

# CHAPTER -2 ( Geography)

## PHYSICAL Features of India

### Acknowledgment

1) Reference : NCERT SOCIAL SCIENCE TEXT BOOK

2) Google Web page for Maps & images

- The Earth is a *dynamic* or constantly changing planet.
  - The thin, fragile plates slide very slowly on the *mantle*'s upper layer.
  - This sliding of the plates is caused by the mantle's convection currents slowly turning over and over.
  - This overturn is like a conveyor belt that moves the plates of the crust.
  - These plates are in constant motion causing earthquakes, mountain building, volcanism, the production of "new" crust and the destruction of "old" crust.
  - The Earth's plates are in constant, but very, very slow motion. They move at only 1/2 to 4 inches (1.3 to 10 centimeters) per year!!
- 
- India is a large landmass formed during different geological periods which has influenced her relief.
  
  - Besides geological formations, a number of processes such as weathering,
  - erosion and
  - deposition
  - created and modified the relief to its present form.

## I MAJOR PHYSIOGRAPHIC DIVISIONS

- The physical features of India can be grouped under the following physiographic divisions
- (1) The Himalayan Mountains
- (2) The Northern Plains
- (3) The Peninsular Plateau
- (4) The Indian Desert
- (5) The Coastal Plains
- (6) The Islands

### II “Theory of Plate Tectonics”.

- 250 millions years ago the Earth's seven continents were all grouped together into a supercontinent called Pangea.
- Just before the days of the dinosaurs the Earth's continents were all connected into one huge landmass called *Pangaea* . This huge supercontinent was surrounded by one gigantic ocean called *Panthalassa*.
- About 180 million years ago the supercontinent Pangea began to break up.
- Scientists believe that Pangea broke apart for the same reason that the plates are moving today. The movement is caused by the convection currents that roll over in the upper zone of the mantle. This movement in the mantle causes the plates to move slowly across the surface of the Earth.
- About 200 million years ago Pangaea broke into two new continents Laurasia and Gondwanaland. *Laurasia* was made of the present day continents of North America (Greenland), Europe, and Asia. *Gondwanaland* was made of the present day continents of Antarctica, Australia, South America. The subcontinent of India was also part of Gondwanaland. Notice that at this time India was

not connected to Asia. The huge ocean of Panthalassa remained but the Atlantic Ocean was going to be born soon with the splitting of North America from the Eurasian Plate.

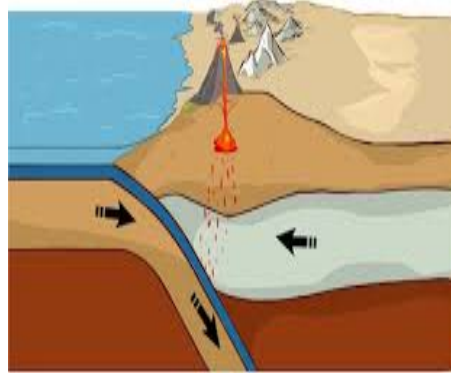
- Notice the position of the Indian Subcontinent today. It moved hundreds of miles in 135 million years at a great speed (4 inches per year!!!) The Indian plate crashed into the Eurasian plate with such speed and force that it created the tallest mountain range on Earth, the Himalayas!

- Earth scientists have attempted to explain the formation of physical features with the help of some theories based on certain evidences.
- One such plausible theory is the **“Theory of Plate Tectonics”**.

According to this theory,

- the crust (upper part) of the earth has been formed out of seven major and some minor plates.
- The movement of the plates results in the building up of stresses within the plates and the continental rocks above, leading to folding, faulting and volcanic activity.
- Broadly, these plate movements are classified into three types.

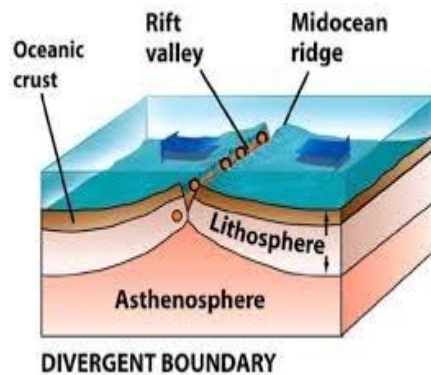
## 1. Convergent Boundaries



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- formed when two plates collide, either crumbling up and forming **mountains** or pushing one of the plates under the other and back into the mantle to melt.
- form strong **earthquakes**, as well as volcanic **mountains** or **islands**, when the sinking oceanic plate melts.

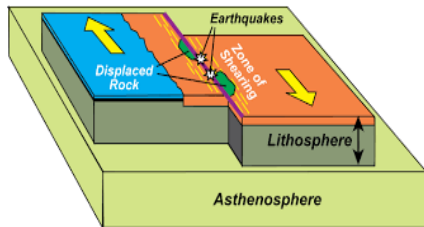
## 2. Divergent Boundary



DIVERGENT BOUNDARY

- Divergent plate boundaries are locations where plates are moving away from one another.
- This occurs above rising convection currents.

## Transform boundaries



forms features such as fault lines and oceanic fracture zones.

Fault lines are also known as strike slip faults.

the borders found in the fractured pieces of the Earth's crust where one tectonic plate slides past another to create an earthquake **fault** zone.

## III Gondwana land:

- It is the southern part of the ancient super continent Pangea with Angara Land in the northern part.
- The Himalayan uplift out of the Tethys sea and subsidence of the northern flank of the peninsular plateau resulted in the formation of a large basin.
  - In due course of time this depression, gradually got filled with deposition of sediments by the rivers flowing from the mountains in the north and the peninsular plateau in the south.

- A flat land of extensive alluvial deposits led to the formation of the northern plains of India.
- The land of India displays great physical variation.
- Geologically, the Peninsular Plateau constitutes one of the ancient land masses on the earth's surface.
- It was supposed to be one of the most stable land blocks. The Himalayas and the Northern Plains are the most recent landforms. From the view point of geology, Himalayan mountains form an unstable zone.
- The whole mountain system of Himalaya presents a very youthful topography with high peaks, deep valleys and fast flowing rivers.
- The northern plains are formed of alluvial. Most volcanoes and earthquakes in the world are located at plate margins, but some do occur within the plates.
- The oldest landmass, (the Peninsula part), was a part of the Gondwana land

#### IV Formation of Young fold mountains the great Himalayas

- The Gondwana land included India, Australia, South Africa, South America and Antarctica as one single land mass.
- The convectional currents split the crust into a number of pieces, thus leading to the drifting of the Indo-Australian plate after being separated from the Gondwana land, towards north.

- The northward drift resulted in the collision of the plate with the much larger Eurasian Plate.
- Due to this collision, the sedimentary rocks which were accumulated in the geosyncline known as the *Tethys* were folded to form the mountain system of western Asia and Himalaya.

### The Himalayas

- Geologically young
- Structurally fold mountains .
- Stretch over the northern borders of India.
- mountain ranges run in a west-east direction from the Indus to the Brahmaputra.
- Represent the loftiest and one of the most rugged mountain barriers of the world.
- They form an arc, which covers a distance of about 2,400 Km.
- Their **width** varies from 400 Km in Kashmir to 150 Km in Arunachal Pradesh.
- **Altitudinal variations** are greater in the eastern half than those in the western half.

The Himalaya consists of three parallel ranges in its longitudinal extent.

1. Greater Himalaya or Himadri
2. Middle Himalaya or Himachal
3. Lesser Himalaya or Shiwalik

### **Himadri**

- The northern most range is known as the Greater Inner Himalayas or the '*Himadri*'.
- It is the most continuous range consisting of the loftiest peaks with an average height of 6,000 metres.
- It contains all the prominent Himalayan peaks.

- The folds of Great Himalayas are asymmetrical in nature.
- The core of this part of Himalayas is composed of granite.
- It is perennially snow bound,
- A number of glaciers descend from this range

### Some Highest Peaks of the Himalayas

Peak	Country	Height in metres
Mt. Everest	Nepal	8848
Kanchenjunga	India	8598
Makalu	Nepal	8481
Dhaulagiri	Nepal	8172
Nanga Parbat	India	8126
Annapurna	Nepal	8078
Nanda Devi	India	7817
Kamet	India	7756
Namcha Barwa	India	7756
Gurla Mandhata	Nepal	7728



## Important Mountain passes in Himalayas

**Banihal Pass:** This mountain range separates the Kashmir valley in the Indian state Jammu and Kashmir from the outer Himalaya and plains to the south.

**Jelep la pass:** It is a high mountain pass between India and Tibet in East Sikkim District of Sikkim. The pass is in Sikkim and the route connects Lhasa to India.

**Karakoram Pass:** The Karakoram Pass is between India and China in the Karakoram Range.

**Mana Pass:** It is a mountain pass in the Himalayas on the border between India and Tibet. It appears to now be the highest vehicle-accessible pass in the world.

**Nathu la:** It connects the Indian state of Sikkim with China's Tibet Autonomous Region.

**Rohtang Pass:** It connects the Kullu Valley with the Lahul and Spiti Valleys of Himachal Pradesh, India. Manali-Leh Highway, a part of NH 21, transverses Rohtang Pass.

**Shipki la Pass:** Shipki La is a mountain pass and border post on the India-Tibet border. The river Sutlej enters India (from Tibet) through this pass.

**Zoji La Pass:** Zoji La is a high mountain pass in Indian Kashmir, located on the Indian National Highway 1D between Srinagar and Leh in the western section of the Himalayan mountain range.

### Lesser Himalayas (Himachal)

- The range lying to the south of the Himadri forms the most rugged mountain system and is known as *Himachal* or lesser Himalaya.
- The ranges are mainly composed of highly compressed and altered rocks.
- The altitude varies between 3,700 and 4,500 metres and



