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: ASTORIA CLATSOP CO AP, OR **COOP ID: 350328**

Climate Division: OR 1 **NWS Call Sign: AST** **Elevation: 9 Feet** **Lat: 46˚09N** **Lon: 123˚53W**

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	48.1	36.7	42.4	67	1986	7	47.9	1981	11+	1980	29	35.0	1979	695	0	.0	.0	15.0	.3	8.7	.0
Feb	50.8	37.6	44.2	72+	1996	15	49.9	1983	9	1989	5	36.8	1989	583	0	.0	.0	17.7	.2	6.2	.0
Mar	53.3	38.6	46.0	73+	1994	27	50.6	1983	22	1971	1	41.7	1971	573	0	.0	.0	25.7	.0	4.5	.0
Apr	56.1	40.8	48.5	83+	1999	16	51.2	2000	29+	1968	13	44.6	1975	492	0	.0	.0	29.1	.0	1.3	.0
May	60.0	45.4	52.7	87	1985	16	56.8	1997	30	1954	1	49.8	1977	375	1	.0	.0	31.0	.0	.1	.0
Jun	63.6	49.8	56.7	93	1955	8	59.4	1983	37	1980	4	54.2	1971	244	2	.0	.1	30.0	.0	.0	.0
Jul	67.2	52.9	60.1	100	1961	11	62.2	2000	39	1971	7	58.2+	1986	151	4	.0	@	31.0	.0	.0	.0
Aug	68.3	53.2	60.8	96	1981	9	63.9	1997	39	1973	19	57.2	1973	130	7	.0	.1	31.0	.0	.0	.0
Sep	67.5	49.5	58.5	95	1972	2	61.9	1997	33+	1983	28	55.4	1986	197	7	.0	.1	30.0	.0	.0	.0
Oct	61.0	44.1	52.6	85+	1987	6	56.1	2000	26	1971	28	50.0	1984	386	1	.0	.0	30.7	.0	.5	.0
Nov	53.1	40.1	46.6	71+	1999	11	50.6	1995	15	1955	14	38.9	1985	542	0	.0	.0	24.2	.1	4.5	.0
Dec	48.4	37.1	42.8	64	1980	26	47.4	1999	6+	1990	21	36.7	1990	688	0	.0	.0	15.4	.9	7.9	.0
Ann	58.1	43.8	51.0	100	Jul 1961	11	63.9	Aug 1997	6+	Dec 1990	21	35.0	Jan 1979	5056	22	.0	.3	310.8	1.5	33.7	.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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1953-2001

(3) Derived from 1971-2000 serially complete daily data

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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	9.62	9.86	4.53	1990	9	16.69	1971	.69	1985
Feb	7.87	8.19	3.71	1996	8	18.26	1999	1.35	1993
Mar	7.37	6.97	2.53	1997	19	15.31	1997	1.19	1992
Apr	4.93	4.35	2.73	1991	4	10.07	1996	1.65	1977
May	3.28	3.45	1.74	1968	31	6.00	1977	.37	1982
Jun	2.57	2.46	2.07	1968	1	5.47	1981	.55	1992
Jul	1.16	.86	1.72	1976	7	4.39	1983	.05	1984
Aug	1.21	.86	1.92	2001	22	3.85	1977	.14	1986
Sep	2.61	2.59	2.67	1997	16	7.27	1997	.04	1975
Oct	5.61	5.38	3.52	1982	28	12.56	1975	.52	1987
Nov	10.50	10.60	5.56	1998	25	19.60	1998	1.45	1976
Dec	10.40	10.45	3.59	1974	26	20.38	1996	2.67	1985
Ann	67.13	67.72	5.56	Nov 1998	25	20.38	Dec 1996	.04	Sep 1975

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	20.8	16.2	7.5	2.4
Feb	18.8	14.0	5.8	1.7
Mar	20.7	15.2	5.3	1.5
Apr	18.2	12.0	3.2	.5
May	16.1	8.8	1.8	.2
Jun	13.1	6.4	1.5	.3
Jul	8.3	2.9	.6	.2
Aug	7.2	2.9	.7	.2
Sep	9.4	5.6	1.7	.5
Oct	14.8	10.1	3.8	1.4
Nov	20.9	16.8	7.4	2.6
Dec	21.2	16.2	7.2	3.2
Ann	189.5	127.1	46.5	14.7

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	2.75	3.66	5.04	6.24	7.41	8.63	9.97	11.56	13.62	16.86	19.86
Feb	2.70	3.44	4.53	5.44	6.32	7.23	8.21	9.36	10.84	13.13	15.23
Mar	3.20	3.86	4.79	5.54	6.25	6.96	7.72	8.60	9.71	11.39	12.91
Apr	1.92	2.38	3.03	3.57	4.08	4.60	5.16	5.81	6.64	7.91	9.07
May	.98	1.29	1.76	2.16	2.55	2.96	3.40	3.93	4.61	5.67	6.66
Jun	.72	.96	1.33	1.65	1.97	2.30	2.66	3.09	3.65	4.53	5.35
Jul	.09	.17	.32	.48	.66	.86	1.11	1.41	1.84	2.55	3.24
Aug	.16	.25	.43	.59	.77	.97	1.20	1.48	1.86	2.49	3.10
Sep	.13	.27	.58	.93	1.33	1.81	2.39	3.14	4.20	6.01	7.83
Oct	1.06	1.56	2.39	3.15	3.92	4.75	5.69	6.84	8.35	10.78	13.10
Nov	3.86	4.84	6.26	7.45	8.58	9.73	10.99	12.44	14.30	17.17	19.79
Dec	3.97	4.94	6.33	7.48	8.57	9.68	10.89	12.28	14.06	16.79	19.29
Ann	45.60	49.69	54.98	59.01	62.62	66.12	69.75	73.78	78.68	85.83	92.05

\+ 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: 1953-2001
(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	1.2	.0	#	0	10.8	1971	12	16.1	1971	12+	1982	6	1+	1993	.8	.3	.1	@	@	.7	.3	.2	.1
Feb	.4	.0	#	0	2.2	1993	20	3.4	1993	2	1989	3	#	1989	.6	.1	.0	.0	.0	.2	.0	.0	.0
Mar	.2	#	0	0	1.6	1974	7	1.7	1974	#+	1974	7	0	0	.2	.1	.0	.0	.0	.0	.0	.0	.0
Apr	.1	#	0	0	1.0	1975	3	1.1	1975	#	1975	4	0	0	.2	.0	.0	.0	.0	.0	.0	.0	.0
May	#	.0	#	0	#	1995	12	#+	1995	0	0	0	#	1993	.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	#	1994	29	#+	1994	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.3	.0	0	0	4.3	1985	30	4.6	1985	#+	1985	30	0	0	.3	.0	@	.0	.0	.0	.0	.0	.0
Dec	1.0	.0	#	0	10.3	1985	2	10.7	1985	5	1985	2	1	1972	.6	.2	.1	@	@	.7	.2	@	.0
Ann	3.2	#	N/A	N/A	10.8	Jan 1971	12	16.1	Jan 1971	12+	Jan 1982	6	1+	Jan 1993	2.7	.7	.2	@	@	1.6	.5	.2	.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

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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	5/18	5/12	5/08	5/05	5/01	4/28	4/25	4/20	4/15
32	4/30	4/23	4/17	4/12	4/08	4/04	3/30	3/24	3/17
28	3/19	3/07	2/27	2/20	2/13	2/06	1/29	1/19	1/01
24	2/23	2/13	2/04	1/28	1/21	1/13	1/02	0/00	0/00
20	1/31	1/20	1/11	1/01	12/15	0/00	0/00	0/00	0/00
16	1/14	1/01	12/15	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	9/27	10/03	10/06	10/10	10/13	10/16	10/19	10/23	10/28
32	10/14	10/24	10/30	11/05	11/10	11/16	11/22	11/28	12/08
28	11/11	11/21	11/29	12/05	12/11	12/18	12/24	1/02	1/19
24	11/27	12/10	12/20	12/29	1/08	1/18	2/03	0/00	0/00
20	12/18	12/30	1/10	1/21	2/09	0/00	0/00	0/00	0/00
16	12/24	1/07	1/26	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	189	180	174	169	164	159	153	147	138
32	252	239	230	223	216	209	201	192	180
28	>365	346	325	312	301	290	279	266	250
24	>365	>365	>365	>365	357	340	327	314	299
20	>365	>365	>365	>365	>365	>365	>365	>365	340
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	695	583	573	492	375	244	151	130	197	386	542	688	5056
60	545	442	437	346	229	108	38	34	83	234	402	536	3434
57	452	358	344	256	146	48	7	8	38	151	317	443	2568
55	395	306	284	198	100	23	1	2	19	105	262	386	2081
50	253	180	147	76	24	1	0	0	1	29	144	245	1100
32	9	1	0	0	0	0	0	0	0	0	1	8	19

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	335	350	437	501	650	750	878	900	801	641	448	348	7039
55	0	1	1	6	26	74	165	187	123	30	4	0	617
57	0	0	0	3	13	38	106	128	78	15	2	0	383
60	0	0	0	1	5	12	38	53	33	5	0	0	147
65	0	0	0	0	1	2	4	7	7	1	0	0	22
70	0	0	0	0	0	0	0	1	1	0	0	0	2

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	132	156	201	271	408	518	637	663	569	402	225	135	132	288	489	760	1168	1686	2323	2986	3555	3957	4182	4317
45	42	63	75	125	253	368	482	508	419	251	108	49	42	105	180	305	558	926	1408	1916	2335	2586	2694	2743
50	1	7	13	36	113	218	327	353	269	116	34	3	1	8	21	57	170	388	715	1068	1337	1453	1487	1490
55	0	0	0	3	34	81	172	198	130	34	1	0	0	0	0	3	37	118	290	488	618	652	653	653
60	0	0	0	0	1	13	43	60	37	4	0	0	0	0	0	0	1	14	57	117	154	158	158	158
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	31	48	70	111	178	244	340	358	306	190	76	33	31	79	149	260	438	682	1022	1380	1686	1876	1952	1985

(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