

# Virginia Earthquake of August 23, 2011

Largest earthquake in Virginia  
In 114 years

Centered in low-population  
area between Richmond  
and Charlottesville

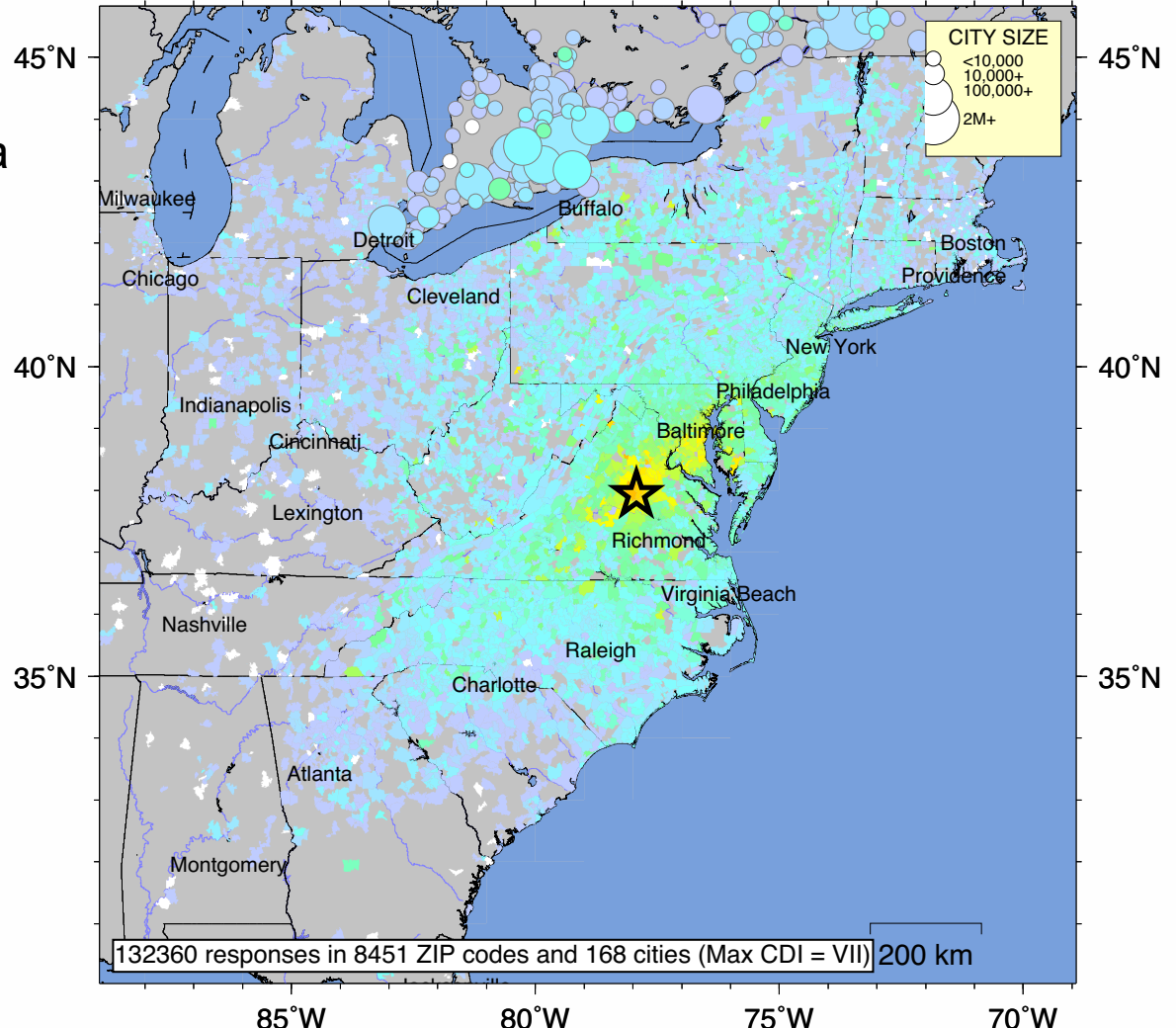
No fatalities. Estimated  
Damages >\$100M

Felt from Florida to Maine to  
Missouri (>100,000 reports)

Caused evacuations across  
Washington DC metropolitan  
area, and damage to historic  
structures.

## USGS Community Internet Intensity Map VIRGINIA

Aug 23 2011 01:51:04 PM local 37.936N 77.933W M5.8 Depth: 6 km ID:se082311a

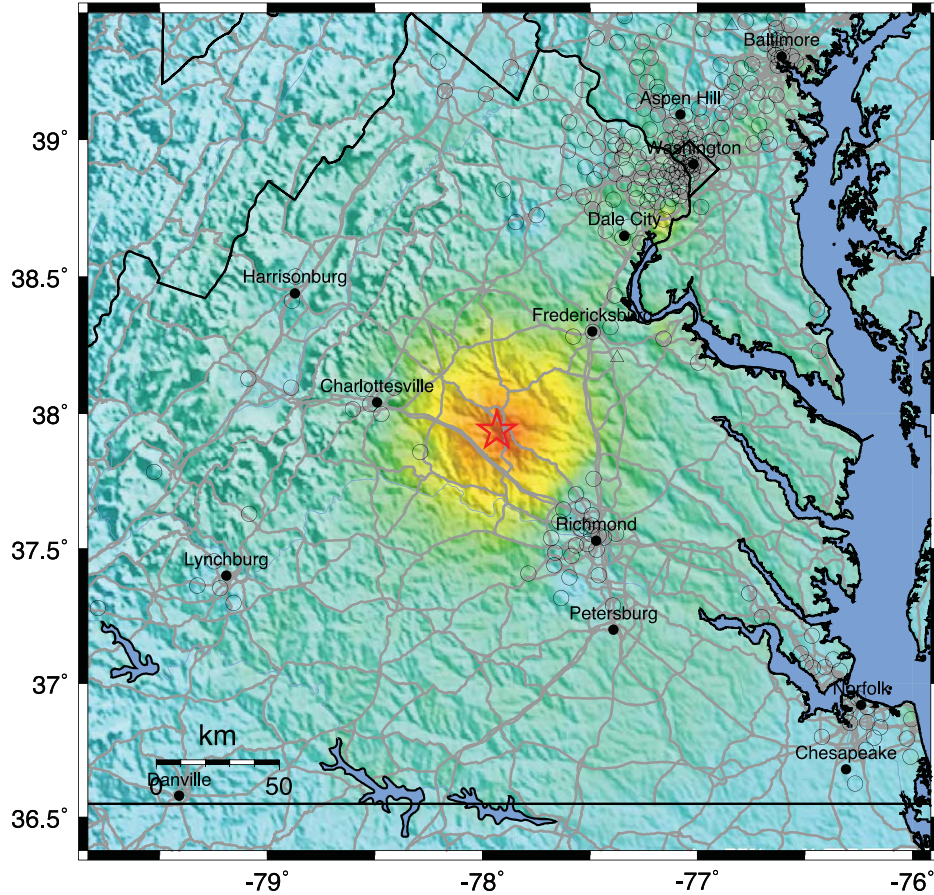


INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+
SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy

Processed: Fri Aug 26 15:29:21 2011

### USGS ShakeMap : VIRGINIA

Tue Aug 23, 2011 17:51:04 GMT M 5.8 N37.94 W77.93 Depth: 6.0km ID:082311a

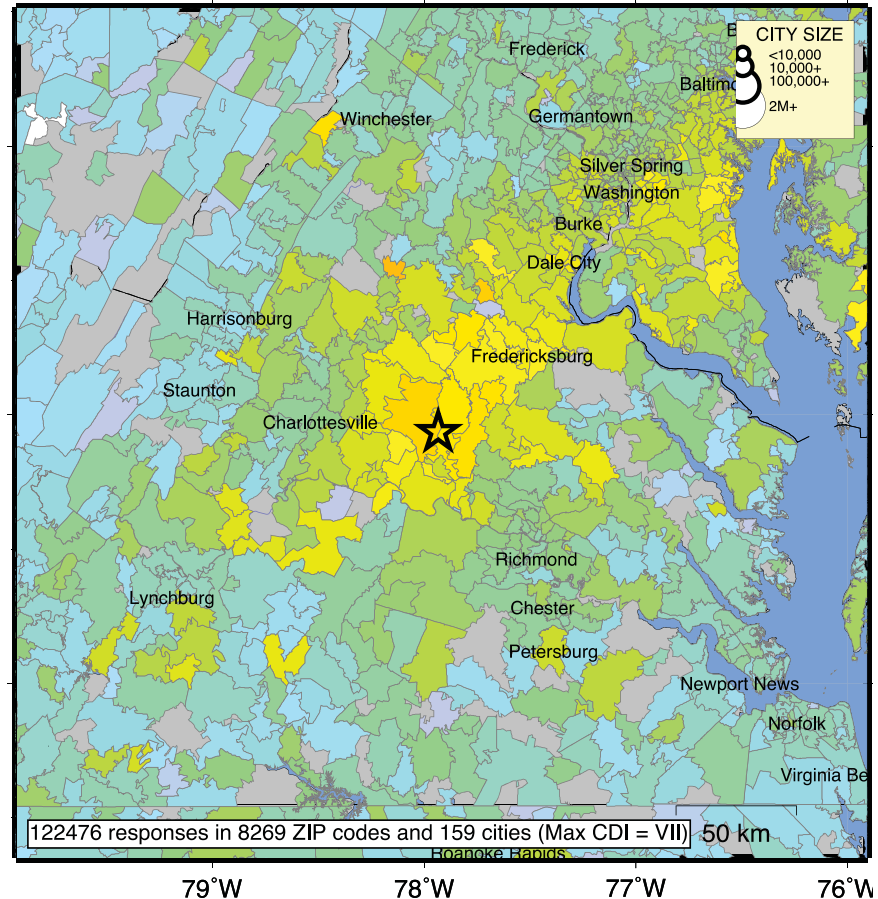


Map Version 4 Processed Tue Aug 23, 2011 01:50:45 PM MDT -- NOT REVIEWED BY HUMAN

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

### USGS Community Internet Intensity Map VIRGINIA

Aug 23 2011 01:51:04 PM local 37.936N 77.933W M5.8 Depth: 6 km ID:se082311a

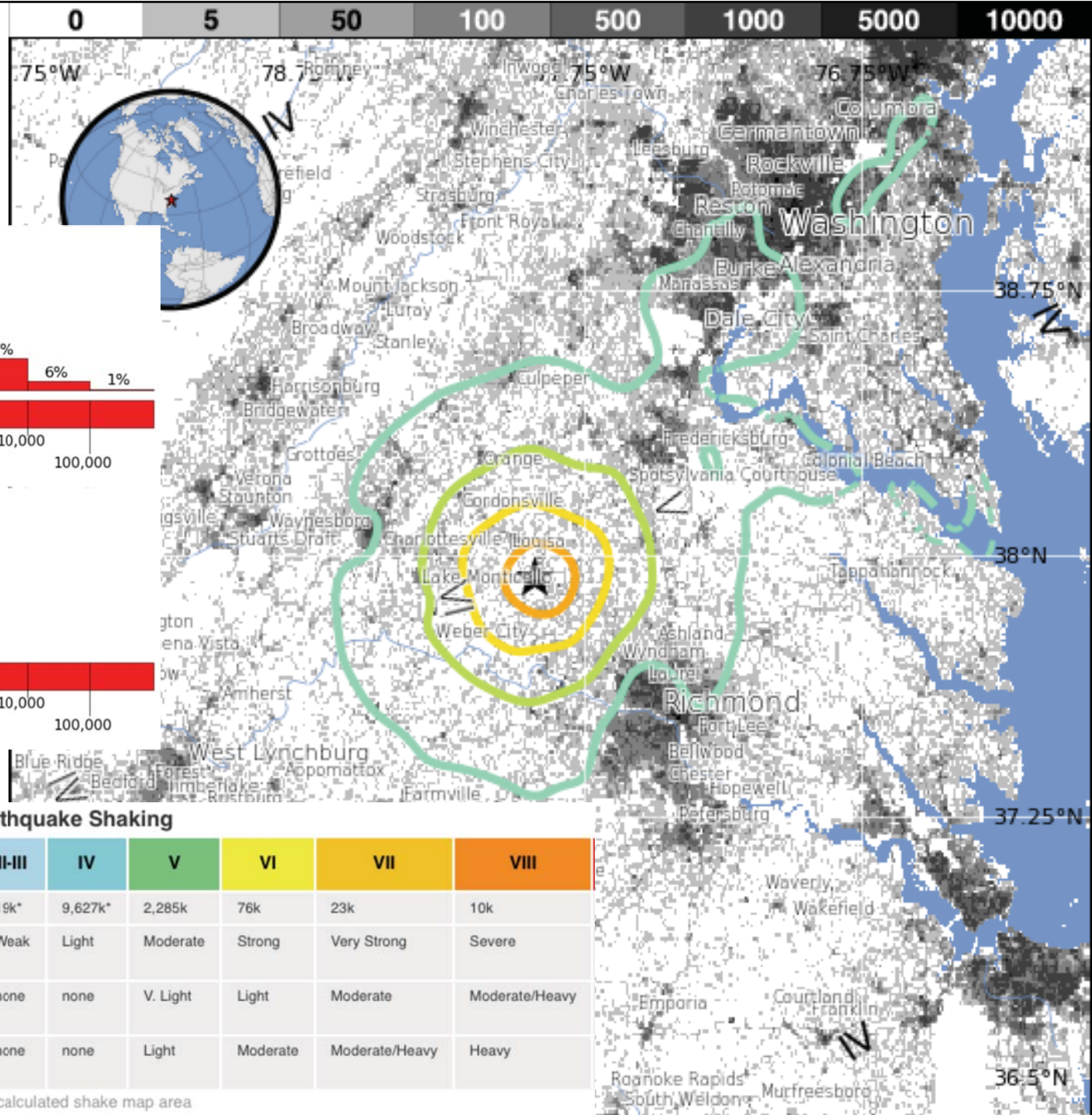
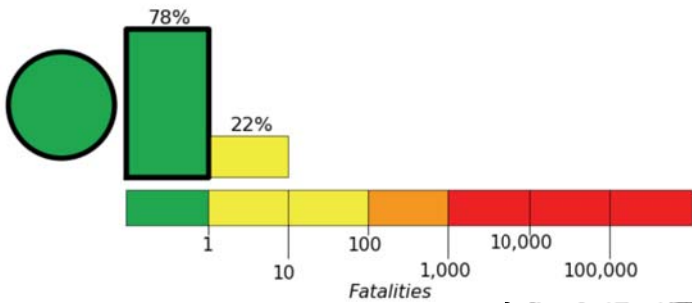
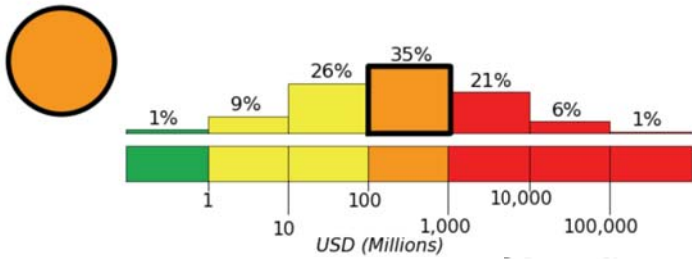


	79°W	78°W	77°W	76°W					
INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+
SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy

Processed: Wed Aug 24 11:12:25 2011

Modeled vs. reported ground shaking intensity (ShakeMap, DYFI?)

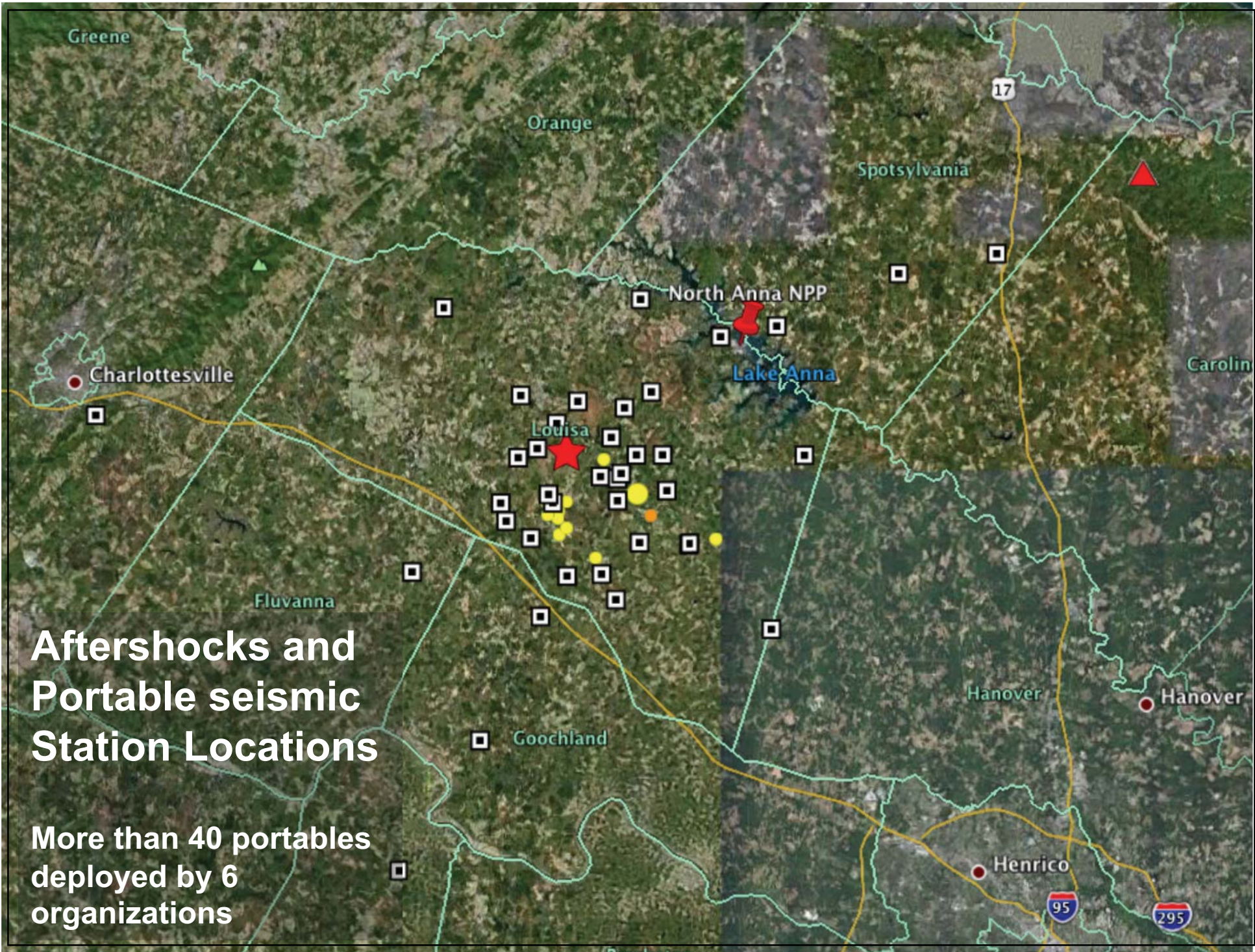
# USGS PAGER Exposure Estimates



Estimated Population Exposed to Earthquake Shaking

Estimated <u>Modified Mercalli Intensity</u>		I	II-III	IV	V	VI	VII	VIII
Est. Population Exposure		---	19k*	9,627k*	2,285k	76k	23k	10k
Perceived Shaking		Not Felt	Weak	Light	Moderate	Strong	Very Strong	Severe
Potential Structure Damage	Resistant	none	none	none	V. Light	Light	Moderate	Moderate/Heavy
	Vulnerable	none	none	none	Light	Moderate	Moderate/Heavy	Heavy

\*Estimated exposure only includes population within calculated shake map area







# Aftershocks and Portable seismic Station Locations

More than 40 portables deployed by 6 organizations

MAP SHOWING RELATIVE INTENSITY OF OBSERVED DAMAGE TO RESIDENCES  
FROM THE AUGUST 23, 2011 EARTHQUAKE IN LOUISA COUNTY, VIRGINIA

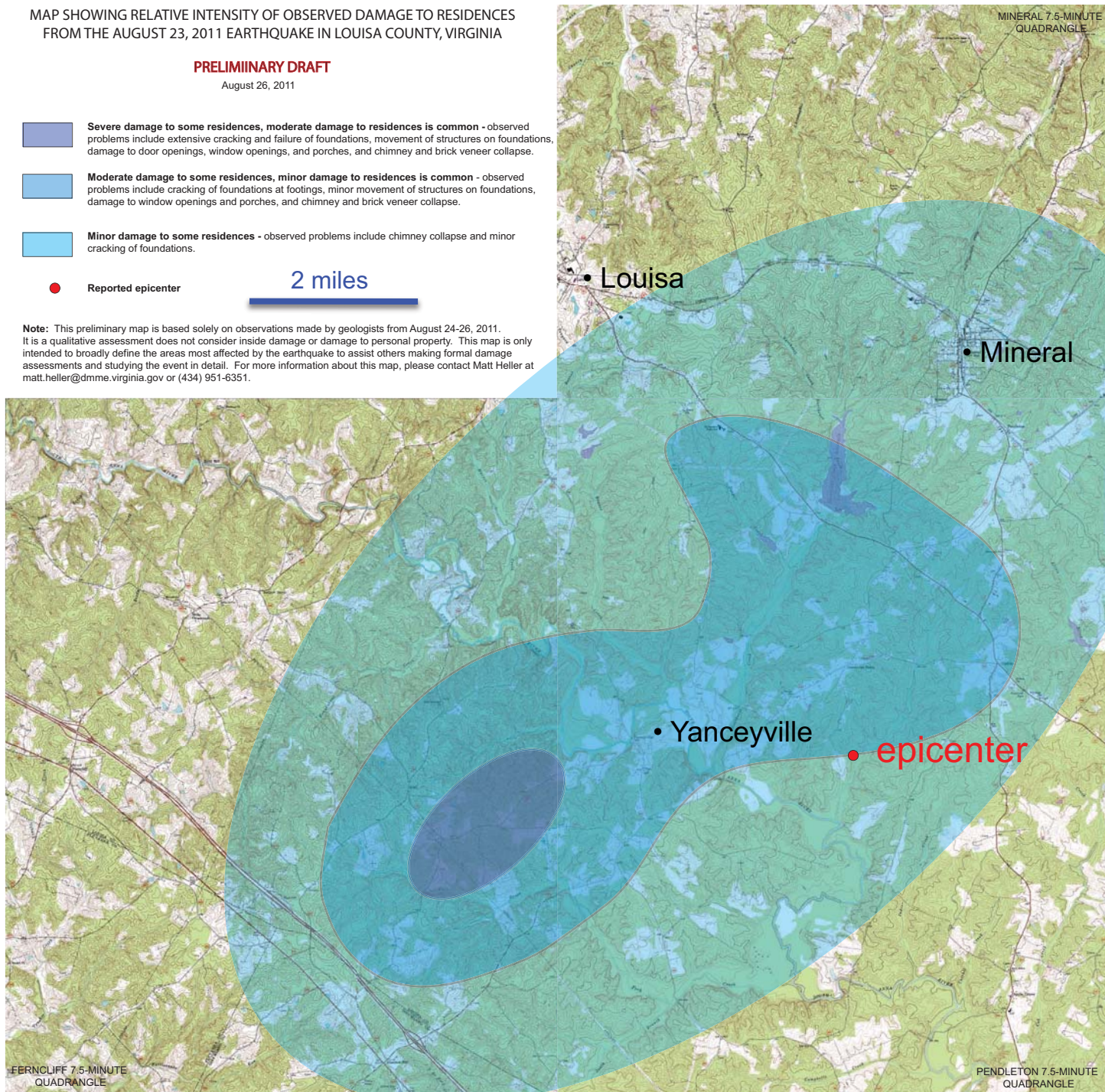
**PRELIMINARY DRAFT**

August 26, 2011

- 
**Severe damage to some residences, moderate damage to residences is common** - observed problems include extensive cracking and failure of foundations, movement of structures on foundations, damage to door openings, window openings, and porches, and chimney and brick veneer collapse.
- 
**Moderate damage to some residences, minor damage to residences is common** - observed problems include cracking of foundations at footings, minor movement of structures on foundations, damage to window openings and porches, and chimney and brick veneer collapse.
- 
**Minor damage to some residences** - observed problems include chimney collapse and minor cracking of foundations.
- 
**Reported epicenter**

2 miles

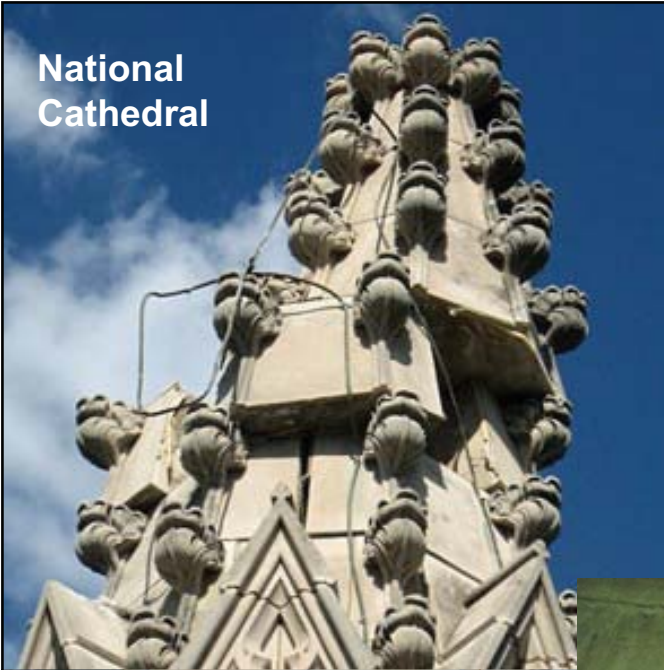
**Note:** This preliminary map is based solely on observations made by geologists from August 24-26, 2011. It is a qualitative assessment does not consider inside damage or damage to personal property. This map is only intended to broadly define the areas most affected by the earthquake to assist others making formal damage assessments and studying the event in detail. For more information about this map, please contact Matt Heller at matt.heller@dmme.virginia.gov or (434) 951-6351.



FERNCLIFF 7.5-MINUTE  
QUADRANGLE

PENDLETON 7.5-MINUTE  
QUADRANGLE

National  
Cathedral



National  
Cathedral



Washington  
Monument



Culpeper  
Virginia



Washington  
Monument



Cuckoo  
Virginia



Yancy Mill  
Virginia

