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: STARTUP 1 E, WA **COOP ID: 458034**

Climate Division: WA 4 **NWS Call Sign:** **Elevation: 170 Feet** **Lat: 47˚52N** **Lon: 121˚43W**

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	46.5	33.3	39.9	67	1961	20	47.0	1981	-8	1950	25	33.8	1980	779	0	.0	.0	9.4	.7	13.7	.0
Feb	50.2	34.7	42.5	77	1968	29	47.7	1992	-4	1950	1	33.7	1989	631	0	.0	.0	14.3	.4	10.1	.0
Mar	54.2	36.4	45.3	79	1994	30	49.1	1992	6	1955	4	40.2	1971	611	0	.0	.0	22.0	@	7.7	.0
Apr	59.3	39.5	49.4	86	1987	28	53.4	1992	17	1982	25	43.8	1975	468	0	.0	.0	26.3	.0	4.2	.0
May	65.4	44.6	55.0	102	1983	29	59.9	1993	27	1965	6	50.8	1974	313	2	@	.2	30.7	.0	.5	.0
Jun	69.9	48.9	59.4	98	1982	19	63.7	1982	31	1976	3	56.6+	1991	176	8	.0	.5	30.0	.0	@	.0
Jul	75.6	51.7	63.7	103	1951	12	67.3	1998	35	1952	6	60.5	1986	79	37	.0	1.8	31.0	.0	.0	.0
Aug	76.6	51.4	64.0	100+	1960	9	66.8	1981	36+	1973	23	60.1	1973	82	51	.0	1.2	31.0	.0	.0	.0
Sep	71.5	47.0	59.3	98+	1988	3	62.7	1974	30+	1983	30	54.9	1972	186	13	.0	.5	29.9	.0	.3	.0
Oct	61.4	40.9	51.2	92	1987	2	54.3	1988	19	1949	20	47.8	1972	429	0	.0	@	29.4	.0	4.2	.0
Nov	51.0	37.2	44.1	78	1949	2	49.5	1997	4	1955	15	33.4	1985	626	0	.0	.0	16.8	.3	7.2	.0
Dec	45.6	33.6	39.6	67	1980	27	43.6	1979	3+	1990	29	33.1	1990	787	0	.0	.0	8.7	1.1	13.2	.0
Ann	60.6	41.6	51.1	103	Jul 1951	12	67.3	Jul 1998	-8	Jan 1950	25	33.1	Dec 1990	5167	111	@	4.2	279.5	2.5	61.1	.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: 1948-2001

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

Issue Date: February 2004

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: STARTUP 1 E, WA **COOP ID: 458034**

Climate Division: WA 4 **NWS Call Sign:** **Elevation: 170 Feet** **Lat: 47˚52N** **Lon: 121˚43W**

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	8.58	8.85	6.85	2000	8	18.22	1971	.99	1985
Feb	5.85	5.67	3.59	1996	9	10.81	1996	.89	1993
Mar	6.20	5.82	2.52	1972	6	11.05	1997	2.01	1992
Apr	5.48	5.29	2.32	1990	26	10.82	1981	2.48+	1998
May	4.81	4.66	2.31	1971	16	8.37	1996	2.57	1982
Jun	3.73	3.36	2.25	1972	24	7.61	1993	.75	1987
Jul	2.12	2.12	1.88	1959	3	5.67	1993	.05	1984
Aug	2.09	1.67	1.70	1980	18	6.16	1977	.14+	1998
Sep	3.36	3.48	2.27	1951	8	7.03	1972	.43	1975
Oct	5.59	5.16	3.21	1951	3	13.36	1996	.19	1987
Nov	9.23	9.27	3.85	1986	24	15.18	1986	2.00	1979
Dec	8.48	8.70	3.67	1977	2	13.56	1996	1.16	1985
Ann	65.52	66.70	6.85	Jan 2000	8	18.22	Jan 1971	.05	Jul 1984

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	18.6	14.7	5.8	2.0
Feb	17.0	13.0	3.8	.9
Mar	19.9	14.6	3.9	.9
Apr	18.5	13.0	3.1	.8
May	16.9	11.2	3.3	.7
Jun	13.8	8.8	2.7	.5
Jul	8.4	4.7	1.4	.3
Aug	8.1	4.9	1.4	.4
Sep	10.9	6.9	2.2	.7
Oct	16.0	10.7	3.9	1.2
Nov	20.4	16.2	6.7	2.4
Dec	19.1	15.0	6.3	2.1
Ann	187.6	133.7	44.5	12.9

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	2.62	3.43	4.65	5.69	6.71	7.76	8.92	10.28	12.04	14.78	17.33
Feb	2.29	2.83	3.61	4.24	4.85	5.46	6.13	6.90	7.88	9.38	10.75
Mar	3.01	3.54	4.27	4.85	5.39	5.92	6.50	7.15	7.97	9.20	10.30
Apr	2.50	2.98	3.65	4.19	4.70	5.20	5.75	6.37	7.15	8.33	9.40
May	2.43	2.83	3.38	3.81	4.22	4.62	5.05	5.53	6.14	7.04	7.86
Jun	1.15	1.50	2.03	2.48	2.92	3.38	3.88	4.46	5.22	6.41	7.50
Jul	.29	.46	.77	1.06	1.37	1.71	2.10	2.58	3.24	4.30	5.33
Aug	.30	.47	.77	1.06	1.36	1.70	2.08	2.55	3.19	4.23	5.23
Sep	.54	.82	1.31	1.77	2.25	2.77	3.37	4.10	5.08	6.66	8.18
Oct	1.08	1.58	2.40	3.15	3.92	4.74	5.68	6.81	8.30	10.71	12.99
Nov	3.38	4.24	5.49	6.53	7.53	8.54	9.65	10.93	12.57	15.10	17.41
Dec	3.62	4.38	5.46	6.33	7.16	7.99	8.89	9.91	11.21	13.19	14.99
Ann	49.13	52.36	56.47	59.57	62.30	64.93	67.63	70.61	74.19	79.37	83.81

\+ 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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Services

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: STARTUP 1 E, WA **COOP ID: 458034**

Climate Division: WA 4 **NWS Call Sign:** **Elevation: 170 Feet** **Lat: 47°52N** **Lon: 121°43W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	3.8	.8	#	0
Feb	2.3	.3	#	0
Mar	.5	.0	#	0
Apr	.2	.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	0
Nov	.4	.0	#	0
Dec	1.7	.3	#	0
Ann	8.9	1.4	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	5.0	1973	5	19.9	1972	9	1982	5	1+	1982
Feb	9.0	1971	27	15.2	1971	2+	1982	11	#+	1982
Mar	3.5	1974	8	4.0	1974	6	1971	1	#+	1977
Apr	1.0	1972	17	2.9	1972	#+	1981	9	#+	1981
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	#	1972	28	#+	1972	0	0	0	0	0
Nov	2.0	1975	28	3.0	1975	2	1975	30	#+	1982
Dec	9.0	1974	27	9.3	1974	9	1974	27	1	1974
Ann	9.0+	Dec 1974	27	19.9	Jan 1972	9+	Jan 1982	5	1+	Jan 1982

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.4	1.6	.4	.1	.0
Feb	1.1	.7	.2	.1	.0
Mar	.4	.1	.1	.0	.0
Apr	.3	.1	.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	.0	.0	.0	.0	.0
Nov	.3	.2	.0	.0	.0
Dec	1.1	.5	.1	.1	.0
Ann	5.6	3.2	.8	.3	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	1.8	.7	.1	.0
Feb	.4	.0	.0	.0
Mar	.3	@	.0	.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	.0	.0
Nov	.3	.0	.0	.0
Dec	.7	.3	.1	.0
Ann	3.5	1.0	.2	.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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: STARTUP 1 E, WA **COOP ID: 458034**

Climate Division: WA 4 **NWS Call Sign:** **Elevation: 170 Feet** **Lat: 47˚52N** **Lon: 121˚43W**

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	5/22	5/18	5/15	5/11	5/07	5/03	4/27
32	5/17	5/09	5/04	4/29	4/24	4/20	4/15	4/09	4/02
28	4/12	4/02	3/26	3/20	3/14	3/08	3/02	2/22	2/12
24	3/16	3/03	2/22	2/15	2/08	1/31	1/24	1/15	1/02
20	3/05	2/19	2/09	1/30	1/21	1/11	12/30	12/07	0/00
16	1/23	1/09	12/28	12/14	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	9/16	9/23	9/27	10/01	10/05	10/08	10/12	10/17	10/23
32	10/01	10/07	10/12	10/15	10/19	10/22	10/26	10/31	11/06
28	10/21	10/30	11/05	11/10	11/15	11/20	11/26	12/02	12/10
24	11/06	11/16	11/24	11/30	12/06	12/12	12/19	12/26	1/06
20	11/14	12/01	12/13	12/24	1/04	1/17	2/03	0/00	0/00
16	12/06	12/22	1/06	1/26	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	169	160	153	148	142	137	131	125	115
32	211	199	191	183	177	170	163	154	143
28	287	273	263	254	246	238	229	219	204
24	363	335	320	309	298	288	277	265	248
20	>365	>365	>365	>365	365	331	311	292	270
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

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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: STARTUP 1 E, WA **COOP ID: 458034**

Climate Division: WA 4 **NWS Call Sign:** **Elevation: 170 Feet** **Lat: 47˚52N** **Lon: 121˚43W**

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	779	631	611	468	313	176	79	82	186	429	626	787	5167
60	624	491	456	319	173	69	15	19	80	275	476	632	3629
57	531	407	363	234	107	30	4	6	38	189	392	539	2840
55	471	356	306	181	72	15	0	2	20	137	337	478	2375
50	328	229	169	78	18	1	0	0	2	46	212	331	1414
32	23	9	0	0	0	0	0	0	0	0	9	18	59

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	267	302	412	522	712	822	981	992	817	594	373	254	7048
55	2	5	4	13	71	146	269	281	148	17	11	1	968
57	0	0	0	6	44	102	210	223	106	7	6	0	704
60	0	0	0	1	17	51	128	143	58	1	0	0	399
65	0	0	0	0	2	8	37	51	13	0	0	0	111
70	0	0	0	0	0	0	4	8	2	0	0	0	14

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	81	120	178	281	470	588	742	752	582	355	156	76	81	201	379	660	1130	1718	2460	3212	3794	4149	4305	4381
45	24	43	68	152	316	438	587	597	433	207	65	27	24	67	135	287	603	1041	1628	2225	2658	2865	2930	2957
50	0	7	17	63	176	290	432	442	286	88	17	0	0	7	24	87	263	553	985	1427	1713	1801	1818	1818
55	0	0	1	22	79	151	279	287	150	25	0	0	0	0	1	23	102	253	532	819	969	994	994	994
60	0	0	0	2	32	62	140	143	56	3	0	0	0	0	0	2	34	96	236	379	435	438	438	438
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	23	48	87	148	250	323	439	454	343	187	53	15	23	71	158	306	556	879	1318	1772	2115	2302	2355	2370

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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