	2889	4162	5387	6328	6948	7173	7239
45	20	69	189	382	656	922	1118	1070	791	473	127	26	20	89	278	660	1316	2238	3356	4426	5217	5690	5817	5843
50	1	27	109	256	503	772	963	915	641	328	65	7	1	28	137	393	896	1668	2631	3546	4187	4515	4580	4587
55	0	6	57	152	355	622	808	760	495	205	25	0	0	6	63	215	570	1192	2000	2760	3255	3460	3485	3485
60	0	0	20	73	221	472	653	605	355	105	7	0	0	0	20	93	314	786	1439	2044	2399	2504	2511	2511
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	55	115	214	334	516	711	839	805	609	391	157	65	55	170	384	718	1234	1945	2784	3589	4198	4589	4746	4811

(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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://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"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
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## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)