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: VERNAL AP, UT **COOP ID: 429111**

Climate Division: UT 6 **NWS Call Sign: VEL** **Elevation: 5,260 Feet** **Lat: 40˚26N** **Lon: 109˚31W**

Temperature (˚F)

Month	Mean (1) Daily Max	Mean (1) Daily Min	Mean (1) Mean	Extremes Highest Daily(2)	Year	Day	Highest Month(1) Mean	Year	Lowest Daily(2)	Year	Day	Lowest Month(1) Mean	Year	Degree Days (1) Base Temp 65 Heating	Cooling	Mean Number of Days (3) Max >= 100	Max >= 90	Max >= 50	Max <= 32	Min <= 32	Min <= 0
Jan	30.0	7.3	18.7	57	1956	7	29.8	1981	-38+	1937	9	2.8	1973	1438	0	.0	.0	.5	17.6	31.0	9.0
Feb	37.2	12.7	25.0	64+	1972	28	34.8	1995	-38	1989	7	11.6+	1984	1121	0	.0	.0	3.4	9.5	28.0	4.2
Mar	51.7	24.3	38.0	76	1971	26	43.8	1986	-12+	1952	23	31.7	1984	837	0	.0	.0	18.2	1.1	27.5	.0
Apr	62.5	31.6	47.1	91	1947	30	53.2	1992	6+	1945	3	42.0	1975	539	0	.0	.0	26.8	.0	16.3	.0
May	72.5	39.8	56.2	93	2000	29	60.3	2000	12	1948	9	50.8	1995	283	8	.0	.2	30.7	.0	4.5	.0
Jun	83.6	47.2	65.4	101+	1971	22	69.8	1977	25+	1943	3	60.1	1975	79	91	.1	7.8	30.0	.0	.3	.0
Jul	89.8	53.2	71.5	103+	1931	25	74.0	1978	33	1928	6	66.4	1993	9	211	.3	18.4	31.0	.0	.0	.0
Aug	87.7	51.5	69.6	102	2000	7	73.2	1983	32+	1932	31	66.0	1987	16	159	.2	12.7	31.0	.0	@	.0
Sep	77.4	42.8	60.1	97	1954	1	64.9	1979	19	1965	18	55.2	1971	177	30	.0	1.7	29.9	.0	2.7	.0
Oct	63.0	32.1	47.6	89	1979	7	52.8	1988	6	1971	30	44.4+	1982	542	0	.0	.0	28.3	.2	16.4	.0
Nov	45.3	20.6	33.0	72+	1937	2	38.1	1995	-16	1953	21	27.0	1971	962	0	.0	.0	10.8	3.2	28.2	.3
Dec	33.0	10.2	21.6	65	1995	1	33.2	1980	-32	1932	14	7.0	1978	1344	0	.0	.0	1.0	13.4	30.9	4.8
Ann	61.1	31.1	46.2	103+	Jul 1931	25	74.0	Jul 1978	-38+	Feb 1989	7	2.8	Jan 1973	7347	499	.6	40.8	241.6	45.0	185.8	18.3

\+ 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/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	.45	.41	.76	1956	16	1.57	1978	.00	1972
Feb	.50	.47	1.11	1937	7	1.16	1998	.00	1972
Mar	.68	.61	1.24	1979	29	2.07	1979	.00+	1999
Apr	.86	.78	.96	1950	15	2.21	1986	.05	1989
May	1.05	.97	1.07	1995	2	2.81	1995	.00	1974
Jun	.66	.51	1.36	1943	1	2.14	1990	.00+	1980
Jul	.64	.56	.99	1998	24	2.01	1987	.00+	1978
Aug	.74	.72	1.15	1947	22	2.41	1997	.00+	1974
Sep	.91	.80	1.30	1938	2	2.86	1997	.00	1979
Oct	1.25	1.01	1.60	1981	11	4.36	1981	.00+	1988
Nov	.57	.51	1.40	1930	17	1.52	1983	.00+	1979
Dec	.46	.36	1.19	1949	19	1.42	1971	.00+	1993
Ann	8.77	9.06	1.60	Oct 1981	11	4.36	Oct 1981	.00+	Mar 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.6	1.8	@	.0
Feb	4.0	2.0	.1	.0
Mar	4.2	2.2	.2	.1
Apr	5.2	2.5	.5	.0
May	6.4	3.2	.5	@
Jun	4.2	2.1	.3	.0
Jul	4.5	1.9	.2	.0
Aug	4.5	2.2	.4	.0
Sep	5.1	2.8	.4	.1
Oct	5.1	3.4	.7	.1
Nov	3.6	1.7	.2	.0
Dec	3.6	1.7	.1	.0
Ann	55.0	27.5	3.6	.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	.02	.05	.12	.18	.25	.33	.43	.55	.72	.99	1.27
Feb	.04	.10	.18	.25	.33	.41	.51	.62	.78	1.02	1.26
Mar	.00	.06	.17	.27	.39	.51	.66	.84	1.09	1.51	1.91
Apr	.11	.18	.30	.42	.54	.69	.85	1.05	1.32	1.77	2.21
May	.11	.23	.40	.56	.71	.88	1.07	1.30	1.60	2.09	2.56
Jun	.00	.00	.15	.26	.37	.50	.65	.83	1.06	1.46	1.85
Jul	.00	.03	.12	.21	.32	.44	.59	.78	1.05	1.50	1.95
Aug	.00	.06	.18	.30	.42	.56	.72	.91	1.19	1.64	2.08
Sep	.08	.18	.33	.47	.60	.75	.92	1.13	1.41	1.85	2.28
Oct	.00	.13	.35	.55	.75	.98	1.24	1.55	1.99	2.70	3.39
Nov	.00	.00	.16	.26	.36	.46	.58	.72	.90	1.20	1.49
Dec	.00	.00	.08	.17	.25	.34	.45	.58	.76	1.04	1.32
Ann	5.07	5.73	6.60	7.29	7.91	8.52	9.16	9.88	10.78	12.10	13.27

\+ 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

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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	1.4	-99.9	2	#
Feb	2.6	2.0	2	0
Mar	.7	.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	.4	.0	#	0
Nov	.9	.0	#	0
Dec	2.8	1.0	1	0
Ann	8.8	-9.9	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	7.0	1996	25	7.0	1996	19	1985	22	13	1985
Feb	6.0	1979	21	8.0	1987	16	1985	10	13	1985
Mar	5.0	1979	29	5.0	1979	11	1985	4	4	1985
Apr	.0	0	0	.0	0	0	0	0	0	0
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	4.0	1984	17	4.0	1984	2	1991	29	#	1991
Nov	6.0	1984	25	6.5	1984	6	1984	25	#+	1994
Dec	10.0	1984	20	10.0	1984	15	1984	27	15	1984
Ann	10.0	Dec 1984	20	10.0	Dec 1984	19	Jan 1985	22	15	Dec 1984

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.6	1.9	.3	.1	.0
Feb	2.0	1.5	.4	.1	.0
Mar	.2	.2	.1	.1	.0
Apr	.0	.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	.2	.1	@	.0	.0
Nov	.4	.3	.1	.1	.0
Dec	1.6	1.2	.3	.1	.1
Ann	7.0	5.2	1.2	.5	.1

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	.0	.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	.3	.0	.0	.0
Nov	.4	.1	.1	.0
Dec	-9.9	-9.9	-9.9	-9.9
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	6/19	6/14	6/11	6/08	6/05	6/02	5/29	5/26	5/21
32	6/14	6/07	6/02	5/29	5/25	5/21	5/17	5/12	5/06
28	5/25	5/20	5/16	5/12	5/09	5/05	5/02	4/28	4/22
24	5/10	5/04	4/29	4/26	4/22	4/19	4/15	4/10	4/04
20	4/23	4/17	4/13	4/09	4/06	4/03	3/31	3/27	3/21
16	4/11	4/04	3/30	3/25	3/21	3/17	3/13	3/07	2/28

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	8/30	9/04	9/08	9/12	9/15	9/18	9/21	9/25	10/01
32	9/12	9/16	9/18	9/21	9/23	9/25	9/28	10/01	10/05
28	9/19	9/23	9/27	9/30	10/03	10/06	10/09	10/12	10/17
24	10/02	10/08	10/12	10/15	10/18	10/21	10/25	10/29	11/03
20	10/17	10/21	10/25	10/27	10/30	11/02	11/04	11/07	11/12
16	10/24	10/28	11/01	11/03	11/06	11/08	11/11	11/14	11/19

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	125	117	111	106	102	97	92	86	78
32	141	134	129	124	120	116	112	107	100
28	169	161	155	151	146	142	137	132	124
24	207	197	190	184	178	173	167	160	150
20	229	221	216	211	206	201	196	191	183
16	256	247	240	234	229	224	218	211	202

***** 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	1438	1121	837	539	283	79	9	16	177	542	962	1344	7347
60	1283	981	682	395	158	26	1	2	83	388	812	1189	6000
57	1190	897	589	313	101	10	0	0	46	300	722	1096	5264
55	1130	846	527	262	71	5	0	0	29	244	662	1034	4810
50	987	716	382	155	23	0	0	0	6	125	512	879	3785
32	502	310	51	3	0	0	0	0	0	0	91	381	1338

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	87	113	237	454	748	1002	1225	1166	843	482	120	60	6537
55	2	5	1	24	106	317	512	453	181	12	0	0	1613
57	0	0	0	15	74	263	450	391	139	6	0	0	1338
60	0	0	0	6	39	188	358	300	86	2	0	0	979
65	0	0	0	0	8	91	211	159	30	0	0	0	499
70	0	0	0	0	1	32	94	57	6	0	0	0	190

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	2	70	240	512	772	987	928	611	263	22	0	0	2	72	312	824	1596	2583	3511	4122	4385	4407	4407
45	0	0	19	130	358	622	832	773	463	143	3	0	0	0	19	149	507	1129	1961	2734	3197	3340	3343	3343
50	0	0	0	52	221	472	677	618	320	56	0	0	0	0	0	52	273	745	1422	2040	2360	2416	2416	2416
55	0	0	0	15	110	328	522	463	191	15	0	0	0	0	0	15	125	453	975	1438	1629	1644	1644	1644
60	0	0	0	1	37	194	367	310	85	0	0	0	0	0	0	1	38	232	599	909	994	994	994	994
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	10	80	201	358	495	612	585	417	217	31	0	0	10	90	291	649	1144	1756	2341	2758	2975	3006	3006

(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