

Sterling Reporter

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National Weather Service Baltimore MD/Washington DC Forecast Office

Spring & Summer 2013



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MIC's Corner

*By, James E. Lee
Meteorologist in Charge*

The Baltimore/Washington Weather Forecast Office (WFO) has completed its planning for the coming year, and I'm excited to share a few of the many projects in our work plan.

One of the WFO's major goals for this winter is providing new winter weather products and services. These products will give our customers probabilistic information, allowing us to describe the inherent uncertainty in forecasting winter storms. For example, instead of providing a deterministic forecast that Fairfax will receive 7.2 inches of snowfall, we will be forecasting that Fairfax has the potential of receiving a minimum of 4 inches, a maximum of 10 inches, with the most likely accumulation of 6 to 8 inches. This allows us to give the public, emergency managers, and transportation planners the range of possible outcomes, which is important for impact planning. Look for more information on this exciting development before Thanksgiving.

The second project we're implementing will help us better communicate weather information and keep with the times on social media: First, we are implementing a WFO Twitter account, which will enable us to send and receive short weather messages. Second, we will be posting a Monday morning weather briefing on YouTube, which will provide a video-based outlook of the hazardous weather potential for the upcoming week. These two communications enhancements will take place no later than December 31, 2013.

The third new project I want to share with you is a modification to marine operations. Our WFO has recently implemented the marine numerical model called Simulating WAves Nearshore (SWAN) into operations. SWAN predicts wave heights for most of our marine area. In past years, we have relied on a simple wind speed/direction relationship to derive wave heights. While this has worked well, it is not scientific. The SWAN Model integrates a science-based numerical prediction model with water depth and has been shown to produce a more accurate wave height forecast. This was recently made operational, so mariners should already be seeing better wave forecasts.

Finally, I want to welcome three new Meteorologist Interns to the WFO Staff: Carl Barnes, Dan Hofmann, and Amy Bettwy. Carl and Dan come to us from Pathways internships at National Weather Service offices in Honolulu and New York City, respectively. Amy is from NWS Sioux Falls, SD. Welcome, Carl, Dan, and Amy! If you have any questions, please call me at 703-996-2200, extension 222, or email me at James.E.Lee@noaa.gov.

Marine Users Committee: Spring Meeting

By, Brandon Peloquin,
Senior Forecaster

In the late summer of 2005, when office program leaders were developing goals for Fiscal Year 2006, I remember having a conversation with MIC Jim Lee about organizing a group in which local marine users could interact with their local NWS office and each other to discuss marine-related weather issues. Establishing such a group to meet twice a year would not only enhance our relationship with the users, but also promote feedback that would lead to an improvement in marine warnings and forecasts. The name given to the group was Marine Users Committee, which quickly became known as the MUC.

That first meeting was held on December 2, 2005, and was discussed in the Winter 2006 edition of the Sterling Reporter. Including the first meeting, our office has hosted 15 MUCs to date. The most recent meeting occurred on June 20, 2013.

This meeting featured more information about the SWAN (Simulating Waves Nearshore) model. Local research suggests that SWAN can provide even more accurate wave forecasts than the method currently employed. Our office has recently incorporated this wave model into operations.

This meeting also welcomed guest speakers, including a NOAA/NESDIS (National Environmental Satellite Data and Information Service) meteorologist who spoke about microbursts over the Chesapeake Bay and also a speaker from the National Safe Boating Council who outlined their training and outreach activities and also discussed the partnership with the NWS. The picture (right) shows a group shot of those who were able to attend the June meeting.

Hosting these meetings twice a year has certainly been my favorite part of working as Marine Program Leader. The interactions have been valuable and enjoyable, and the milestones run the gamut from improving warning services and performance, re-configuring marine zones to provide better forecasts of winds and waves, working toward increasing the number of observations on the water and enhancing boater education, just to name a few.

As Jim and I had hoped in our 2005 conversation, the Marine Users Committee certainly strengthened our relationship with marine users, and this relationship has provided us with essential feedback that helped to improve marine services. Of course, there's more work to do, more goals to accomplish and more milestones to build. Thanks to all of those who have participated and contributed on our MUC, and here's to the next 15 MUCs!



Participants of the June 20, 2013 MUC meeting in Sterling, VA

2013 LWX Summer Student Volunteers

*By, Heather Sheffield,
General Forecaster*

It was hard to say good-bye to our 2013 summer student volunteers. All seniors in college, Julie Hayes (Valparaiso), Chris Birchfield (Ohio State) and Ian Eppig (Millersville) started at the Sterling WFO in late May. They volunteered a few days a week through the entire summer, aiding in operations and doing local research on-site. Their help was a great thing while being understaffed through the busy summer.

Julie Hayes is a senior at Valparaiso University majoring in Meteorology. She worked with the Senior Service Hydrologist, Jason Elliott and Senior Forecaster, Howard Silverman on **Gauge Correlations and Tidal Anomaly Indicators in the Chesapeake Bay and Tidal Potomac, Anacostia, and Patuxent Rivers**. Hayes broke her research into two phases. She found in her first phase on gauge correlations that, 1. Several gauges have a strong correlation relationship. 2. If elevated water levels are occurring at Washington Channel, there are likely similar elevated water levels occurring at Alexandria and Anacostia Aquatic Gardens and similar correlations exist between Solomon's Island and Annapolis. If one of these gauges were to fail, the close correlation between the two indicate the other could be used to infer or predict water levels at the failed gauges, 3. Even though the Colonial Beach, VA and Long Beach, MD gauges no longer exist, they correlate well with gauges that do exist. Hayes found in phase 2 that, 1. The wind and depth departure values are very sporadic, 2.

There is always a negative departure with a NW wind, but no correlation between departure value and wind speed, 3. There is not definitive proof in the dataset of a 15kt SE wind on the Potomac causing a one foot departure at SW Waterfront Channel in Washington DC (WASD2), most one foot departures occurred with a NE wind, again with no correlation to wind speed.

Chris Birchfield is a senior at Ohio State University majoring in Atmospheric Sciences. He worked this summer with the Science Operations Officer, Steven Zubrick and Emergency Response Meteorologist, Ken Widelski on the **Evaluation of Probabilistic Snowfall Amount Forecasts for Decision Support in the Mid-Atlantic Region**. Birchfield focused on the evaluation of several products generated from NCEP, WPC, MDL, and the Weather Forecast Office in Sterling from the 17 January 2013 and 5/6 March 2013 snowfall events using 15 chosen data points throughout the LWX County Warning Area. Birchfield found that 1. Internally-generated SREF and LWX probabilities didn't seem to be consistent between each event, 2. The NAM MOS probabilities were much higher than GFS MOS on average but both still worked well for DCA for each event and 3. High variability in probabilistic guidance made for



From left: Ian Eppig, Julie Hayes, and Chris Birchfield.

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Summer Volunteers (*continued*)

difficulty in accurate prediction.

Ian Eppig is a senior at Millersville University majoring in Meteorology. He worked this summer with Emergency Response Meteorologist, Steven Goldstein on the **National Weather Service Baltimore/Washington Operations Video**. His videography expertise helped complete the LWX Office video that should be out to the public this fall. This video will introduce our mission and what tasks the staff at the forecast office accomplish 365 days a year, 24/7. It will go over the watches, warnings, and advisories including a message from our Warning Coordination Meteorologist, Chris Strong. Ian also spent time developing shorter videos on Aviation Forecasting and Upper Air Operations.

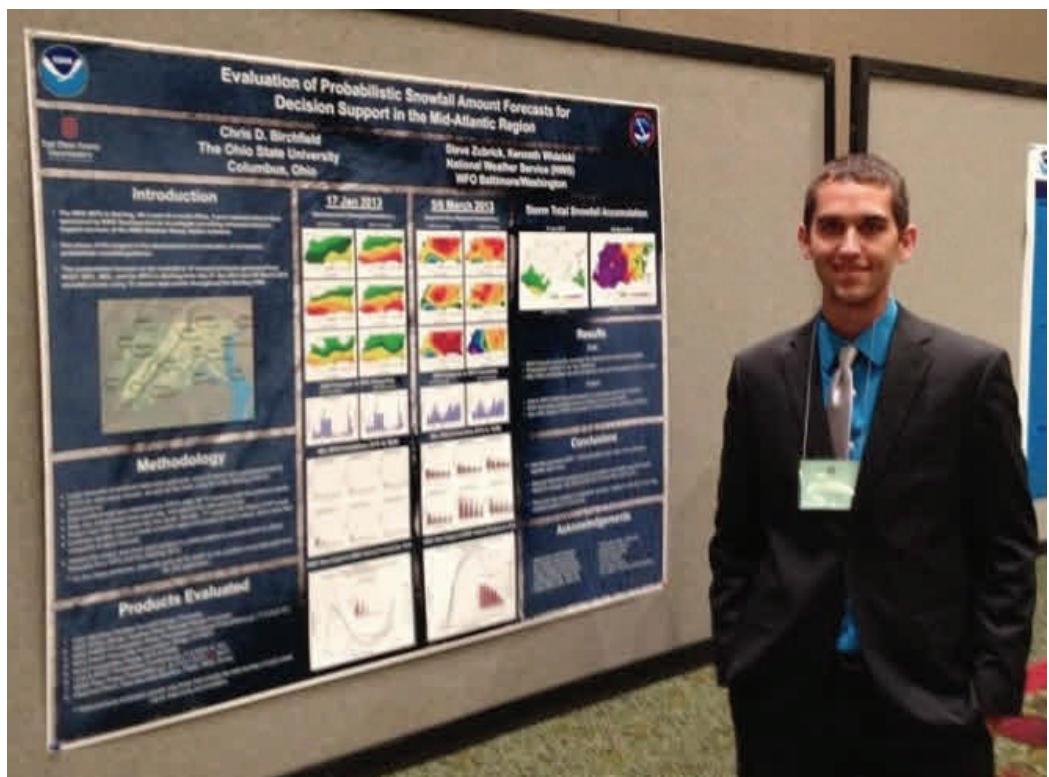
On behalf of everyone at the Baltimore/Washington Forecast Office, we wish the best of luck to these students as they complete their undergraduate studies in meteorology!

Summer Student Volunteer Awarded

*By, Steve Zubrick,
Science and Operations Officer*

Chris Birchfield, a summer 2013 student volunteer of ours and a senior atmospheric sciences major at The Ohio State University was awarded 2nd place at the National Weather Association (NWA) Annual Meeting's Undergraduate Student Poster Presentation competition! Chris' poster presentation, "*Analysis of winter probabilistic snowfall amount forecasts for use in decision support for users in the Mid-Atlantic Region*", co-authored by Baltimore/Washington WFO staff members Ken Widelski and Steve Zubrick, examined various winter probabilistic guidance during several key winter events in the Mid-Atlantic region. His research helped frame our new suite of winter probabilistic products being rolled out this Winter (FY14), as part of the Baltimore/Washington WFO Pilot Project on providing better winter decision support to key customers and partners.

This marks the 5th time a student who participated in the Baltimore/Washington WFO Summer Student Volunteer program has received recognition from the NWA. The Baltimore/Washington WFO Student Volunteer Program is focused on students conducting local research to benefit our operations. The NWA began giving out awards to Student presentations in 2005.



Chris Birchfield with his award winning poster on October 15, 2013.

New Employees at LWX



Three Meteorological Interns recently started at Baltimore/Washington WFO! Carl Barnes (left) comes to us from the NWS Pacific Region Headquarters in Honolulu. Amy Bettwy (center) is from the WFO in Sioux Falls, SD. Dan Hofmann (right) hails from the New York City WFO in Upton, NY.

SKYWARN Amateur Radio Recognition

*By, Chris Strong,
Warning Coordination Meteorologist*

When a piece of weather information crackled across short wave radio in Anne Arundel County, Kurt Fritch – call sign WA3TOY - was likely receiving it. His leadership in developing and expanding the Anne Arundel County Maryland subnet for Skywarn amateur radio was instrumental in getting information into and out of the amateur radio operators in Annapolis and the surrounding area. That information included such things as when and where damaging winds, hail, snow, or flooding was impacting the county. Such information could then be turned around and included in NWS warnings and reports to alert neighbors as to what was happening in their community. During his years as subnet coordinator in Anne Arundel County, he built it up to be one of the premiere Skywarn subnets in the entire region. For his dedicated work to the Skywarn program supporting the National Weather Service, Kurt was presented with the Public Service Award by the National Weather Service - Baltimore/Washington. Thank you for your many years of service Kurt!



Dept. of Commerce Public Service Award winner
Kurt Fritch (right) with LWX WCM Chris Strong.

2013 Severe Weather Season

By, Greg Schoor,
General Forecaster

After consecutive summers with record-breaking temperatures and hundreds of severe weather warnings, this year has been cooler and much quieter in terms of severe weather. Let's compare the number of severe weather warnings issued (Severe Thunderstorm - SVR, Tornado - TOR, and Flash Flood - FFW) through the end of August over the past three years. Normally, a handful of key events throughout the year are responsible for a good portion of these numbers – like the tornado outbreak of April 27-28, 2011 and the derecho of June 29-30, 2012 (<http://www.erh.noaa.gov/lwx/events/>).

Number of Severe Weather Warnings Issued (SVR, TOR, FFW)

Warning Type (no. warnings issued thru Aug. 31 each year)	2011	2012	2013
Severe Thunderstorm	412	308	185
Tornado	80	35	20
Flash Flood	122	62	78

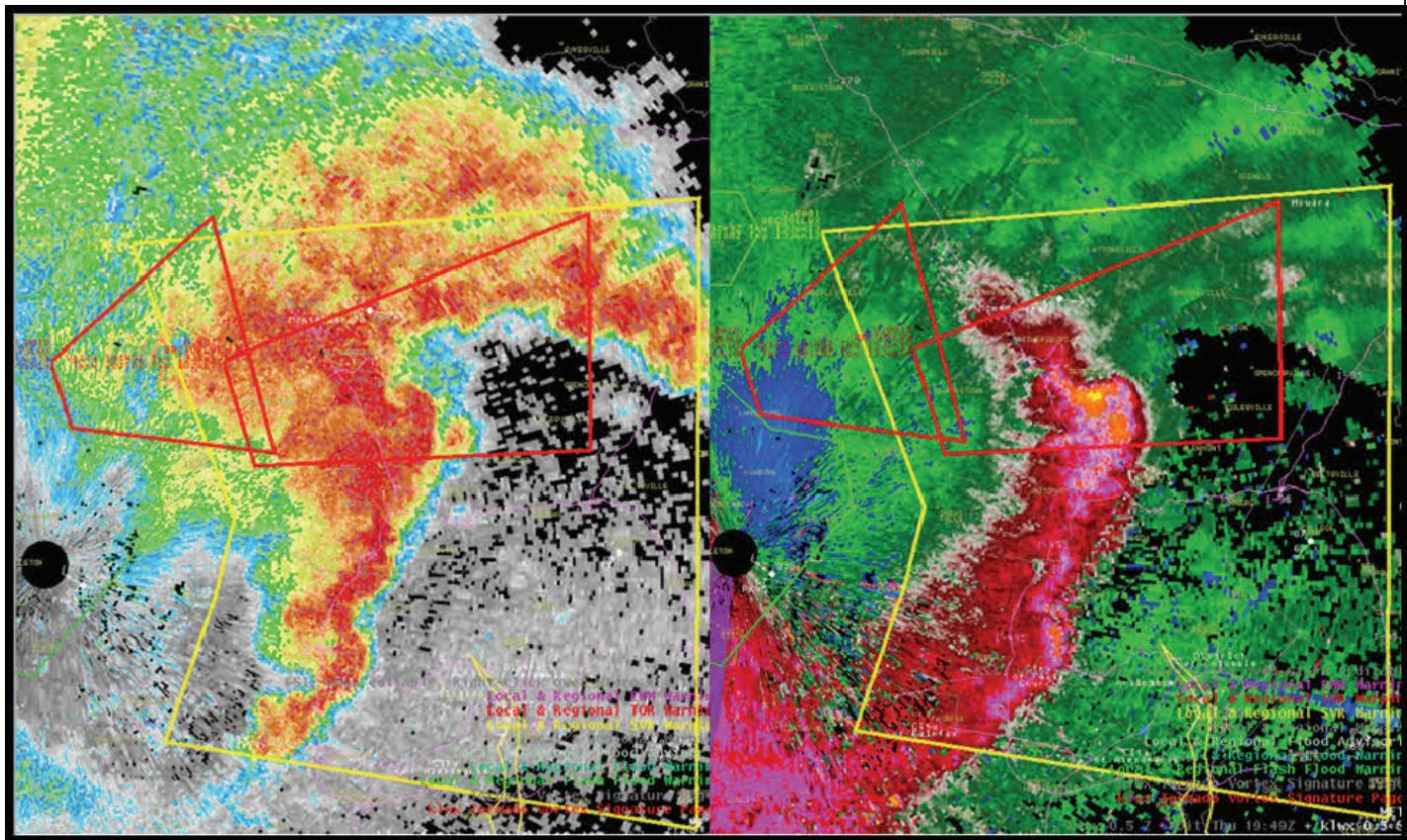
Though the marquee events for this year's severe weather season pale in comparison to larger events of the past couple of years, the two busiest severe weather days in mid-June. Ten tornadoes touched down between these two days, four on June 10th and six on June 13th, including a pair of long track tornadoes on the 13th. Fortunately, all of these were EF-0 tornadoes.



Above Images: Numerous flood and flash flooding reports covered the area on June 10th, along with the four brief EF0 tornadoes across portions of Northeastern Maryland (left). Three days later, on June 13th (right) six more tornadoes and damaging wind reports came from severe storms that swept across the region. The image does not include the track of the EF0 "Broomes Island, MD" track.

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2013 Severe Weather Summary (*continued*)



Side-by-side display of 0.5° reflectivity and storm-relative velocity (storm motion accounted for) at 3:49pm from KLWX (Sterling 88D Radar) on June 13th, with the warning polygons overlaid, showing a severe storm over portions of Montgomery Co. MD and Fairfax Co. VA. Notice the red-orange “hook” on the leading edge of the squall line in the middle of the left image which is coincident with the small bright yellow splotch on the right image, indicating winds in the 60-70 mph range. This storm produced a long track (21 mile) EF0 tornado.

An extended cool season kept the weather relatively quiet during March and April, which are normally fairly active across our region. By the end of April, only 13 Severe Thunderstorm Warnings had been issued between the two months, 10 of them coming on one day (April 19th) and one tornado warning. A week into the month of May however, the activity level shot up, with severe warnings being issued on 11 of the remaining 25 days. Around half of the days in both June and July saw at least one severe weather warning being issued. A handful of these days had only Flash Flood Warnings and only 4 days from both months had Tornado Warnings.

Naturally, warning issuances don’t tell the whole story. Some days saw only a handful of strong and briefly severe thunderstorms developing off the ridgelines and higher terrain of the Blue Ridge and Central Appalachians. The rest of the county warning area did receive its share of severe weather however, with several severe events affecting rolling hills of the Shenandoah Valley, the Northern Virginia Piedmont, Eastern Maryland, and the metropolitan areas of Washington D.C. and Baltimore. There were well over 500 individual reports of severe wind damage (from winds 58 mph or greater) or large hail (one -inch in diameter or greater) from this activity, not including a couple hundred additional reports of flooding, funnel clouds, and sub-severe hail.

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2013 Severe Weather Summary (*continued*)

In sharp contrast to the derecho that swept across the area late June 29 into June 30, 2012, many of the severe thunderstorms over the course of the current calendar year have been more localized and isolated. Even without severe conditions, like large hail and damaging winds, the widespread activity from these few larger severe weather events gave the area a surplus of rainfall. By mid-summer, most area climate and observation sites were running at least a couple of inches of rainfall above normal. However, a mainly dry spell since then has put annual rainfall a couple inches below normal as we head into fall.

LWX Tornadoes of 2013 (through mid October)

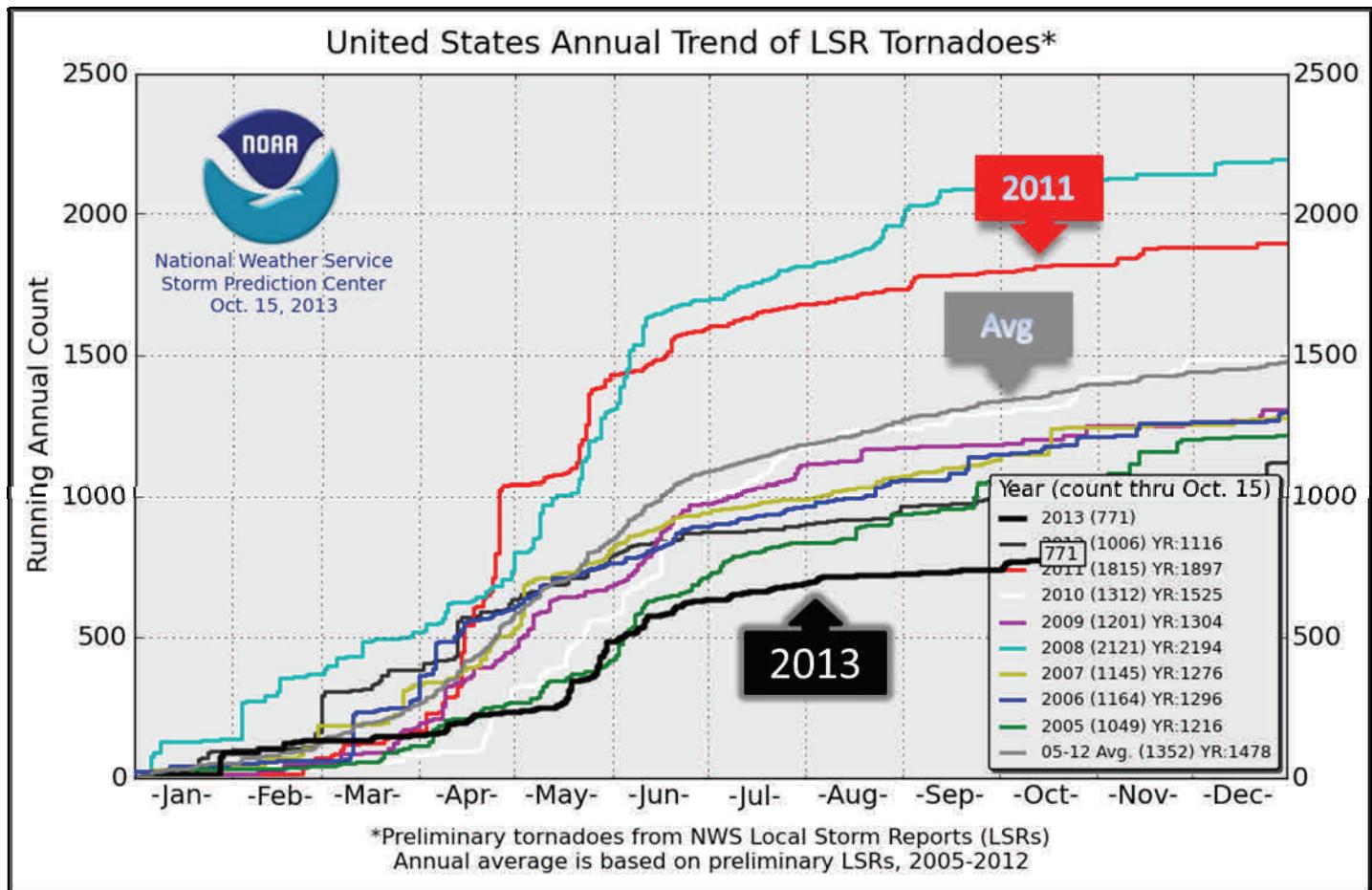
Date (2013)	Location	EF-Rating	Est. Max Wind Speed (mph)	Path Length (mi)	Max Path Width (yd)
April 19	Fredericksburg, VA	EF1	90	0.75	150
	Largo, MD	EF0	85	0.50	75
June 10	Fork, MD	EF0	80	0.50	100
	Baltimore, MD (Locust Pt.)	EF0	80	0.20	75
	Coltons Point, MD	EF0	65	0.25	50
	Woodbine, MD	EF0	80	0.50	100
June 13	rural Spotsylvania Co., VA	EF0	70	6.90	50
	Thornburg, VA	EF0	80	2.50	75
	rural King George Co., VA	EF0	70	7.10	50
	Oakley to California, MD	EF0	75	13.80	200
	North Potomac to Burtonsville, MD	EF0	75	21.00	150
	Broomes Island, MD	EF0	70	1.80	75
July 1	near Clinton, MD	EF0	65	2.30	75
July 23	near Darlington, MD	EF0	80	1.80	100
August 13	Harford Furnace, MD	EF0	70	1.00	75

Most notable in this list of surveyed tornado reports are the multitude of EF0 ratings and the majority of occurrences in Maryland. The longer tracks associated with most of the June 13th tornadoes indicate how different of an atmospheric environment was in place that day compared to the rest of the summer. Most of tornadoes in this region (not only on this list) each year are on the low-end of the Enhanced Fujita Tornado Intensity Scale (EF) and last only a few brief minutes, sometimes only a minute or two.

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2013 Severe Weather Summary (continued)

A majority of all tornadoes nationwide are of the weaker and short-lived variety. In fact, less than one percent of tornadoes are of the “violent” variety, EF4 & 5, and only 0.1% of all tornadoes (since 1950) are EF5 rated. Though the current year is marked by the powerful and devastating EF5 tornadoes of late May in Central Oklahoma, the number of confirmed tornadoes nationwide is down compared to the yearly average (see graphic below). Through October 15, 2013, only 771 tornadoes have been reported, the fewest by far since at least 2005.



Source: The Storm Prediction Center (SPC) WCM Page (<http://www.spc.noaa.gov/wcm/#tograph>)

Though two and a half months are left in this year, the vast majority of the severe weather season for the Mid-Atlantic is over. The greatest risk to fall weather around here is tropical activity. After an early June passage of the remnants of Tropical Storm Andrea, tropical activity has been fairly quiet for the Mid-Atlantic. An exception is when moisture from the remnants of Tropical Storm Karen aided flooding in the central Mid-Atlantic during the second week of October.



Spring Media Workshop

*By, Greg Schoor,
General Forecaster*

The proximity of national centers and divisions of the National Weather Service within our region, including our national headquarters, has its benefits - especially when one of them moves into a new building. For the first time, NWS Sterling held its most recent broadcast media weather workshop at the home of NOAA's Weather Prediction Center (WPC, formerly HPC). The new facility is NOAA's Center for Weather and Climate Prediction (NCWCP) in College Park, MD (pictured right). On March 29, 2013, the NCWCP played host to the LWX spring broadcast media workshop. Normally, the biannual gathering is hosted at our office, in Sterling, VA. But with the new state-of-the-art NOAA facility recently completed, we wanted to give our broadcasters a look at the new building.



Around twenty members of the local television, print, and internet media in the field of meteorology from across the County Warning Area attended the workshop at NCWCP, along with members of the NWS Sterling staff. The event kicked off with welcome presentations from Jim Lee, MIC of NWS Sterling and Allan Darling, NCEP Executive Officer. After an overview of the relationship between the forecast office and WPC, the group was then led on a tour of the new facility and some of

the operations areas by Allan Darling. Members of the local media and some long-time WPC forecasters met for the first time, recognizing years of forecasting collaboration.

The Mid-Atlantic region is no stranger to extreme weather events, especially with several occurring in recent years. A couple of the more memorable events happened in recent years and are still fresh on the minds of both area residents and those tasked with getting the alert out before they arrived. The first is the derecho of June 29 into 30, 2012 which made such an impact on the area that it has become a marker by which severe weather events are measured in this region. The unprecedented nature and impact of hurricane, turned post-tropical system Sandy in late October 2012 was quite remarkable for its wide ranging impacts from wind, coastal flooding, rainfall, and even blizzard conditions in the Appalachians. Both events were important lessons in preparation for high-impact weather.



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Spring Media Workshop (*continued*)



Louis Uccellini, NWS Director, giving an update on the Weather-Ready Nation (WRN) initiative.

(QLCS), which often produce most of the area's tornado in a given year. An extensive review of the June 29, 2012 derecho that swept across the region in the middle of an already devastating heat wave was presented next. The derecho presentation initiated a lengthy and productive dialogue with media members about how to present such large-scale and immediate impact events to warn the maximum amount of people in an effective amount of time. Attendees also learned about Wireless Emergency Alerts: (<http://www.nws.noaa.gov/com/weatherreadynation/wea.html>), a new, free public service through a partnership with the NWS, FEMA, the FCC, and the wireless companies, to send specific life-threatening warnings to smart phones.

We look forward to our future gatherings with our media partners to provide the best possible collaboration and weather information for the central Mid-Atlantic region.

Events like the derecho and Sandy are driving the conversation about the need for separation between typical severe weather events and extreme and highly impactful weather events. Collaboration between the National Weather Service and broadcast media is critical to carrying out our mission to protect life and property, especially as societal needs continue to evolve in this modern world.

The other topics of the workshop included preparation for the spring and summertime weather threats, a brief review of the previous winter season, and some updates to the technology side of warning dissemination. A presentation was made on tornado formation from quasi-linear convective systems



LWX Staff and media partners at the March 2013 severe weather workshop in College Park, MD

STEM Career Fair at Dulles Town Center

**By, Steve Zubrick,
Science and Operations Officer**

WFO Baltimore/Washington meteorologists Steve Zubrick (SOO) and Bryan Jackson (General Forecaster) participated in the “*Change the World*” Science and Engineering Careers Fair September 27 and 28, 2013. The fair, held at nearby Dulles Town Center Mall, was cosponsored by Congressman Frank Wolf (R-VA 10th District) and the National Science Foundation (NSF). Over 100 scientists and engineers provided interactive demonstrations highlighting work in their fields. The fair targeted middle and high school students, but many mall patrons also benefitted from the demonstrations.



Bryan Jackson mans the hail simulation demonstration



Steve Zubrick holds the balloon

We provided several demonstrations on the role of science in NWS weather forecast and warning operations, including exhibits on tornadoes, the 2012 derecho, and hailstones. Most popular were demos of simulated upper air “launches” using an NWS weather balloon/ radiosonde and simulating hail in an updraft. The balloon and sonde were tethered to a 40 foot string to allow for repeated “releases”. We discussed the science and importance of data obtained from upper air atmospheric soundings. Then students were given a hands-on opportunity to hold the radiosonde and tethered balloon, and perform a balloon release indoors! A hair dryer and ping pong ball makes for a good visual of how hail cycles through thunderstorms. Nearly 500 people visited the NWS booth during the two-day fair. Congressman Frank Wolf (VA-10) and NSF Acting Director Dr. Cora Marrett, also stopped by the booth on Friday to chat and see first-hand our science demonstrations.



A student simulates hail



Rep. Frank Wolf visits the booth



A student releases a radiosonde

WEATHER READY NATION CORNER

Summer Decision Support Services

*By, Kyle Struckmann and Steve Goldstein,
Emergency Response Meteorologists*

Once again, the summer of 2013 was busy with major events in the region, attracting millions of people. Given the potential high impact of hazardous weather on these events, emergency managers often turn to the National Weather Service for event-specific forecasting support.

When needed, the National Weather Service deploys its staff of Emergency Response Meteorologists to emergency operations centers to give decision-makers important updates about potential weather impacts at these events. Whether the concern is thunderstorms, excessive heat, or other issues that impact decisions, a meteorology specialist is on site to help. Here are some recent events for which the NWS provided decision support:

Baltimore Grand Prix:

For the last few years, the Grand Prix of Baltimore has proven to be a huge boost to the city's tourism industry over the Labor Day weekend. Drawing up to 150,000 people over a three day period, the event has generated economic benefits to downtown hotels, shops and restaurants.

The event is highly dependent on good weather. Races cannot be allowed to continue if it rains hard enough for water to pond on the track. Additionally, there is a requirement to evacuate the grandstand if lightning is observed within 15 miles of downtown. Extreme late summer heat can also strain everyone involved in setting up for, maintaining and closing down after each day's events.

Because weather is so critical to the event's success, the National Weather Service in Sterling, VA was called upon to provide an emergency response meteorologist to support city emergency management. Meteorologist Steve Goldstein was integrated into the city's emergency operations center (EOC) in the convention center during the days of the event. Weather forecasts and outlooks were presented to the incident management team (IMT) every three hours. Current conditions were watched closely for the development of any afternoon thunderstorms with support from the forecast office in Sterling. The



Steve Goldstein provides weather support for the EOC at the Grand Prix of Baltimore.

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WEATHER READY NATION CORNER

Summer Decision Support Services *(continued)*

most critical time for weather support was during the main, nationally televised race. This took place Sunday 9/1 between 2:30 and 4:45 p.m. There was a 50% chance of thunderstorms in the forecast that day, but fortunately these held off until the completion of the race. An afternoon heat index near 100 degrees resulted in a few heat related illnesses, but in general the weather ended up being very cooperative through the event. Several weather briefings were attended by the mayor of Baltimore. Maryland Governor O'Malley visited the EOC on Saturday as well. Onsite support from the National Weather Service contributed to an informed and prepared IMT and a very successful event for the city of Baltimore.

March on Washington:

Emergency response support was provided to the U.S. Park police multi-agency coordination center (MACC) for the 50th anniversary celebration of Dr. Martin Luther King's historic march on Washington DC in 1963. This event was attended by more than 150,000 people during the two days of celebration and dedication. The 'National Action to Realize the Dream March' was conducted on August 24th

and concluded at the foot of the Lincoln Memorial. This day featured several distinguished speakers, activists, and organizers. Then on August 28th, the 'Let Freedom Ring Ceremony' was conducted. This ceremony was attended by many VIPs, including President Obama, Vice President Biden, and former President Carter.

The U.S. Park Police initiated a unified command through their MACC to be the primary information gathering point for both of these events. Both events were dependent on the weather for their successful completion. August 24th was a clear day with no threat of thunderstorms and seasonal temperatures in the 80s. As such it was not necessary to deploy an emergency response meteorologist on-site. However, specific weather forecasts for the National Mall were assembled at the forecast office in Sterling. These were electronically distributed to FEMA, DC Homeland security, and the U.S. Park Police among others.



An example of emergency response services. This is Kyle Struckmann providing decision support for a wildfire.

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WEATHER READY NATION CORNER

Summer Decision Support Services *(continued)*

It appeared the festivities on August 28th would not make out as lucky. The day donned much warmer with a 40 percent chance of showers and thunderstorms. Because of this, emergency response meteorologist Steve Goldstein was deployed to the MACC. The meteorologist gave an initial forecast briefing to the MACC at 10 AM and every two hours thereafter. From a security and preparedness standpoint, the critical event times were from 1 PM to 4 PM. During this time, the President, former President, and Vice President would all be delivering keynote speeches. Leaders from other nations also attended the ceremony. Additionally, many vendors had stands set up in the area and security and police were busy with crowd control.

Very warm and humid conditions began to cause cases of heat exhaustion in the crowd as 1 PM approached. Fortunately, light rain made conditions more bearable. As the afternoon progressed, the skies cleared, and it became evident the threat of thunderstorms would hold off until the completion of the ceremony. The meteorologist remained at the MACC well into the evening to provide weather updates for everyone involved in cleanup efforts.

National Mall 4th of July Fireworks:

Emergency Response Meteorologists Kyle Struckmann and Steve Goldstein deployed to the US Park Police Headquarters Multi-Area Command Center on July 4. Usually the two main weather concerns are heat, and the potential for thunderstorms to delay or cancel the fireworks. This year's weather cooperated quite well, with dry conditions and a high of 89 degrees. Struckmann and Goldstein provided hourly weather updates to decision makers in charge of many federal, state and local departments, including police, public safety, transportation and health agencies.

Numerous local city and county emergency managers were supported during events in the spring and summer of 2013. Some examples of these events include:

- The Preakness Stakes, Baltimore, May 18
- The Marine Corps Historic Half Marathon in Fredericksburg, May 19
- Fauquier County Fair, July 18-21
- Aquapalooza (King George County), July 20





Shot of the Year: Panorama of a roll cloud crossing the forecast office in Sterling, VA around 7:30 a.m. on September 16. This image was posted on our Facebook page and quickly went viral.

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. These classes will be posted soon! Please use the “SKYWARN” link from our homepage for more info:

weather.gov/washington OR weather.gov/baltimore

National Weather Service
Baltimore MD/Washington DC
43858 Weather Service Road
Sterling, VA 20166
703.996.2200
Spring & Summer 2013

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