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: EPHRATA AP, WA **COOP ID: 452614**

Climate Division: WA 8 **NWS Call Sign: EPH** **Elevation: 1,259 Feet** **Lat: 47˚18N** **Lon: 119˚32W**

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	34.3	21.7	28.0	61+	1971	31	37.9	1981	-22	1950	29	14.2	1979	1148	0	.0	.0	1.5	12.5	27.8	1.5
Feb	42.1	27.1	34.6	65	1977	16	41.4	1991	-24	1950	1	22.7	1985	850	0	.0	.0	6.6	4.7	21.3	.7
Mar	53.6	33.2	43.4	75+	1999	20	48.9	1992	2	1955	4	37.8	1971	668	0	.0	.0	23.3	.2	14.2	.0
Apr	63.6	39.6	51.6	94	1977	24	56.1	1977	22	1982	1	45.4	1982	405	3	.0	.1	29.6	.0	4.9	.0
May	72.8	47.9	60.4	101	1986	31	64.0	1987	29+	1959	4	53.8	1984	182	37	.1	1.5	31.0	.0	.4	.0
Jun	80.5	54.9	67.7	105	1973	22	72.6	1992	33	1976	28	63.1	1980	60	141	.5	4.7	30.0	.0	.0	.0
Jul	88.2	61.2	74.7	109	1960	18	81.3	1975	40	1981	8	66.5	1993	17	316	3.0	14.5	31.0	.0	.0	.0
Aug	87.6	60.3	74.0	115	1961	4	79.2	1971	36	1960	22	68.5	1995	13	289	2.1	13.1	31.0	.0	.0	.0
Sep	78.1	51.2	64.7	106	1988	3	70.9	1990	28	2000	23	58.2	1985	123	112	.2	3.1	30.0	.0	.1	.0
Oct	63.3	40.1	51.7	86	1991	1	58.1	1988	14	1984	31	46.3	1984	416	2	.0	.0	29.2	@	4.3	.0
Nov	45.0	30.3	37.7	72	1989	9	44.1	1999	-15	1985	23	23.4	1985	821	0	.0	.0	10.3	2.7	17.9	.2
Dec	34.4	22.5	28.5	63	1972	1	36.4	1999	-21	1983	23	16.1	1984	1133	0	.0	.0	1.6	12.1	27.1	1.2
Ann	62.0	40.8	51.4	115	Aug 1961	4	81.3	Jul 1975	-24	Feb 1950	1	14.2	Jan 1979	5836	900	5.9	37.0	255.1	32.2	118.0	3.6

\+ 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: 1949-2001

(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	.83	.86	.69	1959	11	2.45	1995	.00	1977
Feb	.78	.75	.90	1989	18	1.76	1983	.00	1988
Mar	.75	.73	.85	1991	24	1.78	1983	.00	1973
Apr	.43	.35	.69	1953	7	1.08	1993	.00+	1985
May	.64	.53	.79	1972	21	1.83	1972	.00	1992
Jun	.51	.38	.97	1951	4	1.90	1984	.00+	1989
Jul	.44	.28	1.74	1998	31	1.93	1998	.00+	1988
Aug	.25	.07	.93	1990	21	1.21	1999	.00+	2000
Sep	.37	.28	.67	1960	4	1.68	1986	.00+	1999
Oct	.47	.34	.86	1973	31	1.60	1973	.00+	1987
Nov	1.03	.88	.82	1998	5	3.63	1983	.00	1976
Dec	1.19	1.19	.76	1992	28	3.12	1992	.07	1976
Ann	7.69	7.54	1.74	Jul 1998	31	3.63	Nov 1983	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.8	3.3	.1	.0
Feb	6.8	2.7	.1	.0
Mar	6.8	2.8	.1	.0
Apr	4.7	1.3	.0	.0
May	5.7	2.0	.2	.0
Jun	4.3	1.7	.1	.0
Jul	2.7	1.1	.2	.1
Aug	2.4	.8	.1	.0
Sep	3.4	1.2	.1	.0
Oct	4.5	1.6	.1	.0
Nov	8.6	3.6	.3	.0
Dec	9.0	4.2	.3	.0
Ann	66.7	26.3	1.7	.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	.12	.23	.38	.49	.61	.73	.86	1.02	1.23	1.57	1.88
Feb	.06	.15	.27	.39	.51	.63	.78	.97	1.21	1.61	1.99
Mar	.11	.21	.34	.44	.54	.65	.77	.92	1.10	1.40	1.68
Apr	.00	.00	.11	.19	.26	.34	.44	.55	.70	.94	1.18
May	.02	.07	.16	.25	.35	.47	.60	.78	1.02	1.43	1.83
Jun	.00	.02	.09	.17	.25	.35	.47	.62	.84	1.20	1.56
Jul	.00	.00	.00	.08	.16	.26	.38	.54	.76	1.15	1.52
Aug	.00	.00	.00	.00	.02	.09	.18	.29	.46	.74	1.03
Sep	.00	.00	.01	.05	.12	.19	.30	.43	.63	.98	1.34
Oct	.00	.02	.08	.15	.23	.32	.43	.57	.77	1.11	1.45
Nov	.07	.18	.34	.49	.65	.83	1.03	1.27	1.60	2.15	2.67
Dec	.12	.21	.38	.54	.72	.92	1.16	1.46	1.86	2.53	3.18
Ann	4.36	4.95	5.74	6.35	6.92	7.47	8.05	8.71	9.52	10.73	11.80

+ 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: 1949-2001
(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	4.7	3.3	3	1
Feb	2.7	.4	1	#
Mar	.9	.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	#	.0	#	0
Nov	2.3	.6	#	#
Dec	7.1	4.8	2	1
Ann	17.7	9.1	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	7.0	1993	8	17.7	1993	27	1993	20	19	1993
Feb	6.0	1993	19	11.9	1975	14	1985	11	10	1985
Mar	3.3	1996	5	5.0	1971	6+	1993	2	1	1993
Apr	1.0	1980	6	1.0	1980	#	1980	6	#	1980
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	#	1991	31	#+	1991	#	1971	31	#	1971
Nov	8.0	1984	27	13.6	1996	11	1996	26	3	1996
Dec	8.4	1971	8	27.6	1992	14	1996	30	6	1996
Ann	8.4	Dec 1971	8	27.6	Dec 1992	27	Jan 1993	20	19	Jan 1993

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.9	2.3	.4	.1	.0
Feb	1.7	1.1	.3	.1	.0
Mar	.7	.4	.1	.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	.0	.0	.0	.0	.0
Nov	1.4	.7	.3	.1	.0
Dec	4.3	2.7	.9	.2	.0
Ann	12.0	7.2	2.0	.5	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	9.4	5.2	1.6	.0
Feb	3.8	1.5	.2	.0
Mar	.4	.1	.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	1.6	.5	.2	.0
Dec	7.9	4.3	2.2	.1
Ann	23.1	11.6	4.2	.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	5/28	5/21	5/16	5/12	5/09	5/05	5/01	4/26	4/20
32	5/08	5/02	4/28	4/25	4/21	4/18	4/15	4/10	4/05
28	4/19	4/14	4/10	4/07	4/04	4/01	3/29	3/25	3/20
24	4/07	3/29	3/22	3/17	3/11	3/06	3/01	2/22	2/13
20	3/11	3/04	2/27	2/22	2/18	2/14	2/10	2/05	1/29
16	2/26	2/18	2/13	2/08	2/03	1/30	1/25	1/19	1/11

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	9/23	9/27	9/30	10/02	10/05	10/07	10/09	10/12	10/16
32	10/04	10/09	10/12	10/15	10/18	10/21	10/24	10/27	11/01
28	10/08	10/15	10/20	10/24	10/28	11/01	11/05	11/09	11/16
24	10/27	11/02	11/07	11/11	11/15	11/19	11/23	11/28	12/05
20	10/29	11/06	11/11	11/15	11/20	11/24	11/29	12/04	12/11
16	11/09	11/17	11/23	11/28	12/02	12/07	12/12	12/17	12/25

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	174	165	159	153	148	143	137	131	122
32	203	194	189	184	179	174	169	163	155
28	231	223	216	211	206	201	196	189	181
24	278	268	260	254	248	242	236	229	218
20	303	293	286	279	274	268	261	254	244
16	334	321	313	306	300	294	287	280	269

***** 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	1148	850	668	405	182	60	17	13	123	416	821	1133	5836
60	993	710	513	267	89	19	4	2	58	271	671	978	4575
57	900	626	421	194	50	8	0	1	33	195	584	885	3897
55	838	571	360	152	32	4	0	0	21	150	528	823	3479
50	693	442	221	70	8	0	0	0	6	66	392	677	2575
32	247	101	6	0	0	0	0	0	0	0	75	233	662

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	122	175	360	588	878	1071	1323	1299	980	610	245	123	7774
55	0	1	2	50	197	384	610	586	311	46	8	0	2195
57	0	0	1	32	154	329	548	525	263	30	3	0	1885
60	0	0	0	15	99	249	458	434	198	13	0	0	1466
65	0	0	0	3	37	141	316	289	112	2	0	0	900
70	0	0	0	0	9	66	195	166	54	0	0	0	490

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	3	34	143	359	636	840	1083	1061	749	377	69	5	3	37	180	539	1175	2015	3098	4159	4908	5285	5354	5359
45	0	5	50	220	481	690	928	906	599	238	21	0	0	5	55	275	756	1446	2374	3280	3879	4117	4138	4138
50	0	0	10	111	331	540	773	751	451	124	2	0	0	0	10	121	452	992	1765	2516	2967	3091	3093	3093
55	0	0	0	47	201	391	618	596	309	50	0	0	0	0	0	47	248	639	1257	1853	2162	2212	2212	2212
60	0	0	0	12	105	250	463	443	183	14	0	0	0	0	0	12	117	367	830	1273	1456	1470	1470	1470
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	18	87	214	387	531	703	687	468	223	26	0	0	18	105	319	706	1237	1940	2627	3095	3318	3344	3344

(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