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Earthquakes

Earthquakes are the catastrophic geomorphological events over the surface of Earth regulated by Endogenetic Activity & Impulsive action of Thermal Convection currents. The mechanism of Earthquakes can be illustrated by taking the reference of Plate Tectonic Theory. It means # along the zone of divergence & convergence the intensity & magnitude of earthquakes remain very high.

Most of the earthquakes are associated with the process of Faulting. Subsequently, fault areas or fault line remains the most prominent zone where dislocation, dismemberment & displacement of Rock columns take place. Sudden slippage of Rock columns along the fault line release the internal accumulated energy of rocks in widening

circles to start tremors & vibrations over the surface of earth.

Types of Fault :-

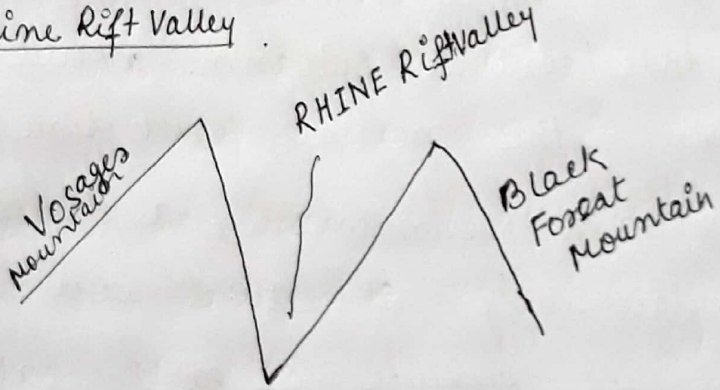
a) Normal Fault :-

In the process of normal faulting when intense thermal convection currents able to carry the rock columns in different direction, then the subduction of middle / central column would take place along the normal fault line. By this resultant phenomenon, a depression like configuratory structure would develop over the surface of earth called as "GRABEN". Adjacent to the graben, along the fault line, elevated side columns are regarded as "Horst" or "Block" Mountain.

It should be noted that by the same subsequential phenomenon if a "V" shape configuratory structure develop over the surface of earth then the concerned physical feature is regarded as a "Valley of Rift"

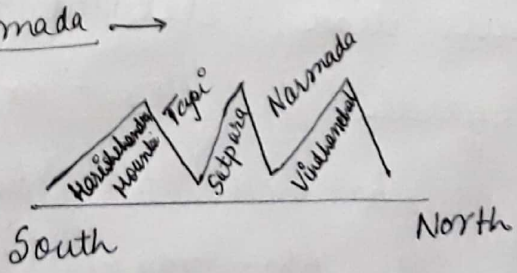
Sometimes, when the upwelling convection currents able to uplift the side columns in drastic manner & the middle column does not get subsided in the same manner then again a Valley shaped physical feature would develop over the surface of earth which appears like a "Rift Valley" but regarded as a "Valley of RAMP".

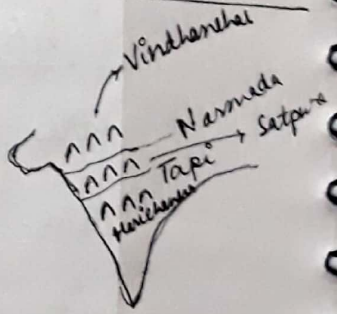
e.g. Rhine Rift Valley.



In India, Rift Valley

Tapi & Narmada →





Ramp Valley → Brahmaputra Ramp Valley

b) Reverse faulting on the other hand is a phenomenon getting regulated by compressional activity & convergence of Rock columns. Regular compressional activity carried by converging convection currents develop some fault lines in lithosphere along which the over thrusting or under ~~thrusting~~ of rock columns takes place.

c) Strike-Slip or transform fault is different from normal & reverse fault in the sense that Rock columns are neither converging or diverging adjacent to each other but sliding horizontally parallel to each other in opposite direction. It should be noted that all those areas over the surface of earth where the process of faulting had taken place, there is a high possibility of catastrophic events like Earthquakes. It is because always along the fault line the movement of Rock columns take

place to release the energies in widening circles & to bring high & low magnitude earthquakes over the surface of earth.

Distribution of Earthquakes:

The plate tectonic theory provides substantial evidences about the location & occurence of earthquakes. Approx. 68% of the earthquakes acknowledged over the surface of earth are limited in a zone called as Circum-Pacific Belt. Similarly, 25% of the earthquakes are observed in the zone of Mid-continental Belt. It should be noted that in these regions respective plates are converging with each other & oceanic plate is sub-ducting under less denser plates. Apart from these areas there are certain other areas where the intensity & magnitude of earthquakes remain very high.

San Andreas fault is a prominent earthquake prone zone where the intensity & frequency of this catastrophic event remain very high. It is a fault line where minor California plate is sliding adjacent to the plate of North America with the convergence of North American plate to the plate of Juan De Fuca. Apart from this, the Great Rift Valley of Africa is also a prominent Earthquake Prone Zone where the plate of Somalia & Ethiopia are sliding adjacent to the plate of Africa with the convergence of African plate to the plate of Eurasia. It should be noted that the point from which 3 branches of fault line radiates in different direction is the Afar Region of Ethiopia.

The coastal margin of Japan & Western Pacific also remain a prominent Earthquake prone Zone since several plates are converging with each other & the lithospheric column in the zone of convergence becomes very weaker by the creation of several Reverse faults.

MBF
↓
Main Boundary Fault

HFF
↓
Himalayan Forward Fault

The Earthquakes of Himalayan Physiographical Region are also associated with the phenomenon of convergence & faulting. In central Himalaya earthquakes types of seismic events are highly acknowledged in a zone called as MBF (Main Boundary Fault) located between middle & Shivalik Himalaya. It is catagory of Thrust or Reverse fault created by the convergence of Indian Plate to the plate of Eurasia.

Apart from this, HFF (Himalayan Forward Fault) located to the south of Shivalik is also a prominent weak zone of Indian Subcontinent but frequent seismic events are not taking place in the respective area.

In Western & North Western Himalaya Indus Kohistan Seismic zone is a prevailing fault line along which Rock columns sliding adjacent to each other with the convergence of Indian

plate to the plate of Eurasia.

Polity

Topics :-

- Organs of Govt → Executive (Art 52–78)
  Legislature (Art 79–122)
  Judiciary (Art 124–147)

- Centre – State Relation

- Local Self Govt →
  - PRIs
  - Urban Local Bodies

- Constitutional Bodies :-
  - CAG
  - Election Commission of India
  - UPSC & SPSC