

Climatography of the United States No. 20

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: RICHLAND, WA

1971-2000

COOP ID: 457015

Climate Division: WA 8

NWS Call Sign:

Elevation: 373 Feet

Lat: 46° 19N

Lon: 119° 16W

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	39.9	26.0	33.0	71	1971	31	41.2	1994	-21	1950	29	14.3	1979	993	0	.0	.0	7.1	7.5	22.0	.5
Feb	47.2	29.3	38.3	73+	1986	24	43.5	1995	-22+	1950	3	25.3	1989	749	0	.0	.0	13.9	2.6	16.0	.4
Mar	57.2	34.7	46.0	82	1960	26	49.7	1986	11	1993	1	41.2	1993	590	0	.0	.0	27.8	.2	9.7	.0
Apr	65.1	40.4	52.8	92+	1977	25	56.9	1987	23	1972	3	47.3	1975	369	1	.0	@	29.9	.0	2.2	.0
May	73.3	47.3	60.3	104	1986	31	65.8	1993	30	1954	1	55.7	1984	172	27	.1	1.8	31.0	.0	.1	.0
Jun	80.3	53.5	66.9	110	1958	23	71.9	1986	38+	1984	5	62.8	1991	54	113	.3	5.9	30.0	.0	.0	.0
Jul	87.9	58.5	73.2	110+	1968	7	78.7	1985	41	1948	25	68.0	1993	8	261	2.9	15.3	31.0	.0	.0	.0
Aug	87.7	57.9	72.8	113	1961	5	76.3	1971	39	1973	19	68.9	1980	8	251	2.5	14.6	31.0	.0	.0	.0
Sep	78.5	49.8	64.2	106	1950	3	69.8	1990	31+	1985	29	59.3	1983	112	86	@	3.1	30.0	.0	.3	.0
Oct	65.3	39.9	52.6	89	1958	3	57.2	1988	18	1971	29	49.9	1984	386	0	.0	.0	30.5	.0	3.7	.0
Nov	49.1	33.2	41.2	77	1975	4	46.8	1990	-6	1985	23	29.1	1985	715	0	.0	.0	17.1	1.4	12.2	@
Dec	39.8	27.1	33.5	66+	1993	10	40.2	1973	-10	1968	30	22.8	1985	977	0	.0	.0	6.7	6.9	22.5	.7
Ann	64.3	41.5	52.9	113	Aug 1961	5	78.7	Jul 1985	-22+	Feb 1950	3	14.3	Jan 1979	5133	739	5.8	40.7	286.0	18.6	88.7	1.6

+ 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/normal/usnormals.html

Issue Date: February 2004

(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

084-A

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Precipitation (inches)																								
	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.97	.74	.92	1997	31	2.17	1978	.13	1977	9.4	3.8	.1	.0	.19	.28	.42	.55	.68	.83	.99	1.18	1.44	1.85	2.24
Feb	.75	.66	1.11	1956	21	1.61	1983	.07	1988	8.0	2.9	@	.0	.15	.22	.33	.43	.53	.64	.77	.92	1.12	1.44	1.74
Mar	.71	.69	.63	1954	17	1.59	1989	.03	1994	7.8	2.5	.1	.0	.09	.15	.25	.35	.45	.57	.70	.86	1.08	1.44	1.79
Apr	.57	.64	.72	1969	6	1.41	1993	.00	1977	5.9	1.9	@	.0	.05	.11	.20	.28	.37	.46	.57	.70	.88	1.16	1.44
May	.61	.62	.87	1994	16	1.77	1980	.05	1992	5.9	2.1	.1	.0	.08	.13	.22	.30	.39	.49	.61	.75	.93	1.24	1.54
Jun	.41	.39	.90	1948	11	.89	1980	.00	1999	4.4	1.5	@	.0	.02	.06	.12	.18	.25	.32	.40	.51	.65	.89	1.12
Jul	.25	.16	.91	1998	31	1.63	1998	.00+	1999	2.9	.8	.1	.0	.00	.00	.03	.06	.10	.16	.22	.30	.42	.63	.83
Aug	.30	.12	1.12	1977	30	1.82	1977	.00+	1998	2.6	.9	.1	@	.00	.00	.00	.03	.09	.16	.25	.36	.53	.82	1.11
Sep	.34	.24	.70	1971	2	1.04	1977	.00+	1999	3.7	1.0	.1	.0	.00	.00	.01	.06	.13	.20	.29	.41	.58	.87	1.17
Oct	.53	.49	1.10	1982	29	1.59	1982	.00+	1987	4.7	1.7	.2	@	.00	.02	.09	.17	.25	.36	.48	.64	.86	1.25	1.63
Nov	1.07	.99	.78	1966	20	2.78	1973	.07	1976	10.1	3.6	.2	.0	.19	.29	.45	.59	.74	.90	1.08	1.31	1.60	2.08	2.53
Dec	1.04	.88	.68+	1995	12	2.83	1973	.21	1976	10.1	4.3	.2	.0	.25	.35	.50	.64	.77	.91	1.07	1.26	1.50	1.89	2.26
Ann	7.55	7.82	1.12	Aug 1977	30	2.83	Dec 1973	.00+	Sep 1999	75.5	27.0	1.2	.0	4.33	4.90	5.66	6.26	6.80	7.33	7.90	8.53	9.31	10.47	11.50

+ 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

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Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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Climate Division: WA 8

NWS Call Sign:

Elevation: 373 Feet

Lat: 46° 19N

Lon: 119° 16W

Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	2.6	.9	1	#	4.7	1993	9	16.0	1993	14	1980	11	6	1993	2.8	.9	.1	.0	.0	5.8	3.0	1.9	.2
Feb	2.0	.0	1	0	6.0	1990	13	10.0	1989	11	1985	9	4	1985	1.4	.7	.4	.1	.0	1.7	1.2	.5	.0
Mar	.4	.0	#	0	2.0	1980	6	3.2	1993	6	1993	3	1	1993	.4	.2	.0	.0	.0	.3	.1	@	.0
Apr	#	.0	0	0	#	1976	16	#+	1976	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.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	.0	.0	#	0	.3	1971	31	.3+	1991	#+	1997	6	#+	1997	.1	.0	.0	.0	.0	.0	.0	.0	.0
Nov	1.2	.0	#	0	5.3	1985	20	13.0	1985	9	1985	23	3	1985	1.0	.4	.1	@	.0	.9	.6	.3	.0
Dec	3.1	2.6	#	#	4.0	1977	30	9.0	1992	10	1985	3	5	1985	3.1	1.3	.2	.0	.0	4.5	2.2	.3	.1
Ann	9.3	3.5	N/A	N/A	6.0	Feb 1990	13	16.0	Jan 1993	14	Jan 1980	11	6	Jan 1993	8.8	3.5	.8	.1	.0	13.2	7.1	3.0	.3

+ 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

Complete documentation available from:

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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	5/06	5/01	4/28	4/25	4/23	4/20	4/18	4/14	4/10
32	4/21	4/16	4/13	4/09	4/07	4/04	3/31	3/28	3/23
28	4/11	4/03	3/29	3/24	3/20	3/15	3/11	3/05	2/26
24	3/25	3/15	3/08	3/02	2/25	2/19	2/13	2/06	1/28
20	3/06	2/25	2/19	2/13	2/08	2/03	1/29	1/22	1/13
16	2/27	2/17	2/09	2/03	1/28	1/21	1/13	1/01	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	9/24	9/28	10/01	10/04	10/06	10/08	10/11	10/14	10/18
32	10/02	10/07	10/11	10/14	10/17	10/20	10/24	10/27	11/02
28	10/18	10/24	10/28	10/31	11/04	11/07	11/10	11/14	11/20
24	10/28	11/04	11/10	11/14	11/19	11/23	11/28	12/03	12/11
20	11/03	11/12	11/19	11/25	11/30	12/05	12/11	12/17	12/26
16	11/20	12/01	12/10	12/17	12/24	1/01	1/10	1/24	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	185	178	174	169	165	162	157	152	146
32	216	208	203	198	193	188	183	178	170
28	254	245	239	233	228	223	218	211	202
24	303	290	281	273	266	259	251	242	230
20	333	320	310	302	294	286	278	268	255
16	>365	>365	>365	342	328	318	308	298	285

* 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	993	749	590	369	172	54	8	8	112	386	715	977	5133
60	838	609	435	229	77	14	0	1	45	235	565	822	3870
57	753	526	343	157	39	5	0	0	22	154	482	729	3210
55	695	474	284	116	23	2	0	0	12	108	426	667	2807
50	553	345	153	42	4	0	0	0	2	34	296	522	1951
32	173	51	1	0	0	0	0	0	0	0	35	122	382

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	202	226	434	622	878	1048	1276	1266	965	638	310	168	8033
55	12	5	4	48	188	360	563	553	287	32	11	0	2063
57	8	1	1	29	143	303	501	491	236	16	7	0	1736
60	0	0	0	11	87	222	409	399	170	5	0	0	1303
65	0	0	0	1	27	113	261	251	86	0	0	0	739
70	0	0	0	0	5	42	136	127	35	0	0	0	345

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	40	89	228	413	665	846	1065	1053	754	420	133	47	40	129	357	770	1435	2281	3346	4399	5153	5573	5706	5753
45	9	27	106	265	510	696	910	898	604	273	56	17	9	36	142	407	917	1613	2523	3421	4025	4298	4354	4371
50	0	5	30	140	355	546	755	743	455	149	17	1	0	5	35	175	530	1076	1831	2574	3029	3178	3195	3196
55	0	0	3	56	214	396	600	588	310	61	1	0	0	0	3	59	273	669	1269	1857	2167	2228	2229	2229
60	0	0	0	16	105	252	445	433	178	18	0	0	0	0	0	16	121	373	818	1251	1429	1447	1447	1447
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	16	48	138	251	401	527	676	673	475	263	60	18	16	64	202	453	854	1381	2057	2730	3205	3468	3528	3546

(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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. Freeze Data Table
1971-2000 serially complete daily data |
|---|---|

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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