



## From Tornadoes to Floods, Harford & Allegany Counties are



By Barbara Watson, Warning Coordination Meteorologist

Storm Ready is a National Weather Service (NWS) program aimed at building a partnership between local forecast offices and communities to save lives and protect property from hazardous weather. NWS weather forecast offices (WFOs) work with local emergency managers to improve communications and increase preparedness within a community. A Storm Ready certification means that the community has met all of the requirements necessary to achieve this status. Harford County Maryland became the first county in Maryland to be certified "Storm Ready" by the National Weather Service in July. Allegany County, Maryland, became the second Maryland County to be classified "StormReady" in September.

To achieve this recognition, Harford County (population of 225,000) and Allegany County (population 74,000) had to have at least four different ways to receive warnings and weather updates from the NWS. They had to have at least four different ways to monitor weather and radar data and they had to have at least four different ways to assist in getting warning information out to the community (such as sirens, reverse 911, radio system, cable override). These abilities had to be available to both their 911 centers (24 hour warning point) and their Emergency Operations Center (EOC).

In addition, Harford and Allegany counties had to have NOAA Weather Radios in all of its grade schools and public buildings as a means for the community to get warnings and take action when necessary. Both counties also had to have a hazard assessment which tells them the risks and potential for different types of weather as well as a hazardous weather operations plan which outlines how the county will respond when different types of severe weather threaten. Both counties also had to help with SKYWARN spotter training and help with public outreach to educate people on safety and preparedness actions.

As shown by these requirements, a lot of hard work goes into achieving Storm Ready status. The NWS Baltimore-Washington Forecast Office congratulates Harford County and Allegany County on their efforts and achievements to protect their communities. They now become a model for the rest of the state and the greater Washington area to follow.

More counties are working hard toward achieving StormReady status, including Montgomery County, Maryland and Jefferson County, West Virginia.

## NWS Sterling Received Dept. of Commerce Gold Medal for Sept. 11th Support

The National Weather Service Forecast Office in Sterling, Virginia and the National Weather Service Forecast Office in Upton, New York were recognized for their support to emergency management following the September 11, 2001, terrorist attacks. Immediately after the crashes of the hijacked airlines at the World Trade Center, Pentagon, and western Pennsylvania, emergency management officials initiated search and rescue efforts. Weather information was critical to the safety of rescuers and played an important role in the decision-making process.

Their efforts in providing critical weather support helped keep workers safe and facilitate rescue and recovery efforts.

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# NWS Staff Showcase Warning Technologies at Deaf Conference in Washington, DC

by Melody Paschetag and Josephine Bergner

Gallaudet University hosted Deaf Way II at the Washington, DC Convention Center July 8-13, 2002. This was an international event with 9,000 attendees from around the world. It included deaf, hearing, hard of hearing, late-deafened, deaf-blind, parent, student and more. During the three days



*NWS Staff at Deafway II Booth at D.C. Convention Center*

of exhibits, attendees examined technology used by, for and on deaf people, and saw the interconnectedness of deaf, hard of hearing, and hearing people in an increasingly technologically sophisticated world. More details about the conference can be found at [www.deafway.org](http://www.deafway.org).

Representatives from the Baltimore-Washington Forecast Office and Weather Service Headquarters participated in the exhibits. We provided information on

weather safety and demonstrated how the deaf and hard of hearing can receive severe weather warnings. With the national network of NOAA Weather Radio transmitters across the country, the deaf and hard of hearing can also be notified when severe weather is in their area. Manufacturers have made NOAA Weather Radios and adapters which can be used by the deaf/hard of hearing. In turn, when the National Weather Service issues a severe weather warning, a tone and short coded message is broadcast which can be read off the radio display. The adapters flash or vibrate, letting them know there is

severe weather and to go to the radio to read a short warning statement. With this information, they can take the appropriate action. Another way the deaf and hard of hearing can receive this information is through their pager and e-mail. Since many deaf carry a personal pager, they can receive severe weather warnings wherever they are. More information can be found at [www.nws.noaa.gov/nwr](http://www.nws.noaa.gov/nwr) under Special Needs Information.

## COOP Modernization Partner's Forum

by Melody Paschetag, Service Hydrologist

National Weather Service Headquarters hosted the COOP Modernization Partner's Forum September 18<sup>th</sup> in Rockville, MD. The focus was working to build a National Observing capability for the future.

It was a gathering of private and academic weather and data experts to plan the modernization of the nation's volunteer network of more than 11,000 weather observers whose daily data reports are used by NOAA's National Weather Service to forecast changes in our weather, water and climate. The Cooperative Observer Program (COOP) of volunteers has been in existence for 112 years and is a part of the Department of Commerce. Melody Paschetag, the Service Hydrologist from the Sterling, VA Weather Office and Sandra Hastings, a COOP Observer from Mechanicsville, MD also attended.

Established in 1890, the COOP network was set up to take meteorological observations and establish and record climate conditions in the United States, primarily for agricultural purposes. Today, most COOP stations depend upon outdated technology. Volunteers are provided a set of weather instruments and observing instructions by the National Weather Service, which manages and maintains the network.

Since the beginning of the COOP program, many uses for COOP data have emerged. These include: climate change

and variability; water management; flood zone determination; drought assessment; environmental impact assessment; risk management and insurance industry needs; litigation; engineering, power plant and architectural design; energy consumption studies/models; crop yield forecasts; and weather and climate forecasts, warnings and verification.

It was agreed that first, the COOP stations needed more up-to-date weather equipment and, second, making data available on a near real-time basis. The first, pre-modernization phase is to upgrade the current network by replacing the punch block in the Fisher-Porter rain gages and replacing the Minimum-Maximum Temperature (MMTs) displays for all sites. The next phase is the full-modernization phase. The entire process is expected to take up to fourteen years to complete.

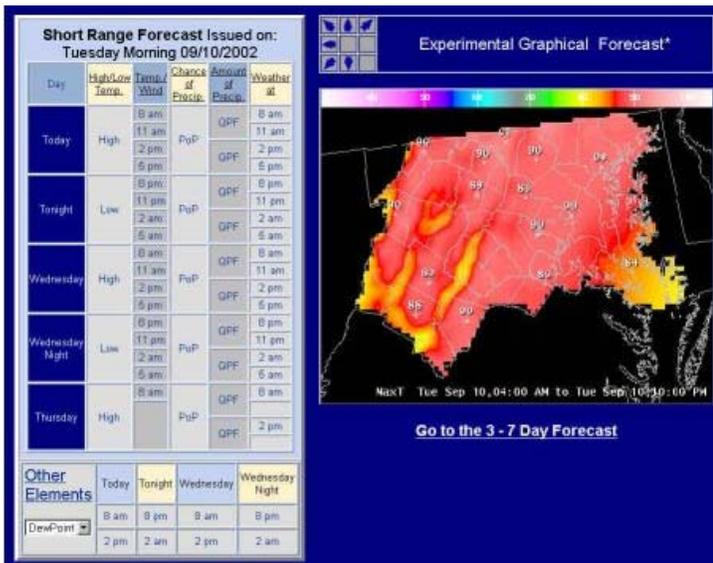
"Modernizing the COOP network is the first step in meeting the nation's increasing need for timely, higher-resolution weather and climate data," said NOAA Weather Service Director retired Air Force Brig. Gen. Jack Kelly. "Modernized stations will increase our ability to quickly and accurately chart variability, thereby improving our forecasting and drought-monitoring capabilities."

# Sterling Web Site – further in depth

By Jim DeCarufel—webmaster

In the last issue of the Reporter we ended our review with the Graphical Forecast Table. Now we'll continue with the items on the main page of the NWS Sterling web site.

The Experimental Gridded Forecast is another way of showing the forecast for our County Warning Area (CWA) or our area of forecast responsibility. This section is a work in progress and may not always work properly so use with caution. Every possible attempt is made to keep the information current. What it will show is a graphical representation of the latest forecast temperatures for the current forecast period. Clicking on the link will bring up a map that looks like something like this.



If you use Internet Explorer as your browser, then you can place your mouse arrow on any of the links on the left side table and the map on the right will display those values. In this example, the image on the right shows the forecast Maximum temperature for Tuesday Sept 10<sup>th</sup>. Other parameters will also show up in a map using the color scale shown immediately above the map. Continuing on with the main page shows several thumbnail images of the Radar, Satellite and Forecast map. Clicking on any of these images will bring up a full screen view of the most recent image you click on. Below the forecast map image is a link named "more...". Clicking that will bring up the main page of the Hydro-meteorological Prediction Center (HPC) that has forecast maps for 12, 24, 36 and 48 hours and day 3, 4, 5, 6

forecasts. There are links to the Day 1 QPF, Day 2 QPF and Day 3 QPF. QPF stands for Quantitative Precipitation Forecast so what you can visually see the forecast precipitation amounts for the next 3 days. With the current drought situation, those may be helpful for everyone to keep an eye on. Back to the Sterling page.

**Local Storm Report** is another very informative product that is issued

Below the Radar and Satellite Images section is what I'll have to call, for the lack of a better name, the potpourri area. This would be the area where each office can put in any information that is relevant to that particular office. Besides the link to the Sterling Reporter, there are links to the April 28 tornado event, Skywarn classes and possibly 3 of the more important links on the entire web site. The **Public Information Statement** is a link to the latest statement we issued. These are issued by us when we feel the information is relevant to the general area. Topics may include, How hot it has been, How much rain fell from a storm over the area, How dry it's been, and so on.

Another very high profile product is the **Drought/Water Supply Statement**. This product is issued on the second and fourth Wednesday of each month. This product consists of a narrative statement and the latest rainfall amounts by county for the 46 counties in our CWA. Very informative!

The **Local Storm Report** is another very informative product that is issued to relay reports of damage from a storm that affects the CWA. If we, for example, issued a Severe Thunderstorm Warning for several counties, this is where we will post damage reports that we receive. Continuing on, are a couple more thumbnail images that we all wish weren't there, the latest **Drought Map** and **Drought Outlook**. Unfortunately, it appears that we'll have to keep these links on the web site for some time to come. These maps are a visual presentation of how bad the drought is and what the prospects are for some drought relief.

That pretty much takes care of the main page of our web site. In the next issue, we'll go into a brief explanation of some of the text links on the left side menu. Lotsa good stuff there so stay tuned....



# Waxing Creative

by Julie Arthur - Senior Forecaster

While our meteorologists love the weather, they do have other interests. Take, for example, Christopher Strong (Chris) and Andrew Woodcock (Woody). They make up the musical duo Strangewax. Woody plays bass guitar and composes songs for the band. His musical interests were piqued when he observed Chris playing guitar. Chris is the bands lead singer and plays guitar. He has been playing various instruments since he was a child and hails from a musical family.

Strangewax was born when the two musicians discovered they both liked to play music from the 60's, 70's and 80's. They eventually progressed to writing their own songs. Since our meteorologists work rotating shifts, it has been a challenge to get together for practice sessions. As Chris put it, "It's much like trying to get 2 lock tumblers aligned, or getting a puzzle together."



Chris and Woody during a recording session

Meteorology and music come together when Woody and Chris weave weather words into their songs. For instance, "She Was Like Lightning" is a haunting melody about a girl, and "Mitchell" describes the human devastation caused by the deadly Hurricane Mitch. Chris noted that weather can be used to create a mood. The chorus of "Rainino" sadly queries "Rain comin' down/Can't you hear the sound" as it paints the greyness and negativity of a broken relationship.

Whether Woody and Chris are composing forecasts or waxing creative, Strangewax is a high note on the Sterling staff!

Strangewax is a high note on the Sterling staff!



## SKYWARN/Co-Op Open House at the National Weather Service

On August 10<sup>th</sup>, the annual SKYWARN/Co-op Open House, Picnic, and Awards Ceremony was held at the Sterling National Weather Service Forecast Office. About 80 SKYWARN spotters and cooperative observers attended. Staff members Melody Paschetag and Barbara Watson, who are responsible for organizing local SKYWARN activities, had a chance to meet and greet several dedicated observers, including some who drove over two hours to attend the get-together. News Channel 8 also attended and put together a story on SKYWARN. Melody gave tours of the office and staff member Trina

Heiser conducted a special balloon release. Hot dogs and hamburgers were grilled, lots of home made side dishes were sampled, and a special volunteer ap-

preciation cake was enjoyed by all.

Awards were presented to spotters that have given extra time and dedication to the program. A certificate and rain gauge were given to Leila C., the SKYWARN amateur radio spotter who reported the devastating April 28<sup>th</sup> La Plata tornado. Butch B., the new volunteer SKYWARN amateur radio coordinator, was given an NWS hat. John P., SKYWARN coordinator, and Mike V., assistant coordinator, were also thanked for their dedication. Michael graciously provided pictures of the event for the newsletter.



Carol and Leila cooking burgers.



Ron, Maria and Mark enjoy the food and some radio DX

## Fall and Winter SKYWARN Training Classes

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Here's your chance to join the National Weather Service SKYWARN Spotter Network or enhance your severe weather spotting skills. How do I sign up for these free classes? Visit our SKYWARN training web site for details: <http://www.erh.noaa.gov/lwx/skywarn/classes.html>



*Butch shows off his certificate*

### Basics I Class

This class is essential for becoming a SKYWARN spotter. It is a 3-hour class that covers the basics of how SKYWARN and the National Weather Service operate, what you need to report and how, and how to spot severe thunderstorms and tornadoes. **This class is a prerequisite for all other classes.**

**Wednesday, November 6th, 6:00 - 9:00 PM at Williamsport, MD**

**Tuesday, November 12th, 6:00 - 9:30 PM at Bardane, WV (Jefferson Co.)**

**Saturday, December 7th, 9:00 AM - Noon at Stafford, VA**

### Basics II Class

This class is an optional sequel to the Basics I class. It is 2 1/2 hours long. It is good for spotters who need a refresher or feel they want additional information and training. It reviews the basic spotting techniques and covers more information about thunderstorms and Doppler radar. You must have taken Basics 1 to attend this class.

**Saturday, December 7th, 1:00 - 3:00 PM at Stafford, VA**

### Winter Storm Class

This is an optional 2 1/2 hour class that is offered seasonally. Its focus is on Mid-Atlantic snow storms and nor'easters. It looks at the frequency and history of the storms, how they form and the difficulties in forecasting them, how to be prepared, how to measure snow and ice, and how SKYWARN operates during a winter event. You must have taken Basics I to attend this class.

**Thursday, November 14th, 6:00 - 8:00 PM at Bardane, WV (Jefferson Co.)**

**Tuesday, December 3rd, 6:30 - 9:00 PM at Cumberland, MD**

## The NWS Marine Warning and Forecasting Services

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By Neal DiPasquale Senior Forecaster

Unless you're an avid boater, you may not know about the National Weather Service (NWS) marine forecast and warning program. However, few people are more affected by the weather than the mariner. An unexpected change in winds, seas, or visibilities can negatively impact marine operations and threaten lives. The marine program is at the core of the NWS's mission. Our warnings and forecasts help the marine community plan and make decisions to protect life and property. Creating a marine forecast is just as challenging as preparing the more familiar public forecast. Despite this fact, marine forecasts rarely generate as much publicity and media attention as public forecasts.

The NWS Marine program is comprised of: Coastal Marine forecasts, Offshore Forecasts, High Seas warnings and forecasts, and tropical forecasts and warnings.

The High Seas forecast is prepared for areas beyond 250 nautical miles (NM) offshore, and is mainly geared to the needs of the largest ocean-going vessels. Off-

shore forecasts are for 60 to 250 NM away from the coastline and are mainly for those mariners operating a day or more from safe harbor. The coastal marine forecasts are issued by the coastal NWS offices for mariners and boaters operating within 60 NM of shore.

The NWS Sterling office issues a Coastal Waters Forecast (CWF) for most of the Chesapeake Bay and the Tidal Potomac (see map on next page). A CWF is a five day forecast consisting routinely of wind direction and speed, wave height, weather, restriction to visibilities (when 1 NM or less), and unusual high or low tides. We also forecast more unusual events such as significant freezing spray or rime build up on vessels, and hazardous ice on the bay during extremely cold winters. But winds and waves are the prime considerations for boats and ships.

With Baltimore harbor being one of the busiest harbors on the East Coast, our marine forecasts and warnings become extremely important. A typical forecast may read "North winds 10 to 15 kt. Waves 2 ft. A chance of afternoon showers and thunderstorms." Of course when

## NWS Marine Warning and Forecasting Services (cont'd)

sustained winds and waves increase over certain thresholds we have to issue special advisories and warnings. For example, when we are expecting generally strong winds or high waves that will last for more than a few hours, we will issue the following advisories and warnings in our CWF:

**“Small Craft Advisory”** when sustained winds are 18 to 33 knots or waves are 4 ft or more.

**“Gale Warning”** when sustained winds are 34 to 47 knots.

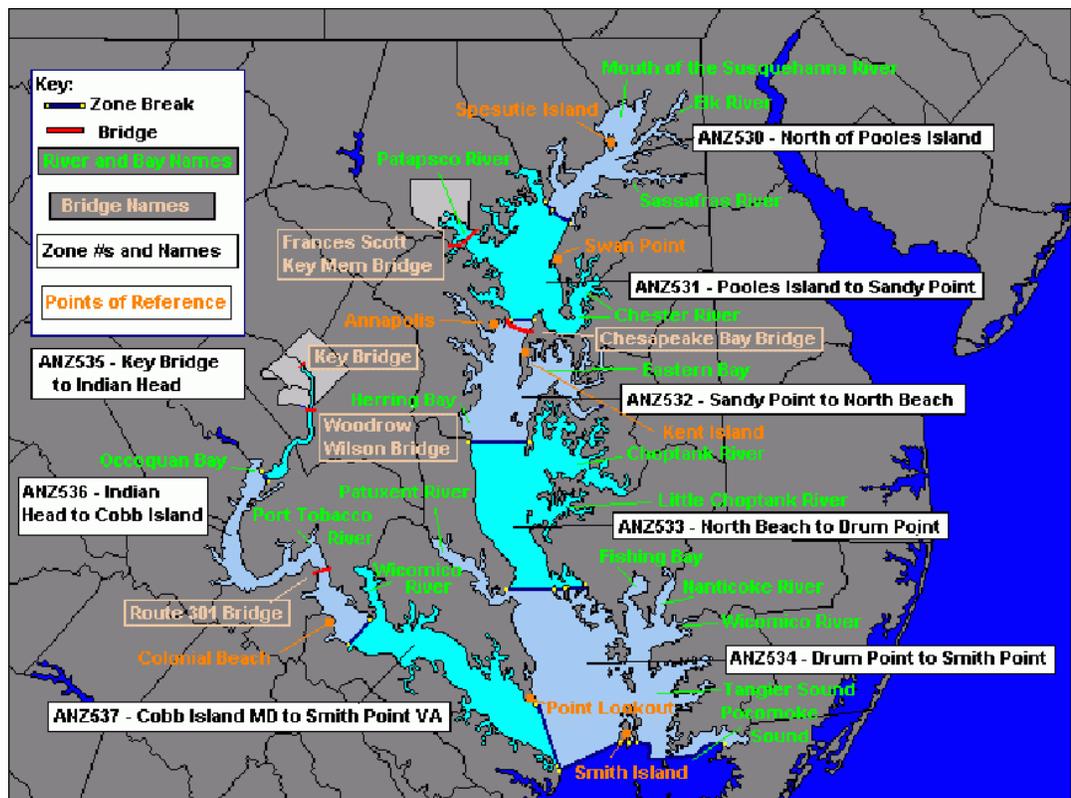
**“Storm Warning”** when sustained winds are 48 knots or higher.

If the higher winds and waves are due to strong to severe thunderstorms moving over the bay, then we will issue a Marine Weather Statement (MWS) or Special Marine Warning (SMW). The purpose of the MWS is to provide information on non-severe, but significant conditions such as fog or winds increasing up to 34 kts for a couple of hours or less, usually due to a shower or thunderstorm. A SMW is issued when a potentially hazardous event occurs over the water. These events include sudden strong wind shifts, squalls, water-spouts, and gusts of 34 kts or greater, again usually from a thunderstorm or water-spout. These warnings are equivalent to severe thunderstorm warnings on land. Of course when a tropical system moves up the coast we also issue the appropriate tropical or hurricane watches and warnings as necessary.

We are also able to forecast and warn for the eastern coast nearshore waters, from Sandy Hook NJ to the NC/VA state line if the NWS offices in Philadelphia or Wakefield require backup for any reason.

The NWS Marine weather products are widely disseminated via U.S. Coast Guard (USCG) broadcast, NOAA Weather Radio, Internet and other media. Details on the dissemination of NWS marine products can be found on the NWS Marine Weather Dissemination Home Page at [www.nws.noaa.gov/om/marine/home.htm](http://www.nws.noaa.gov/om/marine/home.htm)

We continually strive to improve our marine forecasts and warnings. To help accomplish this, our office routinely staff booths at major boat shows and marine festivals. This direct contact allows us to gain valuable feedback from the marine community. The NWS has also established a nationwide Marine Report program (MAREP). Through this cooperative effort, mariners relay radio reports of sea and wind conditions to the NWS, similar to the spotter and coop program, but on the water. If you would like to participate or learn more about this volunteer program, please visit our marine page on the office website.



*Sterling Coastal Waters Map*

## Historic Chronicle: The Madison County Flood of June 27, 1996

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Research by Barbara Watson, Warning Coordination Meteorologist

The Madison County Flood on June 27, 1996 was the worst flash flood Virginia had experienced since the remnants of Camille dropped up to 30 inches of rain in Nelson County in August 1969. The Nelson County flood ranks as one of the nation's worst flash floods of the 20<sup>th</sup> century. Only one person died in the Madison County flood versus a staggering 117 people who were killed in the Nelson County flood of 1969. This incredible difference can be attributed to three significant factors.

1) The Madison County flood was well forecasted. Flash flood warnings did not even exist in 1969. The National Weather Service contacted the State Emergency Operations Center ahead of time to inform them that a significant flood was likely on June 27<sup>th</sup> 1996.

2) Early response and heroic actions by emergency responders made a big difference. Early warning allowed officials to have resources in place before the flooding began. As conditions worsened through the day, the operators of the helicopters risked their lives flying in low visibility into mountain valleys to pluck people from rooftops. Some 80 people were rescued! In 1969, rescue operation spin-up time was much longer.

3) The Madison County flood occurred in daylight when people could see rising water and emergency responders could see people who needed help. In Nelson County, people were asleep and awoke as their houses floated off their foundations.

The weather that set up the Madison County flood included a tropical air mass; an upper level low over the Mississippi Valley which sent disturbances across the area helping to trigger thunderstorms; a slow moving cold front sliding south along the front range of the Appalachians which served as a focus for thunderstorms; and high pressure to the north which set up a westward flow of moist air from the oceans into the mountains. A large thunderstorm complex developed early in the day over Rappahannock County and slowly moved south to Madison County becoming nearly stationary where it dumped 20 or more inches of rain.

Devastating flooding resulted. Nearly all roads and every bridge in Madison County was damaged or washed away. Half of the farms sustained damage. The entire hay crop was lost and half the corn crop was wiped out. Hundreds of livestock were killed and 500 to 1000 miles of fencing was damaged or washed away. County damages were estimated at \$64 million with an additional \$29 million in agricultural losses. The only death in the county was due to a home collapsing on a woman. An additional death occurred with flooding in both Rappahannock and Warren counties. The flood waters from Madison and Orange Counties flowed into the Rapidan River. The stream gage near Ruckersville in Greene County was destroyed by raging water. The flood crest was estimated to have reached 31.6 feet, a 500-year flood level. Downstream at the Culpeper gage, the river crested at 30.4 feet, which is equivalent to a 100-year flood.

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## Regional Weather Review: May & June 2002 by Michelle Margraf, Storm Data Focal Point

### **May 2002**

**2<sup>nd</sup>:** Afternoon thunderstorms downed trees and power lines in Culpeper, Stafford, and Montgomery counties and Washington D.C. Dime to golfball sized hail fell in Fairfax, Montgomery, Howard, and Baltimore counties. In Loudoun County, large hail caused damage in Ashburn, Countryside, and Cascades. In Mineral County, very heavy rain flooded roads, basements and creeks.

**12<sup>th</sup>:** Thunderstorms downed trees and power lines across Central and Western Maryland and Loudoun County, Virginia. Large hail fell in Washington, Harford, Prince William and Fairfax counties.

**13<sup>th</sup>:** Scattered afternoon thunderstorms downed

trees and power lines in the following counties: Frederick (VA & MD), Allegany, Washington, Baltimore, St. Mary's, Mineral, Berkeley, and Morgan. In Howard County, 75 MPH winds downed numerous trees onto power lines, roads, and structures northwest of Ellicott City. Large hail fell in Alexandria, Baltimore County and Howard County. That evening, a strong cold front that produced winds up to 50 MPH downed trees in scattered locations.

**14<sup>th</sup>:** A line of showers downed trees across Maryland west of the Chesapeake Bay, Northern Virginia, and the Eastern Panhandle of West Virginia. In Allegany County, a gable roof was blown off in Cumberland. In Montgomery County, a wind gust of 87 MPH was reported in Clarksburg. In Jefferson County, a large tree

## Regional Weather Review (cont'd)

fell onto a car and killed the driver east of Charles Town. **18<sup>th</sup>:** Scattered thunderstorms downed trees in Charles, Calvert, and St. Mary's Counties between 7 and 9 AM. On the Potomac River, a waterspout became a tornado as it struck land south of Faulker. It stayed on the ground for 5 miles before dissipating south of Newport. It downed several trees and destroyed a few sheds and barns.

**20<sup>th</sup>-22<sup>nd</sup>:** Temperatures plummeted into the mid 20s to lower 30s around dawn on the 20<sup>th</sup>, 21<sup>st</sup>, and 22<sup>nd</sup>. Tender vegetation such as grapes, corn, soybeans, tomatoes, sweet potatoes, squash, cucumbers, and beans were lost to the late season frost.

**26<sup>th</sup>:** Thunderstorms produced flash flooding in Rockingham, Shenandoah, Hampshire, and Jefferson counties. Large hail fell across the Eastern Panhandle of West Virginia, Northern Virginia, and in Montgomery County, Maryland. Downed trees and power lines were reported in Jefferson, Fauquier, and Loudoun Counties.

**27<sup>th</sup> AM:** A stationary thunderstorm over Northern Loudoun and Southern Montgomery counties between 3:30 and 5:00 AM and dropped up to 4 inches of rain. Tuscarora Creek in Leesburg Seneca Creek near Poolesville overflowed their banks.

**27<sup>th</sup> PM:** In Allegany County, thunderstorms produced significant flooding along Elk Lick Run around Baltimore Pike (Route 144) east of Cumberland. Twenty people were evacuated and over 100 homes and several roads were damaged. In Montgomery, Albemarle, Shenandoah, and Hardy counties, roads were also flooded. High winds downed trees in Nelson and Albemarle Counties. At Manassas Airport, the roof of a hangar was blown off.

**28<sup>th</sup>:** Afternoon thunderstorms flooded roads in southern Hampshire County.

**29<sup>th</sup>:** Afternoon thunderstorms flooded roads and basements in Grant and Allegany counties.

**31<sup>st</sup>:** An afternoon thunderstorm over Spotsylvania County downed several trees and caused minor structural damage. A thunderstorm over Anne Arundel County produced quarter sized hail.

### **June 2002**

**4<sup>th</sup>:** Scattered afternoon thunderstorms produced large hail Albemarle, Hardy, Berkeley, and Grant counties.

**5<sup>th</sup>:** Scattered afternoon and evening thunderstorms produced dime to golfball sized hail in Albemarle, Warren, Rappahannock and Washington counties. Downed trees and power lines were reported region wide. In Prince Georges County, 500 homes were damaged by fallen trees, and three people were injured.

**6<sup>th</sup>:** Trees and power lines were downed region wide by afternoon and evening thunderstorms. In Lake of the Woods, 70 MPH winds downed numerous trees and

power lines onto roads, homes, and cars. One person was injured. In Augusta County, a twin silo and barn were damaged. Three people were injured in Charlottesville and one person was injured near Wilderness (Spotsylvania Co.) when trees fell onto cars. Large hail fell in Culpeper, Fairfax, Prince William, Anne Arundel, Howard, and Prince George's counties. In Frederick County (MD), a tornado damaged a trailer and downed several trees near Frederick. In Orange County, a tornado near Orange uprooted trees and damaged a garage.

**13<sup>th</sup>:** Scattered afternoon and evening thunderstorms downed trees and power lines in King George, Stafford, Spotsylvania, Orange, Charles, and Greene counties.

In Berkeley County, cars were stalled on flooded roads. **16<sup>th</sup>:** In Charles County, a golfer was injured when thunderstorm winds downed a tree limb near White Plains. In Calvert County, power lines were downed.

**18<sup>th</sup>:** Scattered evening thunderstorms produced flooding in Greene and Albemarle counties. Dime to golfball sized hail fell in Greene, Culpeper, Fauquier, and Albemarle counties. Trees were downed in Fairfax County.

**19<sup>th</sup>:** An afternoon thunderstorm flooded roads in St. Mary's County.

**25<sup>th</sup>:** An evening thunderstorm downed trees across northeastern Shenandoah County.

**25<sup>th</sup>-30<sup>th</sup>:** A heat wave contributed to the deaths of a 33 year-old woman in Montgomery County, a 69 year-old man in Carroll County, and 5 senior citizens in Baltimore City.

**27<sup>th</sup>:** Afternoon thunderstorms downed trees in Arlington County, Alexandria, Washington County, Calvert County, Prince George's County, St. Mary's County, and Washington D.C. In Washington County, a wind gust of 81 MPH and dime sized hail was recorded near Smithsburg. A barn, fencing, and trees were damaged.



Trina launches a weather balloon during Skywarn/Co-op picnic.

# The Hot, Dry Summer. Aren't you glad it's over?

By Dewey Walston



...SUMMER 2002 TIES FOR THE 2ND WARMEST SUMMER ON RECORD IN WASHINGTON DC...

METEOROLOGICAL SUMMER HAS COME TO AN END. DURING THE SUMMER MONTHS OF JUNE...JULY AND AUGUST... THE TEMPERATURE IN WASHINGTON DC AVERAGED 79.4 DEGREES WHICH WAS 2.4 DEGREES ABOVE NORMAL.

THE HOTTEST SUMMER'S ON RECORD IN WASHINGTON DC...

80.0 DEGREES IN 1980  
79.4 DEGREES IN 1991 & 2002  
79.3 DEGREES IN 1993  
79.2 DEGREES IN 1987  
79.1 DEGREES IN 1999

THERE HAVE BEEN 52 DAYS SO FAR THIS YEAR ON WHICH THE TEMPERATURE REACHED 90 DEGREES OR HIGHER IN WASHINGTON. THE AVERAGE IS 37 DAYS PER YEAR. THE RECORD IS 67 DAYS SET IN 1980.

THE HIGH TEMPERATURE WAS 95 DEGREES OR HIGHER ON 8 CONSECUTIVE DAYS FROM AUGUST 12TH TO AUGUST 19TH. THIS TIES THE RECORD FOR THE LONGEST STRING OF DAYS REACHING 95 DEGREES OR WARMER. RECORDS DATE BACK TO 1871. EIGHT 95 DEGREE DAYS IN A ROW WAS ALSO ATTAINED IN JULY 1993 AND JULY 1987.

ONLY 7.64 INCHES OF RAIN FELL DURING THE SUMMER MONTHS IN WASHINGTON. THIS IS 2.59 INCHES BELOW NORMAL. 2002 SUMMER RAINFALL WAS THE 20TH DRIEST ON RECORD. THE DRIEST SUMMER'S ON RECORD IN WASHINGTON DC...

4.62 INCHES IN 1962 & 1966  
4.66 INCHES IN 1943  
5.06 INCHES IN 1964  
5.38 INCHES IN 1894  
5.57 INCHES IN 1893

THE LONG TERM DROUGHT CONTINUES IN WASHINGTON. FOR THE 12 MONTH PERIOD SEPTMBER 1ST 2001 TO AUGUST 31ST 2002, WE HAVE RECEIVED ONLY 22.63 INCHES OF RAIN IN WASHINGTON. THAT IS THE DRIEST ON RECORD FOR THAT 12 MONTH PERIOD.

FOR BALTIMORE...

IN BALTIMORE...THE SUMMER TEMPERATURE AVERAGED 76.9 DEGREES WHICH WAS NOT EVEN CLOSE TO THE RECORD WHICH IS 79.1 DEGREES SET IN 1943.

THE HOTTEST SUMMER'S ON RECORD IN BALTIMORE MD...

79.1 DEGREES IN 1943  
78.9 DEGREES IN 1872  
78.7 DEGREES IN 1995  
78.4 DEGREES IN 1949  
78.1 DEGREES IN 1930

THERE HAVE BEEN 47 DAYS SO FAR THIS YEAR ON WHICH THE TEMPERATURE REACHED 90 DEGREES OR HIGHER. THE AVERAGE IS 30 DAYS PER YEAR. THE RECORD IS 54 DAYS SET IN 1988.

ONLY 8.01 INCHES OF RAIN FELL AT BWI AIRPORT THIS SUMMER. THIS IS 3.01 INCHES BELOW NORMAL. 2002 SUMMER RAINFALL WAS THE 20TH DRIEST ON RECORD.

THE DRIEST SUMMER'S ON RECORD IN BALTIMORE MD...

4.39 INCHES IN 1930  
4.53 INCHES IN 1966  
5.38 INCHES IN 1991  
5.56 INCHES IN 1998  
5.95 INCHES IN 1893

THE LONG TERM DROUGHT CONTINUES IN BALTIMORE. FOR THE 12 MONTH PERIOD SEPTMBER 1ST 2001 TO AUGUST 31ST 2002, BWI AIRPORT HAD RECEIVED ONLY 26.33 INCHES OF RAIN. THAT IS THE DRIEST ON RECORD FOR THAT 12 MONTH PERIOD.



Prettyboy reservoir on Oct 6,2002. Photo by Jim Schuyler



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**Please note our new web address:  
[www.erh.noaa.gov/lwx/](http://www.erh.noaa.gov/lwx/)**