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: COULEE DAM 1 SW, WA **COOP ID: 451767**

Climate Division: WA 7 **NWS Call Sign:** **Elevation: 1,700 Feet** **Lat: 47˚57N** **Lon: 119˚00W**

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	32.5	21.4	27.0	61	1981	22	35.0	1990	-17	1950	30	13.2	1979	1180	0	.0	.0	.5	14.2	27.6	1.2
Feb	40.0	25.6	32.8	61	1995	20	39.7	1991	-15	1950	1	24.8	1989	901	0	.0	.0	3.4	5.0	21.9	.7
Mar	51.2	31.5	41.4	73+	1994	30	47.4	1992	0	1955	4	35.3	1971	733	0	.0	.0	18.7	.4	16.3	.0
Apr	61.7	37.8	49.8	91	1977	25	54.0	1994	23	1977	19	45.0	1982	458	0	.0	@	29.0	.0	5.8	.0
May	70.6	45.4	58.0	100	1986	30	63.4	1993	27	1954	1	53.0	1984	236	18	@	.7	31.0	.0	.4	.0
Jun	78.4	52.2	65.3	102+	1992	23	71.9	1992	36	2001	25	60.6	1981	91	100	.1	3.0	30.0	.0	.0	.0
Jul	86.2	57.9	72.1	108	1960	18	80.3	1985	40	2000	2	64.6	1993	29	247	1.5	12.0	31.0	.0	.0	.0
Aug	86.4	57.7	72.1	110	1961	4	76.9	1971	38	1951	31	66.5	1976	19	238	1.0	11.6	31.0	.0	.0	.0
Sep	76.3	49.4	62.9	103	1988	3	68.7	1998	30+	1974	30	55.2	1986	153	88	.1	1.8	30.0	.0	.1	.0
Oct	61.2	39.6	50.4	84+	1988	4	56.0	1988	10	1984	31	46.7	1984	453	1	.0	.0	28.4	@	3.4	.0
Nov	43.0	30.9	37.0	69	1989	9	42.3	1998	-10	1985	30	23.1	1985	841	0	.0	.0	6.3	2.7	15.5	.2
Dec	33.3	23.1	28.2	58+	1980	27	34.7	1973	-16	1968	30	19.3	1983	1141	0	.0	.0	.7	13.5	26.2	.7
Ann	60.1	39.4	49.8	110	Aug 1961	4	80.3	Jul 1985	-17	Jan 1950	30	13.2	Jan 1979	6235	692	2.7	29.1	240.0	35.8	117.2	2.8

\+ 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

Issue Date: February 2004

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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	1.00	.96	.70	1986	23	2.19	1986	.30	1985
Feb	1.01	.86	.90	1997	12	3.12	1980	.03	1988
Mar	.98	.95	.95	1995	9	2.64	1983	.06	1979
Apr	.83	.84	.81	1997	23	2.19	1993	.00	1985
May	1.28	1.07	1.23	1972	18	3.32	1980	.12	1992
Jun	.95	.89	2.31	1996	27	2.62	1984	.05+	1986
Jul	.67	.45	1.29	1965	21	2.94	1993	.00+	1988
Aug	.48	.31	1.22	1948	4	1.43	1990	.00+	2000
Sep	.54	.42	1.38	1948	26	2.08+	1986	.00+	1990
Oct	.60	.54	.53	1981	6	1.63	1996	.00	1978
Nov	1.32	1.23	1.12	1973	12	3.95	1973	.13	1976
Dec	1.48	1.41	.95	1996	2	3.44	1996	.26	1976
Ann	11.14	11.01	2.31	Jun 1996	27	3.95	Nov 1973	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.5	3.6	.1	.0
Feb	10.8	3.8	.2	.0
Mar	10.8	3.4	.2	.0
Apr	8.3	3.0	.1	.0
May	9.1	3.5	.6	@
Jun	6.9	2.9	.4	.1
Jul	5.0	1.9	.4	@
Aug	4.2	1.4	.2	.0
Sep	4.9	1.6	.2	@
Oct	6.8	2.4	.1	.0
Nov	12.7	4.6	.3	@
Dec	13.2	5.2	.3	.0
Ann	104.2	37.3	3.1	.1

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	.28	.37	.51	.64	.76	.89	1.03	1.20	1.42	1.76	2.08
Feb	.13	.21	.35	.50	.64	.81	1.00	1.24	1.56	2.08	2.59
Mar	.17	.26	.40	.53	.67	.82	.99	1.20	1.47	1.92	2.34
Apr	.05	.13	.26	.39	.52	.66	.82	1.03	1.31	1.76	2.21
May	.23	.34	.52	.70	.88	1.07	1.29	1.56	1.91	2.49	3.04
Jun	.10	.17	.30	.43	.58	.74	.92	1.16	1.48	2.01	2.53
Jul	.00	.02	.10	.19	.30	.43	.60	.81	1.11	1.62	2.14
Aug	.00	.00	.04	.09	.17	.26	.39	.56	.80	1.24	1.68
Sep	.00	.01	.06	.13	.21	.32	.46	.63	.90	1.35	1.82
Oct	.02	.07	.16	.24	.34	.44	.57	.73	.95	1.32	1.67
Nov	.20	.31	.50	.68	.87	1.08	1.32	1.61	2.00	2.64	3.25
Dec	.34	.48	.70	.89	1.08	1.29	1.52	1.79	2.15	2.73	3.26
Ann	6.92	7.69	8.71	9.49	10.20	10.89	11.61	12.42	13.41	14.87	16.15

\+ 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	3.4	2.6	2	0	8.0	1975	12	13.8	1975	23	1993	5	16	1993	2.1	1.2	.3	.1	.0	-9.9	-9.9	-9.9	-9.9
Feb	.8	.0	1	0	3.0	1985	7	5.0	1990	10	1996	4	6	1993	.9	.6	.2	.0	.0	-9.9	-9.9	-9.9	-9.9
Mar	.2	.0	#	0	3.0	1975	17	3.0	1975	7	1993	3	1	1993	.1	.1	@	.0	.0	.2	.1	.0	.0
Apr	#	.0	#	0	#	1982	14	#	1982	#	1982	14	#	1982	.0	.0	.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	.1	.0	#	0	1.3	1971	30	1.3	1971	1	1971	31	#	1971	@	@	.0	.0	.0	.1	.0	.0	.0
Nov	.6	.0	#	0	6.0	1996	19	6.0	1996	10	1985	30	10	1985	.8	.4	.1	.1	.0	.4	.1	.0	.0
Dec	3.3	2.9	2	#	8.0	1996	24	8.6	1972	19	1992	31	13	1985	2.0	1.4	.3	.1	.0	-9.9	-9.9	-9.9	-9.9
Ann	8.4	5.5	N/A	N/A	8.0+	Dec 1996	24	13.8	Jan 1975	23	Jan 1993	5	16	Jan 1993	5.9	3.7	.9	.3	.0	-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	5/22	5/17	5/14	5/11	5/08	5/05	5/02	4/29	4/24
32	5/10	5/04	4/29	4/26	4/22	4/19	4/15	4/10	4/04
28	4/22	4/15	4/10	4/05	4/01	3/28	3/24	3/19	3/12
24	3/31	3/23	3/18	3/13	3/09	3/04	2/28	2/22	2/15
20	3/10	3/03	2/27	2/22	2/18	2/14	2/10	2/05	1/29
16	3/01	2/22	2/16	2/12	2/07	2/03	1/29	1/23	1/14

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	9/20	9/26	9/29	10/03	10/06	10/09	10/12	10/16	10/21
32	10/04	10/08	10/12	10/15	10/17	10/20	10/23	10/26	10/31
28	10/20	10/25	10/29	11/01	11/04	11/07	11/10	11/13	11/19
24	10/27	11/04	11/09	11/14	11/18	11/23	11/27	12/03	12/10
20	11/03	11/13	11/20	11/25	12/01	12/06	12/12	12/19	12/28
16	11/16	11/25	12/02	12/08	12/14	12/20	12/26	1/03	1/14

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	175	166	160	155	150	145	140	134	126
32	203	194	188	182	177	172	167	161	152
28	242	233	227	221	216	210	205	198	189
24	288	276	268	260	254	247	240	231	220
20	319	307	299	292	285	278	271	262	251
16	355	335	325	317	310	303	295	287	275

***** 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	1180	901	733	458	236	91	29	19	153	453	841	1141	6235
60	1025	761	578	313	125	33	9	4	78	304	691	986	4907
57	932	677	485	234	75	15	3	1	47	221	601	893	4184
55	870	621	424	185	50	9	1	0	31	172	544	831	3738
50	717	485	281	90	14	0	0	0	10	74	405	678	2754
32	252	108	13	0	0	0	0	0	0	0	72	216	661

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	96	130	303	533	805	999	1241	1242	925	571	221	98	7164
55	0	0	2	28	142	318	528	529	266	29	3	0	1845
57	0	0	0	16	105	264	469	468	222	16	0	0	1560
60	0	0	0	6	61	192	381	378	163	6	0	0	1187
65	0	0	0	0	18	100	247	238	88	1	0	0	692
70	0	0	0	0	3	40	142	126	39	0	0	0	350

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	2	19	108	312	573	774	1012	1009	702	350	56	4	2	21	129	441	1014	1788	2800	3809	4511	4861	4917	4921
45	0	0	30	180	418	624	857	854	553	213	14	0	0	0	30	210	628	1252	2109	2963	3516	3729	3743	3743
50	0	0	3	84	272	474	702	699	403	105	1	0	0	0	3	87	359	833	1535	2234	2637	2742	2743	2743
55	0	0	0	27	151	328	547	544	266	39	0	0	0	0	0	27	178	506	1053	1597	1863	1902	1902	1902
60	0	0	0	6	69	196	396	393	153	12	0	0	0	0	0	6	75	271	667	1060	1213	1225	1225	1225
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	3	62	185	339	479	647	647	432	193	13	0	0	3	65	250	589	1068	1715	2362	2794	2987	3000	3000

(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