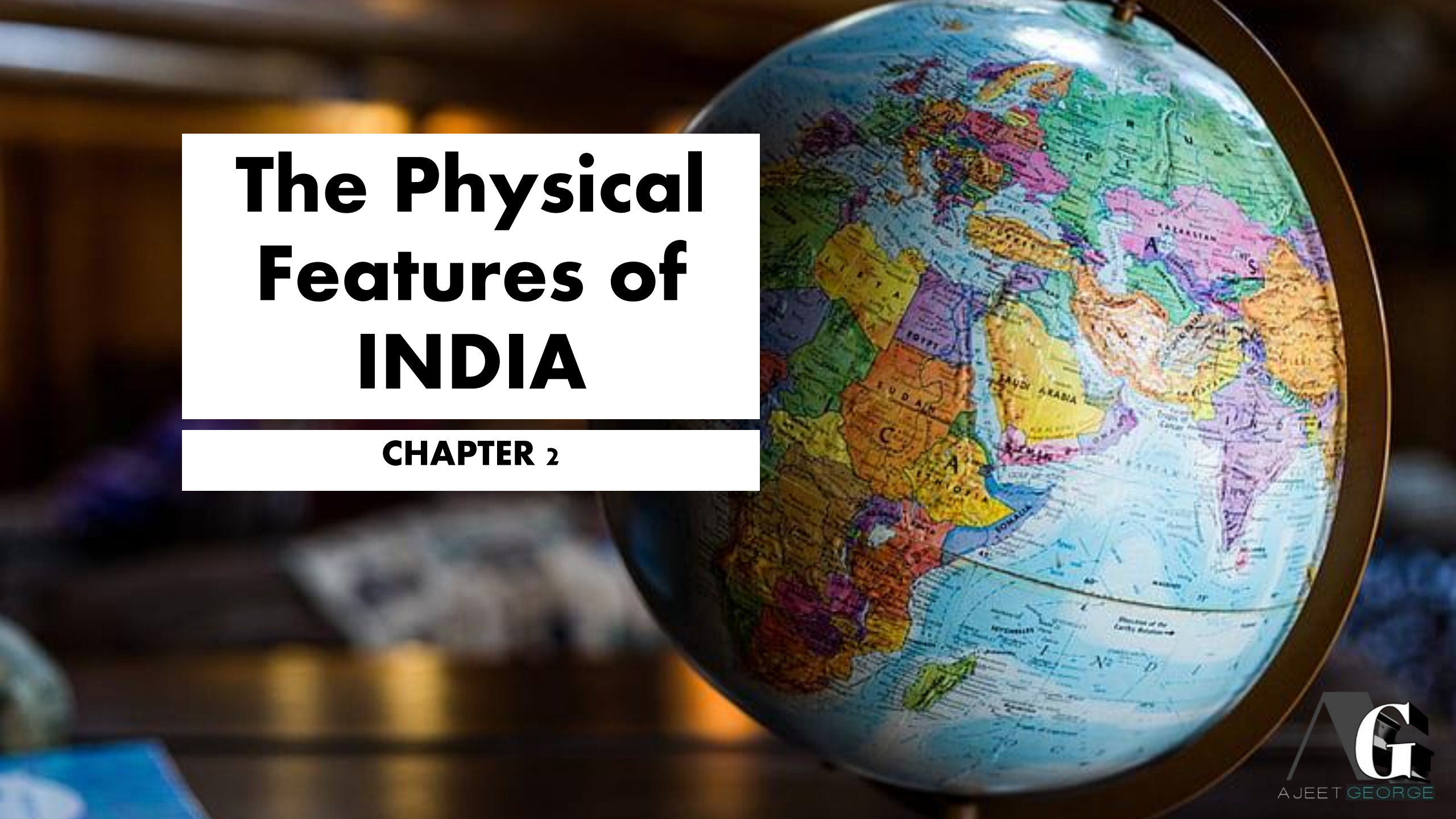
The Physical Features of INDIA

CHAPTER 2



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INTRODUCTION

-India, it's vast and varied landform and its evolution

- Formation of India Landmass (Himalayan , Northern Plains)
- Major Physiographic division
  - The Himalayan Mountain
  - The Northern Plains
  - The Peninsular Plateau
  - The Indian Desert
  - The coastal plains
  - The Islands
- Importance of varied physical features

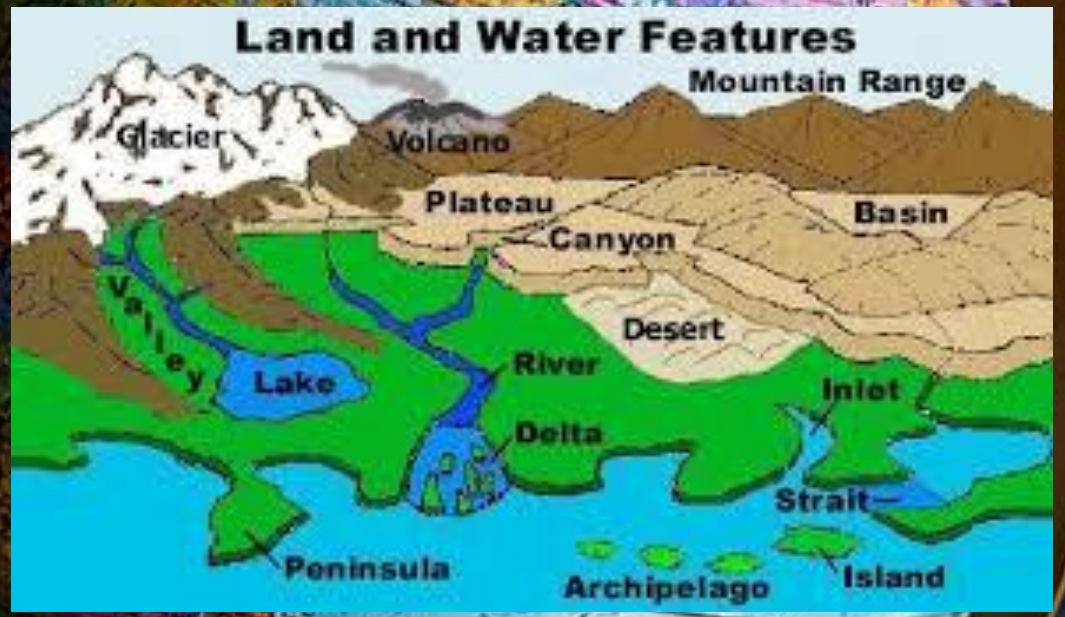
Theory of plate Tectonics

On Earth there are different physical features- along with different types of rocks.

Reasons from difference in rock formation and physical features are

- Land formed during different geological periods.
- Processes such as weathering, erosion, deposition .

Scientists have attempted to explain all this with the help of :The theory of Plate Tectonics"



Theory of plate Tectonics

According to the Theory of Plate Tectonics

Earth crust is divided into seven major and some minor plates

Plates are Continuously moving (floating on magma)

Leading to folding, faulting and volcanic activity

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Theory of plate Tectonics

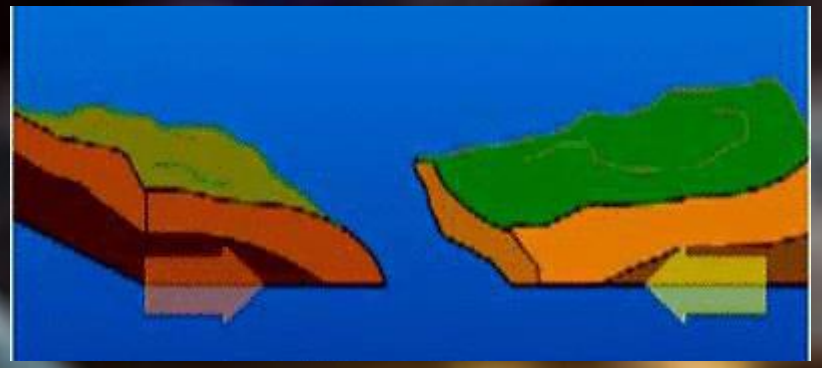
Due to the movement of plates, various changes occurs. (How)

- There are three main plate movement

CONVERGENT PLATE BOUNDRY

Plates comes towards each other

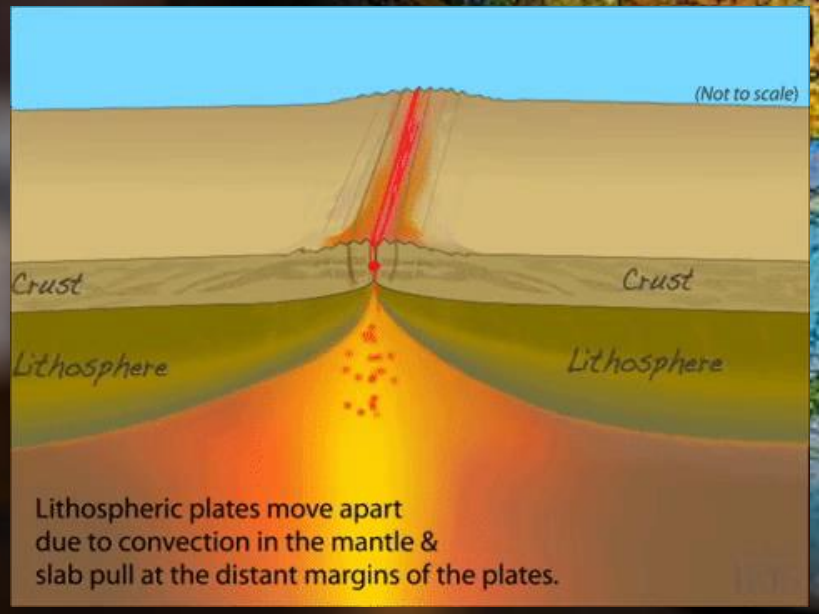
Folding e.g. Mountain Formation



DIVERGENT PLATES BOUNDRY

Plates move away from each other

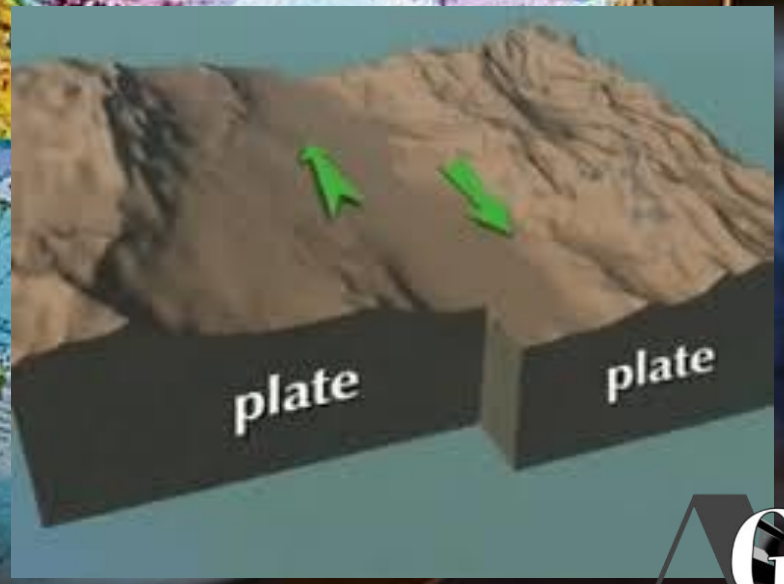
Faulting E.g. Formation of Rift Valley



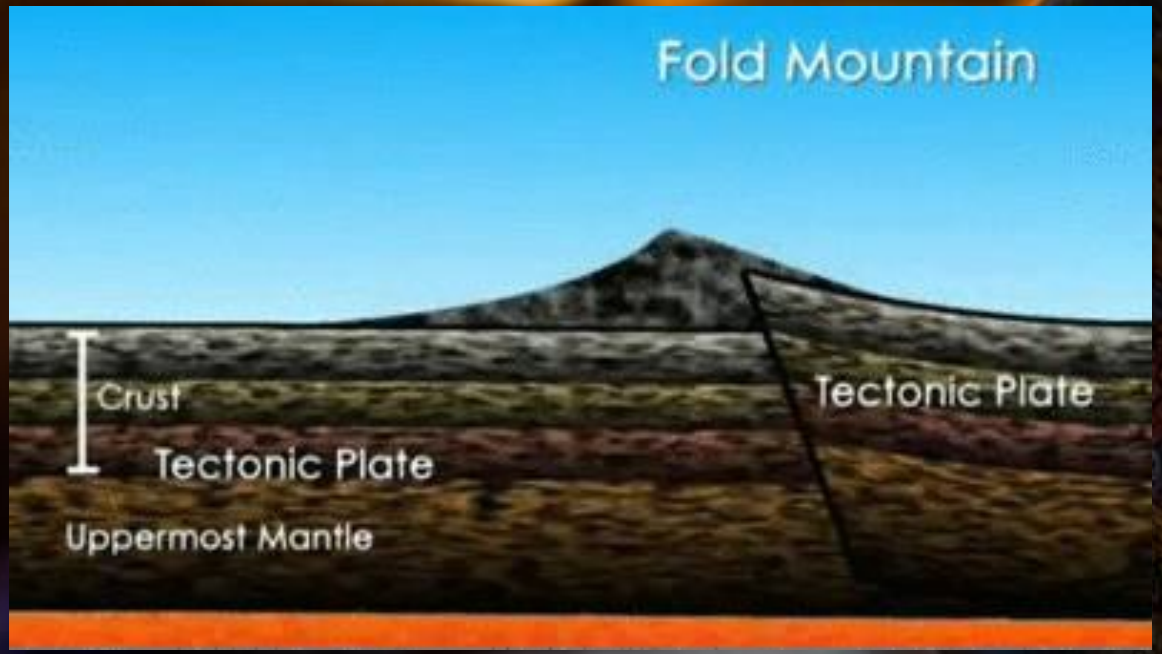
TRANSFORM PLATES BOUNDRY

Plates moves Horizontally

Earthquake, volcano



Theory of plate Tectonics



- Similarly these movements had resulted in the formation and evolution of the present landform features of India.

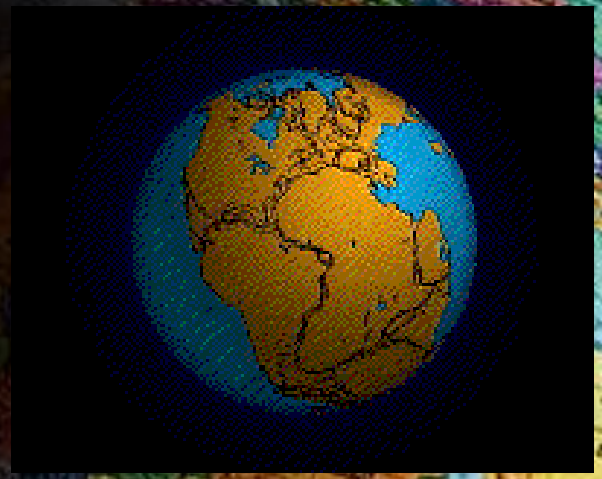
- Most volcanoes and earthquakes in the world are located at plate margins but some do occurs within plates

Formation of Indian Landmass:

- Story of Pangea and Panthalassa Landmass & Oceanic Part

- Division -----Southern part of the supercontinent was GONDWANA LAND (Peninsula) and Northern part was ANGARA LAND

- Gondwana- India, Austria, South Africa, South America and Antarctica



Formation of Indian Landmass:

- - The conventional currents split the crust into a number of pieces.
- Major Continents and Plates

After split plates started drifting in different directions.

- Indo- Australian plate drifted toward North
- Northward drift of Indo- Australian plate resulted in collision of Eurasian plate. Thus forming Indian Landmass.

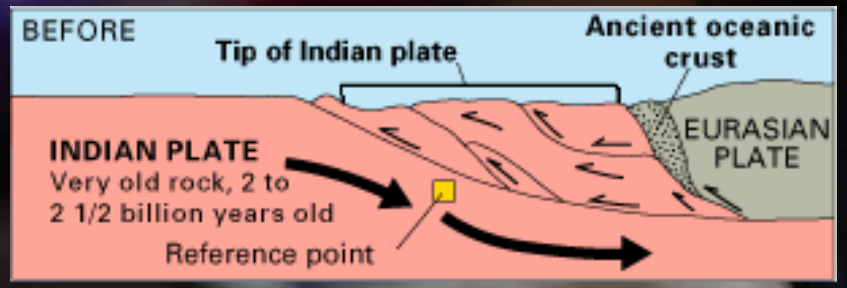
Further many other features developed after that

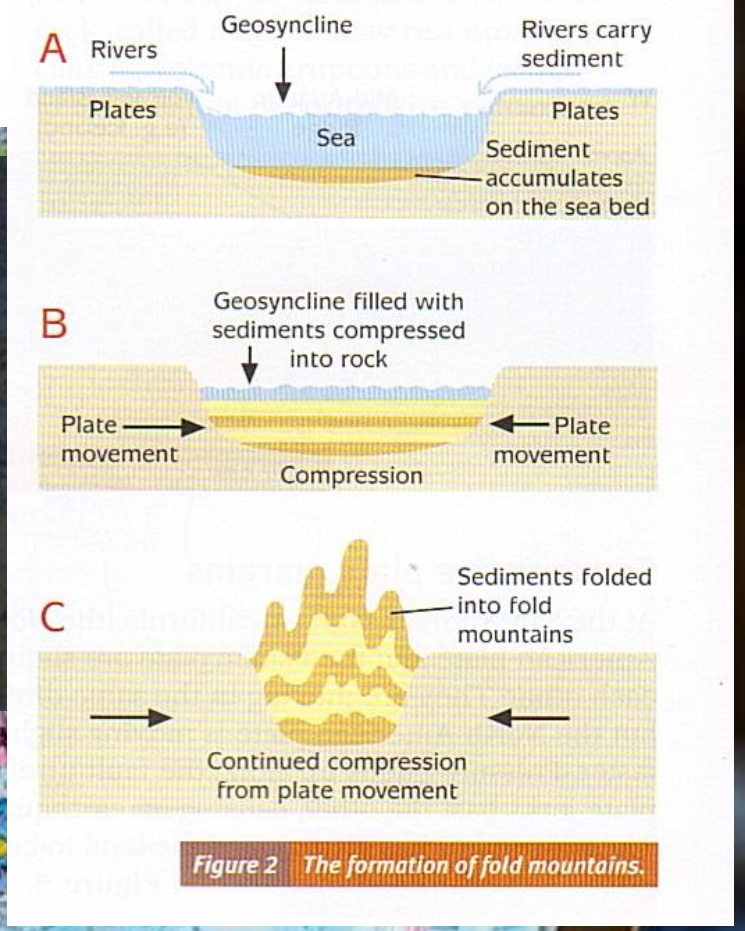
Formation of Himalayas and Northern Plains:

- Formation of both the physical features are interrelated and connected with the drifting of plate(Indo-Australian Plate)

Drifting----------Collision

(Indi-Australian Plate) (Collison with Eurasian Plate)





Sedimentary rock of geosyncline known as Tethys were uplifted to form the mountain system. (Himalayan Range)

Formation of Himalayas and Northern Plains:

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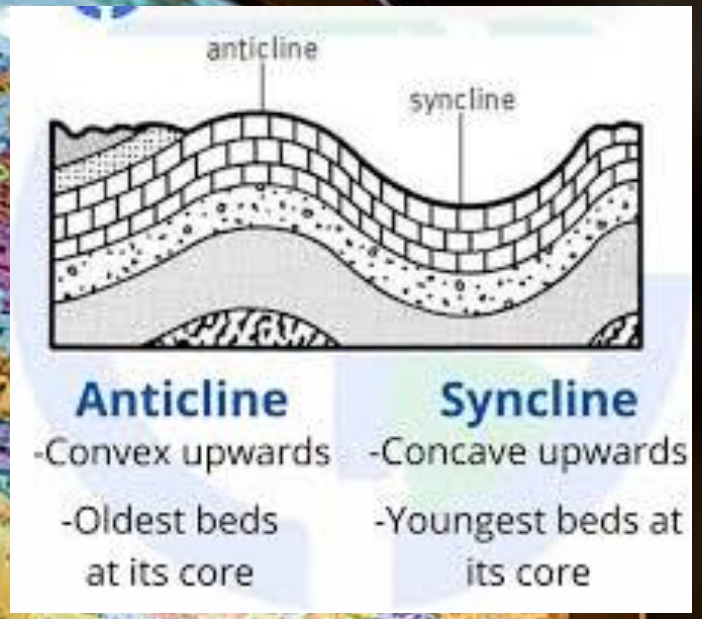
Formation of Himalayas and Northern Plains:

Collision --- formation of large basin at the foothills

In due course of time the depression got filled by the sediments brought by the rivers coming from Himalayas.

The area between Himalayas in north and Peninsular plateau in south got filled with alluvial soil.

This is how Northern plateau of India was formed



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Formation of Peninsular Plateau

- Formation of Peninsular was mainly due to volcanic activities which occurred during plate movement.
- Peninsular plateau constitutes one of the ancient land masses of the earth's surface
- It was supposed to be one of the most stable land blocks.
    - YOUTHFUL TOPOGRAPHY- Himalayas, Northern plains
    - OLD TOPOGRAPHY- Peninsular Plateau

The Himalayan Mountains

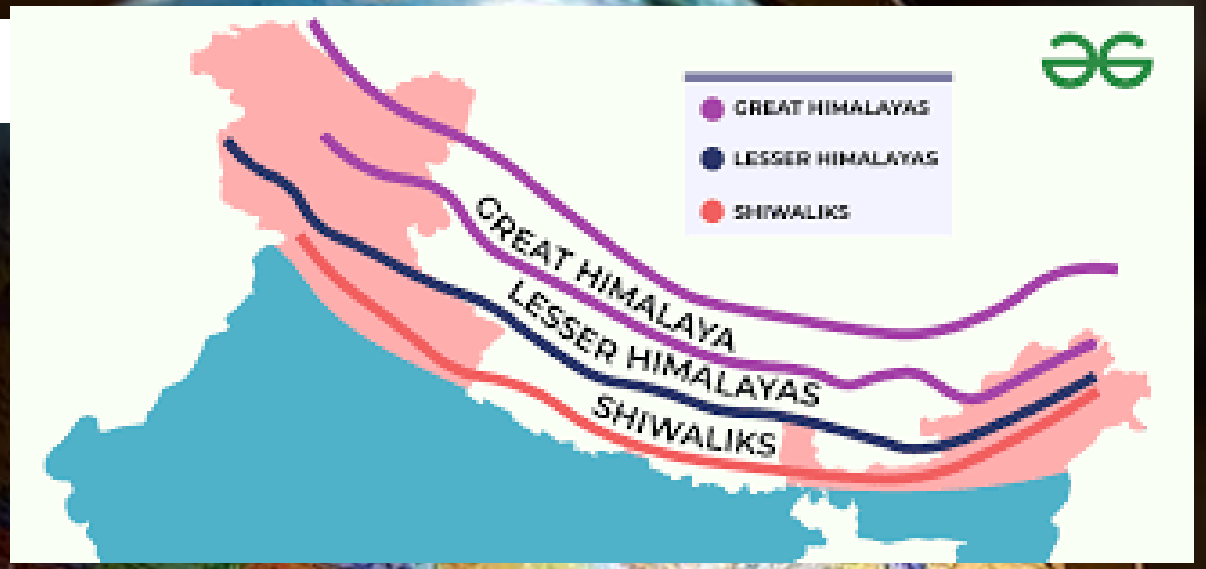
Geologically young and structurally fold mountain

- Located in the northern borders of India
- Runs between Indus and Brahmaputra.
- Represent the loftiest and most rugged mountain barrier of the world.
- Covers 2400km of distance
    - width 400 km in Kashmir
    - 150km in Arunachal Pradesh
- Altitudinal variations are greater in the eastern half than those in the western half.

Formation of Peninsular Plateau

- The Himalayas consist of three parallel ranges.----------In its longitudinal extent.

- Himadri/greater or inner Himalayas
- Himachal or lesser Himalaya/middle Himalayas
- Shiwaliks/Outer Himalayas

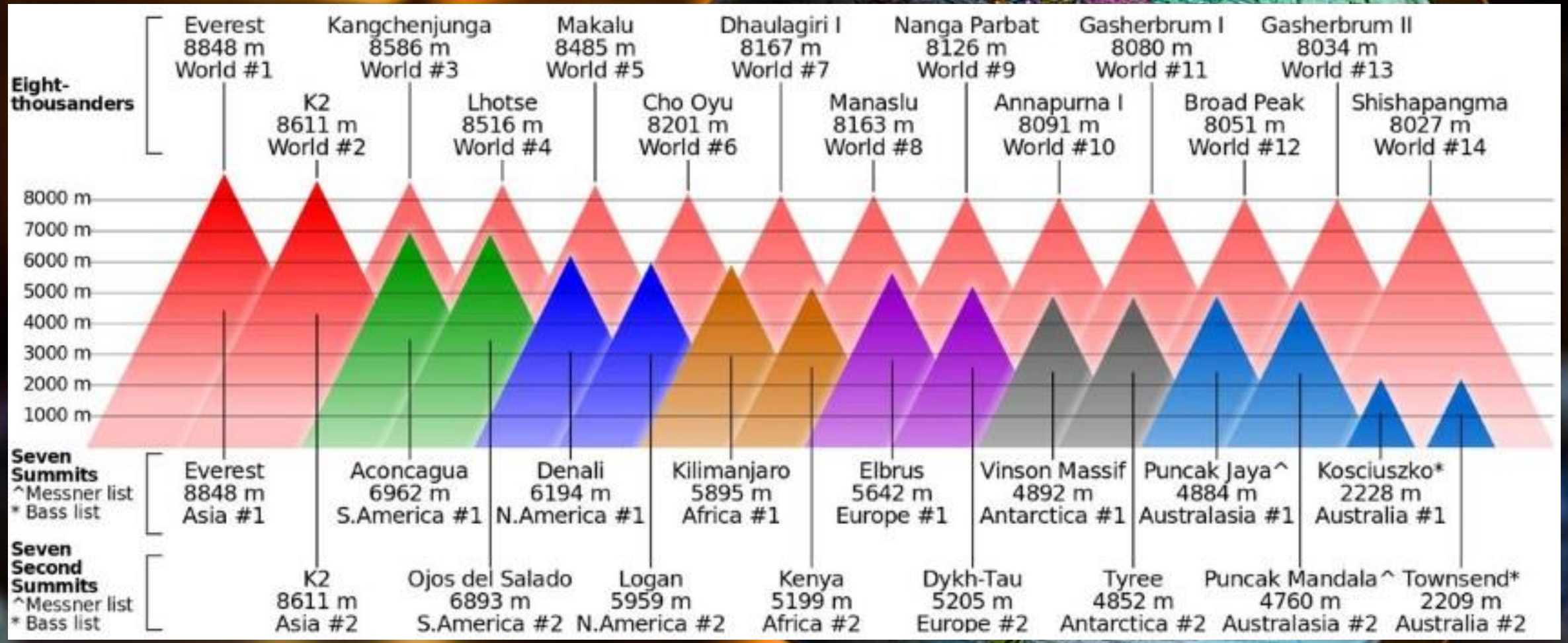


Himalayan ranges: HIMADRI

Great or inner Himalayas or Himadri

- Northernmost Range
- Most continuous range consisting of the loftiest peaks. (6000 m average height)
- The folds of Great Himalayas are asymmetrical in nature.
- Core is made up of granite and it is perennially snowbound.
- Number of glaciers descend from this range.

HIMADRI: Prominent Peaks



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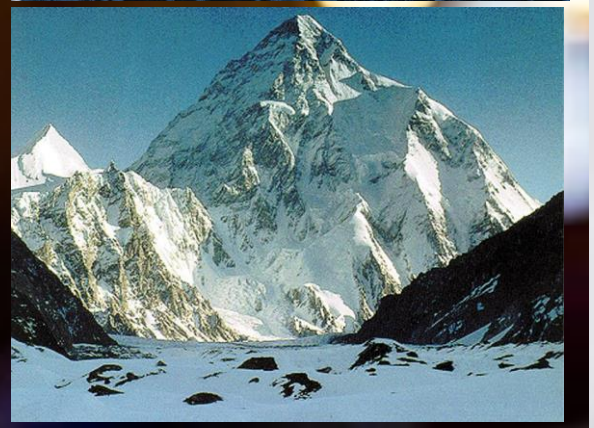
Himalayan ranges: HIMADRI

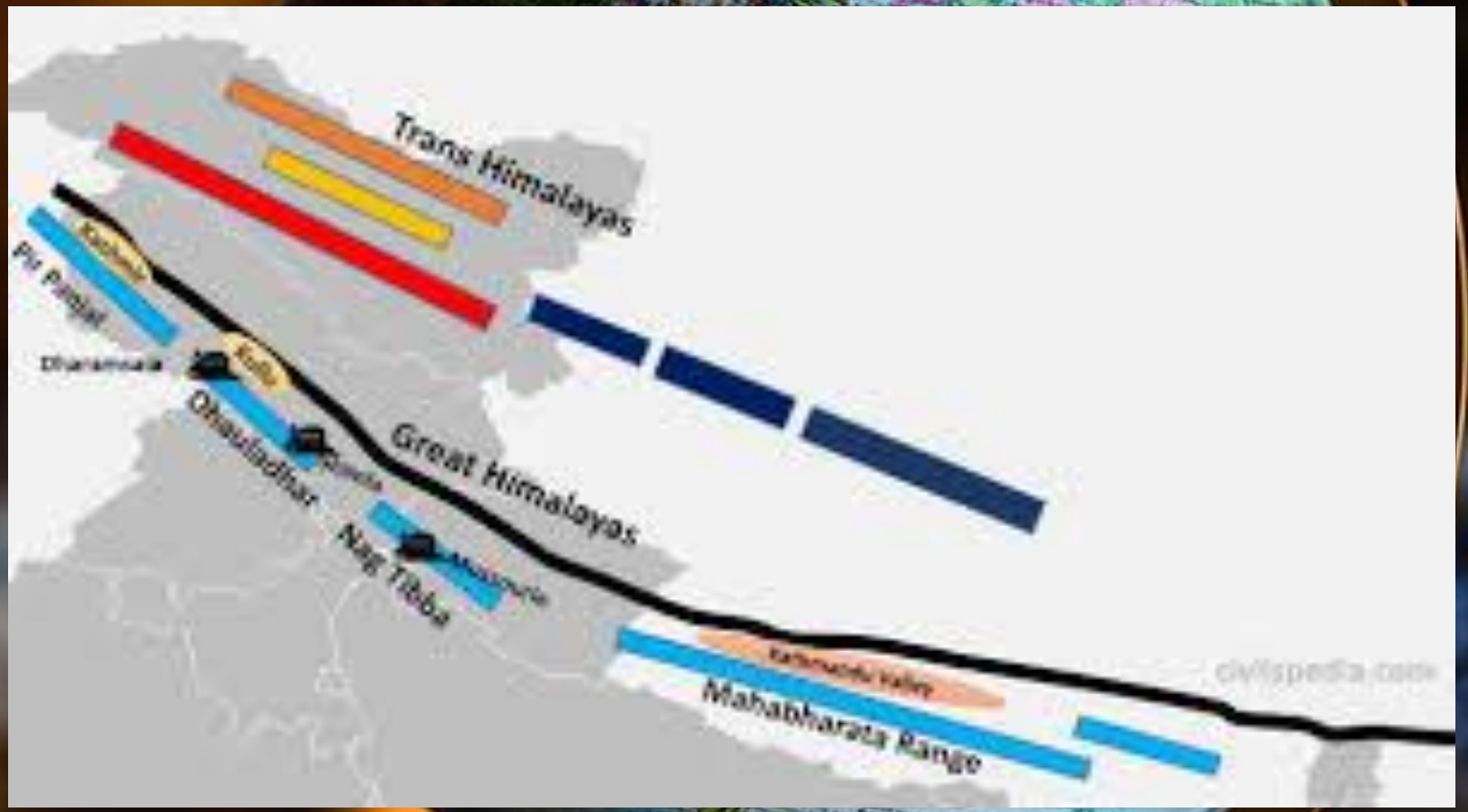


Himalayan ranges: HIMACHAL or Lesser Himalaya/Middle Himalayas

Himachal /Lesser/ Middle Himalayas

- Range lying to the south of the Himadri
- Composed of highly compressed and altered rocks.
- Average altitude varies between 3700 m and 4500m and the avg. width is of 50 km.
- Pir panjal range forms the longest and most important range. Dhaula Dhar and Mahabharat are other
- Famous valley of Kashmir, the kangra and kullu valley are found in this range.

Himalayan ranges: HIMADRI

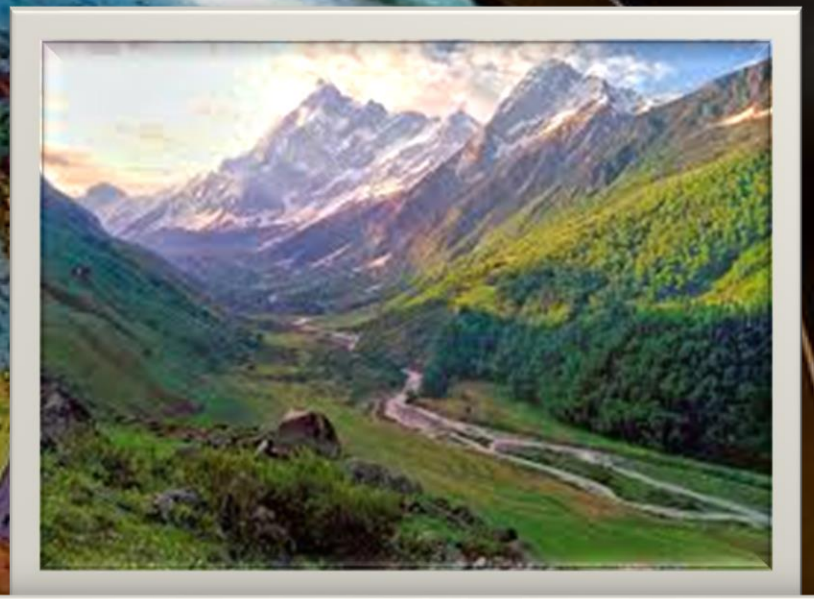


Himalayan ranges: SHIWALIKS or OUTER Himalayas

SHIWALIKS or Outer Himalayas

- Outermost range of the Himalayas.
- These ranges are composed of consolidated sediments brought down by rivers from the main Himalayan ranges located farther north.
- Average heights of this range varies from 900 to 1100 m and they extend over a width 10-50 km.

Himalayan ranges: SHIWALIKS or OUTER Himalayas



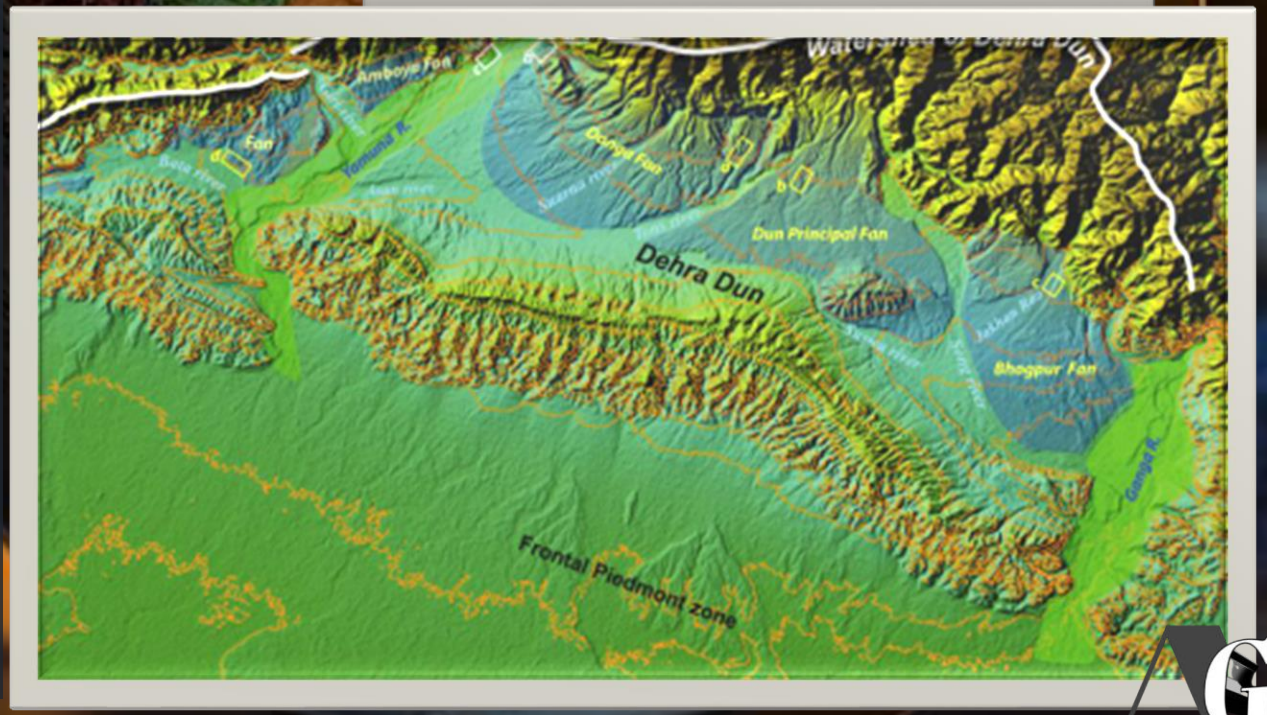
SHIWALIKS or Outer Himalayas

- Shiwaliks consist of Duns

Duns- The longitudinal valley lying between lesser Himalayas and Shiwaliks

eg. Dehradun, Kotli Dun and Patli dun.

- Theses valleys are covered with thick gravel and alluviam.

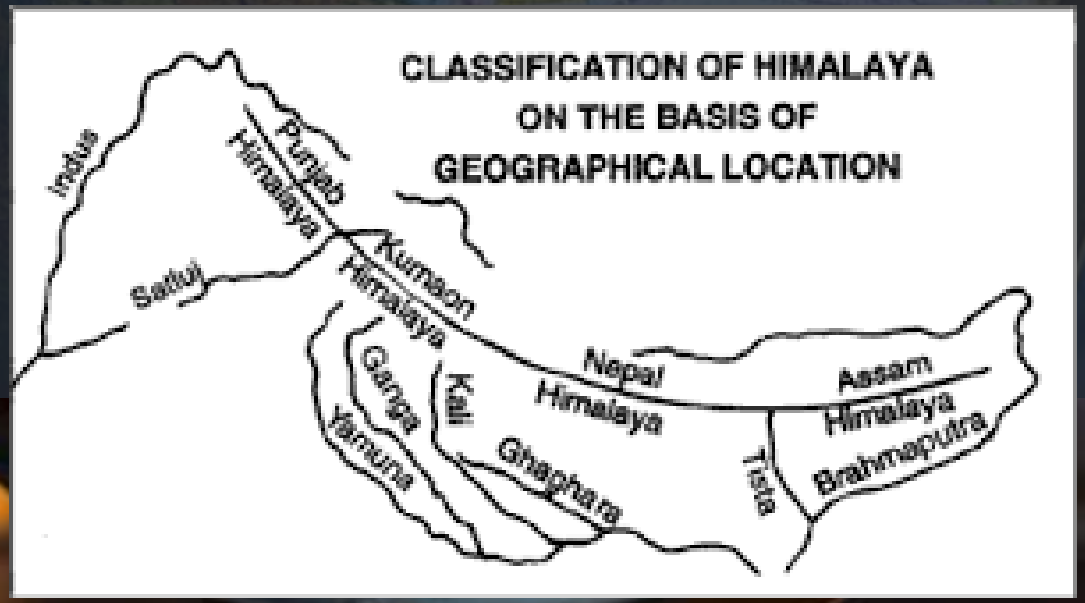


HIMALAYAS: West to East

Besides the longitudinal divisions, Himalayas have been divided on the basis of regions from West to East.

Demarcated by River Valley

- **Himalayas between Indus and Satluj rivers - <u>Punjab/Kashmir and Himachal Himalayas</u>**
- **Himalayas between Satluj and Kali rivers. - <u>*Kumaon Himalayas*</u>**
- **Himalayas between Kali and Teesta rivers - <u>*Nepal Himalayas*</u>**
- **Himalayas between Teesta River and Dihang River - <u>*Assam Himalayas*</u>**



PURVANCHAL HIMALAYAS

Another important part of Himalayas running in the north eastern part are known as Purvanchal Himalayas or Eastern Himalayas.

It is comprised of various hills such as Patkai hills, The naga Hills, The Manipur hills and the Mizo hills.

Dense forest, valleys and rivers are found in this range

The Northern Plain

- **Formation of Northern plains**

- **Rivers played a major role in its formation.**
- **The Indus, the Ganga and the Brahmaputra along with their tributaries are responsible for the formation of Northern Plain.**
- **Spreads over an area of 7 lakh sq km.**
- **2400km long and 240km to 320 km broad.**
- **Densely populated physiographic division (Because- Fertile soil and abundance of water)**
- **Various geographic features as Riverine island, doabs and distributaries are found in NP.**

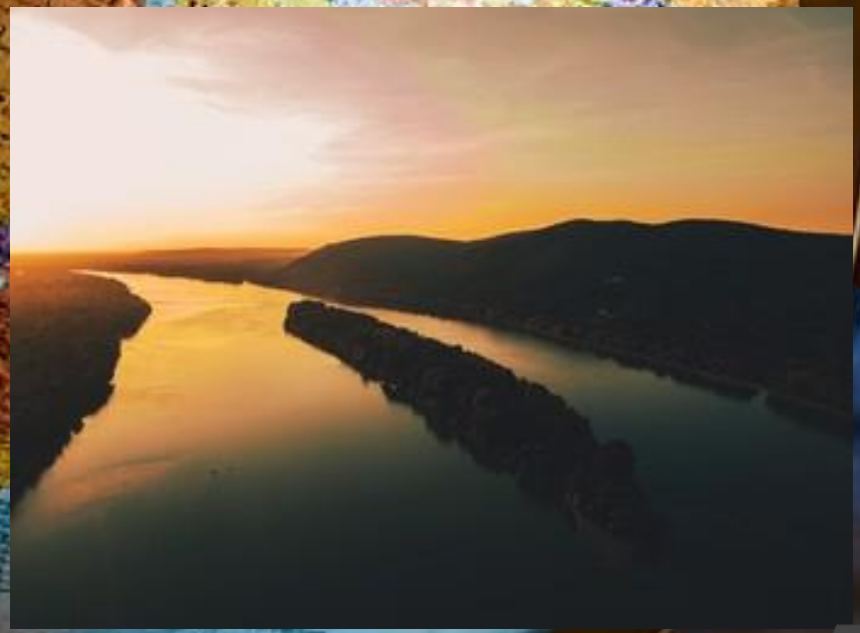
The Northern Plain

Riverine Islands

-----River -------Deposition -------Formation of land between the river

- Majuli, in Brahmaputra river is the largest inhabited revirine island in the world.

- Distributaries and tributaries

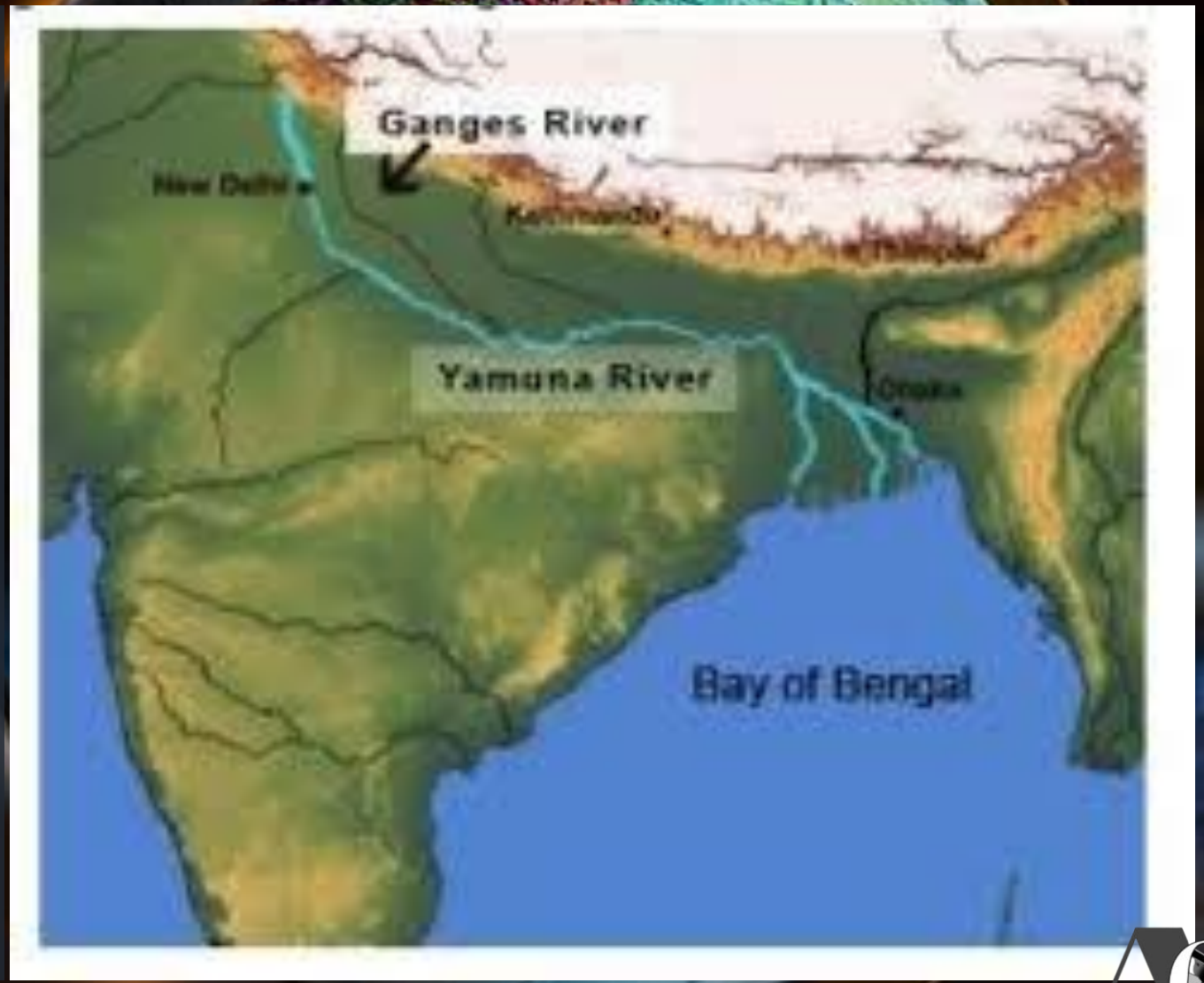


The Northern Plain

- **Doab**

Land between the two rivers is known as doab.

- **Doab is made up two words ‘do’ means two**
- **And ‘ab’ means water**
- **Eg Ganga Yamuna doab**



Divisions of Northern Plain

NP is divided into three sections

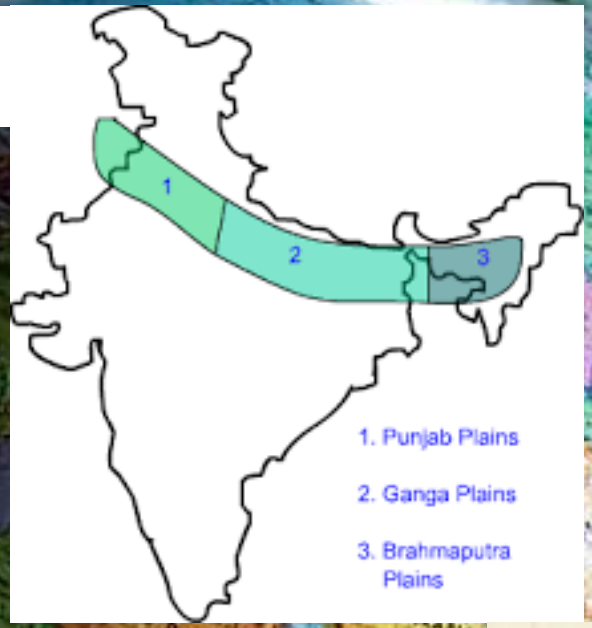
Punjab Plains

- **Western part of Northern Plain**
- **Formed by Indus and its tributaries.**

- **This section is denominated by Doabs**
- **Eg. The punjab itself is made up of two words**

  Punj – Five , ab- water

  land between five rivers.



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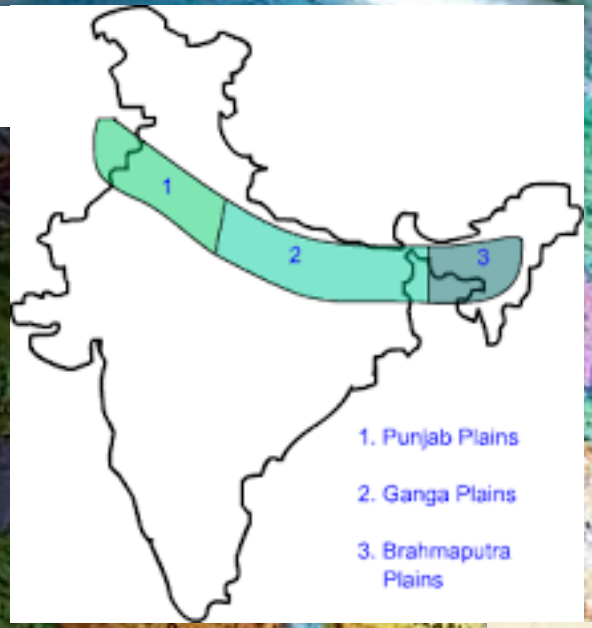

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Divisions of Northern Plain

Ganga Plains

- Extends between Ghaggar and Teesta rivers.
- It spreads over the state of Haryana, Delhi, UP, Bihar, partly in Jharkhand and West Bengal.

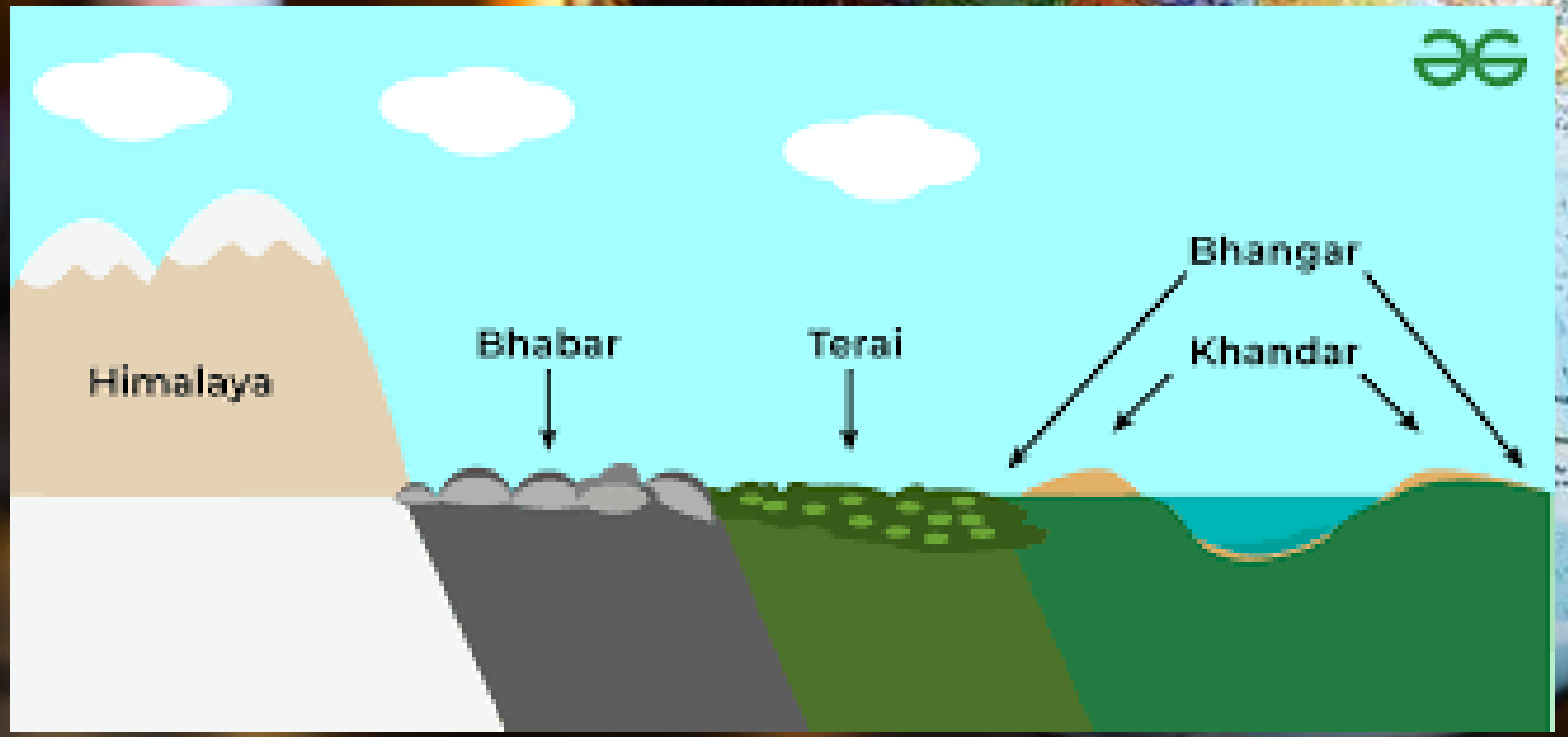
Brahmaputra Plain

- East to the Ganga plains lies the Brahmaputra plain.
- Covers most of the Assam and states of Northeast.
- Drained by Brahmaputra River

Bhabar, Terai, Bhangar and Khadar

Apart from the divisions on the basis of area, northern plains can also be divided on the basis of diverse relief features.

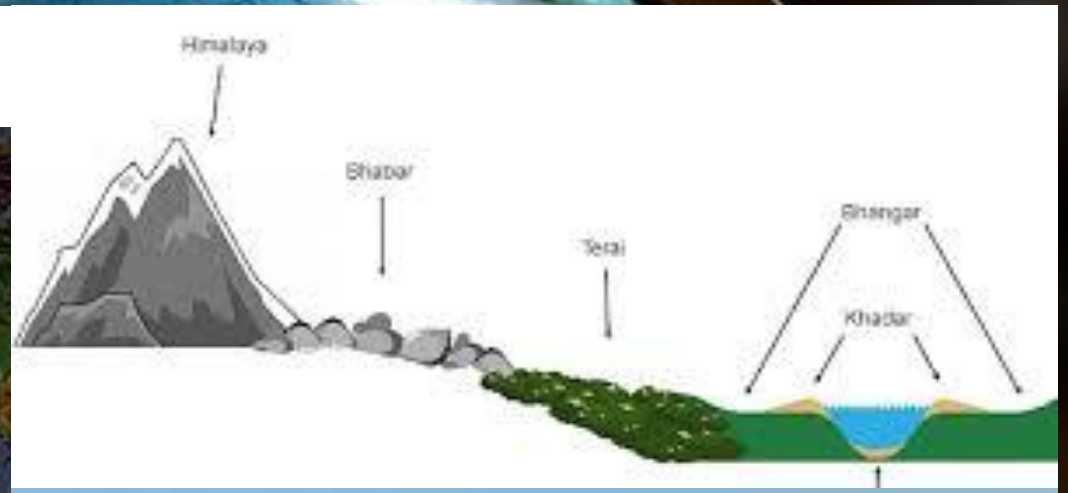
Northern plain is divided into four regions on the basis of relief features.



Bhabar, Terai, Bhangar and Khadar

BHABHAR

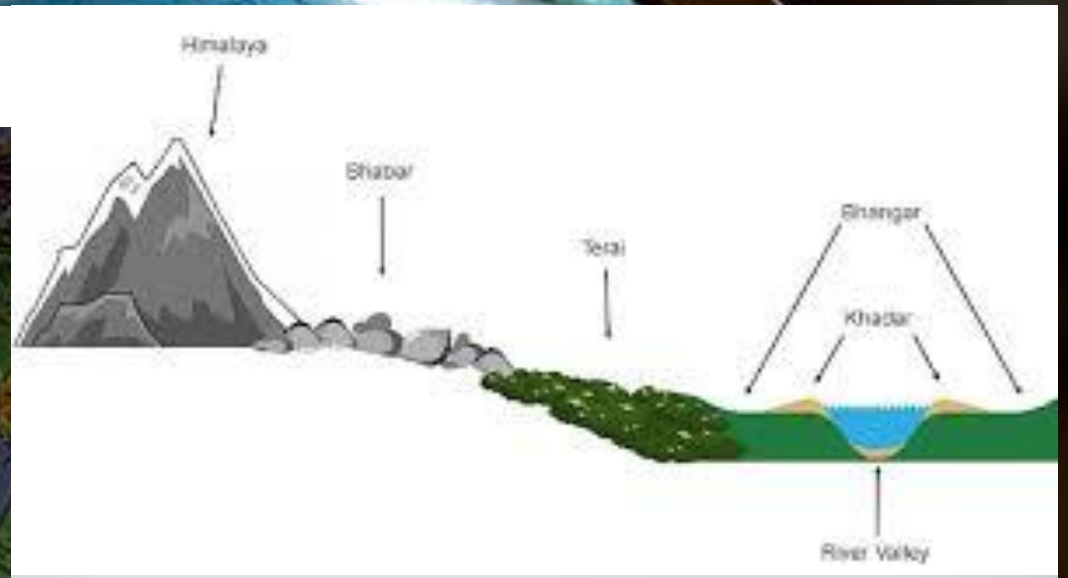
- Belt of about 8 to 16 km in width lying parallel to the slopes of Shiwaliks.
- The Bhabar area is comprised of pebbles which are brought down by rivers.
- Streams disappears in the Bhabar Belt



Bhabar, Terai, Bhangar and Khadar

TERAI

- South to the Bhabar belt lies Terai Region
- The wet swampy and marshy region where the streams and rivers re-emerge.
- The region is thickly forested and full of wildlife.
- Over the period of time forest have been cleared to create agricultural land and to settle migrants from Pakistan after partition.



Bhabar, Terai, Bhangar and Khadar

Bhangar

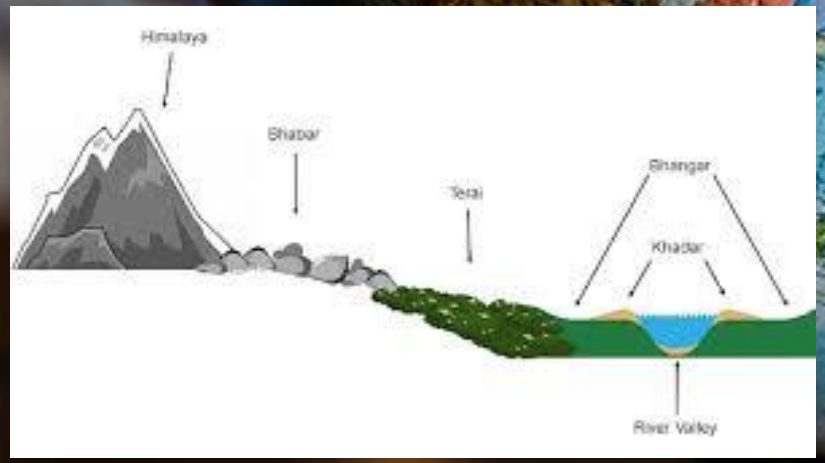
- Older alluvium.
- It lies above the floodplains of river

And present a terrace like feature.

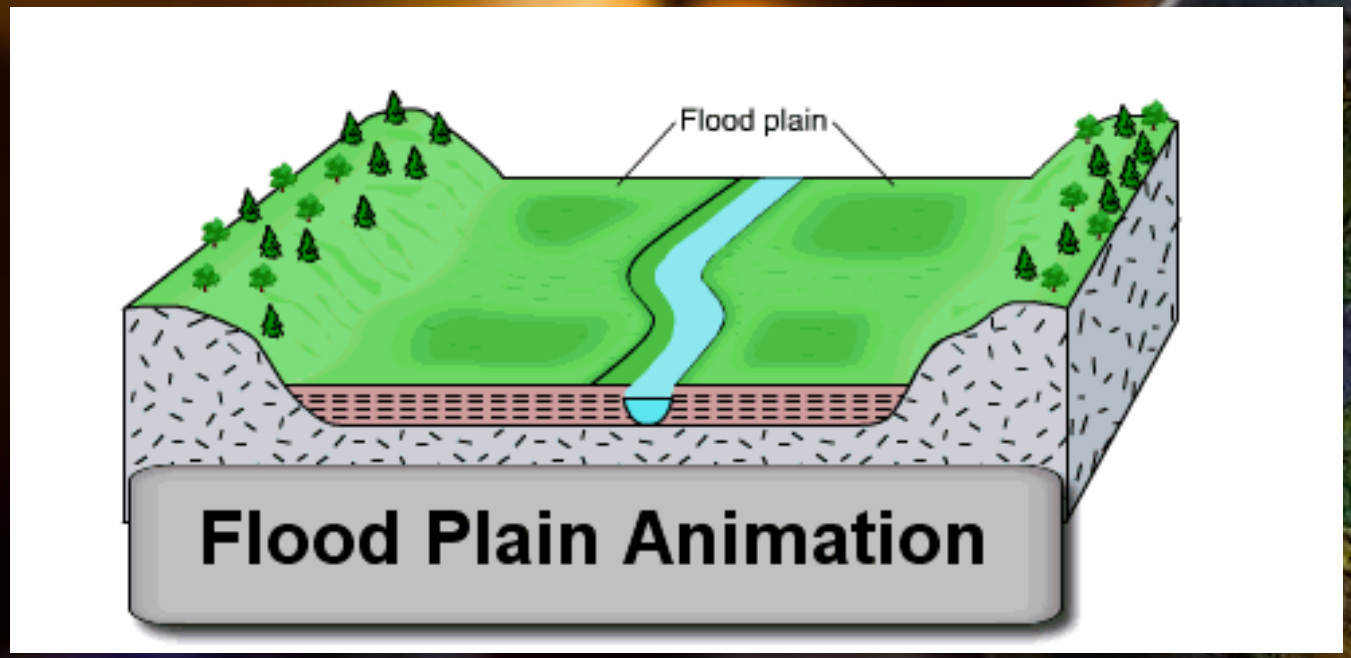
- The soil in this region contains calcareous deposits (Kankar)
- This is less fertile

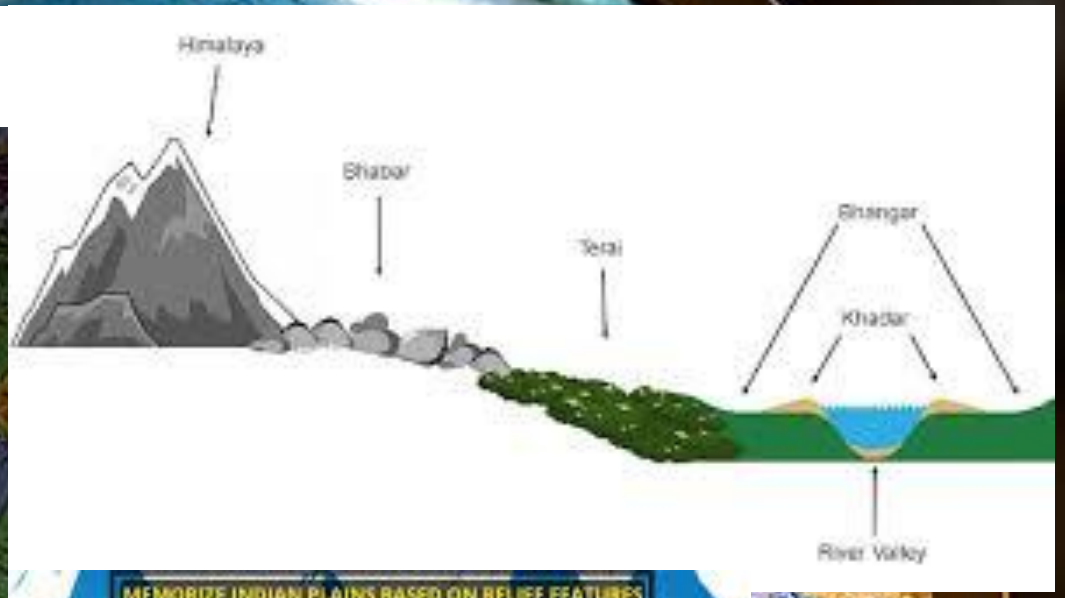
Khadar

- New and young alluvium.
- They are renewed almost every year.
- Very fertile
- Ideal for agricultures



Bhabar, Terai, Bhangar and Khadar





CALCAREOUS DEPOSITS

Khadar and Bhangar

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The Peninsular Plateau

What is Peninsular?

A landmass which is covered by water by three sides.

What is plateau?

A tableland like structure.

The Peninsular Plateau

- The tableland composed of old crystalline, igneous and metamorphic rocks.

- Formed due to the breaking and drifting of the Gondwana land.
- The peninsular plateau made up of black soil (Volcanic origin)
- The plateau has broad and shallow valleys and rounded hills.
- Two broad divisions of Plateau:

<u>Central Highlands and Deccan Plateau</u>

The Peninsular Plateau

Central Highland

- Part lying to the north of the Narmada river.
- Major part of Malwa plateau makes up the central highland
- Covered by Vindhya at north, Satpura at South and Aravali on the northwest.
- Rivers such as Chambal, the Sind, the Betwa and the Ken flow from its southwest to south east. (Indicating the slope)
- The Central highland are wider in the west but narrower in the east known as Bundelkhand and Baghelkhand.
- Chotanagpur plateau in eastward extension

The Peninsular Plateau

Deccan Plateau

- Triangular landmass lying south of the river Narmada
- Borders- Satpura (Northern Borders)
  Mahadev, Kaimur hills
  Maikal range(Eastern borders)
- Tilted towards east
  higher in West and slopes gently eastwards.
- An extension of these plateau is also found in North east (Meghalaya Plateau..)
- Western ghats and eastern ghats and marks western and eastern edges respectively.

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The Peninsular Plateau

Western Ghats

- Continuous and can be crossed through passes only
- Higher than eastern ghats, Average elevation is 900-1600 m
- They stretch from Tapi to the south of nilgiri hills.
- Western ghats cause orographic Rain.
- Height progressively increase from North to South
- Highest peak ANAMUDI (2695m)

EASTERN GHATS

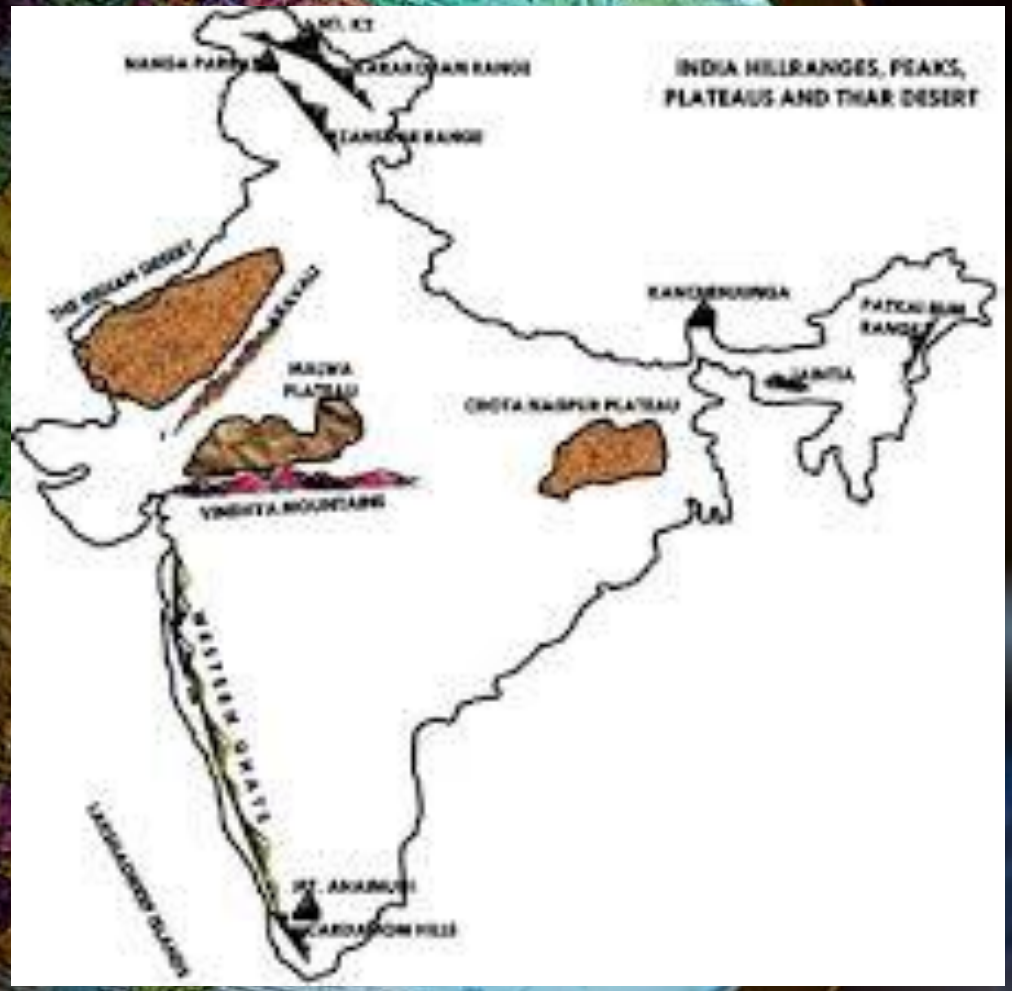
- Discontinuous. Irregular, bisected by rivers
- Average elevation is 600 m
- The eastern ghats stretch from the Mahanadi valley to the Nilgiri Hills
- L
- Highest peak – MAHENDRAGIRI (1501m)

The INDIAN DESERT

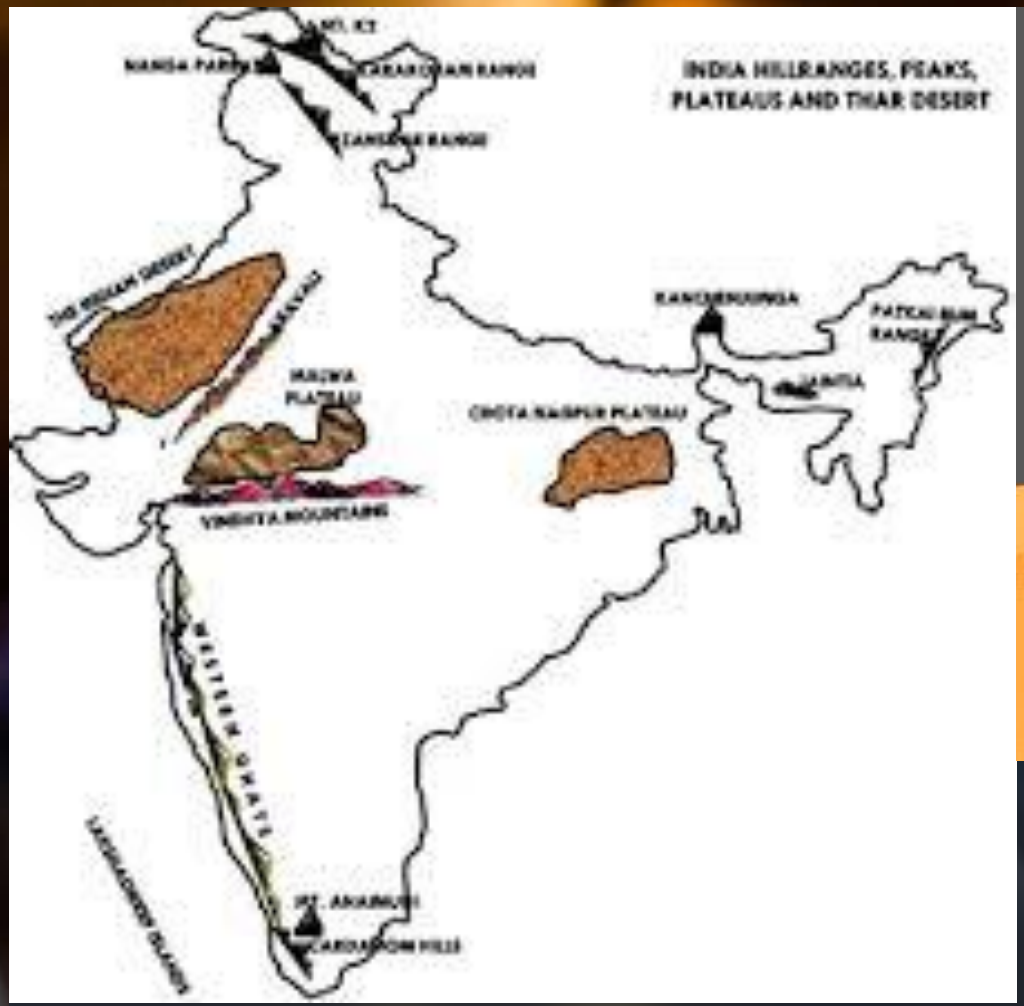
THAR DESERT

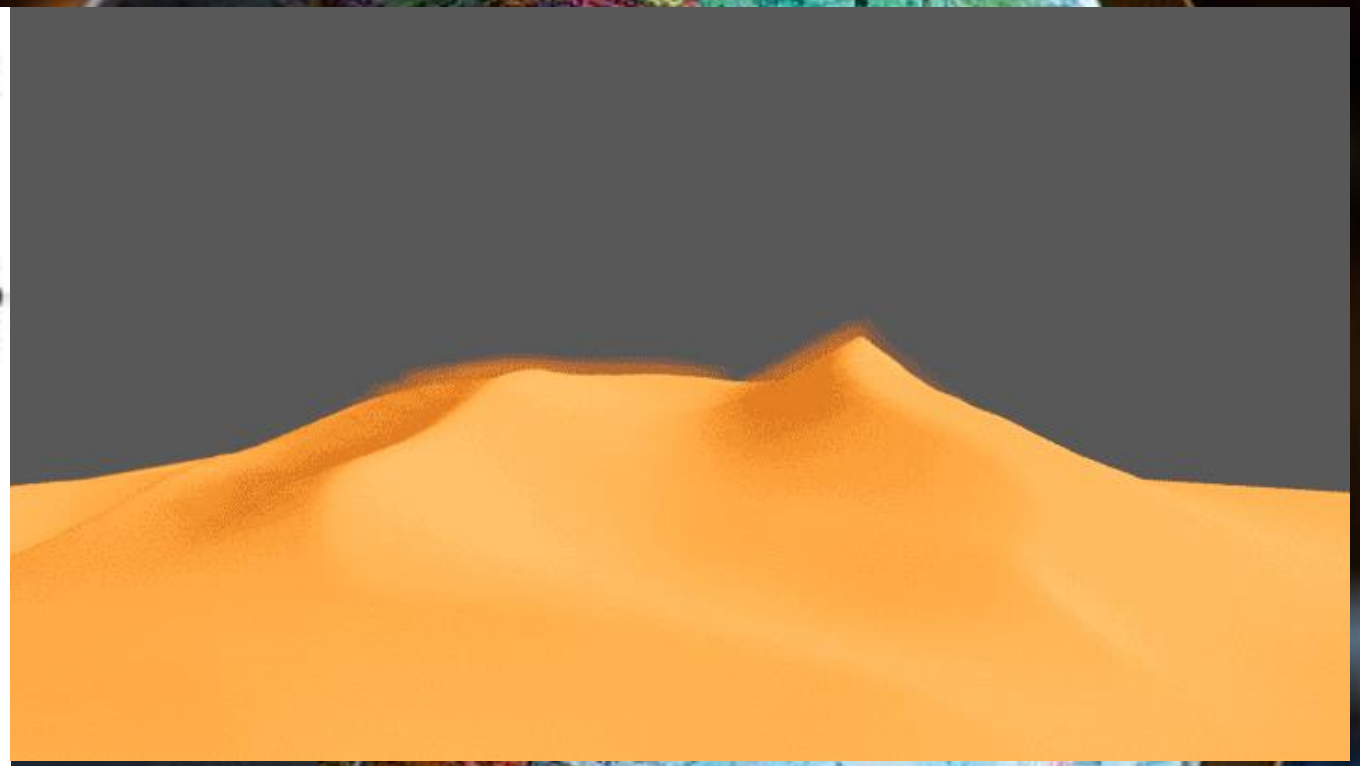
- The Indian desert lies towards the western margins of the Aravali Hills
- Undulating sandy plains, covered with sand dunes.
- This region receives low rainfall(below 150mm), streams appear during the rainy season and never reaches sea.

- LUNI is the only river in the this region
- It has arid climate with low vegetation.



The INDIAN DESERT



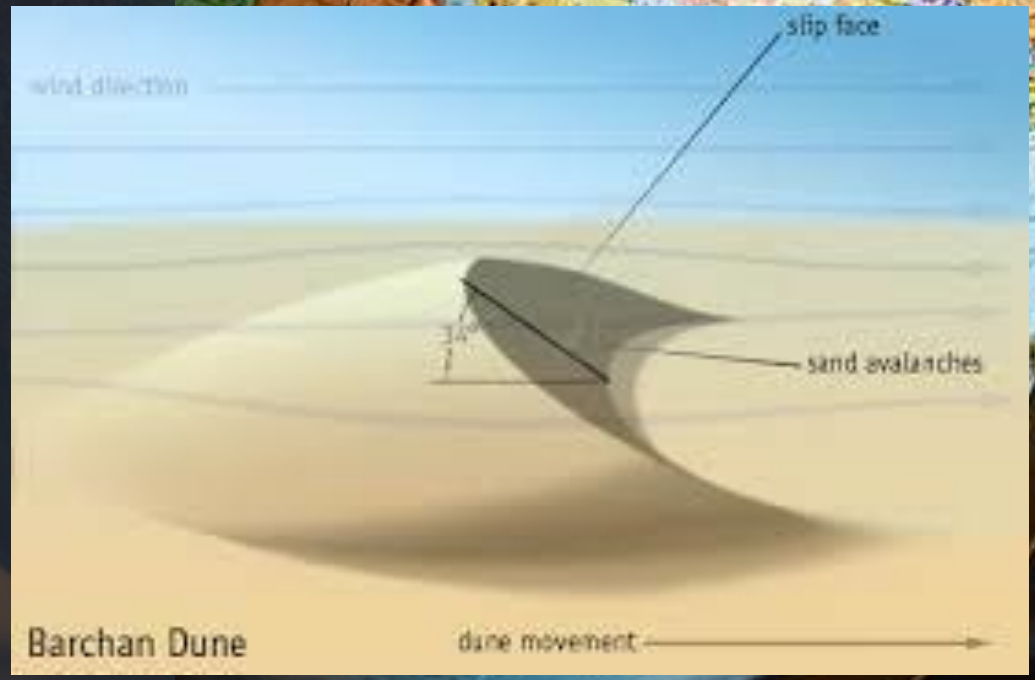


The INDIAN DESERT

BARCHANS

Another important features of the Indian Desert

- **Crescent shaped dunes found in the Thar Desert.**



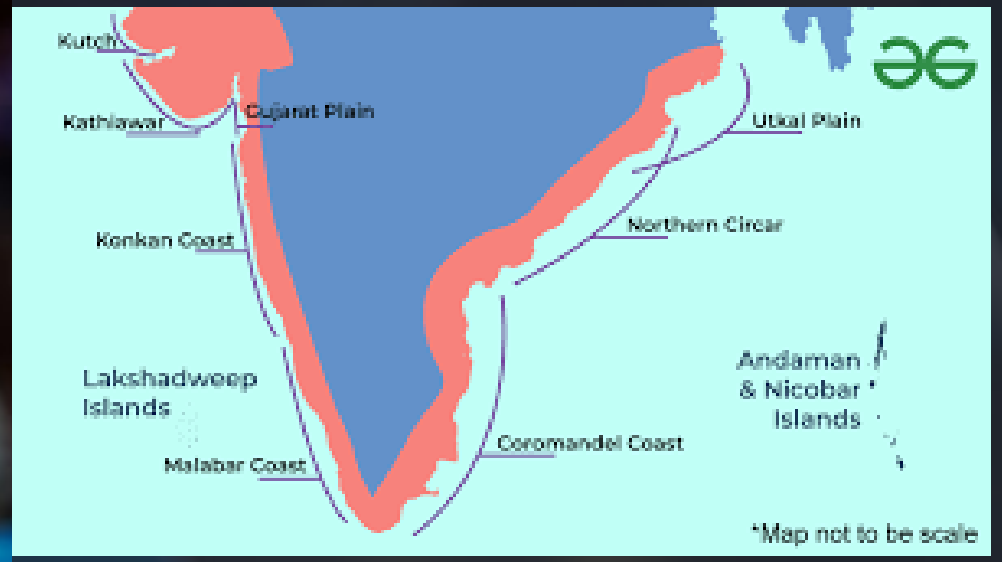
The COASTAL PLAINS

Stretch of Narrow Coastal Strips at the margin of peninsular plateau

These strips run along the Arabian sea on the west and Bay of Bengal on the East.

The COASTAL PLAINS

Western coastal plain	Eastern coastal plain
• Between the Arabian Sea and the Western Ghats	• Between the Bay of Bengal and the Eastern Ghats
• From the Rann of Kutchh to Kanyakumari	• From the Sundarban delta region to Kanyakumari
• Comparatively narrow	• Comparatively wide
• Can be divided into Gujarat coast, Konkan coast, and Malabar coast	• Can be divided into north Zircar plain and Coromandal coast
• Backwaters and esturies are seen	• Delta formation takes place



The Island

-Besides the vast mainland. The country has two groups of islands.

Lakshadweep islands

- Group lying close to the Malabar coast of Kerala.
- It is composed of small Coral Island.
- Earlier they were known as Laccadive, Minicoy and Amindivi (renamed in 1973)
- It covers small area of 32 sq km.
- Administrative headquater of these island is Kavaratti

ANDAMAN & NOCOBAR ISLAND

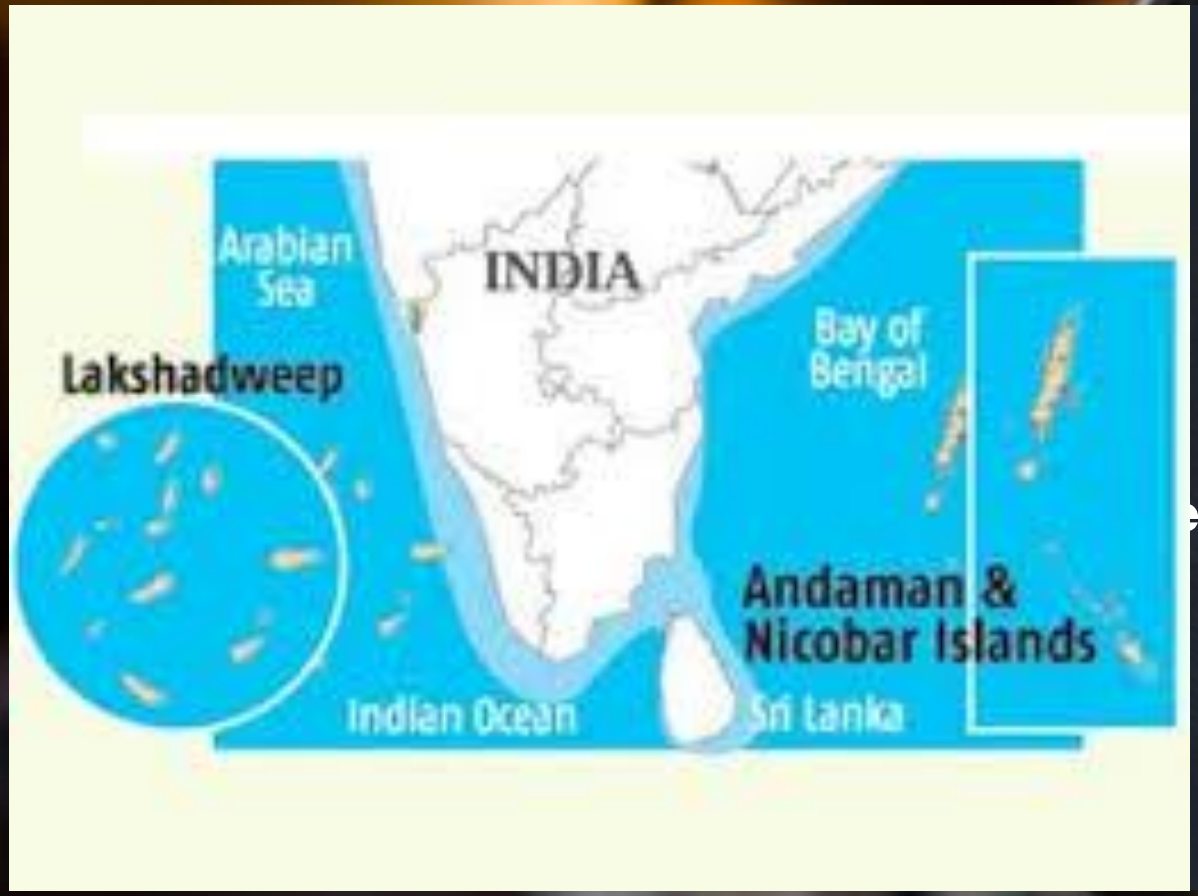
- Chain of island in the bay of Bengal.
- Entire group is divided into two broad categories.

a- Andaman in the North

B- Nicobar in the south

- It is believed that these islands are an elevated portion of submarine mountains.
- Equatorial climate and thick forest area.

The Island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INDIA
Bay of Bengal
Lakshadweep
Andaman & Nicobar Islands
Indian Ocean
Sri lanka


INDIA
States and Union Territories
TAJIKISTAN
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PAKISTAN
CHINA (TIBET)
NEPAL
BHUTAN
BANGLADESH
MYANMAR (BURMA)
LADAKH
Srinagar
Leh
JAMMU & KASHMIR
Jammu
HIMACHAL PRADESH
Shimla
PUNJAB
Dehradun
CHANDIGARH
UTTARAKHAND
HARYANA
DELHI
New Delhi
UTTAR PRADESH
Lucknow
Jaipur
RAJASTHAN
SIKKIM
Gangtok
Itanagar
ARUNACHAL PRADESH
Dispur
ASSAM
NAGALAND
Kohima
Shillong
MEGHALAYA
Imphal
MANIPUR
Agartala
TRIPURA
Aizawl
MIZORAM
BIHAR
Patna
JHARKHAND
Ranchi
WEST BENGAL
Kolkata
Gandhinagar
GUJARAT
Bhopal
MADHYA PRADESH
CHHATTISGARH
Raipur
Daman
DADRA & NAGAR HAVELI AND DAMAN & DIU
ODISHA
Bhubaneswar
BAY OF BENGAL
MAHARASHTRA
Mumbai
TELANGANA
Hyderabad
Amaravati
Yanam (Puducherry)
ARABIAN SEA
Panaji
GOA
ANDHRA PRADESH
KARNATAKA
Bengaluru
Chennai
Mahe (Puducherry)
PUDUCHERRY
LAKSHADWEEP (INDIA)
Kavaratti
KERALA
TAMIL NADU
Karaikal (Puducherry)
Palk Strait
Thiruvananthapuram
SRI LANKA
ANDAMAN & NICOBAR ISLANDS (INDIA)
Port Blair
International Boundary
State/UT Boundary
Country Capital
State/UT Capital
INDIAN OCEAN
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The Island

PITTI ISLAND, inhabited island in Lakshadweep has a bird sanctuary.

CORAL

- Short lived microscopic organism lives in colonies.
- They flourish in shallow, mudfree and warm water.
- They secrete calcium carbonate. Their skeleton makes up the REEFS

The Island

Coral reefs makes up the island.

Ex – Great Barrier Reef, Australia

ATOLLS

- Atolls are circular or coral reef

IMPORTANCE OF PHYSICAL FEATURES OF INDIA

The diverse physical features of India have immense future possibilities for development because of the following reasons.

- The mountains are the major sources of water and forest wealth.
- The northern plains are the granaries of the country. They provide the base for early civilisations.
- The plateau is a storehouse of minerals, which has played a crucial role in the industrialisation of India.
- The coastal region and island groups provide sites for fishing and port activities.