



Sterling Reporter



Newsletter of NOAA's National Weather Service Baltimore/Washington Forecast Office

Volume 6, Issue 2

Summer 2007

Running with the Currents

Steve Rogowski

A quarter of the Baltimore/Washington National Weather Service Forecast office staff participated in the 18th annual Susan G. Komen National Race for the Cure. NWS Baltimore/Washington staff walked with several other NOAA agencies on June 2nd 2007. The race raised nearly \$4.0 million to fund breast cancer research and local patient support programs in the National Capital Area. This year's 5K race drew nearly 45,000 participants.



Before the race. Pictured from left to right Jim Lee, Meteorologist In Charge, Conrad C. Lautenbacher, Jr. Vice Admiral, U.S. Navy (Ret.), Brandon Peloquin, Steve Rogowski, Mary Glackin, Acting Assistant Administrator for the NWS, Steve Listmaa, and Christopher Strong.

MIC's Corner

Jim Lee, Meteorologist-In-Charge

As I start my fourth year as Meteorologist-in-Charge of the NWS Baltimore/Washington Weather Forecast Office, and as we start fiscal year 2008 (FY08) next month, I am constantly reminded of how change is so much a part of everyone's lives. As you can see in other articles in this edition of the *Sterling Reporter*, I have recently staffed several key positions in our office, including the promotion of Chris Strong as our Warning Coordination Meteorologist, and Art Patrick as our Electronics Systems Analyst. I recently promoted one of our General Forecasters, Brandon Peloquin, to fill Chris' Senior Forecaster vacancy. Earlier this month, Dr. Jack Hayes became the new Director of the National Weather Service. This week, construction has started for our new facility, which if everything goes as planned, we will be forecasting from one year from now. Change is constant!

In preparation for the new fiscal year which runs from October 2007 through September 2008, our staff has just completed our Annual Operating Plan (AOP) for FY08. The AOP serves as our work plan for the coming year. Our office has 50 different programs, ranging from radar maintenance to fire weather to diversity. Each of the 50 programs set goals to accomplish in the coming year, and I want to highlight a few major goals that we are planning to accomplish in FY08.

First of all, the focus of this year will be to continue our primary mission of producing excellent forecast products and services; we will never lose sight of this mission at our office. Second, with the Dulles Airport Runway expansion project, we are moving into a new facility and receiving a new WSR-88D radar system. Much of our activity -- particularly in the last half of FY08 -- will be centered on preparing for the move, and then actually moving in next summer. Because of our office move, our Backup Program will be an important focus for us this year. Emphasis on this program will enable us to provide seamless services to our region for several days while we move our shop 1/2 mile west on Weather Service Road here in Sterling. We will be working to make our Cooperative Observer Program more visible on our website (<http://weather.gov/washington>). We are transitioning to new program leaders in several key programs: Backup, Fire Weather, Shift Scheduling, and Flash Flood. We are working with our partners in setting up All Hazards NOAA Weather Radio transmitters in downtown Washington, DC, and in Fredericksburg, VA. Finally, we will be planning for our public Open House, which is scheduled for October 2008. These are only a handful of the 180 goals our office has identified to achieve in FY08.

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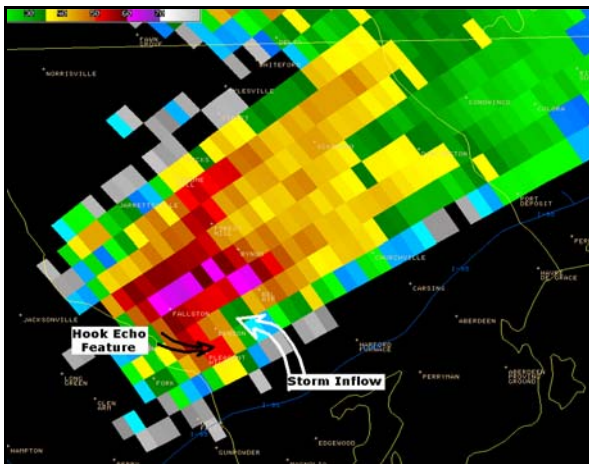
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The July 16th Harford County Tornado

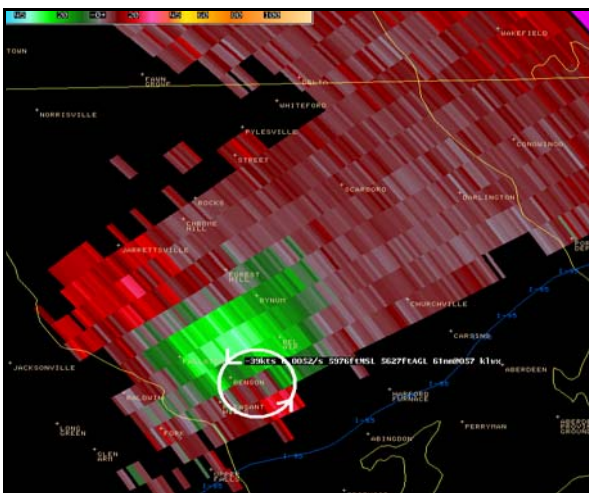
Greg Schoor

A thunderstorm developed along an east/west oriented stationary boundary near the Maryland/Pennsylvania border on July 16th. During the afternoon hours, daytime heating created a series of turbulent eddies called horizontal convective rolls. These long horizontal areas of circulating air can stretch for miles and are a focal point for tornado development. Low level winds (storm inflow) continued to interact with the boundary as the storms moved east, though once the storms reached a stalled north-south oriented sea-breeze boundary, the storms rapidly developed into one severe thunderstorm, for which a Severe Thunderstorm Warning was issued for Baltimore County at 5:26 PM EDT. Within minutes of the thunderstorm becoming severe, a hook echo feature was noticeable on radar, below.



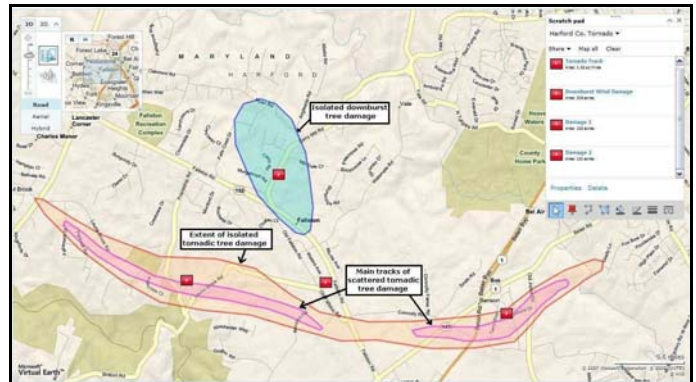
KLWX WSR-88D Radar Reflectivity (Z) image 2209Z.

The end or pendant of the hook echo is the mostly likely area for strong rotation because of the proximity of the strong updraft and downdraft regions converging. The result is a comma shape of higher reflectivity wrapping around the updraft, or low level storm inflow. Below is the corresponding storm relative winds of the thunderstorm. Notice the strong rotation denoted by the white circle.



KLWX WSR-88D Radar Storm Relative Velocity (SRM) image from 2209Z. The white circle indicates the low-level rotation in the storm, the lower portion of the mesocyclone.

A Tornado Warning was issued for Harford County at 6:12 pm EDT. Doppler radar had indicated circulation in the storm strong enough to support a weak tornado. As the storm continued to move southeast across Harford County, a weak tornado developed and began to knock down trees, power lines and snapping large limbs. A survey of the damage indicates the tornado was not touching the ground for the entire length of the damage it created. No structural damage was reported directly from tornadic winds and most of the tree damage or trees that were knocked down were isolated in nature. Most of the storm damage and nearly all of the tornado tree damage was exclusively limited to the Fallston area, mainly about a 4 miles stripe across the southern portions of the city, see below.



A map of the estimated damage path created by the tornado in the Fallston area. The duration of the tornado estimated between 6:15 and 6:27 pm. The red and pink shaded regions indicate the extent of the tornadic damage and track, while the blue shaded region indicates an area where tree and powerline damage was created from a severe downburst.

On the figure, the furthest extent of the tornadic damage is encompassed in within the red shaded area and the main areas of tornadic damage is located within the pink line. With the isolated nature of the downed trees, powerlines and other tree damage, this tornado most likely was not strong enough to stay on the ground continuously and cycled between being a funnel cloud and weak tornado for the entire path length. The tornado was given an EF1 rating on the newly instituted Enhanced Fujita Scale, with estimated wind speeds of 86 to 110 mph. In this case, no structural damage occurred, so the maximum rating was based on the size of the large trees felled on Laurel Brook Rd. in Fallston, see below.



First of 3 large trees knocked over onto Laurel Brook Rd in Fallston, looking southwest.

April – June 2007 Storm Data

Sarah Rogowski

The Storm Data Publication can be found on our webpage at <http://www.erh.noaa.gov/lwx/Storms/Strmdata/>.

A late season snow developed over portions of central Virginia as a low pressure system deepened off the Delmarva Coast late April 6th. Snow amounts ranged from 1 to 4 inches, with highest amounts reported across Orange County.

A Nor'Easter impacted the Mid Atlantic region on April 15th and 16th. Low pressure off the southeastern coast moved north along the Delmarva. Heavy rain spread north across the region early April 15th, causing flooding by the afternoon and evening. As the low pressure area pushed north and intensified, colder air advanced from the northwest. This allowed rain to change to snow along the upslope region of the Allegheny Front. Winds also increased in the wake of the low, downing trees and power lines across the forecast area.

A strong cold front approaching the region from the north and west triggered thunderstorms during the afternoon of May 16th. Some storms became severe, downing trees and power lines and producing large hail across portions of the forecast area.

Clear skies, light winds and a moist ground combined to produce areas of dense fog across the Shenandoah Valley and Potomac Highlands of Virginia. Visibilities were reduced to 1/4 mile or less during the early morning hours of May 19th.

Scattered showers and thunderstorms developed along a stalled frontal boundary on May 27th. Some of these storms became severe, downing trees and power lines and producing large hail across the forecast area. Wind gusts up to 40 knots were reported over the coastal waters.

A strong cold front pushed across the Mid Atlantic on the evening of June 8th. Ahead of the front, a warm and unstable air mass allowed scattered showers and thunderstorms to develop over northern and central Maryland during the afternoon and spread southeast during the evening. Some of these storms became severe, producing damaging winds that downed trees and power lines.

A series of weak surface low pressure troughs combined with several upper level disturbances to produce scattered showers and thunderstorms during the afternoon and evening hours on June 11th through 13th. Several of these storms became severe, producing damaging winds and large hail. One of these severe thunderstorms produced a tornado. An NWS Storm Survey concluded that a small tornado, rated at EF0, touched down north of the town of Butler in Baltimore County. The tornado produced a path between 1 and 2 miles long and 75 yards wide. No structural damage was found and no injuries were reported.

Scattered thunderstorms developed across northern Virginia and central Maryland during the afternoon of June 27th as high pressure moved offshore. Some storms became severe, producing damaging wind gusts and large hail across the region.

Student Program News

NWS Baltimore/Washington created a Student Volunteer Program aimed at allowing selected college students to gain first-hand knowledge and experience of operations within an NWS forecast office. After a competitive application and interview process, three students were selected for the 2007 Summer Program.



From Left, Sarah Rogowski, Student Program Leader, Joe Wegman, Kyle Tapley, Audra Hennecke and Jim Lee, MIC, during the Student Volunteer Luncheon on July 30th.

Kyle Tapley will be a senior at The Pennsylvania State University this fall. He has worked this summer with Steve Rogowski to perform a climatological study using 9 Chesapeake Bay, 5 Tidal Potomac, and 2 Atlantic Coast water level gages within the NOAA and USGS networks. This study combines historical water level data with U.S. Naval Observatory Lunar phase data to attempt to draw conclusions regarding the frequency and pattern of water level anomalies at individual gages and the collection of local water level gages on a monthly, yearly, and lunar phase basis.

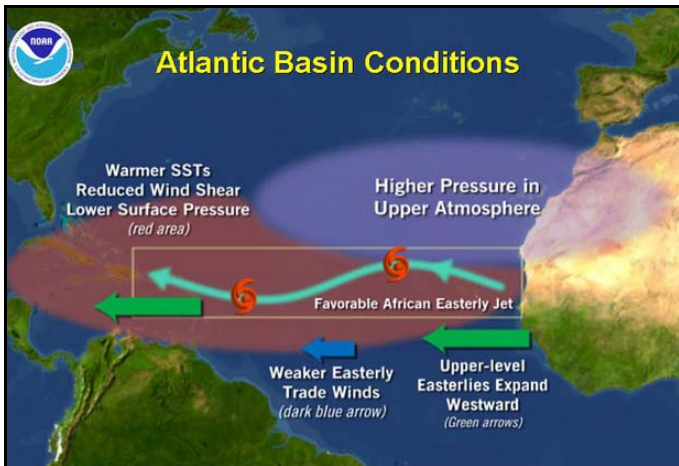
Joe Wegman will be a junior at The State University of New York at Oswego. Joe worked with Jim Lee and Sarah Rogowski on a project involving Lake Effect and Upslope snow events along the Allegheny Front. This project analyzed events that occurred during the past 3 winter seasons along the western slopes of the Allegheny Front. The goal is to collect a climatology of these events as well as develop tools that will help better Lake Effect and Upslope snow forecasts for this area.

Audra Hennecke, a summer 2006 Student Volunteer, was awarded a paid student intern position as a Student Temporary Employment Program (STEP). She will be a senior this fall at The Pennsylvania State University. Audra continued her work on a flash flood project started last summer. Information was gathered from local emergency management regarding flash flood-prone areas. These locations were used to create a Flash Flood Location overlay for radar imagery, thus allowing forecasters to be more aware of the known flash flood-prone areas in the event of severe weather. Additionally, these locations will be incorporated into both the Flash Flood Warnings and Statements text.

Tropical Outlook

Luis Rosa

The peak of the hurricane season has arrived and both NOAA and the Colorado State University Team have updated their seasonal outlooks. Although both organizations have reduced their number of tropical cyclones slightly, they are still predicting an above average season with 13 to 16 named storms, with seven to nine becoming hurricanes, of which three to five could become major hurricanes. NOAA cites that development of La Niña-like conditions, warmer than normal sea surface temperatures in the tropical Atlantic and Caribbean Sea and the active multi-decadal signal as justifications for their continued forecast of much above normal hurricane activity this year. NOAA also cites that conditions like the ones that are present right now in the tropical Atlantic have produced 2-4 hurricane strikes in the continental United States and 2-3 hurricanes in the region around the Caribbean Sea.



<http://www.noaanews.noaa.gov/stories2007/s2905.htm>

What people in the Mid Atlantic region can expect this hurricane season? On an average season, the Mid Atlantic region gets the remnants of a tropical cyclone twice a year, with one tropical storm visiting the area every four years. The last significant storm to impact the area was the remnants of Hurricane Ivan in September 2004 when 32 tornadoes occurred across the Baltimore/Washington forecast area. This set a new record for tornadoes for one storm. In 2003, Tropical Storm Isabel caused extensive damage across the area with major river flooding in the Shenandoah, Potomac, Rapidan and Rappahannock River basins and record storm surge along the Chesapeake Bay and Tidal Potomac River.

For more information on Tropical Weather, visit the National Hurricane Center website at <http://www.nhc.noaa.gov/>

New Staffing

It has been a busy season for staffing changes at NWS Baltimore/Washington. Here are a few updates to our office.

Christopher Strong is the new Warning Coordination Meteorologist (WCM). Chris has a B.S. Degree in Meteorology from The Pennsylvania State University. He served as a student employee at NWS Buffalo in 1992. Chris worked with Maryland Public TV on the "AM Weather" television broadcast, then onto NWS Baltimore/Washington where he has served as Meteorologist Intern, General Forecaster and Senior Forecaster since 1993. Chris will fill the shoes of David Manning, who was promoted to NWS Eastern Region Headquarters.



Arthur Patrick is the new Electronics Systems Analyst (ESA). He comes to us from WFO North Platte, Nebraska. Art has an A.A. in Electronics Technology from the Central Virginia Community College, as well as additional coursework in Electrical Engineering Technology from Old Dominion University. Art started his NWS career in 1985 at WSO Lynchburg as an Electronic Technician (ET) student trainee, then became a full-fledged ET in 1986. He has served as an ET at several Virginia offices through March of 2004 when he was promoted to ESA at WFO North Platte.

Richard Winther is our new Lead Forecaster. He comes to us from WFO Pocatello, Idaho. Rick has a B.S. in Meteorology from the University of Utah. After graduation from Utah, he worked as a Meteorologist/Climatologist for the Peace Corp in Jamaica from 1985 to 1987. He then joined the NWS as a Meteorologist at WSO Richmond from 1987 to 1993 and then as a General Forecaster in State College from 1993 to 1998. In 1998, Rick was promoted to Lead Forecaster in Pocatello.



May – July 2007 Climate Summary

Brian La Sorsa

The period from May through July turned out to be quite dry. Precipitation total for all three months only managed to top off at 5.53 and 6.45 for Reagan National and Baltimore Washington International airports respectively. The period of May through July has gone down as the 5th driest on record for Reagan National and the 10th driest on record for Baltimore Washington International. Another interesting tidbit on the extremely dry conditions comes from Reagan National during the month of May. There were only four days of measurable rainfall during this month. Only two other years (1939 and 1964) had less days of measurable rainfall. Only 3 days of measurable rainfall were calculated during these years.

Temperatures also averaged above normal for the period across Reagan National as well as Baltimore Washington International. For Reagan National, May turned out to be the 25th warmest on record with an average temperature of 67.8 degrees. This is 2.2 degrees above normal. June was 1.6 degrees above the normal temperature of 74.5 and July also came 0.5 degrees above normal. At Baltimore Washington International, May was 2.6 degrees above the normal temperature of 62.9 and June came in at 1.9 degrees above the normal of 73.7. July did come in closer to normal with an average temperature of 76.9 which is 0.4 degrees above the normal.

CoCoRaHS Observation Network

<http://www.cocorahs.org/>

CoCoRaHS is an acronym for the Community Collaborative Rain, Hail and Snow Network. It is a unique, non-profit, community-based network of volunteers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow). The network originated with the Colorado Climate Center at Colorado State University in 1998 thanks in part to the Fort Collins flood a year prior. In the years since, CoCoRaHS has expanded rapidly with over 3,500 observers in eighteen states, including Maryland, Virginia and Washington DC. Each time a rain, hail or snow storm occurs, volunteers take measurements of precipitation from as many locations as possible. These precipitation reports are then recorded online. CoCoRaHS is used by a wide variety of organizations and individuals. Instantaneous hail, heavy rain, and heavy snow reports go directly to the local NWS Offices and are used in determining if a severe thunderstorm warning or flash flood warning needs to be issued.

For more information about the CoCoRaHS Program, please check out the website (<http://www.cocorahs.org/>) or contact Bruce Sullivan at Bruce.Sullivan@cocorahs.org.

May – July 2007 Outreach

Sarah Rogowski

Chris Strong visited the City of Charlottesville Emergency Operating Center on May 22nd. He conducted a SKYWARN Training class that evening.

On May 30th, Sarah Rogowski was a guest speaker NOAA 2007 Scholars Orientation Program. She met with between 15 and 20 college students who have received various NOAA Scholarships and are interested in weather forecasting in an NWS Forecast Office when they graduate.

On June 12th, Chris Strong gave a presentation on the June 6, 2006 flood of the Federal Triangle area of DC from tropical thunderstorms.

Greg Schoor conducted a tour for a group of Spotsylvania County Earth Science Teachers on June 14th. Jim Fitzgibbon from the NWS Testing and Evaluation Branch conducted a weather balloon release for the group.

Andrew Woodcock and Luis Rosa distributed weather safety and education materials as well as discussed the role of the NWS at the Fairfax County Emergency Response Open House on June 20th.

Brian LaSorsa and Sarah Rogowski conducted a tour on July 10th for a group of NOAA Student Employees working at various national centers surrounding Washington DC.

Brian LaSorsa was a guest speaker at the 2007 Howard University Weather Camp on July 17th at the Noblis Facility in Falls Church. He conducted a brief talk on severe and tropical weather and was part of a professional panel giving advice on careers in the field of meteorology.



Group Picture of the 2007 Howard University Weather Camp

On July 18th, Nikole Listemaa conducted a tour for 11 students and teachers participating in this year's Meadowside Nature Center's Meteorology Camp.

Jim Lee conducted a tour on July 31st in coordination with NWS International Affairs to the Directors of the Tunisia, Morocco and Algerian meteorological agencies.

MIC's Corner (Continued)

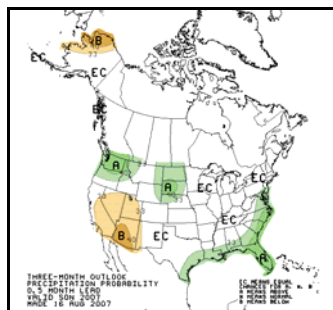
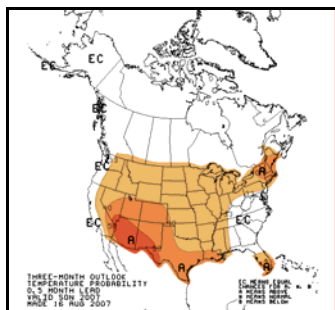
It is important to recognize our achievements in FY07. We accomplished a great deal, including hosting the First Emergency Manager/Media Workshop, riding out a very active convective season where our probability of detection of severe thunderstorms increased from 74% in FY06 to 88% in FY07, an average lead time jumping from 13.3 minutes to 16.2 minutes, while at the same time lowering our false alarm ratio from 42% to 29%! We had excellent forecasts for the Valentines Day 2007 sleet storm, with winter weather warning lead times averaging 30 hours, with a 100% accuracy. Our equipment availability rivals any other forecast office in the agency.

As you can see, FY07 was a very good year, and we are looking forward to making FY08 even better. If you have any questions or comments about the NWS Baltimore/Washington Weather Forecast Office, please email me at James.E.Lee@noaa.gov, or phone me 703-260-0107x222.

September – November Outlook

NOAA's National Weather Service Climate Prediction Center created these September – October – November - temperature and precipitation outlooks during mid August. 'EC' means Equal Chance, 'A' stands for Above Normal, while 'B' is Below Normal.

These are probabilistic forecasts; the forecast probability anomaly is the difference between the actual forecast probability of the verifying observation falling in a given category and it's climatologically value.



Climate Prediction Center outlooks, discussions and explanations are available at: <http://www.cpc.noaa.gov/products/predictions/90day/>

SKYWARN News

For more information on upcoming classes, check out the website: <http://www.erh.noaa.gov/lwx/skywarn/classes.html>

ATTENTION ALL SKYWARN SPOTTERS:

Please email Sarah Rogowski (Sarah.Rogowski@noaa.gov) with any changes in your contact information.

Thanks to all Spotters for your reports. Some of you may have received emails this summer requesting weather reports related to a storm that moved across your county. Please remember to provide storm reports as soon as possible. These reports are extremely valuable in the warning decision making process as well as for our verification effort. The ideal way to report severe weather is through Phone or Amateur Radio. There are several ways to report severe weather.

Telephone: 703-260-0107 or 800-253-7091

Email: LWX-Report@noaa.gov

Radio Call Sign: WX4LWX

What to Report:

Time (start and end)

Location (State, County, City)

Tornado (circulation on the ground)

Funnel (not on the ground)

Storm Rotation/Wall Cloud

Hail: size compared to a coin and depth on ground

Heavy Rain: measured 1 inch or more (duration)

Flooding: water out of banks or covering roadways

Wind: 50 MPH or greater (measured or estimated)

Damage: generally downed trees and/or power lines

Snow Accumulation: every 2 inches, storm total

Thank you for your time as a SKYWARN Spotter!



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