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: TROUTDALE, OR **COOP ID: 358634**

Climate Division: OR 2 **NWS Call Sign:** **Elevation: 35 Feet** **Lat: 45˚33N** **Lon: 122˚23W**

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	46.0	33.9	40.0	65+	1991	13	45.2	1990	3	1950	31	28.4	1979	777	0	.0	.0	9.9	1.7	11.9	.0
Feb	50.6	36.1	43.4	70	1988	29	48.7	1991	0	1989	4	34.9	1989	606	0	.0	.0	16.5	.6	6.8	@
Mar	57.2	38.9	48.1	79+	1994	29	53.0	1986	15	1989	3	43.1	1971	526	0	.0	.0	27.6	.0	3.6	.0
Apr	62.3	41.8	52.1	89	1987	27	56.1	1989	29+	1975	5	47.1	1972	388	0	.0	.0	29.4	.0	.8	.0
May	69.1	47.0	58.1	98	1983	31	62.7	1992	31	1952	2	54.4	1977	228	12	.0	.6	31.0	.0	.0	.0
Jun	75.0	51.9	63.5	104	1992	23	67.6	1986	37	1949	30	58.9	1971	97	49	.2	2.0	30.0	.0	.0	.0
Jul	81.7	55.4	68.6	105+	1994	22	73.1	1985	38+	1989	24	64.6	1993	21	132	.8	5.8	31.0	.0	.0	.0
Aug	82.5	55.3	68.9	108	1977	18	74.4	1986	41	1951	29	65.1+	1980	26	146	.9	6.2	31.0	.0	.0	.0
Sep	77.0	50.5	63.8	103	1987	1	67.5	1994	28	1972	29	59.6	1972	96	57	.1	2.4	30.0	.0	.1	.0
Oct	65.3	44.4	54.9	88+	1988	2	58.9	1988	24	1949	19	52.2	1971	317	1	.0	.0	30.6	.0	.4	.0
Nov	53.3	39.5	46.4	75	1975	4	50.8	1989	12	1985	25	38.3	1985	559	0	.0	.0	21.3	.2	3.9	.0
Dec	46.3	34.7	40.5	68	1980	26	45.0+	1999	6+	1968	31	32.4	1985	760	0	.0	.0	10.1	1.4	9.7	.0
Ann	63.9	44.1	54.0	108	Aug 1977	18	74.4	Aug 1986	0	Feb 1989	4	28.4	Jan 1979	4401	397	2.0	17.0	298.4	3.9	37.2	@

+ 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	6.09	6.73	2.71	1999	19	10.05	1971	.16	1985
Feb	5.16	4.85	2.70	1982	22	9.89	1996	.85	1993
Mar	4.40	4.19	2.03	1999	1	7.48	1989	1.45	1978
Apr	3.65	3.45	1.70	1989	26	6.61	1993	1.40	1977
May	2.83	2.69	1.46+	1963	6	5.68	1977	.36	1992
Jun	2.20	1.71	1.70	1981	8	5.33	1984	.58+	1987
Jul	.94	.54	1.28	1978	16	3.96	1993	.00	1984
Aug	1.10	.87	1.40	1977	26	3.14	1977	.00+	1998
Sep	2.00	1.97	2.20	1969	18	4.23+	1986	.00+	1993
Oct	3.34	2.96	4.50	1994	27	7.78	1990	.17	1987
Nov	6.53	6.36	3.28	1996	19	12.01	1995	1.34	1976
Dec	6.61	6.08	2.60	1977	13	13.55	1996	1.21	1976
Ann	44.85	45.12	4.50	Oct 1994	27	13.55	Dec 1996	.00+	Aug 1998

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	16.6	12.6	4.5	1.2
Feb	15.9	11.8	2.8	.8
Mar	16.6	11.6	2.4	.3
Apr	14.8	10.4	1.7	.2
May	11.6	7.9	1.1	.2
Jun	8.6	5.9	1.0	.4
Jul	4.5	2.5	.6	@
Aug	4.5	2.8	.7	.2
Sep	7.1	4.5	1.0	.2
Oct	10.6	7.4	1.9	.3
Nov	17.6	13.6	3.8	.9
Dec	16.7	12.6	4.4	1.2
Ann	145.1	103.6	25.9	5.9

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	1.45	2.02	2.91	3.71	4.50	5.33	6.27	7.38	8.84	11.15	13.33
Feb	1.89	2.37	3.07	3.65	4.21	4.78	5.40	6.12	7.04	8.45	9.75
Mar	1.91	2.31	2.86	3.31	3.73	4.16	4.62	5.14	5.80	6.81	7.72
Apr	1.71	2.03	2.47	2.82	3.15	3.48	3.83	4.23	4.73	5.50	6.18
May	.86	1.13	1.53	1.88	2.21	2.56	2.94	3.40	3.98	4.89	5.73
Jun	.56	.77	1.09	1.37	1.65	1.94	2.27	2.65	3.16	3.96	4.71
Jul	.02	.07	.18	.31	.46	.64	.86	1.14	1.53	2.21	2.89
Aug	.00	.00	.14	.30	.49	.71	.99	1.35	1.84	2.70	3.56
Sep	.00	.15	.48	.79	1.12	1.50	1.94	2.48	3.23	4.49	5.71
Oct	.54	.82	1.31	1.77	2.25	2.76	3.36	4.08	5.05	6.62	8.12
Nov	2.06	2.68	3.60	4.39	5.15	5.94	6.80	7.81	9.12	11.16	13.04
Dec	1.99	2.62	3.56	4.37	5.15	5.97	6.87	7.93	9.30	11.43	13.41
Ann	32.14	34.61	37.77	40.17	42.30	44.36	46.48	48.82	51.66	55.78	59.34

\+ 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	.7	.1	#	0	4.0	1980	8	4.0	1974	24	1980	11	3	1980	.6	.4	.1	.0	.0	.5	.1	.0	.0
Feb	1.0	.0	#	0	5.5	1993	20	11.0	1993	2	1985	6	#+	1989	.5	.4	.1	.1	.0	.2	.0	.0	.0
Mar	.8	.0	0	0	6.0	1989	3	14.0	1989	0	0	0	0	0	.2	.2	.1	.1	.0	.0	.0	.0	.0
Apr	#	.0	0	0	#	1972	17	#	1972	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	.6	.0	#	0	3.7	1992	20	6.0	1977	3+	1978	20	#+	1985	.2	.2	.2	.0	.0	.1	.1	.0	.0
Dec	.9	.0	#	0	5.0	1971	29	6.5+	1972	5	1971	29	1	1972	.4	.3	.1	.1	.0	.5	.2	@	.0
Ann	4.0	.1	N/A	N/A	6.0	Mar 1989	3	14.0	Mar 1989	24	Jan 1980	11	3	Jan 1980	1.9	1.5	.6	.3	.0	1.3	.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	5/10	5/03	4/29	4/25	4/21	4/17	4/14	4/09	4/03
32	4/21	4/13	4/07	4/01	3/27	3/23	3/17	3/11	3/03
28	3/20	3/08	2/27	2/20	2/13	2/06	1/30	1/20	1/06
24	2/20	2/10	2/03	1/28	1/22	1/15	1/06	0/00	0/00
20	2/06	1/26	1/17	1/08	12/26	0/00	0/00	0/00	0/00
16	1/27	1/10	12/21	0/00	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	9/29	10/06	10/11	10/16	10/20	10/24	10/28	11/02	11/10
32	10/11	10/22	10/30	11/05	11/11	11/17	11/24	12/02	12/13
28	10/20	11/02	11/12	11/20	11/28	12/06	12/15	12/25	1/11
24	12/02	12/13	12/21	12/29	1/05	1/13	1/24	0/00	0/00
20	12/16	12/28	1/07	1/17	2/01	0/00	0/00	0/00	0/00
16	12/18	1/03	1/22	0/00	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	210	200	193	187	181	175	169	162	152
32	269	255	245	236	228	220	211	201	187
28	>365	327	308	295	285	275	264	253	237
24	>365	>365	>365	>365	360	344	331	318	302
20	>365	>365	>365	>365	>365	>365	>365	356	328
16	>365	>365	>365	>365	>365	>365	>365	>365	>365

***** 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	777	606	526	388	228	97	21	26	96	317	559	760	4401
60	622	466	371	244	112	30	2	4	29	173	414	605	3072
57	529	382	282	165	64	11	0	0	11	104	331	512	2391
55	472	328	225	121	39	5	0	0	5	68	279	452	1994
50	330	201	108	42	8	0	0	0	0	18	168	309	1184
32	28	4	0	0	0	0	0	0	0	0	5	18	55

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	275	322	497	602	807	943	1134	1143	952	707	436	281	8099
55	5	2	10	33	133	258	421	430	266	62	20	2	1642
57	0	0	4	17	96	204	359	369	212	36	12	1	1310
60	0	0	0	5	52	133	267	279	141	12	5	0	894
65	0	0	0	0	12	49	132	146	57	1	0	0	397
70	0	0	0	0	1	10	44	57	15	0	0	0	127

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	87	143	255	370	560	702	877	890	707	468	212	89	87	230	485	855	1415	2117	2994	3884	4591	5059	5271	5360
45	26	49	120	224	405	552	722	735	557	314	96	31	26	75	195	419	824	1376	2098	2833	3390	3704	3800	3831
50	0	10	37	104	255	402	567	580	407	171	23	2	0	10	47	151	406	808	1375	1955	2362	2533	2556	2558
55	0	0	5	39	131	255	412	425	259	67	1	0	0	0	5	44	175	430	842	1267	1526	1593	1594	1594
60	0	0	0	4	59	129	260	272	134	16	0	0	0	0	0	4	63	192	452	724	858	874	874	874
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	26	52	123	194	309	407	543	553	428	252	74	26	26	78	201	395	704	1111	1654	2207	2635	2887	2961	2987

(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