



The Weather Nut

A Newsletter from
the NWS Office in
Wakefield, VA

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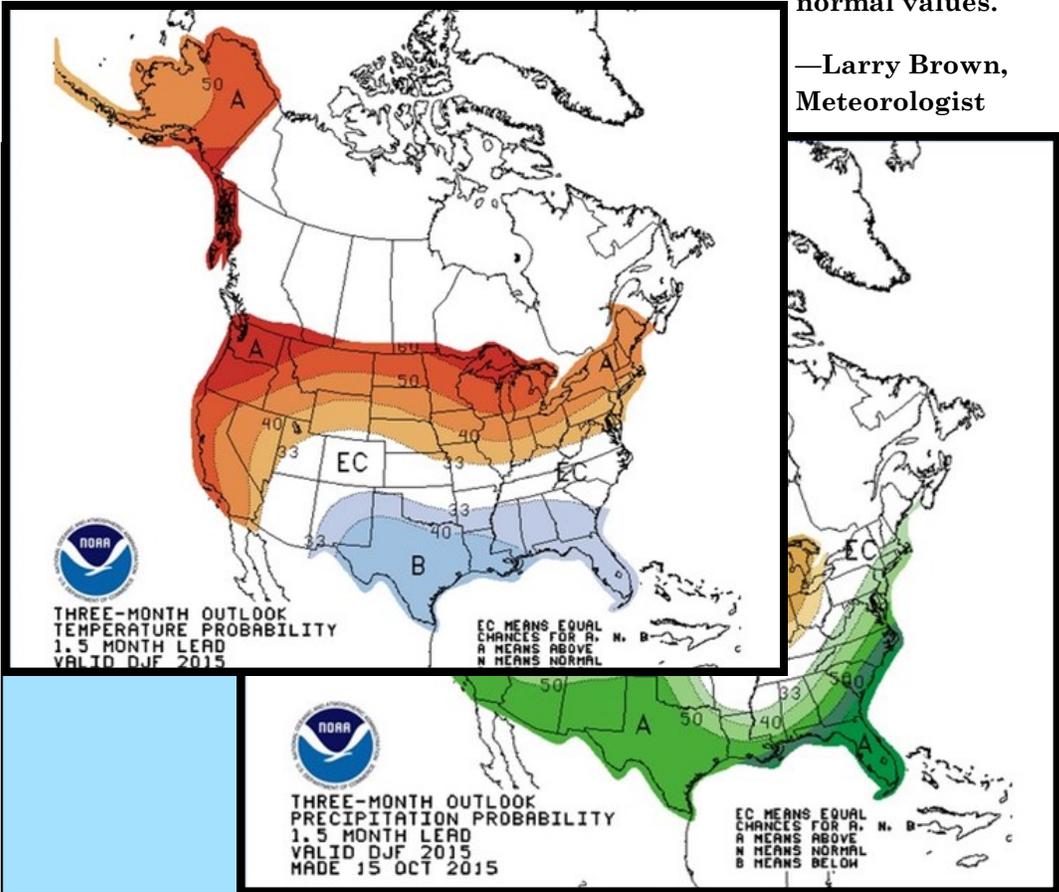
El Nino: What does it mean for us?

Strong El Nino conditions have developed and are expected to persist into the upcoming winter and last through the spring of 2016. During strong El Nino events, above-normal precipitation typically extends across much of the southern United States and this includes the Wakefield County

Warning Area (CWA). Strong El Nino events also typically favor colder than normal conditions over most of the southern states with a mixed outcome of warm and cold events for our area. The most recent Climate Prediction Center outlook favors increased chances for cooler and wetter than

average conditions across most of the southern United States. For precipitation, the Wakefield CWA shows increased chances for a wetter than average winter season (especially over far southeast VA and northeast NC), while temperatures show equal chances for above, below, or near normal values.

—Larry Brown,
Meteorologist

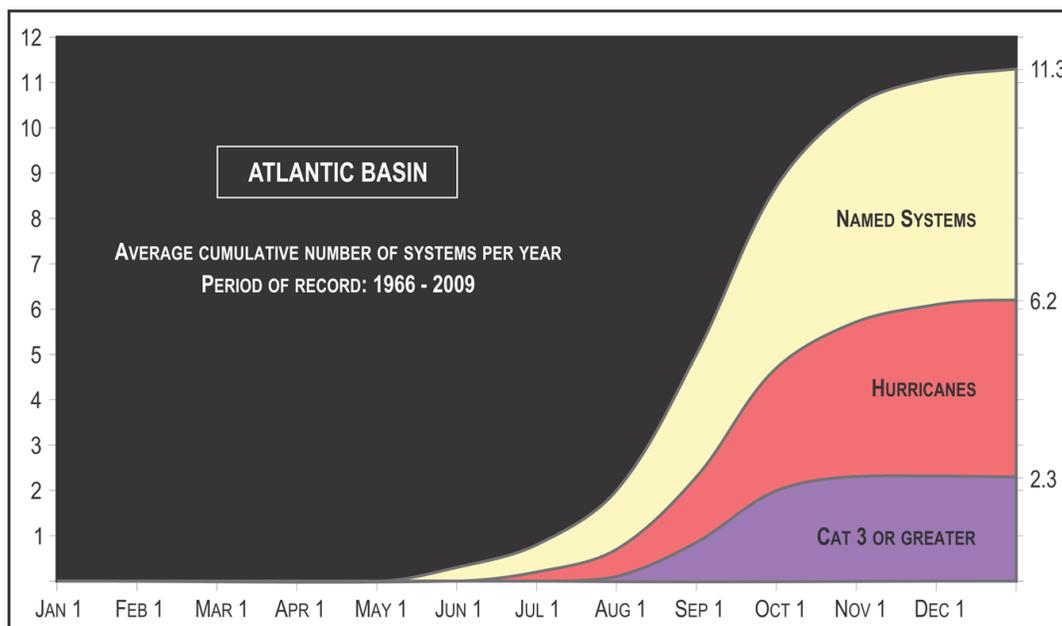


2015 Tropical Season Review

The 2015 tropical season has been average in terms of activity thus far through mid-November. So far this season, there have been 12 named tropical systems, four hurricanes, and two major hurricanes (category three or higher). An early start (three named storms by July) allowed this season to end up being normal in activity. El Niño conditions have stayed in place over the tropical Pacific throughout the season, which generally favors a below-normal amount of tropical activity over the Atlantic Basin on average. Warmer water temperatures over the equatorial Pacific (El Niño) lead to a stronger subtropical jet stream and inhibit tropical activity, while a weaker subtropical jet stream (associated with La Niña) is favorable for more activity.

Tropical Storm Ana was the only system to directly impact the Mid-Atlantic region in 2015. Ana formed on May 8 near the Bahamas, pushing northward and making landfall over South Carolina as a tropical storm on May 10. It was the earliest United States tropical landfall on record, with its early formation due in part to warm Gulf Stream waters. The remnants of Ana then moved up through eastern North Carolina and the Virginia coast. Although a minor event for much of the Wakefield forecast area, the main impact was heavy rain over portions Northeast North Carolina where some areas received over one inch of rainfall.

The tropical season runs through November 30. Although tropical storm development is not that uncommon in November (averages one named storm every other year), increasing



shear over the Atlantic makes it difficult for systems to develop and strengthen. Most tropical storms will form over the western Caribbean or Atlantic and push northeastwards out to sea.

—Matt Scalora,
Meteorologist

Summer 2015 Temperature and Precipitation Summary

The tables below show actual temperatures and precipitation averaged over the June through August period compared to the 1981-2010 normal:

June had well above normal temperatures with Richmond and Norfolk ranking in the top ten warmest on record. The warmest day of the year at Richmond and Norfolk was on June 23rd, 100 and 99 degrees respectively.

The warmest month of the summer overall was in July, however, temperatures in July and August averaged within a degree of normal.

Precipitation-wise, a very wet June was had across the area with Norfolk having its 5th wettest June on record at 8.34 inches. Ten to

thirteen inches of rain fell in portions of south central Virginia that month which was measured by several NWS employees in various parts of Prince George County. July had above normal rainfall across most of the area while August was mainly below normal. Overall the summer had above normal precipitation and most of the precipitation came from localized thunderstorms.

There were several rounds of severe weather during the summer with a concentration of events from the 18th to the 27th of June. On the 18th, a super cell that moved southeast along the Rappahannock River produced three separate tornado touchdowns. On the 20th and 21st, the remnants of Tropical Storm Bill brought damaging winds from thunderstorms with another EF0 tornado at Bowling Green. On the 25th, wind damage was reported at numerous locations with some reports

of large hail. Several calls were received late that evening of large hail near Powhatan which included a picture of a hailstone 3 inches in diameter. Also that evening, Richmond International Airport reported a wind gust of 70 mph. A brief tornado occurred at Hanover on the 27th. This adds up to five tornadoes, the total for the year so far which were all minor EF0.

Besides the remnants of Tropical Storm Bill mentioned above, the remnants of Anna on the 10th and 11th of May brought thunderstorms and locally heavy rainfall to portions of far southern Virginia and northeast North Carolina.

—Lyle Alexander, Meteorologist

Richmond, VA SUMMER 2015 Data						
	TEMPERATURE				PRECIP	
	ACTUAL			Dep	Total (in)	
	Max	Min	Avg		Actual	Dep
Jun	87.8	68.1	78.0	2.65	5.91	1.98
Jul	88.0	70.5	79.3	-0.05	5.89	1.38
Aug	87.6	67.4	77.5	0.00	2.77	1.89
SUM-	87.8	68.7	78.2	0.87	14.57	1.47

RIC 1981-2010 Climatology				
	TEMPERATURE			PRECIP
	Averages			Total (in)
	Max	Min	Avg	
Jun	86.1	64.5	75.3	3.93
Jul	89.7	68.9	79.3	4.51
Aug	87.6	67.4	77.5	4.66
SUM-	87.8	66.9	77.4	13.10

Norfolk, VA SUMMER 2015 Data						
	TEMPERATURE				PRECIP	
	ACTUAL			Dep	Total (in)	
	Max	Min	Avg		Actual	Dep
Jun	86.4	71.0	78.7	3.40	8.34	4.08
Jul	87.6	73.2	80.4	0.75	7.93	2.79
Aug	85.5	71.1	78.3	0.40	1.85	3.67
SUM-	86.5	71.8	79.1	1.52	18.12	3.20

ORF 1981-2010 Climatology				
	TEMPERATURE			PRECIP
	Averages			Total (in)
	Max	Min	Avg	
Jun	83.5	67.1	75.3	4.26
Jul	87.4	71.9	79.7	5.14
Aug	85.1	70.7	77.9	5.52
SUM-	85.3	69.9	77.6	14.92

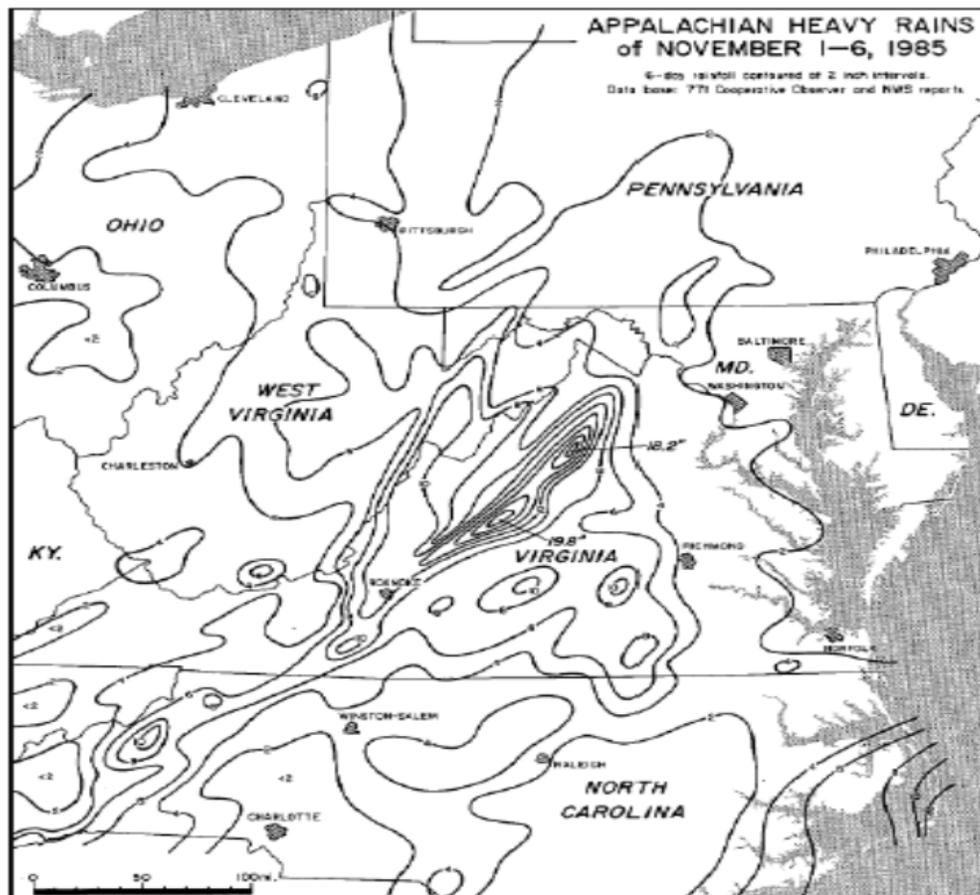
Salisbury, MD SUMMER 2015 Data						
	TEMPERATURE				PRECIP	
	ACTUAL			Dep	Total (in)	
	Max	Min	Avg		Actual	Dep
Jun	82.5	65.1	73.8	1.85	8.26	4.55
Jul	85.2	67.7	76.5	-0.65	6.26	1.88
Aug	84.6	64.4	74.5	-0.40	5.66	1.23
SUM-	84.1	65.7	74.9	0.27	20.18	7.66

SBY 1981-2010 Climatology				
	TEMPERATURE			PRECIP
	Averages			Total (in)
	Max	Min	Avg	
Jun	82.2	61.7	72.0	3.71
Jul	86.5	67.7	77.1	4.38
Aug	84.4	65.4	74.9	4.43
SUM-	84.4	64.9	74.7	12.52

30 Year Anniversary of the Election Day Flood Event (Nov 1985)

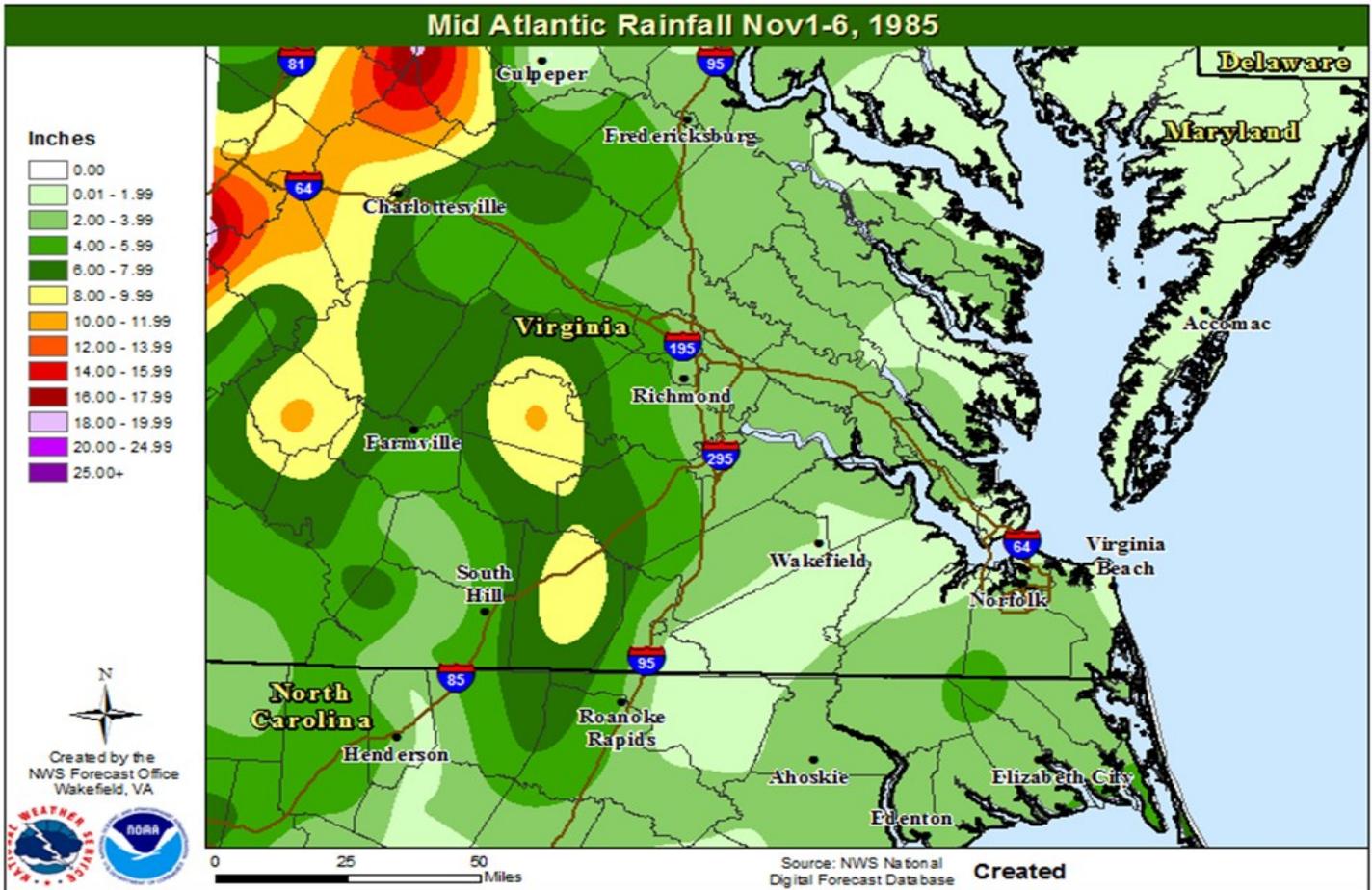
Election Day 1985 will not be remembered for who won which office or which political party made a statement, but instead, it will be remembered for record flooding that occurred across much of central and southwestern Virginia. This event had a slow build up to the final dramatic conclusion on Election Day. On October 31st, Hurricane Juan made landfall along the Gulf Coast and slowly began a track to the north through Alabama, eventually weakening over the Smokey Mountains of Tennessee and Western North Carolina and was absorbed by a slow moving cold front. In advance of Juan, tropical moisture had pushed up through the Carolinas into Virginia, enhancing rainfall across the state on the 1st thru the 3rd of November. This produced 1 – 4 inches of rain across the state. However, the system that followed Juan provided the knockout punch.

By the morning of the 4th, a developing system over the central US plains was strengthening and caused the front to the east to stall over Appalachian Mountains, while a new low pressure area developed in the Gulf of Mexico. This allowed the tropical moisture to continue to feed into the region. As this low lifted northward through the Carolinas, the rain intensified with embedded thunderstorms. Rainfall amounts of 6 to 10 inches occurred on the 4th and 5th. Overall for the 6 day period rain amounts of 6 to 14 inches were common with a high of 19.70 inches reported in Montebello, VA in Nelson County.



Mid Atlantic Rainfall Nov 1-6, 1985

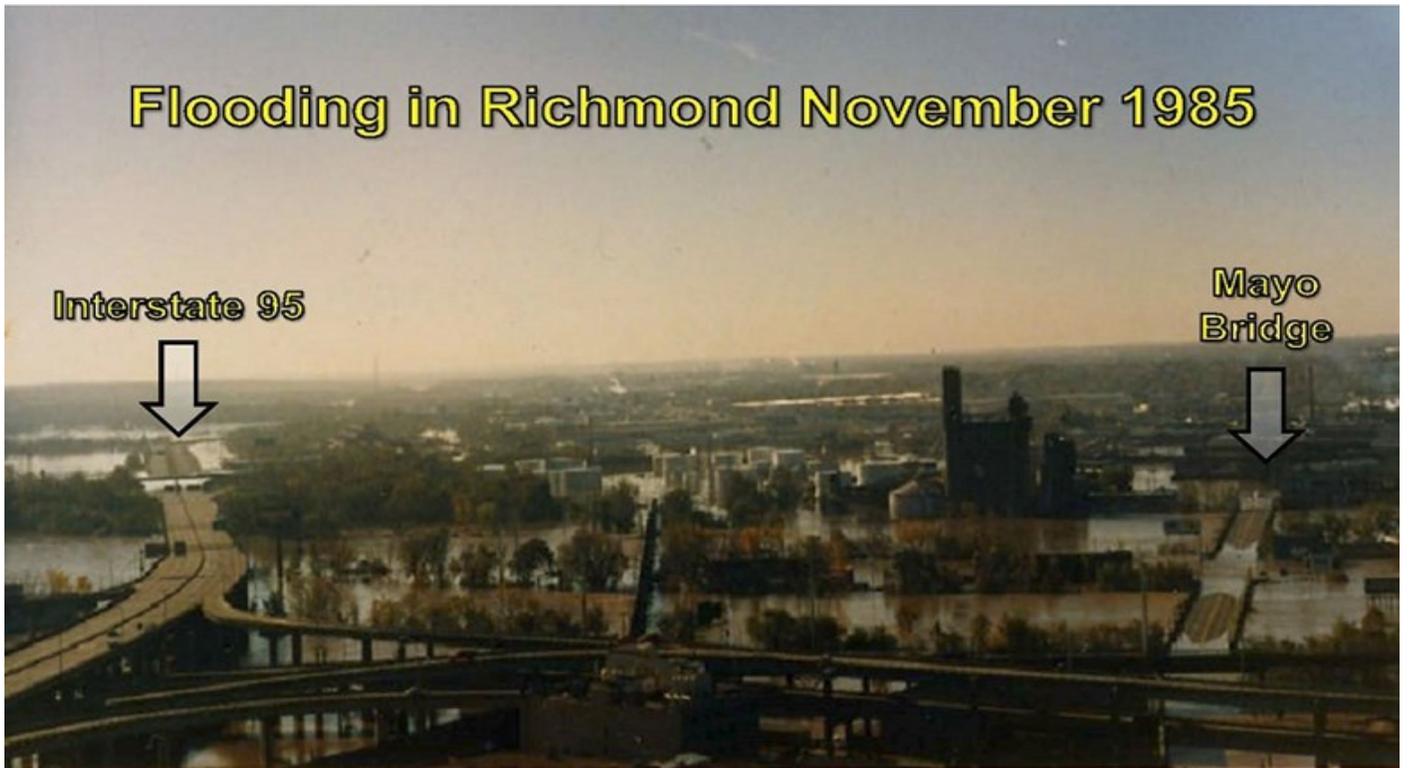
Election Day Flood Event (Continued)



Rainfall over the Wakefield Hydrologic Service Area Nov 1-6, 1985

With the soil already saturated by the rains from Juan, the rain immediately began to run off into area creeks and rivers. The rivers began to rise, quickly reaching bankfull and continuing to rise. The hardest hit areas were portions of the Roanoke River basin to the west and the James River Basin. These rapid water level rises left many folks stranded either at work, at home, in apartments or on roadways. Many people had to be rescued with boats, helicopters, tow trucks, and virtually any vehicle that could make it through the flood waters. Flooding began on the 4th and 5th in the Chowan River basin and across the headwaters of the James River Basin. As that water moved southeast through the basins, it sent flood waters into the eastern part of the state from the 5th - 8th. Downtown Richmond was hit especially hard with flooding. The river level on James River in Richmond was the second highest ever recorded at the Richmond Locks gage location, with the water level reaching a height of 30.76 FT. Only heavy rains from Hurricane Agnes in June of 1972 produced a higher water level in the City of Richmond. Of course, in 1985, the flood wall around Richmond did not exist. The Flood Wall project that now protects the city from river flooding was completed in 1995. The following photos show just how much water was in downtown Richmond.

Election Day Flood Event (Continued)



View of Downtown Richmond Nov 1985 facing south (Courtesy of VDEM)



Corner of US 60 and N. 17th St. in Shockoe Bottom, Richmond VA (Courtesy of VDEM)

Election Day Flood Event (Continued)

Overall, the death toll from the Election Day flood was 22 people in the state of Virginia with the monetary damage estimated at near \$800 Million dollars (1985 US dollar amounts). The river flooding impacted all 3 river basins in the Wakefield VA hydrologic service area with major flooding (James, Appomattox and Chowan basins) and 12 forecast points reached moderate or major flood stage.

Crest Stage River Levels from Election Day Flood

Site	Stream	Date	Crest	Category	Flood Stage	County of Gauge Location	Ranking
Bremo Bluff	James River	11/6/1985	40.70	Major	19	Fluvanna	2
Richmond Locks	James River	11/7/1985	30.76	Major	8	Henrico	2
Cartersville	James River	11/6/1985	32.60	Major	20	Goochland	3
Richmond-Westham	James River	11/7/1985	24.77	Major	12	Henrico	3
Stony Creek	Nottoway River	11/6/1985	20.22	Major	15	Sussex	8
Emporia	Meherrin River	11/6/1985	25.74	Moderate	23	Greenville	8
Rawlings	Nottoway River	11/4/1985	16.43	Major	10	Brunswick	9
Mattoax	Appomattox River	11/7/1985	26.64	Moderate	21	Chesterfield	9
Lawrenceville	Meherrin River	11/5/1985	28.98	Moderate	15	Brunswick	10
Matoaca	Appomattox River	11/6/1985	12.07	Minor	10	Dinwiddie	11
Palmyra	Rivanna River	11/5/1985	26.53	Moderate	17	Fluvanna	12
Sebrell	Nottoway River	11/9/1985	20.39	Moderate	16	Southampton	15
Farmville	Appomattox River	11/5/1985	20.03	Moderate	16	Cumberland	16

—Eric Seymour, Service Hydrologist

Cherrystone Tornado Review (continued)

The tornado caused significant damage in the campground, flipping dozens of campers and downing numerous trees. Numerous trees were also downed along the path across Highway 13. A tractor-trailer was also pushed off Highway 13 due to the strong winds. A storm survey of the area concluded wind speeds reached 80 to 100 miles per hour, giving the tornado a rating of 1 on the Enhanced Fugita Scale. The maximum path width was 150 yards and the length was approximately eight miles.



In addition to the brief EF-1 tornado, large hail and damaging winds occurred with the powerful supercell. Hail to the size of baseballs caused considerable crop damage and damaging straight line winds of 70 miles per hour downed numerous additional trees and powerlines.

Damage caused by downed trees within Cherrystone Campground. (Left)

Thanks to emergency alert networks and local media, several campers received the warnings and were able to take proper action. This is just a reminder that even on vacation, everyone should be weather aware and know proper evacuation routes or shelter areas.

— Scott Minnick,
Meteorologist



Crop damage caused by baseball-sized hail and straight line winds of 70 mph.

NWS Wakefield Participates in Oil Spill Response Exercise

The National Weather Service office in Wakefield, Virginia was invited to take part in an oil spill response exercise on September 22, 2015. The exercise simulated a worst-case scenario discharge of fuel oil in the vicinity of Coast Guard Base Portsmouth and the Craney Island Fuel Depot on the Elizabeth River.

NWS Wakefield along with U.S. Coast Guard Sector Hampton Roads, the National Oceanic and Atmospheric Administration's Office of Response and Restoration (NOAA OR&R), and other federal, state and local agencies participated in the exercise to evaluate the capabilities and effectiveness of the Coast Guard Sector Hampton Roads area contingency plan. As part of the area contingency plan, NWS Wakefield can be called on at any time to quickly and effectively provide weather support to local, state and federal officials in the event of a marine incident. This exercise was a good test of that capability.

The job of the National Weather Service during this event was to provide real time weather information to ensure safe working conditions while equipment deployment and on-water operations were taking place. Also, weather forecasts were prepared so that any adverse weather conditions could be anticipated during the duration of the exercise.



NWS Wakefield meteorologist, Jonathan McGee, provided an on-site weather watch during the day-long exercise by relaying current weather conditions to the Unified Command staff. Mr. McGee also directly briefed the Incident Commanders about expected weather conditions during on-water operations.

—Jonathan McGee,
Meteorologist

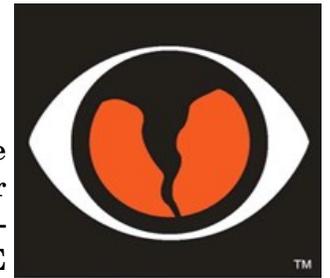
Frank Csulak, NOAA Scientific Support Coordinator, briefing the Unified Command during Coast Guard Sector Hampton Roads Oil Spill Exercise.

SKYWARN 2015 Update

The SKYWARN team at NWS Wakefield would like to thank the nearly 300 new spotters that turned out to our SKYWARN training sessions in 2015. We've had a busy and successful spotter training season!

SKYWARN is a network of volunteer weather spotters who provide the NWS with real-time severe weather reports, and other timely weather information. Each year, the staff of NWS Wakefield brings the SKYWARN program out into the community by teaching a series of FREE weather awareness classes. The information provided by our spotter network is vital in aiding the forecaster decision making process in warning local citizens and schools of approaching severe weather. This information is also utilized by the National Weather Service to enhance the warning program. This year, we've had several great turnouts at classes across our area, including Henrico, Norfolk, Accomac, Edenton, NC, Salisbury, MD and Caroline, VA. We also began a couple of new partnerships in holding classes at the MathScience Innovation Center in Richmond and at Longwood University in Farmville. After quite a bit of demand, we've also continued our online training endeavors this fall, and have a couple of upcoming Online classes scheduled for Late November and December. To find a class near you, check out the [SKYWARN Schedule page](#). For those with alternative or challenging work schedules, be sure to check out our companion new Online SKYWARN classes, offered by COMET. These classes are a great way to get exposed to basic principles of weather awareness whenever your schedule allows. Also, as a reminder, existing spotters are reminded that they need to attend a training session at least once every three (3) years. This will allow our spotters to remain current on the latest storm spotting techniques and the latest information.

As always, thank you for your support of the SKYWARN program! We hope to see you at a SKYWARN training class later this fall or in the Spring! Please be sure to send any questions to our SKYWARN E-Mail at akq-report@noaa.gov. —Mike Montefusco, Meteorologist



SKYWARN
WEATHER.GOV

Are You Prepared for Winter?

As we get ready to turn the calendar to December, now is the time to make sure you're prepared for whatever the winter has to throw at us! In preparation for winter weather, keep in mind that the primary concerns are loss of heat, power outages, and shortage of supplies if storm or proceeding conditions last longer than supplies allow. Now is the time to assure that the necessary precautions are taken. Complete maintenance, cleaning and inspection of HVAC units, chimneys and other heating equipment. Also, make sure your vehicle is prepared by having a full gas tank and inspecting the antifreeze levels, brakes, and battery before the weather goes downhill this winter!

The Safety and Preparedness section of the [NWS Wakefield Briefing page](#) has all of the information you'll need to help you and your family stay safe through the worst of winter weather. Also, check out [ready.gov](#) to set up an emergency plan for your family and put together a disaster preparedness kit for your vehicle.



—Mike Montefusco, Meteorologist



Thank You!
We hope you enjoyed this
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