

This California county had its biggest earthquake in 100 years. Here's what that means



Clare Fonstein

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A canal that carries water to the agricultural lands of the Central Valley is seen near Westley (Stanislaus County) in December 2016. The area near Westley experienced its largest earthquake on record on Monday.

Michael Macor/The Chronicle

A California county experienced its largest earthquake on record Monday night, amid a swarm of more than 10 earthquakes.

The 4.5 earthquake that occurred near Westley shortly after 9 p.m. on Monday was bigger than any in Stanislaus County going back a century in U.S. Geological Survey records, said USGS research geologist Austin Elliott.

While earthquakes like this don't necessarily signal anything big is imminent, they are a reminder that the ground can shake at any moment, Elliott noted.

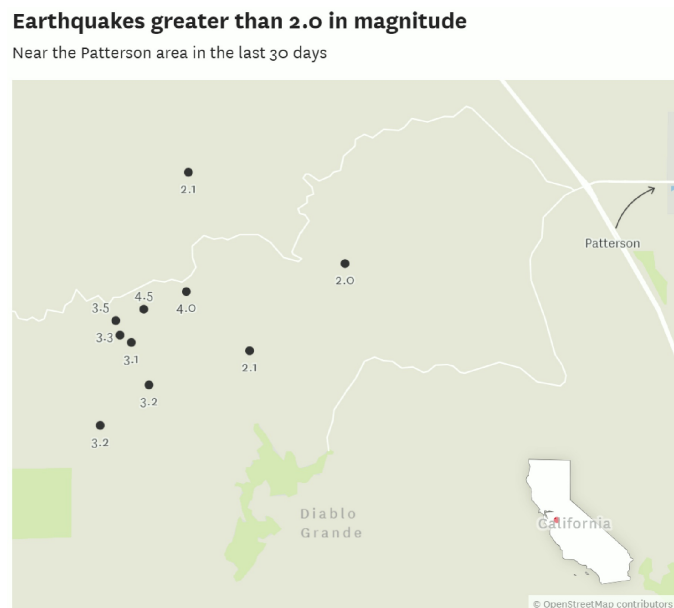
“No individual small earthquake inherently indicates anything larger is coming, and most earthquakes of this magnitude pass without further events and without further larger events,” Elliott said.

Aftershock sequences can last weeks and months, but for an earthquake of 4.5 magnitude, the aftershocks will likely be small and people will stop being able to feel them after a few days, he said.

Stanislaus County is seismically active, but 14 earthquakes in 24 hours is not typical.

“A lot of the people who felt these ones are living in the Central Valley, Turlock, Modesto, Patterson ... (and are) probably not so used to having an earthquake occur so close to them,” Elliott said.

The earthquakes Monday were caused by a mix of compressional convergent faulting, where there are two sides of a tectonic plate coming together, and strike slip faulting, where there are two sides sliding past each other, Elliott said.



Elliott said there are known faults in the region, but the earthquakes were too small to pin on a specific fault.

The faults in the region are known to produce earthquakes, but they don't lead to earthquakes as often as the San Andreas and the Calaveras faults, Elliott said.

He said the earthquakes could have been caused by fault structures that are not mapped.

“Earthquakes of this magnitude — twos and threes and fours — that may be happening, there are all kinds of little fractures and faults that are possible to produce small earthquakes,” Elliott said.

To the west of Stanislaus County are strike-slip faults including the San Andreas and Calaveras, and to the east of the county are convergent faults on the margin of the Central Valley.



Clare Fonstein is a reporter who joined the San Francisco Chronicle as part of the two-year Hearst Journalism Fellowship, spending her first year of the program at the Houston Chronicle. In Houston, Fonstein covered breaking news and trending stories.

She was born and raised in the San Francisco Bay Area, then attended Lehigh University in Bethlehem, Pennsylvania, where she majored in journalism and international relations. She previously worked as an intern at the Morning Call, the daily newspaper of the Lehigh Valley, and her college newspaper at Lehigh University. Reach Clare Fonstein: clare.fonstein@sfchronicle.com

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