



# Aware

*Aware is published by NOAA's National Weather Service to enhance communications between NWS and the Emergency Management Community and other government and Private Sector Partners.*

**March 2013**

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## From the Top

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### NWS is Building a Weather-Ready Nation Shoulder-to-Shoulder

*Dr. Louis Uccellini, NWS Director*

As the new NWS Director, I am honored to lead such a prestigious agency with the unbeatable mission of protecting lives and livelihoods. The past year had its success stories with superior outlooks, forecasts, and warnings, especially those for Sandy. But many challenges remain, particularly related to how we improve communication strategies and decision support services that help save lives and mitigate property loss. Our eyes remain locked on the future to ensure NWS is "second to none" and supports a [Weather-Ready Nation](#).



*Louis Uccellini,  
NWS Director*

Across the Nation today, tens of thousands of flights will arrive safely at their destination, television meteorologists will show satellite and radar images to their viewers, cargo ships are navigating the low water of the Mississippi River, electricity is flowing to homes and businesses, and mobile communications are operating—unaffected by an invisible threat from the sun. These success stories and countless others are made possible by the work the NWS does each and every day.

What makes the NWS a prestigious agency with a bold future are the dedicated men and woman who work day in and day out to keep us all informed and safe. They do so in ways that are more public, such as issuing life-saving watches and warnings, and in ways that are less apparent but are vital to our society ranging from supporting airline safety and marine transportation to protecting our electrical infrastructure from solar storms.

We are effective because of our direct links with communities and our partnerships with emergency managers across the country. I only see these partnerships strengthening over the years. We remain committed to directly engaging the public through a range of outreach activities, especially through the various media outlets that are able to touch lives and support important life-saving decisions.

I look forward to working with emergency managers as we accomplish the goal of making this United States a Weather-Ready Nation and ensuring community resilience in the face of increasing vulnerability to extreme climate, water, and weather events.

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## Dissemination News

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### Two New Space Weather Products Released

*Bob Rutledge, Lead, SWPC Forecast Office*

The NWS Space Weather Prediction Center (SWPC) recently released two new forecast products: a [3-Day](#)

[Forecast](#) and a corresponding [Forecast Discussion](#). Both products are produced at 0030 and 1230 UTC with an optional update during significant space weather events.

These new products will communicate forecast information more frequently and more clearly. The products evolved from the traditional daily Report of Solar and Geophysical Activity.

The 3-Day Forecast is a concise, NOAA-specific product summarizing conditions in the previous 24 hours and the forecast for the next 3 days. This 1-page forecast includes sections describing geomagnetic, radiation, and radio blackout observations and predictions.

The new Forecast Discussion product complements the 3-Day Forecast by describing observations, model output, and scientific reasoning for the forecasts. The discussion provides more of the details of the forecast and its process as well as offering forecasters the chance to express confidence and to describe potential alternate outcomes.

These two new products represent a shift toward improved space weather products and services. The goal is to deliver information at the appropriate level to meet the sophistication of the user.

These products also reflect a move towards more consistency with the meteorological products available to the general public. These two products will supplement the existing product suite, not replace any part of it.

Although space weather is an evolving and sometimes difficult to understand field, SWPC is taking steps to make data clearer and more tangible.

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## EMWIN Satellite News

*Robert Wagner, NWS Telecommunications Operations Center, Office of Operational Services*

**Emergency Managers Weather Information Network (EMWIN) in Person:** The EMWIN team will take part in the NOAA 2013 Satellite Conference in College Park, MD, April 8-12. The team will offer demonstrations and answer questions related to EMWIN and the combined high-rate information transmission (HRIT)/EMWIN service for Geostationary Satellite (GOES) R.

**GOES 12 Nears End-of-Life: GOES 12 at 60 degrees is nearing its end-of-life.** National Environmental Satellite, Data and Information Service (NESDIS) has not set an exact date to remove GOES 12 from service, but it likely will occur but it likely will occur in late summer or early fall.

Legacy users should migrate to EMWIN-N capable systems and use GOES East or West. If unable to upgrade to newer equipment, GOES 12 EMWIN-I users can receive data online through the EMWIN ByteBlaster.

**EMWIN on GOES R:** The EMWIN team is working with the NESDIS, NASA, and the GOES R project team to develop the HRIT/EMWIN service. In the GOES R era, the EMWIN broadcast will combine with the current low rate information transmission to become the HRIT/EMWIN broadcast. The data rate will greatly increase to 400 kbps, allowing for a much larger product set.

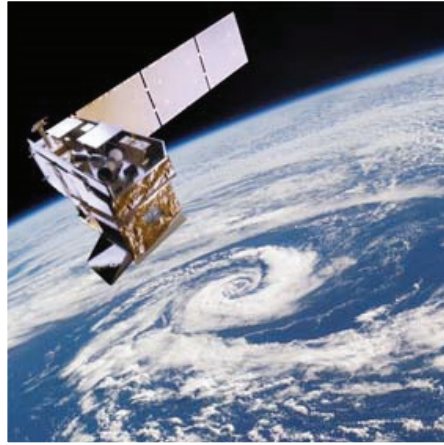
For additional information on any of these topics, please visit the [NWS EMWIN](#) Website.

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## NOAA Reaches Polar Satellite Milestone

*NWS News Staff, Silver Spring, MD*

NOAA reached a major milestone to develop the next-generation of polar-orbiting satellites when it took operational control of America's newest environmental satellite. These satellites are critical to providing



advanced warning for severe weather such as tornado outbreaks, heavy snowfall, hurricanes, heat waves, floods, and wildfires.

Data from the Suomi National Polar-Orbiting Partnership (Suomi NPP) satellite will strengthen NOAA's ability to predict severe weather days in advance. Suomi NPP data are also used to generate dozens of environmental data products, including measurements of clouds, vegetation, ocean color, and land and sea surface temperatures.

The Suomi NPP mission is a bridge between the current fleet of polar-orbiting satellites and NOAA's [Joint Polar Satellite System](#) (JPSS), scheduled to launch in 2017. Suomi NPP is operating new, sophisticated Earth-observing instruments NOAA uses to support improved weather forecasts.

"Satellites like Suomi NPP are critical to the National Weather Service mission and improved decision support services," said NWS Director Louis Uccellini, Ph.D. "These polar satellites provide an important dataset for the global earth observing system and will lead to improved forecasts out to three days in the future and beyond."

Suomi NPP was launched on October 28, 2011. In March 2012, Suomi NPP was commissioned and operations were transferred from the NASA Suomi NPP project to the NASA/NOAA JPSS program. Since that time, the Suomi NPP flight and ground teams at the JPSS program office have ensured the spacecraft, instruments and data products operated successfully. NOAA began using data from one of the Suomi NPP instruments, the Advanced Technology

Microwave Sounder, May 22, 2012, 7 months after launch, nearly three times faster than previous missions.

Suomi NPP observes any given point on the Earth's surface twice a day, once in daylight and once at night. It circles the planet in a north-south motion between the poles about 14 times a day, 512 miles above the surface. NWS incorporates the data into weather prediction models generating medium-to-long range forecasts. The data are also available to users around the world via direct broadcast.

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## Program Updates

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### Derecho Assessment Released; Sandy Next

*Sal Romano, NWS Performance Branch Meteorologist*

*The Historic Derecho of June 29, 2012, Service Assessment reviews NWS performance during the derecho that struck the Ohio Valley and Mid-Atlantic states. The derecho traveled for 700 miles, impacting 10 states and Washington, D.C. The winds generated by this system were intense, with gusts exceeding 80 mph.*

Unfortunately, 13 people were killed by the extreme winds, mainly by falling trees. An estimated 4 million customers lost power for up to a week. The region impacted by the derecho was also in the midst of a heat wave. The heat, coupled with



*Hurricane Sandy battering the U.S. East coast on Monday, Oct. 29, 2012.*



the loss of power, claimed 34 lives in areas without power following the derecho. NWS released the Historic Derecho service assessment document Feb. 5, 2013.

The National Hurricane Center first identified what was to become Hurricane Sandy on October 19, 2012. Sandy reached hurricane status on October 24. It made landfall across the Caribbean—first in Jamaica, then in eastern Cuba and the Bahamas—before moving generally northward parallel to the U.S. Eastern Seaboard.

Sandy made landfall just south of Atlantic City, NJ, around 8 pm EDT on October 29. The storm brought a record water level of 13.88 feet to New York City's Battery Park and isolated total rainfall amounts of 10 inches to extreme southern New Jersey, Delaware, and Maryland. Wind gusts reached 90 mph along the New Jersey shore and on Long Island, NY. Gusts in the Baltimore and Washington metropolitan areas reached over 70 mph, and gusts exceeded 60 mph as far away as Boston and Chicago.

Sandy also resulted in over a foot of snow in the Central Appalachians from North Carolina to Pennsylvania, with parts of West Virginia experiencing blizzard conditions and up to 3 feet of snow. Sandy's central pressure of 940 millibars was the lowest recorded pressure for a landfalling tropical cyclone north of Cape Hatteras. When Sandy made landfall, it broke Philadelphia's, Harrisburg's, and Baltimore's all-time low pressure records.

The Hurricane Sandy Service Assessment Team completed on-site visits and telephone interviews. NWS plans to release this report in early summer.

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## Outreach Innovation

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### NWS, CDC Join to Prevent Weather Health Hazards

[Dr. Michelle Hawkins](#), Physical Scientist, NWS Climate Service Division

NWS and the Centers for Disease Control and Prevention (CDC) share

a common mission: to protect life. Many health threats have significant geographic and temporal variation related to climate, water, and weather parameters. For example, the derecho of June 2012 caused 13 direct fatalities and 34 indirect fatalities due to heat in the week following the event because 4 million people lost power.

With its extensive dissemination system, NWS can efficiently alert the public to serious health threats such as carbon monoxide poisoning from generator use during power outages, harmful mold exposure during or after flooding, and heat stroke during heat waves.

NWS has worked with CDC on two occasions to send out life-saving, health-related information. After Hurricane Sandy, NWS developed a template CDC populated with health safety information. NWS forecast offices impacted by Sandy sent the CDC message via Public Information Statements and Special Weather Statements. The message also was included in NOAA Weather Radio All Hazards messages and sent to the media. Local media included these critical messages in their reports, allowing CDC to reach even more people.

After this first success, NWS and CDC collaborated during the February 2013 East Coast snowstorm.

Partnering with CDC helps NWS ensure a Weather-Ready Nation.

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### Smart Phone App Lets Users Report Precip. on The Go

*NOAA News Staff, Silver Spring, MD*

It's now easier than ever to be a part of NOAA's weather research. The [NOAA National Severe Storms Laboratory](#) (NSSL), in partnership with the University of Oklahoma (OU), has launched a free app that let users anonymously report precipitation from their Apple or Android mobile device.

With the [mPING](#) app, anyone can send a weather observation on the go. The user simply opens the app, selects the type of precipitation that is falling, and hits submit. The user's location and the time of the observation are



*mPING weather reporting app*

automatically included in the report.

All submissions become part of a research project called Precipitation Identification Near the Ground (PING), NSSL and OU researchers will use mPING submissions to build a valuable database of nationwide observations.

You can view all reports in the PING database on the [project's web site](#). To further analyze the data, researchers will compare the reports with what radars detect and use the information to develop new radar and forecasting technologies and techniques.

The apps are available on [iTunes](#) or [Google Play](#) for use on phones and tablets. They were developed and are owned by OU. Learn more by viewing a [YouTube video](#) about the new app.

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### Radar Training Offered to Emergency Managers

*NWSN Staff, Silver Spring, MD*

Senior Forecaster **Bill Borghoff** and General Forecaster **Jacob Beitlich**, NWS Twin Cities, MN, recently traveled to the Hennepin County Emergency Operation Center to present a 2-hour class on interpreting weather radar for EMs and other public service workers.

The class, attended by approximately 50 people, was broken into two parts. During the first part, Borghoff gave an overview of the basic properties of weather radar, including the differences between base reflectivity, composite reflectivity, base velocity and storm relative velocity. He

explained the limitations of radar and how to accurately identify different features of thunderstorms, such as hail cores, velocity couplets and gust fronts.

In the second half of the class, Beitlich used GR Analyst software to show archived radar data from 10 past events referred into Part 1.

“With the widespread availability of radar on smart devices and in operations centers, having more knowledge about the various radar viewing options and some basic concepts about interpretation goes a long way to improve situational awareness among responders,” said Eric Waage, Hennepin County EM Director. “There is clearly a demand for more of these radar classes, so keep the slides handy.”

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## NWS Provides Weather Support to NASA

By Paul M. Iñiguez, Science and Operations Officer, NWS Hanford, CA

From mid-January through early February 2013, NWS Hanford, CA, provided support to NASA for a DISCOVERY-Air Quality (AQ) program.

This mission, part of a broader 4-year campaign to study U.S. air quality, focused on the San Joaquin Valley when air quality is reduced due to severe concentrations of fine particulate matter. The main objective of DISCOVERY-AQ is to collect and analyze data that will improve



The NASA P-3B made low approaches at local airports during this mission, getting as low as 100 feet to make key air quality measurements.

our understanding of the relationship between the atmospheric column constituent content measurements available from satellites and surface air quality.

Cloud cover and fog were the primary forecast concerns for NASA because these elements critically impact the agency’s ability to safely operate aircraft and gather needed data. To help with its day-to-day field activities, NASA scientists contacted NWS Hanford on a daily basis to receive meteorological support and help with go/no-go flight decisions.

Dr. Kenneth E. Pickering, who is responsible for the meteorological aspects and post-mission regional meteorological and air quality modeling of this project, said, “I’m sure this [information] will be very helpful for our flight planning, as frequently nothing is as good as having the benefit of local forecasting experience.”

More details about the mission can be found [on the NASA DISCOVERY-AQ Website](#).

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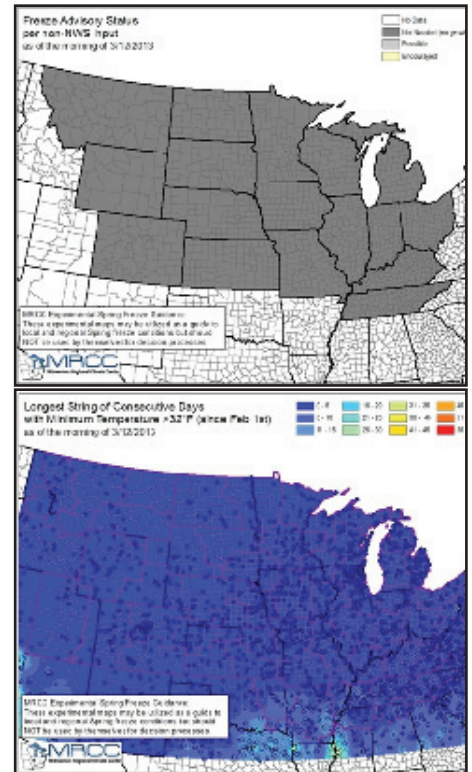
## New Guidance Graphics to Yield More Customer Driven Frost Freeze Headlines

Rick Shanklin, WCM, NWS Paducah, KY

Each spring and fall NWS forecast offices spend a lot of time determining when to start and stop Frost Advisories or Freeze Warnings. This task is complex due to varied geography, types of plants grown, climate variations and other factors.

The progress of crops and other plant life is monitored closely by experts in horticulture and agriculture. It is challenging for WFOs to gather, analyze and coordinate this massive data over a multi-state area. To make the process more efficient, NWS Paducah, KY, spearheaded a Midwestern Regional Climate Center (MRCC) partnership.

The MRCC, which covers a nine state Midwest region, is developing climate information for specific audience such as agriculture. The MRCC has developed a suite of graphical products based on input from NWS,



Examples of experimental Midwest Frost/Freeze maps.

academia, and other subject matter experts. These test products provide a vital geographical representation of where NWS frost and freeze products are needed. The suite of graphics also includes critical temperature threshold maps.

The end result is a more coherent progression and representation of NWS frost/freezing products, and more important, frost and freeze products that better meet customer needs. See all the products at [MRCC Website](#).

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## NWS Offers FEMA Staff Watch Standers Course

By Kim Runk, Physical Scientist, NWS Central Region

The NWS Operations Proving Ground, Central Region Headquarters, WFO Kansas City, MO, and WFO Topeka, KS, developed a pilot training course for FEMA Watch Standers, February 26-28. Funded by FEMA, the 3-day workshop addressed a priority need for FEMA Regional Watch personnel to understand basic meteorology and



hydrology.

Watch Officers need this training because weather-related incidents account for nearly all federally declared disasters. Weather is a critical component throughout the disaster life cycle. This workshop explored coordinating disaster operations from mitigation and planning through response and recovery.

Attendees represented the 10 FEMA regions and its headquarters. Feedback was overwhelmingly positive. One participant said she found the content practical and informative, but the opportunity to build contacts with NWS and colleagues in other FEMA



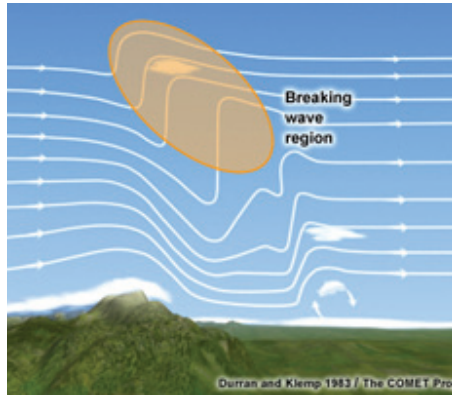
*FEMA Watch Standers work on a data collection exercise to develop a resource report for a weather scenario.*

Regions was equally valuable. This workshop strengthened the NWS-FEMA partnership and enhanced NWS' ability to integrate into the National Response Framework, a critical Weather-Ready Nation objective. FEMA is already planning a follow-up workshop in the fall.

## Attempting to Protect Pilots: Mountain Waves

*Katy Branham, NWS Riverton, WY*

A wintry storm was present over the Wind River Mountains in central Wyoming on the evening of October 25, 2010. The Federal Aviation Administration (FAA) contacted NWS Riverton, WY, because a plane had gone missing on its attempt to pass over the Wind River Mountains. The last communication from the pilot had referenced severe turbulence and icing before



*Breaking Wave Region in Mountain Waves*

falling silent.

When the wreckage of flight N201HF was recovered, the National Transportation Safety Board's noted weather, including mountain wave activity as a significant factor in the fatal wreck which claimed four lives. In that year, 10 people died as a result of aviation accidents over the Wind River Mountains. Realizing something needed to be done to protect pilots, NWS Riverton looked at methods to educate pilots on the hazards associated with wintertime mountain flying.

When strong wind approaches a mountain range perpendicularly, it can create waves in the atmosphere as it moves over the mountain range. The amplitude of the waves can become high enough that the wave breaks (see figure above), causing very strong wind aloft to rush to the surface, gaining speed as it moves downslope. Wind in these instances can easily crest 100 mph near the surface, with stronger wind possible along aircraft flight levels.

Pilots, especially those in small aircraft, have trouble maintaining altitude, which can be deadly over rugged mountain terrain.

In response, NWS Riverton created numerous mountain flying outreach materials for its customers. These products include a poster and pamphlet distributed to airports across central and western Wyoming.

NWS Riverton also created a dedicated aviation Website. In addition to distributing new outreach materials, meteorologists from NWS Riverton conducted numerous presentations

since 2011, including talks at two annual meetings of the Wyoming Airport Operator's Association and a lecture to a local piloting class.

Response from those receiving the outreach materials and presentations has been positive. NWS Riverton is exploring new outlets and outreach efforts.

## Spotter's Field Guide Available in Spanish

By [Ken Drozd](#), WCM, NWS Tucson, AZ

A Spanish language version of the [Weather Spotter's Field Guide](#) is now available to download. This project began when NWS Tucson's Skywarn Spotter [Carlos Scavone](#) approached WCM [Ken Drozd](#) about translating the guide for college level Spanish translation course.



WFO El Paso Meteorologist in Charge [Jesus Haro](#) and WFO Wichita Met Intern [Vanessa Pearce](#) provided expert guidance with technical and language related specifics. The result, a large new group of users can support the NWS Skywarn program.

## Aware

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ISSN 1936-8178