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: WALLOWA, OR **COOP ID: 358997**

Climate Division: OR 8 **NWS Call Sign:** **Elevation: 2,923 Feet** **Lat: 45˚34N** **Lon: 117˚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	35.2	18.7	27.0	64	1971	31	33.8	1999	-32	1950	31	14.5	1979	1180	0	.0	.0	1.9	11.0	28.3	3.1
Feb	42.4	22.2	32.3	67+	1995	24	39.7	1992	-32	1950	2	18.5	1989	915	0	.0	.0	6.1	3.7	25.0	1.5
Mar	51.9	27.3	39.6	79	1978	29	44.5	1992	-5	1989	4	33.8	1985	787	0	.0	.0	17.8	.3	23.5	.1
Apr	60.2	31.7	46.0	90	1977	24	51.4	1987	11+	1968	22	39.5	1975	572	0	.0	@	25.5	.0	15.8	.0
May	68.3	37.5	52.9	95+	2001	23	58.3	1993	16	1954	1	49.4	1977	375	0	.0	.3	30.2	.0	6.6	.0
Jun	76.6	42.9	59.8	101	1992	24	64.1	1977	26+	1984	1	56.7	1976	173	16	@	2.6	30.0	.0	1.6	.0
Jul	85.4	46.0	65.7	106	1994	22	70.6	1998	29	1971	7	59.3	1993	68	89	.6	10.5	31.0	.0	.2	.0
Aug	85.7	44.7	65.2	107	1961	4	69.1	1971	25	1980	29	60.5	1980	79	85	.6	11.3	31.0	.0	.5	.0
Sep	76.7	37.3	57.0	102+	1963	29	63.5	1998	17	1985	29	51.7	1971	259	18	.1	2.9	30.0	.0	8.4	.0
Oct	63.1	30.2	46.7	89+	1996	9	54.3	1988	6	1971	29	43.0	1971	568	0	.0	.0	28.0	@	19.7	.0
Nov	45.1	26.1	35.6	74	1999	12	41.4	1995	-22	1985	23	25.3	1985	883	0	.0	.0	8.7	2.3	23.4	.4
Dec	35.9	19.4	27.7	65	1951	1	34.4	1973	-32	1964	17	13.0	1985	1158	0	.0	.0	2.3	9.6	28.2	2.6
Ann	60.5	32.0	46.3	107	Aug 1961	4	70.6	Jul 1998	-32+	Dec 1964	17	13.0	Dec 1985	7017	208	1.3	27.6	242.5	26.9	181.2	7.7

\+ 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

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	1.84	1.90	1.33	1956	15	3.58	1975	.37	1981
Feb	1.44	1.34	1.40	1986	23	3.91	1986	.35	1991
Mar	1.30	1.24	.67	1983	4	3.05	1972	.33	1992
Apr	1.39	1.17	1.50	1978	27	3.74	1978	.07	1977
May	1.76	1.65	1.45	1991	19	3.50	1991	.34	1997
Jun	1.44	1.22	1.09	1958	9	3.93	1981	.23	1986
Jul	.94	.75	1.98	1982	1	3.27	1982	.05	1973
Aug	.89	.50	1.93	1993	21	4.34	1989	.00	2000
Sep	1.09	.99	1.24	1972	12	2.72	1986	.00	1974
Oct	1.33	1.20	1.56	1995	31	4.32	1975	.00	1987
Nov	2.07	2.00	1.12+	1999	25	4.40	1991	.34	1993
Dec	1.91	1.89	3.50	1950	28	4.25	1977	.25	1976
Ann	17.40	17.14	3.50	Dec 1950	28	4.40	Nov 1991	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	13.0	6.0	.5	.1
Feb	11.3	4.3	.4	.1
Mar	11.6	4.6	.2	.0
Apr	9.9	4.3	.4	@
May	11.3	5.9	.7	.1
Jun	9.0	4.5	.5	.1
Jul	5.8	2.7	.6	.1
Aug	5.7	2.6	.4	.1
Sep	6.3	2.8	.6	.1
Oct	9.1	4.5	.4	.1
Nov	14.8	6.8	.7	.1
Dec	12.9	6.3	.7	@
Ann	120.7	55.3	6.1	.9

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	.58	.75	1.01	1.23	1.45	1.67	1.92	2.20	2.58	3.15	3.69
Feb	.35	.49	.70	.88	1.07	1.27	1.48	1.75	2.09	2.63	3.13
Mar	.51	.63	.80	.94	1.08	1.21	1.36	1.53	1.74	2.07	2.37
Apr	.33	.46	.66	.84	1.02	1.21	1.43	1.68	2.01	2.54	3.04
May	.56	.73	.97	1.19	1.39	1.60	1.83	2.11	2.46	3.00	3.50
Jun	.47	.60	.80	.98	1.14	1.31	1.50	1.72	2.00	2.44	2.84
Jul	.08	.14	.26	.39	.54	.70	.90	1.14	1.48	2.06	2.62
Aug	.02	.08	.20	.33	.47	.64	.84	1.09	1.44	2.04	2.63
Sep	.01	.05	.16	.30	.47	.68	.94	1.29	1.79	2.67	3.55
Oct	.11	.26	.47	.67	.87	1.09	1.33	1.64	2.05	2.71	3.34
Nov	.63	.83	1.12	1.37	1.62	1.87	2.16	2.49	2.91	3.58	4.20
Dec	.41	.59	.87	1.12	1.38	1.65	1.96	2.32	2.81	3.58	4.31
Ann	12.48	13.43	14.66	15.59	16.41	17.20	18.03	18.93	20.03	21.62	23.00

+ 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)

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	12.9	12.7	5	4	11.0	1993	1	32.5	1993	26	1993	14	23	1993	6.5	5.1	1.6	.6	.1	18.0	14.5	11.9	3.9
Feb	7.3	5.0	3	2	14.0	1999	9	33.0	1999	19	1985	11	15	1993	3.9	2.8	.8	.3	.1	12.0	10.2	6.0	1.6
Mar	3.4	2.2	1	#	5.0	1989	2	10.5	1972	16	1993	3	8	1993	2.3	1.7	.3	.1	.0	2.2	1.2	.6	.0
Apr	1.0	#	#	0	5.0	1975	3	12.0	1975	1	1972	12	#+	1996	.7	.4	.1	@	.0	.1	.0	.0	.0
May	.1	.0	#	0	3.5	1986	6	3.5	1986	#+	1996	4	#+	1996	.1	@	@	.0	.0	.0	.0	.0	.0
Jun	#	.0	0	0	#	1973	17	#	1973	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	.3	.0	#	0	2.0	1972	29	2.5	1971	#+	1996	19	#+	1996	.2	.2	.0	.0	.0	.0	.0	.0	.0
Nov	6.6	5.5	1	#	11.0	1977	22	20.2	1973	12	1977	22	4	1985	3.7	2.7	.8	.3	@	5.5	2.5	1.1	@
Dec	9.9	8.8	2	2	10.0	1998	25	25.5	1971	62	1977	23	8	1971	5.7	4.4	1.3	.3	@	13.4	8.9	5.5	1.1
Ann	41.5	34.2	N/A	N/A	14.0	Feb 1999	9	33.0	Feb 1999	62	Dec 1977	23	23	Jan 1993	23.1	17.3	4.9	1.6	.2	51.2	37.3	25.1	6.6

+ 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	7/23	7/16	7/12	7/08	7/04	7/01	6/27	6/22	6/16
32	7/04	6/27	6/21	6/17	6/13	6/09	6/04	5/30	5/23
28	6/11	6/03	5/29	5/25	5/20	5/16	5/12	5/06	4/29
24	5/14	5/08	5/04	5/01	4/28	4/25	4/22	4/18	4/13
20	4/30	4/22	4/17	4/12	4/07	4/03	3/29	3/23	3/15
16	4/06	3/27	3/20	3/15	3/09	3/04	2/26	2/19	2/10

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	8/06	8/11	8/15	8/18	8/20	8/23	8/26	8/29	9/03
32	8/21	8/26	8/30	9/02	9/06	9/09	9/12	9/16	9/21
28	9/05	9/09	9/12	9/15	9/18	9/20	9/23	9/26	9/30
24	9/16	9/22	9/25	9/29	10/02	10/05	10/08	10/12	10/17
20	10/01	10/06	10/10	10/13	10/16	10/19	10/22	10/26	10/31
16	10/12	10/19	10/24	10/28	11/01	11/05	11/09	11/14	11/21

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	62	57	53	50	46	43	40	36	31
32	112	102	95	89	84	78	73	66	56
28	144	136	130	124	119	115	109	103	95
24	178	170	165	160	156	151	147	141	133
20	221	211	203	197	191	185	179	171	161
16	272	260	251	243	236	229	221	212	200

***** 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	1180	915	787	572	375	173	68	79	259	568	883	1158	7017
60	1025	775	632	423	229	71	17	24	148	414	733	1003	5494
57	932	691	539	337	154	33	6	10	96	323	643	910	4674
55	870	635	477	282	112	17	2	4	68	264	583	848	4162
50	717	504	326	162	40	2	0	0	22	138	439	698	3048
32	247	136	16	0	0	0	0	0	0	1	74	240	714

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	90	145	252	418	648	833	1044	1029	749	456	181	105	5950
55	0	0	0	11	47	160	333	321	127	7	0	0	1006
57	0	0	0	6	27	116	275	264	95	3	0	0	786
60	0	0	0	1	9	64	193	185	57	1	0	0	510
65	0	0	0	0	0	16	89	85	18	0	0	0	208
70	0	0	0	0	0	2	26	25	4	0	0	0	57

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	4	18	70	198	401	592	798	780	510	228	42	9	4	22	92	290	691	1283	2081	2861	3371	3599	3641	3650
45	0	0	18	96	256	442	643	625	361	113	11	2	0	0	18	114	370	812	1455	2080	2441	2554	2565	2567
50	0	0	0	35	137	295	488	471	228	43	0	0	0	0	0	35	172	467	955	1426	1654	1697	1697	1697
55	0	0	0	7	59	168	334	318	117	8	0	0	0	0	0	7	66	234	568	886	1003	1011	1011	1011
60	0	0	0	0	16	70	191	179	41	0	0	0	0	0	0	0	16	86	277	456	497	497	497	497
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	16	68	164	281	393	518	515	393	211	25	4	0	16	84	248	529	922	1440	1955	2348	2559	2584	2588

(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

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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