HEMANTA SHRESTHA/EPA

Locals searched near at collapsed house after another powerful earthquake struck in Kathmandu.

By Matt Rocheleau

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The major earthquakes that struck Nepal this spring were the latest in a series that included devastating seismic events in Japan in 2011, Haiti and Chile in 2010, and Indonesia in 2004.

In fact, six of the 15 largest earthquakes ever recorded have occurred over the past 11 years. But observers say that does not mean large quakes are becoming more common.

The amount of powerful seismic activity — registering above 6.0 on the Richter scale — can vary significantly from year to year. But on a larger timescale, the frequency has remained steady, according to the United States Geological Service.

On average, there are about 150 major earthquakes per year, said Gavin P. Hayes, a research geophysicist at the USGS National Earthquake Information Center. And that pattern has not changed.

"Earthquakes are a random process," he said. "Sometimes they seem to cluster, but overall, given the timescale that these events occur on, those kinds of clusters average out over time."

US Marine helicopter missing in aid mission

The helicopter was conducting disaster relief operations when it went missing.

Another deadly earthquake hits Nepal

Hayes said people are becoming more aware of earthquakes that take place in distant places, because the Internet has made it much easier to view news reports, pictures, and videos from around the globe.

There have also been improvements in the technology used to measure earthquakes, he said, and more instruments are set up to record seismic activity in remote areas. This opens the door for readings that may not have been captured years ago.

But the added technology mostly means scientists have been able to record more small earthquakes. Researchers have been able to reliably capture major seismic activity globally for about the past 60 years.

Though naturally occurring tremors have not become more or less common, the number of manmade earthquakes has increased in recent years, he said.

Hayes said that particularly in parts of the United States, including Oklahoma and Texas, researchers have observed a surge in human-induced earthquakes.

The rise, he said, is attributed primarily to oil and gas extraction. Hayes said that the process to remove the fossil fuels from the earth also involves pulling out large amounts of water.

To dispose of that unwanted water, companies often pump it back into the ground, which can cause enough pressure to build up to generate earthquakes, Hayes said.

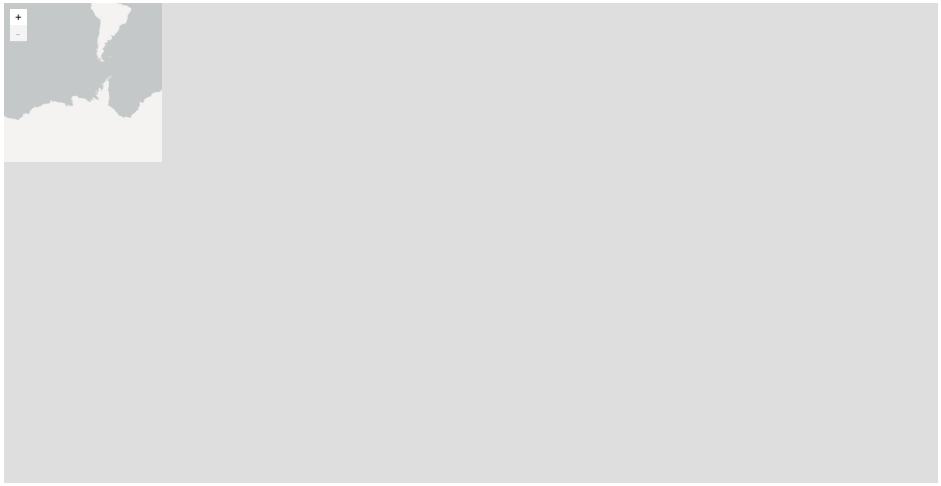
Most of the recorded manmade earthquakes have been relatively small, he said.

Still, "they have the potential to [cause damage] if they get big enough," said Hayes.

The most powerful seismic activity ever attributed to humans was a magnitude-5.6 earthquake in a rural area of Oklahoma in 2011, that injured a few people and damaged more than a dozen homes.

Researchers believe that earthquake was caused by an oil extraction process in the area.

The world's most powerful recorded earthquakes of all time



Location	Year	Magnitude
Chile	1960	9.5
1964 Great Alaska Earthquake	1964	9.2
Off the West Coast of Northern Sumatra	2004	9.1
Near the East Coast of Honshu, Japan	2011	9
Kamchatka	1952	9
Offshore Maule, Chile	2010	8.8
Off the Coast of Ecuador	1906	8.8
Rat Islands, Alaska	1965	8.7
Northern Sumatra, Indonesia	2005	8.6
Assam - Tibet	1950	8.6
Off the west coast of northern Sumatra	2012	8.6
Andreanof Islands, Alaska	1957	8.6
Southern Sumatra, Indonesia	2007	8.5
Banda Sea, Indonesia	1938	8.5
Kamchatka	1923	8.5

SOURCE: United States Geological Survey

MATT ROCHELEAU/GLOBE STAFF

How the number of major earthquakes has varied over time

The number of 6.0 or higher magnitude earthquakes has remained relatively steady over the past 65 years, experts say.

DATA: United States Geological Survey

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