Scientists in Singapore have discovered a way to forecast earthquakes based on slow fault movements caused by moving sub-layers of the earth. Their work was published in *Nature*.

So far, scientists believe that larger earthquakes are unlikely to occur following tremors or earthquakes below a Richter scale of two, caused by small vibrations or slow fault movements. An example of a slow fault movement would be those observed in the area of Parkfield along the San Andreas Fault in the US state of California.

However, the team from Nanyang Technological University’s Earth Observatory of Singapore (EOS) found that not only do these vibrations potentially point to an impending earthquake, they also discovered a discernible pattern to them. EOS conducts research on earthquakes, volcanic eruptions, tsunamis and climate change in and around Southeast Asia, towards safer and more sustainable societies.

“This discovery defied our understanding of how faults accumulate and release stress over time. These vibration patterns are caused by alternating slow and fast ruptures occurring on the same patch of a fault,” said Assistant Professor Sylvain Barbot, an earth scientist at EOS.

“If only slow movements are detected, it does not mean that a large earthquake cannot happen there. On the contrary, the same area of the fault can rupture in a catastrophic earthquake,” he warned.

The study, led by PhD student Ms Deepa Mele Veedu, has major significance for the prediction of earthquakes. Seismic hazards in the Southeast Asia region will probably come from an impending large earthquake in the Mentawai seismic gap in Sumatra, Indonesia, an area currently under active monitoring and investigation.

EOS scientists have earlier pointed out a large earthquake may occur any time in this area southwest of Padang—the only place along a large fault where a big earthquake has not occurred in the past two centuries. The team’s latest findings could potentially be applied in the seismic monitoring of the area to help better forecast large earthquakes in the region.

The article can be found at: [Veedu and Barbot (2016) The Parkfield Tremors Reveal Slow and Fast Ruptures on the Same Asperity](http://www.asianscientist.com/2016/04/in-the-lab/slow-fault-movements-impending-earthquakes/).
Source: Nanyang Technological University; Photo: Shutterstock.
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