More moving and shaking, but why?

The number of earthquakes greater than magnitude 4.0 in Southern California and Baja California has increased significantly in 2010. Scientists are studying the uptick but cannot fully explain it.

By Cara Mia DiMassa

If you've been feeling more shaking this year, it's not your imagination.

The number of earthquakes greater than magnitude 4.0 in Southern California and Baja California has increased significantly in 2010. There have been 70 such quakes so far this year, the most of any year in the last decade. And it's only April. There were 30 in 2009 and 29 in 2008.

Seismologists said they are studying the uptick but cannot fully explain it. Major earthquakes tend to occur in cycles, and experts have said the region in recent years has been in a quiet cycle when it comes to sizable temblors.

The string of quakes this year raises the possibility that Southern California might again be entering a more active seismic period. Scientists said the increase does not mean the Big One is any more imminent, but it could mean more significant quakes are on the way.

Egill Hauksson, a geophysicist at Caltech, said the rate of quakes in the region is "probably . . . picking up again" after a relative lull that lasted more than a decade. "What it means is that we are going to have more earthquakes than in the average year. With more earthquakes, we're bound to have more bigger ones. But there are always fewer of those than the smaller ones."

Scientists, however, have not been able to identify reasons that fully explain the increase.

"We would like to be able to explain it," said Kate Hutton, a seismologist at Caltech. "But there's no real correlation with any cause."

Many of the earthquakes this year have been aftershocks to the 7.2 temblor that rattled the Mexicali area earlier this month. The border region had experienced a swarm of smaller quakes before the big one. And there have been more than 1,000 aftershocks, including more than a dozen that registered higher than 5.0.

The Mexicali quake was the region's largest in nearly two decades -- since the 7.3 Landers quake in the Mojave Desert in 1992. Despite their size, neither temblor did catastrophic damage because they occurred in relatively remote areas far from major population centers.

The Landers quake occurred during a particularly active seismic period in the Los Angeles area. Between 1987 and 1994, the region experienced five major quakes. In

addition to Landers, there were the Whittier Narrows quake (which killed eight people), temblors in Big Bear and Joshua Tree, and the Northridge quake, which killed 57 people, injured 4,500 and caused about $40 billion in damage.

Beginning in the late 1990s, however, the number of memorably large quakes subsided. Experts are not sure about the reason for the cycles; they say one possibility is that the ups and downs are random. Another possibility: a "cascade effect" in which a quake on one fault changes the stresses on another.

"If that fault is ready to produce an earthquake anyway, it might do something. But it would have to be pretty close" for that to happen, Hutton said.

Earthquakes have been in the public consciousness this year after January's devastating temblor in Haiti, which killed tens of thousands and was followed weeks later by another destructive quake in Chile. That was followed by the Mexicali quake, which was larger than the one in Haiti but much less destructive.

Experts said there is no evidence the world is experiencing more large earthquakes. A quake the size of the one that hit Baja erupts somewhere on the planet roughly every three weeks, said David D. Jackson, a professor of geophysics at UCLA.

But the Chile and Haiti temblors occurred in heavily populated areas, so the damage was far greater -- and the attention they received much more intense -- than that caused by big quakes in more remote areas.

The Mexicali quake was centered in a less populated area, and Mexico has stronger building codes than Haiti, so the structural damage was much less.

After a quake strikes a populated area, "I guess it's easy to get the perception that a lot has happened because those are the ones you notice," Jackson said.

The public's awareness of quakes around the globe also has increased with technology. Individuals on Twitter, for example, often first hear about a major quake from fellow users.

And the details of earthquakes, including location and size, have been much better distributed through e-mail, blogs and Twitter feeds. Earthquakes in remote oceans, say, were once noted only by scientists at academic and government institutions. Now, quake enthusiasts can have the details of such a quake delivered to their cellphones minutes after it occurs.

In California, scientists say one of their biggest concerns remains the San Andreas fault, which has produced some of the state's largest earthquakes. Experts have said the San Andreas is overdue for a major event. State officials have also often noted that only about one in six Californians has , with the high cost and large deductibles deterring many homeowners from buying policies.

"As we are building along the San Andreas fault, our exposure to the shaking hazard increases," said Mark Benthien, director of communication, education and outreach for the Southern California Earthquake Center. "And the losses we get in earthquakes increase as well. That's part of the equation."

Hauksson, the Caltech geophysicist, said it's easy to read too much into the upsurge of quakes this year.

Though it comes after several more quiet years, he noted that it's not uncommon for one large quake to produce months -- if not years -- of increased seismic activity. So in that sense, 2010's quake pattern is fairly typical.

The 7.3 Landers quake was followed a few hours later by a 6.5 temblor in Big Bear. Scientists now believe those two quakes were related. And aftershocks from Landers continued for several years.

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