

## UPSC Preparation

### Ring of Fire

The area in the basin of the Pacific Ocean that hosts more than 40 percent of geothermal energy resources is called the ring of fire. It is a volcanic belt where a large number of earthquakes and volcanic eruptions have been witnesses. It is also called 'Circum-Pacific Belt.' The topic, 'Ring of Fire' is important for the upcoming [UPSC Prelims](#) as recent news of the discovery of a ring of fire on the surface of the planet Venus made highlights. Hence, aspirants should know what is the circum-pacific belt and what is the ring of fire discovered on Venus.

As a ring of fire is a volcanic belt, aspirants are suggested to read the basics of volcanoes, earthquakes, and volcanic landforms from the articles linked in the table below:

<a href="#">NCERT Notes: Earthquake</a>
<a href="#">NCERT Notes: Volcanoes</a>
<a href="#">NCERT Notes: Volcanic Land Forms</a>

#### Important Facts about Ring of Fire for UPSC

The table below mentions some important facts about the ring of fire:

Ring of Fire - Facts for UPSC	
What is a ring of fire?	The path located at the rim of the pacific ocean which is characterized by active volcanoes and earthquakes is called the ring of fire. It is also called the Circum-Pacific Belt or Circum-Pacific Seismic Belt.
Why is it called the ring of fire?	It is so-called because it marks a track around the rim of the pacific ocean. Also, since more than 75 percent of earth's volcanoes and 90 percent of earthquakes are witnessed here, it is called the ring of fire. Note: It is not a clear circular ring. A horseshoe-like shape is formed with the ring of fire.
What is the length of the circum-pacific belt?	The ring of fire is 40000 km long.
What are the countries/Cities located in the ring of fire?	Bolivia, Chile, Ecuador, Peru, Costa Rica, Guatemala, Mexico, United States, Canada, Russia, Japan, Philippines, Indonesia, New Zealand, and Antarctica are some of the important places located in the ring of the fire.
What are the features of the ring of fire?	1. The ring of fire features the following: <ul style="list-style-type: none"> <li>• Oceanic trenches</li> <li>• Volcanic arcs, and</li> </ul>

	<ul style="list-style-type: none"><li>• Volcanic belts and/or plate movements</li></ul> <ol style="list-style-type: none"><li>2. It is home to around 452 volcanoes (active and dormant volcanoes both)</li><li>3. More than 80 percent of the world's largest earthquakes occur along the circum-pacific belt.</li><li>4. It is the most seismically active region followed by Alpide Belt that extends from Java to the northern Atlantic Ocean via the Himalayas &amp; Southern Europe</li></ol>
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### Ring of Fire and Plate Tectonics

As the ring of fire is caused by the plate tectonics, it is important to know a few facts about it:

1. **Convergent Plate Boundary** - When two tectonic plates collide into each other, a plate boundary is formed which is called a convergent plate boundary. These boundaries are subduction zones where a heavier plate subducts under the lighter one. When the subduction takes place, there is a transformation of dense magma into buoyant magma that rises up the earth's surface. This rising magma gives rise to active volcanoes. Example:
  - Pacific Plate and North American Plate converge where Pacific plate subducts under North American plate - This convergent plate boundary continues to form Aleutian islands (Hosts 27 Active Volcanoes) and Aleutian Trench.
  - Nazca Plate and South American Plate converge where Nazca plate subducts beneath the South American tectonic plate. This convergence created Andes Mountain and Peru-Chile trench. Nevados Ojos del Salado which is the world's highest active volcano
2. **Divergent Plate Boundary** - When two tectonic plates pull apart from each other, seafloor starts spreading. The boundary thus created is called divergent plate boundary. As a result of seafloor spreading, the magma wells up. The hot magma gets cooled down by cold sea water. This continuous process of magma welling up and it getting cooled down by the seawater creates high ridges on the ocean floor over millions of years. Example:
  - In the ring of fire, East Pacific Rise (located on the divergent boundary of Pacific Plate and the Cocos Plate) is a site of major seafloor spreading site.
3. **Transform Plate Boundary** - When two tectonic plates slide horizontally past each other, stress is built over the areas where these two plates touch while passing. The stress keeps building during the time the plates keep sliding past each other. This stress creates fault in rocks and later become the cause of earthquakes. The transform boundaries in the ring of fire has majority of earth's faults. Example:
  - One of the most active faults in ring of fire is San Andreas Fault (North American's West Coast)

### Ring of Fire - The list of active volcanoes

To be noted is that the western edge of the ring of fire has most of the active volcanoes. Some of the active volcanoes are:

1. Mount Ruapehu in New Zealand
2. Krakatau Island Volcano in Indonesia
3. Mount Fuji of Japan
4. The Aleutian Islands

5. Mount St. Helens
6. Popocatépetl

### What is Ring of Fire that is found on Planet Venus?

NASA's Magellan Mission captured high-resolution images of the Venus surface which were recently observed by planetary researchers. Those images led to the discovery of unusual circular structures called coronae. Using computer simulations, to classify the current activity of corona structures, the scientist found the ring of fire on the Venus planet. The coronae structures have been classified by the scientists into two groups:

1. Coronae that have formed above an active plume that is currently rising and carrying molten material, and
2. Coronae are above a plume that has cooled and becomes inactive.

Scientists have defined the Venus' ring of fire as the band of coronae overlying active mantle plumes forming a belt in Venus' southern hemisphere.

### Conclusion

The topic, 'Ring of Fire' is important from the context of the Geography subject of the [IAS Exam](#). For the preparation of geography which is a part of prelims and mains GS-1, you can check the articles linked below:

<a href="#">Geography Questions for UPSC Mains</a>	<a href="#">GS 1 Structure, Strategy and Syllabus</a>
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UPSC Preparation-Related Links:

<a href="#">Topic-Wise GS 1 Questions for UPSC Mains</a>	<a href="#">GS 2 Structure, Strategy and Syllabus</a>
<a href="#">Topic-Wise GS 2 Questions for UPSC Mains</a>	<a href="#">GS 3 Structure, Strategy and Syllabus</a>
<a href="#">Topic-Wise GS 3 Questions for UPSC Mains</a>	<a href="#">GS 4 Structure, Strategy and Syllabus</a>
<a href="#">Topic-Wise GS 4 Questions for UPSC Mains</a>	<a href="#">UPSC Calendar 2021</a>