Sterling Reporter

MIC's Corner

By, James E. Lee
Meteorologist in Charge

Building a Weather-Ready Nation

The National Weather Service (NWS) has launched a major, new initiative to build a "weather-ready nation." Over the past decade, communities across the country have become increasingly vulnerable to severe weather events, such as tornado outbreaks, intense heat waves, flooding, active hurricane seasons, and solar storms that threaten electrical and communication systems. Through August of this year, the United States has experienced at least nine separate disasters, each with an economic loss of $1 billion or more — tying the record set in 2008. In 2011, there have been 552 fatalities due to tornadoes in the U.S., with estimated losses of over $20 billion. This year's losses have so far amounted to more than $35 billion. Having America "weather-ready" will result in saving more lives and protecting livelihoods from weather-related high impact events.

How will the NWS help America become "weather-ready?" The NWS will continue to partner with other government agencies, researchers, and the private sector to:

- Improve weather and water forecasts;

- More effectively communicate the risk of hazardous weather to local authorities through impact-based decision support services, including a new initiative of deploying emergency response meteorologists to the location of

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National Weather Service Baltimore/Washington is Now on Facebook!

By, Jared Klein, General Forecaster

The Baltimore/Washington National Weather Service Forecast Office has joined Facebook! You can visit our Facebook page at www.facebook.com/US.NationalWeatherService.BaltimoreWashington.gov and *like* us to become a fan. With Facebook being the #1 most visited site on the web, we will use it as a powerful tool to expand the reach of NWS information and our community presence through the social media outlet. Our office will routinely post content about the local

Skywarn Weather Spotter Courses Back in Full Swing

By, Christopher Strong,
Warning Coordination Meteoroogist

With fall comes the end of the summer break and the return of the National Weather Service's weather spotter training classes. Typically 20-25 of these free classes are taught all around the area by our forecasters. Most of these classes are the general class (Basics I) that covers all weather threats to our region, links individuals to the NWS, and registers people into our database to exchange information. We also teach several threat-specific classes that cover one particular weather hazard, such as winter storms, hurricanes, and flooding. A class takes about 2-3 hours, and most (though not all) are during a weekday evening. These classes are a great source of information for the weather enthusiasts out there, and help improve our area's forecasts and warnings by passing valuable ground truth information to

Warning Coordination Meteorologist Chris Strong at the October 11, 2011 Skywarn Class

our forecasters from our network of 'weather spies'. Currently, we have over 5,000 trained spotters in our forecast area alone.

On October 11th, the National Weather Service partnered with *The Washington Post's* Capital Weather Gang to host the largest weather spotter training class ever held by our office. That evening in the Washington Post's large auditorium, I was able to train over 250 new weather spotters from in and around the District of Columbia. All of them will help us have an accurate snowfall picture for storms during our upcoming winter season, as well as report dangerous weather to our office year-round.

If you haven't taken a NWS Skywarn weather spotter class yet, I strongly encourage you take a few hours out of one evening and take this valuable free training. If you have but it's been awhile, come out again and refresh your skills and your connection with your neighborhood weather office.

LIKE our page for interesting weather facts, periodic forecasts, watch and warning information and other helpful links to better understand the weather.

Facebook *(continued)*

weather, including interesting weather and climate facts, forecasts, watch and warning information, outreach events and other helpful links to better understand the weather. Facebook will not only be used as a platform for the Baltimore/Washington National Weather Service Forecast Office to reach out to the public, but for fans of our page to interact publicly with our office. Fans are encouraged to post comments, questions, interesting weather photos/videos and especially any severe weather reports. We look forward to seeing you on Facebook!

Go to: www.facebook.com/US.NationalWeatherService.BaltimoreWashington.gov

StormReady and the WeatherReady Nation

By, Christopher Strong,
Warning Coordination Meteoroogist

The StormReady program was created to help the National Weather Service guide local governments in their efforts to enhance their ability to lessen the impact of damaging weather events. The program ensures that StormReady counties:

- Receive weather warnings and information quickly through redundant systems
- Know what to do with warnings when received
- Have the ability to monitor weather conditions
- Have several ways to pass on that advance weather warnings to the public
- Work with the NWS to educate everyone about weather safety.

Congratulations to Allegany, Harford, and Baltimore Counties in MD and Prince William County in VA for being re-recognized as StormReady! Also, congratulations to Howard County MD, Fair Oaks Mall in Fairfax VA, and George Mason University in northern VA – all of whom were recently recognized as StormReady Counties or StormReady Supporters!

The StormReady program has been so successful nationwide that it is broadening to help the National Weather Service create a truly WeatherReady nation. There are obstacles that we will all need to overcome together to reach this goal.   One of the big ones is communication, and specifically the communication of risk. In a society that is increasingly connected with information bombarding us at all times, 500+ people perished in a well-warned, large tornado outbreak earlier this year. Closer to home many of us endured a multiple hour commute on January 26th with a well warned evening rush hour snow. As a society we can do better to minimize the impact of big weather events that will always be part of our lives. The NWS can do better a better job of getting people actionable information that they understand and believe, and together we can ensure that everyone is tied in by one way or another to have quick access to that information. These are concepts that are part of our drive to create a WeatherReady nation for us all.

Check out this story from NOAA about building our WeatherReady Nation…
http://www.noaanews.noaa.gov/stories2011/20110817_weatherready.html

To do your part, ensure you and your family are well tied into NWS warnings & information through things like NOAA Weather Radio, text alerts to your phone/email that you can sign up for through your county/local TV station/private weather companies, and even our new office Facebook page (featured in this issue!) Together we can build a truly WeatherReady nation that is ready and able to survive and handle any weather that nature brings us.

MIC'S Corner *(continued)*

community decision-makers; and

Provide innovative scientific and technical solutions that help diminish forecasting challenges and improve the communication of hazardous weather information.

For the next several years, the Baltimore/Washington Weather Forecast Office (WFO) will play a major role in the weather-ready nation initiative. Our office has been selected to field a proof-of-concept project that, if successful, will serve as a model for other WFOs around the nation, and make our region weather-ready. This project will have our office provide impact-based decision support services (IDSS) around our region. IDSS is the basic tenant of weather-ready nation.

IDSS takes the improved weather forecasts made by our WFO forecasters and technicians here in Sterling, and combines it with dedicated personnel who specialize in the communication of hazardous weather information with decision makers. These personnel will use innovate information technology resources to enhance decision maker understanding of the societal impacts of hazardous weather events.

In support of the test project, our WFO will be adding three Emergency Response Meteorologists (ERMETs) in late January 2012. The ERMETs will play a significant role in making our region weather-ready by providing IDSS to the local emergency management and first-responder communities. The ERMETs will be great resources for our WFO, having the experience and knowledge of a NWS Senior Forecaster, coupled with specialized training and experience in communicating weather information and emergency response.

The increased loss of human life and damage due to hazardous weather seen across the United States this year is alarming. I am very pleased to see the NWS making substantial efforts on making our nation weather-ready, and extremely proud that our office has been selected to contribute in the early stages of this initiative. Look for progress reports on the status of our IDSS project in future issues of *The Sterling Reporter*.

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.

Local Forecaster Named NWS Eastern Region Employee of the Month

By, Nikole Winstead Listemaa, Senior Forecaster

Bryan Jackson, general forecaster, was named National Weather Service Eastern Region Employee of the Month for September 2011. From late July through late October of this year, Bryan volunteered to cover vacant shifts at the Center Weather Service Unit(CWSU) in Leesburg, Virginia while they were shorthanded. Bryan's experience with weather in the Mid Atlantic greatly assisted him in quickly becoming proficient in CWSU procedures and services such as providing detailed briefings and graphics to air traffic controllers. When Bryan was fully trained, he was able to work solo shifts, enabling the remaining CWSU staff members to get some much needed breaks by getting a few days off a pay period.
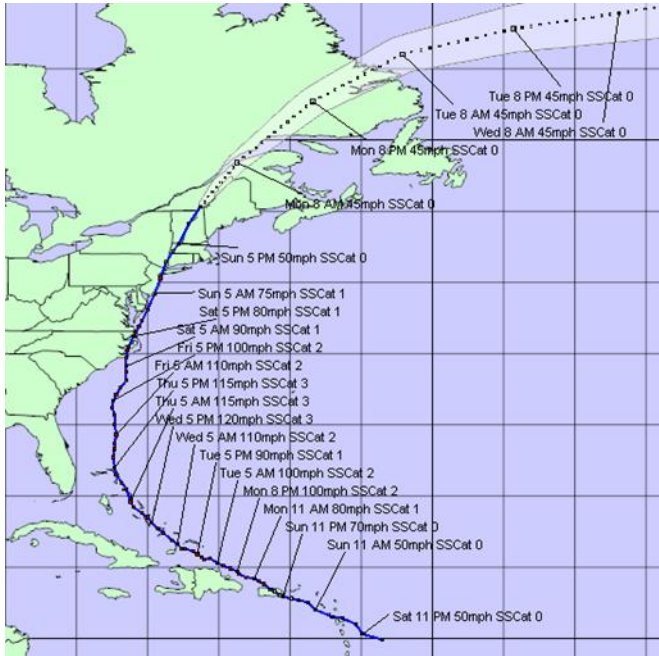

Meteorologist In Charge Jim Lee presenting Bryan Jackson his award.

Irene Slams Southern Maryland

By, Howard Silverman, Senior Forecaster & Steven Zubrick, Science and Operations Officer

Hurricane Irene affected the Mid-Atlantic region on Saturday, August 27 through Sunday, August 28, 2011. The tropical cyclone was named a week prior on August 20, 2011 as the tropical wave was entering the eastern Caribbean.   The cyclone was upgraded to a hurricane just before affecting Puerto Rico on August 21st. They cyclone then turned northwest and then north, paralleling the eastern seaboard of the United States, eventually making landfall near Cape Lookout, North Carolina on the morning of the 27th as a Category 1 Hurricane with maximum sustained winds near 85 mph. Irene then travelled northeast, paralleling the Mid-Atlantic coast. The center of the cyclone passed less than 15 miles off the coast of Ocean City just after 2 AM on August 28th, and then made a second landfall near Little Egg Inlet, New Jersey around 5:35 am. Eventually, Irene weakened to a tropical storm as it moved over New York City around 9 AM.

Locally, Irene will be remembered for producing extensive tree damage due to its strong gusty winds and for its heavy rainfall. At the storm's peak, several area airports briefly recorded minimal sustained tropical storm-force winds of 34 mph, including Washington-Reagan National and Patuxent River Naval Air Station (NAS); both measured sustained 41 mph winds, while 39 mph sustained winds were measured at both Martin State and Andrews Air Force Base. Wind gusts of 50 mph and higher were common along and east of the I-95 corridor, including a 64 mph gust at Patuxent River NAS, and 60 mph gusts at both Reagan National Airport and Quantico Marine Corp Base. Over area waters, even higher wind gusts were reported including the Maryland portion of the Chesapeake Bay. A 73 mph gust was measured in the Bay at Cove Point east of Calvert County, Maryland, and 71 mph gusts were reported at both Thomas Point Lighthouse and at the Francis Scott Key Bridge over the Patapsco River in Baltimore.

Storm Damage in Severna Park, MD

 Communities across southern Maryland and along the western shoreline of the Chesapeake Bay received the
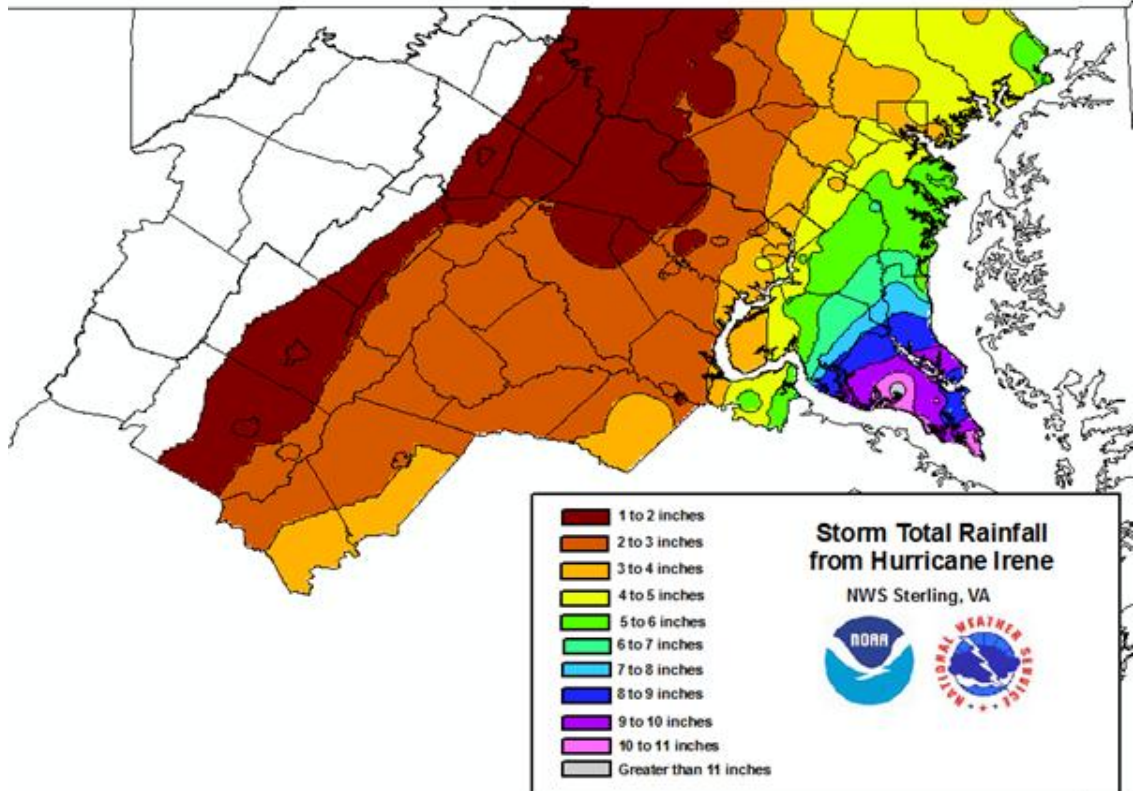
Irene *(continued)*

Storm Damage in Lexington Park, MD

largest impact, although minor impacts extended west all the way to the Blue Ridge Mountains. Fallen trees damaged nearly 1,000 homes primarily across southern Maryland, with nearly two dozen homes being destroyed. In addition, the wind and fallen trees resulted in nearly 2.5 million power outages in Virginia, and around 850,000 in Maryland and the District of Columbia. The number of power outages in Virginia was the second highest in Virginia history – just behind Isabel in 2003. Early damage estimates in the days following the storm topped $13 million in northern Virginia and central and southern Maryland.

In terms of rainfall, a swath of 5-10 inches of rainfall was reported to the west of the storm track (see map). Communities east of Baltimore and Washington were within that area. Between the Blue Ridge and Interstate 95, rainfall totals generally fell between 2 and 4 inches, although it was lower in the Catoctin Mountains in north central Maryland. BWI Airport measured 4.69" while Washington's Reagan National airport measured just under 4 inches (3.83"). The highest report within northern Virginia and central & southern Maryland came from Leonardtown, Maryland where 11.52 inches of rain fell.

Overall, St. Mary's County Maryland received the heaviest rainfall, averaging between 8 and 11 inches. Numerous roads were closed due to flooding from the heavy rainfall, primarily east of Interstate 95. In addition, the river gauge on St. Clement Creek near Clements, Maryland in St. Mary's County set a new record level of 6.98 feet. Records at this location date back to 1968.

1 to 2 inches	
2 to 3 inches	**Storm Total Rainfall**
3 to 4 inches	**from Hurricane Irene**
4 to 5 inches	NWS Sterling, VA
5 to 6 inches	
6 to 7 inches	
7 to 8 inches	
8 to 9 inches	
9 to 10 inches	
10 to 11 inches	
Greater than 11 inches	

Remnants of Lee Cause Torrential Rainfall and Significant Flash Flood across the Baltimore and Washington Areas

By, Stephen Konarik, General Forecaster & Jason Elliott, Senior Service Hydrologist

In early September, ground across Virginia, Maryland, and the District of Columbia was saturated, following a very wet August even prior to the drenching from Hurricane Irene.   Tropical Storm Lee developed in the northern Gulf of Mexico on September 1 and made landfall in Louisiana on September 4. Lee moved northeastward into the Tennessee Valley as a Tropical Depression, eventually becoming extratropical. Southerly flow on the east side of Lee allowed rich tropical moisture to surge up the Eastern Seaboard and into the Mid-Atlantic. High pressure centered over eastern Canada blocked this moisture from moving further north and caused it to pool across our region.   The high pressure also halted Lee's northward progress, forcing it to drift northward over the Central Appalachians for several days. Bands of heavy rain developed and moved north across the area beginning on September 6th and continued through September 9th.   During this period, rainfall totals were excessive, exceeding 12 inches in many locations. The most intense rain bands formed on Wednesday, September 7th and Thursday, September 8th, when the worst flash flooding occurred.

On Wednesday morning, September 7th, a torrential rainband set up in a north/south orientation across Maryland from Charles County into Baltimore County. Rainfall rates of 2 to 3 inches per hour occurred for several hours within this band, causing numerous high water rescues, road closures, and flooded homes. Of note

Allens Fresh (Charles County, MD)
Photo By: NBC Washington

Main Street in Ellicott City
Photo By: JustinWeather

was a rain gauge in Bowie, MD, that observed 4.57 inches of rain in 3 hours, which is an amount that only has a 0.5 percent chance of occurring in a given year. Central Charles County (above) and Ellicott City (left) in Howard County were particularly hard hit.

On Thursday, September 8th, the heaviest rainband set up slightly west of the previous day. This band brought torrential downpours through much of the daytime hours along a swath from King George County, VA to Montgomery County, VA, including the western suburbs of Washington DC. Extremely anomalous 3-hour rainfall amounts were recorded at several automated rain gauges during the event. One near Franconia observed 5.47 inches, a 3 hour amount that has approximately a
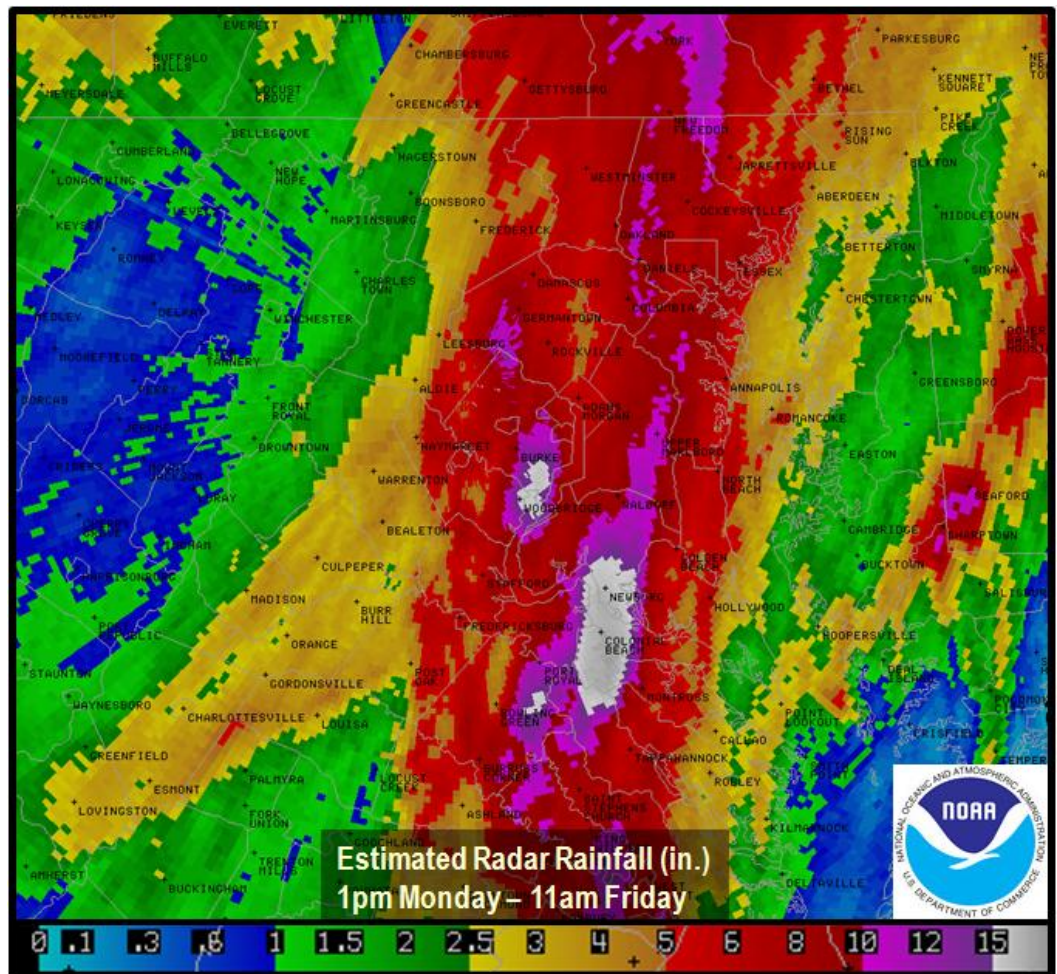
Remnants of Lee *(continued)*

0.2 percent chance of occurring in any given year. A similarly rare six hour rainfall amount of 6.57 was observed at Reston (see right). Also, at Fort Belvoir, an automated weather station tallied 7.03 inches in only 3 hours. Rainfall of this magnitude and duration has a 1 in 1000 chance of occurring each year. This amount of rain caused nearly catastrophic flash flooding in portions of northern Virginia. Tragically, at least 2 people lost their lives in floodwaters in Fairfax County. Hundreds of citizens of Fairfax and Prince William County were evacuated. Numerous major thorough-fares were flooded and closed, including por-

Reston Park and Ride (Fairfax County, VA)
Photo By: NBC Washington

tions of the Capital Beltway, Interstate 66, and George Washington Parkway. The Virginia Railway Express's Manas-sas Line and numerous school districts remained closed into Friday as floodwaters slowly subsided.

Over the course of the event, 34 Flash Flood Warnings were issued by the Baltimore-Washington Forecast Office. There were over 100 reports of flash floods received by our office. This rainfall and the overall wet period of August and September 2011 will go down in the record books in a number of ways. At Baltimore-Washington International Airport (BWI), several daily rainfall records were broken. September 2011 ranked the wettest September on record, with 13.32" of rain being tallied. The two-month period set the record wettest 2 months ever recorded at BWI, with 23.70". The remnants of Tropical Storm Lee proved to be a reminder for residents of the Mid-Atlantic of the dangers of flash flooding. Always remember when high water is observed, turn around, don't drown.

Estimated Radar Rainfall (in.)
1pm Monday – 11am Friday

Early Season Snow

By, Brian Lasorsa,
General Forecaster

On Saturday, October 29th an unusual weather pattern setup for this time of year. High pressure over New England pumped in an abundant amount of cold air while low pressure developed along the Mid-Atlantic Coast. Precipitation well ahead of the low overspread northern and central Virginia, eastern West Virginia and most of Maryland. There was enough cold air for precipitation to fall mainly in the form of snow across northern Maryland and for locations along and west of the Blue Ridge Mountains. The heaviest snow fell Saturday morning through midday before the storm system finally moved away from the area. Snowfall reports were generally between three and six inches across these areas with more across the higher elevations.

Precipitation fell mainly in the form of rain further south and east across Washington and Baltimore. However, there was enough cold air even across these locations for a period of sleet and snow before precipitation ended Saturday. A trace of snow was reported at both Reagan National and BWI Airports. The trace of snow tied a record at BWI that was previously set back in 1952. The trace of snow at Reagan National tied a record dating back to 1925. Snowfall totaled up to 0.6 inches at Washington-Dulles and that set a new daily snowfall record for October 29th. No snow had ever been measured during this date at Washington-Dulles dating back to 1962.
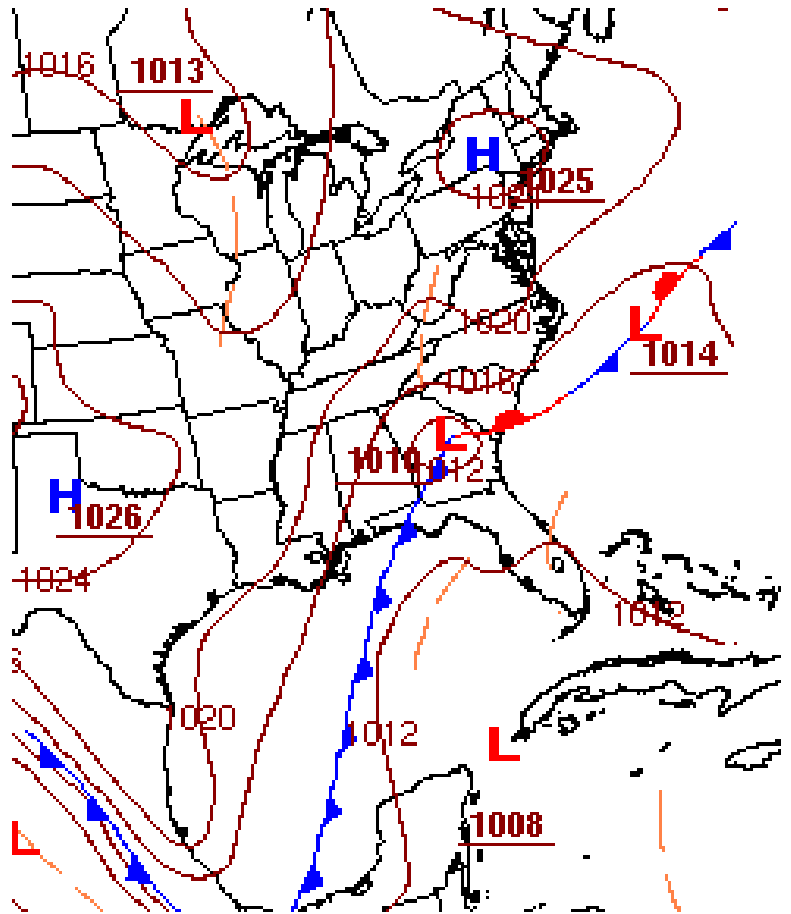
Photo By: Storm Spotter near Manchester, MD

Photo By: Storm Spotter near Poplar Springs, MD
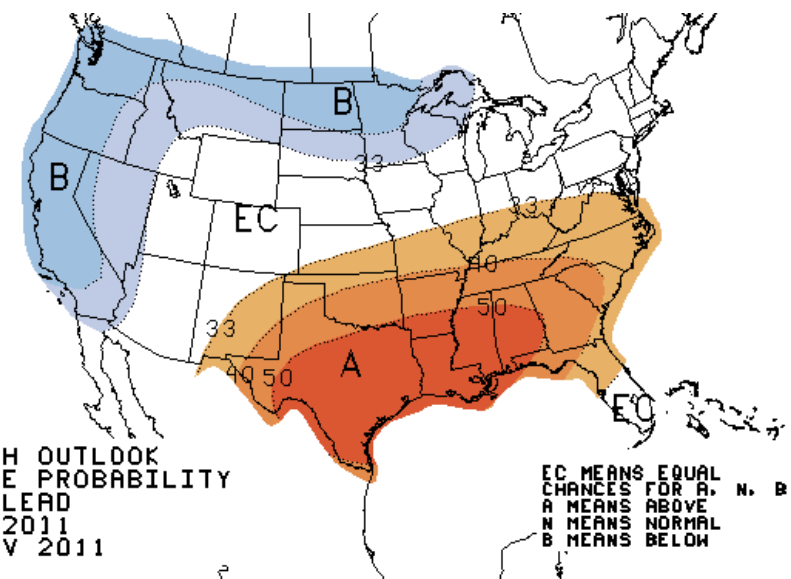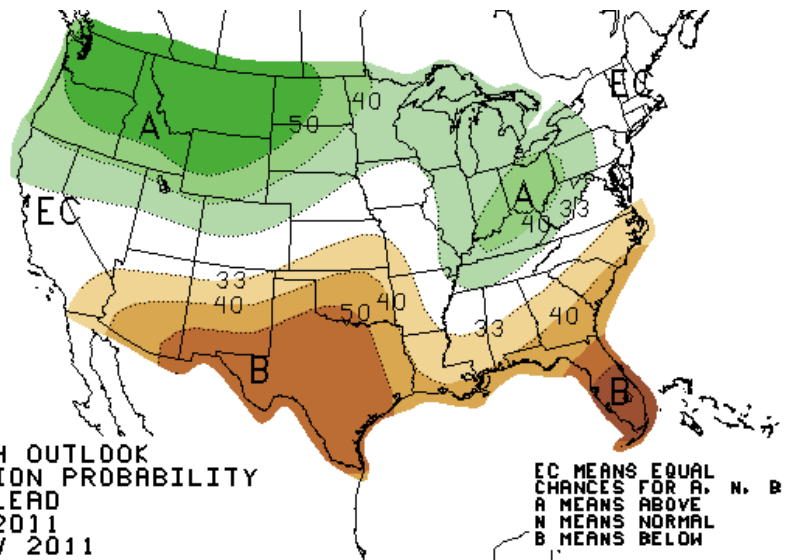
Winter Outlook

By, Jared Klein,   *General Forecaster*

An updated 2011–2012 Winter Outlook from the National Oceanic and Atmospheric Administration/Climate Prediction Center (NOAA/CPC) was issued in mid-November. The outlook favors higher chances of below normal temperatures across the West Coast and north-central United States and above normal temperatures for much of the southern Plains, lower Mississippi Valley and Southeast States. The mid-Atlantic region is situated on the northern edge of the weak signal for above normal temperatures and equal chances for above, near or below normal temperatures. Meanwhile, the winter precipitation outlook shows higher chances for wetter than normal conditions across much of the northern half of the United States that lie west of the Appalachians and drier than normal conditions across the already drought stricken southern tier of the country. The mid-Atlantic region is placed in a transition zone between the enhanced signals for wetter than normal conditions over the Ohio Valley and central Appalachians and drier than normal conditions over the Southeast.

Although some may think an outlook of equal chances is not very helpful, it does tell important information. The probability of above, neutral or below (temperatures or precipitation) are equal because the predictive tools used to construct this forecast did not show a strong enough seasonal climate signal to shift the statistical probabilities one way or another.

THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID DJF 2011
MADE 17 NOV 2011

EC MEANS EQUAL
CHANCES FOR A. N. B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID DJF 2011
MADE 17 NOV 2011

EC MEANS EQUAL
CHANCES FOR A. N. B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

La Niña, which is a climate phenomenon characterized by unusually cool ocean temperatures in the tropical Pacific Ocean, is expected to be a key influence in the climate for the second straight winter. Last winter's moderate to strong La Niña episode faded earlier this year during the Spring. However, cooling of the ocean temperatures in the Pacific associated with La Niña redeveloped by the late summer. The current La Niña episode is expected to gradually strengthen this winter.

Approximately 21 winters since 1950 (including last winter) were influenced by a La Niña episode. The figures below are composites of average December, January, and *(Continued Next Page)*
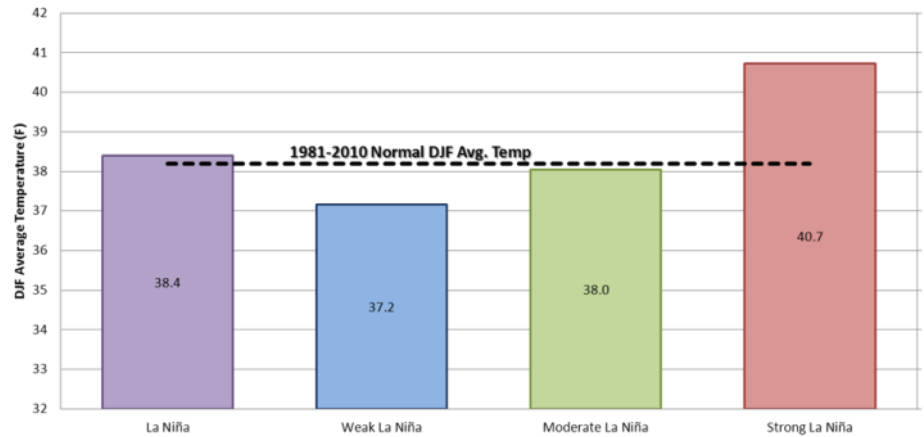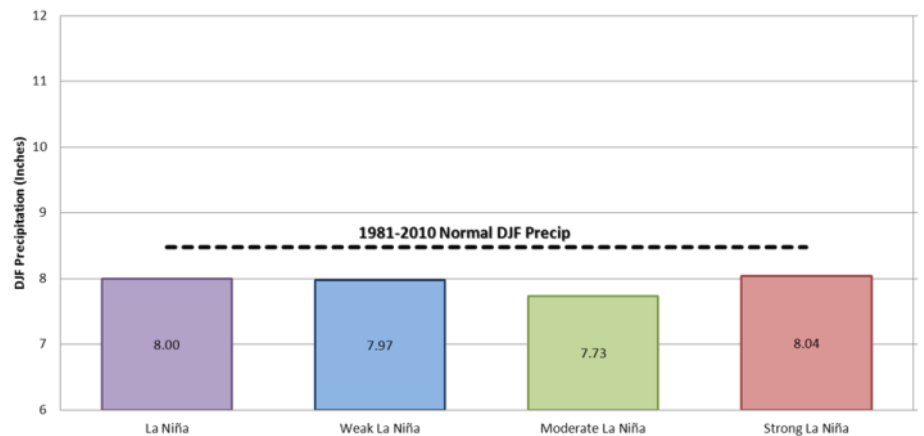
Winter Outlook *(continued)*

February (DJF) temperatures and precipitation, as well as seasonal snowfall at Washington, D.C. Each figure is broken down by the strength (weak, moderate and strong) of the La Niña episode. For Washington D.C., temperatures generally averaged near normal during La Niña winters. However, the stronger the La Niña episode, the warmer temperatures were on average. Winter precipitation averaged drier than normal during all La Niña intensities. Seasonal snowfall during La Niña winters averaged below normal, especially during moderate and strong episodes. The above normal snowfall seen in weak La Niña episodes was weighted heavily by the 6–8 January 1996 snowfall, when 17.1 inches of snow was recorded at Washington D.C.

There are other climate modes such as the North Atlantic Oscillation (NAO) and Madden-Julian Oscillation (MJO), that influence the climate signal on shorter than seasonal time scales. The NAO relates the pressure pattern between the polar low near Iceland and subtropical high pressure over the northern Atlantic Ocean. The MJO is a one- to two-month cycle of tropical convection that propagates from the Indian Ocean eastward across the Pacific Ocean. These modes unfortunately are not predictable on seasonal time scales due to their higher frequency of variability, but do influence winter temperature and precipitation patterns in the mid-Atlantic region.
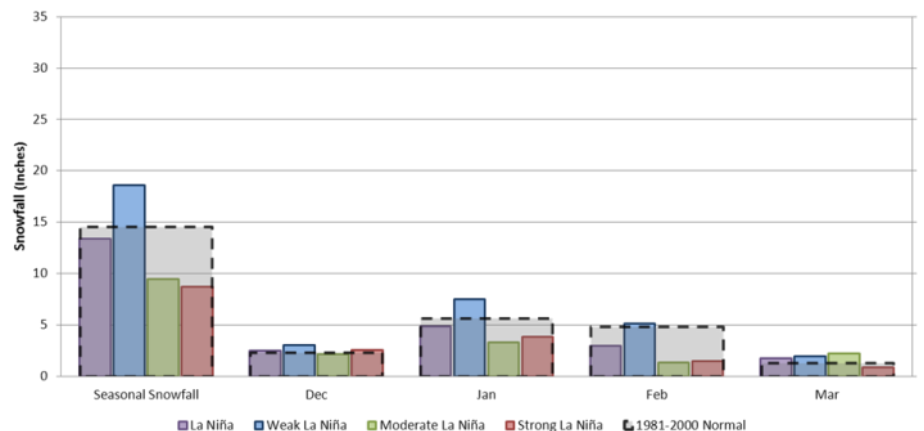

(1950-2011) D-J-F Avg. Temperatures at Washington DC (La Niña Years)

(1950-2011) D-J-F Avg. Precipitation at Washington DC (La Niña Years)

(1950-2011) Avg. Snowfall at Washington DC (La Niña Years)

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 power-lines, 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**

Skywarn Classes

Class	Date	Location
Basics I	12/14/2011	Leesburg, VA

Skywarn classes will resume after the first of the year.

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