

# Aware

Spring/Summer 1995

NATIONAL WEATHER SERVICE/Warning Coordination and Hazard Awareness Report

## Beacon for Success

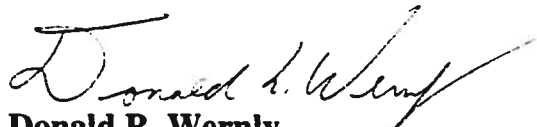
For those of us in government, and that includes all of us from the Federal through the local level, these are difficult and uncertain times. Distrust in the ability of government to solve problems and be effective is at an all time high. Every program is being questioned. Everywhere, resources are proposed to be sharply reduced or eliminated. But amongst the gathering dark clouds, one light shines forth. That light is the demonstrated success of this Nation's warning partnership. A partnership made up of all levels of government, the media, non-profit organizations, volunteer groups, and the private sector which has created the world's best and most respected warning program.

And respected it is, both at home and abroad. This past May saw some of the most outrageous weather this Nation has been buffeted with for some time, including softball-sized hail that injured 510 people in Fort Worth, Texas, to 23 inches of rain in New Orleans, Louisiana, that left 7 dead and damages over \$3.5 billion, to two bouts of flooding in California that caused 20 deaths and \$1 billion in damages, to major river flooding in the Midwest that seemed a flashback to the Great Flood of '93. But in all of these and other events, the warning process worked and it was noticed. Both congressional staffers and the White House had nothing but praise for our abilities to provide timely and accurate warnings

to the public. Similarly, we are working with the World Meteorological Organization (WMO) in Geneva to assist them in helping other countries develop similar public warning and forecast programs.

This partnership has become a model on how government works with other organizations and the private sector to provide the best possible service to the public. Now is the time to redouble our efforts and continue to do our very best. We need to keep in touch with our users and ensure that we continually find new and better ways to meet their needs.

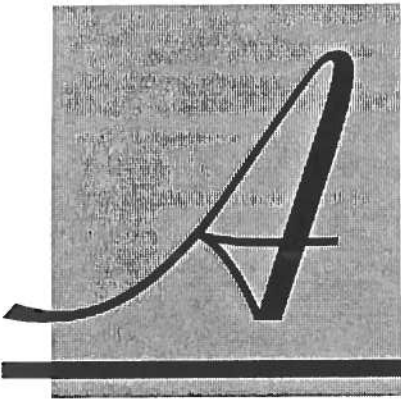
This period of sifting and winnowing, of questioning and challenging will persist for some time. Let us never take our sights off the goal. We have a noble, valued, and timeless mission. We have demonstrated that we have the energy, strength, and ability to do it well. We have shown that we can work together to do in concert what no organization could do alone. Let us always be that light that serves as an example of what is right in government today.

  
Donald R. Wernly  
Chief, Warning and Forecast Branch

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*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.





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# Modernization

## The Short Term Forecast (NOW) Program

As Chairman of the NEXRAD Weather Service Forecast Office (NWSFO) Norman Area Weather Update (AWU) Risk Reduction (RR) Committee, I made a formal presentation and am writing the final AWU RR Report from which National Weather Service (NWS) senior-level management can make informed decisions on the future course of the NOW Program (precursor AWU). The AWU RR is unique from all the others conducted solely at NWSFO Norman in that the NOW Program is in operation at many future modernized offices throughout the country.

In preparation for the May 10 presentation here at Weather Service Headquarters (WSH), the regions sent me a survey of field experiences, including problems and solutions, and whether they recommend continuance of the NOW Program—despite difficulties, they do! I also gave a comprehensive talk on the NOW at the WCM Conference in Salt Lake City on June 6. It was with purpose that I was asked to speak right before the regional breakout sessions. As expected, my talk engendered, as they say, “lively discussions.” Particularly effective during the talk was my use of a professional basketball game synopsis to highlight journalistic versus traditional NWS writing styles. It got a knowing, collective laugh.

It's clear, though, that those offices which believe in the NOW Program and have the resources to provide accurate and timely products are the most effective in educating users to the benefits of the change in service. It's also quite clear that the change in service during this transition is a strain for the NWS. It's not surprising since the NOW Program affects virtually every area of operations, from a change in forecast thinking, and the use of new observing systems and new mesoscale science techniques, to a more concise journalistic writing style—all magnified during the stress of active weather. In particular, the relationship between the NOW and many other products that can (or used to) provide short-term information has been uneasy at best. Indeed, in active to severe weather, the roles of products like the Special Weather Statement (SPS), Severe Weather Statement (SVS), Hurricane Local Statement, Flash Flood Statement, and Marine Weather Statement are being affected by the NOW and are requiring cross-the-board modifications to operations.

As in any area of vigorous growth, pains should eventually lead to gains. We're finding, for example, that those offices/regions that have been participating in the NOW Program for some time have accumulated sufficient experience to be entering a more mature phase. They're finding innovative solutions to problems and are providing their users with enhanced services. Moreover, the program on a national level is undergoing a few mid-course corrections that are providing forecasters with increased flexibility and users with a better product. I'm confident the Program will continue to improve although periods of some stability through this transition are also necessary for a healthy evolution. ■

—Rod Becker, Warning and Forecast Branch, WSH

## Highlights of the Weather Service Operations Manual (WSOM) Chapter C-40, Severe Local Storm Watches, Warnings, and Statements

A number of changes in the new WSOM Chapter C-40 have raised concerns. Some of the more prominent concerns include the relationship between the NOWcast (NOW) and short-fuse statements, the configuration and use of the local storm report (LSR), and the apparent inconsistency between watch cancellations and warning cancellations. In order to defuse these concerns, I offer the following information:

The NOW concept reflects what users have been telling us for years: far and away, they want to know what the weather is going to be in the next few hours. They don't need to hear a history of how it has been. That's why we're moving away from the special weather statement (SPS) for short-fuse events. So for offices using the NOW, the only applications for the SPS should be for long-fuse events, for severe thunderstorm outlooks, and for watch clearances. The severe weather statement (SVS) at NOW offices is much more a brief message than before. While the warning itself informs listeners within a county or portion of a county that severe weather is expected within the valid time of the warning, the SVS conveys an urgent notice to a very localized audience that a specific phenomena is about to impact them. Here's an example:

### Warning text:

THE NATIONAL WEATHER SERVICE HAS ISSUED A TORNADO WARNING FOR SOUTHERN BEXAR COUNTY UNTIL 6 PM CDT. PEOPLE IN SOUTHERN BEXAR COUNTY SHOULD PREPARE FOR A POSSIBLE TORNADO. AT 506 PM...SPOTTERS INDICATED A POSSIBLE TORNADO DEVELOPING NEAR SOMERSET IN SOUTHWESTERN BEXAR COUNTY. THE PARENT THUNDERSTORM IS MOVING NORTHEAST AT 40 MPH.

### SVS text:

PEOPLE IN SOUTHWEST SAN ANTONIO...NEAR LACKLAND AND KELLY AFB...SHOULD TAKE COVER NOW. AT 520 PM CDT...A TORNADO WAS MOVING EAST NORTHEAST INTO LACKLAND AFB.

The LSR format in the new C-40 is wrong. By the time you read this, hopefully, an Operations Manual Letter (OML) should be in your hands that corrects the chapter version. The mistakes were two: (1) the number of characters per line was 79, not the WMO required 69; and (2) the columns didn't match up with the text preformat. Anyway, that is corrected. In addition, if one wishes to write a storm report in free text (such as a post-storm event regarding a major disaster), it is allowed. ■

—Bill Alexander, Warning and Forecast Branch, WSH

## Decentralizing the Convective Watch Program

Work continues to ramp up the Nation on changing the way we issue convective watches. Some of the biggest issues include:

- developing a hardened, reliable, intuitive voice coordination and communications technology for National Centers and Forecast Offices (FO);
- developing personal computer (PC) software and electronic connections to facilitate transfer of Watch Guidance Messages (WGM) and Watch Outline Messages (SAW) from SELS/Storm Prediction Center (SPC) to FOs;
- designing and implementing the Initial Step field test; and
- folding other members of the hazards community (e.g., electronic media, vendors, emergency management, aviation interests, and marine interests) into the planning and information management process.

Of immediate importance, also, is keeping the NWS field people informed of the upcoming changes. During the past several months, I have been talking with as many field folks as possible about the decentralization. In early April, I discussed the upcoming changes with the Eastern Region Warning Coordination Meteorologists (WCM). In addition to the above issues, their concerns centered around added staff loads, training requirements, and watch considerations during warning situations. Such concerns are viable and seem to reflect the general consensus of field forecasters. In this forum, I will try to assuage some concerns although all are not going to go away with a stream of words.

Part of the philosophy of the decentralization's Initial Step, scheduled for July 1996, is to garner more involvement of field forecasters in the watch process. This is necessary to point forecast offices toward the end-state, when FOs will be issuing watches based on National Center guidance and local information. Added involvement includes pre-watch coordination among the FOs and SELS/SPC. This is to be accomplished in the Initial Step through the upgrade to the National Warning System (NAWAS) for the NWS (see related article in this *Aware Report*). Briefly, NAWAS will enable FOs and SELS/SPC to have "party-line" communication capabilities without the rest of the world, i.e., other NAWAS connections in the emergency management field, listening in. Added involvement also includes taking the WGM and adjusting its contents (counties included, valid times) as coordinated between the FO and SELS/SPC. Forecasters will be more aware of watch construct and the mesoscale meteorological components mandating the watch. The tricky part comes when severe, or approaching severe, convection actually develops.

Dealing with watch considerations while the pot is boiling brings to the surface some major staffing and operational philosophy concerns. First, what is the added workload burden of the watch function on FO staff, especially during warning situations? Clearly, there is another layer of thought, another coordination effort, placed upon the forecast staff. Who will assume watch coordination and dissemination responsibility in the FO? How will this load impact the rest of the forecast/warning responsibility? Also, from an operational philosophy standpoint, it is quite a challenge to change thought patterns from watch (mesoscale) to warning (storm scale) and back to watch, both spatially and temporally. This concern is

significant and is best addressed through the larger perspective of National Center support.

In the end-state, the SPC will exist to give support to the FO. That is its prime function. SPC guidance will serve both to alert forecasters of impending warning situations (in the form of Mesoscale Alerting Messages) in the 1- to 4-hour range and to provide gridded data for Weather Forecast Office (WFO) Advanced Weather Interactive Processing System (AWIPS) to generate draft watch products. This support will supply forecasters critical information on which to build their convective watch program and to stay on top of potential warning situations. Forecasters at WFOs will be able to value add to draft watches using locally acquired information (spotter reports, VAD wind profiles, mesonets, etc.). In the Initial Step, while SPC is spinning up, the stream of guidance from SELS will continue and actually be enhanced. Added products (and more detailed products) will be released from SELS during the next year. Forecast Offices will see such products as an evening (02Z) Convective Outlook by mid-1995 and, around the beginning of 1996, will see convective outlooks using gridded binary (GRIB) format every 6 hours.

I have spoken in the past about the need for PC software to enable forecasters to perform graphical modification of WGMs and disseminate public watches. SELS is working on this using ZIP software (originally from WSFO Charleston, West Virginia). The principal concern now is the electronic connection at FOs via AFOS communications. These concerns need to be addressed well before the Initial Step and will be tested during the field test.

Speaking of the field test, it will involve FOs in six states: Michigan, Indiana, Ohio, West Virginia, Kentucky, and Tennessee. Jim Henderson and I are designing the field test, a task that soon will be shared with NWS Eastern, Central, and Southern Regions as well as members of the hazards community (as identified above). Lots of planning needs to go into the field test, and, in fact, the NAWAS-for-NWS communications system will need to exist before the field test can go on.

In short, there are a lot of layers of planning that are ongoing in support of the watch decentralization and very much still needs to happen before we can proceed even with the Initial Step. We will keep you informed, and please do not hesitate to call if you have questions. ■

—Bill Alexander, Warning and Forecast Branch, WSH

## Intersite Coordination

Commensurate with the approval of the National Centers for Environmental Prediction (NCEP), the Intersite Coordination Plan now may move forward. The plan had been on hold pending the disposition of the National Principal Forecaster (NPF), which is a critical position in the Coordination Plan. The basic structure of how WFOs, River Forecast Centers (RFC), and National Centers will attempt to converge on forecast issues has been reviewed several times by NWS Regions. Some of the critical factors in proceeding with the Coordination Plan include:

- availability of a hardened, secure, and intuitive voice communications link among National Centers, FOs, and River Forecast Centers (RFC);

- development of timeline of AWIPS Incremental Systems Capability with regard to the maturity of the AWIPS intersite coordination functionality; and
- disposition of the exact function of the NPF.

Once these critical issues are resolved, the Office of Meteorology (OM) will begin the process of writing coordination guidelines in WSOM Chapter C-45, Meteorological Discussions and Forecast Coordination. Some intermediary coordination guidelines need to be developed and implemented at the Regional level to ensure appropriate exchange of information between field offices and spinning-up National Centers.

Even now, OM is beginning to prepare detailed coordination guidelines for end-state operations. Field input will be essential during the development process, especially during such field tests as the convective watch Operational Demonstration, to ascertain the viability of coordination plans in operational environments. 7

—Bill Alexander, Warning and Forecast Branch, WSH

## Weather Forecast Office (WFO) Backup

As with Intersite Coordination, the WFO Backup Plan has been on hold, waiting for external drivers to prompt needed change. The WFO Backup Plan has been reviewed several times by NWS Regions; however, until now the issue of backing up the Weather Surveillance Radar-1988 Dopplers (WSR-88D) has been unresolved. The difficulty for WFO backup has been the assignment of WSR-88D backup should the parent FO become unable to function but their WSR-88D remain in operation. With the Micro-V retrofit and subsequent WSR-88D software builds, it is possible to have FOs associated to more than one WSR-88D. This means that the backup office will be able to work with the WSR-88D of the crippled FO in an essentially unrestricted fashion. Such a configuration is possible not only with the Principal User Processors (PUP) of today but also within the AWIPS design. The next step to developing the final WFO Backup Plan is for OM to develop, in conjunction with NWS Regions, a prioritized list of backup offices for WFOs. Once that is developed in consultation with AWIPS program specialists and approved by NWS senior management, the WFO Backup Plan can become policy. Such approval is likely later this year. 7

—Bill Alexander, Warning and Forecast Branch, WSH

## The NAWAS and the NWS

Among the most crucial elements of the NWS modernization is coordination and communication. Having communications hardware that is intuitive and user friendly, flexible, and powerful is elemental to success. Voice communications need to work in consonance with AWIPS intersite coordination capabilities to enable field meteorologists and hydrologists to communicate and exchange both ideas and information. Such a voice communications capability exists in the Federal Emergency Management Agency's (FEMA) NAWAS.

NAWAS is a high priority national voice party line-type system that allows NWS watches and warnings to be disseminated to state, area, some county, and larger city warning points. At selected

points within some states, it also may be used to provide spotter and damage reports back to the NWS. From a national control point and regional centers, messages can be disseminated that apply to all or most of the country.

The structure and flexibility of NAWAS is important to the NWS more now than ever before. The need is especially prominent as the NWS changes how it prepares and issues watches for severe local storms. For the past 4 decades, severe thunderstorm and tornado watches have been prepared by and disseminated from the National Severe Storms Forecast Center (NSSFC) in Kansas City, Missouri. Beginning in July 1996, SPC will be providing watch products to Weather Service Forecast Offices (WSFO) and, through coordination between forecast offices and SPC, the forecast offices may adjust valid times and counties before disseminating the public watch. This effort is the first iteration of a decentralizing program that will culminate with forecast offices of the future issuing watches based on computer generated gridded, graphical, probabilistic guidance, and any additional information from local sources.

Such a change will involve substantial coordination, both internally within the NWS and externally between the NWS and the emergency management community. An economical, reliable, and intuitive communications medium is needed for such a program to be effective. With minor modifications, FEMA's NAWAS is ideal for this task.

### Consequences of Not Supporting the NAWAS Proposal

NWS forecast offices and National Centers will need to coordinate among themselves when potentially hazardous weather conditions are anticipated.

- Forecast offices will need to contact via NAWAS up to a dozen adjacent offices with little or no advance warning and without telephone operator interface.
- National Centers will need to make the same type of connection with as many as 25 forecast offices and other National Centers.
- Coordination calls will need to allow true conferencing (multi-way communication) among all participants.
- Parties outside the NWS, unless so selected to participate in the conference call, should not be able to hear the proceedings.

Drops will be needed at approximately 130 NWS offices nationwide. The NWS will need such connections by early 1996. As the NWS moves into the AWIPS era, with the number of forecast offices more than doubling the need for voice coordination capability will become even more necessary.

### Proposal

As part of NAWAS modernization, FEMA conducted studies of state of the art alternative technologies for the system. The NAWAS Technology Assessment Study, which FEMA completed in late 1990, reviewed 15 network and warning technology alternatives. In all cases, to maintain a system of 2,100 users, the 5-year cost of the alternatives was greater than that of the current system and the capability was less. As a result, FEMA concluded that dedicated, leased, full duplex voice land-lines provide the most cost-effective means of fulfilling the system's requirements for the foreseeable future. Upgrading has sharply reduced the current system's annual

operating costs from \$7.3M to \$4.3M, a savings of over 40 percent, while enhancing its performance.

Savings notwithstanding, the current fiscal situation has forced many Federal agencies to trim wherever possible. NAWAS is one system that has come under scrutiny for possible significant reductions or even elimination. To maintain the network at its present level or at an expanded level, FEMA will require assistance through state and Federal partnerships.

The NWS proposes the use of NAWAS as both an internal and external coordination and communication system. As part of the pre-AWIPS plan, the NWS needs to use NAWAS in applying the Hurricane Coordination Hotline (HCH) philosophy to a National coordination network. This approach would network all NWS field offices and National Centers on a circuit separate from the NAWAS backbone system. This would provide the NWS with an internal communication and coordination capability. Circuit bridging devices would provide for external communication and coordination. Such capabilities are paramount to achieving a successful transition into the modernization and associated restructuring (MAR).

### NWS Contribution

FEMA believes that the NWS and the states should become partners in the funding of NAWAS. Since the majority (over 95 percent) of all traffic on NAWAS is weather related, FEMA feels that the NWS and other Federal agencies should bear some of the operating cost. FEMA has operated NAWAS and provided the NWS with NAWAS drops required to communicate and coordinate with county/ parish, state, and regional emergency managers. Unless NAWAS recurring costs are reduced, primarily through downsizing of the network or cost-sharing measures, the NAWAS system will be lost.

It is only reasonable to expect the NWS to, at a minimum, contribute to supporting its own NAWAS circuits. The current consideration is to redirect the annual recurring outlay of approximately \$170,000 for the HCH toward supporting NAWAS. Hopefully, this commitment would allow continuation of NWS NAWAS services. Since the NAWAS and HCH circuits are compatible systems, their integration into a single NWS coordination circuit would reduce the overall operating costs for both agencies.

### Future Applications of NAWAS

The Office of Systems Operations (OSO) sees an opportunity to enhance the NAWAS network greatly and better serve the community. If the NAWAS network eventually was converted to digital circuitry, several improvements could be accomplished. Instead of only one voice channel, two voice channels could be used to reduce circuit congestion. Additionally, the NOAA Weather Wire Service, hazardous materials information, and other disaster/emergency data could be broadcast among all connected to NAWAS. If the agencies choose to convert to digital circuitry with a bandwidth of 56 kilobits per second (kbps), then data could be broadcast at a rate of 19.2 kbps to all locations. There would be an additional bandwidth for expansion or for an emergency "E-mail/LAN" network for the exchange of data (state road reports, severe weather spotter information, etc.).

The method of transmitting the data eventually should be packetized and asynchronous. This would allow easy reception and demodulation by the typical personal computer. Software, similar to that used by the Wireless Weather Information Network (WINN)

experimental system, could be used at each location. By packetizing the data, high priority messages could interrupt the transmission of lesser priority messages in progress, allowing the higher priority messages to be received in a timely manner.

Such a conversion and revamping of the upgraded NAWAS network could be implemented in several stages over a 3-year period, beginning with areas vulnerable to hurricanes and tornadoes, moving in a phased manner over the balance of the Nation. It may be possible that with cooperative funding from state governments, FEMA, NWS, and other Federal sources, the entire network could be done in one fiscal year rather than phasing over a period of 3 or more years. ■

—Bill Alexander, Warning and Forecast Branch, WSH

## International Public Weather Services

The WMO, based in Geneva, Switzerland, has created an independent Public Weather Services Program (PWSP) within its World Weather Watch Department, directed by Bob Landis. In the past, elements of public weather were found among several departments of the WMO. With the emergence of National Meteorological and Hydrological Services (NMHS) in developing countries, the WMO is now placing great emphasis on providing guidance on establishing public weather programs.

To fulfill its mandate, the WMO has already convened two "Expert Meetings on PWSP" in Geneva. The first, held in March of 1994, began the process of producing a "Guide on PWSP" for developing countries; the second session was held in April of 1995. Both meetings included representatives from the United Kingdom, Canada, Australia, Germany, China, Kenya, India, and the United States. Therese Pierce, Chief of the Applied Services Branch at WSH, and Barbara (McNaught) Watson, WCM at NWSFO Washington, DC, were U.S. representatives last year, while I was this year's "expert" on Public Weather Programs.

Emerging NMHSs have been focusing on aviation weather and other specialized services that, while certainly important, have not afforded them the necessary public visibility or government funding for continued growth. It's believed that a strengthened Public Weather Program in these countries would provide just such a stimulus.


Enter the Guide for PWSP. A draft of the Guide is nearing completion. Pending review later this year, the WMO hopes to publish it as a World Weather Watch technical document in 1996 or 1997. While not a specific "cookbook," it will provide a comprehensive picture of Public Weather Programs as they are practiced by countries with established NMHSs. The Guide emphasizes the important role of education and resultant public understanding of NMHS products and services and how they can best respond to weather and flooding hazards. Also strongly emphasized are dissemination technologies and the need for NMHSs to form strong partnerships with the media and other government officials in helping to fulfill their mission. ■

—Rod Becker, Warning and Forecast Branch, WSH

# Operations and Services


## Paradox for Storm Data

Where's Paradox? When will the field see it? How does it relate to the MAR? All these are good questions, and now for the answers. OM has acquired the services of Mr. Robb Kookaby, a professional Paradox programmer, through a contract with Research and Data Systems Corporation. Mr. Kookaby works on-site here at WSH under my guidance. The contract extends through the end of the fiscal year and includes a field test using a half dozen Storm Data authors (volunteers, anyone?). If all goes well, the field should see the optimized software in the fall.

The relationship of Paradox to the NWS modernization is not finalized. While the Informix software to be used in AWIPS possesses the capability to replicate what Paradox Storm does, it is not at all certain that such a capability is desirable. Storm Data most frequently is compiled on a PC away from the operations area. On the other hand, there is value in formatting local storm reports in AWIPS to match the Storm Data format. This is an issue worth addressing more. One thing the Paradox programmer will do is address the issue of how Storm Data will be transformed from the county warning and forecast areas to its final state-by-state arrangement. Storm Data authors will select counties/zones for each event and the software will relate that selection to a specific Federal Information Processing System (FIPS) code. Although the FIPS code will not appear in the final text, the chronology and location of the event will be matched to the state as the National product is assembled. Get it? While a single site may produce Storm Data entries for portions of four or five states, all that is transparent to the user; the final product will look as it does today. 

—Bill Alexander, Warning and Forecast Branch, WSH

## National Warning Coordination Meteorologist (WCM) Conference

The National WCM Conference was held in Salt Lake City, Utah, during the week of June 5-9. The Conference brought together WCMs from all across the country, including Alaska, Hawaii, and Puerto Rico, as well as a representative sampling of Service Hydrologists. The Conference focused on customer service and how best to meet the needs of all NWS customers. Additionally, training was provided on working with the media, leadership, and dealing with difficult people and constituents. One portion of the Conference allowed for regional breakout sessions where action items were generated to enhance the WCM's capabilities. Some of the action items included the need for a budget for each WCM, lap tops, and cellular phones for each WCM, the need for more standardization in NWS products and product formats, and a standard PC software package to support Universal Generic Code dissemination requirements. 

—Don Wernly, Chief, Warning and Forecast Branch, WSH


## RESPONSE '95

On May 9-10, more than 3,000 emergency managers from Louisiana, Mississippi, FEMA, NWS, other Federal agencies, volunteer organizations, and the private sector participated in the largest non-defense exercise ever sponsored by FEMA. The exercise, called "RESPONSE '95," ended a day early, however, when a real emergency—severe storms, flooding, and tornadoes—struck Louisiana and Mississippi coastal areas simultaneously and required the full attention of exercise "players."

The purpose of RESPONSE '95 (a catastrophic hurricane exercise) was to test and evaluate the Federal Response Plan (FRP) and associated Federal, regional, and state disaster response plans. But with actual flood-related problems intruding on the exercise play and affecting many of the same counties and parishes in the exercise, emergency officials decided to terminate the exercise play on Wednesday, May 10, so they could respond effectively to real-world events.

Numerous elements of the NWS participated in support of Exercise RESPONSE '95. I would like to recognize and give special thanks to the following individuals and their staffs.

Techniques Development Laboratory  
Storm Surge Branch - Dr. Wilson Shaffer  
Meteorological Operations Division  
Heavy Precipitation Branch - Dave Olson  
Southern Region Headquarters  
Meteorological Service Division - Gary Woodall  
Weather Service Forecast Office  
Slidell, LA - Billy Crouch, MIC (retired)  
Paul Trotter, MIC  
Frank Revitte, WCM  
Jackson, MS - Tice Wagner, MIC  
Jim Butch, WCM  
National Hurricane Center  
Miami, FL - Bob Sheets, Director (retired)  
Miami, FL - Jerry Jarrell, Deputy Director  
The Weather Channel  
Atlanta, GA - Tony Fulkerson, Video Productions  
Atlanta, GA - John Hope, Hurricane Specialist

Coordinated public and private efforts, such as that evidenced in Exercise RESPONSE '95, reflect the true nature of the partnerships which exist between the public and private sectors. Involvement in exercises, both large and small, will increase across the country as mitigation before recovery becomes the focus of the emergency management community. 

—Rainer Dombrowsky, Warning and Forecast Branch, WSH, and Hazard Technology (Spring 1995 issue), published by EIS International, Leslie Atkin, Editor, 1-800-999-5009

## Building Better Warning Partnerships

The NWS held an Emergency Management Forum March 1-3, 1995, co-sponsored by the National Emergency Management Association and FEMA. The theme was "Building Better Warning Partnerships." Over 100 Federal, state, and local emergency management officials joined in the discussions on warning communication and coordination. This was an exciting opportunity to hear from our users and partners in the warning process.

Our users heard from Dr. Baker, Dr. Friday, and Deputy Director of FEMA, Harvey Ryland. Eight state and local emergency managers discussed lessons learned from recent disasters. Dr. Ken Crawford from the University of Oklahoma presented ideas from the Oklahoma Mesonet for communicating weather information with emergency managers. Dr. Dennis Wenger from Texas A&M University spoke about new insights from social science research on why people evacuated for Hurricane Hugo.

The participants broke into four discussion working groups, each with a different focus. These included: warning coordination and decision making, communications technologies and formats, critical information needs, and warning dissemination to the public. There were numerous suggestions for improvement in the level of service from the NWS based on taking advantage in the scientific improvements generated by the NWS MAR. The formal report is due out soon and will be distributed to all attendees, WCMs, Regions, and user groups.

Many thanks to Richard Augulis, James Campbell, Harry Hassel, Gary Woodall, David Runyan, Rich Douglas, Ruth Barritt, Delores Clark, John Skoda, and the staff of the Warning and Forecast Branch for their hard work in making this user forum such a success.

—Chris Adams, Warning and Forecast Branch, WSH

## Joint NWS/FEMA Training Update

The first two courses, "Workshop in Emergency Management: Partnerships for Creating and Maintaining Spotter Groups" and "Hurricane Planning for the Atlantic and Gulf of Mexico" are out. The instructor guide and student manual were distributed at the WCM Conference in June in Salt Lake City. The next course, "Hazardous Weather and Flood Preparedness" is scheduled to be piloted at FEMA's Emergency Management Institute in October 1995. Thanks go to the following individuals for their assistance in developing these courses.

Beverly Poole, WSFO Paducah, KY  
Rich Douglas, MSD, Western Region Headquarters  
Brian Peters, WSFO Birmingham, AL  
Jim Henderson, NSSFC  
Bill Alexander, WSH  
Ira Bartfeld, CA/NV River Forecast Center  
Barbara Watson, WSFO Washington, DC  
Dave Toronto, WSFO Salt Lake City, UT  
Todd Krause, WSFO Minneapolis, MN

—Chris Adams, Warning and Forecast Branch, WSH

## Second Annual Mid-Atlantic Hazardous Weather Conference for Educators

The Second Annual Mid-Atlantic Hazardous Weather Conference for Educators was held on Saturday, March 4, 1995, at the National Oceanic and Atmospheric Administration (NOAA) Silver Spring Building Complex. Approximately 150 teachers from the region attended the conference. Major cooperate sponsors included the Planning Research Corporation and TRW. Marriott, the NOAA Food Contractor for the SSMC3 cafeteria, provided a continental breakfast and lunch. The keynote speaker was Bob Ryan, WRC-TV Chief Meteorologist, and gave the presentation entitled; "Weather, A Window into Science and Mathematics." "Science is the enemy of ignorance" was used many times in the Bob Ryan presentation. Joe Friday provided the introduction for the keynote address and served as a panelist during the lunch panel discussion. Other panelists included Ron Holle, National Severe Storms Laboratory; also Richard Lees and Juanita Matkins, American Meteorological Society (AMS) Atmospheric Education Resource Agents (AERA) from New Jersey and Virginia, respectively. Thirty-seven organizations provided door prizes at the end of the Conference, an inducement to attend the entire Conference. Approximately 24 NOAA personnel served as volunteers and speakers. Planning is underway for the 1996 Conference.

—Ron Gird, Marine and Applied Services, WSH

## 8th Satellite in Education Conference West Chester University, PA

The Satellites and Education Conference Planning Committee met on March 3, 1995, to review the final conference program. NWS will provide 250 copies of two publications, Weatherwise-Look Up! and the NOAA El Niño and Climate Prediction for the registration package. NWS committed to continue the tradition of providing people to staff the NWS/National Environmental Satellite, Data, and Information Service (NESDIS) exhibit booth. NWS publications will be given as hand-outs at the booth. Ron Gird is presenting a paper on Project WeatherScope and will provide the introduction to the plenary session entitled: "Blue Skies—The Weather on the Information Superhighway" delivered by Dr. Perry Samson, Professor, Dept of Atmospheric, Oceanic, and Space Sciences, University of Michigan. The Governor of Pennsylvania designated March 20-26, 1995, as "Space, Satellite, and Technology Week;" six different activities were planned for that week.

—Ron Gird, Marine and Applied Services, WSH

## Project WeatherScope Annual Report

The first Project WeatherScope Annual Report was delivered to OM at the end of February 1995. The report summarizes the accomplishments for the first year, four major NWS multimedia presentations, a section on new emerging multimedia software, and technologies appropriate for NWS, and a brief look at transitioning the current OM Media Room facilities into a Forecasting Research Operations and New Technologies (FRONT Room). Highlight of the



FRONT Room is the establishment of an all digital NWS presentation computer system.

—Ron Gird, Marine and Applied Services, WSH

## Mass Immigration Emergency Plan

During August and September of 1994, the United States declared a Mass Immigration Emergency (MIE) when tens of thousands of Cubans began leaving their homeland for the United States in homemade craft. Weather in the Straits of Florida proved a pivotal factor during this situation when a strong tropical wave impacted the area about a week after the immigration began. During this time, the NWS Forecast Office in Miami and the National Hurricane Center collaborated to provide weather information tailored to this specific area. According to the U.S. Coast Guard, Immigration and Naturalization Service (INS), and other agencies involved, the forecasts and statements were important in saving many lives.

Spurred by this incident, the Department of Justice and FEMA are working together to plan contingency operations in the event of another MIE. The plans, which incorporate the support of many government agencies, including the NWS, call for an Emergency Response Team (ERT) to be established on-scene to manage the operation and an Emergency Support Team in Washington, DC, to provide support from the agencies' headquarters.

The plans state that NWS responsibilities include providing warnings, forecasts, and statements relating to weather, tides, and sea conditions. The ERT will coordinate with the local NWS Forecast Office to obtain warnings and forecasts on severe storms and flooding as well as marine and aviation warnings and forecasts. The National Hurricane Center (NHC) is charged with providing the current status on tropical systems, from disturbances to hurricanes. While the details of how the support would be provided are still being worked out, it is envisioned that when the ERT is established, the WCM should be the single point of contact between the ERT and the forecast office so as to not unduly impact the continuing operations of the forecast office.

The NWS may be called upon to provide various types of weather information. For example: the intelligence people might need to know weather conditions at the location from which the immigrants are coming; if coming by sea, the Coast Guard will need marine conditions and forecasts, including tides and currents; medical personnel will need to know about temperatures, such as wind chill or heat index and sea surface temperatures; those setting up temporary shelters will need to know about wind and precipitation; and others may need to know about conditions at and along the routes to detention centers and from supply sources.

NWS support is likely to be critical during the initial immigration stages. After the flow of immigrants has stopped, the weather information needed may be limited to routine products available through normal channels.

—Laura Cook, Marine and Applied Services Branch, WSH, and James Lushine, WCM, WSFO Miami, FL

## WCM Job Aid

The WCM Job Aid was distributed to the regions the first week of March 1995. OM provided two copies for each future WFO—one copy for the WCM and a reference copy for the Meteorologist in Charge (MIC).

—Rainer Dombrowsky, Warning and Forecast Branch, WSH

## Geostationary Operational Environmental Satellite (GOES) Update

### GOES-8

In late January 1995, NOAA spacecraft engineers commanded the GOES-8 spacecraft to fire its maneuvering thrusters and begin moving to its new operational location of 75W. The GOES-8 arrived at its new location on February 27, 1995. The GOES-8 has experienced some navigation gridding and calibration performance problems. This problem has impacted the satellite precipitation estimate product, the cloud cover product supporting the Automated Surface Observing System operations, and the GOES animation ("movie loops"). NOAA and the National Aeronautics and Space Administration (NASA) engineers have been working on this problem, and several fixes are planned which are expected to greatly improve the navigation performance starting in April 1995.

NWS and NESDIS GOES-8/9 assessment activities, outlined in the draft NOAA GOES Assessment Plan, have started. GOES-8 data is being distributed to all NWS forecast offices via the GOES-TAP communications system. Real-time GOES-8 digital data is being distributed to a very small group of NWS Forecast Offices equipped with a new PC-486 workstation. The National Meteorological Center has started their assessment activity which will focus on cloud motion and moisture motion vectors as well as temperature and moisture vertical profiles for numerical models at several scales.

GOES-8, with its improved 5-channel imager, has demonstrated new capabilities to detect both local mountain-valley fog and lake-effect snow storms over the Great Lakes. Fog detection is greatly improved when using two of the infrared (IR) channels instead of using only one IR channel. When combined with the local WSR-88D radar data, the forecaster is given a more comprehensive view of local snow storms forming over the Great Lakes. Both products are expected to become operational within a year.

### GOES-9

On May 23, 1995, at 1:52 a.m., EDT, the GOES-J was successfully launched from Cape Canaveral Air Station on an Atlas-Centaur rocket. The GOES satellite successfully separated from the rocket 29 minutes into the flight. During the next 9 days, the satellite went into a series of low earth orbits before arriving in geostationary orbit on May 31, 1995.

All aspects of the flight and low-Earth orbit activities occurred as planned. Once reaching geostationary orbit, the satellite began a series of operations for turning on the imager and sounder instruments. The first full-disk visible engineering picture was successfully taken by the imager on June 12 at 1:45 p.m., local time.

The first full-disk IR engineering picture was successfully taken by the imager on June 19 at 12:45 p.m., local time. The first data from the sounder instrument is planned for June 25.

Preliminary data from GOES-9 indicate it is performing better than GOES-8. GOES-9 navigation is expected to be more stable than GOES-8 navigation. NASA and NOAA expect GOES-9 to become operational around October/November 1995.

GOES-8 became the East operational satellite on June 1, 1995, replacing METEOSAT-3. METEOSAT-3, borrowed from the Europeans in early 1993, was placed in a standby mode and is currently located at 70W.

—Ron Gird, Marine and Applied Services Branch, WSH

## New Global Maritime Distress and Safety System (GMDSS) Pamphlet

The NWS has completed an information pamphlet on the GMDSS. The emphasis is on maritime safety information (MSI) that is broadcast on GMDSS SafetyNET and NAVTEX in accordance with the International SOLAS Convention. MSI in the United States is provided by the NWS, U.S. Coast Guard, and Defense Mapping Agency. The pamphlet also includes broadcast schedules, GMDSS reference sources, U.S. points of contact, and an overview of the U.S. Voluntary Observing Ship Program. For copies, please contact LCDR Bill Sites at 301-713-1677 ext. 128, FAX: 301-713-1598, or via Internet: "wsites@smtpgate.ssmc.noaa.gov".

—Bill Sites, Marine and Applied Services Branch, WSH

## FEMA Annual Disaster Awareness and Preparedness Conference

Over 100 individuals from government, voluntary organizations, business and industry, and the media joined in a 3-day Conference, February 14-16, on public disaster awareness. This Conference focused on how to work together to get people better prepared. This year's Conference, held at FEMA's Emergency Management Institute at Emmitsburg, Maryland, emphasized partnerships with business and industry in emergency preparedness. Reaching hard-to-reach groups and focusing campaigns in ways to have the greatest impact in reducing hazard risk and impact were also covered. Morrie Goodman, director of FEMA's Office of Emergency Information and Public Affairs, hosted and keynoted the Conference.

—Linda Kremkau, Warning and Forecast Branch, WSH

## Dr. Robert Sheets Retires!

At the 49th Interdepartmental Hurricane Conference held in Miami during February 1995, Dr. Sheets was awarded several gifts in anticipation of his retirement. Most notable among the gifts were those presented by the Department of Defense. The Air Force Director of Weather, Brigadier General Tom Lennon presented Dr. Sheets with the Air Force Master Meteorologist Badge. Rear Admiral Paul Gaffney, Commanding Officer of the Naval Meteorology and Oceanography Command presented him the Navy Distinguished

Public Service Award. This is the most prestigious award the Navy can bestow on a civilian who is not a member of the Department of the Navy.

In addition, Dr. Sheets was recognized by the NWS director, Elbert W. Friday, Jr., hurricane specialists from the Department of Commerce, and the Federal Aviation Administration. Dr. Sheets completes a 30-year career in meteorology this May. He became director of the National Hurricane Center in 1987 after previous assignments as Deputy Director (1985-87), Hurricane Specialist (1980-85), and as a senior scientist with NOAA's Hurricane Research Division (1965-80).

Congratulations and best wishes to Bob in his retirement!

—Frank Routhier, Assistant Federal Coordinator for Air Force/Army Affairs, Office of the Federal Coordinator for Meteorological Services and Support Research, and Frank LaPore, Public Affairs, NHC

## Dr. Michael Hudlow Retires!

Dr. Michael D. Hudlow, director of the Office of Hydrology for the NWS, retired on January 31, 1995, after 27 years of Federal Government service. Dr. Hudlow received his Ph.D. in Meteorology with Hydrometeorology emphasis from Texas A&M in 1967. In 1974, he became Deputy Chief of the Hydrological Research Laboratory, Office of Hydrology and became Chief 3 years later. In 1985, he assumed the position of Director until his retirement.

During his career, Dr. Hudlow has been a dedicated supporter of automated local flood warning systems and a member of numerous intra-agency, interagency, and international committees and task groups, including several related to the use of improved hydrologic forecasting information for water management and others related to hydrometeorology. The Integrated Flood Observing and Warning System, the Federal counterpart to the Automated Local Evaluation in Real-Time (ALERT), reached its high level of readiness principally through Dr. Hudlow's leadership. He strongly supported ALERT conferences by ensuring Office of Hydrology participation.

During his lengthy career, Dr. Hudlow has published over 100 technical articles and reports and received many forms of recognition of his accomplishments, including a commendation from the U.S. Army Chief of Staff for the BOMEX Field Radar Hydrology Program in 1969, the Department of Commerce Silver Medal for Precipitation Analysis for GATE in 1976, the NOAA Administrator's Award for Hydrologic Aspects of the Next Generation Radar in 1985, an elected Fellow of AMS in 1988, and the Meritorious Executive Presidential Rank Award in 1991.

In his retirement, Dr. Hudlow has plans to remain active in hydrometeorological work.

—Gene Stallings, Office of Hydrology, WSH

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

# NOAA Weather Radio Initiative


## Digital NOAA Weather Radio (NWR) for the Deaf (The Salt Lake City Evaluation)

Technology is available that enables the NWS to provide low-cost, printed weather information to more users, including the deaf community. The NWS recently evaluated this new technology to provide NWR service to the deaf. To investigate the effectiveness of digital data transfer via NWR to serve the deaf, an evaluation was developed at the NWS Western Region Headquarters in cooperation with the state of Utah and the NWS Forecast Office in Salt Lake City. Receivers and printers were distributed to a group of deaf citizens and deaf support organizations. The evaluation began in late 1993 and concluded in November 1994.

The primary audience for this evaluation was the deaf community of Salt Lake City. With the assistance of the state of Utah's Division of Comprehensive Emergency Management (CEM), the NWS was able to survey additional deaf support organizations. Specifically, the addition of CEM's deaf coordinators provided valuable feedback for the evaluation. In fact, some of the system improvements suggested by the deaf coordinators have been further developed and implemented by the radio manufacturer.


Not only was Salt Lake City the first city in the United States and the world to evaluate this technology as a method to provide weather information to the deaf, the initial evaluation results prompted Environment Canada to begin promoting this technology to serve the deaf citizens of Canada. Printed information available during the Salt Lake City evaluation included: weather warnings (severe thunderstorms, floods, heavy snow, etc.), local weather forecasts, extended weather forecasts, local climate information, and hourly weather observations. With a digital receiver and a standard PC printer, deaf citizens received up to date weather information previously available only to the hearing population.

The technology evaluated in Salt Lake City, called WEATHERCOPY®, was developed by Dataradio, Inc., of Montreal, in collaboration with Environment Canada. Dataradio, Inc., uses packet radio technology combined with radio modem data compression techniques to transmit text and simple graphics over standard NOAA Weather Radio audio frequencies. Transmission is accomplished via a short, audible data burst once during each broadcast cycle. The data burst is modulated to achieve high performance and to be less obtrusive to voice-only listeners.

The NWS operational evaluation of WEATHERCOPY® was extremely successful and the state of Utah significantly contributed to this success. Although the "formal" evaluation is complete, the National Weather Service will keep the digital hardware in place, maintaining this enhanced service for the residents of northern Utah. Considering the existing infrastructure of the NOAA Weather Radio Network, this technology can excel as a method to provide low-cost, real-time warning and forecast service to the deaf citizens of the United States. 


—Mike Campbell, MIC, WSFO Flagstaff, AZ (formerly with Western Region Headquarters)

## NWR Expands in Wisconsin

A new NOAA Weather Radio transmitter went on the air January 7, 1995, in south-central Wisconsin. The state of Wisconsin purchased the transmitter and arranged for the communication links between the new transmitter and NWS NWR console located at the WSFO Milwaukee/Sullivan facility. Hats off to Ken Rizzo, Area Manager, and his staff for coordinating this successful expansion effort that will serve a rural yet popular recreation area of their state. Ken Rizzo, Rusty Kapela (WCM), and Rudy Schaar (Data Acquisition Program Manager [DAPM]) represented the NWS at the state's transmitter inauguration festivity. Also in attendance at the dedication service were state senators and representatives. 

—David Runyan, MSD, Central Region Headquarters

## NOAA Weather Radio Program

I attended a press conference sponsored by Cobra Electronics, Inc., in December 1994. Prior to the press conference, the Cobra executives discussed the plan for the press conference, and other public awareness campaigns they were involved in. The press conference went extremely well and also was attended by reporters from approximately 15 trade journals and electronics magazines. Cobra officials presented a corporate overview and a brief description of new systems. Also presented were 16 new products which included telephones, digital answering machines, CB radios and base stations, radar detectors, and roadside emergency kits. Cobra's new line of CB radios feature NOAA Weather Radio. 

—Stan Johnson, NOAA Weather Radio Program Manager, WSH

# Hazards Community Forum

## National Weather Service Celebrates 125th Anniversary

Here's a story worth telling throughout the year—the 125th anniversary of the National Weather Service.

On February 9, 1870, President Ulysses S. Grant signed a joint resolution of Congress authorizing the Secretary of War to establish a national weather service. Later that year, the first systematized, synchronous weather observations ever taken in the United States were made by "observer sergeants" of the Army Signal Service.

Today, 125 years later, thousands of weather observations are made hourly and daily by government agencies, volunteer/citizen observers, ships, planes, automatic weather stations, and earth-orbiting satellites with the mission of protecting life and property.

"We've come a long way since those first weather observations," said Elbert W. Friday, Jr., director of the National Weather Service. "Back then we were using only human surface observations; today we are in the midst of a major program to modernize the National Weather Service based on state-of-the art technology and knowledge about meteorology."

The original weather agency operated under the War Department from 1870-1891 with headquarters in Washington, D.C., and field offices concentrated mainly east of the Rockies. Little meteorological science was used to make weather forecasts during those early days. Instead, weather that occurred at one location was assumed to move into the next area downstream.

From 1891 to 1940, the Weather Bureau was part of the Department of Agriculture. These first two decades of the 20th century had a remarkable effect on the Nation's meteorological services. In 1902, Weather Bureau forecasts were sent via wireless telegraphy to ships at sea. In turn, the first wireless weather report was received from a ship at sea in 1905. Two years later, the daily exchange of weather observations with Russia and eastern Asia was inaugurated.

In 1910, the Weather Bureau began issuing weekly outlooks to aid agricultural planning. And in 1913, the first fire-weather forecast was issued. During these times, weather forecasters began using more sophisticated methods including surface weather observations; kite experiments to measure temperature, relative humidity, and winds in the upper atmosphere; and later, airplane stations.

Realizing that the Weather Bureau played an important role for the aviation community, and therefore commerce, in 1940, President Franklin D. Roosevelt transferred the Weather Bureau to the Department of Commerce where it remains today. During the late 1940s, the military gave the Weather Bureau a new and valuable tool—25 surplus radars—thus launching the network of weather surveillance radars still in use today. In 1970, the name of the Weather Bureau was changed to the National Weather Service, and the agency became a component of the Commerce Department's newly created National Oceanic and Atmospheric Administration.

The advent of computer technology in the 1950s paved the way for the formulation of complex mathematical weather models, resulting in a significant increase in forecast accuracy. Today, the National Weather Service is at the brink of a meteorological evolution. Advances in satellites, radars, sophisticated information processing and communication systems, automated weather observing systems, and superspeed computers are the centerpieces of the modernization that will result in more timely and precise severe weather and flood warnings for the Nation.

Contact your Regional Public Affairs Officer if you need help with ideas or strategies for getting local news media interested in a story about this year's anniversary.

—Ranee Exler, Public Affairs Office, WSH

## Severe Weather Safety Campaigns Get A Boost

■ The **Domino Pizza** franchises in southeast South Dakota have begun (at no cost to the NWS) printing severe weather safety information on their pizza boxes. The information provided during February was on NWS's winter storm watches and warnings. It is estimated that this information will reach up to 3 thousand people a week. This is the first step in a developing partnership between Domino's Pizza and the NWS in Sioux Falls. Each month throughout the year, different weather topics and safety information will be printed on the pizza box tops. The scheduled topics are:

March/April — NOAA Weather Radio

May — Severe Weather Watches and Warnings

June — Tornadoes

July/August — Thunderstorms, Lightning, and Flash Flood

September/October — NOAA Weather Radio

November — Winter Weather Watches and Warnings

December — Wind Chill

The purpose of this project is to enhance the public's understanding of each of the weather events and help them and their family to become better prepared for adverse or severe weather. Again, it is at no cost to the NWS and based upon early customer comments, Domino's Pizza is very pleased and looks forward to continuing this partnership.

—Todd Heitkamp, WCM, WSFO Sioux Falls, SD

■ **Prairie Farms Dairy** of Carlinville, Illinois, has contacted NOAA Public Affairs, Office of External Affairs, and has offered to provide a campaign to highlight severe weather and flood safety messages on their quarter and half-gallon milk cartons. While the dates are not confirmed, we believe they will begin printing the messages on the cartons by late April. The dairy serves Indiana, Illinois, southern Missouri, and northern Kentucky region of the country.

—David Runyan, MSD, Central Region Headquarters

## Special Olympics World Games

The ninth Special Olympics World Games will be the largest sports event in the world held in 1995 and the largest sports event ever held in Connecticut. It is scheduled from July 1-9 across Southern Connecticut but concentrated in the Greater New Haven area. These games will showcase the talent of 7,100 athletes with mental retardation from over 140 countries.

Staff from NWS Forecast Offices at Upton and Taunton will participate at the Games Operations Center in New Haven, Connecticut. Staff from both offices will not only work with each other but will also work with Dr. Mel Goldstein (Director of Meteorology of Western Connecticut State University) to provide "real-time" weather forecast services for the safe conduct of these games. Additionally, NWS forecasters will also assist the managers of sports venue operations in planning for the possible evacuation of participants. NWS staff will work in a "Crisis Management Room" 16 hours a day with FEMA, the Connecticut State Police, and other key emergency management agencies. The NWS will issue a specific forecast product tailored to meet the needs of the participants and emergency planners at 7 a.m., 11 a.m., and 5 p.m.

Although there are still many planning activities that need to be accomplished, the most important activity at this time is to secure a weather display system. The NWS is working through the Special Olympics Committee to acquire a "gratis" weather display system from the private sector for use during the games.

—Gary Conte, WCM, NWSFO New York City (Upton), NY

## Lightning Safety Partnership

Beginning this spring season of 1995, the NWS and the Sioux Falls Parks and Recreation Department will have lightning safety posters along the Greenway Trail system and at all of the park pavilions in Sioux Falls, South Dakota. The Greenway Trail system is a 10-mile trail system surrounding the city of Sioux Falls that is used by thousands of people, especially in the summer months. The lightning safety posters make the point of not standing underneath trees for protection, which many people do when threatened by lightning. These posters will be displayed behind plastic at each of the 24 information sign locations along the trail and at the park pavilions. The tri-fold brochure, "Are You Ready for a Thunderstorm," will also be displayed next to the poster to provide further information.

The Parks and Recreation Department also agreed to print lightning safety information in their flyer which is a yearly insert in the Sioux Falls paper, the "Argus Leader." The circulation of the "Argus Leader" is over 55,000 strong.

—Todd Heitkamp, WCM, WSFO Sioux Falls, SD

## Seattle Boat Show Participation

NWS participated with an exhibit booth at the Seattle International Boat Show in the Kingdome, January 13-22, 1995. Billed as "the biggest, once-a-year, boating sales event on dry land," it draws an audience of about 100,000. It involves about 450 exhibitors and 1,000 boats and fills not only the whole floor and first perimeter levels of the Kingdome but also two very large semi-permanent structures erected on the adjacent parking lot. It provides an excellent opportunity to meet many of our recreational marine users and to get feedback on our products and services.

Many thanks to WSH for producing and making available the new pop-up display and to WSO San Diego for shipping it to us in plenty of time for show set-up. The display was very effective in identifying from a distance who we were and inviting approach with an attractive marine scene. In fact, several people came to the booth and said, "I don't really have any questions, but when I saw 'National Weather Service,' I had to come over and chat."

A wide variety of handouts was made available (in fact, 20 sq. ft. of counter top was covered). They described marine weather services, NOAA, and Canadian Weather Radio, and NWS modernization. Also, back issues of Mariner's Weather Log and satellite images were made available. When asked if they are familiar with NWR, it is really impressive to hear the number of people who reply with something like, "Oh yes, I listen to it all the time—wouldn't go out in my boat without tuning in first."

Visitors who are aware of NWR were asked to complete a questionnaire made up by the Team Quality Management group that instituted changes in our NWR programming last month. About 200 questionnaires were completed with a lot of comments on the program changes.

—Tom Ainsworth, MSD, Western Region Headquarters

## Doppler Radar Workshop for Wisconsin Area High School Science Teachers

On March 4, 1995, the NWS Office at Green Bay, along with the AMS Project Atmosphere and the U.W.-Green Bay Science Education Service Center, co-sponsored a Doppler Radar Workshop for area high school science teachers. Over 20 schools from northeast and north-central Wisconsin were represented at the seminar, which was held at the Weather Service Office in Green Bay and the Green Bay Radisson Inn (which happens to be across the street from the NWS office).

The day-long workshop introduced the educators to Doppler radar theory, the WSR-88D, and NWS operations in general. Representing the NWS was Gene Brusky, Science Operations Officer (SOO), and me (Jeff Last, WCM) from the Green Bay office.

After registration and coffee and donuts in the Michigan Room of the Radisson, the workshop began with a brief discussion about the NWS, NWS products, and our mission. This led to the main topic of the day, the WSR-88D. The Doppler radar discussion began with a showing of the 15 minute Unisys video "WSR-88D: Next Generation Radar," an excellent introduction to the radar and basic radar principles. After the video, a more detailed explanation of the WSR-88D system followed.

The teachers were then divided into two groups. One half remained at the Radisson, where AMS Atmospheric Education Resource Agent (AERA) Bruce Smith began his talk on basic weather radar principles, using the Project Atmosphere Teacher Guides "Weather Radar: Detecting Precipitation," and "Weather Radar: Detecting Motion." The other group went to the NWS office, where they received in-depth instruction on Doppler radar theory. Examples of WSR-88D products and an actual hands-on case study at the PUP workstation were also presented. The trip to the NWS office began with a tour of the new facility. After lunch at the Radisson, the two groups were "swapped" and the instruction was repeated.

By all accounts, the workshop was a huge success. The teachers commented on how well the workshop turned out, and that they were excited about bringing this information back into their school rooms. Bruce Smith mentioned that the Green Bay workshop might become a model for other AERA representatives to use across the country.

—Jeff Last, WCM, WSO Green Bay, WI

## Prairie Storm '94

WSFO Topeka recently participated in Prairie Storm '94, which was one of the largest state emergency preparedness drills ever conducted in the Nation.

Prairie Storm '94 was hosted by the Kansas Adjutant General's Office and was coordinated by the Kansas Division of Emergency Management and the Kansas National Guard. The drill was designed to test the emergency response plans and capabilities of Kansas counties and various agencies during and following a paralyzing winter storms.

A total of 58 Kansas counties, 10 state agencies, 4 volunteer agencies, 3 Federal agencies, and 1 industry participated in Prairie Storm '94. WSFO Topeka participants included WCM Mike Akulow, forecasters Paul Frantz and Daniel Nietfeld, and me.

Prairie Storm '94 was in the planning stages by the organizers for the past 6 months. The many participants all met together to conduct Prairie Storm '94 on October 13-14, 1994, in the National Guard Armory located next to the Kansas Emergency Management Center in Topeka.

I briefed all of the participants on the NWS's role in providing critical weather information during winter storms and our role in Prairie Storm '94. Closed circuit television was available for all of the participants to receive numerous warnings and statements, which were prepared by Mike Akulow to set the scenario for Prairie Storm '94. The scenario began with widespread freezing rain across Kansas, which was followed by heavy snow and blizzard conditions, with up to 12-foot drifts.

The various agencies had to respond to events ingested into the drill, such as injuries from collapsed roofs, hazardous spills, stranded motorists, accidents and widespread communication outages from downed power lines. The participants were in contact with Paul Frantz and Daniel Nietfeld for the latest weather information during the drill.

The entire exercise was designed to develop and improve coordination and communication among the county, volunteer, state and Federal agencies. The exercise was highly beneficial for all of the participants.

—Curtis Holderbach, MIC/AM, WSFO Topeka, KS

## Fermilab Tornado/Severe Storm Seminar

On Saturday April 8, 1995, the annual Tornado and Severe Storm Seminar was held at Ramsey Auditorium at Fermilab in Batavia, Illinois. There were two programs beginning at 1 p.m. and 7 p.m. Each one lasted 4 to 4 1/2 hours. The programs provided general information on severe weather to spotters, teachers, emergency services personnel, and the public. This year, there was an emphasis on storm chasing.

The program consisted of:

Tom Skilling, WGN-TV — Storm Chasing  
Fred Ostby, Director NSSFC — Operations of NSSFC  
Jon Davies — Storm Chasing  
Jim Allsopp, WCM Chicago — Severe Weather Safety and Spotter Training  
Brian Smith, WCM Omaha — Graphic Effects of Severe Weather  
Anton Seimon, State University of New York (SUNY) — Example of Research Utility of Storm Chase Data  
Paul Sirvatka, College of Du Page — Storm Chasing

Video clips of tornadoes and severe storms were shown between speakers. Most of the video was provided by Tom Grazulis. Several tables were set up in the lobby for groups, including SKYWARN, emergency management, and ALERT. Nearly 1,000 of the NOAA/FEMA/American Red Cross tornado pamphlets and thunderstorm and lightning pamphlets were distributed.

The auditorium was filled beyond capacity (about 900) for each show. Another 150 people watched on big screen television in an overflow room. Total attendance for the two programs was over 2,000. This is probably the largest public tornado seminar in the country.

—Jim Allsopp, WCM, WSFO Chicago, IL

## Modernization Briefing

On Wednesday, April 5, 1995, I hosted eight people from the Alabama Emergency Management Agency (EMA) in a visit to the office. In spite of the fact that the state Emergency Operations Center (EOC) is only 25 miles south on the interstate, this is the first significant visit of EMA staff to the office. The visitors included three area coordinators for north, southwest, and southeast Alabama as well as five division heads from the state EOC, including the operations officer, chief planning officer, communications coordinator, and hurricane program coordinator.

I acquainted them with our overall operations by describing what we do. The focus quickly became the radar system which was one of their primary interests. This group had just visited with Alabama Power staff at the General Services Complex across the interstate and had seen the radar tower close-up.

After a quick walking tour through the office, everyone gathered around the Maxwell PUP, and I walked them through the archive data for the Palm Sunday 1994 tornado event. Kevin Pence, WSFO Birmingham SOO, had preloaded the data from the archive optical. I also provided them with several quick demos of the system using current data which included only some light rain in the southeast corner of the state.

The meeting was quite beneficial in providing us an opportunity to demonstrate our full capability to them. They have subscribed to the WSR-88D data through Weather Service International, but I think they have not been particularly impressed since what they receive is more limited and less timely than what we have. They were definitely impressed by our capability after the demonstration.

I believe the meeting enhanced their confidence in what the NWS can do and is capable of. There were several questions raised about the continued political turmoil from the Tennessee Valley. I shared our perspective with them as I tried to address their questions with honest discussions of both sides of the concern.

—Brian Peters, WCM, WSFO Birmingham, AL

## Severe Weather Awareness Week Assessment

This was the most successful Severe Weather Awareness Week we've ever had in Alabama in the 15 or so years they've been conducted. This was a Severe Weather Awareness Week with a number of firsts—firsts for Alabama and perhaps firsts for anywhere in the country. Key points from the week included:

- first color material for a Severe Weather Week;
- resulted in 157 articles in 80 different newspapers;
- 11 television interviews, totaling over 1 hour of air time, live and taped;
- 6 newspaper interviews;

- 12 radio interviews ranging from 2 minutes to full 30-minute programs;
- material produced at a cost of \$4,000 and shared by public/private partnership that included Federal and state agencies on the public side and several companies on the private side;
- other services to produce the materials donated to the project at an estimated cost of \$3,500, including advice and assistance from an advertising agency; and
- total booklets mailed 1,442 statewide, including for the first time every Board of Education.

I believe the success of this year's severe weather awareness campaign can be attributed to the combination of some active severe weather that has piqued people's interest (the Palm Sunday tornadoes 1994 and the Joppa-Arab tornado, February 26, 1995) as well as a well put-together and distributed awareness week publication.

—Brian Peters, WCM, WSFO Birmingham, AL

## FEMA's Family Preparedness Program

FEMA's Family Preparedness Program is gearing up for the first nationwide broadcast of a new videoconference series to encourage community-wide action. The series, focusing on emergency preparedness and fire prevention, will be introduced through a nationwide Emergency Education Network (EENET) broadcast at 1 p.m., EDT, on October 11, 1995, which falls on Natural Disaster Awareness Day and during National Fire Prevention Week. A second broadcast to a wide audience of community leaders is planned for February 22, 1996, emphasizing planning for disaster preparedness and fire prevention by a broad coalition of community and neighborhood organizations. The broadcasts will be available to anyone with satellite capability. The videoconferences may be viewed at some of the following locations: FEMA EEMET sites, American Red Cross chapters, fire houses, community colleges, and television, and cable stations. Further details, including satellite coordinates, will be provided as the broadcast dates approach.

The videoconference series will help: (1) create national awareness around disaster preparedness and fire prevention; and (2) bring community organizations together to discuss how to get individuals and families to take concrete measures to protect themselves.

A major purpose of the videoconference series and accompanying "Good Ideas Book" will be to highlight outstanding public education and outreach programs around the country. For more information about the videoconference series, write or call: Jennifer Wayman, Ogilvy Adams & Rinehart, 1901 L Street, NW, Washington, DC, 20036, TEL: 202-452-9420, FAX: 202-296-3727.

—Jennifer Wayman, Ogilvy Adams & Rinehart, Washington, DC


## Lightning Reports for Automated Surface Observing System (ASOS) and Automated Weather Observing System (AWOS) Observations

ASOS and AWOS cannot detect, observe, or report thunderstorms and/or lightning so the FAA is developing the Automatic Lightning Detection and Reporting System (ALDARS). ALDARS will operate as follows: National Lightning Detection Network (NLDN) data are delivered via satellite transmission to each Air Route Traffic Control Center (ARTCC) in the continental United States (CONUS). Located at each ARTCC will be an AWOS Data Acquisition System which evaluates each lightning flash report delivered by NLDN. This evaluation determines whether or not the flash is within specified ranges of any AWOS or ASOS in the territory controlled by the ARTCC.

The FAA Technical Center (FAATC) has been assigned the task of assessing NLDN data, and two parameters of assessment are detection efficiency and accuracy. FAATC is evaluating detection efficiency by comparing NLDN data to surface observations throughout CONUS. The assessment of accuracy requires "truth" or the actual location and time of occurrence of a cloud-to-ground lightning flash. This kind of information is not obtained easily, so FAATC is seeking help.

Anytime someone observes a cloud-to-ground lightning flash hit a known location and can note the time of occurrence to the nearest second, FAATC would like to obtain that information. The FAATC will use the information to access accuracy of NLDN. NLDN is "time hacked" to the Global Positioning System, but an observer need not be concerned with having their watch "hacked." As long as the observer's watch is not reset between the time of the observation and the contact with the FAATC analyst, an accurate time of occurrence can be determined. Observers can "hack" their own watch to either WWV or to the time displayed by The Weather Channel to alleviate the necessity of coordination with the FAATC analyst.

Anyone observing a cloud-to-ground lightning hit is asked to contact me, Dale Bryan of Raytheon Service Company, a contractor to FAATC. I can be reached at 609-641-5544, Monday to Friday between 8 a.m. and 5:30 p.m., eastern time. I appreciate any help you can lend.

**NOTE:** "National Weather Service field personnel shall not participate in this data gathering activity during working hours. Field personnel may contribute their personal time to this project if they so desire." 

—Dale Bryan, Raytheon Service Company, English Creek Corporate Center, 500 Scarborough Drive, Suite 304, Pleasantville, NJ, 08232.

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# Publications and Audiovisuals


## What's New!

### ■ *New Advanced Storm Spotter Video — "StormWatch"*

Progress has resumed on *StormWatch*, the advanced storm spotter training video. The production staff completed editing and assembly of the video in late April. Advance copies of the video were shown at the TESSA (TEXAS Severe Storms Association) Conference and at the WCM Conference in Salt Lake City.

*StormWatch* has a total running time of 30 minutes. The video contains three main components:

- (1) A re-enactment of the De Soto/Lancaster, Texas, tornado of April 25, 1994, illustrating the spotter's role in the warning system.
- (2) A discussion of the severe storm environment, the types of thunderstorms which commonly form, and non-tornadic hazardous weather.
- (3) An overview of severe storm observations, supercells, tornadoes, supercell variations, and other tornado-like vortices.

The production staff hopes to complete the final "housekeeping" of *StormWatch* by the end of June 1995. The NWS will then distribute 200 copies of the video to NWS field offices nationwide, with permission from TESSA (who owns the video rights) to make further copies for future NWS use. 

—Gary Woodall, MSD, Southern Region Headquarters

### ■ *"Thunderstorms and Lightning...The Underrated Killers" Presenter's Guide and Slide Resource Library*

The Warning and Forecast Branch is pleased to announce that the "Thunderstorms and Lightning...The Underrated Killers" Presenter's Guide and slide resource library has been completed. This package was developed by NOAA/NWS in cooperation with the American Red Cross and FEMA to heighten public awareness and understanding of thunderstorms and lightning.

The package is intended to be used as a resource by those who deal with disaster preparedness, warning response, and hazard awareness, such as meteorologists, emergency managers, media, local decision-makers, and educators. The slide library and guide are to be used in conjunction with the "Thunderstorms and Lightning...The Underrated Killers" brochure and the American



Red Cross' pamphlets and poster "Are You Ready for a Thunderstorm?"

The modular format of this slide series allows the presenter to select the topics he/she would like to highlight in their presentation. Modules include topics such as "Introduction to Thunderstorms," "Thunderstorm Ingredients and Classifications," "The Life Cycle of a Thunderstorm," and "Lightning...Nature's Fireworks." Other modules address the life cycle of a thunderstorm, environmental clues, thunderstorms and lightning safety, the watch/warning system, the lightning detection system, and the role of weather radar and storm spotters.

Another feature of this modular approach is that it allows the presenter the ability of incorporating his/her own slides. The presenter can add local newspaper, historical society, and media photographs of local storms and their impact. Audiences will be more likely to pay attention and retain information through this personal approach.

Each NWS Region received copies both of the slides and the Presenter's Guide for distribution to their field offices.

Special thanks go to Todd Heitkamp, Warning Coordination Meteorologist, WSFO Sioux Falls, South Dakota, for his painstaking effort in developing the new thunderstorms and lightning package. His dedication to this project while maintaining a diligent watch over his primary duties and functions as a WCM was extraordinary. The Office of Meteorology acknowledges him for a job well done!

—Linda Kremkau, Warning and Forecast Branch, WSH

#### ■ 1993 Summary of Natural Hazard Statistics

The Warning and Forecast Branch now has available the "Summary of Natural Hazard Deaths for 1993 in the United States" which includes deaths, injuries, and damage costs. In 1993, severe weather claimed a total of 372 lives. This is slightly lower than the 9-year average which is 386. Flash floods/river floods had the highest number of fatalities with 103; the 30-year average is 141 annually—still the number one killer. Many of these fatalities were the result of "The Great Flood of 1993" which occurred in the upper Midwest along the Mississippi and Missouri Rivers and their tributaries. It will be recorded as the most devastating riverine flood in modern United States history. In addition, March was the deadliest month with 104 fatalities mostly because of the Superstorm that struck the East Coast States from Florida to the New England States. Of the 372 fatalities, nearly 70 percent were men, and almost 30 percent were women.

—Linda Kremkau, Warning and Forecast Branch, WSH

## What's Upcoming!

#### ■ New Basic Spotter Slide Set

I have been working on a draft of the basic spotter slide set, and it has completed its first review. Several insightful comments were received from the reviewers. Work is progressing at a steady pace to address the comments and concerns received from the reviewers. Unfortunately, with a number of major projects and activities planned for late April and much of May, the completion date for the second draft is unknown at this time. More on this project later.

—Gary Woodall, MSD, Southern Region Headquarters

#### ■ Braille Weather Safety Pamphlets

Ron Jones, DAPM at the Weather Forecast Office in Columbia, South Carolina, and I are working on a project to transcribe several of the weather safety pamphlets into braille. We will be working with the American Red Cross and several other organizations and plan to have braille copies ready for distribution during the next fiscal year. For further information on the braille project, contact me at NWS, 222 West 7th Avenue #23, Anchorage, Alaska, 99513, Tel: 907-271-6165, or Ron Jones, NWS, 2909 Aviation Way, West Columbia, South Carolina, 29170, Tel: 803-822-8038.

—Carolyn Gurney, DAPM, WSFO Anchorage, AK

## What's Been Reprinted!

- Recently, Weather Service Headquarters obtained two videos from the American Meteorological Society which were actually produced by SUNY several years ago. They are:

Everyday Weather Project - Thunderstorms  
Everyday Weather Project - Hurricanes

These two videotapes plus several listed below were reproduced and sent to the Regions for further distribution to NWS field offices. Anyone wishing to borrow any of these videotapes for their awareness presentations can contact me at 301-713-0090.

The Minneapolis Tornado  
Survival in the Cold

In addition, another 50 copies were made of the "Advanced Meteorologists/Spotter Training Slide Series." These copies were shipped to the NWS Regions for further distribution to their spin-up offices.

- The brochure, "Thunderstorms and Lightning...The Underrated Killers" NOAA PA 92053, has been reprinted and is available through the National Logistics Supply Center in Kansas City, Missouri, in quantities of 300 copies.
- "How the National Weather Service Works, A Story with the Weather Woodles" was reproduced and made available to the NWS Regions in March 1995. The "Weather Woodles" are furry little cartoon characters used to educate elementary school children as to what the National Weather Service does. This slide set was created by Carolyn Gurney who is now the DAPM at Anchorage, Alaska. Anyone wishing to borrow this slide set may contact us at 301-713-0090 or contact Carolyn at 907-271-6165.

—Linda Kremkau, Warning and Forecast Branch, WSH

## Other Hazard Awareness Materials

### New Materials from the American Red Cross

#### ■ Hurricane and Typhoon Education

Educating the public on how to prepare for and respond appropriately to the threat of hurricanes and typhoons is known to help reduce loss of life, injuries, and property damage. The

American Red Cross is pleased to announce the following educational materials are available for order through its local chapters. Most of the items address Atlantic hurricanes; however, they are useful for typhoon education as well. Items with ARC numbers are available at no charge (except shipping). Cost items are noted.

There are several interrelated products that you may use to meet various audience needs. While some items appear to duplicate one another, they do not. Each item was designed for specific audiences and include suggestions for use. Please review the item description carefully and select those items that will be of best use in your community.

#### ■ New Materials

##### ***Home Preparedness for Hurricanes.***

This is a 6-minute video for adults and families on how to prepare ahead of time for a hurricane. It was produced by the Tampa Bay Regional Chapter in Tampa, Florida. Designed for general audiences, this video would work well in a setting when presentation time is limited. COST: \$5.00 each. (Stock Number 321333, each).

##### ***Preparing Your Home for a Hurricane.***

This is a 44-page comprehensive booklet giving information for homeowners and others in hurricane-risk areas on hurricane preparedness actions. It provides summarized information from other related materials, including Your Family Disaster Plan, Disaster Supplies Kit, Against the Wind: Protecting Your Home From Hurricane Wind Damage, and Repairing Your Flooded Home. It was also produced by the Tampa Bay Regional Chapter. (Stock number ARC 5040, pk/25)

##### ***Before the Wind Blows.***

This 12-minute video for adults gives information about hurricanes, planning decisions, how evacuation information is given, how the Red Cross selects hurricane evacuation shelters, and how we respond to hurricanes. It is most appropriate for use in areas where hurricane evacuation is an issue, particularly where there are long lead times for evacuation and possibly few or no hurricane evacuation shelters meeting safety requirement nearby. It was produced by the Southeast Louisiana Chapter in New Orleans. COST: \$5.00 each. (Stock number 321334, each).

##### ***Before the Wind Blows.***

This 34-page booklet for adults gives information on hurricane evacuation, shelters, and returning home. It includes hurricane preparedness information and tracking maps. It was also produced by the Southeast Louisiana Chapter. (ARC 5041, pk/25).

##### ***Before the Wind Blows: Media Guide.***

This 32-page booklet, designed for print and electronic media personnel, gives Red Cross information on hurricanes in a format for easy reference and use. It was also produced by the Southeast Louisiana Chapter. (ARC 5041M, pk/25)

##### ***Hurricane Information Guide for Coastal Residents.***

This 17-minute video features Maury Povich and Bob Sheets and was produced by the Northeast Florida Chapter, Jacksonville, Florida. The video features a family finding out about a hurricane headed their way and depicts how they prepare before hurricane landfall, including evacuation decision making. It will work best when longer presentation times are available for audiences who live near the Atlantic or Gulf coasts. COST: \$5.00 each. (Stock number 321335, each).

##### ***Atlantic Hurricane Tracking Poster (24" x 18").***

This 3-color poster features the NOAA/NWS logo. It shows all areas of the United States that may be affected by Atlantic hurricanes, including Caribbean islands, the coast from Maine to Florida, and the Gulf of Mexico. It was designed for use by people planning for hurricanes, tracking them, and the Damage Assessment function. (Poster 4003, pk/5).

##### ***Atlantic Hurricane Tracking Poster (8-1/2" x 11").***

Same as above poster but designed for public distribution. (Poster 4003A, pk/25).

##### ***Pacific Hurricane/Typhoon Tracking Poster (24" x 12").***

This 3-color poster features the NOAA/NWS logo. It shows all areas of the United States that may be affected by Pacific hurricanes and typhoons, from the western U.S. mainland to the Eastern Pacific U.S. territories, including Saipan, Guam, and American Samoa. It was designed for use by people planning for hurricanes, tracking them, and for the Damage Assessment function. (Poster 4004, pk/5).

##### ***Are You Ready for a Hurricane? (ARC 4454 English, ARC 4454S Spanish, pk/25).***

This is a 2-page, 4-color brochure with hurricane safety information and instructions, providing a way to become interactive with it for family hurricane planning. It works with a poster by the same title (P-941, pk/5), which is printed in English on one side and Spanish on the other. Features logos of the American Red Cross, NOAA/NWS and FEMA.

##### ***Against the Wind: Protecting Your Home From Hurricane Wind Damage (ARC 5023 English, ARC 5023S Spanish, pk/25).***

This 8-page brochure gives homeowners information on how to inspect and make simple changes within homes to mitigate or reduce the potential devastating effects of hurricane wind damage. It works with a video by the same title (ARC 5023V English, ARC 5023SV, Spanish, each).

##### ***Jason and Robin's Awesome Hurricane Adventure (ARC 5044, pk/25).***

This 12-page, 4-color workbook is designed for children in third to sixth grade. It gives information on hurricane facts, hazard avoidance, planning, supplies, and what to do when a Hurricane Watch and Warning are issued. Works with a video by the same title (ARC 5044V, each).

##### ***Hurricanes...The Greatest Storms on Earth (ARC 5030, pk/10).***

This 12-page, 4-color, in-depth brochure gives information on hurricanes, public risk and perception, the meteorology of the storm, and how to stay safe. It should only be given out upon request by the public when they request more detailed information as it is not designed for mass distribution.

#### ■ A Note on Selecting Hurricane and Typhoon Education Items

Studies have shown that people became overwhelmed when they are given several print items at the same time. It is suggested to limit the number of print materials to hand out to no more than three, and distribute them at the end of a presentation so attendees

will not be distracted by attempting to read them while you are making a presentation. Have additional print materials available on a nearby table, and refer to them during a presentation. Then if someone asks for an item, you can provide it to them. Education research has shown that when people ask for information, they will read it. If they are simply handed an item or find it as their seat, much of the information is not read and is discarded, which is wasteful. [ ]

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

## The Weather Channel's "On-Air Schedule"

This is a continuing part of the *Aware Report* to provide you with an "On-Air Schedule" from The Weather Channel for live and current forecast weather programs (see below).

### On-Air Schedule

#### Tropical Awareness Week:

Mon	17	July	Forecasting Hurricanes
Tues	18	July	Hurricane Preparedness
Wed	19	July	Path of Hurricanes
Thu	20	July	Historical Hurricanes
Fri	21	July	Hurricane Aftermath/ Lessons Learned

Mon	24	July	City Weather
Tue	25	July	Water Cycle
Wed	26	July	Flash Flooding
Thu	27	July	River Flooding
Fri	28	July	Great Weather Catastrophes

Mon	31	July	Aviation and Weather
Tues	01	Aug	Hurricane Preparedness
Wed	02	Aug	Volcanoes
Thu	03	Aug	Doppler Radar
Fri	04	Aug	Sun and Your Skin

Mon	07	Aug	Structure of the Atmosphere
Tue	08	Aug	Meteorology and Field Trip
Wed	09	Aug	Clouds
Thu	10	Aug	Sun Dogs and Rainbows
Fri	11	Aug	Heavenly Skies

#### Tropical Awareness Week:

Mon	14	Aug	Forecasting Hurricanes
Tue	15	Aug	Hurricane Preparedness
Wed	16	Aug	Path of Hurricanes
Thu	17	Aug	Historical Hurricanes
Fri	18	Aug	Hurricane Aftermath/ Lessons Learned

Mon	21	Aug	Fog
Tue	22	Aug	Heat Index
Wed	23	Aug	Thunderstorms/Lightning
Thu	24	Aug	Tornadoes
Fri	25	Aug	Floods

Mon	28	Aug	Fronts
Tue	29	Aug	Wind
Wed	30	Aug	Jet Stream
Thu	31	Aug	Earthquakes
Fri	01	Sept	Historical Hurricanes

Mon	04	Sept	Careers in Meteorology
Tue	05	Sept	Meteorology Field Trip
Wed	06	Sept	Weather and Human Behavior
Thu	07	Sept	Weather Basics and Terms
Fri	08	Sept	Fall Colors

#### Tropical Awareness Week:

Mon	11	Sept	Forecasting Hurricanes
Tue	12	Sept	Hurricane Preparedness
Wed	13	Sept	Path of Hurricanes
Thu	14	Sept	Historical Hurricanes
Fri	15	Sept	Hurricane Aftermath/ Lessons Learned

Mon	18	Sept	Aviation and Weather
Tue	19	Sept	Highs and Lows
Wed	20	Sept	Fog
Thu	21	Sept	Fall Colors
Fri	22	Sept	Seasons

Mon	25	Sept	El Niño
Tue	26	Sept	Weather Basics and Terms
Wed	27	Sept	Volcanoes
Thu	28	Sept	Earthquakes
Fri	29	Sept	Great Weather Catastrophes

(Friday's 4:00 p.m. topic repeats on Monday at 1:00 a.m. ET.)

For further information, contact the Education Services Department at 404-801-2503. To order *The Weather Classroom* textbook, please send a check for postage and handling, made payable to A.M.F. (Atlanta Mailing & Fulfillment), P.O. Box 723247, Atlanta, GA, 31139-0247, with your street address and the name of your local cable company, in the amount of:

1 textbook	\$6.82	5, 6, or 7 textbooks	\$8.13
2 textbooks	\$7.45	8 or 9 textbooks	\$8.35
3 or 4 textbooks	\$7.84	10 textbooks	\$8.51

Include an additional amount of \$5.00 per book if you would like more than 10 copies. [ ]

—Education Services Department, The Weather Channel

## Aware Report Roster

Attachment B is the *Aware Report* Roster which lists all the WCMs in each of the NWS Regions. If there are any changes to the list, please notify me at 301-713-0090. Also, if you know of someone who would like to be placed on the *Aware Report* distribution list, please have him or her contact the Warning and Forecast Branch. We now have about 1,000 individuals receiving the *Aware Report* throughout the NWS and the natural hazard community. [ ]

—Linda Kremkau, Warning and Forecast Branch, WSH



# Update on the Office of Meteorology's WSOM Chapters

WSOM Chapters	Status
B-16, Marine Reporting Station	To be updated in 1996.
B-19, Fire Weather Stations	Will be updated this summer due to new system for station numbering.
B-30, Voluntary Observing Ship Program	To be updated in 1996.
B-55, Distribution and Use of Satellite Data	Requires a total update; earliest draft early to mid-1996.
B-90, Special Warning Program Observations	To be updated in 1996.
C-10, State Forecast	Update for 7-day state forecast expected in spring 1996.
C-11, Zone and Local Forecasts (main section)	Work will begin on a draft revision in 1996.
C-11, Zone and Local Forecasts (Appendix A)	Update to be issued October 3, 1995.
C-12, 6- to 10-Day, 30-Day, and 90-Day Outlooks	Revised chapter for "long lead" outlooks was issued in January 1995. OML for 8- to 14-day Outlook expected in spring 1996.
OML to C-20, National Public Weather Products; C-44, Non-Precipitation Weather Hazards; C-64, NOAA Weather Radio Program	OML for dissemination of Ultraviolet indices issued June 5, 1995.
OML to C-21 on revisions to Short Term Forecast	Issuance expected in fall 1995.
C-40, Severe Local Storm Warnings	<p>The chapter was released and implemented during March 1995. While it does not include aspects of the convective watch decentralization (scheduled to begin January 1996), it does feature a focus on Short-Term Forecast (Nowcast) concepts. The introduction of the Nowcast affects other products, including warnings and statements. For a detailed explanation of these interrelationships, please read the C-40 article found in the Modernization section of this <i>Aware Report</i>.</p> <p>In addition, an OML to C-40 has been released. It modifies the Local Storm Report (LSR) to conform with the WMO's 69 character-per-line limit in text products.</p> <p>C-41 was issued on June 1, 1995. Some of the significant changes incorporated into C-41 are as follows.</p>
C-41, Hurricane Warnings	<p>(1) At the NOAA Hurricane Conference, it was determined that the "Marine Advisory" was no longer exclusively a marine-related product. It provided important wind information which could be used by emergency managers located inland. The consensus was that inland NWS forecasters, as well as inland emergency managers, should be referencing this advisory for general guidance concerning inland wind effects of landfalling tropical cyclones. On June 1, the "Marine Advisory" became the "Tropical Cyclone Forecast/Advisory." This was a change in name only; it did not affect the AFOS PIL Header which remains unchanged MIATCMAT_.</p>

## WSOM Chapters

## Status

	<p>(2) Responding to emergency management concerns relating to the extent and arrival time of hurricane force winds, the conference chose to enhance the advisory information. NHC agreed to include the 64-knot wind radii, when applicable, out to 36 hours. Conference attendees agreed that by not providing this forecast information, we may be encouraging customers to create their own forecast through extrapolation or persistence. Therefore, in addition to the 34- and 50-knot wind radii, the 64-knot wind radius will be included as appropriate.</p> <p>(3) The effects of a hurricane/typhoon on an inland community may include multiple effects—wind, tornadoes, and torrential rains. Tornadoes and flooding are covered by separate watches and warnings. High winds can also be handled by separate high wind watches and warnings but do not always convey the severity of the situation. Changes to C-41 include the provision of guidelines for the issuance of Inland High Wind Watches and Warnings for hurricane force winds.</p>
C-45, Meteorological Discussions and Forecast Coordination	OML expected in spring 1996 for guidance products on days 6 and 7 and 8- to 14-day Outlook.
C-47, County Warning Areas	Latest appendix issued May 1, 1995. Ongoing public information statements are updates.
C-43, Coastal Flood Program	OML to be issued describing NOS NGWLMS and real-time tide water level access.
C-60, Radio/TV Dissemination; C-61, Telephone Dissemination; C-62, Newspaper Dissemination; C-66, Dissemination of Public Warnings; and C-67, News Wire Dissemination	Work will begin on updating and probably consolidating these chapters late in 1996.
D-06, Duties of IR Mets Requiring Exposure to Hazardous Situations	Will be updated next year due to changes in the Red Flag Program.
OML to D-06, Duties of IR Mets Requiring Exposure to Hazardous Situations	Has been approved; due out very soon.
D-07, Marine Weather Service Program	To be updated in 1996.
D-21, Aviation Terminal Forecasts D-37, International Aviation Aerodrome Forecasts	Merge of these chapters must be completed before the U.S. METAR/TAF is scheduled to be implemented in summer 1996.
D-23, Special Aviation Forecasts and Events D-91, Aviation Liaison and User Support Program	Preliminary work to update, adjust, and reassign the contents of these chapters has been completed. Awaiting ASB resources to complete the job.
D-25, Support to Air Traffic Facilities	Update completed. Awaiting FAA communications update capabilities—60 to 90 days notification will be provided before implementation.
D-30, Transcribed Weather Broadcast Text Products	Aviation Services Branch has FAA route forecast revalidation. An OML will be NWS-coordinated in summer 1995.

## WSOM Chapters

## Status

D-51, Marine Services for Coastal, Offshore, and High Seas

Appendices C - H, dealing with USCG broadcasts of Marine Weather Products, are being consolidated into a separate Marine Dissemination Guide.

Appendix B on reconfigured coastal marine forecast areas will be updated and maps will be added showing boundary demarcations.

To be updated in 1996.

D-52, Marine Services for the Great Lakes

OML to D-52, Marine Services for the Great Lakes

The OML was issued April 27, 1995. This OML modifies the headers of the Open Lake Forecast (GLF) and includes attachments that list current and future marine forecast responsibilities.

F-42, Storm Data and Related Reports

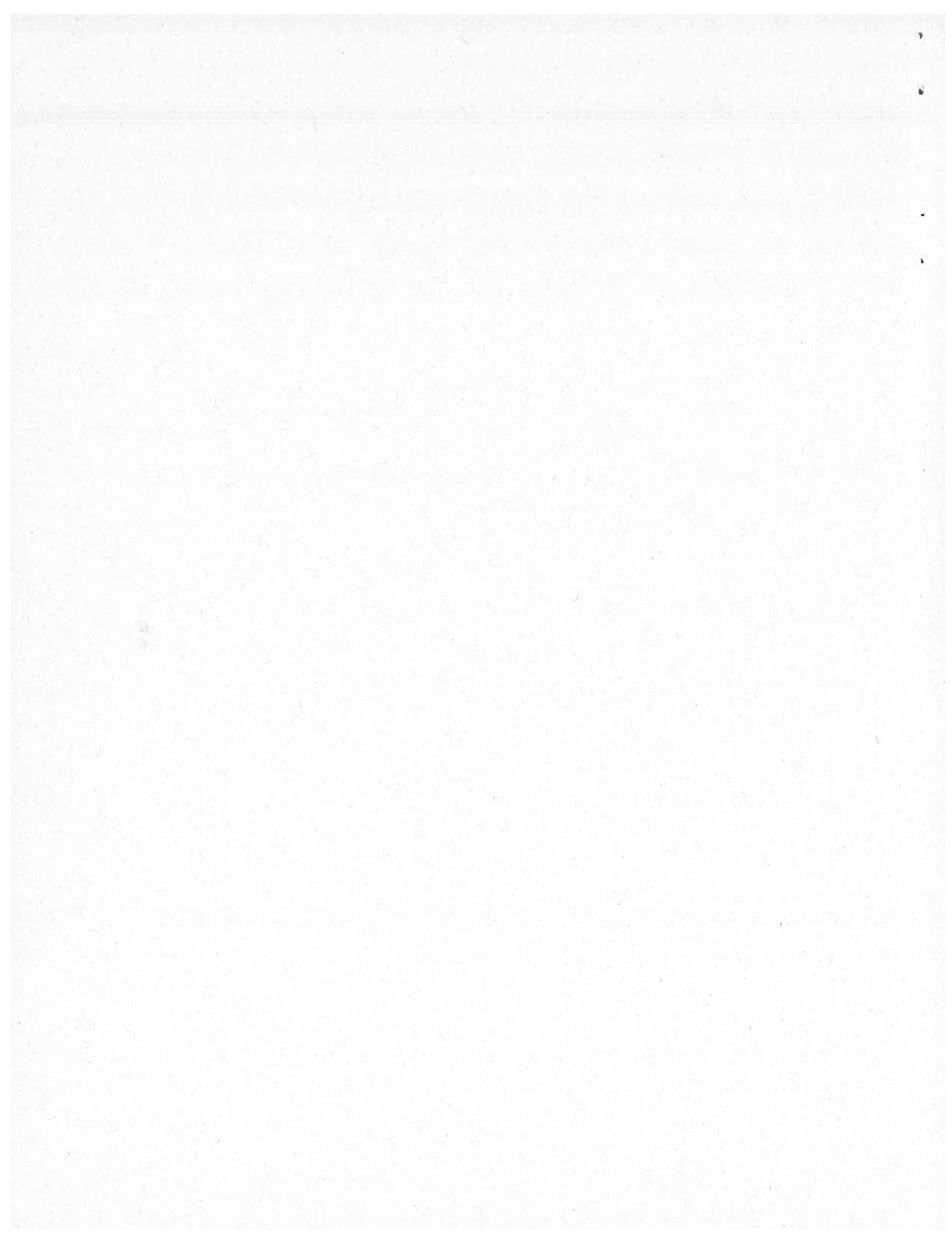
Implementation effective with the July 1994 Storm Data. Although the chapter is built around Paradox Storm Software, that software has been shelved pending optimization by a professional Paradox programmer. In the meantime, Storm Data authors are to conform to the new chapter as closely as possible, using WordPerfect 5.1 software. The optimized Paradox software should be ready by fall 1995.

F-60, Tsunami Warning Service

Will be sent out for first review in May 1995.

F-61, Earthquake Reporting Program

Will be sent out for first review in late April 1995.





**NWS Headquarters Staff, W/OM11**

301-713-0090

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Brian Peters	Birmingham, AL	205-664-3010	Jerry Orchanian	Nashville, TN	615-754-4633
Don Ocker	Brownsville, TX	210-546-5377	Frank Revitte	New Orleans, LA	504-522-7330
Jim Stefkovich	Fort Worth, TX	817-334-8505	Jim Purpura	Norman, OK	405-366-6583
Gene Hafele	Houston/Galveston, TX	713-337-5074	Rafael Mojica	San Juan, PR	809-253-4586
James Butch	Jackson, MS	601-936-2189	Bruce Burkman	Shreveport, LA	318-631-3669
Fred Johnson	Jacksonville, FL	904-741-4370	Bob Goree	Tallahassee, FL	904-576-6318
Roger Erickson	Lake Charles, LA	318-477-5285	Walt Zaleski	Tampa Bay, FL	813-645-2323
Renee Fair	Little Rock, AR	501-834-0308	Steve Piltz	Tulsa, OK	918-832-4115
Larry Vannozzi	Lubbock, TX	806-745-4260			

## Central Region

<u>David Runyan</u>	Regional	816-426-3239	David Tucek	Indianapolis, IN	317-856-0362
Lee Larson	Regional Hydrologist	816-426-3220	Bill Bunting	Kansas City, MO	816-540-5147
Hector Guerrero	Aberdeen, SD	605-225-5547	Todd Shea	LaCrosse, WI	608-782-4533
Kathy Hoxsie	Alpena, MI	517-354-8733	Norman Reitmeyer	Louisville, KY	502-969-8842
Daniel Noah	Bismarck, ND	701-250-4224	Jack Pellett	Marquette, MI	906-475-5212
Joseph Sullivan	Cheyenne, WY	307-772-2468	Rusty Kapela	Milwaukee/Sullivan, WI	414-297-3243
Jim Allsopp	Chicago, IL	815-834-0600	Todd Krause	Minneapolis, MN	612-725-3741
James Meyer	Davenport, IA	319-391-6729	Gene Bowman	North Platte, NE	
Robert Glancy	Denver, CO	303-361-0661	Brian Smith	Omaha, NE	402-359-2394
Jeffrey Johnson	Des Moines, IA	515-270-4501	Ricky Shanklin	Paducah, KY	502-744-6424
Gary Campbell	Detroit/White Lake, MI	313-625-3309	Tom Magnuson	Pueblo, CO	719-948-9429
Jeff Hutton	Dodge City, KS	316-227-7140	Susan Anderson	Rapid City, SD	605-393-8441
Carol Christenson	Duluth, MN	218-720-5255	Donald Noll	Riverton, WY	307-857-3898
Dennis Hull	Goodland, KS	913-899-2360	Todd Heitkamp	Sioux Falls, SD	605-330-4244
Jim Belles	Grand Forks, ND	701-772-0720	Rod Palmer	Springfield, IL	217-732-4029
James Pringle	Grand Junction, CO	303-243-0914	Steve Runnels	Springfield, MO	417-863-1456
John Kottke	Grand Rapids, MI	616-956-5922	Jim Kramper	St. Louis, MO	314-447-1876
Jeff Last	Green Bay, WI	414-494-5845	Mike Akulow	Topeka, KS	913-232-1493
Steve Kisner	Hastings, NE	402-462-2127	John Ogren	Wichita, KS	316-943-5893

## Western Region

<u>Richard Douglas</u>	Deputy MSD Chief	801-524-4000	Peter Felsch	Missoula, MT	406-329-4841
Bob Tibi	Regional Hydrologist	801-524-5137	Rob Doherty	Pendleton, OR	503-276-4493
Chuck Bikle	Billings, MT	406-657-6988	Mike Franjevic	Phoenix, AZ	602-379-4611
Carl Weinbrecht	Boise, ID	208-334-9860	Bruce Bauck	Pocatello, ID	208-233-0834
Ed Clark	Elko, NV	702-738-3018	Dan Keeton	Portland, OR	503-261-9247
John Lovegrove	Eureka, CA	707-443-6484	Roger Lamoni	Reno, NV	702-673-8107
Chris Cuoco	Flagstaff, AR	602-774-3044	Roger Pappas	Sacramento, CA	916-442-1468
Dan Gudgel	Fresno, CA	209-584-0583	Dave Toronto	Salt Lake City, UT	801-524-5113
Kimberly Bailey	Glasgow, MT		Wilbur Shigehara	San Diego, CA	
Lynn Valtinson	Great Falls, MT	406-453-2081	Charles Morrill	San Francisco, CA	408-656-1725
Ron McQueen	Las Vegas, NV	702-736-6404	Ted Buehner	Seattle, WA	206-526-6168
Tim McClung	Los Angeles, CA	805-988-6610	Ken Holmes	Spokane, WA	509-353-2368
John Casad	Medford, OR	503-773-1067	Paul Flatt	Tucson, AZ	602-294-2522

## Alaska Region

<u>Greg Matzen</u>	Regional	907-271-3507
David Goldstein	Anchorage	907-271-5102
John Lingas	Fairbanks	907-456-0435
Robert Kanan	Juneau	907-586-7493
George Carte	Palmer (ATWC)	907-745-4212

## Pacific Region

<u>James Partain</u>	Regional	808-541-1671
Thomas Heffner	Honolulu, HI	808-836-1831
Malcolm Hargrave	Guam	(011) 671-344-4160
Akapo Akapo	Pago Pago (Focal)	(011) 684-699-9130

## NCDC - Storm Data

William Angel	Asheville, NC	704-271-4459
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