



# Aware

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

October 2011

## Dual Polarization Moves Radar Forward

By Dr. Jack Hayes, NWS Director

Dual polarization (dual pol) technology has been called the most significant upgrade to the nation's weather radar network since Doppler radar was first installed in the early 1990s. The technology provides significantly more information and clearer pictures of current weather conditions, helping NWS meteorologists provide more accurate and timely forecasts.

Innovative science and technological solutions such as the nationwide implementation of dual pol radar technology are part of NWS's initiative to help create a Weather-Ready Nation.

On September 29, NWS commissioned the new Langley Hill Doppler Weather Radar near Copalis Beach, WA, our first dual polarization weather radar. Senator Maria Cantwell and a number of local officials and media were on hand to share in the celebration. The radar is in southwest Washington within a few miles of the coast and fills a gap in coverage along the Pacific Northwest coast.

Next on our Weather-Ready Nation agenda is adding dual polarization technology to all 160 Doppler radars NWS uses to warn the public of impending severe weather. Dual pol Doppler radar gives forecasters more precise information to analyze the "what, when, where and how of precipitation and severe weather."

Traditional WSR-88D Doppler radars send out short horizontal bursts of radio waves called pulses. The pulses bounce off particles in the atmosphere and are reflected back to the radar. With dual pol, the radar transmits pulses that look at the atmosphere both horizontally and vertically. This capability gives us new information about the size and shape of an object.

Dual pol staff will add 14 new products to the suite of data already available to NWS forecasters and our partners. These new tools will assist forecasters in the warning and forecast process. Using this new vertical dimension, forecasters can better glean information about the size, shape and composition of precipitation particles. Benefits of this new information include the ability to:

- ◆ Better estimate total precipitation
- ◆ More easily identify snow levels in higher terrain
- ◆ Better identify areas of heavy rainfall, including flash flooding potential
- ◆ More accurately classify precipitation type
- ◆ Provide more precise severe thunderstorm warnings



NWS Director Dr. Jack Hayes

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Spokane, WA, dual pol radar

Senator Cantwell was the first leader in “the other Washington” to be convinced of the need for the coastal radar and to make it a priority. In 2007, she asked the NWS to commission a third-party study, released in May 2009, that demonstrated the gap in Washington’s weather radar coverage. She secured the resources for this radar system through a down-payment in NOAA’s 2009 appropriations and then helped get the full funding included in the NWS 2010 budget. This radar is the fruit of the tireless efforts of Senator Cantwell and others in Washington.

The radar was deployed nearly a year ahead of schedule through the acquisition of a training radar from the Air Force. This training radar shortened the installation time and helped control costs. The result saved public operations and maintenance dollars by using common parts and sharing future enhancements with the entire network of 160 weather radars. In return, the Air Force will save a substantial amount of money by sending its radar technicians to the NWS Technical Training Center. This project is a great example of federal agencies working together to reduce costs and support better public needs.

The Langley Hill radar is now a full-fledged part of the radar network. Data is being sent to our tri-agency radar partners: the Federal Aviation Administration and the Air Force; our commercial partners in the Weather Enterprise, such as the University of Washington; television stations; private firms who provide value-added products; and the public via [weather.gov](http://weather.gov).

The tri-agency Radar Operations Center in Norman, OK, led the planning and execution of this installation. The new radar is already being used by NWS forecast offices in Seattle, WA, and Portland, OR, and by the Northwest River Forecast Center (RFC) in Portland. The installation is timely with the La Niña weather pattern already setting up in the Northwest, bringing the region winter storms.

This radar, and indeed the forecasts and warnings we provide daily, are part of NOAA’s effort to build a Weather-Ready Nation. NWS is working with new and traditional partners and the public to build community resilience in the face of increasing vulnerability to extreme weather. In a collective effort, weather forecasters, emergency managers, business leaders, researchers and the public have to work together to create a Weather-Ready Nation—to transform the way America responds to severe weather and empower individuals by giving them the tools they need to make fast, smart, life-saving decisions. ☼

## Aware

NWS  
Office of Climate,  
Water and Weather  
Services

OCWWS Director  
Dave Caldwell

Awareness  
Branch Chief  
Mike Szkil

Managing Editor  
Melody Magnus  
[Melody.Magnus@noaa.gov](mailto:Melody.Magnus@noaa.gov)

Editors:  
Donna Franklin  
Nancy Lee

Aware online  
[www.weather.gov/os/  
Aware/](http://www.weather.gov/os/Aware/)

Subscribe  
[www.weather.gov/os/  
Aware/awarelist.shtml](http://www.weather.gov/os/Aware/awarelist.shtml)

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## Climate

### Rate New NOAA Climate Website

By [Margaret Mooney](#) and [Jean Phillips](#),  
University of Wisconsin-Madison

Act fast to register your opinions about [NOAA’s Climate Services prototype website](#), via a survey which will only remain open until October 31. Your comments will be most valuable if you take a few minutes to navigate the site before taking the survey. When you’re ready to provide feedback, click on the large red check-mark in the upper right hand corner of the page. [If you get interrupted, you can return to the spot where you left off.](#) ☼



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# Dissemination

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## Hazard Alert Interoperability Update

By [Herb White](#), NWS Dissemination Services Manager

The Integrated Public Alert and Warning System (IPAWS) is a comprehensive system authorized public officials can use to deliver alert messages to the public. IPAWS will provide federal, state, territorial, tribal and local warning authorities the ability to warn their communities of all hazards impacting public safety via multiple communication pathways.

FEMA is working with partners nationwide, including the NWS, to upgrade the alert and warning infrastructure so that regardless of the crisis, the public will receive life-saving information via at least one path.

FEMA has adopted Common Alerting Protocol (CAP) and the IPAWS CAP Profile to ensure compatibility with current and emerging dissemination systems. IPAWS allows you, as an alerting authority, to write your own message using commercially available software that complies with open standards. Your message is then delivered to FEMA's IPAWS Open Platform for Emergency Networks (OPEN), where it is authenticated and delivered through multiple communications pathways simultaneously.

A summary of the significant milestones for CAP, IPAWS, HazCollect, Personal Localized Alert Network (PLAN)/Commercial Mobile Alert System (CMAS), and the Emergency Alert System (EAS) follows:



### Completed by FEMA to Date

- ◆ Released IPAWS OPEN 3.0 (CAP 1.2) interoperable message exchange; IPAWS is the only *automated* system providing access to NWS HazCollect for Non-Weather Emergency Messages from Emergency Management Agencies
- ◆ Created IPAWS Developer test environment; developers are working on applications to retrieve and disseminate IPAWS alerts via the Web
- ◆ Decommissioned OPEN 1.0 and DMIS Tools

### Upcoming Actions by NWS, Cellular Carriers, FEMA and FCC

- ◆ October 2011: FEMA IPAWS EAS Atom feed and CMAS gateway functions online
- ◆ October 2011: Release beta version of Emergency Management Institute Web-delivered Independent Study course (IS-247): "IPAWS for Local Alerting Authorities." Final version expected in early 2012 depending on beta version evaluation. Local alerting authorities are required to demonstrate successful completion of the course within 60 days of publication as a condition of IPAWS access
- ◆ **November 2011**—NWS begins weather alert CAP v1.2 feed via IPAWS-OPEN in addition to current methods
- ◆ **December 2011**—Cellular carriers, working with FEMA IPAWS, rollout PLAN/CMAS in New York City and Washington DC
- ◆ **April 2012**—Participating cellular service providers, working with FEMA IPAWS, must begin deploying PLAN/CMAS nationally
- ◆ **June 2012**—FCC deadline for EAS participants (radio, TV, etc.) to install equipment capable of receiving CAP formatted EAS alerts per Part 11 EAS rules.

Many EAS participants already have installed updated equipment that will be programmed to poll an IPAWS Atom Feed. Encoder/decoder equipment has been tested by FEMA. Suppliers' Declarations of Conformity are available on the [Responder Knowledge Base Website](#). Further FCC rule-making to incorporate CAP into Part II EAS rules is expected in late

2011. New rules will clarify requirements for EAS participants to relay alerts from state or territorial governors.

### Deciphering PLAN/CMAS

PLAN allows enabled users of cellular devices to receive geographically-targeted, text messages (not SMS text) alerting them to imminent local threats. PLAN, technically known as the Commercial Mobile Alert System (CMAS), sends cell broadcasts to enabled handsets. Key features of PLAN include:

- ◆ Provides point-to-multi-point broadcast, not point-to-point used by traditional text messaging
- ◆ Avoids network congestion and message delivery latency associated with traditional text messaging
- ◆ Provided at no cost to the user
- ◆ Opt out, not opt in

PLAN will send three kinds of alerts:

- ◆ Presidential
- ◆ Imminent threat: must meet urgency, severity, certainty requirements
- ◆ AMBER alerts on missing children

The system's 90-character message is automatically populated based on CAP values entered by the message originator. IPAWS is the only system providing access to CMAS.



### What You Need to Have to Use Public Alerting Capability via IPAWS OPEN

EMAs and other government alerting organizations may apply to FEMA for IPAWS access as soon as they complete two steps:

- ◆ Install IPAWS-compatible alert authoring software. Your vendor must be on the list of OPEN Developers and provide required functionality.
- ◆ Complete a Security Memorandum of Agreement (MOA) with FEMA for an IPAWS Collaborative Operating Group (COG) account. You can request a [COG online](#).

A COG may be set up at the state, territorial, regional, or local level. The COG administers its own member accounts through its software. If your COG *only* handles interoperable exchange with other COGs, no further application is required.

Once you complete the MOA process, you will receive a digital certificate your vendor then installs to digitally sign your messages. The application indicates the system applied for: EAS, CMAS, and/or HazCollect. The MOA establishes the type of EAS non-weather event codes used by the organization consistent with state and local EAS plans.

Before submitting, FEMA proposes that all alerting applications be signed by a designated state authority, such as a state EMA Director or designee, Operations Chief, or Communications Officer. To have your public alerts distributed over NWS dissemination systems via IPAWS, [apply for HazCollect](#).

### Links for More Information

- ◆ [IPAWS Website](#)
- ◆ [Developers Resource for NWS Information](#)
- ◆ [NWS Public Alerts in XML/CAP v1.1 and ATOM Formats](#)
- ◆ [Common Alerting Protocol \(CAP\) Specification Technical Work Produced by the OASIS Emergency Management Technical Committee](#) ⚙

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## National EAS Test Preparations Ramping Up

By [Herb White](#), NWS Dissemination Services Manager

The first-ever Nationwide EAS Test is scheduled for Wednesday, November 9, at 2 pm EST. The test should be heard on local and satellite radio and seen on local, cable and satellite television for about 3 minutes. Normal state and local EAS messages are limited to 2 minutes, so this test must be longer than 2 minutes to test EAS encoder/decoder processing of the national, or President's, unrestricted-length message. For the national-level EAS, a single, live-code alert, called the Emergency Action Notification (EAN) is sent simultaneously to Primary Entry Point stations across the country for relay to other EAS broadcasters.

The test will NOT be broadcast on most NOAA Weather Radio All Hazards (NWR) stations. A few NWR stations in the Pacific Northwest and other areas will broadcast the national test. NWS and FEMA are working on improvements to include NWS receiving the national audio message and broadcasting it over the NWR network.

During the Nationwide EAS Test, NWS will test its ability to receive and capture EAN live-code and audio messages. Throughout 2012, NWS will install the NWR Improvement Project (WRIP) Phase II in its Telecommunications Operations Center and at forecast offices nationwide. After those improvements are complete, NWS will install updates such as the capability to broadcast the EAN live code and audio from FEMA over NWR stations

To help ensure the success of the nationwide EAS test, NWS is spreading the word and referring other EAS stakeholders and participants to FEMA resources. In addition, NWS Forecast Offices will reduce the possibility of confusion by moving the NWR Routine Weekly Test scheduled for Wednesday, November 9, to Tuesday, November 8, or cancelling the routine test for the week. NWS does not plan to send any test messages on NWR or other dissemination systems the day of the nationwide EAS test.

The Nationwide EAS Test Informational Toolkit, EAS Best Practices Guide and other information can be downloaded at [http://www.fema.gov/emergency/ipaws/eas\\_info.shtm](http://www.fema.gov/emergency/ipaws/eas_info.shtm). If you are an EAS participant, you should check the FEMA, FCC and National Association of Broadcaster's EAS Websites frequently for updated information. The FCC plans to add a Nationwide EAS Test reporting Web tool before the end of October.

### Additional Online Resources

- ◆ [Emergency Alert System Nationwide Test | FCC.gov](#)
- ◆ [A National Dialogue on the Emergency Alert System | FEMA.gov](#)
- ◆ [Emergency Alert System National Test | National Association of Broadcasters](#)
- ◆ [Details on National EAS Test | National Alliance of State Broadcasters Associations](#)
- ◆ [Latest EAS National Test Information | Society of Broadcast Engineers](#) ⚙



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## NWS Future Service Delivery Architecture

By [Robert Bunge](#), Chief, Telecommunication Software Branch

NWS thanks all those who provided comments and suggestions on how to improve the NWS service delivery architecture. Our requirements gathering phase is closed. We are assessing all the comments provided to develop a roadmap to create a future-facing service delivery architecture to better serve our users' needs. Again, thank you for taking the time to provide your input. ⚙

## EMWIN-N Transition on GOES West to Occur December 14, 2011

By [Robert Wagner](#), IT Specialist, NWS Dissemination Systems Branch

The long awaited Emergency Managers Weather Information Network-N (EMWIN) transition on GOES West will occur on or about December 14, 2011, when GOES 15 replaces GOES 11 and becomes the new GOES West. *GOES 11 users must take action to continue receiving the EMWIN broadcast.*

### What GOES 11 Users Need To Do

GOES 11 users with EMWIN-N capable systems will experience a simple transition:

- ◆ Wait for the change to occur and then configure the software demodulator.
- ◆ Toggle the switch on the intermediate frequency adapter to the QPSK setting.
- ◆ Reboot your system and you can start processing the EMWIN-N broadcast.



GOES R

GOES 11 users who have not upgraded their EMWIN systems still have options. Before the transition, repoint to GOES 12 at 60 degrees west. Repoint as soon as possible to determine if you can receive the signal.

GOES 12 is now helping to support Central America, the Caribbean and South America. The 9.6 kbps signal from EMWIN-I was activated on GOES 12 on May 5, 2010, and will remain on until further notice; however GOES 12 is currently scheduled to be removed from service in May 2013 so it is strongly recommended that users transition as soon as possible.

Legacy users unable to receive the GOES 12 broadcast can continue to receive EMWIN with an internet connection through the EMWIN byteblaster network.

All users need to migrate to EMWIN-N capable systems. The transition could occur earlier due to premature failure of the GOES 11 satellite. Please see the [vendor page](#) on the EMWIN Website.

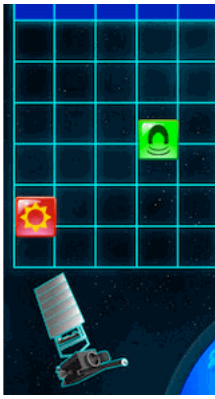
### No Action Needed by GOES East Users

The GOES East transition occurred on April 26, 2010, so GOES East users do not need to take any action. GOES 13 replaced GOES 12 (formerly GOES East) and is transmitting the EMWIN-N broadcast.

### Why is the Transition Necessary?

Changes in the GOES-N thru P satellite constellation required changes to the EMWIN broadcast. The changes allow the use of improved technologies. All legacy EMWIN users will need to upgrade some, or possibly all, of their reception equipment.

Improvements include more data, greater reliability due to forward error correction, a dedicated transponder and no eclipse seasons. Costs for an entire EMWIN-N capable system are as low as \$2,000 plus the cost of a computer upgrade. For an existing system, with a capable equipment, the upgrade would be approximately \$1000 for the receiver hardware. Keep informed of new developments in the EMWIN transition by visiting the NWS [EMWIN Website](#). ⚙



## GOES Just Playing Around on Your iPhone

*Melody Magnus, Aware Editor*

GOES-R staff have developed an innovative way to help the public understand its technology, an iPhone game. "Satellite Insight," a free game, is now available in the Apple Store. The game consists of colored blocks that represent different types of data gathered by GOES-R science instruments. The data blocks fall into columns on a grid. Players must bundle like data types together and store them safely before the data grid overflows. [You also can find the game at iTunes.](#) ☼

## Flooding/Hydrology

### Webinars Save Lives and Property in Pennsylvania

By [NWS News Staff](#), NWS Office of Communications

Major flash flooding was a danger and the rivers were rising rapidly. River forecasts indicated record flooding. WFO Binghamton, NY, needed to convey the urgency of the situation to its customers. People needed to move quickly and get out of harm's way.

The forecast office used webinar technology to add credibility to its river forecasts and provide extra information. In an email to WCM Dave Nicosia, Athens Township, PA, Supervisor Robin Smith said, "If it had not been for your webinars, I hate to think of what would have happened in Wildwood." Water went over the top of a levee that protects Wildwood from the Susquehanna River. "I was able to alert everyone as to what was going on, and they were able to secure trucks to haul out their belongings, storage places to put them and places to stay before it was too late."

For this event, WFO Binghamton took forecasts produced by the NWS Middle Atlantic RFC and integrated them into its webinars. The webinar that Athens Township took part in showed a water vapor satellite loop and a large-scale radar loop. That information was needed to convey why the office was forecasting near record level flooding in the Athens area and most other areas along the Susquehanna River in its forecast area.

The webinar showed emergency managers a stalled deep plume of tropical moisture streaming north from the Caribbean and a wide band of heavy rain from the remnants of Tropical Storm Lee, stalled from the Chesapeake Bay northward to central New York and northeast Pennsylvania.

WCM Dave Nicosia commented, "The webinars allow us to give EMs what is behind the forecast to increase confidence and allow them to assess their risk and potential impacts much better. This, in turn, leads to actions when necessary. That is what impact-based decision support is about and I believe webinar technology is a big part of this."

Public safety officials along the Susquehanna River Basin from Oneonta and Binghamton, NY, to Athens, Towanda, and Wilkes-Barre, PA, began mass evacuations. More than 120,000 people evacuated due to the flooding.

Smith, referring to the critical nature of the webinar, told Nicosia "you literally saved our



*Athens area under water. Photo by Marilyn Nicosia.*

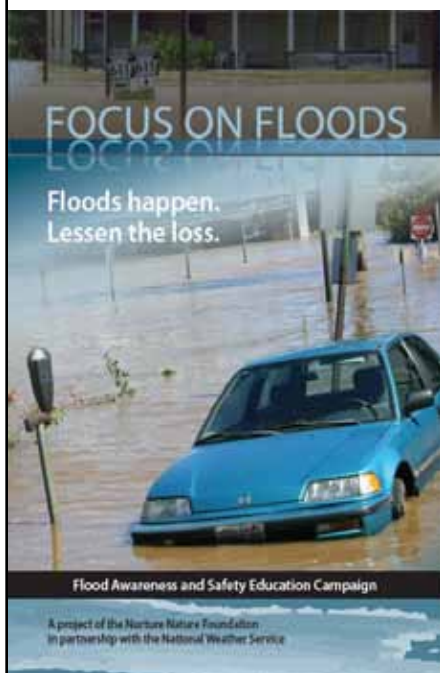
neighborhood. I keep trying to find the words to tell you how important your webinars are to us. We really could have had loss of life on this one, and you made us see that we needed to move and move fast.”

One death occurred as the result of the flood, which broke river crest records from Binghamton, NY, to Wilkes-Barre, PA, including the long standing record crest level on the Susquehanna at Wilkes-Barre, set during the infamous Agnes Flood of 1972. At least 40 people died during that event in the Upper Susquehanna River Basin. The impact-based decision support services webinars provided by NWS Binghamton Weather Forecast Office no doubt saved many lives. [Sample webinar slides are online.](#)

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## Floods Happen. Lessen the Loss.

By [Patricia Wnek](#), Service Coordination Hydrologist, NWS State College, PA



*A new video, “Flood Happen. Lessen the Loss.” helps the public minimize the devastation that can be caused by floods.*

Floods Happen. Lessen the Loss. That’s the take-away message from an award-winning flood education campaign, “[Focus on Floods](#),” produced in a partnership among the [Nurture Nature Foundation](#), NWS Middle Atlantic RFC and NWS Weather Forecast Office (WFO) Philadelphia. This campaign, designed to be shared with other communities, was launched in the Delaware River Basin in 2010. The program was designed to help residents of New York, New Jersey, Pennsylvania and Delaware who suffered severe losses from three historical floods in a 2-year period.

This collaborative effort resulted in a variety of materials: a [Website](#), posters, videos and refrigerator magnets to help residents identify their nearest stream gage and flood stage. These tools have won recognition from regional organizations and positive feedback from teachers, emergency managers and municipal professionals. The program’s message that “floods are natural” emphasized actions residents can take to lessen their loss such as having a plan, sharing river forecast information and evacuating when directed.

The materials included an award-winning animated short film, “The Day of the Flood,” and the creation of a character, “HighWater Mark,” who, along with his dog, “Noah,” helps children learn flood safety through puzzles and other fun activities. These materials, along with images of a traveling flood safety exhibit available for community use at fairs and other events, are all available for direct download on the Website or on a DVD.

The partnership with Nurture Nature Foundation has continued into a second project, Science on a Sphere (SOS) and Flood Forums: Education to Action. The new NOAA SOS recently opened at the Nurture Nature Center in Easton, PA. Center staff, working with NWS and other advisors, will create the first SOS

program about flooding and make it available to 70 SOS sites worldwide.

This program explains the science of precipitation and how climatic changes are contributing to the increasing frequency and severity of floods in the United States and throughout the world. The program will be incorporated into public forums to help residents and communities consider their own flood issues and responses. ☼

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## Hurricanes

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### NWS and Walmart Help Prepare the Rio Grande Valley

By [Barry Goldsmith](#), WCM, NWS Brownsville, TX

The Texas Rio Grande Valley has more than a million residents who could be threatened by hurricane force winds or inland flooding. At least 90 percent are Hispanic; tens of thousands of



whom do not speak or read English. The median household income for the Rio Grande Valley's two metropolitan statistical areas is the lowest in the 276 such areas in the United States.

In response, in 2006 WFO Corpus Christi and local partners along the Texas Coastal Bend region developed *The Texas Hurricane Guide*, a collaborative publication between NWS, Coastal Guardians Outreach, the Texas Division of Emergency Management, Walmart Corp. and local media sponsors from Port Arthur to McAllen, TX.

In 2009, the effort expanded to cover the entire Texas coast, with editions serving the Rio Grande Valley (WFO Brownsville/Rio Grande Valley), Coastal Bend (WFO Corpus Christi), Houston/Galveston (WFO Houston/Galveston) and Upper Texas Coast (WFO Lake Charles).

For the 2011 season, Walmart provided funding for up to 2 million free copies of the guide that were distributed to its customers. During Hurricane Preparedness Week, May 22-28, through the first weekend in June, WFO Brownsville staffed booths at a dozen Walmart stores across the Rio Grande Valley giving out the guide and provide related information. In all, WFO staff went to 14 stores; each shift was 4 hours long. Most shifts were during high volume shopping times such as lunchtime and evening, as well as the Saturday of Memorial Day weekend. NWS staff distributed thousands of guides and answered hundreds of weather-related questions from shoppers who stopped to chat.

WFO Brownsville/Rio Grande Valley's partnership with Walmart provided critical hurricane preparedness information to residents of the Rio Grande Valley by distributing hundreds of thousands of free guides in English and Spanish. *The Texas Hurricane Guide* helps NWS reach deep into a unique culture that includes numerous vulnerable communities. The guide is one step on the path to building a Weather-Ready Nation through preparedness education for the varied needs of different groups. ☼



WFO Brownsville, TX, staff go to Walmart to explain hurricane safety and pass out the 2011 Texas Hurricane Guide.

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## Hurricane Safety Message Targeted in New Children's Book

By [Mike Cantin](#), WCM, NWS Honolulu, HI

How do you get elementary school kids to care about hurricane safety? NWS Honolulu uses a creative new book written just for kids. During 2010, as part of a school project, Keri Kodama, the daughter of Honolulu Service Hydrologist Kevin Kodama, wrote and illustrated a unique children's book entitled *The 3 'Io Brothers and the Big Bad Hurricane*. The book, published with help from NOAA Sea Grant and the University of Hawaii, has received widespread praise.

The book was first presented during the annual Central Pacific Hurricane Press Conference last May. Since that time, the book has been distributed to 200 elementary schools and public libraries in the Hawaiian Islands. WFO Honolulu already has received numerous letters of thanks for the product from schools and other users.

Forecasters from the NWS office are conducting a campaign to present the book to students and library visitors around the state. Presentations have been made on the islands of Maui and Hawaii, with coordination taking place with the Hawaii State Library in Honolulu. During each talk, listeners are treated to interactive readings and large scale photos of each page of the book. The presentation concludes with a discussion of hurricane hazards, safety and preparedness. For more information, contact [Mike Cantin](#). ☼



*The 3 'Io Brothers and the Big Bad Hurricane*, a new children's book, helps bring hurricane safety to kids.

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## Tropical Dashboard Makes EM's Job Easier

By [Rob Molleda](#) and [Dan Noah](#), WCMs, NWS Miami and Tampa Bay, FL

Tropical Web Briefing Tool										
County Watch/Warning										
08/25/2011 11:21 PM										
County	Tropical Storm		Hurricane		Tornado		Coastal Flood		Flash Flood	
	Watch	Warn	Watch	Warn	Watch	Warn	Watch	Warn	Watch	Warn
Broward										
Collier										
Dade										
Glades										
Hendry										
Indian River										
Osceola										
Polk										
St. Johns										
Volusia										

Winds					
08/25/2011 11:21 PM					
County	Begin/End 34 Kt (24 Mph)		Begin/End 64 Kt (74 Mph)		Remarks
	Start	End	Start	End	
Broward	--	--	--	--	22 MPH
Polk	--	--	--	--	14 MPH

A prototype Tropical Briefing Webpage provides an easy-to-use tabular format.

In August, WFOs Tampa and Miami completed a tropical dashboard for a prototype Web Emergency Operations Center. The new Webpage enables EMs to view a four-panel display of satellite, radar and Hurricane Center forecast and model guidance in a dashboard format.

In addition, WFOs Tampa and Miami are providing EMs with a Tropical Briefing Webpage incorporating National Digital Forecast Database information and WFO Potential Impact Graphics. The page is presented in an easy-to-use tabular format broken down by hazard and by county. This data was available in time for Hurricane Irene's near-miss in late August. Initial EM feedback has been extremely positive.

Areas covered on the new site include Watches and Warnings, Winds, Tornadoes, Coastal Flooding, Marine, Inland Flooding Impact Statements, and 7-Day Rainfall.

At this time, the site is for EMs only, not the public. You can view prototype pages for [Miami](#) and [Tampa](#). ☼

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## Outreach

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### Ten of Thousands of Users Tell NWS What They Think

By [Sal Romano](#), Meteorologist, NWS Performance Branch

The 2011 Customer Satisfaction Survey, undertaken by the NWS Office of Climate, Water and Weather Services drew 32,572 respondents. The survey was conducted via a link from various NWS Websites from May 31, 2011, to June 23, 2011. The survey covered the following core areas:

- ◆ Hazardous Services
- ◆ Routine Climate, Water and Weather Services
- ◆ User Support Services
- ◆ Customer Support Services
- ◆ Dissemination Services
- ◆ Outreach and Weather Education

The survey contained four optional sections with questions addressing specific NWS service areas: Climate Services, Fire Weather Services, Hydrologic Services and the Tsunami Program.

The Performance Branch plans to conduct Customer Satisfaction Surveys yearly. The questions for the core areas will be similar to allow comparison from year to year; however, the optional sections of next year's survey will include questions for NWS service areas not included in the 2011 survey: Aviation Weather Services; Marine and Coastal Weather Services; and Routine Forecast and Hazardous Weather Services.

Questions contained in the optional sections of the survey will rotate annually between these two groups of NWS service areas. The NWS Performance Branch welcomes your comments concerning the 2011 survey results and suggestions for 2012 survey questions.

NWS contracted with the Claes Fornell International Group to help develop and implement the survey. Claes Fornell is an expert in the science of customer satisfaction and uses the American Customer Satisfaction Index, the only uniform measure of customer satisfaction in the U.S. economy. This index is used by more than 200 companies and government agencies.

## Key Survey Results

The overall satisfaction score was 84, 19 points higher than the average federal government score of 65. The survey showed dissemination services has the highest impact on satisfaction. Dissemination services survey questions included:

- ◆ Perceived reliability of satellite and radar data available through NWS Websites
- ◆ Ease of locating and understanding information on the NWS Web pages
- ◆ Whether the information is current
- ◆ Whether the NWS Web page is the primary source of weather information
- ◆ Suggested improvements to an NWS Web page

The majority of respondents said NWS is doing a good job with general customer service and more specific decision support services. Respondents recommended NWS communicate survey results to its employees and highlight the great job NWS staff is doing.

NWS plans to post a subset of the full report of the 2011 survey results on the Websites that hosted the survey link. Look for it later this year. ☼

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## Owlie SKYWARN® Kids Icon Goes Interactive

By [Ron Gird](#), Meteorologist, NWS Performance and Awareness Branch

Actor Morgan Freeman is passionate about making America a Weather-Ready Nation—and not just on the silver screen where he’s been known to predict floods and give instructions on ark building. Freeman was honored on August 21 for his commitment to reducing the loss of life and property caused by hurricanes and severe storms.

NWS Eastern Region Director Chris Strager spoke at the Martha’s Vineyard, MA, event, honoring Freeman for his commitment to preparedness. Freeman co-founded the organization [PLAN!T NOW](#) after Hurricane Ivan devastated Grenada in 2004. The non-profit organization delivers cutting-edge preparedness research, education and communications programs to individuals, organizations and communities nationwide.

Among PLAN!T’s NOW’s many activities is its [Young Meteorologist Program](#), developed in conjunction with NWS, the American Meteorological Society and the National Education Association. The program brings the [Owlie Skywarn](#) booklet into the 21st Century with a series of interactive online games featuring a redesigned Owlie.

“Nearly 600 people lost their lives this year alone due to weather events,” Strager said. “We need to make sure the American public—starting with our youth—know how to prepare for weather. It’s people like Morgan Freeman and organizations like PLAN!T NOW that will play a huge role in making America a Weather-Ready Nation.”

Partnerships like this are the cornerstone of the agency’s comprehensive initiative to build a [Weather-Ready Nation](#), as they forward the goal of saving more lives and livelihoods. ☼



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## HazMat Spill Kicks Emergency Preparedness Day into High Gear

By [Krissy Scotten](#), WCM, NWS Amarillo, TX

Looking for a way to generate excitement during your next emergency preparedness day event? Try a Hazmat spill. NWS Amarillo and the Amarillo/Potter/Randall Office of Emergency Management cohosted the 2011 Amarillo Emergency Preparedness Day on September 16 at a local Walmart. This event was held in conjunction with National Preparedness Month and the



Top: Emergency Preparedness Day attendees visit the NWS Amarillo, TX, booth. Photo by Krissy Scotten, NWS Amarillo. Bottom: Rail cars and HazMat spill shortly after the fire was extinguished. Photo by Amarillo Fire Department.

NWS Weather-Ready Nation initiative.

The event, which drew a huge crowd, suddenly lost many emergency and safety participants who were called to action by a Hazmat Incident involving several rail cars in downtown Amarillo. The spill was so extreme, mandatory evacuations near downtown were ordered as well as shelter-in-place advisements.

During this Hazmat event, NWS Amarillo forecasters provided numerous briefings, including running the NOAA Hysplit, but continued to staff the large outreach event. Two NWS Amarillo Emergency Response Meteorologists were dispatched to the Emergency Operations Center to provide decision support for the duration of the event. Dr. Maribel Martinez, Assistant Emergency Management Coordinator, said, "As always, thanks for all the weather, NOAA Hysplit and personnel support during this event!" In addition, the Amarillo Police Department issued a press release mentioning NWS Amarillo forecasts that afternoon. Luckily, there were only a few minor injuries reported, and the Hazmat spill of isopentane and molten sulphur was quickly contained.

Meteorologist-In-Charge José Garcia, commented: "I am extremely proud of the WFO Amarillo staff. Many people depend on our NWS spirit of service, and the staff performed excellent team work in supporting an outreach and Hazmat event simultaneously." This Hazmat event shows even with the best laid plans, you never know when the next disaster will strike and interrupt your events.

The key to making the Emergency Preparedness Day a success, especially with volunteers called away, was its broad base of support available to discuss safety preparedness and disaster topics ranging from severe weather, wildfires and blizzards to flash floods and house fires.

Local representatives included the Texas Department of State Health Services, Metropolitan Medical Response System, Amarillo/Potter/Randall Office of Emergency Management, Texas Panhandle Association of Contingency Planners, Blackmon Mooring, the American Red Cross and the Amarillo Fire Department's Kid's Safety Fire House. ☼

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## How to Reach the Public in the 21<sup>st</sup> Century

By [Fred McMullen](#), WCM, [Charlie Woodrum](#), Meteorologist, NWS Pittsburgh, PA

It used to be enough to communicate science to the public and expect a result. Now, NWS realizes the need to merge social science with hard science to better protect lives and property. To this end, California University of Pennsylvania teamed up with NWS Pittsburgh, local media, emergency management and the private sector to host Pittsburgh's first Integrated Warning Team (IWT) Workshop on September 30 in Canonsburg, PA.

The first half of the workshop included four sessions dedicated to social scientists, emergency management, the media and the private sector. During the second half of the workshop, the nearly 70 participants broke into four groups with a mix of expertise to address questions brought up in the morning.

The workshop concluded with everyone reconvening to share feedback. Strides were made during the workshop to develop and enhance relationships and to improve the communication of weather information to the public and those who use it to make decisions impacting the public on a daily basis. Media participants agreed to work together to coordinate their warning color schemes during severe weather to help prevent public confusion. Emergency management said they appreciated NWS decision support briefings before and during hazardous weather

events. After the breakout sessions, IWT members recognized the need for more consistency and clarity in the communication of flood-related information.

Workshop participants have the opportunity to meet bimonthly as part of the WFO Pittsburgh External Users Team and can stay in touch via the group mailing list and the California University-led IWT Facebook page.

Workshop organizers received encouraging feedback from participants: "A truly outstanding job with the workshop! Very well organized, very well done. Great interaction among people that don't normally interact. Thank you for the opportunity to present," Rob McCafferty, Allegheny County Department of Emergency Services.

"It was great to see the many different participants present and involved. For a 1 day workshop, I thought plenty of material and topics were covered and addressed. The discussion panel with the media mets was good as I know those typically are the toughest folks to get together in the same place at the same time. I was especially impressed with the presence of the National Guard and the large part of Pennsylvania severe weather operations they partake in for the region," Daniel Dix, The Weather Channel. ✪



Harrison Hove, Ohio News Network, addresses challenges in his job in front of media panel members.

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## Service Assessment

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### NWS Assesses Service After 2011 Tornadoes, Floods and Hurricane

By [Sal Romano](#), Meteorologist, NWS Performance Branch

In response to a year of deadly weather, NWS is working on three major service assessments: the spring tornado outbreak, record river flooding, and the devastation following Hurricane Irene.

#### Historic Tornado Outbreaks of April 2011

*The Historic Tornado Outbreaks of April 2011 Service Assessment* examines NWS services during and after the 362 reported tornadoes that struck the Southeast and Midwest from April 25-28. The Service Assessment Team focused on locations most severely affected by the tornadoes on April 27, 2011. This area encompassed Alabama, Arkansas, Georgia, Kentucky, Illinois, Mississippi, Missouri and Tennessee.

Two regional service assessments were included in the appendices. The first of these appendices covers tornadoes in North Carolina, South Carolina and Virginia. The second appendix reviews the St. Louis Metropolitan Area tornado event of April 22, 2011. In addition, a team has completed a separate regional service assessment of the devastating tornadoes that struck Joplin, MO, May 22. The Joplin Service Assessment was referenced in the Historic Tornado Outbreaks of April 2011 Service Assessment but is not contained in it as an appendix.

The team leaders of the four assessments briefed the NWS Corporate Board on October 4, 2011. A final draft of the *Historic Tornado Outbreaks of April 2011 Service Assessment* will be prepared by November 2011. The NWS has already released the Joplin Service Assessment.

#### Spring 2011 Mississippi River Floods

Widespread flooding occurred across the lower Ohio and mid- and lower-Mississippi Valleys during the spring of 2011 due to a combination of runoff from record snowmelt across the northern Plains and unprecedented widespread heavy rainfall in late April and early May across portions of the central Mississippi River Basin and Ohio River Basin. Extreme precipitation

amounts were recorded in some tributary basins, which received more than 20 inches of rain (700%-1000% above normal precipitation) within 2 weeks.

As water drained into the Ohio and Mississippi Rivers, channels already full from a wet spring were unable to handle the additional water. Record flooding occurred in the lower portions of the Ohio River and associated tributaries as well as along the mainstem of the Mississippi from the confluence of the Ohio and Mississippi Rivers at Cairo, IL, downstream to the Gulf of Mexico.

In the Lower Mississippi RFC's hydrologic service area alone, record levels were equaled or set at 16 river forecast locations, with 28 sites experiencing major flooding, 25, moderate flooding, and 33, minor flooding. Many WFOs shifted staff to long-term significant hydrologic operations, particularly WFOs Paducah, KY; Memphis, TN; Jackson, MS; Lake Charles, LA; and Slidell, LA. The NWS Performance Branch is reviewing the draft of this service assessment.



*Lowes Home Improvement store after it was hit by a tornado in Sanford, NC, April 16, 2011. Photo courtesy of Associated Press.*

### Hurricane Irene

On Saturday, August 20, Hurricane Irene was a tropical wave east of the Lesser Antilles. Irene struck the U.S. Virgin Islands and Puerto Rico first as a tropical storm and then strengthened into a Category 1 hurricane late Sunday night into Monday morning, August 21-22. The storm strengthened into a Category 2 hurricane. Irene then weakened before making landfall near Cape Lookout, NC, on the morning of August 27 as a Category 1 hurricane. After moving across the Outer Banks of North Carolina and extreme southeastern Virginia, Irene traveled northward off the Eastern Seaboard until it reached Little Egg Inlet on the New Jersey Coast, where it made landfall early Sunday morning. By 9 am on Sunday morning, Irene, downgraded to a tropical storm with 65 mph winds, was centered over New York City. Irene then traveled

northeast through New England and around midnight Sunday, reached the Canadian border as an extra-tropical cyclone, with sustained winds of 50 mph. Irene produced strong, damaging winds along its path, dropped massive amounts of rain and produced damaging storm surges.

The assessment focuses on locations most severely affected by the weather-related impacts of Irene, including the U.S. Virgin Islands, Puerto Rico, and North Carolina up through southeastern Canada. The assessment team is currently working on a draft report. ☼

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## Severe Weather

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### SKYWARN® Spotter Course Now Online

By [Bryan Guarente](#), COMET, and [Tony Mostek](#), NWS Forecast Decision Training Branch

The total is 400,000. That is the estimate of how many people are volunteer SKYWARN® Spotters. Each of those people likely went to a local training session hosted by an NWS local office, an emergency manager or another local group. How many more people would take the training if it were available online? We can find out now.

Since going online in early September, more than 1,000 individuals passed the “SKYWARN Spotter Training Course” hosted by the COMET® Program with support from the NWS SKYWARN Modernization Team. Through two nationally-significant, scenario-based modules, “Role of the SKYWARN Spotter” and “SKYWARN Spotter Convective Basics,” users learn:

- ◆ History of the program
- ◆ Its purpose

- ◆ Procedure for getting involved
- ◆ Tips on making accurate, succinct reports
- ◆ How to identify basic convective storm features

This training is meant as baseline training for all nationally-recognized SKYWARN Spotters. After completing the course, users can choose to volunteer as a SKYWARN spotter at the local WFO level. Local WFOs can build on this course as a prerequisite to local training or as an annual refresher.

This course is a first step to support spotter training. Future plans include creating additional modules covering numerous hazards such as winter weather, flooding, etc., and linking course completion to the NWS IRIS database. The course can be accessed on [COMET's MetEd site](#)




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## National Severe Weather Workshop Scheduled for March 1-3, 2012

By [Greg Carbin](#), WCM, and [Jared Guyer](#), Meteorologist, SPC

The theme for 2012 National Severe Weather Workshop is: “*Weather Ready Nation: Helping Communities Prepare.*” This will be the 12th anniversary for this growing national workshop dedicated to effectively transmitting messages about meteorological risk. EMs, weather enthusiasts, teachers, students, meteorologists, broadcasters and vendors in threat alerting, sheltering and communications will gather, present and discuss weather hazards topics.

After two days of general sessions, the workshop will conclude Saturday morning with a half-day session related to storm spotter training. Some of the presentations planned include:

- ◆ Reviews of the intense 2011 severe weather season
- ◆ Social science assessments from 2011 tornado events
- ◆ Impacts of hazardous weather events from a response and recovery perspective
- ◆ Progress in storm prediction technology and approaches to information dissemination.

Enterprising companies will have exhibits and information kiosks set up. Future updates to the workshop website will feature participating vendors.

- ◆ For more information about the workshop agenda, contact [Gregory.Carbin@noaa.gov](mailto:Gregory.Carbin@noaa.gov).
- ◆ For registration and accommodation information, contact [Brenda.Gomez@noaa.gov](mailto:Brenda.Gomez@noaa.gov).
- ◆ For vendor and sponsorship opportunities, contact Keith Brewster [kbrewster@ou.edu](mailto:kbrewster@ou.edu).

Check the website for updates in the weeks ahead and the next edition of *Aware* for more details such as the workshop location: <http://www.norman.noaa.gov/nsww/>. ☼

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## Space Weather

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### Secure Grid '11: Space Weather Exercise

By [Genene Fisher](#), NWS Senior Advisor, Space Weather, William Murtagh, Program Coordinator, SWPC

- ◆ What is the potential impact of a major geomagnetic storm on the North American power grid?
- ◆ What procedures should be implemented based on forecasts from NOAA's Space Weather Prediction Center (SWPC)?
- ◆ Are there ways to minimize the impact on critical infrastructure?
- ◆ What are the procedures for recovering from a catastrophic geomagnetic storm?

These questions and more were discussed October 4-5 at the Secure Grid Table Top Exercise held at the National Defense University. In addition to SWPC, the exercise included the Departments of Energy and Homeland Security and USNORTHCOM.

SWPC staff provided the scenario—an extreme (G5) geomagnetic storm. Homeland Security staff and industry provided details on the consequences—40 million Americans without electricity. Participants from government, the electric power industry and emergency response examined preparation, response and recovery actions. A summary was presented to senior leadership, including keynote speaker Assistant Secretary for Commerce Dr. Kathryn Sullivan. Themes discussed included:

- ◆ How to communicate the threat
- ◆ Importance of early warning
- ◆ Liability issues
- ◆ Incentives to protect infrastructure
- ◆ Need for further studies

The findings and recommendations will be compiled into a report to help guide public and private partners.

The magnitude and duration of a geomagnetic storm depends on many factors, including the speed, strength and magnetic orientation of a Coronal Mass Ejection. Most storms are harmless, resulting in nothing more than increased aurora activity. Stronger storms, however, can adversely affect the grid and critical infrastructure. In 1989, a geomagnetic storm cut power to Quebec, affecting 6 million people. It took 9 hours to restore the network after repairing or replacing destroyed equipment. In 2003, a magnetic storm damaged electrical systems from Scandinavia to South Africa. Both of these storms were small compared to the 1859 super storm known as the Carrington Event. With today's modern grid system, it is believed similar event could cause a widespread blackout and cost the United States between \$1 trillion and \$2 trillion.

SWPC, the nation's official source for space weather watches, warnings and alerts, monitors the sun 24 hours a day to predict solar and geomagnetic storms. For more information, see [www.spaceweather.gov](http://www.spaceweather.gov). ☼



*Bill Murtagh from SWPC presents a space weather scenario.*

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## StormReady

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### Southern Arkansas University Offers Unique Emergency Management

By [Keith Stelman](#), WCM, NWS Shreveport, LA

Southern Arkansas University (SAU) in Magnolia, AR, home to more than 3,300 students and faculty, became the first StormReady University in Arkansas this summer. Thanks to the work of University Police Chief and Emergency Manager Eric Plummer, the University can tout a weather readiness program second to none.

The University relies on an array of methods to communicate with its faculty and students. On the 200 foot bell tower in the middle of campus sits the only known voice activated tornado siren in the Arkansas, Louisiana, Texas region. This siren can transmit weather warnings or be overridden with a customized voice with instructions. Earlier this year a train carrying hazardous material derailed and the voice-based system was used to instruct students and faculty to evacuate to the athletic center.



SAU also invested in campus-wide text messaging capabilities and a software package allowing the Campus Police to display an emergency message on every computer on the campus network. The EM office also can communicate with NWS directly via the Arkansas 800 MHz radio system, owned and operated by the state government.

One of the newer technologies used by SAU is a Twitter feed through which the university asks all of the students with Twitter accounts to access for updated information. SAU also designated a safe area in each building and assigned a building captain as part of its Emergency Operating Plan. Each building captain is responsible for the students and faculty occupying their building.

On two separate occasions this past spring, the University went into lock down for tornado warnings and successfully used all of these communication resources.

WFO Shreveport welcomes Southern Arkansas University into the StormReady program and hopes other universities will follow its example. ☼



*Southern Arkansas University goes Extra StormReady mile: from left: NWS Little Rock, AR, MIC Armando Garza; Eric Plummer, Chief of Police; Dr. David Rankin, University President; Keith Stellman, WCM.*

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## Wisconsin Boy Scouts Uninjured Thanks to StormReady®

By [Rusty Kapela](#), WCM, NWS Milwaukee, WI

WFO Milwaukee designated the [Marquette/Oxford Camp Freeland Leslie a StormReady supporter](#) on April 27. On July 19, some 250 scouts and leaders learned just how valuable StormReady preparations can be.

Scout leaders were aware of the prospects for severe weather impacting the area. They followed the progress of a line of severe storms packing wind gusts to around 60 mph on [NWR](#) and kept up with NWS radar on the Internet. When it became apparent the storm was headed directly for the camp, staff put the emergency plan into action and quickly got everyone into designated shelters.

“The concept of plan your work and work your plan coupled with the Boy Scout motto: ‘Be Prepared,’ definitely paid dividends for our scouts that night,” Camp Freeland Leslie staffer Bill Hollister said. “Congratulations to those who trained and to those who put the training into action.”

Hollister noted the storm, “was over as fast as it happened” as the high winds whipped tree limbs, tents and equipment for about 5 minutes. The storm hit the camp at 11:25 pm and calm returned by 11:30 pm. Scouts and leaders came out of their shelters to find significant damage to several tents, mostly from fallen tree branches landing on them, but thanks to StormReady, there were no injuries.

“This was a great opportunity for the scouts to really see the advantages of being StormReady and will go a long way toward reinforcing the fact that being prepared pays off. Getting 250 people through a severe storm in an outdoor environment with no injuries did not happen by accident. The training and education provided by the National Weather Service are responsible for that,” Hollister added. ☼



*The StormReady programs helped prepare Boy Scouts for severe weather at Camp Freeland Leslie thanks to StormReady.*

# Winter Weather

## Science in a Sphere Puts a New Spin on Winter Weather

By [Ted Buehner](#), WCM, NWS Seattle, WA



*NWS Seattle WCM Ted Buehner uses the Science on a Sphere to demonstrate last winter's La Nina and how tropical Pacific sea surface temperatures have trended to another La Nina this winter.*

This year's Northwest "Take Winter by Storm" preparedness campaign kicked off on October 3 at Seattle's Pacific Science Center using the Center's Science on a Sphere as a centerpiece.

Take Winter By Storm spokesperson Andy Wappler, who is Puget Sound Energy Vice President of Communications and former KIRO-TV chief meteorologist, teamed up with NWS Seattle to provide the winter weather forecast and important preparedness tips.

For a 5<sup>th</sup> year, NWS Seattle, WA, joined with four central Puget Sound counties, several cities, a number of Puget Sound area businesses and non-profits for the campaign. All Seattle area TV stations and several radio stations covered the event. [The Seattle Times](#) also ran an article on the campaign.

Western Washington experiences a number of significant winter weather hazards such as flooding, wind storms and snow. The "Take Winter By Storm" campaign is designed to help area residents and businesses better prepare by offering easy-to-use tools and resources.

The campaign messages are driven by TV and radio Public Service Announcements and social media such as [Facebook](#), [Twitter](#) (@WinterByStorm, #stormready, #winterprep), [YouTube](#) and [Flickr](#). The [takewinterbystorm.org](#) Website offers checklists and emergency contact cards in nine different languages.

Every Monday through mid-November, the campaign produces a winter weather themed media event. Topics include storm drain/urban flood prevention, river flooding, wind/power outages and related carbon monoxide poisoning prevention, 3-day supplies, and snow and driving/transit preparedness. In addition, the campaign re-enforces NWS Seattle flood and weather warning messages by pushing relevant preparedness tips.

A study of the cumulative effect of these continuing campaigns conducted last year, showed a growing community response spurring more organizations to join the effort in 2011.

In October 2011, the campaign won a "Best in Show" award from the Puget Sound American Marketing Association, beating out a number of other high profile campaigns. The award noted the campaign exemplified a true "marketing" campaign, capturing the pulse of the market by targeting the correct audience, developing public-private partnerships, using strategic branding and ultimately producing accountable engagement metrics to show increased community preparedness behaviors in winter weather preparedness. ☺

### Climate, Water and Weather Links

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