

Sierra's eastern front long overdue for large earthquake (Update)

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Seismogram being recorded by a seismograph at the Weston Observatory in Massachusetts, USA. Credit: Wikipedia

The Sierra's eastern front is long overdue for a large earthquake along the California-Nevada line, where a magnitude-7 event expected on average every 30 years hasn't occurred in six decades, scientists said Tuesday.



Nevada Seismological Laboratory Director Graham Kent said the region's earthquake "drought" is likely one of the reasons the public has a misconception there's a low risk a serious quake will strike.

"We've experienced such a long stretch of not having earthquakes, we've sort of built in a sense of complacency," he said at an Earthquake Economic Resiliency Forum ahead of the Seismological Society of America's annual meeting in Reno.

The experts are gathering in Nevada days after powerful, deadly earthquakes in Ecuador (magnitude-7.8) and southern Japan (magnitude-7.3).

Seismologists said Tuesday it's likely the Reno-area will eventually experience the kind of destructive quake that rocked Japan, where nearly 1,200 houses have been destroyed in and around Kumamoto.

"This is an opportunity to scare you a little bit, or hopefully a lot," said Kent, who runs the lab on the campus of the University of Nevada, Reno.

Rich Koehler, an assistant professor of geology at Nevada's Bureau of Mines and Geology, said a magnitude-7 earthquake could potentially hit anytime, anywhere along the California-Nevada border.

"You have to start with the belief that an earthquake threat is real," added Craig dePolo, a research geologist at the bureau.

Kent said a magnitude-6 earthquake or larger typically strikes every 10 years or so along the Sierra Nevada frontal fault system running from south of Yosemite National Park to north of Reno and Lake Tahoe.

There were seven magnitude-6.5 or larger earthquakes in the region



from 1915 to 1954, but none since, he said. The most recent magnitude-6 was 22 years ago in Carson Valley south of Carson City.

The Federal Emergency Management Agency estimates a magnitude-6 quake could cause up to \$1.9 billion in damage in the Reno-Sparks area and \$590 million at Lake Tahoe, Kent said.

The largest earthquake ever recorded in the Sierra fault system was a magnitude-7.4 in 1872 in Owens Valley south of Yosemite. It's the third largest in California history, behind the magnitude-7.9 at Fort Tejon in 1857 and the magnitude-7.8 in San Francisco in 1906. More recent studies of the fault lines and damage suggest the Owens Valley quake was probably bigger than the one in San Francisco, Kent said.

The three-day seismology conference will address new mapping techniques to pinpoint fault lines, early warning systems and the growing use of social media to track widespread impacts.

Ken Smith, associate director of the Nevada lab, said early warnings have limited use in places like Reno where the faults are so close.

"If the earthquake is under your house, you won't get much warning," he said. But new technology being developed in California could help mitigate damage on the Las Vegas Strip if a big one hits 150 to 200 miles northwest in Death Valley.

"If you get a magnitude-7 like Owens Valley, it could translate into a 30 or 40 second warning for Las Vegas," Smith said.

The UNR lab chronicled the Owens Valley event in its March newsletter with historical excerpts from naturalist John Muir, who wrote about the violent shaking while at Yosemite on March 26, 1872.



"I ran out of my cabin near the Sentinel rock, both glad and frightened, shouting, 'A noble earthquake!" Muir wrote. "The shocks were so violent and varied and succeeded one another so closely, one had to balance in walking as if on the deck of a ship among the waves."

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