Sterling Reporter

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Photo: usmayors.org

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MIC's Corner

By, James E. Lee
Meteorologist in Charge

I want to thank everyone who attended the Baltimore/Washington Weather Forecast Office Open House last fall during the weekend of September 22-23, 2012. I hope you found this to be a great event for you and your family. Our office thoroughly enjoyed hosting the event, and we estimate between 3,000 and 5,000 people were in attendance.

Since our last issue of *The Sterling Reporter*, the remnants of Hurricane Sandy impacted much of the northeast United States, with coastal areas of New Jersey and New York receiving the worst impact. Fortunately, our area did not receive these levels of effects from historical storm Sandy, despite hurricane force wind gusts being recorded along and east of Interstate 95.

Advance planning is critical in withstanding any kind of a natural disaster; however, in extreme events such as Sandy, there is little that can be done to protect property as witnessed in New Jersey, Staten Island, and Long Island. But we can protect and save lives. Many of the deaths due to Sandy could have been avoided if people obeyed evacuation orders from their local emergency managers. It is critical to listen to emergency managers during times of crisis. If given the order to evacuate, please follow their directions.

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Weather Ready Nation Open House
By, Christopher Strong, Warning Coordination Meteorologist

Over the weekend of September 22nd - 23rd, the Baltimore/Washington NWS weather forecast office held a wildly successful public open house. To open the weekend of community interaction with their local NWS office, a ceremony was held to talk about the Weather-Ready Nation initiative, and introduce the pilot project that NWS Baltimore/Washington was selected to undertake – *Incident Decision Support Services in an Urban Environment.* Congressman Frank Wolf [VA-10th], NOAA Administrator Dr. Jane Lubchenco, Bob Ryan [Lead Meteorologist; WJLA-TV], Roy Shrout [Deputy Coordinator; Fairfax County

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Open House (continued)

Office of Emergency Management], John McGowan [FEMA Region III], and Jim Lee [NWS Baltimore/ Washington] all spoke to the strong partnerships that exist to bring about a Weather-Ready Nation in the years ahead – with help from our local pilot project. In addition, Officer Tim Kyburz (from Alexandria Police) and his wife Valencia, were recognized with a Public Service Award for their actions to alert their neighbors to an oncoming tornado when they heard the nighttime alert on All-Hazards NOAA Weather Radio.

After the opening ceremony, the weekend was spent strengthening ties with the community by giving people an opportunity to learn about multitude of weather threats we face, the National Weather Service warnings that precede those threats, and the facility and technology that allows us to give that advance notification. Several thousand people took part from all around the region. They were treated to weather balloon launches to learn about one way we regularly sample the atmosphere. There were two presentation tents in which ran half hour sessions on exciting and informative topics like: June 29th's Derecho, winter storms, flooding, how weather forecasting has evolved, careers in weather forecasting, climate resources, our new pilot project, and an introduction to our office.

In addition to the presentations, people were able to walk through our operations area - the core of our 24/7 forecast operations. There, they could learn about how forecasters put together a sea of information to create an always up to date forecast, and the official NWS watches & warnings that need to go out as a result of it when the forecast turns ugly. While on the floor, people could interact with NWS forecasters to ask questions and gain even more insight on how things work, as well as the wealth of technology needed to produce an accurate weather forecast.

A second ceremony on Sunday afternoon recognized our exceptionally dedicated volunteers that help the NWS do what

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Open House (continued)

we do. Our network of co-operative observers, who are the backbone of our nation's climate record, provide daily temperature and precipitation data to the National Weather Service– some have for decades. Meanwhile, our thousands of SKYWARN weather spotters form a network of 'weather spies' that report directly to the NWS when the weather turns violent or threatens to do so. Tim Dennison, our SKYWARN amateur radio coordinator, was recognized with a Public Service Award Sunday for organizing the resources of our SKYWARN network.

Through the course of the NWS Baltimore/Washington open house weekend, almost all presentation tents were full or overflowing, the operations area was busy with a steady stream of people passing through, weather balloon launches thrilled the young and old, and everyone left happy with a knowledge of how to keep themselves and their families weather ready.

Measuring Snow in the Winter

By, Calvin Meadows, Observations Program Leader

Winter is upon us! You should have already taken the following precautions to prepare for the winter season:

- Remove the funnel and inner measuring tube of the manual rain gauge to expose the overflow can so that it can more accurately catch frozen precipitation.
- Put your snowboard(s) out and mark their location with a flag or some other indicator so they can be found after a new snowfall. Snowboards should be located in the vicinity of your station in an open location (not under trees, obstructions, or on the north side of structures in the shadows).
- Check your inner measuring tube and overflow can to make sure there are no leaks. If there are leaks, take appropriate action.
- Review the proper precipitation measuring procedures.

For those interested in measuring precipitation the National Weather Service way, the cooperative observation manual is available here*:*

http://www.nws.noaa.gov/directives/sym/pd01013015curr.pdf

Or take a look at the "Measuring Snow" Video

https://madis-data.noaa.gov/snow_video.html

Amateur Radio Network

By, Tim Dennison, WX4LWX

There are currently over 5000 registered Skywarn volunteers in the Greater Washington DC area. Of those, 1372 are licensed amateur radio (ham radio) operators. During a Skywarn activation the ham radio community sets up a network on local repeaters and relevant hazardous weather information is reported directly to NWS via the ham radio. Ham radio is yet another means of getting the information quickly to NWS.

The ham radio operators have set up resources to aid the dissemination of information. These resources are not restricted to the ham operator and I invite you to check them out and join in. The first is a Yahoo group called WX4LWX (which happens to be the ham radio call sign for the NWS). This group is used for Skywarn related announcements including Skywarn activation request by NWS and is an excellent way to hear about the activations quickly. This group is not used to report hazardous weather. The best way for immediate notification is by phone. Don't worry, you won't be blasted by thousands of useless emails.

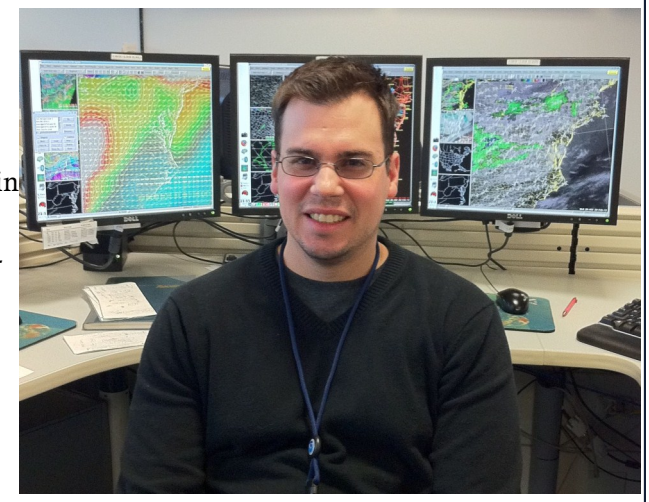
Going hand in hand with the Yahoo group is our WX4LWX web page www.WX4LWX.org (<http://www.wx4lwx.org/>). This page features an NWS coverage area map and information about what constitutes hazardous weather. If you have a scanner that can monitor 144 to 148 mHz, the map indicates which Skywarn ham radio net is nearest to your location.

Hopefully everyone has access to a NOAA radio. If not and you are looking to purchase one, I would suggest you consider one that scans both NOAA weather radio and the 144 to 148 mHz (VHF ham band). Monitoring the Skywarn nets allows you to hear what others are reporting. Furthermore, NOAA weather radio alerts are also broadcast on 147.300 mHz. On June 29, the night of the derecho, NOAA weather radio service was interrupted. During the height of the storm, Skywarn ham operators were relaying the information that would have been on the weather radio on the Skywarn nets. Those who could monitor 147.300 mHz (the primary Skywarn network) were receiving the valuable information. So make a NOAA weather radio with a ham band scanner part of your kit to support a weather ready nation.

For more information please contact Tim Dennison, Amateur Radio Skywarn Coordinator at tim@dennison.bz

Eastern Region Team of the Month—Ken Widelski Honored

By, Nikole Winstead Listemaa, Senior Forecaster



Congratulations to Ken for being awarded the Eastern Region Team of the Month for November 2012. Ken was part of a regionally sponsored team that provided Decision Support Services (DSS) for the 2012 Democratic National Convention (DNC) in September 2012. Ken's team members included Neil Dixon, Anthony Sturey and Justin Lane from the Greenville-Spartanburg Forecast Office. Additional team members were Philip Hysell (WFO Blacksburg, VA) and Christopher Leonardi (WFO Charleston, WV).

The DNC was a National Special Security Event due to the attendance of high profile officials in the U.S. Government, including the President and Vice President of the United States. Due to its high profile nature and the many outdoor events scheduled, DSS for the DNC needed to be thoroughly planned and perfectly executed.

Student Intern Program

By, Andrew Woodcock, Senior Forecaster

The NWS Sterling Student Intern program, which brings meteorology majors into the office each summer to do research, has paid great dividends for the office. In 2012 we hosted one student, Anna Schnieder, who is now a senior at Penn State. What has become of the interns from years past? We tracked down many who have interned in the last seven years. Please read on, you'll find this is a talented group of young scientists:

Adele (Lichtenberger) Igel, 2005
Adele's fall of 2005 project compared precipitable water measurements from GOES and ground-based GPS sensors. She graduated from Thomas Jefferson High School in 2006, then went to North Carolina State, where she received a BS in physics and meteorology. Adele is currently working on a Masters degree in atmospheric science at Colorado State, with plans to earn a PhD. Her research involves "looking at the impacts of aerosols and latent heating on warm fronts." In 2011 she married a fellow atmospheric scientist. Last December-early January she participated in the DYNAMO (DYNAmics of the MjO) field campaign and spent three weeks operating a radar on a research vessel in the Indian Ocean. She's received several scholarships and internships along the way, including three from the American Meteorological Society, the NOAA Hollings scholarship, and currently has a National Science Foundation (NSF) fellowship.

Tanya (Emswiler) Schoor, 2005
Tanya worked with fellow summer intern Stefan Cecelski on a climatological research paper, looking at trends in significant summer/winter weather events in the area. She completed her undergraduate degree in 2007 at Ohio State University, needing only three years to finish a four year program! Afterwards she did on-camera forecasting at TV3 in Winchester. She now works for a satellite imagery company, GeoEye, in Herndon, where she is an oceanographer. Tanya uses her knowledge of weather to support sustainable global fisheries and generate fish finding maps. Previously, she worked with satellite data to determine where cloud cover would be least impacting to imaging. And in 2009 she married NWS Sterling forecaster Greg Schoor!

Matt Riggs, 2005
For his internship Matt performed a climatological study of tornadoes in the mid-Atlantic region. He completed his BS in Meteorology from Penn State in 2006, with a minor in Global Business Strategies. After graduation he worked at Earthsat Weather/MDA Federal in Rockville, MD as a weather consultant forecasting for the US and Europe. In May 2010 he took a position at Mars Chocolate in Hackettstown, NJ, and for the past two years has been a part of the internal commodity research team, supporting their Petcare division (Pedigree, Royal Canin, etc.) though fundamental grains and oilseeds analysis, as well as rice for their food business (Uncle Bens). Matt says "I have to say that my NWS internship was a great stepping stone and strong building block in my resume, and it certainly was a benefit in my job search out of school."

Stefan Cecelski, 2005
Stefan's intern work involved archiving observational data from main Mid-Atlantic airport locations into a database. He obtained his BS in meteorology from Millersville University in 2009, and is currently at the University of Maryland, where he has completed a masters and is seeking a PhD. His area of research is "tropical cyclogenesis from African Easterly waves in the north Atlantic basin." He also serves as the Skywarn coordinator for MeteoGrads (graduate student organization) at UMD, and is the recipient of the NASA Earth and Space Science Fellowship (NESSF) for 2011-2012.

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Student Interns (continued)

Audra Hennecke, 2006

While at Sterling Audra worked on a project focused on identifying flash flood prone locations within each county in the Sterling forecast area. She also worked Hydromet Tech (HMT) shifts and received her upper-air certification. In 2008 she graduated from Penn State with a BS in Meteorology. She became a Meteorologist Intern at the NWS Forecast Office in Kansas City and is now a General Forecaster a the NWS Forecast Office in Topeka. In 2010, Audra was accepted into the NWS Central Region Leadership Development Program. Her class created a series of six videos with group discussion questions that focused on various leadership topics and how they play a role in the mission and future growth of the NWS.

Katie LaBelle, 2006

Katie worked on two projects during her student internship: "A Climatology of Seasonal Variability in Flight categories for Selected Airports in the Mid-Atlantic Region ", and "Comparison of Cold Air Damming Events at DCA/BWI/IAD Which Produce Low Ceilings and Visibilities." She also worked shifts at the HMT desk. She received a BS in Meteorology from Penn State. After graduating she served as an intern at NWS Las Vegas for 2 1/2 years. She was next selected as a general forecaster at the Reno office for another 2 1/2 years. In March 2012 Katie was chosen to be the Program Coordination Office (PCO) representative in the Office of the Assistant Administrator for the NWS. She is working alongside NWS senior leadership for one year, then will transfer to the Department of Commerce building to work at the PCO office for NOAA. Katie says "I don't think I would be in the NWS if there wasn't an intern program!"

Casey (Quell) Dail, 2006

Casey graduated from UNC-Asheville in 2005, and then volunteered at NWS Sterling for eight months, learning the HMT/Intern desk, launching weather balloons and working on projects including the spring Open House. In May 2006 she was selected to be a Meteorologist Intern at the NWS office in Newport, NC, and is now a General Forecaster at that office. She also is in charge of the office aviation and student volunteer programs.

Isha Renta, 2006-07

Isha worked with the DC-Lightning Mapping Array (LMA), integrating data from the LMA and radar data into Warning Decision software to analyze a September 28th, 2006 tornado that occurred over Severna Park, MD. She studied lightning and radar characteristics and signatures during the lifetime of the supercell. After

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Student Interns (continued)

her NWS Sterling internship she spent 28 days in the NOAA Research Vessel Ronald H. Brown as part of the trans-Atlantic Aerosol and Ocean Science Expeditions. The mission focused on "providing critical measurements that characterized the impacts and evolution of aerosols from the African continent while transiting the Atlantic Ocean." She received a BS in Mathematics from the University of Puerto Rico in Mayaguez (2004), and a Master's degree (2008) in Atmospheric Sciences from Howard University. Her thesis dealt with "the study of the structure of the surface wind field of Hurricane Ivan (2004) using the Geophysical Fluid Dynamics Laboratory model." She is now pursuing a PhD at the University of Maryland, studying "the boundary layer structure and extratropical transition of Hurricane Irene (2011)." Isha also works as a meteorologist for the Naval Surface Warfare Center in Dahlgren, VA.

Kyle Tapley, 2007

During his internship at Sterling Kyle worked on a coastal flooding product, compiling data from the tidal gauges within the region. He then looked for correlations between different winds speeds and directions at each gauge to determine what winds made coastal flooding most likely. He also analyzed the most severe flooding events at each gauge and determined what weather event caused them. After graduating from Penn State in May 2008 with a BS in Meteorology he was hired by MDA EarthSat Weather in Gaithersburg, MD. Kyle's current title is Senior Agricultural Meteorologist, working on a variety of products geared towards commodity traders which include short and long range weather forecasts for all of the major growing areas around the world. He also works with colleagues to create yield and production forecasts of agricultural products, and has given weather talks at various agricultural conferences in the U.S. and Europe. Kyle says "I really enjoyed my time as an intern at Sterling. I learned a lot and have been able to use what I learned in my job today."

Ben Green, 2008

Ben's internship at NWS Sterling dealt with the coastal flood program, looking at synoptic conditions favorable for coastal flooding and verifying the CBOFS model. He graduated with a BS in Meteorology from Penn State in December 2009, but stayed in the department as a graduate student, receiving his Masters in December of 2011. His thesis dealt with "miniature supercells and tornadoes in the landfalling outer rainbands of Hurricane Katrina," which was published in the journal "Weather and Forecasting." Ben is now working on his PhD at Penn State, focusing on "tropical cyclone Numerical Weather Predication and to improve estimates of momentum/heat/moisture fluxes from the ocean." He also won an NSF Graduate Research Fellowship... and says "my time at Sterling certainly helped!"

Elizabeth Thompson, 2008

While working at NWS Sterling Elizabeth completed studies of two-high impact weather events: "The Valentines Day 2007 sleet and ice storm" and an "Analysis of July 4, 2006 Washington DC Severe Thunderstorm." After graduating in 2010 with a BS in meteorology from Valparaiso University, she is now a third year grad

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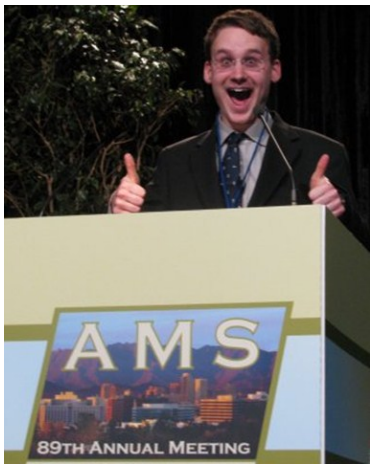
Student Interns (continued)

student at Colorado State University doing radar meteorology research. She is working with the Oklahoma CASA X-band dual-polarized radar network and OU-PRIME C-band dual-polarized radar studying winter storms. She has been developing a winter hydrometeor identification algorithm to investigate the microphysics and kinematics of these weather systems. Like 2005-student Adele, she sailed across the Indian Ocean for DYNAMO in November - December 2011. The Doppler radar and ocean data collected will be combined and studied for her PhD on "air-sea interaction related to the Madden Julian Oscillation." She has also studied science policy through the AMS Summer Policy Program held annually on Capitol Hill, and participated in education/outreach activities through CSU's "Little Shop of Physics." In March 2012 Elizabeth was chosen for a National Science Foundation Graduate Research Fellowship for three years of research funding.

Joe Wegman, 2007-09



Joe worked on the project " Upslope Snow on the Allegheny Front" for three summers. He completed with a BS in meteorology from SUNY Oswego with Honors in May 2009 and graduated Magna Cum Laude. Joe then went to graduate school at the University of Illinois at Urbana-Champaign where he completed his MS in Atmospheric Sciences in May 2012 with the thesis topic, "lightning in the wraparound regions of winter cyclones." He has participated in several field projects in areas ranging from lake breezes off of Lake Michigan to storm chasing to Orographic Cloud Seeding in Wyoming. Joe became a land and marine forecast meteorologist at Fleetweather in New York in July 2012. He hopes to eventually become a public sector weather forecaster. Joe proposed to his fiancee, Rosanne Luis, on the shore of Lake Ontario in Oswego, NY on March 25, 2011. They will be getting married in the Bronx on June 15, 2013.

Morgan Brooks, 2009

Morgan volunteered in Sterling during the summer of 2009. While here she worked on a verification study of Small Craft Advisories issued by the office. She presented the results at the 2009 National Weather Association Annual Meeting and received "Best Undergraduate Student Poster Presentation." She became the SCEP (Student Career Experience Program) student at the NWS Raleigh office in the summer of 2010. While there she performed Meteorologist Intern duties and worked on a lightning climatology of North Carolina, analyzing "the spatial and temporal frequency of lightning strikes." Morgan graduated from NC State University in May 2011 with a degree in meteorology and a minor in physics. In July she moved to the southern Wisconsin NWS office (just outside Milwaukee) after being hired as a Meteorologist Intern. She says "so far, I have had the opportunity to complete a great deal of training, issue Severe Thunderstorm Warnings, issue short and long term forecasts, and experience a bit of true Wisconsin winter weather."

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Student Interns (continued)

Nick Werner, 2009

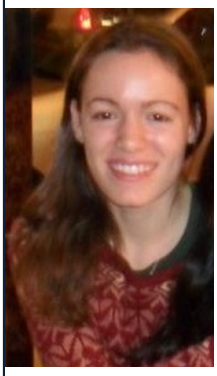
While at Sterling, Nick worked on a flash flood climatology of the Sterling forecast area. This included analysis of past flash flood watches/warnings and the upper air soundings during these events. He completed his undergraduate degree at Penn State in December 2009 with a BS in Meteorology and a minor in Mathematics. Nick is currently working towards a Masters in Atmospheric Sciences at Texas A&M University. The group he's working with operates a flux tower near downtown Houston; his research is on CO_2 fluxes at the tower. In May 2011 he went storm chasing in Oklahoma and got the opportunity to see an EF-3 tornado!

Jeff Waters, 2009

Jeff worked on a project that focused on improving methods for predicting severe hail and increasing the accuracy of hail size forecasts in the Washington D.C. forecasting area. The results of this study have become an integral part of NWS Sterling's severe forecasting program. He graduated from Ohio University (Athens, OH) in the spring of 2009 with a degree in Geography/Meteorology and minors in Mathematics, Physics, and Business. In the fall of 2009, he started grad school at Penn State. His focus was in tropical meteorology and climatology, with his thesis focusing on "the impacts of recent climate change on tropical cyclone formation in the Atlantic Ocean using Global Climate Models (GCM)." He received a Master of Science in the spring of 2011. After completing grad school, Jeff began a job as a Natural Catastrophe Risk Analyst for Risk Management Solutions. The company sells software (catastrophe models) that help insurance and reinsurance companies assess how much their portfolio is at risk of a natural disaster.

Jessica Showers, 2011

Jessica volunteered at WFO Sterling, researching "a tornado climatology in the northern Virginia area and its relation to the ENSO cycle." She graduated from NC State with a BS in Meteorology in 2011 and moved on to grad school at Florida Institute of Technology in Melbourne, FL. She has since realized that her passion was teaching instead of forecasting and has changed her Masters program. She hopes to finish in 2013 and find a teaching position (possibly earth science or physics) at a local high school. And she became engaged to a meteorologist! Jessica says his dream is to work at the National Weather Service and is currently applying for SCEP positions in Florida while working at getting his Masters in Meteorology. Congratulations Jessica!



Michelle Cohen, 2011

While at Sterling Michelle looked at "societal impacts of the January 26 2011 rush hour thundersnow." In her senior year at Tufts, she's completed seven of eight semesters of undergrad degree (majoring in physics), but is currently taking a year off for a SCEP position at the Meteorological Development Laboratory in Silver Spring, MD, in Product Generation Branch.

As you can see, the former NWS Sterling interns have excelled in a wide scope of meteorological endeavors. We are proud to have worked with all of them. Interviews for the 2013 program are ongoing. We look forward to working with another excellent group this summer!

Fire Weather Users Group

By, Brian Lasorsa, General Forecaster

Wildfires near Interstate 95 in Northeastern Maryland in February 2011 Photo By: WTOP

On Wednesday, January 9th we hosted a meeting for fire weather users located throughout our area of responsibility. Members from West Virginia Division of Forestry, the Maryland Department of Natural Resources, and the George Washington/Jefferson National Forest were able to attend. Our fire weather users are particularly sensitive to the development and spread of forest fires. Therefore, weather forecasts are very important to their daily activities. The two weather elements that are most important to the fire weather community are wind and relative humidity.

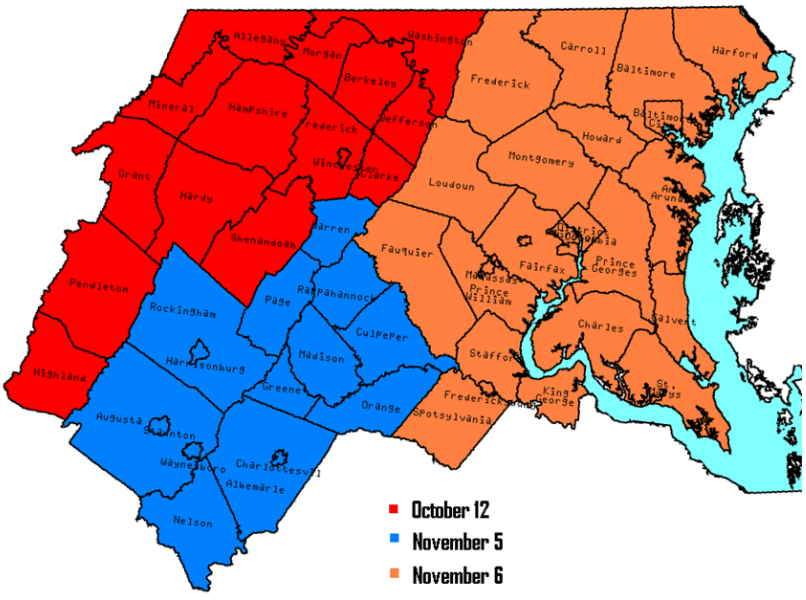
When wind and relative humidity reach certain levels it can become dangerous toward the development and spread of wildfires. A Red Flag Warning (Fire Weather Watch) will be issued when these conditions are expected (possible). The threshold for issuing such products was discussed at the meeting. Generally when sustained wind speeds reach 20 mph and the relative humidity is below 30 percent, a red flag warning or fire weather watch may be warranted. A third element that is important to the fire weather community is fuel moisture. This is simply the amount of moisture that is in vegetation. During extended dry periods fuel moisture can be quite low, aiding an enhanced threat for the spread and development of wildfires. Fuel moisture is determined out in the field by the National Weather Service coordination contacts such as the Maryland Department of Natural Resources, West Virginia Division of Forestry, and the Virginia Department of Forestry.

The following website http://www.erh.noaa.gov/lwx/fire.htm contains information regarding our fire weather products as well as the latest policy regarding headlines and other statements. The following website http://www.srh.noaa.gov/ridge2/fire/ contains fire weather information across the whole country. Just click on your area of interest to obtain the latest information regarding forecasts and potential fire weather concerns.

Frost-Freeze: Autumn Update

By, Bryan Jackson General Forecaster

The NWS is responsible for issuing frost and freeze headlines when temperatures low enough to harm cold-sensitive vegetation are possible. The season in which cold-sensitive vegetation grows is referred to as the "growing season". The growing season is declared to have begun after vegetation becomes active in the Spring, typically April for the central Mid-Atlantic states, and ends after the first prolonged, widespread freeze event in the Autumn. Due climatological and topographical differences across the LWX forecast area, the declaration of the beginning and end of the growing season is done on a zone-by-zone basis. This autumn, it took three freeze events to end the growing season across the LWX forecast area as noted in the figure to the right. On October 12, high pressure over the Great Lakes brought an early freeze to the Potomac Highlands and northern Shenandoah Valley. It was not until November 5 and 6 when the next Canadian air outbreak occurred.



The growing season was declared over across LWX after three freeze events.

Inauguration Day Weather History

By, Jared Klein, General Forecaster

Weather has played an integral role in past presidential inaugurations, especially since ceremonies were held outdoors beginning in 1817. At its extreme, weather on inauguration day has been linked to the death of a president and a first lady. William Henry Harrison, the ninth President of the U.S., and Abigail Fillmore, First Lady of the 13th U.S. President, Millard Fillmore died from pneumonia that potentially originated from prolonged exposure to cold on inauguration day.

Photo By: Architect of the Capitol

Precipitation

About one in three inaugurations have had measurable precipitation (i.e., at least 0.01") in Washington D.C. on that day, and about one in six inaugurations have had measurable precipitation during the ceremony. The wettest inauguration day was January 20, 1937, when 1.77 inches of rain fell during the day of President Franklin D. Roosevelt's second inauguration. Between 11 AM and 1 PM, 0.69 inches of rain was recorded with a noon temperature of only 33°F.

Snowfall

One of the worst weather inaugurations was in 1909, when the 27th U.S. President, William Taft, was sworn into office. A storm dumped heavy snow on the nation's capital (nearly 10 inches of snow) and combined with high winds to bring down trees and power lines. The inclement weather brought transportation to a standstill and forced the ceremony to be held indoor. A similar situation occurred on the eve of the presidential inauguration of John F. Kennedy, when 8 inches of snow fell.

Temperatures

The normal high temperature, low temperature and noon temperature for January 20 (the typical date for inauguration) at Washington D.C. is 43 degrees, 28 degrees and 37 degrees, respectively. However, some inaugurations have featured extreme temperatures that vary significantly from the norm. The warmest and coldest January presidential inaugurations occurred during Ronald Reagan's term. In 1981, Ronald Reagan's first inauguration, the temperature was a mild 55 degrees at noon. On January 21, 1985, the noon temperature for Reagan's second inauguration was only 7 degrees; a remarkable 48-degrees colder than his first inauguration. The low temperature that day was 4 degrees below zero while the high temperature only reached 17 degrees.

The large graphic on the next page illustrates noon temperatures from past U.S. presidential inaugurations going back to inauguration of the nation's first president, George Washington, on April 30, 1789.

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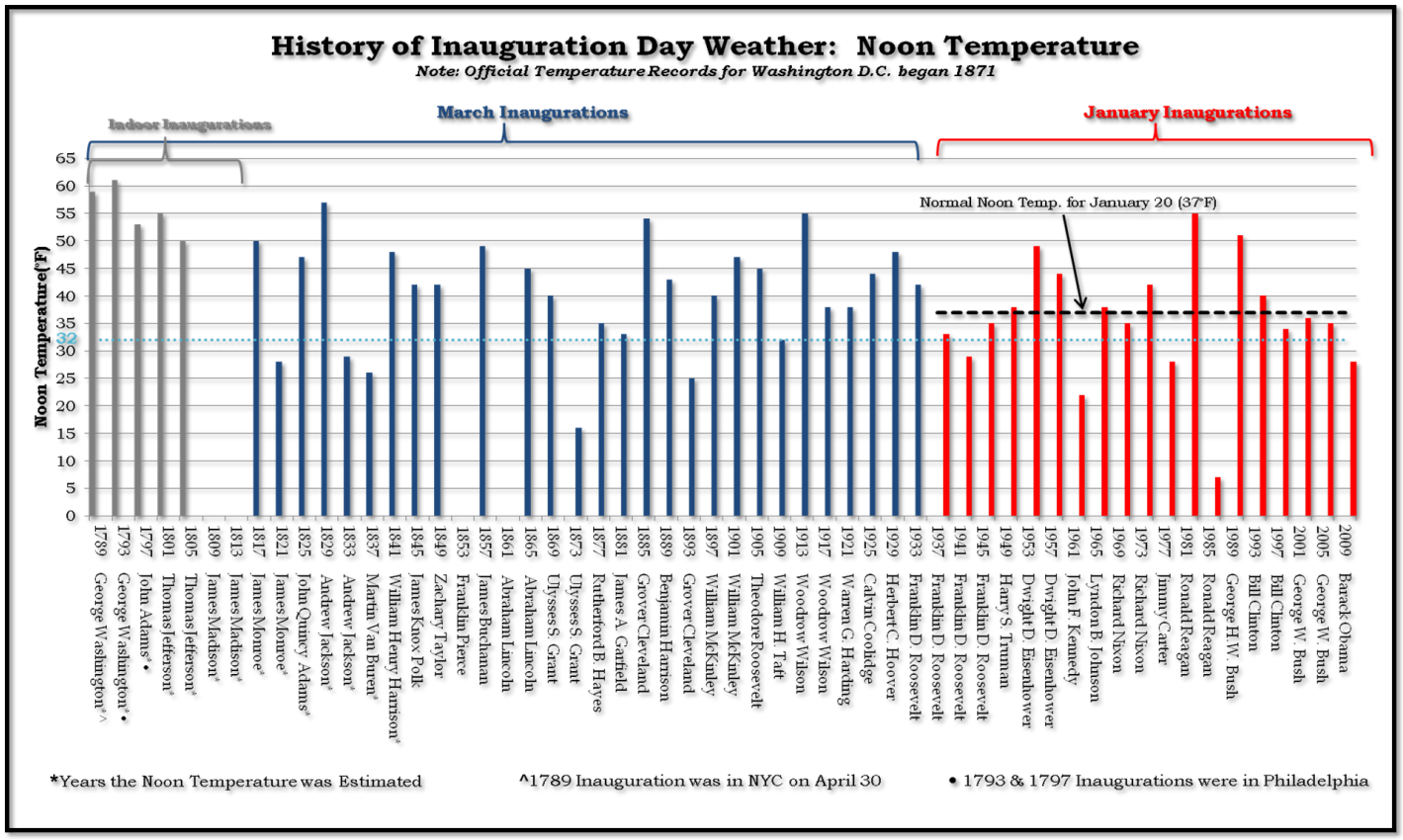
Inauguration Day Weather *(continued)*



Note: The first three presidential inaugurations were held outside of Washington D.C. Official NWS temperature records for Washington D.C. go back to 1871. Prior to 1871, temperature records should be considered unofficial. Unofficial records were estimated from previous literature (references available on the webpage provided at the end of this article) when possible, although some historical temperature records were unable to be recovered.

For much more information on inauguration weather, including references, please visit http://www.erh.noaa.gov/lwx/Historic_Events/Inauguration/Inauguration.html.

2013 Inauguration Weather Data

January 21, 2013
Noon temperature: 40º
Noon Sky Cover: Mostly Cloudy
Noon Wind: South 10 mph
Daily Precipitation: 0.00”

*Note weather data are currently considered to be preliminary until made official by the National Climate Data Center.

Climate Data for January 20

Normal High	Normal Low	Record High	Record Low	Record Precipitation	Record Snow
43°F	28°F	70°F in 1951	-2°F in 1985	1.77 inches in 1937	3.8 inches in 1975

Climate Data for January 21

Normal High	Normal Low	Record High	Record Low	Record Precipitation	Record Snow
43°F	28°F	70°F in 1959	-4°F in 1985	1.41 inches in 1902	3.5 inches in 1982

New Tidal Forecasts for Washington DC

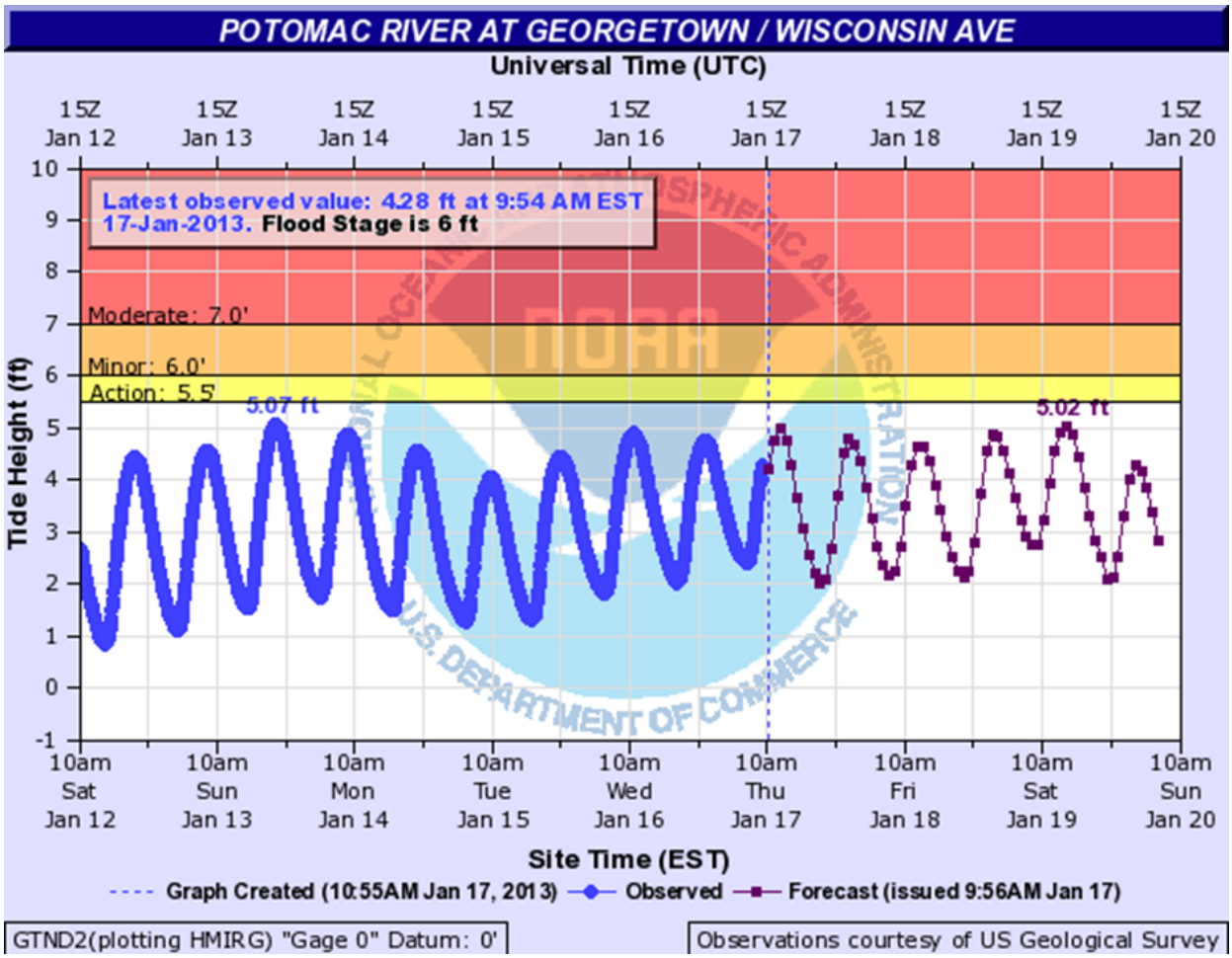
By, Jason Elliott,
Senior Service Hydrologist

In mid-January, the National Weather Service began providing routine daily forecasts of tidal heights on the uppermost portion of the Tidal Potomac River, and the adjacent Washington Channel; both in Washington, DC.

The gauge locations where new forecast services are available are:
* Tidal Potomac River at Wisconsin Avenue / Georgetown
* Washington Channel at SW Waterfront, Washington, DC

Forecasts of high tide values were previously provided at the Wisconsin Avenue / Georgetown gauge during times of high freshwater inundation, but these new forecasts are provided every day, regardless of freshwater flooding, and include the entire tide cycle. During freshwater flooding, the tidal forecast may be updated several times per day – usually anytime the forecast for the Potomac River at Little Falls is updated.

There are some limitations to keep in mind: the water level forecasts provided may not fully account for the effects of wind-driven water or surge, especially in major events. In significant wind-driven events, wave action can also produce water levels slightly above the gauge reading.



Example of the combined observation (blue) and forecast (purple) graph for a tidal site.

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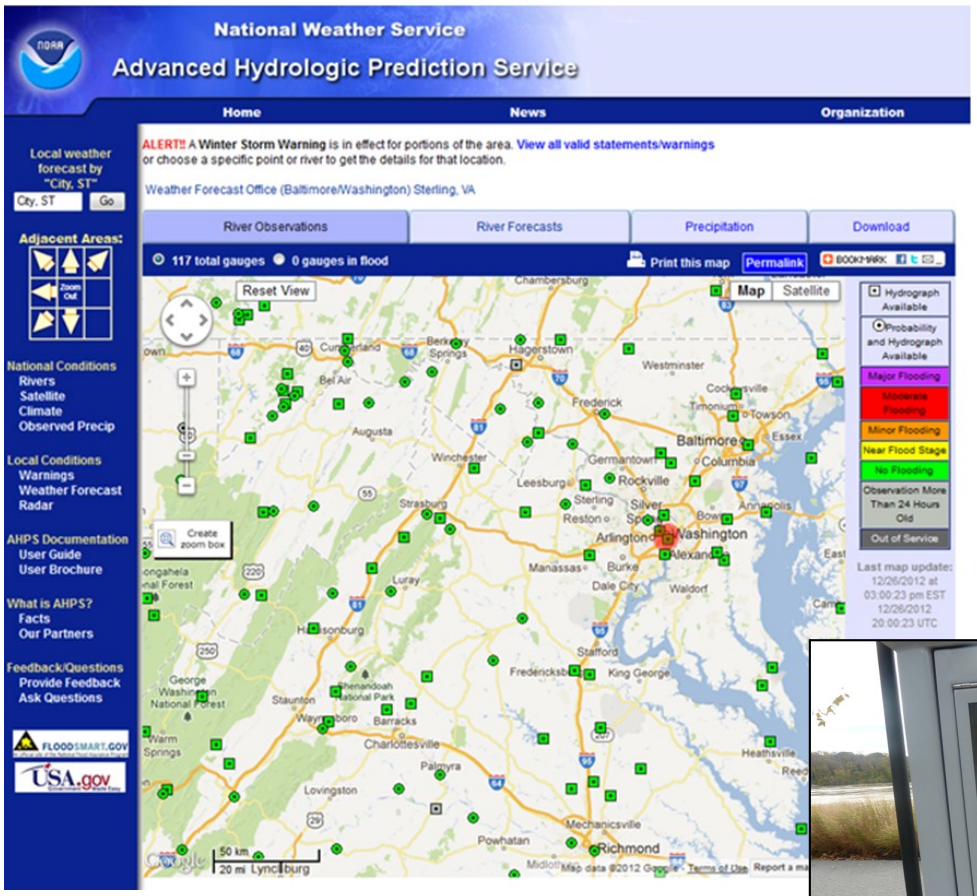
Tidal Forecasts *(continued)*

We will continue to utilize existing procedures for providing watch, warning, and advisory services to this area through the Coastal Flood suite of products. It is important to note that in wind-driven events, because of the limitations noted above – and because tidal flooding is not limited to these gauge locations – we may issue coastal flood watches, warnings, or advisories even though the forecast is below the established threshold.

*WMLW and MLLW are mean low water tidal datums. These tidal datums are utilized so that gauge values indicate the height above a long-term average low tide. Astronomical tide predictions are routinely referenced to low water tidal datums. To convert to true NAVD88 elevation, subtract 1.25 from the Wisconsin Avenue value and 1.40 from the SW Waterfront value.

	Potomac River at Wisconsin Avenue/ Georgetown (DC)	Washington Channel at SW Waterfront (DC)
Action Stage	5.5 feet (WMLW)*	3.7 feet (MLLW)*
Minor Flood Level *(coastal flood advisory)*	6.0 feet (WMLW)*	4.2 feet (MLLW)*
Moderate Flood Level *(coastal flood watch/ warning)*	7.0 feet (WMLW)*	5.3 feet (MLLW)*
Major Flood Level	10.0 feet (WMLW)*	7.0 feet (MLLW)*



The advisory/warning thresholds for the two sites with new forecasts are in the table above.

These new forecasts may be viewed at any time by choosing the Rivers and Lakes link on our website at http://weather.gov/washington. From there, just click on the squares in the DC area, as highlighted on the map shown to the left.

Our colleagues at the United States Geological Survey operate the river gauge on the Georgetown Waterfront. You can walk down to the site and see the inner workings of the gauge, as shown in the picture to the right.

MIC's Corner (continued)

As the calendar turns to 2013, six members of our office staff have moved on to new horizons since our last edition of the *The Sterling Reporter*. Steve & Nikole Listemma, Trina Heiser, Matthew Kramar, Stephen Konarik, and Carrie Larsen have all taken their next steps in their lives and careers, and our office will miss each of them dearly.

Nikole was a Senior Forecaster on our staff for almost nine years, and helped in office outreach. Nikole was also the Editor of *The Sterling Reporter*, and was the Team Leader for all three of our Open Houses that we have hosted since 2004. Steve Listemaa was our Information Technology Officer for almost nine years. Steve played a vital role in all tasks related to computing, which is a mainstay to our office's operation. Trina was a member of this office for over two decades, serving as Hydrometeorological Technician and our Cooperative Program Manager. Matthew was a Senior Forecaster here for just over four years, and was our Training, Severe Weather, and Verification Program Leader. Stephen was a General Forecaster here for almost four years, and served as our Flash Flood Program Leader. Carrie served as a Meteorologist Intern here for about 18 months, and did great research on the marine wave model SWAN, which we will be implementing into operations later this year.

I want to thank all six departing staff members for their years of great service as valued employees of our office. Best wishes to all of them, as they now become WFO LWX alumni. Our office has some important positions to fill, and I anticipate new hires arriving at Sterling this spring. Look to the next edition of *The Sterling Reporter* to learn more about our new staff members.

If you have any questions, feel free to call me at 703-996-2200, extension 222, or email me at James.E.Lee@noaa.gov.

2012 Average Temperature Summary

By, Jared Klein and Bryan Jackson, General Forecasters

Official observations for Washington DC and Baltimore are currently taken at Reagan National Airport and Baltimore-Washington International Thurgood Marshall Airport, respectively. Official temperature records for Washington DC and Baltimore both date back to 1871.

Washington DC

2012 was the warmest year on record for Washington DC with an annual average temperature of 61.5°. The previous warmest annual average temperature on record was 60.2°set in 1991. The average temperature for 2012 was 3.3° above the 1981-2010 normal. For reference, the 2012 DC annual average temperature would be comparable to the normal annual temperature of cities such as Atlanta, Oklahoma City, and San Jose.

Baltimore

2012 was the third warmest year on record for Baltimore with an annual average temperature of 58.6°. Only 1931 and 1949 had higher annual average temperatures; 59.2° for both years. A case can be made for 2012 to also be the warmest year on record for Baltimore. Both 1931 and 1949 predate the BWI airport when observations were taken at the Customs House in downtown Baltimore where minimum temperatures were generally higher due to the urban heat island effect. 2012 had highest maximum temperature for the entire Baltimore record (68.6°) and the highest minimum temperature of the BWI era (48.6°). The 2012 annual average temperature was 3.5° above the 1981-2010 normal.

Hurricane Sandy Recap

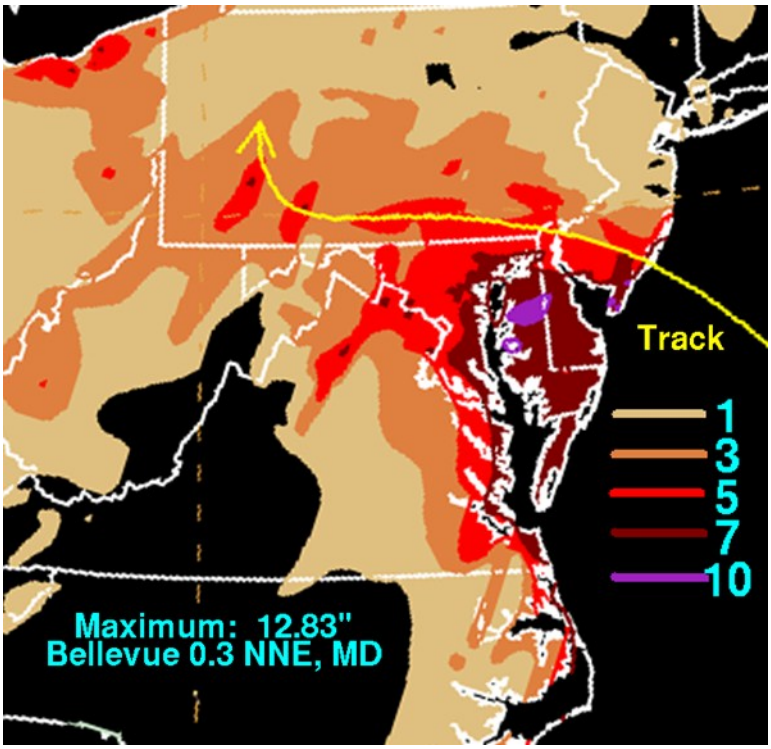
By, Steve Zubrick (SOO) and Chris Strong (WCM)

Hurricane Sandy delivered extreme weather conditions up and down the East coast. Most of the attention on Sandy focused on New Jersey and New York (including New York City), which were especially hard hit from a combination of high winds, tidal surge and coastal flooding. Overall, over 130 persons in the U.S. perished from Sandy. Many of those deaths were attributed to coastal inundation from tidal surge. Across our region, heavy rain, flooding and high winds were the main impacts, with blizzard conditions and amazing snowfall totals of two to three feet occurring across higher elevations of the Appalachians from the Maryland/Pennsylvania border to North Carolina.

From a meteorologist's view, Hurricane Sandy was a peculiar storm. As it moved north along the Mid-Atlantic coast, Sandy transitioned from a hurricane to something more akin to a major East Coast winter storm. Remember, hurricanes are powered largely by warm, moist tropical ocean air. In contrast, winter storms are powered by large differences in temperature both at the surface and aloft and moisture. Sandy behaved not only as a hurricane, accompanied by the usual high winds, heavy rains and coastal flooding, but also exhibited features of a major winter storm with heavy snow and blizzard conditions.

The transition from a tropical system to an extra-tropical cyclone occurred as Sandy turned northwest along the Delmarva coast on Monday October 29, before making landfall along the southern New Jersey coast that evening. This transition allowed Sandy to maintain strength, and kept the storm's minimum central pressure very low. In fact, several all-time low sea level pressure records were broken, including Baltimore MD reaching 964.4 millibars (mb) (28.48 inches), which broke the previous record low pressure of 965.9 mb (28.52 inches) set on March 13, 1993 during the historic 1993 March Superstorm.

The low central pressure contributed to very high winds. The strongest winds remained just above the surface with Sandy, so many of the peak winds were occurred in higher elevations, e.g., Wintergreen Resort along the Blue Ridge reported a peak wind gust of 67 mph; gusts of 80 mph were reported on top of the Chesapeake Bay Bridge and 79 mph on top of Thomas Point Lighthouse in the Chesapeake Bay. Our NWS forecasts calling for wind gusts to near 70 mph prompted local officials to close Federal agencies in the Washington DC metro region both on Monday and Tuesday. Even Metrorail was shut down from Monday through Tuesday afternoon. Actual wind gusts of between 50 to 60 mph were common throughout the entire region, mainly from the late afternoon to evening on Monday with many trees down reports.

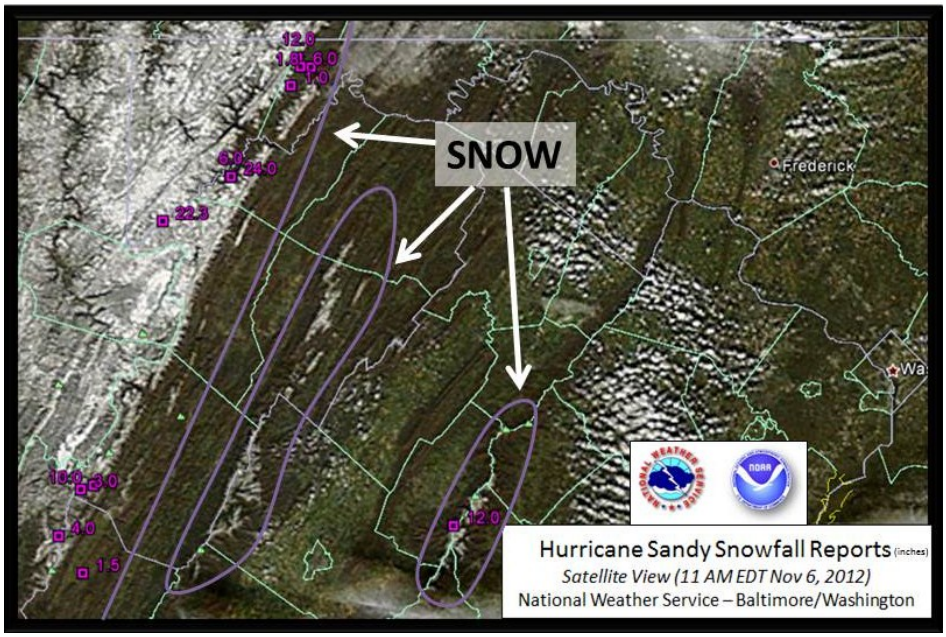


Rainfall across the Mid-Atlantic from Sandy (*credit* NHC)

Hurricane Sandy Recap *(continued)*

In addition to the high winds, the heaviest rainfall occurred primarily in the central Mid Atlantic. A swath of the Mid-Atlantic – including the Washington and Baltimore metro areas – saw storm total rainfall from Sandy of 5" to near 12". Baltimore had their 5th highest rainfall for any calendar day on record, and most for any day in October (6.67"). Further north, locations across hard-hit northern New Jersey and eastern New York saw only about 2" of rain (but had higher winds and storm surge). Fortunately, our region had been rather dry before the storm, so the impacts of half to 1 foot of rain were less than they could have been if it had fallen on a soggy ground. Nonetheless, road closures due to flooding were widespread late Monday into Tuesday. Here's a listing of our rain and snow reports: http://www.erh.noaa.gov/lwx/events/rainmaps/index.php?event=20121030&type=rain

And then there was the snow. It is hard for anyone to imagine 1 to 3 feet of snow falling in late October. But for many residents and visitors in the Appalachians and along the Blue Ridge (including Skyline Drive) that is exactly what happened. Tropical moisture from Sandy was transported westward, colliding with cold, Canadian air, resulting in very heavy wet snow. One foot of snow was measured on Skyline Drive at Big Meadows (3500 feet elevation), and nearly 2 feet was recorded by our Cooperative Observer in Bayard, WV (BAYW2, 2400 feet elevation). Power outages in those areas were widespread and long-lasting from the combination of the extremely heavy snow on the trees and very strong wind gusts (60-80 mph). Sandy produced one of the most impactful winter storms on record for the Allegheny Highlands.



MODIS visible imagery of snowfall across ridgelines after Sandy.

Remember, when a hurricane (or tropical remnants) occurs, there are four main threats: 1) flooding 2) coastal flooding from tidal surge, 3) wind damage, and 4) tornadoes (a special kind of wind damage).

Flooding: Widespread rains inundate communities, and turn drainage ditches into raging rivers.
Tidal Surge: Along shorelines, it has the largest potential for loss of life & massive property damage.
Wind Damage: Creates power & communications outages, downed trees, & property damage.
Tornadoes: Mainly to the right of the storm track. Causes massive wind damage in small, targeted areas.

Each tropical system brings a different level of impact for each of these four threats, though the most widespread threat is usually flooding rains. In the unique case of Sandy, snow was also an impact. So, the next time a hurricane or tropical remnants approach, please remember these threats and make your family ready. For more information about storm preparedness and safety, please visit: http://www.ready.gov/

WEATHER READY NATION CORNER

Decision Support Services During Sandy

By, Kyle Struckmann,
Emergency Response Meteorologist

As Sandy approached the mid-Atlantic, the National Weather Service Baltimore/Washington Forecast Office provided timely and accurate decision support services forecasts for emergency managers from numerous state, city, county and federal agencies from across the region.

When a storm as historic as Sandy threatens, emergency managers and other government agencies make critical decisions about protecting the people and property in their communities. This includes evacuations, opening shelters, organizing post-event recovery, among many others. It is critical for them to know what specific threats from a storm are developing.

Visible satellite imagery of Sandy off the Delmarva coast as it began a post-tropical transition and turn toward the New Jersey coastline.

NWS Baltimore/Washington provided decision-support services through in-office support and deployments. Emergency Response Meteorologists Steve Goldstein and Ken Widelski staffed the Maryland Emergency Management Agency from October 27 - 31. They provided regular updates to numerous state officials, including direct briefs to Maryland Governor Martin O'Malley. Meanwhile, the NWS increased staffing to handle numerous requests for telephone and e-mail weather support from various agencies across the region. The office conducted 68 conference calls from October 25-31. Most calls were provided to state agencies in Maryland, Virginia and West Virginia (33). The other calls were provided to various city and county emergency management offices, plus federal government partners.

Meanwhile, the third Emergency Response Meteorologist, Kyle Struckmann, was deployed to New York City to provide critical decision support services forecasting. Working from the New York City Office of Emergency Management (NYC OEM), Struckmann frequently briefed New York City Mayor Michael Bloomberg, City Commissioners and representatives from NYC OEM before and during the storm. As a result of NWS forecasts, New York City ordered mandatory evacuations for 375,000 people who were in the path of Sandy's record-setting storm surge.

WEATHER READY NATION CORNER

Inauguration Decision Support Services

By, Kyle Struckmann and Steve Goldstein, Emergency Response Meteorologists

The National Weather Service played a key role in the planning and preparation for the 57th Presidential Inauguration on January 21, 2013 by providing decision-support services (DSS) forecasts for event planners. The NWS partnered with numerous agencies to support the event, including several branches of the U.S. Armed Forces, the National Park Service, and the U.S. Capitol Police.

Inauguration weather DSS by the NWS aided our core partners in many ways. The focus of Inauguration related DSS was on sensible and any potentially hazardous weather anticipated during implementation stages and for the actual day of the event. Knowledge from this DSS allowed event planners prepare for any impacts to the public attending the Inauguration and for those setting up the event days in advance. In addition, space weather forecasts were provided by the NWS Space Weather Prediction Center to discuss any sunspot activity that could have affected radio communications. Fortunately the impact space weather activity through that period was minimal. In addition, aviation forecasts helped the FAA handle the significant increase in air traffic to capital region airports in the days leading up to the event.

Inauguration 2013 weather support began with a conference call briefing on Saturday, January 12 in preparation for the dress rehearsal on Sunday, January 13. Afterwards, 15 additional conference call briefings were conducted from January 15 through Inauguration Day, with increasing frequency as the event drew closer.

In addition, all three WFO Baltimore/Washington Emergency Response Meteorologists conducted on-site DSS at two sites the day before and on Inauguration Day. Ken Widelski and Kyle Struckmann deployed to the DC Homeland Security and Emergency Management Agency (DCHSEMA) in Washington, DC, while Steve Goldstein supported the effort from the Virginia Department of Emergency Management (VDEM) Region 2 office in Fairfax, VA. At DCHSEMA, Widelski and Struckmann provided regular stand-up briefings and written forecast updates. These updates were distributed to numerous partner agencies with staffing at DCHSEMA. This included numerous District agencies like the Washington DC Department of Transportation, the Department of Health, and Fire and Emergency Services; a number federal agencies such as the Federal Emergency Management Agency (FEMA) and the US Marshals, and several branches of the military.

Goldstein worked 12 hour shifts on the same two days on site at VDEM in Fairfax. Implementing 'after action' recommendations from the 2009 Inauguration, VDEM had developed their multi-agency coordination center (MACC) staff list well before the event. The meteorologist took part in communication, planning and situational awareness exercises in the weeks leading up to the

(continued next page)

WEATHER READY NATION CORNER

Inauguration Decision Support Services (continued)

Inauguration. Once on-site, Goldstein provided written weather forecasts and stand up briefings every two hours. The forecasts were included in updates to the incident action plan (IAP), a fluid document that outlines procedures the team uses to support the event. Web EOC, an internal web based data sharing system, ensured updated weather forecasts were available to anyone who needed them.

Steve Goldstein at the VDEM Region 2 MACC in Fairfax

The main potential weather impact for this year's inauguration was the risk for snow squalls and gusty winds as a cold front moved through the region. Light snow accumulations were possible, and with an expected sharp drop in temperatures from an evening cold frontal passage, any melted precipitation would have quickly refrozen. Washington DC responded by preparing a small fleet of trucks to handle snow and ice removal. A snow band did develop in the late afternoon over west-central Maryland which just missed The District to the north. The expected cold front moved through the District shortly after the inaugural parade finished. Several briefings that afternoon kept officials up to date about the progress of the front and its associated precipitation, assuring them that festivities would be carried out with little weather impact.

Historically, the Inauguration has experienced a wide range of weather. For example, the 1909 Inauguration of President William Howard Taft took place during a 10 inch snow storm. Strong winds toppled trees and telephone polls, and crews cleared 58,000 tons of snow from the parade route. President Ronald Reagan experienced both the warmest and coldest January inaugurations. The temperature during the 1981 Inauguration reached 55 degrees. Conversely, the 1985 inauguration took place with a temperature of 7 degrees and wind chills between -10 and -20 degrees. That inauguration was moved indoors and the parade was canceled. More information about historical inauguration weather can be found at:
http://www.erh.noaa.gov/lwx/Historic_Events/Inauguration/Inauguration.html

Because of the variety of possible weather conditions and extreme impacts, NWS DSS forecasting played a crucial role in preparation for the 2013 Inauguration.

Skywarn Reporting Procedures

1. Tornado or Funnel Cloud
2. Storm Rotation
3. Hail (any size and depth on ground)
4. Wind 50 MPH or greater (measured or estimated)
5. Wind Damage (downed trees and/or powerlines, structural)
6. Snow Accumulation (every two inches, storm total)
7. Ice Accumulation (any ice accumulation)
8. Heavy Rain (measured 1 inch, storm total)
9. Flooding (water out of banks and/or covering roadways)
10. Time of event & location

How to report:

Telephone: 1.800.253.7091

Amateur Radio: WX4LWX

This is very time critical information that needs to be relayed to the forecaster **immediately**. Give the person on the phone/radio your name and spotter number.

If you absolutely cannot get to a telephone to relay a report or to email ***delayed*** reports and storm totals: LWX-report@noaa.gov

Skywarn Classes

Class	Date	Location
Basics I	March 20	Leonardtown, MD
Basics I	April 23	Prince Frederick, MD

For more information on our Skywarn Classes, please visit our website:

weather.gov/washington OR weather.gov/baltimore

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