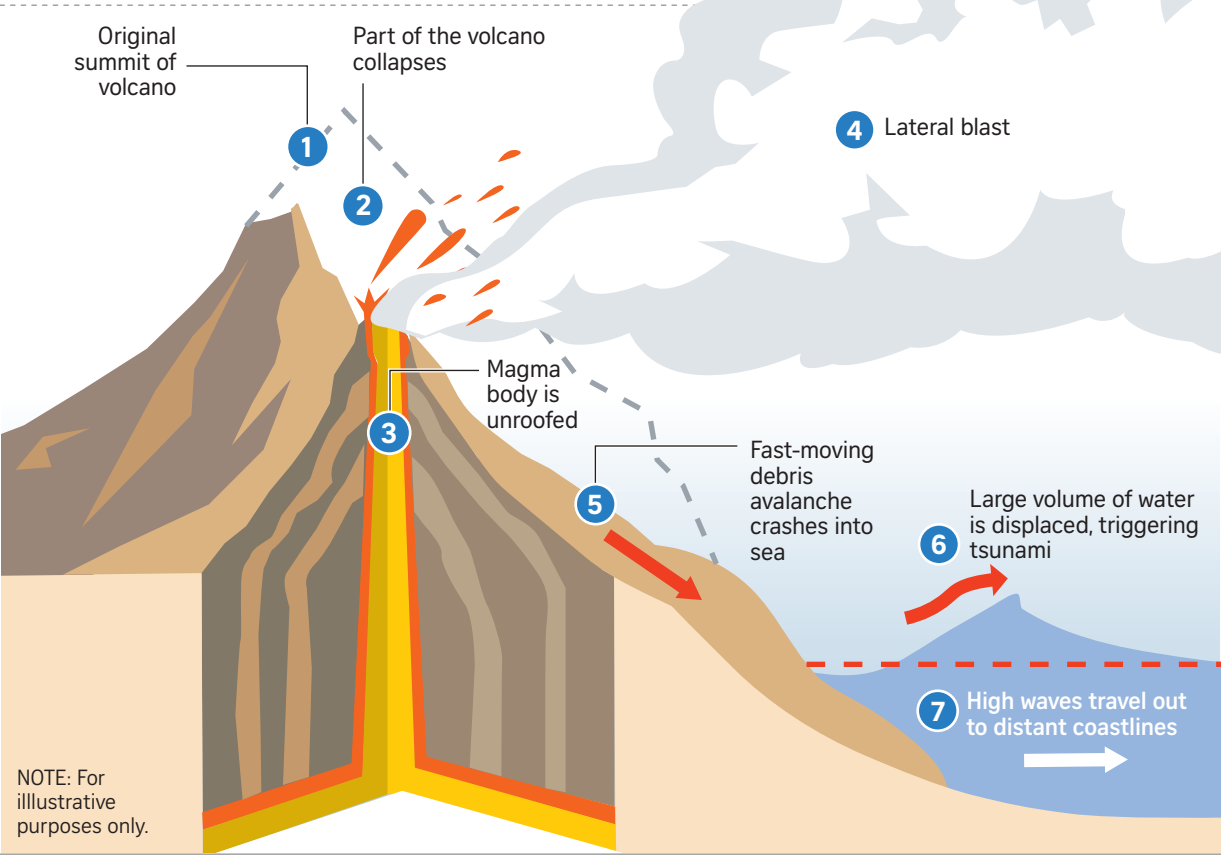
How do volcanic eruptions trigger tsunamis?



- Tsunamis are created when large amounts of water — in the ocean, a bay or even a lake — are quickly displaced. In an earthquake, that displacement can occur when the ground moves as a fault breaks.
- Volcanic activity creates a tsunami differently. One possibility is an explosive eruption, or general weakening of the flanks of a volcano by hot magma passing through.
- Either way, part of the volcano — perhaps, in the case of Anak Krakatau, a part that is underwater — can collapse, creating a landslide that displaces a large volume of water, generating high waves.
- Another possible mechanism is the collapse of a magma chamber below the volcano as it empties during an eruption.
- Indonesian authorities have ruled out a tectonic earthquake as the trigger of the Sunda Strait tsunami.
- The disaster management agency said the Dec 22 tsunami was caused by an undersea landslide resulting from volcanic activity on Anak Krakatau and was exacerbated by an abnormally high tide because of the current full moon.
- But Indonesia's geology agency said it has yet to collect adequate data to determine whether the eruptions caused, or partly caused, the tsunami.
- Because this tsunami was triggered by a volcanic eruption, the existing early warning system for tsunamis triggered by earthquakes could not detect it.
- A separate tsunami warning buoy system set up in the Sunda Strait by Indonesia in 2008 also gave no warning, as it has not been working since 2012.

Areas affected by the tsunami

Sources: BBC, GEOSCIENCE AUSTRALIA, NYTIMES STRAITS TIMES GRAPHICS