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: MARYSVILLE, KS **COOP ID: 145063**

Climate Division: KS 3 **NWS Call Sign:** **Elevation: 1,180 Feet** **Lat: 39˚50N** **Lon: 96˚38W**

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	35.0	13.0	24.0	71+	1981	24	34.4	1989	-21	1974	12	10.2	1979	1271	0	.0	.0	4.9	12.8	30.1	5.1
Feb	41.7	18.3	30.0	84	1972	29	39.2	1976	-22	1971	8	15.6	1979	979	0	.0	.0	9.0	7.9	25.4	3.2
Mar	53.2	28.6	40.9	92	1986	30	46.5	1986	-18+	1998	12	33.0	1975	748	0	.0	@	18.1	2.2	19.4	.3
Apr	64.6	39.5	52.1	97	1989	27	60.3	1981	6	1975	3	45.9	1983	396	7	.0	.6	26.5	.1	6.5	.0
May	74.7	50.3	62.5	100	1967	24	68.7	1977	26	1961	2	56.7	1995	152	75	.0	1.3	30.9	.0	.4	.0
Jun	84.8	60.5	72.7	108	1980	27	78.0	1988	40+	1993	5	67.4	1992	18	246	.8	9.1	30.0	.0	.0	.0
Jul	89.7	65.5	77.6	112	1954	14	83.3	1980	42	1972	5	72.9	1992	0	391	3.1	16.4	31.0	.0	.0	.0
Aug	88.0	63.4	75.7	110	1956	17	83.2	1983	44+	1974	4	68.9	1992	10	340	1.9	13.5	31.0	.0	.0	.0
Sep	79.8	53.7	66.8	109	2000	3	72.1	1998	27+	1984	30	60.3	1993	75	126	.4	5.6	29.9	.0	.5	.0
Oct	67.9	40.8	54.4	97	1954	4	59.7	2000	11	1993	31	48.5	1976	338	7	.0	.4	28.9	.1	6.1	.0
Nov	51.0	28.6	39.8	87	1950	1	48.8	1999	-3+	1976	28	32.6	1991	756	0	.0	.0	16.5	2.3	19.6	.1
Dec	39.1	17.7	28.4	72	1964	23	33.8	1999	-27	1989	23	10.2	1983	1133	0	.0	.0	6.6	8.3	29.4	2.6
Ann	64.1	40.0	52.1	112	Jul 1954	14	83.3	Jul 1980	-27	Dec 1989	23	10.2+	Dec 1983	5876	1192	6.2	46.9	263.3	33.7	137.4	11.3

\+ 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

(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	.71	.70	1.35	1949	3	2.08	1979	.00+	1988
Feb	.78	.66	2.32	1954	20	2.03	1973	.00+	1996
Mar	2.48	2.10	3.25	1993	31	5.96	1973	.10	1988
Apr	2.86	2.36	2.00	1991	13	7.70	1984	.57	1989
May	4.51	4.32	4.13	1962	29	10.52	1996	.93	1992
Jun	4.79	5.06	4.50	1983	18	11.80	1990	.68	1973
Jul	4.58	3.61	6.10	1972	24	23.58	1993	.00	1974
Aug	3.82	3.35	3.59	1972	25	11.37	1977	.25	1971
Sep	3.26	2.77	3.68	1989	9	7.79	1977	.58	1979
Oct	2.30	2.26	3.69	1973	11	5.47	1979	.06	1999
Nov	1.70	1.46	1.87	1952	17	4.17	1998	.00+	1989
Dec	.94	.75	1.67	1984	16	2.77	1984	.00+	1979
Ann	32.73	32.99	6.10	Jul 1972	24	23.58	Jul 1993	.00+	Feb 1996

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.3	2.5	.3	@
Feb	3.7	2.2	.4	.1
Mar	6.8	4.8	1.9	.4
Apr	8.4	5.5	2.0	.6
May	10.9	7.6	3.0	1.1
Jun	9.1	6.2	3.1	1.6
Jul	8.5	5.7	2.7	1.4
Aug	8.6	5.7	2.8	1.3
Sep	8.2	5.4	2.1	.9
Oct	6.0	4.1	1.7	.5
Nov	5.2	3.4	1.1	.3
Dec	4.4	2.4	.5	.1
Ann	84.1	55.5	21.6	8.3

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	.19	.32	.44	.57	.72	.90	1.14	1.54	1.92
Feb	.00	.00	.22	.36	.49	.63	.80	.99	1.24	1.66	2.06
Mar	.21	.38	.71	1.06	1.43	1.86	2.37	3.02	3.90	5.38	6.84
Apr	.78	1.05	1.47	1.83	2.18	2.55	2.96	3.45	4.08	5.07	6.00
May	1.17	1.59	2.25	2.83	3.40	3.99	4.66	5.45	6.48	8.11	9.64
Jun	1.26	1.72	2.41	3.02	3.62	4.25	4.95	5.78	6.87	8.57	10.17
Jul	.15	.49	1.13	1.79	2.52	3.35	4.35	5.61	7.35	10.27	13.15
Aug	.62	.95	1.51	2.03	2.57	3.16	3.84	4.66	5.75	7.53	9.23
Sep	.64	.94	1.42	1.86	2.30	2.78	3.32	3.97	4.83	6.21	7.52
Oct	.36	.55	.89	1.21	1.54	1.90	2.31	2.81	3.49	4.59	5.64
Nov	.00	.18	.48	.75	1.03	1.34	1.69	2.11	2.69	3.65	4.57
Dec	.00	.07	.22	.37	.52	.70	.90	1.16	1.51	2.10	2.68
Ann	19.63	22.00	25.13	27.56	29.77	31.93	34.19	36.73	39.86	44.48	48.54

\+ 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

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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	6.4	4.0	1	#
Feb	4.7	4.0	1	#
Mar	2.5	.6	#	0
Apr	.6	.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	.0	.0	0	0
Nov	.7	.0	#	0
Dec	1.4	1.0	#	#
Ann	16.3	9.6	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	12.0	1979	13	27.1	1979	17	1979	13	8	1979
Feb	12.0	1978	13	16.0	1978	16	1978	14	5	1981
Mar	10.0	1984	12	13.0	1980	7	1975	10	6	1978
Apr	8.0	1997	12	12.1	1997	12	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	.3	1997	26	.3	1997	0	0	0	0	0
Nov	7.3	1975	26	7.3	1975	7	1975	26	1	1991
Dec	6.0	1981	17	6.0	1981	8	1983	21	4	1983
Ann	12.0+	Jan 1979	13	27.1	Jan 1979	17	Jan 1979	13	8	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.9	1.4	.7	.3	@
Feb	1.2	1.0	.5	.2	@
Mar	.9	.7	.3	.2	@
Apr	.2	.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	@	.0	.0	.0	.0
Nov	.3	.2	.1	@	.0
Dec	1.0	.6	.2	@	.0
Ann	5.5	4.1	1.9	.7	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	.2	.1	.1	.0
Apr	.1	.1	.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	.0	.0	.0	.0
Nov	.2	.1	.1	.0
Dec	.6	.1	.0	.0
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	5/18	5/13	5/09	5/06	5/03	4/30	4/27	4/23	4/18
32	5/09	5/04	5/01	4/28	4/25	4/22	4/19	4/16	4/11
28	4/29	4/24	4/20	4/17	4/15	4/12	4/09	4/06	4/01
24	4/13	4/08	4/04	4/01	3/29	3/26	3/23	3/19	3/14
20	4/06	4/01	3/28	3/25	3/22	3/19	3/16	3/12	3/07
16	3/27	3/21	3/17	3/14	3/11	3/08	3/04	2/28	2/22

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	9/17	9/21	9/23	9/26	9/28	9/30	10/02	10/05	10/08
32	9/22	9/27	9/30	10/04	10/06	10/09	10/12	10/16	10/21
28	10/03	10/08	10/12	10/15	10/18	10/21	10/25	10/29	11/03
24	10/15	10/21	10/26	10/29	11/02	11/06	11/09	11/14	11/20
20	10/20	10/28	11/02	11/06	11/11	11/15	11/19	11/25	12/02
16	11/02	11/09	11/14	11/18	11/22	11/26	11/30	12/05	12/11

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	143	139	134	127
32	179	174	170	167	164	161	157	154	148
28	201	196	192	189	186	183	180	176	171
24	247	237	229	223	218	212	206	198	188
20	262	252	245	239	233	227	221	214	204
16	279	271	265	260	255	251	245	240	231

***** 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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1271	979	748	396	152	18	0	10	75	338	756	1133	5876
60	1116	842	593	264	75	4	0	1	26	208	606	978	4713
57	1023	765	507	196	44	1	0	0	12	143	519	885	4095
55	961	712	448	156	29	0	0	0	6	108	465	824	3709
50	811	584	313	78	8	0	0	0	0	46	331	679	2850
32	336	224	41	0	0	0	0	0	0	0	49	240	890

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	88	168	316	601	946	1218	1414	1353	1042	692	283	130	8251
55	0	13	10	67	262	529	701	640	358	87	9	1	2677
57	0	9	7	47	215	470	639	578	303	60	4	0	2332
60	0	3	0	25	153	382	546	487	228	32	0	0	1856
65	0	0	0	7	75	246	391	340	126	7	0	0	1192
70	0	0	0	1	28	135	246	210	58	1	0	0	679

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	8	49	169	400	722	1006	1189	1128	820	474	130	19	8	57	226	626	1348	2354	3543	4671	5491	5965	6095	6114
45	0	19	98	274	568	856	1034	973	670	334	70	5	0	19	117	391	959	1815	2849	3822	4492	4826	4896	4901
50	0	8	48	169	417	706	879	818	525	214	30	0	0	8	56	225	642	1348	2227	3045	3570	3784	3814	3814
55	0	1	22	93	278	556	724	663	384	118	7	0	0	1	23	116	394	950	1674	2337	2721	2839	2846	2846
60	0	0	6	49	161	408	569	508	260	55	3	0	0	0	6	55	216	624	1193	1701	1961	2016	2019	2019
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	15	49	128	252	453	667	798	754	530	308	95	25	15	64	192	444	897	1564	2362	3116	3646	3954	4049	4074

(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