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: YELLOWTAIL DAM, MT **COOP ID: 249240**

Climate Division: MT 5 **NWS Call Sign:** **Elevation: 3,305 Feet** **Lat: 45˚19N** **Lon: 107˚56W**

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	40.2	17.7	29.0	68	1974	16	42.0	1986	-30+	1997	12	13.0	1979	1118	0	.0	.0	9.0	8.7	24.4	5.6
Feb	46.1	21.9	34.0	72+	1995	24	42.8	1999	-32	1989	3	17.5	1989	869	0	.0	.0	12.4	5.7	20.5	3.1
Mar	54.0	28.0	41.0	80+	1993	24	50.9	1986	-16	1989	4	32.1	1996	744	0	.0	.0	19.3	1.8	19.3	.8
Apr	63.4	36.2	49.8	89	1980	21	57.0	1987	8	1997	12	40.2	1975	460	5	.0	.0	25.3	.3	8.5	.0
May	72.7	44.5	58.6	98	2001	13	63.2	1985	21	1967	4	53.3	1995	224	25	.0	1.0	30.1	.0	.8	.0
Jun	82.7	52.4	67.6	104+	1988	27	76.8	1988	31	1969	13	61.5	1998	65	142	.8	7.0	30.0	.0	.0	.0
Jul	91.0	57.2	74.1	107+	1995	29	78.2	1985	31	1948	7	65.9	1993	11	293	3.2	17.5	31.0	.0	.0	.0
Aug	91.0	56.1	73.6	107+	1995	7	80.5	1983	37+	1992	25	68.4	1987	23	287	2.3	17.8	31.0	.0	.0	.0
Sep	79.2	47.2	63.2	104	1950	5	70.0	1998	22	1965	18	58.3	1986	131	77	.3	4.7	29.4	.0	1.1	.0
Oct	66.1	38.5	52.3	94	1963	4	56.5	1973	-7	1991	30	49.0	1984	395	1	.0	.2	27.9	.3	6.6	@
Nov	49.0	27.7	38.4	78	1999	12	49.2	1999	-14+	1985	27	21.2	1985	801	0	.0	.0	15.1	3.8	18.5	.8
Dec	41.7	20.5	31.1	72	1980	27	40.2	1999	-28+	1990	21	11.8	1983	1051	0	.0	.0	9.5	6.9	23.9	3.4
Ann	64.8	37.3	51.1	107+	Aug 1995	7	80.5	Aug 1983	-32	Feb 1989	3	11.8	Dec 1983	5892	830	6.6	48.2	270.0	27.5	123.6	13.7

\+ 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: 1948-2001

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

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Climate Division: MT 5 **NWS Call Sign:** **Elevation: 3,305 Feet** **Lat: 45°19N** **Lon: 107°56W**

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	.86	.81	.84	1969	5	1.67	1978	.12	1990
Feb	.72	.62	.74	1986	4	1.86	1986	.02	1992
Mar	1.39	1.31	1.07	1970	8	3.05	1973	.17	1978
Apr	2.10	2.11	3.21	1964	26	5.67	1978	.33	1981
May	3.09	2.56	5.00	1988	7	9.28	1978	.12	1998
Jun	2.21	2.06	2.50+	1992	14	7.81	1992	.58	1971
Jul	1.45	1.03	4.56	1981	25	5.22	1981	.07	1988
Aug	.98	.84	2.34	1964	29	2.89	1987	.07	1994
Sep	1.77	1.59	2.11	1978	18	5.13	1991	.18	1990
Oct	1.89	1.85	2.39	1974	31	6.14	1971	.11	1978
Nov	.95	.85	1.09	1978	9	2.26	1991	.32	1987
Dec	.87	.74	.79	1972	29	2.51	1989	.08	1986
Ann	18.28	17.91	5.00	May 1988	7	9.28	May 1978	.02	Feb 1992

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.3	2.9	.2	.0
Feb	6.1	2.4	.1	.0
Mar	9.1	4.6	.4	.0
Apr	9.7	5.8	1.0	.3
May	9.9	6.2	2.2	.6
Jun	9.1	5.2	1.1	.4
Jul	6.7	2.9	.7	.3
Aug	5.5	2.8	.4	.1
Sep	6.9	4.2	1.1	.3
Oct	6.4	4.0	1.2	.4
Nov	5.8	3.1	.4	@
Dec	6.6	2.8	.3	.0
Ann	89.1	46.9	9.1	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	.24	.32	.45	.55	.66	.77	.89	1.04	1.22	1.51	1.79
Feb	.09	.15	.25	.35	.46	.58	.71	.88	1.11	1.49	1.86
Mar	.43	.57	.76	.93	1.10	1.26	1.45	1.67	1.95	2.39	2.80
Apr	.49	.69	.99	1.27	1.54	1.83	2.15	2.54	3.05	3.86	4.62
May	.56	.83	1.29	1.71	2.14	2.60	3.13	3.77	4.62	5.98	7.29
Jun	.48	.69	1.01	1.30	1.60	1.91	2.26	2.68	3.24	4.12	4.96
Jul	.09	.18	.36	.55	.78	1.04	1.35	1.76	2.32	3.28	4.24
Aug	.17	.25	.39	.53	.67	.82	.99	1.19	1.47	1.92	2.34
Sep	.25	.39	.65	.89	1.15	1.43	1.76	2.17	2.71	3.60	4.46
Oct	.28	.43	.71	.97	1.24	1.54	1.89	2.31	2.88	3.81	4.70
Nov	.32	.41	.54	.66	.76	.87	.99	1.13	1.31	1.59	1.84
Dec	.12	.19	.31	.43	.56	.70	.86	1.06	1.33	1.76	2.19
Ann	12.63	13.71	15.11	16.17	17.11	18.03	18.98	20.03	21.31	23.17	24.79

\+ 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: 1948-2001
(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	21.0	-99.9	2	0	15.0	1972	2	21.0	1972	15	1972	3	10	1972	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Feb	-99.9	-99.9	1	0	.0	0	0	.0	0	7	1984	14	7	1984	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Mar	-99.9	-99.9	1	0	.0	0	0	.0	0	14	1977	29	6	1977	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Apr	-99.9	-99.9	#	0	#	1981	13	#	1981	#	1997	2	#	1997	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
May	#	.0	0	0	#	1981	11	#	1981	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Sep	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Oct	-99.9	-99.9	0	0	#	1979	31	#	1979	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	.0	.0	.0	.0
Nov	-99.9	-99.9	2	0	#	1979	99	#	1979	21	1977	20	21	1977	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Dec	-99.9	-99.9	0	0	#	1979	99	#	1979	0	0	0	0	0	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9	-9.9
Ann	-9.9	-9.9	N/A	N/A	15.0	Jan 1972	2	21.0	Jan 1972	21	Nov 1977	20	21	Nov 1977	-9.9	-9.9	-9.9	-9.9	-9.9	-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	6/02	5/27	5/23	5/19	5/16	5/12	5/09	5/04	4/28
32	5/18	5/12	5/08	5/05	5/02	4/29	4/26	4/22	4/16
28	5/03	4/27	4/23	4/19	4/16	4/12	4/09	4/04	3/29
24	4/23	4/17	4/13	4/09	4/06	4/03	3/30	3/26	3/21
20	4/21	4/13	4/07	4/02	3/29	3/24	3/19	3/13	3/05
16	4/03	3/27	3/22	3/18	3/14	3/10	3/06	3/01	2/22

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	9/13	9/17	9/19	9/22	9/24	9/26	9/28	10/01	10/05
32	9/16	9/21	9/25	9/29	10/02	10/05	10/09	10/13	10/18
28	9/28	10/05	10/09	10/13	10/17	10/20	10/24	10/29	11/04
24	10/10	10/16	10/20	10/24	10/27	10/31	11/03	11/08	11/14
20	10/20	10/26	10/30	11/02	11/06	11/09	11/13	11/17	11/23
16	10/30	11/04	11/07	11/11	11/14	11/17	11/20	11/23	11/29

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	153	145	140	135	131	126	121	116	108
32	173	166	161	156	152	148	144	139	132
28	209	200	194	188	183	178	173	166	158
24	228	219	213	208	203	198	193	187	178
20	254	243	235	228	222	215	208	200	189
16	270	261	255	249	244	239	233	226	217

***** 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	1118	869	744	460	224	65	11	23	131	395	801	1051	5892
60	970	740	592	323	119	22	1	6	57	249	663	899	4641
57	885	662	506	250	73	10	0	2	29	173	579	815	3984
55	827	610	449	207	50	5	0	1	17	130	525	757	3578
50	686	488	317	119	15	0	0	0	3	58	400	615	2701
32	287	170	43	2	0	0	0	0	0	1	103	227	833

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	192	225	322	537	824	1067	1305	1288	936	629	293	199	7817
55	19	22	15	51	160	382	592	575	263	46	24	16	2165
57	15	17	10	35	122	327	530	515	215	27	18	12	1843
60	8	12	3	18	75	249	438	426	153	10	12	4	1408
65	0	0	0	5	25	142	293	287	77	1	0	0	830
70	0	0	0	0	5	67	168	173	31	0	0	0	444

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	51	77	155	321	579	830	1062	1049	710	414	128	61	51	128	283	604	1183	2013	3075	4124	4834	5248	5376	5437
45	20	33	80	202	427	680	907	894	563	277	62	25	20	53	133	335	762	1442	2349	3243	3806	4083	4145	4170
50	3	9	31	109	289	531	752	739	422	168	27	7	3	12	43	152	441	972	1724	2463	2885	3053	3080	3087
55	0	0	11	53	167	381	597	584	289	87	8	1	0	0	11	64	231	612	1209	1793	2082	2169	2177	2178
60	0	0	1	19	78	245	446	431	174	34	0	0	0	0	1	20	98	343	789	1220	1394	1428	1428	1428
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	27	55	113	212	359	519	669	659	447	272	80	37	27	82	195	407	766	1285	1954	2613	3060	3332	3412	3449

(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