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

Aware

Volume 3, July 2008

Climate, Water, Weather

What the Broadcast Community Want Us to Know

By Ken Graham, Office of Services, Integrated Services Director
Kenneth.Graham@noaa.gov

I recently had the opportunity to facilitate a focus group at the American Meteorological Society's Conference on Broadcast Meteorology in Denver, CO. Considering most of the public watches television when disaster strikes, this group of professionals is instrumental for the distribution of critical life-saving information.

Communication was by far the dominant theme. Comments from broadcasters clearly pointed to the important role they play in getting our word out. When tornadoes, hurricanes, fires and floods threaten communities, telling broadcasters what we know, as soon as we know it, is critical.

It was clear from the broadcasters that they are not starved for data. Many of the TV stations have radars, some are even installing dual polarization technology. Other stations have created their own meso-nets. They receive NWS watches, warnings and routine products. It was interesting to hear that some of the TV stations are running local computer models to support their forecast operations.

What they did express is the need for more information, not more data. The information they need comes from our forecasters minds. The broadcasters commented that the most useful routine product they receive is the Area Forecast Discussion. It contains information on what the forecaster is thinking and often contains verbal considerations of uncertainty and confidence in the forecast or in upcoming severe weather scenarios.

The jobs of our television partners have changed. No longer do they just come in and prepare for the 5, 6, and 10 or 11 o'clock news. Now they also constantly update Websites, write weather blogs, interact with viewers, and present more frequent short weathercasts. Any way to communicate information we know, when we know it, will better serve our partners.

Several broadcasters in the audience from smaller stations expressed their needs as well. They often do not have access to the high tech equipment and data most television stations call a baseline. They need information in formats they can read—not just in graphical formats—which are sometimes tough to interpret. In major disasters, radio may be the only means to get information to the public. NWS recognizes the important role our radio partners play in fulfilling the NWS mission to America.

This meeting was a great opportunity to meet with broadcasters. I want to thank them for their candid feedback. ❄

Inside Aware

Aviation Safety

Free Aviation Safety Tips Available in *The Front*

In June, the NWS Aviation Branch released the latest copy 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:

- New 30-Hour TAF to Affect Aviation Coding Worldwide
- CWSUs Take Steps to Reduce Weather Related Airspace Congestion
- Aviation Concerns Regarding Hazardous Thunderstorms

To download the June 2008 edition, go to **www.weather.gov/os/aviation/front.shtml**. If you would like an email when *The Front* is released, write editor **Melody.Magnus@noaa.gov**. If you have article suggestions or comments, contact **Michael.Graf@noaa.gov**. ❄

Disaster Services

PRiMO Helps Unite Diverse Pacific Region Emergency Management Interests

Jack Hayes, NOAA Assistant Administrator for Weather Services and NWS Director.

The NWS Pacific Region is a founding partner of the Pacific Risk Management 'Ohana (PRiMO), a unique network of risk management partners and stakeholders in the Pacific, formed to improve the development and delivery of risk management-related information, products and services.

NWS provided support to the recent PRiMO 6th Annual Meeting in Honolulu. The keynote speakers included Dr. Jack Hayes, NOAA Assistant Administrator for Weather Services and NWS Director; the Honorable Mufi Hannemann, Honolulu Mayor; and Chad Maison, Maisu Navigator for the Hokule'a.

PRiMO is based on key stakeholders recognizing the benefits of collective action. The group acknowledges the need for local, national and regional participation to achieve effective hazard mitigation and information dissemination. The group shares a commitment to one another and to the *'ohana* (family) as a whole.

PRiMO has made progress identifying the qualities that define "Community Resilience" and developing them so communities can better respond to disasters. The annual meetings provide a place for both traditional indigenous and scientific hazard mitigation specialists to expand their knowledge, identify challenges, collaborate with partners and identify funding sources. The Pacific Island communities are particularly vulnerable to natural hazards.

For more information, contact Timothy.Hendricks@noaa.gov, NWS Pacific Region. ❄

Aware

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

Director, OCWWS
Dave Caldwell

Chief, Performance and Awareness Division
Bob McLeod

Managing Editor
Melody Magnus
Melody.Magnus@noaa.gov

Editors
Darcey Dodd
Art Kraus
Eva Whitley

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New NDFD Hazards Element Released as Experimental

On July 8, NWS released its Hazards element for experimental use as part of the National Digital Forecast Database (NDFD). The Hazards element contains all the active long-duration watches, warnings and advisories issued in the AWIPS Gridded Forecast Editor (GFE).

This element is the first to have 1-hour temporal resolution, through 72 hours, for GRIB2 files and 6-hour temporal resolution for days 4 and 5.

NWS will post supplemental NDFD-style hazards images on www.weather.gov at 3-hour temporal resolution (e.g., 00, 03, 06 UTC, etc.) up to 72 hours. Day 4 and 5 will have 6-hour temporal resolution. This process will continue until the NWS Web farm has sufficient capacity to generate 1-hour resolution images.

This element is available for the contiguous U.S. (CONUS) (Figure 1), 16 pre-determined CONUS subsectors (Figure 2), Alaska, Puerto Rico and the Virgin Islands, Hawaii and Guam.

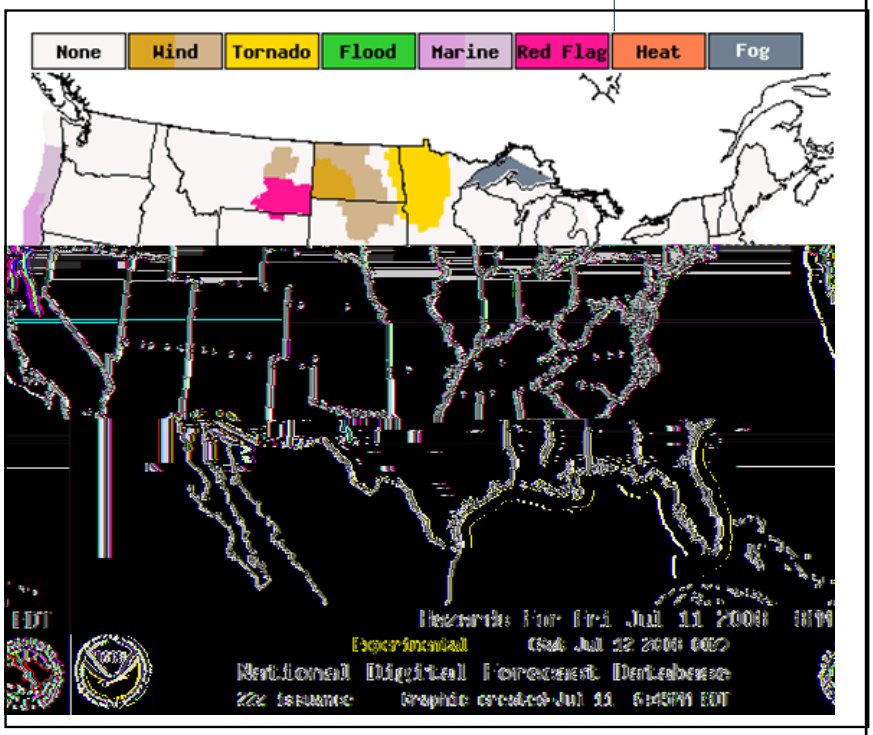


Figure 1. CONUS Hazards Graphic

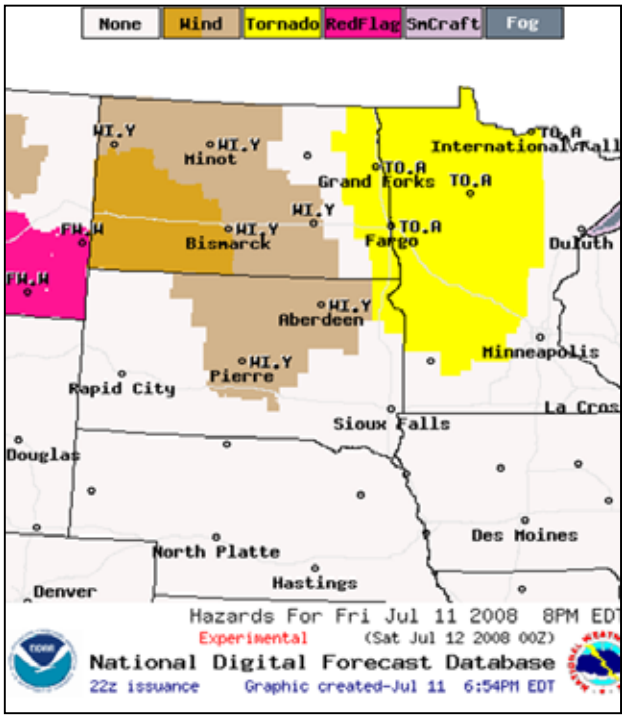


Figure 2. *Northern Plains CONUS Subsector Hazards Graphic*

The element does not include hazards issued in WarnGen that are not created in a gridded format (e.g., Tornado Warning, Severe Thunderstorm Warning, etc.) and RiverPro (e.g., Flood Watch and Warning for forecast points). WarnGen and RiverPro do not provide hazards in gridded format.

Initially, the hazards grids will not include warnings for Gale, Storm, Hurricane Force Wind and/or Heavy Freezing Spray. The Ocean Prediction Center and the Tropical Analysis and Forecast Branch issue these warnings in their Offshore and High Seas forecasts.

A detailed listing of all included hazards can be found in Appendix A of the Product Description Document (PDD) entitled *Experimental Hazards Grids in the National Digital Forecast Database*.

The PDD is posted on the NWS Catalog of New or Enhanced Products in experimental status at: products.weather.gov/PDD/HazardGrid0608.pdf

Please provide feedback on this new element. The comment period ends January 8, 2009. Links to online surveys for NDFD elements are as follows:

- GRIB2 Users: www.weather.gov/survey/nws-survey.php?code=ndfd-grids
- XML SOAP Service Users: www.weather.gov/survey/nws-survey.php?code=xmlsoap
- Users of NDFD images: www.weather.gov/survey/nws-survey.php?code=gfp

For more information on the Hazards element, contact Mark.Tew@noaa.gov, NWS Marine Services Program Leader. ❄

QPF, Sky Cover and Snow Amount Elements Promoted to Operational Forecast Status

The NDFD Quantitative Precipitation Forecast (QPF), Sky Cover, and Snow Amount elements became operational for most of the United States on July 8, 2008. This completes the transition to operational status for all of the original 12 baseline forecast elements in the NDFD.

The table below shows availability for these three grids beginning July 8, 2008.The QPF element has improved gridded verification of NWS forecasts and analysis capabilities at WFOs. One customer noted, "From the graphical forecast, we get much more accurate prediction of rainfall, wind gusts, etc., than from any other source."

Element	CONUS	Puerto Rico/ Virgin Islands	Hawaii	Guam	Alaska
QPF	**Operational**	**Operational**	**Operational**	Not available	Not available
Snow Amount	**Operational**	Not required	**Operational**	Not required	Not available
Sky Cover	**Operational**	**Operational**	**Operational**	**Operational**	Not available

Availability for QPF, Sky Cover and Snow Amount Elements beginning July 8, 2008

The Sky Cover element has many applications but is especially important to aviation. A user of this grid explained, "I am a pilot and I use this tool more than anything else when I am concerned about conditions on the ground for takeoff or landing. Wind and sky conditions given graphically every 3 hours and updated hourly are excellent."

Feedback from businesses that use the Snow Amount element have shown its benefit to numerous industries: "We are in the snow management industry and we use the information to prepare our troops and equipment. We then decide to run with a pre treatment or wait it out for active or post treatments."

For more details on these elements or NDFD in general, go to **www.weather.gov/ndfd/** or contact Andy.Horvitz@noaa.gov, NWS Fire and Public Weather Services Branch. ❄

Disaster Management (DM) Takes Major Steps Forward

The Disaster Management (DM) E-Gov Initiative program was established to meet the nation's need for a unified point of access to information and services relating to the four pillars of all-hazards disaster management:

- Disaster preparedness
- Mitigation
- Response
- Recovery

The DM Initiative elements improve information sharing and enhanced services for citizens and the emergency management (EM) community, including first responders, at the local, tribal, state and federal levels. The program also includes integration of alerts, warnings, grants and training activities. The initiative enhances disaster management effectiveness through discussion forums, panels and workshops.

The DM Program has been managed by the Federal Emergency Management Agency (FEMA) since October 2007, with Sarah Hyder as Program Manager. This transfer took place with the intention of improving overall alignment and integration of disaster management information. DM initiatives that have moved include:

- Public side of the DisasterHelp.gov Website
- Disaster Management Interoperability Services (DMIS) Desktop Tools
- Open Platform for Emergency Networks (DM-OPEN)
- Practitioner-Driven Emergency Messaging Standards Initiative

The DM Program Office is now composed of representatives from the Department of Homeland Security together with many of FEMA's internal staff. This integration brings a higher level of coordination. Representatives now are committed to following the "stakeholder-driven" approach the program has historically embraced. This approach enhances information and resource accessibility for emergency response personnel.

While this office has remained steadfastly involved with the technology industry and the user community, funding issues had delayed progress. Those issues have now been resolved. The DM Program is preparing to undertake several projects geared towards better understanding its users, including interviews, focus groups, usability and satisfaction surveys and assessments. The DM Program has expanded its customer support and outreach efforts in 2008 as follows:

- Moved server to the data center at NASA's Stennis Space Center in Mississippi, resulting in 300% transmission speed increase and reduced maintenance costs. Cost savings will be used to further upgrade the system to better meet user requirements.
- Moved DMIS and DM-OPEN mailing lists to FEMA GovDelivery System. To date, there is more than a 1500% increase in subscribers to the DM-OPEN list and a 600% increase in DMIS Special Interest Group (SIG) list subscribers. The DM Team, in concert with the DMIS and OPEN SIGS, is using various means of outreach to include these new subscribers and DMIS Collaborative Operators Groups (COG) as active DM Program stakeholders.
- Plans to launch new DM Program Website in August with updated pages and links for key functions, training and an online registration. The online registration allows U.S. and Canadian Municipal EM/First Responder facilities to register for DM COG status and receive the DMIS Incident Management Toolset. Commercial EM software vendors may register

to receive the information and accounts necessary to develop an interface to the non-proprietary DM OPEN data interoperability backbone.

For more information on the DM Program and DMIS services, go to the Website at: www.dmi-services.org/ or contact Sarah Hyder, FEMA's DM Program Manager at sarah.hyder@dhs.gov.

For more information on this article, contact Avagene Moore, FEMA Disaster Management Team Outreach, at: amoore@emforum.org. ❄

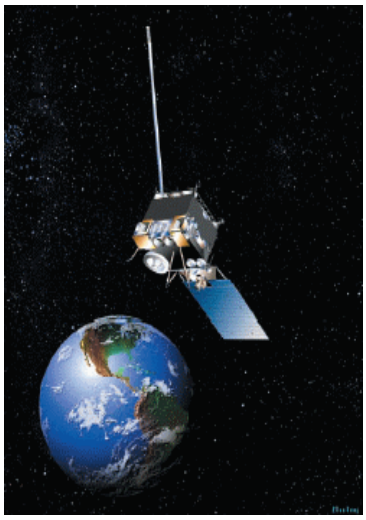
EMWIN Expands Caribbean Outreach, Moves Forward with GOES-R

A member of the Emergency Managers Weather Information Network (EMWIN) team has been invited to present EMWIN information at the United Nations Space-Based Solutions for Disaster Management and Emergency Response for the Caribbean in Barbados this July. The intent of the workshop is to build on regional space-based solutions for disaster management and emergency response for the Caribbean. The EMWIN team plans to add to the groundwork laid for 13 Caribbean island nations last year under the NWS supported Third Border Initiative.

EMWIN on GOES R

The future of EMWIN looks bright as staff continue to develop an EMWIN Geostationary Satellite (GOES) R prototype. Later this summer, the EMWIN team, together with National Aeronautics and Space Administration, National Environmental Satellite, Data and Information Service, and the GOES-R Program office, will test a prototype receiver developed using an open source, software-defined radio.

The receiver will be backward compatible for EMWIN and Low Rate Information Transmission. This design will allow for a greatly enhanced EMWIN broadcast while maintaining the current satellite dish size.



GOES Satellite

EMWIN-N News

GOES-13 (N) will be brought out of storage later this summer to provide an opportunity for EMWIN-N testing. The EMWIN team will be using an off-the-shelf transition-ready EMWIN-N system being marketed by an EMWIN vendor.

Based on the remaining fuel of the GOES-East (12) satellite, EMWIN staff expects the GOES-13 to be in operation by September 2010. In the event of a major failure of either GOES-East (12) or GOES-West (11), GOES-13 could be called into service earlier. Users should consider migrating to EMWIN-N capable systems. For vendor contact, please see our vendor page at: **www.weather.gov/emwin/winven.htm**.

To keep informed of new developments in the EMWIN transition, please visit the NWS EMWIN website at: **www.weather.gov/emwin/index.htm**. For more information, contact **Robert.Wagner@noaa.gov**, Office of the NWS Chief Information Officer. ❄

Driving Past Flood Warning Sign Becomes Reckless Driving Offense in Tennessee

A new law in Tennessee, which took effect on July 1, makes ignoring a flood warning sign or barricade, such as Turn Around Don't Drown (TADD™), a "Reckless Driving" offense. If emergency personnel have to rescue the violator, the law provides the authority to charge for these services. The law exempts emergency vehicles forced to cross a flooded road to respond to a call.

In Tennessee, being cited for reckless driving can result in up to 6 points (7 points for commercial vehicles) on drivers' records and can include a fine in addition to paying for rescue services. The maximum fine is $2,500, but generally ranges from $50 to $250 for first-time offenders with clean driving records.

NWS Nashville, TN, and Huntsville, AL, staff were instrumental in getting this bill passed. Steven A. Mayer, Rutherford County, TN, Emergency Management, said, "I hope I can be among the first to extend congratulations to NWS for bringing this life-saving program to the state. Additionally, kudos to the Tennessee counties of Lincoln, Moore and Bedford for having the vigilance and foresight to embrace the TADD program and enact corrective measures long before the law came into effect. No flood-related deaths have occurred in these counties since endorsing the program."

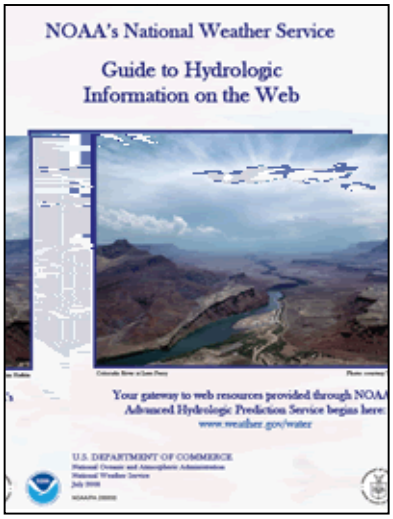
One impetus for this bill was statistics showing the number of instances an individual has been rescued after attempting to cross a flooded stream or creek. Many drivers just don't learn the first time.

To highlight the significance of the Tennessee law, a ceremony is planned with Tennessee's governor and other legislative members. TADD™ began as a pilot program in Lincoln County, TN. The statewide kickoff of the Tennessee TADD™ program began with the Lincoln County TADD™ sign ceremony on March 24, 2006. You can find more information about the ceremony at: **www.srh.noaa.gov/hun/about_us/lincoln_tadd.php**.

For details on the new law see: **www.legislature.state.tn.us/bills/currentga/asp/WebBillInfo/BillCompanionInfo.aspx?BillNumber=sb3143**

Information on TADD™ is online at: **www.weather.gov/os/water/tadd/index.shtml**. For details about the Tennessee TADD™ program, contact **Jerry.Orchanian@noaa.gov**, WCM, NWS Nashville, TN, or **Tim.Troutman@noaa.gov**, WCM, WFO Huntsville, AL. ❄

New Hydrologic User's Guide Released



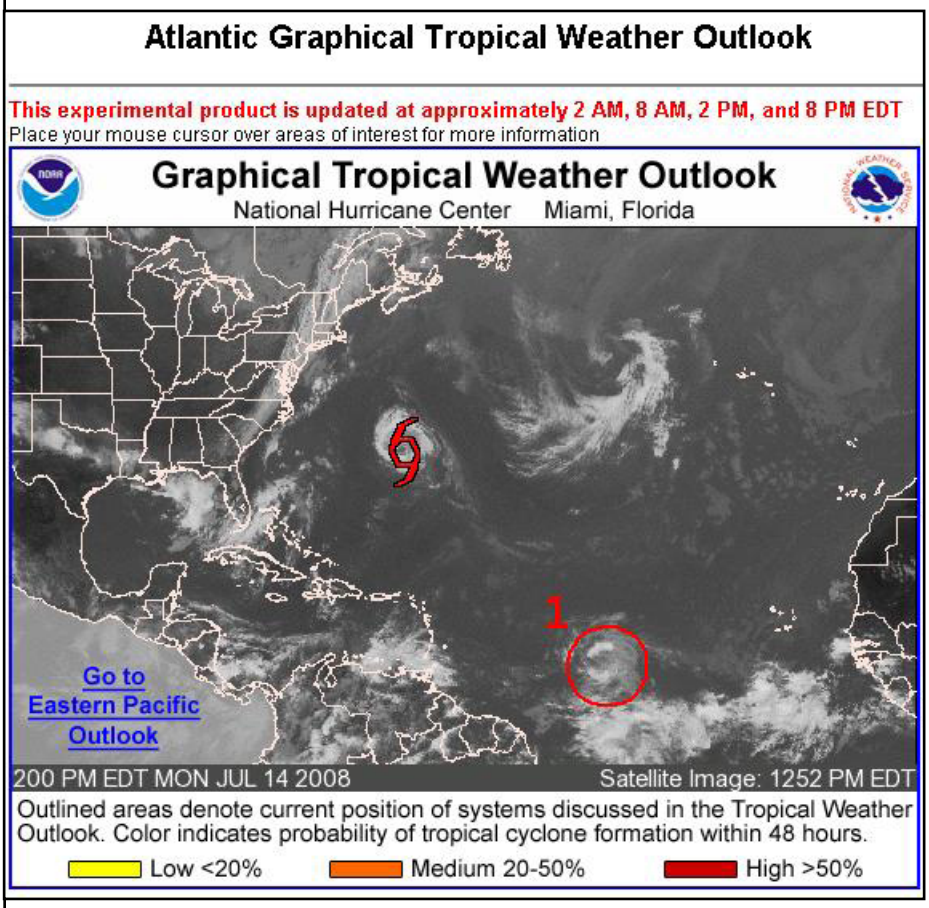
Your gateway to resources provided through NWS Advanced Hydrologic Prediction Service (AHPS) is available online at: **www.weather.gov/water**. NWS has developed a new AHPS User's Guide to heighten awareness, understanding, and access to NWS hydrologic forecast and warning information. This new guide should enable decision makers, such as emergency and floodplain managers, and city officials, to make more informed decisions to mitigate the impacts of hazardous conditions. Each Web function and tab is explained in plain language to assist users as they navigate through the breadth of AHPS tools.

You can request printed copies of the new AHPS User's Guide through your local NWS office. For the most up-to-date version of this evolving User's Guide, however, please download the online version at: **www.weather.gov/os/water/ahps/Ahps-resources.shtml**.

For more information, contact **Larry.Wenzel@noaa.gov**, NWS National Hydrologic Outreach Program Leader. ❄

Experimental Tropical Cyclone Products for the 2008 Season

This year's hurricane season brings several experimental graphical products that show great promise for improved communication of tropical cyclone information. The experimental Tropical Cyclone Graphical Hazard team worked hard during the off-season to improve the tropical cyclone hazard graphics product. This Internet-based product consists of four tropical cyclone hazard graphics:



The experimental Graphical Tropical Weather Outlook has been enhanced since its 2007 debut and now includes a 3-tiered, color-coded, categorical genesis forecast.

- Wind
- Tornado
- Coastal flooding
- Inland flooding

One or more of 17 coastal Weather Forecast Offices (WFOs) will generate and post these graphics for the 2008 hurricane season when the National Hurricane Center (NHC) issues a tropical cyclone watch or warning for the WFO's area of responsibility.

The graphics are assessments by forecasters of the impacts a tropical cyclone could have in their area of responsibility. The graphics are based on official forecasts and associated forecast uncertainties from the NHC, the Storm Prediction Center, and the Hydrometeorological Prediction Center. The Website for these products is: **www.weather.gov/os/tropical**.

Hurricane Center Experimental Graphics

The Hurricane Center also will showcase several experimental products. The experimental Graphical Tropical Weather Outlook (GTWO), shown above, has been enhanced since its 2007 debut and now includes a 3-tiered, color-coded, categorical genesis forecast. The GTWO is intended to be a visual companion to the operational text-only Tropical Weather Outlook.

Another NHC experimental product is the Tropical Cyclone Wind Field graphic. This graphic displays areas potentially affected by sustained winds of tropical storm and hurricane force. The graphic offers representations of coastal areas under tropical cyclone watches and warnings, the current position of the center of the tropical cyclone, and its track history. The Website for these graphics is: **www.nhc.noaa.gov/aboutexperimental.shtml**.

For more information on these products, contact **Scott.Kiser@noaa.gov**, NWS Tropical Cyclone Program Manager. ❄

New Marine Weather Message is One New Product for Many Marine Weather Hazards

On August 5, 2008, NWS will operationally implement a new Marine Weather Message (MWW) product. This product has been issued experimentally since July 2007. The MWW is intended to better inform coastal and Great Lakes mariners of adverse marine weather hazards such as heavy freezing spray, hazardous seas, and storm force and gale force winds. The MWW will contain all the active long duration non-tropical, marine-related watches, warnings and advisories, provide reasoning for the issuance of these hazards, and elaborate on the threats involved with each.

At the same time, NWS will begin issuing a new set of marine watches up to 48 hours in advance, allowing marine interests extra time to prepare for these hazards. In the past, NWS only issued marine warning and advisory headlines for threats expected to take place within 12 to 24 hours. The new watches, issued in the MWW and headlined in the Coastal Marine Forecast, and Great Lakes Nearshore and Open Lakes Forecasts, include:

- Hurricane Force Wind Watch
- Storm Watch
- Gale Watch
- Heavy Freezing Spray Watch
- Hazardous Seas Watch

In addition to the new marine watches, NWS offices will issue the MWW for the following warnings or advisories:

Marine Warnings

- Hurricane Force Wind Warning
- Storm Warning
- Gale Warning
- Hazardous Seas Warning
- Heavy Freezing Spray Warning

Marine Advisories

- Ashfall Advisory
- Brisk Wind Advisory
- Dense Fog Advisory
- Dense Smoke Advisory
- Freezing Spray Advisory
- Low Water Advisory
- Small Craft Advisory
- Small Craft Advisory for Hazardous Seas
- Small Craft Advisory for Rough Bar
- Small Craft Advisory for Winds

For more details, including a sample message and a link to the latest active Marine Weather Messages, visit the MWW page at: **www.weather.gov/os/mww/index.shtml** or contact **Mark.Tew@noaa.gov**, NWS Marine Services Program Leader. ❄

Boy Scout Day Finds NWS Prepared

NWS Headquarters (HQ) offered a Weather Merit Badge workshop for Boy Scouts in June, attracting boys from 19 troops in the Washington-Baltimore area. The workshop compacted what is typically several weeks of work into one intense day with NWS meteorologists, climatologists, hydrologists and other staff members. Activities for the day included:

- Building weather observing tools
- Learning practical lessons on weather safety
- Making a cloud chamber
- Talking to NWS employees about weather careers.

NWS Director Jack Hayes joins the Boy Scouts on a special day focused on learning weather safety.

The Scouts also had a national weather briefing and played a game of weather Jeopardy!™" to review what they learned during the day. After completing the workshop and presenting the weather safety messages to their families and troops, the boys earned a weather merit badge. To simplify the process for the boys, NWS Evaluation Branch Chief Will Shaffer, a certified weather merit badge counselor, was on hand to help the boys complete badge requirements.

By sad coincidence, that same week four Boy Scouts were tragically killed by a tornado at a Scout leadership camp in Iowa. The timing attracted media attention to the HQ event. Crews from ABC, CNN, FOX, AP and Montgomery County Gazette documented the daylong activities.

At the event, NWS Director Dr. Jack Hayes commented: "The Scouts and staff at the camp in Iowa were doing the right thing by monitoring the situation with a NOAA Weather Radio. Had they not taken shelter when they did, it's likely that even more of the boys would have been injured or killed." Dr. Hayes then asked the Scouts, the media, and NWS volunteers to take a moment of silence and remember those who had lost their lives.

The workshop filled up in just 4 days. More than 100 boys were on a waiting list. One troop traveled almost 3 hours by train to get to the session.

NWS Program Analyst Donna Franklin, who helped plan the event, hopes the program will expand to local forecast offices. "As Boy Scouts, they spend a lot of time outside in the wilderness. By being prepared, knowing weather patterns, knowing what to expect, and having a NOAA Weather Radio, they can really maximize their chances of keeping safe," Franklin said.

Boy Scout Matthew Heffernan, 14, from Reston, VA, said he learned that "tornadoes are not anything to be messed with. In movies you see people running and spazzing, but you really should try to get low and find shelter for yourself." Hefferman added, "Scouting is very closely tied to the weather."

NWS HQ is considering additional Boy and Girl Scout Merit Badge workshops. "Our long waiting list shows the huge demand for courses of this type for the Scouting community. NWS is pleased to provide this important public service," said Susan Buchanan, NOAA Public Affairs Specialist for Weather. Buchanan noted that the team is developing a "how-to" guide to help other NWS offices host their own Scout Weather Merit Badge day.

For more information on the event, contact Deborah.Lavine@noaa.gov. ❄

New Project Tests Success of Providing Weather Information at Travel Plazas

WFO Buffalo, NY, is helping the New York State Thruway Authority (www.nysthruway.gov) to make weather information available to travelers on the Thruway. During the October 13, 2006, lake effect storm, motorists were stranded in their vehicles on the New York Thruway for up to 18 hours. WFO Buffalo and the Thruway Authority are hoping to avoid similar incidents.

WFO Buffalo staff provided the Fully Localized Atmospheric Research Reception Environment (FLARE) software to the New York State Thruway Authority. The software, written by Jason Burks, ITO, at NWS Huntsville, AL, is being used by the Thruway Authority in a test project at four Travel Plazas: Angola, Pembroke, New Baltimore and Guilderland, NY. The software displays standard NWS products including current weather conditions, radar and satellite loops, and current surface maps on TV monitors at the rest stops. When the weather is forecasted to be hazardous, the system will display active watches or warnings in effect for that region. The intent is to help motorists decide whether to wait out an approaching storm that could bring blinding lake-effect snows or other hazards. The monitors also display information on missing children and will be used to send out active AMBER alerts.

TV monitors at the rest stops display current weather conditions, radar and satellite loops, and current surface maps. When the weather is forecasted to be hazardous, the system will display active watches or warnings in effect for that region.

For more information, contact **Judith.Levan@noaa.gov**, WCM, NWS Buffalo, NY.❄

Civil Air Patrol Back in Vogue for Accurate Disaster Assessments

NWS meteorologists use sophisticated technology, such as Doppler radar and computer models, to forecast and analyze weather events. But even the most high-tech equipment can't assess the destruction caused by a tornado.

To really witness a tornado's wrath, the best view is from the air. Terrain, trees and brush often hinder ground surveys. The complexity of trying to reconstruct large and significant severe weather and hydrologic events "post mortem" requires the careful planning and execution of combined ground and aerial surveys.

Since the recent signing of the Memorandum of Understanding between the Department of Commerce and the Department of Defense, local NWS offices may request and take part in Civil Air Patrol (CAP) overflights of significant severe weather and hydrological events. So far this year, CAP has assisted with aerial photography and damage assessment of dozens of tornadoes from Wisconsin, Arkansas, Alabama, Tennessee and numerous points in between.

A 123-Mile Tornado Track

In Arkansas, NWS Little Rock Meteorologists John Lewis and Brian Smith boarded a CAP Cessna 182 to view the tornado track of an event that struck northwest Arkansas on February 5, 2008. This Arkansas tornado was part of the notorious "Super Tuesday" killer tornadoes. The primary goal that day was to determine if the long-track Arkansas tornado was one continuous path or multiple segments.

Although ground surveys provided part of the picture, NWS needed an aerial view to confirm a new Arkansas record—a 123 mile track—the longest track in Arkansas since 1950 and one of the longest ever recorded in U.S. meteorological history.

Tormented Tennessee

In Tennessee, NWS offices requested a CAP flight to view several potential long-track tornadoes. Tennessee CAP Wing Commander Colonel Barry Melton noted that one track over Tennessee was so long, CAP flight pilots had to fly Howard Waldron, WCM, NWS Morristown to the tornadoes' possible birth place over northeast Mississippi.

For more information, contact Walt.Zaleski@noaa.gov, NWS Southern Region WCM Program Manager. ❄

NWS Releases Spanish Version of Popular Sky Watcher Chart

The NWS OCWWS Outreach Team has just released a Spanish version of its updated, two-sided Sky Watcher Chart, replacing the older NWS Cooperative Observer Program Cloud Chart.

NWS partnered with National Aeronautics and Space Administration on this updated chart, also available as a poster. Side one offers cloud thumbnail pictures similar in appearance to the old chart, with cloud photos and classifications according to the observing code. Side one also now includes the cloud symbol on the lower right corner of each photo.

Side two presents an introduction to clouds and includes definitions of the different categories of clouds, the hydrological cycle, and a cloud height chart. Unlike previous versions, there are no copyright restrictions for this chart. You can find the English and Spanish versions of the chart online at: **www.weather.gov/os/brochures.shtml#storm**

For more information, contact Ron.Gird@noaa.gov, NWS Outreach Manager. ❄

Monthly GoToMeeting™ Briefings Help Save Gas and Time for Eastern Montana Disaster and Emergency Services

Have you ever spent more time driving to a meeting than actually attending it? It's a hurdle that NWS Warning Coordination Meteorologists (WCM) and Emergency Managers are always jumping over, especially in the West. In Montana, the long drives are known as "Windshield Time."

NWS Billings and Glasgow WCMs Tom Frieders and Tanja Fransen are responsible for more than 30,000 square miles of eastern Montana. With staff training, summer leave, and severe and fire weather season, it's not always possible to attend one-on-one meetings with Disaster and Emergency Service Coordinators (DES).

To resolve the problem, NWS Montana staff decided to try Citrix GoToMeeting™ software to brief local coordinators on topics such as the introduction of the Heat Stress Index, recent weather and hydrology news, and the long-range weather outlook. The software allows NWS staff to show files on almost any selected computer to attendees who have a passcode. Attendees can see exactly what is on the NWS computer while the meteorologist provides a briefing, just as if they were in the room.

GoToMeeting™ should never replace crucial personal contact generated by one-on-one meetings, but once a strong working relationship has been established, this is a great way to enhance partnerships by having scheduled updates.

In Montana, monthly calls are held after the Climate Prediction Center outlooks are updated. One DES Coordinator commented, "This briefing is the best thing you all have done. You've saved me from wasting a full day traveling to a location, and with the cost of fuel being so high, you are helping our local governments save money!"

For more information, contact Tom.Frieders@noaa.gov or Tanja.Fransen@noaa.gov. ❄

Arts Festival, Air Show Draws Record Crowds to Weather Booth

Art and science intersected when NWS Huntsville, AL, teamed up with meteorology graduate students from the University of Alabama at Huntsville to staff a booth at the 2008 Panoply Arts Festival in downtown Huntsville in late April. Panoply was a 3-day festival that attracted more than 100,000 folks from across the region.

NWS staff and students handed out brochures on heat, severe weather, tornadoes, hurricanes, flash floods and NOAA Weather Radio. The booth also displayed eight weather safety posters that were finalists in a contest for 1st through 8th grade students. After hundreds voted for their favorite poster, two winners were selected. In keeping with the art theme, weather safety color sheets rounded out the fun at the NWS Huntsville booth.

NWS Huntsville, AL, staff lured aviators to a colorful booth at the Huntsville air show. Staff also supplied incident command support via several weather briefings.

Air Show Featured Severe Weather

Nearly 200,000 people came out to the Huntsville, AL, air show in late June. The lively 2-day event featured fantastic performances including the U.S. Navy Blue Angels. NWS staff handed out thousands of safety brochures.

Unfortunately, the event's second day brought severe weather. NWS Huntsville office supplied incident command support during the afternoon hours by providing several weather briefings to Madison County, AL, emergency management before the storms rolled in. Then, scattered thunderstorms developed to the west of the airport during the show. Sadly, even though the public received notice of the onset of thunderstorms at least 20 minutes beforehand, 1 person was killed and 12 were injured when strong non-severe winds toppled a number of tents situated on the airport grounds.

For more information, contact Tim.Troutman@noaa.gov, WCM, NWS Huntsville, AL. ❄

Wal-Mart Customers Buy into Weather Safety

NWS Amarillo teamed up with the Amarillo/Potter and Randall County Emergency Management (EM) Officials to promote weather and general safety as part of FEMA's Emergency Preparedness Week. The outreach event was held at a local Amarillo Wal-Mart store.

On the day of the June event, NWS lured busy shoppers to a booth by offering pet tornadoes, pencils, cloud charts and lightning posters to Wal-Mart shoppers entering and exiting the store. The pet tornadoes and cloud charts were a big hit. EM representatives

handed out comprehensive emergency preparedness booklets. The Amarillo EM brought their Mobile Operations Center which was made available for the public to tour. Approximately 200 people visited the NWS booth.

For more information, contact Steve.Drillette@noaa.gov, WCM, NWS Amarillo, TX. ❄

Severe Weather

NWS Forms Two Service Assessment Teams in Response to Mother's Day Weekend Tornadoes and Record Midwest Flooding in June

NWS has formed its 3rd and 4th national service assessment teams this year to evaluate two more horrific weather events in 2008:

- Deadly tornadoes across northeast Oklahoma and southwest Missouri on May 10, 2008, Mother's Day weekend
- Historic flooding in the Midwest throughout June

NWS has not formed more than three national service assessment teams in one calendar year since 1998. The most teams assembled in a year was seven teams in 1992. NWS forms these teams to evaluate its performance during significant hazardous weather events.

Cleanup crews continue work in a neighborhood in Picher, OK, Monday, May 12, 2008, after Saturday's tornado. (AP Photo by Sue Ogrocki)

Mother's Day Weekend Tornadoes

One of many tornadoes that struck during the Mother's Day weekend outbreak reached EF4 on the Enhanced Fujita Scale and resulted at least 19 confirmed fatalities. This tornado caused six fatalities and numerous injuries in the town of Picher in the northeast corner of Oklahoma. Before WWII, Picher was a lead and zinc mining town with a population of 16,000. By 2008, unstable ground and possible contamination caused by the mining reduced the town's population to about 800.

This same tornado then moved east from Picher and killed 13 more people near Racine, south of Joplin. The majority of those killed were in vehicles trying to outrace the tornado. Because severe thunderstorms can develop quickly, NWS recommends seeking shelter in a basement or interior room with no windows on the lowest level of a sturdy building. If a tornado is bearing down on your vehicle and you cannot get to a safe building, as a last resort, leave your vehicle and lie in a ditch or depression away from the road.

Midwest Flooding

Several days of heavy rain falling on already saturated soils caused catastrophic flooding across the Midwest in June. The states most severely impacted include Iowa, Wisconsin, Illinois, Missouri and Indiana. Soils were saturated from large amounts of snow during the winter and consistent rains in the spring. The heavy rain that fell from June 1-15, 2008, across the area was more than the soil and waterways could handle. This resulted in flood crest records being set on many streams and rivers across the Midwest. By June 30, there were 24

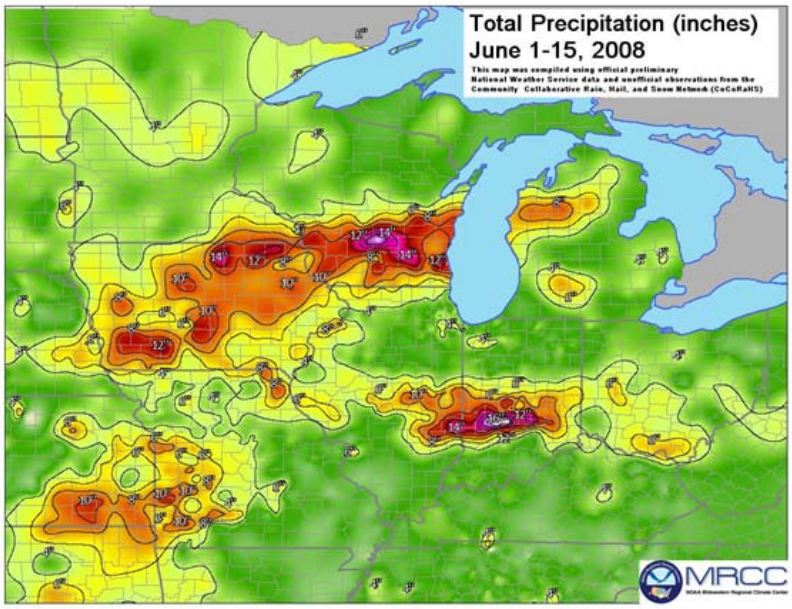
fatalities (preliminary count) caused by the flooding. Property damage is in the billions of dollars.

The assessment teams will focus on NWS operations and services, and on societal impacts of the event. The teams will try to determine if there is a way for NWS to elicit better responses to hazardous weather warnings and watches. Both teams will also identify areas for improvements and make recommendations to aid decision makers in their preparedness strategies.

Finally, the teams will identify best practices for other NWS offices to emulate during similar severe weather events.

NWS Performance Branch staff hopes to have the reports completed this winter. Check future editions of *Aware* for availability.

For more information on these two reports, contact Wayne.Presnell@noaa.gov, Meteorologist, NWS Performance Branch. ❄



Total precipitation observed (inches) during the period June 1-15, 2008. The maximum of 16+ inches fell across central Indiana with 14+ inches observed across northern Iowa and south-central Wisconsin. Image courtesy of the Midwest Regional Climate Center.

Hazardous Weather Testbed Works to Improve Severe Weather Forecasts and Warnings

The NOAA Hazardous Weather Testbed (HWT) team, in Norman OK, tests and evaluates new technologies for severe thunderstorm forecasting and warning. The team is composed of forecasters, research meteorologists, technical specialists, trainers and software developers. This collaboration facilitates a more effective transfer of these new technologies into NWS operations, resulting in improved severe local storm outlooks, watches, and warnings. The HWT has two major components:

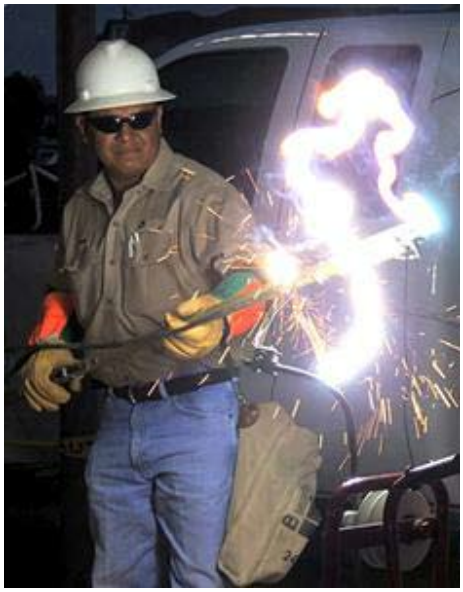
- Experimental Forecast Program (EFP): Long-fused, large-domain hazardous convective weather
- Experimental Warning Program (EWP): Short-fused warning-scale forecasts.

This spring, the EFP program tested and evaluated output from several new high-resolution computer models, focusing on predicting the timing, location, intensity and types of severe thunderstorms. Each of these factors is an operational challenge for forecasters at the Storm Prediction Center (SPC) and at local forecast offices. NWS will use the results to improve the models used to prepare NWS severe weather outlooks.

The EWP program conducted three experiments this spring. Two of the experiments focused on new radar technologies: Phased Array Radar (PAR) and Collaborative Adapting Sensing of the Atmosphere (CASA) dense radar networks. Participants evaluated PAR and CASA output in real-time during thunderstorm events in Central Oklahoma and also used archive case-study playback. During quiet weather in Oklahoma, the evaluators involved in the third experiment focused on remote severe weather events across the United States, producing separate experimental hazardous weather warning grids for severe hail, thunderstorm winds and tornadoes using real-time radar data and spotter reports.

For more information, contact Kevin.Scharfenberg@noaa.gov, NMS National Severe Storms Laboratory. ❄

Man-Made Lightning Sparks Safety Awareness



Man-made lightning shows the power of this natural force.

Colts baseball fans were treated to some man-made lightning displays during a game on June 26. The Concho Valley Electric Coop provided live arcing demonstrations to show what electricity can do to various items such as hot dogs, baseball caps, tree limbs and baseball bats.

The demonstration was done in conjunction with NWS San Angelo, City Government, the American Red Cross and Tom Green County Emergency Management as a team effort to promote National Lightning Safety Awareness Week, June 22-28.

During the demonstrations, San Angelo WCM Meteorologist Hector Guerrero discussed lightning safety with the fans while emergency management officials and American Red Cross volunteers distributed brochures.

The Concho Valley Electric Coop gave away All Hazards NOAA Weather Radios during each inning of the game. NWS employees passed out magnets and "When Thunder Roars, Go Indoors!" stickers to fans. Guerrero also had the honor of throwing out the first pitch of the game.

For more lightning safety resources, statistics, links and tips go to: **www.lightningsafety.noaa.gov**. For information on this event, write **Hector.Guerrero@noaa.gov**, WCM, NWS San Angelo, TX. ❄

NWS Teams with Baseball Team, Local Media for Lightning PSA

Capitalizing on the recent success of the Tampa Bay Rays Major League baseball team, the Tampa Bay Area NWS office and NOAA Public Affairs teamed up with the Rays and local media to promote lightning safety on Sunday, June 22.

NWS Tampa Lead Forecaster Mike Cantin contacted team officials in late April about working with the team to promote lightning safety during a game. Initial plans included creating a public service announcement (PSA) to be played during the game and subsequent games during the summer. The PSA will be produced by NWS Tampa Bay and NWS Public Affairs staff as well as members of BayNews9. Plans are to complete the PSA during the summer for use this year and in the future.

At the June 22 Rays game, NWS set up a weather safety booth inside one of the main gates of Tropicana Field. Thousands of fans passed the booth as they entered the stadium.

The booth featured many items including information about lightning safety, hurricane planning, cloud charts and children's coloring books. The three members of the booth team spent time talking to fans and handing out brochures and a lightning safety bookmark created by BayNews9. Around 20,000 fans attended the game.

For more information, contact **Daniel.Noah@noaa.gov**, WCM, NWS Tampa Bay, FL. ❄

The Tampa Bay Rays vs. the Astros and lightning. The Rays, a Major League Baseball Team, are working with the NWS to produce a safety PSA for their fans to watch during game breaks.

Next Generation Warning Products and Services Workshop

The decision to issue a watch, warning or advisory for an extreme weather event such as a tornado, flood, hurricane, blizzard, extreme heat, etc., is arguably the most important decision made by NWS forecasters. The identification and communication to the public of the threats imposed by these extreme events involves a large segment of the weather enterprise, including vendors of meteorological information, the media, emergency managers and a variety of federal, state and local governmental organizations.

The NWS has recently begun to design a new application to fully support its watch, warning and advisory mission and meet new operational requirements. A critical initial step in this design process is to ensure there is a thorough understanding of both the types of information and the format of the information needed.

On December 2-4, NWS and the University of Oklahoma will hold a joint workshop in Norman, OK, to bring together technical and operations experts from the private weather enterprise, broadcast media, emergency management and academia. The meeting's goal is to determine specific requirements associated with NWS issuing watch, warning and advisory services. Discussions will range from broad concepts of watch, warning and advisory services to the details of textual and graphical dissemination. The goal of the workshop is to enable NWS partners to:

- Fully take part in defining requirements for the new application
- Share details regarding new technologies and capabilities that would impact these requirements
- Obtain a clear idea about how to maximize public and partner satisfaction with the quality, usability and flexibility of NWS' future watch, warning and advisory services

A clear understanding of how people receive and interpret hazardous weather information is critical to meeting these goals. Consequently, the workshop also will address the current state of the social sciences with respect to the understanding of human response to the watch, warning and advisory services, and to identify social science needs.

Additional information including a draft agenda, online registration, and logistical details is available at **apps.weather.gov/partners/index.php.** For more information, contact **John.T.Ferree@noaa.gov** or **Kevin.Scharfenberg@noaa.gov**, NWS Severe Storms Services. ❄

StormReady/TsunamiReady

StormReady® Program Gains St. Louis and First School District

The NWS StormReady® and TsunamiReady™ programs are geared to help communities better prepare and respond to weather emergencies. This year, that preparedness has been crucial in light of an onslaught of winter weather, tornadoes, high winds, flooding, heat and wildfires. No program can prevent destructive weather or eliminate the destructive results, but StormReady helps ensure Emergency Managers have the tools they need to prepare and respond.

In June, the program gained St. Louis, MO. Requirements increase with size of the locality, making this a major achievement. Other major cities in

St. Louis, MO., one of the newest StormReady sites.

the program include New York City, Pittsburgh, San Francisco and Seattle, to name a few.

StormReady also gained the Wichita Falls, TX, School District, its first such district in the nation. The program now includes its first airport as well, Detroit Metropolitan Wayne County Airport. Meanwhile, Six Flags Adventure Parks continue to add locations to StormReady: Six Flags New Jersey joined this spring.

In all, the program has added 35 new sites since mid April including Jackson State University in Alabama, Florida Atlantic University, and the Salt River Project near Phoenix, AZ. These new sites include counties and communities from Wisconsin to New Mexico and from California to New York.

The following four hospitals joined the supporter program, established for entities that support the spirit of StormReady but lack the infrastructure to meet all the requirements:

- Kell West Regional Hospital, Wichita Falls, TX
- Loring, SC, Community Hospital
- Billings, MT, Clinic
- SSM Cardinal Glennon Children's Medical Center in St. Louis, MO

The supporter program continued to pick up speed when the Indianapolis Motor Speedway signed on in May as well as General Electric in Alabama, FedEx Forum Arena in Atlanta and the Florida Aquarium in Tampa Bay.

For more information on the StormReady® and TsunamiReady™ programs, contact either Donna.Franklin@noaa.gov or Melody.Magnus@noaa.gov. ❄

Online Summer Awareness Resources

Summer is severe weather, flood and hurricane season. NWS offers numerous resources to help communities, schools and individuals better prepare for emergencies. Check out the following sites for posters, videos, animations, photos, survivor stories, kid and teacher resources, policy statements and much more.

- **Flood Safety: www.floodsafety.noaa.gov/index.shtml**
- **Hurricane Safety: www.weather.gov/os/hurricane/index.shtml**
- **Lightning Safety: www.lightningsafety.noaa.gov/index.htm**
- **Severe Weather: www.weather.gov/os/severeweather/index.shtml**

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Climate, Water and Weather Links

Aviation Weather:	**aviationweather.noaa.gov/**
Brochures/Booklets/Posters:	**weather.gov/os/brochures.shtml**
Education/Outreach:	**www.weather.gov/os/edures.shtml**
Flooding/Water:	**www.floodsafety.noaa.gov/**
Hurricane Awareness:	**www.weather.gov/om/hurricane/index.shtml**
Lightning Safety:	**www.lightningsafety.noaa.gov/**
Marine Weather:	**weather.gov/os/marine/home.htm**
MIC/WCM/SOO/DOH List:	**weather.gov/os/wcm-soo.pdf**
Natural Hazards Statistics:	**weather.gov/os/hazstats.shtml**
National Digital Forecast Database:	**weather.gov/ndfd/**
NOAA Weather Radio Information:	**weather.gov/nwr/**
Past Weather/Climate:	**lwf.ncdc.noaa.gov/oa/ncdc.html**
Rip Current Awareness:	**www.ripcurrents.noaa.gov/**
Severe Weather Safety:	**weather.gov/os/severeweather/index.shtml**
Tsunami Information:	**www.tsunami.gov**