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: MANATI 2 E, PR **COOP ID: 665807**

Climate Division: PR 3 **NWS Call Sign:** **Elevation: 250 Feet** **Lat: 18˚26N** **Lon: 66˚28W**

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 >= 90	Max >= 70	Max >= 50	Max <= 32	Min <= 32	Min <= 0
Jan	81.0	66.2	73.6	92+	1981	16	76.1	1998	56	1929	30	71.1	1976	0	267	@	31.0	31.0	.0	.0	.0
Feb	81.6	65.5	73.6	96+	1982	15	76.2	1998	52+	1929	15	71.5	1976	0	240	.5	28.2	28.3	.0	.0	.0
Mar	82.9	66.2	74.6	97+	1947	24	76.7	1983	53	1929	7	72.5	2000	0	295	2.0	31.0	31.0	.0	.0	.0
Apr	83.7	67.9	75.8	99	1909	29	78.2	1987	55	1923	3	73.9	1976	0	325	3.2	30.0	30.0	.0	.0	.0
May	85.5	70.1	77.8	99+	1941	19	79.8	1999	58	1990	2	76.2	1996	0	397	7.3	31.0	31.0	.0	.0	.0
Jun	87.3	71.9	79.6	99+	1969	17	81.6	1997	60+	1971	12	77.7	1976	0	439	11.5	30.0	30.0	.0	.0	.0
Jul	86.8	72.6	79.7	99+	1932	18	81.5	1990	62+	1962	7	78.2	1982	0	456	8.8	31.0	31.0	.0	.0	.0
Aug	87.6	72.5	80.1	98+	1908	20	81.8	1987	62	1930	27	76.8	1974	0	466	10.6	31.0	31.0	.0	.0	.0
Sep	87.2	71.8	79.5	98+	1968	29	81.7	1998	60	1981	4	77.9	1975	0	435	8.9	30.0	30.0	.0	.0	.0
Oct	86.4	70.8	78.6	98+	1927	20	80.8	1987	61+	1981	30	76.5	1985	0	423	7.0	31.0	31.0	.0	.0	.0
Nov	83.9	69.8	76.9	97+	1906	9	78.6	1987	59	1944	14	74.5	1984	0	354	1.8	30.0	30.0	.0	.0	.0
Dec	81.9	67.5	74.7	95	1962	6	78.1	1997	57	1927	20	71.7	1973	0	301	.6	31.0	31.0	.0	.0	.0
Ann	84.7	69.4	77.0	99+	Jun 1969	17	81.8	Aug 1987	52+	Feb 1929	15	71.1	Jan 1976	0	4398	62.2	365.2	365.3	.0	.0	.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: 1900-2001

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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	4.05	3.80	4.81	1926	15	10.58	1997	.45	1983
Feb	3.33	2.93	4.60	1915	12	9.70	1987	.44	1975
Mar	2.77	2.34	9.00	1901	17	8.67	1981	.41	1984
Apr	4.90	4.07	9.41	1915	8	14.33	1987	.13	1997
May	6.42	4.40	8.10	1988	11	21.29	1986	.92	1973
Jun	2.94	2.45	3.30	1984	6	10.13	1984	.02	1985
Jul	3.65	3.15	4.20	1955	4	8.36	1979	1.00	1972
Aug	4.90	4.15	5.61	1944	16	13.80	1979	1.45	1993
Sep	5.57	5.22	9.20	1996	10	12.68	1996	1.54	1998
Oct	6.17	5.12	6.60	1974	25	15.55	1974	1.29	1982
Nov	6.36	5.52	9.00	1901	18	12.86	1979	1.36	1976
Dec	5.77	4.69	7.50	1906	3	23.25	1981	.08	1997
Ann	56.83	56.61	9.41	Apr 1915	8	23.25	Dec 1981	.02	Jun 1985

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	14.3	8.2	2.3	.9
Feb	11.2	6.4	1.7	.9
Mar	10.2	6.1	1.8	.6
Apr	11.4	6.8	3.2	1.3
May	12.7	8.5	3.6	1.7
Jun	8.8	5.3	1.9	.6
Jul	13.7	7.7	2.1	.7
Aug	12.9	8.0	3.0	.9
Sep	14.2	9.4	3.6	1.0
Oct	14.7	10.1	3.9	1.3
Nov	15.5	10.9	4.2	1.7
Dec	15.6	10.5	3.4	1.2
Ann	155.2	97.9	34.7	12.8

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	1.09	1.48	2.06	2.58	3.08	3.61	4.19	4.88	5.79	7.20	8.53
Feb	.51	.79	1.28	1.74	2.21	2.74	3.34	4.07	5.06	6.66	8.19
Mar	.74	1.00	1.40	1.75	2.10	2.46	2.87	3.34	3.97	4.94	5.86
Apr	.51	.88	1.55	2.24	2.97	3.80	4.77	5.98	7.63	10.37	13.05
May	.72	1.21	2.11	3.00	3.96	5.03	6.28	7.84	9.95	13.45	16.85
Jun	.20	.38	.75	1.16	1.61	2.13	2.76	3.57	4.68	6.57	8.44
Jul	1.07	1.42	1.94	2.39	2.83	3.28	3.79	4.38	5.15	6.35	7.47
Aug	1.44	1.91	2.61	3.21	3.80	4.41	5.08	5.88	6.91	8.52	10.01
Sep	2.16	2.68	3.42	4.03	4.61	5.19	5.83	6.57	7.51	8.95	10.26
Oct	1.78	2.37	3.25	4.02	4.76	5.54	6.40	7.42	8.74	10.80	12.71
Nov	1.82	2.42	3.33	4.12	4.90	5.70	6.60	7.65	9.01	11.15	13.14
Dec	.77	1.24	2.06	2.86	3.71	4.64	5.72	7.05	8.84	11.78	14.61
Ann	34.89	38.90	44.16	48.25	51.93	55.55	59.32	63.55	68.74	76.38	83.10

\+ 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: 1900-2001
(3) Derived from 1971-2000 daily data

Complete documentation available from:
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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	.0	.0	0	0
Feb	.0	.0	0	0
Mar	.0	.0	0	0
Apr	.0	.0	0	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.0	.0	0	0
Nov	.0	.0	0	0
Dec	.0	.0	0	0
Ann	.0	.0	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	.0	0	0	.0	0	0	0	0	0	0
Feb	.0	0	0	.0	0	0	0	0	0	0
Mar	.0	0	0	.0	0	0	0	0	0	0
Apr	.0	0	0	.0	0	0	0	0	0	0
May	.0	0	0	.0	0	0	0	0	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	.0	0	0	.0	0	0	0	0	0	0
Nov	.0	0	0	.0	0	0	0	0	0	0
Dec	.0	0	0	.0	0	0	0	0	0	0
Ann	.0	0	0	.0	0	0	0	0	0	0

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.0	.0	.0	.0	.0
Feb	.0	.0	.0	.0	.0
Mar	.0	.0	.0	.0	.0
Apr	.0	.0	.0	.0	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.0	.0	.0	.0	.0
Nov	.0	.0	.0	.0	.0
Dec	.0	.0	.0	.0	.0
Ann	.0	.0	.0	.0	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.0	.0	.0	.0
Feb	.0	.0	.0	.0
Mar	.0	.0	.0	.0
Apr	.0	.0	.0	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.0	.0	.0	.0
Nov	.0	.0	.0	.0
Dec	.0	.0	.0	.0
Ann	.0	.0	.0	.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

Complete documentation available from:
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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	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
32	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
28	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
24	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
20	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
16	0/00	0/00	0/00	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	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
32	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
28	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
24	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
20	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
16	0/00	0/00	0/00	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	>365	>365	>365	>365	>365	>365	>365	>365	>365
32	>365	>365	>365	>365	>365	>365	>365	>365	>365
28	>365	>365	>365	>365	>365	>365	>365	>365	>365
24	>365	>365	>365	>365	>365	>365	>365	>365	>365
20	>365	>365	>365	>365	>365	>365	>365	>365	>365
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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	1290	1164	1318	1315	1420	1429	1479	1489	1425	1446	1344	1324	16443
55	577	520	605	625	707	739	766	776	735	733	654	611	8048
57	515	464	543	565	645	679	704	714	675	671	594	549	7318
60	422	380	450	475	552	589	611	621	585	578	504	456	6223
65	267	240	295	325	397	439	456	466	435	423	354	301	4398
70	117	102	142	175	242	289	301	311	285	268	205	153	2590

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	1074	999	1101	1105	1201	1218	1264	1267	1211	1224	1138	1110	1074	2073	3174	4279	5480	6698	7962	9229	10440	11664	12802	13912
45	919	854	946	955	1046	1068	1109	1112	1061	1069	988	955	919	1773	2719	3674	4720	5788	6897	8009	9070	10139	11127	12082
50	764	709	791	805	891	918	954	957	911	914	838	800	764	1473	2264	3069	3960	4878	5832	6789	7700	8614	9452	10252
55	609	564	636	655	736	768	799	802	761	759	688	645	609	1173	1809	2464	3200	3968	4767	5569	6330	7089	7777	8422
60	454	419	481	505	581	618	644	647	611	604	538	490	454	873	1354	1859	2440	3058	3702	4349	4960	5564	6102	6592
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	759	703	782	792	864	874	914	910	870	885	822	795	759	1462	2244	3036	3900	4774	5688	6598	7468	8353	9175	9970

(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 were calculated from a serially complete daily data set. A serial dataset was not available for precipitation,
To ensure that a station's data was adequate to estimate these statistics, the following criteria were used:
1. A station must have 80% of its data for the 1971-2000 time period.
2. Only months with at least 21 days are used.
3. There must be a least 21 months (meeting criteria 2.) in the sample.

g. Snowfall and snow depth statistics were derived daily values quality controlled to be consistent with 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 differences 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. Other inconsistencies may appear from comparing statistically modeled values such as degree days to observed temperatures.

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. 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