AWARE

OCTOBER 1990

NATIONAL WEATHER SERVICE / *Warning Coordination and Hazard Awareness Report*

MODERNIZATION

Training for Warning Coordination Meteorologists (WCM) - *Read*

A major topic of discussion at the Warning Preparedness Conference in Boulder was the need for formal training for the WCM position in the modernized National Weather Service (NWS). Following the Conference, Bill Alexander and Lans Rothfusz of the Southern Region Headquarters have taken the initiative and are well underway in developing a WCM Handbook and prototype short course. These developments will be coordinated with the other regions and Weather Service Headquarters (WSH).

The following areas within the job description of the WCM will be covered by the course and handbook:

- o hazardous weather data acquisition and dissemination processes;
- o weather information needs of the emergency management community;
- o establishing, training and maintaining spotter networks;
- o interacting with and using the mass media;
- o techniques of public and persuasive speaking;
- o damage survey methodology, including basic wind engineering concepts related to structural failure;
- o preparing and conducting severe weather drills;
- o collecting and preparing Storm Data; and
- o public relations.

The WCM position will also entail some management responsibilities. Training in this area will be accomplished through conventional management courses.

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PLEASE SHARE THIS COPY OF THE "AWARE" REPORT WITH OTHERS IN YOUR OFFICE

The initial "prototype" short course is being developed for the WCMs at Norman, Tulsa and Amarillo in preparation for the Weather Forecast Office (WFO) Norman Risk Reduction Exercise. A one-week workshop to further evaluate the course content is scheduled for November 1991 for the Modernization and Associated Restructuring Demonstration (MARD) area WCMs where further validation of the course content will be achieved. Following this validation, the course is expected to be offered about three times a year through 1996 as new WCMs come on board during the Modernization and Associated Restructuring (MAR) of the NWS. After the mid-1990s, the course should be offered once a year based on expected turnover in WCM positions.

The Handbook will consist of two major components: a generic section with information pertinent to all offices and a section tailored to the local WFO area. The generic section will be developed and distributed to each WFO. The local area section will be developed at each office by the WCM.

WCM Conferences will continue to be held every 2 years to introduce new ideas and to provide a forum to exchange experiences among the WCMs. Additional training on new ideas could be provided through videotape, computer based training, newsletters, outside courses, etc.

Details on the status of training development will be presented in future issues of the AWARE Report.

Meteorological Services Division (MSD) Chief's Conference - *Becker*

The MSD Chief's Conference will be held here at WSH the week of December 3, 1990. The agenda will contain a range of subjects from current Weather Service Operations Manual (WSOM) chapters for the Public, Marine and Applied Services, and Aviation Programs to a myriad of transition issues.

The Warning and Forecast Branch will be allotted 3 hours to discuss the following issues in the Public Weather and Dissemination Programs. The resolution of these issues are important to help ensure that the public weather programs continue to move forward and provide some of the key ingredients to nail down the Public Service Transition Plan.

o Zone Reconfiguration

Should "zones" be considered "building blocks" (i.e., reduced to county size) in many areas of the country for enhanced flexibility in combining to reflect mesoscale conditions? Or should they maintain the present climatological concept although reduced to a smaller size? Should both concepts be considered for different parts of the country? Would it adversely affect users? Local forecasts as separate products will be eliminated by the reconfiguration. Major metropolitan areas, however, should have a unified forecast whether or not small zones (or counties) divide the area.

o "State" and Extended Forecasts

Most statewide products should be eliminated if at all possible. WFOs should issue WFO-wide Area Forecast Discussions (old State Forecast Discussion) and 1- to 2-day (old State) and 3- to 6-day extended forecasts in the discrete period format. Moreover, we think a combined 1- to 6-day WFO-wide product would provide users a quite useful package.

o Zone and Extended Forecasts

The concept of appending the extended to the zones has merit in that it provides users a complete zone package out to day 6. There are certain arguments against it, however. These include the combining of zones for the primary reason of the mesoscale/first period conditions while having to account for possibly different weather combinations for the extended periods. Another would be the extra length of the product. In any case, the extended should not be appended to the zones until Stage 2 when full automation will be available.

o Specific WSOM Chapters

The Area Weather Update, the new "nowcast" product to be started in Stage 1, should be included in a new chapter rather than be included in WSOM Chapter C-11 or one of the warning chapters. A revised WSOM Chapter C-42, Winter Weather Warnings, should be ready for the 1991/1992 winter season. Issues include keeping Winter Weather Outlooks in current Special Weather Statements but having separate products for winter weather watches and warnings.

The proposed new WSOM Chapter C-44, High Winds, Heat, Fog and Dust, is designed to bring together those hazards that don't neatly fit into other chapters. More work is needed on several issues, such as extra AFOS PILs and the appropriateness of outlooks and watches for certain hazards, before convergence can be reached.

o Emergency Broadcast System (EBS)

The NWS has not been consistent in its current policy of requesting local EBS activation across the country. Some offices manually telephone EBS stations while many other Weather Service Forecast Offices (WSFO) use the much preferred NOAA Weather Wire Service (NWWS) and NOAA Weather Radio (NWR). The Federal Communications Commission (FCC) is conducting concurrent studies on upgrading the EBS. To that end, we will be working with the regions, the FCC and the Federal Emergency Management Agency (FEMA) to draft a new comprehensive policy.

One area that the NWS, the FCC and FEMA find exciting is the possible use of WRSAME (NWR Specific Area Message Encoder) to automatically activate EBS. WRSAME is already in operation in several areas, including Kansas City, Fort Worth, Omaha and Little Rock. In addition, FEMA has recently funded the implementation of WRSAME in all New York State NWS offices and EBS stations. The use of WRSAME throughout this state will provide a test bed for consideration elsewhere.

The Council of State Governments - *Becker*

Rod Becker gave a presentation on the NWS's MAR to the Council of State Government's National Conference on Contingency Management, Governing Disasters, on November 14, 1990, in Charleston, South Carolina. It was a fine opportunity for the NWS to reach this prestigious and appropriate audience consisting of a wide spectrum of state emergency management officials. Along with copies of the overhead slides, handouts included the "Strategic Plan for the Modernization and Associated Restructuring of the National Weather Service." Several members of the audience expressed their interest and excitement in the changes the NWS is planning that are expected to benefit the emergency management community.

Article on NWS Public Service Program and Modernization Activities - *Berger*

A short article on The National Weather Service Public Service Program and Modernization activities will appear in the January issue of the University of Colorado's "Natural Hazards Observer." This article summarizes information presented at a seminar on Forensic Aspects of Mass Disasters held at the FBI Academy in Quantico, Virginia, last June.

Survey of State Emergency Management Weather Dissemination Systems - *Read*

WSH and Dr. Christopher Adams, in coordination with the regions, will conduct a national survey during the next year to gain information about the dissemination of hazardous weather information within the emergency management community. The purpose of the survey is to document how each state distributes hazardous weather information. From the survey results, 3 or 4 effective state distribution systems will be studied in detail. A report on the survey and the detailed state studies will be prepared. The information in the report will serve at least two purposes: first, to provide our offices with detailed information on "how to" establish an effective system if their state currently does not have one; and second, to provide information necessary for establishing links to the Advanced Weather Information Processing System (AWIPS) in the modernized NWS.

WARNING AND FORECAST BRANCH INITIATIVES

NWS-FEMA Meeting at Eastern Region Headquarters - *Wernly*

On the invitation of Dr. Susan Zevin, Director Eastern Region, representatives from Central Region and Southern Region met with representatives from FEMA Regions 1 through 5 concerning FEMA and NWS coordination during natural disaster surveys. NWS Headquarters was represented by Don Wernly while FEMA Headquarters was represented by an individual from their office for Disaster Assistance Programs. At the meeting, coordination procedures were developed between FEMA and the NWS to ensure that, following disasters, teams from both organizations complimented each other. As a result, whenever NWS regional surveys are organized, a person will be designated as the coordination point with the appropriate FEMA Regional Office. Similarly, whenever a Presidential Disaster Declaration is issued and a FEMA Hazard Mitigation Team is organized, the appropriate NWS Region will be apprised. Furthermore, following a Presidentially Declared Disaster, both NWS and FEMA teams will first report to the Disaster Field Office at the disaster site to coordinate their actions. Hopefully these procedures will ensure that the victims of disasters are not further victimized by Federal disaster survey teams.

Coastal Storm Mitigation Work Group - *Wernly*

On November 5, Walt Cottrell from Legislative Affairs, Marcella Jansen from the Office of Coastal Resource Management, and Don Wernly represented NOAA at a meeting with representatives from FEMA's National Flood Insurance Program. The goal of the meeting was to develop cooperative approaches for mitigating coastal storm losses. The main strategy centered around methods to encourage state and local governments to establish and implement minimum loss reduction standards through the adoption and implementation of Evacuation Plans, Zoning and Building Codes, and Awareness and Education Programs. As a result of that meeting, the following tasks were agreed upon.

Compile an annotated list of the major findings and recommendations from the myriad of reports being published on Hurricane Hugo.

Undertake a feasibility study of establishing a Coastal Safety Institute comprised of both public and private sectors to encourage and support building codes and land use planning.

Undertake a feasibility study for developing consensus standard codes for coastal areas.

Conduct a pilot project to enhance hazard mitigation, awareness, and code compliance.

Develop a "hypothetical storm" awareness program to emphasize the extent of losses if a Hugo-type storm struck elsewhere.

Explore how to train code officials and attempt to introduce mitigation courses in degree programs for engineers and architects.

These tasks are very energetic and require considerable time for all members of the working group. Hopefully, incremental steps can be taken to influence the growth and construction along our Nation's vulnerable coasts. Additional information will be provided as the project evolves.

1990 Hurricane Season - *Sokich*

November 30 usually marks the "end" of the hurricane season. There have been tropical systems which have formed in December, but these storms are statistically abnormal. According to the National Hurricane Center (NHC), the 1990 Atlantic hurricane season had 14 named storms and reached "N" for the first time since the naming of storms began in 1954. (Actually, one other year, 1969, had more storms with 18. The number of storms that year was increased after-the-fact when some of the unnamed storms were reclassified to tropical storm or hurricane strength during post-season analyses which included additional data.) The 1990 season had the fifth highest number of tropical storms/hurricanes on record. Only one named storm, "Marco," made landfall in the contiguous U.S. Preliminary reports indicate that "Marco" made landfall near St. Petersburg, Florida, as a tropical storm. The eye continued to skirt along the west coast of Florida as the storm moved northward. Marco made final landfall as a tropical depression at Cedar Key, Florida. You have to search back to 1890 to find a year which had no landfalling tropical storms or hurricanes.

The East Pacific hurricane season got off to an early start with the first named storm forming on May 12. The 20 named storms in the East Pacific is the second highest number of storms on record at the NHC, but the 16 hurricanes is the highest total recorded for a single season.

More on hurricanes... - *Sokich*

The scarcity of landfalling storms and the lack of major policy issues preclude holding the 27th NOAA/NWS Hurricane Conference. This is the first year that this Conference has not been held. The Interdepartmental Hurricane Conference will be held as scheduled at Homestead AFB, Florida, February 5-8, 1991.

The NHC in Coral Gables, Florida, will host two hurricane/storm surge workshops. The first will focus on the gulf coast region of the U.S. and is scheduled for the last week in January. The east coast workshop will take place during the end of February. Each workshop will contain NWS forecasters as well as local members of the emergency management community.

Dedication of the National Weather Service Science and History Center - *Kremkau*

On Monday, November 19, 1990, the National and Atmospheric Administration (NOAA) in conjunction with the Foulger Pratt Development Corporation opened the National Weather Service Science and History Center located at Weather Service Headquarters in Silver Spring, Maryland. On hand for this occasion were the Under Secretary and Administrator, Dr. John A. Knauss, as well as Dr. Elbert W. Friday, Jr., Assistant Administrator for Weather Services, Foulger Pratt representatives, local TV meteorologists, local government officials, and many more. For the first time, the Center provides a visual history of NOAA's weather sciences and affords an educational opportunity to the citizens and visitors to the greater Washington, DC, area. Photo murals, models and video displays enable visitors to see and hear a parade of Weather Service progress from the 1890s into the 21st century.

Tornado Symposium - *Read*

Tornado Symposium III is scheduled for April 2-5, 1991, in Norman, Oklahoma. Attachment A is an announcement describing the items that will be covered at this important conference. The purpose of the Symposium is to present the latest thinking on key aspects of tornadoes. Furthermore, a workshop on warning and preparedness will be conducted Friday afternoon, April 5. WPMs are encouraged to attend this conference. Details on funding and other travel arrangements still need to be worked out. Economical accommodations will be available in the Norman area. More information will be sent through your regional offices.

INTERNATIONAL DECADE FOR NATURAL HAZARD REDUCTION

Decade Plan - *Ed Gross, Chief, Constituent Affairs and Industrial Meteorology*

The draft plan for the Decade is being reviewed by Federal agencies as well as outside experts. Their comments are being gathered, and, hopefully, a finalized plan for the Decade will be completed by the end of November. At the same time, development of an implementation plan is being undertaken and details will be made available through the AWARE Report.

A New Decade Exhibit - *Gross*

The exhibit, "A Decade for Natural Disaster Reduction, Working Together for a Safer, More Productive World" (1990-2000), made its debut at the National Weather Association Conference during the week of October 29. The Decade exhibit is intended for display at national meetings. It features a U.S. map with symbols placed where natural disasters have occurred. There is only one Decade exhibit at the moment, but many more exhibits are being planned for the future. We are considering purchasing one for each of the NWS regions, but at a cost of $5K each, it'll be some time before they are completed. We are working with the American Red Cross and other Federal agencies to assist us with funding to create additional exhibits.

Briefing for United Methodist Committee on Relief (UMCOR) - *Wernly*

On Monday, October 15, Don Wernly, led a 2-1/2 hour seminar on preparedness for the United Methodist Committee on Relief. The Committee is part of the United Methodist Church's General Board of Global Ministries with projects throughout the United States and in 80 countries around the world. The Committee met at the Penta Hotel across from Madison Square Garden in New York City to celebrate their 50th anniversary of service and to plan further projects. They have already been introduced to the International Decade for Natural Hazard Reduction and were seeking ways in which they could become more involved in preparedness and education efforts before disasters occur. Mr. Wernly's seminar included discussions on NWS modernization, the Integrated Warning Program, Hurricane Hugo, preparedness planning, and hazard awareness initiatives. It was learned at the seminar that UMCOR works with local emergency managers and other local volunteer organizations when providing disaster relief. They plan an additional workshop in January that will involve local volunteer organizations in the natural hazard preparedness problem and have tentatively invited Don to take part. UMCOR has indicated a willingness to work with the NWS in the preparedness program. We'll keep you informed of further developments.

Briefing for the Dutch Delegation Ministry of Home Affairs - *Wernly*

In September, Don Wernly made a presentation on the NWS Warning Coordination and Hazard Awareness Programs to the Delegation of the Dutch Ministry of Home Affairs. This included the Secretary of their Information Council, the Director of Information within the Ministry of Welfare, the Head of Public Information within the Ministry of Housing, and the Deputy Director-General for Civil Order and Safety. The objectives of their tour included understanding how critical information was shared between the decision makers and the public, the role of the media in the different stages of disasters, cooperation between government agencies and the private sector, evacuation problems, and the provision of hazard information to minority groups. It was stressed that warning programs are not sufficient unless information is communicated in a manner that elicits the proper response.

WARNING COORDINATION AND HAZARD AWARENESS BULLETIN BOARD

South Central Bell Prints Hurricane Charts

South Central Bell (SCB) working with the National Weather Service in Birmingham printed 30,000 "Storm Safety and Hurricane Tracking Charts." About 5,000 of these brochures have been given to the NWS for use in public awareness with the remaining 25,000 to be used by SCB as part of their own hurricane awareness and preparedness effort, both inside the company and outside through their Corporate Affairs Department. The majority of the publications will go to the coastal sections of SCB's nine-state region of Louisiana, Mississippi, Alabama, Florida, Georgia, North and South Carolina, Tennessee, and Kentucky.

The initiative for this cooperative effort began rather innocently one June morning when Charles Penton, Operations Manager for Building Design and Asset Protection for SCB, visited the WSFO in Birmingham to request a selection of hurricane brochures for an upcoming SCB hurricane preparedness meeting. In talking with Mr. Penton, Birmingham DMIC Brian Peters described the NWS awareness/preparedness programs and the ever-present need for publications.

The discussion sparked Mr. Penton's interest in working with the NWS to reprint the "Storm Safety and Hurricane Tracking Chart" brochure. With the help of NOAA Public Affairs, the negatives were loaned to SCB. SCB was then able to get cost estimates and produced 30,000 copies of the publication.

This is an excellent example of how private industry and government can work together for the benefit of both.

Lightning Strikes Automobiles!

Brian Smith, WSFO Washington, recently sent an article detailing two separate incidents of lightning striking automobiles. Vehicles are usually one of the safer places to be during a thunderstorm. Meteorologists report few cases of lightning striking cars. In these particular cases, one vehicle was a parked car and the other was a moving van.

> In June, lightning hit a moving van on Rt. 50 near Annapolis, Maryland, burned the roof and knocked out the computer system, alternator, and battery. In the article, there was no mention of anyone being injured.
>
> During a severe thunderstorm on July 10 near Severna Park, Maryland, a bolt of lightning struck a tree next to a house, bounced off the tree and hit a car parked several feet away. The bolt fizzled the alternator of a 3-year-old Oldsmobile, damaging several sensors and blowing out both back tires.

It's apparent that lightning can and does strike anything out in the open.

Spotter Training

-- South Texas Area Manager, Al Dreumont, provided bilingual spotter training at Laredo during the middle of September. Because of his fluency in Spanish, the Laredo Amateur Radio Club specifically requested Al to provide the training (normally, San Antonio WPM Bill Hare would have done the training). The spotter training was performed in conjunction with a Hamfest which turned out to be international in flavor. With many Mexican national amateurs in attendance, Al explained stateside procedures for amateur radio spotter work, including relaying information to the NWS and disseminating statements and warnings. The Hams from Mexico intend to develop similar procedures and will relay severe weather reports in Mexico to the Laredo Hams. Much of the severe weather of the area originates across the border so this will give WSFO San Antonio and the city of Laredo some much needed advance warning.

-- WSO Key West MIC, Dennis Henize, provided spotter training to the Monroe County RACES in early September. Dennis is an Advanced Class amateur himself and an active member in the group, the function of which is to supply emergency communications during and after emergencies. All 17 members of the organization were in attendance, most of whom are representatives of emergency response and government agencies involved directly in hurricane preparedness and response.

-- WSFO Memphis WPM Rich Lane held a spotter training session at the Agri-Center in Memphis, Tennessee, where 50 amateur radio operators attended. The meeting was unique in three ways: (1) 35 minutes before the meeting was to begin, everyone ran outside to observe what appeared to be a wall cloud. It turned out to be a large rain shaft, but gave Rich a grand opportunity to do some "on-the-spot" training; (2) after they all went back inside, Rich showed them a tape he had put together of three mid-South tornadoes, and (3) after the meeting, Rich and Met Intern, Brad Grant, gave them a tour of the WSFO. In all, it was a highly unusual opportunity for the area spotters to get some valuable training.

Severe Weather Awareness and School Buses

Guy Tucker, WPM, WSFO St. Louis, Missouri, put on a severe weather safety seminar for the Mayflower Contract Service in Edwardsville, Illinois. Mayflower provides bus transportation for school children in portions of Metro-East. There were 55 drivers and several assistants for handicapped students. Their concern was what to do when a tornado warning is in effect at the time school lets out. They also were concerned about what to do when a tornado warning was in effect while they were enroute.

Guy recommended the students remain inside the school until the tornado warning was over and that this was something they should work out with the school administrators. In his findings, some school administrators feel that the students should not be held after school during a tornado warning and feel that the students should be loaded onto the bus. Guy did not recommend getting the students out of the bus unless a tornado was actually headed for the bus or unless law enforcement officials were stopping vehicles and telling the drivers and passengers to unload.

After the meeting, Guy wrote to the Central Region and asked if he responded correctly to their questions. Central Region approved of the way Guy responded.

Schools should not, **must not**, dismiss students if a tornado warning has been issued for their part of the county, city, etc. A tornado struck Belvidere, Illinois, on the afternoon of April 21, 1967. A school had just dismissed for the day and was in the final process of loading buses. Several students were killed or injured. The principal was aware of a tornado watch for the area but not a tornado warning. The only damage to the building was to a sign with the school's name, which was ripped off a wall. We do not know if students would have been loaded anyway had officials known of the warning. The lesson is, however, that the building would have provided the best shelter. Considerable evidence exists that buses, or for that matter any vehicle, provide no protection if struck directly by a tornado.

Once the bus is enroute and if the driver becomes aware of a warning and conditions appear threatening, he/she should look for some nearby structure, such as another school building, an office, etc., where the students could be sheltered. If the bus is in more open country, then the driver should try to stop the bus in some type of sheltered area, such as a cut through a hill or under a sturdy overpass, among others. Should a tornado actually be seen and appears to be headed for the bus, evacuation to one of the traditional locations is still in order. Stopping the bus is important for several reasons. The bus is more unstable while moving, and in heavy rain, hail, or strong wind, there is a greater risk of an accident. The driver would also be in a better position to calm the students and discuss any evacuation or self-protection measures.

It would be a good idea for all WPM's to ask their State Departments of Education to remind school officials of the threat and need for teacher/staff training and drills. The NWS brochure, "Tornado Safety Rules in Schools" provides safety rules and instructions for schools to follow. Also, in the future, WSH will consider addressing this issue if a new tornado video is planned.

WBC has the ABC's for the Local SKYWARN Network

Jim Belville, MIC WSFO Washington, and his staff have given an extraordinary effort to organize the SKYWARN program at the new office in Sterling, Virginia. Numerous talks and training classes by the WSFO staff have increased the number of signed participants to 350 with the ranks growing daily. The training classes at the WSFO are incredibly successful, so much so that, due to limited space, Jim needs to have advanced registration! The Washington WSFO distributes a SKYWARN Newsletter which keeps the members appraised of upcoming training classes as well as current and future SKYWARN activities. This is an efficient way to communicate with the members and to maintain a high level of interest in the program. Well done!!

Award-winning Video

"WEATHER'S GREAT DISASTERS - SUPERSTORMS" won the award for Best Feature and or Documentary Video at the Fifth Annual Minnesota Video Awards held on September 16. Directed and produced by Bob Bowes of Master Communications Group, SUPERSTORMS has generated positive reviews from coast to coast, including Leonard Maltin, Philadelphia Inquirer, St. Paul Pioneer Press, and Rocky Mountain News. This documentary features meteorologists Karen Filloon of WCCO Radio and Jim Campbell, MIC WSFO Minneapolis, Minnesota. This 30-minute public awareness video takes an exciting look at hurricanes, tornadoes, and flash floods, with footage from some of America's most devastating storms. The tape has a suggested retail of $9.95 and is now available at Musicland, SunCoast Pictures, Title Wave, and video stores nationwide.

NATURAL HAZARD STATISTICS

Statistics by State for 1989 - *Kremkau*

Included in the July issue of the AWARE Report was the 1989 Summary of Natural Hazard Deaths. As a supplement to that summary, please add the "1989 Summary Report of Severe Weather Deaths, Injuries, and Damage Costs by **State**" (see attachment B).

50-Year Statistics - *Kremkau*

Attachment C is a listing of the number of fatalities from lightning, tornadoes, floods, and hurricanes for the last 50 years. At the bottom, we have prepared the 20-year averages for each natural hazard. You'll notice the lightning and tornado deaths show the most significant decrease since the 40s. This is most likely due to better education of the general public to the danger of these hazards.

SEVERE WEATHER AWARENESS CAMPAIGNS

State	Campaign	Date	Drill
Eastern Region			
New York	Winter Weather	Nov. 26-30, 1990	
Ohio	Winter Safety Week	Nov. 25-Dec. 1	
South Carolina	Severe Weather	Mar. 4-10, 1991	
Ohio	Tornado Safety	Mar. 17-23	Mar. 20
Pennsylvania	Severe Weather	Apr. 7-13	
Ohio	Flood Safety Week	May 5-11	
Southern Region			
Alabama	Winter Weather	Dec. 3-7	
Alabama	Severe Weather	Feb. 11-15, 1991	
Mississippi	Severe Weather	Feb. 11-15	
Georgia	Severe Weather	Feb. 25-Mar. 1	
Central Region			
Colorado	Media workshop	Oct. 16	
Wyoming	Winter Weather	Oct. 29-Nov. 2	
Nebraska	Winter Weather	Nov. 11-17	
Iowa	Winter Weather	Nov. 14	
Wisconsin	Winter Weather	Nov. 29	
Michigan	Winter Weather	Nov. 25-Dec 1	
Minnesota	Winter Weather	Dec. 2-8	
Western Region			
San Francisco, CA	Media/Emergency Services Workshop	Oct. 10	
Los Angeles, CA	Media/Emergency Services Workshop	Nov. 8	

PUBLICATIONS AND AUDIOVISUALS

Hurricane Hugo Slide Set - *Kremkau/Wernly*

The Warning and Forecast Branch is pleased to announce that the Hurricane Hugo Slide Set with documentation has been developed by Dr. Robert Sheets, Director, National Hurricane Center, with assistance from Dr. Joseph Golden, NOAA's Chief Scientist's Office, and Donald Wernly, Warning and Forecast Branch, National Weather Service.

The "Hurricane Hugo" slide set, containing 135 slides, explains the story of Hugo from the tropical depression stage to a Category 5 storm in the Atlantic, as a Category 4 storm over the Virgin Islands and Puerto Rico, and finally making landfall near Charleston, South Carolina. Also provided are infrared satellite images of the hurricane at different stages, slides showing the extensive damage caused by Hugo to the Virgin Islands, Puerto Rico, and South Carolina, and the track of Hugo and other historical storms.

The "Hugo" slide set is available for loan at Weather Service Headquarters. The original 125 slides were reproduced and distributed in June, but we have added 10 slides showing the inland effects from Hugo in the Charlotte, North Carolina, area. These additional slides and the printed script will be sent to the regions for distribution to all NWS coastal offices by mid-November.

For those interested in purchasing the "Hugo" slide series, a complete set of slides with documentation can be purchased from the National AudioVisual Center, Customer Services Section, 8700 Edgeworth Drive, Capitol Heights, Maryland, 20743-3701, Tel: (301) 763-1896, for $95.

NWS Brochures - *Kremkau/Rivera*

Two NWS brochures, "Watch Out, Storms Ahead" (NOAA PA 82004) and "Thunderstorms and Lightning" (NOAA PA 83001) are out of stock at this time. It is our understanding from the Public Affairs Office that both of these brochures are in the process of being reprinted and should be restocked at Kansas City (NOAA Logistics Supply Center) by the end of November.

The Spanish translation of the Natural Hazard Watch/Warning Poster (NOAA PA 86001) is still on schedule for printing by December 1990. Comments from the regions have been favorable and if there are no major obstacles, we hope to distribute the new poster with English on one side and Spanish on the other before the spring severe weather season.

CTW's Big Bird GETS READY for FLOODS - *Kremkau*

The Children's Television Workshop (CTW) has recently completed a new training kit, Big Bird GETS READY for FLOODS, to help educate children about floods. The kit, featuring Big Bird, other Sesame Street characters and Willard Scott, contains games, songs and stories, and provides a fun way for parents and children to learn flood safety and preparedness tips. Individual free copies are available by contacting Adrienne Lesser, CTW, Department NH, One Lincoln Plaza, New York, New York, 10025, (212) 595-3456.

Dissemination of Public Service Video Information through Blockbuster Video - *Berger*

Blockbuster Video is a national distribution company which provides the use of video tapes classified as Public Service free of charge to the public. By the reproduction and introduction of NOAA public service tapes into their system, public safety and hazard awareness information could reach a much wider audience.

Mr. Robert Amdur of the Department of Commerce Office of Public Affairs is planning to work with Blockbuster's national headquarters to have several NOAA tapes introduced into their system. These include "Terrible Tuesday," "Hurricane," "The Awesome Power," "Trashing the Oceans," "Coastal Ocean in Crisis," and "NOAA Corp...the Seventh Service." Coincidentally, Mr. Raymond Martin of the NWS Office in Honolulu sent in a suggestion to distribute these public service tapes through the Honolulu Blockbuster Video outlets. The suggestion was adapted after coordination with the national effort by Mr. Amdur.

U.S. Geological Survey Develops Earthquake Information and Preparedness Guide - *Kremkau*

"The Next Big Earthquake in the San Francisco Bay Area May be Sooner Than you Think: Are you Prepared?" is a 24-page earthquake information and survival guide prepared by the USGS, Department of the Interior, in Menlo Park, California, in cooperation with leading earthquake scientists and disaster relief experts from various other local, state, and Federal agencies in the San Francisco Bay area. More than 40 northern California newspapers, as a public service to their readers, volunteered to distribute more than 2 million copies of the guide. In addition to newspaper distribution, a limited number of copies will be available at USGS Earth Science Information Centers in Menlo Park and San Francisco, at American Red Cross Chapters, and other disaster response agencies.

Cleaning and Repairing of Films and Videotapes - *Kremkau*

Once again, the contract for cleaning and repairing of films and/or videotapes has been awarded to the Modern Talking Picture Service, Inc. (address below). If you have any films or videotapes that need to be cleaned or repaired, please send them to Modern and include a self-addressed franked mailing label so that it can be mailed back to the sender. This is very important because shipping costs are not included in the contract. If you encounter any problems with the service, please contact Linda Kremkau, Warning and Forecast Branch, at (301) 427-8090. We have been very pleased with their efforts in the past and know they will continue to provide quality service in the future.

Modern Talking Picture Service, Inc.
5000 Park Street, N.
St. Petersburg, FL 33709
Attn: Patti Larkin

AWARE Report Roster - *Kremkau*

Attachment D is the AWARE Report Roster. Please notify Linda Kremkau at FTS 427-8090 for any changes to the telephone numbers or for new WPMs or focal points.

Also, if you know of someone who would like to be on the AWARE Report distribution list to receive future issues, please have them write to: National Weather Service, NOAA, 1325 East-West Highway, Silver Spring, MD, 20910, Attn: Linda Kremkau.

Tornado Symposium III

Norman, Oklahoma, April 2-5, 1991

Announcement and Call for Papers

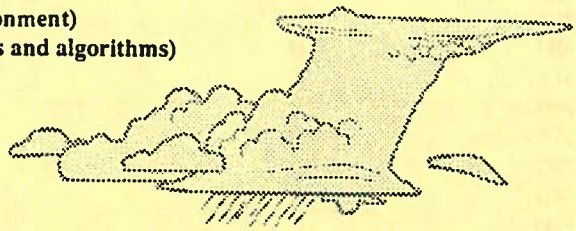
Tornado Symposium I was held at the University of Wisconsin in 1970. Tornado Symposium II was held at Texas Technological University in 1976. There has been considerable improvement in our basic understanding of tornadoes and in operational and engineering applications of that understanding during the past 14 years. Now, the National Weather Service is about to begin a wholesale modernization and restructuring program based on the introduction of new observing systems such as the WSR-88D (NEXRAD) radar, profilers, and GOES-Next. Furthermore, the research and operational communities are now planning the first field observations under the STORM program for sometime in the early 1990's. The time is right for Tornado Symposium III, a forum to review the advances of the last decade and to focus on the opportunities about to unfold.

Tornado Symposium III will occur on the 17th anniversary of the jumbo outbreak of tornadoes and will commemorate the appointment by the University of Chicago of Dr. T. T. Fujita as Merriam Distinguished Professor. The meteorological community in Norman, including the National Severe Storms Laboratory (NSSL), the OKC National Weather Service Forecast Office, the WSR-88D Operational Support Facility, and the University of Oklahoma (OU) School of Meteorology, Oklahoma Climatological Survey (OCS), Cooperative Institute for Mesoscale Meteorological Studies (CIMMS) and the Center for Analysis and Prediction of Storms (CAPS), will serve as hosts for the symposium. Sponsors include the NOAA Storm Program Office, the National Science Foundation, OU/CIMMS, OU/CAPS, COMET, the Wind Engineering Research Council, the National Weather Association, the American Meteorological Society, and the American Geophysical Union.

The symposium will begin in the afternoon on Tuesday, April 2nd. Formal presentations will conclude at noon on Friday, April 5th. Then, in the afternoon of Friday, April 5 there will be three concurrent workshops: one on wind engineering aspects of damage assessment and control, one on numerical modeling of tornadoes and tornadic storms, and one on warning and preparedness.

The symposium will comprise 12 formal sessions. Each session will begin with an invited review paper by a distinguished expert, to be followed by other invited papers and a limited number of contributed papers. This symposium will highlight review and tutorial papers specifically on the subject of tornadoes but will also include contributed papers on recent research. There will be no poster sessions. Instead, there will be "static" displays of hardware, software, photographs, videos, etc. to be set up near the meeting room for browsing during breaks. During the week there will be tours of the WSR-88D Operational Support Facility and the New Norman Prototype NWS Warning and Forecast Office. The planned session topics are as follows:

1. **Tornado theory (including waterspouts, landspouts)**
2. **Numerical modeling**
3. **Hurricane-spawned tornadoes**
4. **Physical models and analogs**
5. **Tornado forecasting (including characteristics of the environment)**
6. **Tornado detection and warning (including radar signatures and algorithms)**
7. **Tornado observations**
8. **Damage surveys**
9. **Climatology, Hazards, and Risk Assessment**
10. **Engineering for occupant safety**
11. **Containment of hazardous material**
12. **Building codes and standards**



Authors who wish to contribute a paper should notify the program committee by September 15, 1990. The program committee will accept abstracts, in standard AGU Format (copy available on request) until December 1, 1990. Instead of a preprint volume, there will be a preprinted abstract volume (similar to those of the Fall and Spring Meetings of the AGU). The symposium proceedings, to include all papers presented and a transcript of any comments and replies during the presentations, will be published in a volume of the highest standards and quality, suitable for bibliographic reference.

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Attachment B
1989
Summary Report of Severe Weather
Deaths, Injuries, and Damage Costs by State

State	Deaths	Injuries	Amount of Damage (M)
AL	28	501	113.3
AK	19	13	76.3
AZ	6	45	40.5
AR	14	43	102.2
CA	6	37	97.3
CO	7	139	238.6
CT	1	130	344.2
DE	5	9	7.1
DC	1	3	28.0
FL	23	48	724.4
GA	9	116	58.1
HI	0	0	7.4
ID	6	30	54.1
IL	3	116	90.1
IN	5	40	44.8
IA	5	27	103.3
KS	7	12	20.7
KY	10	25	89.9
LA	14	119	128.1
ME	0	77	3.3
MD	7	10	36.4
MA	5	11	8.7
MI	11	32	6.5
MN	2	3	14.5
MS	10	19	21.8
MO	1	1	10.8
MT	8	10	44.8
NE	1	8	125.4
NV	0	0	37.1
NH	0	27	0.2
NJ	5	17	45.1
NM	5	11	36.8
NY	49	273	196.6
NC	23	117	440.6
ND	0	11	73.3
OH	7	31	54.6
OK	14	16	29.2
OR	11	5	3.1
PA	12	32	24.3
RI	0	3	0.2
SC	56	517	5,476.9
SD	3	4	4.8
TN	18	18	27.9
TX	46	141	3,016.8
UT	2	1	16.8
VT	7	27	33.7
VA	9	127	96.3
WA	6	3	30.7
WV	6	5	2.4
WI	1	20	23.3
WY	1	3	4.8
PR	3	0	1,000.0
VI	3	0	500.0
TOTAL	501	3,033	13,816.1 (M)

Attachment C
50-Year List of Severe Weather Fatalities

Year	Lightning Deaths	Tornado Deaths	Flood Deaths	Hurricane Deaths
1940	340	65	60	51
1941	388	53	47	10
1942	372	384	68	8
1943	432	58	107	16
1944	419	275	33	64
1945	268	210	91	7
1946	231	78	28	0
1947	338	313	55	53
1948	256	140	82	3
1949	249	212	48	4
1950	219	70	93	19
1951	248	34	51	0
1952	212	230	54	3
1953	145	515	40	2
1954	220	36	55	193
1955	181	126	302	218
1956	149	83	42	21
1957	180	191	82	395
1958	104	66	47	2
1959	183	58	25	24
1960	129	47	169	65
1961	149	51	93	46
1962	153	28	53	4
1963	165	31	41	11
1964	129	73	142	49
1965	149	296	188	75
1966	110	98	56	54
1967	88	114	53	18
1968	129	131	57	9
1969	131	66	445	256
1970	122	72	131	11
1971	122	156	68	8
1972	94	27	555	121
1973	124	87	178	5
1974	102	361	111	1
1975	91	60	127	4
1976	74	44	193	9
1977	98	43	210	0
1978	88	53	125	36
1979	63	83	121	22
1980	74	28	82	4
1981	66	24	84	0
1982	77	64	155	0
1983	77	34	204	22
1984	67	122	126	4
1985	74	93	166	30
1986	68	15	94	11
1987	88	59	70	0
1988	68	32	31	9
1989	67	50	85	38
Total Since 1940	8170	5639	5623	2015
Average 1970-1989	85	75	146	17

Attachment D

AWARE Report Roster

OCTOBER 1990

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