

This issue was produced prior to Hurricane Irene's arrival. We hope you all fared well in the storm. Indeed, those of us on the East Coast have had our share of natural hazards for a while.

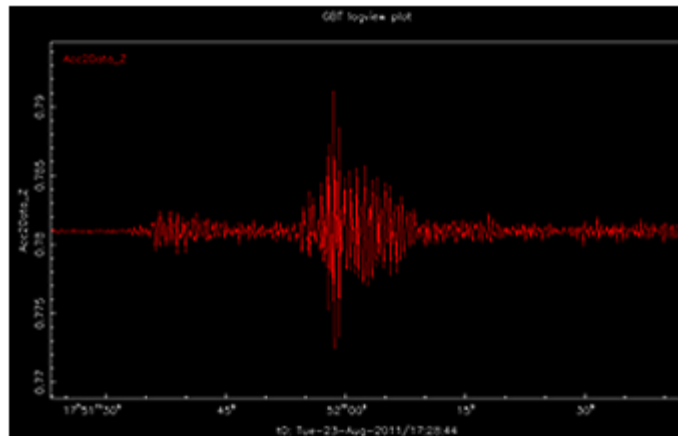
Director's Matters

By H. Frederick Dylla, Executive Director

Checking our faults

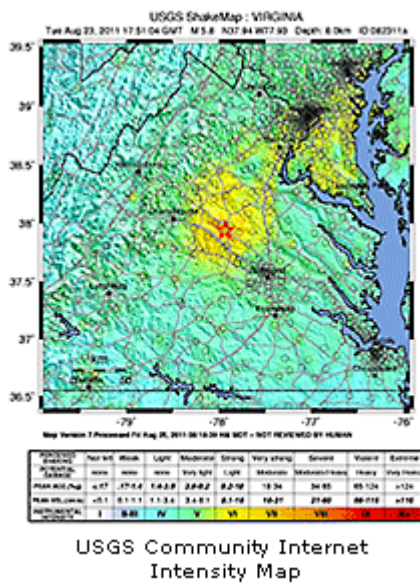
Mother Earth dominated last week's news, especially for the large segment of the US population living on the Eastern Seaboard between the Carolinas and Massachusetts Bay. At 1:51 pm (EDT) on Tuesday afternoon, a magnitude 5.8 earthquake hit the Eastern United States. It was the largest East Coast quake in 75 years. It was caused by tension being released from a fault near the town of Mineral, VA, which is located in what is known as the Central Virginia Seismic Zone. The fault, which was likely formed more than 250 million years ago during a period of intense mountain building in this region, ruptured at a depth of six kilometers. For most of the East Coast populace, it was their first real experience with an earthquake.

This event was another



Effect of the earthquake on the 100 meter diameter Green Bank Telescope in West Virginia, as measured by an accelerometer mounted on its elevation axle. The telescope was stationary at the time for maintenance. The maximum acceleration was about 0.04g. Image provided by Jason Ray, NRAO.

teaching moment for all of us. For many in the big cities, it tested evacuation and emergency procedures with a spectrum of responses and lessons learned for improvement. With the East Coast's total lack of experience with quakes, the predominant response of exiting structurally sound buildings will be examined. With our more frequent experience with intense thunderstorms and occasional tornadoes, the rule of "duck and cover" is the preferred response by safety experts. The nearest large city to the quake's epicenter, our nation's capital, received minor damage, most notably to beloved monuments, the 555 foot (170 meter) tall Washington Monument and the Washington National Cathedral. The biggest problem stemmed from the federal government's dismissal of all employees in unison until buildings could be checked for structural damage—most of the city's commuters clogged all forms of transportation.



On everyone's mind and dominating the media were obvious questions: What caused this rattle of the ground beneath us, and could the East Coast expect more temblors? Within an hour of the tremor, the [United States Geological Survey](#) had posted an informative page on their website that explained the location of the quake, a plot showing the intensity of ground motion moving away from the epicenter, and brief summaries that put this particular event in context with the historical record of quakes in the Virginia Appalachians. A quick review of the site showed the reader that there are two seismically active regions in Virginia, the other site near Blacksburg, VA, having produced a [5.9 scale quake](#) more than a century ago in 1897. Besides tumbling

chimneys, Virginia farmers in 1897 had to contend with heavily undulating fields, and muddied or completely dried-up springs.

Such quakes on the East Coast are rare and affect a large area, in contrast to the more intense, more frequent, but highly localized quakes on the West Coast. These observations present an opportunity to explain some basic geology to the public. Quakes are caused by slippage along bedrock fault lines and occur much more frequently near the edge of continental plates. California lies at the active boundary of the North American and Pacific plates, whereas Virginia sits roughly in the *middle* of the North American plate, whose eastern boundary lies in the middle of the Atlantic Ocean. Adding to this comforting fact of our location is the fortunate

structure of the bedrock below the Eastern Appalachians, which is relatively sparsely interrupted with faults compared to the highly faulted bedrock underlying California. The structural geology of the East Coast, with its more contiguous bedrock, allows quakes to propagate across distances that are more than ten times greater than areas affected by western quakes.

An [additional review of the earthquake](#), including a compelling review of the geologic history of the region, is reported in the AGU Blog *Mountain Beltway*, written by Callan Bentley, an assistant professor of geology at Northern Virginia Community College.

Last week's moderate temblor made all East Coasters appreciate the risks that our friends who live near plate boundaries are exposed to, such as those who live in California and Japan, site of the devastating magnitude 9 quake that hit its northeast coast in March. Most of the affected East Coast recovered from minor disruption and frayed nerves by the end of the day. Japan will take years for a full recovery from the quake and resulting tsunami. The tragic loss of life was most devastating, and many of us are still encouraged by the spirit we witness in Japan's recovery. We are thankful that we could use last week's event to learn how to deal with emergencies, extend help to those whose nerves were frayed by the event and its self-inflicted traffic jams, and maybe even learn a little geology along the way.

PHYSICS RESOURCES CENTER MATTERS

SPS Reporter Program offers undergraduates a unique meeting experience



The [Society of Physics Students \(SPS\) Reporter Awards](#) offer travel support for SPS chapters or individual students reporting on a

national physics meeting for SPS. This includes most major AIP Member Society meetings, where the students are treated like other members of the press. Many ambitious student reporters succeed in securing interviews with society leadership and prominent invited speakers on such occasions.

The resulting articles are 2–3 page reflections about the meeting from a student

publications such as *The SPS Observer* or *Radiations*, the magazine of Sigma Pi Sigma, the physics honor society. The articles may also be used in publications of the organization hosting the meeting.

Most recently, SPS member Stuart Harper from Brigham Young University reported from the 161st Meeting of the Acoustical Society of America, held May 23–27, 2011, Seattle, WA. Harper says one of his favorite topics covered at the meeting was acoustics education:



One of the best presentations I saw was given by Andrew McNeese and Richard Lenhart of University of Texas, Austin. They presented an Edison tinfoil phonograph that had been constructed from approximately \$100 worth of materials. I had the opportunity to use it myself and it was incredible; I felt like I was taking part in science history as I saw this fundamental acoustics invention in action.

[You can read his full account on the SPS website.](#)



Report author Stuart Harper constructing lab equipment for the BYU research labs.



A "homemade" Edison tinfoil phonograph, built by Andrew McNeese and Richard Lenhart of University of Texas, Austin.

Tips for Outlook



Most staff have had formal Outlook training, but some of us are still learning the platform. To help educate staff about some of the most popular Outlook actions, Business Systems and Operations staff has compiled a few tips that could save you time and mental energy. "Tips for Outlook" can be accessed through the [AIP|InSite](#) homepage, under the "Links" section. Check it out.

WHAT'S HAPPENING THIS WEEK

Thursday, September 8

- AIP Publishing picnic, 1–4 pm at Seversky Mansion (Old Westbury, NY)

***AIP Matters* will suspend for Labor Day and resume on Monday, September 12.**

We invite your feedback to this newsletter via email to aipmatters@aip.org.

For past issues of this newsletter, visit the [AIP Matters archives](#).