

# 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: PORTLAND SEWAGE PLANT, TN**

**1971-2000**

**COOP ID: 407359**

**Climate Division: TN 3**

**NWS Call Sign:**

**Elevation: 794 Feet**

**Lat: 36° 35N**

**Lon: 86° 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	42.9	26.0	34.5	72+	1972	25	42.8	1990	-19	1963	24	19.8	1977	947	0	.0	.0	10.2	5.9	22.4	1.0
Feb	48.3	29.5	38.9	81	1996	24	45.8	1990	-9	1965	2	24.3	1978	732	0	.0	.0	13.4	3.6	17.6	.1
Mar	58.4	38.1	48.3	85+	1963	31	54.7	1973	-1	1960	5	42.5	1996	520	0	.0	.0	23.6	.5	10.7	.0
Apr	68.2	47.0	57.6	89+	1974	4	63.6	1981	22	1966	10	53.0	1997	242	20	.0	.0	28.5	.0	2.9	.0
May	76.2	56.6	66.4	94	1962	15	73.5	1987	29	1963	1	61.9	1976	90	133	.0	.4	30.9	.0	.1	.0
Jun	84.0	65.2	74.6	100	1988	25	77.3	1971	36	1966	1	70.5	1974	3	292	@	6.2	30.0	.0	.0	.0
Jul	88.3	69.2	78.8	102+	1988	8	82.6	1986	48+	1963	10	75.3	1984	0	426	.3	14.2	31.0	.0	.0	.0
Aug	87.3	67.3	77.3	101	1988	18	81.6	1995	44	1964	13	73.1	1992	0	381	.2	11.2	31.0	.0	.0	.0
Sep	81.1	60.2	70.7	100	1990	8	76.3	1998	32	1965	25	66.4	1974	28	198	@	4.1	30.0	.0	.0	.0
Oct	70.0	48.0	59.0	90	1959	4	65.2	1971	22	1962	26	51.8	1988	227	41	.0	.0	30.6	.0	2.1	.0
Nov	57.8	39.3	48.6	84	1971	1	55.1	1985	9+	1964	22	40.1	1976	496	2	.0	.0	22.6	.2	9.7	.0
Dec	47.2	30.0	38.6	76	1998	5	48.4	1971	-14+	1989	22	26.1	1989	818	0	.0	.0	14.0	3.2	19.4	.4
Ann	67.5	48.0	57.8	102+	Jul 1988	8	82.6	Jul 1986	-19	Jan 1963	24	19.8	Jan 1977	4103	1493	.5	36.1	295.8	13.4	84.9	1.5

+ 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](http://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: 1955-2001

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

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**Lon: 86°32W**

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	4.23	3.77	3.81	1999	23	11.41	1999	.46	1984	9.2	6.8	3.1	1.2	.93	1.32	1.94	2.50	3.06	3.66	4.33	5.13	6.19	7.87	9.46
Feb	4.14	3.60	3.56	1989	20	10.32	1989	1.31	1978	8.5	6.7	2.7	1.2	1.38	1.77	2.35	2.84	3.31	3.79	4.32	4.94	5.73	6.96	8.10
Mar	5.55	4.77	4.29	1975	12	14.93	1975	1.99	1982	10.9	8.2	4.0	1.6	1.79	2.32	3.10	3.76	4.40	5.06	5.78	6.63	7.72	9.42	10.99
Apr	4.23	3.76	4.00	1968	4	9.38	1979	1.01	1992	9.8	7.5	3.2	.9	1.07	1.47	2.09	2.63	3.17	3.73	4.36	5.11	6.09	7.63	9.08
May	5.51	4.99	4.12	1974	22	12.91	1983	2.23	1988	10.3	8.0	3.5	1.4	2.44	2.93	3.61	4.17	4.69	5.22	5.78	6.43	7.24	8.48	9.60
Jun	4.58	3.72	8.05	1969	23	13.42	1998	.07	1988	9.1	6.9	3.0	1.4	.71	1.10	1.76	2.39	3.05	3.77	4.59	5.59	6.94	9.13	11.22
Jul	4.46	4.14	3.45	1973	2	9.72	1979	2.11	1997	8.5	6.9	3.5	1.3	1.99	2.38	2.94	3.38	3.80	4.22	4.67	5.19	5.84	6.83	7.72
Aug	3.58	3.56	3.14	1984	29	6.93	1984	.74	1996	7.4	5.8	2.5	1.0	1.45	1.78	2.24	2.63	2.99	3.35	3.75	4.20	4.78	5.66	6.47
Sep	3.79	3.14	5.94	1979	14	10.98	1979	.54	1983	7.3	5.6	2.6	1.0	.64	.97	1.53	2.05	2.58	3.16	3.82	4.62	5.69	7.42	9.08
Oct	3.43	3.23	3.43	1995	5	8.30	1995	.33	2000	6.6	5.3	2.4	.8	.71	1.02	1.53	1.98	2.45	2.94	3.50	4.17	5.06	6.47	7.81
Nov	4.73	4.48	4.49	1973	27	9.95	1973	.79	1976	9.3	6.9	3.6	1.4	1.62	2.07	2.72	3.27	3.80	4.34	4.93	5.63	6.51	7.88	9.15
Dec	5.06	4.49	4.00	1978	9	13.97	1990	1.20	1985	9.7	7.0	3.1	1.5	1.37	1.85	2.58	3.22	3.85	4.51	5.24	6.10	7.23	9.00	10.65
Ann	53.29	51.01	8.05	Jun 1969	23	14.93	Mar 1975	.07	Jun 1988	106.6	81.6	37.2	14.7	38.36	41.26	44.97	47.78	50.27	52.68	55.17	57.91	61.23	66.04	70.20

+ 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: 1955-2001

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

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**NWS Call Sign:**

**Elevation: 794 Feet**

**Lat: 36°35N**

**Lon: 86°32W**

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	4.5	1.5	#	0	10.0	1978	17	22.5	1978	11	1978	21	3	1979	1.2	.9	.3	.2	.1	2.9	1.0	.4	.2
Feb	1.8	.0	#	0	10.0	1979	7	13.0	1978	12	1979	11	3	1979	.7	.5	.1	.1	.1	1.2	.2	.1	.0
Mar	.2	.0	#	0	1.5	1972	3	2.0	1972	2	1978	3	#+	1978	.2	.1	.0	.0	.0	.1	.0	.0	.0
Apr	#	.0	0	0	#	1973	11	#+	1973	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	.2	.0	#	0	1.0	1976	12	2.0	1976	1	1976	30	#+	1976	.2	.1	.0	.0	.0	.1	.0	.0	.0
Dec	.4	.0	#	0	2.0	1974	17	3.0	1974	2	1974	17	#+	1995	.3	.2	.0	.0	.0	.3	.0	.0	.0
Ann	7.1	1.5	N/A	N/A	10.0+	Feb 1979	7	22.5	Jan 1978	12	Feb 1979	11	3+	Feb 1979	2.6	1.8	.4	.3	.2	4.6	1.2	.5	.2

+ 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	5/04	4/29	4/25	4/22	4/19	4/16	4/13	4/10	4/04
32	4/25	4/20	4/16	4/13	4/10	4/07	4/04	3/31	3/26
28	4/11	4/07	4/03	3/31	3/29	3/26	3/23	3/20	3/15
24	4/03	3/27	3/22	3/18	3/14	3/10	3/06	3/01	2/22
20	3/19	3/12	3/06	3/02	2/26	2/21	2/17	2/11	2/04
16	3/11	3/02	2/24	2/19	2/15	2/10	2/05	1/30	1/22
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	10/03	10/06	10/09	10/11	10/14	10/16	10/19	10/23
32	10/08	10/13	10/17	10/20	10/23	10/26	10/30	11/02	11/08
28	10/21	10/27	11/01	11/05	11/08	11/12	11/15	11/20	11/26
24	11/05	11/11	11/15	11/18	11/22	11/25	11/28	12/02	12/08
20	11/15	11/22	11/27	12/02	12/06	12/10	12/14	12/19	12/26
16	11/21	12/02	12/09	12/15	12/21	12/27	1/03	1/10	1/20
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	196	189	183	179	174	170	165	160	153
32	217	210	204	200	195	191	187	181	174
28	249	240	234	229	224	219	213	207	198
24	278	269	263	257	252	247	241	235	225
20	311	301	294	288	282	277	270	263	253
16	346	328	319	312	305	299	292	285	274

\* 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

Complete documentation available from:  
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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	947	732	520	242	90	3	0	0	28	227	496	818	4103
60	792	593	374	133	37	0	0	0	7	129	358	668	3091
57	710	516	292	84	19	0	0	0	2	85	281	582	2571
55	652	464	243	58	12	0	0	0	1	61	235	524	2250
50	511	341	142	17	3	0	0	0	0	22	140	389	1565
32	149	61	5	0	0	0	0	0	0	0	5	77	297

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	225	253	509	768	1065	1279	1449	1404	1160	837	501	282	9732
55	14	12	34	136	364	589	736	691	471	185	41	16	3289
57	11	9	21	102	309	529	674	629	413	146	27	12	2882
60	0	1	10	61	234	439	581	536	327	97	14	5	2305
65	0	0	0	20	133	292	426	381	198	41	2	0	1493
70	0	0	0	4	61	156	271	232	97	12	0	0	833

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	74	132	301	529	810	1031	1192	1144	909	584	291	119	74	206	507	1036	1846	2877	4069	5213	6122	6706	6997	7116
45	37	70	192	388	655	881	1037	989	759	433	184	58	37	107	299	687	1342	2223	3260	4249	5008	5441	5625	5683
50	17	31	110	264	501	731	882	834	609	296	109	28	17	48	158	422	923	1654	2536	3370	3979	4275	4384	4412
55	0	8	56	163	351	581	727	679	461	177	52	9	0	8	64	227	578	1159	1886	2565	3026	3203	3255	3264
60	0	0	22	87	217	431	572	524	319	92	18	1	0	0	22	109	326	757	1329	1853	2172	2264	2282	2283
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	45	80	182	325	519	709	825	789	602	364	164	67	45	125	307	632	1151	1860	2685	3474	4076	4440	4604	4671

(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.  
Complete documentation for the 1971-2000 Normals is available on the internet from:  
[www.ncdc.noaa.gov/oa/climate/normal/usnormals.html](http://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.

- |   |   |
|---|---|
| <ol style="list-style-type: none"><li>a. Temperature/ Precipitation Tables<ol style="list-style-type: none"><li>1. 1971-2000 Monthly Normals</li><li>2. Cooperative Summary of the Day</li><li>3. National Weather Service station records</li><li>4. 1971-2000 serially complete daily data</li></ol></li><li>b. Degree Day Table<ol style="list-style-type: none"><li>1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals</li><li>2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data</li></ol></li></ol> | <ol style="list-style-type: none"><li>c. Snow Tables<ol style="list-style-type: none"><li>1. Snow Climatology</li><li>2. Cooperative Summary of the Day</li></ol></li><li>d. Freeze Data Table<br/>1971-2000 serially complete daily data</li></ol> |
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## References

U.S. Climate Normals 1971-2000, [www.ncdc.noaa.gov/normal.html](http://www.ncdc.noaa.gov/normal.html)  
U.S. Climate Normals 1971-2000-Products Clim20, [www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html](http://www.ncdc.noaa.gov/oa/climate/normal/usnormalsprods.html)  
Snow Climatology Project Description, [www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html](http://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](http://www1.ncdc.noaa.gov/pub/data/special/serialcomplete_jam_0900.pdf)