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: WOODRUFF, UT **COOP ID: 429595**

Climate Division: UT 5 **NWS Call Sign:** **Elevation: 6,315 Feet** **Lat: 41˚32N** **Lon: 111˚09W**

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	27.8	2.3	15.1	52+	1953	9	24.9	1999	-47	1949	29	3.2	1979	1549	0	.0	.0	.1	18.3	30.8	13.0
Feb	32.3	5.1	18.7	59	1977	20	29.1	2000	-46	1989	6	7.2	1993	1296	0	.0	.0	1.0	12.0	28.0	9.7
Mar	42.9	16.6	29.8	69	1986	28	37.2	1986	-32	1966	4	20.2	1998	1094	0	.0	.0	8.2	3.5	30.5	2.2
Apr	53.7	23.2	38.5	79	1992	30	44.1	1987	-2	1966	20	31.2	1975	797	0	.0	.0	20.2	.2	27.0	@
May	63.4	31.2	47.3	84	1954	20	51.5	1992	10	1972	1	41.8	1975	549	0	.0	.0	28.6	.0	16.0	.0
Jun	73.1	38.2	55.7	93+	1988	24	61.4	1988	20	1966	5	51.1	1975	286	6	.0	.1	29.9	.0	3.6	.0
Jul	80.9	43.2	62.1	97	2000	31	66.1	1988	28+	1948	29	55.3	1993	121	30	.0	1.6	31.0	.0	.5	.0
Aug	79.8	41.0	60.4	94+	1986	18	64.4	2000	20+	1965	31	55.8	1975	165	22	.0	1.1	31.0	.0	2.8	.0
Sep	70.9	32.2	51.6	90	1990	12	56.8	1990	8+	1978	19	47.3	1971	406	2	.0	@	29.3	.0	14.3	.0
Oct	58.8	22.6	40.7	82+	1979	7	45.6	1988	-16	1972	31	36.4	1984	753	0	.0	.0	25.0	.5	27.1	.2
Nov	40.9	13.4	27.2	69	1999	15	34.4	1995	-30	1979	30	20.6	1994	1136	0	.0	.0	7.9	7.1	29.1	3.5
Dec	29.6	3.9	16.8	60+	1969	21	25.7	1977	-46	1978	31	6.3	1985	1497	0	.0	.0	.8	17.3	30.7	12.1
Ann	54.5	22.7	38.7	97	Jul 2000	31	66.1	Jul 1988	-47	Jan 1949	29	3.2	Jan 1979	9649	60	.0	2.8	213.0	58.9	240.4	40.7

\+ 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: 1948-2001

(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	.54	.52	.49	1980	14	1.94	1980	.03	1984
Feb	.50	.40	.87	1999	9	1.36	1998	.08	1988
Mar	.63	.54	1.02	1995	4	1.59	1995	.01	1992
Apr	.94	.83	1.43	1957	23	2.42	1999	.00	1977
May	1.19	1.07	.86	1993	4	2.23	1993	.10	1972
Jun	.99	.74	1.74	1998	17	5.05	1998	.02	2000
Jul	.79	.59	1.44	1953	31	2.71	1973	.03	1988
Aug	.83	.50	1.30	2000	31	2.73	1997	.00	1985
Sep	1.24	.82	1.65	1983	3	4.39	1982	.03+	1975
Oct	1.06	1.13	1.01	1992	30	2.58	1994	.00	1988
Nov	.67	.62	1.11	1954	12	1.58	1983	.03	1976
Dec	.45	.42	.80	1964	23	1.42	1983	.00	1976
Ann	9.83	9.31	1.74	Jun 1998	17	5.05	Jun 1998	.00+	Oct 1988

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.5	1.9	.0	.0
Feb	5.1	1.8	.1	.0
Mar	6.4	2.1	.2	@
Apr	6.2	2.9	.4	.1
May	8.8	3.9	.3	.0
Jun	5.3	2.8	.5	@
Jul	5.4	2.5	.2	.1
Aug	6.0	2.5	.3	.1
Sep	6.1	2.9	.5	.2
Oct	5.7	3.2	.6	@
Nov	6.2	2.4	.1	.0
Dec	5.2	1.6	.0	.0
Ann	71.9	30.5	3.2	.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	.05	.09	.16	.23	.31	.41	.52	.66	.85	1.17	1.49
Feb	.09	.13	.21	.28	.35	.42	.51	.61	.75	.97	1.19
Mar	.09	.14	.23	.32	.41	.52	.63	.78	.97	1.28	1.58
Apr	.07	.17	.32	.45	.60	.76	.94	1.16	1.46	1.95	2.43
May	.24	.35	.53	.68	.84	1.02	1.21	1.44	1.75	2.24	2.71
Jun	.05	.11	.23	.36	.51	.69	.91	1.19	1.59	2.27	2.94
Jul	.09	.15	.26	.37	.49	.62	.77	.96	1.22	1.65	2.07
Aug	.04	.11	.23	.35	.48	.63	.80	1.01	1.31	1.80	2.29
Sep	.05	.12	.26	.42	.61	.84	1.12	1.49	2.01	2.91	3.81
Oct	.03	.10	.24	.39	.56	.75	.99	1.29	1.71	2.42	3.12
Nov	.10	.15	.25	.34	.44	.54	.67	.82	1.02	1.35	1.67
Dec	.04	.09	.16	.23	.30	.37	.45	.55	.69	.90	1.11
Ann	5.40	6.18	7.21	8.03	8.77	9.51	10.29	11.16	12.25	13.87	15.30

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	9.2	7.5	5	4
Feb	7.4	6.5	5	4
Mar	5.6	5.5	2	#
Apr	4.3	3.3	#	#
May	1.0	.0	#	0
Jun	.1	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.5	.0	#	0
Oct	3.0	1.5	#	#
Nov	5.8	4.0	1	#
Dec	6.5	6.4	3	1
Ann	43.4	34.7	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	1993	9	29.5	1993	27	1993	18	17	1993
Feb	8.5	1999	9	19.0	1989	25	1993	25	21	1993
Mar	7.0	1987	16	17.7	1973	22	1998	9	16	1998
Apr	9.0	1996	18	13.5	1983	7	1986	2	1	1984
May	5.0	1983	11	7.0	1983	7	1983	11	#+	1999
Jun	2.0	1998	17	2.0	1998	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	13.4	2000	23	13.4	2000	11	2000	23	1	2000
Oct	8.0	1975	27	9.5	1975	5	1997	24	1	1991
Nov	10.0	1982	30	17.0	1978	13	1985	30	6	1985
Dec	6.0	1996	13	14.5	1996	18	1983	27	14	1985
Ann	13.4	Sep 2000	23	29.5	Jan 1993	27	Jan 1993	18	21	Feb 1993

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.9	2.9	1.2	.3	.0
Feb	3.6	2.8	.9	.3	.0
Mar	3.0	2.3	.7	.2	.0
Apr	1.8	1.7	.6	.2	.0
May	.7	.5	.1	@	.0
Jun	.1	.1	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.2	.2	.1	.1	@
Oct	1.4	1.1	.5	.2	.0
Nov	3.1	2.6	.7	.3	@
Dec	3.9	2.8	.9	.2	.0
Ann	21.7	17.0	5.7	1.8	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	-9.9	-9.9	-9.9	-9.9
Feb	-9.9	-9.9	-9.9	-9.9
Mar	2.7	1.4	.5	.0
Apr	1.0	.4	.1	.0
May	.3	@	@	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.2	.1	.1	@
Oct	.7	.3	.1	.0
Nov	2.7	1.1	.7	.1
Dec	10.8	7.2	4.7	.0
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	7/30	7/24	7/20	7/17	7/14	7/11	7/07	7/03	6/28
32	7/16	7/08	7/03	6/29	6/25	6/21	6/16	6/11	6/04
28	6/22	6/15	6/10	6/06	6/02	5/29	5/24	5/19	5/12
24	5/30	5/25	5/22	5/19	5/17	5/14	5/11	5/08	5/03
20	5/18	5/13	5/09	5/07	5/04	5/01	4/28	4/24	4/20
16	5/03	4/28	4/24	4/21	4/18	4/16	4/13	4/09	4/04

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	7/31	8/03	8/07	8/10	8/13	8/15	8/18	8/22	8/27
32	8/04	8/11	8/16	8/20	8/24	8/27	8/31	9/05	9/12
28	8/20	8/26	8/30	9/03	9/07	9/10	9/14	9/18	9/24
24	9/05	9/10	9/13	9/16	9/19	9/21	9/24	9/28	10/02
20	9/12	9/17	9/19	9/22	9/24	9/27	9/29	10/02	10/06
16	9/19	9/25	9/29	10/03	10/06	10/09	10/13	10/17	10/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	52	44	38	34	29	25	20	14	7
32	90	80	72	65	59	53	46	38	28
28	126	116	108	102	96	90	84	77	67
24	144	137	133	128	125	121	117	112	105
20	161	155	150	146	143	139	136	131	125
16	194	186	180	175	170	165	160	154	146

***** 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	1549	1296	1094	797	549	286	121	165	406	753	1136	1497	9649
60	1394	1156	939	647	395	161	40	71	264	598	986	1342	7993
57	1301	1072	846	557	305	102	15	35	189	505	896	1249	7072
55	1239	1016	784	497	249	71	7	20	145	443	836	1187	6494
50	1084	876	631	357	128	21	0	3	61	291	686	1032	5170
32	554	408	185	37	0	0	0	0	0	10	220	499	1913

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	28	37	114	231	474	710	932	880	586	281	74	25	4372
55	0	0	0	0	10	91	226	187	41	0	0	0	555
57	0	0	0	0	4	62	172	140	25	0	0	0	403
60	0	0	0	0	1	31	104	83	10	0	0	0	229
65	0	0	0	0	0	6	30	22	2	0	0	0	60
70	0	0	0	0	0	0	5	3	0	0	0	0	8

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	0	6	80	270	494	709	664	378	114	7	0	0	0	6	86	356	850	1559	2223	2601	2715	2722	2722
45	0	0	0	25	142	346	554	509	240	39	0	0	0	0	0	25	167	513	1067	1576	1816	1855	1855	1855
50	0	0	0	3	55	210	399	354	124	6	0	0	0	0	0	3	58	268	667	1021	1145	1151	1151	1151
55	0	0	0	0	10	95	249	205	42	0	0	0	0	0	0	0	10	105	354	559	601	601	601	601
60	0	0	0	0	0	26	107	76	9	0	0	0	0	0	0	0	0	26	133	209	218	218	218	218
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	24	111	229	363	493	480	331	178	25	0	0	0	24	135	364	727	1220	1700	2031	2209	2234	2234

(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