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: BULLFROG BASIN, UT **COOP ID: 421020**

Climate Division: UT 7 **NWS Call Sign: U17** **Elevation: 3,822 Feet** **Lat: 37˚32N** **Lon: 110˚43W**

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	43.7	24.7	34.2	67	1986	21	40.4	2000	3	1971	7	23.4	1973	955	0	.0	.0	9.2	1.8	28.3	.0
Feb	51.9	29.9	40.9	72+	1972	28	47.8	1995	4	1989	5	34.1	1974	675	0	.0	.0	18.5	.6	20.5	.0
Mar	61.9	36.5	49.2	84	1998	25	54.4	1972	15	1971	2	44.2	1987	494	4	.0	.0	29.1	.0	6.9	.0
Apr	71.4	44.0	57.7	93+	1989	20	64.0	1989	21	1975	1	50.4	1975	246	27	.0	.3	29.7	.0	4.1	.0
May	82.3	54.0	68.2	102+	2000	24	73.2	1984	33	1975	5	63.0	1975	57	153	.1	4.6	31.0	.0	.1	.0
Jun	93.8	63.4	78.6	110	1970	26	83.3	1994	42	1980	5	74.0	1975	2	411	6.4	22.6	30.0	.0	.0	.0
Jul	99.0	70.5	84.8	110+	1971	15	88.1	1996	54	1969	19	82.0	1987	0	613	12.9	29.1	31.0	.0	.0	.0
Aug	95.8	68.7	82.3	107+	1969	5	85.5	2000	46	1972	23	78.2	1975	0	534	6.3	26.4	31.0	.0	.0	.0
Sep	86.8	59.6	73.2	101+	1967	4	77.3	1979	43	2000	23	69.0	1986	8	253	.4	10.4	30.0	.0	.0	.0
Oct	73.1	46.5	59.8	93	1989	1	65.0	1988	25	1971	30	55.1+	1984	196	36	.0	.6	30.8	.0	.8	.0
Nov	56.5	34.9	45.7	79	1988	3	50.0	1995	13	1976	28	41.0	2000	579	0	.0	.0	24.3	.0	13.6	.0
Dec	45.7	25.9	35.8	69	1969	25	41.8	1980	0	1990	22	27.9	1978	905	0	.0	.0	11.7	1.2	27.2	@
Ann	71.8	46.6	59.2	110+	Jul 1971	15	88.1	Jul 1996	0	Dec 1990	22	23.4	Jan 1973	4117	2031	26.1	94.0	306.3	3.6	101.5	@

+ 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: 1967-2001

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

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Precipitation (inches)

Precipitation Totals

Mean Number of Days (3)

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution									
Month	Mean	Median	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.60	.44	.78	1980	18	1.98	1980	.00+	1986	4.7	1.9	.1	.0	.00	.00	.08	.17	.27	.39	.54	.73	1.00	1.46	1.92
Feb	.40	.38	.44	1980	20	1.27	1980	.00+	1974	4.3	1.1	.0	.0	.00	.07	.15	.21	.27	.34	.41	.50	.61	.80	.97
Mar	.63	.48	.95	1983	4	2.35	1983	.00+	1999	5.4	2.2	.2	.0	.00	.03	.12	.22	.32	.44	.59	.77	1.03	1.47	1.91
Apr	.31	.18	.48	1978	9	1.47	1975	.00	1977	2.9	.8	@	.0	.00	.01	.04	.08	.13	.19	.27	.37	.51	.77	1.03
May	.37	.24	.95	1979	8	1.89	1979	.00+	1984	3.6	1.0	.1	.0	.00	.00	.06	.11	.18	.25	.34	.46	.62	.89	1.17
Jun	.13	.02	.42	1972	23	1.03	1972	.00+	2000	1.7	.5	.0	.0	.00	.00	.00	.00	.01	.03	.08	.14	.23	.40	.57
Jul	.37	.26	1.74	1969	19	1.40	1997	.00	1971	4.0	1.6	.1	.0	.00	.02	.06	.11	.17	.24	.33	.44	.61	.89	1.18
Aug	.50	.47	1.20	1989	18	1.63	1989	.00+	1998	3.4	1.4	.1	@	.00	.05	.13	.21	.30	.39	.49	.62	.80	1.09	1.37
Sep	.66	.57	.88	1977	11	2.07	1997	.00+	1989	5.3	2.3	.3	.0	.00	.04	.14	.25	.36	.48	.63	.82	1.07	1.51	1.93
Oct	.98	.74	1.19	1978	22	6.53	1972	.00+	1999	4.7	2.6	.5	.1	.00	.02	.11	.23	.38	.58	.83	1.16	1.64	2.49	3.35
Nov	.62	.54	.81	1979	8	1.97	1979	.00	1989	3.4	1.4	.4	.0	.01	.05	.13	.22	.31	.43	.57	.75	1.00	1.43	1.86
Dec	.43	.30	.79	1978	2	2.37	1978	.00+	1989	3.3	1.5	.1	.0	.00	.00	.08	.15	.22	.31	.41	.53	.70	.98	1.26
Ann	6.00	5.25	1.74	Jul 1969	19	6.53	Oct 1972	.00+	Jun 2000	46.7	18.3	1.9	.1	2.89	3.41	4.11	4.68	5.21	5.73	6.29	6.93	7.73	8.94	10.02

\+ 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: 1967-2001
(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	1.3	.0	1	#
Feb	.8	.0	#	0
Mar	.6	.0	#	0
Apr	#	.0	#	0
May	#	.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
Nov	.4	.0	#	0
Dec	1.9	.0	#	0
Ann	5.0	.0	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	1974	5	8.2	1979	8	1974	6	6	1974
Feb	5.0	1979	1	6.5	1979	7	1979	1	4	1979
Mar	6.0	1985	28	6.1	1985	6	1985	28	#+	1998
Apr	#	1980	1	#	1980	#	1997	12	#	1997
May	#	1978	6	#	1978	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	#	1971	29	#	1971	0	0	0	0	0
Nov	4.5	1979	19	5.0	1979	5	1979	19	#+	1985
Dec	6.5	1974	29	11.7	1978	10	1978	18	2	1978
Ann	8.0	Jan 1974	5	11.7	Dec 1978	10	Dec 1978	18	6	Jan 1974

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.2	.5	.2	.1	.0
Feb	.3	.3	.1	.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	.0	.0	.0	.0	.0
Nov	.1	.1	.1	.0	.0
Dec	.7	.6	.2	.1	.0
Ann	2.5	1.7	.7	.4	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	2.5	1.9	.3	.0
Feb	.8	.1	.0	.0
Mar	.2	.1	.1	.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	.1	.1	.0
Dec	.2	.1	.0	.0
Ann	3.8	2.3	.5	.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	5/22	5/13	5/06	5/01	4/26	4/21	4/15	4/09	3/31
32	5/10	4/30	4/24	4/18	4/12	4/07	4/01	3/25	3/15
28	4/26	4/14	4/04	3/28	3/20	3/13	3/05	2/24	2/11
24	3/31	3/20	3/12	3/05	2/27	2/21	2/14	2/06	1/26
20	3/02	2/19	2/11	2/04	1/29	1/22	1/15	1/06	12/24
16	2/21	2/10	2/02	1/25	1/18	1/09	12/27	0/00	0/00

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	10/13	10/18	10/22	10/25	10/28	10/30	11/02	11/06	11/11
32	10/24	10/28	10/31	11/03	11/05	11/08	11/11	11/14	11/18
28	11/01	11/06	11/10	11/13	11/16	11/19	11/22	11/25	12/01
24	11/07	11/14	11/19	11/22	11/26	11/30	12/04	12/08	12/15
20	11/14	11/23	11/30	12/06	12/11	12/17	12/23	12/30	1/11
16	11/24	12/05	12/13	12/20	12/27	1/04	1/17	0/00	0/00

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	220	208	199	191	184	177	169	160	147
32	244	231	222	214	207	199	191	182	169
28	284	269	258	248	240	231	222	211	196
24	315	300	289	280	272	263	254	243	228
20	>365	350	333	322	313	304	295	285	271
16	>365	>365	>365	>365	>365	343	324	309	292

***** 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.

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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	955	675	494	246	57	2	0	0	8	196	579	905	4117
60	800	535	350	143	18	0	0	0	1	100	430	750	3127
57	707	451	272	95	7	0	0	0	0	60	344	657	2593
55	645	397	225	70	4	0	0	0	0	40	289	595	2265
50	502	269	128	26	0	0	0	0	0	11	169	445	1550
32	112	17	1	0	0	0	0	0	0	0	2	63	195

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	180	266	534	771	1119	1398	1636	1557	1236	862	414	181	10154
55	0	2	45	151	410	708	923	844	546	190	10	0	3829
57	0	1	30	117	352	648	861	782	486	147	5	0	3429
60	0	0	15	74	269	558	768	689	397	94	2	0	2866
65	0	0	4	27	153	411	613	534	253	36	0	0	2031
70	0	0	0	7	71	271	458	379	131	9	0	0	1326

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	23	94	307	500	817	1149	1347	1273	974	628	196	31	23	117	424	924	1741	2890	4237	5510	6484	7112	7308	7339
45	2	32	172	358	662	999	1192	1118	824	474	100	4	2	34	206	564	1226	2225	3417	4535	5359	5833	5933	5937
50	0	9	78	227	508	849	1037	963	674	328	38	0	0	9	87	314	822	1671	2708	3671	4345	4673	4711	4711
55	0	1	28	127	363	699	882	808	524	194	8	0	0	1	29	156	519	1218	2100	2908	3432	3626	3634	3634
60	0	0	6	56	230	549	727	653	377	95	0	0	0	0	6	62	292	841	1568	2221	2598	2693	2693	2693
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	21	73	200	331	526	726	852	819	634	387	131	24	21	94	294	625	1151	1877	2729	3548	4182	4569	4700	4724

(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