

Sterling Reporter

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MIC's Corner

By, James E. Lee
Meteorologist- In- Charge

As 2009 winds down, the NWS Baltimore/Washington Weather Forecast Office (WFO) recently completed planning for 2010. There are several highlights from our 2010 operating plan that I want to raise to your attention:

- Numerical weather prediction models continue to exhibit increasing skill. Studies have shown that current National Weather Service (NWS) 48-hour temperature and precipitation forecasts are equivalent in accuracy to NWS 24-hour forecasts ten years ago. Computer-generated numerical weather model output statistics, also known in the meteorological community as MOS, are becoming increasingly difficult for our forecasters to improve upon. Beyond 60-hours, gridded MOS forecasts show more skill than humans at forecasting maximum and minimum temperatures and probability of precipitation.

This means that operations within the NWS Baltimore/Washington WFO continue to evolve. As such, our office developed an operations concept that will take advantage of advances in science and technology that will be implemented in January 2010. This new operations concept will enable our staff to: 1) become more focused in issuing timely and effective hazardous weather watches, warnings, advisories, and statements, including providing increased decision support services to our emergency management community; 2) provide more accurate 24-hour forecasts by increasing their knowledge of model biases and awareness of local observations; 3) become more skilled through increased opportunities for professional development and training; 4) promote stronger programs through enhanced opportunities in

(Continued on page 2)

Summer 2009 Student Volunteer Program

By, Andrew Woodcock, Senior Forecaster

Each summer the Baltimore/Washington Forecast Office becomes actively involved with college Meteorology students through its Student Volunteer program. The process for selecting students begins in January with the application process and continues into February with interviews. Final selections for positions are typically made in March or early April. Around fifteen



From left to right: Morgan Brooks, Joe Wegman, Jeff Waters and Nick Werner

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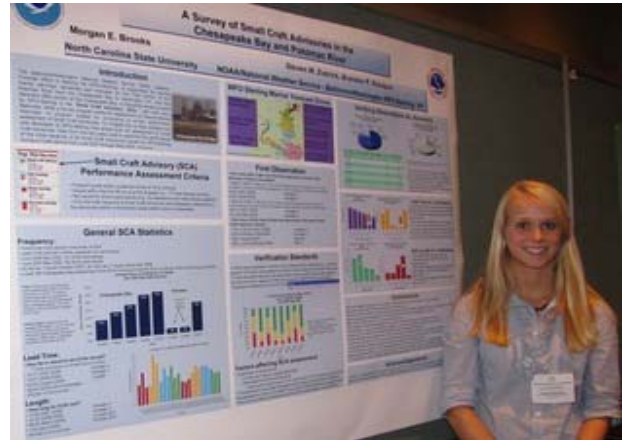
MIC's Corner (*continued*)

program leadership.

- In order to efficiently disseminate our weather forecasts and warnings to a larger area, we will be increasing our NOAA Weather Radio coverage this year with two new transmitters: one in Fredericksburg, VA, and another transmitter in downtown Washington, DC.
- To better serve the marine community, we will be implementing a numerical model to aid us in forecasting waves for the Maryland portion of the Chesapeake Bay and tidal Potomac River. This should be a major improvement from our current empirical techniques, and will inject new science into our marine forecasts.
- For emergency managers and broadcast meteorologists, please mark your calendars for the 2nd NWS Baltimore/Washington WFO Emergency Manager/Broadcast Meteorologist Conference, which has been scheduled for April 7-8, 2010, in Leesburg, VA. The initial conference was held in March 2007, and was attended by approximately 45 local emergency managers and broadcast meteorologists. Look for further information on this conference in the coming months.

Finally, I want to congratulate one of our Summer 2009 Student Volunteers, Ms. Morgan Brooks, a student at the North Carolina State University, was awarded "*Best Undergraduate Poster Presentation*" at

the National Weather Association (NWA) 34th Annual Meeting in Norfolk, VA, for her poster presentation "*A Survey of Small Craft Advisories in the Chesapeake Bay and Potomac River.*" This makes three out of the last four years that a Baltimore/Washington WFO stu-



Ms. Morgan Brooks at the 2009 NWA Annual Meeting

dent volunteer has won the "*Best Undergraduate Poster Presentation*" at the NWA Annual Meeting.

If you have any questions or comments about the NWS Baltimore/Washington WFO, please email me at James.E.Lee@noaa.gov, or phone me 703-996-2200, extension 222.

Annapolis Buoy Ceremony

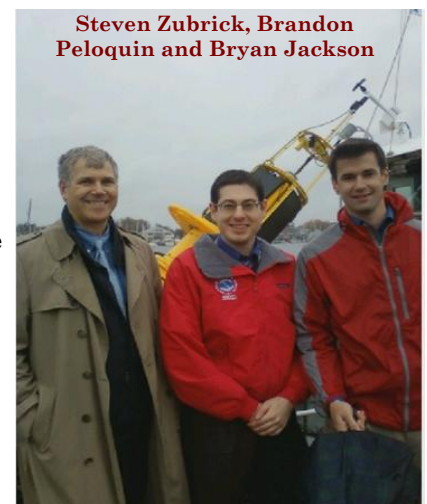
By, Steven Zubrick, Science and Operations Officer



The deployed buoy at the mouth of the Severn River

November 20th. The buoy was moored near the mouth of the Severn River just east of Annapolis MD, and is the seventh buoy in NOAA's Chesapeake Bay Interpretative Buoy System (CBIBS). CBIBS is a system of buoys placed along portions of the Captain John Smith Chesapeake

This past Veteran's Day, November 11, 2009, myself and two LWX forecasters, Brandon Peloquin and Bryan Jackson, attended a ceremony in Annapolis, MD to recognize the impending deployment of a new marine buoy in the Chesapeake Bay region. U.S. Senator Ben Cardin, Congressman John Sarbanes and Annapolis Mayor Ellen O. Moyer, were featured speakers at the ceremony hosted by NOAA's Chesapeake Bay Office. The event was going to feature the actual deployment of the buoy, but due to strong winds from the combined effects of Ida and the strong Nor'easter, the actual deployment was delayed until



(*continued on page 8*)

Recent StormReady Renewals

Fairfax County Virginia, Washington & Montgomery Counties in Maryland, and the University of Maryland all have been re-recognized as StormReady communities by the National Weather Service. These communities have maintained strong ties with the National Weather Service over the years, and have consistently provided their citizens with exceptional service and planning.

In order to maintain their StormReady status, these communities had to continue to demonstrate:

- Multiple ways of receiving NWS watches/warnings/advisories and forecasts.
- Multiple ways of communicating vital watch/warning/advisory and forecast information to the public.
- Means to monitor the weather in their community.
- An exceptional training program that includes weather safety for their citizens.
- Thorough plans for what to do during hazardous weather events.
- Maintaining strong relationships with the NWS through mutual visits back and forth and by hosting weather spotter classes for the public.

By, Christopher Strong,
Warning Coordination Meteorologist

Verna Brown at Washington County emergency management, Tony Loconte at Montgomery County emergency management, Roy Shrout at Fairfax County emergency management, and Major Jay Gruber at the University of Maryland public safety and emergency management office all demonstrated the exceptional capabilities of their communities and their desire to maintain strong partnerships with the NWS.



Thank you to all of these fine public servants for your dedication and your partnership working with us to protect the people of this nation from all the dangerous weather threats that we are subjected to on a regular basis. We feel confident that these areas would be able to respond quickly and effectively to any weather threat that Mother Nature throws their way.

Howard University Noblis Weather Camp By, Bryan Jackson, General Forecaster

On Wednesday July 29, I participated in the Howard University-Noblis Weather Camp 2009 at the Noblis offices in Falls Church, VA. The campers consisted of 12 high school scholars from across the country that have a passion for meteorology. I was a part of a group of presenters from both Noblis and the NWS headquarters office in Silver Spring, Maryland. In the morning session Robert Saffie, of Noblis (and previously of NWS HQ), and I worked one-on-one with students at computer stations on the topic of severe storms and tropical weather. The Sterling forecast



area was in a slight risk for severe weather that day, so I concentrated on showing the students some of the ingredients forecasters look for when determining the severe weather threat for the day. An EF-1 tornado occurred that afternoon in and near Oldtown, Maryland (eastern Allegany County). Later, I judged a weather Jeopardy-type game which had a severe weather category consisting of questions I had submitted. That afternoon, I participated in a career guidance panel where a group of fellow meteorologists talked about our experience in getting into meteorology and our current jobs. In addition, we fielded questions regarding careers and education from the engaged students, who were mostly rising seniors and very eager to enter college. I particularly enjoyed interacting with such bright students and I hope to work with the camp next year.

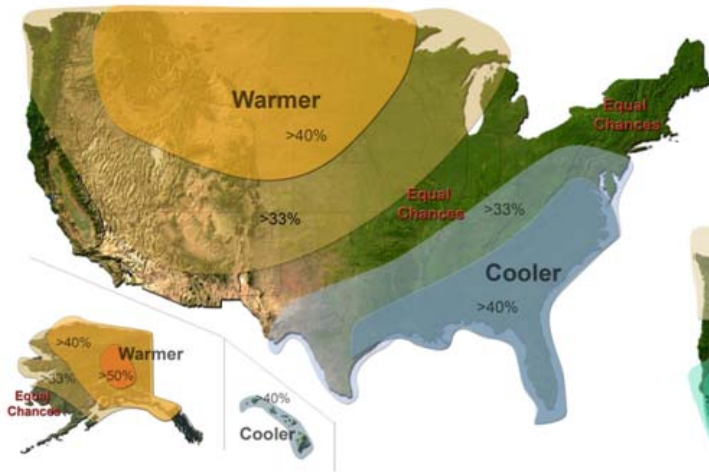
Winter 2009-2010 Outlook

By, Jared Klein, General Forecaster

The official National Oceanic and Atmospheric Administration (NOAA) Winter Outlook from the Climate Prediction Center (CPC) was released back in mid-October. The outlook favors below average temperatures and equal chances for above or below average precipitation in the greater Baltimore and Washington DC area for the upcoming 2009-2010 winter season (see figures below).

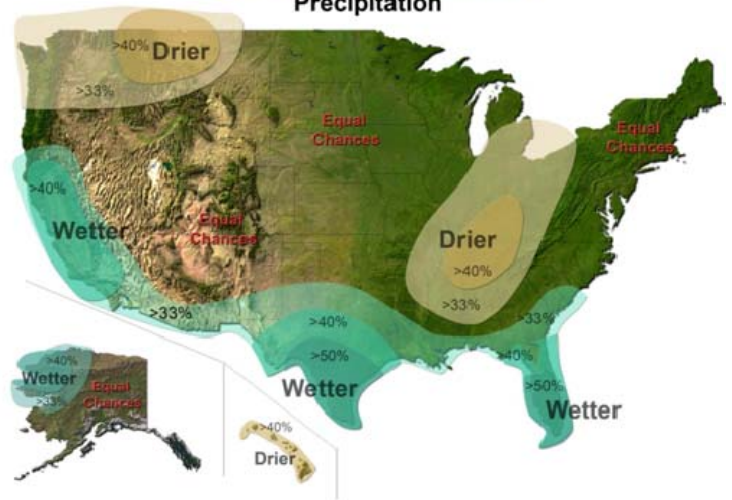
El Niño, which is a climate phenomenon characterized by unusually warm ocean temperatures in the tropical Pacific Ocean, is expected to play a key role in influencing this upcoming winter's weather across the United States.

U.S. Winter Outlook Temperature



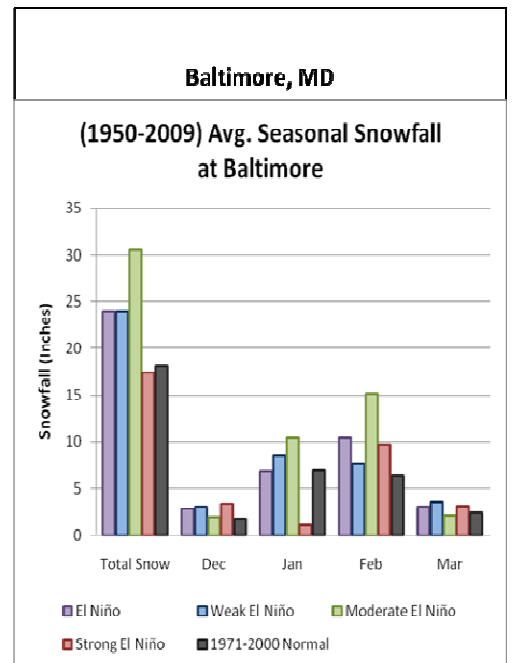
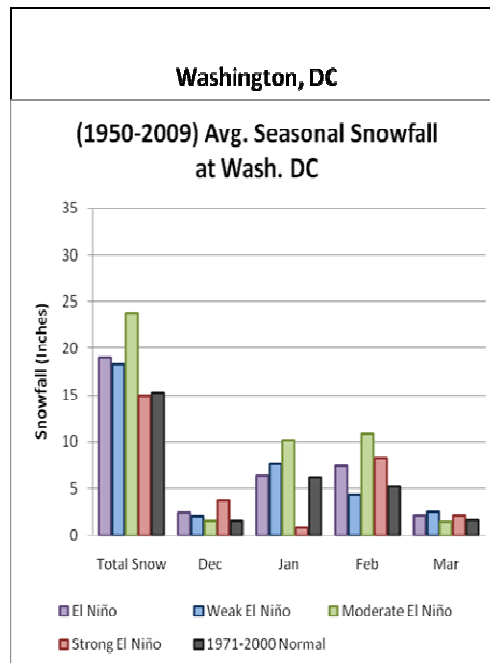
NOAA 2009/10 Winter Outlook: Temperature

U.S. Winter Outlook Precipitation



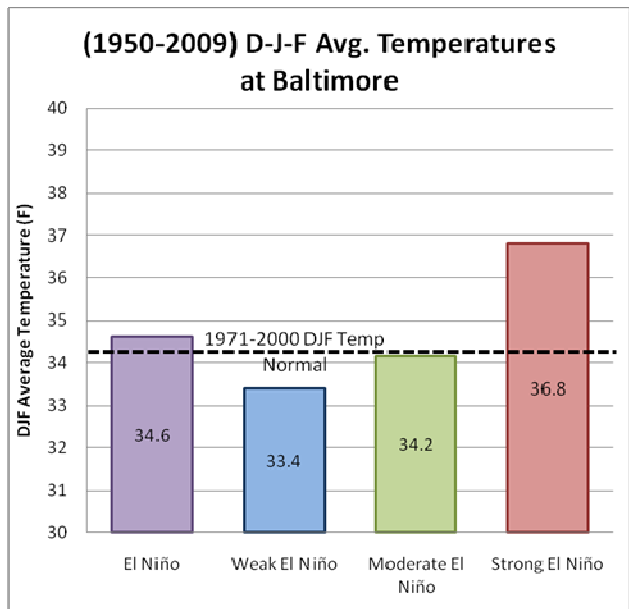
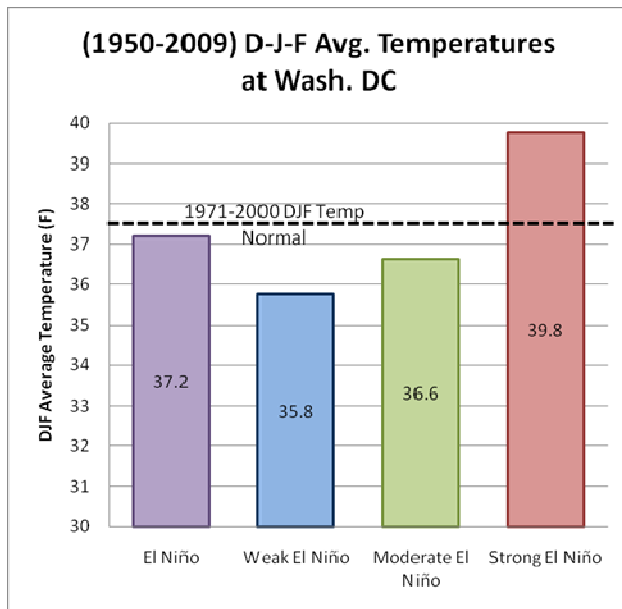
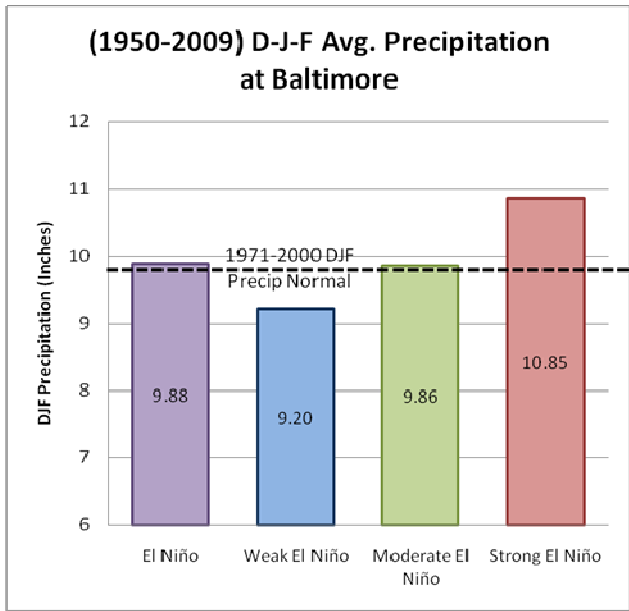
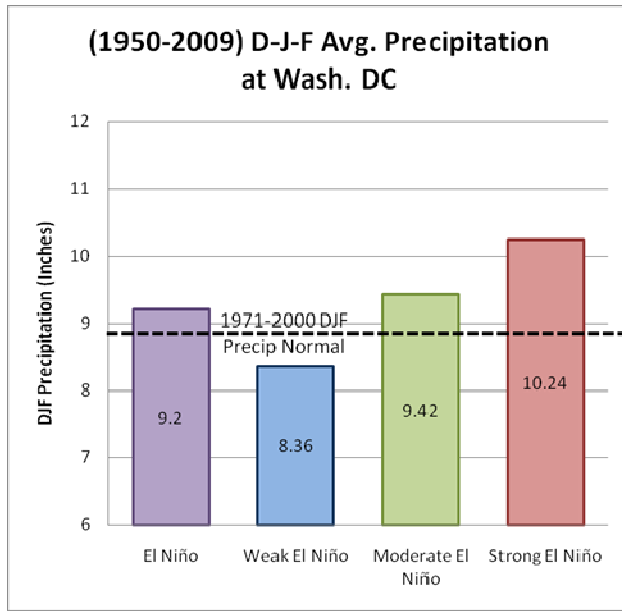
NOAA 2009/10 Winter Outlook: Precipitation

Looking back at past winters since 1950, approximately 17 were influenced by an El Niño episode. The figures below are composites of average December, January, and February (DJF) temperatures and precipitation, as well as seasonal snowfall at Washington, D.C. broken down by the strength of the El Niño episode. Both DJF temperatures and precipitation averaged near normal while seasonal snowfall averaged a few inches above normal. The strength of the warming in the equatorial Pacific Ocean (i.e. El Niño episode) shows a possible correlation to seasonal temperature, precipitation, and snowfall locally at Baltimore and Washington D.C. Weak El Niño winters averaged below normal temperatures and precipitation, while strong El Niño episodes have resulted in above normal temperatures and precipitation. On average, the stronger the El Niño episode, the



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Winter 2009-2010 Outlook *(continued)*



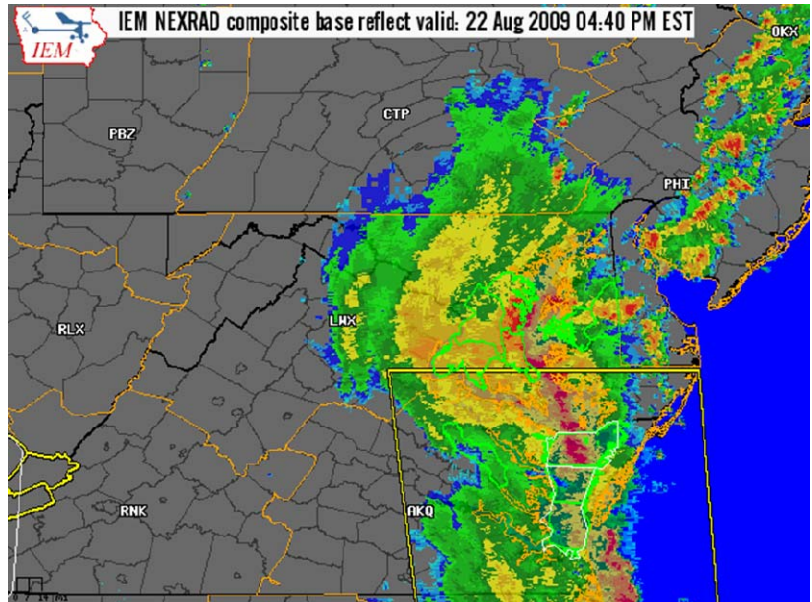
warmer and wetter the winters have been. These findings can largely be linked to a stronger than normal sub-tropical jet that typically occurs during moderate to strong El Niño winters, which would favor more active storm systems from the south that draw warm, moist air northward as opposed to the drier Alberta clippers from the northwest. Seasonal snowfall averaged above normal for weak and moderate El Niño winters while below normal for strong El Niño episodes. During strong El Niño episodes, the bulk of the cold air remains north of the mid-Atlantic region, often resulting in precipitation falling as rain instead of changing to snow.

Not all El Niño winters are alike as many other shorter and longer term climate patterns influence the local weather. For example, although it might seem that all strong El Niño winters in Washington D.C. and Baltimore have been associated with above normal temperatures and precipitation and below normal snowfall; these atmospheric quantities have been variable each winter. Of the 17 El Niño winters, eight had above normal snow while nine were below normal. The above average El Niño winters have been associated with some of our snowiest winters, especially during moderate El Niño episodes. With the ongoing El Niño episode expected to continue, even strengthen to moderate levels this winter, El Niño will likely play an important role with the winter climate here in the greater Baltimore and Washington D.C. area.

August 2009 Flash Floods By, Brian Lasorsa, General Forecaster

Showers and thunderstorms rolled through eastern Maryland ahead of an approaching cold front on Saturday, August 22nd. A mid-level trough of low pressure approached the Mid-Atlantic from the west Saturday and a southwest flow ahead of this system ushered in copious amounts of moisture from the Gulf of Mexico. Sunshine Saturday morning provided the instability for showers and thunderstorms to develop. Due to the instability and abundant moisture, some thunderstorms produced locally heavy rain in short periods of time which resulted in flash flooding.

Numerous roads were closed due to flash flooding across Anne Arundel and Calvert Counties during the afternoon and evening of the 22nd. Storm spotters measured rainfall amounts between three and five inches across this area. The image above shows the radar imagery for August 22nd at 4:40 PM EST. The orange and red colors indicate where the heaviest rain is falling and the green colored counties indicate where a flash flood warning was in effect.



Radar imagery from August 22nd. Photo Source: Iowa State University of Science and Technology.



The half ton truck was swept downstream during the flash flooding. Photo Source: rivervalleyranch.com

On Friday, August 28th, more flash flooding was reported across Maryland. A trough of low pressure was located over the central portion of the nation while high pressure remained over the western Atlantic. A southwest flow in between these two systems ushered in deep moisture from the Gulf of Mexico. Tropical Storm Danny was passing by just to our east and moisture from this system was also being drawn into the Mid-Atlantic. The combination of the stationary boundary and deep moisture lead to the development of showers and thunderstorms. Heavier showers and thunderstorms produced tremendous amounts of rain in a short period of time, resulting in areas of flash flooding during the night of the 28th into the early morning hours of the 29th.

One of the areas hardest hit was across northern Carroll County in and around the towns of Manchester and Lineboro. Numerous roads were closed due to high water and there was also a report of water forty inches high on houses along Black Rock Road near the town of Lineboro. Major flooding also caused a tremendous amount of damage at a camp site called the River Valley Ranch in Manchester, Maryland. Flooding caused damage to dorms, fences, bridges, and much more. The picture below shows just some of the flash flooding that caused the damage at the River Valley Ranch.



Flash flooding at the River Valley Ranch. Photo Source: rivervalleyranch.com

Flash Flood Safety

By, Stephen Konarik, General Forecaster



Fredericksburg, VA
September 2000

A **Flash Flood** is a rapidly evolving flood which occurs within 6 hours (often much less) of heavy or excessive rainfall, dam or levee failure, or a sudden release of water impounded by an ice jam. Flash floods typical occur from stationary, slow moving, or training thun-

derstorms where rainfall rates can reach as high as 5 inches per hour. **Flash flooding is the #1 severe weather related killer in the United States**, responsible for more deaths than tornadoes and hurricanes combined.

Safety When Driving

More than half of all flash flood fatalities occur in vehicles being driven over flood waters. Never enter a roadway covered by water if it is too deep to see the pavement. Water with a depth as little as 1 foot is powerful enough to float a vehicle off the roadway. If your vehicle stalls in water, leave it at once and seek high ground. Most flash flood deaths occur at night. At night, visibility is greatly reduced and floodwaters are harder to recognize. Turn around don't drown!



Madison/Green County Line, VA,
June 1995

Safety When at Home, Work, and School

Know your personal risk and proximity to streams and other waterways. A flash flood can be caused by rainfall several miles upstream sending water rapidly downstream. Densely populated areas have little available ground for rainfall to be absorbed. Buildings, roads, and other concrete and pavement exponentially increase the amount of runoff. Storm drains designed to channel runoff can overflow, making low spots such as underpasses, underground parking garages, and basements extremely dangerous in urban areas. Levees and dams can also give way, allowing floodwaters to escape their channels, sometimes devastating everything in their paths.



Rock Creek, Montgomery County, MD,
June 2006

Safety When Camping or Hiking

Terrain in hilly or mountainous areas is particularly prone to flash flooding. A creek within a narrow valley can

easily fluctuate from a depth of 6 inches to one of 10 feet or more in under an hour during a period of intense rainfall. Sometimes the flash flood is caused by rainfall several miles upstream, with little or no rain falling over the downstream area that experiences the flash flood. When enjoying outdoor recreation, monitor weather forecast and stay alert for rapidly changing conditions. A stream that suddenly rises and becomes muddy is sometimes a first sign of an impending flash flood. Head immediately for higher ground.

A **Flash Flood Watch** is issued when flash flooding is possible within the watch area. When a watch is issued, be prepared to respond and act quickly. Have an evacuation route, with consideration that roads may become flooded and impassable.



A **Flash Flood Warning** means flash flooding is occurring or will be occurring shortly. Move to higher ground immediately, away from low spots or streams. Do not drive unless it is essential, and never cross a flooded road, as there is no way to tell how deep the water is or what lies beneath the surface. Never walk, swim, or play in or near floodwaters or storm drains.

True or False?

A 100-year flood occurs only once every 100 years. FALSE: The term 100-year flood is based on a climactic average, every year there is a 1% chance of a 100-year flood occurring

Flash floods occur only along flowing streams. FALSE: Flash floods often occur in urban areas and otherwise dry areas nowhere near flowing streams.

Flash Floods occur mainly in the late afternoon and evening. FALSE: Flash floods frequently occur at night, when visibility is limited and floodwaters are difficult to see. *Larger vehicles, such as SUVs and pickup trucks, are safer to drive through flood waters than smaller ones.* FALSE: Only six inches of rushing water can carry away most vehicles, regardless of their size.

Student Volunteer Program (continued)

students applied for the volunteer positions this year. Competition was high and after an extremely challenging interview process, four students were selected. This was the largest number of Students our office has hosted since the Student Volunteer Program began many years ago.

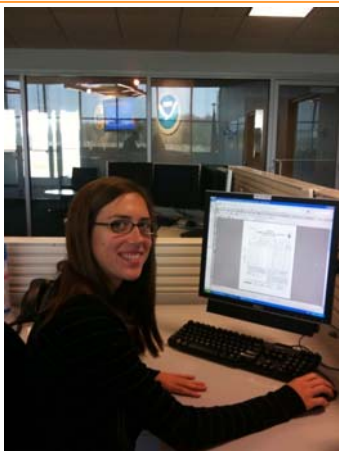
Student selections included Jeff Waters, a recent graduate of Ohio University; Nick Werner, senior at Penn State University; Morgan Brooks, a sophomore at North Carolina State University and Joe Wegman a recent graduate from SUNY Oswego. This was Wegman’s third summer participating in the program.

Each student was assigned a forecaster-mentor to be paired with for the summer. Together, the mentor/student team was to research a problem that affects the mid Atlantic region and present their findings to the Baltimore/Washington Forecast staff in August. In October, the students would also present their findings in poster form at the National Weather Associated annual conference held in Norfolk, VA.

Jeff Waters, working with mentor Matthew Kramar, did a study on “increased accuracy of hail size prediction.” Joe

Wegman, with mentor Brian Lasorsa, continued his work on “upslope snow climatology along the western slopes of the Alleghany Front.” Nick Werner, along with mentors Jared Klein and Stephen Konarik, did “a study of flash flood events in the NWS Sterling forecast area.” And Morgan Brooks, with mentor Brandon Peloquin, did “a survey of small craft advisories (issuance vs. verification) on the tidal Potomac River and the Maryland portion of the Chesapeake Bay”.

All presentations to the forecast staff were excellent – highly informative and well done. Due to travel constraints only Morgan Brooks was able to head to Norfolk for the NWA conference, BUT...her poster so impressed the judges that she was chosen as the winner of the student division. In late September, the Program Leaders for the Student Volunteer Program won the National Weather Service’s Eastern Region Isaac Cline Award. The Isaac Cline Award is given to employees for operational excellence in the delivery of products and services in support of the NWS mission. Congratulations to Steven Zurbick, Andrew Woodcock and Jared Klein!



Staffing News: SCEP Intern Hired

**By, Nikole Listemaa,
Senior Forecaster**

Heather Sheffield joined our staff in May of 2009 as a SCEP Intern. The Student Career Experience Program is a paid internship through the National Weather Service that allows college students to gain valuable work experience within a Forecast Office. Students often assist the forecasters in everyday duties, participate in Outreach activities and conduct research.

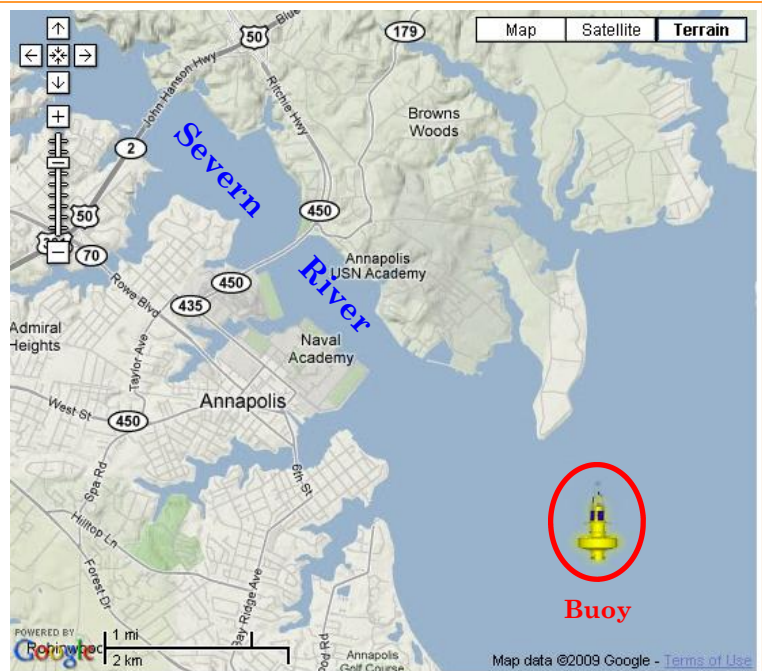
Heather is originally from Buffalo, New York (and is an avid Buffalo Bills fan). She majored in Meteorology at SUNY Oswego and went onto graduate school at the University of Maryland. Heather is currently pursuing her graduate degree in Geospatial Information Sciences.

Annapolis Buoy (continued)

National Historic Trail. These on-the-water buoy platforms merge cellular communications and internet-based information sharing to provide real-time weather and water information. Wind speed and direction, temperature, wave height, current speed/direction, are some of the parameters available. For more information visit the CBIBS web portal at:

<http://www.buoybay.org/site/public/> or for mobile Access to Buoy Data: 877-BUOY-BAY.

Map courtesy of CBIBS



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



December 2: Winter Storms
Stanley, VA

December 9: Basics I
Leonardtown, MD

December 10: Basics I
Stafford, VA

For 2010:

February 22: Basics I
Prince Frederick, MD

February 24: Basics I
Emmitsburg, Md

March 2: Basics I
Landover Hills, MD

March 16: Flood/Coastal Flood
Glen Burnie, MD

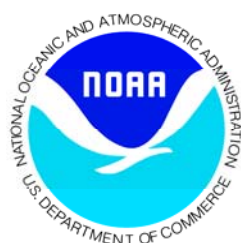
We encourage you to take the Basics I class every five years to maintain proficiency!

Please email any changes to your contact information to:

Nikole.Winstead.Listemaa@noaa.gov

Thank you for donating your time as a spotter!

Baltimore/ Washington
Forecast Office
43858 Weather Service Road
Sterling, VA 20166
703.996.2200
weather.gov/washington
Or
weather.gov/baltimore



Sterling Reporter
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Editor: Nikole Winstead Listemaa