



# disaster preparedness report

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National Weather Service

March 1986

## WHAT'S HAPPENING IN DISASTER PREPAREDNESS

o Bon Voyage Dick Wood Dick, who has served as the Disaster Awareness Program Leader since July of 1980, has left for greener pastures and is now the Deputy Meteorologist in Charge at Albuquerque, New Mexico. Dick made significant contributions to the awareness program during a time of declining resources. He deserves a lot of credit for the recent international award winning films "Terrible Tuesday," "Hurricane," and "Survival in the Cold." He also resurrected two brochures "Thunderstorms and Lightning" and "Heat Wave" and was responsible for updating many of our core brochures. Dick's main emphasis during his tenure was always to try and provide the field with the tools needed to get the awareness and spotter training jobs done.

Dick, we wish you well in your new job and thank you for all you have done for the awareness program.

o Where Does the Awareness Program Go From Here A reorganization in the Office of Meteorology will change how the awareness program is handled in the future. The awareness and warning coordination function will be shared by four people: Jim Campbell, Jim Belville, Linda Kremkau, and Lorraine Brown. Jim Campbell and Linda will be handling Dick Wood's former duties while Jim Belville will become a national focal point for warning coordination. One of Jim Belville's main goals will be to promote ways to strengthen the coordination between local NWS offices and emergency managers in other state, county, and municipal government agencies. He will examine systems already in place in California, Colorado, and Oklahoma, and then look for ways to expand those systems to other areas.

We want to assure you we will maintain strong commitment to the awareness program despite the fact there will no longer be a single dedicated position. Both Jim's are former Southern Region warning and preparedness meteorologists and share a vital interest in the awareness program. Linda is a Program Support Assistant in the Severe Weather Branch and will be responsible for maintaining our stock of publications and audiovisuals. Lorraine will also be assisting in the program, and she will be your primary contact for publications and audiovisuals.



o New Spotter Film A 19-minute tornado film has been produced and should have reached most Central and Southern Region offices, as well as selected offices in the Eastern Region. Funding does not allow us to send the film to as many stations as we would have liked. The film has no audio, but a script will be prepared and sent soon. The film is intended as a training tool for spotter training by NWS personnel.

The film consists of a number of different segments, the longest being the 10-minute Ellis, Kansas, Tornado of May 1985, showing the development through dissipation of this storm.

o Tornado Outbreak Project in Pennsylvania Many areas of Mercer County, Pennsylvania, were directly affected by the May 31, 1985, tornado outbreak, especially communities in the southwest part of the county, including Sharon, Farrell, Wheatland and Hermitage.

In a effort to assist in treatment of resultant psychological problems, the Mercer County Tornado Outreach Project was formed. The goals and makeup of the Project are similar to the Trumbull County, Ohio, Mental Health Board's program developed to assist those in Trumbull County. OIC, Timothy Piatt's (WSO Youngstown, Ohio), participation in this project involves providing general weather information and severe weather awareness.

o NWR Receiver Sales Continue Strong Radio Shack Headquarters in Fort Worth has enlightened us with updated sales figures, shown below, for their weather radio receivers.

	<u>Year</u>	<u>Sales</u> (thousands, estimated)
	1977	167
	1978	255
	1979	268
	1980	281
	1981	294
	1982	307
	1983	320
	1984	Missing
	1985	354
By model for 1985:	203,000	cube, time/weather/no alarm
	94,000	pocket model, crystal control
	<u>57,000</u>	warning alarm, desk model
Total	354,000	

Note that the 1985 sales were nearly 100,000 more than in 1978 (354,000 in 1985 and 255,000 in 1978). Although many manufacturers have gotten out of the weather radio receiver market, the awareness and use of NOAA Weather Radio continues to increase yearly.



- o Natural Hazard Statistics As you can see from the attached natural hazard statistics for 1985, it is important to include "complete" data for natural hazard deaths, including the location of death (permanent or mobile home, vehicle, etc.), age, and gender of all fatalities. Most of this information should be available in newspaper clippings, but if not, check with the Office of Emergency Services or other offices that collect these data. Please be sure you include this information starting with the January 1986 Storm Data.
- o Ron Stagno, WPM, of the Houston Area Weather Service Office, was asked to participate in a Crisis Management and Emergency Response Course hosted by the Harris County Sheriff's Department.

This was the first time such a course has been offered for law enforcement officers in Harris County and surrounding county areas. The course emphasized management, coordination, and response to crisis situations, including natural disasters, plane crashes, plane hijacking, bomb threats, threats to dignitaries, terrorist activities, explosives, and firearms.

Our portion of the course in the natural disasters section consisted of 3 hours of lecture and a spotter training session including the spotter training film and "Terrible Tuesday." A program on hurricanes followed with a showing of the new hurricane film on Hurricane "Alicia."

The program began with the course on Crisis Management and Emergency Response. It was well received by the 60 police officers representing the Harris and Montgomery County Sheriff's Office, the Houston Police Department, and several other law enforcement agencies.

Although no further commitments have been made, considerable interest was expressed in having us present a similar program as a regular part of the required training for the new Harris County Sheriff and City of Houston police officers.

- o Mike Franjevic, WPM, reports that about a year and a half ago, WSFO Phoenix embarked upon a Traveler's Dust Storm Awareness Campaign. To accomplish this, approximately 10,000 Dust Storm Driving Safety Wallet-size Cards were distributed to the Arizona Department of Agriculture (ADA). The ADA, in turn, distributed the wallet cards to its seven agricultural inspection stations, which are located on major highways entering the western and southern portions of Arizona. The inspection stations passed out the cards to motorists, mainly during adverse weather conditions capable of producing dust storms.

The seven agricultural inspection stations and their locations are as follows:

- Ehrenburg (Interstate 10, near the California border).
- Yuma (Interstate 8, near the California border).
- Parker (State Route 95, in extreme western Arizona).
- Kingman (Interstate 40, in northwest Arizona).
- Solomon (U.S. 70 near Safford, in southeast Arizona).
- San Simon (Interstate 10, near the New Mexico border).
- Sanders (Interstate 40, near the New Mexico border).



The availability of the cards for motorists coming into the dust storm areas of Arizona was well received by the Department of Public Safety (DPS) as well as the general public. Many of their favorable comments were relayed to WSFO Phoenix by the Arizona Department of Agriculture.

Because of the success of this Traveler's Dust Storm Awareness Campaign, WSFO Phoenix will distribute another 10,000 of the Dust Storm Wallet Cards to the ADA in February 1986. The ADA will redistribute about 1,500 of the cards to each of the seven agricultural inspection stations for use during dust storm situations.

o Preparedness Outreach Continues in Birmingham MIC/AM, Frank Makosky, and WPM, Jay Shelley, were guest speakers recently at the Birmingham Baptist Minister's Conference. They were trying to extend the preparedness efforts of the NWS in Alabama into more areas. The American Red Cross in Birmingham was instrumental in getting Frank and Jay onto the program. In their presentation, they outlined the awareness program and efforts of the NWS to make people aware of the proper safety precautions to be taken during hazardous weather.

o Hams Assist with Communications Once Again Amateur radio operators provided valuable assistance during Hurricane Kate when normal communications between Tallahassee and Apalachicola failed. Using hams from the Tallahassee Amateur Radio Society, reports on weather conditions were collected from across northern Florida throughout the storm. Their help in communicating tide and wind reports was outstanding according to Tallahassee MIC, Fred Kramer. WSO Tallahassee was able to backup Apalachicola for nearly 8 hours on November 21 and 22 until Apalachicola's lines were restored.

o Bottom Line on Hurricane Kate Local journalists have a certain knack for putting most things in their proper perspective. The following excerpt is from an article which appeared in the Sylvester, Georgia, newspaper.

"It (Hurricane Kate) continued through Worth County with less and less force. It completely demolished the outhouse at St. Paul's Missionary Baptist Church. If any parishoner was in there, he went straight to glory with his pants down."





SUMMARY OF 1985  
NATURAL HAZARD DEATHS

RICHARD A. WOOD  
NATIONAL WEATHER SERVICE  
SILVER SPRING, MARYLAND

The attached preliminary data shows that 376 lives were lost in 1985 due to tornadoes, lightning, severe thunderstorms, wind storms, floods/flash floods, and hurricanes.

<u>EVENT</u>	<u>DEATHS</u>	<u>20-YEAR NORMAL</u>
Floods/Flash Floods	166	163
Tornadoes	94	98
Lightning	74	97
Hurricanes	30	33
Severe Thunderstorms (not related to lightning)	6	--
High Winds (not related to above)	6	--

Besides the 166 deaths due to flash flooding and flood, another 129 lives were lost due to mud slides in Puerto Rico in October and another 9 persons are still missing and presumed dead in the November West Virginia flooding.

In the future, I will also attempt to tabulate "winter" weather (1985-86 season) and "heat" related deaths during 1986. The 1985 data attached for tornadoes, hurricanes, floods/flash floods, and lightning include the location, age and gender of all 376 fatalities.

(updated 1/28/86)



FLOODS/FLASH FLOODS 1985

Richard A. Wood, W/OM11x1  
National Weather Service

For the first 9 months of 1985, it appeared the flood/flash flood death toll would be the lowest in 17 years (57 in 1968), but major flooding in Puerto Rico in October and in Virginia and West Virginia in November brought the total up to 166 deaths -- 3 more than the 20-year normal.

Forty-eight percent of the fatalities were vehicle related. Most of these resulted because the victims drove into flooded waterways. Many drivers, lacking common sense, will simply drive around a barricade or warning sign into a flooded stream, wash, etc., and then get washed away. Three sheriffs lost their lives trying to rescue victims in waterways.

In addition to vehicle related deaths, 37% of the fatalities occurred in permanent homes and 3% were in mobile homes. Many of these would not leave their homes despite advance warning.

Not included in the 166 flood/flash flood deaths are 129 mudslide victims in Puerto Rico and 9 persons still missing but presumed dead in the West Virginia floods.

AVERAGE AGE OF DEATHS: 36.3

DEATHS BY GENDER: 102 males (61%)  
64 females (39%)

AVERAGE AGE OF MALES: 37.1  
AVERAGE AGE OF FEMALES: 35.1

DEATHS BY AGE (Males & Females)		DEATHS BY AGE (Males)	DEATHS BY AGE (Females)	DEATHS BY MONTH
1-9	26	14	12	Feb. - 5
10-19	21	10	11	Mar. - 7
20-29	29	22	7	Apr. - 12
30-39	25	16	9	May - 5
40-49	18	12	6	June - 6
50-59	17	10	7	July - 5
60-69	13	10	3	Aug. - 12
70-79	10	3	7	Sep. - 2
80-89	4	3	1	Oct. - 51
90-99	3	2	1	Nov. - 61



FLOOD/FLASH FLOOD 1985

LOCATION	MOBILE HOMES	PER HOMES	VEHICLE	CAMPING/ NEAR BANK/ OTHER	TOTAL
Arkansas			2		2
Arizona			1		1
Illinois		1	5		6
Kentucky			4		4
Maryland				1	1
Missouri			3	1	4
Oklahoma			4	4	8
Pennsylvania		2		1	3
Puerto Rico		39	12	1	52
Texas			14	2	16
Virginia		3	15	1	19
West Virginia	5	14	11	8	38
Wyoming		3	9		12
TOTAL	5	62	80	19	166
PERCENT	3%	37%	48%	12%	100%



TORNADOES - 1985

RICHARD WOOD, W/OM11x1  
NATIONAL WEATHER SERVICE

The following are the final tornado statistics for 1985. Note, at least in 1985, that the majority of deaths were elderly people, generally over the age of 60, and primarily female. This might suggest several things -- the elderly may not perceive the danger, they may not react to the warning, or they may feel that if it's their time, "what will be, will be." The question I raise, "Is this a 1-year happening or a trend?" This is the first year I have compiled such a complete breakdown. Total 1985 tornado deaths - 94.

<u>Deaths by Age</u> (Males and Females)	<u>Deaths by Age</u> (Males)	<u>Deaths by Age</u> (Females)	<u>Deaths by</u> <u>Month</u>
1-9 = 4	1-9 = 3	1-9 = 1	March 2
10-19 = 7	10-19 = 3	10-19 = 4	April 5
20-29 = 9	20-29 = 1	20-29 = 8	May 77
30-39 = 9	30-39 = 6	30-39 = 3	June 3
40-49 = 10	40-49 = 5	40-49 = 5	August 3
50-59 = 3	50-59 = 0	50-59 = 3	Nov. 3
60-69 = 23	60-69 = 12	60-69 = 11	
70-79 = 17	70-79 = 5	70-79 = 12	
80-89 = 12	80-89 = 3	80-89 = 9	

AVERAGE AGE OF DEATHS: 52.2

DEATHS BY GENDER:

56 females (60%)  
38 males (40%)

AVERAGE AGE OF FEMALES: 53.4  
AVERAGE AGE OF MALES: 50.5

<u>LOCATION</u>	<u>MOBILE HOMES</u>	<u>PER HOMES</u>	<u>VEHICLE</u>	<u>OTHERS</u>	<u>TOTAL</u>
Pennsylvania	22	26	2	15	65
Ohio		5	2	4	11
Texas		4			4
Wisconsin	2			2	4
Arkansas	1	2			3
Florida	1	1			2
Iowa		2			2
Illinois	1				1
Michigan				1	1
Alabama	1				1
TOTAL	28	40	4	22	94
PERCENT	30%	43%	4%	23%	100%





LIGHTNING 1985

(PRELIMINARY DATA)

RICHARD WOOD, W/OM11X1, JANUARY 2, 1986  
NATIONAL WEATHER SERVICE

The 74 lightning deaths in 1985 were 24 percent below the 20-year normal of 97 deaths annually. Several unusual deaths were recorded including 2 deaths in metal beds inside of houses and the death of a man who was struck by lightning on an open field and then while being transported to the hospital, the ambulance was struck by lightning and killed the man. The 2 ambulance attendants were injured. Statistics for 1985 show that males in their teens and 20's are the most likely to be killed by lightning and that most deaths occur in open fields, near or under trees or were water related. Eighty percent of the fatalities occurred between the hours of 10 a.m. and 7 p.m. LST.

Deaths by states -- Minnesota and New Jersey 5; Florida, Iowa, Kentucky, Michigan, New York, Texas, and Virginia 4; California, Kansas, Missouri, Ohio, Tennessee, and Wisconsin 3; Louisiana, Maryland, Nebraska, and Utah 2; Alabama, Arizona, Arkansas, Colorado, Massachusetts, Mississippi, North Carolina, Rhode Island, South Carolina, and Puerto Rico 1.

DEATHS BY AGE (Male & Female)		DEATHS BY AGE (Male)		DEATHS BY AGE (Female)		DEATHS BY MONTH	
1-9	1	1		0		April	5
10-19	23	21		2		May	11
20-29	26	25		1		June	14
30-39	9	9		0		July	28
40-49	9	7		2		August	9
50-59	4	4		0		Sept.	5
60-69	1	1		0		Oct.	1
70-79	1	1		0		Nov.	1
80+	0	0		0			

AVERAGE AGE OF DEATHS: 29.1  
DEATH BY GENDER: 69 males (93%)  
5 females (7%)

AVERAGE AGE OF MALES: 29.1  
AVERAGE AGE OF FEMALES: 28.2



LIGHTNING 1985

STATE	DEATHS	NEAR/ UNDER TREE	BEACH	FARMING/ OPEN FIELD	CAMPING	WALKING	BOAT/ WATER	GOLF BALL FIELD	NEAR CAR/ TRUCK	OTHER
AL	1						1			
AZ	1					1				
AR	1			1						
CA	3			3						
CO	1			1						
FL	4		1	1			2			
IA	4	3						1		
KS	3				1	1			1	
KY	4			1			1	2		
LA	2	2								
MO	2	1					1			
MA	1									1
ME	4	2						1		1
MN	5	1		2			1			1
MS	1						1			
MO	3	1				2				
NE	2	2								
NJ	5					1	3			1
NY	4			3		1				
NC	1		1							
OH	3			1			1	1		
RI	1						1			
SC	1			1						
TN	3	1		1	1					
TX	4	2							2	
UT	2							1	1	
VA	4	1		1					1	1
WI	3						3			
PR	1					1				

TOTAL	74	16	2	16	2	7	15	6	5	5
PERCENT	100%	22%	3%	22%	3%	8%	20%	8%	7%	7%



HURRICANE 1985

Richard A. Wood, W/OM11x1  
National Weather Service

Despite the fact that the Gulf and east coasts experienced the most hurricane strikes since 1916 (6) and hurricane warnings were issued for all coastal states from Maine to Texas for the first time in history, death totals were 3 below the 20-year normal of 33 deaths annually. Louisiana had the most deaths - 12; Florida, 7; Connecticut and Rhode Island, 2 each; and 1 each for Alabama, Arkansas, Georgia, New Hampshire, New Jersey, New York and North Carolina. There was 1 death associated with Danny; 4 deaths with Elena; 8 with Gloria; 12 with Juan; and 5 with Kate.

DEATHS BY AGE	MALE	FEMALE	DEATHS BY MONTH
1-9 = 1	0	1	July 0
10-19 = 2	2	0	August 1
20-29 = 7	7	0	Sept. 12
30-39 = 6	6	0	Oct. 12
40-49 = 4	4	0	Nov. 5
50-59 = 2	2	0	
60-69 = 7	3	4	
70-79 = 0	0	0	
80-89 = 1	0	1	

AVERAGE AGE OF DEATHS: 40.9  
DEATH BY GENDER: 24 males (80%)  
6 females (20%)

AVERAGE AGE OF MALES: 36.8  
AVERAGE AGE OF FEMALES: 57.3



HURRICANE - 1985

LOCATION	TOTAL	MOBILE HOME	PER HOME	BOAT/ DROWN	VEHICLE	FALLING TREE	HEART ATTACK	OTHER
AL	1	1						
AR	1				1			
CT	2				2			
FL	7			2		2	3	
GA	1					1		
LA	12			11				1
NH	1		1					
NJ	1							1
NY	1					1		
NC	1	1						
RI	2			1		1		
<b>TOTAL</b>	<b>30</b>	<b>2</b>	<b>1</b>	<b>14</b>	<b>1</b>	<b>7</b>	<b>3</b>	<b>2</b>
<b>PERCENT</b>	<b>100%</b>	<b>7%</b>	<b>3%</b>	<b>47%</b>	<b>3%</b>	<b>23%</b>	<b>10%</b>	<b>7%</b>

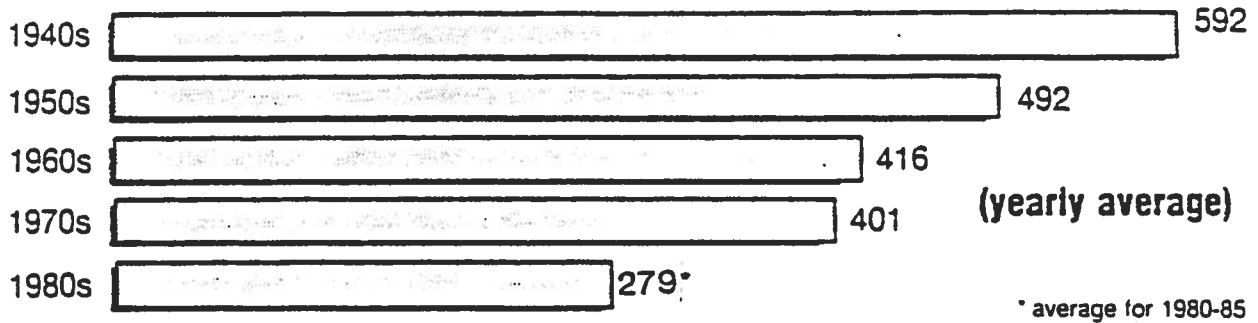




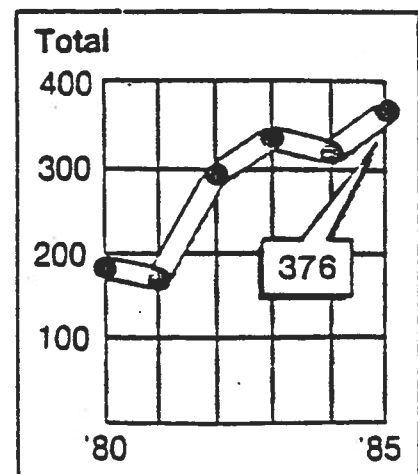
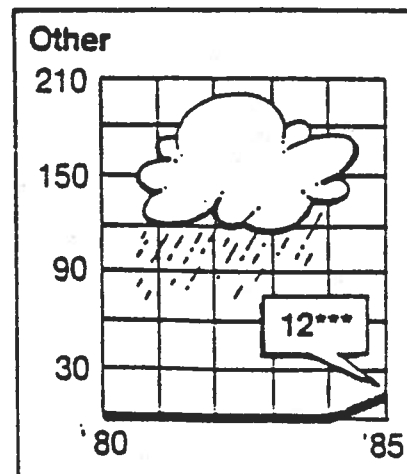
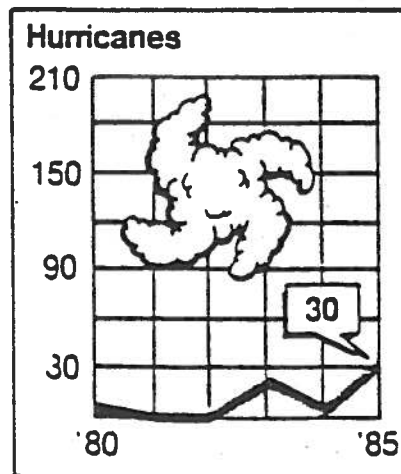
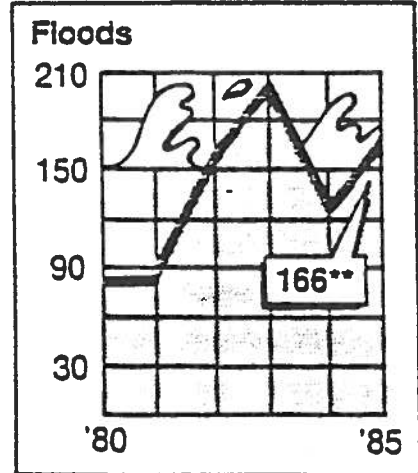
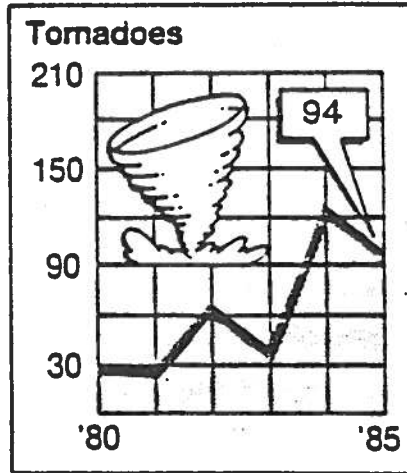
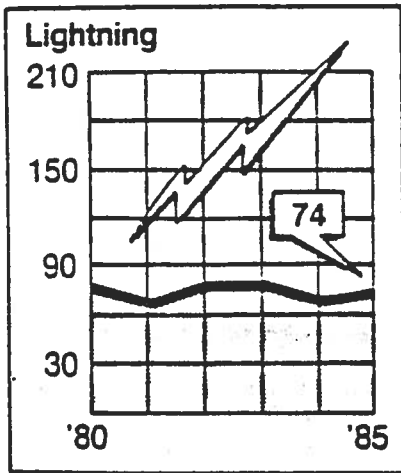
# Weather-related death toll

Here is a breakdown of weather-related deaths in the U.S. over the years: (Story, 1A)

## Yearly average of deaths by decade



## Deaths in the '80s

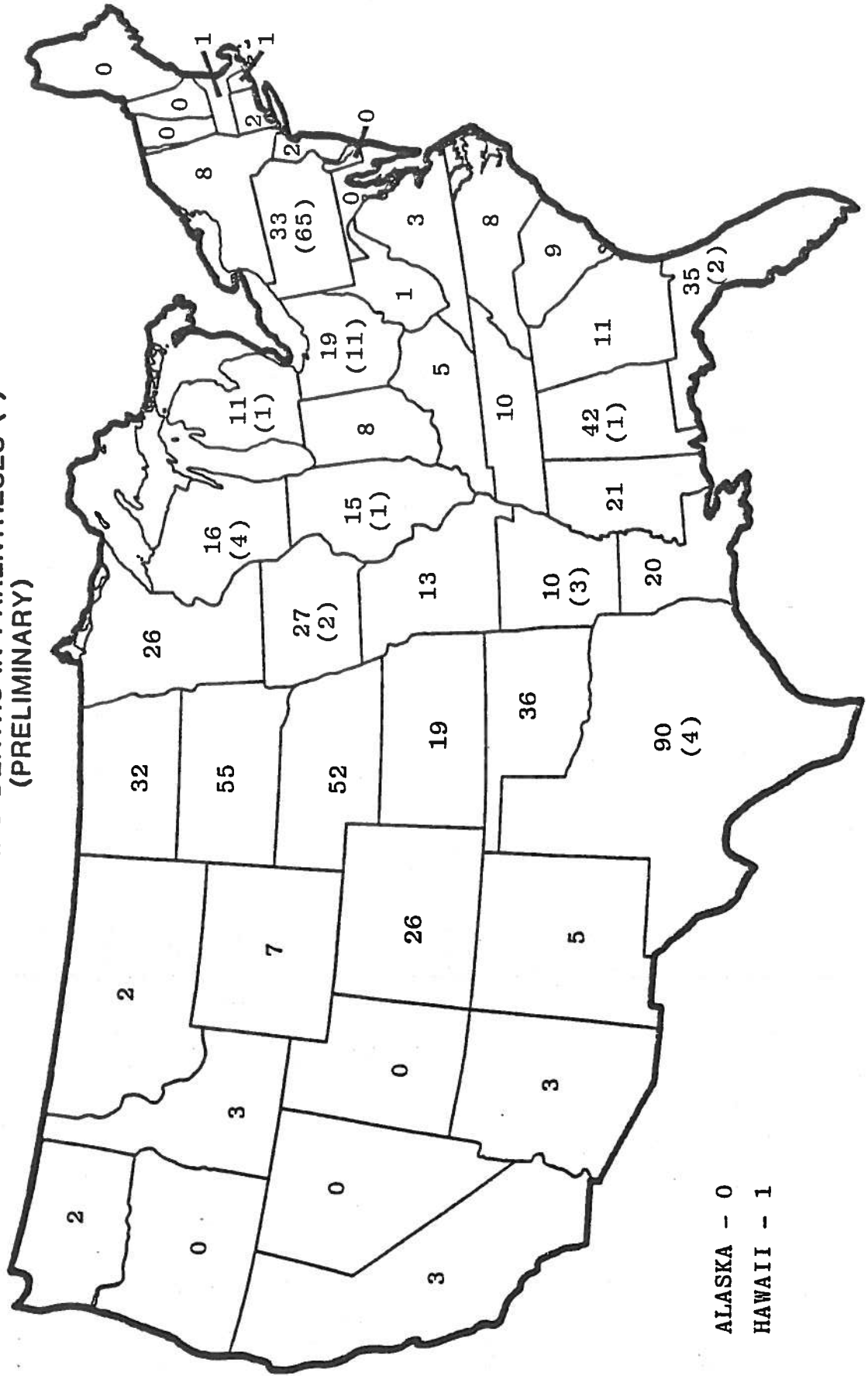


\*\* does not include 129 mudslide deaths in Puerto Rico and 9 people missing and presumed dead in West Virginia  
 \*\*\* includes 6 wind-related and 6 thunderstorm-related deaths



# 1985 TORNADOES

TOTAL TORNADOES: 683  
TORNADO DEATHS IN PARENTHESES ( )  
(PRELIMINARY)



ALASKA - 0  
HAWAII - 1



DISASTER PREPAREDNESS ROSTER

MARCH 1986

FTS - 427-8090

CENTRAL REGION

FIS

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Clerk, Disaster Preparedness

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Regional Hydrologist  
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Louisville (Focal)  
St. Louis (Focal)  
Sioux Falls (Focal)  
Topeka (Focal)  
Denver (Focal)  
Cheyenne (Focal)  
Minneapolis (Focal)  
Milwaukee (Focal)  
Bismarck (Focal)  
Omaha (Focal)

758-3239  
758-3229  
353-4680  
378-2220  
862-4496  
331-4035  
352-5210  
279-7018  
782-4244  
752-2630  
327-3611  
328-2376  
725-3400  
362-3243  
783-4224  
864-4207

EASTERN REGION

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Dick Calcaperra  
Dennis Decker  
Rich Schwerdt  
Ralph Izzo  
Tim Scrom  
Dave Dilley  
Tom Dunham  
Bill Drzal  
Dave Sisk  
Fred Ronco/Jay Imkunas

Regional (WPM)  
Reg. Hydrologist  
Cleveland (WPM)  
Columbia, SC (WPM)  
Philadelphia (WPM)  
Parkersburg, (WPM)  
Raleigh (WPM)  
Washington, DC (WPM)  
New York (Focal)  
Albany (Focal)  
Boston (Focal)  
Buffalo (Focal)  
Pittsburgh (Focal)  
Pittsburgh (Focal)  
Portland (Focal)

649-5455  
649-5464  
942-4949  
677-5501  
597-3696  
923-1344  
672-4436  
763-8275  
662-5340  
562-6586  
223-1354  
437-4800  
722-2882  
722-2882  
833-3552

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Jay Shelley  
David Martin  
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David Imy  
Nelson Devilliers  
Alfonso Castaneda  
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Bill Hare  
Francisco Torres-Cordero  
Ralph Pike  
Mike Koziara  
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Houston (WPM)  
Jackson (WPM)  
Little Rock (WPM)  
Lubbock (WPM)  
Memphis (WPM)  
Oklahoma City (WPM)  
San Antonio (WPM)  
San Juan (WPM)  
Albuquerque (Focal)  
New Orleans (Focal)  
Miami (Focal)

334-2812  
246-7586  
229-0837  
334-3401  
526-5834  
490-4639  
740-5331  
738-7362  
757-6441  
749-4155  
730-5025  
8-809-753-4893  
474-2170  
682-6891  
350-5547

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Los Angeles (Focal)  
Phoenix (Focal)  
Portland (Focal)  
Reno (Focal)  
Salt Lake City (Focal)  
San Francisco (Focal)  
Seattle (Focal)  
Great Falls (Focal)

588-4000  
588-5137  
554-9860  
793-7215  
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423-4340  
470-5719  
588-5133  
466-7767  
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