Aware is published by NOAA's National Weather Service to enhance communications within the Agency and with the emergency management community.

Aware

July 2010

Climate, Water, Weather

Get Alerts, Stay Alive: Public Alerts and Warnings

By Wade Witmer, Deputy Director, IPAWS Division, FEMA

At the upcoming 2010 International Association of Emergency Managers (IAEM) Annual Conference, October 30-November 4 in San Antonio, TX, Antwane Johnson, Division Director of Integrated Public Alert and Warning System (IPAWS), FEMA National Continuity Programs, will speak about the evolution and future of alerts and warnings as it relates to local and state emergency managers. During the conference, IPAWS and NWS staff, in collaboration with private sector partners, will demonstrate the activation, by IPAWS Common Alerting Protocol (CAP) message, of multiple types of Emergency Alert System (EAS) encoder/decoder devices, NOAA Weather Radio All Hazards (NWR) radios, and other commercial alerting systems. The demonstration will show CAP message origination by multiple vendor software products and transmission of the CAP messages via the IPAWS-OPEN aggregator to the alerting devices and systems. The IPAWS information booth will also be presenting information on the IPAWS Commercial Mobile Alert System (CMAS), the Geo-Targeted Alerting System (GTAS) and the upcoming, first nationwide EAS test.

The IPAWS Mission is to "Provide integrated services and capabilities to federal, state, territorial, tribal, and local authorities that enable them to alert and warn their respective communities via multiple communications methods." FEMA is building the IPAWS capability to ensure that under all conditions the U.S. President can alert and warn the American people. When the President is not using the IPAWS capabilities, IPAWS shall be available to support state, local, tribal, and territorial alert and warning authorities.

Local alert authorities can use IPAWS to send alerts to the public via IPAWS connections. IPAWS will maintain interfaces to all broadcasters, NOAA and cellular service providers as well as making alerts available to Internet applications. Local emergency managers (EM) may choose to use the IPAWS alert services and may also integrate local systems that use CAP standards with the IPAWS infrastructure. IPAWS and other CAP enable systems will give EMs a simple way to alert and warn the public about serious emergencie from a single interface. Using a single template a complete and effective alert message will go out to the public simultaneously over multiple alerting systems. IPAWS will save time when time matters, while maximizing the reach and impact of alerts before, during and after an emergency. In the past year, IPAWS has improved the integration of public alert and warning systems by:

- Completing IPAWS Technical Specification to Common Alerting Protocol v1.2
- Finishing the CMAS Interface Specification
- Conducting a successful live code exercise of national EAS, i.e., using the EAN event code in Alaska

Inside Aware

Additionally, IPAWS continues to expand the national Primary Entry Point system and sites and is transitioning the DM-OPEN system to IPAWS-OPEN to fulfill IPAWS Aggregator and Gateway functions. In the future, IPAWS will continue to create and maintain an integrated interoperable environment for alerts and warnings, make alerts and warnings more effective, and strengthen the resilience of IPAWS infrastructure through:

- Inventorying and evaluating state and local Emergency Operation Center alert and warning capabilities
- Conducting conformance testing of vendor products to ensure they meet the IPAWS CAP Profile
- Formally adopting CAP, publishing the final CAP-to-EAS Implementation Guide and publishing the draft online (See CAP Work Pace Quickening, Page 5)
- Making the IPAWS CMAS Gateway available for carrier testing
- Conducting the first ever nationwide exercise of the national EAS ☼

Climate Update

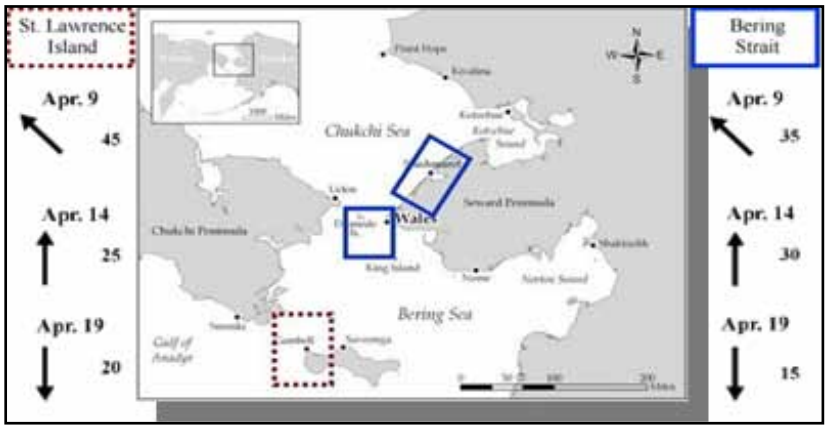
Sea Ice Forecasts Reflects Changing Needs of Users

By Judy Koepsell, NWS Climate Services Division; Gary Hufford, NWS Alaska Region Climate Services Program Manager

In an effort to support the needs of specific groups of users, the Arctic Research Consortium of the United States is providing a new product for the Alaska Native population. Alaska Natives—Indians, Aleuts or Eskimos—who reside in Alaska and dwell on the coast of the North Pacific Ocean or the Arctic Ocean, have a legal right to harvest walrus for subsistence purposes. The condition of the sea ice is critical not only to a successful walrus hunt but also to the safety of the hunters. Alaska Native hunters are now finding it difficult to "read" the ice using their ancestral knowledge because climate conditions are changing.

To help make subsistence walrus hunts as safe as possible, envoys from four Alaskan villages met with NOAA and University of Alaska representatives to request a scientific "reading" of the ice conditions in the form of a new forecast product.

The new Sea Ice Walrus Outlook (SIWO) is a collaboration between the science side (weather and ice forecasters, climate scientists and sea ice researchers at NOAA and the University of Alaska), and native knowledge from Alaska Native sea ice experts and the Eskimo Walrus Commission.



Sample SIWO product

Updates to SIWO were released every Friday through June 25. The updates included information on sea ice conditions relevant to the walrus population in the Northern Bering Sea and southern Chukchi Sea regions of Alaska.

Those involved in this year's SIWO project will meet the first week in August, in Anchorage, AK, to discuss the results of this pilot project and review lessons learned. ☼

Aware

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Establishing an Ecological Forecasting System: Predicting Sea Nettles in the Chesapeake Bay

By Christopher Brown, NESDIS; David Green, NWS OCWWS, and Anthony Siebers, NWS Wakefield, VA

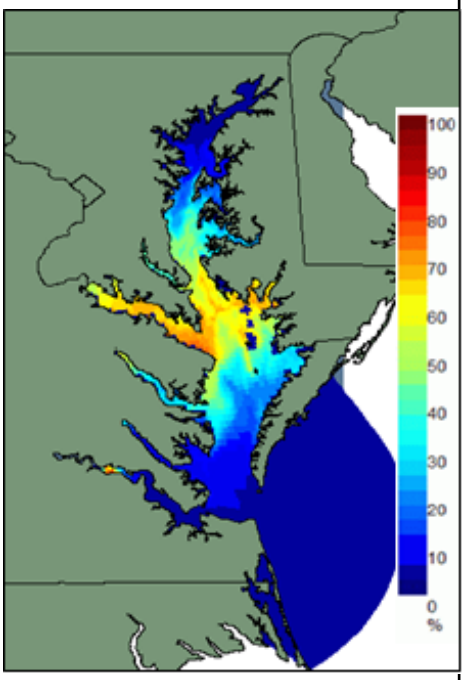
Ecological forecasting—predicting the impacts of physical, chemical, biological and human-induced change on ecosystems and their components—is an emerging requirement for NOAA's mission to protect lives and property, enhance economic security and meet its Great Lakes, estuarine, coastal and ocean stewardship mandates.

To expand this effort, NWS Wakefield, VA, initiated a pathfinder project supporting the National Ocean Service (NOS) to demonstrate an operational ecological forecasting capability for sea nettles in the Chesapeake Bay.

High concentrations of sea nettles, a species of stinging jellyfish, inhabit the Chesapeake Bay from late spring to early autumn. Their unprovoked stings are painful. Knowing where and when to expect these jellyfish helps people avoid them. Over the past 6 years, demonstration forecasts of sea nettle encounter probability (see graphic), generated and disseminated by the NOAA Chesapeake Bay Office, have been used heavily by the Chesapeake Bay recreational community and groups such as the Calvert Cliffs Nuclear Plant. The prototype system has been successful and the Weather Forecast Office in Wakefield, VA, provides a link to the test system.

The ecological prediction system is currently being transitioned to operations. It will use the Chesapeake Bay Operational Forecasting System, a 3-D hydrodynamic model developed by NOS and run at the NWS National Centers for Environmental Prediction. The forecasts from this operational system will be disseminated and delivered through existing methods and portals.

The regional prediction system can be easily modified to predict other important ecological variables in the Bay, specifically the likelihood of waterborne pathogens and the concentration of dissolved oxygen. ☼



Example nowcast prediction of the likelihood of encountering sea nettles, on 17 August 2007 in the Chesapeake Bay

Disaster Management

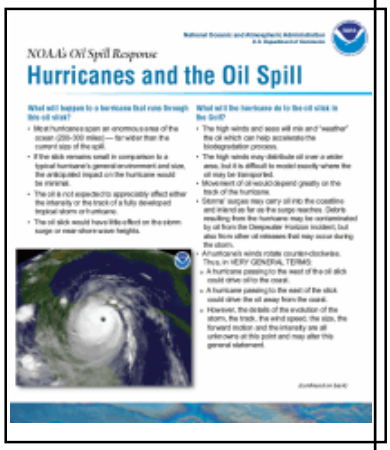
NOAA's Oil Spill Response, Hurricanes and the Oil Spill

By Melody Magnus, Aware Managing Editor

The NOAA Communications Group and NOAA's National Hurricane Center have created a convenient, concise explanation of how hurricanes will impact the Deepwater Horizon Oil Spill site. With NOAA predicting a more active than normal hurricane season, many people are concerned about how weather will impact continued efforts to repair and recover from this enormous environmental disaster.

The flyer, NOAA's Oil Spill Response, Hurricanes and the Oil Spill is a concise, attractive back and front flyer that details:

- What will happen to a hurricane that runs through this oil slick?
- What will the hurricane do to the oil slick in the Gulf?
- Will the oil slick help or hurt a storm developing in the Gulf?
- Will the hurricane pull up the oil that is below the surface of the Gulf?


NOAA's Oil Spill Response

Hurricanes and the Oil Spill

NOAA's Oil Spill Response, Hurricanes and the Oil Spill is available to download.

- Have we had experience in the past with hurricanes and oil spills?
- Will there be oil in the rain related to a hurricane?

Various NOAA agencies are assisting with the cleanup and recovery efforts in many ways: from wildlife and habitat restoration and recovery to weather support and much more. You can learn more at the **NOAA Office of Response and Restoration Website**. ☼

IMETs Provides Onsite Weather Support for Deepwater Operations

*By **Tyree Wilde**, WCM, WFO Portland, OR*

Julia Ruthford, IMET, WFO Portland, OR, briefs the Joint Operations Center staff at Houma, LA.

Support for the Deep Water Gulf cleanup stretches to Portland, OR. Julia Ruthford and Scott Weishaar, Incident Meteorologists (IMETs) from NWS Portland were sent to Houma, LA, to provide on-site meteorological support for the Incident Management Team working the Deepwater Horizon Oil Spill. Julia went for 2 weeks in May-June, and Scott was sent in late June through early July.

Julia and Scott, veterans of numerous wildfire dispatches, found the magnitude the Deepwater Oil Spill operations many times that of wildfire support. The Deepwater Incident Management Organization managed more than 7,000 people and tracked boats for oil skimming and containment, air operations, in-situ burning operations, beach cleanup and oil plume modeling and tracking, which required weather support at a variety of levels.

NWS New Orleans staff is providing daily spot forecasts, sometimes on an hourly basis, to support critical operations. Julia and Scott provided daily weather briefings at numerous meetings, shift changes and conference calls. They also were the primary conduit to ensure the Operations and Command staff received NWS weather alerts and updates during severe weather episodes and provided impromptu briefings to the Command and Operations groups.

With convection almost a daily occurrence and 11 different forward operating branches, it made for intense days. When Hurricane Alex, the first Atlantic hurricane of the season, entered the Gulf of Mexico, frequent weather updates were critical and the IMETs became one of the most sought after people in the Joint Operations Center. ☼

Dissemination News

Is the End of ALL CAPITALS Text Products Coming?

*By **Herb White**, NWS Disseminations Services Meteorologist*

Should NWS shift from providing many of its products in all capitals with limited punctuation to using mixed case and the standard punctuation used in business documents? Many users have commented that changing to mixed case for plain language text products such as forecasts, watch/warning/advisory products, hydrologic data and climatic and other environmental data would make text products easier to read. Such a change also would allow online users to click Web links directly rather than manually converting them to lower case or mixed case.

Comments Sought

NWS sent a Public Information Notice on May 28 requesting user feedback on the proposal to change NWS plain language text products to include both upper and lowercase alphabetic

characters. All users of NWS information are encouraged to provide feedback on this proposed change by using the online customer survey form. Comments and feedback will be accepted through September 15, 2010.

In a Service Change Notice, also issued May 28, NWS announced plans to use mixed case and additional punctuation and other characters in national administrative and change notice messages. The additional characters are part of the International Reference Alphabet No. 5, e.g., ASCII.

NWS is testing the switch to mixed case with these products as part of a risk reduction effort. The notices are not operational warning and forecast products and do not originate on the AWIPS system, for which non-critical software changes are frozen until after AWIPS II implementation. This change offers users of NWS text products the opportunity, in a non-operational environment, to identify and correct any anomalous behavior of their systems and their customers' systems resulting from the change.

User comments regarding the change to national administrative and change notice messages will be vital in determining future transition steps and timing of those changes. NWS plans to keep the online survey form open indefinitely to track user issues and better plan the transition.

The current proposal to change to mixed case is focused on public and plain language products for which formats, including all caps and limited allowable character set, are not fixed by national or international agreement. For example, these changes will not affect domestic and international aviation text products and NWS text messages transmitted on the Global Telecommunications System and International Satellite Communications System. Future NWS Service Change Notices will detail changes for specific products well before they occur. ☼

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REFERENCE: SERVICE CHANGE NOTIC
           LOWERCASE LETTERS IN
           STATEMENTS...SERVICE
           IMPLEMENTATION NOTIC

BEGINNING MAY 28 AND CONTINUING
NWS IS SEEKING USER FEEDBACK ON
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Sample all capitals message. Restrictions such as all capitals and limited punctuation make products harder to understand.

CAP Work Pace Quickening

By Herb White, NWS Dissemination Services

The Organization for the Advancement of Structured Information Standards (OASIS) approved the Common Alerting Protocol (CAP) v1.2 standard July 1. The standard joins the CAP v1.2 USA IPAWS Profile v1.0 specification to form a foundation for alert generators, of which NWS is the largest contributor, to develop supporting software and infrastructure for alerting technologies

The FEMA IPAWS Program Office is expected to formally adopt CAP this fall as another major milestone toward making CAP a format to significantly improve emergency alerting technologies. To help define weather alert and non-weather alert use cases in the subcommittee's work to draft the Emergency Data eXchange Language—Distribution Element (EDXL-DE v2.0) specification, NWS Dissemination Services staff took part in a 3-day meeting in late June of the OASIS Emergency Management Technical Committee's Infrastructure Framework Subcommittee. The primary purpose of EDXL-DE is to facilitate the packaging and delivery of XML and non-XML content emergency messages. EDXL-DE is important to the future use of CAP.

NWS CAP Usage Guide

The CAP Usage Guide will explain how NWS is populating various CAP elements and parameters and will provide users a source for parameter definitions. The guide is meant to be used with the referenced CAP v1.2 and IPAWS Profile v1.0 documents. NWS CAP will conform to the IPAWS profile. NWS will be asking CAP partners and the alerting community to provide feedback on the Usage Guide in the coming months.

On July 15, OASIS held a Webinar on EDXL standards including CAP. The Webinar, which was recorded and is available online, provides an overview of EDXL and how implementation can enhance interoperability and information sharing capabilities in the emergency management

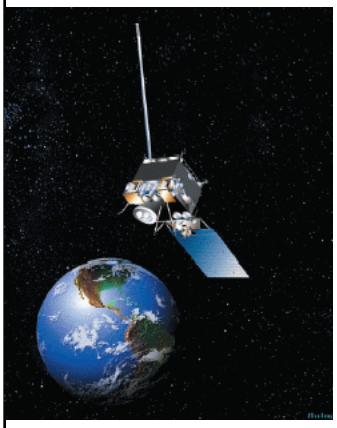
and response domains. Some good follow-up information was shared during the Q&A period with the panel of experts. ☼

EMWIN-N Transition Successful, Plans for GOES 14 Under Way

By William Johnson, NWS Telecommunications Operations Center, Office of Operational Systems

The Emergency Managers Weather Information Network-N (EMWIN-N) transitioned from Geostationary Operational Environmental Satellite 12 (GOES 12) to GOES 13 on April 26. GOES 12 (East) was moved to 60 degrees west to support the Caribbean, Central and South America. The EMWIN-I broadcast has been reactivated on GOES 12 to ease transition problems for legacy users.

The next major milestone will be the activation of GOES 14, tentatively set to replace GOES 11 (West) in December 2011. The transition could occur earlier due to satellite failure. All EMWIN users that have not done so should migrate to EMWIN-N capable systems. To keep informed of new developments in the EMWIN transition, please visit the NWS **EMWIN Website**.



GOES Satellite

Frequency Issues

The FCC issued a Public Notice on June 4 requesting comments by June 28 from non-federal users of the 1675-1710 MHz band spectrum. This spectrum currently is used by NOAA satellites. The federal government is considering auctioning it to the commercial sector for mobile broadband use. The current bandwidth is used for the Polar-orbiting Operational Environmental Satellite High Resolution Picture Transmission and Low Resolution Data Transmission, GOES VARiable (GVAR), GOES Data Collection System data, Low-Rate Information Transmission and EMWIN services.

The FCC is investigating the possible shared use of these frequencies with wireless broadband services. Shared use has the likelihood of causing service disruption and interference for the federal services currently using this band, including but not limited to EMWIN. ☼

Flooding/Hydrology

A new brochure helps you better prepare for flooding.

Local Flood Warning System Helps Community Prepare for Flooding

By Larry Wenzel, National Hydrologic Outreach Program Leader

NWS partnered with the National Hydrologic Warning Council (NHWC) to develop a new safety brochure promoting the use of Local Flood Warning Systems (LFWS). Community leaders often ask what they can do to reduce the loss of life and property. The information in this safety brochure provides decision makers with the information they need to get started.

LFWS is a low-cost alternative suitable for communities of all sizes with small or large flood problems. The LFWS provides real-time information to help make many important decisions such as:

- Positioning resources
- Relocating expensive property
- Evacuating or sheltering-in-place residents at risk
- Closing flood-prone roads before a disaster happens

A long-time partner of NWS, NHWC is a non-profit organization dedicated to helping community officials become aware of ways to improve their operations through the use of real-time flood warning systems.

You can request copies of this brochure, NOAA/PA 201053, from your local NWS office or you can download it from the NWS AHPS Toolbox. ☼

Decision Support for Flash Flood-Prone Communities

By Brian McInerney, Hydrologist, NWS Salt Lake City, UT

During the afternoon hours of Monday, September 14, 2009, a thunderstorm formed over the Paria River Drainage in southern Utah. Knowing that the Bureau of Land Management Kanab Field Office in this area did not have access to television, NOAA Weather Wire service, or a landline telephone, forecasters from NWS Salt Lake City called a park ranger's cell phone and relayed information regarding an impending flash flood.

The park ranger quickly ran to alert hikers setting out to enter the Paria Narrows and convinced them to return. The quick action saved their lives! Three hours later, the Paria River went from a quiet, narrow, steep-walled canyon with trickling water flows, to a mud-filled raging torrent, enveloping everything in its path.

NWS reaches out to help hikers with a new, 2-day Flash Flood Potential Rating product.

This example illustrates the successful partnership between NWS Salt Lake City and the National Parks, Monuments and Recreational Areas. This partnership began with two simple questions: "What can we do better?" and "What services does the park staff need to protect lives and property?" NWS staff determined most park visitors were out of contact during the day and unable to receive conventional flash flood products.

The National Parks, Monuments and Recreation Areas asked for an informational product that would provide flood risk information out to 2 days. The result was the Flash Flood Potential Rating (SLCRRASLC), which provides a qualitative rating of the potential for flash flooding over the next 2 days. Categories of Dry, Low, Moderate, High and Very High define the flash flood risk for 10 recreational areas across southern Utah.

This product is issued twice daily and is stamped on backcountry visitor permits, posted in visitors centers and relayed verbally to those venturing into the backcountry. Providing this information routinely and meeting with and addressing the needs of the resident agencies has built trust in this partnership. This trust allowed rangers to respond appropriately to the Flash Flood Warning. ☼

NWS Offices Collaborate on Monsoon Awareness Activities

By Ken Drozd, WCM, NWS Tucson, AZ

The summer North American Monsoon System affects the southwest U.S. each year, bringing beneficial rain to the region. At the same time, however, thunderstorms bring an array of weather hazards including lightning, wildfires, flash flooding, downburst winds and dust storms. In addition, extreme heat, which on a 30-year average, ranks No. 1 for the number of fatalities related to weather hazards, typically occurs during the summer monsoon season.

Through a collaborative effort between NWS Weather Forecast Offices (WFO) in Albuquerque, NM; El Paso, and Midland, TX; Flagstaff, Phoenix, and Tucson, AZ; and Las Vegas, NV, June 15 through September 30 has been defined as "The Monsoon." The WFOs worked extensively with the news media and emergency management community this spring to promote weather safety prior to the monsoon, culminating

WCM John Fausett, left, of WFO El Paso/Santa Teresa is interviewed on KVIA TV.

The **Monsoon Tracker** *Web page from WFO Tucson, AZ, help increase monsoon awareness and safety for the public.*

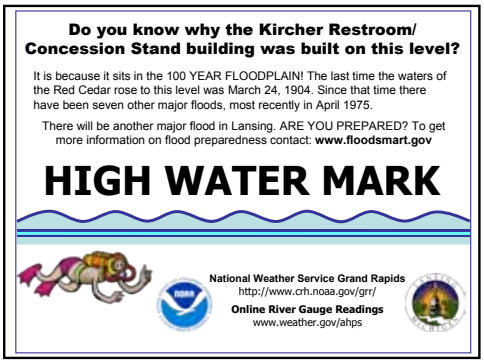
in Monsoon Awareness Week, June 7-11. The governors of Arizona and New Mexico recognized that week with formal proclamations.

A variety of methods were employed by the WFOs to convey monsoon weather safety to the media and directly to the public, including safety fairs, press conferences and media workshops. NWS staff members took part in dozens of interviews prior to and during Monsoon Awareness Week. NWS staff members made live television appearances and WFO Albuquerque took part in a 2-hour live radio call-in show. In addition, some television stations in the region worked with their local WFOs to create special monsoon programming, including Spanish segments produced from information provided by WFO El Paso.

Use of the Internet was expanded to publicize monsoon safety messages, awareness activities and meteorological topics through headlines, multimedia presentations and weather graphics. The monsoon tracker page from WFO Tucson was also heavily used. In addition, a Website was developed by partners of WFO Tucson to act as a clearinghouse for safety information across southern Arizona.

During the past 2 years, in which these WFOs have coordinated Monsoon Awareness Week activities and shared local successes, the improved communication between offices has led to the delivery of a more unified monsoon safety message to emergency management and media partners and to members of the general public. ☼

Nebraska, Michigan Join High Water Mark Program



High Water Mark signs, like this one in Lansing, MI, help remind residents and visitors that flood dangers are a real and present danger.

By Scott Mentzer, MIC, NWS Goodland, KS

NWS Goodland, KS, is using the High Water Mark Sign program to gain public interest in flood awareness and preparation. This summer, to commemorate the 75th anniversary of the 1935 Republican River flood that impacted eastern Colorado, southern Nebraska and northern Kansas, NWS is doing extensive outreach and posting new High Water Mark Signs. Record flood crests from that event have been topped in the recent past.

The first outreach event was held in Holdrege, NE. An audience of around 100 people showed up for the lecture. A High Water Mark Sign was presented at the end of the presentation. The sign was placed near the community of Alma, NE. There are 10 more such events planned through the summer.

Michigan also joined the program with two signs in Lansing commemorating the historic flood in 1904 and seven other signs for major floods on the Red Cedar and Grand Rivers. ☼

Heat Safety

New Excessive Heat Web Page

By Jannie G. Ferrell, Health Weather Program Lead, NWS Fire and Public Weather Services Branch

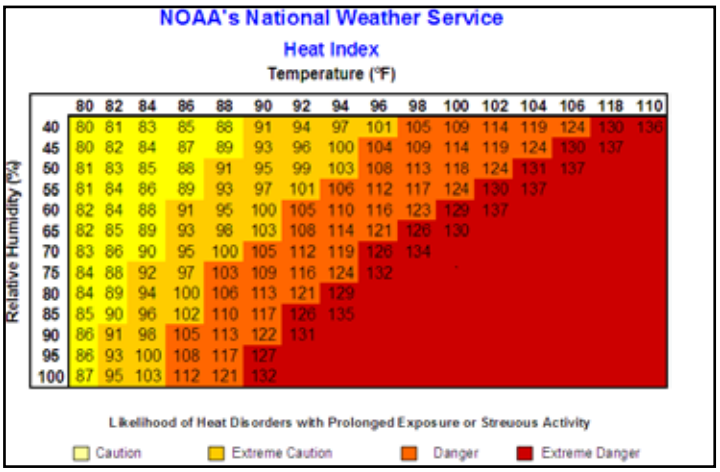
Thanks to Intern August Veron, NWS Louisville, KY, NWS now has an improved Heat Awareness Web page. Last summer, August saw the need to update our Heat Awareness page and volunteered his services. The new Heat Awareness Web page emphasizes the dangers

of excessive heat, the No. 1 weather-related killer over the last 30 years, and provides heat safety tips.

Already this summer, many lives have been lost due to the East Coast heat waves of early July.

The heat page includes a detailed section on the risk of leaving children in a parked vehicle. Children are dying from hyperthermia even in moderate temperatures. Child safety tips are provided to help stop this tragedy.

The page includes a higher resolution heat chart, new graphics, more science and many other helpful features. ☼



NWS has redone its Heat Safety page with new features, graphics and safety tips.

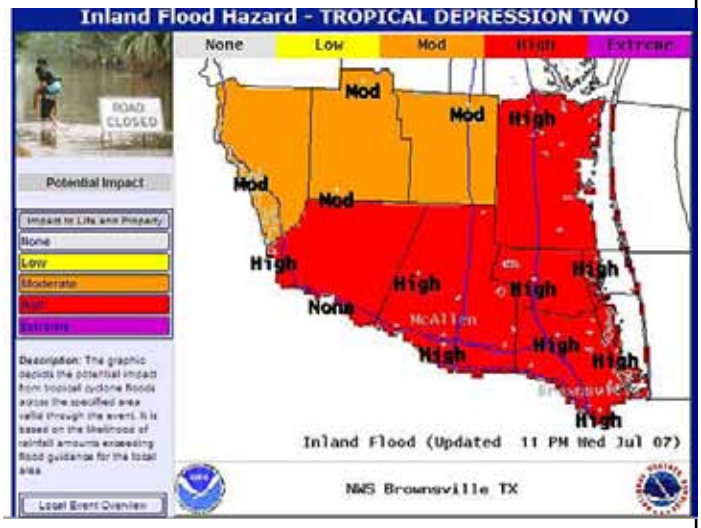
Hurricane Awareness

Feedback Wanted on Two Experimental Tropical Cyclone Products

By John F. Kuhn, NWS Marine Services Branch

NWS is looking for your feedback on two experimental products. The first is the Probabilistic Tropical Cyclone Storm Surge Exceedance product, a series of graphics indicating the 10-90 percent chances of storm surge heights exceeding displayed amounts. These graphics will be available whenever a Hurricane Watch or Warning is in effect for any portion of the Gulf or Atlantic Coasts of the contiguous United States. You can provide comments through an online NWS User Survey.

The second suite of products is the Tropical Cyclone Impact Graphics. Coastal NWS Forecast Offices along the Atlantic and Gulf Coasts and NWS San Juan will produce four hazard graphics: wind, coastal flood, inland flood and tornadoes. Local NWS offices will post these graphics on their office Websites whenever Tropical Cyclone Watches or Warnings are in effect for their area. Again, we encourage you to provide comments through the NWS User Survey. ☼



Example of Tropical Impact Graphic for inland flooding.

COMET® Community Hurricane Preparedness Online Course Updated

By Vickie Johnson, COMET® and Daniel Brown, National Hurricane Center

Originally published about 10 years ago, the free *Community Hurricane Preparedness* (CHP) online training module has been updated in time for the 2010 hurricane season. The CHP module provides training to help the emergency management community and local officials to make the best decisions possible to protect their communities during tropical cyclone events.

COMET® developed the original and revised versions in collaboration with FEMA and the National Hurricane Center (NHC). NHC meteorologists updated module content on NHC products, which have changed greatly in the past 10 years. FEMA hurricane program specialists provided current information on tools to assist emergency managers in response and evacuation decision-making during hurricane threats. At the conclusion of the course, the students should be able to:

- Identify how tropical cyclones form, their climatology, typical tracks and when the active seasons are in the Atlantic and Gulf of Mexico
- Describe the impacts from tropical cyclone hazards, including high winds, storm surge, tornadoes and heavy precipitation
- Demonstrate familiarity with the tropical cyclone forecast process and terminology
- Explain the use and limitations of products and tools provided by FEMA, NHC and NWS forecast offices for hurricane preparedness, planning, response and operations
- Analyze various sources of information and formulate a plan for dealing with a possible hurricane

The Community Hurricane Preparedness module is on the **COMET® Website**. There is no charge for the module but you must register at the **COMET/MetEd Website**. The module is also available for continuing education credits through **FEMA's Independent Study program**. R

Rip Current Updates

Reducing Rip Currents Deaths with Better Education

*By **Deborah Jones**, NWS Marine Outreach Coordinator*

This clip from one of many new Rip Current video products show the right way to Break the Grip of the Rip.

In a continuing effort to heighten awareness of the nation's leading hazard at surf beaches, rip currents, NOAA's Break The Grip Of The Rip® campaign has created new outreach tools that include:

- Beach balls with the rip current slogan and safe swimming graphic imprinted
- **Video from Ocean Today Kiosk, Smithsonian Ocean**
- **Expanded multimedia page**
- **New rip current animation and Public Service**
- **Announcement in high and low resolution including captioned versions**
- **Break The Grip Of The Rip® brochure**, flyer and related printed materials
- **Updated Rip Current Jeopardy® Game**, appropriate for a variety of ages

The greatest safety precautions that can be taken are to recognize the danger of rip currents and only swim at beaches with lifeguards. The United States Lifesaving Association has calculated the chance that a person will drown on a beach protected by USLA affiliated lifeguards is as low as 1 in 18 million. This summer, **Break The Grip Of The Rip!®** ☼

Update on Flood, Tsunami National Service Assessments

By Sal Romano, Meteorologist, NWS Performance Branch

The NWS Performance branch is working on an assessment of the record Tennessee and Kentucky flooding and has completed and published the Southeast U.S. Flooding and South Pacific Basin Tsunami assessments.

Tennessee and Kentucky Floods of April 30 – May 4, 2010

Record rainfall fell on parts of Tennessee and Kentucky, May 1-2, resulting in catastrophic flooding. On May 1, middle Tennessee, including the Nashville area, was hit by flash flooding. On May 2-3, the area experienced unprecedented flooding along the Cumberland River, which flows through metropolitan Nashville. The event resulted in 17 fatalities. Preliminary damage estimates, primarily in the Nashville area, total nearly $2 billion.

A 10-person team assessed operations, products and services at the Ohio River Forecast Center and WFOs Louisville and Nashville. Members of the Service Assessment Team met with the Mayor of Nashville, staff from Congressman Jim Cooper's office; staff from Tennessee Senators Alexander and Corker; U.S. Army Corps of Engineers; Nashville Council on Aging; U.S. Geological Survey; and Gaylord Entertainment, the owners/operators of Opryland and Opryland Hotel. The team also interviewed NWS staff, public, businesses, emergency management community and members of the media. The team is in the process of writing the first draft of the service assessment document.

Southeast U.S. Flooding of September 2009

Copious moisture drawn northward into the southeast United States produced showers and thunderstorms from Friday, September 18, through Monday, September 21, 2009. Rainfall amounts across the region totaled 5"-7", with locally higher amounts near 20". The northern two-thirds of Georgia and Alabama and southeast Tennessee were hardest hit when southeasterly low-level winds provided a favorable upslope flow. Flash flooding and areal flooding were widespread with the greatest impacts concluding on Wednesday, September 23, 2009. This assessment was posted on May 28, 2010.

Flooding in the Southeast resulted in several deaths and significant damage.

Tsunami in the South Pacific Basin

A "great" earthquake with an 8.0 magnitude occurred at 1748 UTC on September 29, 2009, about 125 miles south of the Samoan Islands in the south central Pacific Ocean. Within minutes, this earthquake spawned a tsunami that severely impacted islands of the South Pacific Ocean, including American Samoa, Western Samoa and Tonga. The total number of reported fatalities on these three islands was 139, including 110 in Western Samoa, 22 in American Samoa and 7 in Tonga. No significant impacts were noted in Hawaii or on the U. S. West Coast. This assessment was posted on June 4, 2010. ☼

Severe Weather Updates

Lightning Safety Campaign Expands Spanish Outreach, Offers New Tools

By Donna Franklin, NWS Lightning Safety Program Lead

NWS joined with key partners to host the 10th National Lightning Safety Awareness Week from June 20-26. The week began with a kickoff event at the Museum of Science and Industry in Tampa, FL, the "lightning capital" of the United States. Lightning experts were on hand to answer questions and Radio Disney provided games, activities and prizes. NWS WFOs around the country also hosted lightning safety awareness events for their communities.

Lightning Safety Week featured support from Radio Disney, which provided games, activities and prizes for a kickoff event in Tampa, FL.

The annual lightning safety campaign is helping to reduce the number of deaths caused by lightning each year. Lightning Safety Awareness Week, first launched in 2000 to educate people about the danger of lightning, has helped reduce annual lighting deaths from an average of about 72 per year to 58 per year.

This year, NWS translated the brochure, "Lightning Safety for You and Your Family" into Spanish and also created two Spanish lightning public service announcements. In addition, NWS added the Leon the Lion coloring book and activities for children to its Website. Also new this year on the Website is a toolkit targeted to large event venues such as stadiums and a toolkit for counties that includes signs for parks and schools. The toolkits provide best practices to help organizations establish effective lightning safety programs.

While there has been a decrease in deaths, many people still wait too long to seek shelter. Through July 14, lightning had already struck and killed 15 people this year. NWS continues its strong push to educate people not to go outdoors during a thunderstorm.

One of the most common mistakes people make during thunderstorms is huddling under a tree or other structure to stay dry. This can be a potentially deadly mistake. Lightning can strike from a storm that is as far away as 10 miles. If you hear thunder, you need to get inside an enclosed building with electricity or plumbing or into a hard-topped vehicle immediately.

To see all of the new resources NWS has for lightning safety, go to our National Lightning Safety Website. ☼

How Strong a Tornado Does It Take to Knock Over A Pump Jack?

By John Ferree, NWS Severe Storms Service Leader, Jim LaDue, NWS Warning Decision Training Branch, and Pat Vesper, WCM, NWS Midland, TX

While surveying damage from the May 14 tornadoes in west Texas, Pat Vesper, WCM, WFO Midland, TX, was impressed by something he had never seen before—a tornado that had toppled two oil pump jacks. The 320 type pumping unit with the concrete base weighs 71,000 pounds. Viewing the picture on the next page, what rating on the Enhanced Fujita (EF) Scale would you guess?

Pat sent several pictures and a description to Jim LaDue, NWS Warning Decision Training Branch in Norman, OK. Jim developed much of the EF-Scale training and organized a recent

summit on the EF-Scale. Jim, in turn, forwarded the information to key summit attendees. Dr. Craig Miller and Dr. Greg Kopp from the University of Western Ontario, Department of Civil and Environmental Engineering proposed an EF rating. Their solution was then reviewed by Dr. Kishor Mehta, Professor of Civil Engineering at Texas Tech University and a leading authority within the wind engineering community.

Factoring in the design and dimension of the 320 type pump jack, as well as the concrete base construction, it was determined that the wind speed necessary to overturn it would be approximately 160 mph. While a formal Damage Indicator (DI) is not presently available for oil field equipment, this wind speed estimate falls at the upper end of the EF-3 scale.

Pump jack turned over by tornado.

As a result of the expert analysis, this tornado has been assigned a rating of EF-3, making it the most powerful tornado to have impacted Ector County since at least 1880, when weather records were first archived. This tornado was the strongest tornado in the WFO Midland, TX, County Warning Area since the F-4 Bakersfield Valley tornado, on June 1, 1990.

Discussions continue among the EF-scale stakeholders on how to evolve the EF scale to include new DIs, such as pump jacks, grain silos, center-pivot irrigation sprinkler systems, farming equipment and vehicles. Also, there is a need to add additional information to existing DIs. Until a more structured process is in place, feel free to email me photos of unusual damage not currently covered in the EF-Scale documentation. ☼

New Type of Weather Spotter

*By **Eric Kurth**, Meteorologist, and **Kathy Hoxsie**, WCM, NWS Sacramento, CA*

Sheilla and Doug Emerson have recently become a new type of weather spotter, Relay Spotters. They are different from most spotters in that they are both legally blind. Their role is to use amateur radio to relay reports from spotters who are unable to communicate with WFO Sacramento, CA, in any other way. This relay is extremely useful in getting severe weather reports from spotters who are on the road, do not have cell phones or are out of range of cell towers.

NWS has found a valuable role for two blind weather buffs. They serve as Relay Spotters.

Doug, a recent transplant from Ohio, has had an interest in weather for much of his life. He even observed a tornado from his home in Broadview Heights, OH, in 1985, while he still had partial vision. Doug earned his amateur radio license in 1997 and became a trained spotter for WFO Cleveland, OH, in 1999. Doug was then able to blend these two activities as a net controller for the office SkyWarn® program.

Doug lost his vision entirely in September 2006. Shortly thereafter, he began corresponding with Sheilla, who was an amateur radio enthusiast in the San Francisco Bay area. Doug soon moved to California, where he and Sheilla were married. They are both members of the North Hills Radio Club in the Sacramento metropolitan area. Sheilla shares Doug's interest in weather, which was fostered by one of her neighbors, a ham radio operator who has a weather station set up at his home.

Shortly after becoming NWS relay spotters, Shellia and Doug forwarded an observation to WFO Sacramento for hail during a thunderstorm. The couple is enthusiastic about their roles as volunteers for NWS and look forward to serving their community further. ☼

Maryland Kicks Off First Statewide Tornado Drill with School Focus

By Chris Strong, WCM, NWS Sterling, VA

As part of a greatly enhanced Maryland Severe Storms Awareness Week, Maryland conducted its first annual statewide tornado drill on April 15, 2010. NOAA All Hazards Weather Radios across the state broadcast the drill with EAS activation.

Public schools were targeted for this drill. NWS Baltimore/Washington worked with the Maryland EMA and the Maryland State Department of Education on this effort. Walter Mitchell Elementary School in La Plata, MD, was picked as an initiating site for the drill due to the town's recent history with an F-4 tornado in April 2002. Warning Coordination Meteorologist (WCM) Chris Strong gave students a half hour interactive presentation on weather and weather safety, which was followed by the drill, transmitted over the NOAA All-Hazards Weather Radio.

Working with the Maryland EMA, NWS expanded Maryland's Severe Weather Awareness Week. Each day featured a school presentation on severe weather and safety in a different county. Each county school system that hosted was encouraged to broadcast the presentation through its schools on their day to increase weather safety awareness throughout the county. Internet announcements, flyers and media advisories were issued to further broaden the reach of the awareness week campaign. That week, the state of Maryland held its annual Severe Storms Conference for emergency management, which featured presentations by Bill Read from the National Hurricane Center, NWS Eastern Region Director Chris Strager, NWS Baltimore/Washington Meteorologist in Charge James Lee and WCMs serving Maryland. ☼

StormReady/TsunamiReady

State Government Gives Incentive for StormReady Recognition

By Tom Johnstone WCM, NWS Nashville, TN

For over 20 years, Tennessee's Department of Economic and Community Development has encouraged economic development and community growth through the Three-Star Excellence in Community Development Program. Three-Star helps Tennessee communities grow by developing strategic goals, focusing on strengths, and identifying needs to become better positioned for economic growth.

Three-Star is an economic incentive-based community certification program. Three-Star certified communities must be recertified every year and face ever escalating criteria. As communities meet these increasingly demanding criteria, however, they become eligible for escalating amounts of funding in the form of grants. This program has five community development categories:

- Planning and Infrastructure
- Community Development
- Leadership
- Economic
- Education and Workforce

Within each category there are required benchmarks that a Three-Star community must meet along with strategic goals communities can meet and score extra credit.

After the devastating February 5, 2008, tornado outbreak in which 31 Tennessee residents were killed, a push began to get emergency preparedness included as a benchmark for the Community Development category of the Three-Star program. Criteria such as volunteerism,

housing, public libraries and beautification were already areas of focus for the Community Development category, but after the tornadoes the Governor and Tennessee EMA began working to get emergency preparedness added as a benchmark.

Beginning in 2009 a Community Emergency Preparedness focus was added to the Community Development category. Required actions include having a certified and full-time Emergency Manager, active Local Emergency Planning Committee, Community Emergency Response Teams training and an annual disaster exercise. The two strategic actions for this category are Emergency Management Administration (EMA) accreditation and StormReady recognition.

Since the inclusion of StormReady as a strategic goal in 2009, NWS has recognized 20 new communities in Tennessee. "We've been working with the NWS for a couple years toward getting our StormReady recognition, but once the Mayor found out about StormReady becoming a Three-Star Strategic Action, the process moved very quickly," said Cumberland County EMA Director Keith Garrison, "Three-Star definitely helped us on our way toward our 2010 StormReady recognition."

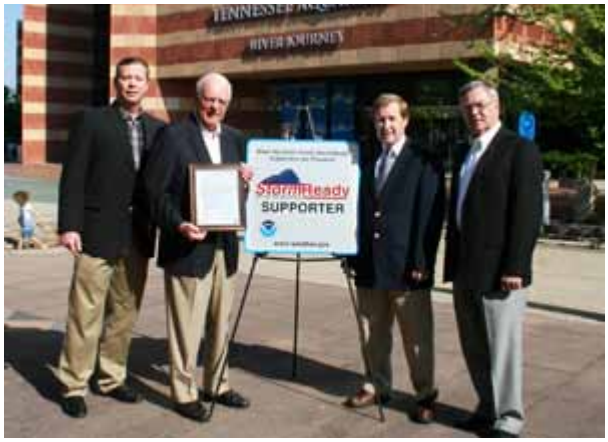
Tennessee's Three-Star program understands that a prepared community is a strong community. Building strong communities is what the program is all about. StormReady recognition is now a great way a community can help fulfill the Community Development requirement of Three-Star. For more information on Tennessee's Three-Star Excellence in Community Development program please visit the **program overview**. ☼

Aquarium Uses NOAA Grant to Become StormReady Supporter

By Tim Troutman, WCM, NWS Morristown, TN

The Tennessee Aquarium recently joined the StormReady Supporter program, thanks in part to a NOAA Office of Education grant project conducted in conjunction with NWS Morristown, TN. The WFO will begin climate, weather and other NOAA related outreach events soon at the Aquarium and plans to have Video teleconferencing installed at NWS Morristown the latter part of the summer/early fall to increase outreach and provide more training to the teachers and students at future scheduled events at the Tennessee Aquarium.

"The StormReady Supporter program encourages businesses and organizations to take a proactive approach to improving local hazardous weather operations, severe weather safety and awareness," said MIC George Mathews of WFO Morristown, TN. Organizations typically opt to become supporters rather than full StormReady sites because they do not have 24/7 monitoring hours. ☼



The Tennessee Aquarium was recognized as a StormReady supporter with help from Education grant. From left, Rodney Fuller, Facilities Manager; Charlie Arant, President & CEO; WCM Tim Troutman; Don Allen, Director, Hamilton County Emergency Services.

Weather Statistics

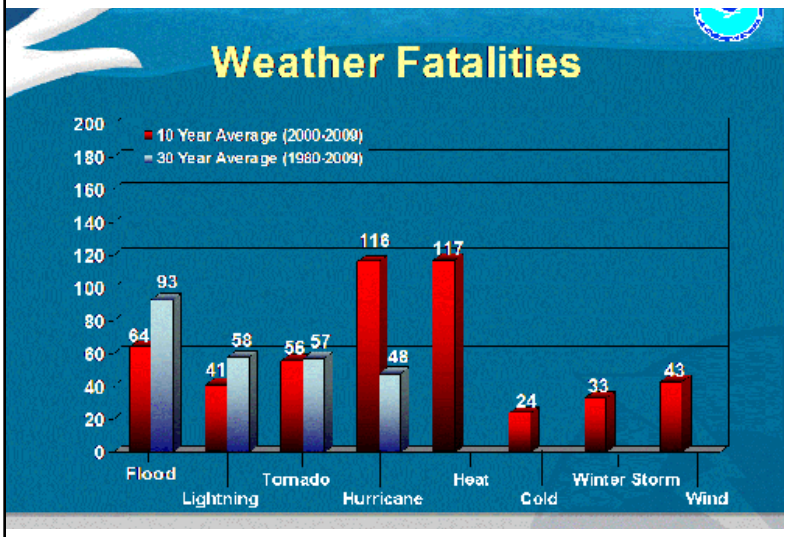
Statistics for 2009 Weather Fatalities, Injuries and Damage

By Melody Magnus, Aware Managing Editor

The **NWS hazardous weather statistics Website** was updated to include 2009 numbers. Weather-related deaths were down to 366 in 2009 from 568 fatalities in 2008. The 2009 number is well below the 10-year average (2000-2009) of 575. Rip currents were the most deadly

hazard, claiming 54 lives in 2009, but down from 67 in 2008. Flooding was the next most deadly weather category, with 53 victims. Thunderstorm and other high winds claimed 47 lives.

Of the 2009 weather-related fatalities, males again accounted for more than twice as many deaths (242) as females (119), a common pattern reflecting the higher percentage of men who hold outdoor jobs, such as construction, and who take part in sports and other outside activities. Males were more likely to be victims in all age ranges except the 80+ year old categories. August was the deadliest month in 2009, claiming 58 lives, followed by June, during which 54 weather-related deaths were recorded.



Weather-related injuries also were down in 2009. There were 1,828 reported injuries/illnesses, down significantly from 2,899 in 2008. As in 2008, tornadoes caused by far the most injuries, with 1,714 reported victims, followed by thunderstorms, with 271 injuries, and heat with 217 victims.

Which state had the most dangerous weather in 2009? Florida won that dubious honor with 35 victims of various kinds of weather from lightning to cold, floods, thunderstorms and rip currents. American Samoa followed closely with 32 deaths, most if not all from the tsunami that struck the island in late September. Illinois had 29 victims, and Texas, 27 weather related deaths.

Extreme weather caused approximately $7.5 billion in combined property and crop damages in 2009, down dramatically from $30.3 billion in 2008. Property damages were estimated at $6.8 billion, down from $27.1 billion in 2008. In contrast to 2008, when coastal storms and tropical storms/hurricanes were the most destructive weather, in 2009, hail and thunderstorm damage caused the heaviest property losses. These two categories amounted to more than $2.8 billion in damages. Crop damage was most affected by hail as well, which accounted for $349.67 million in damages to farmers, followed by extreme cold and high winds, which accounted for losses of $189.05 million and $172.18 million, respectively. ☼

Online Summer and Fall Awareness Resources Available

Summer is here and autumn is approaching. You can find severe weather, flood, rip current and hurricane tips to ensure you are ready. Check out these sites for posters, videos, animations, photos, survivor stories, children's and teachers' resources, policy statements and much more. If you know of additional resources, contact Melody Magnus. ☼

Climate, Water and Weather Links

- National Weather Service Home Page
- Aviation Weather, Information and Resources
- Weather Safety and Awareness Brochures, Booklets, Posters
- Education and Outreach Videos, Multimedia and More
- NWS Local Office Key Contact List
- NOAA Weather Radio All-Hazards
- HazCollect Information
- Past Weather and Climate from the National Climatic Data Center
- StormReady Home Page
- TsunamiReady Home Page
- Weather Fatality and Injury Statistics