Aware

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NATIONAL WEATHER SERVICE

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The *Aware Report* is available on the web at:
http://www.nws.noaa.gov/om/aware.pdf

Aware Report is an administrative document, issued by the National Oceanic and Atmospheric Administration, for the information and use of the Agency and the natural hazard community.

From the Director's Corner

During the last year, the Office of Meteorology (OM) has been involved in multiple planning activities to position the agency to ensure that our customers reap the full benefits that the modernization of the Weather Service has to offer. The OM Strategic Plan outlines our goals in the areas of science and service. It is our blueprint to keep us focused on what our customers feel are the most important tasks facing the hydrometeorological community. The Strategic Plan provides the basis of the new OM Home Page whose address is included in this issue of the *Aware Report*. We promise to keep the Home Page current so that all of our customers can track our major initiatives. Next, we created a series of OM Technical Operating Plans that ensure that each major initiative is reviewed on an annual basis and supported by the proper resource mix. Evolving from these plans came service transition plans for each of the major hydrometeorological service areas as well as a twelve-step transition plan to bring our current field office operations into the full restructured and modernized National Weather Service (NWS).

In the midst of this planning activity, numerous high profile activities were brought to fruition. The concept of the end-to-end forecast process was articulated to underscore the roles of the National Centers, River Forecast Centers (RFC), and field offices in the entire forecast process from data acquisition through numerical modeling, the addition of national center and local office forecast expertise, to delivery and use by the customer. The dissemination of critical information to our customers was enhanced through the establishment of the Emergency Managers Weather Information Network (EMWIN) in collaboration with the NWS Office of Systems Operations. Similarly, improved interagency coordination of critical information was accomplished through the creation of outreach resources for the Warning Coordination Meteorologists (WCM) and videoconferencing capabilities between the NWS and the Federal Emergency Management Agency (FEMA) during landfalling hurricanes. In an effort to ensure that future services keep pace with scientific advances, the Collaborative Science, Technology, and Applied Research Program (CSTAR) was inaugurated to forge collaborative efforts between our field offices and the university community while our Science and Operations Officers (SOO) were provided resources necessary to enhance the scientific integrity of local operations.

The planning process is winding down. We are now entering an era where the implementation of a modernized, integrated forecast process is becoming the dominant activity. The national radar system is virtually in place, the automated surface observing system is operational, county warning areas are established, the Advanced Weather Interactive Processing System (AWIPS) is becoming a reality, staffing is aiming toward end state targets, customers are demanding additional services, yet the budgetary pressures are omnipresent and increasing. Times like these demand creativity, flexibility, and, above all, the will to make the necessary changes to satisfy customer expectations. We in OM view all of our colleagues in the public and private sectors as one team dedicated to providing the best possible service to our customers. Together we can create the kinds of opportunities to ensure success.

Louis W. Uccellini

Louis W. Uccellini
Director, Office of Meteorology

Science and Service

CUSTOMER SERVICE

The Convective Watch Decentralization Begins in 1997

The NWS Plan to migrate the convective watch program from the Storm Prediction Center (SPC) to future Weather Forecast Offices (WFO) remains on schedule for a Phase I field test in the spring of 1997 and national Phase I implementation in the fall of 1997. The Plan as drafted in April 1996 has undergone extensive review within the NWS and among its external customers. Only minor changes are necessary to deliver a Plan that accommodates concerns of NWS Regions, the National Centers for Environmental Prediction (NCEP) and external customers. A final version of the Plan is due in November.

Meanwhile, the first of three Convective Watch Decentralization Teams has begun its work to deliver plans to guide the NWS through the decentralization. The Science Application Team met in May to identify field forecaster needs for training and to construct a working outline for collecting information about available training. The team members have worked diligently to deliver information that will culminate in a draft training plan due late this fall (see related article by Eli Jacks in the Science and Training section). Product Format and Service Evaluation Teams begin their work this fall as well.

The Customer Workshop in March 1995 yielded a Customer Advisory Panel composed of representatives from each major group of NWS external customers. The Advisory Panel will continue to assist the NWS in developing products and services associated with the decentralization (and with other NWS projects associated with the modernization). The next customer workshop is planned for December.

Late in 1995, Gary Garnet developed personal computer (PC)-based software to allow future WFOs to redefine watches and generate watch clearance products. That software will be beta tested this winter by SPC. In addition, OM has allowed other field developed/supported software packages to be used instead of the ZIP software developed by Garnet. Also, OM is reviewing commercial graphics information system (GIS) software that conceivably could provide a near-AWIPS data processing, display, and watch/warning capability.

—Bill Alexander, Mesoscale Manager

Service Backup Plan for the MAR Nears Completion

Providing Service Backup capability in the fully modernized and restructured (MAR) environment continues to be a formidable issue. With the delivery of AWIPS now upon us, it is increasingly urgent that specific information be gathered about data requirements for future WFOs. WFO functionality can be degraded or interrupted by a variety of communications or hardware/software failures, resulting in slowed or interrupted flow of information (and therefore operational capability).

There are three primary modes of failure. One, a WFO loses its Satellite Broadcast Network (SBN) downlink. When this occurs, the WFO's rate of data reception diminishes from about 1544 kilobytes (kb) to 64 kb (or 120 kb if the frame relay is used as well as the SBN backup line). At best, WFOs lose an order of magnitude in their data-gathering capability. Under such conditions, what can a WFO continue to do? What is the priority for product receipt, knowing that larger products (visible satellite imagery, for example) are too large under limited data gathering situations. Another scenario pertains to the failure of the SBN uplink at Fort Meade, Maryland. While there are multiple channels comprising the uplink, it is possible for the entire uplink array to fail (during a hurricane or tornado, for example). In such a situation, alternate terrestrial data links only can be tapped by a maximum of 33 offices at a time and at a data rate 10 to 20 times slower than using the SBN. While WFOs will be able to continue their short-fuse responsibility without any SBN data nationwide, they will quickly run out of usable model and satellite data. Under such conditions, how long can a forecast office continue to provide its routine product suite? Furthermore, once the SBN is restored, how long will it take to replenish WFO databases such that they may resume full operations? A third failure scenario pertains to a "backhoe" incident, i.e., when a WFO is totally disabled and without power. Assuming all adjacent WFOs pick up the disabled WFO's warning and forecast responsibility according to plan, everything's fine until the disabled WFO is restored. The question is, how long will it take for the disabled WFO to retrieve enough guidance and data to resume its full warning and forecast responsibility? Remember that the SBN is only for new data. Back data must be requested through terrestrial lines and at the slower rate.

Again, these questions require considerable thought by future WFOs and Regions. We need to deliver AWIPS with sufficient communications capability, including knowing what models (or subsets of models) and what data WFOs require, as a minimum, to operate. In the coming months, future WFOs and Regions will be working alongside OM to provide quantitative information that can be folded into the AWIPS communications specifications.

—Bill Alexander, Mesoscale Manager

Emergency Managers Weather Information Network (EMWIN) Available Nationwide

Since it became a permanent part of the NWS operational suite of dissemination systems in early 1996, EMWIN has proven very popular with its intended customers. As word of its usefulness—and affordability—continues to spread, implementation is struggling to meet demand.

Currently, the EMWIN datastream is available nationwide from the National Oceanic and Atmospheric Administration's (NOAA) Geostationary Operational Environmental Satellite (GOES)-8 and -9

satellites and in KU band format from the Galaxy 4 satellite as well as the Corporation for Public Broadcasting's Telstar 401 satellite. The digital datastream is also available in an increasing number of locations in an easier and less costly manner using local radio rebroadcast (converted from satellite downlink) and other techniques. Besides the original audio transmission from NWS Headquarters, other rebroadcasts are now occurring throughout the state of Oklahoma and neighboring areas in Kansas; parts of north Texas, including the Wichita Falls area; and western Arkansas, including Fort Smith and Fayetteville. Work continues with local emergency management across the country to obtain appropriate radio frequencies for rebroadcasts in other states. This expansion should become evident in 1997.

Commercial vendors are selling radio receiving equipment for under $150 and complete satellite earth stations, including dishes or antenna (depending on the satellite), other hardware peripherals and software, ranging between $400 and $800 and dropping. Remember that all users, regardless of type of EMWIN reception, will need a personal computer for ingest and display of data. For the latest information on the EMWIN vendors and their equipment and prices, please visit this Web site on the Internet:

http://www.nws.noaa.gov/oso/oso1/oso12/document/winven.htm

For general information about EMWIN, please visit this Web site:

http://www.nws.noaa.gov/oso/oso1/oso12/document/wintip.htm

An information packet has been distributed that also provides names, addresses, and telephone numbers for commercial vendors. If you'd like a copy, contact your local NWS office. A full-color brochure on EMWIN is planned for early 1997.

—Rod Becker, Dissemination Services Manager

Emergency Alert System (EAS) Begins Nationwide Operations on January 1, 1997

Operated in joint partnership by the Federal Communications Commission (FCC), the FEMA, and the NWS, the EAS officially begins nationwide operations on January 1, 1997. Some 24,000 AM and FM radio stations and commercial and public broadcast TV stations will be required to implement the new system although the broadcast of local emergency messages still will be voluntary. Some media facilities are already operational. Cable TV facilities will join the EAS July 1, 1997.

Formerly the Emergency Broadcast System (EBS), the new EAS will be a much more robust and less error-prone voice "alerting" system, providing up to 2 minutes of critical information. The system features digital automation for optional hands-free broadcasting of emergency messages from such authorized sources as the NWS, the emergency management community, and the media itself. This is particularly necessary for the growing number of automated media facilities, which previously could not broadcast local emergency messages. Given that each EAS facility must monitor at least two other sources of emergency messages, this "web" feature nearly guarantees that potentially life-saving information reaches its intended audience. Judging from the history of the EBS, emergency weather messages from the NWS are expected to activate the new EAS well over 80 percent of the time.

As the NWS's primary entry into the EAS, NOAA Weather Radio's (NWR) influence and "visibility" will increase markedly. Coupled with NWR's future migration to an "all hazards" network, NWR will reach into millions more homes through the commercial electronic media to broadcast emergency environmental and man-made messages.

It cannot be overstressed that NWR broadcasts must maintain or attain the highest levels of quality and timeliness. This is crucial to people responding appropriately to hazardous situations and to NWS credibility. By highest quality, we don't necessarily mean professional "golden" voices, but clear enunciation, concise information, no hesitation or uncertainty in presentation, and no extraneous sounds or background noises. We must take this seriously. If we don't get it right, the media eventually will not let us interrupt their programming with our critical messages.

To ensure success, the Weather Service Headquarters (WSH) and the Regions recently conducted videoconferences on the EAS to reach consensus on national NWS policy before the start-up date.

—Rod Becker, Dissemination Services Manager

Severe Weather Verification Distributed to NWS Field Offices

In August, field offices received the first severe local storm warning files, event files, and statistical summaries based on the new verification system that was developed by WSH. For most offices, the statistics included data from January through April 1996. Updated reports will be sent on a monthly basis.

Initial reaction to the content and format of the reports has been favorable. Many offices noted that the number of missing warnings was significantly less than under the old system. The key to the new warning collection system is a dedicated warning file on a server directly off the NWS Telecommunications Gateway. This reduces the number of communication links between the warning issuance and subsequent receipt by the verification program.

The potential still exists for warnings not to make it into the verification database. Therefore, additional automated quality control procedures are under review. The goal is to reduce the time required by field offices in the quality control process.

—Paul Polger, Verification Manager

Preliminary Planning for the Exercise "RESPONSE 98"

Recently, Dr. Wilson Shaffer, Marine Techniques Branch, Office of Systems Development (OSD), and I met with FEMA representatives to discuss the upcoming national exercise, "RESPONSE 98." This preliminary session was called to identify potential participants. Exercise "RESPONSE 98" will test the response capabilities of the Northeast United States when threatened by a landfalling hurricane.

John Crawford, planning specialist for FEMA's Preparedness, Training and Exercise Directorate indicated that RESPONSE 98 would involve FEMA Regions I and II. Early commitments are that every state within FEMA Regions I and II will be participating. FEMA Region 1 states participating include Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island. States from FEMA Region II include New York and New Jersey.

On October 22, 1996, FEMA exercise design staff met with planners from the participating FEMA regions and NWS representatives. This planning session will set the agenda for the kick-off meeting originally scheduled for December 3-5, 1996, in Maynard, Massachusetts. Budget pressures have forced this meeting to be rescheduled for January 1997. OM will take the early lead in this effort. As with Exercise "RESPONSE 95," OM will be involving regional and field offices once the exercise agenda has been completed. Please direct any questions to Rainer Dombrowsky, Customer Service, 301-713-0090 x116.

—Rainer Dombrowsky, WCM Program Leader

Hurricane Liaison Team Deployed to the National Hurricane Center (NHC)

During this hurricane season, the Tropical Prediction Center (TPC) and FEMA agreed to test the concept of deploying a liaison team to the NHC. The concept provides for a real-time emergency management liaison between NHC and Federal, state, and local emergency management and response agencies during times of hurricane threat.

Prior to the 1996 hurricane season, elements of FEMA Region IV and volunteer state and county emergency management professionals were reported to NHC in support of the emergency management community. This ad hoc approach was so well received by state officials that the Governor of Florida requested that the process be formalized. FEMA Director, James Lee Witt, subsequently requested that NHC consider formalizing the concept. Following several meetings between FEMA, NHC, and OM, a plan was drafted defining the purpose and functions of the team, team structure, and team activation and deployment process.

To date, the Hurricane Liaison Team has been activated for Hurricanes Bertha, Edouard, Fran, and Lili. FEMA and the NWS are conducting an assessment of the Hurricane Liaison Team mobilization and operations plans and will have revised plans for review following the 1996 hurricane season. Inquiries concerning the Hurricane Liaison Team can be directed to either William Massey, FEMA Region IV, 404-853-4430, or me at 301-713-0090 x116.

—Rainer Dombrowsky, WCM Program Leader

Course Change for the National Warning System (NAWAS)

The NAWAS upgrade process has fallen victim to the budget problems being felt within the entire Federal Government. The NAWAS upgrade plan, as originally presented a year ago, is no longer viable. The combination of a shrinking budget and failures in the proposed technologies elements of the proposed upgrade and reconfiguration have been abandoned by FEMA. FEMA's position was presented by Stu Carter, FEMA telecommunications specialist, to the Meteorological Services Division (MSD) Chiefs at their September conference. OM is currently working with the regions and FEMA in identifying the reasonable alternatives to achieving the goals OM set last year.

The objective, as defined by the MSD Chiefs, is the development of a coordination path for the end-to-end forecast process through internal-office, multi-regional coordination projects in FY 97, through the use of existing technologies when possible. The MSD Chiefs agreed to support three demonstration projects. These projects include the expansion of the on-going Western Region demonstration to include participation by Central and Southern Regions. This project will demonstrate the capabilities of FTS Blast-up (teleconference approach) in establishing an efficient voice coordination capability that is responsive to both routine and event driven coordination. Project 2 calls for the demonstration of the NAWAS in whatever form FEMA and the NWS can agree on. In conjunction with this communication approach, Eastern and Central Regions will integrate "Monitor" software into the coordination process with focus on the event driven with the goal to make routine event coordination with additional software resources. The final project will be a continuation and expansion of the on-going Alaska Region effort in the sharing of graphical information via existing electronic pathways and the development of a sharing capability to exchange SIGMET preparation information among the AWC, the Canadians, and the Alaska Aviation Weather Unit.

The evaluation period for these projects will begin December 1, 1996, and end May 1, 1997. The evaluation report and subsequent recommendations will be presented on or about July 4, 1997. For further details on these projects, field offices should call the responsible regional office or they can contact OM.

—Rainer Dombrowsky, WCM Program Leader

New Hats Complement Local NWS Survey Teams

Recently, a WCM from one of our NWS field offices went out to survey damage from a dam break but realized that he had little in the way of identification to allow him onto the damaged site. So OM got involved and looked into providing each field office with NWS Disaster Survey Team identification items: hats, name tags, jackets (windbreakers), and/or possibly T-shirts. Funding was approved to purchase NOAA/NWS hats only for each of our NWS field offices. The hats have "NOAA" and "NWS" embroidered in gold letters with a NOAA bird placed between these two acronyms. These hats were distributed to the Regions in September. Many more staff members will want to order hats, but this has to be discussed with each of the regions (if funding is available).

In addition, name tags can be ordered from Prestiege Advertisers (this is the same company who created the NOAA Corps name badge). Having these name tags from one company will ensure having the same look for our staff members for conducting surveys. Each badge consists of a name and title (only two lines). The NOAA logo and NWS will be imprinted on each badge. Each office will be required to order their own name badges using their funding. OM will just supply the contact where to obtain the ID name tags.

From field and headquarter's response so far, these hats were useful when surveying the Tropical Storm Fran flood event along the Potomac River in September.

—Linda Kremkau, Editor

Third NWS/FEMA Emergency Managers Training Course Completed

The third course "Hazardous Weather and Flooding Preparedness" is completed. We have sent out to the regions a complete set of course materials for each WCM. They will get them to the field along with any additional information. If they have not arrived, LOOK FOR THEM SOON.

The fourth course, "Warning Coordination and Communication," is being drafted now. We have targeted late fall/early winter 1996 as the time for the two pilot offerings. We will be asking again for help from WCMs to teach and help evaluate the pilot courses.

—Christopher R. Adams, Senior Social Scientist

NOAA Heat Wave Workshop a Success

The NOAA Heat Wave Workshop was co-sponsored by the Centers for Disease Control and Prevention and the Environmental Protection Agency, September 18-19, 1996, in Silver Spring, Maryland. The workshop was put on by the NWS under the auspices of the NOAA Chief Scientist. There were four goals for this workshop.

(1) Bring together interested agencies, groups, companies, and individuals.
(2) Develop a common understanding of heat waves as natural hazards.
(3) Identify solutions to reduce the disasters' impacts of these events.
(4) Create an action plan to jointly implement disaster reduction solutions.

To accomplish this, the workshop was organized to first provide a common understanding of the problem and issues. Three panels of experts presented information on (1) the Chicago heat wave, (2) Federal agencies roles, and (3) state and local heat wave response programs. Following the presentations the first morning, workshop attendees broke into one of three working groups to identify issues and concerns and develop action plans. The groups were facilitated by Mike Franjevic, WCM, Phoenix, Arizona; John Feldt, Meteorologist in Charge (MIC), Des Moines, Iowa; and Kevin McCarthy, Public Weather Program Leader, OM. Their hard work helped make this workshop a success. These three groups addressed:

- Current warning and forecast practices.
- Research requirements for improved warnings, forecasts, and health impacts.
- Identify successful state and community intervention strategies.

Here are some of their findings and recommendations:

Research Requirements

- Establish an interagency task force to coordinate and focus research activity.
- Evaluate existing heat-related watch/warning systems and models.
- Develop an optimal heat wave watch/warning system.
- Assess the availability of excessive heat mortality and morbidity data.
- Evaluate community education and prevention efforts.
- Evaluate mitigation efforts.

Heat Wave Forecasts and Warning Practices

- There is a need for a uniform definition of "heat wave."
- Revise the heat program procedures to allow more flexibility in the operations of the local NWS offices.
- Evaluate current products and user understanding of terminology.
- Define cancellation criteria for NWS heat-related products.
- Develop and conduct NWS preparedness programs for excessive heat, targeting training for the media and local/state officials and public education.

Successful State and Community Intervention Programs

- Develop a model excessive heat response action plan for multiple agencies. This should address:
  - Preparedness — public education, training, exercises, resource management, warning systems, housing.
  - Response — command systems, intervention programs, emergency public information, staged warnings, mass care, tracking of health impacts.
  - Recovery — de-activation, continued monitoring of health effects, mental health intervention, community development.
  - Evaluation — evaluating and modifying response plan, epidemiological studies, cost/benefit analysis.

The NOAA Heat Wave Workshop Report is being finalized as the AWARE Report goes to press. Copies will be sent to participants and all WCM's. For additional copies, contact Linda Kremkau in the Customer Service Core. For more information on Excessive Heat Program, contact Kevin McCarthy, Integrated Hydrometeorological Services.

—Christopher R. Adams, Senior Social Scientist

Chris Adams Returns to Colorado State University

As I sit here finishing packing 4 years worth of files and memories, I pause to reflect on the growth and changes I have seen here at WSH. The WCM program is in full swing and going strong. Customer service, meeting the information requirements of public safety officials, is a priority. I have truly enjoyed the experience of working to help develop these programs.

It is time to return to Colorado State University but I will still continue to support the research and project requirements of the NWS. I will be housed at the Cooperative Institute for Research in

the Atmosphere. My work will focus on effective warning coordination and communication, education of emergency management officials to fully utilize the improved products and information from the NWS, dissemination of information to users, and research on the societal impacts of weather.

Please keep in touch. My address has changed, but my work has not. Please feel free to call or e-mail me at:

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—Christopher R. Adams, Cooperative Institute for Research in the Atmosphere, Colorado State University

INTEGRATED HYDROMETEOROLOGICAL SERVICES

Public Weather Program Changes

The following eight changes in the public weather program went into effect on Tuesday, November 5, 1996. A detailed statement for each change can be obtained from the OM Home Page. Click on the "Hot Topics" subsection and click again on "notifications."

State zone forecast maps (in "bna" ascii type format) have been updated and can be downloaded from the following Web site:

http://www.nws.noaa.gov/modernize/st-maps/maps.htm

1. The NWS has reconfigure public zone forecast areas in eight western states (CA OR WA ID MT UT AZ NV). These reconfigurations provide better site-specific forecasts since the new smaller zones can be grouped with the needed flexibility to more accurately reflect the expected or ongoing weather. A zone is named either by county (or counties) or other recognizable geographical names. Zones were downsized in the other states 3 years ago.

2. Public zone forecast areas in part of north-central Wyoming were reconfigured by replacing three Wyoming zones (50, 51, and 52) with four new Wyoming zones (26, 27, 98, 99). Concurrently, Wyoming zone 53 was renumbered as zone 28 and renamed to East Johnson (county). Also, long-fuse warning and forecast responsibility for Wyoming zones 98 and 99, which together comprise all of Sheridan County, was assigned to the Weather Service Forecast Office (WSFO) in Great Falls (GTF), Montana. For Wyoming zones 26, 27, and 28, long-fuse warning and forecast responsibility resides with the WSFO in Cheyenne (CYS), Wyoming.

3. Forecast and long-fuse warning responsibilities for Wyoming zone 21 in extreme southwest Wyoming was transferred to the WSFO in Salt Lake City (SLC), Utah, from the WSFO CYS.

4. Two new zones were created in northeast Ohio. Ashtabula County was split into two portions—a lakeshore portion from Interstate 90 northward and an inland portion south of Interstate 90. This zone change allows forecasts in Ashtabula County to be more specific. The I-90 breakpoint line between the two zones is as follows:

41 DEG 45 MIN 39 SEC NORTH / 81 DEG 00 MIN 03 SEC WEST
TO
41 DEG 55 MIN 30 SEC NORTH / 80 DEG 31 MIN 15 SEC WEST

5. Two independent cities in southeast Virginia were moved to different forecast zones. This action was taken to unify backup assignments between the Norfolk/Richmond, Virginia, Weather Service Office (WSO) at Wakefield, and the Washington DC/Baltimore, Maryland, WSFO at Sterling, Virginia.

VA CITY	FROM ZONE	TO ZONE
Hampton	VAZ095-	VAZ094-
Petersburg	VAZ080-	VAZ081-

6. Forecast and long-fuse warning responsibilities for 41 zones in the six midwest states (IL IN MN NE WI MO) were transferred to other WSFOs. These service transfers consolidate all services for each of these 41 zones with one WSFO.

7. More event-driven public zone forecasts will be issued in the following areas:

> Kentucky, Indiana, Illinois, Iowa, Wisconsin, Minnesota, North Dakota, New Mexico, Georgia, Alabama, Mississippi, Arkansas, Tennessee, Florida, Louisiana, Puerto Rico/Virgin Islands, Marianas Islands, Montana, Nevada, California, Arizona, and the rest of Texas and Oklahoma where this change has not already occurred.

For these areas, this program change means that the scheduled public zone forecasts, issued around 11 a.m. and 9 p.m. local time, are being replaced by unscheduled event-driven zone forecast updates as needed. As necessary, the forecasts are accompanied by watches, warnings, and advisories.

Scheduled zone forecasts will continue to be issued around 4 a.m. and 4 p.m. local time and, if necessary, accompanied by watches, warnings, and advisories. The scheduled times may vary from office to office by around an hour or so from 4 a.m. and 4 p.m. local time.

The change to more event-driven issuances had already been implemented in the following areas:

> South Dakota, Nebraska, Kansas, Missouri, Colorado, Wyoming, Michigan, Idaho, Alaska, Oklahoma (except the panhandle and northeast), west Texas (except the panhandle), Wichita Falls, Texas, and vicinity.

8. A number of WSOs in the midwest United States gained partial (or shared) responsibility for public zone forecasts and long-fuse watches/warnings and advisories. These WSOs now share this

responsibility with established WSFOs. This is an interim phase in the NWS modernization that will provide improved services through more effective coordination of long- and short-fuse warnings and forecasts. However, no product identifier and header changes are required by NWS customers. The issuing office (whether WSO or WSFO) will be indicated in the mass news disseminator label within the product itself.

—Kevin C. McCarthy, Public Program Manager

Hurricane Opal Service Assessment Released

Hurricane Opal struck the Florida Panhandle on October 4, 1995, causing nine deaths and an estimated $2 billion damage. A new approach to reporting disasters was decided on and the result is the first ever Service Assessment. Each NWS element involved in Hurricane Opal was involved in writing a section of the report. Dr. Jay Baker of Florida State University interviewed emergency managers and others affected by Opal and wrote a chapter that provides an independent review of the event. The Service Assessment was released in June.

The Hurricane Opal Service Assessment is available by contacting OM's Customer Service at (301) 713-0090 or through the NWS Home Page on the Internet at:

http://www.nws.noaa.gov/om/omhome.htm .

—Laura Cook, Marine Weather Services

NWS Participates in Experimental Aircraft Association (EAA) Fly-In Convention in Oshkosh, Wisconsin

The 44th annual EAA Fly-In Convention in Oshkosh, Wisconsin, took place August 1-7, 1996. More than 800,000 people and 11,000 airplanes participated in this year's show. This year's convention hosted 2,487 show planes and 748 commercial exhibitors.

For the first time, the NWS teamed with eight Federal (from the United States and Canada) and state agencies in a joint outreach effort at the air show. The other participating agencies were: U.S. Customs; U.S. Customs National Aviation Center; U.S. Customs Drug Interdiction Center (with their Blackhawk Helicopter); National Park Service; U.S. Department of Agriculture (USDA) Animal Plant Health Inspection Service; USDA Animal Control; Canada Customs; and the Wisconsin National Guard. There were over 60,000 visitors to our display this year. The visitors were primarily pilots and aviation enthusiasts, but this air show is always an excellent opportunity for outreach to other Federal and state agencies, teachers, and the general public.

The NWS contingent was large and diverse, including folks from two of the local offices (Green Bay and Milwaukee/Sullivan), the Aviation Weather Center, Central Region Headquarters, the Automated Surface Observing System (ASOS) Program Office, the Office of Systems Operations, the Office of Meteorology, and NOAA Public Affairs. Both Lou Boezi, Deputy Assistant Administrator for Modernization, and Rich Augulis, NWS Central Region Director, had the opportunity to visit and participate in our display and were impressed by the nature of the outreach the NWS provided. Both Lou and Rich support our continued display at Oshkosh with the other participating agencies, and plans have already begun for NWS participation in the 1997 air show.

The NWS display included a large screen McIDAS system on loan from the Aviation Weather Center; an EMWIN system on loan from the Next Generation Radar (NEXRAD) Weather Service Forecast Office (NWSFO) Milwaukee/Sullivan; a dedicated PC for displaying the minute-by-minute ASOS observations (there is a commissioned ASOS at the airport); the pop-up NWR display; an extra large TV/VCR for showing videos (the tornado videos drew the largest crowds, of course); and a large selection of NWS and NOAA brochures, handouts, and reference material. The most popular items were the METAR/TAF decode cards, heat stress cards, and a list of NWS Home Page addresses.

During the convention, several NWS presentations were offered. On August 2, Howard Diamond and Chris Alex presented a detailed seminar on the new hourly surface observation (METAR) and aviation forecast (TAF) codes. Over 150 pilots participated in that seminar, which is impressive, since that talk took place during the afternoon air show. On August 6, Doug Gifford of the ASOS Program Office, gave a talk on ASOS; Jim Henderson briefed on the Aviation Weather Center on August 3, and Lou Boezi gave several interviews. In addition, Lou Boezi presented a plaque to the president of the Experimental Aircraft Association on behalf of Dr. Friday and the NWS on August 2.

One of the highlights of our experience at the air show was the joint sponsorship by the nine agencies of four "Make-A-Wish" children and their families. "Make-A-Wish" is the organization which grants wishes for terminally ill children. Representatives from each of the nine agencies spent all day Saturday, August 3, with the children and their families. The activities for the children included a flight in a historic Ford Tri-Motor plane, piloted by Chuck Yeager; VIP seats for the afternoon air show; a ride in the Blue Angels simulator; a visit to the EAA Aviation Museum; and presentation of gifts from each agency.

The success of our participation in the air show this year is due largely to the tireless efforts of Howard Diamond, the coordinator of the NWS participation, and Mike Szkil, MIC of NEXRAD Weather Service Office (NWSO) Green Bay. Many thanks to both of them and to all NWS participants for a job well done.

—Christine Alex, Aviation Meteorologist

Global Marine and Distress Safety System (GMDSS) Radiocommunication Marks End Of An Era

Since the days of the Titanic, morse code radiotelegraph equipment has been required aboard ships sailing the high seas. The equipment is intended to be used in the event of distress and to receive routine navigation and weather information. In June 1996, marine radiocommunications in the United States entered a new age when ships were permitted to install a GMDSS equipment suite in lieu of the traditional radiotelegraph installation. GMDSS will become

mandatory for all ships >300 tons and passenger vessels on an international basis beginning in February 1999. Under GMDSS regulations, reception of weather and other safety information is mandatory.

GMDSS uses a combination of automated satellite, VHF and HF radio equipment to provide reliable ship-to-ship, ship-to-shore, and shore-to-ship communications for distress, safety, and routine communications. The NWS actively participates in GMDSS by preparing marine forecasts for broadcast via SafetyNET (INMARSAT C satellite), NAVTEX (MF radio), Narrow Band Direct Printing (HF radio) as well as U.S. Coast Guard VHF and HF voice stations. NOAA also participates in GMDSS through the operation of the SARSAT (Search And Rescue Satellite Aided Tracking) system, used to detect the position of vessels in distress equipped with satellite beacons known as EPIRBs.

Currently, only a small percentage of U.S. commercial and government ships are fully equipped with GMDSS. This number will grow dramatically in the coming months now that radiotelegraph equipment is no longer required and as 1999 approaches. Correspondingly, user awareness and questions regarding NWS marine products can be expected to increase. In a recent joint survey conducted by RTCM (the Radio Technical Commission for Maritime Services), current GMDSS users expressed their general satisfaction with the dissemination of safety information via GMDSS.

—Tim Rulon, Cmdr NOAA Corps

SCIENCE AND TRAINING

Convective Watch Decentralization: The Forecaster Training Plan is Under Development

During the spring of 1996, OM issued its draft Plan for decentralizing the Convective Watch Program. As part of this Plan, a Science Application Team was established to address the issue of how to create an effective training program for NWS field forecasters on how to issue and monitor convective watches.

The Team, chaired by OM, met for the first time in May 1996 at WSH. It consists of NWS SOOs, a representative from the SPC, as well as training experts from the Cooperative Program for Operational Meteorology, Education and Training (COMET); the Operations Training Branch of the Weather Surveillance Radar-1988 Doppler (WSR-88D) Operational Support Facility; and the National Weather Service Training Center.

At the conclusion of the 2-day meeting, the Team had established a proposed outline of required knowledge, skills, and abilities for forecasters to issue convective watches. The outline was prepared utilizing the "Snellman Funnel" format; that is, presuming forecasters would prepare their watches by considering climatic and large-scale factors first before proceeding down to the mesoscale. Using the new outline as a guide, each member of the team was assigned a section of the outline with the goal of researching and enumerating available resources (written or computer based), forecasting tools, training techniques, and proposed certification criteria for their portions. The OM Team coordinators agreed that their role would be to fold the input from Team members into a cohesive Plan.

At this writing, a great deal of first draft input has been received by OM from Team members on their sections of the Plan. Efforts are currently being directed towards developing a concise, standardized format for the input to ensure that the final Plan will be realistic and user friendly. In addition, the difficult question of how to certify completion of the training material by individual forecasters is currently being addressed. The Team will continue coordination efforts during the first part of FY 97 in order to tackle these issues and move forward with generation of the Training Plan.

—Eli Jacks, National SOO Coordinator

NWS Sponsors Fifth National Heavy Precipitation Workshop at State College, Pennsylvania

The NWS sponsored the Fifth National Heavy Precipitation Workshop at the Atherton Hotel, State College, Pennsylvania, September 9-13, 1996. The American Meteorological Society and the National Weather Association were cooperating organizations. The workshop used the end-to-end forecast process as a template and focused on key science and policy issues regarding quantitative precipitation estimation (QPE), deterministic and probabilistic quantitative precipitation forecasting (QPF), and deterministic and probabilistic flash and river flood forecasting. Participants represented a broad spectrum of the meteorological community to include the NWS regions, national centers, and national headquarters, NOAA Laboratories, academe, the private sector, and the user community.

Sessions addressed the following fundamental questions: What are the socioeconomic impacts of flash and river flooding and the service requirements of the end user? What are the NWS Quantitative Precipitation Information (QPI) data product requirements and how are they/will they be satisfied? What are the QPF, probabilistic quantitative precipitation forecast (PQPF), and flash flood guidance (FFG) products requirements and how will the Weather Service satisfy them? How are and will the data and QPF/PQPF/FFG guidance products be used at WFOs and RFCs to access the potential for river and flash flooding and how are/will they be used to generate forecast and warning products? What are the recent scientific advances in the identification, understanding, and validation of hydrometeorological phenomena leading to flash and river flooding conditions? What are the current and future NWS plans for verifying QPF/PQPF, flash floods, and flood forecasts? And what will be the QPF/PQPF and probabilistic river state forecasting training requirements for WFOs/RFCs and end users, and how will we satisfy these training requirements?

Representatives from the National Hydrologic Warning Council, the Tennessee Valley Authority, the Connecticut Department of Environmental Protection, the Bureau of Reclamation, Weather Services International Corporation, the Corps of Engineers, and the NWS discussed their requirements for QPE, QPF, and PQPF in support of emergency management, transportation, and water use. Emergency management is concerned with public safety and property loss due to river flooding and small stream flash flooding as well as dam safety. Transportation is concerned with both waterway travel

and surface auto/truck and train travel. Water use addresses concerns of hydroelectric power, recreation, and domestic and agro/industrial water consumption. Many of the participants cited the fact that flash floods and river floods cause more loss of life and property than all other weather-related natural phenomena. Consequently, timely and accurate precipitation and river forecasts are essential for the preservation of life and property. As a result, users are hungry for forecast information to use in decision-making processes and emphatically articulated a need for probabilistic products which quantify the uncertainty of our QPF and river forecasts.

—Tom Graziano, Meteorologist
—Ward Seguin, Meteorologist, Deputy Director, Techniques Development Laboratory

The First Collaborative Science, Technology, and Applied Research (CSTAR) Program Workshop Held

On September 25-26, 1996, the first CSTAR Program Workshop was held in Silver Spring, Maryland. An Executive Session was convened on September 27 for NWS participants. The purpose of the workshop was to give university researchers and their NWS counterparts, who interact with CSTAR through programs such as COMET Cooperative and Partners projects and NOAA and NWS Cooperative Institutes (CI), an opportunity to summarize their collaborative activities and discuss the impact of their work in NWS operations.

Activities at CIs and COMET have proved to be very beneficial to the NWS. For example, applied science and training activities at CIs, such as the CI for Applied Meteorological Studies at Texas A&M University and the CI for Tropical Meteorology at Florida State University, and with collaborative activities at North Carolina State University were shown to have direct benefit in NWS operations. With the initiation of new NWS CIs at the Pennsylvania State University and the University of Utah, the benefit of collaborative activities to the NWS should continue to increase.

In addition, three panel discussions were held at the CSTAR Workshop: (1) Environmental Information and Data Sharing Between Academic and Operational Communities; (2) The Service/Science Linkage: How it Applies to the Evolving Forecast Process; and (3) University Participation in the NWS Priority and Decision Process. Members from the university community and the NWS served as panelists and addressed important topics in their respective subject areas. More than twenty representatives from the university community attended the workshop as well as national representation from the NWS and NOAA. Top NOAA management was very impressed by the diversity and impact of the collaborative activities within the CSTAR Program.

—Sam Contorno, Meteorologist

Update on the NWS Lake Effect Snow Study

The NWS 3-year Lake Effect Snow (LES) Study began in November of 1994 with the overall goal of finding ways to improve the warning and forecast services associated with the evolution of lake effect snow squalls. In addition, the study will (1) assess the ability of the WSR-88D and GOES-8/9 products to detect the development and evolution of lake effect snow squalls, and (2) evaluate the utility of existing radar- and satellite-based algorithms to provide quantitative measurements of snowfall rates. The Study is presently scheduled for completion after the 1996-97 lake effect season.

The consensus among participating forecasters at five NWS offices in the Eastern Region and nine Central Region offices is that overall services to the Great Lakes Region for LES events have improved over the past 2 years; preliminary verification scores confirm this conclusion. However, there are still some concerns about gaps in the WSR-88D radar coverage during an important subset of LES events in areas, such as South Bend, Indiana, and Erie, Pennsylvania.

During the second year of the study (1995-96), forecasters made significant improvements in the utilization of multiple data sets for detection and prediction of LES. These data sets include WSR-88D radar products, digital GOES-8 data, hourly NGM and ETA model soundings, snow spotter observations, and ACARS (ARINC [Aeronautical Radio, Incorporated] Communications Addressing and Reporting System). Forecasters ranked the WSR-88D as the most critical tool for the detection and short-range prediction of LES, followed by digital GOES-8 satellite data. High-resolution, hourly forecast soundings from the NGM and ETA were considered the most critical data sources for the longer term (6-36 hour) forecasts.

The upcoming third year of the LES Study will focus on: (1) the development of quantitative estimates of snowfall rate from multiple data sources, (2) the integration of all snow spotter reports into a uniform format that can be accessed by all participating offices, (3) assessment of the utility of rapid scan satellite data, and (4) the provision of more timely access to model sounding data and mesoscale models. Efforts to expand and enhance forecaster access to radar data also will be pursued.

—Jim Gurka, Meteorologist
—Gary Carter, Scientific Services Division (SSD), Eastern Region Headquarters
—Dick Livingston, SSD, Central Region Headquarters

TECHNOLOGY AND FORECAST SYSTEMS

GOES-9 Imager Motor Failure

In April 1996, the primary motor for the GOES-9 Imager failed. The National Environmental Satellite, Data, and Information Service and the National Aeronautics and Space Administration (NASA) spacecraft engineers successfully turned on the back-up motor, and the GOES-9 Imager capabilities were restored. This is the second motor failure on the GOES-8/9 instruments. The GOES-8 Sounder primary motor failed during the first 6 months of its operation. NASA launched an investigation regarding the premature failure of the two motors. A new motor design has been accepted by both NASA and NOAA and will be placed in the GOES-K Imager and Sounder instruments. GOES-K is scheduled to be launched in mid-1997.

In the meantime, in order to preserve the lifetime of the GOES-9 Imager back-up motor, a new special GOES-9 Mitigation Operations was developed. This special operations will be used four times a year, before and after the spring and fall eclipse seasons. During this special Mitigation operations, the Imager and Sounder instruments are physically turned away from the sun and will not transmit any data. This procedure prevents the instruments from excessive heating—the cause of the motor failures. Data outage periods are from 0440 Greenwich Mean Time (GMT) until 1400 GMT daily, starting on or about October 11 and ending on or about November 1, 1996.

—Ron Gird, Satellite Program Leader

The Integrated MAR Operations and Services Team (IMOST) Second Meeting

The IMOST conducted its second team meeting at the end of April 1996. The team's mission is to support the OM-lead effort to implement NWS modernized field operations and services by:

- Developing a consensus definition of the NWS "End-to-End Forecast Process;"
- Facilitating convergence of the various NCEP and field office modernized operations plans to achieve that process; and
- Developing a plan for implementing integrated operations and services based on an incremental AWIPS capabilities strategy.

The team's charter is to bring knowledge of operational, technological, and scientific planning and implementation activities together. We seek to identify any planning inconsistencies in the stated goals of various NWS organizational elements. This includes reviewing NCEP and field office service integration and implementation support requirements. Science integration/implementation support requirements are also considered.

In its first year of operation, the IMOST updated the OM Integrated Operations and Services Plan (IOSP). We also provided information to top NWS managers, the Modernization Systems Manager, and the Integrated Operations and Services Committee (IOSC) on a range of MAR planning and implementation issues. This was done through the OM Director.

As detailed in a previous *Aware Report* article, the IMOST developed its information through numerous interactions with NCEP and field office forecasters and managers. These included a MAR planning Workshop and a MAR operations Tabletop Exercise. These and other team tasks were reviewed at the second meeting. The visibility, effectiveness, and future direction of team activities was evaluated. The meeting report included the following information.

The 11-member team consists of:

Michael Tomlinson - OM
William Lerner - OM
Wendy Wolf - Wx2, Modernization Systems Management
Anthony Siebers - Eastern Region, NWSO Wakefield
Lawrence Vannozzi - Southern Region, NWSFO Lubbock
Preston Leftwich - Central Region, CRH
Michael Conger - Western Region, NWSFO Salt Lake City
Carven Scott - Alaska Region, NWSFO Anchorage
James Partain - Pacific Region, PRH
Jeff Zimmerman - Office of Hydrology
Edwin Danaher - NCEP, Hydrometeorological Prediction Center.

The team reviewed impacts of initial AWIPS deliveries on field office operations and operational evaluations. They also examined the inter-relationships revealed by comparing OM, OH, and NCEP MAR transition steps. Final comments on the updated IOSP were also provided. The IOSP was published in May along with updates to OM's Service Transition Plans.

Task Team reports showed that completed Major Tasks included:

- the IMOST MAR planning workshop;
- the IMOST MAR operations Table-top Exercises;
- facilitating coordination and resolution of the operational roles and products of the Hydrometeorological and Storm Prediction Centers of NCEP;
- facilitating and assisting in the development of NCEP transition plans coordinated with OM transition and program plan.

Other completed tasks included an investigation of the impact of uncoordinated data decoder applications development; cross-referencing projected data flows with planned AWIPS data flow and storage capacities; and a review of field office scientific training plans and cooperative scientific development projects.

The team was briefed by Louis Uccellini, OM Director, on issues requiring IMOST focus. OM and NCEP program staff members joined the team's discussions for a valuable exchange of insights and information as the team became better versed in the details, regarding task, or potential task, areas.

Major new team tasks include:

- Developing a detailed description of WFO forecast support requirements; and

- Developing a proposal for a set of processes by which scientific, technological, and product requirements can be coordinated and implemented.

Both of these new tasks, as well as ongoing previously identified tasks, are currently being worked on by IMOST task teams with staff and field office forecaster's assistance.

—Mike Tomlinson, Transition Meteorologist

Console Replacement System (CRS) Entering Test Phase

Despite several schedule slips and system integration problems, the CRS is entering the system test and subsequent field Operational Test and Evaluation (OT&E). NWS senior level management recently reviewed the program's progress and the additional goals to achieve concerning test schedules and project costs and directed a close look at the proposed CRS furniture. The system integration effort continues, and planned dates for formal system tests and for OT&E activities are presented in the following schedule.

NWS senior level management will decide on CRS deployment based on OT&E results.

The Office of Systems Operations has a CRS home page on the World Wide Web which contains this latest schedule in further detail as well as some recent photographs of the system. The Uniform Resource Locator is:

http://www.nws.noaa.gov/oso/oso1/oso12/crs.htm

Functional and Performance Tests:

System Functional Test (at CommPower Engineering):	11/15/96 - 11/22/96
System Integration Test (at WSH):	12/09/96 - 12/13/96

Operational Test and Evaluation at WSFOs (including installation, checkout, operations, and maintenance training):

Oxnard, CA:	12/16/96 - 03/03/97
Charleston, WV:	12/16/97 - 03/03/97
Pleasant Hill, MO:	01/06/97 - 03/03/97
Birmingham, AL:	01/06/97 - 03/03/97

A system will also be installed at the NWS Training Center with operations and maintenance training for NWSTC personnel performed from 01/27/97 - 01/31/97.

Field implementation is currently planned to begin in September 1997, continuing through completion in September 1998.

—Joanne Courchesne, Meteorologist

(Editor's Note: For updates on the WSOM chapters, see attachment A)

WCM Program

Storm Chasing Essentials

With the approach of fall and, in some locales, a "mini" severe weather season, we'd like to give you novice storm chasers a little schooling about the essentials of storm chasing. After all, we would like to have you back reading the *Aware Report* again in the Winter.

Storm chasing sometimes is a thrilling adventure, but it requires a great deal of patience. Very different from the recent major motion picture "Twister," a chaser may go days without seeing a good severe storm, much less a tornado. Also, it requires good meteorological reasoning, forecasting skills, and intuition based on experience. It helps to be a seasoned meteorologist who specializes in the forecasting of severe storms, but some of the most successful storm chasers are talented, self-educated amateurs.

Here are a few critical tools for chasing storms.

- ***A good forecast*** — Have as much information in hand as possible about what's going on, and will go on, with the weather. Know in advance, like the day before, what is in store and where it's going to happen. Most chasers go out for a couple weeks at a time, committing their vacations to the event. Only a few can afford to go out on any given day to chase, without planning ahead, so careful forecasting of the next day's weather is needed to tell you where to be and when to be there. Most chasers take the time to visit the local Weather Service forecast office and gather as much information as possible. During the chase, they take mobile data collection devices with them, ranging from a battery-powered NOAA Weather Radio to dual Doppler radars, laptop PCs with radar and satellite downlinks to amateur radios.

- ***A good set of road maps*** — This is a necessity to help your safety, economy, efficiency, and overall success. Road maps should be current and more detailed than the standard statewide maps available through service stations. They need to be detailed down to the county road level. State highway departments and map stores carry them and, in some locales, grocery stores sell them. Without such detailed maps, it's easy to make a critical mistake and get yourself either cut off from intercepting a storm or, worse, get yourself cut off from escaping one that turns on you.

- ***Reliable transportation*** — It doesn't have to be pretty, but a car, van, or truck that is mechanically sound is essential. It needs to be able to carry all your gear, your luggage, yourself, and a partner (see below) without failure, through deep water, in high wind and blinding rain. And, you should not be too shy about getting some hail dents on your vehicle either. For years, I chased in an old compact pickup that I sold last year with 184,000 miles on it. It never broke and never failed me. Always give it a thorough checkout before you leave.

- ***Good photographic equipment*** — Depending on your objective (recreation, science, or a combination of both), you'll want to take a good 35mm or 4x5 still camera with tripod, a good set of lenses and top quality slide film (lots of it). The film should be optimized for marginal lighting conditions, but take some daylight film for bright situations, too. More scientific chasers also will want to bring stop-action cameras that take time-lapse imagery as well as high-speed camcorders.

- ***A good, reliable, experienced partner*** — Only a few veteran chasers go it alone. Especially for the novice chaser, it is critical that you go in the company of an experienced chaser—one who knows forecasting, who understands storm chasing etiquette, and has a good sense of intercept logistics. It's an art as well as a science, and with a fast moving supercell, there is little margin for error.

These are only a few of the basic requirements for the beginning storm chaser. Storm chasing is not for the casual enthusiast. Its potential for danger is obvious so it must be taken very seriously.

—Bill Alexander, Mesoscale Manager, Customer Service

Alaska Establishes Spotter Networks

Spotter networks in most of the country are old hat. In Alaska, the establishment of spotter networks are a recent development. The NEXRAD Algorithm Improvement Project has been the springboard to establishing spotter networks in the Fairbanks area and in south-central Alaska. In south-central Alaska (Anchorage area), we started with a press release. One of the local newspapers responded by sending a reporter for an interview, which resulted in a front-page, weather-related article. This led to coverage from one of the local TV stations and a couple of interviews from radio stations. The media coverage has resulted in over three dozen citizens calling in to volunteer to help in the program. It also resulted in establishing contact with the local and regional Amateur Radio Operators Clubs. The Fairbanks Forecast Office has also been successful in recruiting a significant number of volunteers to assist in their new program.

—Neal Marchbanks, NEXRAD Program Manager, Alaska Region Headquarters

Spokane, Washington, Recruits New Spotters

NWSO Spokane has recruited more than 100 new spotters over the past several months from varied groups, such as the Coast Guard Auxiliary, ham radio groups, Civil Air Patrol, and Granges across our county warning and forecast area (CWFA). Reports from our volunteer spotters have resulted in weather advisories/warnings and amended forecasts that may very well have saved members of the community many dollars in property damage and prevented injuries or loss of life.

Coast Guard Auxiliary Squadrons from Spokane County in Eastern Washington and in Kootenai and Bonner Counties in the Idaho Panhandle have been recruited and trained. These spotters are very active and enthusiastic. I (Mark Strobin, the Assistant WCM/Spotter Focal Point in NWSO Spokane) have taught the weather section for a safe boating class for the Spokane squadron. Additionally, the squadron in Bonner County is working with our WCM Ken Holmes and me in obtaining several weather stations that they will support, in which our office would be able to receive real-time weather information in an area that does not have any reporting stations. Additionally, they have given us weather records for Sandpoint, Idaho.

Ham radio groups are an integral part of our spotter program. Ham radio groups from northeast Washington and in the Lewiston area of the Idaho Panhandle have been recruited and trained. Our office will be setting up a packet radio system and a ham radio with the help of some of our spotters within the next several weeks for faster communication during potentially severe/winter weather events. The packet radio system is not a HAM radio packet but one developed for the Inland Northwest Emergency Alert Region. It will utilize a state owned frequency and allow a hard copy of EAS messages to go from the NWS and CWFA counties to the LP-1. It will also allow for two-way communications between the NWS in Spokane and county emergency managers. I have received a ham radio license with other personnel in the office expected to take the ham radio license test within the next couple of months.

Civil Air Patrol Squadrons from Chelan, Douglas, Grant, Spokane, and Whitman Counties in eastern Washington and Kootenai and Nez Perce Counties in the Idaho Panhandle have been recruited and trained. These spotters are very active and enthusiastic.

Members from Grange offices in eastern Washington and northern Idaho will be recruited and trained in the next several months. Six meetings have been scheduled for this fall with the Granges expressing a great deal of interest in becoming volunteer spotters.

Even with the advance of technology in the NWS, such as Doppler Radar, we still rely on volunteer spotters for ground truth during potentially severe/winter weather events. This is where volunteer weather spotters can fill the void of information in data sparse areas of eastern Washington and northern Idaho.

—Mark Strobin, WCM, NWSO Spokane, WA

NOAA Weather Radio Initiatives

The Alabama Cooperative Extension System (ACES) Partners with NWS to Promote NWR

The NWS, working with the ACES, was putting finishing touches on work to increase public awareness of NWR. The project was initiated after the devastating 1994 Palm Sunday tornado which killed 22 people in Alabama, including 20 at a church near Piedmont, Alabama. Despite the fact that tornado warnings were out ahead of the tornado, people still died. The Alabama Cooperative Extension System at Auburn University applied for a grant from FEMA to promote NWR as part of the mitigation efforts following the storm.

ACES, working with the NWS WCM in Birmingham and the Alabama Emergency Management Agency, has created a color brochure to be distributed throughout the state informing people about NWR. At least 500,000 brochures have been printed to be distributed to people through local emergency management agencies in each county as well as through local county extension agents. Additional distribution through highway department rest areas is being investigated.

Three 30-second public service announcements (PSA) have also been created that will be delivered to each television station in the state. The PSAs feature a young boy telling his dog about what his family is doing to be better prepared for weather, including buying a weather radio and planning for severe weather. Additionally, the three PSAs will be strung together with a little added footage to create a 2-minute PSA which will help stations fulfill new FCC required educational programming.

—Brian Peters, WCM, NWSFO Birmingham, AL

New NWR Transmitter Serves Tennessee

A new NWR transmitter has been set up in southern Maury County to serve residents in southern middle Tennessee. The Emergency Management Director for Lawrence County, Mr. Joe Baxter, solicited private funds in the community to establish a weather radio transmitter. Mr. Derrel Martin, MIC for Nashville NWSO, assisted Mr. Baxter in his efforts.

The weather radio is on a 1000-watt transmitter on a radio tower attached to the Tennessee Wildlife Resources Agency. It is broadcast on a frequency of 162.425 MHz. The signal will serve residents in seven counties—Maury, Lawrence, Giles, Lewis, Lincoln, Marshall, and Wayne. Plans are being made to distribute tone alert weather radios to all public schools in these seven counties.

There was a big need for NWR in this part of the country for many years. In June 1994, a tornado injured 20 people and caused widespread damage in Iron City in southern Lawrence County. In the following year on May 18, 1995, a tornado nearly leveled the city of Ethridge and killed 3 people and injured 22 others in Lawrence County.

—Jerry Orchanian, WCM, NWSO Nashville, TN

More NWR Receivers Deployed in Washington

On Thursday, August 22, 1996, NWSFO Seattle-Tacoma Area Manager Chris Hill participated in the presentation of NWR receivers to 30 hospitals in the Seattle, Tacoma, Everett area of western Washington. This completed a joint NWS-Washington State Grange Association project to place NWR receivers in all school districts (296) and hospitals (102) in the state.

The Washington Public Utility Districts (PUD) Association provided funding to purchase the weather radio receivers for those hospitals with active PUDs. The Washington Health Foundation along with the Washington State Association of Hospital Auxiliaries provided funding for the receivers for those hospitals located in non-PUD counties.

State Grange Director Bob Joy praised the organizations that funded the project. Chris Hill praised the Grange, especially project coordinator Christine Ohlsen, for making the project successful. Chris Hill also pointed out that the project has been such a great success in Washington State that Granges in other states are considering similar programs.

The next phase of the joint project will place NWR receivers in nursing homes across Washington.

—Christopher D. Hill, Area Manager, NWSFO Seattle-Tacoma, WA

Grassroots Approach toward NWR Growth

> "A TORNADO WARNING IS IN EFFECT FOR GRAHAM COUNTY. THE TORNADO IS EXPECTED TO MOVE INTO HILL CITY AROUND 1130 PM CDT. RESIDENTS OF HILL CITY ARE URGED TO GO TO THE BASEMENT OR INTERIOR ROOM ON THE LOWEST FLOOR."

You may have just issued a tornado warning with plenty of lead time and ground truth from spotters. If the people in the path of the tornado do not receive the warning in a timely manner, lives are in danger. This is especially true when severe weather is in an area that is not tone alerted by NWR.

Introductory Briefing

During spring 1995, all ten non-NWR counties in the NWSO Goodland warning area were given a briefing during spotter training on the capabilities of NWR. The spotter training was targeted for the presentation as the audience was already interested in severe weather and were willing partners in trying to gather weather information. The briefing included the 10-minute video "NOAA Weather Radio: An All Hazards Warning Network," produced by WSH.

During one spotter briefing, only 5 of 30 attendees admitted to ever hearing about NWR. At the end of this session, a group of interested and enthusiastic spotters met to investigate getting NWR.

This group evolved into the Wichita-Greeley NWR Task Force which gathered funds and resources to purchase and install an NWR transmitter. Installation is set for fall 1996.

On several other occasions, the informal spotter briefing about NWR was followed in a few weeks or months by a more detailed presentation to county commissioners and other interested parties. This briefing was usually organized by spotter groups or emergency management. An audio tape was presented of what an NWR broadcast would sound like for that particular area. The tape included both a fair weather broadcast and a severe weather sample (with tone alert). The all hazards feature usually impressed emergency managers and county officials.

Resources

During the more formal presentation, resources needed and those already available were surveyed. These included tower sites, equipment, money, and technical expertise.

Local governments often own or lease communication towers where NWR could be added. In two instances, phone companies donated space on their towers with the understanding of a broadcast acknowledgment. When informed about the future Specific Area Message Encoder capability, a commercial radio station donated tower space. Some individuals who own towers were interested enough in the weather to offer space for NWR.

The NWS accepts donations of NWR transmitter equipment only when the equipment meets strict specifications. If a local group is willing to pick up recurring maintenance and communications costs, a used transmitter with continuous duty capability could be used. The specifications for this type of transmitter are less stringent. A technical expert on the special interest NWR team will be able to determine suitable transmitters. Advanced ham radio spotters may become the local group's technical expert. A copy of "Installation of NOAA Weather Radio (NWR) Stations By Special Interest Groups" was given to each local group. This resource can be found under Appendix L in the WCM Job Aid.

Local governments, including emergency managers (EM), can often acquire equipment through Federal or state government surplus for a fraction of market value. One EM was able to get 7/8 inch Heliax for $1 per foot. Vendors generally charge $6 per foot. Another EM found two surplus generators with a utility to emergency switch for $750. A new switch alone would cost over $1,000.

Fund raising, if needed, has generally been left up to the local special interest group. As a WCM, you may be able to give the group some advice based upon previous installations, but generally they know more about their area and people than the NWS. Private grants have been employed for the NWR effort.

Industries or businesses which benefit from the increased weather information may wish to donate funds or other resources. This could include agricultural interests or insurance companies. Local groups have also purchased NWR receivers wholesale and are selling them at retail. The profit is being used to recoup the NWR cost.

The NWSO can assist the special interest group's fund raising by referring to the proposed NWR during school or civic group presentations. Public awareness has also been increased by mentioning NWR when corresponding with local people about weather services. The cooperative observers should also be informed about the proposed NWR as they are often considered the local weather expert.

Don't forget to use your Regional Headquarters (RH) as a resource as well. When a transmitter location is proposed, the RH will be able to provide a theoretical coverage pattern based upon the antenna height and transmitter power. This coverage pattern can be used by the local group to "sell" the transmitter to potential donors of funds or resources. The RH also provides the necessary forms and agreements and arrange for licensing and additional recording consoles to be delivered if available. It generally takes at least 2 months for license approval. A new transmitter may take 6 to 8 weeks to arrive after ordering.

Installation

Upon receipt of licensing, it is the responsibility of the special interest group to install the transmitter, feed line, and antenna, and ensure that it works. The group may rely upon their technical expert or may contract with an installation vendor. If the transmitter is not being donated to the NWS, the special interest group will be responsible for communication and maintenance costs as well. The installation technician works closely with the NWS Electronics Technician at this time to guarantee the proper audio levels and tone alert and switching.

As soon as the transmitter is checked out, it's a good idea to examine the broadcast pattern using a signal strength meter. This will point out any deficiencies which may need to be corrected. The signal strength perimeter will also be used to determine tone alert areas.

Post Installation Promotion

There will likely be enough local interest created prior to installation that articles will have already appeared in local or regional newspapers. A special brochure can be easily made to describe what NWR is, the program schedule, and the area of coverage. The front part of the brochure may include logos from the cooperating parties (local governments, private donors, NWS).

The brochure is circulated at NWS outreach events and given to the special interest group for further distribution.

Summary

These suggestions are based on what NWSO Goodland, Kansas, experienced while working with local groups to establish NWR at Bethune, CO (WWF77 162.425 MHZ), Lenora, KS (WWF87 162.525 MHZ), Tribune, KS, and Culbertson, NE. Although each special interest group varied, there were two things that were common. First, the success of each installation was in doubt until one person in the group took charge. Second, the more people that were informed about the proposed NWR installation, the more resources became available. Obstacles encountered during NWR projects should be considered as challenges and opportunities to involve more people.

This WCM believes the NWS-local partnership is more successful in the long run because the local group has ownership in their NWR station. They are more responsive to NWR listener surveys. This

evolves into more NWR receivers being purchased and more active NWR listening.

—Dennis Hull, WCM, NWSFO Goodland, KS

San Joaquin Valley Project ALERT Gains Momentum

After a tornado struck Fuller Elementary School in Chowchilla, California, in January 1995, Meteorologist Scott Birch and subsequently Meteorologist Intern Ray Kruzdlo of the San Joaquin Valley NWSO have sought to place a NOAA Weather Radio in every school district office within the county warning and forecast area (CWFA). This past summer that initial goal was effectively reached with orders for NWR receivers going out from Kern County.

Since there were 175 school districts throughout the CWFA, money had to be raised/donated to make the Project work. While the media and some small businesses did donate money toward initial radio purchases, it was California State "safety funds" for schools that allowed the large number of purchases. Between the state monies and the private donations, 100 percent school district coverage was obtained for the northern six of seven counties within the San Joaquin Valley CWFA. The seventh county, Kern County, did purchase radios for a little over half of their schools. However, the school superintendent's office microwaves information to all schools within the county and the placement of an NWR receiver at that facility effectively ensures inclement weather warnings to schools through that medium in combination with the NWR.

Although there are only 175 school districts in the CWFA, over 300 radios have been purchased as interest was so high that some counties purchased radios for every school. The schools are also pleased to have the NWR receivers as it sparks interest in meteorology studies. A second, newer phase of the Project is underway with a goal to pursue NWR receivers for private schools. Specifically, Mr. Kruzdlo has been talking with the Roman Catholic Church as many of the private schools are associated with the local diocese.

Effective warning dissemination is the key for the saving of lives and property. Project ALERT certainly makes the NWS warning process more effective thus contributing to the fulfilling of the NWS mission here in the San Joaquin Valley CWFA.

—Dan Gudgel, WCM, NWSO Fresno, CA

Hazards Community Forum

United Way Supports Packet Radio Backbone

External partnerships in Bismarck, North Dakota, will lead to better amateur radio communications during times of severe weather. I am an amateur radio operator and a member of the Central Dakota Amateur Radio Club (CDARC). Dan and Tim Rasset, the president of the CDARC, solicited the board of the local United Way asking for monetary assistance in a regional project. The CDARC is taking the initiative to build a high speed packet radio backbone in North Dakota. This new network would rapidly transfer digital data over large areas of rural North Dakota quickly and at a low cost.

The NWS in Bismarck has been transferring messages over the existing packet radio network for 2 years, but this system is unexpectedly slow and outdated. Some of the messages transferred to this system include thunderstorm outlooks, radar coded messages, radiosonde data, warnings, and statements.

The biggest advantage of packet radio over other forms of digital communications is it covers a large area for a low cost. Just as important, it allows amateur radio operators across the state to be more active in the SKYWARN severe weather spotter program and the NWS itself. Packet radio networks in North Dakota not only support SKYWARN activities but can be used for disaster recovery operations and not-for-profit fund-raising events.

The United Way board voted to fund the Packet Radio Digital Communication Improvements program at the $2,000 level in 1997 to purchase the equipment for the Bismarck area. It is their hope that this would represent "seed money" for the CDARC and that other North Dakota United Ways and additional organizations would contribute to this cause.

—Daniel Noah, WCM, NWSFO Bismarck, ND

NWS Personnel Deploy to Iowa State Emergency Operations Center (EOC)

In recent years, the NWS in Des Moines, Iowa, has established a close partnership with the Iowa Division of Emergency Management. An important function of the NWS is to support the

emergency management community during emergency situations. NWSFO Des Moines actively works with the Iowa Division of Emergency Management during emergency situations by sending personnel to the EOC. How this partnership evolved and what role the NWS has at the EOC will be the focus of this article.

How the NWS became involved at the State EOC

The roots of the NWS/EOC partnership go back to the 1993 floods. In July 1993, NWS personnel from NWSFO Des Moines spent several days at the EOC during the worst of the flood. NWS personnel provided current and critical hydrological and meteorological forecasts for officials at the EOC. The foundation was in place for a new partnership. In December 1994, the Terra Chemical Plant near Sioux City, Iowa, exploded causing a serious HAZMAT situation. The state EOC was activated, and they asked for a meteorologist to report to the EOC for duty. The new EOC was in the STARC Armory in Johnston, Iowa. The STARC is a state of the art facility with a large underground EOC. The NWS was given a position at the EOC during the Terra incident. NWS meteorologist provided the EOC with vital forecasts for the Sioux City area. Based on NWS forecasts, Sioux City was not evacuated, saving the taxpayers considerable expense.

NWS Role at the State EOC

Now that Des Moines NWS was a member at the EOC, what functions would the NWS perform in future events? Up to this point, the NWS role had been unorganized and reactive. For operations to be more effective, procedures needed to be developed.

In the fall of 1995 and throughout 1996, the NWS was involved in several EOC drills. Three FEMA evaluated nuclear power plant drills were conducted with the NWS providing support. During each exercise, people from NWS Des Moines were called and dispatched to the EOC for duty. Based on these exercises, the NWS role at the EOC was solidified.

NWS/EOC functions:

- *Provide detailed and specific weather support for agencies at the EOC.* The WCM Laptop PC with modem communication to the Automation of Field Operations and Services (AFOS) is the meteorological data supply for the individual at the EOC. PC programs, including SHARP, PCGRIDS, and Intercom, are used to obtain and analyze the weather. Phone communication to duty forecasters at the NWSFO is used for additional support. Specific forecasts are made for agencies requesting weather, and more general weather forecasts are given during EOC Sitreps.

- *Dissemination of emergency messages.* The Iowa Division of Emergency Management Division of Public Information is located near the NWS at the EOC. Since authenticity of messages is high at the EOC, the NWS can disseminate critical information to the public via the weather wire and weather radio. Using Intercom, the NWS representative at the EOC transmits Civil Emergency Messages directly into AFOS as needed. Recommendations for weather radio tone alert are given to the affected NWS office. This ensures that authentic messages are being disseminated very quickly over the weather wire and weather radio.

Anytime the state activates the EOC, the NWS at Des Moines will respond. If the emergency affects areas outside of NWSFO Des Moines CWFA, the Des Moines NWS office will coordinate with the affected office. If the event becomes protracted, personnel from the affected office will be committed to the EOC in Des Moines. The solid partnership between the Iowa Division of Emergency Management and the NWS will yield positive results in the future.

—Jeff Johnson, WCM, NWSFO Des Moines, IA

New Heat Wave Card Development

Kristin Mashack, student employee, and I have developed a color wallet-size, fold-up heat wave card. This wallet card was developed in conjunction with the Milwaukee City Health Department. This health department requested a wallet-size card containing two tables of heat indices—one based on dewpoints and the other based on relative humidities. Kristin and I carried it one step further and incorporated heat wave warning/watch/advisory terminology and Health Department safety tips. The result was a card that has information on all four sides—the tables on one side and the terminology and safety tips on the other. The prototype wallet card is currently being reviewed by the Milwaukee Health Department and the NWS Central Region in Kansas City.

Ultimately, the Milwaukee Health Department intends to equip all of their emergency services people with these heat wave cards. These people also will have portable temperature/relative humidity/dewpoint instruments when they enter apartments or homes in search of heat victims. The instrument and wallet card will enable them to quickly determine the "inside" heat index for research purposes, etc. During the killer heat wave of July 1995, paramedics noted that inside temperatures were measured as high as 125 degrees!

—Rusty Kapela, WCM, NWSFO Milwaukee/Sullivan, WI

Weather Safety Information via Billboards

Billboards have been along many highways across the country for a number of years and will probably continue to exist in the future. They are controversial in many areas as people claim they clutter the countryside. Well with this in mind, I at first was hesitant approaching a local billboard company about displaying weather safety messages. However, I decided since they are there, why not use them. So I contacted Avery Brothers in Sioux City, Iowa, who have many billboards along highways and interstates across the WSFO Sioux Falls CWFA, to see if they would be interested in this partnership. After hearing my proposal, they enthusiastically agreed with it. They are so excited about the project that they have agreed to pay for the artwork and setup fees and will display a number of them across the area throughout the entire year at no cost to the NWS. The themes of the billboards will change with the seasons and will include topics, such as winter weather, lightning, and tornado safety, as well as NOAA Weather Radio.

—Todd Heitkamp, WCM, WSFO Sioux Falls, SD

NWS and The Weather Channel Reach Out to North Carolina Elementary Schools

We are working with The Weather Channel to sponsor a poster contest for school children in grades 1-5. Kids are asked to design a poster with the theme of "Hurricanes and Hurricane Safety." Our quarterly newsletter is distributed to all of the schools in eastern North Carolina as well as the media and will promote this contest. The Weather Channel is providing the prizes which consists of a "Weather Tracker's Kit" and CD ROM for the winning entry in each group (we're dividing the entries into two groups: 1st and 2nd grade, and 3rd through 5th). The school in which the winning student resides will receive an "Everything Weather" CD-ROM (teacher's edition). Contest ends November 15, 1996.

Another project we have is connected with Lowe's, a major home improvement chain in the South. They have their own in-house printing plant and have reproduced the Hurricane tri-color brochures for distribution in their stores. I'm working with them on doing the same with the Tornado and Thunderstorm pamphlets.

—Dan Bartholf, WCM, NWSFO Newport, NC

Salt Lake City's Mitigation Team Organized

The state of Utah Comprehensive Emergency Management (CEM) had developed and organized an Interagency Advisory Team (IAT) made up of Federal and state experts to support county and local governments with hazard mitigation. David Toronto, WCM, and Brian McInerney, Service Hydrologist, at NWSFO Salt Lake City are members of this team. The team meets once every quarter for training and hazard awareness. Dave and Brian usually provide training or a weather potential briefing for these sessions.

In times of need, the county or local emergency managers can call upon the team for information and advice for their mitigation efforts. Twice in the last year, the IAT has been asked for its expertise regarding potential weather hazards.

Last winter, a large avalanche dammed the Provo River in Provo Canyon, a few miles south of Salt Lake City. A break of the ice and snow dam could have caused a flash flood down the canyon impacting communities along the river. CEM was called by the county emergency manager and the IAT was activated. Dave and Brian both went down to the avalanche site to make an assessment of the problem. Using NWS expertise and that of others on the team, the county was able to determine that the threat was minimal and take appropriate mitigation steps.

During the long hot summer this year, a major wildfire burned the hillside just to the east of a suburban area of Orem, Utah. The IAT was activated at the request of the city. Dave Toronto provided information regarding short- and long-term flash flood potential over the burn area. This information along with that of other team members aided the city in applying their mitigation measures to protect the homes near the burn area. Mitigation includes calling the NWS and monitoring NWR. The forecasters in Salt Lake City also have instructions to call the city, regarding rain over the burn area to help the city in its mitigation efforts.

—Dave Toronto, WCM, NWSFO Salt Lake City, UT

Wisconsin WCM's Innovative Approach to Obtain Wind Observations

There has long been a need to increase the number of weather observations across the state. In an initiative started in May by Rusty Kapela, NWSFO Sullivan, and me (Jeff Last, NWSO Green Bay), people with wind instruments were recruited through local newspapers, radio talk shows, and NOAA Weather Radio. Now, over 80 people and institutions (such as marinas, cable companies, and power plants) in eastern and central Wisconsin are participating in the program.

The participants call the NWS whenever they measure wind speeds over a certain speed or are called upon after storms move through their county. The measurements help the weather service determine whether wind conditions verified warnings and forecasts for a particular area. Actual wind speed measurements are needed by the NWS to help verify severe weather warnings, high wind warnings, wind advisories, as well as routine, day-to-day forecasts. We obviously do not want to "cry wolf" with needless warnings; consequently, we need to know if severe weather occurs in a county after a warning has been issued.

The NWS Office in Green Bay is also using data from the Green Bay Metropolitan Sewerage District Plant at the mouth of the Fox River to enhance its marine weather program. The weather equipment is located right on the Bay of Green Bay; wind and temperature data from the equipment is broadcast hourly on Green Bay's NOAA Weather Radio station, KIG-65. Getting the data was a team effort: MIC Mike Szkil, Meteorologist Jill Last, and I worked out the agreement with the plant. Jim Skowronski, forecaster at the Green Bay office, wrote a computer program that automatically gathers the data.

—Jeff Last, WCM, Green Bay, and Rusty Kapela, WCM, Milwaukee/Sullivan, WI

Emergency Services Information System (ESIS) Implemented in Alaska

The Alaska Division of Emergency Services (ADES) has implemented an ESIS based on the commercially available FirstClass system this past year to support emergency services information transfer and data basing. FirstClass, developed by SoftArc, Inc., Global Area Communications, is an easy-to-use information system. The FirstClass software can support a variety of information sharing requirements: send and receive electronic mail, share files, use electronic conferencing, and participate in on-line chats. Applications extend beyond the emergency services community. For example, every Public Broadcast Service television station (over 270) in the country is tied into their own FirstClass System, which is something we learned at the recent workshop on the new national Emergency Alert System.

We first became aware of the ADES ESIS last fall during our south-central flood review. ADES had just adopted the system; there were not many clients then. Since then, the number of Alaskan clients has increased significantly, adding more each time a disaster occurs and more agencies hear about it. Every fire chief in the state has access to the ADES ESIS, since many of the fire stations serve as emergency operations centers. Other state and federal agencies are also granted access to the system. Examples are the Alaska Fire Service (Alaska Division of Forestry) which is the wildfire fighting agency in Alaska, the Alaska Volcano Observatory which is operated jointly by the U.S. Geological Survey and the University of Alaska, State Troopers, Local Emergency Planning Committees, Department of Natural Resources, hospitals, the University of Alaska, and the Army and Air National Guard.

Our regional Warning Program Meteorologist, our three forecast office WCMs, our Alaska RFC, and our Alaska Tsunami Warning Center are all clients on the System.

The real value of the System stems from the ability of the ADES to define what are called "conferences," which are locations or pigeon holes in the system identified for a specific purpose or task. A conference is a "windows" icon where information specific to an event or activity is placed for access by an ESIS client. Messages placed in a conference can be text or graphic. ADES now sets up a specific conference to coordinate all disaster-response efforts any time the State Emergency Coordination Center is convened.

Our first operational experience with the System was the Miller's Reach Fire in south-central Alaska in June. During the fire, our Anchorage forecast office was inserting fire weather forecasts, updates, and satellite photos manually into the ADES ESIS. This initial effort was cumbersome and time consuming but did provide valuable event-driven weather information to emergency management staff having access to the ESIS. A benefit in turn for us was the ability to view messages from other agencies entered into the ***Wildfire*** conference, such as field reports regarding weather, fire, and other information valuable to our fire weather forecasting efforts.

Earlier this month, we completed the first of a two-part effort to automate the delivery of weather information between our forecast offices and the ADES. The flow of NWS products and weather information to the ESIS was the first part. The ADES selected products they would like to see on the ESIS from our list of weather products, such as advisories, watches, warnings, and statements. Some routine public and fire weather products were also selected. These products are now automatically delivered from our Alaska Region Operations Network (ARONET) to an Internet address. The ADES automatically polls the Internet address every 5 minutes for messages. New messages at the address are automatically placed in an ESIS conference called "NWS." Any client on the ESIS can now view products entered into the "NWS" conference from anywhere in the state.

The Internet was jointly chosen as the initial communications link between the NWS and the ADES' ESIS simply because it was available and was computer logically simple to implement. A more "operationally" dependable path can be implemented in the future.

Other "special event" products will be added in the future when they become available. For example, during search and rescues in Alaska which are frequent, intensely weather dependent, and critical to saving lives, the Alaska Aviation Weather Unit and/or the forecast offices will support these operations with special text and graphic weather information products. These products help the agencies involved in the search and rescue, such as the ADES, the state troopers, the national guard, and the U.S. Coast Guard.

Alerting capability will be added in the future. This capability will alert the continuously operating ADES emergency coordination center when there is a significant weather product being sent on the ESIS.

The second part of this effort will be the delivery of on-scene weather-related reports and messages through the ESIS to our forecast offices during responses to human-caused or natural disasters. These reports and messages would be entered into a conference especially set up in the ESIS to "manage" the disaster response and be automatically sent to our forecasters for display. This weather-related information available from the ESIS can provide valuable weather insights which aid our forecast services during the event. For example, during the south-central Alaska flood in September-October of 1995, some 10 percent of the messages in the 257-page long ESIS log for the event contained very useful on-scene weather or flood information which was not available to our forecasters and hydrologists during the event. The automation task remains to sift the ESIS information to cull the weather-related information which will make the relay to forecasters more efficient and effective.

—Greg Matzen, Warning Program Manager, Alaska Region Headquarters

Special Outreach in the Quad Cities Area

On July 31, 1996, a special office tour was conducted at the NWS Office in the Quad Cities. Twelve science teachers from South Korea, along with their interpreter from the University of Iowa, and four local high school teachers were office guests for about 2 hours. The tour was part of the 1996 Korean Science Teachers Workshop, part of a program involving the exchange of teachers between the United States and South Korea. The state of Iowa was targeted to participate in the program because of the high quality of education maintained here. Many of the Korean teachers taught either physics or another science-related subject, and they were very interested in the new WSR-88D Radar, severe weather, and emergency response, and in our current methodology in manipulating the gridded model data on our PC network. They also were especially interested in our home page. The visit ended with a video presentation of actual tornadoes that occurred in our area during the 1995 and 1996 severe weather seasons. Our feeling that this tour had been extremely successful was confirmed by a letter we received from the teachers in August saying in part that, "the visit was the most precious experience of the workshop. We hope we can be in touch with you regarding some international cooperation in science education."

—James F. Meyer, WCM, NWS Quad Cities, IA/IL

Colorado State Fair a Success for NWSFO Pueblo

From August 17 through September 3, NWSO Pueblo learned much from our booth at the Colorado State Fair in Pueblo. This was a great opportunity to not only talk face-to-face with customers in our part of the state but also to meet people from the rest of Colorado and from across the North American continent. That's right! We chatted with people from California to Virginia and from Texas to Canada. We talked with our customers about what type of services we provide, and they told us their perception of what kind of job we were doing. Many people confuse us with The Weather Channel. We explained to them that many of our forecasts, statements, and warnings are on The Weather Channel, but we don't "work for" them. It was a real eye-opener to learn how people fit us into the professional "weather picture puzzle." We all have our collective work cut out for us.

One of our focuses at the State Fair was NOAA Weather Radio. With the display, supplied by WSH, the fairgoers were drawn to the playing weather radio, and asked questions about this well-kept "secret." Our customized NOAA Weather Radio brochures for eastern Colorado were a great tool to help us spread the word about NOAA Weather Radio—with both what it does now and what it will do in the future. Many expressed genuine interest in getting a weather radio and cutting out the media middle-man.

Another focus was the Modernization of the National Weather Service and what that has meant and what it will mean for people in Colorado and the rest of the Nation. It continues to be especially important that we explain the transfer of services from spindown to spinup offices and reassure our customers that all is well with the services of the NWS. We need to tell them that this is a government reorganization that does make geographical and fiscal sense.

We distributed literally thousands of pamphlets (over 5,000) to the thousands that stopped by during the 17-day fair. The most popular were tornadoes, thunderstorms, and "A Change in the Weather Service."

Booths at State Fairs can be expensive, but we were fortunate to get a FREE booth in an air-conditioned building. We accomplished this by calling months in advance and being persistent with the "FREE theme" throughout. It helped to have a good hometown image with fair organizers, too.

It rained 13 out of the 17 fair days, so the organizers and folks there were glad to have access to us in person and were happy to have access to our radar imagery and latest forecasts, statements, and warnings piped in via phone line, modem, and through NWR.

The most popular item was again the "low-tech" pet tornado in a bottle. It drew folks to the booth so we could then talk with them about NWR and the NWS in Colorado and across the Nation.

The State Fair booth was a great time commitment for NWSO Pueblo. Nearly all extra shifts and training and all other WCM activities had to be put on hold for 2 1/2 weeks. But the information gained from talking with our customers and the knowledge they gained from interacting with us made the whole experience worthwhile. It certainly was an experience we would like to repeat. If you haven't given it a try in your state, do so next year!

—Thomas Magnuson, WCM, NWSO Pueblo, CO

Montana NWS Office Hosts Severe Weather Workshop

On June 27, 1996, NWSO Glasgow, Montana, hosted a severe weather workshop for area media and Montana Disaster and Emergency Service (DES) county coordinators. Given the rural nature of northeast Montana and the lack of NWR coverage for most of our population, local radio stations and phone trees initiated by the DES are the usual means of warning dissemination.

Representatives from several radio stations attended as well as our local DES coordinators. The workshop gave the attendees the opportunity to see how the office works in a severe weather situation and also gave them a chance to ask questions. The questions ranged from how and what probabilities of precipitation (POPs) are to what they themselves could do to improve the dissemination process.

Two of the meteorologists, Chris Waterhouse and Perry Martin, showed the attendees, in real-time, the process we go through when issuing a warning. The speed at which we could issue a warning impressed our guests. This meeting was also a good opportunity for the meteorologist to hear what the media has to go through to get the word out and, more appreciation of each other has been noted since the workshop. Just by meeting these members of the media, the working relationships have already improved.

The feedback from the workshop was very positive from both the attendees and our own staff. We hope to expand the invitations for workshops like this to our entire CWFA.

—Kimberly Bailey, WCM, NWSO Glasgow, MT

Publications and Audiovisuals

What's New!

■ ***New NOAA Weather Radio Brochure***

We are pleased to announce a new NOAA Weather Radio brochure has been developed by OM. This project included close coordination over the last 5 months with NOAA and NWS Public Affairs, Industrial Meteorology, Office of Systems Operations, and NWS regional staff. Both the American Red Cross (ARC) and FEMA granted us approval to add their logos to this publication, and we included their suggested changes. This publication was prepared for Radio Shack who indicated a willingness to distribute approximately 7 million copies for their holiday packaging of weather radios. In addition, the ARC also has agreed to reproduce this brochure for their chapters.

Special thanks go to Todd Heitkamp, WCM, NWSFO Sioux Falls, South Dakota, who initially wrote the first draft. Also, we want to thank Sue Dietterle, who designed the brochure. Without Sue's patience, understanding, and diligence during the last five months, this publication would not have been possible.

We will notify the Regions when copies become available for general use.

—Linda Kremkau, Editor, Customer Service

■ ***New Atlantic and Pacific Hurricane Tracking Maps***

During the past year, the American Red Cross has been encouraging WSH to make negatives of their three hurricane tracking maps (two Atlantic maps [8 1/2" x 11" and 18" x 24"] and one Pacific map [12" x 24"]) for distribution to our offices. The Red Cross can no longer provide these maps free to our offices. So during the spring and summer months, OM has been working with the American Red Cross and their contractor to enhance the Pacific Hurricane tracking map (with encouragement from the Pacific Region Headquarters) to include the islands of Yap and Palau, add the international date line, and revise the text to include the word typhoon throughout the text. At this time, we have printed the following quantities which are stocked at the National Logistics Supply Center (NLSC). *Unfortunately, the Atlantic and Pacific Hurricane Tracking Maps are not reproducible because of the Red Cross copyright.*

	NOAA PA	Copies
Atlantic Tracking Map (8-1/2" x 11")	96071	170,000
Atlantic Tracking Map (18" x 24")	96072	16,000
Pacific Tracking Map (12" x 24")	96073	48,000

For distribution, the smaller Atlantic hurricane tracking map can be ordered from NLSC by single copies not to exceed 300, but the larger Atlantic tracking map comes in packages of 25. The Pacific tracking map also comes in packages of 25. The maximum quantity one can order is 12 packages which is 300 of the larger Atlantic and the Pacific tracking maps.

—Linda Kremkau, Editor, Customer Service

■ ***New "Flash Floods and Floods...The Awesome Power" Slide Resource Library with Presenter's Guide***

Soon the Regions and field offices will be receiving the newly developed Flash Floods and Floods Slide Resource Library and Presenter's Guide. This package has been a long time coming. To help us complete this project, we detailed to WSH, Bruce Burkman, from the Shreveport, Louisiana, Weather Service Office. We also recruited Larry Wenzel from the Office of Hydrology to work with Bruce to refine the text and pull together additional flash flood/flood slides, covering recent years' major flooding events to enhance this product. We feel this is a much improved package to use for natural hazard awareness of flash floods and floods.

The slides will be reproduced in November for distribution to the Regions and field offices in December.

Special thanks go to Roger Stairs, NWSFO Pittsburgh, Pennsylvania, who initially began work on the slide set a few years ago and also to Bruce Burkman and Larry Wenzel who successfully completed it under a short time frame.

—Linda Kremkau, Editor, Customer Service

What's Being Reprinted!

Below is a list of brochures that have been recently reprinted and stocked at NLSC.

SKYWARN Decal	NOAA PA 92051
Natural Hazard Watch/ Warning Poster	NOAA PA 86001
Safe Boating Weather Tips	NOAA PA 94058
Flash Floods and Floods...The Awesome Power	NOAA PA 92050
Tornadoes...Nature's Most Violent Storms	NOAA PA 92052
Thunderstorms and Lightning... The Underrated Killers	NOAA PA 92053
Winter Storms...The Deceptive Killers	NOAA PA 91002

The following is a current list of NWS publications.

NWS Publications

NOAA/PA	NAME
70027	Survival in a Hurricane (Wallet Card)
77014	Flash Flood (Wallet Card)
82002	Dust Storm Driving Safety (Wallet Card)
82004	Watch Out Storms Ahead
85001	Heat Wave
85002	Hawaiian Hurricane Safety Measures with Central Pacific Tracking Chart
85005	Tornado Safety Tips (Como Protegerse En Caso De Tornado) (WC)
85006	Survival in a Hurricane (Como Sobrevivir En Un Huracan) (Spanish 70027) (WC)
86001	Natural Hazard Watch & Warning Poster (English/Spanish)
91001	Hurricane! A Familiarization Booklet
91002	Winter Storms...The Deceptive Killers
91003	Red Cross - Are You Ready for a Winter Storm?
91004	Red Cross - Are You Ready for a Winter Storm? (Spanish Version)
91005	Red Cross Poster - Are You Ready for a Winter Storm? (English/Spanish)
92050	Flash Floods and Floods...The Awesome Power!
92051	SKYWARN Decal
92052	Tornadoes...Nature's Most Violent Storms
92053	Thunderstorms and Lightning...The Underrated Killers!
92054	FEMA's Emergency Preparedness Materials Catalog
92055	Advanced Spotter's Field Guide
92056	Mariner's Guide to Marine Weather Services
92058	Red Cross - Are You Ready for a Tornado? (Spanish)
92060	Red Cross - Are You Ready for a Flood or a Flash Flood? (Spanish)
92501	NOAA Brochure
93052	Are You Ready for a Thunderstorm? (Spanish)
93056	A Pilot's Guide to Aviation Weather Services (replaces PA 71005) (Booklet)
93059	A Change in the National Weather Service
93060	Spotter ID Card (replaces 84001)
94050	Hurricanes...Unleashing Nature's Fury (Revised March 1996)
94051	Aviation Modernization
94053	Are You Ready for a Hurricane?
94054	Are You Ready for a Hurricane? (Spanish)
94055	Are You Ready for a Hurricane? Poster (English/Spanish)
94056	Are You Ready for a Heat Wave? (Spanish)
94058	Safe Boating Weather Tips
94059	River and Flood Program (Hydrologic Services Program)
94061	NOAA Weather Radio pamphlet (replaces 76015)
96051	National Centers for Environmental Prediction
96052	Key to New International Aerodrome Forecast (TAF) and New Aviation Routine Weather Report (METAR) (Card) (Replaces 93054)
96053	NWR Decal
96071	Atlantic Hurricane Tracking Map - 8-1/2" x 11"
96072	Atlantic Hurricane Tracking Map - 18" x 24"
96073	Pacific Hurricane Tracking Map - 12" x 24"
96074	The Hidden Danger—Low Water Crossing

What's Upcoming!

■ ***Basic Severe Storms Spotter's Field Guide***

Gary Woodall, Southern Region Headquarters, submitted another draft of the basic severe storms spotter's field guide to WSH for review. He and Newton Skiles (NWSFO Little Rock, AR) have shorten it somewhat from 26 pages to about 20 pages, which will make it more reasonable to print in color. It is our hope to print this guide during the 1997 fiscal year. This will complement the new slide set "Concepts of Severe Storm Spotting" developed last spring for use by our field offices for training purposes.

—Linda Kremkau, Editor, Customer Service

■ ***New Heat Wave Brochure***

At a result of the Heat Wave event during the summer of 1995 and the magnitude of fatalities that occurred with this event, WSH felt that it was essential that a new heat wave publication be prepared in the coming year. In August 1996, Jim Allsopp, WCM, NWSFO Chicago, Illinois, was detailed to WSH to work on the first draft of the new heat wave brochure. Jim spent that time writing the content and worked with the Centers for Disease Control and Prevention to obtain information on heat deaths by age group possibly in graphic form. We will also work with FEMA and the American Red Cross to get their input and possibly add their logos. It is our goal to complete this publication for printing in FY 97.

—Linda Kremkau, Editor, Customer Service

NOAA/ARC/FEMA Publications

The American Red Cross (ARC) can no longer provide the tri-fold, tri-logoed "Are You Ready" pamphlets to NWS offices. Once our supply of the ARC's pamphlets are gone at NLSC, then we will no longer have these pamphlets available. The ARC has asked that the NWS offices not place any more demands for these materials or of any of our in-depth brochures on their local Red Cross chapters. Any requests received from the public for these tri-fold publications will have to be directed to the local ARC. As you read in the next article, ARC will be charging a small fee for these publications.

However, we will continue our working relationship with the ARC and include them in the development of any new NWS publications. We value ARC's input and expertise in every aspect of these materials especially with maintaining a consistent message with respect to saving lives and reducing property losses.

—Linda Kremkau, Editor, Customer Service

Other Hazard Awareness Materials

■ ***Budget Cuts in the Red Cross Affect Cost of Printed Brochures***

Since re-energizing the relationship with the NWS in producing public education brochures 4 years ago, we have seen a phenomenal demand by the public for information and respect for our teamwork.

The Red Cross believes strongly in working with our partners involved in educating the public. Recent marketing research has reaffirmed that the public doesn't believe it even heard a message until the message was delivered six times. On average, the public does not take action, like storing disaster supplies or buying a NOAA Weather Radio, until it hears the message 22 times. That's why it's so important that the message gets out from a variety of sources and that the message is consistent.

The process of continuing to support public education activities such as this does not come cheaply. Since the first in-depth public education brochure was produced by the NWS in cooperation with FEMA and the Red Cross, we have seen demand for them exceed the million-mark in less than 12 months.

Prior to July 1996, the Red Cross was in the position to provide copies of any of its Community Disaster Education materials at no charge to partner agencies. But as demand has risen by 150 percent a year for the last 4 years, the cost of meeting that demand has likewise risen.

In the fiscal year ending June 30, 1996, the Red Cross paid $6.7M to reproduce public education and related materials. It is estimated that about $3M worth of materials was shipped to third parties, including schools, emergency management agencies, NWS offices, businesses, and others.

Facing a $16M deficit as of June 30, Red Cross Acting President Gene Dyson adopted procedures that all Red Cross chapters would be charged for all materials they order from the Red Cross warehouse. To offset the immediate financial impact, each Red Cross chapter was provided a "purchase credit" to use to pay these costs for materials they order for their own use.

The credit issued to each chapter's account, however, does not adequately cover the costs of materials ordered by third party organizations. Therefore, effective July 1, Red Cross chapters were advised to inform anyone who orders materials from them in bulk that the materials can no longer be provided free of charge.

It is still possible to order any materials you want from your local Red Cross chapter, including the NOAA/NWS brochures, as well as other popular awareness-raising brochures such as the "Are You Ready?" series. Your local chapter can inform you about the charges for each item. The charge is based on what it costs the Red Cross to reproduce the product and is not designed to generate revenue or raise funds.

It is regretful that in these days of increased demand by the public for sophisticated educational materials, there are declining resources to support reproducing them. We hope you will continue to work with your local Red Cross chapters in public education activities. No one organization can do it all.

Together, we can make a significant impact on the way our communities prepare, respond, and cope with severe weather events and disasters.

—Rocky Lopes, Disaster Services, American Red Cross National Headquarters

■ ***FEMA's Community and Family Preparedness Program Continues to Educate the Public***

The goal of FEMA's Community and Family Disaster Preparedness Program is that the American public be educated and prepared on what to do before, during, and after a disaster to protect themselves, their families, their homes, and their businesses. The program works with state and local emergency managers in cooperation with other

agencies and voluntary organizations, providing disaster services, with other community organizations, school systems, business, industry and the media to promote disaster preparedness education.

The program encourages local coalitions to protect their communities from hazards they face and prepare to respond to disaster. Limited quantities of public information publication, camera-ready copy, and video submasters for duplication are available for state and local disaster preparedness activities:

- video and print materials for presentations in schools and adult seminars, to teach children as well as adults how they can help deal with disasters;
- brochures on family disaster kits that will carry a household through several days without additional supplies, electricity, or water;
- family disaster planning for getting out of residences quickly, what to take along when they have to evacuate, how to provide for communications, and reunite separated family members;
- how to get safe water; and
- helping children cope with disaster.

Call FEMA Publications: 1-800-480-2520. Disaster preparedness information is also available via on-line services and a FAX-ON-DEMAND system accessible by touch-tone telephone. Pdf graphic image files for printing are at FEMA's Home Page on the Web (**http://www.fema.gov**) or the Web site for the Family Preparedness Program on-line conferences (**http://www.partner.org**). Camera-ready copy for local program leaders is also available to businesses, industries, or other organizations, who are free to add their name and that of any partners before printing copies for their own use and dissemination.

Activities include disaster preparedness presentations, training for organizers and leaders, seminars for community groups, and preparedness and mitigation campaigns for such specific hazards as earthquakes and seasonal floods, tornadoes, hurricanes, and severe winter weather.

The Family Disaster Preparedness Program brings to reality the fact that the public itself can do more than government to prepare for disaster and protect their property, reduce threats to life and well-being, and avoid heavy costs of recovery if they realize that what they do makes a substantial difference. The program recognizes the public as the government's major partner in disaster preparedness.

Contact Ralph B. Swisher, PT-TR-PR, FEMA, Washington, DC, 20472; Tel 202-646-3561, FAX 202-646-4371, Internet: **rswisher@fema.gov**.

—Ralph Swisher, Preparedness Branch, Training Division, FEMA, Washington, DC

Sources and Limits of the FEMA's Community and Family Preparedness (CFP) Program Materials

Printed brochures of FEMA's CFP Program, issued jointly by FEMA and the American Red Cross Community Disaster Education (CDE) Program, are increasingly available on the Internet. Graphic image files, printing instructions, and software to pull files down are posted for the basic CFP brochures.

- FEMA and the Red Cross have placed graphic image files of basic disaster awareness/preparedness and fire safety and prevention brochures on the Internet, and additional items will be added as they are prepared and available in appropriate form. In the meantime, both Web sites have a great deal of additional information that can be downloaded and prepared by those with desktop publishing computer capability.

  FEMA's Internet Address — **http://www.fema.gov**

  Go to PREPARING FOR DISASTER, then to [Family Preparedness] for camera-ready images of brochures; or for a complete list of publications (not the full text), go to the LIBRARY, then to PUBLICATIONS.

  ARC's Internet Address — **http://www.redcross.org**

- Other partners in public disaster education have also established sites with hazard and preparedness information:

  [enter principal Web site addresses: NOAA/NWS, USGS, CA, FL, CHARLOTTE, NC; etc.];

- The National Weather Service of the National Oceanic and Atmospheric Administration;
- The U.S. Geologic Survey;
- Several states and even a number of local jurisdictions.
- FEMA's Office of Public Affairs maintains a "FAX-ON-DEMAND" system. Dial 1-202-646-HELP for fact sheets and backgrounders on a wide variety of specific hazard, preparedness, mitigation, response, and recovery topics.
- Camera-ready copy designed for states and local users and sponsors to add their names or logos is stocked by the FEMA Publications Distribution Center. Call 1-800-480-2520.
- The FEMA Radio Network has brief broadcast quality "sound bites" for radio stations to use in disaster coverage and steps the public can take to protect themselves.

Quantities of print and videotape materials from FEMA's Community and Family Preparedness Program are severely limited because of severe budgetary constraints. The American Red Cross, which must use public donations to print their materials, has found it necessary to require reimbursement at cost for larger orders to eligible users.

These policies have not been adopted arbitrarily. FEMA's policy has been justified on the grounds that while it is an appropriate Federal responsibility to undertake research and provide the best technical information available on a national basis, it is not the Federal Government's role to mass produce locally used public information materials for what is primarily the responsibility of

state and local governments for disaster preparedness, mitigation, response, and recovery. The Red Cross, rightly sensitive to the proper use of public donations, found it necessary to avoid subsidizing government emergency programs funded by government appropriations.

As modern technology has made other alternatives available, even the economies of scale once thought to justify national production, warehousing, and distribution are called into question. Warehousing and distribution costs and the delays of a system disseminating materials from a centralized warehouse were imposing a greater burden in cost and delays. Immediate access to image files at the point of use, where the numbers needed could be quickly printed as needed for many uses, is proving to be a better answer. Many local program managers are also finding local partners willing to help with printing costs, especially if they have been invited to participate in the planning stage.

On the next page (page 25) is a list of Community and Family Preparedness Program materials, most of which are printed and disseminated by both FEMA and the American Red Cross, and a few also in partnership with the National Weather Service. The list provides item numbers to be used when ordering, limits on quantities, identifies those for which camera-ready hard copy are available, and which are available to be pulled down from the Internet.

—Ralph Swisher, Preparedness Branch, Training Division, FEMA, Washington, DC

The Weather Channel's "On-Air Schedule"

This is a continuing part of the *Aware Report* to provide you with an "On-Air Schedule" from The Weather Channel for live and current forecast weather programs (see below). The Weather Classroom 10-minute program airs Monday-Friday at 1 p.m., ET.

On-Air Schedule

Mon.	18	Nov.	The Jet Stream
Tue.	19	Nov.	The Water Cycle
Wed.	20	Nov.	The Seasons
Thu.	21	Nov.	Winter Precipitation
Fri.	22	Nov.	Satellites & Forecasting
Mon.	25	Nov.	The Atmosphere
Tue.	26	Nov.	Clouds
Wed.	27	Nov.	Art in the Air
Thu.	28	Nov.	Heavenly Skies
Fri.	29	Nov.	The Sun and You
Mon	02	Dec.	Thunderstorm Basics
Tue.	03	Dec.	Lightning
Wed.	04	Dec.	Tornadoes
Thu.	05	Dec.	Floods
Fri.	06	Dec.	Thunderstorm Safety
Mon.	09	Dec.	Hurricane Basics
Tue.	10	Dec.	Hurricane Formation
Wed.	11	Dec.	Hurricane Forecasting & Preparation
Thu.	12	Dec.	Hurricanes & You
Fri.	13	Dec.	Hurricanes of the Past
Mon.	16	Dec.	Weather Basics
Tue.	17	Dec.	Fronts
Wed.	18	Dec.	High & Low Pressure
Thu.	19	Dec.	Wind
Fri.	20	Dec.	The Jet Stream
Mon.	23	Dec.	The Water Cycle
Tue.	24	Dec.	The Seasons
Wed.	25	Dec.	Christmas Special: The Chase
Thu.	26	Dec.	Winter Precipitation
Fri.	27	Dec.	Satellites and Forecasting
Mon.	30	Dec.	The Atmosphere
Tue.	31	Dec.	Clouds

—Education Services Department, The Weather Channel

Aware Report Roster

Attachment B is the *Aware Report* Roster which lists all the WCMs in each of the NWS Regions. The telephone numbers are listed numbers for that office and not the WCM's direct telephone number. If there are any changes, please notify me at (301) 713-0090 Ext. 118. The Roster is placed at the back of the *Aware Report* for anyone wishing to detach and use separately.

Also, if you know of someone who would like to be placed on the *Aware Report* distribution list, please have him or her contact OM's Customer Service at the telephone number above.

—Linda Kremkau, Editor, Customer Service

DISASTER AWARENESS/PREPAREDNESS PUBLICATIONS
CAMERA-READY COPY AND PRINTED STOCKS

ITEM # REFERENCE LIST & LIMITS

Title		Short Description		Printed Item #	Limit	Camera Copy #	Limit	Web File
Emergency Preparedness Checklist –	English	L-154 E	ARC 4471	8-0963	25	0-0167	1	X
	Spanish	L-154 S	ARC 4471S	8-1026	25	0-0166	1	
Preparing for Emergencies: A Checklist for People w/Mobility Problems		L-154 M	ARC 4497	8-1017	25	0-0168	1	X
Disaster Public Information Catalog		L-164		8-0822	25	NA		
Family Disaster Supplies Kit –	English	L-189 E	ARC 4463	8-0941	25	0-0163	1	X
	Spanish	L-189 S	ARC 4463S	8-1004	25	0-0165	1	
Family Disaster Plan –	English	L-191 E	ARC 4466	8-0954	25	0-0161	1	X
	Spanish	L-191 S	ARC 4466S	8-0996	25	0-0162	1	
Helping Children Cope w/Disaster –	English	L-196 E	ARC 4499	8-1034	25	0-0139	1	X
	Spanish	L-196 S	ARC 4499S	8-1111	25	0-0160	1	
Wildfire - Are You Prepared?		L-203	ARC 5020	5-0228	25	0-0169	1	
Food & Water in an Emergency		L-210	ARC 5055	9-0044	25	9-0057	1	X
Emergency Management Guide for Business & Industry		FEMA-141	ARC 5025	8-0628	10	9-0056	1	X
Disaster Preparedness Coloring Book –	English	FEMA-243E	ARC 2200	8-1123	50	0-0078	1	
	Spanish	FEMA-243S	ARC 2200S	NA		0-0082	1	
Available from FEMA only								
Good Ideas Book		K-81		8-1108	2	[Use Contents as camera-copy]		
Are You Ready? Your Guide to Disaster Preparedness		H-34		8-0908	10	0-0056	1	
Videotapes								
Adventures of Disaster Dudes Videotape		VT 1/2"	ARC 5024V	8-1129	1			
Presenter's Guide: Adventures of the Disaster Dudes		FEMA-242	ARC w/vid	8-1117	2			
When Disaster Strikes - Video		VT 1/2"		8-0931	1			
Multihazard Preparedness PSA's Video (Hollywood Personalities)		VT 1/2"		0-0111	1			
Multihazard Preparedness PSA's Video Submaster (Hollywood Personalities)		VT 3/4"		0-0173	1			
Hurricane, Tornado & Flood Preparedness & Family Disaster Plan - Video (Bob Vila)				0-0115	1			
Hurricane, Tornado & Flood Preparedness & Family Disaster Plan Video Submaster (Vila)				0-0109	1			

ATTACHMENT A

Update on OM's WSOM Chapters

WSOM Chapters	Status
B-16, Marine Reporting Station	To be updated in 1997.
B-19, Fire Weather Stations	Will be updated and consolidated with D-06 in 1997.
B-30, Voluntary Observing Ship Program	To be updated in 1997.
B-55, Distribution and Use of Satellite Data	Requires a total update; earliest draft early 1997.
B-90, Special Warning Program Observations	To be updated in 1997.
C-11, Zone and Local Forecasts (main section)	To be updated by early 1997.
C-11, Zone and Local Forecasts, Appendix A (Zone Forecast Maps)	Appendix A issued November 5, 1996.
C-40, Severe Local Storm Watches, Warnings, and Statements	No changes since the March 1995 rewrite and the May 1996 OML. In early 1997, an OML will be issued to update the format for the public watch narrative. Late in the year, an OML will be issued to integrate products and services associated with Phase I of the convective watch decentralization.
C-41, Tropical Cyclone Program	C-41 was updated in May 1996.
C-45, Meteorological Discussions and Forecast Coordination	OML expected in 1997 for guidance products on days 6 and 7 and 8- to 14-day Outlook. Begin rewrite of chapter in 1997.
C-47, County Warning Areas, Appendix A	Ongoing public information statements are updates. Next appendix issuance expected by the end of 1996 or early 1997.
C-49, Warning Coordination and Hazard Awareness	The Customer Service of OM will begin the review and update process for C-49 in early June 1997. The first draft should reach the field for review late in 1997. Our goal is to have the chapter updated in early 1998. Evaluate option for merging Chapters C-45 and C-49.
C-60, Radio/TV Dissemination; C-61, Telephone Dissemination; C-62, Newspaper Dissemination; and C-67, News Wire Dissemination	Work will begin on updating and probably consolidating these chapters in 1997.
C-66, Dissemination of Public Warnings	Consolidate into chapter C-49 by early 1998.
C-72, National Watch/Warning Verification Program C-73, Public/Aviation Forecast Verification	These chapters will be updated and consolidated into a single chapter during FY 97.
D-06, Fire Weather Services	Will be updated in 1997 and consolidated with B-19.
OML to D-06, Duties of IR Mets Requiring Exposure to Hazardous Situations	Has been approved; due out very soon.
D-07, Marine Weather Services	To be updated in 1997.
D-20, Area Forecasts (OML)	Draft, dated May 28, 1996, became effective July 1, 1996. Final draft is in coordination for signature.
D-22, Domestic SIGMET (OML)	Draft, dated May 28, 1996, became effective July I, 1996. Final draft is in coordination for signature.
D-22, Domestic SIGMET	Will be consolidated with D-38 mid-1997.
D-38, International SIGMET	D-22 and D-38 will be consolidated mid-1997.
D-21, Aviation Terminal Forecasts (Obsolete) D-37, International Aviation Aerodrome Forecasts (Obsolete)	Superseded by June 20, 1996, draft of D-31.
D-31, Aviation Terminal Forecasts	Draft dated June 20, 1996, became effective July 1, 1996. Incorporating regional comments into final draft to be coordinated for signature (winter 1996).
D-23, Special Aviation Forecasts and Events D-91, Aviation Liaison and User Support Program	Preliminary work to update, adjust, and reassign the contents of these chapters has been completed. Awaiting ASB resources to complete the job.
D-25, Air Traffic Operations Support	The chapter was issued October 25, 1996.
D-30, Transcribed Weather Broadcast Text Products	Draft dated June 28, 1996, became effective July 1, 1996. Final draft is in coordination for signature.

WSOM Chapters	Status
D-51, Marine Services for Coastal, Offshore, and High Seas	Appendices A and B are going to be replaced by an OML in the spring of 1997.
D-80, Familiarization Flights	Final draft is in coordination for signature.
D-90, Support for Accident Investigation and Litigation	Final draft submitted for signature.
F-42, Storm Data and Related Reports	An OML has been released to accommodate changes associated with Paradox 11, the new software for Storm Data. Other minor changes also have been included.
F-60, Tsunami Warning Service	Chapter issued January 25, 1996.
F-61, Earthquake Reporting Program	Chapter issued March 6, 1996.

Eastern Region

Rick Watling	Regional (Focal)	516-244-0123
Solomon Summer	HSD Chief	516-244-0111
Dick Westergard	Albany, NY	518-869-6347
Vacant	Binghamton, NY	607-729-7629
Mike Emlaw	Blacksburg, VA	540-552-0084
Glenn Field	Boston (Taunton), MA	508-823-1900
Stan Levine	Buffalo, NY	716-565-0204
Steve Hogan	Burlington, VT	802-862-2475
Tom Dunham	Central PA (State College)	814-234-9412
Jerry Harrison	Charleston, SC	803-744-3207
Mike Washington	Charleston, WV	304-746-0180
Mary Jo Parker	Cincinnati, OH	513-383-0031
Larry Gabric	Cleveland, OH	330-265-2370
Steve Naglic	Columbia, SC	803-765-5501
Sam Baker	Greenville-Spartanburg, SC	864-848-1332
Dan Bartholf	Newport, NC	919-223-5122
Gary Conte	New York City (Upton), NY	516-924-0037
Joe Miketta	Philadelphia, PA	609-261-6600
Rich Kane	Pittsburgh, PA	412-262-1591
John Jensenius	Portland (Gray), ME	207-688-3210
George Lemons	Raleigh, NC	919-860-1234
Bill Sammler	Wakefield, VA	804-899-4200
Barbara Watson	Washington, DC	703-260-0107
Tom Matheson	Wilmington, NC	910-762-4289

Southern Region

Gary Woodall	Regional	817-334-2812
Ed May	HSD Chief	817-334-2674
Keith Hayes	Albuquerque, NM	505-243-0702
Douglas Crowley	Amarillo, TX	806-335-1121
Barry Gooden	Atlanta, GA	770-486-1333
Larry Eblen	Austin/San Antonio, TX	210-629-0130
Brian Peters	Birmingham, AL	205-664-3010
Don Ocker	Brownsville, TX	210-504-3354
John Cole	Corpus Christi, TX	512-289-0959
Jack Mercer	El Paso, TX	505-589-4088
Jim Stefkovich	Fort Worth, TX	817-429-2631
Gene Hafele	Houston/Galveston, TX	713-337-5074
James Butch	Jackson, MS	601-936-2189
Fred Johnson	Jacksonville, FL	904-741-4370
Roger Erickson	Lake Charles, LA	318-477-5285
Renee Fair	Little Rock, AR	501-834-9102
Larry Vannozzi	Lubbock, TX	806-745-4260
Dennis Decker	Melbourne, FL	407-255-0212
John White	Memphis, TN	901-757-6400
Jim Lushine	Miami, FL	305-229-4522
George Mathews	Midland/Odessa, TX	915-563-5006
Gary Beeler	Mobile, AL	334-639-6625
Howard Waldron	Morristown, TN	615-586-3771
Jerry Orchanian	Nashville, TN	615-754-8502
Frank Revitte	New Orleans, LA	504-522-7330
Jim Purpura	Norman, OK	405-366-6583
Richard May	San Angelo, TX	915-944-9445
Rafael Mojica	San Juan, PR	809-253-4586
Bruce Burkman	Shreveport, LA	318-631-3669
Bob Goree	Tallahassee, FL	904-576-6318
Walt Zaleski	Tampa, FL	813-645-2323
Steve Piltz	Tulsa, OK	918-832-4115

Central Region

David Runyan	Regional	816-426-3239
Ken King	Actg. HSD Chief	816-426-3220
Hector Guerrero	Aberdeen, SD	605-225-5547
Kathy Hoxsie	Gaylord, MI	517-731-3384
Daniel Noah	Bismarck, ND	701-250-4224
Joseph Sullivan	Cheyenne, WY	307-772-2468
Jim Allsopp	Chicago, IL	815-834-0600
James Meyer	Davenport, IA	319-391-6729
Robert Glancy	Denver, CO	303-361-0661
Jeffrey Johnson	Des Moines, IA	515-270-4501
Gary Campbell	Detroit/White Lake, MI	810-625-3309
Jeff Hutton	Dodge City, KS	316-227-7140
Carol Christenson	Duluth, MN	218-729-0651
Dennis Hull	Goodland, KS	913-899-2360
Jim Belles	Grand Forks, ND	701-772-0720
James Pringle	Grand Junction, CO	970-243-7007
Mike Heathfield	Grand Rapids, MI	616-956-5922
Jeff Last	Green Bay, WI	414-494-5845
Steve Kisner	Hastings, NE	402-462-2127
David Tucek	Indianapolis, IN	317-856-0361
Shawn Harley	Jackson, KY	606-666-4856
Bill Bunting	Kansas City, MO	816-540-5147
Todd Shea	LaCrosse, WI	608-784-8275
Norman Reitmeyer	Louisville, KY	502-969-8842
Jack Pellett	Marquette, MI	906-475-5782
Rusty Kapela	Milwaukee/Sullivan, WI	414-297-3243
Todd Krause	Minneapolis, MN	612-361-6670
Gene Bowman	North Platte, NE	308-532-4936
Brian Smith	Omaha, NE	402-359-2394
Ricky Shanklin	Paducah, KY	502-744-6440
Tom Magnuson	Pueblo, CO	719-948-9429
Susan Anderson	Rapid City, SD	605-341-9271
Donald Noll	Riverton, WY	307-857-3898
Todd Heitkamp	Sioux Falls, SD	605-330-4247
Rod Palmer	Springfield, IL	217-732-4029
Steve Runnels	Springfield, MO	417-863-1456
Jim Kramper	St. Louis, MO	314-447-1876
Mike Akulow	Topeka, KS	913-232-1493
John Ogren	Wichita, KS	316-942-8483

Western Region

Richard Douglas	Deputy MSD Chief	801-524-4000
Bob Tibi	HSD Chief	801-524-5137
Chuck Bikle	Billings, MT	406-652-0851
Carl Weinbrecht	Boise, ID	208-334-9860
Ed Clark	Elko, NV	702-738-3018
John Lovegrove	Eureka, CA	707-443-6484
Chris Cuoco	Flagstaff, AR	520-556-9161
Dan Gudgel	Fresno, CA	209-584-0583
Kimberly Bailey	Glasgow, MT	406-228-2850
Lynn Valtinson	Great Falls, MT	406-453-2081
Ron McQueen	Las Vegas, NV	702-263-9744
Tim McClung	Los Angeles, CA	805-988-6610
John Casad	Medford, OR	503-773-1067
Peter Felsch	Missoula, MT	406-329-4841
Rob Doherty	Pendleton, OR	541-276-7832
Mike Franjevic	Phoenix, AZ	602-379-4611
Bruce Bauck	Pocatello, ID	208-233-0834
Dan Keeton	Portland, OR	503-261-9247
Roger Lamoni	Reno, NV	702-673-8107
Roger Pappas	Sacramento, CA	916-979-3041
Dave Toronto	Salt Lake City, UT	801-524-5113
Wilbur Shigehara	San Diego, CA	619-297-2107
Charles Morrill	San Francisco, CA	408-656-1725
Ted Buehner	Seattle, WA	206-526-6095
Ken Holmes	Spokane, WA	509-244-0110
Paul Flatt	Tucson, AZ	520-889-2402

Alaska Region

Greg Matzen	Regional	907-271-3507
David Goldstein	Anchorage	907-266-5117
John Lingaas	Fairbanks	907-456-0435
Robert Kanan	Juneau	907-586-7493
George Carte	Palmer (ATWC)	907-745-4212

Pacific Region

James Partain	Regional	808-532-6413
Thomas Heffner	Honolulu, HI	808-973-5275
John Miller	Guam	(011) 671-472-7408
Akapo Akapo	Pago Pago (Focal)	(011) 684-699-9130

NCDC - Storm Data

William Angel	Asheville, NC	704-271-4459