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: WALSH 1 W, CO **COOP ID: 058793**

Climate Division: CO 1 **NWS Call Sign:** **Elevation: 3,978 Feet** **Lat: 37˚23N** **Lon: 102˚18W**

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	44.5	16.0	30.3	79	1982	27	39.6	1986	-25	1984	18	17.6	1979	1078	0	.0	.0	13.0	6.5	30.0	1.9
Feb	50.2	19.6	34.9	82+	1981	20	43.5	2000	-19+	1996	3	19.1	1978	843	0	.0	.0	16.2	4.2	25.7	1.3
Mar	57.9	26.7	42.3	88	1989	12	48.3	1972	-6	1978	4	37.8	1980	703	0	.0	.0	23.1	1.6	21.0	.2
Apr	67.1	35.4	51.3	96	1989	23	59.0	1981	8+	1997	12	44.9	1984	420	7	.0	.5	27.1	.2	9.9	.0
May	76.0	46.0	61.0	102+	2000	31	66.4	1974	28	1975	7	56.0	1995	171	48	.1	2.7	30.4	.0	.7	.0
Jun	87.2	56.3	71.8	108	1980	24	76.9	1994	38	1975	11	66.2	1989	22	225	2.1	12.9	30.0	.0	.0	.0
Jul	92.0	61.3	76.7	106+	1981	21	79.6	1978	45	1994	8	73.5	1975	0	362	3.9	20.3	31.0	.0	.0	.0
Aug	89.2	60.2	74.7	103	1977	7	80.0	1983	41	1988	29	70.8	1992	3	304	1.0	15.7	31.0	.0	.0	.0
Sep	81.4	51.3	66.4	102+	2000	7	72.4	1998	20	1985	30	61.6	1973	66	106	.3	7.2	29.6	.0	.4	.0
Oct	70.2	38.8	54.5	94	1967	3	58.3	1973	8	1993	30	47.3	1976	331	4	.0	.5	29.1	.3	6.5	.0
Nov	55.3	26.6	41.0	88	1980	8	48.0	1999	-9	1976	28	33.1	1972	721	0	.0	.0	19.9	2.0	22.8	.1
Dec	46.2	18.4	32.3	78+	1982	18	38.2	1980	-20	1989	22	19.8	1983	1013	0	.0	.0	13.6	5.3	29.4	1.6
Ann	68.1	38.1	53.1	108	Jun 1980	24	80.0	Aug 1983	-25	Jan 1984	18	17.6	Jan 1979	5371	1056	7.4	59.8	294.0	20.1	146.4	5.1

\+ 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: 1951-2001

(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	.42	.28	1.04	1990	19	1.41	1990	.00	1986
Feb	.42	.16	.87	1990	20	1.62	1987	.00+	1994
Mar	1.02	.67	1.05	1979	21	3.55	2000	.04	1989
Apr	1.43	.98	1.93	1988	2	4.52	1980	.20	1972
May	2.76	2.75	2.95+	1988	31	5.82	1978	.36	1974
Jun	2.32	2.12	2.54	1995	29	7.63	1989	.20+	1980
Jul	3.33	2.63	4.30	1982	8	11.35	1998	.12	1983
Aug	2.54	2.21	3.20	1994	14	7.43	1994	.02	1983
Sep	1.44	.93	2.80	1973	24	4.04	1988	.10	1980
Oct	1.21	.60	2.60	1999	8	4.78	2000	.00+	1980
Nov	.67	.32	1.57	1975	19	2.69	1972	.00+	1999
Dec	.39	.28	.69	1997	23	1.75	1997	.00+	1988
Ann	17.95	17.36	4.30	Jul 1982	8	11.35	Jul 1998	.00+	Nov 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.3	1.5	.1	@
Feb	2.8	1.4	.1	.0
Mar	5.0	3.0	.4	@
Apr	5.8	3.6	.8	.2
May	8.4	5.2	1.5	.6
Jun	7.1	4.6	1.7	.5
Jul	7.3	5.1	2.3	1.0
Aug	6.8	4.5	1.8	.6
Sep	5.1	2.9	1.1	.2
Oct	3.8	2.1	.7	.4
Nov	3.3	1.8	.2	.1
Dec	3.2	1.3	.1	.0
Ann	61.9	37.0	10.8	3.6

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	.11	.17	.24	.31	.40	.51	.67	.92	1.17
Feb	.00	.00	.04	.09	.16	.25	.36	.50	.71	1.07	1.44
Mar	.08	.15	.28	.42	.58	.76	.97	1.24	1.62	2.25	2.87
Apr	.20	.32	.52	.72	.93	1.16	1.42	1.74	2.18	2.89	3.57
May	.70	.96	1.36	1.72	2.07	2.44	2.85	3.34	3.98	4.99	5.93
Jun	.29	.47	.80	1.12	1.46	1.85	2.29	2.84	3.58	4.80	5.99
Jul	.39	.65	1.12	1.59	2.08	2.63	3.28	4.07	5.16	6.94	8.68
Aug	.22	.39	.73	1.08	1.47	1.91	2.43	3.09	4.00	5.52	7.01
Sep	.17	.28	.49	.69	.90	1.14	1.42	1.76	2.23	3.00	3.75
Oct	.00	.02	.13	.28	.47	.71	1.02	1.42	2.02	3.07	4.15
Nov	.00	.03	.11	.21	.32	.45	.61	.81	1.10	1.59	2.08
Dec	.00	.04	.10	.17	.23	.30	.39	.49	.62	.85	1.08
Ann	11.36	12.58	14.17	15.41	16.51	17.60	18.72	19.98	21.53	23.80	25.78

\+ 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: 1951-2001
(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	5.5	5.1	1	1
Feb	2.8	2.0	#	#
Mar	4.8	4.0	#	#
Apr	2.0	.5	#	#
May	.3	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.2	.0	#	0
Oct	1.0	.0	#	0
Nov	3.1	2.0	#	#
Dec	4.0	3.3	#	#
Ann	23.7	16.9	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	10.0	1990	19	14.5	1990	12	1990	20	2	1993
Feb	9.0	1990	20	14.0	1990	10	1990	21	4	1978
Mar	8.0	1998	19	15.0+	1999	8+	1999	19	5	1975
Apr	9.0	1988	2	13.0	1988	13	1988	3	1	1988
May	6.0	1978	2	6.0	1978	6	1978	2	#+	1990
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	3.0	1984	29	3.0	1984	2	1995	21	#	1995
Oct	8.5	1997	26	9.0	1997	9	1997	26	1	1997
Nov	5.0	1972	27	17.0	1972	11	1991	3	2	1991
Dec	8.5	1979	27	16.6	1997	8	1997	26	3	1997
Ann	10.0	Jan 1990	19	17.0	Nov 1972	13	Apr 1988	3	5	Mar 1975

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.9	1.9	.5	.1	@
Feb	2.0	1.2	.4	.1	.0
Mar	2.1	1.7	.5	.2	.0
Apr	1.0	.7	.2	.1	.0
May	.1	.1	@	@	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.1	.1	@	.0	.0
Oct	.3	.2	.1	.1	.0
Nov	1.5	1.2	.4	@	.0
Dec	2.2	1.4	.4	.1	.0
Ann	12.2	8.5	2.5	.7	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	5.9	2.2	.6	.1
Feb	2.4	1.1	.3	@
Mar	2.1	.9	.3	.0
Apr	1.0	.2	.1	.1
May	.1	.1	.1	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	@	.0	.0	.0
Oct	.5	.3	.1	.0
Nov	2.6	.9	.2	@
Dec	4.8	1.2	.4	.0
Ann	19.4	6.9	2.1	.2

+ 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	5/17	5/14	5/11	5/09	5/07	5/05	5/03	4/30	4/27
32	5/12	5/08	5/04	5/02	4/29	4/27	4/24	4/21	4/17
28	5/01	4/26	4/23	4/20	4/18	4/15	4/12	4/09	4/05
24	4/19	4/15	4/13	4/10	4/08	4/06	4/04	4/01	3/28
20	4/13	4/09	4/06	4/04	4/01	3/30	3/27	3/25	3/20
16	4/07	3/31	3/27	3/23	3/19	3/15	3/11	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	9/16	9/21	9/24	9/27	9/30	10/03	10/05	10/09	10/14
32	9/26	10/01	10/04	10/07	10/10	10/13	10/16	10/19	10/24
28	10/03	10/08	10/12	10/16	10/19	10/22	10/25	10/29	11/03
24	10/12	10/18	10/22	10/25	10/28	11/01	11/04	11/08	11/14
20	10/19	10/25	10/29	11/02	11/06	11/09	11/13	11/17	11/23
16	10/30	11/05	11/09	11/12	11/16	11/19	11/23	11/27	12/03

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	163	157	152	149	145	142	138	133	127
32	180	174	170	166	163	159	156	151	146
28	201	195	191	187	183	180	176	172	165
24	225	217	212	207	203	198	193	188	180
20	241	233	227	222	217	213	208	202	194
16	269	259	253	247	241	236	230	223	213

***** 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	1078	843	703	420	171	22	0	3	66	331	721	1013	5371
60	923	703	548	286	84	5	0	0	20	197	572	858	4196
57	830	621	457	217	49	1	0	0	7	131	486	765	3564
55	769	570	397	176	32	0	0	0	3	96	430	703	3176
50	621	440	259	94	8	0	0	0	0	38	298	552	2310
32	190	107	13	0	0	0	0	0	0	0	32	131	473

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	135	188	332	577	899	1193	1385	1324	1030	696	300	141	8200
55	1	7	4	63	218	503	672	611	344	79	8	0	2510
57	0	2	1	43	173	444	610	549	288	53	4	0	2167
60	0	0	0	23	115	358	517	456	210	25	0	0	1704
65	0	0	0	7	48	225	362	304	106	4	0	0	1056
70	0	0	0	0	14	119	210	167	41	0	0	0	551

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	44	86	199	391	677	965	1144	1078	806	471	149	51	44	130	329	720	1397	2362	3506	4584	5390	5861	6010	6061
45	10	37	111	262	523	815	989	923	658	331	77	15	10	47	158	420	943	1758	2747	3670	4328	4659	4736	4751
50	0	10	52	157	377	665	834	768	513	211	32	1	0	10	62	219	596	1261	2095	2863	3376	3587	3619	3620
55	0	1	16	78	242	516	679	613	373	112	7	0	0	1	17	95	337	853	1532	2145	2518	2630	2637	2637
60	0	0	2	33	130	371	524	460	242	47	0	0	0	0	2	35	165	536	1060	1520	1762	1809	1809	1809
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	61	103	178	278	424	607	735	697	511	332	141	70	61	164	342	620	1044	1651	2386	3083	3594	3926	4067	4137

(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