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

Aware

Volume 3, October 2009

Climate, Water, Weather

Survey Seeks to Quantify Emergency Management Actions, Best Practices and Issues

By Richard Okulski, WCM, NWS Memphis, TN; and Greg Carbin, WCM, SPC

Emergency managers (EM) take numerous actions based on NWS tornado and severe thunderstorm watches. These actions include calling in additional employees to staff emergency operations centers, staging response and recovery equipment, opening storm shelters and recommending school closures. Emergency management response may vary by geographic location, budget constraints, time of day, day of the week and the magnitude/extent of the severe weather hazards anticipated.

The Mississippi Emergency Management Agency (MEMA) partnered with NWS to host the *Emergency Management-NWS Watch Actions Survey* to aid in quantifying EM actions, best practices and issues related to NWS severe thunderstorm and tornado watches. The information gained from this survey will help NWS improve its short-term convective watch and warning programs in support of EMs in the South and across the United States.

As of late September, nearly 500 EMs and public safety officials had responded to the 20-question online survey. While the survey is hosted by MEMA in Mississippi, responses came from 29 states, ranging from Montana to Florida (See Figure 1).

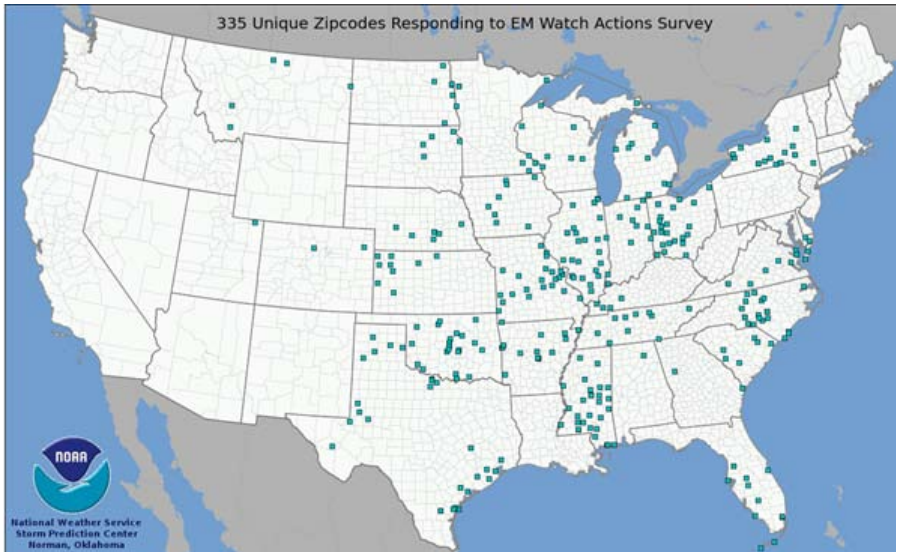

Figure 1. Zipcode locations of survey responders

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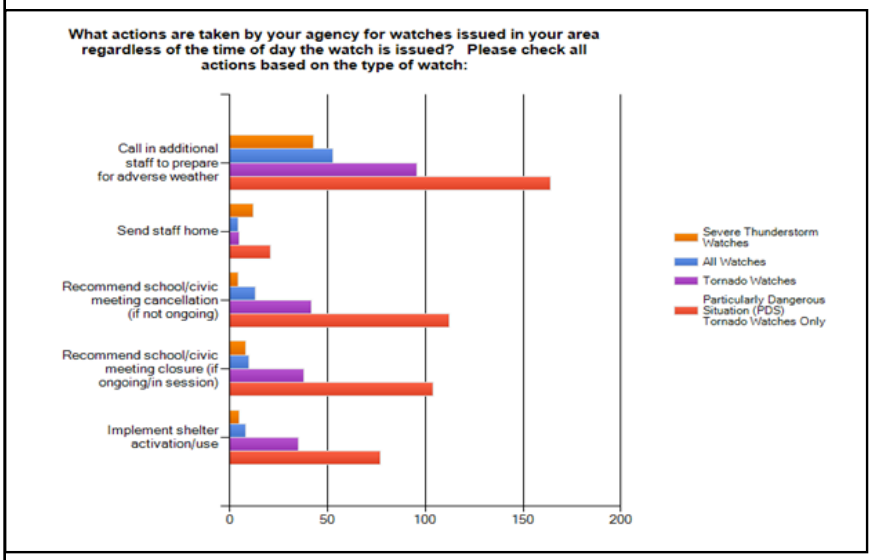

Figure 2. Watch actions based on watch type

Initial analysis indicates EMs are likely to increase staff, recommend school and civic meeting cancellation and open storm shelters when NWS issues a Particularly Dangerous Situation (PDS) watch (Figure 2). NWS issues PDS tornado watches when there is a high likelihood of multiple strong or violent tornadoes (EF2 to EF5 rated damage). In addition, 62 percent of EMs favor continuing a tornado watch for their county until there is high certainty the severe weather hazard has passed.

The survey results also suggest that what is considered ideal lead time—elapsed time between NWS watch issuance and the first occurrence of severe weather—varies widely among survey responders. Some consider 30 minutes an ideal lead time for a watch from a public safety perspective. Other respondents wanted up to 3 hours of lead time.

Better understanding the results from this survey will require further analysis. A filtering of responses based on geography may also clarify specific regional emergency management actions NWS can support with modifications and improvements to the watch program. The authors will present preliminary results from this survey at the International Association of Emergency Managers (IAEM) Annual Conference in Orlando, FL, in early November. ❄

Dissemination News

EMWIN Testing Continues on GOES-R

By William Johnson, NWS Office of the Chief Information Officer

The Emergency Managers Weather Information Network (EMWIN) team used the recently launched GOES 14 satellite to test the next generation EMWIN prototype receiver, which is nearing completion. The EMWIN team includes representatives from National Environmental Satellite, Data and Information Service (NESDIS), National Aeronautics and Space Administration (NASA), and the Geostationary Satellite (GOES) R project team. The GOES 14 satellite (formerly known as GOES-O) was launched on June 27, 2009. GOES 14 is the second operational GOES-N series satellite in orbit.

The successful EMWIN and low-rate information transmission (LRIT) data streams tests were performed at Wallops Command and Data Acquisition station from August 24-27. Although NWS has not yet released the final test results, initial data indicated the GOES R EMWIN/LRIT prototype receiver performed within the specified parameters. The prototype provides backward compatibility to the current GOES generation broadcast to ensure transition flexibility. In the GOES R era, the EMWIN broadcast data rate will greatly increase, allowing for a much larger product set.

Additional EMWIN testing will continue until the GOES 14 satellite is placed into storage later this year. In addition, the EMWIN team is planning to support the demonstration of the prototype receiver at NOAA's 6th GOES Users Conference. The conference, which will be held from November 3-5, 2009, in Madison, WI, will provide overviews of current, near-term and future GOES systems, including EMWIN.

Aware

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EMWIN-N Transition Nears

The two GOES-N series satellites, GOES 13 and 14, are awaiting full-time operation. Once they are placed into service, the EMWIN-N broadcast will replace the current legacy broadcast. The current plans are for GOES 13 to replace GOES 12 (East) in May 2010 and GOES 14 to replace GOES 11 (West) in December 2011. The transition could occur earlier if either satellite fails prematurely.

All users should consider migrating to EMWIN-N capable systems. Please see the vendor page on the **EMWIN Website**. Anyone with an EMWIN-N system can try out the broadcast by using either the GOES 10 or GOES 14 satellite. Both satellites are providing test broadcasts until December 2009, when the GOES 10 will be removed from service and GOES 14 will be placed into storage. ❄

Weather Radio Improvement Project Contract Awarded

*By **Ronald Vailliant**, NWR Program Manager*

The Weather Radio Improvement Project (WRIP) Phase II contract recently was awarded to the team of Communications & Power Engineering, Inc. (CommPower) and Harris Corp. WRIP will modernize and consolidate NOAA Weather Radio All Hazards (NWR) and NOAA Weather Wire Service (NWWS). WRIP Phase II consists of a 3-year development and deployment effort with options for up to 2 years of follow-on maintenance support. The CommPower/Harris team, working with NWS, will develop and deploy a nationwide dissemination system. The new system will rapidly and reliably deliver around-the-clock weather, all-hazards and other emergency information as well as broadcast live audio emergency announcements to the public, media, law enforcement and local/state managers.

The WRIP architecture includes the Master Processing Center (MPC), Text-to-Speech/Digital Analog Converter (TTS/DAC) subsystems and Broadcast Management System (BMS) workstations. The MPC will incorporate redundant and largely fault-tolerant hardware for processing NWR and NWWS information. WRIP system components will use the NOAAnet communications infrastructure to connect the MPC, TTS/DAC and BMS workstations. The new system will receive and process all weather and warning related data for dissemination via NWR transmitters, Web services, satellite feeds, National Law Enforcement Network and other customers as they become available.

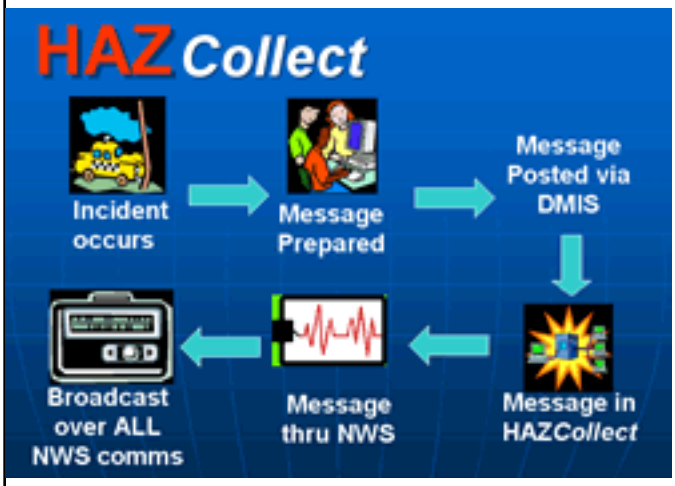
The TTS/DAC subsystems will be configured in a Weather Forecast Office (WFO)-centric configuration. The subsystems will use existing communications systems to provide audio programming for each NWR broadcast transmitter. There will be a BMS workstation "portal" at each of the 122 WFOs. The BMS will allow meteorologists and other authorized emergency personnel to generate and submit weather and warning broadcast data, live audio announcements, and regionalized network control and monitoring functions.

WRIP will process NWR BMS, World Meteorological Organization messages and Common Alerting Protocol (CAP) formatted messages using normalized open standards and content keyword profiling. This flexibility will ensure the system can meet future dissemination mission needs. WRIP's flexibility will allow it to be easily extended to support future payloads and interfaces as they become available. In other words, WRIP will evolve as technology advances evolve, ensuring NWS meets its commitment to provide timely and reliable public alert services.

Deploying WRIP will be a joint CommPower, Inc. and NWS effort. CommPower will install the primary and backup MPC components along with other WRIP elements required to support NWS Training Center activities. NWS will install TTS/DAC subsystems and BMS workstations at each WFO. To ensure the process goes smoothly, CommPower and the NWS Training Center will develop training material for NWS personnel.

The WRIP Operational Test and Evaluation (OT&E) is expected to begin in June or July 2011, with WFO TTS/DAC and BMS workstation installations beginning in September 2011. Once WRIP OT&E activities are completed, NWWS service likely will transition to WRIP. ❄

HazCollect Service is Operational—Register Now!



By Herb White, NWS Dissemination Services Manager

The NWS HazCollect service is available now to all emergency managers and warning officials. HazCollect and FEMA's Disaster Management Interoperability Service (DMIS) are your low-cost entry into Common Alerting Protocol.

What are the steps to prepare, sign up and implement? First, go to the NWS HazCollect Website, then select "For Government."

HazCollect is a public warning service for pre-approved and authenticated officials at the federal, state and local levels. You can use HazCollect to broadcast non-weather emergency messages over NWS systems. Dissemination includes NWWS, EMWIN, NOAAPORT and NWR for relay to Emergency Alert System (EAS). ❄

A Decade of Weather Radio Awareness Months Shows Results

By Ted Buehner, WCM, NWS Seattle, WA

NWS offices in Washington along with Washington State Emergency Management and many local emergency management organizations are seeing results from their annual effort to promote September as Weather Radio Awareness Month in the state.

When the campaign started, about 1 in 10 people in Washington had a weather radio. Today, estimates show about 1 in 5 have a receiver—substantial progress. The campaign goal is to have weather radios become as common as smoke detectors in homes and businesses. Washington residents face hazards ranging from gale force winds to volcanoes, earthquakes, tsunamis, landslides, international boundary issues and oil spills.

State Emergency Management hosted the campaign Website, offering NWS information, such as when EAS is activated, a list of Washington's 22 NWR stations, and information on where to buy weather radios. Some of the many campaign activities included:

- Adding headlines on Websites of all four NWS offices serving Washington and on many emergency management agency (EMA) sites
- Establishing September 16 as a test day to air EAS Required Monthly Test on all the NWR stations. The test also triggered the start of a statewide drop, cover and hold earthquake drill as well as a coastal tsunami warning communications test.
- Holding about two dozen preparedness events, including 20 with western Washington weather radio retail partners like WalMart and Radio Shack who offered receivers at sharply reduced prices
- Arranging to have amateur radio staff onsite at retail outlets to help program receivers
- Giving NWR purchasers a letter from the Governor thanking them for their involvement
- Ensuring other preparedness supplies were available for consumers to purchase
- Using the disaster preparedness theme to highlight flooding potential in high risk areas
- Hosting a joint press conference with the state EMA office to highlight all of these preparedness events along with taking part in several radio talk show appearances
- Inserting campaign articles in the state broadcasters association newsletter and a number of utility bill newsletters
- Distributing information to school districts and EMAs
- Working with two weather radio manufacturers to create more "how to program my weather radio" Articulate slide shows. ❄

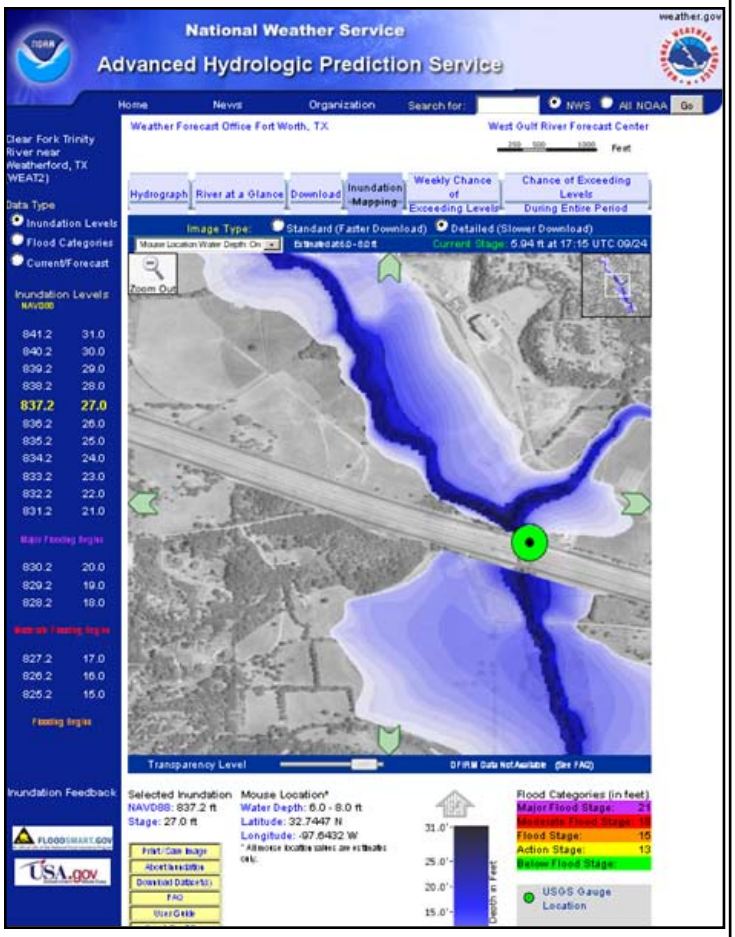
NWS Expands Flood Mapping Program

By Victor Hom, NWS National Inundation Mapping Services Leader

NWS continues to enhance the communication of flood risk and impacts through the use of Advanced Hydrologic Prediction Service (AHPS) flood inundation maps. Developed in partnership with government agencies and local municipalities, the AHPS flood inundation maps provide information on the spatial extent and depth of flood waters in the vicinity of NWS river forecast locations. These inundation maps, in combination with river observations and NWS river forecasts, help decision makers mitigate the impacts of flooding and build more resilient communities.

Hurricane Katrina exposed the vulnerabilities and hazards of flood inundation in our coastal and riverine communities. The NWS hydrology program staff is working with its partners to enhance the communication of potential flood risks across some of the more vulnerable locations. One key way to illustrate these risks is to display possible flood inundation extents and depth of water relative to NWS river forecasts. These new map libraries, combined with NWS river forecasts, empower communities and property owners with graphics and up-to-date information about flood risk.

On September 30, NWS published the third in a series of online AHPS flood inundation map libraries, bringing the total number of inundation mapping locations to 47.



AHPS Flood Inundation Mapping Interface

In 2009, the existing partnership with NOAA Coastal Service Center, the Federal Emergency Management Agency, United States Geological Survey and Lower Colorado River Authority enabled NWS to create flood inundation libraries for the following Gulf Coast locations:

River Name and Location	NWS ID
Clear Fork Trinity River, near Weatherford, TX	WEAT2
Cibolo Creek at Selma, TX	SELT2
Colorado River near Bay City, TX	BACT2
Colorado River at Columbus, TX	CBST2
Colorado River above La Grange, TX	LGRT2
Colorado River at Wharton, TX	WHAT2
Greens Bayou at Houston, TX	GBHT2
San Antonio River at Goliad, TX	GLIT2
Vermilion River at Lafayette, LA (Surrey Street Gage)	VLSL1
White Oak Bayou at Houston, TX	HGTT2

The inundation map libraries are accessible via the Web. You can display flood inundation maps for forecast river levels ranging from minor flooding through the largest observed flood on record. These flood inundation maps, associated geospatial data (e.g., shapefiles), river forecasts and other related information are accessible through the AHPS Website. Direct links to the flood inundation map libraries also are online.

NWS will continue to establish partnerships in other parts of the United States so it can expand the number of locations with inundation mapping services. If your community would like to implement this valuable, cost-effective hazard visualization and communication tool, please email Victor Hom. ❄

Wildfire Decision Support Doesn't End When Fire Is Out

By Roger Lamoni, NWS Western Region Fire Weather Program Manager and Senior Service Hydrologist Brian McInerney, NWS Salt Lake City

For many years, most WFOs have provided spot forecasts, telephone briefings and even Incident Meteorologists (IMET) to assist in wildfire suppression efforts across the country. As the "wildland-urban" interface increases, more and more homes and businesses are becoming vulnerable to flash floods and debris flows after a fire is contained. Because of this increasing threat, land management agencies are asking NWS Service Hydrologists to help them determine post-fire flash flood and debris flow threats to populated areas.

On September 4, WFO Salt Lake City, UT, Senior Service Hydrologist Brian McInerney was deployed to the Mill Flat, UT, fire as part of a Burn Area Response Team (BAER). BAERs operate under the jurisdiction of federal land management agencies. Their objective is to reduce flash flood threats and protect wildland resources after a wildfire. Below is Brian's account of his experiences on the team.

Burn Area Response Team assesses burn severity and potential flood threat.

"The Mill Flat fire, which started July 25, occurred just southwest of Cedar City, UT, in the Pine Valley Mountains. The location is above the small town of New Harmony. My role with the team was primarily to assess the flash flood and debris flow threat after the fire and assist in placement and configuration of an early warning weather station in the burn scar.

"After arriving on September 4, I was integrated into the BAER team and asked to locate potential areas where debris flows might impact the town of New Harmony. One of the streams flowing out of the burn scar, Ash Creek, had already generated a small debris flow during a thunderstorm the night before. The team located multiple potentially hazardous areas and presented the data to Dixie National Forest Supervisor Robert MacWhorter.

"On September 5, I assisted in finding a suitable location for an early warning weather station in the burn scar. The team chose a location at the headwaters of Straight Canyon, 4 miles up from the mouth of the drainage. Data from this temporary weather station is now part of the MesoWest observation network and is transmitted via satellite at least hourly, with additional transmissions when the system records 0.20 inches of rainfall within 15 minutes. Data can be easily viewed via the NWS Salt Lake City Website, providing critical assistance to forecasters determining the flash flood threat to New Harmony.

On September 6, some of the BAER team visited the Mill Flat Meadow area, headwaters of the burn scar above the town of New Harmony. First, this top area of the burn was analyzed

with transects for each drainage run in addition to visual inspections. The team then hiked the entire vertical length of the burn area over the next 9 hours, covering about 10 miles and descending 3,000 feet back to New Harmony. Team members found that the burn scar received moderate to high burn severity.

"Hydrophobicity was present in all drainages, meaning the fire had dramatically changed the rainfall/runoff relationship. The BAER team calculated debris flows could occur in these drainages with rainfall intensities of just 0.50 inches or more in an hour. Depending on rainfall intensity and duration, life-threatening debris flows could affect homes and ranches on the alluvial fans below the National Forest boundary, even reaching New Harmony itself.

"The debris flow threat to New Harmony will remain for up to 3 years, with a reduced threat for up to 5 years. In the past, debris flows have occurred after the drainages received many days of moderate rainfall, followed by an intense thunderstorm; however, with the watershed in such poor condition, it is probable that an intense thunderstorm now could produce a debris flow into the town of New Harmony." ❄

With Help from Retailer, NWS Expands "Turn Around Don't Drown" Sign Program

By Tim Troutman, WCM, NWS Morristown, TN

The Washington County, TN, Emergency Management Agency (EMA) received a $1,000 grant in mid September from WalMart to place 10 Turn Around Don't Drown (TADD) signs in flood prone locations. NWS had already identified locations that needed these safety signs.

These signs are in addition to three signs installed last summer in southwest Virginia and eastern Tennessee. Details about the July 31 initial Virginia TADD sign kick-off ceremony with Jess Powers, Russell County, VA, EMA, are available on the NWS TADD Website. Other TADD sign ceremonies, led by Senior Service Hydrologist Brian Boyd, were held in Carter County, TN, on August 24 and in Washington County, TN, August 27.❄

From left, Carter County Commissioner R. L. Miller, EMA Director Ernest Jackson; WCM Tim Troutman; MIC George Mathews; and Senior Service Hydrologist Brian Boyd install a new Turn Around Don't Drown sign near a section of the road that flooded in January 1998, resulting in seven deaths.

Recent Flooding in Southeast Spotlights Need to Expand TADD

By Larry Wenzel, National Hydrologic Outreach Program Leader

Most of the deaths from the recent floods in the southeast United States occurred when cars were swept off the roads by moving water. Many of those deaths could have been avoided. Overall, more than half of all flood-related deaths in the United States occur when motorists drive vehicles across flooded roads. Clearly, more education is needed.

The NWS TADD campaign is an effort to meet the need for education. The starting place is the TADD Toolbox, a one-stop shop for TADD safety information that hosts multimedia, brochures, articles and publications.

Additionally, the site includes information on how to obtain Federal Highway Administration sanctioned TADD road signs. Local WFO and River Forecast Center staffs are working with emergency managers and community leaders to explain how they can obtain TADD signs to post in flood-prone localities. Many yellow TADD warning signs already are posted.

The state of Oklahoma is taking the hazards of driving across flooded roads to a new level. It is including TADD safety information in its updated Drivers Handbook, due to be released this fall. ❄

Storm Tide Project Opens Communication Gates

By Daniel Noah, WCM, NWS Tampa Bay Area, FL

Communicating threat to decision makers is Job 1 when a tropical cyclone is in the area. One of the most difficult threats to communicate is storm tide. Levy County, FL, on the Gulf coast, has a unique storm tide issue due to its low coastal elevations and the county's jutting shape. Active tropical seasons in 2004, 2005 and 2008 led to numerous interactions between local officials and the NWS Tampa Bay Area office. Despite this interaction, local officials expressed confusion about various tidal and geodetic datums (reference levels) which they felt made storm tide observations and forecasts harder to understand and complicated decision making.

In response, NWS initiated the Storm Tide Project, a series of 15 strategically installed utility poles in the Levy County cities of Cedar Key and Yankeetown. The poles have elevation markings above Mean Sea Level (MSL) that allow local officials to clearly see the depth of a storm tide. This inundation data can be relayed back to NWS in a usable format. Local officials no longer need to understand the various datums of observations or forecasts, leaving NWS to worry about the behind-the-scene number crunching.

The project seemed simple enough, but obtaining accurate elevations at the 15 tide-pole locations was not easy. The Florida Department of Environmental Protection came to the rescue by surveying and installing 13 new benchmarks. The benchmarks used North American Vertical Datum of 1988 (NAVD 88), which is the datum used for vertical control surveying in the United States. The base elevation of each pole was marked in MSL. The Central Florida Electric CO-OP donated and installed the new tide poles; the Levy County Road Department manufactured and installed the signage.

There are other benefits of this project in addition to enhanced communication. The project gives local officials ownership because they are now a direct part of the warning process. Relationships were built between NWS and local officials. Finally, the project allows for greater public awareness of the storm tide threat since they see the poles and ask questions. The Levy County Storm Tide Project is one possible solution to enhance communication between NWS and its partners. ❄

Storm tide markers like the one above help local officials boil down technical information into meaningful data to relay to NWS forecast offices.

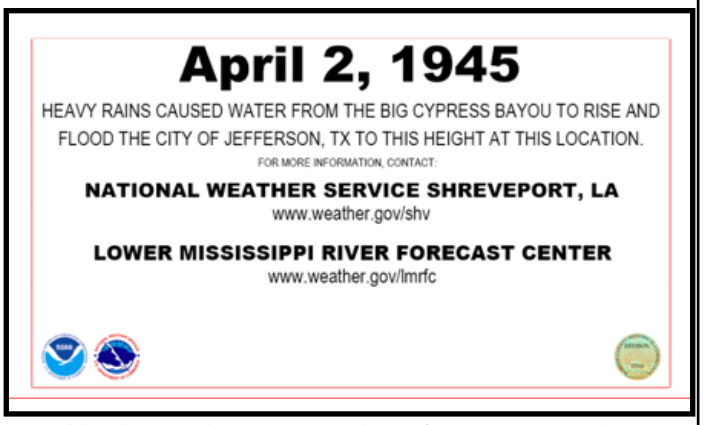
High Water Mark Sign Program Spreads in South

By Melody Magnus, Aware Editor

The NWS Southern Region has added several new locations to the High Water Mark Sign program. High Water Mark signs note the location of significant floods. These signs are a visual reminder of the dangers of flooding and the need to remain prepared with flood insurance and other protective measures. The program is open to locations throughout the United States.

In the past few months, several new signs were posted in North Carolina; Texas gained its first High Water Mark location, Jefferson.

To learn more about this program, see the NWS High Water Mark Toolbox. It provides instructions on how to get a sign for your community, a map of existing signs and much more. ❄



Signs like the one above are posted at a frequently visited location near a flood site to increase awareness about flood risk.

Hurricane Awareness

Maine Learns Hurricane Lessons After Bill Comes Calling

By Michael Cantin, WCM, NWS Caribou, ME

On August 23, as Hurricane Bill tracked northeastward, large swells pounded the coast of Maine, with some waves measured in excess of 17 feet. The large waves coincided with a busy and beautiful day at Acadia National Park, where an estimated 10,000 people gathered to watch the waves. When the afternoon high tide arrived, many hefty waves washed over some of the spectators killing one and injuring several others.

On September 9, staff from NWS Caribou, ME, took part in a post event planning and debrief regarding Hurricane Bill. The event, hosted by Hancock County Emergency Management, included Acadia National Park staff, U.S. Coast Guard (USCG) officials, Marine Patrol, hospital and dispatch personnel, the regional life-flight coordinator and local emergency management officials.

NWS WFO Caribou serves residents of Maine from Penobscot Bay to the Canadian border, an area that includes Acadia National Park. WCM Mike Cantin discussed with the assembled group the availability of weather information before hazardous weather to aid in planning purposes, along with several different avenues of receiving information including iNWS and NWSChat.

Since Hurricane Bill, WFO Caribou provides briefing materials to state and local emergency management, local media, the USCG and Acadia National Park before weather events, most notably Tropical Storm Danny. These briefings are very well received. Plans are now in place also to send the graphics to area hospitals to assist in their planning and staffing decisions. ❄

Hurricane Bill generated waves as high as 17 feet as it struck the Maine coast at Acadia National Park.

Smithsonian "The Scientist is In" with NWS Help

By Ron Gird, NWS Outreach Manager

Sant Ocean Hall, Smithsonian Museum

Several NOAA scientists volunteered their time and expertise to take part in the NOAA and Smithsonian program: The Scientist is In. The program was part of the first anniversary celebration of the Smithsonian Sant Ocean Hall in the National Museum of Natural History on September 26.

Each NOAA scientist was assigned a station within the Ocean Hall where they answered questions from visitors and provided handouts. Ron Gird took part in the event and showcased NOAA Weather Radio All Hazards and weather observing technologies. He also provided Hurricanes Katrina and Andrew posters, the NOAA/NASA Cloud Chart, and NOAA-Watch and JetStream bookmarks. ❄

Hurricane Camille Acts as Kickoff for Emergency Planning

By Phil Hysell, WCM, NWS Blacksburg, VA

In August 1969, 40 years ago, western Virginia was impacted by the remnants of Hurricane Camille, a particularly violent tropical cyclone. NWS Blacksburg, VA, used the anniversary of that event as a kickoff to promote safety and awareness of dangerous weather and to highlight changes in weather data, warning decisions and communications.

From left, answering questions at a Town Meeting focusing on hurricane preparedness are Phil Hysell, WCM; Steve Keighton, SOO; Ken Kostura, Forecaster; and Peter Corrigan, Service Hydrologist. Photo by Rockbridge County Emergency Services Coordinator Robert Foresman.

The Town Hall session featured a survey of participants, weather safety brochures and a 45-minute DVD provided by the Virginia State Police detailing the destruction Camille caused.

Local media and emergency management were key to the success of the program. Robert Foresman, Emergency Management Coordinator for Rockbridge County, VA, was instrumental in securing the location for the Town Hall meeting and helped promote the event through the Rockbridge alert system and the Rockbridge County twitter page.

Local television and radio stations, newspapers and media Websites supported the event with publicity. NWS staff also sent emails to spotters and emergency managers and issued public information statements on NOAA Weather Radio.

Just before the Town Hall meeting, NWS conducted a workshop specifically geared for first responders and emergency management officials. During this meeting, NWS Blacksburg provided an overview of NWS digital and mobile services, reviewed weather safety information and answered questions. Michael Cline, Virginia State Coordinator of Emergency Management, spoke about the changes in emergency management since Camille struck in 1969.

The success of both events was due in large part to the support of NWS Blacksburg staff: Peter Corrigan, Service Hydrologist; Phil Hysell, WCM; Steve Keighton, Science Operations Officer; Ken Kostura, Forecaster; Dave Wert, Meteorologist in Charge and Jim White, Observing Program Leader.

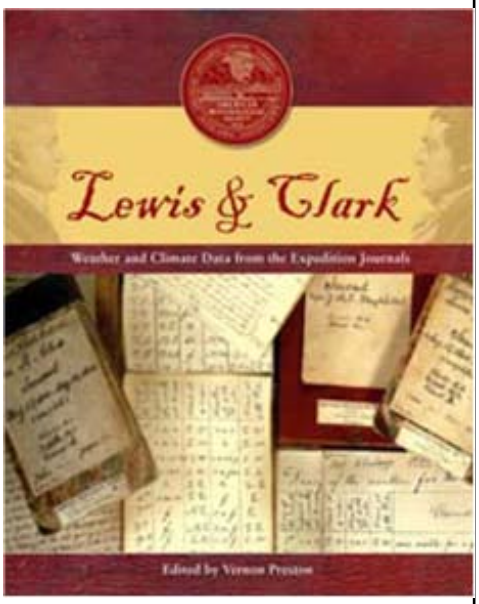
To continue this dialog and to further enhance its presence in local communities, the Blacksburg office plans on conducting annual or semi-annual Town Hall meetings across the rest of its forecast area. ❄

Lewis and Clark Give Past Weather Insights

By Vern Preston, WCM, NWS Pocatello, ID

Three years ago, NWS Pocatello WCM Vernon Preston marked the bicentennial anniversary of the Lewis and Clark Expedition (1803-1806) by compiling the weather and climate data from various expedition journals and publishing them first through NOAA and now through the American Meteorological Society (AMS). Lewis & Clark: Weather and Climate Data From The Expedition Journals is now available to a broader public. Below is a brief synopsis of the report.

"The first scientific records of weather and climate in the western United States were collected during the Lewis and Clark Expedition of 1803 to 1806 as they traversed uncharted territory between St. Louis, MO, and the Pacific Ocean. Various expedition members recorded daily weather observations and information on climatic regimes through detailed descriptions of flora and fauna in the narrative journals. In addition, Lewis and Clark kept a separate weather diary with daily observations of temperature, wind, weather conditions and river levels. The recently released American Meteorological Society Historical Monograph provides a comprehensive summary of the data collection and weather-related challenges that threatened their safety and nearly derailed the Corps of Discovery's mission. *Lewis and Clark* is a compelling read for weather and history buffs and a key resource for scientists researching climate history." ❄



Lewis & Clark: Weather and Climate Data From The Expedition Journals is now available to the public.

Weather's Not the Only Source of Heat in Amarillo, TX

By Steve Drillette, WCM, NWS Amarillo, TX

Need a new venue to reach the public? WFO Amarillo cooked up a new idea—barbeque. Amarillo staff took part in the annual Good Times Chamber BBQ Cook off held in downtown Amarillo September 9-10. More than 100 cooking teams were on hand and nearly 10,000 people attended.

MIC Jose Garcia and Electronic Technician David Wilburn served as the primary chefs. Several other staff members from the forecast office helped out during the 2-day event.

There were three categories judged in the cook off: brisket, ribs and other meat. WFO Amarillo took 3rd place in the "Other Meat" competition with its delicious beef-n-shrimp shish kebabs. WFO Amarillo has competed in this event for the past 9 years. ❄

NWS Amarillo, TX, staff dished up some award winning barbeque with a side of weather preparedness.

Service Assessments

Two Service Assessments Near Completion; Samoan Tsunami and Southeast Flooding Teams Formed

By Melody Magnus, Aware Editor

The NWS Performance Branch hopes to receive final approval and release two major service assessments by the end of the year:

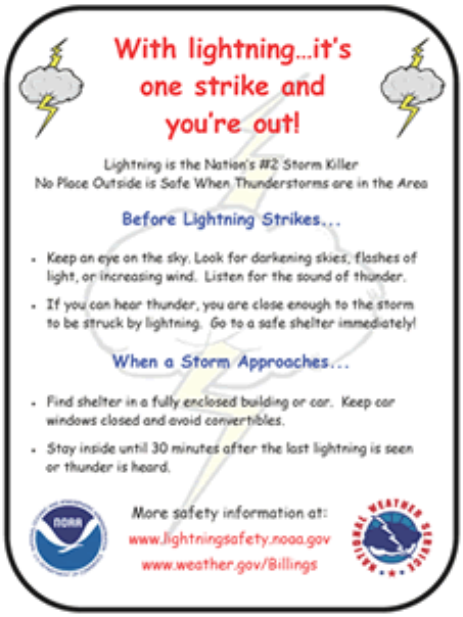
- Mother's Day Weekend Tornado in Oklahoma and Missouri, May 10, 2008
- Central United States Flooding of June 2008

In addition, two new teams are being formed. One will evaluate service during the devastating tsunami that struck American Samoan and the independent nation of Western Samoa on the morning of September 29 Samoa time, resulting in the loss of at least 160 lives across the Samoas and Tonga, causing widespread damage. The earthquake that caused the tsunami was rated at magnitude 8.0 by the U.S. Geological Survey. The quake was centered about 120 miles south of the Samoas. The first tsunami waves impacted the islands just 15 or 20 minutes after the earthquake occurred.

A second team will look at NWS performance in association with the disastrous flooding event across the Southeast states in late-September, particularly in Georgia. At least 10 people died, many as a result of their vehicles being swept off roadways by flood waters.

Look for more information on these reports in the winter edition of *Aware*. ❄

Severe Weather



NWS Billings, MT, developed the 1-page ad above to run in the minor league baseball club's program.

Package Deal Packs in Crowd for Lightning Safety

***By** Tom Frieders, WCM, NWS Billings, MT*

NWS Billings, MT, is working with its local minor league baseball team to help it become a StormReady Supporter. Forecaster Kurt Hooley approached the team's General Manager and suggested the need for some weather safety at the park after a few close calls with lightning in the previous year.

As an initial step toward StormReady recognition, the team included a 1-page ad about lightning safety in its program throughout the season. Also, they included NWS in a promotion night in which the NWS staff set up a booth to promote weather safety with fans. They also reserved a spot in the park for NWS to have a gathering for family, friends and anyone else interested in weather and baseball to enjoy a dinner during that game. For $15 per person, fans got an admission ticket to the game and to an all-you-can eat spread of ballpark goodies. The event attracted almost 90 people to the NWS section. As a bonus, the weather was great! ❄

NWS Plans 10th Annual National Severe Weather Workshop

By Walt Zaleski, Southern Region WCM Manager

Save the date for the 10th Annual National Severe Weather Workshop, scheduled for March 4-6, 2010. The conference will again be held in the Oklahoma City area.

This year's theme will be: "Remembering Our Past to Build a Safer Future: A Decade of Sharing Information about Weather Emergencies, Communications and Response." Look for more details, registration information and more in the winter edition of Aware. ❄

StormReady/TsunamiReady

StormReady Program Gains 53 Sites Since Midsummer

By Melody Magnus, Aware Editor

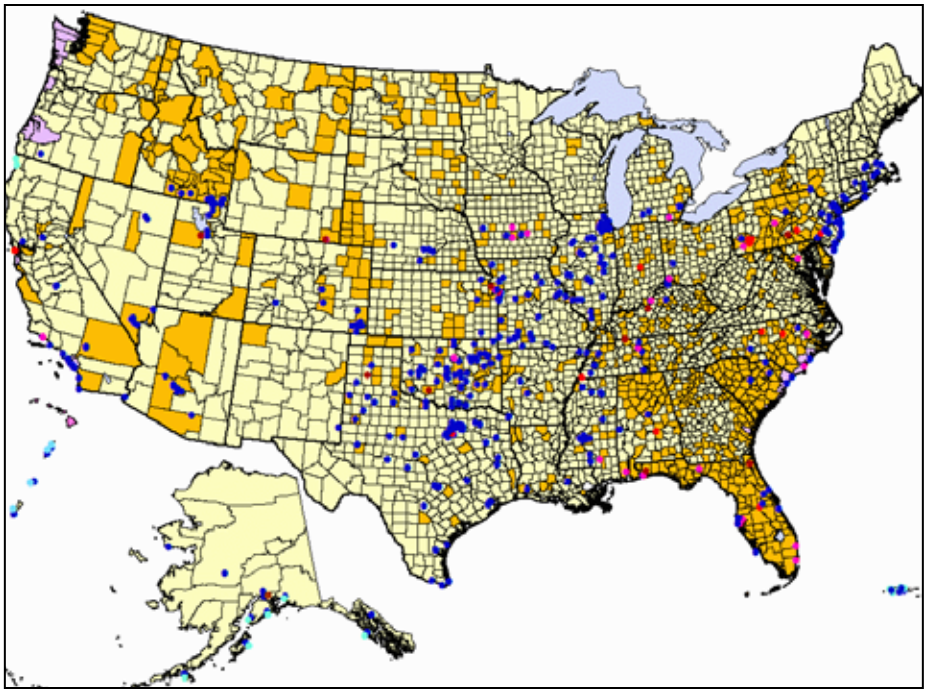
Since July, the NWS StormReady program gained an impressive 53 sites, including its first National Monument, Craters of the Moon (see article next page), its first state park, Bay City, MI, State Recreation Area and its first shopping center, The Mall at Partridge Creek in Michigan.

The StormReady program also gained the Sea-Tac International Airport, in Seattle; four hospitals in Pennsylvania and several more Universities: Oklahoma State, Xavier in Ohio, the University of Tampa, FL, and the State University of New York at Oneonta. The program also added a new military site, Naval Air Station Whiting Field in Florida, which trains staff for several branches of the armed forces.

In addition to these special sites, the program gained new counties and communities from Alaska to Florida and Massachusetts to California.

The TsunamiReady program gained two new sites as well: Carolina, PR, and Sand Point, AK.

The NWS supporter program, which has fewer requirements, added all 15 schools in the Nassau, FL, school district; Fayetteville, TN, Public Utilities; the Lake City, IN, Running Club; and the Superior Air Ground Ambulance Service Inc., in Elmhurst, IL.



StormReady counties are shown in gold. Communities are indicated with colored dots. As of press time, there were 1,522 StormReady sites.

For more information on becoming StormReady or TsunamiReady, contact your local NWS office or go to the StormReady Website. ❄

StormReady Goes Interstellar with Craters of the Moon

By Vern Preston, WCM, NWS Pocatello, ID

Developing relationships is a crucial element in the StormReady process. This past year, WFO Pocatello worked with the National Park Service Craters of the Moon National Monument and Preserve in Southern Idaho to become StormReady.

Craters' staff took several steps to ensure visitors and coworkers are aware of weather hazards throughout the monument. NOAA Weather Radio All Hazards receivers were placed at strategic locations such as visitor centers, park entrances, campgrounds and within park ranger vehicles. NWS trained staff members at the start of their main summer tourism season and provided a fireside chat at a scheduled evening event at the campground.

Craters of the Moon National Monument and Preserve becomes StormReady. Shown are Rick Dittmann, NWS Pocatello, ID, Meteorologist in Charge; and Doug Neighbor, National Park Service Craters of the Moon Superintendent. Photo by WCM Vern Preston.

NWS also provided various safety brochures and cloud charts for park ranger presentations and kiosk locations. WFO Pocatello Information Technology Officer Matt Williamson added **Craters of the Moon Monument as a "Point-and-Click" forecast location on the NWS web site**. This 7-day forecast page has the name of the monument at the top of the page.

This forecast update is printed out daily and placed at strategic viewing locations. For years, Craters has been an integral part of the NWS observations system. They are a NWS Cooperative Observer site as well as a NOAA climate station. NOAA Air Resources Laboratory–Field Research Division also has equipment placed on the monument grounds for assistance with the Department of Energy's Idaho National Laboratory. ❄

Online Fall and Winter Awareness Resources Available

Fall is here and winter is approaching. You can find **windchill** and **winter weather** season information 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