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: STEHEKIN 4 NW, WA **COOP ID: 458059**

Climate Division: WA 6 **NWS Call Sign:** **Elevation: 1,270 Feet** **Lat: 48˚21N** **Lon: 120˚44W**

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	32.8	23.9	28.4	55	1989	31	34.1	1994	-18	1950	25	18.4	1979	1136	0	.0	.0	.3	11.5	29.6	.4
Feb	38.3	26.2	32.3	59+	1961	20	36.6	1992	-16	1936	7	25.5	1989	918	0	.0	.0	.6	3.9	25.6	.1
Mar	47.7	30.2	39.0	70	1994	27	44.8	1992	-5	1955	4	33.8	1971	809	0	.0	.0	11.9	.2	22.4	.0
Apr	58.9	36.3	47.6	93	1932	13	52.3	1994	19+	1936	3	42.1	1972	521	0	.0	.0	26.5	.0	7.1	.0
May	68.7	43.4	56.1	101	1986	31	60.9	1993	25+	1964	14	52.0	1996	284	6	@	.4	30.9	.0	.7	.0
Jun	75.9	50.0	63.0	103+	1992	25	69.9	1992	30+	1974	3	58.3	1981	118	56	.2	2.6	30.0	.0	@	.0
Jul	83.6	54.9	69.3	107	1998	28	76.3	1985	37	1949	1	63.1	1983	43	174	.8	9.1	31.0	.0	.0	.0
Aug	83.3	54.9	69.1	105+	1977	20	74.6	1977	30	1965	29	63.4	1995	34	161	.8	8.2	31.0	.0	.0	.0
Sep	72.9	46.7	59.8	98+	1998	3	66.9	1998	25	1970	13	54.9	1972	201	45	.0	.8	30.0	.0	.4	.0
Oct	57.4	37.7	47.6	84+	1979	8	51.6	1988	16	1935	31	44.4	1990	541	0	.0	.0	26.2	.0	6.6	.0
Nov	40.8	30.8	35.8	65+	1987	4	41.3	1987	0	1955	15	27.3	1985	876	0	.0	.0	2.7	1.9	18.7	.0
Dec	32.9	25.1	29.0	55	1972	1	33.7	1999	-21	1968	30	21.1	1983	1116	0	.0	.0	.2	11.2	29.1	.4
Ann	57.8	38.3	48.1	107	Jul 1998	28	76.3	Jul 1985	-21	Dec 1968	30	18.4	Jan 1979	6597	442	1.8	21.1	221.3	28.7	140.2	.9

\+ 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

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	6.38	6.23	3.71	1982	24	12.01	1982	.59	1985
Feb	4.27	4.11	6.60	1949	16	7.97	1982	.33	1993
Mar	2.88	2.79	2.83	1972	5	5.80	1997	.30	1996
Apr	1.49	1.33	2.00	1989	5	4.26	1989	.00	1999
May	1.04	.90	1.34	1951	11	2.46	1998	.15	1983
Jun	.90	.77	1.51	1936	2	3.27	1992	.11	1989
Jul	.63	.45	.83	1992	5	2.58	1983	.00	1984
Aug	.82	.73	2.30	1963	13	2.25	1976	.00+	2000
Sep	1.17	1.10	1.87	1972	21	3.56	1978	.00	1976
Oct	2.94	2.37	2.80	1994	27	8.05	1990	.00	1987
Nov	6.50	6.34	3.42	1990	24	13.13	1990	1.53	1979
Dec	7.17	6.95	3.21	1975	2	14.31	1996	1.40	1985
Ann	36.19	36.56	6.60	Feb 1949	16	14.31	Dec 1996	.00+	Aug 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	14.5	11.7	4.2	1.6
Feb	11.4	9.4	2.9	.7
Mar	10.7	7.9	1.7	.3
Apr	7.0	4.1	.7	.2
May	5.9	3.3	.3	.1
Jun	5.4	2.8	.3	@
Jul	4.0	1.9	.3	.0
Aug	4.4	2.4	.3	.1
Sep	5.4	3.3	.6	.1
Oct	8.6	6.4	1.9	.5
Nov	15.8	12.7	4.5	1.6
Dec	15.9	12.6	5.0	1.9
Ann	109.0	78.5	22.7	7.1

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	1.66	2.26	3.18	4.00	4.80	5.65	6.59	7.71	9.16	11.46	13.60
Feb	1.10	1.50	2.12	2.67	3.21	3.78	4.41	5.16	6.14	7.68	9.12
Mar	.70	.97	1.39	1.76	2.13	2.52	2.96	3.48	4.16	5.25	6.26
Apr	.14	.31	.56	.78	1.00	1.24	1.51	1.84	2.29	3.00	3.69
May	.22	.31	.46	.60	.74	.89	1.06	1.27	1.54	1.97	2.37
Jun	.11	.18	.30	.43	.56	.71	.88	1.09	1.39	1.86	2.33
Jul	.01	.04	.11	.19	.29	.41	.56	.75	1.03	1.50	1.98
Aug	.00	.00	.14	.27	.42	.58	.78	1.02	1.36	1.93	2.50
Sep	.02	.09	.23	.39	.57	.79	1.06	1.41	1.90	2.74	3.58
Oct	.17	.45	.91	1.34	1.80	2.31	2.89	3.62	4.61	6.23	7.81
Nov	1.77	2.39	3.32	4.14	4.95	5.79	6.72	7.83	9.27	11.52	13.63
Dec	2.34	3.02	4.02	4.87	5.70	6.54	7.47	8.56	9.96	12.13	14.14
Ann	24.75	26.93	29.74	31.88	33.80	35.66	37.58	39.71	42.31	46.10	49.38

\+ 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	44.8	45.8	26	27	26.0	1971	15	101.0	1998	80	1997	1	63	1997	10.3	9.7	5.8	3.6	1.0	30.0	29.4	28.0	23.9
Feb	22.9	22.0	27	30	22.0	1979	7	76.0	1979	66	1997	13	57	1997	5.6	5.3	2.9	1.8	.5	26.0	25.8	25.4	22.0
Mar	7.1	3.0	18	15	19.0	1972	5	39.5	1971	63	1972	5	49	1979	2.5	2.0	.8	.4	.1	20.9	20.7	20.2	18.0
Apr	.1	.0	3	#	1.0	1971	9	1.0+	1989	36	1997	2	20	1997	.1	.1	.0	.0	.0	4.0	3.8	3.4	2.4
May	.0	.0	#	0	.0	0	0	.0	0	#	1997	7	#	1997	.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	.4	.0	#	0	3.0	1996	18	3.0+	1996	3	1996	18	#+	1996	.2	.2	@	.0	.0	.3	@	.0	.0
Nov	12.3	6.0	2	#	18.0	1984	2	51.0	1984	23	1984	2	9	1984	4.1	3.7	1.7	1.0	.1	7.0	5.1	3.5	1.5
Dec	44.1	39.8	12	11	28.0	1979	2	165.0	1996	84	1996	31	41	1996	10.6	9.9	5.4	3.2	1.1	25.4	22.6	20.1	15.7
Ann	131.7	116.6	N/A	N/A	28.0	Dec 1979	2	165.0	Dec 1996	84	Dec 1996	31	63	Jan 1997	33.4	30.9	16.6	10.0	2.8	113.6	107.4	100.6	83.5

+ 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	5/28	5/23	5/20	5/16	5/14	5/11	5/07	5/04	4/29
32	5/16	5/10	5/05	5/01	4/27	4/23	4/19	4/14	4/07
28	4/22	4/17	4/13	4/09	4/06	4/03	3/31	3/27	3/21
24	3/25	3/17	3/11	3/06	3/01	2/24	2/20	2/14	2/06
20	3/13	3/05	2/27	2/22	2/17	2/12	2/07	2/01	1/24
16	3/05	2/24	2/17	2/11	2/06	1/31	1/25	1/18	1/09

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	9/24	9/27	9/30	10/02	10/05	10/07	10/10	10/14
32	9/27	10/02	10/06	10/09	10/12	10/15	10/18	10/22	10/27
28	10/14	10/19	10/23	10/26	10/29	11/01	11/04	11/08	11/13
24	10/31	11/07	11/13	11/18	11/22	11/27	12/01	12/07	12/15
20	11/15	11/23	11/28	12/03	12/08	12/13	12/17	12/23	12/31
16	11/19	11/28	12/05	12/11	12/17	12/22	12/28	1/04	1/13

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	159	153	148	144	141	137	133	129	123
32	196	186	179	173	167	162	156	148	139
28	228	220	214	210	205	200	195	190	182
24	300	288	279	272	265	259	251	243	231
20	329	317	308	300	293	286	278	269	257
16	342	331	323	317	312	306	300	293	284

***** 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	1136	918	809	521	284	118	43	34	201	541	876	1116	6597
60	981	778	654	373	155	45	12	8	108	388	726	962	5190
57	888	694	561	289	96	20	5	2	67	298	636	869	4425
55	826	638	499	236	66	11	1	1	46	242	576	807	3949
50	671	498	346	125	18	1	0	0	14	119	429	652	2873
32	176	77	14	0	0	0	0	0	0	0	56	159	482

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	64	83	228	469	745	928	1154	1150	834	482	170	65	6372
55	0	0	0	14	98	249	442	438	190	10	0	0	1441
57	0	0	0	7	67	198	383	377	151	5	0	0	1188
60	0	0	0	2	32	133	298	290	102	2	0	0	859
65	0	0	0	0	6	56	174	161	45	0	0	0	442
70	0	0	0	0	0	16	86	71	15	0	0	0	188

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	0	0	47	241	507	696	912	908	601	251	22	0	0	0	47	288	795	1491	2403	3311	3912	4163	4185	4185
45	0	0	8	121	352	546	757	753	451	128	1	0	0	0	8	129	481	1027	1784	2537	2988	3116	3117	3117
50	0	0	0	47	208	396	602	598	307	51	0	0	0	0	0	47	255	651	1253	1851	2158	2209	2209	2209
55	0	0	0	12	100	249	447	443	179	14	0	0	0	0	0	12	112	361	808	1251	1430	1444	1444	1444
60	0	0	0	0	38	133	296	291	79	2	0	0	0	0	0	0	38	171	467	758	837	839	839	839
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	29	150	303	416	566	568	359	137	2	0	0	0	29	179	482	898	1464	2032	2391	2528	2530	2530

(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