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: ROSALIA, WA **COOP ID: 457180**

Climate Division: WA10 **NWS Call Sign:** **Elevation: 2,400 Feet** **Lat: 47˚14N** **Lon: 117˚22W**

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	35.3	21.9	28.6	60	1981	23	37.1	1994	-24+	1979	1	12.3	1979	1129	0	.0	.0	1.0	10.4	26.2	1.8
Feb	41.1	26.0	33.6	66	1977	21	40.7	1991	-25	1996	2	22.7	1989	880	0	.0	.0	4.7	4.7	22.3	.8
Mar	49.2	30.8	40.0	74	1994	31	45.8	1992	-4	1955	4	33.7	1971	775	0	.0	.0	13.7	.5	19.5	@
Apr	58.1	34.7	46.4	94	1977	25	51.2	1987	15	1966	19	41.7	1975	558	0	.0	.1	23.9	.0	11.9	.0
May	66.4	40.6	53.5	95	1993	13	59.6	1993	23	1954	1	49.3	1996	358	3	.0	.2	30.1	.0	3.0	.0
Jun	73.6	45.7	59.7	99	1973	23	65.5	1992	27	1979	7	54.1	1981	195	35	.0	1.2	29.8	.0	.2	.0
Jul	83.0	49.4	66.2	104+	1998	28	72.5	1998	31	1971	7	59.8	1993	71	109	.3	7.5	31.0	.0	.1	.0
Aug	84.1	49.4	66.8	107	1961	5	70.9	1977	31	1980	29	60.9	1980	69	123	.6	8.5	31.0	.0	.1	.0
Sep	74.0	41.6	57.8	101	1988	4	64.2	1998	20+	1983	29	51.5	1971	249	33	@	1.6	29.8	.0	2.4	.0
Oct	61.0	33.2	47.1	90+	1992	1	53.6	1988	12	1971	29	43.4	1984	556	0	.0	.1	26.7	@	12.7	.0
Nov	43.5	28.0	35.8	72	1988	1	43.1	1999	-15	1985	28	22.0	1985	877	0	.0	.0	7.2	2.4	20.8	.3
Dec	35.5	22.1	28.8	59	1980	27	34.8	1979	-29	1968	31	19.3	1985	1122	0	.0	.0	1.1	9.7	26.9	1.4
Ann	58.7	35.3	47.0	107	Aug 1961	5	72.5	Jul 1998	-29	Dec 1968	31	12.3	Jan 1979	6839	303	.9	19.2	230.0	27.7	146.1	4.3

\+ 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

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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	2.15	2.10	1.44	1953	9	3.69	1982	.63	1977
Feb	1.69	1.65	1.15	1963	1	3.13	1979	.38	1977
Mar	1.69	1.58	1.45	1989	10	4.28	1989	.52	1992
Apr	1.45	1.50	1.00	2000	14	3.21	1993	.19	1977
May	1.74	1.82	1.38	1980	26	4.07	1980	.57	1992
Jun	1.33	1.27	1.10	1990	2	2.79	1971	.32	1986
Jul	.78	.55	1.33	1983	14	2.67	1993	.00	1973
Aug	.70	.59	1.18	1989	24	2.57	1989	.00	1994
Sep	.83	.66	1.12	1982	29	3.05	1982	.00+	1990
Oct	1.22	1.10	1.10	1955	10	2.73	1990	.00	1987
Nov	2.36	2.00	1.26	1992	22	5.63	1973	.43	1976
Dec	2.46	2.41	1.36	1978	1	5.17	1980	.63	1985
Ann	18.40	17.80	1.45	Mar 1989	10	5.63	Nov 1973	.00+	Aug 1994

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.8	7.9	.7	@
Feb	10.7	6.6	.4	.0
Mar	11.9	6.2	.3	@
Apr	10.1	5.0	.4	@
May	10.1	5.6	.7	.1
Jun	8.7	4.2	.5	@
Jul	5.2	2.7	.3	.1
Aug	4.3	2.1	.2	@
Sep	5.3	3.1	.2	.1
Oct	7.3	4.4	.3	.0
Nov	13.6	8.4	.7	.1
Dec	12.6	8.5	1.0	.1
Ann	111.6	64.7	5.7	.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	.91	1.11	1.38	1.60	1.81	2.02	2.25	2.51	2.84	3.35	3.80
Feb	.51	.67	.91	1.12	1.32	1.53	1.76	2.03	2.38	2.92	3.43
Mar	.64	.79	1.02	1.21	1.39	1.57	1.77	2.00	2.29	2.74	3.16
Apr	.35	.49	.70	.89	1.07	1.27	1.49	1.75	2.09	2.64	3.14
May	.70	.86	1.09	1.27	1.45	1.63	1.82	2.04	2.32	2.75	3.15
Jun	.47	.59	.77	.92	1.07	1.22	1.38	1.57	1.82	2.19	2.54
Jul	.06	.14	.27	.38	.50	.63	.78	.96	1.21	1.61	1.99
Aug	.01	.04	.12	.22	.33	.46	.63	.84	1.15	1.68	2.21
Sep	.00	.00	.09	.23	.38	.55	.76	1.03	1.41	2.03	2.66
Oct	.07	.18	.37	.55	.74	.95	1.19	1.50	1.91	2.59	3.25
Nov	.72	.94	1.28	1.57	1.85	2.14	2.46	2.83	3.32	4.08	4.78
Dec	.81	1.05	1.39	1.68	1.96	2.25	2.57	2.94	3.41	4.15	4.83
Ann	13.56	14.51	15.72	16.63	17.44	18.22	19.02	19.90	20.97	22.51	23.84

\+ 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	6.8	6.0	2	1
Feb	3.0	1.1	1	#
Mar	.8	.0	#	0
Apr	.2	.0	#	0
May	.1	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.2	.0	#	0
Nov	3.3	1.1	#	#
Dec	6.7	5.5	1	1
Ann	21.1	13.7	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	1982	23	23.1	1982	15	1996	31	7	1993
Feb	5.0	1981	12	12.7	1975	15	1996	4	7	1985
Mar	3.0	1997	16	4.5	1985	4	1989	3	#+	1999
Apr	2.0	1975	6	3.0	1975	#	1990	28	#	1990
May	1.0	1981	5	1.0	1981	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	3.0	1996	20	3.0	1996	1	1971	31	#	1971
Nov	8.0	1996	19	19.6	1973	6	1973	7	3	1973
Dec	8.0	1984	30	18.5	1992	18	1996	29	7	1996
Ann	8.0+	Nov 1996	19	23.1	Jan 1982	18	Dec 1996	29	7+	Dec 1996

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.4	3.0	.6	.2	.0
Feb	2.2	1.5	.2	@	.0
Mar	.8	.6	@	.0	.0
Apr	.2	.1	.0	.0	.0
May	.1	@	.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	.1	.1	@	.0	.0
Nov	2.2	1.4	.4	@	.0
Dec	4.5	3.6	.9	.2	.0
Ann	14.5	10.3	2.1	.4	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	5.5	3.2	.7	.0
Feb	1.5	.4	.2	.0
Mar	.2	.0	.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
Nov	.6	.1	.0	.0
Dec	3.8	1.7	.5	.0
Ann	11.6	5.4	1.4	.0

+ 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	7/06	6/26	6/19	6/13	6/08	6/02	5/27	5/20	5/10
32	6/11	6/02	5/26	5/21	5/15	5/10	5/04	4/28	4/19
28	5/21	5/12	5/06	5/01	4/26	4/20	4/15	4/09	3/31
24	4/21	4/10	4/03	3/27	3/21	3/15	3/08	3/01	2/18
20	3/28	3/16	3/08	3/01	2/22	2/15	2/08	1/31	1/19
16	3/06	2/24	2/18	2/12	2/07	2/02	1/27	1/20	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	8/23	8/29	9/02	9/06	9/09	9/12	9/16	9/20	9/26
32	9/09	9/14	9/18	9/21	9/24	9/27	9/30	10/04	10/09
28	9/16	9/22	9/27	10/01	10/04	10/08	10/12	10/16	10/23
24	9/29	10/06	10/10	10/14	10/18	10/22	10/26	10/30	11/06
20	10/06	10/15	10/21	10/26	10/30	11/04	11/09	11/15	11/23
16	10/25	11/05	11/13	11/19	11/26	12/02	12/08	12/16	12/27

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	126	114	106	99	93	86	79	71	59
32	168	155	146	138	131	124	116	107	95
28	191	181	173	167	161	155	149	141	131
24	250	236	226	218	210	202	194	184	171
20	288	275	265	257	250	242	234	225	211
16	329	316	307	299	291	284	276	266	253

***** 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	1129	880	775	558	358	195	71	69	249	556	877	1122	6839
60	974	740	620	409	218	103	22	22	146	402	727	967	5350
57	881	656	527	322	148	62	9	10	97	312	637	874	4535
55	819	600	465	266	109	41	4	5	71	254	580	812	4026
50	672	469	317	145	38	12	0	1	26	133	441	658	2912
32	230	108	16	0	0	0	0	0	0	1	90	196	641

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	124	151	265	432	668	830	1060	1078	774	469	203	97	6151
55	0	0	0	8	63	180	351	370	155	9	4	0	1140
57	0	0	0	4	40	141	295	313	121	4	0	0	918
60	0	0	0	0	18	93	214	232	80	1	0	0	638
65	0	0	0	0	3	35	109	123	33	0	0	0	303
70	0	0	0	0	0	10	39	50	10	0	0	0	109

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	25	78	202	413	585	814	833	550	254	43	4	3	28	106	308	721	1306	2120	2953	3503	3757	3800	3804
45	0	3	24	106	267	435	659	678	403	140	11	0	0	3	27	133	400	835	1494	2172	2575	2715	2726	2726
50	0	0	0	46	158	294	504	524	265	64	0	0	0	0	0	46	204	498	1002	1526	1791	1855	1855	1855
55	0	0	0	14	77	170	351	376	156	21	0	0	0	0	0	14	91	261	612	988	1144	1165	1165	1165
60	0	0	0	4	33	82	215	235	73	6	0	0	0	0	0	4	37	119	334	569	642	648	648	648
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	9	48	131	253	350	508	524	360	188	19	0	0	9	57	188	441	791	1299	1823	2183	2371	2390	2390

(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