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: JOPLIN RGNL AP, MO **COOP ID: 234315**

Climate Division: MO 4 **NWS Call Sign: JLN** **Elevation: 980 Feet** **Lat: 37˚09N** **Lon: 94˚30W**

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	42.4	23.7	33.1	77+	1986	20	42.9	1990	-12	1985	20	19.4	1979	990	0	.0	.0	9.9	7.3	24.6	1.3
Feb	49.0	28.8	38.9	87	1996	22	47.3	1976	-12	1979	9	24.6	1978	731	0	.0	.0	13.8	3.9	18.5	.5
Mar	58.9	37.5	48.2	90	1995	22	53.3	1986	3	1980	2	41.1	1975	521	0	.0	@	23.7	.6	9.8	.0
Apr	69.1	46.3	57.7	96	1972	12	64.5	1981	19+	1975	3	51.2	1983	238	19	.0	.4	28.5	.0	2.0	.0
May	76.7	55.5	66.1	95	1949	31	72.4	1987	30	1960	1	59.0	1976	86	121	.0	.5	31.0	.0	@	.0
Jun	85.0	64.5	74.8	103+	1953	15	78.9	1994	44	1988	10	69.5	1976	8	299	.1	7.1	30.0	.0	.0	.0
Jul	90.4	69.4	79.9	115	1954	14	88.1	1980	50	1975	13	76.4	1971	0	462	1.4	18.5	31.0	.0	.0	.0
Aug	89.5	67.5	78.5	106	1970	8	85.1	1983	46	1950	21	71.8	1992	4	422	1.7	15.8	31.0	.0	.0	.0
Sep	81.0	59.2	70.1	105+	2000	2	77.4	1998	30	1984	30	60.3	1974	47	200	.2	5.1	30.0	.0	.1	.0
Oct	70.9	48.1	59.5	94	1953	1	63.1	1971	18	1993	31	52.5	1976	202	31	.0	.3	30.2	.0	1.6	.0
Nov	56.6	36.9	46.8	83+	1980	8	56.2	1999	7	1976	29	38.2	1976	549	1	.0	.0	21.2	.6	10.7	.0
Dec	46.0	27.4	36.7	76+	1966	7	44.0	1971	-15+	1989	23	21.6	1983	877	0	.0	.0	12.1	4.3	21.2	.7
Ann	68.0	47.1	57.5	115	Jul 1954	14	88.1	Jul 1980	-15+	Dec 1989	23	19.4	Jan 1979	4253	1555	3.4	47.7	292.4	16.7	88.5	2.5

\+ 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: 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	1.84	1.40	2.39	1975	30	4.14	1982	.01	1986
Feb	2.25	1.92	4.69	1985	22	7.82	1985	.27	1996
Mar	3.62	3.06	2.81	1974	10	9.04	1973	.84	1971
Apr	4.32	3.68	3.48	1970	30	10.38	1999	.11	1989
May	5.07	4.90	5.21	1999	4	12.75	1990	1.44	1988
Jun	5.42	5.16	5.22	1976	23	12.17	1977	.83	1972
Jul	3.55	2.89	6.85	1976	3	12.43	1992	.17	1974
Aug	3.82	3.77	4.91	1980	14	8.20	1985	.05	2000
Sep	5.22	3.68	7.12	1986	30	19.08	1986	.99	1980
Oct	3.94	3.89	5.00	1959	2	9.14	1983	.16	1995
Nov	4.06	3.42	3.62	1979	20	12.34	1985	.03	1989
Dec	2.96	2.28	3.59	1999	4	7.67	1999	.19	1996
Ann	46.07	45.20	7.12	Sep 1986	30	19.08	Sep 1986	.01	Jan 1986

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.4	4.1	1.1	.2
Feb	6.8	3.9	1.4	.5
Mar	9.7	6.2	2.4	.8
Apr	10.1	6.7	3.0	1.2
May	11.3	7.6	3.3	1.5
Jun	9.8	7.4	3.6	1.4
Jul	7.2	4.8	2.2	.9
Aug	7.9	5.6	2.3	1.2
Sep	8.3	6.0	3.1	1.8
Oct	7.9	5.2	2.6	1.2
Nov	7.7	5.1	2.6	1.2
Dec	8.0	4.5	1.8	.9
Ann	102.1	67.1	29.4	12.8

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	.23	.38	.64	.89	1.16	1.46	1.81	2.24	2.83	3.78	4.71
Feb	.34	.53	.85	1.16	1.49	1.84	2.25	2.75	3.42	4.51	5.55
Mar	1.01	1.36	1.88	2.33	2.77	3.24	3.75	4.36	5.15	6.38	7.54
Apr	.87	1.26	1.90	2.48	3.06	3.69	4.40	5.26	6.39	8.20	9.91
May	1.62	2.10	2.81	3.42	4.00	4.61	5.28	6.06	7.07	8.63	10.08
Jun	1.60	2.11	2.88	3.55	4.20	4.88	5.63	6.51	7.65	9.43	11.09
Jul	.47	.75	1.26	1.76	2.28	2.85	3.52	4.34	5.45	7.28	9.04
Aug	.55	.86	1.41	1.94	2.50	3.10	3.81	4.67	5.82	7.71	9.53
Sep	.86	1.31	2.07	2.79	3.53	4.33	5.25	6.38	7.88	10.31	12.64
Oct	.68	1.02	1.60	2.14	2.69	3.29	3.98	4.81	5.91	7.70	9.41
Nov	.37	.66	1.21	1.77	2.39	3.09	3.91	4.95	6.38	8.75	11.08
Dec	.44	.69	1.11	1.52	1.95	2.42	2.96	3.62	4.51	5.95	7.34
Ann	31.88	34.60	38.10	40.77	43.14	45.45	47.83	50.47	53.69	58.36	62.41

+ 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)

Extremes (2)

Mean Number of Days (1)

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	4.5	3.5	1	0	6.7	1997	8	17.9	1979	8+	1997	9	4	1979	2.6	1.6	.5	.1	.0	6.5	3.0	1.4	.0
Feb	3.6	1.7	#	0	8.0	1980	8	14.5	1980	14+	1980	9	2+	1980	2.1	1.2	.4	.2	.0	3.9	1.7	.7	.2
Mar	1.2	.0	#	0	9.0	1975	9	11.0	1975	8+	1989	6	1+	1989	.7	.3	.1	.1	.0	.9	.3	.2	.0
Apr	.0	.0	0	0	.5	1973	9	.5	1973	#+	1994	6	0	0	.1	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	1997	.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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.0	.0	0	0	.4	1993	29	.4	1993	#+	1993	31	0	0	.1	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.6	.0	#	0	4.6	1988	20	4.6	1988	5	1988	20	#	1988	.4	.3	@	.0	.0	.3	.1	@	.0
Dec	2.8	1.1	#	0	8.2	1987	14	11.5	1987	10+	1987	17	2	1983	1.9	1.0	.3	.1	.0	2.5	.9	.3	.1
Ann	12.7	6.3	N/A	N/A	9.0	Mar 1975	9	17.9	Jan 1979	14+	Feb 1980	9	4	Jan 1979	7.9	4.4	1.3	.5	.0	14.1	6.0	2.6	.3

+ 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	5/06	5/01	4/27	4/24	4/21	4/18	4/15	4/11	4/06
32	4/21	4/16	4/12	4/09	4/06	4/03	3/31	3/27	3/22
28	4/14	4/07	4/02	3/29	3/25	3/21	3/16	3/11	3/04
24	4/01	3/25	3/20	3/16	3/12	3/08	3/03	2/27	2/20
20	3/21	3/13	3/07	3/02	2/25	2/21	2/16	2/10	2/01
16	3/12	3/04	2/26	2/21	2/16	2/11	2/06	1/30	1/16

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	9/26	10/01	10/05	10/08	10/11	10/14	10/17	10/21	10/26
32	10/05	10/12	10/17	10/21	10/25	10/28	11/01	11/06	11/13
28	10/19	10/25	10/30	11/03	11/06	11/10	11/14	11/19	11/25
24	10/27	11/03	11/08	11/12	11/16	11/20	11/25	11/30	12/07
20	10/30	11/10	11/18	11/25	12/01	12/08	12/14	12/22	1/02
16	11/20	11/26	12/01	12/05	12/09	12/13	12/17	12/23	1/02

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	197	188	182	177	172	167	162	156	148
32	227	218	211	206	201	196	190	184	175
28	257	246	239	232	226	220	213	206	195
24	278	268	261	255	249	243	237	230	220
20	310	297	288	281	274	268	261	253	242
16	>365	321	310	301	294	287	280	271	260

***** 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	990	731	521	238	86	8	0	4	47	202	549	877	4253
60	836	601	375	129	32	1	0	0	15	101	410	727	3227
57	751	522	292	80	15	0	0	0	6	60	331	641	2698
55	692	471	242	55	9	0	0	0	3	40	282	583	2377
50	550	354	140	16	1	0	0	0	0	11	180	446	1698
32	170	78	5	0	0	0	0	0	0	0	13	110	376

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	203	271	507	771	1058	1282	1485	1441	1143	852	455	256	9724
55	12	20	30	136	354	592	772	728	457	180	35	16	3332
57	9	15	19	102	298	532	710	666	400	137	23	12	2923
60	1	9	9	60	222	443	617	573	319	86	12	5	2356
65	0	0	0	19	121	299	462	422	200	31	1	0	1555
70	0	0	0	4	52	174	311	281	111	7	0	0	940

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	63	132	310	549	818	1055	1247	1207	909	618	258	94	63	195	505	1054	1872	2927	4174	5381	6290	6908	7166	7260
45	29	77	200	407	663	905	1092	1052	759	466	163	49	29	106	306	713	1376	2281	3373	4425	5184	5650	5813	5862
50	6	37	117	276	509	755	937	897	609	326	87	20	6	43	160	436	945	1700	2637	3534	4143	4469	4556	4576
55	2	15	62	167	359	605	782	742	465	206	43	5	2	17	79	246	605	1210	1992	2734	3199	3405	3448	3453
60	0	3	25	88	223	455	627	587	331	114	16	0	0	3	28	116	339	794	1421	2008	2339	2453	2469	2469
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	40	90	186	336	525	725	859	825	604	382	150	60	40	130	316	652	1177	1902	2761	3586	4190	4572	4722	4782

(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