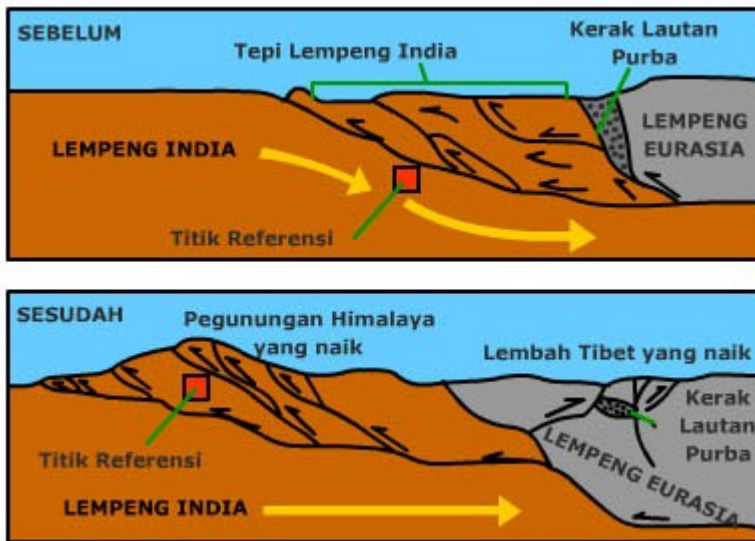
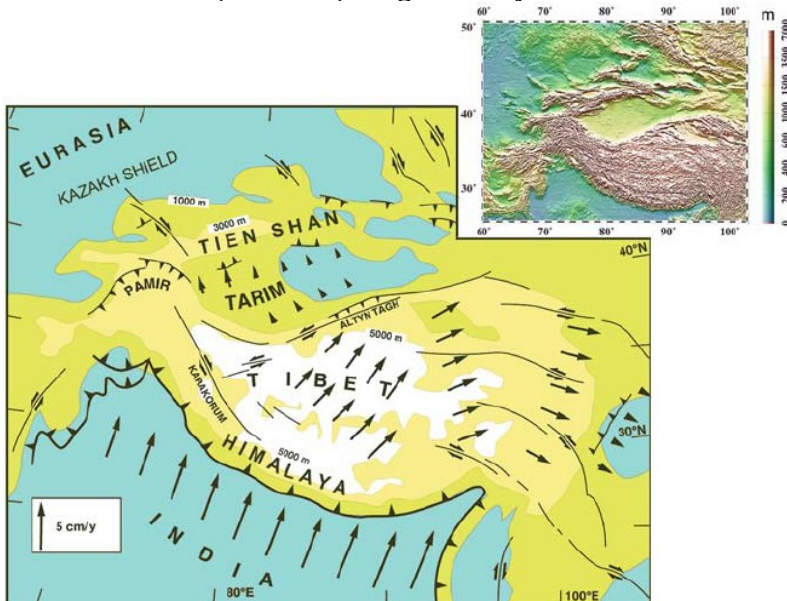


2015 Nepal earthquake

https://en.wikipedia.org/wiki/April_2015_Nepal_earthquake#Earthquake



- HIMALAYAS WERE FORMED when the Indian lithospheric plate drifted northward and collided with the Eurasian plate
- 60 mya oceanic lithosphere at the northern edge of the **Indian plate** was **subducted** under southern Tibet
- 55-40 mya India the thrust determines the **rise of Himalaya** (Nepal and Tibet)
- **Indian crust was too buoyant** to plunge far under Tibet; as a result a new fault, the Main Central Thrust, broke through the Indian crust. A slice of Indian crust, topped by Paleozoic and Mesozoic sediments that had been deposited on the continental shelf, was thrust up onto the oncoming subcontinent
- **SHINGLING EFFECTS** occur when tectonic plates collide and create thrust faults.
- Nepal lies towards the southern limit of the diffuse collisional boundary where the Indian Plate underthrusts the Eurasian Plate, occupying the central sector of the Himalayan arc, nearly one-third of the 2,400 km (1,500 mi) long Himalayas.



- The **convergence rate** between the plates in central Nepal is about **45 mm per year**. The location, magnitude, and focal mechanism of the earthquake suggest that it was caused by a slip along the Main Frontal Thrust.
- The earthquake's effects were **amplified in Kathmandu** as it sits **on the Kathmandu Basin**, which contains up to **600 m of sedimentary rocks**, representing the infilling of a lake.

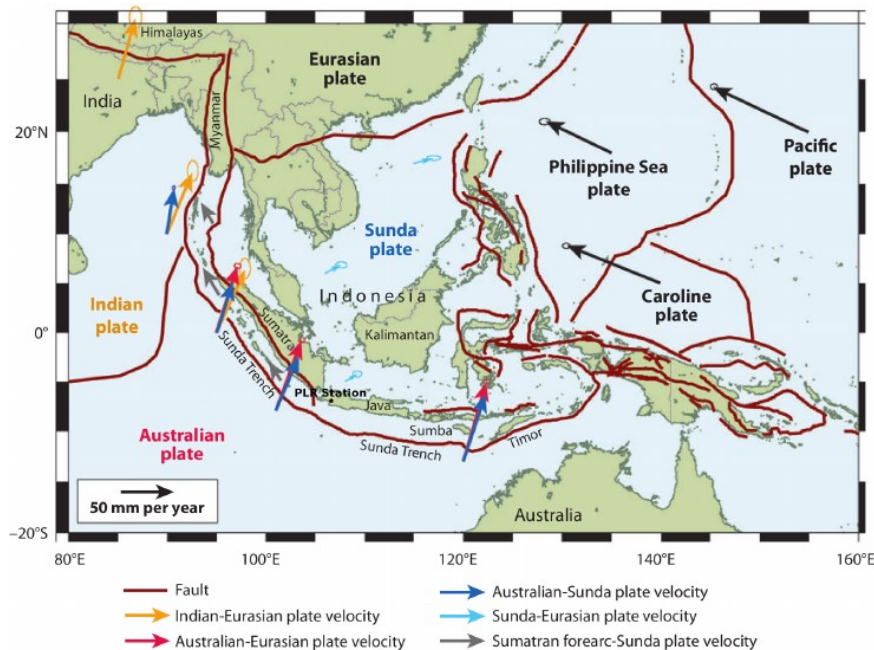
- A study from 2015 suggests that because of tectonic stress buildup, the **earthquake from 1934 in Nepal and the 2015 quake are connected**, following a historic earthquake pattern.

2018 Indonesia earthquake and tsunami

https://en.wikipedia.org/wiki/Geology_of_Indonesia

<https://www.weforum.org/agenda/2018/08/two-types-of-tectonic-plate-activity-create-earthquake-and-tsunami-risk-on-lombok/>

The **tectonics of Indonesia** are very **complex**, as it is a meeting point of **several tectonic plates**. Indonesia is located between two **continental** plates: the **Eurasian Plate** (Sunda Plate) and **Australian Plate** (Sahul Shelf); and between two **oceanic** plates: the **Philippine Sea Plate** and **Pacific Plate**.

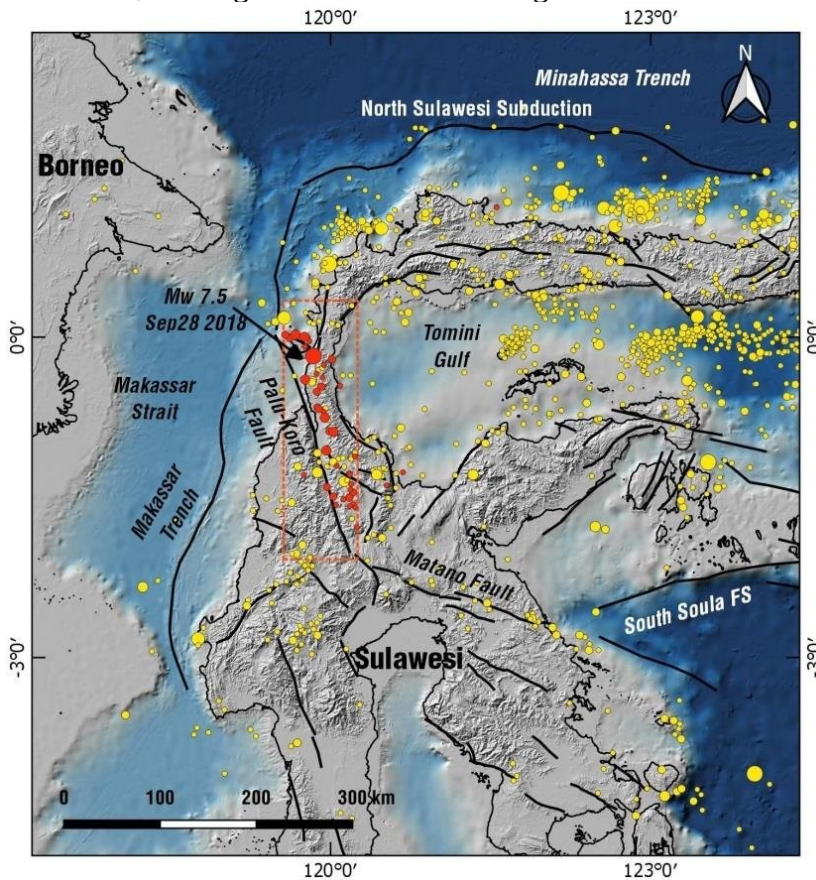


The **subduction** of the Indian oceanic plate beneath the Eurasian continental plate formed the **volcanic arc** in western Indonesia, one of the most seismically active areas on the planet with a long history of powerful eruptions and earthquakes. This chain of active volcanoes formed Sumatra, Java, Bali, and Nusa Tenggara islands, most of which, particularly Java and Bali, emerged within the last 2–3 million years. The Pacific and Australian plate movements controlled the tectonics of the eastern portion of Indonesia.

The island chain sits **within** what's known as the **Ring of Fire**, a curving horseshoe-shaped chain of tectonic plate boundaries that **hugs the Pacific basin**. It is **home to around 90 percent of the world's earthquakes**. Some of these earthquakes are very large, such as the magnitude 9.1 quake off the west coast of Sumatra that generated the 2004 Indian Ocean tsunami. This earthquake occurred along the Java-Sumatra subduction zone, where the Australian tectonic plate moves underneath Indonesia's Sunda plate. But to the **east of Java**, the subduction zone has become "jammed" by the Australian continental crust, which is much thicker and more buoyant than the oceanic crust that moves beneath Java and Sumatra. The Australian continental crust can't be pushed under the Sunda plate, so instead it's starting to ride over the top of it. This process is known as back-arc thrusting. The data from the recent Lombok earthquakes suggest they are **associated with this back-arc zone**. The zone extends north of islands stretching from eastern Java to the island of Wetar, just north of Timor (as shown in map below).

Lombok was hit by two deadly quakes on July 29 and August 5 2018, with the strongest measuring 6.9 magnitude.

On 28 September 2018, a shallow, magnitude 7.5 earthquake struck in Central **Sulawesi** (epicentre located 77 km away from the provincial capital Palu). This event was preceded by a sequence of foreshocks, the largest of which was a magnitude 6.1 tremor that occurred earlier that day.



A localised tsunami struck Palu, sweeping shore-lying houses and buildings on its way. The combined effects of the earthquake and tsunami led to the deaths of an estimated 4,340 people. This makes it the deadliest earthquake to strike the country since the 2006 Yogyakarta earthquake, as well as the deadliest earthquake worldwide in 2018, surpassing the previous earthquake that struck Lombok a few months earlier, killing more than 500.