

Florida rarely sees massive waves

By Kevin Spear
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The tsunamis that killed tens of thousands were fueled by one of the most powerful earthquakes of the past century.

Such catastrophic waves are unlikely but not impossible for Florida and the nation's East Coast, scientists said Monday, while Caribbean island dwellers have reason to be wary.

Most tsunamis, also called seismic sea waves, occur in the Pacific and Indian oceans. In those regions, various plates of the Earth's crust grind and joust against each other as one slides over another, breeding earthquakes.

The resulting shock of a temblor can propel a wave that travels outward at 600 mph, or nearly the speed of sound. A major tsunami will cross an entire ocean before it slows and rises in a towering wall of water.

In 1960, Chile was struck by one of the most powerful earthquakes recorded. It spawned a tsunami that hit Hawaii 15 hours later and eventually plowed into Japan.

Scientists say the Atlantic Ocean has rarely seen that kind of rampage.

"The geology is completely different," said Jose Borrero, a research professor at the University of Southern California who studies that state's vulnerability to tsunamis. "You don't have earthquake zones in the Atlantic to generate waves that huge."

In the fault line between two major plates under the Atlantic, geologic activity is the reverse of behavior among Pacific region plates.

Borrero said the plates are drifting apart instead of pounding against each other.

The earthquakes that do occur along the fault are deeper in the Earth's crust, resulting in less powerfully felt quakes, Borrero said.

Still another factor working in Florida's favor is its shallow coastal waters.

"Any wave can exist only in a certain amount of water," said Bob Morton, a U.S. Geological Survey researcher in St. Petersburg.

The shallow depths off both of Florida's coasts will act as a breakwater, dissipating a tsunami's energy, Morton said.

"It would definitely reduce it substantially," he said.

Yet the state may not be immune to devastation from one of the ocean waves.

The tsunami that Florida dreads most could be waiting far away in the Canary Islands off the coast of Africa.

A volcano there is showing signs of breaking apart, says Steven Ward, a University of California geophysicist.

If that were to happen, staggering amounts of rock could plunge into the ocean, powering up a tsunami that could race

toward the United States.

"It's a wave of 10 to 15 meters when it hits Florida," said Ward, adding that his calculations put the surge at much bigger than Sunday's tsunami. "We call it a mega-tsunami."

But the last time the Canary Islands volcano crumbled into the ocean was a half-million years ago. There's no way to know for sure when, or whether, it will again.

Another potential trigger for an Atlantic Ocean tsunami is an asteroid, such as the monster that struck near Mexico's Yucatán Peninsula.

That was more than 60 million years ago and is linked by researchers to the extinction of dinosaurs.

Considering those time frames, the chances of a major tsunami striking Florida are "essentially none," said Morton of the USGS office in St. Petersburg.

However, residents of Puerto Rico and many Caribbean nations are worried about tsunamis.

"We are prone or more prone as any western seaboard state in the United States," said Professor Aurelio Mercado of the University of Puerto Rico in Mayaguez.

Mercado, a founder and former director of the Puerto Rico Tsunami Warning and Mitigation Program, said his island is riding on top of a "micro-plate" in the Earth's crust. The plate jostles adjoining plates with a sideways motion.

The earthquakes spawned in the area aren't as powerful as those born under the Pacific Ocean.

But they are just as dangerous, Mercado said, because tsunamis don't have far to travel before they can strike a heavily populated Caribbean coastline.

Japan and the United States are wired to sensitive ocean buoys for warnings of approaching tsunamis.

But Mercado said Puerto Ricans have precious little time for electronic warnings.

"Since tsunamis tend to be local, there is not much a warning system can do," Mercado said. "People have to know how to react when there is an earthquake. In just a few minutes, water can be inland."

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