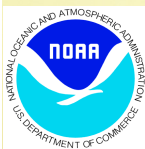


Sterling Reporter

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National Weather Service Baltimore MD/Washington DC Forecast Office

Fall-Winter 2013-14



MIC's Corner

By, James E. Lee
Meteorologist in Charge

The winter of 2013-2014 will go down in the record books as colder and snowier than normal. While December gave us slightly above normal temperatures, January and February were much colder and snowier than normal for our region. Earlier this week, we reached all-time March minimum temperatures at both Dulles and BWI Airports. The vernal equinox on March 20 will bring on a much welcomed spring for many of us who desire warmer weather.

As the season turns, so does our preparation and readiness activities for severe weather. Please take time to prepare for severe weather season, and know what to do if a Tornado Warning or Severe Thunderstorm Warning is issued for your area. You can find a wealth of information on severe weather preparedness activities at the following National Weather Service website: <http://www.nws.noaa.gov/os/brochures.shtml>. I highly recommend the pamphlet on lightning safety (<http://www.nws.noaa.gov/os/lightning/resources/lightning-safety.pdf>). Unfortunately, 400 people are struck on average by lightning each year in the United States, with about 60 people losing their lives. Many of these injuries and deaths are preventable by simply following a few safety tips, which are listed in the pamphlet. Here is a simple rule of thumb: If you are outside and hear thunder, you are at risk of being struck by lightning. So when you hear thunder, go inside immediately to a sturdy building or vehicle; don't make that game of tennis or hole of golf your last one.

In my last MIC's Corner, I previewed new probabilistic snowfall products. These products have been well received by

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Pilot Project Corner: New Winter Weather Page & Forecasting the 'Range of Possibilities'

Ken Widelski
Emergency Response Specialist
Winter Project Team Leader

NWS Sterling has developed a new winter weather page that features innovative new tools that provide decision makers with enhanced winter weather forecast services. The new webpage located at www.erh.noaa.gov/lwx/winter is a one stop shop for winter weather information that was

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MIC's Corner (continued)

the emergency managers and transportation planners, and I hope the public as well. Our office will be looking to expand the program next winter to include ice products. You can access our winter weather page which highlights our probabilistic snowfall products at <http://www.erh.noaa.gov/lwx/winter/>. Please refer to Ken Widelski's article in this edition of *The Sterling Reporter* for additional details on how they are generated.

Finally, I have seen an increase in use of our social media program, which includes our office accounts on both Facebook and Twitter. I hope that you can take advantage of these new services, as we have modified our operations to provide updates and fast-breaking weather information from our office via Facebook and Twitter. Thousands of people are already following us on social media. If you are interested too, simply click on the links in the upper left hand corner of our office homepage: <http://www.erh.noaa.gov/lwx/>.

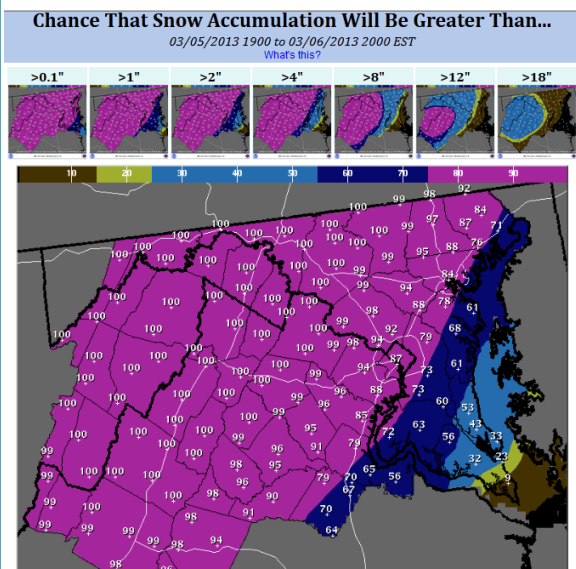
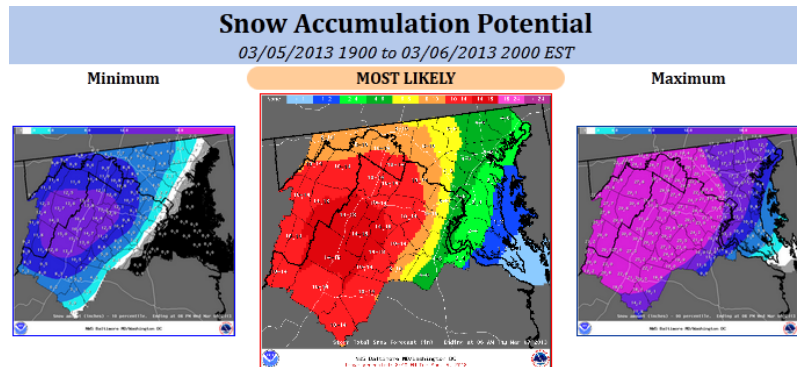
If you have any questions, please call me at 703-996-2200, extension 222, or email me at James.E.Lee@noaa.gov.

New Winter Weather Page (continued)

developed as part of a three year pilot project to help decision makers in the Middle Atlantic.

Embedded within the new winter weather page are three new revolutionary forecast products that have been developed based on extensive collaboration with the emergency management community and the media.

The three new forecast products are:



Snowfall Accumulation Potential

This product provides decision makers with a range of possible solutions. A minimum snowfall potential (expect at least this much snow), a maximum snowfall potential (prepare for the possibility of this much snow), and a most likely scenario which is the official NWS Sterling forecast and where our highest confidence lies within the goal posts of possibilities.

Chance That Snow Accumulation Will Be Greater Than...

This product gives the percentage chance or confidence that a specific snowfall amount will be exceeded. Snowfall amount thresholds range from >0.1" through >18". Simply mouse over the desired amount and the probabilities will appear in the large screen below.

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Snowfall Accumulation Table

This product allows a decision maker to select his or her county of choice from a drop down menu. Once the county is selected, a list of cities within the county appears, each showing the minimum/most-likely/maximum possibilities & chance of various ranges of accumulations. Decision makers can toggle between snowfall range or exceedance probabilities.

Chance of Snow Accumulation
Experimental - Leave feedback
 01/11/2014 0700PM to 01/12/2014 0800PM EST
[What's this?](#)

Country: Selected

Location	Min	Likely	Max	0"	0.1-1"	1-2"	2-4"	4-8"	8-12"	12-18"	>18"
Bayard, WV	0	N/A	2	70%	8%	9%	13%	0%	0%	0%	0%
Charlottesville, VA	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%
Frederick, MD	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%
Fredericksburg, VA	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%
Hagerstown, MD	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%
Harrisonburg, VA	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%
Inner Harbor, MD	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%
Leonardtown, MD	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%
Martinsburg, WV	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%
National Mall, DC	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%
Staunton, VA	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%
Winchester, VA	0	N/A	0	100%	0%	0%	0%	0%	0%	0%	0%

[Switch to Exceedance](#)

The Winter Weather Webpage and new probabilistic winter forecast products are part of NOAA's Weather Ready Nation initiative to improve the country's resilience to extreme weather. Please visit the new webpage.

Weather Ready *Steve Goldstein, ERS meteorologist*

The National Weather Service (NWS) Weather Ready Nation initiative is about building community resilience in the face of extreme weather events. NWS Baltimore/Washington is expanding principles defined by Storm Ready and making them more adaptable to a broad range of entities.

This expansion is called the Weather Ready program, and it teaches organizations to develop and maintain their own hazardous weather preparedness and response plans. A more proactive role will help ensure the right actions are taken when notification of dangerous weather is received. While Storm Ready has traditionally been limited to state, city and county emergency managers, Weather Ready will focus on individual organizations, facilities, neighborhoods and households.



Steve Goldstein, Emergency Response Meteorologist, presents the Northern Virginia Hospital Alliance with a certificate of recognition for helping develop the Weather Ready program.

Similar to Storm Ready, the Weather Ready program requires entities to maintain constant weather awareness, have multiple ways to receive and disseminate severe weather warnings, develop preparedness plans and integrate these into their culture.

But Weather Ready is a self-paced, fluid program that is free of advisory boards, approval processes and waiting periods. Organizations will be able to walk themselves through the requirements by going to a web page maintained by the NWS. The site will contain all relevant training, educational videos, exercises and recommended checklists. These checklists are adaptable to the size and complexity of the participating entity; from a complex organization down to individual households and buildings.

The Weather Ready program encourages individuals and organizations to take responsibility for being prepared for hazardous weather. It has no formal review panel. Participating entities will notify NWS that they now comply with program requirements. The entity will then be recognized through the issuance of a certificate.

Keep an eye on the NWS Baltimore/Washington web page for updates about this exciting program!

Outreach

*Bryan Jackson, General Forecaster
Marine Program Leader*

Baltimore Boat Show Visit



Bryan Jackson and Amy Bettwy staff the NWS Baltimore/Washington booth at the Baltimore Convention Center for a boat show on Thursday, January 23.

Baltimore/Washington meteorologists were able to staff a booth at the Baltimore Boat Show from January 23-26. Since the office is located in Sterling, across the metro area from our marine zones, an opportunity like this is ideal to interact with many members of our marine community. The booth was stocked with pamphlets and handouts regarding safe boating and our procedures (see picture). Several hundred mariners visited the table to talk with meteorologists. Surveys were offered to regular Chesapeake Bay boaters and over 40 were completed! This survey allowed mariners to indicate their purpose for boating (recreational, professional, research, etc.), which seasons they spend time of the water, where they boat, and

what weather information they access both before and during their marine activities. An opportunity for feedback was also given. These surveys will be compiled and the statistics will be discussed at the next Baltimore/Washington Marine Users Committee meeting which will be held late in the Spring or early Summer of this year.

Elementary School Visit

On January 8, I visited Bailey's Elementary School for the Arts and Sciences to discuss hazardous weather and safety to two 2nd grade classes. Children at that age are very inquisitive and have a good attention span. This made for many honest and cute questions. My favorite was when I discussed debris in tornadoes and how some that have impacted banks have carried cash and checks many miles, to which a child asked, "So then would it rain money?" I smiled and explained that tornadoes usually shred what they pick up, so it would not be worth much. The hour long visit included many



Bryan Jackson interacts with 2nd graders on a visit to Bailey's Elementary in Falls Church, VA.

photos and videos, as well as popular demonstrations such as a tornado in a bottle and simulated hail with a ping pong ball and hair dryer. Special thanks to Bailey's teacher Joanna Vanderpool (daughter of the custodian here at the Baltimore/Washington office) for arranging the visit!

Media Workshop

*Gregory Schoor, General Forecaster
Broadcast Media Program Leader*



Our winter Media Workshop was held at the National Weather Service (NWS) office on December 13, 2013, and attendees were greeted with several informational presentations, including a new suite of winter probabilistic guidance. (See *Winter Weather Page on page 1*)

Weather forecasting for the Mid-Atlantic region often presents challenges, especially

during the winter months.

“This is my 17th winter working at the National Weather Service living in New England and in the Mid-Atlantic and it is always tough to nail down winter events,” said James Lee, Meteorologist-In-Charge of the National Weather Service Baltimore/Washington Office.

No term better represents these challenges than the word “uncertainty.”

In the past this term has been difficult to quantify or to explain to those who are depending on the forecasts for wintry precipitation. The series of experimental but operationally available probabilistic products were introduced to local television broadcasters, radio, print, and internet media, at the workshop, after having gone through a winter weather event just days before.

Probabilistic forecasting is fairly uncharted territory in operational forecasting, but is expected to become more of a necessity in order to better communicate uncertainty. Instead of one deterministic value for an expected amount of snowfall, such as 5.2 inches, more value can be gleaned from expressing the snowfall forecast as a 75% chance of receiving between 4 and 6 inches. Also, by placing upper and lower boundaries on the expected amount, saying that a location can expect no more than 8 inches of snow, but no less than 2 inches during an event can also add value to the expectations for that forecast. These “goalposts of possibilities” can set the expectations for an oncoming storm up to a full day ahead of what had been possible before. They also can alert when snow is not expected, but there is a small chance, letting transportation officials and others know of a possible threat.

“Well done,” said Topper Shutt, Chief Meteorologist WUSA9 in Washington D.C. when asked about the probabilistic snowfall forecasting philosophy.

“It’s a big confidence boost”, said Jonathan Myers, Morning Meteorologist at FOX45 in Baltimore, MD.

The new suite of products, is available on the web at: <http://www.erh.noaa.gov/lwx/winter/> or you can access it off our main page in the winter section.

Additionally, as has been popular in recent years, a more complete analysis of the seasonal outlook was covered. With a neutral ENSO predicted by the Climate Prediction Center (CPC) for the 2013-2014 Winter Season, it was discussed what the common

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Media Workshop *(continued)*

effects are for the Mid-Atlantic region how the forecast compares to previous seasons.

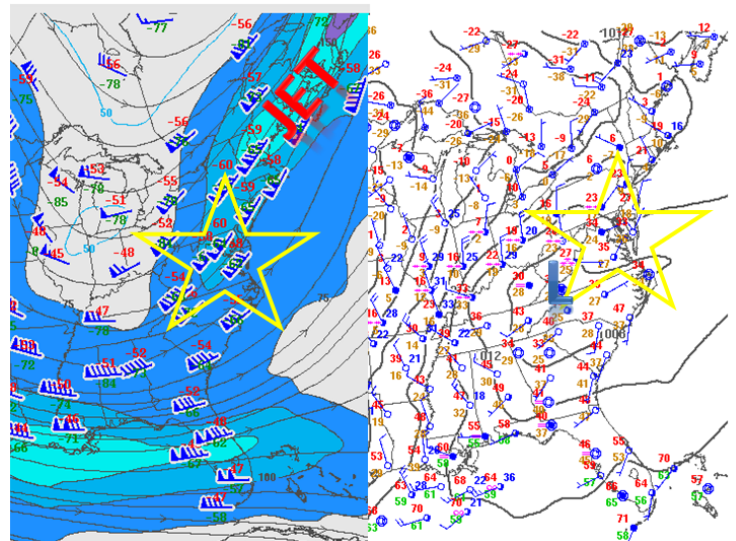
Another winter weather forecasting advancement coming from the NWS's Weather Prediction Center is a potential modification to how much ice that the weather models will forecast. The National Centers for Environmental Prediction (NCEP) which is home to the CPC and WPC divisions, also houses the computing power for the nation's weather forecasting models. Forecasting snow and ice amounts out of general precipitation has always been challenging because of the nature of water and its phase changes from gas to liquid to ice, and back.

Geoff Manikin, a modeler at NCEP, performed extensive research that revealed a handicap in one of the models for the potential to over-forecast amounts of snow and ice. A modification to this model has shown a more accurate formula for snow and ice prediction and is expected to be an improvement to the provided products and services.

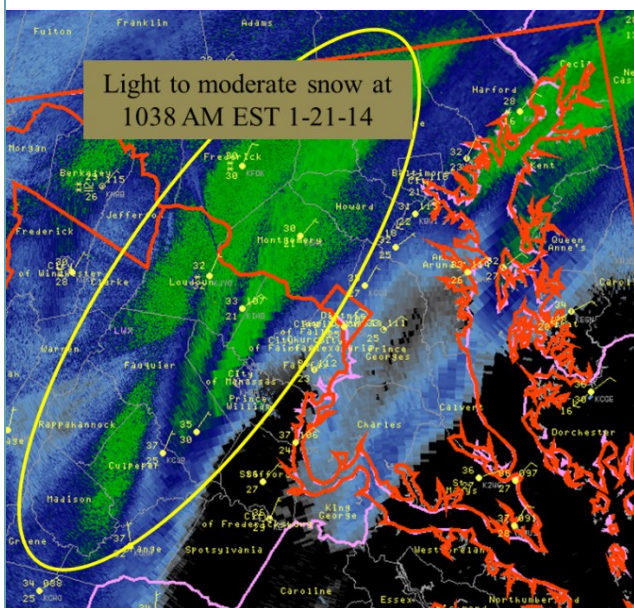
Event Review: January 21 Snow *Heather Sheffield, General Forecaster*

The snow forecast quickly escalated 36 hours prior to the first snowflakes on Tuesday, January 21, 2014. Model guidance over the weekend and prior to the event became snowier with each model run and consistency led to the issuance of a Winter Storm Warning on Monday, January 20, 2014.

An upper trough was located across the eastern half of the United States. The storm track leading up to this event featured numerous waves of low pressure, called Alberta clippers, diving southeastward around the upper trough from central Canada into the mid-Atlantic region. Alberta clippers typically produce little precipitation since they originate from central Canada- a region without a large source of moisture.



12Z 300mb Upper Air Obs and 12Z Surface Analysis



However, the one Alberta clipper that moved into the Northern Plains on the Monday afternoon of January 20 was able to tap into deeper moisture from the Gulf of Mexico and Atlantic Ocean as low pressure rapidly developed in the Mid-Atlantic States on Tuesday. The strengthening of low pressure occurred in response to the position of several jet streaks in the upper levels of the troposphere - one over the northern Gulf Coast and another over New England (image above, left). An arctic cold front dropped southward into the region Tuesday morning, allowing cold air to sink southward into the region and precipitation with this event to be snow.

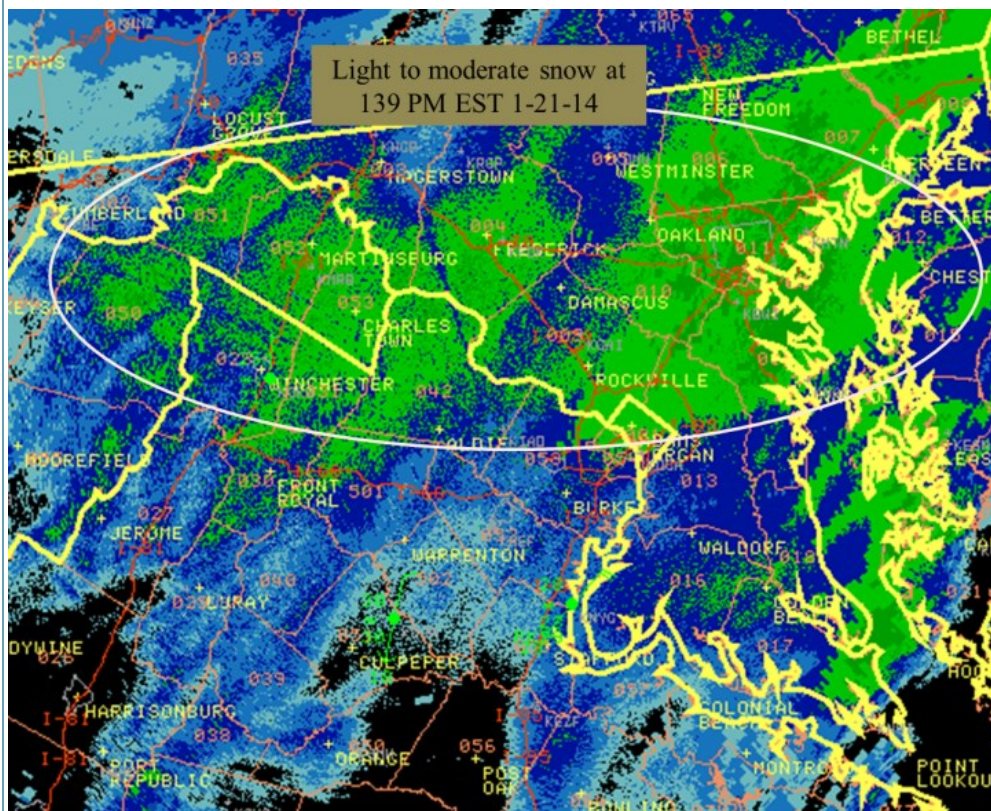
Snow began to move over the Potomac Highlands early Tuesday morning. Reagan National Airport and southern

Event Review

(continued)

Maryland were in the upper 30s around sunrise Tuesday morning. Temperatures just before the snow arrived were above freezing across the greater Baltimore and D.C. metropolitan area due to light easterly surface flow and abundant cloud cover on Monday night, but quickly dropped once snow started to fall (note: temperatures at the NWS forecast office in Sterling, VA dropped 5 degrees in 15 minutes at the onset). Snow that started to fall in DC was able to wet the ground initially, limiting accumulations on the roadways.

In the early afternoon Tuesday, radar was depicting light to moderate snow remaining across northern Virginia, DC and northern Maryland, where there were reports of 3". Meteorologists on shift at the office noted how the



visibility and snow had been falling for hours with little accumulation (only 1 inch as of 1 PM EST). Strong mid-level winds may have caused the snowflakes to destruct as they fell causing them to be so tiny.

Low pressure moved off the North Carolina coast by late Tuesday afternoon as the shortwave trough moved over the Appalachian Mountains. Snow in association with the shortwave trough began to move into Central Virginia. Further north, a front in the mid levels of the troposphere was the focus for light to moderate snow across the northern Mid Atlantic. Moderate bands with snowfall rates of 1" per hour were

reported for several hours, bringing additional accumulation through the evening. The back edge of the snow became evident in the evening and Winter Storm Warnings were dropped from west to east. Snow began to wrap around the departing surface low and southern Maryland received their accumulation in the evening. This winter storm broke the record for the longest stretch of consecutive days without seeing 2 inches of snow at Reagan National Airport. It also broke daily snowfall records at all three major airports for January 21: Dulles International (8.5), Reagan National (3.8) and Baltimore-Washington International (5.1). The previous records were 2.0 (1982), 3.8 (1982) and 3.2 (2001) respectively.

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 critical report or to email *delayed* reports and storm totals: LWX-report@noaa.gov

SKYWARN Classes

A full slate of SKYWARN classes is being scheduled for the 2014 course year.

Please use the "SKYWARN" link from our homepage for more info:

weather.gov/washington OR weather.gov/baltimore

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Fall & Winter 2013-14

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