Aware

Aware is issued by the National Oceanic and Atmospheric Administration to keep communications lines open within the Agency and with the natural hazards community

Spring 1999

Service, Science, and Technology

CUSTOMER SERVICE

NWS Assures Year 2000 Readiness: How Emergency Managers Can Get Ready

Recognizing the importance of weather data, the National Weather Service (NWS), in conjunction with other National Oceanic and Atmospheric Administration (NOAA) agencies, has been working since 1996 to ensure there will be no disruption as a result of the date change from December 31, 1999, to January 1, 2000 (Y2K).

Does this mean emergency managers will be able to receive timely weather information after the Y2K rollover? The answer depends on whether emergency managers have ensured their weather message processing systems and weather information providers are also Y2K compliant.

Emergency managers should ask themselves: *"Have I checked my weather message processing systems and checked with my weather information provider to ensure they are Y2K compliant?"*

All NWS mission critical systems were Y2K compliant as of March 31, 1999. For more information on NWS Y2K compliance, access the Y2K web site at **http://www.oso1.x3.nws.noaa.gov/y2k**. Although a majority of NWS data are not date dependent, NWS has tested the connectivity and processing ability between the NWS and its partners. In late January and early February, staff performed Y2K end-to-end computer testing with Federal and non-Federal organizations. The testing represented at least 95 percent of NWS data exchanges with other agencies and the private sector. Organizations taking part in the test were:

- Federal Aviation Administration (FAA)
- Fleet Numerical Meteorology and Oceanographic Command — Naval Oceanographic Office
- US Air Force
- US Navy
- National Environmental Satellite and Data Information Service (NESDIS)
- Atmospheric Environment Service of Canada
- United Kingdom Meteorology Office
- World Meteorological Organization (WMO)
- International Civil Aviation Organization
- Air Transport Association
- Family of Services private weather vendors (e.g., WSI Corp.)
- TASC, Inc.
- United and Northwest Airlines
- WorldSpan, Inc.
- ARINC
- GTE, Inc.

During a teleconference, all participants stated the tests were a success. Participants reported no problems with the receipt, transmission, or processing of data. Another successful Y2K end-to-end test occurred late March 1999.

In support of the international meteorological community, NWS staged a Y2K workshop with

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Pacific Region V nations of the WMO. As a result of this workshop, a team consisting of the United States, New Zealand, and the WMO will assist the Pacific island nations with Y2K compliance. You can find the final workshop report at **http://www.wmo.ch/web/www/reports/Hawaii-workshop-rpt.html**. Each WMO region has sponsored at least one workshop similiar to the one held in Region V.

The NWS monitors Y2K compliance of other meteorological agencies through the WMO and has developed an internal qualitative model to predict Y2K readiness of various countries. This model is based on information from the WMO Home Page. The results of this model will help the National Centers for Environmental Prediction (NCEP) develop contingencies for supplying data to meteorological models if Y2K disrupts the flow of data from other nations. The United States is also a member of a WMO working group to develop international contingencies related to the possible loss of international weather data.

As required for all federal agencies by the Office of Management and Budget, the NWS has developed a Y2K Business Continuity and Contingency Plan (BCCP). Since the NWS is a 24 hours per day and 7 days per week operation and must implement operational contingencies daily in the field, the BCCP builds upon these existing contingencies and adds Y2K readiness as an additional layer. To further ensure continued weather warning and forecast operations as NWS move into the new millennium, the BCCP also provides a series of "what if" scenarios to mitigate external problems resulting from Y2K.

NWS is performing Y2K outreach with state and local emergency managers via articles such as this one and presentations at various conferences and organizations. This summer, NWS is planning to hold a major public outreach event on Y2K efforts.

Mike Gerber, NWS Y2K Liaison
Howard Diamond, NWS Y2K End-to-End Test Manager
Barbara Brenkworth, NWS Y2K Coordinator

How to Sustain Vigilance During Extended Periods of Severe Weather

After the February 1998 tornadoes in Central Florida, a Service Assessment team looked at NWS efforts before and during the outbreak. The team noted a series of watches led up to the event and asked "How much watch is too much?" To answer this question, the Office of Meteorology (OM) approached the authors of a multi-year Cooperative Program for Operational Meteorology, Education and Training (COMET) Cooperative Project. Our COMET project, entitled: "Empowering the Forecast Consumer: An Investigation of Citizen Need for and the Technology for Communicating Process-Centered Weather Information," made a natural lead in to this new study.

Our first step was to conduct focus groups to determine how weather information is received, interpreted and used by asking participants, "If one or more watches are issued and remain in effect for an extended period, does their effect dissipate with time?"

One question asked was: "If one or more watches are issued and remain in effect for an extended period, does their effect dissipate with time?" For the reasons we give below, however, we think the better question is "During an extended period of threatening weather, what can NWS forecasters do to sustain heightened levels of vigilance?"

The focus group interviews showed we cannot assume that announcing a watch heightens vigilance. Only if that were the case does it make sense to ask whether heightened vigilance is sustained during the watch or if it dissipates.

Watch Motivates the Public to Respond?

Evidence shows people do not respond to weather conditions on any one factor, including the announcement of a watch. They rely on multiple factors and respond to weather conditions based on what the greatest number of factors most consistently project.

The multiple factors they use include inferred weather trends taken from changes in conditions in near time, how others around them are responding, and their own past experience with similar weather events. Indicators in cur-

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

rent time include official sources of weather information, and "portents," often based on folklore or past experience about the significance of cloud formations, wind direction, temperature changes, animal behavior, etc.

Official sources thus are only one factor most people weigh. Accordingly, if NWS issues a watch, it may not result in heightened vigilance *unless* (a) danger is corroborated by other sources, and (b) the weather condition is deemed to pose a *relevant* risk.

Thus, the answer to whether heightened vigilance will dissipate is **"it depends."** We have formed a hypothesis about what it depends on, and what we can do to reduce or prevent such dissipation.

To ensure vigilance is maintained and even intensified, trends among other indicators people trust must point towards continuously worsening conditions. If trends among other indicators during a watch show little change and the conditions in question have not materialized, or it seems like conditions are improving, then vigilance is likely to dissipate *even if there are scientific reasons for the watch to remain in effect.*

What NWS Does to Maintain Watch Vigilance

Therefore, NWS must focus on circumstances in which there are scientific reasons for a watch to remain in effect when other informal indicators say otherwise. In that circumstance, even repeated watch announcements cannot be expected to have much effect. Any effect they do have would rapidly dissipate.

The remedy: Announcements of watches in those circumstances must be accompanied by a brief "justification" acknowledging informal indicators (especially seemingly unchanging or moderating conditions) negating heightened vigilance. The announcement must give reasons why those other indicators are misleading.

Robert Sanders, Professor, State University of NY
Richard Westergard, WCM, NWSFO Albany, NY

New WSOM Chapter Defines Service Change Process

OM completed the draft of a new Weather Service Operations Manual (WSOM) Chapter A-40, Service Change Process. The chapter has been sent to the Regions and other relevant NWS entities for review. This draft WSOM provides a coherent, standardized process to ensure validation and implementation of new service ideas.

The draft defines the scope of the service changes and includes specific operational steps for coordination, authorization, notification and implementation. This process is necessary to assure compatible product formats and codes, consistency in services rendered, and to adopt locally successful ideas nationwide.

Rod Becker, Dissemination Services Program Manager
Ron Berger, Special Programs Meteorologist

OM Creates New Web Pages

Storm Chaser Web Page

In response to recommendations from the Spencer, SD, Service Assessment, Pleasant Hill Warning Coordination Meteorologist (WCM) Bill Bunting and OM Customer Service staff Mike Gerber and Kina Wallace developed a Storm Chaser Web Page. The new Web site was created to improve coordination between storm chasers and the NWS. This page should result in more timely and accurate severe weather warnings.

The Storm Chaser Web site contains maps, telephone numbers and radio frequencies for storm chasers and spotters. OM anticipates three major benefits from this Web Page:

- Improved coordination between NWS forecast offices and visiting meteorologists engaged in storm chasing
- Enhanced communications with amateur radio networks
- Increased number of storm spotter reports.

The site is password protected. The address should only be given to appropriate storm chasers and spotters. Emergency managers who might need access to this information should contact their local NWS office.

Severe Weather Awareness Week Web Page

In February, OM created a Severe Weather Awareness Week Web Page. The page offers dates and other information on Severe Weather Awareness Weeks around the country. These events help educate people on severe weather threats and safety precautions.

The Web Page includes a quote from NWS Director Jack Kelly, Jr., links to severe weather preparedness guides, and displays a calendar of Severe Weather Awareness Week events for each state. The Web site is being constantly updated as new links to state events are added. To access the site, go to **http://www.nws.noaa.gov/om/svrawar/svrwx.htm**.

Bill Bunting, WCM, NWSFO Pleasant Hill, MO
Mike Gerber, OM Web Author
Kina Wallace, Physical Scientist

NWS Reviews Key Definitions

The NWS is reviewing the definitions of commonly used terms, anecdotally or otherwise loosely defined. The terms are:

- Product
- Data
- Official NWS Products and Data
- Operational NWS Products and Data
- Experimental NWS Products and Data
- Operational Systems
- Skill
- Accuracy
- Reliability.

During April, the Regions reviewed draft definitions and other elements within Weather Service Headquarters. NWS also is reviewing policy guidelines on NWS employees' internal use of the Internet.

Rod Becker, Dissemination Services Program Manager

NHC Helps Public Prepare for Hurricane Season

The National Hurricane Center (NHC) continues its annual tours to increase the public's understanding of hurricanes and the threat to lives and property. Director Jerry Jarrell cites several reasons for the annual tours. "While many East Coast cities, along with their Gulf counterparts, are historically prone to hurricanes, the decades of the 1970s and 80s generated a false sense of expectation. Below normal levels of activity during those years gave people very little 'real' hurricane experience teaching how 'big' and 'bad' big and bad can be." But education and awareness properly applied can help offset lack of experience, Jarrell says.

This year's tour will highlight the 53rd Weather Reconnaissance Squadron's "Hurricane Hunters," the WC-130 aircraft and NHC's hurricane specialists. NOAA Aircraft Operations Center's two WP-3 "Orion," regularly used on the tour as a "flying classroom," are being repaired. Public access to the aircraft, briefings and media availability are means for getting the word out. The tours were held in late April and early May. For more information, contact **flepore@nhc. noaa. gov**.

Frank Lepore, Public Affairs Official, NHC

How To Reduce The Impacts Of Natural Disasters

Public Private Partnership 2000 (PPP2000), part of the Subcommittee on Natural Disaster Reduction, has held 13 public forums addressing ways to reduce the impacts of natural disasters. OM plays a major role in organizing these events. Participants include representatives from federal, state and local governments, the insurance industry, the private sector and academia. The forums cover issues such as:

- Reducing losses from floods
- Health impacts of natural disasters
- Protecting critical infrastructure
- Real-time monitoring and warning for natural hazards.

Detailed information about the forums, the PPP2000 organization, and summaries of the forums can be found at **http://www.usgs.gov/ppp2000/index.html**.

Donna Franklin, Constituent Affairs

New Hurricane Awareness Activities

In May, OM and NOAA Office of Public and Constituent Affairs created Hurricane Awareness Web pages. The pages offer information on hurricane awareness activities around the country and links to local offices hurricane awareness pages. These pages provide quick access to hurricane safety, preparedness and education opportunities.

In February, Customer Service staff, through NOAA/DOC, sent the White House a draft Presidential proclamation for National Hurricane Awareness Week to be held annually in May. A National Hurricane Awareness Week would help save lives and property by commanding:

- Media coverage for safety and preparedness messages
- Greater interagency, state and local participation in NOAA's warning and preparedness programs
- The public's attention on what should be done before, during and after a hurricane
- The attention of school children, who are great motivators for the creation of family preparedness plans.

With year-round planning, an annual, dedicated National Hurricane Awareness Week will focus national attention on the cause of many of the Nation's worst natural disasters. For the latest hurricane awareness information and links, on the Web visit **http://www.nws.noaa.gov/om/** or **http://hurricanes.noaa.gov**.

Herb White, Acting WCM Program Manager

Hurricane Preparedness Training Takes Leap Forward

This spring, the NHC demonstrated a beta version of *Community Hurricane Preparedness,* a Computer Based Learning (CBL) course. The CD-ROM training is the latest in a series of joint NWS-Federal Emergency Management Agency (FEMA) training initiatives. FEMA is producing several thousand copies to be available through FEMA's Independent Study Courses. The program should quickly reach thousands of state and community decision makers.

The Course Goal: Given information on hurricane hazards, forecast limitations, and decision aids, by the end of the class, participants will be able to identify mitigation and preparedness measures to reduce damage and loss of life in their risk areas.

The Target Audience: Local and state officials, in hurricane-prone states, who have decision making responsibilities for disaster response. The student population is estimated to be 8,000 to 10,000 per year. FEMA will also use the class as preparation for attendees of its Hurricane Preparedness Workshops, held annually at the NHC.

Demonstration audiences included the North Carolina Hurricane Conference, the Virginia Emergency Management Conference, the National Hurricane Conference and the WMO RA-IV Hurricane Committee Meeting.

Max Mayfield, Deputy Director, NHC
Herb White, Acting WCM Program Manager

IAEM Plans for Annual Conference

NWS already is mapping its role in the next meeting of the International Association of Emergency Managers (IAEM), November 13-16, in Louisville, KY. The IAEM Conference Planning Committee met on March 13-14. The group agreed on four General Sessions and 18 Concurrent Sessions from almost 100 abstracts submitted. NWS will lead one 90-minute General Session and two 80-minute Concurrent Sessions. OM is coordinating NWS topics, poster sessions, exhibits and attendance with the Offices of Hydrology and Systems Operations, the Regions and NCEP.

The General Session will be "La Nina, A Look Back and a Peek Forward." The session will focus on the well-forecast 1998-99 La Nina event and the numerous abnormal hazardous weather events.

Presentations from WCMs, tropical weather and hydrologic specialists and local emergency managers on specific La Nina-related events will include advance mitigation and preparedness efforts based on the forecasts that reduced the adverse impacts from the events. One concurrent session will focus on meeting emergency manager needs and requirements for accurate and timely weather information now and in the future.

The second concurrent session will center on flood forecasts, warnings and response. This session will include building strategies to eliminate flood fatalities and sharing ideas on how emergency managers and the NWS can improve the exchange of products and information.

Herb White, Acting WCM Program Manager

NEMA/NWS Service Improvement Assessment Reviewed by OM Team

This spring, Customer Service staff sent the National Emergency Management Association (NEMA) a status report of NEMA/NWS Service Improvement Assessment. This Assessment is part of an effort to examine how the NWS can improve support to the emergency management community. OM recommended closing 20 of the 29 action items. OM will report on the remaining nine action items in 90 days. Many of the action items required the NWS provide updated information to the emergency managers about ongoing or planned activities.

Herb White, Acting WCM Program Manager

SPC Begins Forecast Teleconferencing

The Storm Prediction Center (SPC) will be using the AT&T FTS2000 Teleconferencing Service to contact multiple field offices simultaneously this severe weather season. The Customer Service Core provided the SPC with background and technical assistance to set up the service.

Teleconferencing is expected to improve communication between Weather Forecast Offices (WFOs) and SPC *before* it issues watches and other severe weather products.

When SPC is issuing or considering a watch, SPC forecasters will initiate a call using a preset list for the WFO located nearest the threat's center. This list will establish a conference call to all WFOs surrounding the "centroid" WFO; the average call lasts about 5 minutes. SPC has received favorable response from its few calls using the system, although the lists were too large. SPC is creating smaller lists, to be ready by the first of May.

Dave Imy, Storm Prediction Center

Customer Service Gains Two Veteran NWS Experts

OM's Customer Service Core gained two new staff members this year: Customer Service Program Manager Ron Gird and Meteorologist/Web Author Mike Gerber.

In this new position, Ron ensures OM presents a consistent message in its customer outreach programs. He also oversees programs to minimize duplication of efforts. Ron works to integrate customer expectations into improved services and to help keep customers informed about how best to use NWS products. Ron also supports K-12 outreach initiatives, oversees creation of hazard awareness materials, and guides the continued creation and development of partnerships to support customer and educational outreach.

Previously, Ron served as the Satellite Program Manager in the Technology and Forecast Systems Core. He led outreach efforts with the National Aeronautics and Space Administration, The Weather Channel, the American Meteorological Society and National Geographic Society.

Mike Gerber serves as the new Customer Services Meteorologist, OM Web Author, significant weather event and Hurricane Watch Office focal point, and NWS Y2K Liaison to FEMA.

Mike's experience includes computer programming, knowledge of Fire Weather and public speaking. While serving as a Fire Weather Meteorologist at the NWS Forecast Office in Boise, ID, Mike played a major role in the development of RAWS MOS statistical forecast guidance for the Boise Fire Weather Risk Reduction project. He also served as an Incident Meteorologist at major wildfires and instructed numerous fire weather courses. While at the Sterling, VA, Forecast Office, he became a backup co-anchor for the AM Weather television show.

Ron Gird, Customer Service Program Manager
Mike Gerber, Meteorologist, OM Web Author

OM Draft Plan Seeks to Ensure Consistent Agency Message

OM Customer Service has written a draft version of an NWS Unifying Outreach Action Plan. The Plan, which should be approved by June, first was given a technical review by the NWS Regional focal points. The primary goal is to ensure NWS is providing a consistent message to its customers and partners.

The elements of the Plan include:

- Developing annual NWS Outreach "Campaigns"
- Public Awareness/Preparedness
- Constituency Building
- Public and Partners Feedback
- Recruitment.

Campaigns cover major NWS topics staff should be regularly reinforced with customers and partners. Each campaign will have Talking Points, a Communications Plan and a set of viewgraphs. Campaigns will be distributed to the regions and National Centers. The Plan also includes an Outreach Speaking Schedule for NWS Senior Managers.

Ron Gird, Customer Service Program Manager

Fort Smith Tornado Lawsuit Dismissed

On March 16, the U.S. District Court for the Western District of Arkansas dismiss a lawsuit evolving from a tornado that struck the Fort Smith, AR, area on the evening of April 21, 1996. The tornado resulted in the deaths of 2 children, inflicted 40-50 injuries, and caused substantial damage to the historic downtown section of Fort Smith and residential areas of nearby Van Buren. NWS issued a severe thunderstorm warning for the area at 0354 Coordinated Universal Time (UTC) (April 22), followed by a Tornado Warning at 0408 UTC. A tornado touched down on the Oklahoma side of the Arkansas border at 0412 UTC, and moved rapidly into downtown Fort Smith and the west side of Van Buren (by 0418 UTC).

NWS published a Natural Disaster Survey Report of the event in December 1996. Based on the Survey team's investigation, at the time the Tornado Warning was issued "a power loss at the Ft. Smith Police Department caused a failure of the primary communications method with Ft. Smith officials, depriving them of critical input to their decision to sound the Civil Defense sirens. As a result, the sirens were not sounded."

The $2.35 million lawsuit alleging NWS had failed to warn of an impending tornado, "thereby preventing the Plaintiff from proceeding to safe areas." The case was first with the DOC General Counsel's Office on January 12, 1998. The claims were denied April 22, 1998. Suit was filed against the US Government on October 22, 1998. On December 24, the Department of Justice filed a Motion for Dismissal on discretionary function grounds. A hearing was scheduled for March 25, 1999. On March 16, plaintiffs suddenly moved to dismiss their suits. The case appears to be closed.

Bob Kuessner, Forensic Services Manager

INTEGRATED HYDROMETEOROLOGICAL SERVICES

Fire Weather Program Modernizes

In early April, OM hosted the 1999 Fire Weather Forecasters Course and a workshop for Incident Meteorologists (IMETs). The classes drew staff from field and regional offices, NCEP and fire agency staff. The class covered:

- Fire weather policies
- Fire weather service "spin-up" process
- Forecasting winds in complex terrain
- Critical fire weather patterns
- Weather influences on fire behavior
- User needs and systems
- Routine and site-specific forecast product preparation.

More than 40 IMETs and potential IMETs attended the workshop and learned how to use the Advanced Technology Meteorological Units (ATMUs), to be initiated this fire season. The ATMUs feature Dell Pentium 266 laptops integrated with a 56K modem and DirecPC satellite system. The computers will enable high speed Internet access nationwide. The IMETs will be able to download Advanced Weather Interactive Computer Systems-era (AWIPS) data sets, such as high-resolution gridded model data, satellite and radar imagery and observation networks. This system setup also will be able to access WFOs and regional Web servers and will be compatible with Local Data Acquisition and Dissemination Systems.

NWS and interagency fire weather teams also have developed prototype templates to standardize and verify fire weather products. OM will work with customers to refine these prototypes for use in the year 2000 fire season.

Finally, if you visit Washington, DC, this spring, stop by the National Air and Space Museum to see a new IMAX movie, *Wildfire*. The 50-minute film features live action scenes of fire fighters attacking wildfires with NWS staff support. OM Web Author Mike Gerber was at the world premier in March where he set up shop as an IMET in a mock fire site. Mike answered questions for the more than 800 visitors and dignitaries, including Secretary of Interior Bruce Babbitt and Secretary of Agriculture Dan Glickman.

Paul Stokols, Fire Weather Program Manager

Aviation Plan Hits Key Concerns

On January 8, 1999, NWS Director Jack Kelly, Jr., signed the Aviation Action Plan. The Plan directly addresses the most frequently heard customer concerns in this area. The high priority item is the Internet policy for aviation product dissemination. The Plan looks at the Program Forecast Verification program of the Central Weather Service Unit (CWSU) to evaluate its commitment to the aviation program. Specifically, this Plan involves:

- Developing a national aviation verification program for all aviation products
- Improving services to FAA's Traffic Management Units
- Coordinating routinely among all levels of forecast offices
- Requiring greater WFO/CWSU involvement
- Developing a CWSU Action Plan.

Dorothy Haldeman, Aviation Program Manager

Mariner's Guide Revised, Divided and Redesigned

OM has made major changes to the "Mariners Guide to Marine Weather Services" (NOAA/PA 92056). The content has been entirely rewritten to reflect NWS modernization changes and advances in marine weather dissemination. The layout was redesigned and, most important, the Mariners Guide has been divided and will be published as two separate pamphlets:

- Mariners Guide to Marine Weather Services—Great Lakes (NOAA PA 98053)
- Mariners Guide to Marine Weather Services—Coastal, Offshore and High Seas (NOAA PA 98054).

The revised issues should be available at National Logistics Supply Center (NLSC) by late summer 1999. They also will be posted on the OM Web Page at the same time: **http://www.nws.noaa.gov/om/nwspub.htm**.

OM received valuable input from forecasters at marine WFOs serving the Great Lakes, Pacific, Atlantic and Gulf of Mexico. Our thanks to all the field and regional folks who contributed to these new guides.

Richard May, Marine Weather Services Assistant Manager

Mariners Weather Log Now Online

The *Mariners Weather Log* magazine contains articles, news and information about marine weather events and phenomenon. The magazine also covers storms at sea, weather forecasting, the NWS Voluntary Observing Ship Program, Port Meteorological Officers, cooperating ships officers and their vessels. The magazine may now be viewed online at **http://www.nws.noaa.gov/om/mwl/mwl.htm**.

Jim Rulon, Program Leader

Storm Watch: Storm Prediction Center Explains When and Why

The SPC issues tornado watches when it expects at least one strong or violent tornado (F2-F5), or three or more tornadoes, regardless of their F-scale, in a particular area. SPC issues severe thunderstorm watches when it expects organized severe thunderstorms producing large hail and/or damaging winds. Examples of organized convection include supercells, squall lines and longer-lived multicell thunderstorm complexes.

Not all severe weather reports are expected or covered with a watch. SPC will rarely issue watches for pulse severe thunderstorms, consisting primarily of solitary severe updrafts. Watches typically are not issued for severe storms with marginal intensities or short durations. There may be some instances where a localized area of severe thunderstorms develops before SPC issues a watch. In this case, SPC will only issue a watch if staff expects more severe storms to develop across the same area in a specified period. Also, if staff expects the convection to continue, a watch would be issued for areas downstream of the ongoing convection.

Although watch sizes vary, the median size is around 25,000 square miles, about half the size of Iowa. A watch usually lasts 4-6 hours, although there are exceptions. For example, a watch issued in a coastal area may last 7 hours if it is expected to take longer for the severe convection to move offshore. A 3-hour watch may be most practical when the threat area is relatively small and the severe storms are expected to move rapidly. The SPC will make every effort to issue watches at least 30-60 minutes before the onset of significant or organized severe weather. This will not be possible in all cases, especially when the timing of convection initiation is in question.

David Imy, Storm Prediction Center

TECHNOLOGY AND FORECAST SYSTEMS

NWS Defines Requirements For Future Geostationary Satellites

In January, NWS documented its operational requirements for the next generation of Geostationary Operational Environmental Satellites (GOES), year 2010 time frame. The system of geostationary satellites is one of the primary observing systems NWS uses to provide weather, hydrologic and climate warnings and forecasts.

Operational needs evolve and are influenced by budgetary and programmatic issues. Requirements for a new generation of geostationary satellites should be viewed as a baseline to initiate new sensor designs and cost studies. The NWS will continue to work with NESDIS to refine the system definitions for the following:

- Imager
- IR Sounder
- Space Environment Monitoring
- Data Collection Platforms/System
- Emergency Managers Weather Information Network (EMWIN)
- Backup capability
- Microwave Sounder/Imager
- Low Light Imager
- Growth capability
- Continuity of data.

For critical elements, two types of performance levels are listed: threshold and goals. The threshold performance level is the minimum acceptable requirement; a goal is a requirement which, if met, would greatly enhance data use. The top priorities for improved capabilities in the next generation GOES include:

- Ensuring continuous operation during eclipse and keep-out zone periods
- Meeting simultaneous global, climatic, synoptic and mesoscale data needs
- Improving temporal and spatial resolution of imager data
- Improving spatial coverage of the Sounder.

Jim Gurka, Satellite Program Manager
Jim Heil, Meteorologist

AWIPS Satellite Team Develops Requirements

An NWS/NESDIS Team is quickly integrating a significant amount of new satellite data and applications into AWIPS. The team's target completion date will coincide with delivery of AWIPS Build 5, expected to be released summer 2000. The effort has involved extensive coordination/prioritization with NWS field, regional and national center satellite experts, NESDIS's data producers and applications people from both Line Offices. Particular emphasis has been placed on making many of the new GOES Sounder-Based products, currently available on the Internet, operational, including:

- Derived Product Imagery (i.e., Lifted Indices, Total Precipitable Water, Convective Available Potential Energy)
- Binary Universal Format Representation (BUFR) files
- High-Density Winds
- Vertical Soundings.

See **http://defiant.wrh.noaa.gov/satawips/awipsat3.htm** for the full list.

The team polled RAMSDIS, McIDAS and other satellite display/manipulation system experts to determine which satellite applications also should be integrated into AWIPS. The top six desired applications are:

- **Computation of Cloud Heights:** Helps forecasters determine the height of specific clouds and generate warning and aviation products.
- **Brightness Normalization:** Maintains the brightness of visible imagery nearly constant from sunrise to sunset, winter or summer.
- **Image Product Maker:** Allows forecasters to combine satellite-derived fields and NCEP model data, create local satellite-derived products (e.g., fog, cloud phase, cirrus detection), combine local radar and satellite imagery, etc.
- **Parallax Adjustment:** Permits better collocation of satellite-based features with other data.
- **GIF Imagery from D2D Screen:** Permits users to save satellite data on main display panel and sub-panels as full-sized GIF images; used for training and research.
- **Color Enhancement "Roll" and Manipulation:** Allows users to enhance the brightness count scale up and down to better identify features of interest.

Refer to **http://defiant.wrh.noaa.gov/satawips/awipapp2.htm** for the entire list.

Andy Noel, Satellite Program Meteorologist

ACARS Data Tested for NWS Warning and Forecast Use

In April, the North American Atmospheric Observing System (NAOS) Program completed an operational assessment of sounding and en route data from the Aircraft Communications Addressing and Reporting System (ACARS). The Assessment, begun in January 1998, determined the use, availability and quality of ACARS sounding data to support operational local warning and forecast services.

ACARS is an air/ground data link exchanging data between aircraft and airline dispatch and maintenance facilities. Most of data pertains to fuel and passenger loads, engine performance and gate information; however, the data also contains measurements of ambient wind, temperature, altitude, position, time and, on a few aircraft, dew point and turbulence.

Except for dew point, the sensors and communications equipment are part of the normal aircraft infrastructure. Presently, NWS receives between 28,000 and 55,000 ACARS observations daily, including about 825 soundings made during the aircraft's ascent and descent at terminals across the United States and at a few sites in Canada. For this large and expanding volume of data, NWS and the FAA together pay only $330,000 per year.

A primary objective of NAOS is to recommend the most cost efficient and meteorologically effective mix of upper air observing systems. NOAA will use these recommendations to help modernize the upper air network over and near North America. The Assessment is intended to enable operational meteorologists to influence requirements for and the operation of new upper air observing systems. NAOS will benefit from their experience using numerous meteorological datasets.

Taking part in the assessment are 20 NWS, Environment Canada and airline forecast offices and centers: Forecasters were asked to evaluate the ACARS soundings and en route data for its:

- Use in synoptic and mesoscale forecasting
- Availability, vertical resolution and altitude coverage
- Adequacy as a supplementary or substitute upper air observing system
- Need for moisture profiles
- Ability to display information effectively.

The assessment looked at case studies, use in Area Forecast Discussions, and frequency of use statistics and survey results. Access to the proprietary sounding and en route data are provided by an innovative Web site developed and maintained by William Moninger of NOAA's Forecast Systems Laboratory at **http://acweb.fsl. noaa.gov**.

Interim findings of the Assessment have identified the following applications:

- Forecasting winter precipitation type
- Identifying and forecasting convective initiation and severity
- Forecasting high wind events and low level wind shear
- Forecasting ceilings and visibilities
- Validating model forecasts
- Updating WSR-88D hail algorithms.

The evaluation indicates ACARS is a valuable upper air data source and is applicable to many forecast problems. For ACARS data to become more widely used, however, it will need to be incorporated into AWIPS. Developers are working to incorporate ACARS into AWIPS Build 5. Forecasters also feel the lack of water vapor profiles is a limitation, and there is a need for higher resolution ascent/descent soundings in the lower troposphere.

Over the coming years, ACARS coverage may be expanded. The number of soundings and en route observations will increase as more airlines provide data and as older aircraft are upgraded. NAOS hopes regional airlines will begin to provide soundings at airports serving smaller cities. With time, more dew point data will become available as aircraft are equipped with the Water Vapor Sensing System. The availability of this moisture data will make ACARS into a complete upper air observing system of opportunity.

A report on the results of the ACARS Operational Assessment is expected to be available this fall.

Carl Weiss, Rick Decker, Meteorologists, Upper Air Program

Comprehensive Snow Climatology CDs Available

The National Climatic Data Center (NCDC) has just completed the most comprehensive snow climatology information ever compiled for the United States. The project is contained on a CD-ROM set (3 disks). It was completed by NCDC, in partnership with the NWS, with funding from the Environmental Services and Data Information Management (ESDIM) Program.

Statistics, in addition to routine climatology parameters such as average monthly and seasonal snowfall, include return periods for 1-, 2- and 3-day extreme snowfalls. The statistics were computed for about 5,500 COOP stations nationwide. The data collection is contained in DOS ASCII files including data files (file extension .dat), documentation files (file extension .txt), and user-friendly table files (file extension .txt in subdirectories of the TABLES directory).

The CD-ROM does not contain software or extraction routines that would allow the user to import the data directly into spreadsheets or other applications. A file, however, may be easily copied from the CD-ROM onto a hard drive or other device with the DOS copy command. The text files (extension .txt) may be easily read by a text file editor or word processor. The CD-ROM was created so it can be used on a PC running Windows 95, 3.1, or DOS. The instructions are for Windows 95. The data allow users to analyze snowfalls in historical perspective at non-airport locations. The data were compiled in support of the ROSA Implementation Plan: Near Real-Time Collection, Dissemination and Use of Cooperative Observer Observations (OM: 9/96).

Technical and documentation files are included on the CD-ROM. Users should review the "readme.txt" file before attempting to use the CD-ROM. The readme.txt file can be read in Windows 95 by clicking on the readme.txt file icon. The Windows software on some PCs uses "NOTEPAD" to read text files. Some of the files on this CD-ROM will be too large for "NOTEPAD." Windows may use an alternate program (e.g., "WORDPAD") to read large text files.

The CD-ROM set is being sent to all NWS Forecast Offices and River Forecast Centers. Copies can be purchased from NCDC in Asheville, NC. The online price is $230. Mail orders are commercial: $305; noncommercial: $230. All costs include shipping and handling charges. Questions? Call the Climate Services Division, NCDC, at 828-271-4800, then press 2.

Bob Leffler, Physical Scientist

GOES-L Launch Delayed

NOAA has scrubbed the launch of next GOES weather satellite, GOES-L, pending an investigation of a rocket component to be used in the launch. A new launch date has not been set.

Once launched, GOES-L will join GOES 8, 9 and 10 in space. GOES-8 overlooks the area from the central United States to the central Atlantic Ocean; GOES-10 covers the central United States to the central Pacific Ocean. GOES-9 is turned off now. After checkout, GOES-L will become the on-orbit spare to be activated when one of the operational satellites needs to be replaced. GOES-10 will likely replace GOES-8, which has exceeded its life expectancy.

Jim Heil, Assistant Satellite Program Manager

SCIENCE AND TRAINING

FY 1999 Implementation Plan for Training and Science Support

OM has completed its final version of the FY 1999 Implementation Plan for Training and Science Support. The Plan describes NWS's FY 1999 training programs in meteorology, hydrology and engineering/electronics training. Programs include classroom and distance learning.

The plan was developed in coordination with the field, as specified by the NWS National Strategic Training and Education Plan (NSTEP). Specifically, the NSTEP Field Requirements Group (FRG) coordinated the Plan.

The FRG, consisting of the Regional Scientific Services Division Chiefs and the Executive Officer from the NCEP, worked with all divisions within its offices and with its field users to define the highest priority training needs. The FRG already has started to define training requirements for the FY 2000 Implementation Plan.

Eli Jacks, Training Program Leader

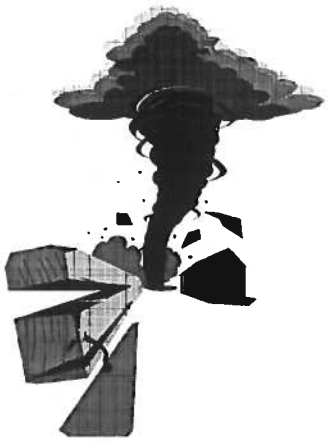
COMET Adds Four Cases to Library

Four new cases in the COMET Case Study Library can now be accessed through the Web, bringing the total to 16.

- **Case Study 013**, February 22-24, 1998, covers a strong winter storm system that moved over Southern California. The storm brought heavy rain as tropical moisture fed into the system. At the same time, an intense storm system moved across Florida, creating deadly tornadoes over the central part of the state.

- **Case Study 014**, developed and contributed by Lynn McMurdie, University of Washington, is on a Midwest Cold Season Synoptic Storm. The event, which ran from October 17-19, 1996, is an example of "classical" cyclone development with some structure similar to the Norwegian conceptual model of storm development.

- **Case Study 015**, April 28, 1998, follows the evolution of a low pressure system through its lifecycle as it moves from Arkansas to Illinois, and provides an example of the effects of model biases in the AVN model. The errors introduced to the AVN model, due to inherent biases, resulted in a faulty prediction of strong cyclogenesis over the Gulf of Mexico.



- **Case Study 016**, July 4, 1995, focuses on a severe weather day for Kansas and Missouri. Tornadic thunderstorms were generated by a combination of abundant moisture, an unusually intense synoptic-scale trough and potentially strong jet dynamics. The case focuses on a tornado that hit the town of Moberly, MO, where tornado watches and warnings were issued well in advance, preventing serious injuries or deaths.

To stay informed on the latest developments in the COMET case-study project, please subscribe to our mailing list by accessing: **http://www.joss.ucar.edu/cometCases/mailList.html**. The new cases can be accessed at: **http://www.comet.ucar.edu/resources/cases**.

Elizabeth Page, Case Studies Program Leader, COMET

New SOO/SAC Coordinator Named

Dr. Robert Rozumalski has been named OM's new Science and Operations Officer (SOO)/Science Applications Computer (SAC) Coordinator, replacing Dr. Peggy Bruehl. Bob is working at the Hydrometeorological Prediction Center (HPC) in Maryland until he moves to Colorado in May.

During the past year and a half, Bob has served as a COMET post-doctoral scientist at the HPC. His job included

verifying the NESDIS Auto Estimator, an algorithm to estimate rainfall from real-time satellite data. This project involved extensive programming and web design. He next helped develop the Numerical Weather Prediction (NWP) training. He has served as the co-instructor for the COMET SOO Symposiums on NWP, where he developed training materials for instructional labs. Bob has been an integral part of the NWP professional development series team, putting NWP training materials on the Web.

Bob has M.S. and PhD. from North Carolina State University. His dissertation research examined boundary layer-forced adjustment processes and their role in creating an environment conducive to explosive cyclogenesis and severe weather. He worked as system administrator and lab coordinator for the university's meteorology program for many years. He was responsible for the daily operations of a large array of UNIX workstations, gaining experience in supporting different platforms for a diverse teaching and research workforce.

Bob's goals as National SOO/SAC Coordinator are as follows:

- Continue to support the SOO program and regions on-station computing needs for training and applied research
- Serve as a resource for local WFO modeling efforts and modeling related issues
- Help SOOs develop local area models and provide guidance for setting up and running models in real-time and experimental modes
- Provide training materials on operational model products and offer guidance on these products for the field
- Support the SOOs on AWIPS- and N-AWIPS-based applications of numerical model data sets, ensuring compatibility with university collaborative efforts by working with Unidata and NCEP
- Support coordination of local applications through interfacing with the AWIPS local applications working group
- Help SOOs build LINUX-based platforms for the WFOs, including installing software, upgrading LINUX releases and bug fixes, and installing compilers.

Bob can be reached at **301-763-8000** ext. 7357 until May, when he moves to Boulder.

LeRoy Spayd, Chief, Science and Training

CSTAR Program To Issue Request for Proposals

The NWS Collaborative Science, Technology and Applied Research (CSTAR) program will issue its first request for proposals (RFP) to colleges and universities. The RFP, to be published in the *Federal Register,* focuses on applied collaborative research addressing the science needs of NWS Regions and National Centers. CSTAR expects to fund four to eight proposals by early 2000. The award amounts will be as large as $125,000 and are renewable for up to two additional years contingent on funds and satisfactory progress. NWS managers will review proposals and announce awards late this fall. CSTAR will issue an RFP yearly and will rotate research focus on the science priorities of all NWS regions.

In addition, the CSTAR Program also is issuing sole source Cooperative Agreements to three NWS Cooperative Institutes (CIs): University of Utah, CI for Regional Prediction; Florida State University, CI for Tropical Meteorology; and Texas A&M University, CI for Applied Meteorological Studies.

OM established the CSTAR program to bring collaborative activities with the academic community into a structured program and to create a cost-effective transition from basic and applied research to operations and services. This service-science linkage provides a foundation for the ongoing NWS modernization.

Sam Contorno, Meteorologist

NOAA Weather Radio Initiatives

OM Hosts AWIPS CRS/NWR Formatter Workshop

OM hosted a workshop February 8-9 to define requirements for AWIPS product generators and formatters for the Console Replacement System (CRS) to support NOAA Weather Radio (NWR) broadcasts. These formatters provide radio-ready text in AWIPS 4.2.

Attendees solidified and prioritized requirements for AWIPS version 5.0, including rudimentary changes to formatters already in version 4.2. Representatives from each Regional Headquarters attended along with one field office representative from each region, except Pacific. Field representatives chosen were those most familiar with the production of formatted scripts for CRS.

Products prepared by AWIPS, Automation of Field Operations and Services (AFOS), Alaska Region Operations NETwork (ARONET) and elsewhere for the NOAA Weather Wire Service (NWWS) dissemination are not "radio-ready." Many products developed for user friendliness in "rip-and-read" form do not contain full sentences (e.g., bullet warnings), may contain embedded codes within the product (e.g., segmented products), or may contain information in a scattered format requiring rewriting before radio broadcast.

Products formatted for NWWS must then be reformatted before CRS can rebroadcast them. The NWR person on shift used to manually rewrite products. Now it can be done using formatters developed for AWIPS Version 4.2. In the interim, many offices are using software developed by the field, such as the Charleston, WV, STORMI/ZIP and Pleasant Hill, MO, AirWave.

During the workshop, attendees revised requirements for AWIPS formatters to reflect operational needs demonstrated by field software. Also, attendees revised requirements to capture and format audio broadcast formats for newly revised visual formats, such as the bullet warnings and segmented products (e.g., NowCasts, Winter and Non-Precipitation Warnings). In addition, capabilities developed for AWIPS 4.2 with select field input were demonstrated to the larger group, and operationally significant changes were defined and added. The meeting also addressed developing formatters for products not addressed in 4.2 (such as marine) as well as generic capabilities such as manual editing for products not yet automated.

Joanne Swanson, CRS Program Manager

Should EAS Use Automated Voice?

On February 24, OM staff and the Office of Systems Operations CRS Program Manager met with representatives of the broadcast industry to discuss using the CRS synthesized voice to issue Emergency Alert System (EAS) warnings. Attendees represented officials of the EAS and the Federal Communications Commission's National Advisory Committee. The meeting was held as a result of an e:mail discussion between NWS Director Jack Kelly and Richard Rudman of the Los Angeles County Local Emergency Communications Committee.

The meeting resulted in a partnership approach. EAS officials agree the time savings gained in issuing automated warnings is impressive and should not be lost, and the synthesized voice is understandable—if not likeable—under good conditions. All participants agreed there are many electronic and mechanical communications problems along the path through the EAS facilities, which degrade any voice used. Both parties must continue to resolve these communications issues as funding for voice improvements remains uncertain for at least 2 years.

NWS was strongly urged to create a Public Service Announcement (PSA) advertising the CRS voice and its life saving potential. Such PSAs would enhance EAS announcements as it would help prepare the public and "get the word out." NWS plans to complete the PSA this spring.

Joanne Swanson, CRS Program Manager

Spanish Language on NWR

The operational approach to using Spanish on NWR was finalized in February 1999. Next, system requirements were submitted to support the change. The bilingual transmissions will be fully automated and geared not to a listening audience but rather to an audience that has reacted to a tone-alarm on a radio. A short translation of the emergency message will be broadcast following its English version. There also will be a reference to a local Spanish broadcasting affiliate to tune into for complete information. CRS also will support NWR stations where a broader bilingual service can be provided. Deployment of software to support initial Spanish capability in CRS is expected by the end of FY 1999.

Joanne Swanson, CRS Program Manager

Project Impact Improves Weather Data Collection and Dissemination

As part of FEMA's focus to establish disaster resistant communities, FEMA chose Flathead County in northwest Montana for funding from Project Impact. Flathead County, a vast rural area, has limited real-time weather data available in the Flathead River Basin, including Glacier National Park. The county has been hit hard over the last decade from extensive floods. In addition, localized blizzards are not uncommon.

To improve warnings and forecasts, NWSO Missoula, MT, extensively uses weather data from remote sensing networks in non-populated rural areas. West Glacier Park and the Flathead River Basin are key locations where there is insufficient weather data to detect impending storms or flooding.

Goals to enhance mitigation and response to severe weather and flooding in Flathead County lie in enhancing two areas: ***Data collection from weather stations and dissemination systems for all hazardous events.***

Data Collection from Weather Stations

Heavy winter or spring rains creates the greatest danger of serious and widespread damage in the area. NWSO Missoula determines the potential for this type of flooding by assessing mountain snowpack water-equivalent values from SNOTEL sites.

NWSO Missoula is pressing for a new river gauge on the Middle Fork of the Flathead River. The current gauge only works part of the time. Major high water this spring will likely wash away the gauge for the fourth time. A new US Geological Survey (USGS) River Gauge with a satellite interrogated Data Collection Platform is proposed to stabilize this system. River gauge height data will be transmitted every hour from the site to an orbiting satellite in space. The data would then be instantaneously transmitted from the satellite to the NWS and USGS computer systems. NWS would use the data to make flood forecasts and issue flood warnings as much as 6 to 12 hours in advance.

NWS also wants four new Natural Resources and Conservation Service (NRCS) SNOTEL sites: two in the North Fork River drainage, one possibly at Cyclone Mountain and one near the U.S.-Canadian border. A SNOTEL site is also needed in the South Fork River drainage, possibly at either Spotter Bear, North Fork Jocko, Trinkur Lake, or Upper Holland Lake, now are manually read NRCS SNOTEL sites. If the SNOTEL weather stations are installed, the NRCS would likely pick up the maintenance costs.

The SNOTEL site on the South Fork River drainage would also assist the Department of Reclamation and the Department of Fish, Wildlife and Parks in determining the runoff for the Hungry Horse Reservoir. The snowpack, temperature and rainfall information gathered from the SNOTEL sites are transmitted every 3 hours via a meteor burst method. This information is input automatically into NRCS and NWS computers. The data are then used as input to hydrologic computer models to produce flood forecasts. The forecasts are then used by the NWS to issue flood warnings, giving the public advanced notice flooding is on the way.

Dissemination Systems for all Hazardous Events

Currently, there are two means of activating the EAS for Flathead County. NWS activates EAS for severe weather and flood warnings via the NWR on frequency 162.55 MHz. The media can activate EAS, relaying the weather and flood warnings as well as other non-weather related hazards issued by the Flathead County Sheriffs Office.

Flathead County Office of Emergency Services and the NWS agree there is a substantial need for an effective early warning system in 60 schools in Flathead County. To be able to effectively receive both weather and non-weather related hazards, it is proposed the schools receive NWR with Specific Area Message Encoding capability and Emergency Alert Sentinel Radios.

Potential Partners to Help Develop Projects

All the following parties should have an inherent vested interest in supporting mitigation of severe weather and flooding events:

- Glacier National Park
- Flathead County Office of Emergency Services
- Department of Natural Resources and Conservation
- Flathead National Forest

- Bureau of Reclamation - Hungry Horse Dam
- Winter Sports Incorporated
- Columbia Falls Aluminum Company
- Fish, Wildlife and Parks
- USGS
- Flathead County Association of Fire Fighters.

Ray Nickless, Service Hydrologist
Peter Felsch, WCM
NWSO Missoula, MT

Winter and Weather Safety Home Gain Boost from Project Impact

FEMA selected Aberdeen as South Dakota's first "Project Impact" community. Project Impact is a pilot program designed to develop partnerships between local government agencies, civic and volunteer groups, businesses and individual citizens.

Aberdeen will receive approximately $500,000 in seed money. As members of two Project Impact subcommittees, Aberdeen NWSO staff provide crucial hazardous weather mitigation and educational background information.

Lead Forecaster Stan Keefe has been the driving force behind many of the Project Impact Education initiatives. Stan's accomplishments include the following.

- Helped design, produce and distribute 5,000 book covers aimed at increasing awareness of winter weather hazards. The book covers continually remind students and parents of winter safety. Stan coordinated with the Education Committee, insurance agencies, and a local printing company to ensure funding was available for this project. Then, after gaining the enthusiastic support of the art instructors at the two Aberdeen High Schools, Stan asked students to design unique book covers for their respective schools. The only boundaries placed on the students were to list Winter Safety Rules and the contents of Winter Survival Kits. As a result of Stan's efforts, nearly 4,500 students are advertising the hazards of winter weather and how people can protect themselves from these hazards.

- Designed fliers two local grocery stores are distributing. The fliers include a list of winter safety rules and a list of the contents of Winter Survival Kits. Stan coordinated with the managers of local grocery stores to reproduce the fliers and put them in grocery bags for their customers. So far, the stores have printed and distributed nearly 10,000 fliers. Because of Stan's initiative, creativity, and coordination, this project has been a huge success.

- Coordinated with the manager of Mac's hardware store to set up displays to help people build their own Winter Survival Kits. Weekly displays at the store focus on individual items to include in a Winter Survival Kit.

- Coordinated with the South Dakota School for the Visually Impaired to have the above mentioned fliers published in Braille. The school agreed to provide these Braille copies to anyone requesting them.

- Worked with the Minorities Director at Northern State University to have the fliers translated into the Lakota language. With four reservations within our county warning area, Native Americans compose a significant portion of our customer base. Stan worked with a Sioux tribal elder who is doing the translating for us. Stan is also working on an oral version of these safety rules in Lakota.

- Designed an 8-page pamphlet to increase awareness of severe convective storms. These pamphlets define tornado watches and warnings, explain tornado danger signs and other thunderstorm hazards, list actions to take during a storm, and offer a map showing the location of all sirens and storm shelters in and around Aberdeen, and the frequencies of local broadcast media outlets, including NWR 2000. Stan is seeking funding from a number of civic organizations to print 10,000 pamphlets. He already has gained commitments to fund half this project. Once this project is completely funded, pamphlets will be provided to visitors to the Aberdeen area. The pamphlets will be distributed by local motels and the Aberdeen Parks and Recreation Department. These pamphlets also will be available in Braille.

- Stan has coordinated with a representative of US West Telephone to include winter and severe weather safety rules in the next publication of the Aberdeen phone book. In addition, the phone book will include the map Stan created to show the locations of all sirens and storm shelters in and around Aberdeen.

William Tallman, MIC, NWSO Aberdeen, SD

Project DataStreme Offers Internet Education to Teachers

NWSO Aberdeen SOO Ken Harding recently took part in Project DataStreme as a local team member. Project DataStreme is an Internet-based course offered in conjunction with the American Meteorological Society and the National Science Foundation. The course, geared to elementary and high school science teachers, stresses student involvement in meteorological teaching and activities. With eight graduates of the first course, and eight more signed-up for spring, interest in the course is strong.

William Tallman, MIC, NWSO Aberdeen, SD

EMWIN Training Provided to Emergency Managers

Funding was obtained for 25 EMWIN systems at county Emergency Operations Centers (EOCs) this past year. These systems complemented the EMWIN system at the Montana State EOC and demonstrated the need for EMWIN training.

In November, 4 hours of formal EMWIN training was provided to 12 county emergency services coordinators in the Great Falls area. In January 1999, NWS staff provided state emergency services personnel with a 6-hour training session on EMWIN and NWS products.

In February, in conjunction with NWSO Missoula, an EMWIN was set up at the annual Montana Disaster and Emergency Services Conference, allowing both county commissioners and state and county emergency managers to have hands on experience with the system.

Lynn Vallinson, WCM (Retired), NWSO Great Falls, MT

EMWIN Broadly Available In West Central Florida

The *St. Petersburg Times* newspaper started rebroadcasting EMWIN material on December 8, 1997. The newspaper has been on the air almost continuously since then. The St. Pete Times rebroadcasts at 1200 baud on a frequency of 139.2125 MHz, a Florida National Guard frequency.

Although the EMWIN signal is downloaded from GOES at 9600 baud, the *St. Pete Times* is transmitting at 1200 baud to accommodate the thousands of users who have not yet upgraded to 9600. The paper is encouraging its customers to upgrade to 9600 to allow faster and expanded retransmission of the EMWIN signal.

The *St. Pete Times* is carrying every text report/observation/statement/warning for the states of Florida, Georgia, Alabama, Mississippi, Louisiana and Texas. The system is programmed to disseminate all warnings and severe weather statements immediately. The *St. Pete Times* adds West Central Florida Doppler Radar imagery from the Weather Channel and includes a local Boltek lightning map of the Florida Peninsula. As a public service, the broadcast also includes textual items, such as road and school closures, evacuation orders and feedback messages for customers.

The newspaper's next goal is to expand the retransmission to cover all of NWSO Tampa's County Warning Area. Current signal strength provides EMWIN DataStreme to about 3 million customers in West Central Florida.

Finally, we are working on a 4-page brochure promoting the merits of EMWIN and in particular, the *St. Pete Times* rebroadcast service of EMWIN.

Jack Belich, Assistant to the President, St. Petersburg Times

Now Online: Winter Weather Severity Index

You can now access the Winter Weather Severity Index test developed by NWFSO Cheyenne, WY. The test is currently being conducted in the Cheyenne County Warning Area. The test has generated a lot of national media attention over the past several months and might be of interest to other NWS personnel. The Web address is **http://www.crh.noaa.gov/cys/wxtest.html**.

Joe Sullivan, WCM Program Manager, CRH

Local Twister Author Share Podium with NWS

In late January, local TV meteorologists and I took part in a 2-hour Severe Weather Awareness Symposium. The event was combined with a book signing at the new Barnes and Noble Bookstore in Springfield, MO. The symposium was generated by Sedalia, MO, Police Captain Tim D. Mosier, author of the recently published book *Twisters in the Heart-*

land. Mosier is also Deputy Emergency Manager for Sedalia-Petitis County and an NWS storm spotter.

Mosier's book is written for the lay person who wants to know more about severe weather and preparedness. The book also details the numerous tornadoes have struck the Sedalia, MO, area during Mosier's lifetime. I spoke on the NWS watch and warning process and how information reaches the media and NWR listeners. Also discussed were ways people can prepare before a storm arrives and what to do once a warning is issued. NWR 2000 was demonstrated along with a discussion on its role in the warning process and, of course, the new NWR automated voice.

The local TV meteorologists discussed how their stations receive warnings and forecasts from the NWS, and how they pass along NWS information to their listeners. They also discussed their close working relationship with the local NWS office and how it takes a team of professionals from the NWS, emergency management community, and the media to ensure public safety during severe and hazardous weather. Many other questions were answered concerning global warming, climatic changes, and how to become a storm spotter or chaser.

William Davis, MIC, NWSO Springfield, MO

South Dakota Expand NWR Outreach With Discount Sales Deal

In late April, during South Dakota's Severe Weather Awareness week, KELO-TV and Nyberg's Ace Hardware began offering coupons for $15 off an NWR receiver. The receiver is a Midland band, so it is not programmable, but it is still a good deal at a good price. People can get the coupon by going to KELO-TV's Web page at **http://www.kelotv.com**. We are working closely with both parties by doing PSAs, providing maps and offering technical expertise.

Since KELO-TV covers the entire state and Nybergs only has stores in Sioux Falls, Nybergs will furnish a toll free number for those who want to order the radio. They are expecting to sell 10,000 radios. Nyberg's Ace has been an important weather safety partner with this office in the past, so I know this project will be nothing but first class. If you have any questions, feel free to contact me at **Todd.Heitkamp@noaa.gov.**

Todd Heitkamp, WCM, NWSFO Sioux Falls, SD

Ground Hog's Day Casts No Shadow

Time flies, people come and go, and technology changes so quickly it is necessary to "call a huddle" once a year. On February 2, NWSO Wilmington, NC, conducted the First Annual Ground Hog Day Gathering.

The meeting brought together County Warning Area team members to talk to each other; learn about NWS activities from MIC Rich Anthony, SOO Reid Hawkins, and WCM Tom Matheson; and to attend a FEMA course, "Warning Coordination," conducted by Matheson.

NWS modernization issues included the transition to WFO status and new technology, especially AWIPS, NWR 2000, EMWIN and the Internet.

The 45 attendees included state, county and city Emergency Managers, TV broadcasters from four TV stations, SKYWARN HAM radio coordinators, Red Cross representatives and staff from a Spanish language coordination group. The meeting included a tour of the NWSO. Attendees loved the gathering. We'll do it again next Ground Hog's Day.

Thomas Matheson, WCM, NWSO Wilmington, NC

Wisconsin Dispatchers Gain Insight into Warning Process

Recently, about 200 sheriff dispatchers in Wisconsin completed a class led by NWSO Green Bay, WI, entitled "Warning and Communication in the National Weather Service." The course was required as part of in-service training for the state's emergency dispatchers.

The hour-long seminar explained the warning process and emphasized the importance of dispatchers in providing quick, accurate communication during severe weather. After a brief explanation of NWS duties, beyond warnings, I explained common terms used by the NWS and spotters. Next the course covered the warning process and the tools used to issue timely and accurate warnings. The class ended with a discussion on a recent F3 tornado, and how the process successfully worked.

For most of the dispatchers, the course was the first time they had met an NWS representative. Many expressed appreciation for this insight into the warning process.

Jeff Last, WCM, NWSO Green Bay, WI

Publications and Audiovisuals

Digital Versions of Eight Slide Sets Now Available on CD-ROM

Nowadays it's digital this and digital that, so not to be completely outdone, NWS has digitized its most popular hazardous weather slide sets. The project began several years ago when the Regions and NWS Headquarters (NWSH) explored the use of computer equipment in outreach efforts. After NWSH conducted a nationwide risk reduction project and settled on PCs, field offices received laptop computers and LCD displays. With the decision made, the next step was to provide offices with digital images—a logical step, but not an easy one.

NWS has numerous slide sets, some of which are national standards and others are less known. To determine what and how to digitize, I was detailed to Southern Region Headquarters as part of a STAR Program (visiting staff) to work with Southern Region WCM Gary Woodall. The project got a boost when Central Regional WCMs David Runyan, Joe Sullivan and WCM Brian Smith, NWSFO Omaha, NE, joined the team.

Using slide scanning equipment, we began the tedious, often downright boring job of scanning each slide, adjusting colors, removing dust specks and whatever else might be required. Once the individual slide sets were scanned, files were placed on a master CD-ROM used to create duplicates for all field offices, Regional Offices and NWSH. The CD-ROM also includes WordPerfect and Adobe Acrobat versions of the slide scripts. OM Customer Service provided resources for purchasing the blank CD-ROMs. Slide sets scanned include:

- Thunderstorms and Lightning
- Winter Storms
- Hurricane Andrew
- Hurricane Hugo
- Tornado Safety
- Basic Spotter Slide Set
- Advance Spotter Slide Set
- Flash Flood Slide Set.

NWS created and distributed 210 CD-ROMs through regional contact points to all field offices. Linda Kremkau, Customer Service, has a small supply of additional CD-ROMs. She can be reached at **linda.kremkau@noaa.gov** or 301-713-0090 x118.

Brian Peters, WCM, NWSFO Birmingham, AL

Guide for Standard Disaster Safety Messages Just Released!

Major national organizations that study and communicate about disaster safety have joined to produce a new resource guide, *Talking About Disaster: Guide for Standard Messages*.

This Guide provides standardized safety messages for 13 natural hazards and general disaster preparedness topics. The messages have been reviewed and approved by the National Disaster Education Coalition, which delivers disaster preparedness information to the public. Following each message are explanations, statistics, or reasons to reinforce the credibility of the message and correct myths and information. This project was undertaken because research shows when the public receives consistent information, it will prepare and respond when disaster threatens.

The Coalition includes the American Red Cross, FEMA, Institute for Business and Home Safety; IAEM; National Fire Protection Association; NWS; U.S. Department of Agriculture/Cooperative State Research, Education and Education Service; and the USGS.

Users of this resource may include emergency managers, meteorologists, teachers, disaster and fire educators, public affairs/public relations personnel, mitigation specialists, managers and officers, media personnel and/or any other person in the severe weather, earthquake, disaster, or communications communities. The safety information is intended for dissemination to the general public. All content is in the public domain. The Lowes Home Safety Council provided support for development of the Guide.

Any local American Red Cross chapter can order additional copies of this Guide from the Red Cross central warehouse: stock number A4461M. The cost is $3 per copy.You can access it at **http://www.redcross.org/disaster/safety/guide.html**.

Rocky Lopes, American Red Cross

Office of Hydrology Offers New Service Assessment and Two Videos

Three new products are now available from the NWS Office of Hydrology:

- **South Texas Service Assessment Online**—Torrential rains over south and southeast Texas during the weekend of October 17-18, 1998, led to widespread and deadly flooding. A total of 31 people died during the event, and property damage estimates approached three quarters of a billion dollars. OH has prepared a Service Assessment of this event, including Findings and Recommendations. It can be accessed at **http://www.nws.noaa.gov/om/service_assessments/txflood.htm**

- **Hidden Danger-Low Water Crossing—Spanish**—NWS has distributed nearly 3,000 copies of the English version of the video, "The Hidden Danger-Low Water Crossing" video to emergency managers, rescue teams, drivers training instructors, state highway departments, etc., since its release in 1996. Riding on the heals of its success, OH commissioned a Spanish version. To obtain copies, contact Larry Wenzel at 301-713-0006, x147.

- **New Safety Video—Moving Water: Adventure or Danger?**—In mid May, OH will release its newest safety video, "Moving Water: Adventure or Danger?" Copies are being shipped to the Regional Hydrologists for distribution to the field Service Hydrologists and River Forecast Centers.

Larry Wenzel, OH

1997 Summary of U.S. Natural Hazard Statistics

OM has completed the "Summary of U.S. Natural Hazard Statistics for 1997," a report of fatalities, injuries and damage costs caused by severe weather in 1997. The report is compiled using *Storm Data*, information submitted electronically by NWS forecast offices in the 50 states, Puerto Rico, Guam and the Virgin Islands. The 1997 summary can be accessed at: **http://www.nws.noaa.gov/om/hazstats.htm**.

Here are some key facts:

- Weather and flood-related hazards claimed 600 lives. The average number of deaths for 1988-1997 is 524.
- Floods accounted for the greatest number of fatalities: 118, followed by winter storms/blizzards: 84.
- The total number of weather-related injuries in 1997 climbed to 3,799, compared to 2,711 in 1996.
- Tornadoes caused the most injuries with 1,033.
- Damage caused by severe weather cost the Nation nearly $10.8 billion in 1997.
- Flooding caused the greatest amount of property damage: $6.9 billion.
- Extreme cold was responsible for the greatest amount of crop damage: $304.3 million.
- Of the 600 weather-related fatalities, almost two-thirds were males. Sixty-nine (69%) percent of the male fatalities were between the ages of 20 to 70. Male deaths out paced female deaths in all age categories except the 80 to 90 age group.
- The deadliest weather month in 1997 was January with 108 deaths, followed by July with 91 and March with 85.
- The 30-year average (1968-1997) for flash floods/flood fatalities rose slightly from 138 in 1996 to 140. The 30-year average fatality rate for lightning is 81; tornadoes, 69; and hurricanes, 24. The 10-year average (1988-1997) for cold-related deaths is 38; for heat, 131.

If you would like a copy of the summary, please contact me at 301-713-0090 x118.

Linda Kremkau, Editor, Customer Service

Map Lesson Plan in National Geographic Society Newsletter

NWS, in conjunction with the National Geographic Society (NGS) and NOAA's Coastal Services Center will distribute 12,000-14,000 free copies of the NGS hazards map. The map was published July 1998 as the *National Geographic* magazine supplement. NOAA purchased the maps to give to schools nationwide. The maps offer a lesson plan keyed to Grades 5-8 and adaptable to lower or higher levels.

The maps were developed by a contractor with input from Ros Helz, USGS, and logistical support from NOAA Public Affairs. NWS sponsored the lesson plan, included in the spring 1999 issue of the NGS quarterly newsletter *Update*. For more information, contact me at 301-713-0460 or **JoeG@oar31.oar.noaa.gov**.

Joseph Golden, Senior Meteorologist, Oceanic and Atmospheric Research

States Most Prone to April Tornadoes

As part of an ongoing company-funded research study of tornadic risk, Engineering Analysis Inc. is using Site Assessment of Tornado Threat software to determine the top 20 tornado-prone states for April. The rankings, based on NWS data from 1950 through 1997, are located online at **http://eai.home.mindspring.com**.

Engineering Analysis, Inc., Huntsville, AL

Weather Channel "Classroom"

The Weather Channel airs a series of programs offering insights into how weather happens. These commercial-free shows are 8 minutes long; they air from 4 a.m. to 4:30 a.m. The shows offer breaks for classroom discussion. Show topics are listed below. For online weather education, see **http://www.weather.com/education**.

May 24, 27	Look Up! Sky Awareness
May 31, June 3	Climate: A World of Weather
June 7, 10	Hurricanes
June 14, 17	Extremes in Water Cycle
June 21, 24	Sun, Seasons and the Sky
June 28, July 1	Forecasting: Then & Now
July 5, 8	Tornadoes
July 12, 15	Water: Oceans to Air
July 19, 22	Air in Motion
July 26, 29	Thunderstorms: The Weather Machine
August 2, 5	Look Up! Sky Awareness
August 9, 12	Climate: A World of Weather
August 16, 19	Hurricanes
August 23, 26	Extremes in Water Cycle

Laura Buss, Education Department, The Weather Channel

Updated National Audiovisual Center (NAC) and the NWS Publications Lists

The following two pages are updated lists of NWS audiovisuals and publications. The NAC offers many of the NWS slide sets and videotapes to the public for a cost. Please note NAC's phone numbers and costs have changed. In addition, details on how to obtain materials from OM Customer Service are noted.

Also included is a revised listing of the NWS Publications. Most of the Red Cross publications are out of stock at NLSC but the local Red Cross chapters have some available for a small fee.

You can obtain the NWS publications from the NLSC in Kansas City, MO. The maximum number of copies to order at one time is 300 for the tri-logo publications; field guides are limited to 100 copies for each order. Several of these publications can be found on OM's Home Page at **http://www.nws.noaa.gov/om/nwspub.htm**.

For information on NWS publications, contact me at 301-713-0090 x118 or **linda.kremkau@noaa.gov**.

Linda Kremkau, Managing Editor

Extra! Extra! AwareNow Offers Latest News from Hazards Community

OM now offers constant updates to *Aware* in an online format called *AwareNow*. OM adds new articles to *AwareNow* within a few days of receiving them, usually the same day. The new publication allows quick access to news from OM, WCMs and others in the hazards community.

To ensure quick loading and easy access, *AwareNow* is online in html format. All Web links are live, enabling immediate access to more information.

To get an article online, send it to **melody.magnus@noaa.gov**. To access *AwareNow*, go to **http://www.nws.noaa.gov/om/awarenow.htm**.

Melody Magnus, AwareNow Editor

WSOM Chapter Updates and Roster

Attachment A is the WSOM Chapter updates. Attachment B is the *Aware* Roster: a list of WCMs and SOOs in each NWS Region. Telephone numbers are *listed* numbers for an office, *NOT* the direct number. If a name or telephone number has changed, please notify me at 301/713-0217. If you know someone who would like to receive the *Aware*, please have him or her contact Linda Kremkau at 301/713-0090 x118, e:mail **linda.kremkau@noaa.gov**.

Melody Magnus, Editor

National Weather Service
Slide Sets and Videotapes

The NWS slide sets and videotapes can be purchased from the National Audiovisual Center (NAC) at the address below.

National Technical Information Service
National Audiovisual Center (NAC)
5285 Port Royal Road, Rm. 1008
Springfield, VA 22161

Sales Desk -1-800-553-NTIS (6847) or 703-605-6000
Customer Inquiry: 703-605-6050
Fax: 703-605-6900 or 1-888-584-8332
Web site: http://www.ntis.gov
Handling fee: $4 per order.

The NWS slide sets and presenter's guides available from NAC are:

NAME	STOCK NO.	COST
Winter Storms...The Deceptive Killers	AVA19250.SS00	$100
Tornadoes...Nature's Most Violent Storms	AVA19540.SS00	$95
Thunderstorms and Lightning...The Underrated Killers	AVA19778.SS00	$105
Hurricane Hugo	AVA18529.SS00	$130
Hurricane Andrew	AVA19393.SS00	$95
Advanced Met. Spotter Training Slides	AVA17568.SS00	$155
Concepts of Severe Storm Spotting	AVA19930.SS00	$110
Flash Floods and Floods...The Awesome Power	AVA19997.SS00	$120

The NWS videotapes available from NAC are:

"Terrible Tuesday," 1/2" VHS/23 minutes/color/1984	AVA11945.VNB1	$50
"Hurricane," 1/2" VHS/28 minutes/color/1985	AVA12440.VNB1	$50
"The Awesome Power," 1/2" VHS/17 minutes/color/1988	AVA17096.VNB1	$50

Most of these videotapes and slide sets can be borrowed for presentations or school talks from Weather Service Headquarters (address below). For availability of these audiovisual materials, please contact Linda Kremkau, Customer Service, WSH, at 301-713-0090 x118.

National Weather Service, NOAA
1325 East-West Highway, Rm. 14370
Silver Spring, Maryland 20910

Other videotapes available from Customer Service are:

"The Hidden Danger—Low Water Crossings," 1/2" VHS/8 minutes/NWS Office of Hydrology/1996
"StormWatch," 1/2" VHS/30 minutes/copyright by TESSA/1995
"Surviving the Cold," 1/2" VHS/16 minutes/American Red Cross Video Network/1989
"Minneapolis Tornado," 1/2" VHS/12 minutes/copyright by KARE-TV/1986

Those interested in using portions of the NWS videotapes should contact our NOAA Video Studio at 301-713-1479.

NWS Publications

NOAA PA	NAME
70027	Survival in a Hurricane (Wallet Card)
77014	Flash Flood (Wallet Card)
81011#	Spotter's Guide for Identifying and Reporting Severe Local Storms (Out of print)
82002	Dust Storm Driving Safety (Wallet Card)
82004	Watch Out Storms Ahead
85001	Heat Wave (Out of print)
85002	Hawaiian Hurricane Safety Measures with Central Pacific Tracking Chart
85005	Tornado Safety Tips (Como Protegerse En Caso De Tornado) (WC)
85006	Survival in a Hurricane (Como Sobrevivir En Un Huracan) (Spanish 70027) (WC)
86001	Natural Hazard Watch & Warning Poster (English/ Spanish)
91001	Hurricane! A Familiarization Booklet (Out of print)
91002	Winter Storms...The Deceptive Killers
91003*	Red Cross—Are You Ready for a Winter Storm?
91004	Red Cross—Are You Ready for a Winter Storm? (Spanish Version)
91005*	Red Cross Poster—Are You Ready for a Winter Storm? (English/Spanish)
92050	Flash Floods and Floods...The Awesome Power!
92051	SKYWARN Decal
92052+	Tornadoes...Nature's Most Violent Storms
92053+	Thunderstorms and Lightning...The Underrated Killers!
92054	FEMA's Emergency Preparedness Materials Catalog
92055	Advanced Spotter's Field Guide
92056	Mariner's Guide to Marine Weather Services
92057*	Red Cross—Are You Ready for a Tornado?
92058	Red Cross—Are You Ready for a Tornado? (Spanish)
92059*	Red Cross—Are You Ready for a Flood or Flash Flood?
92060	Red Cross—Are You Ready for a Flood or a Flash Flood? (Spanish)
92061*	Red Cross Poster—Are You Ready for a Tornado? (English/Spanish)
93051*	Red Cross Poster—Are You Ready for a Thunderstorm?
93052	Red Cross—Are You Ready for a Thunderstorm? (Spanish)
93053*	Red Cross Poster—Are You Ready for a Thunderstorm? (English/Spanish)
93056	A Pilot's Guide to Aviation Weather Services (replaces PA 71005) (Booklet)
93059	A Change in the National Weather Service
93060	Spotter ID Card (Out of print)
94050	Hurricanes...Unleashing Nature's Fury (March 1996)
94051	Aviation Modernization
94052*	Red Cross—Are You Ready for a Heat Wave?
94053*	Red Cross—Are You Ready for a Hurricane?
94054	Red Cross—Are You Ready for a Hurricane? (Spanish)
94055*	Red Cross Poster—Are You Ready for a Hurricane? (English/Spanish)
94056	Red Cross—Are You Ready for a Heat Wave? (Spanish)
94057*	Red Cross Poster—Are You Ready for a Heat Wave? (English/Spanish)
94058	Safe Boating Weather Tips (Revised July 1998)
94059	River and Flood Program (Hydrologic Services Program)
94061	NOAA Weather Radio Frequency Pamphlet
96051	National Centers for Environmental Prediction
96052	Key to New International Aerodrome Forecast (TAF) and New Aviation Routine Weather Report (METAR)(Card)
96053	NWR Decal
96054	MSC-1, Eastport, ME, to Montauk Point, NY
96057	MSC-4, Cape Hatteras, NC, to Savannah, GA
96058	MSC-5, Savannah, GA, to Apalachicola, FL
96061	MSC-8, Mexican Border to Point Conception, CA
96062	MSC-9, Point Conception, CA, to Point St. George, CA
96063	MSC-10, Point St. George, CA, to Canadian Border
96064	MSC-11/12, Great Lakes
96065	MSC-13, Hawaiian Waters
96066	MSC-14, Puerto Rico and Virgin Islands
96067	MSC-15, Alaska Waters
96068	MSC-16, Guam and the Northern Mariana Islands
96070	NOAA Weather Radio Brochure (Out of print)
96071	Atlantic Hurricane Tracking Map - 8-1/2" x 11"
96072	Atlantic Hurricane Tracking Map - 17" x 22" (Out of print)
96073	Pacific Hurricane Tracking Map - 12" x 24"
96074E	The Hidden Danger—Low Water Crossing (English)
96074S	The Hidden Danger—Low Water Crossing (Spanish)
96076	ASOS Guide for Pilots (Booklet)
97050	Basic Spotters' Field Guide
0002	NOAA Brochure

Not available from NLSC. Available on OM's Home Page (http://www.nws.noaa.gov/om/nwspub.htm) in text version only.

\+ Available in Braille. Contact your local NWS Office, Region, or Weather Service Headquarters.

* Available from your local Red Cross chapter only.

Attachment A—Update on OM's WSOM Chapters

A-40 **Service Change Process**
Draft revision completed.

B-16 **Marine Reporting Station**
To be updated in 1999.

B-19 **Fire Weather Stations**
Will be updated and consolidated with D-06 in 1999.

B-30 **Voluntary Observing Ship Program**
Due in 1999.

B-90 **Special Warning Program Observations**
To be updated in 1999.

C-11 **Zone and Local Forecasts** (main section)
To be updated in 1999.

C-11 **Zone and Local Forecasts, Appendix A**
(Zone Forecast Maps)
Update expected summer 1999.

C-40 **Severe Local Storm Watches, Warnings and Statements**
OML issued April 1998.

C-41 **Tropical Cyclone Program**
A draft will be sent to regions by mid-April. A final chapter will be available by the end of May.

C-42 **Combined Winter Storm and Non Precip Hazards**

C-44 OML under development. Due in 1999.

C-43 **Coastal Flood Program**
Due in 2000.

C-45 **Meteorological Discussions and Forecast Coordination**
An OML to C-45 defining the state liaison office policy is being drafted for field review in 1999.

C-47 **County Warning Areas, Appendix A**
Page changes to be issued in 1999.

C-49 **Warning Coordination and Hazard Awareness**
Review and update began in early June 1997. Still in OM for review. First draft will not reach field until 1999.

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

C-61 **Telephone Dissemination;**

C-62 **Newspaper Dissemination;**
Will begin updating and probably consolidating in 1999.

C-63 **NOAA Weather Wire Service (NWWS)**
Update due 2000.

C-64 **NOAA Weather Radio Program**
Chapter effective December 21, 1998.

C-66 **Dissemination of Public Warnings**
Will consolidate into chapter C-49 in 1999.

C-67 **News Wire Dissemination**
Will begin updating and probably consolidating in 1999.

C-75 **National Verification Program**
Draft completed and sent to region in mid-April. Chapter will be finalized before AWIPS implementation in June.

D-06 **Fire Weather Services**
Will be updated in 1999 and consolidated with B-19, D-06, OML: Duties of IR Mets Requiring Exposure to Hazardous Situations.

D-07 **Marine Weather Services**
To be updated in 1999.

D-20 **Aviation Area Forecasts**
OML effective November 5, 1998. Will begin updating chapter possibly combining with D-35 in 1999. Backup and new VOR chart in progress. WMO headers/AFOS PILs for new areas.

D-22 **Domestic SIGMET**
OML effective November 5, 1998. Currently working on updating chapter combining D-22 and D-38. Backup and new VOR chart in progress.

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

D-24 **Wind and Temperature Aloft Forecasts**
Currently working on updating chapter.

D-25 **Air Traffic Operations Support**
Pen and ink changes due after coordination with FMH-12.

D-30 **Transcribed Weather Broadcast Text Products**
OML effective Nov. 5, 1998.

D-31 **Aviation Terminal Forecasts**
Page changes effective Nov. 5, 1998.

D-35 **International Area Forecasts**
Should be combined with D-24; timing to be determined.

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

D-38 **International SIGMET**
Currently working on updating chapter combining D-22 and D-38.

D-51 **Marine Services for Coastal, Offshore and High Seas, Appendix B**
Changes effective Dec. 1, 1998.

D-52 **Marine Services for the Great Lakes**
OML effective Dec. 1, 1998.

D-80 **Familiarization Flights**
Chapter in review.

D-82 **Training Program for Pilot Weather Briefers**
Initial draft sent to Regions and Aviation Program at WSH for comment on Oct. 22, 1998. Due spring 1999.

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

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

F-42 ***Storm Data*** **and Related Reports**
An OML has been released to accommodate changes associated with Paradox II the new *Storm Data* software. Other minor changes also have been included.

F-60 **Tsunami Warning Service**
OML issued effective April 1998.

F-61 **Earthquake Reporting Program**
Chapter issued March 6, 1996.

J-02 **Significant Hydrometeorological Events, Post-Storm Data Acquisition, and Service Assessments**
Chapter issued Sept. 28, 1998.

J-08 **Nuclear Emergency Response**
Chapter update 1999.

Attachment B–WCM/SOO Roster

WCM	SOO	Location	Telephone

NWS Headquarters

John Ogren, National WCM Program Manager			301-713-0090
Eli Jacks, National SOO Program Manager			301-713-1970 x188

Eastern Region

Rick Watling, Regional (Focal) WCM Program Manager			**516-244-0123**
Kenneth Johnson, Regional SOO Program Manager			**516-244-0136**
Solomon Summer, HSD Chief			516-244-0111
Dick Westergard	Warren Snyder	Albany, NY	518-435-9568
Barbara Watson	Steve Zubrick	Baltimore, MD/Washington, DC	703-260-0107
Vacant	Jeff Waldstreicher	Binghamton, NY	607-770-9531
Glenn Field	James Lee	Boston, MA	508-823-1900
Stan Levine	Ed Mahoney	Buffalo, NY	716-565-0204
Vacant	Paul Sisson	Burlington, VT	802-862-2475
Hendricus Lulofs	Dan Cobb	Caribou, ME	207-498-2869
Tom Dunham	Rich Grumm	Central Pennsylvania, PA	814-234-9412
Jerry Harrison	Steven Brueske	Charleston, SC	803-744-3207
Dan Bartholf	Dan Luna	Charleston, WV	304-746-0173
Mary Jo Parker	John DiStefano	Cincinnati, OH	937-383-0031
Gary Garnet	Robert LaPlante	Cleveland, OH	216-265-2370
Steve Naglic	Michael Cammarata	Columbia, SC	803-765-5501
Vince DiCarlo	Larry Lee	Greenville-Spartanburg, SC	864-848-1332
Laura Furgione	Carin Goodall	Morehead City, NC	919-223-5122
Gary Conte	Jeff Tongue	New York City, NY	516-924-0037
Joe Miketta	Alan Cope	Philadelphia, PA	609-261-6600
Rich Kane	Josh Korotky	Pittsburgh, PA	412-262-1591
John Jensenius	Joseph Fred Ronco	Portland, ME	207-688-3216
George Lemons	Kermit Keeter	Raleigh/Durham, NC	919-515-8209
Mike Emlaw	Steve Keighton	Roanoke, VA	540-552-0084
Bill Sammler	Hugh Cobb	Wakefield, VA	757-899-4200
Tom Matheson	Reid Hawkins	Wilmington, NC	910-762-4289

Southern Region

Gary Woodall, Regional WCM Program Manager			**817-978-2812 x106**
Bernard Meisner, Regional SOO Program Manager			**817-978-2671**
Jerry Nunn, HSD Chief			817-978-2674
Keith Hayes	Deirdre Kann	Albuquerque, NM	505-243-0702
Douglas Crowley	Richard Wynne	Amarillo, TX	806-335-1121
Barry Gooden	Gary Beeley	Atlanta, GA	770-486-1333
Larry Eblen	Jim Ward	Austin/San Antonio, TX	830-629-0130
Brian Peters	Kevin Pence	Birmingham, AL	205-664-3010
Don Ocker	Shawn Bennett	Brownsville, TX	210-504-3354
Terry Huber	Andy Patrick	Corpus Christi, TX	512-289-0959
Jim Stefkovich	Mike Foster	Dallas/Fort Worth, TX	817-429-2631
John Fausett	Val MacBlain	El Paso, TX	505-589-4088
Gene Hafele	Steve Allen	Houston/Galveston, TX	281-337-5074
James Butch	Alan Gerard	Jackson, MS	601-936-2189
Fred Johnson	Pat Welsh	Jacksonville, FL	904-741-4370
Howard Waldron	Steve Parker	Knoxville/Tri-Cities, TN	423-586-9040
Wayne Presnell	Jack Settelmaier	Key West, FL	305-295-1316
Roger Erickson	Felix Navejar	Lake Charles, LA	318-477-5285
John Robinson	George Wilken	Little Rock, AR	501-834-9102
Larry Vannozzi	Loren Phillips	Lubbock, TX	806-745-4260
Dennis Decker	Dave Sharp	Melbourne, FL	407-255-0212

WCM	SOO	Location	Telephone
John White	Jerry Rigdon	Memphis, TN	901-544-0399
Jim Lushine	Jack Gross	Miami, FL	305-229-4522
George Mathews	Brian Francis	Midland/Odessa, TX	915-563-5006
Gary Beeler	Jeff Medlin	Mobile, AL	334-633-6443
Jerry Orchanian	Henry Steigerwalt	Nashville, TN	615-754-8506
Frank Revitte	Mike Koziara	New Orleans/Baton Rouge, LA	504-522-7330
Jim Purpura	Dave Andra	Oklahoma City, OK	405-366-6583
Buddy McIntyre	Greg Jackson	San Angelo, TX	915-944-9445
Rafael Mojica	Rachel Gross	San Juan, PR	787-253-4586
Bruce Burkman	Ken Falk	Shreveport, LA	318-631-3669
Bob Goree	Irv Watson	Tallahassee, FL	904-942-8999
Walt Zaleski	Charles Paxton	Tampa Bay Area, FL	813-645-2323
Steve Piltz	Steve Amburn	Tulsa, OK	918-832-4115

Central Region

Joe Sullivan, Regional WCM Program Manager			**816-426-3239 x703**
Preston Leftwich, Regional SOO Program Manager			**816-426-5672**
Ken King, HSD Chief			816-426-3220
George Marshall	Ken Harding	Aberdeen, SD	605-225-5547
Daniel Noah	Viggo Jensen	Bismarck, ND,	701-250-4224
John Griffith	David Copley	Cheyenne, WY	307-772-2468
Jim Allsopp	Ken Labas	Chicago, IL	815-834-0600
James Meyer	Ray Wolf	Davenport, IA	319-391-6729
Robert Glancy	Eric Thaler	Denver/Boulder, CO	303-361-0661
Jeffrey Johnson	Karl Jungbluth	Des Moines, IA,	515-270-4501
Darin Figurskey	Dick Wagenmaker	Detroit, MI	248-625-3309
Jeff Hutton	Steve Hunter	Dodge City, KS	316-227-7140
Carol Christenson	Gary Austin	Duluth, MN	218-729-0651
Jim Belles	Phillip Schumacher	Eastern North Dakota, ND	701-772-0720
Kevin Lynott	Llyle Barker	Goodland, KS	785-899-7119
James Pringle	Michael Meyers	Grand Junction, CO	970-243-7007
Mike Heathfield	*Vacant*	Grand Rapids, MI	616-956-5922
Jeff Last	Eugene Brusky	Green Bay, WI	920-494-5845
Steve Kisner	Rick Ewald	Hastings, NE	402-462-2127
David Tucek	John Kwiatkowski	Indianapolis, IN	317-856-0361
Jim Keeney	Michael Lewis	Jackson, KY	606-666-4856
Bill Bunting	Peter Browning	Kansas City/Pleasant Hill, MO	816-540-5147
Todd Shea	Dan Baumgardt	LaCrosse, WI	608-784-8275
Rod Palmer	Jeff Hedges	Lincoln, IL	217-732-4029
Norman Reitmeyer	Ted Funk	Louisville, KY	502-969-8842
Jack Pellett	Ed Fenelon	Marquette, MI	906-475-5782
Rusty Kapela	John Eise	Milwaukee/Sullivan, WI	414-297-3243
Todd Krause	Richard Naistat	Minneapolis, MN	612-361-6670
Gene Bowman	*Vacant*	North Platte, NE	308-532-4936
Brian Hirsch	Bruce Smith	NC Lower Michigan	517-731-3384
Jane Hollingsworth	Julie Adolphson	Northern Indiana	219-834-5178
Brian Smith	Steve Byrd	Omaha, NE	402-359-2394
Ricky Shanklin	Pat Spoden	Paducah, KY	502-744-6440
Tom Magnuson	Paul Wolyn	Pueblo, CO	719-948-9429
Susan Sanders	Brian Klimowski	Rapid City, SD	605-341-9271
Donald Noll	Derek Frey	Riverton, WY	307-857-3898
Todd Heitkamp	Ron Holmes	Sioux Falls, SD	605-330-4247
Steve Runnels	David Gaede	Springfield, MO	417-863-1456
Jim Kramper	Ron Przybylinski	St. Louis, MO	314-447-1876
Mike Akulow	George Phillips	Topeka, KS	785-232-1493
Vacant	Michael Stewart	Wichita, KS	316-942-8483

WCM	SOO	Location	Telephone

Western Region

Tom Ainsworth, Regional WCM Program Manager			**801-524-4000**
Andy Edman, Regional SOO Program Manager			**801-524-5131**
Bob Tibi, HSD Chief			801-524-5137
Stephen Kuhl	Keith Meier	Billings, MT	406-652-0851
Carl Weinbrecht	David Billingsley	Boise, ID	208-334-9860
Tim Dudley	Steve Apfel	Elko, NV	702-738-3018
John Lovegrove	Mel Nordquist	Eureka, CA	707-443-6484
Tyree Wilde	Michael Staudenmaier	Flagstaff, AZ	520-556-9161
Kimberly Bailey	Greg Gust	Glasgow, MT	406-228-2850
Rick Dittman	David Bernhardt	Great Falls, MT	406-453-2081
Ron McQueen	Kim Runk	Las Vegas, NV	702-263-9744
Tim McClung	Dave Danielson	Los Angeles, CA	805-988-6610
John Casad	Dennis Gettman	Medford, OR	541-773-1067
Peter Felsch	Tim Barker	Missoula, MT	406-329-4841
Dennis Hull	Jon Mittelstadt	Pendleton, OR	541-276-7832
David Runyun	Doug Green	Phoenix, AZ	602-379-4611
Vern Preston	Dean Hazen	Pocatello/Idaho Falls, ID	208-233-0834
Dan Keeton	Bill Schneider	Portland, OR	503-261-9247
Roger Lamoni	Mary Cairns	Reno, NV	702-673-8107
Kathy Hoxie	Scott Cunningham	Sacramento, CA	916-979-3041
Dave Toronto	Larry Dunn	Salt Lake City, UT	801-524-5113
Ed Clark	Ivory Small	San Diego, CA	619-297-2107
Charles Morrill	Dr. Warren Blier	San Francisco Bay Area, CA	408-656-1725
Dan Gudgel	Larry Greiss	San Joaquin Valley	209-584-0583
Ted Buehner	Brad Colman	Seattle/Tacoma, WA	206-526-6095
Ken Holmes	Ron Miller	Spokane, WA	509-244-0110
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Alaska Region

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David Goldstein	Carven Scott	Anchorage	907-266-5117
John Lingaas	Kraig Gilkey	Fairbanks	907-458-3712
Robert Kanan	Carl Dierking	Juneau	907-790-6803
Bruce Turner	*(no SOO position)*	Palmer (ATWC)	907-745-4212

Pacific Region

Mark Jackson, Regional WCM Program Manager			**808-532-6413**
Thomas Heffner	Paul Jendrowski	Honolulu, HI	808-973-5275
Tom Tarlton		Guam	671-472-7408
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