

Climatology of the United States

No. 20

1971-2000

Station: MUSCLE SHOALS AP, AL

COOP ID: 015749

Climate Division: AL 1

NWS Call Sign: MSL

Elevation: 540 Feet

Lat: 34°45N

Lon: 87°36W

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	49.1	30.7	39.9	80	1949	10	48.4	1974	-11	1985	21	27.0	1977	778	0	.0	.0	15.6	2.8	18.9	.2
Feb	54.8	34.3	44.6	83	1962	13	52.1	1990	-2	1958	18	33.2	1978	573	0	.0	.0	18.7	1.1	13.3	@
Mar	63.8	41.8	52.8	86+	1967	13	57.4+	1997	10	1943	3	46.6	1971	388	8	.0	.0	27.7	.1	5.6	.0
Apr	72.4	48.7	60.6	92	1987	30	65.9	1999	27	1989	11	56.2	1983	169	36	.0	.1	29.7	.0	.9	.0
May	79.8	57.7	68.8	99	1941	29	74.1	1987	36+	1971	4	62.9	1976	50	167	.0	2.1	31.0	.0	.0	.0
Jun	87.3	65.6	76.5	104	1952	28	80.5	1998	44	1972	1	70.8	1974	1	344	.2	11.6	30.0	.0	.0	.0
Jul	90.6	69.8	80.2	106+	1952	29	85.5	1980	53+	1972	7	76.0	1972	0	471	1.0	18.8	31.0	.0	.0	.0
Aug	90.0	68.1	79.1	105+	1954	16	83.9	1980	53+	1992	29	75.5	1992	0	436	1.2	16.4	31.0	.0	.0	.0
Sep	83.9	61.9	72.9	103	1954	4	78.4	1998	39+	1982	23	66.6	1974	18	255	.2	6.8	30.0	.0	.0	.0
Oct	73.6	49.4	61.5	94+	1963	12	68.8	1984	25	1961	27	54.9	1976	171	63	.0	.2	30.8	.0	.5	.0
Nov	62.2	40.8	51.5	85	2000	1	58.3	1978	2	1950	25	41.9	1976	414	9	.0	.0	25.9	@	7.4	.0
Dec	52.7	33.8	43.3	78+	1964	24	51.9	1984	-5	1989	23	33.4	1989	674	0	.0	.0	19.2	1.3	14.7	.1
Ann	71.7	50.2	61.0	106+	Jul 1952	29	85.5	Jul 1980	-11	Jan 1985	21	27.0	Jan 1977	3236	1789	2.6	56.0	320.6	5.3	61.3	.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/normal/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1940-2001

(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: MUSCLE SHOALS AP, AL

COOP ID: 015749

Climate Division: AL 1

NWS Call Sign: MSL

Elevation: 540 Feet Lat: 34°45N

Lon: 87°36W

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	4.97	4.86	4.41	1951	31	11.77	1974	.60	1986	11.8	7.6	3.6	1.3	1.49	1.96	2.67	3.28	3.87	4.48	5.16	5.96	6.99	8.60	10.10
Feb	4.46	3.97	5.03	1948	12	10.74	1991	.51	1978	10.0	6.5	2.7	1.1	1.24	1.66	2.30	2.86	3.41	3.98	4.62	5.37	6.34	7.87	9.30
Mar	6.21	5.49	4.80+	1994	27	14.25	1980	2.22	1985	11.6	7.8	3.8	1.5	2.18	2.76	3.61	4.33	5.01	5.72	6.49	7.38	8.52	10.29	11.92
Apr	4.43	3.87	5.34	1983	5	12.81	1983	.36	1986	9.3	7.0	3.3	1.3	1.04	1.45	2.10	2.68	3.26	3.87	4.55	5.37	6.44	8.15	9.75
May	5.30	4.84	3.32	1980	17	11.86	1983	1.18	1987	10.5	6.9	3.2	1.6	1.69	2.19	2.94	3.57	4.19	4.82	5.52	6.33	7.39	9.02	10.54
Jun	4.90	4.22	5.60	1992	12	13.43	1989	1.03	1988	10.4	7.3	3.1	1.6	1.45	1.92	2.62	3.22	3.81	4.42	5.09	5.88	6.91	8.51	10.00
Jul	4.52	3.53	5.60	1972	28	14.40	1975	.92	1977	8.5	6.2	2.3	1.1	1.14	1.57	2.23	2.81	3.38	3.99	4.66	5.46	6.51	8.16	9.71
Aug	2.96	2.83	3.43	1976	25	6.78	1979	.15	1990	7.5	4.4	1.6	.8	.35	.58	.99	1.40	1.84	2.33	2.90	3.61	4.57	6.15	7.69
Sep	4.30	4.20	5.71	1979	13	10.13	1979	.17	1984	8.3	5.9	2.8	1.3	.72	1.09	1.72	2.31	2.92	3.58	4.34	5.25	6.48	8.46	10.36
Oct	3.22	2.52	3.24	1986	24	8.25	1984	.00	2000	7.1	4.8	2.0	.9	.35	.74	1.28	1.74	2.21	2.71	3.28	3.97	4.88	6.34	7.73
Nov	5.09	5.08	3.65	1991	30	11.06	1986	1.90	1971	9.5	6.9	3.3	1.5	2.11	2.58	3.23	3.77	4.27	4.78	5.33	5.97	6.77	8.00	9.11
Dec	5.44	4.97	5.20	1991	1	19.19	1990	.65	1980	11.2	7.8	3.4	1.5	1.14	1.64	2.44	3.17	3.90	4.68	5.56	6.62	8.01	10.24	12.35
Ann	55.80	54.58	5.71	Sep 1979	13	19.19	Dec 1990	.00	Oct 2000	115.7	79.1	35.1	15.5	38.62	41.91	46.14	49.37	52.24	55.03	57.91	61.10	64.99	70.64	75.54

+ 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: 1940-2001

(3) Derived from 1971-2000 serially complete daily data

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Elevation: 540 Feet

Lat: 34°45N

Lon: 87°36W

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	1.0	#	#	0	5.1	1988	7	5.9	1978	7	1988	7	1	1988	.6	.4	.1	@	.0	1.2	.4	.2	.0
Feb	.9	#	#	0	5.0	1985	1	9.6	1985	5+	1985	4	1	1985	.7	.4	.1	@	.0	.8	.2	.1	.0
Mar	.3	.0	#	0	2.6	1993	12	4.6	1993	5	1993	13	#	1993	.2	.1	.0	.0	.0	.1	@	@	.0
Apr	.0	.0	0	0	.5	1987	2	.5	1987	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	#	1993	.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	#	.0	0	0	#	1991	8	#+	1991	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.2	#	#	0	2.0	1989	9	2.5	1989	2+	1989	10	#	1989	.3	.1	.0	.0	.0	.3	.0	.0	.0
Ann	2.4	#	N/A	N/A	5.1	Jan 1988	7	9.6	Feb 1985	7	Jan 1988	7	1+	Jan 1988	1.8	1.0	.2	@	.0	2.4	.6	.3	.0

+ 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	4/22	4/18	4/15	4/12	4/10	4/07	4/05	4/02	3/28
32	4/12	4/08	4/04	4/01	3/29	3/26	3/23	3/20	3/15
28	4/02	3/26	3/21	3/17	3/13	3/08	3/04	2/27	2/20
24	3/15	3/09	3/04	3/01	2/25	2/22	2/18	2/13	2/07
20	3/07	2/27	2/21	2/16	2/12	2/07	2/02	1/27	1/19
16	2/25	2/16	2/10	2/04	1/30	1/24	1/17	1/07	0/00
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	10/07	10/12	10/16	10/19	10/22	10/24	10/28	10/31	11/05
32	10/22	10/27	10/31	11/03	11/06	11/08	11/12	11/15	11/20
28	11/04	11/09	11/13	11/16	11/19	11/22	11/25	11/28	12/03
24	11/10	11/18	11/24	11/30	12/05	12/10	12/15	12/21	12/30
20	11/19	11/29	12/06	12/13	12/18	12/24	12/30	1/06	1/16
16	12/06	12/15	12/22	12/28	1/02	1/08	1/16	1/27	0/00
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	211	205	201	197	194	191	187	183	177
32	242	235	229	225	221	216	212	207	199
28	277	268	261	256	250	245	240	233	224
24	309	300	293	287	282	276	271	264	255
20	350	331	321	313	306	299	292	283	272
16	>365	>365	>365	348	338	329	321	313	302

* 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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Climate Division: AL 1 NWS Call Sign: MSL Elevation: 540 Feet Lat: 34°45N Lon: 87°36W

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	778	573	388	169	50	1	0	0	18	171	414	674	3236
60	634	439	253	81	15	0	0	0	4	88	283	529	2326
57	547	361	186	44	6	0	0	0	1	54	216	443	1858
55	491	312	148	27	3	0	0	0	0	37	177	389	1584
50	363	203	73	6	0	0	0	0	0	11	98	267	1021
32	68	14	0	0	0	0	0	0	0	0	1	29	112

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	314	365	644	857	1140	1333	1494	1459	1228	914	586	378	10712
55	24	19	79	194	430	643	781	746	538	238	71	24	3787
57	18	13	55	151	371	583	719	684	479	193	50	17	3333
60	11	7	29	97	287	493	626	591	391	135	28	10	2705
65	0	0	8	36	167	344	471	436	255	63	9	0	1789
70	0	0	0	9	80	204	316	287	144	22	1	0	1063

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	135	210	415	623	901	1100	1250	1215	994	676	361	187	135	345	760	1383	2284	3384	4634	5849	6843	7519	7880	8067
45	70	122	281	476	746	950	1095	1060	844	521	241	105	70	192	473	949	1695	2645	3740	4800	5644	6165	6406	6511
50	35	62	168	334	591	800	940	905	694	370	140	51	35	97	265	599	1190	1990	2930	3835	4529	4899	5039	5090
55	10	26	91	210	436	650	785	750	544	235	70	19	10	36	127	337	773	1423	2208	2958	3502	3737	3807	3826
60	0	4	36	108	291	500	630	595	398	127	29	3	0	4	40	148	439	939	1569	2164	2562	2689	2718	2721
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	77	129	247	388	593	759	862	834	666	429	213	108	77	206	453	841	1434	2193	3055	3889	4555	4984	5197	5305

(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.

- 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