Aware

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

April 2012

Weather-Ready Nation: More than a Slogan

By Dr. Jack Hayes, NWS Director

Dr. Jack Hayes, NWS Director

We have a long road ahead of us until we are truly a Weather-Ready Nation. We must continue to do all we can to get the word out to our citizens.

"Weather-Ready Nation" slides easily off the tongue just like a nice slogan should, notes William Hooke, Senior Policy Fellow and Policy Director of the American Meteorology Society in a recent blog post. He goes on to write that building a Weather-Ready Nation must go beyond the slogan. I couldn't agree more.

We know that we are talking about the difference between life and death when it comes to severe weather.

In fact, building a Weather-Ready Nation requires the action of every person and every community. When faced with devastating tornadoes, like we saw again in February, March and April this year, our challenge looms large. But I believe in the potential of each and every person across the country—and especially our emergency management partners—to ***be a force of nature*** when it comes to weather-readiness. This is critical to our ability to save lives and livelihoods.

This belief is fueled by stories like that of Stephanie Decker, an Indiana mom whose children are alive today because her husband sent a simple text about an imminent tornado and she wasted no time getting the children to the basement.

She said she acted on a mother's instinct to protect her children. In interviews, she calls herself "just a mom," but I see her as a force of nature whose dramatic story has the power to save lives in the future.

Her comments reminded me of how we feel about our work and our partnership. We live and breathe the force of nature concept every day. From fair weather forecasts to the tireless support provided during emergency situations, we can never bow to the weather, no matter how severe. That's something we have in common with Stephanie.

When we combine those two things—an empowered public and the continued operational improvements and partnerships under our Weather-Ready Nation initiative—we can transform the way the country responds to severe weather. And that's more than a slogan, that's the realization of a vision: to build a Weather-Ready Nation. ☼

Inside

Decision Support

NWS Helps Keep Flights on Schedule

Shown is the N.Y. metropolitan area with locations of some of the major airports supported by the NY TRACON.

By Brandon Smith, Meteorologist, NWS Eastern Region

The majority of weather-related flight delays across the United States are due to conditions in the New York (NY) metropolitan area. This area is among the busiest and most challenging for aviation weather support. Overseeing this complex flight arena is the NY Terminal Radar Approach Control (NY TRACON: N90), the Federal Aviation Administration (FAA) facility that covers flight operations for John F. Kennedy, Laguardia, and Newark/Liberty Airports as well as Teterboro, NJ, and White Plains, NY.

To address these challenges, NWS New York, NY, and the Center Weather Service Unit (CWSU) in Ronkonkoma, NY, teamed up to provide the first onsite weather support to a TRACON. NWS meteorologists worked on the operations floor of NY TRACON for 4 weeks, encompassing Thanksgiving and Christmas in 2011, the busiest time of the year for NY airports and also a time for some extremely challenging weather conditions.

Onsite decision support services are not a new idea. CWSU meteorologists have been directly supporting Air Route Traffic Control Centers since 1974, but this support is the first provided at a TRACON. The WFO, CWSU and Eastern Region Aviation Program Manager met several times with NY TRACON traffic managers to facilitate the support. NWS forecasters were trained on the specific forecast issues associated with these airports. Once onsite, the FAA provided a work station with Internet access and software needed to assimilate forecast data. NWS personnel were briefed on security and issued access badges.

NWS staff covered two shifts: 6 am to 2 pm and 1 pm – 9 pm, providing consistent coverage during the busiest traffic. Forecaster duties included:

- Coordinating with the WFO Aviation Forecaster, CWSU Forecaster, and the NWS Aviation Weather Center to ensure consistency among various forecast products
- Taking part in scheduled and on-demand weather briefs
- Interpreting alternate scenarios allowing air traffic managers to consider back-up plans

Wind direction and gusts, compression and ceilings were the most common issues during this demonstration. As a result of the decision support activities, N90 was more knowledgeable of weather and was able to better execute accurate air traffic management decisions having a wide range of impacts on the entire National Airspace System (NAS). For example:

- Using wind gust forecasts allowed staff to determine if additional runways would be available during peak times when potential high crosswinds were present: using two runways at LaGuardia instead of one, and three runways at JFK instead of two (Dec. 20)
- Using ceiling forecasts to determine whether certain ideal arrival flows were available, such as using the "Expressway Approach" to LaGuardia instead of the longer "localizer approach." (Dec. 22)

Air traffic delays cost the U.S. economy $7,000 per hour, making delays significant. Ralph Tamburro, Traffic Management Officer for NY TRACON commented, "Having the forecasters on site at the New York TRACON has provided us with immediate access to an individual that can answer any weather questions, which aides in our decision making. This service provides

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an overall better operation to the customers. Additionally, we have gained significant knowledge of weather forecasting and how complex it is and, conversely, the forecasters learn how the weather impacts the NAS. We look forward to their continued support during the severe weather season."

Benefits for N90 Traffic Managers

- Improved awareness of the meteorological situation and current weather conditions
- Increased awareness of forecasted changes in weather conditions
- Ability to assimilate uncertainty in forecasts for integration into decision making
- More effective integration of weather forecasts in Traffic Management
- Increased ability to manage air traffic

Complexity of N.Y. metropolitan airspace, courtesy of the FAA.

Benefits for NWS Meteorologist

- More aware of the critical weather problem of the day threshold levels, the decision making processes at N90, and the weather tools available to N90.
- Cognizant of specific daily Traffic Management weather information needs
- Greatly increased awareness of current FAA air traffic impacts and concerns
- Significantly reduced time and effort required to obtain FAA air traffic impacts

WFO NY and CWSU NY will continue to assess the feasibility of providing more sustained support throughout the challenging summer convection season.☼

New! Communicating Risks for High Impact Events Training

By Brad Grant, Team Leader, Warning Decision Training Branch, Norman, OK

The crisis communications cycle is critical to everyone who provides Impact-Based Decision Support Services (IDSS). In fact, recommendations for improvements to communications have appeared in just about every NWS Service Assessment over the past 22 years. The need for NWS and its partners to improve communications has dramatically increased, intensifying emphasis on IDSS. Providing that support hinges on our ability to understand crisis communications and provide effective risk management. The enhanced communications IDSS brings is critical to creating a Weather-Ready Nation.

The NWS Warning Decision Training Branch has developed a training course on the elements of a risk communication cycle (Figure 1). The risk communications cycle is a natural extension from the more typical, crisis communication cycle used in emergency management.

Each phase of the risk communication cycle involves specific types of communication with stakeholders. The course shows how this

Unified Area Command–Joint Information Center during the Deepwater Horizon incident. Courtesy U.S. Coast Guard.

Figure 1. Risk Communications Cycle

model is applied to crisis communications for all types of IDSS. The first part of the course, Crisis Communication Module 1, emphasizes communication with core partners serving large venues and, in many cases, incident response support. Four examples illustrate how NWS offices navigated IDSS in 2010-11. The stories come from some well-known venues where IDSS occurred:

- Beale Street Music Festival, Memphis, TN
- Busch Stadium Derecho, St. Louis, MO
- Deepwater Horizon Gulf of Mexico Oil Spill
- Enbridge Oil Spill, Kalamazoo River, MI

The second part of the course, available by the end of April, provides tools for improving risk management support to stakeholders. The tools include needs assessment, pre-and post-mortems and Focus Cards/Class Responsibility Collaboration cards. An office-wide assignment associated with Module 2 offers the chance to practice one of the techniques with a core stakeholder group. ☼

New Services, Workshop Help Mitigate Drought, Wildfires

By Jody James, WCM, NWS Lubbock, TX

"The current drought is the worst single year [2011] Texas drought since record-keeping began, and it may prove to be one of the most devastating economic events in our history," according to Texas Comptroller Susan Combs. Estimates by the Texas AgriLife Extension Service put 2011 state agricultural losses for 2011 at $5.2 billion. Fires across the state burned 3.9 million acres in 2011, destroyed more than 2,000 homes and caused 10 fatalities.

In February 2012, NWS Lubbock and Texas Department of Emergency Management officials in west Texas held a first-of-its-kind workshop for local and regional fire weather and transportation officials, and local and state EMs. The 1-day workshop was held in conjunction with the Southwest Farm and Ranch Classic.

WFO Lubbock, TX, MIC Justin Weaver addresses attendees at the Southern Plains Drought-Wildfire Decision Support Workshop.

Last year, communication between west Texas forecasters and the Texas Forest Service allowed state officials to preposition firefighters and equipment where fire outbreaks were likely.

In addition, for the first time last year, Weather Forecast Office (WFO) Lubbock, TX, forecasters alerted local officials of new fire starts based on satellite imagery, before 911 calls were received by local EMs.

The Southern Plains Drought-Wildfire Decision Support Workshop, which drew about 100 state decision makers, opened communication channels between NWS meteorologists and partners in fire and agricultural agencies. The workshop included representatives from the Texas Department of Transportation, Texas Forest Service, U.S. Geological Survey, U.S. Department of Agriculture, and Texas Agrilife, the state agricultural extension service, as well as local broadcasters.

Topics presented included a review of the record drought and wildfire season of 2011, the 2012 weather outlook, water supply issues, and a crop and agricultural outlook.

- Todd Lindley and Greg Murdoch, senior forecasters at WFOs Lubbock and Midland, discussed Southern Plains fire meteorology and the Red Flag threat index, a new tool that better quantifies potential fire severity in the region.
- Ron McQueen, senior forecaster and Fire Weather Program leader at Lubbock, gave workshop participants an in depth outlook pertaining to weather, wildfire, and fuels.
- Justyn Jackson, general forecaster from the Amarillo NWS office, presented a summary of decision support initiatives from west Texas NWS Weather Forecast Offices.

Collaborative meetings provide an opportunity to better understand and prepare for long-range challenges, such as the current drought, and to learn about their effects on wildfire potential. These coordinated actions between public and private partners and U.S. citizens will play a critical role in helping Texans to become more prepared and weather resilient—part of a Weather-Ready Nation. ☼

Easy Ways to Improve Tribal Nation Partnerships

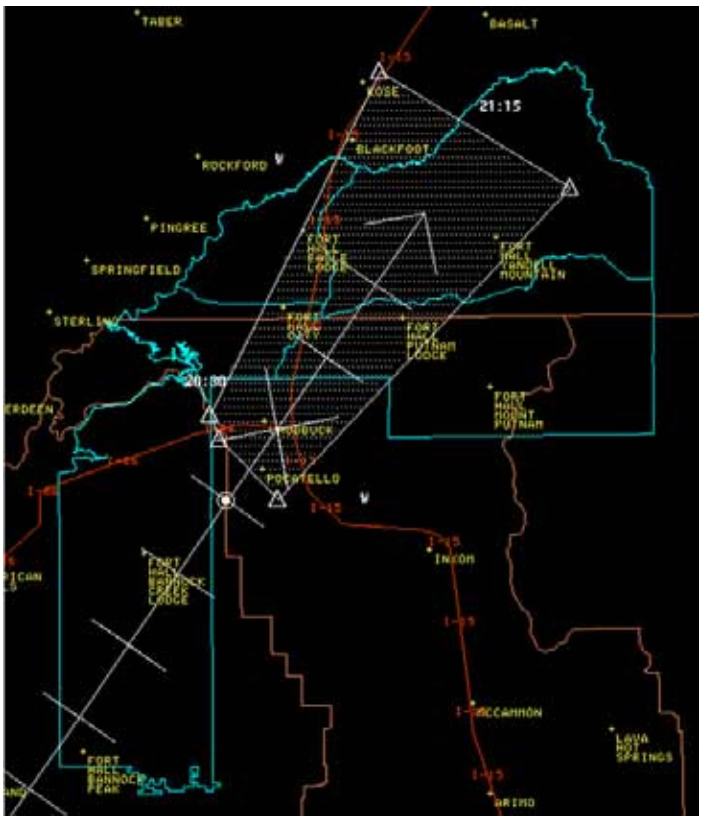
By Vern Preston, WCM, NWS Pocatello, ID

Have you ever wondered how your office might better partner with a Tribal Nation in decision support? At a recent meeting with Shoshone-Bannock Department of Public Safety emergency management officials, we explored ways to modify watches and warnings so reservation residents better understand where hazardous weather threats are and can respond to them faster.

Just as a state has counties and towns, the sovereign lands of the Shoshone-Bannock's Fort Hall Reservation has five districts and lodges, which serve as community centers. Working with Fort Hall Emergency Manager Wes Jones and Exercise Coordinator Mel Timbana, NWS identified the districts and lodge locations recognized by tribal members. Science Operations Officer Dean Hazen then obtained the corresponding map shapefiles for the five districts.

NWS incorporated the shapefiles and lodge locations into the AWIPS computer system and WARNGEN software templates. Location references were modified by Dean and Lead Forecaster Dan Valle to ensure tribal reservation nomenclature will be used in future short-fused warnings for flash floods, severe thunderstorms and tornados.

This information will be read in our warning products through NOAA Weather Radio and available for media to use as they highlight areas impacted by severe weather.



AWIPS display with county boundaries (tan), interstates (red), city/lodge locations (yellow), Fort Hall Reservation district boundaries (cyan), and WARNGEN warning polygon (white).

"Tribal members know their location within the reservation boundaries by their lodge and district," said Wes Jones, Shoshone-Bannock Tribes Department of Public Safety emergency manager. Our partnership with the National Weather Service to list these locations within the warning statements will enhance the ability of tribal members who live within the reservation to determine if their location is within the hazard area and be able to react faster during a warning situation."

This enhancement to our decision support initiative with the Shoshone-Bannock Tribes demonstrates a spirit of cooperation and informed collaboration. It strengthens our relationship we enjoy with our tribal emergency response community. ☼

Third Party Social Media Monitoring Made Easier

By Tim Brice, Meteorologist, WFO El Paso, TX

Over the last few years, the world has witnessed an explosion of information via social media platforms. What was once simply a way for kids to share the latest gossip has become a tidal wave of sometimes vital communication. Whether it's on Facebook, Twitter or one of the many other social media platforms, people like to be heard and everyone likes to talk about the weather.

Each day, there are tens of thousands of tweets and status updates about the weather, many of which include a weather photo. NWS recently began to look into ways of capturing this information to improve forecasts and verify warnings. Many NWS offices monitor Twitter and encourage people to post weather photos and updates to local NWS Facebook pages. But here is the problem: each day, there are more than 250 million Twitter tweets, over 200 million photos posted to Facebook, and more than 60,000 hours of videos posted to YouTube.

One way to stay on top of this avalanche of data, is the Virtual Operations Support Teams. VOST is a program developed in the EM community in which social media savvy volunteers monitor platforms and relay relevant information to a local NWS office when the weather gets active. If these volunteers see a status update or tweet about significant weather, they ask the poster for clarifying information. Once they have the location, time of event and other vital information, they pass it on to a local NWS office, freeing forecasters to do what they do best—monitor the weather and issue advisories and warnings.

Three NWS offices are testing the VOST concept pros and cons during the upcoming severe weather and monsoon seasons: WFOs El Paso, TX, Albuquerque, NM, and Norman, OK. The Albuquerque and Norman offices are working with locally developed VOST teams; WFO El Paso is testing the concept with a VOST team scattered across the country.

WFOs won't completely stop monitoring social media directly, but VOST could ease the burden of sorting through the mountain of posts during an office's busiest times. ☼

Dissemination Updates

CAP v1.2 and Wireless Emergency Alerts Rolling Out

By Mike Gerber, NWS New and Emerging Technologies Meteorologist

In the Fall 2011 and Winter 2012 editions of *Aware*, we detailed how Common Alerting Protocol (CAP) and the Commercial Mobile Alert System (CMAS), also known as Wireless Emergency Alerts (WEA), hold significant potential to improve response to NWS alerts.

Commercial wireless carriers are now rolling out CMAS/WEA. NWS plans to begin pushing CAP v1.2 to the FEMA Integrated Public Alert and Warning System (IPAWS) in May. This means wireless carriers will be able to pick up NWS alerts from IPAWS and distribute them to millions of cell phones over CMAS/WEA in time for summer and the upcoming tropical weather season.

The NWS will format CAP messages such that CMAS will be primarily triggered for the initial issuance of the following warning types. This list reflects the latest information at the time of this publication and is subject to change.

- Tsunami Warnings
- Tornado Warnings
- Flash Flood Warnings
- Extreme Wind Warnings
- Hurricane and Typhoon Warnings
- Blizzard Warnings
- Ice Storm Warnings
- Dust Storm Warnings

Rollout dates vary by wireless carrier and a CMAS/WEA capable phone is required to receive CMAS/WEA messages, so cellular customers should check with their wireless carrier for details. The International Association for the Wireless Telecommunications Industry just released a one-stop Website pointing to CMAS/WEA information for each of the participating wireless carriers. Please share the following link with your community.

Sample cell phone bill insert on CMAS/WEA.

http://www.ctia.org/wea/

As published in a **March 28 blog in *Alerts, Warnings & Response to Emergencies***, participating carriers have already begun to notify their customers of the new service. Some cellular customers received announcements, such as the one shown above, as early as their March billing cycle.

These are exciting times for advances in alert and warning capabilities. Look for the latest information on CMAS/WEA in the July edition of *Aware*. ☼

Making Light of Dual Pol Radar

*By **Keli Pirtle**, Public Affairs Specialist, National Severe Storm Laboratory*

The NOAA Weather Partners' videographer James Murnan has posted a creative outreach video explaining dual-polarization radar technology on the NOAA Weather Partners YouTube channel.

Part of "That Weather Show" video series, "**Dual Polarization Technology"** spoofs popular commercials to talk about the benefits of this upgrade to existing NWS radars. Viewers are taken into the Dual-Polarization Zone, where forecasters give more precise information to accurately diagnose severe weather. The video addresses, "What is dual polarization technology?" and "Why should you care?"

Murnan has created 30 videos during the past few years on topics ranging from phased array radar technology to the Coastal and Inland Flooding Observation and Warning project. ☼

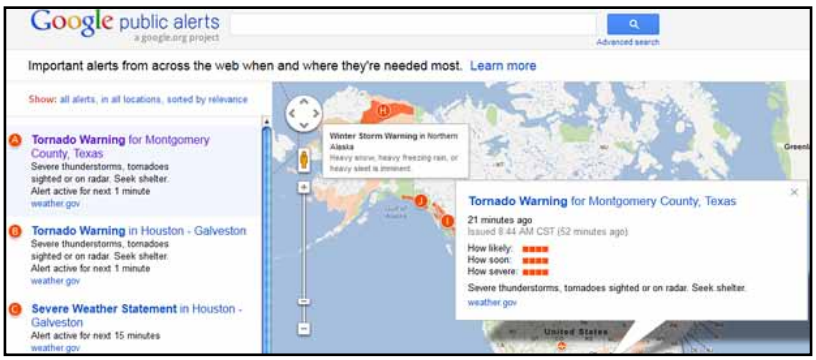
Enter the Dual-Polarization Zone for a fast, easy-to-grasp introduction to this complex technology.

Google to Post NWS Weather Alerts

By NWS News Staff

NWS recently announced a new partner in its efforts to build a Weather-Ready Nation. The Google Crisis Response Team is now offering Google Public Alerts. According to Google, "With [the] launch of Public Alerts on Google Maps, relevant weather, public safety, and earthquake alerts from NOAA, NWS, and the USGS will be accessible when you search on Google Maps."

The weather and hydrologic alerts in Google's new service are populated by NWS generated CAP messages, an industry standard for the exchange of hazard alert information. Mike Gerber, NWS Emerging Dissemination Technology Lead, said "NWS CAP offers our warning information



Google Public Alerts are a new piece of a Weather-Ready Nation.

in its most atomic parts, which are clearly tagged, so that developers and manufacturers can readily integrate our warning information into all kinds of products and services at a low cost."

During the past year, Google's non-profit Crisis Response Team has worked with NWS headquarters staff to integrate NWS CAP messages in Google Public Alerts. The effort was initiated through an existing Cooperative Research and Development Agreement between NOAA and Google. ☼

Hurricane Awareness

Minor Modification to the Saffir-Simpson Hurricane Wind Scale

Category	Winds	Summary
1	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage
2	96-110 mph 83-95 kt 154-177 km/h	Extremely dangerous winds will cause extensive damage
3	111-129 mph 96-112 kt 178-208 km/h	Devastating damage will occur
4	130-156 mph 113-136 kt 209-251 km/h	Catastrophic damage will occur
5	157 mph or higher 137 kt or higher 252 km/h or higher	Catastrophic damage will occur

Modified Saffir-Simpson Hurricane Wind Scale. Changes noted in red.

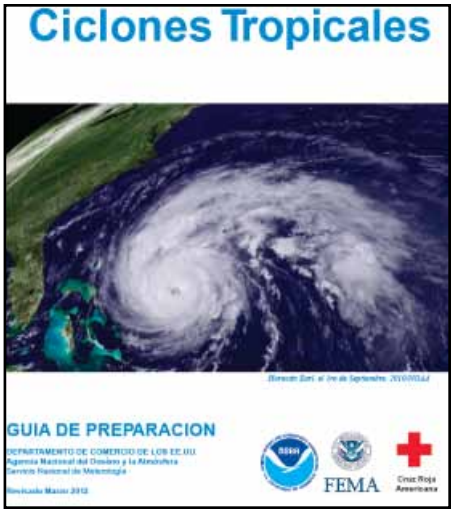
By John F. Kuhn, Meteorologist, NWS Marine and Coastal Services

The Saffir-Simpson Hurricane Wind Scale has been modified slightly this year to resolve inconsistencies with conversion from knots to the various units used for wind speed in advisory products: mph and km/h. The change broadens Category 4 wind speed range by 1 mph at each end of the range. The new mph range is 130-156 mph, changed from 129-155 mph.

This change does not alter the category assignments of any storms in the historical record, nor will it change the category assignments for future storms. More information on why this does not change past or future storm designation is available online.

The new summary table is shown at right with changes highlighted: The Saffir-Simpson Hurricane Wind Scale provides information on wind impacts only. The scale does not provide commentary or information on other impacts or characteristics of tropical cyclones. ☼

Hurricane Booklet Available in Spanish



By Melody Magnus, NWS Aware Managing Editor

The newly revised, 12-page *Tropical Cyclone* booklet released last fall is now available online in Spanish. Thanks to the work of several NWS staff members, including National Hurricane Center (NHC) Specialist Todd Kimberlain, Marine and Coastal Service Meteorologist John Kuhn and Layout Editor Melody Magnus, a Spanish version of this in-depth resource, Ciclones Tropicales, is now online.

For the English version and a variety of other tropical storm and hurricane resources, go to the Hurricane Awareness Website and the NHC Education and Outreach Website. ☼

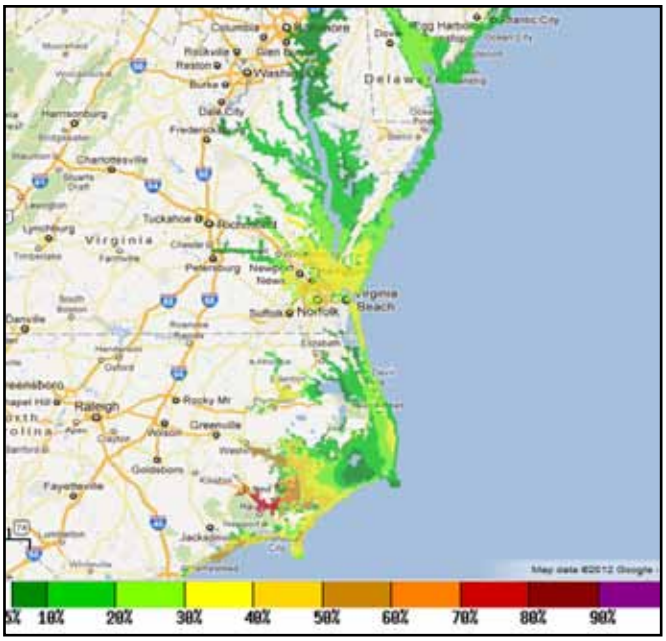
NWS Seeks Feedback on Tropical Cyclone Product

By John F. Kuhn, Meteorologist, NWS Marine and Coastal Services

To help NWS improve its products, please provide feedback on the NWS Experimental Probabilistic Tropical Cyclone Inundation graphics. As part of a long-term effort to improve communications on storm surge and reduce confusion with the various tidal and geodetic vertical datums, NWS is providing storm surge information and model guidance in feet above ground level, i.e., inundation.

These graphics include two suites of probability products for the Gulf of Mexico and Atlantic coastal areas: The first suite of products shows probabilities, in percent, of inundation exceeding 0-20 feet above ground level, at 1 foot intervals: e.g., the probabilities in percent of inundation exceeding 0 feet, 1 feet, 2 feet, . . . 20 feet. The second suite of products shows the probabilities of inundation heights above ground level being exceeded, from 10 to 50 percent, at 10 percent intervals. NWS will provide the two suites of products, out to 78 hours and a cumulative and incremental probability:

- Cumulative Probability: overall probability the event will occur at each grid cell from the start of the run until some specified time (0-6 hours, 0-12, 0-18, etc.).
- Incremental Probability: the probability the event will occur sometime during the specified forecast period (0-6 hours, 6-12, 12-18, etc.) at each grid cell.



Hurricane Irene Advisory 25 – Probability of >= 4 feet above ground level

Please provide your comments through an NWS User Survey. ☼

Hurricane Class Spurs Local Action

By Ernesto L. Morales, Senior Forecaster, NWS San Juan, PR

Hurricane season in San Juan, PR, started in March when NHC staff Daniel Brown, Michael Brennan, Robbie Berg visited WFO San Juan to review verification statistics and new NHC products.

On March 14-16, FEMA offered its Hurricane Preparedness Course (L324) for the first time in Puerto Rico. Speakers for this pilot included NHC and FEMA staff as well as four WFO San Juan presenters who discussed how Caribbean products interface with Continental U.S. products.

The large San Juan class included a combination of local PREMA, Virgin Island EMA, FEMA, other federal employees, and university students, many of whom were not familiar with all the tropical products offered.

The outreach activities described here, involving the combined participation of local agencies, U.S. Air Force, and NHC have helped develop a closer rapport between local personnel and the agencies involved during weather and non-weather emergency events.

The entire WFO San Juan staff took part in either the class or related activities, such as Hurricane Hunter visit and tour. This participation built stronger relationships with sister agencies, helping WFO staff better respond to future weather events. A similar event is being planned for Louisiana. ☼

Tours of the Hurricane Hunter aircraft promote hurricane preparedness.

Lightning Safety

What's New for the 2012 Lightning Safety Campaign?

By Donna Franklin, NWS Lightning Safety Program Lead

Kids try the innovative Young Meteorologists weather safety games at WeatherFest 2012, during the American Meteorlogical Society National Meeting.

When NWS launched the Lightning Safety Campaign in 2001, the average annual number of lightning deaths in the U.S. was 73. Ten years later, the average number of deaths has dropped to 53. In 2011, the United States recorded the fewest number of lightning deaths since records were kept—just 26. Did the campaign play a role in that trend? We think so. Effective Web-based lightning safety information, dedicated partners, compelling public service announcements, and the annual Lightning Safety Awareness Week create a winning combination.

With this good news, where will we focus our 2012 efforts? Statistics show that more than 80 percent of lightning victims are male. Of that number, most are between the ages of 20-50. This year's campaign will target this population through a social media campaign that features new public service announcements.

NWS is also promoting lightning safety toolkits for large event venues (see related article), and a toolkit for counties and communities. Through our partnership with the U.S. Lifesaving Association, NWS is developing a new toolkit specifically for beach patrols and lifeguards.

Find out more at the NWS Lightning Safety Website. If you want to share an interesting lightning story, ideas for outreach and awareness, get more involved the in campaign, or have questions, email donna.franklin@noaa.gov. Remember, "When Thunder Roars, Go Indoors!" ☼

Georgia Tech's Stadium Receives Lightning Safety Recognition

By Charlie Woodrum, Meteorologist, NWS Pittsburgh, PA

Georgia Tech football fans have something new to cheer about, EMs at Bobby Dodd Stadium in Atlanta have developed a lightning safety plan for large outdoor venues based on the new NWS Lightning Safety Toolkit. The stadium, home to Georgia Tech football games for nearly 100 years, is now safer for the nearly 60,000 fans who gather there for games.

Georgia Tech's Bobby Dodd Stadium receives National Weather Service lightning safety recognition

By completing the new safety plan, the stadium became the first in the nation to earn this recognition. The stadium's plan includes:

- An on-site lightning detection system
- Written plan with instructions for contacting local EMs
- Procedures to notify patrons that a lightning threat exists
- Emergency operations plan to evacuate the venue
- Locations of shelters
- Way to advise attendees of lightning safety procedures

Weather Coordination Meteorologists (WCM) and local office outreach teams are encouraged to use the NOAA lightning safety toolkit as a template to help venue managers complete safety plans. Venues completing the toolkit will receive two "When Thunder Roars, Go Indoors!" signs and can be recognized for their efforts at a local ceremony.

"The threat of lightning-related injuries or fatalities to sports fans in large outdoor venues is a growing concern for all of us," said MIC Lans Rothfusz, NWS Peachtree City, GA. "This program is designed to help reduce the risk through improved preparedness on the part of event staff and emergency managers and increased public awareness of the hazards associated with thunderstorms and lightning." ☼

Outreach Innovations

Owlie SKYWARN® Coloring Book Becomes Online Video Game

By Ron Gird, NWS OCWWS Education Manager

PLAN!T NOW and its partners, which include NWS, are launching the Young Meteorologist Program (YMP), a free digital series of sophisticated video games that will teach students across the United States about severe weather science, safety, and preparedness.

Designed for students in grades 3-8, the YMP game follows the main character, Owlie, through five severe weather challenges as he, and the students, try to earn a Young Meteorologist Certificate. Game segments on hurricanes, lightning, floods, tornadoes, and winter storms help kids learn how to prepare for real-life weather emergencies.

Owlie, the game's main character, is adapted from Owlie SKYWARN®, a long-standing character in the NWS education program. The sound scientific lessons from the Owlie SKYWARN® workbook have been turned into a high tech character designed to appeal to a digital generation raised on computer games. YMP is one of many programs focusing on students and their role in helping the NWS create a Weather-Ready Nation.

In addition to NWS, the National Education Association and the American Meteorological Society supported this project. ☼

NWS Operations Proving Ground Equals Better Products

By Kim Runk, Director, NWS Operations Proving Ground, NWS Central Region Headquarters

By the end of September, NWS will initiate a ground-breaking concept designed to improve Impact-Based Decision Support Services (IDSS) and streamline new services to operations, the Operations Proving Ground. OPG, hosted at the NWS Training Center in Kansas City, MO, will serve as a framework to advance two key components of the Weather-Ready Nation: services, and science and technology.

The Roadmap outlines a strategy for enhancing IDSS, a critical element of which is training and certification of Emergency Response Specialists (ERS). These key staff will be the backbone of IDSS, working on both a scheduled basis and on-demand for emergency incidents.

NWS is developing a training plan for the entire decision support spectrum. The OPG, a key part of this plan, will test tools and applications for in-residence simulation training for senior ERS. While all NWS operational personnel will receive IDSS training, senior ERS represent

Emergency Response Specialists perform coordination work from NWS Central Region Headquarters during the March 2, 2012, Indiana-Kentucky tornado outbreak. These types of operations will benefit directly from incident management simulations that test new tools and capabilities at the Proving Ground.

the staff NWS sends to high-impact venues for on-scene support.

At the OPG, NWS will conduct science and technology (S&T) prototype testing with partner agencies such as FEMA, the Environmental Protection Agency, USGS, and local and state EMs to create a simulation immersion environment. OPG simulations will include systems, forecast tools, and data sets identical to those available in the local forecast office and in many emergency operations centers. Through this process, NWS personnel will gain valuable experience by practicing critical skills needed for effective, seasoned, decision assistance and expert risk communication at natural disaster incidents.

The OPG will allow NWS to rigorously test new S&T capabilities in a operational setting before pushing it to field offices. New tools and techniques developed by NOAA research labs and test beds can be evaluated for scientific merit as well as human factors, such as impact on work flow, contribution toward effective decision making, or delivery of services. NWS will be able to evaluate whether a forecaster understands how to use a new tool and how it integrates with existing tools.

By integrating S&T development and operations, NWS hopes to enhance communication between the two communities, optimizing the transition of research advancements into improved operational practices.

The OPG concept is an effective way to test new science and services, and then efficiently implement change into our warning and forecast operations. This small investment translates into improved community emergency preparedness, lower mitigation costs, more rapid post-event recovery, and ultimately, more lives saved. That's meaningful value. That's good government. That's a Weather-Ready Nation. ☼

NWS and Highway Patrol Team Up for Safety

By Tom Johnstone, WCM, NWS Nashville, TN; Jim Branda, Meteorologist, NWS Memphis, TN

More than 900 state troopers attended an in-service training that included an online spotter training class.

Each year, the Tennessee Highway Patrol (THP) training facility in Nashville hosts 900+ troopers for a week of in-service training. For 2012, in addition to covering the usual law enforcement related subjects, officers will start a new online class during the in-service: NWS SKYWARN® Spotter training.

SKYWARN® training will be offered over several weeks, beginning in May, via a special video produced by THP and taught by WFOs Nashville and Memphis meteorologists. The new video allows students and instructors to maximize training efficiency by using the flexibility of an online program.

The video concentrates on identifying storm threats, staying safe during these threats, and accurately reporting severe weather. Once the troopers have completed the program, they will be official NWS spotters.

"Weather safety is a major concern for our troopers in the field," says THP Training Officer Chris Dye. "This training will help keep motorists and troopers safe and provide hundreds of extra spotters watching the skies all across Tennessee."

The next phase of the training partnership will be for THP's dispatchers. Between June and October, dispatchers from all eight THP districts will come to WFO Nashville for a 3-hour NWS familiarization and severe weather training seminar.

Dispatchers will have the opportunity to tour the office, watch a weather balloon launch, and see how meteorologists create forecasts and warnings. The dispatchers also will receive basic radar training and an abbreviated SKYWARN® class. The radar and spotter training will allow the dispatchers to better visualize what the troopers are seeing in the field. The final portion of the seminar will be an overview of NWSChat. NWS plans to get all THP district offices on NWSChat by the end of the year.

The NWS and THP both work to keep people safe. This training partnership will go a long way toward saving lives in Tennessee. For more information on the training center, see the **THP Website**. ☼

Protecting Residents of Manufactured Homes from Tornadoes

By Dan Darbe, Senior Meteorologist; Robert Garcia, Meteorologist Intern, NWS Peachtree City, GA

To promote Georgia's Severe Weather Awareness Week in February, NWS Peachtree City, GA, launched its mobile outreach vehicle for events at two large manufactured home communities in Fayette County, GA, the site of a devastating tornado in 2006.

NWS worked in partnership with the county's emergency management and fire departments and several manufactured home communities to reach more than 225 residents. The talks focused on how to stay informed about developing storms, specific threats for manufactured home occupants, and the actions necessary to protect life and property before hazardous weather strikes.

Tornado in Fayette County, GA, January 2, 2006

As a result of the April 2011 tornadoes and the 2006 tornado that nearly hit a manufactured home community, turn out was impressive. Residents ranging from school children to the elderly came out to learn more about weather threats and how to stay informed using NOAA Weather Radio, local broadcast media, and social media. A weather radio was a prize at each event. NWS provided weather safety literature in English and Spanish. NWS Meteorologist Intern Robert Garcia was on hand to answer questions in Spanish.

The event was so successful, NWS Peachtree City staff plan to take the mobile outreach vehicle to other counties with manufactured home communities this summer and fall. ☼

Workshop Helps Promote Unified Warning Message

By Ron Trumbla, NWS Southern Region Public Affairs Officer

The NWS Fort Worth, TX, hosted an integrated warning team workshop in late February. Several hundred attendees from the media and EM community were on hand to talk about severe weather warnings, decision support services and media coverage.

"The workshop was part of an initiative designed to disseminate a unified warning message during severe weather events," said NWS Fort Worth Meteorologist-in-Charge Bill Bunting. "The idea was to get the emergency managers, print and broadcast media and the NWS together in one room for an open, free-wheeling discussion on ways to improve communications among the groups." The event fostered spirited discussion on a range of subtopics including:

- When and why local governments decide to sound outdoor sirens
- Why some weather events get wall-to-wall media coverage while others do not
- How NWS provides information to its partners
- What works well and what can be improved
- How warnings are received and perceived by the public
- What the expanding role of social media in warning dissemination means

Joe Trainor, Ph.D., an assistant professor at the University of Delaware and disaster expert was the featured speaker. He is noted for his extensive research in international aspects of disasters, warning and protective actions, human and behavioral response, and multi-organizational disaster response networks. Trainor also served as an NWS assessment team member for the report on the historic April 27, 2011, tornado outbreak.

Partnerships are part of creating a Weather-Ready Nation. Ongoing communication and coordination with partners helps communities be better prepared for severe weather.

Incident Meteorologist Educates Students on Hazards Literacy

By NWS News Staff

NWS Elko, NV, Incident Meteorologist Pam Szatanek is doing her part to ensure students at Elko High School are part of a Weather-Ready Nation. Szatanek is showing students there is more to weather than checking the forecast to decide what to wear or whether the football game is on.

NWS Incident Meteorologist Pam Szatanek makes hazards awareness a subject to which teens can relate.

The Elko High School health curriculum contains a section on individual risk assessment. This Hazards Literacy Initiative took several years of trial and error before it was fine-tuned sufficiently for the classroom. The brainchild of Szatanek, the project started when she began doing thematic units for home schooling and working with science teachers. Over time, she felt that a better venue might be working with health teachers, encouraging them to think about individual risk assessment.

"Hazards literacy from the viewpoint of a meteorologist," said Pam, "is breaking down language that our community takes for granted and opening up a dialog about the types of dangerous weather phenomena that we experience in our country."

Using Smart Boards to navigate the Web and an interactive style, Pam has taught nearly 506 students about individual risk assessment. She teaches three basic themes during a 50-minute class:

- How to navigate the NWS Website
- Differences among watches, warning, and advisories
- Evacuation and surface weather, such as road conditions

Some of the topics discussed include:

- Hurricanes Katrina and Irene
- Reasons why people don't evacuate
- Threat of range fires in northern Nevada
- Weather-related driving hazards

As a result of its success, Pam has been asked to expand the program to other schools. ☼

Rip Currents

Rip Currents Program Saves Lives Worldwide

By Deborah Jones, NWS Marine and Coastal Services Lead

Rip currents are a major beach hazard, claiming 64 lives in 2010 in the United States and hundreds more worldwide. In South Africa this March, 15 members of extremely fit soccer team were victims of an intense rip.

The NWS rip current awareness program is increasingly receiving stories and requests from individuals and groups in other nations who want to model awareness programs on the successful NWS model. The NWS Rip Current Safety Website is used by international users from Turkey to North Korea.

In addition to signs, videos, brochures, photos and much more, the Website now offers an international rip current stories page featuring survivor stories from Brazil, Ireland, Nicaragua, and New Zealand. The site also includes headlines on its home page detailing U.S. and international rip current articles.

After a local teen died in Playa Maderas, Nicaragua, Michael Dann, a concerned U.S. citizen, downloaded the template on the NWS Website for a Spanish language rip current safety sign to post along this popular Nicaraguan beach.

After witnessing the death of a local woman in a rip current at Playa Maderas, Nicaragua, a citizen downloaded the template on the NWS Website for a Spanish language rip current safety sign to post along this popular Pacific Ocean beach. He wrote to us to say, "Thank you for making your signs available to help prevent this loss of life. I think your signs are the most effective that I have come across." Check out Micky Dann's story on NWS Facebook for the full story.

Who are the U.S. victims? They are all ages and backgrounds but a large percentage are teenagers who hang out on fishing piers after lifeguards have gone off duty. Piers and jetties are a notorious location for permanent rip currents. Many of these teens have been drinking, further reducing their ability to survive a rip current. More than 95 percent of rip current victims are on beaches NOT protected by a life guard. ☼

Service Assessments

Assessment Recommendations: Next Step, Improving Service

By Sal Romano, NWS Service Assessment Meteorologist

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

A Service Assessment provides a list of service deficiency findings and recommendations to improve NWS operations. These recommendations, in turn, become action items the NWS Performance Branch tracks and reports on to the NWS Corporate Board. Listed below are just a few of actions implemented as a result of recent services assessments. This edition of *Aware* looks at tornado recommendations. See the summer *Aware* for flood-related actions.

- **Recommendation:** NWS should communicate with EMs and other key decision-makers to highlight unusual or fast-changing situations involving extreme weather events.
- **Action:** All WFOs should modify their severe weather operations plan to specifically call for the use of rapid communication methods such as telephone and NWSChat, to exchange information with EMs and other key decision makers about unusual or fast-changing situations involving extreme weather.
- **Status:** Severe weather operations plans for WFOs now include requirements for using rapid communication methods to provide EMs and other key partners hydrometeorological information for unusual or fast-changing situations.

- **Recommendation:** The NWS should emphasize to EMs and other key decision makers that an entire area in and near a warning polygon is under risk of the warned phenomenon. Decision-makers should be concerned with the entire warned area.
- **Action a:** Modify phrasing in Storm-Based Warnings to state "*the entire area in and near a warning is under risk*."

Devastation caused by Joplin, MO, Tornado, May 22, 2011

- **Status b:** Revised the "*Storm-Based Warnings*" flyer to emphasizes "*all locations in a warning polygon are threatened, requiring immediate action to protect life and property*." The revised flyer has been posted on the Integrated Database for Education and Awareness as a WCM resource.
- **Action b:** Develop and distribute education and outreach materials for EMs and other key decision makers to explain in detail the concept of Storm-based warnings and discuss impacts in and around the area of the warning.
- **Status a:** NWS, U.S. Army Corps of Engineers, USGS preparedness guide "*Thunderstorms, Tornadoes, Lightning . . . Nature's Most Violent Storms*" and the "*Storm-Based Warnings*" flyer were extensively updated and widely distributed to EMs and the public.

- **Recommendation:** Training for EMs and SKYWARN® spotters needs to stress that right-turning storms can result in south of east motion. In operational meteorology, this is called a «*right turning*" thunderstorm and is an indication a thunderstorm's rotation has become strong enough to cause it to veer in a direction different from the ambient steering winds.
- **Action:** Develop and distribute education and outreach materials for EMs and other key decision makers that educate on how right-turning storms can result in south of east motion, or other atypical storm motions right of the expected path.
- **Status:** This action item was addressed through the update of the tri-agency booklet *Thunderstorms...Tornadoes...Lightning...Nature's Most Violent Storms*.

- **Recommendation/Action:** NWS should develop education and outreach material encouraging people to notify family, friends, and neighbors of imminent weather danger without jeopardizing their own safety. The educational and outreach material should also emphasize the importance of immediately acting upon a single source of information when the threat is imminent.
- **Status:** "*Nature's Most Violent Storms*" severe weather preparedness guide addresses this concept extensively when describing how to develop an emergency plan. The exact language used in this preparedness guide was coordinated between the NWS, FEMA and the American Red Cross, including their risk communication experts. The information in the "*Nature's Most Violent Storms*" has been shared nationally with the EM community including the International Association of Emergency Managers. During outreach events, WCM's will continue to encourage users to take this action. ☼

Tsunami Ready

How to Promote Tsunami Readiness on East Coast

By Scott Spratt, WCM, NWS Melbourne, FL

NWS MIC Bart Hagemeyer discusses the local tsunami threat during a March 8 workshop at the Indian River County Emergency Operations Center in Vero Beach, FL.

This summer, Indian River County in central Florida, will become the state's first TsunamiReady™ County. Since the county has been recognized as a StormReady® county since 2001, three of the five required guidelines for TsunamiReady™ status have been met: Staffing a 24-hour Warning Point and Emergency Operations, and receiving and locally disseminating NWS hazardous weather messages to the public.

The county added tsunami-specific messages to this information stream. In addition, a telephone tree was established by NWS Melbourne to provide a further means to verify EMs receive tsunami threat information immediately.

The two remaining guidelines to meet were much more labor intensive: Developing and enacting a community preparedness plan and creating a formal tsunami hazard operations plan.

Community preparedness involved many parts, starting with a workshop to engage and educate county and local community first responders, decision makers, and elected officials. Nearly 50 government staff and partners attended the workshop, with presentations by local, state, academic, and NWS tsunami experts on the local tsunami threat.

NWS Melbourne will hold another tsunami workshop in late May for other government partners, as well as for local citizens, and plans are underway to add tsunami curriculum within the county's public schools.

NWS Melbourne staff also tagged on to the LANTEX12 Exercise to offer another preparedness action in which local officials and NWS Melbourne staff reviewed actions to take if a simulated tsunami event were underway. To further promote tsunami awareness throughout the county's 22-mile long barrier island, the county installed 28 Tsunami Hazard Zone signs and 23 Tsunami Evacuation Route signs at beach access locations and at inland directed roadways.

In addition, EMs developed a 22-page Tsunami Warning and Evacuation Plan for the county in coordination with barrier island municipalities and NWS Melbourne. The plan defines the tsunami hazard zone. This tsunami hazard zone expands the 300 foot danger zone, inland from the high tide location, guidance suggested by the NWS for two reasons: to ensure maximum public safety and to provide a concise and easy to visualize description of the mandatory evacuation area. The Tsunami Warning and Evacuation Plan will become part of the county's Comprehensive Emergency Management Plan.

The county hopes to complete requirements by summer. Brevard County, which includes Indian Harbour Beach, the first East Coast TsunamiReady™ site, is close on its heels and may achieve this TsunamiReady™ status by end of 2012. ☼

NWS Offers Online Tsunami Education

By Vickie Johnson, COMET

As the 2011 Japan tsunami made clear, it is critical coastal community leaders and the general public understand the science behind tsunamis, the warning products issued for them, and how they can prepare for these potential disasters. The **COMET Program** has produced five, online modules free for non-commercial use from COMET's **MetEd** Website. **Registration is required**.

- **Community Tsunami Preparedness**: Helps emergency managers prepare their communities for tsunamis. Lessons include basic tsunami science, hazards, warning system, importance of public education activities, and how to craft good emergency messages and develop response plans. The module includes video interviews of lessons learned by public officials in Crescent City, CA, after the March 11, 2011, tsunami in Japan. (English and Spanish)
- **Tsunami Warning Systems:** Describes the processes involved in anticipating, detecting, and warning by summarizing data collection, modeling, analysis, and alert procedures used at Tsunami Warning Centers. A simulated event and past tsunami occurrences are used to highlight warning system processes for determining the threat based on seismic and sea level data and forecast models. Message communication and local response are also addressed as final components of any warning system.

- **Tsunamis**: Introduces the science: causes, initiation process, properties, propagation, inundation, and long-term effects. The module uses animations, historical images, video, and interactive exercises to help learners discover the ways tsunamis interact with and affect the world.
- **Tsunami Strike! Pacific Edition:** Provides a scenario-based learning experience for students from middle through high school. The scenario tells the story of four main characters at different locations in the Pacific basin who are impacted by a major tsunami that originates in Alaska's Aleutian Islands. Over the course of the scenario, learners view the unfolding events and how each of the characters responds and observe how scientists analyze and communicate the tsunami threat. Fourteen short lessons provide interactive instruction focused on the science, safety, and history of tsunamis.
- **Tsunami Strike! Caribbean Edition:** Offers an interactive experience in which students become a journalist writing an article for a news magazine. Sixteen multimedia lessons on tsunami science, safety, and history are interwoven within the scenario. The material is aimed at middle and high school students but is appropriate for adults concerned about tsunami risks in the Caribbean. (English, Spanish coming soon)☼

First Ever National Severe Weather Preparedness Week: April 22-28

By Donna Franklin, National Lightning Safety Program Lead

As part of its Weather-Ready Nation campaign, the NWS is partnering with FEMA to place a special emphasis on preparedness during the first ever National Severe Weather Preparedness Week, April 22-28, 2012.

During the week, we're calling on the public to be weather-ready and Be a Force of Nature. This slogan exemplifies our goal to empower people across the country to be role models for their families and friends by being prepared and then getting friends and family to act, modeling the behavior and then sharing with others by texting, Tweeting, or posting a Facebook status update.

Research shows that people are most likely to prepare when they observe the preparations taken by others. Each day will highlight a topic important to preparedness. The Weather Channel is joining our efforts by asking people to pledge to prepare. Get involved with **National Severe Weather Preparedness Week!**