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: MORGAN POWER AND LIGHT, UT **COOP ID: 425826**

Climate Division: UT 5 **NWS Call Sign:** **Elevation: 5,090 Feet** **Lat: 41˚03N** **Lon: 111˚40W**

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	34.6	11.0	22.8	57+	1959	18	31.4	1999	-27+	1971	6	13.7	1989	1309	0	.0	.0	1.7	10.4	30.0	6.2
Feb	40.6	15.1	27.9	67	1963	5	37.0	2000	-32	1982	6	18.8	1985	1041	0	.0	.0	4.8	4.8	26.3	3.3
Mar	49.6	23.6	36.6	74+	1956	24	41.9	1999	-14+	1964	7	29.8	1985	880	0	.0	.0	17.3	.5	25.2	.3
Apr	58.5	30.6	44.6	86	2000	27	51.2	2000	5	1975	1	37.7	1975	614	0	.0	.0	25.5	.0	17.7	.0
May	69.3	38.1	53.7	90+	1954	19	58.4	1994	18+	1953	3	49.0	1975	354	4	.0	@	30.2	.0	5.7	.0
Jun	80.2	44.3	62.3	99+	1954	23	67.3	1977	24	1954	2	58.2	1993	130	47	.0	5.2	30.0	.0	.7	.0
Jul	87.9	50.6	69.3	102+	2001	4	73.3	2000	30+	1948	29	62.0	1993	26	157	.1	15.9	31.0	.0	.0	.0
Aug	86.4	48.7	67.6	102	2001	7	71.9	2000	26+	1964	30	63.4	1975	49	128	.1	12.5	31.0	.0	.2	.0
Sep	77.0	40.1	58.6	95+	1950	3	64.0	1990	19+	1950	28	53.7	1986	215	22	.0	1.7	29.9	.0	4.7	.0
Oct	64.6	29.6	47.1	88	1992	1	51.7	1988	8	1972	31	41.4	1984	555	0	.0	.0	28.3	.2	19.4	.0
Nov	47.2	21.3	34.3	75+	1999	5	42.6	1999	-17	1955	16	26.4	2000	923	0	.0	.0	13.5	2.4	25.6	.8
Dec	36.6	12.3	24.5	68	1995	1	33.3	1995	-33	1990	23	14.1	1990	1259	0	.0	.0	2.7	8.9	29.1	4.2
Ann	61.0	30.4	45.8	102+	Aug 2001	7	73.3	Jul 2000	-33	Dec 1990	23	13.7	Jan 1989	7355	358	.2	35.3	245.9	27.2	184.6	14.8

\+ 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	1.85	1.88	1.20	1997	3	4.27	1980	.29	1992
Feb	1.77	1.52	1.82	1986	17	6.88	1986	.47	1988
Mar	1.88	1.87	1.05	1972	3	3.48	1982	.57	1999
Apr	2.10	2.14	1.31	1974	10	5.53	1974	.13	1987
May	2.03	1.95	1.45	1975	7	5.04	1975	.16	1972
Jun	1.13	.92	1.37	1998	17	3.68	1998	.00	1994
Jul	.75	.66	1.45	1965	19	2.14	1982	.02	1978
Aug	.83	.60	2.20	1986	21	2.64	1986	.00	1985
Sep	1.54	1.19	1.68	1986	25	7.13	1982	.03	1974
Oct	1.71	1.60	1.40	1966	13	4.47	1971	.02	1988
Nov	1.85	1.57	1.50	1951	12	4.33	1985	.02	1976
Dec	1.58	1.27	1.25	1983	7	5.76	1983	.01	1976
Ann	19.02	18.59	2.20	Aug 1986	21	7.13	Sep 1982	.00+	Jun 1994

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.1	5.6	.8	.1
Feb	8.9	5.2	.7	.1
Mar	10.8	6.2	.7	@
Apr	9.7	5.5	1.1	.2
May	9.9	5.5	1.2	.2
Jun	5.3	2.9	.7	.1
Jul	4.2	1.9	.4	.0
Aug	5.4	2.3	.3	.1
Sep	6.2	3.4	1.0	.3
Oct	7.3	4.2	1.1	.2
Nov	9.4	5.4	.9	.1
Dec	8.7	5.0	.6	.1
Ann	95.9	53.1	9.5	1.5

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	.39	.56	.83	1.08	1.33	1.59	1.89	2.25	2.73	3.48	4.20
Feb	.42	.59	.85	1.08	1.31	1.55	1.82	2.15	2.57	3.25	3.88
Mar	.75	.92	1.17	1.37	1.56	1.76	1.97	2.21	2.52	2.99	3.42
Apr	.34	.52	.83	1.12	1.42	1.74	2.11	2.56	3.16	4.14	5.08
May	.45	.64	.94	1.21	1.48	1.76	2.08	2.47	2.97	3.78	4.54
Jun	.04	.12	.27	.44	.62	.82	1.07	1.38	1.81	2.54	3.25
Jul	.06	.11	.21	.32	.43	.56	.72	.92	1.19	1.64	2.09
Aug	.01	.05	.15	.26	.39	.55	.74	1.00	1.35	1.96	2.57
Sep	.10	.19	.38	.59	.82	1.10	1.43	1.86	2.46	3.47	4.47
Oct	.11	.21	.43	.66	.92	1.23	1.60	2.07	2.73	3.84	4.94
Nov	.34	.51	.78	1.03	1.29	1.56	1.88	2.26	2.76	3.58	4.36
Dec	.07	.15	.32	.53	.77	1.06	1.42	1.89	2.56	3.70	4.85
Ann	11.78	13.10	14.85	16.20	17.41	18.61	19.85	21.25	22.96	25.47	27.68

\+ 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	17.7	15.0	5	2	12.0	1993	9	50.0	1996	24	1993	12	16	1993	6.6	6.1	2.7	1.1	.2	12.3	9.9	8.2	4.0
Feb	14.4	14.5	4	1	12.0	1983	8	30.0	1983	18	1993	25	14	1993	4.9	4.7	2.2	.8	.1	11.0	8.2	6.0	2.5
Mar	7.1	6.8	1	#	9.0	1998	6	22.0	1982	13	1993	1	4	1985	2.4	2.4	1.1	.3	.0	2.1	.8	.3	.0
Apr	4.3	2.5	#	0	10.0	1974	10	24.0	1974	2	1982	4	#+	1999	1.3	1.3	.6	.2	@	.1	.0	.0	.0
May	1.4	.0	#	0	12.0	1975	6	28.0	1975	2	1983	11	#+	2000	.3	.3	.2	.1	@	@	.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	.3	.0	#	0	4.1	2000	23	4.1	2000	3	2000	23	#+	2000	.1	.1	.1	.0	.0	.1	@	.0	.0
Oct	1.6	.0	#	0	9.0	1989	28	11.0+	1984	7	1989	28	#+	1996	.5	.5	.2	.1	.0	.3	.1	@	.0
Nov	9.2	5.5	1	#	12.0	1985	18	41.0	1985	12	1986	8	4	1985	3.1	2.9	1.3	.5	.1	4.5	2.5	1.3	.1
Dec	15.7	14.0	2	1	16.0	1974	13	55.3	1983	22	1983	27	11	1983	5.3	4.9	2.4	1.0	@	9.8	6.8	4.7	1.2
Ann	71.7	58.3	N/A	N/A	16.0	Dec 1974	13	55.3	Dec 1983	24	Jan 1993	12	16	Jan 1993	24.5	23.2	10.8	4.1	.4	40.2	28.3	20.5	7.8

+ 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	7/03	6/27	6/22	6/18	6/15	6/11	6/07	6/02	5/27
32	6/17	6/10	6/06	6/02	5/29	5/25	5/21	5/16	5/10
28	5/24	5/19	5/14	5/11	5/08	5/04	5/01	4/26	4/21
24	5/10	5/04	4/29	4/25	4/21	4/18	4/14	4/09	4/03
20	4/23	4/17	4/13	4/10	4/07	4/03	3/31	3/27	3/21
16	4/12	4/04	3/29	3/24	3/19	3/15	3/10	3/04	2/24

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	8/16	8/22	8/27	8/31	9/03	9/07	9/11	9/15	9/21
32	9/03	9/08	9/12	9/15	9/18	9/21	9/24	9/27	10/02
28	9/11	9/16	9/19	9/23	9/26	9/28	10/02	10/05	10/10
24	9/23	9/28	10/02	10/05	10/08	10/11	10/15	10/19	10/24
20	10/04	10/10	10/15	10/19	10/23	10/27	10/31	11/05	11/12
16	10/23	10/28	11/01	11/04	11/07	11/10	11/14	11/18	11/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	110	100	92	86	80	74	67	60	50
32	137	128	122	116	111	106	101	94	85
28	164	156	150	145	140	136	131	125	116
24	196	187	180	175	169	164	158	152	142
20	225	216	210	204	199	194	188	182	173
16	263	252	245	238	233	227	220	213	203

***** 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	1309	1041	880	614	354	130	26	49	215	555	923	1259	7355
60	1154	901	725	465	217	54	5	13	111	401	773	1104	5923
57	1061	817	632	380	149	26	1	4	65	311	683	1011	5140
55	999	761	570	326	111	14	0	2	42	255	623	949	4652
50	844	622	424	203	44	2	0	0	10	135	479	794	3557
32	353	209	61	7	0	0	0	0	0	1	98	298	1027

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	67	91	204	383	673	907	1154	1102	797	469	165	62	6074
55	0	0	0	12	71	231	441	391	149	10	0	0	1305
57	0	0	0	6	47	183	380	331	111	4	0	0	1062
60	0	0	0	2	22	121	291	247	67	1	0	0	751
65	0	0	0	0	4	47	157	128	22	0	0	0	358
70	0	0	0	0	0	12	66	50	5	0	0	0	133

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	0	9	73	211	456	698	930	882	584	281	53	6	0	9	82	293	749	1447	2377	3259	3843	4124	4177	4183
45	0	1	22	109	306	548	775	727	436	158	15	1	0	1	23	132	438	986	1761	2488	2924	3082	3097	3098
50	0	0	0	41	178	399	620	572	294	66	0	0	0	0	0	41	219	618	1238	1810	2104	2170	2170	2170
55	0	0	0	14	82	258	465	418	166	14	0	0	0	0	0	14	96	354	819	1237	1403	1417	1417	1417
60	0	0	0	0	19	136	314	267	68	0	0	0	0	0	0	0	19	155	469	736	804	804	804	804
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	14	70	178	330	466	588	576	426	257	61	4	0	14	84	262	592	1058	1646	2222	2648	2905	2966	2970

(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