Aware

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

July 2012

Weather.gov: Another Path to a Weather-Ready Nation

By Chris Vaccaro, Acting Director, Communications and Executive Affairs

Developing a Weather-Ready Nation in today's fast-paced environment requires access to accurate information quickly and easily. Knowing that, NWS has refreshed its homepage, Weather.gov, as well as its city forecast pages. The NWS mobile site has also been enhanced to optimize display on today's smart phones.

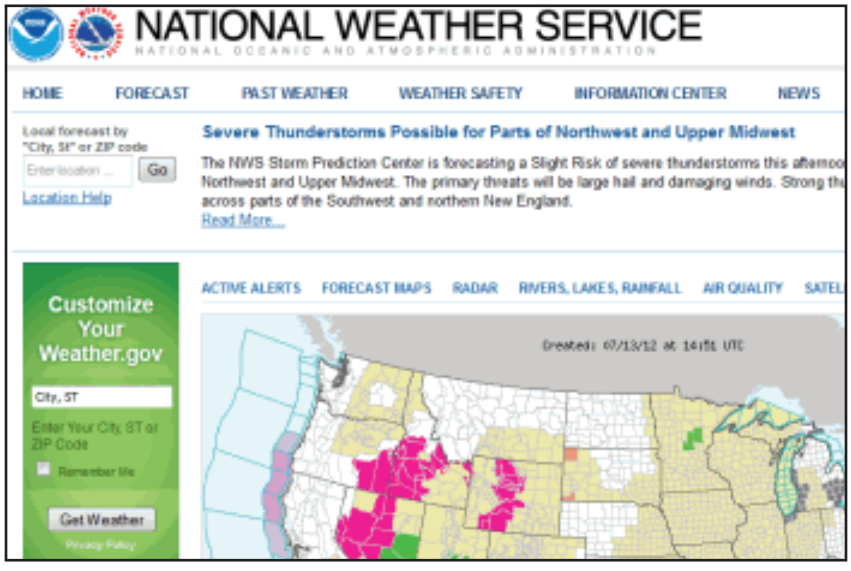
The updated Weather.gov offers you the ability to customize the site to meet your individual needs—the top feature requested we received from users. Users can now save their locations so the weather for their area is easily accessible.

NWS updated the site with input from NWS users, emergency management (EM), and other partners. We heard what people wanted and we took action.

Weather.gov receives approximately 60 million visitors per month. When severe weather strikes, that number can jump 3 to 10 times. We know how important it is to ensure EMs and the public receive weather information easily and immediately during high-impact weather events such as land falling hurricanes, crippling blizzards, and tornado outbreaks.

Overall, Weather.gov is more user friendly and content is easier to locate. But our work is not done. This new structure will also allow for greater consistency and organization across all of the agency's Websites as we continue to seek better ways to communicate vital weather information.

A diverse NWS in-house team used existing resources to make this Website update possible. Next, the team will use a multi-phased effort to roll out the new design to local NWS Weather Forecast Offices, River Forecast Centers,



The new weather.gov home page

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National Centers, and Center Weather Service Units Websites. These modifications and improvements should prove valuable to the EM community. We want to be able to get the best, most accurate and up-to-date weather information to our partners. ☼

Aviation Updates

Collaborative Approaches to High Impact Aviation Events

By Christine Riley, Forecaster, NWS Monterey, CA

Ever had a flight delayed for hours? Ever enjoyed it? One of the highest impact aviation weather challenges for NWS Monterey, CA, is forecasting low clouds over the San Francisco International Airport. During low cloud events, the Federal Aviation Administration (FAA) must implement Ground Delay Programs (GDP), reducing airport arrival rates by 50 percent and sending ripple effects through the entire U.S. airspace.

Delays hurt the local and national economy, besides annoying travelers. To prevent this, forecasters at NWS Monterey and the Center Weather Service Unit in Fremont, CA (ZOA) have been testing ways to enhance critical aviation forecasts to meet FAA requirements for these high impact events.

In 1995, a research team in the aviation community began working on a system to accurately forecast stratus clearing times over the approach. The Marine Stratus Forecast System (MSFS) became operational in 2004. MSFS helps predict stratus clearing time and increased arrival rates. The system uses four models to determine a consensus clearing time.

WFO Monterey, CA, staff during a GPSM training session given by Lara Cook of Mosaic ATM, Inc.

Unfortunately, researchers at MIT Lincoln Labs (MITLL) determined the system did not significantly improve the GDPs. So team researchers went back to the drawing board with the help of Mosaic ATM Inc. and developed a new system, the Ground Delay Parameters Selection Model (GPSM).

GSPM includes air traffic data and MSFS. GPSM is now used by the FAA and NWS to determine the best response to high impact stratus events. This new GPSM system created opportunities for the agencies to collaborate on standardized terminology. Conference calls held before the test used the expertise of NWS forecasters, FAA personnel, and academic researchers to develop effective training methods. NWS Monterey Forecasters Austin Cross and Christine Riley, as well as ZOA Forecaster Ashley Helmetag, partnered to develop this training.

In April and May 2012, NWS Monterey staff received GSPM training for the upcoming local stratus season, May 15-October 15. Forecasters from NWS Eureka, CA, and MITLL researchers attended this training session remotely.

Collaboration between all these government and private groups has helped forge a strong, positive work relationship and a better product. Continued efforts will further the goal of improving high impact aviation event forecasts to support the FAA.

In the next several months, NWS plans to expand training nationwide. NWS Monterey Forecasters Riley and Cross already presented information to NWS San Diego. The team also plans to meet with United Airlines forecasters and visit the FAA Command Center.

These external partnerships allow NWS to further the collective understanding of how this project will enhance forecasting of high impact events. In addition, a locally designed cross-training program between the NWS Monterey office and ZOA will allow job shadowing and stronger relationships between the two offices.

Aware

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ISSN 1936-8178

Tangible benefits have already been realized. Communication between key players has increased, allowing forecasters to focus on the greatest concerns of those involved. Significant training efforts have enhanced the skills and ability of forecasters to diagnose and forecast high impact aviation events. These growing relationships and improved training efforts will increase over the next several years. NWS Monterey and ZOA will continue developing collaborative approaches to support partners during critically important aviation events. ☼

Decision Support

NWS Learns from FEMA Region IX Anthrax Exercise

By Leslie M. Wanek, DSS Program Manager, NWS Western Region Headquarters

This spring, NWS staff from Western Region Headquarters (WRH) and WFO Las Vegas, NV, took part in a full-scale FEMA Region IX Hazmat exercise. The 3-day exercise dealt with the release of deadly anthrax dust. NWS provided onsite support at FEMA Region IX Headquarters.

The multi-day exercise created opportunities to coordinate many levels of weather support for the EM community. At the local level, WFO Las Vegas dispatched meteorologists **Mike Kennedy** and **Joe Nemeth** to the Las Vegas Emergency Operations Center (EOC) to provide onsite support. Staff members at the WFO tested back-up procedures, the local Continuity of Operations Plan, and numerous emergency notification procedures.

This scenario helped the WFO staff better understand the specific needs of its EOC partners during a rapidly changing situation. WFO staff explored various communication methods, such as WebEOC, to support the flow of information.

Top: FEMA Region 9 Response Center in Oakland, CA. Left: Joe Nemeth and Mike Kennedy staffing Las Vegas EOC. Photos by NWS Todd Morris.

At the regional level, meteorologist **Todd Morris** provided on-site support to the FEMA Region IX Response Center in Oakland, CA. At WRH, the Regional Operations Center (ROC) convened leadership for a FEMA Incident Command System role play. The ROC monitored the situation and provided summary reports to the National Operations Center at NWS Headquarters.

As part of the exercise, NWS created an NWSChat room to more efficiently coordinate decision support services information between EOC locations, the ROC, and WFO Las Vegas. The exercise provided an opportunity for the ROC and WFO Las Vegas to test the NOAA emergency employee check-in system and update a number of internal notification procedures.

This full-scale exercise brought WRH and the WFO together with local, county, state, and federal partners in the most diverse and realistic EOC exercise to date for this area. This exercise was an invaluable experience every WFO should take part in. ☼

Emergency Response Meteorologists Respond to Wildfires

By Chris Strong WCM, NWS Baltimore, MD/Washington, DC

When multiple wildfires developed across eastern West Virginia and the western half of Virginia in early April, WFO Baltimore/Washington sent out its newly formed Emergency Response Services (ERS) team to provide on-site decision support services. The ERS program

NWS ERS Kyle Struckmann gives a briefing on the wildfires.

ensured fire fighting agencies had on-site forecast information 2 days before the incident meteorologist was sent to handle weather support across the region.

"Our pilot project and ERS meteorologists allow us to respond quickly to user requests for weather support," said Meteorologist-in-Charge (MIC) **Jim Lee**, WFO Baltimore/Washington. "The ERS meteorologists can convey the weather expertise from the forecast office where it is needed most—with the decision makers who protect lives and save property."

ERS meteorologists **Steve Goldstein** and **Kyle Struckmann** worked with the U.S. Forest Service office in Edinburg, VA, on April 10-11, providing onsite, impact-based decision support services for the Wolf Gap and Shipwreck wildfires. The ERS meteorologists provided updated fire weather forecasts for the U.S. Forest Service, the Virginia Department of Forestry, and other local organizations.

Steve and Kyle provided onsite morning and afternoon weather briefings that included forecasts for precipitation, winds, and relative humidity, as well as needed briefings when precipitation developed over the area.

The team also provided long-term forecasts to let firefighters know how fire weather conditions would change through the upcoming weekend. The forecast office continued to provide spot forecasts and short-term forecasts for the region. Firefighters and members of the local community submitted observations to the WFO, which used the reports to verify forecasts and support enhanced short-term forecasting. This Weather-Ready Nation pilot project enabled WFO Baltimore/Washington to quickly send meteorologists to provide critical decision-support forecasts where most needed. ☼

Decision Support To Oil Boom Town in North Dakota?

From left, David Caserta and Travis Kelley, Target Logistics; Corey King, ERS, WFO Bismarck; Mike Hallesy, Williams County EM; Rich Kinney, Assistant WCM WFO Bismarck; Jim Assid, NWS Williston Liaison.

By Corey King, ERS, NWS Bismarck, ND

An oil boom in North Dakota? Increased drilling by Target Logistics at the Bakken Shale oil formation in the Williston Basin, ND, has brought an influx of workers and their families to western North Dakota. The population of Williston has nearly doubled in the past few years. This population boon has created a housing shortage, with new non-permanent housing brought in for upwards of 2,500 people.

The growing population has increased the need for Impact Decision Support Services (IDSS) in the region. To gain a better understanding of the housing situation, staff from WFO Bismarck, ND, went to Williston to meet with Travis Kelly, Target Logistics regional vice president and Mike Hallesy, Williams County EM. They discussed options for sheltering, especially during tornadoes and damaging wind events.

"The foundation of successful IDSS is having strong relationships in place before support is even needed," commented WFO Bismarck WCM John Paul Martin. The demand for weather information in western North Dakota will continue to grow as oil production attracts workers to the area. NWS represents a reliable weather, water, and climate information resource for public safety, including NOAA Weather Radio All Hazards and Wireless Emergency Alerts. Working with EMs in this rapid growth area and changes in both the community and industrial landscape is crucial to ensuring western North Dakota is part of a Weather-Ready Nation. "This visit went a long way in establishing those relationships in an area where even routine weather events can have a high impact," said Martin. ☼

Weather-Ready Nation Project Crosses Environmental Boundaries

By NWS News Staff, Communications And Executive Affairs Office, Silver Spring, MD

NWS has improved its ability to support the Tampa Bay community and its ecologically valuable environments before, during, and after severe weather and other disasters. Tampa is the largest open-water estuary in Florida, encompassing nearly 400 square miles, with a watershed that covers almost 2,200 square miles. The area supports more than 200 species of fish and the most diverse colonies of water birds in the United States.

In addition, the Port of Tampa is Florida's largest seaport and one of the largest cargo ports in the country. More than 4 billion gallons of oil, fertilizer components, and other hazardous materials pass through Tampa Bay each year. The Weather-Ready Nation project will take weather support services beyond the traditional NWS domain and address impacts that cross ecological and economic boundaries.

NWS assigned three ERS to the pilot project. The specialists will be deployed to provide critical onsite weather support during weather-sensitive events, including environmental incidents. The ERS will collaborate with local port authorities and scientists studying environmental issues to expand on impact-based decision support services. The pilot project will focus on environmental and public health issues. Initially, the team will:

- Develop a Marine Route Forecast
- Enhance current Harmful Algal Bloom forecasts
- Improve the local provision of storm surge warning information
- Develop graphical smoke plume and visibility hazard forecasts

Media and other constituents look on as NWS Southern Region Director Bill Proenza speaks at the ceremony launching the NOAA Weather-Ready Nation Pilot Project in Tampa, FL.

"These collaborations and new products will serve to mitigate future risk and impact from hurricane storm surge, environmental and ecological effects in the Gulf of Mexico, and provide safety and high-impact weather information for marine navigation through the Port," said WFO Tampa MIC **Brian LaMarre**.

The Tampa Bay forecast office serves 5 million residents in 15 counties. In addition, the office produces forecasts and warnings for Tampa Bay and the coastal waters of the Gulf of Mexico, out to 60 nautical miles. ☼

Dissemination Updates

NWS Makes Government Weather Data More Accessible

By Susan Buchanan, NWS Public Affairs Specialist

The Obama Administration recently announced its commitment to "ramp up its ongoing efforts to make large amounts of government data more easily accessible to the public," and NWS is on board. NWS has made its weather alerts available to FEMA's Integrated Public Alert and Warning System (IPAWS) public alert warning system in the Common Alerting Protocol (CAP) version 1.2 to provide cellphone-based warnings through Wireless Emergency Alerts (WEA). We plan to make them available experimentally to the general public by the end of this summer.

Alerts currently are available in CAP version 1.1. This change paves the way for even greater growth with less up-front investment by the private weather sector.

A successful private weather enterprise has already developed around the availability of government weather data, spurring innovation and job creation; however, the raw data and official government forecasts supporting this industry have been trapped in outdated teletype format. Before NWS adopted CAP, companies that wanted to repackage weather data with added value for profit (i.e., weather apps and specialty decision support tools for industries requiring weather guidance) also had to expend significant resources to develop software to reliably decode the warnings.

With CAP, each part of a weather alert is wrapped in XML tags, easy for Web developers to convert. "The benefit of CAP is that it's easy to splice, dice, parse and reuse, and it's also GIS [map creation software] friendly. CAP will open the door for developers to find new and creative ways of presenting our warnings to further save lives and property," said **Mike Gerber**, NWS CAP Project Manager.

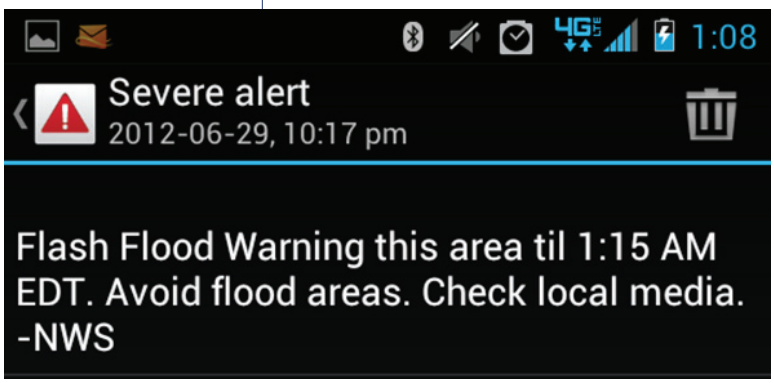
CAP is the industry standard for warning communications systems. According to the Organization for the Advancement of Structured Information Standards, CAP is "a simple but general format for exchanging all-hazard emergency alerts and public warnings over all kinds of networks… It provides an open, non-proprietary digital message format for all types of alerts and notifications." CAP is promoted by the World Meteorological Organization and International Telecommunications Union, and has been adopted by many countries throughout the world as the international standard for emergency communications.

With the upgrade to 1.2 this summer, NWS will offer more functionality, such as making it easier to track forecast updates and cancellations of watches and warnings. The upgrade also will allow the agency to provide cellphone-based warnings through the new Wireless Emergency Alert program. ☼

Wireless Emergency Alerts Arriving on Cell Phones

By Mike Gerber, NWS New and Emerging Technologies Meteorologist, NWS Awareness Branch

On June 28, 2012, the most critical NWS warnings began triggering WEA on WEA-capable cell phones. NWS produced Common Alerting Protocol (CAP) messages are pushed to the FEMA Integrated Public Alert and Warning System (IPAWS). These messages are formatted to trigger a WEA broadcast for the following types of NWS warnings.



WEA message received June 29, 2012 on a Motorola Razr for a Flash Flood Warning near Frederick, MD.

- Tornadoes
- Flash Floods
- Hurricanes and Typhoons
- Extreme Wind
- Blizzard and Ice Storm
- Dust Storms

This summer, the NWS is working to enable WEA alerts for tsunamis. During the first couple weeks of service, cell phone users have ,reported WEA messages arriving within seconds of the corresponding warning issuance from the NWS. There have also been reports of WEA messages reaching cell phones well outside of the warned area. As with any new service, there may be hiccups early on. The NWS is coordinating with FEMA IPAWS and the wireless carriers to address issues as they occur. ☼

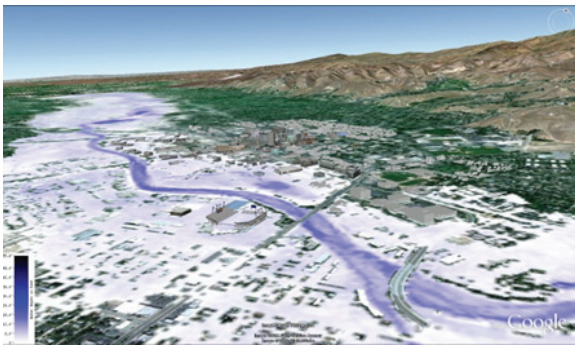
Flooding/Hydrology

New Flood Inundation Mapping Technology Reduces Risk

By Jay Breidenbach, WCM, NWS Boise, ID

People living along the Boise River have a new NWS tool to help them understand their risk during floods. It also provides EMs, media, and the general public with a powerful decision making tool to help protect life and property during a flood.

A large section of the river is now depicted on interactive maps showing where the water will flow and what it will look like when the river crests beyond its banks. The new flood inundation maps—a joint effort by NWS and the U.S. Army Corps of Engineers (USACE)—also will help local officials reduce flood impacts by giving them more advanced planning information. This incorporation of GIS-based interactive mapping features into our inundation maps increases the utility of the NWS Advanced Hydrologic Predictive Service (AHPS) for our users."



Boise River AHPS flood inundation map

Boise is the first western U.S. city to get the maps, which are available for 68 other locations. The maps were produced in partnership between the USACE; Ada, ID, City-County Emergency Management; and Boise and Garden City, ID. Boise WCM Jay Breidenbach worked for more than a year with these agencies to ensure NWS met decision support needs. Jay notes this is the first entirely flow-based AHPS site in the country. Many agencies responsible for managing dams communicate in terms of flow. Understanding agency requirements was the key to changing the way the NWS communicates and accomplishes its mission in these areas.

"Public safety is the Corps highest priority, and the Boise River is the highest flood-risk priority in the Walla Walla District," said Lt. Col. David Caldwell, USACE Walla Walla District Commander. "We've appreciated the opportunity to partner with the National Weather Service to provide technical information that will help the community and its leaders better understand and prepare for flood risk. These maps already assisted all of us in the recent flood response, and they'll continue to serve us well." NWS Western Region Director Vickie Nadolski said, "The Boise River flood inundation map project demonstrates the National Weather Service's commitment to identify specific flood impacts and help communities become more weather ready. Now when National Weather Service issues forecasts for the river at different flows, people will be able to open the map and see what it means to them." ☼

Forecast Improvement

Significant Improvement for Weather and Climate Forecast Accuracy

By Susan Buchanan, NWS Public Affairs Specialist

The National Centers for Environmental Prediction (NCEP) recently upgraded its operational Global Forecast System (GFS), to run 4 times per day with forecasts up to 16 days in advance. The GFS is the backbone of the NWS global weather and climate forecasting capability.

On May 22, the upgrade provided a new method for assimilating the billions of pieces of atmospheric data collected daily from Earth observations and satellites. These data are used to describe the current state of the atmosphere, the important first step to running any

weather forecast model.

Even with billions of observations, gaps in depiction of the current atmosphere can lead to forecast errors. The new data assimilation technique uses ensembles, or collections of forecasts, to better fill those gaps.

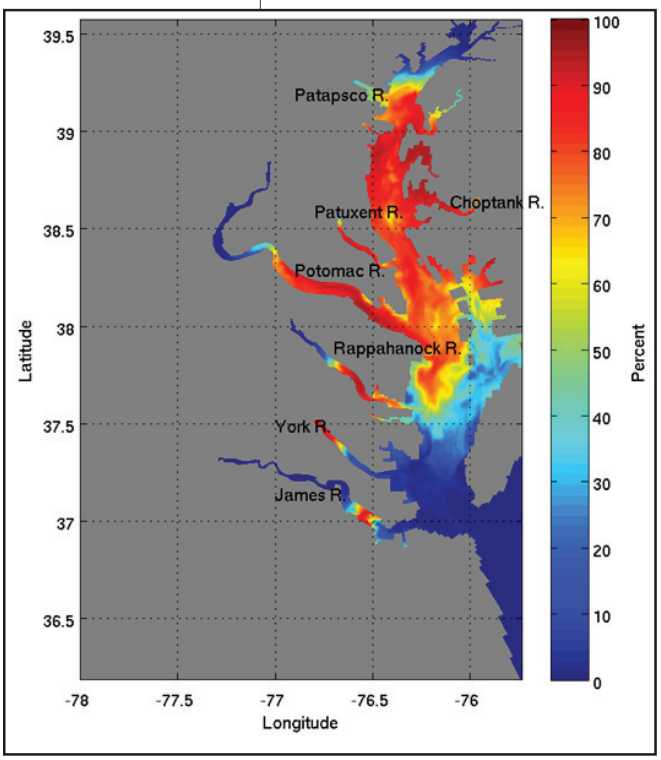
During extensive testing, the new system produced more accurate forecasts out to 16 days. It also improved hurricane track forecast accuracy, general global weather predictions, and forecasts of stratospheric ozone, which affects the amount of skin-damaging radiation hitting the Earth's surface and also affects climate.

"This data assimilation upgrade represents one of the biggest improvements in U.S. weather and climate forecasting in a decade," said NCEP Director Louis Uccellini, Ph.D.

The new hybrid system is the result of an intensive, 3-year collaboration between scientists at NCEP, the NOAA Earth System Research Laboratory (ESRL), NASA, and the University of Oklahoma. Further system improvements will be developed over the next few years through continued collaboration between NCEP, ESRL, the University of Maryland, and the University of Oklahoma. ☼

NWS Supports Ecological Forecasting System

By Anthony Siebers, Chief, NWS Ocean Forecast Branch, OPC



Probability (%) of encountering Sea Nettles in the Chesapeake Bay based on the Chesapeake Bay Operational Forecast System valid July 20, 2012, at 00 UTC. Image can be animated through a 48 hour forecast.

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. The NWS Ocean Prediction Center (OPC), part of NCEP, worked with the National Environmental Satellite, Data and Information Service, National Marine Fisheries Service and National Ocean Service (NOS) to demonstrate the operational production capability for the sea nettle forecast guidance.

This forecast was part of a pathfinder project with NOS. The project's goal was to demonstrate an operational ecological forecast for sea nettles in the Chesapeake Bay. High concentrations of adult sea nettles, a species of stinging jellyfish, appear in the Chesapeake Bay from late spring to early autumn. Their sting is painful. Knowing where and when to expect these jellyfish helps people avoid them. Over the past 8 years, demonstration forecasts of sea nettle encounter probability, generated and disseminated by the NOAA Chesapeake Bay Office, have been used heavily by the Chesapeake Bay recreational community and utilities, such as the Calvert Cliffs Nuclear Plant.

After a successful test, the sea nettles forecast guidance was shifted into OPC's production suite in April 2012, making the guidance more broadly available and ensuring 24-hour support. The guidance uses output from the Chesapeake Bay Operational Forecasting System, a 3-D hydrodynamic model developed by NOS and run at NCEP. The regional prediction system can be extended to predict other important ecological variables in the Bay, such as the likelihood of waterborne pathogens, the concentration of dissolved oxygen and the extent of hypoxia, and the presence and extent of harmful algal blooms.

Project participants include Christopher Juckins, Robert Daniels and Ming Ji, NWS OPC; Christopher Brown, NESDIS; David Green, NWS; Frank Aikman NOS; and C.J. Pellerin, NMFS NCBO. ☼

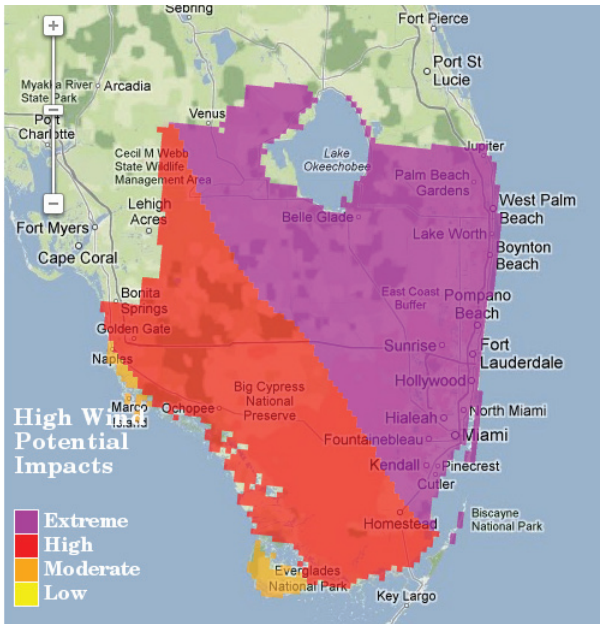
Hurricanes/Tropical Storms

Feedback Wanted on Tropical Cyclone Potential Impact Graphics

By John Kuhn, Meteorologist, NWS Marine and Coastal Services Branch

To help us improve our products, please provide your feedback on WFO Experimental Tropical Cyclone Impact Graphics. This Website is an internet-based decision-support service consisting of at least four graphics:

- **High Wind Impacts**
- **Coastal Flooding Impacts**
- **Inland Flooding Impacts**
- **Tornado Impacts**



Example of High Wind Potential impacts

During the 2012 Atlantic Hurricane Season, 23 Atlantic and Gulf Coast WFOs, as well as San Juan, will generate the graphics, whenever tropical cyclone watches or warnings are in effect for their area.

Each tropical cyclone hazard graphic is based on the most recent threat assessment for a particular geographic area. The graphic shows the potential impact of the event using descriptions unique to that area. The assessment considers the forecast magnitude of the hazard and the uncertainty of the forecast.

The graphics combine the expertise of the local WFO with meteorologists from the National Hurricane Center, the Storm Prediction Center, and the Hydrometeorological Prediction Center. The images are designed to distill an abundance of complex information into easy-to-understand maps to aid decision making. These graphics provide an at-a-glance summary of potential impacts that have a reasonable chance to occur. The valid period is the duration of the event because the graphics do not convey specific timing.

While all participating WFOs will provide graphics for each of the aforementioned hazards, some may provide additional graphics, e.g., marine, combined hazards bar charts, etc. Please provide your comments through an NWS User Survey. ☼

Hurricane Center Better Serves Local EMs and Other Partners

By NWS News Staff, Communications And Executive Affairs Office, Silver Spring, MD

To improve impact-based decision support to its partners, the National Hurricane Center hosted the first-ever workshop for the new ERS position. The workshop is a pilot project that's part of a new NWS Weather-Ready Nation initiative, designed to provide specialized services to key partners.

Facilitators from forecast offices in Miami, Key West, and Melbourne, FL, and New Orleans, LA., joined NHC staff to provide a week-long course entitled, "Responding to Tropical Cyclone Emergencies." Topics included the overall hurricane problem, hazards, communications, and media training. A table-top exercise simulating a hurricane emergency rounded out the workshop.

ERS **Mike Sowko,** with the NWS Operations Center, described the workshop as unique and valuable. "A lot of the hazards associated with tropical systems are difficult to communicate effectively to emergency managers, and this course specifically addressed how to overcome

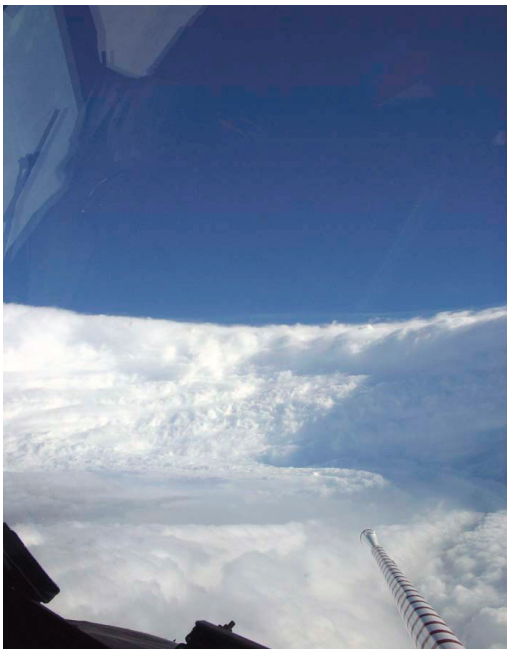
those challenges," Sowko said. "This is exactly the type of innovative training that the NWS needs to make us a Weather-Ready Nation."

NOAA Communications Public Affairs Officer **Dennis Feltgen**, who taught the media course, emphasized how important it is for ERS staff to communicate important information to the media in an understandable manner. "We can't do our job effectively without it," he said. ☼

New Model Will Help Forecasters Study Eyewall of Hurricanes

NWS News Staff, Communications And Executive Affairs Office, Silver Spring, MD

When the first hurricane emerges from the Atlantic Ocean or Gulf of Mexico this season, NWS will use a new research statistical model to help predict the start of the eyewall replacement cycle, a key indicator a storm's strength and size is about to change dramatically. This new research tool is part of a suite of forecast products NWS uses to warn coastal communities of imminent threats.



Eyewall of Hurricane Katrina taken on Aug. 28, 2005, as seen from a NOAA P-3 hurricane hunter aircraft before the storm made landfall.

An eyewall is an organized band of clouds immediately surrounding the center, or eye, of a hurricane. The most intense winds and rainfall occur near the eyewall. Within a hurricane, eyewall replacement cycles occur when a second concentric eyewall forms around the original eye and eventually overtakes it. This phenomenon happens most often in strong, long-lived hurricanes.

"Hurricanes usually strengthen and grow gradually over time, but eyewall replacement cycles can cause very sudden changes in size and intensity," said **Jim Kossin**, a scientist with the National Climatic Data Center, which led the effort to create the model.

The model predicts the start of the developing cycle by measuring key aspects of the storm's structure and environment and relating these to the conditions observed during past cycles. Skillful forecasting of these natural cycles is crucial to protecting life and property.

As it was approaching New Orleans, Hurricane Katrina weakened but grew in size because of an eyewall replacement cycle. The huge wind field led to an enormous storm surge that devastated the Gulf Coast.

The model uses data from NOAA's Geostationary Operational Environmental Satellites to identify hurricane structure patterns related to these cycles. Microwave images from NOAA's polar orbiting satellites were used to create the model. This is an important first step towards understanding how we can use the eyewall cycle to someday improve intensity forecasts," said **James Franklin**, NHC Branch Chief. This project is part of the NOAA Joint Hurricane Testbed which is part of the Hurricane Forecast Improvement Project under the NOAA Weather-Ready Nation Strategic Plan."☼

Rip Current Safety

How to Save Lives on Texas Beaches

*By Barry Goldsmith, WCM, NWS Brownsville/*Rio Grande Valley, *TX*

Between 2008 and 2011 16 people drowned due to rip and alongshore currents at South Padre Island, TX. No other direct weather deaths have been officially reported from any other weather hazards in the Rio Grande Valley during this time.

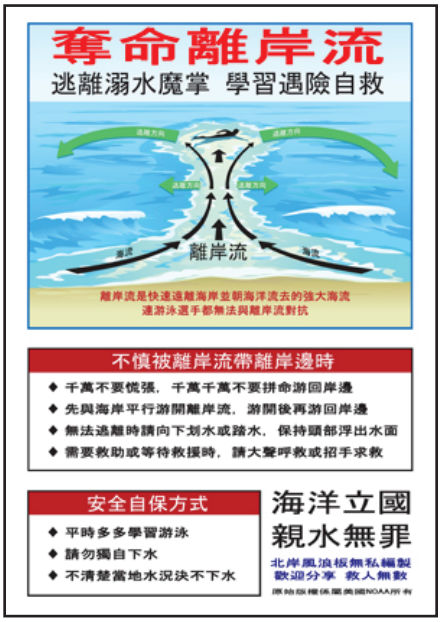
Since 2009, NWS Brownsville has made concerted efforts to expand rip current safety programs on South Padre Island. Staff distributed more than 10,000 "Break the Grip of the

Rip" and "Escapese de la Resaca" brochures in 2009 and 2010 to public and private entities. In June 2011, NWS Brownsville launched its Rip/Alongshore Current Safety Web pages in English and Spanish. Each page focuses on the unique impact of the South Padre Island surf zone, including descriptions of the rip/alongshore current, safety tips, and a primer for understanding the daily surf zone forecast.

Information in Spanish is critical for summertime visitors to South Padre Island. The vast majority of the drownings were Mexican nationals or visitors who spoke little or no English. The pages are highlighted through social media, partner emails, and Website "Top News" each year during Rip Current Awareness Week, any time rip currents pose a significant threat to life during the crowded Spring Break and summer seasons, and other periods when visitors flock to the beach. ☼

U.S. Rip Currents Signs Going Viral in Mexico, Taiwan?

By Melody Magnus, Aware Managing Editor, NWS Performance and Awareness Division



The national Rip Current Awareness Week 2012 is being "liked" on Facebook. One post alone on NWS Facebook page received 1300 "likes" and 3,000 "shares." The Ocean Today Rip Current video had been "liked" 16,000 times. In fact, just before being caught in a life threatening rip current in Mazatian, Mexico, a swimmer had just watched the video. Deb Hoeck posted "I learned how to break the grip of the rip in Mazatlan, Mexico, right before swimming in the ocean. The knowledge really helped me break a strong swirl bringing me dangerously close to a sharp, rocky section about 50 feet away from the shore. I like this segment because it shows you what it can look like before you get in".

A concerned citizen in Taiwan translated the NWS sign into Chinese for use locally in China and even U.S beaches that draw Chinese tourists. He placed the localized sign on Facebook and within 24 hours it had received 1200 "likes." "We have had several rip current victims in Taiwan year after year. So I decided to localize the NOAA Rip Current sign into Chinese and share it on Facebook to avoid another tragedy," said Jeff Wu. "A clear picture is worth a thousand words indeed."

The NOAA Rip Current graphic was "liked" so much it was included in an enhanced South African Rip Current Education campaign. With the graphic and its slogan being used in their new video and brochures. Help spread the safety word on Facebook and other social media!

Service Assessment

Assessment Done: Next Step, Improving NWS Services: Part 2

By Sal Romano, Meteorologist, NWS Performance Branch

In the spring edition of Aware, we summarized some key NWS Service Assessment findings, the recommendations made to address them, and the status of those actions. Here is the second half of that report.

A Service Assessment evaluates NWS performance and services during a hazardous event. Assessments are a learning tool designed to identify and share best practices, and address problems and service deficiencies. These reports are not intended to be a meteorological or hydrological study or a catalog of charts detailing the event's history.

The assessment provides a list of service deficiency findings and recommendations to improve NWS operations. The NWS Performance Branch then works with the team leader to write action items for each recommendation, which NWS staff, in turn, implement. The

Performance Branch also tracks and reports progress on these actions to the NWS Corporate Board. Below are just a few of actions implemented as a result of recent services assessments.

River Flooding-Related and Flash Flooding-Related Action Items

Recommendation/Action Item: The NWS should ensure modeling and modification capabilities within the Community Hydrologic Prediction System (CHPS) architecture include the ability for the user to adjust or extend the rating curve and easily examine the impacts of these changes on the forecast hydrograph. (Rating curves are also known as ground-truth, river stage-flow relationships.)

NWS is working on numerous recommendations to improve its flood related forecasts.

Status: CHPS now includes the necessary modeling and modification capabilities to adjust the rating curves. The features were tested by the North Central River Forecast Center.

Recommendation: The NWS should develop a real-time process to alert WFOs and RFCs when levees are overtopped or fail.

Action Item: OCWWS Hydrologic Services Division (HSD) will assess the feasibility of a real-time process to alert WFOs and RFCs when levees are over-topped or fail.

Status: HSD assessed the feasibility and determined a real-time process of alerting WFOs and RFCs when levees are over-topped is not possible without system interoperability and data synchronization. Under the auspices of the Integrated Water Resources, Science, and Services, the NWS anticipates establishing system interoperability and data synchronization within 5 or more years. Currently, various communication tools and techniques (e.g., NWSChat, inter-agency Fusion Team activities, coordination calls, email, and other communication mechanisms) are used to share this information in near real time.

Recommendation/Action Item: The NWS should evaluate policy regarding terminology used to describe rare events to ensure the information conveyed is statistically sound and meaningful to partners and users. This information should include an evaluation of the effectiveness of using probability of occurrence information (1% chance of occurrence) vs. expected return frequency information (100-year event).

Status: Based on input from the International Association of Emergency Managers and National Hydrologic Warning Council, NWS updated Instruction 10-922 to specify appropriate terminology for expressing flood frequency (e.g., 1% chance flood).

Recommendation: NWS should enhance hydrometeorological monitoring and situational awareness tools to help forecasters recognize the extreme nature of unusual events. NWS should provide comparisons against critical values, historical events, and climatology, sending alerts when user-selected thresholds are reached. The system would be comparable to the way the Flash Flood Monitoring and Prediction System (FFMP) compares precipitation amounts to flash flood guidance and the River Gage Alert and Alarm program compares observed river stages to locally determined stage thresholds.

Action Item a: Implement and evaluate a distributed modeling technique at demonstration sites such as WFOs Binghamton, Pittsburgh, and Baltimore/Washington.

Status: A distributed modeling technique is running at WFOs Binghamton, Pittsburgh, and Baltimore/Washington.

Action Item b: Define procedures for including precipitation frequency data in FFMP.

Status: The procedures were developed. OCWWS HSD will provide the procedures and training via Webinar to NWS field offices.

Action Item c: NWS regions should ensure all WFOs are in compliance with Annual Office Training Plan per policy (NWS Instruction 20-106) including hydrology training.

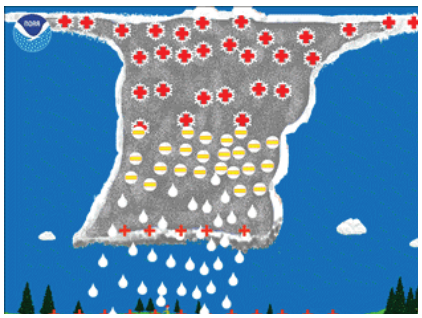
Status: Issue addressed during routine HSD teleconferences. NWS regions provided assurance of WFO compliance. ☼

Severe Weather

NWS Lightning Safety Site Features New Science Section

By Melody Magnus, Aware Managing Editor, NWS Performance and Awareness Division

The NWS Lightning Safety Website has just launched a new science section written and illustrated by NWS Lightning Safety Specialist John Jensenius. This multipage mini-school offers weather buffs, students, and the public a user-friendly way to understand the mechanics of a strike. Topics, illustrated with animations, include thunderstorm development and electrification, types of flashes, thunder and ground current. Visit the new science section of NWS lightning site to learn more. ☼



The new science section of the NWS Lightning safety website features numerous animations to illustrate the science described.

Founder of Skywarn, Merle Kachenmeister, Leaves Legacy

By Tanja Fransen, WCM, NWS Glasgow, MT

Merle Kachenmeister left a life-saving legacy.

It was April 1965, and the Palm Sunday Tornado Outbreak had just devastated a large portion of the heartland of America. According to the Storm Prediction Center database, 48 tornadoes moved across Wisconsin, Iowa, Illinois, Indiana, Michigan and Ohio, killing 260 people. Online references include from 1,500 up to 3,400 injuries that day.

Because there were 17 tornadoes rated as an F4 that day and so many fatalities, NWS formed a Service Assessment Team. The team published the findings three weeks later in a 64-page report. Many significant findings of the assessment dramatically changed the way NWS operates its warning program.

The assessment recommended the expanded use of civil defense sirens for tornadoes, an increase in the number of weather radars in the Midwest, the use of FM radio to broadcast warnings (later NOAA All-Hazards Weather Radio), and the formal implementation of the terminology Tornado Watch and Tornado Warning, along with the policy for their use.

One final recommendation was to "increase the number of trained weather spotters to report severe weather to the local office." This action item led to the creation of the Skywarn Weather Spotter Program. The program recently got a surge of publicity when the granddaughter of Merle Kachenmeister posted on the Skywarn Spotter Facebook page that her grandfather, the creator of Skywarn, had passed away on May 29, 2012.

In 1965, Merle was employed at NWS Toledo, OH. He was an avid amateur radio operator and a Navy veteran. When he saw the recommendation to increase the number of trained spotters, he organized the Tri-state Weather Network, based on a similar program in the South called Skywatch. After the first successful year, NWS implemented the program nationwide as Skywarn.

The Palm Sunday tornado outbreak in April 1965 devastated parts of the Midwest.

When Merle retired from the NWS Toledo office after 20 years, an article the *Toledo Blade*, stated, "He has received many commendations during his 32 years as a weather forecaster, but he says that none mean more than a Bronze Medal Award given him in December 1974 by the U.S. Department of Commerce for organizing and operating the severe weather network." Retired NWS personnel recall there being reports called in prior to 1965, but the formal organization of the network, and the name Skywarn, is credited to Merle. ☼