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: CLEARWATER, WA **COOP ID: 451496**

Climate Division: WA 1 **NWS Call Sign:** **Elevation: 80 Feet** **Lat: 47˚34N** **Lon: 124˚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	46.6	34.0	40.3	65	1968	23	44.6	1983	-8	1950	14	33.4	1979	766	0	.0	.0	8.9	.5	13.5	.0
Feb	50.2	34.7	42.5	76	1992	26	46.9	1977	-1	1950	1	34.3	1989	631	0	.0	.0	14.1	.3	11.5	.0
Mar	53.6	35.6	44.6	79	1947	16	48.8	1992	15	1951	10	40.7	1976	631	0	.0	.0	23.9	.0	10.7	.0
Apr	58.2	37.8	48.0	85	1987	26	50.6	1987	25	1975	1	43.8	1975	512	0	.0	.0	28.4	.0	5.9	.0
May	63.0	41.6	52.3	95+	1963	21	56.6	1993	26	1954	1	49.0	1974	393	0	.0	@	31.0	.0	.6	.0
Jun	66.4	45.5	56.0	102	1958	5	59.4	1978	31	1972	2	52.9	1971	271	0	.0	.1	30.0	.0	.1	.0
Jul	70.9	48.1	59.5	99	1942	1	62.1	1995	34+	1949	2	57.2	1977	173	3	.0	.3	31.0	.0	.0	.0
Aug	71.9	47.9	59.9	98	1981	9	62.7	1997	31	1973	21	55.7	1973	164	5	.0	.4	31.0	.0	@	.0
Sep	70.1	44.8	57.5	96	1937	14	61.8	1979	27	1972	27	54.3	1972	229	3	.0	.2	30.0	.0	.4	.0
Oct	61.5	40.5	51.0	85	1952	6	54.4	1976	23	1971	28	48.2	1984	434	0	.0	.0	30.4	.0	3.8	.0
Nov	51.7	36.9	44.3	74	1970	1	48.4	1987	10+	1955	15	36.1	1985	622	0	.0	.0	18.8	.2	8.8	.0
Dec	46.2	34.1	40.2	61+	1962	16	45.6	1979	4	1983	24	34.6	1983	770	0	.0	.0	8.8	.8	14.0	.0
Ann	59.2	40.1	49.7	102	Jun 1958	5	62.7	Aug 1997	-8	Jan 1950	14	33.4	Jan 1979	5596	11	.0	1.0	286.3	1.8	69.3	.0

\+ 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: 1931-2001

(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	15.39	16.12	6.85	1971	26	25.86	1971	2.35	1985
Feb	13.42	12.92	7.94	1982	13	25.56	1982	.35	1993
Mar	12.34	12.04	4.70	1950	3	22.99	1974	1.89	1992
Apr	8.38	8.11	6.40	1959	29	16.72	1981	2.89	1998
May	6.17	5.72	2.80	1939	28	14.98	1974	1.43	1982
Jun	3.70	3.28	2.96	1956	8	8.08	1981	1.30	1972
Jul	2.82	1.88	9.13	1972	12	13.69	1983	.15	1985
Aug	2.96	2.18	3.10	1936	31	12.12	1991	.00	1998
Sep	4.84	4.25	3.85	1968	17	16.89	1978	.02	1991
Oct	10.32	8.74	4.38	1967	30	33.40	1975	1.80	1972
Nov	16.41	16.32	6.95	1962	19	28.92	1977	5.12	1979
Dec	16.53	15.69	6.14	1979	17	33.49	1979	3.72	1985
Ann	113.28	110.46	9.13	Jul 1972	12	33.49	Dec 1979	.00	Aug 1998

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	21.9	17.5	9.7	5.2
Feb	19.3	16.1	9.6	4.7
Mar	20.1	16.6	8.8	4.0
Apr	17.1	13.5	6.4	2.3
May	15.3	10.9	4.3	1.6
Jun	12.3	8.2	2.7	.6
Jul	8.4	4.5	1.4	.8
Aug	7.3	4.8	1.9	.9
Sep	10.1	6.9	3.5	1.6
Oct	16.8	12.7	7.0	3.7
Nov	22.1	18.8	11.8	6.0
Dec	22.9	18.7	10.7	5.9
Ann	193.6	149.2	77.8	37.3

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	5.43	6.88	8.98	10.75	12.44	14.18	16.08	18.28	21.10	25.46	29.46
Feb	3.73	5.00	6.93	8.62	10.27	11.99	13.90	16.16	19.09	23.70	27.99
Mar	5.34	6.45	8.00	9.27	10.45	11.65	12.94	14.42	16.29	19.12	21.69
Apr	3.46	4.23	5.31	6.19	7.03	7.87	8.78	9.83	11.16	13.19	15.04
May	1.68	2.27	3.16	3.94	4.70	5.50	6.39	7.44	8.80	10.95	12.95
Jun	1.34	1.69	2.19	2.61	3.01	3.42	3.87	4.38	5.04	6.06	7.00
Jul	.18	.34	.69	1.08	1.51	2.02	2.63	3.41	4.51	6.36	8.21
Aug	.10	.32	.73	1.15	1.63	2.16	2.81	3.62	4.74	6.63	8.49
Sep	.18	.40	.92	1.54	2.28	3.18	4.30	5.76	7.86	11.49	15.16
Oct	2.29	3.25	4.76	6.12	7.49	8.94	10.58	12.53	15.10	19.20	23.06
Nov	6.27	7.80	9.98	11.80	13.52	15.28	17.18	19.38	22.19	26.50	30.43
Dec	7.20	8.68	10.75	12.44	14.02	15.62	17.33	19.30	21.78	25.55	28.96
Ann	80.44	86.79	94.93	101.11	106.61	111.92	117.40	123.47	130.82	141.49	150.72

\+ 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: 1931-2001
(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	.3	.0	#	0	1.5	1979	26	2.0	1979	24	1971	14	2	1971	.3	.2	.0	.0	.0	.2	.0	.0	.0
Feb	.8	.0	#	0	3.0	1971	26	5.0	1971	5	1971	27	#	1971	.4	.4	.1	.0	.0	.2	.1	.1	.0
Mar	1.2	.0	#	0	3.5	1974	7	6.0	1974	5	1971	2	#	1971	.5	.5	.2	.0	.0	.2	@	@	.0
Apr	.1	.0	0	0	1.0	1972	9	1.0	1972	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.1	.0	0	0	.6	1976	28	.6	1976	0	0	0	0	0	.1	.0	.0	.0	.0	.0	.0	.0	.0
Dec	2.0	2.0	#	0	4.0	1972	5	8.0	1972	5	1972	11	1	1972	.9	.7	.4	.0	.0	.1	.0	.0	.0
Ann	4.5	2.0	N/A	N/A	4.0	Dec 1972	5	8.0	Dec 1972	24	Jan 1971	14	2	Jan 1971	2.3	1.9	.7	.0	.0	.7	.1	.1	.0

+ 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	6/19	6/12	6/06	6/01	5/28	5/24	5/19	5/13	5/06
32	5/26	5/17	5/11	5/06	5/02	4/27	4/22	4/16	4/08
28	4/14	4/04	3/28	3/21	3/15	3/09	3/03	2/24	2/13
24	3/08	2/26	2/19	2/13	2/07	2/02	1/27	1/20	1/10
20	2/12	1/30	1/20	1/11	12/31	12/16	0/00	0/00	0/00
16	1/24	1/11	12/30	12/12	0/00	0/00	0/00	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	9/02	9/10	9/15	9/20	9/25	9/30	10/05	10/10	10/18
32	9/20	9/28	10/03	10/08	10/12	10/16	10/20	10/26	11/02
28	10/20	10/28	11/03	11/08	11/13	11/17	11/22	11/28	12/06
24	11/06	11/19	11/28	12/06	12/14	12/21	12/29	1/07	1/20
20	11/28	12/12	12/23	1/03	1/14	1/31	0/00	0/00	0/00
16	12/18	1/01	1/14	2/04	0/00	0/00	0/00	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	149	139	132	125	119	113	107	100	89
32	199	186	177	170	162	155	147	138	126
28	288	272	260	251	242	232	223	211	196
24	>365	345	328	316	306	296	286	274	257
20	>365	>365	>365	>365	>365	>365	345	328	310
16	>365	>365	>365	>365	>365	>365	>365	>365	>365

***** 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	766	631	631	512	393	271	173	164	229	434	622	770	5596
60	611	491	476	362	240	131	54	53	104	280	472	615	3889
57	518	407	383	272	156	68	16	17	53	193	382	522	2987
55	456	351	321	214	109	38	5	6	29	141	326	460	2456
50	312	220	182	92	30	4	0	0	3	48	193	314	1398
32	16	3	0	0	0	0	0	0	0	0	3	15	37

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	272	296	392	479	630	719	852	864	764	589	371	268	6496
55	0	0	0	3	26	67	145	158	103	17	4	0	523
57	0	0	0	0	12	37	93	106	68	7	0	0	323
60	0	0	0	0	3	10	38	50	29	1	0	0	131
65	0	0	0	0	0	0	3	5	3	0	0	0	11
70	0	0	0	0	0	0	0	0	0	0	0	0	0

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	85	112	161	253	393	502	619	637	536	353	153	80	85	197	358	611	1004	1506	2125	2762	3298	3651	3804	3884
45	26	34	53	116	240	352	464	482	386	204	60	27	26	60	113	229	469	821	1285	1767	2153	2357	2417	2444
50	0	1	1	34	104	203	309	327	238	84	10	0	0	1	2	36	140	343	652	979	1217	1301	1311	1311
55	0	0	0	3	34	78	158	176	106	18	0	0	0	0	0	3	37	115	273	449	555	573	573	573
60	0	0	0	0	4	19	47	52	28	0	0	0	0	0	0	0	4	23	70	122	150	150	150	150
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	12	36	70	133	210	260	345	363	314	183	43	6	12	48	118	251	461	721	1066	1429	1743	1926	1969	1975

(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