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: RAINIER PARADISE RNGER S, WA **COOP ID: 456898**

Climate Division: WA 5 **NWS Call Sign:** **Elevation: 5,427 Feet** **Lat: 46˚47N** **Lon: 121˚45W**

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	32.6	20.6	26.6	65	1962	30	34.9	1981	-13	1963	11	20.7	1993	1190	0	.0	.0	.7	17.2	29.3	.5
Feb	34.2	21.6	27.9	60+	1996	15	35.9	1991	-18	1989	3	19.7	1989	1039	0	.0	.0	1.5	13.7	26.5	.3
Mar	36.2	22.8	29.5	70	1960	19	38.3	1992	-2	1955	4	24.7	1977	1086	0	.0	.0	2.4	11.3	28.8	.0
Apr	41.0	25.6	33.3	78	1987	28	38.5	1989	3	1972	9	28.1	1972	951	0	.0	.0	6.3	6.1	23.9	.0
May	47.6	30.8	39.2	83	1986	31	44.6	1992	13	1968	5	34.4	1984	800	0	.0	.0	12.4	1.2	20.5	.0
Jun	53.5	36.1	44.8	85	1986	1	51.4	1992	20+	1976	3	40.3	1980	607	0	.0	.0	18.2	.1	11.0	.0
Jul	61.5	41.9	51.7	86	1990	12	58.6	1985	22	2000	1	41.8	1993	420	8	.0	.0	25.4	.0	3.3	.0
Aug	63.0	43.4	53.2	87	1996	24	60.8	1986	26	1993	25	46.4	1995	379	13	.0	.0	26.2	.0	1.7	.0
Sep	57.3	39.2	48.3	89+	1988	5	55.1	1974	20	1972	27	42.4	1985	510	7	.0	.0	19.9	@	7.2	.0
Oct	47.6	32.1	39.9	88	1952	4	48.9	1988	11	1984	31	33.5	1990	780	0	.0	.0	12.0	2.7	17.7	.0
Nov	35.6	23.7	29.7	71	1949	2	38.0	1976	-11	1955	15	19.7	1985	1061	0	.0	.0	1.7	12.8	27.0	.2
Dec	32.8	20.4	26.6	62+	1962	8	33.7	1985	-18	1968	29	17.4	1983	1191	0	.0	.0	.7	15.9	29.5	.9
Ann	45.2	29.9	37.6	89+	Sep 1988	5	60.8	Aug 1986	-18+	Feb 1989	3	17.4	Dec 1983	10014	28	.0	.0	127.4	81.0	226.4	1.9

\+ 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: 1948-2001

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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	18.21	19.26	6.22	1982	24	31.82	1972	1.21	1985
Feb	13.93	13.67	7.43	1996	9	25.44	1972	1.41	1993
Mar	12.87	13.04	5.56	1997	20	24.26	1997	2.82	1992
Apr	9.00	8.32	3.63	1991	5	17.15	1972	2.95	1998
May	5.51	5.43	2.01	1969	29	11.79	1984	.83	1992
Jun	3.92	3.95	2.70	1985	7	10.44	1981	.27	1977
Jul	2.16	2.17	1.88	1983	13	7.13	1983	.00+	1984
Aug	2.28	1.40	2.12	1961	31	8.02	1977	.13	1973
Sep	4.74	5.11	3.45	1959	26	10.29	1977	.00	1993
Oct	8.53	7.79	5.20	1959	22	19.15	1975	.25	1987
Nov	19.07	20.47	6.53	1995	28	35.42	1995	6.32	1979
Dec	19.72	18.29	7.76	1977	2	32.05	1996	5.47	1985
Ann	119.94	123.41	7.76	Dec 1977	2	35.42	Nov 1995	.00+	Sep 1993

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	21.2	18.6	11.9	6.8
Feb	18.7	16.1	9.9	4.8
Mar	21.4	18.4	10.0	4.0
Apr	19.3	15.1	6.6	2.4
May	16.1	12.3	3.9	.9
Jun	12.6	9.0	2.4	.7
Jul	8.3	5.2	1.4	.3
Aug	7.7	4.7	1.7	.5
Sep	10.1	7.6	3.1	1.5
Oct	14.4	12.0	6.3	2.8
Nov	22.0	19.7	12.4	7.3
Dec	21.8	19.1	12.6	7.2
Ann	193.6	157.8	82.2	39.2

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	5.41	7.15	9.74	11.98	14.16	16.42	18.92	21.86	25.66	31.61	37.13
Feb	4.80	6.11	8.03	9.65	11.20	12.80	14.55	16.58	19.18	23.22	26.92
Mar	5.65	6.80	8.40	9.71	10.94	12.17	13.49	15.01	16.93	19.84	22.47
Apr	3.54	4.37	5.56	6.54	7.46	8.41	9.43	10.61	12.10	14.40	16.49
May	1.91	2.43	3.18	3.82	4.44	5.06	5.75	6.55	7.58	9.16	10.62
Jun	.97	1.34	1.91	2.42	2.92	3.45	4.04	4.75	5.67	7.12	8.49
Jul	.00	.33	.76	1.11	1.45	1.81	2.22	2.70	3.35	4.40	5.40
Aug	.18	.32	.62	.93	1.28	1.68	2.16	2.77	3.61	5.02	6.42
Sep	.23	.64	1.35	2.05	2.80	3.63	4.61	5.84	7.51	10.27	12.98
Oct	1.56	2.31	3.56	4.72	5.91	7.19	8.64	10.40	12.74	16.51	20.10
Nov	6.93	8.72	11.30	13.47	15.53	17.64	19.93	22.60	26.01	31.26	36.07
Dec	8.16	9.96	12.49	14.58	16.54	18.53	20.67	23.13	26.26	31.02	35.36
Ann	86.96	93.39	101.61	107.83	113.35	118.67	124.15	130.21	137.53	148.14	157.29

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	109.4	97.3	118	121
Feb	96.2	91.8	146	145
Mar	101.2	102.5	169	160
Apr	74.1	67.8	177	165
May	27.2	23.4	149	139
Jun	6.6	6.2	91	78
Jul	.8	.0	25	10
Aug	.0	.0	2	0
Sep	3.2	.0	#	#
Oct	27.2	21.3	3	2
Nov	108.1	102.3	29	24
Dec	120.5	119.5	77	77
Ann	674.5	632.1	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	37.0	1972	11	249.5	1971	264	1972	25	203	1972
Feb	44.0	1994	23	187.8	1979	275	1972	18	252	1972
Mar	24.0	1994	21	215.0	1971	290	1999	30	274	1972
Apr	28.0	1991	4	146.0	1991	305	1972	17	289	1972
May	17.0	1971	17	71.9	1974	295	1972	1	261	1974
Jun	10.5	1973	17	16.5	1973	245	1974	1	209	1974
Jul	6.2	1979	2	10.7	1979	158	1974	1	118	1974
Aug	.1	1973	31	.1	1973	66	1974	1	25	1974
Sep	13.0	1972	23	38.0	1972	19	1972	24	6	1972
Oct	18.0	1979	19	84.3	1975	44	1975	30	11	1971
Nov	25.0	1997	20	212.7	1994	124	1994	30	77	1994
Dec	31.0	1998	2	227.0	1971	166	1996	29	130+	1996
Ann	44.0	Feb 1994	23	249.5	Jan 1971	305	Apr 1972	17	289	Apr 1972

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	18.4	16.9	13.1	9.4	4.3
Feb	16.4	15.5	11.1	7.9	2.9
Mar	19.3	17.6	12.6	8.6	3.4
Apr	15.5	13.7	8.5	5.9	2.0
May	8.9	7.5	3.6	1.9	.4
Jun	2.9	2.0	.7	.3	@
Jul	.4	.3	.1	@	.0
Aug	@	.0	.0	.0	.0
Sep	1.1	.8	.3	.2	.1
Oct	6.0	4.9	3.3	2.2	.7
Nov	17.3	15.9	11.7	8.2	3.6
Dec	18.9	17.4	12.7	9.8	4.4
Ann	125.1	112.5	77.7	54.4	21.8

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	29.7	29.7	29.7	29.7
Feb	27.0	27.0	27.0	27.0
Mar	30.1	30.1	30.1	30.1
Apr	-9.9	-9.9	-9.9	-9.9
May	-9.9	-9.9	-9.9	-9.9
Jun	28.2	28.1	28.1	27.5
Jul	12.6	12.1	11.7	10.8
Aug	1.4	1.4	1.4	1.2
Sep	1.5	1.0	.7	.3
Oct	8.6	6.9	5.9	3.0
Nov	25.3	23.9	23.4	21.6
Dec	29.2	29.0	28.8	28.3
Ann	-9.9	-9.9	-9.9	-9.9

+ 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	8/03	7/30	7/26	7/24	7/21	7/19	7/16	7/13	7/08
32	7/25	7/20	7/16	7/13	7/10	7/07	7/04	6/30	6/24
28	7/11	7/03	6/27	6/22	6/17	6/12	6/07	6/01	5/24
24	6/17	6/10	6/05	6/01	5/28	5/24	5/20	5/15	5/08
20	5/23	5/16	5/11	5/07	5/02	4/28	4/24	4/19	4/11
16	5/02	4/24	4/18	4/13	4/08	4/03	3/29	3/23	3/15

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	7/30	8/03	8/07	8/10	8/13	8/16	8/19	8/23	8/28
32	8/06	8/13	8/18	8/22	8/27	8/31	9/04	9/09	9/16
28	8/31	9/07	9/12	9/17	9/21	9/25	9/29	10/04	10/11
24	9/22	9/29	10/03	10/07	10/11	10/15	10/19	10/24	10/30
20	10/10	10/16	10/21	10/25	10/29	11/02	11/06	11/11	11/17
16	10/19	10/26	10/31	11/05	11/09	11/13	11/17	11/22	11/29

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	42	35	30	26	22	18	14	9	2
32	74	64	58	52	47	42	36	29	20
28	130	118	109	102	95	88	81	73	61
24	162	153	146	141	136	130	125	118	109
20	211	200	192	185	179	173	166	158	147
16	245	235	227	220	214	208	201	193	182

***** 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	1190	1039	1086	951	800	607	420	379	510	780	1061	1191	10014
60	1035	899	946	801	645	460	283	248	373	628	911	1036	8265
57	942	815	853	711	552	375	213	184	298	539	821	943	7246
55	880	759	791	651	490	321	173	149	253	481	761	881	6590
50	725	619	636	501	343	199	92	74	161	346	611	726	5033
32	218	171	145	73	22	6	0	0	8	46	159	240	1088

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	51	56	68	112	245	389	612	657	495	289	88	72	3134
55	0	0	0	0	1	14	72	93	50	12	0	0	242
57	0	0	0	0	0	8	49	67	35	8	0	0	167
60	0	0	0	0	0	3	27	37	20	3	0	0	90
65	0	0	0	0	0	0	8	13	7	0	0	0	28
70	0	0	0	0	0	0	0	0	0	0	0	0	0

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	1	7	7	44	103	193	374	405	272	116	11	1	1	8	15	59	162	355	729	1134	1406	1522	1533	1534
45	0	0	0	17	51	107	247	273	168	59	2	0	0	0	0	17	68	175	422	695	863	922	924	924
50	0	0	0	1	23	53	145	168	96	26	0	0	0	0	0	1	24	77	222	390	486	512	512	512
55	0	0	0	0	3	21	75	88	43	11	0	0	0	0	0	0	3	24	99	187	230	241	241	241
60	0	0	0	0	0	1	29	42	15	1	0	0	0	0	0	0	0	1	30	72	87	88	88	88
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	1	27	59	108	209	222	143	58	1	0	0	0	1	28	87	195	404	626	769	827	828	828

(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