

# Sterling Reporter

Volume 10, Issue 3

National Weather Service Baltimore MD/Washington DC Forecast Office

Summer 2011



## MIC's Corner

By, James E. Lee  
Meteorologist in Charge

The National Weather Service Baltimore/Washington Forecast Office is responsible for providing life-saving hazardous weather warnings and forecasts twenty four hours a day, seven days a week. In this edition of the *Sterling Reporter*, I would like to share another important aspect of our job with you.

Our WFO's unique proximity to the Nation's Capitol provides us with the opportunity to host many visitors. Visitors include congressional staff, personnel from other government agencies, NOAA and NWS VIPs, and international scientists and dignitaries. The international scientists have a keen interest in the National Weather Service, which is renowned for being the best meteorological service in the world.

Typically, these international guests are visiting Washington DC and meeting with other federal agencies, elected officials or their embassies. The U.S. Department of State will contact the U.S. Department of Commerce, who will contact the International Activities Office of National Weather Service Headquarters. This is how the Baltimore/Washington WFO usually winds up on the international guest's itinerary.

This summer we've had a flurry of international visitors. Our office has hosted tours for the China Meteorological Organization, the World Bank, the Ministry of Emergencies of the Ukraine, and the Korean Meteorological Administration. International tours can be challenging at times, because many of the visitors do not speak or understand English and need the services of a translator.

Other visitors this summer have included Dr. Kathryn Sullivan, the assistant secretary of commerce for environmental observation and prediction and NOAA Deputy

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## Lightning Safety

By, Christopher Strong, Warning Coordination Meteorologist

Nothing is as common around our region as the summertime thunderstorm. They bring us needed rainfall to keep things growing in the heat of summer, and bring vivid lightning displays that can rival the 4<sup>th</sup> of July. However, lightning is a common summertime danger that all of us encounter regularly, but often underestimate.

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## Lightning Safety *(continued)*

Just in the past 2 years:

- In northern Virginia, a boy was killed playing in a ball field after his game had been called off due to an approaching thunderstorm.
- In suburban Maryland, a man was killed outdoors at a community park celebration.
- On the Chesapeake Bay, a man was killed while jet skiing trying to come to shore during a fast moving storm.
- This past June, a man was struck while fishing at a park in Central Maryland.
- This August, two individuals were seriously injured by a lightning strike in Arlington, VA

For every lightning fatality, there are likely at least 10 injuries from this common, yet preventable, summertime occurrence. In a typical year in the United States, 55 people are killed by lightning. In addition, hundreds of people are permanently injured each year. People struck by lightning suffer from a variety of long-term, debilitating symptoms, including memory loss, attention deficits, sleep disorders, chronic pain, numbness, dizziness, stiffness in joints, irritability, fatigue, weakness, muscle spasms, depression, and more.

Here's what you need to know about how to best protect yourself from lightning. If you hear thunder, lightning is close enough to strike you. Typically, the first lightning strikes are furthest from the core of the storm. These strikes are the killers because people think they can get 1 or 2 last things done before they go inside. So, when you hear thunder, immediately move to safe shelter – either an enclosed building or an enclosed vehicle. A great slogan to remember is – “When thunder roars, go indoors!” After the storm, stay in shelter until at least 30 minutes after you hear the last clap of thunder.

Nearly all of the people killed by lightning are outside; so seeking shelter indoors will go a long way in keeping you safe. However, part of the lightning's mammoth electrical charge can be channeled into your home through anything that conducts electricity. This includes your home's plumbing and water, electrical wiring, and corded telephones. While most people that are struck indoors are only injured, rather than killed by a direct strike outdoors, you can still do a few things to keep you and family safe while indoors. Especially during periods of frequent lightning strikes, it is a good idea to stay off corded phones, computers and other electrical equipment that put you in direct contact with electricity. Also, avoid plumbing, including sinks, baths/showers, and faucets. Lastly, do not lie on concrete floors, and do not lean against concrete walls.

Of course using good surge protectors to keep your valuable electronic equipment safer is always a good idea. These protect your property from a power surge carried through your homes wiring from a nearby lightning strike. Surge protectors can only go so far however. Sometimes, if the bolt is close enough, just the electromagnetic surge that is carried through the air can do damage to sensitive electrical circuits and equipment.

So, next time you hear an approaching thunderstorm, remember – **When thunder roars, go indoors!** Keep you and your family safe from this common, yet extraordinarily powerful summertime danger.

For some internet fun, try doing an internet search on YouTube (or a similar site) for “Lightning Strike”. There are some videos out there that really can show you the power of nature's lightshow. Also, check out <http://www.lightningsafety.noaa.gov> for some good survivor stories and more fun facts.



## Weather Day at Camden Yards

*By, Gregory Schoor,  
General Forecaster*

Is there a better way to kick off summer than a major league baseball game and a lesson in meteorology? Over 8,000 enthusiastic kids, parents, and teachers from Baltimore area schools were invited to the 4th annual Weather/Field Trip Day on May 26, 2011 at Camden Yards in Baltimore. The event was hosted by the First Warning Weather Team (Bob Turk, Bernadette Woods, and Tim Williams) from Baltimore TV station WJZ-13, along with the Mid-Atlantic Sports Network (MASN) and the Baltimore Orioles organization.

Before the game between the Baltimore Orioles and the Kansas City Royals, area students were treated to a series of presentations about the weather. The event kicked off with a message from long-time WJZ weather-caster Marty Bass. Bass appeared on the Jumbotron, imparting fun and meaningful weather safety lessons to the crowd by showing videos about tropical weather, thunderstorms, winter weather, and flooding. As part of the presentation, Chris Strong, Warning Coordination Meteorologist at the Baltimore-Washington National Weather Service office, was invited to launch a weather balloon and radiosonde and discuss how meteorologists use them to assess the upper atmosphere.

“We launch these balloons from our office and offices across the nation twice a day. They collect temperature, humidity, pressure, and wind information as they float to around 100,000ft above the ground”, Strong explained. “All of that data goes directly into our computer forecast simulations and helps us provide accurate forecasts and warnings to everyone.”

Weather safety was a critical element to the message of the day. The WJZ Weather Team led kids in chants of the NWS slogans, “Turn Around, Don’t Drown!” and “When Thunder Roars, Go Indoors!”



**Chris Strong (left) & Bob Turk (right)**

## Think Pink!

*By, Brandon Peloquin,  
Senior Forecaster*



**From Left to Right: Heather Sheffield, Brandon Peloquin, Bryan Jackson, Jim Lee, Chris Strong & Shannon Strong**

On Saturday, June 4, the Komen Global Race for the Cure was held in downtown Washington D.C. With high pressure overhead, it was a perfect day for runners and walkers to participate in the 5km event to promote breast cancer awareness.

Like every year, Sterling had a contingent of several people who were part of the larger NOAA Running with the Currents Team. I walked the 5km with others from NOAA while the rest of those from Sterling ran the race. They included: Meteorologist-In-Charge Jim Lee, Warning Coordination Meteorologist Chris Strong and his wife Shannon, Forecaster Bryan Jackson and Meteorologist Intern Heather Sheffield. After the race, Forecaster Greg Schoor and his wife Tanya also joined in the after-race activities on the National Mall.

I have been a part of Running with the Currents at the Race for the Cure since 2005. Year after year, that one day in early June is a day filled with optimism, hope and emotion – and of course lots of pink as a symbol of breast cancer awareness.

I can't wait until June 2, 2012 – the date of the next Race. I may even have to succumb to the peer pressure of running instead of walking. The training must start now!



## Active Spring for Mid Atlantic Flooding

*By, Jason Elliott,  
Senior Service Hydrologist*

In the last issue of the *Sterling Reporter*, we discussed the back-to-back heavy rain and flooding events in March. Although flood events can happen during any month of the year, widespread river flood events most often occur between January and May, and flash flood events are most likely between May and September. April and May featured multiple rounds of both.

Though there were several isolated river flood events in both April and May, two were particularly widespread and notable – April 17<sup>th</sup> through 19<sup>th</sup>, and May 18<sup>th</sup> through 20<sup>th</sup>. The April event was caused by a large-scale storm system that produced widespread one to three inch rainfall totals, with enhanced totals over five inches due to upslope flow along the Blue Ridge Mountains. The heaviest totals were in the Monocacy River basin in Frederick County, Maryland. Not coincidentally, the Monocacy River was the only location to reach major flood, topping out at 20.61 feet, more than five feet above flood stage. Floodwaters from the Monocacy entered Gambrill Mill on the Monocacy National Battlefield, the first time water levels have reached that structure since 2003.

Moderate flooding occurred on the South Fork Shenandoah River and its headwater tributaries. This began on the 17<sup>th</sup> with the heavy rain along the Blue Ridge, which ran off from Rockfish Gap east of Waynesboro,



**Floodwaters from the Shenandoah River cover portions of Harpers Ferry National Historical Park on April 17<sup>th</sup>, 2011**



**Water overtopped this bridge on Criser Road in Front Royal. The bridge was closed for nearly a week while repairs were made**

down toward the city. Ultimately, water overflowed a culvert on Rockfish Run, sweeping away a family of three who were trying to cross the creek at that time. Although one member of the family was rescued, two of the three could not be reached and were casualties of the floodwaters. The entire eastern Shenandoah Valley was affected over the next two days, all the way down to Harpers Ferry, where much of the Shenandoah River riverfront was covered by water.

On top of the river flooding, significant flash flooding occurred in the area of heaviest rain near the Blue Ridge. This included numerous reports of water rescues and roads washed out near Thurmont and Emmitsburg in Frederick County, Maryland; and several reports of landslides and bridges overtopped by water in Warren and Clarke Counties in Virginia.

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## Spring Flooding *(continued)*

Staff at the Monocacy National Battlefield caught a flash flood on camera just a week and a half later, on the morning of April 28<sup>th</sup>. Heavy rain up to three inches fell in the immediate vicinity of the battlefield, leading to a short-lived flash flood of the area near Gambrill Mill. Though no park structures were significantly damaged, water covered access roads, such as the one pictured on the right.



The entry lane to Gambrill Mill and Urbana Pike beyond (MD Route 355) are inundated by flood waters. Route 355 was closed to traffic during the busy morning commute until waters receded (facing southwest). Photo courtesy National Park Service.

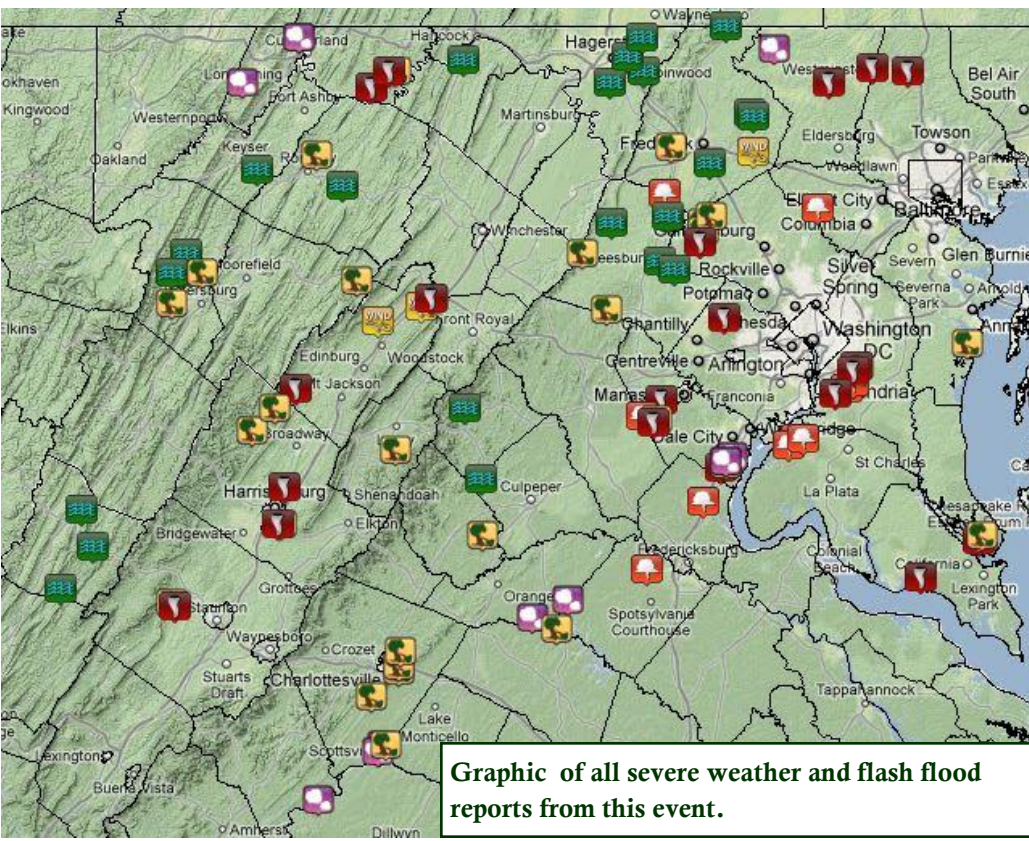
A much drier weather pattern took shape in early May, and it appeared for the first couple weeks of the month that the wet spring-time period might be coming to an end. In the metro areas, that was the case, but farther west, another round of heavy rain impacted the Shenandoah Valley and Potomac Highlands in mid-May. Many spots west of Washington DC received more than two inches of rain in one day, and at least some rain was observed in parts of the area every day for a week.

This combination led to flooding that was of nearly the same intensity as the mid-April event, though in slightly different locations. For example, there was no flooding at all on the Monocacy in May, but more of the upper Potomac was affected in May than in April.

As you can see, 2011 was a very active spring for flooding in the mid-Atlantic region. Conditions have been much quieter since mid-May, but we will continue to closely watch for summertime convection which may cause flash flooding.

## April 27th-28th Tornado Outbreak

*By, Stephen Konarik,  
General Forecaster*



Graphic of all severe weather and flash flood reports from this event.

During late April 2011, an historic tornado outbreak impacted a large section of the southern and eastern United States. Late on the 27<sup>th</sup> and continuing into the late morning of the 28<sup>th</sup>, the storm system responsible for the deadly tornadoes across the South moved through the mid-Atlantic region. This storm system helped create intense wind shear (winds changing direction and speed with height) over the Mid-Atlantic. This wind shear, when combined with moderate instability over the region, allowed tornadoes to rapidly form. In addition large hail, damaging winds, and flash flooding occurred. The storm system pro-

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# Tornadoes *(continued)*



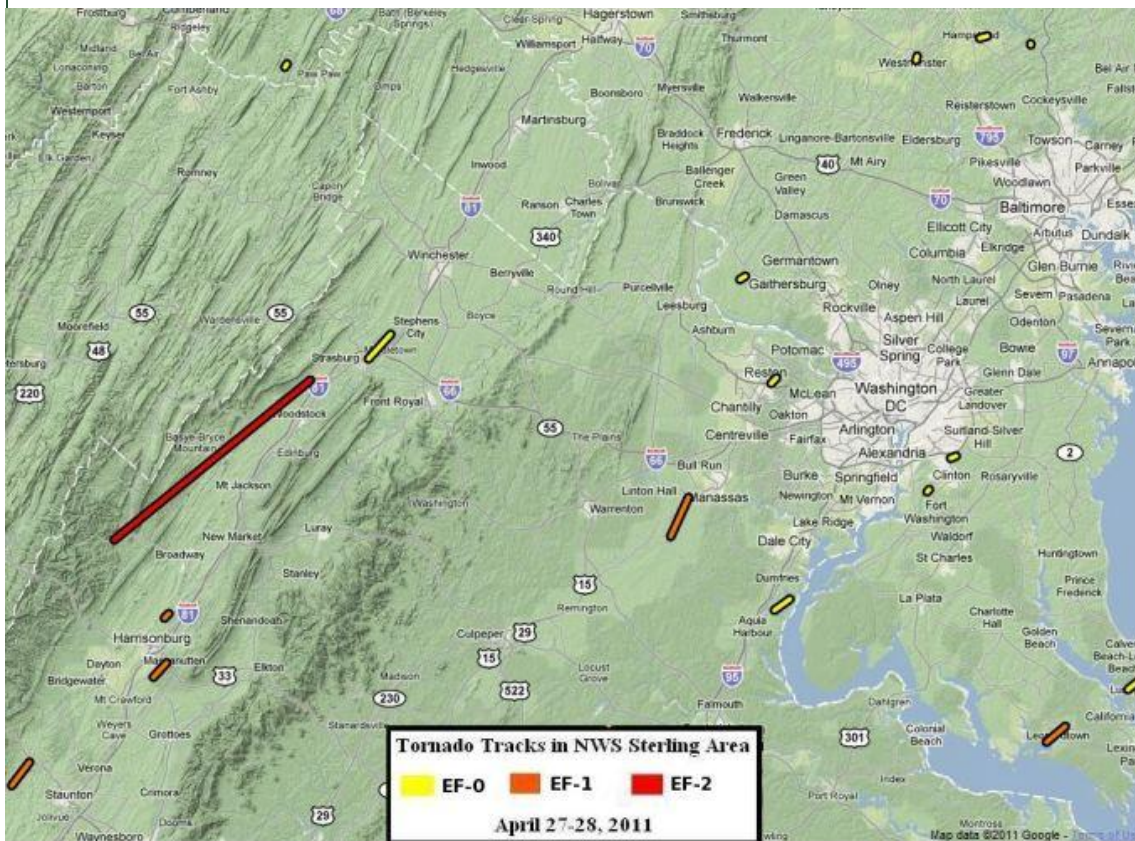
**Shenandoah County Damage to a Poultry House**

ings. This ranks second in total number of tornado warnings compared to the 43 tornado warnings issued by WFO Sterling during the roughly six hour period on September 17, 2004 as the remnants of Tropical Storm Ivan moved through the Mid-Atlantic. During the April 27-28, 2011 outbreak, for the 19 tornadoes that occurred in the WFO Sterling region, the average lead time was over 11 minutes. The first tornado of the event touched down shortly after 6:15pm on the evening of the 27<sup>th</sup>, as noted by the weather observer at Quantico Marine Corps Base (NYG). This tornado, rated an EF-0, lofted debris (likely trees) into the air but did no other damage. The particular thunderstorm cell responsible for this tornado tracked northeast across the Potomac River into Maryland, where

duced 19 tornadoes in the Washington-Baltimore WFO county warning area alone, mainly across northern portions of Virginia and Maryland. This was by far the most tornadoes ever recorded for a two day period in April. It took over two weeks to survey areas suspected of having tornado damage. For this event, there were a total of 13 tornadoes rated EF-0, 5 rated EF-1 and one rated EF-2. The image below (image 1&2) shows a list of all severe weather and flash flood reports from this event.

During a near 20 hour period from the late afternoon on the 27<sup>th</sup> through about noon on the 28<sup>th</sup>, WFO Sterling issued 38 tornado warn-

**St. Mary's County Damage**



it spawned three more EF-0 tornadoes, one of which struck portions of Andrews Air Force Base in Prince Georges County.

The most intense and longest track tornado observed in the Mid-Atlantic region was an EF-2 tornado that tracked over 33 miles across Rockingham and Shenandoah Counties in Virginia's Shenandoah Valley between 2am and 3am on the morning of the 28<sup>th</sup>. This tornado was responsible for 2 minor injuries, which fortunately were the only two reported in WFO Sterling's CWA during the entire event. With peak winds estimated at 130 mph and a width of 400 yards, this EF-2 torna-

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## Tornadoes *(continued)*

do was on the ground for over 20 minutes from its initial touchdown near Fulks Run, VA before it dissipated over St. Luke, VA. Damage included destruction of a mobile home, a poultry facility (see photo previous page), and numerous sheds in a swath from Orkney Springs to Basye to Bryce Resort. In addition, numerous roofs were taken off and hundreds of trees uprooted.

A total of 5 EF-1 rated tornadoes, with wind speeds of 90 to 100 mph, impacted the area. These were responsible for damage to dozens of houses as other structures as well as the uprooting of countless large trees. (see photo previous page) The final tornado, one of the 12 EF-0 tornados of the event, tracked nearly 2 miles through the community of Lusby, MD shortly before noon on the 28<sup>th</sup> of April. It, too, uprooted a number of trees with its estimated 70 mph winds.

## Tornado Specifics

Location	Start/ End Time	Event Type	Path Length	Path Width
<b>Stafford County</b> Southeast of Triangle	Apr. 27 6:15 pm-6:22 pm	EF-0 Tornado 65 mph	2.0 mi	Unknown
<b>Prince George's County</b> 1 SE Friendly	Apr. 27 7:06 pm-7:07 pm	EF-0 Tornado 70 mph	0.4 mi	75 yds
<b>Prince George's County</b> 1 N Clinton	Apr. 27 7:12 pm-7:13 pm	EF-0 Tornado 70 mph	0.2 mi	50 yds
<b>Prince George's County</b> Andrews AFB and Camp Springs	Apr. 27 7:16 pm-7:17 pm	EF-0 Tornado 70 mph	0.8 mi	100 yds
<b>Prince William County</b> Nokesville and Bristow	Apr. 27 10:46 pm-11:01 pm	EF-1 Tornado 90 mph	5.8 mi	125 yds
<b>Fairfax County</b> Reston	Apr. 27 11:25 pm-11:28 pm	EF-0 Tornado 80 mph	1.2 mi	75 yds
<b>Allegheny County</b> 2N Town Creek	Apr. 28 1:27 am-1:28 am	EF-0 Tornado 80 mph	0.5 mi	75 yds
<b>Allegheny County</b> 3NW Green Ridge	Apr. 28 1:35 am-1:35 am	EF-0 Tornado 80 mph	0.1 mi	75 yds
<b>Rockingham/Shenandoah County</b> Fulks Run to St. Luke	Apr. 28 2:12 am-2:41 am	EF-2 Tornado 130 mph	33.2 mi	400 yds
<b>Augusta</b> Churchville	Apr. 28 2:17 am-2:23 am	EF-1 Tornado 100 mph	4 mi	150 yds
<b>Rockingham</b> Linville	Apr. 28 3:01 am-3:02 am	EF-1 Tornado 90 mph	0.9 mi	50 yds
<b>Shenandoah/Frederick Counties</b> NE of Strasburg to just N of Middletown	Apr. 28 3:45 am-3:49 am	EF-0 Tornado 70 mph	4.3 mi	175 yds
<b>Rockingham County</b> Keezletown	Apr. 28 3:55 am-3:58 am	EF-1 Tornado 90 mph	2.7 mi	150 yds
<b>Montgomery County</b> North of Poolesville	Apr. 28 6:45 am-6:47 am	EF-0 Tornado 65 mph	0.8 mi	50 yds
<b>Carroll</b> Westminster	Apr. 28 7:37 am-7:38 am	EF-0 Tornado 65 mph	0.6 mi	50 yds
<b>Baltimore</b> 2E Hampstead	Apr. 28 8:09 am-8:11 am	EF-0 Tornado 65 mph	1.1 mi	50 yds
<b>Baltimore</b> 2 WNW Hereford	Apr. 28 9:54 am-9:54 am	EF-0 Tornado 70 mph	0.1 mi	75 yds
<b>St. Marys</b> Breton Bay	Apr. 28 11:25 am-11:29 am	EF-1 Tornado 90 mph	3.3 mi	50 yds
<b>Calvert</b> Lusby	Apr. 28 11:41 am-11:43 am	EF-0 Tornado 70 mph	1.8 mi	50 yds

# NWS Heat Products & the Heat Index

*By, Steven Zubrick,  
Science and Operations Office*

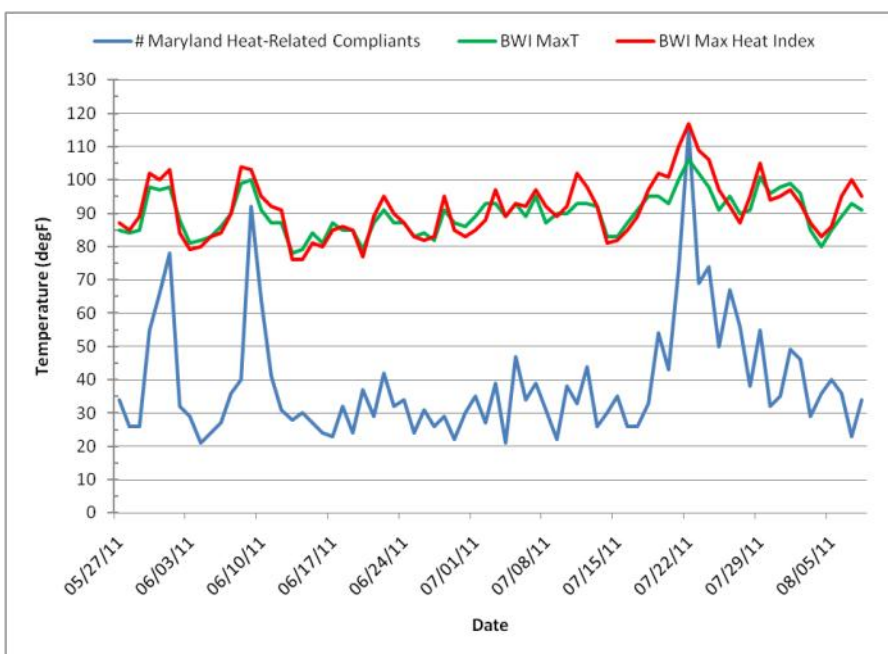
During times of hot weather and high humidity, heat-related illness can affect many people, especially those with pre-existing health conditions, the very young, and the elderly. Local NWS offices can issue several types of heat-related products to prepare and alert the populace.

Issuance by the NWS of various heat-related products is based on a number of factors, but relies heavily on meeting or exceeding certain threshold values of the Heat Index (HI). This index is a measure of the combined effects of heat and humidity, and is given in whole degrees Fahrenheit. Many weather web sites (including ours) offer a weather calculator to compute the HI given input of the air temperature and either relative humidity or the dew point temperature. The HI, sometimes referred to as “apparent temperature, provides an indication of the likelihood of heat-related disorders. Heat Index values above 105°F may cause increasingly severe heat disorders with continued exposure and/or physical activity.

Beyond two days out, NWS forecasters may include mention of high heat and humidity in our Hazardous Weather Outlook. One to two days out, issuance of an “Excessive Heat Watch” is possible. Less than 24 hours out, forecasters can issue either an “Excessive Heat Warning” or a “Heat Advisory”. An “Excessive Heat Warning” indicates a life-threatening situation for people at high risk, and a dangerous day for anyone who overexerts themselves to get heat exhaustion. A “Heat Advisory” is issued when expected HI values are not quite as high, but everyone should take precautions. Local governments, for example, might respond by opening “cooling centers”, adjusting work hours of employees who work outdoors, providing water, and checking on persons most at risk (e.g., the elderly who may be immobile).

For our region, our office uses threshold HI values of 110F or higher for two or more hours as a key factor that could trigger issuance of an “Excessive Heat Warning”. If HI values are forecast to be less than 110F but at least 105F, then a Heat Advisory could be issued. Sometimes, heat-related products are issued for the first really hot spell of a season, when people are not acclimated to the heat. These early issuances could occur before summer begins, e.g., in May, even if HI values are not quite expected to meet our thresholds of 105F and/or 110F.

The figure to the right plots daily high temperature at BWI airport (green line), the maximum Heat Index value (red line) for that day at BWI and the number of heat-related complaints of illness (state-wide) as tracked by the State of Maryland’s Department of Health and Mental Hygiene. The period shown is from Memorial Day 2011 through August 8, 2011. By assuming that the Heat Index measured at BWI airport is representative of conditions elsewhere in the state, the figure shows a good correlation of Heat Index (red line) with heat illness complaints. On the brutally hot and humid day of July 22, 2011, Heat Indices peaked at 115F at BWI, 121F at Washington DC-Reagan National Airport and an amazing 123F in downtown Baltimore at the Maryland Science Center NWS observing station (DMH). The 22<sup>nd</sup> coincided with the summer’s peak number of illness complaints in Maryland of 115.



In highly urbanized areas, such as downtown Washington DC and Baltimore MD, where temperatures run slightly hotter than in adjoining less urbanized areas, heat-related watch, warning and/or advisory products might be issued while adjoining areas (being cooler) have none. Regardless of where one lives, heat-related disorders can occur not only in urbanized areas, but in locations where people cannot avoid the excessive heat and humidity. Any buildings or dwellings lacking air conditioning can quickly bring heat-related disorders to those within them. In addition, those who must work outside or be outside should drink plenty of fluids and watch themselves for the first signs of heat-related problems, such as dizziness and nausea. If you do, get to a cool location quickly.

More information on heat safety can be found at: <http://www.weather.gov/om/heat/index.shtml>



## Repeat Record Heat and New 30 Year Normals

By, Steven Zubrick, Science and Operations Officer  
& Jared Klein, General Forecaster

The big climate news has been a return of record heat this summer and implementation of new 30-year climate normals.

After one of the warmest springs and summers on record last year (2010), many were hoping 2011 would bring cooler spring and summertime temperatures. That was not the case as the anomalous heat returned again for 2011. Spring 2011 (March-May) featured above normal temperatures, but didn't rank in the top 10 warmest springs. However, like last year, July 2011 was hot and one for the record books. All three climate stations (Washington DC, Baltimore and Dulles) set all-time records for the hottest month (July 2011); with some of those records set just last year.

**Note: The records below are preliminary until they are quality controlled and certified by NOAA's National Climatic Data Center. Official weather records date back 140 years to 1871 for Washington DC, 141 years to 1870 for Baltimore and 49 years to 1962 for Dulles.**

Through the end of July 2011, the Mid-Atlantic had experienced several bouts of multi-day above normal heat. The heat began right after Memorial Day 2011 and continued into early June 2011. After a brief respite from the heat in mid-June through early July, the latter half of July 2011 saw record-breaking heat.

July 2011 temperatures ended up setting numerous records. Dulles Airport (IAD) set a new all-time high temperature record on July 22<sup>nd</sup> when the thermometer hit 105F. BWI Airport set an all-time high of 106F on July 22<sup>nd</sup> for the airport measuring site; only one degree shy of Baltimore's all-time record high of 107F set back on July 10, 1936 (when temperatures were recorded downtown). Numerous daily max and high min temperatures were set during the March through July period of 2011. Here's a brief highlight of some of the records set.

### **Washington D.C.**

July 2011 was both the hottest July ever, and the hottest month on record. The monthly average temperature of 84.5F smashed the previous hottest monthly average of 83.1F set during Julys of 2010 and 1993. July's high temperature averaged 93.6F, which set a new record for the warmest maximum monthly temperature. The high of 104F on July 29<sup>th</sup> was tied for the 5<sup>th</sup> all-time highest temperature, two degrees shy of the all-time hottest temperature (106F) in Washington DC set on July 20, 1930 and again on August 6, 1918. Through early August 2011, there have been 5 days of 100F or better; the most since the summer of 1997 (the summer of 1930 had 11 days of 100F or more!). July 2011 set the record for most number of days of 90F or higher in any month: 25 days. Washington had daytime highs of 90F or better during a consecutive 16-day period (July 18<sup>th</sup> through August 2<sup>nd</sup>) that tied for fifth longest.

There wasn't much relief at night. The July min temperature averaged 75.4F, which set a new record for the warmest minimum monthly temperature. Records were also set for most number of consecutive days (4) where the temperatures did not drop below 80F (July 21<sup>st</sup> through the 25<sup>th</sup>) and the most number of days for any month where daily temperatures stayed at or above 80F (7 days).

*(continued next page)*

## MIC's Corner *(continued)*

Administrator and Dr. Jack Hayes, the NOAA assistant administrator for weather services and Director of the National Weather Service were given tours of our office.

Typically, we start a tour by giving our guests a short PowerPoint presentation in our conference room, which provides an overview of the office and our operations. After the PowerPoint presentation, we conduct a walking tour of the building, which ends in our operations area. This is where we demonstrate our hydrometeorological workstations and tools.

Serving as science ambassadors to the international community and other federal entities is an important duty, one that is unique to the Baltimore/Washington WFO, and one that we proudly see as a privilege.

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](mailto:James.E.Lee@noaa.gov).



**Korean Meteorological Administration Tour**

## Repeat Record Heat *(continued)*

The average temperature for the period spanning meteorological spring (defined as March–May) combined with the first two months (June and July) of meteorological summer in 2011 was 67.5F; the 4<sup>th</sup> warmest on record (the warmest was 69.0F set just last year; at least 2010 can boast about something!).

### *Baltimore, Maryland*

Baltimore sweltered through another hot July. Like DC, July 2011 was not only the hottest July ever, but the hottest month on record. The monthly average temperatures of 81.7F edged the previous hottest monthly average of 81.5F set during Julys of 2010, 1995 and 1872. July's monthly-averaged high temperature of 92.9F set a new record for warmest maximum monthly temperature. There were four days of highs reaching 100F this July, one less than last July 2010. July 2011 also set the record for most number of days of 90F or higher for any month: 22 days. Baltimore had daytime highs of 90F or better during a consecutive 17-day period (July 17<sup>th</sup> through August 2<sup>nd</sup>) that now ranks as third longest.

**New Climate Normals:** Starting August 1, 2011, the NWS began incorporating the National Climatic Data Center's (NCDC) new 30-year normals in all its climate products issued nationwide. The new climate normals covering the period 1981 to 2010 replace the previous 30-year normals of 1971 to 2000. Overall, the new normals for both Virginia and Maryland show a slight increase statewide for max and min temperatures. For a more detailed discussion on the impacts the new normals have, refer to the news item at the top of our home page ([NWS Baltimore/Washington Home page](#)) called "*New 30-year Climate Normals*" under the "Top news of the day" section.

# “Hurricane Hunter” Visits Southern Maryland

*By, Howard Silverman,  
Senior Forecaster*



**NOAA’s P-3 “Hurricane Hunter” upon landing at NAS Patuxent River MD on Tuesday, May 3, 2011**

On May 3<sup>rd</sup>, NOAA’s P-3 Orion “Hurricane Hunter” aircraft touched down at the Naval Air Station in Patuxent River, MD as a part of 2011’s East Coast Awareness Tour. This event was a culmination of months of planning by Warning Coordination Meteorologist Chris Strong and Senior Forecaster/ Tropical Weather Program Leader Howard Silverman.

Each year, staff from NOAA’s Aircraft Operations Center and Senior Hurricane Specialists from the National Hurricane Center conducts the tour to raise awareness on the threats hurricanes and tropical storms pose and to educate the public on the importance of creating a safety plan. This year’s tour included NHC Director Bill Read, Senior Hurricane specialist Daniel Brown, Storm Surge Team

Lead Jamie Rhome, and FEMA Administrator Craig Fugate. In addition to Chris and Howard, Meteorologist-in-Charge Jim Lee, General Forecaster Stephen Konarik and Meteorologist Intern Heather Sheffield traveled down to southern Maryland to assist running the event.

The morning program was dedicated to the local schools, with almost 500 4<sup>th</sup> and 5<sup>th</sup> grade students from St. Mary’s County in attendance. The demand was overwhelming; we were able to accommodate only about half of the interested school groups. The students who were fortunate enough to attend not only



**Senior Forecaster/Tropical Weather Program Leader Howard Silverman speaks to a school group at the Hurricane Awareness Tour**

got a chance to tour the plane and interact with flight crew, they also received a presentation on tropical cyclones and the hazards they pose, given by meteorologists from the NWS Sterling Forecast Office.

During the afternoon, the plane was open for public tours. Over 100 individuals turned out for this unique opportunity within the 2 hour period.

The National Weather Service Baltimore-Washington Forecast Office would like to thank the staff at the Patuxent River Naval Air Station as well as the Maryland Emergency Management Agency and the Saint Mary’s County Department of Public Safety for their assistance in planning and executing this event.



**From Left to Right: Stephen Konarik, Howard Silverman, Jim Lee, Heather Sheffield & Chris Strong**

# Geographic Information Systems and the National Weather Service

*By, Heather Sheffield,  
Meteorologist Intern*

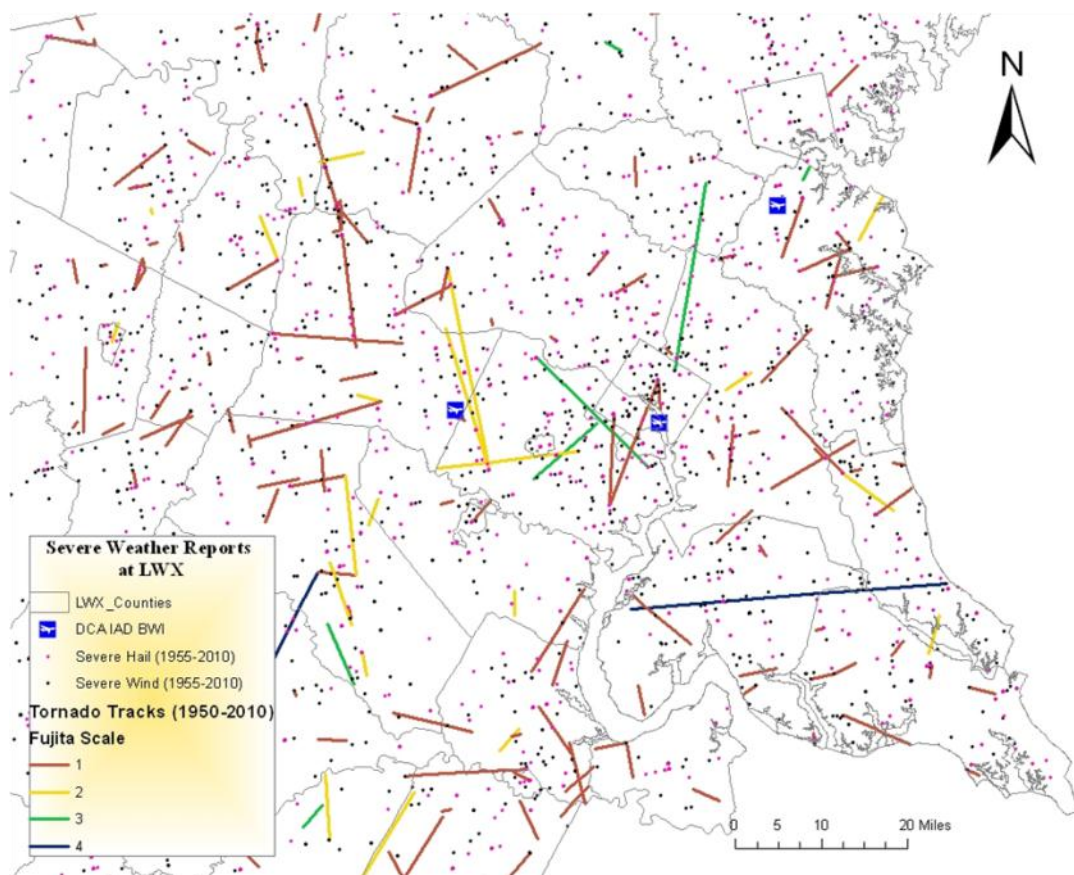
The National Weather Service has been utilizing a science known as Geographic Information Systems for years now. Geographic Information Systems (GIS) are used to collect, analyze, store and display data on a geographic surface such as a map. Data that is ingested into a GIS program can be arranged and prepared for geographic viewing or statistical analysis. All around the world and in many professions, GIS is used to help visualize and let customers access their data and information. Websites that use Google or Bing maps are a few examples. Another example of GIS use would be maps that show red vs. blue or percentages of votes going to each candidate as part of a Presidential poll. The National Weather Service (NWS) website is just one example of how the NWS uses GIS by displaying watches, warnings, and advisories on a map of the CONUS, where users can click on a geographic location and retrieve information.

The NWS Baltimore/Washington Forecast Office has been increasing the use of GIS. After a significant snow, wind or rain event, you might have noticed a local map is displayed under Top News of the Day. These maps show totals over our County Warning Area (CWA). This year was the first year that these maps were developed on a regional level, as part of the Hydrometeorological Event Display, developed by Eastern Region Headquarters. This web service shows a Google Map with its base controls, and multiple overlays that the user can switch on and off. As an event is taking place, the reports that we retrieve from our CWA (including spotters, CO-OP Observers, and airports) are sent to Eastern Region Headquarters. The data is combined with data from other Eastern Region NWS Offices (PA, NJ, and NY) and is displayed on a Google Map. The user is then able to toggle on and off layers such as contours, point data, CWA boundaries, and the gridded image.

At our office, we have used GIS to name rivers in each basin throughout the CWA, which has helped warning forecasters input basins and rivers into warning products. GIS has also been used to analyze coastal flooding events in Baltimore City and Baltimore County. We have the ability to access maps of Baltimore that show the various inundation levels from

different categories of hurricanes. Below is a map of severe hail, wind, and tornado tracks, which was generated using data from the Storm Prediction Center and displayed across our CWA. Using point data in a GIS, correlations and comparisons may also be made by doing statistical analysis.

As the National Weather Service moves into the future towards new technology and faster ways to notify the public of weather, GIS will be crucial to assisting in the generation and dissemination of products.



# 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](mailto:LWX-report@noaa.gov)

# Skywarn Classes

Class	Date	Location
Basics I	October 11	DC
Winter Storms	October 12	Cumberland, MD
Basics I	October 25	Leonardtown, MD
Winter Storms	November 12	College Park, MD
Basics I	December 14	Leesburg, VA

For more information on our Skywarn Classes, please visit our website [weather.gov/washington](http://weather.gov/washington) OR

[weather.gov/baltimore](http://weather.gov/baltimore)

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