

Haiti should brace for more devastating quakes: study

January 26 2012



A man walks down the road by the sea near the settlement of Titanyen, an area north of Port au Prince, in 2011. The 2010 earthquake that devastated southern Haiti may have opened a new era of seismic activity and residents should brace for more massive temblors, said a US study on Thursday.

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The 7.0 [quake](#) that killed 250,000 people and leveled much of the capital Port-au-Prince, was of a magnitude unseen on the island since the 18th century, said the study in the [Bulletin of the Seismological Society of America](#).

A equivalent 6.6 level quake in 1701, centered in the same region and described in similar ways to the 2010 [temblor](#) according to historical accounts, was followed by three big quakes -- two in 1751 and one in 1770, said the study.

Those quakes would be equal to about 7.5, 6.6 and 7.5 today, and were all located on or near the same crack in the Earth's crust known as the Enriquillo fault that extends along southern Haiti and the Dominican Republic.

The [fault system](#) has accumulated "considerable potential slip" since the 18th century, and regional [stress levels](#) in the Earth may be sufficient to unleash more massive temblors in the coming years, said the research.

"The 2010 Haiti earthquake may mark the beginning of a new cycle of large earthquakes on the Enriquillo fault system after 240 years of seismic quiescence," said the study, led by William Bakun of the US Geological Survey.

"The entire Enriquillo fault system appears to be seismically active; Haiti and the Dominican Republic should prepare for future devastating earthquakes."

Bakun's study reviews the history of earthquakes and hurricanes on the [Caribbean island](#) known as Hispaniola since it was first discovered by Christopher Columbus in 1492 and was swiftly colonized by Europeans.



A Haitian man walks through the ruins of the Cathedral in Port-au-Prince in 2011. The 2010 earthquake that devastated southern Haiti may have opened a new era of seismic activity and residents should brace for more massive temblors, said a US study on Thursday.

"There are ample Spanish, French, and British accounts describing the social and physical conditions of Hispaniola in the past 500 years," said the study.

"The five centuries of [seismic history](#) of the [island of Hispaniola](#) is arguably the longest in the western hemisphere."

With that historical perspective, the island's seismic record is comparable to that of the San Andreas fault in California, where 56 years of "significant earthquake activity" beginning in 1850 culminated in San Francisco's 7.8 quake on the moment magnitude scale in 1906, Bakun wrote.

USGS analysts have predicted that there is a 62 percent probability of another major, damaging earthquake in the San Francisco area by 2031.

And while the science of predicting earthquakes is imprecise, seismologists are gaining better knowledge of risk rates using more

advanced technologies and an examination of the historical record for clues.

There are no reports of earthquakes in the area before 1700, and no comparable ones until 2010, though there was a quake in 1860 that was centered further north on the island and is considered unrelated to the fault system.

An analysis of past patterns suggests that the 2010 quake was a re-rupture of the same zone as in 1701, indicating that the Enriquillo fault system may be on a 310 year cycle, said the study.

Bakun and colleagues noted that much of the devastation around the capital in 2010 was due to "inadequate building practices," and urged more seismic hazard mitigation efforts in future construction across southern Haiti and the Dominican Republic.

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Citation: Haiti should brace for more devastating quakes: study (2012, January 26) retrieved 25 April 2024 from <https://phys.org/news/2012-01-haiti-brace-devastating-quakes.html>

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