Live near southern San Andreas fault? Look out

They can't say when, but scientists warn to prepare for major earthquake

Charles Q. Choi, OurAmazingPlanet, 2-11-11

The valley of Coachella in Southern California is known for concerts held there every year, but new research has shed light on a more dangerous kind of rocking that has occurred there over the past millennium: quakes on a mysterious part of the San Andreas fault.

The southernmost 60 miles of the San Andreas fault is the only stretch of the fault that has not ruptured in recorded history. This makes it hard to gauge when the next earthquake might strike there or how damaging it might be. This uncertainty is especially troubling considering a major quake there could severely damage Los Angeles, roughly 140 miles to the west.

To learn more about the southern part of the 800-mile-long fault, scientists focused on an area of the city of Coachella that was untouched by orchards or by canals, golf courses or other developments, making evidence of past earthquakes relatively easy to see.

The researchers investigated three trenches about 25 feet deep and up to roughly 1,300 feet long. These exposed how the earth along the fault was layered, helping the scientists look at how the ground might have shifted because of past quakes.

Their analysis uncovered at least five and up to seven major earthquakes at this part of the San Andreas during the past 1,100 years, with one occurring about every 180 years. The most recent quake occurred there around 1690. Because this stretch of the fault has had more than 300 years to accumulate stress, the researchers said it is likely to produce a major quake in the next few decades.

"I would tell people living in Southern California that a major San Andreas fault earthquake will very likely happen during their lifetimes and that they need to be as prepared as possible," researcher Belle Philibosian, a geologist at the California Institute of Technology, told OurAmazingPlanet.

Of course, scientists can't say exactly when this or any other fault might rupture, but Philibosian emphasized the need for preparedness.

"The exact timing of large earthquakes appears to be inherently unpredictable — at least, all scientific efforts have so far failed — so the way to deal with earthquakes is through building codes and emergency planning," she added. "People should, if possible, have their houses assessed for earthquake risk and have them retrofitted if need be. It's also very important to have a cache of emergency supplies."

For researchers, the next step is to see how much the fault slipped during each of these past earthquakes, to figure out the quakes' size and extent, Philibosian said.

Philibosian and her colleagues Thomas Fumal and Ray Weldon detailed their findings in the February issue of the Bulletin of the Seismological Society of America.