

News

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Worse quake to come, Indonesia warned

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Abstract

A series of earthquakes might not have reached its peak.

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A magnitude-9.0 quake is predicted to hit the top of the Mentawai section, left unruptured last week.

A week after a series of powerful earthquakes rocked Indonesia, killing more than 20 people, geologists are warning that the big one may be yet to come. The region might still hold enough energy to release a magnitude-9.0 tremor that could produce a deadly tsunami, echoing the 2004 tsunami that killed more than 230,000 people in southeast Asia.

The trio of quakes, of magnitudes 8.4, 7.9 and 7.0, occurred off the coast of Padang in southwest Sumatra on 12 and 13 September, along a subduction zone where the Australian tectonic plate dives under the Sunda plate. The plates are sliding past each other, but in some patches they stick, building pressure, which is released when the plates slip in an earthquake. Last week's earthquakes released pressure from a 700-kilometre-long region, known as the Mentawai section, which had been building since the last quake, an event of magnitude 8.6 in 1833.

Kerry Sieh, an earthquake geologist at the California Institute of Technology in Pasadena, has spent the past 15 years studying the history of Indonesian earthquakes from the patterns the tremors leave in coral growth. His data suggest that this area has ruptured every 200 to 230 years since the fourteenth century.

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Based on Sieh's study of the uplift of fossil corals, a preliminary analysis suggests that last week the plates slipped far less (around 2 metres) than they did in 1833 (10–18 metres). If that is the case, not all the pressure may have been released, and part of last week's rupture zone could 're-rupture' in conjunction with a 200-kilometre patch off the coast of Padang (see image) that has not ruptured since 1797. That would produce a magnitude-9.0 quake, he says — enough to spawn a deadly tsunami.

Jim Mori, an earthquake specialist at Kyoto University's Disaster Prevention Research Institute, says Sieh's 'seismic gap' theory is plausible. It is similar to the geological trough at Nankai in Japan in that earthquakes are now expected where they have not occurred in a long time, he says.

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