



ATLANTIC COAST OBSERVER NETWORK, MD / DE / DC CHAPTER WITH DATA FROM NEARBY AREAS

ISABEL, HENRI, AND GRACE THREE NAMES TO REMEMBER

The following quote by **Bill Hudelson** of **South Bowie** sums up this month: "A month of misery, heartache, appreciation for the little things (electricity) in life and an awesome demonstration of the power of even a minimal hurricane."

September was a very active weather month. Numerous rain events produced record to near record rainfall across the region making this the wettest month in 2003 by exceeding June's regional average by over a half of an inch. Temperatures this month averaged out near normal despite the lack of heat extremes. The warmest day occurred on the 1st or 2nd while the coolest occurred on the 30th at most locations. There were only two observation days with 90 degree.

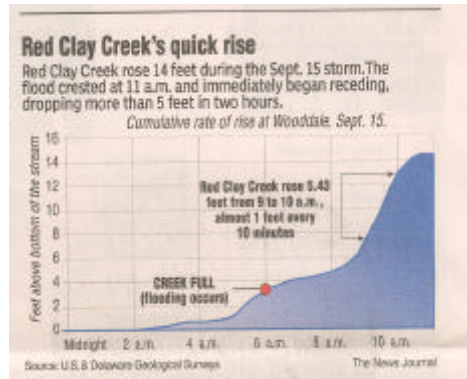
The first four days of the month were humid and cloudy. Showers and thundershowers were numerous. **Tropical Storm Grace** was absorbed into a stalled frontal system. As that frontal system moved through the region on the 3rd and 4th it dropped heavy rains totaling 2 inches or more over portions of Washington, Carroll, Baltimore and Harford Counties. **Greg Keefer** of **Hagerstown 1 E** reported 3.94", most of it falling on the 3rd, causing flash flooding. (See **Greg Keefer's** comments for the 3rd on the Observer Comments).

From the 5th through 11th very little rain fell. Temperatures were slightly below average while the humidity remained at comfortable levels for early September. Light showers fell on the 9th in areas of Western and Central Maryland.

Beginning on the 12th a tropical air mass moved into the region as the remnants of **Tropical Storm Henri** moved north from the North Carolina Outer Banks. This was a disorganized system which lingered across the region through the 15th. Most of the region received

less than an inch. Isolated locations received over an inch. **John Zyla** of **Ridge** recorded 2.29" on the 12th.

The heaviest rains fell during the morning of the 15th. The following amounts were reported by ACON observers: 3.60" by **Dan Leathers Delaware State Climatologist at Pearson Hall in Newark**, 2.55" by **Jim Canavan of Wilmington 4 NNE**, and 2.33" by **Gary Gallaher of Bear 2 SE DE**. The Wilmington NWS only reported 1.27". The heaviest showers "trained" in a band centered over the Red Clay Creek Valley in Northern Delaware and Southern Chester County Pennsylvania. Rain fell at hourly rates of over 2". An estimated 8 to 10 inches fell creating the worse flooding on record. Below is a chart from the *Wilmington Delaware New Journal* Newspaper detailing the rate of the rise of the flood waters at Wooddale DE:



ton Delaware New Journal Newspaper detailing the rate of the rise of the flood waters at Wooddale DE:

All roads in a 20 mile section from Kennett Square Pennsylvania southwards into Delaware were damaged and made impassable. The Wooddale Covered Bridge, which survived record floods of Hurricane Floyd in 1999, was washed away. The Wilmington and Western Railroad sustained an estimated 5 million dollars of damage. A picture of some damage is on page 2. Severe flooding occurred throughout the valley. The community of Glenville, which is lo-

EXTREMES REPORTED BY ACON OBSERVERS

MAXIMUM TEMPERATURE

Jug Bay Wetlands	90
Ridge	90
Fallston 2 NW	89
Forest Glen	89
Hollywood	89

MINIMUM TEMPERATURE

Davis 3 SE WV	36
Eagle Rock	38

WARMEST AVG. TEMP.

Ridge	74.1
Baltimore 2 SE	74.0

COLDEST AVG. TEMP.

Davis 3 SE WV	56.9
Eagle Rock	60.1
Frostburg	60.1

MAXIMUM PRECIPITATION

Hagerstown 1 E	11.45
Smithsburg 2 NE	11.35
Eagle Rock	10.48
Frederick 4 N	10.26

MINIMUM PRECIPITATION

UofD Harbeson DE	4.36
Millersville 1 SE	5.75
Jug Bay Wetlands	5.87

MAXIMUM SNOWFALL

Davis 3 SE WV	T
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MEMBER NEWS

Dave Leshner of **Davis 3 SE WV** joins us this month. He lives 22 miles SW of Eagle Rock in the Canaan Valley, a short distance south of the extreme southwestern corner of Maryland. Many of us already know Dave.

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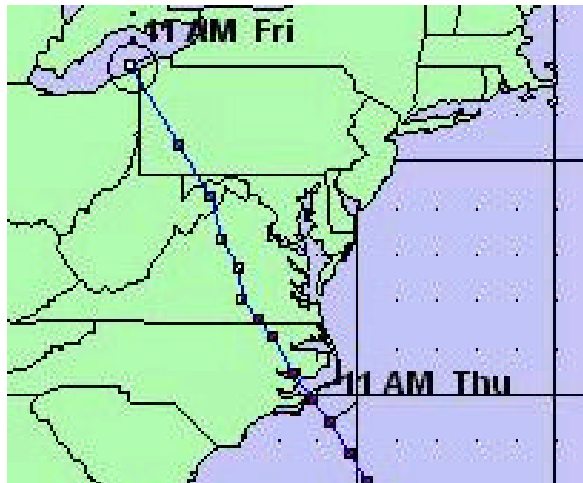
cated on the floodplain near the mouth of the Red Clay Creek, has requested a government buyout.



The picture above is from the *Wilmington Delaware New Journal* Newspaper:

As the flood waters of Henri receded, **Hurricane Isabel** was approaching the North Carolina coast. Isabel made land fall near Drum Inlet mid day of the 18th. Strong high pressure over New England and Southeast Canada prevented Isabel from taking the typical north to northeast track that parallels the east coast. Her path took her over central Virginia, extreme Western Maryland to central Lake Erie.

Isabel will be most remembered for widespread tree



and power line damages and for the major tidal flooding in parts of Annapolis, Baltimore, and Washington DC. The storm surge and constant east to southeast winds along with a high tide broke or tied levels set during the August 23, 1933 unnamed hurricane. At Baltimore the water continued to rise after the 2:07 AM high tide. It did not stop rising until 8:06 AM when it reach 8.15 feet above

above mean low water. This level was 7 feet above normal. The previous record high was 7.99 feet. In Annapolis the water rose to 7.20 feet tying the previous record. At Washington D.C. it peaked at 11.3 feet, breaking the record of 11.1 feet. This flooding was not caused by heavy rains, but by winds from Isabel, which passed west of the bay, pushing water northward and westward. The levels were 2 feet higher than predicted and surprised everyone. It proved that a strong hurricane is not needed to cause flooding of this magnitude. The high water damaged many marinas and flooded hundreds of homes.

Power outages, as result of Isabel, affected millions of people from North Carolina to Pennsylvania. In addition to power line and tree damage it damaged crops. In Pennsylvania where the winds and rains flattened corn fields the Amish received permission to use mechanized equipment to harvest the corn.

Ocean front dunes fared well during Isabel, but the Western Shore of the Chesapeake Bay took the worse of Isabel's pummeling. In Baltimore County about 3 million dollars worth of damage was caused by erosion. 11,500 feet of shoreline was damaged.

Chemistry and engineering labs at the Naval Academy were severely damaged by the tidal flooding. A three story 360 foot long barge that covers 3/4 of an acre and more than 20 trailers now serve as temporary classroom while repairs are being made.

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Picture at the left:
The waterfront promenade at Tydings Park Marina in Havre de Grace. Photo from *The Baltimore Sun*



A worker prepares to remove a tree that fell on a house in the 4900 block of Upton Street NW. The tree damaged the house's roof and chimney when it toppled.

Picture on the left: One of the many trees which were uprooted. This one was on Upton Street NW DC. Photo from the *Washington Post*

Picture at center left: Many state and US flags were damaged as result of Isabel winds. These flags at the Washington Monument are being replaced. Photo from the *Washington Post*.

Picture at center: Alex Haley statue at Annapolis Statue at Annapolis City Dock. Photo from *The Baltimore Sun*



National Park Service worker Frank Lewis repairs U.S. flags surrounding the Washington Monument, part of storm recovery efforts in the District.



The Alex Haley statue in Annapolis is almost submerged as floodwaters cover City Dock in the capital's downtown.



Picture above: Delaware Bay at Bay View Delaware, Photo from *Wilmington DE News Journal*.

Photo at right: Annapolis City Dock Photo from the **AP**



Continued from page 2

The days following the passage of Isabel were quiet while the clean-up continued. A strong cold front moved through the region early on the 23rd. It brought with it heavy rain and thunderstorms and flooding in central Maryland. **Manuel Farfan of Frederick 4 N** reported that heavy rain began around 6 PM on the 22nd. By dawn of the next morning 4.07" had fallen creating a 110 foot sink hole near Interstate 70. Also nearly 60 roads were closed and people had to be rescued from automobiles as a result

of the flooding. Rainfall totals of over 2 inches fell in Frederick, Carroll, Baltimore, Harford, Anne Arundel, Montgomery, Prince Georges Counties. At most stations this was heavier than what fell during the passage of Hurricane Isabel. After the cold front exited Northern Delaware around daybreak it spawned 4 F1 tornados in the Philadelphia Metropolitan region.

The final cold front of the month moved through the region late on the 28th. It brought with it the coolest temperatures of the season. Morning temperatures on the 30th were generally in the lower 40's.

Hurricane Isabel as seen through the eyes of ACON Observers

<u>Observer</u>	<u>Station</u>	<u>Precip</u>	<u>Peak Wind</u>	<u>Low Barometer</u>
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Listed by the amount of Precipitation which fell on Sept 18 & 19th

Jeff Stoudt	Laurel 2 E	4.67		
Rebecca Harvey	Eagle Rock	4.21		
Greg Latta	Frostburg	3.74		
Jim Vaughn	Smithsburg 2 NE	3.66	68 SE	
Dave Leshner	Davis 3 SE	3.61		
Greg Keefer	Hagerstown 1E	2.89	63 SE	29.50
Rich Giannola	Olney 1S	2.65		
Dean Dey	UofD Research Center	2.56		
	Georgetown DE			
Rich Giannola	Laurel JHU/APL	2.53	44 NE	29.57
Brian Smith	Oxon Hill	2.41		
Nate Mullins	LaVale	2.36		
David Roth	Montgomery Village 1SW	2.30	50 SE	29.54
Dan Hanson	Millersville 1 SE	2.14	47 E	
Stan Rossen	Glenmont 1NNE	2.13		
Bill Hudelson	South Bowie	2.12	40 NE	
Joe Terry	Forest Glen	1.94	45 ENEe	29.56
Gary Gallaher	Bear 2 SE DE	1.93	53 ESE	29.73
Dave Bryant	St Margarets	1.91		29.61
Herb Close	Manchester 1SW	1.89	62	
Kevin Shaw	Gaithersburg 2WNW	1.88		
Manual Farfan	Frederick 4N	1.76		
Rob Cohen	Potomac 4N	1.73		
Karyn Molines	Jug Bay Wetlands	1.72		
Floyd Abell	Hollywood	1.68	51	
Ralph Hartsock	Westminster 4SSE	1.62	56 ESE	
Tony Scafide	Bethesda	1.49	58 SE	
Al Kreinik	Parkton 5SW	1.47	55e	29.58

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e= Estimated direction or speed

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<u>Observer</u>	<u>Station</u>	<u>Precip</u>	<u>Peak Wind</u>	<u>Low Barometer</u>
Greg Klein	Westminster 5 SSE	1.44		
John Zyla	Ridge	1.41	46 SE	29.44
Jim Canavan	Wilmington 4NNE	1.35		
Marty Sharrow	Owings Mills 2SE	1.26		
Bobby Miller	Millers 4NE	1.20	49 ENE	29.56
Joe Manfre	Baltimore 2SE	1.11		
Lynn Albright	Fallston 2NW	1.07	52	
Dean Dey	UofD Warrington Farms, Harbeson DE	0.96		

ISABEL AS SEEN THROUGH THE EYES OF ACON OBSERVERS

Floyd Abell of Hollywood - Isabel caused severe tidal flooding and damaging winds in St Marys County. Some locations estimated winds gusts were 70 to 80 MPH, at my station 51 MPH. Power was lost for over a week as some locations. Downed trees also did a lot of damage.

Lynn Albright of Fallston - We were without power for 2 days, and the next day power was intermittent. My husband's sister had 7 feet of water (Bowley's Quarters area) from storm surge in her home. They lost the entire contents of their first floor (the house is on stilts and the water still was over the top of the kitchen counters). They also lost both vehicles. Rescuers could not reach them until the water receded. At that point they wouldn't leave their property due to the fear of looting of what they do have left. Another relative lost their home to fire this weekend. Their power was out and had a generator running in a shed next to the house. The fumes/gases built up in the shed until an explosion happened and fire thereafter. All that was left was one wall of the house. Here at our home we were very fortunate. We were of course well prepared, and when the electric went it was no big deal, just a little inconvenient. Our home sustained no damage. We can't say the same for our neighbors.



Carrs Mill Road, Fallston
Photo by Lynn Albright

Tollgate Road, Fallston
Photo by Lynn Albright

Old Fallston Road, Fallston
Photo by Lynn Albright

David Bryant of St Margarets - Light showers began around 7:30 AM of the 18th. By 3 PM steady, light rain with estimated winds in the 30's mph. Some small mostly old dead oak and poplar limbs hitting the roof. Heavy rain squalls 6 to 7 PM. Worst part of the storm from 11PM of the 18th to 12:20 AM of the 19th.

Herb Close Jr. of Manchester 1 SW - The peak of the storm occurred after Midnight with heavy rains and high winds. I had a peak wind gust of 62 MPH at 12:22 AM and again between 1 AM - 6 AM. Winds were generally SE 30 - 45 MPH gusting 45 - 60 MPH. Moderate - heavy wind swept rains fell especially after 11 PM to early morning hours. With the visibility down to 1/16 to 1/8 th mile at times and rain blowing almost horizontal in sheets it looked like a blizzard outside. During the highest gusts the windows whistled in my weather office and that hasn't been observed since the Nor'easter of December 1992. I did not have power outage, but many brownouts and a few very brief blackouts for about 5 seconds. Here the next morning I saw 6 medium sized trees snapped off at the trunk about 3 to 6 feet off the ground and

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two trees were split. They were the flowering trees along Washington Way. I also has some minor roof damage. About a dozen shingles blew off. Also about 5 feet of metal angle at the very top of the roof lifted up the roofing nails and bent all the way back facing NW. There was a 1 " gap five feet long open to the attic.

Rob Cohen of Potomac 4 N - Minor tree damage in neighborhood, power out for only 2.5 hours. Frequent blue—green flashes of distant transformer arcing 10 - 11 PM during the strongest winds.

Manuel Fanfan of Fredrick 4N - Very windy overnight, especially around 2AM when I felt the townhouse moving like a very small earthquake. Not much rain but very windy indeed. Isabel's aftermath around my area: just a few broken branches, never lost power, and not a lot of rain. No incidents reported nearby

Gary Gallaher of Bear 2 SW DE - Increasing winds and rains. Hourly peak wind gusts increased from 20 mph at 4AM (18th), to the 30's by noon, 40's by 6 PM, and the 50's by 2 AM (19th). Afterwards they decreased to the 30's by 5 AM where they remained till 3 PM. Heavy tropical showers the evening of the 18th and early morning hours of the 19th. The strongest winds occurred during these showers. Some trees lost branches as well some uprooted. Power out for 11 hours here.



Up rooted tree in Caravel Farms, Bear DE Photo by Gary Gallaher



Flooding of Cypress Creek at the headwaters of the Magothy River, Severna Park, MD Photo by Jeff Gallaher

Rich Giannola of Olney 1 S - Rain began at 1:00 PM on the 18th and ended ~9:00 AM on the 19th. Power was lost for 25 hours, 11:30 PM on the 18th to 12:30 AM on the 20th.

Dan Hanson of Millersville 1 SE - Peak wind gust of 47 MPH. Because the station is in fairly heavily wood surroundings, the wind gusts is quite significant. Many small to large branches fell with a few whole trees down. Probably the most widespread effects were the power outages. The electricity was off from 9/18 2105 to 9/22 1000. The tidal flooding was the worst I had ever witnessed on the Severn River. At the head waters of the Severn, the tide rose nearly 7 feet which completely submerged most docks.

Ralph Hartsock of Westminster 4 NNE - Squalls arrive 2 PM. Heavy winds. Extensive tree damage, major power outages.

Bill Hudelson of South Bowie - Power off 1500 9/18 and back on 0015 9/21.

Greg Keefer of Hagerstown 1 E - Rains and wind begin in the afternoon around 2:30 PM on the 18th. Increasing wind and rain into the evening with heavy rain squalls and wind gusts to 50 MPH at times. 19th - Very strong wind and rain all night with many gusts from the east to 50+ mph and several gusts to 60 mph with a peak gusts of 63 MPH around 1 AM. Flooding not as serious as expected but some moderate flooding was reported. Winds did a good bit of damage to many trees and wires and some structural damage reported. Also a lot of power outages. Winds that strong and steady are very rare for my station location especially from the east. When the peaks gusts of 60+ came through I actually felt the house move. Wow!

Greg Klein of Westminster 5 SSE - Powerful winds from Isabel knocked down over a dozen medium to large trees in my woods behind my house.

Al Kreinik of Parkton 5 SW - Winds at midnight estimated 55 mph. Loss of power from 8:30 PM on the 18th to 4:00 PM on the 21st. Limbs torn from trees and corn crops damaged. Some trees uprooted.

Bobby Miller of Millers 4 NE - Periods of heavy showers as storm passed well to the west. Strong winds developed in evening and gusts estimated to 60 MPH around midnight (maximum observed 49 MPH). Much local damage due to branches and whole trees uprooted. Some nearby had no power for a week. Corn blown down. Power out for 91 hours from 8:34 PM on the 18th to 2:06 PM on the 22nd.

Nate Mullins of LaVale - Periods of rain began around 1 PM (18th) with increasing winds throughout the evening. ENE winds gusts to 35+ by late evening. Rain heaviest towards midnight. Cool but temperatures slowly rose into the 60's.

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Rain overnight moderate to heavy at times. Not as much as expected with no big downpours and only light winds even though the center of the storm passed very close. Rainfall was much heavier on the ridges to the west with nearly 4" reported in the Frostburg area. Some flooding and wind damage was reported in the area.

Stan Rossen of Glenmont 1 NNE - RA/SQ 1130-2007, 1.89"; -RA 2140-2315 .10; 19th -SHRA 0001, 0440, 1330-1435, 1535-1630.

Brian Smith of Oxon Hill - As of 18th 2030 hours - temp spiked up to 74, up 6 degrees in the last hour. Not raining now. Storm damage - One rotted tree toppled into the street in front of my house. It missed two cars including mine. The large sycamore in my back yard survived, at least 90%...it lost several branches. Two trees in front of the house at 723 Crawford lost their tops, which appeared to have been twisted off. Just before the power went out I was watching a small isolated cell go screaming W headed for OXNM2. Wonder if it contained a tornado? Interesting observation - Many people on my block saw a fabled green LTGIC (some red too) often reported with tropical cyclones. I saw it too; didn't hear thunder, but others did, and said it was a weird sound, like popping.

Jeff Stoudt of Laurel 2 E - Beside the widespread storm force wind gusts, radar imagery showed a narrow band of torrential rain which developed during the evening and persisted a couple of hours in the vicinity of the Howard, Anne Arundel, Price Georges County triple point which resulted in nearly doubled rainfall in this neighborhood and the great majority of the 4.67" storm total.

Joe Terry of Forest Glen - Increasing wind all day, the highest tended to occur in the rain bands. Peak wind of 45 MPH occurred at 2255 (Highest since station inception December 1994. Some large tree limbs down, but considerable small debris everywhere. Frequent blue and orange flashes from all directions much of the night due to transformers. Power out for 89 hours starting at 1650 on the 18th.

John Zyla of Ridge - Isabel left only 46 MPH wind gusts but massive destruction as far as trees down in Southern St Marys County. I lost power Thursday afternoon (18th) and got it back Tuesday afternoon (6 days or 133 hours.)

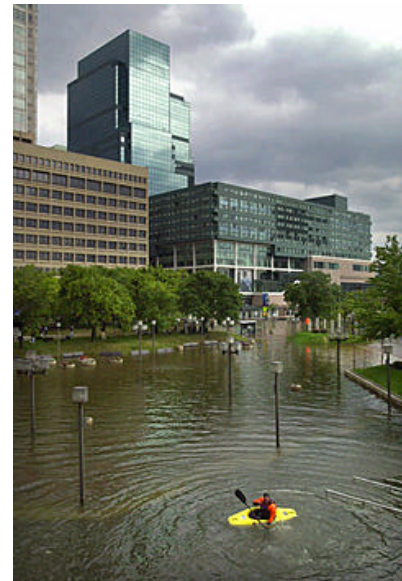


Photo at top left:
Downed power lines near Hampstead
Photo from *The Baltimore Sun*

Photo at top right:
Baltimore Inner Harbor
Photo from *The Baltimore Sun*

Photo at the left:
Baltimore Fells Point
Photo from *The Baltimore Sun*

OBSERVER COMMENTS FOR SEPTEMBER 2003

Gary Gallaher of Bear 2 SW, DE

Second wettest September on record and the third wettest month on record in 37 years of records. A new September record for number of days with $\geq 1"$ of 4 days was set. The old record was 3 days set in 1971 and tied in 1975, 1981, & 1995. A new September peak wind gust record (since 1990) of 53 MPH was set. Two daily precipitation records were set, 2.33" on the 15th and 2.65" on the 18th. The maximum temperature of 85 was the second lowest monthly maximum for September. The lowest September maximum temperature is 83 degrees set in 1980.

Nate Mullins of LaVale

Second wettest September on record (since 1992).

22nd - Rain began this afternoon and was steady through the evening. Heavy rains 10 PM to midnight ended around midnight 1.30" fell. This was the 3rd day in the last 5 that I have measured over an inch of rain.

27th - Thunderstorms briefly brushed by 2:30 - 3 PM with pea sized hail. Strong storms 4 - 6 PM with intense frequent lightning and very heavy downpours. Streams out of banks and lots of flooding reported in the county with 3 to 4 inches in some areas. Also reports of quarter sized hail and damaging wind.

Jeff Stoudt of Laurel 2 E

5th month this year and the 4th out of the last 5 with total precipitation of over 7 inches.

12th & 13th - Remnants of tropical storm Henri 12th PM and 13th AM. 1.46" of rain fell.

23rd - Period of heavy rain before dawn.

27th - Late evening thundershower.

Al Kreinik of Parkton 5 SW

4th - Heavy AM rain, much lightning and thunder.

23rd - Heavy period of rain causes streams to overflow their banks; pond overflows. Shelter in standing water for several hours.

Joe Manfre of Baltimore 2SE

23rd - Cloudy, heavy rain in AM.

24th - Sunny, mild, low humidity.

30th - Sunny, cool, low humidity.

Marty Sharrow of Owings Mills

4th - Overcast, humid with early heavy rains

5th - Partly sunny much less humid and cooler.

23rd - Torrential morning rain, then clearing.

Herb Close of Manchester 1 SW

September was a mild and very wet month. Rainfall was the second highest in 15 years of record behind the 9.29" set in September 1999. 9.05" fell at Finksburg 2 NW, my parents house and my old station.

Ralph Hartsock of Westminster 4 SSE

2nd - Heavy thunderstorm overnight - more daytime rain on and off.

3rd - Heavy AM rains, cloudy PM.

23rd - Heavy rains overnight—flooding some major.

30th - Cold start - Sunny and chilly.

Greg Klein of Westminster 5 SSE

Wettest month of the year.

Bobby Miller of Millers 4 NE

Only 4 days with maximum temperature ≥ 80 degrees. This month was the 3rd (third) wettest September of 22 on record.

3rd - Heavy rains in morning with frequent thunder. 0.90" fell in 30 minutes.

Manuel Farfan of Frederick 4 N

13th - Rain overnight and most of the morning.

Rich Giannola of JHU/APL OF Laurel

This months rainfall was the most to fall since June 2001 when 9.28" fell.

Rob Cohen of Potomac 4 N

23rd - Heavy rain overnight, ending about 7 AM.

Rich Giannola of Olney 1 S

12th - SHRA from remnants of TS Henri began late AM and ended early the afternoon of the 13th.

Kevin Shaw of Gaithersburg 2 WNW

A rather wet, uncomfortable month, with many significant rain events. Maximum temperatures were generally muted due to above normal cloudiness and rain.

Joe Terry of Forest Glen

3rd month this year with over 8 inches of precipitation.

23rd - AM deluge. Continuous rain from the evening of the 22nd to about dawn for a total of 3.01". 1.75" fell between 0410 and 0510 hours.

29th & 30th - Spectacular autumn weather. A pleasant end to such a tumultuous month of weather.

Bill Hudelson of South Bowie

4th - Mostly overcast, periods of rain, dense fog evening, flood watch.

23rd - Heavy rain during night, rain ended 0730 hours.

27th - Increasing evening clouds. Thunderstorm to west at 2330 hours.

Floyd Abell of Hollywood

1st - 4th - Thunder each day.

23rd - AM heavy rain with weak thunder then fair.

John Zyla of Ridge

20th & 21st - Heavy fog.

Greg Keefer of Hagerstown 1 E

Wettest September on record with 11.45" of rain. Old record was 10.54" set in 1996.

3rd - Some light rain drizzle and fog overnight. Hazy warm and very humid today. Intense thunderstorms this evening with very heavy rains between 7:30 PM - 10PM. Close to 3 inches fell at this station but areas in the south end of town got hit hard with reports of 4 to 6 inches or more in some spots. Much flash flooding reported. The storm were training over the same area. They also had very wicked and frequent lightning. A lot of water damage reported across the region.

4th - More storms and downpours overnight with thunderstorms moving in around 4 AM dropping another inch.

Jim Vaughn of Smithsburg 2 NE

This was the wettest September on record breaking the old record of 11.20" set in 1996. It was also the second wettest month behind June 1996 when 12.92" fell.

3rd - Remnants of tropical storm Grace. Flooding in Washington County just south of my station. Rainfall of 1.09" broke the daily record of 1.03" set in 1993.

Compiled by Gary Gallaher, MD/DE ACON Data Collector and Report Writer, from data received from dedicated observers. Without your observations each month this report will not be possible.