

## Differences between Haiti and Chile quakes

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The Chile earthquake was hundreds of times more powerful than the Haitian one, but a lack of infrastructure meant the toll in Port-au-Prince was so much worse (AP)

A combination of geography, comparative wealth and disaster readiness is why Chile's massive earthquake won't come close to Haiti's calamitous toll even though it was much stronger, experts say.

Saturday's 8.8-magnitude quake, the seventh most powerful on record, struck central Chile some 325 kilometers south of the capital Santiago and 115 kilometers north-northeast of the second city of Concepcion. So far the death toll is over 700 and rising, although President Michelle Bachelet in announcing the newest figures warned the toll would still rise with hundreds of people remaining missing.

### Haiti quake 'much weaker'

Haiti, the poorest country in the Americas, was struck on January 12 with a 7.0-magnitude quake -- hundreds of times weaker than the one in Chile -- but the epicenter was just 24 kilometers from the overflowing capital Port-au-Prince. The most recent estimates put the toll there at over 220,000 dead, with President Rene Preval warning the final figure could reach 300,000, making it the worst natural disaster in modern history. Seismically speaking, comparisons between the tremors are irrelevant because the situations at their fault lines are so different, experts said. But put in geographic context, the two earthquakes show how events of different strengths at varying distances from densely urban areas can have vastly different outcomes.

### Seabed 'absorbing shock'

The epicenter of Chile's earthquake was 35 kilometers below the ocean floor, with the seabed absorbing a large portion of the shock -- although it did prompt a tsunami that threatened the entire Pacific region. At a depth of only 10 kilometers, it was the Haiti quake's shallowness that proved so catastrophic, according to experts. This proximity to the surface amplified the vibrations and caused far more damage to densely-packed urban areas near the Haitian capital. The epicenter of Chile's quake was almost five times farther away from the second city of Concepcion than Port-au-Prince was to Haiti's quake.

### Preparedness 'key'

"The difference between the Chile quake and Haiti was not only that the epicenter of the Haiti quake was closer... but also that Chile was better prepared than Haiti for a quake of this magnitude and intensity," Roger Bilham, a geology expert at the University of Colorado, told AFP. Because Chileans live on an active fault line, with the experience of the largest recorded earthquake in history, the South American country was far more ready for a major seismic event than Haiti -- relatively unused to such quakes.

Since May 1960's record 9.5-magnitude quake that left over 2,000 dead, successive Chilean governments have ensured sensible moves towards robust construction standards. While Saturday's quake still constitutes a major disaster, Chile's widespread adoption and enforcement of modern, seismic-resistant building practices "has mitigated the potential for devastation," according to US risk modelling firm EQECAT.

**Stronger buildings in Chile**

Sustainable building group Architecture for Humanity noted the differences between construction in the two countries by saying "stronger building codes and location/depth of the epicenter" resulted in less damage in South America. Following Haiti's quake, engineering experts blamed lax building standards in the Caribbean nation for having exacerbated the disaster. When the quake struck, apartment blocks and smaller homes simply crumbled to the ground, trapping thousands under rubble and burying thousands more alive.

**Poor quality construction**

"The quality of construction in Haiti, even in buildings that are supposedly engineered construction, is not good at all," Farzad Naeim, president of the board of directors of the Earthquake Engineering Research Institute (EERI), told AFP at the time. From photographs he saw of the devastation in Haiti, Naeim said many of the larger buildings were built using non-ductile concrete. This was described in a report presented at the World Conference on Earthquake Engineering in Beijing in 2008 as "arguably... the greatest seismic life safety hazard in many urban centers worldwide because of the collapse potential."

Source: <http://www.sbs.com.au/news/article/1204517/Differences-between-Haiti-and-Chile-quakes>