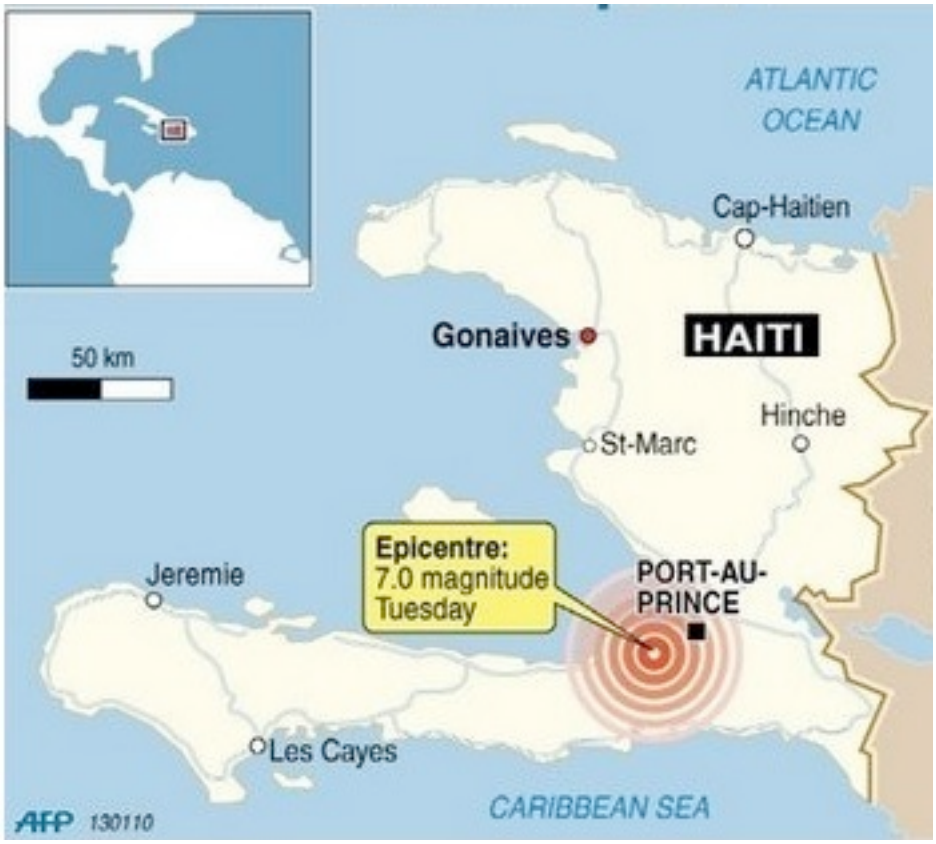
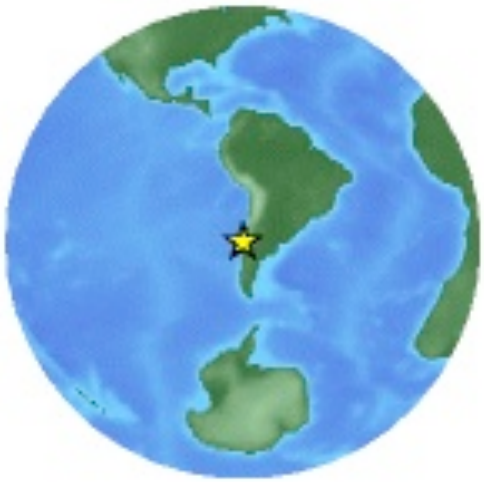


On Tuesday, January 12, 2010, a 7.0-magnitude earthquake struck Haiti. It only lasted for about 35 seconds, but more than 200,000 people were killed and at least 500,000 homes were damaged or destroyed. Government buildings, offices, hotels, schools, and stores collapsed during and after the earthquake, burying people beneath rubble. The earthquake also caused widespread power outages, destroyed roads and hospitals, and damaged communication systems, which hindered rescue and aid efforts. By January 24, at least 52 aftershocks measuring 4.5 or greater had been recorded.

The earthquake was caused by the movements of two tectonic plates: the North American and the Caribbean. Haiti is part of a large island that lies on the boundary between these two plates. At that boundary, both plates have mostly oceanic crust. These two plates are not moving toward or away from each other. Instead, the two plates are moving side-by-side, with the North American plate heading west and the Caribbean plate heading east.



On Saturday, February 27, 2010, an 8.8-magnitude earthquake occurred off the coast of Chile. It lasted 90 seconds and triggered a tsunami that devastated several towns along the coast and caused minor damage in San Diego, California. The earthquake generated a blackout that affected 93% of the country and lasted several days in some locations. Although it was much stronger than the earthquake that struck Haiti, fewer than 1000 people died, perhaps because of Chile's strict laws requiring earthquake-resistant buildings.

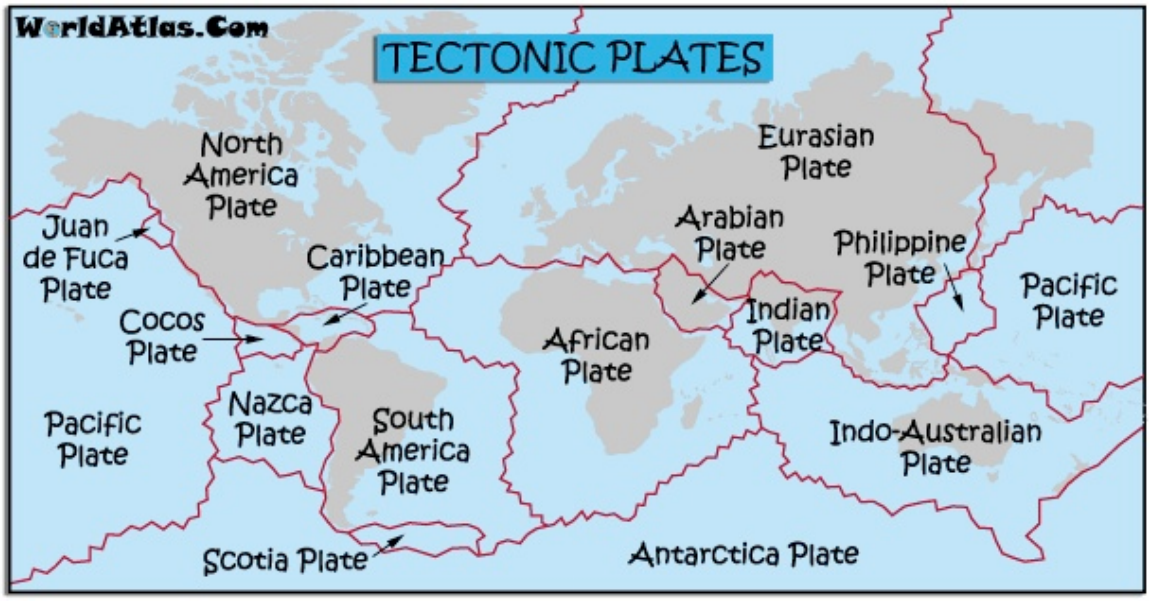
The earthquake was caused by the movements of two tectonic plates: the Nazca and the South American. The Nazca plate has oceanic crust and, at that boundary, the South American plate has continental crust. As these plates move toward each other, the Nazca plate is sinking and moving under the South American plate.

Mount St. Helens, in the state of Washington, is one of the most beautiful mountains of the Cascade Range. But on May 18, 1980, it erupted with a force that blew off the mountain's top and sent ash and debris more than 12 miles into the sky. Sixty two people were killed, and thousands of acres of prime forest were destroyed.

The formation of the Cascade Range and the eruption of Mount St. Helens were caused by the movements of three tectonic plates: the Pacific, the North American, and a tiny plate called Juan de Fuca, which lies between the other two. The Pacific and the Juan de Fuca plates have oceanic crust, and they are moving away from each other. The Juan de Fuca and North American plates are moving toward each other. At that border, the North American plate has continental crust, so the Juan de Fuca plate is sinking and moving under the North American plate. As the plate sinks, magma forms and then rises to the surface. Volcanoes that form this way typically erupt with explosive force, because trapped gases expand as the magma rises, creating tremendous pressure. This pent-up pressure is suddenly released in a violent eruption.

This is an aerial photograph of Amero, a town in Columbia that was destroyed when the Nevado del Ruiz volcano erupted on November 13, 1985. It ejected only about 3 percent of the magma that erupted at Mount St. Helens, yet this tiny eruption triggered mudflows that killed more than 23,000 people. The hot volcanic material melted the snow and ice that covered the mountain, creating floods of water that swept downward. As these floods descended, they picked up soil and loose debris forming hot mudflows. Two and a half hours after the start of the eruption, one of the mudflows reached Amero, 45 miles from the volcano. Within a few short minutes, most of the town was buried or swept away.

Nevado del Ruiz is in the Andes Volcanic Chain of western South America. The formation of the chain and the eruption of Nevado del Ruiz were caused by the movements of two plates: the Nazca, which has oceanic crust, and the South American, which has continental crust at that boundary. As these plates move toward each other, the Nazca plate is sinking and moving under the South American plate.



Haiti Earthquake

name of plate		
type of crust		
type of boundary		

Chile Earthquake

name of plate		
type of crust		
type of boundary		

Mount St. Helens Eruption

name of plate		Juan de Fuca	
type of crust			
type of boundary			

Nevado del Ruiz Eruption

name of plate		
type of crust		
type of boundary		