

Climatology of the United States No. 20

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

Station: BONNEVILLE DAM, OR

1971-2000

COOP ID: 350897

Climate Division: OR 2

NWS Call Sign:

Elevation: 62 Feet

Lat: 45° 38N

Lon: 121° 57W

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	43.3	32.4	37.9	64	1990	10	43.2	1999	-5	1950	31	25.2	1979	842	0	.0	.0	6.2	3.0	10.8	.0
Feb	47.4	34.4	40.9	67	1986	25	46.2	1991	-5	1950	1	31.7	1989	676	0	.0	.0	10.8	.9	6.9	.0
Mar	54.3	37.3	45.8	74+	2001	24	51.1	1992	20+	1993	1	40.7	1971	595	0	.0	.0	23.6	@	2.7	.0
Apr	60.1	41.2	50.7	88	1987	28	54.2	1987	28	1968	13	45.0	1975	432	0	.0	.0	27.7	.0	.5	.0
May	67.0	46.5	56.8	98	2001	23	62.0	1992	31+	1966	22	52.5	1977	262	6	.0	.2	30.9	.0	@	.0
Jun	72.7	51.5	62.1	102	1992	23	66.9	1992	37	1967	2	58.3	1991	121	35	@	1.0	30.0	.0	.0	.0
Jul	79.3	56.0	67.7	104	1961	12	72.6	1985	43+	1955	5	62.6	1993	33	115	.3	3.2	31.0	.0	.0	.0
Aug	80.0	56.1	68.1	107	1977	18	71.8	1986	42	1965	8	64.1+	1976	29	123	.5	3.3	31.0	.0	.0	.0
Sep	74.7	52.3	63.5	100+	1987	1	66.8	1974	34	1972	27	59.4	1985	107	61	.1	1.1	30.0	.0	.0	.0
Oct	63.8	46.1	55.0	86+	1993	4	59.7	1988	29+	1971	29	51.0	1984	314	3	.0	.0	30.1	.0	.1	.0
Nov	51.0	39.5	45.3	80	1961	12	50.7	1995	9	1985	24	35.7	1985	592	0	.0	.0	18.4	.5	2.5	.0
Dec	43.8	33.9	38.9	65	1980	26	43.3	1999	0+	1968	31	28.4	1985	811	0	.0	.0	6.5	2.3	8.2	.0
Ann	61.5	43.9	52.7	107	Aug 1977	18	72.6	Jul 1985	-5+	Feb 1950	1	25.2	Jan 1979	4814	343	.9	8.8	276.2	6.7	31.7	.0

+ 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

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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	11.20	11.89	4.12	1956	15	21.10	1975	.32	1985	19.9	15.9	8.0	3.5	2.69	3.74	5.38	6.84	8.28	9.82	11.53	13.57	16.24	20.47	24.45
Feb	9.83	8.94	3.75	1996	7	17.78	1999	1.23	1993	18.3	14.2	6.9	2.8	3.46	4.38	5.73	6.86	7.94	9.05	10.26	11.67	13.48	16.27	18.83
Mar	7.96	7.58	4.00	1957	7	13.97	1997	2.16	1992	19.5	15.2	6.3	1.7	3.18	3.91	4.95	5.81	6.62	7.45	8.34	9.37	10.67	12.67	14.49
Apr	6.02	6.04	4.85	1981	10	12.49	1993	2.08	1977	17.8	12.5	4.6	.8	2.39	2.95	3.73	4.39	5.00	5.63	6.30	7.08	8.08	9.59	10.98
May	3.96	3.40	2.35	2001	1	8.22	1984	.62	1992	14.7	9.6	2.4	.5	1.19	1.57	2.13	2.62	3.09	3.57	4.11	4.74	5.56	6.84	8.02
Jun	3.01	3.02	2.74	1981	8	8.76	1981	.84+	1986	10.8	7.0	1.7	.5	.85	1.14	1.57	1.94	2.31	2.70	3.12	3.62	4.27	5.29	6.24
Jul	1.03	.87	1.60	1983	14	5.90	1983	.00+	1984	5.3	2.5	.6	.1	.00	.05	.19	.34	.51	.71	.95	1.25	1.68	2.41	3.13
Aug	1.35	1.13	2.08	1956	26	4.55	1978	.00	1998	5.5	3.1	.9	.2	.02	.09	.25	.43	.65	.90	1.22	1.62	2.20	3.18	4.17
Sep	3.02	2.66	2.48	1951	30	6.65	1972	.02	1993	8.8	6.0	2.2	.8	.13	.27	.61	1.00	1.47	2.02	2.71	3.61	4.88	7.07	9.28
Oct	5.73	5.17	4.73	1959	11	13.26	1996	.10	1987	12.8	9.9	4.0	1.5	.71	1.16	1.97	2.77	3.61	4.55	5.65	7.00	8.83	11.84	14.77
Nov	12.09	11.65	5.05	1999	25	21.57	1995	3.18	1976	21.4	17.1	9.3	3.6	4.29	5.42	7.08	8.46	9.79	11.15	12.64	14.36	16.57	19.98	23.11
Dec	12.77	11.66	4.02	1964	22	27.94	1996	3.44	1985	20.7	16.2	8.8	4.4	4.40	5.60	7.36	8.85	10.27	11.74	13.33	15.20	17.59	21.28	24.69
Ann	77.97	80.60	5.05	Nov 1999	25	27.94	Dec 1996	.00+	Aug 1998	175.5	129.2	55.7	20.4	56.15	60.40	65.82	69.92	73.57	77.08	80.71	84.72	89.57	96.60	102.67

+ 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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Climate Division: OR 2

NWS Call Sign:

Elevation: 62 Feet

Lat: 45° 38N

Lon: 121° 57W

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	5.3	3.7	1	#	14.0	1980	8	15.5	1971	63	1980	11	19	1980	2.1	1.7	.8	.3	.1	2.7	1.8	.9	.0
Feb	2.8	1.2	#	0	8.5	1989	19	19.0	1990	11	1990	16	1	1994	1.5	1.1	.5	.3	.0	1.3	.6	.4	.1
Mar	.4	.0	#	0	11.3	1989	2	11.3	1989	9	1989	5	#+	1989	.3	.2	@	@	@	.1	.1	.0	.0
Apr	#	.0	0	0	#	1976	15	#+	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	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.7	.0	#	0	9.3	1985	22	9.3	1985	12	1985	22	1+	1985	.4	.3	.1	.1	.0	.3	.1	.1	.0
Dec	3.4	1.8	#	0	9.0	1984	12	16.3	1984	14	1971	30	1+	1996	1.7	1.1	.4	.2	.0	.5	.1	.0	.0
Ann	12.6	6.7	N/A	N/A	14.0	Jan 1980	8	19.0	Feb 1990	63	Jan 1980	11	19	Jan 1980	6.0	4.4	1.8	.9	.1	4.9	2.7	1.4	.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

Complete documentation available from:

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NWS Call Sign:

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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	5/07	4/28	4/21	4/15	4/09	4/04	3/29	3/22	3/12
32	4/17	4/05	3/27	3/19	3/12	3/05	2/26	2/17	2/05
28	3/10	2/27	2/19	2/12	2/06	1/30	1/23	1/14	1/01
24	2/19	2/10	2/03	1/28	1/22	1/15	1/06	0/00	0/00
20	2/11	1/30	1/20	1/11	1/01	12/20	0/00	0/00	0/00
16	1/30	1/15	1/01	12/11	0/00	0/00	0/00	0/00	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	10/23	10/30	11/05	11/09	11/14	11/18	11/23	11/28	12/06
32	11/04	11/12	11/18	11/23	11/28	12/02	12/07	12/13	12/21
28	11/20	12/01	12/09	12/15	12/22	12/28	1/04	1/13	1/26
24	12/05	12/17	12/25	1/02	1/09	1/18	1/29	0/00	0/00
20	12/11	12/21	12/29	1/06	1/15	1/27	0/00	0/00	0/00
16	12/16	12/31	1/13	2/03	0/00	0/00	0/00	0/00	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	256	243	234	225	218	210	202	192	179
32	304	289	278	268	260	251	242	231	215
28	>365	350	337	327	318	310	301	291	278
24	>365	>365	>365	>365	>365	353	336	321	304
20	>365	>365	>365	>365	>365	>365	355	334	313
16	>365	>365	>365	>365	>365	>365	>365	>365	352

* 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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Climate Division: OR 2 NWS Call Sign: Elevation: 62 Feet Lat: 45° 38N Lon: 121° 57W

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	842	676	595	432	262	121	33	29	107	314	592	811	4814
60	687	536	440	285	135	43	5	4	39	177	445	656	3452
57	594	452	348	204	80	17	1	1	17	111	361	563	2749
55	537	396	290	155	51	8	0	0	9	76	307	501	2330
50	393	267	158	64	11	0	0	0	0	23	190	358	1464
32	55	14	0	0	0	0	0	0	0	0	7	32	108

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	237	262	428	558	767	904	1104	1117	944	712	405	245	7683
55	5	0	5	23	105	222	391	404	263	75	15	1	1509
57	0	0	1	12	72	171	330	343	211	47	9	0	1196
60	0	0	0	3	34	107	241	253	143	20	3	0	804
65	0	0	0	0	6	35	115	123	61	3	0	0	343
70	0	0	0	0	0	6	36	40	17	0	0	0	99

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	67	103	216	342	538	680	869	881	722	483	198	75	67	170	386	728	1266	1946	2815	3696	4418	4901	5099	5174
45	14	31	86	198	383	530	714	726	572	331	89	21	14	45	131	329	712	1242	1956	2682	3254	3585	3674	3695
50	0	1	22	87	236	380	559	571	422	187	24	1	0	1	23	110	346	726	1285	1856	2278	2465	2489	2490
55	0	0	0	34	115	233	404	416	275	81	0	0	0	0	0	34	149	382	786	1202	1477	1558	1558	1558
60	0	0	0	3	49	109	255	262	144	21	0	0	0	0	0	3	52	161	416	678	822	843	843	843
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	10	26	85	160	281	386	542	556	426	238	53	13	10	36	121	281	562	948	1490	2046	2472	2710	2763	2776

(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.

- 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/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