Sterling Reporter

Volume 9, Issue 2 | National Weather Service Baltimore MD/Washington DC Forecast Office | Summer 2010 Issue

MIC's Corner

James E. Lee
Meteorologist in Charge

On Sunday, July 25, 2010, a summertime squall line with abundant cloud-to-ground lightning and damaging wind gusts crossed our region. Four people in the Washington, DC Metropolitan Area lost their lives due to this hazardous weather event: Two people were fatally struck by lightning (Montgomery County and on the Chesapeake Bay near Sandy Point State Park), and two people were killed by falling trees due to high winds (Loudoun County and Prince Georges County).

Looking at our office's performance that day, our Severe Thunderstorm and Special Marine Warnings provided at least 30 minutes of lead time prior to the onset of the hazardous weather where the fatalities occurred. This is one of the objective ways the National Weather Service measures its performance in response to hazardous thunderstorm events, and our warning lead times that day exceeded our goals. Yet with the four fatalities, can we say that the weather enterprise in the mid-Atlantic region on July 25th was successful?

Our agency is currently developing a Strategic Plan that will define the NWS in the year 2020. An important part of this draft Strategic Plan is working towards providing more frequent and better decision support services for our emergency management community. I believe we need to go beyond that, and not only provide enhanced decision support services for our emergency managers, but provide better decision support services for the general public.

Everyone within the weather industry needs to work together to help people become more aware of the threats posed by hazardous weather, and to help educate them so they can make sound, life-saving decisions when they encounter hazardous weather. Examples of making sound decisions include: Seeking shelter or safe harbor from thunderstorms; moving to higher ground prior to the onset of flash flooding; staying home for

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Heat: The Stealthy Killer

By: Andrew Woodcock, Senior Forecaster

Although you can certainly feel it - heat rarely grabs media attention, partly because it lacks the visual images of a snowstorm or tornado. In addition, heat fatalities are frequently underreported; often it is the poor and elderly who fall victim. However, heat can kill in large numbers, even in this day and age. In Philadelphia in 1993, one hundred and eighteen heat related deaths were reported during an eight day stretch in July. Chicago saw over seven hundred deaths during a week in July 1995. And across Europe during July and August

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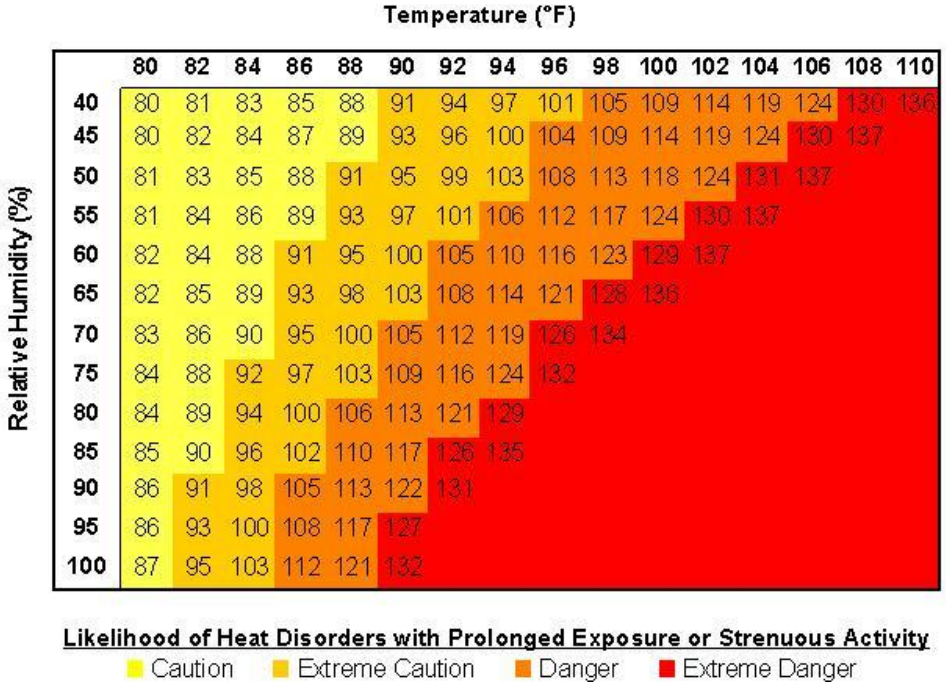
2003 an extended heat wave killed an estimated fifty **thousand** people (almost fifteen thousand in France alone).

Heat: The Stealthy Killer *(continued)*

A heat wave stretched across the U.S. in July and August 2006. This killed at least two hundred twenty-five people. In Los Angeles electricity consumption was so high that transformers failed, leaving thousands without power for up to five days. By August 1st the heat had pushed east to Rochester, NY, with the heat index registering 110.

Could Washington DC and Baltimore be subject to an extended heat wave? Absolutely. Although anywhere in the NWS Sterling forecast area could experience an environment of high heat and humidity (with the possible exception of at the higher elevations at the western edge of our region) the areas that would most likely fall prey to extended heat waves are those that are highly urbanized. In addition to high heat and humidity during the day, urbanized areas, with a high density of buildings, roads, and little in the way of grassy areas and trees, hang on to heat and offer little escape during the nighttime hours. Heat injuries are cumulative – occurring over of a period of time, and when regions don't cool off at night problems are exacerbated.

What are the impacts of an extended heat wave? Both people and animals are at risk. Heat injuries can come on slowly. The first stage of heat injury is ***heat cramps***. These often happen after intense physical exertion, and involve spasms of large muscle groups. Next is ***heat rash***, sometimes referred to as prickly heat. This is a rash caused by blocked sweat ducts. Afterwards is ***heat exhaustion***, which is marked by excessive exhaustion. Symptoms include headache, nausea, and dizziness. Fluids must be replaced immediately. Finally is ***heat stroke***. Sweating is absent from the body. This causes the body core temperature to soar, resulting in brain injury and eventually death.



The National Weather Service has a multi-tiered system to provide advance notice of situations where a combination of heat and humidity could become dangerous. Heat index is a value combining air temperature and humidity. If there is a 30% chance that in the next two to five days heat index values will exceed 105 this will be highlighted in the ***Hazardous Weather Outlook***. This gives the public and emergency officials a heads up for preparation. If there is a 50% chance that heat index values will exceed 110 in the next twenty-four to forty-eight hours an ***Excessive Heat Watch*** will be issued. A ***Heat Advisory*** will be issued up to twenty-four hours in advance when heat index values are expected to reach 105 to 109. ***Excessive heat warnings*** are issued up to twenty-four hours in advance when the heat index is expected to reach 110 or higher.

How does the issuance of these products help to save lives? As previously stated heat is a stealthy killer – it takes hours, and often days, for its cumulative effects to take their toll. These products provide key information to emergency officials, who then open cooling centers, and put more people on the lookout for shut-ins who can't get to these centers. The media will broadcast this information to allow dissemination to the most possible people.

What can you do to prevent heat injury? On hot and humid days limit the amount of outdoor exertion you do during the peak heat of the day. If you must be outside wear loose light colored clothing. Hydration is absolutely essential - drink plenty of liquids. Water and sport drinks are best, alcohol is worst, as it is a dehydrator. Always ensure pet and livestock have access to adequate water and shade, and never leave a child or pet unattended in a parked car.

Heat injuries cause more fatalities in an average year than lightning, tornadoes, and

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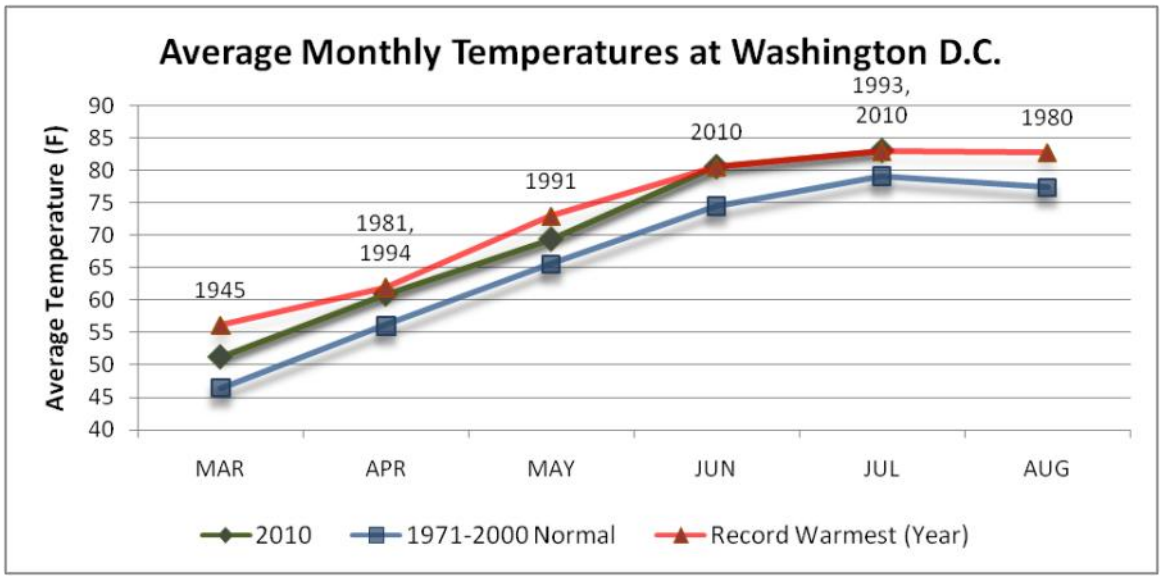
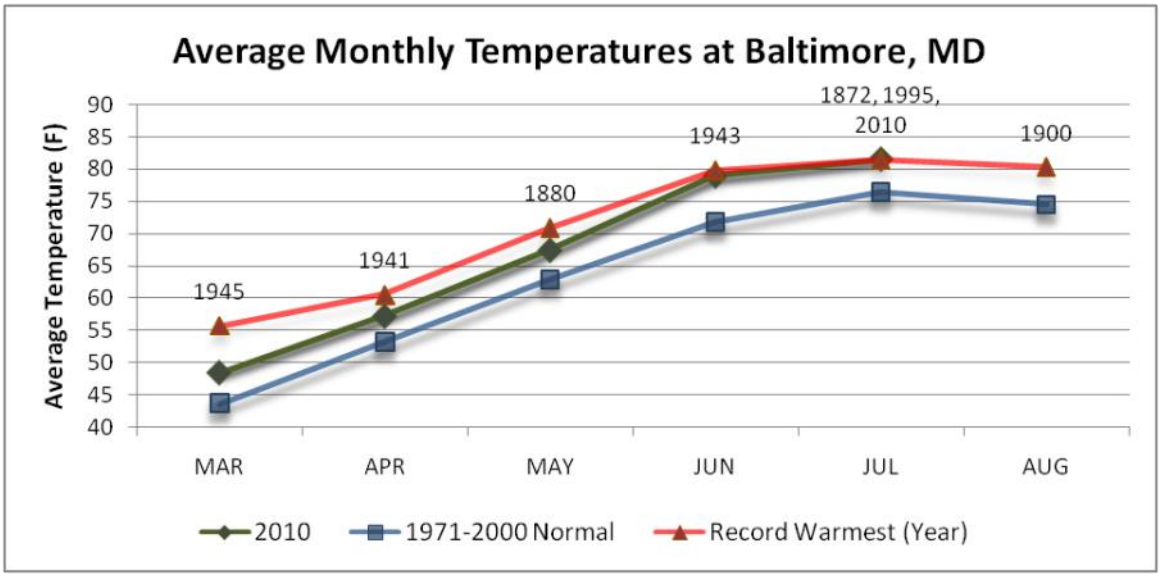
Roller Coaster Climate

By: Jared Klein,
General Forecaster

For residents of the Washington DC and Baltimore area, images of unprecedented snowfall this past winter quickly melted away from the unusual warmth of this spring and first two months of summer. After the 56.1 inches of snow this past winter at Reagan National Airport, the snowiest winter on record in Washington DC, the second warmest meteorological spring (60.5F; defined as March-April) was followed by the warmest June (80.6F monthly average temperature) and July (83.1F monthly average temperature) on record. July 2010 actually tied July 1993 for the warmest of any month on record at Washington DC.



Baltimore transitioned from the record-breaking 77 inches of snowfall this past winter to the 7th warmest meteorological spring on record (57.6F), the second warmest June (78.9F) and the warmest July (81.5F) on record. The 81.5F average monthly temperature in July 2010 tied July 1872 and July 1995 for the warmest of any month on record at Baltimore.



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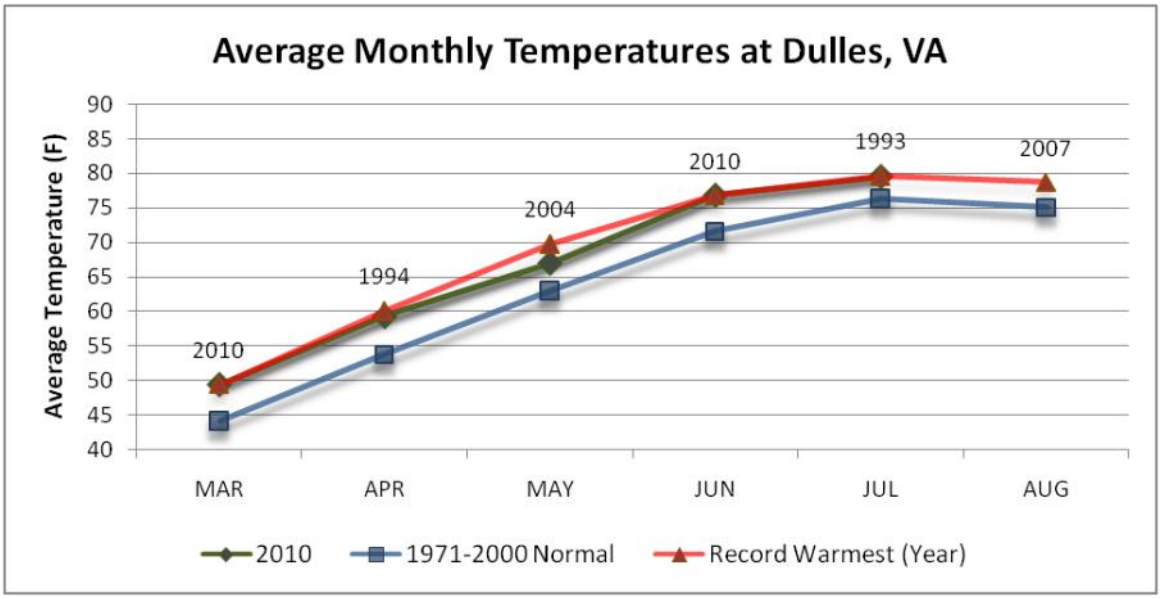
Climate Roller Coaster *(continued)*

At Dulles, the record-breaking 73.2 inches of snowfall this winter preceded the all-time warmest meteorological spring (58.6F), followed by the warmest first two months of meteorological summer (78.1F; defined as June-July) on record. Dulles set monthly records in 2010 for warmest average monthly temperatures for March (49.5F) and June (76.8F). April (59.3F) and July (79.5F) 2010 both went down as the 2nd warmest April and July (tied with July 1994) months, respectively; while May (67.0F) was the 3rd warmest May on record.



During this warm period in 2010, four daily record maximum temperatures and eight daily record high minimum temperatures (all during May-July) were tied or set at Washington DC; ten daily record maximum temperatures and five daily record high minimum temperatures (all during April-July) at Baltimore; and 13 daily record maximum temperatures and 20 daily record high minimum temperatures (all during March-July) at Dulles.

Through July, Washington DC, Baltimore and Dulles have respectively recorded 44, 41 and 37 days of 90F or greater. These are the most number of such days in any calendar year through July for all three locations. Temperatures reached the century mark four times at Reagan National, seven times at Baltimore-Washington International and twice at Dulles. For Baltimore, the high temperature has never reached 100F this many days in the same year before August. The 105F temperature that was recorded at Baltimore-Washington International on July 6th was tied for the second warmest high temperature ever recorded in Baltimore.

The quick transition from record-breaking snowfall to record-breaking warmth during the spring and summer has never been rivaled by any other year in the climate record books that go back to the early 1870s in Washington DC and Baltimore. Warm spring and summer seasons following snowy winters are very rare for Washington DC. A search through the Washington DC climate data reveals that snowy DC winters (here defined as 25 inches or greater, which is ~10 inches above the 1971-2000 normal seasonal snowfall) have been followed by warm springs (here defined as 1.0F above the 1971-2000 normal March-May temperature of 56.1F) only twice (57.1F in 1918 and 58.4F in 1979). Likewise, snowy DC winters have preceded hot summers (here defined as 1.0F above the 1971-2000 normal June-August temperature of 77.0F) only four times (78.5F in 1966, 79.1F in 1983, 79.2F in 1987, and 79.0F in 1988) prior to 2010.

Unlike any other year on record, what is so extraordinary about transition of the climate in 2010 is the duration and magnitude of the heat that followed the snowy conditions. Both the spring months and first two months of summer in 2010 were greater than 3.5F above normal for the first time on record. In any of the snowy (e.g., 25 inches or greater) DC winters, there has never been a transition to heat on record that is comparable in magnitude of 2010.

2010 Tropical Weather Season

By: Howard Silverman,
Senior Forecaster

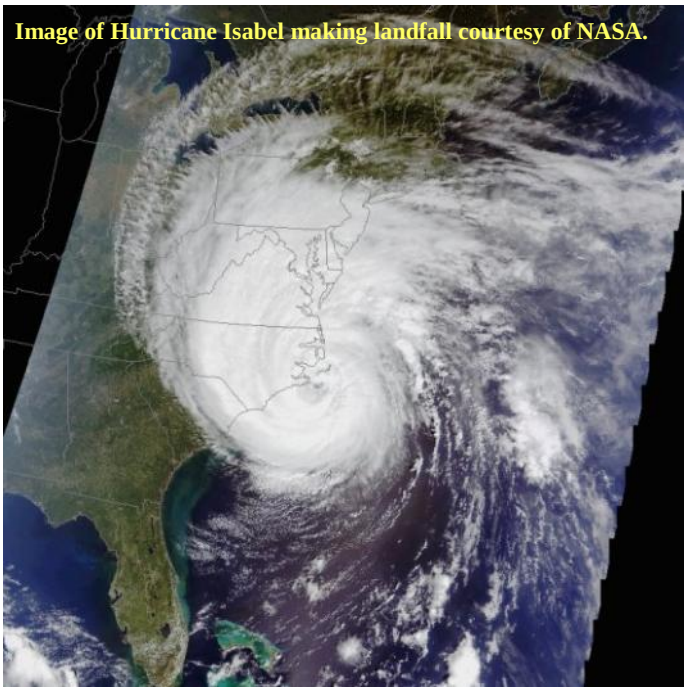
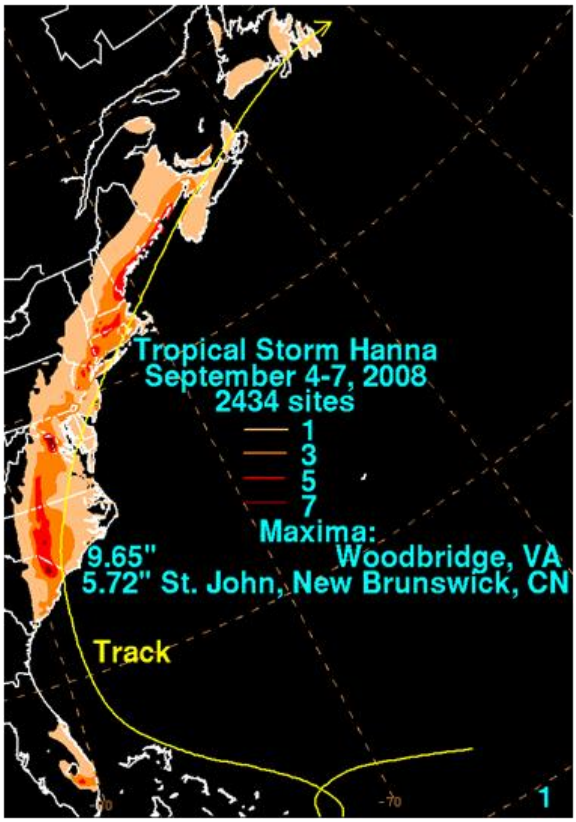


Image of Hurricane Isabel making landfall courtesy of NASA.

June 1st marked the start of the 2010 Tropical Weather Season in the Atlantic basin. This year looks to be an active one, even though the tropics have been rather tranquil up to this point. The latest outlook from the Climate Prediction Center (CPC), which was updated in early August, indicates a 70 percent chance of 14-20 named storms including 8-12 hurricanes, and 4-6 of those becoming major hurricanes. The conditions expected this year have produced some very active Atlantic hurricane seasons in the past, including the extremely active 1995 season. The busiest part of the Tropical Weather Season in the Atlantic runs from late August to mid October. However, it only takes one storm hitting our area to cause damage to our property, disruption to our lives, and put us in harm's way. Therefore, now is the time to create an action plan if you don't have one and review that plan if you do.



The last time the area experienced any tropical-related weather was in 2008 when Hanna gave us a glancing blow. Although that storm didn't produce much in terms of wind, it did produce a lot of rain—with tallies between 6-9 inches in the Washington DC and Fredericksburg area. One has to go back to 2003 (Isabel) to find a tropical storm that produced widespread, multi-faceted damage. Time tends to breed complacency. On average, the Chesapeake Bay receives a Category 1 Hurricane once every 15 years. The bottom line is that our time will come again.

There are several changes to products and services for the 2010 season I'd like to highlight. First of all, Tropical Storm or Hurricane Watches will now be issued by the National Hurricane Center (NHC) when those conditions are possible within 48 hours; warnings will be issued when those conditions can be expected within 36 hours. This is an increase of 12 hours over previous seasons, and can be done due to increased accuracy in hurricane forecasting. As a reminder, tropical storms have winds between 39-73 mph, and hurricanes have winds 74 mph or greater. These winds may be accompanied by storm surge, coastal flooding, and/or river flooding.

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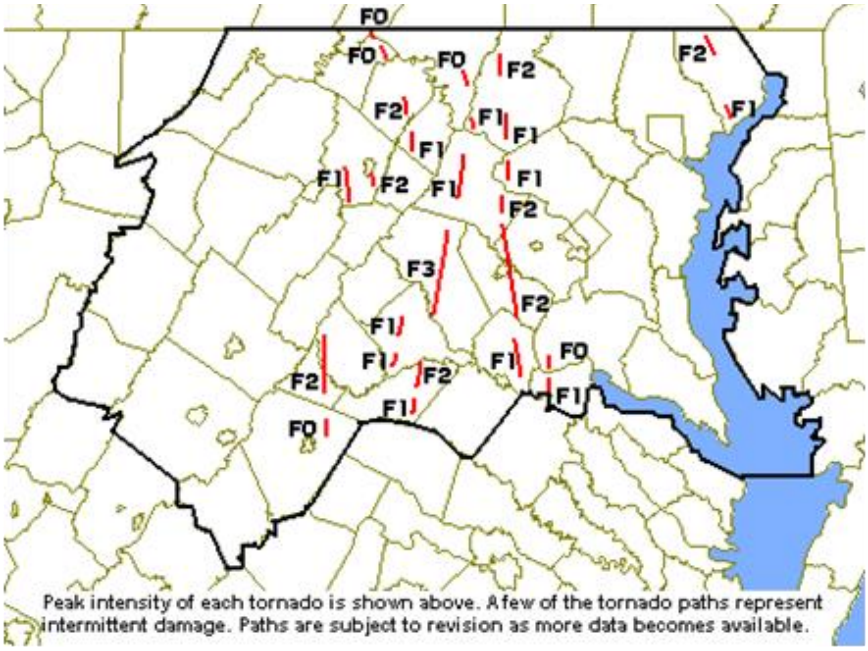
2010 Tropical Season *(continued)*

In reference to hurricane winds, the Saffir-Simpson Scale will now be purely a Hurricane Wind Scale. Any reference to storm surge has been removed from the scale, and now will be expressed explicitly in our products.

Another big change comes in the form of a new term which will be used beginning this season. Once storms begin to lose their tropical characteristics, the storm will now be called "Post-Tropical." In the past, the cyclone would have been referred to as extratropical; that term will now solely be used when the storm is driven by the clash of warm and cold air masses.

Tropical cyclone climatology along the mid Atlantic coast indicates that we are in the area where this transition tends to occur. Therefore, I would anticipate that we will be referring to Post-Tropical storms a lot in the coming years. I would like to stress that, from an impact perspective, *nothing has changed*. Post-Tropical is just a new term to better classify the cyclone scientifically. Whether the storm is tropical, post-tropical, or extratropical, it still may contain strong winds and heavy rains, and it still can bring the threat of coastal, inland, and/or river flooding. Your response to the storm should not change based on the label applied to it! For example, on September 17, 2004 our area was impacted by the remnants of Hurricane Ivan. That storm would now be classified as Post-Tropical. As you may recall, the remnant of Ivan produced a record number of tornadoes, including 32 in our service area. That should illustrate how a tropical cyclone can still be dangerous, even while it's losing its tropical characteristics.

Tornado Tracks from the Remnants of Hurricane Ivan. September 17, 2004



Finally, the format of Public Advisories from the NHC has changed quite a bit. The changes are designed to assist users in finding specific information quickly and easily. It will also assist in computers parsing the statements, as certain terms will always be found in the same spot within the statement. All summary information will be at the top.

There are several other minor changes this year. A full list of these changes, including examples, can be found on the National Hurricane Center's webpage at http://www.nhc.noaa.gov/pdf/nhc_new_2010.pdf.

Finally, we've created a local tropical weather presence on our homepage. Our intent is to provide you with information pertaining to tropical cyclones in the Mid-Atlantic in one convenient location. To find the page, navigate over to our homepage, and then click "Tropical", or use the following address: http://weather.gov/lwx/tropical.

MIC's Corner *(continued)*

the evening instead of trying to drive through blizzard conditions, turning around and taking an alternative route when you encounter a flooded roadway.

This will take an outreach effort by federal, state, and local governments, but government alone cannot accomplish this important function. Most importantly, people need to be willing to learn to make weather-wise decisions. Most weather related fatalities or injuries are preventable, by people simply being aware of the potential hazard, and being proactive by making the right decision once the hazard occurs.

Collapsed crane in Montgomery County. Photo Courtesy: Montgomery County Emergency Management

So it's important for you to have a severe weather plan for your family. One night over the dinner table, talk over weather hazards such as lightning and flooding (the two leading causes of weather-related fatalities in the mid-Atlantic), and what to do in response to them to reduce your risk of being injured. Another idea is to host other families in your neighborhood and discuss your hazardous weather plan with them. Obviously, if you are reading the Sterling Reporter, you have a keen interest in weather in our region. Consider being a leader in your family and community, and help us help others learn about hazardous weather, and how to make good, proactive decisions in response to hazardous weather to save lives.

For more information on making a Family Disaster Plan, the American Red Cross has an excellent brochure on this topic at this website: http://www.redcross.org/images/pdfs/code/family_disaster_plan.pdf

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.

Speiden Family Honored for 45 Years of Cooperative Weather Observer Service

By, Calvin Meadows
Observations Program Leader

On July 23, 2010, William, JoAnne and Sandra Speiden were awarded the Richard H. Hagemeyer Award for 45 years of outstanding service in the Cooperative Weather Observer Program. The award is named for Richard Hagemeyer, a 51-year NOAA employee who was a former cooperative program manager and long time supporter who spent his last 20 years with the agency as director of the National Weather Service's Pacific Region.

William Speiden's mother, Mrs. Louise Speiden, established the Somerset observing station in 1946, reporting daily precipitation readings to the U.S. Weather Bureau and, later, to the National Weather Service. The National Weather Service's Cooperative Weather Observer Program has given scientists and researchers continuous observational data since its inception more than a century ago. Today, some 11,700 volunteer observers participate in the nationwide program to provide daily reports on temperature, precipitation and other weather factors such as snow depth, river levels and soil temperature.

Mr. William Speiden

The first extensive network of cooperative stations was set up in the 1890s as a result of an 1890 act of Congress that established the U.S. Weather Bureau. Many of the stations have even longer histories. John Campanius Holm's weather records, taken without benefit of weather instruments in what is now Wilmington, Delaware, in 1644 and 1645, were the earliest known recorded observations in the United States. Many other historic figures also maintained weather records, including Benjamin Franklin, George Washington and Thomas Jefferson. Jefferson maintained an almost unbroken record of weather observations between 1776 and 1816, and Washington took weather observations up until just a few days before he died. Several awards for accomplishments and length of service in the Cooperative Weather Observer Program are named for such pioneers of weather observations.

NOBLIS Weather Camp

By: Stephen Konarik , General Forecaster

On July 21, I represented NWS Baltimore/Washington at Noblis' 2010 Weather Camp. This event, managed by Howard University and funded by NOAA, is a highlight of a two week summer camp designed for minority high school students with interests in meteorology. There were 14 students in attendance from across the United States. Over 25 professionals from around metropolitan Washington participated through presentations and career panel discussions, which, aside from me, included 5 other NOAA scientists.

Charles Harris (back left) and Stephen Konarik (back right) converse with students.

The students took part in a series of "weather stations", where the professional leaders paired up to facilitate interactive discussions on a variety of meteorological topics. Hosting 3 students at a time, I joined Charles Harris, retired U.S. Air Force and principal meteorologist for the Road Weather Program at Noblis' Center for Sustainability, to compare and contrast the U.S. government's roles in providing specialized support for the United States public and military forces. I discussed with the students services and products the National Weather Service offers the public in our quest to protect the life and property of the United States. The students were given information on several NOAA websites, including the Storm Prediction Center and Tropical Prediction Center. The camp attendees' interests were piqued when the discussion transitioned to the severe weather they had monitored the previous evening. They were fascinated to learn about the analyses and mechanics upon which the warning decision process and dissemination of warning products were based. Fortunately for the campers, I had worked on the warning operations desk the day before, so had direct experience to explain.

In addition to the group discussions, I partook in a career discussion panel, where I informed the students of the general steps necessary to gain the knowledge required for National Weather Service employment. It was fascinating to see so many young adults enthused about the weather and eager to be a part of the future of the science of meteorology. I fielded various questions about my personal experiences in pursuit of my career, and I tried to give insight and perspective regarding the steps taken in my career path.

The day concluded with a game of Weather Jeopardy which featured a compilation of answers on the topics learned during the presentations and showcased the students' already in-depth knowledge of the weather. Even my attempt at a most challenging final Jeopardy answer, "This U.S. city recorded its warmest spring on record with an average daily temperature of 66.8 degrees F", was promptly and accurately responded to with the appropriate response – "What is Washington, D.C.?" All of the professionals involved in Weather Camp remarked on how rewarding it was for us to have the opportunity to increase awareness of meteorology and related fields and to encourage and assist young men and women in pursing their dreams to become a part of this scientific field.

WJZ Weather Day

By: Christopher Strong, Warning Coordination Meteorologist

For the third consecutive year, The National Weather Service participated in "Weather Field Trip Day" organized by WJZ-TV 13 in Baltimore. Kids from around the Baltimore metro area were brought in to learn about weather and afterwards enjoy a day at Camden Yards baseball stadium – home of the Baltimore Orioles. The weather team from WJZ-TV, including meteorologists Bernadette Woods, Tim Williams, and chief meteorologist Bob Turk spoke to several thousand school kids from the field of the stadium.

Chris Strong and the Baltimore Orioles Mascot.

During the event, there were several short multimedia presentations played through the outfield scoreboard and sound system. Topics ranged from basic meteorology, to our extreme winter, to hurricanes and their threats, to a presentation about the jet stream and flow in the atmosphere. During that latter segment, Chris Strong from NWS Baltimore/Washington strode onto the field to explain to the assembled crowd how we use weather balloons to make measurements of the atmosphere high above, and how those observations help us make weather forecasts and warnings to the public. After some questions, Chris launched a weather balloon from the infield to show everyone exactly how the process works, and how this relatively old technology has been able to be such a vital source of weather information through the decades. After all the children in the stands were instructed on many facets of the weather, all were treated to a baseball victory by the home team Baltimore Orioles.

This event was just one of many examples of how the National Weather Service partners with the local media to enhance the public's understanding of weather, explain what threats are out there, and how people can be ready when they come.

Race for the Cure

By: Brandon Peloquin, Senior Forecaster

On Saturday, June 5, several members of the Sterling Forecast Office donated their time to participate in the Global Race for the Cure. The Global Race for the Cure is an annual event which typically occurs on the first Saturday in June. It's an event where tens of thousands of people from all walks of life converge on the Mall in D.C., and either run or walk 5K in support of the fight against breast cancer.

This year, Jim Lee, Brandon Peloquin, Stephen Konarik, Brian LaSorsa and Heather Sheffield joined NOAA's Running with the Currents Team of the Global Race for the Cure, and travelled into D.C. for the 8 o'clock start. The weather was cooperative for the event, with isolated thunderstorms firing late in the day well after the race. The temperature at the start of the race was in the upper 70s, and rose into the lower to mid 80s by the end of the race.

From Left to Right: Lasorsa, Lee, Sheffield, Peloquin and Konarik

Having participated in a few of these races over the years, I can attest that rain or shine, Saturday Race Day is filled with optimism, hope and positive energy. These feelings will undoubtedly be renewed the first Saturday next June -- June 4, 2011 – as the Global Race for the Cure continues its quest to one day eliminate breast cancer forever.

Steve Zubrick Briefs Capitol Hill

By, Steve Zubrick
Science and Operations Officer

On July 21, 2010, as a representative of the National Weather Service, I was invited to present information on providing early warnings of tornadoes at a public briefing on Capitol Hill in Washington DC. The briefing, organized by the Congressional Hazards Caucus, featured short presentations from me, Dr. John Snow, Regents' Professor of Meteorology and Dean Emeritus, College of Atmospheric and Geographic Sciences, the University of Oklahoma, and Dr. Roger Wakimoto, Director, National Center for Atmospheric Research (NCAR) in Boulder. Prior to the briefing, I enjoyed several conversations with my fellow presenters, including a discussion with Dr. Wakimoto about the differing physical mechanisms for tornadoes that build "up" from the surface as opposed to those that descend from a storm. Dr. Snow, when asked by a Hill staffer what was needed to provide better lead times for tornado warnings responded that not only do we need improved observations (from satellites, better radars and mesonet data), but improved prediction models of storm-scale (1-10 km) phenomena is just as important. These improved models will require extraordinary increases in high performance computing, with "petaflop" machine performance necessary. Rapid, real-time data assimilation of the plethora of observations is also part of the modeling equation. All three presentations can be viewed at the following link: http://www.hazardscaucus.org/briefings/tornado-briefing0710.html

From Left to Right: Steve Zubrick, Roger Wakimoto, John Snow. (Not pictured Maggie Walser.)

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

Upcoming Skywarn Classes

BASICS I: September 9 Marriottsville, MD

BASICS I: September 17 Washington DC

Winter Storms: September 23 Landover Hills, MD

Winter Storms: November 8 Kearneysville, WV

Visit our website for more details:

http://www.erh.noaa.gov/lwx/skywarn/classes.html

weather.gov/washington or weather.gov/baltimore

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