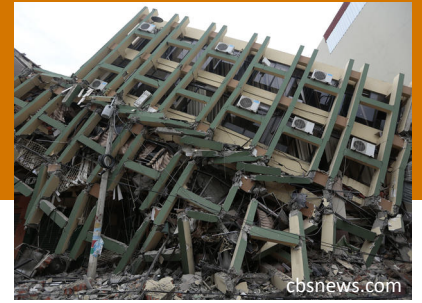


# SciNews



**Event:** Magnitude 7.8 Earthquake in Ecuador

## Important Dates and Numbers:

April 16, 2016: Major earthquake strikes Ecuador

7.8: Magnitude of earthquake

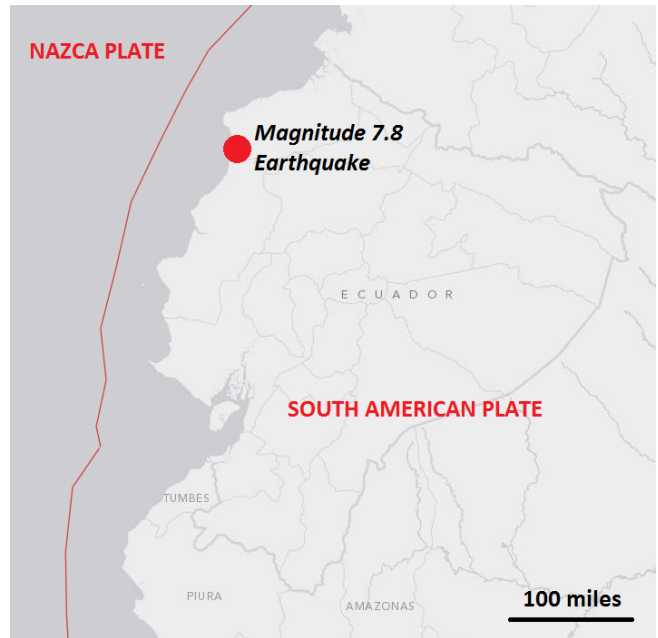
11.9: Depth (in miles) of earthquake

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## Event Description

The Pacific Coasts of South America, North America, and Asia are on the infamous Ring of Fire of volcanoes. The Ring of Fire is also associated with large earthquakes, which like the volcanoes, result from the interactions between tectonic plates. On April 16, 2016, a magnitude 7.8 earthquake rocked the tiny country of Ecuador, causing destruction in many cities and towns and over 650 deaths nationwide. Earthquakes like this one occur when a dense, heavy oceanic plate (the Nazca Plate) “subducts” or slips below a less dense continental plate (the South American Plate). Subduction zones are one of the three main types of plate boundaries and are hosts to the largest earthquakes.



This map of Ecuador shows the location of the April 16, magnitude 7.8 earthquake as a red dot. It lies off the plate boundary (red line) at the surface. This is because the Nazca plate is plunging below S. America and the earthquake occurred at depth along the fault.

## Additional Media (see SciNews website for links!)

Watch an IRIS video about how scientist study these large subduction zone earthquakes and see (1) how stress builds up along a fault and (2) how subduction zone earthquakes can cause tsunamis.

## Alternative Lesson Plans (links on the SciNews website!)

Compare and contrast the recent Japanese earthquakes with the Ecuadorean earthquake that occurred the next day. The New York Times has a well-explained article on the differences and some educational activities based on the event.

## Lesson Descriptions

*Students will hypothesize which of the 3 main types of faults at plate boundaries was responsible for the magnitude 7.8 earthquake in Ecuador.*

Present the 3 main types of faults – strike slip, normal, and reverse. Show students the map of South America with the location of the Ecuadorean earthquake. Zoom in on Ecuador and have them estimate the distance the earthquake is from the plate boundary. Why isn't it on the plate boundary? Help students connect this observation to the type of plate boundary – a subduction zone earthquake (reverse fault). Then show some videos of the shaking and damage from the earthquake.

## Lesson Materials - download from the SciNews website

**(1) Faults Slideshow (.pptx):** Present your students with the 3 main type of faults. If this material is not a review, then strongly consider using (3) for a 3D visual aid.

**(2) Youtube videos of the Ecuadorean earthquake:** Visit the SciNews site for links to videos of the earthquake and damage.

**(3) Optional - Fold-up 3D cutouts (.pdf):** This document by Indiana University provides information about faulting as well as to fold-up cutouts to help teachers present faults in 3D.

## Next Generation Science Standards

*MS-LS2-4: Use empirical evidence to argue that physical or biological changes to an ecosystem affect populations.*



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