

EARTHQUAKES AND VOLCANOES

Earthquakes

- The sudden tremors or shaking of the earth's crust is called an earthquake. When a part of the earth's surface moves backward and forward or up and down, the earth's surface 'quakes', and these are called the 'earthquake'.
- The earth's crust is made up of different parts of various sizes. They are called plates. Most of the earthquakes in the world are caused by the movements of the plates (Tectonism)
- 'Seismology' the special branch of Geology, it deals with the study of earthquake.
- 'Richter scale' and 'Mercalli scale' are the instruments to measure/record the magnitude and the intensity of an earthquake respectively.

Seismic Waves

- The place where the seismic waves originate beneath the earth's surface is called the focus of the earthquake.
- The epicenter is that point on the ground surface which is closest to the focus.
- Seismic waves are recorded on the seismograph. Seismic waves are mainly of three types- 1. Primary waves, 2. Secondary waves and 3. Surface or Long waves.

The earthquake zones in India

- The Indian plate is moving from south to north. That is why there are earthquakes in the Himalayan region.
- Earthquakes occur in Assam, Arunachal Pradesh, Nagaland, Tripura, Manipur, Mizoram, Andaman and Nicobar Islands, Jammu and Kashmir, the northwestern region of Uttar Pradesh, the northern region of Bihar etc.

Volcanic Activity

- Magma or molten rock is formed beneath the ground surface due to various reasons.
- This molten rock ruptures the ground and pours out. Sometimes, it cools down beneath the ground surface instead of pouring out.
- All these activities are called volcanic activities.
- There are three types of Volcanoes :
 1. Active Volcanoes
 2. Dormant Volcanoes
 3. Extinct Volcanoes.

Volcanic eruptions

- The pouring out of the magma or molten rock through ground surface is called a volcanic eruption.

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- At the time of eruption, the magma, steam, fragments of rock, dust and gaseous substances are ejected with great force from under the ground surface through a pipe like passage.
- The opening of this pipe on the earth's surface is known as the vent which forms a crater. The lava which is thrown into the sky during an eruption, falls to the ground in the form of solid fragments. Dark clouds gather in the sky and it begins to rain heavily.
- The volcanic ash and dust mixes with the rain water giving rise to hot mud flows.

Types of Volcanic Eruptions

Volcanic eruptions are classified into two types depending on the manner of ejection of the magma:

1. Central eruption
2. Fissure eruption.

Central eruption

- This type of eruption is sometimes very explosive, because lava, steam, gas, dust, smoke, stone fragments are ejected from a narrow pipe from under the ground with greater intensity. This type of eruption gives rise to conical or dome-shaped hills. Some examples of volcanic mountains formed due to central eruption are Mt. Kilimanjaro in Africa, the Fujiyama in Japan and the Vesuvius and Mount Etna in Italy.

Fissure eruption

- A very long fissure (cracks) develops in the ground surface and so, the molten rock, rock fragments, steam and gases within, pour out slowly.
- These eruptions take place at a very slow speed. Since this lava is more fluid, it spreads over longer distances.
- The lava cools down on the ground over a period of time, increasing the thickness of the surface in that area. Basalt plateaus are formed due to these eruptions.
- Basalt plateaus are also found in Brazil in South America and Saudi Arabia in West Asia and Deccan plateau in India.
- In Maharashtra, the fertile black regur soil has been formed from basalt rocks. It is also called black cotton soil.
- The opening of exploded volcano is of different types. Some important types are -

Crater: This is funnel or cup-shaped opening at the top of the volcanic cone. It gets filled up with rain water then it forms a crater lake, e.g.- Lonar Lake in Buldhana district (Maharashtra). Sometimes many small craters are formed in a single crater. This take place when the exposition was of less intensity than that of pre-existing crater, these are known as Nested craters, e.g. the three small craters of Mountain (Philippines).

Caldera: This is widened form of crater which is formed due to depression of the crater or expansion of volcanic mouth or vent due to successive eruptions. Depending on their intensity and duration, volcanic eruptions can create calderas as much as 100 km (62 miles) wide. Mt. Aso of Japan is an example of Caldera. The Toba Caldera on the Indonesian island of Sumatra is the newest resurgent caldera.

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