

# Aware

April 2010

## Climate, Water, Weather

### EMWIN-N to Transition on GOES East: April 26, 2010

By [William Johnson](#), NWS Office of Operational Systems

The long anticipated Emergency Managers Weather Information Network-N (EMWIN-N) transition on GOES East is scheduled to occur on or about April 26. GOES 12 users must take action to continue receiving the EMWIN broadcast.

By the date above, users with legacy EMWIN systems will need to re-point to GOES West, currently GOES 11. If you are using a legacy system, you should try re-pointing to GOES West as soon as possible to ensure you can acquire the signal.

At the same time, to support the Caribbean, GOES 12 (East) will be moved to 60 degrees west. NWS plans to reactivate the current EMWIN-I broadcast on GOES 12 once it arrives at its new location. This addition will allow users a longer transition period; however, the legacy EMWIN-I broadcast on GOES 12 likely will not be available until it reaches 60 degrees west. EMWIN-I is moving at approximately 1/2 degree per day, thus GOES 12 will take about 30 days to arrive at its new location.

Using the legacy broadcast is only a short-term solution due to the age of the GOES 12 satellite. In addition, GOES 14 is tentatively scheduled to replace GOES 11 (West) in December 2011. The transition could occur earlier if there is a satellite failure. All EMWIN users should migrate to EMWIN-N capable systems as soon as possible.

#### Transition Background

Changes in the GOES-N thru P satellite constellation resulted in changes to the EMWIN broadcast and the development of EMWIN-N. The changes allow the use of improved technologies, but 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
- ◆ Dedicated transponder
- ◆ No eclipse seasons

Costs for an EMWIN-N capable system are as low as \$2,000, plus the cost of a computer. Upgrades for an existing system cost approximately \$1,000.

For more information, please download the [EMWIN-N Transition Flyer](#). To keep informed of new developments in the EMWIN transition, please visit the [NWS EMWIN Website](#).

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## Aviation Tips

### Find Aviation Weather Tips in *The Front*

By [Melody Magnus](#), Managing Editor, *The Front*

In March, the NWS Aviation Branch released the latest edition of its aviation safety newsletter, [The Front](#). This free resource offers aviation weather tips to pilots of private and commercial planes, balloons and other aircraft. Articles in the latest edition include:

- ◆ Using LAMP Guidance in Flight Planning
- ◆ Eastern Region CWSU Websites Gain Consistent Look and Feel

If you would like an email when [The Front](#) is released, write the Editor, [Melody Magnus](#). If you have suggestions or comments on the content, contact [Michael Graf](#), NWS Aviation Branch. ☼



## Flooding/Hydrology

### Call for Papers: National Flood Workshop, October 24–26, 2010

By [Jill F. Hasling](#), Certified Consulting Meteorologist, Weather Research Center

A [National Flood Workshop](#) on October 24-26, 2010, is being organized by Weather Research Center (WRC), a private, non-profit educational and research center in Houston, TX, and its partners, which include NWS Houston. The workshop will bring together federal agencies, emergency managers, academia and professionals from across the nation to encourage dialogue on the various aspects of flooding. WRC's goal is to hold annual national workshops to discuss flooding topics, provide education and training and most importantly, reduce loss of life and property damage from floods. The conference will offer four tracks:

- ◆ **Track 1: Meteorology and Hydrology: Flood Event Case Studies, Flood Forecasting, Flood Monitoring Systems (ALERT, USGS), Flooding Basics, Media, Public Warning, Awareness & Education, and Storm Surge Events**
- ◆ **Track 2: Modeling and Inundation, Data Assessment, Digital Elevation Models, GIS, Rainfall Predictive Models, and Hydrology and Hydraulic Models**
- ◆ **Track 3: Floodplain Management, Flood Impacts, Infrastructure, Insurance and Loss Mitigation: Legal Issues Post Disaster, Response and Recovery, and Watershed Management**
- ◆ **Track 4: Environmental Impacts, Hazards, Land Use and Development Impacts, and Water Quality**
- ◆ **Other Topics: Preparing for Future Floods and Global Events**

Abstracts are being sought for oral presentations and posters. Send abstracts to [wrc@wxresearch.org](mailto:wrc@wxresearch.org) or upload to the [WRC website](#) on or before **April 28, 2010**. Conference presenters are required to pay the appropriate conference registration fee. ☼

### Aware

NOAA's  
National Weather Service  
Office of Climate, Water  
and Weather Services

OCWWS Director  
Dave Caldwell

Acting Branch Chief  
Jason Tuell

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

Editors  
Darcey Dodd  
Art Kraus

**Aware** online  
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## High Water Mark Signs Highlight Flood Dangers

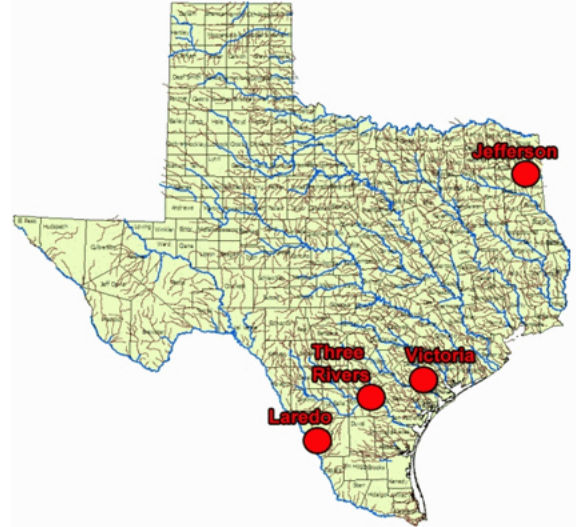
By [John Metz](#), WCM, NWS Corpus Christi, TX

The 40<sup>th</sup> High Water Mark sign in the United States was unveiled in Victoria, TX, on March 19. This addition marks the second High Water Mark sign to be displayed in Texas and the first for the NWS West Gulf River Forecast Center (WGRFC) in Ft. Worth and the NWS Forecast Office in Corpus Christi. The sign commemorates the record 500-year flood on the Guadalupe River that occurred on October 20, 1998.

Moisture from two Pacific hurricanes, along with a stalled frontal boundary over central Texas, produced up to 30 inches of rainfall over the headwaters of the Guadalupe River. During the height of the flood, the river rose to a level of 34.04 feet in Victoria, inundating Riverside Park and parts of the downtown area. The peak flow reached a record shattering 466,000 cubic feet per second, three times the previously observed record flow set back in 1936.

This High Water Mark sign project was a joint effort between the Victoria Office of Emergency Management, the U.S. Geological Survey and NWS. It is part of a campaign to raise public awareness of local flood history and was unveiled during Flood Safety Awareness Week 2010.

The sign is located in Riverside Park, a popular high traffic area. Two additional locations are planned for south Texas, including Three Rivers and Laredo. ☼



*Texas proposed and actual high water signs.*

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## NWS Caribou and The City of Bangor Strengthen Flood Safety Ties

By [Mark Turner](#), Forecaster, NWS Caribou, ME

One forecasting challenge faced by NWS Caribou, ME, is predicting water levels in a low lying area of eastern Maine's largest city, Bangor. In the business district of downtown Bangor, an area known as the Kenduskeag Plaza, at the confluence of the Kenduskeag Stream and the powerful Penobscot River, freshwater runoff and ocean tides converge, sometimes with disastrous results.

On Groundhog Day (February 2) 1976, a powerful storm system raced up the East Coast passing through extreme western Maine. This storm system drove hurricane-force winds through the Gulf of Maine and onto Maine's Mid-Coast, causing waves as high as 14 feet and a storm surge of 5 feet.

The storm surge was amplified as it pushed up the Penobscot River, nearly 20 miles from the Penobscot Narrows, toward downtown Bangor.

A dramatic tidal surge-induced flood struck Bangor at 11:15 am, just over an hour before high tide.

The water was estimated to have risen at a rate of 1 foot per minute, quickly inundating businesses and roads to a depth of over 12 feet, more than 17 feet above flood stage and 10 feet above the expected astronomical high tide level. More than 200 cars were submerged and many people were trapped in the rising water.



*Flooding in downtown Bangor, ME, 1976*

In 2008, Bangor, with the assistance of NWS Caribou and the Maine Emergency Management Agency, applied for FEMA hazard mitigation grant funding to establish two stream gauging stations on the Kenduskeag Stream in the Penobscot River watershed. These gauges were installed by the United States Geological Survey in December of 2009.

Soon after installation, the gauges were tested by a strong Nor'easter in the Gulf of Maine. Using water level data from the new gauges, survey data from Bangor City Engineers and empirical tide, surge and water level forecasts, NWS successfully predicted the minor flooding that affected Bangor on January 2, 2010. Since this initial success, NWS Caribou has teamed up with Bangor City officials to ensure the public's safety three additional times. The increased coordination between WFO Caribou and city officials will also soon lead to the city being recognized as StormReady. ☼

## NWS Helps Public Prepare for Possible Dam Failure

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

NWS Seattle is working with local partners to improve flood preparedness in the event of flooding related to water seeping from the Howard Hanson Dam southeast of Seattle.

In January 2009, heavy rain produced widespread major flooding throughout much

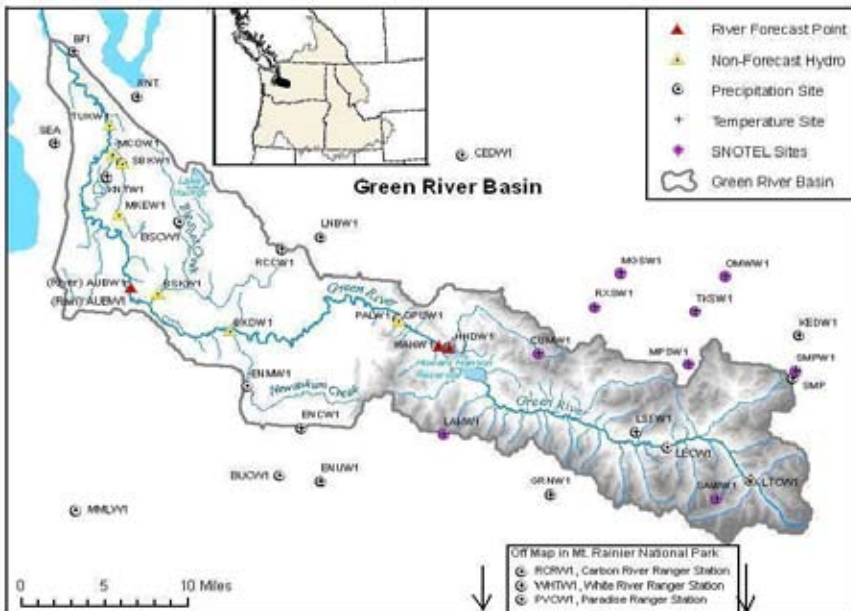
of the Pacific Northwest. The Howard Hanson Dam sharply reduced the threat of flooding downstream in King County and four Washington cities along the Green River. Without the dam, built in 1962, the Green River Valley would have experienced widespread flooding. During the January event, the dam suffered some damage on its right abutment, impairing its ability to control future floods.

The U.S. Army Corps of Engineers made a temporary fix but a more permanent repair is not expected for at least 3 to 5 years. The Green River Valley is home to about a quarter million people and is a major warehouse and business district. In addition, tens of thousands of people commute through the valley. FEMA estimates that a major flood disaster would cause at least \$10 billion in losses.

NWS Seattle is partnering with the Corps, FEMA, state government, King County and the Green River cities to help residents and businesses better prepare for flooding potential.

The NWS Northwest RFC provides guidance on how much water is expected to flow into the dam's reservoir as well as how much water is flowing into the river below the dam. The Corps uses that information to help manage the water flow out of the dam to minimize the flood threat downstream. NWS Seattle provides forecasts of rainfall and snow levels to the RFC as input to river guidance and issues flood warnings as needed.

NWS Seattle also installed additional instrumentation to monitor conditions more closely in the basin and surrounding areas, including rain gauges and several atmospheric river observatories supported by NOAA's Earth System Research Laboratory. This additional instrumentation has helped short-term weather and river forecasts.



Green River Basin map is just one of the many features on the [NWS Seattle Howard Hanson Dam Webpage](#).

Finally, NWS Seattle now offers a [Howard Hanson Dam Webpage](#) on its site with current and forecast conditions in the river basin along with other resources. The page includes the Hydrology section of the Seattle Area Forecast Discussion (AFD), which is included routinely in every AFD from late October through March. This section includes specific forecast information for the Green River basin out to 10 days. Partners and customers have commented that the Website link is an outstanding resource and easy to use.

FEMA, the state of Washington, King County and the Green River cities all want more lead time about a potential major flood so they can deploy resources in advance. NWS Seattle worked with the Corps, the RFC and FEMA to develop 3-5 day trigger point levels, based on forecast rain amounts that have historically generated a significant flood on the Green River. Combined with locally tailored 5-day precipitation guidance and other resources, NWS Seattle issued a twice daily Alert Level Forecast for the 3-5 day forecast period. The product was disseminated via email to key partners, indicating the anticipated threat level. There were other joint efforts prior to and during the past winter, such as town hall meetings, disaster fairs and exercises.

Until the Howard Hanson Dam right abutment is permanently repaired, the threat of flooding in this economic artery of Washington will continue. That threat exists for at least the next several winters. For now, partners will continue their high level of joint preparedness and planning efforts. ☼

## Hurricane Awareness

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### National Hurricane Center Improves Format of Public Advisories

By [Daniel Brown](#), National Hurricane Center

The National Hurricane Center (NHC) issues a suite of products for any active tropical cyclone in the Atlantic or eastern North Pacific basin. The suite contains several text and graphic products, including the Tropical Cyclone Discussion, Wind Speed and Intensity Probability products, 3- and 5-day Watch/Warning Cone graphics, and an Initial Wind Field graphic.

The Public Advisory is a text product that contains basic storm information (e.g., location, maximum sustained winds, present movement and minimum central pressure), coastal watches and warnings in effect, a narrative describing the expected motion and intensity during the next 48 hours and information on storm impacts. The basic format of the Public Advisory has not changed for several decades. Changes to the product beginning in 2010 should help users find information more efficiently. The Public Advisory will now be organized in sections:

- ◆ Summary
- ◆ Watches and Warnings
- ◆ Discussion and 48-hour outlook
- ◆ Hazards affecting land
- ◆ Next advisory

The sections contain keywords that can help the human eye and computer software find specific information more readily. The Summary section, offering a concise list of storm particulars, has been moved to the top of the product, immediately following the headline.

Information in the Watches and Warnings section is organized into two parts: the first part highlights changes in Watches or Warnings since the last advisory and the second part summarizes Watches and Warnings in effect in list or bullet form.

A Discussion and 48-hour outlook section provides users with information on the motion, intensity, size and minimum pressure of the cyclone. That section also contains general information on the predicted track and intensity of the cyclone during the next 2 days.

The next section describes hazards affecting land, such as storm surge, wind, rainfall, tornadoes and surf. Information will now be presented in paragraphs that begin with keywords identifying the type of hazard.

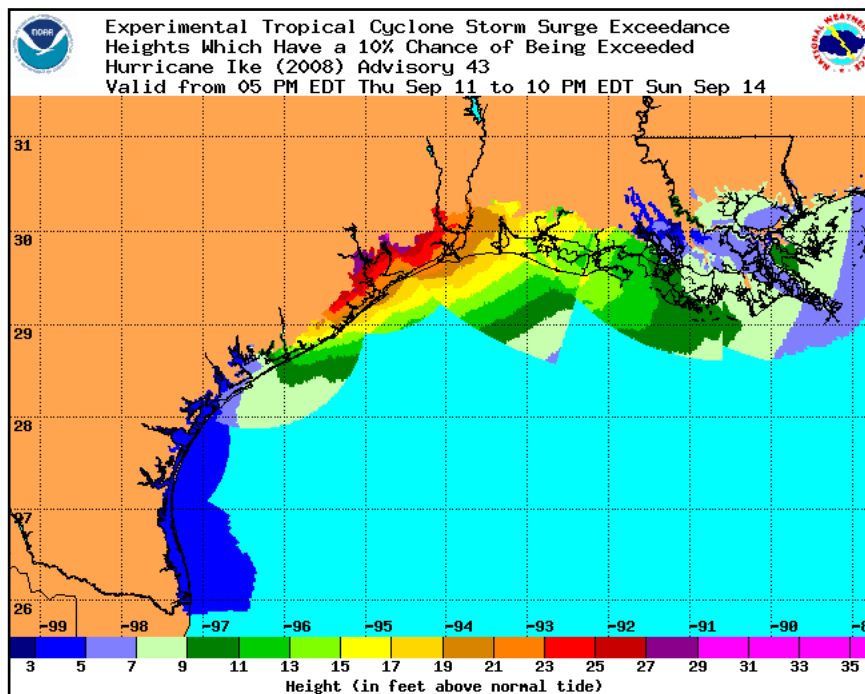
The final section will provide the time(s) of the next scheduled issuance of the public advisory.

Examples and a more detailed description of the new public advisory format can be found on the [National Hurricane Center Website](#). ☼

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## Tropical Cyclone Program Makes Changes for 2010 Season

By [John Kuhn](#), NWS Marine Services Branch



*This experimental graphic shows storm surge heights, in feet above normal tide level, which have a 10 percent chance of being exceeded during the next 3 days. The graphic is based upon an ensemble of Sea, Lake and Overland Surge from Hurricanes (SLOSH) model runs using the current National Hurricane Center (NHC) official hurricane advisory. The exceedance heights depend on the historical accuracy of NHC's forecasts of hurricane track and wind speed, and an estimate of storm size.*

As discussed in the previous article, the Tropical Cyclone Public Advisory Product (TCP) will undergo a format change allowing users to more easily find information within standardized sections and provide easier decoding with automated programs.

NWS also will implement a new Saffir-Simpson Hurricane Wind Scale (SSHWS) this hurricane season. The new scale will not provide pre-established storm surge and flooding impacts to categorize hurricanes.

The SSHWS contains the same wind speed ranges for each of the five categories of hurricanes in the original scale; however, the new scale provides updated definitions of damage and impacts. The new definitions were developed in association with highly respected wind scientists from academia and industry. Further information can be found at the following links:

The 2010 tropical season kicks off soon. During National Hurricane Preparedness Week, May 23-29, NOAA releases its official hurricane outlook. The hurricane season begins May 15 in the eastern Pacific and June 1 in the Atlantic and central Pacific. Several changes will take place in the NWS tropical cyclone program for 2010. The most significant are detailed below.

The NHC will increase the lead time associated with Tropical Cyclone Watches and Warnings by 12 hours. Tropical Storm Watches will generally be issued for threatened coastal areas when tropical storm conditions are possible there within 48 hours. Tropical Storm Warnings will be issued for areas when conditions are expected within 36 hours. Similar increases in lead time will apply to Hurricane Watches and Warnings. Hurricane Watches and Warnings generally will be timed to provide 48 hours and 36 hours of notice, respectively, before the onset of tropical storm force winds. This threshold (sustained winds of 39 mph or greater) forces a suspension of many hurricane preparedness activities.

- ◆ [Atlantic and East Central Pacific](#)
- ◆ [Central Pacific](#)

You can find additional tropical cyclone service changes at the official [Public Information Notice Website](#).

The following tropical cyclone products will become operational for 2010:

- ◆ [Tropical Cyclone Surface Wind Field Graphic](#) for the Central Pacific hurricane basin
- ◆ [Graphical Tropical Weather Outlook](#) issued by Central Pacific Hurricane Center (CPHC)
- ◆ [Tropical Cyclone Surface Wind Speed Probabilities for the North Pacific Ocean](#)

Two products will remain experimental. As in 2009, the Experimental Tropical Cyclone [Probabilistic Storm Surge](#) Exceedance Products will consist of 10 through 90 percent exceedance heights in 10 percent increments.

The second project to remain experimental is the [Tropical Cyclone Impact Graphics](#). NWS San Juan, PR, will join the list of WFOs posting impact graphics in 2010. WFOs will produce four hazards graphics—coastal flooding/surge, inland flooding, wind and tornadoes—when any portion of the WFO forecast area is under an NHC Tropical Watch or Warning. The graphics will also be available in netCDF format. Users are strongly encouraged to provide feedback on these products. ☼

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## Hurricane Preparedness Course Helps Connect Players

By [Ray Tanabe](#), WCM, CPHC/NWS Honolulu, HI

The CPHC and FEMA partnered again to host the second annual L-324 Hurricane Preparedness Course in Hawaii on February 23-25. The 2010 class included representatives from FEMA, DHS, state and county emergency manager (EM), police, the Pacific Disaster Center, University of Hawaii and a local neighborhood preparedness group.

The 3-day course is a specialized training opportunity to build the capacity of civil defense and EMs to understand hurricanes and make effective protective action decisions during a hurricane threat.

Through hands-on and interactive instruction with hurricane specialists at CPHC, the course provides intensive instruction on all aspects of tropical cyclone forecasts and products, along with local NWS products. The course also emphasizes the importance of understanding storm inundation and flash flooding threats.

For most attendees, the most important feature of the course is the chance to build face-to-face relationships between NWS hurricane specialists and the EM community. Many EMs recognized the names that appear on hurricane and other forecast products from CPHC/NWS Honolulu and were glad to put faces to names. Likewise, forecasters were glad to meet EMs they often speak with over the phone and build a more personal relationship. ☼



*Attendees at the 3-day Hurricane Course exchange ideas and make contacts.*

## Outreach Innovations

### A New Way to Visit Wyoming Schools

By [Katy Barnham](#), Meteorologist, NWS Riverton, WY

NWS Riverton, WY, covers nearly 57,000 square miles, or about 58 percent of Wyoming. Included in its 11 counties are numerous schools offering opportunities for outreach events. With this vast area to cover, traveling to some of these schools can take NWS employees in excess of 4 hours each way.

Recently, the office began using the Wyoming Education Network (WEN), a video conferencing network, to allow multiple schools from across the state to view a centralized speaker. The first WEN talk was conducted on February 11 and was viewed by eight schools across the state. The topics included an overview of NWS and a look at winter weather safety.

The presentation was followed by an “open-mic” time when students were able to ask questions. The question and answer time allowed the NWS speaker to see the students and added a more personal feel to the session. With NWS permission, the WEN coordinator taped the session and kept it on the network for 30 days for other schools to access.

Given the setup of the WEN studio and the various cameras there, the presentations can include Microsoft PowerPoint™ slides, visual aids and a drawing board. The goal is to be dynamic and informative for students of varying age levels.

The first NWS talk was geared toward high school students, although one or two middle schools took part. Two additional WEN talks are scheduled for later this school year; NWS Riverton already is planning several talks for the next school year.

Video conferencing is highly beneficial on many levels. It allows additional schools to participate in NWS talks, provides speaking experience for NWS employees and reduces the amount of time NWS employees spend traveling to conduct a single talk. NWS Riverton realizes that not every school participates in the WEN and still conducts on-site school visits as time allows. ☼



## Severe Weather

### NWS Seeks Comments on Proposal to Check Twitter for Significant Weather Reports

By [Bob Bunge](#), NWS Office of Operational Systems

NWS is seeking comments through December 31 on experimental use of Twitter™ to obtain user reports of hazardous weather. An advantage of searching Twitter™ for weather reports is the capability to use recently added geographical information, “geotagging,” associated



with Twitter™ messages—“Tweets.” This information allows NWS to correlate each Tweet to the location where it was sent.

NWS expects that access to information from this widely used social media tool will help to enhance and increase timely and accurate online weather reporting and communication between the public and their local weather forecast offices.

The reports will be carefully evaluated during the experiment to ensure quality and timeliness. More information on this project can be found at the [Storm Report Website](#).

The public can monitor these reports via third party websites. Links are provided at the Storm Report Website. To provide comments, go to the [NWS Twitter™ Survey](#). ❄



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## NWS Launches “When Thunder Roars Go Indoors” County Campaign

By [Mary Scarzello Fairbanks](#), Meteorologist, NWS OCWWS

Last summer, during one of my son’s little league baseball games in Howard County, MD, I heard a rumble of thunder and assumed the coach would call the game. When he didn’t, I walked over to ask why. He said he would wait until he heard more thunder. While I was trying to explain that if you could hear *any* thunder, lightning was close enough to strike, we heard another loud clap of thunder. I pulled my son off the pitcher’s mound, bringing the game to a halt and upsetting the coaches and majority of parents, who thought they were safe unless they saw lightning nearby.

A parent on the opposing team happened to work for Howard County’s Health Department. He asked what the county could do to help educate people about lightning risks. In response, I led an effort by the NWS Outreach Program to develop the “When Thunder Roars Go Indoors” County Campaign.

On average, each year in the United States, lightning kills 58 people and injures about 400 others. Many of those injured suffer from a variety of long-term, debilitating symptoms and permanent neurological disabilities. A large percentage of victims reportedly were seeking shelter when hit but waited too long to get to safety.

The “When Thunder Roars Go Indoors” campaign for counties uses a new approach to educate the public about lightning dangers. The campaign encourages people to respond to the sound of thunder and not wait for lightning or rain to head for a safe shelter. This campaign establishes a voluntary program to help counties increase lightning awareness at their outdoor recreational venues.

The campaign is inexpensive, can be developed and implemented quickly and easily with available resources and supports public health and safety initiatives. Howard County has placed signs with the slogan “When Thunder Roars Go Indoors” at the entrance to all its 72 public schools, as well as sports fields and facilities, public parks and recreation centers.

Join Howard County in being a leader in the effort to keep its community safe by [downloading our easy to use toolkit](#). For more resources, see the [Lightning Safety Website](#). ❄



*Park, playgrounds, ball fields, pools and other outdoor recreation locales in Howard County, MD, now sport these bright yellow signs reminding people to go indoors as soon as they hear thunder.*

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## LPI Helps Support NOAA's Lightning Safety Campaign



By [Donna Franklin](#), NWS Lightning Safety Program Lead

Donna Franklin, NOAA's Lightning Safety Program Lead, addressed the 2010 United Lightning Protection Association (ULPA) and Lightning Protection Institute (LPI) Annual Conference in Nashville, TN. Accompanied by Ellen Bryan, a Miss Ohio contestant and passionate spokesperson for lightning safety, Franklin explained NOAA's Lightning Safety Awareness Campaign and stressed the importance of personal responsibility when it comes to lightning safety.

NOAA's Lightning Safety campaign got a generous boost from LPI. Pictured are Leslie Chapman-Henderson, President/CEO of Federal Alliance for Safe Homes; Donna Franklin, NWS; Kim Loehr, Marketing Communications Consultant, LPI; and Ellen Bryan, lightning spokesperson and sister of a lightning victim.

After the presentation, LPI committed \$5,000 to partner with NOAA in the 2010 Lightning Safety Campaign. ULPA presented Ellen Bryan with a \$1,000 check to support her efforts to take the lightning safety message to schools and community organizations. Ellen's sister, Christina, was struck by lightning 10 years ago and sustained extensive and permanent injuries. Ellen and Christina recorded a [public service announcement](#) for NOAA's lightning safety program last year. ✨

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## NWS Workshop Survey Shows Who Knows Weather

By [Greg Carbin](#), WCM, Storm Prediction Center and [Dale Morris](#), Warning Decision Training Branch

EMs, meteorologists and weather enthusiasts gathered in Norman, OK, for the 10<sup>th</sup> Annual National Severe Weather Workshop, March 4-6. This year's workshop was attended by more than 400 people from across the United States and Canada and from as far away as China and South Korea. Each day featured presentations from public and private sector individuals and agencies involved in emergency management, hazardous weather information, and mitigation efforts.

The workshop is designed to enhance partnerships between severe weather forecasters and researchers, EMs, broadcast meteorologists, businesses, storm spotters and other weather enthusiasts.

Participants identify communities at risk, evaluate current and future tools for hazardous weather assessment, and discuss the challenges involved in conveying warning information about impending weather to the public.

Attendees were asked to complete a 5-minute online survey on their perceptions of uncertainty terms and various expressions of uncertainty and probability currently used in various forecast and warning products.

Respondent included a mix of 55 EMs, NWS forecasters, broadcast meteorologists, academics, researchers and other users of weather information. All respondents are assumed to be better educated about weather information than the general public. The results were tabulated and presented on the last day of the workshop. Some of the most interesting responses follow.

*What does a forecast of 60 percent chance of rain for tomorrow mean?* Of those responding, 36 percent indicated the correct answer: It will rain on 60 percent of days like tomorrow. A significant number of the meteorologists who responded (48 percent) answered incorrectly.



Bill Proenza, NWS Southern Region Director, speaks at the 10th Annual National Severe Weather Workshop.

*How would you interpret a 10 percent contour in a Storm Prediction Center (SPC) convective outlook?* While more than 70 percent of respondents chose at least one of two correct answers, both meteorologists and non-meteorologists missed the question.

*What does a 60 percent probability in a tornado watch mean?* The correct interpretation is 6 out of 10 watches like this one will have two or more tornadoes. That answer was selected by only 25 percent of respondents.

In general, there was disagreement over expressing probabilities in numeric terms; however, there was broad agreement with questions on expressing uncertainty in qualitative terms such as slight, moderate and likely.

The null hypothesis behind the survey was that there would be a lack of consensus among attendees about expressions of uncertainty. The hypothesis was proved to be true in most cases. This survey did reveal a lack of consensus among the meteorologists about their understanding of probability and uncertainty. The survey suggests that we need to study forecaster needs as well as those of users. In addition, the survey results imply that effective use of probabilistic information may be challenging if those producing the information do not agree on these expressions of uncertainty.

The annual National Severe Weather Workshop is hosted by NWS and Oceanic and Atmospheric Research, the Oklahoma Emergency Management Association and the Central Oklahoma Chapter of the American Meteorological Society/National Weather Association. ✨

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## Leaf Blower Rakes in Audience for Gorillas

By [Steve Drillette](#), WCM, NWS Amarillo, TX

In March, NWS Amarillo, TX, took part in “Kids Day at the Gorillas.” On “Kids Day,” the semi-pro Amarillo Gorillas hockey team played at 11 am with all of the Amarillo Independent School District 4<sup>th</sup> and 5<sup>th</sup> graders attending.

NWS Amarillo provided entertainment during the first intermission between periods. WCM Steve Drillette, Forecaster John Brost and HydroMeteorological Technician Steve Bilodeau conducted a presentation on the dangers of severe weather, which included a demonstration on how a severe thunderstorm produces large hail. John Brost used a leaf blower to illustrate a storm’s updraft that suspended various light weight balls, serving as hailstones. Steve Bilodeau played the victim who was eventually struck by the hailstones. The demonstration was a big hit with more than 500 students and 200 adults attending. ✨



*WCM Steve Drillette, center, describes the demonstration as Forecaster John Brost, left, imitates a thunderstorm updraft with a leaf blower and Steve Bilodeau observes the suspended hail.*

## Service Assessments

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### NWS Releases Mount Redoubt Service Assessment; Two More Assessments Near Completion

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

Service Assessments evaluate NWS performance during significant weather events. The following is a status of current national Service Assessments:

- ◆ **Mount Redoubt Volcanic Eruptions March-April 2009:** On March 22, 2009, Mount Redoubt Volcano, just over 100 miles southwest of Anchorage, AK, began a series of eruptions.

Of the six significant eruptions, plume heights were at or above 60,000 feet on two occasions. Ashfall amounts west and north of Anchorage ranged from just a trace to a half inch. The assessment was signed by OCWWS and NWS Alaska Region Directors in January 2010 and is [online for download](#).

- ◆ **Southeast United States Flooding of September 2009:** Copious moisture drawn northward into the Southeast United States produced showers and thunderstorms from Friday, September 18, through Monday, September 21, 2009. The northern two-thirds of Georgia, Alabama and southeast Tennessee were hardest hit as the southeasterly low level winds provided a favorable upslope flow. Flash flooding and areal flooding were widespread with the greatest impacts concluding on Wednesday, September 23, 2009. The assessment was briefed to the NWS Corporate Board on March 2, 2010. The final draft has been prepared. NWS staff plan to release the report this spring.
- ◆ **Tsunami in the South Pacific Basin on September 29-30, 2009:** An earthquake, with an 8.1 magnitude, occurred at 1748 UTC (6:48 am Samoa Standard Time) on Tuesday, September 29, 2009, about 125 miles south of the Samoan Islands in the south central Pacific Ocean. Within minutes, this earthquake spawned a tsunami that severely impacted islands of the South Pacific Ocean, including American Samoa, Western Samoa and Tonga. The total number of reported fatalities on these three islands was at least 192; this included 149 in Western Samoa, 34 in American Samoa and 9 in Tonga. No significant impacts were noted in Hawaii or on the U.S. West Coast. NWS is preparing a final draft of this report. ❄

## StormReady

### Nation's Deadliest Tornado Commemoration Highlighted with StormReady Ceremony for Nation's Deadliest Tornado City

By [Rick Shanklin](#), WCM, NWS Paducah, KY

March marked the 85-year anniversary of our nation's deadliest tornado, the [Great Tri-State Tornado of March 18, 1925](#). This tornado killed 695 people as it tracked for 219 miles across Missouri, Illinois and Indiana. In recognition of this anniversary, NWS Paducah, KY, held a commemoration ceremony at John A. Logan College in Carterville, IL.

The commemoration ceremony included presentations from Peter Felkner, author of *The Tri-State Tornado—The Story of America's Greatest Tornado Disaster*, and a commemoration video produced by Shane Luecke, Electronics Systems Analyst (ESA), NWS Paducah. The video included some rarely-seen movie footage following the tornado. In addition, a presentation was made by Steve Piltz, MIC of NWS Tulsa, OK and team member of the Tri-State Tornado Reanalysis Project. The project includes an extensive reanalysis of the track, including an evaluation of its continuity and an effort to find and analyze additional meteorological data.

While discussions and reflections of the historical significance of the tornado were a strong focus of the commemoration ceremony, other aspects were considered, including the structure of the parent thunderstorm and how it might have appeared as well as the impacts this tornado



Steve Piltz, MIC, WFO Tulsa, OK, presents "Update to the Tri-State Tornado Re-Analysis Project." The sensational, but exaggerated headline from the 1920s, spotlights the tragic consequences of the event.

would have if it occurred today. One major benefit of the ceremony, which was widely covered by the media, was the promotion of severe weather preparedness before, during and after the event.

A unique part of the overall commemoration ceremony was a StormReady recognition ceremony for Murphysboro, IL, which holds the record for the greatest number of single tornado fatalities—234—for any U.S. city. Steve Piltz, who is both a native of Murphysboro and a founder of the StormReady program, presented the StormReady signs and certificate plaques to Murphysboro officials. ❄

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## StormReady Program Gains 38 Sites in New Fiscal Year

By [Melody Magnus](#), *Aware Editor*

The new decade already has 38 new StormReady sites, bringing the total to 1,588 as of April 15. StormReady increased its count with new counties and communities in states from Washington to Florida. The program also gained a StormReady hotel: Loews Hotels at Universal Orlando in Florida. The military stepped up when the 148th Fighter Wing of the Minnesota Air National Guard joined in March.

StormReady gained an impressive seven universities in the past three months: Purdue and Valparaiso Universities in Indiana, the University of Louisiana at Monroe, the Universities of Alabama and New Mexico, Virginia Tech University and the University of Medicine and Dentistry of New Jersey. The TsunamiReady program gained two new sites: Ilwaco, WA, and Ponce, PR.

The NWS Stormready Supporter program, which has fewer requirements, added several new hospitals: Brunswick, NC, Community Hospital, Portneuf Medical Center in Pocatello, ID, and Palmetto Health Richland Hospital in Columbia, SC. The Idaho Falls Regional Airport also joined as a supporter.

To be recognized as StormReady, a community must commit to specific levels of emergency preparedness, including 24/7 communications and an active outreach and education program. For more information on becoming StormReady or TsunamiReady, contact your local NWS office or go to the [StormReady Website](#). ❄

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## Online Spring and Summer Awareness Resources Available

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

### Climate, Water and Weather Links

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