

Climatology of the United States No. 20

Station: SPRINGFIELD CAPITAL AP, IL

1971-2000

COOP ID: 118179

Climate Division: IL 6

NWS Call Sign: SPI

Elevation: 586 Feet

Lat: 39° 51N

Lon: 89° 41W

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	33.1	17.1	25.1	71	1950	24	37.1	1990	-21+	1999	5	10.2	1977	1239	0	.0	.0	3.2	14.2	27.6	4.1
Feb	38.9	22.2	30.6	74+	1996	26	40.4	1998	-22	1963	26	16.6	1978	979	0	.0	.0	6.2	8.6	22.0	2.5
Mar	51.1	32.4	41.8	87	1981	31	48.1	1973	-12	1960	5	31.8	1984	726	2	.0	.0	16.6	2.1	15.9	.1
Apr	63.4	42.2	52.8	90	1986	25	60.0	1981	19+	1997	9	47.7	1982	376	17	.0	@	26.5	@	4.3	.0
May	74.4	52.7	63.6	95+	1967	25	70.5	1977	28	1966	10	58.8	1997	126	84	.0	1.4	30.9	.0	@	.0
Jun	83.3	61.9	72.6	103	1954	26	78.5	1971	40	1966	1	67.9+	1982	14	249	.2	6.7	30.0	.0	.0	.0
Jul	86.5	66.0	76.3	112	1954	14	81.1	1980	48+	1975	13	72.1	1971	1	358	.5	10.7	31.0	.0	.0	.0
Aug	84.5	63.9	74.2	103	1964	3	80.2	1995	43+	1986	29	70.0	1986	4	291	.3	6.9	31.0	.0	.0	.0
Sep	78.5	55.4	67.0	101	1984	1	71.1	1998	32+	1995	23	61.6	1974	77	140	@	3.2	30.0	.0	.1	.0
Oct	66.6	44.4	55.5	93+	1954	3	62.6	1971	17	1952	29	49.1	1976	319	23	.0	.1	29.5	.0	3.7	.0
Nov	50.9	33.7	42.3	83	1950	1	48.4	1999	-3	1964	30	34.4	1976	674	1	.0	.0	15.9	1.3	14.4	.0
Dec	38.0	22.6	30.3	74+	1984	28	38.7	1982	-21	1989	23	16.1	1983	1061	0	.0	.0	5.2	8.4	24.8	1.8
Ann	62.4	42.9	52.7	112	Jul 1954	14	81.1	Jul 1980	-22	Feb 1963	26	10.2	Jan 1977	5596	1165	1.0	29.0	256.0	34.6	112.8	8.5

+ 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/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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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	Median	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	1.62	1.30	2.12	1975	10	4.48	1982	.04	1986	9.1	4.3	.8	.2	.23	.36	.59	.82	1.05	1.31	1.61	1.97	2.47	3.27	4.05	
Feb	1.80	1.45	2.37	1990	22	4.89	1990	.51	1995	8.5	4.0	1.0	.3	.50	.68	.93	1.16	1.38	1.61	1.87	2.17	2.56	3.17	3.75	
Mar	3.15	2.92	1.92+	1972	12	7.89	1973	.97	1999	11.4	6.7	2.1	.8	1.14	1.44	1.86	2.22	2.56	2.91	3.30	3.74	4.31	5.18	5.98	
Apr	3.36	3.00	4.45	1979	11	8.16	1994	.73	1971	11.4	6.8	2.1	.7	.95	1.27	1.75	2.17	2.58	3.01	3.48	4.04	4.77	5.90	6.96	
May	4.06	3.79	3.54	1996	8	10.72	1996	.52	1992	11.0	7.0	2.7	1.0	.79	1.16	1.75	2.30	2.86	3.45	4.13	4.94	6.02	7.76	9.40	
Jun	3.77	2.84	4.48	1958	10	9.22	1990	.62	1988	9.6	6.3	2.2	.9	.63	.96	1.51	2.03	2.56	3.14	3.80	4.61	5.68	7.43	9.09	
Jul	3.53	3.06	4.33	1981	27	10.76	1981	.89	1997	8.6	5.5	2.2	1.0	.88	1.21	1.72	2.18	2.63	3.11	3.64	4.27	5.10	6.40	7.63	
Aug	3.41	3.28	4.40	1981	2	8.37	1981	.46	1992	8.3	5.2	2.3	.9	.75	1.07	1.57	2.02	2.47	2.95	3.49	4.14	5.00	6.36	7.64	
Sep	2.83	2.31	5.12	1959	26	8.57	1986	.00	1979	8.0	5.1	1.7	.7	.34	.69	1.16	1.57	1.98	2.41	2.90	3.49	4.26	5.50	6.68	
Oct	2.62	2.09	3.24+	1991	4	6.41	1991	.99	1971	8.3	5.1	1.8	.6	.79	1.04	1.41	1.73	2.05	2.37	2.72	3.14	3.68	4.53	5.31	
Nov	2.87	2.98	2.36	1964	15	6.94	1985	.25	1999	9.8	6.0	1.9	.5	.61	.87	1.29	1.67	2.06	2.47	2.93	3.49	4.22	5.39	6.50	
Dec	2.54	2.22	4.70	1982	2	8.94	1982	.58	1989	9.9	5.3	1.5	.6	.53	.76	1.14	1.48	1.82	2.18	2.60	3.09	3.74	4.79	5.78	
Ann	35.56	32.35	5.12	Sep 1959	26	10.76	Jul 1981	.00	Sep 1979	113.9	67.3	22.3	8.2	24.02	26.21	29.04	31.21	33.14	35.02	36.97	39.13	41.77	45.62	48.96	

+ 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															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	7.1	5.8	1	1	8.0	1987	9	21.1	1977	12	1999	3	7	1977	5.7	2.2	.8	.3	.0	12.3	6.9	3.4	.4
Feb	5.8	4.4	1	1	6.8	1986	23	16.0	1993	11	1982	9	6	1979	4.5	1.6	.7	.3	.0	9.5	5.3	2.4	.2
Mar	3.4	2.6	#	1	8.2	1978	7	18.5	1978	16	1978	8	4	1978	2.5	.9	.4	.2	.0	3.1	1.4	.6	.1
Apr	.7	.0	#	0	6.1	1980	14	7.3	1980	4	1980	15	#	1994	.7	.2	.1	@	.0	.3	.1	.0	.0
May	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	2000	.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	.3	1989	19	.3	1989	#+	1993	31	0	0	.1	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.6	.4	#	0	7.6	1975	26	8.5	1975	6	1975	27	1	1977	1.6	.5	.1	.1	.0	.8	.2	.1	.0
Dec	6.0	3.2	1	0	17.0	1972	12	22.7	1973	15	1973	20	3+	2000	4.8	1.7	.4	.3	.1	6.7	3.2	1.9	.1
Ann	24.6	16.4	N/A	N/A	17.0	Dec 1972	12	22.7	Dec 1973	16	Mar 1978	8	7	Jan 1977	19.9	7.1	2.5	1.2	.1	32.7	17.1	8.4	.8

+ 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	5/14	5/09	5/05	5/02	4/29	4/25	4/22	4/18	4/13
32	4/25	4/21	4/18	4/16	4/13	4/11	4/08	4/05	4/01
28	4/15	4/11	4/09	4/06	4/04	4/02	3/30	3/27	3/23
24	4/13	4/07	4/03	3/30	3/27	3/24	3/20	3/16	3/11
20	4/01	3/26	3/22	3/18	3/15	3/12	3/08	3/04	2/26
16	3/19	3/13	3/09	3/06	3/02	2/27	2/24	2/19	2/14
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	9/24	9/27	9/30	10/02	10/04	10/06	10/08	10/11	10/14
32	10/01	10/05	10/08	10/11	10/13	10/16	10/18	10/21	10/25
28	10/12	10/17	10/21	10/25	10/28	10/31	11/04	11/08	11/13
24	10/21	10/26	10/30	11/03	11/06	11/09	11/13	11/17	11/22
20	11/01	11/07	11/12	11/15	11/19	11/22	11/26	12/01	12/07
16	11/12	11/18	11/23	11/27	12/01	12/04	12/08	12/13	12/19
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	174	168	164	161	158	154	151	147	141
32	197	192	188	185	182	179	176	172	167
28	228	221	215	211	206	202	197	192	185
24	247	239	233	228	223	218	213	207	199
20	272	264	258	253	248	243	238	232	224
16	297	289	283	277	272	268	262	256	248

* 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)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Below													
65	1239	979	726	376	126	14	1	4	77	319	674	1061	5596
60	1082	825	569	245	75	2	0	0	17	191	532	921	4459
57	989	747	484	179	45	1	0	0	6	132	448	832	3863
55	928	695	427	141	31	0	0	0	3	100	392	775	3492
50	784	566	297	68	10	0	0	0	0	44	266	631	2666
32	324	204	39	0	0	0	0	0	0	0	27	225	819

Cooling Degree Days (1)

Base	Cooling Degree Days (1)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Above													
32	64	123	339	630	983	1222	1377	1311	1053	730	335	116	8283
55	0	1	24	90	288	532	664	598	371	129	22	2	2721
57	0	1	17	68	238	472	602	537	318	99	15	1	2368
60	0	0	9	43	171	384	509	444	243	63	7	1	1874
65	0	0	2	17	84	249	358	291	140	23	1	0	1165
70	0	0	0	4	33	129	210	159	66	6	0	0	607

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	15	50	172	409	747	991	1138	1072	821	493	172	38	15	65	237	646	1393	2384	3522	4594	5415	5908	6080	6118
45	5	21	96	274	592	841	983	917	671	352	98	16	5	26	122	396	988	1829	2812	3729	4400	4752	4850	4866
50	0	7	51	171	440	691	828	762	525	229	54	4	0	7	58	229	669	1360	2188	2950	3475	3704	3758	3762
55	0	1	27	93	299	541	673	607	380	136	23	0	0	1	28	121	420	961	1634	2241	2621	2757	2780	2780
60	0	0	7	46	176	391	518	452	249	65	5	0	0	0	7	53	229	620	1138	1590	1839	1904	1909	1909
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	6	32	105	239	464	669	783	734	533	299	97	20	6	38	143	382	846	1515	2298	3032	3565	3864	3961	3981

(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

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
- 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/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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