

Evolution of Landforms due to Internal Forces

Lesson No.	Title	Activity
4	Evolution of Landforms due to Internal Forces	Create a model showing the formation of block mountains

Meaning

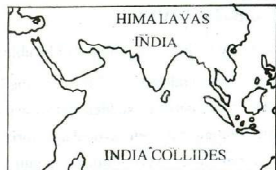
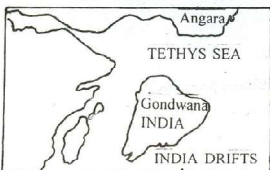
Land forms on the earth's surface are the result of internal and external forces. Internal forces originating from earth's interior (endogenetic forces) creates inequalities of different relief features. These forces cause movements of the earth's crust which are called earth movements. Slow movements bring slow and gradual changes in the relief features while sudden movements bring abrupt and rapid changes. These movements may be vertically or horizontally and resulted in folding and faulting of the rock strata. Volcanoes are landforms marking the eruption of lava at the earth's surface. The shape and size of volcano depends on the frequency of eruption, fluidity of lava and type of eruption.

Internal Forces

- The forms on the earth is the end result of the forces working simultaneously and continuously both inside and outside on its surface.
- The forces originate from within the earth's crust are called internal or endogenetic forces.
- The sources of energy are the internal heat, chemical reactions taking place within the earth, and the transfer of rock materials on the earth's surface by external forces.

Earth Movements

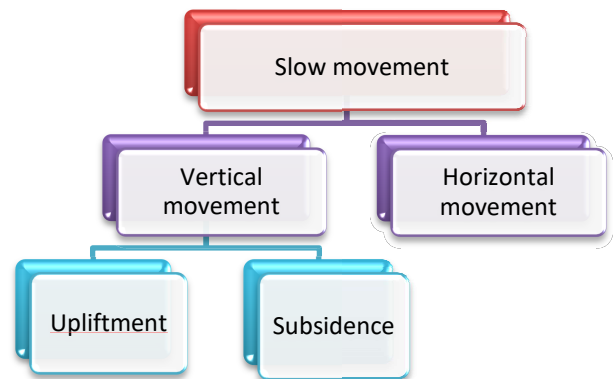
- Since the origin of earth, there have been major changes in the distribution of continents and oceans, the land and the oceans.
- The earth has experienced innumerable earth movements which have brought about vast changes in its surface.



- The forces working from inside the earth in turn cause movements in its crust called earth movements.
- These movements are also called tectonic movements because of rising from the movements of the actual structure of the earth's Crust.

- Earth movements are constructional and responsible for buildings of different types of land forms.
- The Malwa plateau and Deccan traps of India, Columbia and Snake Rivers Plateau of North America etc were also formed by the solidification of molten lava in different geological times.

Classification of Earth Movements



Slow Movement-

The movement bringing changes very gradually (hundreds/thousands of years) and covering period of more than a human life span are called slow movements.

Sudden Movements

These movements bring about abrupt changes in the crust. For example volcanic eruptions and earthquakes.

Vertical movements

- Such movements originate from earth's centre

- Large - scale upliftment/subsidence of part of earth's surface.
- These are slow & wide spread movements.
- Known as continent building/plateau building movements and called epirogenetic movements - 'Epeiros' (Greek- 'continent')
- Evidence of upliftment- Sedimentary rocks - deposited & formed in oceans and seas
- Evidences of submergence-
 - Submerged buildings, river -valleys and cities

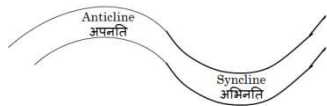
Horizontal Movement

Forces of Compression

- Cause lot of disruption in horizontal strata
- It has two types - Forces of compression and Forces of tension
- Pushing of rock strata against a hard plane from one side or from both sides
- Result in bending of rock layers and form fold mountains
- Process of bending, warping and twisting of rock strata

Folding

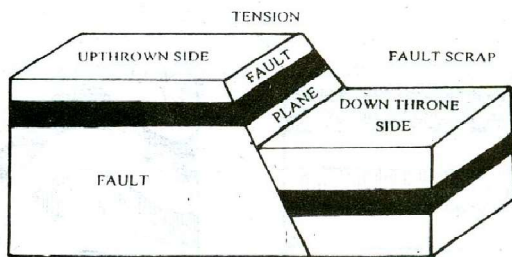
- Resultant landform - (wave-like)



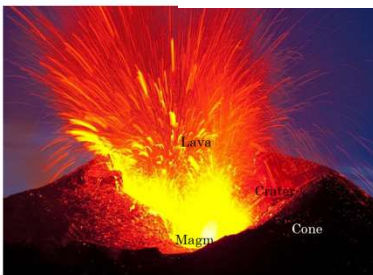
Fold

Forces of Tension

- Intense tensional forces → rock strata is broken/fractured
- Displacement of rocks upward/downward from original position along such a fracture - Faulting
- Line along which displacement of fractured rock strata takes place - Fault line
- Plane along which displacement of rock strata takes place - Fault plane

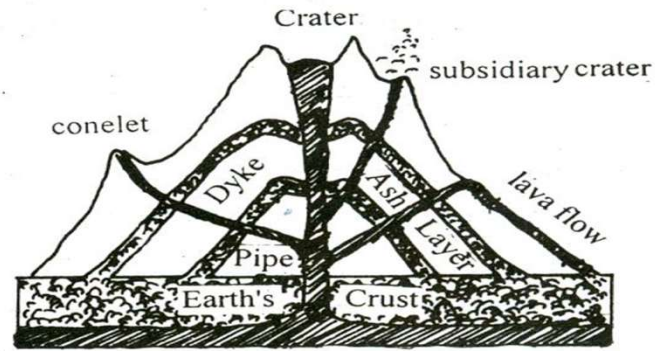


Volcano

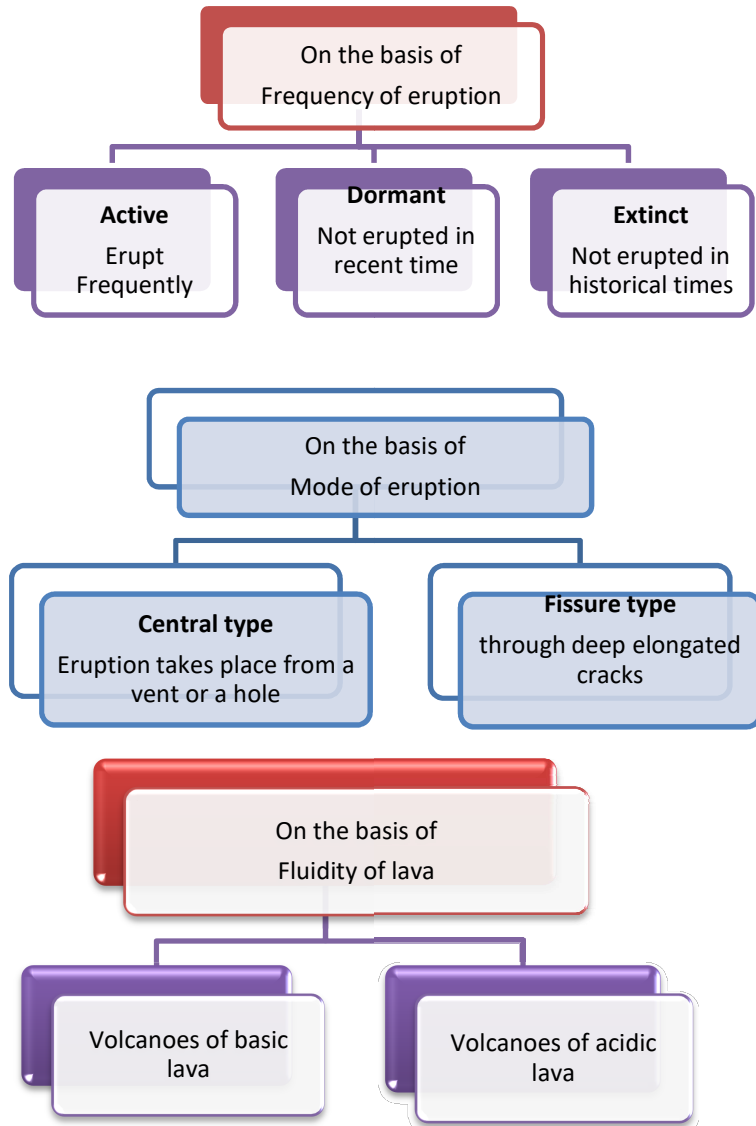


Volcano - a vent or an opening in earth's crust through which molten rock material, rock fragments, ash, steam & other hot gases come out.

- It comes slowly or forcefully from earth's interior due to intense heat & pressure within earth.

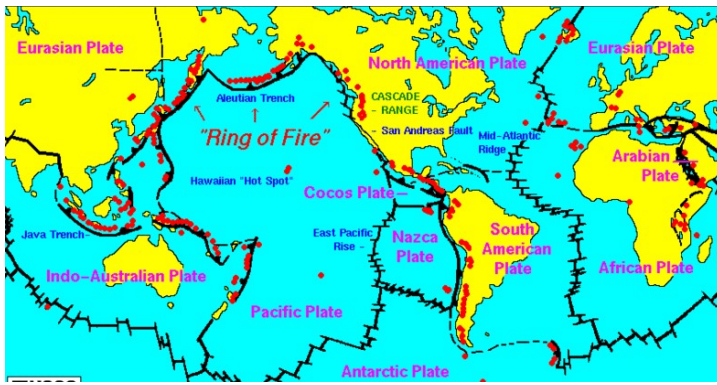


Types of Volcano



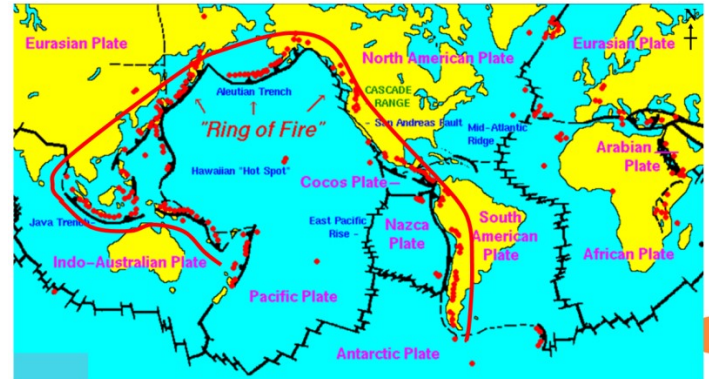
Distribution of Volcanoes

- 500 volcanoes in world
- Mostly found in 3 belts:
 - The Circum-Pacific belt (Ring of Fire)
 - The Mid-World Mountain belt
 - The African Rift Valley belt
- Volcanoes – closely related to regions of intense folding & faulting



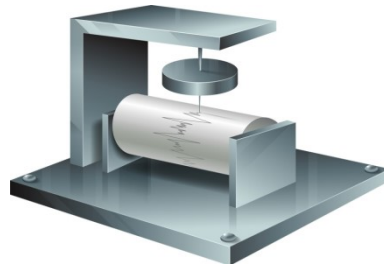
Distribution of Earthquake

- Phenomenon of almost every part of world
- 2 important belts - more frequent
 - i. Circum-Pacific belt
 - ii. Mid-world mountain belt

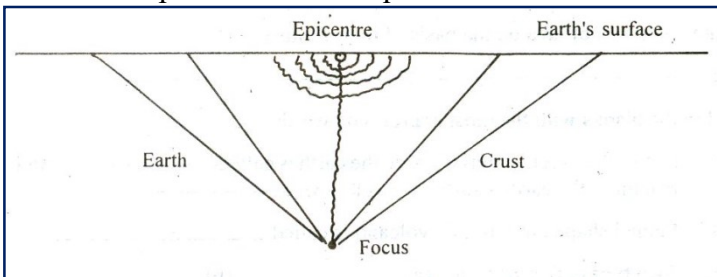


Earthquake

- A motion of ground surface
- Ranges from → faint tremor - wild motion
- Form of energy of wave motion transmitted through surface of earth
- Instrument used for recording earthquakes - Seismograph



Focus and Epicenter of Earthquake



- Earthquake waves originate from focus and travel in all directions
- Intensity - Highest at epicentre causing maximum destruction - at & around epicentre

Causes of Earthquake

- Folding, faulting & displacement of rock strata
- Volcanic eruption
- Other causes- landslides, collapse of cavern or underground mines & tunnel

Effects of Earthquake

- Violent earthquakes - very disastrous
- Causes:
 - Landslides
 - Damming of river course
 - Floods
 - Depression leading to formation of lakes
 - Cracks & fissures in earth's crust
 - Changes the drainage system (Assam after 1951)
- Displacement of rock strata (vertical & horizontal) along fault-line
- Fire
- Seismic sea waves – Tsunamis

Do You Know?

- Maximum volcanoes are found in Pacific region called ring of fire
- 83 Volcanoes are found in Mediterranean region

Evaluate Yourself

1. Differentiate between internal and external forces with appropriate examples.
2. How the functioning of horizontal movement is different from vertical movement?
3. Explain the features formed due to horizontal movement.
4. Describe the types of volcanoes on the basis of Frequency and mode of eruption.
5. On the outline map of the world mark the distribution of 10 major volcanoes and Ring of Fire.