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: TROUT CREEK R S, MT **COOP ID: 248380**

Climate Division: MT 1 **NWS Call Sign:** **Elevation: 2,356 Feet** **Lat: 47˚52N** **Lon: 115˚37W**

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	34.3	19.3	26.8	57	1989	31	35.0	1994	-33	1979	1	11.6	1979	1185	0	.0	.0	.3	9.8	27.7	3.1
Feb	41.0	22.1	31.6	69	1995	25	37.4	1992	-23+	1996	2	22.5	1989	937	0	.0	.0	3.4	3.5	24.9	1.9
Mar	50.4	26.7	38.6	75	1994	31	44.0	1992	-6+	1976	2	33.0	1976	820	0	.0	.0	15.9	.3	23.9	.1
Apr	60.7	31.5	46.1	92+	1977	26	49.7	1980	9	1975	1	41.3	1982	567	0	.0	.1	26.2	.0	17.5	.0
May	69.1	37.7	53.4	98	1966	27	57.7	1993	18+	1973	1	49.7	1996	359	1	.0	.6	30.8	.0	8.0	.0
Jun	76.0	43.6	59.8	101	1961	17	64.2	1974	27+	1979	14	55.1	1981	177	21	.0	2.1	30.0	.0	1.2	.0
Jul	84.2	46.4	65.3	105	1994	24	71.4	1998	27	1979	3	58.7	1993	91	101	.6	10.1	31.0	.0	.3	.0
Aug	85.3	46.0	65.7	110	1961	4	70.5	1971	26	1965	25	60.6	1987	79	99	.8	11.1	31.0	.0	.4	.0
Sep	74.8	39.9	57.4	101+	1998	6	64.2	1998	18	2000	23	52.4	1985	248	19	.2	1.8	30.0	.0	5.3	.0
Oct	60.0	33.3	46.7	89	1970	5	52.7	1988	5	1971	29	43.1	1985	569	0	.0	.0	26.4	@	15.5	.0
Nov	42.0	28.5	35.3	69	1965	1	40.6	1999	-8+	1985	28	24.0	1985	892	0	.0	.0	4.7	2.5	20.5	.3
Dec	33.9	21.2	27.6	55	1965	4	33.4	1999	-40	1968	30	17.8	1983	1161	0	.0	.0	.2	10.4	27.6	1.5
Ann	59.3	33.0	46.2	110	Aug 1961	4	71.4	Jul 1998	-40	Dec 1968	30	11.6	Jan 1979	7085	241	1.6	25.8	229.9	26.5	172.8	6.9

\+ 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: 1960-2001

(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	3.67	3.43	1.87	1974	14	10.21	1974	.32	1985
Feb	2.74	2.30	1.57	1963	3	5.73	1972	.46	1998
Mar	2.21	2.05	1.47	1963	30	3.83	1982	.38	1992
Apr	1.84	1.61	1.39	1996	24	3.34	1991	.17	1977
May	2.35	2.06	2.04	1980	26	5.82	1998	.72	1999
Jun	2.26	1.91	2.71	1964	8	4.68	1981	.39	1979
Jul	1.39	1.17	1.19	1971	10	4.40	1993	.00+	1985
Aug	1.35	1.19	3.00	1999	8	3.83	1999	.00	2000
Sep	1.40	1.16	1.29	1968	18	3.67	1985	.00	1990
Oct	1.97	1.56	2.01	1994	27	5.72	1990	.00	1974
Nov	3.89	3.96	1.64	1990	25	8.03	1973	.76	1993
Dec	3.90	4.05	2.55	1964	22	7.67	1996	.70	1985
Ann	28.97	28.46	3.00	Aug 1999	8	10.21	Jan 1974	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	15.4	9.5	2.1	.5
Feb	13.0	7.8	1.4	.3
Mar	13.6	7.4	.7	@
Apr	11.4	5.8	.6	.1
May	12.9	7.1	1.0	.2
Jun	11.9	6.2	.9	.2
Jul	7.4	3.8	.9	.1
Aug	6.9	3.7	.7	.1
Sep	8.0	4.3	.7	.0
Oct	9.8	5.6	1.0	.1
Nov	16.0	10.1	2.3	.5
Dec	15.4	10.3	2.5	.3
Ann	141.7	81.6	14.8	2.4

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	.80	1.14	1.68	2.17	2.65	3.17	3.76	4.46	5.38	6.85	8.23
Feb	.56	.81	1.21	1.58	1.95	2.35	2.80	3.34	4.05	5.20	6.28
Mar	.67	.88	1.19	1.46	1.72	2.00	2.30	2.65	3.11	3.82	4.48
Apr	.47	.65	.92	1.15	1.38	1.63	1.90	2.23	2.65	3.31	3.94
May	.76	.98	1.31	1.59	1.86	2.14	2.45	2.81	3.27	3.99	4.66
Jun	.63	.84	1.17	1.45	1.73	2.02	2.34	2.72	3.21	3.98	4.70
Jul	.00	.22	.49	.72	.94	1.17	1.44	1.74	2.16	2.83	3.47
Aug	.06	.18	.38	.58	.79	1.03	1.31	1.67	2.15	2.94	3.72
Sep	.18	.36	.60	.79	.99	1.20	1.44	1.72	2.09	2.68	3.24
Oct	.11	.29	.59	.88	1.19	1.53	1.93	2.43	3.11	4.22	5.30
Nov	1.03	1.40	1.97	2.46	2.95	3.46	4.03	4.70	5.58	6.95	8.24
Dec	1.18	1.55	2.10	2.58	3.04	3.52	4.05	4.67	5.48	6.73	7.90
Ann	20.94	22.50	24.51	26.02	27.36	28.66	30.00	31.48	33.26	35.85	38.09

\+ 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: 1960-2001
(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	20.4	19.6	10	8
Feb	10.5	9.8	8	5
Mar	3.9	1.3	2	#
Apr	.4	.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	7.7	5.5	1	#
Dec	21.2	15.0	5	2
Ann	64.1	51.2	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	12.0	1982	23	52.1	1982	35+	1997	28	30	1997
Feb	14.0	1986	15	28.1	1985	34	1975	10	25	1997
Mar	10.0	1996	4	17.2	1996	24	1997	5	19	1997
Apr	4.0	1997	4	4.0	1997	8	1997	1	1	1997
May	#	1984	3	#	1984	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	#	1985	8	#+	1985	0	0	0	0	0
Nov	15.0	1996	19	44.0	1996	25	1996	24	9	1996
Dec	11.5	1990	27	55.1	1996	43	1996	29	26	1996
Ann	15.0	Nov 1996	19	55.1	Dec 1996	43	Dec 1996	29	30	Jan 1997

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	8.9	6.8	3.2	1.3	.1
Feb	4.4	3.5	1.7	.6	@
Mar	1.8	1.4	.6	.2	@
Apr	.3	.2	@	.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	3.3	2.3	1.0	.5	@
Dec	8.0	6.2	2.6	1.1	.1
Ann	26.7	20.4	9.1	3.7	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	24.7	20.2	19.5	13.5
Feb	19.5	16.5	13.2	7.5
Mar	5.6	3.7	2.5	.9
Apr	.1	@	.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	5.6	3.3	1.4	.6
Dec	17.3	11.9	8.1	4.2
Ann	72.8	55.6	44.7	26.7

+ 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	7/31	7/23	7/17	7/11	7/06	7/01	6/26	6/20	6/11
32	7/04	6/26	6/20	6/14	6/09	6/04	5/30	5/24	5/15
28	6/03	5/28	5/24	5/20	5/16	5/12	5/09	5/04	4/28
24	5/11	5/04	4/28	4/24	4/20	4/16	4/12	4/06	3/30
20	4/25	4/16	4/09	4/04	3/29	3/24	3/18	3/12	3/02
16	4/02	3/25	3/19	3/14	3/10	3/05	2/28	2/22	2/14

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	8/06	8/12	8/17	8/21	8/25	8/28	9/01	9/06	9/12
32	8/22	8/29	9/03	9/07	9/11	9/14	9/19	9/23	9/30
28	9/02	9/09	9/14	9/18	9/22	9/27	10/01	10/06	10/13
24	9/17	9/26	10/03	10/09	10/14	10/19	10/25	10/31	11/09
20	10/06	10/15	10/22	10/28	11/03	11/08	11/14	11/21	12/01
16	10/18	10/29	11/07	11/14	11/20	11/27	12/04	12/12	12/23

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	84	72	63	56	49	42	34	25	13
32	128	116	107	99	92	85	78	69	57
28	161	150	142	135	129	122	116	108	97
24	217	203	193	184	176	168	160	150	136
20	256	243	233	225	218	210	202	193	179
16	296	282	272	263	255	247	238	228	214

***** 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	1185	937	820	567	359	177	91	79	248	569	892	1161	7085
60	1030	797	665	418	215	79	32	24	138	415	742	1006	5561
57	937	713	572	330	141	39	14	10	87	323	652	913	4731
55	875	657	510	274	101	22	8	5	60	265	592	851	4220
50	720	517	356	150	33	3	0	0	18	136	446	696	3075
32	247	112	18	0	0	0	0	0	0	1	73	215	666

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	85	99	221	423	665	834	1033	1042	762	454	172	77	5867
55	0	0	0	7	53	165	328	334	132	5	0	0	1024
57	0	0	0	3	31	123	272	278	98	2	0	0	807
60	0	0	0	0	12	73	197	199	59	0	0	0	540
65	0	0	0	0	1	21	101	99	19	0	0	0	241
70	0	0	0	0	0	4	37	34	4	0	0	0	79

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	4	57	203	415	593	779	786	514	216	25	0	0	4	61	264	679	1272	2051	2837	3351	3567	3592	3592
45	0	0	13	100	269	443	624	631	366	101	6	0	0	0	13	113	382	825	1449	2080	2446	2547	2553	2553
50	0	0	0	43	145	297	469	477	227	35	0	0	0	0	0	43	188	485	954	1431	1658	1693	1693	1693
55	0	0	0	14	66	165	319	328	120	9	0	0	0	0	0	14	80	245	564	892	1012	1021	1021	1021
60	0	0	0	1	22	75	180	189	50	1	0	0	0	0	0	1	23	98	278	467	517	518	518	518
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	7	60	168	301	396	507	517	373	168	7	0	0	7	67	235	536	932	1439	1956	2329	2497	2504	2504

(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