Aware

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

Summer 1997

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From the Director's Corner

Maintain the Vision!

The abrupt departure of Dr. Joe Friday Jr. has left an obvious void in the organization. Questions about the future of the National Weather Service (NWS) abound within and outside the agency. Now is the time for all of us, at every level of the NWS, to pull together and set our sights on our common vision.

Our future and our strength derive from our historic mission to ensure the safety of life and property, reinforced in the Strategic Plan for the Modernization and Associated Restructuring of the NWS:

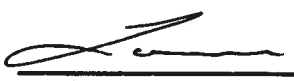
> *To provide weather and flood warnings, public forecasts and advisories for all of the United States, its territories, adjacent waters and ocean areas, primarily for the protection of life and property. NWS data and products are provided to private meteorologists for the provision of all specialized services.*

I believe the NWS is the premier service agency in the Federal government. Twenty-four hours a day, 365 days a year, our personnel are on the line issuing warnings and forecasts with the degree of accuracy and with lead times that have saved countless lives and enabled sound decisions to protect property. Many times, this work is done with a selfless disregard for personal concerns. Our people have remained on duty even as their loved ones are evacuated and their houses succumb to nature's wrath.

Vice President Al Gore is urging Federal agencies to become more responsive to customer needs. The NWS, through its Warning Coordination Meteorologists (WCMs), Service Hydrologists, Science and Operations Officers (SOOs), and its entire dedicated workforce, meet with customers daily to ensure the best possible service. Our links to emergency managers and the media have created a weather partnership that is the envy of the world. The synergy between the NWS and academia ensures that the latest science translate into new products.

Our dynamic relationship with the private sector hydrometeorological community has enabled it to prosper and stimulate our economy by building upon the wealth of data and information from our field offices, River Forecast Centers (RFCs), and National Centers. No other country has been able to structure such a vibrant partnership between the Government and private sector. The NWS is uncommon among the Federal Government in that not only our name but our very existence defines service.

The modernization of the NWS, along with its technologies, structure, and professional workforce, will enable us to finally provide, as Deputy Assistant Administrator for Operations Dr. Susan Zevin has envisioned, a seamless delivery of critical information across all time scales from the climatological down to the storm scale. Reflecting on our possibilities, Lou Boezi, Deputy Assistant Administrator for Modernization, has said, "Look to the weather and see the future." A new century is dawning. Keep our mission clear. Look to the future for we're building it now.



Louis W. Uccellini, Director, Office of Meteorology

Office of Meteorology

OM Builds Consensus on Forecast Process Applied to Requirements

The Office of Meteorology (OM), through the Integrated Modernization and Associated Restructuring Operations and Services Team, is proceeding with an effort to build an NWS-wide consensus on optimizing the functional End-to-End Forecast Process for modernized operations. OM program managers are already using the steps that define this process (in reverse) as a template for ensuring that program services are re-engineered through user-driven, requirements-based efforts.

The current forecast process starts by acquiring observations at all forecast levels. It assimilates centralized data and develops and operates numerical models. The present system produces centralized models and model statistics-based guidance and forecasts and manual forecast product suites. To effectively use products and services and meet service requirements, it also produces critical local forecasts and warnings as well as local outreach programs.

This process has evolved over the past 40 years, mainly in response to decisions by each operating element. Observation data sets have been acquired by each element for its own needs. There is limited access to, or cross-use of, some of these data sets and products. The results of an office's or center's data assimilation and quality assurance process often are not directly available to anyone else.

To provide the most useful, timely, and cost-effective weather services, the focus of each component of the forecast process must be fine-tuned. This process also must be done to take full advantage of the NWS modernization. The fine-tuning must be coordinated with the other forecast process components to meet the requirements of each level's users who are dependent on the NWS product/data stream.

A coordinated focus on requirements has been designed based on a template derived by simply reversing the steps of the end-to-end forecast process. Thus, service requirements validation begins at the user end of the forecast process, where the products and services are provided to an increasingly diverse external user community. These requirements determine the guidance and forecast support requirements of the Weather Forecast Offices (WFOs), Center Weather Service Units, RFCs, and National Centers for Environmental Prediction (NCEP). The field office and service center requirements determine the most effective and useful numerical and statistical model outputs. The field office and modeling requirements determine the mix and content of required observation data sets. These requirements also provide a foundation for data assimilation schemes needed to initialize the models.

The underlying requirements associated with each step, and the focus of each of the elements, will be used to refine the details of the modernized end-to-end forecast process. The effort to build a consensus on those details is ongoing. The process is currently being applied to the hydrometeorological (Aviation, Marine, Fire Weather, Flash Flood, and Hurricane) forecast programs. For example, the Federal Aviation Administration (FAA), National Aeronautics and Space Administration (NASA), Air Transport Association, and National Center for Atmospheric Research, and users and developers of NWS aviation weather services have been participating in groups providing requirements input and/or validation as part of OM's aviation program re-engineering effort. OM has sponsored user advisory groups and/or workshops to provide similar input for re-engineering the Fire Weather, Watch Decentralization, Quantitative Precipitation Forecast (flash flood), and Marine programs.

Forecast process roles and elements will be tested as necessary to ensure that the NWS's modernized operations make the most effective use of available resources to meet validated user needs.

Mike Tomlinson, Services Implementation Manager

Aware

National Weather Service, NOAA, Office of Meteorology
1325 East-West Hwy., Room 14370
Silver Spring, MD 20910
Linda Kremkau, Managing Editor
Melody Magnus, Editor
Tel: (301) 713-0090 x118
Fax: (301) 713-1598
e:mail: Linda.Kremkau@noaa.gov

Louis W. Uccellini, Director
Mary Newton, Executive Officer
Paul Hirschberg, Principal Scientist
Michael Tomlinson, Services Implementation Manager

Richard Przywarty, Chief, Service Division
Donald Wernly, Chief, Customer Service
Therese Pierce, Chief, Integr. Hydromet. Services

Gregory Mandt, Chief, Science Division
LeRoy Spayd, Chief, Science and Training
Joseph Bocchieri, Chief, Tech./Fcst Systems

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Customer Service

Status of the Convective Watch Decentralization Plan

The NWS Employees Organization (NWSEO) has approved support plans for Service Evaluation and Product Format. The NWSEO is still reviewing the CWD Forecaster Training Plan. Barring problems, NWS senior management will clear those plans by the end of summer. These plans are the detailed arrangements that support the Convective Watch Decentralization Plan, completed last January.

In July, NWS began beta-testing of the Phase I PC software that enables field forecasters to perform their watch function. This function is being performed at a number of sites across the continental United States, with WFOs, the Storm Prediction Center (SPC), and commercial customers taking part.

During Phase I (the Field Test, proposed to begin early 1998), field forecasters will adjust SPC convective watches in the area of responsibility, adding or subtracting a county or two, as the watch is issued. Also, forecasters are responsible for clearing portions of a watch in their area.

To perform this function, the new product Watch County Notification (WCN) is being introduced. The WCN will be the product category by which WFOs will redefine and clear watches in their area of responsibility. NWS is testing software packages, product formatting, and product utility. Software at WFOs consists of the PC-based Zone Identifier Program (ZIP) and PC-NOW, as well as the Interactive Computer Worded Forecast (ICWF) software for the Advanced Weather Interactive Processing System (AWIPS).

The Product Format Team developed the product formats during the past year. Customer response to this beta test will have a strong bearing on the final configuration and usefulness of the product stream. Beta testing should continue through this fall.

We must complete two requirements before proceeding with the nationwide Phase I field test. All software and product formats must be approved and in place, and a "party-line" voice communications and coordination technology must be operational at all Contiguous U.S. WFOs and NCEP service centers. Once these conditions are met, we will conduct a formal field test of not less than 30 days. Using "canned" data on quiet weather days, field offices and the SPC will work with customers to ensure all equipment, product formats, and communications technologies are functional. Thorough service evaluation will be performed during the field test. Based on that evaluation, and concurrence by Regional and NCEP Directors and the Director of the NWS, the NWS could proceed with Phase I operations by late spring of 1998.

Bill Alexander, Mesoscale Manager

Disaster Agencies Join to Obtain "Quick Response" Post Storm Data

Gathering scientific evidence about extreme weather and flooding events needs to be accomplished as soon as possible post-event to improve the science. Improving the science helps us to provide more accurate and timely watches and warnings, thereby allowing us to fulfill our mission of saving lives, mitigating property damage, and promoting commerce. Damage and debris fall patterns, high water marks and birm lines are quite perishable and may be erased by bulldozers and rescuers within hours. To facilitate a "quick response," the Post-Storm Data Acquisition (PSDA) working group of the Interdepartmental Committee for Meteorological Services and Supporting Research is writing policy into their annual operating plan that will ensure multiple agency cooperation in the effort.

The concept is for the PSDA, through the Office of the Federal Coordinator, to activate and dispatch predesignated teams of scientists and engineers to the stricken area upon hearing about an extreme event. Teams would consist of representatives from NOAA (NWS, Environmental Research Laboratories), the National Institute of Standards and Technology, and other PSDA agencies, such as the U.S. Army Corps of Engineers, U.S. Geological Survey (USGS), Department of Agriculture, and Federal Emergency Management Agency (FEMA). Team configuration would vary according to the nature of the event. The quick response teams would be funded through FEMA Response and Recovery in a declared national disaster and through the Office of the Federal Coordinator's non-year resources (to which NWS contributed a modest amount) if there is not a declared disaster, but the evaluation would have significant scientific merit.

Work is beginning on identifying specific scientists and engineers to be involved in the quick response initiative. Meanwhile, the OM is writing a Standard Operating Plan (SOP) for the quick response team. Once completed, it will become an Attachment to the PSDA Operating Plan. The quick response SOP is expected to be in place by this fall. Far too many extreme weather and flooding events have been missed from the scientific perspective. This mechanism will allow priceless data to be gathered in the future.

Bill Alexander, Mesoscale Manager

WISEV6 Nears Completion

Greg Jackson, SOO at NEXRAD Weather Service Office (NWSO) San Angelo, TX, has begun beta-testing of WISE Version 6, a PC-based short-fuse warning and statement software package for field warning offices. The update was prompted by a change in certain marine forecast responsibilities that would have mandated significant reprogramming of SRWarn. Recall that NWS has used SRWarn as its primary PC-based warning software for nearly a decade. With the release of WISEV6, NWS will phase out SRWarn.

Jackson's effort was made possible through OM funding for one week of travel to Southern Region Headquarters in Fort Worth; by Southern Region Headquarters, which supplied the needed workstation; and by NWSO San Angelo, which contributed his time.

This fall, following beta-testing, OM will distribute WISEV6 through the Regions to Atlantic and Gulf coastal offices. Regional personnel may, at their discretion, further distribute the software. Jackson has agreed to provide installation support and maintenance for the software.

Bill Alexander, Mesoscale Manager

Team Assembled to Evaluate Severe Thunderstorm Warning Criteria

The Severe Thunderstorm Warning Criteria Team consists of 25 members from widely divergent backgrounds. The team includes representatives from operational meteorology in NWS forecast offices and National Centers, such as SPC, research (Cooperative Program for Meteorology, Education and Training [COMET] and the National Severe Storms Laboratory [NSSL]), training (the NWS Training Center and NEXRAD Operations Training Branch), Customer Service and Social Science (WCMs and social scientists), engineers, and external users (U.S. Air Force, the insurance industry, and the electronic media.)

The team is studying such basic concepts as the purpose of a severe thunderstorm warning and the threshold of wind/hail at which storms become life threatening. The team will examine data on warnings/verification from the SPC, insurance loss information from the insurance industry, *Storm Data* information on wind speed/hail size vs. damage, emergency management, and media opinions of warning criteria.

The team has held some preliminary meetings, but much work remains to be done. The team plans to submit a draft report to OM by the end of September and a final report by the end of October.

Jim Purpura, WCM, NWSFO Norman, OK

New Bullet Format Coming For Short Fuse Warnings This Fall

With the advent of numerous PC-software programs in the field has come several varieties of formats for issuing short-fuse warnings. Such variety is a testament to the individuality of each field office, but it can cause major heartburn with our external customers. Commercial consumers and providers of weather information must program these variations into their software or our products will not be received or properly used.

Recently, NWS Regional Meteorological Service Divisions agreed upon a standardized format for short-fuse, bullet warnings. Further, they agreed that in the very near future, ALL short-fuse warnings will be issued in this standard format. The products that will use this standard bullet format include:

Warning Type	**Product Category**
Tornado	TOR
Severe Thunderstorm	SVR
Flash Flood	FFW
Special Marine	SMW
Tornado/Flash Flood	TOR/FFW
Severe Thunderstorm/ Flash Flood	SVR/FFW
Severe Thunderstorm/ Special Marine	SVR
Tornado/Special Marine	TOR

Basically, the format includes the follow information in this *specific* order:

- AFOS PIL
- WMO Header
- Universal Geographic Code
- Mass News Disseminator
- Attribution
- Warning Type/County Affected
- Valid Time
- Short Term Forecast
- Nowcast
- Call to Action
- lat/long of expect storm track (optional)

The box on the top of the next page offers an example of the new format, which we expect to institute this fall.

Bill Alexander, Mesoscale Manager

Sample Short Fuse Bullet Warning Format

RDUTORMHX
WWUS1 KMHX
NCC147-061815-

BULLETIN - EAS ACTIVATION REQUESTED
TORNADO WARNING
NATIONAL WEATHER SERVICE NEWPORT NC
130 PM EDT TUESDAY MAY 6 1997

THE NATIONAL WEATHER SERVICE HAS ISSUED A

* TORNADO WARNING FOR PITT COUNTY -EASTERN NORTH CAROLINA

* UNTIL 215 PM EDT

* TORNADO WILL BE NEAR SIMPSON AT 145 PM EDT GRIMESLAND AT 150 PM EDT

* AT 130 PM EDT...TORNADO INDICATED NEAR WINTERVILLE...BY NATIONAL WEATHER SERVICE DOPPLER RADAR...MOVING NORTHEAST AT 20 MPH.

IF YOU ARE IN THESE AREAS - SEEK SHELTER IN A BASEMENT OR SMALL INTERIOR ROOM - AWAY FROM WINDOWS.

{Optional numeric sequence for use with AZRanWhiz to automatically create lat/long pathcast, e.g., 142.672 74.499 142.672 74.403 142.672 74.307 142.672 74.211 142.672 74.115}

NNNN

Customer Voice Heard at Service Workshop Held September 10

OM held a Customer Service Workshop on Wednesday, September 10, at NWS Headquarters. These workshops began in 1995 and provide a dialog between the NWS and our customers on proposed products, product improvements and ways of strengthening the private sector/Federal partnership. Participants included private sector meteorological providers; print media, wire services, and television reps.; emergency managers; and Federal agency staff who work with FEMA and the FAA.

The workshops are a forum at which NWS personnel listen as much as they speak. The customers drive the agenda by submitting topics to be discussed. Various Headquarters program leaders, NCEP, and Regional Office staff address the questions and issues. New products and product changes are also presented and the users provide input. For example, at past workshops, we have presented updates to the watch decentralization plan; based on comments received, we have revised this plan to reflect customer suggestions. Topics requested for the September meeting included:

- Discussion of marine products
- Progress of dissemination systems
- Status of World Meteorological Organization header changes and zone/county warning changes
- Cooperative Observer Program snowfall update
- Updates on product content and composition.

In addition, for the first time, the Office of Hydrology (OH) made a presentation.

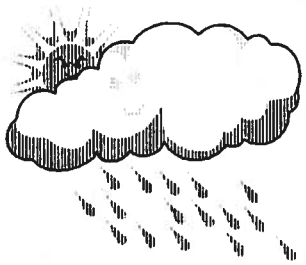
An outgrowth of the Customer Service Workshop has been the Customer Participation panels. These group of volunteers are a subset of the general workshop attendees. They are regularly contacted to provide input into a variety of issues that directly affect the private sector. The NWS is going directly to its users and asking for feedback before implementing a new product or change. For example, the Customer Participation Panel will be consulted in the process of developing new policy on severe thunderstorm criteria.

Scott Kiser, Meteorologist

World Disaster Reduction Day—Oct. 8 Focus on Education, Preparedness

The United Nations (UN) has designated October 8 as World Disaster Reduction Day. The official theme is "Water: Too much . . . too little . . . leading cause of natural disasters." The UN is encouraging nations to use the day for outreach and education on disaster awareness.

In response to all the recent U.S. natural disasters and increased interest from the Administration on this subject, FEMA has pulled together representatives from NOAA/NWS, the American Red Cross, the Army Corps of Engineers, Departments of Energy and Transportation, Small Business Administration, and Public Affairs specialists.



The group's goal is to educate the public, primarily via the media, about the dangers of natural disasters and how to prepare for them. The group plans to create a comprehensive media campaign on a national, regional, and local level. The packet consisted of a press release, facts and statistics about flood and drought disasters and a list of Internet sites, brochures, etc.

The media packages were distributed in August. The group sent kits to each participating agency's regional and local field offices. These offices were asked, in turn, to "pitch" the story to local media outlets. For a stronger news "hook," regional and local offices were encouraged to add information on local risks and mitigation/preparedness actions. To save money and speed distribution, the group plans to print only limited hard copies and make the packets available via the Internet at **http:\\www.fema.gov**.

Stephanie Kenitzer, NOAA Public Affairs
Linda Kremkau, Managing Editor

Hurricane Fran Named Worst Natural Economic Disaster for North Carolina

In August 1996, Hurricane Fran, a Category 3 storm, made landfall on the North Carolina coast. Fran was the worst natural economic disaster ever for North Carolina. In addition to the coastal damage, Fran brought significant inland winds to North Carolina and severe flooding in North Carolina, Virginia, and West Virginia. NWS wrote a service assessment to document its performance regarding Fran.

The assessment found that the NWS performed in an excellent manner with timely and accurate watches and warnings. For example, NWS issued flood warnings on the Potomac River at Point of Rocks, MD, so far in advance that businesses and home owners had time to rent trucks and remove their merchandise and furniture. Early briefings by NWS offices in Virginia prompted the governor to proclaim a state of emergency before Fran was even on shore.

The assessment was compiled at NWS Headquarters, however, the Tropical Prediction Center, Marine Prediction Center, and Eastern Region Headquarters wrote the various sections. RFCs and NEXRAD WFOs also contributed greatly. The assessment was printed and distributed to NWS regional and field offices in September.

Scott Kiser, Meteorologist

Forums on Public Policy Issues In Natural Disaster Reduction

On September 10, the Public-Private Partnership 2000 (PPP 2000) presented its first in a series of forums on natural disaster reduction. The kickoff program is entitled "Natural Disaster Reduction Initiatives of the Insurance Sector." The series of at least 14 forums will continue through 1998 in Washington, D.C.; the first two will be held in the White House Conference Center.

PPP 2000 is a cooperative effort of the Subcommittee on Natural Disaster Reduction (SNDR), the Institute for Business and Home Safety (IBHS), and a group of private sector organizations. This unique partnership encompasses the Nation's leading public-private organizations committed to and responsible for reducing deaths, injuries,

property damage, economic losses, human suffering and environmental impact caused by natural disasters.

SNDR agencies' target all types of natural hazards. Responsibilities for member agencies range from basic research to emergency warnings and services, response, recovery, and mitigation. SNDR agencies coordinate, communicate, educate, plan, and conduct outreach to help formulate and implement public policy. NOAA and NWS have been active for years in SNDR activities. NWS has taken an active role in PPP 2000 and the Forum organizing committee.

SNDR comprises 19 agencies and departments under the President's National Science and Technology Council's Committee on the Environment and Natural Resources. SNDR is part of a national effort to reduce losses from natural disasters by improving hazard identification and risk assessment, advancing understanding of the causes of hazards, and laying the foundation for more timely and reliable forecasts of and responses to dangerous events.

IBHS (formerly IIPLR) is a nonprofit organization sponsored by the insurance industry and other groups committed to reducing deaths, injuries, property damage, economic losses, and human suffering caused by natural disasters.

Each Forum will seek a wide range of ideas, views, and opinions from sponsors and participants, the latter invited based on their specialized knowledge and experience and their relevance to each Forum theme. Themes will be framed by the following concepts:

- Develop a framework for a public-private partnership to mitigate effects of natural disasters
- Identify broad public policy issues facing such a partnership
- Identify interactions among stakeholders
- Define policy issues sponsors and participants can address to effect a paradigm shift in the way individuals, businesses, communities, and governments manage risk from natural hazards
- Identify the short- and long-term benefits of the Forum and future uses of the ideas and information.

Forum reports will be used to develop U.S. policies for building on the accomplishments of the International Decade for Natural Disaster Reduction. The Forum's recommendations will also be used to create and implement loss reduction strategies for natural hazards. Payoffs will carry into the 21st century through better performance and safety of buildings and infrastructure, disaster-resistant communities, and a sustained quality of life.

Herb White, Meteorologist

National Warning System (NAWAS) Upgrade Stalled

There continues to be little movement in the NAWAS upgrade process. The uncertainties surrounding the FY98 budgets of NWS and FEMA remain unresolved. As of this printing, OM was awaiting word on the FY98 budget. Despite these continuing setbacks, OM has attempted to move forward with upgrading of NWS coordination capabilities.

Recently, as OM considered other options for conducting warning and forecast coordination, it was discovered that NESDIS had a Digital Conference and Switching System (DCSS) that they were about to surplus. OM acquired the DCSS and will move the bridge to the SPC as soon as possible. The DCSS will meet many of the coordination requirements of the modernized NWS.

Information on the DCSS can be acquired by contacting me (301-713-0090 x 116) or Herb White (301-713-0090 x 146) in Customer Service, W/OM11, or Cliff Schoenberger, W/OSO151 (301-713-0499 x 131).

Rainer Dombrowsky, WCM Program Leader

NAWAS Customer Assessment Completed; Results Ready

The Customer Service Core is currently reviewing the responses it received from the emergency management community relating to the need for NAWAS. OM will be presenting the results in a formal report in early September. OM will also brief the National Emergency Management Agency and the National Coordinating Council on Emergency Management at their upcoming annual conferences.

For a copy of the report, contact Customer Service, W/OM11, NWS, NOAA, 1325 East-West Highway, Rm. 14326, Silver Spring, MD, 20910 (301-713-0090 x 116).

Rainer Dombrowsky, WCM Program Leader

INTEGRATED HYDROMETEOROLOGICAL SERVICES

Coast Guard Radiofax Charts Now Available on E-mail from NWS

NWS now has available, via e-mail, radiofax charts broadcast by the U.S. Coast Guard from Boston, MA; New Orleans, LA; and Pt. Reyes, CA. NWS plans to include marine text products in the near future.

This FTPMAIL server is intended to allow Internet access for mariners who receive e:mail but do not have direct access to the Internet. Using FTPMAIL, users can request files from NWS and have them automatically e-mailed back to them. Turnaround is generally under 3 hours; however, performance may vary widely. NWS cannot guarantee receipt. To use the FTPMAIL, start by downloading the "HELP" service file as follows:

Send e-mail to: ftpmail@tgsv5.nws.noaa.gov
Subject line: put anything you want
Body: help

These radiofax charts are also available at:

http://www.nws.noaa.gov/fax/marine.shtml

Direct any questions on the FTPMAIL service to:

Timothy.Rulon@noaa.gov, 301/713-1677 x 128
Clifford.Fridlind@noaa.gov, 301/713-0882 x 122

Be certain to include your e-mail address.

Timothy Rulon, Global Maritime Distress and Safety System, Program Manager

Phase I of Offshore Marine Forecast Transfer to NCEP Completed

On June 10, four field offices transferred responsibility for their offshore forecasts (OFF) to the Marine Prediction Center (MPC). The OFFs from NWSOs in Taunton, MA; Sterling, VA; Seattle, WA; and Monterey, CA, are now done by MPC using new World Meteorological Organization and Automation of Field Operations and Services (AFOS) headers. Mariners have given MPC positive feedback on its new products. The transfer by these four offices completed Phase I of the OFF transfer.

In Phase 2, targeted to start March 1, 1998, NWSFOs in New Orleans, LA, and Miami, FL, will transfer OFFs to the Tropical Prediction Center (TPC). The TPC is developing a transition plan based on the MPC experience.

A meeting was held at TPC July 9-10 with representatives from Southern, Eastern and Central Region Headquarters, OM, MPC, TPC and NWSFO Miami. In addition to working on Phase II of the OFF transfer, the group looked at re-engineering the entire marine product suite over the next several years.

Kevin McCarthy, Public/Synoptic Programs Leader

NWS/FEMA Hurricane Liaison Team (HLT) Gears Up for Hurricane Season

To improve hurricane service, local and state emergency managers, FEMA personnel and eight OM staff met at the TPC, May 27-30, to finalize plans for the HLT operations.

The hurricane team serves emergency managers by supplying critical information during hurricane threats along the Atlantic and Gulf coasts. OM will supply two meteorologists each time TPC activates the HLT. These meteorologists supply basic information to external users, allowing National Hurricane Center specialists to concentrate on forecasting the storm track and intensity.

For example, during a hurricane, team members will contact impacted coastal offices. Each time an HLT meteorologist responds to a call from an emergency manager, he or she will alert the responsible field office by fax or phone of the concerns raised, e.g., communications outage, unable to reach local NWS office, etc. The local office would then address the concerns directly with the emergency manager.

Kevin McCarthy, Public/Synoptic Programs Leader

NWS Drafting 5-Year Aviation Weather Operations Plan Reflecting User Surveys, Product Requests

In April, the Integrated Hydrometeorological Services Core began writing an operations plan for Aviation Weather. The background and starting point for the Operations Plan analysis came from many user surveys, FAA and NWS aviation weather conferences, and other government and industry documents.

We developed a comprehensive list of user concerns mapped to the products and services NWS provides. We then compiled a list of what users say they want NWS to provide and compared it to our actual products. We now have a list of unmet or partially met needs.

The Operations Plan discusses potential changes in office roles and responsibilities within the framework of the end-to-end forecast process.

The plan also discusses many new products and services, along with ways to make changes using a team approach to product implementation and risk mitigation. Implementation teams will be formed that will be composed of members from the NWS, FAA, industry, and academia.

The first draft of the Plan is now being reviewed by each Regional Meteorological Services Division. It will go out for a second, broader review this fall to the FAA, other NWS offices, and industry.

Jim Roets, Meteorologist

NWS "Re-engineering" Marine Program; Reviewing Buoy, C-MAN Network

NWS has created a team to "re-engineer" the Marine Program. The team will look at all aspects of the program. The team will establish the requirements of marine products and services users and determine the best way for NWS to meet those requirements. Team members will work with other marine offices in their area to ensure all needs are being met.

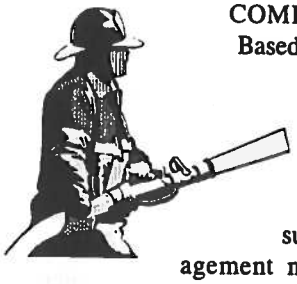
At Dr. Baker's request, the National Research Council is conducting a study on the buoy and Coastal Marine Automated Network (C-MAN). The study will recommend a stable network, essential to support weather and climate services aimed at protection of life and property.

Laura Cook, Marine Weather Services Manager

Fire Weather Risk Reduction (FWRR) Focuses on Future

At an FWRR meeting held in Boise, ID, August 13-14, members agreed that risk reduction activities will shift from the use of the ICWF in forecast preparation. The focus now will be ensuring the transfer of fire weather forecasting from dedicated forecasters at select sites to core staffing at all forecast offices. A key goal will be to maintain an adequate level of expertise and service to the fire management community.

Several issues were addressed to meet this goal. The group identified training needs for all core forecasters, including the completion of the COMET Fire Weather Computer-Based Learning Module distributed last spring. In spring 1998, a week long Fire Weather Forecasters Course is scheduled in Boise to address more complex issues, such as fire behavior, fire management needs, and micro/mesoscale winds in complex terrain. Fire weather focal points, and some WCMs and SOOs from offices with more critical fire weather concerns, will be invited to attend. An additional class is scheduled for 1999 to train those unable to attend the first class. Separate regional workshops will be held to address the special needs of Incident Response Meteorologists, including the setup and use of the Air Transportable Mobile Units.



The FWRR will also tackle product standardization issues, increased demands for site-specific (spot) forecasts, development of statistical forecast applications for Remote Automated Weather Station sites, applications of high resolution prediction models, such as the mesoeta and MM5, and transfer of locally developed fire weather applications to the AWIPS environment. In addition, the FWRR will work with the user community and NCEP/SPC to identify weather requirements and new products and services that will enable the successful transition and integration of the modernized fire weather program.

Paul Stokols, Fire Weather Program Leader

TECHNOLOGY AND FORECAST SYSTEMS

OM Issues Updated Weather Service Operations Manual Chapter (WSOM)

OM has updated WSOM Chapter J-03, Backup Operations and Site Evacuations, to reflect the technological advanced systems installed since the chapter was last issued in 1993. Anticipating the commissioning of AWIPS, OM has deleted or changed to "system" many of the references to the AFOS systems. NWS made major revisions to information on National Center Failures and Special Services Backup. Because of the extensive reorganization of NCEP, examples of product identifiers and formats now include Family of Services via NWS' Telecommunications Gateway. The discussion of pilot briefings was extensively rewritten to reflect the assumption of these briefings by Automated Flight Service Stations. Backup situations now include procedures relevant to the Alaska and Pacific regions.

OM made the updates in cooperation with the Office of Systems Operations (OSO), NWS regional staff, OH, NCEP, and NWSEO.

Gary Charsen, Meteorologist

GOES-West Mitigation Operations Scheduled for Late Summer, Fall

Geostationary Operational Environmental Satellite (GOES)-East and GOES-West spacecraft and instruments continue to operate nominally with no significant changes to operations. The schedule for the GOES-West Fall-97 Mitigation Operations is as follows: August 17-September 3 and October 13-30.

During those weeks, there will be fewer images from GOES-West. GOES-East will change its normal Imager operating schedule to produce full disk images every 30 minutes.

Ron Gird, Satellite/Space Program Leader

GOES-Sounder Provides Support to Jarrell, TX, Tornado Event

The GOES-East Sounder instrument provided excellent data and information during the Jarrell, TX, tornado event, May 27, 1997, 2215GMT. The Sounder produced Lifted Index (LI) and Layered Precipitable Water (LPW) products used to track changing atmospheric instability during the pre-convective environment. The LI, at 15GMT, was in the range of -09 to -11 and changed to -10 to -15 at 19GMT. The GOES-Sounder proved to be a highly effective monitoring tool during this severe weather outbreak.

Since the Jarrell event, NWS field forecasters have used the GOES-Sounder to provide information after the morning 12Z radiosonde. The Bismarck, ND, Forecast Office mentioned the use of GOES LI products in the State Forecast Discussion on June 9. The GOES LIs were used to help determine the location of afternoon convection in western North Dakota.

The NWS Tucson, AZ, Forecast Office used the GOES-9 Sounder to track a narrow band of low-level moisture responsible for developing convection over Phoenix and Tucson. "The modifications to the forecast . . . would not have been possible without the GOES-9 Sounder data," said David Bright, SOO, NWSFO Tucson, AZ.

Ron Gird, Satellite/Space Program Leader

GOES-10 Inverted; Sends Top Quality Infrared Imagery in Checkout

On July 31, NOAA and the NASA spacecraft engineers successfully inverted the GOES-10 spacecraft. The spacecraft rotated 180 degrees and is orbiting in an inverted position. All spacecraft components are functioning nominally in this new configuration. The solar array panel is running in the reverse mode. A team of NOAA and NASA engineers are monitoring the solar array movement.

On August 8, GOES-10 visible images were acquired from the spacecraft. The visible image quality was excellent—the same as seen about 2 months ago! Plans are now underway to resume the on-orbit checkout activities. The first Infrared imagery with excellent quality was successfully acquired August 20.

Ron Gird, Satellite/Space Program Leader

AWIPS Build 3 Users Conference Held August 25

The week of August 25, OM hosted a Users Conference for representatives of the NWS's six regions and of the first 18 NWS field sites to receive AWIPS Build 3.0. Locations represented included the three Pathfinder sites (Pittsburgh NWSFO, Boston NWSFO, and the Northeast RFC), the nine sites using Build 2.1 (Salt Lake City NWSFO, Colorado Basin RFC, Kansas City NWSO, Missouri Basin RFC, Topeka NWSFO, Dodge City NWSO, Wichita NWSO, Goodland NWSO, and Tulsa NWSFO), and the first six Limited Deployment Decision sites (Minneapolis NWSFO, North Central RFC, Duluth NWSO, Hastings NWSO, Bismarck NWSFO, and Oklahoma City NWSFO). Topics for the conference included:

- AWIPS hardware and software architecture
- Maintenance
- Installation
- Training
- Functional capabilities
- Local software development environment
- Evolutionary path.

The topics were presented by the AWIPS Acquisition Office, the Forecast Systems Laboratory (FSL), the Techniques Development Laboratory, OH, OSO and OM. Field personnel shared their insight into the operational complexities associated with the AWIPS transition.

The high point of the meeting was the chance to gain hands-on experience on the AWIPS Build 3.0 workstations. The User Conference was for SOOs or AWIPS Focal Points and Development and Operations Hydrologists. In addition, OSO will host a session for Electronic System Administrators from the first 21 Limited Deployment Decision sites and the five AWIPS Build 3.0 Operational Test and Evaluation sites.

In October, NWS expects to deploy and operationally test AWIPS Build 3.0, which incorporates the computational and display capabilities of FSL's WFO-Advanced.

Robin Radlein, AWIPS Program Leader

NWS Holds First Interactive Computer-Worded Forecast (ICWF) Course

NWS held its first ICWF training course at the NWS Training Center in Kansas City, June 23-27. Attending were SOOs and focal points from the three ICWF Risk Reduction sites: Tulsa, OK; Wichita, KS; and Pleasant Hill, MO; as well as regional and headquarters staff. The ICWF will become a component of future AWIPS builds.

The ICWF is an interactive, graphical means of defining the forecast state of the atmosphere. ICWF uses a digital database of forecast values to automatically generate forecast products for review. This system represents a fundamentally different way to prepare products. NWS offered this course so Meteorologists in Charge (MICs) and regional representatives can better teach and discuss this new product with forecasters at risk reduction sites.

Sam Contorno, Meteorologist

ASOS Shown To Be More Accurate Than CONV in Temperature Test

Thomas McKee and Alison Schrumpf, Colorado State University, have demonstrated the results of temperature comparisons between ASOS and CONV (conventional) instruments, as part of the Climate Data Continuity Project. The tests show the CONV instrument, the Model HO83 hygrothermometer, is predominantly warmer compared to its ASOS replacement. The average temperature difference (ASOS-CONV) for all observations for 76 sites is -0.79°F. In addition, there is a considerable range of -2.56°F to +0.61°F, resulting in a fair variability among CONV instruments.

ASOS has no systematic bias in measuring "true" ambient air temperature, although the ASOS hygrothermometers do vary by 0.3°F compared to a calibrated field standard. Instrument biases between the ASOS and CONV hygrothermometers show that the ASOS instrument is most often cooler than the CONV instrument. (The test used nighttime overcast observations.) On the average, the CONV instruments were 0.53°F warmer than the ASOS instruments, with seasonal ranges of up to 2.17°F warmer and 1.17°F cooler than ASOS. Only nine stations had a positive, annually averaged instrument bias. Both the variability and the prevailing warm bias among the HO83 hygrothermometers show that ASOS is more accurate than CONV temperature measurements.

Andy Horvitz, OM Surface Observation Program Manager

SCIENCE AND TRAINING

COMET Case Studies Now on Web

You can now access the COMET case study library through the WWW-based CODIAC data management system. Each COMET case study is a collection of meteorological data sets covering a specific event. The COMET case-study library is a well-rounded resource that contains a variety of meteorologically significant case studies useful for training and research.

NWS funds this collaborative project between COMET, the Joint Office for Science Support, and Unidata programs to provide an inexpensive way of supporting on-station training and research. The much improved access to and ease of use of the case-study data sets allows SOOs to collaborate with the academic community using the same software and data sets.

The case studies include data from the WSR-88D radars, GOES-8 and -9, NCEP models, NWS Family of Services, radiosondes, and profilers. Some of the cases also contain data sets contributed by users. For example, university staff contributed surface mesonet data, isentropic gridded model data, and mesoscale-model output in three of the existing on-line cases. NWS encourages all users to contribute data that would enrich case studies. Each case also includes a description and summary page.

These Web pages are maintained by COMET at **http://www.comet.ucar.edu**. (Click on Case Study Library.) Soon on-line exercises will be created for each case. To see an example of these exercises, go to: **http://www.comet.ucar.edu/pub_html/sac_html/casestudy/firstpage.html**.

Currently, you can search, browse, and download the following three COMET case studies:

- 004, Bow Echo, 5 May 1996
- 005, Lake Effect Snow, 4-5 January 1995
- 007, High Plains Snow, 13-14 March 1996

At present, the Web sites allow you to order seven case studies, including the three listed above, for delivery on 8mm tape. These seven cases contain meteorological events dating back to 1993.

For a more detailed explanation of this project and direct access to the CODIAC system, see our Web page at: **http://www.joss.ucar.edu/cometCases**, which includes a "What's New" section.

To stay informed of the latest developments on the COMET case-study project, please subscribe to our mailing list. To subscribe, see the instructions at **http://www.joss.ucar.edu/cometCases/mailList.html**.

Not on the Web? We'll be happy to add you to the e:mail list. Just send a request to Ethan Davis at **edavis@ucar.edu** or Linda Miller at: **lmiller@ unidata.ucar.edu**.

We are always interested in ways to make the case-study data easier for users to access and use. If you have a suggestion, including what cases you would like to see available, send e-mail to: **support@unidata.ucar.edu.** Currently, we are working on a short user survey that will ask for more specific input. We look forward to hearing from you!

Ethan Davis, UCAR/Unidata
Julie Adolphson, NWS/OM
Linda Miller, UCAR/Unidata, Boulder, CO

COMET Develops Multimedia Training Modules, Interactive CD-ROMs

COMET has developed three new modules, each presented in a multimedia format: MPEG video, audio, computer animations and graphics, and text. Here is a summary of these high-tech courses.

Fire Weather

Fire Weather, a computer-based multimedia training module produced by COMET, arrived in NWS offices in April. This module helps prepare forecasters to take over fire weather responsibilities as part of the NWS modernization. The module features three NWS experts in fire weather: Dave Goens, MIC, Pocatello, ID; Paul Werth, Fire Weather Meteorologist, Boise, ID; and Sharon Alden, Lead Forecaster and Fire Weather Program Leader, Fairbanks, AK. In addition, members of the Forest Service and the National Interagency Fire Center offer insight on the customers' perspective and a thorough review of the module.

These individuals provide coverage of the fire weather forecasting process that will build a solid understanding of its unique aspects. The module will work as a first step in learning the requirements of each fire weather programs.

The Fire Weather module explains the relationship between topography, fuels, and weather to help forecasters tailor weather products that affect fire danger and behavior.

The module also introduces forecasters to members of the land management community that make up the fire weather customer base.

Users discuss their responsibilities and offer examples of the questions asked when calling the forecast office. Within each case study, coordinating phone calls are presented between customers and the subject matter experts.

The instructional content is embedded throughout the case studies, providing both a context for the material and immediate opportunities for its use. A hypermedia index, accessed from the navigation bar at the top of each screen, offers students the ability to move to any content portion of the module. This index serves as a reference guide for quick reviews or as a means of accessing particular content to support discussions.

Anticipating Convective Storm Structure and Evolution

In late April, forecast offices began receiving the COMET interactive CD-ROM, ***Anticipating Convective Storm Structure and Evolution.*** This module, part of a series of training on forecasting convection, complements and expands on the material in ***A Convective Storm Matrix***. The subject matter experts for this module were Morris Weisman (National Center for Atmospheric Research), Steve Keighton (NWS Flagstaff), and Ed Szoke (FSL).

This CD-ROM provides forecasters with a strategy for anticipating convective storm structures, their evolution, and their potential for producing severe weather. The course is based on an understanding of the physical processes that control a storm's development. Special emphasis is placed on the role that buoyancy and vertical wind shear interactions have in controlling storm structure and evolution. The module explains how forecasters can better manage their activities during convective events if they can anticipate what is possible and probable within the storm environment. Because forecasters need to accurately monitor the evolution of convective storms to issue timely forecast products and statements, this module also demonstrates methods for monitoring storm evolution through observed data, in particular, Doppler radar data. The program is based on an understanding of the current conceptual models of convective storms.

The CD-ROM also contains a hodograph tutorial and a summary of convective storm forecast parameters. Numerous interactions and a set of summary exercises are included to test and apply the user's knowledge of the material.

A hypermedia outline available at the top of each screen provides direct access to any portion of the module. This outline serves as a guide for quick reviews of the content, as a means of accessing specific content to support on-station discussions, or simply as a convenient way of navigating within the module.

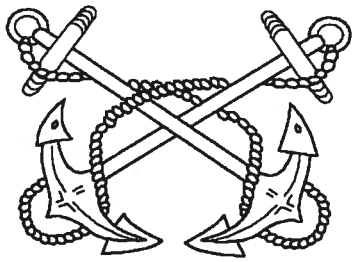
Marine Meteorology

The ***Marine Meteorology*** CD-ROM should have started arriving at NWS offices in mid August. COMET released the first two portions of this CD-ROM several years ago on Laserdisk, but the last section is new educational material.

The ***Marine Meteorology*** module focuses on the basics of forecasting coastal and deep ocean wind and waves, visibility at sea, and superstructure icing. Specific topics include:

- Boundary layer differences
- Primary wave generation mechanisms
- Wave modeling
- Sources of restrictions to visibility and icing conditions.

Reliable marine forecasts are possible only if the forecaster has adequate data and interpretive knowledge of all applicable reciprocal forces. This module helps establish a solid foundation of knowledge and skills through an experiential, interactive medium. The program invites students to apply knowledge to real-life forecasting situations. The module will help equip a forecaster to function adequately in an environment characterized by complex interrelated forces and limited analysis data. "Adequate functioning" refers to making timely, accurate coastal and deep ocean forecasts.



Marine Meteorology dynamically presents concepts and principles with a combination of audio, video, text, illustration, and animation. Information is presented in a manner that allows immediate practical application. For example, the case studies use actual weather data and coaching from experienced meteorologists.

The principal science advisors for this module were Chuck Bragg, Jim Gurka, Dr. Steven Lyons, Stephen Rinard, and Dr. Carlyle Wash.

Elizabeth Mulvihill Page, NWS,
UCAR/COMET, Boulder, CO
e:mail: epage@comet.ucar.edu

NOAA Weather Radio Initiatives

New NWR Specific Area Message Encoding (NWR SAME) Prevents Overwarning

All NWR consoles and transmitters nationwide now are equipped with NWR SAME technology. This technology provides digital codes that precede and follow emergency messages broadcast on NWR. The codes identify the type of event and area affected (typically by county). The Customer Service Core and OSO provided NWR receiver manufacturers with specifications for creating home receivers with this new capability. Users can program these NWR SAME receivers to broadcast alerts for specific areas, typically a home county, but with multi-county capability. More advanced NWR SAME receivers will allow users to decide the type of event they want to be alerted for, such as tornado or flash flood watches and warnings.

Users with the current system now receive an emergency message with the NWR SAME code followed by the 1050 Hz warning alarm tone for their entire coverage area (about 10 counties), even if the message is for only one county. The new NWR SAME service will eliminate the appearance of over warning.

NWS Public Affairs, in close coordination with OM and NWS Regions, has issued promotional materials for educating the public about the new SAME technology and its advantages.

Rod Becker, Dissemination Services Manager

NWR Interim Program Consoles Get Automation Fix for Code

The Customer Service Core is working closely with OSO and the NWS Regions to fix the interface problems between the interim NWR consoles and the NWR SAME equipment. These incompatibilities resulted in failures in transmission of NWR SAME encoded messages. Modifications to the interim consoles are underway, with retrofits expected to solve the problems, providing substantial automation of code generation during the fall of 1997. This automation will also improve the success rate of entry to the Emergency Alert System (EAS).

Rod Becker, Dissemination Services Manager

NWS Working to Improve Emergency Alert System (EAS)

With grateful acknowledgment to Larry Krudwig, Central Region Headquarters, for his expertise and commitment, the Customer Service Core is working closely with the NWS regions, the Federal Communications Commission (FCC), and FEMA to manage the new EAS (formerly the Emergency Broadcast System). NWR SAME is the NWS's primary entry to the EAS. Started January 1, 1997, the EAS includes the voluntary actions of some 24,000 radio and television facilities to broadcast NWR SAME and other official emergency messages. The cable television industry is expected to join the EAS in 1998.

The Customer Service Core issued national EAS policy for field offices in December 1996, in time for nationwide implementation. We are working closely with the Regions and FCC to modify the rules as experience is gained with the new system. The FCC is expected to issue draft modified rules to industry this fall, based on NWS proposals. The changes include new EAS event codes for non-weather emergencies and more rigorous policy for tri-agency (FCC, NWS, FEMA) management of the system.

Rod Becker, Dissemination Services Manager

NWS Considers NWR Overrides For Non-Weather Emergencies

The Customer Service Core, OSO, and the NWS Regions are developing recommendations for NWS management on whether to allow external organizations to capture (or override) NWR programming with fast-breaking, non-weather emergencies, such as a nuclear disaster. Management should reach a decision this fall. In some cases, these external organizations have funded their own NWR transmitters, with the NWS providing normal NWR programming. Other organizations seeking override capability are already within coverage of NWS-owned transmitters.

Certain nuclear power plants and the Chemical Stockpile Emergency Preparedness Program (CSEPP — jointly managed by the Department of Defense and FEMA), among other potential candidates, have expressed the desire to use NWR as their dissemination method to alert the local population in case of an accident. These organizations would buy and distribute thousands of NWR receivers to people in the affected areas. NWS already has granted a couple of CSEPP sites in the West the right to immediately broadcast emergency messages to the local populace on their own transmitters.

The arguments for override are that the many seconds (or even minutes) saved would be crucial to saving lives and that override would only be allowed for organizations using highly trained personnel, such as found in a local Emergency Operations Center. This is the methodology used by the two western CSEPP sites.

In addition, these override events would be very rare. The argument in favor of the NWS retaining control of NWR is that NWS personnel are most familiar with NWR broadcasting, as they do it all the time, and could receive external notification fast enough to be effective.

Rod Becker, Dissemination Services Manager

NWS to Start NWR Console Replacement System (CRS) Promotions/Outreach

In January, NWS will begin a 12-month deployment of the NWR CRS, which replaces the old analog Ampro consoles and the interim digital consoles. This fully digital system includes such advanced features as built-in NWR SAME functionality, automation that transforms text to synthesized voice for more timely broadcasts, and enhanced time scheduling of messages to better suit the listening public's needs. These features will allow NWS personnel more time for professional warning and forecasting duties.

While voice automation will produce more timely and consistently understandable life-saving warnings and other broadcast messages, it does not contain the intonation or carry the "personality" of the live human voice. At the four NWR CRS test sites, there have been some complaints over this automation, however, many of the respondents understand the need for automation. To ensure broad understanding of the need for automation, OM, NWS Public Affairs and the CRS team are producing local promotion and outreach materials for use before CRS becomes operational. Included will be NWR "spots" using voice synthesis.

Rod Becker, Dissemination Services Manager

NWR Expansion Limited By Funding, Technology Problems

The Customer Service Core, OSO, and the NWS Regions are working to meet Vice President Gore's goal to expand the NWR network from coverage of about 80 percent of the population to 95 percent, mostly into rural areas. These new transmitters are funded by external private and public organizations in partnership with the NWS, since there are no Federal funds for this initiative. To date, over 50 new transmitters have been installed. Problems occurring with this initiative are:

- Failures with certain expansion transmitters, temporarily holding up further expansion. The NWS is recommending alternative sources for expansion transmitters while resolving problems with the primary transmitter source. Expansion plans for the NWR network are not expected to be halted.
- NWR's network expansion beyond NWS's original expectations, making it difficult for the agency to fund recurring maintenance and communications costs.
- Current NWS office workload has increased dramatically in expansion areas where staff is providing unique NWR programming for each new transmitter.

The NWS may have to limit further acceptance of donated new transmitters until it can address these problems.

Rod Becker, Dissemination Services Manager

Hazards Community Forum

NWS Meteorologists Help Illinois Teachers with New Science Standards

The Illinois State Board of Education (ISBE) has rewritten its science academic standards to include more earth and sky science. To help teachers obtain a greater depth of understanding and new teaching strategies, the ISBE has developed a project called "Near and Far Sciences for Illinois."

ISBE has recruited astronomers, geologists, and meteorologists to train a cadre of 256 K-12 teacher-leaders around the state. Taking part are meteorologists from NWS offices in Chicago, Quad Cities, Lincoln, St. Louis, and Paducah, as well as a private sector meteorologist in the Chicago area.

Jim Allsopp, WCM, Chicago; James Meyer, WCM, Davenport; Ray Wolf, SOO, Davenport; Rod Palmer, WCM, Lincoln; Jeff Hedges, SOO, Lincoln; Jim Kramper, WCM, St. Louis; Ron Przybylinski, SOO, St. Louis; and Paul Witsaman, Met., Paducah, will serve as meteorologist mentors to the teachers.

The project involves a one-day orientation/introduction meeting in September followed by 2-day workshops in each field—meteorology, astronomy, and geology. The program runs from fall 1997 through spring 1998.

The meteorology workshops will consist of lecture and hands-on work based on the American Meteorological Society (AMS) DataStreme and Project ATMOSPHERE materials. AMS Atmospheric Education Resource Agents will assist the meteorologists. The project will wrap up with the teachers spending a day job shadowing a scientist.

Jim Allsopp, WCM, NWSFO Chicago, IL
Ricky Shanklin, WCM, NWSO Paducah, KY

More Nevada Schools Receive NOAA Weasther Radios

NWSO Elko has distributed nearly 30 tone-alerted weather radios to schools in its county warning area. These radios were purchased in cooperation with the Elko County School District. The purchase was made possible by a grant of $1,200 from Barrick Gold Mine of Nevada. In total, 40 radios were purchased with the grant; we plan to distribute all of the radios by September.

Ed Clark, WCM, NWSO Elko, NV

North Dakota Gets the Warning Out With Help from Emergency Managers, HAMs and Media

Severe weather warnings in North Dakota are reaching more people faster than ever before thanks to the NWS partnerships with the media, emergency management, and the amateur radio community. The NWS has proven its commitment to this effort by investing in the WCM position.

One of the most successful efforts in North Dakota has been the new EAS. Because many radio stations are automated at night, the voice used to broadcast the warnings comes directly from the weather radio. Even a Bismarck TV station interrupts its broadcast to get warnings out via the weather radio signal. In response to media needs, NWSFO Bismarck has fine-tuned the length of broadcasts for all watches and warnings.

North Dakota amateur radio operators and county emergency managers have funded the Emergency Management Weather Information System (EMWIN). This information is retransmitted on 143.150 MHz in Bismarck, Fargo, and Grand Forks, ND. Other cities and counties are putting the EMWIN system in their budget for next year.

Amateur radio operators (HAMs) are also getting into the act. In a small community outside of NWR range, amateur radio operators have modified their repeater to automatically broadcast the NWR signal anytime it picks up the tone alarm. Of course, they now want us to tone alert their county (sounds like a job for the WCM). The HAMs can also turn on/off the NWR function at any time. In Bismarck, we page HAMs to get them in the office. The local repeater will broadcast a specially worded weather alert every time the pager goes off. This process will also spread the alert to people with home scanners.

This is an exciting time to be in the National Weather Service. As WCMs, we have the opportunity to be part of new and creative ways to get the warning out.

Daniel Noah, WCM, NWSFO Bismarck, ND

Reaching Out Without Deep Pockets

At NWSO Aberdeen, SD, we have improved community relations and saved more than $2,000 in the past three years by developing strong partnerships with broadcast media. One of the ways that we have benefited is by having entry fees of up to $500 waived at shows and fairs.

Thanks to a partnership with KGIM radio station in Aberdeen, the station sponsors us for The Great Outdoor Show and the Cattlemen's Convention. KKAA radio station sponsors us for the Farm and Home Show. Because of our relationship with Northern Rural Cable Company, the company installed and maintains cable TV in our office free of charge, enabling us to monitor our warnings and Nowcasts on The Weather Channel.

We are thankful to these broadcast companies for their generosity toward the NWS in Aberdeen and for giving us an opportunity to meet the people we serve.

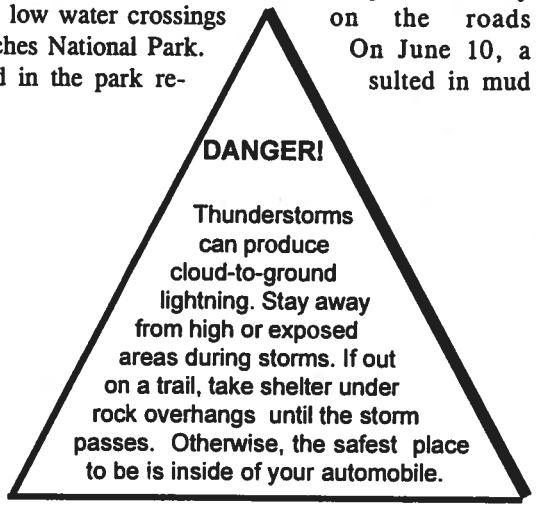
Bill Tallman, MIC, NWSO Aberdeen, SD

NWS and Arches National Park Strive for Better Natural Hazard Safety Signs

On June 26, the chief ranger for Arches National Park in southeast Utah asked me to help develop text for some lightning awareness signs to be posted in parking lots and at trail heads. Historically, lightning has been one of the leading weather-related dangers in southeast Utah. Last year was no exception, with one fatality and two minor injuries from a lightning strike on the Delicate Arch trail.

The danger awareness signs need to be large enough to read but concise enough to ensure that they will be read. Therefore, the text length was quite limited. The lightning awareness text agreed upon by the chief ranger is below.

How effective are danger awareness signs? The park has had flash flood awareness signs in place for many years near low water crossings on the roads within Arches National Park. On June 10, a flash flood in the park resulted in mud flows and rock slides and a washed out section of the Cache Valley Road. Despite the fact that more than 4,000 people were in the park on that day, there were no injuries or damage to vehicles because tourists heeded the message on the flash flood awareness signs.



James Pringle, WCM, NWSO Grand Junction, CO

Yellowstone County Outreach Committee Gets Out 100 NWRs

The Yellowstone County Outreach Committee is a government/private sector group that pools resources to provide the county with materials on significant weather and hazardous materials. The group takes part in community functions, educates, and tries to help residents prepare for severe weather. The committee is chaired by Chuck Bikle (NWSO Billings, MT, Senior Forecaster, Outreach Focal Point) and comprised of Billings NWS office representatives, the Yellowstone County Department of Emergency Services Coordinator, ZooMontana Representative, KULR-8 and KTVQ-Q2 Meteorologists, and a Northern Ag Network Weather Broadcaster. The group meets once a month to discuss outreach issues.

This partnership is involved in a variety of activities such as school and community fairs and presentations, community organization speaking engagements, weather training seminars/workshops, Earth Day and conservation, etc.

One of our more recent projects is the "NOAA Weather Radio Distribution Project." The Local Emergency Planning Committee gave the Outreach Committee a grant of $4,500 to purchase weather radios (batteries included) for county use. The project's goal was to install weather radios in all local schools (rural and parochial included), hospitals, retirement centers, and nursing homes. To date, the committee has distributed more than 100 systems; 145 NWRs were purchased.

Bert Nelson, WCM, NWSO Billings, MT

Kentucky Severe Storms Effort Awarded

Beverly Poole, MIC, NWSFO Paducah, KY, recently presented the Distinguished Service Award to Donald Armstrong, emergency information supervisor for Kentucky Disaster and Emergency Services at Frankfort, KY. Poole, along with other NWS staff serving Kentucky, recommended Armstrong for the national award, which is the highest honor given by the NWS. Armstrong won for his "many years of exemplary service in the interest of public safety." Armstrong has served since 1988 as the chairman of the Kentucky Severe Storms Preparedness Committee.

Ricky Shanklin, WCM, NWSFO Paducah, KY

Two New NWR Transmitters Operational in Mississippi

After 10 months of work, I'm proud to announce two new NWR transmitters became operational in Mississippi on Friday, August 15: a 300-watt transmitter in Kosciusko and a 100-watt transmitter at the State Penitentiary at Parchman.

In 1996, the state of Mississippi passed legislation requiring every school in Mississippi to have a weather radio by July 1997. This presented a problem for not only those schools but for the NWS, which has no funds to purchase new NWR transmitters.

In September 1996, while attending an EAS meeting in Georgia, I learned that FEMA could provide mitigation funds to states with open disasters. I proposed to the Mississippi Emergency Management Agency (MEMA) that we try to use some of these funds to purchase the equipment needed for two transmitters and antennas. They learned FEMA would pay 75 percent if the state came up with the other 25 percent. MEMA approached the state legislators and quickly obtained the 25 percent funding needed. This was the easy part.

After some research, I found out that the NWS could pay for telephone lines and power costs, but not for recurring tower rent. MEMA could not cover tower rental either. So now I had to try and find two towers in the areas we needed to cover that would not charge us. I found two such towers and began obtaining licenses. Just about the time I was ready to submit the license application for Kosciusko, the tower owner decided he wanted to be paid for tower space. This was a major setback, but we did not give up. With the help of MEMA, we located another tower and restarted the license process.

In March 1997, we sent in both license applications. MEMA began contracting for installation of the transmitters and antennas. Then in early April, MEMA informed me they had found a better tower location for the northwest Mississippi location. I canceled the first license application and gathered information for the new location. By mid-April, both applications had been sent in and everything seemed to be flowing smoothly.

MEMA could not allocate money for the equipment until they had the licenses. In early May, I followed up on the licenses and found out they had never reached Washington. I now had to resubmit them. It takes a minimum of six weeks to go through the license process. I was in a panic because MEMA had to have its funds allocated by the end of Mississippi fiscal year (June 30) or go back to the legislature and reapply for funding. We were in a sit-and-wait period.

Waiting for Washington

By the beginning of June, one license had been approved, but the other one was flagged by a computer and delayed at least two weeks. Time was getting short, and my panic level was going up exponentially. Finally on June 19, the second license was approved. MEMA shifted into high gear to get the money allocated in less than 10 days.

MEMA's got the contract assigned under the deadline. Now it was just a matter of getting the phone lines in and getting the equipment installed. Sounds simple doesn't it? WRONG! One of the sites was out in the middle of nowhere and every time the phone company went to install the line, the rep couldn't find anyone to give him access to the building, even with several contact numbers.

After several weeks, I was told the line was installed at the tower site. That wasn't exactly truthful because 3 days before the equipment was to be installed, I found out the phone company still had not received access to the building. One of the two people with a key was on vacation and the other person was not on any set schedule. I even offered to drive up there myself if it would help. Finally, on the day the transmitter was to be installed, the phone company showed up and got the line in.

At noon on August 15, I received a call that the transmitter at Kosciusko was on the air. I called a Civil Defense director in an adjacent county and asked him to turn his radio on. I was elated when I heard the transmission over his radio. Later that day, I checked on the other location only to find out the phone lines were up all the way to the debark box but had not been run to the transmitter. The folks at the transmitter site ran the lines and the transmission began late that afternoon.

What have I learned from this experience? Set goals and regardless of the roadblocks, persevere. The gratification of knowing you have achieved a goal that will help save lives is worth all the struggles it takes to get there.

Jim Butch, WCM, NWSFO, Jackson, MS

Publications and Audiovisuals

Billings Staff Convert Three More NWS Pamphlets to Braille

Since the last edition of *Aware*, I have converted three more publications into Braille:

- Winter Storms...The Deceptive Killers
- Flash Floods and Floods...The Awesome Power
- NOAA Weather Radio, the Voice of the National Weather Service.

Also available in Braille are:

- Tornadoes...Nature's Most Violent Storms
- Thunderstorms and Lightning. . .the Underrated Killers.

You can borrow copies from each of the NWS Regional Office's MSD and from Weather Service Headquarters.

To obtain a personal copy, contact Carolyn Gurney at **406/652-0851, x229** or write to her c/o NWS, 2170 Overland Avenue, Billings, MT, 59102-6455.

These pamphlets contain the wording of the print versions; graphs and photographs are described in words. They were printed by Jim Aldrich; the Braille version was edited by Brian Tew, both in NWSO Billings, MT.

In addition, these publications will be highlighted on OM's Web site as available in Braille from the Customer Service Core.

Carolyn Gurney, Hydrometeorological Technician, NWSO Billings, MT

Editor's Note: Carolyn has also contacted a reading service for the blind to have these five pamphlets recorded on audiotape. When these tapes become available, we will notify you. Our thanks go to Carolyn for her dedication to seeing this project to completion. Great job!

National Disaster Education Coalition Working Group Formed

For several years, NWS has worked with FEMA and the American Red Cross (ARC) to co-logo educational materials. This ad-hoc coalition helps ensure consistent preparedness and outreach messages among the agencies and keeps down printing costs. The coalition has been revived and expanded to include other members, such as the USGS and the U.S. Fire Administration.

This National Disaster Education Coalition Working Group now meets monthly to share ideas, review materials, and work together in areas where we share common goals. The group focuses on raising public awareness and supporting and providing education about natural hazards, disaster preparedness, and mitigation.

We have come a long way in building our national coalition from an informal, bilateral-agency process, to a more formal, multilateral, sharing process. An important step was to set goals to meet these needs and present a consistent message to the public. These goals were agreed upon by all the agencies involved in June 1997.

In addition, the Working Group has developed a Project Priority Matrix in which each agency is assigned a lead to each of the projects listed. The matrix follows this article.

Most interagency web links between ARC and NWS have been completed. ARC will work with FEMA and USGS to find ways to link with one another.

Rocky Lopes, ARC, will take the lead the effort to develop a "standard disaster safety message resource" document by June 1998. This document will be a single source for writers, educators, media, and others who wants to know what the right thing to say is, what has changed (or what's wrong), and why the information is the way it is. This resource will be web-based, not print, allowing for easier updates and refinements. Rocky will list the "known" messages by hazard and send them to respective lead agency contacts for the hazard to review, modify, add on to or delete.

Once review is complete and all agencies feel comfortable with the messages, we will develop and post web-based materials. We envision that the final resource will be joint-logoed by all participating agencies. A strategy for promotion and dissemination will follow.

Linda Kremkau, Managing Editor

National Disaster Education Coalition
Working Group Project Priority Matrix

PROJECT	TARGET QUARTER
1. Complete goals for national coalition	6/97: (DONE!)
2. Seeking Agency senior management support for the coalition process	9/97: Lead: Susan Russell-Robinson, USGS
a. Develop cover letter to go with goals to agency head	Susan Russell-Robinson
b. Send cover letter with short suspense date for review by coalition members	Rocky Lopes, ARC
c. Final comments incorporated based on review	Rocky Lopes
d. Final cover letter sent to each agency	Rocky Lopes
e. Agency rep puts cover letter on his/her own letterhead and forwards to appropriate person	Agency Rep.
f. Approved agency head letter shared with coalition members at June meeting	Group
3. Put in-depth NWS weather brochures on WWW	12/97: Lead: Linda Kremkau, NWS
4. Other agencies link to each other's materials on WWW	9/97: Each agency
5. Color print-on-demand Internet capabilities	
a. Information presentation on technology	9/97: Susan Russell-Robinson
b. Capability to do this	TBD
6. Decision on potential consolidation of NWS Flood, Thunderstorm, and Tornado brochures	6/98: Linda Kremkau
7. Decide which existing joint logoed materials, exactly, need to be redesigned, modified, or combined.	
a. Decide exactly which brochures to change	9/97: Group
b. Complete brochures	6/98: Document lead
8. Explore potential new products by reviewing list of "gap" areas not already covered.	
a. Identify gaps	12/97: Paula Gori, USGS
b. Produce materials to fill gaps	9/98: Gap lead
9. Explore ways to evaluate impact of materials on the audiences for which they were intended	
a. Presentation by respected professional on measurement techniques	12/97: Paula Gori
b. Agreement on measurement method(s) to employ	3/98: Group
c. Decide how to implement measurement method(s)	3/98: Group
d. Implement measurement method(s)	12/98: Each agency
10. Develop guidebook for local disaster education providers on how to develop public/private partnerships that can support making materials and information available.	12/97: Lead, Ralph Swisher, FEMA
11. Develop "Standard Messages on Hazards"	6/98: Rocky Lopes
12. Conduct an "Electronic Field Trip" for kids, following successful events of 10/95, for IDNDR Theme Day of October 1998.	12/98: TBD
13. Develop a strategy for how to fill in "gaps for emerging hazards" that our coalition has not addressed.	3/99: Group
14. Review National Disaster Education Coalition	3/99

What's Being Reprinted

This year, we have been limited as to what we can print in the way of brochures. *The Advanced Spotters' Field Guide* (NOAA PA 92055) was the only publication printed this year, but as of June, the guide was out of stock again. It is our hope that we will have funds near the end of the fiscal year to print the guide once more. We feel that this training tool should be kept available and in stock as much as possible over the other publications.

Linda Kremkau, Managing Editor

Community and Family Disaster Preparedness Conference

FEMA's Community and Family Preparedness Program held its eighth annual conference at the National Emergency Training Center, Emmitsburg, MD, July 8-10.

With approximately 90 people attending, the conference was rated a real success. Receiving the highest ratings were short reports by participants, the opportunity to share ideas and programs, and the "Fair" exhibiting materials.

The conference saw a new partnership formalized in a signing ceremony by FEMA Associate Director for Preparedness, Training, and Exercises Kay C. Goss and Robert Zaike, National Program Director of the National Society of St. Vincent de Paul. The Society recently adopted Community and Family Preparedness as a nationwide program. The signing ceremony followed Kay Goss' address to the conference on how this program contributes to FEMA's three key objectives:

- Educating children about disasters
- Educating the public about hazard and risk reduction through mitigation
- Involving the community in broader coalitions through public-private partnerships.

Goals of the conference were to:

- Share successful program activities, approaches and techniques
- Maintain the program priorities focus at each level of the emergency management system
- Promote successful program development.

This year's conference renewed the tradition of an annual national program conference sponsored by the Community and Family Preparedness Program and the American Red Cross Community Disaster Education program.

The event was planned in cooperation with the Coalition for Public Education, of which NWS is a member. Public information materials on weather hazards and related disaster preparedness carry the logos of NWS, which took the lead in developing them; ARC, which also reproduces and disseminates them; and FEMA.

Ralph B. Swisher, Program Manager, FEMA

Computerized Weather Awareness Slide Sets Coming Soon

Tired of spilling those 20-year-old unmarked slides on the floor 5 minutes before your presentation? Or constantly having to find your place in the presenter's guide?

NWS is bringing the old 35mm NWS Weather Awareness slide sets into the computer age. Service Hydrologist Gina Loss and WCM John Lovegrove, NWSO Eureka, CA, are converting several slide shows into WordPerfect Presentations 3.0 files. Completed presentations will include all the text slides, graphics, speaker notes, and professionally digitized photos included in the original slide sets. The format of the shows remains the same but you can now present the show using a laptop computer connected to an LCD projector.

This method of producing slide shows allows greatly improved versatility for presenters, who can easily add local information and photographs. As information changes, the slides can be updated locally or centrally. Users can also print out hard copies of the slides as handouts.

The following slide shows are being or have already been converted to electronic format:

- FEMA/NWS Course—Hazardous Weather and Flooding Preparedness
- Weather Woodles
- Winter Storms . . . The Deceptive Killers!
- Thunderstorms and Lightning. . .The Underrated Killers!
- Tornadoes . . . Nature's Most Violent Storms
- Flash Floods and Floods . . . The Awesome Power!
- Concepts of Severe Storm Spotting

You may obtain the new files via FTP or through the mail on disks. Due to the size of some of the files, they should be stored on ZIP drives or local area networks.

John Lovegrove, WCM
Gina Loss, Service Hydrologist, NWSO Eureka, CA

Attention to Detail Gives Writing Professional Edge

NWS Public Affairs is contributing to the *Aware Report* in a new format: providing writing and grammar tips to give our publications a more professional touch. This is an extension of the "Improve Your Writing" section of the monthly Central Region (CR) Highlights, the CR staff notes.

Shortly after the column started in CR Highlights, a field employee asked why he should give care about "outdated English rules that everybody has ignored since high school," since he is a scientist and his first concern is to make sure his scientific judgments (warnings and forecasts) are accurate. As long as people understand him, he asked, what difference does it make whether he occasionally misplaces a comma or bends some grammatical rule.

The question illustrates a major point—if you don't know correct spelling and grammar, can you be sure people understand what you say? If you don't know how to express yourself properly, how can you hope to communicate your thoughts to anyone? Put quite simply, you can't. As stated in a comment by a *Readers Digest* editor about that magazine's "Verbal Edge" column of writing and word usage tips: "Words are tools for thought. Used with skill and precision, they create a clear, vivid, and forceful message. Used carelessly, they suggest that the thoughts behind them are just as sloppy and confused."

Clear Words, Clear Results

Operational directions for AFOS communication are in place, at least partly, to make certain that the public does understand the information imparted when an office issues a forecast, watch or warning. AFOS rules work and the public has little difficulty picking out the important information in those products. NWS employees tend to have more problems in their scientific papers and correspondence. Oh, their science is fine, they simply make many of the same mistakes common to the general public. That may not have any negative impact on Joe Average, but repeated errors in spelling and grammar can be detrimental to professional growth and development.

The September 1993 issue of *Executive Edge* carried an article entitled "Resume Destroyers," which noted that a survey sponsored by Reference Software International showed 99 percent of Fortune 1000 executives said poor writing and grammar hinder a person's ability to be promoted. Eighty percent of the executives polled said they had refused to interview job applicants just because of poor spelling or grammar in their resumes. Word processing programs available with spellcheck and grammarcheck have pretty much eliminated excuses for those type errors.

This won't be an attempt to turn everyone into a grammarian fully versed in the intricacies of sequence of tense or singular and plural modifier matching, or to be as accurate in punctuation as the most experienced copy editor. But it will provide tips on how to avoid common pitfalls that detract from a professional look. Here are some examples, starting with what is probably the most common error in the country.

Over/more than—Despite what sports announcers, the average person and even some news anchors seem to think, these words are NOT synonyms. "Over" means above, higher than or on top of; it does not mean "more than." The American Heritage Dictionary gives 36 definitions for "over" used in various contexts; not one says it means more than.

All right — There is no such word as alright. All right is an adverb that means satisfactory, average, correct, uninjured, very well, without a doubt, dependable, honorable, good or excellent.

Anyone who writes for any purpose—not just professionally—would do well to invest in a college-level dictionary and thesaurus. The publisher isn't important as long as it is a college-level text. Once the dictionary and thesaurus are in hand, read the directions for using them to understand word usage and definition preferences and taboos. Then, it's just a matter of repeated practice before writing within the rules becomes second nature.

Pat Slattery, Public Affairs Specialist
Central Region Headquarters

New SKYWARN Spotter Training Video Now Available

In April, I began working with the Western Wisconsin Technical College (WWTC) in La Crosse to produce a SKYWARN Spotter Training video tape. A lot of the coordination on this project was done by a storm spotter. The spotter had help from staff at the La Crosse NWS office and the Spring 1997 Visual Communications class at the WWTC.

The 70-minute videotape was produced using a professional news studio and a series of training slides; it was directed by one of the students as part of a semester project. While there were some minor technical flaws in the final edit, the tape will assist spotter groups that have not been at a formal training session or cannot attend one. We have notified a variety of spotter groups and Emergency Managers about the new tape. In response, one county government plans to mass produce them for all its spotters.

I hope to work with the WWTC again this fall to put together training tapes on other weather safety topics and, perhaps, a higher quality spotter training video. This project is an excellent example of two different groups working together to benefit each other at virtually no cost.

Todd Shea, WCM, La Crosse, WI

Weather Channel's "Classroom"

The Weather Channel airs a series of programs that offer insights into how weather happens. These commercial-free shows are 8 minutes long; they air from 4:00 a.m. to 4:30 a.m. The programs are based on feedback from educators and educational consultants. The shows offer breaks for classroom discussion. For on-line weather education, see the Weather Channel Web site: **http://www.weather.com/education.**

Sept. 15, 18	Air in Motion, Weather Systems
Sept. 22, 25	Look Up! Sky Awareness, Clouds
Sept. 29, Oct. 2	Hurricanes, Behind Tropical Storms
Oct. 6, 9	Thunderstorms: The Weather Machine
Oct. 13, 16	Tornadoes: The Facts About Twisters
Oct. 20, 23	Intro. to the NEW Weather Classroom
Oct. 27, 30	Sun, Seasons and Sky
Nov. 3, 6	Water: Oceans to Air
Nov. 10, 13	Air in Motion, Weather Systems
Nov. 17, 20	Look Up! Sky Awareness, Clouds
Nov. 24, 27	Hurricanes, Behind Tropical Storms
Dec. 1, 4	Thunderstorms: The Weather Machine
Dec. 8, 11	Tornadoes: The Facts About Twisters
Dec. 15, 18	Extremes in the Water Cycle
Dec. 22, 25	Snow, Ice, Wind and Cold

Educational Services, The Weather Channel

More NWS Publications On-Line

Check out the OM Web site for on-line versions of the following publications:

- 70027 Survival in a Hurricane (English)
- 77014 Flash Flood
- 82002 Dust Storm Driving Safety
- 85001 Heat Wave: A Major Summer Killer
- 85006 Survival in a Hurricane (Spanish)
- 86001 Natural Hazard Watch and Warning Poster, in English and Spanish
- 91001 Hurricane, A Familiarization Booklet
- 92056 Marine Weather Services for Mariners
- 94058 Safe Boating Weather Tips

Keep checking the site for new on-line versions of NWS publications. If you have seen an electronic version of any other NWS publication, let us know so we can link to it. To find NWS publications, go to **http://www.nws.noaa.gov/om/nwspub.htm;** send e:mail to **melody. magnus @noaa.gov.**

Melody Magnus, Editor

WSOM Chapter Updates and *Aware Report* Roster

Attachment A is the WSOM Chapter Updates. Attachment B is the *Aware Report* Roster that now includes WCMs and SOOs in each NWS Region. Telephone numbers are *listed* numbers for that office and *NOT* the direct number. If a name or telephone number has changed, please notify me at 301/713-0090, ext. 118. If you know someone who would like to be placed on the distribution list to receive the *Aware Report,* please have him or her contact OM's Customer Service Core at the telephone number above.

Linda Kremkau, Managing Editor

Please Return Your Purge Card!

This fall you'll receive a Purge Card, asking if you wish to remain on the *Aware Report* mailing list. To continue receiving the *Aware Report*, you must complete and return this postcard within 30 days of receipt. If we do not receive your card within the specified time period, your name will be removed from the mailing list.

If you have any questions, please feel free to contact me at **301-713-0090 Ext. 118.**

Linda Kremkau, Managing Editor

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**
In process. Due in 1998.

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 in 1998.

C-11 **Zone and Local Forecasts, Appendix A**
(Zone Forecast Maps)
Page updates to be issued fall 1997.

C-40 **Severe Local Storm Watches, Warnings and Statements.** An Operations Manual Letter (OML) was issued February 1997 to update the format for the public watch narrative and conduct products to EAS. 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**
Updated May 1997.

C-45 **Meteorological Discussions and Forecast Coordination.**
An OML to C-45 defining the state liaison office policy is being drafted for field review for August 1997.

C-47 **County Warning Areas, Appendix A.** Ongoing public information statements and page replacements as needed.

C-49 **Warning Coordination and Hazard Awareness**
Review and update began in early June 1997. Still in OM for review. The first draft will not reach the field until early 1998.

C-60 **Radio/TV Dissemination;**

C-61 **Telephone Dissemination;**

C-62 **Newspaper Dissemination;**
Work will begin on updating and probably consolidating these chapters late in 1997 or early 1998.

C-64 **NOAA Weather Radio Program**
In 1998, OML to incorporate experience with EAS operations.

C-67 **News Wire Dissemination**
Work will begin on updating and probably consolidating this chapter late in 1998.

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 98.

WSOM Chapters: Status

D-06 **Fire Weather Services**
Will be updated in 1998 and consolidated with B-19. OML to D-06. Duties of IR Mets Requiring Exposure to Hazardous Situations.

D-07 **Marine Weather Services**
To be updated in 1997.

D-20 **Aviation Area Forecasts**
Should be combined with D-35; timing to be determined.

D-20 **Aviation Area Forecasts (OML)**
Draft dated May 28,1996, became effective July 1 1996. OML not signed.

D-22 **Domestic SIGMET**
Will be consolidated with D-38; timing to be determined.

D-22 **Domestic SIGMET (OML)**
Draft dated May 28, 1996, became effective July 1 1996. OML not signed.

D-23 **Special Aviation Forecasts and Events**

D-24 **Wind and Temperature Aloft Forecasts**
Should be combined with D-36; timing to be determined.

D-25 **Air Traffic Operations Support**
OML due in FY 1998.

D-30 **Transcribed Weather Broadcast Text Products**
Chapter issued July 8, 1997.

D-31 **Aviation Terminal Forecasts**
Chapter issued June 6, 1997.

D-35 **International Area Forecasts**
Should be combined with D-20; timing to be determined.

D-36 **International/Aviation Service Arrangements**
Should be combined with D-24; timing to be determined.

D-38 **International SIGMET**
Will be consolidated with D-22; timing to be determined.

D-51 **Marine Services for Coastal Offshore and High Seas Appendices A and B** are going to be replaced by an OML in the fall of 1997.

D-80 **Familiarization Flights**
OML to be issued fall 1997.

D-90 **Support for Accident Investigation and Litigation**
Transmittal Memo issued July 15, 1997, #97-8.

D-91 **Aviation Liaison and User Support Program**
Preliminary work to update, adjust, and reassign the contents of these chapters has been completed. Awaiting resources to complete the job.

F-42 ***Storm Data* and Related Reports**
An OML has been released to accommodate changes associated with Paradox II 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.

Attachment B–WCM/SOO Roster

WCM	SOO	Location	Telephone
Eastern Region			
Rick Watling, Regional (Focal)			**516-244-0123**
Solomon Summer, HSD Chief			516-244-0111
Dick Westergard	Warren Snyder	Albany, NY	518-435-9568
Barbara Watson	Steve Zubrick	Baltimore, MD/Washington, DC	703-260-0107
Stephan Kuhl	Jeff Waldstreicher	Binghamton, NY	607-770-9531
Glenn Field	James Lee	Boston, MA	508-823-1900
Stan Levine	Ed Mahoney	Buffalo, NY	716-565-0204
Steve Hogan	Paul Sisson	Burlington, VT	802-862-2475
Tom Dunham	Rich Grumm	Central Pennsylvania, PA	814-234-9412
Jerry Harrison	Steven Brueske	Charleston, SC	803-744-3207
Mike Washington	Dan Luna	Charleston, WV	304-744-1436
Mary Jo Parker	John DiStefano	Cincinnati, OH	937-383-0031
Larry Gabric	Robert LaPlante	Cleveland, OH	330-265-2370
Steve Naglic	Michael Cammarata	Columbia, SC	803-765-5501
Sam Baker	Larry Lee	Greenville-Spartanburg, SC	864-848-1332
Dan Bartholf	Carin Goodall	Morehead City, NC	919-223-5122
Gary Conte	Jeff Tongue	New York City, NY	516-924-0037
Joe Miketta	Alan Cope	Philadelphia, PA	609-261-6600
Rich Kane	Josh Korotky	Pittsburgh, PA	412-262-1591
John Jensenius	Joseph Fred Ronco	Portland, ME	207-688-3210
George Lemons	Kermit Keeter	Raleigh/Durham, NC	919-515-8209
Mike Emlaw	Steve Keighton	Roanoke, VA	540-552-0084
Bill Sammler	Hugh Cobb	Wakefield, VA	757-899-4200
Tom Matheson	Reid Hawkins	Wilmington, NC	910-762-4289
Southern Region			
Gary Woodall, Regional			**817-978-2812**
Ed May, HSD Chief,			817-978-2674
Keith Hayes	Deirdre Kann	Albuquerque, NM	505-243-0702
Douglas Crowley	Richard Wynne	Amarillo, TX	806-335-1121
Barry Gooden	Gary Beeley	Atlanta, GA	770-486-1333
Larry Eblen	Jim Ward	Austin/San Antonio, TX	210-629-0130
Brian Peters	Kevin Pence	Birmingham, AL	205-664-3010
Don Ocker	Mark Jackson	Brownsville, TX	210-504-3354
John Cole	Andy Patrick	Corpus Christi, TX	512-289-0959
Jim Stefkovich	Mike Foster	Dallas/Fort Worth, TX	817-429-2631
Jack Mercer	Val MacBlain	El Paso, TX	505-589-4088
Gene Hafele	Steve Allen	Houston/Galveston, TX	713-337-5074
James Butch	Russell Pfost	Jackson, MS	601-936-2189
Fred Johnson	Pat Welsh	Jacksonville, FL	904-741-4370
Howard Waldron	Steve Hunter	Knoxville/Tri-Cities, TN	423-586-9040
Roger Erickson	Felix Navejar	Lake Charles, LA	318-477-5285
Renee Fair	George Wilken	Little Rock, AR	501-834-9102
Larry Vannozzi	Loren Phillips	Lubbock, TX	806-745-4260
Dennis Decker	Dave Sharp	Melbourne, FL	407-255-0212
John White	Jerry Rigdon	Memphis, TN	901-544-0399
Jim Lushine	Jack Gross	Miami, FL	305-229-4522
George Mathews	Brian Francis	Midland/Odessa, TX	915-563-5006
Gary Beeler	Jeff Medlin	Mobile, AL	334-633-6443

Attachment B–WCM/SOO Roster

WCM	SOO	Location	Telephone
Jerry Orchanian	Henry Steigerwalt	Nashville, TN	615-754-8506
Frank Revitte	Mike Koziara	New Orleans/Baton Rouge, LA	504-522-7330
Jim Purpura	Dave Andra	Oklahoma City, OK	405-366-6583
Richard May	Greg Jackson	San Angelo, TX	915-944-9445
Rafael Mojica	Shawn Bennett	San Juan, PR	809-253-4586
Bruce Burkman	Ken Falk	Shreveport, LA	318-631-3669
Bob Goree	Irv Watson	Tallahassee, FL	904-942-8999
Walt Zaleski	Charles Paxton	Tampa Bay Area, FL	813-645-2323
Steve Piltz	Steve Amburn	Tulsa, OK	918-832-4115

Central Region

David Runyan, Regional			**816-426-3239**
Ken King, Actg. HSD Chief			816-426-3220
Hector Guerrero	Ken Harding	Aberdeen, SD	605-225-5547
Daniel Noah	Viggo Jensen	Bismarck, ND,	701-250-4224
Joseph Sullivan	Peter Manousos	Cheyenne, WY	307-772-2468
Jim Allsopp	Ken Labas	Chicago, IL	815-834-0600
James Meyer	Ray Wolf	Davenport, IA	319-391-6729
Robert Glancy	Eric Thaler	Denver/Boulder, CO	303-361-0661
Jeffrey Johnson	Karl Jungbluth	Des Moines, IA,	515-270-4501
Gary Campbell	Dick Wagenmaker	Detroit, MI	248-625-3309
Jeff Hutton	Bill Nichols	Dodge City, KS	316-227-7140
Carol Christenson	Gary Austin	Duluth, MN	218-729-0651
Jim Belles	Phillip Schumacher	Eastern North Dakota, ND	701-772-0720
Dennis Hull	John Kwiatkowski	Goodland, KS	913-899-2360
James Pringle	Michael Meyers	Grand Junction, CO	970-243-7007
Mike Heathfield	Gary Garnet	Grand Rapids, MI	616-956-5922
Jeff Last	Eugene Brusky	Green Bay, WI	414-494-5845
Steve Kisner	Rick Ewald	Hastings, NE	402-462-2127
David Tucek	Mike Sabones	Indianapolis, IN	317-856-0361
Shawn Harley	Michael Lewis	Jackson, KY	606-666-4856
Bill Bunting	Peter Browning	Kansas City/Pleasant Hill, MO	816-540-5147
Todd Shea	Dan Baumgardt	LaCrosse, WI	608-784-8275
Rod Palmer	Jeff Hedges	Lincoln, IL	217-732-4029
Norman Reitmeyer	Ted Funk	Louisville, KY	502-969-8842
Jack Pellett	Ed Fenelon	Marquette, MI	906-475-5782
Rusty Kapela	John Eise	Milwaukee/Sullivan, WI	414-297-3243
Todd Krause	Richard Naistat	Minneapolis, MN	612-361-6670
Gene Bowman	Steve Parker	North Platte, NE	308-532-4936
Vacant	Bruce Smith	NC Lower Michigan	517-731-3384
Jane Hollingsworth	Julie Adolphson	Northern Indiana	219-834-5178
Brian Smith	Steve Byrd	Omaha, NE	402-359-2394
Ricky Shanklin	Pat Spoden	Paducah, KY	502-744-6440
Tom Magnuson	Paul Wolyn	Pueblo, CO	719-948-9429
Susan Anderson	Brian Klimowski	Rapid City, SD	605-341-9271
Donald Noll	Derek Frey	Riverton, WY	307-857-3898
Todd Heitkamp	Ron Holmes	Sioux Falls, SD	605-330-4247
Steve Runnels	David Gaede	Springfield, MO	417-863-1456
Jim Kramper	Ron Przybylinski	St. Louis, MO	314-447-1876
Mike Akulow	George Phillips	Topeka, KS	913-232-1493
John Ogren	Michael Stewart	Wichita, KS	316-942-8483

Attachment B–WCM/SOO Roster

WCM	SOO	Location	Telephone

Western Region

Richard Douglas, Deputy MSD Chief			**801-524-4000**
Bob Tibi, HSD Chief			801-524-5137
Bert Nelson	Keith Meier	Billings, MT	406-652-0851
Carl Weinbrecht	David Billingsley	Boise, ID	208-334-9860
Ed Clark	Steve Apfel	Elko, NV	702-738-3018
John Lovegrove	Mel Nordquist	Eureka, CA	707-443-6484
Chris Cuoco	*Vacant*	Flagstaff, AZ	520-556-9161
Kimberly Bailey	Greg Gust	Glasgow, MT	406-228-2850
Lynn Valtinson	David Bernhardt	Great Falls, MT	406-453-2081
Ron McQueen	Kim Runk	Las Vegas, NV	702-263-9744
Tim McClung	Dave Danielson	Los Angeles, CA	805-988-6610
John Casad	Dennis Gettman	Medford, OR	503-773-1067
Peter Felsch	Tim Barker	Missoula, MT	406-329-4841
Rob Doherty	Mike Johnson	Pendleton, OR	541-276-7832
Mike Franjevic	Doug Green	Phoenix, AZ	602-379-4611
Bruce Bauck	Dean Hazen	Pocatello/Idaho Falls, ID	208-233-0834
Dan Keeton	Bill Schneider	Portland, OR	503-261-9247
Roger Lamoni	Mary Cairns	Reno, NV	702-673-8107
Roger Pappas	Scott Cunningham	Sacramento, CA	916-979-3041
Dave Toronto	Larry Dunn	Salt Lake City, UT	801-524-5113
Vacant	Ivory Small	San Diego, CA	619-297-2107
Charles Morrill	Dave Reynolds	San Francisco Bay Area, CA	408-656-1725
Dan Gudgel	Larry Greiss	San Joaquin Valley	209-584-0583
Ted Buehner	Brad Colman	Seattle/Tacoma, WA	206-526-6095
Ken Holmes	Ron Miller	Spokane, WA	509-244-0110
Paul Flatt	David Bright	Tucson, AZ	520-670-5156

Alaska Region

Greg Matzen, Regional			**907-271-3507**
David Goldstein	Carven Scott	Anchorage	907-266-5117
John Lingaas	Kraig Gilkey	Fairbanks	907-456-0435
Robert Kanan	Carl Dierking	Juneau	907-586-7493
Vacant	*Vacant*	Palmer (ATWC)	907-745-4212

Pacific Region

Regional			**808-532-6413**
Thomas Heffner	Paul Jendrowski	Honolulu, HI	808-973-5275
John Miller	Mike Sierchio	Guam	(011) 671-472-7408
Akapo Akapo		Pago Pago (Focal)	(011) 684-699-9130

NCDC - Storm Data

Stuart Hinson		**Asheville, NC**	**704-271-4437**