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: WAPATO, WA **COOP ID: 458959**

Climate Division: WA 8 **NWS Call Sign:** **Elevation: 841 Feet** **Lat: 46˚26N** **Lon: 120˚25W**

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	37.9	22.6	30.3	68	1971	31	37.5	1990	-20	1950	31	15.2	1979	1077	0	.0	.0	5.4	8.7	27.0	1.0
Feb	46.1	27.1	36.6	70+	1988	22	42.1	1991	-21	1950	3	26.2	1989	795	0	.0	.0	13.6	2.7	21.3	.5
Mar	56.7	33.1	44.9	80	1960	25	49.7	1992	6+	1993	2	40.4	1993	624	0	.0	.0	28.1	.2	14.2	.0
Apr	65.2	39.2	52.2	94	1977	24	58.2	1977	22+	1968	16	46.9	1982	387	3	.0	.1	29.8	.0	5.3	.0
May	74.2	46.6	60.4	102	1983	30	64.5	1972	26	1975	4	54.9	1984	179	37	.1	1.9	31.0	.0	.8	.0
Jun	81.2	53.2	67.2	104+	1992	24	72.9	1992	33	1984	1	63.0	1991	63	129	.4	6.5	30.0	.0	.0	.0
Jul	88.5	58.5	73.5	107	1975	5	79.5	1985	39	1955	2	66.3	1993	17	281	3.3	16.3	31.0	.0	.0	.0
Aug	87.9	57.3	72.6	106	1978	4	78.2	1977	35	1984	28	67.8	1995	13	248	2.4	14.9	31.0	.0	.0	.0
Sep	78.9	48.0	63.5	99+	1998	3	68.9	1990	29+	1983	29	58.9	1983	127	80	.0	3.5	30.0	.0	.4	.0
Oct	65.8	37.0	51.4	89	1988	2	57.9	1988	15	1971	29	48.0	1982	422	1	.0	.0	30.2	.0	8.3	.0
Nov	48.6	29.7	39.2	75	1959	23	45.3	1999	-9+	1985	24	28.0	1985	776	0	.0	.0	16.1	1.4	18.8	.2
Dec	37.9	22.9	30.4	66	1972	1	37.2	1999	-18	1990	29	20.7	1985	1073	0	.0	.0	5.0	8.9	27.0	1.0
Ann	64.1	39.6	51.9	107	Jul 1975	5	79.5	Jul 1985	-21	Feb 1950	3	15.2	Jan 1979	5553	779	6.2	43.2	281.2	21.9	123.1	2.7

\+ 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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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	1.16	1.08	1.25	1997	1	3.22	1995	.06	1984
Feb	.71	.72	.83	1963	1	1.78	1983	.00	1988
Mar	.70	.58	.82	1987	15	2.24	1983	.00	1973
Apr	.55	.50	.92	1974	24	2.19	1995	.00+	1981
May	.57	.45	.99	1986	6	1.45	1990	.00	1979
Jun	.58	.28	1.36	1951	6	3.25	1991	.00+	1999
Jul	.32	.17	1.47	1992	23	1.65	1992	.00+	1988
Aug	.35	.21	1.20	1975	18	1.77	1975	.00+	2000
Sep	.40	.34	.71	1954	16	1.61	1986	.00+	1990
Oct	.54	.47	1.01	1982	29	1.52	1994	.00+	1978
Nov	1.05	.86	1.20	1996	19	3.06	1983	.00	1976
Dec	1.25	1.01	1.26	1977	13	3.88	1996	.06	1976
Ann	8.18	7.98	1.47	Jul 1992	23	3.88	Dec 1996	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.8	3.9	.4	@
Feb	6.7	2.5	@	.0
Mar	6.3	2.3	.2	.0
Apr	4.7	1.8	.2	.0
May	5.0	2.0	.2	.0
Jun	3.8	1.6	.3	.0
Jul	2.4	1.0	.1	@
Aug	2.3	1.0	.1	.1
Sep	3.3	1.3	.1	.0
Oct	3.8	1.6	.2	@
Nov	8.5	3.4	.3	@
Dec	8.5	4.2	.3	.1
Ann	63.1	26.6	2.4	.2

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	.13	.22	.38	.54	.71	.90	1.13	1.41	1.80	2.43	3.05
Feb	.08	.16	.28	.38	.49	.60	.72	.87	1.07	1.39	1.69
Mar	.03	.09	.20	.30	.41	.53	.68	.86	1.11	1.52	1.93
Apr	.00	.03	.10	.18	.27	.38	.51	.67	.90	1.30	1.69
May	.04	.11	.20	.28	.37	.46	.57	.70	.88	1.17	1.44
Jun	.00	.02	.08	.15	.25	.36	.51	.69	.96	1.42	1.89
Jul	.00	.00	.01	.04	.09	.15	.24	.36	.54	.85	1.19
Aug	.00	.00	.03	.07	.12	.19	.28	.40	.58	.89	1.21
Sep	.00	.00	.05	.10	.17	.25	.36	.49	.67	.99	1.32
Oct	.00	.02	.08	.15	.24	.34	.48	.65	.90	1.33	1.76
Nov	.05	.15	.31	.46	.63	.81	1.03	1.30	1.66	2.27	2.86
Dec	.14	.23	.40	.58	.76	.97	1.22	1.52	1.93	2.62	3.28
Ann	4.77	5.38	6.18	6.81	7.38	7.94	8.53	9.19	10.01	11.21	12.28

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	5.2	4.8	2	1
Feb	2.2	1.2	1	#
Mar	.4	.0	#	0
Apr	#	.0	0	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.1	.0	#	0
Nov	1.5	.0	#	0
Dec	6.4	3.4	1	#
Ann	15.8	9.4	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	7.3	1979	10	14.9	1996	15	1997	1	6+	1997
Feb	4.3	1993	19	8.3	1993	8	1993	20	2	1997
Mar	2.5	1993	2	3.8	1993	7	1993	3	1	1993
Apr	#	1982	16	#+	1982	0	0	0	0	0
May	.0	0	0	.0	0	0	0	0	0	0
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	.0	0	0	.0	0	0	0	0	0	0
Oct	2.8	1991	29	2.8	1991	3	1991	29	#+	1991
Nov	10.5	1996	19	13.5	1996	11	1996	19	3	1996
Dec	10.0	1996	29	27.5	1996	20	1996	30	6	1985
Ann	10.5	Nov 1996	19	27.5	Dec 1996	20	Dec 1996	30	6+	Jan 1997

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.1	2.1	.4	.1	.0
Feb	1.3	1.1	.2	.0	.0
Mar	.4	.3	.0	.0	.0
Apr	.0	.0	.0	.0	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.1	@	.0	.0	.0
Nov	.7	.5	.2	.1	@
Dec	3.5	2.3	.7	.1	@
Ann	9.1	6.3	1.5	.3	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	9.8	5.9	4.1	.4
Feb	3.3	2.3	.9	.0
Mar	.4	.2	.1	.0
Apr	.0	.0	.0	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	@	@	.0	.0
Nov	1.5	1.2	.6	@
Dec	7.3	3.3	1.5	.3
Ann	22.3	12.9	7.2	.7

+ 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	5/25	5/20	5/17	5/14	5/11	5/09	5/06	5/03	4/28
32	5/15	5/09	5/04	4/30	4/26	4/22	4/18	4/13	4/06
28	4/24	4/18	4/13	4/09	4/06	4/02	3/29	3/24	3/18
24	4/01	3/24	3/19	3/14	3/10	3/05	2/28	2/23	2/15
20	3/05	2/25	2/19	2/14	2/09	2/04	1/30	1/24	1/16
16	2/25	2/16	2/09	2/03	1/28	1/23	1/17	1/10	12/31

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	9/25	9/28	10/01	10/04	10/07	10/11	10/16
32	9/29	10/04	10/07	10/10	10/12	10/15	10/18	10/21	10/26
28	10/12	10/15	10/18	10/20	10/22	10/24	10/26	10/29	11/01
24	10/21	10/27	10/31	11/04	11/07	11/11	11/14	11/18	11/24
20	10/29	11/07	11/13	11/18	11/23	11/28	12/03	12/10	12/18
16	11/07	11/17	11/25	12/01	12/07	12/13	12/19	12/26	1/06

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	162	155	150	146	142	138	133	128	121
32	195	186	179	174	169	164	158	152	143
28	220	213	208	203	199	194	190	185	177
24	273	263	255	248	242	236	229	221	210
20	325	312	302	294	286	279	270	261	248
16	>365	343	330	320	310	301	292	281	266

***** 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	1077	795	624	387	179	63	17	13	127	422	776	1073	5553
60	922	655	469	249	87	19	3	2	56	273	626	918	4279
57	829	571	377	177	48	8	0	0	30	192	539	825	3596
55	767	515	317	136	30	4	0	0	18	144	482	763	3176
50	623	383	183	59	7	0	0	0	4	57	346	610	2272
32	198	55	2	0	0	0	0	0	0	0	48	169	472

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	144	184	401	606	880	1056	1287	1258	943	601	263	118	7741
55	0	0	4	52	198	369	574	545	271	33	6	0	2052
57	0	0	1	33	154	314	512	483	223	19	3	0	1742
60	0	0	0	15	99	235	423	391	159	6	0	0	1328
65	0	0	0	3	37	129	281	248	80	1	0	0	779
70	0	0	0	0	9	56	163	130	31	0	0	0	389

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	20	54	194	390	649	838	1060	1033	731	379	92	19	20	74	268	658	1307	2145	3205	4238	4969	5348	5440	5459
45	1	17	84	245	494	688	905	878	581	240	32	2	1	18	102	347	841	1529	2434	3312	3893	4133	4165	4167
50	0	1	21	129	343	538	750	723	432	121	7	0	0	1	22	151	494	1032	1782	2505	2937	3058	3065	3065
55	0	0	2	56	211	388	595	568	288	49	1	0	0	0	2	58	269	657	1252	1820	2108	2157	2158	2158
60	0	0	0	19	108	248	443	414	163	15	0	0	0	0	0	19	127	375	818	1232	1395	1410	1410	1410
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	11	41	135	251	411	526	674	658	472	273	54	8	11	52	187	438	849	1375	2049	2707	3179	3452	3506	3514

(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

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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