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# Study: Changes in water flow into Salton Sea delay 'Big One'

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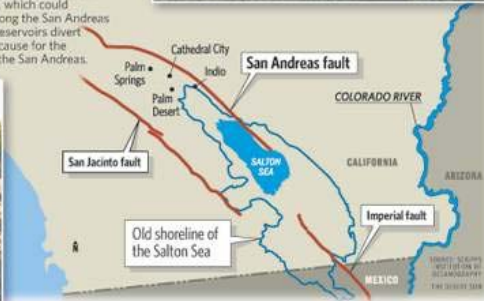
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The map illustrates the size of the Salton Sea today compared to the much larger historic Lake Cahuilla. Floodwater from the river formerly weighed down on small faults beneath the Salton Sea, which could rupture and trigger larger quakes along the San Andreas fault. Today, man-made dams and reservoirs divert Colorado River water — a possible cause for the approximately 300-year silence of the San Andreas.



Lost Lake off Highway 138 in San Bernardino County is a sag pond created by the San Andreas fault line, which runs underneath the water. **AT TOP:** A deep chasm in an area of the San Andreas fault that is frequently studied by geologists near the Salton Sea. / Crystal Chatham and Jay Calderon, The Desert Sun

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Written by **Ryan Buxton**

It's been mystifying geologists for years.

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The answer may lie beneath the Salton Sea, according to a new report from the Scripps Institution on Oceanography.

Major quakes along the San Andreas fault used to be triggered on average about every 180 years when the weight of seawater pressured smaller faults, according to Scripps' findings, published Sunday in the journal Nature Geoscience.

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But since reservoirs and dams were built in the early part of the 20th Century to prevent the Colorado River from flooding into the Salton Sea — reducing it to a 25th of its historical size — the San Andreas has been still.

“We’ve been baffled as to why the southern San Andreas hasn’t gone. It’s been compared to a woman who is 15 months pregnant,” said Scripps seismologist Debi Kilb, a report co-author, in a news release. “Now this paper offers one explanation why.”

Essentially, the paper makes the case that the weight of the water in the Salton Sea kept regularly triggering earthquakes along the network of faults beneath the sea and across the southeastern corner of California.

Without that weight, the pressure has continued to build.

The last major quake on the San Andreas and the last major flood in the Salton Sea area both occurred around 300 years ago, said Danny Brothers, a marine geologist with the U.S. Geological Survey and lead author of the Scripps report.

“We’re proposing we’ve reset the earthquake cycle on the San Andreas because we haven’t allowed flooding to come in and tip it,” he said.

Before that, when the lake was at its largest, there were five quakes larger than magnitude 7 in a span of 1,000 years.

Though Brothers said the study won’t make it easier to predict the next earthquake, it suggests that when the San Andreas does rupture, it won’t be triggered by the smaller faults, but “full tectonic stress.”



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If the entire segment of the San Andreas ruptures at once, the magnitude of the resulting quake could be anywhere from 7.2 to 7.8, Brothers said.

But it's impossible to predict whether the quake would actually reach a magnitude of 7 or above because the entire length of the fault may not rupture at once, he said.

Should the "Big One" hit, Brothers also said the Coachella Valley could see immense damage from liquefaction, a phenomenon caused when soil saturated with water is shaken enough that it loses strength and stiffness — like quicksand — causing danger to building foundations.

While this discovery is meaningful to groups like the Salton Sea Authority, which is working to restore the sea, this new level of understanding likely won't have an effect on the average resident's earthquake preparedness, said Dennis Mileti, the Rancho Mirage-based former director of the National Hazard Center, which studies human behavior in natural disasters.

Mileti said research shows people are only influenced to further prepare for earthquakes in three ways — if they see friends or relatives preparing, if they receive information that tells them how specifically to prepare rather than emphasizing risks and dangers and if they receive repetitive, consistent information over and over.

Because the Scripps findings don't fall under those categories, the average person is unlikely to consider the information beyond casual observation.

"They'll be interested in it and they might talk about it over cocktails," Mileti said.

Ryan Buxton is a reporter for The Desert Sun. Contact him at (760) 778-4661 or [ryan.buxton@thedesertsun.com](mailto:ryan.buxton@thedesertsun.com)

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