

# STORM DATA

## ERRATA

### NATIONAL SUMMARY OF TORNADOES, 1986

PAGE 1-12, ADD THESE STATES

### TORNADOES, TORNADO DAYS, AND DEATHS BY STATE AND NATION, 1953-86

| STATE        | TOTAL | AVG. | MOST | TORNADOES |       |       | PER<br>10,000<br>SQ. MI. | DAYS  |      | DEATHS |      | PER<br>10,000<br>SQ. MI. |
|--------------|-------|------|------|-----------|-------|-------|--------------------------|-------|------|--------|------|--------------------------|
|              |       |      |      | YEAR      | LEAST | YEAR  |                          | TOTAL | AVG. | TOTAL  | AVG. |                          |
| Maryland     | 88    | 3    | 10   | 1975      | 0     | 1986+ | 2.45                     | 68    | 2    | 2      | 0    | 2                        |
| Missouri     | 960   | 28   | 79   | 1973      | 6     | 1953  | 4.05                     | 422   | 12   | 132    | 4    | 19                       |
| North Dakota | 607   | 18   | 52   | 1976      | 2     | 1961  | 2.53                     | 338   | 10   | 21     | 1    | 3                        |
| South Dakota | 882   | 26   | 64   | 1965      | 1     | 1958  | 3.37                     | 418   | 12   | 8      | 0    | 1                        |
| W.oming      | 313   | 9    | 42   | 1979      | 0     | 1970  | .94                      | 214   | 6    | 2      | 0    | 0                        |

# NATIONAL SUMMARY OF TORNADES, 1986

HENRY N. VIGANSKY  
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
 NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE  
 NATIONAL CLIMATIC DATA CENTER

During 1986, 764 tornadoes were reported in the United States. Tornadoes occurred on 168 days, killed 15 people, and injured 573 people. Nine of the fatalities occurred in mobile homes. Total property losses were estimated to be in excess of \$500 million. Tornadoes damaged or destroyed over 500 mobile homes. Alaska, Connecticut, Delaware, Maryland, and Oregon were fortunate to escape a tornado visitation. The outstanding feature of the 1986 tornado season was the extremely low count of 15 fatalities, the lowest recorded since 1916. Locations of new monthly records since 1953 by state, killer tornadoes, and state-to-state border crossings are shown in the following three tables:

TABLE I. NEW MONTHLY RECORDS (SINCE 1953)

| MONTH     | STATE          | NEW RECORD | PREVIOUS RECORD (YEAR) |
|-----------|----------------|------------|------------------------|
| March     | Kentucky       | 6          | 5 (1964)               |
| March     | Ohio           | 9          | 6 (1985)               |
| April     | Nebraska       | 17         | 15 (1985)              |
| May       | Idaho          | 3          | 1 (1985)               |
| June      | North Carolina | 7          | 6 (1982)               |
| August    | Idaho          | 5          | 1 (1984)               |
| August    | Rhode Island   | 3          | -0-                    |
| September | Michigan       | 8          | 5 (1974)               |
| September | South Dakota   | 5          | 2 (1985)               |
| October   | West Virginia  | 2          | 1 (1979)               |
| November  | Arizona        | 2          | 1 (1968)               |

TABLE II. LOCATION OF KILLER TORNADES

| DATE       | STATE          | COUNTY       | TOTAL DEATHS |
|------------|----------------|--------------|--------------|
| February 5 | Texas          | Harris       | 2            |
| March 10   | Indiana        | Hancock      | 1            |
| March 10   | Ohio           | Fayette      | 1            |
| March 10   | Ohio           | Huron        | 1            |
| March 10   | Ohio           | Muskingum    | 1            |
| March 12   | Alabama        | Pickens      | 2            |
| April 19   | Texas          | Nolan        | 1            |
| April 26   | Iowa           | Lyon         | 1            |
| May 15     | Missouri       | Scott        | 1            |
| July 2     | North Carolina | Onslow       | 3            |
| August 15  | New York       | St. Lawrence | 1            |

TABLE III. STATE-TO-STATE BORDER CROSSINGS

| DATE         | STATE         |      | STATE         |
|--------------|---------------|------|---------------|
| April 26     | Iowa          | into | Minnesota     |
| July 4       | Wisconsin     | into | Michigan      |
| July 28      | Nebraska      | into | Iowa          |
| August 7     | New Hampshire | into | Maine         |
| August 8     | Rhode Island  | into | Massachusetts |
| September 18 | Kansas        | into | Nebraska      |
| October 1    | Indiana       | into | Ohio          |

The first tornado of the 1986 season touched down on February 2 at 9:40 p.m., two miles (3.2 km) south of Brock, Texas. The tornado moved east-northeast to about four miles (6.4 km) southwest of Weatherford. Five mobile homes, three houses, two sheds, and one boathouse were either destroyed or damaged; two people were injured.

On February 5, a severe thunderstorm produced a mesoscale cyclonic circulation that gave birth to a family of four tornadoes. The first tornado touched down at 3:45 p.m., seven miles (11.3 km) northwest of Katy, Texas; moved east-northeast for about eight miles (12.9 km), and destroyed a few rice fields. The second tornado touched down five miles (8.1 km) south of Tomball, Texas; moved northeast for two and a half miles (4 km), destroyed several tin buildings, and caused considerable damage to a residential area. A third tornado touched down in southeast Tomball; hundreds of power lines were downed, and several homes and apartments were damaged by the tornado. Hail the size of golf balls accumulated to an ankle-deep depth in various parts of town. The final tornado of the outbreak touched down at 4:30 p.m., one mile (1.6 km) southwest of Hooks Airport (located southeast east of Tomball). The twister struck a mobile home park and destroyed or damaged 37 mobile homes. One elderly lady was crushed to death when her mobile home collapsed. One man was killed in the same area when a tree fell on his truck, and caused him to lose control of the vehicle which crashed into nearby trees. The tornado moved over Hooks Airport, and created havoc with 300 airplanes; 90% of the airport buildings were damaged. The four tornadoes caused damages in excess of \$80 million; two people were killed, and 49 persons were injured.

On March 10, 17 tornadoes were spawned in south-central Indiana and southwest and central Ohio over a period of about five hours. At 2:28 p.m., the first tornado touched down five miles (8.0 km) southwest of Martinsville, Indiana, and left a 40-mile (64.4 km) intermittent path of destruction to near Fountaintown. Winds within the tornado were estimated at 158-206 mph (254-331 km/h); 100 homes were damaged as well as numerous churches, schools, and businesses. A small tornado touched down briefly at 2:55 p.m., two miles (3.2 km) east of Indianapolis International Airport; damage was limited to a few buildings in a nearby industrial park. Twin tornadoes touched down at 3:10 p.m., three miles (4.8 km) west of Boggstown, Indiana, and traveled northeast through the northwest side of Fairland and the east side of Fountaintown. The tornado on the right side left an intermittent path of destruction to just south of Fountaintown, and the other tornado left a continuous path of destruction to near Charlottesville; one fatality resulted from the tornado on the left side. The fifth and sixth tornadoes of the outbreak touched down at 3:10 p.m. The fifth tornado touched down in a wooded area one mile (1.6 km) southwest of Little York, Indiana, and destroyed 300 acres of timber; the tornado continued on a northeast path into the town of Austin. Power lines and trees were downed throughout the path of the tornado; 15 mobile homes were destroyed; 75 houses, numerous barns and outbuildings were heavily damaged or destroyed; and 25 people were injured. The sixth tornado touched down one mile (1.6 km) south of Greenfield, Indiana, and moved northeast for five miles (8.0 km); six semi-trailers were overturned. At 3:40 p.m., a tornado left a four-mile (6.4 km) intermittent path of destruction between Dunreith and Spiceland, Indiana; numerous homes were damaged. A tornado touched down at 3:55 p.m., one-half mile (.8 km) southeast of Bloomington, Indiana, then moved northeast through Lynn, and remained on the ground to one mile (1.6 km) southwest of Barton. The twister moved through the town of Lynn, generated winds in excess of 158 mph (254 km/h), and caused extensive damage to a school and numerous homes. At 4:20 p.m., two tornadoes touched down in Ohio. The first tornado touched down near Maud, and caused considerable damage to nine apartment buildings. The second tornado touched down one mile (1.6 km) northeast of Coldwater, then traveled northwest through Celina, and retracted into the parent cloud four miles (6.4 km) southeast of Mendon; one home and a house trailer were destroyed, and 119 homes sustained minor damage. A tornado touched down west of Wilmington at 5:08 p.m., and moved through the northern part of the city; two homes were destroyed, six homes and five business buildings were damaged, 30 mobile homes were overturned, and ten people were injured. At 5:20 p.m., a twister touched down one mile (1.6 km) south of Kenton, then traveled to seven miles (11.3 km) northeast of Kenton; one barn and a bathhouse were destroyed, and numerous other buildings experienced moderate damage. A tornado touched down at 5:25 p.m. in western Fayette County and moved 30 miles (48.3 km) northeast through portions of Madison and Pickaway Counties; one man was killed and ten people were injured; one house, ten mobile homes, and five farm buildings were destroyed; and 40 mobile homes were damaged. At 5:42 p.m., a small tornado caused scattered damages in southeast Wyandot and southwest Crawford Counties. A tornado struck on the east side of Ripley at 5:54 p.m., and traveled northeast for six miles (9.7 km) before dissipating; two warehouses were destroyed; another warehouse, a restaurant, and a high school were severely damaged. At 6:03 p.m., a tornado touched down two miles (3.2 km) east of Willard, and traveled northeast to near Olena; six homes and three mobile homes were destroyed, and five homes were extensively damaged; one girl was killed, and ten people were injured. The final tornado of the outbreak touched down at 7:45 p.m., two miles (3.2 km) southwest of Norwich; the storm traveled to New Concord before lifting. Although damage was minimal, one person was killed and three people were injured. For the entire outbreak, four people were killed (one in Indiana and three in Ohio), and 81 people were injured (48 in Indiana and 33 in Ohio).

On March 12, during the late morning hours and through the early evening hours, 11 tornadoes were spawned in Mississippi (six) and Alabama (five). The first tornado touched down at 9:25 a.m. in northeastern Amite County, Mississippi, and moved northeast for six miles (9.7 km) through portions of Pike and Lincoln Counties; eight homes were heavily damaged, one dairy barn and a tin shed were destroyed, nine head of cattle were killed,

and timber damage was extensive. A small tornado touched down at 10:10 a.m. about eight miles (12.9 km) east of Brookhaven; minor damage was confined to one roof and several trees. At 12:07 p.m., a violent tornado touched down five miles (8.0 km) northeast of Taylorsville, and traveled for 31 miles (49.9 km) northeast to near Interstate 20 between the towns of Newton and Hickory; wind speeds were estimated to be between 158-206 mph (254-331 km/h); property damage exceeded \$665,000, and two people were injured. A tornado touched down at 12:50 p.m., northeast of Enterprise, then moved northeast, and dissipated two miles (3.2 km) northwest of Meridian; numerous homes were destroyed and timber damage was extensive. At 1:06 p.m., a huge tornado with destructive winds between 207-260 mph (333-418 km/h) touched down in the extreme northwest side of Meridian and moved northeast to Bailey. At intervals the tornado was one-half mile (.8 km) wide; eight people were injured; and property damage, including forest areas, was in excess of \$500,000. A tornado touched down briefly at 1:30 p.m. near Potterville; one barn was destroyed, and one house and a store were damaged. In Alabama at 2:15 p.m., a strong tornado touched down four miles (6.4 km) northwest of Aliceville and moved north before lifting at eight and a half miles (13.7 km) west of Reform. Two people were killed when the tornado demolished their home, which was located west of Carrollton. Wind speed within the tornado was estimated in excess of 158 mph (254 km/h); timber damage was estimated at \$250,000, and other property damage exceeded \$1.5 million. At 2:58 p.m., a severe tornado touched down two miles (3.2 km) east of Millport and traveled six miles (9.7 km) north-northwest of Kennedy; the path width was 300 yards (274 m). The twister caused extensive damage to a new consolidated school complex, blew an automobile off the highway, and caused excessive damage to a lumberyard. It was reported that the tornado lifted a railroad car off the tracks. A tornado touched down at 3:25 p.m. one mile (1.6 km) west of Winfield, then moved north-northeast for two and a half miles (4.0 km); trees were downed, a dairy barn and some outbuildings were unroofed, and one frame house was destroyed. A second tornado touched down at 3:35 p.m. at about the same place and traveled along the same track as the tornado just previously mentioned. The second tornado inflicted additional damage to the dairy farm, and the top of a two-story concrete building was blown off. Damage along the remainder of the storm's track was limited mainly to trees and a few outbuildings. At 8:20 p.m., the final tornado of the outbreak touched down in a trailer park located in Arabi; five members of one family riding in a car and a truck were injured when the twister struck the vehicles. Other damages included trees and power lines downed; five mobile homes, five houses, and several industrial buildings were damaged. In Alabama, two people were killed and five people were injured; while in Mississippi, ten people were injured.

On April 19, a multiple-vortex tornado developed from a severe thunderstorm and touched down one and a half miles (2.4 km) southwest of Sweetwater, Texas, and moved northeast at approximately 50 mph (80.5 km/h) into the city of Sweetwater. Upon reaching the central part of the city, the storm broadened to 600 yards (549 m) and intensified. Numerous old buildings were destroyed throughout the city; one man was killed in his residence, which was a new well-built brick structure located in a retirement complex (the structure was totally destroyed, as were many other residences in the same area). A mobile home park sustained heavy damages, and 22 mobile homes were destroyed. The worst damage occurred to well-constructed brick homes on the east side of the city; the structures were unroofed, outer walls were crumbled, and inner walls collapsed.

A killer tornado touched down at 6:30 p.m. on April 26 just north of George, Iowa, and moved northeast to five miles (8.0 km) northwest of Little Rock, before crossing into Minnesota; the storm moved ten miles (16.1 km) northeast to near Rushmore, Minnesota. As a result, destruction was heavy in Iowa. On a farm four miles (6.4 km) northwest of Little Rock, Iowa, a four-year old girl was killed, and her uncle and grandmother were injured. The family was in a dairy barn when they realized the storm was upon them. Instead of taking shelter in the house (which had no structural damage), they tried to outrun the storm in a pickup truck. Before they were able to leave the farmyard, a fence post crashed through the truck window and killed the girl. In Minnesota, 16 farmsteads were damaged; two women were injured; and numerous cattle and flocks of poultry were destroyed.

On May 15 at 5:54 p.m., a severe tornado touched down two miles (3.2 km) southeast of Coldwater, Michigan, and traveled northeast one and two-tenths miles (1.9 km) at a speed of 40 mph (64.4 km/h) to two miles (3.2 km) east of Coldwater. The tornado left a path of destruction 200-yards (182.8 m) wide, and winds were estimated to be greater than 158 mph (254 km/h). Damages included six homes destroyed, 14 homes damaged, and three businesses damaged; the loss was estimated at \$1.6 million.

During the hours of 4:00 and 6:30 p.m. on May 15, six tornadoes touched down in extreme southeast Missouri. The first tornado touched down in the area of Bloomfield, and damaged numerous homes and demolished a car wash. A mobile home was destroyed and another was damaged; an AT&T microwave tower was downed east of Bloomfield, which disrupted long-distance telephone service. In Stoddard County at 4:51 and 5:00 p.m., two tornadoes touched down briefly, causing no damage. A tornado touched down near Morehouse and left an intermittent path of minor damage to one mile (1.6 km) east of Lambert. A tornado touched down southwest of Sikeston. Prior to

entering the town of Sikeston, the twister damaged a barn and a Holiday Inn. It then left a three-mile (4.8 km) path of destruction through Sikeston, destroying 50 homes and an elementary school; 19 people were injured. The final tornado of the outbreak touched down south-southwest of Vanduser. The tornado traveled northeast through eastern Vanduser, causing considerable destruction which included a cotton gin and badly damaged a grain elevator; a 74-year old man was killed, and 15 people were injured.

On May 16, thunderstorms spawned 11 tornadoes over various parts of Oklahoma, and produced hail ranging from three-fourths inch (1.9 cm) to golf-ball size; winds of 60 to 80 mph (97 to 129 km/h) were reported. The 11 tornadoes left a path of only 14 miles (22.5 km) of destruction, which resulted in approximately \$863,000 in damages.

The remnants of Hurricane Bonnie spawned five mini-tornadoes in Desota and Webster Parishes, Louisiana, on June 27. The first tornado touched down momentarily at 1:10 a.m. in Desota Parish; damage was estimated at \$40,000. A small tornado touched down one-half mile (.8 km) north of Springhill and did about \$15,000 in roof damage to three houses. Another tornado touched down one and a half miles (2.4 km) west of Springhill, and destroyed three mobile homes and damaged numerous other homes. Five homes were heavily damaged by a tornado near Cullen. At 6:40 p.m., the last tornado of the outbreak caused about \$15,000 damage to three homes near Shongaloo. Damage caused by the five tornadoes was estimated at \$320,000, and seven people were injured.

A strong tornado touched down on July 2 in a trailer park located in Jacksonville, North Carolina. Ten mobile homes were destroyed and 20 others sustained major damage. Three people were killed, and ten other people were injured; damage was estimated at nearly \$500,000.

On July 4, a tornado touched down two miles (3.2 km) south of Niagara, Wisconsin, and traveled eight miles (12.9 km) east-southeast and moved across the Menominee River into Michigan, and then continued on a east-southeast course for an additional 16.3 miles (26.2 km) in Michigan, to four and a half miles (7.2 km) east-northeast of Nadeau, Michigan. The forward speed of the storm was 50 mph (80.5 km/h). Damage in Wisconsin included several homes and various other buildings. In Michigan, the twister destroyed seven homes, one mobile home, two vehicles, and 20 other buildings. A total of 12 people were injured, all in Michigan.

An outbreak of eight tornadoes was reported in five New England states on August 7 and 8. The first tornado touched down on August 7 at 2:10 p.m. at Hanscom Field, Massachusetts, and flipped over three single-engine airplanes. The tornado moved northeast and cut through a residential area on the south side of Bedford; damage to structures was estimated at \$100,000; and damage to aircraft was about \$50,000. Another tornado touched down on the west shore of Province Lake, New Hampshire, and moved east across the lake. Numerous boats were damaged and considerable damage was inflicted to several homes along lake frontage. The tornado continued on an east course through a wooded area and crossed the state boundary into Maine. Substantial damage to crops and farm buildings was reported. The tornado was on the ground for one and a half miles (2.4 km) in each state. Another tornado touched down in Maine near Shapleigh; most of the damage was confined to wooded areas with the exception of one house and a barn which suffered roof damage. A second tornado in New Hampshire initially formed as a waterspout over Lake Winnepesaukee and hit the shore near the mouth of the Melvin River, in the Melvin section of Tuftonboro. Upon landfall, the tornado retracted into the parent cloud. Extensive damage was caused by the tornado; additional damage was apparent in Melvin Village, which was caused by straight-line winds of 80 to 90 mph (129 to 145 km/h). The fifth tornado touched down at 3:30 p.m. in Cumberland Hill, Rhode Island. A few homes experienced structural damage; most of the damage was to trees and power lines. The sixth tornado touched down in Cranston and moved four miles (6.4 km) northeast to the southern portion of Providence, Rhode Island. Damage to homes and other structures was in the millions of dollars; over 6,000 customers lost electrical power; and 20 people were injured. On August 7 at 5:40 p.m., the seventh tornado of the outbreak touched down momentarily in Westford, Vermont, and caused no damage. The final tornado of the New England outbreak touched down on August 8 at 10:15 a.m. in northern Providence County, Rhode Island. The twister traveled northeast through the town of Slatersville, then crossed the state line into Massachusetts, and terminated in the southern portion of Millville, Massachusetts. Most of the damage occurred in Slatersville, with minor damage reported in Massachusetts. The most significant feature of this outbreak, considering that the concentration of tornadoes developed in highly populated areas, was that there were no casualties reported.

A killer tornado touched down in the area of Somerville, New York, on August 15 at 5:30 p.m. Thousands of trees were downed, four barns were destroyed, and numerous homes were damaged; one person was killed and three people were injured. This was the final killer tornado of the 1986 tornado season.

On September 18, a tornado touched down seven miles (11.3 km) west of Republic, Kansas, and traveled north through Hardy, Nebraska. The tornado was on the ground for 13 miles (20.9 km); six miles (10 km) in Kansas, and seven miles (11.3 km) in Nebraska. Several farms in Kansas were destroyed. Seven people in Hardy were injured, ten buildings were destroyed, and another 100 buildings sustained minor damage.

At 4:34 p.m. on September 28, a tornado touched down four miles (6.4 km) southwest of Farrar, Iowa, and traveled to six miles (9.7 km) east-southeast of Baxter. The tornado generated winds in excess of 207 mph (333 km/h). The twister moved through Iowa farmlands, devastated seven homes and severely damaged an additional 45 homes; total damage was about \$2 million.

On September 29, a strong thunderstorm produced a continuous 55-mile (88.5 km) path of destruction extending from southeast Tazewell County, northeast across McLean County, into southwest Livingston County, Illinois. The thunderstorm contained two tornadoes, one at the beginning of the path and one near the end of the path. The first tornado touched down in Hopedale, and caused \$250,000 damage. The second tornado touched down northeast of Lexington, and terminated one mile (1.6 km) northeast of Fairbury. A large microwave tower was destroyed near Lexington. The tornado created havoc with numerous farm buildings, grain bins, wagons, equipment, and houses; also, thousands of acres of crops were destroyed. Total wind and tornado damage in the three affected counties exceeded \$4 million.

Four tornadoes touched down in southeast Virginia on October 14. The first tornado touched down at 5:50 a.m. about five miles (8 km) east-northeast of Lawrenceville, and moved 12 miles (19.3 km) northeast before dissipating; total damage was estimated at \$1 million. The second twister touched down in Charles City County at 7:05 a.m., and left a five-mile (8 km) path of downed trees and power lines; also, 15 homes were damaged. The final two tornadoes touched down at 7:20 a.m. One of the tornadoes touched down 35 miles (56.3 km) southeast of Richmond, and left a 15-mile (24 km) path of destruction in Sussex and Prince George Counties. One person was injured; damage was in excess of \$200,000. The other twister left a two-mile (3.2 km) path of destruction in Dinwiddie and Prince George Counties; detailed damage reports are not available.

During the night of November 25 and 26, four tornadoes were spawned in southeast Alabama; nine people were injured. All four tornadoes left an accumulated 77-mile (123.9 km) path of destruction. Property destroyed or damaged included 37 homes, 19 mobile homes, seven outbuildings, three chicken brooders, two churches, one business, one factory, five automobiles, and one helicopter. Included in the damage report were numerous downed trees and power lines.

The final tornado of the 1986 season touched down at 8:10 p.m. on New Years Eve, south of Fort Pierce, in White City, Florida. Several homes suffered minor roof damage.

Additional information is presented in the following tables and charts. Continuing efforts in data collection by the National Severe Storms Forecast Center, National Weather Service Offices, the University of Chicago, and the National Climatic Data Center have resulted in several corrections to previous tables.

More detailed information concerning tornado activity can be obtained from monthly Storm Data publications. The National Severe Storms Forecast Center has generated a magnetic tape which contains tornado statistics for the period 1950-1986. A copy of that tape can be obtained by contacting the National Climatic Data Center, Federal Building, Asheville, North Carolina 28801-2696 (telephone: (704) 259-0682).

# TORNADO SUMMARY BY STATE AND NATION, 1986

|            | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANN |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ALABAMA    |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     |     | 7   |     | 1   | 1   | 1   |     |     |     | 4   |     | 14  |
| DAYS       |     |     | 3   |     | 1   | 1   | 1   |     |     |     | 2   |     | 8   |
| DEATHS     |     |     | 2   |     |     |     |     |     |     |     |     |     | 2   |
| INJURIES   |     |     | 5   |     |     |     |     |     |     |     | 9   |     | 14  |
| ARIZONA    |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     |     |     |     |     |     |     |     |     |     | 2   |     | 2   |
| DAYS       |     |     |     |     |     |     |     |     |     |     | 1   |     | 1   |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| ARKANSAS   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     | 1   |     | 1   | 1   |     |     |     |     |     |     |     | 3   |
| DAYS       |     | 1   |     | 1   | 1   |     |     |     |     |     |     |     | 3   |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| CALIFORNIA |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     | 3   | 2   |     |     |     | 1   |     | 1   |     |     |     | 7   |
| DAYS       |     | 3   | 2   |     |     |     | 1   |     | 1   |     |     |     | 7   |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     |     |     |     |     |     |     |     | 1   |     |     |     | 1   |
| COLORADO   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     |     |     |     | 6   | 8   | 1   | 4   | 1   |     |     |     | 20  |
| DAYS       |     |     |     |     | 3   | 3   | 1   | 4   | 1   |     |     |     | 12  |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     |     |     |     |     | 6   |     |     |     |     |     |     | 6   |
| FLORIDA    |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     | 7   | 11  |     | 6   | 9   | 2   | 9   | 3   | 1   |     | 5   | 53  |
| DAYS       |     | 4   | 2   |     | 3   | 8   | 2   | 5   | 3   | 1   |     | 2   | 30  |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     | 9   | 1   |     |     |     |     | 13  |     |     |     | 5   | 28  |
| GEORGIA    |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     | 3   | 2   | 2   |     | 1   | 1   |     |     |     |     |     | 9   |
| DAYS       |     | 1   | 2   | 1   |     | 1   | 1   |     |     |     |     |     | 6   |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     | 21  | 19  |     |     |     |     |     |     |     |     |     | 40  |
| HAWAII     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     |     |     | 1   | 1   |     |     |     |     |     |     |     | 2   |
| DAYS       |     |     |     | 1   | 1   |     |     |     |     |     |     |     | 2   |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| IDAHO      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     |     |     |     | 3   | 1   |     | 5   | 1   |     |     |     | 10  |
| DAYS       |     |     |     |     | 2   | 1   |     | 4   | 1   |     |     |     | 9   |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| ILLINOIS   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     |     |     | 1   | 11  | 3   | 1   |     | 6   |     |     |     | 22  |
| DAYS       |     |     |     | 1   | 2   | 2   | 1   |     | 3   |     |     |     | 9   |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     |     |     |     | 1   | 1   |     |     | 10  |     |     |     | 12  |
| INDIANA    |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     |     | 8   |     | 7   |     | 2   | 1   |     | 1   |     |     | 19  |
| DAYS       |     |     | 1   |     | 2   |     | 2   | 1   |     | 1   |     |     | 7   |
| DEATHS     |     |     | 1   |     |     |     |     |     |     |     |     |     | 1   |
| INJURIES   |     |     | 48  |     |     |     |     | 2   |     |     |     |     | 50  |
| IOWA       |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     |     | 1   | 3   | 13  | 8   | 9   | 3   | 5   |     |     |     | 42  |
| DAYS       |     |     | 1   | 1   | 3   | 2   | 3   | 3   | 2   |     |     |     | 15  |
| DEATHS     |     |     |     | 1   |     |     |     |     |     |     |     |     | 1   |
| INJURIES   |     |     |     | 2   |     |     | 1   | 3   | 3   |     |     |     | 9   |
| KANSAS     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     |     |     | 12  | 11  | 1   | 1   | 3   | 4   |     |     |     | 32  |
| DAYS       |     |     |     | 3   | 6   | 1   | 1   | 3   | 3   |     |     |     | 17  |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     |     |     |     |     |     |     | 3   |     |     |     |     | 3   |
| KENTUCKY   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER     |     |     | 6   | 2   |     |     | 2   |     |     |     |     |     | 10  |
| DAYS       |     |     | 2   | 1   |     |     | 1   |     |     |     |     |     | 4   |
| DEATHS     |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES   |     |     | 25  | 2   |     |     | 1   |     |     |     |     |     | 28  |

# TORNADO SUMMARY BY STATE AND NATION, 1986

|               | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANN |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| LOUISIANA     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     | 2   | 5   | 1   | 5   |     | 1   |     |     | 2   |     | 16  |
| DAYS          |     |     | 2   | 4   | 1   | 1   |     | 1   |     |     |     |     | 11  |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     | 3   | 3   |     | 7   |     |     |     |     |     |     | 13  |
| MAINE         |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     |     |     |     |     | 2   |     |     |     |     | 2   |
| DAYS          |     |     |     |     |     |     |     | 1   |     |     |     |     | 1   |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| MASSACHUSETTS |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     |     |     |     |     | 2   | 1   |     |     |     | 3   |
| DAYS          |     |     |     |     |     |     |     | 2   | 1   |     |     |     | 3   |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| MICHIGAN      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     | 1   | 3   | 2   | 6   | 7   | 8   |     |     |     | 27  |
| DAYS          |     |     |     | 1   | 2   | 2   | 4   | 3   | 3   |     |     |     | 15  |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     |     |     |     |     | 13  | 3   | 1   |     |     |     | 17  |
| MINNESOTA     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     | 3   | 2   | 9   | 4   |     |     |     |     |     | 18  |
| DAYS          |     |     |     | 2   | 1   | 5   | 4   |     |     |     |     |     | 12  |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     |     | 2   |     |     |     |     |     |     |     |     | 2   |
| MISSISSIPPI   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     | 2   | 17  | 4   | 3   |     | 1   | 1   | 1   |     | 6   |     | 35  |
| DAYS          |     | 1   | 2   | 2   | 2   |     | 1   | 1   | 1   |     | 3   |     | 13  |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     | 11  | 1   |     |     |     |     |     |     | 4   |     | 16  |
| MISSOURI      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     | 3   | 7   | 4   |     | 1   |     | 2   |     |     | 17  |
| DAYS          |     |     |     | 1   | 2   | 1   |     | 1   |     | 2   |     |     | 7   |
| DEATHS        |     |     |     |     | 1   |     |     |     |     |     |     |     | 1   |
| INJURIES      |     |     |     |     | 34  |     |     |     |     |     |     |     | 34  |
| MONTANA       |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     |     | 2   | 2   |     |     |     |     |     |     | 4   |
| DAYS          |     |     |     |     | 2   | 2   |     |     |     |     |     |     | 4   |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| NEBRASKA      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     | 17  | 6   | 10  | 12  | 3   | 6   |     |     |     | 54  |
| DAYS          |     |     |     | 4   | 1   | 6   | 7   | 2   | 3   |     |     |     | 23  |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     |     | 1   |     |     | 1   |     | 7   |     |     |     | 9   |
| NEVADA        |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     |     | 1   |     |     |     |     |     |     |     | 1   |
| DAYS          |     |     |     |     | 1   |     |     |     |     |     |     |     | 1   |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| NEW HAMPSHIRE |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     |     |     | 1   |     | 2   |     |     |     |     | 3   |
| DAYS          |     |     |     |     |     | 1   |     | 1   |     |     |     |     | 2   |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| NEW JERSEY    |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     |     |     |     |     |     | 1   |     |     |     | 1   |
| DAYS          |     |     |     |     |     |     |     |     | 1   |     |     |     | 1   |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| NEW MEXICO    |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     |     |     |     | 1   |     | 1   |     |     |     | 2   |
| DAYS          |     |     |     |     |     |     | 1   |     | 1   |     |     |     | 2   |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES      |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| NEW YORK      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER        |     |     |     |     |     | 2   | 3   | 2   | 1   |     |     |     | 9   |
| DAYS          |     |     |     |     |     | 1   | 2   | 2   | 1   | 1   |     |     | 7   |
| DEATHS        |     |     |     |     |     |     |     | 1   |     |     |     |     | 1   |
| INJURIES      |     |     |     |     |     | 2   | 7   | 4   |     |     |     |     | 13  |

# TORNADO SUMMARY BY STATE AND NATION, 1986

|                | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANN |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| NORTH CAROLINA |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     | 3   |     | 1   | 7   | 3   | 2   |     |     |     |     | 16  |
| DAYS           |     |     | 1   |     | 1   | 3   | 2   | 1   |     |     |     |     | 8   |
| DEATHS         |     |     |     |     |     |     | 3   |     |     |     |     |     | 3   |
| INJURIES       |     |     |     |     | 5   |     | 10  |     |     |     |     |     | 15  |
| NORTH DAKOTA   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     |     |     | 5   | 12  | 12  |     |     |     |     |     | 29  |
| DAYS           |     |     |     |     | 1   | 6   | 5   |     |     |     |     |     | 12  |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     |     |     |     |     | 1   |     |     |     |     |     |     | 1   |
| OHIO           |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     | 9   | 1   | 3   | 5   | 2   | 1   | 1   | 1   |     |     | 23  |
| DAYS           |     |     | 1   | 1   | 1   | 2   | 1   | 1   | 1   | 1   |     |     | 9   |
| DEATHS         |     |     | 3   |     |     |     |     |     |     |     |     |     | 3   |
| INJURIES       |     |     | 33  | 6   |     |     |     | 2   |     |     |     |     | 41  |
| OKLAHOMA       |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     | 2   | 4   | 25  | 1   |     | 2   | 7   | 6   |     |     | 47  |
| DAYS           |     |     | 2   | 3   | 4   | 1   |     | 2   | 2   | 2   |     |     | 16  |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     |     |     | 2   | 15  |     |     |     | 1   |     |     |     | 18  |
| PENNSYLVANIA   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     |     |     |     |     | 1   | 1   | 2   | 2   |     |     | 6   |
| DAYS           |     |     |     |     |     |     | 1   | 1   | 2   | 2   |     |     | 6   |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     |     |     |     |     |     |     |     | 1   | 2   |     |     | 3   |
| RHODE ISLAND   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     |     |     |     |     |     | 3   |     |     |     |     | 3   |
| DAYS           |     |     |     |     |     |     |     | 2   |     |     |     |     | 2   |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     |     |     |     |     |     |     | 20  |     |     |     |     | 20  |
| SOUTH CAROLINA |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     |     |     |     |     | 1   |     |     |     |     |     | 1   |
| DAYS           |     |     |     |     |     |     | 1   |     |     |     |     |     | 1   |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     |     |     |     |     |     | 3   |     |     |     |     |     | 3   |
| SOUTH DAKOTA   |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     |     | 3   | 2   | 8   | 12  | 4   | 5   |     |     |     | 34  |
| DAYS           |     |     |     | 1   | 1   | 5   | 4   | 2   | 1   |     |     |     | 14  |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| TENNESSEE      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     | 2   | 1   | 1   | 1   |     |     |     |     |     |     |     | 5   |
| DAYS           |     | 2   | 1   | 1   | 1   |     |     |     |     |     |     |     | 5   |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     | 5   |     | 6   |     |     |     |     |     |     |     |     | 11  |
| TEXAS          |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     | 12  | 4   | 21  | 49  | 24  | 3   | 5   | 4   | 7   | 3   |     | 132 |
| DAYS           |     | 2   | 2   | 5   | 11  | 7   | 2   | 5   | 3   | 4   | 3   |     | 44  |
| DEATHS         |     | 2   |     | 1   |     |     |     |     |     |     |     |     | 3   |
| INJURIES       |     | 51  |     | 106 | 4   |     |     | 1   |     |     | 2   |     | 164 |
| UTAH           |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     |     |     | 1   |     |     | 1   | 1   |     |     |     | 3   |
| DAYS           |     |     |     |     | 1   |     |     | 1   | 1   |     |     |     | 3   |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| VERMONT        |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     |     |     |     |     |     | 1   |     |     |     |     | 1   |
| DAYS           |     |     |     |     |     |     |     | 1   |     |     |     |     | 1   |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| VIRGINIA       |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     |     |     |     |     |     | 2   |     | 4   |     |     | 6   |
| DAYS           |     |     |     |     |     |     |     | 2   |     | 1   |     |     | 3   |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     |     |     |     |     |     |     |     |     | 1   |     |     | 1   |
| WASHINGTON     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| NUMBER         |     |     |     |     | 1   |     |     |     | 1   |     |     |     | 2   |
| DAYS           |     |     |     |     | 1   |     |     |     | 1   |     |     |     | 2   |
| DEATHS         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| INJURIES       |     |     |     |     |     |     |     |     |     |     |     |     | 0   |

# TORNADO SUMMARY BY STATE AND NATION, 1986

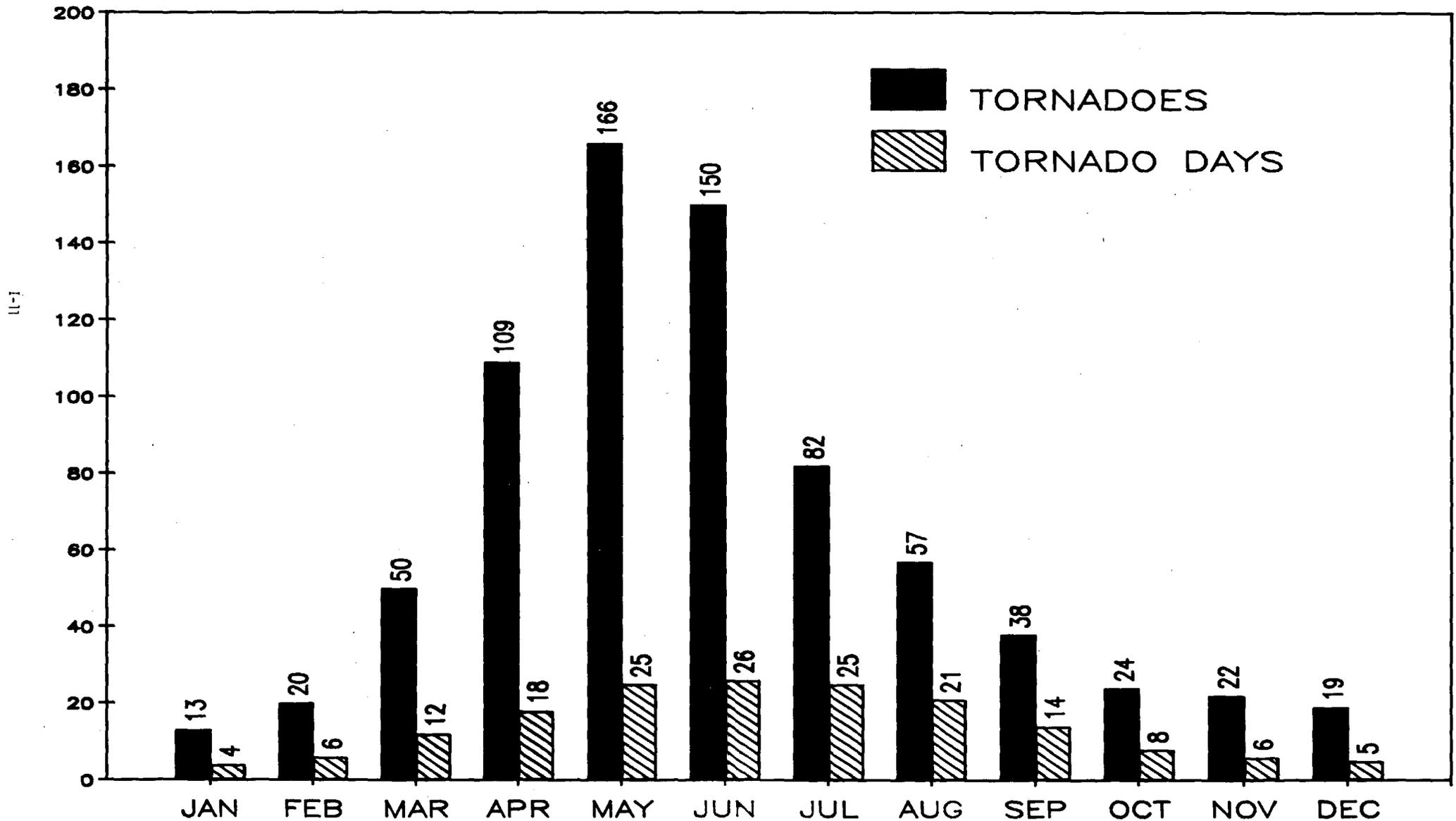
|               | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANN  |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| WEST VIRGINIA |     |     |     |     |     |     |     |     |     |     |     |     |      |
| NUMBER        |     |     |     |     |     |     |     |     |     | 2   |     |     | 2    |
| DAYS          |     |     |     |     |     |     |     |     |     | 2   |     |     | 2    |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0    |
| INJURIES      |     |     |     |     |     |     |     |     |     | 1   |     |     | 1    |
| WISCONSIN     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| NUMBER        |     |     |     |     |     | 3   | 7   |     | 4   |     |     |     | 14   |
| DAYS          |     |     |     |     |     | 3   | 4   |     | 3   |     |     |     | 10   |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0    |
| INJURIES      |     |     |     |     |     |     |     |     | 1   |     |     |     | 1    |
| WYOMING       |     |     |     |     |     |     |     |     |     |     |     |     |      |
| NUMBER        |     |     |     |     |     | 7   | 1   | 1   | 1   |     |     |     | 10   |
| DAYS          |     |     |     |     |     | 4   | 1   | 1   | 1   |     |     |     | 7    |
| DEATHS        |     |     |     |     |     |     |     |     |     |     |     |     | 0    |
| INJURIES      |     |     |     |     |     |     |     |     |     |     |     |     | 0    |
| UNITED STATES |     |     |     |     |     |     |     |     |     |     |     |     |      |
| NUMBER        | 0   | 30  | 75  | 84* | 173 | 134 | 88* | 67* | 65* | 26* | 17  | 5   | 764* |
| DAYS &        | 0   | 11  | 9   | 17  | 25  | 25  | 24  | 23  | 17  | 7   | 8   | 2   | 168  |
| DEATHS        | 0   | 2   | 6   | 2   | 1   | 0   | 3   | 1   | 0   | 0   | 0   | 0   | 15   |
| INJURIES      | 0   | 86  | 145 | 131 | 59  | 17  | 36  | 51  | 25  | 4   | 15  | 5   | 574  |

\* CORRECTED FOR BOUNDARY-CROSSING TORNADOES.  
& TORNADO DAYS FOR COUNTRY AS A WHOLE.

# NATIONAL SUMMARY OF TORNAOES, TORNAO DAYS, AND DEATHS BY MONTH AND ANNUAL, 1953-86

| YEAR | JANUARY |      |        | FEBRUARY |      |        | MARCH  |      |        | APRIL  |      |        | MAY    |      |        | JUNE   |      |        | JULY   |      |        | AUGUST |      |        | SEPTEMBER |      |        | OCTOBER |      |        | NOVEMBER |      |        | DECEMBER |      |        | ANNUAL |      |      |     |
|------|---------|------|--------|----------|------|--------|--------|------|--------|--------|------|--------|--------|------|--------|--------|------|--------|--------|------|--------|--------|------|--------|-----------|------|--------|---------|------|--------|----------|------|--------|----------|------|--------|--------|------|------|-----|
|      | NUMBER  | DAYS | DEATHS | NUMBER   | DAYS | DEATHS | NUMBER | DAYS | DEATHS | NUMBER | DAYS | DEATHS | NUMBER | DAYS | DEATHS | NUMBER | DAYS | DEATHS | NUMBER | DAYS | DEATHS | NUMBER | DAYS | DEATHS | NUMBER    | DAYS | DEATHS | NUMBER  | DAYS | DEATHS | NUMBER   | DAYS | DEATHS | NUMBER   | DAYS | DEATHS |        |      |      |     |
| 1953 | 14      | 6    | 0      | 16       | 3    | 3      | 40     | 10   | 24     | 47     | 16   | 34     | 94     | 21   | 161    | 111    | 24   | 244    | 31     | 19   | 0      | 24     | 15   | 0      | 5         | 4    | 0      | 12      | 6    | 0      | 21       | 8    | 49     | 421      | 136  | 515    |        |      |      |     |
| 1954 | 2       | 1    | 0      | 17       | 9    | 2      | 63     | 13   | 10     | 112    | 22   | 3      | 101    | 22   | 9      | 107    | 26   | 5      | 45     | 23   | 0      | 49     | 21   | 0      | 21        | 10   | 0      | 2       | 2    | 0      | 17       | 3    | 1      | 550      | 160  | 36     |        |      |      |     |
| 1955 | 2       | 2    | 0      | 4        | 4    | 0      | 43     | 15   | 5      | 99     | 18   | 7      | 147    | 26   | 103    | 154    | 28   | 2      | 49     | 21   | 5      | 33     | 18   | 0      | 15        | 8    | 2      | 23      | 7    | 1      | 20       | 4    | 0      | 593      | 152  | 126    |        |      |      |     |
| 1956 | 2       | 2    | 0      | 7        | 12   | 8      | 31     | 7    | 1      | 85     | 15   | 6      | 79     | 24   | 4      | 65     | 21   | 0      | 91     | 26   | 1      | 43     | 20   | 2      | 16        | 10   | 0      | 29      | 8    | 0      | 7        | 6    | 0      | 504      | 155  | 83     |        |      |      |     |
| 1957 | 17      | 3    | 13     | 45       | 3    | 8      | 38     | 7    | 1      | 216    | 21   | 27     | 227    | 26   | 87     | 147    | 25   | 14     | 55     | 19   | 0      | 20     | 14   | 2      | 17        | 10   | 2      | 18      | 11   | 2      | 58       | 11   | 25     | 38       | 4    | 19     | 856    | 154  | 192  |     |
| 1958 | 12      | 7    | 0      | 20       | 5    | 13     | 15     | 10   | 0      | 76     | 19   | 4      | 68     | 21   | 0      | 127    | 27   | 42     | 121    | 30   | 1      | 46     | 20   | 1      | 24        | 14   | 1      | 9       | 6    | 4      | 45       | 6    | 0      | 1        | 1    | 0      | 564    | 166  | 66   |     |
| 1959 | 16      | 2    | 3      | 20       | 5    | 21     | 43     | 11   | 9      | 30     | 12   | 1      | 226    | 28   | 8      | 73     | 25   | 2      | 63     | 24   | 0      | 38     | 18   | 0      | 58        | 15   | 14     | 24      | 10   | 0      | 11       | 4    | 0      | 2        | 0    | 604    | 156    | 58   |      |     |
| 1960 | 9       | 4    | 0      | 28       | 10   | 0      | 28     | 10   | 0      | 70     | 20   | 7      | 201    | 26   | 34     | 124    | 27   | 3      | 43     | 22   | 0      | 47     | 23   | 1      | 22        | 13   | 0      | 18      | 10   | 1      | 25       | 6    | 0      | 1        | 1    | 0      | 616    | 172  | 46   |     |
| 1961 | 1       | 1    | 0      | 31       | 8    | 0      | 124    | 17   | 7      | 74     | 19   | 3      | 137    | 25   | 23     | 107    | 23   | 2      | 77     | 27   | 0      | 27     | 16   | 0      | 53        | 16   | 15     | 14      | 5    | 0      | 36       | 7    | 1      | 16       | 5    | 0      | 697    | 169  | 51   |     |
| 1962 | 12      | 3    | 1      | 25       | 7    | 0      | 37     | 9    | 17     | 41     | 8    | 1      | 200    | 22   | 3      | 171    | 29   | 0      | 78     | 26   | 0      | 51     | 21   | 6      | 24        | 11   | 0      | 11      | 10   | 0      | 5        | 4    | 0      | 2        | 0    | 657    | 152    | 28   |      |     |
| 1963 | 15      | 5    | 1      | 6        | 3    | 0      | 48     | 12   | 8      | 84     | 14   | 16     | 71     | 21   | 1      | 91     | 23   | 0      | 62     | 26   | 0      | 26     | 13   | 2      | 33        | 13   | 3      | 11      | 5    | 0      | 15       | 6    | 0      | 0        | 0    | 0      | 464    | 141  | 31   |     |
| 1964 | 14      | 3    | 10     | 2        | 2    | 0      | 36     | 11   | 6      | 157    | 23   | 15     | 135    | 20   | 16     | 136    | 24   | 0      | 63     | 23   | 0      | 79     | 23   | 2      | 25        | 10   | 0      | 22      | 4    | 22     | 17       | 8    | 0      | 18       | 5    | 2      | 704    | 156  | 73   |     |
| 1965 | 21      | 11   | 0      | 32       | 4    | 0      | 34     | 9    | 2      | 129    | 20   | 267    | 275    | 25   | 17     | 147    | 28   | 6      | 86     | 26   | 0      | 61     | 23   | 0      | 64        | 21   | 0      | 16      | 4    | 1      | 34       | 6    | 5      | 7        | 4    | 0      | 906    | 181  | 299  |     |
| 1966 | 1       | 1    | 0      | 28       | 5    | 0      | 12     | 6    | 58     | 80     | 20   | 12     | 98     | 17   | 0      | 126    | 28   | 19     | 100    | 27   | 3      | 58     | 21   | 0      | 22        | 13   | 0      | 29      | 6    | 6      | 20       | 3    | 0      | 11       | 3    | 0      | 585    | 150  | 98   |     |
| 1967 | 39      | 4    | 7      | 8        | 5    | 0      | 42     | 14   | 3      | 149    | 18   | 73     | 116    | 25   | 3      | 210    | 28   | 6      | 90     | 25   | 1      | 28     | 16   | 2      | 139       | 16   | 5      | 36      | 7    | 4      | 20       | 8    | 5      | 0        | 61   | 10     | 10     | 926  | 173  | 114 |
| 1968 | 5       | 3    | 0      | 7        | 3    | 0      | 28     | 8    | 0      | 102    | 15   | 40     | 145    | 26   | 72     | 136    | 27   | 11     | 56     | 22   | 2      | 66     | 23   | 2      | 25        | 14   | 0      | 14      | 9    | 0      | 44       | 12   | 3      | 32       | 9    | 1      | 660    | 171  | 131  |     |
| 1969 | 3       | 1    | 32     | 5        | 5    | 0      | 8      | 2    | 1      | 68     | 15   | 2      | 145    | 25   | 4      | 137    | 28   | 7      | 99     | 27   | 0      | 69     | 21   | 19     | 20        | 11   | 0      | 26      | 10   | 0      | 5        | 3    | 0      | 23       | 7    | 1      | 608    | 155  | 66   |     |
| 1970 | 9       | 5    | 0      | 16       | 3    | 0      | 25     | 12   | 2      | 117    | 16   | 29     | 88     | 19   | 26     | 134    | 24   | 6      | 81     | 26   | 3      | 55     | 21   | 0      | 54        | 20   | 0      | 50      | 13   | 6      | 10       | 4    | 0      | 14       | 8    | 0      | 653    | 171  | 72   |     |
| 1971 | -18     | 7    | 1      | 83       | 12   | 131    | 40     | 13   | 2      | 75     | 14   | 11     | 166    | 24   | 7      | 199    | 28   | 2      | 100    | 30   | 1      | 100    | 21   | 0      | 47        | 15   | 0      | 38      | 12   | 0      | 16       | 7    | 0      | 56       | 9    | 2      | 888    | 192  | 156  |     |
| 1972 | 33      | 10   | 5      | 7        | 4    | 0      | 69     | 17   | 0      | 96     | 20   | 16     | 140    | 27   | 0      | 114    | 25   | 2      | 115    | 29   | 0      | 59     | 23   | 2      | 49        | 19   | 0      | 34      | 10   | 0      | 17       | 4    | 2      | 8        | 6    | 0      | 741    | 194  | 27   |     |
| 1973 | 33      | 7    | 1      | 10       | 4    | 0      | 80     | 16   | 17     | 150    | 22   | 10     | 250    | 26   | 35     | 224    | 26   | 2      | 80     | 26   | 0      | 51     | 23   | 4      | 69        | 22   | 3      | 25      | 11   | 0      | 81       | 11   | 12     | 49       | 12   | 3      | 1102   | 206  | 87   |     |
| 1974 | 24      | 8    | 2      | 23       | 9    | 0      | 36     | 12   | 1      | 269    | 22   | 313    | 144    | 28   | 10     | 194    | 26   | 31     | 59     | 19   | 0      | 107    | 26   | 0      | 25        | 11   | 0      | 45      | 10   | 4      | 13       | 8    | 0      | 8        | 5    | 0      | 947    | 184  | 361  |     |
| 1975 | 52      | 7    | 12     | 45       | 12   | 7      | 84     | 16   | 12     | 108    | 20   | 13     | 188    | 30   | 5      | 196    | 28   | 6      | 79     | 26   | 2      | 60     | 25   | 2      | 34        | 17   | 0      | 12      | 7    | 0      | 40       | 8    | 0      | 22       | 8    | 1      | 920    | 204  | 60   |     |
| 1976 | 12      | 5    | 0      | 37       | 6    | 5      | 180    | 18   | 21     | 113    | 23   | 1      | 155    | 24   | 8      | 169    | 26   | 3      | 84     | 28   | 2      | 82     | 18   | 1      | 35        | 15   | 3      | 11      | 5    | 0      | 0        | 0    | 0      | 1        | 1    | 0      | 835    | 169  | 44   |     |
| 1977 | 5       | 4    | 0      | 17       | 3    | 2      | 64     | 15   | 0      | 88     | 15   | 26     | 228    | 29   | 4      | 132    | 27   | 0      | 99     | 27   | 1      | 38     | 26   | 6      | 65        | 21   | 1      | 25      | 5    | 1      | 24       | 10   | 0      | 23       | 7    | 2      | 852    | 189  | 43   |     |
| 1978 | 23      | 7    | 2      | 6        | 3    | 0      | 17     | 8    | 0      | 107    | 17   | 4      | 213    | 27   | 7      | 148    | 28   | 17     | 143    | 30   | 11     | 65     | 24   | 1      | 20        | 10   | 6      | 7       | 5    | 0      | 9        | 5    | 0      | 30       | 9    | 5      | 788    | 173  | 53   |     |
| 1979 | 16      | 9    | 0      | 4        | 3    | 0      | 53     | 13   | 1      | 120    | 17   | 58     | 112    | 23   | 2      | 150    | 24   | 8      | 132    | 30   | 1      | 127    | 27   | 5      | 68        | 19   | 2      | 47      | 12   | 7      | 21       | 8    | 0      | 2        | 1    | 0      | 852    | 186  | 84   |     |
| 1980 | 5       | 4    | 0      | 11       | 9    | 0      | 41     | 15   | 2      | 137    | 16   | 4      | 203    | 25   | 8      | 217    | 30   | 7      | 95     | 26   | 5      | 73     | 27   | 0      | 37        | 14   | 1      | 43      | 7    | 1      | 3        | 2    | 0      | 1        | 1    | 0      | 866    | 176  | 28   |     |
| 1981 | 3       | 3    | 0      | 25       | 5    | 2      | 33     | 13   | 1      | 84     | 18   | 13     | 187    | 24   | 0      | 223    | 29   | 8      | 98     | 27   | 0      | 64     | 22   | 0      | 26        | 16   | 0      | 32      | 12   | 0      | 7        | 5    | 0      | 1        | 1    | 0      | 783    | 175  | 24   |     |
| 1982 | 18      | 8    | 1      | 3        | 2    | 0      | 60     | 15   | 6      | 150    | 20   | 30     | 327    | 28   | 14     | 198    | 30   | 4      | 95     | 29   | 0      | 34     | 15   | 0      | 38        | 12   | 2      | 9       | 4    | 0      | 19       | 6    | 0      | 95       | 13   | 7      | 1046   | 182  | 64   |     |
| 1983 | 13      | 2    | 2      | 41       | 7    | 1      | 71     | 21   | 0      | 65     | 15   | 6      | 249    | 26   | 14     | 178    | 27   | 2      | 99     | 27   | 4      | 76     | 21   | 0      | 20        | 15   | 0      | 12      | 5    | 0      | 49       | 11   | 0      | 58       | 13   | 5      | 931    | 190  | 34   |     |
| 1984 | 1       | 1    | 0      | 7        | 4    | 0      | 73     | 15   | 64     | 176    | 22   | 33     | 169    | 27   | 6      | 242    | 25   | 14     | 72     | 21   | 0      | 47     | 20   | 0      | 17        | 12   | 0      | 49      | 12   | 4      | 30       | 5    | 1      | 4        | 2    | 0      | 907    | 166  | 122  |     |
| 1985 | 2       | 2    | 0      | 7        | 4    | 0      | 38     | 12   | 9      | 134    | 19   | 5      | 182    | 28   | 78     | 82     | 24   | 3      | 51     | 19   | 0      | 108    | 26   | 3      | 40        | 16   | 0      | 18      | 8    | 0      | 19       | 8    | 3      | 3        | 2    | 0      | 684    | 168  | 94   |     |
| 1986 | 0       | 0    | 0      | 30       | 11   | 2      | 75     | 9    | 6      | 84     | 17   | 2      | 173    | 25   | 1      | 134    | 25   | 0      | 88     | 24   | 3      | 67     | 23   | 1      | 65        | 17   | 0      | 26      | 7    | 0      | 17       | 8    | 0      | 5        | 2    | 0      | 764    | 168  | 15   |     |
| POR  | 453     | 148  | 93     | 693      | 193  | 197    | 1709   | 411  | 289    | 3692   | 608  | 1155   | 5639   | 840  | 770    | 5103   | 893  | 477    | 2779   | 857  | 46     | 1928   | 714  | 64     | 1292      | 480  | 63     | 805     | 269  | 66     | 739      | 209  | 53     | 642      | 170  | 108    | 25474  | 5792 | 3381 |     |
| MEAN | 13      | 4    | 3      | 20       | 6    | 6      | 50     | 12   | 9      | 109    | 18   | 34     | 166    | 25   | 23     | 150    | 26   | 14     | 82     | 25   | 1      | 57     | 21   | 2      | 38        | 14   | 2      | 24      | 8    | 2      | 22       | 6    | 2      | 19       | 5    | 3      | 749    | 170  | 99   |     |

**AVERAGE NUMBER OF TORNADOES AND TORNADO DAYS  
EACH MONTH IN THE UNITED STATES**  
(BASED ON 25,474 TORNADOES THAT OCCURRED FROM 1953-1986)



# TORNADOES, TORNADO DAYS, AND DEATHS BY STATE AND NATION, 1953-86

| STATE                | TORNADOES |         |          |       |       |       |                            | DAYS  |         | DEATHS |         |                            |
|----------------------|-----------|---------|----------|-------|-------|-------|----------------------------|-------|---------|--------|---------|----------------------------|
|                      | TOTAL     | AVERAGE | GREATEST | YEAR  | LEAST | YEAR  | PER #<br>10,000<br>SQ. MI. | TOTAL | AVERAGE | TOTAL  | AVERAGE | PER #<br>10,000<br>SQ. MI. |
| ALABAMA              | 742       | 22      | 45       | 1983+ | 5     | 1956  | 4.23                       | 389   | 11      | 215    | 6       | 42                         |
| ALASKA               | 1         | 0       | 1        | 1959  | 0     | 1986+ | .00                        | 1     | 0       | 0      | 0       | 0                          |
| ARIZONA              | 118       | 3       | 17       | 1972  | 0     | 1965  | .30                        | 95    | 3       | 3      | 0       | 0                          |
| ARKANSAS             | 711       | 21      | 78       | 1982  | 2     | 1969+ | 3.94                       | 321   | 9       | 151    | 4       | 28                         |
| CALIFORNIA           | 134       | 4       | 14       | 1982  | 0     | 1968+ | .25                        | 100   | 3       | 0      | 0       | 0                          |
| COLORADO             | 662       | 19      | 58       | 1982  | 1     | 1959  | 1.87                       | 410   | 12      | 2      | 0       | 0                          |
| CONNECTICUT          | 46        | 1       | 8        | 1973  | 0     | 1986+ | 2.70                       | 42    | 1       | 4      | 0       | 8                          |
| DELAWARE             | 30        | 1       | 5        | 1975  | 0     | 1986+ | 4.29                       | 27    | 1       | 2      | 0       | 10                         |
| DISTRICT OF COLUMBIA | 0         | 0       | 0        |       | 0     |       | .00                        | 0     | 0       | 0      | 0       | 0                          |
| FLORIDA              | 1488      | 44      | 97       | 1975  | 10    | 1956  | 7.47                       | 946   | 28      | 61     | 2       | 10                         |
| GEORGIA              | 699       | 21      | 46       | 1974+ | 7     | 1960  | 3.49                       | 393   | 12      | 72     | 2       | 12                         |
| HAWAII               | 24        | 1       | 4        | 1971  | 0     | 1984+ | 1.10                       | 20    | 1       | 0      | 0       | 0                          |
| IDAHO                | 59        | 2       | 10       | 1986+ | 0     | 1977+ | .21                        | 49    | 1       | 0      | 0       | 0                          |
| ILLINOIS             | 903       | 27      | 107      | 1974  | 4     | 1953  | 4.71                       | 419   | 12      | 147    | 4       | 26                         |
| INDIANA              | 689       | 20      | 48       | 1973  | 4     | 1984  | 5.58                       | 336   | 10      | 206    | 6       | 57                         |
| IOWA                 | 990       | 29      | 61       | 1984  | 7     | 1956  | 5.17                       | 444   | 13      | 60     | 2       | 11                         |
| KANSAS               | 1454      | 43      | 97       | 1955  | 14    | 1976  | 5.20                       | 680   | 20      | 168    | 5       | 20                         |
| KENTUCKY             | 275       | 8       | 34       | 1974  | 0     | 1953  | 2.00                       | 160   | 5       | 101    | 3       | 25                         |
| LOUISIANA            | 735       | 22      | 64       | 1983  | 3     | 1955  | 4.46                       | 450   | 13      | 93     | 3       | 19                         |
| MAINE                | 74        | 2       | 11       | 1971  | 0     | 1985+ | .66                        | 65    | 2       | 1      | 0       | 0                          |
| MASSACHUSETTS        | 117       | 3       | 12       | 1958  | 0     | 1982+ | 4.17                       | 86    | 3       | 99     | 3       | 120                        |
| MICHIGAN             | 546       | 16      | 39       | 1974  | 2     | 1959  | 2.76                       | 317   | 9       | 234    | 7       | 40                         |
| MINNESOTA            | 615       | 18      | 34       | 1968  | 5     | 1972  | 2.15                       | 346   | 10      | 76     | 2       | 9                          |
| MISSISSIPPI          | 730       | 21      | 44       | 1973  | 1     | 1979  | 4.50                       | 386   | 11      | 335    | 10      | 70                         |
| MONTANA              | 135       | 4       | 13       | 1971  | 0     | 1974+ | .27                        | 103   | 3       | 1      | 0       | 0                          |
| NEBRASKA             | 1209      | 36      | 78       | 1975  | 10    | 1966  | 4.60                       | 586   | 17      | 49     | 1       | 6                          |
| NEVADA               | 23        | 1       | 4        | 1964  | 0     | 1985+ | .06                        | 22    | 1       | 0      | 0       | 0                          |
| NEW HAMPSHIRE        | 67        | 2       | 9        | 1963  | 0     | 1985+ | 2.12                       | 58    | 2       | 0      | 0       | 0                          |
| NEW JERSEY           | 52        | 2       | 8        | 1973  | 0     | 1984+ | 1.95                       | 44    | 1       | 0      | 0       | 0                          |
| NEW MEXICO           | 258       | 8       | 18       | 1972  | 0     | 1953  | .62                        | 200   | 6       | 3      | 0       | 0                          |
| NEW YORK             | 137       | 4       | 9        | 1986  | 0     | 1953  | .81                        | 107   | 3       | 6      | 0       | 1                          |
| NORTH CAROLINA       | 414       | 12      | 38       | 1973  | 2     | 1970  | 2.31                       | 257   | 8       | 70     | 2       | 13                         |
| OHIO                 | 491       | 14      | 43       | 1973  | 2     | 1984  | 3.50                       | 252   | 7       | 170    | 5       | 41                         |
| OKLAHOMA             | 1879      | 55      | 107      | 1957  | 21    | 1978  | 7.90                       | 767   | 23      | 199    | 6       | 28                         |
| OREGON               | 31        | 1       | 4        | 1984  | 0     | 1986+ | .09                        | 27    | 1       | 0      | 0       | 0                          |
| PACIFIC ISLANDS      | 2         | 0       | 1        | 1981+ | 0     | 1986+ | -                          | 2     | 0       | 0      | 0       | 0                          |
| PENNSYLVANIA         | 302       | 9       | 33       | 1985+ | 0     | 1959  | 1.96                       | 197   | 6       | 73     | 2       | 16                         |
| PUERTO RICO          | 9         | 0       | 2        | 1979  | 0     | 1986+ | .77                        | 8     | 0       | 0      | 0       | 0                          |
| RHODE ISLAND         | 5         | 0       | 3        | 1986  | 0     | 1984+ | 1.21                       | 4     | 0       | 0      | 0       | 0                          |
| SOUTH CAROLINA       | 313       | 9       | 23       | 1973  | 1     | 1986+ | 2.96                       | 208   | 6       | 39     | 1       | 13                         |
| TENNESSEE            | 385       | 11      | 44       | 1974  | 1     | 1962  | 2.68                       | 208   | 6       | 75     | 2       | 18                         |
| TEXAS                | 4224      | 124     | 232      | 1967  | 32    | 1953  | 4.65                       | 1664  | 49      | 402    | 12      | 15                         |
| UTAH                 | 46        | 1       | 6        | 1984  | 0     | 1985+ | .16                        | 38    | 1       | 0      | 0       | 0                          |
| VERMONT              | 27        | 1       | 5        | 1962  | 0     | 1985+ | .82                        | 24    | 1       | 0      | 0       | 0                          |
| VIRGINIA             | 193       | 6       | 22       | 1975  | 1     | 1982+ | 1.39                       | 129   | 4       | 16     | 0       | 4                          |
| VIRGIN ISLANDS       | 2         | 0       | 1        | 1979+ | 0     | 1986+ | -                          | 2     | 0       | 0      | 0       | 0                          |
| WASHINGTON           | 46        | 1       | 4        | 1983+ | 0     | 1977+ | .20                        | 39    | 1       | 6      | 0       | 1                          |
| WEST VIRGINIA        | 68        | 2       | 6        | 1980+ | 0     | 1984+ | .83                        | 53    | 2       | 2      | 0       | 1                          |
| WISCONSIN            | 646       | 19      | 43       | 1980  | 3     | 1953  | 3.38                       | 346   | 10      | 75     | 2       | 13                         |
| TOTAL: UNITED STATES | 25474*    | 749     | 1102     | 1973  | 421   | 1953  | 2.07                       | 5786& | 170     | 3381   | 99      | 9                          |

+ ALSO IN EARLIER YEAR(S).  
\* CORRECTED FOR BOUNDARY-CROSSING TORNADOES & TORNADO DAYS FOR COUNTRY AS A WHOLE.

# MEAN ANNUAL TORNADOES PER 10,000 SQUARE MILES.  
\* NUMBER OF DEATHS PER 10,000 SQUARE MILES.

# NATIONAL TORNADOES, TORNADO DAYS, DEATHS AND RESULTING LOSSES BY YEARS, 1916-86

| YEAR | NUMBER TORNADOES | TORNADO DAYS | TOTAL DEATHS | MOST DEATHS IN SINGLE TORNADO | TOTAL PROPERTY LOSSES \$ | PROPERTY LOSS FREQUENCY * |            |                     |
|------|------------------|--------------|--------------|-------------------------------|--------------------------|---------------------------|------------|---------------------|
|      |                  |              |              |                               |                          | CATEGORY 5                | CATEGORY 6 | CATEGORY 7 AND OVER |
| 1916 | 90               | 36           | 150          | 30                            | 6                        | 7                         | 1          | 0                   |
| 1917 | 120              | 38           | 153          | 101                           | 7                        | 21                        | 9          | 0                   |
| 1918 | 111              | 45           | 132          | 36                            | 7                        | 20                        | 5          | 0                   |
| 1919 | 104              | 35           | 206          | 53                            | 7                        | 10                        | 2          | 0                   |
| 1920 | 105              | 50           | 439          | 87                            | 7                        | 14                        | 1          | 0                   |
| 1921 | 100              | 55           | 202          | 61                            | 7                        | 22                        | 1          | 0                   |
| 1922 | 100              | 64           | 132          | 16                            | 7                        | 22                        | 1          | 0                   |
| 1923 | 100              | 59           | 110          | 23                            | 6                        | 21                        | 1          | 0                   |
| 1924 | 130              | 57           | 376          | 85                            | 6                        | 25                        | 1          | 0                   |
| 1925 | 119              | 65           | 794          | 689                           | 7                        | 34                        | 2          | 1                   |
| 1926 | 111              | 57           | 144          | 23                            | 6                        | 28                        | 0          | 0                   |
| 1927 | 163              | 62           | 540          | 92                            | 4                        | 20                        | 9          | 0                   |
| 1928 | 203              | 79           | 955          | 14                            | 7                        | 40                        | 7          | 0                   |
| 1929 | 197              | 74           | 274          | 40                            | 7                        | 48                        | 4          | 0                   |
| 1930 | 192              | 72           | 179          | 41                            | 7                        | 38                        | 6          | 0                   |
| 1931 | 94               | 57           | 36           | 6                             | 6                        | 14                        | 1          | 0                   |
| 1932 | 151              | 67           | 394          | 37                            | 7                        | 11                        | 1          | 0                   |
| 1933 | 258              | 96           | 362          | 34                            | 7                        | 46                        | 9          | 0                   |
| 1934 | 147              | 77           | 47           | 6                             | 6                        | 10                        | 3          | 0                   |
| 1935 | 180              | 77           | 71           | 11                            | 6                        | 29                        | 0          | 0                   |
| 1936 | 151              | 71           | 52           | 216                           | 7                        | 17                        | 5          | 1                   |
| 1937 | 147              | 75           | 299          | 5                             | 6                        | 24                        | 0          | 0                   |
| 1938 | 213              | 76           | 183          | 32                            | 7                        | 29                        | 6          | 0                   |
| 1939 | 152              | 75           | 91           | 27                            | 7                        | 21                        | 3          | 0                   |
| 1940 | 124              | 62           | 65           | 18                            | 7                        | 13                        | 2          | 0                   |
| 1941 | 118              | 57           | 53           | 25                            | 6                        | 24                        | 1          | 0                   |
| 1942 | 167              | 66           | 384          | 65                            | 7                        | 42                        | 10         | 0                   |
| 1943 | 152              | 61           | 58           | 5                             | 7                        | 28                        | 8          | 0                   |
| 1944 | 169              | 68           | 275          | 100                           | 7                        | 50                        | 9          | 0                   |
| 1945 | 121              | 66           | 210          | 69                            | 7                        | 21                        | 10         | 1                   |
| 1946 | 106              | 65           | 78           | 15                            | 7                        | 29                        | 7          | 0                   |
| 1947 | 169              | 78           | 313          | 169                           | 7                        | 46                        | 7          | 1                   |
| 1948 | 183              | 68           | 139          | 33                            | 7                        | 62                        | 11         | 2                   |
| 1949 | 249              | 80           | 211          | 58                            | 7                        | 54                        | 13         | 0                   |
| 1950 | 200              | 88           | 70           | 18                            | 7                        | 47                        | 9          | 0                   |
| 1951 | 262              | 113          | 34           | 6                             | 7                        | 35                        | 11         | 2                   |
| 1952 | 240              | 98           | 239          | 57                            | 7                        | 53                        | 19         | 0                   |
| 1953 | 421              | 136          | 515          | 116                           | 8                        | 63                        | 18         | 7                   |
| 1954 | 550              | 160          | 36           | 6                             | 7                        | 63                        | 8          | 1                   |
| 1955 | 593              | 152          | 126          | 80                            | 7                        | 74                        | 13         | 1                   |
| 1956 | 504              | 155          | 83           | 25                            | 7                        | 83                        | 24         | 1                   |
| 1957 | 856              | 154          | 100          | 44                            | 8                        | 129                       | 26         | 3                   |
| 1958 | 1044             | 166          | 66           | 19                            | 7                        | 70                        | 8          | 1                   |
| 1959 | 1004             | 166          | 66           | 21                            | 7                        | 70                        | 4          | 1                   |
| 1960 | 999              | 172          | 66           | 16                            | 7                        | 65                        | 11         | 1                   |
| 1961 | 999              | 160          | 66           | 17                            | 7                        | 103                       | 21         | 1                   |
| 1962 | 999              | 160          | 66           | 17                            | 7                        | 51                        | 10         | 0                   |
| 1963 | 999              | 141          | 66           | 15                            | 7                        | 77                        | 15         | 1                   |
| 1964 | 704              | 136          | 239          | 23                            | 7                        | 119                       | 17         | 5                   |
| 1965 | 906              | 181          | 299          | 44                            | 8                        | 126                       | 30         | 1                   |
| 1966 | 585              | 150          | 98           | 58                            | 8                        | 79                        | 13         | 4                   |
| 1967 | 625              | 173          | 114          | 34                            | 8                        | 125                       | 20         | 8                   |
| 1968 | 660              | 171          | 134          | 44                            | 8                        | 120                       | 20         | 8                   |
| 1969 | 600              | 155          | 100          | 32                            | 8                        | 88                        | 16         | 6                   |
| 1970 | 600              | 155          | 100          | 32                            | 8                        | 69                        | 14         | 6                   |
| 1971 | 888              | 171          | 100          | 32                            | 8                        | 71                        | 10         | 6                   |
| 1972 | 888              | 192          | 100          | 32                            | 8                        | 100                       | 10         | 1                   |
| 1973 | 741              | 194          | 100          | 32                            | 8                        | 71                        | 10         | 1                   |
| 1974 | 1102             | 206          | 300          | 7                             | 9                        | 219                       | 28         | 9                   |
| 1975 | 947              | 184          | 300          | 34                            | 9                        | 166                       | 22         | 2                   |
| 1976 | 920              | 204          | 300          | 9                             | 9                        | 189                       | 31         | 1                   |
| 1977 | 835              | 169          | 44           | 25                            | 8                        | 145                       | 41         | 5                   |
| 1978 | 852              | 189          | 43           | 22                            | 8                        | 173                       | 40         | 6                   |
| 1979 | 788              | 173          | 53           | 16                            | 9                        | 153                       | 33         | 6                   |
| 1980 | 852              | 186          | 44           | 42                            | 9                        | 169                       | 22         | 1                   |
| 1981 | 866              | 176          | 28           | 15                            | 9                        | 201                       | 29         | 1                   |
| 1982 | 783              | 175          | 24           | 10                            | 9                        | 144                       | 43         | 1                   |
| 1983 | 1046             | 182          | 44           | 10                            | 9                        | 254                       | 79         | 1                   |
| 1984 | 931              | 190          | 34           | 3                             | 9                        | 211                       | 85         | 1                   |
| 1985 | 907              | 166          | 22           | 16                            | 9                        | 193                       | 90         | 3                   |
| 1986 | 684              | 168          | 94           | 18                            | 9                        | 114                       | 55         | 1                   |
| 1986 | 764              | 168          | 15           | 3                             | 9                        | 157                       | 66         | 9                   |
| MEAN | 749              | 170          | 99           | -                             | -                        | 124                       | 37         | 7                   |

NOTE: - THE ABOVE ESTIMATED LOSSES ARE BASED ON VALUES AT TIME OF OCCURRENCE. MEAN WAS DERIVED FROM DATA FOR PERIOD 1953-1986.

\$ STORM DAMAGES IN CATEGORIES:

- 5. \$50,000 TO \$500,000
- 6. \$500,000 TO \$5 MILLION
- 7. \$5 MILLION TO \$50 MILLION
- 8. \$50 MILLION TO \$500 MILLION
- 9. \$500 MILLION AND OVER

\* NUMBER OF TIMES PROPERTY LOSSES REPORTED IN STORM DATA IN CATEGORIES 5,6,7, AND OVER.

# NUMBER OF FUNNEL CLOUDS BY STATE AND NATION, 1986

|                      | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANN |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ALABAMA              |     |     | 5   |     | 8   |     |     |     |     |     |     |     | 13  |
| ALASKA               |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| ARIZONA              |     |     |     | 2   | 2   | 1   | 2   | 1   |     | 3   |     |     | 11  |
| ARKANSAS             |     |     | 1   | 5   | 5   |     | 6   |     |     |     |     |     | 17  |
| CALIFORNIA           |     | 3   |     |     |     |     |     |     |     |     |     |     | 3   |
| COLORADO             |     |     |     |     |     |     |     | 5   |     |     |     |     | 5   |
| CONNECTICUT          |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| DELAWARE             |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| DISTRICT OF COLUMBIA |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| FLORIDA              |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| GEORGIA              |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| HAWAII               |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| IDAHO                |     |     |     |     |     | 1   |     |     |     |     |     |     | 1   |
| ILLINOIS             |     |     |     | 1   | 16  | 6   | 4   |     | 1   |     |     |     | 28  |
| INDIANA              |     |     |     |     | 1   | 1   |     |     |     |     |     |     | 2   |
| IOWA                 |     |     |     | 3   | 20  | 2   | 25  | 5   | 7   |     |     |     | 62  |
| KANSAS               |     |     |     | 9   | 10  | 5   | 3   | 6   | 2   |     |     |     | 35  |
| KENTUCKY             |     | 1   | 7   |     | 1   |     | 1   |     |     |     |     |     | 10  |
| LOUISIANA            |     |     |     | 3   | 3   |     |     |     |     |     |     |     | 6   |
| MAINE                |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| MARYLAND             |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| MASSACHUSETTS        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| MICHIGAN             |     |     |     |     | 9   | 10  | 8   | 12  | 9   |     |     |     | 48  |
| MINNESOTA            |     |     |     |     | 1   | 6   | 13  | 3   |     |     |     |     | 23  |
| MISSISSIPPI          |     | 2   | 3   |     | 7   |     | 1   | 1   |     | 1   | 2   |     | 17  |
| MISSOURI             |     |     |     |     |     | 1   |     |     |     |     |     |     | 1   |
| MONTANA              |     |     |     |     | 1   |     |     |     |     |     |     |     | 1   |
| NEBRASKA             |     |     |     | 6   | 1   | 6   | 14  | 6   | 2   |     |     |     | 35  |
| NEVADA               |     |     |     |     |     |     |     | 1   | 2   |     |     |     | 3   |
| NEW HAMPSHIRE        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| NEW JERSEY           |     |     |     |     |     |     |     | 1   |     |     |     |     | 1   |
| NEW MEXICO           |     |     |     |     |     |     | 3   |     |     | 1   |     |     | 4   |
| NEW YORK             |     |     |     |     |     |     | 2   | 1   |     |     |     |     | 3   |
| NORTH CAROLINA       |     |     |     | 1   | 1   |     | 3   |     |     |     |     |     | 5   |
| NORTH DAKOTA         |     |     |     |     | 1   | 26  | 33  | 3   |     |     |     |     | 63  |
| OHIO                 |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| OKLAHOMA             |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| OREGON               |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| PACIFIC ISLANDS      |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| PENNSYLVANIA         |     |     |     |     |     |     | 2   |     | 2   |     |     |     | 4   |
| PUERTO RICO          |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| RHODE ISLAND         |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| SOUTH CAROLINA       |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| SOUTH DAKOTA         |     |     |     | 2   | 10  | 15  | 25  | 16  | 1   | 1   |     |     | 70  |
| TENNESSEE            |     |     | 1   |     | 1   |     |     |     |     |     |     |     | 2   |
| TEXAS                |     | 2   | 2   | 16  | 5   | 22  | 5   | 7   | 8   | 4   |     |     | 71  |
| UTAH                 |     |     |     |     |     |     | 2   |     |     |     |     |     | 2   |
| VERMONT              |     |     |     |     |     |     |     | 1   |     |     |     |     | 1   |
| VIRGINIA             |     |     |     | 1   |     |     |     |     |     |     |     |     | 1   |
| VIRGIN ISLANDS       |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| WASHINGTON           |     |     |     |     |     | 4   |     |     |     |     |     |     | 4   |
| WEST VIRGINIA        |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| WISCONSIN            |     |     |     |     |     |     | 15  | 2   | 6   |     |     |     | 23  |
| WYOMING              |     |     |     |     |     |     |     |     |     |     |     |     | 0   |
| TOTAL: UNITED STATES | 0   | 8   | 19  | 49  | 103 | 106 | 167 | 71  | 40  | 10  | 2   | 0   | 575 |

ANNUAL TORNADO MAPS BASED ON THE UNIVERSITY OF CHICAGO  
TORNADO TAPE WILL NO LONGER BE PRODUCED DUE TO LACK OF  
FUNDING. DATA THROUGH 1985 IS AVAILABLE FROM THE:

UNIVERSITY OF CHICAGO  
DEPARTMENT OF THE GEOPHYSICAL SCIENCES  
5734 SOUTH ELLIS AVENUE  
CHICAGO, IL 60637

# NATIONAL SUMMARY OF LIGHTNING, 1986

HENRY N. VIGANSKY  
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
 NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE  
 NATIONAL CLIMATIC DATA CENTER

Sixty-eight (68) people were killed and another 271 people were injured by lightning during 1986. The fatality rate for the year was 30 percent below the national average (97), while the injury rate was eight percent above the national average (250). The national averages were compiled for the 28-year period-of-record, 1959-1986. Even with the low death frequency rate for the year, an increase (from the national average) of percentage frequency of deaths occurred in the following locations: open fields (37 percent versus 28 percent); under trees (18 percent versus 17 percent); boating, fishing, and water related (15 percent versus 13 percent); near tractors, heavy road equipment, etc. (seven percent versus six percent); and golf courses (six percent versus four percent). The following table summarizes the number, location, and percentage frequency of lightning fatalities and injuries for 1986 and the period 1959-1986:

TABLE I  
 LOCATION, NUMBERS, AND PERCENTAGE FREQUENCY OF LIGHTNING DEATHS AND INJURIES

| LOCATION                                  | NUMBER (PERCENTAGE FREQUENCY) |            |         |          |
|---|-------------------------------|------------|---------|----------|
|   | 1959-1986                     |            | 1986    |          |
|   | DEATHS                        | INJURIES   | DEATHS  | INJURIES |
| Open fields, ball fields, etc.            | 752 (28)                      | 2,114 (30) | 25 (37) | 119 (44) |
| Under trees                               | 458 (17)                      | 984 (14)   | 12 (18) | 50 (18)  |
| Boating, fishing, and water related       | 352 (13)                      | 387 (6)    | 10 (15) | 15 (6)   |
| Near tractors, heavy road equipment, etc. | 166 (6)                       | 190 (3)    | 5 (7)   | 4 (2)    |
| Golf courses                              | 113 (4)                       | 284 (4)    | 6 (9)   | 17 (6)   |
| At telephones                             | 30 (1)                        | 189 (3)    | 0       | 8 (3)    |
| Various other and unknown locations       | 844 (31)                      | 2,843 (40) | 10 (14) | 58 (21)  |

Some lightning incidents are briefly described in the following monthly summaries:

JANUARY -- In Whitman, Massachusetts, during a rare January thunderstorm, a lightning bolt struck a tree and a nearby garage, blasted out the rear wall of the garage, and sent an electrical surge through the wiring which blew an electric meter off the wall; a minor fire was ignited, and parts of the tree were found 150 feet (45.7 m) away. In Marshfield, Massachusetts, a bolt of lightning struck a house which blew an electric meter off the wall; sent shingles flying; fused parts of an oil burner; ruptured the basement water pipes and caused the basement to flood; and broke several windows. In Cunningham, Tennessee, lightning struck power lines and the electrical surge followed the wires into a nearby house and knocked out the fuse box. Bits of wiring formed into projectiles and were shot out of the fuse box into nearby walls. Materials around the wiring smoldered for several hours before igniting; the fire damaged two rooms, and smoke and water damage were evident throughout the house; damage was estimated at \$25,000.

FEBRUARY -- During a snowstorm, lightning started a fire in a church bell tower in Johnstown, Pennsylvania. Lightning destroyed one home and damaged three surrounding homes in O'Hara Township, Pennsylvania; one person was injured.

MARCH -- Lightning strikes twice in the same place: in Baxter County, Arkansas, lightning struck a radio transmitter, which caused the radio station to be off the air for two hours. The same tower was struck again about 90 minutes after repairs had been completed. It took two days to repair the damage caused by the second strike. Lightning struck a home in Payson, Arizona, and created a large explosion which caused the home to burn to the ground. The explosion was witnessed by a helicopter pilot/paramedic, who rushed to the scene and rescued two occupants of the house; a third person escaped unassisted. In Wayland, Massachusetts, lightning struck a pine tree, traveled along the root system, leaving a six-inch (15.2 cm) wide path through the ground, and ripped out shrubbery; it also shattered several two-inch (5.1 cm) thick slate patio tiles. It then entered the house; the electric charge surged through the entire electrical system, and the house was engulfed in flames and destroyed.

APRIL -- Near La Follette, Tennessee, a 39-year old man was killed instantly and his 10-year old daughter was injured when lightning struck a metal-roofed chicken house in which they had taken refuge. In Dead Horse Point State Park, Grand County, Utah, a 23-year old man was killed by lightning at a scenic point overlooking the Colorado River.

MAY -- In Volusia County, Florida, a 59-year old man was killed by lightning while he was poling a small boat to shore; at the time it was not raining. A man was killed by a lightning bolt in Sheridan, Indiana, while standing 30 feet (9.1 m) from a tree when the lightning bolt deflected from the tree to the man. Near Carrollton, Kentucky (on Interstate 71), lightning struck a State Highway Patrol car. The lightning bolt struck the two-way radio antenna mounted on the roof, and charged every metal part inside the car before going to ground through the frame, axle, and rear tires. A small circular hole was burned in the trunk lid; the charge burned out the alternator and all radios, and the current burnt a hole the size of a quarter in each rear tire. The entire inside of the car lit up, including the metal cage. The minute lightning struck, a flash went down both sides of the car and across the road; a ball of fire rolled down the back of the car and along the road behind it. The trooper reported that he had a sore spot on the top of his head and a ringing sensation in his ears. In Russell County, Kentucky, at the Lake Cumberland State Park Golf Course, lightning struck a tree and killed a 31-year old woman. In New London, Minnesota, a woman was knocked unconscious when lightning struck her home while she was using the telephone. Three men were struck by lightning while fishing on the Ross Barnett Reservoir located in Rankin County, Mississippi. All three men were knocked unconscious for about one hour. One of the men suffered from burns and a shattered eardrum, the other two men were treated for minor injuries. Lightning caused a \$330,000 fire at a Boy Scout camp in Johnston County, Oklahoma. A school was struck by lightning in Okay, Oklahoma, causing a fire which destroyed the school; property damage was estimated at \$1 million. In Bryan County, Oklahoma, a man was killed by lightning while plowing a field. A man in Baker County, Oregon, was struck and killed by lightning while he was moving irrigation pipes across a field. In Hurst, Texas, an eight-year old boy was struck by lightning while playing basketball with his father on a school playground; several days later the youngster died.

JUNE -- Lightning struck a home in Conway County, Arkansas, killing a dog on the front porch (the pads of the dog's feet were blown off). The woman of the house was slammed against a wall (at the time, she was taking a shower). The charge melted a telephone and the bottom portion of a freezer; burned out the electric range, television set, and other appliances; blew a hole in the front porch wall (where the dog was lying), and three holes in the carport wall. Five vehicles were damaged: the brake cylinders of two trucks were damaged, the tires on a third truck were melted, the polarity of the electrical system on one car was reversed, and unspecified damage was caused to the fifth vehicle. A thunderstorm moved over Camp Chaffee, Arkansas, where the National Guard was on maneuvers; lightning injured six people, three of them required hospitalization. North of Denver, Colorado, lightning injured five members of a drum and bugle corps; at the time of the lightning strike they were performing outdoors on a metal platform. On a ranch just south of Denver, Colorado, a man was killed by lightning. In Hernando County, Florida, lightning struck a pine tree; the charge traveled 50 feet (15.2 m) along the ground and injured four workers who were burying an electrical cable. Lightning struck a tree in Manatee County, Florida, and injured six workers who had sought shelter under a tree to ward off the rain. Another lightning incident in Manatee County killed a man as he was loading a truck in a field. A 14-year old boy was killed by lightning while he was crossing a soccer field in Orange County, Florida. In Polk County, Iowa, on Saylorville Lake, a man was killed by lightning while he was pulling up a boat anchor; his two fishing companions were unhurt. Lightning struck a split-level home located three miles (4.8 km) south of Masonville, Kentucky; it damaged the roof and a bedroom. The bolt hit the roof, entered a bedroom where a child was sleeping, damaged a window, melted an electric line, exploded a piece of paneling, and sent chips flying throughout the room and into a hallway; the child was unhurt. In Bristol County, Massachusetts, lightning struck in a campground and injured four campers as they were working on a trailer awning; one required cardiopulmonary resuscitation to restore his heartbeat. During a thunderstorm in Oakland County, Michigan, four golfers took refuge under a tree; lightning struck the tree, killed one person and injured the other three people. In Cleveland, Mississippi, a group of young men were playing basketball when a severe thunderstorm moved into the area. Because of intense lightning, all but one of the men left the recreation area. The loner took shelter under a tree; lightning struck the tree and killed him. The National Weather Service Office in Concord, New Hampshire, was struck by lightning which knocked out the main power system and the auxiliary power unit. Lightning caused a major fire in Somersworth, New Hampshire, which destroyed the building of Lotus Products, a manufacturer of plastic drinking straws. Also destroyed were raw materials, finished products, and machinery. The building was immediately engulfed in flames; fortunately, all 20 employees escaped unharmed. In Hildebran, North Carolina, an elderly man was injured by lightning as he sat on a couch in his home. In Canton, North Carolina, a 13-year old boy was struck by lightning as he sat under a tree with his dog; the dog was immediately killed and the boy succumbed a week later. East of Clinton, Oklahoma, a man was killed by lightning while feeding livestock. Lightning destroyed a home valued at \$400,000 in Rogers County, Oklahoma. In

northwest Providence County, Rhode Island, at Pulaski Memorial Park, lightning struck a pine tree near the beach. The electrical charge traveled along the ground for 200 feet (61 m) to a pavilion where a group of students were huddled together to ward off the storm; five were knocked to the ground and required hospital treatment for minor burns, and one of the five went into shock. Two marines stationed at Parris Island, South Carolina, were injured by lightning while towing an aircraft into a hanger. Lightning struck two male campers while on the Appalachian Trail northeast of Elizabethton, Tennessee; both were temporarily knocked unconscious, neither was seriously injured, but one was admitted to a hospital after complaining of numbness in his arms and legs. Thirty-seven (37) cows valued at \$44,000 were killed by lightning as they sought shelter from the rain under a tree on a farm near Rutledge, Tennessee.

JULY -- Six field workers in San Diego County, California, were injured by a single lightning bolt. In Marysville, Idaho, ball lightning exploded inside a house and threw a youth 12 feet (3.7 m) across the room, injuring the lad. Two young men were injured by lightning in Fayette County, Kentucky, while attempting to remove a volleyball net. The younger man (21-years old) looked skyward and saw a bolt of lightning racing toward him through the trees about 50 feet (15.2 m) above him; he was struck by lightning, but not seriously injured. His 24-year old friend was seriously injured by the lightning bolt; the 21-year old was wearing tennis shoes and braced his foot on a metal chair on which the barefoot 24-year old man was standing. A landmark church in Brighton, Maine, was heavily damaged by lightning. Also, two women directly across the street from the church were stunned by the lightning bolt and were left with bright red spots on their legs. The steeple was torn apart and a three-foot (.9 m) hole was blasted in the roof; plaster was ripped from the walls, and windows were blown out. The lightning bolt exited through the lower corner of the building, leaving a huge hole in the wall and a large crack in the granite at the base of the building; boards and building debris were hurled into the yard across the street. On White Bear Lake in Ramsey County, Minnesota, two men were hospitalized after being struck by lightning while boating. Lightning struck a tree in Mill River Park, Rockville Centre, New York, under which several people were seeking shelter from the rain; six people were injured; a six-year old boy was seriously hurt, but recovered after spending two weeks in a hospital. In Berne, New York, a man was struck by lightning while installing dry-wall in a home; this was the fourth time he had been struck by lightning. On a golf course in Raleigh, North Carolina, lightning struck a storage building that housed 100 golf carts; the building and contents were destroyed, and the damage was estimated to be over \$400,000. Fire started by lightning gutted a commercial building in Roxboro, North Carolina, causing more than \$500,000 in damages. Lightning struck a tree house in Statesville, North Carolina; a 19-year old boy and an 18-year old girl were injured. Lightning struck three boys while playing baseball near Lucas, Ohio; one boy was killed while carrying an aluminum bat, and the other two youths suffered minor injuries. One person was killed by lightning and five other people were injured while they were in a park shelter located in Cambria County, Pennsylvania. Four soccer players were injured when lightning struck while on a playing field in Newport, Rhode Island. Lightning struck a car while on Interstate 29 near Watertown, South Dakota, and caused all four tires to blow out. One member of the Kentucky National Guard was killed and ten soldiers were injured by lightning while on military maneuvers on the Tennessee side of Fort Campbell Military Reservation. There lightning struck a tree and traveled down to the base of the tree where it struck a 20-year old soldier in the head (he was killed instantly); two of the injured men were placed in intensive care because of numbness in their legs. On a golf course in Fairfax County, Virginia, a golfer was killed by a bolt of lightning; three other golfers and a groundskeeper were injured by the same lightning bolt. In Union County, Wisconsin, lightning struck the roof of a food processing plant and the ensuing fire caused \$300,000 in damages.

AUGUST -- Near Mobile, Alabama, two teenagers were killed by a lightning bolt that struck a large oak tree in an open field where they had sought refuge from a thunderstorm. Both youngsters were unconscious when the paramedics arrived; one victim was pronounced dead upon arrival at a hospital, and the other person died the following day. In Oakley, Idaho, lightning hit a television antenna at a residence and the charge traveled down the cable, setting the shrubbery on fire; the television and radio were blown out, and a telephone and the house wiring were damaged. Lightning destroyed two computer printers, and burned several telephones and three master telephone relay boards in Grace, Idaho. In Laurel County, Kentucky, lightning touched off a spectacular fire that destroyed the London Church Furniture Plant; damage was assessed at \$1 million. On a farm near Richlandville, Kentucky, three men were seriously injured when lightning struck them while they were in a barn hanging up tobacco. In Ocean City, Maryland, lightning struck and killed three people and injured two other persons; they were seated under a beach umbrella. In Uxbridge, Massachusetts, a construction worker was killed by a lightning bolt while working within a house. The lightning struck a nearby tree and traveled into the house via a window, hitting the worker in the head; the lightning charge caused minor damage to the structure. On a golf course in Monroe County, Michigan, two people were struck by lightning; the woman was critically injured (she was wearing metal-spiked shoes), and the man suffered minor injuries (he was wearing rubber-soled shoes). A woman was driving a van in Wayne County, Michigan, when lightning struck the van and injured her. A man and a woman were riding a motorcycle near Clinton, Mississippi, when lightning struck their motorcycle.

Neither cyclist was seriously hurt, although one received a cut on the leg and the other one had metal scraps driven into the back and neck. Their radio antenna was disintegrated, and paint was removed from their helmets. In Durham, North Carolina, lightning was responsible for the death of a girl while she was playing under a tree; five other people at the same location were injured by the same lightning strike. Two men were injured by lightning while riding in a vehicle near Buffalo, South Dakota. In Roberts County, South Dakota, a man was injured by lightning while talking on a telephone. Lightning struck a van near Altair, Texas; one occupant was injured. In Pulaski County, Virginia, an 81-year old woman was injured by lightning while cooking on a wood stove; the force of the lightning bolt blew her across the room, causing her to crash into a wall. In Mabton, Washington, a 16-year old girl was injured when using a telephone. Lightning hit a utility pole; the charge moved along the telephone lines into the house and struck the girl in the shoulder, knocking her unconscious.

SEPTEMBER -- In Apache County, Arizona, lightning struck and killed a boy while he was walking his horse in an open field; his stepfather and a friend were injured by the same lightning bolt. In downtown Sterling, Illinois, lightning destroyed a building, resulting in a \$300,000 loss. Near Stanton, Michigan, lightning struck a small shed and killed a woman and injured her two companions. In Oakland County, Michigan, lightning struck a gas line and caused it to rupture. As a result of the lightning strike and the ensuing explosion, five people were injured. In Pearl River County, Mississippi, three horseback riders took refuge under a tin-roofed shed during a thunderstorm; one boy was touching the tin roof when lightning struck the roof. The bolt traveled through the boy's body, causing him to lose consciousness; immediately cardiopulmonary resuscitation was applied to the youth and he survived the ordeal with only minor injuries. No report was made about the horse's condition. Near Egg Harbor, Wisconsin, lightning destroyed a barn and its contents valued at \$150,000.

OCTOBER -- In Sequoia National Park, California, a group of teenagers were throwing snowballs during a thunderstorm near Kings Canyon lookout; lightning struck one person and he required hospitalization for minor burns. In Carbon County, Utah, lightning killed a 26-year old man while he was hunting deer in the Beaver Canyon area; two other members of the hunting party received minor injuries.

NOVEMBER -- Lightning struck the Agnew Substation located east of Port Angeles, Washington, and caused \$6,000 in damages to a transformer and utility pole. On the shore of Deer Lake about five miles (8 km) east of St. Croix Falls, Wisconsin, lightning struck a restaurant; the fire destroyed the second level, and caused nearly \$200,000 in damages.

DECEMBER -- No reported incidents.

Additional information is presented in the following tables.

More detailed information concerning lightning data can be obtained from the monthly STORM DATA publications. The National Climatic Data Center has lightning data available on magnetic tape for the period 1959-1986. The tape contains the date/time (year, month, day, and hour), location (state and county), number of fatalities, number of injuries, and amount of damage. A copy of this tape can be obtained by contacting the National Climatic Data Center, Federal Building, Asheville, North Carolina 28801-2696 (telephone: (704) 259-0682).

# TOTAL DEATHS BY STATE AND NATION FOR YEAR 1986

| STATE                | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANN |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ALABAMA              | 0   | 0   | 0   | 0   | 0   | 0   | 2   | 2   | 0   | 0   | 0   | 0   | 4   |
| ALASKA               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| ARIZONA              | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 2   |
| ARKANSAS             | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| CALIFORNIA           | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| COLORADO             | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 1   |
| CONNECTICUT          | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| DELAWARE             | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   |
| DISTRICT OF COLUMBIA | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| FLORIDA              | 0   | 0   | 0   | 0   | 1   | 4   | 2   | 3   | 0   | 0   | 0   | 0   | 10  |
| GEORGIA              | 0   | 0   | 0   | 0   | 0   | 1   | 3   | 0   | 0   | 0   | 0   | 0   | 4   |
| HAWAII               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| IDAHO                | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| ILLINOIS             | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 1   |
| INDIANA              | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   |
| IOWA                 | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 1   |
| KANSAS               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| KENTUCKY             | 0   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 2   |
| LOUISIANA            | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 2   |
| MAINE                | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| MARYLAND             | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 4   | 0   | 0   | 0   | 0   | 5   |
| MASSACHUSETTS        | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 2   | 0   | 0   | 0   | 0   | 2   |
| MICHIGAN             | 0   | 0   | 0   | 0   | 0   | 1   | 2   | 0   | 2   | 0   | 0   | 0   | 5   |
| MINNESOTA            | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| MISSISSIPPI          | 0   | 0   | 0   | 0   | 0   | 1   | 2   | 0   | 0   | 0   | 0   | 0   | 3   |
| MISSOURI             | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| MONTANA              | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| NEBRASKA             | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| NEVADA               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| NEW HAMPSHIRE        | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| NEW JERSEY           | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| NEW MEXICO           | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| NEW YORK             | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| NORTH CAROLINA       | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 2   | 0   | 0   | 0   | 0   | 4   |
| NORTH DAKOTA         | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| OHIO                 | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 2   |
| OKLAHOMA             | 0   | 0   | 0   | 0   | 2   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 3   |
| OREGON               | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   |
| PENNSYLVANIA         | 0   | 0   | 0   | 0   | 0   | 0   | 2   | 0   | 0   | 0   | 0   | 0   | 2   |
| PUERTO RICO          | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 1   |
| RHODE ISLAND         | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| SOUTH CAROLINA       | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   |
| SOUTH DAKOTA         | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   |
| TENNESSEE            | 0   | 0   | 0   | 1   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 0   | 4   |
| TEXAS                | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 2   |
| UTAH                 | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 2   |
| VERMONT              | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| VIRGINIA             | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   |
| WASHINGTON           | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| WEST VIRGINIA        | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| WISCONSIN            | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| WYOMING              | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| TOTAL: UNITED STATES | 0   | 0   | 0   | 2   | 9   | 13  | 21  | 17  | 5   | 1   | 0   | 0   | 68  |

# TOTAL INJURIES BY STATE AND NATION FOR YEAR 1986

| STATE                | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANN |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ALABAMA              | 0   | 0   | 0   | 0   | 1   | 0   | 2   | 0   | 0   | 0   | 0   | 0   | 3   |
| ALASKA               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| ARIZONA              | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 2   | 0   | 0   | 0   | 2   |
| ARKANSAS             | 0   | 0   | 0   | 0   | 0   | 8   | 0   | 0   | 0   | 0   | 0   | 0   | 8   |
| CALIFORNIA           | 0   | 0   | 0   | 0   | 0   | 0   | 6   | 0   | 0   | 1   | 0   | 0   | 7   |
| COLORADO             | 0   | 0   | 0   | 0   | 0   | 5   | 0   | 0   | 0   | 0   | 0   | 0   | 5   |
| CONNECTICUT          | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| DELAWARE             | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| DISTRICT OF COLUMBIA | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| FLORIDA              | 0   | 1   | 2   | 0   | 0   | 17  | 11  | 3   | 3   | 0   | 0   | 0   | 37  |
| GEORGIA              | 0   | 0   | 2   | 0   | 0   | 0   | 4   | 0   | 0   | 0   | 0   | 0   | 6   |
| HAWAII               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| IDAHO                | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   |
| ILLINOIS             | 0   | 0   | 0   | 0   | 0   | 0   | 5   | 0   | 0   | 0   | 0   | 0   | 5   |
| INDIANA              | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| IOWA                 | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| KANSAS               | 0   | 0   | 0   | 0   | 0   | 0   | 2   | 2   | 0   | 0   | 0   | 0   | 4   |
| KENTUCKY             | 0   | 0   | 0   | 0   | 1   | 1   | 3   | 3   | 0   | 0   | 0   | 0   | 8   |
| LOUISIANA            | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| MAINE                | 0   | 0   | 0   | 0   | 0   | 0   | 3   | 0   | 0   | 0   | 0   | 0   | 3   |
| MARYLAND             | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 2   | 0   | 0   | 0   | 0   | 3   |
| MASSACHUSETTS        | 0   | 0   | 0   | 0   | 0   | 4   | 1   | 1   | 0   | 0   | 0   | 0   | 6   |
| MICHIGAN             | 0   | 0   | 0   | 0   | 3   | 6   | 6   | 3   | 11  | 0   | 0   | 0   | 29  |
| MINNESOTA            | 0   | 0   | 0   | 0   | 1   | 0   | 5   | 0   | 2   | 0   | 0   | 0   | 8   |
| MISSISSIPPI          | 0   | 0   | 0   | 0   | 3   | 0   | 2   | 2   | 1   | 0   | 0   | 0   | 8   |
| MISSOURI             | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| MONTANA              | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| NEBRASKA             | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 4   | 1   | 0   | 0   | 0   | 5   |
| NEVADA               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| NEW HAMPSHIRE        | 0   | 0   | 0   | 0   | 0   | 1   | 3   | 0   | 0   | 0   | 0   | 0   | 4   |
| NEW JERSEY           | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| NEW MEXICO           | 0   | 0   | 0   | 0   | 0   | 3   | 3   | 0   | 0   | 0   | 0   | 0   | 6   |
| NEW YORK             | 0   | 0   | 0   | 0   | 2   | 3   | 13  | 2   | 0   | 0   | 0   | 0   | 20  |
| NORTH CAROLINA       | 0   | 0   | 0   | 0   | 1   | 2   | 5   | 5   | 1   | 0   | 0   | 0   | 14  |
| NORTH DAKOTA         | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| OHIO                 | 0   | 0   | 0   | 0   | 1   | 2   | 4   | 0   | 0   | 0   | 0   | 0   | 7   |
| OKLAHOMA             | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   |
| OREGON               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| PENNSYLVANIA         | 0   | 1   | 0   | 0   | 0   | 2   | 7   | 0   | 0   | 0   | 0   | 0   | 10  |
| PUERTO RICO          | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| RHODE ISLAND         | 0   | 0   | 0   | 0   | 0   | 5   | 4   | 1   | 0   | 0   | 0   | 0   | 10  |
| SOUTH CAROLINA       | 0   | 0   | 0   | 0   | 1   | 6   | 0   | 0   | 0   | 0   | 0   | 0   | 7   |
| SOUTH DAKOTA         | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 3   | 0   | 0   | 0   | 0   | 4   |
| TENNESSEE            | 0   | 0   | 0   | 1   | 0   | 2   | 13  | 0   | 1   | 0   | 0   | 0   | 17  |
| TEXAS                | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 6   | 0   | 0   | 0   | 0   | 6   |
| UTAH                 | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 2   | 0   | 0   | 2   |
| VERMONT              | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| VIRGINIA             | 0   | 0   | 0   | 0   | 0   | 0   | 5   | 5   | 0   | 0   | 0   | 0   | 10  |
| WASHINGTON           | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 1   |
| WEST VIRGINIA        | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   |
| WISCONSIN            | 0   | 0   | 0   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 2   |
| WYOMING              | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   |
| TOTAL: UNITED STATES | 0   | 2   | 4   | 2   | 15  | 68  | 112 | 43  | 22  | 3   | 0   | 0   | 271 |

# TOTAL DEATHS BY STATE AND NATION FOR PERIOD 1959-86

| STATE                | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANN  |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ALABAMA              | 0   | 0   | 2   | 2   | 4   | 17  | 26  | 16  | 1   | 1   | 0   | 0   | 69   |
| ALASKA               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0    |
| ARIZONA              | 0   | 0   | 0   | 0   | 2   | 1   | 16  | 14  | 11  | 0   | 0   | 0   | 44   |
| ARKANSAS             | 0   | 0   | 8   | 0   | 11  | 29  | 27  | 19  | 3   | 0   | 0   | 0   | 97   |
| CALIFORNIA           | 0   | 0   | 0   | 0   | 0   | 2   | 6   | 5   | 3   | 0   | 0   | 0   | 16   |
| COLORADO             | 0   | 0   | 0   | 1   | 10  | 15  | 29  | 15  | 0   | 1   | 0   | 0   | 71   |
| CONNECTICUT          | 0   | 0   | 0   | 0   | 0   | 3   | 5   | 3   | 1   | 0   | 0   | 0   | 12   |
| DELAWARE             | 0   | 0   | 0   | 0   | 2   | 2   | 4   | 3   | 0   | 0   | 0   | 0   | 11   |
| DISTRICT OF COLUMBIA | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 0   | 0   | 3    |
| FLORIDA              | 0   | 0   | 4   | 3   | 21  | 66  | 73  | 65  | 32  | 3   | 1   | 1   | 269  |
| GEORGIA              | 0   | 0   | 2   | 3   | 4   | 16  | 28  | 10  | 2   | 1   | 0   | 0   | 66   |
| HAWAII               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0    |
| IDAHO                | 0   | 0   | 0   | 1   | 1   | 6   | 5   | 5   | 1   | 0   | 0   | 0   | 19   |
| ILLINOIS             | 0   | 0   | 0   | 4   | 7   | 21  | 12  | 12  | 10  | 2   | 0   | 0   | 68   |
| INDIANA              | 0   | 0   | 1   | 2   | 7   | 21  | 15  | 12  | 5   | 2   | 0   | 0   | 65   |
| IOWA                 | 0   | 0   | 1   | 3   | 10  | 18  | 6   | 13  | 4   | 4   | 0   | 0   | 59   |
| KANSAS               | 0   | 0   | 0   | 4   | 9   | 5   | 13  | 8   | 4   | 1   | 2   | 0   | 46   |
| KENTUCKY             | 1   | 0   | 0   | 3   | 9   | 19  | 15  | 9   | 10  | 0   | 0   | 0   | 66   |
| LOUISIANA            | 0   | 0   | 1   | 5   | 9   | 19  | 39  | 14  | 11  | 0   | 2   | 1   | 101  |
| MAINE                | 0   | 0   | 0   | 0   | 0   | 3   | 5   | 6   | 0   | 3   | 0   | 0   | 17   |
| MARYLAND             | 0   | 0   | 0   | 0   | 2   | 5   | 8   | 11  | 1   | 0   | 0   | 81* | 108  |
| MASSACHUSETTS        | 0   | 0   | 0   | 1   | 3   | 4   | 5   | 9   | 1   | 0   | 0   | 0   | 23   |
| MICHIGAN             | 0   | 0   | 0   | 1   | 6   | 20  | 26  | 21  | 7   | 0   | 0   | 0   | 81   |
| MINNESOTA            | 0   | 0   | 0   | 3   | 3   | 8   | 7   | 12  | 10  | 1   | 0   | 0   | 44   |
| MISSISSIPPI          | 1   | 0   | 4   | 2   | 11  | 10  | 25  | 18  | 5   | 0   | 0   | 0   | 76   |
| MISSOURI             | 0   | 0   | 5   | 4   | 20  | 18  | 12  | 8   | 3   | 1   | 0   | 0   | 71   |
| MONTANA              | 0   | 0   | 0   | 0   | 2   | 8   | 6   | 2   | 0   | 0   | 0   | 0   | 18   |
| NEBRASKA             | 0   | 0   | 0   | 1   | 3   | 13  | 8   | 6   | 4   | 0   | 0   | 0   | 35   |
| NEVADA               | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 2   | 0   | 0   | 0   | 0   | 3    |
| NEW HAMPSHIRE        | 0   | 0   | 0   | 0   | 0   | 3   | 2   | 0   | 0   | 0   | 0   | 0   | 5    |
| NEW JERSEY           | 0   | 0   | 0   | 1   | 3   | 7   | 19  | 14  | 5   | 0   | 0   | 0   | 49   |
| NEW MEXICO           | 0   | 0   | 0   | 1   | 3   | 8   | 21  | 26  | 4   | 0   | 0   | 0   | 63   |
| NEW YORK             | 0   | 0   | 0   | 0   | 6   | 18  | 52  | 26  | 4   | 2   | 0   | 0   | 108  |
| NORTH CAROLINA       | 0   | 1   | 4   | 3   | 20  | 30  | 46  | 34  | 4   | 0   | 0   | 0   | 142  |
| NORTH DAKOTA         | 0   | 0   | 0   | 0   | 0   | 4   | 3   | 3   | 0   | 0   | 0   | 0   | 10   |
| OHIO                 | 0   | 0   | 0   | 3   | 8   | 22  | 40  | 15  | 8   | 2   | 2   | 0   | 100  |
| OKLAHOMA             | 1   | 1   | 1   | 9   | 14  | 12  | 7   | 15  | 11  | 3   | 2   | 0   | 76   |
| OREGON               | 0   | 0   | 0   | 0   | 2   | 0   | 0   | 1   | 2   | 1   | 0   | 0   | 6    |
| PENNSYLVANIA         | 0   | 1   | 0   | 0   | 7   | 24  | 28  | 25  | 8   | 1   | 0   | 0   | 94   |
| PUERTO RICO          | 0   | 0   | 0   | 0   | 0   | 3   | 6   | 9   | 5   | 3   | 0   | 0   | 26   |
| RHODE ISLAND         | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 0   | 2   | 0   | 0   | 0   | 4    |
| SOUTH CAROLINA       | 0   | 0   | 1   | 0   | 6   | 9   | 29  | 11  | 7   | 0   | 0   | 0   | 63   |
| SOUTH DAKOTA         | 0   | 0   | 0   | 0   | 4   | 1   | 5   | 1   | 3   | 3   | 0   | 0   | 17   |
| TENNESSEE            | 0   | 1   | 1   | 7   | 12  | 31  | 19  | 18  | 14  | 2   | 3   | 0   | 108  |
| TEXAS                | 0   | 0   | 0   | 14  | 26  | 14  | 38  | 21  | 15  | 7   | 1   | 0   | 136  |
| UTAH                 | 0   | 0   | 0   | 1   | 1   | 5   | 5   | 6   | 2   | 1   | 0   | 0   | 21   |
| VERMONT              | 0   | 0   | 0   | 0   | 0   | 4   | 5   | 4   | 0   | 0   | 0   | 0   | 13   |
| VIRGINIA             | 0   | 0   | 0   | 0   | 9   | 8   | 9   | 9   | 3   | 0   | 0   | 0   | 38   |
| WASHINGTON           | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 1    |
| WEST VIRGINIA        | 0   | 0   | 0   | 0   | 4   | 2   | 8   | 2   | 1   | 0   | 0   | 0   | 17   |
| WISCONSIN            | 0   | 0   | 0   | 1   | 2   | 8   | 12  | 11  | 2   | 1   | 1   | 1   | 39   |
| WYOMING              | 0   | 0   | 0   | 0   | 2   | 4   | 7   | 6   | 2   | 0   | 0   | 0   | 21   |
| TOTAL: UNITED STATES | 3   | 4   | 35  | 83  | 285 | 570 | 784 | 576 | 231 | 46  | 14  | 84  | 2715 |

\* On December 8, 1963 the crash of a jetliner killing 81 people near Elkton, Maryland, was attributed to lightning by the Civil Aeronautics Board Investigators.

# TOTAL INJURIES BY STATE AND NATION FOR PERIOD 1959-86

| STATE                | JAN | FEB | MAR | APR | MAY | JUN  | JUL  | AUG  | SEP | OCT | NOV | DEC | ANN  |
|----------------------|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|------|
| ALABAMA              | 6   | 1   | 10  | 2   | 5   | 14   | 56   | 38   | 1   | 4   | 0   | 0   | 137  |
| ALASKA               | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0   | 0   | 0   | 0   | 0    |
| ARIZONA              | 2   | 0   | 0   | 0   | 6   | 1    | 27   | 21   | 16  | 0   | 0   | 0   | 73   |
| ARKANSAS             | 1   | 2   | 2   | 10  | 26  | 23   | 30   | 57   | 9   | 1   | 0   | 1   | 162  |
| CALIFORNIA           | 1   | 0   | 0   | 4   | 0   | 0    | 15   | 7    | 1   | 1   | 1   | 1   | 31   |
| COLORADO             | 0   | 0   | 0   | 0   | 23  | 44   | 44   | 43   | 5   | 0   | 0   | 0   | 159  |
| CONNECTICUT          | 0   | 0   | 2   | 0   | 3   | 17   | 13   | 11   | 6   | 0   | 0   | 0   | 52   |
| DELAWARE             | 0   | 0   | 0   | 0   | 8   | 9    | 0    | 1    | 2   | 0   | 0   | 0   | 20   |
| DISTRICT OF COLUMBIA | 0   | 0   | 0   | 0   | 0   | 4    | 1    | 1    | 0   | 0   | 1   | 0   | 7    |
| FLORIDA              | 0   | 2   | 15  | 12  | 27  | 178  | 178  | 166  | 130 | 27  | 0   | 1   | 736  |
| GEORGIA              | 0   | 0   | 5   | 2   | 18  | 43   | 106  | 31   | 3   | 5   | 0   | 0   | 213  |
| HAWAII               | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0   | 0   | 0   | 0   | 0    |
| IDAHO                | 0   | 0   | 0   | 1   | 6   | 17   | 15   | 17   | 4   | 1   | 0   | 0   | 61   |
| ILLINOIS             | 0   | 0   | 0   | 2   | 13  | 37   | 28   | 32   | 28  | 1   | 0   | 0   | 141  |
| INDIANA              | 0   | 0   | 2   | 4   | 19  | 31   | 26   | 22   | 1   | 0   | 0   | 0   | 105  |
| IOWA                 | 0   | 0   | 1   | 7   | 22  | 41   | 35   | 18   | 16  | 3   | 1   | 0   | 144  |
| KANSAS               | 0   | 0   | 5   | 10  | 14  | 23   | 39   | 26   | 27  | 4   | 1   | 0   | 149  |
| KENTUCKY             | 0   | 0   | 0   | 2   | 20  | 56   | 50   | 20   | 10  | 1   | 0   | 0   | 159  |
| LOUISIANA            | 1   | 0   | 6   | 2   | 13  | 13   | 95   | 38   | 14  | 1   | 1   | 1   | 185  |
| MAINE                | 0   | 0   | 0   | 0   | 3   | 5    | 25   | 50   | 0   | 0   | 1   | 0   | 84   |
| MARYLAND             | 0   | 0   | 0   | 0   | 21  | 17   | 33   | 19   | 6   | 0   | 0   | 0   | 96   |
| MASSACHUSETTS        | 0   | 0   | 1   | 11  | 16  | 39   | 104  | 73   | 26  | 4   | 2   | 1   | 277  |
| MICHIGAN             | 0   | 0   | 1   | 9   | 37  | 133  | 103  | 190  | 30  | 6   | 0   | 0   | 509  |
| MINNESOTA            | 0   | 0   | 0   | 0   | 15  | 17   | 20   | 18   | 9   | 4   | 0   | 0   | 83   |
| MISSISSIPPI          | 1   | 2   | 4   | 3   | 13  | 10   | 101  | 34   | 9   | 2   | 2   | 1   | 182  |
| MISSOURI             | 0   | 1   | 1   | 8   | 20  | 16   | 4    | 15   | 3   | 2   | 4   | 0   | 74   |
| MONTANA              | 0   | 0   | 0   | 0   | 5   | 9    | 10   | 8    | 0   | 0   | 0   | 0   | 32   |
| NEBRASKA             | 0   | 0   | 0   | 4   | 14  | 6    | 8    | 16   | 6   | 0   | 0   | 0   | 54   |
| NEVADA               | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 2    | 0   | 0   | 0   | 0   | 2    |
| NEW HAMPSHIRE        | 0   | 0   | 0   | 0   | 2   | 18   | 30   | 3    | 2   | 0   | 0   | 0   | 55   |
| NEW JERSEY           | 0   | 0   | 0   | 0   | 3   | 11   | 53   | 18   | 16  | 0   | 0   | 0   | 101  |
| NEW MEXICO           | 0   | 0   | 0   | 1   | 17  | 12   | 36   | 23   | 6   | 0   | 0   | 0   | 95   |
| NEW YORK             | 0   | 0   | 0   | 1   | 6   | 52   | 100  | 126  | 23  | 3   | 1   | 0   | 312  |
| NORTH CAROLINA       | 0   | 2   | 27  | 13  | 39  | 64   | 99   | 107  | 19  | 2   | 1   | 0   | 373  |
| NORTH DAKOTA         | 0   | 0   | 0   | 0   | 2   | 0    | 0    | 5    | 4   | 0   | 0   | 0   | 11   |
| OHIO                 | 0   | 0   | 32  | 3   | 50  | 49   | 50   | 90   | 42  | 4   | 11  | 0   | 331  |
| OKLAHOMA             | 1   | 1   | 3   | 14  | 29  | 36   | 32   | 32   | 19  | 19  | 5   | 2   | 193  |
| OREGON               | 0   | 0   | 0   | 0   | 2   | 2    | 0    | 9    | 3   | 0   | 0   | 0   | 16   |
| PENNSYLVANIA         | 0   | 6   | 0   | 0   | 9   | 107  | 85   | 134  | 41  | 2   | 0   | 0   | 384  |
| PUERTO RICO          | 0   | 0   | 0   | 0   | 0   | 0    | 2    | 0    | 2   | 1   | 0   | 0   | 5    |
| RHODE ISLAND         | 0   | 2   | 0   | 0   | 1   | 10   | 9    | 12   | 3   | 0   | 1   | 0   | 38   |
| SOUTH CAROLINA       | 0   | 0   | 0   | 3   | 20  | 14   | 90   | 26   | 19  | 1   | 0   | 0   | 173  |
| SOUTH DAKOTA         | 0   | 0   | 0   | 1   | 4   | 18   | 11   | 9    | 1   | 2   | 0   | 0   | 46   |
| TENNESSEE            | 0   | 1   | 4   | 3   | 28  | 52   | 96   | 46   | 20  | 4   | 0   | 0   | 254  |
| TEXAS                | 0   | 2   | 5   | 32  | 43  | 38   | 37   | 41   | 23  | 10  | 2   | 0   | 233  |
| UTAH                 | 0   | 0   | 0   | 0   | 2   | 18   | 12   | 14   | 4   | 2   | 0   | 0   | 52   |
| VERMONT              | 0   | 0   | 0   | 0   | 0   | 3    | 10   | 2    | 0   | 0   | 0   | 0   | 15   |
| VIRGINIA             | 0   | 0   | 0   | 2   | 7   | 13   | 44   | 29   | 6   | 0   | 0   | 0   | 101  |
| WASHINGTON           | 0   | 0   | 0   | 0   | 4   | 1    | 7    | 8    | 0   | 1   | 0   | 0   | 21   |
| WEST VIRGINIA        | 0   | 0   | 0   | 0   | 0   | 2    | 23   | 25   | 1   | 1   | 0   | 0   | 52   |
| WISCONSIN            | 0   | 1   | 2   | 3   | 5   | 26   | 52   | 22   | 7   | 2   | 2   | 0   | 122  |
| WYOMING              | 0   | 0   | 0   | 0   | 4   | 32   | 18   | 21   | 6   | 0   | 0   | 0   | 81   |
| TOTAL: UNITED STATES | 13  | 23  | 128 | 169 | 644 | 1381 | 2062 | 1776 | 629 | 121 | 37  | 8   | 6991 |

## NATIONAL TOTAL DEATHS BY YEAR FOR PERIOD 1959-86

| YEAR  | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANN  |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 1959  | 1   | 0   | 1   | 4   | 18  | 25  | 50  | 39  | 13  | 7   | 0   | 0   | 158  |
| 1960  | 0   | 0   | 1   | 5   | 7   | 33  | 25  | 17  | 9   | 0   | 0   | 0   | 97   |
| 1961  | 0   | 0   | 1   | 2   | 9   | 23  | 47  | 20  | 10  | 1   | 0   | 0   | 113  |
| 1962  | 0   | 0   | 3   | 6   | 27  | 20  | 26  | 28  | 9   | 1   | 0   | 0   | 120  |
| 1963  | 0   | 0   | 4   | 3   | 11  | 37  | 42  | 20  | 10  | 2   | 0   | 81* | 210  |
| 1964  | 0   | 0   | 9   | 6   | 15  | 21  | 29  | 19  | 7   | 1   | 1   | 0   | 108  |
| 1965  | 0   | 0   | 2   | 4   | 12  | 34  | 39  | 28  | 4   | 2   | 0   | 0   | 125  |
| 1966  | 0   | 0   | 1   | 1   | 8   | 15  | 21  | 16  | 11  | 3   | 0   | 0   | 76   |
| 1967  | 1   | 0   | 1   | 2   | 3   | 26  | 21  | 14  | 1   | 2   | 1   | 1   | 73   |
| 1968  | 0   | 0   | 0   | 1   | 5   | 24  | 30  | 29  | 9   | 3   | 1   | 1   | 103  |
| 1969  | 0   | 0   | 1   | 5   | 13  | 17  | 27  | 13  | 14  | 3   | 0   | 0   | 93   |
| 1970  | 0   | 0   | 0   | 1   | 17  | 25  | 27  | 19  | 21  | 1   | 0   | 0   | 111  |
| 1971  | 0   | 0   | 2   | 1   | 12  | 27  | 33  | 19  | 19  | 0   | 0   | 0   | 113  |
| 1972  | 0   | 0   | 1   | 1   | 5   | 21  | 31  | 28  | 3   | 1   | 0   | 0   | 91   |
| 1973  | 0   | 1   | 2   | 3   | 10  | 24  | 31  | 18  | 13  | 2   | 1   | 0   | 105  |
| 1974  | 0   | 2   | 0   | 7   | 12  | 21  | 28  | 24  | 6   | 0   | 2   | 0   | 102  |
| 1975  | 0   | 1   | 3   | 3   | 11  | 19  | 28  | 18  | 6   | 2   | 0   | 0   | 91   |
| 1976  | 0   | 0   | 0   | 1   | 9   | 19  | 19  | 19  | 3   | 2   | 0   | 0   | 72   |
| 1977  | 0   | 0   | 0   | 4   | 9   | 19  | 16  | 35  | 14  | 1   | 0   | 0   | 98   |
| 1978  | 0   | 0   | 1   | 1   | 9   | 26  | 24  | 22  | 3   | 1   | 0   | 1   | 88   |
| 1979  | 0   | 0   | 0   | 3   | 11  | 4   | 20  | 16  | 4   | 3   | 2   | 0   | 63   |
| 1980  | 0   | 0   | 0   | 0   | 7   | 16  | 27  | 20  | 5   | 1   | 0   | 0   | 76   |
| 1981  | 0   | 0   | 0   | 4   | 5   | 13  | 19  | 19  | 5   | 0   | 2   | 0   | 67   |
| 1982  | 1   | 0   | 0   | 3   | 5   | 14  | 29  | 18  | 4   | 3   | 0   | 0   | 77   |
| 1983  | 0   | 0   | 1   | 2   | 4   | 8   | 28  | 23  | 8   | 1   | 2   | 0   | 77   |
| 1984  | 0   | 0   | 1   | 3   | 10  | 14  | 20  | 10  | 7   | 1   | 1   | 0   | 67   |
| 1985  | 0   | 0   | 0   | 5   | 12  | 12  | 26  | 8   | 8   | 1   | 1   | 0   | 73   |
| 1986  | 0   | 0   | 0   | 2   | 9   | 13  | 21  | 17  | 5   | 1   | 0   | 0   | 68   |
| TOTAL | 3   | 4   | 35  | 83  | 285 | 570 | 784 | 576 | 231 | 46  | 14  | 84  | 2715 |
| MEAN  | 0   | 0   | 1   | 3   | 10  | 20  | 28  | 21  | 8   | 2   | 1   | 3   | 97   |

\* On December 8, 1963 the crash of a jetliner killing 81 people near Elkton, Maryland, was attributed to lightning by the Civil Aeronautics Board Investigators.

## NATIONAL TOTAL INJURIES BY YEAR FOR PERIOD 1959-86

| YEAR  | JAN | FEB | MAR | APR | MAY | JUN  | JUL  | AUG  | SEP | OCT | NOV | DEC | ANN  |
|-------|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|------|
| 1959  | 0   | 0   | 0   | 5   | 27  | 52   | 110  | 103  | 23  | 3   | 1   | 1   | 325  |
| 1960  | 0   | 0   | 2   | 11  | 12  | 70   | 28   | 50   | 16  | 9   | 4   | 0   | 202  |
| 1961  | 0   | 0   | 7   | 14  | 15  | 49   | 83   | 50   | 31  | 5   | 1   | 1   | 256  |
| 1962  | 0   | 0   | 3   | 5   | 39  | 38   | 90   | 49   | 12  | 6   | 0   | 0   | 242  |
| 1963  | 7   | 0   | 0   | 6   | 14  | 64   | 55   | 44   | 18  | 1   | 0   | 0   | 209  |
| 1964  | 3   | 0   | 10  | 15  | 14  | 38   | 99   | 53   | 8   | 1   | 1   | 0   | 239  |
| 1965  | 0   | 2   | 2   | 4   | 26  | 42   | 59   | 59   | 19  | 1   | 0   | 0   | 217  |
| 1966  | 3   | 2   | 1   | 2   | 37  | 39   | 42   | 44   | 15  | 1   | 0   | 0   | 183  |
| 1967  | 0   | 0   | 0   | 4   | 7   | 35   | 59   | 33   | 4   | 2   | 0   | 1   | 145  |
| 1968  | 0   | 0   | 4   | 2   | 16  | 52   | 117  | 155  | 14  | 9   | 1   | 0   | 370  |
| 1969  | 0   | 0   | 0   | 4   | 19  | 75   | 39   | 23   | 12  | 0   | 0   | 1   | 173  |
| 1970  | 0   | 0   | 1   | 5   | 40  | 40   | 82   | 43   | 43  | 4   | 1   | 0   | 259  |
| 1971  | 0   | 1   | 0   | 1   | 24  | 71   | 79   | 54   | 22  | 1   | 1   | 0   | 254  |
| 1972  | 0   | 0   | 8   | 6   | 12  | 24   | 72   | 54   | 24  | 2   | 1   | 0   | 203  |
| 1973  | 0   | 0   | 10  | 2   | 20  | 23   | 74   | 59   | 29  | 9   | 2   | 0   | 228  |
| 1974  | 1   | 9   | 1   | 3   | 12  | 27   | 56   | 51   | 12  | 1   | 0   | 0   | 173  |
| 1975  | 0   | 3   | 0   | 1   | 30  | 60   | 107  | 154  | 42  | 1   | 0   | 1   | 399  |
| 1976  | 0   | 1   | 0   | 7   | 16  | 39   | 73   | 68   | 13  | 1   | 0   | 1   | 219  |
| 1977  | 0   | 0   | 0   | 3   | 35  | 58   | 58   | 67   | 62  | 4   | 4   | 0   | 291  |
| 1978  | 0   | 0   | 5   | 3   | 19  | 100  | 73   | 54   | 42  | 5   | 0   | 0   | 301  |
| 1979  | 0   | 2   | 4   | 26  | 32  | 73   | 55   | 49   | 9   | 2   | 2   | 0   | 254  |
| 1980  | 0   | 1   | 2   | 11  | 11  | 49   | 50   | 134  | 16  | 1   | 0   | 0   | 275  |
| 1981  | 1   | 0   | 2   | 9   | 34  | 60   | 108  | 52   | 9   | 3   | 13  | 0   | 291  |
| 1982  | 1   | 0   | 2   | 6   | 38  | 20   | 54   | 32   | 11  | 4   | 4   | 2   | 174  |
| 1983  | 0   | 0   | 24  | 3   | 25  | 24   | 87   | 113  | 30  | 31  | 0   | 0   | 337  |
| 1984  | 0   | 0   | 7   | 5   | 13  | 43   | 80   | 53   | 44  | 7   | 1   | 0   | 253  |
| 1985  | 0   | 0   | 29  | 4   | 42  | 48   | 61   | 33   | 27  | 4   | 0   | 0   | 248  |
| 1986  | 0   | 2   | 4   | 2   | 15  | 68   | 112  | 43   | 22  | 3   | 0   | 0   | 271  |
| TOTAL | 13  | 23  | 128 | 169 | 644 | 1381 | 2062 | 1776 | 629 | 121 | 37  | 8   | 6991 |
| MEAN  | 0   | 1   | 5   | 6   | 23  | 49   | 74   | 63   | 22  | 4   | 1   | 0   | 250  |



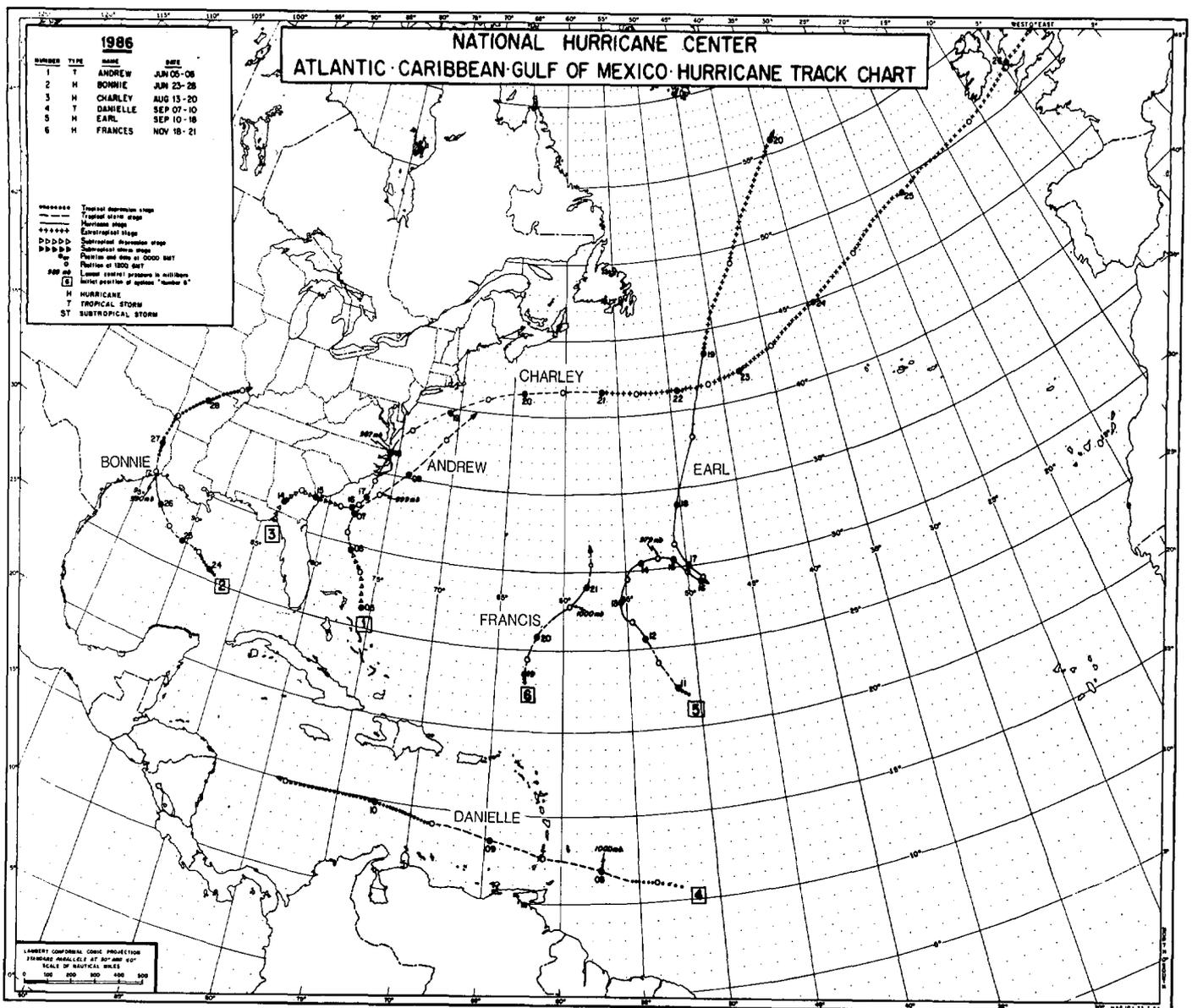


Figure 1. -- Tropical cyclone tracks, 1986.

free from hurricane activity for a record setting fifth straight season. Tropical storm Danielle moved across the Windward Islands into the Eastern Caribbean, but soon dissipated due to upper level wind shear. Table 3 lists ships encountering winds of 50 knots or more.

### Tropical Storm Andrew

JUNE 5-8

A slow developing circulation near the Bahama Islands was

designated a depression on June 5th. As the system moved slowly northward sustained surface winds increased to tropical storm strength (35 knots) on the 6th (fig. 2). Andrew recurved to the northeast, with its center passing 70 miles from Cape Hatteras before heading out to sea and dissipating off the New England Coast. Maximum sustained winds reached 45 knots on the east side of the storm as it passed

near the coast. There was one drowning death but no reports of damage.

### Hurricane Bonnie

JUNE 23-28

Bonnie was identified as a tropical depression on June 23d in the central Gulf of Mexico. The depression reached storm strength on the next day, when its center was located about 175 miles south of the Louisiana coast. Just

Table 3. -- Ships encountering tropical cyclone winds of 50 knots or more.

| TROPICAL CYCLONE | VESSEL CALL SIGN | DATE MO DAY | TIME UTC | SHIP POSITION |       | WIND    |            | PRESSURE (MB) |
|------------------|------------------|-------------|----------|---------------|-------|---------|------------|---------------|
|                  |                  |             |          | LAT.N         | Lon.W | DIR (°) | SPEED (KN) |               |
| ANDREW           | (None)           |             |          |               |       |         |            |               |
| BONNIE           | (None)           |             |          |               |       |         |            |               |
| CHARLEY          | KMHF             | 08 20       | 0000     | 43.9          | 60.1  | 100     | 50         | 1007.8        |
|                  | KMHF             | 08 20       | 1200     | 43.8          | 60.2  | 040     | 66         | 1008.8        |
|                  | VSG8             | 08 20       | 1200     | 44.2          | 58.4  | 050     | 55         | 1007.2        |
|                  | VAKB             | 08 23       | 1200     | 48.0          | 39.3  | 080     | 50         | 1005.3        |
| DANIELLE         | (None)           |             |          |               |       |         |            |               |
| EARL             | ELAF7            | 09 18       | 2140     | 44.4          | 45.2  | 120     | 65         | 1004.0        |
|                  | YJWG6            | 09 19       | 1200     | 46.5          | 39.0  | 180     | 55         | 1017.8        |
|                  | ELDT6            | 09 19       | 1200     | 50.5          | 38.3  | 150     | 58         | 1006.0        |
|                  | ELDT6            | 09 19       | 1800     | 51.3          | 36.8  | 180     | 55         | 1003.5        |
| FRANCES          | (None)           |             |          |               |       |         |            |               |

a few hours later, a USAF reconnaissance plane reported a 68-knot flight-level wind speed and Bonnie was upgraded to a hurricane. The center crossed the coast near

the Texas/Louisiana border early on the 26th (fig. 3).

A sustained wind speed of 67 knots with a gust to 85 knots was recorded at Sea Rim State Park on the

Texas coast. An oil rig about 100 miles offshore observed 72-knot sustained winds. The lowest surface pressure was 990 millibars or 29.24 inches, recorded by the



Figure 2. -- Andrew at 1631, June 5, north of the Bahamas. NOAA GOES.



Figure 3. -- Bonnie at 1600 on the 26th over southeast Texas. NOAA GOES.

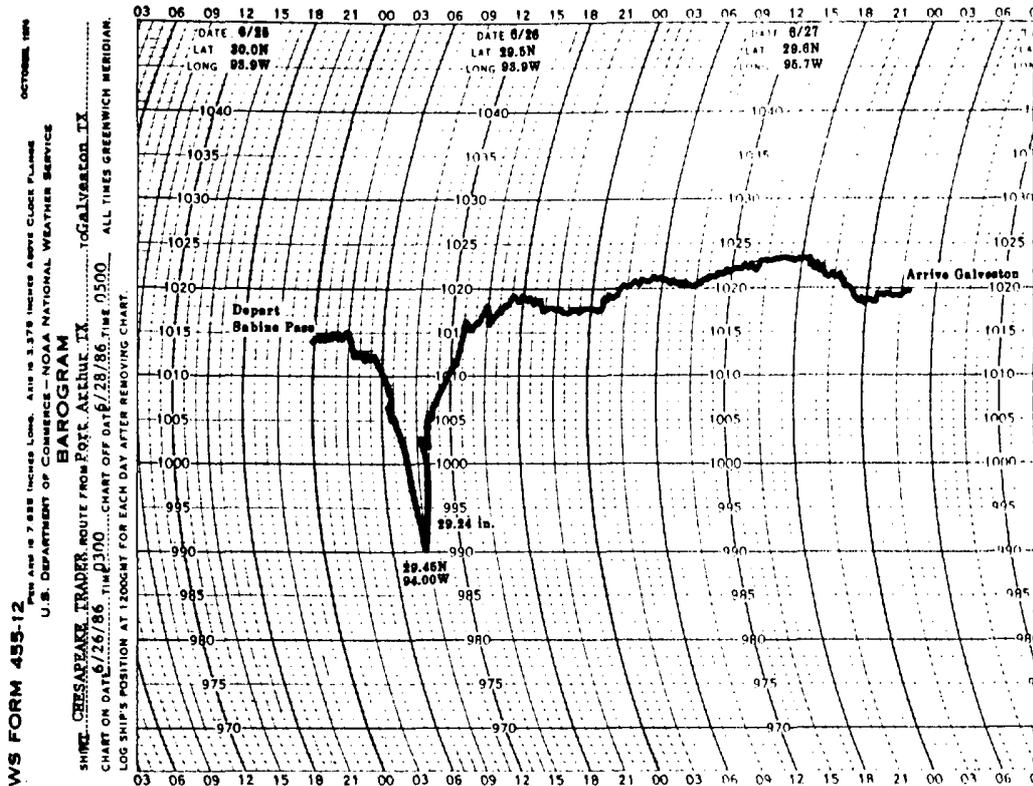


Figure 4. -- Barograph trace from the MT CHESAPEAKE TRADER as she passed through the center of Hurricane Bonnie.

Ship CHESAPEAKE TRADER just off the upper Texas coast (fig.4).

Storm surge water levels along the coast ranged up to a maximum of 5 feet above normal astronomical tide at Sabine Pass, Texas. Coastal flooding produced most of the \$2-million damage

estimate. There were three deaths in the Port Arthur, Texas area.

### Hurricane Charley

AUGUST 13-20

A weak circulation was first detected from satellite pic-

tures on August 12th, centered just west of Tampa, Florida. The weak circulation was tracked across the Florida panhandle, across Georgia and back offshore into the Atlantic on the 15th. It then strengthened to a tropical storm. The storm turned

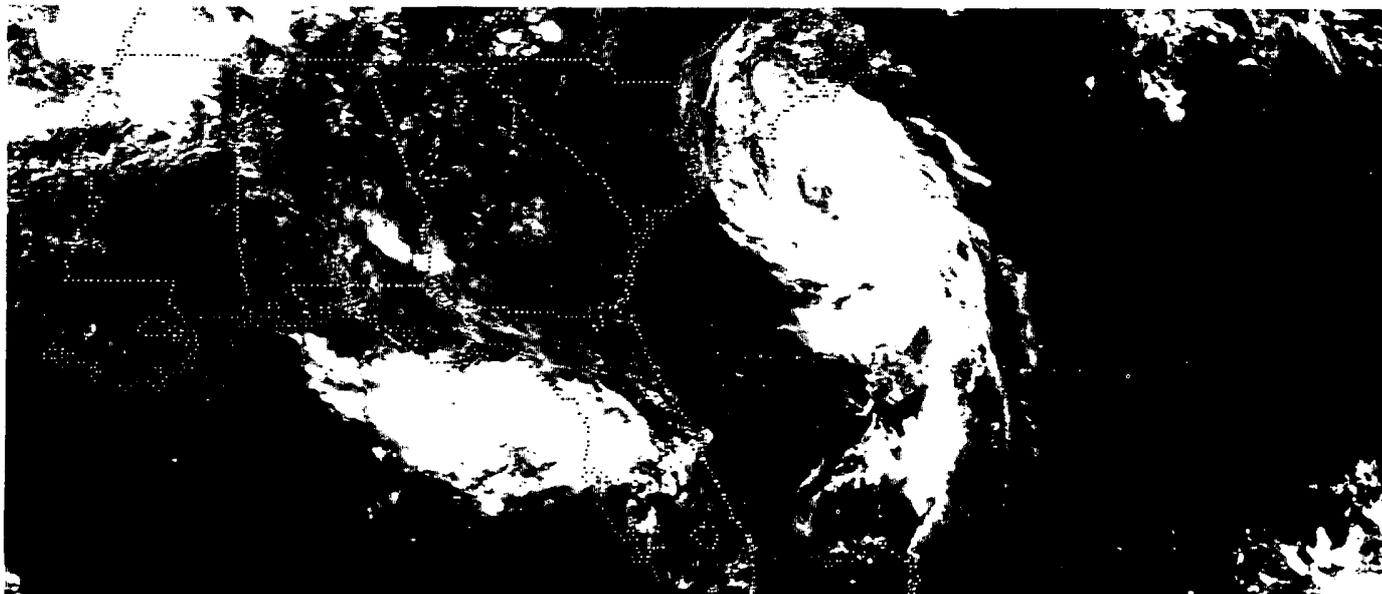


Figure 5. -- Charley off the North Carolina coast at 1630 on the 16th. NOAA GOES.

northward on the 17th and strengthened to a minimum hurricane just prior to moving across extreme eastern North Carolina (fig. 5). Charley moved backed over the Atlantic on the 18th. Its maximum winds fell below 74 miles per hour. The storm moved parallel to the northeastern U.S. coast before heading out to sea. Charley transformed into a large extratropical storm with gale-force winds spreading out several hundred miles from the center. The system moved across the North Atlantic shipping lanes and was tracked to the British Isles and Northern Europe by the end of August.

Maximum sustained-surface winds were observed in the 45- to 55- knot range along the coastal sections of North Carolina, Virginia, Maryland,

Delaware and New Jersey, and on Nantucket Island, Massachusetts. The highest value was 85 knots sustained at the Cheasapeake Bay Bridge and Tunnel at South Island, Virginia. Reconnaissance aircraft measured flight level winds of 65 knots during the 18 hours that Charley was a hurricane. The lowest pressure was 987 millibars or 29.15 inches early on the 18th. No ships reported winds of 50 knots or more.

There were five deaths associated with Charley and damage was estimated to be \$15 million.

### Tropical Storm Danielle

SEPTEMBER 7-10

Danielle can be traced to disturbance that moved off the

African coast on September 1st. During the 6 and 7th satellite pictures showed that the system had acquired a low-level circulation and was approaching the Lesser Antilles. Wind speeds were estimated to have reached storm strength on the afternoon of the 7th, based on satellite intensity estimates.

The storm moved through the Windward Islands on the 8th causing some damage, primarily to crops, on St. Vincent and the Grenadine Islands. Danielle continued into the central Caribbean, where the low-level circulation separated from the deep convective clouds that are required to maintain the strength of tropical cyclones (fig. 6). By the 10th, the system had completely lost its circulation.

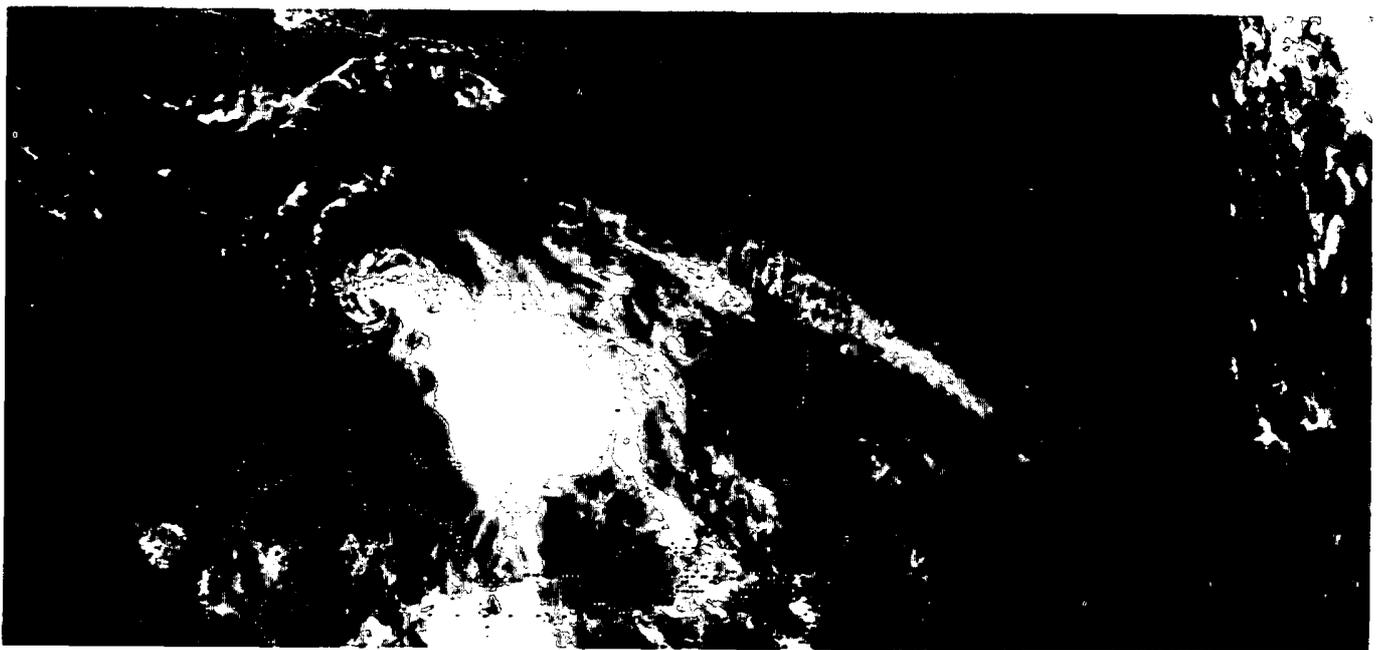


Figure 6. -- Danielle on the 9th, over the eastern Caribbean, showing sea-level circulation after separation from convection. NOAA GOES.

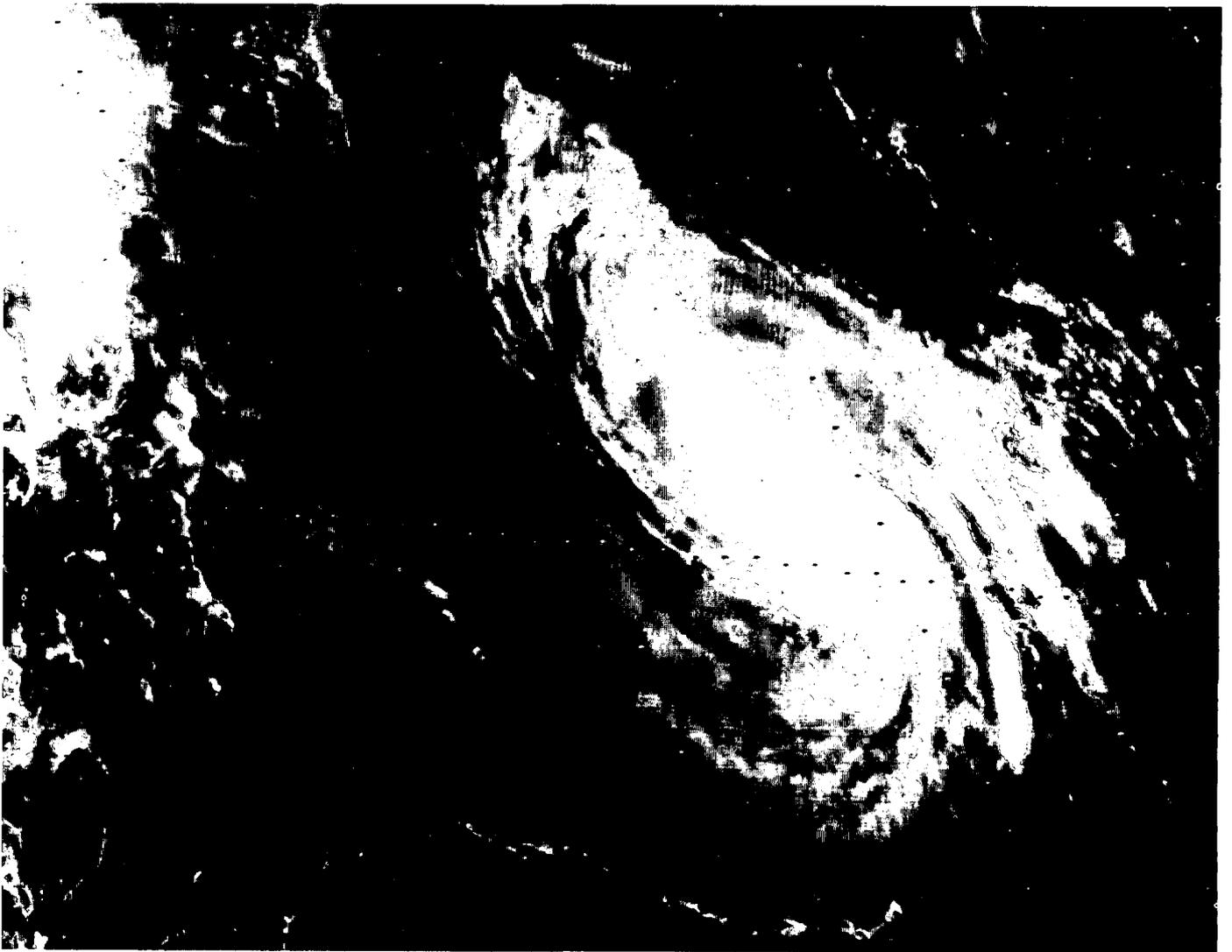


Figure 7.-- Earl at its peak on the 14th over the mid Atlantic. NOAA GOES

Aircraft reconnaissance indicated that the strongest winds of 50 knots occurred on the 8th, while the storm was passing through the Winward Islands.

## Hurricane Earl

SEPTEMBER 10-18

A tropical weather disturbance moved off the African coast on September 4th, following Danielle's origin by a few days and located several hundred miles farther north. The system

gradually turned northwestward and, on the 9th, interacted with an upper-level circulation. This resulted in the formation of a surface depression on the 10th, centered about 1000 miles east of Puerto Rico.

The depression quickly strengthened, and by the time the reconnaissance plane reached the area late on the 11th, 1500 foot flight level winds were 75 knots, well above the 64-knot hurricane threshold. On the next day, a plane found a broad

area of 85-knot winds with a peak wind of 90 knots. From the 12th through the 15th Earl's northward motion was blocked and the hurricane drifted eastward (fig. 7). On the 16th, a northward motion was resumed and Earl headed into the major shipping lanes where it gradually became extratropical.

Earl was a hurricane for seven days and was the longest-lasting, as well as the most intense, hurricane of the season. Several ships encountered winds of 50 knots or more, mainly

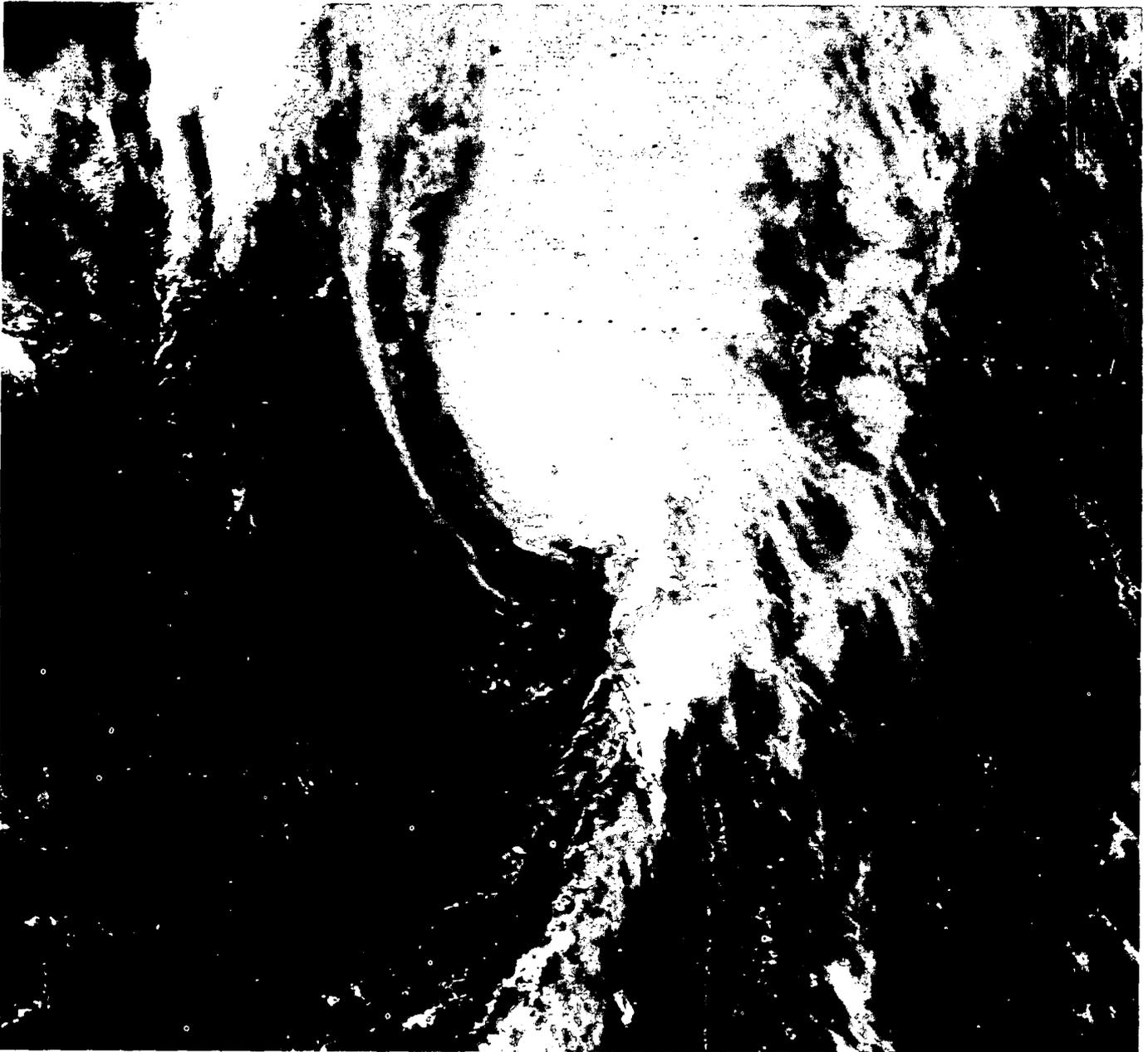


Figure 8. -- Frances on the 20th about 400 miles southeast of Bermuda. NOAA GOES.

during the period Earl was becoming extratropical in the far North Atlantic.

### Hurricane Frances

NOVEMBER 18-21

The last named tropical cyclone of the year was Frances, a late November hurricane that, like Earl, remained at sea.

The origin of Frances was first seen on satellite pictures on the 15th as an area of cloudiness northeast of the Lesser Antilles. On the 17th, a circulation was detected and, by the 19th, the ship VLADIR ILYICH (UQJX) reported 35-knots winds and heavy rain near 23.2°N 61.2°W, indicating that the system was of tropical storm strength.

On the 20th, a plane found 75-knot winds and a surface pressure of 1000 millibars or 29.53 inches and this was the basis for upgrading Frances to a hurricane when it was centered some 400 miles southeast of Bermuda (fig. 8). Frances accelerated toward the northeast and dissipated on the 21st as it merged with an extratropical low pressure system.

National Oceanic and Atmospheric Administration  
**NATIONAL CLIMATIC DATA CENTER**

World's Largest Weather Records Archive

**WHY DO YOU NEED WEATHER DATA?**



- *Litigation*
- *Insurance Claims*
- *Environmental Studies*
- *Engineering Projects*
- *University Research*
- *Personal Curiosity*



**WHAT TYPE OF INFORMATION DO YOU NEED?**



- *Station Records*
- *Monthly/Annual Summaries*
- *Long Term Climatic Studies*
- *Surface or Upper Air Charts*



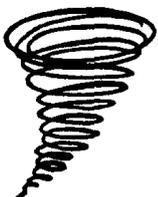
**WHICH OUTPUT MEDIA IS BEST FOR YOU?**



- *Publications*
- *Paper Copies*
- *Charts*
- *Microfiche/Microfilm*
- *Floppy Disk*
- *Computer Tape*



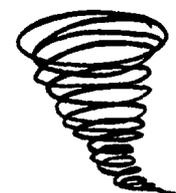
Call or write NCDC and explain your weather related problem.  
Our meteorologists will provide the best possible solution.

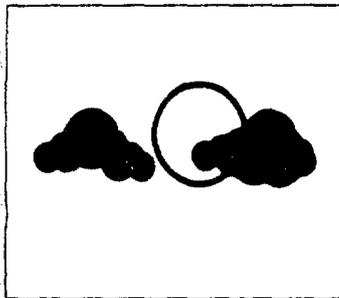


**NATIONAL CLIMATIC DATA CENTER**

Federal Building, Asheville, N. C. 28801-2696

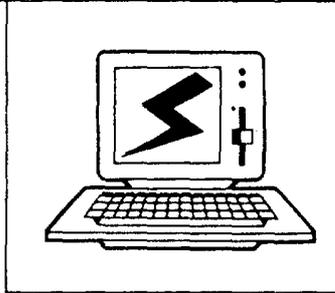
Phone (704) 259-0682 or (704)-CLIMATE





**COMPUTATIONAL  
HYDROLOGY  
INSTITUTE**

**CHI**



**ANNOUNCEMENT • AND • CALL • FOR • PAPERS  
COMPUTATIONAL HYDROLOGY 88**

*Second International Symposium on Computational Methods  
In Flood Control Hydrology & Hydraulics, Surface &  
Subsurface Hydrology, and Water Resources Engineering*

**San Diego, California**  
July 10 - 13, 1988

**Time Schedule**

|                              |                |
|------------------------------|----------------|
| SUBMIT ABSTRACT (300 WORDS): | SEPT. 15, 1987 |
| PRELIMINARY ACCEPTANCE:      | NOV. 1, 1987   |
| SUBMIT PAPER:                | FEB. 15, 1988  |
| FINAL ACCEPTANCE:            | MAR. 30, 1988  |

Chief among the concerns of environmental impacts are the effects of storm runoff on existing and urbanized watersheds. Such concerns as stormwater management, surface runoff pollution, and methods for hydraulic and hydrologic modeling are only a few of the many problems faced by today's private engineering concerns and public agencies. This international conference, COMPUTATIONAL HYDROLOGY 88, aims at providing a forum for presenting the latest innovative and applied computational methods in flood control hydrology and hydraulics, surface and subsurface hydrology, and water resources engineering.

**Objectives**

The major objective of COMPUTATIONAL HYDROLOGY 88 is the creation of a proper forum of discussion among managers, scientists, and engineers involved in the creation, development of application of computer software to hydrologic problems. COMPUTATIONAL HYDROLOGY 88 will present the most recent developments and practical implementations in the theoretical, numerical and applicable aspects of computer analysis, simulation modeling, control and forecasting for hydrologic applications. The conference aims at the establishment of a useful connection between originators of hydrologic software programs and their possible users, thus reducing the present large duplication of effort in software development.

**Call For Papers**

Papers are invited on the topics outlined in the preceding column and other topics within the general scope of the Conference. Abstracts should be no more than 300 words and should be submitted to the Administrative Director, Computational Hydrology Institute, as soon as possible and no later than the deadline shown above. Abstracts should state clearly the methodology, purpose, results, and conclusions of the final paper. The final acceptance will depend upon the review of the full length paper. Accepted papers will also be considered for possible publication in the new journal, HYDROSOFT.

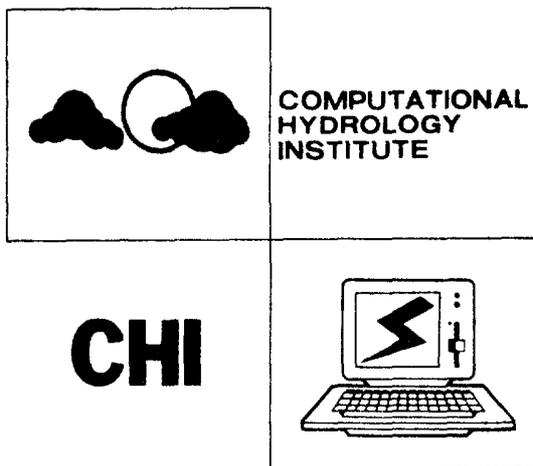
**Conference Chairmen**

**T.V. Hromadka, Ph.D., Ph.D., P.E.**  
California State University, Fullerton  
Department of Mathematics  
Fullerton, CA 92634

**J.J. DeVries, Ph.D., P.E.**  
Associate Director,  
Water Resources Center  
University of California, Davis

**R.H. McCuen, Ph.D., P.E.**  
University of Maryland  
Department of Civil Engineering  
College Park, MD 20742

**H.H. Chang, Ph.D., P.E.**  
Department of Civil Engineering  
San Diego State University, CA



18021-J Sky Park Blvd., Suite 524  
Irvine, CA 92714

**ANNOUNCEMENT • AND • CALL • FOR • PAPERS**  
**COMPUTATIONAL HYDROLOGY 88**

*Second International Symposium on Computational Methods  
In Flood Control Hydrology & Hydraulics, Surface &  
Subsurface Hydrology, and Water Resources Engineering*

**San Diego, California**  
July 10 - 13, 1988

DETAILS ON PAGE REVERSE  
+++++

DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE  
NATIONAL CLIMATIC DATA CENTER  
FEDERAL BUILDING  
ASHEVILLE, N.C. 28801

**BULK RATE**  
**POSTAGE & FEES PAID**  
United States Department Of Commerce  
NOAA Permit No. G - 19