

## Deadly Caribbean tsunami risk

Potentially deadly tsunamis threaten Puerto Rico, the Virgin Islands and the rest of the Caribbean given the region's location along the junction of several major and minor tectonic plates.

Many of the islands sit above a subduction zone, where two plates meet and one slides protestingly under the other, down into Earth's mantle. Others, like Haiti, straddle strike-slip faults, where plates slide side by side. The devastating earthquakes in Haiti and Sumatra, Indonesia, in the last decade have brought increased attention to the Caribbean, and scientists at an American Geophysical Union (AGU) meeting compared the setting to that of Sumatra for its complexity and the risk of tsunamis and giant earthquakes. Studies presented at the December 2012 AGU meeting and subsequently updated in [livescience.com](http://livescience.com) have unearthed historical reports that show the Eastern Caribbean's 1843 Lesser Antilles earthquake was as intense as Sumatra's magnitude 8.7 Nias earthquake in 2005. According to Susan Hough of the United States Geological Survey (USGS): "There really is a preponderance of evidence for a very large magnitude earthquake. The simplest explanation is that it was a Nias, Sumatra-style mega-thrust rupture." Over 40 Caribbean nations and territories could suffer damage from a tsunami from the region's subduction zones, while landslides from volcanoes falling into the sea are another hazard: giant masses of falling rock act like a paddle on the water, propelling a great wave. Strike-slip earthquakes of the type that devastated Haiti can trigger submarine landslides, and 2010's 7.0 magnitude quake did cause a local tsunami on Haiti's south shore, according to a study by geologists at the Georgia Institute of Technology. Disaster does not necessarily have to dog our doorstep, with earthquakes as far away as Europe also a documented source of tsunamis in the Caribbean. In 1755, an earthquake in Portugal sent a tsunami westward across the Atlantic, washing over Anegada Island in the British Virgin Islands, geologist Brian Atwater of the USGS reported. Historic accounts detail up to 100 possible tsunamis in the Caribbean, with more than 3,500 people killed in tsunamis between 1842 and 2010, compared with just 579 in the eastern Pacific (Hawaii, Alaska, and North and Central America) over the same period. About half of the Caribbean deaths resulted from a tsunami in 1946, which was associated with an earthquake in the Dominican Republic. In November 1867, a 20-foot-high tsunami slammed into Charlotte Amalie Bay in St Thomas, USVI. The estimated 7.5 magnitude quake responsible for that tsunami occurred in Anegada Passage between Puerto Rico and St Croix