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: CANYONLANDS THE NEEDLE, UT **COOP ID: 421168**

Climate Division: UT 7 **NWS Call Sign:** **Elevation: 4,998 Feet** **Lat: 38˚09N** **Lon: 109˚47W**

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	39.3	15.1	27.2	63+	1971	30	36.6	1998	-16+	1971	6	10.9	1973	1173	0	.0	.0	5.3	6.0	29.5	2.5
Feb	47.7	21.9	34.8	73	1972	28	41.1	1995	-14	1989	8	24.9	1979	846	0	.0	.0	13.7	1.0	24.7	.5
Mar	56.8	28.7	42.8	80+	1972	9	49.3	1992	7	1971	2	36.0	1977	687	0	.0	.0	26.1	.1	20.0	.0
Apr	65.3	35.7	50.5	89+	1989	21	61.5	1992	12	1975	2	44.4	1975	437	6	.0	.0	28.6	.0	9.9	.0
May	75.7	45.5	60.6	98	2000	30	67.2	1992	22	1967	2	54.9	1975	185	48	.0	1.6	31.0	.0	1.4	.0
Jun	87.4	54.5	71.0	106	1977	1	76.3	1994	29	1990	2	65.4	1975	28	207	1.5	17.4	30.0	.0	.1	.0
Jul	93.0	61.7	77.4	107+	1971	13	83.2	1996	41	1968	1	73.8	1987	0	383	6.4	26.5	31.0	.0	.0	.0
Aug	90.6	60.2	75.4	104+	1980	8	81.1	1996	40+	1968	24	71.9	1987	5	326	2.2	23.7	31.0	.0	.0	.0
Sep	81.7	50.2	66.0	99+	1979	8	70.3	1998	27	1985	30	61.5	1971	68	96	.0	6.4	30.0	.0	.4	.0
Oct	68.4	37.7	53.1	90	1979	7	61.2	1992	14+	1991	30	48.0	1982	378	7	.0	@	30.0	.0	7.5	.0
Nov	52.1	25.8	39.0	76+	1980	9	45.9	1995	-4	1976	28	31.2	1979	781	0	.0	.0	19.5	.3	23.6	.1
Dec	41.3	17.2	29.3	66	1995	4	37.0	1995	-15+	1978	8	19.9	1978	1108	0	.0	.0	5.4	3.3	29.8	.7
Ann	66.6	37.9	52.3	107+	Jul 1971	13	83.2	Jul 1996	-16+	Jan 1971	6	10.9	Jan 1973	5696	1073	10.1	75.6	281.6	10.7	146.9	3.8

\+ 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: 1965-2001

(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	.58	.49	.76	1980	18	1.56	1980	.00	1972
Feb	.42	.33	.78	1966	8	1.37	1979	.00+	1988
Mar	.80	.59	1.10	1985	29	2.59	1985	.01	1972
Apr	.72	.55	.83	1988	24	1.99	1999	.00	1989
May	.68	.46	1.30	1996	28	2.61	1995	.00	1974
Jun	.31	.20	.72+	1969	17	1.87	1984	.00+	1989
Jul	.87	.91	.98	1977	24	2.27	1981	.05	1994
Aug	.93	.79	1.10	1968	8	2.09	1984	.00	1985
Sep	.80	.67	1.56	1999	17	2.17	1994	.00	1992
Oct	1.17	1.06	1.12	1986	11	4.43	1972	.01	1999
Nov	.63	.59	.87	1998	9	1.58	1987	.00	1993
Dec	.51	.48	.86	1966	27	1.54	1978	.00+	1989
Ann	8.42	8.35	1.56	Sep 1999	17	4.43	Oct 1972	.00+	Nov 1993

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.6	2.4	.1	.0
Feb	4.0	1.4	@	.0
Mar	6.2	2.6	.3	@
Apr	4.6	2.3	.2	.0
May	5.1	2.1	.2	@
Jun	3.2	.9	.1	.0
Jul	5.3	2.6	.4	.0
Aug	6.0	2.6	.6	.0
Sep	5.5	2.6	.1	@
Oct	5.2	3.0	.6	.1
Nov	4.2	1.8	.4	.0
Dec	3.5	1.7	.2	.0
Ann	57.4	26.0	3.2	.1

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	.09	.16	.26	.34	.42	.51	.60	.72	.86	1.10	1.32
Feb	.00	.05	.13	.19	.26	.34	.42	.52	.66	.89	1.11
Mar	.06	.12	.22	.33	.46	.60	.76	.98	1.27	1.76	2.24
Apr	.03	.09	.19	.30	.41	.54	.70	.89	1.15	1.59	2.02
May	.01	.05	.14	.23	.34	.47	.62	.82	1.10	1.58	2.05
Jun	.00	.00	.01	.06	.12	.18	.27	.38	.53	.80	1.07
Jul	.09	.16	.28	.40	.53	.68	.85	1.07	1.36	1.85	2.32
Aug	.05	.13	.28	.41	.56	.72	.91	1.15	1.47	2.01	2.53
Sep	.02	.06	.16	.27	.40	.55	.73	.96	1.29	1.86	2.42
Oct	.06	.12	.26	.41	.59	.81	1.07	1.40	1.88	2.69	3.50
Nov	.01	.04	.11	.19	.29	.41	.56	.76	1.03	1.52	2.00
Dec	.00	.03	.10	.17	.26	.36	.48	.63	.83	1.19	1.54
Ann	5.50	6.05	6.76	7.31	7.80	8.28	8.77	9.33	10.00	10.99	11.85

+ 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: 1965-2001
(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	4.4	3.3	2	1	8.0	1973	4	15.7	1973	14	1973	20	11	1973	1.8	1.3	.4	.2	.0	6.5	2.9	.7	.0
Feb	2.5	.4	1	#	7.0	1986	6	13.0	1986	10	1973	6	7	1986	1.0	.7	.3	.1	.0	1.7	.5	.0	.0
Mar	1.9	.0	#	0	12.0	1985	28	12.0+	1985	15	1985	28	10	1985	.8	.7	.4	.1	.1	.7	.3	.1	.0
Apr	.7	.0	#	0	8.0	1975	1	9.5	1975	3	1999	3	#+	1999	.2	.2	.1	@	.0	.2	@	.0	.0
May	#	.0	#	0	#	1980	25	#	1980	2	1979	8	#+	1987	.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	.3	.0	#	0	2.5	1975	23	3.0	1986	3	1975	23	#+	1986	.2	.1	.0	.0	.0	.1	@	.0	.0
Nov	1.0	.0	#	0	7.2	1979	20	7.2	1979	9	1979	21	1	1998	.8	.5	.1	@	.0	1.0	.4	.1	.0
Dec	2.9	.5	1	#	6.0	1975	31	12.5	1983	13	1979	27	6	1978	1.2	1.0	.5	.2	.0	1.8	.6	.3	.0
Ann	13.7	4.2	N/A	N/A	12.0	Mar 1985	28	15.7	Jan 1973	15	Mar 1985	28	11	Jan 1973	6.0	4.5	1.8	.6	.1	12.0	4.7	1.2	.0

+ Also occurred on an earlier date(s) #Denotes trace amounts

(1) Derived from Snow Climatology and 1971-2000 daily data

@ Denotes mean number of days greater than 0 but less than .05

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	6/09	6/01	5/27	5/22	5/18	5/13	5/09	5/03	4/26
32	5/27	5/19	5/14	5/10	5/06	5/01	4/27	4/22	4/15
28	5/13	5/05	4/29	4/24	4/19	4/15	4/10	4/04	3/27
24	4/28	4/19	4/13	4/07	4/02	3/28	3/22	3/16	3/07
20	4/14	4/05	3/29	3/23	3/18	3/12	3/06	2/28	2/18
16	4/01	3/21	3/12	3/05	2/27	2/20	2/13	2/05	1/24

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	9/17	9/21	9/23	9/26	9/28	9/30	10/03	10/06	10/09
32	9/23	9/28	10/02	10/06	10/09	10/12	10/16	10/20	10/26
28	10/10	10/14	10/17	10/20	10/23	10/25	10/28	11/01	11/05
24	10/19	10/24	10/28	10/31	11/03	11/06	11/09	11/13	11/18
20	10/26	11/02	11/06	11/10	11/14	11/18	11/22	11/26	12/02
16	11/05	11/12	11/16	11/20	11/23	11/27	12/01	12/05	12/11

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	156	148	142	137	133	128	123	117	109
32	187	176	168	162	156	150	143	136	125
28	217	206	198	192	186	180	173	166	155
24	246	235	227	220	214	208	201	193	182
20	276	264	255	248	241	234	226	217	205
16	312	297	287	278	269	261	252	241	226

***** 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	1173	846	687	437	185	28	0	5	68	378	781	1108	5696
60	1018	706	535	303	95	7	0	0	21	245	631	953	4514
57	925	622	448	232	58	3	0	0	8	178	542	860	3876
55	869	566	391	190	39	1	0	0	4	139	483	798	3480
50	724	437	262	107	12	0	0	0	0	67	342	644	2595
32	286	96	19	1	0	0	0	0	0	0	31	179	612

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	136	175	355	560	886	1169	1406	1345	1018	652	240	94	8036
55	6	0	14	59	212	480	693	632	332	78	2	0	2508
57	0	0	9	41	169	421	631	570	277	55	1	0	2174
60	0	0	3	22	113	336	538	477	200	29	0	0	1718
65	0	0	0	6	48	207	383	326	96	7	0	0	1073
70	0	0	0	0	15	107	233	191	34	1	0	0	581

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	6	44	181	375	681	972	1199	1139	816	443	99	9	6	50	231	606	1287	2259	3458	4597	5413	5856	5955	5964
45	0	14	89	240	527	822	1044	984	666	301	37	1	0	14	103	343	870	1692	2736	3720	4386	4687	4724	4725
50	0	0	35	133	377	672	889	829	516	175	9	0	0	0	35	168	545	1217	2106	2935	3451	3626	3635	3635
55	0	0	6	62	238	524	734	674	373	85	0	0	0	0	6	68	306	830	1564	2238	2611	2696	2696	2696
60	0	0	0	19	129	377	579	519	234	26	0	0	0	0	0	19	148	525	1104	1623	1857	1883	1883	1883
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	12	49	158	275	452	614	744	721	537	322	97	9	12	61	219	494	946	1560	2304	3025	3562	3884	3981	3990

(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