

# East vs. West quakes: Way different creatures

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Tony Williams surveys damage at his Mineral, Va. home after an earthquake struck Tuesday, Aug. 23, 2011. Items in his home were knocked over and displaced, and the home suffered some structural damage after the most powerful earthquake to strike the East Coast in 67 years shook buildings and rattled nerves from South Carolina to New England. The quake was centered near Mineral, a small town northwest of Richmond. (AP Photo/Steve Helber)

(AP) -- The East Coast doesn't get earthquakes often but when they do strike, there's a whole lot more shaking going on. The ground in the East is older, colder and more intact than the West Coast or the famous Pacific Ring of Fire. So East Coast quakes rattle an area up to 10 times larger than a similar-sized West Coast temblor.

"They tend to be more bang for the buck as far as shaking goes," said

Virginia Tech geology professor James Spotila.

Tuesday's 5.8-magnitude quake was centered in Virginia and was felt up and down the Eastern seaboard for more than 1,000 miles. There hasn't been a quake that large on the East Coast since 1944 in New York.

While this was a rarity for the East, a 5.8 quake isn't unusual for California, Oregon, Washington and Alaska, where one occurs about once a year. Those states have had 103 quakes 5.8 or bigger since 1900, compared to now two in the East.

The tiny island of Trinidad is more quake-prone than the East Coast, said U.S. Geological Survey [seismologist](#) Paul Earle.

"In all the years I was at FEMA, there didn't seem to be a concern for earthquakes on the East Coast," former [Federal Emergency Management Agency](#) chief James Lee Witt said.

Because of geology, earthquakes on the coasts have different triggers and act differently in some ways. And they definitely are felt differently.

One glaring East versus West disparity: When a quake happens in California, geologists usually know what fault ruptured. Tuesday's quake happened on an unknown fault, and it is likely to remain a mystery.

Because the quake didn't break the surface "we may never actually map this fault from this earthquake," Earle said.

The only thing that will help scientists figure out where the break truly occurred are the aftershocks which could help highlight or outline the [fault line](#), said Cornell University seismologist Rowena Lohman.

Most of the times, quakes occur when Earth's floating giant plates shift,

rub against or slip past each other. That's what happens along California's San Andreas fault when quakes happen there.

Tuesday's thrust earthquake was far from the edge of a plate - the nearest are thousands of miles away in the mid-Atlantic or California, said seismologist David Applegate, associate director of natural hazards for the USGS in Reston, Va.

The stresses that cause these kinds of quakes come from far away and mount ever so slowly over time, even building up from the retreat of glaciers at the end of the Ice Age, he said.

Another East versus West contrast: The ground is different in the East in a way that makes the shaking travel much further, allowing people to feel the [quake](#) several states and hundreds of miles away.

The rocks in the Earth's crust in the East are colder, older and harder, which means seismic waves travel more efficiently and over greater distances. Rocks on the [West Coast](#) are relatively young and broken up by faults.

"An intact bell rings more loudly than a cracked bell and that's essentially what the crust is on the East Coast," USGS seismologist Lucy Jones told a news conference in Pasadena, Calif.

In the East, hurricanes are the worry far more than quakes. Former FEMA chief Witt said people on the West Coast know what to do in an earthquake: drop to the floor, cover their heads and hold on to something sturdy until the shaking stops.

That's what USGS's Applegate did in Virginia.

"It's seared in our heads," said USGS seismologist Susan Hough in

Pasadena. "People back East don't get that kind of preparedness message."

**More information:** USGS: <http://earthquake.usgs.gov/earthquakes/>

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