

Climatology of the United States

No. 20

1971-2000

Station: SUN RIVER 4 S, MT

COOP ID: 248021

Climate Division: MT 4

NWS Call Sign:

Elevation: 3,600 Feet Lat: 47° 29N

Lon: 111° 44W

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	11.9	23.1	65	1992	31	37.3	1986	-46+	1996	30	6.9	1979	1299	0	.0	.0	4.8	10.3	26.6	8.7
Feb	40.0	16.2	28.1	73	1992	27	40.3	1991	-45	1996	2	9.7	1989	1033	0	.0	.0	8.6	6.9	23.1	5.4
Mar	47.4	22.2	34.8	78	1978	29	42.8	1986	-33	1960	3	24.9	1996	936	0	.0	.0	15.5	3.7	25.1	2.0
Apr	57.3	30.4	43.9	88	1980	20	50.9	1987	-16	1975	6	32.1	1975	634	0	.0	.0	22.8	.8	17.9	.3
May	66.0	38.7	52.4	93	1988	16	57.7	1988	8	1954	2	48.1	1982	392	1	.0	.1	28.9	.0	6.1	.0
Jun	74.0	46.3	60.2	99	1990	30	68.9	1988	26	1969	13	56.3	1998	178	33	.0	1.7	29.9	.0	.5	.0
Jul	81.5	49.8	65.7	101+	1973	10	70.4	1985	33+	1972	4	58.1	1993	79	98	.1	5.6	31.0	.0	.0	.0
Aug	80.8	48.8	64.8	102+	1983	6	70.9	1971	28	1992	25	59.5	1993	110	103	.1	5.7	31.0	.0	.1	.0
Sep	70.3	40.4	55.4	97	1967	5	62.3	1998	16	1984	28	48.7	1985	312	22	.0	1.1	28.2	@	5.0	.0
Oct	59.5	33.0	46.3	91	1992	1	50.1	1988	-19	1991	30	38.6	1984	582	0	.0	.0	25.7	.7	15.0	.2
Nov	43.4	22.8	33.1	74+	1999	7	43.5	1999	-40	1959	13	13.3	1985	957	0	.0	.0	11.2	4.6	22.5	2.7
Dec	35.8	14.7	25.3	65	1957	9	36.4	1999	-51	1968	29	3.7	1983	1232	0	.0	.0	5.0	8.5	26.5	6.2
Ann	57.5	31.3	44.4	102+	Aug 1983	6	70.9	Aug 1971	-51	Dec 1968	29	3.7	Dec 1983	7744	257	.2	14.2	242.6	35.5	168.4	25.5

+ 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/normal/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1912-2001

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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	Med-ian	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	.42	.38	.58	1988	11	.88	1993	.01	1995	5.6	1.4	@	.0	.06	.10	.16	.22	.28	.34	.42	.51	.64	.84	1.04	
Feb	.36	.35	.60	1982	21	1.04	1989	.02	1981	4.6	1.1	.1	.0	.04	.07	.12	.18	.23	.29	.36	.45	.56	.75	.94	
Mar	.67	.61	.75	1950	6	1.87	1981	.09	1986	6.5	2.4	.1	.0	.11	.17	.27	.36	.46	.56	.68	.82	1.01	1.32	1.61	
Apr	1.24	1.02	1.90	1975	26	3.49	1993	.02	1981	7.6	3.4	.7	.1	.13	.23	.40	.57	.76	.97	1.21	1.52	1.93	2.62	3.29	
May	2.18	1.97	2.20	1983	9	5.13	1981	.15	2000	10.2	5.2	1.2	.2	.58	.79	1.10	1.38	1.65	1.93	2.25	2.62	3.11	3.88	4.60	
Jun	2.08	1.86	2.53	1964	8	4.56	1991	.45	1972	9.2	5.2	1.1	.2	.45	.64	.94	1.22	1.50	1.79	2.12	2.52	3.05	3.88	4.68	
Jul	1.47	1.07	1.53	1983	10	5.64	1993	.12	1973	7.1	3.5	1.0	.2	.11	.21	.40	.60	.82	1.08	1.39	1.79	2.33	3.25	4.15	
Aug	1.51	1.04	2.05	1989	25	5.70	1985	.30	1988	7.8	3.9	.8	.2	.21	.34	.55	.76	.98	1.23	1.51	1.85	2.31	3.06	3.79	
Sep	1.06	.94	1.55	1982	27	2.88	1985	.11	1990	6.6	3.2	.3	@	.16	.24	.40	.54	.70	.86	1.05	1.29	1.60	2.12	2.61	
Oct	.81	.69	1.26	1975	13	3.72	1975	.00	1987	5.1	2.7	.2	.1	.05	.13	.26	.38	.51	.64	.80	1.00	1.27	1.71	2.13	
Nov	.49	.41	.56	1966	10	1.82	1978	.04	1972	5.0	1.8	.0	.0	.08	.12	.19	.26	.33	.40	.49	.59	.73	.96	1.18	
Dec	.42	.28	.52	1984	23	1.23	1978	.04	1999	5.0	1.5	@	.0	.04	.07	.13	.19	.25	.32	.41	.51	.66	.89	1.13	
Ann	12.71	11.45	2.53	Jun 1964	8	5.70	Aug 1985	.00	Oct 1987	80.3	35.3	5.5	1.0	7.06	8.05	9.38	10.42	11.37	12.31	13.30	14.42	15.81	17.87	19.69	

+ 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: 1912-2001

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Lat: 47° 29N

Lon: 111° 44W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	7.0	5.5	2	1	11.0	1988	11	17.6	1978	16	1978	29	12	1978	4.9	2.7	.4	.1	@	11.0	4.4	1.8	.1
Feb	4.6	3.6	2	1	6.0	1986	15	12.6	1989	16	1978	17	13	1978	3.8	2.1	.4	@	.0	8.2	5.1	2.2	.1
Mar	6.9	8.2	1	1	9.0	1987	19	13.8	1975	11	1978	6	9	1978	3.3	2.2	.5	.2	.0	4.3	2.2	.9	.0
Apr	4.2	2.0	#	#	6.0	1975	4	20.1	1975	11	1975	9	6	1975	2.0	1.3	.6	.1	.0	1.5	1.0	.5	.1
May	.8	.0	#	0	13.5	1983	9	13.5	1983	12	1983	9	1	1983	.2	.2	.1	@	@	.2	.2	.1	.1
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	.1	.0	0	0	3.0	1992	23	3.0	1992	0	0	0	0	0	@	@	@	.0	.0	.0	.0	.0	.0
Sep	.3	.0	#	0	4.0	1973	14	5.5	1973	4	1973	14	#+	2000	.2	.2	@	.0	.0	@	@	.0	.0
Oct	2.7	1.1	#	#	5.0	1985	7	12.9	1975	6	1972	29	1	1991	.9	.7	.3	@	.0	.8	.5	.1	.0
Nov	4.3	3.0	1	#	5.9	1977	18	16.3	1973	11	1973	6	3	1985	3.1	2.1	.3	.1	.0	5.2	2.4	.5	@
Dec	8.3	6.0	1	1	10.0	1977	30	26.0	1977	12	1996	29	5	1972	3.8	2.4	.5	.3	@	6.8	2.9	1.2	.1
Ann	39.2	29.4	N/A	N/A	13.5	May 1983	9	26.0	Dec 1977	16+	Feb 1978	17	13	Feb 1978	22.2	13.9	3.1	.8	@	38.0	18.7	7.3	.5

+ 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	7/07	6/29	6/24	6/20	6/16	6/12	6/07	6/02	5/26
32	6/14	6/08	6/04	6/01	5/29	5/26	5/22	5/18	5/13
28	5/22	5/17	5/14	5/11	5/08	5/05	5/02	4/29	4/24
24	5/11	5/06	5/03	4/30	4/28	4/25	4/22	4/19	4/15
20	5/01	4/25	4/21	4/18	4/15	4/12	4/09	4/05	3/30
16	4/22	4/16	4/13	4/09	4/06	4/03	3/31	3/27	3/22
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	8/19	8/24	8/27	8/31	9/02	9/05	9/08	9/12	9/17
32	9/04	9/07	9/10	9/12	9/14	9/16	9/18	9/20	9/24
28	9/09	9/14	9/17	9/20	9/23	9/26	9/28	10/02	10/07
24	9/20	9/25	9/28	10/01	10/04	10/06	10/09	10/13	10/17
20	9/27	10/02	10/06	10/10	10/13	10/16	10/20	10/24	10/29
16	10/08	10/14	10/18	10/21	10/24	10/28	10/31	11/04	11/10
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	104	95	89	83	78	73	67	61	52
32	126	120	115	111	107	103	99	94	88
28	159	151	146	141	137	133	128	123	115
24	178	171	166	162	158	154	150	146	139
20	204	196	190	185	180	176	170	165	156
16	221	214	209	204	200	196	192	187	179

* 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	1299	1033	936	634	392	178	79	110	312	582	957	1232	7744
60	1148	902	781	489	247	86	23	47	197	427	813	1082	6242
57	1065	823	688	405	171	47	10	25	141	336	728	998	5437
55	1006	771	627	352	129	29	5	16	108	279	672	939	4933
50	861	644	479	232	52	6	0	4	47	153	536	796	3810
32	420	281	92	16	0	0	0	0	0	4	181	370	1364

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	143	172	179	372	632	845	1042	1016	700	445	214	161	5921
55	16	18	1	18	47	184	335	319	119	7	16	18	1098
57	14	15	0	11	28	143	277	266	91	2	12	14	873
60	3	9	0	5	11	91	198	195	57	1	6	6	582
65	0	0	0	0	1	33	98	103	22	0	0	0	257
70	0	0	0	0	0	8	33	40	7	0	0	0	88

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	24	40	66	181	399	613	804	785	484	258	72	27	24	64	130	311	710	1323	2127	2912	3396	3654	3726	3753
45	4	12	29	94	255	464	649	631	341	151	33	5	4	16	45	139	394	858	1507	2138	2479	2630	2663	2668
50	0	1	2	43	141	318	494	477	219	74	12	0	0	1	3	46	187	505	999	1476	1695	1769	1781	1781
55	0	0	0	10	59	185	343	326	115	28	0	0	0	0	0	10	69	254	597	923	1038	1066	1066	1066
60	0	0	0	1	22	86	198	185	47	6	0	0	0	0	0	1	23	109	307	492	539	545	545	545
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	9	35	66	150	268	384	509	496	331	190	41	11	9	44	110	260	528	912	1421	1917	2248	2438	2479	2490

(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:

www.ncdc.noaa.gov/oa/climate/normal/usnormals.html

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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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