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: SEATTLE TACOMA AP, WA **COOP ID: 457473**

Climate Division: WA 3 **NWS Call Sign: SEA** **Elevation: 400 Feet** **Lat: 47˚28N** **Lon: 122˚19W**

Temperature (˚F)

Month	Mean (1)			Extremes										Degree Days (1) Base Temp 65		Mean Number of Days (3)					
	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	45.8	35.9	40.9	64	1981	20	46.4	1995	0	1950	31	34.8	1980	747	0	.0	.0	8.9	.7	8.8	.0
Feb	49.5	37.2	43.3	70	1968	27	48.7	1977	1	1950	1	35.9	1989	613	0	.0	.0	13.4	.3	6.0	.0
Mar	53.2	39.1	46.2	75	1987	31	50.3	1992	11	1955	4	41.3	1976	582	0	.0	.0	22.6	.0	2.3	.0
Apr	58.2	42.1	50.2	85	1976	30	53.6	1977	29+	1975	5	45.8	1975	447	0	.0	.0	28.1	.0	.2	.0
May	64.4	47.2	55.8	93	1963	21	60.1	1995	28	1954	1	51.8	1999	291	5	.0	.1	30.8	.0	.0	.0
Jun	69.6	51.7	60.7	96+	1995	30	65.0	1992	38	1952	12	56.4	1971	150	19	.0	.4	30.0	.0	.0	.0
Jul	75.3	55.3	65.3	100	1994	20	68.6	1985	43+	1954	2	61.2	1993	55	65	@	1.2	31.0	.0	.0	.0
Aug	75.6	55.7	65.6	99+	1981	9	68.5	1977	44+	1955	14	61.9	1980	45	65	.0	1.1	31.0	.0	.0	.0
Sep	70.2	51.9	61.1	98	1988	2	64.4+	1994	35	1972	27	55.9	1972	138	19	.0	.3	30.0	.0	.0	.0
Oct	59.7	45.7	52.7	89	1987	1	55.8	1987	28	1949	19	49.7	1984	383	0	.0	.0	29.8	.0	.2	.0
Nov	50.5	39.9	45.2	74	1949	4	49.1	1995	6	1955	15	35.8	1985	592	0	.0	.0	17.5	.2	3.4	.0
Dec	45.5	35.9	40.7	64	1993	10	44.7	1976	6	1968	30	35.3	1990	754	0	.0	.0	8.4	1.2	8.8	.0
Ann	59.8	44.8	52.3	100	Jul 1994	20	68.6	Jul 1985	0	Jan 1950	31	34.8	Jan 1980	4797	173	@	3.1	281.5	2.4	29.7	.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: 1931-2001

(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	5.13	4.90	2.98	1986	18	9.41	1990	.58	1985
Feb	4.18	4.39	3.06	1996	8	8.35	1996	.35	1993
Mar	3.75	3.70	2.70	1972	5	8.15	1997	1.55	1979
Apr	2.59	2.39	2.64	1991	4	6.53	1991	.55	1977
May	1.78	1.66	1.83	1969	29	3.70	1977	.12	1992
Jun	1.49	1.38	1.75	1968	1	3.05	1990	.16	1987
Jul	.79	.66	.85	1981	13	2.39	1983	.08	1973
Aug	1.02	.65	1.63	1975	18	4.59	1975	.01	1974
Sep	1.63	1.46	1.65+	1978	22	5.95	1978	.00+	1991
Oct	3.19	2.99	2.72	1981	6	7.75	1975	.31	1987
Nov	5.90	5.32	3.41	1959	20	11.62	1998	.74	1976
Dec	5.62	5.31	2.14	1974	26	11.85	1979	1.37	1978
Ann	37.07	35.51	3.41	Nov 1959	20	11.85	Dec 1979	.00+	Sep 1991

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	17.8	11.9	3.3	.7
Feb	15.6	10.2	2.7	.4
Mar	16.4	10.6	1.7	.3
Apr	13.6	7.1	1.2	.2
May	11.6	5.7	.6	@
Jun	8.5	4.4	.7	.1
Jul	5.3	2.5	.4	.0
Aug	5.5	2.7	.5	.1
Sep	8.3	4.5	.9	.1
Oct	11.7	7.6	2.1	.4
Nov	17.9	13.2	3.5	1.0
Dec	17.8	11.7	3.6	1.2
Ann	150.0	92.1	21.2	4.5

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	1.69	2.18	2.89	3.50	4.08	4.69	5.35	6.12	7.12	8.66	10.08
Feb	1.12	1.52	2.12	2.65	3.17	3.72	4.32	5.04	5.97	7.43	8.80
Mar	1.46	1.81	2.30	2.71	3.10	3.50	3.92	4.42	5.04	6.00	6.88
Apr	.72	.97	1.34	1.67	1.98	2.32	2.69	3.12	3.69	4.57	5.40
May	.47	.64	.90	1.12	1.35	1.58	1.84	2.14	2.54	3.16	3.75
Jun	.39	.53	.74	.93	1.12	1.32	1.54	1.80	2.14	2.67	3.17
Jul	.12	.19	.30	.41	.53	.65	.79	.97	1.20	1.58	1.95
Aug	.05	.10	.22	.35	.51	.70	.93	1.23	1.65	2.38	3.11
Sep	.00	.09	.33	.57	.84	1.15	1.53	2.00	2.66	3.77	4.86
Oct	.71	1.01	1.48	1.90	2.32	2.77	3.27	3.87	4.67	5.93	7.12
Nov	1.92	2.48	3.30	4.01	4.68	5.38	6.15	7.05	8.20	10.00	11.66
Dec	1.87	2.40	3.18	3.85	4.48	5.14	5.86	6.70	7.79	9.46	11.01
Ann	26.92	28.90	31.43	33.34	35.04	36.68	38.36	40.22	42.48	45.74	48.55

\+ 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	2.4	.5	#	0	7.9	1972	25	14.0	1972	11	1972	26	2	1972	2.0	.9	.3	@	.0	1.4	.5	.3	.1
Feb	1.3	.3	#	0	6.3	1990	17	9.8	1990	7	1990	17	1+	1990	.9	.4	.2	.1	.0	1.0	.3	.2	.0
Mar	.6	.0	#	0	6.0	1989	1	7.4	1989	7+	1989	3	1	1989	.5	.2	@	@	.0	.2	.1	.1	.0
Apr	.1	.0	#	0	1.2	1972	17	2.3	1972	2	1972	17	#	1972	.1	.1	.0	.0	.0	@	.0	.0	.0
May	.0	.0	#	0	.0	0	0	.0	0	0	0	0	#	1996	.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	0	2.0	1971	27	2.0	1971	#	1984	31	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.1	.0	#	0	7.8	1985	21	17.5	1985	8+	1985	27	1	1985	.6	.3	.1	.1	.0	.8	.5	.2	.0
Dec	2.5	.3	#	0	10.0	1974	27	18.8	1974	10	1974	27	1+	1974	1.6	.7	.2	.1	@	.9	.4	.1	@
Ann	8.1	1.1	N/A	N/A	10.0	Dec 1974	27	18.8	Dec 1974	11	Jan 1972	26	2	Jan 1972	5.7	2.6	.8	.3	@	4.3	1.8	.9	.1

+ 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	4/27	4/22	4/18	4/15	4/11	4/08	4/05	4/01	3/27
32	4/04	3/26	3/20	3/15	3/10	3/05	2/28	2/22	2/13
28	3/11	2/28	2/19	2/12	2/06	1/30	1/23	1/14	1/01
24	2/25	2/13	2/04	1/27	1/20	1/12	1/02	12/19	0/00
20	2/05	1/19	1/05	12/20	0/00	0/00	0/00	0/00	0/00
16	1/22	1/08	12/24	0/00	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	10/15	10/20	10/24	10/27	10/30	11/02	11/06	11/09	11/15
32	10/28	11/04	11/09	11/13	11/17	11/21	11/25	11/30	12/07
28	11/16	11/24	11/29	12/04	12/09	12/13	12/18	12/24	1/02
24	11/23	12/05	12/13	12/21	12/28	1/05	1/15	2/03	0/00
20	12/10	12/26	1/08	1/24	0/00	0/00	0/00	0/00	0/00
16	12/18	1/03	1/19	0/00	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	224	216	210	206	201	197	192	186	179
32	280	270	263	257	251	245	239	232	222
28	348	329	319	312	305	298	291	282	271
24	>365	>365	>365	357	341	330	320	310	296
20	>365	>365	>365	>365	>365	>365	>365	>365	329
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

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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	747	613	582	447	291	150	55	45	138	383	592	754	4797
60	593	466	428	295	154	57	12	8	57	229	444	599	3342
57	500	382	339	210	93	24	3	1	25	147	357	506	2587
55	438	329	280	156	60	12	1	0	13	100	301	444	2134
50	293	202	152	57	13	1	0	0	1	27	175	297	1218
32	11	3	0	0	0	0	0	0	0	0	3	9	26

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	285	321	440	544	736	859	1031	1041	870	641	399	281	7448
55	0	0	1	18	76	174	319	328	187	30	1	0	1134
57	0	0	1	11	50	123	257	266	136	15	0	0	859
60	0	0	0	4	25	66	170	176	75	5	0	0	521
65	0	0	0	0	5	19	65	65	19	0	0	0	173
70	0	0	0	0	1	5	17	16	3	0	0	0	42

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	95	136	205	312	495	629	790	802	639	405	184	91	95	231	436	748	1243	1872	2662	3464	4103	4508	4692	4783
45	30	48	80	171	341	479	635	647	490	251	74	30	30	78	158	329	670	1149	1784	2431	2921	3172	3246	3276
50	0	4	19	65	195	329	480	492	341	116	15	0	0	4	23	88	283	612	1092	1584	1925	2041	2056	2056
55	0	0	0	20	80	182	325	337	194	30	0	0	0	0	0	20	100	282	607	944	1138	1168	1168	1168
60	0	0	0	2	31	71	177	183	78	3	0	0	0	0	0	2	33	104	281	464	542	545	545	545
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	16	34	71	134	243	336	475	488	350	169	43	12	16	50	121	255	498	834	1309	1797	2147	2316	2359	2371

(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