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: OLYMPIA AP, WA **COOP ID: 456114**

Climate Division: WA 3 **NWS Call Sign: OLM** **Elevation: 206 Feet** **Lat: 46˚58N** **Lon: 122˚54W**

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	44.4	31.8	38.1	61+	1984	4	42.3	1994	-8	1979	1	30.8	1979	820	0	.0	.0	8.6	.8	14.9	.2
Feb	48.3	32.6	40.5	73	1986	27	44.8	1977	-1+	1972	2	32.5	1989	678	0	.0	.0	14.0	.3	13.5	.1
Mar	53.0	34.1	43.6	76+	1995	30	47.2	1992	9	1989	3	38.9	1971	648	0	.0	.0	24.0	.0	12.8	.0
Apr	58.2	36.5	47.4	87	1987	27	50.2	1989	23+	1975	8	42.7	1972	512	0	.0	.0	28.3	.0	7.7	.0
May	64.6	42.0	53.3	96	1983	28	58.1	1993	25	1954	1	50.5	1999	349	2	.0	.1	30.9	.0	1.1	.0
Jun	70.0	46.4	58.2	98	1982	18	62.5	1978	30	1976	3	53.9	1971	201	10	.0	.8	30.0	.0	.1	.0
Jul	76.1	49.6	62.8	102	1994	20	66.9	1998	35	1962	3	59.2	1977	90	38	.1	2.2	31.0	.0	.0	.0
Aug	77.0	49.5	63.3	104	1981	9	66.5	1981	33	1973	18	58.8	1973	78	40	.1	2.3	31.0	.0	.0	.0
Sep	71.7	44.9	58.3	98	1988	2	63.1	1974	25	1972	27	54.6	1972	195	7	.0	.6	30.0	.0	.6	.0
Oct	60.4	38.9	49.7	90	1987	1	53.3	1988	20	1971	28	46.1	1972	465	0	.0	@	30.1	.0	5.6	.0
Nov	49.6	35.3	42.4	74	1949	4	47.0	1995	-1	1955	15	33.0	1985	666	0	.0	.0	17.4	.3	10.8	.1
Dec	43.8	32.1	38.0	64	1958	1	43.6	1980	-7	1983	23	32.0	1990	829	0	.0	.0	6.9	1.3	15.5	.3
Ann	59.8	39.5	49.6	104	Aug 1981	9	66.9	Jul 1998	-8	Jan 1979	1	30.8	Jan 1979	5531	97	.2	6.0	282.2	2.7	82.6	.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

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	7.54	7.51	3.82	1990	9	14.53	1990	.29	1985
Feb	6.17	5.76	3.64	1951	9	15.50	1999	.22	1993
Mar	5.29	4.75	3.40	1972	5	11.79	1997	1.50	1992
Apr	3.58	2.99	3.11	1991	4	7.80	1991	1.21	1998
May	2.27	2.03	1.29	1973	23	5.48	1984	.19	1992
Jun	1.78	1.56	1.60	1985	6	3.74	1984	.32	1987
Jul	.82	.56	1.34	1995	9	3.00	1983	.00	1984
Aug	1.10	.70	1.38	1977	23	4.17	1977	.00	1998
Sep	2.03	1.95	1.51	1972	21	7.59	1978	.00+	1993
Oct	4.19	3.99	2.95	1994	31	9.86	1985	.39	1987
Nov	8.13	7.52	4.33	1962	19	15.28	1998	1.37	1976
Dec	7.89	8.15	3.50	1956	9	13.01	1979	2.50	1985
Ann	50.79	51.69	4.33	Nov 1962	19	15.50	Feb 1999	.00+	Aug 1998

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	19.4	13.8	5.3	1.7
Feb	17.7	12.4	4.0	1.2
Mar	18.1	12.8	3.1	.7
Apr	15.1	9.5	1.9	.3
May	12.5	7.0	.8	.1
Jun	9.2	5.1	.8	.1
Jul	5.2	2.3	.4	.1
Aug	5.4	2.8	.6	.1
Sep	8.4	5.0	1.3	.3
Oct	13.0	8.3	2.6	.8
Nov	20.1	14.7	5.8	1.7
Dec	20.8	13.7	5.3	2.2
Ann	164.9	107.4	31.9	9.3

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	1.82	2.53	3.63	4.61	5.58	6.61	7.76	9.13	10.92	13.76	16.43
Feb	1.52	2.10	3.00	3.80	4.59	5.43	6.36	7.47	8.92	11.21	13.36
Mar	2.08	2.57	3.26	3.84	4.39	4.94	5.54	6.23	7.11	8.46	9.69
Apr	1.23	1.57	2.06	2.48	2.88	3.29	3.74	4.26	4.93	5.98	6.93
May	.52	.74	1.07	1.37	1.66	1.98	2.33	2.75	3.30	4.18	5.01
Jun	.57	.74	.99	1.20	1.41	1.62	1.86	2.13	2.49	3.04	3.55
Jul	.03	.10	.22	.34	.47	.62	.79	1.01	1.30	1.80	2.28
Aug	.02	.08	.21	.36	.54	.75	1.00	1.33	1.80	2.60	3.40
Sep	.00	.00	.34	.66	1.02	1.42	1.91	2.52	3.36	4.78	6.19
Oct	.77	1.15	1.76	2.33	2.91	3.53	4.24	5.10	6.25	8.08	9.84
Nov	2.54	3.31	4.46	5.44	6.39	7.38	8.46	9.73	11.37	13.92	16.29
Dec	2.97	3.71	4.77	5.64	6.48	7.33	8.26	9.33	10.69	12.79	14.71
Ann	36.42	39.21	42.78	45.49	47.89	50.22	52.61	55.26	58.47	63.12	67.13

+ 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	4.3	.6	#	0	14.2	1972	24	29.2	1972	20	1972	26	4	1972	2.1	1.4	.5	.2	@	1.9	.7	.6	.4
Feb	4.0	1.1	#	0	10.8	1989	1	27.4	1990	12	1972	1	2+	1990	2.2	1.2	.5	.2	@	1.9	1.0	.7	.2
Mar	1.0	.0	#	0	6.6	1989	1	9.0	1989	5	1989	3	#	1989	.7	.4	.1	@	.0	.2	.1	@	.0
Apr	.1	#	0	0	1.8	1972	12	2.2	1972	0	0	0	0	0	.2	.0	.0	.0	.0	.0	.0	.0	.0
May	#	.0	#	0	#	1991	8	#+	1991	0	0	0	#	1994	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jun	#	.0	0	0	#	1976	2	#	1976	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	1.5	.0	#	0	10.3	1978	19	14.8	1978	13	1978	20	2+	1985	.7	.4	.2	.1	@	.9	.8	.6	.1
Dec	3.8	2.6	#	0	8.3	1974	26	17.2	1971	7	1985	3	1	1985	2.7	1.3	.4	.1	.0	1.6	.5	.2	.0
Ann	14.7	4.3	N/A	N/A	14.2	Jan 1972	24	29.2	Jan 1972	20	Jan 1972	26	4	Jan 1972	8.6	4.7	1.7	.6	@	6.5	3.1	2.1	.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	6/15	6/08	6/03	5/30	5/27	5/23	5/19	5/14	5/07
32	5/23	5/17	5/12	5/08	5/05	5/01	4/28	4/23	4/17
28	5/05	4/28	4/23	4/19	4/15	4/11	4/07	4/02	3/26
24	3/28	3/18	3/11	3/05	2/28	2/22	2/16	2/09	1/30
20	3/08	2/26	2/18	2/11	2/05	1/30	1/22	1/13	12/27
16	2/22	2/11	2/02	1/26	1/18	1/09	12/26	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	9/05	9/11	9/16	9/19	9/23	9/26	9/30	10/04	10/10
32	9/19	9/25	9/29	10/03	10/06	10/10	10/13	10/18	10/24
28	10/08	10/14	10/19	10/23	10/27	10/31	11/04	11/09	11/15
24	10/21	11/01	11/10	11/17	11/24	12/01	12/08	12/17	12/29
20	11/08	11/19	11/28	12/05	12/12	12/19	12/27	1/06	1/25
16	11/25	12/09	12/19	12/28	1/07	1/19	2/09	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	148	138	130	124	118	113	106	99	89
32	180	171	164	159	154	149	143	137	128
28	226	215	207	200	194	188	181	173	162
24	318	301	289	279	269	259	249	236	220
20	>365	355	331	318	308	298	289	278	263
16	>365	>365	>365	>365	352	336	325	313	300

***** 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	820	678	648	512	349	201	90	78	195	465	666	829	5531
60	678	547	510	379	216	98	31	20	99	321	528	683	4110
57	585	463	417	290	140	51	11	6	52	230	438	590	3273
55	523	407	355	233	99	29	4	1	30	173	382	528	2764
50	374	273	212	110	28	4	0	0	4	63	246	375	1689
32	27	9	1	0	0	0	0	0	0	0	10	21	68

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	229	262	379	481	677	801	970	982	800	557	328	219	6685
55	0	0	0	9	52	125	257	270	129	14	1	0	857
57	0	0	0	4	33	84	198	210	86	6	0	0	621
60	0	0	0	1	15	42	120	128	41	2	0	0	349
65	0	0	0	0	2	10	38	40	7	0	0	0	97
70	0	0	0	0	0	2	8	8	1	0	0	0	19

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	67	92	154	250	439	571	731	744	570	321	128	64	67	159	313	563	1002	1573	2304	3048	3618	3939	4067	4131
45	20	28	48	122	284	421	576	589	420	174	49	20	20	48	96	218	502	923	1499	2088	2508	2682	2731	2751
50	0	2	3	42	145	271	421	434	272	67	11	0	0	2	5	47	192	463	884	1318	1590	1657	1668	1668
55	0	0	0	6	53	132	266	281	137	12	0	0	0	0	0	6	59	191	457	738	875	887	887	887
60	0	0	0	0	14	45	129	136	43	0	0	0	0	0	0	0	14	59	188	324	367	367	367	367
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	12	39	86	152	252	329	439	452	351	179	42	5	12	51	137	289	541	870	1309	1761	2112	2291	2333	2338

(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