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: MOAB, UT **COOP ID: 425733**

Climate Division: UT 7 **NWS Call Sign:** **Elevation: 4,073 Feet** **Lat: 38˚34N** **Lon: 109˚33W**

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	43.5	19.6	31.6	67+	1950	24	39.0	1981	-24	1930	22	14.8	1973	1038	0	.0	.0	9.0	4.0	28.5	1.3
Feb	52.5	25.9	39.2	75+	1962	11	47.1	1995	-10+	1929	9	27.2	1974	722	0	.0	.0	17.6	1.0	22.5	.2
Mar	64.1	35.0	49.6	86	1986	28	55.2	1994	9	1931	8	45.1	1976	481	1	.0	.0	29.5	.0	12.8	.0
Apr	73.2	42.0	57.6	96+	1992	27	66.5	1992	15	1928	8	51.9	1983	252	29	.0	.7	29.8	.0	3.6	.0
May	83.6	49.9	66.8	103+	2000	28	71.9	1992	28	1929	2	60.8	1995	65	119	.2	7.3	31.0	.0	@	.0
Jun	95.0	57.6	76.3	113	1936	17	79.9	1981	37+	1937	6	71.4	1995	3	342	7.3	23.2	30.0	.0	.0	.0
Jul	100.5	64.1	82.3	114	1989	7	85.1	1998	43	1928	9	78.0	1987	0	536	17.4	30.1	31.0	.0	.0	.0
Aug	98.1	63.4	80.8	110	1990	9	84.5	1992	40	1931	27	76.1	1989	0	488	12.1	28.4	31.0	.0	.0	.0
Sep	88.8	53.4	71.1	108+	1976	6	76.1	1992	28	1934	27	66.4	1986	22	205	1.7	15.0	30.0	.0	.1	.0
Oct	75.0	40.6	57.8	95+	1992	1	64.5	1992	15	1932	26	53.4	1984	247	23	.0	1.7	30.6	.0	4.2	.0
Nov	57.2	29.5	43.4	80+	1952	1	46.9	1981	2	1931	24	37.7	2000	649	0	.0	.0	23.3	.0	21.1	.0
Dec	45.7	21.4	33.6	69+	1995	4	41.5	1980	-11	1945	15	25.2	1978	976	0	.0	.0	9.9	1.8	28.5	.2
Ann	73.1	41.9	57.5	114	Jul 1989	7	85.1	Jul 1998	-24	Jan 1930	22	14.8	Jan 1973	4455	1743	38.7	106.4	302.7	6.8	121.3	1.7

\+ 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: 1928-2001

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

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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	.67	.60	.83	1993	7	2.19	1978	.00+	1992
Feb	.50	.39	.75	1930	24	1.38	1987	.00	1972
Mar	.90	.81	.83	1980	28	3.19	1975	.00	1972
Apr	.99	.78	2.10	1978	9	2.66	1978	.00	1982
May	.81	.65	1.30+	1929	26	2.62	1995	.00	1974
Jun	.37	.20	1.51	1969	24	1.83	1983	.00+	1991
Jul	.91	.65	2.77	1983	23	4.52	1983	.07	1993
Aug	.83	.85	1.50	1939	28	2.01	1999	.00	1985
Sep	.75	.74	1.33	1950	20	3.36	1997	.03	1974
Oct	1.26	1.10	1.86	1965	16	3.77	1972	.01+	1999
Nov	.77	.66	.88	1943	22	2.40	1983	.01	1989
Dec	.63	.55	.90	1977	31	1.86	1978	.00+	1989
Ann	9.39	9.03	2.77	Jul 1983	23	4.52	Jul 1983	.00+	Jan 1992

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.6	2.4	.2	.0
Feb	4.8	2.0	.1	.0
Mar	6.4	3.0	.3	.0
Apr	5.9	2.8	.3	.1
May	5.2	2.4	.4	@
Jun	2.7	1.0	.2	@
Jul	4.9	1.9	.4	.1
Aug	5.7	2.5	.4	@
Sep	5.1	2.1	.3	.0
Oct	5.7	3.2	.6	.1
Nov	5.0	2.3	.3	.0
Dec	4.6	1.9	.2	.0
Ann	61.6	27.5	3.7	.3

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	.00	.09	.22	.33	.43	.55	.68	.83	1.05	1.39	1.71
Feb	.04	.09	.17	.24	.32	.40	.50	.62	.78	1.04	1.29
Mar	.04	.11	.25	.38	.52	.68	.87	1.10	1.42	1.96	2.48
Apr	.09	.20	.36	.51	.66	.82	1.00	1.22	1.52	2.00	2.45
May	.01	.06	.16	.27	.40	.55	.74	.98	1.32	1.90	2.48
Jun	.00	.00	.02	.06	.12	.19	.30	.43	.63	.99	1.36
Jul	.04	.09	.20	.32	.46	.62	.83	1.09	1.47	2.11	2.75
Aug	.06	.15	.28	.40	.53	.67	.83	1.02	1.29	1.72	2.14
Sep	.05	.10	.19	.29	.41	.54	.70	.91	1.19	1.67	2.15
Oct	.04	.10	.23	.40	.59	.82	1.11	1.50	2.04	2.99	3.95
Nov	.10	.16	.27	.37	.49	.61	.76	.94	1.18	1.58	1.97
Dec	.00	.15	.28	.38	.47	.57	.67	.79	.95	1.20	1.43
Ann	5.68	6.35	7.24	7.93	8.55	9.16	9.80	10.51	11.39	12.69	13.83

\+ 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: 1928-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	3.5	1.5	1	#
Feb	.7	.0	#	0
Mar	.6	.0	#	0
Apr	.0	.0	#	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.0	.0	0	0
Nov	.2	.0	#	0
Dec	2.5	.7	#	0
Ann	7.5	2.2	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	8.0	1973	4	15.5	1974	8	1974	27	4	1974
Feb	2.3	1988	3	4.0	1990	6	1974	3	2	1988
Mar	6.0	1975	27	6.0	1975	2	2000	20	#+	2000
Apr	.5	1999	3	.5	1999	#	1999	2	#	1999
May	.0	0	0	.0	0	0	0	0	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	.0	0	0	.0	0	0	0	0	0	0
Nov	3.0	2000	15	3.0	2000	1	1973	26	#+	2000
Dec	6.8	1972	28	10.0	1972	3	1987	23	2	1998
Ann	8.0	Jan 1973	4	15.5	Jan 1974	8	Jan 1974	27	4	Jan 1974

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.4	1.2	.6	.2	.0
Feb	.6	.4	.0	.0	.0
Mar	.2	.2	.1	.1	.0
Apr	.1	.0	.0	.0	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.0	.0	.0	.0	.0
Nov	.2	.1	.1	.0	.0
Dec	1.2	.8	.3	.1	.0
Ann	3.7	2.7	1.1	.4	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.2	.0	.0	.0
Feb	2.0	.5	.0	.0
Mar	.1	.0	.0	.0
Apr	.0	.0	.0	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.0	.0	.0	.0
Nov	.1	.0	.0	.0
Dec	.1	.0	.0	.0
Ann	2.5	.5	.0	.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

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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	5/16	5/10	5/06	5/03	4/30	4/27	4/24	4/20	4/14
32	5/01	4/25	4/21	4/17	4/14	4/11	4/07	4/03	3/28
28	4/18	4/11	4/07	4/03	3/30	3/26	3/22	3/18	3/11
24	4/03	3/26	3/21	3/16	3/12	3/07	3/02	2/25	2/17
20	3/18	3/11	3/05	2/28	2/24	2/20	2/15	2/10	2/02
16	2/28	2/18	2/12	2/06	1/31	1/26	1/20	1/14	1/04

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	9/20	9/26	9/30	10/04	10/07	10/11	10/14	10/19	10/25
32	10/02	10/07	10/12	10/15	10/19	10/22	10/26	10/30	11/05
28	10/15	10/20	10/24	10/27	10/30	11/02	11/05	11/09	11/14
24	10/27	11/01	11/04	11/07	11/10	11/13	11/16	11/19	11/24
20	11/05	11/10	11/14	11/18	11/21	11/24	11/27	12/01	12/06
16	11/15	11/21	11/26	11/29	12/03	12/06	12/10	12/15	12/21

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	186	177	171	165	160	154	149	142	133
32	217	207	199	193	187	181	174	167	157
28	241	231	224	219	213	208	202	195	185
24	273	263	255	249	243	236	230	222	212
20	298	288	281	274	269	263	257	250	240
16	332	321	314	308	302	297	292	285	276

***** 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)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1038	722	481	252	65	3	0	0	22	247	649	976	4455
60	886	588	335	149	21	0	0	0	4	136	499	821	3439
57	798	508	255	101	9	0	0	0	1	86	411	728	2897
55	740	456	207	74	5	0	0	0	0	60	353	666	2561
50	598	335	111	28	1	0	0	0	0	20	218	512	1823
32	207	64	2	0	0	0	0	0	0	0	3	86	362

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	192	266	545	767	1077	1329	1559	1511	1173	799	344	132	9694
55	12	14	38	152	368	639	846	798	483	146	4	0	3500
57	9	10	24	118	310	579	784	736	424	110	2	0	3106
60	4	6	11	76	230	489	691	643	337	67	0	0	2554
65	0	0	1	29	119	342	536	488	205	23	0	0	1743
70	0	0	0	9	46	208	381	334	101	5	0	0	1084

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	22	93	313	533	826	1087	1313	1258	938	560	153	16	22	115	428	961	1787	2874	4187	5445	6383	6943	7096	7112
45	2	32	183	385	671	937	1158	1103	788	412	73	3	2	34	217	602	1273	2210	3368	4471	5259	5671	5744	5747
50	0	9	84	251	517	787	1003	948	638	273	23	0	0	9	93	344	861	1648	2651	3599	4237	4510	4533	4533
55	0	1	32	143	367	637	848	793	489	152	6	0	0	1	33	176	543	1180	2028	2821	3310	3462	3468	3468
60	0	1	8	66	229	489	693	638	345	65	0	0	0	1	9	75	304	793	1486	2124	2469	2534	2534	2534
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	22	81	235	365	536	660	784	770	596	399	135	20	22	103	338	703	1239	1899	2683	3453	4049	4448	4583	4603

(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

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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