The M7+ Earthquakes of Summer 2026 - Is This Normal?

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Background

Over the past few months, five magnitude 7 or greater earthquakes occurred in relatively quick succession. These include events in Venezuela (the "doublet" - M7.2 and M7.5, June 24), Mexico (M7.3, July 17), Colombia (M7.4, August 10) and Indonesia (M7.7, August 14) that have people asking "Is this normal"? Several of these events were highly destructive, although their origins and impacts varied.

The June 24th Venezuela "doublet" consisted of two earthquakes of M7.2 and M7.5 separated in time by 30 seconds and ~140 km in distance. These shallow, strike-slip earthquakes occurred near the San Sebastián fault system and near the boundary between the South American and the Caribbean tectonic plates. The M7.5 earthquake was the largest in Venezuela in 126 years. More than 200 km of fault ruptured during this earthquake, with fault slip ranging from 1 to 5 m. Rupture was directed towards Caracas and likely contributed to some of the damage in that area. This event caused significant damage (estimates of 6500+ people killed and more than 800 building collapses).

The M7.3 Mexico earthquake of July 17th was an offshore subduction earthquake (thrust faulting) on/near the interface where the Cocos plate is subducting beneath the North American plate. Although strong shaking was experienced in many areas, damage was limited as this earthquake was located 80 km or more from populated communities. This earthquake ruptured a fault about 50 km long and with slip of up to 2.5 m. There were no reports of fatalities or serious damage from this earthquake, which highlights how distance from major population centres can strongly influence earthquake impacts.

The August 10th M7.4 western Colombia earthquake was located within the subducting Malpelo plate (a segment of the Nazca plate) at a depth of ~110 km. Impacts were very significant for an earthquake of this intermediate depth, with estimates of more than 330 fatalities and more than 600 buildings collapsed.

The M7.7 Indonesia earthquake of August 14th occurred in a very seismically active region near where the Australian and Sunda tectonic plates are colliding. This shallow earthquake ruptured a fault (thrust faulting – perhaps in the overriding plate) about 100 km long with slip up to 7 m. It exposed nearly 2 million people to shaking ranging from strong to severe. More than 100 fatalities have been reported and more than 70,000 homes were damaged.

Taken together, these five earthquakes span several of the major tectonic settings in which large earthquakes occur. These include shallow crustal strike-slip faulting, subduction-related thrust faulting, and intermediate-depth intraslab faulting. Their occurrence within such a short period naturally raises questions.

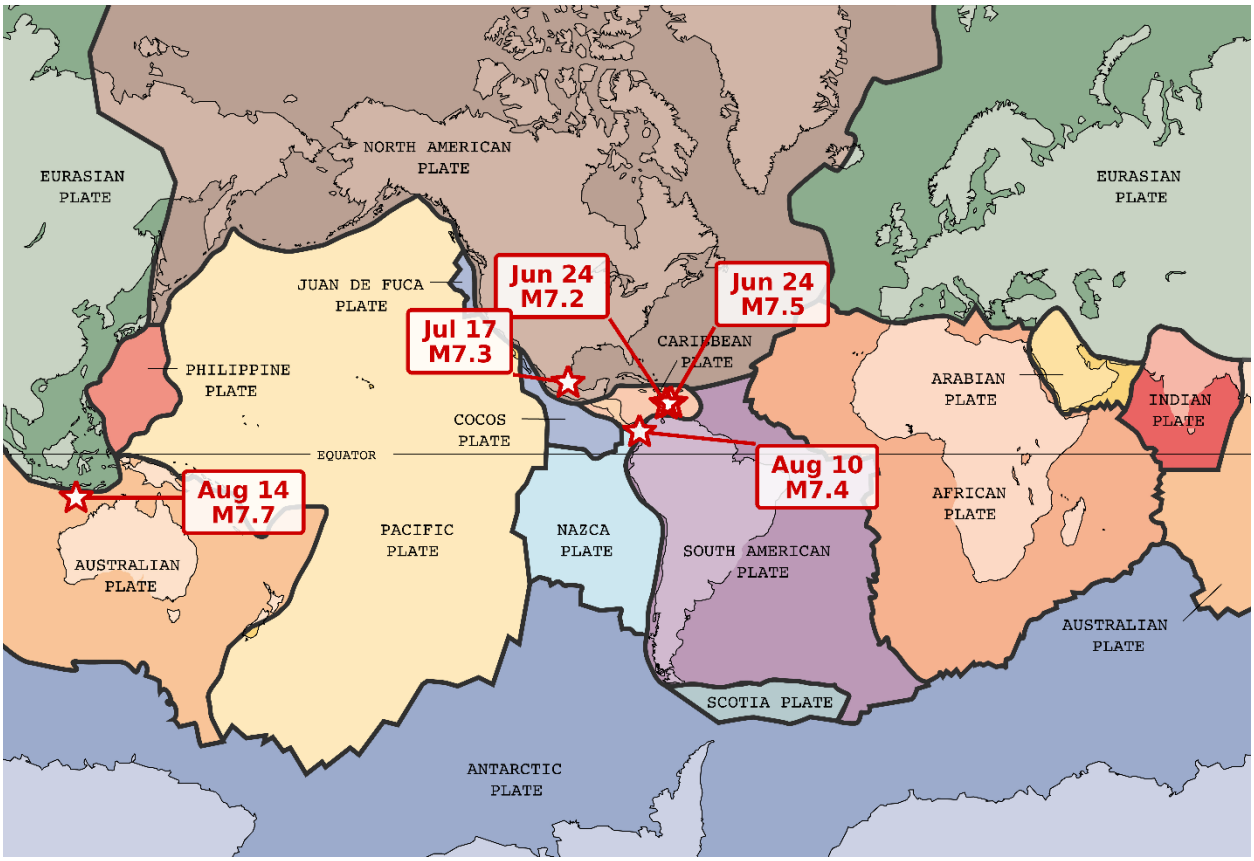

Figure 1. Locations of the five recent M7+ earthquakes in relation to tectonic plates.

Are They Connected?

No! These earthquakes all occurred on (or near) active plate tectonic boundaries, which are regions that experience abundant, ongoing seismicity. In the cases of Venezuela and Colombia, these were considered “rare events” based on the exact location where they occurred. However, it is important to recall that large earthquakes in a specific location often have recurrence intervals of hundreds or even thousands of years. Note that M7-7.9 earthquakes generally produce a fault slip of ~1 to 8 m. At a nominal slip rate of 2 cm/y (representing tectonic plate motion), it would take 50-400 years of strain accumulation to produce a single M7-7.9 earthquake.

These earthquakes were separated by 1000+ km, were all on different fault systems (and different types of faults). There is no evidence that these earthquakes are causally connected.

The Statistics:

In an average year, 15-18 earthquakes of M7-7.9 occur around the world. This number can vary significantly from year to year, with as few as six M7-7.9 earthquakes occurring during 2017 to as many as 24 in 2010. At the time of writing this (August, 2026 – ¾ of the way through the year) there have been 11 M7-7.9 earthquakes this year. The expected number at this point in the year would be 12 (based on a yearly average of ~16). So, we are slightly below the “normal” yearly rate of M7-7.9 earthquakes.

Why Does it Seem "Not Normal"?

The media coverage of large (M7+) earthquakes generally depends on their impact on communities and infrastructure. A large earthquake that occurs far from population centres and infrastructure has little or no impact, and is unlikely to "make the news". For example, there were 16 earthquakes of M7 or larger in 2025, but only a few of those had significant news coverage. This included the July 2025 M8.8 Kamchatka earthquake that generated a significant tsunami, caused damage and was associated with nearby volcanic eruptions. This also included the tragic M7.7 Burma earthquake in March 2025. The vast majority of 2025 M7+ earthquakes had little impact, and most were in remote areas. Sadly, each of these recent five M7-7.9 earthquakes had significant media coverage due to their very significant impact.

What controls impact? Primarily it is earthquake location, depth, rupture style, local soil conditions (e.g., basins with soft soils), building age, building type, and construction quality.

Learning From these Events

These recent tragic earthquakes serve as important reminders of the importance of earthquake awareness and preparedness. For scientists and engineers around the world, these events provide a wide variety of new and high-quality datasets. These data provide critical new information on ground shaking, earthquake rupture and directivity effects, linkages with faults, shaking response and impacts on buildings and other key infrastructure, and emergency response efforts. While it will take months or even years to analyze these new data, these studies will lead to improved codes and standards that will help mitigate losses from future earthquakes.