

Climatology of the United States

No. 20

1971-2000

Station: WAPPAELLO DAM, MO

COOP ID: 238700

Climate Division: MO 6

NWS Call Sign:

Elevation: 410 Feet

Lat: 36° 56N

Lon: 90° 17W

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	43.4	23.4	33.4	75+	1967	24	41.9	1990	-15	1977	11	20.8	1977	979	0	.0	.0	8.3	6.2	25.9	1.2
Feb	49.8	27.5	38.7	80	1982	24	46.2	1976	-9	1951	2	27.7	1978	738	0	.0	.0	13.2	3.5	20.5	.3
Mar	59.2	37.1	48.2	87	1967	13	54.4	1976	3	1960	5	41.6	1996	525	3	.0	.0	23.7	.5	11.6	.0
Apr	70.0	46.8	58.4	92	1980	23	66.5	1981	24	1973	11	52.5	1983	227	29	.0	.2	29.3	.0	1.9	.0
May	78.3	56.1	67.2	95	1953	27	73.6	1987	33+	1966	10	62.7	1981	72	141	.0	1.8	31.0	.0	.0	.0
Jun	86.5	65.0	75.8	106	1952	30	79.6	1984	44	1969	3	71.6	1974	2	325	.1	10.4	30.0	.0	.0	.0
Jul	91.3	69.3	80.3	110	1980	13	85.5	1980	51+	1972	6	77.5	1971	0	474	1.6	20.2	31.0	.0	.0	.0
Aug	89.8	67.3	78.6	108+	1980	1	83.6	1983	48+	1986	29	74.0	1992	0	420	1.4	16.5	31.0	.0	.0	.0
Sep	82.5	59.9	71.2	105	1951	1	76.6	1998	34	1967	29	65.5	1974	22	208	.1	5.8	30.0	.0	.0	.0
Oct	72.0	47.5	59.8	94+	1963	12	67.2	1971	22+	1981	25	55.1	1976	202	39	.0	.3	30.7	.0	1.3	.0
Nov	58.8	37.6	48.2	85	1950	1	53.8	1999	1	1950	25	41.3	1976	505	2	.0	.0	22.4	.2	10.7	.0
Dec	47.4	28.0	37.7	75+	1956	7	46.3	1971	-10	1989	22	26.1	2000	846	0	.0	.0	12.0	3.4	22.2	.4
Ann	69.1	47.1	58.1	110	Jul 1980	13	85.5	Jul 1980	-15	Jan 1977	11	20.8	Jan 1977	4118	1641	3.2	55.2	292.6	13.8	94.1	1.9

+ 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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No. 20 1971-2000

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

Station: WAPPAELLO DAM, MO

COOP ID: 238700

Climate Division: MO 6

NWS Call Sign:

Elevation: 410 Feet Lat: 36°56N

Lon: 90°17W

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	3.54	3.30	4.80	1982	30	12.38	1982	.00	1986	8.3	5.2	2.3	.9	.58	1.05	1.66	2.14	2.62	3.13	3.68	4.34	5.20	6.56	7.83
Feb	3.36	3.22	2.98	1949	14	9.24	1989	1.04	1982	7.0	4.9	2.5	1.0	1.04	1.36	1.83	2.24	2.64	3.05	3.50	4.03	4.72	5.78	6.77
Mar	4.70	3.58	11.00	1977	28	16.37	1977	1.03	1971	10.3	7.1	3.0	1.1	1.33	1.78	2.45	3.04	3.61	4.21	4.87	5.65	6.67	8.26	9.74
Apr	4.84	4.55	3.48	1973	20	12.35	1973	1.87	1976	10.0	7.1	3.3	1.6	1.59	2.05	2.73	3.30	3.85	4.42	5.05	5.78	6.72	8.18	9.52
May	4.44	4.05	8.45	1973	27	14.98	1973	1.12	1994	10.9	7.5	2.9	1.0	1.00	1.41	2.07	2.65	3.24	3.86	4.56	5.39	6.49	8.23	9.88
Jun	3.90	3.48	4.02	2000	18	7.98	1998	1.04	1988	9.2	6.3	2.6	1.0	1.20	1.58	2.13	2.60	3.06	3.53	4.06	4.67	5.46	6.69	7.84
Jul	3.86	3.47	4.19	1971	24	10.91	1998	.27	1980	7.8	5.7	2.4	1.1	.61	.94	1.50	2.04	2.59	3.19	3.88	4.72	5.84	7.67	9.42
Aug	3.23	2.46	3.71	1978	30	7.50	1978	.98+	1995	7.6	4.9	2.2	1.0	.77	1.07	1.54	1.96	2.38	2.82	3.32	3.91	4.68	5.90	7.05
Sep	3.46	2.89	3.27	1996	16	11.66	1972	.64	1981	7.6	5.0	2.0	1.2	.61	.91	1.42	1.89	2.38	2.90	3.50	4.23	5.19	6.75	8.24
Oct	3.42	3.20	3.50	1998	6	9.36	1984	.72	1989	7.6	5.2	2.4	.9	.80	1.12	1.62	2.07	2.51	2.99	3.52	4.15	4.98	6.30	7.53
Nov	5.14	5.18	5.50	1994	5	11.37	1973	.65	1976	9.7	6.2	3.1	1.7	1.16	1.63	2.39	3.06	3.74	4.46	5.27	6.24	7.51	9.53	11.44
Dec	4.33	4.02	2.94	2001	17	14.34	1982	.45	1989	8.4	5.8	2.9	1.1	.84	1.23	1.87	2.45	3.04	3.68	4.40	5.27	6.42	8.27	10.02
Ann	48.22	47.29	11.00	Mar 1977	28	16.37	Mar 1977	.00	Jan 1986	104.4	70.9	31.6	13.6	33.60	36.41	40.02	42.77	45.22	47.59	50.04	52.76	56.06	60.86	65.02

+ 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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NWS Call Sign:

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Lat: 36°56N

Lon: 90°17W

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	4.4	.5	1	0	8.0	1978	17	16.5	1978	14	1978	18	5	1978	1.8	1.3	.4	.2	.0	1.5	.8	.8	.4
Feb	1.6	.0	#	0	5.5	1980	8	9.5	1982	17	1979	26	3	1978	.7	.5	.3	.1	.0	3.1	1.3	.3	.0
Mar	.8	.0	#	0	4.0	1975	10	7.0	1975	5	1978	3	1	1978	.3	.2	.1	.0	.0	.3	.3	@	.0
Apr	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.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	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.5	.0	#	0	4.5	1975	27	4.5	1975	5	1975	27	#+	1980	.1	.1	.1	.0	.0	.2	.1	@	.0
Dec	1.3	.0	#	0	7.0	1984	5	7.0	1984	3	1973	20	#+	1990	.4	.4	.2	.1	.0	.4	.1	.0	.0
Ann	8.6	.5	N/A	N/A	8.0	Jan 1978	17	16.5	Jan 1978	17	Feb 1979	26	5	Jan 1978	3.3	2.5	1.1	.4	.0	5.5	2.6	1.1	.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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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	4/26	4/22	4/19	4/16	4/13	4/11	4/08	4/05	4/01
32	4/16	4/12	4/09	4/06	4/03	4/01	3/29	3/26	3/21
28	4/05	3/31	3/27	3/24	3/21	3/18	3/15	3/11	3/06
24	3/29	3/23	3/19	3/16	3/12	3/09	3/05	3/01	2/23
20	3/18	3/10	3/05	3/01	2/24	2/20	2/16	2/10	2/03
16	3/10	3/02	2/24	2/19	2/14	2/10	2/05	1/30	1/22
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	10/06	10/11	10/15	10/18	10/21	10/23	10/26	10/30	11/04
32	10/16	10/22	10/26	10/29	11/01	11/04	11/07	11/11	11/16
28	10/30	11/04	11/07	11/10	11/12	11/15	11/18	11/21	11/26
24	11/04	11/10	11/14	11/17	11/21	11/24	11/28	12/02	12/07
20	11/13	11/20	11/25	11/30	12/04	12/08	12/12	12/17	12/24
16	11/19	11/28	12/05	12/11	12/16	12/22	12/27	1/03	1/12
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	210	203	198	194	190	185	181	176	169
32	230	224	219	215	211	207	203	198	192
28	257	250	245	240	236	231	227	221	214
24	276	268	262	257	253	248	244	238	230
20	310	300	293	287	282	276	270	263	253
16	336	323	315	308	302	296	289	281	271

* 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	979	738	525	227	72	2	0	0	22	202	505	846	4118
60	824	600	382	127	26	0	0	0	4	107	366	692	3128
57	732	522	303	81	12	0	0	0	1	66	289	605	2611
55	677	470	255	57	7	0	0	0	0	46	242	548	2302
50	533	347	156	19	1	0	0	0	0	14	145	409	1624
32	150	62	7	0	0	0	0	0	0	0	6	81	306

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	195	248	508	792	1091	1313	1497	1443	1176	860	493	258	9874
55	9	12	43	159	385	623	784	730	486	193	39	12	3475
57	1	8	29	123	328	563	722	668	427	151	26	8	3054
60	0	2	15	79	249	473	629	575	340	98	13	1	2474
65	0	0	3	29	141	325	474	420	208	39	2	0	1641
70	0	0	0	8	64	186	319	272	104	10	0	0	963

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	43	107	280	549	845	1075	1251	1191	928	598	263	77	43	150	430	979	1824	2899	4150	5341	6269	6867	7130	7207
45	18	52	175	404	690	925	1096	1036	778	447	163	36	18	70	245	649	1339	2264	3360	4396	5174	5621	5784	5820
50	2	20	93	271	536	775	941	881	628	305	86	12	2	22	115	386	922	1697	2638	3519	4147	4452	4538	4550
55	0	4	42	164	382	625	786	726	479	181	40	3	0	4	46	210	592	1217	2003	2729	3208	3389	3429	3432
60	0	0	14	83	239	475	631	571	337	94	12	0	0	0	14	97	336	811	1442	2013	2350	2444	2456	2456
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	33	80	172	331	539	732	849	809	616	371	157	52	33	113	285	616	1155	1887	2736	3545	4161	4532	4689	4741

(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/normals/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 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">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. 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