Temperature

Weather Station Climatic Division	Latitude	Longitude	Elevation	Distance	Direction	Delta-Elevation	Annual Average Temperature	Maximum Temperature	Minimum Temperature
Site	38° 03' 39"	77° 47' 26"	271 ft msl	-	-	-	-	-	-
Partlow VA-02	38° 03'	77° 42'	249 ft msl	5 mi	97° (E)	-22 ft	55.2°F 1952-1976	106°F 1952-1976	-16°F 1952-1976
							55.5°F		
Louisa VA-02	38° 03'	78° 00'	419 ft msl	11 mi	-93° (W)	148 ft	56.0°F 1948-2002	104°F 1948-2002	-21°F 1948-2002
							56.3°F		
Corbin VA-02	38° 12'	77° 22'	220 ft msl	25 mi	72° (ENE)	-51 ft	55.6°F 1959-2002	104°F 1959-2002	-11°F 1959-2002
Ashland VA-02	37° 45'	77° 29'	220 ft msl	27 mi	135° (SE)	-51 ft	56.6°F 1948-2002	105°F 1948-2002	-11°F 1948-2002
Richmond VA-02	37° 30'	77° 19'	164 ft msl	47 mi	140° (SE)	-107 ft	58.0°F 1948-2002	105°F 1948-2002	-8°F 1948-2002
							57.7°F normal 58.2 Mean	105°F	-12°F
Fredericksburg VA-01	38° 19'	77° 27'	90 ft msl	26 mi	53° (NE)	-181 ft	56.3°F 1930-1997	106°F 1930-1997	-12°F 1930-1997
							56.2°F		
Charlottesville VA-03	38° 08'	78° 27'	641 ft msl	36 mi	-84° (W)	370 ft	56.8°F 1948-2002	107°F 1948-2002	-10°F 1948-2002
							56.8°F	107°F	-9°F
Piedmont VA-04	38° 14'	78° 07'	520 ft msl	21 mi	298° (WNW)	249 ft	55.5°F 1948-2002	106°F 1948-2002	-11°F 1948-2002
							55.9°F		

Precipitation

Weather Station Climatic Division	Latitude	Longitude	Elevation	Distance	Direction	Delta-Elevation	Annual Average Precip	Maximum Annual Precip	Maximum Monthly Precip	Maximum 24-hour Precip	Min Monthly
Site	38° 03′ 39″	77° 47′ 26″	271 ft msl	-	-	-	-	-	-		
Partlow VA-02	38° 03′	77° 42′	249 ft msl	5 mi	97° (E)	-22 ft	45.20 in 1952-1976	72.25 in 1952-1976	16.20 in 1952-1976	5.45 in[a] 1952-1976	0.00
							42.24 in				
Louisa VA-02	38° 03′	78° 00′	419 ft msl	11 mi	-93° (W)	148 ft	42.85 in 1948-2002	62.47 in 1948-2002	16.33 in 1948-2002	11.18 in[b] 1948-2002	0.00
							41.62 in				
Corbin VA-02	38° 12′	77° 22′	220 ft msl	25 mi	72° (ENE)	-51 ft	42.64 in 1959-2002	60.70 in 1959-2002	10.44 in 1959-2002	7.45 in[c] 1959-2002	0.00
Ashland VA-02	37° 45′	77° 29′	220 ft msl	27 mi	135° (SE)	-51 ft	42.51 in 1948-2002	58.75 in 1948-2002	14.33 in 1948-2002	5.44 in[d] 1948-2002	0.01
Richmond VA-02	37° 30′	77° 19′	164 ft msl	47 mi	140° (SE)	-107 ft	43.29 in 1948-2002	61.31 in 1948-2002	16.60 in 1948-2002	8.79 in[e] 1948-2002	0.01
							43.16 in		18.87 in	8.79 in	
Fredericksburg VA-01	38° 19′	77° 27′	90 ft msl	26 mi	53° (NE)	-181 ft	41.12 in 1930-1997	57.31 in 1930-1997	16.20 in 1930-1997	6.17 1930-1997	0.14
							40.99 in				
Charlottesville VA-03	38° 08′	78° 27′	641 ft msl	36 mi	-84° (W)	370 ft	46.74 in 1948-2002	66.03 in 1948-2002	17.96 in 1948-2002	9.20 in 1948-2002	0.01
							45.72 in		16.96 in	8.00 in	
Piedmont VA-04	38° 14′	78° 07′	520 ft msl	21 mi	298° (WNW)	249 ft	42.07 in 1948-2002	63.47 in 1948-2002	13.32 in 1948-2002	7.85 in 1948-2002	0.00
							38.68 in				

[a] August 12, 1955 (either hurricane Connie or Diane?)

[b] August 20, 1969 (hurricane Camille?)

[c] June 22, 1972

[d] July 16, 1989

[e] August 12, 1955 (either hurricane Connie or Diane?)

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Snowfall

Weather Station Climatic Division	Latitude	Longitude	Elevation	Distance	Direction	Delta-Elev	Annual Average Snow Fall	Annual Maximum Snow Fall	Maximum Monthly Snow Fall	Maximum 24-hour Snow Fall	Maximum Snow Depth
Site	38° 03′ 39″	77° 47′ 26″	271 ft msl	-	-	-	-	-	-	-	-
Partlow VA-02	38° 03′	77° 42′	249 ft msl	5 mi	97° (E)	-22 ft	16.6 in 1952-1976	47.0 ~~54.0 in~~ 1952-1976	41.0 in 1952-1976	20.0 in 1952-1976	N/A
							18.6 in				
Louisa VA-02	38° 03′	78° 00′	419 ft msl	11 mi	-93° (W)	148 ft	18.5 in 1948-2002	55.3 ~~59.0 in~~ 1948-2002	32.2 in 1948-2002	16.0 in 1948-2002	24 in 1948-2002
							19.9 in				
Corbin VA-02	38° 12′	77° 22′	220 ft msl	25 mi	72° (ENE)	-51 ft	15.8 in 1959-2002	41.8 ~~48.7 in~~ 1959-2002	26.0 in 1959-2002	15.0 in 1959-2002	16 in 1959-2002
Ashland VA-02	37° 45′	77° 29′	220 ft msl	27 mi	135° (SE)	-51 ft	15.4 in 1948-2002	60.9 ~~56.4 in~~ 1948-2002	30.2 in 1948-2002	14.0 in 1948-2002	19 in 1948-2002
Richmond VA-02	37° 30′	77° 19′	164 ft msl	47 mi	140° (SE)	-107 ft			28.5 in 1897-1999	21.6 in 1897-1999	
							13.9 in 1948-2002	38.9 ~~47.0 in~~ 1948-2002	26.2 in 1948-2002	13.3 in 1948-2002	15 in 1948-2002
							16.3 in		28.5 in	21.6 in	20 in
Fredericksburg VA-01	38° 19′	77° 27′	90 ft msl	26 mi	53° (NE)	-181 ft	14.6 in 1930-1997	35.0 in 1930-1997	30.5 in 1930-1997		
							17.7 in				
Charlottesville VA-03	38° 08′	78° 27′	641 ft msl	36 mi	-84° (W)	370 ft	20.7 in 1948-2002	61.9 in 1948-2002	29.8 in 1948-2002		
									30.2 in 1893-1999	20.7 in 1893-1999	
							24.2 in		29.8 in		
Piedmont VA-04	38° 14′	78° 07′	520 ft msl	21 mi	298° (WNW)	249 ft	20.6 in 1948-2002	63.3 in 1948-2002	32.0 in 1948-2003		
							22.0 in				

Virginia's Climate

Bruce P. Hayden and Patrick J. Michaels

Climate Controls

Few states have a more diverse climate than that of Virginia. The state has five different climate regions: the Tidewater, Piedmont, Northern Virginia, Western Mountain, and Southwestern Mountain regions. Some localities—Charlottesville, Lynchburg, and Warrenton, for example—have climate amenities such as long growing seasons and infrequent subzero temperature minimums, while winters on the northern Blue Ridge frequently produce bitterly cold temperatures like those of Chicago. Similarly, annual rainfall totals can vary from a sparse thirty-three inches typical of the Shenandoah Valley to more than sixty inches in the mountains of southwestern Virginia.

Virginia's climate results from global-scale weather patterns that are modified by the diverse landscape of the Commonwealth. While detailed discussion of the global-scale contribution is beyond the scope of this newsletter, the state's landscape provides local controls primarily in three ways. First, the Atlantic Ocean and its "river" of warm water, commonly called the Gulf Stream, play a dominant role in differentiating Virginia's precipitation climate. Winter storms generally move or "track" from west to east and, in the vicinity of the east coast, move northeastward paralleling the coast and the Gulf Stream. This shift to a northeast track results in part from the tendency of the storm to follow the boundary between the cold land and the warm Gulf Stream Waters. These storms grow rapidly as they cross the coast; and as they move northeastward, moisture-laden air from the storm crosses Virginia from the east and northeast. The eastern slopes and foothills of the Blue Ridge Mountains are the prime recipients of this moisture. The great coastal storms of 1962, which are remembered primarily because of the high surf and storm surges along Virginia's coast, also produced record snowfalls along the northern section of the Blue Ridge mountains.

The high relief of the Appalachian and Blue Ridge mountain systems also helps to control Virginia's climate. The influence here originates with the well-developed rainfall pattern that is evident along the great mountains of the western margin of North America. Great quantities of rain fall on these western slopes as moist air from the Pacific Ocean flows eastward, rises, condenses, and precipitates. As the air flows down over the eastern slopes, however, little rain falls and a "rain shadow" pattern results. Along the Appalachian and Blue Ridge Mountains of western Virginia, this airflow is sometimes from the west and sometimes from the east. When the flow is from the west, the New River and Shenandoah River valleys are in the rain shadow of the Appalachian Mountains; when the airflow is from the east, they are in the shadow of the Blue Ridge Mountains. As a result, both the New River and the Shenandoah River valleys are the driest portions of the state. Regions of equally low rainfall are rare in the eastern United States (although common along the eastern margins of the great plains of the central United States).

The third important local control on climate is the state's complex pattern of rivers and streams, which drain the precipitation that falls and modify the pattern of moist airflow from which the precipitation falls. These river systems drain the Commonwealth's terrain in all four geographical directions. In far southwestern Virginia, the Clinch and Holston rivers drain south into North Carolina and Tennessee. The New River drains westward into the Ohio River, while the Shenandoah River

drains northward into the Potomac. Finally, the Roanoke, James, York, and Rappahannock rivers drain eastward through the Piedmont and into the Tidewater area. The air that flows across Virginia flows either up these river valleys or over the crests of the mountains and down into the valleys. With a southerly flow of air, for example, moist air would move up the Holston River drainage, and rainfall would increase up valley with increasing elevation. However, this same southerly airflow would be downhill into the New River drainage, and on toward the Ohio River basin. This downward flow of air is not conducive to rainfall.

Virginia's wide variety of agricultural products marks the economic benefits of its climate diversity. The close quarters of dissimilar climatic zones also has its costs, however, because the boundaries between zones are not fixed and the year-to-year constancy of conditions is rare. A climate condition typical of one region might in a given year extend outward into another area. As an example, low rainfall levels typical of the Shenandoah Valley's thirty-three inches per year may extend eastward across the Blue Ridge, out across the Piedmont, and into the Tidewater region. In such a case, drought, crop failure, and economic losses like those of the past summer may be extensive.

Weather Systems

Much of Virginia's rainfall results from storms associated with warm and cold fronts. As already noted, these storms generally move from west to east and, in the vicinity of the east coast, move northeastward. While a very large number of specific storm histories and storm tracks can occur and a great diversity of precipitation patterns can result, not all are equally common. Storms are most frequently observed to move parallel to the Appalachian or the Blue Ridge Mountains, the coastal zone, and the Gulf Stream, all of which have a northeast trend, or to move parallel to the Great Lakes and the Ohio River Valley. When storms cross the east coast well to the south of Virginia and move offshore, the heaviest rain usually falls in southeastern Virginia. When these storms become very intense or when they closely skirt the coastline, the strong up-slope winds result in heavy rainfalls on the Blue Ridge. Frequently, frontal storms tracking along the Ohio Valley move across southern Pennsylvania and off the New Jersey coast; as such storms approach the coast, great quantities of moist air flow inland and then southward into Virginia.

When sufficient cold air invades Virginia from the west and northwest, frontal storms may cause heavy snowfalls. Two of the state's most dramatic frontal snowstorms of recent years occurred during the Christmas holidays of 1966 and 1969. In both cases, the Storm tracked along the Gulf and the east coasts and crossed over Tidewater Virginia; a strong east and northeast flow brought moist air across the state, overriding cold air from the west. While heavy snows are common in the Piedmont region, the average winter does not have a major coastal snowstorm, and heavy winter snows usually are confined to the mountainous areas of the state. As remarkable as it may seem, some of the heaviest snowfalls in the eastern United States occur in the Appalachians of West Virginia, just a few miles west of Highland County, Virginia. More than 2,500 millimeters (100 inches) fall annually in this area; but Virginia, being in West Virginia's snow shadow, receives only a fraction of this amount.

While heavy snowfalls usually result from frontal storms, hurricanes are created by a different weather pattern. Hurricanes and tropical storms are intense cyclones formed within the deep, moist layers of air over warm, tropical waters. Unlike frontal storms, which derive much of their energy from the great temperature contrasts on either side of fronts, hurricanes and tropical storms derive most of their energy from the warm ocean surface. Tropical storms over the low-latitude oceans generally move from east to west. As they move westward, they are displaced farther and farther to the north. Eventually, they enter the westerly airstreams of the mid-latitudes, and then recurve north and eastward. In the vicinity of Virginia, these tropical storms move in a general northeasterly track, like frontal storms: and as they move along this route, they intensify. Those storms that reach an intensity indicated by sustained winds of at least seventy-two miles an hour are classified as hurricanes.

Hurricanes and tropical storms that cross Virginia, including those immediately offshore, occur most frequently in early August and September and rarely appear before June or after November. During the month of September, anywhere from 10 to 40 percent of Virginia's rainfall comes from

hurricanes and tropical storms. When Hurricane Camille, Virginia's most notable hurricane of recent times, passed through the state in 1969, upwards of 840 millimeters (33 inches) of rain fell on the eastern slopes of the Blue Ridge in Nelson County and caused record floods along the James River.

Before the turn of the century, hurricane and tropical storm passages across Virginia were relatively common, averaging one per year. From 1905 to 1920, however, a hurricane struck, on the average, only one year in every five. The frequency then increased to about three hurricanes in a five-year period before decreasing again in the 1960s and 1970s. The reasons for these variations are as yet unknown.

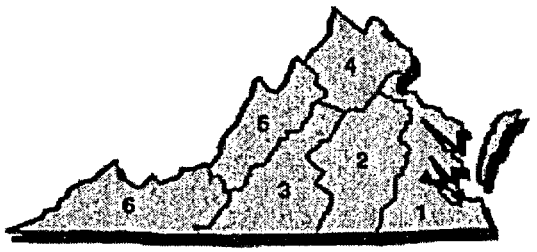
Thunderstorms, which occur in all months of the year, are most common in the deep, moist, warm air of tropical origin that is typical of summer. In Virginia, days with thunderstorms are recorded at commercial and military airports. Over the last two decades the state has averaged one thunderstorm day a decade in January, compared with nine thunderstorm days a month in July. Thunderstorm days are most frequent in southern Virginia, particularly in the far southwestern section, while northern Virginia experiences the least number of such storms. Thunderstorms are also most likely to occur during the warmest part of the day, with 4:00 p.m. the most probable time of occurrence. In Roanoke, for example, thunderstorms occur ten times more frequently at 4:00 p.m. than at 10:00 a.m. and five times more frequently at 4:30 p.m. than at 7:00 p.m. At Norfolk, thunderstorms are also most frequent at 4:00 p.m., remaining common there until about midnight. Thunderstorms produce complex patterns of rainfall, such that areas of heavy rain may be next to areas with little or no rain.

Virginia Long-Term Average Temperature and Precipitation (1895-1998)

Month	Maximum °F	Minimum °F	Average °F	Precipitation (Inches)
Jan	45.8	26.0	35.9	3.13
Feb	47.7	26.7	37.2	3.08
Mar	56.9	34.1	45.5	3.86
Apr	67.1	42.7	54.9	3.29
May	75.8	52.2	64.0	3.99
Jun	82.9	60.2	71.5	3.69
Jul	86.1	64.3	75.2	4.31
Aug	84.6	63.2	73.9	4.14
Sep	79.2	57.0	68.1	3.50
Oct	69.2	45.0	57.1	3.36
Nov	57.8	35.4	46.6	3.21
Dec	47.8	28.0	37.9	3.18
Annual	66.7	44.6	55.7	42.70

Locate Weather Station

National Climatic Data Center



Virginia-USA

State Climatologist
Regional Climate Center
6 divisions listed in this state.

Select Division

Some stations not identified by division.

- 01 - Tidewater
- 02 - Eastern Piedmont
- 03 - Western Piedmont
- 04 - Northern
- 05 - Central Mountain

Locate Stations

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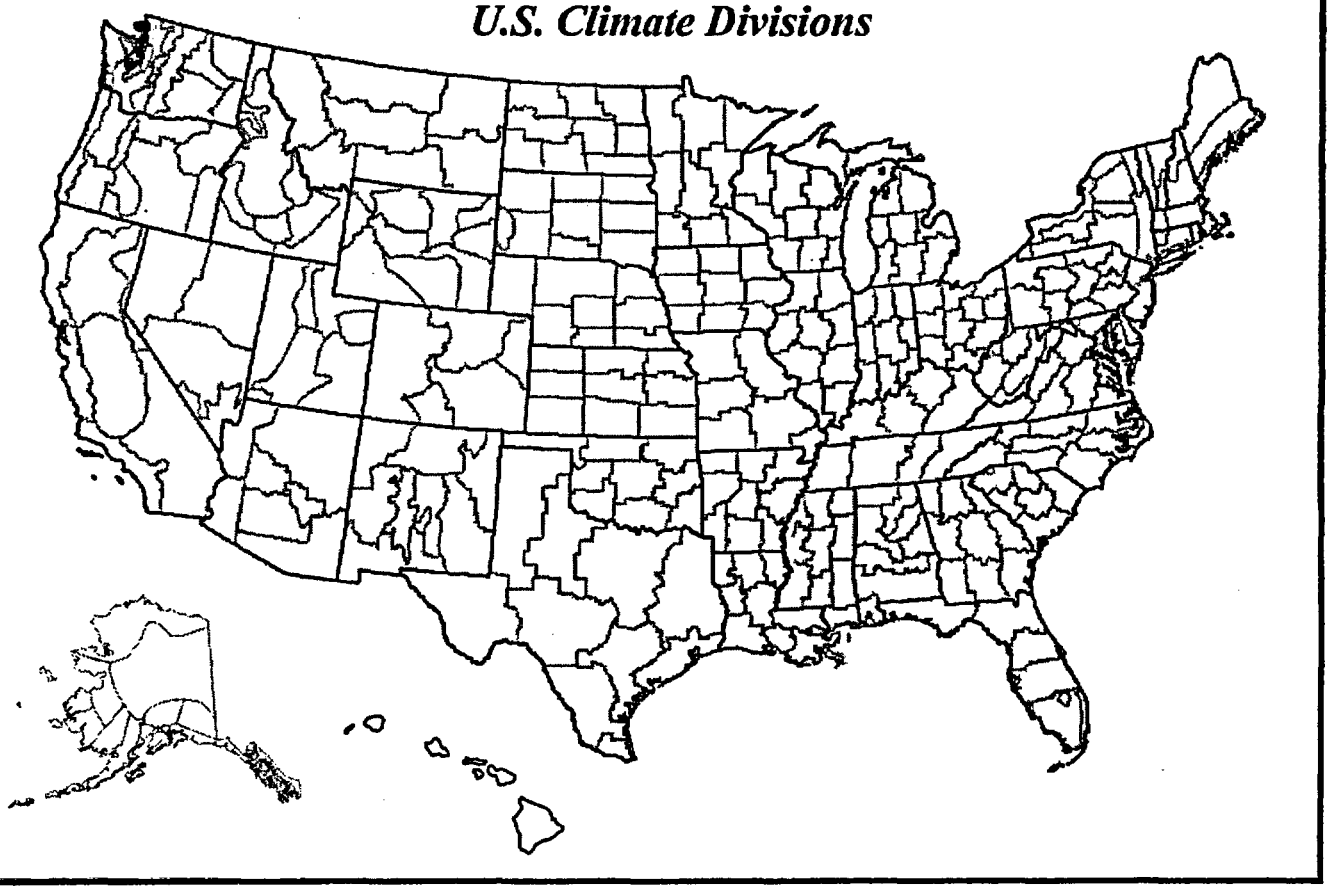
CLIMATOGRAPHY OF THE UNITED STATES NO. 85

Divisional Normals and Standard Deviations of Temperature, Precipitation, and Heating and Cooling Degree Days

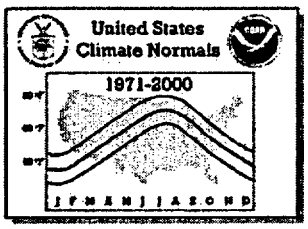
1971 – 2000 (and previous normals periods)

Section 1: Temperature

U.S. Climate Divisions



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, NC



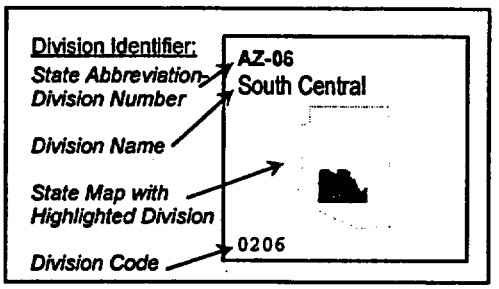
NOTES

Product Description:
This Climatography includes normals and standard deviations for the five 30-year normals periods and the 70-year period between 1931-2000 for each climate division. A *climate division* represents a region within a state that is as climatically homogeneous as possible. The divisional data are used for research applications in hydrology, agriculture, energy supply, *etc.*, where data averaged over an area rather than for a point (station) is needed. Divisional data are used to assess large-scale climatic features with respect to a long period (*i.e.*, decadal, 30-year period, *etc.*). There are 344 climate divisions in the conterminous U.S., with additional divisions in Alaska, Hawaii, Puerto Rico, the U.S. Virgin Islands, and Pacific trust territories. Divisional boundaries generally coincide with county boundaries except in the western U.S., where they are based largely on drainage basins.

The normals and standard deviations include values for each of the 12 calendar months and an annual value. The divisional data are displayed by name and number for a state or territory. Data for the conterminous United States are presented alphabetically, followed by data for Alaska, Hawaii, Puerto Rico, the Virgin Islands, and Pacific trust territories. The data elements, presented in separate sections, include time of observation-corrected mean temperature (degrees F), precipitation (inches), and heating and cooling degree days (base 65 degrees F).

Abbreviations:
AVERAGE = Mean of Element for all Months (or Annual Values) for the Given Period of Record.
STD DEV = Standard Deviation for all Months (or Annual Values) for the Given Period of Record.
31-00 = 1931 through 2000 Long-Term Period of Record.
31-60 = 1931 through 1960 Normal Period of Record.
41-70 = 1941 through 1970 Normal Period of Record.
51-80 = 1951 through 1980 Normal Period of Record.
61-90 = 1961 through 1990 Normal Period of Record.
71-00 = 1971 through 2000 Normal Period of Record.

DB = Drainage Basin
Fthls = Foothills
Hydro = Hyrdrological Division



Computational Procedures:
Monthly divisional average temperature and total precipitation data are derived by giving equal weight to all stations reporting both temperature and precipitation within a climatological division, except for Hawaii, where any available stations (including precipitation-only stations) are used. The number of reporting stations within a division varies from month-to-month and year-to-year. Station data are *not* adjusted for inhomogeneities.

Temperature values are corrected for time of observation in the conterminous U.S. In the conterminous U.S., observers at National Weather Service cooperative stations often take one observation per day, and the ending time of the climatological day can vary from station-to-station as well as year-to-year. Differences of the 24-hour period over which maximum and minimum temperature (as well as average temperature) is reported impact the calculated monthly mean temperature. These potential biases are rectified by adjusting for varying observation times using a model (Karl *et al.*, 1986) to adjust the climate division averages such that all stations end their climatological day at midnight (*i.e.*, climatological and calendar day coincide).

Monthly divisional temperature normals and 70-year averages are computed by adding the yearly values for a given month and then dividing by the number of years in the period. The annual normal and 70-year average are computed by adding all of the monthly normal or long-term average values and then dividing by 12. Precipitation normals and long-term means are computed in a similar manner, except for the annual, which is the sum of monthly values.

Sequential monthly degree days are derived using a modification of the Rational Conversion Formulae developed by Thom (1954, 1966). This technique utilizes the historical monthly average temperature and its corresponding standard deviation (over the standardizing period 1931-2000) to compute degree days. The modified Thom technique derives the monthly degree days using a spline fit of the monthly mean temperature and standard deviations to ameliorate the month-to-month step function that is inherent with only a single monthly input. The procedure for the computation of the divisional degree day normals involves i.) Calculation of the standard deviations of the temperatures for each of the 12 calendar months over the standardizing period; ii.) Use of the modified Thom technique to compute the heating and cooling degree days for every month and year in the period 1931-2000; and iii.) Calculation of the 30-year normals and 70-year (1931-2000) long-term averages of the degree days using the procedure discussed above. Standard deviations are computed using the sum and sum square values from the corresponding period of month-year sequential values. For annual temperature, the sum and sum square of the annual values are used, while for annual precipitation, the sum and sum square of monthly values are used.

Anomalous Climate Divisions:
The following divisions are non-existent: Nebraska Division 04, Pacific Islands Division 01.
Due to lack of data, no data were computed for: Hawaii Division 07 (Island of Kahoolawe); Puerto Rico Division 07 (Outlying Islands).
Data for the climate divisions of the Virgin Islands (01/02/03) were consolidated into a single Division 04 for the entire Virgin Islands.

Supplemental Divisional Normals:
Hawaiian Hydrological Divisions: The varied topography and the locations of the observation stations in Hawaii yield highly localized precipitation patterns. These patterns are at a finer resolution than the island-by-island climate divisions. Research by NWS's Hydrometeorological Design Studies Center (NOAA, 2002) has led to the establishment of regional divisions for precipitation frequency studies. Data based on these divisions are found at the end of the tables.

Divisional Maps Supplement: Maps showing mean and standard deviations for the conterminous U.S., Alaska, and Hawaii are presented in Section 5.

References:
Karl, T.R., C.N. Williams, Jr., P.J. Young, and W.M. Wendland,1986: "A model to estimate the time of observation bias associated with monthly mean maximum, minimum, and mean temperatures for the United States," Journal of Climate and Applied Meteorology, Vol. 25, pp. 145-160.
Guttman, N.B. and R.G. Quayle, 1995: "A Historical Perspective of U.S. Climate Divisions", Bulletin of the American Meteorological Society, Statistical descriptors of climate, Bulletin of the American Meteorological Society, Vol. 77, no. 2, pp. 293-303.
NOAA, 2002: Hawaii Precipitation Frequency Study: Update of *Technical Paper No. 43*, NOAA/NWS/Office of Hydrology.
Thom, H.C.S., 1954: "The rational relationship between heating degree days and temperature," Monthly Weather Review, Vol. 82, pp. 1-6.
Thom, H.C.S., 1966: "Normal degree days above any base by the universal truncation coefficient," Monthly Weather Review, Vol. 94, pp. 461-465.

Vermont - Virginia

Climate Division	Element	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
VT-01 Northeastern	31-00 AVERAGE	14.9	16.8	27.3	40.2	52.7	62.0	66.5	64.2	56.2	45.4	34.0	20.3	41.7
	STD DEV	5.2	4.7	4.0	3.0	3.0	1.8	2.0	2.2	2.4	2.8	3.2	5.0	1.2
	31-60 AVERAGE	15.8	17.0	26.9	40.5	53.0	62.4	66.9	64.7	56.9	46.2	34.3	19.9	42.0
	STD DEV	5.3	4.8	4.7	3.1	2.9	1.7	2.0	2.5	2.1	2.4	3.6	4.8	1.2
	41-70 AVERAGE	14.8	16.8	27.5	40.6	52.3	62.2	66.6	64.1	56.7	46.5	34.7	19.8	41.9
	STD DEV	4.9	4.1	4.1	3.0	3.2	1.8	2.2	2.4	2.6	2.5	3.0	4.9	1.1
	51-80 AVERAGE	14.7	16.7	27.7	40.4	52.7	62.1	66.5	64.1	56.3	45.7	34.4	20.1	41.8
	STD DEV	4.7	4.5	3.5	2.7	3.3	1.8	2.1	2.2	2.6	2.8	3.2	4.9	1.1
	61-90 AVERAGE	14.2	16.6	27.9	40.3	52.8	61.7	66.4	64.0	56.0	45.2	34.0	20.0	41.6
	STD DEV	5.1	4.5	3.3	3.0	2.9	1.9	1.7	2.0	2.6	2.9	3.0	5.3	1.0
	71-00 AVERAGE	14.6	17.2	27.6	40.1	52.8	61.5	66.1	63.9	55.4	44.2	33.5	20.9	41.5
4301	STD DEV	5.0	5.0	3.8	3.1	3.0	2.0	1.8	1.8	2.1	2.8	2.8	5.4	1.3
VT-02 Western	31-00 AVERAGE	18.3	19.7	30.1	43.0	55.3	64.4	69.1	66.7	58.7	47.9	36.6	23.9	44.5
	STD DEV	5.3	4.7	4.0	2.9	2.8	1.8	1.8	2.1	2.3	2.7	3.2	4.8	1.1
	31-60 AVERAGE	19.2	20.1	29.9	43.3	55.5	64.6	69.3	66.9	59.2	48.6	36.8	23.8	44.8
	STD DEV	5.3	4.7	4.6	3.0	2.6	1.8	1.9	2.4	2.1	2.5	3.5	4.4	1.1
	41-70 AVERAGE	18.1	19.9	30.4	43.5	54.9	64.6	69.1	66.6	59.2	49.1	37.3	23.5	44.7
	STD DEV	5.0	3.9	4.1	2.9	3.0	1.9	1.9	2.3	2.4	2.4	3.0	4.5	1.0
	51-80 AVERAGE	17.8	19.3	30.2	43.1	55.2	64.5	69.1	66.7	58.7	48.2	36.9	23.6	44.4
	STD DEV	4.7	4.7	3.4	2.9	3.2	1.7	1.9	2.1	2.5	2.8	3.1	4.5	1.1
	61-90 AVERAGE	17.3	19.0	30.3	42.9	55.3	64.2	69.2	66.7	58.4	47.7	36.6	23.3	44.2
	STD DEV	5.3	4.6	3.5	3.0	2.9	1.8	1.5	1.9	2.4	2.8	2.9	5.2	0.9
	71-00 AVERAGE	17.8	19.9	30.3	42.8	55.5	64.1	69.0	66.6	58.0	46.8	36.3	24.3	44.3
4302	STD DEV	5.2	5.3	3.8	3.1	2.8	1.9	1.9	1.8	2.0	2.7	2.8	5.4	1.2
VT-03 Southeastern	31-00 AVERAGE	18.6	20.4	30.0	42.1	53.9	62.9	67.6	65.3	57.2	46.3	36.1	23.4	43.7
	STD DEV	5.0	4.6	3.7	3.0	2.8	1.9	1.9	2.2	2.1	2.6	3.0	4.6	1.3
	31-60 AVERAGE	18.7	19.5	28.7	41.5	53.5	62.6	67.2	64.9	57.1	46.5	35.3	22.3	43.2
	STD DEV	5.2	4.8	4.4	3.3	2.6	1.8	1.9	2.2	2.1	2.4	3.2	4.4	1.3
	41-70 AVERAGE	17.9	19.4	29.4	42.0	53.1	62.8	67.2	64.7	57.3	47.0	36.0	22.2	43.3
	STD DEV	4.5	4.1	4.0	3.2	3.0	1.9	1.9	2.3	2.5	2.3	2.9	4.4	1.2
	51-80 AVERAGE	18.3	20.2	30.1	42.2	53.5	62.8	67.4	65.1	57.3	46.6	36.5	23.2	43.6
	STD DEV	4.1	4.1	3.2	2.7	3.0	1.9	1.9	2.1	2.5	2.7	2.8	4.3	1.1
	61-90 AVERAGE	17.8	20.5	30.8	42.3	53.9	62.7	67.7	65.4	57.2	46.3	36.6	23.4	43.7
	STD DEV	4.6	4.1	2.8	2.8	2.8	1.7	1.6	2.1	2.4	2.8	2.8	4.5	1.0
	71-00 AVERAGE	19.2	22.0	31.4	42.8	54.7	63.3	68.1	65.9	57.2	45.9	36.8	24.9	44.4
4303	STD DEV	5.0	4.4	3.0	2.7	2.5	2.0	1.7	1.9	1.6	2.7	2.7	4.9	1.3
VA-01 Tidewater	31-00 AVERAGE	38.3	39.8	47.1	56.2	65.5	73.7	77.8	76.3	70.5	59.8	49.9	41.0	58.0
	STD DEV	4.8	4.0	3.5	2.4	2.2	1.9	1.6	1.6	2.0	2.6	2.7	4.0	1.0
	31-60 AVERAGE	39.6	40.2	46.7	56.3	66.0	74.1	77.8	76.4	70.8	60.3	49.7	40.7	58.2
	STD DEV	5.3	4.2	4.3	2.5	2.0	1.8	1.5	1.4	2.1	2.6	2.4	4.1	1.0
	41-70 AVERAGE	38.4	39.6	46.7	56.5	65.9	73.6	77.6	76.2	70.5	60.4	49.8	40.1	57.9
	STD DEV	4.4	3.5	4.1	2.3	2.4	1.9	1.6	1.5	2.1	2.5	2.2	3.8	1.0
	51-80 AVERAGE	37.6	39.1	46.8	56.5	65.3	73.1	77.5	76.6	70.7	59.7	49.8	41.1	57.8
	STD DEV	4.1	4.2	3.4	2.4	2.2	1.9	1.5	1.6	2.1	2.6	2.5	4.0	1.0
	61-90 AVERAGE	36.6	38.9	47.3	55.8	65.1	73.2	77.5	76.3	70.2	59.5	50.3	41.2	57.7
	STD DEV	4.3	4.0	2.9	2.2	2.0	1.9	1.5	1.7	2.2	3.0	2.8	4.1	0.9
	71-00 AVERAGE	37.7	40.1	47.7	56.4	65.3	73.6	78.2	76.4	70.5	59.3	50.1	41.8	58.1
4401	STD DEV	4.5	4.1	2.7	2.4	2.1	2.0	1.8	1.8	1.7	2.9	3.1	4.2	1.0
VA-02 Eastern Piedmont	31-00 AVERAGE	36.6	38.8	46.4	55.9	64.8	72.8	76.8	75.2	68.7	57.4	47.7	38.8	56.7
	STD DEV	4.9	4.0	3.8	2.3	2.4	2.0	1.7	1.6	2.3	2.8	2.8	4.1	1.1
	31-60 AVERAGE	38.3	39.4	46.1	56.1	65.5	73.5	77.1	75.5	69.2	58.2	47.4	38.7	57.1
	STD DEV	5.1	4.1	4.8	2.4	2.2	2.0	1.6	1.4	2.2	2.6	2.4	4.1	1.0
	41-70 AVERAGE	36.7	38.5	46.0	56.4	65.3	72.9	76.6	75.1	68.5	57.9	47.4	37.8	56.6
	STD DEV	4.4	3.6	4.5	2.3	2.6	2.0	1.6	1.4	2.3	2.8	2.2	3.9	1.1
	51-80 AVERAGE	35.7	37.9	46.1	56.4	64.6	72.1	76.4	75.3	68.7	57.2	47.4	38.6	56.4
	STD DEV	4.2	4.3	3.7	2.3	2.5	2.0	1.5	1.5	2.4	2.7	2.6	4.0	1.0
	61-90 AVERAGE	34.7	37.8	46.7	55.6	64.2	72.2	76.2	75.0	68.3	57.0	48.1	38.7	56.2
	STD DEV	4.5	4.1	3.0	2.3	2.2	1.9	1.5	1.7	2.4	3.2	2.8	4.2	1.0
	71-00 AVERAGE	35.9	39.1	46.9	55.9	64.1	72.4	76.8	75.1	68.5	56.9	48.0	39.4	56.6
4402	STD DEV	4.6	4.1	2.8	2.3	2.2	2.0	1.8	1.9	2.0	3.1	3.2	4.2	1.0
VA-03 Western Piedmont	31-00 AVERAGE	36.9	39.0	46.3	56.1	64.6	72.3	76.0	74.5	68.0	57.2	47.5	38.8	56.4
	STD DEV	4.7	3.9	3.8	2.3	2.6	2.1	1.8	1.7	2.4	2.9	2.8	4.0	1.2
	31-60 AVERAGE	38.9	40.0	46.1	56.6	65.6	73.3	76.4	75.0	68.7	58.4	47.6	39.2	57.2
	STD DEV	4.6	3.9	4.7	2.4	2.3	2.2	1.8	1.6	2.4	2.5	2.7	4.0	1.0
	41-70 AVERAGE	37.2	38.8	45.9	56.8	65.2	72.4	75.8	74.4	67.8	57.8	47.4	38.1	56.5
	STD DEV	4.1	3.7	4.4	2.6	2.8	2.1	1.5	1.5	2.3	2.7	2.3	3.8	1.1
	51-80 AVERAGE	35.8	37.8	45.9	56.3	64.3	71.5	75.5	74.5	67.9	56.7	47.1	38.5	56.0
	STD DEV	4.2	4.1	3.6	2.3	2.7	2.1	1.5	1.4	2.3	2.8	2.5	3.8	1.0
	61-90 AVERAGE	34.7	37.6	46.4	55.6	63.8	71.5	75.4	74.2	67.5	56.3	47.7	38.4	55.8
	STD DEV	4.4	3.7	2.9	2.3	2.5	1.9	1.7	1.7	2.3	3.3	2.6	4.1	0.9
	71-00 AVERAGE	35.8	38.9	46.5	55.7	63.5	71.6	75.9	74.3	67.6	56.3	47.5	38.9	56.0
4403	STD DEV	4.7	3.8	2.9	2.2	2.3	2.0	1.8	1.9	2.0	3.2	3.0	4.2	1.0

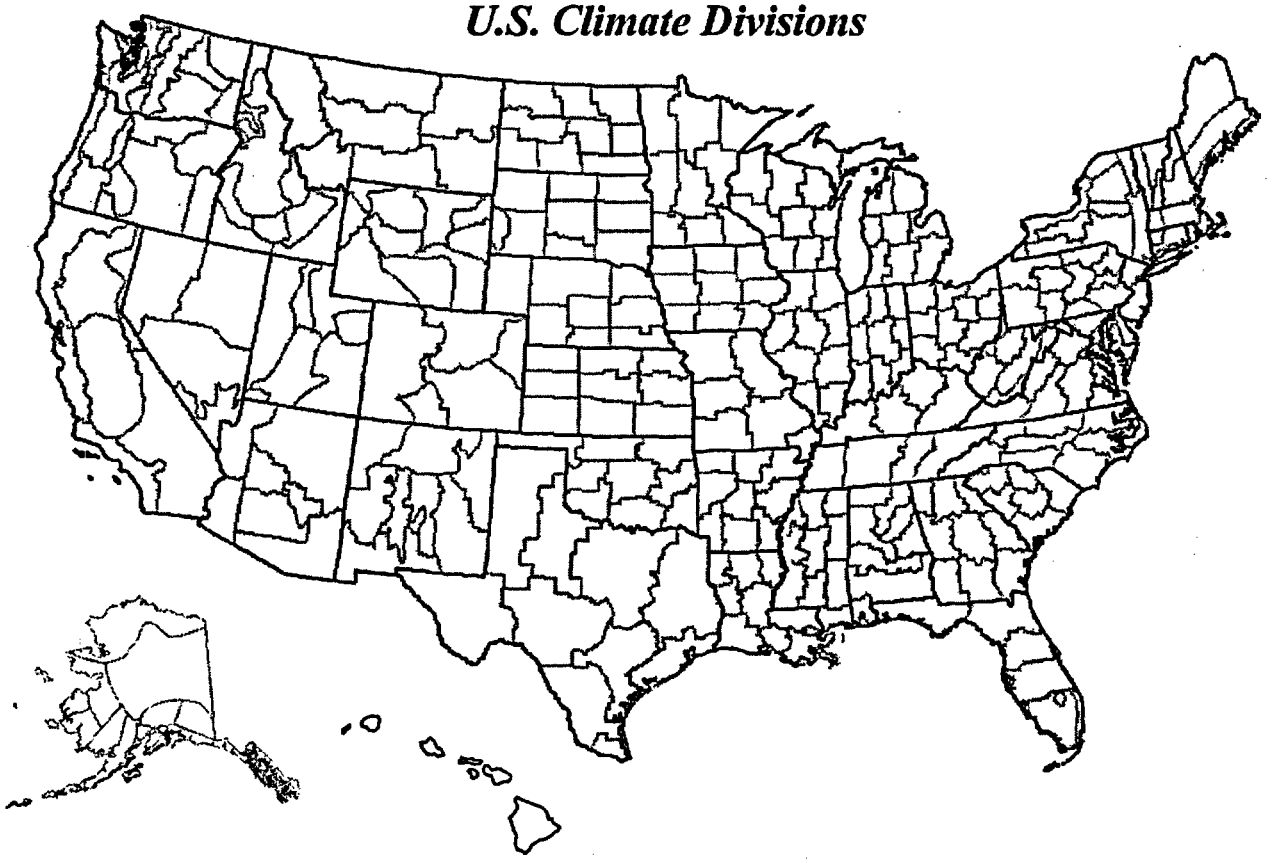
CLIMATOGRAPHY OF THE UNITED STATES NO. 85

Divisional Normals and Standard Deviations of Temperature, Precipitation, and Heating and Cooling Degree Days

1971 – 2000 (and previous normals periods)

Section 2: Precipitation

U.S. Climate Divisions

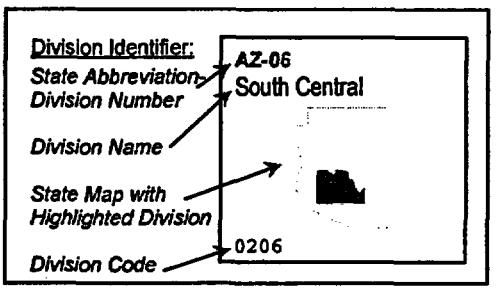


NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, NC

Product Description:
This Climatography includes normals and standard deviations for the five 30-year normals periods and the 70-year period between 1931-2000 for each climate division. A *climate division* represents a region within a state that is as climatically homogeneous as possible. The divisional data are used for research applications in hydrology, agriculture, energy supply, *etc.*, where data averaged over an area rather than for a point (station) is needed. Divisional data are used to assess large-scale climatic features with respect to a long period (*i.e.*, decadal, 30-year period, *etc.*). There are 344 climate divisions in the conterminous U.S., with additional divisions in Alaska, Hawaii, Puerto Rico, the U.S. Virgin Islands, and Pacific trust territories. Divisional boundaries generally coincide with county boundaries except in the western U.S., where they are based largely on drainage basins.

The normals and standard deviations include values for each of the 12 calendar months and an annual value. The divisional data are displayed by name and number for a state or territory. Data for the conterminous United States are presented alphabetically, followed by data for Alaska, Hawaii, Puerto Rico, the Virgin Islands, and Pacific trust territories. The data elements, presented in separate sections, include time of observation-corrected mean temperature (degrees F), precipitation (inches), and heating and cooling degree days (base 65 degrees F).

Abbreviations:
AVERAGE = Mean of Element for all Months (or Annual Values) for the Given Period of Record.
STD DEV = Standard Deviation for all Months (or Annual Values) for the Given Period of Record.
31-00 = 1931 through 2000 Long-Term Period of Record.
31-60 = 1931 through 1960 Normal Period of Record.
41-70 = 1941 through 1970 Normal Period of Record.
51-80 = 1951 through 1980 Normal Period of Record.
61-90 = 1961 through 1990 Normal Period of Record.
71-00 = 1971 through 2000 Normal Period of Record.
DB = Drainage Basin
Fthls = Foothills
Hydro = Hyrdrological Division



Computational Procedures:
Monthly divisional average temperature and total precipitation data are derived by giving equal weight to all stations reporting both temperature and precipitation within a climatological division, except for Hawaii, where any available stations (including precipitation-only stations) are used. The number of reporting stations within a division varies from month-to-month and year-to-year. Station data are *not* adjusted for inhomogeneities.

Temperature values are corrected for time of observation in the conterminous U.S. In the conterminous U.S., observers at National Weather Service cooperative stations often take one observation per day, and the ending time of the climatological day can vary from station-to-station as well as year-to-year. Differences of the 24-hour period over which maximum and minimum temperature (as well as average temperature) is reported impact the calculated monthly mean temperature. These potential biases are rectified by adjusting for varying observation times using a model (Karl *et al.*, 1986) to adjust the climate division averages such that all stations end their climatological day at midnight (*i.e.*, climatological and calendar day coincide).

Monthly divisional temperature normals and 70-year averages are computed by adding the yearly values for a given month and then dividing by the number of years in the period. The annual normal and 70-year average are computed by adding all of the monthly normal or long-term average values and then dividing by 12. Precipitation normals and long-term means are computed in a similar manner, except for the annual, which is the sum of monthly values.

Sequential monthly degree days are derived using a modification of the Rational Conversion Formulae developed by Thom (1954, 1966). This technique utilizes the historical monthly average temperature and its corresponding standard deviation (over the standardizing period 1931-2000) to compute degree days. The modified Thom technique derives the monthly degree days using a spline fit of the monthly mean temperature and standard deviations to ameliorate the month-to-month step function that is inherent with only a single monthly input. The procedure for the computation of the divisional degree day normals involves i.) Calculation of the standard deviations of the temperatures for each of the 12 calendar months over the standardizing period; ii.) Use of the modified Thom technique to compute the heating and cooling degree days for every month and year in the period 1931-2000; and iii.) Calculation of the 30-year normals and 70-year (1931-2000) long-term averages of the degree days using the procedure discussed above. Standard deviations are computed using the sum and sum square values from the corresponding period of month-year sequential values. For annual temperature, the sum and sum square of the annual values are used, while for annual precipitation, the sum and sum square of monthly values are used.

Anomalous Climate Divisions:
The following divisions are non-existent: Nebraska Division 04, Pacific Islands Division 01.
Due to lack of data, no data were computed for: Hawaii Division 07 (Island of Kahoolawe); Puerto Rico Division 07 (Outlying Islands).
Data for the climate divisions of the Virgin Islands (01/02/03) were consolidated into a single Division 04 for the entire Virgin Islands.

Supplemental Divisional Normals:
Hawaiian Hydrological Divisions: The varied topography and the locations of the observation stations in Hawaii yield highly localized precipitation patterns. These patterns are at a finer resolution than the island-by-island climate divisions. Research by NWS's Hydrometeorological Design Studies Center (NOAA, 2002) has led to the establishment of regional divisions for precipitation frequency studies. Data based on these divisions are found at the end of the tables.

Divisional Maps Supplement: Maps showing mean and standard deviations for the conterminous U.S., Alaska, and Hawaii are presented in Section 5.

References:
Karl, T.R., C.N. Williams, Jr., P.J. Young, and W.M. Wendland, 1986: "A model to estimate the time of observation bias associated with monthly mean maximum, minimum, and mean temperatures for the United States," Journal of Climate and Applied Meteorology, Vol. 25, pp. 145-160.
Guttman, N.B. and R.G. Quayle, 1995: "A Historical Perspective of U.S. Climate Divisions", Bulletin of the American Meteorological Society, Statistical descriptors of climate, Bulletin of the American Meteorological Society, Vol. 77, no. 2, pp. 293-303.
NOAA, 2002: Hawaii Precipitation Frequency Study: Update of *Technical Paper No. 43*, NOAA/NWS/Office of Hydrology.
Thom, H.C.S., 1954: "The rational relationship between heating degree days and temperature," Monthly Weather Review, Vol. 82, pp. 1-6.
Thom, H.C.S., 1966: "Normal degree days above any base by the universal truncation coefficient," Monthly Weather Review, Vol. 94, pp. 461-465.

Climate Division	Element	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
VT-01 Northeastern	31-00 AVERAGE	2.71	2.26	2.71	3.11	3.58	3.87	4.11	4.05	3.71	3.40	3.55	3.01	40.07
	STD DEV	1.27	0.88	0.96	1.10	1.53	1.46	1.36	1.47	1.53	1.51	1.20	1.31	5.96
	31-60 AVERAGE	2.49	2.19	2.53	2.98	3.37	3.84	3.95	3.37	3.69	3.25	3.25	2.58	37.49
	STD DEV	0.97	0.69	0.99	0.95	1.29	1.29	1.45	1.27	1.47	1.38	1.24	0.90	4.08
	41-70 AVERAGE	2.21	2.24	2.37	2.87	3.36	3.80	3.77	3.66	3.20	3.12	3.46	2.80	36.86
	STD DEV	0.90	0.69	0.94	0.89	1.18	1.19	1.37	1.29	1.42	1.41	1.17	1.09	4.20
	51-80 AVERAGE	2.54	2.28	2.70	3.01	3.29	3.72	3.76	3.93	3.34	3.22	3.40	3.20	38.39
	STD DEV	1.30	0.89	0.97	0.83	1.25	1.45	1.25	1.34	1.39	1.48	1.15	1.38	5.14
	61-90 AVERAGE	2.52	2.29	2.73	3.09	3.71	3.89	3.94	4.50	3.45	3.43	3.81	3.40	40.76
	STD DEV	1.40	1.07	0.96	0.92	1.79	1.49	1.07	1.40	1.47	1.56	1.26	1.54	6.54
	71-00 AVERAGE	3.25	2.40	3.08	3.26	3.91	4.09	4.39	4.73	4.09	3.79	3.83	3.36	44.18
4301	STD DEV	1.46	1.08	0.77	1.29	1.84	1.75	1.30	1.54	1.59	1.59	1.12	1.57	5.75
VT-02 Western	31-00 AVERAGE	2.41	1.97	2.56	3.04	3.44	3.61	3.98	3.89	3.65	3.13	3.25	2.63	37.56
	STD DEV	1.11	0.80	0.86	1.05	1.38	1.35	1.25	1.39	1.49	1.39	1.16	1.22	4.53
	31-60 AVERAGE	2.52	2.12	2.63	3.05	3.43	3.73	4.12	3.39	3.69	3.11	3.15	2.54	37.48
	STD DEV	0.89	0.73	0.98	1.03	1.28	1.29	1.34	1.60	1.53	1.29	1.29	1.09	3.74
	41-70 AVERAGE	2.22	2.07	2.40	3.04	3.43	3.55	3.79	3.68	3.32	2.94	3.31	2.69	36.44
	STD DEV	0.87	0.71	0.96	0.97	1.17	1.19	1.13	1.57	1.33	1.25	1.27	1.16	4.23
	51-80 AVERAGE	2.33	2.04	2.56	3.03	3.28	3.59	3.63	3.97	3.42	2.98	3.16	2.88	36.87
	STD DEV	1.17	0.83	0.92	0.75	1.23	1.28	1.17	1.40	1.24	1.33	1.21	1.34	4.45
	61-90 AVERAGE	2.07	1.89	2.43	2.95	3.46	3.57	3.69	4.38	3.42	3.09	3.39	2.79	37.13
	STD DEV	1.18	0.92	0.77	0.91	1.55	1.20	1.06	1.07	1.38	1.40	1.11	1.38	5.22
	71-00 AVERAGE	2.54	1.90	2.65	3.04	3.56	3.68	4.07	4.29	3.88	3.37	3.36	2.65	38.99
4302	STD DEV	1.34	0.95	0.61	1.16	1.60	1.56	1.26	1.14	1.48	1.56	1.03	1.42	4.93
VT-03 Southeastern	31-00 AVERAGE	3.54	2.97	3.69	3.82	3.91	3.81	3.88	3.71	3.79	3.52	4.12	3.67	44.43
	STD DEV	1.65	1.23	1.48	1.43	1.90	1.75	1.58	1.72	1.83	1.87	1.63	1.67	5.76
	31-60 AVERAGE	3.64	3.00	3.73	3.88	3.80	3.89	4.08	3.36	4.01	3.37	4.09	3.50	44.35
	STD DEV	1.37	0.79	1.75	1.29	1.70	1.29	1.59	1.79	2.00	1.86	1.71	1.47	4.98
	41-70 AVERAGE	3.07	3.03	3.39	3.61	3.82	3.59	3.57	3.30	3.51	3.21	4.23	3.66	41.99
	STD DEV	1.37	0.84	1.40	1.25	1.58	1.37	1.28	1.59	1.58	1.78	1.59	1.48	5.34
	51-80 AVERAGE	3.35	2.99	3.71	3.81	3.75	3.55	3.47	3.80	3.65	3.56	4.03	3.96	43.63
	STD DEV	1.91	1.03	1.43	1.17	1.61	1.54	1.29	1.64	1.64	1.90	1.62	1.82	6.45
	61-90 AVERAGE	3.22	3.12	3.52	3.79	4.11	3.74	3.64	4.02	3.49	3.59	4.11	3.91	44.26
	STD DEV	1.93	1.63	1.32	1.39	2.26	1.79	1.54	1.55	1.66	1.71	1.72	1.91	6.89
	71-00 AVERAGE	3.82	2.94	3.87	3.86	4.22	3.97	3.95	4.13	3.78	3.91	4.14	3.76	46.35
4303	STD DEV	1.88	1.64	1.28	1.61	2.21	2.17	1.64	1.84	1.76	1.96	1.51	1.93	5.81
VA-01 Tidewater	31-00 AVERAGE	3.61	3.17	3.89	3.12	3.70	3.63	4.97	4.80	4.02	3.14	3.01	3.08	44.14
	STD DEV	1.54	1.24	1.53	1.15	1.56	1.35	1.97	2.27	2.55	1.74	1.55	1.36	6.38
	31-60 AVERAGE	3.37	3.02	3.53	3.23	3.61	3.57	5.41	5.37	3.88	3.06	2.98	2.84	43.87
	STD DEV	1.65	1.13	1.15	1.06	1.68	1.26	2.23	2.55	2.05	1.69	1.54	1.24	5.77
	41-70 AVERAGE	3.08	3.12	3.54	2.82	3.41	3.70	5.02	4.95	3.68	2.97	2.94	3.15	42.38
	STD DEV	1.03	1.15	1.17	0.98	1.67	1.34	2.25	2.33	1.69	1.68	1.65	1.30	6.27
	51-80 AVERAGE	3.51	3.23	3.93	2.92	3.70	3.70	4.52	4.72	3.94	3.39	3.03	3.28	43.87
	STD DEV	1.34	1.17	1.20	0.98	1.55	1.51	1.76	2.13	2.42	1.99	1.62	1.30	6.75
	61-90 AVERAGE	3.62	3.36	3.89	2.99	3.89	3.73	4.43	4.38	3.81	3.15	3.10	3.30	43.65
	STD DEV	1.48	1.14	1.60	1.30	1.50	1.52	1.53	1.78	2.36	1.82	1.61	1.48	7.01
	71-00 AVERAGE	3.97	3.28	4.36	3.21	4.02	3.48	4.66	4.44	4.37	3.47	3.14	3.23	45.63
4401	STD DEV	1.55	1.37	1.86	1.25	1.40	1.34	1.77	2.00	3.18	1.78	1.51	1.44	6.65
VA-02 Eastern Piedmont	31-00 AVERAGE	3.55	3.11	3.89	3.30	3.78	3.65	4.63	4.30	3.68	3.27	3.17	3.16	43.49
	STD DEV	1.73	1.33	1.61	1.47	1.55	1.60	1.89	2.18	2.34	2.12	1.84	1.46	6.48
	31-60 AVERAGE	3.51	2.97	3.71	3.53	3.69	3.67	5.09	4.78	3.64	2.92	3.00	3.09	43.60
	STD DEV	1.88	1.11	1.25	1.43	1.59	1.50	2.13	2.70	2.12	1.70	1.73	1.30	5.74
	41-70 AVERAGE	2.95	3.03	3.59	3.04	3.45	3.51	4.74	4.38	3.53	2.86	3.01	3.26	41.35
	STD DEV	1.16	1.19	1.15	1.09	1.43	1.34	2.14	2.36	1.90	1.47	1.83	1.48	6.31
	51-80 AVERAGE	3.32	3.19	3.76	3.09	3.66	3.66	4.14	4.36	3.56	3.69	3.15	3.30	42.88
	STD DEV	1.68	1.50	1.28	1.10	1.56	1.67	1.84	2.09	2.20	2.50	1.78	1.62	7.40
	61-90 AVERAGE	3.36	3.26	3.74	3.08	3.98	3.63	4.20	4.17	3.41	3.77	3.42	3.25	43.27
	STD DEV	1.69	1.47	1.71	1.56	1.59	1.77	1.67	1.70	2.31	2.45	2.07	1.68	7.67
	71-00 AVERAGE	3.84	3.99	4.16	3.33	4.13	3.58	4.36	3.93	4.03	3.85	3.42	3.18	45.00
4402	STD DEV	1.68	1.56	2.01	1.60	1.53	1.74	1.70	1.65	2.72	2.51	1.92	1.57	6.56
VA-03 Western Piedmont	31-00 AVERAGE	3.52	3.18	4.03	3.56	4.04	3.91	4.70	4.24	4.07	3.39	3.12	3.29	45.05
	STD DEV	1.73	1.40	1.73	1.48	1.64	1.86	1.59	2.19	3.00	2.41	1.75	1.53	6.71
	31-60 AVERAGE	3.42	3.04	3.94	3.68	3.96	4.08	4.82	4.63	4.07	3.11	2.91	3.32	44.98
	STD DEV	1.77	1.31	1.45	1.14	1.57	1.49	1.49	2.63	2.99	2.29	1.76	1.37	6.26
	41-70 AVERAGE	2.98	3.13	3.83	3.33	3.80	3.77	4.58	4.32	4.07	3.06	2.89	3.32	43.08
	STD DEV	1.15	1.30	1.26	1.18	1.46	1.70	1.37	2.23	2.75	1.69	1.69	1.58	6.06
	51-80 AVERAGE	3.29	3.27	4.12	3.49	3.91	3.77	4.21	4.08	3.82	3.65	3.02	3.28	43.91
	STD DEV	1.63	1.50	1.57	1.24	1.54	1.85	1.32	1.73	2.46	2.40	1.56	1.71	6.55
	61-90 AVERAGE	3.22	3.30	3.86	3.43	4.25	3.66	4.56	4.11	3.74	4.02	3.35	3.26	44.76
	STD DEV	1.67	1.49	1.78	1.80	1.69	2.03	1.66	1.89	2.71	2.56	1.89	1.76	7.53
	71-00 AVERAGE	3.84	3.29	4.23	3.73	4.39	3.95	4.63	3.81	4.38	3.76	3.35	3.25	46.61
4403	STD DEV	1.82	1.51	2.13	1.82	1.84	2.17	1.79	1.75	3.38	2.73	1.78	1.61	6.98

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Southeast Regional Climate Center

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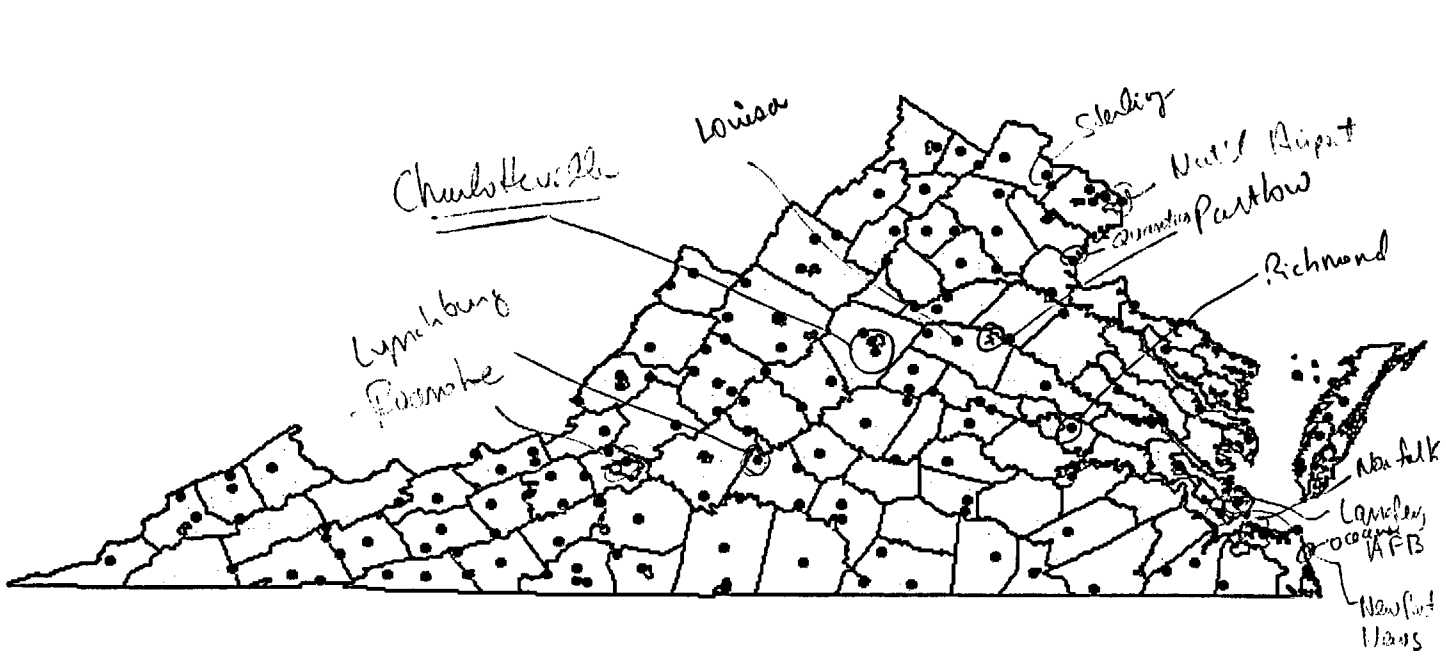

Click on any of the stations above or select a location from the list below to view historical climate summaries for that site.

ABINGDON 3 S	ELKWOOD 7 SE	PALMYRA 2
ALLISONIA 2 SSE	EMPORIA 1 WNW	PARTLOW 3 WNW
ALTAVISTA	FALLS CHURCH 2 SW	PEDLAR DAM
AMELIA 4 SW	FARMVILLE 2 N	PENNINGTON GAP 1 W

Station List

57 station(s) found in Division 02 (Eastern Piedmont), VA, USA.

Access Digital ASCII Data For This Group of Stations.
Select individual station below to access data for that station.
NCDC May Not Have Received Any Data for Some of these Stations.

Station Name - City, State or Province, Country - County	Period of Record		COOP ID	WBAN	Call Sign /ICS	WMO ID	Type
Alberta - Alberta, VA, United States - Brunswick County	NO DATA AVAILABLE ON LINE (click for additional details)		440079	.	.	.	COOP
Alberta 5 N - Alberta, VA, United States - Brunswick County	NO DATA AVAILABLE ON LINE (click for additional details)		440079	.	.	.	COOP
Amelia 3 SE - VA, United States - Amelia County	01 Feb 1976	30 Sep 1980	440187	.	.	.	COOP
Amelia 4 SW - VA, United States - Amelia County	01 Sep 1980	01 May 2003	440187	.	.	.	COOP
Amelia 8 NE - VA, United States - Amelia County	NO DATA AVAILABLE ON LINE (click for additional details)		440188	.	.	.	COOP
Amelia Court House - Amelia Court House, VA, United States - Amelia County	01 Oct 1969	28 Feb 1976	440187	.	.	.	COOP
Ashland - Ashland, VA, United States - Hanover County	01 Aug 1948	Present	440327	.	.	.	COOP
Blackstone - Blackstone, VA, United States - Nottoway County	01 Nov 1941	Present	.	13726	BKT	.	FAA
Blackstone Water Works - Blackstone, VA, United States - Nottoway County	01 Nov 1951	09 Apr 1974	440778	.	.	.	COOP
Bowling Green - Bowling Green, VA, United States - Caroline County	01 Mar 1950	30 Jun 1962	440937	.	.	.	COOP
Bremo Bluff - VA, United States - Fluvanna County	01 Aug 1948	Present	440993	.	.	.	COOP
Buckingham - Buckingham, VA, United States	01 Nov 1948	Present	441136	.	.	.	COOP

- Buckingham County							
Camp Pickett - VA, United States - Nottoway County	01 Aug 1972	Present	441322	.	.	.	COOP
Cartersville - Cartersville, VA, United States - Goochland County	NO DATA AVAILABLE ON LINE (click for additional details)		441427	.	.	.	COOP
Chase City - Chase City, VA, United States - Mecklenburg County	01 Dec 1949	31 Aug 1950	441606	.	.	.	COOP
Chase City - Chase City, VA, United States - Mecklenburg County	01 Sep 1950	Present	441606	.	.	.	COOP
Chatham 4 N - Chatham, VA, United States - Pittsylvania County	01 Aug 1948	31 Dec 1949	441614	.	.	.	COOP
Clarksville - Clarksville, VA, United States - Mecklenburg County	01 Aug 1948	Present	441746	.	.	.	COOP
Columbia 2sse - VA, United States - Goochland County	01 Aug 1948	01 Apr 1986	441929	.	.	.	COOP
Columbia River - VA, United States	NO DATA AVAILABLE ON LINE (click for additional details)		441936	.	.	.	COOP
Corbin - VA, United States - Caroline County	01 Jan 1959	Present	442009	.	.	.	COOP
Crozier - VA, United States - Goochland County	01 Aug 1948	Present	442142	.	.	.	COOP
Cumberland - Cumberland, VA, United States - Cumberland County	01 Apr 1971	01 Jan 1995	442160	.	.	.	COOP
Farmville 2 N - Farmville, VA, United States - Cumberland County	01 Aug 1948	Present	442941	.	.	.	COOP
Farmville River - Farmville, VA, United States - Cumberland County	NO DATA AVAILABLE ON LINE (click for additional details)		442940	.	.	.	COOP
Gordonsville - Gordonsville, VA, United States - Orange County	01 Dec 1936	30 Apr 1961	443462	13732	.	.	COOP FAA
Gordonsville 3 S - Gordonsville, VA, United States - Louisa County	01 Jun 1961	01 Jun 2003	443466	.	.	.	COOP
Greenbay 2 N - VA, United States - Prince Edward County	NO DATA AVAILABLE ON LINE (click for additional details)		443565	.	.	.	COOP
John H Kerr Dam - VA, United States	01 Aug 1948	Present	444414	.	.	.	COOP

- Mecklenburg County							
Keysville 2 S - Keysville, VA, United States - Charlotte County	01 Aug 1976	Present	444568	.	.	.	COOP
Lake Chesdin - VA, United States - Chesterfield County	NO DATA AVAILABLE ON LINE (click for additional details)		444686	.	.	.	COOP
Lawrenceville - Lawrenceville, VA, United States - Brunswick County	NO DATA AVAILABLE ON LINE (click for additional details)		444761	.	.	.	COOP
Lawrenceville 3 E - Lawrenceville, VA, United States - Brunswick County	01 Aug 1989	Present	444768	.	.	.	COOP
Lawrenceville 5 W - Lawrenceville, VA, United States - Brunswick County	01 Aug 1948	01 Aug 1989	444768	.	.	.	COOP
Lee Exp Forest - VA, United States	01 Aug 1948	31 Dec 1954	444802	.	.	.	COOP
Louisa - Louisa, VA, United States - Louisa County	01 Aug 1948	Present	445050	.	.	.	COOP
Matoaca - VA, United States - Chesterfield County	NO DATA AVAILABLE ON LINE (click for additional details)		445341	.	.	.	COOP
Mattoax (river) - VA, United States - Amelia County	NO DATA AVAILABLE ON LINE (click for additional details)		445344	.	.	.	COOP
Montpelier - VA, United States	NO DATA AVAILABLE ON LINE (click for additional details)		445708	.	.	.	COOP
New Canton - New Canton, VA, United States - Buckingham County	01 Aug 1948	31 Dec 1976	446004	.	.	.	COOP
Palmyra - Palmyra, VA, United States - Fluvanna County	01 Dec 1956	30 Apr 1957	446490	.	.	.	COOP
Palmyra 1 E - Palmyra, VA, United States - Fluvanna County	01 Apr 1957	Present	446491	.	.	.	COOP
Palmyra River - Palmyra, VA, United States - Fluvanna County	NO DATA AVAILABLE ON LINE (click for additional details)		446493	.	.	.	COOP
Pamplin City 1 SE - Pamplin, VA, United States - Prince Edward County	NO DATA AVAILABLE ON LINE (click for additional details)		446499	.	.	.	COOP
Partlow 3 WNW - VA, United States - Spotsylvania County	01 May 1952	31 Dec 1976	446533	.	.	.	COOP

Petersburg - Petersburg, VA, United States - Petersburg County	01 Jun 1979	Present	446656	.	.	.	COOP
Powhatan - Powhatan, VA, United States - Powhatan County	01 Oct 1950	Present	446906	.	.	.	COOP
Rawlings River - VA, United States - Brunswick County	NO DATA AVAILABLE ON LINE (click for additional details)		447083	.	.	.	COOP
Richmond Chimborazo - Richmond, VA, United States - Richmond (city) County	01 Oct 1897	16 Jul 1992	447206	13780	.	.	COOP
Richmond City Locks - Richmond, VA, United States - Richmond (city) County	01 Aug 1948	Present	447196	.	.	.	COOP
Richmond Civic Center - Richmond, VA, United States - Richmond County	NO DATA AVAILABLE ON LINE (click for additional details)		447197	.	.	.	COOP
Richmond International Airport - Richmond, VA, United States - Henrico County	01 Aug 1928	Present	447201	13740	RIC /KRIC	72401	ASOS ASOS-NWS COOP
Richmond Three Chopt - Richmond, VA, United States - Henrico County	NO DATA AVAILABLE ON LINE (click for additional details)		447209	.	.	.	COOP
Richmond Westham Gage - Richmond, VA, United States - Henrico County	NO DATA AVAILABLE ON LINE (click for additional details)		447199	.	.	.	COOP
Sandston - Sandston, VA, United States - Henrico County	01 Apr 1999	Present	447541	.	.	.	COOP
Westbrook Sanatorium - VA, United States	01 Aug 1948	31 Dec 1948	448984	.	.	.	COOP
Winterpock 4 W - Winterpock, VA, United States - Chesterfield County	01 Dec 1972	Present	449213	.	.	.	COOP

Access Digital ASCII Data For This Group of Stations

The following data can be selected for the stations listed above. Please note that data availability is determined by the data collected at any given station.

Notice: There is a limit (around 165) to the number of stations that can be passed into the CDO system using this method. If you receive an error message, you may need to access the CDO directly at http://cdo.ncdc.noaa.gov/.

IMPORTANT NOTE: These files may or may not contain column headers. In order to use these files, you will need to import them into a spreadsheet or database package for presentation. Please do not order these data if you do not know what a Digital ASCII File is. A sample Digital ASCII File is available for viewing but content varies a great deal depending on your request.

Get **15 Minute Precipitation Data** ***(TD3260, 7 Station Coop IDs)***

Get **Hourly Precipitation Data** ***(TD3240, 10 Stations)***

Get **Daily Data** ***(TD3200/10, 44 Stations)***

Get **Monthly Data** ***(TD3220, 41 Stations)***

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Station List

14 station(s) found within approximately 25 miles (40.23 kilometers) of Partlow 3 WNW, VA, United States (38°03'N / 77°42'W).

Access Digital ASCII Data For This Group of Stations.
Select individual station below to access data for that station.
NCDC May Not Have Received Any Data for Some of these Stations.

Station Name - City, State or Province, Country - County Approximate Distance	Period of Record		COOP ID	WBAN	Call Sign /ICS	WMO ID	Type
Louisa - Louisa, VA, United States - Louisa County 16.32 miles (26.27 kilometers)	01 Aug 1948	Present	445050	.	.	.	COOP
Montpelier - VA, United States 17.30 miles (27.84 kilometers)	NO DATA AVAILABLE ON LINE (click for additional details)		445708	.	.	.	COOP
Milford - Milford, VA, United States - Caroline County 18.18 miles (29.25 kilometers)	NO DATA AVAILABLE ON LINE (click for additional details)		.	.	.	.	A
Bowling Green - Bowling Green, VA, United States - Caroline County 19.05 miles (30.65 kilometers)	01 Mar 1950	30 Jun 1962	440937	.	.	.	COOP
Corbin - VA, United States - Caroline County 20.87 miles (33.59 kilometers)	01 Jan 1959	Present	442009	.	.	.	COOP
Lake Of The Woods - VA, United States - Orange County 20.90 miles (33.64 kilometers)	01 Oct 1969	01 Oct 2001	444692	.	.	.	COOP
Fredericksburg Sewage - Fredericksburg, VA, United States - Fredericksburg County 21.08 miles (33.92 kilometers)	15 Feb 1993	Present	443204	.	.	.	COOP
Fredericksburg 2 - Fredericksburg, VA, United States - Spotsylvania County 21.42 miles (34.48 kilometers)	01 Aug 1948	10 Nov 1992	443200	.	.	.	COOP
Fredericksburg Embry Plant - Fredericksburg, VA, United States - Spotsylvania County 21.42 miles (34.48 kilometers)	01 Aug 1948	20 Aug 1969	443197	.	.	.	COOP
Fredericksburg - Fredericksburg, VA, United States - Spotsylvania County 22.36 miles (35.99 kilometers)	NO DATA AVAILABLE ON LINE (click for additional details)		443188	.	.	.	COOP

Fredericksburg National Pk - Fredericksburg, VA, United States - Spotsylvania County 22.89 miles (36.83 kilometers)	01 Sep 1978	01 Apr 1997	443192	.	.	.	COOP
Ashland - Ashland, VA, United States - Hanover County 23.86 miles (38.40 kilometers)	01 Aug 1948	Present	440327	.	.	.	COOP
Richardsville - VA, United States - Culpeper County 24.25 miles (39.03 kilometers)	01 Apr 1984	01 Apr 1987	447164	.	.	.	COOP
Gordonsville - Gordonsville, VA, United States - Orange County 24.51 miles (39.44 kilometers)	01 Dec 1936	30 Apr 1961	443462	13732	.	.	COOP FAA

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The following data can be selected for the stations listed above. Please note that data availability is determined by the data collected at any given station.

Notice: There is a limit (around 165) to the number of stations that can be passed into the CDO system using this method. If you receive an error message, you may need to access the CDO directly at http://cdo.ncdc.noaa.gov/.

IMPORTANT NOTE: These files may or may not contain column headers. In order to use these files, you will need to import them into a spreadsheet or database package for presentation. Please do not order these data if you do not know what a Digital ASCII File is. A sample Digital ASCII File is available for viewing but content varies a great deal depending on your request.

Get **15 Minute Precipitation Data** ***(TD3260, 3 Station Coop IDs)***

Get **Hourly Precipitation Data** ***(TD3240, 5 Stations)***

Get **Daily Data** ***(TD3200/10, 11 Stations)***

Get **Monthly Data** ***(TD3220, 11 Stations)***

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Partlow 3 WNW

VA, United States

List Stations in Division VA-02
List Stations in Spotsylvania County
List Stations within 5, 10, 25, or 50 miles

Type* : COOP
Call Sign/ICS* :
WBAN* :
COOP ID* : 446533
Climate Division* : VA-02 - Eastern Piedmont
WMO ID* :
In Service* : 01 May 1952 to 31 Dec 1976
Elevation* : 75.9m (249.0') above s/l
Lat/Lon* : 38°03'N / 77°42'W
County* : Spotsylvania

5.0 miles

- Data Inventories
- DATA
- Station History
- State Climatologist
- Regional Climate Center

Information at Other Sites
- National Weather Service
  - Eastern Region Headquarters
  - Local Weather Conditions
  - Local Weather Forecast
- Current Radar
- Current Satellite
- Sunrise/Sunset

* *Disclaimer*
* *List of NCDC Datasets*
* *Please report any Data Errors found.*
* *Note to webmasters: you can link directly to this page.*

Data Inventories

Please note that additional data (digital and non-digital) may be available for this station. Contact NCDC if additional details are needed.

Click on the following where available:
- *DAT to obtain digital ascii data (charges may apply),*
  Please do not order these data if you do not know what a Digital ASCII File is.
- *INV to view inventory, or*
- *DOC to view documentation*

Surface
DAT INV DOC 3200 -Cooperative Summary Of The Day
DAT INV DOC SOD -Daily Surface Data (TD3200/3210 combined)
DAT INV DOC 3220 -Summary Of The Month (SOM) Cooperative

DATA

Additional data products may be available for this station. If you can't find what you are looking for here, please try our Most Popular Products page.

Forms, Publications, and Web Pages
Graphs and Other Images
CD-ROMs
Digital ASCII Files

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NOTE:
To print data frame (right side), click on right frame before printing.

1971 - 2000

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1971-2000 Normals (~3 KB)

1961 - 1990

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1961-1990 Normals (~3 KB)

Period of Record

- Station Metadata
- Station Metadata Graphics

General Climate Summary Tables
- Temperature
- Precipitation
- Heating Degree Days
- Cooling Degree Days
- Growing Degree Days

Temperature
- Daily Extremes and Averages
- Spring 'Freeze' Probabilities
- Fall 'Freeze' Probabilities
- 'Freeze Free' Probabilities
- Monthly Temperature Listings
  Average

PARTLOW 3 WNW, VIRGINIA (446533)

Period of Record Monthly Climate Summary

Period of Record : 6/ 1/1952 to 12/31/1976

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	46.5	49.6	58.4	70.7	78.1	85.1	89.0	87.5	81.2	71.0	60.4	49.4	68.9
Average Min. Temperature (F)	20.6	23.8	31.5	41.0	49.5	58.1	62.4	61.7	53.4	41.0	31.4	24.0	41.5
Average Total Precipitation (in.)	2.85	3.60	4.10	3.18	4.20	3.84	4.34	5.08	3.96	3.83	3.10	3.13	45.20
Average Total SnowFall (in.)	5.7	4.3	2.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.7	16.6
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 97.5% Min. Temp.: 93.7% Precipitation: 96.9% Snowfall: 93.1% Snow Depth: 86.8%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

PARTLOW 3 WNW, VIRGINIA

Period of Record General Climate Summary - Temperature

Station:(446533) PARTLOW 3 WNW															
From Year=1952 To Year=1976															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	46.5	20.6	33.4	76	29/1975	-16	18/1957	40.4	53	26.4	70	0.0	2.7	25.8	1.5
February	49.6	23.8	36.6	78	11/1959	-8	01/1965	42.8	54	29.5	58	0.0	1.1	22.2	0.4
March	58.4	31.5	44.9	88	30/1963	0	07/1960	49.9	74	34.7	60	0.0	0.2	16.9	0.1
April	70.7	41.0	55.9	96	26/1960	18	17/1962	59.9	60	50.7	66	0.8	0.0	7.5	0.0
May	78.1	49.5	63.8	96	09/1963	23	11/1966	70.0	53	58.9	67	2.7	0.0	1.4	0.0
June	85.1	58.1	71.7	100	27/1952	34	03/1966	74.9	52	67.9	55	9.5	0.0	0.0	0.0
July	89.0	62.4	75.7	104	30/1953	42	07/1970	79.7	55	72.1	62	15.0	0.0	0.0	0.0
August	87.5	61.7	74.6	106	31/1953	40	30/1965	77.5	59	71.9	69	12.2	0.0	0.0	0.0
September	81.2	53.4	67.4	106	02/1953	25	29/1970	72.0	61	62.3	67	5.4	0.0	0.3	0.0
October	71.0	41.0	56.1	95	04/1954	14	27/1962	63.9	71	50.9	64	0.4	0.0	8.1	0.0
November	60.4	31.4	45.9	86	02/1974	-3	25/1970	50.9	75	42.0	69	0.0	0.0	17.1	0.0
December	49.4	24.0	36.7	76	25/1955	-9	12/1962	48.2	56	28.1	63	0.0	1.0	23.3	0.7
Annual	68.9	41.5	55.2	106	19530831	-16	19570118	57.5	53	53.3	66	45.8	5.1	122.6	2.8
Winter	48.5	22.8	35.6	78	19590211	-16	19570118	41.1	57	30.7	70	0.0	4.9	71.3	2.6
Spring	69.1	40.7	54.9	96	19600426	0	19600307	58.0	55	51.3	70	3.4	0.2	25.8	0.1
Summer	87.2	60.8	74.0	106	19530831	34	19660603	76.0	52	71.7	62	36.7	0.0	0.0	0.0
Fall	70.9	42.0	56.5	106	19530902	-3	19701125	60.4	71	53.0	67	5.7	0.0	25.6	0.0

Table updated on Feb 11,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

PARTLOW 3 WNW, VIRGINIA

Period of Record General Climate Summary - Precipitation

Station:(446533) PARTLOW 3 WNW														
From Year=1952 To Year=1976														
	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	2.85	6.75	66	0.20	54	2.10	06/1962	7	6	2	1	5.7	41.0	66
February	3.60	7.45	71	0.45	63	2.60	07/1965	8	7	3	1	4.3	19.0	67
March	4.10	9.95	75	1.45	66	2.25	24/1969	8	8	3	1	2.9	24.0	62
April	3.18	6.80	73	0.55	63	2.00	27/1973	7	6	2	1	0.2	4.0	71
May	4.20	9.10	72	0.45	64	2.10	17/1960	9	9	3	1	0.0	0.0	53
June	3.84	9.95	72	1.45	70	4.40	22/1972	7	7	3	1	0.0	0.0	52
July	4.34	11.70	56	0.38	57	3.90	20/1956	8	7	3	2	0.0	0.0	52
August	5.08	12.20	55	1.25	66	5.45	12/1955	8	8	3	2	0.0	0.0	52
September	3.96	16.20	75	0.29	54	4.30	25/1975	6	6	2	1	0.0	0.0	52
October	3.83	11.45	76	0.10	63	4.10	06/1957	5	5	3	1	0.0	0.0	52
November	3.10	7.25	72	0.00	65	3.40	27/1971	5	5	2	1	0.8	8.0	53
December	3.13	8.15	69	0.30	65	3.05	29/1958	5	5	2	1	2.7	11.0	60
Annual	45.20	72.25	72	28.75	63	5.45	19550812	83	80	32	12	16.6	54.0	62
Winter	9.57	15.25	71	3.15	63	3.05	19581229	20	19	7	2	12.7	47.0	66
Spring	11.48	18.80	75	5.70	63	2.25	19690324	24	23	8	3	3.1	24.0	62
Summer	13.26	22.05	69	4.58	53	5.45	19550812	23	22	9	4	0.0	0.0	52
Fall	10.88	20.00	75	4.85	65	4.30	19750925	16	16	7	3	0.8	8.0	53

Table updated on Feb 11,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
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Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@cirrus.dnr.state.sc.us

PARTLOW 3 WNW, VIRGINIA

Period of Record General Climate Summary - Temperature

Station:(446533) PARTLOW 3 WNW															
From Year=1952 To Year=1976															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	46.5	20.6	33.4	76	29/1975	-16	18/1957	40.4	53	26.4	70	0.0	2.7	25.8	1.5
February	49.6	23.8	36.6	78	11/1959	-8	01/1965	42.8	54	29.5	58	0.0	1.1	22.2	0.4
March	58.4	31.5	44.9	88	30/1963	0	07/1960	49.9	74	34.7	60	0.0	0.2	16.9	0.1
April	70.7	41.0	55.9	96	26/1960	18	17/1962	59.9	60	50.7	66	0.8	0.0	7.5	0.0
May	78.1	49.5	63.8	96	09/1963	23	11/1966	70.0	53	58.9	67	2.7	0.0	1.4	0.0
June	85.1	58.1	71.7	100	27/1952	34	03/1966	74.9	52	67.9	55	9.5	0.0	0.0	0.0
July	89.0	62.4	75.7	104	30/1953	42	07/1970	79.7	55	72.1	62	15.0	0.0	0.0	0.0
August	87.5	61.7	74.6	106	31/1953	40	30/1965	77.5	59	71.9	69	12.2	0.0	0.0	0.0
September	81.2	53.4	67.4	106	02/1953	25	29/1970	72.0	61	62.3	67	5.4	0.0	0.3	0.0
October	71.0	41.0	56.1	95	04/1954	14	27/1962	63.9	71	50.9	64	0.4	0.0	8.1	0.0
November	60.4	31.4	45.9	86	02/1974	-3	25/1970	50.9	75	42.0	69	0.0	0.0	17.1	0.0
December	49.4	24.0	36.7	76	25/1955	-9	12/1962	48.2	56	28.1	63	0.0	1.0	23.3	0.7
Annual	68.9	41.5	55.2	106	19530831	-16	19570118	57.5	53	53.3	66	45.8	5.1	122.6	2.8

Winter	48.5	22.8	35.6	78	19590211	-16	19570118	41.1	57	30.7	70	0.0	4.9	71.3	2.6
Spring	69.1	40.7	54.9	96	19600426	0	19600307	58.0	55	51.3	70	3.4	0.2	25.8	0.1
Summer	87.2	60.8	74.0	106	19530831	34	19660603	76.0	52	71.7	62	36.7	0.0	0.0	0.0
Fall	70.9	42.0	56.5	106	19530902	-3	19701125	60.4	71	53.0	67	5.7	0.0	25.6	0.0

Table updated on Nov 3,

For monthly and annual means, thresholds, and sums:

Months with 5 or more missing days are not considered

Years with 1 or more missing months are not considered

Seasons are climatological not calendar seasons

Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

PARTLOW 3 WNW, VIRGINIA

Monthly Total Snowfall (Inches)

(446533)

File last updated on Dec 9,
*** Note *** Provisional Data *** After Year/Month 197612
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR(S)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANN
1951-52	0.00z	0.00z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00	0.00
1952-53	0.00	0.00	0.00	0.00	0.00 a	0.00	0.00	0.00	8.00	0.00	0.00	0.00	8.00
1953-54	0.00	0.00	0.00	0.00	8.00	0.00	8.00	0.00	0.00	0.20	0.00	0.00	16.20
1954-55	0.00	0.00	0.00	0.00	0.00	0.00 a	5.00	2.00	0.00	0.00	0.00	0.00	7.00
1955-56	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00
1956-57	0.00	0.00	0.00	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	4.50
1957-58	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00 z	4.00 d	0.00	0.00	0.00	10.00
1958-59	0.00	0.00	0.00	0.00	0.00	2.00	3.00	0.00	0.00	0.00	0.00	0.00	5.00
1959-60	0.00	0.00	0.00	0.00	0.00	0.00 z	0.00 b	6.00	0.00 z	0.00	0.00	0.00	6.00
1960-61	0.00	0.00	0.00	0.00	0.00	11.00	0.00 z	0.00 z	0.00	0.00 z	0.00	0.00	11.00
1961-62	0.00	0.00	0.00	0.00	2.00	0.00 z	13.00	6.00	24.00	0.00	0.00	0.00	45.00
1962-63	0.00	0.00	0.00	0.00	0.00	11.00	0.00	0.00	0.00	0.00	0.00	0.00	11.00
1963-64	0.00	0.00	0.00	0.00	0.00	5.00	9.00	17.00	3.00	0.00	0.00	0.00	34.00
1964-65	0.00	0.00	0.00 a	0.00	2.00	0.00	0.00 z	0.00 z	0.00 z	0.00	0.00	0.00	2.00
1965-66	0.00	0.00	0.00	0.00	0.00	1.00	41.00	5.00	0.00	0.00	0.00	0.00	47.00
1966-67	0.00	0.00	0.00	0.00	0.00 a	0.00 d	3.00	19.00	0.00	0.00	0.00	0.00	22.00

1967-68	0.00	0.00	0.00	0.00	3.00	4.00	0.00 z	4.00	3.00	0.00	0.00	0.00	14.00
1968-69	0.00	0.00	0.00	0.00	2.00	0.00	1.00	0.00	8.00	0.00	0.00	0.00	11.00
1969-70	0.00	0.00	0.00	0.00	0.00	0.00 z	7.00 a	2.00	0.00	0.00	0.00	0.00	9.00
1970-71	0.00	0.00	0.00	0.00	0.00	0.00	14.00	4.00	10.00	4.00	0.00	0.00	32.00
1971-72	0.00	0.00	0.00	0.00	1.00	0.00	0.00	10.00	0.00	1.00	0.00	0.00	12.00
1972-73	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00 a	0.00 z	0.00	0.00	4.00
1973-74	0.00	0.00	0.00	0.00	0.00	11.00	0.00	6.00	0.00	0.00	0.00	0.00	17.00
1974-75	0.00	0.00	0.00	0.00	0.00	0.00 z	0.00 z	0.00 z	0.00 z	0.00	0.00	0.00	0.00
1975-76	0.00	0.00	0.00	0.00	0.00	0.00 z	0.00	0.00 z	1.00	0.00	0.00	0.00 z	1.00
Period of Record Statistics													
MEAN	0.00	0.00	0.00	0.00	0.75	2.68	5.72	4.26	2.90	0.24	0.00	0.00	16.34
S.D.	0.00	0.00	0.00	0.00	1.78	4.14	9.37	5.67	5.75	0.87	0.00	0.00	13.12
SKEW	0.00	0.00	0.00	0.00	3.10	1.26	2.85	1.52	2.61	3.99	0.00	0.00	1.08
MAX	0.00	0.00	0.00	0.00	8.00	11.00	41.00	19.00	24.00	4.00	0.00	0.00	47.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
NO YRS													

PARTLOW 3 WNW, VIRGINIA

Period of Record Daily Climate Summary

Daily Records for station 446533 PARTLOW 3 WNW state: va

For temperature and precipitation, multi-day accumulations
are not considered either for records or averages.
The year given is the year of latest occurrence.

Period requested -- Begin : 1/ 1/1890 -- End : 7/31/2003
Period used -- Begin : 6/ 1/1952 -- End : 12/31/1976

Cooling degree threshold = 65.00 Heating degree threshold = 65.00

AVG Multi-year unsmoothed average of the indicated quantity
HI Highest value of indicated quantity for this day of year
LO Lowest value of indicated quantity for this day of year
YR Latest year of occurrence of the extreme value
NO Number of years with data for this day of year.
Units: English (inches and degrees F)

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
1	1	46	22	73	1966	26	1959	25	22	50	1966	5	1971	0.133	21	1.00	1971	0.75	20	10.0	1971	0.0	14	0.	1976	29.7	21	0.0	21
1	2	47	23	67	1955	31	1969	22	22	45	1955	7	1957	0.011	21	0.14	1966	0.00	20	0.0	1976	0.0	14	0.	1976	30.7	22	0.0	22
1	3	47	23	63	1955	36	1974	24	21	41	1954	5	1957	0.026	21	0.29	1974	0.00	20	0.0	1976	0.0	14	0.	1976	29.4	21	0.0	21
1	4	46	23	66	1955	29	1958	22	22	45	1964	2	1970	0.092	22	0.95	1972	0.00	20	0.0	1976	0.0	14	0.	1976	30.6	22	0.0	22
1	5	45	23	63	1962	26	1968	19	22	38	1973	-1	1959	0.088	22	0.75	1971	0.00	20	0.0	1976	0.0	14	0.	1976	33.0	22	0.0	22
1	6	43	23	69	1955	24	1959	21	22	35	1966	2	1969	0.190	21	2.09	1962	0.05	19	1.0	1969	0.0	13	0.	1976	33.0	22	0.0	22
1	7	45	23	55	1961	24	1968	24	22	38	1962	8	1959	0.044	21	0.59	1970	0.32	19	6.0	1970	0.0	13	0.	1976	31.1	22	0.0	22
1	8	42	23	64	1965	22	1973	21	22	43	1965	-7	1968	0.036	21	0.39	1973	0.21	19	4.0	1973	0.0	13	0.	1976	33.7	22	0.0	22
1	9	42	22	65	1965	12	1970	20	21	40	1965	-7	1970	0.144	22	1.04	1964	0.10	20	2.0	1971	0.0	14	0.	1976	34.6	21	0.0	21
1	10	46	23	64	1960	32	1968	18	22	37	1957	-16	1970	0.102	22	0.65	1956	0.25	20	5.0	1962	0.0	14	0.	1976	33.3	22	0.0	22
1	11	44	22	68	1974	25	1962	19	21	40	1972	-7	1970	0.105	22	0.50	1965	0.15	20	3.0	1955	0.2	14	3.	1955	34.0	21	0.0	21
1	12	42	23	57	1972	28	1968	17	22	40	1956	-6	1968	0.027	22	0.50	1964	0.25	20	5.0	1964	0.0	13	0.	1976	35.6	22	0.0	22
1	13	44	23	68	1960	26	1968	18	22	46	1972	-5	1962	0.121	22	1.40	1968	0.30	20	4.0	1964	0.1	14	2.	1955	33.7	22	0.0	22
1	14	45	23	64	1953	30	1964	20	22	39	1967	5	1973	0.128	22	1.59	1958	0.00	20	0.0	1976	0.0	14	0.	1976	32.8	22	0.0	22
1	15	46	23	68	1959	22	1957	21	22	39	1959	-14	1964	0.078	22	0.45	1957	0.22	20	4.5	1957	0.0	14	0.	1976	32.0	22	0.0	22
1	16	46	23	73	1953	22	1972	20	21	46	1953	-1	1972	0.060	22	0.50	1965	0.25	20	3.0	1959	0.2	13	2.	1956	32.5	21	0.0	21
1	17	46	23	65	1973	26	1957	17	22	40	1963	1	1972	0.067	22	0.70	1970	0.10	20	2.0	1971	0.2	13	2.	1956	34.3	22	0.0	22
1	18	45	23	65	1973	28	1959	15	22	37	1969	-16	1957	0.022	22	0.39	1970	0.00	20	0.0	1976	0.0	14	0.	1976	35.1	22	0.0	22
1	19	46	23	66	1972	28	1967	19	22	43	1972	-7	1965	0.066	22	0.50	1961	0.20	20	3.0	1967	0.0	13	0.	1976	33.0	22	0.0	22
1	20	47	23	62	1959	25	1970	20	22	41	1954	-3	1967	0.052	22	0.59	1963	0.05	20	1.0	1970	0.0	13	0.	1976	31.8	22	0.0	22
1	21	49	23	70	1959	22	1970	22	22	53	1959	2	1970	0.135	22	1.40	1969	0.00	20	0.0	1976	0.0	14	0.	1976	29.9	22	0.0	22
1	22	51	23	72	1959	25	1961	22	22	38	1972	-4	1970	0.099	21	0.75	1973	0.50	20	8.0	1954	0.0	13	0.	1976	29.2	22	0.0	22
1	23	51	23	75	1967	25	1954	25	22	43	1973	-5	1970	0.110	21	1.19	1966	0.00	20	0.0	1976	0.0	13	0.	1976	27.7	22	0.0	22
1	24	49	23	75	1967	36	1970	21	21	38	1972	3	1970	0.174	21	1.90	1953	0.00	20	0.0	1976	0.0	13	0.	1976	30.6	21	0.0	21
1	25	50	23	75	1967	20	1961	26	22	49	1964	2	1961	0.094	21	1.15	1958	0.00	20	0.0	1976	0.0	13	0.	1976	27.5	22	0.0	22

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
1	26	52	22	73	1967	28	1966	25	21	41	1962	4	1968	0.093	20	0.90	1966	0.45	20	9.0	1966	0.0	14	0.	1976	26.3	21	0.0	21
1	27	48	22	72	1954	25	1961	23	21	43	1954	0	1961	0.154	21	0.59	1966	0.30	20	6.0	1966	0.0	14	0.	1976	30.2	21	0.0	21
1	28	47	23	70	1974	30	1963	20	22	42	1960	-14	1961	0.168	21	0.95	1960	0.10	20	2.0	1962	0.0	14	0.	1976	32.2	22	0.0	22
1	29	46	22	76	1975	18	1966	19	21	42	1960	-9	1966	0.049	21	0.39	1970	0.20	20	4.0	1966	0.0	14	0.	1976	33.1	21	0.0	21
1	30	49	23	71	1975	14	1966	22	21	40	1968	3	1961	0.128	21	2.00	1966	1.00	20	20.0	1966	0.0	14	0.	1976	30.5	21	0.0	21
1	31	46	23	66	1974	30	1965	19	21	47	1969	-10	1965	0.040	21	0.50	1957	0.00	20	0.0	1976	0.0	14	0.	1976	33.4	21	0.0	21
2	1	46	23	70	1967	22	1971	22	21	40	1967	-8	1965	0.112	23	0.75	1958	0.11	19	2.0	1962	0.0	13	0.	1974	31.9	21	0.0	21
2	2	45	23	73	1967	21	1961	24	21	38	1954	-5	1971	0.191	23	2.00	1973	0.00	19	0.0	1974	0.0	13	0.	1974	30.5	21	0.0	21
2	3	43	23	64	1970	25	1961	21	21	35	1969	7	1966	0.181	23	1.30	1972	0.00	19	0.0	1974	0.0	13	0.	1974	33.0	21	0.0	21
2	4	45	23	72	1962	30	1971	19	21	42	1957	2	1970	0.060	23	0.65	1956	0.11	19	2.0	1971	0.0	12	0.	1974	33.3	21	0.0	21
2	5	49	23	70	1962	36	1975	20	21	37	1962	3	1965	0.075	23	0.59	1971	0.11	19	2.0	1974	0.0	12	0.	1973	30.6	21	0.0	21
2	6	50	23	66	1965	35	1966	25	21	41	1960	2	1966	0.169	23	1.00	1956	0.00	19	0.0	1974	0.0	12	0.	1973	27.7	21	0.0	21
2	7	49	23	64	1965	32	1962	26	21	46	1965	6	1967	0.266	23	2.60	1965	0.42	19	8.0	1967	0.0	12	0.	1973	27.6	21	0.0	21
2	8	46	23	74	1965	34	1972	25	21	54	1965	-8	1967	0.138	23	2.00	1971	0.21	19	4.0	1974	0.0	12	0.	1973	29.6	21	0.0	21
2	9	47	23	62	1956	34	1962	23	21	42	1965	8	1963	0.041	21	0.39	1970	0.00	19	0.0	1974	0.0	12	0.	1973	30.2	21	0.0	21
2	10	50	23	72	1959	30	1972	25	21	51	1960	0	1958	0.092	23	0.75	1970	0.26	19	3.0	1967	0.0	12	0.	1973	27.5	21	0.0	21
2	11	50	23	78	1959	30	1973	25	21	48	1966	1	1968	0.126	23	0.70	1964	0.47	19	7.0	1964	0.2	13	2.	1955	27.4	21	0.0	21
2	12	47	23	67	1965	29	1962	23	21	51	1965	4	1968	0.120	23	0.78	1955	0.11	19	2.0	1962	0.0	13	0.	1974	30.5	21	0.0	21
2	13	48	23	68	1966	32	1968	21	21	44	1971	2	1973	0.210	23	1.75	1971	0.05	19	1.0	1960	0.0	13	0.	1974	31.4	21	0.0	21
2	14	49	23	64	1967	32	1960	21	21	48	1959	4	1955	0.094	23	0.65	1973	0.47	19	5.0	1960	0.0	12	0.	1974	30.4	21	0.0	21
2	15	50	23	77	1954	29	1958	27	21	50	1954	11	1965	0.155	23	0.90	1973	0.11	19	2.0	1964	0.0	13	0.	1974	26.8	21	0.0	21
2	16	49	23	76	1954	30	1958	24	21	58	1954	2	1963	0.060	23	0.70	1958	0.11	19	2.0	1962	0.0	13	0.	1974	28.4	21	0.1	21
2	17	48	23	70	1954	26	1958	24	21	42	1955	-2	1958	0.071	23	0.50	1972	0.47	19	5.0	1972	0.0	13	0.	1974	29.3	21	0.0	21
2	18	49	23	71	1956	20	1958	21	21	42	1956	-1	1973	0.167	23	1.19	1961	0.21	19	4.0	1967	0.0	13	0.	1974	30.1	21	0.0	21
2	19	51	23	76	1961	34	1973	25	21	48	1961	2	1968	0.120	23	0.29	1972	0.16	19	3.0	1972	0.0	13	0.	1974	27.1	21	0.0	21
2	20	49	23	67	1961	32	1959	24	21	41	1956	8	1970	0.100	23	1.40	1972	0.00	19	0.0	1974	0.0	13	0.	1974	28.6	21	0.0	21
2	21	50	23	71	1971	38	1963	19	21	34	1954	-1	1958	0.130	23	1.19	1954	0.00	19	0.0	1974	0.0	13	0.	1974	30.8	21	0.0	21
2	22	51	23	70	1974	36	1963	22	21	41	1971	-2	1968	0.051	23	0.59	1961	0.00	19	0.0	1974	0.0	13	0.	1974	29.0	21	0.0	21
2	23	51	23	65	1961	37	1972	24	21	44	1955	7	1964	0.234	23	2.34	1969	0.11	19	2.0	1972	0.0	13	0.	1974	28.4	21	0.0	21
2	24	55	23	76	1961	35	1967	25	21	41	1959	10	1970	0.088	23	0.59	1972	0.26	19	5.0	1966	0.0	13	0.	1974	25.9	21	0.0	21
2	25	53	23	70	1961	29	1967	27	21	44	1961	11	1967	0.113	23	0.70	1966	0.05	19	1.0	1964	0.0	13	0.	1974	25.5	21	0.0	21
2	26	52	23	68	1956	38	1965	28	21	51	1957	4	1967	0.165	23	1.10	1957	0.00	19	0.0	1974	0.0	13	0.	1974	25.0	21	0.0	21
2	27	56	23	74	1961	36	1963	26	21	46	1957	6	1968	0.073	23	0.95	1958	0.00	19	0.0	1974	0.0	13	0.	1974	24.5	21	0.0	21
2	28	57	23	72	1955	39	1964	31	21	43	1971	14	1970	0.134	23	1.70	1966	0.26	19	5.0	1964	0.0	13	0.	1974	21.5	21	0.0	21
2	29	54	5	76	1972	48	1964	25	5	40	1972	13	1956	0.078	5	0.39	1968	0.80	5	4.0	1968	2.0	2	4.	1968	25.8	5	0.0	5
3	1	56	24	77	1972	38	1969	29	23	55	1955	11	1970	0.116	24	0.93	1954	0.43	21	6.0	1969	0.2	19	3.	1968	22.7	23	0.0	23
3	2	56	24	78	1972	35	1960	29	23	52	1976	6	1967	0.039	24	0.45	1971	0.19	21	4.0	1953	0.0	18	0.	1976	22.3	23	0.0	23
3	3	56	24	72	1974	32	1960	30	23	49	1964	11	1962	0.153	24	1.30	1973	0.10	21	2.0	1953	0.0	18	0.	1976	22.0	23	0.0	23
3	4	56	24	81	1974	31	1960	33	23	60	1974	11	1968	0.153	24	1.19	1971	0.00	21	0.0	1976	0.0	18	0.	1976	20.8	23	0.2	23
3	5	57	24	83	1961	32	1960	32	23	53	1961	8	1960	0.127	24	1.59	1965	0.00	21	0.0	1976	0.0	19	0.	1976	20.4	23	0.1	23
3	6	58	24	82	1961	36	1960	32	22	65	1961	4	1960	0.157	24	0.79	1955	0.95	21	20.0	1962	0.0	19	0.	1976	20.5	22	0.4	22
3	7	56	24	80	1974	34	1960	30	21	54	1961	0	1960	0.110	24	1.45	1967	0.29	21	4.0	1962	0.0	19	0.	1976	22.5	21	0.1	21
3	8	56	24	83	1974	35	1960	28	23	48	1972	0	1960	0.113	24	0.90	1957	0.10	21	2.0	1953	0.1	19	2.	1953	23.3	23	0.0	23
3	9	57	24	79	1964	31	1960	27	22	48	1964	0	1960	0.055	24	0.55	1958	0.24	21	4.0	1958	0.0	18	0.	1976	23.5	22	0.0	22
3	10	57	23	77	1955	35	1975	30	23	46	1964	18	1953	0.121	24	1.10	1973	0.00	21	0.0	1976	0.0	18	0.	1976	21.0	22	0.0	22
3	11	55	23	76	1967	36	1960	30	23	55	1955	12	1972	0.100	24	0.70	1962	0.00	21	0.0	1976	0.0	18	0.	1976	22.4	22	0.0	22
3	12	58	23	75	1972	40	1974	33	23	48	1973	15	1969	0.220	24	1.90	1963	0.00	21	0.0	1976	0.0	18	0.	1976	19.7	22	0.0	22
3	13	57	24	79	1973	39	1960	30	22	49	1953	10	1960	0.095	24	0.70	1953	0.00	20	0.0	1976	0.0	18	0.	1976	21.9	22	0.0	22
3	14	60	24	80	1973	38	1968	31	23	44	1955	3	1960	0.214	24	1.80	1975	0.00	21	0.0	1976	0.0	18	0.	1976	19.8	23	0.0	23

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
3	15	59	24	76	1973	42	1960	34	23	51	1957	10	1970	0.097	24	0.70	1974	0.00	21	0.0	1976	0.0	18	0.	1976	18.5	23	0.0	23
3	16	57	23	76	1973	40	1956	32	23	55	1973	7	1970	0.126	24	0.79	1960	0.00	21	0.0	1976	0.0	18	0.	1976	20.6	22	0.0	22
3	17	58	24	77	1963	43	1961	28	23	48	1955	6	1970	0.193	24	1.70	1975	0.00	21	0.0	1976	0.0	18	0.	1976	22.2	23	0.0	23
3	18	54	23	75	1966	40	1956	32	23	47	1968	6	1967	0.109	24	0.79	1970	0.00	20	0.0	1976	0.0	18	0.	1976	21.5	22	0.0	22
3	19	58	24	72	1968	38	1958	30	23	46	1966	7	1967	0.188	24	0.85	1975	0.00	20	0.0	1976	0.0	18	0.	1976	21.1	23	0.0	23
3	20	58	24	80	1968	41	1964	33	23	51	1954	18	1971	0.287	24	1.80	1975	0.00	20	0.0	1976	0.0	18	0.	1976	20.0	23	0.0	23
3	21	58	24	86	1968	39	1964	32	23	46	1969	14	1965	0.126	24	0.85	1962	0.00	20	0.0	1976	0.0	17	0.	1976	20.3	23	0.0	23
3	22	61	24	87	1968	38	1961	33	21	55	1968	14	1956	0.147	24	0.90	1955	0.00	21	0.0	1976	0.0	17	0.	1976	18.9	21	0.3	21
3	23	62	23	84	1966	47	1961	32	23	56	1966	19	1967	0.020	24	0.29	1962	0.00	21	0.0	1976	0.0	18	0.	1976	18.4	22	0.2	22
3	24	62	24	79	1966	45	1972	32	23	49	1953	17	1973	0.210	24	2.25	1969	0.00	21	0.0	1976	0.0	18	0.	1976	18.4	23	0.0	23
3	25	61	24	83	1959	42	1972	32	23	54	1964	10	1971	0.302	24	2.09	1953	0.00	21	0.0	1976	0.0	18	0.	1976	19.2	23	0.0	23
3	26	62	24	78	1964	42	1971	34	23	62	1954	18	1974	0.088	24	1.00	1971	0.48	21	10.0	1971	0.0	17	0.	1976	17.5	23	0.2	23
3	27	62	24	80	1968	45	1958	31	23	46	1959	21	1960	0.045	24	0.70	1959	0.00	21	0.0	1976	0.0	17	0.	1976	18.3	23	0.0	23
3	28	64	24	84	1960	48	1975	33	23	47	1971	16	1969	0.023	24	0.50	1974	0.00	21	0.0	1976	0.0	17	0.	1976	16.4	23	0.0	23
3	29	63	24	84	1968	41	1956	32	23	48	1965	15	1959	0.140	24	1.19	1974	0.00	21	0.0	1976	0.0	18	0.	1976	17.6	23	0.0	23
3	30	61	24	88	1963	38	1970	38	23	60	1960	20	1970	0.077	24	0.65	1959	0.14	21	3.0	1964	0.0	18	0.	1976	16.2	23	0.3	23
3	31	62	24	79	1968	44	1958	36	23	59	1960	15	1964	0.106	24	0.90	1958	0.00	21	0.0	1976	0.0	18	0.	1976	16.6	23	0.0	23
4	1	66	23	83	1967	44	1964	35	22	53	1962	20	1956	0.147	23	1.65	1976	0.00	22	0.0	1976	0.0	22	0.	1976	14.9	22	0.0	22
4	2	68	21	88	1967	51	1964	38	21	56	1969	18	1964	0.148	23	1.19	1971	0.00	22	0.0	1976	0.0	22	0.	1976	12.8	21	0.1	21
4	3	67	21	85	1967	53	1962	37	21	54	1967	20	1972	0.058	23	0.95	1960	0.00	22	0.0	1976	0.0	22	0.	1976	13.6	21	0.3	21
4	4	66	22	88	1956	44	1975	38	21	60	1974	20	1962	0.113	23	0.59	1973	0.00	22	0.0	1976	0.0	22	0.	1976	13.2	21	0.6	21
4	5	65	22	80	1956	45	1954	35	22	55	1974	22	1965	0.170	23	1.70	1960	0.00	22	0.0	1976	0.0	22	0.	1976	15.1	22	0.0	22
4	6	65	23	82	1967	42	1975	38	22	50	1955	21	1966	0.156	23	0.90	1956	0.00	22	0.0	1976	0.0	22	0.	1976	13.3	22	0.0	22
4	7	68	23	87	1967	53	1965	36	22	59	1962	20	1974	0.109	23	0.90	1971	0.23	22	4.0	1971	0.0	22	0.	1976	13.3	22	0.5	22
4	8	67	23	88	1959	40	1972	39	21	61	1954	18	1970	0.180	23	1.30	1973	0.00	22	0.0	1976	0.0	22	0.	1976	12.5	21	0.8	21
4	9	67	23	90	1959	52	1972	38	22	65	1959	25	1972	0.049	23	0.75	1965	0.00	22	0.0	1976	0.0	22	0.	1976	13.3	22	0.5	22
4	10	67	23	86	1959	50	1974	36	22	59	1959	19	1960	0.022	23	0.42	1953	0.00	22	0.0	1976	0.0	22	0.	1976	13.7	22	0.4	22
4	11	65	23	83	1953	50	1973	35	22	54	1959	19	1960	0.105	23	1.04	1955	0.00	22	0.0	1976	0.0	22	0.	1976	14.7	22	0.0	22
4	12	68	23	85	1965	50	1973	38	22	60	1965	18	1976	0.064	23	0.45	1962	0.00	22	0.0	1976	0.0	22	0.	1976	12.7	22	0.6	22
4	13	67	23	88	1971	46	1966	35	22	59	1974	20	1976	0.227	23	1.80	1953	0.00	22	0.0	1976	0.0	22	0.	1976	14.0	22	0.1	22
4	14	70	23	90	1960	54	1970	39	22	59	1964	19	1973	0.180	23	1.70	1970	0.00	22	0.0	1976	0.0	22	0.	1976	11.1	22	0.4	22
4	15	70	23	88	1967	52	1962	40	22	62	1967	21	1973	0.120	23	2.00	1975	0.00	22	0.0	1976	0.0	22	0.	1976	11.0	22	0.8	22
4	16	72	23	90	1976	53	1962	40	22	56	1960	24	1970	0.043	23	0.50	1956	0.00	22	0.0	1976	0.0	22	0.	1976	9.5	22	0.5	22
4	17	74	23	92	1976	56	1962	40	22	66	1960	18	1962	0.077	23	0.85	1954	0.00	22	0.0	1976	0.0	22	0.	1976	9.1	22	1.0	22
4	18	77	23	94	1976	58	1956	45	22	60	1963	32	1974	0.026	22	0.35	1969	0.00	22	0.0	1976	0.0	22	0.	1976	5.6	22	1.1	22
4	19	76	23	92	1976	59	1956	45	22	64	1969	28	1960	0.081	23	0.45	1953	0.00	22	0.0	1976	0.0	22	0.	1976	6.1	22	1.4	22
4	20	74	23	94	1976	52	1962	44	21	64	1972	25	1953	0.084	23	0.70	1970	0.00	22	0.0	1976	0.0	22	0.	1976	7.5	21	1.4	21
4	21	76	23	92	1957	58	1964	45	22	64	1957	23	1956	0.051	23	0.50	1962	0.00	22	0.0	1976	0.0	22	0.	1976	6.5	22	1.5	22
4	22	77	23	86	1963	62	1972	48	22	61	1957	25	1953	0.150	23	1.30	1972	0.00	22	0.0	1976	0.0	22	0.	1976	4.4	22	1.7	22
4	23	76	23	94	1960	57	1959	50	22	66	1973	36	1969	0.075	23	0.50	1970	0.00	22	0.0	1976	0.0	22	0.	1976	4.1	22	1.7	22
4	24	74	23	94	1960	60	1969	45	22	64	1957	27	1959	0.070	23	0.59	1968	0.00	22	0.0	1976	0.0	22	0.	1976	6.7	22	1.2	22
4	25	73	23	93	1960	59	1972	44	22	62	1957	24	1956	0.108	23	0.90	1973	0.00	22	0.0	1976	0.0	22	0.	1976	8.5	22	1.5	22
4	26	75	23	96	1960	56	1967	44	22	60	1957	30	1969	0.090	23	0.55	1970	0.01	22	0.2	1954	0.0	22	0.	1976	7.0	22	1.4	22
4	27	72	23	91	1957	52	1967	45	22	60	1962	28	1976	0.159	23	2.00	1973	0.00	22	0.0	1976	0.0	22	0.	1976	8.4	22	1.4	22
4	28	73	23	90	1957	49	1966	45	21	61	1954	26	1976	0.068	22	0.55	1966	0.00	22	0.0	1976	0.0	22	0.	1976	7.8	21	1.7	21
4	29	73	23	90	1974	50	1966	45	22	69	1956	28	1973	0.118	23	1.30	1964	0.00	22	0.0	1976	0.0	22	0.	1976	8.0	22	1.9	22
4	30	74	23	91	1974	52	1966	46	22	67	1956	31	1976	0.100	23	1.36	1953	0.00	22	0.0	1976	0.0	22	0.	1976	6.2	22	1.3	22
5	1	76	23	88	1953	55	1964	48	23	65	1974	30	1969	0.101	24	1.40	1976	0.00	24	0.0	1976	0.0	24	0.	1976	4.8	23	1.3	23
5	2	76	24	91	1954	59	1966	47	24	62	1953	26	1963	0.148	24	1.04	1966	0.00	24	0.0	1976	0.0	24	0.	1976	5.7	24	2.0	24

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
5	3	77	24	92	1965	63	1964	45	24	64	1954	28	1963	0.120	24	0.70	1974	0.00	24	0.0	1976	0.0	24	0.	1976	6.1	24	1.8	24
5	4	76	24	92	1965	55	1970	44	24	60	1968	30	1973	0.111	24	0.75	1975	0.00	24	0.0	1976	0.0	24	0.	1976	6.7	24	1.1	24
5	5	77	24	91	1955	64	1975	41	24	64	1953	26	1966	0.033	24	0.45	1958	0.00	24	0.0	1976	0.0	24	0.	1976	7.4	24	1.0	24
5	6	77	24	91	1966	52	1958	46	24	63	1953	33	1975	0.185	24	1.95	1967	0.00	24	0.0	1976	0.0	24	0.	1976	5.1	24	1.2	24
5	7	76	24	92	1959	51	1958	45	23	62	1953	28	1968	0.113	24	1.19	1965	0.00	24	0.0	1976	0.0	24	0.	1976	5.5	23	0.9	23
5	8	78	24	90	1964	63	1956	48	23	64	1961	28	1974	0.143	24	1.40	1960	0.00	24	0.0	1976	0.0	24	0.	1976	4.0	23	1.7	23
5	9	77	24	96	1963	61	1967	47	24	68	1961	27	1956	0.213	24	1.19	1974	0.00	24	0.0	1976	0.0	24	0.	1976	5.2	24	2.1	24
5	10	78	24	95	1963	59	1966	46	24	60	1968	28	1966	0.012	24	0.19	1961	0.00	24	0.0	1976	0.0	24	0.	1976	5.0	24	1.9	24
5	11	77	24	92	1953	63	1960	49	23	66	1959	23	1966	0.047	24	0.79	1961	0.00	24	0.0	1976	0.0	24	0.	1976	4.3	23	2.1	23
5	12	79	24	92	1959	62	1960	51	22	64	1968	32	1969	0.132	24	1.10	1974	0.00	24	0.0	1976	0.0	24	0.	1976	3.6	22	3.1	22
5	13	77	24	95	1956	63	1960	49	23	62	1971	31	1969	0.181	24	1.70	1971	0.00	24	0.0	1976	0.0	24	0.	1976	4.2	23	2.1	23
5	14	77	24	95	1956	58	1967	50	23	64	1957	34	1960	0.147	24	1.19	1972	0.00	24	0.0	1976	0.0	24	0.	1976	4.4	23	2.5	23
5	15	78	24	93	1962	63	1954	49	23	68	1976	35	1966	0.153	24	1.50	1971	0.00	24	0.0	1976	0.0	24	0.	1976	4.1	23	2.2	23
5	16	79	24	91	1974	60	1973	51	23	67	1976	28	1973	0.104	24	1.10	1976	0.00	24	0.0	1976	0.0	24	0.	1976	3.3	23	2.5	23
5	17	78	24	93	1974	66	1975	50	22	66	1965	35	1973	0.249	24	2.09	1960	0.00	24	0.0	1976	0.0	24	0.	1976	3.2	22	1.8	22
5	18	79	24	93	1962	68	1973	50	23	66	1958	26	1973	0.135	24	0.70	1972	0.00	24	0.0	1976	0.0	24	0.	1976	3.8	23	2.7	23
5	19	80	24	95	1962	67	1953	52	24	65	1966	34	1970	0.185	24	0.95	1972	0.00	24	0.0	1976	0.0	24	0.	1976	2.0	24	2.5	24
5	20	81	24	94	1962	62	1954	53	24	66	1959	38	1976	0.208	24	1.19	1953	0.00	24	0.0	1976	0.0	24	0.	1976	1.8	24	3.5	24
5	21	78	24	90	1976	65	1972	52	23	64	1960	37	1968	0.052	24	0.79	1965	0.00	24	0.0	1976	0.0	24	0.	1976	2.9	23	2.4	23
5	22	80	24	90	1975	64	1967	51	23	64	1953	37	1954	0.156	24	2.00	1959	0.00	24	0.0	1976	0.0	24	0.	1976	2.3	23	2.5	23
5	23	80	24	93	1970	66	1967	54	24	66	1955	41	1966	0.142	24	1.35	1974	0.00	24	0.0	1976	0.0	24	0.	1976	2.0	24	3.8	24
5	24	80	24	92	1964	66	1967	52	24	65	1958	37	1961	0.052	24	0.79	1971	0.00	24	0.0	1976	0.0	24	0.	1976	2.6	24	3.1	24
5	25	79	24	86	1970	61	1973	53	24	64	1971	29	1956	0.137	24	0.90	1962	0.00	24	0.0	1976	0.0	24	0.	1976	2.4	24	3.0	24
5	26	79	24	91	1953	59	1973	53	24	62	1966	40	1964	0.140	24	1.45	1970	0.00	24	0.0	1976	0.0	24	0.	1976	2.2	24	2.5	24
5	27	78	24	91	1965	58	1961	52	24	66	1957	34	1967	0.159	24	1.25	1968	0.00	24	0.0	1976	0.0	24	0.	1976	3.0	24	2.7	24
5	28	77	24	87	1955	57	1968	51	24	64	1965	36	1961	0.137	24	0.85	1968	0.00	24	0.0	1976	0.0	24	0.	1976	3.0	24	2.0	24
5	29	79	24	93	1969	56	1971	52	23	65	1973	38	1972	0.179	24	1.30	1971	0.00	24	0.0	1976	0.0	24	0.	1976	2.0	23	2.5	23
5	30	80	24	95	1969	60	1971	53	23	66	1976	36	1964	0.115	24	0.90	1971	0.00	24	0.0	1976	0.0	24	0.	1976	2.0	23	3.6	23
5	31	81	23	94	1956	64	1967	52	23	65	1956	36	1961	0.150	24	1.00	1971	0.00	24	0.0	1976	0.0	24	0.	1976	1.5	23	3.3	23
6	1	80	24	94	1969	64	1967	54	23	65	1974	35	1966	0.150	24	1.59	1975	0.00	24	0.0	1975	0.0	24	0.	1975	2.0	23	3.6	23
6	2	80	23	90	1969	64	1964	54	23	68	1958	35	1967	0.270	24	1.90	1959	0.00	24	0.0	1975	0.0	24	0.	1975	2.6	23	4.3	23
6	3	81	24	89	1954	67	1963	54	23	66	1975	34	1966	0.275	24	3.00	1963	0.00	24	0.0	1975	0.0	24	0.	1975	1.4	23	3.8	23
6	4	81	24	91	1952	68	1957	52	23	68	1972	39	1964	0.024	24	0.35	1957	0.00	24	0.0	1975	0.0	24	0.	1975	1.5	23	3.0	23
6	5	84	23	94	1970	72	1962	55	23	64	1957	43	1967	0.062	24	0.65	1963	0.00	24	0.0	1975	0.0	24	0.	1975	0.4	23	4.8	23
6	6	85	24	95	1952	76	1962	57	24	70	1973	40	1967	0.117	24	0.90	1961	0.00	24	0.0	1975	0.0	24	0.	1975	0.4	24	6.5	24
6	7	84	24	94	1971	74	1954	58	24	69	1959	42	1954	0.098	24	0.95	1955	0.00	24	0.0	1975	0.0	24	0.	1975	0.5	24	6.2	24
6	8	85	24	93	1969	70	1957	56	23	64	1959	40	1970	0.069	24	0.75	1955	0.00	24	0.0	1975	0.0	24	0.	1975	0.3	23	5.3	23
6	9	85	24	96	1952	61	1955	58	24	71	1953	40	1970	0.178	24	2.00	1969	0.00	24	0.0	1975	0.0	24	0.	1975	1.0	24	7.2	24
6	10	86	24	100	1964	71	1969	61	24	75	1974	42	1960	0.110	24	1.40	1966	0.00	24	0.0	1975	0.0	24	0.	1975	0.3	24	8.3	24
6	11	85	24	94	1959	71	1966	58	24	68	1958	38	1972	0.130	24	1.19	1962	0.00	24	0.0	1975	0.0	24	0.	1975	0.7	24	6.6	24
6	12	85	24	95	1970	75	1966	57	24	70	1973	38	1972	0.194	24	1.10	1962	0.00	24	0.0	1975	0.0	24	0.	1975	0.5	24	6.5	24
6	13	86	24	95	1956	70	1962	59	24	69	1973	44	1952	0.153	24	1.40	1962	0.00	24	0.0	1975	0.0	24	0.	1975	0.2	24	7.4	24
6	14	84	24	95	1956	65	1953	59	24	70	1961	45	1970	0.104	24	1.19	1960	0.00	24	0.0	1975	0.0	24	0.	1975	0.5	24	6.9	24
6	15	84	24	96	1964	70	1958	57	24	68	1952	45	1959	0.123	24	0.75	1969	0.00	24	0.0	1975	0.0	24	0.	1975	0.5	24	5.8	24
6	16	83	24	98	1957	58	1965	57	24	69	1957	45	1958	0.138	24	0.79	1974	0.00	24	0.0	1975	0.0	24	0.	1975	1.1	24	5.8	24
6	17	83	24	94	1957	64	1965	56	24	69	1952	39	1964	0.104	24	0.79	1966	0.00	24	0.0	1975	0.0	24	0.	1975	1.3	24	5.5	24
6	18	84	24	97	1970	71	1965	56	24	68	1973	41	1965	0.097	24	0.55	1969	0.00	24	0.0	1975	0.0	24	0.	1975	0.8	24	5.4	24
6	19	85	24	96	1964	72	1956	57	24	69	1969	40	1965	0.064	24	0.55	1962	0.00	24	0.0	1975	0.0	24	0.	1975	0.4	24	6.6	24
6	20	85	24	100	1964	67	1956	60	23	69	1975	45	1954	0.107	24	1.35	1962	0.00	24	0.0	1975	0.0	24	0.	1975	0.2	23	7.3	23

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
6	21	86	24	96	1970	74	1961	61	24	69	1957	47	1968	0.349	24	3.35	1964	0.00	24	0.0	1975	0.0	24	0.	1975	0.2	24	8.1	24
6	22	86	24	94	1959	74	1958	60	24	71	1957	47	1963	0.239	24	4.40	1972	0.00	24	0.0	1975	0.0	24	0.	1975	0.2	24	7.7	24
6	23	87	24	94	1965	76	1972	62	24	73	1967	40	1963	0.073	24	0.75	1967	0.00	24	0.0	1975	0.0	24	0.	1975	0.1	24	9.3	24
6	24	88	24	95	1968	78	1972	62	24	72	1964	45	1970	0.069	24	0.59	1958	0.00	24	0.0	1975	0.0	24	0.	1975	0.0	24	9.9	24
6	25	89	24	98	1952	76	1974	61	23	68	1967	51	1963	0.027	24	0.39	1957	0.00	24	0.0	1975	0.0	24	0.	1975	0.0	23	10.2	23
6	26	89	24	99	1954	77	1955	61	23	75	1968	45	1965	0.067	24	0.55	1975	0.00	24	0.0	1975	0.0	24	0.	1975	0.2	23	9.9	23
6	27	88	23	100	1952	77	1974	60	24	69	1966	44	1965	0.054	24	0.70	1952	0.00	24	0.0	1975	0.0	24	0.	1975	0.1	23	9.3	23
6	28	87	23	97	1969	70	1974	60	23	75	1964	35	1970	0.072	24	0.79	1974	0.00	24	0.0	1975	0.0	24	0.	1975	0.4	23	9.1	23
6	29	88	24	99	1959	72	1974	60	23	72	1953	40	1970	0.103	24	1.00	1966	0.00	24	0.0	1975	0.0	24	0.	1975	0.3	23	8.9	23
6	30	90	24	100	1959	76	1974	61	23	68	1971	52	1954	0.174	24	1.40	1952	0.00	24	0.0	1975	0.0	24	0.	1975	0.0	23	10.5	23
7	1	91	25	101	1968	77	1952	62	24	69	1958	54	1962	0.157	24	1.90	1961	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	11.2	24
7	2	91	25	100	1956	80	1976	60	24	70	1971	44	1952	0.025	24	0.29	1967	0.00	25	0.0	1976	0.0	25	0.	1976	0.1	24	10.2	24
7	3	91	24	99	1954	79	1962	63	24	74	1958	48	1957	0.124	24	1.25	1962	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	11.7	24
7	4	88	25	99	1955	79	1976	61	25	68	1972	48	1971	0.136	24	1.75	1975	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	9.6	25
7	5	87	25	98	1955	75	1976	60	25	79	1957	45	1963	0.312	24	2.09	1956	0.00	25	0.0	1976	0.0	25	0.	1976	0.1	25	8.6	25
7	6	87	25	95	1957	74	1961	61	25	71	1958	47	1964	0.153	24	1.40	1956	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	8.5	25
7	7	87	25	96	1954	78	1972	60	25	72	1953	42	1970	0.051	24	1.10	1969	0.00	25	0.0	1976	0.0	25	0.	1976	0.1	25	8.5	25
7	8	88	25	97	1970	76	1961	62	25	71	1958	48	1972	0.161	24	1.30	1964	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	9.8	25
7	9	89	24	98	1955	83	1963	62	24	74	1957	50	1970	0.076	24	0.39	1962	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	10.2	24
7	10	87	24	96	1973	78	1970	62	24	70	1971	45	1963	0.119	24	1.00	1955	0.00	25	0.0	1976	0.0	25	0.	1976	0.1	24	9.5	24
7	11	88	24	97	1957	80	1976	60	24	69	1968	49	1963	0.203	24	1.55	1965	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	8.7	24
7	12	87	24	94	1966	74	1965	60	25	69	1958	50	1973	0.153	24	1.19	1972	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	7.9	24
7	13	88	25	99	1954	80	1975	59	25	68	1964	48	1973	0.230	24	2.09	1972	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	8.5	25
7	14	89	25	102	1954	77	1975	62	24	70	1968	50	1974	0.241	24	3.00	1975	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	10.4	24
7	15	90	25	98	1954	75	1959	64	25	74	1957	54	1956	0.166	24	1.59	1966	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	11.5	25
7	16	90	25	99	1974	83	1959	63	25	74	1973	50	1960	0.035	24	0.85	1974	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	11.5	25
7	17	88	25	98	1953	75	1962	62	25	75	1955	45	1970	0.096	24	1.04	1956	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	10.0	25
7	18	89	25	100	1963	77	1958	63	25	70	1971	45	1970	0.054	24	1.10	1961	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	10.6	25
7	19	90	25	100	1953	82	1965	64	25	71	1972	50	1970	0.162	24	2.00	1962	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	11.7	25
7	20	88	25	97	1953	74	1958	65	25	78	1974	54	1976	0.262	24	3.90	1956	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	11.3	25
7	21	90	25	100	1953	79	1970	63	25	76	1952	47	1966	0.076	24	0.55	1973	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	10.9	25
7	22	91	25	101	1957	76	1970	62	25	72	1964	46	1966	0.084	24	0.75	1969	0.00	25	0.0	1976	0.0	25	0.	1976	0.1	25	11.3	25
7	23	90	25	101	1952	79	1970	65	25	79	1972	56	1966	0.243	24	3.19	1970	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	12.5	25
7	24	89	25	98	1968	78	1969	64	25	76	1972	51	1974	0.059	24	0.45	1958	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	11.2	25
7	25	89	25	97	1968	75	1962	64	25	78	1972	51	1957	0.058	24	1.10	1959	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	11.5	25
7	26	90	25	97	1966	82	1974	63	25	79	1972	50	1970	0.103	24	1.80	1974	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	11.4	25
7	27	91	25	99	1966	80	1968	63	25	76	1972	50	1975	0.055	24	1.10	1958	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	11.4	25
7	28	91	25	103	1952	76	1962	63	25	70	1963	57	1960	0.112	24	1.45	1966	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	12.0	25
7	29	89	25	101	1953	77	1960	66	25	71	1970	60	1962	0.229	24	2.30	1955	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	11.8	25
7	30	89	25	104	1953	77	1956	64	25	78	1976	50	1970	0.303	24	1.70	1974	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	11.1	25
7	31	90	25	103	1954	78	1956	62	25	74	1976	48	1966	0.062	24	0.39	1960	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	10.9	25
8	1	91	25	100	1954	83	1965	64	24	72	1971	50	1966	0.238	25	3.00	1965	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	11.8	24
8	2	89	25	97	1975	80	1958	64	24	70	1964	59	1965	0.315	25	2.60	1968	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	11.1	24
8	3	88	25	100	1957	76	1958	64	24	79	1967	48	1965	0.184	25	1.10	1964	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	11.0	24
8	4	87	25	96	1960	75	1964	64	24	72	1971	51	1965	0.195	25	2.65	1969	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	10.0	24
8	5	86	25	98	1975	75	1972	64	24	78	1953	49	1976	0.225	25	1.75	1975	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	9.9	24
8	6	88	24	96	1968	78	1974	62	23	70	1976	48	1966	0.156	25	2.39	1962	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	23	10.0	23
8	7	87	24	95	1955	79	1975	63	23	70	1960	49	1957	0.065	25	0.59	1961	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	23	10.1	23
8	8	88	25	96	1968	75	1955	63	24	70	1958	50	1975	0.071	25	0.59	1952	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	10.0	24

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
8	9	87	24	96	1963	72	1955	63	23	70	1965	50	1964	0.122	25	2.20	1962	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	23	9.5	23
8	10	87	24	95	1973	73	1964	63	23	72	1957	51	1972	0.144	25	1.10	1952	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	23	10.2	23
8	11	87	24	96	1973	75	1972	62	23	72	1961	45	1972	0.075	25	0.90	1960	0.00	25	0.0	1976	0.0	25	0.	1976	0.2	23	9.3	23
8	12	87	25	97	1957	75	1955	60	24	72	1961	43	1954	0.236	25	5.45	1955	0.00	25	0.0	1976	0.0	25	0.	1976	0.2	24	8.4	24
8	13	86	25	97	1976	77	1967	59	24	70	1958	45	1971	0.139	25	1.50	1976	0.00	25	0.0	1976	0.0	25	0.	1976	0.1	24	7.3	24
8	14	88	25	95	1959	77	1964	61	24	70	1958	44	1964	0.120	25	1.15	1973	0.00	25	0.0	1976	0.0	25	0.	1976	0.2	24	9.0	24
8	15	88	25	98	1953	77	1964	62	24	72	1957	46	1963	0.145	25	1.19	1976	0.00	25	0.0	1976	0.0	25	0.	1976	0.2	24	9.7	24
8	16	89	25	101	1954	73	1964	62	24	70	1973	49	1963	0.127	25	1.35	1975	0.00	25	0.0	1976	0.0	25	0.	1976	0.1	24	10.3	24
8	17	88	25	98	1968	78	1964	63	24	70	1955	52	1967	0.180	25	2.00	1955	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	10.2	24
8	18	87	25	95	1965	76	1957	61	24	72	1959	49	1962	0.262	25	2.80	1955	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	8.9	24
8	19	87	25	97	1956	70	1957	61	24	69	1968	44	1953	0.125	25	1.30	1957	0.00	25	0.0	1976	0.0	25	0.	1976	0.2	24	8.9	24
8	20	87	25	95	1968	72	1961	61	24	69	1962	48	1964	0.298	25	4.60	1969	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	8.7	24
8	21	87	25	98	1959	75	1961	62	24	70	1967	48	1969	0.180	25	2.00	1975	0.00	25	0.0	1976	0.0	25	0.	1976	0.1	24	9.0	24
8	22	86	25	105	1968	74	1967	63	24	70	1955	43	1969	0.170	25	1.10	1965	0.00	25	0.0	1976	0.0	25	0.	1976	0.2	24	9.2	24
8	23	86	25	97	1968	74	1967	63	24	76	1964	48	1969	0.234	25	2.09	1958	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	9.1	24
8	24	86	25	98	1968	73	1957	60	24	78	1968	46	1952	0.148	25	2.55	1958	0.00	25	0.0	1976	0.0	25	0.	1976	0.3	24	8.1	24
8	25	87	25	97	1968	73	1957	60	24	78	1968	42	1952	0.118	25	1.59	1957	0.00	25	0.0	1976	0.0	25	0.	1976	0.1	24	8.5	24
8	26	88	25	99	1959	75	1958	60	24	70	1976	47	1966	0.191	25	3.55	1961	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	24	8.6	24
8	27	87	25	99	1953	76	1969	61	24	70	1975	48	1966	0.227	25	3.10	1971	0.00	25	0.0	1976	0.0	25	0.	1976	0.1	24	8.8	24
8	28	88	25	101	1953	72	1958	60	24	69	1954	42	1969	0.079	25	1.50	1976	0.00	25	0.0	1976	0.0	25	0.	1976	0.2	24	8.9	24
8	29	88	25	102	1953	75	1965	60	24	70	1954	43	1969	0.022	25	0.45	1959	0.00	25	0.0	1976	0.0	25	0.	1976	0.4	24	8.8	24
8	30	89	25	105	1953	71	1965	61	24	69	1963	40	1965	0.067	25	1.10	1963	0.00	25	0.0	1976	0.0	25	0.	1976	0.6	24	9.8	24
8	31	88	25	106	1953	79	1964	61	24	71	1955	40	1968	0.179	25	2.80	1960	0.00	25	0.0	1976	0.0	25	0.	1976	0.3	24	9.2	24
9	1	87	25	105	1953	72	1975	61	25	71	1959	46	1954	0.279	25	3.60	1952	0.00	25	0.0	1976	0.0	25	0.	1976	0.0	25	8.8	25
9	2	85	25	106	1953	75	1972	59	25	72	1959	43	1970	0.073	25	0.65	1969	0.00	25	0.0	1976	0.0	25	0.	1976	0.4	25	7.3	25
9	3	87	25	104	1953	76	1955	58	25	69	1959	40	1967	0.048	25	0.75	1957	0.00	25	0.0	1976	0.0	25	0.	1976	0.5	25	7.8	25
9	4	86	25	103	1953	75	1967	58	25	70	1963	45	1967	0.101	25	2.30	1974	0.00	25	0.0	1976	0.0	25	0.	1976	0.4	25	7.6	25
9	5	86	25	100	1954	76	1974	58	25	68	1953	46	1974	0.053	25	0.45	1953	0.00	25	0.0	1976	0.0	25	0.	1976	0.3	25	7.1	25
9	6	85	25	104	1954	68	1974	58	25	68	1959	44	1972	0.125	25	1.70	1974	0.00	25	0.0	1976	0.0	25	0.	1976	0.7	25	6.7	25
9	7	84	25	103	1954	62	1974	55	25	70	1961	40	1970	0.214	25	1.90	1974	0.00	25	0.0	1976	0.0	25	0.	1976	1.0	25	5.5	25
9	8	83	25	94	1976	69	1952	54	25	71	1961	41	1962	0.058	25	0.90	1969	0.00	25	0.0	1976	0.0	25	0.	1976	0.4	25	4.0	25
9	9	82	25	94	1976	72	1957	55	24	64	1961	39	1966	0.017	25	0.25	1957	0.00	25	0.0	1976	0.0	25	0.	1976	0.9	24	4.3	24
9	10	84	25	95	1970	71	1967	55	25	69	1954	40	1966	0.095	25	1.04	1957	0.00	25	0.0	1976	0.0	25	0.	1976	1.2	25	5.4	25
9	11	83	25	92	1964	67	1967	55	25	67	1971	38	1976	0.117	25	1.30	1960	0.00	25	0.0	1976	0.0	25	0.	1976	1.2	25	5.2	25
9	12	81	25	91	1963	70	1967	54	24	70	1957	33	1967	0.356	25	2.80	1960	0.00	25	0.0	1976	0.0	25	0.	1976	1.8	24	4.0	24
9	13	81	25	93	1961	62	1964	52	25	67	1956	36	1968	0.114	25	1.10	1964	0.00	24	0.0	1976	0.0	24	0.	1976	2.2	25	3.8	25
9	14	83	25	95	1962	70	1975	52	25	68	1956	35	1975	0.177	25	2.25	1966	0.00	25	0.0	1976	0.0	25	0.	1976	2.1	25	4.3	25
9	15	84	25	95	1970	64	1963	53	25	65	1965	35	1964	0.075	25	0.79	1976	0.00	25	0.0	1976	0.0	25	0.	1976	1.3	25	4.8	25
9	16	83	25	96	1970	67	1963	54	24	67	1957	41	1966	0.131	25	2.50	1976	0.00	25	0.0	1976	0.0	25	0.	1976	1.1	24	4.4	24
9	17	80	25	94	1958	64	1959	55	23	69	1956	35	1966	0.134	25	1.30	1957	0.00	25	0.0	1976	0.0	25	0.	1976	1.6	23	4.3	23
9	18	80	25	96	1970	64	1961	56	23	67	1971	35	1966	0.144	25	1.04	1970	0.00	25	0.0	1976	0.0	25	0.	1976	1.6	23	4.3	23
9	19	80	25	93	1954	69	1961	54	25	66	1960	34	1959	0.124	25	1.50	1972	0.00	25	0.0	1976	0.0	25	0.	1976	1.6	25	3.2	25
9	20	79	25	91	1965	65	1966	54	24	70	1955	33	1973	0.275	25	2.50	1966	0.00	25	0.0	1976	0.0	25	0.	1976	2.5	24	3.3	24
9	21	79	25	91	1970	62	1972	53	24	67	1961	30	1956	0.144	25	1.25	1966	0.00	25	0.0	1976	0.0	25	0.	1976	2.7	24	3.5	24
9	22	79	25	94	1970	68	1955	50	25	67	1957	30	1962	0.018	25	0.35	1953	0.00	25	0.0	1976	0.0	25	0.	1976	3.0	25	2.2	25
9	23	77	25	95	1970	61	1974	49	24	61	1965	31	1969	0.059	25	0.79	1952	0.00	25	0.0	1976	0.0	25	0.	1976	4.0	24	2.3	24
9	24	78	25	97	1970	64	1975	47	25	61	1971	29	1963	0.133	25	2.30	1975	0.00	25	0.0	1976	0.0	25	0.	1976	4.8	25	2.1	25
9	25	78	25	96	1970	68	1975	48	24	62	1955	28	1963	0.183	25	4.29	1975	0.00	25	0.0	1976	0.0	25	0.	1976	4.2	24	2.3	24
9	26	78	25	96	1970	58	1966	51	25	62	1959	33	1967	0.121	25	2.30	1975	0.00	25	0.0	1976	0.0	25	0.	1976	3.8	25	2.9	25

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
9	27	75	25	93	1970	56	1956	50	25	67	1972	35	1974	0.134	25	1.25	1956	0.00	25	0.0	1976	0.0	25	0.	1976	4.4	25	1.9	25
9	28	75	25	94	1954	58	1956	50	24	64	1967	34	1957	0.069	25	0.75	1974	0.00	25	0.0	1976	0.0	25	0.	1976	3.9	24	1.4	24
9	29	75	25	95	1954	54	1957	49	24	68	1959	25	1970	0.145	25	2.00	1963	0.00	25	0.0	1976	0.0	25	0.	1976	4.7	24	1.8	24
9	30	76	25	92	1954	60	1957	48	24	70	1959	25	1970	0.214	25	1.90	1972	0.00	25	0.0	1976	0.0	25	0.	1976	5.0	24	1.6	24
10	1	74	25	87	1954	62	1972	48	25	69	1971	30	1974	0.237	25	2.20	1971	0.00	25	0.0	1976	0.0	25	0.	1976	5.7	25	1.7	25
10	2	74	25	90	1959	57	1958	46	25	66	1971	29	1966	0.312	25	2.09	1973	0.00	25	0.0	1976	0.0	25	0.	1976	5.6	25	0.7	25
10	3	75	25	94	1954	52	1974	47	25	68	1971	22	1974	0.023	25	0.39	1976	0.00	25	0.0	1976	0.0	25	0.	1976	6.2	25	1.6	25
10	4	76	25	95	1954	62	1974	44	25	63	1954	18	1974	0.070	25	0.75	1964	0.00	25	0.0	1976	0.0	25	0.	1976	6.6	25	1.4	25
10	5	75	25	92	1954	58	1965	44	25	64	1954	16	1974	0.036	25	0.90	1972	0.00	25	0.0	1976	0.0	25	0.	1976	6.8	25	1.2	25
10	6	75	25	91	1959	59	1957	45	25	63	1955	24	1970	0.234	25	4.10	1957	0.00	25	0.0	1976	0.0	25	0.	1976	7.0	25	1.4	25
10	7	73	25	86	1963	59	1967	44	25	65	1955	26	1966	0.148	25	2.00	1965	0.00	25	0.0	1976	0.0	25	0.	1976	8.0	25	0.8	25
10	8	72	25	86	1963	58	1952	42	25	65	1959	24	1964	0.168	25	1.90	1959	0.00	25	0.0	1976	0.0	25	0.	1976	8.9	25	0.5	25
10	9	73	25	83	1959	52	1952	44	25	70	1959	23	1974	0.176	25	2.00	1976	0.00	25	0.0	1976	0.0	25	0.	1976	7.0	25	0.6	25
10	10	73	25	87	1958	54	1952	44	25	68	1959	28	1974	0.155	25	2.25	1971	0.00	25	0.0	1976	0.0	25	0.	1976	7.6	25	0.8	25
10	11	73	24	89	1954	55	1952	41	24	67	1959	22	1964	0.022	25	0.35	1952	0.00	25	0.0	1976	0.0	25	0.	1976	9.0	24	0.8	24
10	12	73	24	90	1954	55	1967	41	24	63	1954	20	1964	0.004	25	0.09	1968	0.00	25	0.0	1976	0.0	25	0.	1976	8.8	24	0.5	24
10	13	76	24	92	1954	63	1967	40	24	60	1954	25	1957	0.000	25	0.00	1976	0.00	25	0.0	1976	0.0	25	0.	1976	7.8	24	0.6	24
10	14	76	24	86	1954	59	1959	45	22	57	1971	26	1963	0.100	25	1.50	1955	0.00	25	0.0	1976	0.0	25	0.	1976	5.8	22	0.5	22
10	15	75	24	83	1960	60	1961	45	23	64	1975	28	1963	0.092	25	1.80	1954	0.00	25	0.0	1976	0.0	25	0.	1976	6.3	23	0.6	23
10	16	73	24	84	1963	59	1972	42	24	58	1971	29	1972	0.129	25	1.19	1964	0.00	25	0.0	1976	0.0	25	0.	1976	8.0	24	0.5	24
10	17	72	24	85	1975	58	1969	43	23	58	1956	20	1973	0.055	25	1.00	1976	0.00	25	0.0	1976	0.0	25	0.	1976	8.4	23	0.4	23
10	18	71	24	84	1963	54	1966	39	24	62	1968	15	1970	0.133	25	1.10	1956	0.00	25	0.0	1976	0.0	25	0.	1976	10.9	24	0.5	24
10	19	68	23	84	1963	48	1972	40	23	61	1968	18	1970	0.165	25	2.09	1966	0.00	25	0.0	1976	0.0	25	0.	1976	11.5	22	0.1	22
10	20	69	24	85	1969	55	1964	38	24	56	1971	22	1974	0.231	25	2.25	1976	0.00	25	0.0	1976	0.0	25	0.	1976	12.0	24	0.0	24
10	21	66	24	79	1963	52	1974	38	23	52	1971	16	1974	0.236	25	3.00	1961	0.00	25	0.0	1976	0.0	25	0.	1976	13.6	23	0.0	23
10	22	68	23	81	1975	52	1960	37	22	56	1965	20	1972	0.125	25	2.09	1956	0.00	25	0.0	1976	0.0	25	0.	1976	13.1	22	0.0	22
10	23	70	24	84	1975	58	1969	37	24	60	1971	20	1974	0.094	25	1.80	1971	0.00	25	0.0	1976	0.0	25	0.	1976	12.0	24	0.1	24
10	24	69	24	80	1954	59	1964	39	24	58	1971	19	1964	0.051	25	0.45	1957	0.00	25	0.0	1976	0.0	25	0.	1976	11.4	24	0.0	24
10	25	67	24	80	1975	50	1962	39	23	61	1971	14	1969	0.135	25	1.59	1971	0.00	25	0.0	1976	0.0	25	0.	1976	12.7	23	0.3	23
10	26	66	25	77	1964	47	1962	37	25	62	1971	22	1965	0.035	25	0.50	1958	0.00	25	0.0	1976	0.0	25	0.	1976	13.8	25	0.0	25
10	27	67	25	80	1963	47	1957	38	24	59	1971	14	1962	0.069	25	0.90	1956	0.00	25	0.0	1976	0.0	25	0.	1976	12.3	24	0.0	24
10	28	66	25	79	1953	52	1960	37	25	56	1971	21	1957	0.044	25	0.52	1953	0.00	25	0.0	1976	0.0	25	0.	1976	13.7	25	0.0	25
10	29	64	25	78	1966	55	1969	37	25	57	1971	22	1969	0.281	25	2.45	1953	0.00	25	0.0	1976	0.0	25	0.	1976	14.7	25	0.0	25
10	30	67	25	83	1961	59	1966	35	25	54	1971	14	1969	0.122	25	1.00	1954	0.00	25	0.0	1976	0.0	25	0.	1976	14.4	25	0.0	25
10	31	68	25	82	1961	55	1962	36	25	69	1961	19	1966	0.122	25	1.70	1976	0.00	25	0.0	1976	0.0	25	0.	1976	14.2	25	0.6	25
11	1	68	25	84	1971	59	1962	37	24	64	1971	19	1954	0.194	25	3.25	1956	0.00	25	0.0	1976	0.0	25	0.	1976	13.1	24	0.4	24
11	2	69	25	86	1974	46	1954	39	24	67	1971	20	1976	0.195	25	1.57	1954	0.00	25	0.0	1976	0.0	25	0.	1976	11.9	24	0.5	24
11	3	68	25	82	1974	45	1962	38	23	62	1972	24	1964	0.092	25	0.90	1962	0.00	25	0.0	1976	0.0	25	0.	1976	12.8	23	0.2	23
11	4	65	25	82	1961	46	1954	37	24	66	1961	16	1966	0.054	25	1.35	1970	0.00	25	0.0	1976	0.0	25	0.	1976	14.6	24	0.4	24
11	5	63	25	84	1974	45	1962	35	24	60	1961	18	1966	0.058	25	0.75	1973	0.00	25	0.0	1976	0.0	25	0.	1976	16.3	24	0.3	24
11	6	60	25	79	1975	43	1953	33	24	50	1974	13	1967	0.156	24	2.20	1963	0.32	25	8.0	1953	0.0	25	0.	1976	18.6	24	0.0	24
11	7	60	25	80	1975	42	1960	32	24	52	1963	17	1962	0.105	24	1.40	1963	0.00	25	0.0	1976	0.0	25	0.	1976	19.4	24	0.0	24
11	8	59	25	80	1975	47	1976	31	24	50	1975	14	1967	0.046	25	0.75	1969	0.00	25	0.0	1976	0.0	25	0.	1976	20.2	24	0.0	24
11	9	62	25	81	1975	50	1969	31	24	56	1975	15	1976	0.109	25	2.09	1962	0.00	25	0.0	1976	0.0	25	0.	1976	18.8	24	0.1	24
11	10	60	25	78	1975	45	1957	32	24	58	1966	17	1957	0.120	24	1.10	1968	0.08	25	2.0	1968	0.0	25	0.	1976	19.0	24	0.0	24
11	11	60	25	79	1964	48	1957	28	24	50	1962	13	1957	0.029	24	0.50	1970	0.00	25	0.0	1976	0.0	25	0.	1976	20.9	24	0.0	24
11	12	62	24	75	1967	45	1968	33	24	51	1967	12	1957	0.241	24	1.80	1970	0.08	25	2.0	1976	0.0	24	0.	1975	17.8	23	0.0	23
11	13	63	25	81	1955	50	1970	31	24	52	1961	16	1976	0.010	24	0.25	1970	0.00	25	0.0	1976	0.0	25	0.	1976	18.4	24	0.0	24
11	14	63	25	80	1955	39	1976	32	23	54	1955	17	1966	0.215	25	2.09	1972	0.00	25	0.0	1976	0.0	25	0.	1976	17.4	23	0.1	23

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
11	15	62	25	76	1973	42	1969	33	24	53	1961	17	1969	0.092	25	1.10	1952	0.00	25	0.0	1976	0.0	25	0.	1976	18.2	24	0.0	24
11	16	64	25	82	1955	46	1967	34	24	54	1956	8	1967	0.009	25	0.09	1961	0.00	25	0.0	1976	0.0	25	0.	1976	16.2	24	0.0	24
11	17	64	25	78	1963	48	1970	33	24	52	1956	12	1970	0.076	25	1.80	1956	0.00	25	0.0	1976	0.0	25	0.	1976	16.6	24	0.0	24
11	18	61	25	77	1958	40	1959	31	24	55	1954	10	1970	0.071	25	0.75	1962	0.00	25	0.0	1976	0.0	25	0.	1976	19.3	24	0.0	24
11	19	59	24	74	1957	39	1955	35	23	56	1954	19	1959	0.146	25	0.90	1964	0.08	25	2.0	1961	0.0	24	0.	1976	17.8	23	0.0	23
11	20	56	25	73	1953	38	1968	30	23	57	1952	16	1965	0.141	25	2.55	1952	0.00	25	0.0	1976	0.0	25	0.	1976	22.3	23	0.0	23
11	21	57	25	70	1953	40	1969	29	23	49	1952	9	1969	0.142	25	2.70	1952	0.00	25	0.0	1976	0.0	25	0.	1976	21.9	23	0.0	23
11	22	57	25	72	1963	41	1972	28	24	51	1953	7	1964	0.061	24	0.75	1957	0.00	25	0.0	1976	0.0	25	0.	1976	23.1	24	0.0	24
11	23	57	25	70	1973	38	1971	26	24	58	1963	9	1964	0.049	25	0.50	1963	0.00	25	0.0	1976	0.0	25	0.	1976	24.2	24	0.0	24
11	24	57	24	75	1958	39	1956	28	24	51	1955	6	1970	0.068	25	0.90	1959	0.04	25	1.0	1971	0.0	25	0.	1976	22.8	23	0.0	23
11	25	55	25	71	1973	38	1970	28	24	48	1964	-3	1970	0.131	25	1.15	1964	0.00	25	0.0	1976	0.0	25	0.	1976	24.2	24	0.0	24
11	26	57	25	73	1973	45	1963	27	23	43	1964	16	1974	0.051	25	0.79	1972	0.00	25	0.0	1976	0.0	25	0.	1976	23.7	23	0.0	23
11	27	57	24	71	1963	41	1974	30	23	48	1965	8	1974	0.154	24	3.40	1971	0.00	25	0.0	1976	0.0	25	0.	1976	21.7	23	0.0	23
11	28	56	24	71	1960	40	1958	29	23	45	1968	12	1974	0.094	23	1.50	1973	0.00	25	0.0	1976	0.0	25	0.	1976	22.8	23	0.0	23
11	29	54	25	70	1968	40	1958	27	24	50	1968	6	1955	0.157	24	1.19	1963	0.00	23	0.0	1975	0.0	24	0.	1976	25.0	24	0.0	24
11	30	50	24	70	1970	35	1967	24	23	41	1975	7	1965	0.059	24	0.75	1972	0.21	24	3.0	1967	0.1	23	3.	1952	28.3	22	0.0	22
12	1	48	24	65	1973	35	1964	20	22	30	1972	5	1976	0.095	23	2.00	1974	0.00	20	0.0	1976	0.0	18	0.	1976	31.8	22	0.0	22
12	2	50	24	74	1970	33	1952	21	22	36	1962	8	1967	0.021	23	0.35	1968	0.00	20	0.0	1976	0.0	18	0.	1976	29.5	22	0.0	22
12	3	53	24	66	1972	36	1966	26	22	41	1955	14	1971	0.027	23	0.19	1967	0.00	20	0.0	1976	0.0	18	0.	1976	25.9	22	0.0	22
12	4	54	24	71	1973	22	1966	28	22	49	1964	7	1966	0.075	23	0.59	1957	0.30	20	6.0	1957	0.0	17	0.	1976	24.9	22	0.0	22
12	5	56	24	74	1972	41	1966	27	22	48	1964	5	1970	0.110	23	1.50	1973	0.00	20	0.0	1976	0.0	17	0.	1976	24.0	22	0.0	22
12	6	52	24	72	1960	42	1968	26	21	52	1972	6	1969	0.026	23	0.35	1953	0.00	20	0.0	1976	0.0	17	0.	1976	26.1	21	0.0	21
12	7	51	24	72	1956	35	1958	25	21	54	1956	-2	1970	0.200	23	1.45	1957	0.00	20	0.0	1976	0.0	18	0.	1976	27.2	21	0.0	21
12	8	53	24	75	1956	38	1958	27	21	53	1956	0	1970	0.197	22	2.00	1974	0.00	19	0.0	1973	0.0	17	0.	1973	25.2	21	0.0	21
12	9	50	23	70	1966	35	1960	26	21	49	1966	14	1968	0.162	23	1.40	1973	0.00	20	0.0	1976	0.0	18	0.	1976	27.2	21	0.0	21
12	10	51	23	72	1966	31	1968	28	22	52	1966	10	1968	0.156	23	1.70	1969	0.00	20	0.0	1976	0.0	18	0.	1976	26.0	21	0.0	21
12	11	50	24	72	1971	25	1958	24	22	52	1971	-3	1968	0.078	23	0.90	1967	0.20	20	3.0	1960	0.1	18	1.	1958	28.2	22	0.0	22
12	12	48	24	70	1971	27	1957	25	20	54	1971	-9	1962	0.169	23	0.95	1953	0.40	20	8.0	1960	0.0	18	0.	1976	28.6	20	0.0	20
12	13	49	24	66	1967	26	1962	27	21	47	1965	-8	1962	0.063	23	0.39	1966	0.00	18	0.0	1976	0.0	17	0.	1976	27.7	21	0.0	21
12	14	48	23	69	1967	25	1960	24	22	39	1965	3	1960	0.180	23	1.50	1953	0.05	20	1.0	1958	0.1	17	1.	1958	28.9	21	0.0	21
12	15	46	24	72	1971	33	1963	24	22	46	1971	6	1970	0.058	23	0.70	1972	0.00	20	0.0	1976	0.0	17	0.	1976	30.4	22	0.0	22
12	16	49	23	69	1971	33	1963	20	21	49	1971	4	1963	0.107	23	1.40	1970	0.25	20	5.0	1973	0.0	17	0.	1976	30.9	21	0.0	21
12	17	49	24	68	1956	32	1963	21	21	49	1971	0	1963	0.026	23	0.59	1973	0.30	20	6.0	1973	0.0	17	0.	1976	29.6	21	0.0	21
12	18	48	24	64	1956	34	1953	22	22	47	1956	0	1953	0.019	23	0.29	1967	0.00	20	0.0	1976	0.0	17	0.	1976	29.8	22	0.0	22
12	19	49	24	64	1967	33	1963	23	21	47	1967	1	1964	0.100	23	0.09	1968	0.00	20	0.0	1976	0.0	17	0.	1976	29.2	21	0.0	21
12	20	47	24	65	1972	30	1963	25	21	50	1957	6	1963	0.058	23	0.95	1966	0.00	19	0.0	1976	0.0	16	0.	1976	28.8	21	0.0	21
12	21	45	24	75	1956	30	1955	23	20	51	1956	-2	1963	0.230	22	1.59	1973	0.35	20	6.0	1962	0.0	17	0.	1976	30.8	20	0.0	20
12	22	46	22	64	1957	34	1954	22	21	43	1956	2	1963	0.142	23	1.70	1969	0.00	20	0.0	1976	0.0	17	0.	1976	30.5	20	0.0	20
12	23	47	23	64	1957	31	1963	23	20	45	1956	-6	1960	0.095	23	0.55	1956	0.45	20	5.0	1963	0.2	16	4.	1967	30.2	19	0.0	19
12	24	48	23	68	1971	26	1966	26	20	42	1971	8	1960	0.047	23	0.90	1966	0.00	19	0.0	1976	0.0	15	0.	1976	27.6	19	0.0	19
12	25	51	23	76	1955	36	1976	26	20	53	1964	2	1969	0.056	23	0.79	1969	0.25	20	5.0	1962	0.0	15	0.	1976	27.1	20	0.0	20
12	26	49	24	68	1971	34	1967	23	19	48	1964	10	1969	0.110	23	1.04	1957	0.00	20	0.0	1976	0.0	14	0.	1972	28.7	19	0.0	19
12	27	51	23	70	1971	30	1967	22	20	51	1964	-7	1966	0.065	23	1.50	1964	0.00	20	0.0	1976	0.0	15	0.	1976	28.7	20	0.0	20
12	28	50	23	73	1971	28	1967	23	20	48	1971	-1	1970	0.073	23	0.70	1959	0.00	19	0.0	1976	0.0	15	0.	1976	28.5	20	0.0	20
12	29	48	22	68	1971	25	1967	23	20	49	1954	-5	1970	0.195	22	3.05	1958	0.00	20	0.0	1976	0.0	15	0.	1976	28.7	19	0.0	19
12	30	47	23	70	1971	32	1963	21	21	43	1954	-8	1970	0.082	22	0.25	1972	0.00	20	0.0	1976	0.0	15	0.	1976	30.8	21	0.0	21
12	31	47	24	72	1965	30	1963	24	19	38	1965	1	1963	0.109	23	0.55	1969	0.15	20	3.0	1976	0.0	14	0.	1972	29.1	19	0.0	19

Station Metadata, Quality Control, and Inventory Information for

PARTLOW 3 WNW, Virginia

Station Name	PARTLOW 3 WNW
COOP Station Number	446533
State	Virginia
Latitude	38d 03m N
Longitude	077d 42m W
Elevation	249 ft.
County	SPOTSYLVANIA
Climate Division	02
CSSA Site I.D.	
CSSA County Warning Area	
Data Period Analyzed for Snowfall	1952-1976
Data Period Analyzed for Snow Depth	1952-1976

NA = Insufficient data.

In the COOP Station History Metadata Base, this station has:
0 location changes over 25 years,
0 observations time changes over 25 years.

Over 1952-1976 period, for this station's snowfall data:
89% of the months had complete data,
6.9% of the daily values were missing,
there were 14 breaks in the data record.

Over 1952-1976 period, for this station's snow depth data:
38% of the months had complete data,
58.0% of the daily values were missing,
there were 11 breaks in the data record.

To Station Selection Page To Option Selection Page

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NCDC / Snow Clim. / State / Options / Station(County) / Params / Greatest SF / Search

Greatest Snowfall Amount for One-Day and Multiple Day Snowfall Events.

PARTLOW 3 WNW, Virginia

Month/Season	1-Day	2-Day	3-Day	4-Day	5-Day	6-Day	7-Day	NYRS
January	20.0 1/00/0	0.0 1/00/0	0.0 1/00/0	0.0 1/00/0	0.0 1/00/0	0.0 1/00/0	0.0 1/00/0	20
February	8.0 2/00/0	0.0 2/00/0	0.0 2/00/0	0.0 2/00/0	0.0 2/00/0	0.0 2/00/0	0.0 2/00/0	19
March	10.0 3/00/0	0.0 3/00/0	0.0 3/00/0	0.0 3/00/0	0.0 3/00/0	0.0 3/00/0	0.0 3/00/0	21
April	4.0 4/00/0	0.0 4/00/0	0.0 4/00/0	0.0 4/00/0	0.0 4/00/0	0.0 4/00/0	0.0 4/00/0	22
May	0.0 5/00/0	0.0 5/00/0	0.0 5/00/0	0.0 5/00/0	0.0 5/00/0	0.0 5/00/0	0.0 5/00/0	24
June	0.0 6/00/0	0.0 6/00/0	0.0 6/00/0	0.0 6/00/0	0.0 6/00/0	0.0 6/00/0	0.0 6/00/0	24
July	0.0 7/00/0	0.0 7/00/0	0.0 7/00/0	0.0 7/00/0	0.0 7/00/0	0.0 7/00/0	0.0 7/00/0	25
August	0.0 8/00/0	0.0 8/00/0	0.0 8/00/0	0.0 8/00/0	0.0 8/00/0	0.0 8/00/0	0.0 8/00/0	25
September	0.0 9/00/0	0.0 9/00/0	0.0 9/00/0	0.0 9/00/0	0.0 9/00/0	0.0 9/00/0	0.0 9/00/0	25
October	0.0 10/00/0	0.0 10/00/0	0.0 10/00/0	0.0 10/00/0	0.0 10/00/0	0.0 10/00/0	0.0 10/00/0	25
November	8.0 11/00/0	0.0 11/00/0	0.0 11/00/0	0.0 11/00/0	0.0 11/00/0	0.0 11/00/0	0.0 11/00/0	25
December	8.0 12/00/0	0.0 12/00/0	0.0 12/00/0	0.0 12/00/0	0.0 12/00/0	0.0 12/00/0	0.0 12/00/0	20
Winter	NA 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	-99
Spring	NA 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	-99
Summer	NA 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	-99
Autumn	NA 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	-99
Annual	20.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	25
August-July	NA 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	0.0 00/0	-99

Snow fell on each day.
Amount listed with most recent date of occurrence below it.
All snowfall amounts are in inches.
NYRS = Number of Years with non-missing data.
NA = Not Applicable, or insufficient data to compute.
* = value > 0 but less than units resolution.

To Station Selection Page To Parameter Selection Page

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Greatest Snowfall Amount for 1-Day, 2-Day, and 3-Day Snowfall Events.

PARTLOW 3 WNW, Virginia

Month/Season	1-Day	2-Day	3-Day	NYRS
January	20.0	24.0	24.0	20
February	8.0	9.0	20.0	19
March	10.0	10.0	10.0	21
April	4.0	4.0	4.0	22
May	0.0	0.0	0.0	24
June	0.0	0.0	0.0	24
July	0.0	0.0	0.0	25
August	0.0	0.0	0.0	25
September	0.0	0.0	0.0	25
October	0.0	0.0	0.0	25
November	8.0	8.0	8.0	25
December	8.0	11.0	11.0	20
Winter	NA	NA	NA	-99
Spring	NA	NA	NA	-99
Summer	NA	NA	NA	-99
Autumn	NA	NA	NA	-99
Annual	20.0	24.0	24.0	25
August-July	NA	NA	NA	-99

Whether or Not snow fell on each day.
All snowfall amounts are in inches.
NYRS = Number of Years with non-missing data.
NA = Not Applicable, or Insufficient data to compute.
* = value > 0 but less than units resolution.

To Station Selection Page To Parameter Selection Page

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Please see the NCDC Contact Page if you have questions or comments.

PARTLOW 3 WNW, VIRGINIA

Monthly Total Snowfall (Inches)

(446533)

File last updated on May 18,
*** Note *** Provisional Data *** After Year/Month 197612
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR (S)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANN
1951-52	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00	0.00
1952-53	0.00	0.00	0.00	0.00	0.00a	0.00	0.00	0.00	8.00	0.00	0.00	0.00	8.00
1953-54	0.00	0.00	0.00	0.00	8.00	0.00	8.00	0.00	0.00	0.20	0.00	0.00	16.20
1954-55	0.00	0.00	0.00	0.00	0.00	0.00a	5.00	2.00	0.00	0.00	0.00	0.00	7.00
1955-56	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00
1956-57	0.00	0.00	0.00	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	4.50
1957-58	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00z	4.00d	0.00	0.00	0.00	10.00
1958-59	0.00	0.00	0.00	0.00	0.00	2.00	3.00	0.00	0.00	0.00	0.00	0.00	5.00
1959-60	0.00	0.00	0.00	0.00	0.00	0.00z	0.00b	6.00	0.00z	0.00	0.00	0.00	6.00
1960-61	0.00	0.00	0.00	0.00	0.00	11.00	0.00z	0.00z	0.00	0.00z	0.00	0.00	11.00
1961-62	0.00	0.00	0.00	0.00	2.00	0.00z	13.00	6.00	24.00	0.00	0.00	0.00	45.00
1962-63	0.00	0.00	0.00	0.00	0.00	11.00	0.00	0.00	0.00	0.00	0.00	0.00	11.00
1963-64	0.00	0.00	0.00	0.00	0.00	5.00	9.00	17.00	3.00	0.00	0.00	0.00	34.00
1964-65	0.00	0.00	0.00a	0.00	2.00	0.00	0.00z	0.00z	0.00z	0.00	0.00	0.00	2.00
1965-66	0.00	0.00	0.00	0.00	0.00	1.00	41.00	5.00	0.00	0.00	0.00	0.00	47.00
1966-67	0.00	0.00	0.00	0.00	0.00a	0.00d	3.00	19.00	0.00	0.00	0.00	0.00	22.00
1967-68	0.00	0.00	0.00	0.00	3.00	4.00	0.00z	4.00	3.00	0.00	0.00	0.00	14.00
1968-69	0.00	0.00	0.00	0.00	2.00	0.00	1.00	0.00	8.00	0.00	0.00	0.00	11.00
1969-70	0.00	0.00	0.00	0.00	0.00	0.00z	7.00a	2.00	0.00	0.00	0.00	0.00	9.00
1970-71	0.00	0.00	0.00	0.00	0.00	0.00	14.00	4.00	10.00	4.00	0.00	0.00	32.00
1971-72	0.00	0.00	0.00	0.00	1.00	0.00	0.00	10.00	0.00	1.00	0.00	0.00	12.00
1972-73	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00a	0.00z	0.00	0.00	4.00
1973-74	0.00	0.00	0.00	0.00	0.00	11.00	0.00	6.00	0.00	0.00	0.00	0.00	17.00
1974-75	0.00	0.00	0.00	0.00	0.00	0.00z	0.00z	0.00z	0.00z	0.00	0.00	0.00	0.00
1975-76	0.00	0.00	0.00	0.00	0.00	0.00z	0.00	0.00z	1.00	0.00	0.00	0.00z	1.00
Period of Record Statistics													
MEAN	0.00	0.00	0.00	0.00	0.75	2.68	5.72	4.26	2.90	0.24	0.00	0.00	16.34
S.D.	0.00	0.00	0.00	0.00	1.78	4.14	9.37	5.67	5.75	0.87	0.00	0.00	13.12
SKEW	0.00	0.00	0.00	0.00	3.10	1.26	2.85	1.52	2.61	3.99	0.00	0.00	1.08
MAX	0.00	0.00	0.00	0.00	8.00	11.00	41.00	19.00	24.00	4.00	0.00	0.00	47.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
NO YRS	24	24	24	24	24	19	20	19	21	22	24	24	14

Louisa

Louisa, VA, United States

List Stations in Division VA-02
List Stations in Louisa County
List Stations within 5, 10, 25, or 50 miles

Type* : COOP
Call Sign/ICS* :
WBAN* :
COOP ID* : 445050
Climate Division* : VA-02 - Eastern Piedmont
WMO ID* :
In Service* : 01 Aug 1948 to Present
Elevation* : 128.0m (419.8') above s/l
Lat/Lon* : 38°03'N / 78°00'W
County* : Louisa

11.6 miles

- Data Inventories
- DATA
- Station History
- State Climatologist
- Regional Climate Center

Information at Other Sites

- National Weather Service
  - Eastern Region Headquarters
  - Regional Forecast Office
  - Local Weather Conditions
  - Local Weather Forecast
- Current Radar
- Current Satellite
- Sunrise/Sunset

* Disclaimer
* List of NCDC Datasets
* Please report any Data Errors found.
* Note to webmasters: you can link directly to this page.

Data Inventories

Please note that additional data (digital and non-digital) may be available for this station. Contact NCDC if additional details are needed.

Click on the following where available:

- *DAT to obtain digital ascii data (charges may apply),*
  Please do not order these data if you do not know what a Digital ASCII File is.
- *INV to view inventory, or*
- *DOC to view documentation*

Surface
DAT INV DOC 3200 -Cooperative Summary Of The Day
DAT INV DOC SOD -Daily Surface Data (TD3200/3210 combined)
DAT INV DOC 3220 -Summary Of The Month (SOM) Cooperative

DATA

Additional data products may be available for this station. If you can't find what you are looking for here, please try our Most Popular Products page.

Forms, Publications, and Web Pages
Graphs and Other Images
CD-ROMs
Digital ASCII Files

Forms, Publications, and Web Pages

Most of these products are publications that have been converted to on-line access. As such, these documents have column headings and are displayed in an easy-to-read format.

For additional information and product samples, click on the ? icon next to the desired product.

? Daily/Monthly/Annual Virginia Climatological Data
? Record of Climatological Observations
? Annual Climatological Summary
? Storm Data Publication

? Miscellaneous Storm Events in Louisa County
*All List Storms

Graphs and Other Images

Includes contour maps, time series, NEXRAD radar mosaics, and satellite images.

For additional information and product samples, click on the ? icon next to the desired product.

? National Mosaic Reflectivity Images
? Miscellaneous Satellite Images

CD-ROMs

The following are some of the more popular CD-ROMs that contain data for this station. Others are available that may contain summarized data for this station. A complete list of CD-ROMs is available in the OnLine Store.

For additional information, click on the ? icon next to the desired product.

? NCDC Cooperative Station Data

Digital ASCII Files

These files may or may not contain column headers. In order to use these files, you will need to import them into a spreadsheet or database package for presentation. Please do not order these data if you do not know what a Digital ASCII File is. A sample Digital ASCII File is available for viewing but content varies a great deal depending on your request. Other digital files are available Offline that may contain data for this station.

For additional information and product samples, click on the ? icon next to the desired product.

? SOD -Daily Surface Data (TD3200/3210 combined)
? 3220 -Summary Of The Month (SOM) Cooperative

Station History

Louisa

Date Began	Date Ended	Lat/Lon	Elevation meters/feet	COOP ID	WBAN	Call Sign	WMO ID	Type
LOUISA								
13 Mar 2001	Present	38°03'N / 78°00'W	128.0m / 419.8'	445050	.	.	.	COOP
11 Feb 1998	13 Mar 2001	38°02'N / 78°00'W	128.0m / 419.8'	445050	.	.	.	COOP
01 Oct 1992	11 Feb 1998	38°02'N / 78°00'W	128.0m / 419.8'	445050	.	.	.	COOP
01 Nov 1970	01 Oct 1992	38°02'N / 78°00'W	128.0m / 419.8'	445050	.	.	.	COOP
01 Aug 1948	01 Nov 1970	38°02'N / 78°00'W	134.1m / 439.8'	445050	.	.	.	COOP

12 miles

Top of Page

NCDC / Climate-Radar Data Inventories / Locate Station / Search

This page dynamically generated 01 Dec 2003 from:
http://www.ncdc.noaa.gov/oa/climate/stationlocator.html
Please send questions or comments about this system to ncdc.webcliserv@noaa.gov
Please see the NCDC Contact Page if you have questions or comments.

Back to:
State Map | Southeast Map | Home Page

NOTE:
To print data frame (right side), click on right frame before printing.

1971 - 2000

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1971-2000 Normals (~3 KB)

1961 - 1990

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1961-1990 Normals (~3 KB)

Period of Record

- Station Metadata
- Station Metadata Graphics

General Climate Summary Tables
- Temperature
- Precipitation
- Heating Degree Days
- Cooling Degree Days
- Growing Degree Days

Temperature
- Daily Extremes and Averages
- Spring 'Freeze' Probabilities
- Fall 'Freeze' Probabilities
- 'Freeze Free' Probabilities
- Monthly Temperature Listings
  Average

LOUISA, VIRGINIA (445050)

Period of Record Monthly Climate Summary

Period of Record : 8/ 1/1948 to 3/31/2003

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	45.9	49.7	58.5	69.8	77.0	84.1	87.4	85.8	79.7	69.7	59.0	48.3	67.9
Average Min. Temperature (F)	24.8	26.6	33.2	42.2	51.5	60.0	64.6	63.3	56.0	44.0	35.2	27.5	44.1
Average Total Precipitation (in.)	3.16	3.09	3.89	3.04	3.53	3.61	4.30	4.22	3.51	3.52	3.50	3.28	42.65
Average Total SnowFall (in.)	5.9	5.4	2.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.3	18.5
Average Snow Depth (in.)	1	1	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 99.7% Min. Temp.: 99.7% Precipitation: 99.8% Snowfall: 99.8% Snow Depth: 99.7%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

LOUISA, VIRGINIA

Period of Record General Climate Summary - Temperature

Station:(445050) LOUISA															
From Year=1948 To Year=2003															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	45.9	24.8	35.4	80	30/2002	-14	28/2000	48.8	50	24.9	***	0.0	3.2	23.7	0.7
February	49.7	26.7	38.2	81	24/1985	-21	05/1996	47.6	76	27.6	***	0.0	1.6	20.5	0.1
March	58.5	33.2	45.9	89	12/1990	2	08/1960	52.9	76	33.2	***	0.0	0.2	15.0	0.0
April	69.8	42.2	56.0	96	17/2002	13	10/1985	61.0	54	51.4	61	0.5	0.0	5.6	0.0
May	77.0	51.5	64.2	96	20/1996	26	04/1986	70.9	53	59.4	67	1.4	0.0	0.5	0.0
June	84.0	60.0	72.0	100	27/1950	38	11/1972	76.7	52	68.1	72	6.4	0.0	0.0	0.0
July	87.4	64.6	76.0	104	30/1953	42	01/1988	79.3	55	71.0	101	11.4	0.0	0.0	0.0
August	85.8	63.3	74.6	104	31/1953	38	29/1986	77.9	80	71.0	92	8.3	0.0	0.0	0.0
September	79.7	56.0	67.8	104	07/1954	29	24/1983	73.1	70	63.7	67	2.8	0.0	0.1	0.0
October	69.7	44.0	56.9	94	05/1951	18	24/1969	63.8	84	50.9	87	0.1	0.0	4.2	0.0
November	59.0	35.2	47.1	88	01/1974	11	24/1970	54.0	85	40.3	96	0.0	0.0	13.5	0.0
December	48.3	27.5	37.9	79	29/1984	-9	23/1989	47.5	56	26.3	89	0.0	1.9	21.8	0.2
Annual	67.9	44.1	56.0	104	19530730	-21	19960205	59.0	90	53.7	100	31.1	7.0	104.9	1.0
Winter	48.0	26.3	37.1	81	19850224	-21	19960205	43.1	49	32.0	78	0.0	6.8	66.1	1.0
Spring	68.4	42.3	55.4	96	19960520	2	19600308	59.2	77	51.9	60	2.0	0.2	21.1	0.0
Summer	85.7	62.6	74.2	104	19530730	38	19720611	76.8	52	71.9	100	26.1	0.0	0.0	0.0
Fall	69.4	45.1	57.3	104	19540907	11	19701124	60.7	70	53.9	100	3.0	0.0	17.8	0.0

Table updated on Feb 11,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

LOUISA, VIRGINIA

Period of Record General Climate Summary - Precipitation

Station:(445050) LOUISA

From Year=1948 To Year=2003

	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	3.16	8.53	78	0.10	81	2.02	07/1996	9	6	2	1	5.9	32.2	66
February	3.09	8.22	98	0.29	78	3.98	14/1984	9	6	2	1	5.4	23.3	96
March	3.89	8.94	94	0.92	66	3.90	04/1993	10	7	3	1	2.9	28.5	60
April	3.06	7.17	83	0.49	85	2.53	16/1987	10	7	2	1	0.3	4.5	71
May	3.63	10.40	71	0.56	64	2.27	27/1990	11	7	2	1	0.0	0.0	49
June	3.69	10.82	72	0.35	70	6.51	26/1975	9	6	3	1	0.0	0.0	49
July	4.31	11.71	91	0.52	98	5.18	22/1956	10	7	3	1	0.0	0.0	49
August	4.22	16.33	69	0.48	91	11.18	20/1969	9	6	3	1	0.0	0.0	48
September	3.51	11.14	87	0.47	54	4.59	06/1996	8	5	2	1	0.0	0.0	48
October	3.52	10.82	72	0.00	100	4.18	06/1972	7	5	2	1	0.0	1.5	79
November	3.50	10.88	85	0.32	101	5.76	28/1993	8	6	2	1	0.7	6.5	87
December	3.28	7.66	48	0.24	65	3.18	10/1992	8	6	2	1	3.3	19.5	66
Annual	42.85	62.47	72	29.81	80	11.18	19690820	110	74	29	11	18.5	59.0	66
Winter	9.52	16.16	98	3.58	81	3.98	19840214	27	18	7	2	14.6	55.3	96
Spring	10.58	18.02	103	5.40	86	3.90	19930304	31	21	7	2	3.2	28.5	60
Summer	12.22	27.77	69	4.80	98	11.18	19690820	29	19	8	3	0.0	0.0	49
Fall	10.53	20.36	96	2.73	101	5.76	19931128	24	16	7	3	0.7	6.5	87

Table updated on Feb 11,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

LOUISA, VIRGINIA

Period of Record Daily Climate Summary

Daily Records for station 445050 LOUISA state: va

For temperature and precipitation, multi-day accumulations
are not considered either for records or averages.
The year given is the year of latest occurrence.

Period requested -- Begin : 1/ 1/1890 -- End : 7/31/2003
Period used -- Begin : 8/ 1/1948 -- End : 7/31/2003

Cooling degree threshold = 65.00 Heating degree threshold = 65.00

AVG Multi-year unsmoothed average of the indicated quantity
HI Highest value of indicated quantity for this day of year
LO Lowest value of indicated quantity for this day of year
YR Latest year of occurrence of the extreme value
NO Number of years with data for this day of year.
Units: English (inches and degrees F)

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
1	1	46	54	74	1952	32	1987	27	54	57	1966	6	1998	0.164	55	1.41	2003	0.25	55	7.5	1971	0.7	55	10.	1971	28.5	54	0.0	54
1	2	47	55	67	2000	26	1968	25	55	45	1952	8	2002	0.053	55	1.04	1979	0.04	55	2.0	1962	0.6	55	9.	1971	29.1	55	0.0	55
1	3	47	55	70	1997	30	2002	27	55	53	1950	2	2001	0.087	55	1.10	1999	0.06	55	3.5	2002	0.5	55	8.	1963	28.5	55	0.0	55
1	4	47	55	74	1997	29	1958	27	55	58	1950	8	1970	0.097	55	0.68	1982	0.10	55	2.6	1994	0.4	55	7.	1963	28.4	55	0.0	55
1	5	46	55	72	1950	28	1999	25	55	57	1950	2	1969	0.088	55	0.98	1993	0.19	55	7.0	1980	0.5	55	9.	1980	30.2	55	0.0	55
1	6	45	55	70	1950	26	1988	26	55	57	1998	3	1999	0.090	55	0.93	1966	0.18	55	3.0	1975	0.5	55	9.	1980	30.1	55	0.0	55
1	7	46	55	68	1950	19	1988	28	55	58	1998	3	1988	0.114	55	2.02	1996	0.49	55	16.0	1996	0.9	55	18.	1996	28.4	55	0.0	55
1	8	43	55	69	1998	25	1973	24	55	60	1998	2	1970	0.115	55	1.12	1978	0.26	55	8.5	1988	1.1	55	21.	1996	31.9	55	0.0	55
1	9	44	55	67	2003	12	1970	24	55	52	1998	0	1970	0.119	55	1.09	1964	0.10	55	3.0	1977	1.0	55	18.	1996	31.5	55	0.0	55
1	10	45	55	70	1950	27	1982	24	55	50	1950	-2	1988	0.102	55	1.15	1965	0.11	55	4.0	1962	0.9	55	16.	1996	31.0	55	0.0	55
1	11	44	55	70	1975	18	1982	24	55	51	1972	-9	1962	0.099	55	1.57	1991	0.13	55	6.0	1955	0.9	55	16.	1996	30.9	55	0.0	55
1	12	43	55	66	1963	24	1981	23	55	52	1963	-2	1988	0.086	55	1.35	1991	0.14	54	4.5	1996	0.9	55	20.	1996	32.3	55	0.0	55
1	13	45	55	71	1960	25	1982	23	55	48	1995	-2	1977	0.078	55	0.75	1964	0.34	55	5.5	1982	1.0	55	13.	1996	31.0	55	0.0	55
1	14	46	55	72	1995	27	1982	24	55	50	1952	8	1997	0.128	55	1.83	1968	0.19	55	4.0	1957	0.9	55	10.	1996	30.1	55	0.0	55
1	15	46	55	75	1952	22	1957	25	55	58	1995	-4	1964	0.110	55	1.42	1995	0.09	55	2.0	1957	0.7	55	8.	1996	29.8	55	0.0	55
1	16	46	55	71	1953	19	1994	24	55	45	1953	-3	1994	0.059	55	0.66	1991	0.22	55	4.5	1959	0.8	55	7.	1996	30.0	55	0.0	55
1	17	46	55	73	1990	18	1977	23	55	52	1949	-3	1977	0.055	55	1.25	1978	0.18	55	3.0	1985	0.8	55	6.	1965	31.2	55	0.0	55
1	18	45	55	72	1990	23	1997	25	55	57	1990	-5	1957	0.099	55	1.32	1980	0.08	55	4.0	1984	0.7	55	6.	1965	30.3	55	0.0	55
1	19	45	55	70	1951	14	1994	24	55	52	1986	-4	1994	0.119	55	1.19	1987	0.22	55	4.0	2002	0.8	55	6.	1965	30.7	55	0.0	55
1	20	45	55	69	1951	16	1994	24	55	49	1954	-3	1984	0.141	55	1.27	1988	0.36	55	6.0	1975	0.9	55	6.	1975	30.6	55	0.0	55
1	21	45	55	68	1959	18	1985	23	55	49	1990	-7	1985	0.118	55	1.58	1969	0.00	55	0.0	2003	0.7	55	5.	1978	31.4	55	0.0	55
1	22	46	55	70	1986	23	1961	24	55	40	1999	-11	1984	0.166	55	1.77	1987	0.55	55	15.5	1987	1.1	55	15.	1987	30.6	55	0.0	55
1	23	48	55	73	1974	25	1954	27	55	47	1962	5	1961	0.102	55	1.80	1998	0.05	55	1.0	1982	1.0	55	15.	1987	28.1	55	0.0	55
1	24	49	55	73	1967	35	1980	26	55	54	1950	-3	1987	0.113	55	1.76	1999	0.03	55	0.8	1971	0.7	55	11.	1987	27.6	55	0.0	55
1	25	47	55	73	1967	21	1961	28	55	56	1950	-2	1961	0.134	55	1.29	1978	0.32	55	11.0	2000	0.9	55	13.	1987	27.7	55	0.0	55
1	26	48	55	77	1950	15	1961	26	55	57	1950	0	1961	0.100	55	1.01	1978	0.44	55	11.0	1987	1.1	55	24.	1987	28.6	55	0.0	55
1	27	48	55	72	1974	26	1961	24	55	53	1967	-13	1987	0.130	55	1.30	1998	0.14	55	4.0	1966	1.1	55	19.	1987	29.2	55	0.0	55
1	28	47	55	71	1999	25	1986	23	55	42	1953	-14	2000	0.113	55	1.58	1998	0.13	55	4.0	1995	1.0	54	15.	1987	30.4	55	0.0	55
1	29	47	55	77	1975	22	1966	24	55	44	1970	-4	2000	0.038	55	0.44	1990	0.11	55	4.0	1966	1.0	55	15.	1966	29.9	55	0.0	55
1	30	48	55	80	2002	17	1966	26	55	54	2002	5	1961	0.070	55	1.03	1995	0.31	54	10.0	1966	1.2	55	24.	1966	28.6	55	0.0	55
1	31	46	55	69	2002	26	1951	25	55	51	1969	-4	1965	0.055	55	1.16	1949	0.15	55	3.5	1985	0.6	54	9.	1987	29.8	55	0.0	55

2	1	47	55	76	2002	25	1996	25	55	47	1988	-2	1965	0.091	55	1.10	1985	0.11	55	4.0	1958	1.0	55	22.	1966	29.0	55	0.0	55
2	2	48	55	74	1989	28	1996	26	55	57	1988	4	1971	0.173	55	2.07	1973	0.33	55	10.0	1996	1.1	55	23.	1966	28.4	55	0.0	55
2	3	46	55	70	1991	20	1996	24	55	46	1989	7	1966	0.142	55	1.88	1982	0.17	55	6.0	1961	1.0	55	18.	1966	30.2	55	0.0	55
2	4	46	55	72	1991	19	1996	24	55	45	1990	4	1951	0.148	55	2.87	1998	0.16	55	3.5	1975	0.9	55	15.	1966	30.1	55	0.0	55
2	5	47	55	76	1991	23	1996	22	55	46	1962	-21	1996	0.071	55	0.83	1984	0.13	55	5.0	1984	0.7	55	15.	1966	30.9	55	0.0	55
2	6	47	55	68	1991	27	1995	24	55	48	1991	-7	1996	0.107	55	1.91	1964	0.09	55	3.0	1983	0.7	55	14.	1966	29.6	55	0.0	55
2	7	47	55	62	1991	29	1979	25	55	51	1991	3	1995	0.186	55	1.58	1965	0.41	55	7.5	1967	0.9	55	12.	1966	29.4	55	0.0	55
2	8	46	55	71	1965	31	1995	24	55	52	1965	-1	1967	0.076	55	1.49	1961	0.34	55	9.0	1961	0.9	55	15.	1961	30.1	55	0.0	55
2	9	47	55	69	1990	27	1979	24	55	46	1990	2	1967	0.060	55	0.88	1969	0.06	55	1.5	1979	0.8	55	14.	1961	29.8	55	0.0	55
2	10	49	55	69	1959	27	1973	24	54	49	1960	-8	1979	0.055	55	0.90	1990	0.05	55	1.5	1980	0.6	55	13.	1961	29.1	54	0.0	54
2	11	50	55	67	1999	22	1979	26	55	47	1960	-1	1979	0.142	55	2.09	1994	0.47	55	11.0	1983	0.9	55	13.	1961	27.6	55	0.0	55
2	12	48	55	70	1984	27	1979	24	55	50	1965	3	1964	0.105	55	1.22	1985	0.17	54	2.5	1979	0.9	55	12.	1961	29.4	55	0.0	55
2	13	46	55	75	1951	26	1979	24	55	47	1984	7	1967	0.120	55	1.78	1971	0.24	55	7.0	1960	0.9	55	12.	1961	30.0	55	0.0	55
2	14	50	55	76	1990	26	1979	27	55	54	1949	5	1979	0.135	55	3.98	1984	0.09	55	2.0	1960	0.6	54	11.	1961	26.9	55	0.0	55
2	15	51	55	80	1989	27	1979	28	55	56	1949	12	1983	0.084	55	0.93	2003	0.33	55	11.0	1958	0.8	54	11.	1958	25.7	55	0.0	55
2	16	49	55	77	1989	27	1987	28	55	55	1954	4	1963	0.140	55	1.28	2003	0.40	55	9.8	1996	1.0	55	15.	1958	26.2	55	0.0	55
2	17	49	55	76	1976	26	2003	27	55	62	1976	0	1996	0.126	55	1.73	1998	0.25	55	5.0	1967	1.0	55	12.	1958	27.4	55	0.1	55
2	18	49	55	71	1981	18	1979	26	55	46	1981	2	1979	0.086	55	1.00	1960	0.20	55	4.5	1979	0.8	55	12.	1958	28.2	55	0.0	55
2	19	53	55	74	1961	32	1993	29	55	52	1981	5	1979	0.107	55	1.04	1972	0.13	55	4.5	1979	0.7	55	17.	1979	24.1	55	0.0	55
2	20	52	55	72	1971	30	1959	30	55	56	1991	8	1979	0.038	55	0.65	1996	0.02	55	1.0	1957	0.5	55	16.	1979	24.2	55	0.0	55
2	21	53	55	72	1997	34	1993	28	54	51	1953	7	1958	0.095	55	1.12	1954	0.06	55	3.3	1993	0.4	55	11.	1979	24.8	54	0.0	54
2	22	54	55	73	1991	25	1963	29	55	49	1981	2	1968	0.105	55	2.30	2003	0.07	55	3.5	2001	0.2	55	8.	1979	24.0	55	0.0	55
2	23	53	55	74	1985	32	1999	30	55	55	1990	3	1963	0.163	55	1.15	1984	0.05	55	2.0	1987	0.1	54	6.	1979	23.5	55	0.0	55
2	24	54	55	81	1985	34	1967	30	55	56	1985	15	2002	0.106	55	2.13	1979	0.19	55	5.5	1966	0.2	54	4.	1979	23.6	55	0.1	55
2	25	54	55	80	2000	27	1967	29	54	54	1985	7	1989	0.089	55	1.15	1965	0.05	55	1.5	1960	0.1	55	2.	1966	24.3	54	0.0	54
2	26	52	55	76	1977	30	2003	28	55	50	1957	6	1990	0.129	55	1.22	1957	0.30	55	7.0	1950	0.2	54	3.	2003	25.3	55	0.0	55
2	27	53	55	74	1976	28	2003	28	55	54	1977	4	1963	0.078	55	0.85	1958	0.30	54	9.0	1982	0.4	53	9.	1982	24.7	55	0.0	55
2	28	54	55	77	1976	34	1978	30	55	51	1955	10	1994	0.105	55	1.40	1966	0.15	55	3.0	1980	0.2	54	6.	1982	23.0	55	0.0	55
2	29	54	13	79	1972	31	1980	28	13	47	1972	15	1980	0.039	13	0.37	1968	0.31	13	3.0	1968	0.1	11	1.	1980	23.7	13	0.0	13
3	1	53	55	78	1976	28	1980	30	55	55	1955	10	1980	0.139	54	1.33	1954	0.35	54	8.0	1969	0.4	53	8.	1969	23.7	55	0.0	55
3	2	55	55	78	1972	19	1980	30	55	60	1972	11	1980	0.093	54	2.66	1994	0.28	54	5.0	1953	0.5	53	11.	1980	22.8	55	0.1	55
3	3	55	55	76	1974	31	1960	31	55	50	1991	8	1980	0.162	54	1.25	1960	0.30	54	12.0	1960	0.5	54	12.	1960	22.7	55	0.0	55
3	4	53	55	81	1983	30	1960	31	54	59	1974	8	1996	0.166	55	3.90	1993	0.00	54	0.0	2003	0.4	54	11.	1960	23.1	54	0.1	54
3	5	57	55	81	1961	30	1960	33	55	61	1974	9	2002	0.124	54	1.52	1965	0.20	54	11.0	1962	0.4	54	11.	1962	20.5	55	0.1	55
3	6	57	55	81	1961	34	1962	33	55	58	1961	10	1960	0.150	54	1.53	1989	0.15	54	7.0	1962	0.5	54	14.	1962	20.1	55	0.1	55
3	7	56	55	80	1974	31	1960	31	55	50	1983	5	1960	0.113	54	1.40	1967	0.16	54	4.0	1962	0.5	54	16.	1962	21.6	55	0.0	55
3	8	56	55	85	2000	27	1989	30	55	54	1980	2	1960	0.126	54	1.58	1995	0.07	54	2.0	1953	0.4	54	10.	1962	22.5	55	0.0	55
3	9	56	54	79	2000	27	1960	31	54	54	2000	4	1960	0.092	54	1.17	1976	0.30	54	6.0	1958	0.6	54	8.	1962	21.8	54	0.0	54
3	10	56	55	77	2000	34	1975	30	55	52	1986	11	1996	0.063	54	0.84	1978	0.15	54	4.0	1960	0.4	53	9.	1960	22.3	55	0.0	55
3	11	56	55	81	1990	35	1998	30	55	60	1986	7	1960	0.062	54	0.97	1952	0.00	54	0.0	2003	0.3	53	8.	1960	22.1	55	0.0	55
3	12	57	55	89	1990	37	1960	31	55	54	1973	13	1960	0.142	54	2.08	1963	0.00	54	0.0	2003	0.2	53	8.	1960	21.0	55	0.1	55
3	13	58	55	88	1990	36	1980	33	55	59	1977	4	1960	0.152	55	2.07	1993	0.26	54	8.8	1993	0.4	54	8.	1993	20.2	55	0.1	55
3	14	58	54	86	1990	29	1993	33	55	51	1979	10	1960	0.137	54	1.49	1975	0.01	54	0.8	1988	0.2	54	7.	1993	19.6	54	0.1	54
3	15	58	54	81	1990	35	1993	33	55	54	1957	2	1993	0.069	55	1.35	1999	0.00	54	0.0	2003	0.2	54	6.	1993	19.5	54	0.0	54
3	16	58	54	81	1995	36	1960	33	55	64	1990	17	1992	0.085	55	1.19	1960	0.25	54	11.0	1960	0.4	54	17.	1960	19.9	54	0.1	54
3	17	59	54	83	1982	41	1961	32	55	62	1990	13	1950	0.160	55	1.51	1990	0.00	54	0.0	2003	0.3	54	12.	1960	19.9	54	0.0	54
3	18	56	54	81	1989	36	1967	32	54	52	1990	13	1967	0.117	54	0.84	1949	0.03	54	1.5	1956	0.2	54	9.	1960	20.9	53	0.0	53
3	19	57	55	76	1978	35	1958	34	55	59	1966	11	1993	0.189	54	1.22	1952	0.02	54	1.0	1958	0.2	54	8.	1960	19.9	55	0.0	55
3	20	58	55	79	1968	42	1989	34	55	49	1975	16	1956	0.194	54	2.77	2003	0.09	54	2.5	1990	0.1	54	5.	1960	19.4	55	0.0	55
3	21	58	55	86	1952	38	1964	35	55	54	1976	16	1965	0.222	55	2.08	2001	0.01	54	0.7	1988	0.1	54	4.	1960	18.6	55	0.1	55
3	22	58	55	85	1968	35	1961	33	55	56	1952	11	1986	0.102	55	1.56	1961	0.03	54	1.5	1985	0.1	54	3.	1960	19.5	55	0.0	55
3	23	60	55	83	1966	41	1989	33	55	53	1966	18	1959	0.099	54	1.74	1949	0.00	54	0.0	2003	0.0	54	0.	2003	18.8	55	0.1	55
3	24	62	55	80	1994	44	1983	35	55	54	1988	18	1992	0.137	54	1.63	1979	0.00	54	0.0	2003	0.0	54	0.	2003	16.6	55	0.0	55
3	25	61	55	82	1959	41	1958	33	55	51	1994	18	1971	0.087	54	0.79	1984	0.01	54	0.5	1990	0.0	54	0.	2003	18.0	55	0.0	55
3	26	62	55	79	2003	39	1978	35	55	57	1964	14	1983	0.146	53	1.05	1973	0.15	54	8.0	1971	0.1	54	8.	1971	16.8	55	0.0	55
3	27	62	55	84	1998	41	1958	35	55	63	1949	13	2001	0.127	54	1.36	1983	0.02	54	1.0	2003	0.0	54	2.	1971	16.6	55	0.2	55
3	28	63	55	86	1989	46	1966	37	55	68	1991	14	2001	0.124	54	2.19	1994	0.00	54	0.0	2003	0.0	54	0.	2003	15.6	55	0.4	55

3	29	66	55	87	1998	42	1956	39	55	67	1989	18	1959	0.138	55	1.59	1984	0.04	54	2.0	1984	0.0	54	0.	2003	13.4	55	0.6	55
3	30	65	55	88	1998	39	1970	42	55	64	1977	20	1983	0.122	55	1.15	2001	0.04	54	2.0	1964	0.0	54	0.	2003	12.5	55	0.5	55
3	31	63	55	88	1986	43	1958	39	55	60	1998	20	1969	0.103	55	1.04	1958	0.00	54	0.0	2003	0.0	54	0.	2003	14.7	55	0.3	55
4	1	66	55	85	1978	43	1964	38	55	56	1979	20	1965	0.096	55	1.30	1976	0.01	55	0.5	1964	0.0	55	0.	2003	13.3	55	0.0	55
4	2	68	55	89	1963	48	1992	39	55	54	2003	22	1964	0.069	55	1.39	1970	0.00	55	0.0	2003	0.0	55	0.	2003	11.9	55	0.2	55
4	3	68	55	90	1963	50	1992	39	55	64	1977	19	1992	0.114	55	1.16	1951	0.00	55	0.0	2003	0.0	55	0.	2003	12.0	55	0.3	55
4	4	67	55	86	1956	46	1992	41	55	62	1974	21	1992	0.128	55	1.06	1984	0.00	55	0.0	2003	0.0	55	0.	2003	11.9	55	0.5	55
4	5	65	55	82	1988	44	1954	39	55	61	1981	25	1995	0.109	55	1.42	1960	0.02	55	1.0	1987	0.0	55	0.	2003	13.2	55	0.1	55
4	6	64	55	82	1988	48	1987	39	55	58	1985	24	1992	0.107	55	0.77	1949	0.03	55	1.8	1987	0.0	54	0.	2003	13.8	55	0.1	55
4	7	66	55	87	1991	47	1990	38	55	58	1967	19	2002	0.135	55	1.19	1971	0.12	55	4.5	1971	0.0	55	0.	2003	13.3	55	0.2	55
4	8	66	55	88	1959	37	1972	38	55	61	1954	22	1990	0.086	55	0.97	1973	0.00	55	0.0	2003	0.0	55	0.	2003	13.2	55	0.3	55
4	9	66	55	90	1959	41	2003	39	55	65	1991	20	1972	0.084	55	0.89	2003	0.00	55	0.0	2003	0.0	55	0.	2003	13.4	55	0.5	55
4	10	66	55	87	2001	50	1986	38	55	60	1991	13	1985	0.097	55	1.29	1961	0.00	55	0.0	2003	0.0	55	0.	2003	13.5	55	0.3	55
4	11	68	55	86	1977	46	1958	39	55	54	1990	22	1960	0.079	55	0.85	2003	0.00	55	0.0	2003	0.0	55	0.	2003	12.3	55	0.1	55
4	12	68	55	88	1977	48	1962	40	55	59	1981	23	1989	0.071	55	1.16	1959	0.09	55	3.0	1959	0.0	55	0.	2003	11.4	55	0.6	55
4	13	67	55	89	1971	40	1959	39	55	59	1974	22	1990	0.129	55	1.33	1953	0.02	55	1.0	1957	0.0	55	0.	2003	12.1	55	0.2	55
4	14	69	55	89	1960	48	1950	40	55	63	1972	23	1950	0.077	55	1.55	1970	0.00	55	0.0	2003	0.0	55	0.	2003	11.1	55	0.4	55
4	15	69	55	87	2002	49	1950	43	55	63	1967	20	1950	0.153	55	1.94	1983	0.00	55	0.0	2003	0.0	55	0.	2003	9.5	55	0.7	55
4	16	71	55	93	2002	51	1962	43	55	59	1967	28	1950	0.173	55	2.53	1987	0.00	55	0.0	2003	0.0	55	0.	2003	9.0	55	0.8	55
4	17	71	55	96	2002	48	1986	42	55	62	1982	23	1962	0.110	55	1.63	1998	0.00	55	0.0	2003	0.0	55	0.	2003	9.5	55	0.9	55
4	18	72	55	95	1976	45	2003	44	55	63	1963	24	1983	0.065	55	0.74	2002	0.00	55	0.0	2003	0.0	55	0.	2003	8.7	55	1.2	55
4	19	73	55	93	1995	49	1983	45	55	63	1985	25	2001	0.055	55	1.04	1964	0.00	54	0.0	2003	0.0	55	0.	2003	8.0	55	1.5	55
4	20	72	55	93	1976	50	1991	45	55	66	1963	27	1997	0.064	55	0.56	1991	0.00	55	0.0	2003	0.0	55	0.	2003	8.1	55	1.5	55
4	21	73	55	91	1985	55	1978	44	55	62	1957	25	1983	0.064	55	1.16	1992	0.00	55	0.0	2003	0.0	55	0.	2003	7.3	55	0.7	55
4	22	74	55	94	1985	56	1984	46	55	61	1992	29	1953	0.127	55	1.19	1972	0.00	55	0.0	2003	0.0	55	0.	2003	6.2	55	1.3	55
4	23	74	55	93	1960	51	1984	46	55	66	1954	25	1986	0.067	55	0.59	1984	0.00	55	0.0	2003	0.0	55	0.	2003	6.6	55	1.6	55
4	24	73	55	93	1960	50	1995	46	55	62	1977	27	1986	0.128	55	2.08	1983	0.00	55	0.0	2003	0.0	55	0.	2003	6.9	55	0.9	55
4	25	72	55	93	1960	48	1965	44	55	68	1966	28	1999	0.163	55	1.56	1987	0.00	55	0.0	2003	0.0	55	0.	2003	8.4	55	1.3	55
4	26	73	55	94	1960	50	1978	45	55	66	1961	27	2001	0.135	55	2.29	1978	0.00	55	0.0	2003	0.0	55	0.	2003	7.3	55	1.2	55
4	27	72	55	93	1990	52	1967	45	55	63	1994	29	1987	0.132	55	1.75	1973	0.00	55	0.0	2003	0.0	55	0.	2003	8.0	55	1.1	55
4	28	72	55	92	1957	47	1966	46	55	63	1954	28	1998	0.082	55	0.85	2002	0.00	55	0.0	2003	0.0	55	0.	2003	7.2	55	1.2	55
4	29	73	55	90	1974	49	1966	45	55	66	1956	28	2001	0.068	55	0.74	1964	0.00	55	0.0	2003	0.0	55	0.	2003	7.5	55	1.4	55
4	30	74	55	90	1974	51	1964	47	55	62	1956	30	1961	0.071	55	0.78	1996	0.00	55	0.0	2003	0.0	55	0.	2003	5.9	55	1.1	55
5	1	75	55	90	1986	55	1964	48	55	65	1974	32	1996	0.116	55	1.57	2003	0.00	54	0.0	2003	0.0	54	0.	2003	4.9	55	1.2	55
5	2	75	55	90	1951	59	1995	48	55	62	1983	29	1963	0.115	55	1.52	1962	0.00	54	0.0	2003	0.0	54	0.	2003	4.9	55	1.4	55
5	3	75	55	92	1965	60	1950	48	55	66	1983	31	1986	0.117	55	1.07	1985	0.00	54	0.0	2003	0.0	54	0.	2003	5.1	55	1.4	55
5	4	74	55	91	1965	54	1970	47	55	62	1958	26	1986	0.150	55	1.84	1978	0.00	54	0.0	2003	0.0	54	0.	2003	6.0	55	1.1	55
5	5	75	55	90	1955	57	1978	47	55	67	1953	32	1966	0.105	55	1.81	1990	0.00	54	0.0	2003	0.0	54	0.	2003	5.7	55	1.4	55
5	6	77	55	94	1950	51	1958	49	55	65	1953	31	1983	0.118	55	2.01	1989	0.00	54	0.0	2003	0.0	54	0.	2003	4.6	55	2.0	55
5	7	76	55	93	1986	50	1958	48	55	64	1949	30	1970	0.077	55	1.33	1967	0.00	54	0.0	2003	0.0	54	0.	2003	5.1	55	1.9	55
5	8	76	54	91	1964	55	1992	48	54	63	1961	33	1997	0.134	54	2.01	1998	0.00	53	0.0	2003	0.0	53	0.	2003	4.5	54	1.5	54
5	9	75	55	95	1963	61	1980	48	55	67	1964	31	1983	0.098	55	0.81	1974	0.00	54	0.0	2003	0.0	54	0.	2003	5.4	55	1.7	55
5	10	76	55	94	1963	58	1966	49	55	64	1965	27	1983	0.095	55	1.01	1990	0.00	54	0.0	2003	0.0	54	0.	2003	4.6	55	1.9	55
5	11	77	55	91	1953	59	1989	51	55	66	1965	27	1966	0.075	55	0.87	1961	0.00	54	0.0	2003	0.0	54	0.	2003	3.6	55	2.2	55
5	12	77	55	91	1953	56	1960	52	55	68	1968	36	1983	0.095	55	1.07	1974	0.00	54	0.0	2003	0.0	54	0.	2003	3.7	55	2.7	55
5	13	76	55	94	1956	62	1996	51	55	69	1980	31	1996	0.129	55	1.95	1971	0.00	54	0.0	2003	0.0	54	0.	2003	4.2	55	2.3	55
5	14	75	55	94	1956	57	1967	50	55	66	1991	32	2001	0.131	55	1.35	1972	0.00	54	0.0	2003	0.0	54	0.	2003	4.2	55	1.7	55
5	15	77	54	92	1962	59	1954	51	54	63	1983	32	1984	0.087	55	0.97	1950	0.00	54	0.0	2003	0.0	54	0.	2003	3.4	54	2.4	54
5	16	77	55	91	1965	61	1978	51	55	67	1976	30	1984	0.160	55	1.81	1983	0.00	54	0.0	2003	0.0	54	0.	2003	3.5	55	2.3	55
5	17	77	55	90	1951	59	2003	52	55	70	1990	29	1984	0.095	55	1.17	1993	0.00	54	0.0	2003	0.0	54	0.	2003	3.3	55	2.7	55
5	18	78	55	91	1996	54	2003	53	55	69	1995	34	1955	0.133	55	1.30	2003	0.00	54	0.0	2003	0.0	54	0.	2003	2.7	55	3.1	55
5	19	77	55	95	1996	49	1981	54	55	67	1997	34	2002	0.149	55	1.61	1972	0.00	54	0.0	2003	0.0	54	0.	2003	2.6	55	3.2	55
5	20	77	55	96	1996	56	1954	54	55	66	1996	31	2002	0.131	55	1.38	1953	0.00	54	0.0	2003	0.0	54	0.	2003	2.9	55	3.3	55
5	21	77	55	93	1996	59	2002	54	55	69	1996	33	1992	0.124	55	1.74	1971	0.00	54	0.0	2003	0.0	54	0.	2003	2.7	55	2.9	55
5	22	79	55	90	1984	56	1967	52	55	68	1959	28	2002	0.123	55	1.42	2001	0.00	54	0.0	2003	0.0	54	0.	2003	2.4	55	2.5	55
5	23	79	55	92	1964	58	2003	54	55	70	1953	34	1997	0.099	55	0.93	1984	0.00	54	0.0	2003	0.0	54	0.	2003	2.1	55	3.5	55
5	24	80	55	92	1964	65	1967	55	55	76	1964	35	1963	0.065	55	0.95	1985	0.00	54	0.0	2003	0.0	54	0.	2003	1.6	55	3.5	55

5	25	79	55	90	1991	59	1973	55	55	66	1955	33	1956	0.119	55	1.49	1987	0.00	54	0.0	2003	0.0	54	0.	2003	1.7	55	3.4	55
5	26	78	55	92	1953	57	1992	55	55	78	1989	35	1988	0.107	55	1.16	2001	0.00	54	0.0	2003	0.0	54	0.	2003	2.2	55	3.4	55
5	27	77	55	90	1965	56	1961	54	55	71	1989	36	1949	0.163	55	2.27	1990	0.00	54	0.0	2003	0.0	54	0.	2003	2.8	55	2.8	55
5	28	77	55	91	1991	55	1968	54	54	68	1991	34	1994	0.093	55	0.91	1960	0.00	54	0.0	2003	0.0	54	0.	2003	2.8	54	2.8	54
5	29	78	55	93	1991	55	1971	55	55	68	1991	33	1997	0.178	55	2.20	1990	0.00	54	0.0	2003	0.0	54	0.	2003	2.2	55	3.3	55
5	30	79	55	94	1969	59	1971	54	55	65	1959	40	1964	0.130	55	1.48	1971	0.00	54	0.0	2003	0.0	54	0.	2003	1.9	55	3.3	55
5	31	81	54	95	1991	60	1967	56	54	71	1991	35	1984	0.095	55	0.85	1980	0.00	54	0.0	2003	0.0	54	0.	2003	1.5	54	4.5	54
6	1	81	55	94	2002	66	1967	57	55	72	2002	39	1984	0.105	55	1.26	1975	0.00	55	0.0	2003	0.0	55	0.	2003	1.3	55	5.1	55
6	2	81	55	98	1951	62	1964	56	55	69	2002	39	2003	0.161	55	1.26	1974	0.00	55	0.0	2003	0.0	55	0.	2003	1.5	55	4.9	55
6	3	80	55	94	1951	61	1997	56	55	70	1980	39	1986	0.227	55	2.25	1979	0.00	55	0.0	2003	0.0	55	0.	2003	1.6	55	4.3	55
6	4	80	55	91	1973	66	2003	56	55	69	1989	38	1988	0.103	55	1.70	1987	0.00	55	0.0	2003	0.0	55	0.	2003	1.1	55	3.6	55
6	5	81	55	92	2002	68	1951	56	55	69	2002	38	1997	0.171	55	1.71	1982	0.00	55	0.0	2003	0.0	55	0.	2003	1.0	55	4.2	55
6	6	83	55	95	1952	69	2000	58	55	70	1981	39	1997	0.077	55	1.10	2000	0.00	55	0.0	2003	0.0	55	0.	2003	0.6	55	5.7	55
6	7	83	55	94	1999	61	1997	59	55	73	1952	45	1991	0.113	55	2.38	1989	0.00	55	0.0	2003	0.0	55	0.	2003	0.7	55	6.1	55
6	8	84	55	95	1999	71	1957	59	55	76	1980	39	1977	0.070	55	1.11	1971	0.00	55	0.0	2003	0.0	55	0.	2003	0.6	55	6.5	55
6	9	84	55	98	1999	60	1955	60	55	73	1981	40	1949	0.089	55	1.29	1969	0.00	55	0.0	2003	0.0	55	0.	2003	0.8	55	7.4	55
6	10	84	55	99	1964	67	1998	60	55	71	1963	42	1988	0.097	55	1.49	1951	0.00	55	0.0	2003	0.0	55	0.	2003	0.6	55	7.3	55
6	11	83	55	95	1984	69	1982	59	55	71	1958	38	1972	0.137	55	3.30	1968	0.00	55	0.0	2003	0.0	55	0.	2003	0.6	55	6.6	55
6	12	84	55	94	1986	69	1982	60	55	71	1986	44	1972	0.132	55	1.48	1965	0.00	55	0.0	2003	0.0	55	0.	2003	0.4	55	6.9	55
6	13	85	55	98	1954	71	1982	61	55	70	2003	47	1980	0.152	55	2.38	1959	0.00	55	0.0	2003	0.0	55	0.	2003	0.3	55	7.7	55
6	14	84	55	94	1994	65	1953	60	55	73	1981	44	1985	0.137	55	1.58	2002	0.00	55	0.0	2003	0.0	55	0.	2003	0.5	55	7.0	55
6	15	84	55	97	1956	69	1971	60	55	70	1981	46	1978	0.135	55	2.73	2003	0.00	55	0.0	2003	0.0	55	0.	2003	0.2	55	7.1	55
6	16	83	55	96	1957	57	1965	61	55	73	1981	47	1961	0.147	55	1.46	1954	0.00	55	0.0	2003	0.0	55	0.	2003	0.4	55	7.2	55
6	17	83	55	95	1952	62	1965	61	55	70	1986	44	1964	0.117	55	0.78	1966	0.00	55	0.0	2003	0.0	55	0.	2003	0.6	55	7.0	55
6	18	83	55	97	1970	68	1973	60	55	72	1970	44	1986	0.093	55	1.10	1990	0.00	55	0.0	2003	0.0	55	0.	2003	0.5	55	6.6	55
6	19	85	55	98	1952	69	1956	61	55	70	1988	43	1999	0.174	55	3.01	1978	0.00	55	0.0	2003	0.0	55	0.	2003	0.2	55	7.7	55
6	20	85	55	98	1964	67	1956	62	55	70	1975	51	1985	0.126	55	2.37	1989	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	8.1	55
6	21	85	55	95	1988	70	1999	62	55	70	1973	46	1985	0.197	55	4.89	1972	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	8.1	55
6	22	85	55	97	1988	71	1992	62	55	71	1967	40	1992	0.115	55	2.30	1972	0.00	55	0.0	2003	0.0	55	0.	2003	0.3	55	8.7	55
6	23	85	55	97	1988	65	1972	62	55	73	1988	43	1992	0.098	55	0.98	1951	0.00	55	0.0	2003	0.0	55	0.	2003	0.3	55	8.9	55
6	24	86	55	95	2002	73	1974	62	55	73	1964	47	1999	0.060	54	0.95	1998	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	9.0	55
6	25	87	55	99	1952	71	1979	62	55	75	1950	45	1979	0.016	55	0.28	1955	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	9.3	55
6	26	87	55	100	1952	74	1979	62	54	75	1968	45	1986	0.198	55	6.51	1975	0.00	55	0.0	2003	0.0	55	0.	2003	0.2	54	9.1	54
6	27	87	55	100	1950	70	1961	62	55	75	1949	44	1985	0.145	55	1.63	1995	0.00	55	0.0	2003	0.0	55	0.	2003	0.2	55	9.5	55
6	28	86	55	98	1959	66	1974	62	55	73	1966	45	1970	0.070	55	0.96	2000	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	9.1	55
6	29	87	55	99	1959	74	1949	62	55	73	1980	49	1970	0.112	55	0.91	1973	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	9.2	55
6	30	87	55	99	1959	71	1983	63	55	71	1991	52	1987	0.104	55	1.41	1952	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	9.9	55
7	1	87	55	100	1954	75	1952	64	55	74	1969	42	1988	0.152	55	2.06	1981	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	10.0	55
7	2	87	55	99	1956	75	1981	63	55	75	1960	45	1988	0.119	55	1.37	1991	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	9.9	55
7	3	87	55	100	1954	70	1978	64	55	72	1980	43	1957	0.163	55	1.91	2003	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	10.1	55
7	4	87	55	99	1999	71	1962	64	55	71	1999	48	1986	0.135	55	3.47	1991	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	10.2	55
7	5	87	55	102	1999	74	1979	64	55	75	1957	49	1967	0.142	55	1.16	1965	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	10.5	55
7	6	86	55	101	1999	72	1961	63	55	74	1977	48	1951	0.220	55	3.58	1989	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	9.1	55
7	7	87	55	100	1977	75	1972	62	55	75	1977	47	1983	0.115	55	1.23	1999	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	9.5	55
7	8	87	55	99	1977	76	1969	63	55	73	2003	46	1983	0.139	55	2.01	1996	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	10.0	55
7	9	88	55	98	1990	70	1969	64	55	75	1992	51	1961	0.085	55	0.77	1996	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	10.8	55
7	10	86	55	97	1993	77	1970	65	55	75	1981	47	1963	0.149	55	1.11	1970	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	10.4	55
7	11	87	55	96	1989	78	1949	63	55	74	1989	50	1963	0.138	55	1.90	1949	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	10.0	55
7	12	86	55	98	1951	74	1965	63	55	73	1967	46	2002	0.214	55	3.65	1985	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	9.3	55
7	13	87	55	99	1957	74	1999	64	55	72	1981	51	1953	0.184	55	3.11	1975	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	10.1	55
7	14	87	55	103	1954	72	2002	65	55	73	1957	49	2001	0.132	55	1.36	1990	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	10.9	55
7	15	88	55	98	1995	74	1967	65	55	73	1996	51	1987	0.116	55	1.73	1954	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	11.5	55
7	16	89	55	100	1988	73	1981	65	55	74	1984	53	2001	0.155	55	2.15	1949	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	11.5	55
7	17	88	55	98	1988	78	1989	65	55	72	1980	54	1987	0.055	55	0.56	1986	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	11.4	55
7	18	89	55	98	1963	78	1958	65	55	72	1982	52	1985	0.075	55	1.29	1984	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	11.7	55
7	19	89	55	96	1977	80	1956	66	55	75	1952	55	1984	0.066	55	0.91	1955	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	12.2	55
7	20	89	55	97	1977	77	2000	67	55	76	1980	54	1984	0.115	55	1.31	1956	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	12.4	55

7	21	88	55	100	1983	75	1950	65	55	74	1980	49	1996	0.107	55	1.15	1984	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	11.6	55
7	22	89	55	102	1952	75	1970	66	54	74	1952	50	2001	0.241	55	5.18	1956	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	54	12.1	54
7	23	88	55	101	1952	75	1973	66	55	74	1951	54	1983	0.109	55	1.15	1997	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	11.5	55
7	24	87	55	97	1965	72	2000	65	55	72	1978	49	1985	0.219	55	3.70	2002	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	11.1	55
7	25	87	55	98	1965	73	2000	66	55	73	2001	53	1957	0.167	55	1.15	1965	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	10.8	55
7	26	87	55	97	1987	71	2002	66	55	74	1987	54	1953	0.106	55	1.10	1994	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	10.8	55
7	27	87	55	98	1953	74	1994	65	55	71	1993	53	1962	0.213	55	2.39	1991	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	10.9	55
7	28	89	55	102	1952	75	2001	66	55	74	1980	49	1962	0.051	55	0.58	1968	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	11.9	55
7	29	87	55	102	1953	64	2001	65	55	73	1966	57	2001	0.162	55	1.87	2001	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	10.6	55
7	30	86	55	104	1953	65	1972	65	55	72	1963	53	1997	0.154	55	1.52	1996	0.00	55	0.0	2003	0.0	55	0.	2003	0.1	55	10.4	55
7	31	88	55	102	1954	75	1982	65	55	72	1988	47	1997	0.086	55	1.42	1978	0.00	55	0.0	2003	0.0	55	0.	2003	0.0	55	11.1	55
8	1	88	55	100	1954	78	1965	65	55	74	1950	51	1997	0.129	55	2.78	1948	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	11.1	55
8	2	87	54	98	2002	77	1976	65	54	73	1979	48	1998	0.096	54	1.39	1989	0.00	54	0.0	2002	0.0	54	0.	2002	0.0	54	10.6	54
8	3	87	55	100	1957	76	1958	65	55	72	1967	47	1998	0.155	55	1.71	1968	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	10.9	55
8	4	86	55	96	1987	75	1964	65	55	74	1963	50	1998	0.318	55	4.44	1948	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	10.3	55
8	5	86	55	99	2002	75	1972	64	55	72	1980	49	1951	0.145	55	1.00	1980	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	10.0	55
8	6	85	55	95	2002	74	1994	63	55	73	1962	48	1957	0.117	55	1.54	1993	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	9.1	55
8	7	85	55	95	2001	73	1982	64	55	73	2000	46	1994	0.031	55	0.52	1983	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	9.3	55
8	8	87	55	95	2001	74	1955	64	55	73	1977	48	2002	0.100	55	1.16	1952	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	9.9	55
8	9	87	55	98	1983	70	1955	64	55	72	1968	49	2002	0.109	55	0.85	1962	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	10.3	55
8	10	87	55	96	1949	72	1989	65	55	76	1987	50	1999	0.116	55	1.17	1952	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	10.5	55
8	11	86	55	96	1949	71	1989	64	55	74	1988	51	1972	0.110	55	1.33	1984	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	10.0	55
8	12	86	54	98	2002	73	1955	63	55	74	1994	50	1968	0.184	55	3.15	1955	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	54	9.2	54
8	13	85	55	99	2002	70	1996	63	55	75	1994	51	1971	0.135	55	1.31	1978	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	8.9	55
8	14	86	55	96	2002	72	1992	64	55	74	1994	47	1950	0.123	55	1.25	1955	0.00	55	0.0	2002	0.0	55	0.	2002	0.1	55	9.7	55
8	15	86	55	99	1953	69	1992	64	55	73	1988	47	1983	0.163	55	3.42	1949	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	9.8	55
8	16	86	55	100	1954	68	1994	64	55	73	1952	48	1979	0.094	55	1.20	1975	0.00	55	0.0	2002	0.0	55	0.	2002	0.2	55	10.2	55
8	17	87	54	99	1988	72	1994	64	55	74	2002	48	1979	0.216	55	5.44	1994	0.00	55	0.0	2002	0.0	55	0.	2002	0.1	54	10.4	54
8	18	85	55	96	2002	71	1985	64	54	74	1988	51	1981	0.296	55	5.87	1985	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	54	9.6	54
8	19	85	55	95	2002	68	1957	63	55	72	1990	49	1998	0.100	55	0.93	1979	0.00	55	0.0	2002	0.0	55	0.	2002	0.1	55	8.8	55
8	20	84	55	101	1983	70	1961	63	55	72	1978	43	1998	0.343	55	11.17	1969	0.00	55	0.0	2002	0.0	55	0.	2002	0.2	55	8.5	55
8	21	84	55	98	1951	65	1956	61	55	74	1989	49	2000	0.110	55	1.81	1985	0.00	55	0.0	2002	0.0	55	0.	2002	0.1	55	7.4	55
8	22	84	55	102	1983	73	1990	62	55	72	1959	50	1956	0.089	55	1.20	1963	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	7.7	55
8	23	84	55	101	2002	74	1967	62	55	73	1968	50	1985	0.118	55	1.48	1967	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	8.2	55
8	24	85	55	98	1998	74	1967	61	55	73	1968	44	1952	0.097	55	2.13	1967	0.00	55	0.0	2002	0.0	55	0.	2002	0.2	55	7.9	55
8	25	85	55	96	1998	70	1957	61	55	71	1968	46	1952	0.106	55	2.51	1958	0.00	55	0.0	2002	0.0	55	0.	2002	0.1	55	7.9	55
8	26	86	55	97	1959	74	1958	61	55	70	1965	49	1977	0.063	55	1.37	1961	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	8.3	55
8	27	86	55	98	1953	75	1971	63	55	72	1998	50	1984	0.157	55	2.30	1971	0.00	55	0.0	2002	0.0	55	0.	2002	0.0	55	9.5	55
8	28	86	55	102	1953	70	1986	64	55	72	1965	49	1969	0.108	55	2.33	2002	0.00	55	0.0	2002	0.0	55	0.	2002	0.1	55	10.2	55
8	29	86	55	101	1953	69	1986	62	55	74	1973	38	1986	0.147	55	2.65	1959	0.00	55	0.0	2002	0.0	55	0.	2002	0.5	55	9.6	55
8	30	86	55	102	1953	71	1988	61	55	71	1989	38	1986	0.041	55	0.52	1978	0.00	55	0.0	2002	0.0	55	0.	2002	0.5	55	9.0	55
8	31	85	55	104	1953	72	1999	62	55	73	1970	44	1986	0.084	55	1.30	1981	0.00	55	0.0	2002	0.0	55	0.	2002	0.3	55	8.8	55
9	1	84	54	103	1953	68	1986	61	54	71	1959	46	1948	0.125	55	2.78	1952	0.00	55	0.0	2002	0.0	55	0.	2002	0.2	54	7.8	54
9	2	84	55	102	1953	72	1986	61	55	74	1950	44	1987	0.031	55	0.37	1995	0.00	55	0.0	2002	0.0	55	0.	2002	0.4	55	7.7	55
9	3	84	55	100	1953	69	1962	61	55	72	1993	44	1967	0.132	55	1.27	1974	0.00	55	0.0	2002	0.0	55	0.	2002	0.2	55	7.7	55
9	4	84	55	95	2002	72	1994	61	55	74	1970	40	1997	0.142	55	2.31	1996	0.00	55	0.0	2002	0.0	55	0.	2002	0.4	55	7.5	55
9	5	83	55	100	1954	68	1974	60	55	72	1953	39	1997	0.128	55	2.73	1979	0.00	55	0.0	2002	0.0	55	0.	2002	0.5	55	6.8	55
9	6	82	55	103	1954	66	1974	60	55	71	1979	43	1997	0.236	55	4.58	1996	0.00	55	0.0	2002	0.0	55	0.	2002	0.5	55	6.6	55
9	7	83	55	104	1954	65	1974	58	55	70	1990	42	1988	0.076	55	1.54	1974	0.00	55	0.0	2002	0.0	55	0.	2002	0.6	55	6.1	55
9	8	82	55	93	1985	69	1952	57	55	71	1987	39	1988	0.120	55	3.36	1987	0.00	55	0.0	2002	0.0	55	0.	2002	0.8	55	4.8	55
9	9	82	55	92	1985	68	1956	57	55	71	1985	40	1986	0.085	55	2.14	1950	0.00	55	0.0	2002	0.0	55	0.	2002	1.0	55	5.1	55
9	10	83	55	97	1983	70	1956	58	55	71	1954	38	1956	0.109	55	2.41	1997	0.00	55	0.0	2002	0.0	55	0.	2002	0.9	55	6.3	55
9	11	82	55	100	1983	65	1967	57	55	70	1971	40	1949	0.084	55	1.83	1960	0.00	55	0.0	2002	0.0	55	0.	2002	1.1	55	5.5	55
9	12	82	55	95	1983	70	1967	56	55	71	1957	37	1967	0.176	55	2.87	1987	0.00	55	0.0	2002	0.0	55	0.	2002	1.1	55	4.7	55
9	13	81	55	95	1952	61	1964	56	55	70	1987	42	1992	0.118	55	2.08	1978	0.00	55	0.0	2002	0.0	55	0.	2002	1.3	55	4.7	55
9	14	82	55	94	1952	63	1963	56	55	72	1979	34	1985	0.124	55	3.04	1966	0.00	55	0.0	2002	0.0	55	0.	2002	1.6	55	5.4	55
9	15	81	55	94	1998	59	1963	57	55	70	1989	35	1985	0.050	55	1.13	1976	0.00	55	0.0	2002	0.0	55	0.	2002	1.2	55	4.8	55

9	16	80	54	96	1970	65	1999	56	55	70	1965	37	2001	0.114	55	1.83	1999	0.00	55	0.0	2002	0.0	55	0.	2002	1.8	54	4.2	54
9	17	79	55	94	1991	63	1959	56	54	73	1991	35	1984	0.110	55	1.88	1957	0.00	55	0.0	2002	0.0	55	0.	2002	1.8	54	4.0	54
9	18	79	55	95	1970	64	1961	56	55	70	1991	36	1990	0.113	55	1.39	1958	0.00	55	0.0	2002	0.0	55	0.	2002	1.8	55	4.1	55
9	19	79	55	96	1983	65	1981	56	55	72	1978	37	1984	0.061	55	1.83	2000	0.00	55	0.0	2002	0.0	55	0.	2002	1.6	55	4.0	55
9	20	79	55	93	1954	61	1969	57	55	69	1988	39	1959	0.141	55	2.47	1966	0.00	55	0.0	2002	0.0	55	0.	2002	1.1	55	3.8	55
9	21	79	55	91	1965	60	1969	56	55	69	1989	32	1956	0.120	55	1.12	1966	0.00	55	0.0	2002	0.0	55	0.	2002	1.7	55	3.9	55
9	22	77	55	94	1970	62	1971	54	55	72	1989	35	1962	0.150	55	1.57	1994	0.00	55	0.0	2002	0.0	55	0.	2002	2.6	55	3.1	55
9	23	76	55	94	1970	59	1974	52	55	70	1980	32	1983	0.088	55	1.64	1975	0.00	55	0.0	2002	0.0	55	0.	2002	3.5	55	2.5	55
9	24	75	55	93	1970	59	1995	51	55	69	1986	29	1983	0.073	55	1.39	1975	0.00	55	0.0	2002	0.0	55	0.	2002	4.6	55	2.2	55
9	25	75	55	92	1970	56	1992	51	55	67	1986	31	1983	0.108	55	1.71	1975	0.00	55	0.0	2002	0.0	55	0.	2002	4.6	55	2.0	55
9	26	75	55	93	1970	60	2000	52	55	66	1980	36	2001	0.145	55	1.57	1994	0.00	55	0.0	2002	0.0	55	0.	2002	3.4	55	2.1	55
9	27	76	55	95	1998	54	1956	52	55	67	1972	37	2000	0.154	55	1.91	1956	0.00	55	0.0	2002	0.0	55	0.	2002	3.6	55	2.3	55
9	28	75	55	93	1954	48	1984	51	55	64	1986	31	1989	0.114	55	2.32	1992	0.00	55	0.0	2002	0.0	55	0.	2002	3.8	55	1.5	55
9	29	74	55	93	1954	55	1957	50	55	69	1959	34	1951	0.142	55	1.75	1999	0.00	55	0.0	2002	0.0	55	0.	2002	4.7	55	1.3	55
9	30	74	55	91	1954	60	1983	50	55	70	1959	35	1992	0.131	55	1.44	1983	0.00	55	0.0	2002	0.0	55	0.	2002	4.7	55	1.6	55
10	1	74	54	89	1986	58	1964	51	54	70	1954	31	1993	0.206	54	2.60	1979	0.00	54	0.0	2002	0.0	54	0.	2002	4.5	54	1.5	54
10	2	75	54	89	1986	55	1958	50	54	69	1971	32	1997	0.152	54	2.90	1973	0.00	54	0.0	2002	0.0	54	0.	2002	4.1	54	1.6	54
10	3	74	54	90	1954	52	1974	49	54	66	1954	30	1974	0.064	54	1.58	1985	0.00	54	0.0	2002	0.0	54	0.	2002	5.1	54	1.4	54
10	4	74	54	94	1954	60	1948	50	54	71	1986	28	1974	0.071	54	0.74	1995	0.00	54	0.0	2002	0.0	54	0.	2002	5.3	54	1.8	54
10	5	74	54	94	1951	51	1948	50	54	68	1954	29	1996	0.139	54	2.22	1948	0.00	54	0.0	2002	0.0	54	0.	2002	5.6	54	2.2	54
10	6	73	54	91	1951	54	1948	47	54	64	1995	28	1988	0.154	54	4.17	1972	0.00	54	0.0	2002	0.0	54	0.	2002	6.3	54	1.5	54
10	7	71	54	85	1990	55	1967	46	54	66	1949	29	1988	0.067	54	1.53	1965	0.00	54	0.0	2002	0.0	54	0.	2002	7.9	54	0.8	54
10	8	70	54	85	1963	57	2000	45	54	65	1959	26	2001	0.120	54	2.15	1996	0.00	54	0.0	2002	0.0	54	0.	2002	8.4	54	0.6	54
10	9	72	54	86	1990	50	1952	47	54	69	1959	23	2001	0.134	54	2.33	1976	0.00	54	0.0	2002	0.0	54	0.	2002	6.9	54	1.0	54
10	10	72	54	87	1958	52	1952	46	54	67	1959	29	2000	0.115	54	2.18	1971	0.03	54	1.5	1979	0.0	54	0.	2002	7.4	54	0.9	54
10	11	71	54	89	1954	54	1979	45	54	67	1959	25	1964	0.061	54	1.76	2002	0.00	54	0.0	2002	0.0	54	0.	2002	8.0	54	0.7	54
10	12	71	54	89	1954	54	1987	45	54	62	2002	28	1994	0.026	54	0.48	1993	0.00	54	0.0	2002	0.0	54	0.	2002	7.9	54	0.7	54
10	13	72	54	91	1954	57	1988	44	54	64	1990	23	1988	0.057	54	1.16	1990	0.00	54	0.0	2002	0.0	54	0.	2002	7.9	54	0.7	54
10	14	73	53	86	1975	52	1977	45	54	65	1986	21	1988	0.154	54	3.50	1995	0.00	54	0.0	2002	0.0	54	0.	2002	7.1	53	1.0	53
10	15	73	53	87	1989	58	2002	44	53	64	1970	26	1987	0.087	54	2.92	1954	0.00	54	0.0	2002	0.0	54	0.	2002	7.9	53	0.8	53
10	16	71	54	85	1989	53	1978	44	54	61	1960	30	1987	0.061	54	1.16	2002	0.00	54	0.0	2002	0.0	54	0.	2002	7.9	54	0.4	54
10	17	69	54	82	1963	54	1978	44	54	63	1989	29	1970	0.079	54	0.93	1964	0.00	54	0.0	2002	0.0	54	0.	2002	9.0	54	0.2	54
10	18	69	54	82	1984	52	1966	42	54	66	1980	27	2001	0.118	54	1.36	1997	0.00	54	0.0	2002	0.0	54	0.	2002	9.7	54	0.2	54
10	19	67	54	84	1991	45	1972	42	54	59	1980	26	1948	0.169	54	3.75	1996	0.00	54	0.0	2002	0.0	54	0.	2002	11.0	54	0.1	54
10	20	67	54	86	1953	49	1972	42	54	63	1984	22	1992	0.199	54	3.69	1961	0.00	54	0.0	2002	0.0	54	0.	2002	11.1	54	0.3	54
10	21	67	53	84	1984	52	1985	41	53	61	1993	22	1952	0.203	54	3.32	1961	0.00	54	0.0	2002	0.0	54	0.	2002	11.9	53	0.3	53
10	22	68	54	85	1949	53	1959	42	54	68	1984	25	1952	0.089	54	1.36	1985	0.00	54	0.0	2002	0.0	54	0.	2002	11.0	54	0.3	54
10	23	69	54	82	1975	49	1982	42	54	64	1984	22	1997	0.180	54	2.00	1983	0.00	54	0.0	2002	0.0	54	0.	2002	10.1	54	0.2	54
10	24	68	53	85	2001	48	1982	42	54	59	1971	18	1969	0.073	54	1.29	1971	0.00	54	0.0	2002	0.0	54	0.	2002	10.6	53	0.1	53
10	25	66	54	80	2001	45	1981	42	54	63	1975	26	1962	0.144	54	2.03	1971	0.00	54	0.0	2002	0.0	54	0.	2002	11.6	54	0.2	54
10	26	66	54	82	1984	46	1962	40	54	59	1971	25	1987	0.154	54	2.28	1977	0.00	54	0.0	2002	0.0	54	0.	2002	12.6	54	0.1	54
10	27	66	54	83	1984	46	1976	40	54	59	1977	21	1988	0.073	54	1.17	1981	0.00	54	0.0	2002	0.0	54	0.	2002	12.8	54	0.1	54
10	28	66	54	82	1984	48	1976	41	54	60	1977	24	1976	0.114	54	2.78	1972	0.00	54	0.0	2002	0.0	54	0.	2002	11.9	54	0.1	54
10	29	65	54	85	1984	47	2002	39	54	65	1984	21	2001	0.106	54	2.26	1953	0.00	54	0.0	2002	0.0	54	0.	2002	13.3	54	0.2	54
10	30	64	54	84	1996	41	2002	39	54	57	1971	19	1969	0.074	54	0.72	1970	0.00	54	0.0	2002	0.0	54	0.	2002	13.5	54	0.1	54
10	31	65	53	85	1950	47	1993	40	53	62	1971	24	2000	0.062	54	1.02	1949	0.00	54	0.0	2002	0.0	54	0.	2002	12.6	53	0.2	53
11	1	66	55	88	1974	49	1992	42	55	64	1971	26	2000	0.151	55	2.00	1951	0.00	55	0.0	2002	0.0	55	0.	2002	11.6	55	0.3	55
11	2	66	55	85	1971	44	1954	43	55	67	1971	21	1993	0.153	55	0.91	1999	0.01	55	0.5	1954	0.0	55	0.	2002	11.2	55	0.4	55
11	3	66	55	82	1990	45	1951	41	55	63	1972	23	1996	0.140	55	1.09	1985	0.00	55	0.0	2002	0.0	55	0.	2002	12.1	55	0.2	55
11	4	63	55	81	1975	46	1991	39	55	67	1961	22	1996	0.109	55	2.08	1985	0.00	55	0.0	2002	0.0	55	0.	2002	14.5	55	0.3	55
11	5	62	55	81	1975	44	1991	38	55	64	1977	19	1995	0.191	55	2.46	1985	0.04	55	2.0	1962	0.0	55	2.	1962	15.6	55	0.2	55
11	6	61	55	80	1975	43	1953	36	55	67	1948	15	1991	0.080	55	1.93	1963	0.04	55	2.0	1953	0.0	55	2.	1953	17.1	55	0.2	55
11	7	60	55	75	1965	42	1967	36	55	58	1977	19	1967	0.185	55	2.97	1997	0.00	55	0.0	2002	0.0	55	0.	2002	17.5	55	0.0	55
11	8	61	55	81	1975	45	1971	35	55	63	1975	18	1967	0.109	55	1.39	1996	0.00	55	0.0	2002	0.0	55	0.	2002	17.3	55	0.1	55
11	9	62	55	79	1994	40	1991	36	55	58	1986	20	1976	0.033	55	0.70	1962	0.00	55	0.0	2002	0.0	55	0.	2002	16.3	55	0.0	55
11	10	60	55	74	1999	39	1991	38	55	61	1966	23	1995	0.191	55	1.77	1990	0.04	55	2.0	1968	0.0	55	0.	2002	16.5	55	0.0	55
11	11	60	55	78	1985	33	1987	35	55	55	1978	18	1957	0.133	55	1.35	1970	0.12	55	6.5	1987	0.1	55	6.	1987	17.8	55	0.0	55

11	12	59	54	76	1989	43	1996	35	54	53	1989	18	1996	0.107	55	1.36	2002	0.04	55	1.0	1976	0.0	55	1.	1976	18.5	53	0.0	53
11	13	59	54	78	1985	36	1995	34	55	56	1964	17	1996	0.070	55	1.16	1992	0.00	55	0.0	2002	0.0	55	0.	2002	18.6	54	0.0	54
11	14	60	55	80	1985	35	1996	34	55	56	1993	12	1986	0.081	55	1.67	1972	0.00	55	0.0	2002	0.0	55	0.	2002	18.1	55	0.1	55
11	15	62	55	82	1993	41	1996	36	55	65	1993	18	1996	0.088	55	1.37	1970	0.00	55	0.0	2002	0.0	55	0.	2002	16.6	55	0.1	55
11	16	60	55	79	1955	38	1967	37	55	57	1964	13	1967	0.055	55	1.58	1989	0.00	55	0.0	2002	0.0	55	0.	2002	16.7	55	0.0	55
11	17	60	55	76	1963	37	1980	36	55	54	1960	17	1996	0.120	55	1.71	1956	0.00	55	0.0	2002	0.0	55	0.	2002	17.3	55	0.0	55
11	18	58	55	76	1963	38	1959	33	55	55	1958	16	1997	0.073	55	0.76	1962	0.00	55	0.0	2002	0.0	55	0.	2002	19.6	55	0.0	55
11	19	57	55	74	1991	36	1951	34	55	54	1954	18	1997	0.090	55	0.97	1957	0.00	55	0.0	2002	0.0	55	0.	2002	19.3	55	0.0	55
11	20	58	55	78	1985	36	1986	35	55	58	1954	19	1951	0.133	55	2.73	1952	0.02	55	1.0	1961	0.0	55	0.	2002	18.9	55	0.0	55
11	21	56	54	74	1991	37	1969	33	54	61	1991	12	1951	0.080	55	1.44	1952	0.05	55	3.0	1996	0.1	55	3.	1996	20.5	54	0.0	54
11	22	55	55	73	1983	38	1989	32	55	58	1991	13	1964	0.075	55	0.79	1991	0.02	55	1.0	1972	0.0	55	0.	2002	21.7	55	0.0	55
11	23	55	55	71	1992	37	1989	31	55	58	1963	13	2000	0.063	55	0.75	1989	0.07	55	4.0	1989	0.1	55	3.	1989	22.2	55	0.0	55
11	24	56	55	73	1979	33	1981	33	55	59	1979	11	1989	0.091	55	1.07	1959	0.11	55	3.0	1981	0.1	55	3.	1981	20.5	55	0.0	55
11	25	54	55	75	1990	34	1970	31	55	57	2001	11	1970	0.159	55	1.80	1983	0.04	55	1.0	1983	0.0	54	0.	2002	22.5	55	0.0	55
11	26	56	55	76	1990	31	1950	32	55	56	1979	14	1950	0.095	55	1.05	1999	0.00	55	0.0	2002	0.0	54	0.	2002	21.3	55	0.0	55
11	27	57	55	74	1970	35	1977	34	55	57	1985	12	1991	0.126	55	2.55	1993	0.00	55	0.0	2002	0.0	55	0.	2002	19.6	55	0.0	55
11	28	55	55	74	1990	35	1958	34	55	59	1973	15	2002	0.223	55	5.76	1993	0.00	55	0.0	2002	0.0	55	0.	2002	20.3	55	0.0	55
11	29	53	55	74	1998	37	1955	32	55	53	2001	14	1996	0.199	55	2.59	1987	0.00	55	0.0	2002	0.0	55	0.	2002	22.4	55	0.0	55
11	30	51	55	73	1998	33	1976	30	54	62	2001	14	1976	0.080	55	1.59	1985	0.09	55	2.0	1952	0.0	55	1.	1964	24.8	54	0.0	54
12	1	51	55	77	1998	33	1964	28	55	57	1991	11	1976	0.102	55	1.82	1974	0.00	55	0.0	2002	0.0	55	0.	2002	25.8	55	0.0	55
12	2	52	55	75	1970	33	1952	28	55	52	1982	15	1999	0.049	55	1.17	1986	0.01	55	0.5	1952	0.0	55	1.	1952	25.3	55	0.0	55
12	3	53	55	70	1998	30	1971	30	55	54	1982	13	2000	0.097	55	1.25	1967	0.00	55	0.0	2002	0.0	55	0.	2002	23.8	55	0.0	55
12	4	54	55	77	1998	28	1966	31	55	60	1982	8	2000	0.160	55	2.59	1948	0.11	55	6.0	1957	0.1	55	6.	1957	22.5	55	0.0	55
12	5	53	55	78	2001	30	2002	32	55	60	1973	12	1966	0.102	55	1.29	1973	0.12	55	6.5	2002	0.2	55	5.	2002	22.8	55	0.0	55
12	6	53	55	78	1998	39	2002	31	55	55	1982	12	2002	0.093	55	0.98	1996	0.01	55	0.5	1954	0.1	55	3.	2002	23.4	55	0.0	55
12	7	52	55	79	1998	31	1958	30	55	55	1998	8	2002	0.101	55	1.28	1976	0.05	55	2.5	1995	0.0	54	0.	2001	24.5	55	0.0	55
12	8	52	55	74	1980	34	1977	30	55	63	1951	12	1954	0.092	55	1.82	1974	0.17	55	7.2	1989	0.2	54	7.	1989	24.0	55	0.0	55
12	9	49	55	74	1991	26	1989	29	55	58	1951	12	1960	0.123	55	1.16	1978	0.09	55	2.5	1988	0.1	54	7.	1989	26.3	55	0.0	55
12	10	48	55	70	1966	31	1995	28	55	50	1972	5	1989	0.170	55	3.17	1992	0.05	55	2.0	1992	0.1	55	4.	1989	26.7	55	0.0	55
12	11	47	55	70	1971	24	1958	28	55	53	1971	4	1968	0.167	55	1.17	2002	0.19	55	5.0	1960	0.2	55	5.	1960	27.7	55	0.0	55
12	12	47	55	71	1985	24	1988	28	55	50	1985	-5	1962	0.141	55	0.98	1961	0.22	55	5.0	1989	0.4	55	7.	1989	27.7	55	0.0	55
12	13	48	55	75	1984	20	1960	30	55	51	1956	2	1988	0.123	55	0.82	1996	0.22	55	4.5	1989	0.6	55	12.	1989	26.1	55	0.0	55
12	14	48	55	67	2001	26	1958	28	55	55	2001	10	1960	0.141	55	1.44	1953	0.05	55	1.5	1951	0.4	55	9.	1989	27.3	55	0.0	55
12	15	47	55	76	1984	29	1958	28	55	45	1975	4	1958	0.119	55	1.22	1948	0.00	55	0.0	2002	0.2	55	7.	1989	27.6	55	0.0	55
12	16	47	55	78	1971	30	1963	27	55	58	1971	6	1958	0.071	55	1.12	1974	0.07	55	2.5	1973	0.3	55	6.	1989	28.3	55	0.1	55
12	17	48	55	74	1984	27	1989	26	55	48	1971	-5	1989	0.056	54	0.85	1961	0.23	55	11.5	1973	0.5	55	14.	1973	28.6	55	0.0	55
12	18	46	55	74	1984	30	1989	26	55	55	1984	8	1973	0.111	55	1.96	1977	0.02	55	1.0	1951	0.4	55	13.	1973	29.1	55	0.0	55
12	19	47	55	69	1970	27	1989	26	55	50	1967	3	1989	0.045	55	1.10	1995	0.01	55	0.7	1982	0.4	55	12.	1973	29.2	55	0.0	55
12	20	45	55	64	1988	28	1985	26	55	50	1957	3	1989	0.100	55	1.35	1957	0.05	55	3.0	2000	0.3	55	5.	1989	29.4	55	0.0	55
12	21	44	55	72	1956	28	1983	26	55	51	1956	2	1989	0.140	55	1.97	1951	0.19	55	7.5	1962	0.4	54	8.	1962	29.9	55	0.0	55
12	22	45	55	70	1949	20	1989	25	54	49	1990	-3	1989	0.108	55	1.30	1983	0.03	55	1.0	1950	0.3	54	6.	1962	30.3	54	0.0	54
12	23	48	55	70	1990	21	1989	26	55	62	1990	-9	1989	0.083	55	0.97	1963	0.14	55	4.0	1963	0.3	54	5.	1989	28.2	55	0.0	55
12	24	47	55	68	1964	24	1989	28	55	49	1979	5	1983	0.119	55	2.08	1986	0.23	55	12.0	1966	0.4	54	10.	1966	27.6	55	0.0	55
12	25	45	55	70	1964	16	1983	26	55	51	1965	-5	1989	0.071	55	1.13	2002	0.16	55	6.0	1962	0.5	54	10.	1962	29.7	55	0.0	55
12	26	46	55	72	1982	21	1985	24	55	60	1982	-1	1983	0.100	55	1.71	1969	0.25	55	14.0	1969	0.6	54	14.	1969	30.4	55	0.0	55
12	27	45	55	73	1971	30	1989	24	55	53	1973	0	1966	0.039	55	1.26	1964	0.04	55	1.0	1997	0.6	54	13.	1969	30.4	55	0.0	55
12	28	46	55	77	1984	28	1977	26	55	53	1971	8	1955	0.134	55	1.58	1990	0.30	55	4.5	1966	0.7	54	11.	1969	29.3	55	0.0	55
12	29	47	55	79	1984	24	1993	27	55	54	1996	9	2000	0.135	55	2.58	1958	0.08	55	2.6	1993	0.7	53	10.	1969	28.5	55	0.0	55
12	30	48	55	72	1996	28	1983	27	55	52	1984	6	1983	0.063	55	1.66	1948	0.07	55	4.0	1997	0.6	54	9.	1962	28.0	55	0.0	55
12	31	46	55	70	1965	26	1963	26	55	52	1992	-1	1993	0.108	54	1.51	1975	0.10	55	3.0	1970	0.6	54	9.	1962	29.3	55	0.0	55

Southeast Regional Climate Center, sercc@dnr.state.sc.us

LOUISA, VIRGINIA

Monthly Total Snowfall (Inches)

(445050)

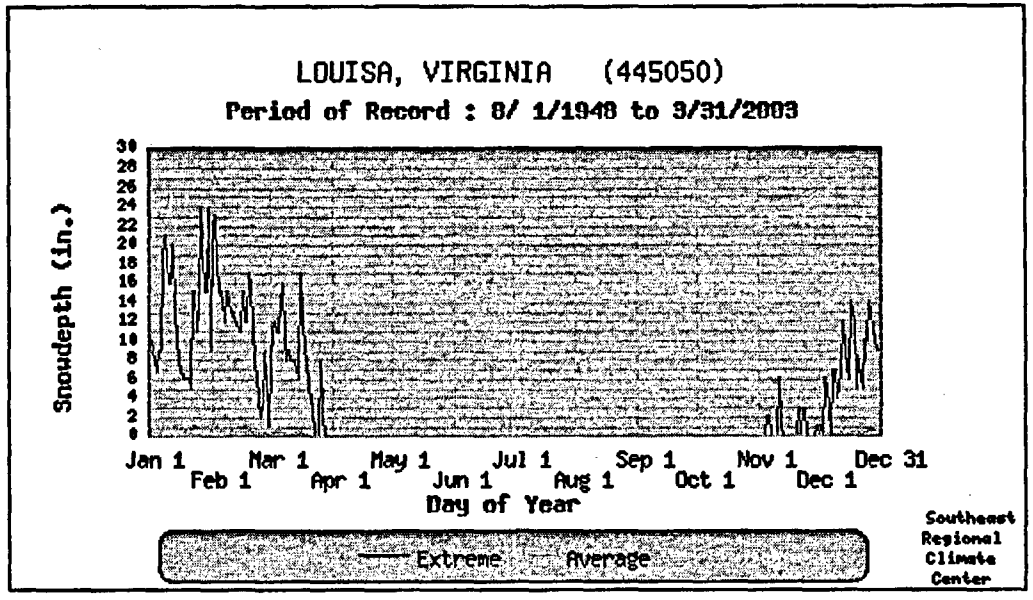
File last updated on May 18,
*** Note *** Provisional Data *** After Year/Month 200401
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR (S)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANN
1947-48	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1948-49	0.00z	0.00	0.00	0.00	0.00	1.50	2.50a	2.00	0.00	0.00	0.00a	0.00	6.00
1949-50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	2.50	0.00	0.00	0.00	10.50
1950-51	0.00	0.00	0.00	0.00	1.00	6.00	0.00	1.00	0.00	0.00	0.00	0.00	8.00
1951-52	0.00	0.00	0.00	0.00	0.00	2.50	1.50	0.00	0.00	0.00	0.00	0.00	4.00
1952-53	0.00	0.00	0.00	0.00	2.00	1.50	0.00	0.00	7.00	0.00	0.00	0.00	10.50
1953-54	0.00	0.00	0.00	0.00	2.00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	14.00
1954-55	0.00	0.00	0.00	0.00	0.50	2.50	7.00	1.50	0.00	0.00	0.00	0.00	11.50
1955-56	0.00	0.00	0.00	0.00	0.00	0.50	2.70	0.00	1.50	0.00	0.00	0.00	4.70
1956-57	0.00	0.00	0.00	0.00	0.00	0.00	10.50	1.00	0.00	1.00	0.00	0.00	12.50
1957-58	0.00	0.00a	0.00	0.00	0.00	6.00	1.00	19.00	12.50	0.00	0.00	0.00	38.50
1958-59	0.00	0.00	0.00	0.00	0.00	1.50	4.50	0.00	0.00	3.00	0.00	0.00	9.00
1959-60	0.00	0.00	0.00	0.00	0.00	0.00	3.00	13.00	28.50	0.00	0.00	0.00	44.50
1960-61	0.00	0.00	0.00	0.00	0.00	7.00	12.50	17.50	0.00	0.00	0.00	0.00	37.00
1961-62	0.00	0.00	0.00	0.00	1.00	5.50	10.50	7.50	22.00	0.00	0.00	0.00	46.50
1962-63	0.00	0.00	0.00	0.00	2.00	16.00	0.50	3.50	0.00	0.00	0.00	0.00	22.00
1963-64	0.00	0.00	0.00	0.00	0.00	4.00	7.50	10.50	2.00	0.50	0.00	0.00	24.50
1964-65	0.00	0.00	0.00	0.00	1.00	0.00	10.00	3.00	1.50	0.00	0.00	0.00	15.50
1965-66	0.00	0.00	0.00	0.00	0.00	0.50	32.20	7.00	0.00	0.00	0.00	0.00	39.70
1966-67	0.00	0.00	0.00	0.00	0.30	19.50	2.00	14.50	0.00	0.00	0.00	0.00	36.30
1967-68	0.00	0.00	0.00	0.00	1.50	6.50	6.00	3.00	2.00	0.00	0.00	0.00	19.00
1968-69	0.00	0.00	0.00	0.00z	3.00	0.00	0.00	0.00	15.50	0.00	0.00	0.00	18.50
1969-70	0.00	0.00	0.00	0.00	0.00	15.50	7.30	1.10	0.00	0.00	0.00	0.00	23.90
1970-71	0.00	0.00	0.00	0.00	0.00	3.00	9.30	1.00	8.00	4.50	0.00	0.00	25.80
1971-72	0.00	0.00	0.00	0.00	3.00	0.00	0.00	9.60	0.00	0.00	0.00	0.00	12.60
1972-73	0.00	0.00	0.00	0.00	1.00	0.00	3.00	2.00	0.00	2.00	0.00	0.00	8.00
1973-74	0.00	0.00	0.00	0.00	0.00	15.00	0.00	6.50	1.00	0.00	0.00	0.00	22.50
1974-75	0.00	0.00	0.00	0.00	0.00	0.00	9.00	6.50	0.00	0.00	0.00	0.00	15.50
1975-76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00
1976-77	0.00	0.00	0.00	0.00	1.00	1.50	9.00	0.00	0.00	0.00	0.00	0.00	11.50
1977-78	0.00	0.00	0.00	0.00	0.00	0.00	8.00	2.00	7.50	0.00	0.00	0.00	17.50
1978-79	0.00	0.00	0.00	0.00	0.00	0.00	2.50	20.00	0.00	0.00	0.00	0.00	22.50
1979-80	0.00	0.00	0.00	1.50	0.00	0.00	10.00	6.00	12.50	0.00	0.00	0.00	30.00
1980-81	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00

1981-82	0.00	0.00	0.00	0.00	3.00	1.50	9.50	12.00	0.00	0.00	0.00	0.00	26.00
1982-83	0.00	0.00	0.00	0.00	0.00	5.70	0.00	14.00	0.00	0.00	0.00	0.00	19.70
1983-84	0.00	0.00	0.00	0.00	1.00	0.00	4.00	5.00	2.00	0.00	0.00	0.00	12.00
1984-85	0.00	0.00	0.00	0.00	0.00	0.00	9.00	0.00	1.50	0.00	0.00	0.00	10.50
1985-86	0.00	0.00	0.00	0.00	0.00	0.00	3.00	1.50a	0.00	0.00	0.00	0.00	4.50
1986-87	0.00	0.00	0.00	0.00	0.00	0.00	31.00	8.00	0.00	2.80	0.00	0.00	41.80
1987-88	0.00	0.00	0.00	0.00	6.50	0.00	14.50	0.00a	1.50	0.00a	0.00	0.00	22.50
1988-89	0.00	0.00	0.00	0.00	0.00	3.20	0.00	7.20	3.50	0.00	0.00	0.00	13.90
1989-90	0.00	0.00	0.00	0.00	4.00	16.70	0.00	0.00	3.00	2.30	0.00	0.00	26.00
1990-91	0.00	0.00	0.00	0.00	0.00	4.00	2.50	2.00	0.00	0.00	0.00	0.00	8.50
1991-92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.50	0.00	0.00	0.00	0.00	3.50
1992-93	0.00	0.00	0.00	0.00	0.00	2.00	0.00	7.10	9.80	0.00	0.00	0.00	18.90
1993-94	0.00	0.00	0.00	0.00	0.00	7.20	6.60	7.50	4.00	0.00	0.00	0.00	25.30
1994-95	0.00	0.00	0.00	0.00	0.00	0.00	7.00	3.30	0.00	0.00	0.00	0.00	10.30
1995-96	0.00	0.00	0.00	0.00	0.00	5.50	26.50	23.30	0.00	0.00	0.00	0.00	55.30
1996-97	0.00	0.00	0.00	0.00	3.00	1.40	2.20	7.00	0.00	0.00	0.00	0.00	13.60
1997-98	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00
1998-99	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	5.00	0.00	0.00	0.00	5.30
1999-00	0.00	0.00	0.00	0.00	0.00	0.00	15.00a	2.00	0.00	0.00	0.00	0.00	17.00
2000-01	0.00	0.00	0.00	0.00	0.00	3.00	0.00	3.50	0.00z	0.00	0.00z	0.00	6.50
2001-02	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	0.00	0.00	0.00	0.00	7.50
2002-03	0.00	0.00	0.00	0.00	0.00	6.50	2.80	22.60	1.00	0.00	0.00	0.00	32.90
2003-04	0.00	0.00	0.00	0.00	0.00	3.50	5.70	0.00	0.00z	0.00z	0.00z	0.00z	9.20
						Period of Record Statistics							
MEAN	0.00	0.00	0.00	0.03	0.66	3.28	5.94	5.29	2.91	0.29	0.00	0.00	18.92
S.D.	0.00	0.00	0.00	0.20	1.28	4.83	7.20	6.26	5.75	0.89	0.00	0.00	12.75
SKEW	0.00	0.00	0.00	7.21	2.48	1.89	2.01	1.35	2.74	3.23	0.00	0.00	0.89
MAX	0.00	0.00	0.00	1.50	6.50	19.50	32.20	23.30	28.50	4.50	0.00	0.00	55.30
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
NO YRS	55	56	56	55	56	56	56	56	54	55	54	55	52

LOUISA, VIRGINIA

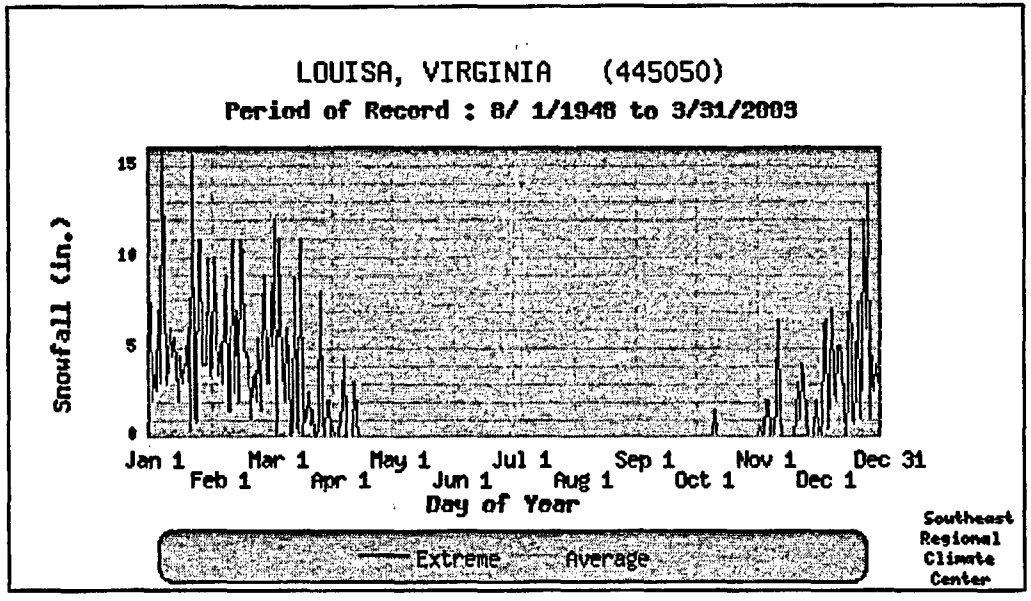
POR - Daily Snowdepth Average and Extreme



- Extreme is the greatest daily snowdepth recorded for the day of the year.
- Average is the average of all daily snowdepth recorded for the day of the year.

LOUISA, VIRGINIA

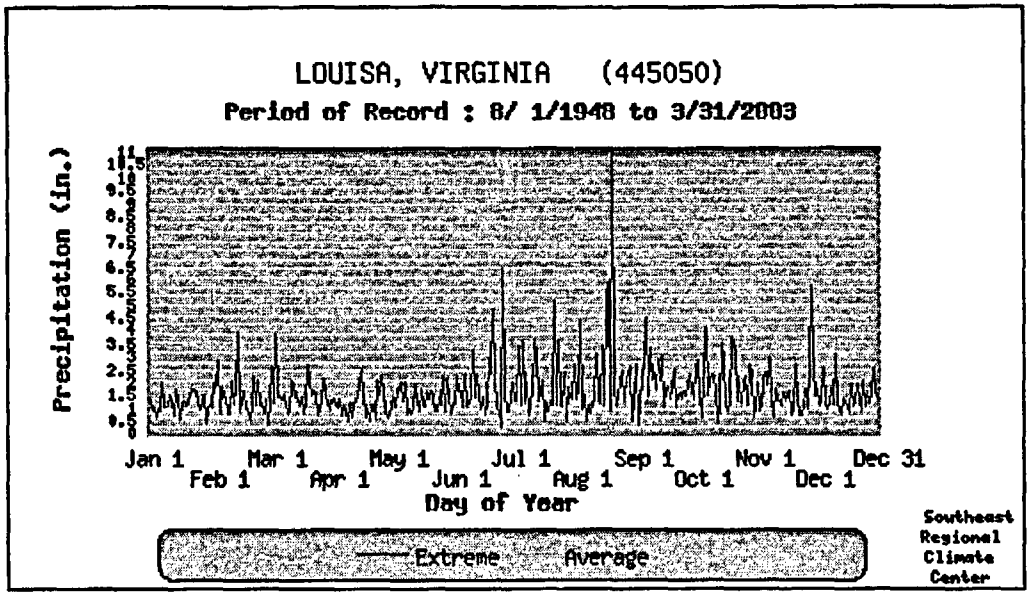
POR - Daily Snowfall Average and Extreme



- Extreme is the greatest daily snowfall recorded for the day of the year.
- Average is the average of all daily snowfall recorded for the day of the year.

LOUISA, VIRGINIA

POR - Daily Precipitation Average and Extreme



- Extreme is the greatest daily precipitation recorded for the day of the year.
- Average is the average of all daily precipitation recorded for the day of the year.

Station Metadata, Quality Control, and Inventory Information for

LOUISA, Virginia

Station Name	LOUISA
COOP Station Number	445050
State	Virginia
Latitude	38d 02m N
Longitude	078d 00m W
Elevation	420 ft.
County	LOUISA
Climate Division	02
CSSA Site I.D.	LOUV2
CSSA County Warning Area	AKQ
Data Period Analyzed for Snowfall	1948-2000
Data Period Analyzed for Snow Depth	1948-2000

NA = Insufficient data.

In the COOP Station History Metadata Base, this station has:
1 location changes over 50 years,
0 observations time changes over 50 years.

Over 1948-2000 period, for this station's snowfall data:
98% of the months had complete data,
0.2% of the daily values were missing,
there were 1 breaks in the data record.

Over 1948-2000 period, for this station's snow depth data:
91% of the months had complete data,
4.2% of the daily values were missing,
there were 3 breaks in the data record.

To Station Selection Page To Option Selection Page

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Please see the NCDC Contact Page if you have questions or comments.

NCDC / Snow Clim. / State / Options / Station(County) / Params / Greatest SF / Search

Greatest Snowfall Amount for One-Day and Multiple Day Snowfall Events.

LOUISA, Virginia

Month/Season	1-Day	2-Day	3-Day	4-Day	5-Day	6-Day	7-Day	NYRS
January	16.0 1/07/1996	19.0 1/08/1996	21.0 1/08/1996	9.5 1/17/1957	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52
February	11.0 2/11/1983	15.0 2/16/1958	6.1 2/19/1958	5.5 2/11/1974	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52
March	12.0 3/03/1960	18.0 3/06/1962	22.0 3/07/1962	5.5 3/10/1960	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52
April	4.5 4/07/1971	4.5 4/07/1971	0.0 NA/1971	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52
May	0.0 5/31/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52
June	0.0 6/30/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52
July	0.0 7/31/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52
August	0.0 8/31/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	53
September	0.0 9/30/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	53
October	1.5 10/10/1979	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52
November	6.5 11/11/1987	TRACE 11/27/1956	0.0 NA/1956	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	53
December	14.0 12/26/1969	15.5 12/26/1969	6.0 12/29/1969	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	53
Winter	16.0 1/07/1996	19.0 1/08/1996	21.0 1/08/1996	9.5 1/17/1957	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52
Spring	12.0 3/03/1960	18.0 3/06/1962	22.0 3/07/1962	5.5 3/10/1960	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52
Summer	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	53
Autumn	6.5 11/11/1987	TRACE 11/27/1956	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	53
Annual	16.0 1/07/1996	19.0 1/08/1996	22.0 3/07/1962	9.5 1/17/1957	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	53
August-July	16.0 1/07/1996	19.0 1/08/1996	22.0 3/07/1962	9.5 1/17/1957	0.0 NA/2000	0.0 NA/2000	0.0 NA/2000	52

Snow fell on each day.
Amount listed with most recent date of occurrence below it.
All snowfall amounts are in inches.
NYRS = Number of Years with non-missing data.
NA = Not Applicable, or insufficient data to compute.
* = value > 0 but less than units resolution.

To Station Selection Page To Parameter Selection Page

This page was generated by http://www.ncdc.noaa.gov/servlets/SCopTab5

Greatest Snowfall Amount for 1-Day, 2-Day, and 3-Day Snowfall Events.

LOUISA, Virginia

Month/Season	1-Day	2-Day	3-Day	NYRS
January	16.0	19.0	21.0	52
February	11.0	15.0	15.0	52
March	12.0	18.0	22.0	52
April	4.5	4.5	4.5	52
May	0.0	0.0	0.0	52
June	0.0	0.0	0.0	52
July	0.0	0.0	0.0	52
August	0.0	0.0	0.0	53
September	0.0	0.0	0.0	53
October	1.5	1.5	1.5	52
November	6.5	6.5	6.5	53
December	14.0	15.5	15.5	53
Winter	16.0	19.0	21.0	52
Spring	12.0	18.0	22.0	52
Summer	0.0	0.0	0.0	53
Autumn	6.5	6.5	6.5	53
Annual	16.0	19.0	22.0	53
August-July	16.0	19.0	22.0	52

Whether or Not snow fell on each day.
All snowfall amounts are in inches.
NYRS = Number of Years with non-missing data.
NA = Not Applicable, or insufficient data to compute.
* = value > 0 but less than units resolution.

To Station Selection Page To Parameter Selection Page

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Please see the NCDC Contact Page if you have questions or comments.

NCDC / Snow Clim. / State / Options / Station(County) / Params / Med/Max Daily SC / Search

Median and Extreme Daily Snow Cover, by Month.

LOUISA, Virginia

All-Days - all days examined, whether or not they had snow on the ground.
Snowy-Days - only days that had snow on the ground were examined.
MaxDate = month/day/year.

Month	All-Days			Snowy-Days	
	Max	MaxDate	NYRS	Median	NYRS
January	24.0	1/26/1987	50	2.5	34
February	23.0	2/02/1966	50	1.2	28
March	17.0	3/16/1960	50	1.5	21
April	0.0	4/30/2000	50	NA	1
May	0.0	5/31/2000	50	NA	0
June	0.0	6/30/2000	50	NA	0
July	0.0	7/31/2000	50	NA	0
August	0.0	8/31/2000	51	NA	0
September	0.0	9/30/2000	51	NA	0
October	0.0	10/31/2000	50	NA	1
November	6.0	11/11/1987	51	1.5	11
December	14.0	12/17/1973	50	1.8	22

All snow cover amounts are in inches.
NYRS = Number of Years with non-missing data.
NA = Not Applicable, or insufficient data to compute.

To Station Selection Page To Parameter Selection Page

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Please see the NCDC Contact Page if you have questions or comments.

NCDC / Climate-Radar Data Inventories / Locate Station / Search

Corbin

VA, United States

List Stations in Division VA-02
List Stations in Caroline County
List Stations within 5, 10, 25, or 50 miles

Call Sign/ICS* :
WBAN* :
COOP ID* : 442009
Climate Division* : VA-02 - Eastern Piedmont
WMO ID* :
In Service* : 01 Jan 1959 to Present
Elevation* : 67.1m (220.1') above s/l
Lat/Lon* : 38°12'N / 77°22'W
County* : Caroline

- Data Inventories
- DATA
- Station History
- State Climatologist
- Regional Climate Center

Information at Other Sites
- National Weather Service
  - Eastern Region Headquarters
  - Regional Forecast Office
  - Local Weather Conditions
  - Local Weather Forecast
- Current Radar
- Current Satellite
- Sunrise/Sunset

* *Disclaimer*
* *List of NCDC Datasets*
* *Please report any Data Errors found.*
* *Note to webmasters: you can link directly to this page.*

Data Inventories

Please note that additional data (digital and non-digital) may be available for this station. Contact NCDC if additional details are needed.

Click on the following where available:
- *DAT to obtain digital ascii data (charges may apply),*
  Please do not order these data if you do not know what a Digital ASCII File is.
- *INV to view inventory, or*
- *DOC to view documentation*

Surface
DAT INV DOC 3200 -Cooperative Summary Of The Day
DAT INV DOC SOD -Daily Surface Data (TD3200/3210 combined)
DAT INV DOC 3220 -Summary Of The Month (SOM) Cooperative

DATA

Additional data products may be available for this station. If you can't find what you are looking for here, please try our Most Popular Products page.

Forms, Publications, and Web Pages
Graphs and Other Images
CD-ROMs
Digital ASCII Files

Forms, Publications, and Web Pages

Most of these products are publications that have been converted to on-line access. As such, these documents have column headings and are displayed in an easy-to-read format.

For additional information and product samples, click on the ? icon next to the desired product.

? Daily/Monthly/Annual Virginia Climatological Data
? Record of Climatological Observations
? Annual Climatological Summary
? Storm Data Publication

? Miscellaneous Storm Events in Caroline County
*All List Storms

Graphs and Other Images

Includes contour maps, time series, NEXRAD radar mosaics, and satellite images.

For additional information and product samples, click on the ? icon next to the desired product.

? National Mosaic Reflectivity Images
? Miscellaneous Satellite Images

CD-ROMs

The following are some of the more popular CD-ROMs that contain data for this station. Others are available that may contain summarized data for this station. A complete list of CD-ROMs is available in the OnLine Store.

For additional information, click on the ? icon next to the desired product.

? NCDC Cooperative Station Data

Digital ASCII Files

These files may or may not contain column headers. In order to use these files, you will need to import them into a spreadsheet or database package for presentation. Please do not order these data if you do not know what a Digital ASCII File is. A sample Digital ASCII File is available for viewing but content varies a great deal depending on your request. Other digital files are available Offline that may contain data for this station.

For additional information and product samples, click on the ? icon next to the desired product.

? SOD -Daily Surface Data (TD3200/3210 combined)
? 3220 -Summary Of The Month (SOM) Cooperative

Station History

Corbin

Date Began	Date Ended	Lat/Lon	Elevation meters/feet	COOP ID	WBAN	Call Sign	WMO ID	Type
CORBIN								
16 Apr 1998	Present	38°12'N / 77°22'W	67.1m / 220.1'	442009	.	.	.	.
01 Oct 1992	16 Apr 1998	38°12'N / 77°22'W	67.1m / 220.1'	442009	.	.	.	.
01 Jan 1959	01 Oct 1992	38°12'N / 77°22'W	67.1m / 220.1'	442009	.	.	.	.

Top of Page

NCDC / Climate-Radar Data Inventories / Locate Station / Search

This page dynamically generated 07 Jan 2004 from:
http://www.ncdc.noaa.gov/oa/climate/stationlocator.html
Please send questions or comments about this system to ncdc.webcliserv@noaa.gov
Please see the NCDC Contact Page if you have questions or comments.

CORBIN, VIRGINIA (442009)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1959 to 7/31/2003

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	43.9	47.1	56.1	66.9	75.1	82.9	86.8	85.7	79.3	68.7	58.6	47.6	66.6
Average Min. Temperature (F)	23.8	26.3	33.9	42.9	52.1	61.0	65.5	64.4	57.2	45.0	36.2	27.9	44.7
Average Total Precipitation (in.)	3.30	3.14	4.04	3.11	3.84	3.68	4.11	3.68	3.66	3.47	3.25	3.39	42.64
Average Total SnowFall (in.)	5.0	5.1	2.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.5	15.8
Average Snow Depth (in.)	1	1	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 100% Min. Temp.: 100% Precipitation: 100% Snowfall: 99.9% Snow Depth: 99.3%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

CORBIN, VIRGINIA

Period of Record General Climate Summary - Temperature

Station:(442009) CORBIN															
From Year=1959 To Year=2003															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	43.9	23.8	33.8	81	31/2002	-8	19/1994	41.5	90	23.4	***	0.0	4.9	24.8	0.8
February	47.1	26.3	36.7	81	26/2000	-11	05/1996	44.7	90	26.6	***	0.0	2.8	21.2	0.2
March	56.1	33.9	45.0	90	31/1998	6	11/1960	51.8	100	34.0	***	0.0	0.5	14.5	0.0
April	66.9	42.9	54.9	94	27/1960	20	01/1965	60.1	60	50.3	66	0.5	0.0	4.2	0.0
May	75.1	52.1	63.6	96	31/1991	27	11/1966	68.6	91	58.4	67	1.2	0.0	0.2	0.0
June	82.9	61.0	71.9	99	30/1959	36	08/1977	75.3	94	68.0	92	5.1	0.0	0.0	0.0
July	86.8	65.5	76.2	103	17/1988	43	01/1988	79.4	102	72.9	62	10.7	0.0	0.0	0.0
August	85.7	64.4	75.0	104	21/1983	43	29/1986	79.0	102	70.2	92	8.6	0.0	0.0	0.0
September	79.3	57.2	68.3	100	03/1980	31	24/1963	74.2	98	64.2	67	3.0	0.0	0.1	0.0
October	68.7	45.0	56.9	92	02/1986	21	24/1969	63.7	84	50.9	88	0.1	0.0	3.3	0.0
November	58.6	36.2	47.4	86	02/1974	11	25/1970	54.1	101	40.7	76	0.0	0.0	12.1	0.0
December	47.6	27.9	37.8	80	08/1998	-3	13/1962	46.2	84	26.5	89	0.0	2.3	21.7	0.1
Annual	66.6	44.7	55.6	104	19830821	-11	19960205	58.7	98	54.0	66	29.2	10.5	102.0	1.1
Winter	46.2	26.0	36.1	81	20000226	-11	19960205	42.4	102	30.7	63	0.0	10.0	67.7	1.1
Spring	66.0	43.0	54.5	96	19910531	6	19600311	58.1	100	51.7	71	1.7	0.5	18.8	0.0
Summer	85.1	63.6	74.4	104	19830821	36	19770608	77.6	102	71.6	92	24.4	0.0	0.0	0.0
Fall	68.9	46.1	57.5	100	19800903	11	19701125	60.7	85	53.3	76	3.1	0.0	15.5	0.0

Table updated on Dec 9,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

CORBIN, VIRGINIA

Period of Record General Climate Summary - Precipitation

Station:(442009) CORBIN														
From Year=1959 To Year=2003														
	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	3.30	9.21	78	0.26	81	2.69	26/1978	10	7	2	1	5.0	21.3	87
February	3.14	9.45	98	0.35	68	3.13	05/1998	9	6	2	1	5.1	26.0	103
March	4.04	9.49	94	1.06	86	3.35	29/1984	11	7	3	1	2.6	23.3	60
April	3.11	7.47	83	0.43	85	2.77	17/1987	10	6	2	1	0.1	3.5	71
May	3.84	7.86	60	0.52	99	2.80	02/1989	11	7	3	1	0.0	0.0	59
June	3.68	11.19	72	0.88	80	7.45	22/1972	10	6	3	1	0.0	0.0	59
July	4.11	7.71	94	1.08	93	3.94	13/1972	11	7	3	1	0.0	0.0	59
August	3.68	8.45	85	0.46	91	5.38	20/1969	9	5	2	1	0.0	0.0	59
September	3.66	10.44	99	0.52	67	4.65	16/1999	8	5	2	1	0.0	0.0	59
October	3.47	9.36	76	0.00	100	3.07	01/1979	8	5	2	1	0.0	1.0	79
November	3.25	6.79	62	0.24	81	3.73	28/1993	9	6	2	1	0.5	7.4	87
December	3.39	7.41	69	0.15	65	2.92	25/1986	10	6	2	1	2.5	15.0	89
Annual	42.64	60.70	72	30.45	81	7.45	19720622	117	73	29	11	15.8	48.7	62
Winter	9.83	19.33	98	4.36	81	3.13	19980205	29	19	7	2	12.6	43.1	96
Spring	10.98	18.15	93	6.12	85	3.35	19840329	32	21	7	3	2.7	23.3	60
Summer	11.46	20.27	72	5.15	80	7.45	19720622	30	18	8	3	0.0	0.0	59
Fall	10.37	17.83	79	1.84	101	4.65	19990916	26	16	7	3	0.5	7.4	87

Table updated on Dec 9,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@cirrus.dnr.state.sc.us

CORBIN, VIRGINIA

Monthly Total Snowfall (Inches)

(442009)

File last updated on Dec 9,
*** Note *** Provisional Data *** After Year/Month 200307
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR(S)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANN
1958-59	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	3.20	0.00	0.00	0.40	0.00	0.00	3.60
1959-60	0.00	0.00	0.00	0.00	0.00	0.00	1.70	5.30	23.30	0.00	0.00	0.00	30.30
1960-61	0.00	0.00	0.00	0.00	0.00	7.10	10.10	11.90	1.00	0.00	0.00	0.00	30.10
1961-62	0.00	0.00	0.00	0.00	1.50	2.20	6.60	5.80	19.00	0.00	0.00	0.00	35.10
1962-63	0.00	0.00	0.00	0.00	2.50	14.80	0.00	0.00	0.00	0.00	0.00	0.00	17.30
1963-64	0.00	0.00	0.00	0.00	0.00	3.00	6.70	12.50	6.50	0.00	0.00	0.00	28.70
1964-65	0.00	0.00	0.00	0.00	0.00	0.90	12.10	2.50	1.50	0.00	0.00	0.00	17.00
1965-66	0.00	0.00	0.00	0.00	0.00	0.00	11.10a	8.30	0.20	0.00	0.00	0.00	19.60
1966-67	0.00	0.00	0.00	0.00	0.00	13.20	1.80	13.90	0.00	0.00	0.00	0.00	28.90
1967-68	0.00	0.00	0.00	0.00	2.00	8.30	1.70	0.00	4.30	0.00	0.00	0.00	16.30
1968-69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	6.00
1969-70	0.00	0.00	0.00	0.00	0.00	4.90	7.50	0.90	0.00	0.00	0.00	0.00	13.30
1970-71	0.00	0.00	0.00	0.00	0.00	0.00	6.70	0.50	7.50	3.50	0.00	0.00	18.20
1971-72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.10a	0.00	0.00	0.00	0.00	8.10
1972-73	0.00	0.00	0.00	0.00	0.00	0.00	3.50	1.00	0.00	0.00a	0.00	0.00	4.50
1973-74	0.00	0.00	0.00	0.00	0.00	9.40	0.00	2.00	0.00	0.00	0.00	0.00	11.40
1974-75	0.00	0.00	0.00	0.00	0.00	0.50	4.50	6.50	1.60	0.00	0.00	0.00	13.10
1975-76	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.80	1.00	0.00	0.00	0.00	1.90
1976-77	0.00	0.00	0.00	0.00	2.50	3.00	10.30	0.00	0.00	0.00	0.00	0.00	15.80
1977-78	0.00	0.00	0.00	0.00	0.00	0.10	8.70	3.70	9.50	0.00	0.00	0.00	22.00
1978-79	0.00	0.00	0.00	0.00	0.00	0.00	4.50	24.20	0.50	0.00	0.00	0.00	29.20
1979-80	0.00	0.00	0.00	1.00	0.00	0.00	11.50	5.60	11.50	0.00	0.00	0.00	29.60
1980-81	0.00	0.00	0.00	0.00	0.00	0.00	3.20	0.00	1.00	0.00	0.00	0.00	4.20
1981-82	0.00	0.00	0.00	0.00	0.10	4.00	9.50	11.70	0.00	0.50	0.00	0.00	25.80
1982-83	0.00	0.00	0.00	0.00	0.00	5.50	0.00	18.70	0.00	0.00	0.00	0.00	24.20
1983-84	0.00	0.00	0.00	0.00	0.50	0.00	6.50	1.50	0.00	0.00	0.00	0.00	8.50
1984-85	0.00	0.00	0.00	0.00	0.00	0.00	6.60	0.00	0.00	0.00	0.00	0.00	6.60
1985-86	0.00	0.00	0.00	0.00	0.00	0.50	2.70	4.90	0.00	0.00	0.00	0.00	8.10
1986-87	0.00	0.00	0.00	0.00	0.00	0.00	21.30	5.50	0.50	0.00	0.00	0.00	27.30

YEAR(S)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANN
1987-88	0.00	0.00	0.00	0.00	7.40	0.00	12.00	0.00	0.70	0.00	0.00	0.00	20.10
1988-89	0.00	0.00	0.00	0.00	0.00	1.80	0.00	2.50	0.00	0.00	0.00	0.00	4.30
1989-90	0.00	0.00	0.00	0.00	3.00	15.00	1.00	0.00	1.50	2.00	0.00	0.00	22.50
1990-91	0.00	0.00	0.00	0.00	0.00	0.00a	2.00	0.00	0.00	0.00	0.00	0.00	2.00
1991-92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.50
1992-93	0.00	0.00	0.00	0.00	0.00	0.50	0.00	5.60	7.20a	0.00	0.00	0.00	13.30
1993-94	0.00	0.00	0.00	0.00	0.00	5.40	4.30	1.80b	1.50	0.00	0.00	0.00	13.00
1994-95	0.00	0.00	0.00	0.00	0.00	0.00	4.30a	3.60	0.00	0.00	0.00	0.00	7.90
1995-96	0.00	0.00	0.00	0.00	0.00	1.50	18.20	23.40	4.70	0.00b	0.00	0.00	47.80
1996-97	0.00	0.00	0.00	0.00	1.00	0.40	3.80	4.00	0.00	0.00	0.00	0.00	9.20
1997-98	0.00	0.00	0.00	0.00	0.00	1.50d	0.00a	0.00	0.00	0.00	0.00	0.00	1.50
1998-99	0.00	0.00	0.00	0.00	0.00	0.00c	0.00a	0.00a	5.00a	0.00	0.00	0.00	5.00
1999-00	0.00	0.00	0.00	0.00	0.00	0.00	10.80a	0.40	0.00	0.00	0.00	0.00	11.20
2000-01	0.00	0.00	0.00	0.00	0.00	2.00	0.00a	2.00a	0.00a	0.00	0.00	0.00	4.00
2001-02	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	6.00
2002-03	0.00	0.00	0.00	0.00	0.00	3.00a	2.50c	26.00	0.00	0.00	0.00	0.00	31.50
Period of Record Statistics													
MEAN	0.00	0.00	0.00	0.02	0.47	2.47	5.04	5.06	2.57	0.14	0.00	0.00	15.98
S.D.	0.00	0.00	0.00	0.15	1.31	4.04	5.09	6.86	4.99	0.60	0.00	0.00	11.03
SKEW	0.00	0.00	0.00	6.40	3.82	1.93	1.15	1.74	2.65	4.75	0.00	0.00	0.65
MAX	0.00	0.00	0.00	1.00	7.40	15.00	21.30	26.00	23.30	3.50	0.00	0.00	47.80
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50
NO YRS	44	44	44	44	44	44	45	45	45	45	45	45	44

CORBIN, VIRGINIA

Period of Record Daily Climate Summary

Daily Records for station 442009 CORBIN state: va

For temperature and precipitation, multi-day accumulations
are not considered either for records or averages.
The year given is the year of latest occurrence.

Period requested -- Begin : 1/ 1/1890 -- End : 7/31/2003
Period used -- Begin : 1/ 1/1959 -- End : 7/31/2003

Cooling degree threshold = 65.00 Heating degree threshold = 65.00

AVG Multi-year unsmoothed average of the indicated quantity
HI Highest value of indicated quantity for this day of year
LO Lowest value of indicated quantity for this day of year
YR Latest year of occurrence of the extreme value
NO Number of years with data for this day of year.
Units: English (inches and degrees F)

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
1	1	45	45	71	1966	24	1963	26	45	56	1973	8	1984	0.181	45	2.00	1976	0.19	45	6.5	1971	0.5	44	7.	1971	29.6	45	0.0	45
1	2	44	45	69	1973	28	1968	26	45	50	1979	7	1968	0.096	45	1.09	1987	0.07	45	3.3	1962	0.5	44	7.	1971	30.0	45	0.0	45
1	3	45	45	68	2000	28	1968	25	45	53	2000	9	2001	0.125	45	1.33	1999	0.09	45	4.0	2002	0.4	44	5.	1971	29.8	45	0.0	45
1	4	45	45	71	2000	24	1979	26	45	61	2000	7	1979	0.110	45	1.00	1992	0.03	45	1.5	1988	0.3	44	5.	1971	29.6	45	0.0	45
1	5	45	45	74	1997	18	1981	24	45	50	1997	2	1981	0.102	45	0.85	1971	0.14	45	6.0	1980	0.3	44	6.	1980	30.7	45	0.0	45
1	6	43	45	69	1998	23	1959	23	45	46	1997	0	1959	0.084	45	1.17	1966	0.15	45	3.0	1980	0.4	43	9.	1980	32.4	45	0.0	45
1	7	43	45	66	1998	24	1988	26	45	58	1998	6	1988	0.149	45	1.23	1995	0.38	44	8.0	1996	0.7	43	8.	1996	30.4	45	0.0	45
1	8	44	45	70	1998	21	1988	25	45	63	1998	-4	1968	0.111	45	0.78	1996	0.34	45	8.0	1988	0.8	43	11.	1996	30.5	45	0.0	45
1	9	42	45	70	1998	15	1970	23	45	60	1998	-3	1968	0.154	45	1.89	1978	0.18	44	3.5	1973	0.8	42	9.	1996	33.1	45	0.0	45
1	10	42	45	65	2003	13	1970	23	45	41	2000	-2	1970	0.088	45	0.90	1965	0.12	45	3.0	1962	0.7	44	9.	1996	33.2	45	0.0	45
1	11	42	45	64	1975	10	1982	23	45	50	1972	0	1962	0.076	45	1.22	1984	0.08	45	1.0	1997	0.6	44	8.	1996	33.2	45	0.0	45
1	12	42	45	73	1975	19	1982	21	45	48	1963	2	1981	0.094	45	1.36	1991	0.11	45	4.5	1996	0.6	44	12.	1996	33.4	45	0.0	45
1	13	42	45	66	1995	21	1981	23	45	47	1999	-2	1981	0.069	45	1.12	1964	0.24	45	4.8	1964	0.8	44	11.	1996	32.7	45	0.0	45
1	14	44	45	71	1995	23	1964	23	45	52	1995	10	1962	0.130	45	1.66	1968	0.14	45	4.0	1982	0.8	44	10.	1996	31.7	45	0.0	45
1	15	43	45	72	1995	24	1988	23	45	59	1995	-2	1964	0.097	45	0.72	1980	0.12	43	3.0	1982	0.8	43	9.	1996	32.3	45	0.0	45
1	16	43	45	69	1959	17	1994	22	45	51	1995	-4	1994	0.085	45	1.01	1995	0.06	45	2.1	1965	0.7	43	6.	1996	32.4	45	0.0	45
1	17	43	45	65	1990	16	1972	20	45	44	1974	-7	1982	0.051	44	0.93	1965	0.34	45	5.6	1965	0.9	43	8.	1965	33.8	45	0.0	45
1	18	43	45	71	1990	18	1977	23	45	43	1999	-4	1982	0.090	44	1.14	1978	0.03	45	1.0	1984	0.6	42	6.	1965	31.9	45	0.0	45
1	19	43	45	70	1990	21	1994	23	45	51	1986	-8	1994	0.122	44	0.98	1980	0.12	45	4.0	1984	0.5	42	5.	1965	32.3	45	0.0	45
1	20	42	45	66	1996	10	1994	22	45	40	1995	-6	1994	0.220	45	1.69	1988	0.35	45	4.6	1961	0.7	43	5.	1965	33.1	45	0.0	45

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
1	21	42	45	62	1959	12	1985	22	45	39	1959	-6	1985	0.109	45	1.66	1979	0.19	44	4.0	1975	0.7	42	4.	1978	33.0	45	0.0	45
1	22	42	45	71	1959	17	1985	22	45	51	1959	-6	1984	0.050	45	0.62	1993	0.08	45	3.0	1987	0.6	42	5.	1961	33.4	45	0.0	45
1	23	44	45	70	1986	23	1961	24	45	47	1973	-4	1970	0.120	45	1.10	1966	0.23	45	8.0	1987	0.7	43	10.	1987	31.2	45	0.0	45
1	24	47	45	74	1999	20	2003	26	45	54	1999	2	1987	0.118	45	1.41	1998	0.00	44	0.2	1968	0.5	43	8.	1987	28.7	45	0.0	45
1	25	47	45	74	1967	24	1963	26	45	48	1972	3	1963	0.102	45	0.68	1999	0.12	45	5.0	2000	0.5	44	7.	1987	28.6	45	0.0	45
1	26	46	45	75	1967	19	1987	25	45	50	1967	2	1961	0.157	45	2.69	1978	0.37	45	9.0	1987	0.8	44	16.	1987	29.8	45	0.0	45
1	27	46	45	72	1967	15	1961	24	45	51	1967	-3	1987	0.115	45	2.10	1976	0.35	45	9.1	1966	1.1	44	15.	1987	30.3	45	0.0	45
1	28	45	45	73	1974	24	1971	22	45	39	2002	-5	1987	0.110	45	1.73	1998	0.04	45	1.5	1979	1.0	44	13.	1987	31.4	45	0.0	45
1	29	44	45	71	1999	23	1966	23	45	42	1974	0	1961	0.078	45	1.33	1998	0.05	44	2.0	1995	0.8	43	12.	1987	31.5	45	0.0	45
1	30	45	45	77	2002	14	1966	25	45	55	2002	4	1961	0.031	44	0.38	1965	0.12	44	3.8	1965	0.7	43	11.	1987	30.2	45	0.0	45
1	31	46	45	81	2002	17	1966	25	45	47	2002	2	1965	0.059	45	1.04	2000	0.20	44	2.8	1985	1.1	44	13.	1966	29.9	45	0.0	45
2	1	44	45	68	2002	27	1971	24	45	51	1988	0	1965	0.038	45	0.70	1985	0.00	45	0.0	2003	0.8	44	12.	1966	31.0	45	0.0	45
2	2	46	45	79	2002	24	1971	26	44	58	1988	-2	1971	0.118	45	0.98	1985	0.43	45	9.1	1996	1.0	44	13.	1966	29.8	44	0.0	44
2	3	45	45	72	1990	18	1961	25	45	48	1970	0	1965	0.119	45	1.00	1973	0.21	44	7.0	1996	1.0	44	12.	1966	29.9	45	0.0	45
2	4	44	45	68	1991	20	1996	24	45	42	1990	1	1965	0.131	45	1.19	1998	0.14	45	3.3	1995	0.8	44	11.	1966	31.7	45	0.0	45
2	5	44	45	70	1991	16	1996	23	45	38	1986	-11	1996	0.142	45	3.13	1998	0.14	45	5.0	1975	0.8	44	10.	1966	31.4	45	0.0	45
2	6	44	45	75	1991	23	1996	24	45	50	1991	-6	1996	0.071	45	1.02	1960	0.05	45	0.7	1983	0.7	44	10.	1966	31.2	45	0.0	45
2	7	44	45	66	1965	25	1978	24	45	47	1991	3	1996	0.127	45	0.88	1967	0.42	45	6.0	2003	1.0	44	9.	1966	31.2	45	0.0	45
2	8	43	45	61	1965	25	1967	24	45	50	1965	3	1967	0.132	45	1.57	1971	0.18	45	3.8	1964	1.0	44	10.	1961	31.9	45	0.0	45
2	9	43	45	73	1965	27	1974	23	45	46	1965	4	1995	0.103	45	1.01	1969	0.25	45	4.0	1961	1.0	43	14.	1961	32.0	45	0.0	45
2	10	44	45	70	2001	23	1979	24	45	54	2001	-4	1979	0.088	45	1.45	1970	0.12	45	2.8	1980	0.9	44	12.	1961	31.2	45	0.0	45
2	11	46	45	71	1959	28	1973	25	45	54	1960	1	1979	0.116	45	1.67	1994	0.27	45	5.0	1983	0.9	44	10.	1961	29.6	45	0.0	45
2	12	48	45	68	1999	23	1979	25	45	46	1965	5	1968	0.158	45	1.30	1983	0.35	44	10.0	1983	1.0	45	15.	1983	29.0	45	0.0	45
2	13	44	45	76	1999	26	1981	24	45	47	1984	7	1979	0.121	45	0.91	1972	0.21	44	4.5	1979	1.0	43	12.	1983	31.5	45	0.0	45
2	14	44	45	69	1976	23	1979	25	45	47	1984	4	1979	0.110	45	1.35	1971	0.16	45	5.0	1960	0.9	43	10.	1983	30.8	45	0.0	45
2	15	48	45	75	1990	26	1979	27	45	48	1984	14	1979	0.065	45	0.59	2003	0.10	45	2.5	1965	0.8	43	9.	1961	27.7	45	0.0	45
2	16	49	45	80	1989	30	1963	28	45	52	1967	7	1963	0.126	45	1.35	1964	0.14	45	3.8	2003	0.7	44	9.	1961	27.2	45	0.0	45
2	17	47	45	75	1976	19	2003	27	44	52	1976	6	1979	0.105	45	1.10	2003	0.42	45	9.2	2003	0.8	45	13.	2003	28.6	44	0.0	44
2	18	46	45	78	1976	20	1979	27	45	56	1976	-1	1979	0.127	45	1.33	1998	0.21	45	5.5	1967	0.8	45	13.	2003	28.5	45	0.0	45
2	19	48	45	74	1976	21	1979	29	45	53	1981	7	1979	0.176	45	1.58	1972	0.28	44	12.0	1979	0.9	45	16.	1979	26.7	45	0.0	45
2	20	51	45	75	1961	29	1993	29	45	53	1981	10	1979	0.024	45	0.33	1981	0.00	45	0.0	2003	0.7	44	14.	1979	25.1	45	0.0	45
2	21	51	45	72	1994	30	1972	28	45	50	2002	9	1968	0.073	45	1.00	1981	0.04	45	2.0	1993	0.4	43	13.	1979	25.8	45	0.0	45
2	22	51	45	74	1997	28	1968	29	45	46	1981	0	1968	0.104	45	1.16	2003	0.00	45	0.0	2003	0.2	44	10.	1979	25.2	45	0.0	45
2	23	52	45	71	1991	25	1963	30	45	50	1985	3	1963	0.203	45	2.37	1971	0.14	45	4.5	1987	0.3	45	6.	1979	24.4	45	0.0	45
2	24	50	45	75	1985	32	1999	30	45	55	1975	15	1963	0.158	45	1.63	1998	0.07	45	1.7	1966	0.2	44	4.	1979	24.9	45	0.0	45
2	25	52	45	79	1985	29	1967	30	45	55	1985	10	1967	0.118	44	2.07	1979	0.16	44	5.0	1966	0.2	43	4.	1966	24.6	45	0.0	45
2	26	50	45	81	2000	26	1967	28	45	46	1976	9	1990	0.138	45	1.61	1979	0.04	45	1.6	1993	0.0	44	1.	1966	26.3	45	0.0	45
2	27	48	45	76	1977	20	1963	27	45	52	1977	10	1963	0.053	45	0.51	1962	0.16	45	3.0	2003	0.2	45	4.	1993	27.6	45	0.0	45
2	28	50	45	75	1997	30	2003	29	45	53	1997	14	1963	0.070	45	0.90	1982	0.26	45	8.5	1982	0.4	45	8.	1982	25.6	45	0.0	45
2	29	53	11	75	1976	30	1980	28	11	41	1972	16	1980	0.044	11	0.29	1964	0.48	11	3.5	1964	0.5	11	4.	1964	24.5	11	0.0	11
3	1	51	45	78	1976	31	1980	29	45	51	1972	10	1980	0.095	45	1.09	1966	0.12	45	4.3	1968	0.3	44	5.	2003	25.0	45	0.0	45
3	2	52	45	78	1976	16	1980	30	45	51	1972	12	1980	0.097	45	1.00	1980	0.33	45	9.5	1980	0.6	44	10.	1980	24.1	45	0.0	45
3	3	54	45	78	1972	23	1980	32	45	48	1991	12	1980	0.176	45	2.15	1994	0.29	45	8.0	1960	0.6	44	8.	1980	22.5	45	0.0	45
3	4	50	45	75	1974	27	1960	32	45	50	1988	13	1996	0.125	45	1.83	1993	0.07	45	1.5	1978	0.4	44	8.	1960	24.3	45	0.0	45
3	5	53	45	82	1983	30	1960	33	45	63	1974	11	2002	0.110	45	1.50	1965	0.00	44	0.0	2003	0.3	44	7.	1960	22.7	45	0.1	45
3	6	56	45	82	1961	29	1960	34	45	59	1961	15	1960	0.145	45	1.70	1962	0.34	45	15.0	1962	0.6	45	15.	1962	20.5	45	0.1	45
3	7	54	45	81	1961	34	1960	32	45	58	1961	11	1960	0.131	45	1.38	1989	0.18	45	4.0	1969	0.6	45	15.	1962	22.4	45	0.1	45
3	8	54	45	80	1974	25	1989	31	45	49	1995	12	1986	0.052	45	0.62	1982	0.07	45	2.2	1996	0.5	45	10.	1962	22.8	45	0.0	45
3	9	54	45	85	2000	28	1996	32	45	59	2000	10	1996	0.146	45	2.12	1995	0.04	45	2.0	1978	0.4	45	8.	1962	22.4	45	0.2	45
3	10	54	45	81	2000	31	1996	32	45	53	1964	14	1984	0.094	45	0.76	1994	0.29	45	5.0	1999	0.6	44	9.	1960	22.4	45	0.0	45
3	11	53	45	78	2000	33	1960	31	45	61	1986	6	1960	0.072	45	0.83	1968	0.01	45	0.5	1979	0.4	44	7.	1960	23.6	45	0.0	45
3	12	53	45	79	1967	34	1960	31	45	52	1990	15	1960	0.106	45	2.08	1963	0.00	45	0.0	2003	0.2	43	7.	1960	23.1	45	0.0	45
3	13	56	45	84	1990	37	1960	33	45	61	1990	16	1998	0.100	45	1.07	1968	0.18	45	7.0	1993	0.3	43	7.	1993	21.1	45	0.2	45
3	14	56	45	86	1990	35	1993	34	45	52	1990	14	1960	0.157	45	1.63	1993	0.00	44	0.0	2003	0.2	44	5.	1960	20.7	45	0.1	45

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
3	15	56	45	86	1990	30	1993	34	45	58	1990	9	1993	0.104	45	1.65	1999	0.00	44	0.0	2003	0.2	44	4.	1960	20.6	45	0.2	45
3	16	57	45	82	2002	37	1993	35	45	63	2002	17	1979	0.042	45	0.29	2001	0.01	45	0.5	1987	0.2	44	4.	1960	19.8	45	0.3	45
3	17	56	45	80	1990	34	1960	34	45	63	1990	15	1970	0.212	45	1.50	1975	0.18	45	8.0	1960	0.3	44	10.	1960	20.6	45	0.1	45
3	18	56	45	79	1999	35	1967	33	45	56	1999	16	1967	0.132	45	1.45	1990	0.00	45	0.0	2003	0.1	44	6.	1960	20.3	45	0.0	45
3	19	55	45	81	1989	32	1993	33	45	49	1983	10	1967	0.126	45	1.20	1998	0.02	45	1.0	1981	0.1	44	4.	1960	21.2	45	0.0	45
3	20	56	45	75	1978	38	1997	34	45	49	1986	22	1993	0.200	45	2.48	1975	0.04	45	1.5	1990	0.0	44	2.	1990	20.2	45	0.0	45
3	21	55	45	78	1976	32	1965	35	45	54	1976	13	1965	0.226	45	1.92	2001	0.04	45	1.2	1965	0.0	44	1.	1988	20.0	45	0.0	45
3	22	56	45	83	1968	36	1986	34	45	48	1972	16	1986	0.154	45	1.35	1999	0.03	45	1.0	1961	0.0	44	0.	2003	20.0	45	0.0	45
3	23	55	45	86	1968	38	1961	32	45	54	1968	20	2002	0.062	45	0.72	1961	0.00	45	0.0	2003	0.0	44	0.	2003	21.8	45	0.2	45
3	24	58	45	83	1966	42	1985	35	45	53	1979	21	1992	0.097	45	1.62	1979	0.00	45	0.0	2003	0.0	44	0.	2003	19.1	45	0.0	45
3	25	60	45	81	1994	37	1983	35	45	55	1988	20	1971	0.128	45	1.38	1969	0.00	45	0.0	2003	0.0	44	0.	2003	18.0	45	0.0	45
3	26	59	45	81	1959	38	1974	36	45	57	2000	21	1974	0.163	45	1.69	1984	0.10	45	4.5	1971	0.1	45	5.	1971	17.7	45	0.1	45
3	27	60	45	81	2003	31	1971	36	45	54	1998	18	2001	0.152	45	1.25	1992	0.09	45	3.0	1971	0.2	45	7.	1971	17.3	45	0.0	45
3	28	61	45	88	1998	42	2001	36	45	68	1998	19	2001	0.146	45	1.79	1994	0.00	45	0.0	2003	0.0	45	0.	2003	17.0	45	0.3	45
3	29	63	45	86	1989	37	1996	40	45	67	1989	18	1966	0.181	45	3.35	1984	0.00	45	0.0	2003	0.0	45	0.	2003	14.5	45	0.6	45
3	30	65	45	89	1998	42	1996	42	45	67	1998	22	1959	0.154	45	1.13	1991	0.14	45	6.5	1964	0.2	45	7.	1964	12.9	45	1.0	45
3	31	62	45	90	1998	37	2003	41	45	64	1998	16	1964	0.129	45	0.85	2003	0.00	45	0.0	2003	0.0	45	2.	1964	14.5	45	0.7	45
4	1	61	45	85	1998	42	1964	39	45	68	1998	20	1965	0.140	45	1.52	1976	0.00	45	0.0	2003	0.0	45	0.	2003	15.8	45	0.4	45
4	2	64	45	85	1978	41	1964	40	45	56	1998	24	1989	0.108	45	1.02	1996	0.00	45	0.0	2003	0.0	45	0.	2003	13.4	45	0.1	45
4	3	67	44	87	1967	48	1992	40	45	61	1967	24	1992	0.098	45	1.16	1983	0.00	45	0.0	2003	0.0	45	0.	2003	12.1	44	0.5	44
4	4	66	45	90	1963	47	1962	42	45	65	1963	23	1992	0.107	45	0.90	1998	0.00	45	0.0	2003	0.0	45	0.	2003	11.5	45	0.5	45
4	5	64	45	85	1999	47	1998	40	45	65	1981	25	1964	0.143	45	1.58	1960	0.00	45	0.0	2003	0.0	45	0.	2003	13.4	45	0.2	45
4	6	62	45	81	1985	41	1987	39	45	60	1985	26	1975	0.079	45	0.78	1989	0.00	45	0.0	2003	0.0	45	0.	2003	14.9	45	0.1	45
4	7	60	45	80	2000	38	1971	39	45	60	1997	22	1977	0.148	45	1.63	1971	0.12	45	3.5	1971	0.1	45	4.	1971	16.1	45	0.1	45
4	8	64	45	86	1991	39	2003	39	45	61	1991	22	1990	0.107	45	1.19	1973	0.00	45	0.0	2003	0.0	45	0.	2003	14.0	45	0.3	45
4	9	65	45	87	1991	35	1972	40	45	65	1991	22	1977	0.129	45	1.25	2000	0.01	45	0.5	1982	0.0	45	1.	1982	13.3	45	0.6	45
4	10	63	45	91	2001	42	2003	39	45	62	1991	24	1985	0.142	45	1.53	1983	0.00	45	0.0	2003	0.0	45	0.	2003	14.7	45	0.7	45
4	11	63	45	80	1992	47	2003	39	45	55	1990	26	1960	0.046	45	0.66	1993	0.00	45	0.0	2003	0.0	45	0.	2003	14.5	45	0.0	45
4	12	64	45	86	1977	49	1973	40	45	61	1981	23	1989	0.016	45	0.19	1962	0.00	45	0.0	2003	0.0	45	0.	2003	13.4	45	0.3	45
4	13	66	45	88	1977	42	1959	41	45	57	1974	21	1990	0.130	45	1.04	1959	0.01	44	0.4	1959	0.0	45	0.	2003	11.9	45	0.3	45
4	14	65	45	88	1977	42	1966	41	45	63	2002	26	1975	0.077	45	1.04	1970	0.00	45	0.0	2003	0.0	45	0.	2003	12.3	45	0.4	45
4	15	67	45	89	1960	48	1991	44	45	65	2002	29	1995	0.096	45	1.13	1984	0.00	45	0.0	2003	0.0	45	0.	2003	10.2	45	0.8	45
4	16	67	45	88	1960	46	1975	44	45	65	1993	29	1981	0.160	45	2.09	1983	0.00	44	0.0	2003	0.0	45	0.	2003	10.7	45	1.1	45
4	17	69	45	90	2002	50	1962	44	45	64	1960	29	1962	0.162	45	2.77	1987	0.00	44	0.0	2003	0.0	45	0.	2003	9.7	45	1.0	45
4	18	70	45	93	2002	53	2001	46	45	65	2002	30	1990	0.093	45	0.85	1998	0.00	45	0.0	2003	0.0	45	0.	2003	8.9	45	1.4	45
4	19	70	45	92	1976	47	2000	45	45	63	1969	28	2001	0.056	45	0.94	1969	0.00	45	0.0	2003	0.0	45	0.	2003	9.0	45	1.0	45
4	20	69	45	92	1976	45	1988	46	45	69	1963	27	1988	0.101	45	0.85	1964	0.00	45	0.0	2003	0.0	45	0.	2003	8.9	45	1.7	45
4	21	70	45	92	1976	48	1962	45	45	59	2002	30	1983	0.034	45	0.57	1964	0.00	45	0.0	2003	0.0	45	0.	2003	8.2	45	0.6	45
4	22	70	45	88	1976	48	1964	47	45	64	1976	29	1975	0.130	45	1.00	1972	0.00	45	0.0	2003	0.0	45	0.	2003	7.4	45	1.0	45
4	23	70	45	93	1985	45	1984	46	45	65	2001	30	1989	0.078	45	1.48	1984	0.00	45	0.0	2003	0.0	45	0.	2003	8.4	45	1.6	45
4	24	71	45	93	1960	49	1997	45	45	64	2001	29	1989	0.101	45	1.58	1983	0.00	45	0.0	2003	0.0	45	0.	2003	8.1	45	0.9	45
4	25	70	45	92	1960	47	1995	45	45	65	1960	31	1969	0.101	45	1.28	1987	0.00	45	0.0	2003	0.0	45	0.	2003	8.4	45	1.0	45
4	26	69	45	93	1960	48	1987	45	45	65	1961	33	1964	0.111	45	0.97	1978	0.00	45	0.0	2003	0.0	45	0.	2003	9.3	45	1.3	45
4	27	70	45	94	1960	46	1978	46	45	64	1994	29	1976	0.132	45	1.43	1978	0.00	45	0.0	2003	0.0	45	0.	2003	8.6	45	1.2	45
4	28	69	45	90	1990	46	1966	46	45	63	1962	28	1976	0.106	45	1.17	1997	0.00	45	0.0	2003	0.0	45	0.	2003	8.6	45	1.1	45
4	29	70	45	88	1983	48	1966	45	45	68	1962	32	1992	0.080	45	1.00	2002	0.00	45	0.0	2003	0.0	45	0.	2003	9.1	45	1.3	45
4	30	70	45	91	1974	50	1966	47	45	63	1962	31	1977	0.077	45	0.91	1994	0.00	45	0.0	2003	0.0	45	0.	2003	7.7	45	0.9	45
5	1	72	45	90	1974	52	1964	48	45	66	1983	33	1971	0.054	45	0.38	1996	0.00	45	0.0	2003	0.0	45	0.	2003	6.3	45	1.1	45
5	2	73	45	90	1986	50	1963	48	45	66	1983	33	1960	0.160	45	2.80	1989	0.00	45	0.0	2003	0.0	45	0.	2003	5.8	45	1.4	45
5	3	73	45	87	2001	49	1995	48	45	68	1983	31	1963	0.072	45	0.72	1974	0.00	45	0.0	2003	0.0	45	0.	2003	6.4	45	1.5	45
5	4	73	45	91	1965	54	1970	47	45	62	1979	29	1986	0.106	45	1.68	1987	0.00	45	0.0	2003	0.0	45	0.	2003	6.5	45	1.2	45
5	5	71	45	90	2001	49	1987	46	45	59	1996	35	1973	0.154	45	2.07	1978	0.00	45	0.0	2003	0.0	45	0.	2003	7.5	45	0.8	45
5	6	73	45	86	2000	54	1978	49	45	60	2000	37	1987	0.090	45	1.19	1989	0.00	45	0.0	2003	0.0	45	0.	2003	5.1	45	1.1	45
5	7	75	45	90	1966	58	1984	49	45	65	2000	29	1968	0.095	45	1.78	1967	0.00	45	0.0	2003	0.0	45	0.	2003	5.2	45	1.6	45

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
5	8	73	45	92	1959	51	1992	50	45	64	2000	30	1974	0.100	45	0.77	1998	0.00	45	0.0	2003	0.0	45	0.	2003	5.7	45	2.0	45
5	9	74	45	92	2000	56	1992	50	45	69	1964	33	1976	0.152	45	2.30	1960	0.00	45	0.0	2003	0.0	45	0.	2003	5.1	45	1.9	45
5	10	74	45	94	1963	57	1966	50	45	67	2000	33	1983	0.083	45	0.52	1989	0.00	45	0.0	2003	0.0	45	0.	2003	5.5	45	2.0	45
5	11	75	45	94	1963	57	1966	51	45	69	1965	27	1966	0.037	45	0.65	1990	0.00	45	0.0	2003	0.0	45	0.	2003	4.4	45	2.2	45
5	12	76	45	89	2001	57	1989	52	45	66	1959	39	1986	0.084	45	2.07	1981	0.00	45	0.0	2003	0.0	45	0.	2003	3.4	45	2.5	45
5	13	76	45	91	2000	55	1960	52	45	68	1980	36	1996	0.165	45	1.51	1974	0.00	45	0.0	2003	0.0	45	0.	2003	4.0	45	3.0	45
5	14	75	45	95	2000	57	1967	51	45	64	1991	35	1996	0.101	45	0.52	1986	0.00	45	0.0	2003	0.0	45	0.	2003	4.1	45	1.7	45
5	15	73	45	88	1991	56	1968	51	45	64	1983	35	1984	0.092	45	0.90	1972	0.00	45	0.0	2003	0.0	45	0.	2003	4.9	45	1.4	45
5	16	75	45	93	1962	63	1989	51	45	66	1976	35	1973	0.192	45	1.40	1971	0.00	45	0.0	2003	0.0	45	0.	2003	3.9	45	1.9	45
5	17	75	45	93	1998	59	1989	52	45	68	1990	32	1984	0.113	45	1.55	1983	0.00	45	0.0	2003	0.0	45	0.	2003	3.9	45	2.3	45
5	18	76	45	91	1974	53	2003	54	45	67	1974	36	1973	0.202	45	1.71	1988	0.00	45	0.0	2003	0.0	45	0.	2003	3.0	45	2.5	45
5	19	76	45	92	1962	55	2003	55	45	69	2000	39	1976	0.122	45	1.55	1987	0.00	45	0.0	2003	0.0	45	0.	2003	3.0	45	3.2	45
5	20	77	45	95	1996	52	1981	55	45	68	1959	36	2002	0.159	45	2.05	1972	0.00	45	0.0	2003	0.0	45	0.	2003	3.0	45	4.1	45
5	21	77	45	96	1996	57	1994	54	45	68	1996	33	1992	0.142	45	1.84	1986	0.00	45	0.0	2003	0.0	45	0.	2003	3.2	45	3.5	45
5	22	76	45	92	1996	54	1967	53	45	69	1959	30	2002	0.163	45	1.73	1960	0.00	45	0.0	2003	0.0	45	0.	2003	3.4	45	2.3	45
5	23	77	45	90	1999	54	1990	55	45	71	1984	39	1971	0.125	45	1.35	1983	0.00	45	0.0	2003	0.0	45	0.	2003	2.6	45	3.2	45
5	24	77	45	91	1964	60	1985	55	45	67	1996	35	1963	0.061	45	0.52	1989	0.00	45	0.0	2003	0.0	45	0.	2003	2.6	45	3.6	45
5	25	78	45	90	1970	60	1985	55	45	66	1964	34	1967	0.088	45	0.69	1977	0.00	45	0.0	2003	0.0	45	0.	2003	1.9	45	3.5	45
5	26	77	45	92	1994	55	1973	56	45	68	1989	38	1988	0.183	45	2.20	2001	0.00	45	0.0	2003	0.0	45	0.	2003	2.4	45	3.3	45
5	27	76	45	91	1991	54	1992	54	45	69	1989	39	1972	0.166	45	0.91	1961	0.00	45	0.0	2003	0.0	45	0.	2003	3.0	45	3.2	45
5	28	74	45	90	1991	52	1968	54	45	70	1991	35	1994	0.135	45	1.40	1960	0.00	45	0.0	2003	0.0	45	0.	2003	3.8	45	2.6	45
5	29	75	45	89	1991	56	1968	56	45	68	1959	37	1997	0.153	45	1.82	1990	0.00	45	0.0	2003	0.0	45	0.	2003	2.6	45	3.0	45
5	30	77	45	92	1991	57	1971	55	45	67	1959	40	1964	0.155	45	1.54	1982	0.00	45	0.0	2003	0.0	45	0.	2003	2.4	45	3.5	45
5	31	79	45	96	1991	61	1984	57	45	70	1991	41	1996	0.112	45	1.75	1992	0.00	45	0.0	2003	0.0	45	0.	2003	2.1	45	4.9	45
6	1	80	45	95	1991	62	1967	58	45	69	1979	39	1967	0.124	45	1.19	1975	0.00	45	0.0	2003	0.0	45	0.	2003	1.4	45	5.2	45
6	2	81	45	94	1991	65	1981	58	45	70	1969	40	1966	0.145	45	1.53	1997	0.00	45	0.0	2003	0.0	45	0.	2003	1.6	45	5.8	45
6	3	80	45	92	2000	58	1988	58	45	69	1980	45	1994	0.254	45	3.00	1963	0.00	45	0.0	2003	0.0	45	0.	2003	1.4	45	5.2	45
6	4	78	45	89	1987	54	1997	56	45	69	1989	39	1988	0.221	45	2.50	1987	0.00	45	0.0	2003	0.0	45	0.	2003	1.9	45	3.9	45
6	5	78	45	91	2002	65	1992	56	45	69	2002	41	1990	0.098	45	0.91	2001	0.00	45	0.0	2003	0.0	45	0.	2003	1.3	45	3.6	45
6	6	81	45	94	2002	69	1998	58	45	71	1981	42	1976	0.092	45	1.39	1989	0.00	45	0.0	2003	0.0	45	0.	2003	0.8	45	5.3	45
6	7	82	45	92	1984	65	1997	60	45	72	1988	46	1991	0.076	45	0.98	1989	0.00	45	0.0	2003	0.0	45	0.	2003	0.5	45	6.2	45
6	8	81	45	97	1999	61	1997	60	45	75	1980	36	1977	0.049	45	0.55	1985	0.00	45	0.0	2003	0.0	45	0.	2003	1.1	45	6.6	45
6	9	83	45	98	1999	70	2003	60	45	72	1981	45	1980	0.110	45	1.01	1969	0.00	45	0.0	2003	0.0	45	0.	2003	0.4	45	7.1	45
6	10	83	44	98	1999	65	1988	60	44	73	1963	43	1988	0.067	45	0.64	1998	0.00	45	0.0	2003	0.0	45	0.	2003	0.6	44	7.0	44
6	11	83	45	98	1964	64	1998	60	45	71	1996	41	1972	0.032	45	0.75	1965	0.00	45	0.0	2003	0.0	45	0.	2003	1.0	45	7.2	45
6	12	83	45	96	2000	69	1998	61	45	72	1986	45	1979	0.114	45	1.04	1995	0.00	45	0.0	2003	0.0	45	0.	2003	0.6	45	7.2	45
6	13	84	45	95	2000	70	1982	62	45	72	1973	46	1992	0.165	45	1.65	1962	0.00	45	0.0	2003	0.0	45	0.	2003	0.3	45	8.0	45
6	14	82	45	94	1984	66	1962	60	45	73	1984	43	1978	0.144	45	1.40	1960	0.00	45	0.0	2003	0.0	45	0.	2003	0.8	45	6.6	45
6	15	83	45	94	1994	71	1997	61	45	73	1981	43	1978	0.090	45	1.54	1984	0.00	45	0.0	2003	0.0	45	0.	2003	0.4	45	7.1	45
6	16	83	45	96	1994	63	1965	62	45	73	1981	47	1961	0.096	45	1.58	2000	0.00	45	0.0	2003	0.0	45	0.	2003	0.6	45	8.1	45
6	17	83	45	97	1991	58	1965	61	45	73	1986	45	1964	0.146	45	2.00	2001	0.00	45	0.0	2003	0.0	45	0.	2003	0.8	45	7.5	45
6	18	82	45	91	2000	59	1965	60	45	71	1967	45	1965	0.088	45	1.10	1991	0.00	45	0.0	2003	0.0	45	0.	2003	0.8	45	6.5	45
6	19	83	45	95	1970	68	1973	62	45	71	1978	46	1965	0.092	45	1.19	1967	0.00	45	0.0	2003	0.0	45	0.	2003	0.4	45	7.6	45
6	20	85	45	95	1994	74	1979	63	45	74	1975	51	1979	0.096	45	0.97	1978	0.00	45	0.0	2003	0.0	45	0.	2003	0.1	45	8.7	45
6	21	84	45	96	1964	72	1999	62	45	70	1994	47	1968	0.236	45	2.89	1964	0.00	45	0.0	2003	0.0	45	0.	2003	0.1	45	8.2	45
6	22	83	45	95	1988	67	1999	63	45	72	1967	40	1992	0.341	45	7.45	1972	0.00	45	0.0	2003	0.0	45	0.	2003	0.4	45	8.2	45
6	23	84	45	99	1988	71	1992	63	45	74	1996	42	1992	0.063	45	0.50	1972	0.00	45	0.0	2003	0.0	45	0.	2003	0.3	45	8.8	45
6	24	84	45	98	1988	63	1972	63	45	72	1964	48	1993	0.112	45	1.15	1998	0.00	45	0.0	2003	0.0	45	0.	2003	0.3	45	8.6	45
6	25	85	45	94	1997	68	1979	63	45	73	1967	46	1979	0.045	45	0.81	1985	0.00	45	0.0	2003	0.0	45	0.	2003	0.2	45	9.0	45
6	26	85	45	96	1997	73	1979	63	45	76	1968	47	1979	0.133	45	2.03	1975	0.00	45	0.0	2003	0.0	45	0.	2003	0.2	45	9.0	45
6	27	85	45	97	1988	70	1961	62	45	73	1998	46	1979	0.136	45	1.39	1968	0.00	45	0.0	2003	0.0	45	0.	2003	0.2	45	8.7	45
6	28	86	45	95	1980	70	1961	63	45	74	1983	48	1970	0.090	45	1.41	2000	0.00	45	0.0	2003	0.0	45	0.	2003	0.1	45	9.3	45
6	29	85	45	98	1969	62	1974	64	45	75	1999	50	1981	0.105	45	1.09	1972	0.00	45	0.0	2003	0.0	45	0.	2003	0.2	45	9.4	45
6	30	86	45	99	1959	68	1983	64	45	74	2001	51	1989	0.102	45	1.35	1984	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	9.8	45

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
7	1	87	45	99	1959	76	1983	64	45	75	1969	43	1988	0.117	45	1.82	1979	0.00	45	0.0	2003	0.0	45	0.	2003	0.1	45	10.2	45
7	2	85	45	97	1968	70	1986	64	45	73	1996	48	1988	0.152	45	2.19	1974	0.00	45	0.0	2003	0.0	45	0.	2003	0.1	45	9.4	45
7	3	86	45	95	1980	75	2003	65	45	74	2002	50	1977	0.112	45	0.82	1970	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	10.4	45
7	4	86	45	97	1966	67	1962	64	45	74	1999	50	1986	0.123	45	1.38	1981	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	9.7	45
7	5	85	45	98	2002	74	1991	64	45	76	2002	49	1971	0.125	45	1.12	1973	0.00	45	0.0	2003	0.0	45	0.	2003	0.2	45	9.7	45
7	6	86	45	99	1999	65	1972	64	45	77	1999	46	1979	0.105	45	1.10	1961	0.00	45	0.0	2003	0.0	45	0.	2003	0.2	45	9.5	45
7	7	86	45	102	1977	73	1972	63	45	72	1999	51	1979	0.112	45	1.73	1995	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	9.2	45
7	8	87	45	99	1977	77	1983	64	45	72	1994	51	1983	0.135	45	1.42	1965	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	9.9	45
7	9	88	45	97	1993	70	1969	65	45	74	1994	53	1961	0.064	45	0.77	1998	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.2	45
7	10	88	45	97	2002	75	1969	66	45	76	2000	48	1963	0.126	45	3.37	1970	0.00	45	0.0	2003	0.0	45	0.	2003	0.1	45	12.3	45
7	11	87	45	101	1988	72	1969	65	45	75	1989	53	1961	0.118	45	1.45	1982	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	10.8	45
7	12	86	45	98	1988	77	2000	64	45	74	1984	48	2002	0.110	45	1.01	1965	0.00	45	0.0	2003	0.0	45	0.	2003	0.1	45	9.9	45
7	13	86	45	95	1992	71	1999	65	45	75	1992	52	1978	0.280	45	3.93	1972	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	10.0	45
7	14	86	45	96	1966	73	1975	66	45	72	1995	54	2001	0.174	45	3.13	1975	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.0	45
7	15	87	45	99	1993	75	1999	65	45	76	1992	53	1987	0.126	45	1.97	1966	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.0	45
7	16	87	45	97	1997	74	1966	66	45	75	1984	53	1960	0.072	45	0.82	1992	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.5	45
7	17	88	45	103	1988	71	1989	66	45	79	1980	54	1987	0.072	45	1.19	1976	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.6	45
7	18	89	45	101	1988	76	1989	66	45	73	1982	56	1985	0.061	45	0.79	1977	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	12.2	45
7	19	89	45	98	1997	78	2001	67	45	72	1988	56	1985	0.039	45	0.51	1984	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	12.7	45
7	20	89	45	98	1999	79	2000	67	45	75	1981	57	2001	0.106	45	1.42	2000	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	12.8	45
7	21	88	45	98	1980	75	1965	66	45	73	1999	49	1966	0.151	45	1.11	1983	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	12.2	45
7	22	88	45	99	1991	73	1984	66	45	74	2003	53	2001	0.195	45	2.31	1988	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	12.1	45
7	23	87	45	98	2002	72	1996	67	45	75	1959	54	1977	0.113	45	1.43	1969	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.6	45
7	24	87	45	99	1991	75	1997	66	45	75	1999	52	1985	0.207	45	2.72	1997	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.4	45
7	25	87	45	98	1999	68	1997	67	45	75	2001	58	1990	0.095	45	1.31	1995	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.6	45
7	26	86	45	97	1987	72	1964	67	45	74	2001	52	1976	0.110	45	1.16	1968	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.0	45
7	27	86	45	98	1987	71	2000	66	45	73	1973	54	1975	0.194	45	2.95	1974	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.1	45
7	28	87	45	96	1966	73	1991	66	45	75	1966	48	1977	0.143	45	1.12	1994	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.3	45
7	29	88	45	98	1999	74	1984	66	45	76	2002	51	1977	0.143	45	0.97	2000	0.00	45	0.0	2003	0.0	45	0.	2003	0.0	45	11.8	45
7	30	85	45	98	1993	66	1972	65	45	74	2002	53	1981	0.277	45	2.50	2001	0.00	45	0.0	2003	0.0	45	0.	2003	0.1	45	10.1	45
7	31	85	45	97	1999	67	1972	65	45	75	1976	51	1966	0.125	45	1.74	1989	0.00	45	0.0	2003	0.0	45	0.	2003	0.2	45	10.1	45
8	1	87	44	101	1999	73	1989	66	44	79	1999	57	1997	0.148	44	1.65	1994	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	11.3	44
8	2	87	44	98	1980	75	1985	65	44	74	1979	52	1992	0.066	44	1.24	1965	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	10.9	44
8	3	88	44	100	1980	77	1976	66	44	74	1980	52	1976	0.130	44	2.30	1968	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	11.5	44
8	4	88	44	99	1980	74	1962	66	44	77	1967	53	1976	0.093	44	1.46	1964	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	11.4	44
8	5	87	44	98	2002	74	1964	66	44	73	1987	53	1992	0.136	44	1.36	1972	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	11.1	44
8	6	86	44	99	2002	73	1966	65	44	73	2002	54	1994	0.143	44	1.94	1982	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	10.1	44
8	7	85	44	99	1977	69	1993	65	44	74	1968	50	1994	0.142	44	2.11	1993	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	10.0	44
8	8	86	44	99	1977	76	1995	65	44	71	1981	49	1989	0.045	44	0.62	1968	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	9.9	44
8	9	87	44	99	1980	76	1995	66	44	74	2000	48	1989	0.073	44	0.65	1982	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	11.2	44
8	10	87	44	99	1980	69	1990	66	44	75	1987	54	1972	0.101	44	2.82	1990	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	11.1	44
8	11	86	44	100	1977	71	1989	65	44	74	1961	50	1972	0.092	44	2.05	1998	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	10.6	44
8	12	86	44	97	1999	69	1989	64	44	75	1980	50	1968	0.143	44	1.96	1982	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	9.8	44
8	13	85	44	98	2002	64	1979	64	44	73	1997	49	1971	0.111	44	1.81	1996	0.00	44	0.0	2002	0.0	44	0.	2002	0.2	44	9.4	44
8	14	85	44	98	2002	70	1996	65	44	75	2002	50	1964	0.157	44	2.25	1978	0.00	44	0.0	2002	0.0	44	0.	2002	0.2	44	9.6	44
8	15	86	44	99	2002	73	1992	64	44	73	2002	49	1963	0.161	44	1.18	1973	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	10.1	44
8	16	86	44	98	2002	66	1992	65	44	73	1997	49	1972	0.022	44	0.29	1992	0.00	44	0.0	2002	0.0	44	0.	2002	0.2	44	10.3	44
8	17	87	44	98	1997	68	1992	66	44	75	2002	48	1979	0.051	44	1.31	1996	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	11.0	44
8	18	87	44	99	1997	70	1992	65	44	74	1969	47	1981	0.167	44	2.06	1994	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	10.8	44
8	19	85	44	96	2002	72	1989	64	44	72	1968	54	1976	0.165	44	4.35	1985	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	9.1	44
8	20	84	44	98	2002	73	1997	63	44	72	2002	48	1998	0.242	44	5.38	1969	0.00	44	0.0	2002	0.0	44	0.	2002	0.2	44	8.5	44
8	21	84	44	104	1983	68	1990	63	44	77	1962	47	1981	0.172	44	2.60	1973	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	8.2	44
8	22	83	44	99	1959	68	1990	63	44	73	1959	51	1969	0.127	44	1.70	1973	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	7.9	44
8	23	84	44	101	1983	71	1990	64	44	74	1966	50	1969	0.180	44	4.27	1974	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	8.7	44

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
8	24	84	44	97	2002	72	1967	63	44	73	1968	47	1987	0.083	44	1.19	1967	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	8.7	44
8	25	85	44	98	1998	76	1990	63	44	71	1998	50	1986	0.085	44	1.22	1959	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	8.6	44
8	26	85	44	95	1998	75	1987	62	44	72	1961	48	1977	0.093	44	2.37	1985	0.00	44	0.0	2002	0.0	44	0.	2002	0.1	44	8.5	44
8	27	86	44	96	1975	76	1989	65	44	72	1998	53	1969	0.136	44	2.33	1961	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	9.8	44
8	28	86	44	97	1987	70	1971	65	44	74	1998	49	1969	0.223	44	5.27	1971	0.00	44	0.0	2002	0.0	44	0.	2002	0.2	44	10.7	44
8	29	86	44	96	1993	69	1986	63	44	72	1988	43	1986	0.096	44	3.02	2002	0.00	44	0.0	2002	0.0	44	0.	2002	0.5	44	9.9	44
8	30	85	44	98	1980	69	1986	63	44	72	1998	43	1986	0.037	44	1.12	1988	0.00	44	0.0	2002	0.0	44	0.	2002	0.7	44	9.4	44
8	31	85	44	96	1991	70	1999	63	44	74	1970	46	1986	0.035	44	0.38	1960	0.00	44	0.0	2002	0.0	44	0.	2002	0.4	44	9.2	44
9	1	85	44	96	1991	69	1975	63	44	74	2000	51	1968	0.090	44	1.12	1975	0.00	44	0.0	2002	0.0	44	0.	2002	0.0	44	8.4	44
9	2	83	44	99	1980	70	1986	61	44	74	1959	44	1991	0.035	44	0.55	1972	0.00	44	0.0	2002	0.0	44	0.	2002	0.4	44	7.4	44
9	3	84	44	100	1980	72	1986	62	44	72	1979	43	1967	0.059	44	1.09	1962	0.00	44	0.0	2002	0.0	44	0.	2002	0.3	44	8.0	44
9	4	84	44	97	1966	71	1962	62	44	72	1993	49	1967	0.071	44	1.88	1974	0.00	44	0.0	2002	0.0	44	0.	2002	0.3	44	7.8	44
9	5	83	44	93	1985	70	1997	62	44	71	1983	44	1997	0.105	44	1.00	2000	0.00	44	0.0	2002	0.0	44	0.	2002	0.6	44	7.4	44
9	6	82	44	95	1983	66	2000	61	44	74	1999	48	1972	0.211	44	3.55	1979	0.00	44	0.0	2002	0.0	44	0.	2002	0.6	44	7.1	44
9	7	82	44	99	1983	67	1974	59	44	74	1998	42	1988	0.123	44	2.74	1974	0.00	44	0.0	2002	0.0	44	0.	2002	1.2	44	6.1	44
9	8	83	44	97	1983	66	1974	58	44	72	1961	43	1988	0.039	44	0.39	1998	0.00	44	0.0	2002	0.0	44	0.	2002	0.6	44	5.9	44
9	9	82	44	93	1985	70	1986	59	44	71	1985	41	1986	0.042	44	0.72	1993	0.00	44	0.0	2002	0.0	44	0.	2002	0.5	44	5.5	44
9	10	83	44	94	1985	72	1998	60	44	70	2001	47	1981	0.051	44	0.50	1977	0.00	44	0.0	2002	0.0	44	0.	2002	0.4	44	6.6	44
9	11	83	44	97	1983	72	1969	58	44	72	1962	43	1976	0.125	44	1.23	1970	0.00	44	0.0	2002	0.0	44	0.	2002	0.7	44	6.1	44
9	12	82	44	99	1983	66	1967	57	44	70	1986	38	1967	0.198	44	4.54	1960	0.00	44	0.0	2002	0.0	44	0.	2002	1.2	44	5.3	44
9	13	81	44	96	1983	68	1965	57	44	69	1987	44	1992	0.195	44	3.18	1989	0.00	44	0.0	2002	0.0	44	0.	2002	1.1	44	4.9	44
9	14	80	44	93	1998	56	1964	58	44	72	1961	39	1975	0.093	44	0.93	1966	0.00	44	0.0	2002	0.0	44	0.	2002	1.6	44	5.5	44
9	15	80	44	95	1980	65	1975	58	44	68	2002	39	1985	0.167	44	1.83	2000	0.00	44	0.0	2002	0.0	44	0.	2002	1.6	44	5.5	44
9	16	79	44	96	1998	57	1963	56	44	71	1993	42	2001	0.258	44	4.65	1999	0.00	44	0.0	2002	0.0	44	0.	2002	1.8	44	4.4	44
9	17	78	44	96	1991	62	1963	57	44	72	1991	38	1986	0.172	44	2.01	1965	0.00	44	0.0	2002	0.0	44	0.	2002	2.3	44	4.3	44
9	18	78	44	98	1991	62	1959	57	44	72	1991	35	1990	0.104	44	1.67	1998	0.00	44	0.0	2002	0.0	44	0.	2002	1.8	44	3.8	44
9	19	78	44	94	1991	65	1961	57	44	73	1991	41	1959	0.092	44	1.54	1993	0.00	44	0.0	2002	0.0	44	0.	2002	1.9	44	4.3	44
9	20	78	44	92	1983	65	1989	57	44	68	1998	39	1959	0.137	44	2.37	1966	0.00	44	0.0	2002	0.0	44	0.	2002	1.6	44	3.7	44
9	21	78	44	91	1983	63	1969	58	44	70	1983	36	1962	0.115	44	2.30	1966	0.00	44	0.0	2002	0.0	44	0.	2002	1.3	44	4.3	44
9	22	77	44	93	1980	63	1962	56	44	70	1980	35	1962	0.135	44	2.08	1979	0.00	44	0.0	2002	0.0	44	0.	2002	2.2	44	3.7	44
9	23	77	44	95	1970	64	1999	54	44	72	1980	36	1983	0.130	44	1.76	1994	0.00	44	0.0	2002	0.0	44	0.	2002	3.0	44	3.0	44
9	24	75	44	95	1970	55	1995	52	44	72	1970	31	1963	0.074	44	1.58	1975	0.00	44	0.0	2002	0.0	44	0.	2002	4.7	44	3.2	44
9	25	75	44	92	1970	58	1995	52	44	68	1977	31	1963	0.115	44	1.45	1991	0.00	44	0.0	2002	0.0	44	0.	2002	4.2	44	2.4	44
9	26	74	44	93	1970	56	2000	54	44	68	1970	39	2001	0.186	44	3.02	1975	0.00	44	0.0	2002	0.0	44	0.	2002	4.0	44	2.6	44
9	27	75	44	94	1986	55	2000	54	44	71	1970	39	1991	0.186	44	3.10	1985	0.00	44	0.0	2002	0.0	44	0.	2002	3.2	44	2.5	44
9	28	76	44	94	1998	57	1984	53	44	69	1999	36	1989	0.051	44	0.52	1984	0.00	44	0.0	2002	0.0	44	0.	2002	3.0	44	2.5	44
9	29	74	44	88	1998	50	1984	52	44	67	1974	37	1978	0.140	44	1.70	1963	0.00	44	0.0	2002	0.0	44	0.	2002	4.0	44	1.7	44
9	30	73	44	87	1973	57	1984	52	44	72	1959	34	1992	0.147	44	1.22	1972	0.00	44	0.0	2002	0.0	44	0.	2002	4.6	44	1.5	44
10	1	72	44	91	1986	60	1993	51	44	71	1959	32	1993	0.210	44	3.07	1979	0.00	44	0.0	2002	0.0	44	0.	2002	4.8	44	1.3	44
10	2	73	44	92	1986	54	1966	51	44	68	1971	34	1966	0.144	44	1.53	1971	0.00	44	0.0	2002	0.0	44	0.	2002	4.8	44	1.4	44
10	3	73	44	90	1986	57	1974	51	44	66	1971	30	1974	0.201	44	2.18	1976	0.00	44	0.0	2002	0.0	44	0.	2002	4.5	44	1.6	44
10	4	73	44	88	1986	51	1974	50	44	70	1986	25	1974	0.045	44	0.58	1987	0.00	44	0.0	2002	0.0	44	0.	2002	5.2	44	1.6	44
10	5	72	44	91	1986	55	1996	50	44	70	2002	30	1968	0.119	44	1.24	1995	0.00	44	0.0	2002	0.0	44	0.	2002	6.5	44	2.3	44
10	6	72	44	90	1959	56	1965	47	44	66	1995	29	1965	0.073	44	1.13	1995	0.00	44	0.0	2002	0.0	44	0.	2002	6.9	44	1.3	44
10	7	72	44	89	1997	60	1964	47	44	66	1995	30	1991	0.078	44	1.54	1972	0.00	44	0.0	2002	0.0	44	0.	2002	6.6	44	1.0	44
10	8	70	44	85	1990	56	1988	46	44	66	1959	29	1964	0.073	44	2.26	1965	0.00	44	0.0	2002	0.0	44	0.	2002	8.2	44	0.9	44
10	9	70	44	84	1959	57	1996	48	44	69	1959	27	2001	0.165	44	2.15	1996	0.00	44	0.0	2002	0.0	44	0.	2002	7.0	44	0.9	44
10	10	72	44	85	1997	59	1989	48	44	68	1959	34	1981	0.146	44	2.46	1971	0.00	44	0.0	2002	0.0	44	0.	2002	6.2	44	0.9	44
10	11	69	44	85	1997	43	1979	47	44	69	1959	28	1964	0.062	44	1.00	2002	0.02	44	1.0	1979	0.0	44	0.	2002	8.3	44	0.8	44
10	12	70	44	85	1962	55	1993	46	44	63	2002	29	1964	0.067	44	1.00	2002	0.00	44	0.0	2002	0.0	44	0.	2002	7.5	44	0.3	44
10	13	70	44	87	1962	54	1987	46	44	68	1983	24	1988	0.033	44	0.95	1990	0.00	44	0.0	2002	0.0	44	0.	2002	8.0	44	1.0	44
10	14	71	44	83	2001	52	1979	47	44	63	1978	24	1988	0.096	44	2.25	1986	0.00	44	0.0	2002	0.0	44	0.	2002	7.1	44	0.9	44
10	15	72	44	86	1975	52	1959	45	44	64	1970	27	1987	0.132	44	2.50	1995	0.00	44	0.0	2002	0.0	44	0.	2002	7.7	44	0.8	44
10	16	71	44	87	1985	59	1978	46	44	62	1975	32	1987	0.040	44	0.58	1970	0.00	44	0.0	2002	0.0	44	0.	2002	7.5	44	0.9	44

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
10	17	70	44	83	1989	56	1977	45	44	66	1989	29	1982	0.108	44	1.58	2002	0.00	44	0.0	2002	0.0	44	0.	2002	8.7	44	0.5	44
10	18	67	44	81	1963	44	1976	43	44	63	1980	28	1969	0.103	44	1.63	1997	0.00	44	0.0	2002	0.0	44	0.	2002	10.5	44	0.3	44
10	19	69	44	80	1975	50	1972	43	44	67	1968	26	1976	0.190	44	2.27	1966	0.00	44	0.0	2002	0.0	44	0.	2002	9.6	44	0.4	44
10	20	66	44	82	1991	43	1972	43	44	61	1984	23	1992	0.117	44	1.19	1976	0.00	44	0.0	2002	0.0	44	0.	2002	11.4	44	0.2	44
10	21	66	44	84	1969	48	1972	42	44	62	1979	24	1974	0.169	44	1.95	1961	0.00	44	0.0	2002	0.0	44	0.	2002	11.5	44	0.5	44
10	22	66	44	86	1979	50	1974	42	44	66	1984	26	1974	0.125	44	1.53	1985	0.00	44	0.0	2002	0.0	44	0.	2002	11.5	44	0.5	44
10	23	67	44	84	1979	50	1982	43	44	66	1984	26	1997	0.119	44	1.57	1990	0.00	44	0.0	2002	0.0	44	0.	2002	10.6	44	0.5	44
10	24	68	44	84	1978	49	1969	42	44	61	2001	21	1969	0.119	44	1.35	1983	0.00	44	0.0	2002	0.0	44	0.	2002	10.5	44	0.2	44
10	25	65	44	86	2001	50	1982	43	44	64	2001	27	1964	0.100	44	1.45	1980	0.00	44	0.0	2002	0.0	44	0.	2002	11.9	44	0.3	44
10	26	65	44	77	1961	49	1962	42	44	61	1971	27	1992	0.189	44	1.51	1982	0.00	44	0.0	2002	0.0	44	0.	2002	12.2	44	0.1	44
10	27	64	44	82	1978	45	1962	40	44	61	1984	23	1962	0.112	44	2.20	1977	0.00	44	0.0	2002	0.0	44	0.	2002	13.2	44	0.1	44
10	28	65	44	82	1984	44	1976	41	44	65	1984	24	1976	0.124	44	1.50	1972	0.00	44	0.0	2002	0.0	44	0.	2002	12.6	44	0.2	44
10	29	65	44	83	1984	46	1976	40	44	66	1984	24	1976	0.072	44	1.27	1972	0.00	44	0.0	2002	0.0	44	0.	2002	13.2	44	0.2	44
10	30	64	44	83	1984	44	2002	38	44	60	1971	22	1969	0.035	44	1.06	2002	0.00	44	0.0	2002	0.0	44	0.	2002	14.3	44	0.1	44
10	31	63	44	83	1961	42	2002	41	44	63	1971	25	1988	0.085	44	1.04	1976	0.00	44	0.0	2002	0.0	44	0.	2002	13.6	44	0.2	44
11	1	64	44	80	1982	47	1993	42	44	66	1971	28	1976	0.085	44	0.93	1988	0.00	44	0.0	2002	0.0	44	0.	2002	12.2	44	0.2	44
11	2	66	44	86	1974	49	1988	43	44	69	1971	24	1993	0.070	44	0.90	1963	0.00	44	0.0	2002	0.0	44	0.	2002	11.2	44	0.5	44
11	3	66	44	84	1971	51	2002	43	44	63	1971	26	1996	0.124	44	0.87	1971	0.00	44	0.0	2002	0.0	44	0.	2002	11.2	44	0.5	44
11	4	64	44	81	1990	42	1962	41	44	67	1982	21	1966	0.097	44	1.96	1985	0.00	44	0.0	2002	0.0	44	0.	2002	13.4	44	0.5	44
11	5	63	44	83	1974	38	1991	40	44	64	1977	21	1995	0.123	44	1.44	1970	0.00	44	0.0	2002	0.0	44	0.	2002	14.3	44	0.4	44
11	6	60	44	81	1961	42	1973	38	44	64	1959	17	1991	0.106	44	1.22	1962	0.06	44	2.5	1962	0.1	44	3.	1962	16.5	44	0.3	44
11	7	60	44	78	1975	44	1967	37	44	60	1977	19	1973	0.158	44	2.80	1963	0.00	44	0.0	2002	0.0	44	0.	2002	16.8	44	0.0	44
11	8	59	44	75	1965	40	1959	37	44	63	1996	22	1960	0.136	44	1.64	1997	0.00	44	0.0	2002	0.0	44	0.	2002	17.6	44	0.1	44
11	9	60	44	81	1975	40	1976	37	44	58	1975	19	1976	0.103	44	2.00	1996	0.00	44	0.0	2002	0.0	44	0.	2002	16.8	44	0.1	44
11	10	61	44	79	1994	40	1991	39	44	60	1975	20	1976	0.149	44	2.20	1962	0.00	44	0.0	2002	0.0	44	0.	2002	15.3	44	0.1	44
11	11	60	44	75	1985	42	1973	38	44	57	2002	21	1973	0.150	44	1.52	1970	0.02	44	0.9	1987	0.0	44	1.	1987	16.2	44	0.0	44
11	12	59	44	78	1985	33	1987	36	44	56	1970	21	1987	0.149	44	1.40	1995	0.20	44	6.5	1987	0.2	44	6.	1987	17.9	44	0.0	44
11	13	57	44	76	1964	37	1976	36	44	57	1985	20	1996	0.133	44	1.39	1975	0.00	44	0.0	2002	0.1	44	3.	1987	19.1	44	0.0	44
11	14	56	44	78	1985	39	1995	35	44	57	1961	14	1986	0.064	44	0.94	1972	0.00	44	0.0	2002	0.0	44	1.	1987	19.5	44	0.0	44
11	15	60	44	80	1985	34	1996	37	44	63	1993	21	1996	0.082	44	1.32	1970	0.00	44	0.0	2002	0.0	44	0.	2002	17.3	44	0.2	44
11	16	58	44	81	1993	36	1969	37	44	56	1973	13	1967	0.039	44	0.91	1983	0.00	44	0.0	2002	0.0	44	0.	2002	17.8	44	0.1	44
11	17	58	44	76	2001	38	1967	36	44	54	1977	21	1997	0.093	44	1.15	2002	0.00	44	0.0	2002	0.0	44	0.	2002	18.5	44	0.0	44
11	18	57	44	76	1963	38	1980	34	44	57	1987	19	1959	0.088	44	1.28	1980	0.00	44	0.0	2002	0.0	44	0.	2002	20.0	44	0.0	44
11	19	57	44	77	1979	35	1959	35	44	49	1994	20	1990	0.069	44	1.05	1984	0.00	44	0.0	2002	0.0	44	0.	2002	19.4	44	0.0	44
11	20	57	44	75	1991	41	1984	34	44	57	1985	20	1980	0.094	44	1.41	1972	0.03	44	1.5	1961	0.0	44	2.	1961	19.5	44	0.0	44
11	21	57	44	77	1985	39	1984	34	44	62	1991	19	1968	0.052	44	0.74	1983	0.00	44	0.0	2002	0.0	44	0.	2002	20.0	44	0.1	44
11	22	54	44	76	1991	33	1987	33	44	63	1991	13	1964	0.115	44	1.06	1985	0.02	44	1.0	1996	0.0	44	1.	1996	21.7	44	0.1	44
11	23	54	44	76	1979	36	1989	32	44	60	1992	15	1964	0.058	44	0.66	1991	0.07	44	3.0	1989	0.0	42	0.	2002	22.2	44	0.0	44
11	24	55	44	75	1979	34	1989	33	44	58	1982	11	1989	0.060	44	0.82	1961	0.00	44	0.1	1981	0.0	43	2.	1989	21.3	44	0.0	44
11	25	56	44	74	1979	37	1981	33	44	60	1979	11	1970	0.144	44	2.12	1983	0.01	44	0.5	1983	0.0	44	1.	1989	20.9	44	0.0	44
11	26	55	44	77	1973	35	1970	34	44	62	1979	17	1991	0.162	44	1.23	2000	0.00	44	0.0	2002	0.0	44	0.	2002	21.3	44	0.0	44
11	27	58	44	74	1990	39	1977	34	44	47	1985	14	1991	0.057	44	0.83	1999	0.00	44	0.0	2002	0.0	44	0.	2002	19.1	44	0.0	44
11	28	58	44	77	1973	37	1977	37	44	55	1973	19	1996	0.193	44	3.73	1993	0.00	44	0.0	2002	0.0	44	0.	2002	18.0	44	0.0	44
11	29	58	44	75	1990	33	1996	34	44	58	2001	18	1996	0.164	44	1.42	1984	0.00	44	0.0	2002	0.0	44	0.	2002	19.7	44	0.0	44
11	30	52	44	74	1998	35	1995	31	44	59	2001	13	1976	0.114	44	1.29	1985	0.05	44	2.0	1967	0.0	44	2.	1967	24.0	44	0.0	44
12	1	51	44	75	1991	31	1976	31	44	57	2001	9	1976	0.106	44	0.72	1985	0.07	44	2.3	1967	0.1	44	2.	1967	24.4	44	0.0	44
12	2	51	44	75	2001	31	1964	30	44	53	1991	13	1967	0.130	44	2.66	1974	0.00	44	0.0	2002	0.0	44	2.	1967	24.8	44	0.0	44
12	3	52	44	72	1970	36	1971	30	44	52	1982	13	1976	0.072	44	1.14	1986	0.00	44	0.0	2002	0.0	44	1.	1967	24.3	44	0.0	44
12	4	53	44	73	1998	29	1976	30	44	52	1982	9	1966	0.109	44	1.82	1991	0.00	44	0.0	2002	0.0	44	0.	2002	23.7	44	0.0	44
12	5	53	44	76	1998	30	2002	32	44	59	1982	13	1966	0.108	44	2.02	1993	0.07	44	3.0	2002	0.1	44	3.	2002	22.7	44	0.0	44
12	6	52	44	79	2001	28	2002	30	44	62	1982	16	1992	0.142	44	1.39	1973	0.00	44	0.0	2002	0.0	44	2.	2002	24.1	44	0.2	44
12	7	52	44	79	1998	32	2002	31	44	64	1998	14	2002	0.079	44	1.16	1976	0.02	44	1.0	1995	0.1	44	2.	2002	23.8	44	0.1	44
12	8	50	44	80	1998	30	1984	30	44	57	1998	14	1977	0.078	44	1.23	1969	0.03	44	1.0	1989	0.0	43	1.	2002	25.3	44	0.1	44
12	9	50	44	74	1980	25	1989	30	44	58	1978	13	1976	0.156	44	1.45	1973	0.19	44	6.5	1989	0.3	43	7.	1989	25.2	44	0.0	44

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
12	10	49	44	75	1991	26	1989	29	44	55	1966	13	1988	0.099	44	1.38	1991	0.05	44	1.0	1988	0.2	42	5.	1989	26.5	44	0.0	44
12	11	49	44	71	1966	27	1968	29	44	49	1966	3	1968	0.191	44	1.74	1969	0.00	44	0.0	2002	0.1	43	4.	1989	26.4	44	0.0	44
12	12	47	44	69	1965	30	1995	29	44	49	1985	6	1962	0.172	44	1.53	1960	0.27	44	7.0	1960	0.3	43	7.	1960	27.2	44	0.0	44
12	13	48	44	72	1979	23	1988	30	44	54	1979	-3	1962	0.116	44	0.88	1998	0.15	44	6.0	1989	0.5	43	11.	1989	26.2	44	0.0	44
12	14	48	44	73	1984	21	1960	30	44	57	1991	6	1962	0.133	44	0.98	1966	0.06	44	2.0	1966	0.4	43	9.	1989	26.5	44	0.0	44
12	15	47	44	67	2001	31	1962	28	44	48	1984	9	1962	0.081	44	0.96	1981	0.00	44	0.0	2002	0.3	43	8.	1989	27.7	44	0.0	44
12	16	47	44	72	1984	31	1963	28	44	51	1971	11	1968	0.118	44	0.95	1981	0.11	44	4.0	1981	0.4	43	7.	1989	27.4	44	0.0	44
12	17	47	44	75	1971	28	1989	27	44	48	1971	0	1989	0.117	44	1.70	2000	0.14	44	6.0	1973	0.4	44	6.	1989	28.2	44	0.0	44
12	18	48	44	72	1984	25	1973	26	44	53	1984	4	1973	0.093	44	1.56	1977	0.02	44	1.0	1973	0.4	44	7.	1973	28.5	44	0.0	44
12	19	45	44	74	1984	27	1989	26	44	47	1984	3	1989	0.078	44	0.90	1977	0.00	44	0.0	2002	0.3	44	6.	1973	29.9	44	0.0	44
12	20	46	44	66	1967	27	1989	26	44	42	1984	9	1991	0.042	44	0.45	1995	0.10	44	2.0	2000	0.4	44	5.	1989	29.2	44	0.0	44
12	21	45	44	66	1988	28	1985	26	44	45	1998	4	1963	0.148	44	1.48	1973	0.03	44	1.0	1962	0.2	44	5.	1989	29.6	44	0.0	44
12	22	43	44	67	1998	28	1989	24	44	46	1998	4	1989	0.133	44	1.17	1983	0.18	43	6.7	1962	0.4	44	7.	1962	31.7	44	0.0	44
12	23	44	44	66	1990	17	1989	25	44	53	1990	1	1989	0.081	44	1.33	1967	0.15	43	6.0	1967	0.4	43	6.	1967	30.7	44	0.0	44
12	24	47	44	77	1990	21	1989	28	44	49	1990	4	1989	0.087	44	0.79	1961	0.14	43	3.0	1966	0.5	42	4.	1989	28.0	44	0.0	44
12	25	45	44	67	1982	22	1989	26	44	53	1974	0	1989	0.163	44	2.91	1986	0.23	42	5.0	1966	0.7	42	8.	1966	30.0	44	0.0	44
12	26	43	44	71	1982	15	1983	25	44	61	1982	-1	1983	0.107	44	1.74	1969	0.14	44	4.9	1969	0.5	41	8.	1962	31.1	44	0.0	44
12	27	45	44	72	1982	24	1983	25	44	60	1964	6	1966	0.022	44	0.26	1964	0.00	43	0.0	2002	0.5	42	6.	1962	30.5	44	0.0	44
12	28	44	44	72	1971	29	1989	26	44	52	1971	8	1966	0.093	44	1.51	1990	0.09	43	2.0	1961	0.5	41	5.	1962	30.3	44	0.0	44
12	29	46	44	76	1984	24	1993	26	44	54	1984	9	1977	0.168	44	1.45	1966	0.20	44	5.0	1993	0.7	41	6.	1993	29.1	44	0.0	44
12	30	45	44	76	1984	24	1993	26	44	58	1984	8	1976	0.064	44	0.78	1962	0.04	43	1.0	1976	0.6	42	6.	1962	29.8	44	0.0	44
12	31	46	44	70	1990	23	1983	26	44	45	1996	3	1993	0.078	44	0.90	1969	0.00	43	0.0	2002	0.4	42	5.	1962	29.5	44	0.0	44

CORBIN, VIRGINIA

Monthly Total Snowfall (Inches)

(442009)

File last updated on May 18,
*** Note *** Provisional Data *** After Year/Month 200401
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR (S)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANN
1958-59	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	3.20	0.00	0.00	0.40	0.00	0.00	3.60
1959-60	0.00	0.00	0.00	0.00	0.00	0.00	1.70	5.30	23.30	0.00	0.00	0.00	30.30
1960-61	0.00	0.00	0.00	0.00	0.00	7.10	10.10	11.90	1.00	0.00	0.00	0.00	30.10
1961-62	0.00	0.00	0.00	0.00	1.50	2.20	6.60	5.80	19.00	0.00	0.00	0.00	35.10
1962-63	0.00	0.00	0.00	0.00	2.50	14.80	0.00	0.00	0.00	0.00	0.00	0.00	17.30
1963-64	0.00	0.00	0.00	0.00	0.00	3.00	6.70	12.50	6.50	0.00	0.00	0.00	28.70
1964-65	0.00	0.00	0.00	0.00	0.00	0.90	12.10	2.50	1.50	0.00	0.00	0.00	17.00
1965-66	0.00	0.00	0.00	0.00	0.00	0.00	11.10a	8.30	0.20	0.00	0.00	0.00	19.60
1966-67	0.00	0.00	0.00	0.00	0.00	13.20	1.80	13.90	0.00	0.00	0.00	0.00	28.90
1967-68	0.00	0.00	0.00	0.00	2.00	8.30	1.70	0.00	4.30	0.00	0.00	0.00	16.30
1968-69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	6.00
1969-70	0.00	0.00	0.00	0.00	0.00	4.90	7.50	0.90	0.00	0.00	0.00	0.00	13.30
1970-71	0.00	0.00	0.00	0.00	0.00	0.00	6.70	0.50	7.50	3.50	0.00	0.00	18.20
1971-72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.10a	0.00	0.00	0.00	0.00	8.10
1972-73	0.00	0.00	0.00	0.00	0.00	0.00	3.50	1.00	0.00	0.00a	0.00	0.00	4.50
1973-74	0.00	0.00	0.00	0.00	0.00	9.40	0.00	2.00	0.00	0.00	0.00	0.00	11.40
1974-75	0.00	0.00	0.00	0.00	0.00	0.50	4.50	6.50	1.60	0.00	0.00	0.00	13.10
1975-76	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.80	1.00	0.00	0.00	0.00	1.90
1976-77	0.00	0.00	0.00	0.00	2.50	3.00	10.30	0.00	0.00	0.00	0.00	0.00	15.80
1977-78	0.00	0.00	0.00	0.00	0.00	0.10	8.70	3.70	9.50	0.00	0.00	0.00	22.00
1978-79	0.00	0.00	0.00	0.00	0.00	0.00	4.50	24.20	0.50	0.00	0.00	0.00	29.20
1979-80	0.00	0.00	0.00	1.00	0.00	0.00	11.50	5.60	11.50	0.00	0.00	0.00	29.60
1980-81	0.00	0.00	0.00	0.00	0.00	0.00	3.20	0.00	1.00	0.00	0.00	0.00	4.20
1981-82	0.00	0.00	0.00	0.00	0.10	4.00	9.50	11.70	0.00	0.50	0.00	0.00	25.80
1982-83	0.00	0.00	0.00	0.00	0.00	5.50	0.00	18.70	0.00	0.00	0.00	0.00	24.20
1983-84	0.00	0.00	0.00	0.00	0.50	0.00	6.50	1.50	0.00	0.00	0.00	0.00	8.50
1984-85	0.00	0.00	0.00	0.00	0.00	0.00	6.60	0.00	0.00	0.00	0.00	0.00	6.60
1985-86	0.00	0.00	0.00	0.00	0.00	0.50	2.70	4.90	0.00	0.00	0.00	0.00	8.10
1986-87	0.00	0.00	0.00	0.00	0.00	0.00	21.30	5.50	0.50	0.00	0.00	0.00	27.30
1987-88	0.00	0.00	0.00	0.00	7.40	0.00	12.00	0.00	0.70	0.00	0.00	0.00	20.10
1988-89	0.00	0.00	0.00	0.00	0.00	1.80	0.00	2.50	0.00	0.00	0.00	0.00	4.30
1989-90	0.00	0.00	0.00	0.00	3.00	15.00	1.00	0.00	1.50	2.00	0.00	0.00	22.50
1990-91	0.00	0.00	0.00	0.00	0.00	0.00a	2.00	0.00	0.00	0.00	0.00	0.00	2.00
1991-92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.50

1992-93	0.00	0.00	0.00	0.00	0.00	0.50	0.00	5.60	7.20a	0.00	0.00	0.00	13.30
1993-94	0.00	0.00	0.00	0.00	0.00	5.40	4.30	1.80b	1.50	0.00	0.00	0.00	13.00
1994-95	0.00	0.00	0.00	0.00	0.00	0.00	4.30a	3.60	0.00	0.00	0.00	0.00	7.90
1995-96	0.00	0.00	0.00	0.00	0.00	1.50	18.20	23.40	4.70	0.00b	0.00	0.00	47.80
1996-97	0.00	0.00	0.00	0.00	1.00	0.40	3.80	4.00	0.00	0.00	0.00	0.00	9.20
1997-98	0.00	0.00	0.00	0.00	0.00	1.50d	0.00a	0.00	0.00	0.00	0.00	0.00	1.50
1998-99	0.00	0.00	0.00	0.00	0.00	0.00c	0.00a	0.00a	5.00a	0.00	0.00	0.00	5.00
1999-00	0.00	0.00	0.00	0.00	0.00	0.00	10.80a	0.40	0.00	0.00	0.00	0.00	11.20
2000-01	0.00	0.00	0.00	0.00	0.00	2.00	0.00a	2.00a	0.00a	0.00	0.00	0.00	4.00
2001-02	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	6.00
2002-03	0.00	0.00	0.00	0.00	0.00	3.00a	2.50c	26.00	0.00	0.00	0.00	0.00	31.50
2003-04	0.00	0.00	0.00	0.00	0.00	0.00	2.00b	0.00	0.00z	0.00z	0.00z	0.00z	2.00
Period of Record Statistics													
MEAN	0.00	0.00	0.00	0.02	0.46	2.41	4.98	4.95	2.57	0.14	0.00	0.00	15.98
S.D.	0.00	0.00	0.00	0.15	1.30	4.01	5.05	6.82	4.99	0.60	0.00	0.00	11.03
SKEW	0.00	0.00	0.00	6.48	3.87	1.97	1.18	1.77	2.65	4.75	0.00	0.00	0.65
MAX	0.00	0.00	0.00	1.00	7.40	15.00	21.30	26.00	23.30	3.50	0.00	0.00	47.80
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50
NO YRS	45	45	45	45	45	45	46	46	45	45	45	45	44

NCDC / Climate-Radar Data Inventories / Locate Station / Search

Ashland

Ashland, VA, United States

List Stations in Division VA-02
List Stations in Hanover County
List Stations within 5, 10, 25, or 50 miles

Call Sign/ICS* :
WBAN* :
COOP ID* : 440327
Climate Division* : VA-02 - Eastern Piedmont
WMO ID* :
In Service* : 01 Aug 1948 to Present
Elevation* : 67.1m (220.1') above s/l
Lat/Lon* : 37°45'N / 77°29'W
County* : Hanover

- Data Inventories
- DATA
- Station History
- State Climatologist
- Regional Climate Center

Information at Other Sites
- National Weather Service
  - Eastern Region Headquarters
  - Regional Forecast Office
  - Local Weather Conditions
  - Local Weather Forecast
- Current Radar
- Current Satellite
- Sunrise/Sunset

* *Disclaimer*
* *List of NCDC Datasets*
* *Please report any Data Errors found.*
* *Note to webmasters: you can link directly to this page.*

Data Inventories

Please note that additional data (digital and non-digital) may be available for this station. Contact NCDC if additional details are needed.

Click on the following where available:
- *DAT to obtain digital ascii data (charges may apply),*
  Please do not order these data if you do not know what a Digital ASCII File is.
- *INV to view inventory, or*
- *DOC to view documentation*

Surface
DAT INV DOC 3200 -Cooperative Summary Of The Day
DAT INV DOC SOD -Daily Surface Data (TD3200/3210 combined)
DAT INV DOC 3220 -Summary Of The Month (SOM) Cooperative

DATA

Additional data products may be available for this station. If you can't find what you are looking for here, please try our Most Popular Products page.

Forms, Publications, and Web Pages
Graphs and Other Images
CD-ROMs
Digital ASCII Files

Forms, Publications, and Web Pages

Most of these products are publications that have been converted to on-line access. As such, these documents have column headings and are displayed in an easy-to-read format.

For additional information and product samples, click on the ? icon next to the desired product.

? Daily/Monthly/Annual Virginia Climatological Data
? Record of Climatological Observations
? Annual Climatological Summary
? Storm Data Publication

? Miscellaneous Storm Events in Hanover County
*All List Storms

Graphs and Other Images

Includes contour maps, time series, NEXRAD radar mosaics, and satellite images.

For additional information and product samples, click on the ? icon next to the desired product.

? National Mosaic Reflectivity Images
? Miscellaneous Satellite Images

CD-ROMs

The following are some of the more popular CD-ROMs that contain data for this station. Others are available that may contain summarized data for this station. A complete list of CD-ROMs is available in the OnLine Store.

For additional information, click on the ? icon next to the desired product.

? NCDC Cooperative Station Data

Digital ASCII Files

These files may or may not contain column headers. In order to use these files, you will need to import them into a spreadsheet or database package for presentation. Please do not order these data if you do not know what a Digital ASCII File is. A sample Digital ASCII File is available for viewing but content varies a great deal depending on your request. Other digital files are available Offline that may contain data for this station.

For additional information and product samples, click on the ? icon next to the desired product.

? SOD -Daily Surface Data (TD3200/3210 combined)
? 3220 -Summary Of The Month (SOM) Cooperative

Station History

Ashland

Date Began	Date Ended	Lat/Lon	Elevation meters/feet	COOP ID	WBAN	Call Sign	WMO ID	Type
ASHLAND								
01 Jun 1990	Present	37°45'N / 77°29'W	67.1m / 220.1'	440327	.	.	.	.
05 Mar 1971	01 Jun 1990	37°45'N / 77°29'W	67.1m / 220.1'	440327	.	.	.	.
ASHLAND 1 SW								
23 Sep 1952	05 Mar 1971	37°45'N / 77°29'W	67.1m / 220.1'	440327	.	.	.	.
01 Sep 1952	23 Sep 1952	37°45'N / 77°29'W	67.1m / 220.1'	440327	.	.	.	.
01 Aug 1948	01 Sep 1952	37°46'N / 77°29'W	67.1m / 220.1'	440327	.	.	.	.

Top of Page

NCDC / Climate-Radar Data Inventories / Locate Station / Search

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ASHLAND 1 SW, VIRGINIA (440327)

Period of Record Monthly Climate Summary

Period of Record : 8/ 2/1948 to 7/31/2003

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	46.4	50.4	59.0	69.7	76.5	83.5	87.0	85.7	79.7	69.2	59.7	49.4	68.0
Average Min. Temperature (F)	25.4	28.1	34.3	43.5	52.8	61.1	65.7	64.5	57.6	45.4	35.8	28.4	45.2
Average Total Precipitation (in.)	3.34	3.09	3.87	3.08	3.91	3.46	4.31	4.07	3.67	3.37	3.09	3.28	42.51
Average Total SnowFall (in.)	6.1	5.1	1.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.0	15.4
Average Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 91.3% Min. Temp.: 91.3% Precipitation: 92.4% Snowfall: 90.3% Snow Depth: 89.5%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

ASHLAND 1 SW, VIRGINIA

Period of Record General Climate Summary - Temperature

Station:(440327) ASHLAND 1 SW															
From Year=1948 To Year=2003															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	46.4	25.4	35.9	82	26/1950	-9	21/1985	49.5	50	24.1	***	0.0	3.4	23.3	0.4
February	50.4	28.1	39.3	82	24/1985	-11	05/1996	48.2	76	27.1	***	0.0	1.6	19.4	0.1
March	59.0	34.3	46.7	90	30/1998	7	07/1960	51.7	77	33.8	***	0.0	0.3	14.2	0.0
April	69.7	43.5	56.6	95	17/2002	18	10/1985	61.8	94	50.8	61	0.6	0.0	4.1	0.0
May	76.5	52.8	64.6	95	06/1950	29	09/1956	70.2	91	58.4	67	1.3	0.0	0.1	0.0
June	83.5	61.1	72.3	100	28/1959	38	01/1966	75.6	81	68.8	72	5.6	0.0	0.0	0.0
July	87.0	65.7	76.4	103	15/1954	46	02/1957	79.9	87	71.9	62	11.1	0.0	0.0	0.0
August	85.7	64.5	75.1	104	30/1953	43	29/1986	79.1	88	71.6	96	8.5	0.0	0.0	0.0
September	79.7	57.6	68.7	105	08/1954	33	21/1956	73.8	98	64.4	67	3.2	0.0	0.0	0.0
October	69.2	45.4	57.3	96	05/1954	19	27/1962	64.5	84	52.4	88	0.2	0.0	3.0	0.0
November	59.7	35.8	47.7	88	01/1950	10	29/1955	55.2	85	41.2	96	0.0	0.0	12.6	0.0
December	49.4	28.4	38.9	80	06/1998	-1	26/1983	49.0	56	28.4	89	0.0	1.6	21.0	0.1
Annual	68.0	45.2	56.6	105	19540908	-11	19960205	59.4	90	54.1	67	30.5	6.9	97.8	0.6
Winter	48.7	27.3	38.0	82	19500126	-11	19960205	43.9	49	32.4	78	0.0	6.6	63.7	0.6
Spring	68.4	43.5	56.0	95	19500506	7	19600307	59.5	91	52.0	60	1.9	0.3	18.5	0.0
Summer	85.4	63.8	74.6	104	19530830	38	19660601	77.6	87	72.1	62	25.3	0.0	0.0	0.0
Fall	69.6	46.2	57.9	105	19540908	10	19551129	62.0	85	53.7	67	3.4	0.0	15.6	0.0

Table updated on Dec 9,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

ASHLAND 1 SW, VIRGINIA

Period of Record General Climate Summary - Precipitation

Station:(440327) ASHLAND 1 SW														
From Year=1948 To Year=2003														
	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	3.34	8.82	78	0.88	81	2.53	28/1998	9	7	2	1	6.1	30.2	96
February	3.09	7.32	98	0.43	68	2.72	04/1998	9	6	2	1	5.1	25.5	79
March	3.87	9.43	94	1.53	85	2.60	24/1979	9	7	3	1	1.8	15.0	62
April	3.08	5.95	87	0.54	85	2.72	16/1987	8	6	2	1	0.1	2.0	71
May	3.91	8.36	90	0.66	64	3.52	31/1980	10	7	3	1	0.0	0.0	49
June	3.46	8.67	72	0.35	80	4.11	22/1972	8	6	2	1	0.0	0.0	49
July	4.31	9.73	56	0.20	83	5.44	16/1989	9	7	3	1	0.0	0.0	49
August	4.07	9.54	85	0.60	98	5.24	27/1971	8	6	3	1	0.0	0.0	48
September	3.67	14.33	99	0.59	86	5.35	09/1977	7	6	2	1	0.0	0.0	48
October	3.37	8.61	95	0.01	100	4.32	21/1961	6	5	2	1	0.0	0.2	79
November	3.09	7.71	85	0.14	101	2.86	28/1993	7	6	2	1	0.4	6.0	87
December	3.28	6.84	73	0.37	65	2.15	21/1957	8	6	2	1	2.0	19.0	73
Annual	42.51	58.75	79	29.19	65	5.44	19890716	99	74	29	11	15.4	56.4	96
Winter	9.70	17.09	98	5.11	81	2.72	19980204	26	19	7	2	13.1	55.2	96
Spring	10.85	20.44	84	5.35	85	3.52	19800531	27	20	8	3	1.9	15.0	62
Summer	11.84	19.99	69	5.45	77	5.44	19890716	25	19	8	3	0.0	0.0	49
Fall	10.13	19.12	79	3.80	98	5.35	19770909	21	16	7	3	0.4	6.0	87

Table updated on Dec 9,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@cirrus.dnr.state.sc.us

ASHLAND 1 SW, VIRGINIA

Period of Record Daily Climate Summary

Daily Records for station 440327 ASHLAND 1 SW state: va

For temperature and precipitation, multi-day accumulations
are not considered either for records or averages.
The year given is the year of latest occurrence.

Period requested -- Begin : 1/ 1/1890 -- End : 7/31/2003
Period used -- Begin : 8/ 2/1948 -- End : 7/31/2003

Cooling degree threshold = 65.00 Heating degree threshold = 65.00

AVG Multi-year unsmoothed average of the indicated quantity
HI Highest value of indicated quantity for this day of year
LO Lowest value of indicated quantity for this day of year
YR Latest year of occurrence of the extreme value
NO Number of years with data for this day of year.
Units: English (inches and degrees F)

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
1	1	48	50	73	1985	26	1963	28	50	58	1973	10	1963	0.099	52	0.79	1987	0.01	45	0.3	1981	0.1	47	3.	1994	27.3	50	0.0	50
1	2	47	52	70	1966	27	1999	26	52	44	1966	10	1977	0.064	52	1.07	1979	0.00	45	0.0	2003	0.1	47	3.	1962	28.6	52	0.0	52
1	3	46	51	73	2000	30	2002	26	51	55	1950	7	2001	0.108	52	1.18	1999	0.14	45	5.5	2002	0.1	46	5.	2002	28.9	51	0.0	51
1	4	48	51	74	1950	33	1985	27	51	57	1950	8	1979	0.094	52	0.79	2000	0.06	45	2.5	1980	0.1	47	4.	2002	28.0	51	0.0	51
1	5	46	51	75	1950	27	1958	25	51	56	1950	4	1981	0.077	52	1.16	1980	0.37	45	12.0	1980	0.4	47	13.	1980	29.7	51	0.0	51
1	6	46	51	73	1950	25	1988	25	51	57	1950	7	1969	0.099	52	1.17	2002	0.07	45	1.0	1996	0.4	47	11.	1980	29.8	51	0.0	51
1	7	48	52	69	1955	21	1996	28	51	57	1998	8	1988	0.147	52	1.51	1962	0.46	45	14.0	1996	0.5	47	12.	1996	27.5	51	0.0	51
1	8	44	52	70	1998	25	1973	25	51	63	1998	6	1977	0.132	52	0.91	1978	0.41	45	7.0	1988	0.8	47	15.	1996	30.4	51	0.0	51
1	9	44	52	66	2003	16	1970	24	52	48	1965	-2	1970	0.124	52	1.45	1978	0.21	45	3.5	1997	0.8	47	13.	1996	31.1	52	0.0	52
1	10	45	51	74	1950	12	1970	26	51	47	1950	-1	1970	0.107	52	1.22	1984	0.05	45	2.0	1977	0.7	47	11.	1996	29.9	51	0.0	51
1	11	45	51	69	1975	20	1982	25	51	52	1972	1	1988	0.106	52	1.42	1991	0.20	45	5.5	1955	0.6	45	10.	1996	30.3	51	0.0	51
1	12	44	51	68	1974	20	1981	22	51	49	1963	1	1981	0.099	52	1.58	1950	0.16	45	6.5	1996	0.6	45	14.	1996	32.3	51	0.0	51
1	13	44	51	71	1995	26	1982	23	51	49	1972	-2	1981	0.089	52	1.26	1978	0.14	45	3.0	1982	0.6	45	13.	1996	31.4	51	0.0	51
1	14	47	51	73	1995	25	1988	24	51	52	1995	7	1962	0.158	52	2.05	1968	0.19	44	6.0	1982	0.7	46	12.	1996	29.9	51	0.0	51
1	15	45	51	67	1995	29	1988	25	51	60	1995	-5	1964	0.097	52	1.00	1995	0.08	44	1.5	1982	0.6	47	9.	1996	30.6	51	0.0	51
1	16	46	51	72	1953	19	1994	24	51	47	1991	0	1972	0.065	51	0.57	1954	0.23	45	5.0	1966	0.7	47	8.	1996	30.5	51	0.0	51
1	17	45	51	71	1990	18	1977	22	51	51	1949	-4	1977	0.038	51	0.96	1978	0.25	45	4.0	1965	0.7	46	7.	1965	31.5	51	0.0	51
1	18	45	51	69	1990	22	1977	24	51	56	1990	-7	1957	0.109	51	1.30	1980	0.07	45	2.0	1984	0.5	45	6.	1982	30.5	51	0.0	51
1	19	46	51	68	1974	14	1994	24	51	49	1986	-4	1977	0.106	51	1.14	1996	0.11	45	2.5	2002	0.4	45	6.	1982	30.3	51	0.0	51
1	20	43	50	63	1954	18	1994	24	51	47	1954	0	1985	0.193	51	1.35	1978	0.48	45	5.5	1985	0.6	43	5.	1985	31.8	50	0.0	50

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
1	21	43	51	68	1990	17	1985	23	50	45	1990	-9	1985	0.140	51	2.01	1969	0.10	45	3.5	1981	0.5	45	5.	1982	32.4	50	0.0	50
1	22	46	50	71	1986	23	1970	24	50	40	1999	-1	1970	0.121	51	2.00	1954	0.42	45	12.0	1987	0.7	44	12.	1987	30.5	50	0.0	50
1	23	48	51	75	1974	23	2003	27	51	53	1957	2	1970	0.128	51	2.37	1998	0.04	44	0.9	1982	0.6	44	12.	1987	27.5	51	0.0	51
1	24	52	50	76	1950	30	1970	28	50	54	1950	1	1987	0.096	51	1.55	1953	0.02	45	1.0	1977	0.5	44	10.	1987	25.6	50	0.0	50
1	25	47	50	79	1950	22	1987	28	50	56	1950	8	1963	0.157	51	1.18	1978	0.26	45	9.0	2000	0.7	44	12.	1987	28.1	50	0.0	50
1	26	48	49	82	1950	24	1961	27	49	59	1950	7	1961	0.110	50	1.03	1976	0.32	45	10.5	1987	0.8	44	19.	1987	27.8	49	0.1	49
1	27	50	50	73	1974	19	1961	26	50	51	1967	-1	1987	0.116	49	1.76	1976	0.42	45	13.0	1966	1.2	47	16.	1987	27.2	50	0.0	50
1	28	48	50	72	1999	27	1986	25	50	46	1999	-6	1987	0.135	50	2.53	1998	0.08	45	2.0	1995	0.8	45	15.	1987	28.4	50	0.0	50
1	29	47	51	76	1975	27	1962	25	51	45	2002	-5	1961	0.031	50	0.38	1973	0.07	45	2.0	1986	0.8	45	14.	1987	28.8	51	0.0	51
1	30	50	50	80	2002	31	2000	28	50	54	2002	7	1961	0.099	50	0.94	2000	0.47	45	8.0	1966	0.8	43	11.	1987	26.7	50	0.0	50
1	31	47	49	68	2002	18	1965	27	49	48	1969	3	1955	0.062	50	1.09	1949	0.17	45	2.5	1965	0.7	43	9.	1987	28.3	49	0.0	49
2	1	49	48	79	2002	27	1996	27	47	53	1988	5	1980	0.087	49	1.05	1958	0.00	46	0.0	2003	0.4	44	8.	1987	27.4	47	0.0	47
2	2	49	48	76	1989	26	1996	28	48	57	1988	9	1980	0.180	49	2.08	1973	0.49	45	7.5	1996	0.7	44	8.	1996	26.7	48	0.0	48
2	3	47	48	71	1967	19	1961	26	48	44	1983	5	1978	0.112	49	1.25	1988	0.09	46	3.0	1996	0.5	44	9.	1996	28.8	48	0.0	48
2	4	46	48	70	1991	17	1996	25	48	43	1990	4	1965	0.157	49	2.72	1998	0.30	45	6.5	1961	0.6	44	9.	1996	29.6	48	0.0	48
2	5	45	49	76	1991	22	1996	23	49	40	1986	-11	1996	0.051	49	0.51	2001	0.09	45	2.5	1984	0.4	44	8.	1996	31.1	49	0.0	49
2	6	46	49	66	1990	29	1995	25	49	43	1991	0	1996	0.083	49	1.02	1960	0.14	45	3.5	1983	0.4	44	7.	1996	29.8	49	0.0	49
2	7	47	50	65	1965	28	1979	27	50	51	1991	6	1966	0.195	50	1.50	1953	0.39	45	7.5	1979	0.6	43	8.	1979	28.3	50	0.0	50
2	8	47	50	66	1963	26	1967	25	50	54	1965	3	1967	0.099	50	1.37	1961	0.15	47	4.0	1974	0.5	43	6.	1996	29.3	50	0.0	50
2	9	47	50	72	1965	28	1951	24	50	47	1965	5	1967	0.061	50	1.30	1969	0.11	47	2.3	1979	0.4	43	8.	1979	29.6	50	0.0	50
2	10	48	50	65	1999	28	1973	25	50	47	1960	-9	1979	0.063	50	1.26	1990	0.17	46	3.5	1967	0.5	43	7.	1979	28.9	50	0.0	50
2	11	51	49	70	1960	26	1983	27	49	49	1955	0	1979	0.151	50	2.60	1994	0.33	46	11.5	1983	0.5	43	11.	1983	26.5	49	0.0	49
2	12	49	48	74	1999	29	1968	26	49	49	1965	5	1968	0.157	50	1.50	1963	0.17	46	2.5	1964	0.7	44	10.	1983	27.8	48	0.0	48
2	13	47	48	74	1949	26	1979	25	48	47	1977	8	1979	0.067	50	1.06	1966	0.14	47	4.5	1982	0.5	44	8.	1983	29.5	48	0.0	48
2	14	50	48	77	1990	26	1979	27	49	56	1984	3	1979	0.091	50	1.61	1984	0.06	47	2.0	1986	0.4	44	7.	1979	27.3	48	0.0	48
2	15	53	48	82	1989	31	1979	29	49	57	1949	17	1960	0.074	49	0.88	2003	0.06	47	1.7	1986	0.4	44	7.	1979	24.5	48	0.0	48
2	16	51	48	78	1954	23	1987	30	49	61	1990	5	1963	0.158	49	1.33	1964	0.27	47	8.0	1996	0.6	44	8.	1996	25.2	48	0.0	48
2	17	49	48	79	1976	26	2003	28	48	62	1976	3	1996	0.123	50	1.40	1998	0.31	47	6.0	1987	0.7	44	6.	1979	26.9	48	0.1	48
2	18	49	48	73	1976	13	1979	28	49	55	1976	4	1979	0.097	50	0.91	2000	0.36	47	6.0	1979	0.8	44	12.	1979	26.8	48	0.0	48
2	19	54	48	71	1984	31	1993	31	49	51	1961	7	1979	0.120	50	1.65	1972	0.27	47	6.5	1972	0.7	44	16.	1979	22.7	48	0.0	48
2	20	53	49	75	1961	33	1972	31	50	55	1991	4	1979	0.055	50	0.82	1981	0.00	47	0.0	2003	0.5	44	15.	1979	23.0	49	0.0	49
2	21	54	50	75	1997	34	1966	30	51	53	1954	8	1958	0.091	50	1.36	1989	0.04	47	2.0	1993	0.4	44	11.	1979	23.8	50	0.0	50
2	22	54	49	73	1985	34	1999	30	50	55	1997	7	1963	0.104	50	1.50	1954	0.09	47	4.0	2001	0.2	44	6.	1979	23.0	49	0.0	49
2	23	53	49	76	1985	27	1963	31	50	58	1990	6	1963	0.183	51	1.50	1994	0.04	47	1.0	1989	0.2	44	5.	1979	23.0	49	0.0	49
2	24	54	48	82	1985	30	1989	30	48	55	1985	15	1965	0.112	51	1.59	1979	0.05	47	2.5	1989	0.1	44	3.	1989	23.2	48	0.1	48
2	25	54	48	79	2000	31	1990	30	48	49	1985	6	1989	0.094	51	2.20	1979	0.14	46	3.5	1950	0.1	44	4.	1950	23.2	48	0.0	48
2	26	51	48	74	1977	29	1967	30	48	55	1957	11	1990	0.113	51	1.04	1992	0.17	47	4.0	1993	0.2	44	4.	1993	24.7	48	0.0	48
2	27	52	48	77	1997	23	1963	29	48	52	1957	8	1963	0.090	51	1.07	1957	0.38	47	10.0	1982	0.3	44	10.	1982	24.6	48	0.0	48
2	28	54	49	77	1976	32	1963	30	48	51	1955	12	1963	0.105	51	0.70	1982	0.14	47	3.0	1982	0.3	44	10.	1982	22.9	48	0.0	48
2	29	55	11	78	1976	35	1980	27	11	43	1972	16	1956	0.025	11	0.28	1964	0.70	10	7.0	1964	0.6	11	7.	1964	24.1	11	0.0	11
3	1	55	49	79	1976	25	1980	29	49	57	1976	9	1980	0.131	50	1.22	1966	0.17	49	5.5	1980	0.2	48	6.	1980	22.9	49	0.1	49
3	2	55	50	79	1972	19	1980	31	50	63	1972	11	1980	0.098	50	2.09	1994	0.41	49	7.5	1980	0.3	47	12.	1980	22.4	50	0.1	50
3	3	54	50	78	1974	33	1962	31	50	50	1991	11	1962	0.145	50	1.04	1960	0.10	49	5.0	1978	0.3	46	8.	1980	22.7	50	0.0	50
3	4	54	50	82	1983	28	1960	32	50	59	1974	12	1996	0.105	51	2.40	1993	0.02	50	1.0	1971	0.2	49	4.	1980	22.3	50	0.1	50
3	5	58	51	80	1976	31	1960	34	50	61	1974	11	1978	0.080	52	1.55	1965	0.03	51	1.5	2001	0.1	50	3.	1978	19.3	50	0.1	50
3	6	58	52	82	1961	30	1960	34	52	60	1961	10	1960	0.182	52	1.59	1969	0.25	51	10.5	1962	0.1	50	2.	1978	19.1	52	0.1	52
3	7	57	52	83	1956	31	1989	33	52	57	1961	7	1960	0.129	52	1.94	1992	0.12	51	4.5	1962	0.1	50	2.	1978	20.5	52	0.1	52
3	8	56	51	85	2000	28	1989	32	51	55	1980	9	1960	0.091	52	1.46	1995	0.06	51	2.5	1996	0.1	50	3.	1978	21.2	51	0.0	51
3	9	56	52	81	2000	31	1999	32	52	54	2000	11	1996	0.107	52	1.64	1998	0.06	51	2.0	1999	0.1	49	2.	1999	21.4	52	0.0	52
3	10	56	52	80	1964	30	1960	32	52	59	1964	12	1996	0.102	52	2.07	1978	0.06	51	2.0	1999	0.0	50	1.	1999	21.3	52	0.1	52
3	11	57	52	80	1990	33	1960	30	52	56	1955	7	1960	0.035	52	0.59	1979	0.01	51	0.3	1979	0.0	50	0.	2003	21.3	52	0.0	52
3	12	58	52	89	1990	37	1960	33	52	54	1973	15	1960	0.101	52	1.00	1962	0.00	51	0.0	2003	0.0	50	0.	2003	19.7	52	0.1	52
3	13	59	52	89	1990	34	1984	35	52	60	1977	7	1960	0.197	52	1.75	1993	0.12	51	5.0	1993	0.1	50	3.	1993	18.6	52	0.2	52
3	14	58	52	87	1990	32	1993	34	52	52	1979	8	1960	0.107	52	1.01	1975	0.04	51	2.0	1993	0.0	50	2.	1993	19.4	52	0.1	52

		Maximum Temperature				Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
3	15	60	53	82	1990	36	1993	34	53	58	1990	9	1993	0.074	52	0.97	1999	0.00	51	0.2	1988	0.0	50	1.	1993	18.3	53	0.1	53
3	16	59	53	81	1995	41	1992	34	53	63	1990	11	1979	0.105	52	0.97	1967	0.06	51	2.3	1950	0.0	50	2.	1950	18.9	53	0.2	53
3	17	59	51	82	1982	35	1960	33	52	62	1990	19	1950	0.210	52	1.94	1975	0.00	51	0.0	2003	0.0	50	0.	2003	18.9	51	0.1	51
3	18	57	51	83	1989	36	1993	33	51	53	2003	13	1967	0.150	52	1.17	1983	0.00	51	0.0	2003	0.0	50	0.	2003	20.1	51	0.0	51
3	19	57	52	74	1978	36	1967	34	51	53	1986	14	1967	0.153	52	2.08	1998	0.00	51	0.2	1971	0.0	49	0.	2003	19.6	51	0.0	51
3	20	58	52	79	1976	40	1956	34	52	45	1975	18	1981	0.116	52	1.45	1982	0.01	51	0.3	1990	0.0	50	0.	2003	19.3	52	0.0	52
3	21	59	52	78	1968	34	1965	35	52	55	1976	14	1965	0.203	52	1.63	2001	0.04	51	2.0	1988	0.0	49	0.	2003	18.2	52	0.0	52
3	22	58	51	87	1968	40	1985	35	51	53	1997	18	1954	0.140	52	1.56	1977	0.01	51	0.5	1973	0.0	49	0.	2003	18.8	51	0.1	51
3	23	59	51	85	1968	39	1961	33	51	52	1968	19	2002	0.066	52	0.81	1949	0.00	51	0.0	2003	0.0	50	0.	2003	19.2	51	0.1	51
3	24	62	51	83	1994	38	1983	36	51	59	1966	20	1992	0.113	52	2.60	1979	0.00	51	0.0	2003	0.0	49	0.	2003	16.2	51	0.2	51
3	25	61	50	81	1959	40	1972	35	50	52	1988	18	1956	0.108	52	1.74	1984	0.00	51	0.0	2003	0.0	49	0.	2003	17.1	50	0.0	50
3	26	62	51	86	1959	40	1971	37	51	59	1954	19	1983	0.158	52	1.67	1978	0.18	51	9.0	1971	0.2	49	9.	1971	16.2	51	0.2	51
3	27	64	51	86	1949	44	2001	37	51	64	1949	17	2001	0.118	52	1.23	1983	0.00	51	0.0	2003	0.1	49	3.	1971	15.4	51	0.3	51
3	28	64	51	87	1989	37	1996	38	51	62	1989	18	2001	0.148	52	1.74	1994	0.00	51	0.0	2003	0.0	49	0.	2003	15.1	51	0.4	51
3	29	66	52	89	1985	43	1996	40	52	63	1985	19	1966	0.155	52	1.87	1991	0.00	51	0.1	1984	0.0	50	0.	2003	12.9	52	0.7	52
3	30	66	52	90	1998	45	1959	42	52	63	1977	20	1969	0.168	52	1.65	1975	0.06	51	3.0	1964	0.1	49	3.	1964	11.8	52	0.5	52
3	31	64	49	88	1986	39	1964	40	49	64	1998	16	1964	0.098	52	0.88	1960	0.00	51	0.0	2003	0.0	50	0.	2003	14.0	49	0.4	49
4	1	65	50	86	1978	44	1961	39	50	67	1998	22	1965	0.141	52	1.24	1961	0.00	52	0.0	2003	0.0	52	0.	2003	13.5	50	0.3	50
4	2	68	52	82	2003	43	1964	40	52	56	1988	24	1964	0.039	52	0.57	1959	0.00	52	0.0	2003	0.0	52	0.	2003	11.2	52	0.2	52
4	3	69	52	88	1967	50	1961	41	52	63	1977	26	1992	0.090	52	1.00	1990	0.00	52	0.0	2003	0.0	52	0.	2003	10.8	52	0.4	52
4	4	69	52	88	1963	48	1992	43	52	63	1974	24	1992	0.135	52	1.12	1998	0.00	52	0.0	2003	0.0	52	0.	2003	10.2	52	0.8	52
4	5	65	51	92	1963	43	1987	41	51	60	1981	25	1964	0.076	52	1.38	1960	0.01	52	0.6	1987	0.0	52	0.	2003	12.4	51	0.3	51
4	6	64	50	83	1988	47	1987	40	51	61	1985	25	1975	0.092	52	0.89	1971	0.00	52	0.0	2003	0.0	52	0.	2003	13.2	50	0.0	50
4	7	65	52	88	1991	47	1989	39	52	60	1997	20	1982	0.148	52	1.68	2003	0.05	52	2.0	1971	0.0	52	0.	2003	13.4	52	0.3	52
4	8	67	52	88	1999	37	1972	40	52	64	1954	25	1996	0.099	52	0.97	1973	0.00	52	0.0	2003	0.0	52	0.	2003	11.9	52	0.3	52
4	9	66	52	92	2001	41	2003	40	52	65	1991	24	1972	0.188	52	1.73	1974	0.01	52	0.7	1982	0.0	52	0.	2003	12.8	52	0.7	52
4	10	66	52	89	1959	51	1961	40	52	61	1991	18	1985	0.076	52	1.51	1993	0.00	52	0.0	2003	0.0	52	0.	2003	12.3	52	0.3	52
4	11	68	52	88	1959	45	2003	40	52	59	1992	22	1960	0.061	52	0.91	2003	0.00	52	0.0	2003	0.0	52	0.	2003	11.6	52	0.3	52
4	12	69	52	88	1977	52	1962	41	52	59	1992	26	1989	0.071	52	0.65	1955	0.00	52	0.0	2003	0.0	52	0.	2003	10.4	52	0.3	52
4	13	68	52	89	1977	42	1959	42	52	67	2001	26	1990	0.175	52	1.97	1953	0.00	52	0.0	2003	0.0	52	0.	2003	10.8	52	0.6	52
4	14	68	51	88	1977	44	1966	42	51	59	1972	24	1950	0.073	52	1.00	1984	0.00	52	0.0	2003	0.0	52	0.	2003	10.8	51	0.3	51
4	15	70	51	88	1960	53	1987	45	52	61	1960	27	1953	0.138	52	1.37	1989	0.00	52	0.0	2003	0.0	52	0.	2003	8.8	51	0.8	51
4	16	70	52	92	2002	52	1951	44	51	60	2002	29	1962	0.182	52	2.72	1987	0.00	52	0.0	2003	0.0	52	0.	2003	9.2	51	0.8	51
4	17	70	51	95	2002	48	1986	43	51	62	2002	24	1962	0.081	52	1.33	1998	0.00	52	0.0	2003	0.0	52	0.	2003	9.9	51	1.2	51
4	18	71	51	94	1976	44	1983	44	51	65	2002	26	1983	0.041	52	0.69	2000	0.00	52	0.0	2003	0.0	52	0.	2003	8.8	51	1.2	51
4	19	72	51	93	1985	51	1983	46	51	63	1975	25	1956	0.069	52	0.79	2002	0.01	52	0.5	1988	0.0	52	0.	2003	7.8	51	1.5	51
4	20	72	51	94	1985	49	1991	46	52	68	1963	29	1974	0.092	52	1.50	1959	0.00	52	0.0	2003	0.0	52	0.	2003	7.6	51	1.5	51
4	21	71	52	91	1985	50	1953	46	52	65	1957	26	1983	0.053	52	1.12	2000	0.00	52	0.0	2003	0.0	52	1.	2000	7.6	52	0.7	52
4	22	72	51	94	1985	50	1964	47	51	64	1976	28	1953	0.142	52	1.44	1972	0.00	52	0.0	2003	0.0	52	0.	2003	7.3	51	1.7	51
4	23	74	52	90	1985	52	1997	47	52	64	1996	29	1986	0.078	52	0.77	1966	0.00	52	0.0	2003	0.0	52	0.	2003	6.5	52	1.4	52
4	24	74	52	91	1960	47	1995	47	52	64	1977	32	2003	0.105	52	1.23	1983	0.00	52	0.0	2003	0.0	52	0.	2003	6.1	52	1.2	52
4	25	72	52	91	1960	51	2000	46	52	66	1961	27	1956	0.121	52	1.13	1987	0.00	52	0.0	2003	0.0	52	0.	2003	7.4	52	1.2	52
4	26	73	52	94	1990	48	1978	46	52	68	1961	31	1981	0.094	52	1.53	1978	0.00	52	0.0	2003	0.0	52	0.	2003	7.2	52	1.6	52
4	27	73	51	92	1990	51	1967	47	52	63	1994	30	1976	0.113	52	1.31	1973	0.00	52	0.0	2003	0.0	52	0.	2003	6.4	51	1.3	51
4	28	72	51	90	1957	50	1967	48	51	68	1954	30	1976	0.103	52	1.69	1980	0.00	52	0.0	2003	0.0	52	0.	2003	7.1	51	1.6	51
4	29	73	52	92	1957	50	1966	46	51	67	1956	31	1967	0.103	52	2.70	1994	0.00	52	0.0	2003	0.0	52	0.	2003	7.3	51	1.5	51
4	30	73	52	89	1974	53	1966	47	52	68	1956	29	1961	0.131	52	0.89	1995	0.00	52	0.0	2003	0.0	52	0.	2003	6.5	52	1.1	52
5	1	75	51	92	1986	53	1964	49	51	64	1994	34	1996	0.045	51	1.06	1976	0.00	51	0.0	2003	0.0	51	0.	2003	4.5	51	1.2	51
5	2	75	51	89	1962	49	1963	50	51	64	2000	33	1963	0.134	51	1.83	1961	0.00	51	0.0	2003	0.0	51	0.	2003	4.5	51	1.8	51
5	3	74	50	90	1954	50	1966	49	50	67	1954	32	1961	0.102	51	1.16	1972	0.00	51	0.0	2003	0.0	51	0.	2003	5.7	50	1.4	50
5	4	73	50	91	1965	50	1994	48	50	61	1984	33	1986	0.140	51	1.59	1978	0.00	51	0.0	2003	0.0	51	0.	2003	5.9	50	0.9	50
5	5	74	51	89	1965	55	1978	48	51	64	1953	33	1966	0.112	51	1.16	1988	0.00	51	0.0	2003	0.0	51	0.	2003	5.8	51	1.3	51
5	6	77	50	95	1950	60	1992	50	50	64	1953	38	1973	0.098	51	1.39	1989	0.00	51	0.0	2003	0.0	51	0.	2003	3.8	50	1.7	50
5	7	77	51	91	1986	49	1992	51	51	65	1956	37	1974	0.071	51	0.82	1977	0.00	51	0.0	2003	0.0	51	0.	2003	3.7	51	2.3	51

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
5	8	75	51	91	2000	58	1992	51	51	65	1961	34	1989	0.140	51	1.51	1956	0.00	51	0.0	2003	0.0	51	0.	2003	4.0	51	1.8	51
5	9	75	51	92	1964	60	1980	49	51	67	1961	29	1956	0.140	51	1.18	1978	0.00	51	0.0	2003	0.0	51	0.	2003	5.2	51	1.6	51
5	10	75	50	94	1963	59	1966	51	50	66	2000	33	1983	0.091	51	1.33	2002	0.00	51	0.0	2003	0.0	51	0.	2003	4.4	50	2.1	50
5	11	77	51	94	1963	57	1949	51	51	66	1979	29	1966	0.099	51	1.56	1981	0.00	51	0.0	2003	0.0	51	0.	2003	3.6	51	2.4	51
5	12	77	50	91	1953	56	1998	53	50	64	1979	33	1966	0.067	51	1.02	1961	0.00	51	0.0	2003	0.0	51	0.	2003	3.2	50	2.6	50
5	13	76	50	92	2000	58	1960	52	50	69	1980	35	1969	0.073	51	0.52	1971	0.00	51	0.0	2003	0.0	51	0.	2003	3.9	50	2.6	50
5	14	75	50	91	1957	56	1986	52	50	66	1991	40	2001	0.145	51	1.48	1972	0.00	51	0.0	2003	0.0	51	0.	2003	3.7	50	1.8	50
5	15	75	51	92	1957	52	1954	52	51	63	1976	35	1984	0.096	51	1.15	1954	0.00	51	0.0	2003	0.0	51	0.	2003	3.7	51	2.0	51
5	16	76	50	92	1962	61	1989	52	50	66	1976	34	1955	0.210	51	1.90	1971	0.00	51	0.0	2003	0.0	51	0.	2003	3.4	50	2.3	50
5	17	77	51	90	1965	58	2003	53	51	69	1990	32	1956	0.041	51	0.59	1988	0.00	51	0.0	2003	0.0	51	0.	2003	3.0	51	2.7	51
5	18	78	51	93	1987	53	2003	54	51	70	1995	31	1973	0.130	51	1.19	1950	0.00	51	0.0	2003	0.0	51	0.	2003	2.3	51	3.0	51
5	19	77	51	93	1996	49	1981	55	51	66	1997	40	2002	0.201	51	1.76	1981	0.00	51	0.0	2003	0.0	51	0.	2003	2.7	51	3.5	51
5	20	77	51	94	1996	58	1994	55	51	66	1997	38	2002	0.115	51	1.03	1969	0.00	51	0.0	2003	0.0	51	0.	2003	2.7	51	3.4	51
5	21	77	51	91	1996	60	2002	55	51	69	1996	38	1950	0.159	51	1.66	1990	0.00	51	0.0	2003	0.0	51	0.	2003	2.2	51	3.3	51
5	22	78	51	91	1960	58	2003	54	51	68	1955	34	2002	0.191	51	2.20	1983	0.00	51	0.0	2003	0.0	51	0.	2003	2.3	51	3.2	51
5	23	79	51	92	1964	55	1967	56	51	69	1957	39	2002	0.117	51	1.61	1951	0.00	51	0.0	2003	0.0	51	0.	2003	1.8	51	3.9	51
5	24	80	51	90	1965	59	1985	56	51	67	1987	39	1963	0.098	51	1.45	1985	0.00	51	0.0	2003	0.0	51	0.	2003	1.5	51	3.9	51
5	25	78	51	91	1991	62	1973	56	51	68	2000	37	1956	0.135	51	1.39	1979	0.00	51	0.0	2003	0.0	51	0.	2003	2.1	51	3.6	51
5	26	77	51	92	1991	54	1992	56	51	69	1989	39	1988	0.139	51	2.11	2001	0.00	51	0.0	2003	0.0	51	0.	2003	2.5	51	3.7	51
5	27	77	51	89	1991	58	1996	55	51	71	1991	41	1967	0.129	51	1.28	1984	0.00	51	0.0	2003	0.0	51	0.	2003	2.3	51	3.2	51
5	28	76	50	91	1965	56	1961	54	50	73	1991	37	1961	0.131	51	1.51	1950	0.00	51	0.0	2003	0.0	51	0.	2003	3.0	50	3.2	50
5	29	77	50	92	1991	55	1971	56	50	68	1982	39	1997	0.166	51	2.14	1990	0.00	51	0.0	2003	0.0	51	0.	2003	2.0	50	3.5	50
5	30	79	50	95	1991	57	1971	57	50	67	1998	40	1964	0.189	51	2.58	1955	0.00	51	0.0	2003	0.0	51	0.	2003	1.7	50	4.4	50
5	31	80	48	95	1991	62	1953	58	48	71	1991	41	1996	0.181	51	3.52	1980	0.00	51	0.0	2003	0.0	51	0.	2003	1.2	48	5.2	48
6	1	81	50	94	1991	60	1967	58	50	73	1998	38	1966	0.147	50	1.79	1997	0.00	50	0.0	2003	0.0	50	0.	2003	1.5	50	5.5	50
6	2	80	50	94	1989	66	1966	57	50	69	1980	38	1967	0.152	50	2.50	1956	0.00	50	0.0	2003	0.0	50	0.	2003	1.3	50	4.9	50
6	3	80	50	90	1987	59	1964	58	50	69	1991	42	1967	0.211	50	2.98	1963	0.00	50	0.0	2003	0.0	50	0.	2003	1.6	50	5.0	50
6	4	78	50	89	1953	62	1965	57	50	72	1981	42	1988	0.180	50	2.01	1963	0.00	50	0.0	2003	0.0	50	0.	2003	1.4	50	3.8	50
6	5	81	50	93	1953	70	1997	57	50	71	2002	43	1965	0.136	50	1.30	1985	0.00	50	0.0	2003	0.0	50	0.	2003	0.8	50	4.3	50
6	6	82	50	91	1988	68	1997	59	50	71	1981	43	1954	0.087	50	0.90	2000	0.00	50	0.0	2003	0.0	50	0.	2003	0.6	50	5.5	50
6	7	82	50	94	1984	61	1997	60	50	70	1986	48	1977	0.087	50	1.70	2003	0.00	50	0.0	2003	0.0	50	0.	2003	0.5	50	6.5	50
6	8	83	50	94	1999	70	1997	60	50	75	1980	40	1977	0.085	50	0.87	1983	0.00	50	0.0	2003	0.0	50	0.	2003	0.6	50	7.0	50
6	9	83	50	95	1999	66	1957	60	50	74	1981	42	1949	0.147	50	2.42	1969	0.00	50	0.0	2003	0.0	50	0.	2003	0.7	50	7.0	50
6	10	83	50	93	1999	65	1955	60	50	70	1985	46	1988	0.041	50	0.79	1961	0.00	50	0.0	2003	0.0	50	0.	2003	0.7	50	6.8	50
6	11	83	50	97	1964	68	1972	60	50	70	1993	42	1972	0.114	50	1.57	1965	0.00	50	0.0	2003	0.0	50	0.	2003	0.4	50	6.9	50
6	12	83	50	94	1986	71	1953	60	50	73	1986	43	1972	0.109	50	1.42	1989	0.00	50	0.0	2003	0.0	50	0.	2003	0.3	50	6.8	50
6	13	84	50	94	1957	69	1995	62	50	72	1973	47	1980	0.134	50	2.49	1962	0.00	50	0.0	2003	0.0	50	0.	2003	0.3	50	7.7	50
6	14	85	50	98	1954	71	1962	61	50	73	1981	44	1985	0.069	50	0.90	1971	0.00	50	0.0	2003	0.0	50	0.	2003	0.2	50	7.6	50
6	15	84	50	96	1957	71	1971	62	50	71	2001	45	1959	0.100	50	1.04	1971	0.00	50	0.0	2003	0.0	50	0.	2003	0.3	50	8.0	50
6	16	83	50	98	1991	61	1965	62	50	74	1981	49	1959	0.161	50	2.03	1965	0.00	50	0.0	2003	0.0	50	0.	2003	0.5	50	7.8	50
6	17	83	50	94	1957	58	1965	62	50	73	2000	45	1964	0.086	50	1.65	1976	0.00	50	0.0	2003	0.0	50	0.	2003	0.5	50	7.6	50
6	18	83	50	95	1957	62	1965	61	50	72	1997	45	1959	0.074	50	1.37	1960	0.00	50	0.0	2003	0.0	50	0.	2003	0.7	50	7.4	50
6	19	83	50	92	1993	70	1965	62	50	71	1993	47	1965	0.079	50	0.76	1949	0.00	50	0.0	2003	0.0	50	0.	2003	0.4	50	7.6	50
6	20	84	50	93	1993	72	1999	63	50	73	1975	47	1954	0.099	50	1.25	2003	0.00	50	0.0	2003	0.0	50	0.	2003	0.1	50	8.3	50
6	21	84	50	97	1988	67	1999	63	50	70	1976	51	1980	0.106	50	1.20	1972	0.00	50	0.0	2003	0.0	50	0.	2003	0.2	50	8.7	50
6	22	85	50	99	1988	66	1963	64	50	72	2000	44	1992	0.241	50	4.11	1972	0.00	50	0.0	2003	0.0	50	0.	2003	0.3	50	9.3	50
6	23	85	50	100	1988	68	1972	63	50	72	1996	46	1992	0.112	50	1.79	1961	0.00	50	0.0	2003	0.0	50	0.	2003	0.2	50	9.0	50
6	24	86	50	96	1950	74	1974	63	50	71	1964	48	1972	0.052	50	0.81	1979	0.00	50	0.0	2003	0.0	50	0.	2003	0.1	50	9.2	50
6	25	86	50	95	2002	73	1979	63	50	73	1981	47	1979	0.032	50	0.58	1960	0.00	50	0.0	2003	0.0	50	0.	2003	0.1	50	9.6	50
6	26	86	50	98	1988	74	1979	63	50	74	2002	46	1979	0.176	50	3.67	1995	0.00	50	0.0	2003	0.0	50	0.	2003	0.1	50	9.6	50
6	27	86	50	99	1959	70	1961	63	50	74	1998	48	1981	0.146	50	1.93	1993	0.00	50	0.0	2003	0.0	50	0.	2003	0.2	50	9.5	50
6	28	86	50	100	1959	68	1974	63	50	72	1983	49	1960	0.098	50	1.90	1949	0.00	50	0.0	2003	0.0	50	0.	2003	0.1	50	9.4	50
6	29	85	50	99	1959	72	1961	64	50	74	1999	52	1981	0.148	50	2.35	1949	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	50	9.6	50
6	30	86	49	100	1959	76	1949	64	49	74	1998	54	1954	0.034	50	0.39	1982	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	49	9.8	49

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
7	1	85	48	95	1959	73	1985	65	48	75	1977	49	1988	0.240	50	3.00	1960	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	10.0	48
7	2	86	48	99	1954	72	2003	64	48	73	1987	46	1957	0.093	50	1.45	1992	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	9.7	48
7	3	87	48	99	1956	72	2003	65	48	75	1980	50	2001	0.086	50	1.46	1994	0.00	50	0.0	2003	0.0	50	0.	2003	0.1	48	10.6	48
7	4	87	48	99	1954	66	1962	65	48	74	1999	53	1996	0.217	50	3.15	1987	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	10.4	48
7	5	87	48	100	1990	76	1979	65	48	77	1957	48	1963	0.084	50	1.74	1972	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	10.8	48
7	6	87	48	99	1977	70	1972	64	48	76	1999	50	1979	0.123	50	2.00	1950	0.00	50	0.0	2003	0.0	50	0.	2003	0.1	48	10.1	48
7	7	87	48	99	1988	70	1961	64	48	74	1999	51	1983	0.106	50	1.84	1956	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	10.2	48
7	8	87	48	97	1993	76	1949	64	48	73	1994	50	1983	0.050	50	0.37	1980	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	10.4	48
7	9	88	47	99	1990	70	1969	66	47	74	1994	53	1984	0.090	49	0.72	1950	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	47	11.4	47
7	10	87	48	98	1993	72	1963	66	48	75	1999	49	1963	0.208	49	2.40	1998	0.00	50	0.0	2003	0.0	50	0.	2003	0.1	48	11.5	48
7	11	86	47	98	1990	73	1969	65	47	73	1989	51	1961	0.082	49	1.15	1999	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	47	10.3	47
7	12	86	48	95	1987	74	1999	64	48	73	1988	48	2002	0.104	49	0.83	1971	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	9.7	48
7	13	86	48	97	1957	69	1990	65	48	75	1992	52	1978	0.258	49	3.00	1991	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	10.3	48
7	14	88	48	101	1954	69	1999	66	48	74	1981	53	1956	0.160	50	1.94	1975	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	11.5	48
7	15	88	48	103	1954	73	1963	66	48	76	1992	56	1987	0.186	50	2.83	2000	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	11.7	48
7	16	87	48	100	1988	71	1989	66	48	74	1995	54	1960	0.227	50	5.44	1989	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	11.3	48
7	17	88	48	99	1988	74	1989	66	48	76	1988	54	1954	0.061	50	0.90	1956	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	11.8	48
7	18	88	48	99	1977	80	1962	66	48	74	1988	58	1985	0.086	49	1.67	2001	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	12.0	48
7	19	88	48	99	1977	78	2001	67	48	75	1959	58	1984	0.083	49	0.90	1988	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	12.6	48
7	20	89	48	98	1977	77	2001	67	48	73	1981	56	1957	0.104	50	2.80	1956	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	12.6	48
7	21	88	47	100	1987	71	1950	67	47	75	1980	53	2001	0.077	50	1.22	1984	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	47	12.5	47
7	22	88	47	99	1957	76	1988	67	47	75	1980	53	2001	0.208	49	1.57	1988	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	47	12.1	47
7	23	87	48	102	1957	77	1973	67	48	78	1972	55	1966	0.128	50	1.29	1980	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	11.6	48
7	24	87	49	98	1957	69	2000	66	49	75	1999	53	1985	0.165	50	2.25	1969	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	49	11.6	49
7	25	86	48	98	1987	70	2000	67	48	75	1991	55	1957	0.064	50	0.62	1985	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	11.2	48
7	26	86	48	97	1987	71	2000	67	48	75	1987	55	1976	0.137	50	0.98	1974	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	11.0	48
7	27	87	48	96	1966	73	1991	66	48	72	1997	48	1962	0.107	50	1.28	1991	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	11.4	48
7	28	88	48	98	1966	78	2001	66	48	74	1997	50	1962	0.106	49	1.70	1995	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	11.9	48
7	29	86	48	99	1966	67	2001	66	48	75	1993	56	1962	0.299	50	2.21	1981	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	11.2	48
7	30	86	48	100	1954	70	1972	66	48	77	1999	52	1956	0.246	49	2.00	1960	0.00	50	0.0	2003	0.0	50	0.	2003	0.0	48	10.5	48
7	31	87	48	102	1954	65	1966	66	48	72	1999	53	1997	0.060	49	0.52	1966	0.00	49	0.0	2003	0.0	49	0.	2003	0.1	48	11.0	48
8	1	88	48	103	1954	78	1996	66	48	79	1973	56	1966	0.157	49	1.70	1953	0.00	49	0.0	2002	0.0	49	0.	2002	0.0	48	11.6	48
8	2	87	48	99	1954	76	1965	66	49	74	1968	55	1992	0.156	50	1.91	1989	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	48	11.2	48
8	3	87	49	98	1987	79	1962	66	49	75	1980	51	1959	0.182	50	1.50	1968	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	11.3	49
8	4	87	49	98	1957	73	1953	66	49	77	1991	56	1998	0.190	50	1.94	1978	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	11.5	49
8	5	86	49	97	2002	74	1964	66	49	74	1989	55	1985	0.173	50	1.33	1972	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	10.9	49
8	6	85	49	99	1977	71	1994	65	49	74	2002	55	1994	0.098	50	2.01	1993	0.00	50	0.0	2002	0.0	50	0.	2002	0.1	49	10.1	49
8	7	85	49	97	1977	73	1994	64	49	75	2000	50	1994	0.125	50	2.11	1960	0.00	50	0.0	2002	0.0	50	0.	2002	0.1	49	9.7	49
8	8	86	48	98	1980	75	1995	65	48	76	1999	52	1954	0.090	50	1.40	1981	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	48	10.2	48
8	9	88	49	99	1980	76	1995	66	49	73	1998	54	1989	0.144	50	2.76	1990	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	11.5	49
8	10	87	48	97	1977	65	1989	66	48	76	1987	56	2002	0.148	50	1.80	1969	0.00	50	0.0	2002	0.0	50	0.	2002	0.1	48	11.4	48
8	11	87	49	97	1983	67	1989	65	48	74	1977	53	1972	0.083	50	2.38	2001	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	48	10.8	48
8	12	85	48	99	1977	71	1986	64	48	74	1961	45	1954	0.165	50	3.43	1979	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	48	9.5	48
8	13	85	48	98	2002	66	1996	64	49	73	1999	51	1954	0.133	50	2.16	1992	0.00	50	0.0	2002	0.0	50	0.	2002	0.1	48	9.7	48
8	14	85	49	98	1985	75	1964	64	49	78	1997	49	1950	0.072	50	0.64	1976	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	9.4	49
8	15	86	49	96	1988	67	1992	65	49	75	1980	47	1963	0.194	49	2.19	1974	0.00	49	0.0	2002	0.0	49	0.	2002	0.0	49	10.0	49
8	16	86	49	100	1954	68	1992	65	49	72	1997	50	1979	0.042	50	0.63	1982	0.00	50	0.0	2002	0.0	50	0.	2002	0.1	49	10.4	49
8	17	87	49	100	1988	69	1992	66	49	76	1997	49	1979	0.081	50	1.52	1954	0.00	50	0.0	2002	0.0	50	0.	2002	0.1	49	11.1	49
8	18	85	49	96	2002	70	1989	66	49	76	1997	52	1981	0.231	50	2.32	1985	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	10.2	49
8	19	85	49	98	1954	74	1957	65	49	72	1988	54	1962	0.247	50	4.85	1985	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	9.6	49
8	20	84	49	103	1983	72	1986	63	49	71	2002	51	1998	0.203	50	4.00	1969	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	8.4	49
8	21	83	49	97	1983	68	1990	63	49	73	1968	50	1953	0.061	50	1.24	1961	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	7.9	49
8	22	84	49	102	1983	72	1990	62	49	72	1959	52	1953	0.077	50	1.19	1950	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	7.7	49
8	23	84	49	100	2002	71	1969	63	49	73	2002	52	1969	0.085	50	1.67	1967	0.00	50	0.0	2002	0.0	50	0.	2002	0.1	49	8.5	49

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
8	24	85	49	98	1998	74	1990	63	49	73	2002	51	1994	0.077	50	1.03	1977	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	9.0	49
8	25	85	49	98	1998	75	1989	63	49	73	1998	49	1978	0.134	50	2.34	1957	0.00	50	0.0	2002	0.0	50	1.	1978	0.0	49	8.6	49
8	26	85	49	97	1975	74	1957	63	49	71	1975	51	1982	0.099	50	1.35	1974	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	8.8	49
8	27	86	49	98	1987	75	1971	65	49	76	1998	55	1984	0.248	50	5.24	1971	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	49	10.5	49
8	28	86	49	99	1953	70	2002	65	49	72	1998	50	1968	0.190	50	1.59	1949	0.00	50	0.0	2002	0.0	50	0.	2002	0.1	49	10.4	49
8	29	86	49	100	1953	70	2002	63	49	73	1993	43	1986	0.082	50	1.20	1988	0.00	50	0.0	2002	0.0	50	0.	2002	0.3	49	9.8	49
8	30	86	49	104	1953	71	1965	63	49	71	1989	44	1986	0.014	50	0.61	2000	0.00	50	0.0	2002	0.0	50	0.	2002	0.4	49	9.6	49
8	31	85	48	102	1953	67	1986	63	48	72	1991	46	1968	0.074	50	1.24	1963	0.00	50	0.0	2002	0.0	50	0.	2002	0.4	48	9.3	48
9	1	85	50	95	1993	70	2002	63	50	77	1959	48	1954	0.207	50	3.05	1960	0.00	50	0.0	2002	0.0	50	0.	2002	0.0	50	8.6	50
9	2	84	50	103	1953	72	1972	62	50	73	1959	48	1954	0.060	50	0.83	1979	0.00	50	0.0	2002	0.0	50	0.	2002	0.1	50	8.0	50
9	3	85	50	100	1953	72	1955	63	50	75	1993	43	1967	0.093	50	1.70	1992	0.00	50	0.0	2002	0.0	50	0.	2002	0.2	50	8.8	50
9	4	84	49	99	1953	70	1962	62	49	73	1993	47	1967	0.106	50	1.51	1974	0.00	50	0.0	2002	0.0	50	0.	2002	0.2	49	8.0	49
9	5	83	49	98	1983	68	1974	63	49	76	1959	45	1997	0.154	50	3.05	1999	0.00	50	0.0	2002	0.0	50	0.	2002	0.3	49	7.7	49
9	6	84	49	102	1954	68	2000	62	49	76	1948	46	1982	0.202	50	2.25	1974	0.00	50	0.0	2002	0.0	50	0.	2002	0.3	49	8.2	49
9	7	84	49	104	1954	65	1974	60	50	78	1948	39	1962	0.126	50	1.64	1974	0.00	50	0.0	2002	0.0	50	0.	2002	0.6	49	7.2	49
9	8	83	50	105	1954	70	1956	60	49	72	1987	43	1984	0.055	50	0.85	1998	0.00	50	0.0	2002	0.0	50	0.	2002	0.3	49	6.2	49
9	9	82	50	94	1954	71	1988	59	50	70	1985	43	1986	0.133	50	5.35	1977	0.00	50	0.0	2002	0.0	50	0.	2002	0.5	50	5.8	50
9	10	83	49	100	1983	68	1956	60	49	71	1954	39	1956	0.046	50	0.59	1988	0.00	50	0.0	2002	0.0	50	0.	2002	0.7	49	6.9	49
9	11	83	50	102	1983	72	1969	58	50	73	1962	43	1949	0.088	50	1.10	1968	0.00	50	0.0	2002	0.0	50	0.	2002	0.8	50	6.3	50
9	12	82	50	99	1983	65	1967	58	50	71	1986	41	1967	0.103	50	2.03	1960	0.00	50	0.0	2002	0.0	50	0.	2002	0.6	50	5.4	50
9	13	81	50	92	1998	68	1985	58	50	70	1989	41	1954	0.138	50	1.32	1965	0.00	50	0.0	2002	0.0	50	0.	2002	0.8	50	5.2	50
9	14	80	50	93	1980	57	1964	58	50	72	1979	38	1953	0.098	50	1.61	1973	0.00	50	0.0	2002	0.0	50	0.	2002	1.7	50	5.5	50
9	15	80	50	94	1962	65	1963	58	50	70	1993	42	1985	0.057	50	1.19	1976	0.00	50	0.0	2002	0.0	50	0.	2002	1.1	50	4.7	50
9	16	79	50	94	1991	57	1963	57	50	70	1991	39	1966	0.231	50	4.96	1999	0.00	50	0.0	2002	0.0	50	0.	2002	1.7	50	4.2	50
9	17	79	50	95	1991	65	1988	57	50	74	1991	40	1984	0.130	50	1.90	1965	0.00	50	0.0	2002	0.0	50	0.	2002	1.7	50	4.6	50
9	18	79	50	93	1954	66	1981	57	50	73	1991	40	1984	0.101	50	1.44	1975	0.00	50	0.0	2002	0.0	50	0.	2002	1.3	50	4.2	50
9	19	79	50	94	1983	65	1969	58	50	71	1978	41	1959	0.046	50	0.76	1991	0.00	50	0.0	2002	0.0	50	0.	2002	1.5	50	4.3	50
9	20	79	50	92	1983	66	1969	58	50	70	1977	37	1959	0.145	50	2.41	1966	0.00	50	0.0	2002	0.0	50	0.	2002	0.8	50	4.5	50
9	21	78	50	91	1965	61	1969	58	50	72	1989	33	1956	0.145	50	2.60	1966	0.00	50	0.0	2002	0.0	50	0.	2002	1.6	50	4.5	50
9	22	77	50	91	1965	63	1999	56	50	73	1992	35	1962	0.224	50	2.72	1979	0.00	50	0.0	2002	0.0	50	0.	2002	2.2	50	3.4	50
9	23	76	50	90	1980	63	1974	53	50	71	1980	34	1983	0.075	50	1.74	1975	0.00	50	0.0	2002	0.0	50	0.	2002	3.1	50	2.1	50
9	24	75	51	91	1984	60	1995	52	50	69	1986	33	1963	0.060	51	1.42	1975	0.00	51	0.0	2002	0.0	51	0.	2002	4.2	50	2.5	50
9	25	75	50	92	1986	55	1992	52	50	67	1986	33	1963	0.121	51	1.41	1975	0.00	51	0.0	2002	0.0	51	0.	2002	4.0	49	2.0	49
9	26	76	51	93	1986	55	2000	53	50	67	1980	37	1967	0.110	51	1.53	1989	0.00	51	0.0	2002	0.0	51	0.	2002	3.0	50	2.3	50
9	27	76	51	95	1954	61	1966	54	50	69	1972	38	1967	0.178	51	2.90	1985	0.00	51	0.0	2002	0.0	51	0.	2002	2.9	50	2.7	50
9	28	74	51	95	1954	48	1984	54	50	70	1996	37	1952	0.105	51	2.21	1976	0.00	51	0.0	2002	0.0	51	0.	2002	3.2	50	2.1	50
9	29	74	51	93	1954	55	1984	53	51	70	1954	40	1981	0.109	51	1.27	1963	0.00	51	0.0	2002	0.0	51	0.	2002	3.6	51	1.9	51
9	30	74	51	96	1954	60	1983	53	51	74	1954	38	1961	0.186	51	1.48	1983	0.00	51	0.0	2002	0.0	51	0.	2002	3.6	51	1.8	51
10	1	74	53	91	1986	55	1984	52	53	70	1959	34	1993	0.160	53	2.57	1959	0.00	53	0.0	2002	0.0	53	0.	2002	3.9	53	1.7	53
10	2	75	53	92	1954	55	1966	52	53	69	1971	35	1966	0.141	53	2.76	1973	0.00	53	0.0	2002	0.0	53	0.	2002	3.8	53	1.8	53
10	3	74	52	89	1986	52	1974	51	52	66	1971	33	1974	0.094	52	1.24	1985	0.00	52	0.0	2002	0.0	52	0.	2002	4.3	52	1.7	52
10	4	74	53	94	1954	57	1996	50	53	70	1986	28	1974	0.066	53	0.74	1995	0.00	53	0.0	2002	0.0	53	0.	2002	5.1	53	2.0	53
10	5	73	53	96	1954	52	1948	51	53	73	1986	30	1965	0.125	53	2.25	1948	0.00	53	0.0	2002	0.0	53	0.	2002	5.6	53	2.3	53
10	6	73	52	94	1951	54	1964	49	53	65	1995	29	1965	0.110	53	2.30	1957	0.00	53	0.0	2002	0.0	53	0.	2002	6.1	52	1.8	52
10	7	71	53	89	1954	55	2001	47	53	67	1995	29	1953	0.136	53	2.09	1951	0.00	53	0.0	2002	0.0	53	0.	2002	7.2	53	1.1	53
10	8	70	53	84	1990	54	2000	46	53	66	1976	29	1954	0.112	53	2.58	1996	0.00	53	0.0	2002	0.0	53	0.	2002	8.2	53	0.9	53
10	9	71	53	94	1959	53	2000	48	53	71	1959	29	2001	0.112	53	1.52	1976	0.00	53	0.0	2002	0.0	53	0.	2002	6.7	53	1.2	53
10	10	71	53	86	1997	54	1952	47	53	70	1959	32	2000	0.138	53	2.07	1971	0.00	53	0.2	1979	0.0	53	0.	2002	6.9	53	0.8	53
10	11	70	53	86	1954	52	1952	47	53	68	1990	30	1964	0.063	53	1.99	2002	0.00	53	0.0	2002	0.0	53	0.	2002	7.6	53	0.7	53
10	12	71	53	89	1954	54	1952	46	53	63	1990	28	1964	0.024	53	0.55	1983	0.00	53	0.0	2002	0.0	53	0.	2002	7.5	53	0.6	53
10	13	70	53	88	1954	56	1988	46	53	70	1990	29	1988	0.042	53	0.61	1983	0.00	53	0.0	2002	0.0	53	0.	2002	7.7	53	0.8	53
10	14	72	52	92	1954	50	1977	48	52	67	1995	27	1988	0.170	53	3.19	1955	0.00	53	0.0	2002	0.0	53	0.	2002	6.7	52	1.2	52
10	15	72	52	87	1985	54	1959	45	53	67	1954	30	1987	0.080	53	2.00	1995	0.00	53	0.0	2002	0.0	53	0.	2002	7.4	52	1.0	52
10	16	71	52	85	1953	56	1997	46	51	61	1975	33	1978	0.092	53	1.48	2002	0.00	53	0.0	2002	0.0	53	0.	2002	7.7	51	0.5	51

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
10	17	69	52	82	1968	48	1991	46	52	65	1989	28	1982	0.128	53	1.59	1964	0.00	53	0.0	2002	0.0	53	0.	2002	8.2	52	0.3	52
10	18	69	52	87	1984	51	1976	44	52	61	1980	27	1982	0.089	53	1.62	1990	0.00	53	0.0	2002	0.0	53	0.	2002	8.8	52	0.3	52
10	19	67	52	86	1953	48	1972	43	52	67	1968	27	1948	0.148	53	1.90	1966	0.00	53	0.0	2002	0.0	53	0.	2002	10.2	52	0.4	52
10	20	67	52	88	1953	46	1972	44	52	62	1984	26	1992	0.112	53	1.67	1976	0.00	53	0.0	2002	0.0	53	0.	2002	10.5	52	0.3	52
10	21	67	52	85	1984	48	1974	42	52	62	1993	26	1974	0.195	53	4.31	1961	0.00	53	0.0	2002	0.0	53	0.	2002	11.4	52	0.5	52
10	22	67	52	89	1949	53	1998	42	52	66	1984	22	1952	0.083	53	2.25	1956	0.00	53	0.0	2002	0.0	53	0.	2002	11.1	52	0.5	52
10	23	67	52	83	1978	50	1982	43	52	67	1984	26	1952	0.129	53	1.33	1983	0.00	53	0.0	2002	0.0	53	0.	2002	10.4	52	0.3	52
10	24	67	52	84	2001	49	1982	43	52	61	2001	26	1969	0.057	53	0.76	1984	0.00	53	0.0	2002	0.0	53	0.	2002	10.3	52	0.2	52
10	25	65	53	79	1954	46	1981	43	53	65	1971	26	1969	0.140	53	1.81	1980	0.00	53	0.0	2002	0.0	53	0.	2002	11.2	53	0.2	53
10	26	66	52	80	1984	53	1979	41	53	62	1971	26	1962	0.136	53	2.42	1977	0.00	53	0.0	2002	0.0	53	0.	2002	11.8	52	0.1	52
10	27	65	53	84	1984	45	1976	41	53	63	1977	19	1962	0.043	53	0.76	1987	0.00	53	0.0	2002	0.0	53	0.	2002	12.3	53	0.2	53
10	28	66	52	83	1984	44	1976	42	52	60	1984	26	1976	0.142	53	2.92	1995	0.00	53	0.0	2002	0.0	53	0.	2002	11.3	52	0.1	52
10	29	65	52	86	1984	47	2002	40	52	66	1984	24	1952	0.074	53	1.75	1953	0.00	53	0.0	2002	0.0	53	0.	2002	13.0	52	0.2	52
10	30	64	52	83	1950	41	2002	39	52	62	1971	20	1952	0.106	53	1.91	1949	0.00	53	0.0	2002	0.0	53	0.	2002	13.5	52	0.0	52
10	31	64	51	88	1950	48	2002	41	51	63	1971	24	1968	0.106	53	2.41	1949	0.00	53	0.0	2002	0.0	53	0.	2002	12.7	51	0.3	51
11	1	66	51	88	1950	48	1988	42	52	66	1971	24	1954	0.127	53	2.26	1949	0.00	53	0.0	2002	0.0	53	0.	2002	11.1	51	0.3	51
11	2	67	52	87	1950	46	1996	43	52	66	1971	25	1993	0.095	52	0.93	1999	0.00	53	0.0	2002	0.0	53	0.	2002	10.5	52	0.5	52
11	3	67	52	83	1950	47	1998	42	52	64	1972	19	1959	0.114	52	1.17	1971	0.00	53	0.0	2002	0.0	53	0.	2002	11.3	52	0.2	52
11	4	64	53	82	1974	39	1991	40	53	66	1977	25	1996	0.109	52	2.00	1985	0.00	53	0.0	2002	0.0	53	0.	2002	13.7	53	0.3	53
11	5	62	53	79	1975	43	1991	39	53	64	1977	22	1991	0.097	53	0.78	1973	0.00	52	0.0	2002	0.0	52	0.	2002	14.6	53	0.1	53
11	6	61	53	81	1948	45	1962	37	53	61	1977	15	1967	0.079	53	0.79	1977	0.00	53	0.0	2002	0.0	53	0.	2002	16.2	53	0.1	53
11	7	61	53	77	1959	40	1953	36	53	61	1977	18	1967	0.146	53	2.57	1963	0.00	53	0.0	2002	0.0	53	0.	2002	17.1	53	0.0	53
11	8	61	53	80	1975	40	1959	36	53	64	1975	17	1967	0.093	53	2.15	1996	0.01	53	0.3	1976	0.0	53	0.	2002	16.9	53	0.2	53
11	9	62	53	77	1994	41	1991	37	53	59	1986	18	1976	0.066	53	0.88	1957	0.00	53	0.0	2002	0.0	53	0.	2002	16.0	53	0.1	53
11	10	61	53	75	1999	40	1991	38	52	56	1977	20	1959	0.179	53	2.09	1962	0.00	53	0.0	2002	0.0	53	0.	2002	15.9	52	0.0	52
11	11	59	53	79	1985	34	1987	36	53	62	2002	19	1957	0.131	53	1.58	1979	0.11	53	6.0	1987	0.1	53	6.	1987	17.9	53	0.0	53
11	12	58	53	79	1964	43	1996	35	53	54	1982	16	1987	0.062	52	1.30	2002	0.10	52	5.0	1976	0.1	52	3.	1976	18.5	53	0.0	53
11	13	59	53	77	1985	40	1968	34	53	58	1985	18	1996	0.108	53	1.63	1982	0.00	53	0.0	2002	0.0	53	1.	1976	18.6	53	0.0	53
11	14	60	53	81	1985	35	1996	35	53	55	1993	16	1986	0.048	53	1.22	1972	0.00	53	0.0	2002	0.0	53	0.	2002	18.0	53	0.1	53
11	15	62	53	82	1993	40	1976	36	53	65	1993	21	1996	0.062	53	1.12	1952	0.00	53	0.0	2002	0.0	53	0.	2002	16.5	53	0.2	53
11	16	60	53	75	2001	41	1972	36	53	56	1993	13	1967	0.052	53	0.71	1969	0.00	53	0.0	2002	0.0	53	0.	2002	17.0	53	0.0	53
11	17	60	53	84	1955	39	1967	37	53	55	1954	19	1967	0.091	53	0.90	2002	0.00	53	0.0	2002	0.0	53	0.	2002	16.8	53	0.0	53
11	18	60	53	79	1953	44	2000	34	53	58	1954	13	1959	0.072	53	0.85	1980	0.00	53	0.0	2002	0.0	53	0.	2002	18.2	53	0.0	53
11	19	60	53	79	1953	40	1984	35	53	59	1954	14	1959	0.086	53	0.91	1984	0.00	53	0.0	2002	0.0	53	0.	2002	17.7	53	0.0	53
11	20	60	53	76	1985	36	1986	36	53	56	1985	15	1959	0.108	53	2.30	1952	0.00	53	0.0	2002	0.0	53	0.	2002	17.4	53	0.0	53
11	21	57	53	74	1991	36	1987	34	53	59	1991	17	1968	0.152	53	2.09	1952	0.01	53	0.5	1996	0.0	53	0.	2002	19.9	53	0.0	53
11	22	55	52	74	1979	36	1989	32	52	59	1992	15	1964	0.112	53	1.41	1962	0.02	53	0.5	1996	0.0	53	0.	2002	21.5	52	0.0	52
11	23	56	52	76	1979	35	1989	31	52	56	1992	15	1984	0.062	53	0.71	1989	0.07	53	3.7	1989	0.1	53	3.	1989	22.0	52	0.0	52
11	24	57	51	74	1979	34	1981	34	51	59	1979	12	1956	0.109	53	1.30	1959	0.05	53	1.7	1971	0.1	53	2.	1989	20.0	50	0.0	50
11	25	56	53	77	1973	37	1956	32	53	61	1973	14	1950	0.155	53	1.64	1983	0.04	53	1.0	1983	0.0	53	1.	1950	21.1	53	0.1	53
11	26	57	53	74	1990	29	1950	33	53	57	2001	13	1950	0.104	53	0.97	1996	0.00	53	0.0	2002	0.0	53	0.	2002	20.4	53	0.0	53
11	27	57	53	79	1973	37	1977	35	52	57	1985	15	1991	0.112	53	1.58	1988	0.00	53	0.0	2002	0.0	53	0.	2002	19.2	52	0.0	52
11	28	58	53	77	1990	39	1996	36	52	60	1973	18	1996	0.159	53	2.86	1993	0.00	53	0.0	2002	0.0	53	0.	2002	18.3	52	0.0	52
11	29	56	52	73	1991	42	1996	33	53	55	2001	10	1955	0.121	52	1.12	1963	0.00	52	0.0	2002	0.0	53	0.	2002	21.2	52	0.0	52
11	30	52	53	75	2001	31	1976	30	53	60	2001	11	1976	0.074	53	0.91	1985	0.00	53	0.1	1952	0.0	53	0.	2002	24.2	53	0.0	53
12	1	51	51	73	2001	34	1967	30	52	57	1991	11	1976	0.121	52	2.10	1974	0.00	49	0.0	2002	0.0	48	0.	2002	25.0	51	0.0	51
12	2	52	52	68	1980	33	1964	28	51	52	1982	16	1967	0.038	52	0.83	1986	0.00	49	0.0	2002	0.0	48	0.	2002	25.1	51	0.0	51
12	3	53	52	76	1950	31	2000	29	52	50	1982	12	1960	0.083	52	1.15	1948	0.00	49	0.0	2002	0.0	48	0.	2002	23.8	52	0.0	52
12	4	55	52	77	1998	30	1966	31	52	56	1982	12	2002	0.091	52	1.11	1983	0.07	49	3.5	1957	0.1	48	4.	1957	22.4	52	0.0	52
12	5	54	52	78	1994	29	2002	32	52	60	1964	14	1966	0.116	52	1.99	1993	0.12	49	6.0	2002	0.1	47	4.	2002	22.6	52	0.0	52
12	6	56	52	80	1998	37	2002	31	52	56	1972	16	1969	0.099	52	0.83	1996	0.00	49	0.0	2002	0.1	47	3.	2002	21.9	52	0.0	52
12	7	53	52	80	1998	32	1954	31	52	59	1998	12	1954	0.092	52	1.02	1996	0.12	49	5.0	1995	0.1	48	3.	2002	23.4	52	0.1	52
12	8	52	52	74	1980	34	1977	30	52	57	1956	10	1954	0.083	52	0.91	1989	0.24	49	6.0	1976	0.3	48	6.	1989	23.9	52	0.0	52
12	9	51	52	74	1991	27	1989	30	52	54	1980	10	1976	0.179	52	1.54	1973	0.06	49	2.0	1988	0.2	48	5.	1989	24.8	52	0.0	52

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
12	10	49	52	72	1956	31	1995	29	52	54	1972	13	1977	0.135	51	1.03	1992	0.06	49	2.9	1950	0.2	48	3.	1989	25.8	52	0.0	52
12	11	48	51	71	1966	28	1968	29	52	50	1971	5	1968	0.179	52	1.70	1967	0.06	49	3.0	1973	0.1	47	3.	1989	26.5	51	0.0	51
12	12	49	52	72	1985	25	1988	28	52	55	1985	6	1962	0.161	52	1.84	1961	0.28	49	8.5	1982	0.3	47	8.	1982	26.6	52	0.0	52
12	13	50	52	72	1984	23	1962	31	52	53	1991	4	1960	0.150	52	1.57	1998	0.12	49	4.0	1989	0.4	47	10.	1989	24.8	52	0.0	52
12	14	49	52	68	2001	23	1960	29	52	52	2001	8	1962	0.123	52	1.50	1953	0.00	49	0.0	2002	0.3	47	8.	1989	26.0	52	0.0	52
12	15	50	52	73	1984	32	1962	29	52	50	1984	8	1962	0.108	52	0.89	1981	0.00	49	0.0	2002	0.2	47	8.	1989	25.8	52	0.0	52
12	16	47	51	78	1971	32	1963	28	51	65	1971	12	1963	0.095	51	0.97	1974	0.18	48	6.0	1973	0.3	47	7.	1989	27.5	51	0.1	51
12	17	48	50	73	1984	25	1973	27	50	47	1971	4	1989	0.084	50	1.31	2000	0.15	47	7.0	1973	0.4	46	13.	1973	27.9	50	0.0	50
12	18	48	50	73	1984	28	1989	26	50	49	2001	7	1973	0.083	50	1.84	1977	0.00	47	0.0	2002	0.4	46	10.	1973	28.2	50	0.0	50
12	19	47	50	65	1990	28	1989	26	50	46	1984	8	1973	0.076	50	0.79	1959	0.10	47	2.0	1982	0.4	46	8.	1973	28.8	50	0.0	50
12	20	47	50	65	1987	28	1985	28	50	47	2002	10	1989	0.061	50	0.66	2002	0.06	47	2.0	2000	0.3	46	7.	1989	28.1	50	0.0	50
12	21	46	50	68	1956	26	1963	27	50	53	1956	2	1963	0.163	50	2.14	1957	0.06	47	3.0	1973	0.2	46	7.	1989	28.6	50	0.0	50
12	22	45	50	72	1956	19	1989	24	50	46	1990	2	1989	0.092	50	1.06	1969	0.01	47	0.5	1981	0.2	46	7.	1989	30.5	50	0.0	50
12	23	48	50	71	1990	21	1989	26	50	55	1990	1	1989	0.060	50	1.20	1968	0.00	47	0.1	1993	0.2	46	7.	1989	27.9	50	0.0	50
12	24	47	50	66	1988	23	1989	27	50	50	1974	3	1983	0.119	49	2.01	1986	0.03	45	1.5	1998	0.3	45	7.	1989	27.9	50	0.0	50
12	25	47	49	74	1955	15	1983	27	49	50	1965	-1	1989	0.078	50	0.90	2002	0.00	46	0.0	2002	0.3	46	8.	1966	28.3	49	0.0	49
12	26	47	48	74	1955	24	1985	25	48	58	1982	-1	1983	0.065	50	1.02	1975	0.00	46	0.0	2002	0.2	44	6.	1989	29.1	48	0.0	48
12	27	46	48	71	1971	28	1989	25	48	59	1964	0	1966	0.012	50	0.39	1997	0.02	47	0.5	1997	0.2	44	6.	1989	29.5	48	0.0	48
12	28	48	48	76	1984	25	1993	27	48	51	1971	7	1966	0.144	50	1.59	1964	0.06	47	2.0	1993	0.2	44	6.	1989	28.0	48	0.0	48
12	29	48	49	77	1984	23	1993	28	49	57	1954	11	1977	0.125	50	1.45	1966	0.14	46	3.5	1993	0.4	45	6.	1966	27.3	49	0.0	49
12	30	48	49	71	1971	26	1983	28	49	58	1954	10	1976	0.117	49	1.70	1948	0.02	47	1.0	1997	0.2	44	5.	1993	27.6	49	0.0	49
12	31	48	50	70	1990	31	1998	26	50	46	1972	4	1993	0.098	51	1.53	1975	0.01	48	0.5	1998	0.1	45	4.	1993	28.4	50	0.0	50

ASHLAND 1 SW, VIRGINIA

Monthly Total Snowfall (Inches)

(440327)

File last updated on May 18,
*** Note *** Provisional Data *** After Year/Month 200401
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

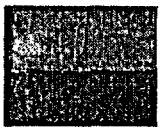
YEAR (S)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANN
1947-48	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1948-49	0.00z	0.00b	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1949-50	0.00	0.00	0.00	0.00	0.00	0.00n	0.00	3.70	2.30	0.00	0.00	0.00	6.00
1950-51	0.00	0.00	0.00z	0.00	1.00	3.10p	1.00b	0.00b	0.00	0.00	0.00	0.00z	2.00
1951-52	0.00z	0.00z	0.00z	0.00	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1952-53	0.00z	0.00z	0.00w	0.00	0.10	0.00	0.00	0.00	5.50	0.00	0.00	0.00	5.60
1953-54	0.00	0.00	0.00	0.00a	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	7.00
1954-55	0.00	0.00	0.00	0.00	0.00	0.00	6.30	0.00h	0.00	0.00	0.00	0.00	6.30
1955-56	0.00a	0.00z	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1956-57	0.00	0.00	0.00	0.00	0.00	0.00	0.00z	0.00	0.00	0.00	0.00	0.00	0.00
1957-58	0.00	0.00	0.00	0.00	0.00	3.50	1.00	0.00z	0.00z	0.00z	0.00z	0.00z	4.50
1958-59	0.00z	0.00z	0.00z	0.00z	0.00	0.00z	0.00z	0.00z	0.00	0.00	0.00	0.00	0.00
1959-60	0.00	0.00	0.00	0.00	0.00	0.00	0.00z	0.00z	0.00z	0.00	0.00	0.00	0.00
1960-61	0.00	0.00	0.00	0.00	0.00	0.00z	0.00z	8.60	0.00	0.00	0.00	0.00	8.60
1961-62	0.00	0.00	0.00	0.00	0.00	0.00z	0.00z	0.00z	15.00	0.00	0.00	0.00	15.00
1962-63	0.00	0.00	0.00	0.00	0.00a	0.00z	0.00z	4.50f	0.00	0.00	0.00	0.00	0.00
1963-64	0.00	0.00	0.00	0.00	0.00	0.00a	0.00z	9.50	3.00	0.00	0.00	0.00	12.50
1964-65	0.00	0.00	0.00	0.00	0.00	0.00	11.00	0.00z	0.00	0.00	0.00	0.00	11.00
1965-66	0.00	0.00	0.00	0.00	0.00	0.00	29.00a	0.00	0.00	0.00	0.00	0.00	29.00
1966-67	0.00	0.00	0.00	0.00	0.00a	0.00c	5.00	13.80	0.00	0.00	0.00	0.00	18.80
1967-68	0.00	0.00	0.00	0.00	0.00	0.00	0.00z	0.00a	0.00d	0.00	0.00z	0.00z	0.00
1968-69	0.00z	0.00	0.00	0.00	0.00a	1.00	0.00	0.00	2.50	0.00	0.00	0.00	3.50
1969-70	0.00	0.00	0.00	0.00	0.00	0.00a	0.50	0.00z	0.00z	0.00z	0.00z	0.00z	0.50
1970-71	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	10.20c	2.00	0.00	0.00	12.20
1971-72	0.00	0.00	0.00	0.00	1.70	0.00	0.00	18.50	0.00	0.00	0.00	0.00	20.20
1972-73	0.00	0.00	0.00	0.00	0.50	0.00	4.50	0.00	0.50	0.00	0.00	0.00	5.50
1973-74	0.00	0.00	0.00	0.00	0.00	19.00	0.00	5.50	0.50	0.00	0.00	0.00	25.00
1974-75	0.00	0.00	0.00	0.00	0.00	0.00	5.00	10.00	2.50	0.00	0.00	0.00	17.50
1975-76	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.70	0.50	0.00	0.00	0.00	2.00
1976-77	0.00	0.00	0.00	0.00	5.30	9.00	14.90	0.10	0.00	0.00	0.00	0.00	29.30
1977-78	0.00	0.00	0.00	0.00	0.00	0.00	8.50	7.20	8.70	0.00	0.00	0.00	24.40
1978-79	0.00	0.00	0.00	0.00	0.00	0.00	3.10	25.50	0.30	0.00	0.00	0.00	28.90
1979-80	0.00	0.00	0.00	0.20	0.00	0.00	17.50	7.60	13.50	0.00	0.00	0.00	38.80
1980-81	0.00	0.00	0.00	0.00	0.00	0.00	5.50	0.00	0.00	0.00	0.00	0.00	5.50

1981-82	0.00	0.00	0.00	0.00	1.00	3.00	12.80	17.60	0.00	0.70	0.00	0.00	35.10
1982-83	0.00	0.00	0.00	0.00	0.00	10.50	0.00	16.70	0.00	0.00	0.00	0.00	27.20
1983-84	0.00	0.00	0.00	0.00	1.00	0.10	4.70	3.00	0.80	0.00	0.00	0.00	9.60
1984-85	0.00	0.00	0.00	0.00	0.00	0.00	11.40	0.10	0.10	0.00	0.00	0.00	11.60
1985-86	0.00	0.00	0.00	0.00	0.00	1.00	9.50	6.20	0.30	0.00	0.00	0.00	17.00
1986-87	0.00	0.00	0.00	0.00	0.00	0.00	25.00	6.90	0.80	0.60	0.00	0.00	33.30
1987-88	0.00	0.00	0.00	0.00	6.00	0.00	9.50	0.20	2.20	0.50	0.00	0.00	18.40
1988-89	0.00	0.00	0.00	0.00	0.00	2.20	0.00	9.60	1.00	0.00	0.00	0.00	12.80
1989-90	0.00	0.00	0.00	0.00	3.90	16.50	0.00	0.10	0.30	0.70	0.00	0.00	21.50
1990-91	0.00	0.00	0.00	0.00	0.00	0.70	0.30	2.00	0.00	0.00	0.00	0.00	3.00
1991-92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00	0.00	0.00	1.10
1992-93	0.00	0.00	0.00	0.00	0.00	0.10	0.00	6.00	7.00	0.00	0.00	0.00	13.10
1993-94	0.00	0.00	0.00	0.00	0.00	5.60	4.30	3.90	2.00	0.00	0.00	0.00	15.80
1994-95	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.50	0.00	0.00	0.00	0.00	10.50
1995-96	0.00	0.00	0.00	0.00	0.00	6.50	30.20	18.50	5.20	0.00	0.00	0.00	60.40
1996-97	0.00	0.00	0.00	0.00	1.00	1.50	5.00	3.10	0.00	0.00	0.00	0.00	10.60
1997-98	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
1998-99	0.00	0.00	0.00	0.00	0.00	2.00	0.30	2.00	4.00	0.00	0.00	0.00	8.30
1999-00	0.00	0.00	0.00	0.00	0.00	0.00	12.80	2.00	0.00	0.00	0.00	0.00	14.80
2000-01	0.00	0.00	0.00	0.00	0.00	2.00	0.50	4.00	2.00	0.00	0.00	0.00	8.50
2001-02	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	8.00
2002-03	0.00	0.00	0.00	0.00	0.00	6.00	7.50	16.80	0.00	0.00	0.00	0.00	30.30
2003-04	0.00	0.00	0.00	0.00	0.00z	2.80	7.30o	0.20	0.00z	0.00z	0.00z	0.00z	3.00
Period of Record Statistics													
MEAN	0.00	0.00	0.00	0.00	0.41	1.98	6.05	5.03	1.78	0.09	0.00	0.00	17.85
S.D.	0.00	0.00	0.00	0.03	1.22	4.12	7.65	6.55	3.44	0.32	0.00	0.00	12.72
SKEW	0.00	0.00	0.00	7.14	3.56	2.75	1.65	1.37	2.45	4.65	0.00	0.00	1.12
MAX	0.00	0.00	0.00	0.20	6.00	19.00	30.20	25.50	15.00	2.00	0.00	0.00	60.40
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10
NO YRS	50	51	51	54	53	48	45	46	51	52	51	50	35

Richmond International Airport

Richmond, VA, United States

ASOS Photographs
Other Stations in Richmond
List Stations in Division VA-02
List Stations in Henrico County
List Stations within 5, 10, 25, or 50 miles



Type* : ASOS-NWS
Call Sign/ICS* : RIC / KRIC
WBAN* : 13740
COOP ID* : 447201
Climate Division* : VA-02 - Eastern Piedmont
WMO ID* : 72401
In Service* : 01 Aug 1928 to Present
Elevation* : 50.0m (164.0') above s/l
Lat/Lon* : 37°30'N / 77°19'W 46.6 miles
County* : Henrico

- About this Station
- Data Inventories
- DATA
- Station History
- State Climatologist
- Regional Climate Center

Information at Other Sites
- National Weather Service
  - Eastern Region Headquarters
  - Regional Forecast Office
  - Current Weather Conditions
  - Current Weather Forecast
- Current Radar
- Current Satellite
- Sunrise/Sunset

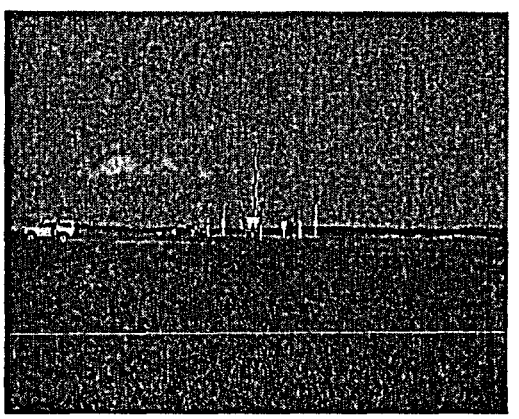
* *Disclaimer*
* *List of NCDC Datasets*
* *Please report any Data Errors found.*
* *Note to webmasters: you can link directly to this page.*

Other Stations in Richmond

Richmond Ashland Hanover Co M
Richmond Byrd Aab
Richmond Chimborazo
Richmond City Locks
Richmond Civic Center
Richmond Three Chopt
Richmond Westham Gage

About this Station

Richmond is located in east-central Virginia at the head of navigation on the James River and along a line separating the Coastal Plains (Tidewater Virginia) from the Piedmont. The Blue Ridge Mountains lie about 90 miles to the west and the Chesapeake Bay 60 miles to the east. Elevations range from a few feet above sea level along the river to a little over 300 feet in parts of the western section of the city.



The climate might be classified as modified continental. Summers are warm and humid and winters generally mild. The mountains to the west act as a partial barrier to outbreaks of cold, continental air in winter. The cold winter air is delayed long enough to be modified, then further warmed as it subsides in its approach to Richmond. The open waters of the Chesapeake

Bay and Atlantic Ocean contribute to the humid summers and mild winters. The coldest weather normally occurs in late December and January, when low temperatures usually average in the upper 20s, and the high temperatures in the upper 40s. Temperatures seldom lower to zero, but there have been several occurrences of below zero temperatures. Summertime high temperatures above 100 degrees are not uncommon, but do not occur every year.

Precipitation is rather uniformly distributed throughout the year. However, dry periods lasting several weeks do occur, especially in autumn when long periods of pleasant, mild weather are most common. There is considerable variability in total monthly amounts from year to year. Snow usually remains on the ground only one or two days at a time. Ice storms (freezing rain or glaze) are not uncommon, but they are seldom severe enough to do any considerable damage. A notable exception was the spectacular glaze storm of January 27-28, 1943, when nearly 1 inch of ice accumulation caused heavy damage to trees and overhead transmission lines. The James River reaches tidewater at Richmond where flooding may occur in every month of the year, most frequently in March and least in July. Hurricanes and tropical storms have been responsible for most of the flooding during the summer and early fall months. Hurricanes passing near Richmond have produced record rainfalls. In 1955, three hurricanes brought record rainfall to Richmond within a six-week period. The most noteworthy of these were Hurricanes Connie and Diane that brought heavy rains five days apart.

Damaging storms occur mainly from snow and freezing rain in winter and from hurricanes, tornadoes, and severe thunderstorms in other seasons. Damage may be from wind, flooding, or rain, or from any combination of these. Tornadoes are infrequent but some notable occurrences have been observed within the Richmond area.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is October 26 and the average last occurrence in the spring is April 10.

Data Inventories

Please note that additional data (digital and non-digital) may be available for this station. Contact NCDC if additional details are needed.

Click on the following where available:

- *DAT to obtain digital ascii data (charges may apply).*
  Please do not order these data if you do not know what a Digital ASCII File is.
- *INV to view inventory, or*
- *DOC to view documentation*

Surface
DAT INV DOC 3200 -Cooperative Summary Of The Day
DAT INV DOC 3210 -Summary Of The Day - First Order
DAT INV DOC SOD -Daily Surface Data (TD3200/3210 combined)
DAT INV DOC 3220 -Summary Of The Month (SOM) Cooperative
DAT INV DOC 3240 -Hourly Precipitation Data
DAT INV DOC 3280 -Surface Airways Hourly And Airways Solar Radiation
DAT INV DOC 3290 -Summary Observation
DAT INV DOC 3292 -Weather Duration
DAT INV DOC 9950 - (see Global Surface Station Information).

Upper Air
DAT INV DOC 6302 -

DATA

Additional data products may be available for this station. If you can't find what you are looking for here, please try our Most Popular Products page.

Forms, Publications, and Web Pages
Graphs and Other Images
CD-ROMs
Digital ASCII Files

Forms, Publications, and Web Pages

Most of these products are publications that have been converted to on-line access. As such, these documents have column headings and are displayed in an easy-to-read format.

For additional information and product samples, click on the ? icon next to the desired product.

? Hourly Surface Weather Observations (Form 10A/B)
? Hourly Precipitation Data for Virginia
? Hourly/Daily Data, Local Climatological Data (Unedited)
? Hourly/Daily Data, Local Climatological Data (Edited)
? Daily/Monthly/Annual Virginia Climatological Data
? Record of Climatological Observations
? Annual Climatological Summary
? Storm Data Publication

? Miscellaneous Storm Events in Henrico County
*All List Storms

Graphs and Other Images

Includes contour maps, time series, NEXRAD radar mosaics, and satellite images.

For additional information and product samples, click on the ? icon next to the desired product.

? National Mosaic Reflectivity Images
? Miscellaneous Satellite Images
? Graph Weather Elements using CLIMVIS

Period of Record	Elements Available
1928-08 thru 1942-12:	ABCDE
1946-04 thru 1998-07:	ABCDEFGHIJKLMNOP

Please ensure that the parameters you enter are within the parameters specified in the above table. Otherwise you will receive no data.

Element 1 (A) Daily Maximum Temperature
Element 2 (B) Daily Minimum Temperature

Year/Month [ ] [January] Submit Graph Values

CD-ROMs

The following are some of the more popular CD-ROMs that contain data for this station. Others are available that may contain summarized data for this station. A complete list of CD-ROMs is available in the OnLine Store.

For additional information, click on the ? icon next to the desired product.

- ? Hourly U.S. Weather Observations, 1990-1995
- ? NCDC Cooperative Station Data
- ? Solar and Meteorological Surface Observational Network
- ? U.S. Hourly Precipitation Data

Digital ASCII Files

These files may or may not contain column headers. In order to use these files, you will need to import them into a spreadsheet or database package for presentation. Please do not order these data if you do not know what a Digital ASCII File is. A sample Digital ASCII File is available for viewing but content varies a great deal depending on your request. Other digital files are available Offline that may contain data for this station.

For additional information and product samples, click on the ? icon next to the desired product.

- ? SOD -Daily Surface Data (TD3200/3210 combined)
- ? 3220 -Summary Of The Month (SOM) Cooperative
- ? 3240 -Hourly Precipitation Data

Station History

Richmond International Airport

Date Began	Date Ended	Lat/Lon	Elevation meters/feet	COOP ID	WBAN	Call Sign	WMO ID	Type
RICHMOND INTERNATIONAL AP								
01 Oct 1995	Present	37°30'N / 77°19'W	50.0m / 164.0'	447201	13740	RIC	72401	ASOS-NWS
RICHMOND R E BYRD INT'L ARPT								
14 Sep 1995	01 Oct 1995	37°30'N / 77°19'W	50.0m / 164.0'	447201	13740	RIC	72401	.
01 Jan 1995	14 Sep 1995	37°31'N / 77°20'W	50.0m / 164.0'	447201	13740	RIC	72401	.
10 Dec 1992	01 Jan 1995	37°31'N / 77°20'W	50.0m / 164.0'	447201	13740	RIC	72401	.

01 Jan 1982	10 Dec 1992	37°30'N / 77°20'W	50.0m / 164.0'	447201	13740	RIC	72401	.
01 Jan 1973	01 Jan 1982	37°30'N / 77°20'W	50.0m / 164.0'	447201	13740	RIC	72401	WSO
18 Feb 1971	01 Jan 1973	37°30'N / 77°20'W	50.0m / 164.0'	447201	13740	RIC	72401	WBAS
RICHMOND BYRD FIELD								
01 Jan 1971	18 Feb 1971	37°30'N / 77°20'W	50.0m / 164.0'	447201	13740	RIC	72401	WBAS
01 Jan 1950	01 Jan 1971	37°30'N / 77°20'W	54.9m / 180.1'	447201	13740	.	.	WBAS
31 Jan 1948	01 Jan 1950	37°30'N / 77°20'W	50.9m / 167.0'	447201	13740	.	.	WBAS
01 Jan 1948	31 Jan 1948	37°30'N / 77°20'W	50.9m / 167.0'	447201	13740	.	.	WBAS
01 Apr 1946	01 Jan 1948	37°30'N / 77°20'W	50.9m / 167.0'	.	13740	.	.	WBAS
24 Sep 1942	31 Dec 1942	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	WBAS
RICHMOND INTL AP								
01 Jan 1940	24 Sep 1942	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	WBAS
31 Mar 1939	01 Jan 1940	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	.
01 Jan 1938	31 Mar 1939	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	WBAS
01 Jan 1937	01 Jan 1938	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	CAA
30 Sep 1935	01 Jan 1937	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	.
01 Aug 1935	30 Sep 1935	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	CAA
31 Dec 1930	01 Aug 1935	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	.
01 Feb 1930	31 Dec 1930	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	WBAS
30 Nov 1928	01 Feb 1930	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	.
01 Aug 1928	30 Nov 1928	37°30'N / 77°20'W	50.0m / 164.0'	.	13740	.	.	WBAS

Top of Page

NCDC / Climate-Radar Data Inventories / Locate Station / Search

This page dynamically generated 18 Nov 2003 from:
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Please see the NCDC Contact Page if you have questions or comments.

Back to:
State Map | Southeast Map | Home Page

NOTE:
To print data frame (right side), click on right frame before printing.

1971 - 2000

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1971-2000 Normals (~3 KB)

1961 - 1990

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1961-1990 Normals (~3 KB)

Period of Record

- Station Metadata
- Station Metadata Graphics

General Climate Summary Tables
- Temperature
- Precipitation
- Heating Degree Days
- Cooling Degree Days
- Growing Degree Days

Temperature
- Daily Extremes and Averages
- Spring 'Freeze' Probabilities
- Fall 'Freeze' Probabilities
- 'Freeze Free' Probabilities
- Monthly Temperature Listings
  Average

RICHMOND WSO AIRPORT, VIRGINIA (447201)

Period of Record Monthly Climate Summary

Period of Record : 8/ 1/1948 to 3/31/2003

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	47.1	50.4	58.9	70.1	77.7	85.2	88.7	87.0	80.7	70.6	60.6	50.2	68.9
Average Min. Temperature (F)	27.5	29.5	36.2	45.3	54.4	63.0	67.9	66.6	59.3	47.3	37.8	30.2	47.1
Average Total Precipitation (in.)	3.20	3.03	3.83	2.96	3.60	3.58	4.86	4.73	3.58	3.38	3.14	3.19	43.09
Average Total SnowFall (in.)	4.6	4.4	2.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.2	13.9
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 99.1% Min. Temp.: 99.1% Precipitation: 99.9% Snowfall: 92.6% Snow Depth: 92.7%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

RICHMOND WSO AIRPORT, VIRGINIA

Period of Record General Climate Summary - Temperature

Station:(447201) RICHMOND WSO AIRPORT															
From Year=1948 To Year=2003															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	47.1	27.5	37.3	81	30/2002	-6	21/1985	49.7	50	25.2	***	0.0	3.2	21.6	0.2
February	50.4	29.5	40.0	82	24/1985	-8	10/1979	48.5	76	28.6	***	0.0	1.5	18.5	0.1
March	58.9	36.2	47.5	91	29/1985	11	14/1960	53.7	77	35.9	***	0.0	0.3	11.0	0.0
April	70.1	45.3	57.7	96	26/1960	23	10/1985	63.2	94	52.7	66	0.8	0.0	1.9	0.0
May	77.6	54.4	66.0	98	30/1991	31	09/1956	72.1	91	60.6	67	2.3	0.0	0.1	0.0
June	85.1	63.0	74.1	104	26/1952	40	02/1967	78.0	94	70.1	55	8.9	0.0	0.0	0.0
July	88.7	67.9	78.3	105	06/1977	51	02/1965	82.4	93	74.6	100	14.7	0.0	0.0	0.0
August	87.0	66.6	76.8	102	31/1953	47	30/1965	80.7	80	73.0	64	10.9	0.0	0.0	0.0
September	80.7	59.3	70.0	103	07/1954	35	24/1974	74.8	70	65.5	63	3.8	0.0	0.0	0.0
October	70.6	47.3	58.9	94	01/1954	21	27/1962	66.1	84	52.9	87	0.4	0.0	1.4	0.0
November	60.6	37.8	49.2	86	01/1950	14	29/1955	56.6	85	42.7	76	0.0	0.0	9.7	0.0
December	50.2	30.2	40.2	81	06/1998	1	16/1958	48.9	56	31.3	89	0.0	1.5	19.5	0.0
Annual	68.9	47.1	58.0	105	19770706	-8	19790210	61.0	90	55.4	66	41.7	6.4	83.6	0.3
Winter	49.2	29.1	39.2	82	19850224	-8	19790210	44.2	50	34.1	77	0.0	6.2	59.6	0.3
Spring	68.8	45.3	57.1	98	19910530	11	19600314	61.0	91	54.2	60	3.1	0.3	12.9	0.0
Summer	86.9	65.8	76.4	105	19770706	40	19670602	78.6	93	73.8	65	34.5	0.0	0.0	0.0
Fall	70.6	48.1	59.4	103	19540907	14	19551129	63.3	85	55.3	76	4.1	0.0	11.1	0.0

Table updated on Dec 9,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

RICHMOND WSO AIRPORT, VIRGINIA

Period of Record General Climate Summary - Precipitation

Station:(447201) RICHMOND WSO AIRPORT														
From Year=1948 To Year=2003														
	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	3.20	7.97	78	0.64	81	3.31	06/1962	10	6	2	1	4.6	26.2	66
February	3.03	5.97	79	0.48	78	2.64	24/1979	9	6	2	1	4.4	21.6	83
March	3.83	8.65	84	0.94	66	3.14	07/1992	11	7	3	1	2.2	20.1	60
April	2.99	7.31	87	0.64	63	2.76	16/1987	10	6	2	1	0.1	1.2	57
May	3.69	8.87	72	0.87	65	3.05	11/1981	11	7	3	1	0.0	0.0	49
June	3.59	8.82	72	0.38	80	3.91	18/1972	9	6	2	1	0.0	0.0	49
July	4.94	13.90	69	0.51	83	4.90	22/1969	11	7	3	1	0.0	0.0	49
August	4.73	14.10	55	0.81	65	8.79	12/1955	9	6	3	1	0.0	0.0	49
September	3.58	16.60	99	0.26	78	4.53	16/1999	8	5	2	1	0.0	0.0	49
October	3.38	9.39	71	0.01	100	4.76	20/1961	7	5	2	1	0.0	0.0	49
November	3.14	7.64	59	0.17	101	3.00	24/1959	8	5	2	1	0.4	7.3	53
December	3.19	7.07	73	0.40	80	2.46	29/1958	9	6	3	1	2.2	14.5	58
Annual	43.29	61.31	75	28.29	70	8.79	19550812	113	74	29	11	13.9	47.0	62
Winter	9.42	15.93	79	3.80	81	3.31	19620106	29	19	7	2	11.2	35.6	67
Spring	10.51	19.09	84	4.81	85	3.14	19920307	31	20	8	2	2.3	20.1	60
Summer	13.26	27.57	69	6.09	53	8.79	19550812	30	19	9	4	0.0	0.0	49
Fall	10.10	19.86	99	2.96	101	4.76	19611020	24	16	6	3	0.4	7.3	53

Table updated on Dec 9,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@cirrus.dnr.state.sc.us

RICHMOND WSO AIRPORT, VIRGINIA

Period of Record Daily Climate Summary

Daily Records for station 447201 RICHMOND WSO AIRPORT state: va

For temperature and precipitation, multi-day accumulations
are not considered either for records or averages.
The year given is the year of latest occurrence.

Period requested -- Begin : 1/ 1/1890 -- End : 3/31/2003
Period used -- Begin : 8/ 1/1948 -- End : 3/31/2003

Cooling degree threshold = 65.00 Heating degree threshold = 65.00

AVG Multi-year unsmoothed average of the indicated quantity
HI Highest value of indicated quantity for this day of year
LO Lowest value of indicated quantity for this day of year
YR Latest year of occurrence of the extreme value
NO Number of years with data for this day of year.
Units: English (inches and degrees F)

		Maximum Temperature						Minimum Temperature						Precipitation				Snowfall				Snowdepth				Heat		Cool	
MO	DY	AVG	NO	HI	YR	LO	YR	AVG	NO	HI	YR	LO	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	AVG	NO	HIGH	YR	HDD	NO	CDD	NO
1	1	49	54	78	1952	34	1977	31	54	54	1966	14	1977	0.115	55	1.20	1987	0.14	53	4.9	1962	0.1	52	3.	1994	25.4	54	0.0	54
1	2	48	55	69	2000	32	1969	29	55	48	1952	11	1977	0.051	55	1.36	1979	0.00	53	0.0	2003	0.1	52	4.	1962	27.1	55	0.0	55
1	3	49	55	74	2000	31	2002	29	55	55	1950	12	2001	0.129	55	1.81	1999	0.16	53	7.7	2002	0.2	52	7.	2002	26.3	55	0.0	55
1	4	48	55	75	1950	28	1958	30	55	57	1950	11	1979	0.083	55	0.75	2000	0.04	53	1.6	1980	0.2	52	6.	2002	26.2	55	0.0	55
1	5	46	55	76	1950	27	1969	27	55	58	1950	6	1981	0.095	55	1.32	1993	0.33	53	13.3	1980	0.1	52	5.	2002	28.5	55	0.0	55
1	6	47	55	73	1950	25	1988	28	55	59	1950	8	1969	0.161	55	3.31	1962	0.24	53	6.0	1996	0.5	52	13.	1980	27.8	55	0.0	55
1	7	48	55	72	1982	21	1996	29	55	61	1998	12	1988	0.123	55	1.18	1996	0.31	53	4.5	1988	0.4	52	11.	1980	26.6	55	0.0	55
1	8	44	55	71	1998	20	1970	27	55	62	1998	6	1970	0.132	55	1.17	1978	0.14	53	3.9	1973	0.4	52	6.	1988	29.6	55	0.0	55
1	9	45	55	68	1965	12	1970	27	55	47	2003	2	1970	0.112	55	1.09	1964	0.09	53	1.7	1977	0.3	52	5.	1988	29.3	55	0.0	55
1	10	46	55	73	1950	22	1982	27	55	50	1972	2	1970	0.127	55	1.77	1984	0.16	53	7.1	1962	0.3	52	4.	1988	28.7	55	0.0	55
1	11	45	55	72	1975	16	1982	27	55	58	1975	4	1982	0.126	55	1.78	1975	0.20	53	7.6	1955	0.4	52	6.	1955	29.3	55	0.0	55
1	12	44	55	68	1963	21	1981	25	55	52	1963	4	1988	0.067	55	0.76	1950	0.13	53	3.8	1964	0.3	52	5.	1955	30.8	55	0.0	55
1	13	46	55	72	1995	27	1982	26	55	49	1992	2	1981	0.119	55	1.59	1978	0.08	53	1.5	1964	0.2	52	4.	1964	29.1	55	0.0	55
1	14	47	55	74	1995	26	1988	27	55	57	1995	8	1964	0.105	55	1.06	1980	0.16	53	5.7	1982	0.2	52	3.	1964	28.1	55	0.0	55
1	15	46	55	75	1952	26	1957	28	55	58	1995	0	1964	0.093	55	0.84	1998	0.17	53	3.6	1966	0.3	52	7.	1982	28.0	55	0.0	55
1	16	46	55	73	1953	20	1972	26	55	51	1991	3	1977	0.059	55	0.64	1965	0.32	53	6.3	1965	0.5	52	7.	1982	29.4	55	0.0	55
1	17	46	55	72	1990	17	1977	24	55	47	1949	-1	1977	0.052	55	1.11	1978	0.08	53	2.6	1985	0.5	52	8.	1965	30.5	55	0.0	55
1	18	46	55	69	1990	19	1977	27	55	54	1990	0	1957	0.085	55	1.43	1980	0.04	53	1.2	1994	0.3	52	5.	1965	28.6	55	0.0	55
1	19	45	55	72	1974	12	1994	27	55	49	1951	-1	1994	0.162	55	1.57	1987	0.19	53	5.1	1967	0.3	52	5.	1967	29.3	55	0.0	55
1	20	46	55	74	1951	20	1994	27	55	50	1954	-2	1985	0.105	55	1.03	1979	0.16	52	4.2	1985	0.3	52	4.	1967	28.8	55	0.0	55
1	21	46	55	72	1959	15	1985	26	55	52	1959	-6	1985	0.104	55	1.20	1949	0.03	52	1.7	1961	0.3	52	4.	1985	29.2	55	0.0	55
1	22	48	55	71	1959	25	1970	27	55	43	1999	-1	1970	0.135	55	1.67	1954	0.29	53	7.4	1987	0.2	52	4.	1985	27.9	55	0.0	55
1	23	49	55	76	1974	23	2003	28	55	56	1999	7	1977	0.080	55	1.74	1998	0.02	52	1.1	1954	0.3	52	6.	1987	26.5	55	0.0	55
1	24	50	55	76	1950	27	1963	29	55	55	1950	7	1987	0.124	55	1.70	1953	0.04	53	1.1	1968	0.2	52	6.	1987	25.6	55	0.0	55
1	25	49	55	79	1950	24	1987	30	55	52	1950	12	1961	0.138	55	1.16	1978	0.12	52	5.0	1987	0.3	52	6.	2000	25.6	55	0.0	55

1	26	50	55	80	1950	19	1961	29	55	58	1950	12	1968	0.100	55	1.28	1966	0.38	53	13.2	1966	0.5	52	12.	1987	25.8	55	0.1	55
1	27	49	55	74	1974	27	1987	27	55	56	1952	5	1961	0.097	55	1.32	1976	0.05	53	1.6	1966	0.8	52	15.	1966	26.9	55	0.0	55
1	28	48	55	72	1999	24	1986	27	55	50	1974	-1	2000	0.145	55	2.07	1952	0.17	53	7.7	1962	0.7	52	14.	1987	28.0	55	0.0	55
1	29	49	55	77	1975	18	1966	27	55	52	1970	6	1987	0.031	55	0.74	1966	0.14	53	5.7	1966	0.7	52	13.	1987	27.4	55	0.0	55
1	30	48	55	81	2002	18	1966	29	55	54	2002	10	1966	0.064	55	1.16	2000	0.18	52	3.2	1965	0.8	52	14.	1966	26.6	55	0.0	55
1	31	46	55	67	1982	27	1951	27	55	49	2002	7	1966	0.062	55	0.82	1957	0.05	53	1.7	1980	0.6	52	12.	1966	28.7	55	0.0	55
2	1	49	55	79	2002	25	1971	28	55	53	1988	3	1965	0.096	55	1.25	1985	0.09	51	1.8	1966	0.5	49	11.	1966	26.7	55	0.0	55
2	2	48	55	78	1989	23	1961	29	55	47	1990	3	1971	0.183	55	1.91	1973	0.28	52	5.3	1972	0.6	50	12.	1966	26.5	55	0.0	55
2	3	47	55	77	1989	21	1996	27	55	46	1990	6	1966	0.124	55	1.17	1961	0.10	52	2.5	1961	0.4	50	10.	1966	28.5	55	0.0	55
2	4	47	55	72	1991	18	1996	27	55	51	1952	8	1996	0.118	55	2.26	1998	0.04	52	2.1	1975	0.3	49	8.	1966	27.9	55	0.0	55
2	5	47	55	76	1991	21	1996	27	55	46	1962	-2	1996	0.056	55	0.88	1960	0.05	51	1.3	1984	0.3	50	6.	1966	28.6	55	0.0	55
2	6	48	55	65	1990	28	1988	27	55	51	1991	3	1966	0.100	55	0.98	1956	0.19	51	3.7	1983	0.1	50	5.	1966	27.7	55	0.0	55
2	7	47	55	63	1963	28	1979	28	55	49	1991	9	1995	0.173	55	1.37	1971	0.21	51	6.4	1979	0.4	50	5.	1979	27.8	55	0.0	55
2	8	47	55	71	1965	31	1995	27	55	52	1965	7	1967	0.084	55	1.29	1961	0.18	51	4.9	1974	0.3	50	5.	1979	28.5	55	0.0	55
2	9	48	55	72	1990	26	1951	27	55	49	1949	8	1979	0.069	55	0.66	1969	0.18	51	4.6	1967	0.2	50	5.	1974	28.0	55	0.0	55
2	10	50	55	73	1959	29	1973	27	55	53	1960	-8	1979	0.060	55	0.58	1994	0.19	51	4.4	1983	0.4	50	8.	1967	26.9	55	0.0	55
2	11	51	55	70	1977	23	1979	28	55	56	1966	-1	1979	0.164	55	1.49	1983	0.35	51	13.3	1983	0.5	49	11.	1983	25.9	55	0.0	55
2	12	47	55	74	1999	25	1955	27	55	50	1965	8	1968	0.098	55	1.15	1993	0.05	50	1.0	1962	0.5	50	12.	1983	28.0	55	0.0	55
2	13	47	55	75	1951	27	1979	27	55	47	1984	8	1979	0.099	55	1.09	1960	0.25	51	8.3	1960	0.4	49	10.	1983	27.9	55	0.0	55
2	14	52	54	79	1949	28	1979	29	55	58	1949	7	1979	0.087	55	1.41	1984	0.22	51	6.4	1965	0.6	49	9.	1983	25.0	54	0.1	54
2	15	52	55	82	1989	32	1963	31	55	58	1949	18	1963	0.119	55	1.56	1953	0.15	51	6.3	1958	0.7	49	11.	1964	23.8	55	0.1	55
2	16	50	55	78	1976	24	1987	31	55	61	1990	10	1963	0.127	55	0.66	2001	0.22	52	8.3	1996	0.4	50	8.	1996	24.8	55	0.0	55
2	17	49	55	81	1976	19	1958	30	55	58	1976	4	1958	0.122	55	1.20	1998	0.22	51	4.0	1972	0.4	50	5.	1987	26.0	55	0.1	55
2	18	50	55	77	1976	14	1979	30	55	58	1976	6	1979	0.104	55	1.04	2000	0.39	51	7.6	1989	0.5	50	6.	1964	25.2	55	0.0	55
2	19	54	55	78	1961	32	1993	32	55	55	1961	10	1979	0.100	55	1.12	1972	0.17	51	4.4	1972	0.7	50	14.	1979	22.0	55	0.0	55
2	20	52	55	73	1994	31	1959	32	55	51	1971	3	1979	0.031	55	0.45	1967	0.00	51	0.0	2003	0.4	49	13.	1979	23.1	55	0.0	55
2	21	54	55	73	1997	33	1968	31	55	54	1953	13	1970	0.100	55	1.33	1954	0.03	51	1.2	1993	0.2	49	8.	1979	22.9	55	0.0	55
2	22	55	55	73	1985	27	1963	32	55	51	1981	6	1968	0.089	55	0.95	1987	0.00	51	0.0	2003	0.1	50	3.	1979	22.0	55	0.0	55
2	23	53	55	75	1985	33	1999	32	55	49	1996	12	1963	0.171	55	1.87	1969	0.03	51	1.3	1989	0.0	49	0.	2000	22.5	55	0.0	55
2	24	54	55	82	1985	31	1989	32	55	56	1985	18	1967	0.128	55	2.64	1979	0.21	51	5.4	1952	0.1	49	3.	1989	22.1	55	0.1	55
2	25	54	55	77	2000	29	1967	31	55	47	2000	10	1967	0.094	55	1.36	1979	0.05	51	2.3	1950	0.1	49	4.	1989	22.9	55	0.0	55
2	26	52	55	77	1977	31	2003	31	55	56	1957	11	1970	0.109	55	1.15	1957	0.37	51	5.3	1963	0.0	49	1.	1993	23.9	55	0.0	55
2	27	53	55	79	1997	30	1963	31	55	53	1977	9	1963	0.077	55	1.19	1982	0.17	51	6.5	1982	0.2	49	5.	1963	23.0	55	0.0	55
2	28	55	55	79	1976	32	1978	33	55	50	1955	16	1994	0.120	55	1.28	1997	0.18	51	7.3	1964	0.2	49	3.	1982	21.1	55	0.0	55
2	29	54	13	79	1972	40	1980	31	13	47	1972	20	1980	0.052	13	0.68	1968	0.20	12	2.4	1968	0.1	12	1.	1964	23.0	13	0.0	13
3	1	54	55	80	1976	21	1980	33	55	52	1987	13	1980	0.116	55	0.85	1983	0.41	52	10.6	1980	0.4	49	9.	1980	22.0	55	0.0	55
3	2	56	55	81	1972	24	1980	34	55	63	1972	16	1980	0.112	55	2.41	1994	0.25	51	5.1	1953	0.5	49	12.	1980	20.6	55	0.1	55
3	3	54	55	79	1974	29	1960	34	55	51	1991	15	1950	0.149	55	0.97	1971	0.21	51	5.5	1960	0.6	48	13.	1980	21.4	55	0.0	55
3	4	55	55	81	1983	32	1960	34	55	60	1974	14	1996	0.096	55	1.83	1993	0.00	51	0.1	1995	0.4	48	9.	1980	21.0	55	0.1	55
3	5	58	55	84	1976	31	1960	37	55	63	1961	14	2002	0.102	55	1.35	1962	0.19	50	9.3	1962	0.2	48	6.	1960	18.2	55	0.3	55
3	6	58	55	84	1961	34	1960	35	55	61	1961	15	1960	0.130	55	1.36	1989	0.11	50	5.3	1962	0.3	48	11.	1962	19.1	55	0.1	55
3	7	56	55	83	1974	31	1960	34	55	61	1983	12	1960	0.135	55	3.14	1992	0.04	52	1.2	1969	0.3	49	9.	1962	20.2	55	0.1	55
3	8	57	55	85	2000	29	1989	33	55	58	1980	15	1986	0.107	55	1.88	1995	0.04	52	1.8	1996	0.2	49	5.	1962	20.6	55	0.1	55
3	9	55	55	82	2000	28	1960	34	55	54	2000	16	1996	0.097	55	1.81	1998	0.28	51	5.4	1960	0.2	48	4.	1962	20.7	55	0.1	55
3	10	56	55	79	2000	33	1960	33	55	52	1992	16	1996	0.071	55	1.90	1978	0.04	51	1.0	1976	0.4	48	8.	1960	20.9	55	0.0	55
3	11	57	55	82	1990	33	1960	33	55	56	1955	15	1960	0.070	55	0.68	2000	0.00	51	0.0	2003	0.1	48	6.	1960	20.0	55	0.0	55
3	12	58	55	89	1990	36	1960	35	55	54	1990	19	1960	0.099	55	1.77	1968	0.00	51	0.0	2003	0.1	48	4.	1960	18.7	55	0.1	55
3	13	58	55	89	1990	34	1984	37	55	63	1990	15	1960	0.195	54	1.99	1993	0.13	51	2.8	1993	0.1	48	4.	1960	18.1	55	0.3	55
3	14	59	55	87	1990	34	1993	36	55	59	1990	11	1960	0.107	55	1.48	1999	0.01	51	0.7	1993	0.1	48	3.	1960	18.0	55	0.2	55
3	15	59	55	82	1973	38	1988	36	55	57	1990	17	1993	0.073	55	0.68	2001	0.00	51	0.0	2003	0.1	48	3.	1960	17.9	55	0.2	55
3	16	58	55	82	1990	37	1960	36	55	65	1990	18	1979	0.147	55	1.04	1963	0.22	51	5.9	1950	0.1	48	5.	1950	18.7	55	0.2	55
3	17	59	55	82	1982	43	1961	35	55	55	1990	19	1970	0.142	55	1.14	1975	0.01	51	0.4	1960	0.1	48	3.	1960	18.3	55	0.0	55
3	18	57	55	82	1989	37	1967	36	55	52	2003	18	1967	0.133	55	1.00	1983	0.00	51	0.1	1981	0.0	48	0.	1997	18.9	55	0.0	55
3	19	58	55	78	1978	39	1958	36	55	58	1986	17	1967	0.160	55	1.64	1998	0.00	51	0.1	1981	0.0	49	0.	1997	18.3	55	0.0	55
3	20	58	55	80	1976	39	1964	36	55	48	1975	22	1956	0.152	55	2.55	2003	0.04	51	1.0	1965	0.0	48	0.	1997	18.2	55	0.0	55
3	21	59	55	90	1968	38	1986	38	55	52	1968	21	1965	0.204	55	2.39	1983	0.02	51	1.1	1973	0.0	48	0.	1997	17.1	55	0.2	55
3	22	59	55	89	1968	41	1961	37	55	60	1968	19	1988	0.089	55	1.01	1961	0.01	51	0.3	1973	0.0	48	0.	1997	17.6	55	0.2	55

3	23	61	55	82	1994	42	1989	35	55	58	1966	21	2002	0.071	55	1.02	1952	0.00	51	0.0	2003	0.0	48	0.	1997	17.2	55	0.1	55
3	24	63	55	83	1994	38	1983	37	55	57	1994	22	1992	0.135	55	1.58	1952	0.00	51	0.0	2003	0.0	48	0.	1997	15.2	55	0.1	55
3	25	60	55	83	1959	40	1974	37	55	54	1988	22	1956	0.105	55	2.20	1984	0.00	51	0.0	2003	0.0	48	0.	1997	16.4	55	0.0	55
3	26	62	55	80	2003	36	1971	39	55	60	1949	21	1974	0.164	55	1.78	1978	0.16	51	8.4	1971	0.0	48	1.	1971	14.8	55	0.1	55
3	27	63	55	85	1949	42	1958	39	55	65	1949	21	1955	0.107	55	1.33	1994	0.00	51	0.0	2003	0.2	49	8.	1971	14.8	55	0.3	55
3	28	64	55	85	1989	40	1996	39	55	62	1991	23	2001	0.082	55	1.80	1984	0.00	51	0.0	2003	0.0	48	0.	1997	13.9	55	0.4	55
3	29	66	55	91	1985	41	1956	42	55	63	1985	23	1966	0.188	55	2.82	1991	0.01	51	0.3	1984	0.0	48	0.	1997	12.2	55	0.8	55
3	30	65	55	88	1998	40	1970	44	55	66	1977	26	1964	0.153	55	1.94	1975	0.11	51	5.3	1964	0.0	48	0.	1997	11.7	55	0.7	55
3	31	63	55	89	1986	44	1983	41	55	62	1998	17	1964	0.125	55	1.13	1962	0.01	51	0.7	1964	0.0	48	1.	1964	13.7	55	0.4	55
4	1	67	54	88	1978	43	1964	42	54	67	1998	27	1965	0.100	54	0.89	1996	0.02	50	1.2	1964	0.0	48	1.	1964	11.5	54	0.4	54
4	2	69	54	89	1967	50	1992	42	54	56	1999	26	1964	0.061	54	0.88	1959	0.00	50	0.0	2002	0.0	48	0.	1997	10.1	54	0.4	54
4	3	68	54	93	1963	52	1992	43	54	60	1963	27	1972	0.062	54	0.87	1960	0.00	50	0.0	2002	0.0	48	0.	1997	10.2	54	0.6	54
4	4	67	54	86	1956	40	1954	43	54	64	1974	26	1992	0.126	54	1.45	1998	0.00	51	0.0	2002	0.0	49	0.	1997	10.9	54	0.8	54
4	5	65	54	83	1985	45	1993	41	54	60	1985	27	1964	0.136	54	1.05	1960	0.00	51	0.0	2002	0.0	49	0.	1997	12.2	54	0.2	54
4	6	63	54	84	1988	44	1996	41	54	57	1994	27	1975	0.114	54	1.22	1971	0.00	51	0.0	2002	0.0	49	0.	1997	13.2	54	0.1	54
4	7	67	54	89	1967	45	1989	41	54	58	1954	25	1977	0.118	54	1.04	1989	0.02	51	0.6	1971	0.0	49	0.	1997	11.7	54	0.5	54
4	8	68	54	89	1959	37	1972	41	54	59	1983	28	1990	0.106	54	1.36	1957	0.00	50	0.0	2002	0.0	48	0.	1997	11.2	54	0.5	54
4	9	66	54	92	2001	42	1996	42	54	66	1991	27	1972	0.081	54	1.04	1998	0.00	50	0.2	1982	0.0	48	0.	1997	12.1	54	1.0	54
4	10	67	54	86	1992	52	1998	42	54	61	1994	23	1985	0.089	54	1.41	1958	0.00	50	0.0	2002	0.0	48	0.	1997	11.5	54	0.6	54
4	11	67	54	90	1977	48	1958	42	53	58	1992	27	1960	0.067	54	1.06	1962	0.00	50	0.0	2002	0.0	48	0.	1997	10.9	53	0.3	53
4	12	69	54	92	1977	48	1988	44	54	61	1965	28	1973	0.106	54	1.54	1959	0.00	50	0.0	2002	0.0	48	0.	1997	9.3	54	0.6	54
4	13	67	54	91	1977	43	1959	44	54	64	1994	25	1976	0.104	54	1.45	1979	0.02	50	1.2	1957	0.0	48	1.	1957	10.5	54	0.6	54
4	14	69	54	90	1977	48	1950	44	54	63	1974	26	1950	0.068	54	1.16	1984	0.00	50	0.0	2002	0.0	48	0.	1997	9.2	54	0.7	54
4	15	70	54	89	1967	47	1975	46	54	63	1967	31	1957	0.183	54	2.51	1983	0.00	50	0.0	2002	0.0	48	0.	1997	8.1	54	1.0	54
4	16	70	54	93	1976	54	1962	46	54	62	2002	33	1988	0.123	54	2.76	1987	0.00	50	0.0	2002	0.0	48	0.	1997	8.2	54	1.1	54
4	17	71	54	96	1976	50	1986	45	54	64	2002	31	1949	0.097	54	1.67	2000	0.00	50	0.0	2002	0.0	48	0.	1997	8.1	54	1.3	54
4	18	73	54	95	1976	47	1983	47	54	64	2002	29	1951	0.056	54	0.64	2000	0.00	50	0.0	2002	0.0	48	0.	1997	6.9	54	1.4	54
4	19	73	54	93	1985	48	1983	48	54	63	1985	29	2001	0.062	54	0.74	1959	0.00	50	0.0	2002	0.0	48	0.	1997	6.7	54	2.1	54
4	20	73	54	95	1985	52	1991	48	54	65	2002	32	1953	0.031	54	0.39	1981	0.00	50	0.0	2002	0.0	48	0.	1997	6.6	54	1.7	54
4	21	73	54	92	1985	55	1997	47	54	64	1957	28	1956	0.067	54	0.93	1992	0.00	50	0.2	1953	0.0	48	0.	1997	6.6	54	1.4	54
4	22	74	54	96	1985	49	1984	49	54	62	1992	34	1953	0.130	54	1.59	1984	0.00	50	0.0	2002	0.0	48	0.	1997	6.0	54	2.0	54
4	23	75	54	95	1985	48	1997	50	54	65	1977	33	1978	0.083	54	0.63	1974	0.00	51	0.0	2002	0.0	49	0.	1997	5.4	54	2.4	54
4	24	74	54	93	1960	48	1956	49	54	65	1975	35	1993	0.130	54	2.14	1987	0.00	51	0.0	2002	0.0	49	0.	1997	5.9	54	2.0	54
4	25	73	54	92	1960	45	1965	48	54	67	1976	31	1956	0.133	54	1.52	1952	0.00	50	0.0	2002	0.0	48	0.	1997	6.6	54	1.6	54
4	26	73	54	96	1960	50	1978	48	54	62	1989	35	1981	0.150	54	2.60	1978	0.00	50	0.0	2002	0.0	48	0.	1997	6.3	54	1.7	54
4	27	73	54	96	1990	51	1967	48	54	63	1994	31	1976	0.149	54	1.20	1973	0.00	50	0.0	2002	0.0	48	0.	1997	6.5	54	1.8	54
4	28	72	54	93	1957	51	1966	49	54	64	1956	34	1978	0.053	54	1.16	1997	0.00	50	0.0	2002	0.0	48	0.	1997	6.4	54	1.9	54
4	29	72	54	94	1974	51	1966	49	54	67	1956	36	1987	0.093	54	1.45	1994	0.00	50	0.0	2002	0.0	48	0.	1997	6.4	54	1.8	54
4	30	75	54	93	1974	55	1964	49	54	63	1991	31	1961	0.064	54	0.75	1996	0.00	50	0.0	2002	0.0	48	0.	1997	4.7	54	1.4	54
5	1	76	54	93	1986	55	1964	51	54	63	1989	36	1996	0.081	54	1.10	1961	0.00	50	0.0	2002	0.0	48	0.	1997	3.7	54	1.8	54
5	2	75	54	90	1954	51	1995	51	54	65	1983	37	1978	0.119	54	1.12	1995	0.00	51	0.0	2002	0.0	49	0.	1997	4.2	54	2.0	54
5	3	75	54	92	1965	60	1985	50	54	65	1954	34	1963	0.119	54	1.16	1972	0.00	50	0.0	2002	0.0	48	0.	1997	4.4	54	1.8	54
5	4	74	54	92	1965	53	1994	50	54	64	1958	32	1986	0.108	54	1.90	1978	0.00	51	0.0	2002	0.0	49	0.	1997	4.7	54	1.4	54
5	5	75	54	91	1980	53	1974	50	54	66	1953	36	1966	0.117	54	1.80	1989	0.00	51	0.0	2002	0.0	49	0.	1997	4.4	54	1.8	54
5	6	77	54	95	1950	54	1958	51	54	65	1953	41	1973	0.083	54	1.39	1958	0.00	50	0.0	2002	0.0	48	0.	1997	3.4	54	2.4	54
5	7	76	54	92	1986	49	1992	52	54	65	2000	37	1970	0.146	54	1.96	1967	0.00	50	0.0	2002	0.0	48	0.	1997	3.5	54	2.1	54
5	8	76	54	91	2000	60	1956	51	54	66	1961	37	1974	0.110	54	1.06	1972	0.00	50	0.0	2002	0.0	48	0.	1997	3.8	54	1.9	54
5	9	76	54	94	1963	60	1962	50	54	67	1964	31	1956	0.072	54	1.38	2002	0.00	51	0.0	2002	0.0	49	0.	1997	4.3	54	1.9	54
5	10	77	54	94	1963	57	1966	53	54	65	2002	35	1966	0.081	54	1.35	1990	0.00	50	0.0	2002	0.0	48	0.	1997	3.1	54	3.1	54
5	11	78	54	89	2001	56	1949	54	54	68	1979	32	1966	0.112	54	3.05	1981	0.00	50	0.0	2002	0.0	48	0.	1997	2.5	54	2.7	54
5	12	78	54	92	1956	55	1960	54	54	67	1979	41	1954	0.052	54	0.61	1960	0.00	50	0.0	2002	0.0	48	0.	1997	2.7	54	3.6	54
5	13	77	54	94	2000	58	1967	54	54	72	1980	36	1969	0.119	54	0.75	1993	0.00	51	0.0	2002	0.0	49	0.	1997	3.3	54	3.3	54
5	14	76	54	94	1956	53	1954	54	54	66	1957	42	1997	0.108	54	1.48	1972	0.00	51	0.0	2002	0.0	48	0.	1997	3.1	54	2.5	54
5	15	77	54	97	1962	57	1954	54	54	68	1983	38	1984	0.115	54	0.78	1981	0.00	50	0.0	2002	0.0	48	0.	1997	2.5	54	2.9	54
5	16	77	54	90	1965	60	1971	54	54	70	1976	39	1984	0.089	54	1.65	1971	0.00	50	0.0	2002	0.0	48	0.	1997	2.5	54	2.9	54
5	17	78	54	94	1974	63	2001	55	54	69	1990	36	1984	0.084	54	1.32	1963	0.00	51	0.0	2002	0.0	48	0.	1997	2.3	54	3.6	54
5	18	79	54	95	1962	61	1951	56	54	71	1995	38	1973	0.166	54	1.67	1992	0.00	51	0.0	2002	0.0	48	0.	1997	1.8	54	4.0	54

5	19	79	54	97	1962	52	1981	56	53	71	1997	42	2002	0.142	54	1.00	1954	0.00	51	0.0	2002	0.0	48	0.	1997	1.9	53	4.2	53
5	20	78	54	95	1996	58	1981	56	54	67	1959	41	2002	0.164	54	1.80	1986	0.00	50	0.0	2002	0.0	48	0.	1997	2.3	54	4.1	54
5	21	78	54	93	1962	61	2002	57	54	71	1996	39	1950	0.059	54	1.24	1988	0.00	50	0.0	2002	0.0	48	0.	1997	1.7	54	4.1	54
5	22	80	53	93	1984	57	1967	56	53	68	1959	38	2002	0.102	53	1.20	1990	0.00	49	0.0	2002	0.0	47	0.	1997	1.5	53	3.8	53
5	23	81	54	94	1970	66	1998	58	54	68	1970	41	2002	0.114	54	1.03	1951	0.00	50	0.0	2002	0.0	48	0.	1997	1.1	54	5.2	54
5	24	81	54	94	1970	59	1967	58	54	70	1957	42	1963	0.149	54	1.42	1962	0.00	51	0.0	2002	0.0	49	0.	1997	1.1	54	5.1	54
5	25	79	54	93	1991	60	1992	58	54	68	1982	39	1967	0.143	54	2.25	1958	0.00	51	0.0	2002	0.0	49	0.	1997	1.4	54	4.7	54
5	26	79	54	94	1991	56	1992	57	54	69	1989	43	1988	0.124	54	1.58	1990	0.00	51	0.0	2002	0.0	49	0.	1997	1.7	54	4.4	54
5	27	77	54	94	1991	57	1961	56	54	72	1991	41	1961	0.115	54	1.54	1968	0.00	50	0.0	2002	0.0	48	0.	1997	1.9	54	3.3	54
5	28	78	54	93	1991	60	1968	57	54	72	1991	38	1961	0.143	54	1.02	1981	0.00	50	0.0	2002	0.0	48	0.	1997	1.8	54	3.9	54
5	29	80	54	96	1991	58	2000	58	54	70	1959	42	1997	0.147	54	1.70	1984	0.00	51	0.0	2002	0.0	49	0.	1997	1.4	54	4.8	54
5	30	80	54	98	1991	58	1971	59	54	70	1959	44	1964	0.130	54	1.15	1992	0.00	50	0.0	2002	0.0	48	0.	1997	1.4	54	5.3	54
5	31	82	54	98	1991	60	1967	59	54	74	1991	46	1996	0.170	54	2.11	1972	0.00	51	0.0	2002	0.0	49	0.	1997	1.0	54	6.2	54
6	1	83	54	97	1991	66	1966	60	54	75	2002	43	1966	0.141	54	2.34	2001	0.00	51	0.0	2002	0.0	49	0.	1997	0.8	54	7.0	54
6	2	83	54	98	1951	60	1964	60	54	70	1991	40	1967	0.173	54	2.24	1956	0.00	50	0.0	2002	0.0	48	0.	1997	0.7	54	6.6	54
6	3	81	54	93	1951	58	1997	59	54	71	1999	43	1967	0.194	54	3.41	1963	0.00	50	0.0	2002	0.0	48	0.	1997	1.0	54	5.5	54
6	4	81	54	93	1951	66	1982	58	54	73	1981	44	1988	0.070	54	0.97	1987	0.00	50	0.0	2002	0.0	49	0.	1997	0.6	54	4.9	54
6	5	83	54	96	2002	67	2000	59	54	71	2002	45	1965	0.145	54	2.53	1985	0.00	50	0.0	2002	0.0	48	0.	1997	0.5	54	6.1	54
6	6	84	54	96	1952	66	1997	60	54	71	1981	45	1976	0.070	54	0.97	2001	0.00	50	0.0	2002	0.0	48	0.	1997	0.2	54	7.4	54
6	7	84	54	99	1984	61	1997	62	54	73	1994	50	1998	0.133	54	1.66	1989	0.00	51	0.0	2002	0.0	49	0.	1997	0.4	54	8.0	54
6	8	85	54	96	1999	69	1957	61	54	73	1992	44	1977	0.082	54	2.06	1969	0.00	51	0.0	2002	0.0	49	0.	1997	0.3	54	8.2	54
6	9	85	54	98	1999	60	1955	62	54	74	1981	47	1949	0.114	54	1.43	1953	0.00	50	0.0	2002	0.0	48	0.	1997	0.5	54	8.6	54
6	10	85	54	98	1964	70	1988	63	54	73	1985	49	1960	0.066	54	1.10	1951	0.00	50	0.0	2002	0.0	48	0.	1997	0.3	54	8.6	54
6	11	84	54	97	1984	70	1972	62	54	72	1968	48	1972	0.065	54	0.93	1955	0.00	50	0.0	2002	0.0	48	0.	1997	0.2	54	7.8	54
6	12	85	54	99	1984	71	1966	62	54	74	1986	46	1972	0.136	54	2.26	1962	0.00	50	0.0	2002	0.0	48	0.	1997	0.1	54	8.6	54
6	13	85	54	98	1954	68	1976	63	54	73	1986	50	1985	0.231	54	2.18	1959	0.00	50	0.0	2002	0.0	48	0.	1997	0.1	54	8.9	54
6	14	85	54	98	1994	65	1953	63	54	76	1981	47	1985	0.080	54	0.95	1961	0.00	51	0.0	2002	0.0	49	0.	1997	0.2	54	8.8	54
6	15	85	54	99	1994	62	1965	63	54	73	2001	47	1978	0.127	54	1.50	1965	0.00	50	0.0	2002	0.0	48	0.	1997	0.2	54	8.9	54
6	16	85	54	100	1991	59	1965	63	54	75	1981	52	1961	0.106	54	1.33	2001	0.00	51	0.0	2002	0.0	49	0.	1997	0.3	54	9.2	54
6	17	84	54	97	1991	61	1965	63	54	75	2000	48	1961	0.142	54	1.55	1976	0.00	50	0.0	2002	0.0	48	0.	1997	0.3	54	8.5	54
6	18	85	54	100	1970	70	1966	63	54	73	1985	48	1961	0.140	54	3.91	1972	0.00	50	0.0	2002	0.0	48	0.	1997	0.3	54	9.0	54
6	19	85	54	97	1994	69	1955	64	54	74	1984	50	1965	0.073	54	1.29	1992	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	9.3	54
6	20	86	54	96	1950	62	1999	65	54	74	1993	52	1966	0.168	54	2.96	1983	0.00	50	0.0	2002	0.0	48	0.	1997	0.1	54	10.3	54
6	21	86	54	97	1988	68	1999	65	54	73	1976	52	1980	0.144	54	2.42	1972	0.00	51	0.0	2002	0.0	49	0.	1997	0.1	54	10.3	54
6	22	87	54	99	1988	73	1958	65	54	74	2000	48	1992	0.136	54	2.98	1991	0.00	50	0.0	2002	0.0	48	0.	1997	0.1	54	11.0	54
6	23	87	54	101	1988	62	1972	66	54	74	1996	49	1992	0.079	54	0.81	1988	0.00	51	0.0	2002	0.0	49	0.	1997	0.2	54	11.3	54
6	24	87	54	98	2002	75	1974	65	54	73	1956	52	1972	0.066	54	2.13	1996	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.0	54
6	25	88	54	100	1952	75	1979	65	54	75	1952	51	1979	0.067	54	2.06	1967	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.3	54
6	26	88	54	104	1952	74	1961	66	54	76	1968	51	1979	0.109	54	1.66	1987	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.3	54
6	27	88	54	100	1952	69	1961	65	54	74	1998	49	1960	0.096	54	1.68	1952	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.6	54
6	28	87	54	99	1959	64	1974	65	54	77	1983	55	1970	0.133	54	2.13	2000	0.00	50	0.0	2002	0.0	48	0.	1997	0.1	54	11.1	54
6	29	88	54	101	1980	76	1962	66	54	75	1953	53	1970	0.174	54	2.46	1999	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.4	54
6	30	89	54	99	1959	78	1949	66	54	76	1991	56	1974	0.107	54	1.79	1999	0.00	51	0.0	2002	0.0	49	0.	1997	0.0	54	12.2	54
7	1	88	54	99	1954	72	1986	67	54	76	1968	53	1988	0.149	54	4.58	1959	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.1	54
7	2	89	54	100	1953	76	2001	66	54	75	1968	51	1965	0.076	54	0.66	1970	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.1	54
7	3	89	54	100	1954	67	1962	67	54	76	1980	53	2001	0.120	54	2.11	1962	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.9	54
7	4	89	54	100	2002	73	1962	67	54	76	1983	56	1986	0.151	54	1.57	1981	0.00	51	0.0	2002	0.0	49	0.	1997	0.0	54	12.8	54
7	5	88	54	101	1990	70	1972	67	54	76	1999	52	1967	0.173	54	2.70	1956	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.3	54
7	6	88	54	105	1977	73	1961	66	54	77	1999	55	1979	0.146	54	1.77	1969	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.6	54
7	7	88	54	103	1977	77	1972	66	54	74	1993	56	2001	0.061	54	0.88	1977	0.00	51	0.0	2002	0.0	49	0.	1997	0.0	54	11.9	54
7	8	89	54	102	1993	75	1969	67	54	75	1994	54	1983	0.137	54	1.39	1961	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.5	54
7	9	90	54	101	1990	72	1950	68	54	76	1957	55	1963	0.200	54	2.79	1955	0.00	51	0.0	2002	0.0	49	0.	1997	0.0	54	13.3	54
7	10	88	54	101	1993	74	1969	68	54	79	1992	55	1963	0.124	54	1.10	1959	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.8	54
7	11	88	54	100	1990	78	1999	67	54	76	1989	53	1963	0.158	54	3.01	1975	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.0	54
7	12	87	54	98	1986	70	1965	67	54	76	1993	52	2002	0.266	54	2.71	1982	0.00	51	0.0	2002	0.0	49	0.	1997	0.0	54	11.8	54
7	13	88	54	101	1954	71	1999	67	54	76	1992	53	1976	0.150	54	1.76	1975	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.2	54
7	14	89	54	103	1954	73	1999	68	54	78	1954	57	1976	0.175	54	1.81	1959	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	13.3	54

7	15	89	54	100	1995	76	1966	68	54	77	1993	59	2001	0.214	54	1.50	1996	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	13.3	54
7	16	89	54	101	1980	73	1978	69	54	77	1983	55	1960	0.229	54	3.53	1949	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	13.6	54
7	17	90	54	100	1980	74	1989	68	54	76	1988	58	1954	0.087	54	1.54	1956	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	13.7	54
7	18	90	54	101	1977	80	2001	69	54	75	1982	59	1966	0.056	54	0.89	1962	0.00	51	0.0	2002	0.0	49	0.	1997	0.0	54	14.1	54
7	19	90	54	98	1977	80	1965	69	54	76	1952	58	1976	0.156	54	1.97	1990	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	14.6	54
7	20	90	54	100	1977	76	1958	69	54	76	1981	57	1966	0.185	54	2.33	1959	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	14.3	54
7	21	90	54	101	1987	72	1950	69	54	76	1980	55	2001	0.159	54	2.33	1979	0.00	51	0.0	2002	0.0	49	0.	1997	0.0	54	14.0	54
7	22	90	54	103	1952	78	2000	69	54	77	1991	55	1974	0.242	54	4.90	1969	0.00	51	0.0	2002	0.0	49	0.	1997	0.0	54	14.1	54
7	23	90	54	103	1952	77	1973	69	54	78	1991	55	1974	0.322	54	3.69	1988	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	14.0	54
7	24	88	54	99	1995	70	2000	69	54	77	1991	56	1977	0.151	54	1.59	1978	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	13.2	54
7	25	88	54	99	1987	72	2000	69	54	75	2001	59	1973	0.211	54	2.65	1965	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.9	54
7	26	88	54	99	1987	73	2000	68	54	76	1987	57	1976	0.133	54	1.87	1994	0.00	51	0.0	2002	0.0	49	0.	1997	0.0	54	13.0	54
7	27	89	54	99	1952	74	1991	69	54	75	1982	52	1962	0.092	54	1.04	1960	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	13.5	54
7	28	90	54	102	1952	74	1984	69	54	75	1958	52	1962	0.062	54	0.77	1982	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	14.1	54
7	29	87	54	101	1993	70	2001	69	54	75	2002	59	1977	0.195	54	2.14	1960	0.00	51	0.0	2002	0.0	49	0.	1997	0.0	54	12.7	54
7	30	88	54	103	1953	70	1972	68	54	76	2002	60	1997	0.101	54	2.23	1966	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.8	54
7	31	89	54	101	1954	79	1982	68	54	76	1999	56	1997	0.157	54	1.92	1960	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	13.6	54
8	1	89	54	99	2002	77	1996	68	54	75	1999	59	2001	0.145	55	1.65	1969	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	13.4	54
8	2	89	54	99	1993	79	1976	68	54	74	1979	57	1992	0.189	55	2.78	1972	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	13.1	54
8	3	88	54	99	1987	75	1953	68	54	79	1980	56	1959	0.238	55	3.27	1958	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.7	54
8	4	89	54	99	1980	73	1966	68	54	74	1987	58	1976	0.201	55	2.54	1948	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.9	54
8	5	88	54	99	1980	71	1966	68	54	75	1989	55	1951	0.123	55	1.77	1952	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.3	54
8	6	87	54	99	1977	74	1994	67	54	75	1989	57	1966	0.220	55	2.02	1978	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.6	54
8	7	87	54	99	1977	77	1966	67	54	77	2000	54	1957	0.104	55	2.86	1974	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.8	54
8	8	88	54	100	1977	77	1989	68	54	76	1999	57	2002	0.135	55	1.16	1985	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.7	54
8	9	89	54	99	1983	74	1990	68	54	74	2001	57	1975	0.203	55	3.72	1990	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.9	54
8	10	88	54	99	1977	66	1989	68	54	77	1987	58	2002	0.200	55	2.85	1960	0.00	50	0.0	2002	0.0	48	0.	1997	0.1	54	12.6	54
8	11	87	54	99	1980	69	1989	67	54	79	1977	54	1972	0.124	55	2.33	1979	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.1	54
8	12	87	54	101	1977	71	1986	66	54	78	1980	53	1954	0.350	55	8.79	1955	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.2	54
8	13	86	54	99	2002	67	1996	67	54	77	1995	56	1971	0.173	55	2.74	1949	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.2	54
8	14	88	54	100	1985	74	1992	67	54	75	1985	53	1983	0.152	55	1.44	1984	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.0	54
8	15	87	54	97	1985	69	1992	67	54	76	1980	51	1983	0.089	55	1.26	1992	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.1	54
8	16	87	54	101	1954	69	1992	67	54	75	1997	53	1963	0.072	55	1.03	1985	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.1	54
8	17	88	54	99	1988	73	1992	68	54	76	1997	56	1979	0.168	55	3.16	1977	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	12.5	54
8	18	86	54	97	2002	72	1954	67	54	76	1988	58	1981	0.269	55	5.58	1985	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.6	54
8	19	86	54	98	2002	68	1957	67	54	73	2002	54	1953	0.223	55	3.62	1957	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	10.9	54
8	20	85	54	102	1983	69	1949	65	54	73	2002	53	1998	0.211	55	2.67	1969	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	10.2	54
8	21	85	54	96	1962	63	1956	65	54	75	1968	55	1984	0.074	55	2.19	1963	0.00	50	0.0	2002	0.0	48	0.	1997	0.1	54	9.9	54
8	22	85	54	102	1983	67	1981	65	54	76	1959	56	2000	0.046	55	0.74	1950	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	9.9	54
8	23	86	54	101	2002	75	1952	65	54	77	2002	55	1997	0.082	55	1.04	1950	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	10.2	54
8	24	86	54	100	1998	73	1957	65	54	75	1968	50	1952	0.093	55	2.02	1967	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	10.1	54
8	25	86	54	99	1998	70	1957	64	54	72	2002	50	1952	0.120	55	1.90	1957	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	9.6	54
8	26	86	54	99	1975	69	1958	65	54	74	1979	53	1952	0.100	55	1.80	1964	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	10.0	54
8	27	87	54	97	1987	74	1971	66	54	75	1998	55	1963	0.201	55	1.56	2000	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	11.3	54
8	28	87	54	99	1953	70	1958	66	54	74	1998	50	1986	0.109	55	1.52	1949	0.00	50	0.0	2002	0.0	48	0.	1997	0.1	54	11.6	54
8	29	87	54	101	1953	68	2002	66	54	74	1993	47	1986	0.040	55	0.75	1988	0.00	50	0.0	2002	0.0	48	0.	1997	0.3	54	11.4	54
8	30	87	54	101	1953	72	2002	65	54	72	1998	47	1965	0.090	55	2.18	1964	0.00	50	0.0	2002	0.0	48	0.	1997	0.3	54	10.9	54
8	31	87	54	102	1953	70	1999	66	54	73	1959	47	1976	0.172	54	1.88	1964	0.00	50	0.0	2002	0.0	48	0.	1997	0.1	54	11.1	54
9	1	86	54	102	1953	71	2002	65	54	74	2000	54	1967	0.171	55	2.52	1975	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	10.1	54
9	2	85	54	100	1980	71	1955	64	54	76	1959	50	1967	0.089	55	1.92	1969	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	9.6	54
9	3	85	54	99	1984	71	1962	65	54	77	1993	48	1967	0.076	55	1.22	1974	0.00	50	0.0	2002	0.0	48	0.	1997	0.0	54	9.6	54
9	4	84	54	95	1970	70	1974	64	54	73	1993	50	1967	0.079	55	1.48	1999	0.00	50	0.0	2002	0.0	48	0.	1997	0.1	54	9.1	54
9	5	84	54	100	1954	67	1972	64	54	74	1979	51	1997	0.185	55	3.14	1953	0.00	50	0.0	2002	0.0	48	0.	1997	0.2	54	8.8	54
9	6	84	54	102	1954	67	1953	63	54	74	1979	49	1976	0.204	55	2.80	1974	0.00	50	0.0	2002	0.0	48	0.	1997	0.4	54	8.4	54
9	7	84	54	103	1954	65	1974	62	54	73	1985	45	1976	0.075	55	0.75	1975	0.00	50	0.0	2002	0.0	48	0.	1997	0.3	54	7.8	54
9	8	82	54	97	1954	70	1986	61	54	73	1987	47	1984	0.116	55	2.02	1999	0.00	50	0.0	2002	0.0	48	0.	1997	0.4	54	6.7	54
9	9	83	54	95	1985	68	1956	61	54	70	1992	47	1986	0.077	55	1.33	1977	0.00	50	0.0	2002	0.0	48	0.	1997	0.3	54	7.0	54

9	10	84	54	96	1985	70	1956	61	54	73	1985	44	1956	0.093	55	1.52	1960	0.00	50	0.0	2002	0.0	48	0.	1997	0.4	54	7.6	54
9	11	83	54	100	1983	66	1967	60	54	72	1971	43	1976	0.095	55	1.88	1996	0.00	50	0.0	2002	0.0	48	0.	1997	0.6	54	6.7	54
9	12	83	54	97	1983	70	1964	60	54	72	1989	43	1967	0.106	55	1.83	1953	0.00	50	0.0	2002	0.0	48	0.	1997	0.4	54	6.4	54
9	13	82	54	93	1998	59	1964	59	54	72	1957	46	1985	0.100	55	2.10	1965	0.00	50	0.0	2002	0.0	48	0.	1997	0.7	54	6.1	54
9	14	82	54	95	1980	64	1983	60	54	74	1979	44	1985	0.099	55	1.06	1973	0.00	50	0.0	2002	0.0	48	0.	1997	1.0	54	6.5	54
9	15	81	54	93	1994	58	1963	60	54	70	2002	44	1985	0.159	55	2.14	1976	0.00	50	0.0	2002	0.0	48	0.	1997	0.7	54	6.0	54
9	16	80	54	97	1991	65	1959	60	54	73	1991	44	1985	0.170	55	4.52	1999	0.00	50	0.0	2002	0.0	48	0.	1997	1.1	54	5.9	54
9	17	80	54	97	1991	64	1959	59	54	73	1991	40	1966	0.098	55	1.54	1957	0.00	50	0.0	2002	0.0	48	0.	1997	1.1	54	5.6	54
9	18	80	54	95	1978	63	1961	59	54	74	1991	43	1966	0.076	55	2.16	1975	0.00	50	0.0	2002	0.0	48	0.	1997	1.0	54	5.2	54
9	19	81	54	96	1978	67	1989	59	54	71	1978	43	1984	0.119	55	3.63	1955	0.00	50	0.0	2002	0.0	48	0.	1997	0.7	54	5.4	54
9	20	80	54	93	1997	62	1969	60	54	71	1988	43	1959	0.130	55	1.87	1989	0.00	50	0.0	2002	0.0	48	0.	1997	0.7	54	5.4	54
9	21	80	54	94	1980	65	1972	59	54	72	1989	39	1956	0.129	55	1.70	1966	0.00	50	0.0	2002	0.0	48	0.	1997	1.0	54	5.2	54
9	22	78	54	97	1980	64	1994	58	54	73	1992	40	1962	0.207	55	2.67	1994	0.00	50	0.0	2002	0.0	48	0.	1997	1.5	54	4.5	54
9	23	77	54	91	1988	57	1995	55	54	74	1980	37	1983	0.062	55	2.08	1975	0.00	50	0.0	2002	0.0	48	0.	1997	2.4	54	3.4	54
9	24	77	54	95	1970	60	1950	54	54	73	1970	35	1974	0.073	55	0.95	1991	0.00	50	0.0	2002	0.0	48	0.	1997	3.3	54	3.1	54
9	25	76	54	94	1986	58	1992	55	54	71	1986	37	1963	0.151	55	1.46	2000	0.00	50	0.0	2002	0.0	48	0.	1997	3.1	54	3.3	54
9	26	77	54	94	1986	55	2000	56	54	70	1977	40	1967	0.151	55	1.96	1985	0.00	50	0.0	2002	0.0	48	0.	1997	2.4	54	3.5	54
9	27	77	54	96	1998	59	1956	56	54	70	1976	44	2001	0.123	55	2.05	1985	0.00	50	0.0	2002	0.0	48	0.	1997	2.3	54	3.4	54
9	28	76	54	93	1954	52	1984	55	54	67	1998	41	1957	0.076	55	1.19	1999	0.00	50	0.0	2002	0.0	48	0.	1997	2.3	54	2.5	54
9	29	75	54	92	1973	56	1984	54	54	71	1979	42	1951	0.087	55	0.75	1960	0.00	50	0.0	2002	0.0	48	0.	1997	3.0	54	2.1	54
9	30	75	54	91	1986	59	1983	54	54	72	1954	39	1961	0.188	55	2.12	1959	0.00	50	0.0	2002	0.0	48	0.	1997	3.0	54	2.0	54
10	1	75	54	94	1954	58	1984	54	54	71	1959	38	1993	0.183	55	1.46	1954	0.00	50	0.0	2002	0.0	48	0.	1997	2.9	54	2.3	54
10	2	76	54	91	1986	55	1958	53	54	69	1986	38	1966	0.166	55	1.54	1969	0.00	50	0.0	2002	0.0	48	0.	1997	3.1	54	2.4	54
10	3	75	54	92	1954	54	1974	52	54	68	1971	31	1974	0.085	55	1.40	1985	0.00	50	0.0	2002	0.0	48	0.	1997	4.1	54	2.5	54
10	4	74	54	94	1986	57	1996	53	54	74	1986	28	1974	0.087	55	2.04	1964	0.00	50	0.0	2002	0.0	48	0.	1997	4.4	54	2.5	54
10	5	75	54	93	1954	58	1965	51	54	69	1995	32	1965	0.116	55	2.11	1948	0.00	50	0.0	2002	0.0	48	0.	1997	4.8	54	2.8	54
10	6	74	54	92	1997	55	1957	50	54	66	1995	33	1965	0.175	55	3.94	1957	0.00	50	0.0	2002	0.0	48	0.	1997	5.0	54	1.8	54
10	7	72	54	88	1997	57	1954	49	54	67	1959	34	1966	0.084	55	1.86	1951	0.00	50	0.0	2002	0.0	48	0.	1997	6.3	54	1.5	54
10	8	72	54	90	1990	53	2000	48	54	67	1959	33	1964	0.123	55	2.93	1996	0.00	50	0.0	2002	0.0	48	0.	1997	6.4	54	1.2	54
10	9	73	54	87	1990	52	1952	50	54	71	1959	33	2001	0.090	55	1.02	1996	0.00	50	0.0	2002	0.0	48	0.	1997	5.2	54	1.6	54
10	10	72	54	88	1997	51	1979	49	54	69	1959	36	1977	0.084	55	1.52	1971	0.00	50	0.0	2002	0.0	48	0.	1997	6.1	54	1.3	54
10	11	72	54	87	1962	54	1952	48	54	70	1990	32	1964	0.054	55	1.16	2002	0.00	50	0.0	2002	0.0	48	0.	1997	6.2	54	1.2	54
10	12	72	54	87	1962	51	1987	48	54	65	1983	29	1964	0.007	55	0.09	1983	0.00	50	0.0	2002	0.0	48	0.	1997	6.3	54	0.8	54
10	13	73	54	90	1954	54	1977	48	54	69	1990	32	1988	0.074	55	1.26	1983	0.00	50	0.0	2002	0.0	48	0.	1997	5.9	54	1.1	54
10	14	73	54	87	1975	52	1977	49	54	66	1954	27	1988	0.147	55	2.09	1977	0.00	50	0.0	2002	0.0	48	0.	1997	5.5	54	1.5	54
10	15	73	54	90	1985	58	1959	48	54	65	1985	34	1987	0.034	55	1.15	1954	0.00	50	0.0	2002	0.0	48	0.	1997	5.8	54	1.2	54
10	16	72	54	86	1975	55	1997	48	54	63	1968	36	1987	0.073	55	0.85	1964	0.00	50	0.0	2002	0.0	48	0.	1997	6.0	54	0.9	54
10	17	69	54	85	1968	51	1976	47	54	66	1989	33	1973	0.109	55	1.36	1991	0.00	50	0.0	2002	0.0	48	0.	1997	7.5	54	0.5	54
10	18	71	54	84	1968	53	1997	46	54	67	1980	28	1977	0.146	55	2.91	1996	0.00	50	0.0	2002	0.0	48	0.	1997	7.7	54	0.6	54
10	19	67	54	84	1991	50	1972	46	54	63	1968	28	1976	0.164	55	2.83	1966	0.00	50	0.0	2002	0.0	48	0.	1997	9.3	54	0.5	54
10	20	68	54	89	1984	50	1972	45	54	65	1984	28	1992	0.188	55	4.75	1961	0.00	50	0.0	2002	0.0	48	0.	1997	9.2	54	0.5	54
10	21	68	54	86	1993	51	1974	44	54	66	1984	27	1974	0.191	55	2.65	1958	0.00	50	0.0	2002	0.0	48	0.	1997	9.6	54	0.5	54
10	22	69	54	84	1984	54	1998	45	54	68	1984	24	1974	0.070	55	1.77	1956	0.00	50	0.0	2002	0.0	48	0.	1997	8.8	54	0.5	54
10	23	70	54	86	1978	50	1982	45	54	63	1971	27	1976	0.174	55	3.17	1971	0.00	50	0.0	2002	0.0	48	0.	1997	7.9	54	0.3	54
10	24	68	54	86	2001	50	1981	46	54	64	1971	27	1969	0.058	55	0.52	1959	0.00	50	0.0	2002	0.0	48	0.	1997	8.6	54	0.3	54
10	25	67	54	80	1991	50	1982	44	54	66	1971	28	1962	0.135	55	1.54	1980	0.00	50	0.0	2002	0.0	48	0.	1997	9.8	54	0.3	54
10	26	66	54	82	1984	49	1962	43	54	63	1971	30	1960	0.135	55	4.35	1977	0.00	50	0.0	2002	0.0	48	0.	1997	10.9	54	0.2	54
10	27	67	54	85	1984	47	1976	44	54	66	1977	21	1962	0.055	55	1.04	1995	0.00	50	0.0	2002	0.0	48	0.	1997	10.4	54	0.4	54
10	28	67	54	86	1984	48	1976	44	54	68	1984	25	1976	0.116	55	1.82	1949	0.00	50	0.0	2002	0.0	48	0.	1997	10.4	54	0.4	54
10	29	65	54	86	1984	48	2002	42	54	68	1984	22	1976	0.072	55	1.81	1953	0.00	50	0.0	2002	0.0	48	0.	1997	11.9	54	0.2	54
10	30	65	54	84	1961	45	2002	42	54	65	1971	23	1965	0.105	55	1.07	1949	0.00	50	0.0	2002	0.0	48	0.	1997	11.8	54	0.2	54
10	31	67	54	85	1950	50	1993	44	54	68	1971	27	1963	0.059	55	0.64	1949	0.00	50	0.0	2002	0.0	48	0.	1997	10.2	54	0.5	54
11	1	68	54	86	1974	49	1988	45	54	67	1971	26	1954	0.207	55	2.44	1956	0.00	50	0.0	2002	0.0	48	0.	1996	9.0	54	0.3	54
11	2	68	54	84	1974	43	1951	45	54	70	1971	24	1976	0.136	55	1.66	1956	0.00	50	0.0	2002	0.0	48	0.	1996	9.4	54	0.7	54
11	3	67	54	83	1974	47	1951	43	54	65	1977	28	1951	0.110	55	1.27	1962	0.00	50	0.0	2002	0.0	48	0.	1996	10.5	54	0.4	54
11	4	64	54	84	1974	47	1991	42	54	66	1977	26	1966	0.101	55	1.69	1985	0.00	50	0.0	2002	0.0	48	0.	1996	12.6	54	0.5	54
11	5	62	54	83	1975	45	1991	41	54	67	1977	25	1991	0.092	55	0.72	2002	0.02	50	0.9	1962	0.0	48	0.	1996	14.2	54	0.4	54

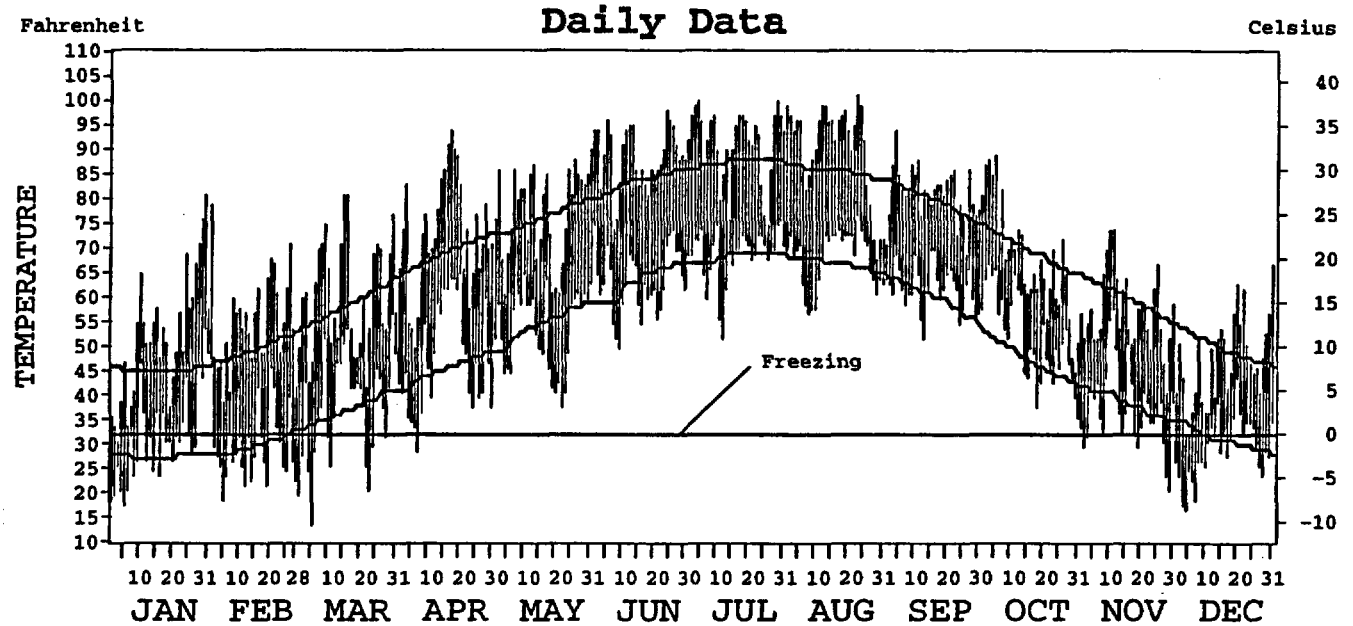
11	6	62	54	81	1975	38	1953	39	54	64	1977	22	1991	0.185	55	2.71	1959	0.14	50	7.2	1953	0.0	48	1.	1953	15.2	54	0.1	54
11	7	61	54	79	1978	43	1959	38	54	65	1977	22	1973	0.105	55	1.99	1997	0.00	50	0.1	1953	0.1	48	3.	1953	15.9	54	0.1	54
11	8	62	54	82	1975	45	1991	38	54	62	1975	20	1967	0.092	55	1.68	1972	0.00	50	0.1	1991	0.0	48	0.	1996	15.2	54	0.1	54
11	9	63	54	81	1986	43	1991	39	54	60	1986	17	1976	0.088	55	2.22	1962	0.00	50	0.0	2002	0.0	48	0.	1996	14.7	54	0.2	54
11	10	62	54	79	1966	44	1991	40	54	63	1966	27	1973	0.161	55	1.64	1983	0.00	50	0.0	2002	0.0	48	0.	1996	14.4	54	0.2	54
11	11	61	54	80	1964	36	1987	38	54	58	2002	23	1973	0.112	55	1.76	1979	0.09	50	4.5	1987	0.0	48	1.	1968	15.9	54	0.0	54
11	12	60	54	78	1949	42	1976	38	54	57	1982	20	1987	0.101	55	1.73	1968	0.04	50	1.2	1968	0.1	48	4.	1987	16.3	54	0.0	54
11	13	60	54	81	1955	43	1997	37	54	59	1985	21	1976	0.043	55	0.48	1975	0.00	50	0.0	2002	0.0	48	0.	1996	16.7	54	0.1	54
11	14	63	54	81	1993	39	1996	38	54	60	1993	18	1976	0.055	55	0.77	1970	0.00	50	0.0	2002	0.0	48	0.	1996	15.3	54	0.3	54
11	15	62	54	86	1993	39	1969	38	54	67	1993	25	1996	0.049	55	1.02	1983	0.00	50	0.0	2002	0.0	48	0.	1996	15.3	54	0.2	54
11	16	63	54	85	1955	39	1967	39	54	55	1958	20	1967	0.075	55	1.24	1978	0.00	50	0.0	2002	0.0	48	0.	1996	14.6	54	0.1	54
11	17	60	54	77	1963	40	1980	38	54	54	1958	24	1997	0.090	55	1.02	1988	0.00	50	0.0	2002	0.0	48	0.	1996	16.1	54	0.0	54
11	18	60	54	76	1958	34	1959	36	54	58	1958	21	1959	0.051	55	1.55	1962	0.00	50	0.0	2002	0.0	48	0.	1996	17.4	54	0.0	54
11	19	59	54	76	1976	37	1951	37	54	58	1954	22	1959	0.099	55	1.38	1972	0.00	50	0.0	2002	0.0	48	0.	1996	17.1	54	0.0	54
11	20	60	54	76	1991	39	1951	37	54	60	1985	21	1951	0.091	55	1.79	1952	0.00	50	0.0	2002	0.0	48	0.	1996	16.8	54	0.1	54
11	21	58	54	75	1992	35	1987	36	54	62	1991	18	1951	0.163	55	2.62	1952	0.00	50	0.0	2002	0.0	48	0.	1996	18.3	54	0.1	54
11	22	56	54	75	1999	37	1989	34	54	62	1992	17	2000	0.061	55	0.59	1997	0.01	50	0.6	1972	0.0	48	0.	1996	19.9	54	0.0	54
11	23	57	54	77	1979	35	1989	34	54	56	1999	20	1984	0.093	55	0.83	1957	0.02	50	1.1	1989	0.0	48	1.	1989	19.8	54	0.0	54
11	24	58	54	76	1979	33	1956	36	54	61	1979	16	1976	0.145	55	3.00	1959	0.00	50	0.0	2002	0.0	48	0.	1996	18.2	54	0.1	54
11	25	56	54	80	1973	36	1970	35	54	61	2001	14	1970	0.144	55	1.61	1983	0.00	50	0.1	1983	0.0	48	0.	1996	19.9	54	0.1	54
11	26	59	54	76	1999	34	1950	35	54	57	1999	17	1950	0.068	55	1.39	1979	0.00	50	0.0	2002	0.0	48	0.	1996	18.5	54	0.0	54
11	27	59	54	82	1973	39	1977	37	54	60	1988	14	1974	0.087	55	1.16	1993	0.00	50	0.0	2002	0.0	48	0.	1996	17.2	54	0.1	54
11	28	59	54	76	1990	38	1996	37	54	56	2001	20	1974	0.148	54	1.66	1984	0.00	49	0.0	2002	0.0	47	0.	1996	17.0	54	0.0	54
11	29	55	53	76	1991	36	1955	34	53	57	2001	14	1955	0.105	54	2.07	1963	0.00	49	0.0	2002	0.0	47	0.	1996	20.8	53	0.0	53
11	30	52	53	76	1991	33	1976	32	53	63	2001	15	1976	0.069	54	0.70	1972	0.03	49	1.0	1952	0.0	47	0.	1996	23.4	53	0.1	53
12	1	52	53	74	2001	35	1964	31	53	59	1991	12	1976	0.075	54	1.42	1974	0.00	49	0.0	2002	0.0	47	0.	1996	23.5	53	0.0	53
12	2	54	52	73	1970	36	1952	31	53	56	1982	19	1965	0.039	54	1.05	1986	0.00	49	0.0	2002	0.0	47	0.	1996	22.3	52	0.0	52
12	3	55	53	75	1991	31	1976	33	53	53	1982	16	1976	0.079	54	1.10	1948	0.00	49	0.0	2002	0.0	47	0.	1996	21.3	53	0.0	53
12	4	56	53	77	1998	32	2002	34	53	60	1982	14	1976	0.095	54	1.04	1950	0.06	49	2.1	1957	0.0	47	0.	1996	20.3	53	0.1	53
12	5	56	53	78	2001	32	2002	33	53	60	1994	19	1974	0.097	54	0.87	1996	0.09	49	4.0	2002	0.0	47	1.	1957	21.0	53	0.1	53
12	6	55	53	81	1998	33	1954	32	53	60	1998	18	1969	0.052	54	0.65	1979	0.04	49	1.8	1954	0.1	47	3.	1954	21.4	53	0.1	53
12	7	54	53	81	1998	34	1984	32	53	60	1998	15	1954	0.096	54	0.97	1996	0.06	48	2.8	1968	0.0	46	1.	1954	22.3	53	0.1	53
12	8	53	53	77	1978	37	1977	32	53	56	1998	15	1976	0.118	54	1.53	1973	0.11	49	3.9	1989	0.0	47	1.	1989	22.5	53	0.0	53
12	9	52	54	76	1951	28	1989	32	54	56	1980	13	1976	0.155	55	1.49	1978	0.08	50	2.0	1989	0.1	48	3.	1989	23.6	54	0.0	54
12	10	51	54	75	1966	32	1968	31	54	60	1972	16	1977	0.189	55	1.53	1969	0.01	50	0.6	1950	0.1	48	3.	1989	24.1	54	0.0	54
12	11	49	54	72	1971	22	1958	30	54	45	2001	12	1968	0.140	55	1.84	1960	0.25	50	6.7	1958	0.2	48	6.	1958	25.6	54	0.0	54
12	12	50	54	72	1985	25	1988	32	54	51	1985	6	1958	0.133	55	1.20	1983	0.21	50	6.1	1982	0.3	48	7.	1958	24.6	54	0.0	54
12	13	51	54	72	1984	25	1960	32	54	52	1965	9	1962	0.142	55	1.83	1998	0.06	49	2.5	1989	0.3	47	5.	1982	24.0	54	0.0	54
12	14	49	54	71	2001	27	1958	31	54	56	2001	12	1960	0.147	55	1.19	1977	0.12	50	5.8	1958	0.2	48	5.	1982	25.6	54	0.0	54
12	15	49	54	73	1984	29	1958	30	54	50	1971	4	1958	0.123	55	1.81	1956	0.01	50	0.6	1981	0.3	48	9.	1958	25.6	54	0.0	54
12	16	49	54	80	1971	25	1951	29	54	60	1971	1	1958	0.118	55	1.29	1970	0.05	50	2.5	1973	0.0	48	1.	1989	26.3	54	0.1	54
12	17	50	54	73	1984	28	1973	28	54	49	1984	10	1951	0.063	55	1.33	2000	0.08	50	2.0	1958	0.1	48	3.	1973	26.3	54	0.0	54
12	18	48	54	75	1984	28	1989	28	54	53	1984	3	1973	0.103	55	1.57	1977	0.01	50	0.4	1963	0.1	48	4.	1973	27.1	54	0.0	54
12	19	49	54	68	1967	30	1989	28	54	57	1967	11	1953	0.048	55	0.72	1959	0.10	50	1.8	1982	0.1	48	3.	1973	26.8	54	0.0	54
12	20	48	54	66	1972	28	1983	30	54	54	1957	11	1963	0.126	55	2.09	1957	0.03	50	1.3	1985	0.1	48	2.	1989	26.8	54	0.0	54
12	21	47	54	73	1956	29	1980	29	54	54	1956	7	1963	0.117	55	0.97	1962	0.09	50	3.6	1962	0.1	48	2.	1962	27.4	54	0.0	54
12	22	47	54	72	1949	19	1989	28	54	52	1990	8	1989	0.089	55	1.04	1967	0.01	50	0.3	1967	0.1	48	3.	1962	27.8	54	0.0	54
12	23	50	54	73	1990	21	1989	29	54	61	1990	9	1989	0.085	55	0.79	1956	0.18	50	5.1	1967	0.1	48	4.	1967	25.9	54	0.0	54
12	24	50	54	71	1988	24	1989	31	54	49	1979	6	1983	0.123	55	2.34	1986	0.12	50	5.8	1966	0.1	48	3.	1966	25.1	54	0.0	54
12	25	47	54	74	1955	14	1983	28	54	58	1964	3	1983	0.080	55	0.96	1969	0.15	50	4.3	1962	0.1	48	4.	1966	27.9	54	0.0	54
12	26	48	54	74	1982	23	1983	27	54	58	1964	5	1980	0.056	55	0.75	1975	0.13	50	6.5	1969	0.1	48	3.	1966	27.5	54	0.0	54
12	27	47	54	73	1971	26	1950	28	54	60	1949	4	1966	0.058	55	1.39	1964	0.00	50	0.2	1980	0.1	48	3.	1966	27.9	54	0.0	54
12	28	47	54	77	1984	30	1993	29	54	49	1982	14	1977	0.126	55	0.82	1992	0.11	50	3.2	1966	0.1	48	3.	1966	27.0	54	0.0	54
12	29	48	54	78	1984	27	1993	30	54	62	1954	14	1952	0.115	55	2.46	1958	0.04	50	2.1	1993	0.1	48	4.	1993	26.3	54	0.0	54
12	30	49	54	72	1996	28	1983	29	54	51	1990	13	1976	0.058	55	1.45	1948	0.00	50	0.0	2002	0.1	48	3.	1993	26.3	54	0.0	54
12	31	48	54	73	1992	28	1962	29	54	52	1972	8	1993	0.142	55	1.83	1975	0.02	50	0.7	1970	0.1	48	3.	1993	26.5	54	0.0	54

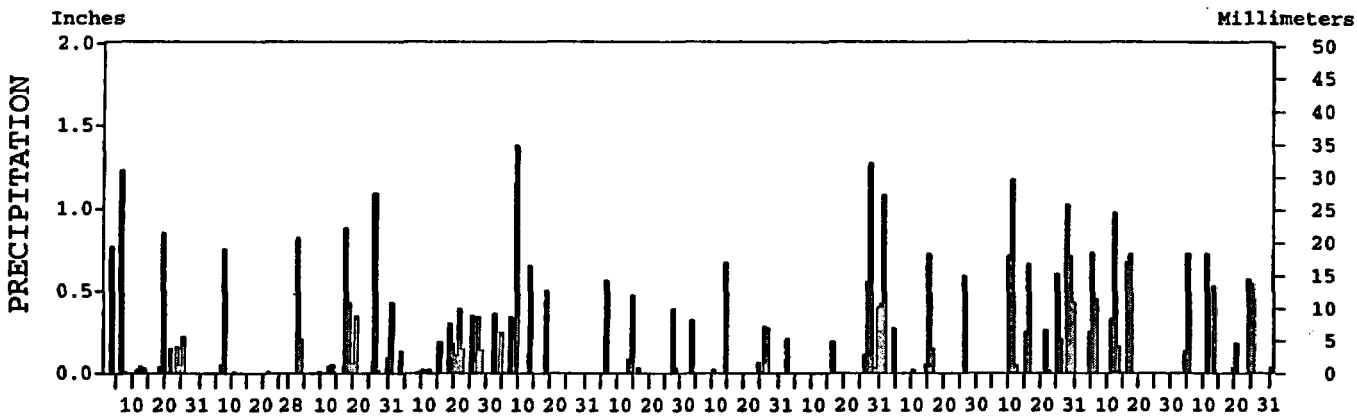
2002 LOCAL CLIMATOLOGICAL DATA
ANNUAL SUMMARY WITH COMPARATIVE DATA

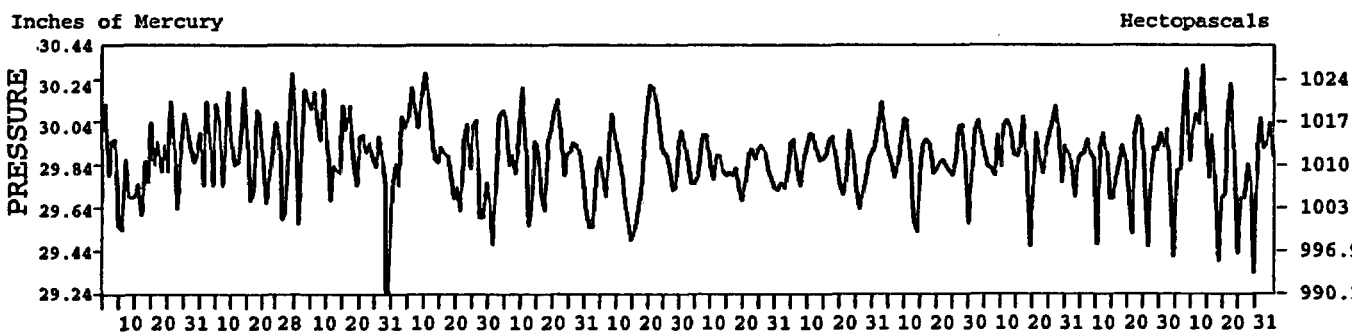
ISSN 0198-5361

RICHMOND,
VIRGINIA (RIC)

Daily Data







I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER.

Thomas R Karl

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NORTH CAROLINA

DIRECTOR NATIONAL CLIMATIC DATA CENTER

METEOROLOGICAL DATA FOR 2002

RICHMOND, VA (RIC)

LATITUDE: 37° 30' 40" N LONGITUDE: 77° 19' 24" W ELEVATION (FT): GRND: 164 BARO: 167 TIME ZONE: EASTERN (UTC + 5) WBAN: 13740

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	MEAN DAILY MAXIMUM	52.3	55.3	60.5	73.0	77.2	88.5	91.4	90.3	81.3	67.8	57.5	47.4	70.2
	HIGHEST DAILY MAXIMUM	81	79	81	94	90	98	100	101	94	89	74	67	101
	DATE OF OCCURRENCE	30	01	16+	17	31	24	29+	23	04	05	11+	31	AUG 23
	MEAN DAILY MINIMUM	31.9	30.1	37.7	47.9	53.5	63.5	69.0	68.3	62.3	52.2	37.9	29.6	48.7
	LOWEST DAILY MINIMUM	18	19	14	29	38	50	52	57	52	36	21	17	14
	DATE OF OCCURRENCE	05	05	05	07	22	09	12	08	13	31	29	04	MAR 05
	AVERAGE DRY BULB	42.1	42.7	49.1	60.5	65.4	76.0	80.2	79.3	71.8	60.0	47.7	38.5	59.4
	MEAN WET BULB	38.8	36.8		54.3	58.8	67.7	71.3	70.4	66.4	56.4	44.4	34.8	
	MEAN DEW POINT	33.2	26.2		48.2	53.5	62.8	66.7	65.7	63.4	53.8	39.9	28.5	
	NUMBER OF DAYS WITH:													
	MAXIMUM ≥ 90°	0	0	0	3	1	13	23	21	1	0	0	0	62
	MAXIMUM ≤ 32°	1	0	0	0	0	0	0	0	0	0	0	2	3
	MINIMUM ≤ 32°	20	21	11	1	0	0	0	0	0	0	6	20	79
	MINIMUM ≤ 0°	0	0	0	0	0	0	0	0	0	0	0	0	0
H/C	HEATING DEGREE DAYS	704	616	490	210	101	1	0	0	0	214	512	814	3662
	COOLING DEGREE DAYS	3	0	6	83	122	340	478	451	213	67	1	0	1764
RH	MEAN (PERCENT)	72	56	69	67	69	67	68	68	78	83	77	70	70
	HOUR 01 LST	78	66	77	82	81	82	83	84	91	89	87	75	81
	HOUR 07 LST	84	74	82	83	81	82	80	83	92	91	89	81	84
	HOUR 13 LST	59	40	55	48	50	45	49	47	61	69	60	58	53
	HOUR 19 LST	69	47	65	60	65	59	59	61	75	85	78	68	66
S	PERCENT POSSIBLE SUNSHINE													
W/O	NUMBER OF DAYS WITH:													
	HEAVY FOG(VISBY ≤ 1/4 MI)	2	2	2	0	3	2	1	0	1	2	4	1	20
	THUNDERSTORMS	0	0	1	6	4	3	3	4	1	0	1	0	23
CLOUDINESS	SUNRISE-SUNSET: (OKTAS)													
	CEILOMETER (≤ 12,000 FT.)													
	SATELLITE (> 12,000 FT.)													
	MIDNIGHT-MIDNIGHT: (OKTAS)													
	CEILOMETER (≤ 12,000 FT.)													
	SATELLITE (> 12,000 FT.)													
	NUMBER OF DAYS WITH:													
	CLEAR													
	PARTLY CLOUDY													
	CLOUDY													
PR	MEAN STATION PRESS. (IN.)	29.88	29.93		29.94	29.89	29.85	29.85	29.89	29.89	29.91	29.84	29.90	
	MEAN SEA-LEVEL PRESS. (IN.)	30.07	30.12			30.08		30.03	30.07	30.07	30.10	30.03	30.10	
WINDS	RESULTANT SPEED (MPH)	3.7	3.5		1.3	1.8	1.6	0.8	0.6	1.6	3.1	3.0	2.8	
	RES. DIR. (TENS OF DEGS.)	25	27		22	26	23	26	08	04	02	25	27	
	MEAN SPEED (MPH)	8.1	9.0	8.1	9.0	8.8	7.7	6.8	7.4	6.8	6.7	8.0	8.1	7.9
	PREVAIL.DIR.(TENS OF DEGS.)	21	20	20	20	20	20	20	01	01	01	20	22	20
	MAXIMUM 2-MINUTE WIND:													
	SPEED (MPH)	25	39	35	36	37	33	32	26	24	31	33	29	39
	DIR. (TENS OF DEGS.)	30	22	36	28	28	27	31	29	35	01	29	27	22
	DATE OF OCCURRENCE	13	01	21	03	13	27	09	15	28+	13	30	25+	FEB 01
	MAXIMUM 5-SECOND WIND:													
	SPEED (MPH)	32	48	39	41	44	44	40	32	31	35	43	38	48
	DIR. (TENS OF DEGS.)	32	23	36	36	29	32	31	27	17	01	28	27	23
	DATE OF OCCURRENCE	13	01	21	19+	13	06	09	24+	27	13	30	25+	FEB 01
PRECIPITATION	WATER EQUIVALENT:													
	TOTAL (IN.)	3.58	0.82	4.48	2.33	3.49	1.56	1.63	3.18	2.88	6.09	4.28	3.45	37.77
	GREATEST 24-HOUR (IN.)	1.23	0.80	1.31	0.54	1.38	0.56	0.67	1.59	1.08	1.52	1.14	1.11	1.59
	DATE OF OCCURRENCE	06	06-07	17-18	21-22	09	06	14	27-28	01	10-11	16-17	24-25	AUG 27-28
	NUMBER OF DAYS WITH:													
	PRECIPITATION ≥ 0.01	13	4	13	13	7	6	7	8	7	12	8	9	107
	PRECIPITATION ≥ 0.10	6	1	7	10	6	3	4	7	5	10	8	7	74
	PRECIPITATION ≥ 1.00	1	0	1	0	1	0	0	1	1	2	0	0	7
SNOWFALL	SNOW,ICE PELLETS,HAIL:													
	TOTAL (IN.)	8.7	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	13.7
	GREATEST 24-HOUR (IN.)	7.7	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	7.7
	DATE OF OCCURRENCE	03	17+	22									05	JAN 03
	MAXIMUM SNOW DEPTH (IN.)	7												
	DATE OF OCCURRENCE	03												
	NUMBER OF DAYS WITH:													
	SNOWFALL ≥ 1.0	2	0	0	0	0	0	0	0	0	0	0	2	4

NORMALS, MEANS, AND EXTREMES

RICHMOND, VA (RIC)

LATITUDE: 37° 30' 40" N LONGITUDE: 77° 19' 24" W ELEVATION (FT): GRND: 164 BARO: 167 TIME ZONE: EASTERN (UTC + 5) WBAN: 13740

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	45.3	49.3	58.4	68.9	76.2	83.6	87.5	85.7	79.7	69.3	59.7	49.7	67.8
	MEAN DAILY MAXIMUM	82	47.5	50.4	58.9	69.3	77.6	85.1	88.3	86.5	80.8	70.6	60.4	50.0	68.8
	HIGHEST DAILY MAXIMUM	73	81	83	93	96	100	104	105	102	103	99	86	81	105
	YEAR OF OCCURRENCE		2002	1932	1938	1990	1941	1952	1977	1983	1954	1941	1993	1998	JUL 1977
	MEAN OF EXTREME MAXS.	82	69.5	71.3	80.2	87.9	91.1	96.0	97.5	96.0	93.1	85.5	77.8	70.1	84.7
	NORMAL DAILY MINIMUM	30	27.6	29.7	37.0	45.3	54.6	63.3	68.3	66.8	59.9	47.2	38.4	31.1	47.4
	MEAN DAILY MINIMUM	82	28.4	30.0	36.6	45.4	54.7	63.5	68.0	66.6	60.1	47.9	38.4	30.9	47.5
	LOWEST DAILY MINIMUM	73	-12	-10	11	23	31	40	51	46	35	21	10	-1	-12
	YEAR OF OCCURRENCE		1940	1936	1960	1985	1956	1967	1965	1934	1974	1962	1933	1942	JAN 1940
	MEAN OF EXTREME MINS.	82	10.3	14.3	21.5	30.9	41.0	51.1	57.7	55.6	45.5	32.4	22.7	14.6	33.1
	NORMAL DRY BULB	30	35.7	38.7	48.0	57.3	66.0	73.9	78.0	76.8	70.0	58.6	49.6	40.1	57.7
	MEAN DRY BULB	82	38.1	40.1	47.8	57.4	66.2	74.3	78.2	76.6	70.5	59.2	49.5	40.4	58.2
	MEAN WET BULB	18	34.3	36.7	41.9	50.7	59.4	67.3	71.5	66.2	63.8	53.8	44.9	36.7	52.3
	MEAN DEW POINT	18	27.3	28.9	33.9	43.3	54.3	63.2	68.0	63.2	60.1	49.0	38.7	29.9	46.7
	NORMAL NO. DAYS WITH:														
	MAXIMUM ≥ 90°	30	0.0	0.0	0.1	0.8	2.3	8.7	13.8	11.0	4.1	0.3	0.0	0.0	41.1
	MAXIMUM ≤ 32°	30	4.3	1.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	7.6
	MINIMUM ≤ 32°	30	23.0	19.5	10.8	2.3	0.1	0.0	0.0	0.0	0.0	2.1	9.4	19.2	86.4
	MINIMUM ≤ 0°	30	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
H/C	NORMAL HEATING DEG. DAYS	30	873	705	528	254	80	8	0	1	27	225	470	748	3919
	NORMAL COOLING DEG. DAYS	30	0	1	8	33	107	277	415	367	187	33	6	1	1435
RH	NORMAL (PERCENT)	30	68	66	63	61	70	72	75	77	77	74	69	69	70
	HOUR 01 LST	30	75	73	72	73	83	86	88	90	90	86	79	76	81
	HOUR 07 LST	30	79	78	78	76	81	83	86	90	90	89	84	80	83
	HOUR 13 LST	30	56	53	49	45	52	54	57	58	57	52	51	55	53
	HOUR 19 LST	30	65	62	57	53	63	66	69	74	77	75	68	68	66
S	PERCENT POSSIBLE SUNSHINE	46	54	58	62	66	65	69	68	66	65	63	59	54	62
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG(VISBY≤1/4 MI)	74	2.7	2.1	1.7	1.6	1.8	1.5	2.0	2.4	2.9	3.3	2.3	2.8	27.1
	THUNDERSTORMS	66	0.2	0.4	1.6	2.5	5.3	6.5	8.1	6.2	2.9	1.0	0.6	0.2	35.5
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	1			5.6		5.6	3.2							
	MIDNIGHT-MIDNIGHT (OKTAS)	1			5.6										
	MEAN NO. DAYS WITH:														
	CLEAR	1	2.0	1.0	9.0		9.0	10.0							
	PARTLY CLOUDY	1		1.0	5.0		4.0	8.0							
	CLOUDY	1	7.0	4.0	10.0		8.0	1.0							
PR	MEAN STATION PRESSURE(IN)	29	29.91	29.89	29.85	29.81	29.81	29.81	29.83	29.86	29.89	29.92	29.92	29.93	29.87
	MEAN SEA-LEVEL PRES. (IN)	18	30.12	30.11	30.05	29.99	30.00	29.99	30.01	30.04	30.08	30.12	30.13	30.14	30.06
WINDS	MEAN SPEED (MPH)	44	8.3	8.7	9.3	9.2	7.9	7.5	7.1	6.6	7.0	7.2	7.7	7.9	7.9
	PREVAIL.DIR(TENS OF DEGS)	27	01	01	36	19	19	20	19	19	36	36	19	36	19
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	7	38	39	37	46	41	45	33	44	40	37	36	40	46
	DIR. (TENS OF DEGS)		31	22	22	33	30	26	29	36	01	10	16	15	33
	YEAR OF OCCURRENCE		2000	2002	1996	1999	1997	2000	1999	1996	1999	1996	1999	1996	APR 1999
	MAXIMUM 5-SECOND:														
	SPEED (MPH)	7	48	49	49	56	60	55	44	59	53	46	46	48	60
	DIR. (TENS OF DEGS)		31	26	22	25	28	27	29	32	08	10	16	16	28
	YEAR OF OCCURRENCE		2000	1997	1996	1998	1996	2000	1999	2000	1996	1996	1999	1996	MAY 1996
PRECIPITATION	NORMAL (IN)	30	3.55	2.98	4.09	3.18	3.96	3.54	4.67	4.18	3.98	3.60	3.06	3.12	43.91
	MAXIMUM MONTHLY (IN)	65	7.97	5.97	8.65	7.31	8.87	9.24	18.87	14.10	16.60	9.39	7.64	7.07	18.87
	YEAR OF OCCURRENCE		1978	1979	1984	1987	1972	1938	1945	1955	1999	1971	1959	1973	JUL 1945
	MINIMUM MONTHLY (IN)	65	0.64	0.48	0.94	0.64	0.87	0.38	0.51	0.52	0.26	0.01	0.17	0.40	0.01
	YEAR OF OCCURRENCE		1981	1978	1966	1963	1965	1980	1983	1943	1978	2000	2001	1980	OCT 2000
	MAXIMUM IN 24 HOURS (IN)	65	3.31	2.67	3.43	2.97	3.08	4.61	5.73	8.79	6.52	6.50	4.07	3.16	8.79
	YEAR OF OCCURRENCE		1962	1979	1992	1987	1981	1963	1969	1955	1999	1961	1956	1958	AUG 1955
	NORMAL NO. DAYS WITH:														
	PRECIPITATION ≥ 0.01	30	10.4	9.4	10.2	9.0	10.7	9.6	10.4	9.5	7.6	7.0	8.0	9.1	110.9
	PRECIPITATION ≥ 1.00	30	0.8	0.7	0.8	0.6	1.0	0.9	1.4	1.3	1.0	1.2	0.8	0.7	11.2
SNOWFALL	NORMAL (IN)	30	4.3	4.8	1.4	0.*	0.0	0.0	0.0	0.0	0.0	0.*	0.3	1.6	12.4
	MAXIMUM MONTHLY (IN)	63	28.5	21.4	19.7	2.0	T	0.0	0.0	0.0	0.0	T	7.3	12.5	28.5
	YEAR OF OCCURRENCE		1940	1983	1960	1940	1994					1979	1953	1958	JAN 1940
	MAXIMUM IN 24 HOURS (IN)	63	21.6	16.8	12.1	2.0	T	0.0	0.0	0.0	0.0	T	7.3	7.5	21.6
	YEAR OF OCCURRENCE		1940	1983	1962	1940	1994					1979	1953	1966	JAN 1940
	MAXIMUM SNOW DEPTH (IN)	78	18	20	13	1	0	0	0	0	0	0	6	9	20
	YEAR OF OCCURRENCE		1922	1922	1980	1964							1938	1958	FEB 1922
	NORMAL NO. DAYS WITH:														
	SNOWFALL ≥ 1.0	30	1.1	1.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	3.5

PRECIPITATION (inches) 2002 RICHMOND, VA (RIC)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1973	2.66	3.11	3.44	4.58	3.56	2.45	3.64	4.34	1.82	2.56	1.27	7.07	40.50
1974	3.21	2.54	3.79	1.58	3.02	1.80	2.25	6.84	4.83	0.39	1.23	4.22	35.70
1975	5.71	2.96	8.04	2.78	2.59	4.00	12.29	2.31	10.98	3.10	2.04	4.51	61.31
1976	3.39	1.35	2.14	1.08	3.76	2.85	2.63	1.35	4.78	6.99	1.88	2.56	34.76
1977	2.22	1.34	2.67	2.33	3.99	1.25	4.20	6.15	2.16	7.88	4.32	5.57	44.08
1978	7.97	0.48	5.67	4.31	3.92	5.26	4.24	5.93	0.26	1.21	4.57	3.80	47.62
1979	6.16	5.97	2.59	3.97	3.80	2.42	4.36	7.08	9.76	3.87	5.50	1.64	57.12
1980	6.05	1.01	5.49	4.28	4.68	0.38	5.18	2.15	2.37	6.96	2.18	0.40	41.13
1981	0.64	2.76	1.52	2.96	6.62	3.69	4.01	2.89	2.70	2.36	0.68	5.04	35.87
1982	2.76	4.44	3.74	2.97	3.48	3.97	9.21	4.39	2.55	2.90	2.70	3.37	46.48
1983	1.59	3.95	6.04	5.21	2.50	5.46	0.51	0.97	3.05	4.02	5.63	4.50	43.43
1984	3.98	3.97	8.65	5.92	4.52	2.01	3.55	4.58	1.86	2.14	3.34	1.52	46.04
1985	3.54	3.20	1.80	0.65	2.36	4.01	5.31	10.58	4.97	5.09	6.99	0.58	49.08
1986	2.69	2.67	1.16	1.16	3.15	1.30	7.01	6.75	0.63	2.43	2.46	5.15	36.56
1987	5.53	2.57	1.65	7.31	2.94	6.29	1.20	1.11	4.43	1.25	3.13	2.86	40.27
1988	2.53	3.08	1.98	2.55	4.81	2.25	7.50	2.95	1.74	2.74	4.34	0.79	37.26
1989	1.88	4.34	5.00	4.27	5.02	5.85	4.00	4.89	5.33	3.54	3.00	2.62	49.74
1990	2.84	2.38	2.54	2.81	6.85	0.97	6.74	5.76	1.92	3.90	1.70	3.52	41.93
1991	3.62	1.09	5.87	0.87	0.91	6.24	3.47	3.32	2.69	2.50	0.67	4.53	35.78
1992	1.57	2.89	5.87	2.21	4.95	2.28	5.68	6.40	2.35	1.94	2.62	2.79	41.55
1993	4.48	2.88	7.24	3.23	4.66	1.75	1.91	3.89	2.97	2.23	3.24	3.77	42.25
1994	3.10	4.38	7.92	2.70	2.49	1.73	7.46	2.54	3.99	2.56	3.99	0.95	43.81
1995	3.15	1.14	3.00	1.98	4.33	1.85	2.89	2.59	3.82	5.11	2.87	1.71	34.44
1996	4.65	2.97	2.71	2.88	3.18	4.35	6.51	4.40	6.87	7.18	3.52	4.91	54.13
1997	1.93	3.71	2.96	3.94	1.36	2.21	4.85	1.41	0.82	3.25	5.33	2.36	34.13
1998	6.85	5.76	6.72	4.32	3.72	4.41	2.37	1.89	3.94	0.47	1.30	5.00	46.75
1999	4.70	1.47	4.04	2.60	2.75	6.29	2.77	2.00	16.60	2.25	1.01	1.72	48.20
2000	3.96	1.60	3.67	4.78	3.03	6.07	4.05	8.28	3.60	0.01	1.72	2.38	43.15
2001	2.06	2.55	3.77	2.14	2.03	6.53	2.73	5.08	2.14	0.65	0.17	1.67	31.52
2002	3.58	0.82	4.48	2.33	3.49	1.56	1.63	3.18	2.88	6.09	4.28	3.45	37.77
POR= 65 YRS	3.23	2.96	3.77	2.98	3.66	3.68	5.13	4.60	3.70	3.26	3.05	3.11	43.13

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AVERAGE TEMPERATURE (°F) 2002 RICHMOND, VA (RIC)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1973	37.6	38.5	52.6	57.9	65.1	76.0	77.4	77.5	72.3	60.6	51.3	40.8	59.0
1974	45.8	40.1	50.4	59.9	65.8	70.6	76.9	75.7	67.4	55.4	48.5	41.7	58.2
1975	40.7	41.4	45.3	52.9	67.7	73.6	76.0	78.8	69.3	62.5	53.6	40.0	58.5
1976	35.1	48.5	52.6	60.5	65.2	74.6	77.3	75.7	68.7	54.4	42.7	36.7	57.7
1977	25.3	40.5	53.7	61.1	68.2	73.0	81.4	79.8	74.2	57.3	52.3	39.5	58.9
1978	33.4	30.3	44.5	57.3	65.5	74.7	77.5	80.1	72.9	58.3	52.5	42.5	57.5
1979	36.4	28.6	51.1	58.4	67.1	70.8	76.9	77.8	71.0	58.3	53.3	42.3	57.7
1980	38.8	36.0	47.4	61.1	68.3	72.8	80.0	80.7	74.7	56.9	46.2	38.6	58.5
1981	31.2	42.2	44.6	60.6	64.1	77.9	79.6	75.1	69.4	56.4	49.1	38.0	57.4
1982	31.6	41.7	49.1	55.9	70.4	73.4	78.6	75.0	69.8	59.2	51.9	46.1	58.6
1983	37.8	39.1	50.4	56.1	66.1	75.6	79.4	77.7	68.8	58.1	49.0	36.2	57.9
1984	32.6	44.5	43.6	55.8	65.4	77.7	76.0	77.0	67.5	66.1	46.6	47.7	58.4
1985	32.6	40.2	49.7	62.0	68.0	74.3	79.0	77.5	70.8	62.6	56.6	37.8	59.3
1986	36.2	39.3	50.0	59.2	66.9	76.1	80.9	74.2	70.8	61.8	49.1	40.9	58.8
1987	34.7	37.0	47.1	54.3	67.3	75.8	81.3	78.5	72.3	52.9	51.3	43.0	58.0
1988	32.3	39.1	47.9	56.0	65.8	72.8	79.9	79.8	68.4	53.6	50.6	39.2	57.1
1989	42.3	39.6	47.9	55.8	64.1	76.1	77.7	75.3	70.8	60.2	49.3	31.3	57.5
1990	46.3	48.0	52.1	57.9	65.8	75.0	79.9	76.3	69.5	63.1	52.6	46.3	61.1
1991	40.2	44.0	50.8	60.2	72.1	75.3	80.7	78.6	71.6	59.9	49.6	44.3	60.6
1992	40.7	42.7	47.2	57.8	61.7	70.8	79.5	73.7	70.3	56.3	50.6	40.9	57.7
1993	41.4	37.8	45.9	55.9	67.7	75.0	82.5	78.5	72.5	58.6	50.9	39.0	58.8
1994	33.4	40.2	48.9	63.2	63.2	78.0	81.1	75.4	69.2	57.6	52.6	45.6	59.0
1995	40.7	38.7	50.2	58.1	65.8	74.1	80.8	78.9	69.1	61.1	44.2	35.6	58.1
1996	34.1	37.8	43.2	57.9	64.8	75.1	76.4	74.3	70.1	58.9	43.2	43.8	56.6
1997	37.7	43.7	49.6	53.6	62.9	71.4	77.8	75.8	70.3	58.9	46.5	39.9	57.3
1998	43.2	44.2	48.5	58.0	67.4	74.0	78.3	78.3	74.2	59.7	49.5	44.2	60.0
1999	42.0	42.2	45.2	57.7	65.5	72.3	79.6	77.9	68.5	57.2	52.9	42.4	58.6
2000	36.3	43.4	52.0	56.4	68.0	75.4	74.7	74.9	67.5	59.7	46.1	33.0	57.3
2001	37.1	42.3	45.2	58.2	65.2	75.0	74.9	78.2	67.8	59.1	54.6	46.0	58.6
2002	42.1	42.7	49.1	60.5	65.4	76.0	80.2	79.3	71.8	60.0	47.7	38.5	59.4
POR= 73 YRS	37.7	39.8	47.4	57.3	66.2	74.2	78.1	76.4	70.2	58.8	49.2	40.1	57.9

HEATING DEGREE DAYS (base 65°F) 2002 RICHMOND, VA (RIC)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1973-74	0	0	5	163	414	744	589	691	455	204	75	5	3345
1974-75	0	0	62	310	513	715	746	654	604	368	44	1	4017
1975-76	0	0	27	121	356	770	917	480	386	227	78	11	3373
1976-77	0	1	15	332	660	869	1227	680	366	176	42	7	4375
1977-78	0	0	4	259	401	784	974	964	627	235	88	5	4341
1978-79	0	0	16	214	366	694	876	1011	439	218	44	4	3882
1979-80	0	0	8	242	353	698	806	835	541	135	47	2	3667
1980-81	0	0	14	267	557	813	1042	633	626	171	107	0	4230
1981-82	0	1	29	273	473	834	1029	645	486	280	6	1	4057
1982-83	0	6	10	213	399	585	836	718	445	282	69	2	3565
1983-84	0	1	86	236	475	887	994	589	657	282	93	3	4303
1984-85	0	0	73	57	546	531	997	692	484	177	35	5	3597
1985-86	0	0	31	114	257	838	886	713	465	187	78	3	3572
1986-87	0	16	24	172	476	741	931	777	550	317	57	0	4061
1987-88	0	0	5	370	409	677	1008	746	527	279	79	32	4132
1988-89	0	0	27	361	425	794	696	709	546	293	108	0	3959
1989-90	0	3	38	181	468	1036	574	472	436	258	50	3	3519
1990-91	0	0	33	146	365	574	762	582	443	193	27	1	3126
1991-92	0	0	25	190	458	637	749	640	545	261	142	10	3657
1992-93	0	0	37	275	427	739	724	757	585	280	24	0	3848
1993-94	0	0	26	213	436	799	973	687	497	130	120	0	3881
1994-95	0	0	11	232	365	595	750	731	453	236	72	1	3446
1995-96	0	0	28	166	620	905	952	782	669	247	122	8	4499
1996-97	0	0	10	193	652	654	840	589	472	337	117	45	3909
1997-98	0	0	19	247	547	771	667	575	536	232	50	7	3651
1998-99	0	0	10	173	457	652	710	631	606	237	60	7	3543
1999-00	0	0	29	249	362	693	882	620	404	257	45	2	3543
2000-01	0	0	61	190	561	983	858	631	605	244	67	0	4200
2001-02	0	0	57	213	312	582	704	616	490	210	101	1	3286
2002-	0	0	0	214	512	814							

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COOLING DEGREE DAYS (base 65°F) 2002 RICHMOND, VA (RIC)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1973	0	0	13	42	91	338	391	395	231	32	9	2	1544
1974	0	0	10	58	106	180	377	340	141	21	26	0	1259
1975	0	0	0	16	135	267	348	433	165	51	18	0	1433
1976	0	8	9	99	91	307	389	337	133	12	0	0	1385
1977	0	0	22	66	148	258	513	467	289	24	27	0	1814
1978	0	0	0	12	112	302	393	475	263	15	0	1	1573
1979	0	0	16	30	117	188	374	404	195	42	9	0	1375
1980	0	0	1	25	157	243	472	494	313	23	1	0	1729
1981	0	0	1	45	89	395	458	319	169	16	0	0	1492
1982	0	0	0	13	181	259	428	323	157	43	13	7	1424
1983	0	0	0	23	108	325	452	405	207	27	0	0	1547
1984	0	0	0	10	114	392	346	381	154	100	0	2	1499
1985	0	4	20	94	139	290	441	392	213	51	10	0	1654
1986	0	0	8	19	142	344	498	308	205	79	6	0	1609
1987	0	0	0	2	136	329	513	427	227	0	3	0	1637
1988	0	0	3	16	108	269	466	465	137	12	0	0	1476
1989	0	3	24	27	88	341	403	331	218	42	4	0	1481
1990	0	1	43	51	81	312	470	356	177	96	0	2	1589
1991	0	0	10	53	254	316	494	428	227	40	3	0	1825
1992	0	0	0	51	48	192	457	275	202	12	3	0	1240
1993	0	0	0	14	112	307	547	426	261	20	18	0	1705
1994	0	0	5	80	70	396	507	332	142	9	2	2	1545
1995	1	0	0	35	105	281	495	437	157	52	3	0	1566
1996	0	0	0	40	123	315	360	293	173	12	0	0	1316
1997	0	0	4	2	59	244	406	341	182	65	0	0	1303
1998	2	0	32	26	131	282	420	418	292	15	0	12	1630
1999	1	0	0	24	82	231	460	409	140	13	2	0	1362
2000	0	0	5	6	143	320	305	313	141	33	0	0	1266
2001	0	0	0	45	79	307	314	414	149	38	7	0	1353
2002	3	0	6	83	122	340	478	451	213	67	1	0	1764

SNOWFALL (inches) 2002 RICHMOND, VA (RIC)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1973-74	0.0	0.0	0.0	0.0	0.0	9.9	T	5.0	T	0.0	0.0	0.0	14.9
1974-75	0.0	0.0	0.0	0.0	0.0	T	2.7	2.9	0.4	0.0	0.0	0.0	6.0
1975-76	0.0	0.0	0.0	0.0	0.0	T	0.2	T	1.0	0.0	0.0	0.0	1.2
1976-77	0.0	0.0	0.0	0.0	1.0	1.7	11.1	T	0.0	0.0	0.0	0.0	13.8
1977-78	0.0	0.0	0.0	0.0	T	T	1.3	5.1	5.0	0.0	0.0	0.0	11.4
1978-79	0.0	0.0	0.0	0.0	0.0	0.0	0.7	19.5	T	0.0	0.0	0.0	20.2
1979-80	0.0	0.0	0.0	T	0.0	T	16.6	7.0	15.0	0.0	0.0	0.0	38.6
1980-81	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.0	0.2	0.0	0.0	0.0	1.0
1981-82	0.0	0.0	0.0	0.0	T	1.9	8.3	10.8	T	0.2	0.0	0.0	21.2
1982-83	0.0	0.0	0.0	0.0	0.0	7.9	0.1	21.4	0.0	T	0.0	0.0	29.4
1983-84	0.0	0.0	0.0	0.0	0.1	T	1.1	2.8	0.3	0.0	0.0	0.0	4.3
1984-85	0.0	0.0	0.0	0.0	0.0	T	8.3	T	T	0.0	0.0	0.0	8.3
1985-86	0.0	0.0	0.0	0.0	0.0	1.3	3.3	4.4	T	T	0.0	0.0	9.0
1986-87	0.0	0.0	0.0	0.0	0.0	0.0	15.8	5.3	0.7	T	0.0	0.0	21.8
1987-88	0.0	0.0	0.0	0.0	4.5	T	8.1	T	T	T	0.0	0.0	12.6
1988-89	0.0	0.0	0.0	0.0	0.0	1.8	T	13.6	T	T	T	0.0	15.4
1989-90	0.0	0.0	0.0	0.0	1.1	9.9	0.0	T	T	0.2	0.0	0.0	11.2
1990-91	0.0	0.0	0.0	0.0	0.0	T	T	1.9	T	0.0	0.0	0.0	1.9
1991-92	0.0	0.0	0.0	0.0	0.1	T	0.0	0.8	T	T	0.0	0.0	0.9
1992-93	0.0	0.0	0.0	0.0	0.0	0.0	0.5	5.3	3.5	T	0.0	0.0	9.3
1993-94	0.0	0.0	0.0	0.0	0.0	5.1	2.2	1.7	0.7	0.0	T	0.0	9.7
1994-95	0.0	0.0	0.0	0.0	0.0	T	3.1	T	0.8	0.0	0.0	0.0	3.9
1995-96	0.0	0.0	0.0	0.0	T		12.3						
1996-97					T	1.0	0.7	1.0	T	T	0.0	0.0	
1997-98	0.0	0.0	0.0	0.0									
1998-99													
1999-00							15.2	0.2					
2000-01							0.3	2.5	0.5	0.0	0.0	0.0	
2001-02	0.0	0.0	0.0	0.0	0.0	0.0	8.7	T	T	0.0	0.0	0.0	8.7
2002-	0.0	0.0	0.0	0.0	0.0	5.0							
POR= 61 YRS	0.0	0.0	0.0	T	0.4	2.1	4.7	3.8	2.4	0.1	T	0.0	13.5

WBAN : 13740

REFERENCE NOTES:

PAGE 1:
THE TEMPERATURE GRAPH SHOWS NORMAL MAXIMUM AND NORMAL MINIMUM DAILY TEMPERATURES (SOLID CURVES) AND THE ACTUAL DAILY HIGH AND LOW TEMPERATURES (VERTICAL BARS).

PAGE 2 AND 3:
H/C INDICATES HEATING AND COOLING DEGREE DAYS.
RH INDICATES RELATIVE HUMIDITY
W/O INDICATES WEATHER AND OBSTRUCTIONS
S INDICATES SUNSHINE.
PR INDICATES PRESSURE.
CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS(OKTAS).

GENERAL:
T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE.
+ INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.
NORMALS ARE 30-YEAR AVERAGES (1961 - 1990).
ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM.
PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH.
POR (PERIOD OF RECORD) BEGINS WITH THE JANUARY DATA MONTH AND IS THE NUMBER OF YEARS USED TO COMPUTE THE MEAN. INDIVIDUAL MONTHS WITHIN THE POR MAY BE MISSING.
WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS, THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED.
0.* OR * INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05.
CLOUDINESS FOR ASOS STATIONS DIFFERS FROM THE NON-ASOS OBSERVATION TAKEN BY A HUMAN OBSERVER. ASOS STATION CLOUDINESS IS BASED ON TIME-AVERAGED CEILOMETER DATA FOR CLOUDS AT OR BELOW 12,000 FEET AND ON SATELLITE DATA FOR CLOUDS ABOVE 12,000 FEET.
THE NUMBER OF DAYS WITH CLEAR, PARTLY CLOUDY, AND CLOUDY CONDITIONS FOR ASOS STATIONS IS THE SUM OF THE CEILOMETER AND SATELLITE DATA FOR THE SUNRISE TO SUNSET PERIOD.

GENERAL CONTINUED:
CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS. WHEN AT LEAST ONE OF THE ELEMENTS (CEILOMETER OR SATELLITE) IS MISSING, THE DAILY CLOUDINESS IS NOT COMPUTED.
WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM. "36" INDICATES TRUE NORTH.
RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION.
AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2.
SNOWFALL DATA COMPRISE ALL FORMS OF FROZEN PRECIPITATION, INCLUDING HAIL.
A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65° F.
DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR.
DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY.
WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY.

ON JULY 1, 1996, THE NATIONAL WEATHER SERVICE BEGAN USING THE "METAR" OBSERVATION CODE THAT WAS ALREADY EMPLOYED BY MOST OTHER NATIONS OF THE WORLD. THE MOST NOTICEABLE DIFFERENCE IN THIS ANNUAL PUBLICATION WILL BE THE CHANGE IN UNITS FROM TENTHS TO EIGHTS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER.

2002
RICHMOND, VIRGINIA (RIC)

Richmond is located in east-central Virginia at the head of navigation on the James River and along a line separating the Coastal Plains (Tidewater Virginia) from the Piedmont. The Blue Ridge Mountains lie about 90 miles to the west and the Chesapeake Bay 60 miles to the east. Elevations range from a few feet above sea level along the river to a little over 300 feet in parts of the western section of the city.

The climate might be classified as modified continental. Summers are warm and humid and winters generally mild. The mountains to the west act as a partial barrier to outbreaks of cold, continental air in winter. The cold winter air is delayed long enough to be modified, then further warmed as it subsides in its approach to Richmond. The open waters of the Chesapeake Bay and Atlantic Ocean contribute to the humid summers and mild winters. The coldest weather normally occurs in late December and January, when low temperatures usually average in the upper 20s, and the high temperatures in the upper 40s. Temperatures seldom lower to zero, but there have been several occurrences of below zero temperatures. Summertime high temperatures above 100 degrees are not uncommon, but do not occur every year.

Precipitation is rather uniformly distributed throughout the year. However, dry periods lasting several weeks do occur, especially in autumn when long periods of pleasant, mild weather are most common. There is considerable variability in total monthly amounts from year to year. Snow usually remains on the ground only one or two days at a time. Ice storms (freezing rain or glaze) are not uncommon, but they are seldom severe enough to do any considerable damage. A notable exception was the spectacular glaze storm of January 27-28, 1943, when nearly 1 inch of ice accumulation caused heavy damage to trees and overhead transmission lines.

The James River reaches tidewater at Richmond where flooding may occur in every month of the year, most frequently in March and least in July. Hurricanes and tropical storms have been responsible for most of the flooding during the summer and early fall months. Hurricanes passing near Richmond have produced record rainfalls. In 1955, three hurricanes brought record rainfall to Richmond within a six-week period. The most noteworthy of these were Hurricanes Connie and Diane that brought heavy rains five days apart.

Damaging storms occur mainly from snow and freezing rain in winter and from hurricanes, tornadoes, and severe thunderstorms in other seasons. Damage may be from wind, flooding, or rain, or from any combination of these. Tornadoes are infrequent but some notable occurrences have been observed within the Richmond area.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is October 26 and the average last occurrence in the spring is April 10.

STATION LOCATION

RICHMOND, VIRGINIA

LOCATION	Occupied From	Occupied To	Airline Distances and Directions from previous Location	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE SEA LEVEL	ELEVATION ABOVE GROUND								AUTOMATIC OBSERVING EQUIPMENT *	REMARKS
						GROUND TEMPERATURE SITE	WIND INSTRUMENT	EXTREME THERMOMETERS	PSYCHROMETER	SUN-SHINE SWITCH	TIPPING BUCKET RAIN GAUGE	WEIGHING RAIN GAGE	8 INCH RAIN GAGE	HYGROTHERMOMETER		
*NOTES: AIRPORT WB-CAA Building	7/15/25	9/24/42	None	37°30'	77°20'	158	#	5	5				3			CAA to 8/3/30. WBAS 8/3/30 to 5/26/35 and 7/14/38 to 9/24/42. # - 40 feet 8/3/30 to 5/26/35, estimated 40 feet 5/26/35 to 7/14/38 and estimated 50 feet to 9/24/42.
Army Hangar (Operations Annex)	9/24/42	4/19/46	1/2 mi. NNW	37°30'	77°20	156	55	5	5				3			AF operation.
Old Airport Administration Bldg.	4/19/46	6/01/50	1/3 mi. SSE	37°30'	77°20'	156	46	5	5				4			WBAS reopened.
Byrd Field + New Terminal Building + R.E. Byrd International Airport effective 2/18/71 ++ ++ Richmond International Airport effective 9/22/85.	6/01/50	8/19/88	4/5 mi. N	37°30'	77°20'	c164	b20 g33	d6	d6	%60 j30	e19	f19	e19	e4 h4 i4	NA M	a. Installed 2700 feet ENE of thermometer site 6/26/59. b. 67 feet to 1/11/61. c. 162 feet to 6/26/59. d. Discontinued 6/26/59. e. 3 feet to 10/9/69. % - Commissioned 11/19/63. f. Installed on roof 1/1/80. g. Minor move 12/2/82. h. Type change 7/9/84. M. ASOS installed 10/1985. i. Type change 11/12/85. j. Inactive summer 1985 until relocated 12/10/85. k. Not moved 8/19/88, other instruments moved 8/20-31/88.
Executive Terminal Richmond International Airport	8/19/88	10/01/95	1/4 mi. N	37°31'	77°20'	164	k33	NA	NA	NA	3	3	3	k4	M	
R.E. Byrd International Airport	10/01/95	Present	NA	37°31'	77°19'	1164									S	ASOS Commissioned 10/01/95 1. Ground Elevation

* TYPE

M = AMOS
T = AUTOB
S = ASOS
W = AWOS

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* NOTES: For earlier station history see previous editions.

RICHMOND/BYRD FIELD VA	
Latitude = 37.50 N	WMO No. 724010
Longitude = 77.33 W	Elevation = 177 feet
Period of Record = 1973 to 1996	Average Pressure = 29.84 inches Hg

Design Criteria Data

		Mean Coincident (Average) Values			
Dry Bulb Temperature (T)	**Design Value (°F)**	Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	99	78	111	9.8	SSW
0.4% Occurrence	95	77	109	9.9	SW
1.0% Occurrence	92	76	108	9.5	SW
2.0% Occurrence	90	75	106	9.3	SW
Mean Daily Range	20	-	-	-	-
97.5% Occurrence	24	22	12	6.9	N
99.0% Occurrence	18	16	9	7.3	N
99.6% Occurrence	14	12	7	6.7	N
Median of Extreme Lows	8	7	5	7.4	W
		Mean Coincident (Average) Values			
Wet Bulb Temperature (T_{wb})	**Design Value (°F)**	Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	82	93	142	8.8	S
0.4% Occurrence	79	90	130	8.7	S
1.0% Occurrence	78	88	126	8.7	S
2.0% Occurrence	77	87	123	8.5	S
		Mean Coincident (Average) Values			
Humidity Ratio (HR)	**Design Value (gr/lb)**	Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	151	85	1.00	7.3	S
0.4% Occurrence	137	84	0.90	7.3	S
1.0% Occurrence	132	82	0.88	6.9	S
2.0% Occurrence	127	81	0.85	7.3	S
Air Conditioning/		$T \geq 93°F$	$T \geq 80°F$	$T_{wb} \geq 73°F$	$T_{wb} \geq 67°F$
Humid Area Criteria	# of Hours	84	1026	880	2161

Other Site Data

Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
7	3.3	90	3.5 + 1.1
Ground Water Temperature (°F) 50 Foot Depth *	**Frost Depth 50 Year Recurrence (in.)**	**Ground Snow Load 50 Year Recurrence (lb/ft^2)**	**Average Annual Freeze-Thaw Cycles (#)**
60.5	18	16	56

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

RICHMOND WSO AIRPORT, VIRGINIA

Monthly Total Snowfall (Inches)

(447201)

File last updated on May 18,
*** Note *** Provisional Data *** After Year/Month 200401
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR (S)	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANN
1947-48	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1948-49	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	1.60	0.00	0.00	0.00	0.00	0.00	1.60
1949-50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.90	5.90	0.00	0.00	0.00	8.80
1950-51	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.70
1951-52	0.00	0.00	0.00	0.00	0.00b	0.00h	2.40	11.00	0.00	0.00	0.00	0.00	13.40
1952-53	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	5.60	0.20	0.00	0.00	6.80
1953-54	0.00	0.00	0.00	0.00	7.30	0.00	7.50	0.00	0.00	0.00	0.00	0.00	14.80
1954-55	0.00	0.00	0.00	0.00	0.00	2.20	9.30	1.40	0.00	0.00	0.00	0.00	12.90
1955-56	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00	0.00	0.00a	0.00	1.10
1956-57	0.00	0.00	0.00	0.00	0.00a	0.00	5.80	0.70	0.00	1.20	0.00	0.00	7.70
1957-58	0.00	0.00	0.00	0.00	0.00	2.90	3.70	7.70	6.30	0.00	0.00	0.00	20.60
1958-59	0.00	0.00	0.00	0.00	0.00	14.50	2.40	0.00	0.00	0.00	0.00	0.00	16.90
1959-60	0.00	0.00	0.00	0.00	0.00	1.20	2.50	8.90	20.10	0.00	0.00	0.00	32.70
1960-61	0.00	0.00	0.00	0.00	0.00	1.70	7.20	5.00	0.00	0.00	0.00	0.00	13.90
1961-62	0.00	0.00	0.00	0.00	0.00	0.90	20.60	1.20	16.20	0.00	0.00	0.00	38.90
1962-63	0.00	0.00	0.00	0.00	0.90	8.10	1.60	8.00	0.00	0.00	0.00	0.00	18.60
1963-64	0.00	0.00	0.00	0.00	0.00	0.40	5.70	10.20	7.00	1.20	0.00	0.00	24.50
1964-65	0.00	0.00	0.00	0.00	0.40	0.00	12.40	6.60	1.00	0.00	0.00	0.00	20.40
1965-66	0.00	0.00	0.00	0.00	0.00	0.00	26.20	3.00	0.00	0.00	0.00	0.00	29.20
1966-67	0.00	0.00	0.00	0.00	0.20	12.20	6.30	17.10	0.00	0.00	0.00	0.00	35.80
1967-68	0.00	0.00	0.00	0.00	0.00	5.60	2.30	2.40	2.80	0.00	0.00	0.00	13.10
1968-69	0.00	0.00	0.00	0.00	1.20	2.80	0.00	0.00	11.90	0.00	0.00	0.00	15.90
1969-70	0.00	0.00	0.00	0.00	0.00	8.30	5.40	0.40	0.00	0.00	0.00	0.00	14.10
1970-71	0.00	0.00	0.00	0.00	0.00	0.90	3.30	2.00	8.40	0.60	0.00	0.00	15.20
1971-72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.80	0.00	0.00	0.00	0.00	17.80
1972-73	0.00	0.00	0.00	0.00	0.60	0.00	4.30	0.40	1.40	0.00	0.00	0.00	6.70
1973-74	0.00	0.00	0.00	0.00	0.00	9.90	0.00	5.00	0.00	0.00	0.00	0.00	14.90
1974-75	0.00	0.00	0.00	0.00	0.00	0.00	2.70	4.10	0.40	0.00	0.00	0.00	7.20
1975-76	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	1.00	0.00	0.00	0.00	1.20
1976-77	0.00	0.00	0.00	0.00	1.00	1.70	11.10	0.00	0.00	0.00	0.00	0.00	13.80
1977-78	0.00	0.00	0.00	0.00	0.00	0.00	1.30	5.10	5.00	0.00	0.00	0.00	11.40
1978-79	0.00	0.00	0.00	0.00	0.00	0.00	0.70	19.50	0.00	0.00	0.00	0.00	20.20
1979-80	0.00	0.00	0.00	0.00	0.00	0.00	16.60	7.00	15.00	0.00	0.00	0.00	38.60
1980-81	0.00	0.00	0.00	0.00	0.00	0.20	0.60	0.00	0.20	0.00	0.00	0.00	1.00

1981-82	0.00	0.00	0.00	0.00	0.00	1.90	8.30	10.80	0.00	0.20	0.00	0.00	21.20
1982-83	0.00	0.00	0.00	0.00	0.00	7.90	0.10	21.60	0.00	0.00	0.00	0.00	29.60
1983-84	0.00	0.00	0.00	0.00	0.10	0.00	1.10	2.80	0.30	0.00	0.00	0.00	4.30
1984-85	0.00	0.00	0.00	0.00	0.00	0.00	8.30	0.00	0.00	0.00	0.00	0.00	8.30
1985-86	0.00	0.00	0.00	0.00	0.00	1.30	3.30	4.40	0.00	0.00	0.00	0.00	9.00
1986-87	0.00	0.00	0.00	0.00	0.00	0.00	15.80	5.30	0.70	0.00	0.00	0.00	21.80
1987-88	0.00	0.00	0.00	0.00	4.50	0.00	8.10	0.00	0.00	0.00	0.00	0.00	12.60
1988-89	0.00	0.00	0.00	0.00	0.00	1.80	0.00	13.60	0.00	0.00	0.00	0.00	15.40
1989-90	0.00	0.00	0.00	0.00	1.10	11.70	0.00	0.00	0.00	0.20	0.00	0.00	13.00
1990-91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90	0.00	0.00	0.00	0.00	1.90
1991-92	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.90
1992-93	0.00	0.00	0.00	0.00	0.00	0.00	0.50	5.30	3.50	0.00	0.00	0.00	9.30
1993-94	0.00	0.00	0.00	0.00	0.00	5.10	2.20	1.70	0.70	0.00	0.00	0.00	9.70
1994-95	0.00	0.00	0.00	0.00	0.00	0.00	3.10	0.00	0.80	0.00	0.00	0.00	3.90
1995-96	0.00	0.00	0.00	0.00	0.00	0.00b	12.30	12.10y	2.40z	0.00x	0.00q	0.00v	12.30
1996-97	0.00v	0.00z	0.00z	0.00z	0.00	1.00	0.70	1.00	0.00	0.00	0.00	0.00	2.70
1997-98	0.00	0.00	0.00	0.00	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1998-99	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00
1999-00	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00d	0.00a	0.00z	0.00z	0.00z	0.00z	0.00
2000-01	0.00z	0.00z	0.00z	0.00z	0.00z	0.00z	0.00a	0.00z	0.00c	0.00	0.00	0.00	0.00
2001-02	0.00	0.00	0.00	0.00	0.00	0.00	8.70	0.00	0.00	0.00	0.00	0.00	8.70
2002-03	0.00	0.00	0.00	0.00	0.00	5.00	5.90	6.00	0.10	0.00	0.00	0.00	17.00
2003-04	0.00	0.00	0.00	0.00	0.00	0.00	0.00z	1.40	0.00z	0.00z	0.00z	0.00z	1.40
						Period of Record Statistics							
MEAN	0.00	0.00	0.00	0.00	0.36	2.20	4.59	4.31	2.24	0.07	0.00	0.00	14.51
S.D.	0.00	0.00	0.00	0.00	1.21	3.70	5.72	5.54	4.59	0.25	0.00	0.00	9.85
SKEW	0.00	0.00	0.00	0.00	4.64	1.86	1.77	1.55	2.41	3.94	0.00	0.00	0.78
MAX	0.00	0.00	0.00	0.00	7.30	14.50	26.20	21.60	20.10	1.20	0.00	0.00	38.90
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70
NO YRS	51	51	51	51	51	50	53	52	51	51	51	51	47

Charlottesville Albemarle Airport

Charlottesville, VA, United States

ASOS Photographs
List Stations in Albemarle County
List Stations within 5, 10, 25, or 50 miles

Type* : **ASOS-FAA**
Call Sign/ICS* : **CHO / KCHO**
WBAN* : **93736**
COOP ID* :
WMO ID* :
In Service* : **01 Aug 1955 to Present**
Elevation* : **195.4m (640.9') above s/l**
Lat/Lon* : **38°08'N / 78°27'W**
County* : **Albemarle**

- Data Inventories
- DATA
- Station History
- State Climatologist
- Regional Climate Center

Information at Other Sites

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  - Eastern Region Headquarters
  - Current Weather Conditions
  - Current Weather Forecast
- Current Radar
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DAT INV DOC 3210 -Summary Of The Day - First Order
DAT INV DOC SOD -Daily Surface Data (TD3200/3210 combined)
DAT INV DOC 3280 -Surface Airways Hourly And Airways Solar Radiation
DAT INV DOC 9950 - (see Global Surface Station Information).

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? Hourly/Daily Data, Local Climatological Data (Unedited)
? Record of Climatological Observations
? Storm Data Publication

? Miscellaneous Storm Events in Albemarle County
*All List Storms

Graphs and Other Images

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? National Mosaic Reflectivity Images
? Miscellaneous Satellite Images
? Graph Weather Elements using CLIMVIS

Period of Record	Elements Available
1962-09 thru 1962-12:	ABCDE

Please ensure that the parameters you enter are within the parameters specified in the above table. Otherwise you will receive no data.

Element 1 (A) Daily Maximum Temperature
Element 2 (B) Daily Minimum Temperature
Year/Month January
Submit Graph Values

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? SOD -Daily Surface Data (TD3200/3210 combined)

Station History

Charlottesville Albemarle Airport

Date Began	Date Ended	Lat/Lon	Elevation meters/feet	COOP ID	WBAN	Call Sign	WMO ID	Type
CHARLOTTESVILLE ALBEMARLE AP								
18 Nov 1998	Present	38°08'N / 78°27'W	195.4m / 640.9'	.	93736	CHO	.	ASOS-FAA
01 Jan 1995	18 Nov 1998	38°08'N / 78°27'W	195.4m / 640.9'	.	93736	CHO	.	.
01 Jan 1993	01 Jan 1995	38°08'N / 78°27'W	195.4m / 640.9'	.	93736	CHO	.	.
31 Dec 1981	01 Jan 1993	38°08'N / 78°27'W	189.6m / 621.9'	.	93736	CHO	.	.
30 Apr 1975	31 Dec 1981	38°08'N / 78°27'W	189.6m / 621.9'	.	93736	CHO	.	FSS
01 Apr 1975	30 Apr 1975	38°08'N / 78°27'W	189.9m / 622.9'	441603	93736	CHO	.	FSS
01 Jan 1969	01 Apr 1975	38°08'N / 78°27'W	189.9m / 622.9'	441603	93736	CHO	.	FSS
01 Jan 1964	01 Jan 1969	38°08'N / 78°27'W	189.9m / 622.9'	441603	93736	CHO	.	FAA
01 Jan 1961	01 Jan 1964	38°08'N / 78°27'W	192.9m / 632.7'	441603	93736	.	.	FAA
01 Dec 1960	01 Jan 1961	38°08'N / 78°27'W	192.9m / 632.7'	441603	93736	.	.	SAWRS
01 Aug 1955	01 Dec 1960	38°08'N / 78°27'W	193.2m / 633.7'	.	93736	.	.	SAWRS

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CHARLOTTESVILLE 2 W, VIRGINIA

Period of Record General Climate Summary - Temperature

Station:(441593) CHARLOTTESVILLE 2 W															
From Year=1948 To Year=2003															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	44.9	26.8	35.8	81	31/2002	-10	19/1994	45.9	50	25.2	***	0.0	4.1	23.0	0.2
February	48.0	28.8	38.4	81	25/1985	1	17/1958	45.7	90	28.1	***	0.0	2.5	19.0	0.0
March	56.7	35.6	46.1	92	31/1998	10	02/1980	52.9	100	34.3	***	0.0	0.4	11.8	0.0
April	68.4	45.5	56.9	96	18/2002	21	14/1950	62.0	85	51.6	83	0.9	0.0	1.6	0.0
May	75.9	54.3	65.1	96	21/1996	33	10/1966	71.1	91	59.3	67	1.4	0.0	0.0	0.0
June	83.2	62.3	72.8	100	27/1952	40	01/1967	77.1	52	68.0	92	6.1	0.0	0.0	0.0
July	87.2	66.4	76.8	104	31/1953	49	01/1988	80.8	55	72.5	84	11.0	0.0	0.0	0.0
August	85.7	65.0	75.3	105	01/1999	44	30/1986	78.5	102	70.4	94	8.5	0.0	0.0	0.0
September	79.3	58.6	68.9	107	07/1954	35	24/1974	74.8	98	65.6	75	3.2	0.0	0.0	0.0
October	68.9	48.1	58.4	96	05/1954	26	20/1972	64.1	84	52.7	76	0.2	0.0	0.7	0.0
November	58.4	38.9	48.6	88	02/1950	10	26/1950	55.7	99	42.8	76	0.0	0.1	7.8	0.0
December	47.5	29.8	38.7	83	08/1998	-3	25/1983	47.2	56	27.0	89	0.0	2.2	19.6	0.1
Annual	67.0	46.7	56.8	107	19540907	-10	19940119	59.7	53	55.0	58	31.4	9.4	83.5	0.3
Winter	46.8	28.5	37.6	83	19981208	-10	19940119	43.4	102	31.0	78	0.0	8.9	61.6	0.3
Spring	67.0	45.2	56.1	96	19960521	10	19800302	59.8	91	53.1	60	2.3	0.4	13.4	0.0
Summer	85.4	64.5	75.0	105	19990801	40	19670601	77.9	102	72.6	72	25.6	0.0	0.0	0.0
Fall	68.9	48.5	58.7	107	19540907	10	19501126	62.0	53	54.3	76	3.4	0.1	8.5	0.0

Table updated on Dec 9,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

CHARLOTTESVILLE 2 W, VIRGINIA

Period of Record General Climate Summary - Precipitation

Station:(441593) CHARLOTTESVILLE 2 W

From Year=1948 To Year=2003

	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	3.25	9.70	78	0.21	81	2.50	09/1978	10	6	2	1	5.6	29.4	66
February	3.26	8.02	98	0.20	68	3.09	14/1984	10	6	2	1	6.2	23.5	79
March	4.13	8.25	94	1.10	81	3.00	04/1993	11	7	3	1	3.8	29.8	60
April	3.27	9.82	83	0.87	85	2.82	03/1983	11	6	2	1	0.3	3.0	59
May	4.45	10.53	71	1.47	64	4.75	28/1982	12	8	3	1	0.0	0.0	49
June	3.97	12.81	72	0.44	66	7.49	22/1972	10	6	3	1	0.0	0.0	49
July	5.00	14.83	94	0.76	53	5.02	28/1994	12	7	3	1	0.0	0.0	49
August	4.37	11.68	55	0.98	66	5.38	15/1949	11	7	3	1	0.0	0.0	48
September	4.34	17.96	87	0.62	85	9.20	08/1987	9	6	3	1	0.0	0.0	48
October	3.90	12.70	76	0.01	100	6.24	21/1961	8	5	2	1	0.1	3.3	79
November	3.46	13.06	85	0.54	101	4.69	28/1993	9	5	2	1	1.1	10.6	53
December	3.35	7.56	48	0.36	55	3.46	04/1948	9	6	2	1	3.6	25.6	89
Annual	46.74	66.03	72	30.39	63	9.20	19870908	122	76	31	12	20.7	61.9	62
Winter	9.85	18.02	98	4.32	102	3.46	19481204	29	18	7	2	15.5	44.0	96
Spring	11.84	19.68	83	5.35	86	4.75	19820528	34	21	8	3	4.1	29.8	60
Summer	13.34	26.71	69	3.30	66	7.49	19720622	33	21	8	3	0.0	0.0	49
Fall	11.71	20.49	72	4.48	53	9.20	19870908	27	16	7	3	1.2	10.6	53

Table updated on Dec 9,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@cirrus.dnr.state.sc.us

CHARLOTTESVILLE VA	
Latitude = 38.13 N	WMO No. 724016
Longitude = 78.45 W	Elevation = 640 feet
Period of Record = 1973 to 1996	Average Pressure = 29.34 inches Hg

Design Criteria Data

		Mean Coincident (Average) Values			
Dry Bulb Temperature (T)	**Design Value (°F)**	Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	97	77	109	9.6	SW
0.4% Occurrence	93	76	108	8.8	SSW
1.0% Occurrence	91	75	108	8.3	S
2.0% Occurrence	89	74	106	8.0	S
Mean Daily Range	19	-	-	-	-
97.5% Occurrence	24	21	10	6.6	NW
99.0% Occurrence	19	16	8	6.5	W
99.6% Occurrence	14	12	6	5.9	WNW
Median of Extreme Lows	3	2	3	6.3	NW
		Mean Coincident (Average) Values			
Wet Bulb Temperature (T_{wb})	**Design Value (°F)**	Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	82	91	151	7.6	S
0.4% Occurrence	79	88	135	8.0	S
1.0% Occurrence	77	87	125	7.5	S
2.0% Occurrence	76	85	121	7.3	S
		Mean Coincident (Average) Values			
Humidity Ratio (HR)	**Design Value (gr/lb)**	Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	154	86	1.00	7.3	S
0.4% Occurrence	138	83	0.90	6.6	S
1.0% Occurrence	130	82	0.85	6.8	S
2.0% Occurrence	126	81	0.82	6.5	S
Air Conditioning/		$T \geq 93°F$	$T \geq 80°F$	$T_{wb} \geq 73°F$	$T_{wb} \geq 67°F$
Humid Area Criteria	# of Hours	49	1014	689	1935

Other Site Data

Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
7	3.2	90	2.4 + 0.9
Ground Water Temperature (°F) 50 Foot Depth *	**Frost Depth 50 Year Recurrence (in.)**	**Ground Snow Load 50 Year Recurrence (lb/ft^2)**	**Average Annual Freeze-Thaw Cycles (#)**
60.6	N/A	N/A	54

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

Fredericksburg National Pk

Fredericksburg, VA, United States

Other Stations in Fredericksburg
List Stations in Division VA-01
List Stations in Spotsylvania County
List Stations within 5, 10, 25, or 50 miles

Call Sign/ICS* :
WBAN* :
COOP ID* : 443192
Climate Division* : VA-01 - Tidewater
WMO ID* :
In Service* : 01 Sep 1978 to 01 Apr 1997
Elevation* : 27.4m (89.9') above s/l
Lat/Lon* : 38°19'N / 77°27'W
County* : Spotsylvania

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- State Climatologist
- Regional Climate Center

Information at Other Sites
- National Weather Service
  - Eastern Region Headquarters
  - Regional Forecast Office
  - Local Weather Conditions
  - Local Weather Forecast
- Current Radar
- Current Satellite
- Sunrise/Sunset

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Other Stations in Fredericksburg

Fredericksburg
Fredericksburg 2
Fredericksburg Embry Plant
Fredericksburg Sewage

Data Inventories

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- *DOC to view documentation*

Surface
DAT INV DOC 3200 -Cooperative Summary Of The Day
DAT INV DOC SOD -Daily Surface Data (TD3200/3210 combined)
DAT INV DOC 3220 -Summary Of The Month (SOM) Cooperative
DAT INV DOC 3240 -Hourly Precipitation Data
DAT INV DOC 3260 -15 Minute Precipitation Data

DATA

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Forms, Publications, and Web Pages
Graphs and Other Images
CD-ROMs
Digital ASCII Files

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? Miscellaneous Storm Events in Spotsylvania County
*All List Storms

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Station History

Fredericksburg National Pk

Date Began	Date Ended	Lat/Lon	Elevation meters/feet	COOP ID	WBAN	Call Sign	WMO ID	Type
FREDERICKSBURG NATL PK								
01 Oct 1992	01 Apr 1997	38°19'N / 77°27'W	27.4m / 89.9'	443192	.	.	.	.
01 Sep 1978	01 Oct 1992	38°19'N / 77°27'W	27.4m / 89.9'	443192	.	.	.	.

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Fredericksburg 2

Fredericksburg, VA, United States

Other Stations in Fredericksburg
List Stations in Division VA-01
List Stations in Spotsylvania County
List Stations within 5, 10, 25, or 50 miles

Call Sign/ICS* :
WBAN* :
COOP ID* : 443200 (443192)
Climate Division* : VA-01 - Tidewater
WMO ID* :
In Service* : 01 Aug 1948 to 10 Nov 1992
Elevation* : 36.6m (120.0') above s/l
Lat/Lon* : 38°18'N / 77°28'W
County* : Spotsylvania

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- Regional Climate Center

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  - Eastern Region Headquarters
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Other Stations in Fredericksburg

Fredericksburg
Fredericksburg Embry Plant
Fredericksburg National Pk
Fredericksburg Sewage

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? 3260 -15 Minute Precipitation Data

Station History

Fredericksburg 2

Date Began	Date Ended	Lat/Lon	Elevation meters/feet	COOP ID	WBAN	Call Sign	WMO ID	Type
FREDERICKSBURG 2								
01 Sep 1978	10 Nov 1992	38°18'N / 77°28'W	36.6m / 120.0'	443200	.	.	.	.
FREDERICKSBURG NATIONAL PARK								
01 Aug 1973	01 Sep 1978	38°18'N / 77°28'W	36.6m / 120.0'	443192	.	.	.	.
25 Oct 1967	01 Aug 1973	38°18'N / 77°28'W	30.5m / 100.0'	443192	.	.	.	.
FREDERICKSBURG 2 S								
01 Oct 1967	25 Oct 1967	38°18'N / 77°28'W	30.5m / 100.0'	443192	.	.	.	.
01 Mar 1961	01 Oct 1967	38°17'N / 77°27'W	15.2m / 49.9'	443192	.	.	.	.
01 Aug 1948	01 Mar 1961	38°18'N / 77°28'W	30.5m / 100.0'	443192	.	.	.	.

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Fredericksburg Embry Plant

Fredericksburg, VA, United States

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Call Sign/ICS* :
WBAN* :
COOP ID* : 443197
Climate Division* : VA-01 - Tidewater
WMO ID* :
In Service* : 01 Aug 1948 to 20 Aug 1969
Elevation* : 6.1m (20.0') above s/l
Lat/Lon* : 38°18'N / 77°28'W
County* : Spotsylvania

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? 3220 -Summary Of The Month (SOM) Cooperative
? 3240 -Hourly Precipitation Data

Station History

Fredericksburg Embry Plant

Date Began	Date Ended	Lat/Lon	Elevation meters/feet	COOP ID	WBAN	Call Sign	WMO ID	Type
FREDERICKSBURG EMBRY PLANT								
01 Oct 1951	20 Aug 1969	38°18'N / 77°28'W	6.1m / 20.0'	443197	.	.	.	.
01 Aug 1948	30 Sep 1951	38°18'N / 77°28'W	6.1m / 20.0'	443197	.	.	.	.

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Fredericksburg Sewage

Fredericksburg, VA, United States

Other Stations in Fredericksburg
List Stations in Division VA-01
List Stations in Fredericksburg County
List Stations within 5, 10, 25, or 50 miles

Call Sign/ICS* :
WBAN* :
COOP ID* : 443204
Climate Division* : VA-01 - Tidewater
WMO ID* :
In Service* : 15 Feb 1993 to Present
Elevation* : 4.6m (15.1') above s/l
Lat/Lon* : 38°17'N / 77°27'W
County* : Fredericksburg

- Data Inventories
- DATA
- Station History
- State Climatologist
- Regional Climate Center

Information at Other Sites
- National Weather Service
  - Eastern Region Headquarters
  - Regional Forecast Office
  - Local Weather Conditions
  - Local Weather Forecast
- Current Radar
- Current Satellite
- Sunrise/Sunset

* *Disclaimer*
* *List of NCDC Datasets*
* *Please report any Data Errors found.*
* *Note to webmasters: you can link directly to this page.*

Other Stations in Fredericksburg

Fredericksburg
Fredericksburg 2
Fredericksburg Embry Plant
Fredericksburg National Pk

Data Inventories

Please note that additional data (digital and non-digital) may be available for this station. Contact NCDC if additional details are needed.

Click on the following where available:
- *DAT to obtain digital ascii data (charges may apply),*
  Please do not order these data if you do not know what a Digital ASCII File is.
- *INV to view inventory, or*
- *DOC to view documentation*

Surface
DAT INV DOC 3200 -Cooperative Summary Of The Day
DAT INV DOC SOD -Daily Surface Data (TD3200/3210 combined)
DAT INV DOC 3220 -Summary Of The Month (SOM) Cooperative

DATA

Additional data products may be available for this station. If you can't find what you are looking for here, please try our Most Popular Products page.

Forms, Publications, and Web Pages
Graphs and Other Images
CD-ROMs
Digital ASCII Files

Forms, Publications, and Web Pages

Most of these products are publications that have been converted to on-line access. As such, these documents have column headings and are displayed in an easy-to-read format.

For additional information and product samples, click on the ? icon next to the desired product.

? **Daily/Monthly/Annual Virginia Climatological Data**
? **Record of Climatological Observations**
? **Annual Climatological Summary**
? **Storm Data Publication**

? **Miscellaneous Storm Events in Fredericksburg County**
*All List Storms

Graphs and Other Images

Includes contour maps, time series, NEXRAD radar mosaics, and satellite images.

For additional information and product samples, click on the ? icon next to the desired product.

? **National Mosaic Reflectivity Images**
? **Miscellaneous Satellite Images**

CD-ROMs

The following are some of the more popular CD-ROMs that contain data for this station. Others are available that may contain summarized data for this station. A complete list of CD-ROMs is available in the OnLine Store.

For additional information, click on the ? icon next to the desired product.

? **NCDC Cooperative Station Data**

Digital ASCII Files

These files may or may not contain column headers. In order to use these files, you will need to import them into a spreadsheet or database package for presentation. Please do not order these data if you do not know what a Digital ASCII File is. A sample Digital ASCII File is available for viewing but content varies a great deal depending on your request. Other digital files are available Offline that may contain data for this station.

For additional information and product samples, click on the ? icon next to the desired product.

? SOD -Daily Surface Data (TD3200/3210 combined)
? 3220 -Summary Of The Month (SOM) Cooperative

Station History

Fredericksburg Sewage

Date Began	Date Ended	Lat/Lon	Elevation meters/feet	COOP ID	WBAN	Call Sign	WMO ID	Type
FREDERICKSBURG SEWAGE								
14 Dec 1998	Present	38°17'N / 77°27'W	4.6m / 15.1'	443204	.	.	.	.
30 Nov 1993	14 Dec 1998	38°18'N / 77°28'W	4.6m / 15.1'	443204	.	.	.	.
FREDERICKSBURG 3								
15 Feb 1993	30 Nov 1993	38°18'N / 77°28'W	4.6m / 15.1'	443204	.	.	.	.

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NCDC / Climate-Radar Data Inventories / Locate Station / Search

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Please see the NCDC Contact Page if you have questions or comments.

FREDERICKSBURG NATL PK, VIRGINIA

Period of Record General Climate Summary - Temperature

Station:(443192) FREDERICKSBURG NATL PK															
From Year=1930 To Year=1997															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	45.9	24.2	35.0	80	27/1950	-12	28/1935	48.3	32	23.6	40	0.0	3.3	24.5	0.7
February	49.2	25.7	37.4	86	25/1930	-10	10/1979	48.1	76	27.8	79	0.0	1.6	21.2	0.3
March	58.0	32.8	45.4	89	14/1990	3	04/1943	55.9	45	34.8	60	0.0	0.2	16.6	0.0
April	69.0	41.7	55.3	97	27/1960	20	04/1943	60.7	81	50.5	61	0.6	0.0	5.1	0.0
May	78.0	51.9	65.0	98	22/1941	28	02/1943	70.1	53	60.1	92	2.4	0.0	0.3	0.0
June	85.7	60.5	73.1	103	30/1945	37	01/1938	77.7	43	68.3	92	9.2	0.0	0.0	0.0
July	89.3	65.3	77.3	105	10/1936	44	01/1988	81.0	87	72.7	62	15.6	0.0	0.0	0.0
August	87.4	63.4	75.4	105	21/1983	40	29/1982	79.0	80	70.3	92	11.9	0.0	0.0	0.0
September	81.5	56.5	69.0	106	01/1953	30	21/1956	75.9	30	64.9	62	5.1	0.0	0.1	0.0
October	70.8	44.2	57.5	97	06/1941	21	20/1948	64.5	71	50.2	88	0.4	0.0	3.9	0.0
November	60.0	34.6	47.3	89	01/1950	4	29/1955	54.5	31	41.5	51	0.0	0.0	14.1	0.0
December	48.9	26.8	37.9	84	01/1934	-6	26/1983	46.4	31	26.8	89	0.0	1.5	22.6	0.1
Annual	68.6	44.0	56.3	106	19530901	-12	19350128	58.5	31	53.7	62	45.4	6.6	108.3	1.1
Winter	48.0	25.5	36.8	86	19300225	-12	19350128	46.8	32	30.3	63	0.0	6.4	68.3	1.1
Spring	68.3	42.1	55.2	98	19410522	3	19430304	59.2	77	51.2	84	3.0	0.2	21.9	0.0
Summer	87.5	63.1	75.3	105	19360710	37	19380601	77.8	87	71.8	46	36.8	0.0	0.0	0.0
Fall	70.8	45.1	58.0	106	19530901	4	19551129	63.3	31	53.4	88	5.6	0.0	18.1	0.0

Table updated on Dec 9,
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@dnr.state.sc.us

FREDERICKSBURG NATL PK, VIRGINIA

Period of Record General Climate Summary - Precipitation

Station:(443192) FREDERICKSBURG NATL PK														
From Year=1930 To Year=1997														
	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	3.20	7.98	37	0.34	81	2.02	26/1933	10	6	2	1	5.2	30.5	87
February	2.65	6.38	72	0.28	78	1.94	11/1994	9	6	2	0	4.1	26.3	79
March	3.55	9.55	94	0.99	81	2.93	29/1984	10	7	3	1	2.3	21.0	60
April	3.04	6.97	83	0.41	85	2.56	17/1987	10	6	2	1	0.1	1.0	71
May	3.64	9.12	60	0.63	39	2.45	02/1989	11	7	3	1	0.0	0.0	30
June	3.36	10.80	72	0.62	44	5.65	22/1972	10	6	2	1	0.0	0.0	30
July	4.49	16.20	45	0.74	57	5.50	26/1996	11	7	3	1	0.0	1.9	41
August	4.13	13.74	55	0.51	63	5.19	13/1955	10	6	3	1	0.0	0.0	30
September	3.54	10.94	75	0.40	54	5.90	05/1935	8	5	2	1	0.0	0.0	30
October	3.42	14.44	42	0.14	63	6.17	16/1942	8	5	2	1	0.0	2.0	40
November	3.09	7.26	85	0.20	81	4.35	02/1956	9	5	2	1	0.6	11.0	53
December	3.01	7.07	69	0.25	37	3.58	04/1948	9	6	2	1	2.3	18.9	89
Annual	41.12	57.31	42	22.82	30	6.17	19421016	115	74	28	10	14.6	35.0	40
Winter	8.86	16.26	79	4.32	41	3.58	19481204	28	18	6	2	11.6	37.5	40
Spring	10.23	17.41	93	5.05	85	2.93	19840329	32	20	7	2	2.4	21.0	60
Summer	11.98	23.98	45	4.81	83	5.65	19720622	31	20	8	3	0.0	1.9	41
Fall	10.05	19.32	42	2.24	30	6.17	19421016	25	16	7	3	0.6	11.0	53

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Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Southeast Regional Climate Center, sercc@cirrus.dnr.state.sc.us

Piedmont Research Station

VA, United States

List Stations in Division VA-04
List Stations in Orange County
List Stations within 5, 10, 25, or 50 miles

Call Sign/ICS* :
WBAN* :
COOP ID* : 446712
Climate Division* : VA-04 - Northern
WMO ID* :
In Service* : 01 Aug 1948 to Present
Elevation* : 158.5m (519.9') above s/l
Lat/Lon* : 38°14'N / 78°07'W
County* : Orange

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- DATA
- Station History
- State Climatologist
- Regional Climate Center

Information at Other Sites
- National Weather Service
  - Eastern Region Headquarters
  - Regional Forecast Office
  - Local Weather Conditions
  - Local Weather Forecast
- Current Radar
- Current Satellite
- Sunrise/Sunset

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Data Inventories

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- *INV to view inventory, or*
- *DOC to view documentation*

Surface
DAT INV DOC 3200 -Cooperative Summary Of The Day
DAT INV DOC SOD -Daily Surface Data (TD3200/3210 combined)
DAT INV DOC 3220 -Summary Of The Month (SOM) Cooperative
DAT INV DOC 3240 -Hourly Precipitation Data
DAT INV DOC 3260 -15 Minute Precipitation Data

DATA

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Forms, Publications, and Web Pages
Graphs and Other Images
CD-ROMs
Digital ASCII Files

Forms, Publications, and Web Pages

Most of these products are publications that have been converted to on-line access. As such, these documents have column headings and are displayed in an easy-to-read format.

For additional information and product samples, click on the ? icon next to the desired product.

? Hourly Precipitation Data for Virginia
? Daily/Monthly/Annual Virginia Climatological Data
? Record of Climatological Observations
? Annual Climatological Summary
? Storm Data Publication

? Miscellaneous Storm Events in Orange County
*All List Storms

Graphs and Other Images

Includes contour maps, time series, NEXRAD radar mosaics, and satellite images.

For additional information and product samples, click on the ? icon next to the desired product.

? National Mosaic Reflectivity Images
? Miscellaneous Satellite Images

CD-ROMs

The following are some of the more popular CD-ROMs that contain data for this station. Others are available that may contain summarized data for this station. A complete list of CD-ROMs is available in the OnLine Store.

For additional information, click on the ? icon next to the desired product.

? NCDC Cooperative Station Data
? U.S. Hourly Precipitation Data

Digital ASCII Files

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For additional information and product samples, click on the ? icon next to the desired product.

? SOD -Daily Surface Data (TD3200/3210 combined)
? 3220 -Summary Of The Month (SOM) Cooperative
? 3240 -Hourly Precipitation Data
? 3260 -15 Minute Precipitation Data

Station History

Piedmont Research Station

Date Began	Date Ended	Lat/Lon	Elevation meters/feet	COOP ID	WBAN	Call Sign	WMO ID	Type
PIEDMONT RESEARCH STN								
05 Dec 2001	Present	38°14'N / 78°07'W	158.5m / 519.9'	446712	.	.	.	.
15 Feb 1999	05 Dec 2001	38°14'N / 78°07'W	158.5m / 519.9'	446712	.	.	.	.
01 Oct 1992	15 Feb 1999	38°13'N / 78°07'W	158.5m / 519.9'	446712	.	.	.	.
01 Oct 1981	01 Oct 1992	38°13'N / 78°07'W	157.0m / 515.0'	446712	.	.	.	.
PIEDMONT FIELD STN								
01 Sep 1961	01 Oct 1981	38°13'N / 78°07'W	159.1m / 521.8'	446712	.	.	.	.
01 Aug 1948	01 Sep 1961	38°13'N / 78°06'W	153.0m / 501.8'	446712	.	.	.	.

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PIEDMONT RESEARCH STN, VIRGINIA

Period of Record General Climate Summary - Temperature

Station:(446712) PIEDMONT RESEARCH STN															
From Year=1948 To Year=2003															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days	# Days
January	44.5	24.1	34.3	81	31/2002	-9	21/1970	48.4	50	23.2	***	0.0	4.3	25.0	0.5
February	47.4	26.2	36.8	79	25/1985	-11	05/1996	45.6	49	25.5	***	0.0	2.6	21.4	0.1
March	55.9	33.2	44.5	88	31/1998	7	08/1960	50.2	100	32.7	***	0.0	0.5	15.2	0.0
April	67.2	43.1	55.2	94	24/1960	18	10/1985	60.4	54	49.7	66	0.4	0.0	3.3	0.0
May	75.2	52.4	63.8	95	13/1956	30	07/1970	71.0	53	58.0	67	1.2	0.0	0.1	0.0
June	83.1	61.1	72.1	102	27/1952	41	01/1966	76.9	52	67.5	72	5.9	0.0	0.0	0.0
July	86.8	65.5	76.2	106	01/1959	47	01/1988	80.9	55	72.5	62	10.8	0.0	0.0	0.0
August	85.4	64.1	74.7	103	30/1953	44	29/1986	77.6	88	70.7	92	8.0	0.0	0.0	0.0
September	79.1	57.0	68.0	106	06/1954	33	25/1963	73.6	54	63.5	67	2.8	0.0	0.0	0.0
October	68.7	45.0	56.9	98	07/1951	22	30/1952	62.9	54	51.3	76	0.1	0.0	2.2	0.0
November	58.0	35.7	46.8	86	01/1950	9	29/1955	52.6	101	40.3	76	0.0	0.0	12.2	0.0
December	47.2	27.3	37.3	79	08/1998	-4	23/1989	46.2	56	25.2	89	0.0	2.3	22.3	0.1
Annual	66.5	44.6	55.5	106	19540906	-11	19960205	58.0	54	53.6	66	29.4	9.8	101.7	0.7
Winter	46.4	25.9	36.1	81	20020131	-11	19960205	43.8	49	30.1	78	0.0	9.3	68.7	0.7
Spring	66.1	42.9	54.5	95	19560513	7	19600308	58.3	77	51.1	60	1.6	0.5	18.6	0.0
Summer	85.1	63.6	74.3	106	19590701	41	19660601	77.0	87	71.6	92	24.8	0.0	0.0	0.0
Fall	68.6	45.9	57.3	106	19540906	9	19551129	60.4	54	52.7	76	3.0	0.0	14.4	0.0

Table updated on Dec 9,
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Southeast Regional Climate Center, sercc@dnr.state.sc.us

PIEDMONT RESEARCH STN, VIRGINIA

Period of Record General Climate Summary - Precipitation

Station:(446712) PIEDMONT RESEARCH STN														
From Year=1948 To Year=2003														
	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	2.88	8.71	78	0.41	81	2.71	14/1968	9	6	2	1	6.1	32.0	87
February	2.74	7.52	98	0.29	68	2.33	08/1965	9	6	2	1	6.3	28.0	79
March	3.70	8.39	93	1.11	81	2.76	06/1962	10	7	3	1	3.5	25.5	60
April	3.14	7.97	83	0.49	85	2.24	22/1992	11	6	2	1	0.3	4.0	59
May	3.87	10.29	71	0.65	64	4.69	06/1989	12	7	3	1	0.0	0.0	49
June	3.91	12.78	72	0.68	80	7.85	22/1972	10	6	2	1	0.0	0.0	49
July	4.37	9.92	97	1.01	53	4.65	24/1997	12	7	3	1	0.0	0.0	49
August	3.96	13.32	55	0.49	95	4.80	28/1978	10	6	2	1	0.0	0.0	48
September	3.53	11.15	87	0.62	53	4.95	09/1987	9	6	2	1	0.0	0.0	48
October	3.51	12.08	76	0.00	63	5.24	15/1954	8	5	2	1	0.1	4.0	79
November	3.37	12.09	85	0.48	101	5.47	28/1993	9	6	2	1	0.9	6.0	68
December	3.09	7.29	73	0.28	55	2.83	11/1992	8	6	2	1	3.5	23.1	66
Annual	42.07	63.47	96	30.37	63	7.85	19720622	117	74	28	11	20.6	63.3	96
Winter	8.71	15.55	98	3.93	77	2.83	19921211	27	17	6	2	15.9	54.0	96
Spring	10.71	17.23	83	5.79	64	4.69	19890506	33	20	8	3	3.8	25.5	60
Summer	12.25	20.90	55	5.70	54	7.85	19720622	32	20	8	3	0.0	0.0	49
Fall	10.41	19.52	79	2.52	101	5.47	19931128	26	16	7	3	0.9	6.0	68

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Southeast Regional Climate Center, sercc@cirrus.dnr.state.sc.us

VIRGINIA STATE CLIMATOLOGY OFFICE

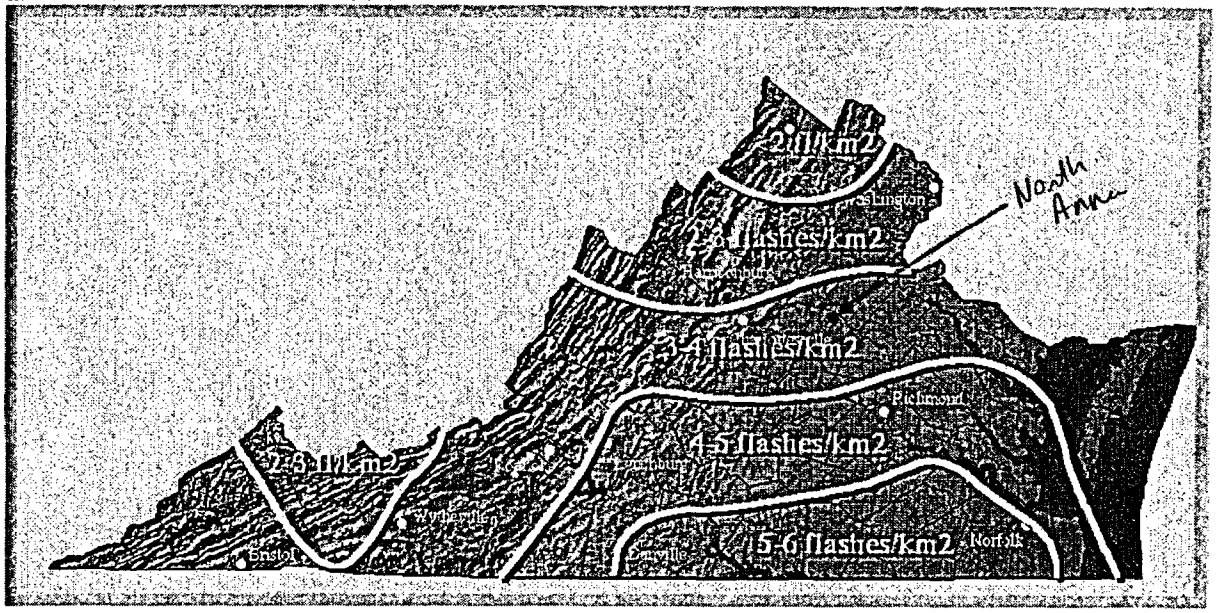
Selected 24-Hour and Monthly VA Station Snowfall Records:

Observing Station	County/Independent City	Period of Record	Monthly Record	Date	24-Hour Record	Date(s)
Abingdon	Washington Co.	1970-1999	27.9	Jan-1986	12.0	Jan-07, 1996; Feb-2, 1996
Ashland	Hanover Co.	1948-1999	30.2	Jan-1996	14.0	Jan-07, 1996
Big Meadows	Madison Co.	1948-1999	53.0	Jan-1996	33.0	Mar-06, 1962
Charlottesville	Albemarle Co.	1893-1999	30.2	Jan-1940	20.7	Mar-06, 1962
Clarksville	Mecklenberg Co.	1948-1999	18.0	Jan-1966	11.0	Jan-27, 1966
Covington	City of Covington	1948-1999	35.0	Jan-1996	18.0	Jan-07, 1996
Dale Enterprise	Rockingham Co.	1948-1999	34.3	Jan-1996	20.0	Feb-11, 1983
Emporia	City of Emporia	1948-1999	17.0	Feb-1979	11.0	Dec-12, 1958
Fredericksburg National Park	Spotsylvania Co.	1930-1999	30.5	Jan-1987	17.0	Jan-24, 1940
Galax	City of Galax	1948-1999	31.5	Mar-1960	20.0	Mar-13, 1993
Lynchburg	Campbell Co.	1930-1999	31.8	Jan-1966	19.0	Jan-01, 1996
Martinsville	City of Martinsville	1948-1999	28.5	Jan-1966	19.0	Mar-13, 1993
Norfolk	City of Norfolk	1948-1999	24.4	Feb-1989	14.2	Feb-17&18, 1989
Pennington Gap	Lee Co.	1931-1999	35.0	Mar-1960	20.0	Mar-03, 1942
Piedmont Research	Orange Co.	1948-1999	32.0	Jan-1987	18.0	Mar-06, 1962
Richmond-Int'l Arpt	Henrico Co.	1897-1999	28.5	Jan-1940	21.6	Jan-23&24, 1940
Roanoke	Roanoke Co.	1948-1999	41.2	Jan-1966	22.2	Jan-06&07, 1996

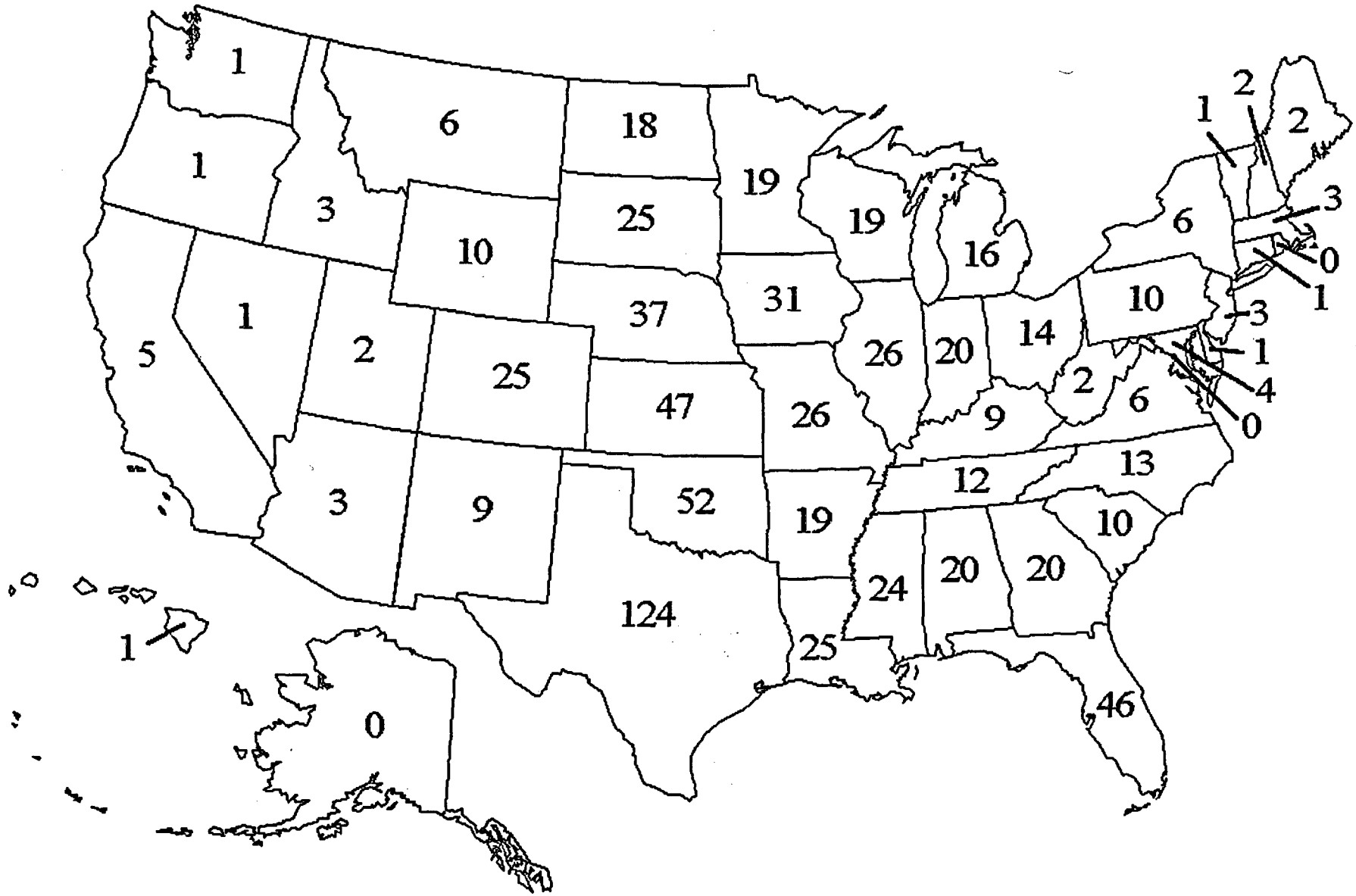
Rocky Mount	Franklin Co.	1948-1999	33.5	Jan-1966	13.5	Jan-07, 1996
Staffordsville	Giles Co.	1951-1999	34.0	Mar-1960	14.3	Jan-07, 1996
Staunton	City of Staunton	1948-1999	33.0	Jan-1978	22.0	Mar-06, 1962
Tangier Island	Accomack Co.	1952-1999	19.0	Mar-1966	10.0	Jan-07, 1958; Jan-27, 1966
Tye River	Nelson Co.	1948-1999	31.5	Jan-1966	17.0	Dec-26, 1969
Walkerton	King and Queen Co.	1932-1999	29.2	Jan-1940	22.0	Jan-25, 1940
Wallaceton-Lake Drummond	City of Chesapeake	1930-1999	21.0	Dec-1935	15.0	Feb-10, 1948
Warrenton	Fauquier Co.	1951-1999	30.5	Jan-1996	13.0	Mar-14, 1993; Jan-07, 1996
Warsaw	Richmond Co.	1892-1999	27.2	Jan-1987	17.0	Jan-26, 1987
Washington-Dulles	Loudoun Co.	1962-1999	30.9	Jan-1996	22.8	Feb-10&11, 1983
Washington-Reagan	Arlington Co.	1948-1999	30.6	Feb-1979	18.7	Feb-18&19, 1979
Williamsburg	York Co.	1950-1999	21.8	Jan-1966	13.5	Jan-05, 1980
Winchester	Frederick Co.	1948-1999	31.0	Mar-1962	22.0	Mar-06, 1962
Wise	Wise Co.	1955-1999	38.7	Jan-1996	26.0	Mar-13, 1993
Woodstock	Shenandoah Co.	1930-1999	34.7	Feb-1983	24.0	Mar-06, 1962
Wytheville	Wythe Co.	1930-1999	30.5	Jan-1966, Jan-1996	16.0	Jan-07, 1996

Lightning Strike Density Map for Virginia

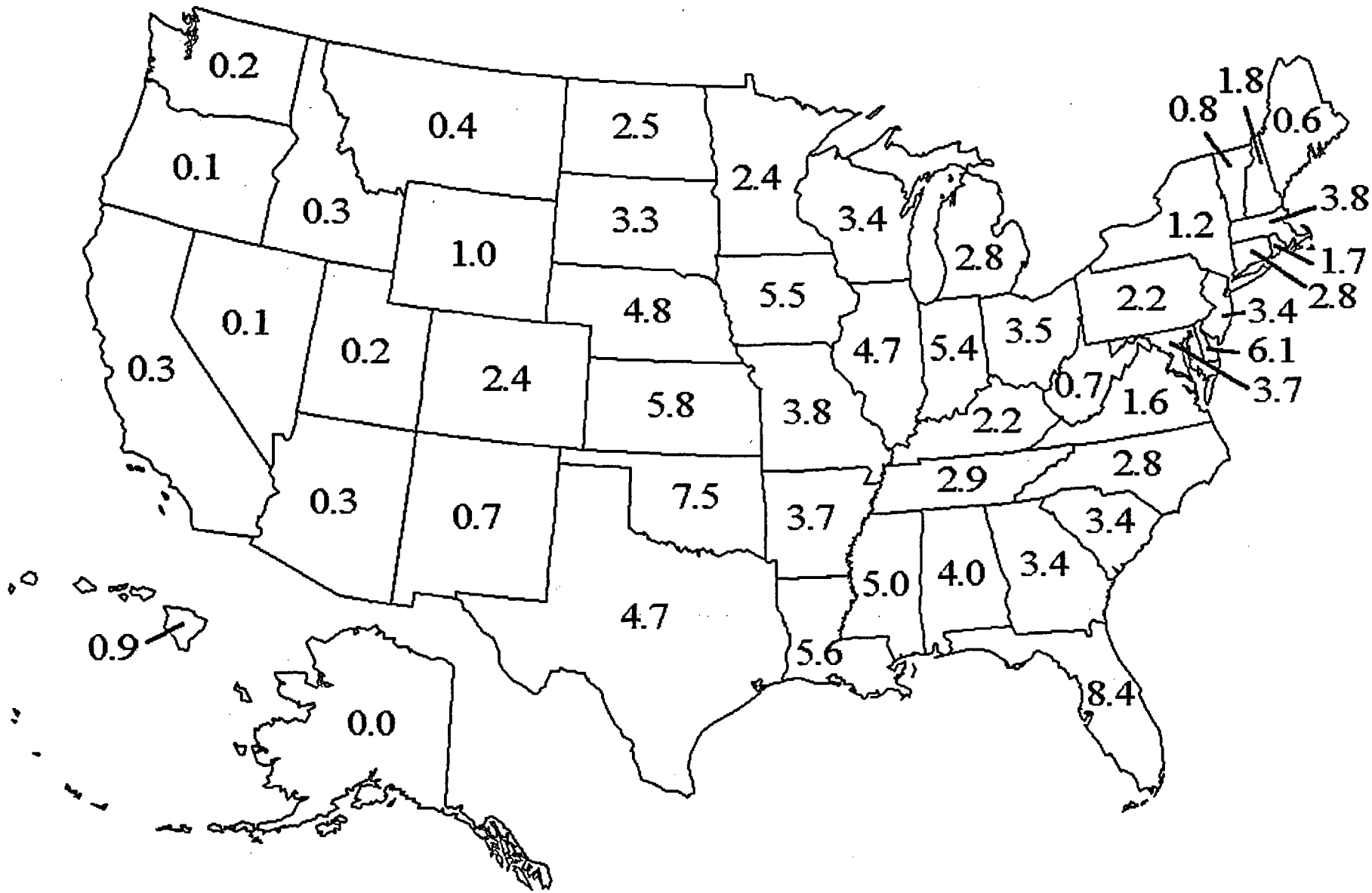
This map is based upon lightning strike data for the year 1989. Strikes were identified by the detector network established by the Electric Power Research Institute.



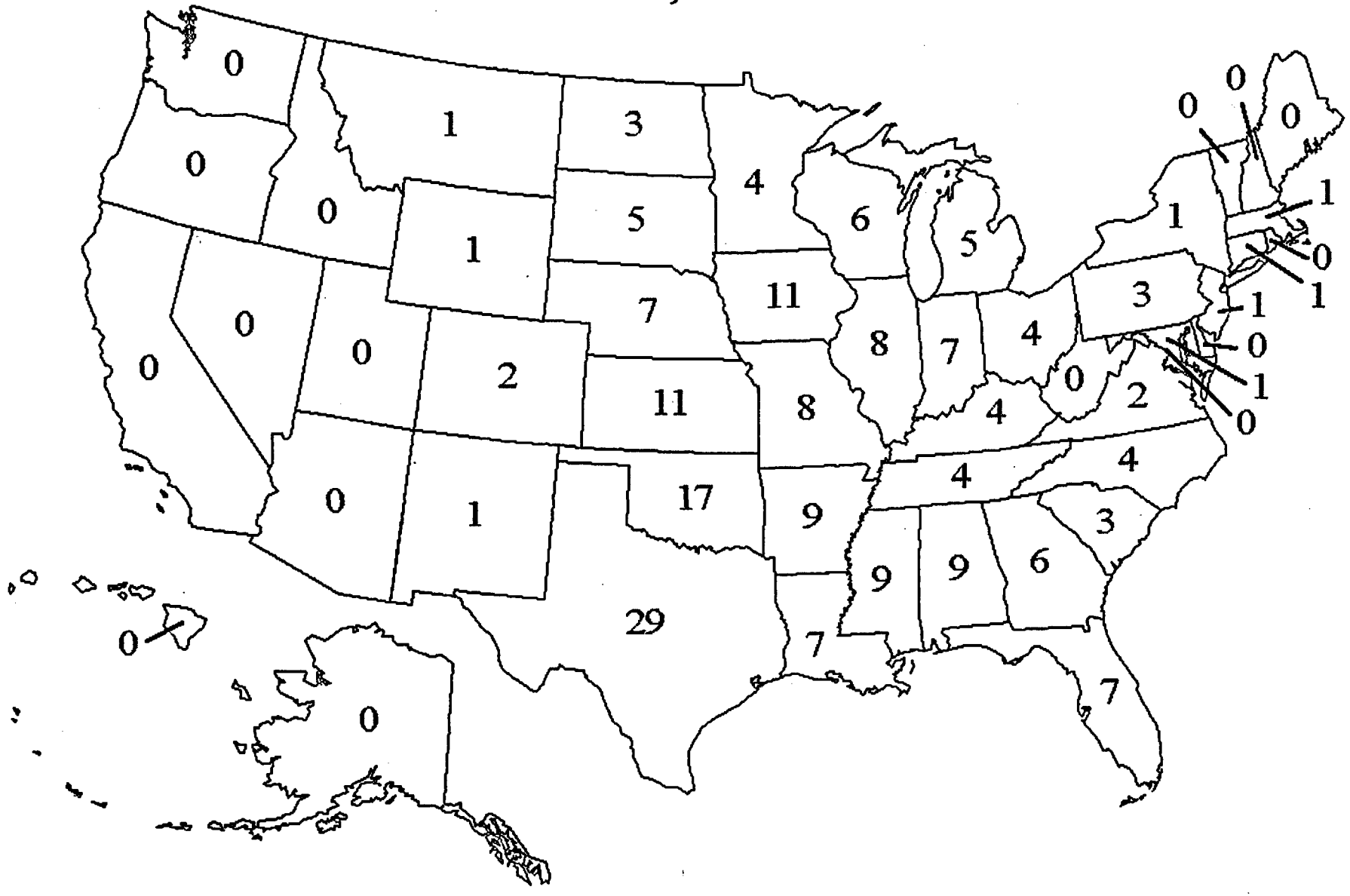
Annual Average Number of Tornadoes, 1950-1995



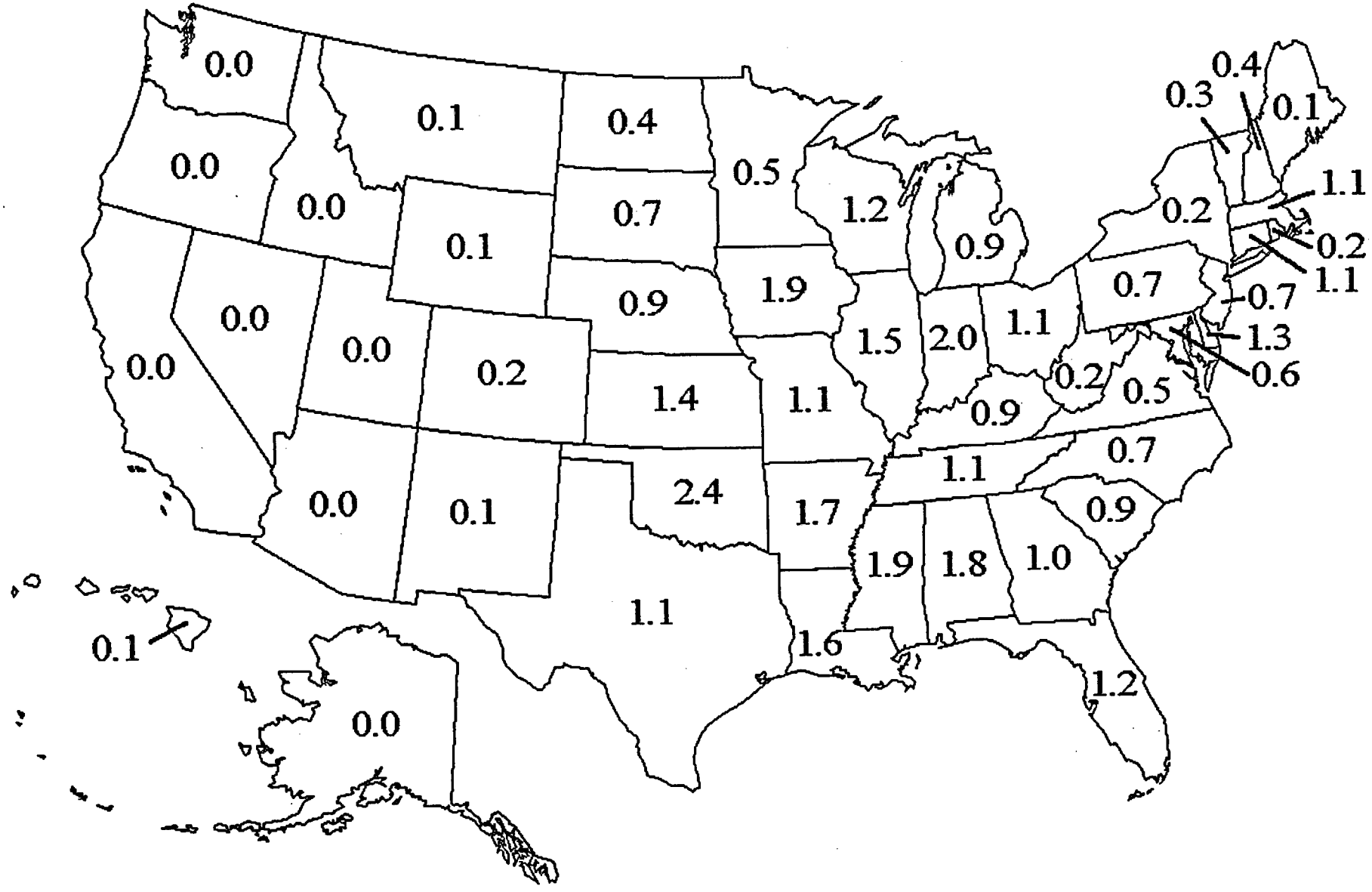
Annual Average Number of Tornadoes per 10,000 Square Miles by State, 1950-1995



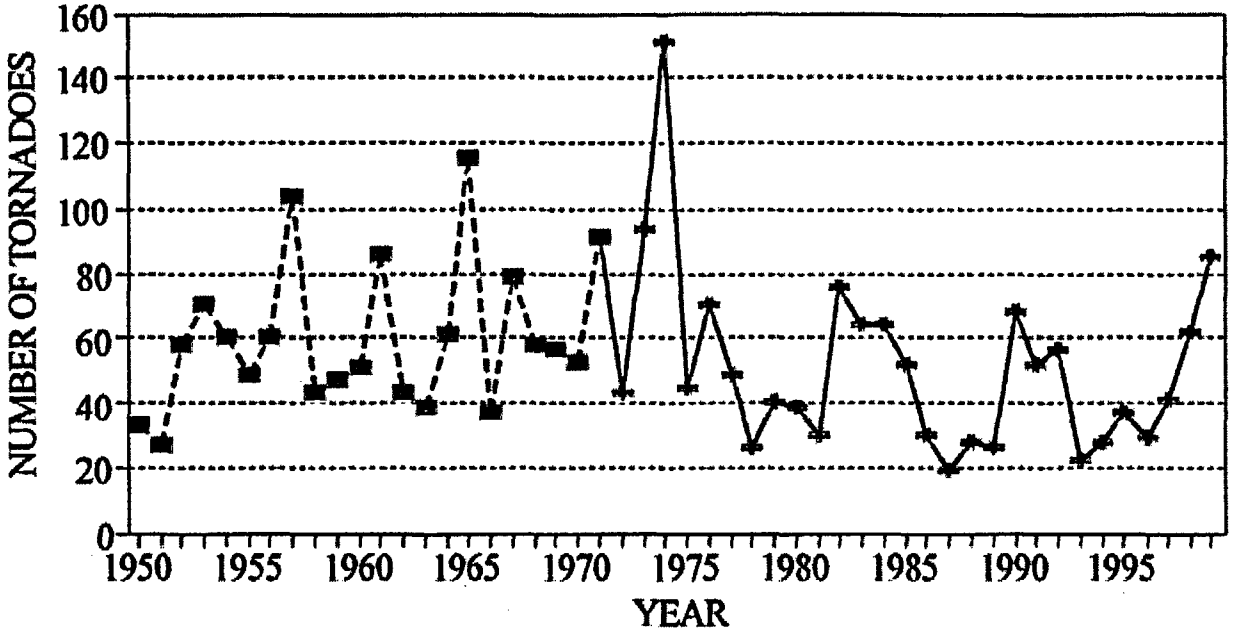
Annual Average Number of Strong-Violent (F2-F5) Tornadoes, 1950-1995



Average Annual Number of Strong-Violent (F2-F5) Tornadoes per 10,000 Square Miles by State



U.S.A. ANNUAL TORNADO COUNT, 1950-1999
VERY STRONG THROUGH VIOLENT TORNADOES



National Climatic Data Center, NOAA

Annual total number of very strong through violent (F3-F5) tornadoes, which are defined as having estimated wind speeds from 158 to 318 mph. The Fujita tornado classification scale was implemented in 1971. Prior to 1971, these data are based on storm damage reports.

463 TORNADO(s) were reported in **Virginia** between **01/01/1950** and **07/31/2003.**

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
284 Port Royal	06/21/1994	1800	Funnel Cloud	N/A	0	0	0	0
285 Port Royal	06/21/1994	1845	Funnel Cloud	N/A	0	0	0	0
286 MATHEWS	06/27/1994	1000	Funnel Cloud	N/A	0	0	0	0
288 SPOTTSYLVANIA	08/17/1994	1525	Funnel Cloud	N/A	0	0	0	0
289 Vac117	03/08/1995	1545	Funnel Cloud	N/A	0	0	0	0
290 Vac117	03/31/1995	1100	Dust Devil	N/A	0	0	5K	0
291 Portsmouth	04/30/1995	1700	Funnel Cloud	N/A	0	0	0	0
326 Widewater	09/04/1996	3:20 PM	Waterspout	N/A	0	0	0	0
337 Hampton	07/30/1997	12:00 PM	Waterspout	N/A	0	0	0	0
338 Huntersville	07/30/1997	12:00 PM	Waterspout	N/A	0	0	0	0
339 Newport News	07/30/1997	12:00 PM	Waterspout	N/A	0	0	0	0
340 Norfolk	07/30/1997	12:00 PM	Waterspout	N/A	0	0	0	0
341 Portsmouth	07/30/1997	12:00 PM	Waterspout	N/A	0	0	0	0
342 Smithfield	07/30/1997	12:00 PM	Waterspout	N/A	0	0	0	0
343 Virginia Beach	07/30/1997	12:00 PM	Waterspout	N/A	0	0	0	0
344 Newport News	08/06/1997	12:30 PM	Waterspout	N/A	0	0	0	0
355 Dale City	04/06/1998	12:45 PM	Dust Devil	N/A	0	0	0	0
368 Clifton	04/23/1999	3:47 PM	Funnel Cloud	N/A	0	0	0	0
378 Amherst	03/06/2000	1:30 PM	Dust Devil	N/A	0	0	3K	0
379 Ocean View	04/08/2000	5:25 PM	Waterspout	N/A	0	0	0	0
382 Sharps	05/10/2000	6:50 PM	Waterspout	N/A	0	0	0	0
387 Upperville	06/15/2000	6:10 PM	Funnel Cloud	N/A	0	0	0	0
388 Aldie	06/15/2000	6:20 PM	Funnel Cloud	N/A	0	0	0	0
389 Ocean View	06/19/2000	1:00 PM	Waterspout	N/A	0	0	0	0
391 Gwynn	07/14/2000	6:50 PM	Waterspout	N/A	0	0	0	0
393 White Stone	07/16/2000	9:45 AM	Waterspout	N/A	0	0	0	0
394 Hopewell	07/19/2000	4:20 PM	Funnel Cloud	N/A	0	0	0	0
395 Garysville	07/19/2000	4:25 PM	Funnel Cloud	N/A	0	0	0	0
398 Chincoteague	07/30/2000	11:05 AM	Waterspout	N/A	0	0	0	0
402 Gwynn	08/20/2000	8:35 AM	Waterspout	N/A	0	0	0	0
403 Hampton Rds	08/20/2000	10:22 AM	Waterspout	N/A	0	0	0	0
404 Gwynn	08/20/2000	10:45 AM	Waterspout	N/A	0	0	0	0
405 Onemo	08/20/2000	11:35 AM	Waterspout	N/A	0	0	0	0
401 Ft Monroe	08/20/2000	2:02 PM	Waterspout	N/A	0	0	0	0
406 Mathews	08/25/2000	9:45 AM	Waterspout	N/A	0	0	0	0
407 Ocean View	10/09/2000	6:15 AM	Waterspout	N/A	0	0	0	0
408 Lynnhaven	10/09/2000	6:20 AM	Waterspout	N/A	0	0	0	0
412 Dumfries	05/22/2001	6:06 PM	Funnel Cloud	N/A	0	0	0	0
413 Lorton	05/22/2001	6:15 PM	Funnel Cloud	N/A	0	0	0	0
414 Springfield	05/22/2001	6:18 PM	Funnel Cloud	N/A	0	0	0	0
415 Tysons Corner	05/25/2001	3:15 PM	Funnel Cloud	N/A	0	0	0	0
418 White Post	05/27/2001	12:35 PM	Funnel Cloud	N/A	0	0	0	0
423 Reva	09/24/2001	1:43 PM	Funnel Cloud	N/A	0	0	0	0
428 Garrisonville	09/24/2001	3:08 PM	Funnel Cloud	N/A	0	0	0	0
438 Fauquier Sulphur Spg	04/28/2002	5:05 PM	Funnel Cloud	N/A	0	0	0	0
440 Halifax	04/30/2002	2:00 PM	Dust Devil	N/A	0	0	3K	0
444 Manassas	09/27/2002	6:18 PM	Funnel Cloud	N/A	0	0	0	0
447 Sowego	05/07/2003	4:45 PM	Funnel Cloud	N/A	0	0	0	0
448 Quantico	05/07/2003	5:35 PM	Funnel Cloud	N/A	0	0	0	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
449 North Garden	05/09/2003	1:15 PM	Funnel Cloud	N/A	0	0	0	0
460 Elkwood	07/10/2003	6:20 PM	Funnel Cloud	N/A	0	0	0	0
263 Petersburg	08/06/1993	1230	Tornado	F4	4	246	50.0M	0
424 Rixeyville	09/24/2001	2:03 PM	Tornado	F4	0	2	2.0M	0
38 GREENE	09/30/1959	1500	Tornado	F3	1	9	25K	0
39 ALBEMARLE	09/30/1959	1530	Tornado	F3	11	4	250K	0
40 FLUVANNA	09/30/1959	1645	Tornado	F3	0	0	250K	0
67 BUCKINGHAM	06/16/1966	1845	Tornado	F3	0	0	3K	0
70 RICHMOND	11/02/1966	1500	Tornado	F3	0	2	25K	0
72 ACCOMACK	07/04/1967	1155	Tornado	F3	0	5	25K	0
76 HALIFAX	03/24/1969	2020	Tornado	F3	1	4	25K	0
91 FAIRFAX	04/01/1973	1445	Tornado	F3	0	37	25.0M	0
92 FAUQUIER	04/01/1973	1445	Tornado	F3	0	0	25K	0
100 WASHINGTON	04/04/1974	300	Tornado	F3	1	1	250K	0
101 SMYTH	04/04/1974	305	Tornado	F3	0	3	250K	0
154 PRINCE WILLIAM	01/26/1978	110	Tornado	F3	1	10	250K	0
155 SUSSEX	04/19/1978	1815	Tornado	F3	0	3	250K	0
156 SURRY	04/19/1978	1920	Tornado	F3	0	0	250K	0
160 NEWPORT NEWS (C)	09/05/1979	1500	Tornado	F3	0	2	2.5M	0
165 FAIRFAX	09/05/1979	1700	Tornado	F3	1	6	2.5M	0
182 NOTTOWAY	05/22/1983	1630	Tornado	F3	0	0	250K	0
183 DINWIDDIE	05/22/1983	1640	Tornado	F3	0	0	250K	0
199 PETERSBURG (C)	05/08/1984	1520	Tornado	F3	0	0	25.0M	0
200 HOPEWELL (C)	05/08/1984	1525	Tornado	F3	0	15	2.5M	0
204 ALBEMARLE	07/25/1985	1214	Tornado	F3	0	0	250K	0
205 GREENE	07/25/1985	1214	Tornado	F3	0	0	250K	0
209 BRUNSWICK	10/14/1986	450	Tornado	F3	0	0	2.5M	0
210 CHARLOTTE	10/14/1986	605	Tornado	F3	0	0	250K	0
240 AMELIA	05/04/1990	1945	Tornado	F3	0	0	2.5M	0
246 ORANGE	10/18/1990	1115	Tornado	F3	0	1	2.5M	0
249 KING WILLIAM	10/18/1990	1500	Tornado	F3	1	0	2.5M	0
273 Urbanna	08/06/1993	1400	Tornado	F3	0	0	50K	0
353 Coatesville	04/01/1998	7:00 PM	Tornado	F3	2	0	800K	0
3 RICHMOND (C)	06/13/1951	1505	Tornado	F2	0	12	250K	0
6 AUGUSTA	04/05/1952	915	Tornado	F2	0	2	25K	0
7 ROCKINGHAM	04/05/1952	1000	Tornado	F2	0	0	250K	0
10 EMPORIA	05/02/1953	1845	Tornado	F2	0	0	25K	0
12 ROANOKE	05/17/1953	1630	Tornado	F2	0	0	25K	0
41 SUFFOLK (C)	10/09/1959	1500	Tornado	F2	0	0	25K	0
45 ROCKINGHAM	08/06/1960	1200	Tornado	F2	0	0	25K	0
46 BUCKINGHAM	09/10/1960	1600	Tornado	F2	0	0	25K	0
49 FREDERICK	07/13/1961	1500	Tornado	F2	0	1	3K	0
51 HALIFAX	01/06/1962	1430	Tornado	F2	0	0	3K	0
54 GOOCHLAND	05/08/1962	1630	Tornado	F2	1	2	0K	0
57 WASHINGTON	06/03/1962	1500	Tornado	F2	0	0	25K	0
58 LOUISA	08/09/1962	1400	Tornado	F2	0	0	250K	0
59 AUGUSTA	11/29/1963	1330	Tornado	F2	0	0	25K	0
60 PITTSYLVANIA	07/12/1964	1300	Tornado	F2	0	0	3K	0
61 HENRY	07/12/1964	1315	Tornado	F2	0	3	250K	0
63 ORANGE	08/17/1965	1955	Tornado	F2	0	0	250K	0
68 BRUNSWICK	11/02/1966	1300	Tornado	F2	0	0	25K	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
69 NOTTOWAY	11/02/1966	1350	Tornado	F2	0	0	250K	0
77 RICHMOND (C)	03/24/1969	2205	Tornado	F2	0	1	250K	0
79 NORTHAMPTON	06/21/1969	1300	Tornado	F2	0	0	25K	0
80 PRINCE GEORGE	07/06/1969	1745	Tornado	F2	0	0	25K	0
81 FAIRFAX	08/09/1969	2215	Tornado	F2	0	0	250K	0
83 PETERSBURG (C)	06/21/1970	1030	Tornado	F2	0	0	250K	0
84 CHESTERFIELD	06/21/1970	1200	Tornado	F2	0	0	25K	0
96 ACCOMACK	10/02/1973	1500	Tornado	F2	0	0	0K	0
103 ROANOKE	04/04/1974	500	Tornado	F2	0	0	2.5M	0
104 NOTTOWAY	05/12/1974	1500	Tornado	F2	0	0	25K	0
108 WASHINGTON	01/25/1975	2230	Tornado	F2	0	0	25K	0
109 SMYTH	01/25/1975	2235	Tornado	F2	0	2	25K	0
114 RICHMOND	04/25/1975	1430	Tornado	F2	0	0	25K	0
127 CLARKE	08/04/1975	1430	Tornado	F2	0	0	250K	0
138 MADISON	06/12/1976	1245	Tornado	F2	0	0	25K	0
143 PITTSYLVANIA	06/25/1977	1230	Tornado	F2	0	0	25K	0
150 CARROLL	08/21/1977	1600	Tornado	F2	0	0	25K	0
157 RAPPAHANNOCK	06/19/1978	1400	Tornado	F2	0	0	25K	0
161 HAMPTON (C)	09/05/1979	1520	Tornado	F2	0	9	250K	0
163 KING GEORGE	09/05/1979	1615	Tornado	F2	0	0	250K	0
166 LOUDOUN	09/05/1979	1730	Tornado	F2	0	2	250K	0
167 LOUDOUN	09/05/1979	1745	Tornado	F2	0	0	250K	0
174 LOUDOUN	06/03/1980	1400	Tornado	F2	0	0	25K	0
177 SUFFOLK (C)	03/30/1981	1700	Tornado	F2	0	0	250K	0
178 MIDDLESEX	05/11/1981	1530	Tornado	F2	0	0	25K	0
180 FAIRFAX	07/28/1981	1720	Tornado	F2	0	0	25K	0
185 RICHMOND	08/31/1983	1600	Tornado	F2	0	0	25K	0
191 CHARLOTTE	10/13/1983	1545	Tornado	F2	0	0	250K	0
193 CULPEPER	10/13/1983	1654	Tornado	F2	0	6	2.5M	0
195 FALLS CHURCH (C)	10/13/1983	1812	Tornado	F2	0	0	2.5M	0
198 CHARLOTTE	05/08/1984	1515	Tornado	F2	0	0	2.5M	0
201 CHESTERFIELD	05/29/1984	1240	Tornado	F2	0	0	2.5M	0
211 PRINCE GEORGE	10/14/1986	620	Tornado	F2	0	0	250K	0
212 SUSSEX	10/14/1986	620	Tornado	F2	0	0	250K	0
213 PRINCE GEORGE	10/14/1986	624	Tornado	F2	0	1	250K	0
220 VIRGINIA BEACH (C)	08/03/1988	1847	Tornado	F2	0	0	250K	0
221 MECKLENBURG	08/29/1988	110	Tornado	F2	0	1	2.5M	0
223 SOUTHAMPTON	11/28/1988	220	Tornado	F2	0	0	250K	0
224 ISLE OF WIGHT	11/28/1988	225	Tornado	F2	0	0	250K	0
226 NORTHUMBERLAND	05/02/1989	415	Tornado	F2	0	0	0K	0
236 CHESTERFIELD	04/02/1990	1853	Tornado	F2	0	0	2.5M	0
239 AUGUSTA	05/04/1990	1722	Tornado	F2	2	10	2.5M	0
262 Kenbridge	08/06/1993	1143	Tornado	F2	0	0	5.0M	0
278 Se Chesapeake	08/06/1993	1500	Tornado	F2	0	0	5.0M	0
281 Warrenton	09/27/1993	1158	Tornado	F2	0	2	500K	0
287 Martinsville	08/17/1994	142	Tornado	F2	0	10	50.0M	0
305 Burnt Chimney	06/09/1996	2:45 PM	Tornado	F2	0	0	0	0
311 Centreville	06/24/1996	3:41 PM	Tornado	F2	0	1	4.0M	0
321 Bedford	07/15/1996	2:30 PM	Tornado	F2	0	0	140K	0
354 Ruther Glen	04/01/1998	7:06 PM	Tornado	F2	0	1	200K	0
375 Hampton	09/04/1999	12:21 PM	Tornado	F2	0	6	7.7M	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
435 Bedford City	04/28/2002	3:43 PM	Tornado	F2	0	1	3.0M	0
436 Rustburg	04/28/2002	3:50 PM	Tornado	F2	0	11	3.0M	0
437 Quicksburg	04/28/2002	3:55 PM	Tornado	F2	0	2	1.6M	0
1 APPOMATTOX	02/01/1951	1300	Tornado	F1	0	0	3K	0
2 KING AND QUEEN	05/11/1951	1500	Tornado	F1	0	0	25K	0
4 NEWPORT NEWS (C)	06/27/1951	1500	Tornado	F1	0	0	3K	0
5 YORK	11/01/1951	640	Tornado	F1	0	0	3K	0
8 FAIRFAX	08/31/1952	2130	Tornado	F1	0	0	25K	0
11 FAUQUIER	05/17/1953	1330	Tornado	F1	0	0	3K	0
13 WASHINGTON	06/10/1953	1400	Tornado	F1	0	0	3K	0
14 PITTSYLVANIA	06/13/1953	1440	Tornado	F1	0	0	3K	0
19 FAUQUIER	09/07/1954	1315	Tornado	F1	0	0	25K	0
20 BOTETOURT	06/11/1955	1400	Tornado	F1	0	0	3K	0
22 HENRICO	07/20/1956	1128	Tornado	F1	0	0	250K	0
23 HENRICO	07/20/1956	1145	Tornado	F1	0	0	3K	0
25 WISE	04/05/1957	1240	Tornado	F1	0	3	25K	0
26 NORFOLK (C)	04/08/1957	1620	Tornado	F1	0	2	250K	0
28 LUNENBURG	05/27/1957	915	Tornado	F1	0	0	25K	0
29 NEWPORT NEWS (C)	04/06/1958	1730	Tornado	F1	0	0	250K	0
30 HALIFAX	04/20/1959	1705	Tornado	F1	0	0	250K	0
33 AUGUSTA	07/01/1959	1130	Tornado	F1	0	0	25K	0
34 PORTSMOUTH (C)	07/10/1959	730	Tornado	F1	0	0	3K	0
36 GRAYSON	07/10/1959	1400	Tornado	F1	0	0	25K	0
37 BUCKINGHAM	08/23/1959	1500	Tornado	F1	0	0	25K	0
42 ISLE OF WIGHT	02/18/1960	1730	Tornado	F1	0	0	25K	0
43 STAFFORD	02/18/1960	2330	Tornado	F1	0	0	0K	0
44 MADISON	05/17/1960	1600	Tornado	F1	0	0	25K	0
48 ALBEMARLE	07/02/1961	1300	Tornado	F1	0	2	0K	0
50 CHESTERFIELD	10/20/1961	1800	Tornado	F1	0	0	0K	0
52 NORFOLK (C)	04/08/1962	950	Tornado	F1	1	0	250K	0
56 FREDERICK	06/02/1962	1400	Tornado	F1	0	0	25K	0
62 CARROLL	08/01/1965	130	Tornado	F1	0	5	25K	0
66 GREENSVILLE	02/13/1966	1045	Tornado	F1	0	0	0K	0
71 ACCOMACK	05/07/1967	1600	Tornado	F1	0	1	25K	0
73 VIRGINIA BEACH (C)	10/25/1967	1700	Tornado	F1	0	0	25K	0
74 NORFOLK (C)	04/30/1968	1615	Tornado	F1	0	0	250K	0
75 NORFOLK (C)	08/10/1968	1650	Tornado	F1	0	0	0K	0
78 CHESAPEAKE (C)	06/18/1969	2301	Tornado	F1	0	0	3K	0
85 FLUVANNA	07/02/1970	1500	Tornado	F1	0	0	3K	0
87 CHESAPEAKE (C)	08/27/1971	1330	Tornado	F1	0	0	250K	0
88 PORTSMOUTH (C)	11/03/1971	930	Tornado	F1	0	4	2.5M	0
89 VIRGINIA BEACH (C)	07/27/1972	1317	Tornado	F1	0	2	25K	0
90 PITTSYLVANIA	09/29/1972	1614	Tornado	F1	0	0	25K	0
94 SUFFOLK (C)	05/28/1973	2030	Tornado	F1	0	0	3K	0
97 DICKENSON	04/04/1974	120	Tornado	F1	0	0	250K	0
102 AUGUSTA	04/04/1974	440	Tornado	F1	0	0	2.5M	0
106 NORTHAMPTON	08/17/1974	1710	Tornado	F1	0	0	3K	0
107 CHESTERFIELD	12/01/1974	1230	Tornado	F1	0	7	250K	0
110 DINWIDDIE	03/19/1975	930	Tornado	F1	0	0	25K	0
111 SUFFOLK (C)	03/19/1975	1000	Tornado	F1	0	0	25K	0
112 CHARLES CITY (C)	03/19/1975	1033	Tornado	F1	0	0	25K	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
113 CAROLINE	03/24/1975	1330	Tornado	F1	0	0	25K	0
115 GLOUCESTER	04/25/1975	1600	Tornado	F1	0	4	250K	0
116 MATHEWS	04/25/1975	1615	Tornado	F1	0	0	0K	0
117 DINWIDDIE	06/01/1975	730	Tornado	F1	0	0	0K	0
121 NOTTOWAY	07/10/1975	1430	Tornado	F1	0	0	25K	0
122 HALIFAX	07/13/1975	857	Tornado	F1	0	0	25K	0
129 ROCKINGHAM	08/15/1975	1300	Tornado	F1	0	0	25K	0
130 GLOUCESTER	08/24/1975	2230	Tornado	F1	0	0	3K	0
131 LANCASTER	09/06/1975	1745	Tornado	F1	0	0	3K	0
136 PITTSYLVANIA	05/15/1976	1635	Tornado	F1	0	0	3K	0
139 MIDDLESEX	07/15/1976	1700	Tornado	F1	0	0	0K	0
141 ACCOMACK	04/05/1977	800	Tornado	F1	0	0	250K	0
153 MECKLENBURG	01/26/1978	1	Tornado	F1	0	0	25K	0
159 CARROLL	07/04/1979	1520	Tornado	F1	0	0	250K	0
162 GLOUCESTER	09/05/1979	1530	Tornado	F1	0	0	25K	0
164 STAFFORD	09/05/1979	1615	Tornado	F1	0	0	25K	0
168 BUCKINGHAM	10/02/1979	1730	Tornado	F1	0	0	3K	0
169 ROCKINGHAM	10/02/1979	1730	Tornado	F1	0	0	25K	0
170 NORFOLK (C)	04/04/1980	1505	Tornado	F1	0	1	250K	0
171 RAPPAHANNOCK	04/14/1980	1700	Tornado	F1	0	0	2.5M	0
173 GLOUCESTER	05/24/1980	1650	Tornado	F1	0	0	3K	0
176 CHESTERFIELD	02/11/1981	1745	Tornado	F1	0	0	250K	0
179 VIRGINIA BEACH (C)	07/04/1981	600	Tornado	F1	0	0	25K	0
184 FLUVANNA	08/23/1983	1500	Tornado	F1	0	0	3K	0
186 PRINCE EDWARD	10/13/1983	1445	Tornado	F1	0	0	250K	0
187 NOTTOWAY	10/13/1983	1447	Tornado	F1	0	0	250K	0
188 AMELIA	10/13/1983	1450	Tornado	F1	0	0	250K	0
189 GOOCHLAND	10/13/1983	1500	Tornado	F1	0	0	250K	0
190 LOUISA	10/13/1983	1505	Tornado	F1	0	0	250K	0
196 CAMPBELL	03/21/1984	0	Tornado	F1	0	0	250K	0
197 CHESTERFIELD	05/08/1984	1510	Tornado	F1	0	0	250K	0
206 CLARKE	08/02/1986	1230	Tornado	F1	0	0	0K	0
207 CLARKE	08/02/1986	1230	Tornado	F1	0	0	0K	0
208 NOTTOWAY	08/06/1986	1600	Tornado	F1	0	0	25K	0
214 MONTGOMERY	03/30/1987	2138	Tornado	F1	0	0	2.5M	0
215 LOUDOUN	07/12/1987	1412	Tornado	F1	0	0	3K	0
216 FAIRFAX	07/12/1987	1415	Tornado	F1	0	0	3K	0
222 BRUNSWICK	11/28/1988	15	Tornado	F1	0	1	0K	0
225 MATHEWS	03/30/1989	1615	Tornado	F1	0	0	250K	0
227 NORTHUMBERLAND	05/02/1989	420	Tornado	F1	0	0	0K	0
228 LOUISA	05/05/1989	2000	Tornado	F1	0	0	250K	0
229 LOUISA	05/05/1989	2055	Tornado	F1	0	0	0K	0
230 CHESTERFIELD	06/13/1989	1330	Tornado	F1	0	0	250K	0
231 HENRICO	06/16/1989	1430	Tornado	F1	0	0	2.5M	0
237 BRUNSWICK	04/02/1990	2020	Tornado	F1	0	1	250K	0
241 LANCASTER	05/10/1990	1618	Tornado	F1	0	0	2.5M	0
247 FAUQUIER	10/18/1990	1133	Tornado	F1	0	0	250K	0
250 HALIFAX	10/18/1990	1510	Tornado	F1	0	1	250K	0
252 BRUNSWICK	08/04/1991	1540	Tornado	F1	0	0	25K	0
253 FAIRFAX	08/04/1992	1245	Tornado	F1	0	0	3K	0
255 GREENE	11/23/1992	5	Tornado	F1	0	0	25K	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
257 CHARLOTTE	11/23/1992	300	Tornado	F1	0	0	25K	0
258 FAUQUIER AND LOUDOUN COUNTIES	04/16/1993	730	Tornado	F1	0	0	500K	0
260 LOUDOUN	04/16/1993	2035	Tornado	F1	0	0	500K	0
264 Colonial Heights	08/06/1993	1240	Tornado	F1	0	0	50K	0
265 Roxbury To	08/06/1993	1300	Tornado	F1	0	0	500K	0
266 Providence	08/06/1993	1315	Tornado	F1	0	0	5K	0
267 Courtland	08/06/1993	1320	Tornado	F1	0	0	50K	0
268 Sussex To 2 E	08/06/1993	1327	Tornado	F1	0	0	500K	0
269 Spring	08/06/1993	1335	Tornado	F1	0	0	50K	0
270 Williamsburg To	08/06/1993	1350	Tornado	F1	0	0	5.0M	0
271 Grove	08/06/1993	1352	Tornado	F1	0	0	50K	0
274 Newport News	08/06/1993	1410	Tornado	F1	0	10	5.0M	0
276 Nc Suffolk	08/06/1993	1430	Tornado	F1	0	0	50K	0
277 Kiptopoke	08/06/1993	1450	Tornado	F1	0	0	50K	0
279 Se Virginia Beach	08/06/1993	1545	Tornado	F1	0	0	50K	0
280 Stanley	09/27/1993	1100	Tornado	F1	0	0	500K	0
283 SOUTHAMPTON	05/26/1994	1644	Tornado	F1	0	0	500K	0
293 Waynesboro	06/10/1995	1440	Tornado	F1	0	0	2.0M	0
294 Gordonsville	07/21/1995	1440	Tornado	F1	0	0	80K	0
295 West Point	10/05/1995	1320	Tornado	F1	0	0	170K	0
299 Partlow	10/27/1995	1715	Tornado	F1	0	0	100K	10K
301 Parksley To	11/11/1995	2150	Tornado	F1	0	0	200K	0
306 Shady Grove	06/09/1996	3:20 PM	Tornado	F1	0	0	0	0
307 Axton	06/10/1996	7:22 AM	Tornado	F1	0	0	80K	0
308 Renan	06/10/1996	8:45 AM	Tornado	F1	0	0	90K	0
313 Broadway	06/24/1996	6:03 PM	Tornado	F1	0	0	40K	0
314 Smithfield	07/12/1996	9:15 PM	Tornado	F1	0	0	25K	0
315 Yorktown	07/12/1996	9:45 PM	Tornado	F1	0	0	15K	0
318 Edwardsville	07/12/1996	11:45 PM	Tornado	F1	0	9	250K	0
320 Stewartsville	07/15/1996	2:00 PM	Tornado	F1	0	0	90K	0
322 Tidemill	07/15/1996	6:30 PM	Tornado	F1	0	0	100K	0
323 Lovettsville	07/19/1996	2:24 PM	Tornado	F1	0	0	50K	10K
325 Belfast	07/19/1996	5:00 PM	Tornado	F1	0	0	200K	10K
328 Scottsburg	10/09/1996	3:40 PM	Tornado	F1	0	0	100K	0
330 Wheatfield	06/18/1997	3:20 PM	Tornado	F1	0	0	1K	0
334 Chesapeake	07/24/1997	12:15 PM	Tornado	F1	0	0	400K	0
335 Norfolk	07/24/1997	12:16 PM	Tornado	F1	0	0	400K	0
345 Wicomico Church	09/10/1997	3:15 AM	Tornado	F1	0	0	150K	0
347 Radiant	09/10/1997	5:40 PM	Tornado	F1	0	0	15K	5K
348 Bumpass	02/17/1998	8:58 PM	Tornado	F1	0	0	5K	0
349 Snell	02/17/1998	9:15 PM	Tornado	F1	0	0	75K	30K
351 Sandy Level	03/20/1998	3:56 PM	Tornado	F1	0	0	200K	0
352 Cascade	03/20/1998	4:04 PM	Tornado	F1	0	0	800K	0
357 Blairs	05/07/1998	6:40 PM	Tornado	F1	0	2	150K	0
361 Clear Brook	06/16/1998	4:35 PM	Tornado	F1	0	0	50K	50K
364 Indian Vly	01/23/1999	2:30 PM	Tornado	F1	0	0	12K	0
365 Jack	03/03/1999	5:35 PM	Tornado	F1	0	17	150K	0
367 Paytes	04/09/1999	5:17 PM	Tornado	F1	0	0	20K	0
372 Flatrun	07/24/1999	12:55 PM	Tornado	F1	0	0	50K	0
373 Wilderness Corner	07/24/1999	12:57 PM	Tornado	F1	0	0	150K	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
369 Fredericksburg	07/24/1999	1:13 PM	Tornado	F1	0	0	20K	0
370 Sylvania Hgts	07/24/1999	1:18 PM	Tornado	F1	0	0	2K	0
371 Falmouth	07/24/1999	1:20 PM	Tornado	F1	0	0	10K	0
374 Annex	07/31/1999	3:00 PM	Tornado	F1	0	0	15K	0
376 Ararat	09/29/1999	5:31 PM	Tornado	F1	0	0	60K	0
377 Ararat	09/29/1999	5:34 PM	Tornado	F1	0	0	130K	10K
381 Mc Kenney	04/17/2000	3:20 PM	Tornado	F1	0	0	15K	0
383 Charlottesville	05/13/2000	6:45 PM	Tornado	F1	0	1	500K	0
384 Boonesville	05/19/2000	1:34 PM	Tornado	F1	0	0	1K	0
385 Dyke	05/19/2000	1:40 PM	Tornado	F1	0	0	2K	0
400 Madison	08/09/2000	3:20 PM	Tornado	F1	0	0	15K	0
410 Woodridge	05/22/2001	4:45 PM	Tornado	F1	0	0	10K	0
416 Ashby	05/27/2001	12:25 PM	Tornado	F1	0	0	65K	0
417 Millwood	05/27/2001	12:33 PM	Tornado	F1	0	0	5K	0
419 Suffolk	06/01/2001	7:10 PM	Tornado	F1	0	0	15K	0
425 Turnbull	09/24/2001	2:18 PM	Tornado	F1	0	0	20K	0
426 Gordonsville	09/24/2001	2:35 PM	Tornado	F1	0	0	5K	0
427 The Plains	09/24/2001	2:49 PM	Tornado	F1	0	0	180K	0
431 Newington	09/24/2001	3:44 PM	Tornado	F1	0	0	40K	0
433 Arlington	09/24/2001	4:00 PM	Tornado	F1	0	2	1.0M	0
434 Bedford City	04/28/2002	3:31 PM	Tornado	F1	0	0	1.2M	0
439 Kingsberry	04/28/2002	6:35 PM	Tornado	F1	0	3	750K	0
443 Orange	06/06/2002	4:45 PM	Tornado	F1	0	0	10K	0
446 Warrenton	05/07/2003	4:25 PM	Tornado	F1	0	0	12K	0
452 Amelia	05/09/2003	2:35 PM	Tornado	F1	0	0	25K	0
457 Round Hill	07/09/2003	1:20 PM	Tornado	F1	0	0	0	0
462 Fairview Beach	07/10/2003	7:00 PM	Tornado	F1	0	0	0	0
9 WASHINGTON	04/30/1953	1745	Tornado	F0	0	0	3K	0
15 BRUNSWICK	03/01/1954	410	Tornado	F0	0	0	3K	0
16 LOUDOUN	05/03/1954	1700	Tornado	F0	0	0	3K	0
18 HALIFAX	08/15/1954	1330	Tornado	F0	0	0	3K	0
35 CHARLOTTE	07/10/1959	1025	Tornado	F0	0	0	25K	0
47 SOUTHAMPTON	06/26/1961	1249	Tornado	F0	0	0	25K	0
53 NORFOLK (C)	04/11/1962	845	Tornado	F0	0	1	3K	0
55 ACCOMACK	05/31/1962	1045	Tornado	F0	0	0	0K	0
64 NEWPORT NEWS (C)	10/07/1965	1700	Tornado	F0	0	0	3K	0
82 NORTHUMBERLAND	08/10/1969	800	Tornado	F0	0	0	0K	0
86 WARREN	07/09/1970	1600	Tornado	F0	0	0	3K	0
93 SUFFOLK (C)	05/20/1973	1902	Tornado	F0	0	0	0K	0
95 HENRICO	06/16/1973	1400	Tornado	F0	0	0	0K	0
98 LEE	04/04/1974	121	Tornado	F0	0	0	0K	0
99 BRISTOL (C)	04/04/1974	200	Tornado	F0	0	0	3K	0
105 NORTHAMPTON	07/05/1974	1630	Tornado	F0	0	0	0K	0
118 SMYTH	06/05/1975	1715	Tornado	F0	0	0	0K	0
119 AUGUSTA	06/05/1975	1930	Tornado	F0	0	0	0K	0
120 ROCKBRIDGE	06/05/1975	1930	Tornado	F0	0	0	0K	0
125 KING WILLIAM	07/13/1975	1920	Tornado	F0	0	0	0K	0
128 GLOUCESTER	08/14/1975	1910	Tornado	F0	0	0	3K	0
172 RICHMOND (C)	04/27/1980	1610	Tornado	F0	0	0	0K	0
175 PRINCE GEORGE	07/22/1980	2310	Tornado	F0	0	0	25K	0
181 NEWPORT NEWS (C)	06/01/1982	1800	Tornado	F0	0	0	0K	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
192 FAUQUIER	10/13/1983	1600	Tornado	F0	0	0	3K	0
194 FAIRFAX	10/13/1983	1755	Tornado	F0	0	0	0K	0
202 GOOCHLAND	07/25/1985	1030	Tornado	F0	0	0	0K	0
203 HANOVER	07/25/1985	1118	Tornado	F0	0	0	0K	0
217 PRINCE WILLIAM	07/21/1987	1805	Tornado	F0	0	0	2.5M	0
218 POWHATAN	07/26/1987	1500	Tornado	F0	0	0	0K	0
219 CAROLINE	06/26/1988	1300	Tornado	F0	0	0	0K	0
232 CAMPBELL	06/21/1989	1405	Tornado	F0	0	0	0K	0
233 AMELIA	11/16/1989	715	Tornado	F0	0	0	250K	0
234 CHESAPEAKE (C)	02/09/1990	1245	Tornado	F0	0	0	25K	0
235 PITTSYLVANIA	04/02/1990	1630	Tornado	F0	0	0	0K	0
238 WASHINGTON	04/30/1990	1625	Tornado	F0	0	0	25K	0
242 AMHERST	07/09/1990	1700	Tornado	F0	0	0	3K	0
243 MECKLENBURG	07/10/1990	1915	Tornado	F0	0	0	0K	0
244 MECKLENBURG	07/11/1990	1700	Tornado	F0	0	0	3K	0
245 FAUQUIER	07/12/1990	1458	Tornado	F0	0	0	0K	0
248 FAIRFAX	10/18/1990	1411	Tornado	F0	0	0	0K	0
251 SUFFOLK (C)	03/29/1991	1515	Tornado	F0	0	0	25K	0
254 VIRGINIA BEACH (C)	08/15/1992	650	Tornado	F0	0	0	0K	0
256 MADISON	11/23/1992	10	Tornado	F0	0	0	25K	0
259 Bluemont	04/16/1993	1925	Tornado	F0	0	0	5K	0
261 FAUQUIER	04/16/1993	2100	Tornado	F0	0	0	5K	0
272 Isle Of Wight	08/06/1993	1400	Tornado	F0	0	0	0	0
275 White Stone	08/06/1993	1415	Tornado	F0	0	0	500K	0
282 Countywide	09/27/1993	1233	Tornado	F0	0	0	1K	0
292 NELSON	06/09/1995	1559	Tornado	F0	0	0	8K	0
296 Isle Of Wight C	10/05/1995	1350	Tornado	F0	0	0	10K	0
297 Isle Of Wight C	10/05/1995	1357	Tornado	F0	0	0	10K	0
298 Dale City	10/14/1995	1542	Tornado	F0	0	0	10K	0
300 Suffolk	11/11/1995	2105	Tornado	F0	0	1	100K	0
302 Newland	01/19/1996	11:30 AM	Tornado	F0	0	0	15K	0
303 Emporia	03/15/1996	1:25 PM	Tornado	F0	0	0	0	0
304 Weber City	04/13/1996	4:11 PM	Tornado	F0	0	0	0	0
309 Middleburg	06/24/1996	3:10 PM	Tornado	F0	0	0	5K	0
310 Extreme Se Portion	06/24/1996	3:40 PM	Tornado	F0	0	0	15K	0
312 Baynesville	06/24/1996	5:25 PM	Tornado	F0	0	0	170K	0
316 Severn	07/12/1996	10:05 PM	Tornado	F0	0	0	7K	0
317 Woods Xrds	07/12/1996	10:15 PM	Tornado	F0	0	0	7K	0
319 Hague	07/13/1996	12:30 AM	Tornado	F0	0	0	10K	0
324 Sterling/ne Portion	07/19/1996	2:50 PM	Tornado	F0	0	0	5K	0
327 Hampton	09/04/1996	4:00 PM	Tornado	F0	0	0	1K	0
329 Shirlington	05/25/1997	4:52 PM	Tornado	F0	0	0	100K	0
331 Dbl Tollgate	06/18/1997	3:42 PM	Tornado	F0	0	0	4K	2K
332 Berryville	06/18/1997	4:02 PM	Tornado	F0	0	0	2K	1K
333 Mountville	06/18/1997	4:18 PM	Tornado	F0	0	0	2K	1K
336 Norfolk	07/24/1997	12:20 PM	Tornado	F0	0	0	100K	0
346 Orange	09/10/1997	4:45 PM	Tornado	F0	0	0	0K	0K
350 Perrin	03/09/1998	5:30 AM	Tornado	F0	0	0	20K	0
356 Chesapeake	04/09/1998	3:00 PM	Tornado	F0	0	0	25K	0
358 Berryville	06/02/1998	8:50 PM	Tornado	F0	0	0	15K	0
359 Bluemont	06/02/1998	9:10 PM	Tornado	F0	0	0	0	10K

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
360 Radford City	06/11/1998	4:00 PM	Tornado	F0	0	0	0	0
362 Lovettsville	06/16/1998	4:55 PM	Tornado	F0	0	0	10K	15K
363 Gainesboro	07/30/1998	5:15 PM	Tornado	F0	0	0	10K	0
366 Kinsale	04/04/1999	4:15 PM	Tornado	F0	0	0	25K	0
380 Gladys	04/17/2000	2:52 PM	Tornado	F0	0	0	0K	0
386 Studley	05/19/2000	3:35 PM	Tornado	F0	0	0	0	0
390 Deltaville	07/14/2000	6:08 PM	Tornado	F0	0	0	0	0
392 Gwynn	07/14/2000	7:09 PM	Tornado	F0	0	0	2K	0
396 Back Bay	07/24/2000	12:59 PM	Tornado	F0	0	0	20K	0
397 Horntown	07/30/2000	10:45 AM	Tornado	F0	0	0	0	0
399 Bowman	08/09/2000	3:00 PM	Tornado	F0	0	0	1K	0
409 Suffolk	05/21/2001	5:05 PM	Tornado	F0	0	0	25K	0
411 Dale City	05/22/2001	5:52 PM	Tornado	F0	0	0	1K	0
420 Laurel	06/15/2001	3:45 PM	Tornado	F0	0	0	5K	0
421 Denbigh	08/11/2001	5:00 PM	Tornado	F0	0	0	50K	0
422 Culpeper	09/20/2001	6:20 PM	Tornado	F0	0	0	0	0
429 Garrisonville	09/24/2001	3:10 PM	Tornado	F0	0	0	0K	0
430 Joplin	09/24/2001	3:19 PM	Tornado	F0	0	0	1K	0
432 Alexandria	09/24/2001	3:55 PM	Tornado	F0	0	0	8K	0
441 Burkeville	05/02/2002	2:50 PM	Tornado	F0	0	0	20K	0
442 Burrowsville	05/02/2002	3:45 PM	Tornado	F0	0	0	3K	0
445 Kings Fork	02/22/2003	2:41 PM	Tornado	F0	0	0	25K	0
455 Verona	05/09/2003	12:55 PM	Tornado	F0	0	0	0	0
450 Keene	05/09/2003	1:20 PM	Tornado	F0	0	0	0	0
451 Antioch	05/09/2003	1:50 PM	Tornado	F0	0	0	5K	0
453 Jarratt	05/09/2003	3:35 PM	Tornado	F0	0	0	5K	0
454 Drewryville	05/09/2003	3:50 PM	Tornado	F0	0	0	10K	0
456 Brodnax	05/31/2003	4:57 PM	Tornado	F0	0	0	0	0
458 Ashbum	07/09/2003	1:45 PM	Tornado	F0	0	0	0	0
459 Reva	07/10/2003	5:51 PM	Tornado	F0	0	0	0	0
461 White Oak	07/10/2003	6:42 PM	Tornado	F0	0	0	0	0
463 Berthaville	07/10/2003	7:30 PM	Tornado	F0	0	0	0	0
17 ESSEX	06/26/1954	1900	Tornado	F	0	0	3K	0
21 RICHMOND (C)	07/20/1956	1115	Tornado	F	0	0	25K	0
24 RICHMOND (C)	07/20/1956	1155	Tornado	F	0	0	25K	0
27 NORFOLK (C)	05/27/1957	720	Tornado	F	0	0	3K	0
31 HIGHLAND	04/28/1959	1500	Tornado	F	0	0	3K	0
32 HANOVER	05/07/1959	1600	Tornado	F	0	0	3K	0
65 GREENSVILLE	02/13/1966	1000	Tornado	F	0	0	25K	0
123 SMYTH	07/13/1975	1800	Tornado	F	0	0	0K	0
124 SUSSEX	07/13/1975	1800	Tornado	F	0	0	25K	0
126 WESTMORELAND	07/17/1975	1600	Tornado	F	0	0	25K	0
132 CLARKE	03/21/1976	1030	Tornado	F	0	0	25K	0
133 MADISON	03/21/1976	1140	Tornado	F	0	0	250K	0
134 CHESAPEAKE (C)	04/04/1976	1500	Tornado	F	0	0	3K	0
135 AMHERST	05/15/1976	1400	Tornado	F	0	0	3K	0
137 LOUISA	05/18/1976	1230	Tornado	F	0	0	3K	0
140 DANVILLE (C)	10/09/1976	320	Tornado	F	0	0	25K	0
142 NORFOLK (C)	06/06/1977	1420	Tornado	F	0	0	25K	0
144 CAROLINE	07/08/1977	1330	Tornado	F	0	1	25K	0
145 GOOCHLAND	07/09/1977	1700	Tornado	F	0	0	250K	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
146 CUMBERLAND	07/12/1977	1645	Tornado	F	0	0	25K	0
147 ORANGE	07/19/1977	1515	Tornado	F	0	1	25K	0
148 LOUISA	08/01/1977	1300	Tornado	F	0	0	25K	0
149 CAROLINE	08/12/1977	1400	Tornado	F	0	1	25K	0
151 VIRGINIA BEACH (C)	10/02/1977	1700	Tornado	F	0	0	25K	0
152 DINWIDDIE	12/05/1977	1600	Tornado	F	0	0	25K	0
158 FRANKLIN	08/09/1978	1445	Tornado	F	0	0	3K	0
				TOTALS:	27	519	281.271M	154K

Magnitude **Mag:**
Deaths **Dth:**
Injuries **Inj:**
Property Damage **PrD:**
Crop Damage **CrD:**

#289

Event Record Details

Event: **Funnel Cloud**
Begin Date: **17 Aug 1994, 1525 EST**
Begin Location: **Not Known**
End Location: **Lake Anna**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
County: **Spottsylvania**

Description:
A funnel cloud was sighted near Lake Anna. It did not touch down.

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#263

Event Record Details

Event: **Tornado**
Begin Date: **06 Aug 1993, 1230 EST**
Begin Location: **1 Mile South West of Petersburg**
Begin LAT/LON: **37°12'N / 77°26'W**
End Location: **To Ne Hopewell**
End LAT/LON: **37°19'N / 77°16'W**
Length: **12 Miles**
Width: **250 Yards**
Magnitude: **F4**
Fatalities: **4**
Injuries: **246**
Property Damage: **$ 50.0M**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
County: **Dinwiddie Prince Georges And Chesterfield Counties**

Description:
The most devastating tornado of the day touched down one mile southwest of Petersburg at approximately 1330 EDT. This tornado rapidly grew in size and strength as it moved northeast into the commercial historic district of Petersburg. Numerous homes and businesses sustained major damage. Damage estimates for the area were $15 million. Forty people were injured. |The tornado crossed the river into Colonial Heights and struck one of the area's shopping districts. It destroyed some buildings and did major damage to numerous other buildings including the the Wal-Mart, where three people were killed and nearly 200 were injured. Total damage estimates in Colonial Heights were $29.5 million. |The tornado crossed the Appomattox River again into Prince George County where it struck a sand and gravel pit company. A block building collapsed and numerous vehicles and other equipment were destroyed. One person was killed. Damage estimates were $750,000. It then moved into the northern section of Hopewell, where it ripped into the Riverside Park Apartment Complex, tearing the roofs off of several buildings. Minor damage was done to another 49 homes, major damage to 13 homes and 2 were destroyed. The tornado weakened then dissipated near the confluence of the Appomattox and James Rivers. Eight people were reported injured and damage estimates were $2.2 million. (F48O) (F40O) (F56O) (M28O)

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#424

Event Record Details

Event: **Tornado**
Begin Date: **24 Sep 2001, 02:03:00 PM EST**
Begin Location: **1 Mile South West of Rixeyville**
Begin LAT/LON: **38°34'N / 77°59'W**
End Date: **24 Sep 2001, 02:18:00 PM EST**
End Location: **2 Miles North of Jeffersonton**
End LAT/LON: **38°39'N / 77°54'W**
Length: **7 Miles**
Width: **75 Yards**
Magnitude: **F4**
Fatalities: **0**
Injuries: **2**
Property Damage: **$ 2.0M**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
County: **Culpeper**

Description:
A tornado damaged several buildings and destroyed one home before crossing into Fauquier County. Two people were injured when the tornado damaged a trailer park. Five tornadoes touched down in Northern Virginia during the afternoon and early evening of the 24th. The thunderstorms which spawned them were created when a strong cold front moved through the region. One tornado touched down briefly in Orange County, just a few miles west of Gordonsville. A resident saw the tornado come "off the mountain" and twist trees along Route 645 near the intersection of Route 33. One tree landed on a vehicle near Route 33. It is unknown exactly how long the twister was on the ground due to the rural nature of its path, so the path length of two tenths of a mile was estimated. The damage path was about 25 yards wide and due to the amount of tree damage it was ranked an F1. Shortly before the tornado touched down in Orange County, another storm produced a much stronger tornado over the northern half of Culpeper County. The tornado was on the ground for 10 miles and touched down just east of Rixeyville on Route 640. It was F0 strength at this location and downed a tree onto a home before moving northeast to Indian Fork Road. On a hilltop at this location it destroyed all but the walkout basement of a two story brick house. Debris from the home such as bricks and wood were impaled into the ground. Plumbing and appliances were strewn across the yard and personal items such as clothing and bedding were found in trees at least 1/2 mile away. A section of a deck was found intact 1/2 mile away and some insulation was discovered 6 miles from the site. A car in the garage of the home was crushed by debris. Fortunately, no one was home at the time the tornado hit. A neighbor who witnessed the destruction said the home exploded like a bomb went off inside when the tornado "dropped onto it". The tornado was ranked an F4 at this location with winds estimated around 210 MPH. It weakened slightly as it moved northeast downing trees along a rural path south of Jeffersonton. Next, it crossed through the heart of Jeffersonton along roughly Scottsville and Springs Roads at F2 strength. Three trailer homes in the Ponderosa Trailer Court were destroyed, including one that was picked up and dropped in pieces 300 yards away. Two people at the trailer park were injured, including one person who was hit in the back by flying debris while clinging to a pole outside. Four churches, 4 trailer homes, 4 houses, and numerous trees and power lines were damaged in Jeffersonton. Two barns and a garage attached to a home were destroyed. The tornado continued to damage trees along its wooded path north of town before it crossed into Fauquier County. The twister, now at F1 strength, remained on the ground for three more miles where it downed more trees and removed the roof of a barn. The damage path crossed Hart Road and Holtzclaw Road, then it disappeared just north of Route 211. The same storm dropped a second tornado in the northern portion of Fauquier County. This tornado touched down southwest of The Plains just south of Interstate 66. Motorists saw it cross the interstate and push northeast toward Route 55. At the intersection of Route 55 and Bunker Hill Road, the twister struck a home at F1 strength. It ripped off the front porch, sending debris onto cars in the driveway. It also destroyed a pool shed and damaged several trees. The tornado crossed Route 55 where it downed trees and power poles and pushed over a tractor trailer. The tornado weakened to F0 strength as it

tracked north near Whitewood Road. Two homes on Milestone Road and a few smaller buildings sustained minor damage. A few trees were damaged as the tornado continued northward just west of Halfway. The funnel dissipated before the storm crossed into Loudoun County. Another thunderstorm dropped two tornadoes along the Interstate 95 and 395 corridor southwest of Washington D.C. The first tornado touched down on Quantico Marine Corps Base just north of Garrisonville. A funnel cloud was spotted near Garrisonville shortly before the twister touched down. Trees were downed on the base along the path of the F0 tornado. Personnel sited it as it passed a quarter mile west of the fire station. The tornado continued north into Prince William County where it downed some trees in Prince William Forest Park area. The tornado moved north into the Lake Montclair community where it took down a few trees, broke branches, and bent siding up on homes. The weak tornado lifted shortly after. Because the storm passed through several limited access areas, part of the tornado track was not able to be surveyed. It is possible the tornado may not have been on the ground the entire time. The second tornado which remained on the ground for 15 miles passed through densely populated areas of Eastern Fairfax County, the western portion of the city of Alexandria, and Arlington County. The F1 tornado touched down just west of Fort Belvoir near Newington Road in Fairfax County. It skipped north-northeast through Kingstown and Franconia following Beulah Street (Route 613). Minor damage was reported at the intersections of Windsor Avenue, Fleet Drive, and Walker Lane. Several townhomes on Beulah Street received minor damage to roofing and siding. Debris was also reported in the Franconia Commons development. The tornado could be seen from the Franconia-Springfield metro station. The next report of minor damage came from the Wellington Commons and Brookland Estates communities near the intersection of Franconia Road and Route 613. Citywide, 10 homes received minor roof damage, two businesses sustained minor damage, and 40 trees and wires were downed. Next, the twister crossed Eisenhower Road as it moved into the western portion of the City of Alexandria. It weakened to F0 strength and was believed to have passed just west of Alexandria Hospital and into the Fort Ward Park area. It downed a large sign on Interstate 395 at King Road. Minor damage was reported in the Park Fairfax and Parc East communities along Martha Custis Drive near the Arlington County border. The tornado returned to F1 strength and continued north-northeast paralleling Interstate 395 into the Shirlington portion of Arlington County. It passed through the Arna Valley and Club Manor Estates developments near National Hospital Medical Center. A woman walking down 28th Street in this area was injured when a tree branch fell onto her. Nearby, windows were shattered at a restaurant. The next concentrated area of damage occurred in the Virginia Highlands development between Kent and Ives Streets. Several trees and wires were downed and a few house roofs sustained damage. A weather observer at Reagan National Airport spotted the thin funnel as it moved from Crystal City over Pentagon City and across the 14th Street Bridge and reported a second funnel descending shortly before the tornado crossed the Potomac River. The tornado moved across Interstate 395 just south of the Pentagon where it downed trees and road signs. One woman was injured when a tree fell onto her vehicle. Other vehicles received broken windows from flying debris. The tornado started to weaken fast as it crossed the 14th Street Bridge into Washington D.C. In addition to tornadoes, the storm produced very heavy downpours. In Loudoun County, Town Branch in Leesburg overflowed its banks. Several roads in low lying areas in and around town were also flooded including the Greenway at mile marker 8, Evergreen Mills Road, Loudoun Street, and the intersection of the Route 15 bypass at Sycolin Road. Three water rescues were reported. Street flooding was observed in Purcellville. Rainfall reports included 4.1 to 4.8 inches in Leesburg, 3.95 inches in Lincoln and Purcellville, 3.9 inches in Ashburn, 2.60 inches in Middleburg, and 2.49 inches in Lovettsville. In Fauquier County, Route 17 between Warrenton and Marshall was flooded. Route 55 near Marshall was also covered with water. Some secondary dirt roads in the northern portion of the county were partially washed out when small streams overflowed. A total of 4.05 inches was recorded in The Plains and 2.14 inches fell in Warrenton. In Culpeper County, 3.35 inches of rain fell in Culpeper. In Madison County, rainfall totals included 2.80 inches in Hood, 2.77 inches at Fork Mountain, 2.65 inches in Wolftown, and 2.35 inches at Big Meadows. In Rappahannock County, 3.75 inches was reported in Castleton.

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#58

Event Record Details

Event: **Tornado**
Begin Date: **09 Aug 1962, 1400 CST**
Begin Location: **Not Known**
Begin LAT/LON: **38°05'N / 78°00'W**
End Location: **Not Known**
End LAT/LON: **38°19'N / 77°43'W**
Length: **22 Miles**
Width: **33 Yards**
Magnitude: **F2**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 250.0K**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
County: **Louisa**

Description:
None Reported

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#190

Event Record Details

Event: **Tornado**
Begin Date: **13 Oct 1983, 1505 CST**
Begin Location: **Not Known**
Begin LAT/LON: **37°45'N / 77°50'W**
End Location: **Not Known**
End LAT/LON: **37°46'N / 77°48'W**
Length: **2 Miles**
Width: **27 Yards**
Magnitude: **F1**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 250.0K**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
County: **Louisa**

Description:
None Reported

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#229

Event Record Details

Event: **Tornado**
Begin Date: **05 May 1989, 2000 CST**
Begin Location: **Not Known**
Begin LAT/LON: **38°03'N / 78°04'W**
End Location: **Not Known**
Length: **2 Miles**
Width: **440 Yards**
Magnitude: **F1**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 250.0K**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
County: **Louisa**

Description:
None Reported

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#229

Event Record Details

Event: **Tornado**
Begin Date: **05 May 1989, 2055 CST**
Begin Location: **Not Known**
Begin LAT/LON: **37°58'N / 77°44'W**
End Location: **Not Known**
Length: **2 Miles**
Width: **10 Yards**
Magnitude: **F1**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0K**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
County: **Louisa**

Description:
None Reported

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#137

Event Record Details

Event: **Tornado**
Begin Date: **18 May 1976, 1230 CST**
Begin Location: **Not Known**
Begin LAT/LON: **38°01'N / 78°00'W**
End Location: **Not Known**
Length: **0 Mile**
Width: **40 Yards**
Magnitude: **F**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 2.5K**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
County: **Louisa**

Description:
None Reported

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#149

Event Record Details

Event: **Tornado**
Begin Date: **01 Aug 1977, 1300 CST**
Begin Location: **Not Known**
Begin LAT/LON: **37°55'N / 78°04'W**
End Location: **Not Known**
Length: **1 Mile**
Width: **30 Yards**
Magnitude: **F**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 25.0K**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
County: **Louisa**

Description:
None Reported

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Query Results

(17) (5 ≥ 1.5")

18 HAIL event(s) were reported in **Louisa County, Virginia** between **01/01/1950** and **07/31/2003.**

1955

Click on Location or County to display Details.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Virginia

	Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
(A)	1 LOUISA	05/17/1960	1900	Hail	1.50 in.	0	0	0	0
	2 LOUISA	05/09/1961	1700	Hail	1.25 in.	0	0	0	0
	3 LOUISA	05/08/1962	1525	Hail	1.00 in.	0	0	0	0
	4 LOUISA	06/08/1969	1600	Hail	1.00 in.	0	0	0	0
	5 LOUISA	05/20/1971	1700	Hail	1.75 in.	0	0	0	0
	6 LOUISA	06/05/1985	1600	Hail	0.75 in.	0	0	0	0
	7 LOUISA	03/26/1988	1610	Hail	1.00 in.	0	0	0	0
	8 Cuckoo	02/17/1998	08:55 PM	Hail	0.88 in.	0	0	0	0
(E)	9 Louisa	04/08/1998	09:15 PM	Hail	0.75 in.	0	0	0	0
(B)	10 Blue Ridge Shrs	06/13/1998	02:35 PM	Hail	0.88 in.	0	0	0	0
	11 Louisa	06/16/1998	04:35 PM	Hail	1.75 in.	0	0	0	0
(C)	12 Louisa	04/23/1999	04:45 PM	Hail	1.00 in.	0	0	0	0
(C)	13 Bumpass	04/23/1999	05:20 PM	Hail	1.75 in.	0	0	0	0
	14 Boswells Tavern	09/07/1999	07:00 PM	Hail	0.88 in.	0	0	0	0
	15 Boswells Tavern	05/13/2000	06:10 PM	Tstm Wind/hail	0 kts.	0	0	150K	0
	16 Mineral	05/22/2001	01:55 PM	Hail	1.00 in.	0	0	0	0
(D)	17 Louisa	06/06/2002	01:50 PM	Hail	1.75 in.	0	0	0	0
	18 Louisa	04/30/2003	07:30 PM	Hail	0.75 in.	0	0	0	0
					TOTALS:	0	0	150K	0

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≥ 0.75"	≥ 1.50"
17	5
19	4
11	3
7	2
12	3
(66)	(17)

Query Results

(4 ≥ 1.5")

19 HAIL event(s) were reported in **Hanover County, Virginia** between **01/01/1950** and **07/31/2003**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Click on Location or County to display Details.

Virginia

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
(A) 1 HANOVER	05/17/1960	1830	Hail	1.00 in.	0	0	0	0
2 HANOVER	08/25/1978	0000	Hail	1.00 in.	0	0	0	0
3 HANOVER	04/27/1980	1645	Hail	2.00 in.	0	0	0	0
4 HANOVER	06/20/1986	1545	Hail	0.75 in.	0	0	0	0
5 HANOVER	05/21/1988	1500	Hail	1.50 in.	0	0	0	0
6 Rockville	05/29/1995	2117	Hail	1.00 in.	0	0	0	0
7 Ashland	05/29/1995	2140	Hail	1.75 in.	0	0	0	0
8 Hanover	11/08/1996	03:10 PM	Hail	0.75 in.	0	0	0	0
9 Hanover	08/04/1997	12:45 PM	Hail	1.00 in.	0	0	0	0
10 Montpelier	05/04/1998	05:00 PM	Hail	1.00 in.	0	0	0	0
(B) 11 Ashland	06/13/1998	03:20 PM	Hail	0.75 in.	0	0	0	0
(C) 12 Studley	04/23/1999	05:50 PM	Hail	0.75 in.	0	0	0	0
13 Central Portion	04/17/2000	02:10 PM	Hail	0.75 in.	0	0	0	0
14 Ashland	04/21/2000	01:35 PM	Hail	0.88 in.	0	0	0	0
15 Central Portion	04/21/2000	02:10 PM	Hail	0.75 in.	0	0	0	0
16 Ashland	05/19/2000	03:25 PM	Hail	1.00 in.	0	0	0	0
(D) 17 Ashland	06/06/2001	03:50 PM	Hail	0.75 in.	0	0	0	0
18 Ashland	05/09/2002	05:45 PM	Hail	0.75 in.	0	0	0	0
19 Studley	05/10/2003	09:55 AM	Hail	1.75 in.	0	0	0	0
				TOTALS:	0	0	0	0

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Query Results

(3 ≥ 1.5")

11 HAIL event(s) were reported in **Caroline County, Virginia** between **01/01/1950** and **07/31/2003.**

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Click on Location or County to display Details.

Virginia

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 CAROLINE	06/18/1958	1715	Hail	0.75 in.	0	0	0	0
2 CAROLINE	06/18/1958	1715	Hail	0.75 in.	0	0	0	0
3 CAROLINE	08/09/1962	1500	Hail	1.00 in.	0	0	0	0
4 CAROLINE	07/09/1977	1630	Hail	2.50 in.	0	0	0	0
5 CAROLINE	06/24/1985	1910	Hail	1.75 in.	0	0	0	0
6 Sparta	06/16/1994	1150	Hail	1.75 in.	0	0	0	0
7 CAROLINE	05/25/1995	1850	Hail	0.75 in.	0	0	0	0
8 Ruther Glen	04/01/1998	07:10 PM	Hail	0.88 in.	0	0	0	0
(E) 9 Ladysmith	04/08/1998	09:15 PM	Hail	0.75 in.	0	0	0	0
10 Ladysmith	05/04/1998	06:03 PM	Hail	0.88 in.	0	0	0	0
11 Bowling Green	05/04/1998	06:20 PM	Hail	0.88 in.	0	0	0	0
				TOTALS:	0	0	0	0

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Query Results

(2 ≥ 1.5")

7 HAIL event(s) were reported in **Spotsylvania County, Virginia** between **01/01/1950** and **07/31/2003.**

Click on Location or County to display Details.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Virginia

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 SPOTSYLVANIA	07/11/1990	1500	Hail	0.88 in.	0	0	0	0
2 SPOTSYLVANIA	04/01/1993	1555	Hail	1.00 in.	0	0	0	0
3 Spotsylvania	09/01/1993	1545	Hail	1.75 in.	0	0	1K	0
4 Thornburg	09/21/1993	1730	Hail	1.00 in.	0	0	1K	0
5 Snell	02/17/1998	09:13 PM	Hail	2.00 in.	0	0	2K	0
6 Spotsylvania	04/21/2000	01:30 PM	Hail	0.75 in.	0	0	0	0
7 Belmont	05/10/2000	05:00 PM	Hail	0.75 in.	0	0	0	0
				TOTALS:	0	0	3K	0

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(3 > 1.5")

Query Results

12 HAIL event(s) were reported in **Orange County, Virginia** between **01/01/1950** and **07/31/2003.**

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Click on Location or County to display Details.

Virginia

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 ORANGE	07/11/1971	1530	Hail	1.75 in.	0	0	0	0
2 ORANGE	03/26/1988	1710	Hail	0.75 in.	0	0	0	0
3 ORANGE	05/13/1993	1425	Hail	0.75 in.	0	0	0	0
4 Orange	06/19/1994	1350	Hail	0.75 in.	0	0	0	0
5 Clifton	06/14/1995	1615	Hail	1.00 in.	0	0	0	0
6 Gordonsville	06/13/1998	01:45 PM	Hail	1.75 in.	0	0	3K	0
7 Gordonsville	07/22/1999	03:05 PM	Hail	1.00 in.	0	0	0	0
8 Barboursville	05/19/2000	02:10 PM	Hail	1.50 in.	0	0	0	0
9 Southwest Portion	05/19/2000	02:20 PM	Hail	0.75 in.	0	0	0	0
10 Barboursville	06/25/2000	06:30 PM	Hail	0.75 in.	0	0	0	0
11 Orange	08/04/2000	02:45 PM	Hail	1.00 in.	0	0	0	0
12 Orange	08/30/2001	03:00 PM	Hail	0.75 in.	0	0	0	0
				TOTALS:	0	0	3K	0

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Query Results

9 HURRICANE & TROPICAL STORM event(s) were reported in **Virginia** between **01/01/1950** and **07/31/2003.**

Click on Location or County to display Details.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Virginia

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 VAZ74>78 - 84>86 - 90>91 - 93>100 - MDZ501	08/15/1995		Hurricane Felix	N/A	0	0	0	0
2 VAZ090>091	07/12/1996	08:00 PM	Hurricane	N/A	0	0	0	0
3 VAZ073 - 075	09/05/1996	08:00 PM	Hurricane	N/A	0	0	0	0
4 VAZ088 - 098	10/07/1996	08:00 PM	Tropical Storm	N/A	0	0	0	0
5 VAZ091 - 094>098	08/26/1998	08:00 PM	Hurricane	N/A	0	4	23.6M	3.1M
6 VAZ089>091 - 094>100	09/01/1999	12:00 AM	Hurricane	N/A	0	0	27K	0
7 VAZ077>078 - 084>086 - 089>091 - 093>100	09/15/1999	12:00 PM	Hurricane	N/A	1	0	99.4M	42.3M
8 VAZ052>055 - 057	09/16/1999	08:00 AM	Tropical Storm	N/A	1	0	220K	0
9 VAZ091 - 094>100	10/17/1999	04:00 PM	Hurricane	N/A	0	0	45K	0
				TOTALS:	2	4	123.232M	45.410M

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Storm Events

Select State

Select Desired State or *All
State: Virginia
Continue

Search the NCDC Storm Event database to find various types of storms recorded in your county or use other selection criteria as desired. The database currently contains:

The Storm Events Database contains data from the following sources:

All Weather Events from 1993 - 1995, as entered into Storm Data. (Except 6/93 - 7/93, which is missing) (NO Latitude/Longitude)

All Weather Events from 1996 - Current, as entered into Storm Data. (Including Latitude/Longitude)

Plus additional data from the Storm Prediction Center; Including
- **Tornadoes 1950-1992**
- **Thunderstorm Winds 1955-1992**
- **Hail 1955-1992**

The Storm Events Database is updated when the data becomes available to NCDC.
The data is updated on a monthly basis and is usually 90-120 days behind the current month

Please do not contact NCDC with requests for information about specific weather events. All of the data is received from the National Weather Service and is made available as soon as possible. If you cannot locate a particular event 120 days after the end of the month of occurrence, contact Stuart Hinson.

Note To Webmaster: Link directly to Events Database

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Event Record Details

1

Event: **Hurricane Felix**
Begin Date: **15 Aug 1995,**
Begin Location: **Not Known**
End Date: **17 Aug 1995,**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Essex, Gloucester, Isle Of Wight, James City / Williamsburg**

Description:
Hurricane Felix threatened the Virginia, Maryland and northeast North Carolina coasts during the three-day period. No major damage was reported in Virginia from Felix, although some beach erosion occurred in Virginia Beach, and some minor overwash was reported in Virginia Beach's Sandbridge area. At the height of the storm, tides were between two and 2.5 feet above normal. Beaches were closed to swimmers for several days as a result of strong rip currents. Some residents and visitors evacuated parts of Virginia Beach as a precaution ahead of Felix.

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#2

Event Record Details

Event: **Hurricane**
Begin Date: **12 Jul 1996, 08:00:00 PM EST**
Begin Location: **Not Known**
End Date: **13 Jul 1996, 07:00:00 AM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **James City / Williamsburg, York / Poquoson**

Description:
None Reported

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#3

Event Record Details

Event: **Hurricane**
Begin Date: **05 Sep 1996, 08:00:00 PM EST**
Begin Location: **Not Known**
End Date: **06 Sep 1996, 02:00:00 PM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **King And Queen, Westmoreland**

Description:
None Reported

Fran?

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44

Event Record Details

Event: **Tropical Storm**
Begin Date: **07 Oct 1996, 08:00:00 PM EST**
Begin Location: **Not Known**
End Date: **08 Oct 1996, 07:00:00 PM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Sussex, Virginia Beach**

Description:
None Reported

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#5

Event Record Details

Event: **Hurricane**
Begin Date: **26 Aug 1998, 08:00:00 PM EST**
Begin Location: **Not Known**
End Date: **28 Aug 1998, 11:00:00 AM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **4**
Property Damage: **$ 23.6M**
Crop Damage: **$ 3.1M**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Chesapeake, Newport News, Norfolk / Hampton / Portsmouth, Suffolk, Virginia Beach, York / Poquoson**

Description:
Hurricane Bonnie moved just offshore of southeast Virginia on August 27th and 28th. Very strong winds and heavy rains associated with Bonnie's spiral bands hammered the Hampton Roads area Thursday evening into Friday morning. The highest sustained wind speed recorded was 81 mph at Cape Henry (anemometer elevation is 90 ft). Other sustained wind speeds were 78 mph at the Chesapeake Light Station Buoy just offshore (anemometer elevation is 90 ft), 53 mph at Langley Air Force Base, and 46 mph at the Norfolk International Airport. The highest gusts recorded were 104 mph at Cape Henry, 93 mph at the Chesapeake Light Station Buoy, 67 mph at Langley Air Force Base, and 64 mph at the Norfolk International Airport. Widespread power outages (up to 250,000 customers/750,000 people) were reported in the Hampton Roads area, along with reports of numerous trees down, trees down on homes, power lines down and some structural damage due to wind. Many windows were reported to have been blown out of hotels along the Virginia Beach oceanfront by the high winds. Some street flooding occurred in Norfolk, Virginia Beach, and Portsmouth due to heavy rain and a 2 to 4 foot storm surge. The peak tidal departure at Sewells Point in Norfolk was 3.5 feet above normal or 6.0 feet above MLLW. This resulted in moderate coastal flooding at the time of high tide. Rainfall amounts generally ranged from 1 to 3 inches across the Hampton Roads area with isolated amounts of 4 to 7 inches occurring in the Norfolk-Virginia Beach area. The lowest sea level pressure recorded was 999 mb at the Oceana Naval Air Station.

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#6

Event Record Details

Event: **Hurricane**
Begin Date: **01 Sep 1999, 12:00:00 AM EST**
Begin Location: **Not Known**
End Date: **05 Sep 1999, 11:00:00 PM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 27.0K**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Accomack, Chesapeake, James City / Williamsburg, Newport News, Norfolk / Hampton / Portsmouth, Northampton, Suffolk, Surry, Virginia Beach, York / Poquoson**

Description:
Hurricane and Tropical Storm Dennis produced one of the most prolonged periods of tropical cyclone related conditions across eastern Virginia, from August 30th through September 5th. The highest sustained wind speed recorded was 52 mph at Langley Air Force Base (LFI). Other sustained wind speeds were 43 mph at the Norfolk International Airport (ORF), and 38 mph at Wallops Island. The highest gusts recorded were 76 mph at Langley Air Force Base, 53 mph at the Norfolk International Airport, and 46 mph at Wallops Island. A tornado rated an F2 occurred in association with Dennis and touched down in the city of Hampton. This tornado caused significant damage and numerous injuries. Otherwise, a few trees and power lines were blown down across the Hampton Roads area resulting in scattered power outages. The peak tidal departure at Sewells Point in Norfolk was around 3.0 feet above normal or 6.0 feet above MLLW. This resulted in moderate coastal flooding at the time of high tide. Rainfall amounts generally ranged from 2 to 5 inches across the Hampton Roads area and caused some street flooding. The lowest sea level pressure recorded was 1006.1 mb at the Norfolk International Airport.

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H7

Event Record Details

Event: **Hurricane**
Begin Date: **15 Sep 1999, 12:00:00 PM EST**
Begin Location: **Not Known**
End Date: **16 Sep 1999, 05:00:00 PM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **1**
Injuries: **0**
Property Damage: **$ 99.4M**
Crop Damage: **$ 42.3M**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Accomack, Chesapeake, Gloucester, Isle Of Wight, James City / Williamsburg, Lancaster, Mathews, Middlesex, Newport News, Norfolk / Hampton / Portsmouth, Northampton, Northumberland, Suffolk, Surry, Virginia Beach, York / Poquoson**

Description:
Hurricane Floyd was a Category 1 hurricane as it crossed the Wakefield WFO county warning area. Sustained tropical storm force winds with gusts to near hurricane force occurred over the northwest quadrant of the storm over interior portions of northeast North Carolina and along the coastal waters of the Wakefield marine area. The center of the storm crossed the county warning area along an Elizabeth City to Currituck county to Sandbridge Virginia Beach axis. The highest sustained wind speed recorded was 69 mph at Chesapeake Light (CHLV2). Other sustained wind speeds were 46 mph at Langley Air Force Base (LFI), 44 mph at Norfolk Naval Air Station (NGU), and 41 mph at Oceana Naval Air Station (NTU). The highest gusts recorded were 100 mph at the James River Bridge, 84 mph at Chesapeake Light, and 63 mph at Langley Air Force Base. Two confirmed tornadoes occurred in association with Floyd. There were approximately several thousand persons evacuated and housed in several shelters from coastal jurisdictions. Hundreds of trees and power lines were blown down across interior southeast Virginia and the immediate Hampton Roads area, resulting in widespread power outages. The tidal departure at Sewells Point in Norfolk was 3.9 feet above normal or 6.4 feet above MLLW. This resulted in moderate to locally severe coastal flooding approximately 2 hours before high tide on the 16th. The tide gage in downtown Norfolk recorded a tide of 7.1 feet above MLLW. Flooding was more widespread during Hurricane Floyd due to extremely heavy rainfall before and during the peak storm tide. Storm surge flooding of 5 to 7 feet occurred over central portions of the Chesapeake Bay inundating sections of Accomack county. Some homes were flooded with 3 to 6 feet of water. The lowest sea level pressure recorded was 970 mb at Chesapeake Light (CHLV2). Floyd will be remembered as an extremely wet hurricane for east-central Virginia. The presence of a stalled frontal boundary provided the focus for extremely heavy rains. Rainfall amounts averaged 10 to 20 inches in a 50 to 75 mile swath centered over the headwaters of the Chowan River Basin in interior southeast Virginia and northeast North Carolina extending into the middle peninsula. Numerous roads were washed out due to flooding. Primary routes out of service included US 460 near Wakefield, US 58 near Emporia and Franklin, and Interstate 95 south of Petersburg to Emporia. M69VE

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#3

Event Record Details

Event: **Tropical Storm**
Begin Date: **16 Sep 1999, 08:00:00 AM EST**
Begin Location: **Not Known**
End Date: **16 Sep 1999, 11:00:00 PM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **1**
Injuries: **0**
Property Damage: **$ 220.0K**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Arlington / Alexandria / Falls, Fairfax, King George, Prince William / Manassas, Stafford**

Description:
F61UT Hurricane Floyd made landfall just east of Cape Fear, North Carolina in the early morning hours of the 16th and moved north-northeast across extreme southeast Virginia to near Ocean City, Maryland by evening on the 16th. Rainbands on the outer edge of the hurricane began to affect northern Virginia shortly after 8:00 AM EDT on the 15th and continued to cross the area through afternoon on the 16th. The eye of Hurricane Floyd passed east of the Chesapeake Bay between 9:00 AM and midnight on the 16th. Gusty winds of 30 to 50 MPH blew north and east of a line from Spotsylvania County to Frederick County between 11:00 AM and midnight on the 16th. Hundreds of trees were downed from the combination of very heavy rain and strong winds. A total of 2 to 5 inches of rain fell in this area and 16,000 power outages were reported. Rainfall reports of over 3 inches included 5.97 inches in Spotsylvania, 4.57 inches at Washington National Airport, 4.55 inches in Annandale, 4.03 inches in Fairfax Station, 3.55 inches in Reston, 3.38 inches in Herndon, 3.36 inches in Great Falls and Chester Gap, and 3.32 inches at Hogback Mountain. Peak wind gusts included 55 MPH at National Airport at 3:00 PM EDT, 45 MPH in Herndon at 4:01 PM EDT, 43 MPH in Manassas at 4:09 PM EDT, 41 MPH in Alexandria at 3:55 PM EDT, 40 MPH in Chantilly at 3:47 PM EDT, and 39 MPH at Dulles Airport at 3:43 PM EDT. In Spotsylvania County, several trees were downed and high water closed several roads in the eastern portion of the county. King George County and Stafford County reported numerous downed trees and several roads closed by high water. In Prince William County, 17 trees came down on roads and power lines, and two homes were slightly damaged by fallen trees. In the Montclair area, 1000 residents lost power. Some secondary roads were also flooded. A few trees were downed in the Manassas area. In Fairfax County, a 61 year old woman was killed when a tree fell onto her car and crushed it on Fair Lakes Drive. ONe business was destroyed by fallen trees and another in Falls Church was damaged. A 70 ft oak tree fell onto a home and tore a hole in the 2nd floor, shattering windows and tearing off rain gutters. The tree also damaged a detached garage and a swingset. The Mason Neck area saw several large trees downed, including a 100 ft poplar that put a hole through a bedroom of a two story home. Mt. Vernon and Vienna also reported several downed trees, including one which damaged a car. The county had to hire 16 tree trimming contractors to clear downed trees that blocked roadways. Flooding caused problems at 7 major intersections and on 20 secondary roads. Winds and rain combined to topple 130 trees in Arlington County and Alexandria. One tree damaged a home and 4500 power outages were reported. In Loudoun County, a handful of trees were downed and a road was blocked near Mt. Weather. Siding was also torn off the side of a few homes. Clarke County reported downed trees and power outages along the ridge at the Loudoun County border. Trees were also downed on the top of Blue Mountain in the southern portion of the county, knocking out power and phone service. In Warren County, a few trees and power lines were downed at higher elevations. In Winchester, a home was damaged by a fallen tree and a few customers lost power.

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#9

Event Record Details

Event: **Hurricane**
Begin Date: **17 Oct 1999, 04:00:00 PM EST**
Begin Location: **Not Known**
End Date: **18 Oct 1999, 06:00:00 AM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 45.0K**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Accomack, Chesapeake, Newport News, Norfolk / Hampton / Portsmouth, Northampton, Suffolk, Virginia Beach, York / Poquoson**

Description:
Hurricane Irene was an intensifying Category 1 hurricane at the time of closest approach to the Wakefield county warning area during the overnight hours of Monday October 18th. Irene was the third tropical system of the 1999 hurricane season to affect the Wakefield county warning area, and brought another round of very heavy rain into southeast Virginia. The very heavy rainfall, locally up to 8 to 12 inches, resulted in widespread street flooding in the urbanized Hampton Roads area. The highest sustained wind speed recorded was 36 mph at the Oceana Naval Air Station (NTU). Other sustained wind speeds were 27 mph at Wallops Island (WAL), and 24 mph at the Norfolk International Airport (ORF). The highest gusts recorded were 48 mph at the Oceana Naval Air Station, 40 mph at the Norfolk International Airport, and 39 mph at Wallops Island. The tidal departure at Sewells Point was less than a foot above normal. The lowest sea level pressure recorded was 996.6 mb at the Oceana Naval Air Station (NTU).

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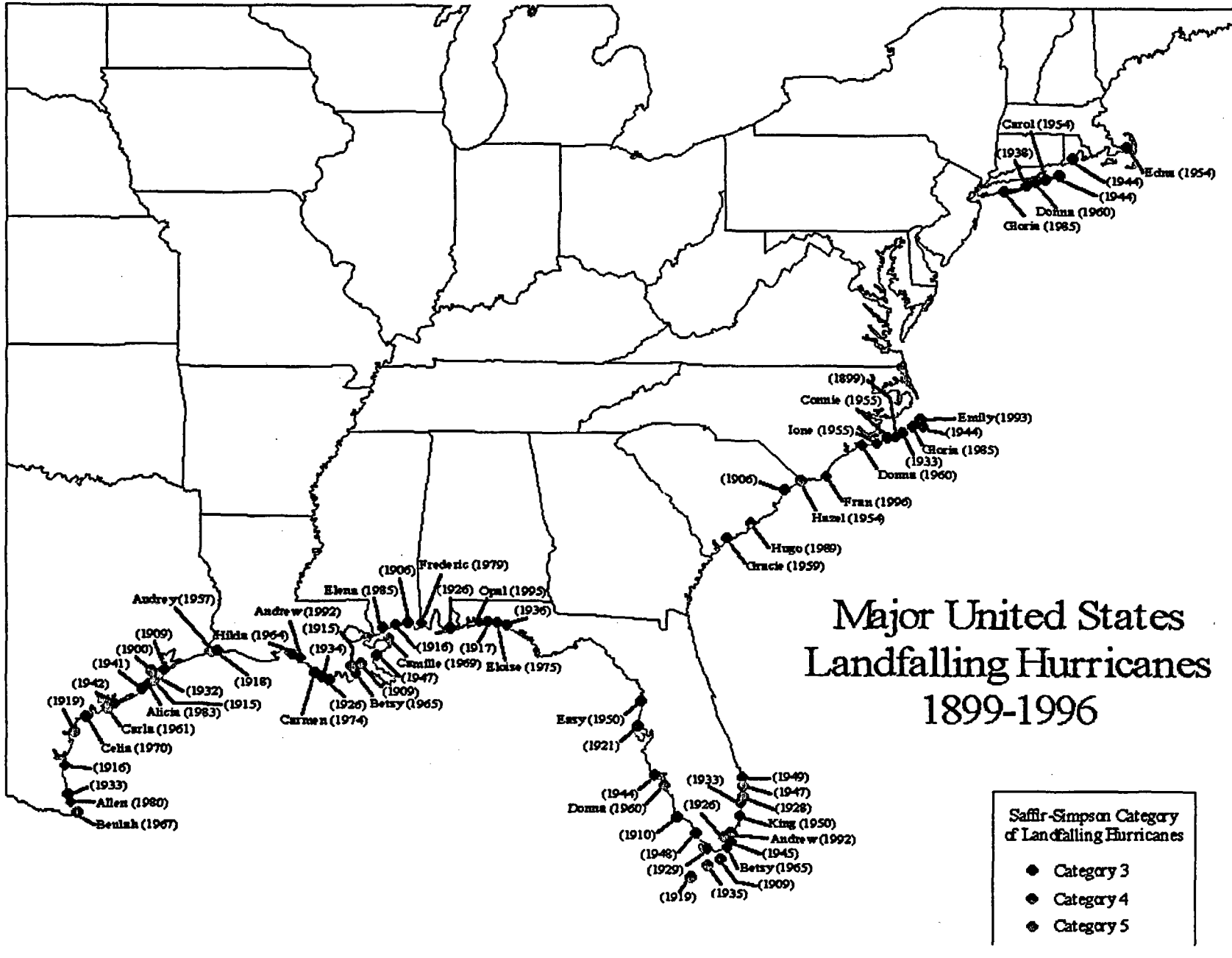
Major United States
Landfalling Hurricanes
1899-1996
Saffir-Simpson Category
of Landfalling Hurricanes
Category 3
Category 4
Category 5
Carol (1954)
(1938)
Edna (1954)
(1944)
(1944)
Donna (1960)
Gloria (1985)
(1899)
Connie (1955)
Emily (1993)
Ione (1955)
(1944)
Gloria (1985)
(1933)
Donna (1960)
(1906)
Fran (1996)
Hazel (1954)
Hugo (1989)
Gracie (1959)
(1906)
Frederic (1979)
Elena (1985)
(1926)
Opal (1995)
(1936)
Andrew (1992)
(1915)
(1916)
(1917)
Camille (1969)
Eloise (1975)
(1947)
(1909)
(1926)
Betsy (1965)
Carmen (1974)
Andrew (1957)
Hilda (1964)
(1909)
(1900)
(1941)
(1942)
(1919)
(1932)
(1915)
(1918)
Alicia (1983)
Carla (1961)
Celia (1970)
(1916)
(1933)
Allen (1980)
Beulah (1967)
Easy (1950)
(1921)
(1944)
Donna (1960)
(1933)
(1949)
(1947)
(1928)
(1926)
King (1950)
(1910)
Andrew (1992)
(1948)
(1945)
(1929)
Betsy (1965)
(1909)
(1919)
(1935)

U.S. Mainland Hurricane Strikes by State, 1900-1996

Hurricane direct hits on the mainland U.S. coastline and for individual states 1900-1996 by Saffir/Simpson category.

AREA	Category Number					ALL	MAJOR
	1	2	3	4	5	1,2,3,4,5	3,4,5
U.S. (Texas to Maine)	58	36	47	15	2	158	64
Texas	12	9	9	6	0	36	15
(North)	7	3	3	4	0	17	7
(Central)	2	2	1	1	0	6	2
(South)	3	4	5	1	0	13	6
Louisiana	8	5	8	3	1	25	12
Mississippi	1	1	5	0	1	8	6
Alabama	4	1	5	0	0	10	5
Florida	17	16	17	6	1	57	24
(Northwest)	9	8	7	0	0	24	7
(Northeast)	2	7	0	0	0	9	0
(Southwest)	6	3	6	2	1	18	9
(Southeast)	5	10	7	4	0	26	11
Georgia	1	4	0	0	0	5	0
South Carolina	6	4	2	2	0	14	4
North Carolina	10	4	10	1 *	0	25	11
Virginia	2	1	1 *	0	0	4	1 *
Maryland	0	1 *	0	0	0	1 *	0
Delaware	0	0	0	0	0	0	0
New Jersey	1 *	0	0	0	0	1 *	0
New York	3	1 *	5 *	0	0	9	5 *
Connecticut	2	3 *	3 *	0	0	8	3 *
Rhode Island	0	2 *	3 *	0	0	5 *	3 *
Massachusetts	2	2 *	2 *	0	0	6	2 *
New Hampshire	1 *	1 *	0	0	0	2 *	0
Maine	5 *	0	0	0	0	5 *	0

Notes: * - Indicates all hurricanes in this group were moving faster than 30 mph. State totals will not necessarily equal U.S. totals, and Texas or Florida totals will not necessarily equal sum of sectional totals.

Major hurricane direct hits on the mainland U.S. coastline and for individual states 1900-1996 by month.

AREA	June	July	August	September	October	ALL
U.S. (Texas to Maine)	2	3	15	36	8	64
Texas	1	1	7	6	0	15
(North)	1	1	3	2	0	7
(Central)	0	0	1	1	0	2
(South)	0	0	3	3	0	6
Louisiana	2	0	4	5	1	12
Mississippi	0	1	1	4	0	6
Alabama	0	1	0	4	0	5
Florida	0	1	2	15	6	24
(Northwest)	0	1	0	5	1	7
(Northeast)	0	0	0	0	0	0
(Southwest)	0	0	1	5	3	9
(Southeast)	0	0	2	7	2	11
Georgia	0	0	0	0	0	0
South Carolina	0	0	0	3	1	4
North Carolina	0	0	2	8	1	11
Virginia	0	0	0	1	0	1
Maryland	0	0	0	0	0	0
Delaware	0	0	0	0	0	0
New Jersey	0	0	0	0	0	0
New York	0	0	1	4	0	5
Connecticut	0	0	1	2	0	3
Rhode Island	0	0	1	2	0	3
Massachusetts	0	0	0	2	0	2
New Hampshire	0	0	0	0	0	0
Maine	0	0	0	0	0	0

Notes: State totals will not necessarily equal U.S. totals, and Texas or Florida totals will not necessarily equal sum of sectional totals.

This is taken from The Deadliest, Costliest, and Most Intense United States hurricanes of this century (and other frequently requested hurricane facts) [NOAA Technical Memorandum NWS TPC-1] updated in February, 1997.

Brian Maher
Jack Beven

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NOAA Technical Memorandum NWS TPC-1

THE DEADLIEST, COSTLIEST, AND MOST INTENSE UNITED STATES HURRICANES FROM 1900 TO 2000
(AND OTHER FREQUENTLY REQUESTED HURRICANE FACTS)

by
Jerry D. Jarrell(retired), Max Mayfield, and Edward N. Rappaport
NOAA/NWS/ Tropical Prediction Center
Miami, Florida

Christopher W. Landsea
NOAA/AOML/Hurricane Research Division
Miami, Florida

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PREFACE

This version of the Deadliest, Costliest, and Most Intense United States Hurricanes from 1900 to 2000 extends the work of Hebert et al. (1997) through the 2000 season. Its also includes an estimate of the monetary loss that historical hurricanes could exact on the current property-at-risk in the same location. Chris Landsea, of the NOAA Hurricane Research Division of the Atlantic Oceanographic and Meteorological Laboratory, has joined as a co-author to add this section. Ed Rappaport has also joined this effort, while Paul Hebert, in his retirement from NOAA, no longer contributes to this report. Information for Hawaii, Puerto Rico and the Virgin Islands, given in Table 14, was provided by Hans Rosendal and Raphael Mojica of the Weather Service Forecast Offices in Honolulu and San Juan, respectively.

This update was begun under the leadership of Jerry Jarrell until his retirement in early 2000. He continued to participate in retirement.

During 1995, the National Meteorological Center, which included the National Hurricane Center, was re-organized into the National Centers for Environmental Prediction (NCEP). Under NCEP, the National Hurricane Center became the Tropical Prediction Center (TPC), a name which more accurately reflects the broad scope of its responsibilities, and more formally publicizes that the majority of its operational products were for tropical weather events exclusive of hurricanes. The name "National Hurricane Center" was retained to apply to the hurricane operations desk at TPC. We will follow the convention where "NHC" refers to the previous National Hurricane Center, "TPC" refers to the current center and "TPC/NHC" refers to the hurricane operations desk of TPC.

ABSTRACT

This technical memorandum lists the thirty deadliest and costliest hurricanes in the United States from 1900-2000. The compilation ranks damage, as expressed by monetary losses, in three ways: 1) contemporary estimates; 2) contemporary estimates adjusted by inflation to 2000 dollars; and 3) contemporary estimates adjusted for inflation and the growth of population and personal wealth [Pielke and Landsea, 1998]. In addition, the most intense (i.e., major1) hurricanes to make landfall in the United States during the period 1900-2000 are listed. Some additional statistics on United States hurricanes of this and previous centuries, and tropical cyclones in general, are also presented.

1. INTRODUCTION

The staff of the Tropical Prediction Center receives numerous requests for statistical information on deaths and damages, incurred during hurricanes affecting the United States. Information about the intensity of these hurricanes is also frequently of interest. Estimates of these measures vary in the literature. Our hope is to present the best compilation of currently available estimates. In some instances, data in our lists represent revised estimates based on more complete information received following earlier publications including previous versions of this technical memorandum.

There are other frequently asked questions about hurricanes, such as: What is the average number of hurricanes per year? What year(s) had the most and least hurricanes? What hurricane had the longest life? On what date did the earliest and latest hurricane occur? What was the most intense Atlantic hurricane? What was the largest number of hurricanes in existence on the same day? When was the last time a major hurricane or any hurricane hit a given community directly2? Answers to these and several other questions are provided in Section 3.

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1 A major hurricane is a category 3, 4, or 5 hurricane on the Saffir/Simpson Hurricane Scale (see Table 1), and is comparable to a Great Hurricane in some other publications.

2 A direct hit means experiencing the core of strong winds and high tides of a hurricane.

2. BACKGROUND AND DEFINITIONS

Many of the statistics in this publication depend directly on the criteria used in preparing another study, "Hurricane Experience Levels of Coastal County Populations-Texas to Maine" [(Jarrell et al. (1992)]. The primary purpose of that study was to demonstrate, county by county, the low hurricane experience level of a large majority of the population. Statistics show that the largest loss of life and, for the most part, property occur in locations experiencing the core of a category 3 or stronger hurricane.

The Saffir/Simpson category is defined by pressure, wind, and storm surge. In nature, however, there is not a one-to-one relationship between these elements. Therefore, in practice, the TPC uses the maximum wind speed to establish the category. Operationally, however, the central pressure is often used to make a first estimate of the wind. Thereafter, available surface wind reports, aircraft reconnaissance flight-level winds (from which surface wind speed can be estimated), and dropwindsonde data are used to anchor the wind estimate. In post-storm analysis, the central pressure ranges of hurricanes on the Saffir/Simpson Hurricane Scale will usually agree fairly well with the wind ranges in that category. On the other hand, the storm surge is strongly dependent on the slope of the continental shelf (shoaling factor). This can change the height of the surge by a factor of two for a given central pressure and/or maximum wind.

Heavy rainfall associated with a hurricane is not one of the criteria for categorizing.

The process of assigning a category number to a hurricane is subjective, as is TPC's estimate of a cyclone's impact. It is made on a county by county basis. In this study, we applied the criteria for direct hit and indirect hit described in the work by Jarrell et al. (1992):

> Direct Hit - Using "R" as the radius of maximum winds in a hurricane (the distance in miles from the storm's center to the circle of maximum winds around the center), all or parts of counties falling within approximately 2R to the right and R to the left of a storm's landfall point were usually considered to have received a direct hit (this assumes an observer at sea looking toward the shore.) If there was no landfall, the closest point of approach was used in place of the landfall point). On average, this direct hit zone extended about 50 miles along the coastline (R 15 miles). Of course, some hurricanes were smaller than this and some, particularly at higher latitudes, were much larger. Cases were judged individually, and many borderline situations had to be resolved.
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> Indirect Hit - In general, areas on either side of the direct hit zone which received wind gusts of hurricane force and/or tides of at least 4 to 5 feet above normal were considered to have had an indirect hit. The evaluation subjectively incorporated a hurricane's strength and size, and the configuration of county coastlines.

The authors acknowledge that there are limitations to this technique. For example, the effect of an indirect hit by a large category 4 hurricane can be greater than that by a direct hit from a small category 1 hurricane.

Neumann et al. (1999) gives the variation in tropical cyclone frequency along the United States coastline for all tropical storms and hurricanes, hurricanes only, and major hurricanes (category 3 or greater). In that study, counts were made of the number of tropical cyclones or hurricanes whose center passed within 75 nautical miles of the coastal location. This counting method thus includes near-misses, as well as direct and indirect hits as defined above.

Statistics on tropical storm and hurricane activity in the North Atlantic Ocean (which includes the Gulf of Mexico and the Caribbean Sea) can be found in Neumann et al. (1999). A stratification of hurricanes by category which have affected coastal counties of the Gulf of Mexico and North Atlantic Ocean can be found in Jarrell et al. (1992). Additional information about the impact of hurricanes can be found in annual hurricane season articles in Monthly Weather Review and Storm Data .

3. DISCUSSION
Part I

The remainder of this memorandum provides answers to some of the most frequently asked questions about the characteristics and impacts of the tropical cyclones to affect the United States from 1900-2000.

1. **What have been the deadliest hurricanes in the United States?**
   Table 2 lists the 30 deadliest tropical cyclones to strike the U.S. mainland 1900-2000. Three hurricanes prior to 1900, a tropical storm which affected southern California in 1939 and the deadliest Puerto Rico and Virgin Islands hurricanes are listed as an addendum.

2. **What have been the costliest hurricanes in the United States?**
   Table 3 lists the 30 costliest tropical cyclones (includes 5 tropical storms) to strike the U.S. mainland 1900-2000. Figures are not adjusted for inflation. Table 3a re-orders some of these plus several other hurricanes after adjusting to 2000 dollars3. Hawaiian, eastern Pacific, Puerto Rican and Virgin Island tropical cyclones are listed as addenda to Tables 3 and 3a. Table 3a also lists the thirty costliest hurricanes 1900-2000 assuming that a hurricane having the same track, size and intensity as noted in the historical record would strike the area with today's population and property-at-risk (see Pielke and Landsea 1998.)
3. **What have been the most intense hurricanes to strike the United States?**
   Table 4 lists the 65 major hurricanes which have struck the U.S. mainland 1900-2000. Hurricanes are ranked by estimated central pressure at time of landfall. Hawaiian, Puerto Rican and Virgin Island hurricanes are listed as an addenda to Table 4. Many of the island hurricanes are close passes, as opposed to landfalls as defined above.

A look at the lists of deadliest and costliest hurricanes 1900-2000 reveals several striking facts: (1) Ten of the twelve deadliest hurricanes were the equivalent of a category 4 or higher. (2) Large death totals were primarily a result of the 15 to 20 feet or greater rise of the ocean (storm surge) associated with many of these major hurricanes. All but six of the thirty deadliest hurricanes were major hurricanes. Four of those six were the inland flood-producing hurricanes Agnes, Diane and Floyd and tropical storm Alberto. (3) A large portion of the damage in two of the eight costliest tropical cyclones (Table 3) resulted from inland flooding caused by torrential rain. (4) Half of the deadliest hurricanes were category four or higher, but only one-sixth of the costliest hurricanes (Table 3) met this criterion. (5) Only one of the deadliest hurricanes occurred during the past twenty five years in contrast to two-thirds of the costliest hurricanes (this drops to two-fifths after adjustment for inflation and to one quarter after adjustment for inflation, population, and personal wealth).

Addenda to Tables 2, 3 and 4 include some noteworthy storms from before 1900, from the U.S. West coast and the Hawaiian islands, as well as in the U. S. Caribbean islands. The rank represents the position they would occupy if included in the main table.

Table 4a summarizes the direct hits on the U.S. mainland since 1900.

The data indicate that an average of 2 major hurricanes every 3 years made landfall somewhere along the U.S. Gulf or Atlantic coast. (When all categories were combined, about 5 hurricanes made landfall every 3 years.)

One of the greatest concerns of the National Weather Service's (NWS) hurricane preparedness officials is that the statistics in table 2 will mislead people into thinking that no more large loss of life will occur in a hurricane because of our advanced technology. Max Mayfield, spokesman for the NWS hurricane warning service and Director of TPC, as well as former NHC Directors, have repeatedly emphasized the great danger of a catastrophic loss of life in a future hurricane if proper preparedness plans for vulnerable areas are not formulated, maintained and executed.

The study by Jarrell et al. (1992) used 1990 census data to estimate that 85% of U.S. coastal residents from Texas to Maine had never experienced a direct hit by a major hurricane. Many of those 45 million residents had moved to coastal sections

during the past twenty-five years. Even the landfalls of Andrew, Hugo, Opal, Fran and Bret have not lessened an ever growing concern brought by the continued increase in coastal populations.

Table 5, which lists hurricanes by decades since 1900, shows that during the twenty year period 1960-1979 both the number and intensity of landfalling U.S. hurricanes decreased sharply! Based on 1900-1959 statistics, the expected number of hurricanes and major hurricanes during the period 1960-1979 was 36 and 15, respectively. But, in fact, only 27 (or 75%) of the expected number of hurricanes struck the U.S. with only 10 major hurricanes or 67% of that expected number. The decade of the eighties showed little change to this trend. Even the decade of the nineties, showed below average landfall frequencies. It could be noted that of the most recent four decades, only the 70's and 90's were significantly below normal.

On the average, a category 4 or stronger hurricane strikes the United States once every 6 years. Even though two category 4 hurricanes struck within three years, (Hugo in 1989 and Andrew in 1992), they represent the only category 4 hurricanes since 1969. Fewer hurricanes in a year do not necessarily mean a lesser threat of disaster, however. The 1919 hurricane, which is both the third deadliest and fourth most intense to strike the United States beginning 1900, occurred in a year which had a total of only three storms/hurricanes. Records for the most intense U.S. hurricane in 1935, and the costliest, Andrew in 1992, occurred in years which had only six tropical storms or hurricanes.

A large death toll in a U.S. hurricane is still possible. The decreased death totals in recent years may be as much a result of lack of major hurricanes striking the most vulnerable areas as they are of any fail-proof forecasting, warning, and observing systems.

Continued coastal growth and inflation will almost certainly result in every future major landfalling hurricane (and even weaker hurricanes and tropical storms) replacing one of the current costliest hurricanes.

If warnings are heeded and preparedness plans developed, the death toll can be reduced. In the absence of a change of attitude or laws restricting building near the ocean, however, large property losses are inevitable.

Part II

This section answers some frequently asked questions about tropical storm and hurricane activity.

1. **What is the average number of hurricanes per year ?**

   Table 6 gives the average number of tropical cyclones which reached storm strength and hurricane strength during selected time periods. A total of ten tropical cyclones reaching storm strength with six of these becoming hurricanes appears to be the best averages to use based on the past 10 to 50 year time periods when adequate observing systems were in place.

2. **What year(s) have had the most and least hurricanes ?** Table 7 shows the years of maximum and minimum tropical cyclone and hurricane activity for the Atlantic hurricane basin. The only years after1900 when a hurricane failed to strike the U.S. mainland were 1902, 1905, 1907, 1914, 1922, 1927, 1930, 1931, 1937, 1951, 1958, 1962, 1973, 1978, 1981, 1982, 1990 ,1994 and 2000.
   Note that only twice has the U.S. mainland gone as long as two years without a hurricane. The most hurricanes to strike in one year were six in 1916 and 1985. There were five in 1933, and four in 1906, 1909, and 1964. Three hurricanes struck the U.S. in one year a total of sixteen times. Ten of these sixteen times occurred during the sixteen years from 1944 to 1959!

3. **When did the earliest and latest hurricanes occur ?** The hurricane season is defined as June 1 through November 30. An early hurricane can be defined as occurring in the three months prior to the start of the season, and a late hurricane can be defined as occurring in the three months after the season. With these criteria the earliest observed hurricane in the Atlantic was on March 7, 1908, while the latest observed hurricane was on December 31, 1954, the second "Alice" of that year which persisted as a hurricane until January 5, 1955. The earliest hurricane to strike the United States since 1900 was Alma which struck northwest Florida on June 9, 1966. The latest hurricane to strike the United States was late on November 30, 1925 near Tampa, Florida.

4. **What were the longest-lived and shortest-lived hurricanes?** Ginger in 1971 holds the record for most days as a

hurricane (20) and tropical cyclone (28) (includes depression stage). Many tropical cyclones remained at hurricane intensity for 12 hours or less.

5. **(5) What were the strongest and weakest hurricanes?** In terms of central pressure (and probably winds), the strongest observed hurricane in the Atlantic basin was Gilbert in 1988 with a pressure of 888 millibars in the northwest Caribbean. The 1935 Labor Day hurricane in the Florida Keys, with a pressure of 892 millibars, was the most intense hurricane to strike the United States. Numerous hurricanes have reached only the minimum wind speed near 74 miles per hour and several have struck the United States.

6. **How many hurricanes have there been in each month?** Table 8, adapted from Neumann et al. (1999), shows the total and average number of tropical cyclones, and those which became hurricanes, by month, for the period 1944-2000. It also shows the monthly total and average number of hurricanes to strike the United States since 1900 (updated from Hebert et al., 1997).

7. **What was the largest number of hurricanes in the Atlantic Ocean at the same time?** According to information on the current version of the master data file of Neumann et al. (1999), until September 25, 1998 there had not been four hurricanes in the North Atlantic at the same time in over 100 years. Hurricanes Georges, Ivan, Jeanne and Karl persisted into September 27th, 1998 as hurricanes. One hundred five years earlier, on August 22, 1893 four hurricanes co-existed, one of them killing an estimated 1,000-2,000 people in Georgia-South Carolina. On September 11, 1961, three hurricanes and possibly a fourth occurred simultaneously. The only other years after 1900 with three hurricanes on the map at the same time were 1950 and 1967. In 1971 from September 10 to 12, there were five tropical cyclones at the same time; however, while most of these ultimately achieved hurricane intensity, there were never more than two hurricanes at any one time.

8. **How many direct hits by hurricanes of various categories have affected each state?** Table 9, updated from Hebert et al. (1997), shows the number of hurricanes affecting (direct hits) the United States and individual states. The table shows that, on the average, close to five hurricanes every three years (1.63 per year) strike the United States, while two major hurricanes cross the U.S. coast every three years (0.64 per year). Other noteworthy facts, updated from Hebert et al. (1997), are:
    1. Thirty-six percent of all U.S. hurricanes hit Florida;
    2. Seventy-six percent of category 4 or higher hurricanes have hit either Florida or Texas;
    3. Approximately half the hurricanes to strike the middle Gulf coast, southern Florida and New York were major hurricanes.

9. **When are the major hurricanes likely to strike given areas ?** Table 10 shows the incidence of major hurricanes by months for the U.S. mainland and individual states. For the United States, September has had more major hurricanes than all other months combined. However, four of the most devastating hurricanes did not occur in September--Andrew (August 1992), Camille (August 1969), Audrey (June 1957), and Hazel (October 1954). Only in Texas and Louisiana are major hurricanes in August and September almost an equal threat. Most major October hurricanes occur in southern Florida.

10. **How long has it been since a hurricane or a major hurricane hit a givencommunity?** A chronological list of all hurricanes to strike the United States 1900 through 1990 including month, states affected by category, and minimum sea level pressure at landfall can be found in Jarrell et al. (1992). Table 11 extends that listing through 2000. Table12 summarizes the occurrence of the last major hurricane or of any hurricane to directly hit the more populated coastal communities from Brownsville, Texas to Eastport, Maine. In addition, if a hurricane indirectly affected a community after the last direct hit, it is listed in the last column of the table. In order to obtain the same type of information listed in Table 12 for the remaining coastal communities, the reader is again referred to Jarrell et al. (1992).

    There many illustrative examples of the uncertainty of when a hurricane might strike a given locality. After a period of nearly 70 years without a direct hit, Pensacola, Florida was hit directly by hurricane Erin and indirectly by major hurricane Opal during a two month period in 1995.

    Miami, which expects a major hurricane every nine years, on average, was struck by a major hurricane in 1992 for the first time since 1950. Tampa hasn't experienced a major hurricane since 1921 years. Many locations along the Gulf and Atlantic coasts have not experienced a major hurricane during the period 1900-2000 (see Table 12).

11. **What is the total United States damage (before and after adjustment for inflation) and death toll for each year since 1900?** Table 13 summarizes this information. Table 13a ranks the top 30 years by deaths, by unadjusted damage

and by adjusted damage. In most years the death and damage totals are the result of a single, major hurricane. Gentry (1966) gives damages adjusted to 1957-59 costs as a base for the period 1915-1965. For the most part, death and damage totals for the period 1915-1965 were taken from Gentry's paper, and for the remaining years from the Monthly Weather Review. Adjusted damages were converted to 2000 dollars by the factors used in Table 3a.

12. **Are there hurricane cycles ?** Choose decade :
(1901-1910), (1911-1920), (1921-1930), (1931-1940), (1941-1950), (1951-1960), (1961-1970), (1971-1980), (1981-1990), (1991-2000)
Figures 1 through 10 show the landfalling portion of the tracks of major hurricanes that have struck the United States 1901-1999 (there were no major hurricane strikes on the United States in 2000). The reader might note the tendency for the major hurricane landfalls to cluster in certain areas during certain decades. Another interesting point is the tendency for this clustering to occur in the latter half of individual decades in one area and in the first half of individual decades in another area. During the very active period of the thirties this clustering is not apparent.

    A comparison of twenty-year periods beginning in 1901 indicates that the major hurricanes tended to be in the western Gulf Coast states at the beginning of the 20th century, shifting to the eastern Gulf Coast states and Florida during the next twenty years, then to Florida and the Atlantic Coast states during the forties and fifties, and back to the western Gulf Coast states in the sixties and seventies.

13. **What are the death and damage statistics for Hawaii, Puerto Rico and the U.S. Virgin Islands?** Table 14 lists some of the deadliest, costliest and most intense tropical cyclones to affect the islands. The Saffir/Simpson hurricane scale and the empirical Atlantic wind pressure relationship do not strictly apply in the Hawaiian area, and thus, hurricanes are not readily comparable to those of the Atlantic basin. In both island areas, some minimum pressure values appear inconsistent with the given wind values. This is largely attributable to the given minimum and maximum winds not necessarily being the extremes in the hurricane.

SUMMARY

In virtually every coastal city of any size from Texas to Maine, the present Tropical Prediction Center Director, Max Mayfield, or former National Hurricane Center Directors, have stated that the United States is building toward its next hurricane disaster. The population growth and low hurricane experience levels indicated in Hebert et al. (1984), together with updated statistics presented by Jarrell et al. (1992), form the basis for their statements. The areas along the United States Gulf and Atlantic coasts where most of this country's hurricane related fatalities have occurred are also now experiencing the country's most significant growth in population. This situation, in combination with continued building along the coast, will lead to serious problems for many areas in hurricanes. Because it is likely that people will always be attracted to live along the shoreline, a solution to the problem lies in education, preparedness and mitigation.

The message to coastal residents is: Become familiar with what hurricanes can do, and when a hurricane threatens your area, increase your chances of survival by moving away from the water until the hurricane has passed! Unless this message is clearly understood by coastal residents through a thorough and continuing preparedness effort, disastrous loss of life is inevitable in the future.

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Table 1. Saffir/Simpson Hurricane Scale [Simpson, R.H. (1974)].

Scale Number (Category)	Central Pressure (Millibars)	Central Pressure (Inches)	Winds (Mph)	Surge (Feet)	Damage
1	>979	>28.91	74-95	4 to 5	Minimal
2	965-979	28.50-28.91	96-110	6 to 8	Moderate
3	945-964	27.91-28.47	111-130	9 to 12	Extensive
4	920-944	27.17-27.88	131-155	13 to 18	Extreme
5	< 920	< 27.17	> 155	> 18	Catastrophic

The Most Intense Hurricanes in the United States 1900-2000

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Table 4: The most intense mainland United States hurricanes, 1900-2000 (includes only major hurricanes at their most intense landfall). Addendum for Hawaii, Puerto Rico, and U.S. Virgin Islands.

Rank	Hurricane	Year	Category (at landfall)	Minimum Pressure (mb)	Minimum Pressure (in)
1	Unnamed (FL Keys)	1935	5	892	26.35
2	Camille (MS, SE LA, VA)	1969	5	909	26.84
3	Andrew (SE FL, SE LA)	1992	5[a]	922	27.23
4	Unnamed (FL Keys, S TX)	1919	4	927	27.37
5	Unnamed (Lake Okeechobee FL)	1928	4	929	27.43
6	Donna (FL, Eastern U.S.)	1960	4	930	27.46
7	Unnamed (Galveston TX)	1900	4	931	27.49
7	Unnamed (Grand Isle LA)	1909	4	931	27.49
7	Unnamed (New Orleans LA)	1915	4	931	27.49
7	Carla (N & Cent. TX)	1961	4	931	27.49
11	Hugo (SC)	1989	4	934	27.58
12	Unnamed (Miami FL, MS, AL, Pensacola FL)	1926	4	935	27.61
13	Hazel (SC, NC)	1954	4[b]	938	27.70
14	Unnamed (SE FL, SE LA, MS)	1947	4	940	27.76
15	Unnamed (N TX)	1932	4	941	27.79
16	Gloria (Eastern U.S.)	1985	3[bc]	942	27.82
16	Opal (NW FL, AL)	1995	3[c]	942	27.82
18	Audrey (SW LA, N TX)	1957	4[d]	945	27.91
18	Unnamed (Galveston TX)	1915	4[d]	945	27.91
18	Celia (S TX)	1970	3	945	27.91
18	Allen (S TX)	1980	3	945	27.91
22	Unnamed (New England)	1938	3[b]	946	27.94
22	Frederic (AL, MS)	1979	3	946	27.94
24	Unnamed (NE U.S.)	1944	3[b]	947	27.97
24	Unnamed (SC, NC)	1906	3	947	27.97
26	Betsy (SE FL, SE LA)	1965	3	948	27.99
26	Unnamed (SE FL, NW FL)	1929	3	948	27.99
26	Unnamed (SE FL)	1933	3	948	27.99
26	Unnamed (S TX)	1916	3	948	27.99
26	Unnamed (MS, AL)	1916	3	948	27.99
31	Diane (NC)	1955	3[e]	949	28.02
31	Unnamed (S TX)	1933	3	949	28.02
33	Beulah (S TX)	1967	3	950	28.05
33	Hilda (Central LA)	1964	3	950	28.05
33	Gracie (SC)	1959	3	950	28.05

33	Unnamed (Central TX)	1942	3	950	28.05
37	Unnamed (SE FL)	1945	3	951	28.08
37	Bret (S TX)	1999	3	951	28.08
39	Unnamed (Tampa Bay FL)	1921	3	952	28.11
39	Carmen (Central LA)	1974	3	952	28.11
41	Edna (New England)	1954	3 [b]	954	28.17
41	Unnamed (SE FL)	1949	3	954	28.17
41	Fran (NC)	1996	3	954	28.17
44	Eloise (NW FL)	1975	3	955	28.20
44	King (SE FL)	1950	3	955	28.20
44	Unnamed (Central LA)	1926	3	955	28.20
44	Unnamed (SW LA)	1918	3	955	28.20
44	Unnamed (SW FL)	1910	3	955	28.20
49	Unnamed (NC)	1933	3	957	28.26
49	Unnamed (FL Keys)	1909	3	957	28.26
51	Easy (NW FL)	1950	3	958	28.29
51	Unnamed (N TX)	1941	3	958	28.29
51	Unnamed (NW FL)	1917	3	958	28.29
51	Unnamed (N TX)	1909	3	958	28.29
51	Unnamed (MS, AL)	1906	3	958	28.29
56	Elena (MS, AL, NW FL)	1985	3	959	28.32
57	Carol (NE U.S.)	1954	3[b]	960	28.35
57	Ione (NC)	1955	3	960	28.35
57	Emily (NC)	1993	3	960	28.35
60	Alicia (N TX)	1983	3	962	28.41
60	Connie (NC, VA)	1955	3	962	28.41
60	Unnamed (SW FL, NE FL)	1944	3	962	28.41
60	Unnamed (Central LA)	1934	3	962	28.41
64	Unnamed (SW FL, NE FL)	1948	3	963	28.44
65	Unnamed (NW FL)	1936	3	964	28.47
Addendum (rank is independent of other events in group)					
4	David (S of PR)	1979	4	924	27.29
7	Unnamed (San Felipe PR)	1928	4	931	27.49
14	Hugo (USVI, PR)	1989	4	940	27.76
33	Iniki (Kauaʻi HI)	1992	Unknown	950	27.91
43	Dot (Kauaʻi HI)	1959	Unknown	955	28.11
50	Donna (St. Thomas, PR)	1960	4	958	28.29
64	Iwa (Kauaʻi HI)	1982	Unknown	964	28.47
65	Georges (USVI, PR)	1998	3	968	28.59

Notes

[a] Reclassified as Category 5 in 2002

[b] Moving more than 30 miles an hour

[c] Highest category justified by winds
[d] Classified Cat. 4 because of estimated winds
[e] Cape Fear, North Carolina, area only; was a Category 2 at final landfall

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Table 9. Hurricane direct hits on the mainland U.S. coastline and for individual states 1900-2000 by Saffir/Simpson category. Updated from Hebert et al. (1997).

AREA	CATEGORY NUMBER 1	2	3	4	5	ALL	MAJOR HURRICANES
U.S. (Texas to Maine)	61	39	48	15	2	165	65
Texas	12	9	10	6	0	37	16
(North)	7	3	3	4	0	17	7
(Central)	2	2	1	1	0	6	2
(South)	3	4	6	1	0	14	7
Louisiana	9	5	8	3	1	26	12
Mississippi	1	2	5	0	1	9	6
Alabama	5	2	5	0	0	12	5
Florida	19	17	17	6	1	60	24
(Northwest)	10	8	7	0	0	25	7
(Northeast)	2	7	0	0	0	9	0
(Southwest)	7	3	6	2	1	19	9
(Southeast)	6	11	7	4	0	28	11
Georgia	1	4	0	0	0	5	0
South Carolina	6	4	2	2	0	14	4
North Carolina	10	6	10	1 *	0	27	11
Virginia	2	1	1 *	0	0	4	1 *
Maryland	0	1 *	0	0	0	1 *	0
Delaware	0	0	0	0	0	0	0
New Jersey	1 *	0	0	0	0	1 *	0
New York	3	1 *	5 *	0	0	9	5 *
Connecticut	2	3 *	3 *	0	0	8	3 *
Rhode Island	0	2 *	3 *	0	0	5 *	3 *
Massachusetts	2	2 *	2 *	0	0	6	2 *
New Hampshire	1 *	1 *	0	0	0	2 *	0
Maine	5 *	0	0	0	0	5	0

Notes:

* Indicates all hurricanes in this group were moving faster than 30 mph. State totals will not equal U.S. totals, and Texas or Florida totals will not necessarily equal sum of sectional totals.

Table 10. Incidence of major hurricane direct hits on the U.S. mainland and individual states, 1900-2000, by Saffir/Simpson category. Updated from Hebert et al. (1997).

AREA	JUNE	JULY	AUG.	SEPT.	OCT.	ALL
U.S. (Texas to Maine)	2	3	16	36	8	65
Texas	1	1	8	6		16
(North)	1	1	3	2		7
(Central)			1	1		2
(South)			4	3		7
Louisiana	2		4	5	1	12
Mississippi		1	1	4		6
Alabama		1		4		5
Florida		1	2	15	6	24
(Northwest)		1		5	1	7
(Northeast)						0
(Southwest)			1	5	3	9
(Southeast)			2	7	2	11
Georgia						0
South Carolina				3	1	4
North Carolina			2	8	1	11
Virginia				1		1
Maryland						0
Delaware						0
New Jersey						0
New York			1	4		5
Connecticut			1	2		3
Rhode Island			1	2		3
Massachusetts				2		2
New Hampshire						0
Maine						0

Note: State totals do not equal U.S. totals and Texas or Florida totals do not necessarily equal the sum of sectional entries.

Table 11. Chronological list of all hurricanes which affected the U.S. 1991-2000, including category by state. This is a continuation of a comparable table covering the years 1900-1990 given in Jarrell et al. (1992).

Year	Month	States Affected & Category by States	Highest Category U.S.	Minimum Sea Level Pressure (Mb.)	Name
1991	Aug.	NY, MA, RI 2	2	964	*BOB*
1992	Aug.	FL(SE) 4, (SW) 3, LA 3	4	922	*ANDREW*
1993	Aug.	NC 3	3	960	*EMILY*
1995	Aug.	FL(SE) 1, (NW) 2	2	973	*ERIN*
1995	Oct.	FL(NW) 3	3	942	*OPAL*
1996	July	NC 2	2	974	*BERTHA*
1996	Sept.	NC 3	3	954	*FRAN*
1997	July	LA, AL 1	1	984	*DANNY*
1998	Aug.	NC 2	2	964	*BONNIE*
1998	Sept.	FL(NW) 1	1	987	*EARL*
1998	Sept.	FL(SW), (Keys), MS 2	2	964	*GEORGES*
1999	Aug.	TX (S) 3	3	951	*BRET*
1999	Sep.	NC 2	2	956	*FLOYD*
1999	Oct.	FL (SW, SE), NC 1	1	987	*IRENE*

Dennis?
9/1/99

Table 12. Last direct or indirect hit by any hurricane or a major hurricane at certain populated coastal communities. Category in parenthesis. Updated from Jarrell et al. (1992).

State	City	Direct Hits: Last Major		Direct Hits: Last Any	Indirect Hits: Last any
Texas	Brownsville	1980(3)	Allen	1980(3) Allen	
	Corpus Christi	1970(3)	Celia	1971(1) Fern	1980(3) Allen
	Port Aransas	1970(3)	Celia	1971(1) Fern	1980(3) Allen
	Matagorda	1961(4)	Carla	1971(1) Fern	1983(3) Alicia
	Freeport	1983(3)	Alicia	1983(3) Alicia	
	Galveston	1983(3)	Alicia	1989(1) Jerry	
	Houston	1941(3)		1989(1) Jerry	
	Beaumont	<1900		1986(1) Bonnie	
Louisiana	Cameron	1957(4)	Audrey	1985(1) Danny	1985(1) Juan
	Morgan City	1992(3)	Andrew	1992(3) Andrew	
	Houma	1974(3)	Carmen	1985(1) Juan	1992(3) Andrew
	New Orleans	1965(3)	Betsy	1965(3) Betsy	1969(5) Camille
Mississippi	Bay St. Louis	1985(3)	Elena	1985(3) Elena	
	Biloxi	1985(3)	Elena	1998(2) Georges	
	Pascagoula	1985(3)	Elena	1998(2) Georges	
Alabama	Mobile	1985(3)	Elena	1998(2) Georges	
Florida	Pensacola	1926(3)		1995(1) Erin	1995(3) Opal
	Panama City	1995(3)	Opal	1995(3) Opal	
	Apalachicola	1985(3)	Elena	1985(2) Kate	1995(3) Opal
	Homosassa	1950(3)	Easy	1968(2) Gladys	
	St. Petersburg	1921(3)		1946(1)	1968(2) Gladys
	Tampa	1921(3)		1946(1)	1968(2) Gladys
	Sarasota	1944(3)		1946(1)	1968(2) Alma
	Fort Myers	1960(3)	Donna	1960(3) Donna	1968(2) Alma
	Naples	1960(4)	Donna	1964(2) Isbell	1992(3) Andrew
	Key West	1948(3)		1999(1) Irene	
	Miami	1992(4)	Andrew	1999(1) Irene	
	Fort Lauderdale	1950(3)	King	1999(1) Irene	1992(4) Andrew
	West Palm Beach	1949(3)		1999(1) Irene	
	Stuart	1949(3)		1979(2) David	
	Fort Pierce	1933(3)		1979(2) David	
	Vero Beach	<1900		1995(1) Erin	

Notes: <1900 means before 1900

State	City	Direct Hits: Last Major		Direct Hits: Last Any		Indirect Hits: Last any	
Florida	Cocoa	<1900		1995(1)	Erin		
	Daytona Bch	<1900		1960(2)	Donna	1979(2)	David
	St. Augustine	<1900		1964(2)	Dora		
	Jacksonville	<1900		1964(2)	Dora		
	Fernandina Bch	<1900		1928(2)		1964(2)	Dora
Georgia	Brunswick	<1900		1928(1)			
	Savannah	<1900		1979(2)	David		
S. Carolina	Hilton Head	1959(3)	Gracie	1979(2)	David	1985(1)	Bob
	Charleston	1989(4)	Hugo	1989(4)	Hugo		
	Myrtle Beach	1954(4*)	Hazel	1954(4*)	Hazel	1989(4)	Hugo
N. Carolina	Wilmington	1996(3)	Fran	1999(2)	Floyd	1999(2)	Dennis
	Morehead City	1996(3)	Fran	1999(2)	Floyd		
	Cape Hatteras	1993(3)	Emily	1993(3)	Emily	1999(1)	Dennis
Virginia	Virginia Beach	1944(3*)		1999(2)	Floyd		
	Norfolk	<1900		1955(1)	Connie	1999(1)	Floyd
Maryland	Ocean City	<1900		<1900		1985(3*)	Gloria
	Baltimore	<1900		<1900		1954(2*)	Hazel
Delaware	Rehoboth Bch	<1900		<1900		1985(3*)	Gloria
	Wilmington	<1900		<1900		1954(2*)	Hazel
New Jersey	Cape May	<1900		1903(1)		1985(3*)	Gloria
	Atlantic City	<1900		1903(1)		1985(3*)	Gloria
New York	New York City	<1900		1903(1)		1976(1)	Belle
	Westhampton	1985(3*)	Gloria	1985(3*)	Gloria		
Connecticut	New London	1938(3*)		1991(2*)	Bob		
	New Haven	1938(3*)		1985(2*)	Gloria		
	Bridgeport	1954(3*)	Carol	1985(2*)	Gloria		
Rhode Island	Providence	1954(3*)	Carol	1991(2*)	Bob		
Mass.	Cape Cod	1954(3*)	Edna	1991(2*)	Bob		
	Boston	<1900		1960(1*)	Donna	1991(1*)	Bob
N. Hampshire	Portsmouth	<1900		1985(2*)	Gloria		
Maine	Portland	<1900		1985(1*)	Gloria		
	Eastport	<1900		1969(1)	Gerda	1985(1*)	Gloria

Notes: * Moving over 30 mph

Table 12. Last direct or indirect hit by any hurricane or a major hurricane at certain populated coastal communities. Category in parenthesis. Updated from Jarrell et al. (1992).

State	City	Direct Hits: Last Major		Direct Hits: Last Any	Indirect Hits: Last any
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	Port Aransas	1970(3)	Celia	1971(1) Fern	1980(3) Allen
	Matagorda	1961(4)	Carla	1971(1) Fern	1983(3) Alicia
	Freeport	1983(3)	Alicia	1983(3) Alicia	
	Galveston	1983(3)	Alicia	1989(1) Jerry	
	Houston	1941(3)		1989(1) Jerry	
	Beaumont	<1900		1988(1) Bonnie	
Louisiana	Cameron	1957(4)	Audrey	1985(1) Danny	1985(1) Juan
	Morgan City	1992(3)	Andrew	1992(3) Andrew	
	Houma	1974(3)	Carmen	1985(1) Juan	1992(3) Andrew
	New Orleans	1965(3)	Betsy	1965(3) Betsy	1969(5) Camille
Mississippi	Bay St. Louis	1985(3)	Elena	1985(3) Elena	
	Biloxi	1985(3)	Elena	1998(2) Georges	
	Pascagoula	1985(3)	Elena	1998(2) Georges	
Alabama	Mobile	1985(3)	Elena	1998(2) Georges	
Florida	Pensacola	1926(3)		1995(1) Erin	1995(3) Opal
	Panama City	1995(3)	Opal	1995(3) Opal	
	Apalachicola	1985(3)	Elena	1985(2) Kate	1995(3) Opal
	Homosassa	1950(3)	Easy	1968(2) Gladys	
	St. Petersburg	1921(3)		1946(1)	1968(2) Gladys
	Tampa	1921(3)		1946(1)	1968(2) Gladys
	Sarasota	1944(3)		1946(1)	1966(2) Alma
	Fort Myers	1960(3)	Donna	1960(3) Donna	1966(2) Alma
	Naples	1960(4)	Donna	1964(2) Isbell	1992(3) Andrew
	Key West	1948(3)		1999(1) Irene	
	Miami	1992(4)	Andrew	1999(1) Irene	
	Fort Lauderdale	1950(3)	King	1999(1) Irene	1992(4) Andrew
	West Palm Beach	1949(3)		1999(1) Irene	
	Stuart	1949(3)		1979(2) David	
	Fort Pierce	1933(3)		1979(2) David	
	Vero Beach	<1900		1995(1) Erin	

Notes: <1900 means before 1900

State	City	Direct Hits: Last Major		Direct Hits: Last Any	Indirect Hits: Last any
Florida	Cocoa	<1900		1995(1) Erin	
	Daytona Bch	<1900		1960(2) Donna	1979(2) David
	St. Augustine	<1900		1964(2) Dora	
	Jacksonville	<1900		1964(2) Dora	
	Fernandina Bch	<1900		1928(2)	1964(2) Dora
Georgia	Brunswick	<1900		1928(1)	
	Savannah	<1900		1979(2) David	
S. Carolina	Hilton Head	1959(3)	Gracie	1979(2) David	1985(1) Bob
	Charleston	1989(4)	Hugo	1989(4) Hugo	
	Myrtle Beach	1954(4*)	Hazel	1954(4*) Hazel	1989(4) Hugo
N. Carolina	Wilmington	1996(3)	Fran	1999(2) Floyd	1999(2) Dennis
	Morehead City	1996(3)	Fran	1999(2) Floyd	
	Cape Hatteras	1993(3)	Emily	1993(3) Emily	1999(1) Dennis
Virginia	Virginia Beach	1944(3*)		1999(2) Floyd	
	Norfolk	<1900		1955(1) Connie	1999(1) Floyd
Maryland	Ocean City	<1900		<1900	1985(3*) Gloria
	Baltimore	<1900		<1900	1954(2*) Hazel
Delaware	Rehoboth Bch	<1900		<1900	1985(3*) Gloria
	Wilmington	<1900		<1900	1954(2*) Hazel
New Jersey	Cape May	<1900		1903(1)	1985(3*) Gloria
	Atlantic City	<1900		1903(1)	1985(3*) Gloria
New York	New York City	<1900		1903(1)	1976(1) Belle
	Westhampton	1985(3*)	Gloria	1985(3*)	Gloria
Connecticut	New London	1938(3*)		1991(2*)	Bob
	New Haven	1938(3*)		1985(2*)	Gloria
	Bridgeport	1954(3*)	Carol	1985(2*)	Gloria
Rhode Island	Providence	1954(3*)	Carol	1991(2*)	Bob
Mass.	Cape Cod	1954(3*)	Edna	1991(2*)	Bob
	Boston	<1900		1960(1*)	Donna 1991(1*) Bob
N. Hampshire	Portsmouth	<1900		1985(2*)	Gloria
Maine	Portland	<1900		1985(1*)	Gloria
	Eastport	<1900		1969(1)	Gerda 1985(1*) Gloria

Notes: * Moving over 30 mph

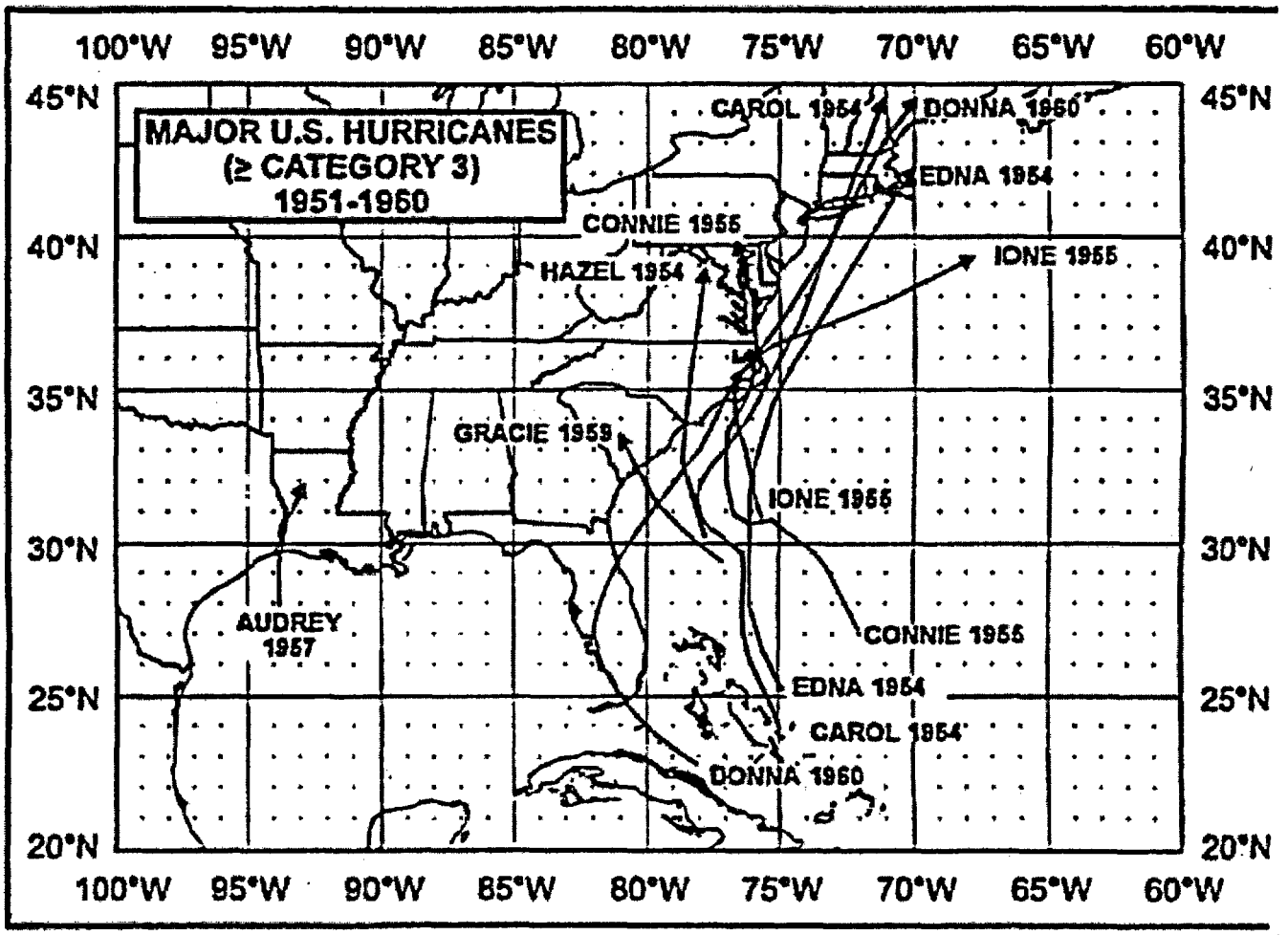


Figure 6. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1951-1960.

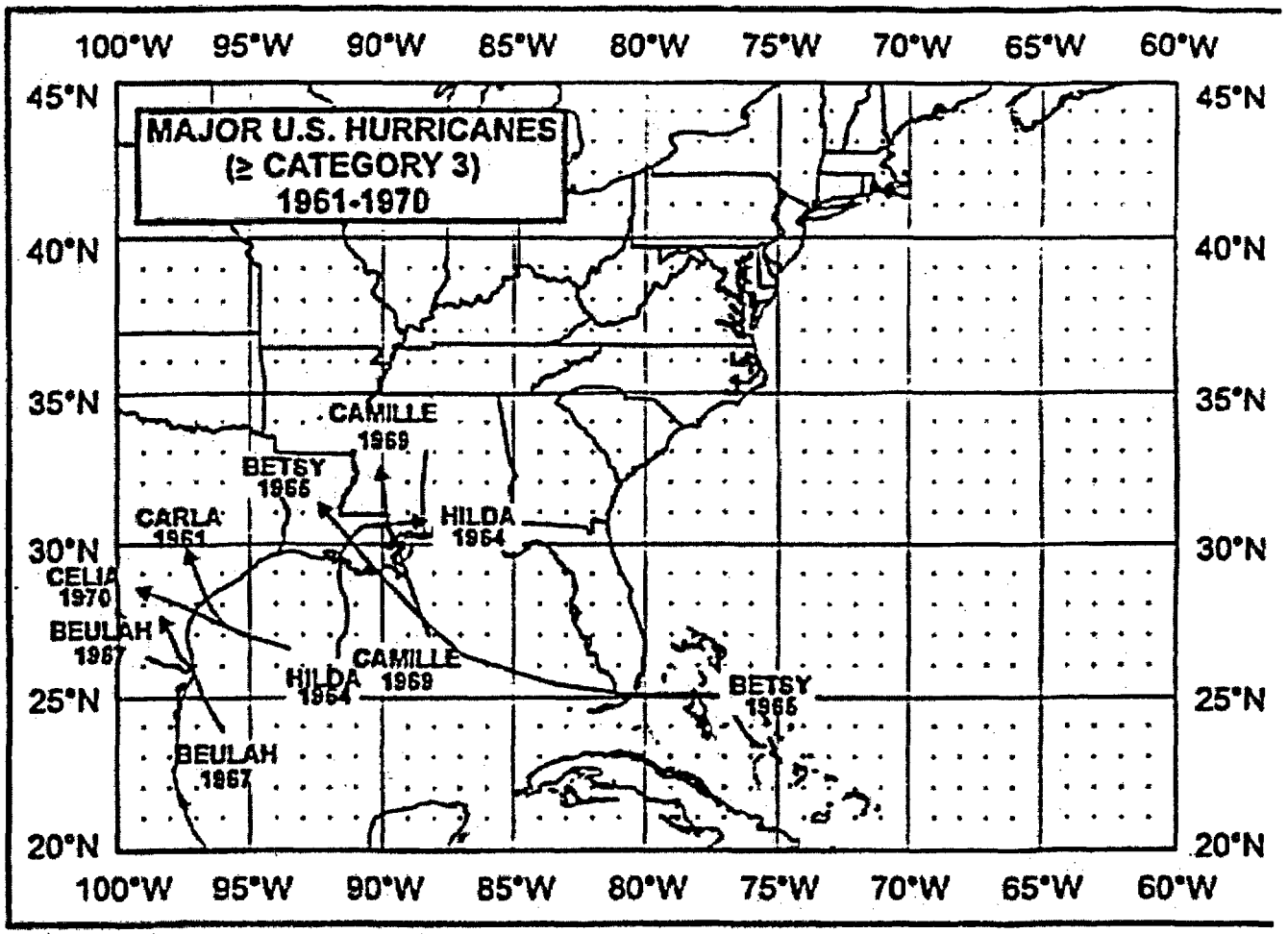


Figure 7. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1961-1970.

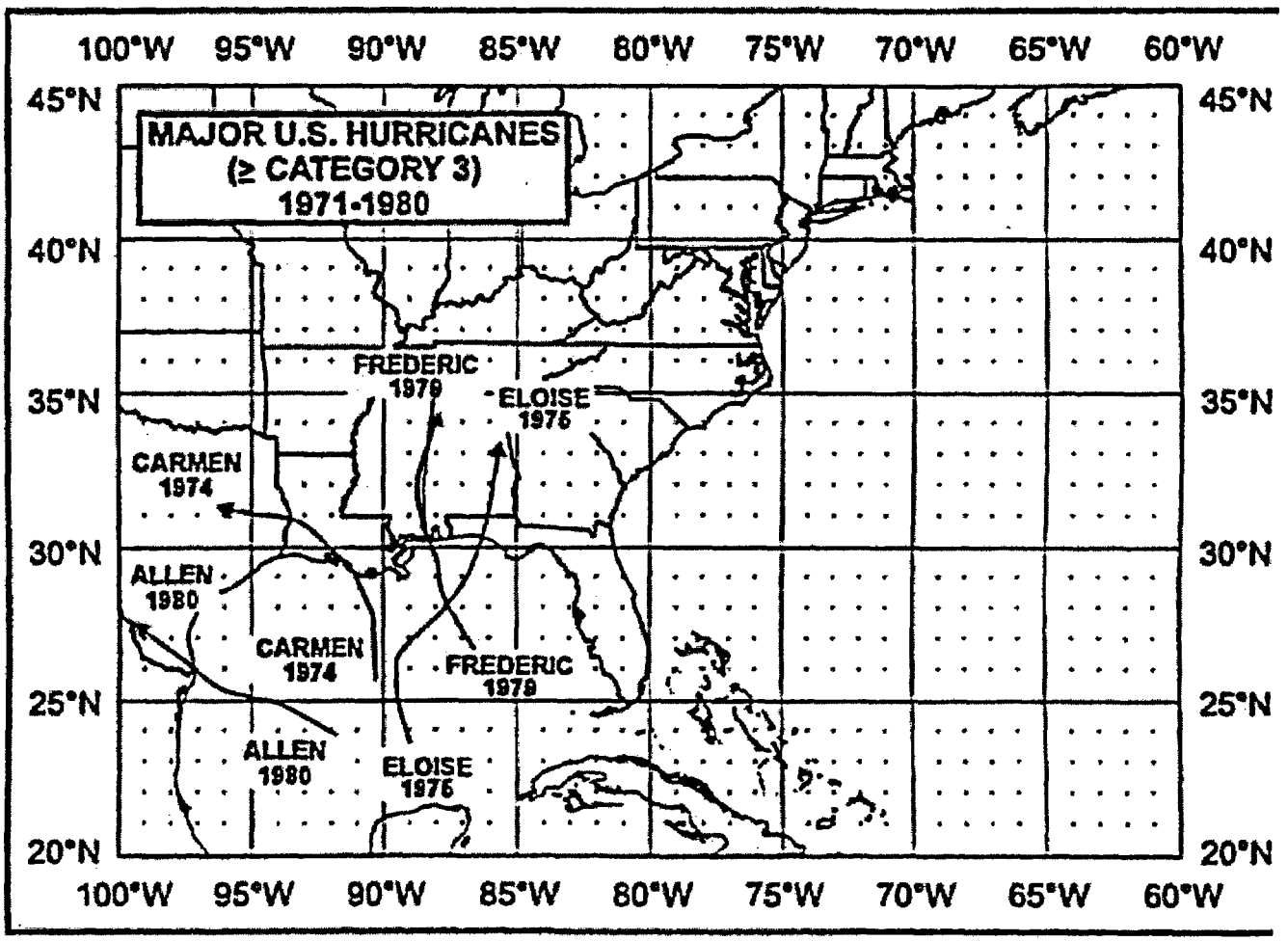


Figure 8. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1971-1980.

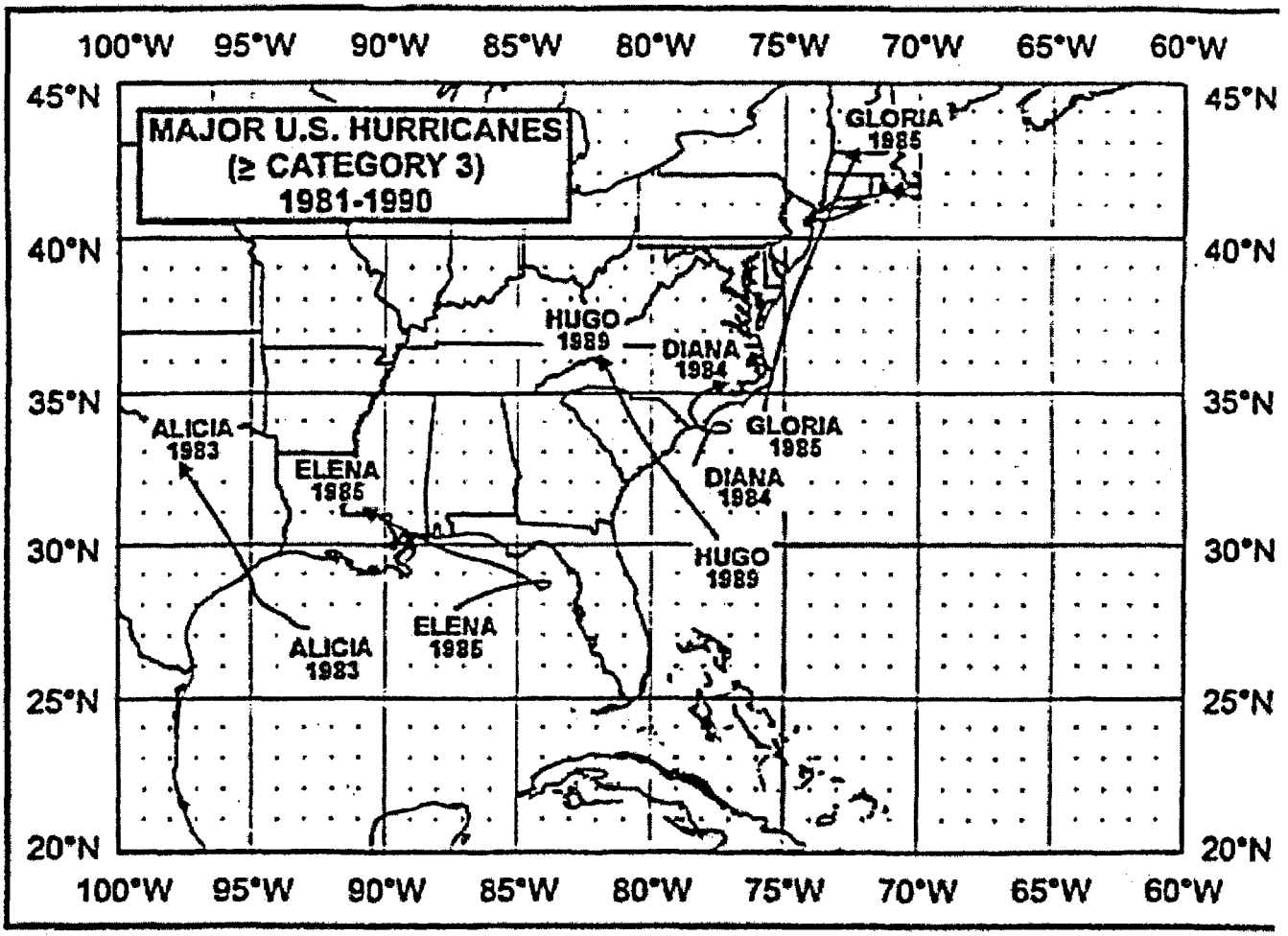


Figure 9. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1981-1990.

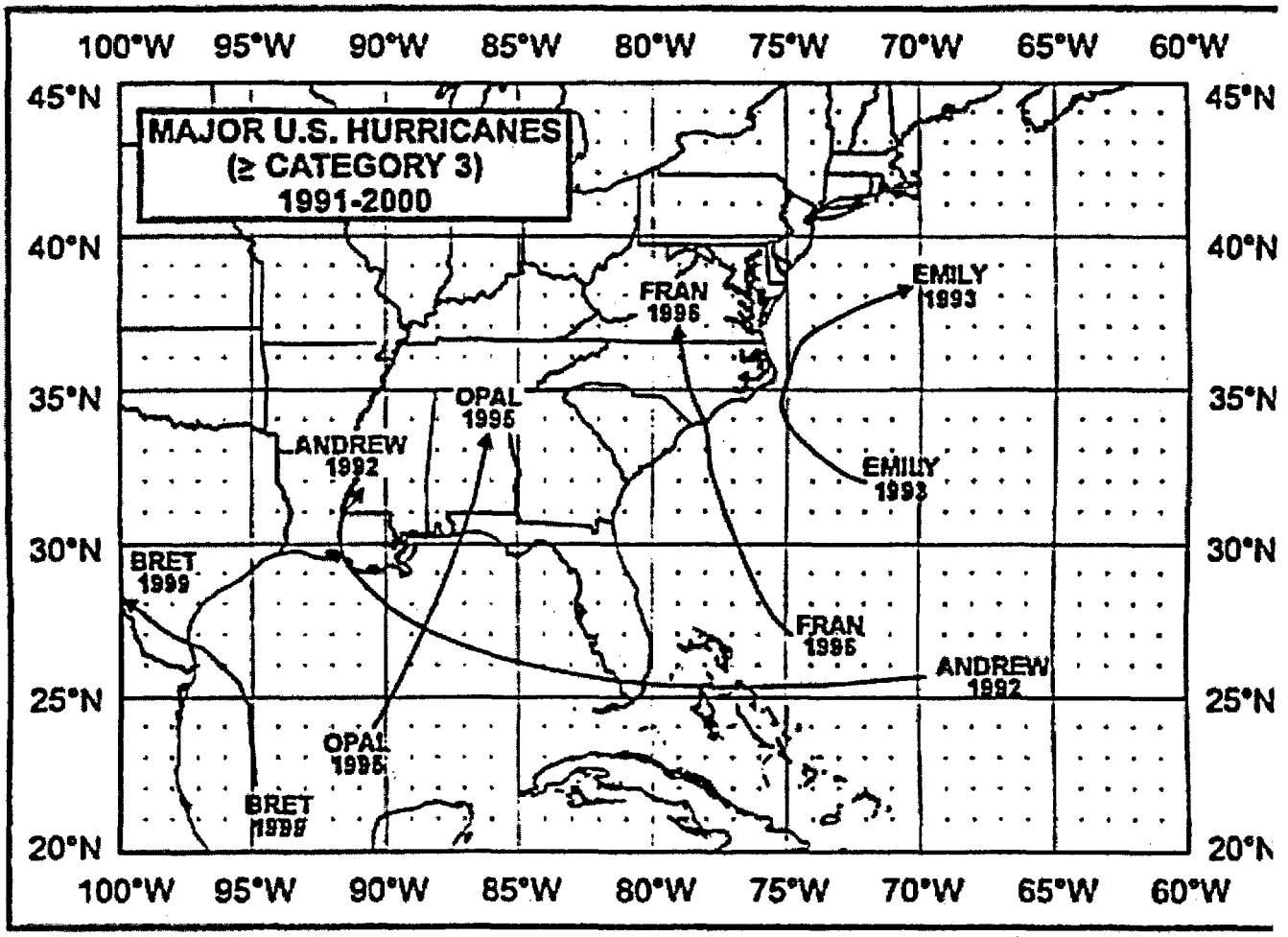
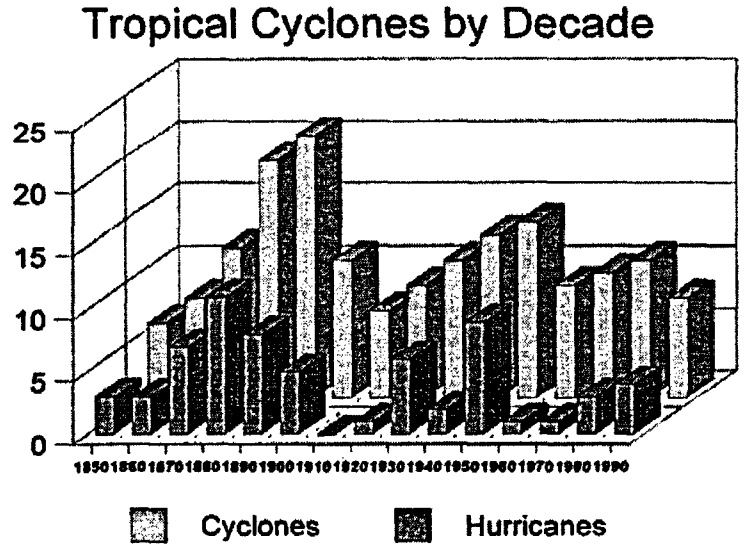


Figure 10. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1991-2000.

Virginia Tropical Cyclone Climatology

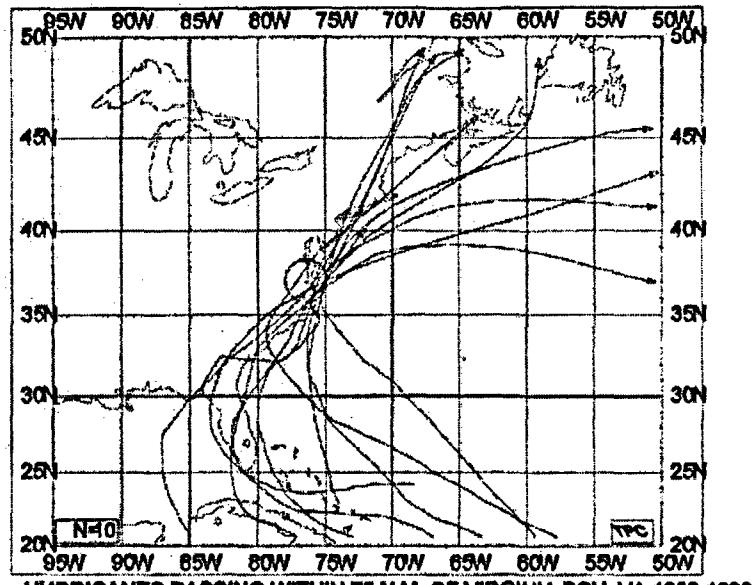
Statistics. On average, a tropical storm, or its remnants, can be expected to impact the Old Dominion yearly, with hurricanes expected once every 2.3 years. These averages are competitive to what is seen down south along the Gulf coast, even though major hurricanes are far more rare.

The chart below breaks down the tropical storm and hurricane distribution by decade starting at 1851...the year the hurricane database begins for the North Atlantic, Caribbean Sea, and the Gulf of Mexico. Tropical storms and hurricane categories before 1886 were determined by damage done across the area. Surprisingly, some of the most active decades for Virginia were during the "Little Ice Age", a period of global coolness, that lasted from around 1870 to 1900. One would expect more storms to impact the state during warmer years than cool years, but this is not the case.



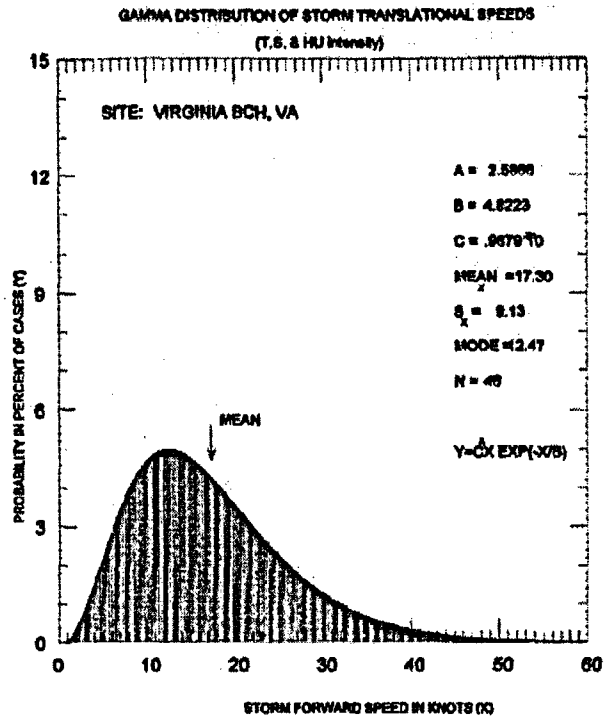
From the graph above, there appears to be a fifty year cycle in the number of tropical storms and hurricanes in and nearby Virginia. The peak of the cycle tends to last around 15 years.

Movement. In most cases, tropical cyclones have moved, regardless of the month, from southwest to northeast across Virginia. There are some examples were storms crossed from east to west or vice versa, but that is quite uncommon. To the lower right is a map showing the tracks hurricanes have taken past Virginia Beach during a 111 year period. The mean forward motion of tropical cyclones through the area is 17.3 knots...or 20 mph. This is normal as tropical cyclones round the western periphery of the Azores- Bermuda High which dominates the flow across the Atlantic during summer months. To the lower right shows the distribution of translational speed past Virginia Beach, courtesy of the National Hurricane Center.



HURRICANES PASSING WITHIN 75 N.M. OF VIRGINIA BCH, VA 1886-1996

(SITE LOCATION MOVED TO 37.6N, 75.4W)



Pressure. The tracks of most tropical cyclones that have affected Virginia are concentrated near the lower coast. Therefore, the lowest pressures measured from these storms were mainly in the area around Norfolk. Only one category three hurricane is known to have passed near Virginia, thus pressures reported across the state are higher that those you would find along the Gulf or South Atlantic coasts. To the right is a chart showing the ten lowest pressures measured across the state from hurricanes. Note how all the readings are from Donna (1960), Floyd (1999), the Chesapeake-Potomac Hurricane (1933), and Hazel (1954).

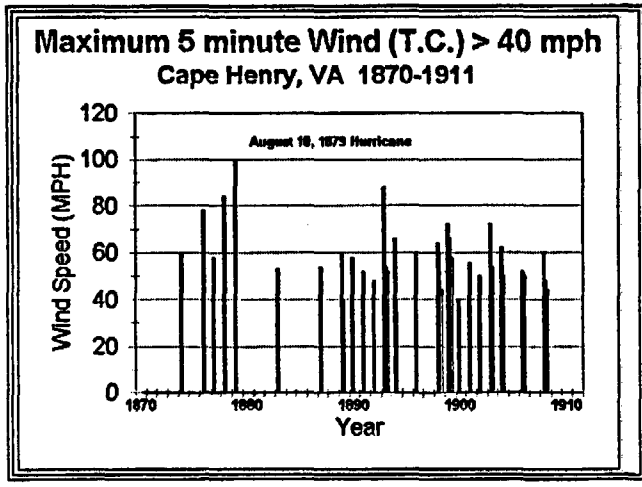
Lowest Pressures in Virginia from hurricanes

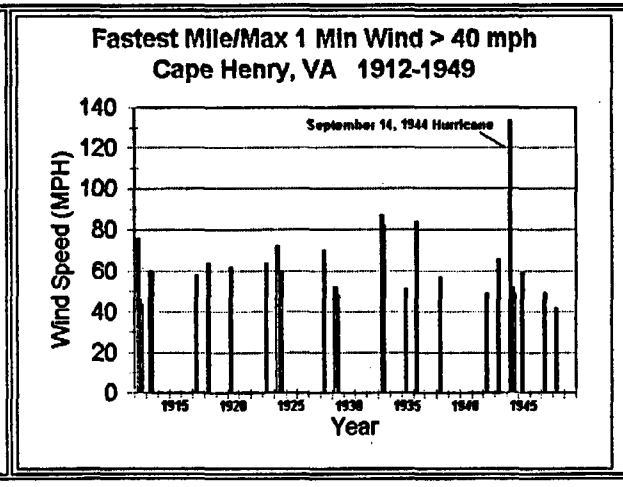
Pressure	Dates	Location
28.51"	9/12/1960	Virginia Beach
28.64"	9/12/1960	Norfolk
28.64"	9/16/1999	Chesapeake Light
28.67"	8/23/1933	Cape Henry
28.68"	10/15/1954	Virginia Beach
28.68"	8/23/1933	Norfolk
28.69"	8/23/1933	Richmond
28.71"	10/15/1954	Blackstone
28.74"	10/15/1954	Gordonsville
28.74"	9/12/1960	Norfolk NAS

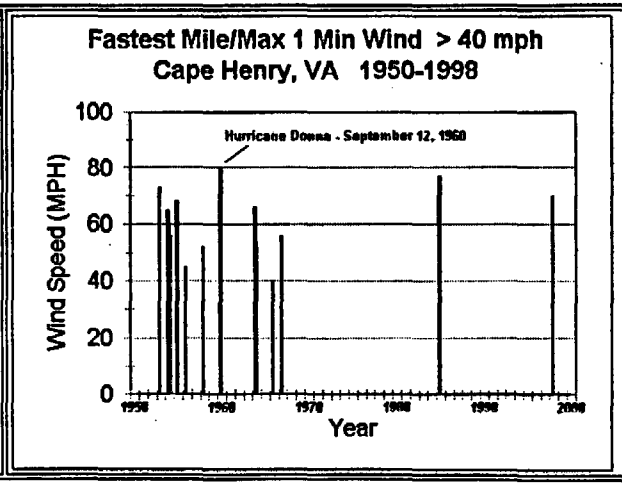
Highest Winds Reported in Virginia from Hurricanes

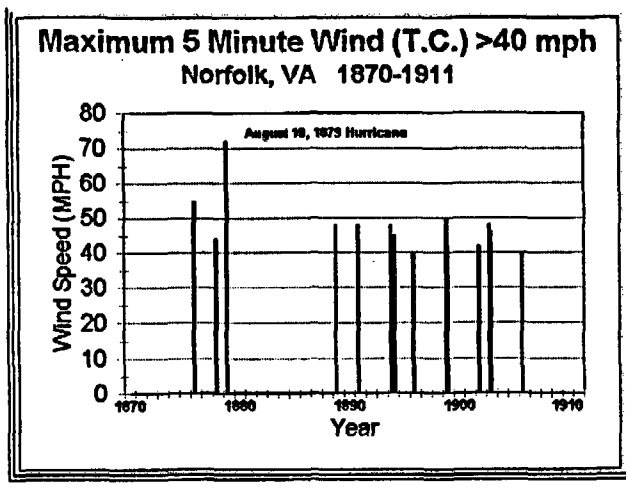
Gust	Dates	Location
150 mph	9/14/1944	Cape Henry
138 mph	9/12/1960	Chesapeake Light Ship
130 mph	10/15/1954	Hampton
110 mph	7/12/1996	South Island CBBT
104 mph	9/27/1985	South Island CBBT
104 mph	8/27/1998	Cape Henry
104 mph	8/17/1986	South Island CBBT
100 mph	8/18/1879	Cape Henry
100 mph	4/6-7/1889	Cape Henry
100 mph	10/15/1954	Norfolk
100 mph	9/19/1999	James River Bridge

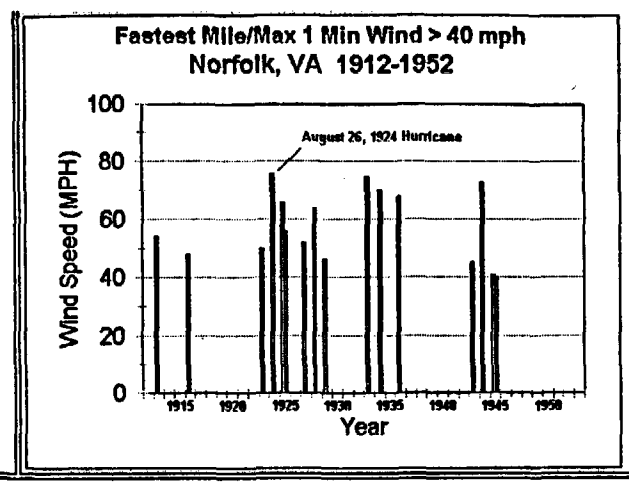
Winds. Coastal sections of Virginia get lashed with sustained winds of hurricane force about every decade. Cape Henry has twelve occurrences while Norfolk has six in the 128-year period ending in 1998. If you include winds of tropical storm force, Cape Henry has reported them 73 years while Norfolk experienced gales 46 years. The anemometer at Cape Henry is higher than at Norfolk, which explains the increased frequency at that site. Friction close to the ground tends to dampen stronger winds from aloft. Below are charts showing maximum winds for Cape Henry and Norfolk. To the left is a listing of wind gusts at or above 100 mph reported statewide.

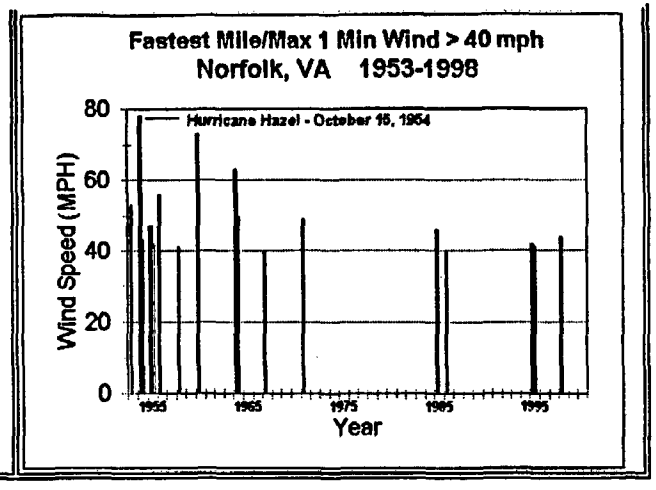












Rainfall. The most common effect of a tropical cyclone passing by Virginia is its associated rainfall. The heaviest rain in a truly tropical cyclone, outside of terrain effects, occurs to the east of the track. However, many systems that pass this far to the north exhibit some non-tropical characteristics, such as cold/dry air wrapping around the west and south sides of the circulation. When this happens, the rainfall distribution changes markedly. The maximum rainfall can then be expected to be just west of the track, and well to the east, outside the reach of the dry air. Severe weather, such as microbursts, tornadoes, and hail tend to be more common with this dry air intrusion, mainly to the east of the track. To the lower right is a chart of the ten highest rainfall amounts, in the Old Dominion, to be measured in association with a tropical cyclone.

Virginia has some special considerations that can affect rainfall. Mountains to the west act as a perfect mechanism for upward motion when a sustained east wind is present, and can lead to flash flooding and landslides in that region. Also, as a tropical system approaches from the south, a baroclinic boundary sets up between the moist Atlantic Ocean and the relatively drier landmass to the west. This boundary can set up two or three days in advance of a tropical storm, and can lead up to prolonged heavy rains across coastal sections. As the cyclone advances north, the boundary will slowly shift west, but rarely makes it west of a Richmond/Washington, D.C. line.

Heaviest Rains in Virginia from
Tropical Cyclones and their Remnants

Amount	Dates	Location
27.00"	8/19-20/1969	Nelson County
19.77"	11/02-07/1985	2 NE Montebello
18.13"	9/14-16/1999	Yorktown
16.57"	9/14-16/1999	Newport News
16.00"	6/17-24/1972	Chantilly
14.30"	9/14-16/1999	James City
14.30"	9/05-09/1996	Tom's Branch
14.18"	6/17-24/1972	Centreville
14.17"	9/05-09/1996	Luray 5 SE
13.60"	6/17-24/1972	Big Meadows

ANNUAL SUMMARIES

Atlantic Hurricane Season of 1993

RICHARD J. PASCH AND EDWARD N. RAPPAPORT

National Hurricane Center, NWS, NOAA, Coral Gables, Florida

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ABSTRACT

The 1993 hurricane season is summarized, and individual tropical storms and hurricanes are described. Overall, the season was relatively inactive, but tropical storms and hurricanes were responsible for a large number of deaths in South America, Central America, and Mexico. Only one hurricane, Emily, made landfall in the United States.

1. Introduction

For the third year in a row, there were fewer hurricanes and tropical storms than normal in the Atlantic basin during 1993. There were eight tropical storms, and four of these became hurricanes. These totals are below the most recent 50-yr averages of near 10 and 6, respectively. Emily, the season's only major and only long-lived hurricane, hit the North Carolina Outer Banks, causing serious damage over a limited area. In spite of the relative inactivity, tropical cyclones caused 280 deaths this year, largely as a result of disastrous mud slides in Venezuela during the passage of Tropical Storm Bret.

Tropical storm and hurricane tracks for 1993 are displayed in Fig. 1. No tropical cyclone reached hurricane intensity south of 21°N, continuing the absence of hurricanes over the deep Tropics observed in 1991 and 1992. Moreover, 1993 was the fourth consecutive year that no hurricanes were observed over the Caribbean Sea. Table 1 contains other statistics of the season. The season ended unusually early; the last named storm (Harvey) lost its tropical characteristics on 21 September. This is the earliest conclusion to tropical storms and hurricanes in a season since 1930.

The vertical shear of the horizontal wind is an important controlling mechanism for tropical cyclone development and intensification (e.g., Gray 1967). Figure 2 shows the anomalies, from the 1975–93 mean, of the magnitude of the vertical shear for the months of August and September 1993. All but one of the season's eight named storms formed in those months. Here the vertical shear is defined as the upper-tropospheric (approximately 200-mb level) minus the lower-tropospheric (approximately 900-mb level) wind. Also plotted in Fig. 2 are dots showing the locations of formation (where tropical depressions developed) of the tropical storms and hurricanes during August and September 1993. With one exception (Emily), the tropical cyclones developed in areas where the shear was indicated on this chart to be near normal or weaker than normal.

It is revealing to note the tracks of the individual tropical storms and hurricanes (from Fig. 1) with respect to the shear field shown in Fig. 2. Tropical Storms Bret and Cindy, along with Hurricane Gert, moved over areas of generally weaker than normal shear, but their strengthening was apparently limited by a close proximity to land (although Gert did intensify to category 2 hurricane status). Tropical Storm Dennis moved over open waters but into an area of stronger than normal shear, and it weakened to dissipation. Floyd and Harvey were at rather high latitudes but, as Fig. 2 shows, these two systems did move through areas of weaker than normal shear and both became hurricanes (although Harvey was a hurricane only very briefly). Probably the most interesting case was Emily. In the early stage of development, Emily was over an area of stronger than normal shear and remained a tropical depression for a couple of days. However, Emily's motion eventually carried it into the region of weaker than normal shear off the southeast U.S. coast, and the cyclone intensified markedly, becoming a major hurricane.

As noted above, the 1993 Atlantic hurricane season ended much earlier than usual. This was probably related to the premature reversal of upper-tropospheric

Corresponding author address: Dr. Richard J. Pasch, National Hurricane Center, 1320 South Dixie Highway, Coral Gables, FL 33146.

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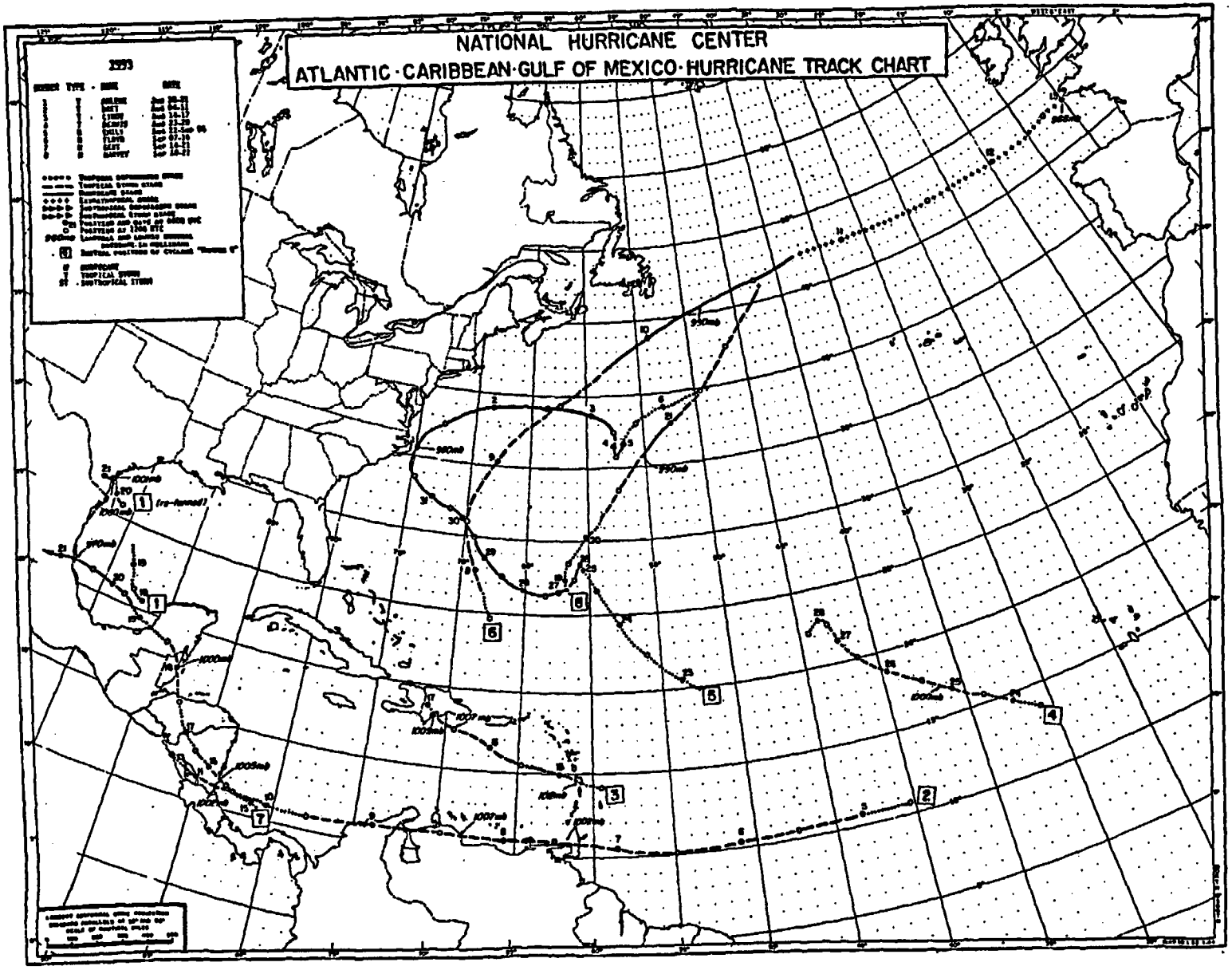


FIG. 1. Tropical storm and hurricane tracks for 1993.

flow, from easterly to westerly, over the eastern tropical Atlantic in the latter part of September 1993 (Avila and Pasch 1995). The increase in vertical shear over the tropical Atlantic (implied by this wind reversal) inhibited tropical cyclogenesis.

2. Individual tropical storms and hurricanes of 1993

a. Tropical Storm Arlene, 18–21 June

1) SYNOPTIC HISTORY

The year's first tropical storm, Arlene, formed from a disturbance that was noted on 9 June over the western Caribbean Sea and Central America. Satellite pictures over the following week indicated that the activity spread slowly northwestward and increased a little in areal coverage. During that period, upper-level winds over the northwestern Caribbean Sea and the Gulf of Mexico were generally from the west or northwest. This created a vertical wind shear that was not favorable for the development of a tropical cyclone. Nevertheless, the system persisted as a rainstorm that reportedly caused a landslide in El Salvador that killed 20 people.

On 16 June, a mid- to upper-level low began to develop over the Bay of Campeche. Over the adjacent Yucatán peninsula and the northwest Caribbean Sea, the flow aloft became more anticyclonic. In addition, on that date, a tropical wave neared the Yucatán peninsula from the east-southeast. The net effect of these changes was for the convective activity to expand west-northwestward into an area where the upper-level circulation was more conducive to the development of a tropical depression. Analysis of surface data suggests that by late on 16 June a 1008-mb low formed over the Yucatán peninsula.

A reconnaissance plane from the U.S. Air Force Reserves found only a broad area of low pressure in that area at midday on 17 June. However, satellite pictures a few hours later showed convective bands developing just offshore over the south-central Gulf of Mexico, and it is estimated that at 0000 UTC 18 June the system

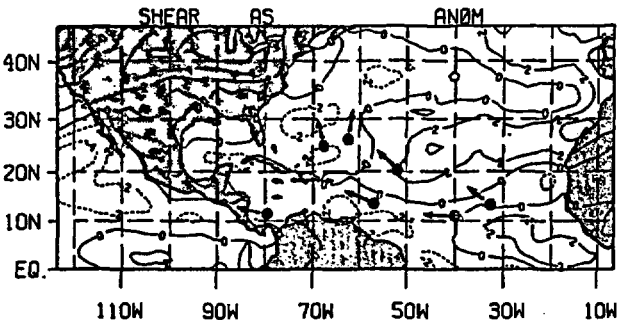


FIG. 2. Anomalies, from the 1975–93 mean, of the magnitude of the vertical shear of the horizontal wind (approximately 900 mb minus 200 mb) for August and September of 1993. Contour interval is 2 m s^{-1} with dashed contours for negative anomalies (i.e., weaker than normal shear). Dots show the location where 1993 tropical storms or hurricanes formed (became tropical depressions) in those two months, and arrowheads show direction of motion of the systems during early stages of development.

became Tropical Depression Two. The depression was centered between the low aloft to the southwest and a deep-layer-mean high to the northeast. The associated steering flow moved the depression toward the northwest at 2–3 m s^{-1}.

The center of the depression remained near the eastern edge of the low aloft, in an area of moderate southwesterly vertical wind shear that apparently precluded strengthening of the depression. The low-level center stayed diffuse, with satellite images occasionally showing separate weak low-level cloud swirls in that area. Indeed, the reconnaissance mission late on 18 June found 1006 mb to be the lowest pressure within a broad area for which the onboard meteorologists could not make a center "fix." By that time, satellite pictures suggest that the upper-level shear over the diffuse center had been further increased by a southwesterly outflow jet cutting across the southwestern Gulf of Mexico from eastern North Pacific Tropical Storm Beatriz.

In the meantime, on 18 June, deep convection became more concentrated in a band located 275–375 km mainly to the east of the center. Over the next 24 h, the

TABLE 1. 1993 Atlantic hurricane season statistics.

Number	Name	Class*	Dates**	Maximum 1-min wind (m s^{-1})	Minimum sea level pressure (mb)	U.S. damage ($ millions)	Direct deaths
1	Arlene	T	18–21 Jun	18	1000	22	6
2	Bret	T	4–11 Aug	26	1002		184
3	Cindy	T	14–17 Aug	21	1007		4
4	Dennis	T	23–28 Aug	23	1000		
5	Emily	H	22 Aug–6 Sep	51	960	35	3
6	Floyd	H	7–10 Sep	33	990		
7	Gert	H	14–21 Sep	44	970		76
8	Harvey	H	18–21 Sep	33	990		

* T: tropical storm, wind speed 17–32 m s^{-1} (34–63 kt). H: hurricane, wind speed 33 m s^{-1} (64 kt) or higher.
** Dates begin at 0000 UTC and include tropical depression stage.

band wrapped cyclonically around the center so that by early on 19 June a comma-shaped band of thunderstorms extended from well northwest through north through southeast of the center. Satellite pictures and reconnaissance data indicate that the center of a new and dominant (1000 mb) convective system, designated Tropical Storm Arlene, formed in the northwest part of the band around 1200 UTC on 19 June.

The new center initially moved northwestward at 2–3 m s^{-1} but then nearly stalled when an eastward-moving short-wave trough passed by to the north. The forward motion then became a westward drift. Arlene made landfall over Padre Island, about 75 km south of Corpus Christi, near 0900 UTC on 20 June and weakened to depression strength shortly thereafter. The system remained a tropical depression through 0600 UTC on 21 June. A low- to midlevel remnant circulation was detected for another day or two over the lower Rio Grande valley of southern Texas and northeastern Mexico.

2) METEOROLOGICAL STATISTICS

Although maximum sustained wind speeds near Arlene's center are estimated to have been about 18 m s^{-1} for the 18 h ending at landfall, somewhat stronger winds were located well to the east of the circulation center, in the convective band. Sustained wind speeds of 21–23 m s^{-1} were reported between 1100 and 2000 UTC by ship *C6JP2* (name unknown) and several platforms over the north-central Gulf of Mexico (see Table 2a). Similar wind speeds in that vicinity had been encountered by the reconnaissance aircraft at a flight level of about 450 m. The distant wind maximum and the association of the tropical cyclone with the nearby low aloft indicate that Arlene's structure had some subtropical cyclone characteristics.

Reconnaissance aircraft observed a central pressure of 1000 mb on seven consecutive penetrations of Arlene. This is the estimated minimum pressure of the storm. The pressure at landfall is estimated at 1001 mb.

Arlene generated storm tides of locally up to about 1.2 m along the Texas coast. The storm tide breached sections of Padre Island and caused local flooding on the mainland.

Heavy rain fell for several days over Central America from the weather system that eventually became Arlene. Heavy rains also occurred over Mexico (Table 2b). Arlene brought large accumulations of rain and local floods to the area extending inland about 275 km from the Texas coast. Locally heavy rain, from a combination of Arlene and a frontal system, also occurred in northeast Texas, Louisiana, and Arkansas. The town of Henderson, Texas, reported the largest total, 326.4 mm.

No reports of tornadoes associated with Arlene have been received by the National Hurricane Center (NHC).

3) CASUALTY AND DAMAGE STATISTICS

In Mexico, floods from Arlene killed five people (four in the state of Yucatán and one in the state of Campeche.) There was one flood-related fatality reported in Henderson. Damage in Campeche was reported at $33 million. Flooding from rainfall was also reported in Texas, Louisiana, and Arkansas. The Texas Division of Emergency Management estimated $22 million damage to homes, businesses, and infrastructure in that state. Crop losses were not quantified.

The storm tide (Table 2a) removed about 0.2–0.3 m of sand from some beaches along the lower Texas coast. Extensive tidal flooding was reported on the lower and middle Texas coast as well as along beach access roads. Beach erosion was also reported in southwestern Louisiana.

4) WARNINGS

Arlene was still a tropical depression when its center moved close enough to the coastline that the issuance of a tropical storm watch was considered by the NHC. However, because the cyclone was then quite poorly organized and significant strengthening was not forecast, the NHC, in coordination with the appropriate National Weather Service (NWS) offices, opted to delay issuing a tropical storm watch. When the new and slightly stronger center formed, a tropical storm warning was issued for Brownsville to Matagorda, Texas, about 21 h prior to landfall. There were no observations of sustained tropical storm force winds received from the warned area.

b. Tropical Storm Bret, 4–11 August

1) SYNOPTIC HISTORY

Bret was spawned by a tropical wave that moved off the west coast of Africa on 1 August. This wave was among several, during late July and early August of 1993, that looked impressive in terms of amount and organization of deep convection. A few days later, the thunderstorm activity associated with the wave became more concentrated, and the development of curved convective bands was noted. Based on intensity estimates using satellite images (Dvorak 1984), a tropical depression is estimated to have formed from this system, about 1850 km to the west-southwest of the Cape Verde Islands on 4 August near 1200 UTC.

The cyclone moved on a westward course at an increasing forward speed during the ensuing 12–24 h. Around 0000 UTC 5 August, satellite intensity estimates indicate that the system strengthened to become Tropical Storm Bret. By 1200 UTC 5 August, Bret was moving westward near 10 m s^{-1}. This motion was maintained for the next 4 days or so, due to a strong deep-layer ridge that remained established to the north of the storm throughout most of its lifetime.

TABLE 2a. Tropical Storm Arlene selected surface observations, June 1993.

Location	Minimum sea level pressure[a]		Maximum surface wind speed (m s^{-1})			Storm surge[b] (m)	Storm tide[b] (m)	Rain (storm total) (mm)
	Pressure (mb)	Date/time (UTC)	Sustained wind	Peak gust	Date/time (UTC)[a]			
Texas[c]								
Brownsville WSO (BRO)	1004.0	19/2315	11	14	21/1021			80.8
Corpus Christi WSO (CRP)	1003.7	20/1116	11	16	20/0821			233.9
Navy Kingsville (NQI)	*1002.1*	*20/1300*	*13*		*20/2000*			*105.1*
Navy Corpus Christi (NGP)	1003.5	20/1056	12	15	20/1256			158.0
Palacios (PSX)	1008.1	19/2352	10	16	19/1851		1.2–1.5[d]	110.5
Victoria Arpt. (VCT)	1008.8	20/0852	9	14	19/2053			108.2
Port Lavaca							1.2	145.5
Port O'Connor							1.2	
Indianola							1.2	
Kingfisher Marina							1.2	
Bob Hall Pier						0.5	0.8	
South end South Padre Island						0.5	0.7	
Ship reports[e]								
C6JP2 (27.1°N, 92.8°W)			23		19/1800			
Commercial platforms[e,f]								
5R0 (28.2°N, 93.8°W, 37 m)			23	28	19/1348			
7W2 (28.5°N, 92.5°W, 29 m)			23	26	19/1103			
7R8 (28.3°N, 92.0°W, 31 m)			21		19/2000			
S58 (28.2°N, 90.7°W, 37 m)			21	23	19/1139			
01T (28.1°N, 94.4°W, 34 m)			21[d]	23	19/1946			
NDBC instruments[g]								
Buoy								
42002 (25.9°N, 93.6°W)	1006.3	19/1000	18	23	19/2000			
42020 (27.0°N, 96.5°W)	1005.1	19/1300	14	17	19/1300			
42035 (29.2°N, 94.4°W)	1009.7	20/1000	15	19	18/1700			
C-MAN								
PTAT2 (27.8°N, 97.0°W)			15	19	19/1633			
SRST2 (29.6°N, 94.0°W)	1011.3	20/0000	15	17	20/0000			

[a] Time of 1-min wind speed unless only gust is given.
[b] *Storm surge* is water height above normal tide level. *Storm tide* is water height relative to National Geodetic Vertical Datum, which is defined as mean sea level in 1929.
[c] One-minute-averaged wind.
[d] Estimated.
[e] Unknown averaging period.
[f] A more extreme value may have occurred.
[g] NOAA buoys report hourly an 8-min-average wind. C-MAN station reports are 2-min-average winds at the top of the hour and 10-min averages at other times. More extreme values may have occurred. Contact National Data Buoy Center for additional details.

The storm initially appeared to have adequate upper-tropospheric outflow for strengthening, and Bret's maximum winds increased to around 25 m s^{-1} by 0600 UTC 6 August. However, by 1800 UTC 6 August, the center of the storm became exposed near the north-northwestern edge of the main convective cloud mass. The dense overcast became reestablished over the center of the storm a few hours later, as Bret neared the island of Trinidad and the northern coast of Venezuela. Based on U.S. Air Force Reserve reconnaissance aircraft observations, the central pressure fell to 1002 mb just after 1800 UTC 6 August. The storm skirted the northern coast of Trinidad early (around 0800 UTC) on 7 August, and the center moved along a portion of the northern coast of Venezuela a few hours later. Figure 3 is a visible satellite picture of Bret over northern Venezuela. Around 2000 UTC 7 August, the center was back out over the water, just offshore of the coast, and by 0800 UTC 8 August, Bret moved over the extreme northwestern part of Venezuela. The center continued westward over the extreme northern sections of Colombia on 9 August.

After interacting with some mountainous terrain over Venezuela, Bret encountered a tremendously high mountain over Colombia, Pico Cristobal Colon, whose peak is about 5800 m above sea level. The circulation was weakened considerably by this mountain and Bret was reduced to a tropical depression when it emerged

TABLE 2b. Selected rainfall accumulations (mm) associated with Arlene and, over northeast Texas, Louisiana, and Arkansas, a combination of Arlene and a frontal system; E indicates estimate.

Location	Total	Location	Total
Mexico (18–20 June; some totals incomplete)		Concord	155.4
Merida, Yucatán	E347.5	Portland	154.9
Panuco, Veracruz	200.4	Washington State Park	154.7
Camargo SJ. 11, Tampico	185.9	Sour Lake	154.7
San Jose Tecoh, Yucatán	6.94	Sabine Pass	153.2
P. Marte Gomez, Tamps.	6.56	Overton	152.1
Teocelo, Veracruz	5.55	Nursery	151.4
Huajusco, Veracruz	5.30	Bishop	150.9
Briones, Veracruz	5.12	Calallen	150.6
Chetumal, Quinta Roo	5.02	Taft	149.6
Texas		Humble	148.3
Henderson	376.4	Refugio	145.8
Carthage	347.7	Wortham	145.0
Longview	338.8	Edroy	144.8
Brazoria	294.6	Easterly	144.5
Marshall	292.9	Post Oak	144.0
San Manuel	290.6	Kountze	143.3
Robstown	285.8	Orange	142.0
Jacksonville	285.2	Conroe	140.5
Chalk Hill	279.4	Houston airport	140.5
Corpus Christi	267.5	Nacadoches	140.4
Anahuac	250.7	Alto	138.7
Centerville	228.6	Agua Dulce	137.7
Hallsville	226.3	Somerville	137.4
Tarum	208.0	Berclair	136.4
Woodlawn	205.7	Cold Spring	135.4
Armstrong	204.5	Hebronville	135.1
Palastine	202.2	Adams Gardens	133.6
Raymondville	201.9	Chapman Ranch	132.1
Longville	198.4	Whitehouse	132.1
Goliad	192.8	Beaumont (city)	130.8
College Station	191.8	Bryan XIX NE	130.6
Kirbyville	190.0	Weslaco	130.6
Monte Alto	186.7	Eastham	130.3
Alief	186.4	Tyler	128.5
De Quincy	185.9	New Caney	128.5
Bay City	183.1	Crockett	127.8
McCook	182.6	Weiss Bluff	127.8
Papalote	180.3	Realitos	127.3
Angleton	174.8	Louisiana	
Columbus	170.7	Lake Charles	305.1
Banquette	168.4	Shreveport	291.1
Mission	168.1	Jennings	191.5
Jewett	166.9	Abbeville	180.3
Jaspar	164.8	Harleton	175.8
Falfurrias	164.6	Keithville	164.1
Dime Box	164.3	Jefferson	159.8
Gladewater	160.5	De Ridder (5N)	148.3
Deweyville	160.0	Old Town Bay	147.3
BPT	159.0	Mooringsport	144.8
Rincon	159.0	Oil City	137.2
Engleman Gardens	158.5	Karnack	131.8
Midway	156.7		
San Jacinto Dam	156.2	Arkansas	
Cypress	156.0	Lewisville	127.5

over the waters of the southwest Caribbean Sea around 0900 UTC 9 August. Indeed, Bret was so severely disrupted by the mountains that the circulation had practically dissipated. However, later during the day on 9 August, convection increased in bands over the southwest Caribbean. The upper-tropospheric flow over the area was mostly straight southwesterly at the time Bret moved off the coast of Colombia, but later on 9 August

FIG. 3. *GOES-7* visible satellite image of Tropical Storm Bret at 1901 UTC 7 August 1993, as heavy rains began spreading over Venezuela.

the upper-level flow became increasingly anticyclonic. Bret regenerated into a tropical storm by 0600 UTC 10 August, while it was located about 260 km to the east of the southern coast of Nicaragua. The forward motion slowed to 5–7 m s^{-1} as the storm neared southern Nicaragua. Based on satellite intensity estimates, Bret's maximum winds were near 21 m s^{-1} when the center crossed the coast of southern Nicaragua near Bahia Punta Gorda around 1700 UTC 10 August. Figure 4 is a visible satellite picture of Bret just prior to landfall in Nicaragua.

After moving inland, Bret turned toward the west-northwest. It is considered to have dissipated as a tropical cyclone when it neared the Pacific coast of Nicaragua around 1800 UTC 11 August, because a low-level circulation could no longer be identified at that point. Nonetheless, a remnant disturbance could be tracked westward and then west-northwestward over the eastern Pacific for a few days. The system eventually regenerated into eastern North Pacific Tropical Depression Eight-E, which later became Hurricane Greg.

2) METEOROLOGICAL STATISTICS

The island of Margarita reported wind gusts to 24 m s^{-1}. The weather station on Grenada reported maximum sustained winds of 16 m s^{-1} with gusts to 20 m s^{-1}. A sailing yacht, the *Lady Elaine*, anchored at Hog Island on the south coast of Grenada, measured a sustained wind of 21 m s^{-1}. Guiara, Venezuela (near the first landfall point in South America), reported a wind gust to 20 m s^{-1}. The highest gusts reported from the islands of Curacao and Bonaire were 21 m s^{-1}. A ship, the *Probo Baro*, reported 20 m s^{-1} sustained winds just off the coast of Venezuela.

During the passage of Bret over Venezuela on 7–8 August, 339 mm of rain reportedly fell in a 10-h period at Guanare (state of Portuguesa). Another 24-h rainfall amount of 285 mm was reported from Quebarada Seca (state of Barinas). Among various reporting sites in Caracas, a maximum 24-h total of 152 mm was noted, with up to 120 mm occurring during a 7-h period.

3) CASUALTY AND DAMAGE STATISTICS

Flooding and mud slides, due to heavy rainfall associated with Bret, caused a major catastrophe in Venezuela. The government of Venezuela reported a total of 173 deaths and "many" missing. The majority of the deaths occurred in the low-income areas surrounding Caracas, where many people reside in ramshackle huts. Press reports indicated at least 10 000 were home-

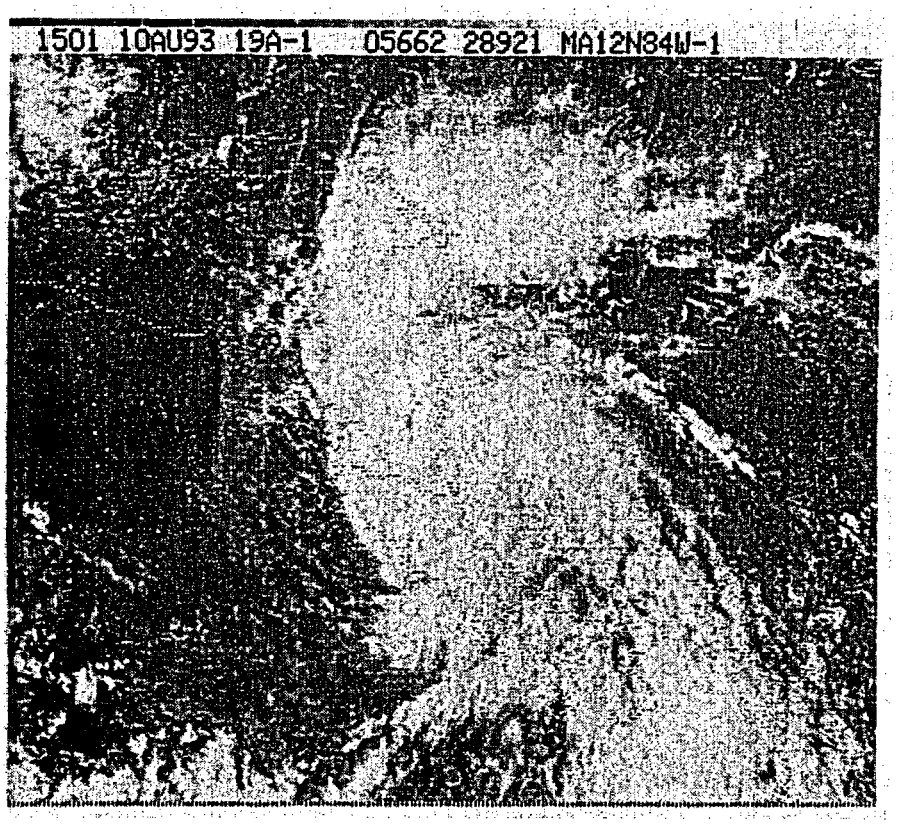


FIG. 4. *GOES-7* visible satellite image of rejuvenated Tropical Storm Bret at 1501 UTC 10 August 1993, just prior to landfall over southern Nicaragua.

less in Venezuela and Bret caused an estimated $25 million worth of damage in that country. There was 1 death and 1 injury reported from Colombia. In Nicaragua, a total of 10 deaths were reported. Nine of these fatalities occurred offshore near Isla de Maiz when (according to ham radio reports) a Spanish vessel sank. There were also 35 000 persons reportedly "displaced" in Nicaragua due to Bret.

4) WARNINGS

The tropical storm warning provided about 24 h of lead time for the southern Windward Islands and the coast of Venezuela. There was only about 8 h of lead time for the coast of Nicaragua, when Bret rapidly redeveloped into a tropical storm over the southwest Caribbean Sea.

c. Tropical Storm Cindy, 14–17 August

1) SYNOPTIC HISTORY

Cindy formed from a tropical wave that moved off the northwest coast of Africa on 8 August. The cloud mass associated with this wave was easily tracked on satellite imagery as it moved west-northwestward between 8 and 10 m s^{-1} across the tropical Atlantic for the next several days. A U.S. Air Force Reserve aircraft investigated the disturbance on 13 August but found only a poorly organized surface circulation. On the next day, another aircraft found that the low-level circulation had become sufficiently better organized to indicate that a tropical depression had formed from this activity around 1200 UTC 14 August.

The tropical depression moved toward the west-northwest, steered by the low- to midlevel flow, and its forward motion slowed to between 5 and 8 m s^{-1}. The depression was upgraded to Tropical Storm Cindy at 1800 UTC 14 August while over the island of Martinique, based on 500-m flight-level winds of near 21 m s^{-1} from an aircraft and the observation of a central dense overcast in satellite imagery. Although the system appeared to have an efficient outflow pattern aloft when it was near the Lesser Antilles, this upper-level structure deteriorated and only a little additional strengthening occurred.

Cindy reached its estimated peak intensity of 21 m s^{-1} around 1200 UTC 16 August while centered about 140 km southeast of Santo Domingo, Dominican Republic. The lowest pressure reported by reconnaissance aircraft was 1007 mb at 1113 UTC. A relatively large area of 18–25 m s^{-1} winds was also reported

from the aircraft at a flight level of 500 m near this time.

The tropical cyclone weakened when part of the circulation began interacting with the mountains of Hispaniola. Cindy was downgraded to a tropical depression at 2100 UTC 16 August when the poorly defined center moved over Barahona, Dominican Republic. The circulation rapidly became disorganized and the depression dissipated by 0000 UTC 17 August. However, the remnant cloudiness and showers spread over the southern Bahamas through 18 August.

2) METEOROLOGICAL STATISTICS

No sustained tropical storm force winds were reported from ships or island stations, but gusts to near 18 m s^{-1} were reported on Martinique. Gusts to 15 m s^{-1} were observed at St. Croix in the U.S. Virgin Islands and at Aquadilla, Puerto Rico.

The largest reported storm total rainfall was 305 mm at Precheur on the island of Martinique. Several reports of 102–254 mm of rain were received from various locations in the Dominican Republic and elsewhere over Martinique, while 76–102 mm of rain were reported over portions of Puerto Rico. It is likely that locally heavy rains occurred elsewhere over some of the Lesser Antilles and over Haiti.

3) CASUALTY AND DAMAGE STATISTICS

Flooding associated with Cindy caused two deaths in Martinique and two deaths in the Dominican Republic. Two persons were also reported missing in the Dominican Republic. Several hundred people were evacuated from flood-prone areas in Puerto Rico but no storm-related deaths were reported from this island.

Estimates of several million dollars in damage to private and public property including houses, roads, and seawalls have been reported from Martinique. There have been no other reports of significant damage received at the NHC related to Cindy.

4) WARNINGS

Tropical storm warnings were issued for the Lesser Antilles from Martinique northward and westward through the U.S. Virgin Islands, for Puerto Rico, and also for the Dominican Republic from Cabo Engano to Samana on the north coast and to Isla Beata on the south coast.

d. Tropical Storm Dennis, 23–28 August

On 21 August, a broad area of low pressure associated with a tropical wave moved off the African coast. This system was embedded within a large monsoon-type flow analyzed using satellite imagery and ship reports. Animation of visible *Meteosat-3* and *Meteosat-4* satellite images showed a distinct cyclonic rotation in the low clouds with increasing convection during the next day. The system became a tropical depression at about 1200 UTC 23 August.

The depression moved slowly westward and then west-northwestward, steered by a weak deep-layer mean flow. Based on the analysis of satellite images, the depression reached tropical storm status by 1200 UTC 24 August. Dennis intensified a little more, reaching its estimated peak intensity of 23 m s^{-1} and minimum pressure of 1000 mb at 0600 UTC 25 August, when convection was the strongest. Little change in intensity occurred during the next 24–30 h while the thunderstorm activity was gradually decreasing.

At that time, the axis of a rather strong middle to upper level trough became established near 50°W north of 20°N, causing Dennis to move north-northwestward. This track brought the storm over relatively cool waters and into an environment of increasing vertical shear, resulting in a separation of the low-level circulation center from the convection. Dennis weakened and was downgraded to a tropical depression at 1200 UTC 27 August. It dissipated 24 h later but the remnants meandered over the North Atlantic for a few more days.

e. Hurricane Emily, 22 August–6 September

Emily, the first hurricane of the 1993 Atlantic season, was the season's only major hurricane and also the longest lived. Its western eyewall passed over the North Carolina Outer Banks.

1) SYNOPTIC HISTORY

Emily moved off the west coast of Africa and over the Cape Verde Islands on 17 August as a tropical wave accompanied by a large cyclonic swirl of low- to mid-level clouds. The swirl moved westward at relatively high latitudes (15°–20°N) over the eastern Atlantic, where cool sea surface temperatures apparently limited the development of deep convection for the next several days. On 21 August, convection began to increase and become concentrated near the center of the cloud swirl, and by 22 August the system developed enough circulation and deep convection to be classified as a tropical depression, while located 1300 km to the east-northeast of Puerto Rico, at around 1800 UTC.

The depression moved toward the northwest at 5–8 m s^{-1} for two days. It then encountered a weak steering current, became quasi-stationary on 25 and 26 August, and began to intensify. Emily briefly reached hurricane intensity on 26 August, based on aerial reconnaissance observations and a report of sustained 33 m s^{-1} winds from a ship, the *OMI Missouri*, located about 90 km southeast of Emily's center at 1100 UTC. Shortly thereafter Emily's maximum winds dropped to just below hurricane force. A high pressure ridge built to the north and Emily, having regained hurricane intensity about 1600 km east of Florida, moved generally westward on

27 and 28 August while maintaining peak winds near 39 m s^{-1}.

Intensification began in earnest on 28 August, and Emily turned toward the northwest in response to the passage of a midlatitude short-wave trough to the north. The hurricane turned toward the west-northwest on 30 August as a short-wave ridge passed to the north. However, yet another trough in the westerlies neared Emily on 31 August and the hurricane began to turn northward. Intensification continued until late on 31 August when the hurricane was moving northward and the eyewall reached the Outer Banks of North Carolina (Fig. 5).

The hurricane reached its peak intensity late on 31 August as the center of the eye reached its point of closest approach to land, about 37 km east of Hatteras Island. Emily was large at this time with a 74-km inner diameter of the circular wall cloud surrounding the center of the hurricane. This is based on U.S. Air Force Reserve and National Oceanic and Atmospheric Administration (NOAA) reconnaissance as well as the Cape Hatteras radar. A portion of the western eyewall passed over Hatteras Island and the surrounding waters, with 1-min surface winds estimated between 33 and 51 m s^{-1}. This caused strong onshore winds on the Pamlico Sound side of Hatteras Island, and the accompanying storm surge coastal flooding was up to 3 m above normal tide levels. The Atlantic coast maximum surge levels were estimated to be only 0.3–0.6 m above normal.

For the record, Emily will be counted as a category 3 (major hurricane) landfall on the Saffir–Simpson hurricane scale (Simpson 1974) for Hyde and Dare Counties in North Carolina.

Emily was at the westernmost point of a recurvature around the western periphery of a large high pressure area when it affected the Outer Banks, and effects over land were minimal elsewhere. By 2 September, Emily had turned sharply toward the east in response to the most recent midlatitude trough and was weakening over colder North Atlantic water. It weakened to a tropical storm on 3 September as it moved southward and stalled. By 5 September, Emily was a tropical depression and moving east-northeastward. Emily became extratropical on 6 September far out in the Atlantic and quickly dissipated.

2) METEOROLOGICAL STATISTICS

The highest sustained wind measurement is 68 m s^{-1} from a U.S. Air Force Reserve plane at 1729 UTC 31 August, 30 km west of the center within a few hours of its point of closest approach to Hatteras Island.

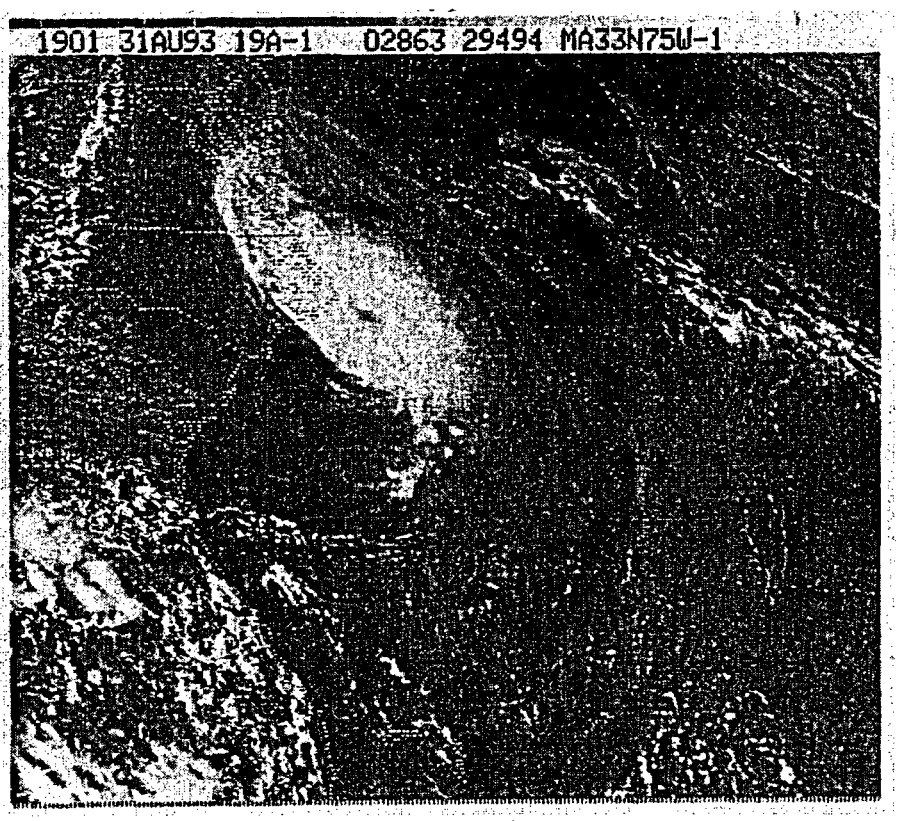


FIG. 5. *GOES-7* visible satellite image of Hurricane Emily at 1901 UTC 31 August 1993, near peak intensity just off the North Carolina Outer Banks.

TABLE 3. Hurricane Emily selected surface observations, 31 August–1 September 1993.

Location	Minimum sea level pressure		Maximum surface wind speed ($m\ s^{-1}$)			Storm surge (m)[b]	Rain (storm total) (mm)
	Pressure (mb)	Date/time (UTC)	1-min average	Peak gust	Date/time (UTC)[a]		
North Carolina							
Brigands Bay						2.6	
Buxton (HAT)	982.2	31/1925	27	44	31/2050	3.1	190.8
Buxton (citizen)			33	48	31/2215		
Buxton (R. Horodner)	976.5	31/2108					
Cedar Island ferry terminal			17	24	31/1830		
Duck pier	1000.5	01/0100	20	26	01/0100	0.5	
Diamond Shoals Light (elevation 46.6 m)	964.5	31/2100	44[c]	66	31/2225	2.6	
Frisco							
Gum Neck							25.4
Oregon Inlet			29	34	31/1846		
Wilmington (ILM)			8	11	31/1650		0
Virginia							
Chesapeake Bay Bridge			12	16	01/0600	0.4	
Norfolk	1008.8	01/0053	10	15	01/0151		0
Maryland							
Ocean City-mesonet	1009.1	01/0908	8	16	01/0908		71.1
Delaware							
Sussix County Airport			7	8	01/1517		0.3
Lewes						0.2	

[a] Time of 1-min wind speed unless only gust is given.
[b] Some of these values are height above MSL (above mean sea level).
[c] Two-minute-average wind speed.

The estimated maximum 1-min surface wind speed is 51 $m\ s^{-1}$ for 12 h beginning at 1800 UTC 31 August. This value turns out to be a reduction to 75% of 68 $m\ s^{-1}$, the 10-s aircraft wind at an altitude of 457 m. Table 3 lists significant surface observations. Diamond Shoals Light Tower is located 417 km southeast of Cape Hatteras, and its anemometer at 46.6-m elevation measured a 2-min wind speed of 44 $m\ s^{-1}$ at 2200 UTC and a peak 5-s gust of 66 $m\ s^{-1}$. They also measured a lowest pressure of 964.5 mb, only 4.5 mb higher than the aircraft-measured minimum pressure (960 mb) at 2349 UTC.

The National Weather Service Office in Buxton recorded a peak 1-min wind of 27 $m\ s^{-1}$ with a gust to 44 $m\ s^{-1}$, but the measurements were disrupted just before, it is believed, the strongest winds were occurred. A private citizen in Buxton recorded 33 $m\ s^{-1}$ with a gust to 48 $m\ s^{-1}$. Preliminary analysis at the NOAA Hurricane Research Division indicates 1-min surface winds speeds to as high as 49 $m\ s^{-1}$ over Pamlico Sound (S. Houston 1994, private communication). These strong onshore winds drove waters from Pamlico Sound onto Hatteras Island. A storm surge flood height of 3.1 m above sea level at Buxton is the highest reported value (Table 3).

The maximum rainfall recorded was 191 mm at Buxton, and very little was observed farther west. Ocean City, Maryland, reported 71 mm.

3) CASUALTY AND DAMAGE STATISTICS

A drowning in rough surf occurred along the Virginia coast on 31 August. Two other deaths due to similar circumstances were reported from Nags Head, North Carolina, on 1 September.

A preliminary damage estimate for North Carolina is $35 million, mainly on Hatteras Island. There were 553 dwellings deemed uninhabitable. About 160 000 persons were evacuated from the barrier islands of North Carolina, 750 from the Virginia coast, 100 000 from the Maryland coast, 1000 from Delaware, and 20 000 from Fire Island, New York.

4) WARNINGS

Hurricane watches and warnings were issued from North Carolina through Delaware and a hurricane watch was also issued for the northern South Carolina coast. The watch was issued at 2100 UTC 29 August, or 47 h prior to the time of Emily's hitting the coast.

The warning was issued at 1800 UTC 30 August or 26 h in advance.

5) FORECASTS

Emily's recurvature near Cape Hatteras was quite well predicted by the NHC. This can be attributed to the generally good performance of the dynamical guidance models in forecasting the track of the hurricane up to its point of closest approach to the North Carolina Outer Banks. The Hurricane Research Division, using NOAA reconnaissance aircraft, conducted two synoptic-flow experiments when difficult evacuation decisions were being made. These provided meteorological observations, in particular midtropospheric winds, over a large, normally data-sparse, oceanic area in the path of the hurricane. These observations were used to initialize the National Meteorological Center's (NMC) global spectral numerical weather prediction model at 0000 UTC on 30 and 31 August. Since most of the NHC track guidance models use the NMC global model as input, the enhanced observational database likely had favorable impact on the other models as well. It should be noted that the NHC (and several of the models) track forecasts were considerably poorer after recurvature, when Emily was moving eastward.

f. Hurricane Floyd, 7–10 September

Floyd formed from a tropical wave that crossed the west coast of Africa on 28 August accompanied by relatively large height falls at low levels of the atmosphere. Inland surface reports in the vicinity of Dakar, and observations from several ships, indicate that the wave also contained a well-defined low-level cyclonic circulation surrounding a low pressure center of about 1009 mb on 28 and 29 August.

Satellite pictures indicate that the low moved steadily westward for about a week with deep convection periodically developing in its vicinity. Initial Dvorak technique satellite classifications began on 29 August, but by late 31 August the system became "too weak to classify" when thunderstorm activity nearly ceased. Deep convection redeveloped on 3 September about 925 km to the east of the Leeward Islands, but significant strengthening was limited by a southwesterly vertical wind shear.

The area of disturbed weather then gradually began to move northwestward and became better organized. On 6 September, a reconnaissance flight by the U.S. Air Force Reserves detected a broad area of surface pressures near 1011 mb centered within a weak low-level circulation about 275 km north of the Virgin Islands. On the following day, a reconnaissance mission detected a 1008-mb low within a small, low-level cir-

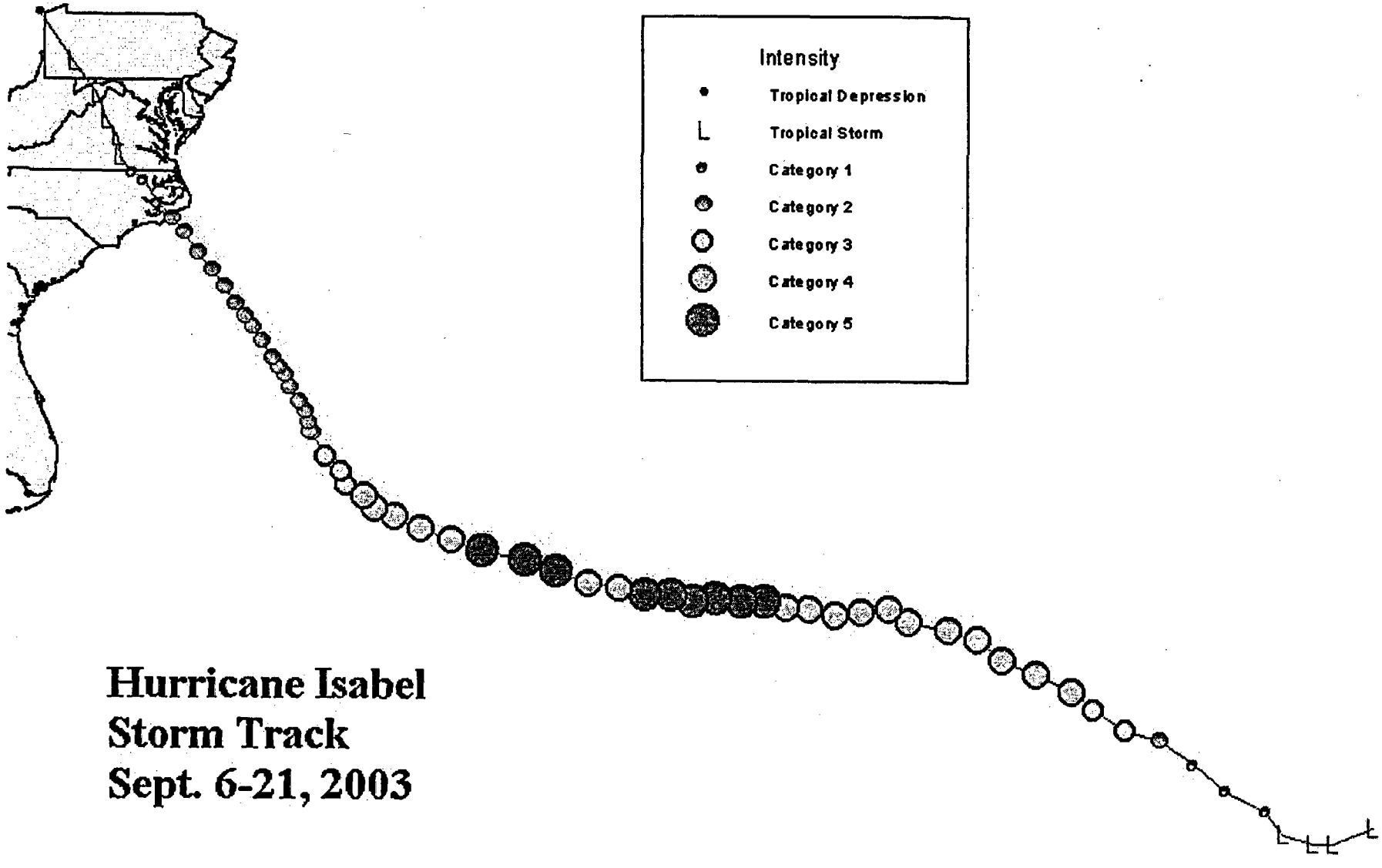
data are the basis for estimating that the system became a tropical depression during the morning of 7 September and that it strengthened to become Tropical Storm Floyd during the afternoon.

Floyd quickly became embedded in the fast air currents between a strong large-scale trough approaching the tropical cyclone from the northwest and a subtropical high to the east. The steering flow accelerated Floyd northward to 10 m s^{-1}, and the storm's center passed about 375 km to the west of Bermuda on 8 September. Strong southwesterly wind shear kept the system from strengthening and, in fact, the last reconnaissance flight in Floyd indicated that the central pressure had risen to 1012 mb by midday on 8 September. The system still appeared sheared on the day's final visible satellite pictures, with a low-level cloud center appearing poorly organized on the southwestern edge of the main area of convective clouds.

Floyd's structure changed considerably overnight and the storm intensified. By morning, the low-level circulation center was no longer exposed but was estimated to be near the center of the convective overcast. The storm was racing northeastward at about 18 m s^{-1} near the eastern end of the ribbon of warm Gulf Stream waters. Beginning near 1500 UTC, satellite imagery occasionally showed a recessed spot within the deep clouds near the estimated circulation center that could be interpreted as a partially formed eye. At 2000 UTC, the circulation center of Floyd passed about 75 km to the northwest of Canadian buoy 44141. The buoy reported a pressure of 998 mb, a sea surface temperature of 27.1°C, and a peak 2-min wind of 31 m s^{-1} during the hour ending at 2000 UTC. It is quite likely that a 1-min wind speed of at least 33 m s^{-1} occurred elsewhere within the southern part of the surface circulation, probably a little closer to the circulation center. Based on this analysis and the hint of an eye on satellite pictures, Floyd is estimated to have become a hurricane with 33 m s^{-1} maximum 1-min surface wind speeds at 1800 UTC 9 September.

Floyd's forward speed continued to increase late on 9 September and early on 10 September. The hurricane was moving at nearly 23 m s^{-1} when it began to lose its tropical characteristics over 19°C water. Deep convection diminished on 10 September and, as the day progressed, it became displaced farther to the northeast of the estimated low-level circulation center. Ship reports indicated an expanded wind field to the south. The system is estimated to have become an extratropical storm with 33 m s^{-1} winds at 1800 UTC 10 September.

Surface data indicate that the extratropical storm decelerated on an eastward heading over the following two days. The system began another deepening phase on 11 September, and its center neared the Brittany coast of France early on 13 September with a pressure



Hurricane Isabel
Storm Track
Sept. 6-21, 2003

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: RICHMOND
MONTH: SEPTEMBER
YEAR: 2003
LATITUDE: 37 30 N
LONGITUDE: 77 20 W

	TEMPERATURE IN F:							:PCPN:	SNOW:	WIND				:SUNSHINE:		SKY		:PK WND	
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
										AVG	MX	2MIN						
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	88	71	80	6	0	15	0.00	0.0	0	9.1	18	210	M	M	7	1	21	220
2	89	72	81	7	0	16	0.00	0.0	0	8.7	18	240	M	M	8	1	23	260
3	89	71	80	7	0	15	0.27	0.0	0	4.9	15	200	M	M	9	13	20	190
4	80	67	74	1	0	9	2.46	0.0	0	7.3	22	220	M	M	9	123	24	230
5	78	61	70	-3	0	5	0.00	0.0	0	9.6	18	350	M	M	4	1	23	20
6	75	57	66	-7	0	1	0.00	0.0	0	5.9	12	10	M	M	7		16	30
7	79	58	69	-4	0	4	0.00	0.0	0	3.6	12	50	M	M	6	1	14	60
8	78	59	69	-3	0	4	0.00	0.0	0	5.5	12	50	M	M	8	1	14	40
9	75	61	68	-4	0	3	0.00	0.0	0	10.3	20	40	M	M	6	1	23	30
10	74	57	66	-6	0	1	0.00	0.0	0	9.8	17	30	M	M	4		22	30
11	78	54	66	-5	0	1	0.00	0.0	0	8.2	17	40	M	M	5		22	70
12	68	62	65	-6	0	0	2.07	0.0	0	13.9	24	20	M	M	10	1	30	20
13	78	68	73	2	0	8	0.10	0.0	0	8.9	16	10	M	M	10	1	21	10
14	78	67	73	2	0	8	T	0.0	0	4.7	9	170	M	M	9	1	12	160
15	86	66	76	6	0	11	0.00	0.0	0	3.6	14	10	M	M	6	1	17	10
16	79	59	69	-1	0	4	0.00	0.0	0	7.8	17	10	M	M	2		24	350
17	78	56	67	-3	0	2	0.00	0.0	0	10.8	22	40	M	M	4		29	40
18	74	65	70	1	0	5	4.32	0.0	0	25.3	46	90	M	M	10	12	72	100
19	83	65	74	5	0	9	T	0.0	0	12.8	29	180	M	M	5	1	41	190
20	86	60	73	4	0	8	0.00	0.0	0	0.8	7	100	M	M	1	1	9	70
21	84	63	74	6	0	9	0.00	0.0	0	3.8	8	190	M	M	3	18	12	120
22	79	63	71	3	0	6	0.19	0.0	0	8.7	15	170	M	M	10	12	21	170
23	80	59	70	3	0	5	0.68	0.0	0	7.6	28	320	M	M	6	1	36	210
24	77	56	67	0	0	2	0.00	0.0	0	4.8	12	20	M	M	1		14	20
25	82	59	71	4	0	6	0.00	0.0	0	5.0	16	210	M	M	1	1	20	200
26	83	60	72	6	0	7	0.00	0.0	0	5.1	13	160	M	M	1	18	15	160
27	81	63	72	6	0	7	0.03	0.0	0	5.5	20	170	M	M	6	18	24	170
28	74	57	66	1	0	1	0.00	0.0	0	5.8	15	350	M	M	5	1	20	290
29	69	50	60	-5	5	0	0.00	0.0	0	6.5	15	320	M	M	5		20	330
30	68	45	57	-8	8	0	0.00	0.0	0	2.7	12	20	M	M	1		18	10
SM	2370	1831			13	172	10.12		0.0	227.0			M		169			
AV	79.0	61.0								7.6	FASTST		PSBL	%	6		MAX(MPH)	
								MISC ---->		46	90						72	100

NOTES:
LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: RICHMOND
MONTH: SEPTEMBER
YEAR: 2003
LATITUDE: 37 30 N
LONGITUDE: 77 20 W

[TEMPERATURE DATA] [PRECIPITATION DATA] SYMBOLS USED IN COLUMN 16

AVERAGE MONTHLY: 70.0 TOTAL FOR MONTH: 10.12 1 = FOG

```
DPTR FM NORMAL:    0.2    DPTR FM NORMAL:     6.14     2 = FOG REDUCING VISIBILITY
HIGHEST:     89 ON  3, 2  GRTST 24HR  4.32 ON 17-18        TO 1/4 MILE OR LESS
LOWEST:      45 ON 30                                    3 = THUNDER
                          SNOW, ICE PELLETS, HAIL        4 = ICE PELLETS
                          TOTAL MONTH:    0.0 INCH       5 = HAIL
                          GRTST 24HR      0.0            6 = GLAZE OR RIME
                          GRTST DEPTH:    0              7 = BLOWING DUST OR SAND:
                                                             VSBY 1/2 MILE OR LESS
                                                         8 = SMOKE OR HAZE
[NO. OF DAYS WITH]        [WEATHER - DAYS WITH]          9 = BLOWING SNOW
                                                         X = TORNADO
MAX 32 OR BELOW:    0     0.01 INCH OR MORE:    8
MAX 90 OR ABOVE:    0     0.10 INCH OR MORE:    7
MIN 32 OR BELOW:    0     0.50 INCH OR MORE:    4
MIN  0 OR BELOW:    0     1.00 INCH OR MORE:    3

[HDD (BASE 65) ]
TOTAL THIS MO.     13     CLEAR  (SCALE 0-3)    7
DPTR FM NORMAL    -14     PTCLDY (SCALE 4-7)   14
SEASONAL TOTAL     13     CLOUDY (SCALE 8-10)   9
DPTR FM NORMAL    -15

[CDD (BASE 65) ]
TOTAL THIS MO.    172
DPTR FM NORMAL    -15     [PRESSURE DATA]
SEASONAL TOTAL   1313     HIGHEST SLP 30.34 ON 30
DPTR FM NORMAL    -82     LOWEST  SLP 29.20 ON 18

[REMARKS]
```

Event Record Details

Event: **Tropical Storm**
Begin Date: **18 Sep 2003, 09:00:00 AM EST**
Begin Location: **Not Known**
End Date: **19 Sep 2003, 04:00:00 AM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **3**
Injuries: **0**
Property Damage: **$ 45.1M**
Crop Damage: **$ 7.1M**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Amelia, Brunswick, Caroline, Chesterfield, Cumberland, Dinwiddie, Fluvanna, Goochland, Hanover, Henrico, King And Queen, King William, Louisa, Lunenburg, Mecklenburg, Nottoway, Powhatan, Prince Edward**

Description:
Tropical Storm Isabel produced tropical storm force sustained winds and wind gusts over the piedmont of central and south central Virginia, as it crossed the Wakefield WFO county warning area. Isabel made landfall near Ocracoke Inlet in North Carolina, tracked northwest into central Virginia just west of Richmond, then continued northward into western Pennsylvania. The highest sustained wind speed recorded was 38 mph at Richmond International Airport. The highest gusts recorded were 73 mph at Richmond International Airport, 63 mph at WWBT-TV, and 53 mph at Chase City in Mecklenburg county. Approximately several thousand persons were evacuated and housed in numerous shelters across the piedmont of central and south central Virginia. The unusually large wind field uprooted many thousands of trees, downed many power lines, damaged hundreds of houses, and snapped thousands of telephone poles and cross arms. Hundreds of roads, including major highways, were blocked by fallen trees. Over 2 million customers of Dominion Virginia Power were without electricity. Local electrical cooperatives also reported thousands of customers were without power. The lowest sea level pressure recorded was 987 mb at Portsmouth Virginia. Isabel will be remembered for the greatest wind and storm surge in the region since Hazel in 1954, and the 1933 Chesapeake-Potomac Hurricane. Also, Isabel will be remembered for the most extensive power outages ever in Virginia, and permanent change to the landscape from all the fallen trees and storm surge. Rainfall amounts ranged from 4 to 7 inches across the piedmont of central and south central Virginia. Inland flooding due to heavy rainfall occurred over parts of the piedmont of central and south central Virginia. High water was reported around Swift Creek in Colonial Heights around Pinehurst Drive. Some areas in Chesterfield county, such as Beach road also had high water. Eight deaths can be directly attributed to Isabel in the Wakefield area of responsibility, with 7 in Virginia. There were more than 15 deaths indirectly attributed to the storm. M27OU, M54IW, F45PH

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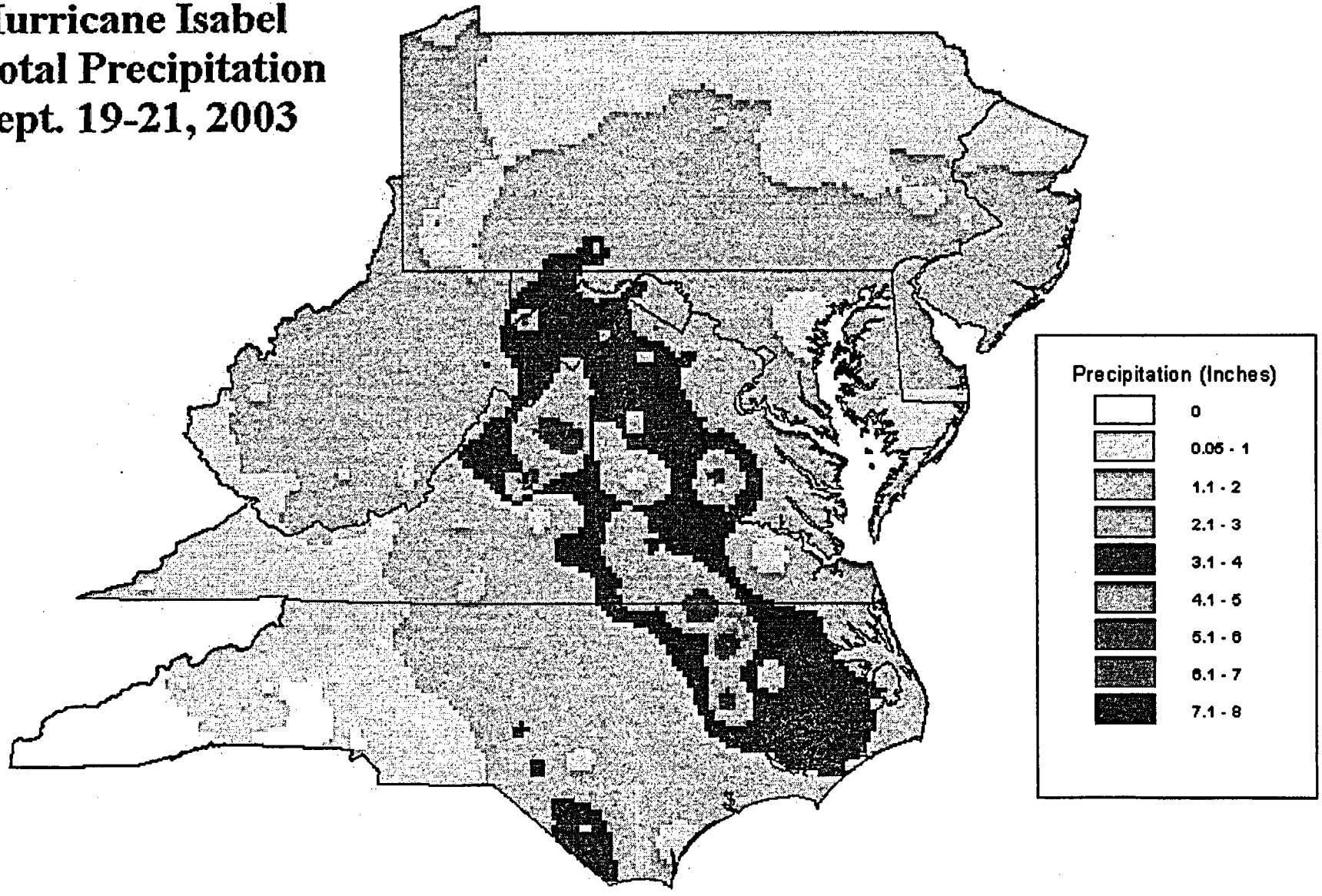
Hurricane Isabel
Total Precipitation
Sept. 19-21, 2003



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Frequently Asked Questions
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AOML Hurricane Research Div.
The Saffir-Simpson Hurricane Scale
Forecasting Models
Inland Wind Model
Eyewall Wind Profiles
TPC Glossary
NWS Glossary
TPC Acronyms
Storm Names
Breakpoints
Hurricane History
TPC Archives
Climatology
Deadliest
1492-1996 (Atlan)
1900-2000 (USA)
Most Expensive
Most Intense
US Strikes by Decade
US Strikes by State
About Us
About the TPC
Mission/Vision
Other NCEP

Tropical Weather Summary

000
ABNT30 KNHC 011222
TWSAT
MONTHLY TROPICAL WEATHER SUMMARY
NWS/TPC NATIONAL HURRICANE CENTER MIAMI FL
8 AM EDT WED OCT 1 2003

FOR THE NORTH ATLANTIC...CARIBBEAN SEA AND THE GULF OF MEXICO...

FIVE TROPICAL CYCLONES DEVELOPED DURING THE MONTH OF SEPTEMBER... TROPICAL STORM HENRI...HURRICANE ISABEL...TROPICAL DEPRESSION FOURTEEN...HURRICANE JUAN...AND HURRICANE KATE. IN ADDITION... HURRICANE FABIAN...COMPLETED ITS LIFE CYCLE IN SEPTEMBER. WITH ELEVEN NAMED TROPICAL CYCLONES FOR THE 2003 SEASON SO FAR...OVERALL ACTIVITY CONTINUES TO RUN WELL ABOVE NORMAL. IN AN AVERAGE SEASON...EIGHT TROPICAL CYCLONES WOULD HAVE FORMED BY THE END OF SEPTEMBER. THE SIX HURRICANES THAT HAVE DEVELOPED SO FAR THIS SEASON IS ALSO AHEAD OF THE NORMAL NUMBER...4.4...FOR THIS DATE.

FABIAN FORMED OVER THE EASTERN ATLANTIC ON 27 AUGUST AND ON 1 SEPTEMBER IT STRENGTHENED TO ITS PEAK INTENSITY OF 145 MPH. THEREAFTER...FABIAN'S INTENSITY FLUCTUATED SOME...BUT IT REMAINED A MAJOR HURRICANE FOR SEVERAL DAYS. IT PASSED WELL NORTH OF THE NORTHERN LEEWARD ISLANDS ON 3 SEPTEMBER AS ITS TRACK CURVED FROM WEST-NORTHWESTWARD TO NORTHWARD. ON 5 SEPTEMBER...FABIAN HIT BERMUDA WITH MAXIMUM WINDS NEAR 115 MPH...AND CAUSED 4 DEATHS AS WELL AS EXTENSIVE DAMAGE...ESTIMATED NEAR 300 MILLION U.S. DOLLARS... ON THAT ISLAND. THEN THE HURRICANE ACCELERATED NORTHEASTWARD WHILE GRADUALLY WEAKENING. FABIAN BECAME EXTRATROPICAL ABOUT 585 MILES EAST OF CAPE RACE NEWFOUNDLAND ON 8 SEPTEMBER. THE DEATH TOLL OF 8 INCLUDES THREE FISHERMEN WHO DROWNED OFF OF NEWFOUNDLAND...AND A RIP CURRENT DROWNING NEAR CAPE HATTERAS.

HENRI FORMED FROM A TROPICAL WAVE ON THE 3RD OVER THE EAST-CENTRAL GULF OF MEXICO. IT MOVED SLOWLY EASTWARD AND ITS WINDS REACHED 50 MPH ON THE 5TH. WEAKENING...HENRI ACCELERATED NORTHEASTWARD ACROSS NORTH-CENTRAL FLORIDA AS A TROPICAL DEPRESSION WITH WINDS OF 30 MPH. IT DISSIPATED ON THE 8TH ABOUT 150 MILES SOUTH OF CAPE HATTERAS NORTH CAROLINA WHILE BECOMING EXTRATROPICAL. HENRI DUMPED UP TO 10 INCHES OF RAIN OVER PORTIONS OF WEST-CENTRAL FLORIDA.

LONG-LIVED HURRICANE ISABEL BEGAN AS A WESTWARD MOVING TROPICAL DEPRESSION OVER THE EASTERN TROPICAL ATLANTIC ON THE 6TH. IT BECAME A TROPICAL STORM LATER THAT DAY...AND A HURRICANE ON THE 7TH AS IT TURNED WEST-NORTHWESTWARD. ISABEL MOVED NORTHWESTWARD ON THE 8TH AND 9TH AND BECAME A MAJOR HURRICANE. THE CYCLONE CONTINUED TO STRENGTHEN AS IT TURNED WESTWARD ON THE 10TH...AND ON THE 11TH IT BECAME A CATEGORY 5 HURRICANE ON THE SAFFIR-SIMPSON HURRICANE SCALE. ISABEL REMAINED AT OR NEAR CATEGORY 5 INTENSITY UNTIL THE 15TH. THE HURRICANE CONTINUED WESTWARD THROUGH THE 12TH...THEN ISABEL TURNED WEST-NORTHWESTWARD ON THE 13TH AND NORTHWESTWARD ON

Centers
TPC Personnel
NOAA Locator
Visitor Information
NHC Library
WX4NHC Amateur Radio Station
TPC Anonymous FTP Server
Contact Us
Webmaster

THE 15TH. WEAKENING BEGAN ON THE 16TH AS ISABEL TURNED NORTH-NORTHWESTWARD. THIS MOTION BROUGHT ISABEL TO THE NORTH CAROLINA COAST NEAR DRUM POINT ON THE 18TH AS A CATEGORY 2 HURRICANE. THE CYCLONE CONTINUED NORTH-NORTHWESTWARD AFTER LANDFALL...EVENTUALLY LOSING ITS TROPICAL CHARACTERISTICS ON THE 19TH OVER WESTERN PENNSYLVANIA.

ISABEL BROUGHT HURRICANE CONDITIONS TO PORTIONS OF EASTERN NORTH CAROLINA AND SOUTHEASTERN VIRGINIA...AND TROPICAL STORM CONDITIONS TO MUCH OF THE REST OF THE REGION FROM NORTH CAROLINA NORTHWARD TO NEW YORK. EXTENSIVE STORM SURGE FLOODING OCCURRED ALONG THE ATLANTIC COASTS OF NORTH CAROLINA AND VIRGINIA...AND IN CHESAPEAKE BAY INCLUDING THE POTOMAC AND JAMES RIVERS. ABOVE NORMAL TIDES WERE REPORTED AS FAR NORTH AS LONG ISLAND. HEAVY RAINS ALSO OCCURRED ALONG THE TRACK OF ISABEL...WITH AMOUNTS OF 6 TO 12 INCHES IN NORTH CAROLINA AND VIRGINIA AND AMOUNTS OF 1 TO 3 INCHES EXTENDING AS FAR NORTH AS OHIO...PENNSYLVANIA...AND NEW YORK.

CASUALTY AND DAMAGE STATISTICS FOR ISABEL ARE INCOMPLETE AT THIS TIME. ISABEL WAS DIRECTLY RESPONSIBLE FOR AT LEAST 13 DEATHS...WITH AT LEAST 17 MORE INDIRECTLY RELATED TO THE STORM. ISABEL CAUSED EXTENSIVE WIND AND WATER DAMAGE IN EASTERN NORTH CAROLINA AND SOUTHEASTERN VIRGINIA AND EASTERN MARYLAND...WITH A TRAIL OF LESSER DAMAGE EXTENDING ACROSS OTHER PORTIONS OF NORTH CAROLINA... VIRGINIA...MARYLAND...WEST VIRGINIA...DELAWARE...NEW JERSEY...PENNSYLVANIA...AND NEW YORK. DAMAGE FROM ISABEL MAY EVENTUALLY BE ASSESSED IN EXCESS OF ONE BILLION DOLLARS.

TROPICAL DEPRESSION FOURTEEN DEVELOPED FROM A TROPICAL WAVE ON THE 8TH ABOUT 300 MILES SOUTHEAST OF THE SOUTHERNMOST CAPE VERDE ISLANDS. THE DEPRESSION QUICKLY ENCOUNTERED UNFAVORABLE UPPER-LEVEL WINDS AND DISSIPATED ON THE 10TH AS IT WAS PASSING THROUGH THE WESTERN CAPE VERDE ISLANDS.

HURRICANE JUAN HAD A COMPLEX FORMATION...DEVELOPING FROM THE INTERACTION OF A TROPICAL WAVE WITH A LARGE UPPER-LEVEL LOW ABOUT 295 MILES SOUTHEAST OF BERMUDA ON THE 25TH. INITIALLY...JUAN APPEARED TO HAVE SUBTROPICAL CHARACTERISTICS BUT BECAME FULLY TROPICAL AS IT MOVED TOWARD THE NORTH-NORTHWEST AND NORTH...PASSING ABOUT 200 MILES EAST OF BERMUDA. ITS WINDS REACHED 105 MPH ON THE 27TH AS IT CONTINUED NORTHWARD. AFTER SOME WEAKENING...THE TROPICAL CYCLONE MADE LANDFALL IN NOVA SCOTIA NEAR HALIFAX LATE ON THE 28TH. ACCORDING TO METEOROLOGISTS FROM ENVIRONMENT CANADA...JUAN WAS THE WORST TROPICAL CYCLONE TO HIT THE AREA IN DECADES. CASUALTY AND DAMAGE STATISTICS FOR JUAN ARE INCOMPLETE AT THIS TIME.

HURRICANE KATE DEVELOPED FROM A TROPICAL WAVE ABOUT 900 MILES WEST-SOUTHWEST OF THE CAPE VERDE ISLANDS ON THE 25TH. AFTER MOVING WEST-NORTHWESTWARD FOR ABOUT A DAY...THE SYSTEM TURNED TOWARD THE NORTH-NORTHWEST AND STRENGTHENED INTO A TROPICAL STORM ON THE 27TH. KATE THEN TURNED TOWARD THE NORTH AND NORTHEAST AND BRIEFLY REACHED HURRICANE INTENSITY ON THE 29TH. AT THE END OF THE MONTH...TROPICAL STORM KATE HAD TURNED BACK TO THE NORTHWEST AND THEN WEST WHILE LOCATED ABOUT 600 MILES SOUTHWEST OF THE AZORES.

SUMMARY TABLE - SEPTEMBER 2003

NAME	DATES	MAX WIND - MPH	DEATHS
H FABIAN	27 AUG-8 SEP	145	8
TS HENRI	3-8 SEP	50	0
H ISABEL	6-19 SEP	160	13*
TD FOURTEEN	8-10 SEP	35	0
H JUAN	25-29 SEP	105	*

```
H KATE          25-   SEP                 75                0
-------------------------------------------------------------------
NOTE...DATES ARE BASED ON UNIVERSAL COORDINATED TIME...UTC

* INFORMATION NOT COMPLETE AT THIS TIME.

FORECASTER FRANKLIN/AVILA/BEVEN/LAWRENCE/PASCH/STEWART
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Tropical Cyclone, Tropical Weather, & TPC Information Topics:
Storm Information, Hurricane Awareness, Historical Information,
Tropical Analysis and Forecasting Branch, About Us, Contact Us

NOAA/ National Weather Service
National Centers for Environmental Prediction
National Hurricane Center
Tropical Prediction Center
11691 SW 17th Street
Miami, Florida, 33165-2149 USA
Todd.Spindler@noaa.gov
Page last modified: Friday, 03-Oct-2003 14:56:20 CDT

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Storm Events

Select State

Select Desired State or *All
State: *All
Continue

Search the NCDC Storm Event database to find various types of storms recorded in your county or use other selection criteria as desired. The database currently contains:

The Storm Events Database contains data from the following sources:

All Weather Events from 1993 - 1995, as entered into Storm Data. (Except 6/93 - 7/93, which is missing) (NO Latitude/Longitude)

All Weather Events from 1996 - Current, as entered into Storm Data. (Including Latitude/Longitude)

Plus additional data from the Storm Prediction Center; Including
- **Tornadoes 1950-1992**
- **Thunderstorm Winds 1955-1992**
- **Hail 1955-1992**

The Storm Events Database is updated when the data becomes available to NCDC.
The data is updated on a monthly basis and is usually 90-120 days behind the current month

Please do not contact NCDC with requests for information about specific weather events. All of the data is received from the National Weather Service and is made available as soon as possible. If you cannot locate a particular event 120 days after the end of the month of occurrence, contact Stuart Hinson.

Note To Webmaster: Link directly to Events Database

NCDC / Climate Resources / Climate Data / Events / Storm Events / Search / Help

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Enter Search Parameters for Virginia

Begin Date: 01/01/1950 * 01/01/1950 thru 09/30/2003

End Date: 09/30/2003 If Different from Begin Date

County: *All

Event Type: *All

Limit Search Results

Tornados to: *All

Hail, Size of at Least: Inches

High Wind Speed of at Least: Knots

Number of Injuries :

Number Of Deaths

Amount of Property Damage $:

Amount of Crop Damage $:

Storm Events

for Virginia

List Storms | Reset | New State | All States

Fujita Tornado Scale

F0: 40-72 mph (35-62 kt)
F1: 73-112 mph (63-97 kt)
F2: 113-157 mph (98-136 kt)
F3: 158-206 mph (137-179 kt)
F4: 207-260 mph (180-226 kt)
F5: 261-318 mph (227-276 kt)

Reference Notes

*** Begin Date is Required to List Storms. Enter dates as MM/DD/YYYY. Search the NCDC Storm Event database to find various types of storms recorded in your county or use other selection criteria as desired. The database currently contains:**

The Storm Events Database contains data from the following sources:

All Weather Events from 1993 - 1995, as entered into Storm Data. (Except 6/93 - 7/93, which is missing) (NO Latitude/Longitude)

All Weather Events from 1996 - Current, as entered into Storm Data. (Including Latitude/Longitude)

Plus additional data from the Storm Prediction Center; Including
- **Tornadoes 1950-1992**
- **Thunderstorm Winds 1955-1992**
- **Hail 1955-1992**

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Query Results

30 SNOW & ICE event(s) were reported in **Louisa County, Virginia** between **01/01/1950** and **09/30/2003**.

Click on Location or County to display Details.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Virginia

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 LOUISA	12/28/1993	0500	Heavy Snow	N/A	0	0	0	0
2 VAZ049	01/30/1995	1400	Heavy Snow	N/A	0	0	0	0
3 VAZ048>049 - 061>062 - 068>069	01/06/1996	12:00 PM	Winter Storm	N/A	0	0	100K	15K
4 VAZ048>049 - 060>064 - 067>068 - 070>076	01/11/1996	11:00 PM	Heavy Snow	N/A	0	0	0	0
5 VAZ048>049 - 061>064 - 073>075 - 077	02/02/1996	02:00 AM	Winter Storm	N/A	0	0	0	0
6 VAZ048>049 - 060>064 - 067>076	02/16/1996	03:00 AM	Winter Storm	N/A	0	0	0	0
7 VAZ048>049 - 060>064 - 066>078 - 085	03/01/1996	09:00 PM	Winter Storm	N/A	0	0	0	0
8 VAZ048>049 - 060>064 - 066>078 - 080>086 - 088>090 - 092>094	03/07/1996	11:00 PM	Winter Storm	N/A	0	0	0	0
9 VAZ048>049 - 060>064 - 069 - 074>077	02/08/1997	08:00 AM	Winter Storm	N/A	0	0	0	0
10 VAZ048>049 - 060>062 - 065>066	12/29/1997	12:00 PM	Winter Storm	N/A	0	0	0	0
11 VAZ048>049 - 060>094 - 096 - 099>100	12/23/1998	02:00 PM	Ice Storm	N/A	0	0	20.0M	0
12 VAZ048>049 - 060>061	01/02/1999	04:00 PM	Winter Storm	N/A	0	0	0	0
13 VAZ048>049 - 060>064 - 069 - 074>076	01/08/1999	09:30 AM	Winter Weather	N/A	0	0	0	0
14 VAZ048>049 - 060>061 - 064	01/15/1999	01:30 AM	Winter Weather	N/A	0	0	0	0
15 VAZ048>049 - 060>062 - 065 - 067>070 - 079>080 - 087>088	01/19/2000	11:00 PM	Winter Storm	N/A	0	0	0	0
16 VAZ048>049 - 060>062 - 068	01/25/2000	01:00 AM	Winter Storm	N/A	0	0	0	0
17 VAZ048>049 - 060>061 - 063>066 - 070>076 - 079>083	01/30/2000	04:00 AM	Ice Storm	N/A	0	2	465K	0
18 VAZ049 - 063>064 - 072>078 - 084>086 - 099	02/12/2000	10:00 AM	Winter Storm	N/A	0	0	0	0

19 VAZ048>049 - 062>064	02/22/2001	10:00 AM	Winter Storm	N/A	0	0	0	0
20 VAZ048>049	01/02/2002	11:30 PM	Winter Storm	N/A	0	0	0	0
21 VAZ048>049 - 060>064 - 066>069 - 071	01/19/2002	09:00 AM	Winter Storm	N/A	0	0	0	0
22 VAZ048>049 - 060>064 - 067>069 - 072>075	12/04/2002	10:00 PM	Winter Storm	N/A	0	0	0	0
23 VAZ048>049 - 060>064 - 069	12/11/2002	03:00 AM	Winter Weather/mix	N/A	0	0	0	0
24 VAZ048>049 - 060>100	01/06/2003	06:00 PM	Winter Weather/mix	N/A	0	0	0	0
25 VAZ048>049 - 060>063 - 065>067 - 069 - 079 - 087 - 095>097	01/16/2003	09:00 PM	Winter Storm	N/A	0	0	0	0
26 VAZ048>049 - 060>064 - 067>069	01/30/2003	12:00 PM	Winter Storm	N/A	0	0	0	0
27 VAZ048>049 - 060>064 - 069 - 071>075	02/06/2003	07:00 PM	Winter Storm	N/A	0	0	0	0
28 VAZ048>049 - 060>064 - 068>071 - 074>076	02/10/2003	07:00 AM	Winter Weather/mix	N/A	0	0	0	0
29 VAZ048>049 - 060>064 - 067>078 - 099	02/15/2003	04:00 PM	Winter Storm	N/A	0	0	0	0
30 VAZ048>049 - 060>077 - 080 - 099	02/26/2003	12:00 PM	Winter Storm	N/A	0	0	0	0
				TOTALS:	0	2	20.565M	15K

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Query Results

28 SNOW & ICE event(s) were reported in **Hanover County, Virginia** between **01/01/1950** and **09/30/2003.**

Click on Location or County to display Details.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Virginia

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 HANOVER	12/28/1993	0500	Heavy Snow	N/A	0	0	0	0
2 W Portion	01/30/1995	1500	Heavy Snow	N/A	0	0	0	0
3 VAZ060 - 063 - 066>067 - 070>071 - 079>083 - 087>090 - 092	01/06/1996	12:00 PM	Winter Storm	N/A	0	0	115K	0
4 VAZ048>049 - 060>064 - 067>068 - 070>076	01/11/1996	11:00 PM	Heavy Snow	N/A	0	0	0	0
5 VAZ048>049 - 061>064 - 073>075 - 077	02/02/1996	02:00 AM	Winter Storm	N/A	0	0	0	0
6 VAZ048>049 - 060>064 - 067>076	02/16/1996	03:00 AM	Winter Storm	N/A	0	0	0	0
7 VAZ048>049 - 060>064 - 066>078 - 085	03/01/1996	09:00 PM	Winter Storm	N/A	0	0	0	0
8 VAZ048>049 - 060>064 - 066>078 - 080>086 - 088>090 - 092>094	03/07/1996	11:00 PM	Winter Storm	N/A	0	0	0	0
9 VAZ048>049 - 060>064 - 069 - 074>077	02/08/1997	08:00 AM	Winter Storm	N/A	0	0	0	0
10 VAZ048>049 - 060>094 - 096 - 099>100	12/23/1998	02:00 PM	Ice Storm	N/A	0	0	20.0M	0
11 VAZ048>049 - 060>064 - 069 - 074>076	01/08/1999	09:30 AM	Winter Weather	N/A	0	0	0	0
12 VAZ048 - 063>064 - 072>075 - 077	03/09/1999	01:00 PM	Winter Storm	N/A	0	0	0	0
13 VAZ063>064 - 071>074 - 078 - 081>086 - 089>100	01/19/2000	11:00 PM	Winter Storm	N/A	0	0	0	0
14 VAZ063>067 - 070>077 - 079>083 - 088	01/25/2000	01:00 AM	Winter Storm	N/A	0	0	0	0
15 VAZ048>049 - 060>061 - 063>066 - 070>076 - 079>083	01/30/2000	04:00 AM	Ice Storm	N/A	0	2	465K	0
16 VAZ049 - 063>064 - 072>078 - 084>086 - 099	02/12/2000	10:00 AM	Winter Storm	N/A	0	0	0	0
17 VAZ048>049 - 062>064	02/22/2001	10:00 AM	Winter Storm	N/A	0	0	0	0

18 VAZ061>064 - 068>078 - 082>086 - 090 - 099>100	01/02/2002	11:30 PM	Winter Storm	N/A	0	0	0	0
19 VAZ048>049 - 060>064 - 066>069 - 071	01/19/2002	09:00 AM	Winter Storm	N/A	0	0	0	0
20 VAZ048>049 - 060>064 - 067>069 - 072>075	12/04/2002	10:00 PM	Winter Storm	N/A	0	0	0	0
21 VAZ048>049 - 060>064 - 069	12/11/2002	03:00 AM	Winter Weather/mix	N/A	0	0	0	0
22 VAZ048>049 - 060>100	01/06/2003	06:00 PM	Winter Weather/mix	N/A	0	0	0	0
23 VAZ048>049 - 060>063 - 065>067 - 069 - 079 - 087 - 095>097	01/16/2003	09:00 PM	Winter Storm	N/A	0	0	0	0
24 VAZ048>049 - 060>064 - 067>069	01/30/2003	12:00 PM	Winter Storm	N/A	0	0	0	0
25 VAZ048>049 - 060>064 - 069 - 071>075	02/06/2003	07:00 PM	Winter Storm	N/A	0	0	0	0
26 VAZ048>049 - 060>064 - 068>071 - 074>076	02/10/2003	07:00 AM	Winter Weather/mix	N/A	0	0	0	0
27 VAZ048>049 - 060>064 - 067>078 - 099	02/15/2003	04:00 PM	Winter Storm	N/A	0	0	0	0
28 VAZ048>049 - 060>077 - 080 - 099	02/26/2003	12:00 PM	Winter Storm	N/A	0	0	0	0
				TOTALS:	0	2	20.580M	0

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Query Results

29 SNOW & ICE event(s) were reported in **Caroline County, Virginia** between **01/01/1950** and **09/30/2003.**

Click on Location or County to display Details.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Virginia

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 CAROLINE	12/28/1993	0700	Heavy Snow	N/A	0	0	0	0
2 VAZ064	01/28/1995	1900	Heavy Snow	N/A	0	0	0	0
3 VAZ048>049 - 060>064 - 067>068 - 070>076	01/11/1996	11:00 PM	Heavy Snow	N/A	0	0	0	0
4 VAZ048>049 - 061>064 - 073>075 - 077	02/02/1996	02:00 AM	Winter Storm	N/A	0	0	0	0
5 VAZ048>049 - 060>064 - 067>076	02/16/1996	03:00 AM	Winter Storm	N/A	0	0	0	0
6 VAZ048>049 - 060>064 - 066>078 - 085	03/01/1996	09:00 PM	Winter Storm	N/A	0	0	0	0
7 VAZ048>049 - 060>064 - 066>078 - 080>086 - 088>090 - 092>094	03/07/1996	11:00 PM	Winter Storm	N/A	0	0	0	0
8 VAZ048>049 - 060>064 - 069 - 074>077	02/08/1997	08:00 AM	Winter Storm	N/A	0	0	0	0
9 VAZ048>049 - 060>094 - 096 - 099>100	12/23/1998	02:00 PM	Ice Storm	N/A	0	0	20.0M	0
10 VAZ048>049 - 060>064 - 069 - 074>076	01/08/1999	09:30 AM	Winter Weather	N/A	0	0	0	0
11 VAZ048>049 - 060>061 - 064	01/15/1999	01:30 AM	Winter Weather	N/A	0	0	0	0
12 VAZ048 - 063>064 - 072>075 - 077	03/09/1999	01:00 PM	Winter Storm	N/A	0	0	0	0
13 VAZ063>064 - 071>074 - 078 - 081>086 - 089>100	01/19/2000	11:00 PM	Winter Storm	N/A	0	0	0	0
14 VAZ063>067 - 070>077 - 079>083 - 088	01/25/2000	01:00 AM	Winter Storm	N/A	0	0	0	0
15 VAZ048>049 - 060>061 - 063>066 - 070>076 - 079>083	01/30/2000	04:00 AM	Ice Storm	N/A	0	2	465K	0
16 VAZ049 - 063>064 - 072>078 - 084>086 - 099	02/12/2000	10:00 AM	Winter Storm	N/A	0	0	0	0
17 VAZ048>049 - 062>064	02/22/2001	10:00 AM	Winter Storm	N/A	0	0	0	0
18 VAZ061>064 - 068>078 -	01/02/2002	11:30 PM	Winter Storm	N/A	0	0	0	0

	082>086 - 090 - 099>100								
✓	19 VAZ048>049 - 060>064 - 066>069 - 071	01/19/2002	09:00 AM	Winter Storm	N/A	0	0	0	0
✓	20 VAZ048>049 - 060>064 - 067>069 - 072>075	12/04/2002	10:00 PM	Winter Storm	N/A	0	0	0	0
✓	21 VAZ048>049 - 060>064 - 069	12/11/2002	03:00 AM	Winter Weather/mix	N/A	0	0	0	0
X	22 VAZ048>049 - 060>100	01/06/2003	06:00 PM	Winter Weather/mix	N/A	0	0	0	0
X	23 VAZ064 - 072>078 - 083>086 - 090>091 - 094>095 - 099>100	01/14/2003	10:00 PM	Winter Weather/mix	N/A	0	0	0	0
X	24 VAZ064 - 068 - 070>078 - 080>086 - 088>094 - 099>100	01/16/2003	09:00 PM	Winter Storm	N/A	0	0	0	0
X	25 VAZ048>049 - 060>064 - 067>069	01/30/2003	12:00 PM	Winter Storm	N/A	0	0	0	0
✓	26 VAZ048>049 - 060>064 - 069 - 071>075	02/06/2003	07:00 PM	Winter Storm	N/A	0	0	0	0
X	27 VAZ048>049 - 060>064 - 068>071 - 074>076	02/10/2003	07:00 AM	Winter Weather/mix	N/A	0	0	0	0
?	28 VAZ048>049 - 060>064 - 067>078 - 099	02/15/2003	04:00 PM	Winter Storm	N/A	0	0	0	0
✓	29 VAZ048>049 - 060>077 - 080 - 099	02/26/2003	12:00 PM	Winter Storm	N/A	0	0	0	0
					TOTALS:	0	2	20.465M	0

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Query Results

26 SNOW & ICE event(s) were reported in **Spotsylvania County, Virginia** between **01/01/1950** and **09/30/2003.**

Click on Location or County to display Details.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Virginia

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 SPOTSYLVANIA	12/28/1993	0700	Heavy Snow	N/A	0	0	0	0
2 VAZ056	01/28/1995	1800	Heavy Snow	N/A	0	0	0	0
3 VAZ056	02/04/1995	0330	Heavy Snow	N/A	0	0	0	0
4 VAZ021 - 025>031 - 036>042 - 050>057	01/12/1996	07:00 AM	Heavy Snow	N/A	0	1	350K	0
5 VAZ025 - 036>039 - 051 - 055>057	02/02/1996	05:00 AM	Heavy Snow	N/A	0	0	0	0
6 VAZ021 - 025>031 - 036>042 - 050>057	02/02/1996	10:00 PM	Heavy Snow	N/A	0	0	0	0
7 VAZ021 - 025 - 036>037 - 041>042 - 050>057	02/16/1996	08:00 AM	Heavy Snow	N/A	0	0	0	0
8 VAZ021 - 025>031 - 036>042 - 050>057	02/08/1997	08:00 AM	Heavy Snow	N/A	0	0	25K	0
9 VAZ028>031 - 037>042 - 050>056	12/23/1998	12:00 PM	Winter Weather	N/A	0	0	0	0
10 VAZ036>038 - 042 - 050>056	01/08/1999	02:00 AM	Winter Weather	N/A	0	0	0	0
11 VAZ026>031 - 039>042 - 051>056	01/14/1999	02:00 AM	Ice Storm	N/A	0	0	320K	0
12 VAZ026>031 - 038>042 - 050>057	03/09/1999	03:00 AM	Winter Storm	N/A	0	0	0	0
13 VAZ030>031 - 039 - 052 - 056>057	01/20/2000	03:00 AM	Winter Weather	N/A	0	0	0	0
14 VAZ025>031 - 036>042 - 050>057	01/25/2000	03:00 AM	Winter Storm	N/A	0	0	0	0
15 VAZ055>057	01/30/2000	06:00 AM	Ice Storm	N/A	0	0	0	0
16 VAZ025>026 - 036>039 - 050 - 055>057	02/12/2000	08:00 AM	Winter Weather	N/A	0	0	0	0
17 VAZ025>031 - 037>042 - 050>053 - 056	12/13/2000	06:00 PM	Ice Storm	N/A	0	0	0	0
18 VAZ021 - 026 - 036>042 - 050>056	12/19/2000	04:00 AM	Winter Weather	N/A	0	0	0	0
19 VAZ036>037 - 050 - 052>053 -	02/22/2001	09:00 AM	Winter Storm	N/A	0	0	0	0

	055>057								
✓	20 VAZ056>057	01/03/2002	05:00 AM	Winter Storm	N/A	0	0	0	0
✓	21 VAZ026>027 - 029>031 - 036>041 - 050>057	01/19/2002	06:00 AM	Winter Weather	N/A	0	0	0	0
✓	22 VAZ021 - 025>031 - 036>042 - 050>057	12/05/2002	12:00 AM	Winter Storm	N/A	0	0	0	0
✓	23 VAZ050 - 055>056	12/11/2002	12:00 AM	Winter Weather/mix	N/A	0	0	0	0
✓	24 VAZ025>030 - 036>042 - 050>057	02/06/2003	07:00 PM	Winter Storm	N/A	0	0	0	0
?	25 VAZ021 - 025>031 - 036>042 - 050>057	02/14/2003	08:00 AM	Winter Storm	N/A	1	0	8.9M	0
✓	26 VAZ021 - 025>031 - 036>042 - 050>057	02/26/2003	06:00 AM	Winter Weather/mix	N/A	0	0	0	0
					TOTALS:	1	1	9.565M	0

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Query Results

30 SNOW & ICE event(s) were reported in **Orange County, Virginia** between **01/01/1950** and **09/30/2003**.

Click on Location or County to display Details.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Virginia

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 ORANGE	12/28/1993	0800	Heavy Snow	N/A	0	0	0	0
2 VAZ050	01/28/1995	1730	Heavy Snow	N/A	0	0	0	0
3 VAZ050	02/04/1995	0230	Heavy Snow	N/A	0	0	0	0
4 VAZ021 - 025>031 - 036>042 - 050>057	01/12/1996	07:00 AM	Heavy Snow	N/A	0	1	350K	0
5 VAZ021 - 025>031 - 036>042 - 050>057	02/02/1996	10:00 PM	Heavy Snow	N/A	0	0	0	0
6 VAZ021 - 025 - 036>037 - 041>042 - 050>057	02/16/1996	08:00 AM	Heavy Snow	N/A	0	0	0	0
7 VAZ021 - 025>031 - 036>042 - 050>057	02/08/1997	08:00 AM	Heavy Snow	N/A	0	0	25K	0
8 VAZ025>026 - 029 - 038>042 - 050>051	12/27/1997	11:00 AM	Snow	N/A	0	0	0	0
9 VAZ037>039 - 042 - 050 - 052>053	12/29/1997	07:00 PM	Winter Weather	N/A	0	0	0	0
10 VAZ028>031 - 037>042 - 050>056	12/23/1998	12:00 PM	Winter Weather	N/A	0	0	0	0
11 VAZ036>038 - 042 - 050>056	01/08/1999	02:00 AM	Winter Weather	N/A	0	0	0	0
12 VAZ021 - 025 - 036>038 - 050 - 057	01/14/1999	02:00 AM	Winter Weather	N/A	0	0	0	0
13 VAZ026>031 - 038>042 - 050>057	03/09/1999	03:00 AM	Winter Storm	N/A	0	0	0	0
14 VAZ037>041 - 050>052	03/14/1999	05:00 AM	Winter Weather	N/A	0	0	0	0
15 VAZ021 - 025>029 - 036>038 - 040>042 - 050>051 - 053>055	01/20/2000	03:00 AM	Winter Storm	N/A	0	0	0	0
16 VAZ025>031 - 036>042 - 050>057	01/25/2000	03:00 AM	Winter Storm	N/A	0	0	0	0
17 VAZ021 - 025>031 - 036>042 - 050>054	01/30/2000	03:00 AM	Winter Storm	N/A	0	0	0	0
18 VAZ025>026 - 036>039 - 050 - 055>057	02/12/2000	08:00 AM	Winter Weather	N/A	0	0	0	0
19 VAZ025>031 - 037>042 -	12/13/2000	06:00 PM	Ice Storm	N/A	0	0	0	0

050>053 - 056								
20 VAZ021 - 026 - 036>042 - 050>056	12/19/2000	04:00 AM	Winter Weather	N/A	0	0	0	0
21 VAZ036>037 - 050 - 052>053 - 055>057	02/22/2001	09:00 AM	Winter Storm	N/A	0	0	0	0
22 VAZ037 - 050 - 055	01/03/2002	05:00 AM	Winter Weather	N/A	0	0	0	0
23 VAZ026>027 - 029>031 - 036>041 - 050>057	01/19/2002	06:00 AM	Winter Weather	N/A	0	0	0	0
24 VAZ021 - 025>031 - 036>042 - 050>057	12/05/2002	12:00 AM	Winter Storm	N/A	0	0	0	0
25 VAZ050 - 055>056	12/11/2002	12:00 AM	Winter Weather/mix	N/A	0	0	0	0
26 VAZ021 - 025>031 - 037>041 - 050>052	01/05/2003	06:00 AM	Winter Weather/mix	N/A	0	0	0	0
27 VAZ025>030 - 036>042 - 050>057	02/06/2003	07:00 PM	Winter Storm	N/A	0	0	0	0
28 VAZ021 - 025>031 - 036>042 - 050>057	02/14/2003	08:00 AM	Winter Storm	N/A	1	0	8.9M	0
29 VAZ021 - 025>031 - 036>042 - 050>057	02/26/2003	06:00 AM	Winter Weather/mix	N/A	0	0	0	0
30 VAZ027>031 - 037>042 - 050>053	03/30/2003	05:00 AM	Winter Weather/mix	N/A	0	0	0	0
				TOTALS:	1	1	9.245M	0

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Event Record Details

Event: **Ice Storm**
Begin Date: **23 Dec 1998, 02:00:00 PM EST**
Begin Location: **Not Known**
End Date: **25 Dec 1998, 05:00:00 AM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 20.0M**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Accomack, Amelia, Brunswick, Caroline, Charles City, Chesterfield / Colonial Height, Cumberland, Dinwiddie / Petersburg, Essex, Fluvanna, Gloucester, Goochland, Greensville / Emporia, Hanover, Henrico / Richmond, Isle Of Wight, James City / Williamsburg, King And Queen, King William, Lancaster, Louisa, Lunenburg, Mathews, Mecklenburg, Middlesex, New Kent, Newport News, Northampton, Northumberland, Nottoway, Powhatan, Prince Edward, Prince George / Hopewell, Richmond, Southampton / Franklin, Suffolk, Surry, Sussex, Westmoreland, York / Poquoson**

Description:
A major ice storm affected central and eastern Virginia from Wednesday, December 23rd into Friday, December 25th. A prolonged period of freezing rain and some sleet resulted in ice accumulations of one half inch /0.50/ to one inch /1.00/ in many locations. The heavy ice accumulations on trees and power lines caused widespread power outages across the region. Approximately 400,000 customers were without power during the maximum outage period, Christmas Eve day. Some customers were without power for about ten days. Many accidents occurred due to slippery road conditions, especially bridges and overpasses. Many secondary roads were impassable due to fallen tree limbs and in a few cases, whole trees.

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Event Record Details

Event: **Winter Weather**
Begin Date: **23 Dec 1998, 12:00:00 PM EST**
Begin Location: **Not Known**
End Date: **24 Dec 1998, 04:00:00 AM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Albemarle / Charlotttesville, Arlington / Alexandria / Falls, Clarke, Culpeper, Fairfax, Fauquier, Frederick / Winchester, Greene, Loudoun, Madison, Orange, Page, Prince William / Manassas, Rappahannock, Spotsylvania / Fredericksburg, Stafford, Warren**

Description:
A cold front swept across Virginia on the 22nd of December, ushering in sub-freezing air that set the stage for a mixed bag of precipitation the following day. On the 23rd, a weak upper level disturbance from the Gulf States moved quickly across the Mid Atlantic region, dropping between a trace and 2 inches of snow across Northern Virginia, in addition to a thin layer of ice and sleet. The combination of mixed precipitation, holiday travellers, and the first snowstorm of the season for drivers led to many traffic accidents. Law enforcement officials reported 70 accidents during the evening rush hour on the 23rd around Washington D.C. In Fairfax County, a tanker truck slid into a ditch in Centreville, leading to a hazardous materials spill and an 11 hour road closure. Interstate 81 was also treacherous, especially between Stephens City and Winchester in Frederick County. A tractor trailer tipped over on the I-81 ramp to U.S. Route 50, closing it from 3 to 11 PM, and two people were injured in a crash at the I-81 Millwood Pike bridge. The westbound lanes of Interstate 64 had to be shut down for two hours in Albemarle County after a tractor trailer wrecked east of Afton and over 50 other accidents lined the highway. A 25 car pileup was reported on U.S. 29 just south of Greene/Albemarle County line. State Route 3 and 208 had to be closed for a short time due to multiple accidents. A 74 year old man was killed in a car accident on the 23rd at 5:45 PM on State Route 208 in Spotsylvania County after his vehicle hit ice and flipped over. Snowfall totals included 0.4 inches at Washington Reagan National Airport (Arlington County), 0.5 inches in Augusta, Rockingham, and Rappahannock Counties, 0.6 inches at Dulles International Airport (Eastern Loudoun County), 0.7 inches in Orange County, 1.0 inches in Frederick, Clarke, Madison and Albemarle County, 1.3 inches in Western Loudoun County, and 1.7 inches in Fauquier County. In addition, many locations received a coating of freezing rain and sleet. This thin layer of ice knocked out power for up to 12 hours for 100 customers in Albemarle County early on the 24th. The wintry mix remained on the ground through December 25th, giving the region a rare "white Christmas".

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Event Record Details

Event: **Ice Storm**
Begin Date: **30 Jan 2000, 04:00:00 AM EST**
Begin Location: **Not Known**
End Date: **30 Jan 2000, 10:00:00 PM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **2**
Property Damage: **$ 465.0K**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Brunswick, Caroline, Charles City, Chesterfield / Colonial Height, Cumberland, Dinwiddie / Petersburg, Essex, Fluvanna, Hanover, Henrico / Richmond, King And Queen, King William, Louisa, Lunenburg, Mecklenburg, New Kent, Prince Edward, Prince George / Hopewell, Richmond, Westmoreland**

Description:
An ice storm affected a large portion of central and eastern Virginia with ice accumulations of up to one-half inch. Freezing rain mixed with sleet and snow spread over the area during the morning hours. Freezing rain then mixed with rain during the afternoon and evening along the eastern counties of Prince George, Charles City, New Kent, King William, King and Queen, Essex, Richmond, and Westmoreland. Farther west, freezing rain fell for most of the day with general accumulations from one-fourth to one-half inch. At one point, 300,000 people were without power in the Richmond vicinity due to the weight of ice downing trees and power lines. One Richmond TV station was knocked off the air for 45 minutes Two people were reported injured in Richmond; one while cutting downed trees with a chainsaw, another in a sledding accident.

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Event Record Details

Event: **Winter Storm**
Begin Date: **30 Jan 2000, 03:00:00 AM EST**
Begin Location: **Not Known**
End Date: **30 Jan 2000, 08:00:00 PM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Albemarle / Charlotttesville, Arlington / Alexandria / Falls, Augusta / Staunton / Waynesbor, Clarke, Culpeper, Fairfax, Fauquier, Frederick / Winchester, Greene, Highland, Loudoun, Madison, Nelson, Orange, Page, Prince William / Manassas, Rappahannock, Rockingham / Harrisonburg, Shenandoah, Warren**

Description:
Cold air was in place east of the Blue Ridge Mountains on the 29th and 30th, keeping surface temperatures below freezing. Low pressure moved from the Lower Mississippi Valley northeastward to the Mid-Atlantic region early on the 30th, creating the perfect conditions for freezing rain around the Fredericksburg area, a mix of sleet and snow east of Skyline Drive, and moderate snowfall in the mountains. Ice accumulations between 1/4 and 3/4 of an inch coated roads, trees, and power lines in Fredericksburg and Stafford, Spotsylvania, and King George Counties. Electrical outages were reported as trees and branches weighed down by ice fell onto power lines. Disruptions affected 1000 power customers in Albemarle County, 125 customers in Orange County, and 3000 customers in Fredericksburg and Spotsylvania and King George Counties. A mix of sleet, freezing rain, and snow fell east of a line from Charlottesville to Arlington. Snow and sleet accumulations in this area ranged from 1 to 3 inches. West of this line, 3 to 7 inches of snow and sleet fell. Storm total accumulations included 1.2 inches at Washington Reagan National Airport, 6.4 inches at Dulles International Airport, 6.0 inches in Winchester, 9.0 inches in Luray, 6.5 inches in Warrenton, 2.5 inches in Manassas, 4.7 inches in Orange, 6.4 inches in Culpeper, 3.0 inches in Charlottesville, 6.5 inches in Staunton, and 7.0 inches in Monterey. Over 70 auto accidents were contributed to the storm, including two separate crashes in Loudoun County which killed a 59-year-old man and an 18-year-old woman. Significant flight delays were reported at National, Dulles, and Charlottesville-Albemarle Airports. Several train and bus routes were canceled or delayed. In Culpeper County, three horses suffering from hypothermia were rescued from a pond during the storm after falling through the ice.

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Event Record Details

Event: **Ice Storm**
Begin Date: **13 Dec 2000, 06:00:00 PM EST**
Begin Location: **Not Known**
End Date: **14 Dec 2000, 08:00:00 AM EST**
End Location: **Not Known**
Magnitude: **0**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0**
Crop Damage: **$ 0.0**

State: **Virginia**
Map of Counties
Forecast Zones affected: **Albemarle / Charlotttesville, Augusta / Staunton / Waynesbor, Clarke, Culpeper, Fairfax, Fauquier, Frederick / Winchester, Greene, Loudoun, Madison, Orange, Page, Prince William / Manassas, Rappahannock, Rockingham / Harrisonburg, Shenandoah, Spotsylvania / Fredericksburg, Warren**

Description:
A strong cold front brought chilly air into the region on the 12th. By the afternoon of the 13th, an upper level disturbance brought warm air into the mid levels of the atmosphere and caused snow that fell from the system to melt to rain on its way down. When the rain hit the ground where temperatures were below freezing, ice accumulated. Across the Shenandoah Valley and much of Northern Virginia, the ice accumulated to between one quarter and three quarters of an inch. The weight of the ice brought down some trees, branches, telephone lines, and power lines. Nearly 50,000 customers lost power across Northern Virginia for a short time. Roads were turned into sheets of ice and several traffic accidents were reported. Along the Interstate 81 corridor, law enforcement advised drivers to remain at home overnight after road conditions rapidly deteriorated. Near the Potomac River south of Washington D.C. and across the Central Piedmont, temperatures remained closed to the freezing mark so ice accumulations were less than one quarter of an inch and only caused minor inconveniences.

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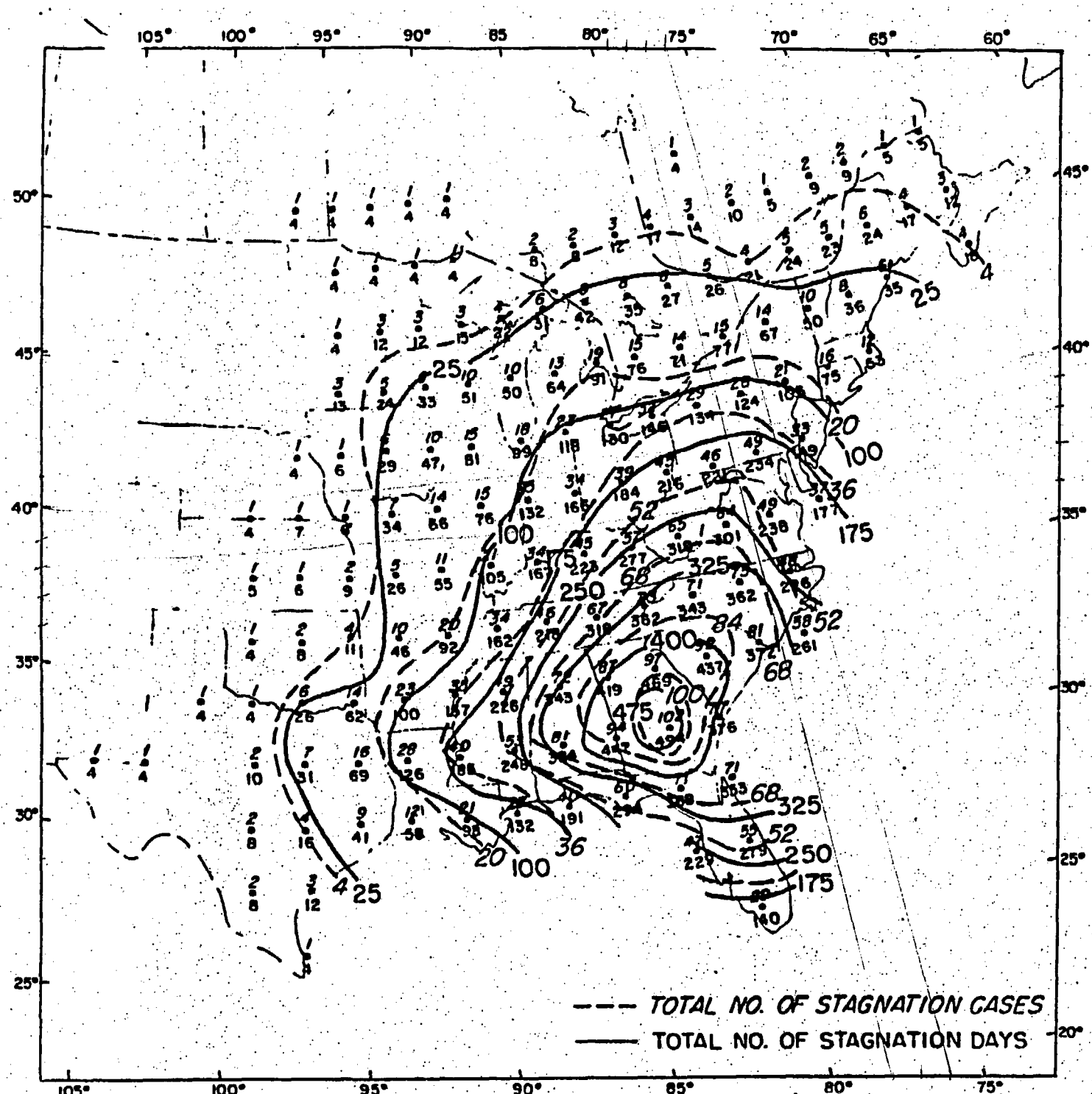
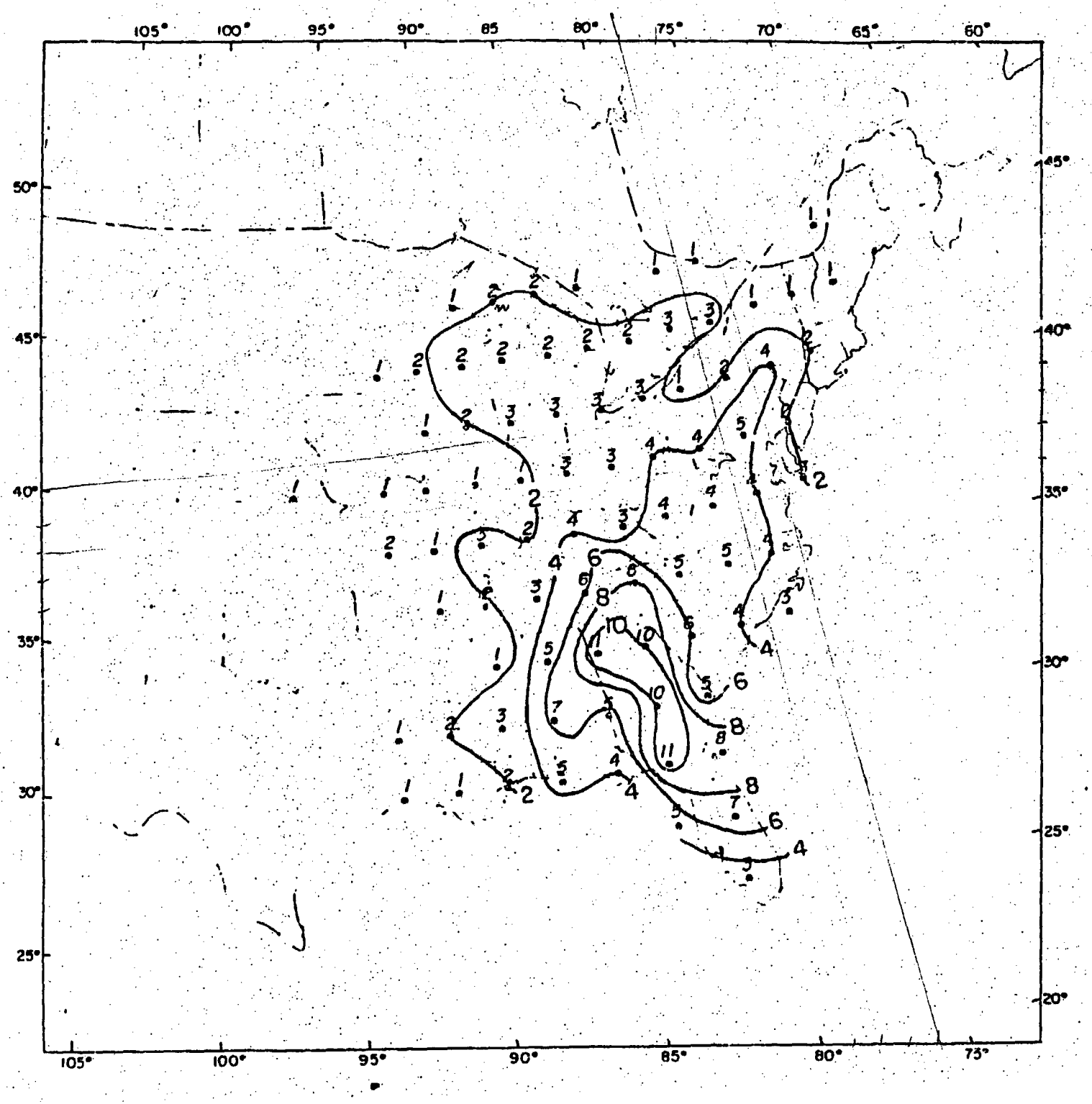


North Anna
38.06° N
77.79° W

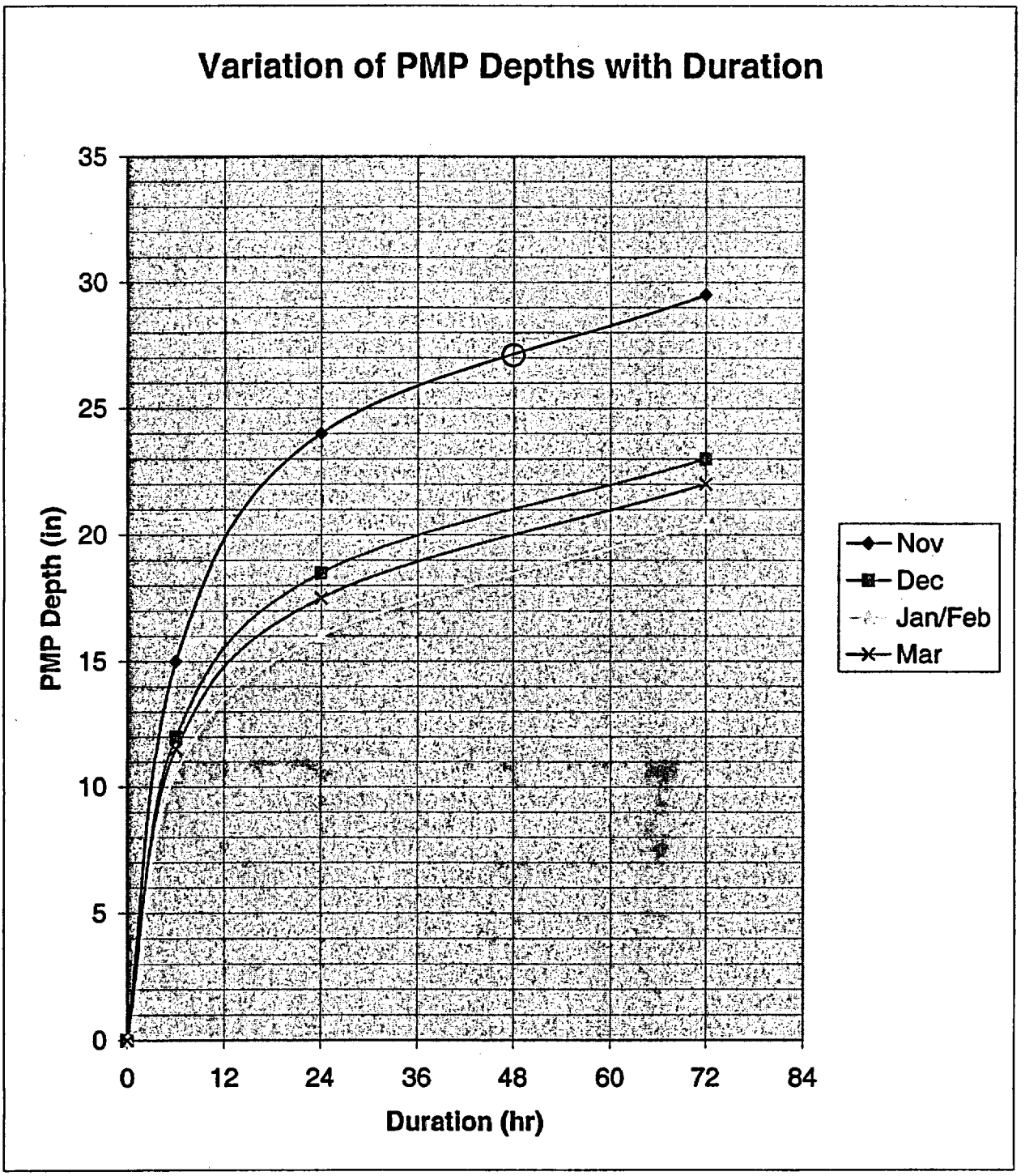


North Anna
38.06° N
77.79° W

North Anna

Duration	PMP Depth (in)			
	Nov	Dec	Jan/Feb	Mar
0	0.0	0.0	0.0	0.0
6	15.0	12.0	10.5	11.5
24	24.0	18.5	16.0	17.5
72	29.5	23.0	20.5	22.0

48	27.1



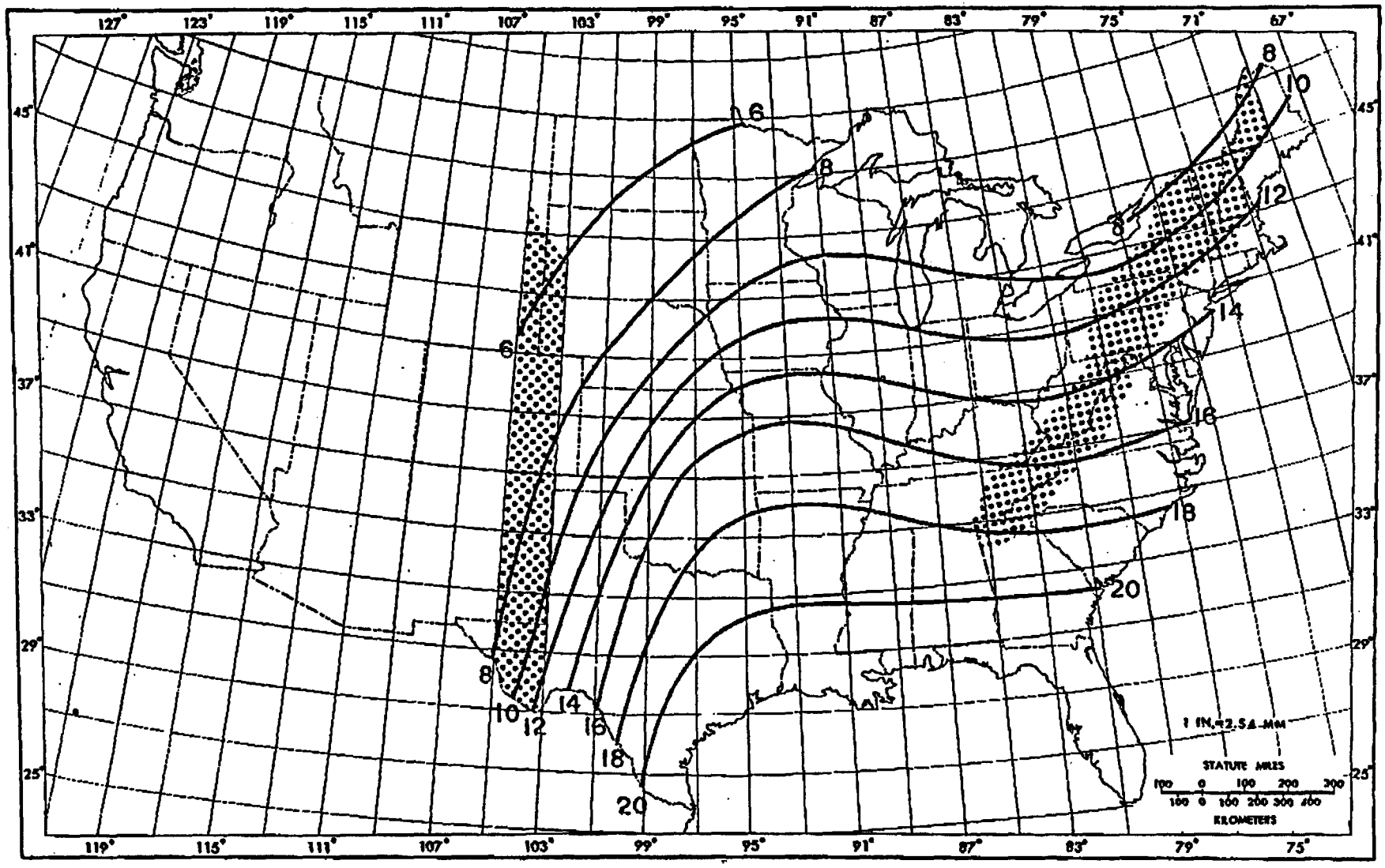


Figure 24.--6-hr 10-mi^2 PMP, November, (in.).

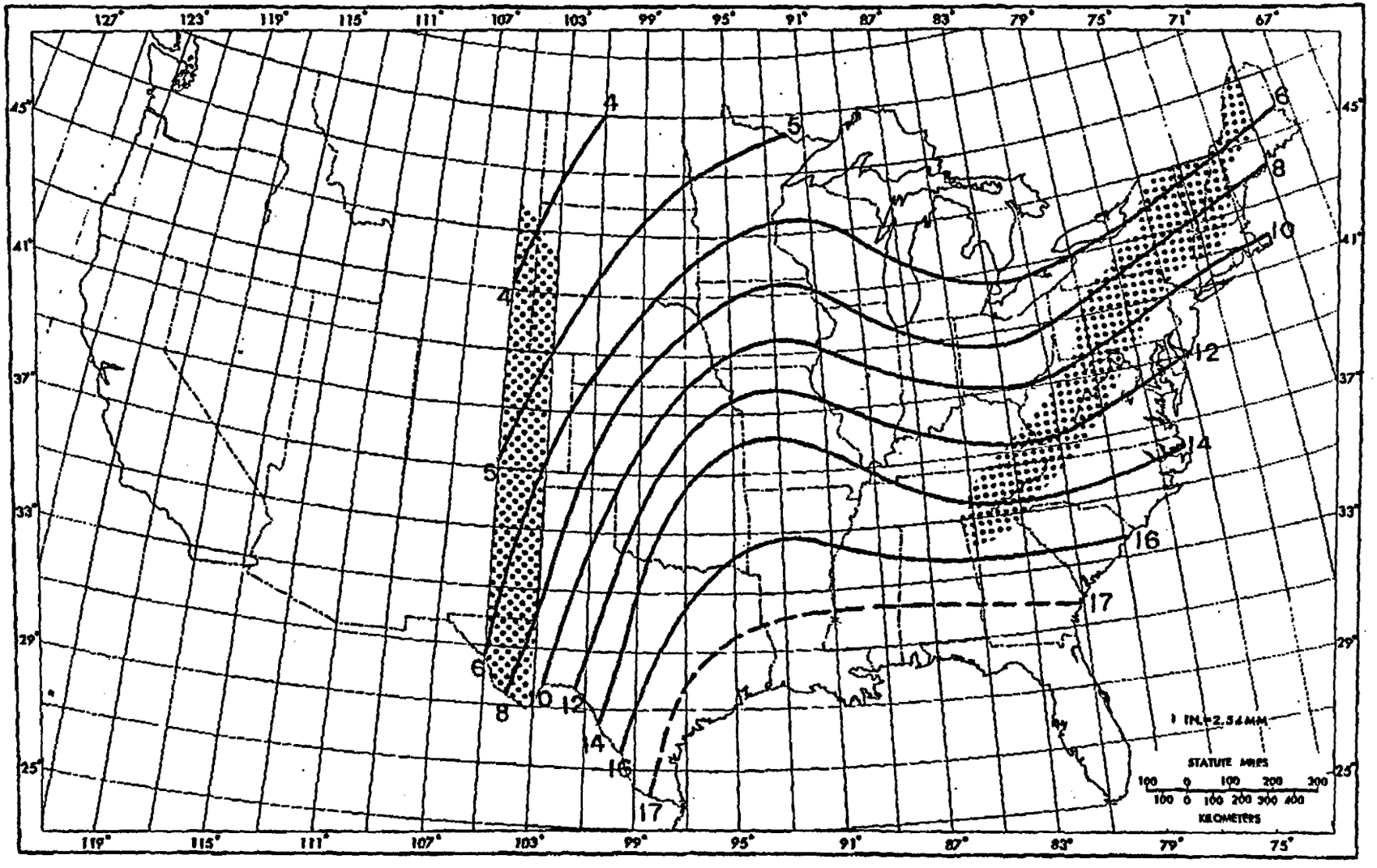


Figure 25.--6-hr 10-mi^2 PMP, December, (in.).

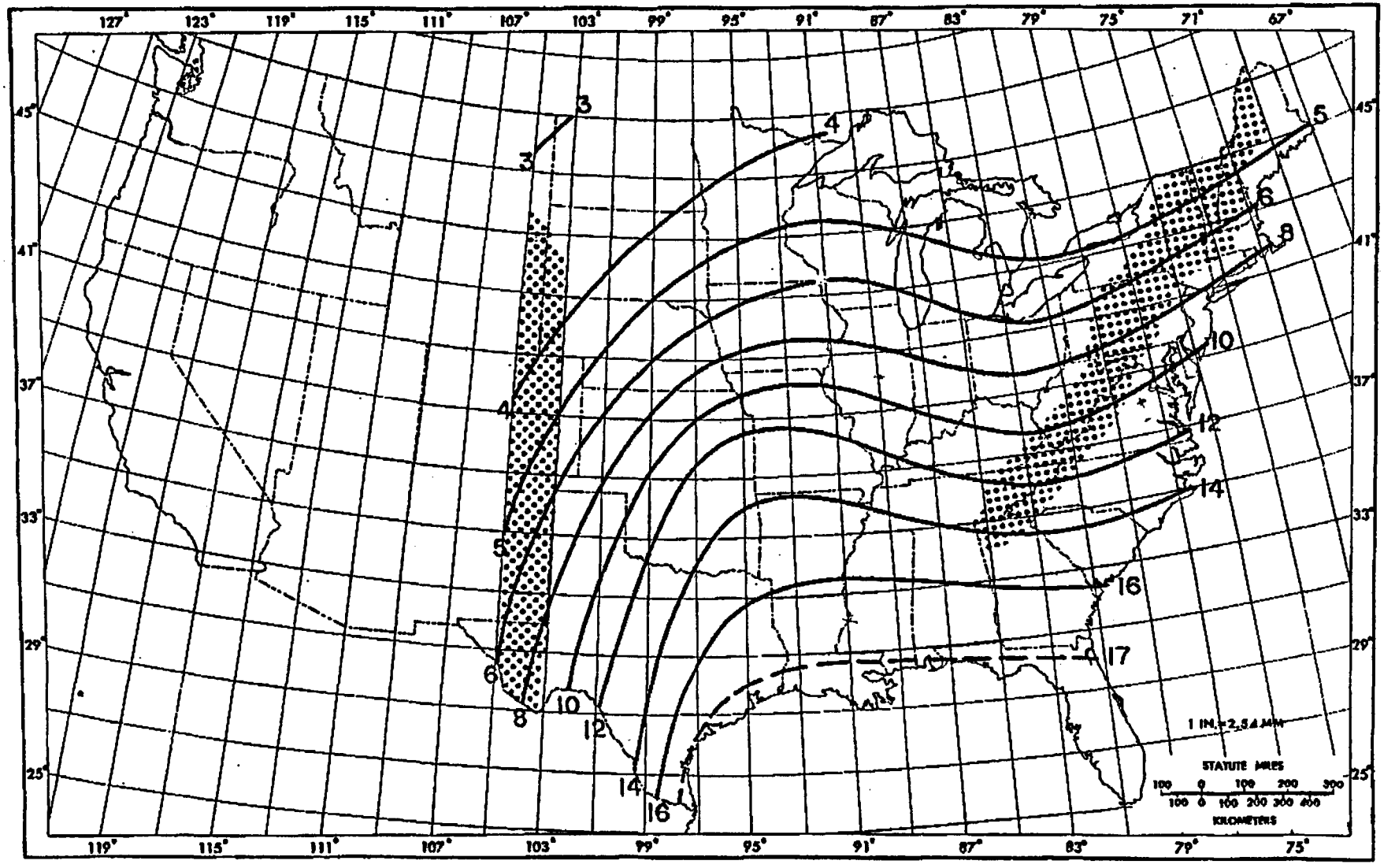


Figure 16.--6-hr 10-mi^2 PMP, January and February , (in.).

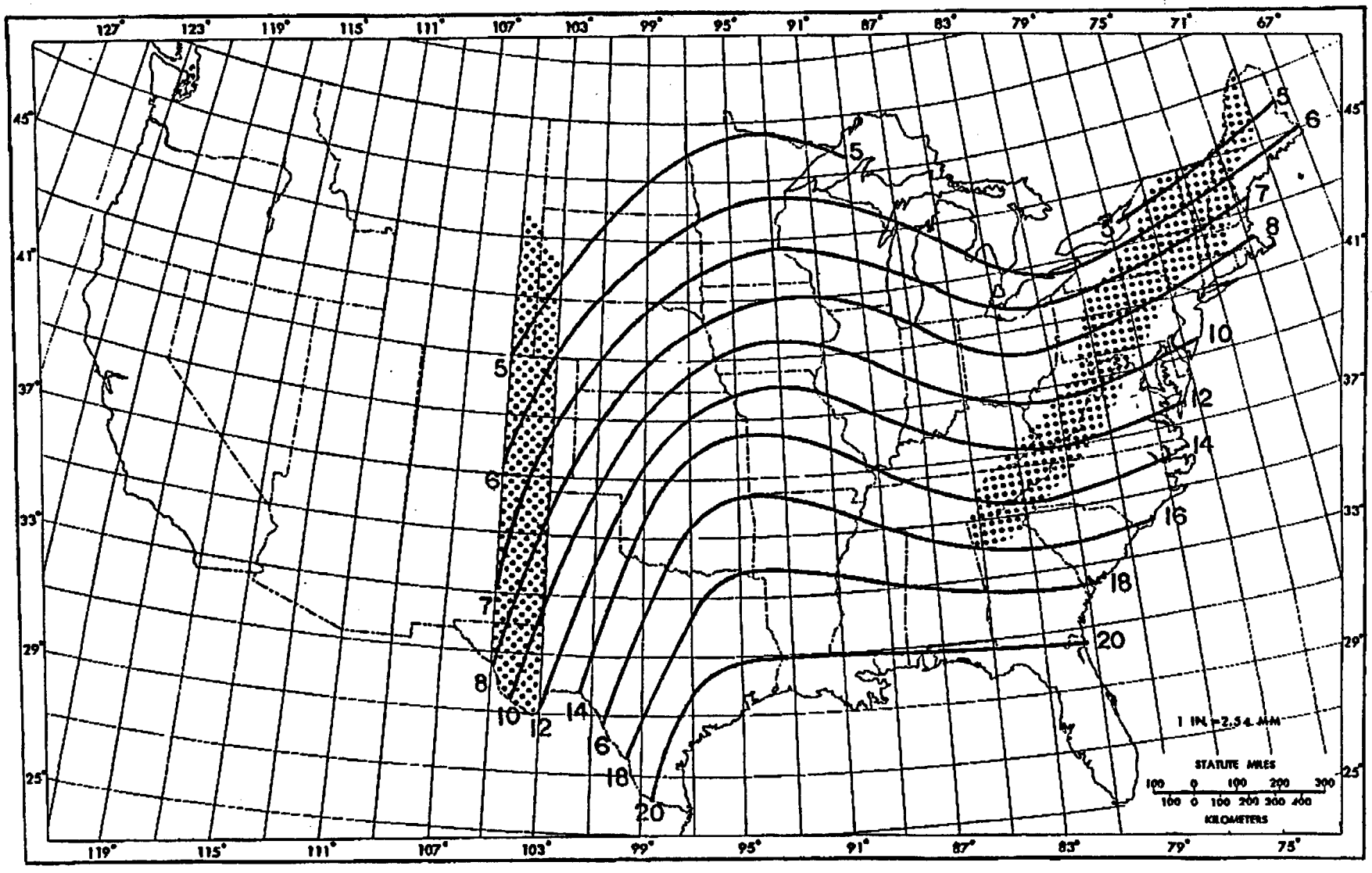


Figure 17.—6-hr 10-mi^2 PMP, March, (in.).

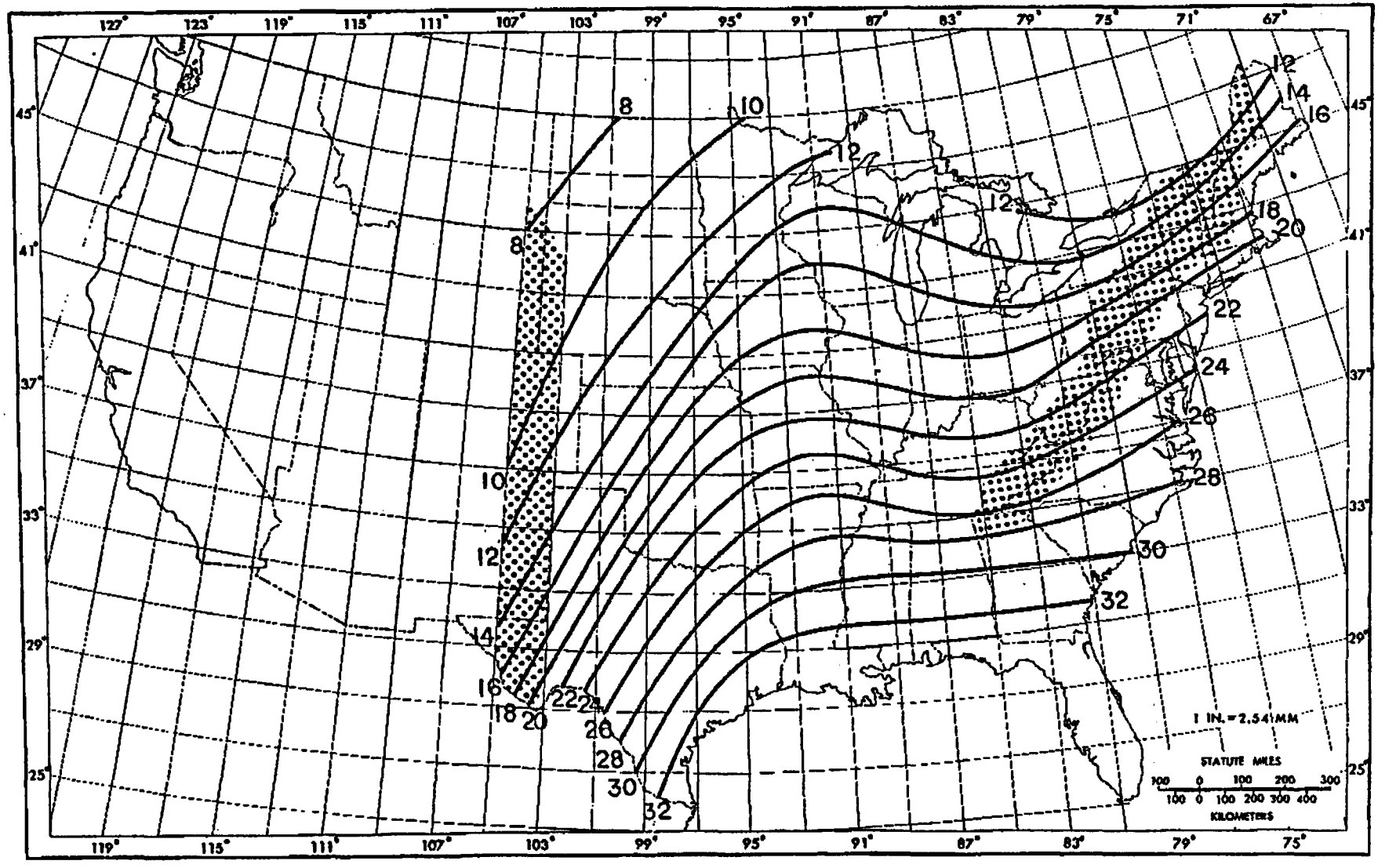


Figure 34.--24-hr 10-mi^2 PMP, November, (in.).

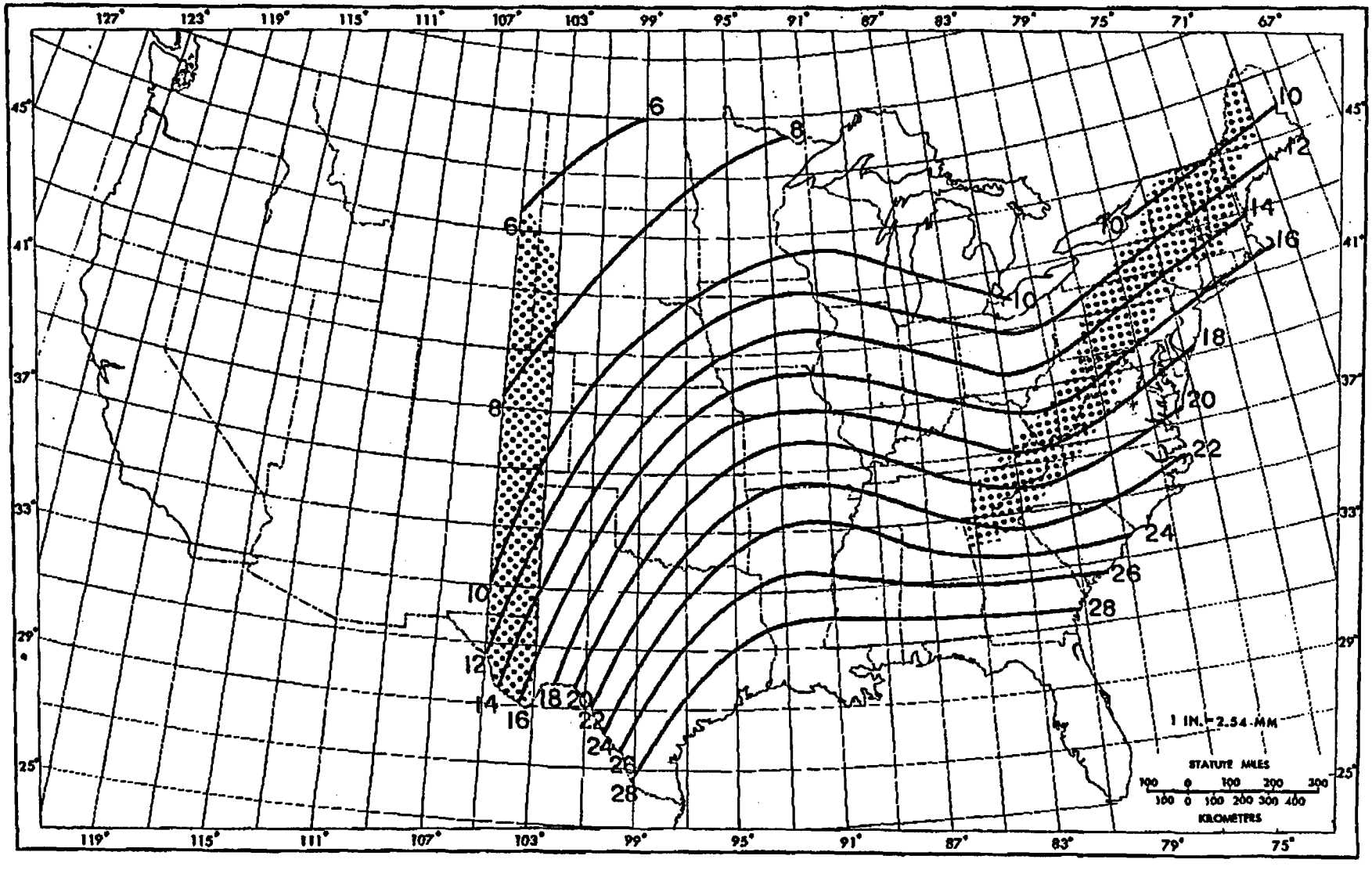


Figure 35.--24-hr 10-mi^2 PMP, December, (in.).

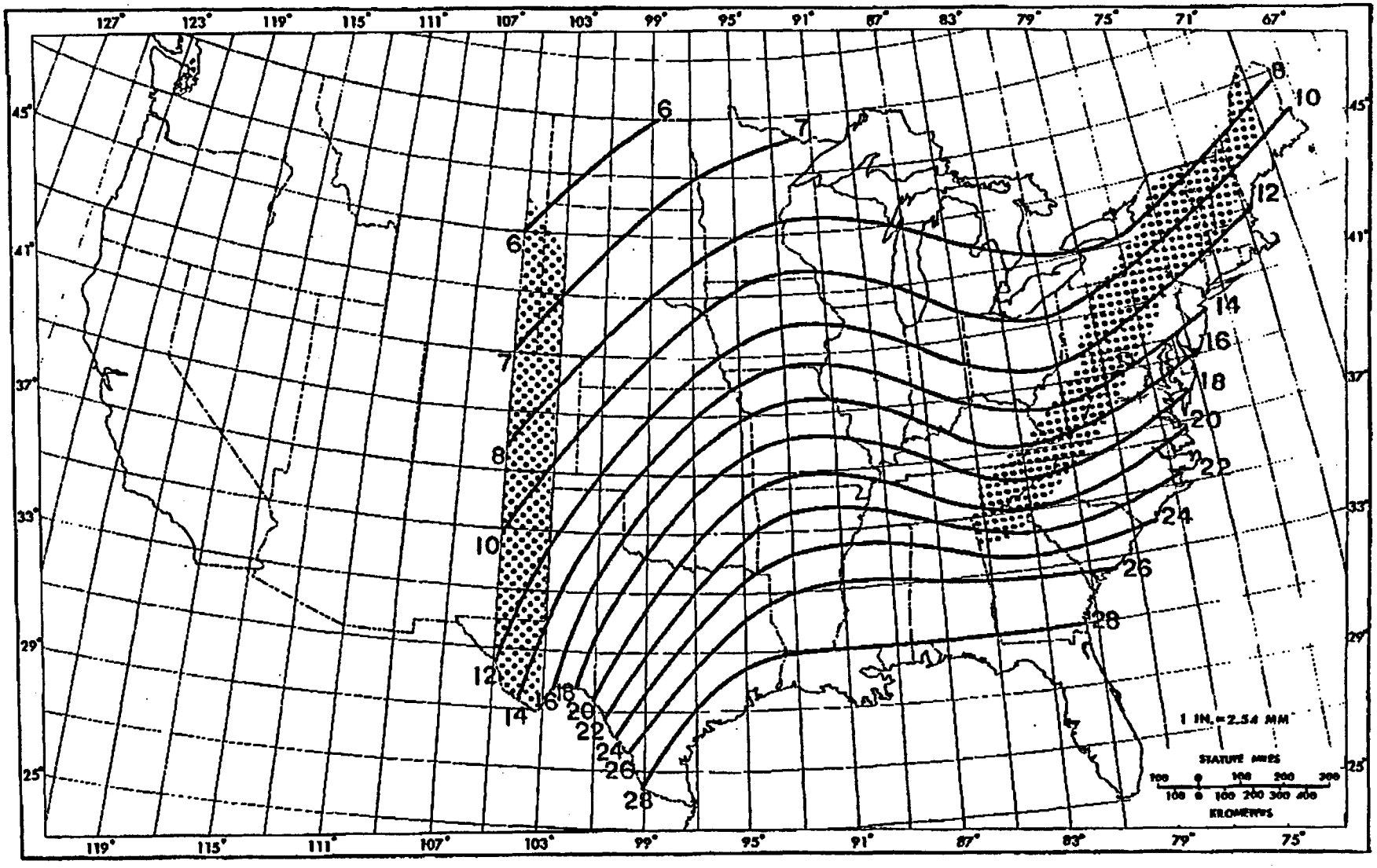


Figure 26.--24-hr 10-mi^2 PMP, January and February, (in.).

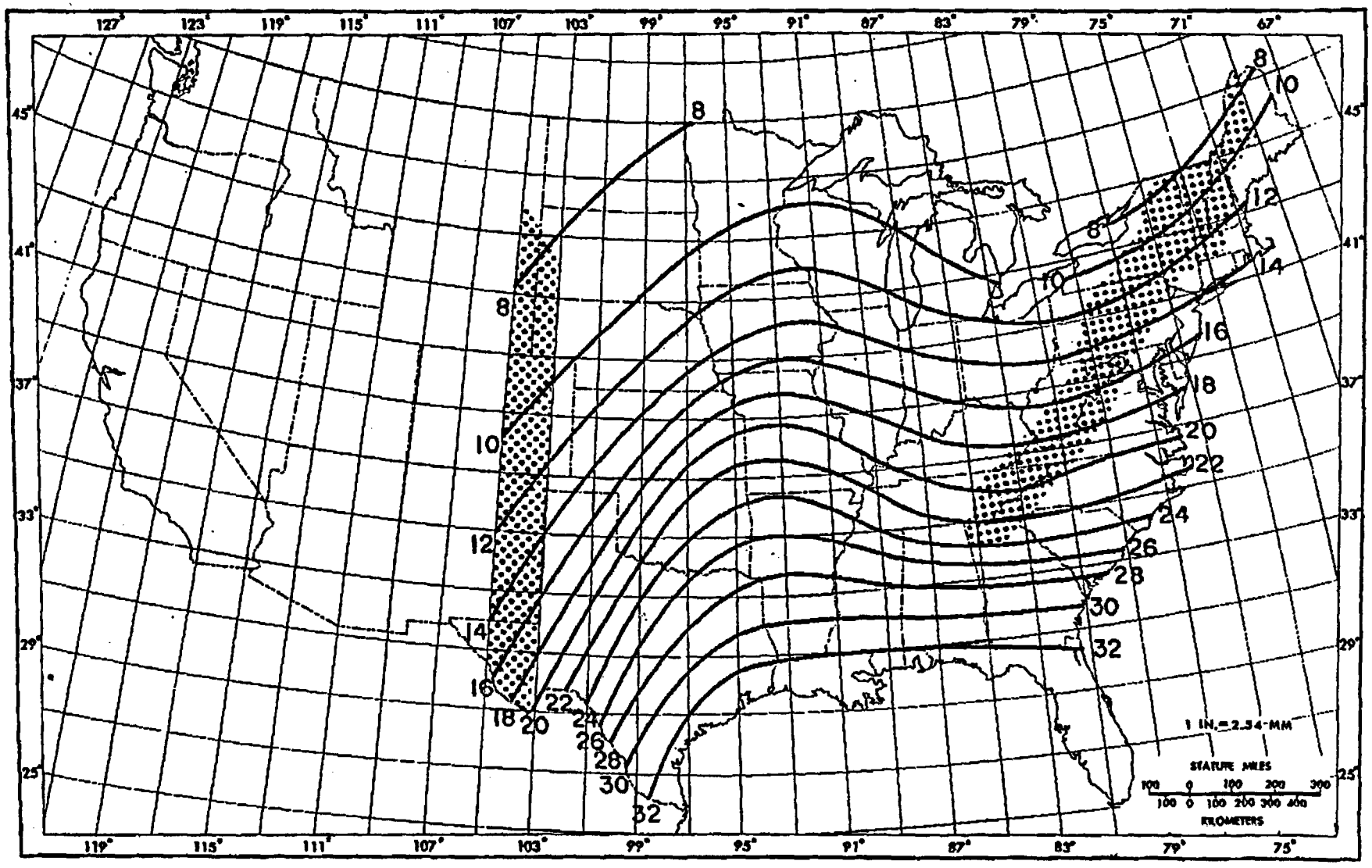


Figure 27.—24-hr 10-mi^2 PMP, March, (in.).

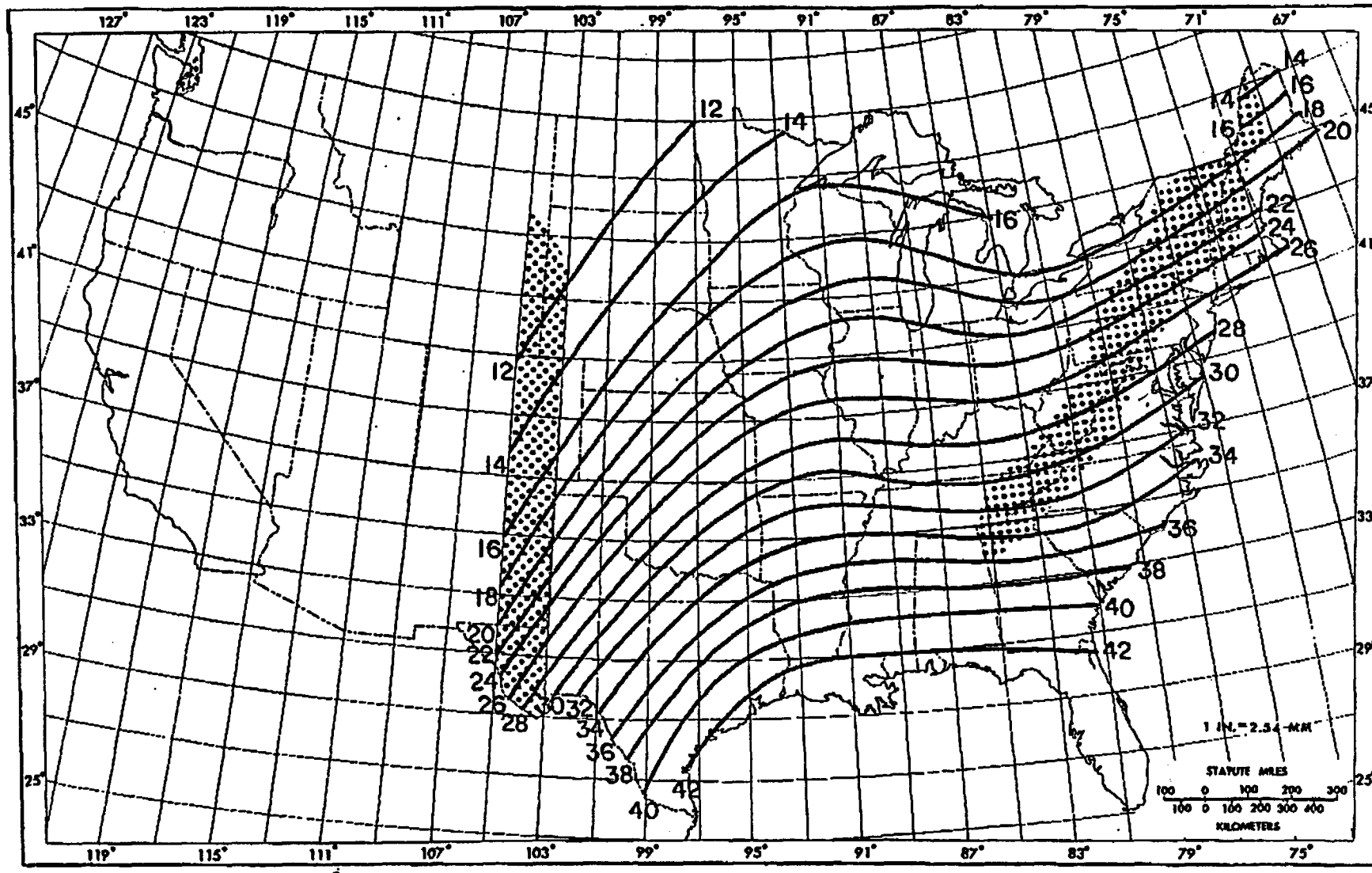


Figure 44.--72-hr 10-mi^2 PMP, November, (in.).

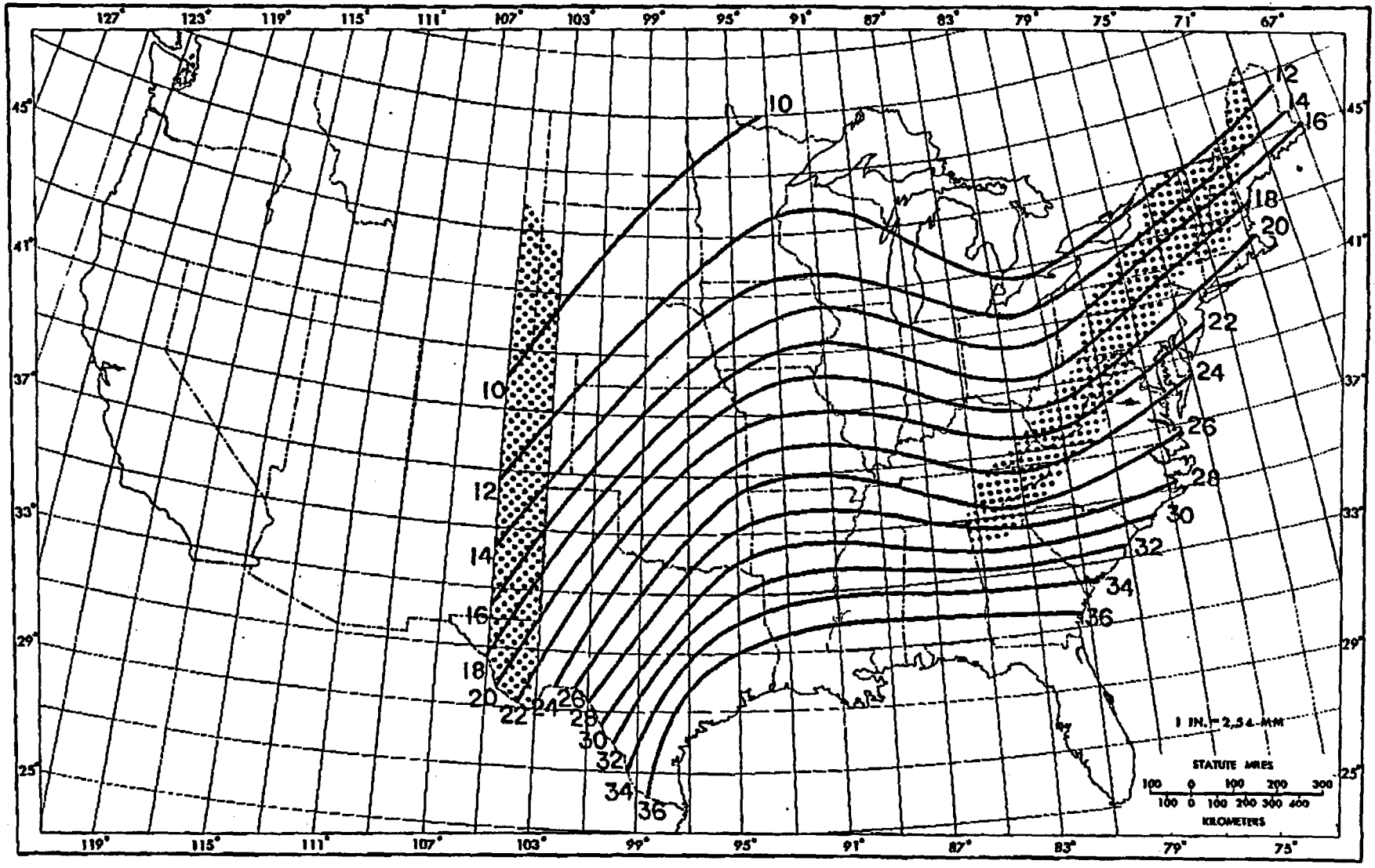


Figure 45.--72-hr 10-mi^2 PMP, December, (in.).

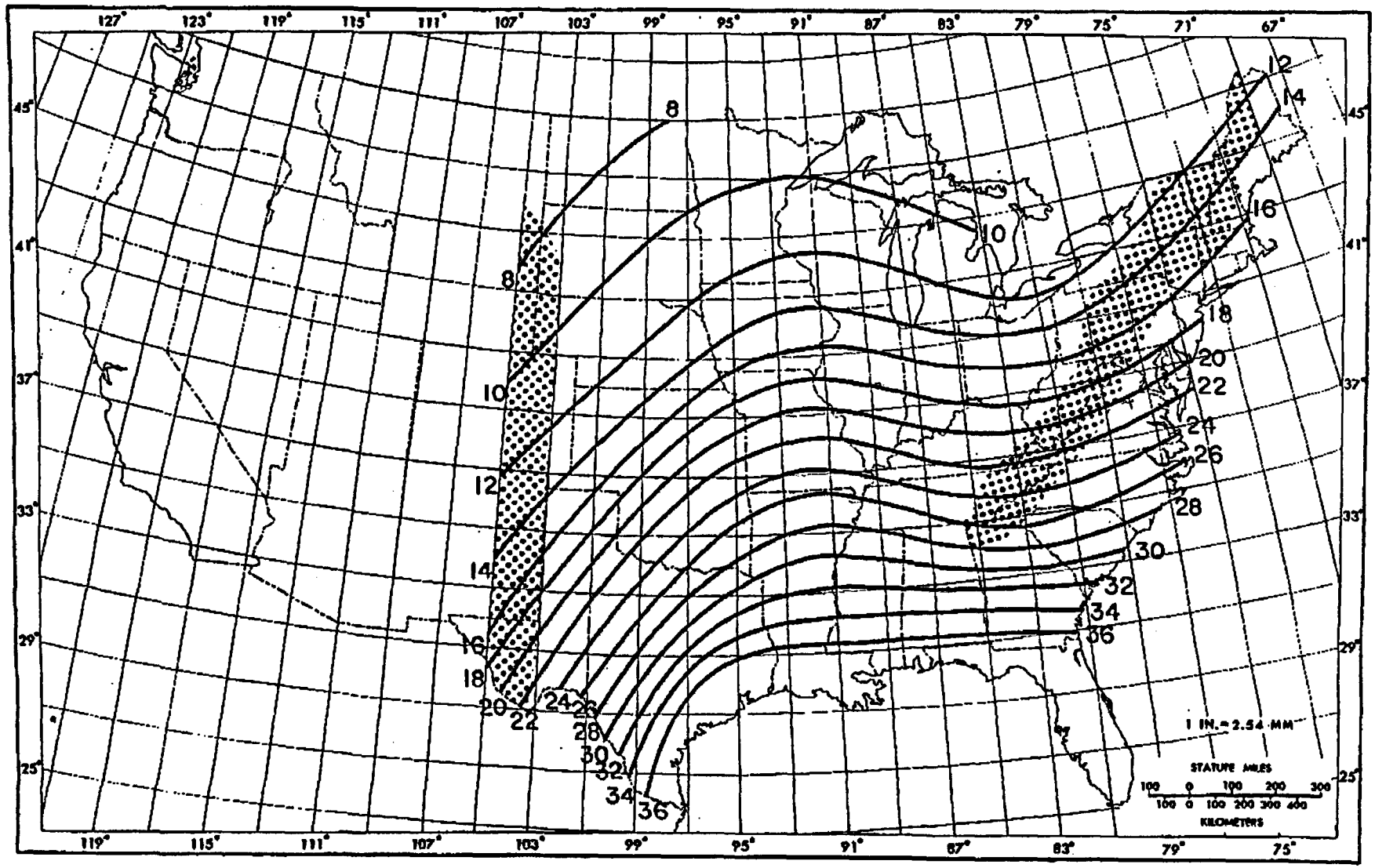


Figure 38.--72-hr 10-mi^2 PMP, January and February, (in.).

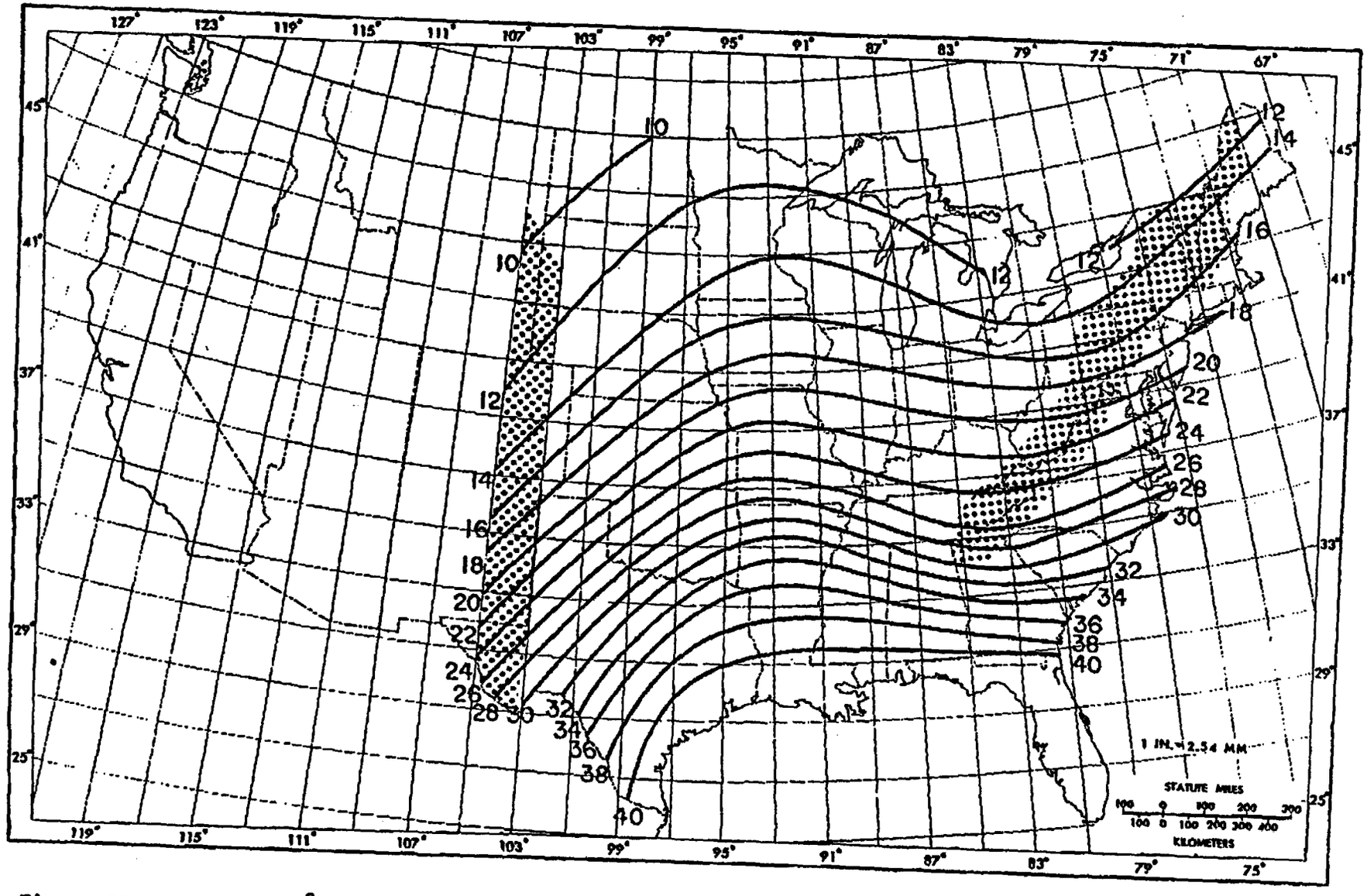


Figure 37.--72-hr 10-mi^2 PMP, March, (in.).

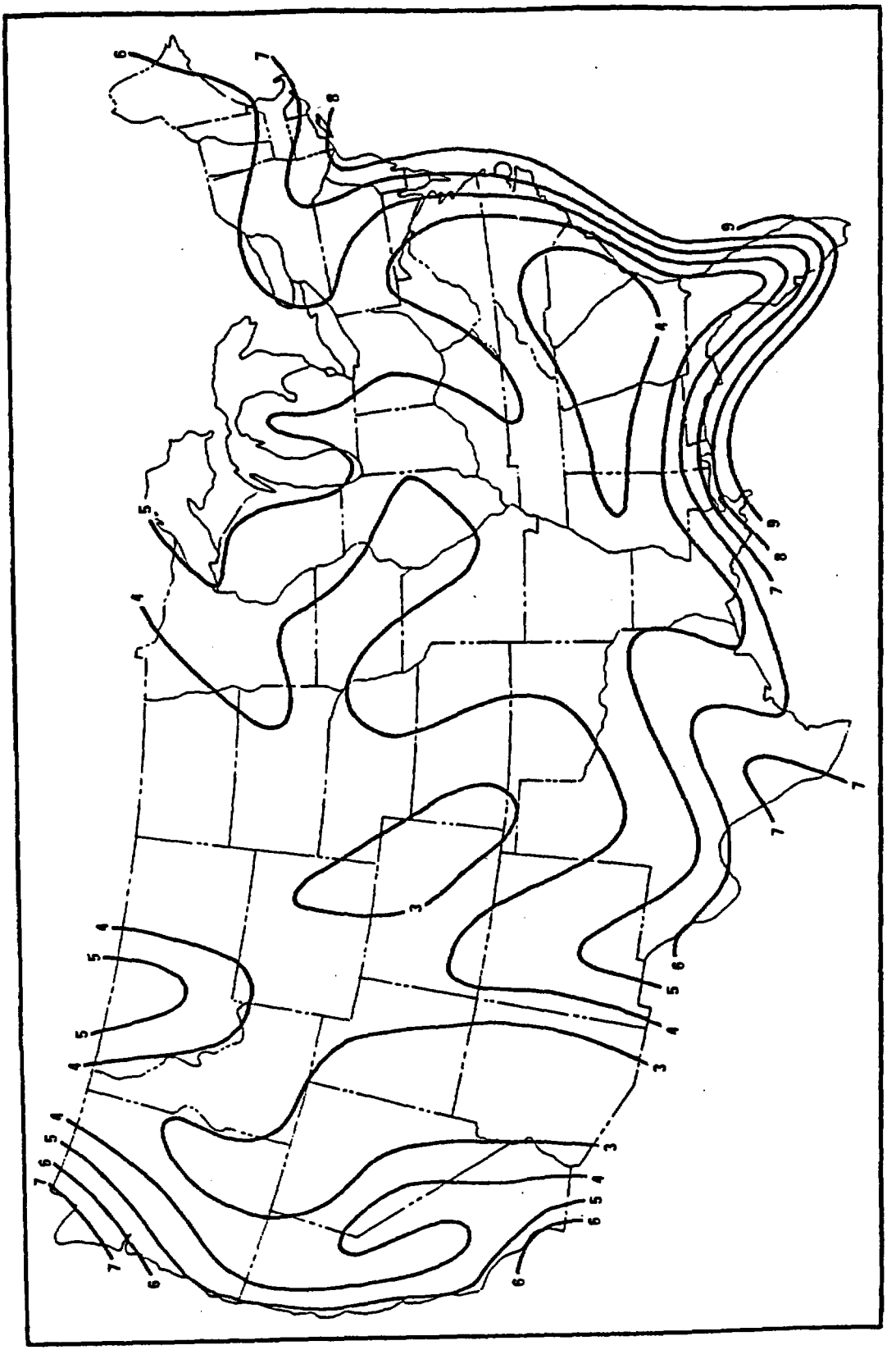


Figure 1. Isopleths (m x 10^2) of mean annual morning mixing heights (see Table B-1 for data).

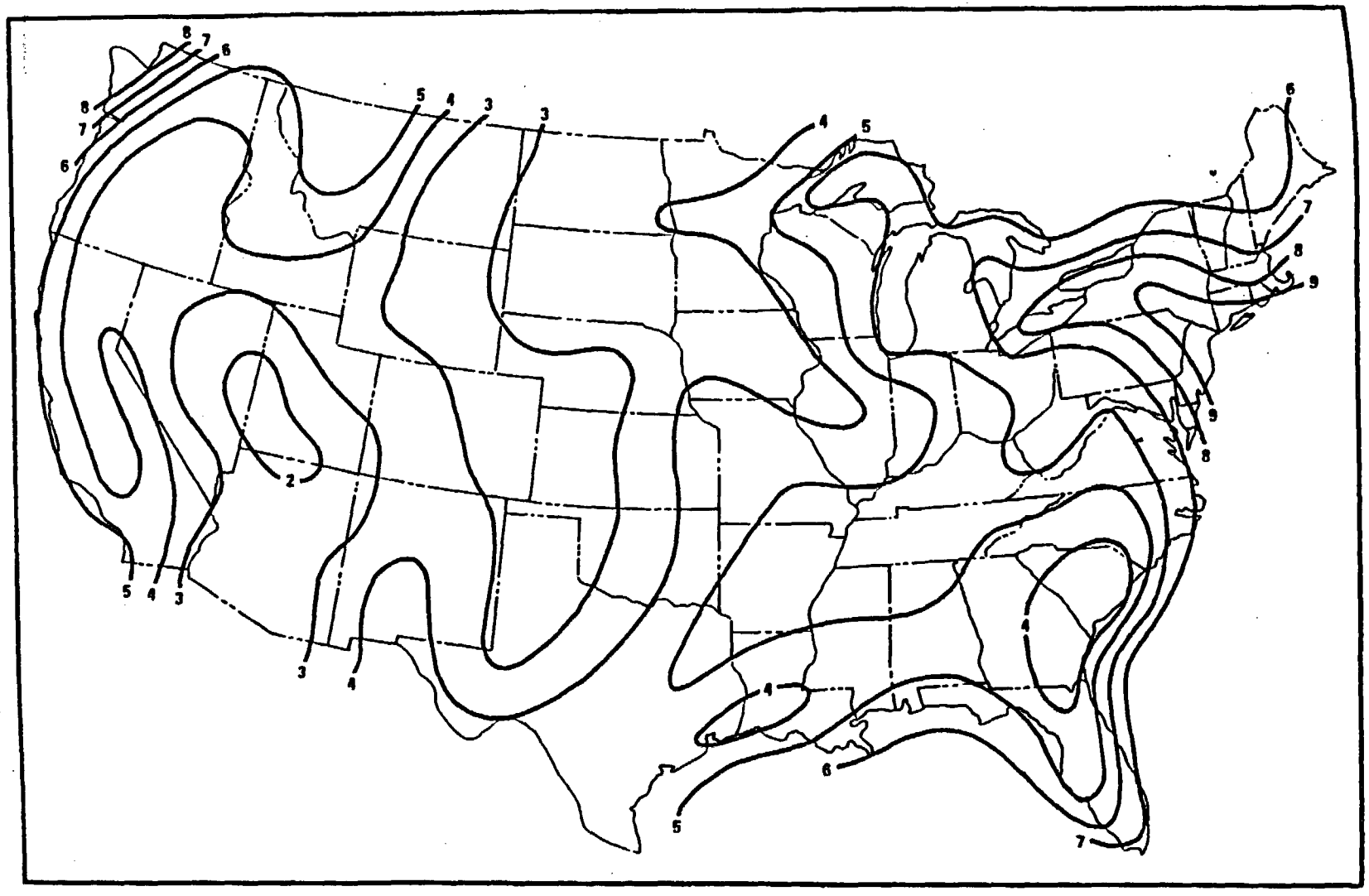


Figure 2. Isopleths (m x 10^2) of mean winter morning mixing heights (see Table B-1 for data).

600 m

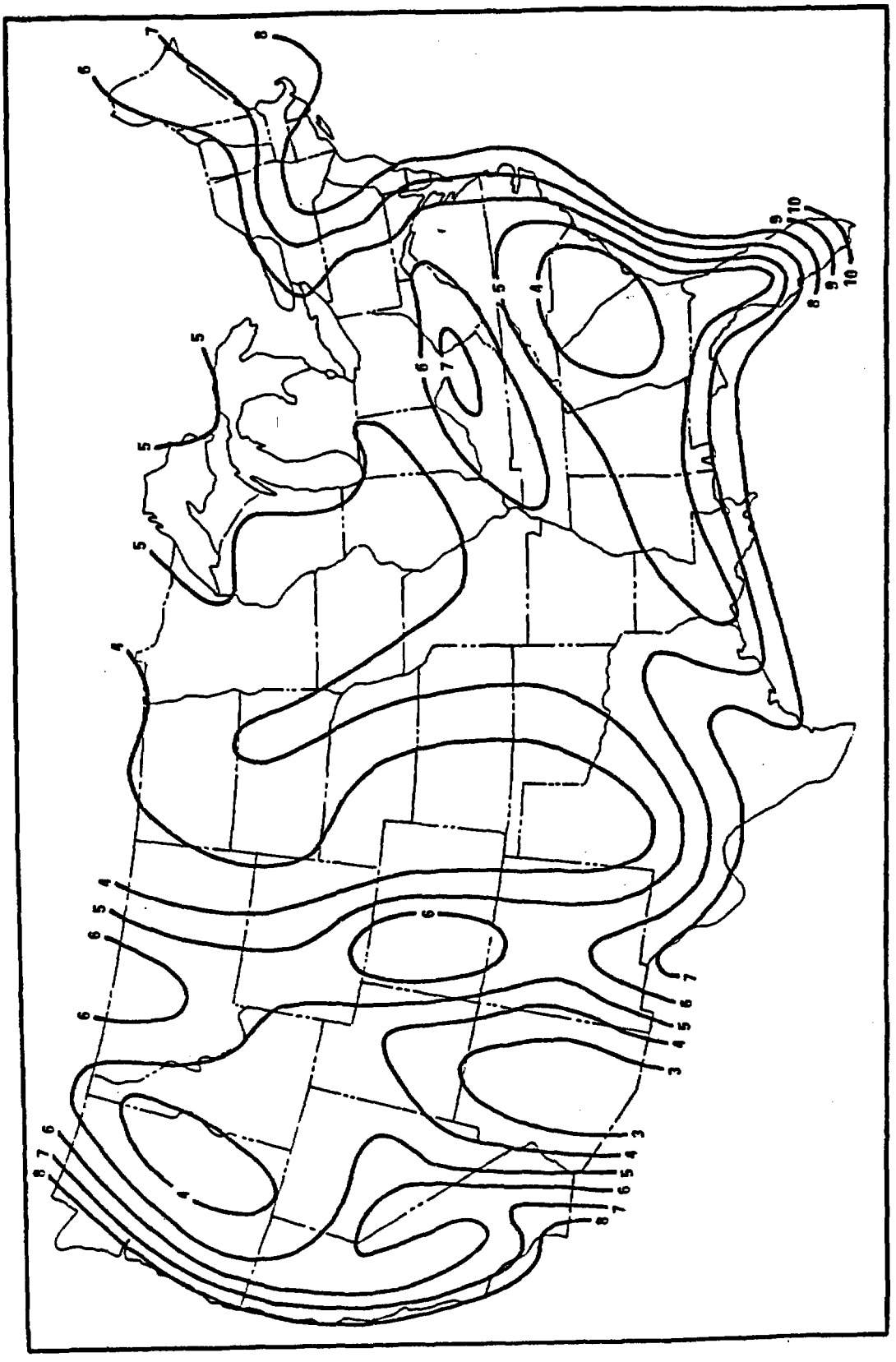


Figure 3. Isopleths (m x 10^2) of mean spring morning mixing heights (see Table B-1 for data).

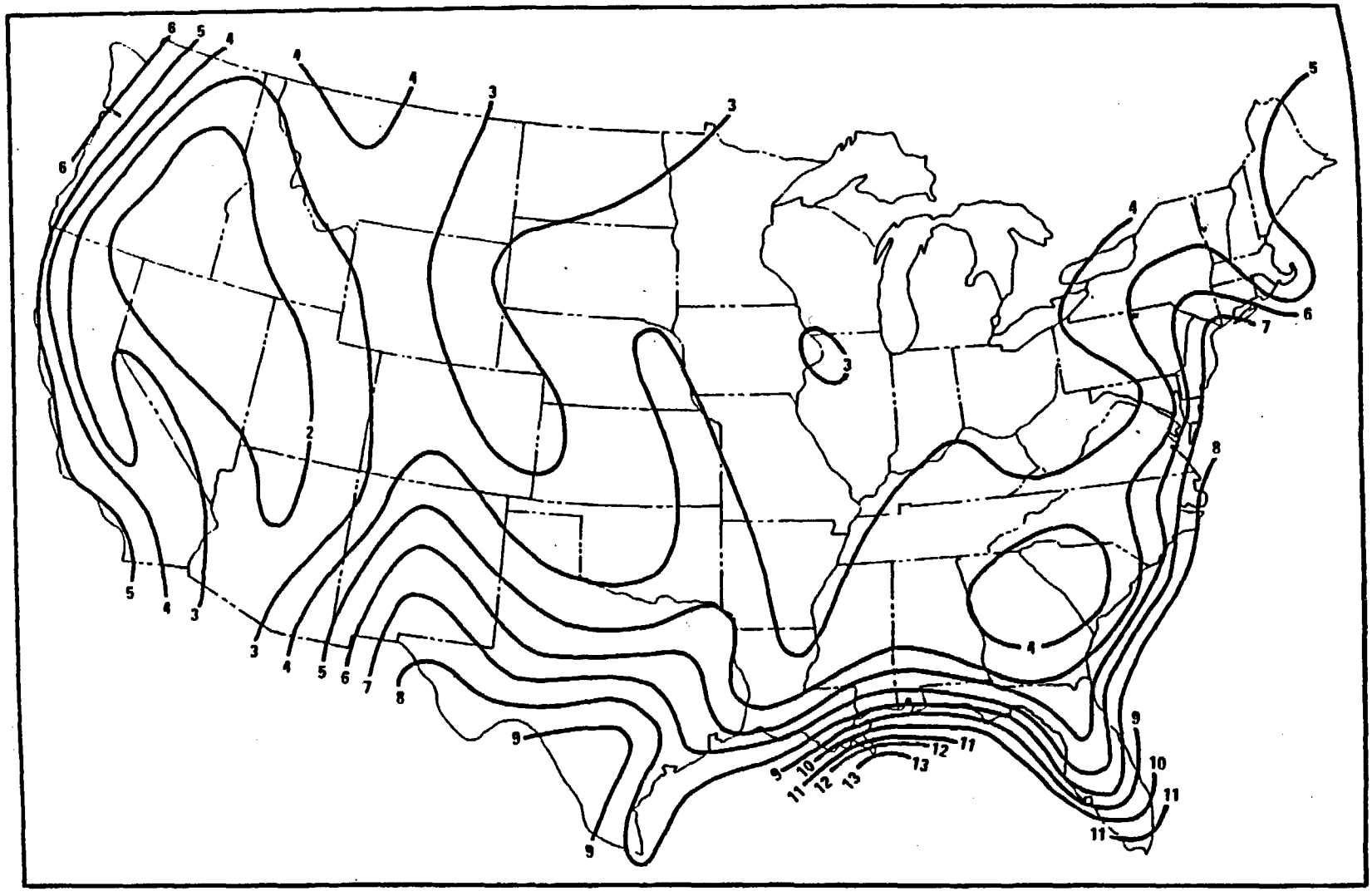


Figure 4. Isopleths (m x 10^2) of mean summer morning mixing heights (see Table B-1 for data).

450 m

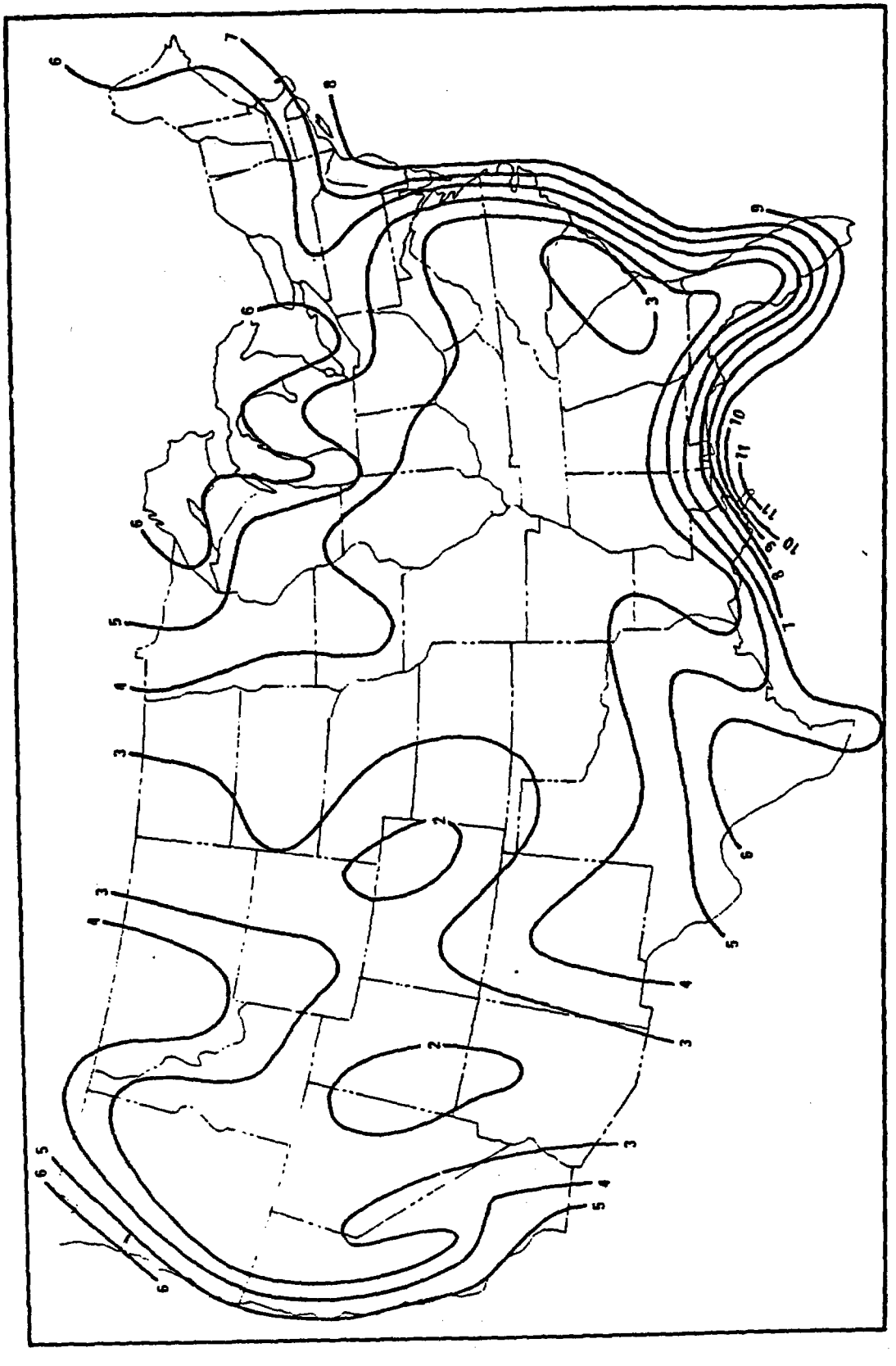


Figure 5. Isopleths (m x 10^2) of mean autumn morning mixing heights (see Table B-1 for data).

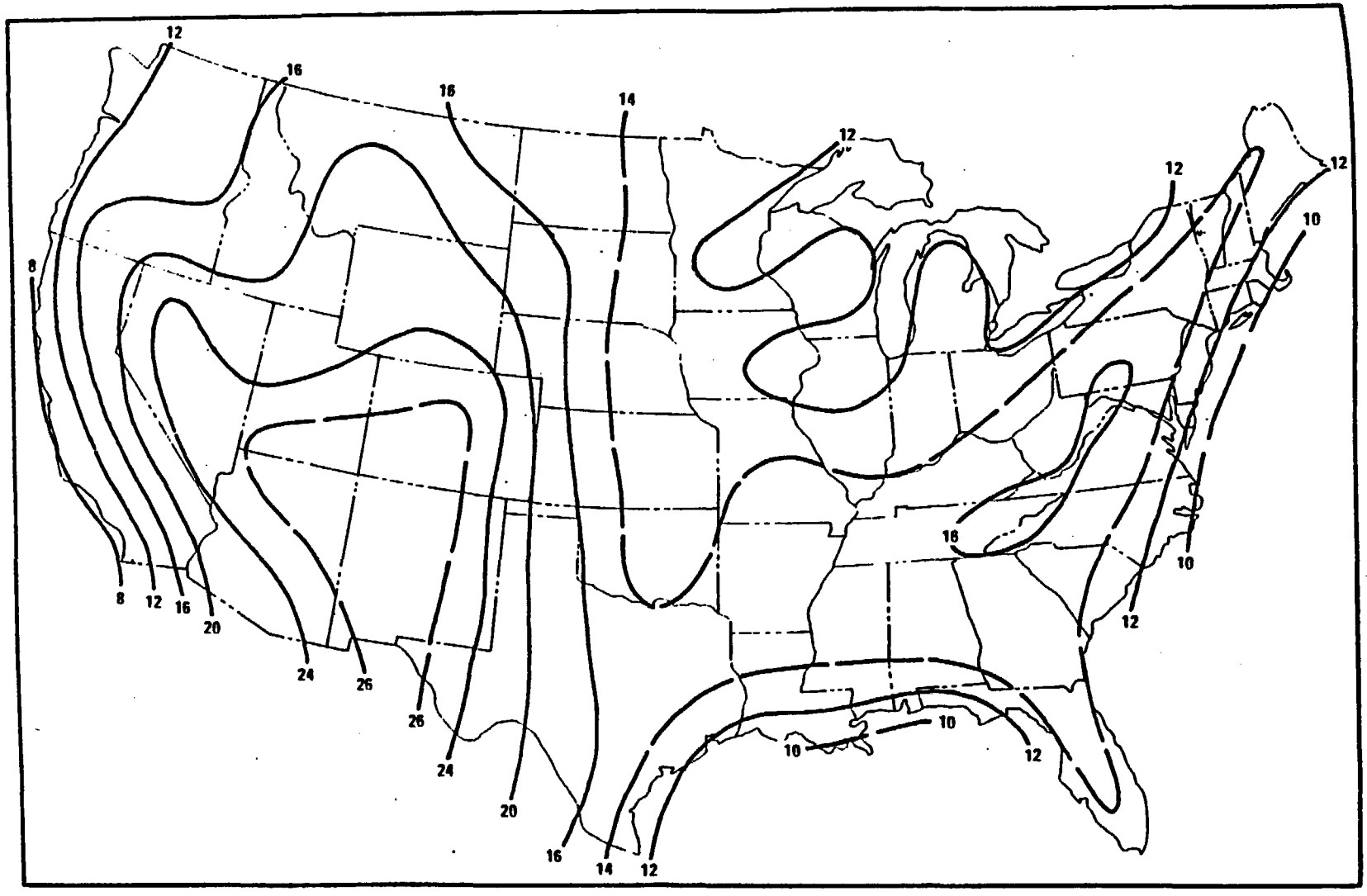


Figure 6. Isopleths (m x 10^2) of mean annual afternoon mixing heights (see Table B-1 for data).

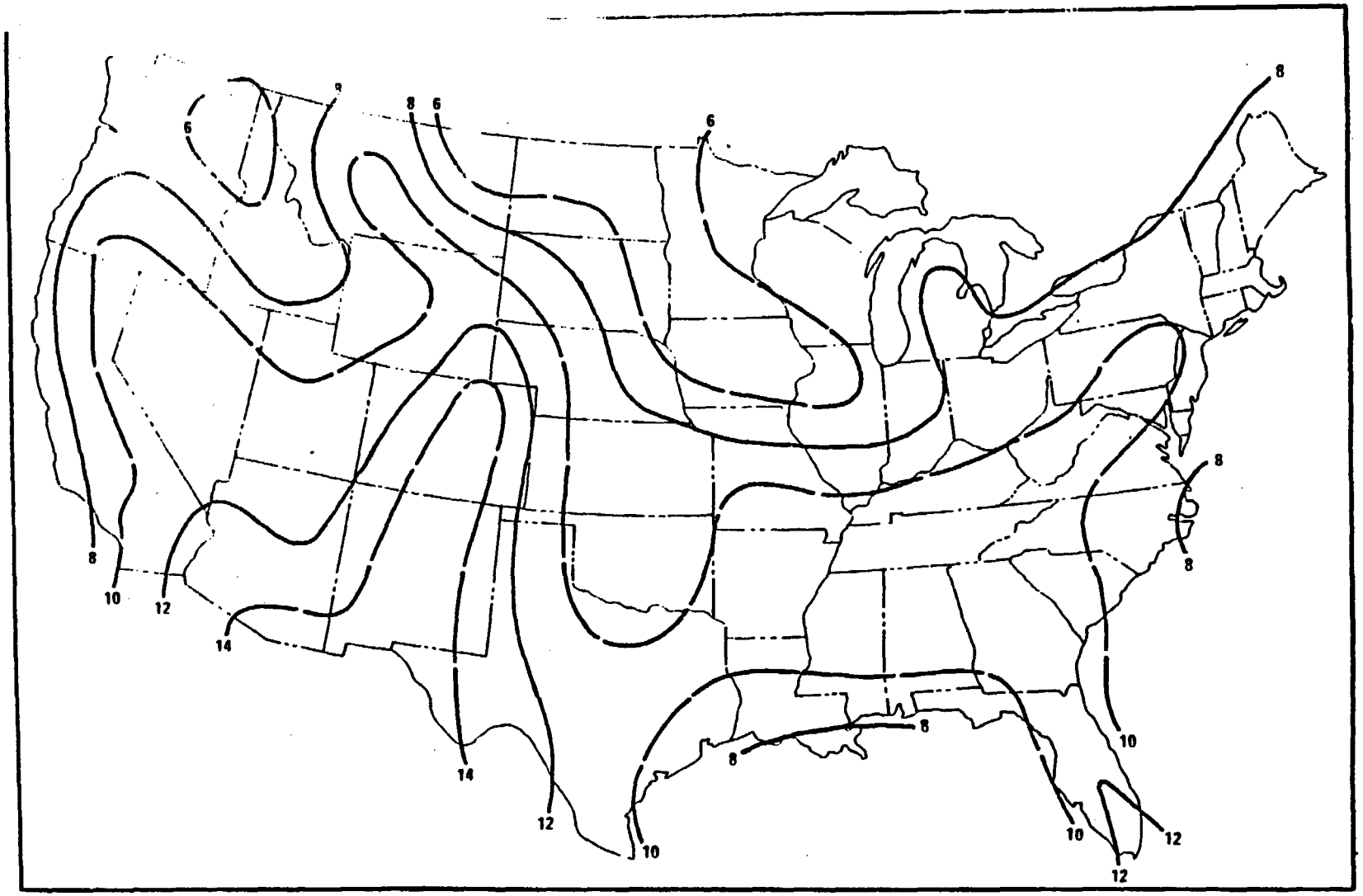


Figure 7. Isopleths (m x 10^2) of mean winter afternoon mixing heights (see Table B-1 for data).

1000 m

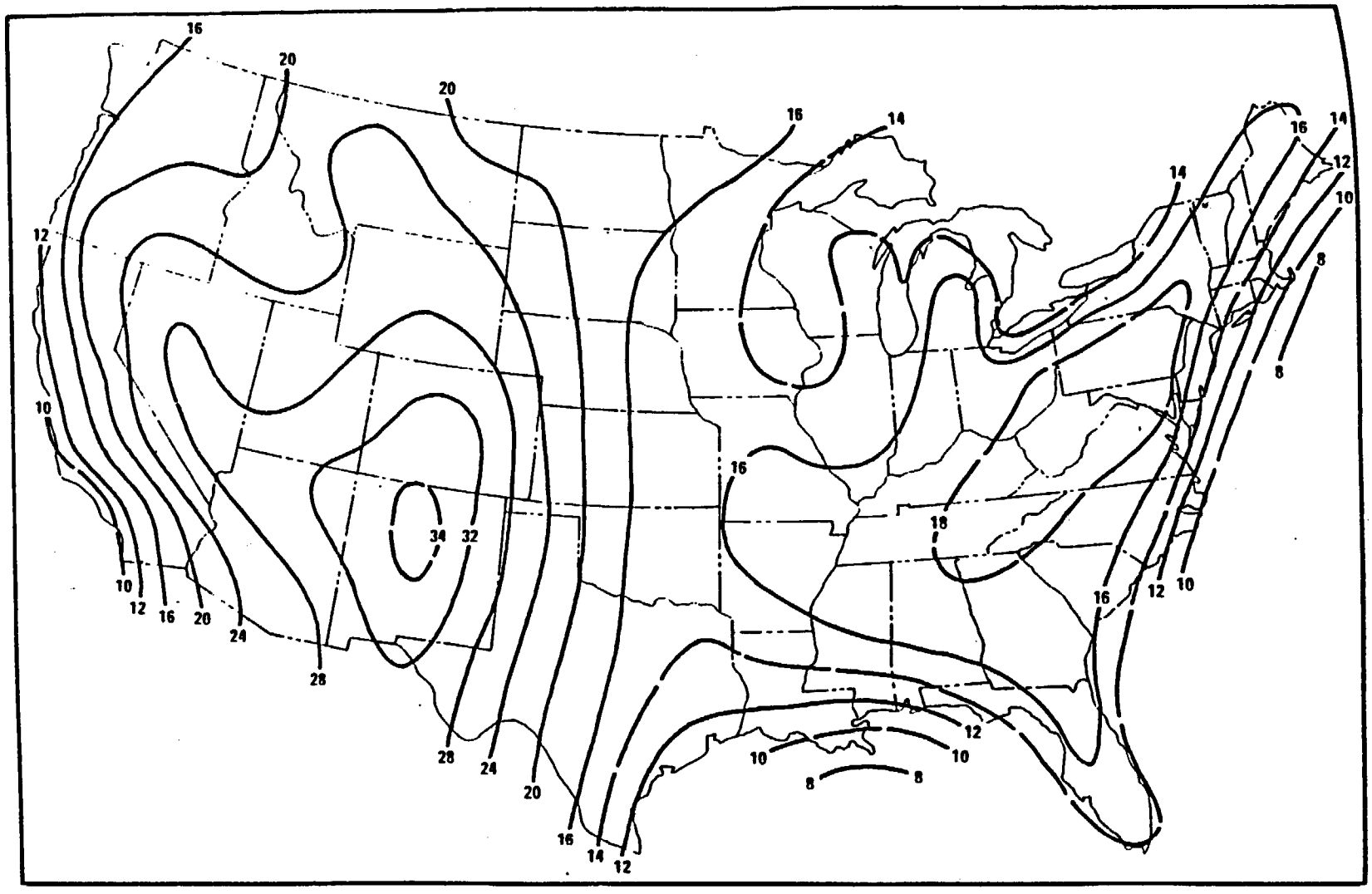


Figure 8. Isopleths (m x 10^2) of mean spring afternoon mixing heights (see Table B-1 for data).

1800 m

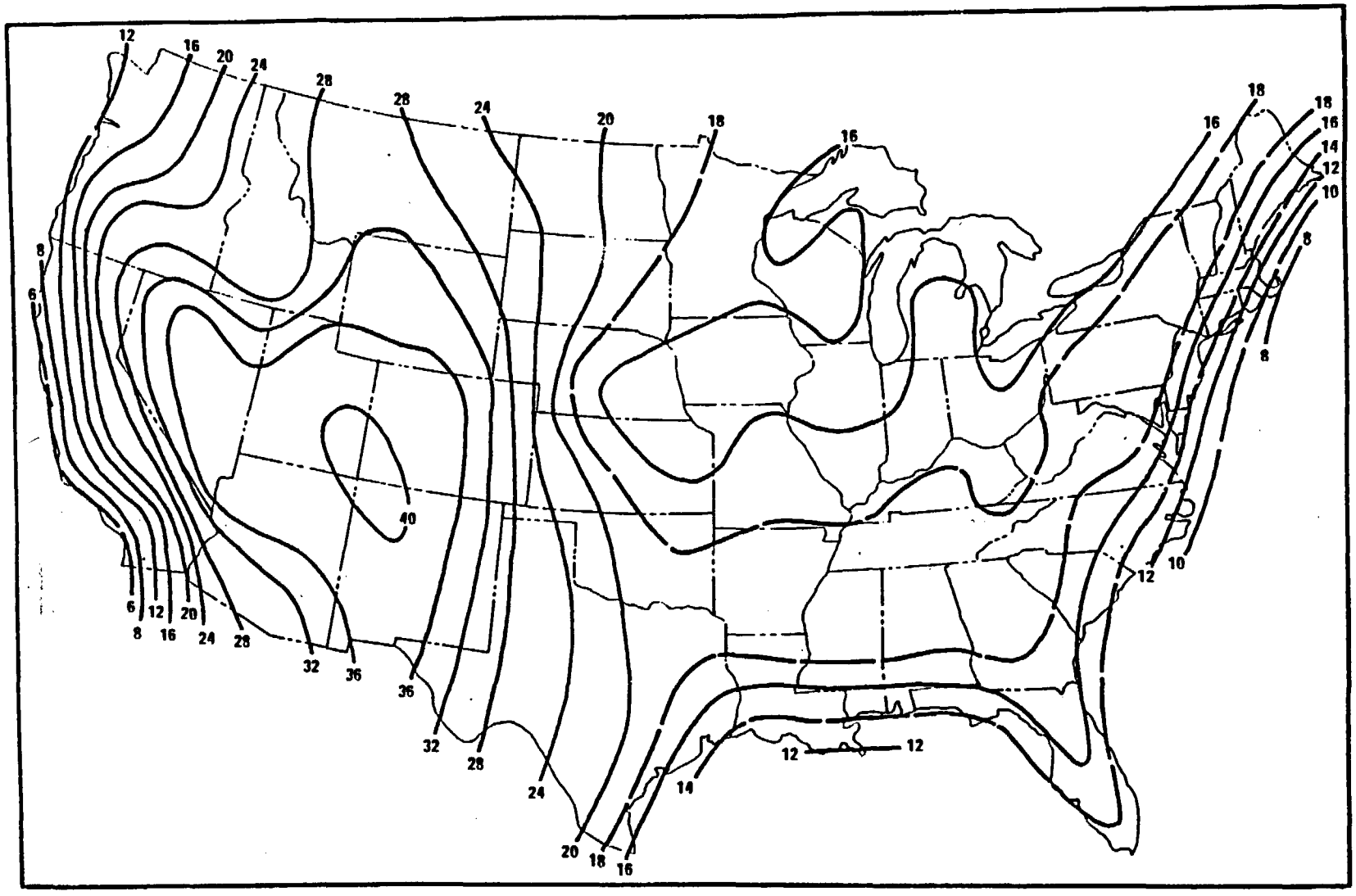


Figure 9. Isopleths (m x 10^2) of mean summer afternoon mixing heights (see Table B-1 for data).

1800 m

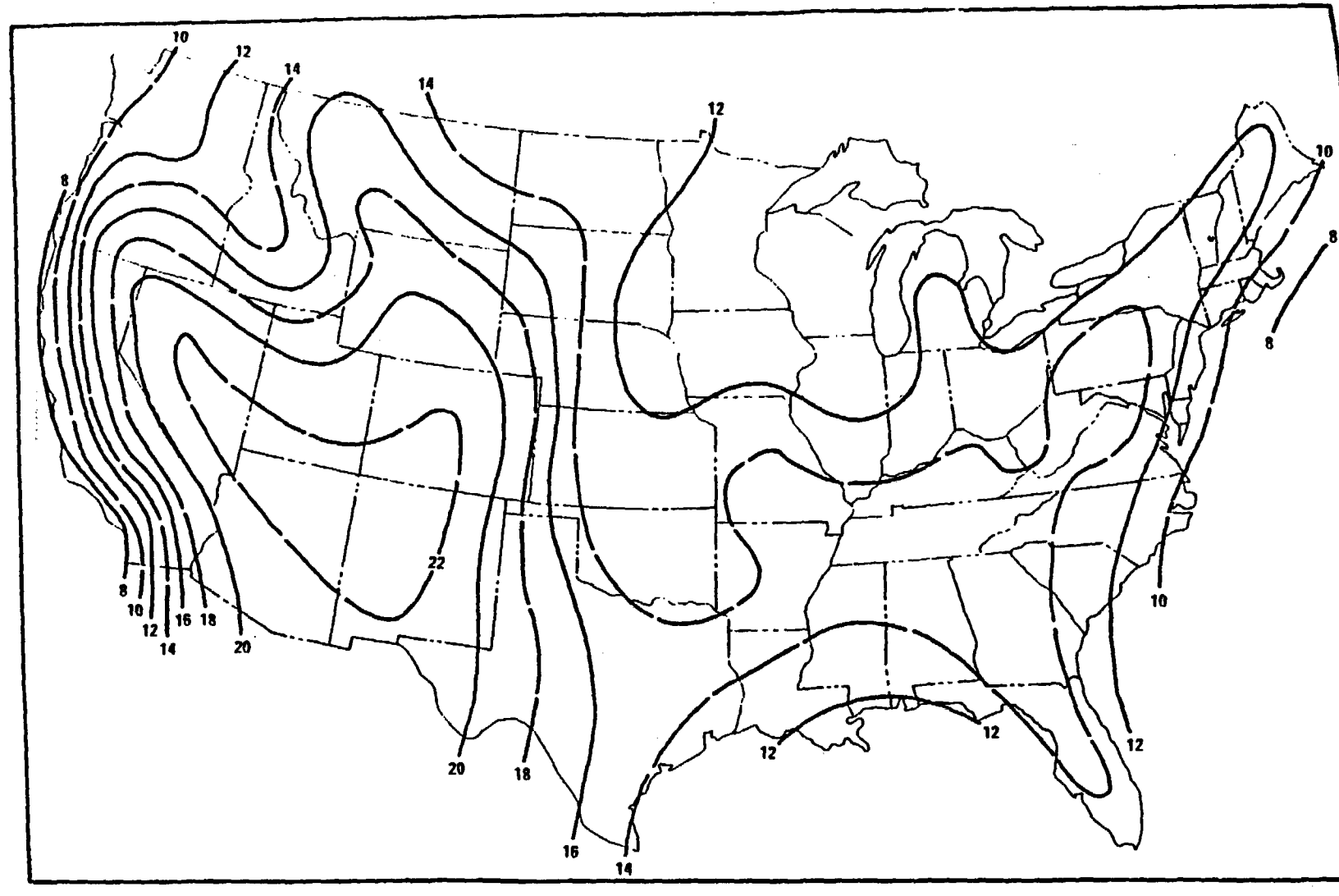


Figure 10. Isopleths (m x 10^2) of mean autumn afternoon mixing heights (see Table B-1 for data).

1400 m

RICHMOND/BYRD FIELD VA	
Latitude = 37.50 N	WMO No. 724010
Longitude = 77.33 W	Elevation = 177 feet
Period of Record = 1973 to 1996	Average Pressure = 29.84 inches Hg

Design Criteria Data

		Mean Coincident (Average) Values			
Dry Bulb Temperature (T)	**Design Value (°F)**	Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	99	78	111	9.8	SSW
0.4% Occurrence	95	77	109	9.9	SW
1.0% Occurrence	92	76	108	9.5	SW
2.0% Occurrence	90	75	106	9.3	SW
Mean Daily Range	20	-	-	-	-
97.5% Occurrence	24	22	12	6.9	N
99.0% Occurrence	18	16	9	7.3	N
99.6% Occurrence	14	12	7	6.7	N
Median of Extreme Lows	8	7	5	7.4	W
		Mean Coincident (Average) Values			
Wet Bulb Temperature (T_{wb})	**Design Value (°F)**	Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	82	93	142	8.8	S
0.4% Occurrence	79	90	130	8.7	S
1.0% Occurrence	78	88	126	8.7	S
2.0% Occurrence	77	87	123	8.5	S
		Mean Coincident (Average) Values			
Humidity Ratio (HR)	**Design Value (gr/lb)**	Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	151	85	1.00	7.3	S
0.4% Occurrence	137	84	0.90	7.3	S
1.0% Occurrence	132	82	0.88	6.9	S
2.0% Occurrence	127	81	0.85	7.3	S
Air Conditioning/		$T \geq 93°F$	$T \geq 80°F$	$T_{wb} \geq 73°F$	$T_{wb} \geq 67°F$
Humid Area Criteria	# of Hours	84	1026	880	2161

Other Site Data

Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
7	3.3	90	3.5 + 1.1
Ground Water Temperature (°F) 50 Foot Depth *	**Frost Depth 50 Year Recurrence (in.)**	**Ground Snow Load 50 Year Recurrence (lb/ft^2)**	**Average Annual Freeze-Thaw Cycles (#)**
60.5	18	16	56

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

CHARLOTTESVILLE VA	
Latitude = 38.13 N	WMO No. 724016
Longitude = 78.45 W	Elevation = 640 feet
Period of Record = 1973 to 1996	Average Pressure = 29.34 inches Hg

Design Criteria Data

		Mean Coincident (Average) Values			
Dry Bulb Temperature (T)	**Design Value (°F)**	Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	97	77	109	9.6	SW
0.4% Occurrence	93	76	108	8.8	SSW
1.0% Occurrence	91	75	108	8.3	S
2.0% Occurrence	89	74	106	8.0	S
Mean Daily Range	19	-	-	-	-
97.5% Occurrence	24	21	10	6.6	NW
99.0% Occurrence	19	16	8	6.5	W
99.6% Occurrence	14	12	6	5.9	WNW
Median of Extreme Lows	3	2	3	6.3	NW
		Mean Coincident (Average) Values			
Wet Bulb Temperature (T_{wb})	**Design Value (°F)**	Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	82	91	151	7.6	S
0.4% Occurrence	79	88	135	8.0	S
1.0% Occurrence	77	87	125	7.5	S
2.0% Occurrence	76	85	121	7.3	S
		Mean Coincident (Average) Values			
Humidity Ratio (HR)	**Design Value (gr/lb)**	Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	154	86	1.00	7.3	S
0.4% Occurrence	138	83	0.90	6.6	S
1.0% Occurrence	130	82	0.85	6.8	S
2.0% Occurrence	126	81	0.82	6.5	S
Air Conditioning/		$T \geq 93°F$	$T \geq 80°F$	$T_{wb} \geq 73°F$	$T_{wb} \geq 67°F$
Humid Area Criteria	# of Hours	49	1014	689	1935

Other Site Data

Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
7	3.2	90	2.4 + 0.9
Ground Water Temperature (°F) 50 Foot Depth *	**Frost Depth 50 Year Recurrence (in.)**	**Ground Snow Load 50 Year Recurrence (lb/ft^2)**	**Average Annual Freeze-Thaw Cycles (#)**
60.6	N/A	N/A	54

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

QUANTICO VA	
Latitude = 38.50 N	WMO No. 724035
Longitude = 77.30 W	Elevation = 13 feet
Period of Record = 1973 to 1996	Average Pressure = 30.00 inches Hg

Design Criteria Data

		Mean Coincident (Average) Values			
Dry Bulb Temperature (T)	Design Value (°F)	Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	97	78	114	6.0	S
0.4% Occurrence	93	77	115	5.5	S
1.0% Occurrence	91	76	113	5.6	S
2.0% Occurrence	89	75	109	5.5	S
Mean Daily Range	17	-	-	-	-
97.5% Occurrence	25	22	11	5.8	NW
99.0% Occurrence	20	17	8	6.1	NW
99.6% Occurrence	16	14	7	5.9	NW
Median of Extreme Lows	8	6	4	5.6	NW
		Mean Coincident (Average) Values			
Wet Bulb Temperature (T_{wb})	Design Value (°F)	Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	83	91	154	5.9	S
0.4% Occurrence	80	90	136	5.5	S
1.0% Occurrence	78	88	127	5.3	S
2.0% Occurrence	77	86	123	5.1	S
		Mean Coincident (Average) Values			
Humidity Ratio (HR)	Design Value (gr/lb)	Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	157	90	1.04	5.2	S
0.4% Occurrence	140	86	0.94	4.8	S
1.0% Occurrence	132	85	0.88	4.8	S
2.0% Occurrence	127	84	0.85	4.7	S
Air Conditioning/		$T \geq 93°F$	$T \geq 80°F$	$T_{wb} \geq 73°F$	$T_{wb} \geq 67°F$
Humid Area Criteria	# of Hours	49	1008	771	1978

Other Site Data

Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
8	3.3	90	2.2 + 0.9
Ground Water Temperature (°F) 50 Foot Depth *	**Frost Depth 50 Year Recurrence (in.)**	**Ground Snow Load 50 Year Recurrence (lb/ft^2)**	**Average Annual Freeze-Thaw Cycles (#)**
60.4	22	20	44

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.