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: MALHEUR BRANCH EXP STN, OR **COOP ID: 355160**

Climate Division: OR 9 **NWS Call Sign:** **Elevation: 2,260 Feet** **Lat: 43˚59N** **Lon: 117˚01W**

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	33.9	18.6	26.3	64	1953	9	34.5	1999	-26+	1962	23	12.4	1979	1201	0	.0	.0	.9	12.0	28.7	2.7
Feb	42.6	24.2	33.4	66	1961	10	40.8	1995	-24+	1989	6	16.2	1989	885	0	.0	.0	6.8	3.4	23.7	.8
Mar	54.7	31.1	42.9	79+	1997	20	49.2	1992	5	1989	4	37.4	1976	685	0	.0	.0	23.6	.2	18.6	.0
Apr	64.0	37.1	50.6	91	1987	28	56.4	1987	18	1956	6	44.4	1975	437	2	.0	.1	29.3	.0	7.3	.0
May	73.0	45.0	59.0	100+	1986	31	65.9	1992	26+	1997	2	55.4+	1984	210	24	.1	1.6	30.9	.0	1.0	.0
Jun	81.8	51.8	66.8	104	1961	17	73.7	1977	30	1951	4	62.2	1993	70	124	.6	6.4	30.0	.0	.0	.0
Jul	90.5	57.4	74.0	106+	1994	23	78.3	1998	36	1986	5	65.2	1993	12	289	3.1	19.1	31.0	.0	.0	.0
Aug	89.8	55.1	72.5	108	1961	4	76.8	1986	37+	1992	24	67.5	1993	18	248	2.3	18.1	31.0	.0	.0	.0
Sep	79.3	45.5	62.4	100	1950	1	70.3	1990	25	1985	29	54.6	1985	153	75	.0	4.9	30.0	.0	.9	.0
Oct	65.6	35.2	50.4	94	1997	2	58.0	1988	18	1996	21	46.0	1985	454	1	.0	.1	30.2	.0	10.0	.0
Nov	47.2	27.2	37.2	77	1980	7	42.8	1999	-5	1985	26	26.8	1985	834	0	.0	.0	12.3	1.4	22.1	.2
Dec	35.6	19.9	27.8	65+	1995	13	36.2	1977	-21+	1990	22	11.2	1985	1154	0	.0	.0	1.6	8.9	28.8	2.2
Ann	63.2	37.3	50.3	108	Aug 1961	4	78.3	Jul 1998	-26+	Jan 1962	23	11.2	Dec 1985	6113	763	6.1	50.3	257.6	25.9	141.1	5.9

\+ 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: 1943-2001

(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	1.29	1.20	.90+	1982	23	2.67	1995	.11	1985
Feb	1.04	.92	.94	1953	8	2.50	1999	.14	1988
Mar	1.08	.96	1.37	1983	4	3.73	1983	.05	1994
Apr	.84	.73	.80+	1969	6	3.51	1978	.08	1987
May	.98	.77	1.06	1998	22	4.55	1998	.04	1971
Jun	.78	.80	1.18	1947	8	1.77	1995	.04	1977
Jul	.36	.24	.93	1998	5	1.40	1997	.00+	1999
Aug	.38	.18	1.22	1979	14	2.12	1979	.00+	1998
Sep	.48	.37	1.52	1959	14	1.59+	1985	.00+	1999
Oct	.65	.60	1.03	1982	30	2.06	1982	.00+	1988
Nov	1.19	1.04	.72	1997	25	2.76	1981	.19	1976
Dec	1.37	1.18	.91	1980	25	3.57	1983	.01	1989
Ann	10.44	9.51	1.52	Sep 1959	14	4.55	May 1998	.00+	Sep 1999

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.4	4.4	.4	.0
Feb	8.5	3.5	.3	.0
Mar	9.4	3.6	.3	@
Apr	7.7	3.0	.1	.0
May	7.1	3.4	.2	@
Jun	5.7	2.3	.3	.0
Jul	2.9	1.1	.1	.0
Aug	3.0	1.2	.2	@
Sep	3.7	1.6	.2	.0
Oct	4.8	2.2	.3	@
Nov	10.0	4.2	.2	.0
Dec	9.8	4.5	.5	.0
Ann	82.0	35.0	3.1	.0

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	.39	.51	.69	.85	1.00	1.16	1.34	1.54	1.81	2.23	2.61
Feb	.16	.24	.40	.54	.69	.85	1.04	1.27	1.58	2.09	2.57
Mar	.18	.28	.43	.58	.73	.90	1.09	1.32	1.63	2.12	2.60
Apr	.12	.19	.31	.42	.55	.68	.84	1.03	1.29	1.71	2.12
May	.06	.12	.24	.38	.53	.70	.91	1.18	1.56	2.20	2.84
Jun	.09	.15	.26	.37	.49	.61	.76	.95	1.20	1.62	2.02
Jul	.00	.00	.03	.08	.13	.21	.30	.42	.60	.92	1.24
Aug	.00	.00	.01	.05	.10	.18	.28	.42	.64	1.02	1.42
Sep	.00	.00	.00	.09	.19	.30	.43	.60	.83	1.23	1.62
Oct	.00	.04	.14	.24	.35	.47	.62	.80	1.06	1.49	1.91
Nov	.25	.36	.53	.69	.85	1.02	1.21	1.44	1.75	2.23	2.69
Dec	.13	.23	.42	.61	.82	1.05	1.33	1.68	2.15	2.94	3.71
Ann	6.43	7.17	8.13	8.88	9.55	10.21	10.90	11.67	12.62	14.01	15.23

\+ 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: 1943-2001
(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	7.5	5.1	3	2	9.0	1982	15	24.8	1982	19	1982	15	11	1989	4.6	2.5	.7	.3	.0	17.3	13.8	8.9	2.9
Feb	3.1	2.3	2	#	6.1	1989	17	10.8	1985	17	1989	18	12	1989	2.3	1.1	.3	.1	.0	9.7	7.0	4.8	1.4
Mar	.6	.0	#	0	3.0	1989	6	4.2	1985	10	1993	3	3	1993	.8	.3	@	.0	.0	1.1	.7	.4	@
Apr	.0	.0	0	0	.5	1975	4	1.0	1975	0	0	0	0	0	.1	.0	.0	.0	.0	.0	.0	.0	.0
May	#	.0	0	0	#	1978	5	#	1978	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	.1	.0	#	0	1.0	1971	27	1.5	1971	1	1991	29	#	1991	.1	@	.0	.0	.0	@	.0	.0	.0
Nov	2.6	.9	#	#	10.0	1975	30	12.5	1994	7	1994	18	2	1994	1.7	.9	.2	.1	@	2.5	1.4	.6	.0
Dec	5.7	4.4	1	1	8.5	1988	25	18.3	1988	16	1983	31	6	1985	4.1	2.3	.7	.1	.0	10.6	6.5	2.8	.1
Ann	19.6	12.7	N/A	N/A	10.0	Nov 1975	30	24.8	Jan 1982	19	Jan 1982	15	12	Feb 1989	13.7	7.1	1.9	.6	@	41.2	29.4	17.5	4.4

+ 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	6/16	6/07	6/01	5/27	5/22	5/17	5/11	5/05	4/26
32	5/17	5/11	5/07	5/04	5/01	4/28	4/25	4/21	4/16
28	5/01	4/24	4/18	4/13	4/09	4/04	3/31	3/25	3/17
24	4/13	4/04	3/29	3/23	3/18	3/13	3/07	3/01	2/20
20	3/26	3/15	3/08	3/01	2/23	2/16	2/10	2/02	1/22
16	3/02	2/22	2/16	2/11	2/06	2/01	1/27	1/21	1/13

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	9/13	9/17	9/20	9/22	9/24	9/26	9/29	10/01	10/05
32	9/18	9/23	9/27	9/30	10/03	10/06	10/09	10/13	10/18
28	10/04	10/09	10/12	10/14	10/17	10/19	10/22	10/25	10/29
24	10/14	10/20	10/24	10/28	10/31	11/04	11/07	11/11	11/17
20	10/28	11/03	11/08	11/12	11/16	11/20	11/24	11/29	12/06
16	11/09	11/16	11/20	11/24	11/28	12/02	12/06	12/11	12/17

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	153	143	136	130	125	119	114	107	97
32	177	169	164	159	154	149	144	139	131
28	216	207	201	195	190	185	179	173	164
24	263	250	241	234	226	219	212	202	190
20	307	293	283	274	266	258	249	239	224
16	326	315	307	301	294	288	281	273	262

***** 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	1201	885	685	437	210	70	12	18	153	454	834	1154	6113
60	1046	745	530	297	107	23	1	4	76	306	684	999	4818
57	953	666	437	221	63	10	0	1	45	226	594	906	4122
55	893	614	378	176	41	5	0	0	29	178	534	844	3692
50	749	484	238	88	11	0	0	0	8	82	394	698	2752
32	299	142	10	0	0	0	0	0	0	0	61	245	757

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	121	181	349	556	837	1044	1301	1254	912	570	217	114	7456
55	2	9	3	42	165	359	588	541	251	35	0	0	1995
57	0	5	0	26	125	304	526	480	207	21	0	0	1694
60	0	0	0	12	76	227	434	389	148	8	0	0	1294
65	0	0	0	2	24	124	289	248	75	1	0	0	763
70	0	0	0	0	5	54	165	133	30	0	0	0	387

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	0	24	138	334	603	819	1067	1022	684	344	59	6	0	24	162	496	1099	1918	2985	4007	4691	5035	5094	5100
45	0	4	56	197	449	669	912	867	536	209	11	0	0	4	60	257	706	1375	2287	3154	3690	3899	3910	3910
50	0	0	11	99	304	519	757	712	390	104	0	0	0	0	11	110	414	933	1690	2402	2792	2896	2896	2896
55	0	0	0	42	180	371	602	557	256	36	0	0	0	0	0	42	222	593	1195	1752	2008	2044	2044	2044
60	0	0	0	13	91	240	449	404	142	10	0	0	0	0	0	13	104	344	793	1197	1339	1349	1349	1349
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	19	100	221	376	509	668	634	447	255	36	1	0	19	119	340	716	1225	1893	2527	2974	3229	3265	3266

(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