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: WILMINGTON NEW CASTLE AP, DE **COOP ID: 079595**

Climate Division: DE 1 **NWS Call Sign: ILG** **Elevation: 74 Feet** **Lat: 39˚40N** **Lon: 75˚36W**

Temperature (˚F)

Month	Mean (1)			Extremes										Degree Days (1) Base Temp 65		Mean Number of Days (3)					
	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	39.3	23.7	31.5	75	1950	26	40.2	1990	-14+	1984	22	20.5	1977	1029	0	.0	.0	5.5	7.7	24.9	.5
Feb	42.5	25.8	34.2	78	1985	24	41.0	1998	-6	1979	18	21.7	1979	864	0	.0	.0	7.8	5.0	21.0	.3
Mar	51.9	33.4	42.7	86	1998	30	48.4	1973	2	1984	10	35.1	1984	687	2	.0	.0	18.2	.7	13.7	.0
Apr	62.6	42.1	52.4	94	1985	22	58.4	1994	18	1982	7	47.0	1975	376	9	.0	.2	27.7	.0	2.8	.0
May	72.5	52.4	62.5	96	1996	20	68.7	1991	30	1978	1	58.6	1997	132	62	.0	1.0	30.9	.0	@	.0
Jun	81.1	61.8	71.5	100	1994	19	75.8	1994	41	1972	11	67.7	1979	15	215	@	3.5	30.0	.0	.0	.0
Jul	86.0	67.3	76.6	102+	1954	31	80.0	1999	48	1988	1	72.9	2000	1	368	.1	9.0	31.0	.0	.0	.0
Aug	84.1	65.8	75.0	101+	1953	30	78.2	1980	43	1982	29	72.0	1982	2	317	.1	5.4	31.0	.0	.0	.0
Sep	77.2	58.1	67.7	100+	1953	2	71.2	1980	36	1974	24	63.5	1984	49	135	@	1.5	30.0	.0	.0	.0
Oct	65.9	45.6	55.8	91	1951	5	62.2	1971	24+	1969	24	50.7	1988	297	16	.0	.0	30.6	.0	1.3	.0
Nov	55.0	36.9	45.9	85	1950	1	50.7+	1985	14	1955	29	40.1	1996	564	1	.0	.0	21.0	.1	9.8	.0
Dec	44.4	28.4	36.4	75	1998	4	41.8	1984	-7	1983	25	24.7	1989	872	0	.0	.0	9.6	3.5	21.2	.1
Ann	63.5	45.1	54.4	102+	Jul 1954	31	80.0	Jul 1999	-14+	Jan 1984	22	20.5	Jan 1977	4888	1125	.2	20.6	273.3	17.0	94.7	.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: 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	3.43	3.03	2.51	1998	23	8.41	1978	.52	1981
Feb	2.81	2.73	2.28	1966	13	7.02	1979	.83	1980
Mar	3.97	3.83	3.21	2000	21	9.17	2000	1.16	1987
Apr	3.39	3.18	2.26	1961	13	6.80	1983	.35	1985
May	4.15	3.96	2.72	1990	29	7.38	1983	.82	1997
Jun	3.59	3.96	4.15	1972	22	7.49	1972	.21	1988
Jul	4.28	4.02	6.63	1989	5	12.63	1989	.89	1999
Aug	3.51	3.04	3.77	1971	27	8.38	1971	.25	1972
Sep	4.01	3.63	8.29	1999	16	12.68	1999	1.29	1977
Oct	3.08	2.85	3.69	1966	19	8.01	1995	.08	2000
Nov	3.19	2.91	2.75	1950	25	7.84	1972	.49	1976
Dec	3.40	2.87	2.09	1996	13	7.96	1996	.80	1985
Ann	42.81	42.30	8.29	Sep 1999	16	12.68	Sep 1999	.08	Oct 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.9	6.4	2.4	1.0
Feb	9.5	5.3	1.9	.6
Mar	10.5	6.7	2.9	1.1
Apr	10.7	6.4	2.6	.8
May	11.5	7.2	2.8	.9
Jun	10.4	6.6	2.4	.8
Jul	9.3	6.2	2.6	1.2
Aug	8.5	5.4	2.2	1.1
Sep	9.0	5.6	2.5	1.2
Oct	8.0	5.1	2.1	.8
Nov	9.2	5.8	2.4	.8
Dec	10.3	5.9	2.6	1.0
Ann	117.8	72.6	29.4	11.3

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	1.03	1.36	1.85	2.27	2.67	3.10	3.56	4.11	4.82	5.92	6.95
Feb	.89	1.16	1.55	1.89	2.22	2.55	2.92	3.36	3.92	4.79	5.59
Mar	1.22	1.59	2.15	2.64	3.11	3.59	4.12	4.75	5.56	6.83	8.00
Apr	1.14	1.46	1.93	2.33	2.71	3.11	3.54	4.04	4.69	5.70	6.63
May	1.50	1.89	2.45	2.92	3.37	3.83	4.33	4.92	5.66	6.81	7.86
Jun	.99	1.33	1.85	2.30	2.74	3.20	3.71	4.32	5.11	6.34	7.49
Jul	1.26	1.67	2.28	2.81	3.32	3.85	4.44	5.14	6.03	7.43	8.74
Aug	.91	1.24	1.75	2.20	2.64	3.11	3.63	4.24	5.04	6.30	7.49
Sep	1.11	1.49	2.07	2.57	3.06	3.58	4.15	4.83	5.70	7.08	8.36
Oct	.65	.93	1.38	1.80	2.21	2.65	3.15	3.75	4.54	5.80	7.00
Nov	.70	.99	1.46	1.89	2.31	2.76	3.27	3.88	4.68	5.95	7.16
Dec	.72	1.04	1.54	1.99	2.45	2.93	3.48	4.14	5.00	6.39	7.70
Ann	31.58	33.78	36.59	38.71	40.58	42.39	44.25	46.30	48.77	52.35	55.43

\+ 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)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	7.5	5.6	1	0
Feb	6.3	2.9	1	0
Mar	2.3	.5	#	0
Apr	.3	.0	#	0
May	.0	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.1	.0	0	0
Nov	.6	#	#	0
Dec	1.9	1.2	#	0
Ann	19.0	10.2	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	22.0	1996	7	26.2	1996	13+	1987	27	4	1982
Feb	14.9	1979	19	27.5	1979	20	1979	20	5+	1979
Mar	13.0	1993	13	13.9	1993	9+	1993	15	1+	1993
Apr	1.8	1987	5	2.6	1982	2	1987	6	#	1987
May	.0	0	0	.0	0	0	0	0	#	1995
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	2.5	1979	10	2.5	1979	0	0	0	0	0
Nov	4.5	1978	27	5.6	1989	6	1989	23	#	1995
Dec	5.4	1990	27	8.9	1989	6	1990	28	1+	1995
Ann	22.0	Jan 1996	7	27.5	Feb 1979	20	Feb 1979	20	5+	Feb 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	4.4	2.2	.8	.2	.1
Feb	3.3	1.4	.5	.3	.2
Mar	1.6	.5	.2	.1	@
Apr	.5	.2	.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	.4	.2	.1	.0	.0
Dec	1.9	.7	.2	.1	.0
Ann	12.1	5.2	1.8	.7	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	7.3	3.4	1.7	.3
Feb	5.6	3.6	2.1	.5
Mar	1.6	.9	.4	.0
Apr	@	.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	.3	.1	@	.0
Dec	2.2	.6	.3	.0
Ann	17.0	8.6	4.5	.8

+ 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	5/07	5/02	4/29	4/26	4/24	4/21	4/18	4/15	4/10
32	4/21	4/18	4/15	4/12	4/10	4/08	4/06	4/03	3/30
28	4/14	4/09	4/05	4/02	3/30	3/27	3/24	3/21	3/16
24	3/31	3/27	3/24	3/22	3/19	3/17	3/14	3/11	3/07
20	3/27	3/21	3/16	3/12	3/08	3/04	2/28	2/23	2/17
16	3/15	3/07	3/01	2/24	2/20	2/15	2/10	2/04	1/27

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	10/02	10/07	10/10	10/13	10/16	10/19	10/22	10/25	10/30
32	10/16	10/21	10/24	10/27	10/30	11/02	11/05	11/09	11/14
28	10/25	10/31	11/03	11/06	11/09	11/12	11/16	11/19	11/24
24	11/08	11/13	11/17	11/20	11/23	11/26	11/30	12/03	12/09
20	11/24	11/30	12/04	12/07	12/10	12/14	12/17	12/21	12/27
16	12/06	12/13	12/18	12/22	12/26	12/30	1/03	1/08	1/14

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	198	190	184	179	175	170	165	160	152
32	220	214	209	206	202	199	195	191	185
28	247	239	233	228	224	219	214	209	201
24	266	260	255	252	248	245	241	237	231
20	306	296	289	282	277	271	265	258	248
16	341	330	322	315	308	302	295	287	276

***** 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	1029	864	687	376	132	15	1	2	49	297	564	872	4888
60	883	723	537	241	51	1	0	0	8	180	423	731	3778
57	790	639	447	168	24	0	0	0	2	123	337	638	3168
55	728	583	390	127	13	0	0	0	1	92	283	578	2795
50	586	454	254	51	2	0	0	0	0	37	164	435	1983
32	175	103	16	0	0	0	0	0	0	0	3	79	376

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	121	149	357	622	954	1190	1387	1335	1074	743	428	201	8561
55	1	1	15	66	254	500	674	622	386	114	22	3	2658
57	0	1	10	47	203	440	612	560	329	84	14	1	2301
60	0	0	6	27	139	352	519	467	248	49	7	0	1814
65	0	0	2	9	62	215	368	317	135	16	1	0	1125
70	0	0	0	3	21	105	216	173	58	3	0	0	579

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	37	57	166	393	714	960	1149	1097	842	504	224	70	37	94	260	653	1367	2327	3476	4573	5415	5919	6143	6213
45	12	24	87	259	559	810	994	942	692	351	126	30	12	36	123	382	941	1751	2745	3687	4379	4730	4856	4886
50	1	5	39	147	405	660	839	787	542	218	59	7	1	6	45	192	597	1257	2096	2883	3425	3643	3702	3709
55	0	0	15	69	262	510	684	632	392	119	23	2	0	0	15	84	346	856	1540	2172	2564	2683	2706	2708
60	0	0	4	30	144	363	529	478	255	55	6	0	0	0	4	34	178	541	1070	1548	1803	1858	1864	1864
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	23	34	99	216	429	645	803	763	547	291	118	34	23	57	156	372	801	1446	2249	3012	3559	3850	3968	4002

(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