

# 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: OAKLEY 4 W, KS

1971-2000

COOP ID: 145888

Climate Division: KS 4

NWS Call Sign:

Elevation: 3,100 Feet Lat: 39°07N

Lon: 100°57W

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	39.5	14.6	27.1	82	1953	12	38.1	1986	-17	1959	4	14.3	1979	1175	0	.0	.0	10.0	8.7	30.3	3.1
Feb	45.6	18.6	32.1	82+	1970	17	39.6	1976	-19	1951	1	20.1	1978	922	0	.0	.0	13.7	5.5	26.0	2.1
Mar	53.9	25.4	39.7	92	1989	11	47.2	1986	-14	1960	3	33.2	1996	786	0	.0	@	20.4	2.2	22.4	.5
Apr	64.1	35.1	49.6	96+	1989	23	56.8	1981	7	1997	12	44.0	1997	464	2	.0	.4	26.4	.3	10.4	.0
May	73.2	46.0	59.6	101+	2000	30	63.8	1987	26+	1967	1	52.0	1995	201	34	.1	1.3	30.5	.0	.8	.0
Jun	85.7	56.7	71.2	108	1952	15	76.8	1988	33	1998	6	65.8	1982	32	218	1.4	10.4	30.0	.0	.0	.0
Jul	91.2	62.5	76.9	111	1954	11	82.7	1980	44+	1952	8	72.8	1992	1	367	3.6	18.3	31.0	.0	.0	.0
Aug	88.8	60.5	74.7	108	1952	16	82.2	1983	44	1993	31	69.4	1992	10	310	1.6	15.5	31.0	.0	.0	.0
Sep	79.7	50.6	65.2	105	2000	7	70.4	1998	23	1985	30	59.8	1993	95	99	.3	6.5	29.6	.0	.5	.0
Oct	67.7	37.9	52.8	96	1967	3	56.0	1974	9	1993	31	47.5	1976	379	1	.0	.5	28.6	.2	6.5	.0
Nov	50.8	25.2	38.0	87	2001	1	46.0	1999	-8	1952	28	29.6	2000	811	0	.0	.0	17.5	2.6	22.8	.1
Dec	41.8	17.2	29.5	84	1964	23	36.4	1980	-21	1989	22	14.5	1983	1101	0	.0	.0	10.9	5.8	29.6	1.9
Ann	65.2	37.5	51.4	111	Jul 1954	11	82.7	Jul 1980	-21	Dec 1989	22	14.3	Jan 1979	5977	1031	7.0	52.9	279.6	25.3	149.3	7.7

+ 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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**Climate Division: KS 4**

**NWS Call Sign:**

**Elevation: 3,100 Feet Lat: 39°07N**

**Lon: 100°57W**

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	.47	.38	1.04	1960	14	1.56	1988	.00+	1998	2.6	1.6	.2	.0	.00	.00	.10	.19	.28	.37	.48	.61	.78	1.04	1.31
Feb	.51	.44	.70	1969	15	1.24	1993	.00+	1999	2.8	1.6	.3	.0	.00	.00	.10	.23	.33	.43	.54	.67	.84	1.10	1.37
Mar	1.25	.88	1.60	1979	23	4.00	1979	.00	1997	5.1	3.2	.8	.3	.08	.20	.39	.57	.77	.98	1.23	1.54	1.95	2.64	3.30
Apr	1.78	1.55	1.80	1976	16	4.80	1984	.51	1993	5.6	3.8	1.3	.4	.45	.62	.88	1.11	1.33	1.57	1.84	2.15	2.57	3.22	3.83
May	3.27	3.13	3.03	1995	23	7.47	1975	.74	1974	8.7	6.5	2.0	.7	.88	1.19	1.66	2.08	2.48	2.91	3.38	3.94	4.67	5.81	6.88
Jun	2.46	2.39	2.95	1974	9	4.57	1974	.16	1981	7.7	5.5	1.8	.4	.46	.68	1.04	1.38	1.71	2.08	2.49	2.99	3.65	4.72	5.73
Jul	3.68	3.46	3.60	1994	16	8.23	1993	.38	1986	7.5	5.7	2.4	1.1	.83	1.17	1.71	2.19	2.68	3.19	3.77	4.46	5.38	6.82	8.19
Aug	2.52	2.42	3.25	1975	1	7.08	1993	.08	1976	6.4	4.3	2.0	.8	.39	.60	.96	1.31	1.67	2.07	2.52	3.08	3.82	5.04	6.20
Sep	1.34	1.02	3.00	1976	16	6.20	1976	.00	1979	4.8	2.9	.9	.2	.02	.10	.26	.44	.65	.91	1.22	1.62	2.18	3.15	4.11
Oct	1.05	.81	2.75	1965	18	4.26	2000	.00+	1989	3.5	2.5	.8	.2	.00	.00	.15	.34	.53	.75	1.00	1.32	1.75	2.46	3.17
Nov	1.02	.71	2.63	1971	16	3.47	1998	.00	1989	3.2	2.2	.7	.2	.03	.11	.25	.40	.56	.74	.97	1.24	1.63	2.28	2.92
Dec	.41	.39	.80	1984	14	1.09	1979	.00+	1996	2.4	1.3	.2	.0	.00	.00	.07	.14	.22	.30	.39	.51	.68	.94	1.19
Ann	19.76	19.92	3.60	Jul 1994	16	8.23	Jul 1993	.00+	Feb 1999	60.3	41.1	13.4	4.3	14.40	15.44	16.78	17.78	18.67	19.53	20.42	21.40	22.58	24.29	25.77

+ 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: OAKLEY 4 W, KS

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Climate Division: KS 4

NWS Call Sign:

Elevation: 3,100 Feet

Lat: 39°07N

Lon: 100°57W

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	5.1	4.1	1	1	9.0	1985	9	13.6	1985	11	1985	13	6	1985	2.3	1.9	.6	.2	.0	7.4	4.5	2.4	.2
Feb	4.9	3.5	1	#	8.0	1997	24	17.0	1997	11	1978	13	5	1993	2.2	1.8	.8	.2	.0	6.1	3.7	2.0	.1
Mar	5.6	3.5	#	#	12.0	1981	8	21.0	1980	12+	1999	13	2	1983	1.9	1.7	1.0	.5	.1	3.3	1.9	.9	.1
Apr	2.3	.0	#	0	10.0	1973	8	11.5	1994	10	1973	8	1	1980	.8	.7	.3	.2	@	.8	.4	.1	@
May	#	.0	0	0	#	1990	12	#	1990	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	#	0	.0	0	0	.0	0	#	1998	21	#	1998	.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	.4	.0	#	0	6.0	1985	29	6.0+	1995	5	1995	21	#+	1995	.1	.1	.1	.1	.0	@	@	@	.0
Oct	.9	.0	#	0	12.0	1997	26	13.0	1997	12	1997	26	1	1997	.2	.2	.1	.1	@	.4	.1	.1	@
Nov	2.7	1.5	#	#	8.0	1975	20	10.0	1975	18	1983	30	3	1983	1.0	.9	.4	.1	.0	2.8	1.6	.8	.0
Dec	3.3	1.2	1	#	7.0	1979	29	12.0	1979	12	1979	29	2	1992	1.7	1.3	.5	.3	.0	4.4	1.6	.9	@
Ann	25.2	13.8	N/A	N/A	12.0+	Oct 1997	26	21.0	Mar 1980	18	Nov 1983	30	6	Jan 1985	10.2	8.6	3.8	1.7	.1	25.2	13.8	7.2	.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

Complete documentation available from:

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**Climate Division: KS 4**

**NWS Call Sign:**

**Elevation: 3,100 Feet**

**Lat: 39° 07N**

**Lon: 100° 57W**

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	5/23	5/18	5/15	5/12	5/10	5/07	5/04	5/01	4/26
32	5/15	5/09	5/05	5/02	4/28	4/25	4/21	4/17	4/11
28	5/03	4/28	4/24	4/21	4/18	4/15	4/12	4/08	4/03
24	4/20	4/15	4/11	4/08	4/06	4/03	3/31	3/27	3/23
20	4/12	4/06	4/02	3/30	3/26	3/23	3/19	3/15	3/09
16	4/06	3/30	3/25	3/21	3/17	3/13	3/09	3/04	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	9/15	9/20	9/23	9/26	9/29	10/01	10/04	10/07	10/12
32	9/27	10/02	10/05	10/08	10/11	10/14	10/17	10/20	10/25
28	10/03	10/08	10/12	10/15	10/18	10/21	10/25	10/28	11/03
24	10/16	10/21	10/25	10/29	11/01	11/04	11/07	11/11	11/17
20	10/25	10/30	11/03	11/06	11/08	11/11	11/14	11/17	11/22
16	11/02	11/08	11/12	11/16	11/19	11/22	11/26	11/30	12/06
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	159	153	148	145	141	138	134	130	124
32	186	178	173	169	165	161	157	152	145
28	203	196	191	187	183	178	174	169	162
24	231	223	218	213	208	204	199	194	186
20	250	242	236	231	226	222	217	211	203
16	273	264	257	252	246	241	236	229	220

\* 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:

[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormals.html)

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**Climate Division: KS 4      NWS Call Sign:      Elevation: 3,100 Feet    Lat: 39°07N      Lon: 100°57W**

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	1175	922	786	464	201	32	1	10	95	379	811	1101	5977
60	1020	782	631	323	102	9	0	2	35	233	661	946	4744
57	927	698	538	247	60	3	0	0	16	158	571	853	4071
55	865	647	477	201	40	1	0	0	8	115	514	791	3659
50	714	517	333	107	10	0	0	0	0	44	376	640	2741
32	252	156	30	0	0	0	0	0	0	0	59	196	693

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	100	158	267	527	856	1176	1390	1323	995	645	238	119	7794
55	0	5	1	38	183	487	677	610	313	48	3	0	2365
57	0	0	0	24	141	429	615	548	261	28	0	0	2046
60	0	0	0	11	89	344	522	456	190	11	0	0	1623
65	0	0	0	2	34	218	367	310	99	1	0	0	1031
70	0	0	0	0	9	119	222	182	42	0	0	0	574

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	21	71	167	356	645	948	1145	1086	791	453	119	36	21	92	259	615	1260	2208	3353	4439	5230	5683	5802	5838
45	1	29	89	234	492	798	990	931	641	316	60	9	1	30	119	353	845	1643	2633	3564	4205	4521	4581	4590
50	0	5	40	133	349	648	835	776	497	198	18	0	0	5	45	178	527	1175	2010	2786	3283	3481	3499	3499
55	0	0	10	69	216	498	680	621	358	102	3	0	0	0	10	79	295	793	1473	2094	2452	2554	2557	2557
60	0	0	1	29	112	354	525	467	237	41	0	0	0	0	1	30	142	496	1021	1488	1725	1766	1766	1766
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	37	80	150	257	401	606	744	706	498	309	106	45	37	117	267	524	925	1531	2275	2981	3479	3788	3894	3939

(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/normal/usnormals.html](http://www.ncdc.noaa.gov/oa/climate/normal/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.  
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 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.

- |   |   |
|---|---|
| <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)