

AUGUST 1991
VOLUME 33
NUMBER 8

STORM DATA



AND UNUSUAL WEATHER PHENOMENA
WITH LATE REPORTS AND CORRECTIONS



noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE / NATIONAL CLIMATIC DATA CENTER ASHEVILLE, N.C.

COVER: Hurricane Bob wrecked at least 18 bobs along the beach at East Perry Landing in Jamestown on August 19th. The town is located on the western shore of Conanicut Island in Narragansett Bay. (Photo courtesy: Kathryn Whitney, Newport (RI) Daily News, Newport, Rhode Island.)

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STORM DATA

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National Climatic Data Center

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STORM DATA contains all confirmed information on storms available to our staff at the time of publication. However, due to difficulties inherent in the collection of this type of data, it is not all-inclusive. Late reports and corrections are printed in each edition.

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The editors of **STORM DATA** solicit your help in acquiring photographs (prints or slides; black and white, or color), maps, clippings, etc. of significant or unusual weather events (past or present). These could be for use in the "Outstanding Storms of the Month" or "Et Cetera" sections of **STORM DATA**. We request our subscribers or other interested persons to mail such items to:

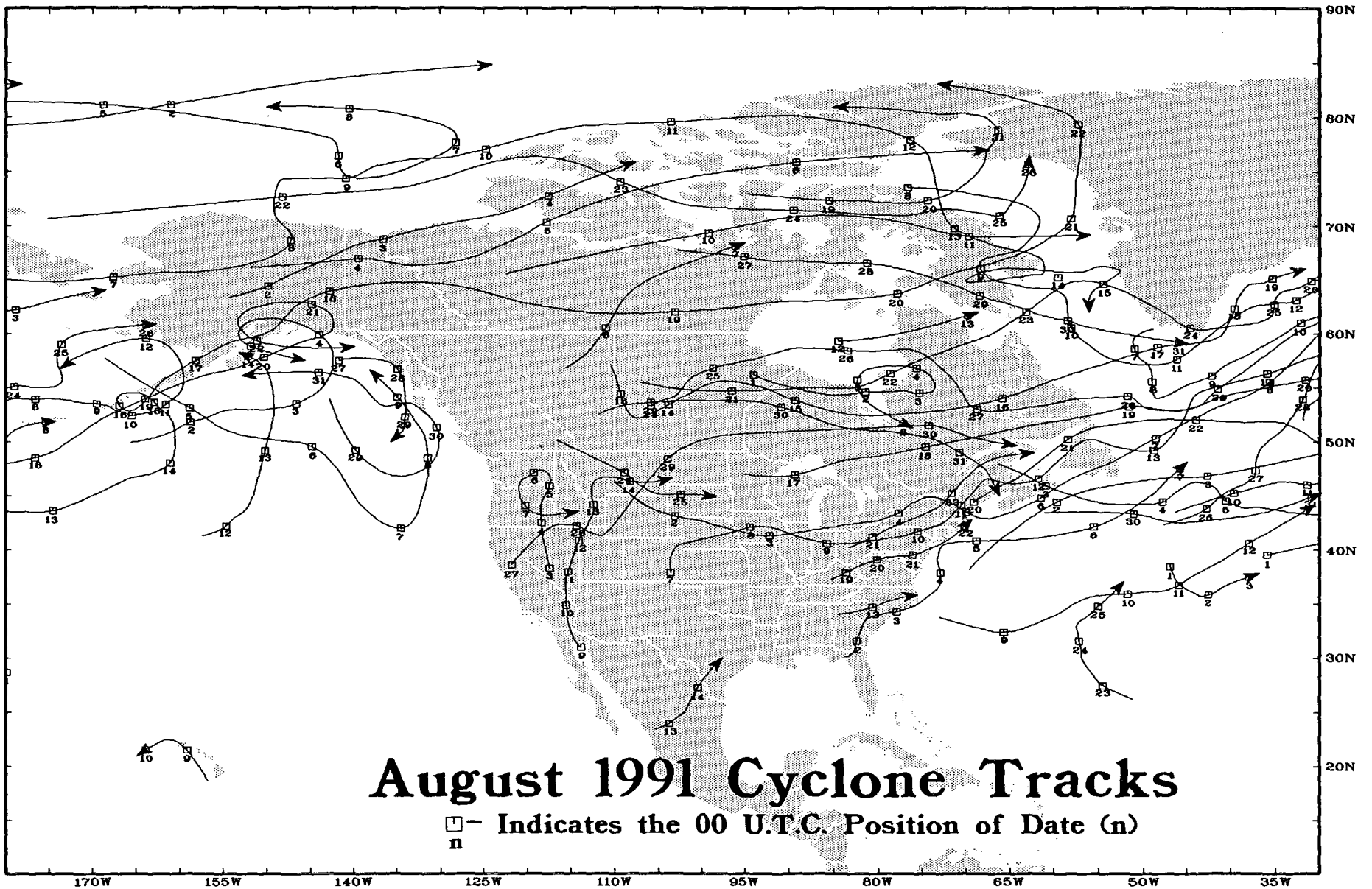
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Director
National Climatic Data Center



CLIMATIC DATA FOR THE MONTH

PRECIPITATION AND TEMPERATURE ANOMALIES - AUGUST 1991

Table 1 lists the 97-year temperature and precipitation rankings for August 1991 for the nine climatically homogeneous regions outlined in Fig. 1 below.

August 1991 ranked as the 16th warmest August on record (since 1895). Mean monthly temperature departures of +2°F were observed in the northern third of the nation, the desert Southwest, and southern Texas. Temperatures averaged near to above normal in Hawaii and southern Alaska. Departures of -2°F were observed in California, parts of the southern Plains, and northern and central Alaska. (See Figs. 2 and 3 on page 5.)

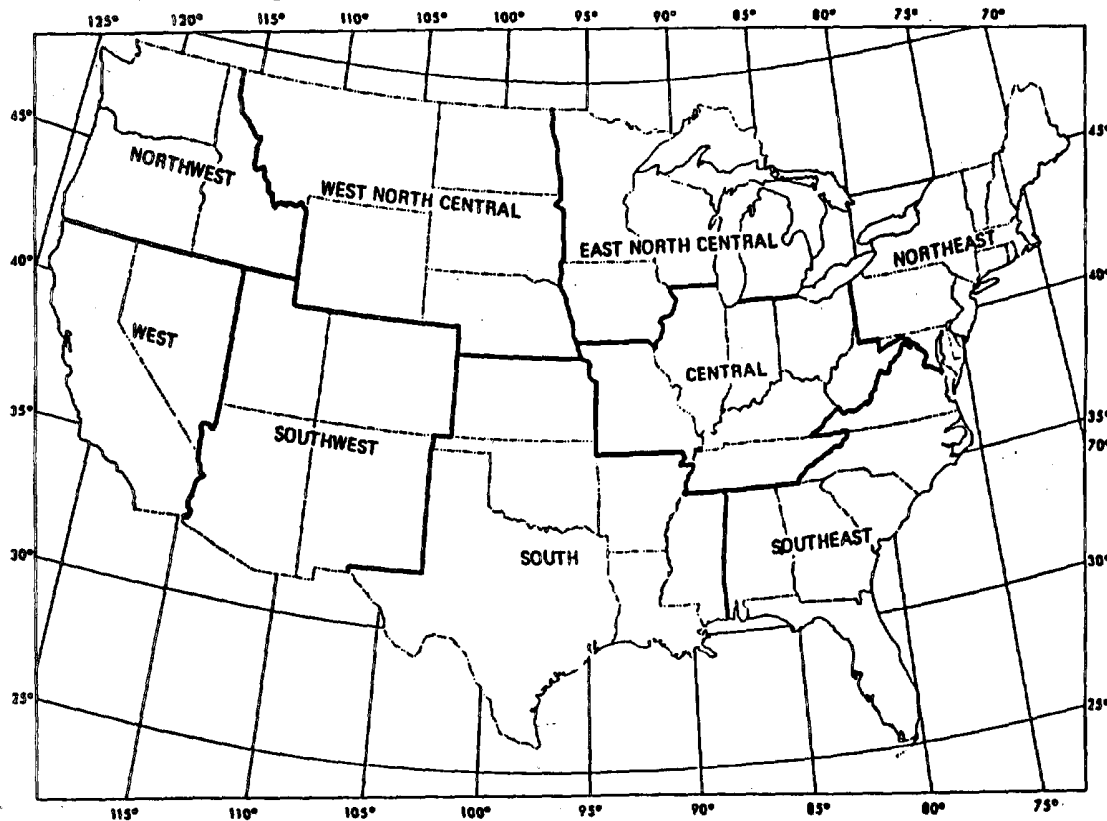
Scattered areas of precipitation occurred throughout the United States. Nationally, August 1991 ranked as the 43rd driest August on record. Hurricane Bob brought five times the normal August rainfall to parts of New England. In California, remnants of Tropical Storm Hilda brought rare summer showers. Farther west, remnants of Hurricane Fefa produced torrential rains in eastern Hawaii, with Hilo receiving almost 20 inches. Seasonably dry conditions also prevailed in the Far West. Abnormally dry weather prevailed over the Corn Belt and mid-Atlantic. Regionally, the Northeast had the seventh wettest August, while the West North Central had the eighth driest August. (See Figs. 4 and 5 on page 6.)

TABLE 1. TEMPERATURE AND PRECIPITATION RANKINGS FOR MAY 1991, BASED ON THE PERIOD 1895-1991. 1 = DRIEST/COLDEST, 97 = WETTEST/HOTTEST.

REGION	PRECIPITATION	TEMPERATURE
Northeast	90	84
East North Central	26	76
Central	29	62
Southeast	52	59
West North Central	8	92
South	79	33
Southwest	31	69
Northwest	70	87
West	65	57
National	43	82

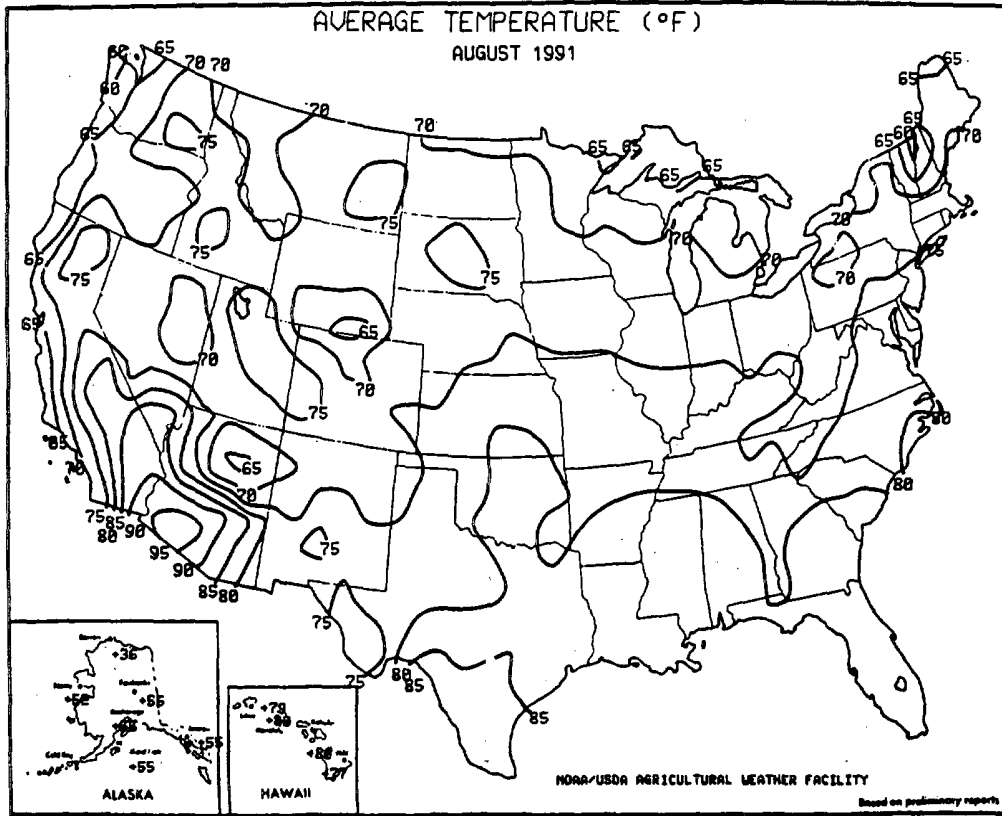
From National Climatic Data Center

Fig. 1



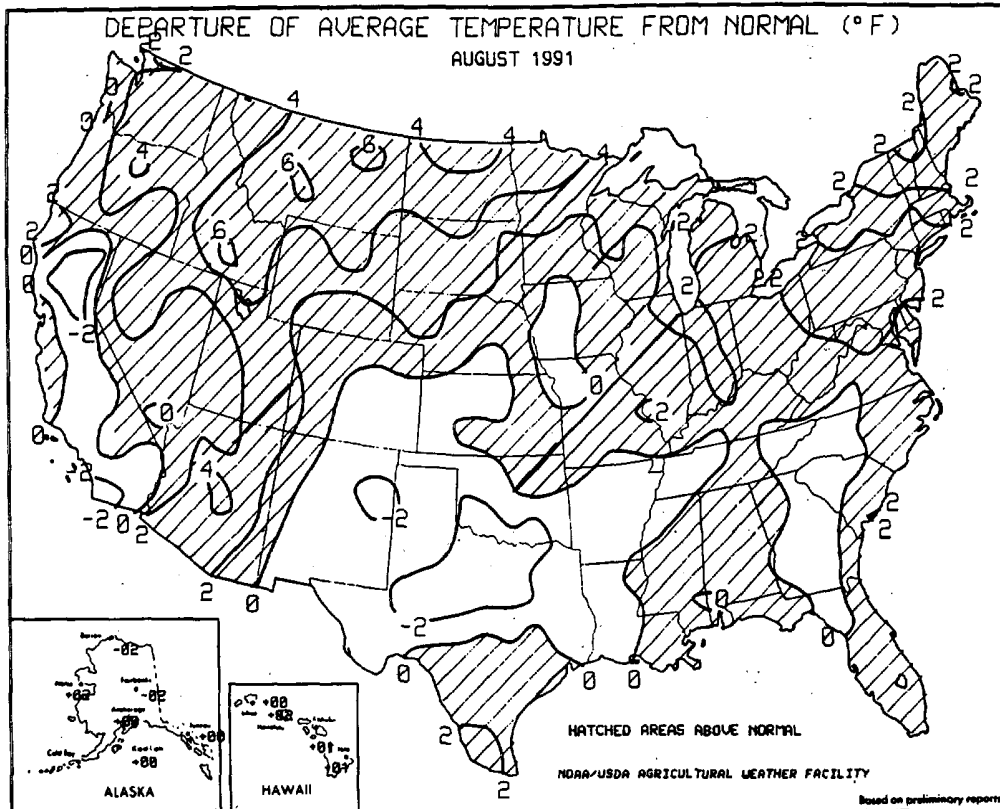
From National Climatic Data Center

Fig. 2



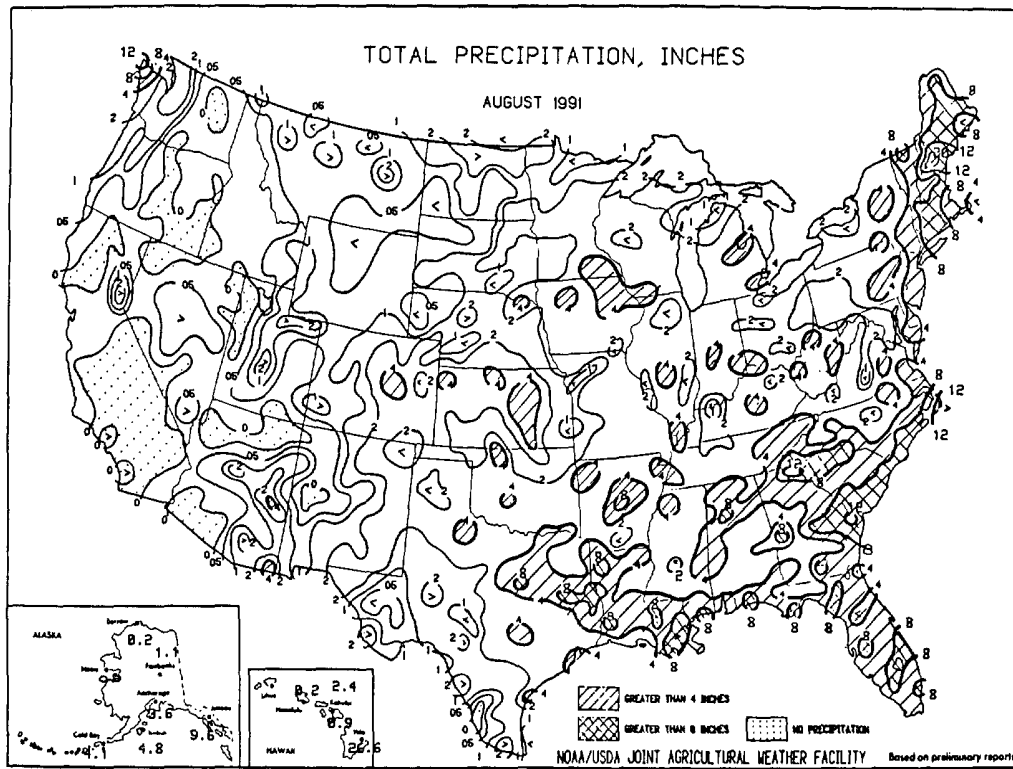
Reprinted from *Weekly Weather and Crop Bulletin* - September 10, 1991

Fig. 3



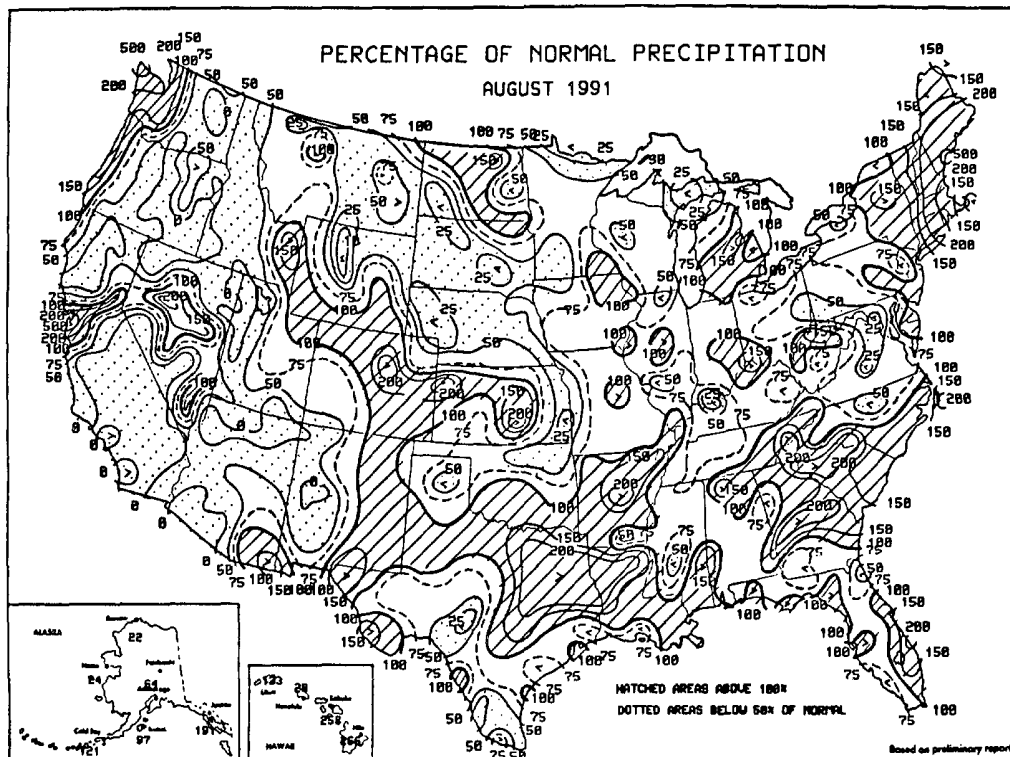
Reprinted from *Weekly Weather and Crop Bulletin* - September 10, 1991

Fig. 4

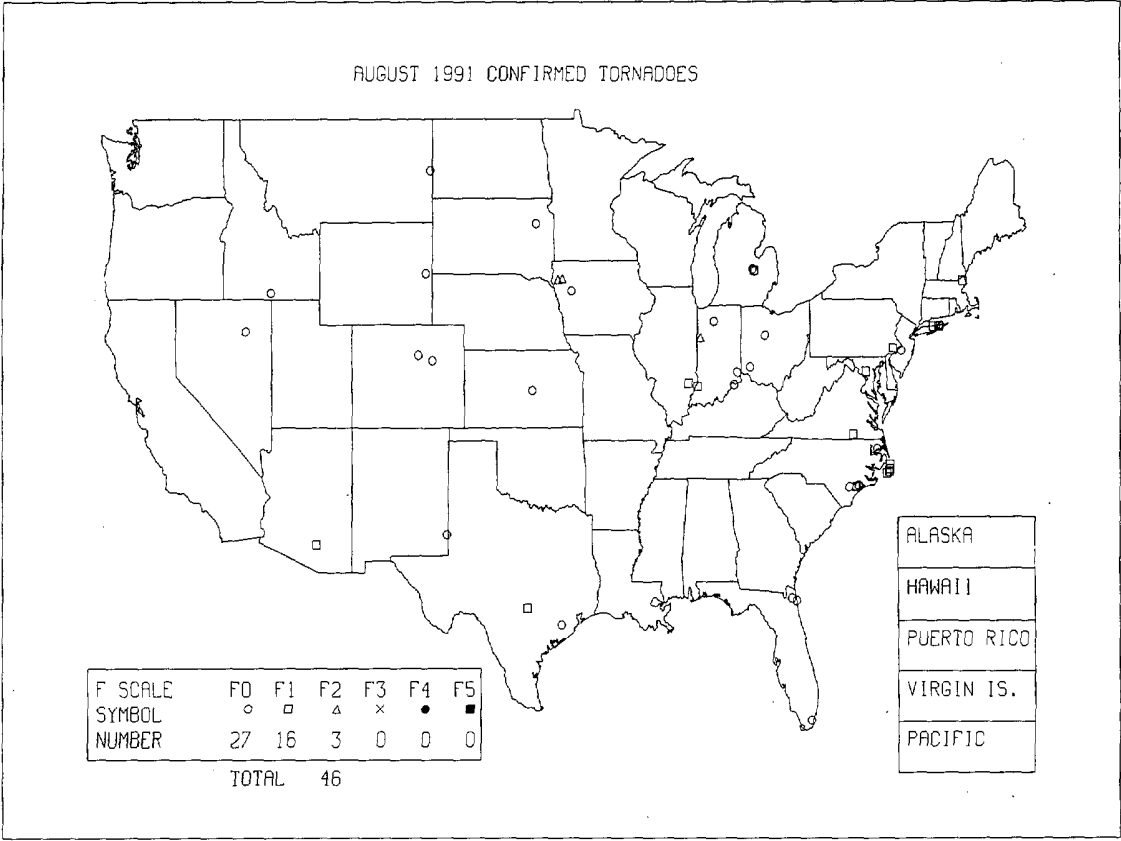


Reprinted from *Weekly Weather and Crop Bulletin* - September 10, 1991

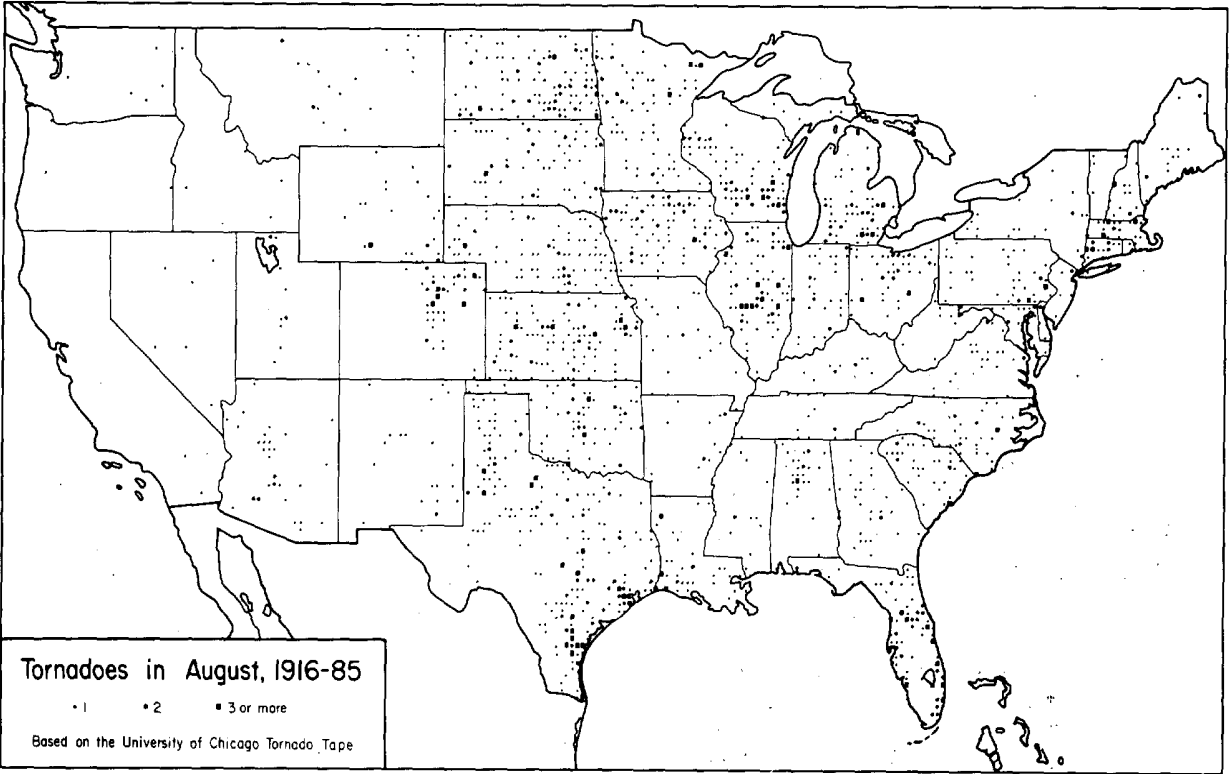
Fig. 5



Reprinted from *Weekly Weather and Crop Bulletin* - September 10, 1991



There were 46 tornadoes across the United States in August 1991. No deaths occurred, but three injuries were reported. North Carolina led the nation with 10 confirmed tornadoes. The strongest tornadoes (on the Fujita Tornado Scale) were three F2s, one in Indiana and the other two in Iowa. (See map above.)



OUTSTANDING STORMS OF THE MONTH

1. HURRICANE BOB - AUGUST 16-20

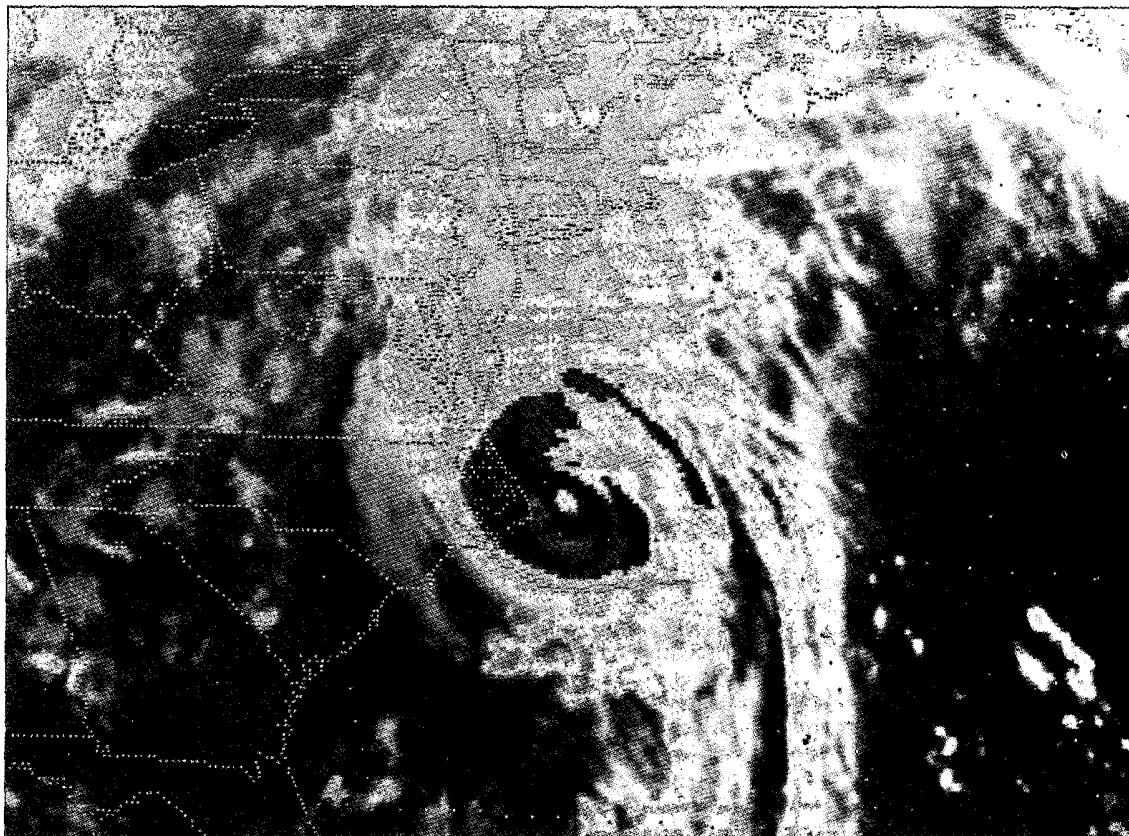
Bob was the first hurricane to strike the north-eastern United States since Gloria in 1985, and was the only hurricane to make landfall in the United States in 1991. Total damage estimates from Bob are at \$1.5 billion. Eighteen deaths resulted from the storm.

Bob formed from the remnants of a frontal trough located near Bermuda on August 12th. Over the next several days, the disturbed weather became the third tropical depression of the 1991 Atlantic hurricane season. On August 16th, the tropical depression reached tropical storm status at 1800 UTC with a 51-knot wind report (at a flight level of 1,500 feet) and a surface pressure of 1005 mb. At this time, the tropical depression was located 120 nautical miles northeast of Nassau. The tropical depression became Tropical Storm Bob and after another 24 hours, Bob reached hurricane status (1800 UTC on the 17th) 205 nautical miles east of Daytona Beach, Florida. A well-defined eye formed in the hurricane late on August 18th. Bob continued to intensify, as it passed 25 to 30 nautical miles east of Cape Hatteras. At 0412 UTC on August 19th, an Air Force reconnaissance plane measured 119-knot winds at the 700 mb level, and at 0621 UTC, a surface pressure of 950 mb was recorded. Bob had now become a Category 3 hurricane (on the Saffir/Simpson Hurri-

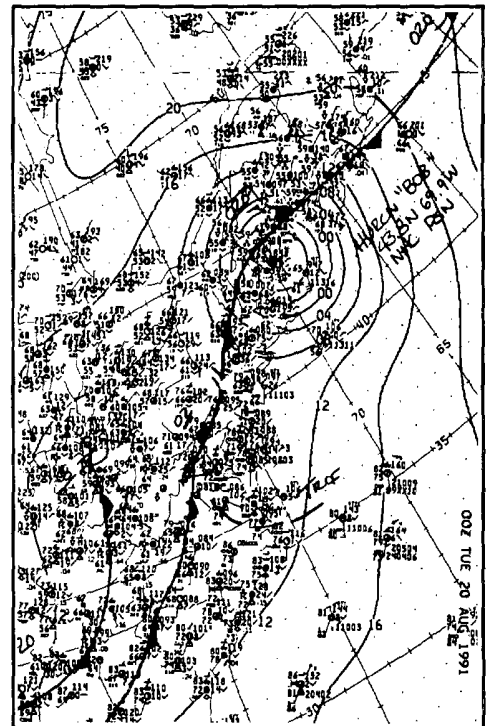
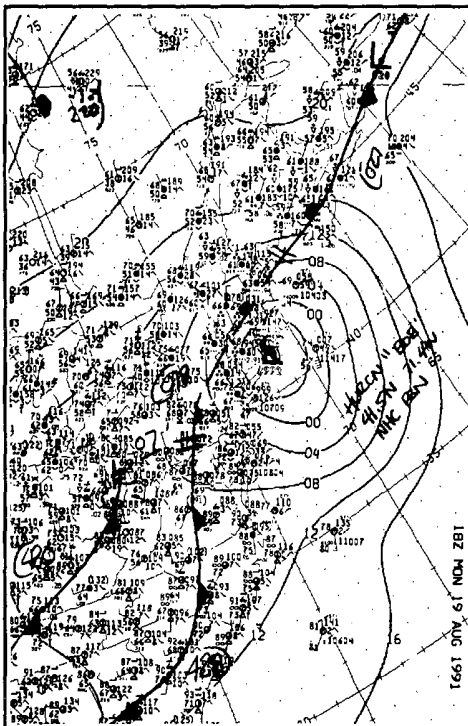
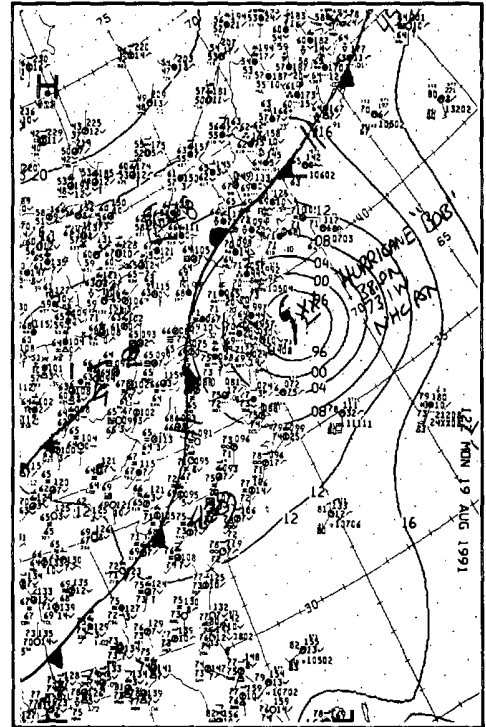
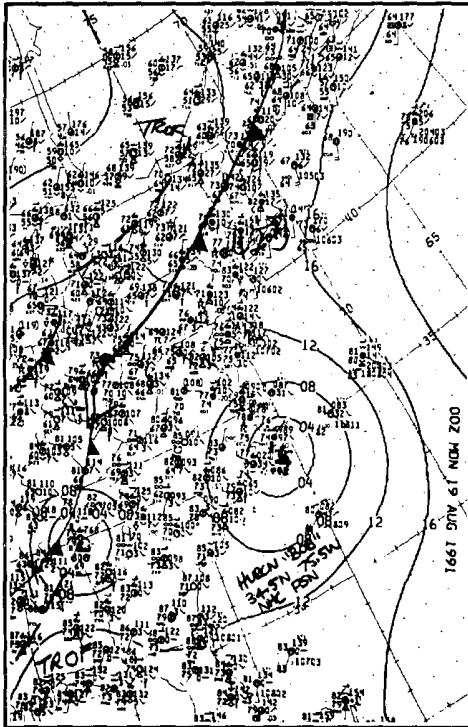
cane Scale) as it moved north-northeast at 20 knots. As the hurricane increased its forward speed, it weakened as it moved over cooler water located off the mid-Atlantic coast. The eye moved over Block Island at 1720 UTC and Newport, Rhode Island, 40 minutes later. Bob had weakened to a Category 2 hurricane by the time of landfall on Rhode Island. After further weakening, Bob made final landfall as a tropical storm near Rockland, Maine, at 0130 UTC on the 20th. Bob turned northeastward and moved over New Brunswick. Bob became extratropical on the 20th, and crossed northern Newfoundland into the North Atlantic (50-50°N) before turning southeastward and dissipating near the coast of Portugal on August 29th.

Bob produced six confirmed tornadoes, five in North Carolina, and one in New York (Long Island). Thirteen additional unconfirmed tornadoes were reported, nine in the wooded areas on Hatteras Island, two in Rhode Island, and two in Massachusetts.

Rainfall amounts ranged from 5 to nearly 8 inches along Bob's path. Some of the totals included 5.30 inches at Cape Hatteras, 7.04 inches at Bridgehampton (Long Island), 7.01 inches at Groton Emergency Operations Center in Connecticut, and 7.83 inches at Portland, Maine.



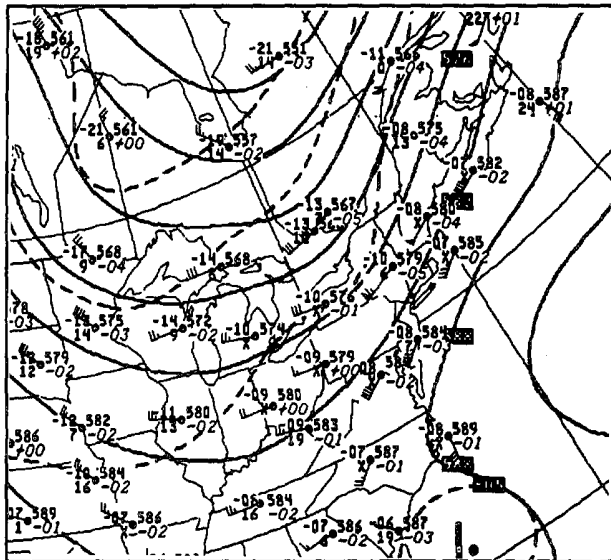
SURFACE ANALYSES OF HURRICANE BOB



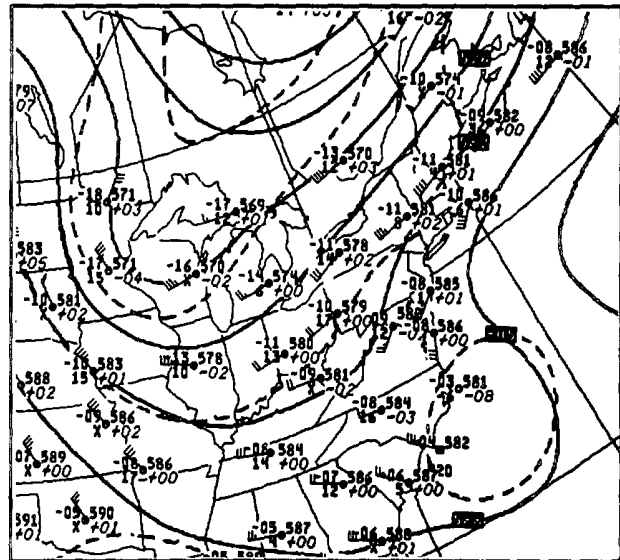
Map Courtesy: National Climatic Data Center

UPPER AIR ANALYSES OF HURRICANE BOB

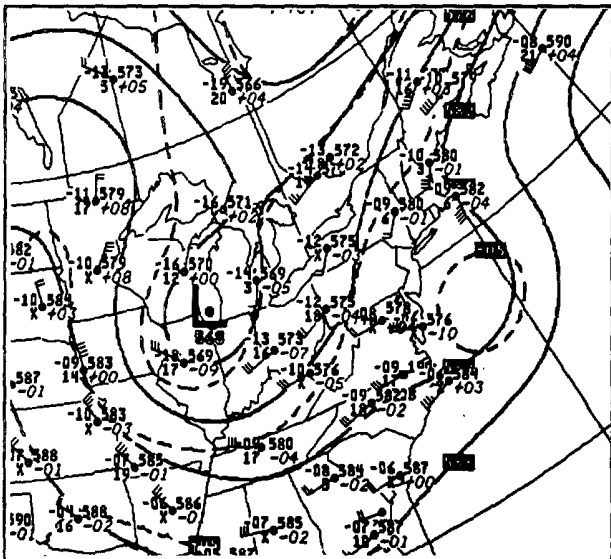
Hurricane Bob's movement was controlled by a mid-level flow between a cut-off low near the Great Lakes, and a strong Atlantic subtropical high pressure ridge. Bob paralleled the United States mid-Atlantic coast before moving into New England.



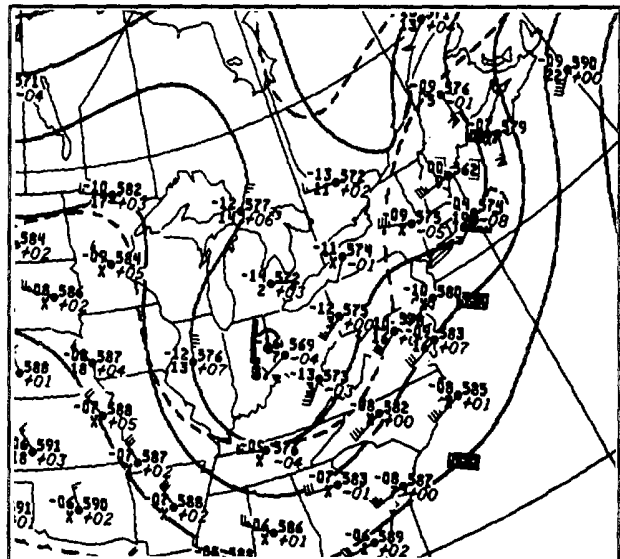
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00Z MON 19



12Z MON 19

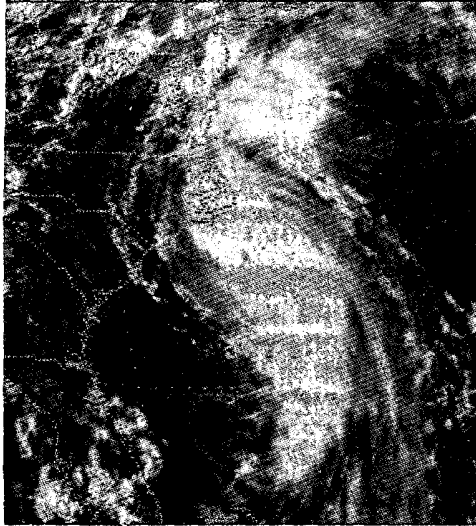


00Z TUE 20

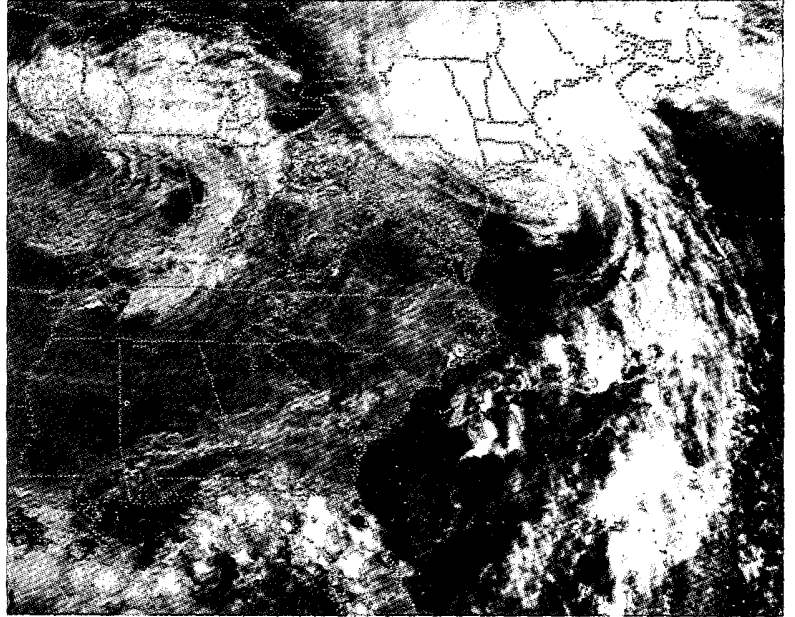
Map Courtesy: National Climatic Data Center

SATELLITE IMAGERY OF HURRICANE BOB

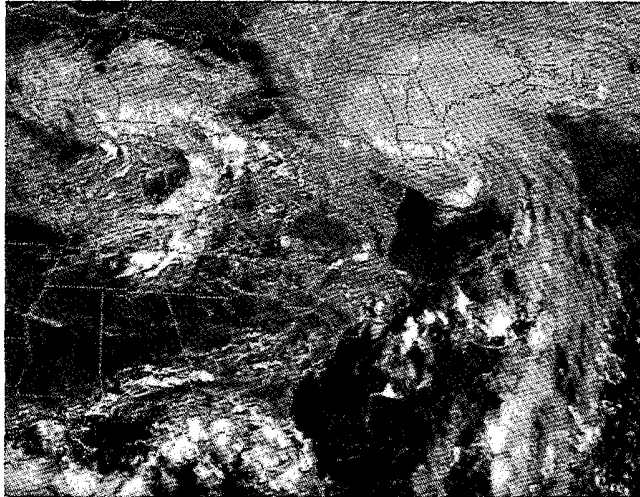
(Satellite courtesy: NESDIS Satellite Application Laboratory, Camp Springs, Maryland.)



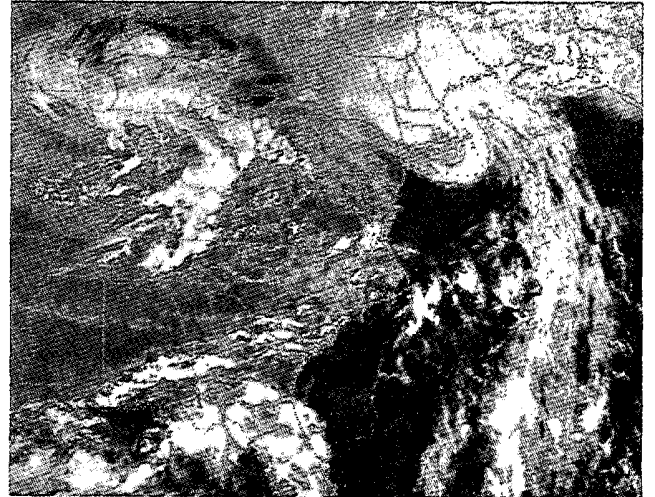
August 18, 1991 - 2031 UTC



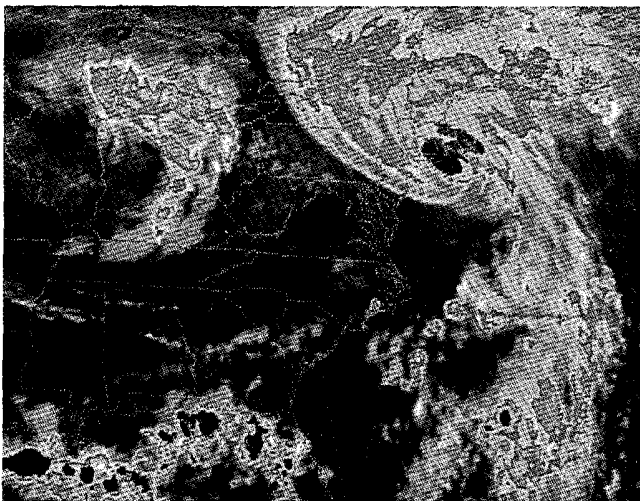
August 19, 1991 - 1631 UTC



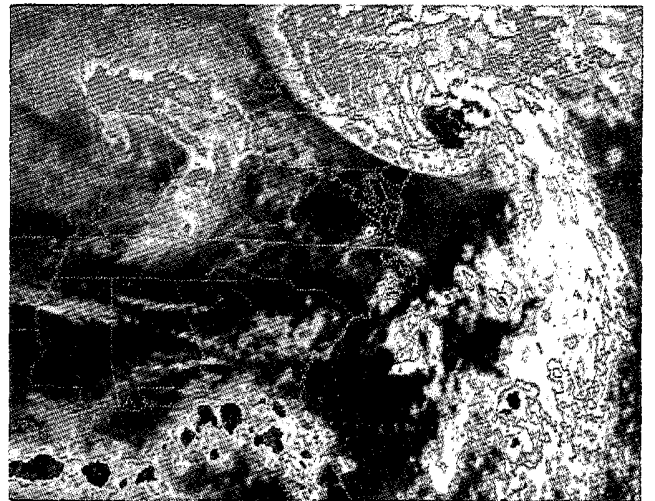
August 19, 1991 - 1731 UTC



August 19, 1991 - 1831 UTC

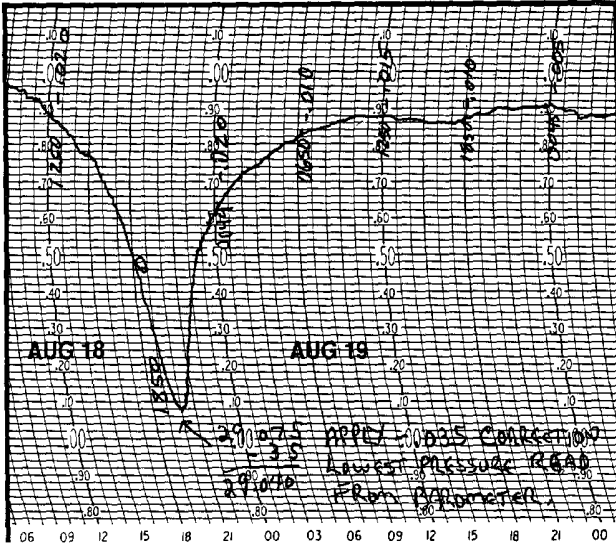


August 19, 1991 - 1601 UTC

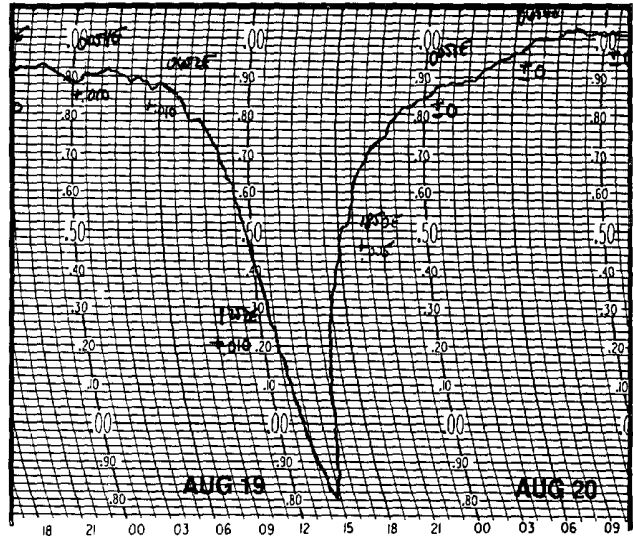


August 19, 1991 - 1701 UTC

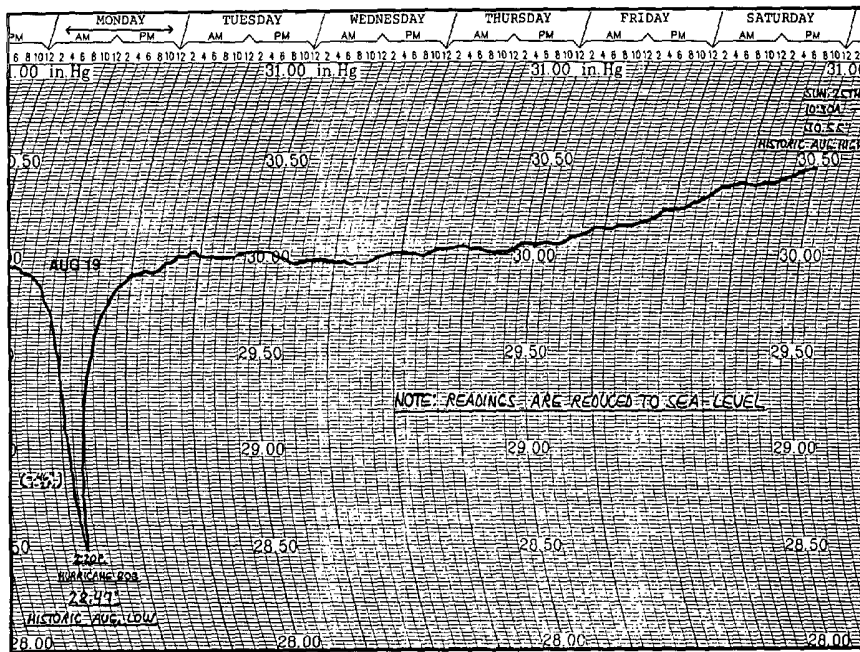
BAROGRAM TRACES OF HURRICANE BOB



Cape Hatteras, NC - August 18, 1991



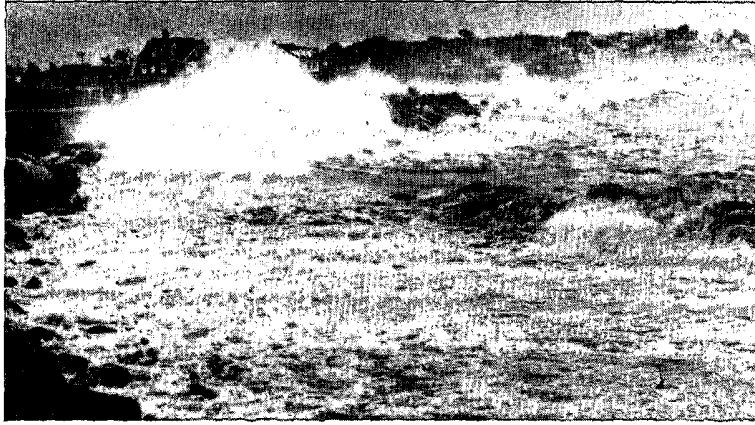
Boston, MA - August 19, 1991



Adamsville, RI - August 19, 1991

Other reports of pressure include a Navy ship, the *USS Valdez*, anchored in Narragansett Bay, reported a pressure of 964.0 mb at 1815 UTC. A pressure of 964.1 mb was also reported in Little Compton, Rhode Island, by a cooperative observer. *USS Samuel B. Roberts* and *USS Capodanno* reported pressure of 967.5 and 967.2, respectively. Boston, Massachusetts, tied the lowest pressure on record for August that was initially set by Hurricane Carol in 1954. Six days later on August 25th, Boston recorded the highest August pressure of 30.57 inches. Adamsville, Rhode Island, experienced the same type of phenomena when the pressure went from 28.47 inches on August 19th to 30.55 inches on the 25th. (See barogram trace above.)

THE DESTRUCTION OF HURRICANE BOB



Waves crashing along Shore Road in Falmouth; Falmouth Heights in background. (Photo courtesy: Mike Kullen, Associated Press, courtesy Cape Cod Times, Hyannis, MA.)



A tied down schooner during the height of the hurricane near Falmouth, MA. (Photo courtesy: Doc Taylor, Burns Hills, NY.)



Mattapoisett Firemen having trouble walking in the winds of Hurricane Bob. (Photo courtesy and ©: Dana Smith, The Stanford Times, New Bedford, MA.)



Tree bends to 80+ mph wind gust on western edge of eye wall at Shelter Harbor, RI. Time of photo is 1:00 p.m. EDT.



Flooding of a home at Swifts Beach. (Photo courtesy and ©: Dana Smith, the Stanford Times, New Bedford, MA.)

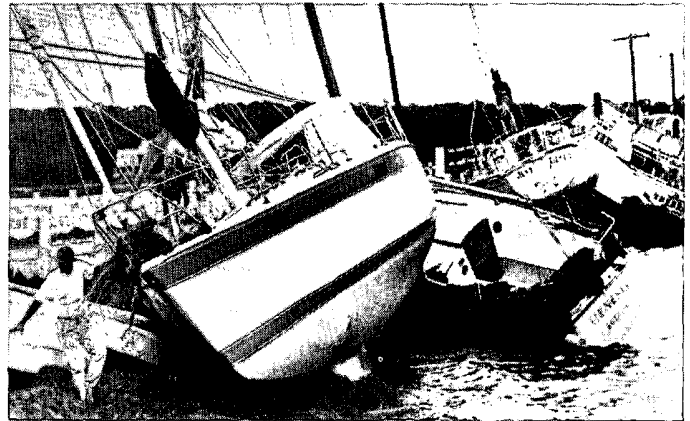
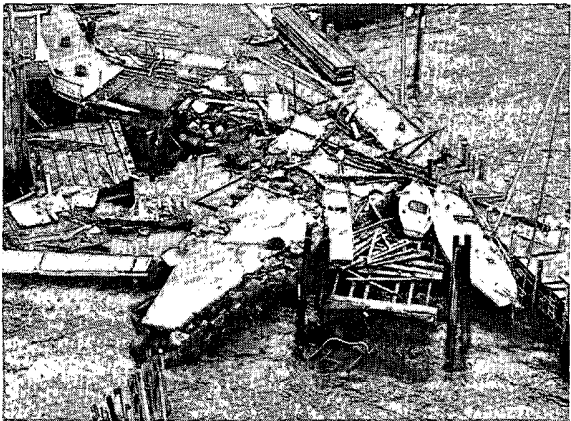
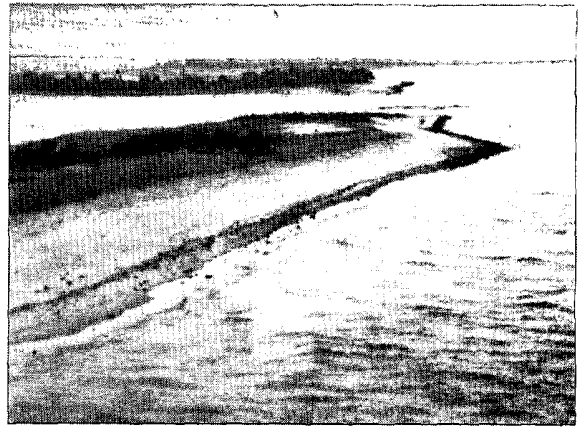


A line of boats against the trees after tearing away from their moorings at Ropes Beach in Cotuit. (Photo courtesy: Steve Heaslip, Cape Cod Times, Hyannis, MA.)

BEFORE

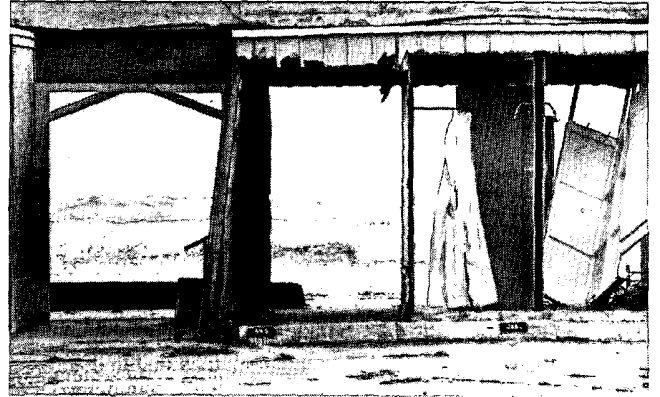


AFTER



Top: Before and after photos of the break through of Washburns Island by Hurricane Bob. (Photo courtesy: Doc Taylor, Burnt Hills, NY.) Above (left): Strong winds and heavy surf ravaged boats, docks, and buildings at East Ferry Marina in Jamestown. (Photo courtesy: Kathryn Whitney, Newport (RI) Daily News, Newport, Rhode Island.) Above (right): A man surveys damaged boats that washed ashore on Green Pond in Falmouth. Bottom: Scranton Avenue in Falmouth is littered with debris following Hurricane Bob. (Photo courtesy: Steven Rose (photographer), Cape Cod Times, Hyannis, MA.)





destroyed by Hurricane Bob! **Above (right):** Newport's most exclusive private beach club at Bailey's Beach was one of the most heavily damaged. The storm winds blew through once-plush cabanas facing Newport's eastern shore. (Photo courtesy: Kathryn Whitney, Newport (RI) Daily News, Newport, Rhode Island.) **Below (left):** Winds from Bob destroyed many homes in the Swifts Beach area. (Photo courtesy: Steve Heaslip, Cape Cod Times, Hyannis, MA.) **Below (right):** Winds from Bob blew out the walls and the roof fell. (Photo courtesy: Hank Seaman, The Standard-Times, New Bedford, MA.)



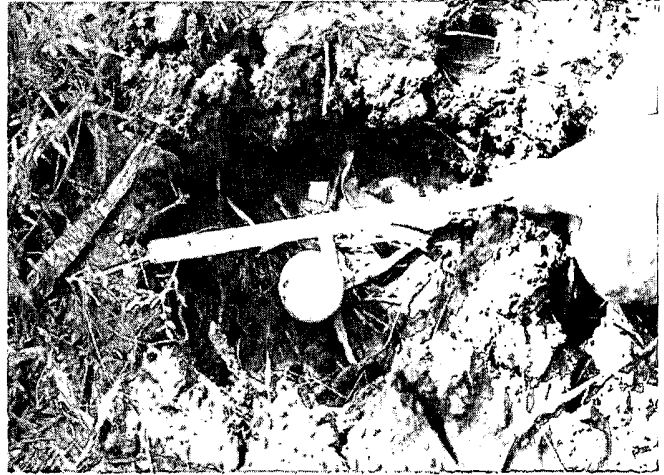
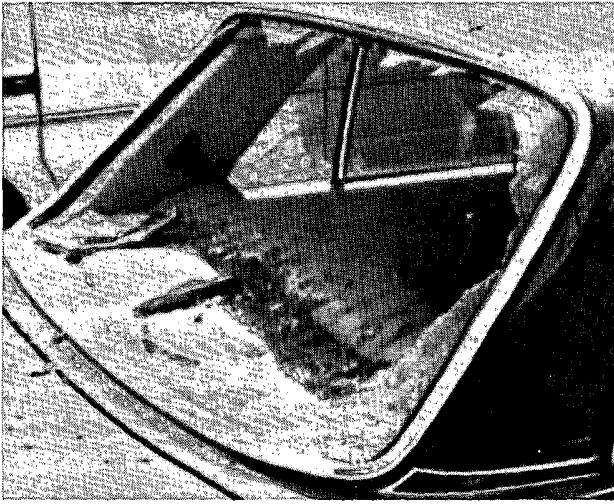
2. HAIL HITS U.S. ON AUGUST 15TH AND 24TH

On August 15th, a hailstorm damaged 29,000 acres of cropland in Nicollet County, Minnesota. Traffic accidents resulted from hail that accumulated on the

roadways. Hailstones as large as a softball caused extensive damage in Lisbon, North Dakota, on August 24th.

Below: Hail covered Highway 15 near Lafayette. **Right:** Hail damaged the leaves of trees. (Photo courtesy: Ed Lee (photographer), The Journal, New Ulm, MN.)





Above (left): Hail shattered the glass of the rear window of this car on August 24th in North Dakota. *Above (right):* Just east of Lisbon the hailstones produced some holes in the ground that were nearly 8 inches in diameter. *Left:* The front windshield of this car was rendered useless by the hail. (Photo courtesy: *The Ransom County Gazette, Lisbon, North Dakota.*)

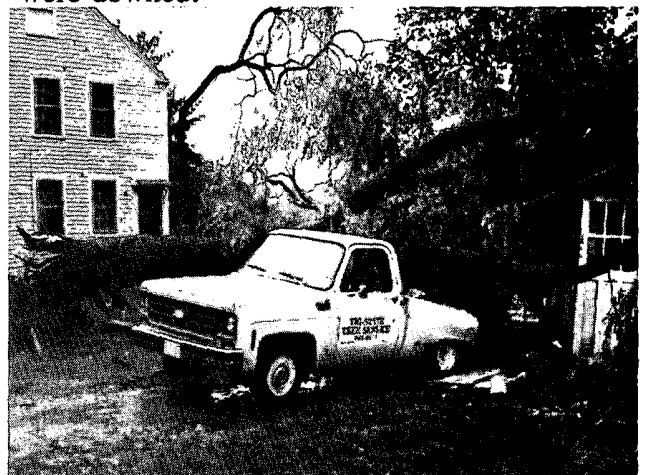
3. THUNDERSTORMS CAUSE DAMAGE - AUGUST 18TH

Strong thunderstorms occurred in the late afternoon hours in southern New Hampshire on August 18th. Fifty-knot (58 mph) winds were observed with these storms along with 0.75-inch size hail.

Damage was quite extensive. Homes and cars were damaged due to trees. Part of a barn roof was blown off, hail caused \$20,000 damage to agriculture products and 60-foot-tall pine trees were downed.



Trees block Union Road in Stratham, New Hampshire, along with the downed power lines. (Photo by *Laura Wood.*) (Photo courtesy: *Matt Palmer, Rockingham County Newspapers, Exeter, NH.*)



A fallen tree lies on a truck in Stratham. (Photo by *Dan Hackett.*) (Photo courtesy: *Matt Palmer, Rockingham County Newspapers, Exeter, NH.*)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
ALABAMA									
Escambia County	05	1300CST			0	0	?	?	Thunderstorm Winds
									Strong thunderstorm winds blew down about half a dozen trees at a golf course in Brewton.
Limestone County	08	1830CST			0	2	0	0	Lightning
									Two boys, ages 11 and 15, were struck by lightning while standing in the backyard of their home. One of the boys was seriously injured. Both were taken to hospitals for treatment.
Montgomery County	27	1500CST			1	2	0	0	Lightning
									Lightning killed one man and injured two others as they were cutting down a 40-foot-tall pine tree in Montgomery. The man who was killed was standing on an aluminum ladder. Two other men who were standing nearby were also injured and were taken to hospitals for treatment. (M290)
ARIZONA									
Mohave County Bullhead City	02	1315MST			0	0	0	0	Flash Flood
									Highway Patrol reported that Route 68 was flooded at the Sacramento Wash between Kingman and Bullhead City.
Cochise County 5 SE Sierra Vista	03	1545MST			0	0	3	0	Hail (1.00) Thunderstorm Winds
									Two windows were blown out of house and a chain link fence was damaged. A billboard was also damaged on Highway 90.
La Paz County Parker	03	1840MST			0	0	0	0	Flash Flood
									The Parker Police Department reported rocks on State Highway 95. A roof was torn off a house in Parker.
Yuma County Martinez Lake	04	1845MST			0	0	?	0	Thunderstorm Winds
									A mobile home was blown into the lake.
Pima County Tucson	05	1730MST			0	0	3	0	Thunderstorm Winds
									High winds from thunderstorms ripped roofs from at least two homes and blew over many trees on the southeast part of the city. Davis-Monthan Air Force Base had a peak gust of 47 mph. One home wind-recorder on the far eastside had a gust to 50 mph. Some street flooding also occurred with about 0.33 inch of rain.
Cochise County Fort Huachuca Willcox	08	1330MST			0	12	4	2	Lightning Thunderstorm Winds
									Lightning struck the pavement near a metal van where 12 soldiers were unloading equipment. All 12 were taken to the hospital, 9 were treated and released, 3 were hospitalized in stable condition. Thunderstorms generated strong winds, heavy rain, and hail in a wide area of southeast Arizona. A radio station in Willcox measured winds up to 52 mph with wind damage to nearby homes and trees. Between 1600 MST and 2030 MST, about 100 lightning strikes were detected in a 25-mile radius around Tucson.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

ARIZONA Cont'd

About 10 people were pulled from swollen washes as heavy rains rapidly filled low spots. One observer reported that 6th and Tucson Boulevard received 1.78 inches. More than 100 calls came into the Fire Department dispatch office. Pea-size hail and winds to 47 mph were also reported. At least one airliner was diverted to Phoenix. The temperature dropped from 102 to 70 degrees in about 20 minutes.

**Pinal County
Apache Junction**

22 1910MST 0 0 0 0 Thunderstorm Winds

An automatic weather station recorded a gust of 59 mph as severe thunderstorms drifted off the mountains and moved westward. Power lines were down.

**Maricopa County
Phoenix area**

22 1930MST 0 0 3 0 Thunderstorm Winds

Power lines down near Guadalupe and Arizona Avenues. An automatic weather station in Tolleson had a peak gust of 69 mph at 2024 MST, and a station at Sun Lakes had a peak gust of 58 mph.

**Pima County
Avra Valley**

24 1215MST 1.0 20 0 2 5 0 Tornado (F1)

Three mobile homes were destroyed as the short-lived tornado moved through this area southwest of Marana. Trees were uprooted and gusts of 60 mph were also reported west of Tucson.

**Maricopa County
Fort McDowell**

24 1800MST 0 0 0 0 Flash Flood

Department of Public Safety reported water over the pavement near the Verde River bridge.

Buckeye

24 1945MST 0 0 ? 3 Hail
Lightning

Slow-moving thunderstorms generated high winds, hail, and flooding along State Route 85. Cotton crops were also damaged. At nearby Luke Air Force Base lightning strikes blew 3 holes about 8 inches in diameter and about 10 inches deep in the runway.

**Gila County
Near Globe**

24 1825MST 0 0 0 0 Flash Flood

The sheriff's office reported flooding of two areas along Route 88, at Lavine and Devore Wash. An observer between Superior and Globe reported 0.87 inch in only 30 minutes.

**La Paz County
Bouse**

25 1925MST 0 0 3 0 Flash Flood
Thunderstorm Winds

A spotter reported street flooding in Bouse. Winds were estimated at 60 mph and caused a travel trailer to tip over. Awnings and antennas were damaged.

**Maricopa County
Queen Creek**

26 1720MST 0 0 0 ? Hail

Cotton crops were damaged by hail in Queen Creek.

**Pinal County
15 SW Florence**

26 1515MST 0 0 0 3 Hail

Strong thunderstorms damaged cotton crops. Heavy rain and gusty winds were also reported.

**Cochise County
Douglas**

30 1800MST 0 0 0 0 Flash Flood

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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ARIZONA Cont'd

Minor flooding was reported on streets around town. Time reported is estimated.

Maricopa County
Phoenix

30	2045MST				0 0	2 0	Thunderstorm Winds
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Power lines down in the Biltmore area and in Chandler as winds gusted to as high as 64 mph at automatic weather stations. Blowing dust and brief heavy rain was also reported.

ARKANSAS

Scott County
Waldron

01	1645CST				0 0	4 0	Thunderstorm Winds
----	---------	--	--	--	-----	-----	--------------------

Thunderstorm winds downed a tree which then fell on electric lines that landed on a mobile home. The downed electric lines then started a fire which destroyed the home.

Madison County
Huntsville

02	1415CST				0 0	2 0	Thunderstorm Winds
----	---------	--	--	--	-----	-----	--------------------

Thunderstorm winds downed trees along Highway 23.

Jefferson County
Pine Bluff

05	1525CST				1 0	0 0	Heat
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A 7-week-old baby boy died in his crib of heat-related causes. The temperature in the house was 91°F and 97°F outside. (M00P)

Sharp County
Hardy

06	1752CST				0 1	3 0	Lightning
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Lightning hit a tree and caused it to fall on the roof of a parked car resulting in head and neck injuries to the woman that was sitting in the car. She was admitted to a local hospital and released the next day.

Faulkner County
Conway

08	1530CST				0 0	3 0	Thunderstorm Winds (G35) Lightning
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Lightning strikes and tree limbs broken by 40 mph wind gusts, combined to break power lines across Conway. Lightning strikes also damaged a few homes and businesses.

Pulaski County
Little Rock

08	1636CST				0 0	5 0	Lightning
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A fire caused by lightning resulted in \$250,000 damage to a large home in Little Rock.

Little Rock

08	1645CST				0 0	2 0	Thunderstorm Winds
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Thunderstorm winds downed several large pine trees in west Little Rock.

Clark County
10 NW Arkadelphia

09	1400CST				0 0	2 0	Thunderstorm Winds (G52)
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SKYWARN spotters reported a few trees down from 60 mph wind gusts near DeGray Lake State Park.

Little River County
Ashdown
3 E Ashdown

09	1548CST				0 0	2 0	Thunderstorm Winds
09	1548CST				0 0	0 0	Hail (1.00)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons	Estimated Damage	Character of Storm	
					Killed	Injured	Property	Crops

ARKANSAS Cont'd

Thunderstorm winds downed trees in, and around Ashdown.

Miller County 4 NE Texarkana	09	1615CST			0	0	0	0	Hail (1.00)
Hempstead County 1 SE Fulton	09	1620CST			0	0	0	0	Hail (0.75)
Pulaski County Little Rock	17	1430CST			0	0	3	0	Lightning

Lightning strikes caused scattered power outages throughout the city.

Jefferson County Pine Bluff	17	1530CST			0	0	3	0	Lightning
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Lightning struck a home causing a fire resulting in \$1,000 damage.

Benton County Siloam Springs	28	1435CST			0	1	0	0	Lightning
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A construction worker suffered minor injuries when he was struck by lightning while pouring concrete. The lightning apparently traveled through a steel and concrete foundation and connected with the man through a reinforcement rod. The man was knocked 10 to 12 feet through the air.

CALIFORNIA, Northern

None reported.

CALIFORNIA, Southern

San Bernardino County Northeastern Portion	02	1325PST			0	0	?	0	Thunderstorms
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A strong and persistent thunderstorm, with heavy rain and strong winds, passed over the New York and Ivanpah Mountains, between Goffs and Mountain Pass.

San Bernardino, Riverside, Imperial, and San Diego Counties	10	1415PST			0	0	?	0	Thunderstorms
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The desert and mountain areas reported local heavy rain and gusty winds of 40 to 45 mph. Palm Springs received 0.20 inch of rain and Big Bear, 0.28 inch of rain.

San Bernardino, Riverside, Imperial, and San Diego Counties	11	0210PST			0	0	?	0	Thunderstorms
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The desert and mountain areas reported local heavy rain, gusty winds and small hail. Needles reported 0.16 inch of rain and Big Bear 0.11 inch of rain.

South Inyo, South- eastern Kern, Northern Los Angeles, San Bernardino, Riverside, San Diego, and Imperial Counties	11	1115PST			0	0	?	0	Thunderstorms
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All desert and mountain areas reported local heavy rain and gusty winds, with some local flooding.

CAZALL	12	0300PST-			0	0	?	0	Thunderstorms
	14	0650PST			0	0	?	0	Rain

A very moist unstable airmass in association with tropical storm Hilda, southwest of San Diego, brought rain and locally strong thunderstorms. Some local flash flooding occurred in the mountain

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

CALIFORNIA, Southern

and desert areas. Goleta fire station had 0.28 inch of rain, Maria Ygnacio 0.31 inch of rain, San Marcos pass 0.28 inch of rain and Refugio 0.63 inch of rain, all in Santa Barbara and Ventura Counties.

COLORADO

El Paso County Colorado Springs	02	1445MST			0	0	4	?	Flash Flood
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Torrential rains caused extensive flooding in parts of Colorado Springs. Reports of 2 to 3 inches of rain in less than 30 minutes were not uncommon. A 61-year-old man had to be rescued when his car was swept away into Sand Creek by flood waters; he was uninjured.

Denver County 9 SE Denver	02	1744MST			0	0	?	?	Flash Flood
6 SSW Denver	02	1758MST			0	0	?	?	Flash Flood
Arapahoe County 6 S Denver	02	1712MST			0	0	?	?	Flash Flood
7 S Denver	02	1724MST			0	0	?	?	Flash Flood
7 ESE Denver	02	1759MST			0	0	?	?	Flash Flood
5 S Denver	02	1815MST			0	0	?	?	Flash Flood
Jefferson County 7 NW Denver	02	1801MST			0	0	?	?	Flash Flood

Late afternoon thunderstorms produced very heavy rain, causing flash flooding around the Denver metro area. Two feet of water covered parts of Interstate 25 in southeast Denver, while 1 foot of water covered part of U.S. Highway 285 in Englewood. Elsewhere, flood waters ranged from 6 inches to 1 foot deep.

Boulder County Longmont	03	0935MST			0	0	?	?	Flash Flood
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Heavy rains caused flooding in downtown Longmont.

Baca County 15 N Springfield	04	1520MST			0	0	?	?	Flash Flood
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The State Highway Patrol closed U.S. Highway 287 after heavy rain flooded the road 15 miles north of Springfield.

Denver County 3 N Denver	06	1513MST			0	0	?	?	Flash Flood
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Heavy rain caused flooding at the junction of Interstates 70 and 25.

Park County 20 S Hartsel	06	1558MST			0	0	?	?	Flash Flood
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Colorado Highway 9 closed due to flooding 20 miles south of Hartsel.

Boulder County Niwot	06	1605MST			0	0	?	?	Hail (0.75)
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Dime-size hail was reported in Niwot.

Larimer County 2.5 WNW Fort Collins	08	1437MST			0	0	?	?	Hail (0.75)
Fort Collins	08	1440MST			0	0	?	?	Hail (1.00)
2 NW Fort Collins	08	1450MST			0	0	3	?	Hail (1.50)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
COLORADO Cont'd									
Red Feather Lakes	08	1620MST			0	0	?	?	Hail (0.75)
Thunderstorms dropped hail up to 1.50 inches in diameter around Larimer County, mainly near Fort Collins. Hail, 2 miles northwest of Fort Collins, caused \$2000 in damage to automobiles.									
El Paso County 1 NW Colorado Springs	08	1548MST			0	0	?	?	Hail (1.00)
1 N Colorado Springs	08	1602MST			0	0	?	?	Hail (1.50)
Large hail fell in northern sections of Colorado Springs. At the Colorado Springs Dog Track, 1.50 inch hail was reported.									
Larimer County 4 W Estes Park	09	1500MST			0	1	?	?	Lightning
A 29-year-old Massachusetts woman was struck by lightning in Rocky Mountain National Park 4 miles west of Estes Park while sightseeing; she was hospitalized in serious condition.									
Jefferson County 16 NW Denver	09	1610MST			0	0	0	0	Funnel Cloud
A funnel cloud was spotted at the U.S. Atomic Energy Commission facility at Rocky Flats.									
Weld County Raymer	11	1734MST			0	0	2	?	Thunderstorm Winds
2 E Raymer	11	1810MST			0	0	?	?	Hail (0.75)
Thunderstorm wind gusts (no estimate) broke tree branches up to 8 inches in diameter in Raymer. Dime-size hail covered a 2-mile stretch of Colorado Highway 52 up to 3 inches deep 2 miles east of Raymer.									
Morgan County 16 N Fort Morgan	11	1813MST			0	0	?	?	Hail (4.00)
Hail up to 4.00 inches in diameter fell 16 miles north of Fort Morgan.									
Lincoln County Limon	11	1825MST			0	0	?	?	Hail (1.50)
					0	0	?	?	Thunderstorm Winds (G53)
Hail to 1.50 inches and thunderstorm wind gusts to 61 mph occurred at the National Weather Service Office in Limon.									
Arapahoe County 1 S Deer Trail	12	1440MST- 1455MST	Short	Narrow	0	0	?	?	Tornado (F0)
Several private citizens reported seeing a tornado in open field 1 mile south of Deer Trail. Deer Trail Fire Department confirmed reports, but no damage was reported.									
Fremont County Cañon City	12	1500MST			0	0	6	?	Flash Flood
14 SE Cañon City	12	1521MST			0	0	?	?	Hail (1.00)
Strong thunderstorms moved through Cañon City, dropping up to 2.50 inches of rain in less than an hour over most of the east side of the city. A rain gage on the northeast side of town near Four Mile Creek recorded 7.50 inches of rain. Red Cross surveys showed 113 single family homes were flooded; 27 were declared beyond repair. Seven mobile homes and five apartments received damage. Twelve businesses also had damage. A 50-foot length of road was washed away by flood waters. This was the worst flooding since 1965. Estimates of damages to homes and businesses									

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property Crops		Character of Storm
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COLORADO Cont'd

were placed at \$554,000; while costs to city and county for roads, sewer, and drainage systems were over \$150,000. A spotter also reported 1.00 inch hail 14 miles southeast of Cañon City.

Weld County Briggsdale

15	1510MST				0	0	?	?	Thunderstorm Winds (G52)
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A National Weather Service mesonet observation station at Briggsdale recorded a thunderstorm wind gust of 60 mph.

El Paso County Falcon

16	1420MST				0	0	?	?	Hail (1.00)
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Hail measuring 1 inch in diameter fell at Falcon.

1 S Calhan

16	1810MST				0	0	?	?	Hail (0.75) Thunderstorm Winds (G53)
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Off-duty National Weather Service employee reported dime-size hail, and thunderstorm wind gusts to 60 mph 1 mile south of Calhan.

Boulder County 18 NE Boulder

16	1400MST				0	0	?	?	Hail (0.75)
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Dime-size hail fell at U.S. Highway 287 near the county line between Boulder and Larimer Counties.

Yuma County Washington County Kit Carson County Bethune 10 W Burlington Burlington

17	Afternoon				0	0	?	5	Hail
17	Afternoon				0	0	?	5	Hail
17	1520MST				0	0	4	?	Thunderstorm Winds
17	1520MST				0	1	5	?	Thunderstorm Winds
17	1530MST				0	0	?	?	Thunderstorm Winds

Intense thunderstorm complex moved through southern Yuma and Washington Counties, dropping hail up to golf ball size through fields of maturing corn and beans. Early estimates place damages to crops in an area approximately 3 miles wide and 20 miles long at over \$300,000. The storm later moved into northern Kit Carson County and produced strong winds which overturned three tractor semi-trailers on Interstate 70, 10 miles west of Burlington. The driver of one of the trucks was slightly injured. The winds later damaged trees and fields of prairie grasses in and near Burlington. A Quonset building was also badly damaged in Bethune.

14 E Hugo

18	1900MST				0	1	?	?	Lightning
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A 33-year-old man was injured when struck by lightning while filling oil tanks 14 miles east of Hugo. The man suffered some burns and lacerations.

Clear Creek County Idaho Springs Idaho Springs Idaho Springs 1 E Idaho Springs Gilpin County Central City

18	2028MST				0	0	?	?	Flash Flood
18	2032MST				0	0	4	?	Flash Flood
18	2050MST				0	0	?	?	Flash Flood
18	2055MST				0	0	3	?	Flash Flood
18	2028MST				0	0	?	?	Flash Flood

Very heavy rain from a slow-moving thunderstorm dropped up to 3 inches of rain in 20 minutes, causing rapid flooding in the steep topography in and around the mountain towns of Idaho Springs and Central City. Flood in Idaho Springs forced the closure of Virginia Gulch Road which runs from Idaho Springs to Central City. Dirt roads above Central City were damaged or destroyed above Central City, with much of the mud ending up on town streets. High water in Clear Creek (3 feet above flood stage) washed out a bridge in Idaho Springs. Rock and mud slides caused the

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
COLORADO Cont'd									
									closing of Interstate 70 for a while, 1 mile east of Idaho Springs. Damage estimates were placed around \$45,000.
Washington County 5 NE Hillsboro	19	1515MST			0	0	?	4	Hail (1.75)
									Golf ball-size hail fell on a farm in northwest Washington County. Hail damaged 300 acres of crops. Preliminary loss estimates were placed at \$30,000.
Adams County Commerce City	22	1340MST	Short	Narrow	0	0	?	?	Tornado (F0)
									National Weather Service personnel sighted tornado briefly on the ground about 3 miles west-northwest of the Weather Service Forecast Office in Denver; no damage was reported.
Larimer County Fort Collins	28	1505MST			0	0	?	?	Flash Flood
									Heavy rains caused flooding in Fort Collins.
CONNECTICUT									
Litchfield County Sharon Kent	18	1505EST			0	0	?	0	Thunderstorm Winds
									Numerous large trees and power lines were blown down.
West Torrington	18	1525EST			0	0	0	0	Hail (0.75)
									Large hail was reported by the state police.
Bakersville	18	1545EST			0	0	0	0	Hail (0.75)
									Local police reported large hail in Bakersville.
Bakersville	18	1545EST			0	0	4	0	Thunderstorm Winds
									Local and state police reported numerous large trees down and blocking Route 202.
New Milford	18	1621EST			0	0	?	0	Thunderstorm Winds
									Large trees were reported down at Candlewood Lake.
Fairfield County Sherman	18	1621EST			0	0	?	0	Thunderstorm Winds
									Large trees were reported down near Candlewood Lake.
CTZALL	19	0900EST- 1500EST			1	2	7	6	High Winds
Hartford County Countywide	19	1306EST- 1337EST			0	0	0	0	Flash Flood
Hartford CTZALL	19	0500EST- 1500EST			0	0	?	?	Heavy Rain

Hurricane "Bob" caused high winds and heavy rain across the state as its center moved rapidly through southeast Rhode Island and southeast Massachusetts. One person died of hypothermia after clinging to a life preserver for 24 hours off Groton where the boat she was in capsized during the morning of the storm. The southeast portion of the state experienced near hurricane force winds with gusts of about 70 mph from the east. Elsewhere, winds gusted between 40 and 60 mph from

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

CONNECTICUT Cont'd

the northeast direction and then from the northwest. Some peak wind gusts recorded by the National Weather Service include: 63 mph at New Haven, 55 mph at Bradley International Airport in Windsor Locks and 52 mph at Bridgeport. High winds caused thousands of trees to fall on power lines resulting in power outages which affected up to 300,000 customers statewide. Power was out for several days in some places. Some homes and automobiles were damaged by falling trees and tree limbs. Along the coast, a number of small boats were sunk or broke from their moorings and were damaged when beached ashore. The storm surge at the Stamford Hurricane Barrier was 5.7 feet. Heavy rain of 4 to 6 inches fell in less than 12 hours causing street flooding. Rainfall of around 7 inches fell in extreme eastern Connecticut. In Hartford, minor lowland flooding occurred when the South Branch of the Park River crested just above the 9-foot flood stage. Damage amounts included: private property \$40 million; public property \$4 million; agricultural losses \$4.5 million. (F280)

DELAWARE

DEZ001	19	0400EST- 1300EST			0	0	0	0	Hurricane
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Fringe winds from Hurricane Bob reached sustained speeds of 34 knots with gusts to 45 at the Indian River Coast Guard station, at about 0600 EST. State parks and campgrounds were closed and the occupants were asked to leave by local officials. No damage was reported.

FLORIDA

Highlands County 8 SSE Avon Park	01	1410EST			0	0	3	0	Thunderstorm Winds
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Strong thunderstorm wind gusts toppled a light pole onto a car at a Sebring Chrysler dealership lot.

Monroe County Bahia Honda Key	02	0820EST	?	?	0	0	0	0	Waterspout
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A waterspout was sighted by rangers at Bahia Honda State Park.

Palm Beach County West Palm Beach	03	0650EST	?	?	0	0	0	0	Waterspout
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Control tower personnel spotted three short-lived waterspouts east of Palm Beach International Airport.

Monroe County 10 NW Key West	03	0933EST	?	?	0	0	0	0	Waterspout
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A waterspout was sighted 10 miles northwest of Key West.

Brevard County Titusville	03	1900EST			0	1	0	0	Lightning
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Lightning struck a man on the roof of his house. He lost all feeling in one arm but was not hospitalized.

Dade County 18 SW Miami	04	1245EST	Short	?	0	0	4	0	Tornado (F0)
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A small tornado roared across a canal and into a subdivision. The tornado uprooted trees that fell across six houses, and tore down a metal carport before it dissipated.

Hillsborough County 3 S Wimauma	05	1430EST			0	3	4	0	Thunderstorm Winds
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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FLORIDA Cont'd

Three men went into an unanchored metal tool shed seeking shelter from a thunderstorm. Strong winds rolled the shed over several times. All three men suffered injuries which included broken ribs, a dislocated shoulder, and lacerations. A 14- by 70-foot mobile home was ripped off its foundation, overturned, and rolled into another mobile home and a tree. A nearby recreational vehicle was overturned and several trees and power lines were blown down.

Brevard County
Palm Bay

05	1705EST				0	0	0	0	Funnel Cloud
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A funnel cloud was noted by law enforcement officers in Palm Bay.

Bay County
13 NNW Panama
City

06	1330EST				0	1	0	0	Lightning
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A man was struck by lightning outside his home in Southport. He walked inside and collapsed.

Hillsborough County
9 W Tampa

06	1440EST				0	0	3	0	Lightning
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Lightning started a fire at a three-story building in Safety Harbor. Most of the damage was in the attic and in one third-floor suite.

Lee County
Captiva

06	1745EST				0	0	0	0	Thunderstorm Winds
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Tree limbs were downed by thunderstorm winds.

Sarasota County
5 to 15 S
Sarasota

06	1833EST				0	0	3	0	Thunderstorm Winds
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Several trees and power lines were blown down. A carport was damaged in Osprey, 46 miles south of Tampa.

Manatee County
Bradenton

06	1845EST- 1900EST				0	0	4	0	Hail (0.88) Thunderstorm Winds
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Nickel-size hail fell briefly and strong thunderstorm winds bent a flagpole. Numerous trees and power lines were downed.

Pinellas County
Clearwater

06	1920EST- 1955EST				0	0	0	0	Hail (1.00)
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Numerous reports of 0.50- to 1.00-inch hail were received from near the St. Petersburg-Clearwater Airport.

Citrus County
Crystal River

06	2130EST				0	0	2	0	Thunderstorm Winds
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Strong thunderstorm winds ripped off a metal boat storage shed and blew it into a house.

Monroe County
5 NE Key West

08	1300EST- 1345EST	?	?		0	0	0	0	Funnel Cloud Waterspout
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Several funnel clouds and waterspouts were sighted northwest of Key West.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
FLORIDA Cont'd									
Dixie County 44 W Gainesville	08	1330EST			0	0	3	0	Lightning
									Lightning struck a large tree in an open field near Cross City killing 12 cows and calves that were under the tree.
Nassau County 7 NNW Jackson- ville	08	1410EST			0	0	2	0	Thunderstorm Winds
									Strong downburst winds toppled several trees in Callahan.
Levy County 33 WSW Gaines- ville	08	1505EST			0	0	4	0	Hail (1.50) Thunderstorm Winds
									Golf ball-size hail fell briefly in Morrison. Thunderstorm winds destroyed a shed in Chiefland.
Marion County 39 SSW Gaines- ville	08	1520EST			0	0	1	0	Hail (1.75) Thunderstorm Winds (G50)
									Golf ball-size hail and 58-mph wind gusts were reported at a fire station just north of Dunnellon.
Citrus County 47 SSW Gaines- ville	08	1530EST			0	0	3	0	Thunderstorm Winds
									Thunderstorm winds uprooted trees and broke off tree limbs in Beverly Hills.
Lee County Fort Myers	08	1810EST- 1830EST			0	0	3	0	Thunderstorm Winds
									Numerous tree limbs were downed north of Fort Myers.
Orange County 36 SSW Daytona Beach	08	2030EST			0	0	4	0	Thunderstorm Winds
									Thunderstorm winds blew down about 40 trees which damaged 12 homes in Maitland.
Santa Rosa County Milton	09	1115EST			0	0	4	0	Lightning
									Lightning struck a barn filled with antiques and set it on fire.
Manatee County 38 SE Tampa	09	1420EST			0	0	3	0	Thunderstorm Winds
									Thunderstorm winds blew down trees and power lines in Duette.
Orange County Orlando	09	1430EST			0	0	0	0	Thunderstorm Winds (G50) Hail (0.88)
									A thunderstorm gust to 58 mph and nickel-size hail reported at 1430 EST at the Orlando International Airport.
Lafayette County Alton	09	1430EST			0	0	4	0	Thunderstorm Winds
									Strong downburst winds blew the roof off a mobile home and toppled several carports.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
FLORIDA Cont'd									
Orange County Orlando	09	1440EST- 1445EST			0	0	2	0	Thunderstorm Winds
									Numerous trees and power lines were downed by strong winds in southwestern Orange County. A few trees were also downed in Orlando and Apopka.
Orlando	09	1445EST			0	1	0	0	Lightning
									Lightning struck a police officer as he entered a building. He suffered only minor burns.
Hardee County 42 ESE Tampa	09	1500EST			0	0	3	0	Thunderstorm Winds
									Thunderstorm winds uprooted trees in Bowling Green.
Polk County 40 ESE Tampa	09	1525EST			0	0	1	0	Thunderstorm Winds
									Strong thunderstorm winds downed several trees in Fort Myers.
St. Lucie County Fort Pierce	09	1530EST			0	0	1	0	Hail (0.75)
									Sheriff's deputies reported dime-size hail in Fort Pierce.
Polk County 49 E Tampa	09	1530EST			0	0	4	0	Thunderstorm Winds (G65)
									Strong 75-mph downburst winds toppled an 18,000-pound mobile home and threw it 10 feet against another mobile home in Haines City.
Highlands County Avon Park	09	1600EST			0	0	2	0	Thunderstorm Winds
									Thunderstorm winds blew down several power poles.
Monroe County Key Largo	10	1019EST	?	?	0	0	0	0	Waterspout
									A waterspout was sighted by the Ocean Reef Sheriff's Office personnel off Key Largo.
Escambia County Pensacola	10	1500EST			0	1	0	0	Lightning
									A 16-year-old boy was injured when lightning struck a metal cable he was sitting on. He was treated at a hospital then released.
Santa Rosa County Milton	10	1520EST			0	0	4	0	Lightning
									Two horses were killed when lightning struck a barn in Milton.
Holms County Holland Crossroads	11	1330EST			0	0	4	0	Thunderstorm Winds
									Strong downburst winds tore the roof off a feed storage building at a dairy farm.
Hardee County Zolfo Springs	12	1700EST			0	0	1	0	Thunderstorm Winds

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
FLORIDA Cont'd									
Strong thunderstorm winds downed several trees.									
Collier County Immokalee	12	1800EST			0	0	0	0	Thunderstorm Winds
Strong thunderstorm winds broke large tree limbs near Immokalee. Marble-size hail was also observed.									
Orange County Orlando	12	1800EST			0	1	0	0	Lightning
Lightning struck an airplane on which a 29-year-old maintenance worker was leaning. He was hospitalized with a numb arm, but was later released.									
Polk County 43 E Tampa	12	1810EST			0	0	1	0	Hail (1.50)
Golf ball-size hail fell in Winter Haven.									
Countywide	12	1940EST			0	0	0	0	Hail (1.00)
Golf ball-size hail fell in Polk County; no damage was reported									
St. Johns County Bakersville	13	1640EST			0	0	0	0	Hail (0.75)
Marble-size hail fell at Bakersville.									
Ponte Vedra Beach	13	1645EST	Short	?	0	0	2	0	Tornado (F0)
A small tornado dropped out of the clouds down to tree-top level and damaged several trees before lifting.									
Ponte Vedra Beach	13	1700EST			0	0	3	0	Lightning
Lightning struck a house starting a fire.									
Monroe County 5 SE Key West	15	0830EST	?	?	0	0	0	0	Waterspout
A waterspout was observed 5 miles southeast of Key West.									
Polk County Lakeland	15	1230EST			0	1	0	0	Lightning
Lightning struck a pickup truck as the driver was rolling up the window. The 46-year-old driver was hospitalized overnight then released.									
Okeechobee County Okeechobee	15	1430EST			0	0	4	0	Thunderstorm Winds (G61)
A 70-mph downburst gust hit near a house under construction. The roof was lifted off and deposited nearby.									
Monroe County 5 NE Key West	16	0820EST	?	?	0	0	0	0	Waterspout
A waterspout was observed 5 miles northeast of Key West.									
2 S Key West	18	0743EST	?	?	0	0	0	0	Waterspout
A waterspout was observed 2 miles south of Key West.									

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
FLORIDA Cont'd									
Palm Beach County 10 SSE West Palm Beach	18	1750EST			0	0	0	0	Funnel Cloud
A funnel cloud was observed briefly over Boynton Beach.									
Duval County Jacksonville	19	1330EST	Short	?	0	0	2	0	Tornado (F0)
A small brief tornado touched down at a school destroying a shelter roof and blowing down several trees. Several witnesses observed the vortex as it struck then saw it go back into the clouds.									
Brevard County Cape Canaveral	19	1510EST			0	0	0	0	Thunderstorm Winds
Thunderstorm winds blew down a few trees near Cape Canaveral.									
Monroe County 48 SSW Miami	21	0800EST	?	?	0	0	0	0	Waterspout
A waterspout was observed off the upper Keys near Tavernier.									
4 N Key West	21	0958EST	?	?	0	0	0	0	Waterspout
A waterspout was observed 4 miles north of Key West.									
Marathon	21	1125EST	?	?	0	0	0	0	Waterspout
A waterspout was observed off the middle Keys near Marathon.									
Dade County Miami	21	1435EST			1	3	0	0	Lightning
Lightning struck a football practice field where several coaches and a player remained after practice. One assistant coach died later at a hospital, two other coaches were hospitalized for the night for less serious injuries. The football player was also hospitalized in good condition. (M600)									
Martin County 28 SSE Vero Beach	21	1700EST			0	0	4	0	Lightning
Lightning struck a house in Stuart starting a fire which caused moderate damage.									
Indian River County 10 NNW Vero Beach	21	1700EST			0	1	3	0	Lightning
Lightning struck the radio tower at the Sebastian police station. Every telephone, computer, and radio was knocked out. The dispatcher who was using the radio at the time was slightly injured.									
Charlotte County Port Charlotte	23	1542EST			0	1	0	0	Lightning
Lightning struck near a Charlotte County tow truck driver who had been called out on an emergency. He was treated at a local hospital then released.									
Sarasota County Siesta Key	24	1700EST			2	4	0	0	Lightning
Lightning struck as twin sisters were walking along the beach passing a man walking in the opposite direction. One twin and the man were killed instantly, and the other sister was only slightly injured. Three other nearby persons were knocked down but otherwise not hurt badly. (F390) (M620)									

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured		Estimated Damage Property Crops		Character of Storm
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FLORIDA Cont'd

Monroe County 7 NW Key West	26	1827EST	?	?	0	0	0	0	Waterspout
A waterspout was observed 7 miles northwest of Key West.									
Pinellas County Clearwater	27	1815EST			0	0	4	0	Lightning
Lightning struck the attic of a house, starting a fire which damaged the roof and garage.									
Broward County 3 S Fort Lauderdale	28	0649EST			0	1	0	0	Lightning
Lightning struck a pole in Hollywood. The man standing next to it was stunned, but not seriously injured.									
Sarasota County Siesta Key	28	1700EST- 1710EST	?	?	0	0	0	0	Waterspout
A waterspout formed near shore then moved offshore to dissipate.									
Bay County Panama City	28	1709EST			2	8	0	0	Lightning
Lightning struck two boats about 30 yards from shore as they attempted to make it back to beat a thunderstorm. The people in the boats were having a family reunion. A brother and sister were killed, and eight other people suffered varying degrees of injuries. (F550) (M670)									
Monroe County 5 NW Key West	30	1425EST	?	?	0	0	0	0	Waterspout
A waterspout was observed 5 miles northwest of Key West.									
Brevard County Malabar	31	0600EST			0	0	0	0	Funnel Cloud
A funnel cloud was observed briefly in southern Brevard County.									
Bay County Panama City	31	1215EST			0	6	0	0	Lightning
Lightning struck near a family on the beach. One woman required CPR, two others suffered shock and burns, and the others were stunned.									
Orange County Orlando	31	1554EST			0	1	0	0	Lightning
Lightning struck near an airline employee at the Orlando Airport. He was taken to the hospital and later released.									

GEORGIA

Effingham County	01	0516EST- 0850EST			0	0	5	?	Flash Flood
A tropical wave developed over southern Georgia and moved northeast to the Augusta area. Rainfall amounts over the eastern third of Georgia ranged from 2 to 4 inches during the event.									
Several families in Effingham County were stranded by flash flooding. On Georgia Highway 17, at least one house was flooded. About half of the county's roads were damaged.									

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
GEORGIA Cont'd									
Lowndes County Valdosta	04	1512EST			1	3	?	?	Lightning
	Lightning caused scattered power outages around Valdosta. A bolt of lightning struck four children about 1512 EST while they played outside; one boy was pronounced dead at 1549 EST. (M110)								
Grady County Cairo	04	1650EST			0	0	3	?	Thunderstorm Winds
	Scattered trees were uprooted near Cairo. About 1630 EST, heavy rainfall started. Several streets were flooded until 1715 EST.								
Ben Hill County Fitzgerald	05	2035EST			0	0	4	?	Lightning
	Lightning struck a house and caused very minor damages. The lightning damaged several street lights and caused interruptions in utility services. (Time is estimated.)								
Bleckley County 4 E Cochran	06	1525EST			0	0	3	?	Thunderstorm Winds
	Scattered trees were pushed into power lines near Cochran on Georgia Highway 126 resulting in power outages.								
Houston County Perry 3 ESE Perry	06	1630EST			0	0	3	?	Thunderstorm Winds
	06	1630EST			0	0	?	4	Thunderstorm Winds
	Strong winds uprooted numerous trees around Perry. On a farm outside of Perry on Georgia Highway 341, several mature pecan trees were uprooted in an orchard. Utility lines were torn down and scattered power outages resulted.								
Cobb County 5 NE Marietta 4 W Roswell Smyrna	06	1839EST			0	0	3	?	Thunderstorm Winds
	06	1900EST			0	0	?	?	Lightning
	Strong winds uprooted trees and tore down large limbs over eastern Cobb County, mainly northeast of Marietta. About 5,000 customers were left without power due to lightning and winds.								
Fulton County Dunwoody Atlanta Sandy Springs	06	1900EST			0	0	2	?	Thunderstorm Winds
	06	1900EST			0	0	?	?	Lightning
	Two trees were uprooted in northern Fulton County around Dunwoody. Lightning left over 3,500 customers without power, mainly in Sandy Springs and southwest Atlanta.								
Clarke County Athens	06	1945EST			0	0	3	?	Thunderstorm Winds
	Several trees were uprooted over the southeastern section of Athens.								
Gwinnett County Peachtree Corners Duluth Norcross	06	2010EST			0	0	4	?	Lightning
	06	2015EST			0	0	3	?	Lightning
	06	2030EST			0	0	3	?	Lightning
	Lightning set a house afire in Peachtree Corners. At Duluth, a lightning strike started a small fire at an apartment complex. At Norcross, lightning caused minor damage when City Hall was struck. Many utility service interruptions developed.								

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

GEORGIA Cont'd

Barrows County Southern Portion	06	2030EST			0	0	3	?	Thunderstorm Winds
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Numerous trees were uprooted and downed across several county roads. Power outages developed after utility lines were torn down.

Cobb County Countywide	09	1630EST			0	0	?	?	Lightning
Smyrna	09	1630EST			0	0	2	?	Thunderstorm Winds
Countywide									

Strong winds ripped down tree limbs and power lines around Smyrna and over the eastern portion of Cobb County. The winds, along with frequent lightning strikes, left about 34,000 customers without utility service over the county.

Lincoln County 5 W Lincolnton	09	1810EST			0	0	4	?	Thunderstorm Winds
5 W Lincolnton	09	1810EST			0	0	?	?	Hail (0.75)

Strong winds uprooted numerous trees and knocked down utility lines west of Lincolnton along Georgia Highway 378. A home's roof was heavily damaged when a large tree fell onto the house.

Coweta County 7 W Newnan	10	1630EST			0	0	5	?	Lightning
Newnan	10	1630EST			0	0	3	?	Flash Flood

Lightning struck electrical equipment and caused power outages for hundreds of Coweta County residents, mainly along U.S. Highway 29 north of Newnan. The lightning started a fire that completely destroyed a home.

Flash flooding developed briefly during the storm. Several cars were trapped in water at a shopping center parking lot.

Twiggs County Bullard	10	1835EST			0	0	?	?	Hail (1.00)
Bibb County Macon	10	1840EST			0	0	?	?	Hail (0.75)

Hail developed over the northeastern section of Macon near the Jones-Bibb county line.

Cherokee County	11	1300EST			0	0	4	?	Lightning
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Lightning struck six homes during the afternoon over Cherokee County. Several homes sustained substantial fire damages. Lightning struck a radio station and damaged broadcasting equipment. Scattered power outages developed. (Time is estimated.)

Cobb County Marietta	11	1322EST			0	0	5	?	Lightning
Charles Island	11	1330EST			1	1	?	?	Lightning
Marietta	11	1340EST			0	0	4	?	Lightning

Lightning struck two men as they stood under a tree on an island in the Chattahoochee River for shelter. One man was pronounced dead about 1355 EST. (M380)

Three houses in a neighborhood were struck by lightning within 30 minutes. At 1322 EST, one house, valued at \$150,000, was set afire and totally destroyed. The two other houses sustained minor damages.

Fulton County Atlanta	11	1340EST			0	0	4	?	Thunderstorm Winds
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons	Estimated Damage	Character of Storm	
					Killed	Injured	Property	Crops

GEORGIA Cont'd

Several trees were uprooted over northwest Atlanta. One tree fell through the middle of a house near downtown Atlanta.

De Kalb County
14 NNE Atlanta
Druid Hills

11	1340EST				0	0	5	?	Thunderstorm Winds (G50)
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At least four small airplanes were damaged at Peachtree-Dekalb Airport when strong winds snapped the tie-down ropes and pulled the moorings out of the ground. One aircraft was overturned.

Over 2,000 customers were without power after the winds tore down tree limbs and utility lines. Minor street flooding developed.

Franklin County
5 NNE to 4 NE
Carnesville

11	1700EST				0	0	4	?	Flash Flood
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Flash floods occurred over Franklin County. A wooden bridge off Georgia Highway 106 and another near Georgia Highway 320 were washed out, along with a few culverts. (Time is estimated.)

Cherokee County
Canton

12	0220EST				0	0	3	?	Flash Flood
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Heavy rainfall produced flooding around Canton. Roads were impassable and several homes had minor water damages in their basements. By 0915 EST, Downing Creek had flooded and water had entered several county offices.

Liberty County
Sunbury

12	1625EST				0	0	3	?	Thunderstorm Winds
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Several small trees were uprooted near Sunbury.

Colquitt County
Murphy Coolidge

13	1440EST				0	0	2	?	Thunderstorm Winds
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Many large limbs were blown into utility lines over southern Colquitt County around Murphy and Coolidge; outages resulted.

Jones County
2.5 S Gray

13	1700EST				0	0	5	?	Thunderstorm Winds
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Winds destroyed two chicken houses, valued at over \$120,000, near Georgia Highway 11.

Chatham County
Hutchinson Island

13	1530EST				0	0	?	?	Funnel Cloud
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A funnel cloud was sighted over the Savannah River.

Bulloch County
Statesboro

13	2005EST				0	0	4	?	Thunderstorm Winds
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Strong winds over Statesboro downed numerous trees, large limbs, and power lines. Over 2,000 customers in several areas lost utility services. Minor street flooding occurred.

Bartow County
Cartersville

13	2100EST				0	0	3	?	Lightning
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Lightning caused very minor damages at a fast-food restaurant on Georgia Highway 20.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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GEORGIA Cont'd

In Bulloch County at Brooklet, a few houses were flooded. Heavy rainfall caved in part of a home's ceiling (time is estimated). Rainfall totals were estimated at near 9 inches at some areas over the 2 days.

In Emanuel County, creeks near U.S. Highway 80 flooded several areas on the east side of Swainsboro. A bridge near Oak Park was washed out by flooding.

IDAHO

Southern Idaho	Entire Month								Extreme Drought
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Long time residents believe that Camas County is the driest it has ever been. The springs feeding the Mormon Reservoir dried up for the first time. Dryland grain produced less than half of normal production. Hay yielded a third of normal. Four of the last 5 years are in the driest 7 years of Camas County history.

Twin Falls County

5 S Buhl	04	1430MST			0	0	3	4	Hail (0.75)
Filer	04	1435MST			0	0	0	0	Funnel Cloud
Roseworth	04	1410MST			0	0	4	5	Thunderstorm Winds (G55)

Several fields of cereal grain were damaged by hail that accumulated to a depth of 6 inches near Roseworth where irrigation wheel lines were damaged by wind. Residents claimed that this was the worst hailstorm since June 19, 1963.

Cassia County

10 W Oakley	04	1440MST	0.1	20	0	0	0	0	Tornado (F0)
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Twin Falls County

Twin Falls	04	1715MST- 1735MST			0	0	0	0	Dust Storm
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Interstate 84 was closed because of blowing dust.

Franklin County

Preston	04	1940MST			0	0	0	5	Hail (1.50)
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Several fields of cereal grains were heavily damaged.

Idaho County

Little Squaw Creek	05	1400MST			0	0	4	0	Flash Flood
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Cabins, 200 feet from the creek, were flooded with 4 feet of water at Lantz Bar in the middle of the Frank Church River of No Return Wilderness. Approximately 1.5 miles of trail were lost because of the washout.

Boise County

Grand Jean	05	1400MST			0	0	4	0	Flash Flood
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Torrential rainstorms scoured three tributaries of the Salmon River in central Idaho. A mudslide near Grand Jean temporarily blocked the road to the campground at Grand Jean.

Bonneville County

Idaho Falls	06	1510MST			0	0	4	0	Thunderstorm Winds
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Thunderstorm winds downed several trees and power lines.

Central Idaho

Central Idaho	09	Unknown			0	0	0	5	Lightning
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Lightning ignited 25 forest fires in the Clearwater and Nez Perce National Forests.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
IDAHO Cont'd									
Bonner County 5 NW Lamb Creek	10	0200PST			0	2	0	4	Lightning
Two people received minor injuries when lightning struck nearby the tent they were sleeping in on Kalispell Island in Priest Lake. Ten small forest fires were set in the area by lightning.									
Teton County Driggs	10	1400MST			0	0	0	4	Lightning
Lightning set fire to 125 tons of baled hay.									
Franklin County Mink Creek	15	1600MST			0	0	0	4	Heavy Rain
A cloudburst flooded Station Creek wiping out beaver dams and closing State Highway 34 for over an hour. Several farms were damaged by mud slides.									
Canyon County Nampa	17	1100MST			0	0	4	0	Heat
Air density was believed to be a factor when a single engine plane failed to clear a fence at the Nampa Airport.									
Southeastern Idaho Power, Bannock and Bingham Counties	19	1645MST			0	0	4	0	Lightning
Lightning burned jumpers off power poles, and caused several lightning arrestors to blow up. Power failures were numerous. Lightning bounced off a tree into a house damaging the attic. Two grass fires were also set.									
Central and Southern Idaho	22 23	1400MST- 0800MST			0	0	4	5	Lightning
Lightning started 55 fires in the Nez Perce National Forest of central Idaho, and 25 wildlands fires were started in southern Idaho. Gusty winds sometimes made it impossible for air tankers to drop flame retardant on the fires.									
Canyon County Nampa	22	2030MST			0	0	4	0	Thunderstorm Winds
Wind knocked down at least five trees and a lot of branches were broken causing widespread power outages.									
Madison County Rexburg	22	2130MST			0	0	4	0	Thunderstorm Winds
High winds blew down an 80-foot cottonwood tree and four power poles cutting power to the pumps to the city water tank. Cable television lines were also cut.									
Central Idaho	25	1400MST			0	0	?	?	Winds
Winds up to 30 mph caused the "let burn" Rush Creek fire in the Frank Church River on No Return Wilderness to triple in size from 600 to 2000 acres.									
Cassia County Oakley	27	1620MST			0	0	3	0	Thunderstorm Winds (G50)
Twin Falls County Buhl	27	1630MST			0	0	4	0	Thunderstorm Winds
Minidoka County Rupert	27	1800MST			0	0	0	5	Hail

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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IDAHO Cont'd

Fremont County Egin	27	1800MST			0 0	3 5	Hail
Bannock County Pocatello	27	1830MST- 1930MST			0 0	3 0	Thunderstorm Winds (G50)

Cereal crops were damaged near Rupert. A barn was lifted from its foundation near Buhl and tossed upside down on its top about 20 feet away.

ILLINOIS

Cook County Oak Park	02	1945CST			0 0	4 0	Thunderstorm Winds
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A microburst blew down 20 trees and hundreds of trees were damaged. A tree fell on a house, 4 garages were damaged by trees or limbs, and 2 light poles were snapped.

Rock Island County 3W Illinois City	02	2120CST			0 0	0 ?	Thunderstorm Winds
10SW Milan	02	2155CST			0 0	3 3	Thunderstorm Winds
Henry County Orion	02	2230CST			0 0	3 ?	Thunderstorm Winds

Storms knocked down limbs that damaged roofs and garages and caused power outages.

Stark County Toulon	02	2315CST			0 0	3 0	Thunderstorm Winds
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A tree was blown down causing damage to a roof and limbs were blown down on power lines.

Monroe County Waterloo	03	1410CST			0 0	0 0	Hail (1.75)
Waterloo	03	1440CST			0 0	3 0	Thunderstorm Winds

Hail, up to golf ball-size, was reported at Waterloo. Thunderstorm wind gusts knocked down large trees and power lines near Waterloo. A construction trailer was blown over at the middle school site.

Randolph County Red Bud	03	1522CST			0 0	4 3	Thunderstorm Winds
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Thunderstorm wind gusts knocked down large trees, power and telephone lines in Red Bud. Structural damage was also done to a building, tearing part of the roof off. At Knotty Pines Mobile Home Court in Red Bud, the skirting from mobile homes was torn off and sheds were destroyed.

Jefferson County Mount Vernon	03	1650CST			0 0	3 2	Thunderstorm Winds
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The Mount Vernon Police Department reported several large trees and power lines knocked down due to thunderstorm wind gusts.

Richland County Olney	03	1746CST	0.5	0.1	0 0	6 0	Tornado (F1) Thunderstorm Winds
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A tornado peeled back the roofs of two apartment buildings and a Wal-Mart store in Olney. Thunderstorm winds also downed numerous trees to the south and east of the brief touchdown.

Lawrence County	03	1808CST			0 0	3 4	Thunderstorm Winds
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
		Local/ Standard			Killed	Injured	Property	Crops	

ILLINOIS Cont'd

Thunderstorm winds downed trees in Sumner and between Petrolia and Pinkstaff. One hundred acres of corn were also severely damaged in Sumner.

Will County Joliet	08	0555CST			0	0	4	0	Thunderstorm Winds (G69)
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Trees and tree limbs were blown down on the west side of Joliet. A SKYWARN spotter measured a wind gust to 79 mph.

Cook County Inverness Northbrook Schaumburg	08	0600CST			0	0	6	0	Lightning
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Lightning started fires that damaged or destroyed three homes in northern Cook County. In Inverness, a \$400,000 home burned to the ground. A home in Schaumburg sustained \$15,000 in damage. A \$150,000 home was destroyed in Northbrook.

Clinton County Aviston	08	1625CST			0	0	3	2	Thunderstorm Winds
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The Clinton County Sheriff's Office reported power lines down.

St. Clair County Milstadt	08	1650CST			0	0	3	2	Thunderstorm Winds
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The sheriff's office reported power lines down.

Randolph County Sparta	08	1735CST			0	0	3	2	Thunderstorm Winds (G52)
Tilden	08	1738CST			0	0	3	2	Thunderstorm Winds (G52)
Evansville and Chester	08	1840CST			0	0	4	3	Thunderstorm Winds

The Randolph County Emergency Officials and sheriff's office reported 60 mph winds and power lines down at Sparta and Tilden. Large trees and power lines were also knocked down in Evansville and Chester.

Jackson County 5 NW Murphysboro	08	1923CST			0	0	0	0	Hail (0.75)
Richland County Gallagher	14	1330CST			0	0	0	?	Hail (0.80)
Franklin County Royalton	14	1515CST			0	0	?	?	Hail (1.00)
Adams County Quincy Airport	18	1648CST			0	2	4	2	Thunderstorm Winds (G65)
Liberty	18	1727CST			0	0	3	2	Thunderstorm Winds

A 75-mph wind gust was recorded at an automated observing station at the Quincy Airport. The storm damaged tents on the airport grounds, where a skydiving convention was being held. State Police District 20 reported power and utility lines down in Liberty.

Jo Daviess County Galena	18	1959CST			0	0	?	0	Thunderstorm Winds
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The sheriff's office reported tree limbs down, and power lines and poles damaged by thunderstorm winds.

Southern Lake Michigan	19	1105CST- 1300CST			0	0	0	0	Waterspout
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

ILLINOIS Cont'd

Numerous waterspouts were sighted over southern Lake Michigan mainly through the noon hour and near Hammond, Michigan City and Evanston; there was no damage.

Wabash County Mt. Carmel

31	1710CST				0	0	2	?	Thunderstorm Winds
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Two homes were damaged and several trees were downed to the northwest of Mt. Carmel by thunderstorm winds.

INDIANA

Knox County

03	1602EST				0	0	6	5	Thunderstorm Winds
03	1602EST				0	0	5	0	Lightning

Numerous trees were uprooted and limbs downed by thunderstorm winds in the Vincennes, Oaktown, Bruceville, and Bicknell areas. Several houses were damaged by falling trees. Lightning caused extensive damage to power lines and computer equipment.

Knox County 5 S Vincennes

03	1605EST	0.5	50		0	0	4	0	Tornado (F1)
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A tornado touched down briefly 5 miles south of Vincennes, downing power lines, snapping a highway sign, and destroying a billboard as it crossed U.S. Route 41.

Daviess County

03	1620EST				0	0	3	0	Thunderstorm Winds
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Numerous trees were downed in the Washington and Montgomery areas.

Greene County

03	1643EST				0	0	4	0	Thunderstorm Winds
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Trees were downed in Bloomfield. A roof was blown off a barn, and several small buildings were damaged north of Newberry.

Martin County Shoals

03	1644EST				0	0	2	0	Thunderstorm Winds
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Limbs were downed in the Shoals area by thunderstorm winds.

Orange County

03	1745EST				0	0	4	?	Thunderstorm Winds
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Numerous trees and power lines were blown down in Paoli, and over the eastern and northern portions of the county.

Washington County

03	1800EST				0	0	3	0	Thunderstorm Winds
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Several trees and power lines were blown down over the western portion of the county.

Morgan County

03	1811EST				0	0	0	0	Thunderstorm Winds
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Trees were downed in various parts of the county.

Ripley County 7 W Versailles

03	1823EST				0	0	3	0	Thunderstorm Winds
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Trees were blown down; some fell on mobile homes.

Ripley County Dabney Johnson County

03	1828EST				0	0	0	0	Hail (1.00)
03	1830EST				0	0	5	0	Thunderstorm Winds

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
INDIANA Cont'd									
Jackson County Seymour 3 NW Houston	03	2150EST			0	0	4	0	Thunderstorm Winds
Trees and power lines were downed in and around Seymour. One tree fell on a car in Seymour. Three miles northwest of Houston, near the Brown-Jackson County line, 20 to 30 trees were downed, and a road was blocked.									
Jennings County	03	2150EST			0	0	3	0	Thunderstorm Winds
Numerous trees and power lines were downed in the western part of the county.									
LaPorte County	08	0805EST			0	0	3	0	Lightning
A car was struck by lightning on the Indiana Toll road between Michigan City and LaPorte. The rear window was knocked out by the lightning.									
St. Joseph County Crumstown	08	0910EST			0	0	0	0	Thunderstorm Winds
Wind gusts were estimated at 60 mph.									
Hamilton County 5 WSW Carmel	08	1450EST			1	0	0	0	Lightning
A 39-year-old male was struck and killed by lightning in a parking area at the Crooked Stick golf course. The victim, who was carrying an umbrella, was proceeding towards a parked car. (M39O)									
Fayette County	08	1525EST			0	0	?	?	Hail (1.75)
Golf ball-size hail occurred in southwest Fayette County.									
Franklin County	08	1605EST			0	0	0	0	Thunderstorm Winds
Trees were downed near Brookville.									
Benton and Warren Counties 3 ESE Boswell 3 E Pine Village	08	1643EST- 1718EST	9.0	125	0	0	5	4	Tornado (F2)
The path of the tornado was intermittent. The tornado first touched down in Benton County, 0.25 mile east of County Road 100 W. on the north side of County Road 700 S. Windows were blown out of a farm house at this location, and the siding was ripped from portions of the house. The roof of a corn crib was blown off, and one of its walls blown down. A 200-gallon gas tank was blown from its base, and deposited 300 yards to the east-southeast.									
The tornado moved in an east-southeast direction, crossed 700 S., and hit another farm on the south side of 700 S. The entire east side of the roof was removed from a large barn at this location, and the building was twisted. Doors, and portions of the roof, and a wall were ripped from a tool shed. The south windows of a workshop were blown in, and the building was twisted. Tree limbs were downed, and a 3-foot diameter tree was broken. The tornado also damaged the corn crop at this location.									
The tornado continued moving east-southeast, and at 800 S. and 200 E, still in Benton County, it caused damage to a corn crop, leaving a 50-foot wide path through the field. The tornado lifted, but then touched down again 1 mile north of Pine Village in Warren County. At this location a 48-foot by 80-foot pole barn was blown off its foundation. The tornado moved east-southeast, and 2.5									

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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INDIANA Cont'd

miles east of Pine Village another farm was hit. Here, the tornado destroyed a 24-foot by 30-foot outbuilding, and a 24-foot by 60-foot corn crib. Two 1000-bushel grain bins were blown off their foundations. Corn was also damaged at this location. The tornado lifted 3 miles east of Pine Village.

Total damage from the tornado was estimated at \$120,000 to \$140,000.

Marion County 6 ESE Indianapolis	12	1430EST			0	0	3	0	Dust Devil
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The dust devil originated at the northeast corner of the Indianapolis Speedrome near the pit area. It moved south-west across the infield of the blacktopped surface of the race track. It picked up debris lifting it more than 100 feet into the air. Continuing on a southwest path, the dust devil moved across a gravel parking lot before reaching a structure at 6400 East Brookville Road. A section of the corrugated metal roof was peeled back on the south side of the building. The dust devil moved across Brookville Road over a grassy area and dissipated. The length of the path was less than 0.25 mile, and the width was around 20 yards.

Marion County 3 S Indianapolis International Airport	14	1254EST			0	0	0	?	Hail (1.00)
Johnson County 1 W Stones Crossing	14	1325EST			0	0	0	?	Hail (0.88)
Crawford County	14	1500EST			0	0	3	0	Thunderstorm Winds

Several large trees were blown down near English.

Ohio County	14	1745EST			0	0	0	4	Hail (0.75)
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Hail damaged crops, with the worst damage being done to the tobacco crop. One 8-acre tobacco field was declared a complete loss, and had to be plowed under.

Switzerland County	14	1745EST			0	0	0	4	Hail (0.75)
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Hail damaged crops and trees between Patriot and East Enterprise.

Vigo County 6 WSW Terre Haute	14	1845EST			0	0	0	0	Thunderstorm Winds
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Several trees were downed in Vigo County.

Marion County 11 SW Indianapolis	17	0620EST			0	0	4	0	Lightning
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Lightning struck a house, that resulted in approximately \$10,000 in damage.

Dearborn County Lawrenceburg	17	1330EST			0	0	0	0	Thunderstorm Winds
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Large tree limbs were downed in Lawrenceburg.

Scott County	17	1815EST			0	0	0	0	Hail (0.75)
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Jennings County Nebraska	17	2110EST			0	0	3	0	Thunderstorm Winds
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In the town of Nebraska, trees and lines were downed.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
INDIANA Cont'd									
Fayette County Connersville	19	0900EST			0	0	5	0	Lightning
									A lightning strike started a fire which resulted in extensive damage to a house.
Ripley County 1 N Milan	19	0925EST			0	0	0	0	Thunderstorm Winds
									Trees were downed 1 mile north of Milan.
LaPorte County Michigan City	19	1240EST			0	0	3	0	Waterspout
									A waterspout produced an estimated \$2500 damage at the Michigan City Yacht Club. The waterspout broke off a small section of mast on a sailboat, and destroyed some tarps.
Pulaski County Monterey	19	1730EST	Short	10	0	0	4	0	Tornado (F0)
									A tornado touched down briefly, and damaged the roof of a grain storage building.
Dearborn County 2 W Manchester	19	1753EST	short	10	0	0	3	0	Tornado (F0)
									A tornado touched down briefly, and blew a porch onto the roof of a one-story house.
Daviess County 3 E Plainville	28	1620EST			0	2	0	0	Lightning
									Two men working near a truck at the Arlen Mine were struck by lightning.
St. Joseph County Mishawaka	30	1345EST			0	7	5	0	Lightning
									Seven people were injured, two seriously, when lightning struck Ski's Place Tavern at 507 E. McKinley Avenue. Two people, aged 30 and 62, were transported to the regional burn center in Fort Wayne, IN. The lightning resulted in a blast in the tavern, which caused extensive damage. Total damage was estimated at \$150,000.
IOWA									
Plymouth County Le Mars	07	1614CST-							
1.5 E Le Mars		1617CST	1.5	65	0	0	5	4	Tornado (F2)
Le Mars	07	1617CST			0	0	3	5	Hail (0.75)
Oyens	07	1625CST			0	0	3	0	Lightning
Plymouth and Cherokee Counties									
4 E Remsen	07	1655CST-							
10 W Cherokee		1715CST	8.0	80	0	0	4	4	Tornado (F2)
Cherokee County Marcus	07	1659CST			0	0	4	4	Thunderstorm Winds (G61)
Ida County Arthur	07	1815CST	0.1	15	0	0	3	2	Tornado (F0)
Humboldt County Bradgate	07	1916CST			0	0	5	4	Thunderstorm Winds (G50+)
Guthrie County Casey	07	2210CST			0	0	4	4	Thunderstorm Winds (G50+)
Marion County Knoxville	08	0012CST			0	0	4	3	Thunderstorm Winds (G50+)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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IOWA Cont'd

Iowa County Williamsburg	08	0100CST			0	0	4	3	Thunderstorm Winds (G50+)
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The combination of an upper level disturbance, a stationary front, and considerable deep moisture resulted in strong convection over Iowa. A mesoscale convective complex developed over Iowa, leaving 0.75 to 2.00 inches of rain over most of the state, with a few areas receiving over five inches. Most of the severe weather occurred during the early stages. Tornadoes touched down in northwestern Iowa. One crossed from eastern Plymouth County into western Cherokee County. The tornado went across open country and caused little damage. Another tornado touched down briefly in the town of Arthur, in Ida County. Many areas reported 40- to 50-mph winds along with pea- to marble-size hail. Dime-size hail fell at Le Mars. A tornado touched down on the outskirts of Le Mars and destroyed a barn. Winds also downed several trees in Marcus. As the storm progressed east, gusty winds accompanied the leading edge of them. High winds tore through Humboldt County. Considerable damage was done to a fertilizer plant in Bradgate, along with a few other buildings in the community. Several trees were also downed. In Iowa County, in what appeared to be a collapsing top, high winds downed numerous trees, power lines, and a few poles in Williamsburg. There were spotty reports of wind damage elsewhere, but they were quite isolated. Lightning struck a house in northern Plymouth County. Damage was minor, being restricted to electrical damage inside the house.

Montgomery County Red Oak	11	1625CST- 1725CST			0	0	0	0	Cold Air Funnel Cloud
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Grundy County Dike	11	1730CST			0	0	3	4	Hail (0.75)
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A cold pool of air aloft over Iowa resulted in an unstable atmosphere. Isolated thunderstorms developed in Iowa. Most of them were over the northeastern and southwestern corners of the state. Dime-size hail fell in northeastern Iowa near Dike. Over the southwest, numerous reports of cold air funnels were received in the Red Oak area.

Poweshiek County 4 S Searsboro	18	0635CST			0	0	5	0	Lightning
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Lightning struck a 40- by 60-foot pole barn and set it on fire. The building was destroyed, along with a combine and 20 to 24 big round bales of straw.

Clay County Webb	22	2353CST			0	0	3	4	Hail (0.75)
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Kossuth County Titonka	22	2356CST			0	0	4	4	Hail (1.00)
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An area of thunderstorms developed in northwestern Iowa and moved across the northern part of the state. The storms produced hail of the severe nature in Clay and Kossuth Counties. Most of the weather reports indicated widespread pea- to marble-size hail, along with wind gusts in the 40- to 50-mph range.

Ringgold County Redding	24	0113CST			0	0	3	0	Lightning
5 SW Mount Ayr	24	0129CST			0	0	0	0	Thunderstorm Winds (G50+)
3 W Mount Ayr	24	0135CST			0	0	4	0	Thunderstorm Winds (G50+)
3 W Mount Ayr	24	0135CST			0	0	3	0	Lightning
6.5 N Mount Ayr	24	0155CST			0	0	4	0	Lightning

An isolated thunderstorm developed over northern Missouri and moved northeast into Ringgold County. Lightning struck and killed a cow at Redding. Another lightning strike north of Mount Ayr killed two cows and two calves. Minor damage occurred at a farmhouse west of Mount Ayr, as lightning struck near the house and caused some appliance damage. The storm caused some wind damage southwest and west of Mount Ayr. A barn roof was torn off and blown across the highway southwest of Mount Ayr. Roof damage was also reported west of Mount Ayr.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
IOWA Cont'd									
Webster County Fort Dodge	30	0600CST			0	1	0	0	Lightning
A man was struck by lightning in Fort Dodge. He was driving to work when his vehicle broke down. He got out of it and was struck by lightning, receiving minor injuries.									
Polk County Des Moines	30	1530CST			0	0	4	0	Lightning
An area of thunderstorms moved across the Des Moines area. Lightning struck the WHO television tower, knocking out the "Sky Eye" camera and the weather radar there. A house was also struck by lightning at about the same time in the northwestern part of Des Moines. Minor damage was reported to the house.									
KANSAS									
Sherman County 10 E Goodland	02	2043CST			0	0	4	0	Hail (2.00)
10 E Goodland	02	2043CST			0	0	4	0	Thunderstorm Winds (G66)
7 E Goodland	02	2045CST			0	0	4	0	Hail (3.00)
7 E Goodland	02	2045CST			0	0	4	0	Thunderstorm Winds (G52)
7 E Goodland	02	2050CST			0	0	4	0	Hail (4.00)
Large hail and strong winds damaged roofs and broke windows in Edson.									
Sumner County 4 W Oxford	04	1700CST			0	0	3	0	Thunderstorm Winds (G60)
Strong thunderstorm winds blew the roof off of a barn.									
Butler County 2 SW Augusta	05	1605CST			0	0	0	0	Hail (0.75)
2 SW Augusta	05	1605CST			0	0	0	0	Thunderstorm Winds (G52)
Reno County Turon	05	1630CST			0	0	0	0	Thunderstorm Winds (G52)
Lyon County Emporia	05	1700CST			0	0	4	0	Lightning
Lightning struck a house and burned a circular hole in the roof.									
Saline County 6 N Brookville	05	1920CST			0	0	3	3	Thunderstorm Winds (G56)
A severe thunderstorm uprooted several large cottonwood trees.									
Pottawatomie County Onaga	07	2145CST			0	0	3	0	Thunderstorm Winds (G60)
Thunderstorm winds knocked down trees and power lines. Some homes were damaged by the falling trees.									
Nemaha County Sabetha	07	2200CST			0	0	3	0	Thunderstorm Winds (G52)
Trees were blown down over much of the southern and eastern parts of the county.									
Brown County Everest	07	2220CST			0	0	4	0	Thunderstorm Winds (G65)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
KANSAS Cont'd									
Winds gusting to around 75 mph, tore part of the roof of the middle school in Everest, downed several trees, and power lines. A few homes were damaged by the trees. The burst of wind blew along a southwest to northeast line but all of the structure damage was at the second floor level.									
Doniphan County Troy	07	2235CST- 2245CST			0	0	0	0	Thunderstorm Winds (G70)
Wind gusts to 82 mph uprooted large trees and tore down several power lines in the Troy area. A church steeple was twisted from its foundation.									
Cowley County Arkansas City	08	1347CST			0	0	0	0	Thunderstorm Winds (G52)
Sixty-mph winds were observed by a storm spotter.									
Montgomery County Independence	08	1415CST			0	0	0	0	Thunderstorm Winds (G58)
Winds, gusting to 67 mph, caused tree and power line damage.									
Sumner County 4 SE South Haven	08	1415CST			0	0	0	0	Hail (0.75)
4 SE South Haven	08	1415CST			0	0	0	0	Thunderstorm Winds (G52)
Wilson County Neodesha	08	1415CST			0	0	4	0	Thunderstorm Winds (G60)
Strong thunderstorm winds caused tree damage throughout the town. Tree limbs broke telephone and power lines.									
Montgomery County Coffeyville	08	1420CST			0	0	2	0	Thunderstorm Winds (G52)
Thunderstorm winds destroyed a storage shed.									
Cowley County 4 SW Arkansas City	08	1440CST			0	0	0	0	Thunderstorm Winds (G52)
A storm spotter observed 60 mph winds.									
Labette County Parsons	08	1445CST			0	0	0	0	Thunderstorm Winds (G52)
Large tree limbs were broken and fell into a home.									
Pawnee County Zook	16	1430CST			0	0	0	0	Thunderstorm Winds (G56)
Thunderstorm winds gusted to 65 mph.									
Edwards County Belpre	16	1500CST			0	0	0	0	Thunderstorm Winds (G56)
Belpre	16	1500CST			0	0	0	3	Hail (0.75)
Thunderstorm wind gusts to 65 mph and dime-size hail produced some minor crop damage.									
Pratt County 3 W Pratt	16	1545CST- 1555CST			0	0	0	0	Hail (0.75)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
KANSAS Cont'd									
Thunderstorm 60-mph wind gusts and dime-size hail were reported west of Pratt.									
3 W Pratt	16	1545CST- 1555CST			0	0	0	0	Thunderstorm Winds (G65)
McPherson County 5 N Conway	16	1549CST	0.5	25	0	0	0	0	Tornado (F0)
A small tornado touched down in an open field 5 miles north of Conway; no known damage.									
Conway	16	1600CST			0	0	3	3	Thunderstorm Winds (G52)
Canton	16	1605CST			0	0	3	3	Thunderstorm Winds (G52)
Moundridge	16	1610CST			0	0	3	3	Thunderstorm Winds (G52)
A severe thunderstorm produced high winds that tore down power lines at Canton and did considerable roof damage at Moundridge.									
Reno County 2 W Burrton	16	1610CST			0	0	4	0	Thunderstorm Winds (G69)
Extensive tree and power line damage. Several outbuildings along with a apartment building that was under construction were destroyed. Winds were estimated at around 80 mph. Hail also accompanied the storm and caused damage to a newly planted milo field.									
Ottawa County Vine Creek	16	1830CST			0	0	3	3	Hail (1.75)
Sedgwick County Wichita	16	1855CST			0	0	4	0	Hail (1.75)
Wichita	16	1855CST			0	0	4	0	Thunderstorm Winds (G65)
Seventy- to eighty-mph winds accompanied the large hail caused tree damage on the west side of Wichita. At the Mid-Continent Airport, six small airplanes were pulled off of their tie-downs and damaged.									
Barber County 20 W Medicine Lodge	20	1730CST			0	0	4	0	Thunderstorm Winds (G65)
A mobile home was destroyed by an isolated thunderstorm wind gust of 75 mph.									
Morris County Delevan	22	1440CST			0	0	0	0	Hail (1.00)
Washington County 5 NW Hanover	22	1535CST			0	0	3	3	Hail (0.75)
Geary County Fort Riley	22	1700CST			0	0	0	0	Hail (1.00)
Cloud County Miltonvale	22	1920CST			0	0	3	3	Hail (0.75)
Aurora	22	1943CST			0	0	4	4	Hail (1.75)
Butler County Benton	22	2120CST			0	0	0	0	Thunderstorm Winds (G52)
A Benton police officer reported 60 mph winds.									
Lincoln County 5 N Sylvan Grove	22	2225CST			0	0	3	3	Thunderstorm Winds (G52)
Lincoln	22	2245CST			0	0	3	3	Thunderstorm Winds (G52)
Finney County Garden City	29	0030CST- 0445CST			0	0	5	0	Lightning

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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KANSAS Cont'd

Lightning struck service transformers, electric lines, and buildings causing power outages and several structural fires. Lightning also caused one house fire that resulted in \$20,000 damage.

Sedgwick County
Clearwater
Haysville

29	0215CST- 1430CST				0	0	5	5	Flash Flood
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Around midnight heavy rain began falling across parts of southern Sedgwick and northern Sumner Counties. By 0600 CST, 5 to 12 inches of rain had fallen through that area. The area hardest hit was in and around Clearwater. A rainfall observer in Clearwater had a 4 inch National Weather Service rain gage that was overflowing by 0700 CST. Around 0215 CST, water was 3 feet deep in some areas of Clearwater. The water continued to rise and by 0540 CST most roads leading in and out of Clearwater were flooded and closed. Hayseville schools were closed because of at least 12 inches of rain in the buildings. A house was flooded in south Wichita at 63rd south and Seneca. The high water subsided at 0830 CST.

Ford County
3 W Dodge

29	0230CST				0	0	4	0	Hail (1.00)
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Thunderstorm wind gusts of 65 mph, combined with golf ball-size hail, blew out the windows of a few houses west of town. The large hail also killed a bunch of sparrows nesting in surrounding trees.

Ford County
3 W Dodge
Barber County
Hardtner

29	0230CST				0	0	4	0	Thunderstorm Winds (G56)
29	0655CST				0	0	0	0	Flood

Flooding occurred along U.S. Highway 281 near the Kansas-Oklahoma border, due to heavy rainfall. Water was up to the tail lights of some cars and the highway patrol had to stop traffic until the water subsided.

McPherson County
McPherson Airport

30	1433CST				0	0	3	3	Thunderstorm Winds (G61)
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A thunderstorm microburst caused a 70 mph wind gust at the McPherson Airport.

KENTUCKY

Campbell County

03	1728EST				0	0	2	0	Thunderstorm Winds
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Several trees were blown down by thunderstorm winds.

Boone County

03	1900EST				0	0	3	0	Thunderstorm Winds
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Trees and power lines were blown down around Belleview and Petersburg.

Kenton County

03	1920EST				0	0	5	0	Thunderstorm Winds
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Strong thunderstorm winds damaged eight homes and downed many trees throughout the county.

Gallatin County

03	2000EST				0	0	3	0	Thunderstorm Winds
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Several large trees were blown down around Warsaw.

Grant County

03	2030EST				0	0	3	0	Thunderstorm Winds
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Several trees and power lines were blown down.

Pendleton County

03	2045EST				0	0	3	0	Thunderstorm Winds
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time	Path	Path	Number of		Estimated		Character of Storm
		Local/ Standard	Length (Miles)	Width (Yards)	Killed	Injured	Property	Crops	
KENTUCKY Cont'd									
									Several trees were blown down by thunderstorm winds.
Madison County Berea	06	1500EST			0	0	5	4	Thunderstorm Winds
									Strong thunderstorm winds blew trees onto homes and garages. Many vehicles were damaged by falling trees as well. Most of the community was without electricity for several hours. Several tobacco crops were also damaged.
Jackson County	06	1545EST			0	0	3	0	Thunderstorm Winds
									Trees and power lines were blown down
Owsley County	06	1615EST			0	0	4	0	Thunderstorm Winds
									Strong winds destroyed a barn and several utility buildings around Ricetown. Trees were also blown down.
Boone County	08	1603EST			0	0	0	0	Hail (0.75)
Gallatin County	08	1606EST			2	0	3	0	Thunderstorm Winds
									Strong thunderstorm winds tossed three people from a pontoon boat into the Ohio River near Warsaw. One man was rescued. A woman, 34-year-old Beatrice McGuire, and 16-year-old Timothy Rogers drowned.
Bracken County	08	1608EST- 1625EST			0	0	3	0	Thunderstorm Winds
									Several large trees were blown down around Johnsville.
Kenton County	08	1610EST- 1625EST			0	0	5	0	Thunderstorm Winds
									Strong winds damaged several homes and trailers, and downed trees and power lines around Erlanger.
Barren County	08	1630CST			0	0	2	0	Thunderstorm Winds
									Thunderstorm winds downed trees in the Austin and Dry Fork areas.
Carroll County	08	2055EST	0.5	50	0	0	3	0	Tornado (F0)
									A tornado briefly touched down 6 miles northwest of Carrollton. It destroyed between 100 and 200 trees. Several large limbs were blown more than 100 yards away.
Webster County	14	1652CST			0	0	0	0	Hail (0.88)
Fleming County	19	1213EST- 1230EST			0	0	5	4	Hail (1.75) Thunderstorm Winds
									Strong winds damaged several homes and trailers in and around Flemingsburg. Golf ball-size hail broke out windows and damaged cars. Large hail also destroyed many tobacco crops.
Mason County	19	1215EST			0	0	3	0	Thunderstorm Winds
									Several large trees were blown down near the Fleming County line.
Lewis County	19	1230EST			0	0	3	0	Thunderstorm Winds
									Several trees were blown down in the eastern portion of the county.

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Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
KENTUCKY Cont'd									
Shelby County	19	1428EST			0	0	0	4	Hail (1.00)
									Hail severely damaged tobacco crops.
Henry County	19	1435EST			0	0	0	4	Hail (1.75)
									Several tobacco crops were destroyed near Eminence.
Jackson County	19	1620EST			0	0	4	4	Hail (0.75)
									Hail damaged tobacco crops and some cars in the western portion of the county.
Jefferson County	19	1645EST			0	0	4	0	Thunderstorm Winds
									Several large trees were blown down in the southeastern part of the county.
Owsley County	19	1700EST			0	0	0	0	Hail (0.75)
Lee County	19	1700EST			0	0	3	0	Thunderstorm Winds
									Trees were blown down in and around Beattyville.
Washington County	19	1705EST			0	0	0	6	Hail (1.75)
									Large hail piled up over 3 inches deep and dropped temperatures 40°F in 20 minutes. It also destroyed many tobacco crops. Damage estimates were over \$1 million.
Breathitt County	19	1715EST			0	0	0	0	Hail (1.00)
Jackson	19	1800EST			0	0	0	4	Hail (1.00)
Rockcastle County									
									Tobacco crops were destroyed by 1.00-inch hail.
LOUISIANA									
Calcasieu Parish	04	1500CST			0	0	0	0	Thunderstorm Winds (G50)
Lake Charles									A severe thunderstorm produced a 50-knot gust at the Lake Charles Airport.
Caddo Parish	07	1600CST			0	0	0	0	Thunderstorm Winds
Shreveport									Hail (0.75)
Shreveport	07	1600CST			0	1	4	0	Thunderstorm Lightning
									A severe thunderstorm produced penny-size hail and blew down several trees in southern Shreveport. About three inches of rain fell between 1600 CST and 1630 CST flooding many streets and causing several automobiles to stall as they tried to negotiate impassable roadways. Frequent lightning strikes injured one person who was standing in a doorway and set a fire that destroyed the roof and attic of a home.
St. Helena Parish	10	1345CST			0	0	2	0	Thunderstorm Winds
1 S Pine Grove									
Livingston Parish	10	1350CST			0	0	2	0	Thunderstorm Winds
5 SW Pine Grove									
6 SE Pine Grove	10	1355CST			0	0	2	0	Thunderstorm Winds
									A southeasterly moving thunderstorm downed several large trees and power lines just south of Pine Grove in St. Helena Parish. In addition, the thunderstorm's winds blew down several trees and power lines 5 miles southwest and 6 miles southeast of Pine Grove in northern Livingston Parish according to the Dixie Electric Company.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

LOUISIANA Cont'd

Winn Parish 5 SE Winnfield	11	1758CST			0	0	0	0	Thunderstorm Winds (G50)
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A thunderstorm produced a 50-knot gust 5 miles southeast of Winnfield.

Calcasieu Parish 4 N Cameron	12	1514CST	?	?	0	0	0	0	Waterspout
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The Cameron Parish Sheriff's Office reported a waterspout over the Calcasieu Lake Ship Channel at 1514 CST. The waterspout dissipated by 1540 CST.

Caddo Parish Shreveport	21	1605CST			0	0	0	2	Thunderstorm Winds
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Straight-line winds blew down several large tree limbs in Shreveport. Several streets were flooded when 1.61 inches of rain fell at the Barksdale Air Force Base.

Lafourche Parish Thibodaux	28	1115CST			0	2	0	0	Thunderstorm Lightning
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Two Thibodaux city employees were struck by lightning while they were reading meters. One person was hospitalized in critical condition.

Caddo Parish Shreveport Airport	30	0815CST			0	0	0	3	Thunderstorm Winds
7 ESE Shreveport Airport	30	0821CST			0	0	0	0	Thunderstorm Winds (G52)
Bossier Parish Elm Grove	30	0833CST			0	0	0	3	Thunderstorm Winds (G51)

Thunderstorm wind gusts in excess of 50 knots blew down trees and power lines in the Shreveport metropolitan area and in Elm Grove.

St. Landry Parish Opelousas	30	1415CST			0	1	3	0	Thunderstorm Winds
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A severe thunderstorm blew down numerous trees in Opelousas. One of the trees fell on top of an automobile injuring one of the passengers. In addition, strong winds damaged the roof and ceiling of an automobile dealership; some of the debris fell on top of one of the new cars causing several hundred dollars damage.

East Baton Rouge Parish Alsen	30	1522CST			0	0	4	3	Thunderstorm Winds
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Straight-line winds from a severe thunderstorm blew off the roof of a motel in Alsen causing several of its concrete walls to collapse. Four neighboring homes were damaged by wind blown debris. The Baton Rouge Airport received 3.20 inches of rain in 1 hour. This caused several streets to flood.

MAINE

Aroostook County Bridgewater	01	1600EST			0	0	?	6	Hail (2.50)
Robinsons	01	1600EST			0	0	?	6	Hail (2.50)
Mars Hill	01	1600EST			0	0	5	0	Thunderstorm Winds Hail (0.75)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
		Local/ Standard			Killed	Injured	Property	Crops	

MAINE Cont'd

Tennis ball-size hail fell in the towns of Bridgewater and Robinsons. Large hail damaged or destroyed 1,500 to 2,000 acres of potato plants; \$2 million in damage occurred to the potato crops as well as various other crops. The hail was reported to be covering the ground 3 inches deep. In Robinsons, hundreds of windows were smashed, the siding of homes was damaged, and part of a potato house roof was blown off. In Mars Hill, 0.75-inch hail caused an estimated \$174,000 in damage.

Oxford County
7 N Upton

01	1835EST								Lightning
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Lightning struck and killed a 16-year-old-boy while in a boat on Lake Umbagog. Another person in the boat had his arm singed by the bolt of lightning. (M16O)

Aroostook County
Stockholm

02	1408EST								Lightning
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Lightning struck a large barn, setting on it on fire, and totally destroying the structure.

Androscoggin County
Lisbon Falls
Cumberland County
North Windham

04	1030EST								Lightning
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04	1030EST								Lightning
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Lightning struck a house in Lisbon Falls causing \$10,000 to \$15,000 in damage. Another bolt of lightning struck a summer camp, which was destroyed by the resulting fire.

All of Maine

19	1000EST-								
20	0200EST		3	?	7	?			Hurricane Bob

On August 19th, Hurricane Bob moved north-northeastward along the Maine coast during the late afternoon hours and eventually made landfall near Boothbay Harbor in Lincoln County around 2000 EST. Hurricane Bob continued to make its way northward into Maine and was eventually downgraded to a Tropical Storm at 2200 EST. All in all, almost \$26 million in damage occurred across the state; \$21 million in insured property and \$4.7 million in uninsured property.) The counties of York, Cumberland, Androscoggin, Kennebec, Sagadahoc, and Franklin were declared disaster areas by the President. Three lives were lost as a result of Hurricane Bob. One man drowned when he was swept away from his stalled vehicle by rushing waters across a road. Another man was killed when his boat capsized offshore. A third man was electrocuted when he tried to pump water out of his flooded basement the morning after Hurricane Bob. Torrential rains fell across the southern sections of the state with numerous locations picking up anywhere from 7 to a little more than 8 inches of rain. The heavy rains caused extensive flooding of roads, homes, rivers, and streams, and basements. Five bridges were washed out in the town of Gorham in Cumberland County where 8.08 inches of rain fell. Many roads were also washed out across the southern sections of the state. Sustained winds of 40 to 60 mph were common across most of the state. Winds gusted to 93 and 92 mph, respectively, at Blue Hill in Hancock County and at Wiscasset in Lincoln County. The 92-mph wind gust in Wiscasset was recorded shortly before the wind cups to the anemometer were blown off. The strong winds knocked thousands of trees down across the state. Many trees fell on cars, homes, power lines, and boats causing extensive damage. Numerous boats were either washed ashore or sunk in the coastal harbors as well as in some inland lakes. Power was knocked out in hundreds of thousands of homes. Some homes were left without power for nearly a week after Hurricane Bob had passed. Apple crops in the southern sections of the state suffered extensive damage and fishing nets for the herring industry in the Grand Manan of Maine were ripped out of their moorings and destroyed. There was an unconfirmed report of a tornado in the town of St. Albans in Somerset County at 2030 EST. A witness reported that a 17-foot sailboat was forced straight into the air and subsequently slammed down. Trees were leveled, several houses were damaged, and a houseboat was dragged three lots down a lake, moorings and all. (M60O) (M34O) (M35P)

Knox County
St. George

21	1434EST								Lightning
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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MAINE Cont'd

Lightning struck a chimney causing \$8,000 in damage to the roof and interior of the home. A second home was struck by lightning causing damage to some rafters, the attic, and the upstairs bedroom ceiling.

Penobscot County Bangor	28	0226EST			0 0	? 0	Thunderstorm Winds
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Thunderstorm winds ripped the top off of a jeep and street signs were blown down.

Cumberland County Cumberland North Yarmouth	28	1730EST			0 0	? 0	Thunderstorm Winds
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Strong thunderstorm winds blew hundreds of trees down in the Cumberland and North Yarmouth areas. The Val Halla Golf Course suffered shattered windows to the golf club-house. Shingles were ripped off the roof and part of the roof was taken off. The metal fence around the tennis courts was completely ripped out of the ground. Trees were knocked onto many homes with six homes experiencing significant roof damage. A metal storage shed was destroyed with some of the pieces of the shed found a mile down the road. A week-old calf that was tied to the shed, was thrown 200 feet and killed. Part of a cow barn was blown in from the wind and a 20-foot livestock trailer was flipped. A tree also fell onto a forage chopper. Broken windows on homes and cars were common due to the fallen trees.

Androscoggin County Auburn	28	1930EST			0 0	? 0	Lightning
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Lightning struck and set fire to 1,000 bales of polyester fabric sitting next to the Gates Formed-Fiber products plant.

MARYLAND AND DC

Prince Georges County Mount Rainier	09	0510EST			0 0	5 0	Lightning
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Lightning struck an apartment building, causing a fire that displaced three families and inflicted \$130,000 damage.

Worcester County Salisbury	09	1130EST- 1600EST			0 0	4 0	Flood
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Four to five inches of rain fell in the Salisbury area, causing widespread minor to moderate flooding. The basement of a hospital was flooded. Residents of a nursing home had to be moved due to flooding. Several homes and businesses also were flooded.

Worcester County	09	1500EST- 1600EST			0 0	0 0	Thunderstorm Winds
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County officials reported several areas where trees were downed.

Frederick County Monrovia	18	1700EST			0 1	0 0	Lightning
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A man was struck by a lightning bolt in his yard; he was hospitalized in critical condition.

Worcester County	18 19	2000EST- 0800EST			0 0	0 0	Hurricane
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Fringe winds from Hurricane Bob reached 35 knots sustained, with gusts to 55 knots at 0615 EST, at the Ocean City fire station. Only minimal beach erosion occurred at Ocean City along with minimal overwash at Assateague Island. Officials at Assateague Island evacuated all campers;

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

MARYLAND AND DC Cont'd

Ocean City officials recommended evacuation for mobile home owners and others living in flood-prone areas. About 1,000 people chose to evacuate.

Washington County Boonsboro 1 N Sharpsburg Williamsport	19	1700EST- 1722EST			0	0	0	0	Thunderstorm Winds
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County Emergency Operations Center reported trees downed in Boonsboro and Williamsport. National Park Service reported tree damage at Antietam National Battlefield.

Frederick County	19	1745EST			0	0	3	0	Thunderstorm Winds
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Numerous reports of trees and power lines downed were received.

Carroll County	19	1900EST- 1920EST			0	0	0	0	Thunderstorm Winds
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State police reported trees downed in many parts of the county and some roads were closed by fallen trees.

Baltimore County Parkville	19	1900EST			0	0	5	0	Lightning
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An apartment complex was set afire by lightning. The fire destroyed 22 apartments that housed 45 people; another 50 tenants were evacuated. A high school was also struck by lightning.

Lutherville	19	2110EST			0	1	3	0	Thunderstorm Winds
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A large tree was toppled onto a car by strong winds. The occupant of the car was injured and hospitalized.

Cecil County	19	2135EST- 2345EST			0	0	4	0	Lightning
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Four houses and a garage were struck by lightning. One house was set ablaze causing \$20,000 damage. The garage was burned to the ground.

Montgomery County Brinklow	20	0730EST- 0810EST			0	0	0	0	Hail (1.00)
Brinklow 3 SW Olney	20 20	0730EST- 0810EST			0 0	0 0	3 3	0 0	Thunderstorm Winds

At Brinklow, there were many reports of downed and heavily damaged trees. A historic 308-year-old oak tree was uprooted. Several telephone poles were snapped. The damage was caused by straight-line winds. Large quantities of up to quarter-size hail fell and was then whipped into drifts up to a foot deep by the wind. At a golf course, 3 miles southwest of Olney, about 80 trees were destroyed or damaged. One tree fell onto the roof of the clubhouse and damaged it.

1 NW Brinklow	20	0750EST- 0810EST	0.8	75	0	0	4	0	Tornado (F1)
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A weak tornado caused minor damage to houses along a 0.75-mile-long path in a subdivision 1 mile northwest of Brinklow. A barn was blown off its moorings and heavily damaged, a few sheds received moderate damage, and a machine shed was destroyed. This tornado was caused by the same thunderstorm that brought damaging winds and 1.00-inch hail to Brinklow.

Howard County 3 N Ashton	20	0830EST			0	0	3	0	Thunderstorm Winds
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August 1991

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MARYLAND AND DC Cont'd

Some 20 trees were downed, a few were 40 to 50 feet tall. Minor damage occurred to homes.

Harford County
Belair
5 SSE Black Horse
Abingdon

20	0830EST				0	0	4	0	Thunderstorm Winds
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A total of 17 trees were reported downed at Bel Air and 5 miles south-southeast of Black Horse. At Abingdon, several trees were downed, with falling limbs damaging the roof and siding of a home.

Baltimore County
Cockeysville

20	0900EST				0	1	0	0	Flood
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A 12-year-old boy was swept into a flooded stream after he stepped into the water; he suffered leg and neck injuries.

Baldwin

20	0930EST				0	0	3	0	Thunderstorm Winds (G65)
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Many large trees were downed in a area that was one-eighth miles by one-quarter mile wide. A construction shed was destroyed and moved 30 feet. There was minor damage to homes; some of which were under construction. The damage was caused by a downburst with highest winds estimated at 70 to 80 mph (65 knots).

Cecil County

20	0945EST- 1015EST				0	0	5	0	Lightning
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Three houses were struck by lightning; one was destroyed by the ensuing fire.

Montgomery County
2 WSW Spencer-
ville

20	1550EST				0	0	0	0	Funnel Cloud
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An off-duty National Weather Service meteorologist reported a funnel cloud in the Cloverly area (2 miles west-southwest of Spencerville). This funnel formed from cumulus clouds and was not associated with thunderstorms.

**Frederick and
Washington Counties**

20	1745EST				0	0	4	0	Thunderstorm Winds
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Numerous trees and power lines downed in both counties.

Carroll County
New Windsor

20	1820EST				0	0	3	0	Thunderstorm Winds
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Police reported power lines downed.

MASSACHUSETTS

**MAZ003, Martha's
Vineyard**

04	0130EST- 1030EST				0	0	?	0	Heavy Rain
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A total of 4.66 inches of rain fell during a 5-hour period between 0130 EST and 0630 EST at Edgartown with an additional 0.50 inch around 1000 EST, raising the total to more than 5 inches. The result was considerable flooding of cellars and low-lying areas on the island. Many roads were impassable as rain fell at a rate of about 2 inches per hour. Less than 0.50 inch of rain fell at Falmouth on Cape Cod located a few miles to the north.

Franklin County
Deerfield
Sunderland

04	1715EST				0	0	4	0	Thunderstorm Winds (G60)
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Up to a dozen or more trees, and many branches were knocked down in South Deerfield and Sunderland. Damage was confined mostly to a narrow path through a wooded region near Sugarloaf

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MASSACHUSETTS Cont'd

State Reservation. Property damage was minimal and power outages affected about 2,500 electric customers.

Hampshire County Hatfield Hadley Amherst	04	1730EST			0	0	4	0	Thunderstorm Winds (G50)
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Trees and wires were knocked down. Scattered power outages occurred. About one inch of rain fell in just 20 minutes at Amherst.

MAZ009, New Bedford	10	0730EST 0930EST-			0	0	4	0	High Winds
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High winds, feeding thunderstorms over southeast Massachusetts, affected New Bedford and nearby coastal communities. Wind gusts to 70 mph knocked down tree limbs causing scattered power outages. A very high tide flooded basements in the south end of New Bedford. The hurricane barrier at New Bedford was closed as a precautionary measure between 0815 EST and 0852 EST. Maximum sustained wind speed was measured at 62 mph with gusts to 71 mph out of the south-southeast.

Essex County Georgetown	15	1735EST- 1740EST	0.8	300	0	0	5	0	Tornado (F1)
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A tornado touched down at the north end of Rock Pond and then skipped along, moving from northwest to southeast, across Route 97. It then touched down near the south-southeast shore of Pentucket Pond where it caused the greatest damage. National Weather Service investigation included eyewitness accounts of a rotating funnel which turned white when it passed over water. A number of large trees were snapped off 20 feet above the ground. An auto was crushed by a falling tree and a house of modular construction, had its roof blown open. The tornado continued to about 0.25 mile southeast of the southeast corner of Pentucket Pond, and then disappeared. Width of the damage path varied from 300 yards to as narrow as 50 yards. Radar observations from Chatham indicated a storm top near 38,000 feet near the time of the event.

Franklin County Greenfield Northfield Warwick	18	1500EST			0	0	4	0	Thunderstorm Winds (G60)
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Trees and wires were knocked down in many towns throughout the county including Greenfield. Up to 3300 electric customers lost power. Officials in Northfield reported the wind damage followed a path about 100 yards wide in the southern part of that town and then on into Warwick.

Hampshire County Hadley	18	1500EST			0	0	?	0	Thunderstorm Winds
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Trees were knocked down in Hadley.

Worcester County Northern Portion	18	1515EST			0	0	4	0	Thunderstorm Winds (G60)
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Trees and wires were knocked down in parts of Orange, Lunenburg, Ashburnham, Clinton, and Bolton. Hundreds of electric customers also lost power.

Middlesex County Ashby	18	1515EST			0	0	4	0	Thunderstorm Winds (G60)
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A spotter reported trees uprooted and an estimated wind gust to 70 mph. Power outages affected 870 customers.

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MASSACHUSETTS Cont'd

MAZ002-003-009	19	1100EST- 1600EST-			0	5	8	7	Hurricane
MAZ001-004-005-006- 007-008	19	1000EST- 1800EST			0	2	8	7	High Winds
MAZ001-002-004-005- 006-007-008	19	0500EST- 1500EST			0	0	?	?	Heavy Rain

Hurricane "Bob" roared into the south coast of Massachusetts inflicting millions of dollars of property damage from Westport east to New Bedford, Buzzards Bay, Cape Cod, and the Islands. The "eye", or center of the hurricane, tracked north-northeast between Fall River and Providence through Bristol and Plymouth Counties passing just to the southeast of Boston with a forward speed of about 40 mph as a strong category two hurricane. The central pressure was about 28.40 inches when it made landfall and had weakened to about 28.70 inches when it passed near Boston and then over Cape Ann between 1600 EST and 1615 EST. The lowest pressure of 28.83 recorded at Boston tied the lowest on record for August initially set in Hurricane Carol in 1954. Oddly enough, Boston rebounded with the highest August pressure of 30.57 ever recorded 6 days later (August 25th). Total estimated damage for the state reached \$900 million in Massachusetts with possibly half of that amount inflicted on property in southern Bristol, southern Plymouth, Barnstable, Dukes, and Nantucket Counties. The counties of Dukes, Barnstable, Bristol, Plymouth, Middlesex, and Essex were later declared federal disaster areas. Damage to crops reached about \$10 million including 20 to 50% of the apple crop. Also, corn and vegetable crops were seriously damaged in most of the state. Over 500 boats broke away from their moorings, sunk, or were driven ashore all along the south coast from Westport to Chatham on Cape Cod. Many were heavily damaged or destroyed, but there were also hundreds of boat owners who heeded warnings of the approaching hurricane and pulled their craft to shore in the hours before the storm. The tidal surge reached 5.8 feet at the New Bedford Hurricane Barrier at 1430 EST, inundating barrier beaches from Westport to Marion and flooding beaches and the coastal flood plain in communities around Buzzards Bay. Over 100 cottages either floated or were washed off their foundations. "Some completely vanished..." was the report from Westport. In Fairhaven, 65 cottages were destroyed. The tidal surge was around 15 feet in upper Buzzards Bay resulting in very heavy damage to coastal properties along its shores. Storm surge damage would have been much worse had the center of the hurricane hit at high tide...about 2 hours later than it did. Farther east, Falmouth, on Cape Cod suffered heavy property losses which included wind damage to several large structures. A steeple and cupola on a building were blown down and an apartment building lost its roof. In addition, the tidal surge along the shore heavily damaged several restaurants, a number of homes, autos, and businesses. Across all of Cape Cod and the Islands thousands of trees were blown down knocking down power lines. Power outages affected the entire Cape and the Islands totaling over 300,000 customers. Over another 100,000 customers lost power in Plymouth and Bristol Counties. Power was slow to be restored with outages lasting from a few days to a week to ten days. Total number of power outages reached about 750,000 customers statewide and was the greatest power loss in the state since Hurricane "Gloria" in September 1985. There were many reliable reports of wind gusts, although unofficial, which exceeded 100 mph from a southeast to south direction along the south coast from Westport to Cape Cod and the Islands. The U.S. Army Corps of Engineers reported sustained winds of 80 mph with several gusts to 110 mph from the east-southeast at the New Bedford hurricane barrier. The National Weather Service at Chatham reported a gust to 95 mph. Other gusts reported include: 143 mph at Westport Point, 125 mph at Brewster, 123 mph at Siasconset on Nantucket Island, 115 mph at Stage Harbor in Chatham, 100 mph in Falmouth, 98 mph at Harwich, 85 mph in Plymouth Harbor, 92 mph atop a 200-foot tower at the Pilgrim Nuclear Plant in Plymouth, 78 mph at the Blue Hill Observatory in Milton, 69 mph at Worcester, and 63 mph at Boston. While less than a 0.50 inch of rain fell to the east of the storm track over Cape Cod and the Islands, rainfall amounts increased to 2 to 3 inches around 10 miles west of the track, and 4 to 7 inches in Middlesex and Worcester Counties causing considerable urban flooding which stalled cars in poor drainage locations. Many locations had intense rainfall of 1.00 to 1.50 inches in an hours time. Fortunately, dry soil prior to this event prevented major flooding. Six-inch storm totals were also reported from Essex County in northeast Massachusetts. Four to six inches were common in Franklin, Hampshire, Hampden, and Berkshire Counties as far west as the eastern slopes of the Berkshires.

Worcester County
Worcester

19	0900EST- 1500EST				?	?	?	?	Flash Flood
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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MASSACHUSETTS Cont'd

Up to 6 feet of water flooded poor drainage urban locations. People were seen in canoes on some streets. The headwaters of the Blackstone River went into flood roughly between 1200 and 1400 EST.

**Middlesex County
Lowell**

22	2000EST								Flood
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The Concord River barely exceeded flood stage 3 days after the 6-inch rains of Hurricane "Bob" had ended. No serious flooding occurred.

MICHIGAN

Berrien County

02	2120EST- 2140EST								Thunderstorm Winds
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Strong thunderstorm winds blew down trees, tree limbs, and power lines. The damage path extended diagonally northwest to southeast across the county. The path started in Benton Harbor, then continued southeast across Berrien Springs, ending near Buchanan. In the Benton Harbor area, trees were blown down, and in one case, a road was blocked. One mile northwest of Berrien Springs, 140 fruit trees (apple, peach, plum, and cherry) per acre on the 100 acre farm were lost. Total damage was estimated near \$85,000. The trees either were broken off at their trunk, split, or uprooted. Approximately 1 mile north of Buchanan, at a mobile home park, the strong winds downed many trees. Several trees fell on a mobile home while the family was inside. The family, which included a 5-year-old son and 7-year-old daughter, escaped without injury, even through the son was briefly trapped in the bathroom, and the daughter in her bedroom. The siding was blown off a barn at the entrance to the mobile home park, and the roofs of two cars were dented. During all of this many power lines were blown down and quite a few roads between Benton Harbor and Buchanan had to be cleared of tree debris.

Cass County

02	2200EST								Thunderstorm Winds
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Strong thunderstorm winds blew down trees, tree limbs, and power lines.

St. Joseph County

02	2230EST								Thunderstorm Winds
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Strong thunderstorm winds blew down trees, tree limbs, and power lines. Across all three counties, 8,000 customers of Consumers Power lost power during the storm.

**Alcona County
Near Barton City**

14	0430EST								Thunderstorm Winds
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Several large trees were uprooted by strong thunderstorm winds.

**Ogemaw County
10 SE West Branch**

15	1545EST								Hail (0.75)
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Sixty-mph winds blew down trees and power lines and thousands of customers were left without power.

**Kent County
Lowell**

17	1216EST								Hail (0.75)
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**Bay County
Bay City**

17	1400EST								Hail (0.75)
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**Washtenaw County
Chelsea**

17	1430EST								Thunderstorm Winds
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Strong thunderstorm winds blew down power lines in the city of Chelsea.

**Genesee County
Clio**

17	1445EST								Thunderstorm Winds
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
MICHIGAN Cont'd									
A small tree was blown down by strong thunderstorm winds.									
Lapeer County North Branch	17	1525EST			0	0	0	0	Hail (1.75)
Golf ball-size hail was reported in the city of North Branch.									
Lapeer County SE of Imlay City	17	1615EST			0	0	3	0	Thunderstorm Winds
Strong thunderstorm winds blew several trees over a road to the southeast of Imlay City.									
Saginaw County Chesaning	17	1800EST			0	0	0	0	Thunderstorm Winds
Strong thunderstorm winds uprooted trees and downed power lines. In Chesaning, one home was damaged when a tree limb fell on it.									
Saginaw and Shiawassee Counties									
2.5 E Chesaning to 1 E Juddville	17	1800EST- 1835EST	11.0	15	0	0	0	0	Tornado (F0)
The tornado first touched down 2.5 miles east of Chesaning, to 1 mile east of Juddville, then continued touching down only occasionally as it crossed into Shiawassee, 3 miles northwest of New Lathrop, where it continued to move southeast at 20 mph touching down only occasionally as it moved. When the tornado passed about 1 mile north-northeast of Juddville, it had its longest continuous track on the ground, about 1.1 miles. When it was 1 mile due east of Juddville, it lifted into a funnel cloud, which then moved 2.5 miles east-southeast of Juddville. Damage was negligible, because the tornado was almost always weak as in the rope stage. For the most part, vegetation was just disturbed and not ripped out. Most of the land the tornado traveled on was hayfields that were just harvested.									
Shiawassee County 1.3 N to 0.8 N of New Lathrop	17	1815EST- 1818EST	0.5	20	0	0	3	0	Tornado (F1)
The tornado touched down 1.3 miles north-northwest of New Lathrop. It then traveled southeast across Johnstone Road where it crossed a corn field and damaged the top of a silo. The tornado lifted shortly after completely destroying a vacant 12-foot-wide by 16-foot-long mobile home.									
Shiawassee County 1 SE to 1 S New Lathrop	17	1825EST- 1830EST	1.0	20	0	0	0	0	Tornado (F0)
This third tornado touched down was 1 mile southeast of New Lathrop, from there it traveled southeast about a mile before dissipating. The only damage this tornado did was pull a large tree out of a wind-row and throw it down onto a bean field.									
Genesee County Montrose	17	1845EST			0	0	0	0	Thunderstorm Winds
Strong thunderstorm winds blew down several trees across the road near the town of Montrose.									
10 W Flint	17	1935EST			0	0	0	0	Thunderstorm Winds
Thunderstorm winds downed trees and limbs across Morrish road, which is 10 miles west of Flint.									
Oakland County South-Central Portion	19	0100EST- 1700EST			0	0	7	0	Flash Flood

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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MICHIGAN Cont'd

Very heavy rain, from a thunderstorm complex, flooded a small area of extreme southern Oakland County with 5 inches of rain in about 4 hours. The towns of Farmington, Farmington Hills, and Novi were hit the hardest. One apartment complex in Farmington Hills sustained water damage to 200 units. Many of them had to be evacuated during the storm, around 0230 EST. Some residents reported being awoken to find their beds floating in water. Many motels, in this 6 mile by 14 mile square area, had significant water damage. Hundreds of vehicles were at least partially submerged in water. Streets and intersections were flooded. It was not until early in the evening of the 19th that the flooding subsided, 12 hours after the rain ended. Damage was estimated around \$5 million.

Washtenaw County
Dexter

19	1110EST				0 2	0 0	Lightning
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Two men, working on a pneumatic power loader, were struck by lightning while hoisting pipes into position at a work site in Dexter. The lightning struck the loader first, before them.

Washtenaw County
Between Whittaker
and Stony Creek

19	1132EST				0 2 4	0 0	Lightning
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Lightning struck a home and caused it to burn to the ground. Two people in the home were injured. Damage to the home was estimated at \$30,000.

Macomb County
St. Clair Shores
Roseville

19	1300EST				0 0 5	0 0	Lightning
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Lightning caused damage to two apartment buildings in separate incidences that occurred at the same time during the early afternoon hours of Monday, the 19th. In St. Clair Shores, lightning struck the roof of the complex, causing a smoldering fire. The police evacuated the residence. Damage to the complex was light, but significant. Lightning also struck the ground near an apartment complex in Roseville. It then bounced up and hit a window air conditioner resulting in a fire inside the wall that spread into the attic. The fire caused \$100,000 in damage to the eight adjoining units before the fire was put out 2 hours later.

Wayne County

19	1715EST-				0 0 0	0 0	Flood
20	1825EST						

Heavy rain fell over southeast Lower Michigan during a 24-hour period from the 18th into the 19th. This resulted in over 2 inches of rain in the Middle Rouge River basin. The river went over its flood stage of 7 feet during the early evening of the 19th, reached a crest of 8.6 feet about 1000 EST on the 20th, then went below its flood stage by 1800 EST on the 20th. The flooding closed Edward Hines Parkway, which parallels the river. Other than that, no significant damage resulted from the flooding.

MINNESOTA

Blue Earth and
Waseca Counties

07	1030CST-				0 0	? ?	Flood
	2200CST						

Thunderstorms producing heavy downpours, dropped in excess of 5 inches of rain in the Mankato and Waseca vicinities. The rain began falling toward late morning and lasted until late evening causing widespread street flooding. Sanitary sewers could not handle the huge volume of water which resulted in sewage backing up into basements of many homes in the Waseca area. Area cropland was also flooded causing some damage.

Waseca County
Waseca

07	1932CST				0 0 0	? ?	Thunderstorm Winds
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Strong thunderstorm winds felled many large trees in Waseca.

Chippewa County
Granite Falls
Renville County
Sacred Heart

15	1200CST				0 0	? ?	Hail (0.75)
15	1300CST				0 0	? ?	Hail (1.50)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

MINNESOTA Cont'd

Renville	15	1305CST			0	0	?	?	Hail (0.75)
Olivia	15	1325CST			0	0	?	?	Hail (0.75)
3 S Hector	15	1325CST			0	0	?	?	Hail (1.00)

An intense hailstorm pelted a large part of Renville County with high winds and large hail causing damage to an estimated 3,500 acres of cropland. The hail stripped leaves from trees and crops and left dents on cars in Sacred Heart, Renville, and Olivia. The large hail also broke windows on many homes south of Hector.

Nicollet County

Lafayette	15	1530CST			0	0	?	?	Hail (1.75)
1 E Klossner	15	1600CST			0	0	?	?	Hail (1.75)
Nicollet	15	1620CST			0	0	?	?	Hail (1.75)

Large hail damaged an estimated 29,000 acres of cropland across Nicollet County. The hail accumulated on roadways near Lafayette and Klossner causing traffic accidents. Many cars were dented due to the combination of wind and hail in Nicollet.

Itasca County

White Oak	15	1750CST			0	0	?	?	Hail (1.75)
Becker County Frazee	24	2200CST			0	0	?	0	Lightning

Lightning struck a concrete statue on the lawn of a church in Frazee causing extensive damage.

Pope County

Cyrus	25	0212CST			0	0	?	?	Hail (0.75)
Pine County Hinckley	25	0620CST			0	0	?	?	Thunderstorm Winds

Strong thunderstorm winds blew down seven large trees in Hinckley causing power outages.

Kanabec County

Mora	25	0625CST			0	0	?	?	Thunderstorm Winds
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Power was knocked out for several hours in Mora when strong winds felled power lines and several trees.

MISSISSIPPI

Lauderdale County

2 N Meridian	07	1255CST			0	0	2	0	Thunderstorm Winds
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Several trees were blown down by thunderstorm winds.

Monroe County

2 N Aberdeen	07	1259CST			0	0	2	0	Hail (1.75) Thunderstorm Winds
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Thunderstorm winds downed several trees 2 miles north of Aberdeen.

Lauderdale County

Meridian	07	1330CST			0	0	1	0	Thunderstorm Winds
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A 3-foot-diameter tree was blown down in Meridian.

Franklin County

3 SE Bude	10	1730CST			0	0	2	0	Thunderstorm Winds
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Three pine trees were blown down across the road by thunderstorm winds.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

MISSISSIPPI Cont'd

Lincoln County 2 W Brookhaven	10	1800CST			0	0	2	0	Thunderstorm Winds
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Several power lines were blown down along State Highway 550.

Kemper County Oak Grove	29	1700CST			0	0	2	0	Thunderstorm Winds
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Strong winds downed several trees onto power lines and caused numerous power outages throughout the community.

MISSOURI

Jefferson County	03	1530CST			0	0	3	2	Thunderstorm Winds
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The Jefferson County Sheriff's Office reported small hail and downed power lines.

Ste. Genevieve County Near Bloomsdale	03	1600CST			0	0	3	1	Thunderstorm Winds
Near Bloomsdale	03	1615CST			0	0	0	0	Hail (1.75)

The Ste. Genevieve County Sheriff's Office reported large trees downed near Bloomsdale at 1600 CST and golf ball-size hail at 1615 CST.

Jefferson County Fletcher	03	1740CST			0	0	3	2	Thunderstorm Winds
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The Jefferson County Sheriff's Office reported several large trees and limbs downed.

Washington County Richwoods	03	1745CST			0	0	2	0	Thunderstorm Winds
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The Washington County Sheriff's Office reported numerous trees downed.

Madison County Marquand	03	1845CST			0	0	3	2	Thunderstorm Winds
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The Madison County Sheriff's Office reported several large trees downed which blocked Highway A for a short time.

Bollinger County Lutesville	03	1920CST			0	0	3	0	Thunderstorm Winds
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The Bollinger County Sheriff's Office reported numerous large trees and power lines downed in and near Lutesville.

Phelps County Near St. James	05	1440CST			0	0	0	0	Hail (0.75)
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The Missouri State Police reported 0.75-inch-diameter hail, but no damage was reported.

Jasper County Joplin Airport	05	1540CST			0	0	0	0	Thunderstorm Winds (G61)
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Gusts to 70 mph were recorded at Joplin Airport, but no damage was reported.

Dallas County Buffalo	05	1615CST			0	1	4	2	Thunderstorm Winds
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Approximately 10 homes were damaged in Buffalo when large trees and limbs fell on roofs. Wind gusts also knocked out plate glass windows in stores injuring one person. A flagpole near the courthouse was bent over at a right angle, and power was lost for about 1.5 hours.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
MISSOURI Cont'd									
Madison County 5 S Fredricktown	05	1640CST			0	0	0	0	Funnel Cloud
	A funnel cloud was reported by the Madison County Sheriff's Office.								
Scott County Chaffee	05	1815CST			0	1	4	2	Thunderstorm Winds
	High winds from thunderstorms uprooted trees and knocked them on to cars, injuring one person. Power lines were also knocked down and close to three inches of rain fell in 1 hour. A flagpole was bent over almost half way to the ground from estimated wind speeds near 60 mph.								
Cooper County 2 E Boonville Boonville	07	1325CST			0	0	3	0	Hail (1.00)
	07	1355CST			0	0	3	2	Thunderstorm Winds
	A highway patrol car was damaged by 1.00-inch hail, 2 miles east of Boonville with damaging winds estimated to 50 mph. In Boonville, tree limbs and power lines were knocked down.								
Taney County	08	1410CST			0	0	5	3	Thunderstorm Winds
	Thunderstorm wind gusts heavily damaged a boat dock on Lake Taneycomo in Rockaway Beach. Trees were knocked down in Forsyth, Branson, and Taneyville damaging roofs and cars. Various other damages occurred across the county from falling trees and blowing debris.								
Vernon County Near Stotsbury	08	1500CST			0	0	0	0	Hail (0.75)
	Hail measuring 0.75 inch in diameter was reported.								
Jefferson County 3 E House Springs	08	1612CST			0	0	3	2	Thunderstorm Winds
	The Jefferson County Sheriff's Office reported downed trees and power lines.								
Gasconade County Swiss	08	1615CST			0	0	3	2	Thunderstorm Winds
	Large trees were downed in and around Swiss.								
Cass County Gunn City	08	1805CST			0	0	2	0	Hail (1.00)
	Hail to 1.00 inch in diameter was reported.								
Johnson County Holden	08	1857CST			0	0	1	0	Thunderstorm Winds (G52)
	Thunderstorm winds gusted to 60 mph in Holden.								
MONTANA									
Valley County Lustre	04	2000MST- 2020MST			0	0	4	5	Hail (1.75) Thunderstorm Winds
	Widespread crop damage was reported around Lustre.								
Roosevelt County	04	2030MST- 2300MST			0	0	4	3	Flash Flood

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

MONTANA Cont'd

Flash flooding was reported when 4.50 inches of rain fell 20 miles east of Wolf Point. Highway 2 was under water.

Dawson County Glendive	06	1630MST			0	0	4	5	Thunderstorm Winds Hail (0.75)
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Wibaux County Wibaux	06	1645MST			0	0	4	5	Thunderstorm Winds Hail (2.75)
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A severe thunderstorm moved between Glendive and Wibaux. Widespread damage to crops, buildings, and livestock occurred.

Wibaux Richland County Sidney	06	1743MST	?	?	0	0	0	0	Tornado (F0)
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Richland County Sidney	06	2000MST			0	0	3	5	Hail (1.25) Thunderstorm Winds
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Ravalli County Hamilton	10	2000MST			0	0	0	0	Hail (1.00)
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Fergus County Moore	11	1740MST			0	0	0	5	Hail (1.00)
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Heavy rain accompanied 1.00-inch hail.

Pondera County Brady	13	1628MST			0	0	4	5	Hail (4.50)
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Many windows were broken and a lot of crop damage occurred because of 4.50-inch hail.

Chouteau County 40 N Great Falls	13	1654MST			0	0	4	4	Hail (1.75)
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Golf ball-size hail fell near the Knees.

Judith Basin County Between Geyser and Stanford	14	1400MST			0	0	0	3	Hail (1.00)
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Madison County	26	1745MST- 1900MST			0	0	4	0	Flash Flood
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Sweetwater Road at Sage Creek, near Ruby Reservoir, was washed out.

NEBRASKA

Sioux County 6 N Mitchell	06	1800MST			0	0	?	?	Hail (1.25)
Pierce County	07	1545CST			0	0	1	1	Thunderstorm Winds

Tree limbs were downed by high winds in the northwest part of the county.

Pierce and Antelope Counties Plainview to Neligh	07	1900CST			0	0	2	2	Flash Flood
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Thunderstorms produced heavy rain which flooded some county roads between Neligh and Plainview. Streets and several basements were also flooded in Plainview. Official rainfall amounts ranged from 1.63 inches at Neligh, to 3.58 inches at Plainview. Unofficial reports ranged from 7 to 9 inches from Plainview to 4 miles south of town.

Dodge County North Bend	07	1950CST			0	0	0	0	Thunderstorm Winds (G61)
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
NEBRASKA Cont'd									
Thunderstorm wind gusts estimated at 60 to 70 mph occurred at North Bend, but no damage was reported.									
Saunders County 9 N Ashland	07	2015CST			0	0	3	0	Thunderstorm Winds
Thunderstorm winds damaged outbuildings and equipment on a farm.									
Custer County Broken Bow	08	0000CST			0	0	4	0	Lightning
Lightning struck a house and started a fire in the attic and then spread throughout the house. Damage was estimated at \$25,000.									
Sioux County 5 S Harrison	10	1750MST			0	0	?	?	Hail (1.75)
10 SW Harrison	10	1826MST			0	0	?	?	Hail (1.75)
5 N Mitchell	11	1843MST			0	0	?	?	Hail (1.75)
Cherry County Valentine	15	1820CST			0	0	4	0	Thunderstorm Winds
Thunderstorm winds blew down trees and power lines. A roof was torn off a church, and siding was ripped off the National Weather Service office.									
Banner County 16 W Harrisburg	24	1400MST			0	0	0	2	Lightning
Lightning started a fire that burned 6,000 acres of grass along the Nebraska-Wyoming border.									
Saunders County 2 E Cedar Bluff	30	0630CST			0	0	3	2	Lightning
Lightning started a fire that destroyed a barn and the 200 bales of alfalfa inside it. Damage was estimated at \$1000 for the barn and \$300 for the hay.									
NEVADA									
NVZ006 Northeastern Nevada	04	1130PST- 1145PST	0.5	15	0	0	0	0	Tornado (F0)
The public reported a tornado 8 miles southeast of Elko.									
NVZ003 Extreme Western Nevada	04	1500PST- 1700PST			0	0	3	?	Flash Flood
Strong thunderstorms produced heavy rain from Carson City to Virginia City. One inch of rain fell in 20 minutes, 8 miles south of Reno. State Highway 341 to Virginia City was closed for several hours because of mud and rock slides.									
NVZ009 Extreme Southern Nevada	10	1900PST- 2100PST			0	0	?	0	Flash Flood
Strong thunderstorms produced heavy rains across extreme southern Nevada. Several roads in Las Vegas were closed because of flash flooding.									
NVZ003 Extreme Western Nevada	14	1520PST			0	0	0	0	Hail (0.75)
Topaz Lake reported 0.75-inch hail and heavy rain.									
NVZ001 Truckee-Tahoe Area	14	1905PST			0	0	0	0	Hail (0.75)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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NEVADA Cont'd

An off-duty weather observer reported 0.75-inch hail at Rubicon Bay on the southwestern side of Lake Tahoe.

NVZ001 Truckee-Tahoe Area	15	0840PST- 0920PST	?	?	0 0	0 0	Waterspout
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The Coast Guard station at Tahoe City reported eight funnel clouds mainly over the middle of Lake Tahoe. Several of the funnel clouds clearly touched the lake forming waterspouts.

NVZ001 Truckee-Tahoe Area	15	1230PST- 1240PST			0 0	0 0	Waterspout
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The Coast Guard station at Tahoe City spotted an additional waterspout in the middle of Lake Tahoe.

NVZ007 East-Central Nevada	23	1600PST			0 1	0 0	Lightning
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A man was struck by lightning and badly burned while hunting near the crest of Diamond Mountain 10 miles northeast of Eureka.

NEW HAMPSHIRE

Merrimack County Warner	01	1930EST			0 0	? 0	Thunderstorm Winds
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Strong thunderstorm winds knocked down trees and power lines. A tall pine tree fell into the third floor of a house knocking pieces of the house apart. Another tree fell onto an antique pump house and destroyed it.

Belknap County Gilmanton	01	2020EST			0 0	? 0	Thunderstorm Winds Hail (1.00)
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Thunderstorm winds knocked large trees down in Gilmanton and 1.00-inch hail was also reported.

Grafton County Lyme Orford	04	1850EST			0 0	? 0	Thunderstorm Winds
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Trees were reported down in the towns of Lyme and Orford.

Hillsborough County Milford	18	1520EST			0 0	? 0	Thunderstorm Winds
Rockingham County Newfields	18	1530EST			0 0	? 0	Thunderstorm Winds
Hillsborough County Merrimack	18	1535EST			0 0	? 0	Lightning
Rockingham County Stratham	18	1535EST			3 11	? 4	Thunderstorm Winds Hail
Hillsborough County Nashua	18	1537EST			0 0	? 0	Thunderstorm Winds (G58)
Rockingham County Greenland	18	1545EST			0 0	? 0	Thunderstorm Winds
Newcastle	18	1545EST			0 0	? 0	Thunderstorm Winds
Londonderry	18	1555EST			0 0	? 0	Hail (0.75)

Strong thunderstorms raced across southern New Hampshire during the late afternoon hours on the 18th. At 1520 EST, thunderstorm winds knocked numerous trees down onto roads in Milford. At 1530 EST, thunderstorm winds also knocked numerous trees down in Newfields which made many roads impassable. Lightning struck a pump station in Merrimack at 1535 EST. The station was completely destroyed. Strong thunderstorm winds ripped through Stratham at 1535 EST. Sixty-foot-tall pine trees toppled onto a park pavillion roof and collapsed it. Three people were killed and

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NEW JERSEY, Northern Cont'd

**Monmouth County
Avon-By-The-Sea**

06 0900EST 0 0 0 0 Dust Devil

A small dust devil formed over the beach area then moved over the ocean a short distance before it dissipated. The swirling winds picked up a large amount of sand as well as some beach chairs and umbrellas.

Avon-By-The-Sea

06 1226EST 0 16 2 0 Dust Devil

A second and considerably larger, dust devil formed during the early afternoon hours. It was estimated to be 30 to 40 feet high with a circumference of 10 to 12 feet. Besides picking up sand, beach chairs, and umbrellas, it lifted a 480-pound wooden lifeboat 6 to 10 feet in the air and twirled it around. The board was tossed into a large group of people. Sixteen people were injured; twelve of them children.

NJZ 005, 007, 015

19 0900EST-1300EST 0 1 ? 0 Hurricane Bob

The center of Hurricane Bob passed about 100 miles east of the New Jersey coast. Although the state escaped its dangerous winds, strong winds did down several trees and power lines in the extreme northeastern section of the state. In Montclair, Essex County, a man was injured when a gust of wind shattered a window. Heavy rain turned out to be the biggest problem for the state. Rainfall totals ranged for the most part between one to three inches. Englewood, Bergen County, reported the highest amount with 3.02 inches. The rivers and streams were able to handle such amounts, staying within their banks, but elsewhere there was considerable street and urban flooding. Several automobile accidents resulted from these heavy rains and/or flooding. The most serious was in Bogota, Bergen County. A couple was killed and their two children injured when their car hydroplaned on a flooded section of Route 80 and crashed into a truck.

**Hunterdon County
Flemington**

20 1300EST 0 0 ? 0 Thunderstorm Winds

**Somerset County
Hillsbough**

20 1320EST 0 0 ? 0 Thunderstorm Winds

**Union County
Plainfield**

20 1400EST 0 0 ? 0 Thunderstorm Winds

**Middlesex County
Piscataway**

20 1400EST 0 0 ? 0 Thunderstorm Winds

**Bergen, Somerset,
Middlesex, and
Union Counties**

20 1300EST-1400EST 0 0 ? 0 Flash Flood

Damaging thunderstorms moved across sections of northern New Jersey during the early afternoon hours. Numerous trees and power lines were downed. In Piscataway, a car was damaged by a downed tree. Torrential rain accompanied these thunderstorms causing considerable street and urban flooding. One-inch of rain in 7 minutes was reported in Belle Mead in Somerset County.

NEW JERSEY, Southern

**Cumberland County
1 N Carlis Corner
Newport**

03 1930EST 0 0 3 0 Thunderstorm Winds
03 1930EST 0 0 3 0 Thunderstorm Winds

Thunderstorm wind gusts downed a few large trees and power lines near Carlis Corner and downed a large tree in Newport.

**Burlington County
Medford Lakes
Burlington**

03 1940EST 0 0 3 0 Thunderstorm Winds
03 2000EST 0 0 3 0 Thunderstorm Winds

Thunderstorm wind gusts downed utility poles in Medford Lakes and trees and utility lines in Burlington.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NEW JERSEY, Southern Cont'd

Ocean County	03	2015EST			0	0	?	0	Thunderstorm Winds (G55)
Toms River	03	2015EST			0	0	?	0	Hail (0.75)
Jackson									

Thunderstorm wind gusts of 60 to 65 mph were reported near Toms River. Dime-size hail fell in Jackson.

NJZ-OSE	19	0400EST- 1000EST			0	0	4	0	Hurricane Bob
Along the Shore from Cape May to Manasquan									

Hurricane Bob moved north around 90 miles offshore. Some of the higher gusts reported were: 64 mph in Loveladies, Ocean County; 61 mph in Long Beach Township, Ocean County; and 59 mph in Ocean City, Atlantic County. The strong wind gusts brought down tree limbs, utility lines, and some trees. Heavy rains of two to four inches caused roadway flooding. Harvey Cedars in Ocean County, received 4.18 inches. Heavy surf caused some minor beach erosion.

Burlington County	19	2035EST	1.5	70	0	0	3	0	Tornado (F0)
Mt. Holly									

A tornado touched down along a 1.5-mile track bringing down trees and causing minor property damage, such as destroying a metal storage shed. The track was 50 to 70 yards wide.

Salem County	20	1440EST			0	0	3	0	Thunderstorm Winds (G52)
Woodstown									

Thunderstorm wind gusts of 60 mph were reported.

Cape May County	20	2040EST			0	0	?	0	Thunderstorm Winds (G52)
Avalon									

Thunderstorm wind gusts of 60 mph or more and marble-size hail was reported in Cape May.

Cape May	31	0800EST			0	2	0	0	Lightning
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A man and a boy were injured by a lightning strike while walking on the beach.

NEW MEXICO

Bernalillo County	01	1445MST- 1530MST			0	0	4	0	Flash Flood
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Over 1 inch of rain flooded arroyos, streets, and two homes in the Sandia Heights section of northeast Albuquerque. One car was stranded by the flood waters, but firefighters pulled the car and the uninjured driver to safety.

Sandoval County	01	1630MST			0	0	3	0	Lightning
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At Rio Rancho lightning struck three separate homes. Damage was mostly minor, although the dishwasher caught fire at one of the homes.

Dona Ana County	02	1430MST			0	0	0	6	Hail (0.50)
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At Salem, marble-size hail destroyed cotton, chile, and alfalfa crops. One thousand acres were destroyed and another 4000 acres were partially damaged. Total damage was estimated at \$1 million.

Santa Fe County	04	1655MST- 1900MST			0	0	5	0	Flash Flood
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Heavy rains caused flash flooding in many parts of the county. The city of Santa Fe was especially hard hit, with flooding reported in 130 homes. Several city roads were closed due to flooding and

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NEW MEXICO Cont'd

one due to a mudslide. Up to 50 additional homes in the county were flooded, as were six county roads. In the northern part of the county, the Santa Cruz River flooded, washing out several roads and bridges. Total damages were estimated at \$250,000.

Sandoval County	06	1915MST- 1945MST			0	0	3	0	Flash Flood
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Lightning and flash floods closed Golf Course Road in Rio Rancho, along with several residential roads. New Mexico Highway 313 was closed near the town of Bernalillo. Lightning struck two Rio Rancho homes, but caused little damage.

Santa Fe County	06	2210MST- 2300MST			1	2	4	0	Flash Flood
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One female was killed, and her brother-in-law and son were injured when their car plunged into a large hole in U.S. Highway 285 about 25 miles south of Santa Fe. A flash flood through an arroyo washed out a large culvert, causing the highway to collapse. One truck was damaged when the road began to collapse beneath it. The victims were in the car that followed immediately behind the truck. The car was demolished when it fell into the newly created 20-foot-long by 6-foot-deep hole in the road.

Lea County 7 N Hobbs	10	1135MST	0.1	10	0	0	0	0	Tornado (F0)
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An officer at the Hobbs Police Department reported a small tornado 7 miles north of Hobbs near the Denver City Highway. After moving north, it lifted into the clouds without causing damage.

Dona Ana County	10	1600MST- 1700MST			0	0	4	0	Flash Flood
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Flash floods damaged several Las Cruces homes and roads. Highway 292 was also flooded.

DeBaca County Sumner Lake	12	2245MST			0	0	3	0	Thunderstorm Winds Heavy Rain
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Strong winds blew a roof completely off a garage and downed several large branches. Heavy rain also damaged some nearby alfalfa fields.

Santa Fe and Mora Counties	13	1700MST- 2000MST			2	0	4	0	Flash Flood
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A man and a girl were swept away and drowned at 1715 MST by the rain swollen Pojoaque River, which flows through Pojoaque Pueblo about 15 miles north of Santa Fe, in Santa Fe County. Witnesses warned the driver not to cross, but he did anyway. The car made it across the river, only to flip down an embankment and into the river. In Mora County, several roads were flooded at 1930 MST, including State Roads 105 and 518. (M31V)(F11V)

Bernalillo County 19 ENE Albuquerque	13	1855MST- 1939MST			0	0	3	0	Hail (1.75)
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A citizen reported golf ball-size hail and 60 to 70 mph winds in Sedillo at 1855 MST. Pine trees near Sedillo were reported as being shredded by golf ball-size hail from 1915 to 1930 MST.

Countywide	15	1800MST- 2100MST			0	0	4	0	Flash Flood
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Flooding forced the closing of Tramway Boulevard in Albuquerque. Several roads in Sandia Heights were flooded, and one house sustained damage. A road was washed out in the eastern part of the county, between New Mexico Highways 337 and 217.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
NEW MEXICO Cont'd									
Torrance County	15	2015MST- 2115MST			0	0	0	0	Flash Flood
									The police reported water over Highway 55, west of Estancia.
Bernalillo County	17	1530MST- 1615MST			0	0	3	0	Flash Flood Hail (0.75)
									Runoff from heavy thunderstorm rains flooded several roads in Albuquerque. A National Weather Service employee reported dime-size hail in the eastern foothills of Albuquerque (11 miles northeast of Albuquerque) at 1600 MST.
Valencia County	17	1815MST- 2100MST			0	0	5	0	Flash Flood
									A flash flood damaged about 50 homes and several businesses in Belen. A bridge on New Mexico Highway 6 was washed out 15 miles west of Los Lunas. Three other bridges on New Mexico Highway 6 were also damaged; the highway had to be closed between Interstate 25 and Interstate 40. Los Lunas police reported five roads were closed due to flooding between 1900 and 2100 MST.
Grant County	17	1930MST- 2030MST			0	0	3	0	Flash Flood
									Several roads were washed out north of Silver City, including State Road 35. People were rescued from two nearby arroyos.
Hidalgo County	19	1555MST- 1730MST			0	0	3	0	Flash Flood
									A National Weather Service cooperative observer reported that several roads were closed near Animas because of flooding.
Lea County 5 W Hobbs	28	1222MST			0	0	0	0	Thunderstorm Winds (G65)
									A thunderstorm wind gust of 65 knots (75 mph) was reported by the weather observer at Hobbs Airport.
1 W Hobbs	28	1245MST			0	0	3	0	Thunderstorm Winds
									The sheriff's office reported that two mobile homes were overturned and several telephone poles were downed 1 mile west of Hobbs.
15 SW Hobbs	28	1327MST			0	0	3	0	Thunderstorm Winds
									The Hobbs Police Department reported several downed power poles 15 miles southwest of Hobbs. An officer estimated the wind associated with the thunderstorm, to be 55 knots (63 mph).
NEW YORK, Central									
Montgomery County Florida	01	1645EST			0	0	3	0	Thunderstorm Winds
Florida	01	1645EST			0	0	4	0	Lightning
Tioga County 5 E Waverly	01	1830EST			0	0	3	0	Thunderstorm Winds
Halsey Valley	01	1830EST			0	0	3	0	Thunderstorm Winds
Nichols	01	1830EST			0	0	3	0	Thunderstorm Winds
Owego	01	1830EST			0	0	3	0	Thunderstorm Winds
Rensselaer County Postenkill	01	1950EST			0	0	4	0	Thunderstorm Winds

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NEW YORK, Central Cont'd

Sand Lake	01	1955EST			0	0	4	0	Thunderstorm Winds
Averill Park	01	2000EST			0	0	3	0	Thunderstorm Winds

Severe thunderstorms downed trees and power lines in Montgomery, Tioga, and Rensselaer Counties. The Town of Florida in Montgomery County, lightning was responsible for a fire which burned three barns to the ground. Postenkill in Rensselaer County, thunderstorm winds blew panels out of windows.

Columbia County									
Clermont	04	1500EST			0	0	4	0	Thunderstorm Winds
Kinderhook	04	1500EST			0	0	3	0	Thunderstorm Winds
Spencertown	04	1500EST			0	0	3	0	Thunderstorm Winds
Warren County									
Stony Creek	04	1555EST			0	0	3	0	Thunderstorm Winds
Warrensburg	04	1555EST			0	0	3	0	Thunderstorm Winds
Washington County									
Granville	04	1655EST			0	0	3	0	Thunderstorm Winds

Severe thunderstorms downed trees and wires in parts of Columbia, Warren, and Washington Counties. Hardest hit was the Kinderhook area in Columbia County where a towering maple tree toppled through the roof of a home causing extensive damage.

NYZ013

Lower Hudson Valley	09	1445EST- 1515EST			0	1	4	0	High Winds
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High winds accompanied a rain storm as it moved through the Lower Hudson Valley. The high winds downed trees and power lines which left 3500 customers without power. The hardest hit was the Cornwall-on-Hudson area in Orange County where a car hit a tree in which a passenger in the car sustained a minor injury. Also hard hit were Beacon, Fishkill, Stormville, Millerton, and Pleasant Valley in Dutchess County.

Orange County									
Coldenham	15	1445EST			0	0	3	0	Thunderstorm Winds
Ulster County									
Ellenville	15	1500EST			0	0	4	0	Thunderstorm Winds

Severe thunderstorms moved through Coldenham and Ellenville downing power lines along Route 17K in Coldenham and leaving 10,000 Ulster County customers without power in the Ellenville area.

Cortland County									
Virgil	15	1635EST			0	0	3	0	Lightning

Lightning struck a milk house setting it on fire in Virgil causing moderate damage to the building.

Oneida County									
Sylvan Beach	16	1730EST			0	0	3	0	Lightning
Rome	16	1810EST			0	0	4	0	Thunderstorm Winds
Holland Patent	16	1820EST			0	0	3	0	Thunderstorm Winds
Utica	16	1820EST			0	0	3	0	Thunderstorm Winds
Herkimer County									
Poland	16	1830EST			0	0	3	0	Thunderstorm Winds
Delaware County									
Walton	16	2000EST			0	5	3	0	Lightning
Broome County									
Endicott	16	2000EST- 2400EST			0	0	5	0	Urban Flood
Hamilton County									
Lake Pleasant	16	2040EST			0	0	3	0	Lightning
Broome County									
Endicott	16	2102EST			0	0	3	0	Thunderstorm Winds

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NEW YORK, Central Cont'd

Endwell	16	2102EST			0	0	3	0	Thunderstorm Winds
Port Dickinson	16	2115EST			0	0	3	0	Thunderstorm Winds
Saratoga County Halfmoon	16	2130EST			0	0	3	0	Hail (1.00)

Severe thunderstorms moved through the Western Mohawk area causing extensive damage in Oneida County where 8,000 customers were left without power in Rome as trees and power poles were lifted out of the ground by thunderstorm winds. Also hard hit were Utica and Holland Patent, where 3,000 customers lost power. In Broome County, at least five cars were submerged as heavy rains flooded an underpass in Endicott, while thunderstorm winds downed trees and power lines in other sections of the county. Lightning struck a sugarhouse burning it to the ground in Lake Pleasant in Hamilton County, while lightning struck a large pine tree near the Delaware County fairgrounds, splitting the tree in half. Five people who had been holding onto to metal near the rides at the time of the lightning strike sustained injuries to their hands.

Dutchess County									
Poughkeepsie	18	1430EST			0	0	3	0	Thunderstorm Winds
Millbrook	18	1435EST			0	0	3	0	Thunderstorm Winds
Orange County									
Maybrook	18	1450EST			0	0	3	0	Thunderstorm Winds
Montgomery	18	1450EST			0	0	3	0	Thunderstorm Winds
Middletown	18	1452EST			0	0	4	0	Thunderstorm Winds
Middletown	18	1452EST			0	0	0	0	Hail (0.88)
Newburgh	18	1500EST			0	0	4	0	Thunderstorm Winds
Newburgh	18	1500EST			0	0	0	0	Hail (1.75)
New Windsor	18	1510EST			0	0	3	0	Thunderstorm Winds
New Windsor	18	1510EST			0	0	4	0	Hail (1.75)
Dutchess County									
Dover	18	1515EST			0	0	3	0	Thunderstorm Winds
Pawling	18	1515EST			0	0	3	0	Thunderstorm Winds
Beacon	18	1530EST			0	0	3	0	Thunderstorm Winds
Fishkill	18	1530EST			0	0	3	0	Thunderstorm Winds
Poughkeepsie	18	1530EST			0	0	3	0	Thunderstorm Winds
Putnam County									
Garrison	18	1530EST			0	0	3	0	Thunderstorm Winds
Cold Spring	18	1530EST			0	0	3	0	Thunderstorm Winds
Dutchess County									
Hopewell	18	1540EST			0	0	3	0	Thunderstorm Winds
Junction									
Stormville	18	1548EST			0	0	0	0	Hail (0.75)

Several squall lines swept through the Lower Hudson Valley of New York on August 18th downing trees and power lines and dumping golf ball-size hailstones. Hardest hit was the Newburgh-Beacon area where hail damaged cars on Route 84 and the New York State Thruway where the telephone poles were snapped off and a number of large trees toppled. At the Newburgh Auto Park on Route 17K, sections of windows were broken, vehicles were damaged, and signs blown down. Also hard hit was the Middletown area where several main arteries to Middletown were shut down by fallen trees, power poles and wires.

Putnam County	19	0900EST- 1500EST			0	0	4	0	Flood
Orange County									
Walden	19	0900EST- 1500EST			0	0	6	0	Flood
NYZ013									
Lower Hudson Valley of New York	19	0930EST- 1200EST			0	0	4	0	High Winds

Hurricane Bob dumped rains in excess of 5 inches over Putnam County and Walden in Orange County, resulting in flooding. Many roads in Putnam County were under water with the Taconic

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NEW YORK, Central Cont'd

State Parkway being especially hard hit. In Walden in Orange County, streets and basements were flooded with several business sustaining extensive damage as Elm Street and the Thruway Shopping Center were flooded. High winds also accompanied the rain downing trees and power lines throughout much of Putnam County and downing two large tree limbs which damaged a camper in Washington-ville in Orange County.

Oneida County									
Utica	20	1545EST			0	0	3	0	Lightning
									Lightning struck power lines at Nichols and Bleecker streets in Utica leaving the area without power for 3.5 hours.
Oneida County									
Rome	21	0346EST			0	0	3	0	Lightning
Rome	21	0600EST- 1000EST			0	0	4	0	Flash Flood
Delaware County									
Deposit	21	0630EST			0	0	3	0	Thunderstorm Winds
Deposit	21	0630EST- 0930EST			0	0	5	0	Flash Flood
Sidney	21	0630EST- 0930EST			0	0	3	0	Urban Flood
Broome County									
Sanford	21	0630EST- 0930EST			0	0	5	0	Flash Flood
Chenango County									
Bainbridge	21	0630EST- 0930EST			0	0	3	0	Urban Flood

Slow moving thunderstorms which trained over parts of Oneida, Broome, Chenango, and Delaware Counties resulted in flash flooding as rainfall amounts exceeded 3 inches in some areas in a 3-hour period. Hardest hit in Oneida County was the Valley View Manor subdivision where numerous homes and yards were flooded. In the Town of Deposit in Delaware County, Cold Spring Creek overflowed its banks forcing fire fighters to evacuate three children from a mobile home on China Road. Many other roads were flooded in Deposit and Sanford, as the contents of several buildings were seen flowing downstream. Flood waters uprooted trees, washed away small bridges, washed away shoulders of both sides of roads, and caused various kinds of property damage. In Rome, lightning hit power lines knocking out power to about 100 customers, while in Deposit thunderstorm winds downed trees and power lines.

Montgomery County									
Canajoharie	21	1517EST			0	0	3	0	Thunderstorm Winds
Amsterdam	21	1550EST			0	0	3	0	Thunderstorm Winds

Severe thunderstorms downed trees and power lines in Canajoharie and Amsterdam.

Clinton County									
Ellenburg	28	1520EST			0	0	3	0	Lightning
Ellenburg	28	1520EST			0	0	3	0	Thunderstorm Winds
Champlain	28	1526EST			0	0	3	0	Lightning
Champlain	28	1526EST			0	0	3	0	Thunderstorm Winds

Thunderstorm winds and lightning destroyed a number of utility poles in Champlain and Ellenburg leaving 1400 customers without power.

St. Lawrence County									
Ogdensburg	30	1530EST			0	0	4	0	Lightning
Ogdensburg	30	1530EST			0	0	4	0	Thunderstorm Winds
Ogdensburg	30	1615EST			0	0	3	0	Thunderstorm Winds
Lisbon	30	1615EST			0	0	3	0	Thunderstorm Winds

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NEW YORK, Central Cont'd

Franklin County Brushton	30	1835EST			0	0	3	0	Thunderstorm Winds
St. Lawrence County Potsdam	30	1930EST			0	0	3	0	Lightning

Severe thunderstorms downed trees and power lines in Ogdensburg and Lisbon blocking some roads. In Potsdam, lightning knocked power lines onto train tracks forcing Conrail to delay trains from entering the village. In Brushton, thunderstorm winds downed three utility poles.

Cortland County Cortland	31	0258EST			0	0	2	0	Lightning
Warren County Thurman	31	0300EST			0	0	4	0	Lightning
Fulton County Northville	31	0330EST			0	0	3	0	Lightning

Lightning struck a home in Cortland causing minor damage, an abandoned farmhouse in Thurman causing a fire that burned the building to the ground, and damaged trees and power poles in Northville.

Champlain, Hudson, Mohawk and St. Lawrence Valleys, and Susquehanna and Catskill Regions in Eastern New York	Mid June- August				0	0	0	7	Drought
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The Palmer Drought Index indicated that moderate to severe drought conditions occurred over various parts of Eastern New York during the period. The Champlain Valley experienced moderate to severe drought from the end of June through the end of August. The Hudson Valley experienced moderate drought from the middle of July through the middle of August. The Mohawk Valley experienced moderate to severe drought from the middle of June through the middle of August and again during the last week of August. The St. Lawrence Valley, and the Susquehanna and Catskill regions experienced moderate drought from the middle of July through early August. The counties which sustained the most crop damage in the above mentioned areas include: Clinton, Columbia, Dutchess, Orange, Putnam, Rensselaer, Sullivan, and Tioga. In addition the New York State Department of Environmental Conservation issued a Drought Alert on August 30th for the following counties in Eastern New York: Delaware, Dutchess, Greene, Orange, Otsego, Putnam, Schoharie, Sullivan, and Ulster. The Drought Alert was issued after the New York City Reservoir Storage Level dropped to 63.6% of usable storage and the precipitation deficit over the past 6 months to about 10 inches for the Delaware and Catskill Watershed Area. Estimates of crop losses in Columbia County alone were in the millions of dollars with a 50% reduction in soybean yields, a 40% reduction in corn yields, a 30% reduction in hay yields, a 25% reduction in vegetable yields and a 10 to 20% reduction in fruit yields.

NEW YORK, Coastal

NYZ 014-015-016-017	19	0800EST- 1500EST			2	0	8	7	Hurricane Bob
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Hurricane Bob, approaching from the south during the early morning hours, moved over extreme eastern Long Island around midday. At 1230 EST, the western part of the eye passed across the Coast Guard station at Montauk Point. They observed bright sunshine and light winds at this time along with an atmospheric pressure of 28.60 inches of mercury. Just before the eye passed over the Montauk area, Montauk Lighthouse observed winds of 88 knots (101 mph), which was the highest gust reported in southeastern New York during the passage of the hurricane. Other peak wind gusts included: 76 knots 12 miles east of East Hampton at Hither Hills State Park, 75 knots at the Montauk Coast Guard station, 65 knots on Fire Island, 63 knots at Farmingdale Airport, and 61 knots 7 miles south of Amityville at Gilgo Beach. Numerous gusts of 50 to 60 knots were also reported. Millions of dollars of property and crop damage occurred, mainly over eastern sections of Long Island. Estimates of damage were put at \$75 million which includes about \$32 million in crop damage. Hundreds of boats were damaged and many sunk, as they broke from their moorings

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NEW YORK, Coastal Cont'd

and crashed into each other. Power lines were downed throughout the area as thousands of trees were uprooted. This resulted in power losses to about 380,000 Long Island customers. The power was restored within 1 week to all customers. Heavy rain also accompanied the hurricane. Suffolk County reported between four and seven inches of rain. Bridgehampton observed the highest with 7.04 inches. Rainfall totals were less as one moved further westward. Nassau County received between 2.50 and 6.50 inches, Rockland and Westchester Counties received between 1.50 and locally near four inches, and the New York City area received between 2.50 and 3.00 inches. These heavy rains caused extensive flooding across the region. Luckily the hurricane moved across during normal low tide. Beach erosion was reported, but for the most part was not significant. The U.S. Coast Guard station at Montauk reported a storm surge of about 10 feet. Across the eastern sections of Long Island, thousands of people were evacuated from low-lying or shoreline areas. Some of these evacuations were ordered, some were just recommended. Although no serious injuries were reported, two deaths were attributed to Hurricane Bob. In Westchester County, near Scarsdale, a woman conductor was killed when a large tree crashed into her train. In Suffolk County, near Center Moriches, a young man was presumed drowned while trying to swim in very rough surf off Great Gun Beach. (F29O) (M19O)

Suffolk County									
4 NW Southampton	19	1230EST	Short	40	0	0	?	0	Tornado (F1)

A tornado associated with Hurricane Bob, touched down briefly at the National Golf Links at Sebonac Neck. Many trees were downed and some were observed to rotate in mid-air before crashing to the ground. The superintendent also reported his ears popping and the basement windows of his house being blown outward.

Wading River									
	19	1300EST	0.3	100	0	0	?	?	Tornado (F1)

Another tornado, associated with Hurricane Bob, touched down briefly at Wading River. The tornado moving from the northwest to the southeast downed several trees along its path.

NEW YORK, Western

Monroe County									
Rochester	14	1550EST			0	1	0	0	Lightning
Ontario County									
Canandaigua	14	1804EST			0	0	3	0	Hail (0.75)
Orleans County									
Medina	15	1220EST			0	0	3	0	Hail (0.75)
Erie County									
Akron	15	1230EST			0	0	3	0	Hail (0.75)
Niagara County									
Middleport	16	1405EST			0	0	3	0	Thunderstorm Winds
Olcott	16	1410EST			0	0	3	0	Hail (0.75)

Afternoon thunderstorms developed in a warm flow of moist air which persisted over the region for the 3 days. The thunderstorms produced 0.75-inch hail and some damage while downing tree limbs and power lines. On the 14th, a Rochester man was injured only slightly when he was struck by lightning while getting into his truck during a thunderstorm.

Jefferson County									
Cape Vincent	30	1920EST			0	0	3	0	Thunderstorm Winds

Thunderstorms developed over southern Ontario in a flow of warm, humid air and then moved into the western parts of northern New York. The thunderstorm winds downed trees and power lines.

Chautauqua County									
Silver Creek	31	0045EST			0	0	4	0	Thunderstorm Winds
Cattaraugus County									
Cattaraugus Indian Reservation	31	0105EST			0	0	3	0	Thunderstorm Winds

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NEW YORK, Western

Erie County									
Cattaraugus Indian Reservation	31	0105EST			0	0	3	0	Thunderstorm Winds
Springville	31	0125EST			0	0	4	0	Thunderstorm Winds
Monroe County									
Henrietta	31	0235EST			0	0	4	0	Thunderstorm Winds

A cold front, accompanied by severe thunderstorms, crossed the area during the early morning hours of the 31st. The thunderstorm winds downed trees and power lines. At Silver Creek in northern Chautauqua County, the strong winds caused minor structural damage to a few homes there.

NORTH CAROLINA

Dare County									
Alligator Reservoir	01	0947EST			0	0	0	0	Waterspout
Roanoke Sound	01	0947EST			0	0	0	0	Waterspout
New Hanover County									
6 SE Wilmington	01	1021EST			0	0	0	0	Waterspout
Dare County									
Albemarle Sound	02	1457EST			0	0	0	0	Waterspout
Onslow County									
10 WNW Jacksonville	02	1610EST	?	?	0	0	0	0	Tornado (F0)
10 WSW Jacksonville	02	1715EST-1738EST	?	?	0	1	4	0	Tornado (F1)
2 WNW NCA	02	1731EST	?	?	0	0	0	0	Tornado (F0)

Thunderstorms produced three small tornadoes over Onslow County. The most serious damage occurred in the Haws Run area, 10 miles west-southwest of Jacksonville, destroying one mobile home and damaging nine others. One woman was injured when trapped in a collapsed mobile home. Several trees were twisted or uprooted in the storms.

Iredell County									
3 SW Mooresville	04	1615EST			0	0	0	0	Hail (0.88)
Alamance County									
Central Portion	04	1715EST			0	0	0	0	Thunderstorm Winds
Guilford County									
Greensboro	04	1730EST			0	0	4	0	Lightning
Granville County									
6 N Oxford	04	1750EST			0	0	3	4	Thunderstorm Winds
Orange County									
Hillsborough	04	1757EST			0	0	0	0	Hail (0.75)
Durham County									
Durham	04	1815EST			0	0	0	0	Thunderstorm Winds

A cold front slipped south through the state to help cause strong thunderstorms over central sections. Winds blew down trees in a few of the storms. In Granville County, wind blew a tree onto a car and destroyed a field of tobacco. In Guilford County, lightning caused structural damage to a church resulting in \$40,000 damage.

Brunswick County									
Near Caswell Beach	06	0930EST			0	0	0	0	Waterspout
Sampson County									
Ingold	06	Afternoon			0	0	?	0	Lightning

Lightning felled a large tree atop a church causing a hole in the roof.

Burke County									
Morganton	06	1545EST			0	0	0	0	Thunderstorm Winds
Buncombe County									
Skyland	06	1745EST			0	0	?	0	Thunderstorm Winds

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NORTH CAROLINA Cont'd

Microburst damage pattern, 0.1 mile by 0.5 mile; 50 trees down.

Alexander County Taylorsville	06	1945EST			0	0	3	0	Lightning
One home was destroyed by a lightning fire.									
Carteret County Near Salter Path	07	0450EST			0	0	0	0	Waterspout
Moore County Southeastern Portion	07	1220EST			0	0	?	0	Thunderstorm Winds
Lenoir County Northern Portion	07	1230EST			0	0	0	0	Thunderstorm Winds (G54)
Sampson County 12 W Clinton	07	1400EST			0	0	3	0	Lightning
Moore County Pine Bluff	07	1600EST			0	1	0	0	Lightning
Lincoln County Lincolnton	07	1700EST			0	0	?	0	Lightning
Mecklenburg County Charlotte	07	1705EST			0	1	0	0	Lightning
Burke County Morganton	07	1715EST			0	0	?	0	Thunderstorm Winds
Gaston County Gastonia	07	1730EST			0	0	?	0	Lightning
Gaston County Gastonia	07	1745EST			0	4	0	0	Lightning
Cabarrus County Southern Portion	07	1747EST			0	0	0	0	Hail (0.88)
Catawba County Newton	07	1815EST			0	0	0	0	Thunderstorm Winds
Davidson County Thomasville	07	1815EST			0	0	0	0	Thunderstorm Winds Hail (1.75)
Transylvania County Lake Toxaway	08	1540EST			0	1	0	0	Lightning
Catawba County Newton	08	1845EST			0	0	0	0	Thunderstorm Winds
Lincoln County Near Lake Norman	08	1845EST			0	0	0	0	Thunderstorm Winds
Mecklenburg County Northern Portion	08	1850EST			0	0	0	0	Thunderstorm Winds
Catawba County Countywide	08	1900EST			0	0	?	0	Lightning
Mecklenburg County 5 W Charlotte	08	1945EST			0	0	0	0	Thunderstorm Winds
Union County Wingate	08	2100EST			0	0	4	0	Lightning

Spurred by a stationary front across the state on the 7th and 8th, several thunderstorms produced intense lightning strikes that injured 7 people, including 4 emergency rescue people in Gaston County, caused structural damage to buildings, 30 separate fires in homes, and businesses in Catawba County on the 8th, killed 4 horses in Sampson County and 12 dairy cattle in Union County. Damage from thunderstorm winds was mainly confined to trees being downed. One large tree in Burke County at Morganton fell on, and damaged a gymnasium roof.

Carteret County Near Morehead City	09	0619EST			0	0	0	0	Waterspout
Alamance County Burlington	09	1530EST			0	0	4	0	Lightning

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NORTH CAROLINA Cont'd

Fire started by lightning burned three condominiums.

Robeson County Saint Pauls	09	1734EST			0	0	?	0	Thunderstorm Winds
Sampson County Newton Grove	09	1805EST			0	0	0	0	Thunderstorm Winds
Johnston County Northern	09	1810EST			0	0	0	0	Thunderstorm Winds
Bladen County Elizabethtown	09	1820EST			0	0	?	0	Thunderstorm Winds
Sampson County Southern	09	1830EST			0	0	0	0	Thunderstorm Winds
Wayne County Goldsboro	09	1900EST			0	0	0	0	Thunderstorm Winds
Greene County 2 NW Snow Hill	09	1905EST			0	0	0	0	Thunderstorm Winds
Pitt County	09	1925EST			0	0	0	0	Thunderstorm Winds

Most wind damage on the 9th resulted in trees being blown down.

Robeson County Near Roland	10	1704EST			0	0	0	0	Funnel Cloud
Columbus County Southeastern Portion	10	1927EST			0	0	0	0	Funnel Cloud
Brunswick County Coastal Waters	11	1215EST			0	0	0	0	Waterspout
Jackson County Sylva	11	2000EST			0	0	4	0	Flash Flood

More than 2 inches of rain in 2 hours flooded Cope and Scotts Creeks causing \$8000 damage to businesses.

Brunswick County Near Leland	12	1200EST			0	0	0	0	Funnel Cloud
New Hanover County 3 E Wilmington	12	1305EST			0	0	0	0	Funnel Cloud
Dare County Hatteras Inlet Alligator Bridge	14	0832EST			0	0	0	0	Waterspout
Union County Waxhaw	14	1500EST			0	0	?	0	Thunderstorm Winds
Carteret County Near Swansboro	17	1130EST			0	0	0	0	Waterspout
Columbus County Near Whiteville	17	1628EST			0	0	0	0	Funnel Cloud
Onslow County Near Jacksonville	18	0701EST	0.5	10	0	0	0	0	Tornado (F0)
Pender County 2 N Penderlea	18	0730EST	0.3	10	0	0	0	0	Tornado (F0)
Coastal Area of North Carolina	18	1400EST-							
Dare County	19	0200EST			1	0	6	0	Hurricane Bob
Dare County Hatteras	18	1900EST	0.1	20	0	0	5	0	Tornado (F1)
Buxton	18	1900EST	0.1	20	0	0	0	0	Tornado (F1)
Avon	18	1900EST	0.1	20	0	0	3	0	Tornado (F1)
Salvo	18	1900EST	0.1	20	0	0	3	0	Tornado (F1)

The eye of Hurricane Bob remained offshore as the storm brushed North Carolina between midafternoon on the 18th and the early morning hours of the 19th. Effects on the state were

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NORTH CAROLINA Cont'd

generally minor and consisted mostly of wind damage on the Outer Banks of Dare County, including four confirmed tornadoes. Total wind and flood damage losses are estimated at \$800,000.

Each tornado had a narrow path less than 100 yards long. The Hatteras tornado destroyed a seafood shop. The Buxton tornado downed numerous trees in the Buxton Woods subdivision. The Avon tornado was witnessed by a Dare County deputy sheriff as it destroyed some telephone booths. The Salvo tornado overturned a mobile home and a storage trailer.

A swimmer drowned off Holden Beach in Brunswick County during the afternoon of the 19th. (M220)

The greatest rainfall total for the storm in North Carolina was 5.30 inches at the Weather Service Office at Cape Hatteras. Highest sustained winds were 44 knots with gusts to 64 knots at Cape Hatteras. Beach erosion was light to moderate along the Outer Banks and southeast coast with no known damage to structures.

Vance County Henderson	19	1720EST			0	0	4	0	Lightning
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A church sustained \$18,000 damage from a lighting strike.

Johnston County 9 SW Clayton	19	1925EST			0	0	0	0	Thunderstorm Winds
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Perquimans County Durants Neck	20	0945EST	0.2	20	0	0	3	0	Waterspout Tornado (F0)
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Brunswick County 4 S Long Beach	27	0843EST			0	0	0	0	Waterspout
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NORTH DAKOTA

McKenzie County 5 NE Fairview, MT	06	2030CST			0	0	4	4	Hail (1.00)
Watford City	14	1515CST			0	0	4	4	Hail (1.50)
5 N Alexander	14	1520CST			0	0	4	4	Hail (2.00)
Mercer County Beulah	14	1820CST			0	0	4	4	Thunderstorm Winds (G50)

Lightning struck a tree and killed 100 sparrows.

Ramsey County Devils Lake	15	2140CST			0	0	3	3	Hail (1.00)
McIntosh County Ashley	19	2200CST			0	0	4	4	Thunderstorm Winds

Thunderstorm winds downed trees and caused damage to cars and homes.

Stutsman County 11 N Cleveland	19	2215CST			0	0	5	5	Lightning
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Lightning strikes started some hay bales smoldering the evening of the 19th. Three consecutive days of hot dry weather followed, along with gusty winds on the third day. This combination caused a prairie fire on the afternoon of the 22nd.

The fire destroyed a fire truck, several outbuildings, 700 acres of grassland, 225 hay bales, and 10 bee hives.

Lightning strikes started prairie fires in other parts of North Dakota, during the hot dry conditions that prevailed over the state the last half of August.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

NORTH DAKOTA Cont'd

Mercer County Beulah	22	1808CST			0	0	3	3	Thunderstorm Winds (G52)
Grand Forks County Grand Forks	24	1430CST			0	1	0	0	Lightning

Lightning struck and injured a man who was outdoors with a hunting rifle slung over his shoulder.

McIntosh County Wishek	24	1805CST			0	0	4	4	Hail (1.00)
2 SW Ashley	24	1855CST			0	0	4	4	Hail (1.00)

Hail caused sporadic crop damage in McIntosh County, southwest of Ashley and around Wishek.

Barnes County 3 NE Fingal	24	2015CST			0	0	4	4	Thunderstorm Winds
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Winds uprooted trees, collapsed farm buildings, and destroyed 200 acres of sunflower crops.

Ransom County 3 NW Lisbon	24	2150CST			0	0	4	4	Thunderstorm Winds
Lisbon	24	2200CST			0	0	6	6	Hail (4.50)

An intense rain and hailstorm occurred along a 2-mile swath from the town of Lisbon to 8 miles east of Lisbon. Softball-size hail was observed in Lisbon, with smaller hail occurring outside the town. The hailfall was so intense that many of the hailstones fused together while on the ground, creating even larger stones.

The hail smashed windows, caused very heavy damage to cars, punched holes in buildings, damaged or destroyed 16,000 acres of crops, and caused over \$5,000 in land erosion loss.

Meanwhile, strong winds which occurred mainly west and northwest of Lisbon, broke windows and damaged farm buildings.

Cass County Horace	24	2358CST			0	0	4	4	Hail (2.50)
Davenport	25	0004CST			0	0	4	4	Hail (2.50)

Large hail occurred along an 8-mile strip from Horace to Davenport, in southeastern Cass County.

Benson County Oberon	25	2005CST			0	0	4	4	Hail (1.75)
Minnewaukan	25	2005CST			0	0	4	4	Hail (1.75)
5 S Fort Totten	25	2025CST			0	0	4	4	Hail (2.75)
Tokio	25	2040CST			0	0	4	4	Hail (1.75)
Warwick	25	2105CST			0	0	4	4	Hail (1.75)

Hail was widespread over southeastern Benson County, mainly over the Devils Lake Sioux Indian Reservation and caused damage to automobiles.

Nelson County 2 SW Tolna	25	2145CST			0	0	4	4	Hail (1.75)
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OHIO

Butler County Western Portion	03	2035EST			0	0	4	0	Thunderstorm Winds
Hamilton County	03	2045EST			0	0	5	0	Thunderstorm Winds
Warren County Mason	03	2115EST			0	0	4	0	Thunderstorm Winds

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
OHIO Cont'd									
Clermont County Goshen and Tate Townships	03	2125EST			0	0	4	0	Thunderstorm Winds
New Richmond	03	2125EST			0	1	0	0	Lightning
Clinton County Blanchester	03	2139EST			0	0	4	0	Thunderstorm Winds
Brown County Georgetown	03	2200EST			0	0	4	0	Thunderstorm Winds
Highland County Dodsonville	03	2200EST			0	0	4	0	Thunderstorm Winds

Thunderstorms moved through southwest Ohio blowing down trees and power lines in many areas. Homes were damaged in Hamilton county and a barn was destroyed near Georgetown. A 45-year-old woman was injured by lightning while closing windows in her house.

Butler County Hamilton Middleton	08	1620EST			0	0	4	0	Thunderstorm Winds
Hamilton County Colerain Township	08	1635EST			0	0	4	0	Thunderstorm Winds
Montgomery County Miamisburg	08	1640EST			0	0	4	0	Thunderstorm Winds
Greene County Xenia	08	1645EST			0	0	4	0	Hail (1.00)
Spring Valley	08	1645EST			0	0	4	0	Thunderstorm Winds
Clinton County Sabina	08	1700EST			0	0	4	0	Thunderstorm Winds
Greene County Bowersville	08	1700EST			0	0	5	0	Thunderstorm Winds
Warren County Lebanon	08	1700EST			0	0	4	0	Thunderstorm Winds
Fayette County 1 S Jeffersonville	08	1715EST			0	0	4	0	Thunderstorm Winds
Franklin County Columbus	08	1715EST			0	0	4	0	Thunderstorm Winds
Clermont County	08	1717EST			0	0	4	0	Thunderstorm Winds
Fayette County 3 N Washington Court House	08	1725 EST			0	0	5	0	Thunderstorm Winds
Washington Court House	08	1750EST			0	0	4	0	Hail (1.00)
Ross County Northern Portion	08	1755EST			0	0	4	0	Thunderstorm Winds
Pickaway County 2 S Circleville	08	1805EST			0	0	4	0	Thunderstorm Winds
Lawrence County Southern Portion	08	1830EST			0	0	4	0	Thunderstorm Winds
Scioto County Wheelersburg	08	2130EST			0	0	4	0	Thunderstorm Winds

Thunderstorms moved through southern Ohio blowing down trees and power lines in many locations, and producing some large hail. Several homes were damaged, and sheds and barns were destroyed in Bowersville. Several homes and cars were damaged north of Washington Court House from falling trees.

Summit County Barberton	13	1825EST			0	0	4	0	Thunderstorm Winds
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An isolated thunderstorm blew down trees and power lines.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
OHIO Cont'd									
Montgomery County W Carrollton	14	1430EST			0	0	4	0	Hail (1.25)
Butler County Trenton	14	1600EST			0	0	3	0	Hail (0.75)
Trenton	14	1600EST			0	0	4	0	Thunderstorm Winds
Auglaize County Gutman	14	1700EST			0	0	4	0	Thunderstorm Winds
Thunderstorms moved through a small part of southwest Ohio blowing down power lines and producing large hail.									
Hamilton County Lunken Airport	17	1407EST			0	0	4	0	Thunderstorm Winds (G51)
Athens County 1 E Nelsonville	17	1430EST			0	0	4	0	Thunderstorm Winds
Lake County Lost Nation Airport	17	1510EST			0	0	4	0	Thunderstorm Winds (G50)
Coshocton County Warsaw	17	1530EST			?	0	5	0	Thunderstorm Winds
Holmes County 1 W Walnut Creek	17	1545EST			0	31	5	0	Thunderstorm Winds
Huron County Bellevue	17	1555EST			0	0	3	0	Hail (0.75)
Medina County Wadsworth	17	1600EST			0	0	5	0	Thunderstorm Winds
Stark County Alliance	17	1610EST			0	0	4	0	Thunderstorm Winds
Summit County 4 SE Akron	17	1628EST			0	0	5	0	Thunderstorm Winds (G85)
Akron	17	1640EST			0	0	4	0	Thunderstorm Winds
Portage County Lake County Lost Nation Airport	17	1650EST			0	0	4	0	Thunderstorm Winds
17	1755EST			0	0	4	0	Thunderstorm Winds (G55)	
Thunderstorms, scattered throughout much of Ohio, blew down trees and power lines and dropped large hail in many areas. Homes were damaged in Warsaw and Wadsworth, and planes were damaged at the Akron Regional Airport. The roof of a flea market collapsed and fell on over 100 people near Walnut Creek. Thirty-one people were injured, and many automobiles and trucks were damaged or destroyed.									
Jackson County Wellston	18	0220EST			0	0	5	0	Thunderstorm Winds
An isolated thunderstorm blew down trees and damaged a home.									
Hamilton County Countywide	19	1009EST			0	0	4	0	Hail (0.75)
Colerain Township	19	1009EST			0	0	4	0	Thunderstorm Winds
Gallia County 15 NW Mercerville	19	1335EST			0	0	4	0	Hail (1.25)
Thunderstorms dropped large hail and blew over some trees in southern Ohio.									
Lorain County Avon Lake	19	1500EST			0	0	3	0	Hail (0.75)
Erie County Bay View	19	1640EST			0	0	4	0	Hail (1.00)
Thunderstorms dropped large hail over part of northern Ohio.									

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
OHIO Cont'd									
Ottawa County Port Clinton	19 20	1600EST- 1100EST			0	0	5	?	Urban Flood
A stationary thunderstorm dropped between 10 and 12 inches of rain on Port Clinton between 1500 EST on the 19th, and 0200 EST on the 20th. Due to the closeness of the city to Lake Erie flooding was limited to basements, low areas and some roads. Some evacuations took place during the early morning hours of the 20th.									
Marion County 8 W Marion	19	1720EST	0.1	20	0	0	0	0	Tornado (F0)
A weak tornado touched down in an open field west of Marion; no damage occurred.									
Warren County 1 W Kings Mills	20	1345EST	0.1	20	0	0	4	0	Tornado (F0)
A weak tornado touched down at the Kings Island Amusement Park damaging trees and power lines and doing some minor structural damage.									
Pickaway County 2 E Circleville	23	1535EST			0	0	4	0	Thunderstorm Winds
Hocking County Logan	23	1710EST			0	0	4	0	Thunderstorm Winds
Thunderstorms moved through southern Ohio blowing down trees and power lines. A barn was damaged east of Circleville.									
Union County Marysville	30	1400EST			0	0	4	0	Thunderstorm Winds
Mercer County Celina	30	1420EST			0	0	4	0	Thunderstorm Winds
Cuyahoga County Strongsville	30	1445EST			0	0	3	0	Hail (0.75)
	30	1445EST			0	0	4	0	Thunderstorm Winds
North Royalton	30	1500EST			0	0	4	0	Thunderstorm Winds
Sandusky County Gibsonburg	30	1546EST			0	0	4	0	Thunderstorm Winds
	30	1546EST			0	0	3	0	Hail (0.75)
Medina County Wadsworth	30	1620EST			0	0	4	0	Thunderstorm Winds
Wayne County Congress	30	1802EST			0	0	4	0	Thunderstorm Winds
Scattered thunderstorms over northern Ohio blew down trees and power lines as it dropped large hail.									
Athens County Athens	31	1515EST			0	0	4	0	Thunderstorm Winds
An isolated thunderstorm blew down power lines on Route 33.									
Statewide	Entire Month				0	0	0	?	Drought
Below normal rainfall continued across Ohio resulting in most areas being in the severe to extreme drought category of the Palmer Drought Severity Index. Only the extreme southwest part of Ohio has received near normal rainfall the past few months. Crops continued to fail across much of Ohio, especially the northeast quarter.									

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
OKLAHOMA Cont'd									
3 S Ringwood	16	1842CST			0	1	4	?	Thunderstorm Winds
Ames to Meno	16	1845CST			0	0	?	?	Thunderstorm Winds
Meno	16	1845CST			0	0	?	?	Hail (1.75)
Meno	16	1910CST			0	0	?	?	Flash Flood
Blaine County									
Longdale	16	1910CST			0	0	?	?	Thunderstorm Winds (G52)
Major County									
1 S Ringwood	16	1930CST			0	0	?	?	Thunderstorm Winds
Garfield County									
Drummond	16	1930CST			0	0	?	?	Thunderstorm Winds
Kingfisher County									
Loyal	16	2000CST			0	0	?	?	Thunderstorm Winds (G56)
Kingfisher	16	2020CST			0	0	?	?	Thunderstorm Winds (G56)
Oklahoma County									
N Oklahoma City	16	2125CST			0	0	3	?	Lightning

Severe thunderstorms were widespread across northwestern Oklahoma, and isolated severe thunderstorms moved across the north-central and central portions of the state. At Carmen, golf ball-size hail punched holes in roofs, broke windows in homes, damaged cars, and picked up a cow self-feeder trough weighing 500 pounds and carried it 300 feet. At McWillie, up to baseball-size hail caused damage to homes and cars. North of Ringwood, the area surrounding a natural gas plant had to be evacuated when a cracking tower at the plant was blown over by strong winds, causing a natural gas leak. South of Ringwood, a 62-year-old man was injured when his mobile home was destroyed by the strong winds. A well house had the roof taken off of it northeast of Fairview. Also, tree damage was reported 1 mile south of Ringwood, at Drummond, and was widespread in the area from Meno to Ames. Power line damage was reported 3 miles northeast of Carmen. As the storms moved through central Oklahoma, lightning struck a house in northwestern Oklahoma City, causing minor damage.

Harper County									
8 S Laverne	20	1810CST			0	0	?	?	Thunderstorm Winds (G52)
Ellis County									
7 NE Catesby	20	1822CST			0	0	?	?	Hail (1.00)
Blaine County									
Watonga	20	2105CST			0	0	?	?	Thunderstorm Winds (G52)

Isolated severe thunderstorms in northwestern Oklahoma produced large hail and strong winds.

Nowata County									
1.5 S South Coffeyville	23	1545CST			0	0	?	?	Thunderstorm Winds (G52)
Nowata	23	1630CST			0	0	?	?	Thunderstorm Winds

Thunderstorms developed in northeastern Oklahoma during the afternoon and two became severe. Winds of 60 mph were reported in southern Coffeyville and damage to trees were reported in Nowata.

Tulsa County									
Sand Springs	24	1645CST			0	0	4	?	Thunderstorm Winds

Severe thunderstorms developed in the afternoon in western Tulsa County. Strong winds produced a 2-mile-wide damage path in the northeastern part of Sand Springs. Several large trees were uprooted, and several businesses sustained minor roof and structural damage. Numerous automobile windshields were damaged or broken out by the winds.

Noble County									
Marland	28	1515CST			0	0	3	?	Thunderstorm Winds
2 NE Marland	28	1515CST			0	0	?	?	Thunderstorm Winds

Isolated severe thunderstorms developed over Noble County and caused widespread minor damage in the Marland area. In the city of Marland, severe thunderstorm winds caused damage to storage

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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OKLAHOMA Cont'd

buildings, toppled large trees, took the roof off a picnic shelter, and broke television antennas off homes. Just northeast of Marland, severe thunderstorm winds caused damage to trees.

Beckham County 1 W to 2 N Delhi	29	0515CST			0 0	4 ?	Thunderstorm Winds
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Strong winds from a severe thunderstorm damaged two barns, a co-op gin, and one truck.

Coal County 13 N Coalgate	29	1425CST			0 0	? ?	Thunderstorm Winds
Choctaw County 6 NW Soper	29	1650CST			0 0	? ?	Thunderstorm Winds (G52)
Muskogee County Muskogee	29	1650CST			0 0	? ?	Lightning
Choctaw County 7 NW Soper	29	1700CST			0 0	3 ?	Thunderstorm Winds (G61)
Pushmataha County Antlers	29	1716CST			0 0	? ?	Thunderstorm Winds

Thunderstorms moved across portions of eastern and southeastern Oklahoma during the afternoon. A few storms across the southeastern portion of the state became severe. Northwest of Soper, strong winds took the roof off a barn. In Muskogee, lightning struck three homes. One home, valued at \$80,000, was completely destroyed and the other two suffered minor damage. Power pole and tree damage was reported at Antlers and tree damage was reported 13 miles north of Coalgate.

Ellis County Arnett	29	1905CST			0 0	? ?	Hail (0.75)
10 S Arnett	29	1915CST			0 0	? ?	Hail (1.75)
Pawnee County 6 NW Pawnee	29	1925CST			0 0	4 ?	Thunderstorm Winds
Ellis County 12 SW Arnett	29	1935CST			0 0	? ?	Hail (1.75) Thunderstorm Winds (G56)
Comanche County Elgin	29	1945CST			0 0	3 ?	Thunderstorm Winds (G61) Thunderstorm Winds (G61)
Roger Mills County 6 NE Durham	29	1945CST			0 0	? ?	Hail (1.75)
1 S Durham	29	2020CST			0 0	? ?	Hail (1.25)
Woodward County 2 NW Cestos	29	2030CST			0 0	? ?	Hail (0.75)
Caddo County Binger	29	2040CST			0 0	? ?	Hail (0.80)
Roger Mills County 6 NNW Reydon	29	2100CST			0 0	? ?	Hail (1.00)
4 NW Reydon	29	2100CST			0 0	? ?	Hail (0.88)
Washita County 3 NE Corn	29	2130CST			0 0	? ?	Hail (0.75)
Custer County 2 SW Weatherford	29	2130CST			0 0	? ?	Thunderstorm Winds (G52)
Caddo County 5 NW Ft. Cobb	29	2151CST			0 0	? ?	Hail (0.75)
2 N Cyril	29	2159CST			0 0	? ?	Thunderstorm Winds (G56)
2 S Cement	29	2203CST			0 0	5 ?	Thunderstorm Winds
Comanche County Sterling	29	2215CST			0 0	? ?	Thunderstorm Winds (G52)
Caddo County Apache	29	2225CST			0 0	? ?	Thunderstorm Winds (G52)
Grady County Rush Springs	29	2225CST			0 0	5 ?	Thunderstorm Winds (G70)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
OKLAHOMA Cont'd									
Comanche County									
10 NNW Lawton	29	2230CST			0	0	?	?	Thunderstorm Winds (G61)
Lawton	29	2245CST			0	0	?	?	Thunderstorm Winds (G52)
Kiowa County									
Hobart	29	2245CST			0	0	?	?	Thunderstorm Winds (G55)
Stephens County									
Marlow	29	2305CST			0	0	?	?	Thunderstorm Winds (G55)
1 NW Duncan	29	2312CST			0	0	3	?	Thunderstorm Winds (G51)
Comanche	29	2325CST			0	0	3	?	Thunderstorm Winds (G52)
Jefferson County									
2 E Hastings	30	0005CST			0	0	?	?	Thunderstorm Winds (G56)
Tillman County									
Hollister	30	0044CST			0	0	?	?	Thunderstorm Winds (G50)

Severe thunderstorms caused numerous reports of large hail, strong winds, and wind damage. These storms were associated with a strong cold front which moved across the state. Strong winds destroyed a barn 6 miles northwest of Pawnee. In Elgin, severe thunderstorm winds toppled trees, broke antennas off homes, and caused scattered roof damage. Lightning from the storms also caused scattered roof damage. Lightning from the storms also caused several fires. South of Cement, a drilling rig was blown over, causing an estimated \$75,000 damage to the rig. In Rush Springs, severe thunderstorm winds destroyed a bus barn and several mobile homes, tore the roof off a barn, and damaged several homes. In Lawton, strong winds caused scattered tree, roof, and power line damage. Northwest of Duncan, winds damaged a chimney on a house, and in Comanche, strong winds downed trees and caused damage to a storage building.

Seminole County									
Seminole	30	1630CST			0	0	?	?	Thunderstorm Winds
Woods County									
Alva	30	1720CST			0	0	?	?	Flash Flood
6 NW Alva	30	1725CST			0	0	?	?	Hail (0.75)
Alva	30	1740CST			0	0	?	?	Thunderstorm Winds (G52)
Garfield County									
Vance Air Force Base	30	1835CST			0	0	?	?	Thunderstorm Winds (G53)

Isolated severe thunderstorms moved across Seminole, Woods, and Garfield Counties during the afternoon and evening hours on the 30th. High winds downed trees in Seminole. Rainfall of 3.20 inches in 40 minutes caused flooding in Alva.

OREGON

Crook County	5	1445PST- 1600PST			1	0	6	6	Flash Flood
A wall of water that was 500-feet high by 200-feet wide, rolled out of Newsome Creek Canyon and into the Aspen Valley Ranch, 2 miles southeast of Post. One man drowned after the section of fence he was holding onto broke loose. Farm equipment, autos, and animals were moved from 1 to 6 miles downstream. (M230)									
Umatilla County	5	1930PST- 2000PST			0	0	5	?	Flash Flood
Automobiles were moved downstream and a rural road was washed out by flood waters.									
Hood River County									
Hood River	6	1230PST			0	0	0	0	Thunderstorm Winds (G67)
Jefferson County									
9 N Madras	6	1400PST- 1500PST			0	0	4	5	Thunderstorm Winds Hail (1.75)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
OREGON Cont'd									
									Wind, gusting to 82 mph, wrapped irrigation lines around telephone poles across Agency Flats. Crop losses included wheat, carrots, potatoes, peppers, and mint.
Gilliam County	6	1400PST- 1600PST			0	0	?	5	Hail (1.00)
									Widespread hail damaged one-fourth to one-half of the county's wheat crop.
Morrow County Ione	6	1545PST- 1600PST			0	0	4	5	Hail (1.75)
									Hail damaged crops, vehicles, and windows. A funnel cloud was sighted approximately 3 miles northeast of Ione.
Umatilla County Hermiston	6	1630PST- 1730PST			0	5	5	5	Thunderstorm Winds Hail (2.00)
									Wind, gusting to 87 mph, accompanied by hail larger than golf balls, blasted the first night of the Umatilla County Fair. Five were injured trying to secure a tent. A wind gust lifted the tent and the people high off the ground. Two women were hospitalized.
Umatilla County	6	1700PST			0	0	?	0	Flash Flood
									A road washed out 5 miles northeast of Weston across Dry Creek.
Umatilla County 9 SW Hermiston	6	1705PST			0	0	?	0	Thunderstorm Winds (G100)
									One hundred-mph wind gusts were recorded at Umatilla Army Depot.
Umatilla County Milton Freewater	6	1705PST- 1800PST			0	0	?	6	Hail (1.75)
									Up to one-third of the region's apple crop was lost due to the severe hail storm.
Lane County 5 N Eugene	9	1022PST			?	?	?	?	Funnel Cloud
									A funnel cloud was sighted by Federal Aviation Administration and National Weather Service employees.
Deschutes County 7 NE Bend	17	1600PST- 1700PST			0	0	3	0	Thunderstorm Winds
									A tree measuring 30 feet tall was downed, and house roof shingles were torn off.
Deschutes County Sisters	18	1930PST- 2000PST			0	0	?	0	Thunderstorm Winds (G55) Hail (1.75)
Bend	18	1949PST			0	0	?	0	Hail (1.00)
Jefferson County Madras	18	2012PST			0	0	?	0	Thunderstorm Winds (G55)
Lake County Silver Lake	20	1430PST			0	0	0	0	Thunderstorm Winds (G60)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

OREGON Cont'd

Jackson County Ashland	20	1930PST- 2100PST			0	0	4	7	Thunderstorm Winds Hail (1.00)
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An area from 6 miles northwest to 9 miles southeast of Ashland experienced significant damage from a thunderstorm. Hail damaged roofs, vehicles, windows, and most of all, 10% of this region's pear crop. A supermarket in Ashland was flooded.

ORZ001	29	1630PST- 1730PST			0	0	?	0	High Winds
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A spotter at Netarts reported wind gusting 42 to 55 mph.

ORZ005	30	1200PST- 1300PST			0	0	4	0	High Winds
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A spotter from Willis Creek reported that a whirlwind destroyed an outbuilding and lifted the sheet metal roof off another building.

PENNSYLVANIA, Eastern

Chester County Downingtown	03	1755EST			0	0	?	0	Hail (0.75)
1 NE Downingtown	03	1805EST			0	0	?	0	Hail (1.00)
Exton	03	1808EST			0	0	0	0	Hail (0.75)
Modena	03	1815EST			0	0	0	0	Funnel Cloud

Thunderstorms dropped 0.50- to 1.00-inch hail. A funnel cloud was reported over Modena by a pilot.

Montgomery County 1 SE Colonial Village	03	1825EST			0	0	3	0	Thunderstorm Winds
Conshohochen	03	1830EST			0	0	?	0	Hail (1.75)
Erdenheim	03	1835EST			0	0	4	0	Thunderstorm Winds Hail (1.50)
Flourtown	03	1835EST			0	0	4	0	Thunderstorm Winds
Wyndmoor	03	1840EST			0	0	4	0	Thunderstorm Winds (G55)
Oreland	03	1840EST			0	0	4	0	Thunderstorm Winds
Glenside	03	1850EST			0	0	4	0	Thunderstorm Winds Hail (0.75)
Rockledge	03	1850EST			0	0	4	0	Thunderstorm Winds
1 N Bethayres	03	1900EST			0	0	3	0	Thunderstorm Winds

Thunderstorm winds gusts brought down hundreds of trees across the lower end of Montgomery County. Trees fell on and damaged houses in many locations. Trees also came down on and damaged automobiles or trucks in many locations. In Oreland, the steeple was blown off a church. Golf ball-size hail fell in Conshohochen and dime-size hail fell in Glenside. Hail just under golf ball-size fell in Erdenheim and broke windows. Colonial Village and North Wyncote reported 0.50-inch hail.

Montgomery County Conshohochen Philadelphia County 0.5 SE Chestnut Hill	03	1830EST- 1840EST	5.0	100	0	0	6	0	Tornado (F1)
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A tornado first touched down in Conshohochen and lifted the roof off a house and dropped it on a garage and air conditioning unit. The tornado downed trees in Conshohochen then moved northeastover Whitemarsh Township downing many trees. Some of the trees came down on houses or vehicles. The tornado curved slowly to the right and crossed over into the northwestern corner

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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PENNSYLVANIA, Eastern Cont'd

of Philadelphia County. Here the tornado moved across the Morris Arboretum destroying 308 trees and damaging 400 others. Trees were uprooted or broken off. The tornado continued more to the southeast over Chestnut Hill as it lifted off. The damage at the arboretum alone was estimated at around \$500,000.

2 SE Bustleton	03	1850EST			0 0	4 0	Thunderstorm Winds (G57)
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Thunderstorm wind gusts, estimated at over 65 mph, ripped up large trees and snapped off utility poles on a 2-mile stretch along Roosevelt Boulevard from Rhawn Street to Grant Avenue.

PAZ-043
Dauphin County
Paxton Creek

	09	0615EST- 0900EST			0 0	? 0	Flash Flood
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Heavy rain fell in the Harrisburg area in Susquehanna and Lower Paxton Township. Five inches of rain fell in the headwaters of the Paxton Creek at Colonial Park. Other amounts were 4.50 inches at Linglestown, 3.20 inches at the Federal Building in Harrisburg, and 2.78 inches at Capital City Airport. As much as one inch fell in 25 minutes and nearly three inches in 3 hours. The Paxton Creek reached a stage of 11.1 feet, which is 1.1 feet over flood stage. In Harrisburg, streets and basements were flooded and at least six vehicles were abandoned in high water. In Lower Paxton Township, one home had a basement wall collapse filling the basement with mud and water.

PAZ045-101
Delaware and
Philadelphia
Counties

	09	1500EST- 1700EST			0 0	7 0	Flash Flood
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Heavy downpours which brought over five inches of rain during the day with much of it occurring in a 2-hour period. The Philadelphia Water Department rain gauge network recorded amounts from 2.50 to 5.50 inches. The heavier amounts were: Heston 5.47 inches, Harrowgate 5.36 inches, Callowhill 5.10 inches, and SEPTA Depot 4.98 inches. Although showers developed around daybreak and continued through the day, the heaviest rain fell between 1500 EST and 1700 EST. The Cobbs Creek and its tributaries flooded along with widespread drainage flooding. In western and central Philadelphia, flooding closed streets and stopped subways. In the eastern portion of Delaware County, there was considerable flooding especially in upper Darby, Darby and Morton. Around 200 homes and 35 businesses sustained flood damage. Some businesses lost their entire inventory. Water was as high as 9 feet in some homes. At least five streets were buckled or washed out. On one street, a large underground culvert could not handle the water and burst upward leaving a huge canyon in the street.

Carbon County
1 SW Ashfield

	09	1900EST			0 0	4 0	Thunderstorm Winds
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Thunderstorm wind gusts uprooted several trees and took branches off others. The wind flipped a boat off a trailer and ripped a good portion of the roofing off a barn.

Lycoming County
Nisbet
2 E Elimsport

	15	1555EST			0 0	? 0	Hail (0.75)
	15	1610EST			0 0	? 0	Hail (1.00)

Thunderstorms dropped dime-size hail in Nisbet and quarter-size hail near Elimsport.

**Northumberland
County**
1 N Milton

	15	1635EST			0 0	? 0	Hail (1.75)
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A thunderstorm dropped golf ball-size hail.

Franklin County
Nyesville

	19	1745EST			0 0	4 0	Thunderstorm Winds
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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PENNSYLVANIA, Eastern Cont'd

Thunderstorm wind gusts damaged two storage buildings and destroyed a smoke house and machinery shed on a farm. The large machinery shed was carried about 200 yards and debris was scattered for about 0.5 mile. A tree was blown over and destroyed the porch roof on the farmhouse. The damage area of the storm was 0.5 mile wide and 1.5 miles long.

Montgomery County Trappe	20	0030EST			0 0	3 0	Thunderstorm Winds
Lancaster County Manheim	20	1014EST			0 0	3 0	Thunderstorm Winds

Thunderstorm wind gusts downed trees and utility lines.

Bucks County 2 ENE Cross Keys	20	1130EST			0 0	4 0	Thunderstorm Winds
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Thunderstorm wind gusts took the tops out of trees and brought some trees down in spots over a 200- by 100-foot area. One large tree limb came down on a house.

PAZ017-029-091 Bucks, Chester, and Montgomery Counties	20	1200EST- 1800EST			0 0	4 0	Flash Flood
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Thunderstorms moved across the counties several times, starting from around 1900 EST on the 19th through around noon EST on the 20th. The first few times the storms fairly well saturated the ground, then heavy downpours from 1100 EST to 1300 EST on the 20th caused the flash flooding. Rainfall amounts of around two inches in a 12-minute time period moved across the area from around Coatesville in Chester County northeast across the Norristown area in Montgomery County, to the Doylestown area in Bucks County. Across this area there was widespread drainage and small stream flooding. Roadways, parking lots, fields, lawns, and parks were flooded. Homes and other buildings were flooded. Many automobiles were flooded on roadways or in parking areas. Some train lines were flooded and not reopened for many hours.

Montgomery County Plymouth Valley	20	1200EST			0 0	3 0	Thunderstorm Winds
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Thunderstorm wind gusts uprooted trees, blew out windows, and carried an aluminum storage shed into a neighbor's yard.

PAZ00E Eastern Pennsylvania	All				0 0	0 9	Drought
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The drought emergency continued for all of eastern Pennsylvania except for Philadelphia and the four surrounding counties. Some counties were over 8 inches below normal on precipitation for the year. Total crop losses are expected to reach \$600 million.

PENNSYLVANIA, Western

Allegheny County 9 S Pittsburgh	19	1425EST			0 0	0 0	Thunderstorm Winds
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Large trees were downed on Library Road in Bethel Park.

Butler County 2 N Butler	19	1430EST			0 0	0 0	Thunderstorm Winds
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Trees were downed north of Butler. A mud slide was also reported.

Westmoreland County 18 N Greensburg	19	1434EST			0 0	0 0	Thunderstorm Winds
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Large trees were downed in Avonmore and Salina.

Armstrong County 15 S Kittanning	19	1439EST			0 0	0 0	Thunderstorm Winds
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
PENNSYLVANIA, Western Cont'd									
11 E Kittanning									Large trees were downed in North Apollo and Rural Valley.
Allegheny County 4 NW Coraopolis	19	1513EST			0	0	0	0	Thunderstorm Winds Power lines were downed blocking roads 2 miles northwest of Coraopolis near the airport.
Indiana County 2 S Indiana	19	1515EST			0	0	0	0	Thunderstorm Winds Trees were downed south of Indiana.
2 S Indiana	19	1540EST			0	0	0	0	Thunderstorm Winds Trees and power lines were downed south of Indiana.
10 SW Indiana	19	1600EST			0	0	0	0	Thunderstorm Winds Large trees were down in Jacksonville.
Cambria County 12 NE Ebensburg	19	1600EST			0	0	0	0	Thunderstorm Winds Large trees were downed in Glasgow.
Crawford County Meadville 16 W Meadville	19	1600EST			0	0	0	0	Thunderstorm Winds Numerous large trees were downed near Meadville. Power lines and trees were also downed near Linesville.
18 NW Meadville	19	1615EST			0	0	0	0	Thunderstorm Winds Power lines were downed in Beaver Center.
24 NE Meadville	19	1630EST			0	0	0	0	Thunderstorm Winds Power lines and large trees were downed at Centerville.
Blair County 12 SW Altoona	19	0028EST			0	0	0	0	Flash Flood Flooding was reported on Ski Gap Road between Claysburg and Blue Knob Village.
RHODE ISLAND									
RIZ002, Western Portion	04	0000EST- 0500EST			0	0	4	0	Heavy Rain Thunderstorms brought downpours of rain which amounted to almost 4 inches in less than 3 hours. Roads were flooded and washed out in places. A local merchant's store was flooded by the heavy runoff with damage estimated at around \$12,000.
RIZ002	19	1100EST- 1600EST			0	2	8	6	Hurricane
RIZ001	19	0900EST- 1700EST			0	0	7	6	High Winds
RIZ001	19	0600EST- 1500EST			0	0	?	?	Heavy Rain

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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RHODE ISLAND Cont'd

Hurricane "Bob" slammed into Rhode Island with its center, or "eye", tracking north-northeast over Block Island at 1220 EST and then right over Newport where a well defined "eye" was reported at 1320 EST. The lowest pressure reported was near 28.35 inches. The "eye" then passed to the west of Little Compton and Tiverton and into Bristol County, Massachusetts passing to the east of Providence. Hurricane force winds were experienced on Block Island and over and around the shores of lower Narragansett Bay. Some wind gusts included: 125 mph at Block Island, 105 mph at Newport and 100 mph at West Warwick. Sustained winds reached minimal hurricane force for a short time in these areas. High winds gusting between 40 and 60 mph affected the western and northern portions of the state including Providence and the vicinity. Dozens of cottages located on the shores of Narragansett Bay were heavily damaged or destroyed by the storm surge which reached 7 feet at the Fox Point Hurricane Barrier at Providence before winds shifted from east-southeast to northwest about an hour before high tide. A restaurant in Narragansett was heavily damaged when waves smashed into the dining room. The communities of Jamestown, Newport, Narragansett, and South Kingstown suffered some of the heaviest property damage in the state. Thousands of trees and limbs were blown down knocking out power to some 260,000 customers statewide. Power was out from a few hours to a full week in some places. Dozens of small boats were torn from their moorings and beached or sunk, but most of the damage to boats occurred on the western shore of Narragansett Bay exposed to the hurricane force winds from the east-southeast that preceded the storm center's arrival. A wind shift to northwest just before high tide prevented more serious coastal flooding. Only a few minor injuries and no deaths resulted from this hurricane. Rhode Island was later declared a federal disaster area. Damage to private property totaled \$115 million with \$9 million estimated for public facilities. Heavy rain of 4 to 7 inches in the northwest half of the state caused considerable urban flooding with stalled cars in poor drainage locations. Some spots had 1 to 1.50 inches of rain in 1 hour. Foster received 7 inches of rain. Fortunately, relatively dry soil prior to this event prevented major flooding. However, several gravel roads washed out in the west part of Coventry.

SOUTH CAROLINA

Clarendon County
2 S Turbeville

Unknown	0	0	3	0	Lightning
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Lightning struck a tree, then jumped to a church via a copper gas line. The ensuing fire burned a pin-sized hole under the sanctuary. The fire smoldered for several days before being discovered on August 19th, at 0930 EST. Damage was estimated at \$1,000.

SCZ007
South Coast

01 2045EST	0	0	?	?	Flood
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Heavy rains resulted in numerous reports of urban and small stream flooding. Some minor flooding was reported along the upper reaches of the Ashley River in the city of Summerville, Ashboro subdivision. No loss of life or large property damage losses were reported.

Georgetown County
Andrews

06 0430EST	0	0	4	0	Thunderstorm Winds
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Thunderstorm winds destroyed a mobile home.

Greenwood County
Greenwood to
Ware Shoals

06 1530EST	0	0	4	?	Thunderstorm Winds
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A severe thunderstorm produced wind damage, mostly downed trees, and power lines, from the city of Greenwood to the Ware Shoals area; numerous trees were downed.

Horry County
6 NNW Crescent
Beach

06 1718EST	0	0	4	0	Lightning
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Lightning struck a tobacco barn, setting it ablaze. Damage was estimated at \$20,000.

Chester County
Fort Lawn

07 1500EST	0	0	?	0	Lightning
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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SOUTH CAROLINA Cont'd

Lightning struck power lines disrupting power to 150 customers.

Lancaster County									
Tradesville	07	1645EST			0	0	3	0	Thunderstorm Winds
9 ENE Lancaster	07	1645EST			0	0	3	0	Lightning Urban Flood
Kershaw	07	1716EST			0	0	3	0	Lightning

At Tradesville, seven trees were blown down. At 9 miles east-northeast of Lancaster, 14 roads were washed out from heavy rains. Lightning also struck power lines and disrupted electrical service at 9 miles east-northeast of Lancaster. At Kershaw, lightning struck an air conditioner setting it ablaze. Damage from the fire was estimated at \$2,500.

York County									
Rock Hill	07	1945EST			0	0	5	0	Lightning

Lightning struck the transmission tower of radio stations WRHI-AM and WRHM-FM, knocking them off the air. Damage was estimated at \$50,000.

Chester County									
Great Falls	07	2140EST			0	0	?	0	Lightning

Lightning struck an apartment on Chester Avenue. It also struck at the fire station/town hall. A fire occurred at the former location, but not the latter.

Calhoun County									
St. Matthews	07	2215EST			0	0	4	0	Lightning

Lightning struck a house, causing a fire which burned it to the ground.

Bamberg County									
1 W Denmark	08	PM			1	0	4	0	Lightning

A 33-year-old man was struck in the head by lightning while riding a tractor. The bolt threw the tractor into a nearby ditch. The coroner estimated the time of death to be between 1300 and 1700 EST. (M330)

Pickens County									
Easley	08	2000EST			0	0	3	0	Lightning

Lightning struck a tree, setting it ablaze.

Georgetown County									
Georgetown	08	1505EST			0	0	?	0	Lightning Urban Flood

Lightning struck an electrical substation and caused power outages to 4,000 customers for about 0.50 hour. Urban flooding along Front Street caused businesses to close.

Anderson County									
Powdersville	08	1620EST			0	0	?	0	Lightning

Lightning struck the roof of a garage, setting it afire.

Laurens County									
2 S Fountain Inn	08	1646EST			1	0	0	0	Lightning

A 42-year-old man was killed by lightning after he stopped his truck along Interstate Highway 385 to assist at a traffic accident. He was standing by his truck when the lightning reportedly struck its radio antenna. (M420)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
SOUTH CAROLINA Cont'd									
Richland County 4 NNE McEntire Air National Guard Base	08	1700EST			1	1	0	0	Lightning
	A 60-year-old woman was killed by lightning while she and a companion were stringing metal wire between two trees. Her companion received second- and third-degree burns to his hands. (F600)								
York County York	09	1330EST			0	0	3	0	Thunderstorm Winds Hail (1.25)
	Thunderstorm winds damaged two barns and a fence, and hail was also reported.								
Lancaster County Lancaster	09	1500EST			0	0	?	0	Thunderstorm Winds
	Thunderstorm winds blew two pine trees onto a house.								
Spartanburg County Northern Portion	09	1700EST			0	0	3	0	Thunderstorm Winds
	Several trees were blown down; at least one tree fell on a mobile home causing substantial damage.								
Pickens County Clemson	09	1605EST			0	0	?	0	Lightning
	Lightning struck a substation, knocking out power to nearly 7,000 customers.								
Beaufort County Hilton Head Island	10	PM			0	0	5	0	Lightning
	Lightning struck three villas in Palmetto Dunes Resort, and one villa in Shipyard Plantation. Telephone service to 10,000 customers was disrupted after lightning struck the telephone transmission lines.								
Spartanburg County Zoar Community to GSP Airport	10	1502EST			0	0	3	0	Thunderstorm Winds
Startex Reidville	10	1520EST			0	0	3	0	Thunderstorm Winds Lightning
	A thunderstorm became severe along the Greenville-Spartanburg County border near Greer, then moved southeast through Spartanburg County. The storm appeared to have steady state characteristics and even displayed visual appearances of rotation. However, all damage was caused by downbursts and was primarily limited to downed trees and power lines.								
Georgetown County N Litchfield Beach	10	1912EST			0	0	?	0	Lightning
	Lightning started a house fire.								
Horry County Myrtle Beach	12	0330EST-							
Cherry Grove	12	2000EST 0404EST			0	0	4	0	Urban Flood Lightning
	Lightning started a house fire in Cherry Grove and 4.42 inches of rain caused urban flooding throughout the Grand Strand.								
Anderson County Anderson to Townville	12	0630EST- 0930EST			0	0	5	?	Flash Flood

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
SOUTH CAROLINA Cont'd									
Union County									
Buffalo	12	0830EST- 1000EST			0	0	?	?	Mudslide
Rose Hill State Park	12	0915EST			0	0	?	?	Flood
Abbeville County									
Northern Portion	12	1300EST			0	0	3	?	Flood
Greenwood County									
Northern Portion	12	1330EST			0	0	3	?	Flood
<p>Up to 8 inches of rain fell in a few hours over the western part of Anderson County, where small streams and creeks flooded, causing severe road and bridge damage. In some cases the roadways washed into Lake Hartwell. Several homes required evacuation and sustained quite a bit of damage. Damage was estimated to be more than \$200,000 in Anderson County according to some reports. Almost 6 inches of rain fell near Buffalo, in Union County, causing a mudslide on S.C. Highway 49. At Rose Hill State Park, a portion of secondary Road 16 was washed out by collapsing drainage pipes. There was less damage in Abbeville and Greenwood Counties where small streams overflowed later that day.</p>									
Berkeley County									
Alvin	12	1500EST			0	0	5	0	Lightning
<p>Lightning struck a house, sparking a fire which destroyed it. Damages were estimated to be between \$60,000 to \$70,000.</p>									
Charleston County									
Charleston	12	1800EST			0	0	4	0	Lightning
<p>Lightning struck the Post-Courier Newspaper Building, knocking a large piece of masonry off the third floor, and damaging the newspaper's computer.</p>									
Berkeley County									
Sangaree	12	1945EST			0	1	0	0	Lightning
<p>A 23-year-old man was struck by lightning, treated for injuries and released.</p>									
Charleston County									
John's Island	12	2033EST			0	0	3	0	Lightning
<p>Lightning struck a house, knocking out a wall that resulted in damages of less than \$5,000.</p>									
Kershaw County									
Camden	13	0430EST- 0700EST			0	0	?	0	Urban Flood
<p>Portions of Camden experienced urban flooding.</p>									
Horry County									
3 SE Nichols	13	2036EST			0	0	?	0	Lightning
<p>Lightning struck the roof of a house, starting a fire.</p>									
Beaufort County									
Beaufort	14	1400EST			0	0	?	0	Lightning
<p>Lightning caused power outages to parts of the city of Beaufort.</p>									
York County									
Leslie	14	1433EST			0	0	4	?	Thunderstorm Winds
Rock Hill	14	1435EST			0	0	?	0	Urban Flood

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

SOUTH CAROLINA Cont'd

At Leslie, four columns were torn off the front of a church, a mobile home was moved 6 inches off its foundation, and a tree was blown down. At Rock Hill, a store parking lot flooded and several creeks flooded yards and roads.

Horry County
Myrtle Beach

17 1946EST 1 0 0 0 Heavy Surf

A 26-year-old man drowned in heavy surf caused by Hurricane "Bob". (M260)

Georgetown County
Litchfield Beach

19 1617EST 0 0 5 0 Lightning

Lightning struck a hotel and a fire station, damaging radio and telephone equipment. Damage was estimated at \$60,000 to \$70,000 for both locations.

Beaufort County
Port Royal Island
St. Helena Island

19 1533EST-1830EST 0 0 ? 0 Lightning
Urban Flood

Lightning caused power outages, and heavy rains caused urban flooding from Port Royal Island to St. Helena Island. The Beaufort Marine Corps Air Station reported 2.75 inches of rain during the storm.

Bamberg County
Olar

24 PM 0 0 ? ? Flood

Sections of Olar were flooded.

Pickens County
Sunset to
Pumpkintown

28 2230EST 0 0 4 5 Flash Flood

Several inches of rain fell quickly in a few hours causing substantial flooding along the Oolenoy and Eastatoe Rivers in northern Pickens County. Some homes were flooded, crops were destroyed, and several vehicles parked near a bridge were washed downstream.

SOUTH DAKOTA

Hanson County
Alexandria

01 2001CST 0 0 3 0 Thunderstorm Winds (G48)

A U-Haul trailer was blown over by strong winds.

Lyman County
6 N Reliance
Custer and Pennington
Counties

02 1825CST 0 0 0 0 Hail (1.00)

15 SW to 50 SE
Rapid City

05 1200CST-1600CST 0 0 4 3 Hail (2.50)

An intense thunderstorm moved across northern Custer and south-central Pennington Counties causing crop loss and structural damage to farm buildings from Hermosa to east of Scenic. Hail sizes ranged from 0.50 inch to 2.50 inches. Downburst winds caused some farm buildings to be moved from their foundations.

Butte County
45 NW Rapid City

06 1730CST 0 0 0 2 Lightning

Lightning caused numerous grass fires.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
SOUTH DAKOTA Cont'd									
Aurora County 2 N Stickney	06	1800CST			0	0	0	1	Lightning
Custer County Custer State Park	06	1855CST- 1945CST			0	0	5	2	Flood
Flooding in Custer State Park was caused by two to six inches of rain. Flynn Creek overflowed onto Highway 87 for several hours resulting in the highway being closed. Runoff from the heavy rain also flooded basements. Copious amounts of pea-size hail damaged some refrigeration and compressor units.									
Lawrence County Whitewood	14	1400CST			0	1	2	0	Lightning
Lightning struck a woman as she talked on a telephone during a thunderstorm. The woman was held for overnight observation at a local hospital.									
Pennington County Rapid City	14	1600CST			0	0	4	0	Lightning
Lightning struck a house leaving a large hole in the roof.									
Clark County Garden City	16	1850CST	0.1	20	0	0	0	0	Tornado (F0)
A tornado touched down briefly in a open field in the northeastern corner of Garden City.									
Brown County Aberdeen	17	1520CST			0	2	3	0	Thunderstorm Winds (G39)
A strong wind collapsed a tent at the Brown County Fair. A 10-year-old girl and a 56-year-old woman were injured by the collapsing tent. Both were treated and released at a local hospital. Elsewhere on the fairgrounds, some electronic equipment was destroyed by flying debris and rain.									
Beadle County Wolsey	17	1915CST			0	0	0	0	Hail (1.00)
1 NE Virgil	17	1930CST			0	0	0	4	Hail (1.00) Thunderstorm Winds (G65)
A thunderstorm with strong winds and hail stripped crops and uprooted big trees. Up to 4 inches of hail was reported on the ground.									
Dewey County Ridgeview	19	1900CST			0	0	5	3	Thunderstorm Winds (G60) Hail (0.75)
A thunderstorm produced about five inches of rain, strong winds, and hail in Ridgeview. Three grain bins were blown over. One of the bins hit a house causing considerable damage. Skirting was blown from several mobile homes and shingles were blown from houses. Hail broke many house windows and destroyed crops.									
Sully County 5 W Sully Buttes	19	2155CST			0	0	0	0	Hail (0.75)
5 W Sully Buttes	19	2215CST			0	0	0	0	Thunderstorm Winds (G60)
Hughes County 8 NW Pierre	19	2220CST			0	0	0	0	Hail (1.75)
Pierre Airport	19	2237CST			0	0	0	0	Thunderstorm Winds (G66)
10 N Pierre	19	2245CST			0	0	0	3	Thunderstorm Winds (G70)
10 N Pierre	19	2246CST			0	0	0	0	Hail (1.00)
Codington County	20	0300CST			0	0	3	0	Lightning

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

SOUTH DAKOTA Cont'd

A lightning storm set two houses on fire. The Civil Defense Director reported there was so much lightning that he drove for 10 minutes without headlights. He also had a lightning strike in a ditch less than 10 feet from his car. It splattered mud on his car, depleted his car battery, and caused problems with his electronic ignition system.

Black Hills South Dakota	23	1925CST			0	0	3	0	Lightning
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Lightning started nearly 70 wildfires across Meade, Pennington, and Lawrence Counties of western South Dakota, destroying about 30 acres of forest.

Dewey County	24	0200CST- 0430CST			0	0	0	2	Lightning
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Lightning started numerous small grass fires.

Beadle County Wolsey	24	1800CST			0	0	3	0	Thunderstorm Winds (G40)
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Two grain bins under construction were blown over by winds from a thunderstorm. Some small branches were also blown from trees.

TENNESSEE

Sevier County Douglas Lake	04	1535CST			1	0	0	0	Lightning
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One man was struck by lightning and killed while getting out of a boat. (M230)

Washington County Glendale	04	1930CST			0	0	3	0	Thunderstorm Winds
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Two barns were blown over in Glendale.

Glendale	04	2000 CST			0	0	3	0	Lightning
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Several building were struck by lightning which caused damage to some electrical equipment.

Sumner County Hendersonville	06	1700CST			0	0	2	0	Thunderstorm Winds
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Several trees were knocked down in Hendersonville.

Sullivan County Bloomingdale	07	1400CST			0	0	4	0	Lightning
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A mobile home was burned by a fire that was started by lightning.

Greene County Greenville	07	1530CST			0	0	3	0	Thunderstorm Winds
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Several trees were uprooted and some power lines were knocked down. There was also some minor street flooding.

Hamblen County Morristown	07	1530CST			0	0	0	4	Hail (1.75)
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A tobacco crop was damaged by large hail.

Morristown	07	1530CST			0	0	3	0	Thunderstorm Winds
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
TENNESSEE Cont'd									
									Several trees and power lines were knocked down and the roof to a barn was blown off.
Morristown	07	1555CST			0	0	3	0	Flash Flood
									Almost 2 inches of rain fell in a 25-minute period which caused some damage to several businesses.
Knox County Knoxville	08	1600CST			0	0	3	0	Lightning
									Several trees and power lines were knocked down.
Williamson County Cool Springs	09	1930CST			0	0	2	0	Flash Flood
									Two inches of rain fell in a 15-minute period which stalled cars at the Cool Springs Galleria.
Dickson County Dickson	09	2000CST			0	0	3	0	Lightning
									Two homes were burned by fires that were caused by lightning.
Bradley County 22 ENE Chatta- nooga	19	1530CST			0	0	2	0	Thunderstorm Winds
									Several trees were knocked down.
Bradley County E Cleveland	19	1645CST			0	0	4	0	Thunderstorm Winds
									Numerous trees were knocked down and several automobiles flipped over.
McMinn County W Athens	19	1700CST			0	0	3	0	Thunderstorm Winds
									Approximately 100 or more trees were knocked down by thunderstorm winds.
Hamilton County Chattanooga	19	1715CST			1	0	0	0	Lightning
									One man was killed when lightning struck a nearby tree. (M180)
Davidson County Nashville	29	1430CST			0	2	0	0	Lightning
									Two pregnant woman were injured by a lightning strike as they were sitting on a metal bench.
Sumner County Portland	29	1530CST			0	0	2	0	Flash Flood
									Some cars were partially submerged by water due to heavy rainfall.
Blount County Maryville	29	1630CST			0	0	3	0	Flash Flood
									Four inches of rain fell in a 90-minute period producing damage to a grocery store as well as flooding several roads.
Knox County Knoxville	29	1700CST			0	1	3	0	Lightning

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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TENNESSEE Cont'd

A man was injured when he was struck by lightning while standing beside his truck. A barn and a house were burned by fires that were started by lightning.

Knoxville	29	1815CST			0	0	2	0	Flash Flood
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Numerous roads were flooded by heavy rainfall.

Anderson County Between Oak Ridge and Clinton	29	1900CST			0	0	4	0	Lightning
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Two cars and a mobile home were crushed by a tree that fell after being struck by lightning.

Sullivan County Kingsport	29	1930CST			0	0	4	0	Thunderstorm Winds
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Several large roofs were damaged, and a few trees and power poles were downed.

TEXAS, Northern

McLennan County Waco	09	1300CST			0	0	5	?	Thunderstorm Winds
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Strong winds destroyed a gazebo, an outdoor storage barn, and damaged several automobiles.

Hopkins County Pine Forest	09	1410CST			0	0	3	?	Thunderstorm Winds
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A downburst downed power lines in Pine Forest.

Cass County 4 N Linden	09	1558CST			0	0	?	?	Thunderstorm Winds (G56)
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Bowie County 3 S Redwater	09	1600CST			0	0	?	?	Thunderstorm Winds (G65)
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Angelina County Lufkin	10	1400CST			0	0	3	?	Thunderstorm Winds
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A downburst snapped a large tree in Lufkin.

Nacogdoches County 5 E Oak Ridge	10	1435CST			0	0	2	?	Thunderstorm Winds
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A downburst blew down large tree limbs.

Shelby County Center	10	1525CST			0	0	3	?	Thunderstorm Winds
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Strong winds blew down several trees, power lines, and street signs.

Lampasas County Lampasas	10	1730CST			0	0	4	?	Thunderstorm Winds
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Strong winds blew down power lines, trees, fences, street signs, and blew in two windows of a residence. The roof of one barn was lifted off while a second barn was also damaged.

Tarrant County Fort Worth	12	0430CST- 0700CST			1	0	?	?	Flash Flood
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Over three inches of rain fell in a 1-hour period and produced flash flooding of Interstate 35 and several secondary roadways near downtown Fort Worth, and a nursing home. One fatality occurred at 0600 CST when a motorist drove his automobile into high water up to 3 feet in depth. (M49V)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of		Estimated		Character of Storm
					Killed	Injured	Property	Crops	
TEXAS, Northern Cont'd									
Hood County Acton	12	1100CST- 1230CST			0	0	?	?	Flash Flood
									Heavy rains produced flash flooding of creeks crossing Farm-to-Market Road 4 near Acton.
Tarrant County Arlington	13	0730CST- 1200CST			0	0	?	?	Flash Flood
									Heavy rains resulted in the flash flooding of Johnson Creek in Arlington where high water was observed up to 3 feet over several secondary roadways.
Dallas County Western Portion	13	0900CST- 1200CST			0	0	?	?	Flash Flood
									Heavy rains resulted in the flash flooding of Cottonwood Creek and Johnson Creek where high water was observed over creek banks.
Freestone County Streetman	14	0055CST- 0500CST			0	0	?	?	Flash Flood
									Heavy rain produced flash flooding of low-lying areas while high water was observed up to the top of a secondary roadway underpass.
McLennan County Waco	14	0100CST- 0430CST			0	0	?	?	Flash Flood
									During a 7-hour period, five inches of rain produced flash flooding along Tehuacana Creek where one roadway was temporarily barricaded.
Anderson County Palestine	14	0130CST- 0900CST			0	0	5	?	Flash Flood
									Heavy rains of nine inches in a 12-hour period produced flash flooding of numerous roadways, several homes, and businesses. High water up to 2 feet in depth was observed in several locations. Damage to local businesses was estimated at approximately \$200,000.
Cherokee County Southern Portion	14	0400CST- 0900CST			0	0	?	?	Flash Flood
									Flash flooding of creeks and streams resulted in the closing of Farm-to-Market Road 1857 southwest of Rusk and State Highway 69 at Wells. A bridge was also washed out on County Road 2314 south of Rusk.
Foard County Crowell	17	0100CST			0	0	5	?	Thunderstorm Winds
									A downburst damaged a barn and two storage bins, destroyed a chicken house, and blew down utility poles.
Bell County Temple	22	1300CST			0	0	3	?	Thunderstorm Winds
Belton	22	1300CST			0	0	3	?	Thunderstorm Winds

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured		Estimated Damage Property Crops		Character of Storm
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TEXAS, Northern Cont'd

Strong winds blew large tree limbs onto power lines and disrupted electrical service to about 3,500 residents at both Temple and Belton.

McLennan County Waco Madison	22	1310CST			0	0	5	?	Thunderstorm Winds
Cooper Airport Waco	22	1330CST			0	1	?	?	Lightning

Strong winds collapsed a large steel storage tank and uprooted trees at Waco Madison Cooper Airport. Lightning struck and injured a man at Waco Airport Park.

Lamar County Petty	29	1517CST			0	0	?	?	Hail (0.75)
Tarrant County Carswell Air Force Base	30	0240CST			0	0	?	?	Thunderstorm Winds (G53)

TEXAS, Southern

Uvalde County La Pryor	04	1730CST			0	2	0	?	Lightning
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A family was working in a metal barn when a thunderstorm passed over. Lightning struck outside the barn and the two boys toughting metal inside were shocked; one of the boys was hospitalized.

Wilson County Floresville	05	1645CST			0	0	3	?	Thunderstorm Winds
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Minor roof damage was reported in the Florsville area along with one tree blown over into a small outbuilding.

Wharton County 7 E Wharton	07	1318CST	0.05	50	0	0	2	?	Tornado (F0)
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A small tornado moved through a corn field near the town of Boling. The only damage was to the corn crop.

Nacogdoches County 6 E Nacogdoches	10	1415CST			0	0	4	?	Thunderstorm Winds
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The Nacogdoches County Sheriff's Office reported numerous trees and power lines down in the eastern part of the county.

Williamson County Round Rock	10	1945CST			0	0	4	?	Thunderstorm Winds
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Several trees were uprooted and utility poles blown over in the town of Round Rock. A chimney at an apartment complex was blown over.

Harris County Baytown	11	1800CST			1	0	?	?	Lightning
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A man swimming off the Bayland Park beach was killed when struck by lightning. (M270)

Travis County	14	1900CST-			0	0	4	?	Flash Flood
	15	0500CST			0	0	4	?	Flash Flood

Up to 5 inches of rain fell within 24 hours in a few locations of Travis County. The sheriff's office reported several road closed. The water was 18 inches deep over U.S. Highway 183 near the intersection of Interstate 35. Rescuers had to pull several people from vehicles that had stalled in the flood waters.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
TEXAS, Southern Cont'd									
Gonzales County Gonzales	15	2340CST			0	0	3	?	Thunderstorm Winds
A large oak tree was uprooted and fell onto a house in the town of Gonzales; no injuries were reported.									
Hays County 2 SW Wimberley	22	1540CST	0.25	30	0	0	3	?	Tornado (F1)
The Hays County Sheriff's Office reported a tornado southwest of Wimberley; several trees were uprooted.									
Comel County 1 NW New Braunfels	22	1715			0	0	3	?	Thunderstorm Winds
Several trees and power lines were reported down northwest of New Braunfels by the Department of Public Safety.									
Caldwell County 10 NW Lockhart	30	1745CST			0	0	?	?	Hail (1.75)
Golf ball-size hail was reported southeast of the town of Umland.									
TEXAS, Western									
Tom Green County San Angelo	04	1640CST			0	0	6	1	Thunderstorm Winds (G70)
A powerful microburst, with wind gusts to 80 mph, caused widespread damage in south San Angelo. The roofs of 33 houses were damaged significantly, and 8 businesses suffered roof and window damage. The gymnasium and physical plant at Angelo State University and the press box at San Angelo Stadium were damaged; damage is estimated at \$3 million.									
Lubbock County 2 SE Slaton	04	1915CST			0	0	0	4	Hail Winds
Pea- to marble-size hail, driven by wind gusts to 53 mph, damaged cotton crops in southeast Lubbock County.									
Randall County 6 NE Canyon	06	1436CST			0	0	3	0	Thunderstorm Winds
The public reported that strong thunderstorm outflow winds blew the roof off a barn.									
Carson County White Deer	08	1615CST			0	0	0	0	Hail (0.75)
Thunderstorms along a cold front produced dime-size hail in White Deer, according to a SKYWARN spotter.									
Sterling County Sterling City	10	1810CST			0	0	3	0	Thunderstorm Winds
The Sterling County Sheriff's Office reported that downburst winds overturned a mobile home in Sterling City.									
Ochiltree County Perryton	12	1632CST			0	0	3	1	Thunderstorm Winds (G61)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

TEXAS, Western Cont'd

Downburst winds to 70 mph were reported by the Ochiltree County Sheriff's Office. The winds downed tree limbs and damaged the wall of a lumber company building.

Reeves County Pecos	13	1945CST				0	0	3	2	Thunderstorm Winds
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Downburst winds damaged the roof of a business and uprooted three trees in Pecos, according to the public.

Deaf Smith County 18 NNW Hereford	18	1552CST				0	0	3	0	Thunderstorm Winds (G61)
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A downburst, with winds gusting to 70 mph, downed light poles, and unroofed a barn 7 miles west of the community of Ford.

Carson County 1 N Conway	20	1628CST				0	0	0	0	Hail (1.00)
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One-inch-diameter hail was reported by an amateur radio spotter north of Conway.

Armstrong County Claude	20	1733CST				0	0	0	0	Hail (0.75)
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Donley County Howardwick	20	1800CST				0	0	4	0	Thunderstorm Winds
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A severe thunderstorm produced dime-size hail in Claude, according to the Armstrong County Sheriff's Office. Another thunderstorm produced strong downburst winds in Donley County. The windows overturned two travel trailers and one mobile home, downed telephone lines, and damaged the porch of a home near Greenbelt Reservoir.

Coke County Robert Lee	21	1830CST				0	0	2	0	Thunderstorm Winds
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The Coke County Sheriff's Office reported downburst winds which downed power lines in Robert Lee.

Schleicher County 6 W Eldorado	23	1625CST				0	0	0	0	Thunderstorm Winds (G52)
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The Schleicher County Sheriff's Office reported downburst winds to 60 mph. Heavy rains which accompanied the downburst produced brief flooding of a secondary highway.

Gaines County 5 W Seminole	28	1525CST				0	0	0	3	Winds Hail
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Marble-size hail and 40 mph wind gusts combined to damage cotton crops in western Gaines County.

Lipscomb County Higgins	30	1840CST				0	0	4	0	Thunderstorm Winds (G61)
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The Higgins Fire Department reported downburst winds to 70 mph. The winds blew skylights out of the local school and damaged a scoreboard. Several roofs and a car were damaged, and a mobile home was overturned.

UTAH

San Juan County Canyonlands	01	0220MST				0	0	0	0	Thunderstorm Winds (G67)
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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UTAH Cont'd

A moist, southerly flow combined with the afternoon heating produced thunderstorms over most of the state. A strong and large thunderstorm moved through the east-central portion of the state. One gust of 67 mph was reported. No other reports of severe weather were received because the thunderstorm moved through a mostly unpopulated area of that portion of the state.

Sevier County

01	2120MST- 2235MST				0 0	2 1	Flash Flood
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Thunderstorms that developed because of the moist, southerly flow produced heavy rains in the central portion of the state. Heavy rain in the Salina area caused an irrigation canal to overflow in a few spots and some street flooding. Some damage was done to the irrigation canal. No other major damage was done in the Salina area. Other damage was confined to minor flooding of yards and gardens. State Road 24, south of Sigurd, was closed for a period of time because water was flowing over the road. The highway patrol in the area reported that several mud slides occurred.

Summit County Island Lake

02	1100MST				2 2	0 0	Lightning
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A very unstable air mass still plagued the southern and eastern portions of the state. A Boy Scout troop was camping at Island Lake in the Uinta Mountains when a violent thunderstorm struck the area. Two boys ages 14 and 16, were killed and two were injured when lightning struck a tree. One of the injured boys was underneath the tree, while the other boy was a short distance away when the lightning struck. (M140) (M160).

Uintah and Grand Counties

02	1530MST- 1800MST				0 0	0 0	Flash Flood
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Considerable moisture and the afternoon heating combined to produce widespread thunderstorm activity over the eastern and southern portions of the state. Areas upstream received brief heavy rain and small hail. Many reports of minor flooding, and some shallow water running over roads were also prevalent in sections upstream of the flash flood area. With these reports in mind and satellite imagery indicating heavy rainfall, a flash flood warning was issued for the southern half of Uintah County and the northwestern quarter of Grand County. There were no ground reports of flash flooding.

Garfield and Wayne Counties

03	1525MST- 1935MST				0 0	3 0	Flash Flood
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The monsoon continued with a vengeance over the southern portion of the state. Numerous reports of flooding were received. Capital Reef National Park was especially hard hit. Normally dry washes and guches in the area of heavy rain were running full through the evening. Some were running as high as 4 or 5 feet. Heavy rain in the canyons around the Escalante and Boulder areas caused mud slides and flooding in the canyons. The flash flooding closed, washed out, and made many roads in the area impassable. In fact, the flooding in Capital Reef National Park caused a family to be stranded for several hours because their vehicle was stuck in mud up to its frame. The flash flooding was continuous until mid-evening when the thunderstorms moved out of the area and the flows subsided. The flooding had been so intense that water was still flowing out of the washes in the Capital Reef National Park late the next morning.

Salt Lake and Utah Counties

Riverton, South Jordan, Sandy, Alta, and Snowbird	04	1458MST			0 0	2 1	Hail (1.75)
		1505MST			0 0	2 1	Hail (1.25)
		1511MST			0 0	2 1	Hail (1.00)
		1516MST			0 0	2 1	Hail (1.00)
		1517MST			0 0	2 1	Hail (0.75)
		1522MST			0 0	2 0	Hail Aloft (1.75)
		1525MST			0 1	0 0	Lightning
		1530MST			0 43	5 0	Hail (0.50)
		1540MST			0 0	3 0	Lightning
		1605MST			0 0	2 0	Hail (0.75)

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
		1625MST			0	0	3	0	Lightning
		1648MST			0	0	2	1	Hail (0.75)
		1700MST			0	0	3	0	Flash Flood
		1705MST- 1730MST			0	0	3	0	Lightning
Kane County Bullfrog	04	1730MST			0	0	0	0	Thunderstorm Winds (G58)

Moisture continued to spread over the entire state with the air mass somewhat drier in the southern portion of the state. An upper level disturbance moving over northern Utah combined with diffluence aloft, and being under the left front quadrant of the jet stream, produced severe thunderstorms along the Wasatch Front and adjacent mountains. These thunderstorms laid down a narrow swath of large hail and very heavy rain from Riverton to Sandy to Alta. The hail aloft was reported in extreme northern Utah County 30 miles southeast of Salt Lake City. In the valley locations, hail damage was minor and mainly confined to some dents in cars, a few broken windows, and damage to gardens. Most of the valley reports of the large hail came from Sandy. However, the most damage was done in the adjacent Wasatch Mountains at Snowbird. For 15 minutes, 0.50-inch hail fell, and piled up on a canvas that sheltered a crowd of people watching a performance of the Utah Symphony. The weight of the hail caused the canopy to collapse on the crowd. There were 43 people injured in the incident. The hail that fell at Alta, Snowbird, and portions of Sandy and Riverton covered the ground. In a few areas, especially in the mountains, the hail was 2 to 3 inches deep.

Very heavy rain also accompanied these thunderstorms. In the valleys, Sandy and South Jordan were the hardest hit. The heavy rain caused Midas Creek in South Jordan to leave its banks, and some minor flooding. Little damage was done from this, but the combination of hail clogging up the drainage system, and the very rain caused the collapse of part of a roof of a supermarket in Sandy. The damage estimate for the flood portion of this event includes this damage to the roof.

Frequent lightning was also a major part of these storms. A man at the Storm Mountain Picnic area in Big Cottonwood Canyon (this is next to the canyon where Alta and Snowbird are located, and where the above mentioned large hail occurred) was struck by lightning, and received minor injuries. Two houses in Sandy were also damaged by lightning. One lightning bolt put a large hole in the roof of one house. Another lightning bolt struck a tree outside the other house. The resulting electrical surge traveled through an underground sprinkling system, and went into the house. The jolt blew out all of the electrical sockets, and caused damage to the electrical system. Lightning also struck some power poles at the mouth of Mill Creek Canyon setting them on fire.

Although these severe thunderstorms did enter counties to the east and north of Salt Lake County, no ground reports of severe weather were received. However, local radar showed that those storms were still very strong, and capable of producing severe weather.

In other areas of northern Utah, outside the severe weather storm path, light to moderate amounts of rain were reported. Later on in the evening, small hail was reported in the Cache Valley.

Because the air mass was drier in the southern portion of the state, the thunderstorms produced very strong and gusty winds. The thunderstorm that caused the strong winds moved to the northeast and weakened.

Emery County	05	1715MST- 1830MST			0	0	0	0	Flash Flood
Emery County	05	1820MST			0	0	4	0	Lightning

With the tropical moisture still present, it combined with the afternoon heating and upper level disturbances passing over the state to set off thunderstorms over most of the state. Thunderstorms over the east-central portion of the state produced very heavy rain and considerable lightning. Western Emery County was the center of the activity. The flash flooding was in the unpopulated desert area of the county east of Castle Dale and Ferron. The Emery County Sheriff's office reported that major flooding was occurring in the San Rafael Swell area, and the washes in the area were running full. He reported that Buckhorn Wash was particularly bad. The sheriff's office also

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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UTAH Cont'd

stated that because of the flash flooding many of the dirt roads in the area were in poor condition, and travel was not recommended. Lightning struck a Utah Power and Light substation in the area, and knocked out the power to Castle Dale.

Sevier County
5 E Richfield
Wayne County

06	1700MST				0	0	0	0	Funnel Cloud
	2050MST-								
07	0200MST				0	0	0	0	Flash Flood

Much of eastern Utah was plagued again with heavy rain and flash flooding. Other factors that contributed to the flash flood situation were that much of the area had received heavy rainfall over the last several days which had saturated the ground, and the thunderstorms that developed followed the paths of earlier storms. Even though heavy rains fell over much of eastern Utah in San Pete, Carbon, Emery, Duchesne, Uintah, Sevier, and San Juan counties, the flash flooding was minor. All these areas had minor flooding of canyons, washes, and small streams. The flash flooding caused shallow water to run over highways and minor street flooding in some communities. This washed some debris on roadways, and caused mud and rock slides in some of these areas from 1400 MST to 1900 MST with several flash flood warnings that accompanied them.

Capital Reef National Park was hit again with major flash flooding. Heavy rainfall in the park caused a major flash flood of Sulphur Creek. Sulphur Creek reached a depth of 6 to 8 feet, and a width of 40 feet. The creek is normally 6 inches deep and about 3 feet wide. The initial flood surge was a wall of water about a foot deep. The flood was the biggest on the creek since 1984. Flash flooding also occurred along the Fremont River which also drains out of the park, and along its tributaries. Downstream in Hanksville, Muddy Creek was running 4 to 5 feet deep at midnight MDT, and the Fremont River also crested at Hanksville about 0300 MDT. No damage resulted from these surges. Even by early on the 7th, the observer at Hanksville said that Muddy Creek was boiling.

Along with the heavy rain and minor flash flooding in Sevier County, a funnel cloud was reported. The short-lived funnel cloud was spotted by two different people. This did not come to the attention of the forecast office until the next day when a radio station in Richfield relayed the information to the forecast office.

Salt Lake County
Sugarhouse and
Salt Lake City

15	1819MST				0	0	1	1	Hail (0.75)
	1822MST				0	0	1	1	Hail (1.00)
	1825MST				0	0	3	1	Hail (1.25)
	1829MST				0	0	1	1	Hail (0.75)
	1830MST				0	0	1	1	Hail (1.50)
	1830MST				0	0	0	0	Lightning
	1840MST				0	0	1	1	Hail (0.75)
	1840MST				0	0	1	1	Hail (1.25)

A moist, southerly flow brought a return of thunderstorm activity to most of the state. Thunderstorms had been prevalent the previous couple of days. An isolated thunderstorm that developed west of the Salt Lake City area moved into the area early in the evening. This thunderstorm laid down a narrow swath of hail and brief heavy rain from Magna to Salt Lake Airport to Sugarhouse and downtown Salt Lake City to Emigration and Mill Creek Canyons in the Wasatch Mountains. The sheriff's office reported some hail damage to cars in Mill Creek Canyon. Otherwise, damage was minor and confined to trees and gardens being shredded. This storm also produced very gusty winds and frequent lightning. Winds gusted to the 45- to 50-mph range while lightning struck a tree in Sugarhouse. No significant damage in the surrounding area was caused by the lightning. Power was also out from 1820 MST to 0150 MST on the 16th in an area around the University of Utah.

A little later on the same evening, small hail and brief heavy rain were reported in Duchesne in northeastern Utah, and in northern Provo and southern Orem in Utah County of northwestern Utah.

Uintah County
Whiterocks

16	1400MST				0	0	1	1	Hail (0.75)
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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UTAH Cont'd

Thunderstorms developed mainly over the northeastern portion of the state on this afternoon. The large hail was observed in Whiterocks which is 30 miles north of Roosevelt. Brief heavy rain was also reported from this storm. A little over 1.5 hours later, 0.25- to 0.50-inch hail was reported from the same area. Based on this report and the radar showing very strong thunderstorms in the area, the severe thunderstorm warning for the area was extended for another hour. One hour later the warning was extended again due to the previous thunderstorms history, and also because radar indicated another very strong thunderstorm had developed in the area. No ground reports confirmed any severe weather.

Duchesne County Tabiona

23	1600MST				1	0	0	0	Lightning
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Lightning struck a sheep herder northwest of Tabiona in a remote area called Rhodes Canyon killing the horse he was riding. The man was struck while he was in a grove of trees near the point of the ridge. (M330)

Sevier and Wayne Counties

24	1420MST- 1630MST				0	0	0	0	Flash Flood
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Thunderstorms developed over the central portion of the state, producing heavy rain. No damage resulted from the flash flooding, but water was reported running over the roads in the area.

Utah County Provo Salt Lake County South Jordan

24	1735MST				0	0	3	0	Thunderstorm Winds (G61)
24	1915MST				0	0	3	0	Thunderstorm Winds

A moist, southwesterly flow produced scattered thunderstorms over most of the state. The particular complex of thunderstorms that produced the severe winds developed over the desert area of northwestern Utah. When this complex moved into the Wasatch Front, it had a very vivid and distinct gust front that reduced visibility to almost zero in several areas. The lightning was also continuous for nearly a couple of hours with this complex of storms. The wind in Utah County blew tree limbs down and caused some power outages. The wind in South Jordan blew a barn down. The wind at Hill Air Force Base ripped some signs off buildings there. Other wind gusts in the area ranged from 40 to 53 mph.

Salt Lake County Holladay

24	1800MST				0	1	0	0	Lightning
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A 23-year-old male was injured as he was walking toward his jeep in front of his residence when lightning struck a telephone pole 10 feet from him. The arc from the lightning struck him and knocked him down. His left hand was paralyzed for a time.

Sevier County

25	1509MST- 1800MST				0	0	2	0	Flash Flood
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Thunderstorms again developed because of a persistent southwesterly flow bringing tropical moisture. The hardest hit areas were the central and extreme northwestern portions of the state. However, the flooding occurred in the central portion. Specifically, the flooding occurred in the Clear Creek Canyon area of Fremont State Park in southwestern Sevier County. Two dirt roads were washed out, and small creeks and streams in the area ran bank full or over their banks.

Salt Lake County Taylorsville

27	1430MST				0	0	4	0	Thunderstorm Winds (G60)
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An upper-level, low-pressure system that moved into central Nevada caused widespread thunderstorm activity around the state. However, the strongest thunderstorms occurred over the northern half of the state. The thunderstorms that moved across the southern end of Salt Lake County and the northern end of Utah County had the strongest winds. The wind in Taylorsville toppled a 30-foot Cottonwood tree onto a car. The car's hood was dented, and the windshield was cracked. Fences

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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UTAH Cont'd

were blown over, and other minor tree damage occurred in the area also. Power outages due to tree limbs being blown over onto power lines also occurred about the same time in the same area. Several other wind gusts of 40 to 55 mph were also reported. These thunderstorms also produced brief, heavy rain and frequent lightning.

VERMONT

Bennington County Bennington	01	1854EST			0 0	4 0	Thunderstorm Winds
Orleans County Derby	01	2040EST			0 0	3 0	Thunderstorm Winds
Morgan	01	2050EST			0 0	3 0	Thunderstorm Winds
Seymour Lake	01	2050EST			0 0	3 0	Thunderstorm Winds
Essex County Wallace Pond	01	2050EST			0 0	3 0	Thunderstorm Winds
Canaan	01	2100EST			0 0	3 0	Thunderstorm Winds
Lemington	01	2100EST			0 0	3 0	Thunderstorm Winds

Thunderstorm winds downed numerous trees and power lines in parts of Vermont. Bennington was hardest hit as power poles were also blown down.

Franklin County Berkshire	04	0530EST			0 0	4 0	Lightning
Washington County Montpelier	04	1740EST			0 0	3 1	Lightning
Rutland County Rutland	04	1750EST			0 0	3 0	Lightning
Washington County Waterbury Center	04	1800EST			0 1	0 0	Lightning
Orleans County Newport Center	04	1857EST			0 0	4 0	Lightning

Intense cloud-to-ground lightning caused damage in parts of central and northern Vermont. Three barns were destroyed by lightning; two in Berkshire and one in Newport Center. In Montpelier, lightning struck a large hemlock tree causing it to fall. A 23-year-old Connecticut woman was struck and injured by lightning as she got out of her car in Waterbury Center.

VTZ004-005

Southern Vermont	19	1220EST- 1525EST			0 0	4 0	High Winds
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High winds in the wake of Hurricane Bob, downed trees and tree limbs blocking roads in Rockingham, Shaftsbury, and Proctorsville.

Grand Isle County Alburg	28	1540EST			0 0	5 0	Thunderstorm Winds
Countywide	28	1600EST			0 0	4 0	Thunderstorm Winds
Franklin County Georgia	28	1620EST			0 0	4 2	Thunderstorm Winds
Saint Albans	28	1620EST			0 0	4 0	Thunderstorm Winds
Fairfax	28	1620EST			0 0	3 0	Thunderstorm Winds
Chittenden County Milton	28	1620EST			0 0	4 0	Thunderstorm Winds
Colchester	28	1620EST			0 0	3 0	Thunderstorm Winds
Westford	28	1620EST			0 0	3 0	Thunderstorm Winds
Jericho	28	1620EST			0 0	3 0	Thunderstorm Winds

Severe thunderstorms moved across Lake Champlain from New York causing extensive damage to parts of northwest Vermont. Among the areas hardest hit were Alburg, Georgia, Saint Albans, and Milton. In Alburg, a hangar and antique airplane were totally destroyed as the hangar was pulled

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
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VERMONT Cont'd

out of the ground and flipped over. In Georgia, numerous trees and wires were downed as well as a barn, a storage shed and an enclosed porch destroyed. A field of corn in Georgia was also knocked flat by the thunderstorm winds. In Saint Albans, a sailboat was lifted over a dock and left on its side, while in Milton numerous trees and power lines were downed. In all, over 3,500 people were left without power.

Chittenden County

Milton	31	0130EST			0	0	3	0	Thunderstorm Winds
Colchester	31	0200EST			0	0	2	0	Thunderstorm Winds

Trees and tree limbs were downed by thunderstorm winds in Milton and Colchester.

Southeastern Vermont

End of June- Early August	0	0	0	0	4	Drought
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Southeast Vermont experienced a moderate drought according to the Palmer Drought Index during this period. Crop damage was limited to stunted growth in field crops and lower yield than normal.

VIRGINIA

Bedford County City of Bedford 8 SE Moneta

04	1330EST- 1400EST				0	0	4	0	Thunderstorm Winds
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In the City of Bedford, trees and large limbs were downed at several locations. A large tree fell onto a house, damaging the roof and a veranda. The storm moved south through Bedford County, causing heavy damage to trees at Smith Mountain Lake (8 miles southeast of Moneta) along with blocking many roads. Several telephone poles were broken in the county by the winds.

Nottoway County 5 W Blackstone

04	1530EST				0	0	4	0	Lightning
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Lightning struck a barn, causing a fire that engulfed the barn and destroyed the hay within.

Brunswick County Danieltown 1 S Lawrenceville

04	1600EST- 1640EST				0	0	6	0	Thunderstorm Winds (G70)
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The sheriff's office reported many trees and power lines downed by winds estimated at up to 80 mph (70 knots) in a 13-mile-long path from Danieltown to 1 mile south of Lawrenceville. Many homes were damaged in a subdivision 1 mile south of Lawrenceville in a swath 0.50 mile to 0.75 mile wide. County officials estimated the damage along the path at about \$1,000,000.

1 S Lawrenceville	04	1640EST	0.5	75	0	0	4	0	Tornado (F1)
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A weak tornado moved along a short path in a subdivision 1 mile south of Lawrenceville. A 200-foot by 50-foot garage was destroyed. Several witnesses saw large trees being twisted off about 20 feet above the ground.

Southampton County	04	1750EST			0	0	0	0	Thunderstorm Winds
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The Southampton County Sheriff's Office reported numerous trees downed.

Goochland County	04	1755EST			0	0	0	0	Thunderstorm Winds
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The sheriff's office reported trees downed.

City of Franklin	04	1800EST- 1830EST			0	0	0	0	Thunderstorm Winds (G50)
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
VIRGINIA Cont'd									
									Cooperative observers reported trees downed due to winds that were estimated at about 60 mph (50 knots).
City of Suffolk	04	1822EST			0	0	0	0	Thunderstorm Winds
									The sheriff's office reported numerous trees down across two highways in the southwestern portion of the city.
Highland County Mill Gap	08	2100EST			0	0	4	0	Thunderstorm Winds
									Trees and power lines were downed. Local power company officials estimated damage to lines was \$5,000.
2 E Mill Gap	08	2100EST- 2400EST			0	0	4	0	Flash flood
									Rainfall estimated at 4 to 7 inches fell in a 2-hour period causing rapid rises in streams which were likened by local officials to the devastating floods of 1985. Road damage 2 miles east of Mill Gap consisted of washed-out shoulders and several places where the road surface was carried away. State highway engineers estimated damage at \$8,500.
Accomack County Pungoteague	09	1400EST- 1500EST			0	0	5	0	Thunderstorm Winds
									Numerous trees were downed or heavily damaged. At least two homes were heavily damaged. Local power company officials reported seven poles snapped off in open fields. Although the damage was reported along a narrow path, reports of a tornado could not be confirmed.
Countywide	09	1400EST- 1700EST			0	0	4	0	Flood
									Five to seven inches of rain hit the central and northern portions of the county. Several roads were closed by high waters and remained off-limits through the night.
Lancaster County 1 S White Stone	14	1200EST			0	0	0	0	Funnel Clouds
									U.S. Coast Guard personnel reported two funnel clouds near White Stone Beach.
10 NNE City of Newport News	14	1410EST			0	0	0	0	Waterspout
									A pilot reported a large waterspout over the Chesapeake Bay while thunderstorms were occurring at the same time.
Zones 01-02	18 19	1900EST- 0300EST			0	0	0	0	Hurricane
									Fringe winds from Hurricane Bob reached 35 knots in the Norfolk area. Several shelters were opened for anyone that might feel the need to evacuate, but no organized evacuations were done. Scattered areas of minor beach erosion along with a few downed trees were reported.
Frederick County 6 NW Siler	19	2000EST			0	1	4	0	Lightning
									Lightning struck a tree and traveled down a metal clothesline to a house, igniting the house and causing \$30,000 damage. The occupant of the house was seriously injured in the fire.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
VIRGINIA Cont'd									
City of Virginia Beach									
Oceana Naval Air Station	19	1449EST			0	0	0	0	Thunderstorm Winds (G60)
Oceana Naval Air Station	19	1520EST			0	0	0	0	Thunderstorm Winds (G52)
Cumberland County Farmville Municipal Airport	19	1800EST			0	0	4	0	Thunderstorm Winds
			Thunderstorm winds destroyed a hangar and dropped the roof 300 yards away. The walls of the hangar collapsed outward.						
City of Richmond	19	2237EST- 2257EST			0	0	0	0	Thunderstorm Winds (G53)
			A severe thunderstorm caused high winds that blew trees down onto cars and houses in various parts of the city. A television meteorologist recorded winds of 61 mph (53 knots) as the severe thunderstorm passed through the western portion of the city.						
Amelia County I N Amelia Court House	31	1900EST			0	0	0	0	Thunderstorm Winds
			Thunderstorm winds blew two large oak trees down.						
WASHINGTON									
Eastern Washington	06	1630PDT- 2300PDT							
			The combination of an unseasonably strong storm in the Gulf of Alaska and a ridge of high pressure east of the state resulted in very strong southerly flow aloft over Washington during the afternoon and evening of the 6th. The strong southerly flow aloft drew moisture northward which triggered the severe weather. (See entries below for more information.)						
Chelan County	06	1625PDT- 1640PDT			0	0	4	6	Hail (1.00)
			One-inch hail was reported in Leavenworth. A half-dozen orchards suffered major losses as nearly ripe pears and apples were damaged.						
Okanogan County	06	1730PDT- 1830PDT			0	0	5	?	Thunderstorm Winds
			Wind gusts estimated as high as 70 mph knocked down several trees in the town of Omak. One mobile home was picked up and left upside down a few feet away from its foundation. Several vehicles in the parking lot of the Moose Lodge were damaged by falling trees.						
Benton and Walla Walla Counties	06	1800PDT- 1900PDT			0	0	?	?	Thunderstorm Winds
			Strong winds at Burbank and Finley downed several power lines. Heavy rains were also reported in the area with a Washington State University agricultural station 5 miles south of Finley reporting 0.58 inch in 15 minutes.						
Benton County	06	1900PDT- 2000PDT			0	0	?	?	Flash Flood
			Heavy rain over the Horse Heaven Hills in eastern Benton County caused road closures from Kennewick to Finley. Runoff from the hills filled irrigation canals which then flooded.						
Chelan County	06	1925PDT			0	0	?	?	Flash Flood

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

WASHINGTON Cont'd

A 2-foot high mud flow was reported in a canyon, 2 miles west of Wenatchee.									
Walla Walla County	06	1957PDT			0	0	5	?	Hail (1.75)
Golf ball-size hail fell in Walla Walla.									
Walla Walla County	06	2000PDT			0	0	5	?	Flash Flood
Numerous roads were washed out in Burbank due to heavy rain.									
Garfield County	06	2000PDT			0	0	?	?	Hail (1.00)
Quarter-size hail, strong winds, and visibilities of 10 to 15 feet were reported in Starbuck. Many small fires were started by lightning. Pea fields sustained major damage throughout the northern part of the county.									
Spokane County	06	2200PDT			0	0	4	?	Thunderstorm Winds (G60)
Heavy rain and wind gusts to 60 mph were reported in the Deep Creek area west of Spokane.									
Kittitas County	18	1740PDT			0	?	?	0	Hail (0.50)
A large thunderstorm produced 0.50-inch hail on Interstate 90, 3 miles east of Easton. Several traffic accidents occurred, but there were no fatalities.									
WAZ-005 Southern Coast of Washington	29	1000PDT			2	1	0	0	Gale Force Winds
Two men were killed and one injured on a morning fishing trip out of Chinook, Washington. After their 100-horsepower outboard engine quit, the threemen decided to swim to shore after being hit by 3- to 4-foot waves in their boat.									
WAZ-001-002-004-005 Western Washington	29	1200PDT- 2300PDT			0	0	5	?	High Winds
Strong southerly winds in advance of a cold front caused numerous power outages and minor damage along the coast and the northern portion of the western interior. Winds along the coast gusted to 62 mph at Destruction Island with Tatoosh Island reporting winds in the 40 to 50 mph range all afternoon. Winds in the 40 mph range were reported at Port Townsend and in Seattle. There was an unconfirmed report of winds gusting to 70 mph at Port Townsend. Power outages occurred along the north coast as well as in Jefferson County and between Issaquah and Federal Way, in King County. The winds died down in the Seattle area by 1800 PDT. In the northwest interior and along the north coast, the winds died down by 2300 PDT.									

WEST VIRGINIA

Clay County Spread	08	0930EST			0	0	3	0	Thunderstorm Winds
Trees were uprooted and large branches ripped loose in a roadside park. A mobile home was pushed off its foundation when a tree crashed down on it.									
Randolph County Beverly	09	1145EST- 1300EST			0	0	0	0	Small Stream Flood
Files Creek overflowed and numerous drainage problems occurred along roads.									
Randolph County Bemis Glady Alpena	09	1400EST- 1545EST			0	0	3	0	Small Stream Flood

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

WEST VIRGINIA Cont'd

The upper reaches of Glady Fork overflowed causing minor drainage problems. Rainfall amounts of 2 to over 4.5 inches fell in 6 hours or less across central Randolph County. Bemis reported 4.7 inches; Dailey, 3.90 inches; and Glady, 3.60 inches.

Wood County

Parkersburg Airport	30	1457EST			0	0	0	0	Thunderstorm Winds (G65)
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Winds gusted to 75 mph at the Wood County Airport. A few trees were blown down on the airport access road.

Preston County

Horse Shoe Run	30	1925EST			0	0	0	0	Thunderstorm Winds
Glade Farms	30	1925EST			0	0	0	0	Thunderstorm Winds

Large tree limbs were blown down along Route 24 and near the junction of Route 26 and Route 5.

Tucker County

4 W St. George	30	1935EST			0	0	0	0	Thunderstorm Winds
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Large tree limbs were ripped off trees on Pifer Mountain.

Preston County

Clifton Mills	31	1420EST			0	0	0	0	Thunderstorm Winds
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Several trees and large limbs were blown down.

Kanawha County

Charleston	31	1630EST			0	0	0	0	Thunderstorm Winds
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Large trees were blown down along Chappell Hollow in the Kanawha City section.

WVZ001-004-005-007-009-010-011-012

	01				0	0	0	0	Drought
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Despite a wet second week, dry and hot weather remained the dominate feature. Drought conditions became more widespread across the western lowlands, but remained the most critical in the eastern panhandle. Summer (June-August) rain totals were only 4 to 5 inches at Morgantown and Martinsburg. This is only about 41% of normal. Crop yields, where harvested, were reported to be 25% to 30% below what was expected. As the shortage of surface water continued, more live-stock producers were supplying water and feeding hay to their animals. Federal aid became available to eligible farmers in 29 counties for buying feed for their animals. Nine counties requested state assistance to resolve water shortages for human consumption. Some of the requests were to help communities such as Fayetteville, Richwood, Masontown, Terra Alta, Parsons, Mannington, and Whitmer. The Oakland district, along county Route 9, in Hancock County was also affected. Water tanker trucks, pumps, and sand bags were provided, when either their wells went dry or reservoirs reached critically low levels blown down.

Marion County

Hoodsville	07	1810EST			0	0	?	0	Thunderstorm Winds
2 NE Fairmont	07	1815EST			0	0	?	0	Thunderstorm Winds

Trees and power lines were knocked down along Route 25 and near Pricketts Fort.

Grant County

Doras	07	1900EST			0	0	?	0	Thunderstorm Winds
3 N Maysville	07	1910EST			0	0	?	0	Thunderstorm Winds

Trees and large limbs fell across county Route 9 near Doras, and near county Route 3 north of Maysville.

Preston County

Fellowsville	07	1910EST			0	0	0	0	Thunderstorm Winds
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

WEST VIRGINIA Cont'd

Rowlesburg
Taylor County
Wendel

07	1915EST				0	0	0	0	Thunderstorm Winds
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Trees were blown down over southern Preston County and across Route 11 in Taylor County.

Tucker County
Parsons
Thomas
Pierce

07	1920EST				0	0	0	0	Thunderstorm Winds
07	1930EST				0	0	0	0	Thunderstorm Winds
07	1930EST				0	0	0	0	Hail (0.88)

Several large trees were fallen and nickel size hail was seen.

Mason County
Santown
Rayburn
Sassafras

12	1450EST				0	0	0	0	Hail (1.00)
12	1455EST				0	0	?	0	Thunderstorm Winds

Quarter-size hail was reported. and numerous trees were downed across roads and power lines.

Roane County
Spencer
Looneyville

12	1455EST				0	0	3	0	Thundestorm Wind
12	1510EST				0	0	0	0	Thunderstorm Winds

Large tree branches were snapped off in Spencer. Large trees fell across power lines along Route 36 near Looneyville.

Lewis County
Weston

12	1509EST				0	0	3	0	Thunderstorm Winds
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Several power lines and trees were downed; one tree fell on an apartment building.

Calhoun County
Nicut

12	1515EST				0	0	0	0	Thunderstorm Winds
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Large tree limbs were snapped off.

Upshur County
Adrian
Adrian

12	1522EST				0	0	3	0	Hail (1.75)
12	1531EST				0	0	0	0	Thunderstorm Winds

Golfball-size hail fell and damaged a home. Trees and power lines were blown down a few minutes later.

Putnam County
Scott Depot

12	1530EST				0	0	0	0	Thunderstorm Winds
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Large tree limbs were broken.

Braxton County
Rosedale
Randolph County
2 N Elkins

12	1538EST				0	0	0	0	Hail (0.75)
12	1600EST				0	0	0	0	Thunderstorm Winds

Several trees were uprooted along Stalnaker Run.

Cabell County
Malcom Springs
Heights

13	1800EST				0	0	3	0	Thunderstorm Winds
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Numerous trees were blown down and several roofs were ripped off of outbuildings.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

WEST VIRGINIA Cont'd

Randolph County Elkins	29	1100EST- 1300EST			0	0	3	0	Urban Flood
An estimated 2 to 3 inches of rain fell over the city in an hour. Storm sewers could not handle the deluge that resulted in streets and basements being flooded.									
Pocahontas County Marlinton	19	1940EST 2100EST			0	0	3	0	Urban Flood
A nearly stationary thunderstorm dumped over 2 inches of rain on the community that caused street and basement flooding. Rock and mud slides temporarily blocked Routes 28, 92, 219, and the vicinity.									
Mineral County 1 N Fort Ashby	20	1600EST			0	0	0	0	Thunderstorm Winds
Numerous trees and limbs were blown down; blocking roads.									
Marion County Worthington	22	1450EST			0	0	0	0	Thunderstorm Winds
Monongalia County Morgantown	22	1450EST			0	0	0	0	Thunderstorm Winds
Large tree limbs were snapped off in both communities and power lines were downed.									
Mineral County Fort Ashby	22	1505EST			0	0	0	0	Thunderstorm Winds
Several trees were uprooted in Fort Ashby.									
Preston County Tunnelton	22	1515EST			0	0	3	0	Lightning
A chimney on an elementary school was damaged. Bricks were hurled as far as 200 feet. Holes were knocked in the roof, causing water damage to ceiling and walls.									
Mason County Clifton	23	1600EST			0	0	0	0	Thunderstorm Winds
Cabell County Barboursville	23	1605EST			0	0	0	0	Thunderstorm Winds
Milton	23	1615EST			0	0	0	0	Thunderstorm Winds
Wood County Parkersburg	23	1610EST			0	0	0	0	Thunderstorm Winds
Lincoln County West Hamlin	23	1640EST			0	0	0	0	Thunderstorm Winds
Tucker County Parsons	23	1644EST			0	0	0	0	Thunderstorm Winds
Saint George	23	1650EST			0	0	0	0	Thunderstorm Winds
5 SE Hendricks	23	1650EST			0	0	0	0	Thunderstorm Winds
Putnam County Buffalo	23	1655EST			0	0	0	0	Thunderstorm Winds
Wayne County Ceredo	23	1810EST			0	0	0	0	Thunderstorm Winds
Westmoreland	23	1815EST			0	0	0	0	Thunderstorm Winds
Cabell County Huntington	23	1820EST			0	0	3	0	Thunderstorm Winds
4 SW Salt Rock (Bowen Creek)	23	1835EST			0	0	0	0	Thunderstorm Winds

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

WEST VIRGINIA Cont'd

Thunderstorms brought brief downpours of much needed rain. Yet, specified areas saw trees uprooted, large branches snapped off, and power outages.

WVZALL, Statewide	17-24				0	6	0	0	Heat Wave
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About a week of excessive heat and humidity peaked on the 23rd. Charles Town reached 103°F and Martinsburg 101°F. Mid and upper 90s were common in the western lowlands with 80s in the mountains. It was the hottest in many counties since the summer of 1988. Some utility companies reported a record 1 hour usage of electricity for the summer season on the 23rd.

Six people at a summerfest in Huntington were treated for heat exhaustion on the 20th and 21st.

WVZ010-011, Eastern Panhandle	01-31				0	0	0	?	Drought
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The drought of 1991 worsened in the Potomac River Basin. The monthly rainfall was less than 1 inch at Martinsburg and Kearneysville. Rainfall of 2 to 3 inches fell around Keyser, Romney, and Moorefield. Moisture from the infrequent showers was quickly evaporated from the top soil by the excessive heat. In the mountains and northern lowlands, July rainfall was heavier and sufficient to lessen the effects of the drought. By the end of the month, state and federal agricultural agencies estimated the state corn yield would be 35 bushels per acre lower than last year's production. Alfalfa yield was estimated to be .7 tons per acre lower than 1990.

Pastures continued to be dry, with some producers already feeding hay to their livestock. Water continued to be hauled to livestock. Federal assistance was given to help buy feed to those who qualified. Other livestock producers sold some of their steers.

WISCONSIN

Minwaukee County 1 E Milwaukee	19	1315CDT			0	0	0	0	Waterspout
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A waterspout was sighted just east of the Milwaukee harbor.

Burnett County Grantsburg	25	0820CDT			0	0	?	?	Thunderstorm Winds (G56)
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A severe thunderstorm with winds up to 64 mph downed some trees and power lines in Grantsburg.

WIZ020, Extreme Southeastern Wisconsin	Summer 1991				0	0	0	?	Drought
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Very sparse rainfall especially over Kenosha County during the summer months produced a drought which affected about 80,000 acres of crops.

WYOMING

Niobrara County 15 N Lusk	07	1745MST	0.01	20-40	0	0	0	0	Tornado (F0)
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A thunderstorm 15 miles north of Lusk produced a brief tornado at 1745 MST; no damage was reported.

Laramie County 3 N Pine Bluffs	07	1830MST			0	0	0	0	Hail (1.50)
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Hail up to 1.50 inches in diameter fell north of Pine Bluffs at 1830 MST.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

WYOMING Cont'd

Carbon County McFadden	09	1830MST			0	0	0	0	Funnel Cloud
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The public reported a funnel cloud over McFadden 40 miles northwest of Laramie at 1830 MST.

Goshen County 30 N Torrington	10	1846MST			0	0	0	0	Hail (1.75)
Laramie County 10 W Carpenter	10	2016MST			0	0	0	0	Hail (1.00)

Hail was reported from thunderstorms in southeastern Wyoming the evening of the 10th.

Laramie County 8 N Cheyenne	11	1430MST			0	0	0	0	Hail (1.75)
25 N Cheyenne	11	1508MST			0	0	0	0	Funnel Cloud
30 NE Cheyenne	11	1435MST			0	0	0	0	Thunderstorm Winds (G52)
7 N Pine Bluffs	11	1810MST			0	0	0	0	Hail (1.50)

Scattered thunderstorms in southeastern Wyoming produced a variety of weather. Wind gusts to 60 mph were noted 30 miles northeast of Cheyenne. A funnel cloud was reported 25 miles north of Cheyenne at 1508 MST. Hail was noted in southeastern Wyoming at 1430 MST and 1810 MST.

Sweetwater County Rock Springs	20	1700MST- 2000MST			0	0	4	0	Flash Flood
Unita County Lyman	24	2040MST			0	0	0	0	Thunderstorm Winds

A gust of wind from a thunderstorm overturned a mobile home in Lyman at 2040 MST.

Albany County 2 NE Laramie	28	1650MST			0	0	0	0	Funnel
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The public reported a funnel cloud at 1650 MST, 2 miles northeast of Laramie.

ALASKA, Northern

AZK001 Arctic Slope Coast	06	0100AST- 0500AST			0	0	?	0	High Winds
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Low pressure in the Beaufort Sea caused a brief outbreak of strong westerly winds on the Arctic coast, east of Barrow. Peak winds recorded were: 41 knots at Barrow; 36 knots at Deadhorse; and 58 knots at Barter Island.

AKZ007 Headwaters of Lower Tanana Valley	18 20	1700AST- 0300AST			0	0	?	0	Flash Flood
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The uplands north of the Tanana River from the Salcha drainage west to Manley Hot Springs received two to three inches of rain. Flooding occurred in the central Chena basin and in the Chatanika basin.

ALASKA, Southern

Bethel	02	1800UTC			0	0	0	0	Record Low Temperature
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Bethel recorded a new record low for the day of 41° F. The old record was 42° F set in 1946.

Aleutians Alaska Peninsula	07 09	0000UTC-			0	0	0	0	High Winds
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Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
ALASKA, Southern Cont'd									
			A 985 mb low tracking slowly east about 60 mile south of the Fox Islands brought southeasterly wind gusts to 46 mph at Cold Bay on the 7th. Northerly winds hit 52 mph at Adak on the 8th while Port Heiden received wind gusts from the southeast at 43 mph. Amchitka had a wind gust to 44 mph from the northwest on the 9th.						
Eastern Aleutians Alaska Peninsula	14 15	0000UTC-			0	0	0	0	High Winds
			Strong low pressure brought northeasterly winds to 54 mph at Dutch Harbor and southeasterly wind gusting to 44 mph at Cold Bay.						
South-Central Alaska Northern Gulf Coast	17	0800UTC			0	0	0	0	Heavy Rain
			A deep layer of subtropical moisture moving northward from the Pacific brought 4.78 inches of rain to Cordova and over 2.00 inches to Valdez. Anchorage received 1.47 inches. Big River Lakes and Seward each recorded 1.00 inch. Amounts dropped off across the western side of the Kenai Peninsula with both Kenai and Homer reporting less than 0.50 inch. From the 15th through the 18th, Cordova recorded 7.02 inches of rain. Only minor flooding was reported with little or no damage.						
Alaska Peninsula	23	0000UTC			0	0	0	0	High Winds
			Southeasterly winds gusting to 51 mph were recorded at Port Heiden and Cold Bay, and 40 mph at Sand Point.						
Eastern Aleutians Alaska Peninsula	25	0000UTC			0	0	0	0	High Winds
			A strong, low-pressure area in the eastern Bering Sea and high pressure south of the Alaska Peninsula brought sustained westerly winds of 40 mph with gusts to 53 mph at Cold Bay and gusts to 43 mph at Dutch Harbor.						
South-Central Alaska Kodiak Island	26 28	0000UTC-			0	0	?	0	High Winds
			A pattern reminiscent of winter took hold over Alaska with a 988-mb low in the northwestern gulf of Alaska and a 1025 mb high over the northern interior. This caused winds to gust up to 61 mph at Sitkinak Airport on the southern end of Kodiak Island. Winds gusted to 50 mph across Palmer and the Matanuska Valley. On the 28th a plane at Birchwood Airport was damaged from the wind. Also some booths at the state fair in Palmer were blown over.						
Central Aleutians	27 29	0000UTC- 0000UTC			0	0	0	0	Unusually Warm Temperature
			A very warm ridge of high pressure with observed freezing levels of 14,000 to 16,000 feet at Adak resulted in unofficial reports of temperatures in the mid-70s at Atka Island on the 27th and 28th. On the 28th, Adak recorded a high of 69 degrees under some afternoon clearing. This was the warmest temperature reported in the state of Alaska.						
St. Paul Island	29				0	0	0	0	Record High Temperature
			High temperature of 57°F broke the old record of 54 set in 1989. This was accompanied by a dew point of 56°.						
King Salmon	31				0	0	0	0	Record Low Temperature
			Low temperature of 32° set a new record for the date. Old record was 34 set in 1933.						

ALASKA, Southeastern

None reported.

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
HAWAII									
Hawaii	03 04	Night-			0	0	5	0	Flash Flood
Heavy rainfall, associated with a weak tropical disturbance, caused scattered flash flooding in the Hilo and Puna areas. Some damage occurred to several buildings in southern Hilo as roofs collapsed from the weight of water accumulated during intense downpours between 2000 LST and 2200 LST. Overnight rainfall at the Hilo Airport was about 11 inches.									
Hawaii and Maui	07				0	2	6	0	Tropical Storm Fefa Lightning
The remnant circulation of dissipating Tropical Storm Fefa caused localized flash flooding mainly in the Hamakua and Kohala districts of the Big Island of Hawaii as intense thunderstorms developed over the windward slopes during the forenoon hours. Localized minor wind damage was reported from around the Big Island and Maui County as wind gusted near 50 to 60 mph locally. Two minor lightning injuries occurred. A 19-year-old male was struck while walking between two buildings at the Hawaii Volcanoes National Park, and an 18-year-old male was shocked and burned slightly about the arm and face by a charge traveling in the telephone wires while conversing on the telephone at Hilo.									
PACIFIC									
None reported.									
PUERTO RICO									
Las Marias	06	0900AST			0	0	4	0	Mud Slide
Heavy rains caused a mud slide of about 60 meters deep damaging three residential lots.									
Anasco	12	1400AST			0	0	3	0	Thunderstorm Winds
Thunderstorm winds downed power lines and trees and lifted 18 zinc sheets from a residence.									
Culebra	16	1500AST			0	0	0	0	Funnel Cloud
A pilot reported a funnel cloud 2 miles north of Culebra.									
San Sebastian	16	1600AST			0	0	1	0	Urban Flood
There were several flooded streets and an elementary school flooded with sewer waters.									
PRZ001-005	17	1200AST- 1530AST			0	0	?	0	Heavy Rains
A strong tropical wave moved westward across Puerto Rico. Heavy rains of around one to two inches caused swelling of a few creeks and flooding of several streets and roads in the municipalities of Las Piedras, Catano, Guaynabo, Bayamon, Toa Baja, and San Juan. Strong winds associated with a thunderstorm in Bayamon lifted a roof from a hardware store which also collapsed.									
Culebra	20	1030AST	?	?	0	0	0	0	Waterspout
A waterspout was observed by a pilot 5 miles north of Culebra.									
Rio Grande	22	1600AST			0	0	0	0	Small Stream Flood
Heavy rains caused a creek to overflow covering a bridge, and a car was swept away to the other side of the bridge. There were no injuries reported.									

Storm Data and Unusual Weather Phenomena

August 1991

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	
PUERTO RICO Cont'd									
Fajardo	24	1500AST	?	?	0	0	0	0	Waterspout
A pilot sighted a waterspout 2 miles south of Palomino Island or just east of Fajardo.									
PRZ001-004-005	27	1000AST- 1900AST			0	0	?	0	Heavy Rains
Rainfall amounts of two to three inches fell in a 24-hour period over most sections of Puerto Rico as a tropical wave moved slowly across the island. A swollen creek in Las Piedras swept a car away, but no injuries were reported. In Toa Baja and Trujillo Alto, several houses lost their zinc roofs, and there was a mud slide in Road 2 between Aguadilla and Isabela.									
Fajardo	31	1900AST	?	?	0	0	0	0	Waterspout
A pilot reported a waterspout just north of Palomino Island, between Fajardo and Culebra.									
VIRGIN ISLANDS									
St. Thomas	15	1310AST			0	0	0	0	Funnel Cloud
A pilot reported a funnel cloud south of St. Thomas.									
St. Croix	20	1730AST	?	?	0	0	0	0	Waterspout
A waterspout was observed by a pilot about 23 miles northwest of St. Croix.									
St. Thomas	25	1435AST	?	?	0	0	0	0	Waterspout
A pilot approaching the St. Thomas Airport reported a waterspout 10 miles west of this airport.									
St. Croix	28	1635AST	?	?	0	0	0	0	Waterspout
A pilot reported a waterspout and a funnel cloud about 15 miles northwest of the St. Croix Airport.									
St. Croix	29	1150AST	?	?	0	0	0	0	Waterspout
A ship reported a waterspout about 14 miles northwest of St. Croix.									

STORM SUMMARY

AUGUST 1991

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

STORM SUMMARY

AUGUST 1991

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 DEATHS	INJURY TOTALS
TORNADOES																												
Number	1	1	2	10	2	2	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	0	0	0	0	0	3
Days	0	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HAIL																												
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
THUNDERSTORM WINDS																												
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HIGH WINDS																												
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LIGHTNING																												
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLASH FLOODS																												
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLOODS																												
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAVY SNOWSTORMS AND BLIZZARDS a																												
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ICE STORMS #																												
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HURRICANES AND TROPICAL STORMS																												
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALL OTHERS																												
Deaths	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crop Damage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

STORM DAMAGE CATAGORIES

REFERENCE NOTES

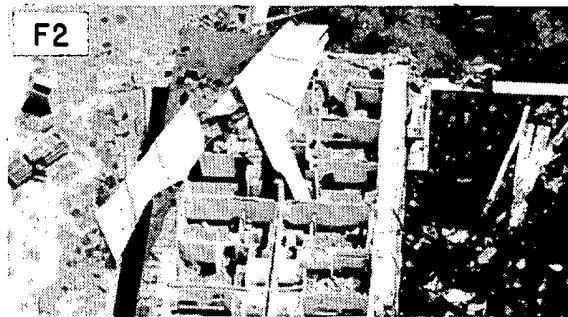
- 1 Less than \$50
- 2 \$50 to \$500
- 3 \$500 to \$5,000
- 4 \$5,000 to \$50,000
- 5 \$50,000 to \$500,000
- 6 \$500,000 to \$5 Million
- 7 \$5 Million to \$50 Million
- 8 \$50 Million to \$500 Million
- 9 \$500 Million to \$5 Billion

- 0/Blank None reported.
 * Miles instead of yards.
 ** Yards instead of miles.
 @ Includes heavy sleet storm.
 # Freezing drizzle and freezing rain, commonly known as glaze.
 ≠ Report incomplete.
 ≠# Report not received.
 o/c Indicates Crop Damage amount is included in the value given for property damage.

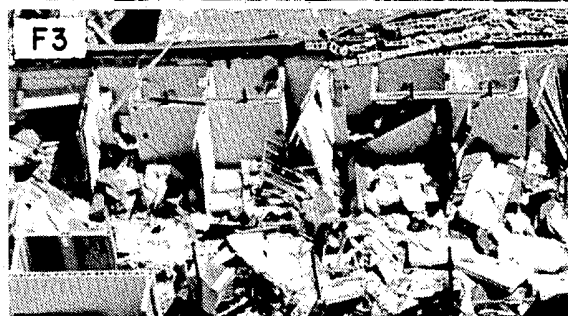
When reports are not received or are incomplete, the Storm Summary National Death and Injury totals may also be incomplete.

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.

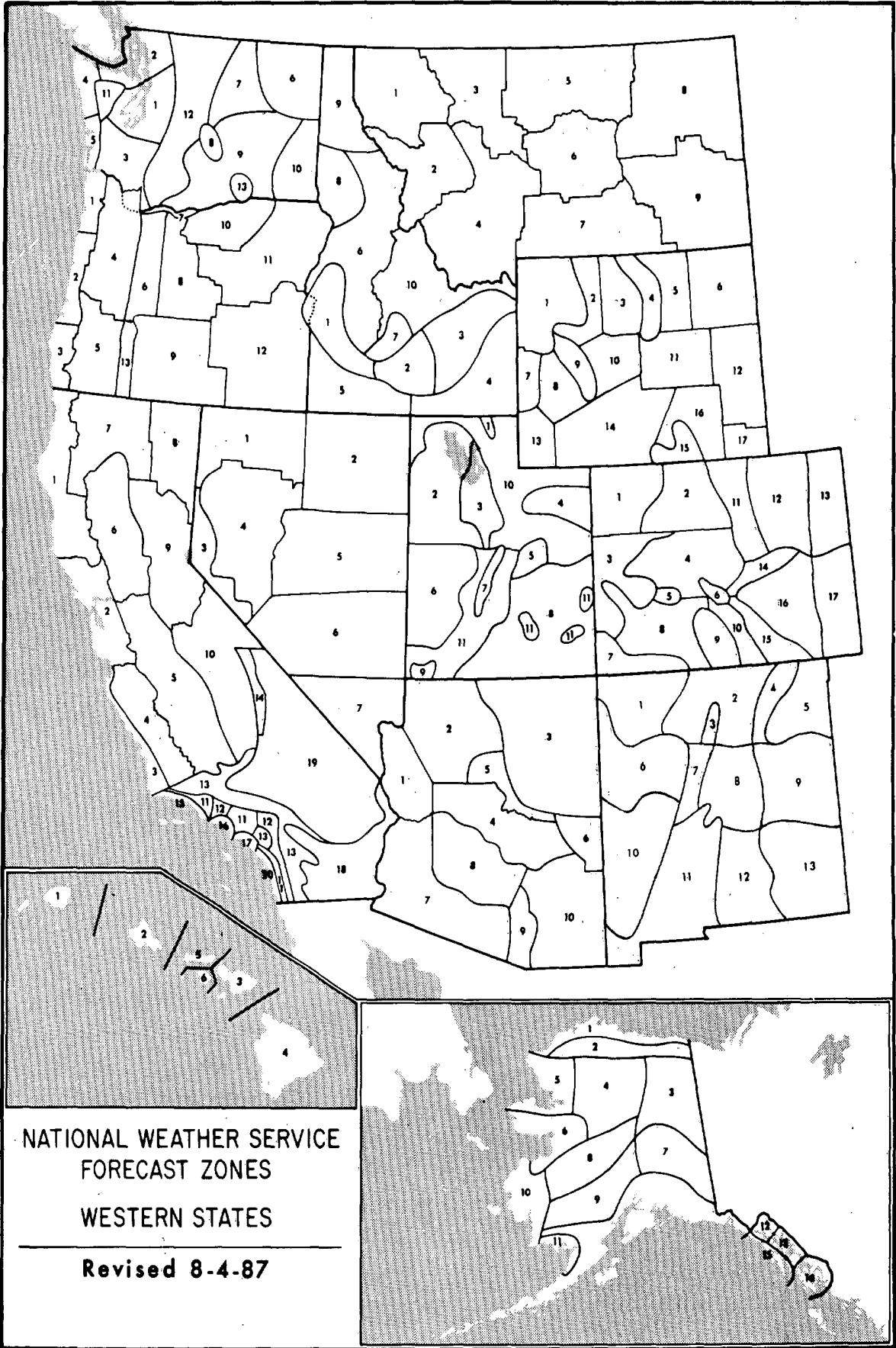


(F6-F12) (319 mph to Mach 1, the speed of sound):
 The maximum wind speeds of tornadoes are not expected to reach the F6 wind speeds.

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

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

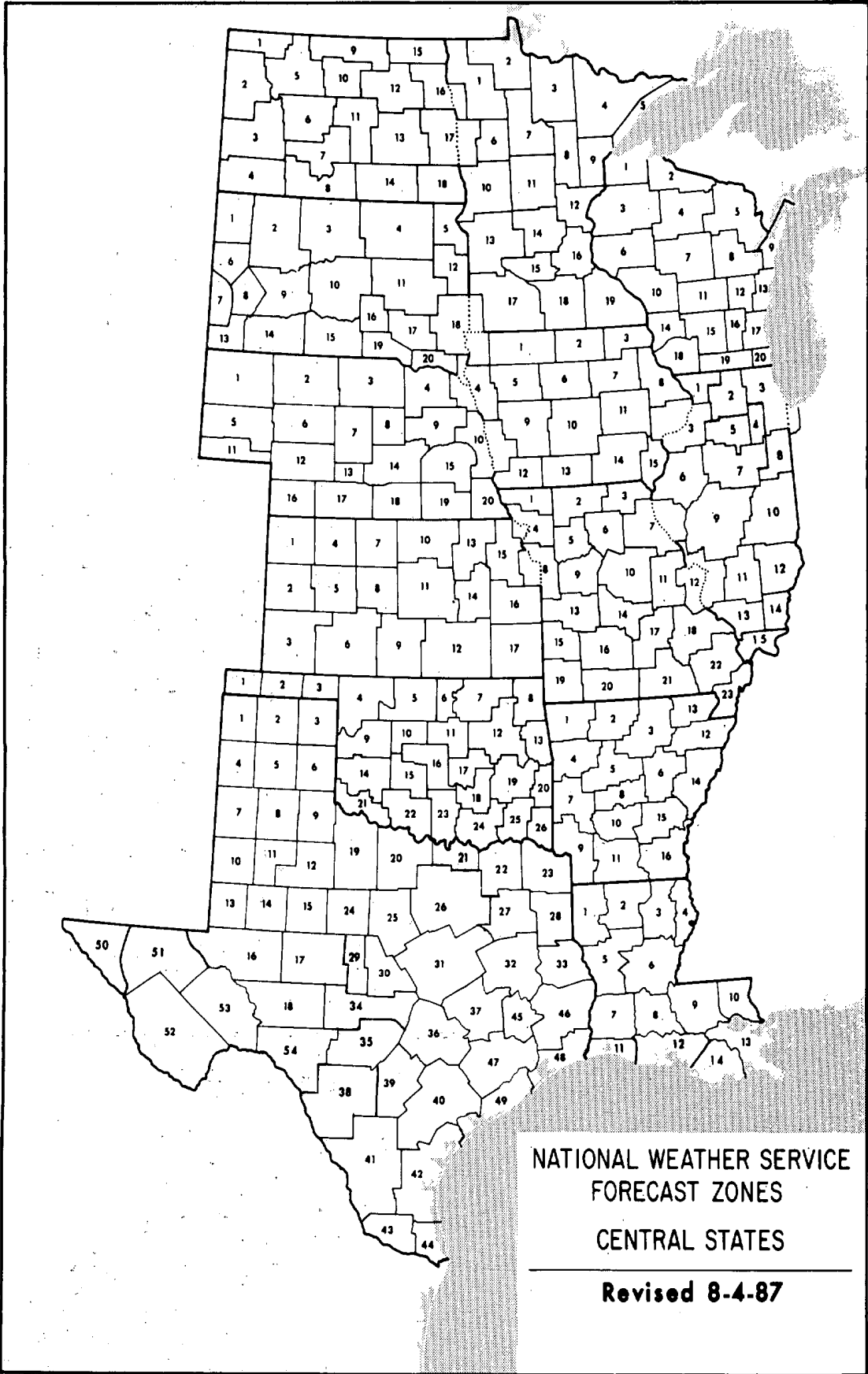
USCOMM-NOAA-ASHEVILLE, N.C. 1992-1800

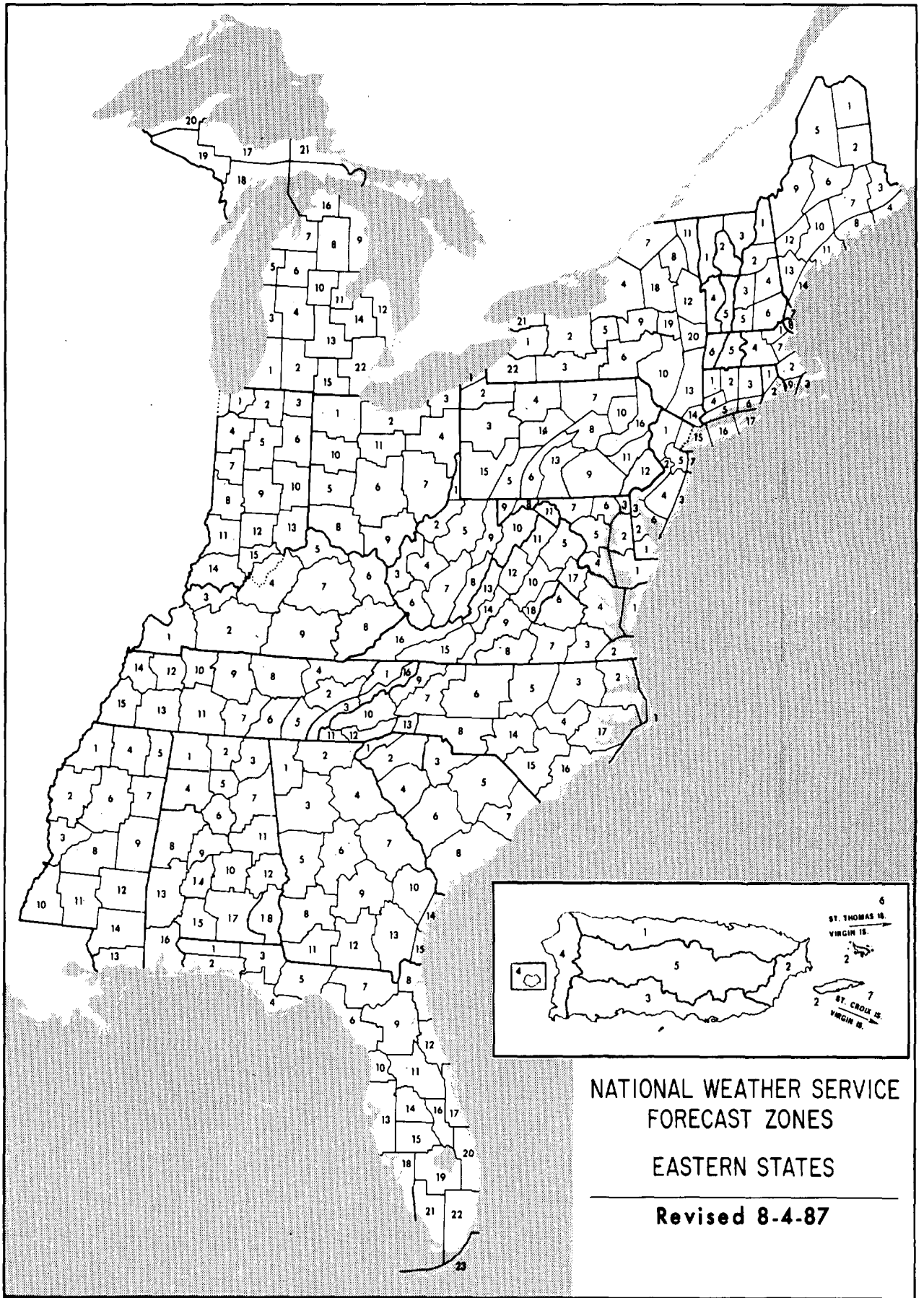


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FORECAST ZONES

WESTERN STATES

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FORECAST ZONES

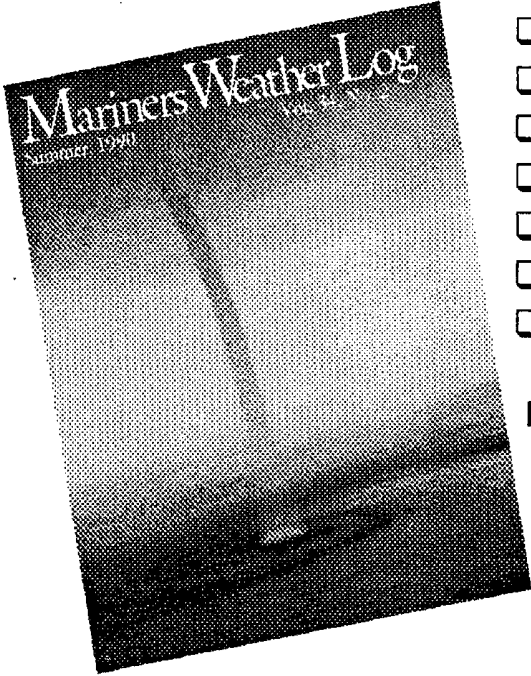
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