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SOCIAL STUDIES (GEOGRAPHY)
CHAPTER 02: PHYSICAL FEATURES OF INDIA
(Notes)

Glossary

Terai Zone:	*It is a Zone next to the Bhabar which is wet and marshy. It has a thick forest cover and a variety of wildlife.*
Bhabar	*Pebbles deposited by the Himalayan rivers, in a narrow belt of 16 km width running parallel to the slopes of Shivaliks, while descending from mountains*
Water divide:	*The upland that separates the flow of two rivers or river system.*
Delta:	*It is a triangular deposition of sediment at the mouth of a river. The river become slow at the mouth of the sea, so mud and silt settle down and from the delta.*
Estuary:	*It is a narrow deep valley at the mouth of a river where currents or tides are strong or the current of the river itself is swift.*
Tributary:	*A river which joins the main river and increase the volume of water.*
Plate Tectonic:	*The scientific concept which explains the movements of the different plates of the crust of the earth.*
Gondwana land:	*A major portion of the crust which once incorporated Australia, Peninsular India south Africa and south America.*
Tethys Sea:	*A narrow sea with a sinking bottom lying between Gondwana land in the south and Angara land in the north.*
Flood Plain:	*A plain formed by the sediment deposited by the rivers years after year.*
Bar:	*A deposit of sand or mud in the river channel.*
Levees:	*An elevated bank bordering the channel of a river and standing above the level of the flood plains.*
Lagoon:	*A salt water lake separated from the sea by the sandbars.*
Glacier:	*Slow moving rivers of snow & ice.*
Pass:	*A gap in mountain range providing a natural route across.*
Alluvial Plains:	*Flat low lying lands made of the alluvium.*
Diverging plate:	*Plates which are moving away from each other.*
Converging Plate:	*Plates which are coming together.*
Pernnial Rivers:	*Rivers which flow throughout the year.*
Fold mountain:	*The fold mountains formed during the most recent major phase of folding in the earth's crust.*
Coral Polyps:	*Coral polyps are short, lived microscopic organisms which live in colonies.*
A Distributary:	*A distributary is that river which originates from a main river. It is formed near the river's mouth before it falls into the sea.*
Gorge:	*The steep-sided narrow and deep valley of a river formed in its upper course is termed as a Gorge or a Canyon. It is also called an I – shaped valley. For example: The Brahmaputra gorge (5500m), and the Indus gorge.*
A Rift Valley:	*A rift valley is the valley which has been formed as a result of the subsidence (sinking) of the landmass between two blocks due to faulting.*
Sand dune:	*A mound ridge, or low hill of loose, windblown sand.*

- India has all major physical features of the Earth, i.e. mountains, plains, deserts, plateaus and islands.
- In India the soil colour varies from place to place as it is formed from different types of rocks.
- India has varied physical features whose formation can be explained on the basis of the 'Theory of Plate Tectonics'.

Chapter: Physical Features of India
Subject: Social Studies (Geography)
Class: IX

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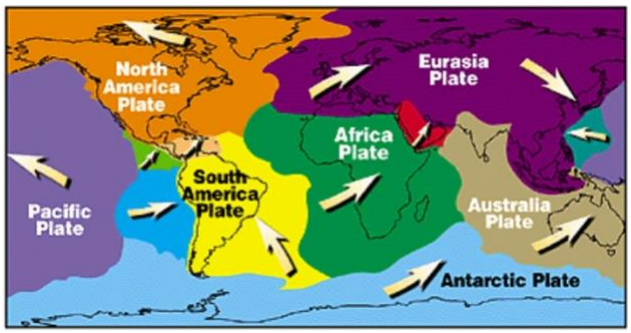
Theory of Plate Tectonics:

- The continental blocks or the plates are floating on mantle;
- The Crust (upper part) of the earth has been formed out of seven major and some minor plates. Following are the seven major plates:
  (i) African Plate
  (ii) Antarctic Plate
  (iii) Eurasian Plate
  (iv) Indo-Australian Plate
  (v) North American Plate
  (vi) Pacific Plate
  (vii) South American Plate

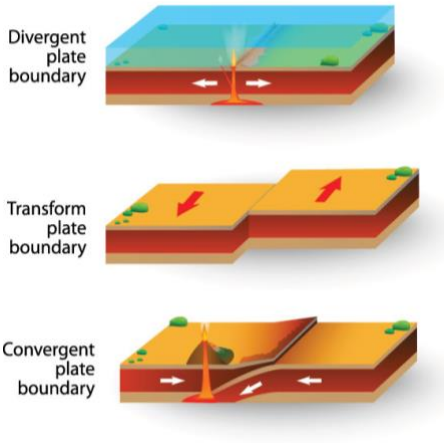
  They move with the change or release of pressure and temperature inside the earth.



a) **Folding:** Caused by compression, when blocks of landforms comes closer to each other, they form wrinkles or folds on the earth's surface. E.g. the young fold mountains "Himalayas";

b) **Faulting:** The structure of rocks cracks or breaks along the weaker areas due to tension, this is called faulting. This may cause upliftment and subsidence of land and can form Block Mountains. E.g. Vindhyas and Satpura hills. When a part of land subsides between two faults, it forms Rift Valley. Narmada & Tapti Rivers flow through the Rift Valley;

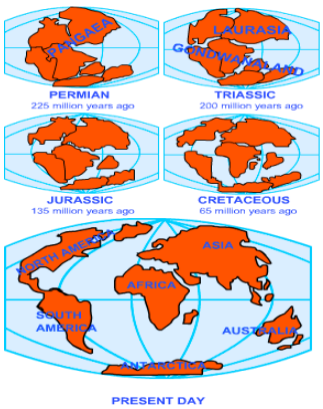
c) **Volcanic Activities:** Natural openings in the earth's crust through which molten materials, rocks, ashes, gases, etc are thrown out are called 'Volcanoes'.



The tectonic plate theory describes the large scale motion of the earth's lithosphere. This theory is based on **continental drift** which explains the formation of various continents over millions of years; as we see them today. According to this theory, the upper part of the earth (crust) is made up of 7 major and some minor plates. The movement of the plates results in folding, faulting, and volcanic activity. There are 3 plates movements:

(a) Convergent Boundary - When two adjacent plates come towards each other convergent boundary is formed
(b) Divergent Boundary - When two adjacent plates move away from each other divergent boundary is formed.
(c) Transform Boundary - When two plates move along the borders, they may either collide or crumble or one may slide under the other.

Continental Drift Theory:

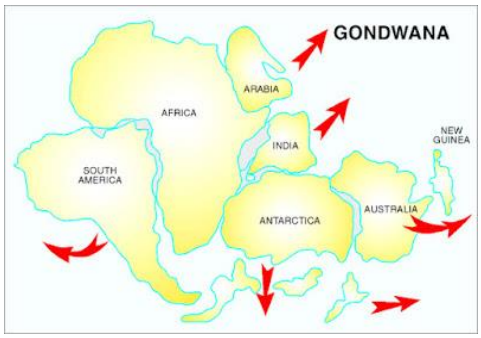


- According to the theory of Continental Drift, the world was made up of a single continent through most of geologic time. That continent eventually separated and drifted apart, forming into the seven continents we have today. The first comprehensive theory of continental drift was suggested by the German meteorologist **Alfred Wegener** in 1912;
- Millions of year also there was a single continent named "**Pangaea**". Pangaea broke into pieces due to internal forces and is drifting away from each other since last almost 225 million years;
- Two landmasses – **"Laurasia in North"** and **"Gondwanaland in South".** The Gondwanaland included the modern-day India, Australia, South America, South America and Antarctica;
- Both the landmasses were separated by a shallow sea called **"Tethys Sea"**;

- Size of Tethys sea kept on decreasing due to movement of landmasses towards each other, thus, resulting in the formation of the young fold mountains **"Himalayas"**.

Formation of India

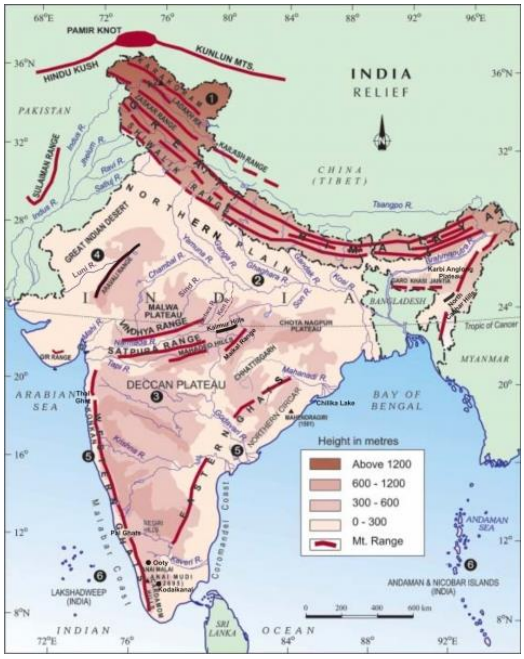
- The Indian Peninsula drifted towards the north and finally collided with the much larger Eurasian Plate.
- As a result of this collision, the sedimentary rocks which were accumulated in the geosynclines (known as Tethys) got folded and formed the mountain systems of the West Asia and Himalaya
- Due to the uplift of the Himalayas in the Tethys Sea, the northern part of the Indian Peninsula got subsided and formed a large basin. That basin was filled with sediments from the rivers which came from the mountains in the north and from the peninsula in the south.



- Thus, the northern plains of India came into existence. These plains are made up of alluvial deposits.
- The Peninsular plateau is known as the old topography, whereas the Himalayas and the Northern plains are considered as new topography.
- The Peninsular plateau is composed of igneous and metamorphic rocks with gently rising hills and wide valleys.

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



1. The Himalayan Mountains

1) The Himalayas are young-fold mountains which are the loftiest and one of the most rugged mountain barriers of the world.

2) The Himalayas are 2400km long, 400km to 150km wide from Kashmir to Arunachal Pradesh respectively. The altitudinal variations are greater in the eastern part than in the western part.

3) The Himalayas have three parallel ranges in the longitudinal extent namely:

   a) <u>Great or Inner Himalayas or Himadri</u>
   - This is the northernmost range and is also known as 'Himadri'.
   - It is the most continuous range containing the loftiest peaks. The average height of peaks in this range is 6,000 meters.

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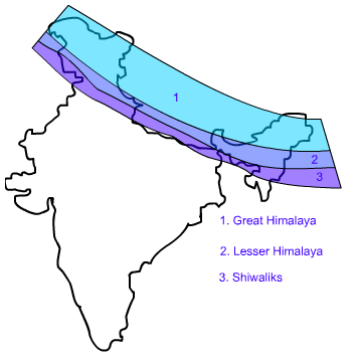
- All the prominent Himalayan peaks are in this range.
- The folds of the Great Himalayas are irregular in nature.
- The core of this part is composed of granite.
- Because of the lofty heights, the peaks of this range are perennially covered with snow.
- Famous glaciers like the Siachen Glacier, the Gangotri and Yamunotri, etc.

Some of the highest peaks of the Himalayas are: -

Peak	Country	Height (in Mtrs)
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



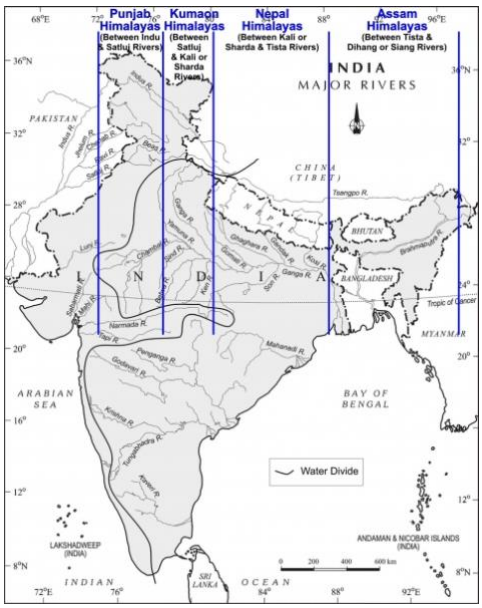
b) Middle Himalayas or Himachal

- This range lies towards the south of the Great Himalayas.
- The altitude of peaks in this range varies from 3,700 to 4,500 meter.
- Average width of this range is 50 km.
- This range is mainly composed of highly compressed and altered rocks.
- The most important mountain range here is the Pir Panjal mountain range and it is the longest range.
- Dhaula Dhar and Mahabharat mountain ranges are also important ranges of lesser Himalayas.
- All great valleys like Kashmir Valley, Kangra Valley, Kullu Valley are present here.
- This region is also known as for its hill stations (for e.g. Kullu,-Manali, Kufri, Shimla, Mussoorie, Nanital, etc.).

c) Outer Himalayas or the Shivaliks

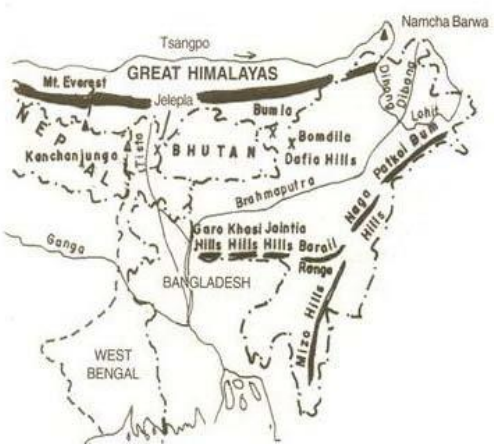
- The outermost range of the Himalayas is known as Shiwaliks, also known as Manak Parbat in ancient times.
- The altitude varies between 900 and 1100 meters in this range.
- The width varies between 10 to 50 km.
- These ranges are composed of unconsolidated sediments brought down by the rivers.
- The longitudinal valleys lying between the Himachal and Shiwaliks are called '**Dun**'.
- Unlike typical river valleys, duns have a structural origin and are covered with boulders and gravel originating from the erosion of the Himalayas and the Shiwalik uplands. Major duns found in the region are Dehra, Kothri, Chaukham, Patli and Kota. The dun of Dehra is the biggest with a length of 35 km and width of 25 km.

4) Himalayan Regions from West to East



- Himalayas have also been divided on the basis of regions from west to east. The division has been done on the basis of the rivers flowing in the himalayan regions. Following is the division:
- Punjab Himalayas: This part lies between the Indus and Sutlej. They are also known as Kashmir Himalaya and Himachal Himalaya.
- Kumaon Himalayas: This part lies between Sutlej and Kali rivers.
- Nepal Himalayas: This part lies between the Kali and Tista rivers.
- Assam Himalayas: This part lies between the Tista and Dihang rivers.
- *Some regional names of Himalayas are: - Sagarmatha Himal , Annapurna Himal , Ganesh Himal, Langtang Himal, Manaslu Himal , Rolwaling Himal, Jugal Himal, Gauri Sankar Himal, Kanjirowa Himal, Khumbu Himal, Dhaulagiri Himal, Purvachal, etc.*

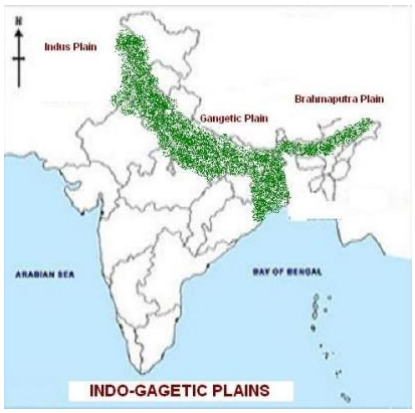
5) Eastern hills and mountains



- The Brahmaputra marks the eastern border of the Himalayas.
- Beyond the Dihang gorge, the Himalayas bend sharply towards south and form the Eastern hills or Purvachal.
- These hills run through the north eastern states of India.
- They are mostly composed of sandstones (i.e. Sedimentary rocks).
- These hills are covered with dense forest.
- These hills are composed of the Patkai Hills, Naga Hills, Manipuri Hills and Mizo Hills.

2. The Northern Plains

(i) The northern plain of India is formed by three river systems, viz. the Indus, the Ganga and the Brahmaputra; along with their tributaries. This plain is composed of alluvial soil which has been deposited over millions of years.



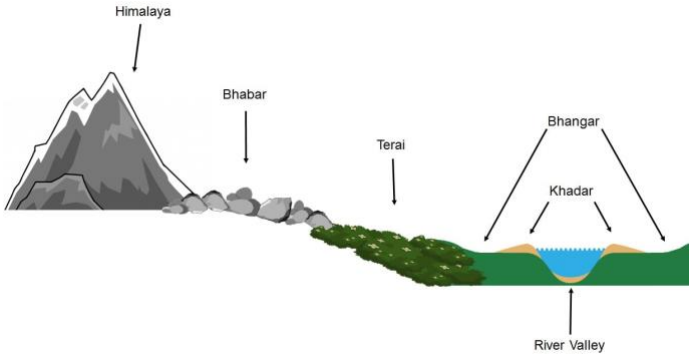
(ii) The Northern Plains spread over an area of 7 lakh sq. km, 240 km long and 240 km to 320 km broad. The rivers that flow to the plains from the mountains are involved in depositional work.

(iii) The northern plain is divided into three sections, viz. the Punjab Plain, the Ganga Plain and the Brahmaputra Plain.

- **Punjab Plains:** The Punjab plains form the western part of the northern plain. This is formed by the Indus and its tributaries; like Jhelum, Chenab, Ravi, Beas and Sutlej. A major portion of this plains is in Pakistan. Doabs abound in this plain.

- **Ganga Plains:** This plain extends between Ghaggar and Tista rivers. The northern states, Haryana, Delhi, UP, Bihar, part of Jharkhand and West Bengal lie in the Ganga plains.
- **Brahmaputra Plains:** This plain forms the eastern part of the northern plain and lies in Assam.

(iv) Based on the relief features; the northern plain can be divided into four regions, viz. bhabar, terai, bhangar and khadar;



1) Bhabar:

- After descending from the mountains, the rivers deposit pebbles in a narrow belt;

- The width of this belt is about 8 to 16 km;
- It lies parallel to the Shiwaliks;
- Bhabar is the gently-sloping coarse alluvial zone below the Siwalik Hills (outermost foothills of Himalayas) where streams disappear into permeable sediments. The underground water level is deep in this region.

2) Terai:

- The terai region lies towards south of the bhabar belt;
- In this region, the streams reappear and make a wet, swampy and marshy region;
- This region was full of forest and wildlife but after partition all this area was cleared and was converted into agricultural land for the settlement of the migrants.

3) Bhangar:

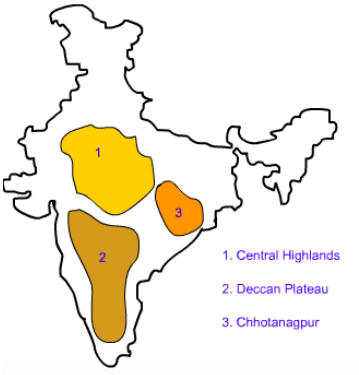
- Bhangar is the largest part of the northern plain and is composed of the oldest alluvial soil;
- They lie above the flood plains. They resemble terraces;
- The soil of this region is locally known as kankar and is composed of calcareous deposits.

4) Khadar:

- The floodplains formed by younger alluvium are called Khadar;
- The soil in this region is renewed every year and is highly fertile;
- This region is very suitable for intensive agricultural activities.

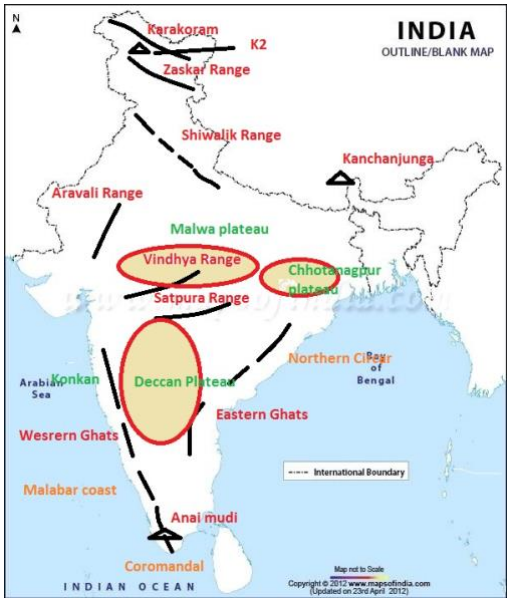
3. The Peninsular Plateau

(i) The peninsular plateau is a tableland which contains igneous and metamorphic rocks.
(ii) It is composed of the oldest rocks because it was formed from the drifted part of the Gondwana land.
(iii) Broad and shallow valleys and rounded hills are the characteristic features of this plateau.
(iv) The plateau can be broadly divided into two regions, i.e. the Central Highlands and the Deccan Plateau.



(v) One of the important features of the peninsular plateau is the black soil area which is known as the Deccan Trap.
(vi) This black soil originated from the volcanic eruption. Thus, it has igneous rocks.

The Central Highlands:



- The Central Highlands lies to the north of the Narmada river.
- It covers the major portion of the Malwa plateau.
- It is located in the north of Narmada river, Vindhya ranges in the South and Aravalis in the North West;
- It covers Malwa plateau, Bundelkhand, Baghelkhand and Chhotanagpur plateau;
- The rivers in this region flow from southwest to northeast (i.e. Chambal, Sind, Betwa, Ken, Son, etc.); which indicates the slope of this region;
- It is wider in the west and narrower in the east;
- Bundelkhand and Baghelkhand mark the eastward extension of this plateau;
- The plateau further extends eastwards into the Chhotanagpur plateau.

The Deccan Plateau:

- Deccan Plateau is a triangular mass lies to the south of the Narmada river;
- The slope of the Deccan Plateau is from west to east;
- Most of the rivers flow from west to east;
- It is located in the north of Satpura range while the Mahadev, Kaimur Hills and Maikal range make its eastern part;
- It extends into the north east which encompasses Meghalaya, Karbi-Anglong Plateau and North Cachar Hills;
- Garo, Khasi and Jaintia hills are the prominent ranges; starting from west to east.

Western Ghats & Eastern Ghats:

- Western Ghats stretch from the Tapi River to Kanayakumari. But The Eastern Ghats stretch from Mahanadi Valley to the Nilgiris in the south.
- Western Ghat's average width is 50 to 80 km. But Eastern Ghat's width varying from 100 to 200 km.
- Western Ghats is source of many large rivers But no big river originates from the Eastern Ghats.
- Western Ghats are continuous and can be crossed through passes only. But Eastern Ghats has been divided into several parts by large rivers.
- Western Ghats average elevation is 900 to 1,600 meters But the average elevation of Eastern Ghats is about 600 metres above sea level.
- Highest Peak of Western Ghats: Anai Mudi (2695 meters).
- Highest Peak of Eastern Ghats: Mahendragiri (1501 meters).
- Western ghats receives orographic type of rainfallal. South-west monsoons coming from the Arabian Sea and causes heavy rainfall. Eastern Ghats is almost parallel to the monsoons coming from the Bay of Bengal and does not cause much rainfall.

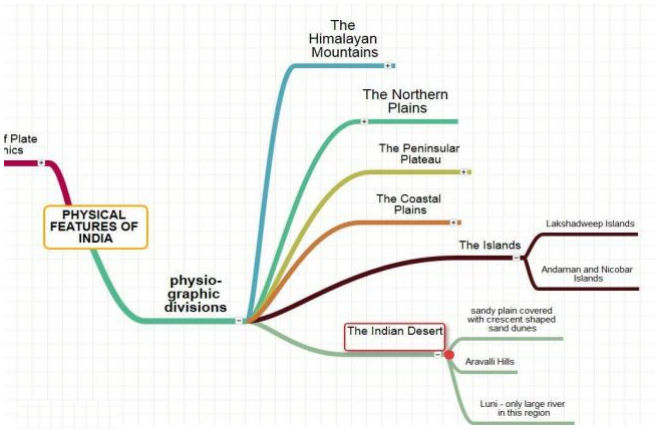
4. The Indian Desert

(i) The undulating sandy plain covered with sand dunes towards the western margins of the Aravalli Hills is the Indian Desert.

(ii) Crescent shaped dunes called barchans cover large parts of the Indian Desert.

(iii) This region gets scanty rainfall which is less than 150 mm in a year. Hence they climate is arid and vegetation is scanty.

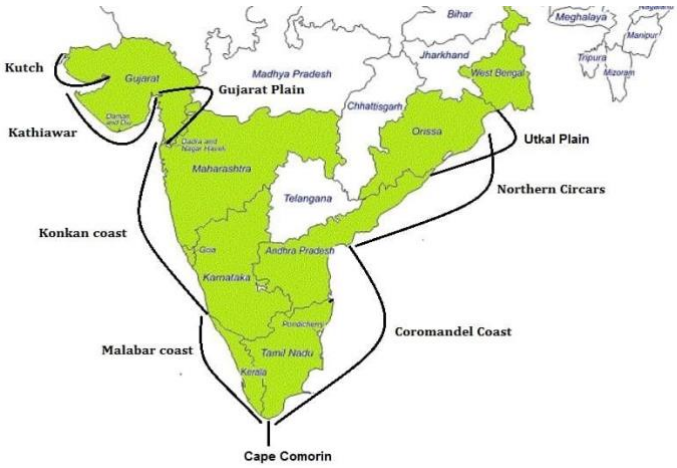
(iv) Luni is the only large river in this region.



5. The Coastal Plains

(i) The Western Coastal Plains is a thin strip of coastal plain with a width of 50km between the Arabian Sea and the Western Ghats.

(ii) It is divided into three sections. The Konkan; (Mumbai – Goa) in the north. The Kannada Plain makes the central part and the Malabar coast stretches in the south.



(iii) The Eastern Coastal Plains is a strip of coastal plain with a width of 100 - 130km between the Bay of Bengal and the Eastern Ghats

(iv) It is divided into two parts. The northern part is called Northern Circar. The southern part is called the Coromandel Coast.

(v) Extensive deltas are formed by large rivers like Mahanadi, Godavari, Krishna and Kaveri.

(vi) Chilika lake is an important feature along the eastern coast. It is the largest salt water lake in India.

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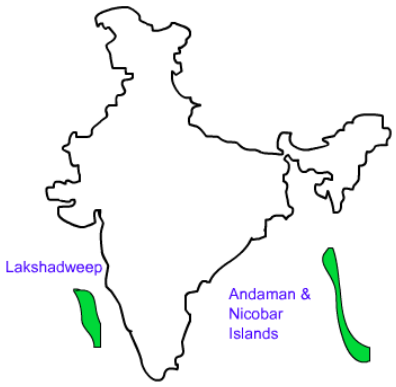
6. The Islands

India has two group of islands (i.e. Lakshadweep in the Arabian Sea and Andaman & Nicobar Islands in the Bay of Bengal).

(i) The Lakshadweep Islands (small group of 36 coral islands) covers an area of 32 sq.km. It got its name in the year 1973. The administrative headquarters of Lakshadweep is at Kavaratti Island. This group of islands is rich in terms of biodiversity (flora & fauna);



(ii) The Andaman & Nicobar Islands are located in the Bay of Bengal. These islands are bigger in size and has more number of islands. This group of 572 islands is divided into two groups. The Andaman is in the north and the Nicobar is in the south.

These islands are located close to equator and thus, experience equatorial type of climate and also have thick forest cover. These islands too have rich biodiversity (flora & fauna).