Pacific ring of fire

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In news- The Hunga Tonga-Hunga Ha'apai volcano (near the island nation of Tonga), located on the Pacific 'Ring of fire has erupted recently.

About the Pacific 'Ring of fire-

- **The Pacific 'Ring of Fire' or Pacific rim, or the Circum-Pacific Belt**, is an **area along the Pacific Ocean.**
- It is a long **horseshoe-shaped seismically active belt of earthquake epicenters**, volcanoes, and tectonic plate boundaries.
- It is **home to about 75 per cent of the world's volcanoes** i.e,. more than 450 volcanoes.
- Also, about 90 per cent of the world's earthquakes occur here.

- **Its length is over 40,000 kilometers and traces from New Zealand** clockwise in an almost circular arc covering Tonga, Kermadec Islands, Indonesia, moving up to the Philippines, Japan, and stretching eastward **to the Aleutian Islands,** then southward along the western coast of **North America and South America.**
- The area is along several **tectonic plates including the Pacific plate, Philippine Plate, Juan de Fuca plate,**

Cocos plate, Nazca plate, and North American plate.

- The movement of these plates or tectonic activity makes the area witness abundant earthquakes and tsunamis every year.
- Along much of the Ring of Fire, **tectonic plates move towards each other creating subduction zones.**
- This is a very slow process – a movement of just one or two inches per year.
- As this subduction happens, rocks melt, become magma and move to Earth's surface and **cause volcanic activity.**
- **Subduction zones are also where most of the violent earthquakes on the planet occur**.
- **Major volcanic events that have occurred within the Ring of Fire since 1800** included the eruptions of Mount Tambora (1815), Krakatoa (1883), Novarupta (1912), Mount Saint Helens (1980), Mount Ruiz (1985), and Mount Pinatubo (1991).
- The Ring of Fire has been the s**etting for several of the largest earthquakes in recorded history, including the** Chile earthquake of 1960, the Alaska earthquake of 1964, the Chile earthquake of 2010, and the Japan earthquake of 2011 as well as the earthquake that produced the devastating Indian Ocean tsunami of 2004.
- The December 26, **2004 earthquake occurred along the subduction zone where the Indian Plate was subducted beneath the Burma plate.**
- **In the case of Tonga, the Pacific Plate was pushed down below the Indo-Australian Plate and Tonga plate**, causing the molten rock to rise above and form the chain of volcanoes.

Further reading: https://journalsofindia.com/underwater-volcanic-eruption-in-tonga/