

STORM DATA

WITH ANNUAL SUMMARIES



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NATIONAL OCEANIC AND
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NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, N.C.

C O N T E N T S

Cover: Hawaiians evacuate their flooded homes on eastern Oahu during New Year's Day after overnight rains fell in amounts measured at up to 22.89 inches (see HEAVY RAINS on OAHU, HAWAII pages 6 through 8). ---Photo by Carl Viti, The Honolulu Advertiser; and provided by Hans E. Rosendal, NWSFO at Honolulu, Hawaii.

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STORM DATA (ISSN 0039-1972)

The section on Outstanding Storms of the Month is prepared by Professor T. Theodore Fujita, editor, and Duane J. Stiegler, associate editor, the University of Chicago, with funding by the U. S. Office of Naval Research. The Storm Data and Unusual Weather Phenomena narratives, and summaries of Hurricanes/Tropical Storms are prepared by the National Weather Service. The National Climatic Data Center compiles statistics on deaths, injuries, damage and prepares the annual summaries of tornadoes and Lightning. This publication contains our best information on storms, but due to the difficulties inherent in collection of this type of data it is not all-inclusive. Late reports and corrections will be carried quarterly. Maps of zones used in the Storm Data and Unusual Weather Phenomena will be published in all editions.

Storm Data is published monthly by the National Climatic Data Center.

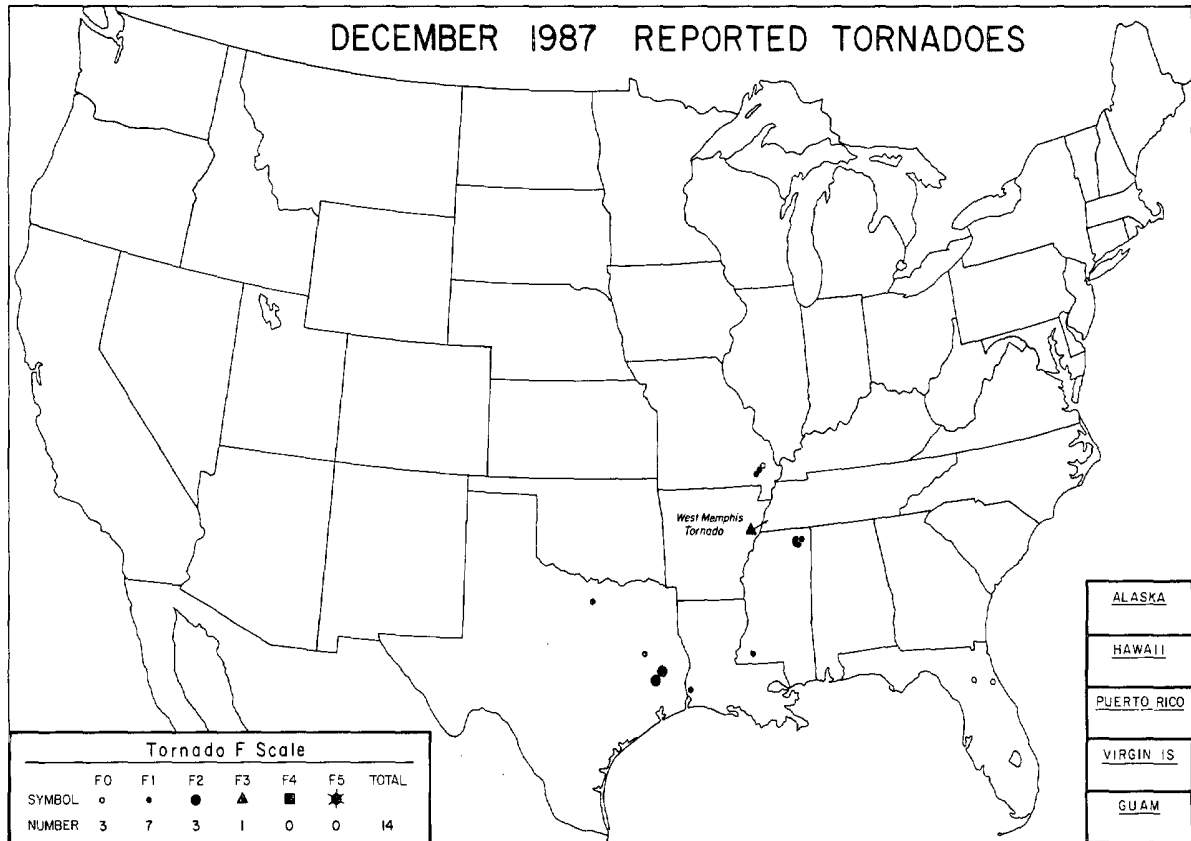
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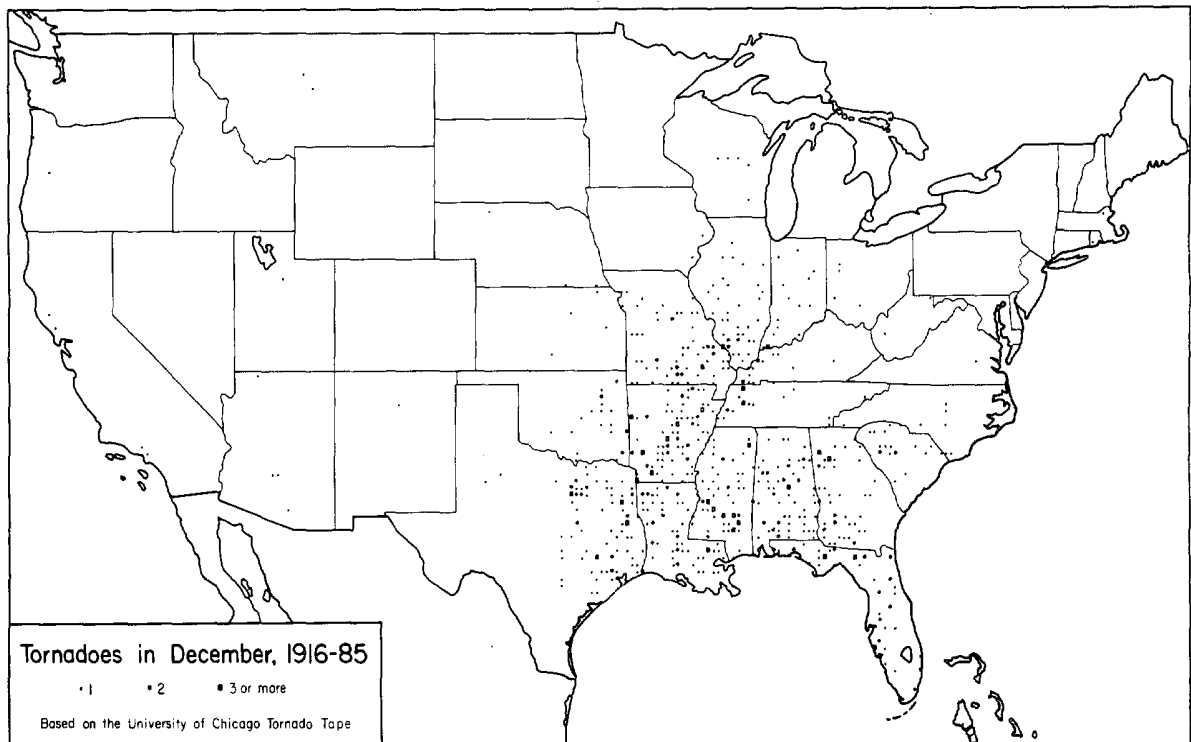
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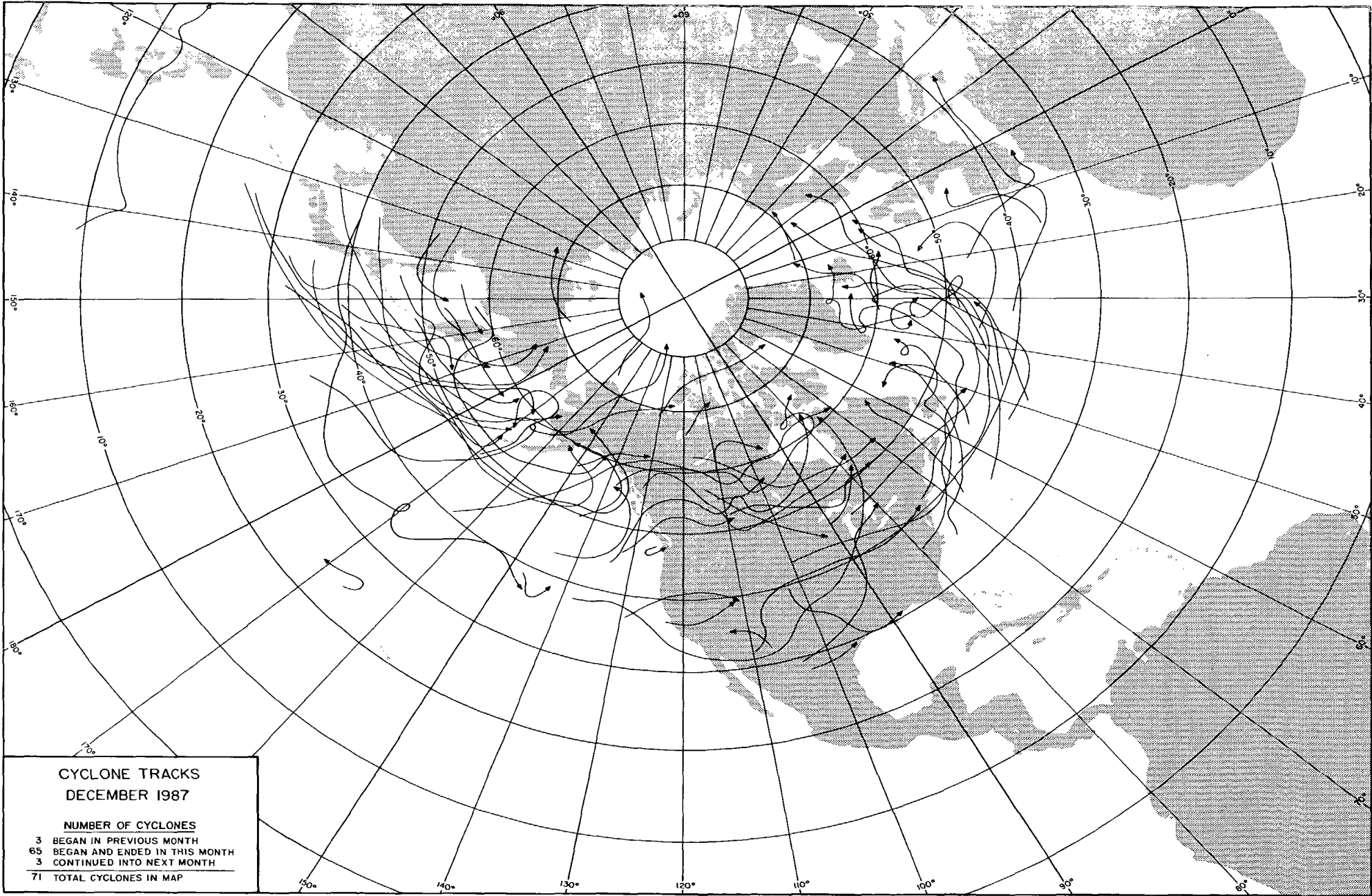
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OUTSTANDING STORMS OF THE MONTH

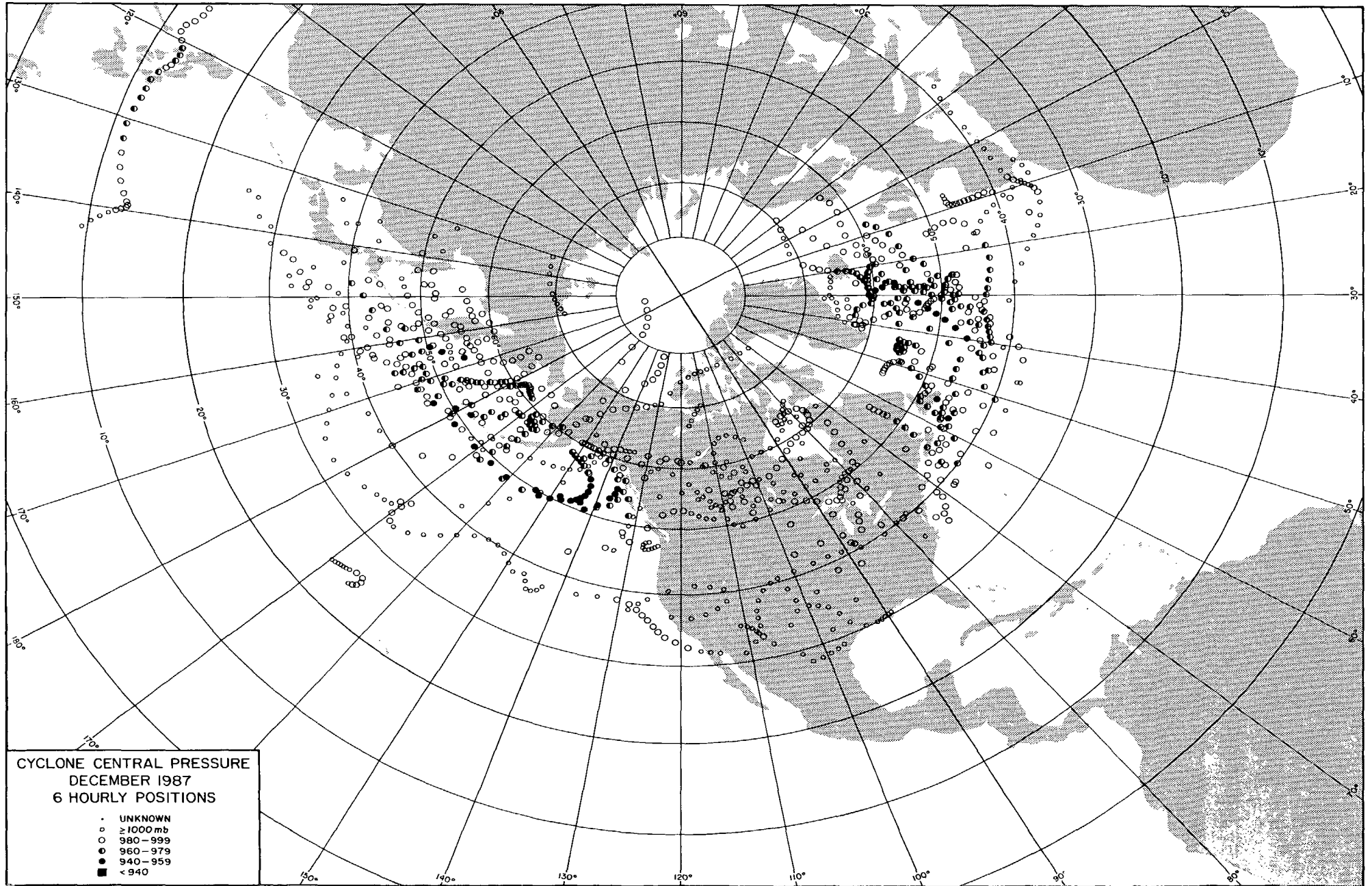


● COMPLETE REPORT RECEIVED	● 1AL	● 7DE	● 14KS	● 21MN	● 28NJ	● 33OH	● 39SD	● 44VA	● 49AK(SE)
○ PRELIMINARY REPORT RECEIVED	● 2AZ	● 8FL	● 15KY	● 22MS	● 29NM	● 34OK	● 40TN	● 45WA	● 50HI
○ REPORT NOT RECEIVED	● 3AR	● 9GA	● 16LA	● 23MO	● 30NY(O)	● 35OR	● 41TX(N)	● 46WV	● 51PR
(N) northern (W) western	● 4CA(N)	● 10ID	● 17ME	● 24MT	● 30NY(C)	● 36PA(E)	● 41TX(S)	● 47WI	● 52VI
(S) southern (C) central	● 4CA(S)	● 11IL	● 18MD	● 25NE	● 30NY(W)	● 36PA(W)	● 41TX(W)	● 48WY	● 53PC
(E) eastern (O) coastal	● 5CO	● 12IN	● 19MA	● 26NV	● 31NC	● 37RI	● 42UT	○ 49AK(N)	
(SE) southeastern	● 6CT	● 13IA	● 20MI	● 27NH	● 32ND	● 38SC	● 43VT	● 49AK(S)	





Mapped at the University of Chicago from NMC, cyclone track data

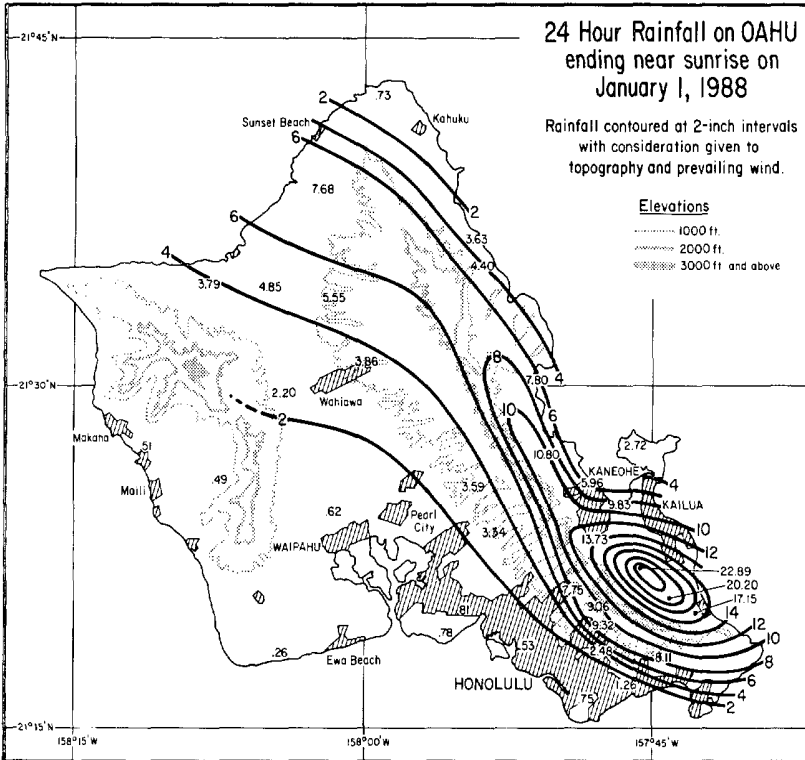


CYCLONE CENTRAL PRESSURE
DECEMBER 1987
6 HOURLY POSITIONS

- UNKNOWN
- ≥ 1000 mb
- ◌ 980-999
- ◌ 960-979
- 940-959
- < 940

1. HEAVY RAINS on OAHU, HAWAII on December 31, 1987 - January 1, 1988

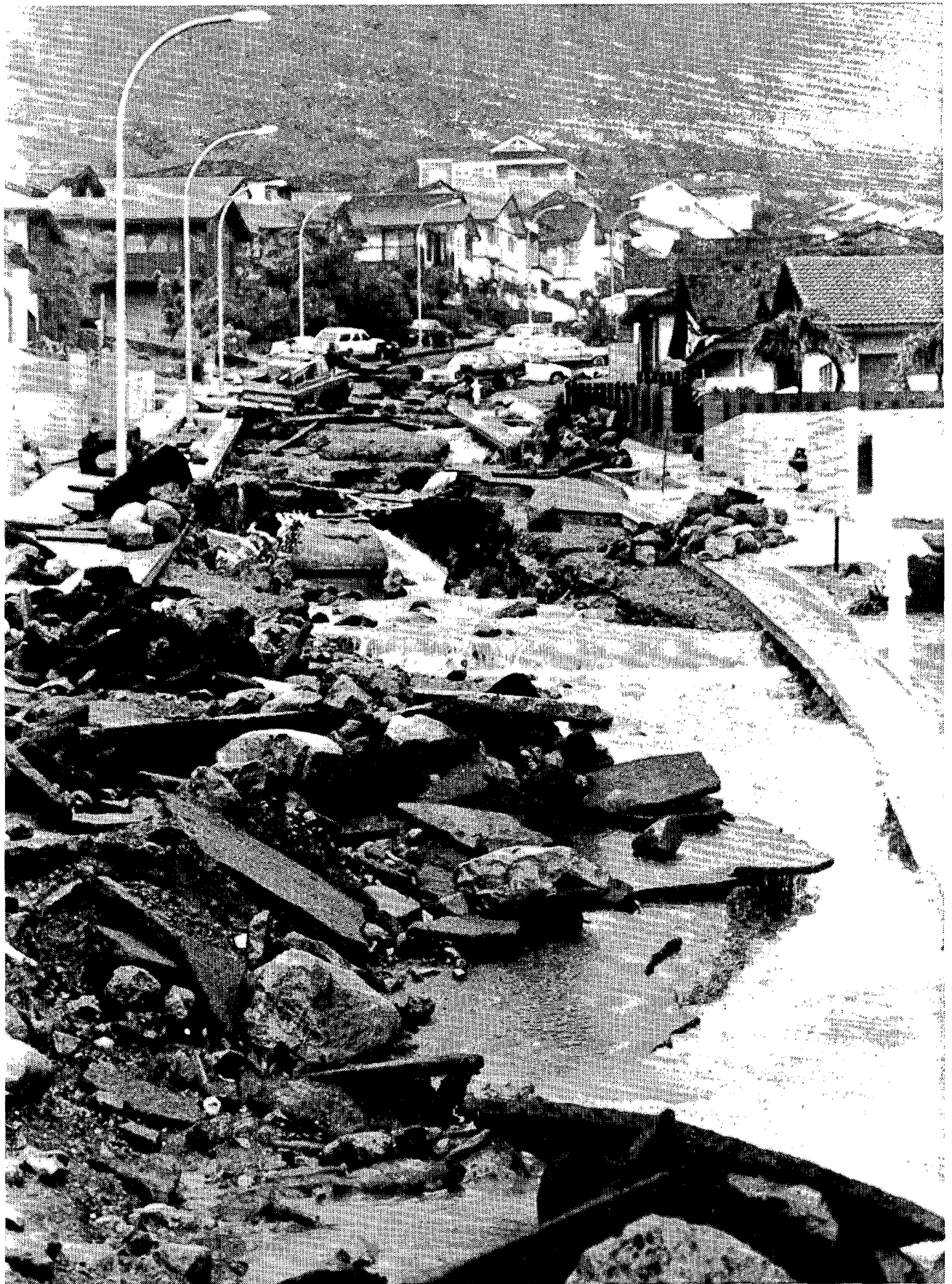
Overnight heavy rains brought some residents of Oahu, Hawaii an unwelcomed New Year's surprise as up to 22.89 inches of rainfall created extensive flash flooding in the valleys along both leeward and windward, eastern portions of the island. Although there were no deaths or injuries, the flooding produced many rock and mud slides and caused damage to numerous vehicles and homes including: minor damage to 477 homes, major damage to 53 homes, and the total destruction of one house. Total property damages were estimated at 35 million dollars. The rains were greatly influenced by orography as a developing trough induced east and northeast, upslope winds over the area.



Contour analysis of 24-hour rainfall on Oahu, Hawaii ending near sunrise on January 1, 1988, with measured amounts shown in inches. This rain episode was preceded by a weeklong rainfall on December 11th through 19th that generally soaked the island with 12 to 18 inch amounts and which also resulted in flooding. ---Analysis by the University of Chicago from data supplied by the NWSFO at Honolulu, Hawaii.

BELOW: Kailua residents evacuate their flood-soaked neighborhood on Kihapai Street by means of an outboard-powered rubber boat and the more conventional wading method.

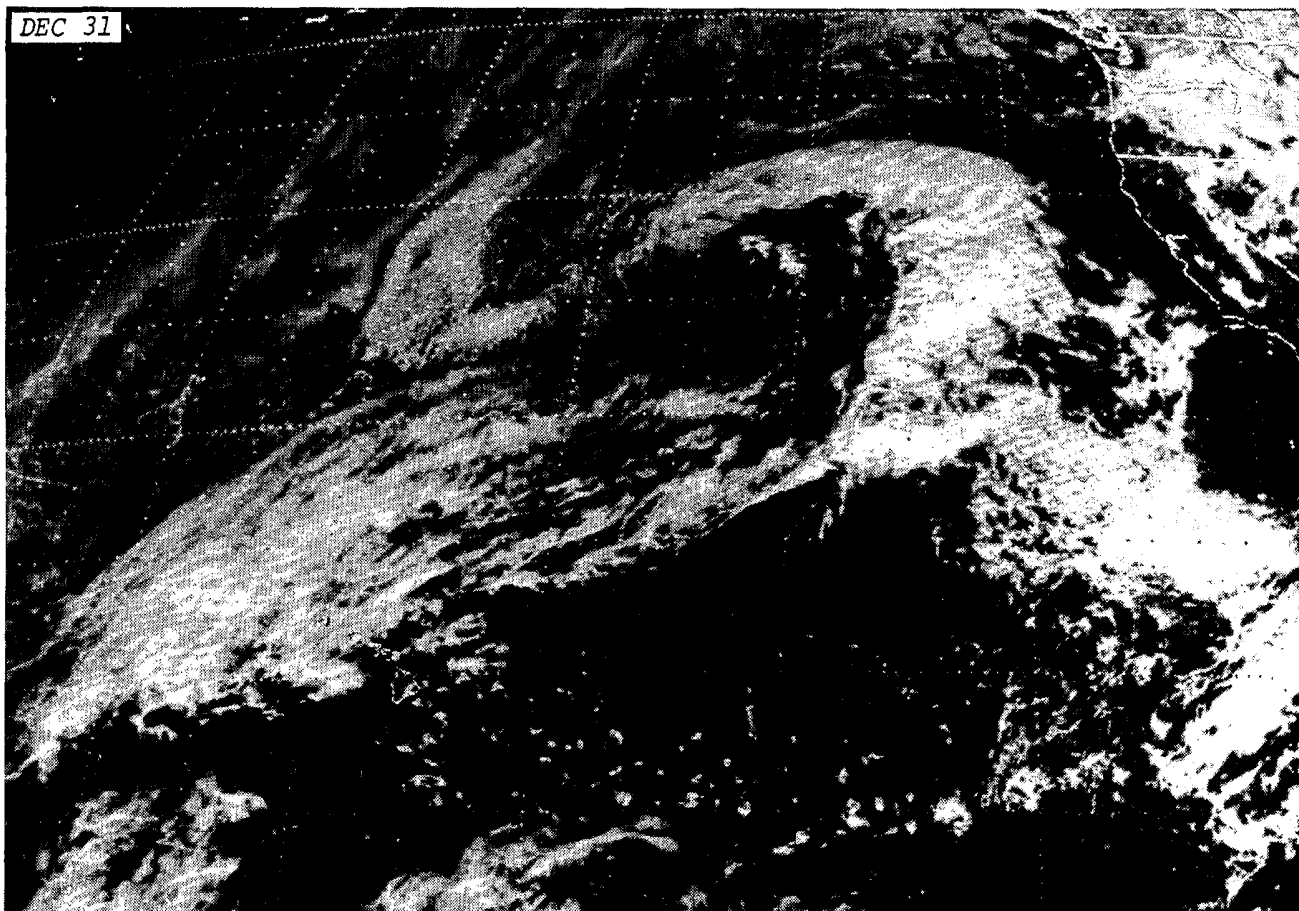




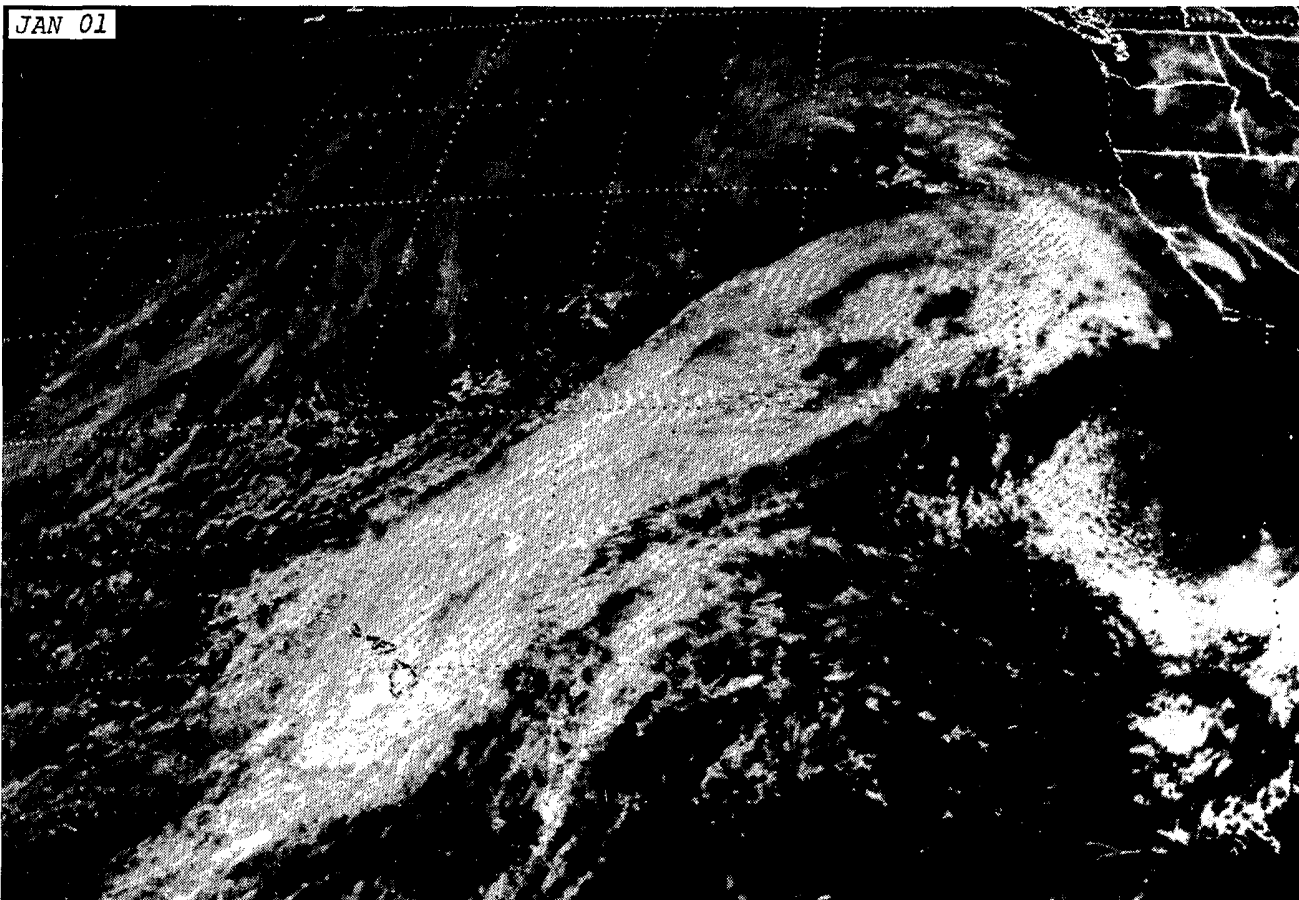
The remains of Kahena Street in Hahaione Valley after fast-flowing floodwaters ripped the steeply-sloped pavement to pieces. ---Both above and previous page photos by Carl Viti, The Honolulu Advertiser. Photos and map data provided by Hans E. Rosendal, NWSFO at Honolulu, Hawaii.

HEAVY RAINS on OAHU, HAWAII ---- continued

DEC 31



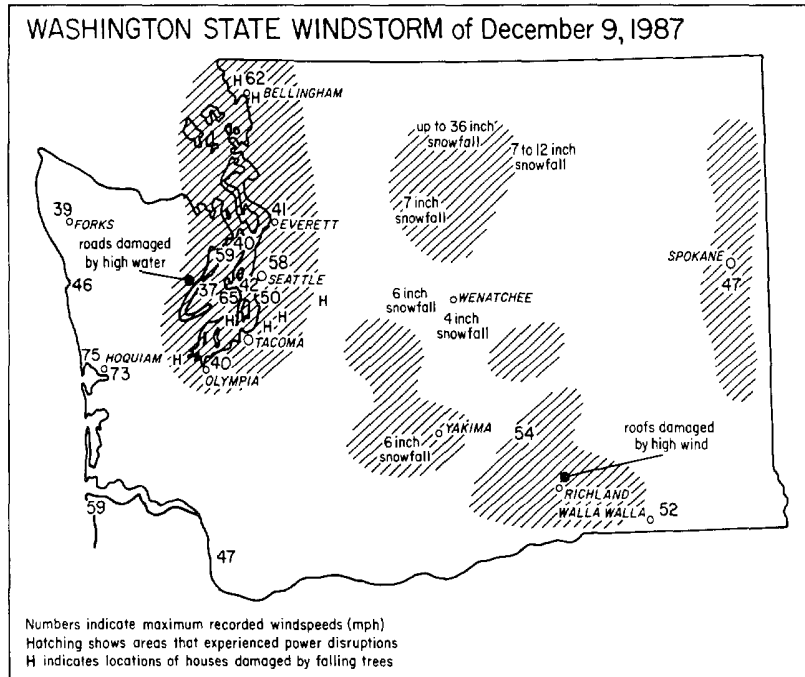
JAN 01



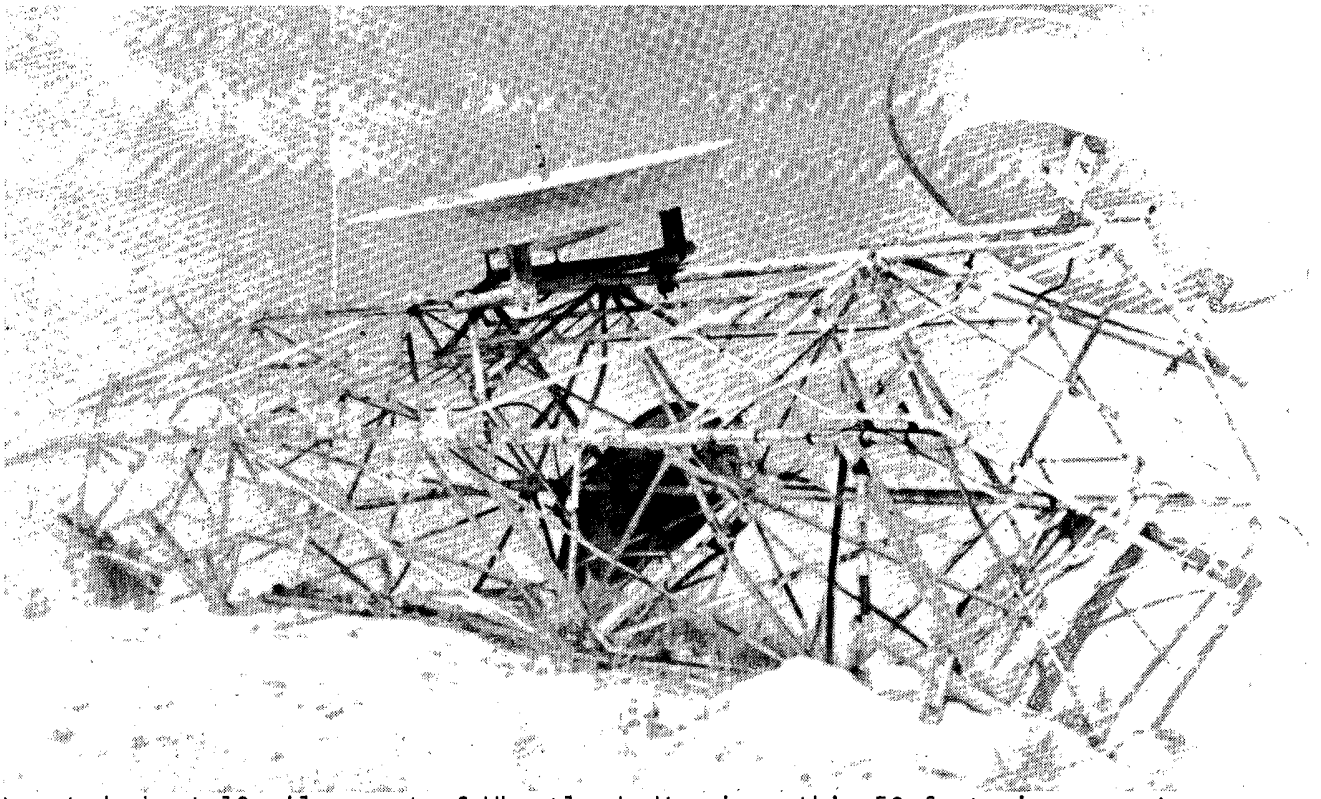
The rain-producing cloud system associated with the developing trough over Hawaii is seen enveloping the islands in two GOES 6 satellite, visible images, each taken at 1016HST on the indicated, consecutive days. ---Photos from NESDIS.

2. WINDSTORM in the NORTHWEST on December 9-10, 1987

On December 9th through 10th, a vigorous frontal system associated with a strong upper level wind flow moved through the Northwest, bringing damaging surface winds to Washington, Oregon and northern Idaho on the 9th, and southeastern Idaho, Wyoming, and the Nebraska Panhandle on the 10th. Throughout the region, trees were downed and power lines snapped, and widespread power outages resulted. Semi-trailer trucks were blown off highways and many homes experienced roof damage due to peeling by the winds or more substantial structural damage from the falling trees. In one case, a falling tree fell onto a moving car in Mill City, Oregon, killing 3 child occupants. Heavy rains and snows accompanied the weather system, causing additional damage.



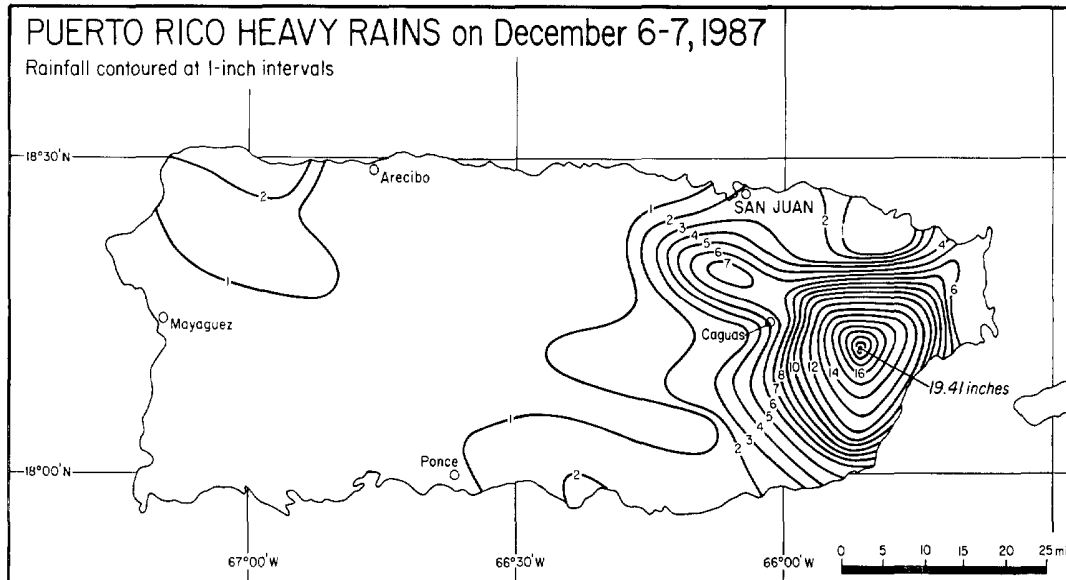
Maximum recorded windspeeds associated with the frontal system as it moved through Washington State on December 9th. Also shown are areas affected by power outages, known points of local damage, and snowfall amounts at various locations. ---Map by Todd Dankers, NWSFO at Seattle, Washington.



Located about 13 miles east of Wheatland, Wyoming, this 50-foot microwave tower was blown down on December 10th by wind estimated to have been in excess of 90 mph. The tower, owned by Platte River Valley Cable TV, was valued at \$55,000. ---Photo by Rich Thurlow, The Platte County Record-Times; and provided by the NWSFO at Cheyenne, Wyoming.

3. HEAVY RAINS in PUERTO RICO on December 6-7, 1987

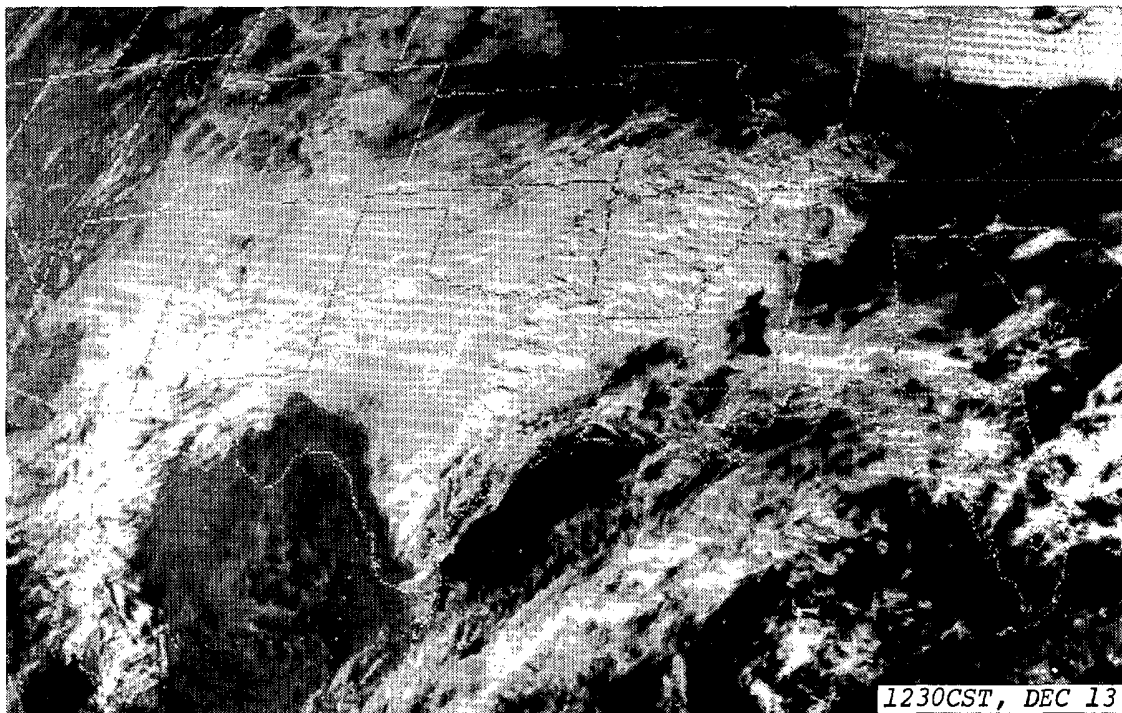
During the evening of December 6th and through the morning of the 7th, a combination of an approaching cold front and a southeast flow of moist tropical air induced intense showers and thunderstorms over southeastern and eastern interior portions of Puerto Rico. The resulting rainfall, in amounts as high as 19.41 inches near Las Piedras, led to severe flash flooding that took one life, damaged or destroyed 13 bridges, caused numerous landslides, and necessitated the evacuation of 1276 persons. Four rainfall intensity records were set and damages estimated at near 5 million dollars in value were incurred during the episode, which came only 10 days after a similar flooding event that took 3 lives and caused 6 million dollars in damage in the same area (see page 31, November 1987 issue).



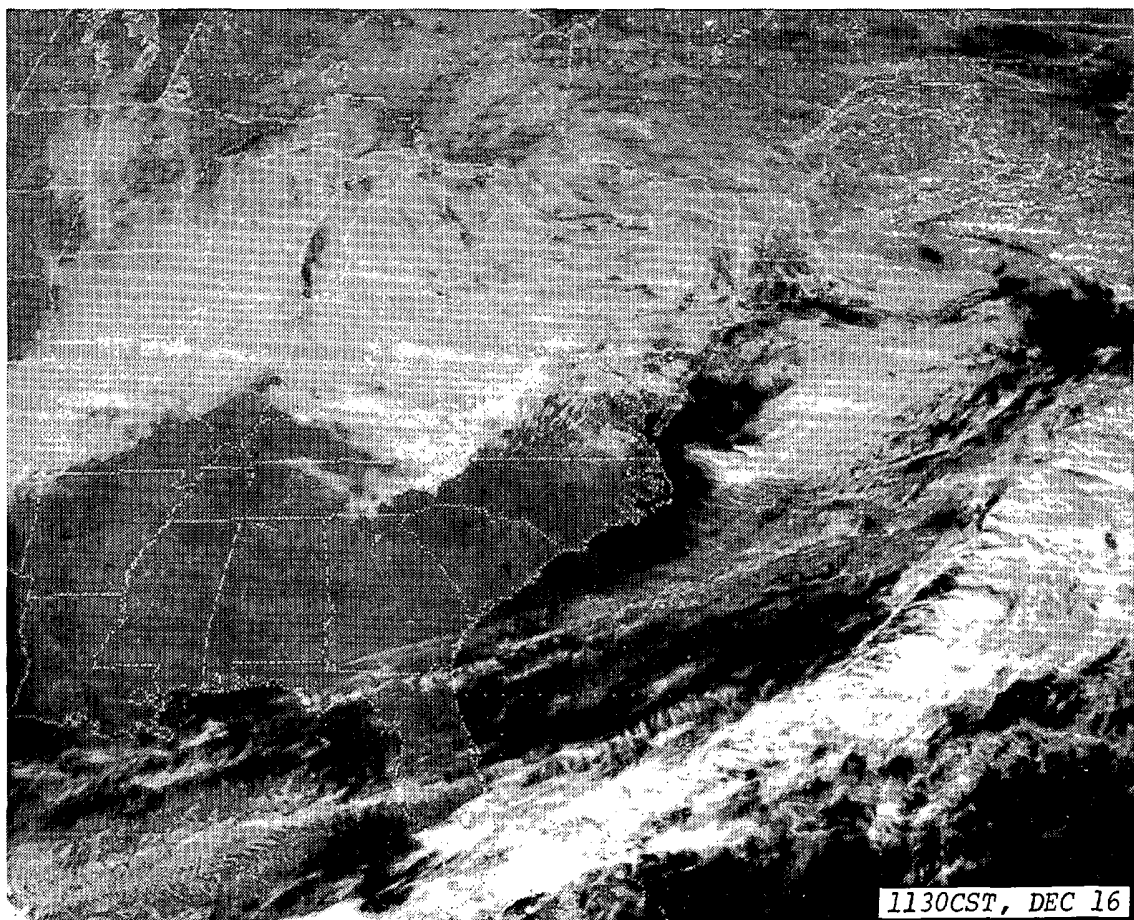
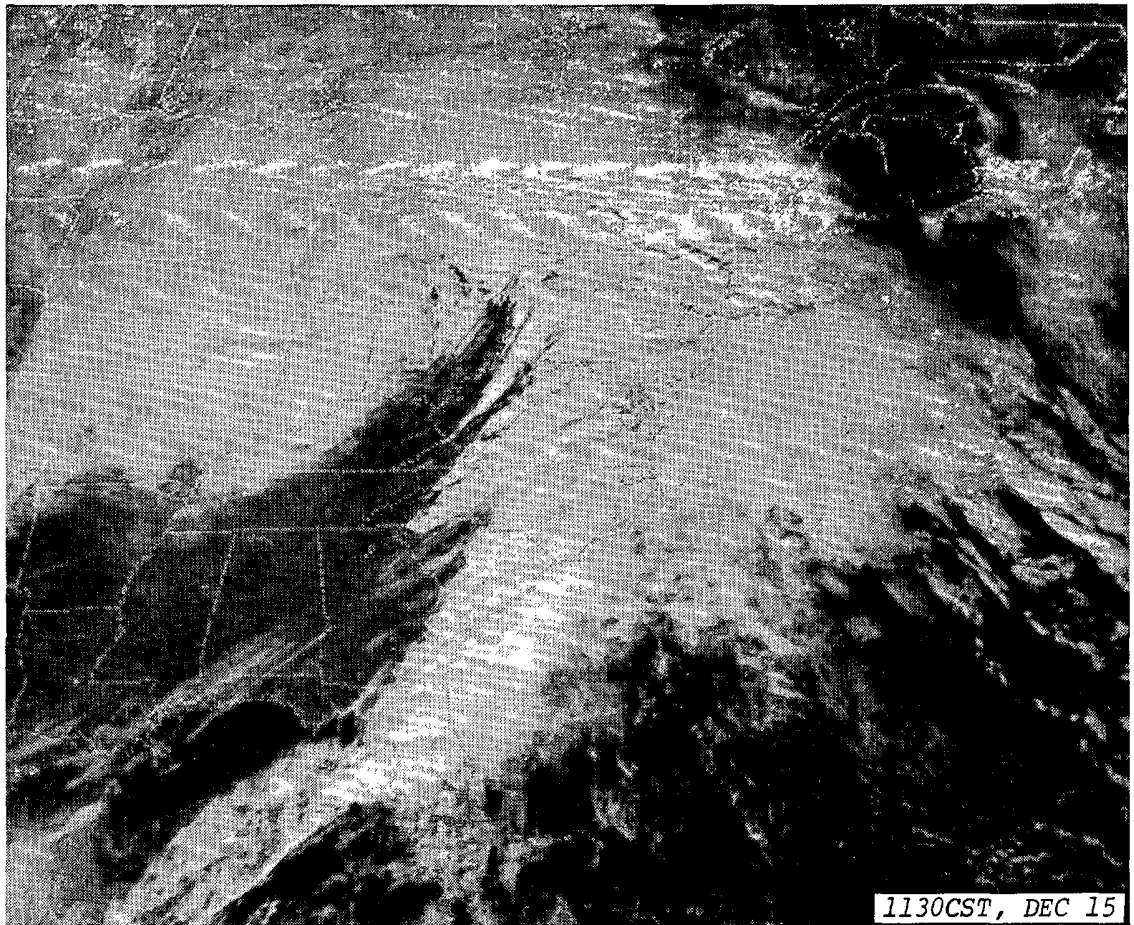
---Mapped by the University of Chicago from Cooperative Observer data provided in Climatological Data.

4. WINTER STORM in the CENTRAL U.S. on December 13-16, 1987

(Narrative and photo captions begin on page 12)



WINTER STORM in the CENTRAL U.S. ---- continued



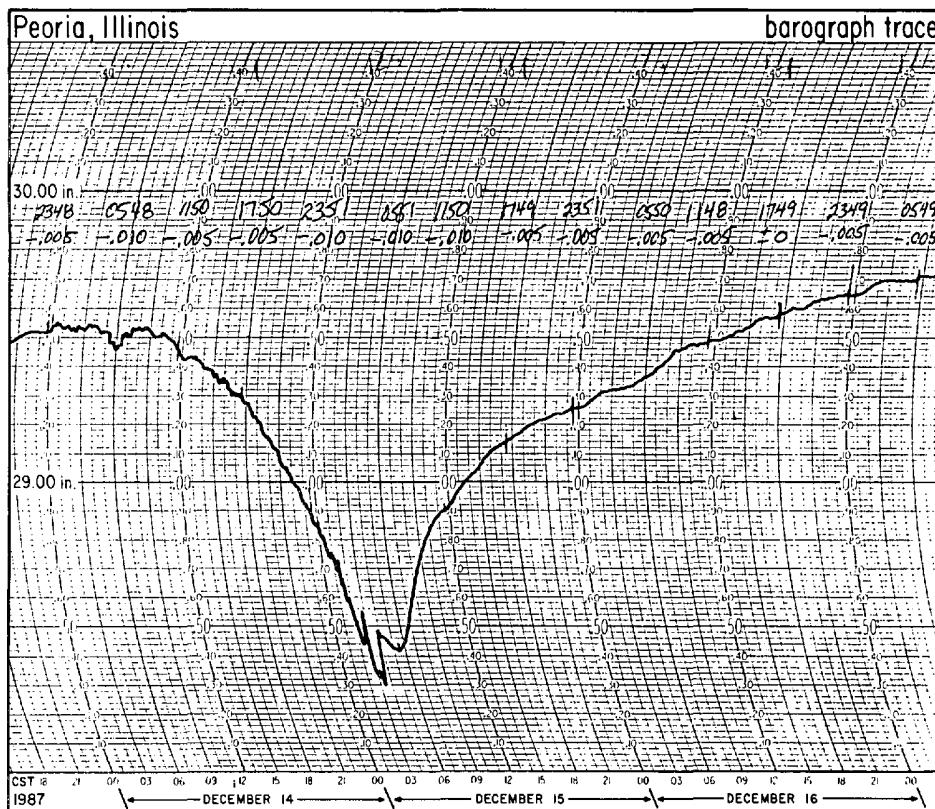
WINTER STORM in the CENTRAL U.S. ---- continued

On December 13th through 16th, a major winter cyclone developed in the south-central U.S. and moved north-northeast to the Great Lakes while undergoing a rapid intensification midway through its journey. The massive storm was marked by three very noteworthy aspects — its rapid, bomb-type central pressure drop while over Illinois on December 15th, its band of heavy snowfall which included record-breaking amounts in extreme west Texas and New Mexico, and an F3 tornado that moved through West Memphis, Arkansas on December 14th, killing 6 people and causing substantial damage. These three storm features are presented on this and the following pages 13 through 19.

PREVIOUS TWO PAGES: GOES 6 satellite, visible images show the winter storm early in its development as snow began in New Mexico and Texas on December 13th, as its center moved into Michigan on the 15th after a rapid deepening, and as it entered Ontario, Canada on the 16th. Note in the last photo the remaining band of snow in the country's midsection and the development of a new cyclone off the coast of Maine. ---Photos from NESDIS.

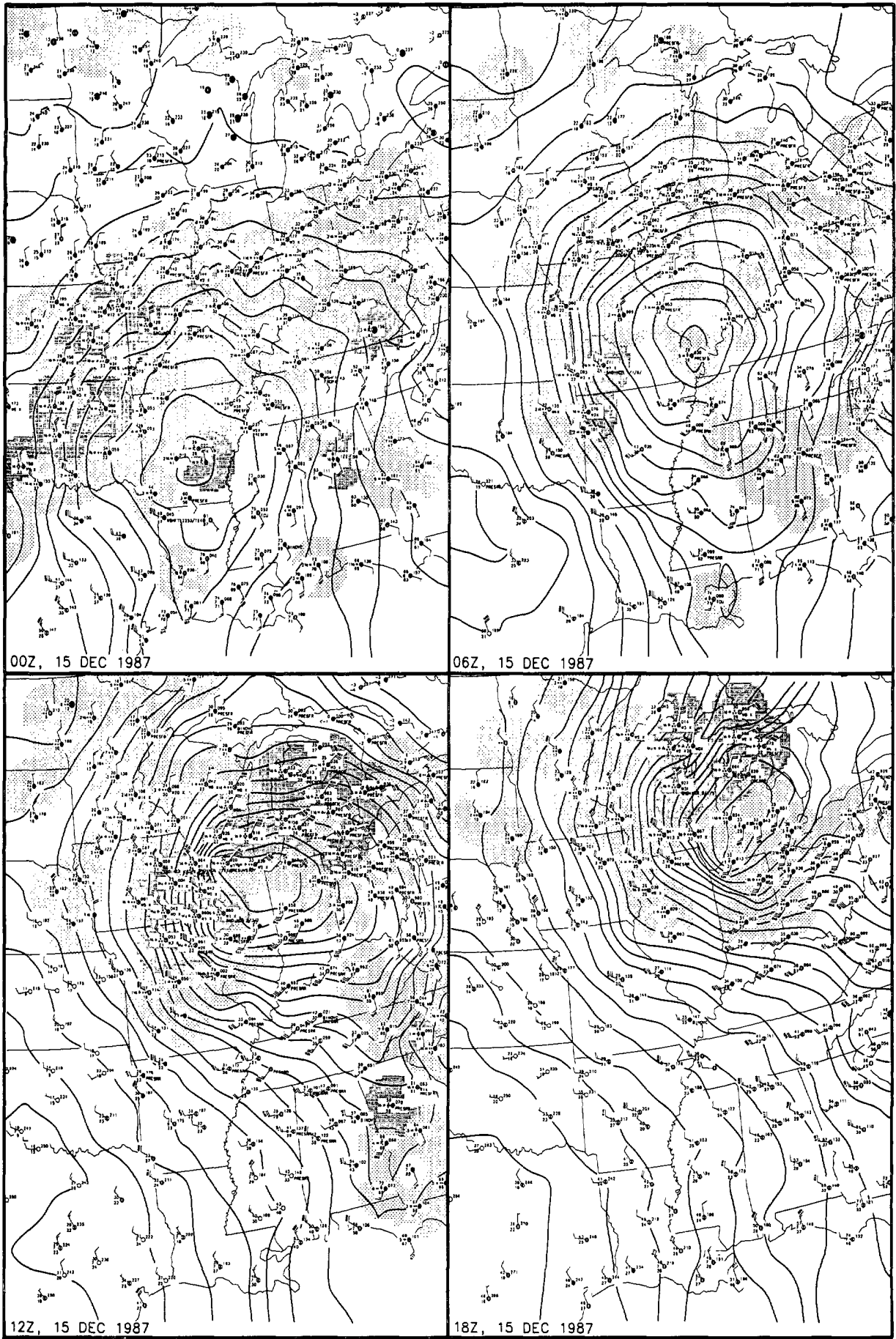
4a. BOMB-TYPE PRESSURE DROP over ILLINOIS on December 15, 1987

As the winter storm moved northward through Illinois on December 15th, its pressure center underwent a dramatic, rapid deepening, earning it the classification of a continental bomb. The term "bomb" is applied to cyclones that experience central pressure reductions at rates of 2 mb or greater per hour, an event that occasionally occurs over oceanic surfaces but is rarely observed over land. The lowest recorded pressure during the storm was 979 mb at Glenview Naval Air Station north of Chicago.



A barograph trace indicating unadjusted pressure versus time at the NWSO at Peoria, Illinois shows a pronounced dip in pressure associated with the passage of the storm's center which rapidly intensified early on December 15th. Note the perturbations in the curve between 0200 and 0400 CST on the 15th, an indication of the storm's structural complexity during the intensification phase. ---Trace from NCDC.

BOMB-TYPE PRESSURE DROP over ILLINOIS ---- continued



Computerized data plot and analysis maps show surface conditions at 6-hour intervals during the storm's intensification phase on December 15th (UTC). Iso-bars are at 2 mb intervals. ---Maps by Brian E. Doty, University of Maryland.

4b. HEAVY SNOW in the CENTRAL U.S. on December 13-16, 1987

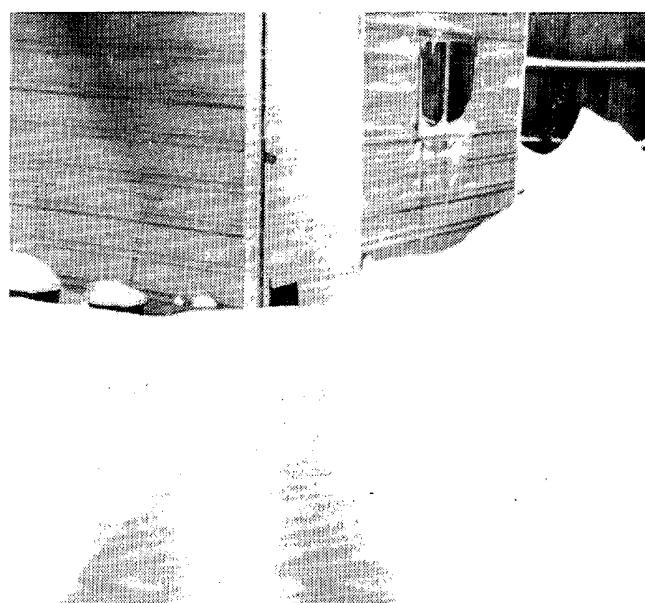
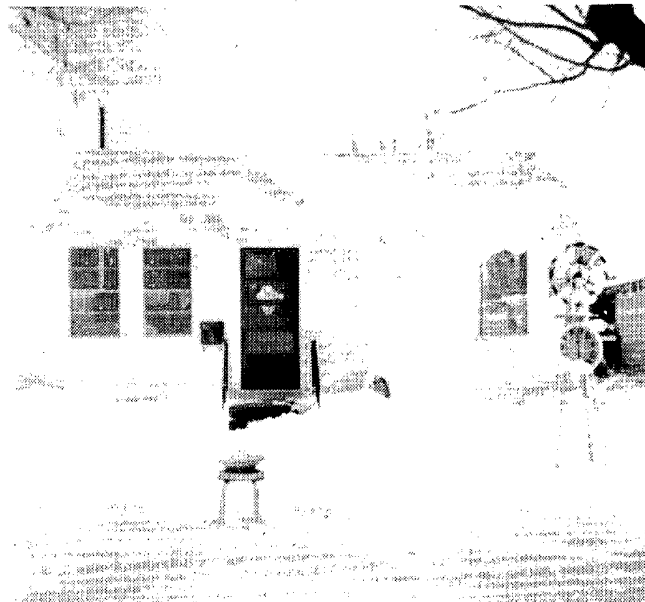
As is customary with major winter cyclones, an extensive band of heavy snowfall was produced by the December 13th to 16th storm. The band extended from the southern Rocky Mountain States northeastward to the Great Lakes, with maximum accumulations along the band being at least a foot in depth and, in many cases, up to 18 inches deep (see map below). The exception was the mountain areas of New Mexico and extreme west Texas where amounts ranged radically within short distances, the least being no snowfall at all and the most 29.3 inches. All-time records were broken in El Paso, Texas where 16.8 inches of snow fell during December 13th, a 24-hour record, while the two-day total of 22.4 inches shattered the all-time mark for an entire season, let alone a single event. The previous season record was 18.5 inches. Also, cold temperatures set 6 new records in El Paso during and immediately following the storm.



Contour analysis of the snowfall associated with the winter storm of December 13th through 16th, 1987. Some Great Lake area amounts include December 17th snowfall (continued on next page)

HEAVY SNOW in the CENTRAL U.S. ---- continued

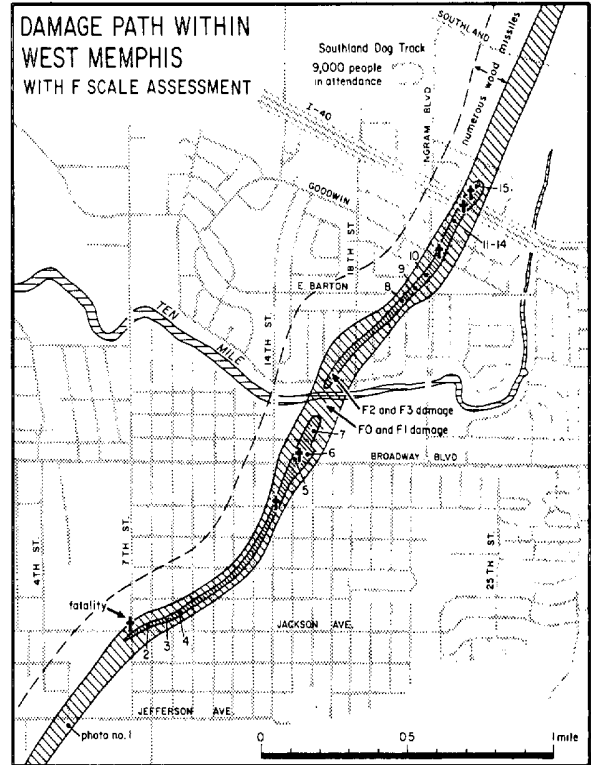
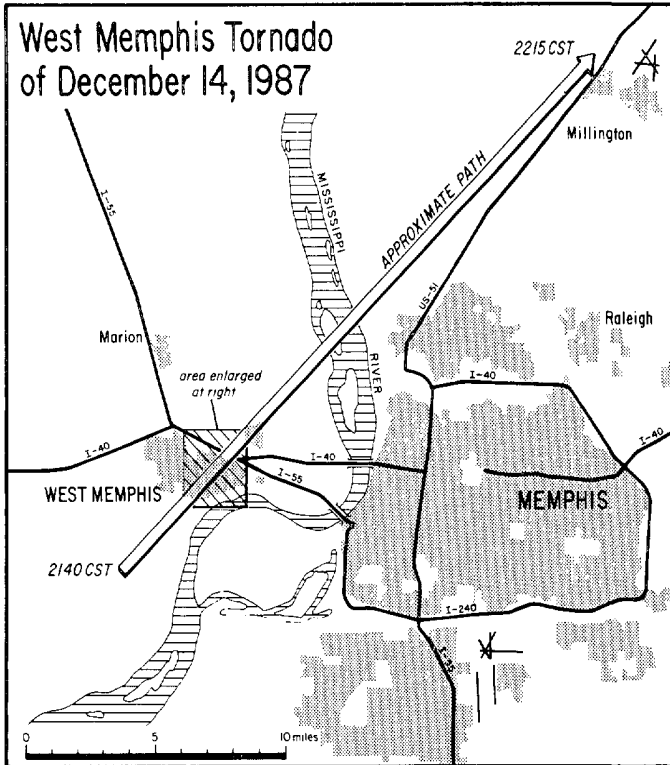
from lake-effect squalls which lingered after the storm's passage. Actual measured amounts are shown in the southern Rockies where variation in the amounts prohibits analysis on this scale. ---Mapped by the University of Chicago from data and analyses supplied by NWSFO's at Indianapolis, Indiana; Des Moines, Iowa; Topeka, Kansas; Ann Arbor, Michigan; St. Charles, Missouri; Albuquerque, New Mexico; Norman, Oklahoma; Lubbock, Texas; and Milwaukee, Wisconsin; and the Illinois State Water Survey.



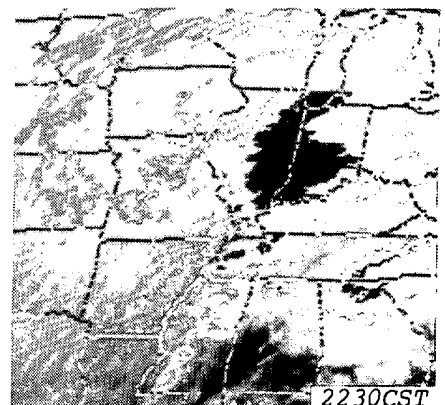
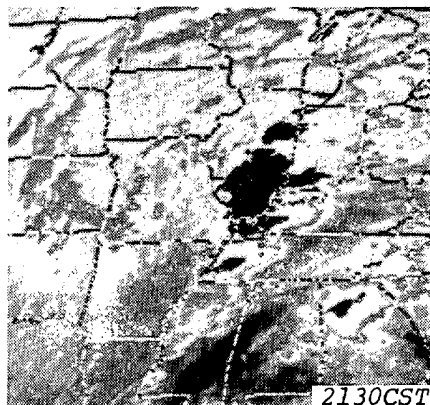
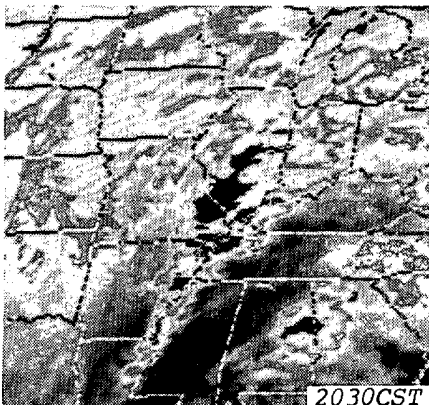
The wintery scenes above, more typical of places in North Dakota or Minnesota, were taken by NWS Observer, A.W. Morgan from his residence in Borger, Texas on December 14th. The Texas Panhandle location received 17 inches of snow on December 13 through the 14th which the storm's winds whipped into huge drifts and unusual formations. The mound in the foreground of the upper left photo is actually a buried auto. ---Photos provided by William O. Alexander, NWSFO at Lubbock, Texas.

4c. TORNADO at WEST MEMPHIS, ARKANSAS on December 14, 1987

During the evening of December 14th, a north-south line of convection formed over the southern Mississippi Valley as the winter cyclone's center moved from central Arkansas to southern Illinois. One thunderstorm spawned a strong tornado that incurred up to F3 intensity damage as it traveled northeast for 12 miles in Arkansas, right through the center of West Memphis (see maps below). The tornado then crossed the Mississippi River and continued for another 13 miles through Tennessee, passing just north of the Memphis metro area. All of the 6 fatalities occurred in West Memphis, which was ravaged by the tornado. In the West Memphis area, 235 homes and 35 businesses were destroyed or heavily damaged, leaving 1500 persons homeless (5% of the population). The potential for a much greater number of fatalities was high as the tornado narrowly missed the Southland Dog Track, passing within 400 yards of the facility. Estimates of the attendance at the time ranged between 6,000 and 9,000.



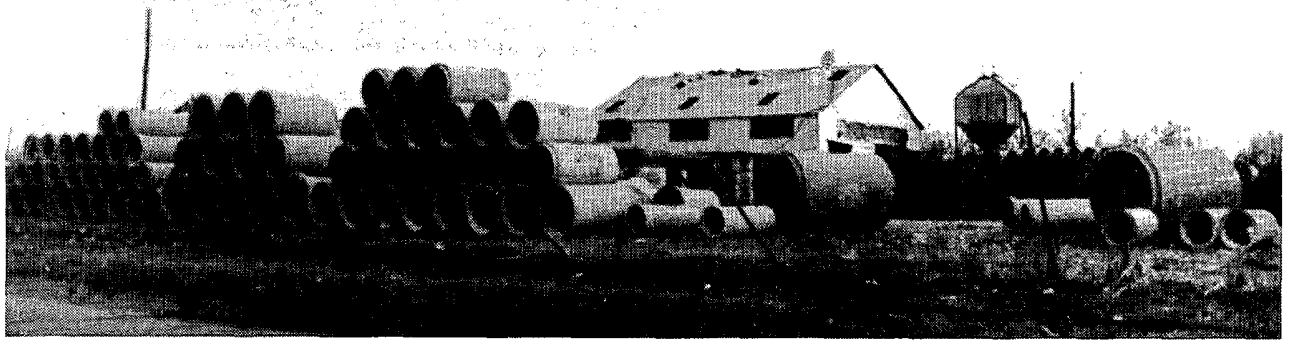
LEFT: Approximate path of the Arkansas-Tennessee tornado that devastated West Memphis on December 14th. ---Map from data supplied by NWSFO's at Little Rock, Arkansas and Memphis, Tennessee. RIGHT: The tornado's damage path within West Memphis, with gradations of F scale and fatality locations indicated. As shown by the dashed-line limit, tornado-generated missiles were flung as far as two blocks to the northwest of the damage path. Photo numbers correspond to pictures on following pages. ---Survey and mapping by Timothy P. Marshall, Haag Engineering Co., Dallas, Texas.



GOES 6 satellite, infrared images show the convective activity over the southern Mississippi Valley during the evening of December 14th. ---Photos from NESDIS.

TORNADO at WEST MEMPHIS, ARKANSAS ---- continued

The following, numbered pictures on pages 17 through 19 correspond to the numbered locations indicated in the map on page 16. All of these photos are by Timothy P. Marshall, Haag Engineering Co., Dallas, Texas.



1. An industrial area at the south end of West Memphis that was first to be struck as the tornado entered the city. Some of the hydro-conduit were rolled, but none were picked up. Some large, light steel frame structures were crumpled.



2. Remains of an old wood-frame house near 8th Street and Jackson Avenue. Many of the homes in this old and impoverished neighborhood experienced similar fates, but some were merely shifted off their supports while remaining intact.



3. A foundation and trail of debris are all that remains of this wood-frame house which, being unanchored, was easily swept away by the tornado.



4. Here, an unanchored home at the periphery of the tornado was rotated about the bathroom plumbing.

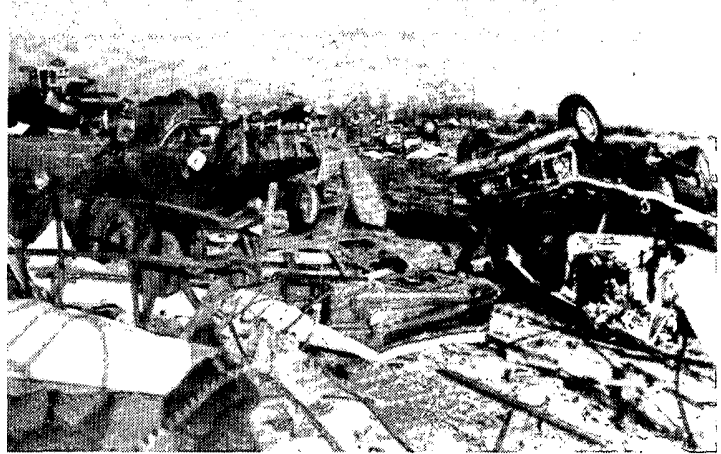


5. Wreckage of unreinforced masonry walls that collapsed at a grocery store at Broadway Boulevard and 15th Street. A teenager caught outside in the store's parking lot was killed when struck in the head by flying debris.

TORNADO at WEST MEMPHIS, ARKANSAS ---- continued



6. A bent light standard points northeastward along the tornado damage path.



7. Vehicles that were tossed about by the tornado as it moved through an area of metal warehouses just south of Ten Mile Bayou. Several of the buildings were flattened.



8. A house that was moved laterally off its foundation, despite the fact that the bases of the walls were anchored.



9. A well-constructed brick home that lost its roof and a few of its exterior walls.



10. Twisted remains of a light steel frame, strip shopping center that had its windward wall pushed in. This portion of the building housed a laundromat.



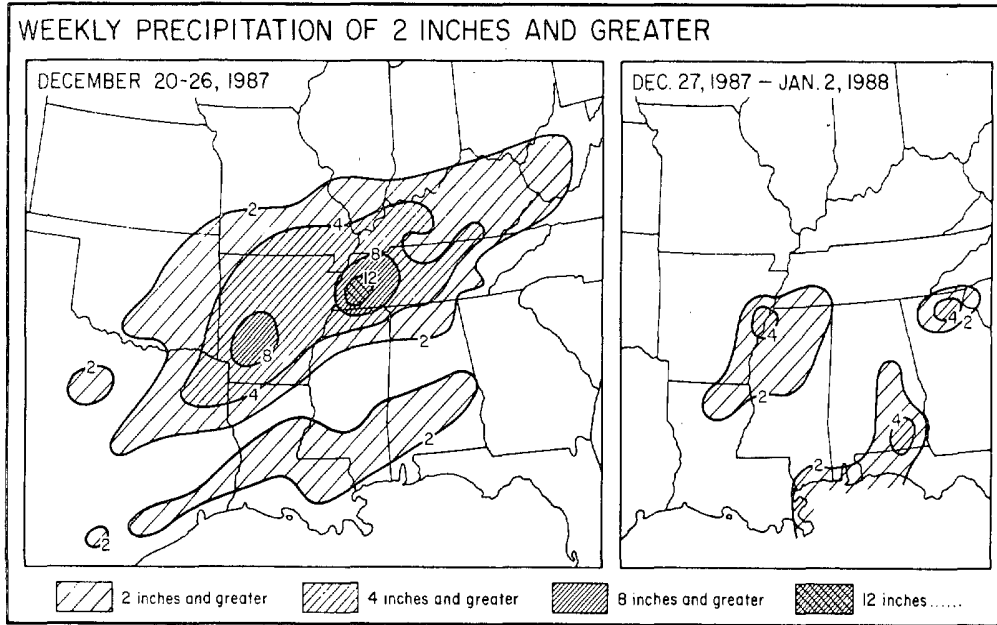
11-14. Four views of the destruction sustained by the Scottish Inn, a two-story wood and masonry structure with a lightweight concrete roof, located on the south side of Interstate 40. The second floor was completely destroyed while the lower level received irreparable damage. At lower left is a second-story firewall that had fallen through the floor and into a first-story room. Miraculously, no one was killed at the motel.



15. A liquor store along Interstate 40 that was levelled.

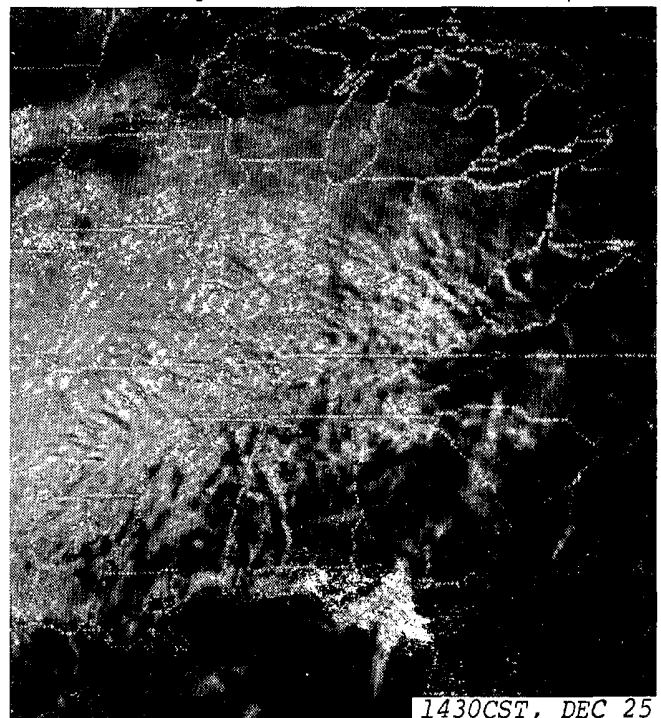
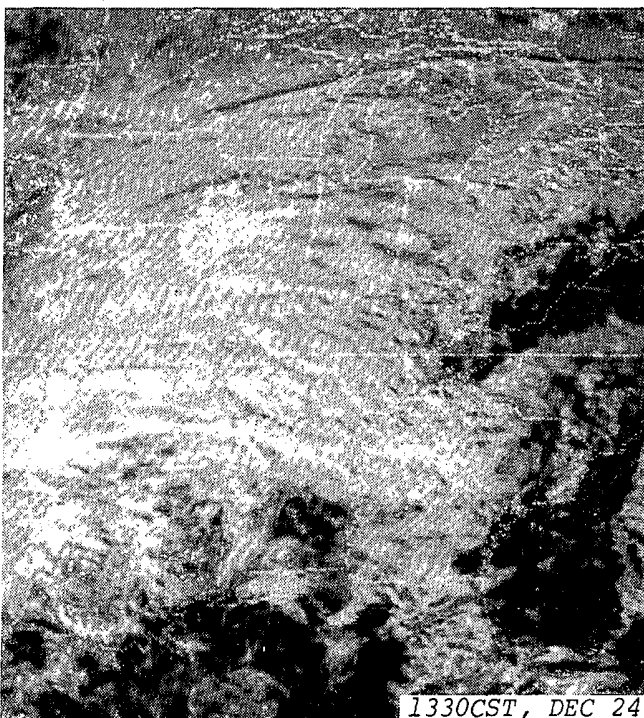
5. HEAVY RAINS in the SOUTH-CENTRAL U.S. on December 24-27, 1987

Beginning on Christmas Eve, heavy rains plagued the South-Central U.S. for four days, and resulted in widespread flooding that lasted well into January 1988 in some areas of the region. The heavy rains fell in a southwest-northeast band across northeast Texas, all of Arkansas, and most of Tennessee and Kentucky (see map below). The largest rainfall amounts, in some cases exceeding a foot, occurred in the Memphis area of eastern Tennessee. The flooding caused four deaths and millions of dollars in damage. For people of West Memphis, Arkansas the rains and subsequent flooding only added insult to injury, coming only 10 days after an F3 tornado carved its own path of destruction through the city (see Item 4c, pages 16 through 19).

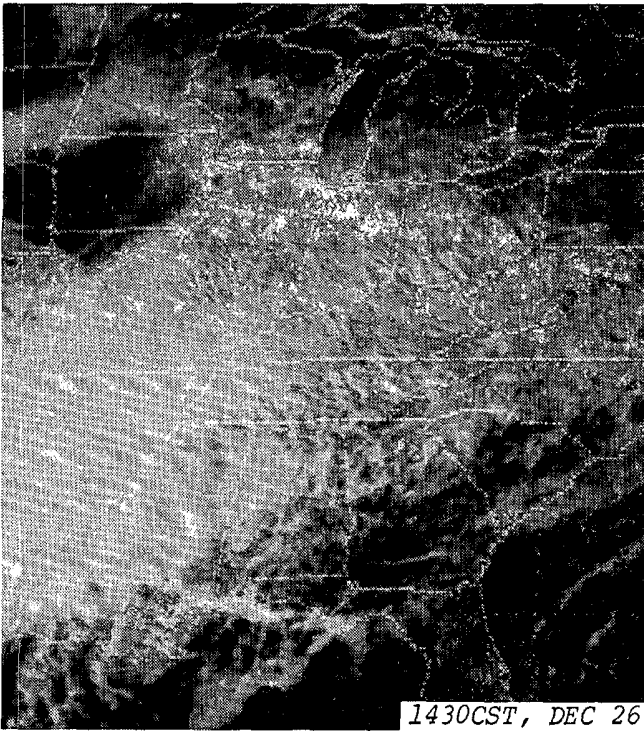


Total weekly precipitation maps with 2-inch threshold, for the two weeks containing the 4-day rain episode (Dec. 24-27, 1987).
---Map source: NOAA/USDA Joint Agricultural Weather Facility;
Weekly Weather and Crop Bulletin.

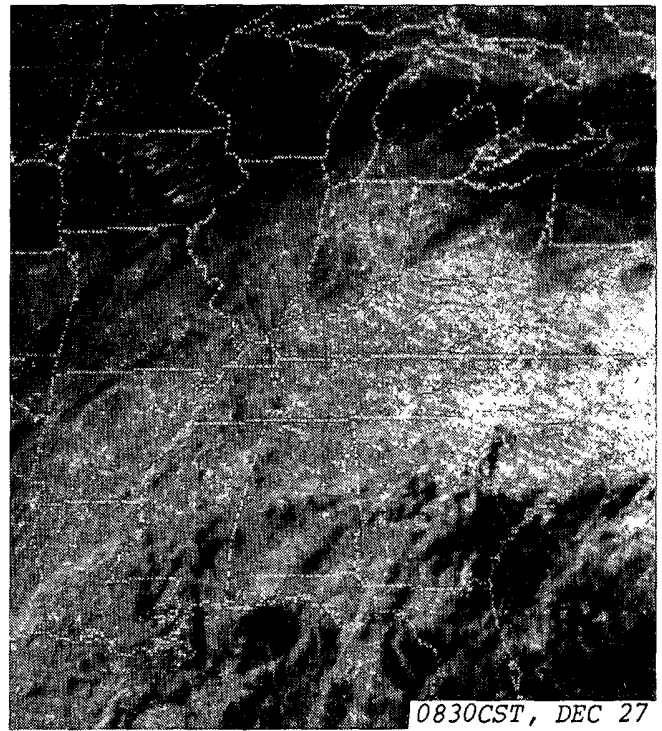
BELOW AND ATOP NEXT PAGE: Four GOES 6 satellite, visible images reveal the persistent cloud pattern that existed over the Central U.S. during the rains. ---NESDIS photos.



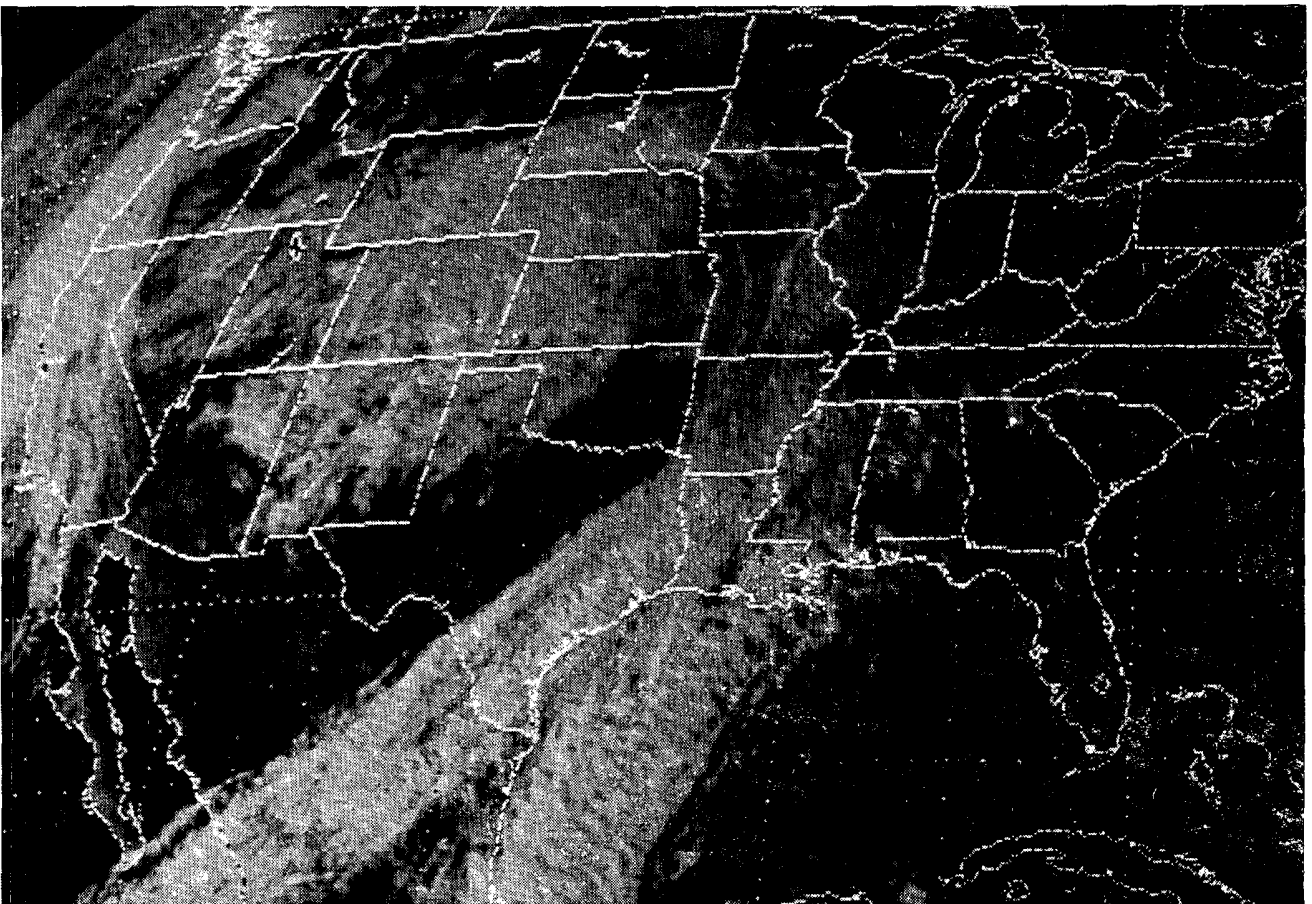
HEAVY RAINS in the SOUTH-CENTRAL U.S. ---- continued



1430CST, DEC 26



0830CST, DEC 27



The giant comma cloud configuration of a major winter storm is seen in the nation's midsection in this GOES 6 satellite, visible image taken at 1530CST on December 27th, the final day of the heavy rains. During the 4-day period, snow and ice storm conditions existed over most of the Mountain and Plains states to the west of the rainfall area. Snowfall amounts in localized, mountain areas were as high as 42 inches, this amount being reported from Intercanyon in the foothills southwest of Denver, Colorado. ---Photo from the National Environmental Satellite Data and Information Service.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS				ESTIMATED ¹ DAMAGE		CHARACTER OF STORM
					KILLED	INURED	PROPERTY	CROPS	PROPERTY	CROPS	
1 ALABAMA											
Pickens County	15	0120CST			0	0	2	0			TSTM Wind At Pickensville a tree was blown onto a porch and did slight damage. Power lines were blown down throughout the county.
Pickens County	15	0125CST			0	1	3	0			TSTM Wind A fence at a construction site was blown down in Reform. A billboard in downtown Reform was also blown down. At Aliceville winds blew the door off the Aliceville fire station. The door hit one man who was slightly injured and required medical attention.
Colbert County	15	0130CST			0	0	3	0			TSTM Wind A roof was blown from a building into the parking lot of a nearby hotel. Several trees were also uprooted.
Lauderdale County	15	0130CST			0	0	3	0			TSTM Wind Throughout the county many windows were blown out and power lines were blown down.
Greene County	15	0145CST			0	0	2	0			TSTM Wind Large tree limbs were blown down at Pleasant Ridge.
Tuscaloosa County	15	0155CST			0	0	0	0		1.00	HAIL (1.00) Quarrier size hail fell at Echola.
Winston County	15	0206CST			0	0	3	0			TSTM Wind Several trees and power lines were blown down at Haleyville.
Marion County	15	0210CST			0	0	3	0			TSTM Wind Trees and power lines were blown down at both Hamilton and Winfield.
Cullman County	15	0225CST			0	0	3	0			TSTM Wind At Smith Lake 10 miles southwest of Cullman one tree fell across the roof of a trailer. Numerous power lines were blown down throughout the county.
Jefferson County	15	0258CST			0	0	0	0			TSTM Wind (G60)
	15	0308CST			0	0	5	0			TSTM Wind (G75) At 0258CST wind gusts to 60 mph were recorded at Tarrant just northeast of Birmingham. At 0308CST winds reached 70-75 mph near the intersection of I-459 and U.S. 280 on the southern edge of Birmingham. Widespread trees and power lines were blown down throughout the county. Several trees reported blown onto houses. One car was totally destroyed by a large downed tree in Homewood. Fences were blown down at many locations in south Jefferson county.
Chilton County	15	0315CST			0	0	2	0			TSTM Wind Several trees were blown down in the Maplesville area near the intersection of U.S. 82 and Alabama 22. A number of large trees were also uprooted four miles north of Jemison.
Shelby County	15	0315CST			0	0	2	0			TSTM Wind Trees and power lines were blown down at Pelham.
St Clair County	15	0320CST			0	0	3	0			TSTM Wind On O'Barr Road between Leeds and Brompton a large tree blew onto a house causing substantial damage.
Dallas County	15	0325CST			0	2	4	0			TSTM Wind A house trailer blew over and was almost destroyed. Of the five occupants two received minor injuries. Several trees were downed at scattered locations throughout the county.
Talladega County	15	0330CST			0	0	3	0			TSTM Wind Numerous trees and power lines were blown down at Talladega. There was some minor building damage.
Autauga County	15	0350CST			0	0	3	0			TSTM Wind (G60)
	15	0350CST			0	0	0	0		0.75	HAIL (0.75) At Autaugaville winds blew to 60 mph downing some trees. Dime size hail also fell in the same area.
Autauga County	15	0400CST			0	0	3	0			TSTM Wind
	15	0400CST			0	0	0	0		0.75	HAIL (0.75) Dime size hail fell at Prattville while numerous power lines were blown down in the same vicinity.
Clay County	15	0405CST			0	0	2	0			TSTM Wind Several trees were blown down at scattered locations in the county.
Elmore County	15	0410CST			0	0	3	0			TSTM Wind Trees and power lines were blown down near Millbrook.
Bullock County	15	0420CST			0	0	2	0			TSTM Wind Trees and power lines were blown down at Simsville.
Elmore County	15	0425CST			0	0	2	0			TSTM Wind Several trees were blown down four miles west of Tallassee.
Bullock County	15	0530CST			0	0	2	0			TSTM Wind Trees were uprooted at several locations in the county.
ALABAMA											
Pike County	15	0530CST			0	0	2	0			TSTM Wind Trees were blown down at scattered locations in the county.
2 ARIZONA											
AZ2003-010	23-25				0	0	4	?			Heavy Snow Eastern, Central Arizona A very large winter storm developed over Utah and moved to the southwest. It spread heavy snow into the higher mountains, and left up to 4 inches of snow in the Tucson area. Many roads in southern Apache County were covered by deep snow. Ice and snow covered many roads in southern Arizona, closing part of I-10 on Christmas Day.
3 ARKANSAS											
Clay County	14	0400CST			0	0	3	-			Thunderstorm Wind A huge oak tree was blown down by a thunderstorm in Piggott. It crushed four cars that were parked nearby.
Sevier County	14	1322CST			0	0	-	-		1.00	HAIL (1.00) Hail was reported 2 miles west of Chapel Hill with diameter ranging up to one inch.
AR2001-002	14	1500CST			0	0	?	-			Ice Storm Boone, Carroll, and Newton Counties A combination of freezing rain, sleet, and snow fell on parts of northwest Arkansas from mid afternoon until late at night. The freezing rain deposited up to a half inch of ice on trees, power lines, and other structures at the higher elevations of the Ozark Mountains. The weight of the ice caused limbs and whole trees to snap. Many power lines were broken. However, a 100-foot change toward lower elevation changed the freezing rain into rain only at many locations. Roads became slippery and hazardous at numerous spots due to the icing.
Hot Spring County	14	1715CST			0	0	-	-			Thunderstorm Wind
	14	1715CST			0	0	-	-		1.75	HAIL (1.75) Golfball size hail fell in Bismarck. Concurrently, trees were blown down at Midway, knocking down power lines.
Columbia County	14	1835CST			0	0	-	-			Thunderstorm Wind Trees were blown down 3 miles southeast of Emerson.
Dallas County	14	1930CST			0	0	-	-			Thunderstorm Wind Several homes in Fordyce were damaged by strong winds during a thunderstorm. Trees, limbs, and power lines were knocked down.
Arkansas County	14	2012CST			0	0	-	-		0.75	HAIL (0.75) Penny-size hail was reported at DeWitt by the Police Department.
Poinsett County	14	2015CST			0	0	-	-		1.75	HAIL (1.75) The Police Department reported golfball size hail covering the ground at Tyrone.
Garland County	14	2042CST			0	0	?	-		1.75	HAIL (1.75) The Arkansas State Police reported marble to golfball size hail at Royal.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

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PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
— ARKANSAS									
Crittenden County	14	2140CST	12	200	6	200	7	-	Tornado (F3)
									A strong tornado touched down four miles southwest of West Memphis and moved northeast at about 60 mph. It traveled 12 miles within Arkansas before crossing the Mississippi River into Shelby County, Tennessee, over Chicken Island. It lifted after traveling 13 miles in Tennessee, just reaching the outskirts of Millington. In Arkansas, the tornado destroyed or damaged heavily 235 homes and 35 businesses, leaving 1500 persons homeless (5% of the population) in West Memphis. The tornado severed two 500,000 volt power lines and three 161,000 volt lines, leaving the entire county without electrical power. Six persons lost their lives in the disaster, but the potential for fatalities was much higher because the tornado tracked within 400 yards of the dog racetrack which had between six and seven thousand persons in attendance at the time. M170, F01H, F48H, M66V, M31H, F290
Mississippi County	14	2200CST			0	0	-	-	Thunderstorm Winds
									A large tree was toppled overnight in Blytheville by strong winds from a thunderstorm.
Lonoke County	15	0125CST			0	0	4	-	High Winds
									An 1800-square foot corrugated tin roof was torn off a shed by gust winds. Also, a barn had some holes punched on its walls. The outbuildings were located on a farm along Arkansas Highway 321, 5 miles east of Cabot.
Most of Arkansas	24-27				1	2	7	7	Flooding
									Heavy rain fell across all of Arkansas beginning on Thursday, Dec. 24, until Sunday, Dec. 27. During the 72-hour period ending at 700 am est the 27th, 6-12 inches of rain fell in a 100-mile wide swath extending southwest to northeast, with an axis centered, roughly, from Texarkana to West Memphis. The remaining areas of the state received rainfall ranging between 3 and 6 inches during the same period. Flooding ranged from minor streams to many major rivers, and at numerous urban areas. The West Memphis Police Department received a missing person report late on Christmas. The body was recovered only a few feet from his car on Tuesday, Dec. 29, as flood waters receded. The exact time and date of his death are unknown. Two flood injuries occurred on Thursday, Dec. 24, at 22:00 CST in Lonoke County, along an unnumbered county road, 3 miles south of the intersection of AR Highways 31 and 38. The injuries happened when their car was washed off a bridge across Pigeon Creek. Bait fish farmers in Lonoke and Prairie counties sustained, at least \$8,000,000.00 in damages to their ponds, levees, and fish stocks. Numerous roads and highways were closed due to high water in many counties. Roadbeds and bridge supports were eroded by swift waters. Many bridges were destroyed. About 1500 persons were evacuated from their homes due to rising water. In Camden, 106 homes, 9 mobile homes; and 2 businesses were flooded by the Ouachita River. In Crittenden County, 500 dwellings and 20 businesses were flooded. The following cities also reported urban flooding: Little Rock, North Little Rock, Fayetteville, Shannon Hills, Pine Bluff, White Hall, Sheridan, Marion, Dyess, Brinkley, Arkadelphia, Morrilton, Holley Grove, West Fork, Hazrdsburg, Piggott, Smackover, Bald Knob, Haynes, LaGrange, Gill, Aubrey, Moro, and Marked Tree. At least, 1366 homes, 124 apartments, 104 mobile homes, and 54 businesses were flooded statewide.
									M28V
AR2001-002 Carroll, Benton, and Newton Counties	25	1000CST			0	0	?	-	Ice Storm
									Freezing rain and sleet fell across parts of northwest Arkansas for the second time in one month. Trees, limbs, power lines, and cable TV lines were knocked down by the weight of the ice. In Carroll County, the areas affected were from Holiday Island to Eureka Springs to Osage. In Newton County, damage was done from Deer southeast, almost to the county line near Pelsor. The area in and around Garfield was affected in Benton County.
4 CALIFORNIA, Northern									
CAZ01-02-06-07-08-09		05- 1600PST 06 1200PST			0	0	5	3	High Wind
									Strong low level winds ahead of an approaching frontal system gusted in excess of 60 mph along the coast and through the mountains. The hardest hit area was near Weed in Siskiyou Co., where gusts to 90mph were reported, doing widespread property damage.
CAZ07-08-09		05- 1600PST 06							Heavy Snow
									6-12 inches of snow fell over the Sierra Nevada and 8-14 inches in the northern mountains as an active cold front moved through California.
CAZ09		07- 1000PST 08							Heavy Snow
									Widespread snowfall of 8 inches through the Central Sierra Nevada.
CA07-08-09-10		15- 0000PST 16 1200PST					2	2	Heavy Snow
									A strong Pacific storm dropped 8 to 12 inches of snow at the 6000 foot level of the Sierra Nevada, with about 2 feet at Mammoth Mtn.
CAZ02-03-05		15- 1900PST 16 1200PST			1	0	5	5	High Wind
									Strong gradient winds gusts to 100mph at Wheeler Ridge in the Tehachapis, and to 60+ MPH along the coast and in southern San Joaquin Valley. There was one fatality due to a falling tree. M30V
CAZ03-04-05		25- 0000PST 26 0800PST						6	Freeze
									Arctic air settled over California, causing widespread damage to citrus and other sensitive crops in Central California.
CA09-10		28- 1200PST 29 1200PST							Heavy Snow
									Heavy snow fell from an active cold front that moved over the Sierra Nevada. In the Lake Tahoe Basin 7-10 inches were common, and 18-24 inches fell at Mammoth Mtn.
4 CALIFORNIA, Southern									
Los Angeles County Westminster	4	1930pst			0	0	4	0	Thunderstorm
									A line of thunderstorms moved onshore near Newport Beach where gusts were reported to near 55 mph. As the storms moved inland several mobile homes sustained damage. 8 mobile homes received major damage, 12 had moderate damage and 24 had minor damage. A convenience store sign was blown from its mounting and down the street. Also a garage was lifted from a home and blown into a neighboring yard. Rainfall totals ranged from one half to three quarters of an inch. In Placentia, a flood channel along Seaview Street overflowed and flooded the road and several basements.
Ventura County Laguna Peak	12	0600pst			0	0	0	0	Strong Winds
									Winds at Laguna Peak near Point Mugu were an omen of the Santa Ana winds to come. No significant winds developed throughout Southern California during the day. Winds at Laguna Peak were from the east from 40 with gusts to 65 mph.
All Areas	14-18				7	11	6	4	Winter Storm
San Bernardino County Bern	14	1000pst			1	?	0	0	
									Arctic air pushed into Southern California and winds reached 100 mph along I-5 near Grapevine. One truck overturned with no injuries. A power pole was blown over onto a vehicle killing the occupant. M57V. Other reports of high winds Monday afternoon included 60 mph within Orange County and over the San Gabriel Mountains.
Coastal Waters Channel Islands	15	2200pst			3	6	?	0	Heavy Surf
									A fishing boat was capsized by heavy seas and strong winds. Nine people abandoned ship but only six of the nine were rescued 17 hours later. 12 foot seas and 30 mph winds aided in shifting the cargo and capsizing the boat. M240, F270, M70.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

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CALIFORNIA, Southern

All Areas	16 0000pst					1	?	3	0									
<p>As the cold air settled into Southern California snow fell in the mountains north of Malibu and snow fell for 2 minutes on the beach. The snow level was as low as 1000 feet at times during the 15th and 16th. Santa Clarita Valley was "snowed-in" and 16,000 students were sent home. Truckers along I-5 near Castaic were snowed in over night.</p> <p>A passenger in a truck was killed when the vehicle was struck head-on during heavy snow on the Sierra Highway. F3V.</p> <p>A man was killed when the truck he was driving hit a rain stalled truck on the I-10 near U.S.C. M27V.</p> <p>Disneyland was closed during the storm for the third time in 24 years. Only the second time due to weather.</p>																		
San Clemente Island	16 1000pst					0	5	3	0	Heavy Seas								
<p>Heavy surf near San Clemente Island destroyed a fishing boat. Five people and one dog were rescued.</p>																		
Tehachapi	0000pst					0	0	?	0	Heavy Snow								
<p>Snow drifts stranded 60 people in 30-40 automobiles. All were rescued by 0200 Wednesday morning.</p> <p style="text-align: center;">2 0 0 0</p> <p>Two people died as a result of faulty heaters. P8P, P80P.</p> <p>During the period 177,000 customers were without power during some point during the storm.</p>																		
San Diego County	overngt					0	0	?	4	Freezing								
<p>Low temperatures for two nights in the agricultural areas caused significant damage (See December 24/25).</p>																		
San Diego County	24 two days					0	0	?	3	Freeze								
<p>Agricultural areas were affected the greatest during this second freeze.</p> <p>Total crop damage resulting from both freezes:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 20%;">Avocado</td> <td style="width: 80%;">8.5-11.25 million dollars</td> </tr> <tr> <td>Strawberries</td> <td>2.0 million dollars</td> </tr> <tr> <td>Flowers</td> <td>500 thousand dollars</td> </tr> <tr> <td>Citrus</td> <td>250 thousand dollars</td> </tr> </table>											Avocado	8.5-11.25 million dollars	Strawberries	2.0 million dollars	Flowers	500 thousand dollars	Citrus	250 thousand dollars
Avocado	8.5-11.25 million dollars																	
Strawberries	2.0 million dollars																	
Flowers	500 thousand dollars																	
Citrus	250 thousand dollars																	

5 COLORADO

Larimer County COZ 011	2 aftn, eve					0	0	3	0	High winds
<p>Strong Chinook winds hit the Fort Collins area. The peak gust recorded was 86 mph at 1455 MST on the CSU foothills campus just west of the city. A gust of 71 MPH was noted a mile north of the town of Waverly at 1548, and a gust of 77 mph was noted in Fort Collins at 1705. Some shingles were ripped off roofs, and fences were downed just southwest of the city.</p>										
Larimer County COZ 011	3 0030					0	0	0	0	High winds
<p>A gust of 69 mph was clocked at Fort Collins.</p>										
Eastern Foothills COZ 011-014	7 mrng					0	0	3	0	High winds
<p>Strong winds buffeted areas along the eastern foothills from the Colorado Springs area north to near the Wyoming border. The peak gust was 93 mph at 0800 MST, at the National Center for Atmospheric Research near Boulder. A metal shed nearby was blown over a fence into a tree two houses away. Winds gusted to 76 mph in Boulder; to 69 mph at the Air Force Academy in El Paso county; and to 60 mph near Waverly in Larimer county. All these gusts occurred from 0300 to 0800.</p>										
Eastern Foothills COZ 011	8 mrng					0	0	3	0	High winds
<p>A gust of 64 mph occurred at 0410 MST in Fort Collins. Farther south, 9 miles west of the Jefferson county foothill town of Bergen Park, gusts estimated at 70 mph damaged a chimney and roof.</p>										

COLORADO

Northeast Colorado COZ 011 thru 014	10					0	0	4	4	High winds
<p>Strong winds blew all day over most of northeastern Colorado. Wind gusts of 60 to 75 mph were clocked in Larimer, Weld, Boulder, and Morgan counties at times ranging from 0355 to 1905 MST. The strongest winds noted were 94 mph 4 miles south of Rollinsville in Gilpin county at 0805; and 97 mph on the summit of Mines Peak, at over 13000 feet elevation on the Continental Divide at 1642. Winds destroyed fences and reduced visibilities to zero in blowing dust in northeastern Weld county. In Logan county, winds blew a tree into a power line 21 miles northwest of Sterling, starting a range fire. Fanned by the strong winds, the blaze burned 3000 acres of hay.</p>										
Eastern Foothills COZ 011-014-015	13-14					0	0	0	0	Snow
<p>A snowstorm dropped 2 to 8 inches along the eastern foothills. Some spots had more; 8 to 12 inches fell just south of the Denver area, and Rye, in the foothills southwest of Pueblo, had 16 inches. Icy conditions contributed to many traffic accidents in the Denver area, and flights were delayed at Stapleton airport.</p>										
Northern Mtns. COZ 002	19-20					0	0	0	0	Heavy snow
<p>15 inches of snow fell at the Mary Jane ski area; other mountain sites had 6 to 12 inches.</p>										
Northeast Foothills COZ 011	21 mrng					0	0	0	0	High winds
<p>Strong winds howled in Boulder and Gilpin counties. Gusts reached 78 mph in east Boulder; 85 mph at Table Mesa in southwest Boulder; 93 mph 4 miles south of Rollinsville; and 97 mph at NCAR, at 1000 MST. A gust of 61 mph was noted 3 miles south of Waverly in Larimer county. The winds were strongest from 0230 to 1100.</p>										
Statewide COZ 001 thru 017	23-24					0	0	0	0	Heavy snow
<p>A snowstorm ensured a white Christmas in virtually all areas of Colorado. 1 to 2 feet fell in most mountain areas. Amounts in the Denver area ranged from 4 to 8 inches, with 10 to 18 inches in the eastern foothills. 10 inches fell in Fort Collins; a snow emergency was declared there. 2 to 6 inches fell in the southwestern valleys; Craig, in the northwest, was buried with 12 to 18 inches. The largest amount of snow noted from the storm was 26 inches at the Wolf Creek Pass ski area.</p>										
Northeast Colo. COZ 011 thru 014	26-27					0	0	6	0	Heavy snow
<p>A snowstorm stalled in northeastern Colorado, giving the Denver area its worst winter storm since the Thanksgiving weekend blizzard in November 1983. Snow fell continuously in the Denver area from about 1000 MST on the 26th until shortly after midnight on the 28th. 15 inches fell at Stapleton airport. Winds were light on the 26th, but suddenly increased to as high as 46 mph by 1000 on the 27th, creating near blizzard conditions and forcing complete closure of the airport for the first time in over four years. The airport remained closed for about eight hours. Interstates 25 and 70 were both closed outside of Denver on the 27th, as communications in the metro area ground to a halt. Total snowfall from the storm ranged from 12 to 18 inches on the east side of the metro area, where the strong winds complicated matters by whipping up drifts 5 feet high. In the western and southern parts of the area, 2 to 3 feet of snow fell, albeit with little wind to cause drifting. The largest total reported was a whopping 42 inches at Intercanyon, in the foothills southwest of Denver. Elsewhere, snowfall ranged from 1 to 2 feet in Boulder and Douglas counties. A foot fell at Brighton in extreme northwest Adams county, but farther north amounts were less; only 6 to 7 inches fell at Greeley and Fort Collins, mostly on the 26th. Farther east, 10 inches buried Akron. Snowfall was much lighter in other parts of the state. Most spots in the mountains had 6 to 12 inches, while 2 to 5 inches fell in the southeast, except for a 10 inch fall at Towner, in Baca county. Little or no snow fell in the southwestern valleys. The Denver area was slow to dig out from the storm; cold temperatures prevented significant melting for a long time after the storm, and total snow removal costs in the Metro area were well over a million dollars.</p>										
<p>6 CONNECTICUT — NONE REPORTED</p>										

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7 DELAWARE ————— NONE REPORTED

8 FLORIDA

Dade Co., Miami (10mi SW)	08	2300EST			0	0	0	3	TSTM wind (55)
Strong wind downed trees in a fruit tree grove.									
Putnam Co., western part	15	1400EST	1.0	30	0	0	3	0	Tornado (F0)
One mobile home was destroyed and several were damaged by a tornado. Trees and power lines were downed.									
Putnam Co., Panama Park	15	1420EST			0	0	2	0	TSTM wind (55)
Strong wind damaged business signs and downed tree limbs and power lines.									
Flagler Co., Bunnell	15	1450EST	1.0	30	0	0	4	0	Tornado (F0)
A tornado was reported by the county civil defense director. Two industrial buildings and four vehicles were damaged.									

9 GEORGIA ————— NONE REPORTED

10 IDAHO

Entire State	1-31				0	0	?	0	Drought
Below normal snow pack occurred throughout the state. Since reservoirs were drained last summer, power companies burned coal to generate nearly 50 percent of electricity; the highest use of non-hydrogeneration in the utilities' history.									
Central Mountains ID2006, 007, 010	1-2	night			0	0	0	0	Heavy snow
Fifteen inches of snow fell on the Sun Valley ski resort overnight along with 50mph winds. Overnight snowfall was 5" on Brundage Mountain near McCall.									
Adams, Valley and Washington Cos.	6	1815MST			0	0	5	0	Tstm wind (58)
Wind felled trees and damaged structures and vehicles. Power transmission lines severed in 30 separate outages affected 6500 customers an average of three hours. Farm structure doors were carried 500 feet by winds near Cambridge.									
Southeast Idaho ID2003	6	1500-2300 MST			0	0	4	0	High winds (54)
Scattered power outages affected 926 customers briefly.									
Northern Idaho ID2008, 009	9	1930-2300 PST			0	0	5	0	High winds (60)
Cold front winds downed trees and power lines. Ninety-six hundred customers were without power for about an hour in Bonner County. Wind felled trees, blocked roads in Benewah County. Telephone outages lasted overnight in portions of Sandpoint. Rain flooded Highway 95N in Colburn.									
Southeast Idaho	10	0700-1100 MST			0	0	4	0	High winds (52)
Cold front winds damaged roofs and caused a one-hour power outage for 3000 customers between American Falls and Pocatello.									
South Central Mountains ID2007	10				0	0	0	0	Heavy snow
Eight inches of new snow was reported at Hetchum.									
North Idaho ID2008	20-21	night			0	0	5	0	Heavy snow
Six-twelve inches of new snow overnight was blamed for numerous automobile accidents.									
Southern Mountains ID2006, 004	22	0800			0	0	0	0	Heavy snow
Snowfall amounts at ski resorts ranged from 10 to 36 inches in 24 hours.									

IDAHO

Statewide ID2001-010	22				0	27	5	0	Heavy snow
Numerous automobile accidents occurred within 24-hour snowfall totals of 4-6".									
Southeast Idaho ID2003	22-23				0	2	5	0	Heavy snow
Eight inches of new snow at Pocatello was blamed for 35 automobile accidents including a seven-car pileup. Eight to eighteen inches of new snow was reported by ski resorts in the Southern Mountains.									
East Central Idaho ID2006, 008	30	0800			0	0	0	0	Heavy snow
Twenty-four hour snow increases were 8" at McCall and 6" at Grangeville.									

ILLINOIS

ILLINOIS Entire State	14	Late			30	0	0	0	Winter Storm High Wind
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A powerful winter storm affected Illinois late on December 14th and early on the 15th. The storm was most intense for portions of northern Illinois of the 1980's, and since the blizzard of January 13, 1979. The storm produced a band of very wet heavy snow ranging in depth from about 6 to 12 inches across portions of west central and northern Illinois. The axis of the heaviest snow affecting Illinois stretched from Quincy to Rockford and just west and north of Chicago. As a side line, earlier on the 14th, a 3 to 7 inch band of snow fell across south central and portions of southwest Illinois, but this snowfall was not directly associated with the main storm system that developed late on the 14th and continued on the 15th. The 6 inch or greater snowfall accumulation line from the main storm system extended north and west of a line from south suburban Chicago to just west of Springfield to a point about 60 miles north of St. Louis. At the peak of the storm, during the early morning of the 15th, most of northern and west-central Illinois experienced a combination of thunderstorms, snow, sleet, some freezing rain and a few reported cases of hail. Very strong winds also developed during the late night of the 14th and early on the 15th across the entire state when surface pressures plunged as the storm occluded and moved northward across Illinois. By 9:00 am, local (152), the surface pressure at O'Hare International Airport in northeast Illinois, plummeted to a record low 981 mbs or 28.96 inches, and this mark established an all time record low pressure reading for the month of December. Nearby Glenview Naval Air Station recorded a low pressure reading of 979 mbs which was the lowest reading during the entire history of the storm. Extreme southern and east-central Illinois received little or no snowfall from the main storm, but high surface winds were observed along with 1 to 2 inches of rain. Damage from high winds were reported across southeast Illinois early on the 15th.

The storm began to organize as a center of low pressure at 1004 mbs over southwest Arkansas on the evening of the 14th, and raced north eastward at over 50 knots, and deepened slowly as it pushed into northeast Arkansas. The track of the low center then began to recurve more northward to just west of the southern tip of Illinois by midnight and deepened to 993 mbs. As the low continued to move northward across Illinois during the late night, the system occluded and intensified explosively and slowed to about 20 to 25 mph and was located about 60 miles southwest of Chicago at 6:00 am, local (122), on the 15th. In the 6 hours between midnight and 6:00 am, local on the 15th, the pressure at O'Hare dropped very rapidly to 984 mbs, a total fall of 24.3 millibars or nearly 3/4 of an inch of mercury. The low continued northeast and began to slowly fill during the day on the 15th, and was located in north, lower Michigan by 6:00 pm local on the 15th.

Some interesting and unusual or outstanding features of the storm included the following: Extremely rapid intensification of the storm as it moved northward across Illinois; sustained winds of 25 mph to 40 mph, briefly up to around 50 mph, with gusts 60 to 75 mph; widespread embedded thunderstorms over areas that were receiving heavy snow and at times were mixed with sleet and hail. In one case, hail was reported up to 3/4 inch near Joliet, in northeast Illinois; the duration of thunderstorm activity was unusually long for a winter storm... a number of official Weather Service locations in northern and west central Illinois reported thunder periodically over a 2 to 4 hour time frame; and associated winds and pressure drops on the center approach were akin to that of a tropical storm; as the storm center moved overhead at a couple of locations, winds suddenly became light or calm, and skies became partly cloudy for a brief time.

The following events or conditions occurred across most of northern and west-central Illinois: At the peak of the storm scattered to numerous power outages across northern and west central Illinois. High winds downed some trees, large tree limbs and ice coated power lines. Power at one time, on the 15th, was out to 165,000 Commonwealth customers in the Chicago metro area of northeast Illinois. High winds caused some spotty damage to buildings across the entire state. The storm shut down aircraft operations at O'Hare Airport, the world's busiest, for several

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ILLINOIS

hours for what was believed to be only the fourth time in 20 years. Major and secondary roadways were closed or impassable due to heavy, blowing, drifting snow over many section of northern and west-central Illinois. Hundreds of schools and businesses were closed. At least 20 persons in the Chicago area died of heart attack from shoveling heavy, wet snow or from pushing vehicles stuck in the snow. A total of about 30, indirectly or directly storm related deaths occurred statewide.

Some official National Weather Service storm totals of snowfall and peak wind gusts; O'Hare International Airport 9.1 inches of snow and peak winds 64 mph; Rockford 11.4 inches and 62 mph; Peoria 8.9 inches and 59 mph; Moline 11.2 inches and 43 mph; Springfield 5.3 inches and 35 mph.

Some county by county highlights:

Cook county- O'Hare airport closed down for fourth time in 20 years. Power out to 165,000 utility customers. 27 deaths reported in greater Chicago area from persons shoveling snow or pushing vehicles. A few reports of roof damage from high winds. Numerous tree limbs and some trees and power lines down.

Rock Island- Moline area numerous vehicles stranded, schools closed, many roads closed.

Franklin- West Frankfort trees down, shingles blown off some roofs in area from high winds. 1.22 inches rain.

Warren county- Monmouth 12 inches snow, roof collapsed DeNovo Ceramics building.

Lee, Ogle, Whiteside counties- 12 inches snow, trees power lines down. 600 persons without power Morrison.

Kankakee county- few trees and power lines down. 1-2 inches snow sleet. 1 inch of rain.

Kane, McHenry counties- many power lines down, some trees down, and many roads closed.

Peoria county- 9 inches of snow. Roads closed, some hail. 30,000 persons without power.

Champaign county- roads closed, some power lines and trees down.

Will county- Joliet area 3/4 inch hail, widespread power outages. 8 inches of snow.

Boone county- Belvidere area- schools closed, trees down, roads closed.

Madison county- Alton 6 inches of snow, power outages.

Kendall county- Yorkville schools and roads closed, wind gusts to 70 mph.

Grundy county- ESDA measured wind gusts 63 mph, roofs off farm buildings, Lutz 5.75 inches of snow.

Tazewell county- ESDA from Washington reported wind gust 90 mph. (at 2:07 am on 15th), Morton 5.3 inches of snow, hail.

Crawford county- Robinson area- Tri City Roofing warehouse sustained considerable roof damage. Many trees and utility lines down. Nora's paint warehouse block wall collapsed, several other businesses damaged.

Woodford county- Roanoke area- 4 to 8 inches of snow, many trees, wires and utility poles down, winds estimated gusts to 90 mph.

Du Page county- 8 inches snow, thousands without power.

McHenry county- ESDA measured wind gusts 73 mph, many businesses closed, schools closed, trees and power lines down, 2 barn roofs blown off, roads closed, 10 inches of snow.

Lake county- 8 to 12 inches snow, 25,000 without power, wind gusts measured to 72 mph, power lines down, schools closed.

Livingston county- Ottawa high winds blew out some windows, widespread power outages and utility poles down, high winds caused power lines to "gallop". Many trees and limbs down.

La Salle county- Ottawa area large tree fell on a house.

Wabash county- Mt. Carmel area- Heavy rain and some trees down. County courthouse roof was partially blown off, siding from a nearby building was ripped away. A large tree fell on a car.

McLean county- scattered power outages, snow and sleet totaled 1 1/2 inches.

Coles county- Mattoon- roof collapsed and did \$100,000 damage to six new cars.

ILZ001-002-003-004-005-006-007-008 Northern Quarter

28 Morning 0 0 0 0 Heavy Snow
Afternoon

About 3 to 8 inches of snow fell across the northern quarter of Illinois on December 28th. Some local snow amounts of 10 inches or more were reported over extreme northeast Illinois over Kane, Lake and McHenry counties. 8.0 inches of snow was recorded officially at O'Hare International Airport. An unofficial report of 13 inches occurred at Antioch near the Illinois-Wisconsin state line. The heavy snow disrupted surface and air travel. Holiday travelers were stranded at O'Hare for a time and hundreds of flights were canceled. Midway airport recorded 7 inches of snow and Joliet 6 inches. Over northwest Illinois some roads were closed because of heavy snow and blowing and drifting snow. In Jo Daviess county in northwest Illinois 150 persons were stranded for a time at a high school. Spotty power outages occurred and a few trees were reported down across northern Illinois because of heavy snow, ice build up and gusty winds. Also, some schools and businesses were reported closed in northwest Illinois. Other snowfall reports in the north: Rockford 8.0 inches; Moline 3.1 inches; Peoria 0.7 inches, Springfield a trace.

12 INDIANA

INZ01-INZ12
North and Central
Indiana 15 0500 EST 2 9 5 ? Wind
1700 EST

A strong low pressure system that moved north across Illinois brought sustained high winds to northern and central Indiana, mainly between 5 am and 5 pm est. Winds to around 70 mph downed trees and power lines throughout the area. Some trees fell on cars, boats, or homes. Roofs were damaged, windows were blown out, shingles were removed, and several old barns were blown down. Two fatalities occurred when the wind caused a semi-truck to swerve into the path of a pick-up truck in Noble County, killing the occupants of the pick-up. A fire was started in Hamilton County when the wind knocked over a high-intensity quartz spotlight at a church. The fire did \$3000 in damage. M49V, F44V

13 IOWA

IAZ003-006-007-008-010-011-013-014-015
Eastern Iowa 14 1500 CST 0 0 5 0 Heavy Snow
15 1200 CST

A major snowstorm struck Iowa during the afternoon of the 14th and morning of the 15th. Snowfall amounts were generally between 5 and 10 inches over the East half of the State. A few areas of the Southeast and East-Central Iowa received 10 to 14 inches. Thunderstorms with sleet and even some small hail accompanied the snow over the Southeast third of the State during the early morning hours of the 15th. Winds of 30 to 50 MPH reduced visibilities to zero at times over the East third of Iowa on the morning of the 15th. Many areas were brought to a virtual standstill. In most areas, this was the largest snowfall in over two years. The Quad Cities recorded 11.4 inches of snow in less than 24 hours. That was a December record, and the largest snowfall since 1979. Snowfall over the rest of the State was from 1 to 4 inches, with only trace amounts over the Northwest corner.

IAZ001-002-003-004-005-SDZ018
Northern Iowa 19 0300 CST 0 0 4 0 Snow and Heavy Snow

A storm brought heavy snow to much of the North third of Iowa. Snowfall amounts were generally in the 5 to 8 inch range.

IAZ002-003-006-007-008-009-010-011-012-013-014-015-NEZ010-ILZ004-
Much of Iowa 27 0900 CST 0 0 5 0 Ice Storm
27 2300 CST

Freezing rain and sleet moved into Southwest Iowa during the early morning of the 27th. It spread quickly across Central, North-Central, and Northeast Iowa. Precipitation over Southeast Iowa began as rain, then changed to freezing rain during the afternoon. Most of the State had freezing rain and sleet. The hardest hit was an area extending from Southwest into Central, North-Central, North-east and East-Central Iowa. In this area, anywhere from 1/4 to 1/2 inch of freezing rain coated everything. The result was broken tree limbs and scattered power outages. The Airport at Des Moines was closed for 14 hours during the afternoon of the 27th and the morning of the 28th.

IAZ001-002-003-005-006-007-008-010-011-SDZ018
Northern Iowa 27 1500 CST 0 0 4 0 Snow and Heavy Snow

Quickly on the heels of the ice storm earlier in the day, freezing rain and sleet changed to snow. Snowfall amounts of anywhere from 4 to 14 inches blanketed about the North half of Iowa. The heaviest snowfall was over the North-Central and Northeast Counties, where amounts of 10 inches or more were common. Traffic was brought to a near standstill over the Northeast third of the State.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS				ESTIMATED DAMAGE	CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS		
14 KANSAS										
KSZ006-009-011-012-013-014-015-016-017- Southeast Half of Kansas	13-15	1800 to 0200CST			0	0	4	0	Heavy Snow	
<p>A major storm system brought locally heavy snows of 6 to 13 inches to the southeast half of Kansas. The heaviest snow fell across east-central and southeast Kansas on the 14th between 0500 and 2100CST where 10 to 13 inches were reported. Snowfall amounts included 13 inches at Yates Center, Pittsburg and Paola; 12 inches at Elgin, Colony and Coffeyville; 11 inches at Kansas City with 10 inches at Leroy, Ottawa and La Cygne. Other amounts from the storm included 8 inches at Topeka and Wichita, with 7 inches at Salina, Hutchinson and Centralia. Three to five inches of snow fell across far southwest Kansas while only 1 to 3 inches was reported across the northwestern part of the state. Northeasterly winds of 15 to 30 mph caused considerable blowing and drifting of the snow, but only a few roads were closed for a short time in the southeastern part of the state during the early morning hours of the 14th. Three deaths occurred during the storm. A woman was killed on US Highway 81 15 miles south of Concordia shortly before noon on the 14th when her car slid on the icy roads into another car, F31V. A man collapsed next to his truck in Kansas City, KS in the early morning hours of the 15th while trying to free it from a snow drift. M490. A man was also found dead next to his truck in the Kismet area in the early afternoon hours of the 14th. The man apparently died from a heart attack while trying to dig his truck out of a snow drift. M720.</p>										
KSZ012-013-014-015-016-017- Eastern Kansas	25-27	0900 to 0200CST			0	0	4	0	Ice Storm	
<p>A storm system brought freezing rain to much of eastern Kansas from the morning of the 25th through the early morning hours of the 27th. Before the freezing rain began, 1 to 5 inches of snow fell across portions of south-central and eastern Kansas from late evening on the 24th into the early morning hours of the 25th. The freezing rain caused significant glazing of roads, power lines and tree limbs across southeast Kansas. Hardest hit areas were around Baxter Springs, Columbus, Sedan, Coffeyville and Pittsburg where the ice buildup caused numerous power outages from tree limbs falling across power lines. The ice was up to 1 inch thick in some of the above mentioned areas. A man was killed when his car collided with another car on an icy highway in Wyandotte County during the evening hours of the 26th. M27V.</p>										
KSZ001-002- Northwest Kansas	26-27	0500 to 0100CST			0	0	3	0	Heavy Snow	
<p>The same storm system that brought freezing rain to eastern Kansas also produced heavy snow in the northwest part of the state. Between 6 to 8 inches of snow fell across the area from the morning of the 26th into the early morning hours of the 27th. Snowfall amounts included 8 inches at Tribune, Scott City and St Francis with 6 inches reported at Goodland. Lighter snowfall amounts of 3 to 5 inches occurred across southwest Kansas with the storm. Blowing and drifting of the snow was not a problem across western Kansas as winds were relatively light during and after the storm. Interstate 70 was closed for a short time from Hays to the Colorado border due to a lack of motel accommodations further west in eastern Colorado. A woman was killed when she lost control of her car on an icy road near Cimmaron. The accident occurred in the early afternoon hours of the 26th. F37V.</p>										
15 KENTUCKY										
Edmonson County	03	1400-1600CST	-	-	0	0	4	0	Gradient Winds	Wind gusting to near 60 mph did extensive damage to the steeple on a church in Lindseyville.
Clinton County	03	1400-1600CST	-	-	0	0	4	0	Gradient Winds	Wind gusting to near 60 mph blew the roof off a gas station in Albany.
Graves County	15	0200-0430CST	-	-	0	0	5	3	Gradient Winds	Winds gusting above 60 mph, heavily damaged a mobile home one mile east of Lowes. A tobacco barn fire was blamed on high wind as tobacco sticks blew from the barn into the firing pot and set the barn ablaze. Roof damage, antenna damage, and power outages were also reported.
Hickman County	15	0200-0300CST	-	-	0	0	5	0	Gradient Winds	Winds gusting to at least 60 mph caused the front portion of a second story building in downtown Hickman to collapse.
Ballard and McCracken Counties	15	0130-0430CST	-	-	0	0	4	0	Gradient Winds	High winds gusting above 60 mph damaged roofs, blew out plate glass windows, and downed power lines. A large tree fell through a house in Paducah.
Calloway and Trigg Counties	15	0130-0430CST	-	-	0	0	4	3	Gradient Winds	Winds in excess of 60 mph lifted a tin storage building and toppled it onto a boat. High winds also blew over a 60ft X 25ft shed causing damages over \$3,000. A tobacco barn burned in Trigg County. The farmer was "firing" the tobacco and the high wind caused the fire to spread. Approximate loss of the barn was \$13,000, with the loss of the tobacco estimated at \$4,500. Also there were numerous power outages and small trees and branches down.
Webster, Hopkins and Caldwell Counties	15	0130-0430CST	-	-	0	0	5	3	Gradient Winds	As winds gusted above 60 mph there were numerous reports of damaged roofs on houses, businesses, and barns. A new building under construction was demolished. Downed power lines left a portion of northern Webster County without electricity for part of the morning.
Todd County	15	0230-0430CST	-	-	0	0	4	0	Gradient Winds	High wind did extensive damage to a school which was under construction as several walls collapsed and wood trusses were blown off the roof.
Henderson and Davies Counties	15	0230-0430CST	-	-	0	0	4	0	Gradient Winds	Steady winds between 30 and 40 mph with gusts to 60 mph snapped telephone and power lines, toppled trees and damaged roofs. Several large plate glass windows were also broken.
Breckinridge and Hardin Counties	15	0300-0500EST	-	-	0	0	4	0	Gradient Winds	In Radcliff, gusty winds above 60 mph did extensive damage when a large concrete block wall was blow over. A small plane was blown upside down in Breckinridge County. There were reports of widespread damage to roofs and barns. Several large plate glass windows were also broken.
Nelson and Marrison Counties	15	0430-0530EST	-	-	0	0	4	0	Gradient Winds	High winds completely destroyed a machine shed near Bloomfield. Damage was done to an elementary school as 8,000 sq ft of roofing was ripped off. Also high winds snapped utility poles and broke tree limbs.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS				ESTIMATED DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	PROPERTY	CROPS	

KENTUCKY

Jefferson County	15	0430-0530EST	-	-	0	0	5	0	Gradient Winds	A helicopter ambulance was damaged when a gust of wind, 65 mph, knocked it on its side on the hospital's landing pad in Louisville. High wind picked up a trailer, which was not anchored, and slammed it against another mobile home. Police reported a few minor accidents when cars were blown off the road.
Clinton County	15	0430-0530EST	-	-	0	0	3	0	Gradient Winds	High winds, around 60 mph, caused damage to several buildings, including one garage which was completely demolished.
Pulaski County	15	0530-0730EST	-	-	0	0	4	0	Gradient Winds	Winds gusting to 58 mph ripped the steeple off a church in Somerset. Damage was estimated at \$25,000 to \$30,000.
Fayette Jessamine and Clark Counties	15	0530-0730EST	-	-	0	0	4	0	Gradient Winds	Gusty winds to 60 mph snapped telephone and power lines, blew out windows, toppled trees, and damaged roofs.
Grant Boone and Kenton Counties	15	0600-0800EST	-	-	0	0	5	0	Gradient Winds	Gusty winds to 60 mph snapped telephone and power lines, blew out glass, toppled trees, and damaged roofs.

16 LOUISIANA

Calcasieu Parish, Vinton	06	1430CST	0.50	25	0	0	4	?	Tornado (F1)	Tornado touched down in western Calcasieu Parish destroying one mobile home, moving several mobile homes off their foundations, and taking the roofs off a few homes.
DeSoto Parish, 7 E of Logansport	14	1710CST			0	0	2	?	TSTM Wind	
Caddo Parish, Shreveport	14	1720CST			0	0	2	?	TSTM Wind	
Bossier Parish, Elm Grove	14	1725CST			0	0	?	?	TSTM Wind and Hail (.88)	
Bossier Parish, Princeton	14	1735CST			0	0	2	?	TSTM Wind and Hail (1.00)	
Bossier Parish, 20 NW Bossier City	14	1753CST			0	0	2	?	TSTM Wind and Hail (0.88)	
Webster Parish, 1 SW Dixie Inn	14	1815CST			0	0	?	?	Hail (1.00)	
Claiborne Parish, 7 N Homer	14	1830CST			0	0	?	?	Hail (0.88)	
Jackson Parish, Clay	14	1930CST			0	0	2	?	TSTM Wind	
Lincoln Parish, 10 SE Ruston	14	1940CST			0	0	2	?	TSTM Wind and Hail (1.00)	
Union Parish, 5 S of Spencer	14	1945CST			0	0	?	?	Hail (1.00)	
Union Parish, 5 SE of Marion	14	1945CST			0	0	?	?	Hail (1.00)	
Ouachita Parish, Monroe	14	1950CST			0	0	?	?	Hail (1.75)	
Ouachita Parish, Monroe	14	1958CST			0	0	3	?	TSTM Wind (53)	
Morehouse Parish, Mer Rouge	14	2001CST			0	0	?	?	Hail (1.75)	
Caldwell Parish, Clerks	14	2015CST			0	0	?	?	Hail (1.00)	
West Carroll Parish, north portion	14	2045CST			0	0	5	?	TSTM Wind	
East Carroll Parish, Lake Providence	14	2055CST			0	0	2	?	TSTM Wind and Hail (0.88)	
Tensas Parish, 5 N of Newellton	14	2115CST			0	0	2	?	TSTM Wind	
East Baton Rouge Parish, Baton Rouge	14	2300CST			0	0	3	?	TSTM Wind	

A line of severe thunderstorms moved rapidly across the state in advance of a cold front. The thunderstorms were accompanied by hail and strong wind gusts which caused minor property damage to

LOUISIANA

Caddo Parish Shreveport	19	1310CST	-	-	0	0	3	?	TSTM Wind (56)	roofs, trees, and out buildings. The most significant damage occurred near Oak Grove in West Carroll Parish where thunderstorm winds demolished two mobile homes. In Baton Rouge, five mobile homes were moved off their foundation blocks by thunderstorm wind gusts.
DeSoto Parish, Stonewall, Logan-sport, Keatchie	19	1310CST	-	-	0	0	5	?	TSTM Wind (70)	
Sabine Parish, 5 S of Noble	19	1345CST			0	1	5	?	TSTM Wind	
Bossier Parish, Bossier City	19	1347CST			0	0	?	?	TSTM Wind (52)	
Red River Parish, 5 N of Coushatta	19	1400CST			0	0	2	?	TSTM Wind	
Webster Parish, 5 SW of Sibley	19	1400CST			0	0	2	?	TSTM Wind	
Bienville Parish, 5 E of Bienville	19	1402CST			0	0	3	?	TSTM Wind (78)	
Bossier Parish, 5 E of Elm Grove	19	1405CST			0	0	2	?	TSTM Wind	
Bienville Parish, 5 N of Ringgold	19	1405CST			0	0	2	?	TSTM Wind	
Claiborne Parish, 10 SE of Homer	19	1410CST			0	0	2	?	TSTM Wind	
Matchitoches Parish Chestnut	19	1415CST			0	0	?	?	TSTM Wind (56)	
Jackson Parish, 5 NE of Chatham	19	1455CST			0	0	2	?	TSTM Wind (61)	
Ouachita Parish, Monroe	19	1510CST			0	0	6	?	TSTM Wind (70)	
Caldwell Parish, 10 N Columbia	19	1525CST			0	0	?	?	TSTM Wind (53)	
West Carroll Parish, Oak Grove	19	1530CST			0	0	2	?	TSTM Wind	
East Carroll Parish, Lake Providence	19	1545CST			0	0	2	?	TSTM Wind	

A line of severe thunderstorms developed ahead of a cold front and moved across the northern half of Louisiana at 45 to 60 mph (40 to 50 kt). Mobile homes were rolled and destroyed near Stonewall and Keatchie. One person suffered minor injuries when a mobile home was demolished by thunderstorm winds near Noble. The Monroe area was especially hard hit as winds gusting to 81 mph (70 kt). Numerous signs and windows were blown out on the west side of Monroe and a mobile home had its roof taken off by thunderstorm wind gusts south of the city.

LAZ01-LAZ02-LAZ03 Northwest and North-Central Louisiana.

LAZ01-LAZ02-LAZ03 Northwest and North-Central Louisiana.	24	0800CST-05 1200CST	-	-	0	0	5	?	Heavy Rain and Flooding	Heavy rains fell over southwest Arkansas, northeast Texas, and portion of northern Louisiana from Dec 24th through early on Dec 28th. Northwest and north-central Louisiana received 3 to 5 inches of rain during this period. However, Ashland, Bastrop, Hosston, Monroe, Plain Dealing, and Vivian recorded over six inches of rain. Considerable runoff occurred as the soil was saturated over the region due to heavy rains in the previous few weeks. Significant flooding of houses, trailers, and camps occurred near Caddo Lake and its tributaries, and around Cypress Bayou Lake. Caddo Lake reached its highest level since 1966. Flooding along Dorcheat Bayou in Webster Parish inundated a few trailers and homes. Minor lowland flooding occurred across much of the area. Some backwater flooding of low lying areas was also reported as major rivers were near flood stage restricting discharge of minor tributaries and streams. Flooding continued over the extreme northwest sections into the first week of January 1988. See January 1988 Storm Data for additional information.
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17 MAINE

MEZ 004-002-003-004-005-006-007-008-009-012	15-	1400 EST-	-	-	1	0	5	?	Heavy Snow	A snowstorm moved out the Southwestern United States toward the Great Lakes on the 14th, and by midday on the 15th, it was centered over Michigan. During the evening of the 15th, another low formed over New Jersey and intensified rapidly as it moved across Cape Cod, and into the Gulf of Maine overnight. By 1600 EST on the 16th, the low had a central pressure of 976 mb and was located just west of Yarmouth, Nova Scotia. The storm continued through the Canadian Maritimes with the heavy snow ending over Eastern Maine by late at night on the 16th. Over Southwest Maine, the snow changed to rain, and snow accumulations ranged from about 1 inch in extreme Southern York County, Zone 14, up to 10 inches over extreme Northern Kennebec County, Zone 10. The snow over Southwest Maine was slow in accumulating due to the rain. It was a different story over the rest of the State, as it was all snow, and most sections
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STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS				ESTIMATED DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	PROPERTY	CROPS	

MAINE

reported over 6 inches with a maximum of 19 inches falling on Blanchard in Southern Piscataquis County, Zone 6. Most of the problems with this storm occurred over Southwestern Maine where snow accumulated 1 to 3 inches before it changed to freezing rain, rain and sleet, then back to snow. There were numerous fender benders but no serious injuries were reported. However, there was one death directly attributed to the storm. A 76 year old Farmington man was killed when his pickup truck was struck by a logging truck at Rtes. 2 and 156 in Wilton (Franklin County - Zone 12) Wednesday afternoon. The Maine Turnpike had its speed limit lowered to 45 MPH for 18 hours beginning at 1720 EST on the 15th. The freezing rain and snow brought down tree limbs and power lines causing scattered power outages. The worst being in the Sanford area (York County - Zone 13) where 3,600 customers were affected, and about 200 homes remained without power from Tuesday night into Friday in Parsonsfield and the Lake Arrowhead area in Waterboro. About 2,000 electric users in Portland (Cumberland County - Zone 14) were power-less for several hours. Another 1,200 were without power in the Cundy's Harbor (Cumberland County - Zone 14) - Phippsburg area (Sagadahoc County - Zone 11) for several hours. Most schools away from the Southwest coast canceled school Wednesday. In Zone 8, all Ferry service was canceled Wednesday to North Haven and Vinalhaven (Knox County) and finally stopped at 1300 EST to Isleboro (Waldo County) due to rough seas.

Following is a list of snow amounts in inches and by zone.

.....Zone 001.....	.....Zone 007.....	.....Zone 011.....
Caribou 15	Bangor 11	Damariscotta 12-13
Fort Kent 6	Milford 10	Rockland 5
Portage 12	.....Zone 008.....	Union 8-9
.....Zone 002.....	Bar Harbor 7	Waldoboro 8
Houlton 12	Brooksville 9	.....Zone 012.....
.....Zone 003.....	Ellsworth 11	Bethel 9
Baileysville 8	Hancock 11	New Sharon 10
Forest City 15	Winter Harbor 14	Rumford 9
Grand Falls 11	.....Zone 009.....	West Paris 6
Vanceboro 15	Brassua Lake 18	.....Zone 013.....
W. Grand Lake 13	Comstock TWP. 15	East Hiram 9
.....Zone 004.....	Eustis 13	Gorham 9
Eastport 7	Flagstaff 12	.....Zone 014.....
Marchias 14	Harris Dam 12	Brunswick 7
.....Zone 005.....	Middle Dam 9	Kittery 1
Allagash 8	Phillips 7	Portland 5
Clayton Lake 13	Upper Dam 10	
Ripogonus Dam 15	Wyman Dam 9	
.....Zone 006.....	.....Zone 010.....	
Blanchard 19	Augusta 9	
Guilford 14	Harmony 9	
Medway 14	Livermore Falls 8	
Milinoocket 14	Skowhegan 10	
Moosehead 16	Waterville 10	

18 MARYLAND and D.C. — NONE REPORTED

19 MASSACHUSETTS

MAZ002-003-007-009 29 Early morning morning 0 0 0 0 0 0 0 Heavy snow

A powerful low pressure system moved northeastward well to the southeast of Cape Cod but resulted in heavy amounts of fluffy snow over the greater Boston metropolitan area and southeastern portion of the state. Snowfall totals of 6 to 12 inches were reported with the heavier totals on Cape Cod. In addition, gusty northeast to north winds caused considerable blowing and drifting of the snow. The early morning commute was very slow and many skidding accidents were reported.

20 MICHIGAN

MIZ016-017-018-021 06 1700EST 0 0 0 Snow and wind

Eastern Upper Peninsula and Northern Tip of Lower Peninsula

Snow accumulations ranged from 4 inches at Detour to 12 inches at Seney. Wind gusts were measured to 70 mph at the Mackinaw Bridge and to 63 mph at Pellston.

MICHIGAN

MIZ001-002-003-004-005-006-007-008-009-010-011-012-013-014-015-016-017-018-019-021 15 0500EST 0 0 0 Heavy snow, high wind

MIZ022- 15 1200EST 0 0 0 High wind, flash flood

Entire state

Snow in excess of four inches fell on all the state except the Northwest and south-east extremities. Over a foot of snow accumulated in the area bounded by Big Rapids, Cadillac, Petoskey, Atlanta, and Gaylord. Thunder and lightning accompanied the beginning of the snowfall in the north central and southwest Lower Peninsula. Winds of 40 to 60 mph persisted most of the day. Many trees were felled by wind and weight of snow, blocking roads and causing extensive power outages. A radio tower was blown down in Petoskey, and buildings were damaged by wind in Mt. Pleasant and the Detroit area. 375 accidents resulted in 3 deaths and 35 injuries. Heavy rain turned the snow to slush in southwest and south central Michigan, and flooded streets and basements in Wayne and southern Oakland Counties.

MIZ001-002-004-013-015-022 28 0930EST 0 0 0 Snow

South of Grand Rapids, St. Johns, and Mt. Clemens

More than 4 inches of snow accumulated with a maximum of 10 to 11 inches in the St. Joseph - Battle Creek - Kalamazoo area. About 1000 auto accidents resulted in 35 injuries. Four men suffered fatal heart attacks shoveling snow. Airline flights were delayed. An aircraft skidded off the runway at Detroit.

21 MINNESOTA

MNZ00N 05-06 0 0 0 0 Heavy Snow

Northern Minnesota

Snow preceded by freezing rain and drizzle spread from northwest and west-central Minnesota late Saturday night to the northeast portions of the state by early Sunday morning. Snow accumulations of 4-7 inches were common over Beltrami, Cass, Crow Wing, Aitkin and Pine Counties. The city of Grand Rapids reported 7 inches by 0900 CST Sunday morning.

MNZ012-013-013-015-016-017 23-25 0 0 0 0 Heavy Snow

Southwest to east central Minnesota

Heavy snowfall began over portions of southwest Minnesota on the morning of the 23rd and spread slowly across the southern half of the state. Snow accumulation ended in southeastern Minnesota early on the morning of the 25th. Snowfall totals ranged from 4-16 inches across much of the south half of Minnesota. Heaviest snowfall occurred along the high terrain of southwest Minnesota and to the northwest of Minneapolis in east-central Minnesota. Lincoln, Lyon, Murray and Redwood received the heaviest snowfall in the 10-16 inch range. Considerable blowing and drifting hampered snow removal in the southwest due to reduced visibilities.

MNZ 013-014-015-017-018-019 27-28 0800 CST 0 0 0 0 Heavy Snow

Southern Minnesota

Freezing rain began at 0800CST Sunday morning across southwest Minnesota before changing to heavy snow. Heaviest snowfall was again across the high terrain of southwest Minnesota. Snowfall amounts ranged from 12-15 inches across Pipestone, Murray, Jackson, Martin, Cottonwood, Lyon and Redwood counties. This area of heavy snowfall extended into numerous adjacent counties where snowfall amounts of 7-12 inches were common. Strong northwest winds of 20-40 mph again hampered travel and snow removal. Snow drifts up to 6 feet deep were common. These conditions closed segments of Interstate 90 for a time with many secondary roads also affected. Across many areas of southern Minnesota, visibilities were reduced to near zero due to blowing snow.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM	PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS							KILLED	INJURED	PROPERTY	CROPS	
22 MISSISSIPPI										MISSISSIPPI									
Washington County, Glen Allan	14	2050CST			0	0	4	0	Thunderstorm Winds	Lee County, Shannon	15	0011CST			0	0	4	0	Thunderstorm Winds
									Strong winds blew a roof off a house in Glen Allan and damaged several others. Some trees were blown down around Lake Washington.										A roof was blown off a building in downtown Shannon in extreme Southern Lee County.
Washington County, Greenville	14	2111CST			0	0	4	0	Thunderstorm Winds (652)	Prentiss County, 3NW Booneville to 1NW Thrasher	15	0015-0025CST	8	100	0	1	5	0	Tornado (F2)
									Strong winds blew out windows in some Greenville businesses.										A tornado moved through the northern portion of Prentiss County destroying one home and damaging several others. Hundreds of trees, ranging in size from small pines to 6-foot diameter oaks were flattened. Other damage included roofs blown off of outbuildings, 2 semi-trailers blown on their sides and large auto parts scattered about from an auto salvage yard.
Bolivar County, Cleveland, Shaw and Rosedale	14	2115CST			0	0	4	0	Thunderstorm Winds (661)	Prentiss County, 3N Booneville	15	0020CST	2	75	0	0	4	0	Tornado (F1)
									Strong winds blew the doors off 2 airport hangars at Cleveland. One airplane was damaged. Trees and power lines were also blown down in Cleveland, Rosedale and Shaw.										The same storm that passed through Prentiss County and produced the tornado listed in the previous entry, produced a second weaker tornado along a path parallel to that of the end of the first. This tornado also tracked to the northeast, but damaged mainly trees.
Leflore County, Greenwood	14	2130CST			0	0	4	0	Thunderstorm Winds	Neshoba County, 4S Philadelphia	15	0020CST			0	0	?	0	Thunderstorm Winds (652)
									Strong winds damaged a soy bean mill in Greenwood.										Itawamba County, Fulton
Panola County, Sardis	14	2145CST			0	0	?	0	Thunderstorm Winds		15	0045CST			0	0	5	0	Thunderstorm Winds
									Numerous trees were blown down in Sardis.										Strong winds damaged 5 residences and 2 businesses. Many trees were uprooted and broken off...mainly in the southern portion of town.
Humphreys County, Isola	14	2145CST			0	0	?	0	Thunderstorm Winds	Clarke County, 10N Quitman	15	0100CST			0	0	?	0	Hail (1.75)
									Trees were blown down in Isola.										Lauderdale County, Russell
Warren County, 3S Vicksburg to 12S of Vicksburg	14	2145CST			0	0	?	0	Thunderstorm Winds		15	0110CST			0	0	4	0	Thunderstorm Winds
									Many trees and power lines were blown down from 3 to 12 miles South of Vicksburg.										A large tree was blown through a roof of a house in Russell.
Amite County, 12N Liberty	14	2210CST	1.5	75	0	0	5	0	Tornado (F1)	Lauderdale County, 2S Causeyville	15	0115CST			0	0	?	0	Thunderstorm Winds
									A tornado moved through wooded areas of northern Amite County. A mobile home in the direct path was flipped over and destroyed. The two occupants were miraculously not injured. A couple of other homes in the path were damaged, and numerous trees were blown down.										A house was blown off blocks 2 miles South of Causeyville. Other roofs in the area were damaged and numerous trees were blown down.
Madison County, 2NW Flora to Cameron	14	2215-2245CST			0	0	?	0	Thunderstorm Winds	Warren County, 18NW Vicksburg	19	1615CST			0	0	3	0	Thunderstorm Winds (652)
									Trees and power lines were blown down in a scattered fashion through much of Northern Madison County. At 2245CST, trees were blown down near Revive, or about 15 miles northeast of Canton.										A plate glass window was blown out of a clubhouse in the Eagle Lake area 18 miles northwest of Vicksburg.
Leflore County, Greenwood	14	2215CST			0	0	4	0	Thunderstorm Winds	Issaquena County, 20N Vicksburg	19	1630CST			0	0	4	0	Thunderstorm Winds
									Strong winds blew part of a roof of a school in Greenwood. The tops were blown out of several trees.										Several homes in the Valley Park area which is located 20 miles north of Vicksburg had shingles blown off the roofs.
Holmes County, Tchula and Lexington	14	2222CST			0	0	?	0	Thunderstorm Winds	Hinds County, Terry, Bolton and Utica	19	1720CST			0	0	?	0	Thunderstorm Winds
									Three 40-50 foot transmission poles were blown down in Tchula. Some signs and trees were blown down in Lexington.										Trees and power lines were blown down near Terry, Bolton and Utica.
Carroll County, Vaiden	14	2240CST			0	0	4	0	Thunderstorm Winds										
									Strong winds damaged a few roofs in Vaiden. Tin was blown off a barn.										
Copiah County, 3W Crystal Springs	14	2244CST			0	0	?	0	Thunderstorm Winds										
									Extensive tree and power line damage 3 miles west of Crystal Springs.										
Marshall County, Potts Camp to Holly Springs	14	2300CST			0	0	?	0	Thunderstorm Winds										
									Extensive tree and power line damage from strong winds occurred from Holly Springs to Potts Camp.										
Rankin County, Richland and Florence	14	2300CST			0	0	4	0	Thunderstorm Winds (655)										
									Strong winds damaged a roof in Richland. Trees were also blown down in Florence.										
Attala County, 15SW Kosciusko	14	2305CST			0	0	?	0	Thunderstorm Winds										
									Trees and power lines were blown down 15 miles southwest of Kosciusko in the Newport area.										
Lafayette County, Oxford	14	2315CST			0	0	4	0	Thunderstorm Winds										
									Trees were blown onto a house and a car damaging both of them in Oxford. Fallen trees also blocked parts of Mississippi Highway 16 and 314.										
Scott County, 3NW Morton	14	2335CST			0	0	?	0	Thunderstorm Winds										
									Trees and power lines were blown down 3NW of Morton.										
Tippah County	14	2335CST			0	0	?	0	Thunderstorm Winds										
									Trees and power lines were blown down in scattered areas of the county.										
Jefferson Davis, 2N Prentiss	14	2345CST			0	0	?	0	Thunderstorm Winds										
									Trees blown down 2N of Prentiss.										
23 MISSOURI																			
										Stoddard County, Bloomfield	14	2135 CST	3	50	0	0	4	0	TORNADO (F1)
																			A tornado damaged two houses.
										Stoddard County, Bloomfield	14	2150 CST	2	100	0	0	4	0	TORNADO (F1)
																			A tornado damaged a trailer home, building and AT&T tower.
										Stoddard County, Bell City	14	2157 CST	1/4	50	0	0	0	0	TORNADO (FO)
																			A tornado touched down briefly without producing damage.
										West Central through Northeast MO04 MO06 MO07 MO08 MO09 MO10 MO11 MO12 MO13 MO14	14-15				0	0	?	0	HVY SNOW.
																			A winter storm produced heavy snow followed by considerable blowing and drifting. Snow amounts ranged from 4 to 14 inches. Columbia reported a 24 hours snow total of just over 12 inches. Kansas City received a record 24 hour snowfall for December. The official total for Kansas City was 11 inches. Several locations had a 12 inch total in the Kansas City area. Portions of St. Louis and St. Charles received up to 8 inches before it changed to rain late on the 14th. Thunder accompanied the snow in St. Louis and Columbia. The blowing of snow on the 15th was restricted to Western and Central Missouri.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM																																																			
					KILLED	INJURED	PROPERTY	CROPS																																																				
MISSOURI																																																												
Southwest	25-26				0	0	7	?	ICE STORM																																																			
MO15	Rain changed to freezing rain and produced severe glazing over Southwest Missouri. The heavy glazing was mostly along and 50 miles either side of Interstate 44 from the Neosho area to Rolla. One to two inches of ice accumulated on trees and wires. Tree limbs and power lines were down all over. The damage was compared to that of a hundred tornadoes by one news reporter. Thousands of residents were without power for several days. Half of the Springfield, Missouri residents were without power for more than 24 hours.																																																											
MO16																																																												
MO17																																																												
MO19																																																												
MO20																																																												
24 MONTANA																																																												
MT Z-003-003-007	09	1830MST			0	0	4	0	High Wind																																																			
	Wind gusts to 87 mph reported at Choteau and 78 mph at Livingston. Wind gusts of 60 mph in the Havre-Chinook area blew over signs and also blew out windows.																																																											
MT Z001-002	21	0100MST			0	0	3	0	Heavy Snow																																																			
	Nine to fourteen inches of snow fell overnight from Seeley Lake to Polebridge.																																																											
25 NEBRASKA																																																												
NEZ005-011 Panhandle Nebraska	10	1345CST- 1515CST			0	1	4	0	High Wind																																																			
	Northwest winds gusted to 61 m.p.h. at Scottsbluff at 1353CST and 1458CST. Gusts to 58 m.p.h. were also reported at Kimball and Sidney. A truck was blown over 4 miles north of Kimball with minor injuries to the driver. Clouds of blowing dust were kicked up and some tree limbs and power lines were downed.																																																											
NEZ005 Panhandle Nebraska	15	1034CST			0	0	1	1	High Wind																																																			
	Northwest wind gusted to 58 m.p.h. at Scottsbluff.																																																											
NEZ001-005-011 Panhandle Nebraska	23	0500CST- 2000CST			0	0	1	1	Heavy Snow																																																			
	Snow of 6 inches or more fell in the Nebraska Panhandle. Heaviest snowfall occurred in the extreme northwest and southwest panhandle with 14 inches at Harrison and 12 inches at Kimball.																																																											
NEZ001-002-003- 004-005-006-007- 008-011-012-013- 014-016-017 West and Central Nebraska	26- 27	2100CST- 1500CST			0	0	1	1	Heavy Snow																																																			
	Six inches or more of snow fell west of a line from Butte to York to Hardy. Heaviest snow of 14 inches or more fell in the north central and northwest panhandle. In these areas, larger amounts included 22" at Elsmere, 20" at Brownlee, 19" at Valentine, 17" at Ainsworth, and 14" at Harrison, Chambers and Rose. Gusty north winds caused some drifting snow resulting in road closures.																																																											
26 NEVADA																																																												
NVZ003 Extreme Western Nevada	01	Evening			0	0	5	0	High Winds																																																			
	Gusty southwest winds ahead of a Pacific cold front hit extreme western Nevada during the evening. Winds gusting to 75 mph were clocked at the Reno airport with other reports of high winds from around the area. The greatest damage was limited to the airport area where south facing windows were blown out of cars in the parking lot in a swath about 10 feet wide by 300 yards long.																																																											
NVZ003 Extreme Western Nevada	06- 07	0600PST 0600PST			0	0	0	0	Heavy Snow																																																			
	6 to 8 inches of snow fell over the mountains of extreme western Nevada with over a foot of snow above the 7000 foot elevation. 4 inches fell in the valleys above 5000 feet but the greater Reno area only received an inch or so.																																																											
NEVADA																																																												
NVZ003 Extreme Western Nevada	08	0300PST 1500PST			0	0	0	0	Heavy Snow																																																			
	Snow amounts ranged from 4 to 8 inches in the Tahoe Basin around the 6000 foot level with over a foot above 7000 feet. Sustained winds of 40 to 50 mph, with a gust to 56 mph at the Reno airport, blew for a couple of hours in extreme western Nevada valleys ahead of the cold front responsible for the heavy snow.																																																											
NVZ00W-00E-00E Extreme Western, Northeast and East-Central Nevada	22	0000PST 2200PST			0	0	0	0	Heavy Snow																																																			
	The mountains of extreme western Nevada including the Tahoe Basin picked up 10 to 18 inches of snow while in the northeast and east-central portions of the state, 2 to 5 inches fell in the valleys with up to 12 inches reported at elevations above 6000 feet.																																																											
NVZ003 Extreme Western Nevada	28- 29	0600PST 0200PST			0	0	0	0	Heavy Snow																																																			
	6 to 18 inches of snow fell in the mountains of extreme western Nevada and around the Tahoe Basin, with up to 6 inches reported in the foothills southwest of Reno at the 5000 foot level. Only 1 to 2 inches fell in valley locations however.																																																											
27 NEW HAMPSHIRE																																																												
NHZ 001-002 Northern and White Mountains of New Hampshire	15- 16	1300 EST- 1700 EST			0	2	5		Heavy Snow																																																			
	A snowstorm moved out the Southwestern United States toward the Great Lakes on the 14th, and by midday on the 15th, it was centered over Michigan. During the evening of the 15th, another low formed over New Jersey and intensified rapidly as it moved across Cape Cod and into the Gulf of Maine overnight. By 1600 EST on the 16th, the low had a central pressure of 976MB and was located just west of Yarmouth, Nova Scotia. The storm continued through the Canadian Maritimes with the heavy snow ending over Northern New Hampshire by 1700EST on the 16th. Over Central and Southern New Hampshire, snow mixed with or changed to rain, sleet, or freezing rain, and snow accumulated from 1 inch along the coast (Rockingham County, Zone 7), up to 8 inches over Western Merrimack County, Zones 3 and 4. The snow over Southern and Central New Hampshire was slow in accumulating due to the rain. It was a different story over the rest of the State as it was mainly snow, and most areas reported over 6 inches with a maximum of 15 inches falling on Pinkham Notch in Northern Carroll County, Zone 2. Most of the problems with this storm occurred over Southern and Central New Hampshire where snow accumulated 1 to 3 inches before it mixed with or changed to freezing rain, rain and sleet then back to snow. There were numerous skidding mishaps and fender benders with no deaths, but 2 serious injuries were reported. One was on Rte. 107 in Gilmanton (Belknap County - Zone 4) Tuesday afternoon, when a 57 year old man lost control of his car and it struck a tree head on. The driver suffered a broken ankle. Bristol (Grafton County - Zone 3) was the scene of a collision between a pickup truck driven by a 71 year old man and a snow plow on River Road. The pickup was sent over a stone wall with its driver sustaining multiple traumas including a broken knee and jawbone. The high water content of the snow is blamed for causing sporadic power outages statewide. The hardest hit areas appeared in Southern Grafton and Northern Merrimack Counties, Zone 4. Major power outages occurred in Holderness, and on the East side of Newfound Lake affecting the towns of Bristol, Hebron, and Bridgewater (Grafton County) for most of the night. About 150 customers around Webster Lake (Merrimack County) were without power for 9 hours. Of the State's 54 interscholastic basketball games Tuesday night, 42 of them were postponed due to the slippery travel conditions.																																																											
	Following is a list of snow amounts in inches and by zones.																																																											
	<table style="width: 100%; border: none;"> <tr> <td>.....Zone 001.....</td> <td>.....Zone 004.....</td> <td>.....Zone 006.....</td> </tr> <tr> <td>Berlin 9</td> <td>Blackwater Dam 7</td> <td>Concord 5</td> </tr> <tr> <td>Big Diamond Pd 13</td> <td>Bristol 6</td> <td>East Derry 3</td> </tr> <tr> <td>Dalton 5</td> <td>Franklin Fls Dam 6</td> <td>Franchestown 5</td> </tr> <tr> <td>Errol 10</td> <td>No Conway 7</td> <td>Hopkinton Dam 8</td> </tr> <tr> <td>First Conn Lk 11</td> <td>Plymouth 7</td> <td>Manchester 4</td> </tr> <tr> <td>No Stratford 8</td> <td>Tanworth 9</td> <td>Mont Vernon 4</td> </tr> <tr> <td>Pittsburgh 10</td> <td>.....Zone 005.....</td> <td>Nashua 3</td> </tr> <tr> <td>.....Zone 002.....</td> <td>Hillsboro 6</td> <td>Rochester 4</td> </tr> <tr> <td>Bethlehem 5</td> <td>MacDowell Dam 4</td> <td>.....Zone 007.....</td> </tr> <tr> <td>Comerford 7</td> <td>Marlow 5</td> <td>Hampton 1</td> </tr> <tr> <td>Gorham 8</td> <td>Otter Brk Dam 3</td> <td>Portsmouth 1</td> </tr> <tr> <td>Pinkham Notch 15</td> <td>Surry Mtn Dam 5</td> <td></td> </tr> <tr> <td>.....Zone 003.....</td> <td>Walpole 5</td> <td></td> </tr> <tr> <td>Bradford 8</td> <td></td> <td></td> </tr> <tr> <td>Enfield 6</td> <td></td> <td></td> </tr> <tr> <td>Lebanon 5</td> <td></td> <td></td> </tr> </table>								Zone 001.....Zone 004.....Zone 006.....	Berlin 9	Blackwater Dam 7	Concord 5	Big Diamond Pd 13	Bristol 6	East Derry 3	Dalton 5	Franklin Fls Dam 6	Franchestown 5	Errol 10	No Conway 7	Hopkinton Dam 8	First Conn Lk 11	Plymouth 7	Manchester 4	No Stratford 8	Tanworth 9	Mont Vernon 4	Pittsburgh 10Zone 005.....	Nashua 3Zone 002.....	Hillsboro 6	Rochester 4	Bethlehem 5	MacDowell Dam 4Zone 007.....	Comerford 7	Marlow 5	Hampton 1	Gorham 8	Otter Brk Dam 3	Portsmouth 1	Pinkham Notch 15	Surry Mtn Dam 5	Zone 003.....	Walpole 5		Bradford 8			Enfield 6			Lebanon 5		
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STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
28 NEW JERSEY, Northern — NONE REPORTED									
28 NEW JERSEY, Southern — NONE REPORTED									
29 NEW MEXICO									
Statewide	12-14	Saturday through Monday morning	2	?	6	0			Heavy Snow High Wind
<p>Strong winter storm deposited up to three feet of snow at higher elevations and up to two feet at lower elevations. The Central Highlands, the Southeast Plains, and the Southcentral Mountains westward to Deming appeared to be hardest hit. Much of the interstate system was closed due to snow and blowing snow. The state emergency preparedness division estimated the number of stranded motorists to be around 1000. Most were sheltered in schools, churches, and local community buildings. Hurricane force canyon winds produced a majority of the damage from the storm in the Albuquerque area. Official windspeeds at the Albuquerque International Airport were measured around 30 to 60 mph with the peak wind of 71 mph occurring at 6:34 PM Sunday. Unofficial reports from the Sandia Peak Tramway, located at the base of the west side of the Sandia mountains just northeast of town, measured sustained winds of 75 mph from noon to 4 PM Sunday. Gusts during the same time period ranged from 90 to 124 mph with the peak wind occurring around 2:30 PM. Coronado Airport on the north side of town also reported windspeeds gusting to 107 mph. Many residences reported damage to fences, metal sheds, etc. A large number of street lights and signs and power poles were knocked down in the Northeast Heights of Albuquerque and in subdivisions near the tram station. The restaurant at the tram station suffered roof damage as did a middle school in Albuquerque. Coronado airport suffered significant hangar damage. There were numerous other reports of damage around the town.</p> <p>Four deaths were reported with the storm, two direct and two indirect. A 35 year old male from Silver City ventured out to chop wood around 7 AM Sunday morning. He was caught in the developing snowstorm and found dead from exposure around 10 PM Sunday evening. A 50 year old male construction worker from Fort Sumner tried to walk one mile to his trailer about 10 to 15 miles south of San Jon after his truck stalled in blinding snow on Sunday. He was found dead from exposure on Tuesday just 300 yards from his home. The indirect casualties were both victims of traffic accidents near the Arizona border on 140 on Saturday night. One was a 27 year old male and the other was a 78 year old woman. (M350) (M50V)</p>									
Statewide	23-26	Wednesday through Saturday	1	?	?	0			Heavy Snow
<p>A slow moving storm dumped up to one and a half feet of snow on the mountain areas and Socorro while the remainder of the lower elevations received up to 6 inches. Some roads were closed for a time, but the road closings were not nearly as extensive as earlier this month. State Police estimated about 1000 people stranded in the southern part of the state, especially on Interstate 10 west of Las Cruces. A 37 year old male was found Sunday night near his stalled pickup truck. He died of exposure sometime over the weekend in western Sandoval County near the McKinley County line. (M37V)</p>									
30 NEW YORK, Coastal — NONE REPORTED									
30 NEW YORK, Central									
Herkimer County	14	EARLY AM	--	--	0	0	3	0	Cold
Record cold air moved over Eastern New York. Coldest temperatures were in Old Forge and Stillwater Res. with minus 28 degrees. An unofficial report from Bear Creek was minus 36 degrees. State wide power use set a new record 22,593 megawatts.									
Madison County	15	0755EST	-	-	2	9	5	0	Snow
A major winter storm dumped six plus inches of snow in the Georgetown section of Madison County. The snow combined with strong gusty winds to create poor visibility and icy road surfaces. During this time a mother with four children rammed into the back of a school bus. The mother and one child was killed; seven children on the school bus were injured.									
F-35-V F-06-V									
Oneida County	15	0930EST	-	-	1	1	4	0	Snow (blowing)
Town of Westmoreland	15	1845EST	-	-	0	2	4	0	Snow
Town of Marcy	Lake effect snows created poor visibility, in Westmoreland, NY. A fatal head-on crash took one life during an intense snow squall. Later in the day, heavy accumulations of snow took down power lines near Marcy, NY. A second car accident occurred when a car ran into low hanging cables. Two (2) men were critically injured when their cars ran into the downed line. The roof of the first car ripped off upon impact with the low hanging cable.								
F-73-V									
Greene County	28	1500EST	--	--	0	0	5	0	Cold
Town/Coxsackie	Extreme cold caused power outages in the Town of Coxsackie.								
30 NEW YORK, Western									
NY2022	01	Evening			0	0	3	0	Heavy Snow
Chautauqua County:	Snow squalls dropped 4 to 8 inches of snow overnight.								
Jamestown									
Sherman									
NY2002-022	03	Evening			0	0	3	0	Heavy Snow
Chautauqua County:	From 4 to 6 inches of snow fell overnight.								
Sherman									
Cattaraugus County:									
Salamanca									
Cayuga County:									
Locke									
Genesee County:	15	1700 EST			0	0	4	0	Lightning & Heavy Snow
Alabama	Lightning struck a house, damaged its electric wiring, and blew out the windows. Heavy snow forced the closure of schools the next day.								
NY2001-021-022	15	1730 EST			0	0	4	0	High Winds
Erie County:	A cold front brought high winds of up to 61 MPH over the area. The winds whipped up huge waves in Lake Erie and smashed them against the eastern shore. Hoover Beach reported some flooding.								
Hoover Beach									
Buffalo									
Niagara County:	In Jamestown, trees and power lines were downed. The power outage forced closure of schools.								
Niagara Falls									
Chautauqua County:									
Dunkirk									
Jamestown									
NY2001	16	0300 EST			0	0	4	0	High Winds
Erie County:	A parked Boeing 727 was turned 90 degrees by the wind. Its wing struck the side of the terminal building.								
Buffalo Airport									
NY2001-003-022	16	0744 EST			0	0	3	0	High Winds
Erie County:	Blowing snow reduced visibilities and made driving hazardous. West Seneca weather spotter reported wind gust of 59 MPH.								
West Seneca									
Chautauqua County									
Wyoming County									
Allegany County:	Power lines were downed in Southern Erie and Chautauqua Counties. Schools had to be closed because of power outage.								
Whitesville	Trees were downed in Whitesville.								
NY2002-003	28	Evening			0	0	4	0	Heavy Snow
Cayuga County:	Seven to eleven inches of snow fell overnight.								
Locke									
Tomkins County:									
Ithaca									
Livingston:									
Avon									

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					KILLED	INJURED	PROPERTY	CROPS	
31 NORTH CAROLINA									
NC2009 Northern Mountains	04	0000EST			0	0	0	0	Heavy Snow
			4 to 6 inches of snow fell in the highest elevations of the Northern Mountains.						
Davidson Co, South of Denton	10	2155EST			0	0	3	0	TSTM Winds
Durham Co, Northern	10	2300EST			0	0	?	0	TSTM Winds
Vance Co, Henderson	10	2340EST			0	0	3	0	TSTM Winds
Warren Co, Warrenton	11	0000EST			0	0	3	0	TSTM Winds
Hallifax Co, Hollister, Roanoke Rps	11	0040EST			0	0	3	0	TSTM Winds
Northampton Co, N of Gumberry	11	0105EST			0	0	?	0	TSTM Winds
			A fast moving line of thunderstorms moved across parts of North Carolina during the late evening/early morning of the 10th and 11th. The thunderstorms produced wind gusts estimated as high as 65 mph in some areas. Trees and power lines were blown down in most areas. The damage was a little more severe in Davidson county, where a homeplace received minor damage, and in Henderson where signs were blown down and there were widespread power outages.						
NC2009 Northern Mountains	29	0800EST			0	0	0	0	Heavy Snow
NC2006-007-008-010-012 Western Piedmont, Northern Foot-hills, Southern and Central Mountains	29	1000EST			0	0	4	0	High Winds
			A winter storm produced up to 6 inches of snow at some locations in the Northern Mountains. This storm's most important feature in North Carolina was the high winds. Some sustained winds over 40 mph with gusts to over 60 mph were reported. Power was interrupted to a great many people over the area, a construction site in Hendersonville was damaged, and a house under construction in Catawba county was blown down.						
32 NORTH DAKOTA									
ND2016-017	30-	1700CST			0	0	?	0	Blizzard
	31	0200CST							
			Blizzard conditions prevailed over much of extreme eastern North Dakota, from late afternoon of the 30th, into the night, ending shortly after midnight on the 31st.						
			Up to three inches of new snow, combined with northwest winds of 25 to 40 mph, caused zero visibilities in the snow and blowing snow. In addition, wind chill temperatures were down to 60 below.						
			Motorists were stranded, part of Interstate 29 was closed, and a 64-year-old man died of an apparent heart attack in his vehicle during the storm.						
			In addition, large shopping malls in Fargo closed early, sporting events were postponed, cars slid into the ditch, and there were many minor traffic accidents.						
33 OHIO									
OHZ002-003-004 North Central, Northeast and Northeast Hills portions of Ohio	04	0100 EST			0	0	?	0	Heavy Snow
			About 4 inches of snow fell on much of the area, although about 6 inches fell in locations to the east of Cleveland. The snow started about 1300 EST on the 3rd.						
OHZ011 North Central Ohio	14	2000 EST			0	0	?	0	Heavy Snow
			About 4 inches of snow fell on the area around upper Sandusky. The snow started about 1800 EST on the 14th.						
OHIO									
OHZ005-008 Southwest Ohio	15	0800 EST			0	2	6	0	High Winds
OHZ001-010 Northwest Ohio	15	0900 EST			0	7	6	0	High Winds
OHZ002-066-009-011 North Central to South Central Ohio	15	1000 EST			0	4	6	0	High Winds
OHZ003-004-007 East Ohio	15	1200 EST			0	0	6	0	High Winds
			A strong low pressure system brought high winds to the entire state. In the northern parts of Ohio gusts of 70 mph were common, with some gusts near 80 mph. In the southern part of the state peak gusts near 60 mph were more typical. Structural damage consisted mainly of buildings being deroofed, windows being blown out and light buildings being toppled, but amounted to a considerable total for the state as a whole. Numerous trees fell, and over 100,000 households lost electricity. Several injuries, mostly minor, resulted from falling debris.						
OHZ001 Williams County	16	0700 EST			0	0	1	0	Flood
			The Tiffin River flooded at Stryker. The river crested at a stage of 12.6 feet (flood stage 11 feet) at 0700 EST on the list. There was only minor damage.						
OHZ003 Northeast Ohio	16	1125 EST			0	0	?	0	Heavy Snow
OHZ002 North Central Ohio	16	1220 EST			0	0	?	0	Heavy Snow
OHZ004 Northeast Hills of Ohio	16	1300 EST			0	0	?	0	Heavy Snow
			Four to 6 inches of snow fell on an area bounded by Cleveland on the west and Youngstown on the south. The snow commenced at 0700 EST on the 16th. Snowfall continued until about 0300 EST on the 17th, at which time the area had received 5 to 12 inches.						
OHZ001 Williams County	21	1500 EST			0	0	0	0	Flood
			The Saint Joseph River flooded at Montpelier. The river crested at a stage of 12.5 feet (flood stage 12 feet) at 1600 EST on the 22nd. There was no damage.						
OHZ001 Northwest Ohio	29	2030 EST			0	0	?	0	Heavy Snow
			About 4 inches of snow were received in Williams County. The snow commenced early in the afternoon of the 28th. Snowfall continued across northwest Ohio until about 0100 EST on the 29th, by which time the entire area had 4 to 5 inches.						
OHZ002 North Central Ohio	29	0100 EST			0	0	?	0	Heavy Snow
			About 4 inches of snow fell on Ottawa County. The snow started at roughly 1900 EST on the 28th.						
OHZ003-004 Northeast Ohio and Northeast Hills of Ohio	29	0500 EST			0	0	?	0	Heavy Snow
			Four to 6 inches of snow fell east of Cleveland and north of Youngstown. The snow started during the evening of the 28th.						

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
34 OKLAHOMA									
OKOPH-ONW-CNC-QNE- CNC-OOC-OEC-OSW	13 15	0200CST- 0900CST			4	35	6	?	Heavy Snow
<p>Four to fourteen inches of snow fell from a slow moving upper level storm system. The 8 to 14 inch depths occurred over much of the northwestern half of the state. Strong northerly winds caused drifts up to 4 feet across many east-west roads and highways. Many roads were closed across the state which caused 60 percent of the schools to be closed from 3 to 4 days. The Oklahoma Highway Patrol estimated 275 auto accidents with 23 causing 35 injuries and 3 deaths. An elderly man became disoriented in Laverne of Harper county and died from hypothermia eight blocks from his home. The weight of the snow caused the roof of a dry-cleaning business to collapse in Woodward. Damage to property is estimated at \$750,000. COLD M760.</p>									
OKZ001-002-003-004- 005-009-014	24 26	2200CST- 2300CST			0	?	?	?	Snow
<p>A slow moving storm system produced 2 to 5 inches of snow. The storm caused roads to become slick causing numerous accidents. This was one of the rare white Christmases enjoyed by some people of Oklahoma.</p>									
OKZ006-007-008-010- 011-012-013-015-016- 017-018-021-022-023	25 27	0200CST- 1500CST			7	45	7	?	Ice Storm
<p>A slow moving storm system produced periods of freezing rain and sleet. The worst area was about a 40 mile wide stretch extending from Duncan to Norman to Tulsa and to Miami. Ice accumulations of one to two inches occurred on power lines and trees. Many large limbs broke off of the trees, while many trees were uprooted due to the weight of the ice. A 1909 foot television tower 10 miles north of Tulsa collapsed due to the weight of the ice. The downing of the powerlines caused over 75,000 households to lose power at one time or another. A week later found 25,000 households still without power. Shelters to house those without heat were found to also have no power. Cleveland, McClain, and Grady counties appeared to be hardest hit. Between 2 and 3 hundred auto accidents occurred on the icy roads with 20 accidents involving 45 injuries and 5 deaths. A 27 year old woman died of hypothermia in Bristow, of Creek County. She was reported to have seizures and would wander off. A 21 year old man had been drinking Christmas Eve and his partner let him off at his home. He was found lying in his driveway the next morning. Exposure was determined to be the cause of death. Damage to houses, businesses, and electrical equipment is estimated at \$10 million. COLD F270 M210.</p>									
OKZ013-019-020-026	26 29	1500CST 1800CST			0	0	?	?	Flooding
<p>Thunderstorms produced 3 to 5 inch rainfall amounts which caused several rivers to flood. The Illinois river flooded low lying areas and caused parts of Highway 10 to be closed for about 12 hours. The Poteau, Blue, and Deep Fork rivers flooded bottom lands, but damage to crops and farm lands was not known.</p>									
OKZ019	26	1800CST			0	0	?	?	Flash Flooding
<p>Thunderstorms produced 3 to 4 inch rainfall amounts which caused Brushy Creek between McAlester and Hallettville in Pittsburg county to flood. A low lying area of Highway 63 was closed for several hours and some damage was done to a bridge.</p>									
35 OREGON									
OREGON COAST	01 03	0000 pst 1800 pst			0	?	5	?	High wind and coast stream flood
<p>A series of storms slammed onto the Oregon coast between the 1st and 3rd with high winds coastal stream flooding and high tidal effects. Wind gusts on the 1st reached 94mph at Cape Blanco. A few unofficial readings reached 100 mph. winds peaked elsewhere through the three days between 60-70 mph. There was wide spread tree damage and power outages and minor property damage. Over 50 sheep and several head of cattle were washed into the ocean by flooding on the sixes river.</p>									
OREZ-010 UMATILLA CO	6	0939 pst			3	?	?	-	wind
<p>Wind in the northeast mountains 50 ENE of Pendleton blew a dead 18 inch diameter tree snap down on a moving vehicle resulting in 2 deaths. Winds in the area were reported out of the south at 20 kts.</p> <p>M38 V F39 V F01V</p>									
OREGON									
OREZ-010 BAKER CO	6	1557 pst	?	?	0	0	?	-	High Wind
<p>A localized wind storm(possibly a downdraft or funnel from a thunderstorm, though none reported in area)...blew off a roof, totaled a pickup truck, caused some store front damage, and blew over 4 railroad grain cars in Huntington, OR.</p>									
OREGON COAST AND OREZ-004 LINN CO	9	1800 pst			3	2	?	-	High Wind
<p>Low pressure moved up the coast with an active cold front moving inland in the evening hours. Wind speeds to 60 mph occurred on the coast and to 47 mph inland at Salem. A combination of soaked ground from heavy rain and the gusty winds blew a tree onto a moving vehicle in Mill City killing three children and injuring 2 other occupants.</p> <p>M14V F12V F6V</p>									
OREZ-008 KLAMATH CO	15 16	0740 pst 0800 pst			-	-	-	-	Heavy Snow
<p>A low pressure system moved into northern Co. on the 15th. This spread warm moist air over the cold air in Oregon producing heavy snow in the mountains of southern Oregon and in the Klamath Basin. 7.2 inches fell at Klamath Falls for the greatest one day total on record. Up to 14 inches was reported in the higher elevations.</p>									
36 PENNSYLVANIA, Eastern									
PAZ007-009-016 The Upper Susquehanna and Lower Susquehanna Valleys and the Pocahon	29	0700 EST			0	0	3	0	Heavy Snow
<p>Light snow began falling over the Lower Susquehanna Valley around 11AM EST on the 28th and spread over the remainder of Eastern Pennsylvania by 3PM. Except for some snow flurries, the snow had ended by noon on the 29th. Snow accumulations ranged from 1 to 9 inches over Eastern Pennsylvania. The Pocahon had 9 inches over the northern sections, but only around 3 inches over the extreme southern end. The Upper Susquehanna Valley had 6 to 8 inches. The Middle Susquehanna and Northeast Metropolitan areas had 3 to 5 1/2 inches. The Lower Susquehanna Valley had 1 to 4 1/2 inches, with the 4 or slightly more over York, Adams and Cumberland Counties. The East Central and Southeast areas had 1 to 3 inches. Many automobile accidents resulted from the snow or ice covered roadways. In Eastern Pennsylvania about 25 people were injured in these accidents and one man was killed.</p>									
36 PENNSYLVANIA, Western									
PAZ004-005 Northern Pennsylvania	04	0400 EST			0	0	0	0	Heavy Snow
<p>Up to 6 inches of snow fell throughout the area.</p>									
Beaver County Beaver	15	1345 EST			0	0	0	0	High Wind
<p>Gradient winds ahead of a low pressure system moving north of Pennsylvania produced winds of 52 mph at the Beaver Co. airport.</p>									
Allegheny County Pittsburgh	15	1444 EST			0	0	0	0	High Wind
<p>Gradient winds ahead of a low pressure system moving north of Pennsylvania produced winds of 54 mph at the Pittsburgh International Airport.</p>									
Erie County Erie	15	1743 EST			0	0	0	0	High Wind
<p>Gradient winds ahead of a low pressure system moving north of Pennsylvania produced winds of 55 mph at the Erie Co. airport.</p>									
Somerset County Johnstown	15	1855 EST			0	0	0	0	High Wind
<p>Gradient winds ahead of a low pressure system moving north of Pennsylvania produced winds of 53 mph at Johnstown Airport.</p>									
Jefferson County Dubois	15	2010 EST			0	0	0	0	High Wind
<p>Gradient winds ahead of a low pressure system moving north of Pennsylvania produced winds of 58 mph at Dubois Airport.</p>									
PAZ002 Northwest Pennsylvania	16	1800 EST			0	0	0	0	Heavy Snow
<p>Seven to nine inches of snow throughout the area.</p>									
PAZ005-015 South Central and Southwestern Pennsylvania	17	0400 EST			0	0	0	0	Heavy Snow
<p>Up to six inches of snow fell throughout the area with isolated areas of eight to twelve inches.</p>									

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					KILLED	INJURED	PROPERTY	CROPS	
— PENNSYLVANIA, Western									
PAZ004 Northern Pennsylvania	20	0400 EST			0	0	0	0	Ice Storm
									Trees and powerlines down from ice accumulation.
PAZ002-003-004-014 Northwest and North Central Pennsylvania	29	0400 EST			0	0	0	0	Heavy Snow
									Up to six inches of snow fell throughout the area.
37 RHODE ISLAND									
Providence county, Cranston	15	2045E-2100E	0	0	0	0	3	0	Lightning
									A winter thunderstorm produced a bolt of lightning that caused minor damage to four homes. Damage consisted of blown fuse boxes, explosions, small fires, and holes in garage walls. The bolt struck near the rear of one house blowing a hole through a snagled wall with enough force to send shingles into a neighbors yard. In another house, the fuse box was blown off the wall and several electrical appliances burned out. Total damage was estimated to be over one thousand dollars.
RIZ002, southern portion of state	29	Early morning			0	0	0	0	Heavy snow
		Morning							A large low pressure system moving northeastward over the ocean well to the southeast of the state brought heavy amounts of fluffy snow to the southern portion and coastal area of the state with amounts of 6 to 10 inches. Gusty winds up to 30 to 40 mph resulted in drifting and blowing snow. Highway travel was slowed by the storm but no other particular problems were reported.
38 SOUTH CAROLINA									
Edgefield County	03	2230EST			0	0	3	0	Hail (0.50)
									A thunderstorm accompanied by hail occurred in the vicinity of highways #430 and #378 in northern Edgefield County. Hail up to 0.50 inch in diameter was reported.
Abbeville County	03	2300EST			0	0	2	0	TSTM Winds
Greenwood County	03	2322EST			0	0	2	0	Lightning
Greenwood County	03	2322EST			0	0	3	0	TSTM Winds
									Thunderstorm winds blew down trees in the Verdery area seven miles SW of Greenwood. The area of major wind damage was 200 yards wide and one mile long. Minor wind damage occurred across the county line in Abbeville County west of Verdery. Another area of damage occurred along S.C. Highway #254 five miles northwest of Greenwood.
S.C. Offshore Waters	06	0000			0	0	7	0	High Winds
									A 395 foot barge carrying 2 million gallons of paraxylene (a colorless, flammable petroleum product) was damaged by heavy seas and high winds. The barge sank 120 miles east of Charleston en route from Corpus Christi, Texas to Wilmington, North Carolina.
Cherokee County	29	1300EST			0	0	2	0	High Winds (35 mph)
Spartanburg County	29	1300EST			0	0	3	0	High Winds (35 mph)
									High winds during the afternoon broke tree limbs, disrupting power to 100 customers in Cherokee County and 600 customers in Spartanburg County.
39 SOUTH DAKOTA									
SDZ011-012-016-017-019 East-Central and Southeast SD.	23-24	0800 to 1200 CST			0	0	0	0	Heavy Snow
									Six to sixteen inches of snow fell in 24 hours in east-central and southeast South Dakota. Some of the larger amounts measured were 9 inches at Huron, 10 inches at Mitchell, Platte and Brookings, twelve inches at Chamberlain and sixteen inches at Alpena.
SDZ018 Southeast SD.	23-24	2000 to 0900 CST			0	0	0	0	Snow
									On the 23rd, snow followed freezing rain resulting in extremely slippery roads. Madison and Parker reported 6 inches of snow and Sioux Falls reported 5 inches. The slick roads were a factor in a traffic accident, thirteen miles south of Beresford on Interstate 29, which killed one man and injured three other people. M64V.
SDZ007-010-011-012-014-015-016-017-018 Southern and Eastern SD.	27-28	0600 to 0600 CST			0	0	0	0	Heavy Snow
									Six to twelve inches of snow fell in southern and eastern South Dakota. The following is a list of some of the larger snowfall amounts in inches. De Smet 12 Wessington Springs and Madison 10 Huron 9 Pierre, Brookings, Mission and McCook County 8 Sioux Falls, Kadoka, Pine Ridge and Martin 7
SDZ010-011-012-015-016-017 Central and East-Central SD.	30	1300 to 2300 CST			0	0	0	0	Blizzard
									Snow and strong winds combined to produce blizzard conditions across parts of central and east-central South Dakota. Winds gusted to 40 mph in some areas producing blowing snow which reduced visibilities to near zero.
Todd County Rosebud	31	Morning			1	0	0	0	Cold
									An elderly man died of exposure on the Rosebud Indian Reservation. M70.
40 TENNESSEE									
TNZ002-003 Knox County	03	2000CST			0	1	5	0	High wind
									Small trees and power lines downed across the area. In Cocke Co in the community of Houston Valley, a woman was injured when strong winds pinned a canner trailer on her.
Shelby County	03	2000CST			0	0	4	0	Thunderstorm wind
									Numerous power outages and downed trees. The roof was blown off a church and mobile home. A hole was knocked into a one million gallon gasoline storage tank at a shell oil company facility in Knoxville.
TNZ008-009-010-011-012-013-014-015	14	2155CST	13.0	200	0	21	6	0	Tornado (F3)
									A tornado crossed the Mississippi River from West Memphis, Arkansas and cut a 13 mile long path through northern Shelby County. The tornado entered the county at Chicken Island, about 4 miles north of the I-40 bridge, moving northeast. It hit the Northhaven housing development of the Memphis metropolitan area where it did its greatest damage. There were 21 reported injuries and 29 homeless, with 30 homes destroyed, 58 severely damaged and 105 with minor damage. The tornado continued northeast to Millington, ending at around 2215CST. (SEE ARKANSAS)
TNZ008-009-010-011-012-013-014-015	14	2300CST			0	1	4	0	High wind
									Power lines and small trees downed. A man was seriously injured when a tree fell on his vehicle near South Fulton in Obian Co.
TNZ008-009-010-011-012-013-014-015	25	0200CST			3	0	6	0	Flood
									Heavy rains began on the 24th that eventually totaled to 14 inches in some locations by the time the rain had stopped. Flooding was wide spread over Western Tennessee. Flood waters drove 3200 people from their homes in Millington, Shelby Co on Christmas day. Three people were killed in two separate accidents involving automobiles in Williamson Co. Some roads were covered by flood waters. M73V F73V F19V

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					KILLED	INJURED	PROPERTY	CROPS	
41 TEXAS, Northern									
Navarro County	6	0845CST			0	0	?	?	Lightning
Corsicana	6	1200CST			0	0	?	?	Flash Flooding
Powell	Lightning struck the First Methodist Church in Corsicana producing substantial damage to the roof. Rainfall of up to 4.5 inches produced flooding in Powell.								
Wise County	6	1145CST	Short	Narrow	0	0	0	?	Tornado (F1)
1 SW Boyd	A tornado was observed briefly 1 mile southwest of Boyd.								
Bowie County	6	1300CST			0	0	?	?	Flash Flooding
Texarkana	Rainfall of up to 2.75 inches flooded many streets and underpasses in Texarkana.								
Anderson County	6	1336CST	9	150	0	0	5	?	Tornado (F1)
4 S Elkhart to 8.5 NE Elkhart	A tornado produced intermittent damage through a rural area of Anderson County. Three homes were destroyed and 27 other houses and outbuildings sustained damage. Damage was estimated at \$210,000.								
Hill County	6	1450CST			0	0	?	?	Hail (1.75)
2 W Blum	Golf ball size hail fell two miles west of Blum.								
Gregg County	6	1600CST			0	0	?	?	Lightning
Longview	6	1600CST			0	0	?	?	Flash Flooding
Kilgore and Longview	Lightning struck 5 houses in Longview burning one of them to the ground. Rainfall of up to 4.20 inches in Kilgore and 4.55 inches in Longview flooded many streets and roads.								
Dallas County	14	Early Morning			2	0	0	0	Cold
Dallas	Two homeless men apparently died of exposure as temperatures dropped to 26 degrees with wind chill temperatures of 2 degrees below zero. One of the men was found outside a store while the other man was found in a downtown park. M520, M420								
Harrison County	14	1515CST			0	0	?	?	Hail (1.00)
10 NW Harleton									
Marion County	14	1515CST			0	0	?	?	Hail (1.00)
10 NW Jefferson									
Bowie County	14	1525CST			0	0	?	?	Hail (1.00)
1 E Maud									
Cass County	14	1535CST			0	0	?	?	Hail (1.00)
8 E Hughes Springs	A line of thunderstorms produced several reports of one inch diameter hail.								
Wilbarger County	14	Afternoon			0	0	?	?	Heavy Snow
Vernon									
Hardeman County	14	Afternoon			0	0	?	?	Heavy Snow
Quanah	A snow depth of 4.5 inches was measured at Vernon and 4 inches at Quanah.								
Comanche County	19	0730CST			0	0	?	?	TSTM Wind
Sidney									
Erath County	19	0755CST			0	0	?	?	TSTM Wind
Stephenville									
Hamilton County	19	0805CST			0	0	?	?	TSTM Wind
1 S Shive									
Hamilton County	19	0810CST			0	0	?	?	TSTM Wind
3 N Hamilton	A squall line produced winds which damaged the roofs of houses in Sidney and knocked down signs in Stephenville. Winds damaged a barn and overturned several silos one mile south of Shive and downed powerlines 3 miles north of Hamilton.								
Bosque County	19	0830CST			0	0	?	?	TSTM Wind
1 W Cranfills Gap									
Cranfills Gap	19	0831CST			0	0	?	?	TSTM Wind
Coryell County	19	0850CST			0	0	?	?	TSTM Wind
Mound									
Cold Springs	19	0904CST			0	0	?	?	TSTM Wind (61)
Winds demolished a barn and downed trees one mile west of Cranfills Gap. Several businesses were damaged and a mobile home overturned in Cranfills Gap. Winds ripped the roof off a house and uprooted trees in Mound. Winds up to 70 miles an hour were observed in Cold Springs.									
TEXAS, Northern									
Johnson County	19	0910CST			0	0	4	?	TSTM Wind
Cleburne									
Venus	19	0920CST			0	0	?	?	TSTM Wind (78)
Ellis County	19	0945CST			0	0	?	?	TSTM Wind
5 S Waxahachie									
Navarro County	19	1010CST			0	0	4	?	TSTM Wind
Corsicana	A squall line produced winds which damaged an aircraft and a hangar at Cleburne Municipal Airport and downed powerlines in Cleburne. The thunderstorms produced winds up to 90 miles an hour at Venus. The storms moved into Ellis County downing powerlines 5 miles south of Waxahachie. In Navarro County the storms produced winds which ripped the roof off a nursing home and broke the windows of several businesses in Corsicana.								
McLennan County	19	0918CST			0	0	?	?	TSTM Wind
1 NE McGregor									
Woodway	19	0921CST			0	0	?	?	TSTM Wind
Waco	19	0925CST			0	0	?	?	TSTM Wind (50)
Bell County	19	0930CST			0	0	?	?	TSTM Wind
Stillhouse Hollow Lake									
Hill County	19	0940CST			0	4	?	?	TSTM Wind
5 N Hillsboro	A squall line produced winds which uprooted trees one mile northeast of McGregor and knocked over fences and uprooted trees in Woodway. Winds to 58 miles an hour were recorded at KXXV-TV in Waco. Trees were uprooted at Stillhouse Hollow Lake. A mobile home was destroyed at Lovelace (5 miles north of Hillsboro) injuring 4 people.								
Grayson County	19	1020CST			0	0	?	?	TSTM Wind
4 E Sherman	Trees and several powerlines were downed 4 miles east of Sherman.								
Henderson County	19	1040CST			0	0	?	?	TSTM Wind
7 WNW Eustace	Winds unroofed a mobile home at Gun Barrel City (7 miles west-northwest of Eustace).								
Anderson County	19	1120CST			0	0	?	?	TSTM Wind
Slocum	Winds damaged a barn and the roof of a house at Slocum.								
Smith County	19	1145CST			0	0	?	?	TSTM Wind
Lake Tyler	The front porch was blown off a house at Lake Tyler.								
Houston County	19	1145CST			0	0	?	?	TSTM Wind
6 NNE Grapeland									
Anderson County	19	1145CST			0	0	?	?	TSTM Wind
9 ESE Elkhart									
12 E Elkhart	19	1150CST			0	0	?	?	TSTM Wind
Several homes were damaged and trees uprooted near Mound City (6 miles north-northeast of Grapeland and 9 miles east-southeast of Elkhart) on the Houston-Anderson County line. Several houses were damaged at Denson Springs (12 miles east of Elkhart).									
Cherokee County	19	1210CST			0	0	?	?	TSTM Wind
6 S Alto	Powerlines were downed 6 miles south of Alto.								
Upshur County	19	1220CST			0	0	?	?	TSTM Wind
East Mountain									
Marion County	19	1240CST			0	0	?	?	TSTM Wind
3 NW Jefferson									
Harrison County	19	1240CST			0	0	?	?	TSTM Wind (61)
5 NW Marshall									
Waskon	19	1250CST			0	0	?	?	TSTM Wind (61)
Panola County	19	1240CST			0	0	?	?	TSTM Wind (52)
5 W Carthage									
Cass County	19	1245CST			0	0	?	?	TSTM Wind
2 SE Kildare									
Gregg County	19	1244CST			0	0	?	?	TSTM Wind
Longview									
Rusk County	19	1230CST			0	0	?	?	TSTM Wind (61)
Overton									
Henderson County	19	1235CST			0	0	?	?	TSTM Wind (56)
Shelby County	19	1300CST			0	0	?	?	TSTM Wind (61)
2 SE Shelbyville	A squall line moved through East Texas downing trees and damaging a satellite dish at East Mountain in Upshur County. Trees and signs were downed 3 miles northwest of Jefferson in Marion County. Winds of 70 miles an hour downed trees 5 miles northwest of Marshall and at Waskon in Harrison County. Winds of 60 miles an hour downed numerous trees and unroofed several barns 5 miles west of Carthage in Panola County. Trees and powerlines were downed 2 miles southeast of Kildare in Cass County. Numerous trees were uprooted and several roofs damaged								

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					KILLED	INJURED	PROPERTY	CROPS	

TEXAS, Northern

<i>In Longview in Gregg County. Trees were downed by 70 mile an hour winds at Overton and trees damaged by 65 mile an hour winds at Henderson in Rusk County. Winds to 70 miles an hour downed trees 2 miles southeast of Shelbyville in Shelby County.</i>									
Wilbarger County Vernon	25	Afternoon			0	0	?	?	Ice Storm
Knox County Knox City	25	Afternoon			0	0	?	?	Ice Storm
<i>An ice storm left up to 2 inches of ice on the ground at Vernon. The ice caused powerlines to break at Knox City leaving the town without power for over 5 hours.</i>									
Titus, Camp, Upshur, Smith, Wood, Rains, Franklin, Hunt, Van Zandt, Freestone, Limestone, and Navarro Counties	26	Early Morning			0	0	?	?	Flash Flooding
<i>Rainfall of up to 4 inches in a two-day period flooded many streets and secondary roads in Northeast Texas.</i>									
Harrison County	26	Afternoon			0	0	?	?	Flash Flooding
<i>Rainfall of up to 6 inches in a two-day period flooded many secondary roads in the county. An 18-car freight train plunged off its tracks at a washed-out bridge 8 miles north of Marshall.</i>									

41 TEXAS, Southern

Polk County, 2SW Livingston to 1SW Livingston	06	1430 to 1440CST	1	200	0	0	5	?	Tornado (F2)
<i>A tornado touched down about 2 miles southwest of Livingston in the East Tempe area and moved northeast for about one mile. The tornado destroyed several houses. Roads were blocked in the area from fallen trees and debris. Outbuildings were also destroyed.</i>									
Polk County, 12NE Livingston to 13NE Livingston	06	1500 to 1510CST	1	200	0	0	6	?	Tornado (F2)
<i>The same thunderstorm that produced the above tornado moved northeast and spawned a second tornado about 12 miles north-northeast of Livingston in the Seven Oaks community. Several homes and mobile homes were destroyed. The two tornadoes combined destroyed 7 homes, and major damage to 23 others was reported.</i>									
Harris CO Crosby NW Houston	06	1730CST			0	0	0	0	Hail (0.75)
<i>Three quarter inch hail fell in the eastern part of the county in the Crosby and Lake Houston area. Same size hail was also reported on the northwest side of the city near Loop 610 and US Hwy 290.</i>									
Jasper CO 4S Kirbyville	06	1915CST			0	0	0	0	Tstm Wind (?)
<i>High winds from a thunderstorm uprooted trees in the Call area or about 4 miles south of Kirbyville. One large outbuilding was destroyed. A porch was reported to have been blown off the front of a house. One bull was killed from flying debris.</i>									
Bastrop CO 5S Elgin	19	1130CST			0	0	0	?	Tstm Wind (?)
<i>High winds from a thunderstorm destroyed a barn and uprooted trees 5 miles south of Elgin.</i>									
Houston CO	19	1201CST			0	0	?	0	Tstm Wind (?)
<i>High winds from a thunderstorm did roof damage to residences in the northern part of the county.</i>									
Lavaca CO Hallettsville	19	1214CST			0	0	?	?	Tstm Wind (?)
<i>High winds from a thunderstorm uprooted trees and downed power lines in Hallettsville. Barns and trees were also reported blown over 5 to 12 miles south and southeast of Hallettsville.</i>									
Walker CO Huntsville	19	1215CST			0	0	0	0	Tstm Wind (51)
<i>High winds from a thunderstorm estimated near 60 MPH did tree damage in the Huntsville area.</i>									
Austin CO Sealy	19	1335CST			0	0	?	?	Tstm Wind (?)
<i>High winds from a thunderstorm uprooted trees near Sealy. Damage to roofs and fences was also reported.</i>									
Harris CO Houston	19	1425CST			0	0	?	0	Tstm Wind (51)
<i>High winds from a thunderstorm, estimated at near 60 MPH, did damage to roofs and chimney tops on the northwest side of the city of Houston. Fences were also blown over.</i>									

41 TEXAS, Western

Far West, Panhandle	13- All 14 Day				2	0	?	?	Snowstorm
<i>A powerful winter-like upper level storm system ingested copious amounts of Gulf moisture and generated record snowfall over much of the Panhandle and Far West. Heaviest snowfall occurred in the El Paso vicinity, across the Guadalupe and Delaware Mountains, and along a 90-mile-wide band in the Panhandle from Muleshoe to Canadian.</i>									
<i>The snow, which fell mostly on the 13th, broke all-time records in El Paso. A total of 16.8 inches was gaged on the 13th (a 24-hour record) while the two-day total of 22.4 inches shattered the all-time mark for an entire season. The previous record for a season was 18.5 inches. Two feet of snow covered Guadalupe Pass; while in the Panhandle totals were between 12 and 18 inches over the band of heaviest snowfall.</i>									
<i>Along with the record snowfall totals were periods of bitter cold. In El Paso a total of six temperature records were established during the storm period and the days immediately following. Record low marks in the single digits were recorded on the 14th, 15th, and 16th; while record low-maximum temperature records were set on each of the same days. Similarly, record cold was also felt in the Amarillo area, where temperatures tumbled to well below zero.</i>									
<i>In El Paso, officials closed many city offices on the 14th, and many schools and businesses were closed or had hours sharply curtailed on the 14th and 15th. Most all roadways across the Panhandle were closed from the 13th through the 15th.</i>									
<i>Monetary losses may never be established but are substantial; principally due to road and highway damage, plumbing breaks, losses due to shutdowns of industry and commerce, and of course traffic accidents.</i>									
<i>Two known fatalities occurred as a result of the storm: Lawrence A. Smith, 38, died after his tractor-trailer rolled over after striking a guardrail on snowcovered Interstate 40 (3.4 miles west of Allenreed) in southern Gray County. The cab was crushed by the trailer, and Smith burned to death in the ensuing fire. The other victim, Huu Nguyen, 33, was hunting along the Canadian River (north of Amarillo) and died of exposure. He had apparently become snow-blinded and froze to death. His body was found December 20th less than a quarter mile from his vehicle.</i>									
M38V, M330									

42 UTAH

UTZ010 Northern Mountains	07	1630MST			0	0	1	0	Heavy Snow
<i>Eight inches of snow fell at both Alta and Snowbird ski resorts in a 12 hour period ending at 4:30 pm MST.</i>									
UTZ003-010 Wasatch Front and Northern Mountains	12	0800MST			0	0	1	0	Heavy Snow
<i>A weak upper level trough combined with lake effect to produce locally heavy snowfall in the Salt Lake Valley and adjacent Wasatch Mountains. Spotters in Riverton and South Jordan reported 5 and 4 inch accumulations respectively overnight. At the same time Alta ski resort received 11 inches of welcome new snow and Snowbird measured 9 inches.</i>									
UTZ011 Southern Mountains	17	1750MST			0	0	1	0	Heavy Snow
<i>Heavy snow fell in several locations in the Southern Mountains of Utah on this date. Twelve hour snowfall totals included 8 inches at Duck Creek, 6 to 8 inches at Long Valley Junction, and 8 inches at Cedar Breaks National Monument.</i>									
UTZ001	22	1000MST			0	0	1	0	Heavy Snow
UTZ010	22	1335MST			0	0	1	0	Heavy Snow
UTZ003	22	1450MST			0	0	1	0	Heavy Snow
UTZ010	22	1645MST			0	0	1	0	Heavy Snow
UTZ003	22	2145MST			0	0	1	0	Heavy Snow
Cache Valley, Wasatch Front, and Northern Mountains	<i>Widespread heavy snowfall was reported across the northwest portion of the state on this date. Twelve hour snowfall accumulations ranged from 4 to 6 inches in the Cache Valley and along the Wasatch Front to around 8 inches in several northern Wasatch ski resorts.</i>								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED ¹ DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED ¹ DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	

UTAH

UTZ005-006-007-008	23	0400MST			0	0	1	0	Heavy Snow
UTZ006	23	0550MST			0	0	1	0	Heavy Snow
UTZ003-004-006	23	0830MST			0	0	1	0	Heavy Snow
UTZ003	23	0950MST			0	0	1	0	Heavy Snow
UTZ010	23	1610MST			0	0	1	0	Heavy Snow
UTZ003-006	23	1715MST			0	0	1	0	Heavy Snow
UTZ003	23	1825MST			0	0	1	0	High Wind
UTZ003	23	2004MST			0	0	1	0	Heavy Snow
UTZ003	23	2100MST			0	0	1	0	High Wind

Wasatch Front, Uinta Basin, East Carbon County, Southwest, Southeast, and Sevier Valley

A major winter storm produced heavy snowfall and high winds over most of Western and Northern Utah on this date. A baby boy was killed and his mother injured in an automobile accident when their car slid off the road on I-70 in Grand County. By early morning, valley accumulations were in the 4 to 6 inch range over most of the state. By mid afternoon from 9 to 12 inches had accumulated along the Wasatch Front. Northern mountain stations reported accumulations of around 8 inches by late afternoon. Easterly canyon wind developed by early evening and gusts from near 60 to an estimated 100 mph were reported.

UTZ003	24	0450MST			0	0	1	0	High Wind
UTZ003	24	0735MST			0	0	1	0	High Wind

Wasatch Front

Reports of easterly canyon wind gusts to 60 and 78 mph were received during the early morning hours on this Christmas Eve.

UTZ003	30	0420MST			0	0	1	0	Heavy Snow
UTZ010-011	30	0800MST			0	0	1	0	Heavy Snow
UTZ006	30	0925MST			0	0	1	0	Heavy Snow

Wasatch Front, Northern and Southern Mountains, and Southwest

From 4 to 8 inches of snow fell along the Wasatch Front, 8 to 10 inches in the northern and southern mountains and near 4 inches in some locations in the southwest.

43 VERMONT ————— NONE REPORTED

44 VIRGINIA ————— NONE REPORTED

45 WASHINGTON

WAZ007	01	0100PST			0	0	0	0	Heavy Snow
WAZ006	01	0400PST			0	0	0	0	Heavy Snow

Northeast Wash.

Snowfall during the night and early morning hours left from 3 to 5 inches of snow on the ground. Cooperative observers in the towns of Bodie and Republic reported 4 and 5 inches of snow, respectively, from the passing system.

WAZ005	01	0830PST			0	1	0	0	Lightning
WAZ005	01	0830PST			0	0	0	0	Hail (0.75)
WAZ001	01	1020PST			0	0	4	0	Lightning
WAZ001	01	Morning			0	0	4	0	High Wind

Western Wash.

The first of a series of Pacific Frontal systems swept ashore and moved over Western Washington during the morning hours. Thunderstorms and gusty winds accompanied the passing front. On the southern Washington Coast, 3/4" hail was reported around Hoquiam and a logger working 10 miles north of Aberdeen was injured when lightning struck a cable he was holding onto. At Ocean Shores, winds gusted to 75 miles an hour early in the morning and were gusting to 35 miles an hour as the front passed. In Woodinville, 15 miles NNE of Seattle, a home received substantial damage after being struck by lightning. Winds in the Puget Sound region occasionally gusted to 45 miles an hour causing up to 15,000 residences to temporarily lose electrical services.

WASHINGTON

WAZ001	03	0400PST			0	1	4	0	High Wind
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The second strong cold frontal system to pass over Western Washington in 48 hours brought more strong winds to the region. Ocean Shores had winds gust to 63 miles an hour early in the morning, but no damage was reported along the state coastline. Winds in the interior areas of W. Washington interrupted power service for up to 20,000 homes. Wind gusts to 60 miles an hour at the Hood Canal Bridge closed that thoroughfare for 2 hours during the strongest winds. Near the town of Duval, 25 miles NE of Seattle, a woman sustained a broken arm when the car she was driving was hit by a falling tree.

WAZ012	09	0900PST			0	0	0	0	Heavy Snow
WAZ001	09	1500PST			0	0	5	0	Heavy Rain
Whole State	09	1700PST			0	0	6	0	High Wind

The fifth significant weather system to hit Washington State in the first nine days of the month carried the strongest winds and spread damage across the state. A warm frontal system moved over the state during the day with heavy amounts of precipitation and strong winds developing late in the afternoon and evening. The heavy precipitation was mostly rain except on the east slopes of the Cascades where snow accumulations ranged from 6 inches up to nearly 3 feet in the Methow Valley. Overburdened power lines failed, causing power outages, some of which lasted a couple days in the Methow. Heavy rains near Hood Canal caused damage to roads and homes near the towns of Quilcene & Brinnon. The high winds which developed late in the afternoon and evening were responsible for the greatest amount of damage. In Western Washington, strongest gusts were 75mph at Ocean Shores and Hoquiam on the Coast, and to 60mph several places around Puget Sound. Winds in the Western Washington interior blew over countless trees onto power lines and houses. At least 32,000 residences lost power during the storm and specific reports documented 7 houses being damaged. Damaged houses were located in Shelton, Gig Harbor, Maple Valley, Auburn, North Bend and two in Bellingham.

Winds in Eastern Washington peaked at 54mph at Hanford, near the Tri-Cities, 50mph at Walla Walla, and 47mph at Spokane. Scattered power outages were caused by downed power lines. In the Tri-Cities, the roof of a tire store and a garage roof were damaged. Winds also blew a camper from its mounts as the truck it was on was being driven near Richland.

46 WEST VIRGINIA

WVZ009	03	Overnight			0	0	0	0	Heavy Snow
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Heavy snowfall overnight in the Northern Mountains produced 6 inch amounts in Terra-Alta in southeast Preston County and 6 inches in the higher elevations of Randolph County.

WVZ001-002-003-004	15	1100EST			0	0	5	?	High Winds
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West Through Northwest part of state

High winds associated with a intense low pressure system passing north of the state and a trailing cold front produced winds gusts as high as 62 MPH. Numerous trees and power lines were blown down. In Marshall County 2 airplanes were blown over.

47 WISCONSIN

WIZ015-016-017-018-019-020-	14	Late Evening into			0	0	?	0	Heavy Snow
South and Southeast Wisconsin	15	Late Evening							
Wisconsin	15	Early Morning into			0	0	5	0	Blizzard
	15	Early Afternoon							
Oregon, Dane Co.	15	0800CST			0	0	5	0	Lightning
9E Darlington, Lafayette Co.	15	0800CST			0	0	5	0	Lightning
South Wayne, Lafayette Co.	15	0800CST			0	0	5	0	Lightning

A powerful winter storm dumped from 6 to 17 inches of snow throughout the state, closing businesses, schools, airports and government offices and causing numerous accidents. Over 20,000 homes were without

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	

WISCONSIN

electricity, many of those in the southeast, due to widespread power outages. Blizzard conditions developed across southeast Wisconsin as winds gusted up to 73 mph. At Milwaukee's Lake Michigan harbor, \$100,000 in damage occurred to a pier that was repeatedly struck by a Greek cargo ship as waves 10 to 15 feet high were whipped up by the winds. Some roads along Lake Michigan were also closed due to wave action. One foot snow amounts were common over the southeast half of the state with 17 inches falling at LaFarge (Vernon County), 16.6 inches at Big Cedar Lake (Washington County) and 15 inches at Richland Center (Richland County). At least 13 people died of heart attacks while shoveling or snow throwing. Also there were numerous reports of severed fingertips as people tried to remove the wet heavy snow from snow throwers. The strong winds blew down a barn in Walworth County, killing 6 prize head of cattle and toppled a 95 foot tall fertilizer tower in Cleveland (Menisowoc County) as well as numerous trees and limbs. Lightning accompanying the storm started fires which destroyed a house in Oregon, a church east of Darlington, and a barn near South Wayne. Several radio and TV station antennae were also struck by lightning.

WYZ014-015-016-017-018-019-020- Southern Third of Wisconsin
 27 Late Evening into 0 0 0 0 Heavy Snow
 28 Late Morning

A heavy snowstorm struck the southern third of the state depositing from 6 to 14 inches of snow. Prairie du Chien (Crawford County) and Blue Mounds (Dane County) picked up 14 inches, while 13 inches fell in Kenosha (Kenosha County) and Darlington (Lafayette County). At least 4 people died of heart attacks while shoveling. Numerous accidents also took place. Some businesses and government offices closed and airport operations were curtailed.

48 WYOMING

WYZ001 NORTHWEST MOUNTAINS
 1 0000 to 0700 MST 0 0 0 0 SNOW

A MOIST WESTERLY FLOW DEPOSITED BETWEEN 4 TO 8 INCHES OVER YELLOWSTONE NATIONAL PARK.

WYZ001-007 NORTHWEST AND WESTERN MOUNTAINS
 2 0000 TO 1900 MST 0 0 0 0 SNOW

A STORM ASSOCIATED WITH A MOIST WESTERLY FLOW DROPPED 4 TO 8 INCHES OF NEW SNOW.

WYZ005 SOUTHEAST WY
 2 0700 TO 1600 MST 0 0 ? 0 HIGH WIND

STRONG JET STREAM WINDS MIXED DOWN TO THE SURFACE AND PRODUCED SUSTAINED WINDS OF 40 TO 50 MPH. ALSO... AIR FORCE PERSONNEL NORTH OF CHEYENNE CLOCKED WIND GUSTS TO 60 TO 65 MPH.

WYZ001 NORTHWEST MOUNTAINS
 2 1400 TO 0600 MST 0 0 0 0 HEAVY SNOW

A STORM MOVED INTO THE NORTHWEST MOUNTAINS AND DUMPED BETWEEN 6 TO 12 INCHES OF NEW SNOW.

WYZ007 WESTERN MOUNTAINS
 4 0200 TO 1800 MST 0 0 0 0 SNOW

FOUR TO SIX INCHES OF NEW SNOW FELL IN THE STAR VALLEY. THE HIGHEST AMOUNT WAS RECORDED ABOUT 7 MILES NORTH OF AFTON NEAR THE TOWN OF BEDFORD.

WYOMING

WYZ001 NORTHWEST MOUNTAINS
 7 0000 TO 1600 MST 0 0 0 0 SNOW

WYZ005 SOUTHEAST
 7 0900 TO 1300 MST 0 0 ? 0 HIGH WIND

A STRONG UPPER LEVEL WESTERLY FLOW ASSOCIATED WITH A SURFACE COLD FRONT MOVED THROUGH THE STATE. THIS WEATHER SYSTEM DUMPED 4 TO 6 INCHES OF NEW SNOW OVER THE NORTHWEST MOUNTAINS. ALSO... VERY STRONG AND GUSTY WINDS RAKED ACROSS THE SOUTHEAST WITH SUSTAINED WINDS OF 40 TO 45 MPH AND GUSTS OF 50 TO 65 MPH.

WYZ001 NORTHWEST MOUNTAINS
 7 2000 TO 8 0700 MST 0 0 0 0 SNOW

A STORM MOVED INTO NORTHWEST WYOMING AND DEPOSITED AROUND 6 INCHES OF NEW SNOW AT THE SOUTH ENTRANCE TO YELLOWSTONE NATIONAL PARK.

WYZ001 NORTHWEST MOUNTAINS
 8 2200 TO 9 0700 MST 0 0 0 0 SNOW

WYZ012 EASTERN FLAINS
 9 1245 MST 0 0 ? 0 HIGH WIND

WYZ002 NORTHWEST CHINOOK
 9 1700 MST 0 0 ? 0 HIGH WIND

NATRONA CO. MOUNTAIN VIEW
 9 2200 MST 0 0 4 0 HIGH WIND

A VIGOROUS COLD FRONT MOVED INTO FAR WEST WYOMING DUE TO A STRONG UPPER LEVEL WESTERLY FLOW ON THE MORNING OF DECEMBER 9. FOUR TO SIX INCHES OF NEW SNOW FELL OVER BOTH THE BRIDGER-TETON NATIONAL FOREST AND THE YELLOWSTONE NATIONAL PARK AHEAD OF THIS COLD FRONT. AROUND 1245 MST WIND GUSTS TO 58 MPH WERE LOGGED ABOUT 35 MILES NORTH OF WHEATLAND AT THE MISSOURI BASIN POWER PLANT. A LITTLE AFTER 1700 MST WIND GUSTS OF 62 MPH WERE CLOCKED AT CODY REGIONAL AIRPORT. LATER THAT EVENING HIGH WINDS BLEW THE ROOF OFF A TRAILER IN MOUNTAIN VIEW.

WYZ001-009 NORTHWEST AND WIND RIVER MOUNTAINS
 9 2300 TO 10 0700 MST 0 0 0 0 SNOW

WYZ005-006-011-012 NORTHEAST AND EAST CENTRAL WY
 10 0300 TO 0830 MST 0 0 4 0 HIGH WIND

WYZ001 NORTHWEST MOUNTAINS
 10 0700 TO 1400 MST 0 0 0 0 HEAVY SNOW

PLATTE CO. AND GOSHEN CO.
 10 0830 TO 1100 MST 0 0 5 3 HIGH WIND

WYZ005 SOUTHEAST WY
 10 1130 TO 1700 MST 0 0 4 0 HIGH WIND

ON DECEMBER 10 A VIGOROUS COLD FRONT THAT ENTERED FAR WEST WYOMING ON DECEMBER 9 SWEEP THROUGH THE STATE DUE TO A STRONG UPPER LEVEL WIND FLOW. FOUR TO SIX INCHES OF NEW SNOW FELL WITH EIGHT INCHES AT HIGHER ELEVATIONS OVER NORTHWEST WYOMING AND THE WIND RIVER MOUNTAINS DURING THE EARLY MORNING HOURS. VERY STRONG WIND GUSTS WERE ASSOCIATED WITH THIS COLD FRONT AS IT MOVE OVER EASTERN WYOMING. FROM 0300 MST TO 0830 MST VERY STRONG WIND GUSTS OF 65 TO 70 MPH WERE CLOCKED. THESE VERY STRONG WIND GUSTS STRETCHED FROM SHERIDAN AIRPORT IN THE NORTH TO THE MISSOURI BASIN POWER PLANT IN THE SOUTH. PLATTE AND GOSHEN COUNTIES WERE RAKED BY EXTREMELY INTENSE WIND GUSTS BETWEEN 0830 TO 1100 MST. THESE EXTREMELY INTENSE WIND GUSTS WERE RECORDED BETWEEN 75 TO 80 MPH. A FEW OF THESE GUSTS WERE ESTIMATED TO BE OVER 90 MPH. NUMEROUS 18-WHEEL SEMI-TRACTOR TRAILERS WERE BLOWN OVER FROM DOUGLAS TO CHEYENNE. ALSO... A 50-FOOT FOUR-LEGGED MICROWAVE TOWER LOCATED ABOUT 13 MILES EAST OF WHEATLAND WAS BLOWN DOWN ABOUT 1030 MST. TWO OF THE FOUR LEGS WERE PULLED COMPLETELY OUT OF THE GROUND STILL IN THE CONCRETE ANCHORS. DAMAGE TO THIS TOWER WAS AROUND \$55,000. A HOUSE TRAILER BEING PULLED ON INTERSTATE 90 SOUTH SHERIDAN WAS COMPLETELY DESTROYED. A FEW TREES OVER 20-FOOT TALL FROM BUFFALO IN THE NORTH TO PINE BLUFFS IN THE SOUTH WERE TOPPLED. AFTER 1130 MST SUSTAINED WINDS OF 35 TO 40 MPH PREVAILED OVER SOUTHEAST WYOMING WITH GUSTS OF 60 TO 65 MPH UNTIL 1700 MST. A MULTITUDE

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED DAMAGE		CHARACTER OF STORM	
					KILLED	INJURED	PROPERTY	CROPS		
WYOMING										
			OF BLOWN OVER ROOFS AND POWER POLES AND DOWNED FENCES WERE REPORTED ACROSS MUCH OF EASTERN WYOMING. FARMERS EVEN REPORTED WIND DAMAGE TO THEIR WHEAT CROPS FROM YODER TO ALBIN. ELSEWHERE... HEAVY SNOW OF 8 TO 12 INCHES FELL DURING THE LATE MORNING TO THE EARLY AFTERNOON AT THE TETON VILLAGE SKI RESORT NORTHWEST OF JACKSON.							
WY2004 BIG HORN MOUNTAINS	12	2200 TO 13 0730 MST			0	0	0	0	SNOW	
			A STORM MOVED INTO THE BIG HORN MOUNTAINS AND DEPOSITED BETWEEN 3 TO 8 INCHES OF NEW SNOW.							
WY2001 NORTHWEST MOUNTAINS	16	0700 TO 17 0700 MST			0	0	0	0	SNOW	
			A STORM MOVED INTO THE YELLOWSTONE NATIONAL PARK AND DROPPED BETWEEN 4 TO 6 INCHES OF NEW SNOW.							
WY2012-017 EASTERN AND SOUTHEAST PLAINS	20	0000 TO 0900 MST			0	0	0	0	SNOW	
			THREE TO FIVE INCHES OF NEW SNOW FELL FROM CHEYENNE TO GLENROCK DURING THE MORNING HOURS OF DECEMBER 20.							
WY2012-017 EASTERN AND SOUTHEAST PLAINS	20	2000 MST			0	0	4	0	HIGH WIND	
			STRONG WINDS BLEW OVER A TRUCK AND TRAILER AT THE BORDEAUX EXIT ON INTERSTATE 25 IN SOUTHEAST WYOMING. THE TRUCK WAS TOTALED BUT THE TRAILER WAS SALVAGABLE.							
WY2001 NORTHWEST MOUNTAINS	21	0000 TO 0930 MST			0	0	0	0	SNOW	
WY2002 NORTHWEST CHINOOK	21	0130 TO 0500 MST			0	0	?	0	HIGH WIND	
WY011 CENTRAL PLAINS	21	0300 MST			0	0	0	0	WIND	
WY2006 SOUTHEAST WY	21	0500 TO 1300 MST			0	0	3	0	HIGH WIND	
			A FAIRLY MOIST BUT STRONG UPPER LEVEL WESTERLY FLOW DUMPED 4 TO 8 INCHES OF NEW SNOW OVER YELLOWSTONE NATIONAL PARK. THIS STRONG WESTERLY FLOW PRODUCED WIND GUSTS AROUND 60 MPH FROM 0130 TO 0500 MST AT CODY REGIONAL AIRPORT. THESE STRONG WESTERLY WINDS CONTINUED TO MOVE INTO SOUTHEAST WYOMING DURING THE MORNING AND THE AFTERNOON. SHORTLY BEFORE 0300 MST NATRONA COUNTY AIRPORT NEAR CASPER RECORDED A WIND GUST TO 43 MPH. FROM 0500 TO 1030 MST SUSTAINED WINDS OF 35 TO 45 MPH WERE CLOCKED FROM RAWLINS TO CHEYENNE ALONG INTERSTATE 80. THESE STRONG WINDS WERE ALSO OBSERVED FROM WHEATLAND TO CHEYENNE. VERY STRONG WIND GUSTS FROM 0500 TO 1030 MST REACHED SPEEDS OF 58 TO 64 MPH AT THE CHEYENNE AIRPORT. CONSTRUCTION DAMAGE DUE TO THESE HIGH WINDS WERE REPORTED IN THE CHEYENNE AREA BETWEEN 0400 TO 0600MST.							
WY200W WEST WY	22	0000 TO 2200 MST			1	2	4	0	WINTER STORM	
			A COLD FRONT ASSOCIATED WITH A STRONG UPPER LEVEL WESTERLY FLOW DROPPED BETWEEN 8 TO 14 INCHES FROM EVANSTON TO YELLOWSTONE NATIONAL PARK. SLICK ROADS ABOUT HALF A MILE WEST OF JACKSON WERE BLAMED FOR THE FATAL AUTOMOBILE ACCIDENT OF A MONTANA WOMAN. TWO OTHER PERSONS WERE ALSO SERIOUSLY INJURED IN CAR ACCIDENTS IN TETON COUNTY. THE TOWN OF GREEN RIVER ALONE HAD AT LEAST 18 WEATHER RELATED TRAFFIC ACCIDENTS BETWEEN 1600 TO 1800 MST WITH DAMAGES GREATER THAN \$12,550.							
WYOMING										
WY2001 NORTHWEST MOUNTAINS	23	0000 TO 1400 MST			0	0	0	0	WINTER STORM	
WY2007-013 MOUNTAINS AND SOUTHWEST	23	0300 TO 1500 MST			0	0	0	0	SNOW	
WY2002-003-009-010 NORTHWEST CHINOOK TO WIND RIVER BASIN	23	0500 TO 1500 MST			0	0	0	0	HEAVY SNOW	
WY2011-014-05E CENTRAL PLAINS RED DESERT SOUTHEAST WY	23	0500 TO 1500 MST			0	0	0	0	WINTER STORM	
			A COLD FRONT THAT ENTERED WEST WYOMING ON DECEMBER 22 COMBINED WITH MOIST SOUTHWESTERLY FLOW AS THE FRONT MOVED THROUGH THE REST OF WYOMING ON DECEMBER 23. SNOWFALL TOTALS ASSOCIATED WITH THIS COLD FRONT VARIED FROM 4 TO 25 INCHES AS IT MOVED FROM THE NORTHWEST TO THE SOUTHEAST ACROSS WYOMING. LESSER AMOUNTS OF SNOW IN THE 3 TO 7 INCH RANGE WERE NOTED OVER THE WESTERN MOUNTAINS AND SOUTHWEST. WIND SPEEDS OF 30 TO 40 MPH FROM ROCK SPRINGS TO LARAMIE PRODUCED AREAS OF BLOWING AND DRIFTING SNOW. VISIBILITIES WERE REDUCED BELOW ONE-HALF MILE IN THESE AREAS OF BLOWING SNOW. ALSO... THESE STRONG WINDS PRODUCED SNOW DRIFTS TWO FEET HIGH OR MORE AND CLOSED INTERSTATES 80 AND 25 OVER SOUTHERN AND SOUTHEAST WYOMING. SOME PARTICULAR SNOWFALL TOTALS WITH THIS WINTER STORM WERE LISTED BELOW.							
			AFTON.....4 INCHES CRYSTAL RESERVOIR...20 INCHES ALBIN.....12 INCHES DULL CENTER.....6 INCHES BAGGS.....12 INCHES ENCAMPMENT.....12 INCHES CASPER MOUNTAIN...25 INCHES LUSK.....10 INCHES CENTENNIAL...11 INCHES SNOWY RANGE RESORT...19 INCHES CHUGWATER...12 INCHES SOUTH PASS.....17 INCHES							
WY2001 NORTHWEST MOUNTAINS	27	0000 TO 1000 MST			0	0	0	0	SNOW	
			A STORM MOVED INTO THE NORTHWEST AND DEPOSITED AROUND 6 INCHES OF SNOW NEAR ALTA.							
WY2009-010-014 WIND RIVER MTNS AND BASIN TO RED DESERT	27	0700 TO 28 0700 MST			0	0	0	0	SNOW WIND	
			A STORM FROM THE NORTHWEST MOUNTAINS MOVED OVER THE WIND RIVER MOUNTAINS... BASIN AND NORTHERN RED DESERT AREA LATE ON DECEMBER 27. THIS STORM DROPPED 5 TO 6 INCHES OF NEW SNOW AT JEFFERY CITY. BLOWING AND DRIFTING SNOW WERE OBSERVED FROM THE SOUTHERN END OF THE WIND RIVER MOUNTAINS TO JEFFERY CITY. THIS BLOWING AND DRIFTING SNOW WAS CAUSED BY NORTH TO NORTHWEST WINDS OF 30 TO 40 MPH WITH GUSTS NEAR 50 MPH OBSERVED AT SOUTH PASS.							
WY2011 CENTRAL PLAINS	27	0500 TO 1800 MST			0	0	0	0	SNOW	
			A STORM DUMPED AROUND 5 INCHES AT THE NATRONA COUNTY AIRPORT WEST OF CASPER.							
WY2006 SOUTHEAST WY	27	0700 TO 1800 MST			0	0	?	0	BLIZZARD	
			A VERY STRONG UPPER LEVEL TROUGH DEVELOPED OVER ARIZONA ON DECEMBER 25 AND MOVED INTO EASTERN COLORADO ON THE MORNING OF DECEMBER 27. THIS TROUGH DEVELOPED BLIZZARD CONDITIONS OVER SOUTHEAST WYOMING FROM 0700 TO 1900 MST. SNOWFALL AMOUNTS VARIED FROM 6 TO 20 INCHES. WIND SPEEDS OVER SOUTHEAST WYOMING WERE CLOCKED AT 25 TO 35 MPH WITH GUSTS TO 45 MPH. THESE STRONG WINDS COMBINED WITH THE HEAVY SNOW AMOUNTS FREQUENTLY LOWERED VISIBILITIES BELOW ONE-QUARTER OF A MILE. THE WINDS ALSO PRODUCED SNOW DRIFTS OVER FOUR FOOT TALL PARTICULARLY OVER ROADWAYS. THESE SNOW DRIFTS CLOSED INTERSTATE 80 FROM CHEYENNE TO THE NEBRASKA BORDER AND INTERSTATE 25 FROM DOUGLAS TO COLORADO BORDER. THESE ROADS STAY CLOSED FOR MUCH OF THE 27th TO THE MORNING OF THE 28th. THIS BLIZZARD STRANDED OVER 300 HOLIDAY TRAVELERS IN THE TINY TOWN OF CHUGWATER. SOME PARTICULAR SNOWFALL TOTALS WHICH WERE ASSOCIATED WITH THIS BLIZZARD.							
			ALBIN.....14 INCHES LA GRANGE.....19 INCHES CARPENTER.....8 INCHES LUSK.....6 INCHES CHUGWATER.....10 INCHES PINE BLUFFS...15 INCHES DOUBLE FOUR RANCH (ALBANY COUNTY)...16 INCHES SARATOGA.....9 INCHES ENCAMPMENT.....6 INCHES WHEATLAND...10 INCHES							

STORM DATA AND UNUSUAL WEATHER PHENOMENA

DECEMBER 1987

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED* DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	

WYOMING

WYZ001 NORTHWEST MOUNTAINS	29	0600 TO			0	0	0	0	SNOW
	30	0600 MST							
WYZ003 BIG HORN BASIN	30	1500 TO			0	0	0	0	SNOW
	31	0000 MST							

FIVE TO SIX INCHES OF NEW SNOW WAS RECORDED NEAR ALTA AND GRAYBULL.

49 ALASKA, Northern ——— NO REPORT RECEIVED

49 ALASKA, Southern

COOK INLET	02	0900AST			0	0	?	0	Heavy Snow
A series of small storms during the week ending December 2nd brought a foot of new snow to Anchorage. Snow on the ground on the 2nd was 20 inches, the most on record for so early in the season.									
ALEUTIANS	14	1800BST			0	0	?	0	High Wind
An intense Aleutian storm with the lowest pressure at 938 mb brought sustained winds of 69 mph and gusts to 89 mph to Shemya Air Force Base.									
COOK INLET	19	1900AST			0	0	5	0	Heavy Snow
A fast moving frontal wave brought 6 to 8 inches of heavy wet snow to Anchorage. This snow added to the already heavy snow pack was in part responsible for the collapse of a church. About 60 people evacuated the church seconds before the roof caved in.									
ALEUTIANS	31	0800BST			0	0	?	0	High Wind
A strong storm in the western Aleutians with central pressure 950 mb brought gusts to 81 mph at Shemya AFB and 71 mph at Cold Bay									

49 ALASKA, Southeastern ——— NONE REPORTED

50 HAWAII

All Islands	11-19				0	0	6	5	Flash Flooding, Wind
A low pressure system of the type often referred to as a Kona Storm developed to the west of the Hawaiian Islands near French Frigate Shoals on the 11th. This low remained to the west of the Islands during the next week or so while the active cloud and shower band associated with the storm moved into the Islands on several occasions dropping heavy rains over the entire area. Kauai and Oahu received the most with 12 to 18 inches the rule across Oahu. This was the first general soaking in many of the lowland lee locations in a number of years and flash flooding was widespread though of mostly minor nature. Streets suffered as pavements broke up and potholes proliferated. Crop losses were mainly to leafy vegetables and tomatoes. Some scattered wind damage occurred where the strong upper southwesterlies blew downslope into lee areas. A Waianae poultry farmer lost 5000 chicken when a roof caved in. Also a Nanakuli nursery man suffered extensive damage to buildings and plants as his hothouse blew over on the evening of the 13th. Many utility poles broke and moisture problems caused telephone service interruptions of more than a week's duration.									

HAWAII

Oahu	31- Jan 1 1930HST				0	0	7	5	Flash Flooding, Wind
Severe flooding and flash flooding resulting from rainfalls locally up to 22 inches in 24 hours did extensive damage in portions of eastern Oahu. Most severely affected by flash flooding and rock slides were Miu, Kuliouou and Hahaione Valleys of leeward eastern Oahu. Extensive stream flooding occurred in portions of Waipenalo and the Coconut Grove area of Kailua adjacent to the Kawaiwi Swamp on windward Oahu. Total property damages were estimated at \$35 million including \$25 million to private and residential property, \$5.6 million to public facilities, \$3.5 million to businesses, and \$0.28 million to agriculture. There were no deaths or injuries. 2800 people were evacuated with 72 left homeless, 477 homes received minor damage to structure and damage to content, 53 homes received major damage and one was destroyed. Numerous cars were also damaged or destroyed. Wind damage included major damage to St. Patrick's private school. Also some wind damage was reported at Nanakuli and Waianae and to overhead wires throughout Oahu. Some minor wind and flood damage also occurred on the neighboring islands of Maui and Kauai.									

51 PUERTO RICO

PUERTO RICO	6 evening				1			5	Flash Flooding
	7 day								

Southeastern and Eastern Interior Sections

A very slow moving COLD FRONT approached the island of Puerto Rico from the northwest on Monday December 7, 1987. This was a weak system that induced a southeast flow of moist tropical air across the Eastern Caribbean. The combination of the COLD FRONT and the southeast flow of moist air promoted the formation of heavy to intense showers and thunderstorms that caused severe flash flooding over the southeastern and eastern interior portions of Puerto Rico during the evening of Monday December 6, 1987, and continuing into the next morning. Rainfall amounted nearly 20 inches during the flood event. An amount of 19.41 inches in 24 hours was measured at a gauging station near the municipality of Las Piedras. There were four intensity records set in this event. Rainfall records for 2, 6, 7, and 8 hours with amounts of 6.73, 11.29, 15.23, and 17.04 inches, respectively, were established. This flood event took the life of one person. In Gurabo, a 52 year old man attempted to cross a flooded bridge and the car was washed away by the strong currents. The car was found later with the drowned body inside. 1276 persons were evacuated from nine (9) municipalities. Four bridges were destroyed, two of them in Las Piedras, and nine (9) others were considerably damaged. Numerous landslides were reported. The damages were estimated to be near 5 million dollars. MS2V.

52 VIRGIN ISLANDS ——— NONE REPORTED

53 PACIFIC ——— NONE REPORTED

STORM SUMMARY

DECEMBER 1987

TYPE	ALABAMA	ARIZONA	ARKANSAS	CALIFORNIA	COLORADO	CONNECTICUT	DELAWARE	FLORIDA	GEORGIA	IDAHO	ILLINOIS	INDIANA	IOWA	KANSAS	KENTUCKY	LOUISIANA	MAINE	MARYLAND & DC	MASSACHUSETTS	MICHIGAN	MINNESOTA	MISSISSIPPI	MISSOURI	MONTANA	NEBRASKA	NEVADA	NEW HAMPSHIRE	
TORNADOES						0	0		0									0	0	0	0							
Number			1					2								1							3	3				
Days			1					1								1						3	1					
Deaths			6					0								0						0	0					
Injuries			200					0								0						0	0					
Property Damage			7					4								0						1	4					
Crop Damage			0					0								?						0	0					
HAIL																												
Deaths			0													0						0	0					
Injuries			0													0						0	0					
Property Damage			?													?						?	?					
Crop Damage			0													?						?	?					
THUNDERSTORM WINDS																												
Deaths	0		0	0				0		0						0						0	0					
Injuries	3		0	0				0		0						1						0	0					
Property Damage	5		4	4				2		5						6						5	5					
Crop Damage	0		0	0				3		0						?						0	0					
HIGH WINDS																												
Deaths				2	0					0		0				0									0	0		0
Injuries				0	0					0		9				0								0	0		0	0
Property Damage				5	4					5		5				6								4	1		4	5
Crop Damage				5	4					0		?				4								0	1		0	0
LIGHTNING																												
Deaths																												
Injuries																												
Property Damage																												
Crop Damage																												
FLASH FLOODS																												
Deaths																												
Injuries																												
Property Damage																												
Crop Damage																												
FLOODS																												
Deaths			1													0												
Injuries			2													0												
Property Damage			7													5												
Crop Damage			7													?												
HEAVY SNOWSTORMS AND BLIZZARDS @																												
Deaths		0		0						0	0		0	0										0	0			0
Injuries		0		0						0	0		0	0									0	0				0
Property Damage		4		2						5	6		5	4									3	2				5
Crop Damage		?		2						0	0		0	0									0	1				0
ICE STORMS #																												
Deaths			0										0	0														
Injuries			0										0	0														
Property Damage			?										0	4														
Crop Damage			0										0	0														
HURRICANES AND TROPICAL STORMS																												
Deaths																												
Injuries																												
Property Damage																												
Crop Damage																												
ALL OTHERS																												
Deaths				3																								
Injuries				11																								
Property Damage				6																								
Crop Damage				7																								

SEE REFERENCE NOTES FOR STORM DAMAGE CATEGORIES

STORM SUMMARY

DECEMBER 1987

TYPE	NEW JERSEY	NEW MEXICO	NEW YORK	NORTH CAROLINA	NORTH DAKOTA	OHIO	OKLAHOMA	OREGON	PENNSYLVANIA	RHODE ISLAND	SOUTH CAROLINA	SOUTH DAKOTA	TENNESSEE	TEXAS	UTAH	VERMONT	VIRGINIA	WASHINGTON	WEST VIRGINIA	WISCONSIN	WYOMING	ALASKA	HAWAII	PACIFIC	PUERTO RICO	VIRGIN ISLANDS	NATIONAL DEATH & INJURY TOTALS
TORNADOES	0															0	0					#		0	0		
Number													1	4													
Days													1	1													
Deaths													0	0													6
Injuries													21	0													226
Property Damage													6	6													
Crop Damage													0	?													
HAIL																											
Deaths																											
Injuries																											
Property Damage																											
Crop Damage																											
THUNDERSTORM WINDS																											
Deaths				0				0		0			0	0													0
Injuries				0				0		0			0	4													8
Property Damage				4				?		3			4	5													
Crop Damage				0				0		0			0	?													
HIGH WINDS																											
Deaths	0	0	0			0		6		0			0					0	0	0				0			8
Injuries	0	0	0			13		2		0			2		0			1	0	0				0			28
Property Damage	6	5	4			7		5		7			5		1			6	5	5				5			
Crop Damage	0	0	0			0		?		0			0		0			0	?	3			5				
LIGHTNING																											
Deaths										0				0				0		0							0
Injuries										0				0				1		0							1
Property Damage										3				?				4		5							
Crop Damage										0				?				0		0							
FLASH FLOODS																											
Deaths							0							0											1		1
Injuries							0							0										0	1		0
Property Damage							?							?										7	5		
Crop Damage							?							?										5	0		
FLOODS																											
Deaths						0	0	0					0														1
Injuries						0	0	0					0														2
Property Damage						1	?	?					6														
Crop Damage						0	?	?					0														
HEAVY SNOWSTORMS AND BLIZZARDS @																											
Deaths	3	0		0		0	1	0	0					1	0			0		0	0						5
Injuries	?	0		0		0	0	0	0					0	0			0		0	0						?
Property Damage	?	6		?		?	6	?	3					?	1			4		5	4						
Crop Damage	0	0		0		0	?	0	0					?	0			0		0	?						
ICE STORMS #																											
Deaths							2																				2
Injuries							0																				0
Property Damage							7																				
Crop Damage							?																				
HURRICANES AND TROPICAL STORMS																											
Deaths																											
Injuries																											
Property Damage																											
Crop Damage																											
ALL OTHERS																											
Deaths			0																								6
Injuries			0																								11
Property Damage			5																								
Crop Damage			0																								

SEE REFERENCE NOTES FOR STORM DAMAGE CATEGORIES

STORM DAMAGE CATAGORIES

REFERENCE NOTES

1	Less than \$50	0/Blank	None reported.
2	\$50 to \$500	*	Miles instead of yards.
3	\$500 to \$5,000	**	Yards instead of miles.
4	\$5,000 to \$50,000	@	Includes heavy sleet storm.
5	\$50,000 to \$500,000	#	Freezing drizzle and freezing rain, commonly known as glaze.
6	\$500,000 to \$5 Million	≠	Report incomplete.
7	\$5 Million to \$50 Million	≠≠	Report not received.
8	\$50 Million to \$500 Million	o/c	Indicates Crop Damage amount is included in the value given for property damage.
9	\$500 Million to \$5 Billion		

When reports are not received or are incomplete, the Storm Summary National Death and Injury totals may also be incomplete.

Definition of Fujita Tornado Scale (F scale)

(F0) Gale tornado (40-72 mph): Light damage
Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage sign boards.

(F1) Moderate tornado (73-112 mph): Moderate damage
The lower limit (73 mph) is the beginning of hurricane wind speed; peel surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads.

(F2) Significant tornado (113-157 mph): Considerable damage
Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.

(F3) Severe tornado (158-206 mph): Severe damage
Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown.

(F4) Devastating tornado (207-260 mph): Devastating damage
Well-constructed houses leveled; structure with weak foundation blown off some distance; cars thrown and large missiles generated.

(F5) Incredible tornado (261-318 mph): Incredible damage
Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100 m; trees debarked; incredible phenomena will occur.

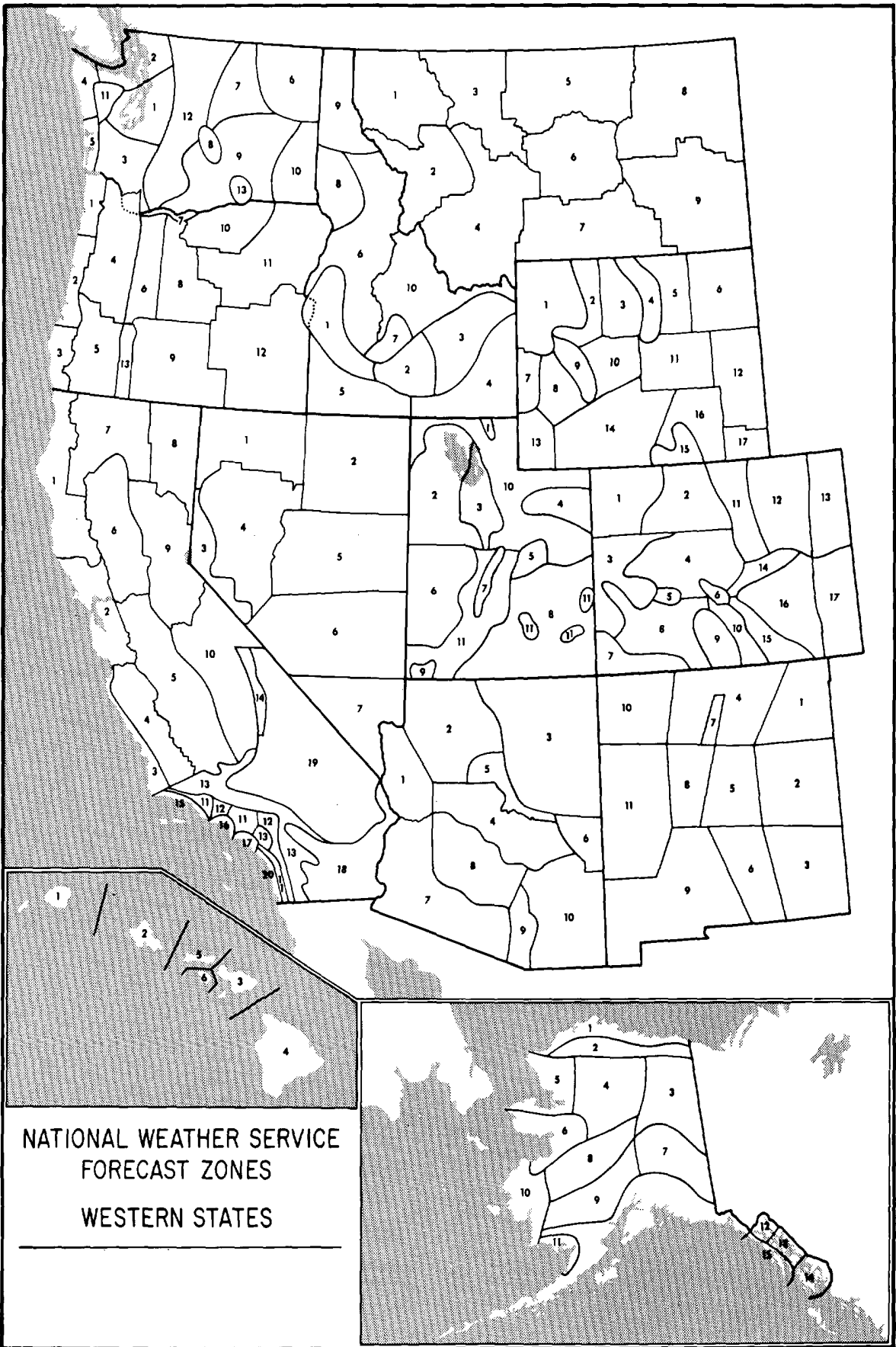
(F6-F12) (319 mph to Mach 1, the speed of sound):
The maximum wind speeds of tornadoes are not expected to reach the F6 wind speeds.

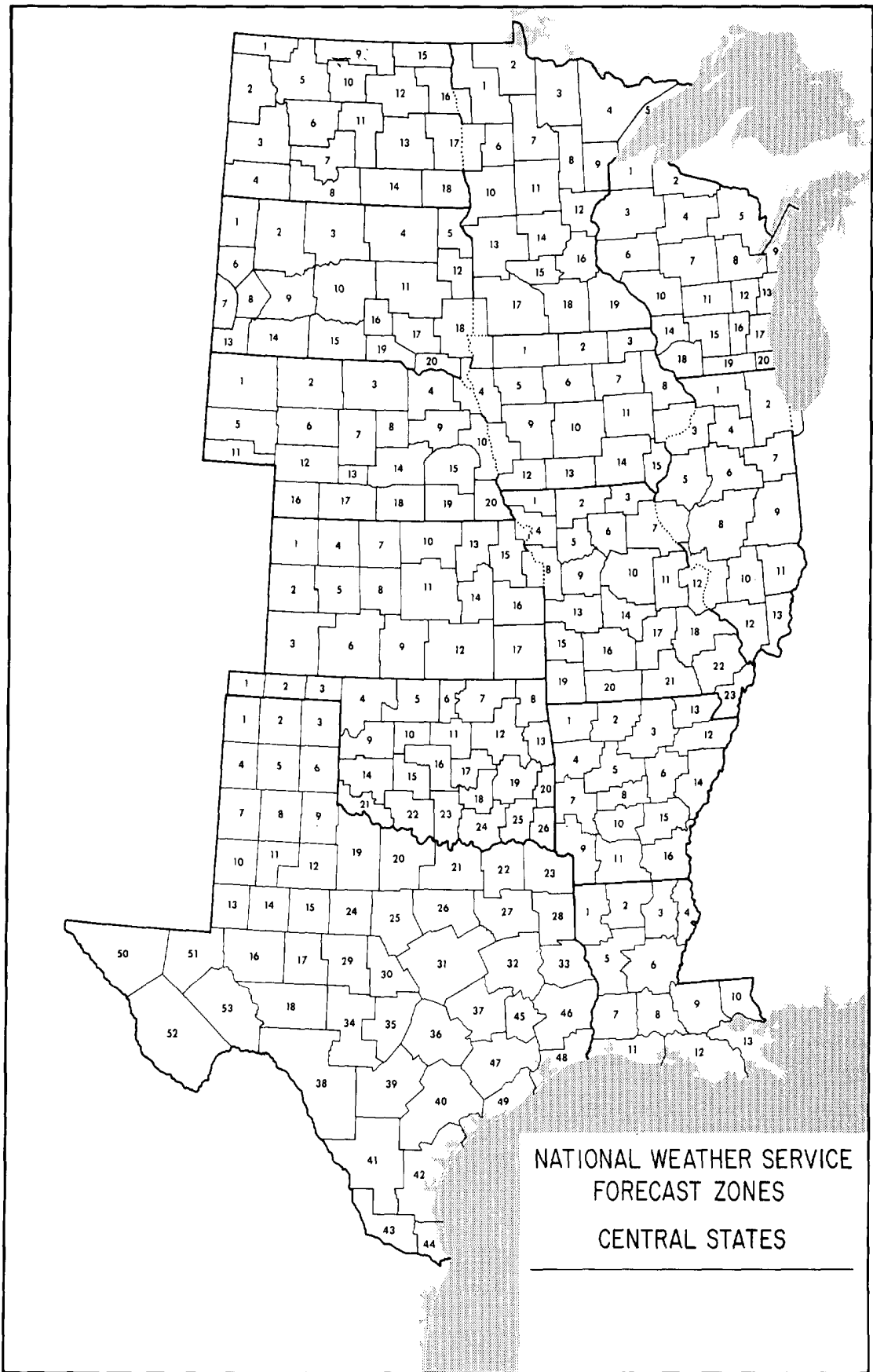
(F0+F1) *Weak Tornado*
(F2+F3) *Strong Tornado*
(F4+F5) *Violent Tornado*

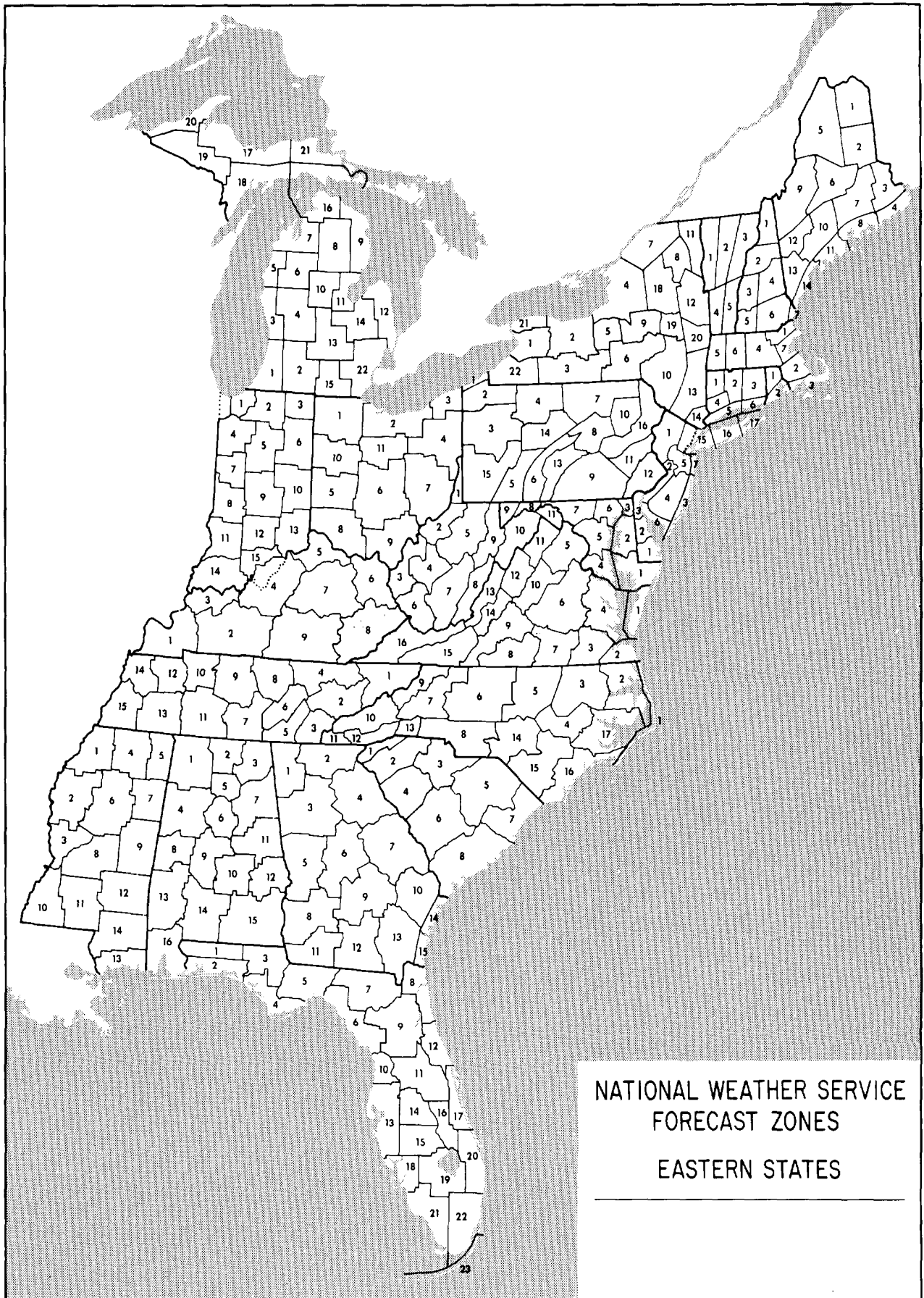


From J. Atmos. Sci., August 1981, p. 1517-1519

USCOMM-NOAA-ASHEVILLE, N.C. 1987-2000







NATIONAL WEATHER SERVICE
FORECAST ZONES
EASTERN STATES

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NATIONAL SUMMARY OF TORNADOES, 1987

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

The 1987 tornado season began on January 4 at 11:10 a.m., when a tornado touched down in Bonita Springs, Florida, and left a two-and-a-half mile (4 km) path with 48 damaged homes and mobile homes. The final tornado of the season occurred on December 15 at 2:50 p.m. in Bunnell, Florida; two industrial buildings and four vehicles were damaged. In 1987, 656 tornadoes were reported in 151 days, which killed 59 people and injured 1,114 others. Property damage for the year was in excess of \$250 million. Tornadoes damaged or destroyed more than 1,200 mobile homes, which resulted in the death of 25 people and 495 injuries. No tornado activity was reported in the following states during 1987: Alaska, Connecticut, Delaware, Hawaii, Maine, Maryland, Massachusetts, New Hampshire, Oregon, Rhode Island, and West Virginia. Location of killer tornadoes, new monthly records (since 1953) by state and nation, and state-to-state border crossings are shown in the following three tables:

TABLE I. LOCATION OF KILLER TORNADOES

<u>DATE</u>	<u>STATE</u>	<u>COUNTY</u>	<u>TOTAL DEATHS</u>
February 28	Mississippi	Jones	6
March 17	Texas	Anderson	1
April 15	Florida	Lake	1
May 21	Alabama	Winston	1
May 22	Texas	Reeves	30
June 11	Texas	Ochiltree	1
June 21	Michigan	Oakland	1
August 15	Minnesota	Ottertail	1
November 15	Louisiana	DeSota	1
	Texas	Burleson	2
	Texas	Madison	3
	Texas	Anderson	1
	Texas	Smith	4
December 14	Arkansas	Crittenden	6
			<u>59</u>

TABLE II. NEW MONTHLY RECORDS (SINCE 1953)

<u>MONTH</u>	<u>STATE</u>	<u>NEW RECORD</u>	<u>PREVIOUS RECORD (YEAR)</u>
May	Nevada	5	2 (1964)
July	Iowa	14	12 (1978)
	New Jersey	8	2 (1975)
	New York	4	3 (1969)
	South Dakota	19	18 (1968)
	United States	163	143 (1978)
November	Louisiana	14	12 (1957)
	Mississippi	18	13 (1973)
	Texas	16	11 (1968)

TABLE III. STATE-TO-STATE BORDER CROSSINGS

<u>DATE</u>	<u>STATE</u>		<u>STATE</u>
July 7	South Dakota	into	Iowa
November 15	Texas	into	Louisiana
December 14	Arkansas	into	Tennessee

A monstrous tornado developed on February 28 at 9:05 a.m., two miles (3.2 km) south of Moselle, Mississippi; it rapidly intensified as it moved northeast at 60 mph (96.5 km/h). The tornado struck the community of Glade about three miles (4.8 km) southeast of Laurel, Mississippi; at this point, it had grown to be nearly two miles (3.2 km) wide and was inflicting damage (F-4 on the Fujita scale). Some homes were swept off their foundations, mobile homes were dismantled and tossed into trees, and the Glade Elementary School was destroyed. Six people were killed in the Glade community. Four of the deaths occurred in mobile homes; one death occurred when the victim was attempting to escape the wrath of the storm in a vehicle which was slammed against a tree. The sixth person to perish from the storm was a man who was attempting to notify an elderly lady of the approaching tornado; the tornado toppled trees on top of him, which crushed him to death. The tornado continued moving northeast into the Powers community located four miles (6.4 km) east of Laurel, and destroyed a 67,500-square-foot warehouse. Loaded 18-wheeler trucks were tossed around like toys. Also the tornado inflicted \$3.5 million damage to the Northeast Jones High School. The twister moved out of Jones County into extreme northwest Wayne County and then into extreme southwest Clarke County, and then dissipated about eight miles (12.9 km) west of Shubuta, Mississippi. The total estimate of storm damage was \$28.5 million.

On Saint Patrick's Day, March 17, at 5:20 a.m., a tornado and downburst winds destroyed a home five miles (8 km) east of Slocum, Texas. A woman was killed, and her husband and two children were injured when their manufactured home collapsed upon them. The winds also blew in windows of a nearby house, destroyed a barn, and downed numerous trees and power lines.

At Mount Dora, Florida, on April 15 at 10:15 a.m., a tornado destroyed 40 mobile homes, 12 houses, and 18 businesses. One elderly woman was killed in a mobile home, and seven people were injured.

On May 21 at 11:45 a.m., a tornado touched down one mile (1.6 km) northeast of Double Springs, Alabama, and moved one-fourth mile (.4 km) northeast. The tornado destroyed a construction site and a car; a 62-year-old man died in the storm while visiting the construction site. Before dissipating, the twister caused minor roof damage to a nearby school building.

A violent multiple-vortex tornado destroyed the community of Saragosa, Texas, on May 22 at 7:10 p.m. The tornado essentially wiped the community off the map, killing 30 people and injuring an additional 121 people. More than 85 percent of the structures in town were destroyed. Initially the tornado touched down two miles (3.2 km) southwest of Saragosa and then moved through farmland, destroying a farmhouse and several outlying buildings. As the storm entered Saragosa, it rapidly became a large multiple-vortex tornado which enveloped almost all of the residential and business districts of the town, and inflicted F-3 and F-4 damage. Twenty-two people were killed in Guadelope Hall while watching a graduation ceremony for Head Start children. Most of those who died were parents and grandparents of the children; none of the Head Start children died. Four additional fatalities occurred in a mobile home, and three were killed in a frame house. Another person died attempting to outrun the tornado in an automobile.

On June 11 at 5:20 p.m., a tornado destroyed a mobile home one mile (1.6 km) northwest of Perryton, Texas; debris was scattered in a narrow path one-half mile (.8 km) from the original location. Four members of the mobile home family were injured and an 18-month-old girl was killed.

On June 21 at 2:45 p.m., a funnel touched down in the central part of the Chateau Estates, a mobile home park located in Novi, Michigan. A man was killed and two persons injured when a mobile home they were in was lifted over the top of an adjacent unit and dropped, and the adjacent unit was then lifted and dropped on top of the victims' mobile home. A total number of 57 mobile homes were destroyed, and 170 were damaged. Total damage was estimated at \$1.7 million; 138 people were left homeless.

At 3:05 p.m. on July 11, a tornado touched down one mile (1.6 km) south of Vulcan, Michigan. The tornado had a continuous path length of 84 miles (135.1 km), mostly through wilderness to Cooks, Michigan. Although several homes and numerous outbuildings were either damaged or destroyed, no one was killed or injured. This tornado has the recognition of having the undisputed longest uninterrupted path for the 1987 tornado season.

A tornado touched down in a housing development in Maple Grove, Minnesota, on July 23 at 5:47 p.m., and moved east into Brooklyn Park before dissipating. The greatest intensity of the storm was near the beginning of its path in Maple Grove, where 14 homes were destroyed and 298 homes damaged. The tornado moved on and destroyed four barns and ten homes in the Brooklyn Park area. Damages were estimated to be in excess of \$5 million. No injuries or casualties were reported.

A waterspout was observed crossing Lake Eagle, located 20 miles (32.2 km) southeast of Fergus Falls, Minnesota, on August 15 at 6:23 p.m. The waterspout touched land along the north shore of Eagle Lake and left a half mile (.8 km) of destruction along the shoreline. Nine cabins received major structural damage. One man was killed from falling debris; his lake home was lifted and deposited 15 feet (4.6 m) from the original site. Eight other people were hospitalized with severe injuries.

Nineteen tornadoes were reported in September for the entire country; they were all classified as weak tornadoes.

Only one tornado was recorded in the nation during October; on October 11 at 9:15 p.m., prior to the passage of Hurricane Floyd, a waterspout moved on shore at Rock Harbor Estates in Key Largo, Florida. It caused damage to several boats, mobile homes, power lines, and minor damage to a few homes.

On November 15 at 12:15 p.m., a tornado touched down three miles (4.8 km) north of Caldwell, Texas, and moved northeast for ten miles (16.1 km) to the extreme southeast part of Milom County. The tornado was in rural areas most of the time, but dozens of homes and mobile homes were destroyed. Two occupants of a mobile home were killed; there were ten people treated for injuries at a local hospital.

A tornado touched down two miles (3.2 km) east of George, Texas, and moved northeast to three miles (4.8 km) east of Leona, Texas, at 2:00 p.m. on November 15. It hit a mobile home just northeast of Normangee, Texas, and killed three people. Eleven sheep and six horses were killed also. The following property was either destroyed or damaged: one mobile home, 25 houses, 38 barns, and 15 vehicles.

On November 15 at 3:03 p.m., a tornado touched down ten-and-one-half miles (16.9 km) southwest of Palestine, Texas, struck a mobile home, and killed one man. The tornado moved into the Lakeview Conference Center where the last of 600 campers had departed just 20 minutes prior to the arrival of the tornado. The twister moved into the southwest part of Palestine to just west of the downtown area before dissipating. In addition to the one fatality, 59 people were injured in Anderson County. Eighty-six Palestine businesses were damaged; nearly 200 residences were damaged. One school was destroyed and another was severely damaged. Damage was estimated to be in excess of \$19 million.

At 3:45 p.m. on November 15, a supercell thunderstorm produced a tornado nine miles (14.5 km) southwest of Jacksonville, Texas. The tornado traveled northeast for 21.5 miles (34.6 km) in Cherokee County, and 12 miles (19.3 km) in Smith County before dissipating eight-and-one-half miles (13.7 km) east-southeast of Tyler, Texas. A two-month-old boy was killed in a mobile home just west of Jacksonville. In Mixon, a 77-year-old woman was killed in a mobile home. A 69-year-old woman and her 45-year-old daughter were killed in Whitehouse, Texas; they were in a tied-down mobile home. Property destroyed or damaged included: 41 mobile homes, 73 residences, three businesses, and 3,200 acres of pine timber. Damages were estimated to be in excess of \$14 million.

A tornado developed on November 15 at 6:30 p.m., five miles (8 km) north of Center, Texas. The twister was on the ground for 16.5 miles (26.5 km) in Texas, and entered Louisiana five miles (8 km) northwest of Longstreet, Louisiana. It was on the ground for an additional 33 miles (53.1 km) in Louisiana prior to terminating in Shreveport, Louisiana. In Texas, 20 people were injured. Property damaged or destroyed in Texas included: 47 houses, 28 mobile homes, and 56 outbuildings. Nearly 34,000 chickens were killed. In Louisiana, one person was killed and 96 people were injured; 14 houses and 51 mobile homes were destroyed. In DeSota Parrish, a 9,700-pound tractor with a front-end loader was lifted and carried 1,980 feet (604 m) before being deposited in a heavily forested area!

A very strong tornado touched down on December 14 at 9:40 p.m., four miles (6.4 km) southwest of West Memphis, Arkansas. It then moved northeast and traveled 12 miles (19.3 km) in Arkansas before crossing the Mississippi River into Tennessee. It dissipated on the outskirts of Millington, Tennessee. In Arkansas, the tornado destroyed or damaged 235 homes and 35 businesses, and left 1,500 people homeless in West Memphis; six people lost their lives in the disaster and 200 people were injured. In Tennessee, 21 people were injured and 29 people were left homeless; 30 homes were destroyed and 163 homes were damaged.

Additional information is presented in the following tables and charts. Continuing efforts in data collection and validation 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 previously issued tables.

More detailed information concerning tornado activity can be obtained from the monthly Storm Data publications. The National Severe Storms Forecast Center has generated a magnetic tape which contains tornado statistics for the period 1950-1987. 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, 1987

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA													
NUMBER					1	5		1					7
DAYS					1	3		1					5
DEATHS					1								1
INJURIES													0
ARIZONA													
NUMBER								1	2				3
DAYS								1	1				2
DEATHS													0
INJURIES													0
ARKANSAS													
NUMBER				1								1	2
DAYS				1								1	2
DEATHS												6	6
INJURIES												200	200
CALIFORNIA													
NUMBER			1	1		1	1						4
DAYS			1	1		1	1						4
DEATHS													0
INJURIES													0
COLORADO													
NUMBER					2	23	14	1					40
DAYS					2	8	5	1					16
DEATHS													0
INJURIES													0
FLORIDA													
NUMBER	5		3	4	5	9	7	6	2	1	1	2	45
DAYS	2		2	2	5	7	5	5	2	1	1	1	33
DEATHS				1									1
INJURIES	1			7		1		6	3				18
GEORGIA													
NUMBER							2						2
DAYS							2						2
DEATHS													0
INJURIES													0
IDAHO													
NUMBER				1		3	2	1					7
DAYS				1		3	2	1					6
DEATHS													0
INJURIES						3							3
ILLINOIS													
NUMBER				5	1	10	4	2					22
DAYS				3	1	3	4	2					13
DEATHS													0
INJURIES				2									2
INDIANA													
NUMBER				3	3	4	6						16
DAYS				2	1	3	3						9
DEATHS													0
INJURIES							3						3
IOWA													
NUMBER				3	13	3	14	4					37
DAYS				1	7	3	7	3					21
DEATHS													0
INJURIES													0
KANSAS													
NUMBER			1		6	8	8						23
DAYS			1		3	5	3						12
DEATHS													0
INJURIES							2						2
KENTUCKY													
NUMBER						3	2	2					7
DAYS						3	1	2					6
DEATHS													0
INJURIES													0
LOUISIANA													
NUMBER		6	1		1		2				14	1	25
DAYS		2	1		1		2				2	1	9
DEATHS													1
INJURIES		9									100		109

TORNADO SUMMARY BY STATE AND NATION, 1987

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
MICHIGAN													
NUMBER				1	1	6	12	2	1				23
DAYS				1	1	3	6	1	1				13
DEATHS						1							1
INJURIES					8	6	3						17
MINNESOTA													
NUMBER					4	1	13	2	1				21
DAYS					3	1	9	1	1				15
DEATHS								1					1
INJURIES								8					8
MISSISSIPPI													
NUMBER		9	11			1					18	3	42
DAYS		2	3			1					1	2	9
DEATHS		6											6
INJURIES		354	4								7	1	366
MISSOURI													
NUMBER						2			1			3	6
DAYS						2			1			1	4
DEATHS													0
INJURIES						1							1
MONTANA													
NUMBER								1					1
DAYS								1					1
DEATHS													0
INJURIES													0
NEBRASKA													
NUMBER			3		6	8	5	4					26
DAYS			2		3	6	3	3					17
DEATHS													0
INJURIES						2							2
NEVADA													
NUMBER					5	1	1	1					8
DAYS					3	1	1	1					6
DEATHS													0
INJURIES													0
NEW JERSEY													
NUMBER							8	1					9
DAYS							5	1					6
DEATHS													0
INJURIES							3						3
NEW MEXICO													
NUMBER				1	7	3	1	2	1				15
DAYS				1	5	3	1	2	1				13
DEATHS													0
INJURIES													0
NEW YORK													
NUMBER						2	4						6
DAYS						2	3						5
DEATHS													0
INJURIES							1						1
NORTH CAROLINA													
NUMBER			1						1		2		4
DAYS			1						1		1		3
DEATHS													0
INJURIES			7										7
NORTH DAKOTA													
NUMBER						3	12	7					22
DAYS						1	1	4					6
DEATHS													0
INJURIES													0
OHIO													
NUMBER						2	3	1					6
DAYS						2	2	1					5
DEATHS													0
INJURIES													0
OKLAHOMA													
NUMBER		3	9		5		1		1		4		23
DAYS		1	2		5		1		1		1		11
DEATHS													0
INJURIES		1	6								1		8

TORNADO SUMMARY BY STATE AND NATION, 1987

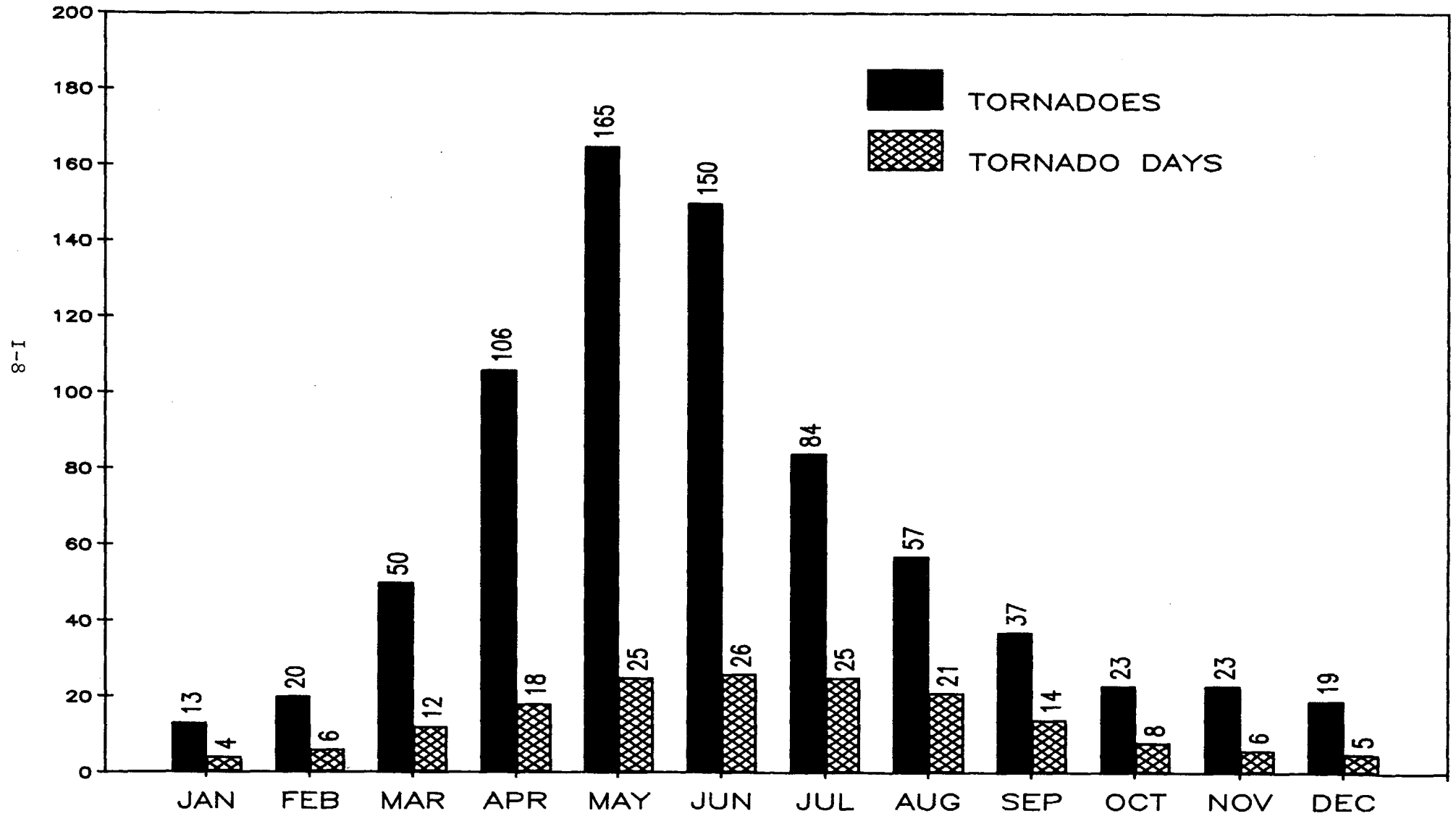
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
PENNSYLVANIA													
NUMBER						4		2					6
DAYS						2		1					3
DEATHS													0
INJURIES						1							1
SOUTH CAROLINA													
NUMBER								1			1		2
DAYS								1			1		2
DEATHS													0
INJURIES								2					2
SOUTH DAKOTA													
NUMBER					4	1	19	9					33
DAYS					3	1	5	3					12
DEATHS													0
INJURIES													0
TENNESSEE													
NUMBER												1	1
DAYS												1	1
DEATHS													0
INJURIES												21	21
TEXAS													
NUMBER	1	1	7		54	21	11	3	8		16	4	126
DAYS	1	1	3		12	9	5	3	3		2	1	40
DEATHS			1		30	1					10		42
INJURIES			3		124	4	12				195		338
UTAH													
NUMBER					1			2					3
DAYS					1			1					2
DEATHS													0
INJURIES													0
VERMONT													
NUMBER					1								1
DAYS					1								1
DEATHS													0
INJURIES													0
VIRGINIA													
NUMBER			1				3						4
DAYS			1				3						4
DEATHS													0
INJURIES													0
WASHINGTON													
NUMBER					1			1					2
DAYS					1			1					2
DEATHS													0
INJURIES													0
WISCONSIN													
NUMBER					1	2	7	5	1				16
DAYS					1	2	6	2	1				11
DEATHS													0
INJURIES								1					1
WYOMING													
NUMBER					4	6	2	1					13
DAYS					3	4	1	1					9
DEATHS													0
INJURIES						1							1
UNITED STATES													
NUMBER	6	19	38	20	126	132	163*	63	19	1	55*	14*	656*
DAYS &	3	4	11	8	25	29	28	24	10	1	5	3	151
DEATHS	0	6	1	1	31	2	0	1	0	0	11	6	59
INJURIES	1	364	20	9	132	19	24	17	3	0	299	222	1114

* CORRECTED FOR BOUNDARY-CROSSING TORNAOOES.
& TORNAOO DAYS FOR COUNTRY AS A WHOLE.

NATIONAL SUMMARY OF TORNAOES, TORNAO DAYS, AND DEATHS BY MONTH AND ANNUAL, 1953-87

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	6	4	0	12	6	0	21	8	49	421	136	515
1954	2	1	0	17	9	0	63	13	10	112	22	3	101	22	9	107	26	5	45	23	0	49	21	1	10	3	0	14	8	0	2	2	0	17	3	1	550	160	36
1955	3	2	0	4	3	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	1	3	0	593	152	126	
1956	2	2	0	47	12	8	31	7	1	85	15	57	79	24	4	65	21	0	91	26	1	43	20	2	16	10	0	29	8	0	7	6	0	9	4	0	504	155	83
1957	17	3	13	3	3	0	38	7	1	216	21	29	227	26	87	147	25	14	55	19	0	20	14	0	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	21	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	1	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	1	13	0	18	10	1	25	6	0	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	4	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	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	13	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	1	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	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	1	100	30	1	50	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	38	18	1	35	15	3	11	5	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	82	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	21	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	47	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	2	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
1987	6	3	0	19	4	6	38	11	1	20	8	1	126	25	31	132	29	2	163	28	0	63	24	1	19	10	0	1	1	0	55	5	11	14	3	6	656	151	59
POR	459	151	93	712	197	203	1747	422	290	3712	616	1156	5765	865	801	5235	922	479	2942	885	46	1991	738	65	1311	490	63	806	270	66	794	214	64	656	173	114	26130	5943	3440
MEAN	13	4	3	20	6	6	50	12	8	106	18	33	165	25	23	150	26	14	84	25	1	57	21	2	37	14	2	23	8	2	23	6	2	19	5	3	747	170	98

**AVERAGE NUMBER OF TORNADOES AND TORNADO DAYS
EACH MONTH IN THE UNITED STATES**
(BASED ON 26,130 TORNADOES THAT OCCURRED FROM 1953-1987)



TORNADOES, TORNADO DAYS, AND DEATHS BY STATE AND NATION, 1953-87

STATE	TORNADOES							DAYS		DEATHS		
	TOTAL	AVERAGE	GREATEST	YEAR	LEAST	YEAR	PER # 10,000 SQ. MI.	TOTAL	AVERAGE	TOTAL	AVERAGE	PER # 10,000 SQ. MI.
ALABAMA	749	21	45	1983+	5	1956	4.15	394	11	216	6	42
ALASKA	1	0	1	1959	0	1987+	.00	1	0	0	0	0
ARIZONA	121	3	17	1972	0	1965	.30	97	3	3	0	0
ARKANSAS	713	20	78	1982	2	1987+	3.84	323	9	157	4	30
CALIFORNIA	138	4	14	1982	0	1968+	.25	104	3	0	0	0
COLORADO	702	20	58	1982	1	1959	1.92	426	12	2	0	0
CONNECTICUT	46	1	8	1973	0	1987+	2.62	42	1	4	0	8
DELAWARE	30	1	5	1975	0	1987+	4.17	27	1	2	0	10
DISTRICT OF COLUMBIA	0	0	0		0		.00	0	0	0	0	0
FLORIDA	1533	44	97	1975	10	1956	7.48	979	28	62	2	11
GEORGIA	701	20	46	1974+	2	1987	3.40	395	11	72	2	12
HAWAII	24	1	4	1971	0	1987+	1.07	20	1	0	0	0
IDAHO	66	2	10	1986+	0	1977+	.23	55	2	0	0	0
ILLINOIS	925	26	107	1974	4	1953	4.69	432	12	147	4	26
INDIANA	705	20	48	1973	4	1984	5.55	345	10	206	6	57
IOWA	1027	29	61	1984	7	1956	5.21	465	13	60	2	11
KANSAS	1477	42	97	1955	14	1976	5.13	692	20	168	5	20
KENTUCKY	282	8	34	1974	0	1953	1.99	166	5	101	3	25
LOUISIANA	760	22	64	1983	3	1955	4.48	459	13	94	3	19
MAINE	74	2	11	1971	0	1987+	.64	65	2	1	0	0
MARYLAND	88	3	10	1975	0	1987+	2.38	68	2	2	0	2
MASSACHUSETTS	117	3	12	1958	0	1987+	4.05	86	2	99	3	120
MICHIGAN	569	16	39	1974	2	1959	2.79	330	9	235	7	40
MINNESOTA	636	18	34	1968	5	1972	2.16	361	10	77	2	9
MISSISSIPPI	772	22	44	1973	1	1979	4.62	395	11	341	10	71
MISSOURI	966	28	79	1973	6	1987+	3.96	426	12	132	4	19
MONTANA	136	4	13	1971	0	1974+	.26	104	3	1	0	0
NEBRASKA	1235	35	78	1975	10	1966	4.57	603	17	49	1	6
NEVADA	31	1	8	1987	0	1985+	.08	28	1	0	0	0
NEW HAMPSHIRE	67	2	9	1963	0	1987+	2.06	58	2	0	0	0
NEW JERSEY	61	2	9	1987	0	1984+	2.22	50	0	0	0	0
NEW MEXICO	273	8	18	1972	0	1953	.64	213	6	3	0	0
NEW YORK	143	4	9	1986	0	1953	.82	112	3	6	0	1
NORTH CAROLINA	418	12	38	1973	2	1970	2.27	260	7	70	2	13
NORTH DAKOTA	629	18	52	1976	2	1961	2.54	344	10	21	1	3
OHIO	497	14	43	1973	2	1984	3.44	257	7	170	5	41
OKLAHOMA	1902	54	107	1957	21	1978	7.77	778	22	199	6	28
OREGON	31	1	4	1984	0	1987+	.09	27	1	0	0	0
PACIFIC ISLANDS	2	0	1	1981+	0	1987+	-	2	0	0	0	0
PENNSYLVANIA	308	9	33	1985+	0	1959	1.92	200	6	73	2	16
PUERTO RICO	9	0	2	1979	0	1987+	.75	8	0	0	0	0
RHODE ISLAND	5	0	3	1986	0	1987+	1.18	4	0	0	0	0
SOUTH CAROLINA	315	9	23	1973	1	1986+	2.90	210	6	39	1	13
SOUTH DAKOTA	915	26	64	1965	1	1958	3.39	430	12	8	0	1
TENNESSEE	386	11	44	1974	1	1987+	2.61	209	6	75	2	18
TEXAS	4350	124	232	1967	32	1953	4.65	1704	49	444	13	17
UTAH	49	1	6	1984	0	1985+	.16	40	1	0	0	0
VERMONT	28	1	5	1962	0	1985+	.83	25	1	0	0	0
VIRGINIA	197	6	22	1975	1	1982+	1.38	133	4	16	0	4
VIRGIN ISLANDS	2	0	1	1979+	0	1987+	-	2	0	0	0	0
WASHINGTON	48	1	4	1983+	0	1977+	.20	41	1	6	0	1
WEST VIRGINIA	68	2	6	1980+	0	1987+	.80	53	2	2	0	1
WISCONSIN	662	19	43	1980	3	1953	3.37	357	10	75	2	13
WYOMING	326	9	42	1977	0	1970	.95	223	6	2	0	0
TOTAL: UNITED STATES	26130*	746	1102	1973	421	1953	2.06	5937&	170	3440	98	10

+ 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, 1916-87

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	121	38	51	101	7	21	9	0
1918	81	45	136	36	7	20	5	0
1919	64	35	206	59	7	10	5	0
1920	87	50	499	7	7	14	0	0
1921	105	55	202	51	7	22	3	0
1922	108	64	135	16	7	7	5	0
1923	102	59	110	23	6	11	1	0
1924	130	57	376	55	7	6	1	1
1925	119	65	794	68	7	34	2	1
1926	111	57	144	23	6	28	0	0
1927	163	62	540	92	7	42	9	1
1928	203	79	95	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	23	1	0
1933	258	96	362	34	7	46	3	0
1934	147	77	47	6	6	10	3	0
1935	180	77	71	11	6	29	0	0
1936	151	71	552	216	7	17	5	1
1937	147	75	29	5	6	24	0	0
1938	213	76	183	32	7	29	6	0
1939	152	75	91	27	7	11	3	0
1940	124	62	65	18	7	13	2	0
1941	118	57	33	25	6	24	2	0
1942	167	66	384	65	7	42	10	0
1943	152	61	58	5	7	28	9	0
1944	169	68	275	10	7	40	1	0
1945	121	66	210	69	7	11	10	1
1946	106	65	78	15	7	29	7	0
1947	165	78	313	69	7	44	7	0
1948	183	68	139	33	7	22	11	0
1949	249	80	211	58	7	44	3	0
1950	200	88	70	18	7	44	9	0
1951	262	113	34	7	7	35	11	0
1952	240	98	229	57	7	35	9	0
1953	421	136	52	11	7	33	4	0
1954	550	160	36	6	8	44	4	1
1955	593	192	126	80	7	44	4	1
1956	504	155	83	25	7	83	4	1
1957	556	194	22	4	8	99	6	3
1958	598	166	66	2	7	70	1	1
1959	604	156	88	1	7	70	4	1
1960	616	172	46	4	7	70	1	1
1961	697	169	51	1	7	71	1	1
1962	657	182	8	7	7	71	1	1
1963	464	141	38	7	7	77	1	0
1964	704	151	71	7	7	77	1	5
1965	906	181	299	44	8	89	0	1
1966	585	150	98	58	8	79	1	4
1967	926	173	114	23	8	85	3	8
1968	600	171	131	44	8	83	3	8
1969	608	155	66	6	8	83	3	8
1970	653	171	72	8	8	77	4	8
1971	888	192	156	8	8	71	4	8
1972	741	194	27	7	8	100	8	8
1973	1102	206	87	7	9	199	1	1
1974	947	184	361	34	9	166	1	2
1975	920	204	60	9	9	89	1	11
1976	835	169	44	5	8	145	4	5
1977	852	189	43	2	8	173	4	6
1978	788	173	53	16	8	153	6	6
1979	852	186	84	4	8	159	7	1
1980	866	176	28	5	8	201	9	1
1981	783	175	24	5	8	144	4	1
1982	1046	182	64	10	8	254	7	1
1983	931	190	34	3	8	111	5	1
1984	907	166	22	16	8	193	5	1
1985	684	168	94	18	9	114	5	1
1986	764	168	15	3	8	157	6	9
1987	656	151	59	30	8	112	3	6
MEAN	747	170	98	-	-	124	37	7

NOTE: - THE ABOVE ESTIMATED LOSSES ARE BASED ON VALUES AT TIME OF OCCURRENCE.
MEAN WAS DERIVED FROM DATA FOR PERIOD 1953-1987.

\$ 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, 1987

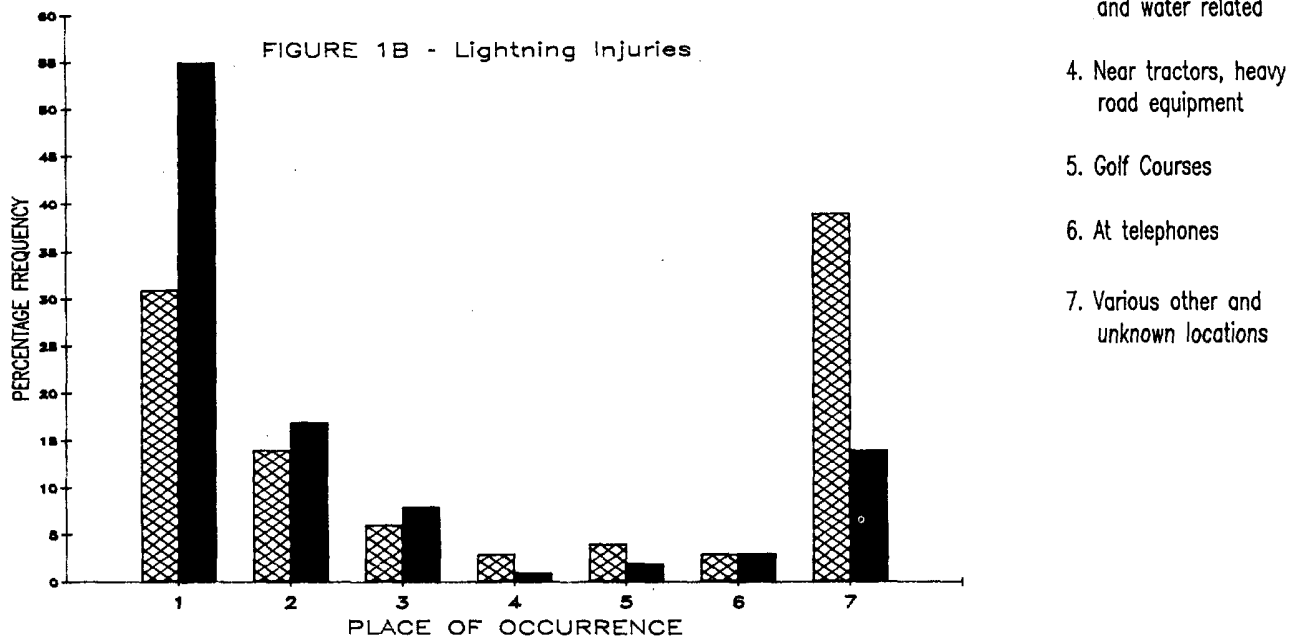
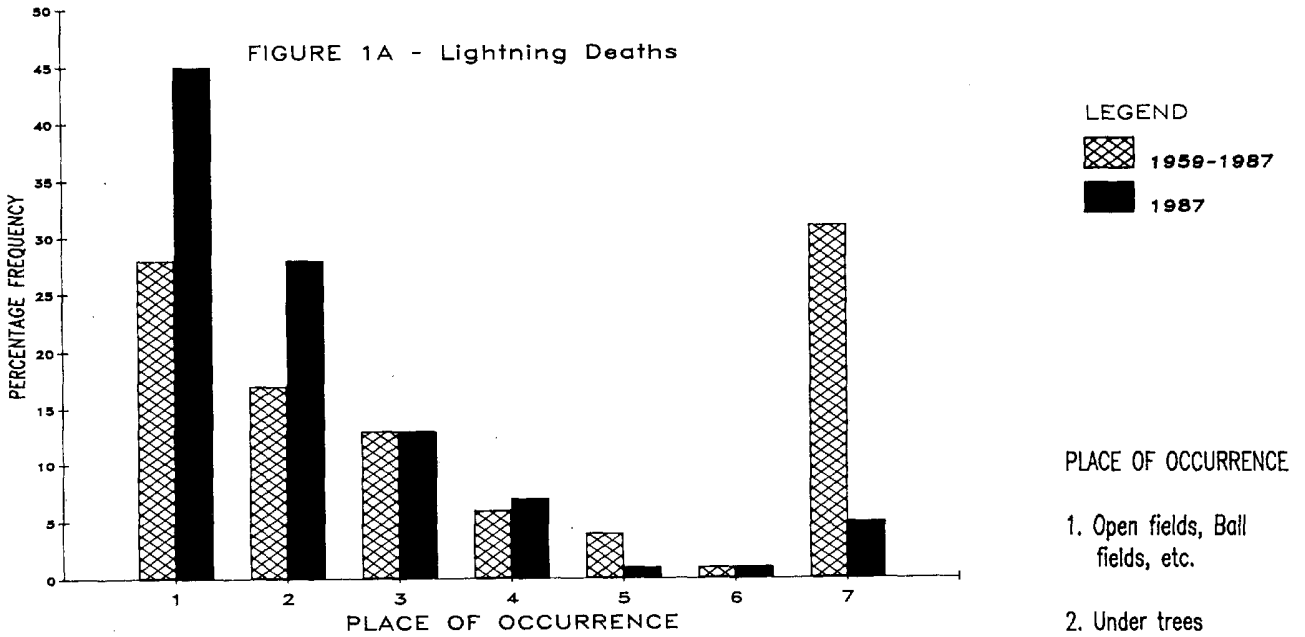
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA									1				1
ALASKA						1		1					2
ARIZONA		3		1	4			2		1	3		14
ARKANSAS					1	2		1					4
CALIFORNIA		3	3		1						5		12
COLORADO													0
CONNECTICUT													0
DELAWARE													0
DISTRICT OF COLUMBIA													0
FLORIDA	3				1								4
GEORGIA					1	3							4
HAWAII													0
IDAHO					5	3	4				1		13
ILLINOIS					4	21	3						28
INDIANA							1						1
IOWA				1	13	5	15	5	1				40
KANSAS			6		22	11	3	2					44
KENTUCKY					10	6	15	1					32
LOUISIANA			1	5	6	6	3	4	4				29
MAINE													0
MARYLAND													0
MASSACHUSETTS													0
MICHIGAN					1	3	19	4					27
MINNESOTA					5	6	32	11					54
MISSISSIPPI			3		1	1	1				3		9
MISSOURI													0
MONTANA													0
NEBRASKA					9	3	2		1				15
NEVADA				1	3	3		1		1			9
NEW HAMPSHIRE													0
NEW JERSEY							1						1
NEW MEXICO					10	5		13	3				31
NEW YORK					1	3		2	1		3		0
NORTH CAROLINA					1		6	9					10
NORTH DAKOTA					1								16
OHIO													0
OKLAHOMA													0
OREGON						1							1
PACIFIC ISLANDS													0
PENNSYLVANIA						4	2		1				7
PUERTO RICO													0
RHODE ISLAND						1							1
SOUTH CAROLINA													0
SOUTH DAKOTA					7	3	11	1	1				23
TENNESSEE													0
TEXAS		1	4	3	22	10	6	2	7				55
UTAH								4					4
VERMONT													0
VIRGINIA						2							2
VIRGIN ISLANDS													0
WASHINGTON					1	4							5
WEST VIRGINIA							1	1					2
WISCONSIN					2	2	6	12	4				26
WYOMING					7	13	1	2					23
TOTAL: UNITED STATES	3	7	17	11	138	122	132	78	24	2	15	0	549

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NATIONAL SUMMARY OF LIGHTNING, 1987

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

A marked increase in lightning fatalities was noted for 1987; the 86 fatalities were the greatest number of annual fatalities recorded since 1978, which recorded 88. A 46 percent increase of injuries was noted for 1987; this was caused by single lightning strikes which caused numerous injuries. There were nine lightning incidents that accounted for 30 percent of the 1987 lightning injuries. The following two figures depict the location and percentage frequency of lightning fatalities and injuries for 1987, and for the period 1959-1987:



The most significant feature of the figures is reflected in the 1987 statistics; there has been a concentrated effort by the field personnel to determine the location of the lightning incidents reported.

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

JANUARY -- No reported incidents.

FEBRUARY -- In Talladega, Alabama, a bolt of lightning shattered sections of a four-inch (10.2 cm) concrete driveway, damaged the electrical wiring of a nearby house, and ignited a fire that destroyed an outbuilding. Lightning destroyed a storage shed and contents (which included a pickup truck, a camper, and a bass boat) in Camden, Arkansas.

MARCH -- Lightning struck the steeple of the Church of God in Russell Springs, Kentucky; charred a portion of the roof and entered the interior of the sanctuary by the electrical wiring, which caused the ceiling tiles to fall to the floor; the pews and carpet in the rear of the church were blanketed with insulation. The back wall buckled under the force of the lightning strike and the other walls were cracked. Ninety (90) people had left the church 20 minutes prior to the lightning strike. In Marshall, Missouri, a man and his one-year-old daughter were struck by lightning while passing a tree on the way to their truck; the man received first-degree burns on one side of his face and serious damage to his eye, and the baby was in a state of shock. The Weather Service Office in Winnemucca, Nevada, was struck by lightning which caused a considerable amount of damage.

APRIL -- Lightning from an early morning thunderstorm struck the National Weather Service Office in Ely, Nevada; the communications equipment and the Automatic Radio Theodolite System were rendered inoperative. At the Memphis International Airport, two men were struck and injured by lightning while working on an aircraft. A couple of hours later, a man in southeast Memphis was struck by lightning while pumping gas. In Bexar County, Texas, lightning struck near three men standing on a dock located on Lake Coloveras; one man was seriously injured, the other two were treated for minor injuries and released at the scene. In San Juan County, Utah, two volunteer students at Canyonlands National Park were killed when lightning struck a tree under which they sought refuge from a thunderstorm.

MAY -- In Mobile, Alabama, two city park employees were seriously injured by lightning at a construction site; the men were standing on a freshly-scraped field. In Marion County, Arkansas, a newlywed couple was struck by lightning while fishing on Bull Shoals Lake; the man was killed and his wife was injured. On a golf course in Broward County, Florida, two men were killed by lightning while standing under a tree; two other people, who did not seek shelter under the tree, were uninjured. On a golf course near Olney, Illinois, two golfers sought shelter under a tree on a hilltop; they were severely burned when lightning struck the tree. In DuPage County, Illinois, lightning struck a tree under which two golfers had taken refuge; one was killed, and the other received minor burns. At a strip mine near Providence, Kentucky, a coal truck with tires seven feet (2.1 m) in diameter was struck by lightning while being moved to higher ground during a thunderstorm; the driver stated that, while he was driving uphill, a flash of lightning and a sound "like a shotgun" had gone off inside the cab of the truck. The six-wheel, 117,000 pound truck "felt like it was picked up and set down, and it shook all over"; one of the steel-belted tires was blown from the rim and landed 30 feet (9.1 m) from the truck, another tire was turned inside out, and a third tire went flat which left only one of the rear tires intact. The two front tires were not damaged. When smoke began bellowing from the side of the vehicle, the driver cut the ignition and set the brakes. Then lightning strikes again!! A second lightning strike shattered the windshield and blew out the rear window. Miraculously the driver was not injured, and damage to the truck was estimated at \$13,000. Lightning struck three prison inmates on the grounds of a correctional institution in Hagerstown, Maryland; one man was killed and the other two were injured. In Baltimore, Maryland (Leaken Park), lightning struck a chapel where a church festival was being held; 13 people were injured, one man died the following day, and the chapel was destroyed. Lightning struck three members of a family who took shelter under a tree in Prospect Park, Brooklyn, New York; the mother was critically injured, and her husband and son received minor injuries. On a golf course near Chattanooga, Tennessee, lightning struck and killed a male golfer; the victim was carrying a golf club over his shoulder when lightning struck him. Three miles (4.8 km) west of Lake Delton, Wisconsin, a woman was knocked unconscious by a lightning-induced electrical surge through the telephone lines; at the time she was talking over the telephone.

JUNE -- At Fort Benning, Georgia, lightning struck a tree and injured ten soldiers standing nearby. In south Augusta, Georgia, lightning struck at a construction site killing one worker and injuring three others. One person was killed and two others were injured by lightning in Massac County, Illinois; the three people had sought shelter under a tree. Near Mayfield, Kentucky, lightning struck a television antenna tower, which sent an electrical charge through the antenna wire into the room and knocked a hole through the side of the house. The charge ripped away portions of the outside siding, cracked a nearby storm window, and knocked plaster down from the living room wall. Electrical switches and receptacles in the living room and adjoining rooms were split in half; the control box for the television rotor was shattered into small pieces and scattered about the room. Lightning struck a natural gas transfer station in Germantown, Maryland, destroying the building and creating a spectacular fire. In extreme northwest Kandiyahi County, Minnesota, a man on a tractor was killed by lightning while bailing hay. On a beach near Biloxi, Mississippi, a couple was struck by lightning. Two Air Force sergeants witnessed the event; when they reached the couple, the man was conscious, but his wife was not breathing. One of the sergeants began cardiopulmonary resuscitation (CPR) to restore her breathing. In the meantime, the other sergeant contacted the police and requested emergency medical assistance. The lady survived the ordeal, and the two sergeants were credited with saving her life. Three men were struck by lightning while working on a construction site 25 miles (40.2 km) south of Las Vegas, New Mexico; one man was burned on his legs, another man 70 feet (21.3 m) away was knocked down and injured, the third man was killed. A man riding a motorcycle was

killed by lightning 25 miles (40.2 km) northwest of Deming, New Mexico. A man was killed and three others were injured by lightning at a construction site in Weaverville, North Carolina; they were standing under a tree waiting for the storm to subside. Lightning struck at a ball field in Coalgate, Oklahoma, killing one boy and injuring two others. A holding tank at the Hess oil terminal near Charleston, South Carolina, was struck by lightning; the resulting fire burned 2.5 million gallons of unleaded gasoline. In Sterling County, Texas, lightning struck a fiberglass tank containing oil and caused it to ignite; the fire ignited five additional tanks, with total damage estimated at \$250,000. Lightning hit two cranes at the Norfolk, Virginia, International Airport; damage was estimated at \$750,000. A man was injured when lightning struck the line of the telephone he was using at his store located in Junior, West Virginia.

JULY -- In Oppelo, Arkansas, lightning struck a tree near a home; the charge jumped to the home and started a fire. The lady inside the house was injured by the charge which required her to be hospitalized with a punctured eardrum, burns around her wrist and on her arm and leg; the house sustained major damage. In Robles Junction, Arizona, a ham radio operator was electrocuted while operating his radio; lightning struck an antenna tower located in the yard. A group of soccer players was hit by lightning on a soccer field in Boulder, Colorado; a ten-year-old boy was critically injured and required hospitalization, fortunately, he recovered. Six other people were knocked to the ground; two boys and a man were slightly injured. In Pasco County, Florida, a man was killed by lightning while standing on a boat ramp. A woman working in her garden near Hillard, Florida, was killed by a lightning bolt. One man was killed and three others suffered minor injuries when struck by lightning at a campsite on Lake Russell, located in Habersham County, Georgia; the victims were in a tent near a tall tree. In Chicago Heights, Illinois, spectators at a baseball game were exiting the field through gates in a metal fence when lightning struck a tree. The charge then jumped to the fence; 30 people were injured. Lightning set fire to the Teagarden Building in Hartford City, Indiana, and caused damage in excess of \$300,000. In Laurel County, Kentucky, a 49-year-old woman and three children were getting off a boat and stepping onto the bank of Laurel Lake when lightning struck a nearby tree; the lightning charge ran into the ground along the bank and traveled up through their bodies. All four people suffered minor injuries and shock. At the Turnabout Camp Boat Club in Boone County, Kentucky, a father and son were sitting on a porch of a camper when lightning struck the roof, traveled down a pole, and struck the father and son. The father was knocked off his bench and momentarily lost his eyesight and hearing, and the boy was knocked unconscious with no pulse or heartbeat. Two nearby nurses were summoned and immediately applied CPR and restored the lad's heartbeat; he was transported to a local hospital in good condition. A woman received minor injuries when lightning struck the police dispatch communications center in Independence, Kentucky; she was operating the radio equipment at the time lightning struck. A man was struck and killed by lightning while working in a tobacco field four miles (6.4 km) north of Frankfort, Kentucky; lightning struck his head, exited through his leg, and ripped his pants. An 18-year-old male attendant at Shively Municipal Club House in Jefferson County, Kentucky, was knocked off his feet when electricity from a lightning strike passed through the telephone lines into the telephone he was holding; he was treated at a local hospital for shock. In Clay City, Kentucky, a man was "zapped" by lightning as it passed through the telephone lines and into the telephone he was using; the electrical current went through the right side of his body and out his foot. The shock knocked him to the floor, and he experienced numbness for a short period of time. The kitchen that he was in lit up with sparks, and holes were burned into the stove top and clothes dryer. In Port Huron, Michigan, five Coast Guardsmen standing on a seawall were struck by lightning. In Lake County, Minnesota, a father and son were killed by lightning which struck a tree 20 feet (6.1 m) from their tent; two others at the same site received minor burns. About one mile (1.6 km) east of Stacey, Minnesota, one woman was killed and another woman was knocked unconscious and hospitalized after being struck by lightning while horseback riding; also, one of the horses was killed. In Gulfport, Mississippi, two boys were standing under a tree when lightning struck the tree and knocked the boys unconscious. When paramedics arrived at the scene, neither boy was breathing and one boy's heart stopped beating. Because of quick action and the professional ability of the paramedics, both boys survived the ordeal. A man was struck by lightning while standing under a large tree in Carson City, Nevada; the bolt passed from the tree through his right arm and torso, then exited to the ground via his left leg. It burned a five-inch (12.7 cm) hole in his shirt, melted the polyester sock on his left foot, and split the sole of his shoe. He was unconscious for a few minutes and was paralyzed for about one hour; he was treated for minor burns. At the Christmas Mountain Condominiums in Bartlett, New Hampshire, a lightning bolt caused damages in excess of \$400,000. Three campers were killed while sleeping in their tents at Darien Lake in Genesee County, New York. Scorch marks indicated that lightning first hit an aluminum pole of one tent, charred its two occupants, then arced over to another tent six feet (1.8 m) away and electrocuted another person. Lightning killed two people in Davidson County, North Carolina; two brothers took refuge from the storm on an island in High Rock Lake. They were with their parents and had left their boat and were standing under a cluster of trees when lightning struck and killed them; the parents were stunned, but not injured. A teenage boy was playing golf near Thomasville, North Carolina, when he was struck and injured by lightning. In Green County, Ohio, seven people received minor injuries from a bolt of lightning; at the time of the lightning strike, they were sitting under a tree. Lightning struck and killed three golfers at Warriors Path State Golf Course just east of Kingsport, Tennessee; the trio attempted to find shelter from the storm under a tree, which was situated on a small hill. Four men were injured by lightning as they huddled under a canoe near a tree along the shoreline of the Shenandoah River in Page County, Virginia.

AUGUST -- Lightning stunned 16 National Guardsmen while on a routine night exercise at Fort McClellan, Alabama. Two lightning bolts struck the ground near the men and made contact with them through the ground; six of the men were slightly injured. While fishing from the bank of Big Lake in Apache County, Arizona, lightning struck a woman behind her left ear, killing her instantly; her husband and son were unhurt. In Foreman, Arkansas, a woman was unable to talk after being struck indirectly by lightning while talking on a telephone. Lightning

injured two golfers standing under a tree on a golf course in Colorado Springs, Colorado. Two men were struck and killed by lightning on a beach near Fort Myers Beach, Florida; two ladies with them received minor injuries. In Morgan County, Kentucky, lightning struck a barn in which three men were working tobacco; the men were standing in the doorway of the barn when lightning struck and killed one man and injured the other two men. In Ridgeland, Mississippi, a woman was talking on a telephone during a thunderstorm; lightning struck the telephone lines outside the house and the charge traveled through the lines into the receiver whereby she received minor injuries. During a ball game in Jackson, Mississippi, lightning struck a transformer and then struck three people on the playing field. One player was severely burned and remained unconscious for 24 hours before she died; a coach and one other player suffered minor burns. Just east of Silver City, New Mexico, lightning struck a high school football field near a group of football players; 18 players were treated for minor burns and released, and six other players were admitted to a local hospital with serious burns. Dry thunderstorms formed in the midafternoon of August 30 and continued through August 31 over the Siskiyou Mountains of southern Oregon and along the southern and central Cascade Mountains; well over 1,000 lightning strikes were reported, and produced over 900 lightning-induced fires. The fires consumed over 130,000 acres of forest land, and the fires continued throughout the month of September; over 9,000 fire fighters were on the lines at one time. This was the second worst fire of this century in Oregon, exceeded only by the Tellbrook Burn in 1921. In Shelby County, Tennessee, lightning ignited a blaze in a warehouse and destroyed florist supplies valued at a half-million dollars. A Collierville, Tennessee, resident was injured and knocked unconscious by a lightning-induced electrical charge as he reached for the selector switch on his television set.

SEPTEMBER -- In Flagler County, Florida, six men from a bridge construction crew were injured when lightning struck the piling platform on which they were standing. In Pensacola, Florida, a man was injured by lightning while talking on a telephone. A woman was struck and killed by lightning in Lee County, Florida, as she rode a bicycle on the Sanibel Causeway. A man was struck and injured by lightning while harvesting peanuts on a farm eight miles (12.9 km) southeast of Asheland, Mississippi. The lightning bolt first struck a nearby tree; afterward the man experienced chest pains, numbness, and sore feet. In Granite County, Montana, a man was killed by lightning while in his boat on Georgetown Lake; his two companions were slightly injured. A woman in Wolcott, New York, was knocked unconscious after lightning struck a utility pole and the surge of electricity traveled through the telephone lines into the receiver she was using; she was hospitalized. In Stokes County, North Carolina, four people were climbing a mountain and took refuge from the thunderstorm under a rock ledge; lightning struck and seriously injured the four climbers who then required hospitalization. Lightning struck and injured seven people on a soccer field in Scioto County, Ohio. A lightning bolt struck one person in the head and then exited through his foot; fortunately CPR was applied and the man survived the ordeal. Three miles (4.8 km) west of Spiro, Oklahoma, two men were killed and two others were injured when lightning struck a building while they were working on the roof.

OCTOBER -- In Fordyce, Arkansas, lightning struck a frame-making factory; the ensuing fire caused extensive damage to the structure and contents, and about \$1 million in inventory was destroyed. Lightning struck an electrical power transformer in Pueblo, Colorado, starting a fire that caused \$75,000 damage to an automobile salvage equipment business and a trailer. In Wichita, Kansas, lightning struck and killed a football coach as he walked across the football field; a boy walking beside him received minor injuries from the lightning strike. In Prince Georges County, Maryland, lightning struck three people in a parking lot; one man was killed and two ladies were uninjured.

NOVEMBER -- In Cleveland County, Arkansas, lightning struck a gymnasium roof of the Kingsland Public School, creating two large holes in the roof; the holes allowed water to run into the building which caused considerable water damage. In Palatka, Florida, lightning struck a tree which fell on an automobile and destroyed the vehicle. A man working at a water plant in Sulphur, Louisiana, was injured when lightning struck nearby and passed through the metal railing which he was leaning against.

DECEMBER -- In Genesee County, New York, lightning struck a house, and damaged the electric wiring and blew out numerous windows. Lightning accompanying a severe winter storm started fires which destroyed a house in Oregon, a church east of Darlington, and a barn near South Wayne, Wisconsin. Several radio and television antennas were also struck by lightning.

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 1959-1987. 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 1987

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA	0	0	0	0	0	2	0	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	1	1	1	0	0	0	0	2
ARKANSAS	0	0	0	0	2	0	0	1	0	0	0	0	4
CALIFORNIA	0	0	0	0	0	0	0	0	0	0	0	0	0
COLORADO	0	0	0	0	0	1	2	0	0	0	0	0	3
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	1	0	0	0	0	0	0	1
FLORIDA	0	0	0	0	2	1	3	3	2	0	0	0	11
GEORGIA	0	0	0	0	0	1	2	0	0	0	0	0	3
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	2	1	0	0	0	0	0	0	3
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	0	0	0	1	0	0	1
KENTUCKY	0	0	0	0	0	0	1	1	0	0	0	0	2
LOUISIANA	0	0	0	0	1	1	0	1	0	0	0	0	3
MAINE	0	0	0	0	0	0	0	0	0	0	0	0	0
MARYLAND	0	0	0	0	2	0	0	0	0	1	0	0	3
MASSACHUSETTS	0	0	0	0	0	0	0	0	0	0	0	0	0
MICHIGAN	0	0	0	0	0	0	0	0	0	0	0	0	0
MINNESOTA	0	0	0	0	0	1	3	0	0	0	0	0	4
MISSISSIPPI	0	0	0	0	1	1	1	1	0	0	0	0	4
MISSOURI	0	0	0	0	0	1	1	0	0	0	0	0	2
MONTANA	0	0	0	0	0	0	0	0	1	0	0	0	1
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	1	1	0	1	0	0	0	3
NEW MEXICO	0	0	0	0	0	2	0	3	0	0	0	0	5
NEW YORK	0	0	0	0	0	0	3	0	1	0	0	0	4
NORTH CAROLINA	0	0	0	0	1	1	2	0	0	0	0	0	4
NORTH DAKOTA	0	0	0	0	0	0	1	0	0	0	0	0	1
OHIO	0	0	0	0	0	0	0	0	2	0	0	0	0
OKLAHOMA	0	0	0	0	0	1	0	0	0	0	0	0	3
OREGON	0	0	0	0	0	0	0	0	0	0	0	0	0
PENNSYLVANIA	0	0	0	0	0	0	1	0	0	0	0	0	1
PUERTO RICO	0	0	0	0	0	0	0	0	0	0	0	0	0
RHODE ISLAND	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH CAROLINA	0	0	0	0	0	1	1	1	0	0	0	0	3
SOUTH DAKOTA	0	0	0	0	0	0	1	0	0	0	0	0	1
TENNESSEE	0	0	0	0	2	0	4	0	0	0	0	0	6
TEXAS	0	0	0	0	0	0	0	0	0	0	0	0	0
UTAH	0	0	0	2	0	0	0	0	0	0	0	0	2
VERMONT	0	0	0	0	0	0	0	0	0	0	0	0	0
VIRGINIA	0	0	0	0	1	0	0	1	0	0	0	0	2
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	14	18	28	15	7	2	0	0	86

TOTAL INJURIES BY STATE AND NATION FOR YEAR 1987

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA	0	0	0	0	2	1	0	6	1	0	0	0	10
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	0	0	0	0	0	0	0	0	1	0	0	0	1
ARKANSAS	0	0	0	1	3	1	4	1	1	0	0	0	11
CALIFORNIA	0	0	0	0	0	0	0	0	0	0	0	0	0
COLORADO	0	0	0	0	4	5	4	3	2	0	0	0	18
CONNECTICUT	0	0	0	0	3	0	1	0	0	0	0	0	4
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	0	0	0	1	0	5	5	11	0	0	0	22
GEORGIA	0	0	0	0	0	16	10	1	0	0	0	0	27
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	3	2	31	0	0	0	0	0	36
INDIANA	0	0	0	0	2	1	1	0	0	0	0	0	4
IOWA	0	0	0	0	0	0	2	0	0	0	0	0	2
KANSAS	0	0	0	0	0	0	1	4	0	1	0	0	6
KENTUCKY	0	0	0	0	0	2	9	8	0	0	0	0	19
LOUISIANA	0	0	0	0	0	0	0	1	0	0	1	0	2
MAINE	0	0	0	0	0	0	0	0	0	0	0	0	0
MARYLAND	0	0	0	0	14	0	0	1	0	2	0	0	17
MASSACHUSETTS	0	0	0	0	4	0	3	0	0	0	0	0	7
MICHIGAN	0	0	0	0	0	2	13	1	2	0	0	0	18
MINNESOTA	0	0	0	0	0	0	1	0	0	0	0	0	1
MISSISSIPPI	0	0	0	0	0	3	2	5	1	0	0	0	11
MISSOURI	0	0	2	0	0	0	0	0	0	0	0	0	2
MONTANA	0	0	0	0	0	0	0	0	2	0	0	0	2
NEBRASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
NEVADA	0	0	0	0	0	1	1	0	0	0	0	0	3
NEW HAMPSHIRE	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW JERSEY	0	0	0	0	2	0	0	0	0	0	0	0	2
NEW MEXICO	0	0	0	0	2	2	0	25	0	0	0	0	29
NEW YORK	0	0	0	0	4	0	7	0	1	0	0	0	12
NORTH CAROLINA	0	0	0	0	0	3	1	1	4	0	0	0	9
NORTH DAKOTA	0	0	0	0	0	0	0	0	0	0	0	0	0
OHIO	0	0	0	0	4	2	7	2	7	0	0	0	22
OKLAHOMA	0	0	0	0	2	2	1	1	2	0	0	0	8
OREGON	0	0	0	0	0	0	0	0	0	0	0	0	0
PENNSYLVANIA	0	0	0	0	0	4	6	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	0	3	0	0	0	0	0	3
SOUTH CAROLINA	0	0	0	0	0	1	1	1	1	0	0	0	4
SOUTH DAKOTA	0	0	0	0	0	0	0	0	0	0	0	0	0
TENNESSEE	0	0	0	3	2	0	2	2	0	0	0	0	9
TEXAS	0	0	0	4	0	0	0	0	7	0	0	0	11
UTAH	0	0	0	0	2	0	0	0	0	0	0	0	2
VERMONT	0	0	0	0	0	0	0	0	0	0	0	0	0
VIRGINIA	0	0	0	0	1	0	5	1	0	0	0	0	7
WASHINGTON	0	0	0	0	0	0	0	0	0	0	0	1	1
WEST VIRGINIA	0	0	0	0	0	1	0	0	0	0	0	0	1
WISCONSIN	0	0	0	0	11	0	0	1	0	0	0	0	12
WYOMING	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL: UNITED STATES	0	0	2	8	66	49	121	71	43	3	1	1	365

TOTAL DEATHS BY STATE AND NATION FOR PERIOD 1959-87

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA	0	0	2	2	4	19	26	18	1	1	0	0	73
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	0	0	0	0	2	1	17	15	11	0	0	0	46
ARKANSAS	0	0	8	0	13	30	27	20	3	0	0	0	101
CALIFORNIA	0	0	0	0	0	2	6	5	3	0	0	0	15
COLORADO	0	0	0	1	10	16	31	15	0	1	0	0	74
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	2	1	1	0	0	0	0	4
FLORIDA	0	0	4	3	23	67	76	68	34	3	1	1	280
GEORGIA	0	0	2	3	4	17	30	10	2	1	0	0	69
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	9	22	12	12	10	2	0	0	71
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	2	2	0	47
KENTUCKY	1	0	0	3	9	19	16	10	10	0	0	0	68
LOUISIANA	0	0	1	5	10	20	39	15	11	0	2	1	104
MAINE	0	0	0	0	0	3	5	6	0	3	0	0	17
MARYLAND	0	0	0	0	4	5	8	11	1	1	0	81*	111
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	9	10	12	10	1	0	0	48
MISSISSIPPI	1	0	4	2	12	11	26	19	5	0	0	0	80
MISSOURI	0	0	5	4	20	19	13	8	3	1	0	0	73
MONTANA	0	0	0	2	2	8	6	2	1	0	0	0	19
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	8	20	14	6	0	0	0	52
NEW MEXICO	0	0	0	1	3	10	21	29	4	0	0	0	68
NEW YORK	0	0	0	0	6	18	55	26	5	2	0	0	112
NORTH CAROLINA	0	1	4	3	21	31	48	34	4	0	0	0	146
NORTH DAKOTA	0	0	0	0	0	4	4	3	0	0	0	0	11
OHIO	0	0	0	3	8	22	40	15	8	2	2	0	100
OKLAHOMA	1	1	1	9	14	13	7	15	13	3	2	0	79
OREGON	0	0	0	0	2	0	0	1	2	1	0	0	6
PENNSYLVANIA	0	1	0	0	7	24	29	25	8	1	0	0	95
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	10	30	12	7	0	0	0	66
SOUTH DAKOTA	0	0	0	0	4	1	6	1	3	3	0	0	18
TENNESSEE	0	1	1	7	14	31	23	18	14	2	3	0	114
TEXAS	0	0	0	14	26	14	38	21	15	7	1	0	136
UTAH	0	0	0	3	1	5	5	6	2	1	0	0	23
VERMONT	0	0	0	0	0	4	5	4	0	0	0	0	13
VIRGINIA	0	0	0	0	10	8	9	10	3	0	0	0	40
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	85	299	588	812	591	238	48	14	84	2801

* 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 1959-87

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA	6	1	10	2	7	15	56	44	2	4	0	0	147
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	2	0	0	0	6	1	27	21	17	0	0	0	74
ARKANSAS	1	2	2	11	29	24	34	58	10	1	0	1	173
CALIFORNIA	1	0	0	4	0	0	15	7	1	1	1	1	31
COLORADO	0	0	0	0	27	49	48	46	7	0	0	0	177
CONNECTICUT	0	0	2	0	6	17	14	11	6	0	0	0	56
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	28	178	183	171	141	27	0	1	758
GEORGIA	0	0	5	2	18	59	116	32	3	5	0	0	240
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	16	39	59	32	28	1	0	0	177
INDIANA	0	0	2	4	21	32	27	22	1	0	0	0	109
IOWA	0	0	1	7	22	41	37	18	16	3	1	0	146
KANSAS	0	0	5	10	14	23	40	30	27	5	1	0	155
KENTUCKY	0	0	0	2	20	58	59	28	10	1	0	0	178
LOUISIANA	1	0	6	2	13	13	95	39	14	1	2	1	187
MAINE	0	0	0	0	3	5	25	50	0	0	1	0	84
MARYLAND	0	0	0	0	35	17	33	20	6	2	0	0	113
MASSACHUSETTS	0	0	1	11	20	39	107	73	26	4	2	1	284
MICHIGAN	0	0	1	9	37	135	116	191	32	6	0	0	527
MINNESOTA	0	0	0	0	15	17	21	18	9	4	0	0	84
MISSISSIPPI	1	2	4	3	13	13	103	39	10	2	2	1	193
MISSOURI	0	1	3	8	20	16	4	15	3	2	4	0	76
MONTANA	0	0	0	0	5	9	10	8	2	0	0	0	34
NEBRASKA	0	0	0	4	14	6	8	16	6	0	0	0	54
NEVADA	0	0	0	0	0	1	1	3	0	0	0	0	5
NEW HAMPSHIRE	0	0	0	0	2	18	30	3	2	0	0	0	55
NEW JERSEY	0	0	0	0	5	11	53	18	16	0	0	0	103
NEW MEXICO	0	0	0	1	19	14	36	48	6	0	0	0	124
NEW YORK	0	0	0	1	10	52	107	126	24	3	1	0	324
NORTH CAROLINA	0	2	27	13	39	67	100	108	23	2	1	0	382
NORTH DAKOTA	0	0	0	0	2	0	0	5	4	0	0	0	11
OHIO	0	0	32	3	54	51	57	92	49	4	11	0	353
OKLAHOMA	1	1	3	14	31	38	33	33	21	19	5	2	201
OREGON	0	0	0	0	2	2	0	9	3	0	0	0	16
PENNSYLVANIA	0	6	0	0	9	111	91	134	41	2	0	0	394
PUERTO RICO	0	0	0	0	0	0	2	0	2	1	0	0	5
RHODE ISLAND	0	2	0	0	1	10	12	12	3	0	1	0	41
SOUTH CAROLINA	0	0	0	3	20	15	91	27	20	1	0	0	177
SOUTH DAKOTA	0	0	0	1	4	18	11	9	1	2	0	0	46
TENNESSEE	0	1	4	6	30	52	98	48	20	4	0	0	263
TEXAS	0	2	5	36	43	38	37	41	30	10	2	0	244
UTAH	0	0	0	0	4	18	12	14	4	2	0	0	54
VERMONT	0	0	0	0	0	3	10	2	0	0	0	0	15
VIRGINIA	0	0	0	2	8	13	49	30	6	0	0	0	108
WASHINGTON	0	0	0	0	4	1	7	8	0	1	0	1	22
WEST VIRGINIA	0	0	0	0	0	3	23	25	1	1	0	0	53
WISCONSIN	0	1	2	3	16	26	52	23	7	2	2	0	134
WYOMING	0	0	0	0	4	32	18	21	6	0	0	0	81
TOTAL: UNITED STATES	13	23	130	177	710	1430	2183	1847	672	124	38	9	7356

NATIONAL TOTAL DEATHS BY YEAR FOR PERIOD 1959-1987

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
1987	0	0	0	2	14	18	28	15	7	2	0	0	86
TOTAL	3	4	35	85	299	588	812	591	238	48	14	84	2801
MEAN	0	0	1	3	10	20	28	20	8	2	0	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 1959-1987

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	0	0	10	15	14	38	99	53	8	1	1	0	239
1965	3	2	2	4	26	42	59	59	19	1	0	0	217
1966	0	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
1987	0	0	2	8	66	49	121	70	43	3	1	1	365
TOTAL	13	23	130	177	710	1430	2183	1846	672	124	38	9	7356
MEAN	0	1	4	6	24	49	75	64	23	4	1	0	254

LIGHTNING DEATHS BY STATE, RANK, AND LOCATION OF OCCURRENCE

1959-1987

1987

STATE	RANK	OPEN FIELDS, BALL PARKS, AND OPEN SPACES		UNDER TREES		BOATING, FISHING AND WATER RELATED		NEAR TRACTORS HEAVY ROAD EQUIPMENT		GOLF COURSES		AT TELEPHONES		VARIOUS OTHER AND UNKNOWN LOCATIONS		OPEN FIELDS, BALL PARKS, AND OPEN SPACES		UNDER TREES		BOATING, FISHING AND WATER RELATED		NEAR TRACTORS HEAVY ROAD EQUIPMENT		GOLF COURSES		AT TELEPHONES		VARIOUS OTHER AND UNKNOWN LOCATIONS	
		NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
ALABAMA	15	18	25	17	23	8	11	4	5	1	1	2	3	23	32	2	50												
ALASKA	51																												
ARIZONA	27	20	43	6	13	5	11			3	7	3	7	9	19					1	50						1	50	
ARKANSAS	8	34	34	19	19	11	11	8	8	2	2			27	26	1	25			1	25						1	25	
CALIFORNIA	40	5	31	3	15	2	13	1	6					5	31														
COLORADO	14	38	51	17	23	4	5	3	4	5	7			7	10	2	67										1	33	
CONNECTICUT	42	2	17	2	17					3	25			5	41														
DELAWARE	43	4	36			4	36	1	9					2	19														
DISTRICT OF COLUMBIA	47	1	25	2	50					1	25					1	100												
FLORIDA	1	81	29	36	13	72	26	20	7	6	2			65	23	4	36	4	36	3	28								
GEORGIA	18	20	29	17	25	10	14	1	1	4	6	2	3	15	22	2	67	1	33										
HAWAII	52																												
IDAHO	35	11	58	3	15	2	11	2	11	1	5			7	10														
ILLINOIS	17	16	23	12	17	3	4	7	10	6	8	1	1	26	37			2	67							1	33		
INDIANA	22	9	14	19	29	5	8	6	9	1	2	2	3	23	35														
IOWA	24	8	14	8	14	1	2	5	8	2	3			35	59														
KANSAS	26	13	28	1	2	4	9	10	21	2	4			17	36	1	100												
KENTUCKY	19	20	29	10	15	4	6	3	4	1	1	1	1	29	44	1	50										1	50	
LOUISIANA	7	15	14	28	27	34	33	8	8					19	18	1	33			2	67								
MAINE	38			2	12	6	35							9	53														
MARYLAND *	6	9	8	5	5	13	12							84	75	3	100												
MASSACHUSETTS	32	4	18	3	13	1	4			1	4	1	4	13	57														
MICHIGAN	12	23	28	19	23	8	10	2	3	10	12	2	3	17	21														
MINNESOTA	25	15	31	12	25	3	6	6	13	1	2	2	4	9	19	1	25	2	50							1	25		
MISSISSIPPI	11	29	36	19	24	9	11	5	6					18	23	2	50	1	25										
MISSOURI	16	16	22	16	22	10	14	5	7	3	4	2	3	21	28	1	50	1	50										
MONTANA	36	7	36	2	11	2	11	4	21					4	21														
NEBRASKA	30	15	43	2	6	3	8	9	26					6	17														
NEVADA	49													3	100														
NEW HAMPSHIRE	46	2	40							1	20			2	40														
NEW JERSEY	23	18	34	5	10	12	23	2	4	4	8	2	4	9	17	2	67												
NEW MEXICO	20	31	46	13	19	6	9			1	1			17	25	3	60	1	20	1	20								
NEW YORK	5	17	15	28	25	16	14	4	4	5	4			42	38	4	100												
NORTH CAROLINA	2	32	22	18	12	18	12	6	4	5	3	1	1	66	46	1	25	3	75										
NORTH DAKOTA	44	2	18					3	27					6	55	1	100												
OHIO	9	33	33	19	19	13	13	3	3	7	7	1	1	24	24														
OKLAHOMA	13	29	37	11	14	14	18	5	6	1	1	2	2	17	22	3	100												
OREGON	45	3	50											3	50														
PENNSYLVANIA	10	28	29	11	12	3	3	3	3	11	12	1	1	38	40	1	100												
PUERTO RICO	31	11	42	6	23	1	4							8	31														
RHODE ISLAND	48					1	25							3	75														
SOUTH CAROLINA	21	15	22	14	21	6	9	7	11	1	2	3	5	20	30	1	33	1	33	1	34								
SOUTH DAKOTA	37	5	27	1	6	2	11	8	44	1	6			1	6														
TENNESSEE	4	32	28	30	26	8	7	8	7	7	6	2	2	27	24			5	83					1	17				
TEXAS	3	60	44	24	17	19	14	5	4	4	3			24	18														
UTAH	33	11	48	6	26	1	4			1	4	1	4	3	14			2	100										
VERMONT	41	1	8	1	8	4	31							7	53														
VIRGINIA	28	8	20	8	20	4	10	3	8	2	5			15	37	1	50	1	50										
WASHINGTON	50	1	100																										
WEST VIRGINIA	39	5	29	2	12	2	12			1	6			7	41														
WISCONSIN	29	3	8	3	8	9	23	4	10	6	15			14	36														
WYOMING	34	11	52	2	10	3	14	1	5					4	19														
UNITED STATES		791	28	482	17	366	13	172	6	111	4	31	1	848	31	39	45	24	28	11	13	6	7	1	1			5	6

* ON DECEMBER 8, 1963 THE CRASH OF A JETLINER KILLING 81 PEOPLE NEAR ELTON, MARYLAND, WAS ATTRIBUTED TO LIGHTNING BY THE CIVIL AERONAUTICS BOARD INVESTIGATORS.

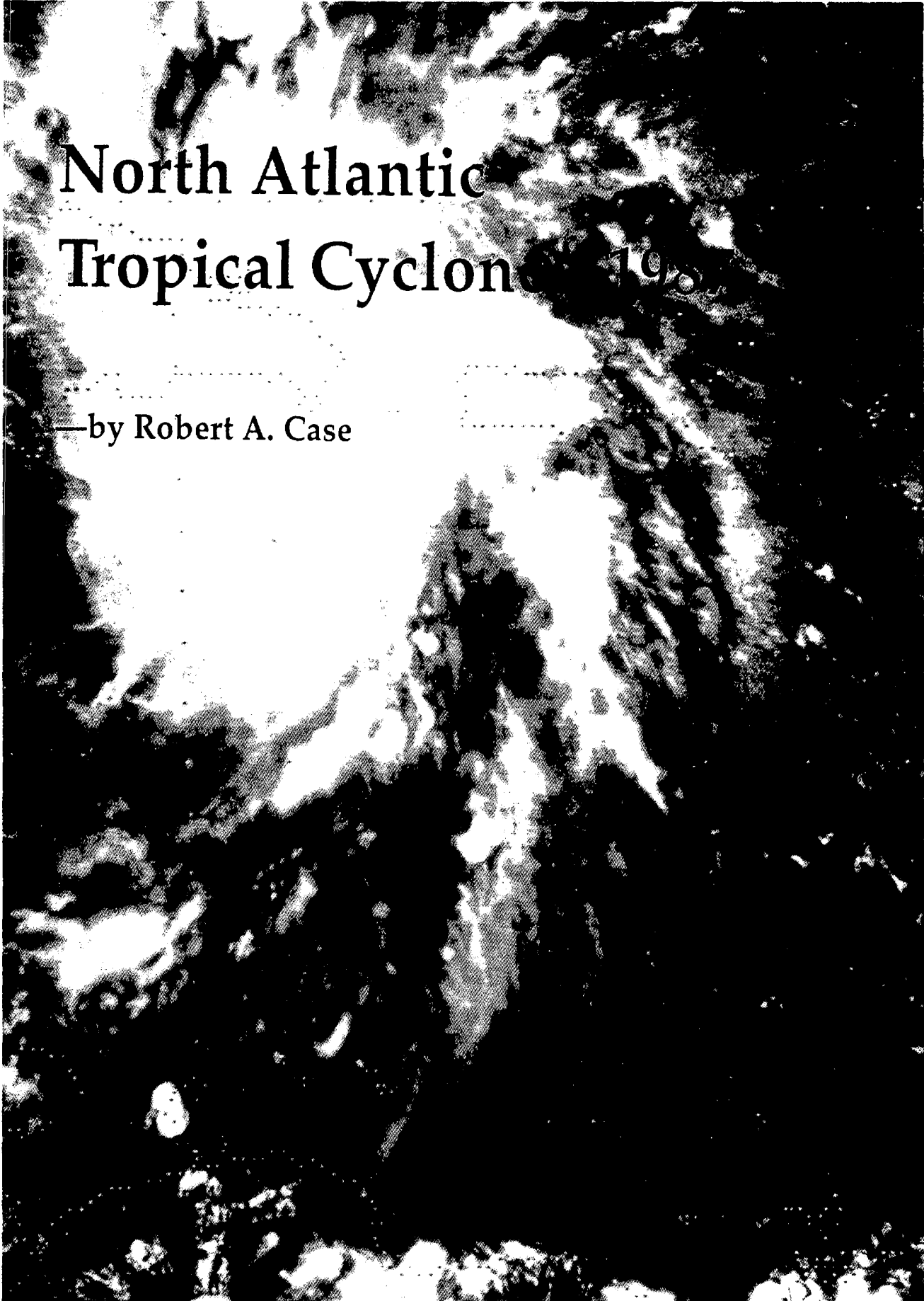
LIGHTNING INJURIES BY STATE, RANK, AND LOCATION OF OCCURRENCE

1959-1987

1987

STATE	RANK	OPEN FIELDS, BALL PARKS, AND OPEN SPACES		UNDER TREES		BOATING, FISHING AND WATER RELATED		NEAR TRACTORS HEAVY ROAD EQUIPMENT		GOLF COURSES		AT TELEPHONES		VARIOUS OTHER AND UNKNOWN LOCATIONS		OPEN FIELDS, BALL PARKS, AND OPEN SPACES		UNDER TREES		BOATING, FISHING AND WATER RELATED		NEAR TRACTORS HEAVY ROAD EQUIPMENT		GOLF COURSES		AT TELEPHONES		VARIOUS OTHER AND UNKNOWN LOCATIONS		
		NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	
ALABAMA	20	52	35	22	15	2	2	1	1	1	1	8	5	61	41	9	90			1	10									
ALASKA	51																													
ARIZONA	32	43	58	5	7	2	3	5	7	1	1			18	24	1	100													
ARKANSAS	18	42	24	25	15	10	6	7	4	4	2	10	6	75	43	5	46	2	18	2	18						2	18		
CALIFORNIA	42	10	32	1	3	3	10							17	55															
COLORADO	15	76	43	14	8	10	6	6	3	15	8	2	1	54	31	11	61	4	22								3	17		
CONNECTICUT	34	4	7	21	38	1	2			3	5	2	4	25	44								3	75				1	25	
DELAWARE	44	8	40	7	35							1	5	4	20															
DISTRICT OF COLUMBIA	48	1	14	3	44			1	14	1	14			1	14															
FLORIDA	1	272	36	81	11	104	14	23	3	28	4	19	3	231	29	15	67	1	5	3	13		1	5	1	5	1	5		
GEORGIA	10	94	39	32	14	13	6	3	1	20	8	3	1	75	31	12	44	14	52							1	4			
HAWAII	52																													
IDAHO	33	9	15	7	12	2	3	2	3	2	3	4	7	35	57															
ILLINOIS	16	72	41	45	25			4	2	13	7	5	3	38	22	31	86	5	14											
INDIANA	25	13	12	26	24	12	11	3	3	8	7	3	3	44	40	1	25	3	75											
IOWA	21	25	17	20	14	1	1	1	1	2	1	1	1	96	65	2	100													
KANSAS	19	20	13	14	9	2	1	7	5	10	6	4	3	98	63	5	80										1	20		
KENTUCKY	14	52	29	20	11	7	4	3	2	10	6	7	4	79	44	3	15	2	11	5	26				2	11	7	37		
LOUISIANA	13	93	50	30	16	18	10	4	2			2	1	40	21	1	50											1	50	
MAINE	28	2	2	31	37	3	4			1	1	1	1	46	55															
MARYLAND *	24	45	40	16	14	15	13	4	4	3	3	1	1	29	25	17	100													
MASSACHUSETTS	7	54	19	12	4	9	3	5	2	2	1	5	2	197	69	2	29	1	14								4	57		
MICHIGAN	2	201	38	94	18	22	4	13	2	30	6	16	3	151	29	6	33			7	39						5	28		
MINNESOTA	29	13	15	14	17	5	6	1	1	8	10	11	13	32	38	1	100													
MISSISSIPPI	12	71	37	37	19	27	14	2	1	4	2	9	5	43	22	5	46	2	18	2	18				1	9	1	9		
MISSOURI	31	23	30	16	21	1	1	1	1	1	1	3	4	31	42			2	100											
MONTANA	41	12	35	5	15	3	9	1	3	3	9			10	29															
NEBRASKA	36	20	37	1	2			5	9	5	9	5	9	18	34															
NEVADA	49	2	40	1	20									2	40	2	67	1	33											
NEW HAMPSHIRE	35	9	16	1	2					4	7			41	75															
NEW JERSEY	27	48	47			8	8	1	1	5	5	2	2	39	37													2	100	
NEW MEXICO	23	77	62	17	14	2	2	3	2	3	2	1	1	21	17	29	100													
NEW YORK	6	32	10	76	23	20	6	20	6	6	2	9	3	161	50	2	17	6	50							2	17	2	16	
NORTH CAROLINA	4	127	33	33	9	21	5	9	2	19	5	6	2	167	44	4	45	3	33						1	11			1	11
NORTH DAKOTA	47	5	46	1	9	1	9	2	18			1	9	1	9															
OHIO	5	87	25	80	23	9	2	4	1	25	7	10	3	138	39	8	36	10	45			1	5	1	5			2	9	
OKLAHOMA	11	75	37	12	6	9	5	10	5	5	2	16	8	74	37	5	62			1	13							2	25	
OREGON	45	5	31			1	6			1	6			9	57															
PENNSYLVANIA	3	118	30	19	5	4	1	2	1	9	2	3	1	239	60													10	100	
PUERTO RICO	50	1	20											4	80															
RHODE ISLAND	40	9	22	15	37					2	4			15	37			3	100											
SOUTH CAROLINA	17	54	30	8	5	10	6	7	4	2	1	4	2	92	52	1	25	1	25									2	50	
SOUTH DAKOTA	39	6	13	5	11	2	4	9	20			1	2	23	50															
TENNESSEE	8	84	32	80	30	3	1	6	2	7	3	9	4	74	28	5	56	1	11			1	11					2	22	
TEXAS	9	105	43	32	13	32	13	4	2	3	1	2	1	66	27	7	64	1	9	3	27									
UTAH	37	22	44	9	17	2	4	1	2	4	7	2	4	14	26	2	100													
VERMONT	46	4	27	1	7									10	66															
VIRGINIA	26	13	12	35	32	6	6	1	1	7	6	2	2	44	41			1	14	5	72							1	14	
WASHINGTON	43	2	9	4	18							2	9	14	64	1	100													
WEST VIRGINIA	38	14	26	9	17	3	5	1	2	2	4	1	2	23	44										1	100				
WISCONSIN	22	50	37	8	6	4	3	1	1	6	4	5	4	60	45	8	68	1	8	1	8					1	8	1	8	
WYOMING	30	39	48	3	4	13	16	8	10	4	5			14	17															
UNITED STATES		2315	31	1048	14	421	6	192	3	288	4	199	3	2893	39	201	55	64	17	32	8	2	1	6	2	9	3	51	14	

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North Atlantic Tropical Cyclones, 1987

—by Robert A. Case

Four tropical storms and three hurricanes roamed the Atlantic Basin in 1987. This is three hurricanes less than the long term average of about four tropical storms and six hurricanes.

Not only were there fewer tropical cyclones, but they were also weaker than usual. Emily, the strongest hurricane of the season had a minimum pressure of 958 millibars which ranks the 1987 season the fourth weakest in the past 20 years. Three tropical cyclones remained in the eastern half of the Atlantic. An unnamed storm moved onshore within 24 hours after forming. Two of the season's three hurricanes were minimal and Emily, the major one, was a very small system. Therefore, it is not surprising that during the entire season only two ships reported wind speeds of 50 knots or greater that were directly attributable to the tropical cyclones of 1987.

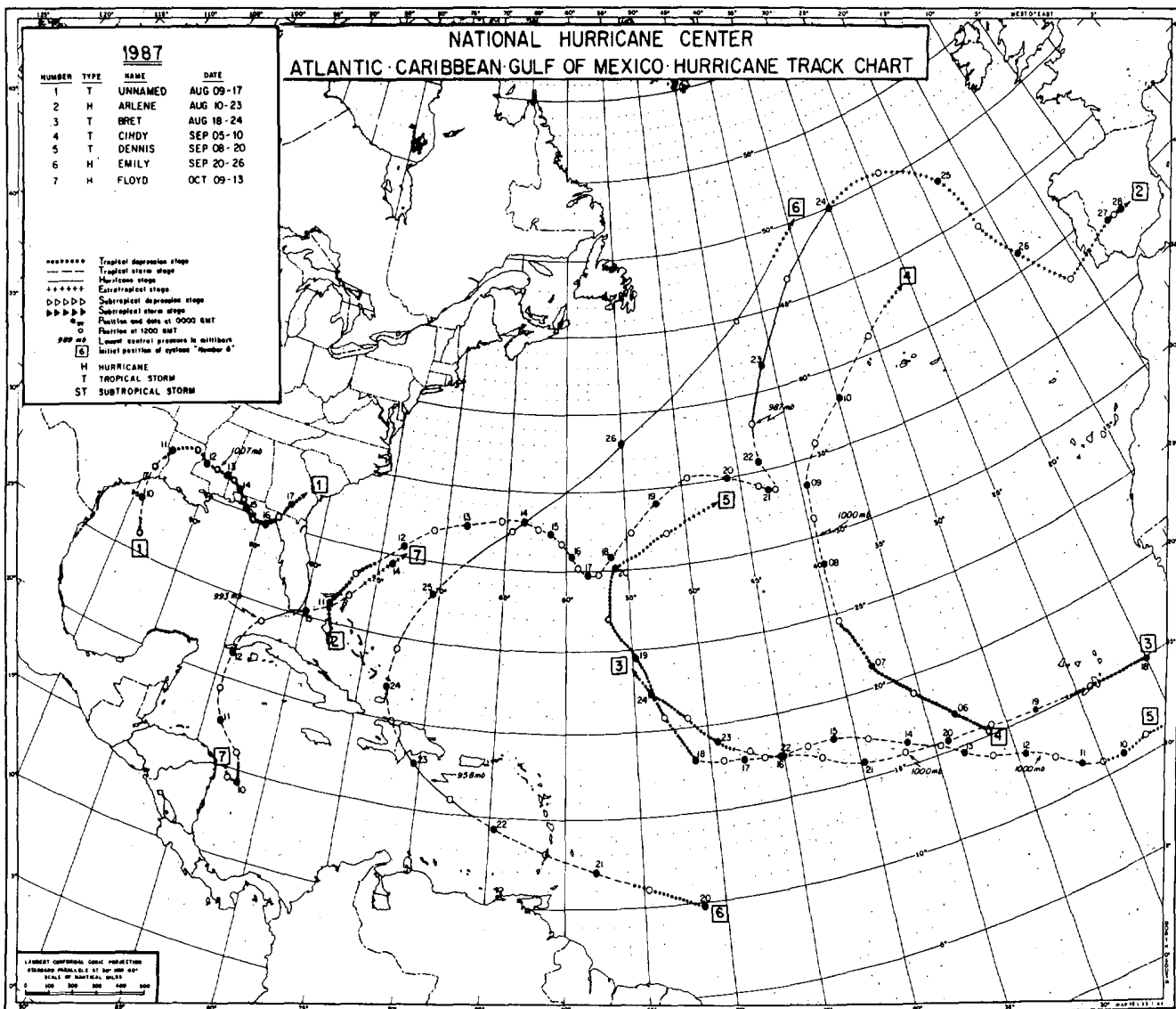
Lastly, in October, a mid-latitude storm (not of tropical origin) slammed into southern England. Winds in excess of 85 knots caused damage that has not been equaled this century.

In light of additional data and a year-end review, Tropical Depression No. 2, in the northwest Gulf of Mexico, was upgraded, for the record to a tropical storm.

This system got its start in the northwest Gulf of Mexico on August 9th from the interaction of a tropical wave and an upper-level low pressure center. In retrospect, the depression became a minimal tropical storm within hours of formation. Maximum winds reported by oil rigs in the area were near 40 knots with gusts to 57 knots. The storm was unable to become well-organized over the waters of the northwest Gulf. Most of the heavier showers and

thunderstorms moved across the coastline hours in advance of the relatively isolated center of circulation. This tropical storm essentially produced no damage near its point of landfall on the upper Texas coast. However, after landfall this system produced 4 to nearly 9 inches of rainfall over portions of the southeast Gulf states resulting in severe flooding and about \$7.5 million in damage, primarily in Mississippi.

Hurricane Arlene began as a low pressure center near the North Carolina coast. After drifting southward into the Bahamas, the system became a tropical depression by midday on the 10th and strengthened to a tropical storm by the evening of the 11th. As Arlene passed to the north of Bermuda it produced 30-knot winds with gusts to 43 knots at the Naval Air Station. Also, the ship *Nivosa*, located about 35 miles north of the center, reported



65-knot winds in heavy weather with a surface pressure of 1002 millibars. However, Bermuda, 50 miles south-southwest of the center, had 25 knots with the same pressure. Based upon satellite presentation showing an exposed center, aircraft reconnaissance reports and the pressure/wind relationship for tropical storms, it was decided that the 65-knot ship report probably was related to localized convection and not representative of the storm circulation.

Arlene continued to meander eastward across the central North Atlantic for the following week. Finally, after reaching hurricane strength (987 millibars) on the 22d, Arlene accelerated off to the north. As the hurricane sped northeastward across the main shipping lanes of the North Atlantic, the ship *Dolabella*, located about 100 miles to the south southwest of Arlene, reported southwest winds of 50 knots. The hurricane weakened to an extratropical storm later that day as it moved over the colder waters of the North Atlantic.

A well-organized tropical disturbance moved off the northwest African coast on August 17. Early the next day (based on satellite imagery) it became the fifth tropical depression of the 1987 hurricane season. Later on the 18th, the ship *S.S. Columbus Canterrury* reported 35-knot winds and a surface pressure of 1004.5 millibars while located just

west of the Cape Verde Islands. This observation assisted in the depression being upgraded to **tropical storm Bret**.

The storm moved on a westerly course for the next several days and reached its maximum strength of 1000 millibars, with strongest winds of 45 knots, on the 20th. Thereafter, strong westerly winds in the upper atmosphere destroyed the organization of the storm, and Bret weakened to a depression by the afternoon of the 22d.

The second of three African waves that developed into eastern Atlantic tropical storms moved off the African coast as an area of disturbed weather on September 1st. A major trough (surface to 200 millibars) in the mid-Atlantic began to dig southward on the 4th. The westward-moving cyclone responded to the weakness in the pressure field and began a northward turn prior to reaching 40°W. The disturbance became a depression on the 5th and was upgraded to **tropical storm Cindy** on the 7th. After the storm reached its maximum strength, strong shearing resulting from the approaching frontal trough destroyed its organization. By the afternoon of the 10th, Cindy became extratropical and was absorbed by a large North Atlantic storm on the 11th.

Dennis, the last of the eastern Atlantic tropical storms of 1987, was first detected as a low-level circulation near

the African coast on September 8th. Several ships in the area reported south or southwest winds during the 9th and 10th, which confirmed that the low-level cloud circulation observed by satellite was present on the surface. The ship *Minusinsk*, about 60 miles southeast of the center on the morning of the 10th, reported southwest winds of 15 knots. This combined with satellite imagery indicated the system had reached tropical storm strength. Tropical storm Dennis tracked toward the west-northwest for the next several days reaching its estimated maximum strength (1000 millibars/45 knots) on afternoon of the 11th. Dennis weakened over the next few days as the organized deep convection around the center of circulation was destroyed by the strong westerly winds aloft — similar to the situation encountered earlier by Bret and Cindy. The storm was downgraded to a depression late on the 17th and turned toward the north in response to a weakness in the Atlantic subtropical high pressure ridge. The depression then merged with an extratropical cyclone on the 20th in the central North Atlantic.

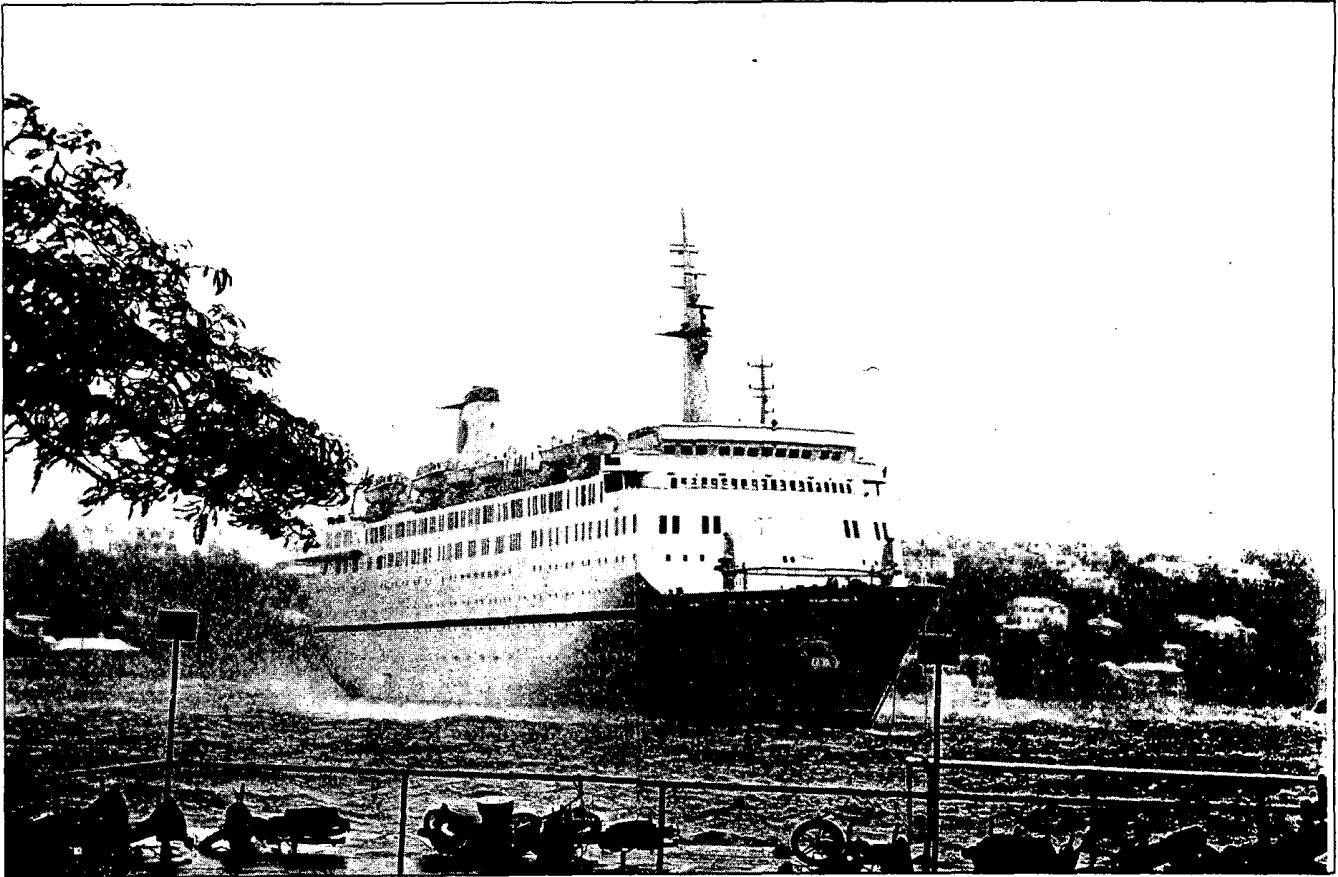
Emily moved off the African coast behind the tropical wave that produced Dennis. At first the disturbance remained weak and within the ITCZ (Intertropical Convergence Zone) on its journey across the tropical Atlantic. On the

Hurricane Statistics 1987							
No.	Name	Class ¹	Dates ²	Winds max sus. (kn)	Press low (mb)	Damage US \$ mil.	Deaths ³
1	Unnamed	T	8/9-8/17	45	1007	7.5	
2	Arlene	H	8/10-8/28	65	987		
3	Bret	T	8/18-8/24	45	1000		
4	Cindy	T	9/5-9/10	45	1000		
5	Dennis	T	9/8-9/20	45	1000		
6	Emily	H	9/20-9/26	110	958		
7	Floyd	H	10/9-10/14	70	993	0.5	

¹ T: Tropical storm, winds 34-63 kn; H: Hurricane, winds 64 kn or higher.
² Dates begin at 0000 UTC
³ No deaths in U.S.; Emily killed 3 in Dominican Republic; 6 died in floods from Tropical Depression No. 14 in Jamaica.

Page 11:
Emily at maximum strength on the 22d of September; right: Arlene at its peak on the 22d of August.





EDDIE MARSHALL

Right: Crew of cruise ship Atlantic uses her anchors and ship's engines to maintain control in the middle of Hamilton Harbor during the height of fast-moving Emily, which is shown (below) within an hour after its 974-millibar eye passed over Bermuda on the morning of the 25th..

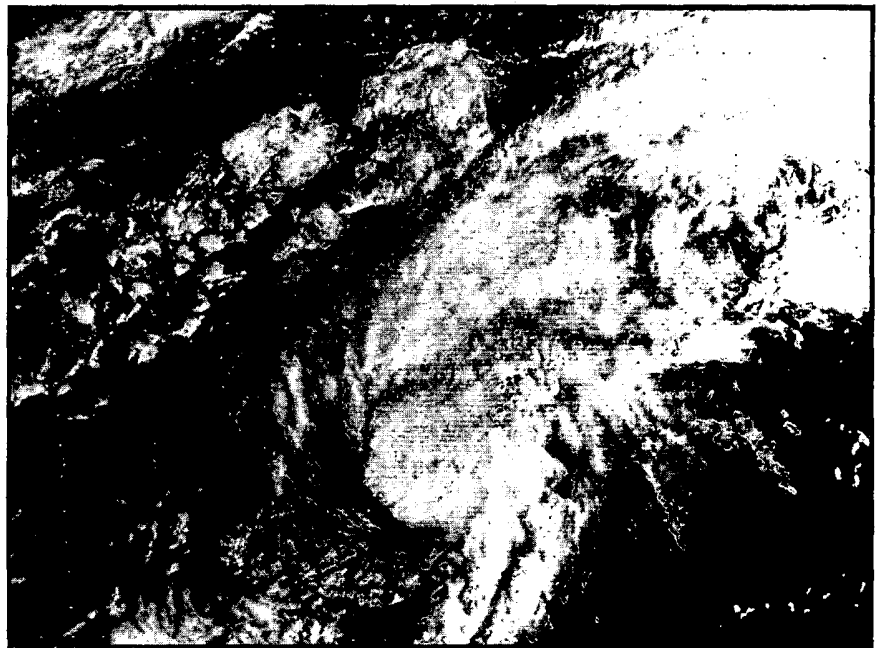
NOAA GOES

20th, the system detached itself from the ITCZ and developed into a tropical depression some 700 miles southeast of the Windward Islands. When an Air Force reconnaissance aircraft arrived in the area late on the afternoon of the 20th, surface winds were estimated to be 40-45 knots. Once in the Caribbean, Emily began to strengthen rapidly. During the 24-hour period from the afternoon of the 21st to the afternoon of the 22d, the central pressure fell 44 millibars, from 1002 millibars to 958 millibars, a rate of 1.83 millibars per hour. Emily was developing into a strong compact hurricane. During the time of rapid strengthening, about 60 nautical miles to the west of the center, *Entalina* reported north-northeast winds of only 15 knots and a surface pressure of 1009.6 millibars, compared to Emily's 991-millibar center. The storm was deepening rapidly and developing a small "eye". The hurricane reached a minimum pressure of 958 millibars with 110-knot winds on the afternoon of the 22d. It weakened slightly prior to striking the rural southern coast of the Dominican Republic, between Barahona and Bani, just before midnight.

The storm moved off the northern coast

of Hispaniola on the morning of the 23d. It continued to move northward across the Bahamas with little change in strength through the evening of the 24th.

However, Emily again deepened rapidly while accelerating toward Bermuda.



Shortly after midnight on the 25th, an Air Force reconnaissance aircraft, located about 215 miles southwest of Bermuda, reported 1500-foot flight level winds of 75 knots and an estimated surface pressure of 985 millibars. Six hours earlier the pressure had been 999 millibars. The cyclone was not only accelerating faster than expected but had deepened rapidly at a rate of 2.3 millibars per hour.

Hurricane Emily, a very small system, passed directly over Bermuda on the morning of the 25th, at a forward speed of 40 knots, with a central pressure of 973.6 millibars. Maximum sustained winds of 75 knots with gusts to 101 knots were recorded at Kindley Field.

Damage resulting in Bermuda from Emily was estimated to be near \$35 million. Several people received injuries, but fortunately no lives were lost. Marine interests suffered extensive damage. The cruise ship, *Atlantic*, with about 700 passengers on board, broke free of her lines by pulling a cleat out of a dock and then floated into the open harbor. Her alert captain and crew used the ship's engines and anchors to maintain control of the ship and keep it secure in the middle of the harbor during the short period of time (less than 2 hours) it took the hurricane to pass over the island.

Emily continued to accelerate toward the northeast after passing over Bermuda, reaching a forward speed of 55 knots as it crossed 40°N. By the afternoon of the 26th, Emily had become extratropical. However, as the extratropical center of Emily began merging with an intense mid-latitude storm, hurricane force winds continued to rake the waters of the far North Atlantic. The ship *Seikyo Maru No. 8*, located about 300 miles south of the combining systems, reported winds of 80 knots. Two other vessels, the *FAAA* and the *DSLW*, reported 70- and 50- knot winds respectively.

The second northwest Caribbean cold front of the fall season pushed southward during the first week of October and generated the seedling which produced **Floyd**. A broad area of low pressure formed on the stalled front by the 6th. After meandering in the general area for the next few days, the low pressure center developed into a tropical depression by the 9th. Strong high pressure centered over the

United States mid-Atlantic coast, in combination with the depression, produced a strong pressure gradient (20-30 knots) over the waters between the two systems.

By the morning of the 10th, Air Force reconnaissance and satellite imagery indicated that the depression had reached tropical storm strength. A report of 35-knot winds from the *Sankomoon*, located just northeast of the circulation center on the morning of the 10th, confirmed that storm-force winds were present at the surface. Later that day the *Captain Roney*, located south of the center just off the Honduran coast, reported west winds of 35 knots.

Tropical storm Floyd began moving northward on the 10th. During the following 36 hours the *Chevron Feluy*, the *Metallourg Bardine* and a ship of unknown registry all reported tropical storm force-winds of 40 knots in the vicinity of the storm.

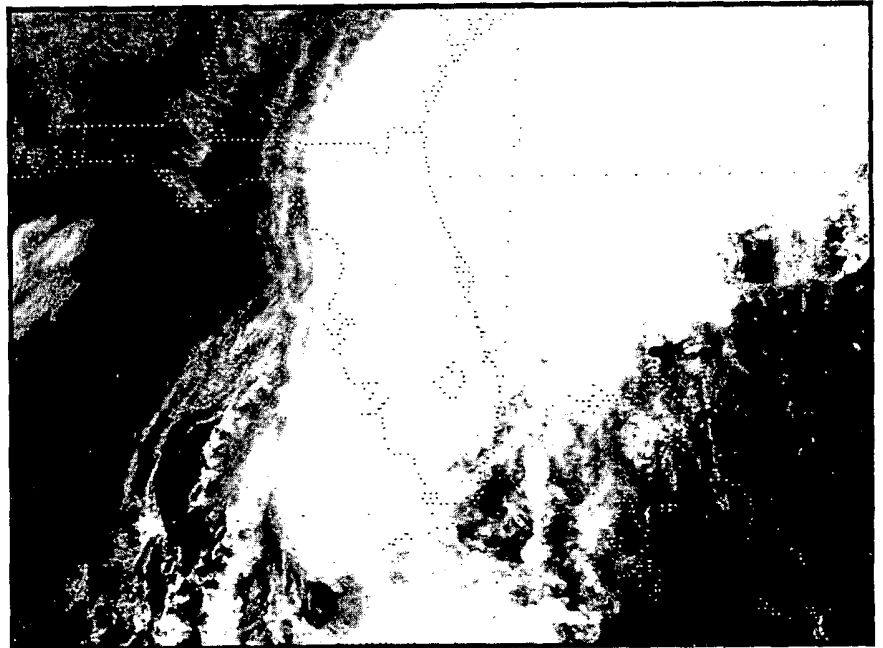
Early on the 12th after Floyd had crossed the western tip of Cuba, a reconnaissance aircraft measured winds of 70 knots at a flight level of 1500 feet, and Floyd was upgraded to a hurricane. However, an approaching trough of low pressure in the westerlies initiated a low-pressure center on a stationary front across central Florida. This development replaced the warm, moist inflow into Floyd with cooler, dry air and turned the hurricane to a more easterly course. As a result the hurricane began to lose its organization as

the center moved toward the east northeast through the Florida Keys. Floyd passed south of the Miami area on the evening of the 12th as a disorganized, weakening system.

By the morning of the 13th, downgraded tropical storm Floyd was located just northeast of the northern Bahamas and had begun to merge with the low pressure center that had been located over central Florida the previous day. The developing extratropical system, in combination with a second large high pressure center located over Ohio, produced northeast winds of 35 to 45 knots over the coastal and offshore waters from the mid Atlantic states to central Florida. The ship *Gulf Queen*, located just northeast of Cape Hatteras on the afternoon of the 13th, reported the strongest winds of 50 knots from the northeast.

Floyd's unorganized center (below) is located just to the southwest of Key West on the morning of October 12th. Its circulation extends well off the south Atlantic coast. Floyd was still a hurricane at this time.

NOAA GOES



North Atlantic Tropical Cyclones

Tropical Storms and Hurricanes										Hurricanes									
	M	J	J	A	S	O	N	D	tot.	Yr.	M	J	J	A	S	O	N	D	tot.
	1	1	1	2	3	1	1		9	1931					2				2
	1	1	3	3	3	3	1		11	1932				3	1	1			6
	1	1	1	7	5	3	1		21	1933		1	1	3	3	1	1		9
				2	2	3	1		11	1934		1	1	1	1	1	1		6
				3	1	2			6	1935				2	1	2			5
		3	2	6	4	1			16	1936		1	1	3	2				7
			1	2	6				9	1937					3				3
				3	1	3	1		8	1938				2	1				3
		1		1	1	2			5	1939				1		2			3
	1			3	2	2			8	1940				3	1				4
					4	2			6	1941					3	1			4
				3	3	3	1		10	1942				3			1		4
			1	2	4	3			10	1943			1	1	2	1	1		5
			3	2	4	2			11	1944			2	1	3	1			7
		1	1	4	3	2			11	1945		1		1	1	2			5
		1	1	1	1	2			6	1946			1		1	1			3
			1	2	3	3			9	1947				2	1	2			5
	1		1	2	3	1	1		9	1948				1	3	1	1		6
				3	7	2	1		13	1949				2	4	1			7
				4	3	6			13	1950				4	3	4			11
Feb 1	1			3	4	2			10	1951	1			2	3	2			8
	1			2	2	2			7	1952				2	2	2			6
	1			3	4	4	1	1	14	1953				2	3	1			6
		1	1	2	4	1	1	1	11	1954		1		2	3	1		1	6
			1	4	5	2			12	1955				3	5	1			9
		1	1	1	4	1			8	1956			1	1	1	1			4
		2	1	1	4	1			8	1957		1		1	2				3
		1		4	4	1			10	1958				3	3	1			7
	1	2	2	1	3	2			11	1959		1	2		3	1			7
		1	2	1	3				7	1960			1	1	2				4
			1		6	2	2		11	1961			1		5	1	1		8
				2	2	1			5	1962				1	1	1			3
			1	1	5	2			9	1963			1	1	4	1			7
		1	1	4	4	1	1		12	1964				2	3	1			6
		1		2	2	1			6	1965				2	1	1			4
		1	4	1	4		1		11	1966		1	3	1	1		1		7
				1	4	3			8	1967				1	3	2			6
		3		1	3	1			8	1968		2		1	1	1			5
			1	5	6	5	1		18	1969				4	4	3	1		12
	1		1	3	3	2			10	1970	1			1	1	2			5
			1	4	6	1	1		13	1971				2	4				6
	1	1		2	2		1		7	1972		1		1	1				3
			2	2	2	2			8	1973			1	1	1	1			4
		1	1	4	4	1			11	1974				2	2				4
		1	1	2	3	1		1	9	1975			1	2	3				6
	1		1	5	2	1			10	1976				4	1	1			6
Jan 1				1	3	2			6	1977				1	3	1			5
			1	4	3	3			12	1978				2	2	1			5
		1	2	3	2	1			9	1979			1	2	2				5
				3	5	1	2		11	1980				3	3	1	2		9
	1	1		2	5	1	1		11	1981				1	5		1		7
		1		1	2	1			5	1982		1			1				2
				2	2				4	1983				2	1				3
				4	6	1	1	1	13	1984				2		1	1	1	5
			2	3	3	2	1		11	1985			1	3	1	1	1		7
				1	2		1		6	1986		1		1	1		1		4
				3	3	1			7	1987				1	1	1			3
J-1 F-1	12	31	43	143	194	99	23	4	551	totals	2	13	20	91	121	52	13	2	314

MONTHLY PRECIPITATION TOTALS												ANNUAL 1987 NORTH CAROLINA		
STATION	ANNUAL	MONTH												
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
NORTH CAROLINA	34.57	1.11	1.85	2.75	0.57	3.55					4.19	5.28	4.28	
ASHEVILLE WSO AP	25.67	0.71	1.57	1.81	0.59	2.90				2.77	4.15	2.94		
ASHFORD	38.74E	1.20	2.70	2.90	0.54E					3.80	4.99	4.80		
BADIN		1.30	2.60	1.20						2.40	4.10	2.90		
B EVERETT JORDAN DAM		1.70	1.50	3.60							1.70			
BOOMER 5 WSO		1.00	2.10											
BURLINGTON 3 WSO		0.80	1.92E											
CAPE HATTERAS WSO	48.86	5.75	1.20											
CAROLINA 8 SE		1.70												
CATAWBOCHE		0.62												
CHARLOTTE WSO AP	26.91													
CLINTON 2 NE	36.91													
DALTON														
DOBSON														
ECON														
ELLEN														
ELIZA														
FAYE														
FRANK														
GREENS														
GREENVILLE														
HELTON														
HOBUCKEN														
LAKE CURE														
LAURINBURG														
LEWINGTON														
MORRISVILLE 2														
NORFOLK CITY														
PLANT CREEK														
RALEIGH-DURHAM WSO														
ROANOKE RAPIDS														
ROSELAND														
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HOURLY PRECIPITATION DATA
NORTH CAROLINA

DECEMBER 1987
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VOLUME 37 NUMBER 12

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STATION INDEX

STATION	COUNTY	TIME	DATE	STATION
NORTH CAROLINA				
ASHEVILLE WSO AP	SWAIN	10:00	10/1/87	
ASHFORD	SWAIN	10:00	10/1/87	
BADIN	ALAMANCE	10:00	10/1/87	
B EVERETT JORDAN DAM	ALAMANCE	10:00	10/1/87	

MONTHLY PRECIPITATION MAXIMA

MAXIMA FOR MEASUREMENT PERIODS OF

STATION	HOURS					
	15	30	45	1	2	3
NORTH CAROLINA	18.25(1000)	18.25(1000)	20.23(845)	20.23(845)	20.23(845)	20.23(845)
ASHEVILLE WSO AP	18.25(

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