disaster preparedness report

National Weather Service

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WHAT'S HAPPENING IN DISASTER PREPAREDNESS

o A New Look! The time has come to revamp and revitalize the Disaster Preparedness Report. We would like to continue the focus on hazard awareness and warning coordination issues while broadening the scope to include evolving NWS policy issues affecting the public warning programs. Furthermore, we feel that the publication would be an excellent forum to highlight positive interactions between all levels of government, the private sector, and the entire hazards community toward reducing the losses of life and property due to natural hazards.

We welcome any comments and thoughts that you might have, including potential new names for our publication! Please send your ideas to Linda Kremkau, Warning and Forecast Branch, by September 15, 1989.

o 1989 Tornado Statistics (Preliminary) As of June 30, 1989, 799 (unconfirmed) tornadoes have struck the United States killing 14 people. The lowest death toll on record was 15 in 1986. April, May, and June were very active this year with 118 tornadoes in the month of April, 300 in May, and 277 in June. Also, May and June have the highest fatalities with 8 and 5, respectively. In 1988, November proved to be the deadliest month when 14 people died from tornadoes. North Carolina leads the Nation with a total of 5 deaths; Florida has 3; South Carolina and Louisiana, 2 each; and Georgia and Texas, 1 each.

Thus far in 1989, NSSFC has issued more watches than they ever issued in a calendar year. It stands at 604 which is an all-time record; last year's count for the entire year was 574. During April, May, and June, 5,237 severe weather events (hail, tornadoes, and wind) were reported. Also, on June 3, NSSFC issued 17 watches in a 24-hour period.

o First Tropical Storm of the Season Allison, the first named storm of the 1989 season, formed just off the Texas Coast from the remnants of Hurricane Cosme. Cosme came ashore near Acapulco, Mexico, and weakened as it traveled north across Mexico. Thirty people perished mostly from mudslides in Mexico.

Tropical Storm Allison drifted inland southwest of Freeport, Texas, and proved to be a major rain-maker for Texas and Louisiana. Winnfield, Louisiana, was swamped with 22-1/2 inches of rain. Also in Louisiana, 19.2 inches were reported at Gorum Fire Tower (Natchitoches Parish). And in Harrison County, Texas, 18.3 inches of rain fell. The unofficial death toll stands at 11 -- all drowning victims. Damage is estimated at around $1 billion mainly from agricultural losses due to flooding in Louisiana and Mississippi and property damage from floods in Houston.

o Hurricane Hotline Again this year, NOAA will provide information through a telephone hotline from the National Hurricane Center where all hurricane activity is monitored. The hotline will be activated during the hurricane season from June 1 through November 30 and only when a named tropical storm or hurricane has developed. This public service is provided by the NOAA National Weather Service, NBC News, and USA Today. The hotline can be reached from anywhere in the U.S. by dialing 900-410-NOAA. The taped messages are continuously updated by the center as new developments occur. The hotline can receive 7,200 calls simultaneously, or up to 216,000 calls per hour, 24 hours a day. Calls cost 50 cents for the first minute and 45 cents for each additional minute. Most calls cost 95 cents.

Last year, more than 100,000 calls were made to the hotline when Hurricane Gilbert threatened the U.S. coast. In 1985, when the hurricane hotline was first established, as many as 700,000 calls were recorded during Hurricanes Gloria and Elena.

NEW AWARENESS MATERIALS

o Reprinted Pubs Below is a list of publications that will be reprinted and restocked at the Kansas City warehouse by the end of August.

NOAA PA	Name	Copies
76015	NOAA Weather Radio	100,000
74025	Tornado Safety Rules in Schools	75,000
81010	Floods, Flash Floods, and Warnings	75,000
82001	Tornado Safety	75,000
85001	Heat Wave	25,000

o The Naming of Hurricanes Before Brian Peters left Southern Region Headquarters to take on the duties of the new DMIC at WSFO Birmingham, he spent time revamping "The Naming of Hurricanes" 2-page information sheet which includes the Atlantic basin names only (see attachment A). We were able to print 5,000 copies at no cost. They are now readily available at the Kansas City Warehouse. Note: Under the year 1990, "Hortense" is misspelled on the printed copies at Kansas City, but has been corrected on attachment A.

o The Weather Channel/American Red Cross Joint Project The Weather Channel/ American Red Cross "Weather Education and Awareness Project" is now in its second year. The American Red Cross and The Weather Channel have produced two booklets to increase weather awareness and provide safety information for 5 severe weather events and for earthquakes. One booklet is for children and the other is for adults. These new disaster education products have been distributed to Red Cross chapters around the country and to participating local cable systems.

WEATHER: Facts and Fun is a 24-page booklet for children. A fun and interesting approach to weather, it includes facts, folklore, sports, history and activities. This is followed by safety information on thunderstorms and lightning, tornadoes, floods and flash floods, hurricanes, winter storms and earthquakes. Essential safety information appears in Spanish as well.

WEATHER: Bringing It Home is a 24-page booklet for adults. It contains much of the same information found in the children's booklet, but also addresses the responsibility adults must assume in caring for children before, during, and after a natural disaster. It also provides additional ideas for senior citizens on preparing ahead of time. Essential safety information appears in Spanish as well. There's fun, too, with folklore, sports, history, and a crossword puzzle.

Individuals interested in receiving one free copy of each booklet, while supplies last, can write to:

Lynne Filderman
American Red Cross
Disaster Services
431 18th Street, NW
Washington, DC 20006

o Lightning and Boats This new brochure is about lightning protection aboard boats. It describes what a protection system is and diagrams how it should be done. It also talks about the "Cone of Protection," other electrical hazards, and provides some guidelines to follow when caught in a storm. First aid for lightning is briefly discussed. The brochure is excellent for marine newcomers and makes a nice handout for boat shows. The greatest contributor to the publication was C. Robert Snider, Area Manager, WSFO Ann Arbor, Michigan.

The brochure is published by Michigan Sea Grant. Copies can be obtained by writing: Michigan Sea Grant College Program, 2200 Bonisteel Boulevard, Ann Arbor, Michigan 48109 (Tel: (313) 764-1138), brochure order number MICHU-SG-89-100.

SEVERE WEATHER AWARENESS ACTIVITIES

o Severe Weather Awareness Weeks Listed below are the "Hurricane" awareness weeks that have taken place at the beginning of the hurricane season. Also included is New Mexico's "Flash Flood" week.

State	Campaign	Date
Texas	Hurricane	June 4-10
Louisiana	Hurricane	May 29-June 2
Mississippi	Hurricane	June 5-9
North Carolina	Hurricane	June 4-10
South Carolina	Hurricane	June 11-17
New York State	Hurricane Month	June
Hawaii	Hurricane	July 2-8
New Mexico	Flash Flood	June 11-17

o Louisiana Hurricane Awareness Week With the beginning of the 1989 hurricane season, Louisiana Governor Buddy Roemer officially proclaimed the week of May 29 - June 2 to be "Hurricane Awareness Week" in the Bayou State. One of the major activities in conjunction with the special observance of the awareness week included participation by the NWS, Louisiana Office of Emergency Preparedness, other state agencies, and many parish emergency agencies, in a hurricane drill to test hurricane readiness plans. Residents living in hurricane prone areas were encouraged to develop or review their hurricane readiness plans. An 8-page informational packet on hurricanes was distributed to media, emergency management, and law enforcement agencies. During the week, Public Information Statements on hurricanes and hurricane preparedness measures were issued.

o Missouri Preparedness WSFO St. Louis had the lead in the fourth annual St. Louis Area Severe Storm Poster Contest coordinated by Lead Forecaster John Feldt. It was held during March and April involving over 7,000 third, fourth, and fifth grade students from around 60 schools. The program was sponsored by the Eveready Battery Company as part of their "Operation Weatheready." Representatives of the company's advertising agency helped with the judging. Photographs of the winner's posters were highlighted on local television stations to access the area's severe weather preparedness activities. Prizes, including weather radios, flashlights, and other company products were presented to the winners during a special ceremony at the St. Louis Science Center. (This type of project has been run in a few other areas in the Region. It appears to have universal popularity and is effective. Other offices should consider this for their campaign '90.)

o Illinois Severe Weather Preparedness The NWS and severe weather were key elements in a radio talk show hosted by WGN-TV in Chicago. The station has one of the highest listing audiences in the Midwest. The program included local media meteorologists, SELS, and WSFO Chicago forecasters. The word on safety and preparedness reached hundreds of miles beyond the Chicago metropolitan area, including large portions of Illinois, Indiana, Wisconsin, and Michigan.

o Disaster Preparedness Activities in Hawaii Several things have happened on the DP scene in Hawaii recently. First, Governor John Waihee proclaimed July 2-8 as hurricane awareness week. Publicity in the form of news articles, PSA's and announcements on NWR were issued.

Second, on July 6, a hurricane workshop jointly hosted by the NWS Hawaii Hurricane Center and the University of Hawaii, Department of Meteorology, was held at the Pagoda Hotel in Honolulu. More than 225 people from all segments of government, military, business, utilities, special organizations, and private individuals registered and attended. The goal was to educate people about hurricanes in Hawaii and how to prepare in the event a hurricane should strike.

Interestingly enough, the first hurricane of the season to affect Hawaii, "Hurricane Dalilia," occurred on July 20.

NEWS AND VIEWS FROM AROUND THE REGION

o CPL Hurricane Video In April, WSO Corpus Christi, Texas, cooperated with the Central Power and Light (CPL) Company in their production of a hurricane awareness video. Thirty-five copies of the videotape entitled, "Hurricane," have been distributed to CPL throughout south Texas. It is a preparedness and training film used mainly by CPL at civic club programs, schools, etc., and also for CPL in-house safety meetings. Fred Roush, MIC at WSO Corpus Christi, is one of the "stars" of the film representing the NWS side of the hurricane story.

o Twin Cities Warning Program Videotape Jim Campbell, MIC(AM) WSFO Minneapolis, along with four television meteorologists in the Twin Cities created an interesting and informative videotape about severe weather. It explains how the warning program works in the metropolitan area and also includes safety rules. Like any major market, there is intense competition between television stations, and in Minnesota, weather in particular is very competitive. That this program was developed is testimony to the excellent spirit of cooperation between the on-camera meteorologists, their station managers, and the NWS. KARE provided the studio, made the set, and provided 20 hours of editing time in a sophisticated production studio all for no cost. Another station, WCCO, provided a producer who spent a lot of time putting the show together. KARE, WCCO, KSTP, and KMSP also contributed footage and did some of the short pieces for the show. KSTP did an excellent story on our office. The best part of all was the 3M Corporation agreed to make 1,000 free copies of the videotape for distribution to schools, emergency management people, and other institutions.

o Severe Weather Program on Public Access TV Channel Meteorologist, Karl Silverman, WSFO Bismarck, recently assisted the cable TV channel for the Bismarck/Mandan, North Dakota, area in taping a 1-hour program on severe summer weather. Karl's interview covered definitions of severe summer weather terms, safety rules, and the dynamics of thunderstorms. The program, to be shown several times this summer, will also use the film, "Terrible Tuesday."

o Storm Spotter Newsletter The first edition of the Nevada Storm Spotter Newsletter has hit the streets. Rick Schulz who is the author has done an excellent job of keeping spotters informed on their important role in our warning and forecast program. Tornado statistics from our Disaster Preparedness Report was included to show how Nevada compares to the rest of the country.

WARNING AND FORECAST BRANCH ACTIVITIES

o Boy Scout Jamboree By the time you receive this DP report, the National Scout Jamboree will be underway (August 1-8). Somewhere between 30,000 and 40,000 boy scouts are expected to attend for a fun-filled week. NOAA is providing a trailer to house the weather monitoring and forecasting equipment. Two meteorologists will staff the NWS "mini" weather office and provide current weather data for the Jamboree. In addition, the scouts will be able to spend time at the NOAA exhibit to learn more about meteorology and, more importantly, receive credit towards their weather merit badge.

NOAA has created a brand new brochure specifically designed for this scouting event and describes the mission of each of the agencies under NOAA (see attachment B).

o "When Lightning Strikes" Slide Set We recently came to the conclusion that our awareness slide sets are over 10 years old and desperately need updating. "When Lightning Strikes" is the first in a series to be redone. So now the search is on for unique lightning shots from around the Nation. Within the last few years, we've learned much more about the effects from lightning and what safety measures to take. We would like to replace some of the drawings in the original slide set and use actual pictures to point out the hazards of lightning. If you have spectacular lightning slides which you would be willing to let us use, please send them to Linda Kremkau by September 15. Please include your name and address so that we can make certain you are given credit for the slide. Also, it will be understood in the accompanying script that permission to use any of these slides should be obtained from the source.

o NOAA and the U.S. Decade for Natural Hazard Reduction In the last issue of the Disaster Preparedness Report, we highlighted the goals of the National Weather Service in response to the call for a U.S. Decade for Natural Hazard Reduction. That paper contributed to an overall NOAA Goal Statement which is included as attachment C to this issue. The NOAA goal statement was prepared by Edward Gross of NOAA's Office of Legislative Affairs and was published in the July issue of the Natural Hazards Research and Applications Information Center's Natural Hazard Observer.

For those who are interested, the Observer is free to subscribers within the U.S. Subscriptions sent beyond the U.S. cost $15 per year. Write to the address below.

Natural Hazards Research and Applications
Information Center
Institute of Behavioral Science #6
Campus Box 482
University of Colorado
Boulder, Colorado 80309-0482

TORNADO TRAUMA!

o Raleigh Tornado Survivor Support Group Dennis Decker, WPM, WSFO Raleigh, was contacted by a local psychiatrist who wanted him to talk with one of his clients, a woman whose house was destroyed in the November 1988 Raleigh tornado. She was extremely anxious whenever she saw rain and became terrified of thunderstorms. After talking to her for an hour about tornadoes, severe thunderstorms, and National Weather Service operations, she suggested Dennis visit the Raleigh Tornado Survivor Support Group.

Dennis remembers, "It was the most unusual weather presentation I have ever given. There were about 30 people of all ages attending. The purpose of the group was to support each other through the emotional, physical and financial hardships they were going through due to the tornado. I have never encountered a group who were more eager to learn about severe thunderstorms and tornadoes. I brought a slide set to narrate but had trouble getting started for all the questions they had. What I thought would take about a half hour lasted 2 hours. It would have lasted longer but the room was only reserved until 9 p.m. What I found most remarkable was that I detected no hard feelings or ill will from the group toward the NWS. They just wanted facts to help them deal with their fear of thunderstorms. Almost every member of the group took the time to shake my hand and thank me for coming when the meeting was over. They asked if I would come again soon. I said that I would."

o Severe Weather Safety Rules Can Save Lives! The following is an excerpt from the Bridgeport Leader combined with the St. Francisville Times concerning events that occurred during the tornado outbreak of January 7, 1989, in a 3-state area: Illinois, Indiana, and Kentucky. More than 50 people were injured in this event; 12 in the town of Allendale. It is based on two accounts of individuals who miraculously survived this tornado.

> "A young man was home by himself. His wife and two children had left earlier in the day to visit grandparents. He was in his house when he heard a different type of sound. Being curious, he went outside to investigate. He thought he heard a train and then he noticed the wind swirling. It took a couple of seconds to realize what was taking place. Once he did, he tried to make it to his garage where his pickup truck was parked. By this time, the force of the wind was too strong.
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> So he tried to run in the opposite direction, across the street, to get out of the way of what he knew was then a tornado. As he ran, his home began to rip apart, but he made it to the opposite side of the street. Once there, he tried to find protection behind another building and he saw it too was about to give way. In desperation, he looked for cover. Near him was a ditch. He flung himself into the ditch and the tornado passed over him. He was unhurt.
>
> Not too far away, three children were huddled on the kitchen floor. A boy lay on top of his two sisters to protect them. The house was blown away and the kitchen floor was lifted up by the ferocious wind. The children remained flat on the floor as best they could. The floor went sailing through the air, up over a hill, and came to rest on the other side and the tornado continued on its path.
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> Two of the children were treated and released from the hospital. The third child was admitted for observation. None sustained serious injury."

Attachment A

The Naming of Hurricanes

U.S. DEPARTMENT OF COMMERCE

NOAA - National Weather Service

Present Procedure in the North Atlantic, Caribbean, and Gulf of Mexico

The National Hurricane Center near Miami, FL, keeps a constant watch on oceanic storm-breeding areas for tropical disturbances which may herald the formation of a hurricane. If a disturbance intensifies into a tropical storm - with rotary circulation and wind speeds above 39 miles per hour - the Center will give the storm a name from one of the six lists below. A separate set is used each year beginning with the first name in the set. After the sets have all been used, they will be used again. The 1989 set, for example, will be used again to name storms in 1995. The letters Q, U, X, Y, and Z are not included because of the scarcity of names beginning with those letters.

The name lists have an international flavor because hurricanes affect other nations and are tracked by the public and weather services of countries other than the United States. Names for these lists are selected from library sources and agreed upon by nations involved during international meetings of the World Meteorological Organization.

The Six-Year List of Names for Atlantic Storms

1989	1990	1991	1992	1993	1994
Allison	Arthur	Ana	Andrew	Arlene	Alberto
Barry	Bertha	Bob	Bonnie	Bret	Beryl
Chantal	Cesar	Claudette	Charley	Cindy	Chris
Dean	Diana	Danny	Danielle	Dennis	Debby
Erin	Edouard	Erika	Earl	Emily	Ernesto
Felix	Fran	Fabian	Frances	Floyd	Florence
Gabrielle	Gustav	Grace	Georges	Gert	Gordon
Hugo	Hortense	Henri	Hermine	Harvey	Helene
Iris	Isidore	Isabel	Ivan	Irene	Isaac
Jerry	Josephine	Juan	Jeanne	Jose	Joyce
Karen	Klaus	Kate	Karl	Katrina	Keith
Luis	Lili	Larry	Lisa	Lenny	Leslie
Marilyn	Marco	Mindy	Mitch	Maria	Michael
Noel	Nana	Nicholas	Nicole	Nate	Nadine
Opal	Omar	Odette	Otto	Ophelia	Oscar
Pablo	Paloma	Peter	Paula	Philippe	Patty
Roxanne	Rene	Rose	Richard	Rita	Rafael
Sebastien	Sally	Sam	Shary	Stan	Sandy
Tanya	Teddy	Teresa	Tomas	Tammy	Tony
Van	Vicky	Victor	Virginie	Vince	Valerie
Wendy	Wilfred	Wanda	Walter	Wilma	William

Names of particular individuals have not been chosen for inclusion in the list of hurricane names.

Why Hurricanes Are Named

Experience shows that the use of short, distinctive given names in written as well as in spoken communications is quicker, and less subject to error than the older more cumbersome latitude- longitude identification methods. These advantages are especially important in exchanging detailed storm information between hundreds of widely scattered stations, airports, coastal bases, and ships at sea.

The Naming of Hurricanes

The use of easily remembered names greatly reduces confusion when two or more tropical storms occur at the same time. For example, one hurricane can be moving slowly westward in the Gulf of Mexico, while at exactly the same time another hurricane can be moving rapidly northward along the Atlantic coast. In the past, confusion and false rumors have arisen when storm advisories broadcast from one radio station were mistaken for warnings concerning an entirely different storm located hundreds of miles away.

History of Hurricane Names

For several hundred years many hurricanes in the West Indies were named after the particular saint's day on which the hurricane occurred. Ivan R. Tannehill describes in his book "Hurricanes" the major tropical storms of recorded history and mentions many hurricanes named after saints. For example, there was "Hurricane Santa Ana" which struck Puerto Rico with exceptional violence on July 26, 1825, and "San Felipe" (the first) and "San Felipe" (the second) which hit Puerto Rico on September 13 in both 1876 and 1928.

Tannehill also tells of Clement Wragge, an Australian meteorologist who began giving women's names to tropical storms before the end of the 19th century.

An early example of the use of a woman's name for a storm was in the novel "Storm" by George R. Stewart, published by Random House in 1941, and since filmed by Walt Disney. During World War II this practice became widespread in weather map discussions among forecasters, especially Air Force and Navy meteorologists who plotted the movements of storms over the wide expanses of the Pacific Ocean.

In 1953, the United States abandoned as confusing a two-year old plan to name storms by a phonetic alphabet (Able, Baker, Charlie) when a new, international phonetic alphabet was introduced. That year, this Nation's weather services began using female names for storms.

The practice of naming hurricanes solely after women came to an end in 1978 when men's and women's names were included in the Eastern North Pacific storm lists. In 1979, male and female names were included in lists for the Atlantic and Gulf of Mexico.

DEPARTMENT OF COMMERCE • UNITED STATES OF AMERICA •

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

Attachment B

NOAA Salutes 1989 National Scout Jamboree

The **National Oceanic and Atmospheric Administration** (NOAA) keeps a constant vigil for dangers such as hurricanes, tornadoes, winter storms, and floods. Its weather forecasts influence the daily decisions of most Americans. Its localized forecasts support pilots, mariners, utility, industrial, and recreational interests, farmers, and foresters who are vital to the Nation's economy.

NOAA produces the nautical and aeronautical charts that guide our ships and aircraft. Its geodetic surveys define land boundaries. Its research ships and aircraft chart the Nation's coastal waterways and help us understand and use the marine environment wisely. It works with the states to manage the Nation's coastal zone. It safeguards marine and estuarine sanctuaries and monitors ocean water quality.

NOAA operates satellite systems that provide information for weather and flood forecasts and crop and ocean conditions to a wide variety of users. Its data centers provide climate, geophysical, and oceanographic information vital to food supply, construction, energy development, and human health.

NOAA helps keep a bountiful supply of nutritious fish and shellfish on America's table by working with commercial and sport fishermen, and managing the sea's living resources within our Exclusive Economic Zone and beyond. It protects marine habitats and such animals as the great whales, porpoises, seals, and sea turtles.

NOAA research investigates many aspects of the oceans, the atmosphere, and Sun-Earth relationships necessary to better understand our environment.

The mission of the **National Weather Service** (NWS) is to safeguard our citizens from hazardous weather through the prompt issuance of watches and warnings and to promote the general welfare through forecasts of general weather conditions.

Over 300 local offices, in concert with the National Meteorological Center in Washington, DC, the National Severe Storm Forecast Center in Kansas City, MO, and the National Hurricane Center in Miami, FL, provide all of the Nation's critical weather needs from warnings of tornadoes and hurricanes to 5-day forecasts for local areas. These products are disseminated to the public through the media and the Weather Service's own NOAA Weather Radio network. This radio network, totaling over 380 stations, spans all 50 states and reaches over 90% of the Nation's population.

The NWS relies upon the assistance of 120,000 trained storm spotters that are located across the United States. The volunteers report weather information on developing storms to help the NWS in issuing timely warnings. This greatly reduces the loss of life and property.

The **National Ocean Service** is the Federal Government's oldest scientific and technical agency. In 1807, President Thomas Jefferson established an agency (Survey of the Coast) to survey and chart the Atlantic coastal waters of the young republic. As the Nation grew, so did the duties and responsibilities of this agency known today as the National Ocean Service.

It's activities include: producing nautical and aeronautical charts from surveys made by NOAA ships and aircraft and establishing and maintaining the national networks of geodetic control which provide the basic geographic framework for mapping and charting. In addition, NOS manages land and ocean resources in the coastal zone (seashore); monitors marine pollution; directs policy for the mining of ocean minerals; and provides oceanographic and marine data to the maritime industry and the recreational boater.

The National Ocean Service looks forward to working with the Boy Scouts of America and supporting scouting activities.

Satellites operated by the **National Environmental Satellite, Data, and Information Service** (NESDIS) provide us with a unique and long-sought opportunity to look at the Earth from space. These spacecraft now enable us to observe and measure the many forces of nature which converge on our planet. From the unique vantage point of space, sophisticated environmental/weather satellites bring us information about cloud formations and movements, ocean currents, sea and lake surface temperatures, vegetation patterns, severe weather conditions, volcanic eruptions, and other factors that affect our daily lives. Much of this information is transmitted from these satellites by "direct readout" to ground stations where it can be displayed and analyzed. These direct readout services were pioneered 25 years ago by the first weather satellites and have been expanded and operated in the United States by the National Oceanic and Atmospheric Administration (NOAA). The most popular of these services are the Automatic Picture Transmission (APT) of the U.S. polar orbiting satellites and the Weather Facsimile (WEFAX) transmitted by the U.S. Geostationary Operational Environmental Satellites (GOES). Each service is available free of charge to users. Other countries have launched, and are now operating, weather satellites with direct readout capabilities.

Satellite direct readout technology can be used in many educational areas. For example, biology students can study how temperature and rainfall affect global vegetation patterns. In geography, students can study land forms, mountains, and watersheds. Earth science students can study meteorology and see, in real time, the forces of nature at work in their environment. They can predict and forecast a storm's

Intensity and direction (math), and identify where (geography) and what (life forms) it will influence in any area of the world (culture). In physics, students can study the orbital dynamics of polar orbiting satellites, as well as all the electronics and technology involved. Oceanography students can follow the meandering course of ocean currents and study the development of sea eddies.

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The **National Marine Fisheries Service** (NMFS) has a long history of cooperation with the Boy Scouts of America (BSA). Through the National Conservation Committee of the BSA, the NMFS has worked to promote scouting and foster an understand among the Scouts of the tremendous heritage and value of our Nation's marine resources.

We have worked in close cooperation with other Federal agencies to develop merit badges and Scouting programs to promote the stewardship of this Nation's vast aquatic resources. The mission of the NMFS is to achieve a continued optimum utilization of living marine resources for the benefit of the Nation. This mission recognizes the renewable nature of the resources in our stewardship. The renewable nature of these resources means that substantial benefits to the Nation can be realized through assuring their continued maximum productivity and their optimum utilization by the multiple, often competing, users. This involves protecting and conserving marine mammals, endangered or threatened species, and the habitat which is the foundation of resource productivity. It also involves promoting the wise use of these resources.

The mission of NMFS and the purpose of the Boy Scouts both benefit from many years of cooperation. This cooperation provides a better understanding and concern for conservation and management of the Nation's living marine resources and aquatic habitats with an eye toward the future.

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The **Office of Oceanic and Atmospheric Research** (OAR) provides objective scientific understanding and technological development for predicting environmental conditions and effects. Some of the important environmental problems being addressed by NOAA scientists include the *greenhouse effect*, the *depletion of the ozone layer*, and *ozone as a pollutant*.

The surface of the Earth is heated by incoming solar radiation. The Earth then re-emits some of this energy as infrared radiation. Some of this infrared radiation is absorbed by various atmospheric gases and then re-emitted toward the Earth. This is known as the greenhouse effect. Concerns about the greenhouse effect arise because about 65% of this infrared radiation is absorbed by gases like water vapor, carbon dioxide (CO_2), and ozone. Human activities have caused an increase in some of these gases, and there is concern that global temperatures could increase.

Ozone (a form of oxygen) exists through all levels of the atmosphere, from the surface to about 100 kilometers (km) altitude. The majority of this ozone is found in the stratosphere, between 20 and 40 km, in the region known as the ozone layer. The ozone layer is critical to life on Earth because it absorbs biologically damaging ultraviolet radiation. Recently, a springtime decrease in the ozone layer above Antarctica has been noticed, and small reductions in the concentrations of stratospheric ozone are seen over much of the rest of the planet. Man-made chemicals (chlorofluorocarbons) are believed to be largely responsible for these reductions.

Ozone in the troposphere (from the surface of the Earth to about 10 km altitude) influences the atmosphere in two significant ways: by contributing to the greenhouse effect and by being a major pollutant. In cities, ozone is formed primarily from gases emitted in motor vehicle exhaust. Because the formation depends on temperature, ozone formation is worse during the summer. NOAA research is showing that tropospheric ozone can be created in the country through gases formed by human activities and gases emitted by vegetation. This research can aid in policy formulation for reducing ozone pollution in the air we breathe.

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The NOAA Corps is the smallest of the seven uniform services of the United States. Established in 1917, the NOAA Corps today provides a pool of professionals trained in engineering and the sciences. Officers give managerial, operational, and scientific support to NOAA and other Federal agencies. The 439 members of the NOAA Corps operate ships, fly aircraft, lead mobile field parties, conduct diving operations, manage research projects, and serve in a wide variety of administrative positions. The Corps seeks college graduates with degrees in engineering and the sciences, who are interested in diversity and spending part of their career at sea.

Attachment C

NOAA and the U.S. Decade for Natural Disaster Reduction

"Working Towards A Safer More Productive World"

Edward M. Gross
NOAA, Office of Legislative Affairs
Washington, DC

By the beginning of the 21st century and the end of the U.S. Decade for Natural Disaster Reduction (USDNDR) the National Oceanic and Atmospheric Administration's (NOAA) goal is to be in a position to:

1. Increase its capabilities to warn and alert the public of impending weather related natural hazards.

2. Increase public awareness to the potential threat of destructive weather related phenomena and to increase public knowledge concerning precautions that can be taken to prevent personal injury and mitigate property damage when destructive weather threatens.

How do we achieve these goals?

NOAA has launched a major program to modernize the National Weather Service (NWS), based on new technology and knowledge in the sciences of meteorology and hydrology. Recent advances in satellites, radar, sophisticated information processing and communications systems, automated remote sensors, and super-speed computers are the foundation of tomorrow's warnings and forecasts. The modernization program will result in more timely and precise severe weather and flood warnings for the nation. This will allow communities to plan for rather than react to severe weather events. Americans will see more reliable site specific warnings of thunderstorms and tornadoes, with up to 30 minute lead times for major tornadoes.

Together with the NWS modernization effort, another important program, STORM, directly contributes to NOAA's USDNDR goals. STORM stands for STormscale Operational and Research Meteorology and has two objectives:

- To improve the 0-48-hour prediction of precipitation and severe weather, and

- To advance fundamental understanding of precipitation and other mesoscale processes and their role in the hydrologic cycle.

As NWS modernization progresses, direct links to emergency managers will help to maximize the flow of vital environmental

information. This "Government helping government" concept reflects NOAA's commitment to local decision makers. Some additional examples of NOAA's support to disaster preparedness and mitigation efforts focused at the state and local level include: specialized disaster modeling like the Sea Lake Overland Surge from Hurricanes (SLOSH) model; the Tsumani warning program; and activities in the Office of Ocean and Coastal Resource Management (OCRM).

The SLOSH model is used by the National Hurricane Center (NHC) to predict hurricane storm surges across bays and estuaries and estimates possible flooding.

SLOSH is also used extensively in hurricane evacuation planning as a tool to predict areas vulnerable to surge flooding. State and local agencies integrate this information with population studies and road capacity estimates to develop comprehensive evacuation plans.

The U.S. has cooperated internationally by making SLOSH available for other hurricane-prone areas of the world.

The Tsunami program provides timely watch and warning information to international and domestic users throughout the pacific basin and Alaska. Our Pacific Tsunami Warning Center in Hawaii is now able to focus on issuing regional Tsunami warnings for areas impacted within three hours of wave travel time from the events origin. During the decade, future systems enhancements will increase lead times even further.

OCRM was established pursuant to the Federal Coastal Zone Management Act (CZMA) of 1972 as amended. It plays a key role in the development of comprehensive coastal management programs with coastal states and territories. One element of the CZMA deals with protecting lives and property from natural hazards. This includes minimizing the loss of life and property caused by improper development in flood-prone, storm surge, geological hazard and erosion-prone areas and has helped establish a national focus on problems of hazard reduction in coastal areas. Financial assistance to state and local governments has provided a tremendous incentive to develop programs to achieve the above objectives. This program, and its associated state programs, will be ideal vehicles during the USDNDR for incorporating the difficult social and economic judgments involved in planning and providing prudent coastal development. This planning and prudent development in turn will mean reduced hazard losses because fewer people will be affected by natural disasters.

NOAA is also committed to working closely with the private sector to enhance the dissemination of information to the public and to encourage specialized services related to disaster reduction.

One such private sector activity being evaluated by NOAA incorporates an innovative private sector dissemination technology with a proposed NWS emergency alerting notification system. It would involve building an alert broadcast capability into a local telephone network which, in turn, would provide a distinctive ring accompanied with a recorded alert message to all telephones located in a prescribed geographic area. This would provide improved alert notification to homes and workplaces during the late evening-early morning hours when the current broadcast alert system is ineffective.

Sociologists have convinced us that timely, site specific warnings, by themselves, are not sufficient to elicit the proper response to the threat. Rather, individuals must be presented with sufficient information to assess clear personal risk. Presently we are working with sociologists and emergency managers to assess what types of information are needed and when, in order to elicit proper decision making and user response.

NOAA realizes that to be effective requires diligent support to the hazards community and decision makers at the state and local level. Its offices across the country will allow NOAA to act as ombudsman at the grass roots level, working with other government agencies, the private sector, local officials, and the media to promote public awareness and to test action plans.

Some of NOAA's vehicles for expanding public awareness will be: hazard awareness weeks; contacts with other organizations; encouragement of the incorporation of hazard awareness education into school curriculum; newsletters; professional journals and societies; and the media to give hazard related information broad circulation.

Though the primary focus of the USDNDR is on rapid onset natural disasters, drought has been included within its purview. It is vital both for the United States and the international community to address specific long term situations of potentially catastrophic proportions such as droughts, desertification, and water resource management. Many experts have listed the 1988 U.S. drought as one of our nation's worst disasters. Accurate, timely predictions, based on sound science, are a crucial element of the U.S. strategy for coping with drought. NOAA research and services in this area will be augmented substantially during the Decade.

The goals of the U.S. Decade and the International Decade for Natural Disaster Reduction are parallel to NOAA's mission. Because of this, the Decade will add momentum to NOAA's efforts toward achieving its goal of increasing its warning and alerting

capabilities and increasing awareness to the potential threat of destructive weather related phenomena. NOAA will assume a leadership role in forging partnerships with the hazard community to ensure a safer more productive world.

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Attachment D

DISASTER PREPAREDNESS ROSTER

JULY 1989

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