Physiography of India:

Major Physiographic Divisions and Significance

Explore the diverse physiography of India with its six distinct divisions. Discover detailed information on physical features, mapping, and the significance of India's geographical landscape

Physiography of India

India stands as one of the world's oldest and most advanced civilizations, boasting a unique cultural identity. It stretches from the snow-capped peaks of the Himalayas in the north to the sun-soaked coastal communities in the south, with lush tropical forests lining the southwestern coastline. The eastern part features the verdant Brahmaputra river, while the western region encounters the expansive Thar Desert.

The Indian mainland's longitude ranges between 8°4′ and 37°6′ north, while its latitude spans from 68°7′ East to 97°25′ East. This configuration results in a longitudinal extension of 2933 km from east to west and a latitudinal stretch of 3214 km from north to south.

At a latitude of 23°30′ north, the Tropic of Cancer neatly divides India into two equal halves – Northern India and Southern India. Along this significant circle of latitude lie the states of Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, West Bengal, Tripura, and Mizoram.

The western and eastern extremities of the country differ by approximately two hours due to a 30-degree variance in longitude. Positioned at 82°30′ East, the Standard Meridian lies at the heart of the nation. The Indian Standard Time is set here, which is 5 and a half hours ahead of GMT. This Meridian's trajectory runs through Mirzapur in Uttar Pradesh, near Allahabad.

What is Physiography?

Physiography refers to the physical geography or the natural features and characteristics of a land or region. It involves the study and description of the physical aspects of the Earth's surface, including landforms, terrain, climate, vegetation, and water bodies. Physiography provides insight into the natural landscape and how it has been shaped over time by geological, hydrological, and atmospheric processes.

Physiographic Divisions of India

ndia is a country with a wide range of physical features. These features have led to the classification of India into six distinct physiographic divisions, each characterized by its own unique geographical characteristics.

- Northern Plain
- Peninsular Plateau
- Indian Desert
- Islands
- Northern and North-eastern Mountain
- Coastal Plains

Northern Plains Physiology of India

The Indus, Ganga, and Brahmaputra rivers have carried and deposited alluvial materials that formed them. Spanning 3200 km from east to west in Indian Physiography, the Northern Plains hold a prominent place. Remarkably, the alluvial deposits can be found up to 2000 kilometres beneath the surface.

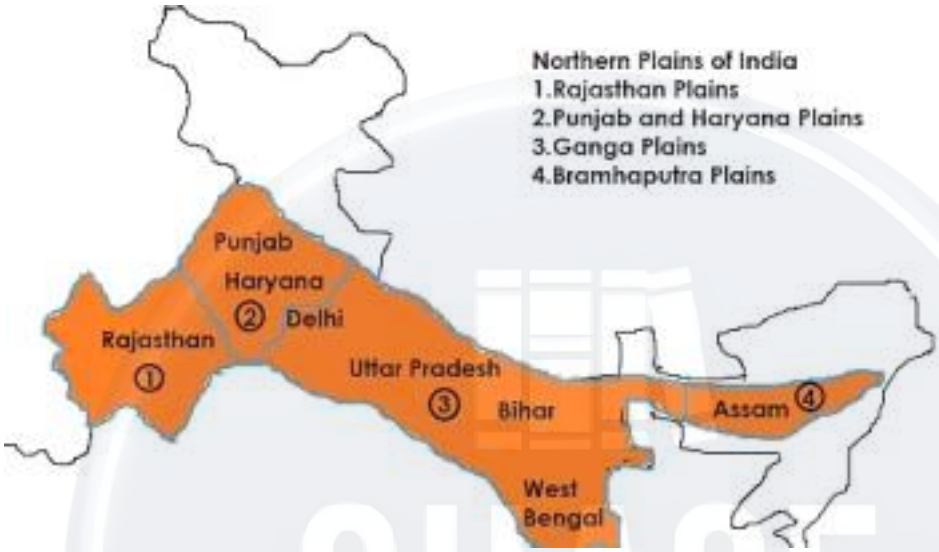
In this region, there's a sequence of geographical features:

1. **Bhabar:** It's a narrow strip near the Shiwalik foothills with a steep slope where the rivers emerge from the mountains.
2. **Tarai:** Located just south of Bhabar, Tarai lacks a well-defined channel and is marked by dense natural vegetation.
3. **Alluvial Plains:** Situated south of the Tarai, this area has fully developed landforms resulting from the erosion and deposition by rivers. You can spot features like sand bars and meanders here.

Within the alluvial plains, there are two divisions:

- **Khadar:** This is the region that gets flooded during monsoons. It's marked by new alluvium deposits that enrich the soil.
- **Bhangar:** Unlike Khadar, Bhangar doesn't get flooded often. The soil here is older and more consolidated.

These divisions showcase the gradual transition from the foothills to the flat plains, each with its own distinct characteristics and geographical significance.



Peninsular Plateau

The biggest natural land area in India is the Peninsular Upland. It's like a lopsided triangle and mostly sits between 600 to 900 meters above the ocean level. The outside borders of this Peninsular plateau are marked by the Delhi Ridge in the northwest (kind of an extension of the Aravallis), the Raj Mahal Hills in the east, the Gir Range to the west, and the Cardamom Hills in the south. The Shillong and Karbi-Anglong plateau are a continuation towards the northeast.

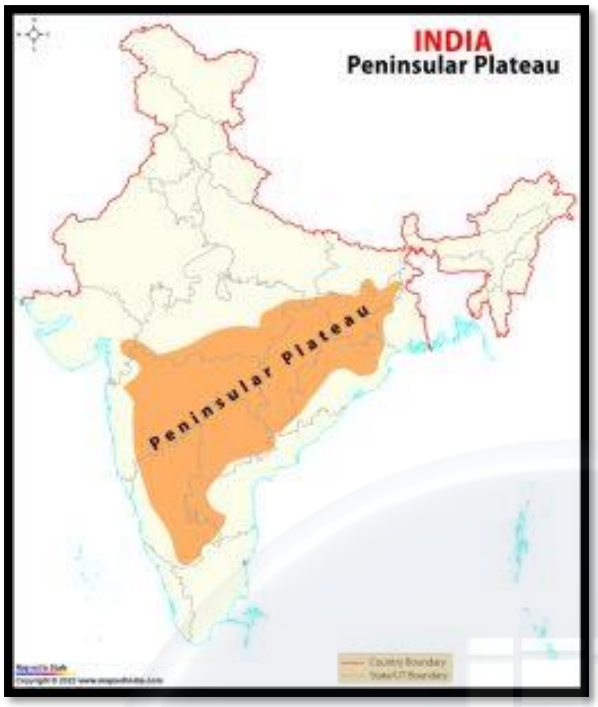
The Peninsular plateau is a part of India's oldest and most steady landmass, shaped by the breaking and shifting of the Gondwana landmass. Its structure is made up of old crystalline, igneous, and metamorphic rocks.

Peninsular India is formed of several plateaus, like the Hazaribagh, Palamu, Ranchi, Malwa, Coimbatore, and Karnataka plateaus. This region has gone through phases of rising and sinking, along with cracks and fractures in the Earth's crust. This has caused the landscape of the Peninsular Plateau to change. In the northwest of the plateau, there are rugged terrains with canyons and deep valleys. The three main valleys are Chambal, Bhind, and Morena.

One distinctive feature of the Peninsular Plateau is the Deccan Trap, an area with dark soil. The rocks in these regions are igneous because they came from volcanic activity. Over time, these rocks have worn down to create the black soil.

The Peninsular Plateau can be divided into three main parts based on its landscape:

1. **Central Highlands:** These are a significant part of the Malwa plateau, located north of the Narmada river. The Vindhyan range and the Aravallis encircle the Malwa Plateau on both sides. The Aravallis are some of the world's oldest folded mountains. The highest point is Guru Sikhar at 1722 meters. The Satpura range borders the Vindhyan range in the south. The northern edge of the Deccan plateau is formed by this range.
2. **Deccan Plateau:** To the south of the Narmada River, there's a triangular piece of land called the Deccan Plateau. The Satpura range bounds its northern side, while its eastern extensions include the Mahadev, Kaimur Hills, and Maikal range. The Deccan Plateau rises gently to the east and is higher in the west. It continues northeast, where it's known as the Meghalaya Plateau, North Cachar Hills, and Karbi-Anglong Plateau. It's separated from the Chotanagpur Plateau by a fault. The Khasi, Garo, and Jaintia Hills are three ranges that stretch from west to east.
3. **North-Eastern Plateau:** This is an extension of the main peninsular plateau. A significant fault likely formed between the Meghalaya plateau and the Rajmahal hills due to the north-eastward movement of the Indian plate during the Himalayan formation. This depression was eventually filled by sediment deposition from multiple rivers. This is when the plateaus in Meghalaya and Karbi-Anglong separated from the main peninsular block. The Garo, Khasi, and Jaintia hills are parts of the Meghalaya plateau, named after the local ethnic groups living there. The Assamese Karbi Anglong highlands show a similar pattern.



Indian Desert

A desert can be defined as a dry area where more water is lost through evaporation than gained through precipitation. Rajasthan is the location of more than 60% of the Thar Desert, which is often referred to as the Great Indian Desert. Some key facts about this desert are as follows:

The Thar Desert, also known as the Great Indian Desert, is situated to the northwest of the Aravalli Hills. It consists of a rolling landscape with long, crescent-shaped dunes called longitudinal barchans, as well as scattered individual dunes.

The region receives very limited rainfall, generally less than 150 mm per year. This results in a dry climate and sparse vegetation. It's often called Marusthali due to these unique characteristics.

During the Mesozoic era, it's believed that this area was once underwater. Evidence for this can be found in the Akal's wood fossils park and sea deposits near Brahmsar, both located close to Jaisalmer. These wood fossils are estimated to be around 180 million years old on average.

While the desert's surface features have been shaped by weathering processes and the effects of wind, its underlying rock structure is connected to the Peninsular Plateau.

The Thar Desert showcases distinct geographical features such as mushroom rocks, oases, and shifting sand dunes.

Geographically, the desert can be divided into two halves based on its orientation: the southern part faces the Rann of Kachchh, while the northern part slopes toward Sindh.

The Luni River is the primary significant river that flows through the southern portion of the desert, reaching the Arabian Sea through the Rann of Kutch. In the desert, there are certain water bodies that temporarily flow before eventually drying up and joining a lake or playa. This illustrates a common phenomenon of inland drainage. The main source of salt in the area comes from the brackish water present in these lakes and playas.

Islands in India

India's landscape includes two significant groups of islands situated in the Arabian Sea and the Bay of Bengal. The Andaman and Nicobar Islands group, located in the Bay of Bengal, consists of a total of 204 islands. These islands are separated by the "Ten Degree Channel," with the Andaman Islands to the north and the Nicobar Islands to the south. These island coastlines are marked by picturesque coral reefs and beautiful beaches. The vegetation on these islands is of the equatorial type. In the Arabian Sea, the Lakshadweep and Minicoy Islands are part of another island group. These islands are situated not far from the Malabar Coast and are entirely formed from coral deposits. Among these islands, Minicoy is the largest of the 43 islands.

Regarding the Bay of Bengal island groups, there are approximately 572 islands and islets located between latitudes 6°N and 14°N and longitudes

92°E and 94°E. The two main islet groups are the Ritchie's archipelago and Labyrinth Island. The entire group of islands can be divided into the Andaman Islands in the north and the Nicobar Islands in the south, separated by the 10° channel.

Moving on to the islands in the Arabian Sea, the Lakshadweep and Minicoy islands are spread between latitudes 8°N and 12°N and longitudes 71°E and 74°E. These islands are situated about 280 to 480 kilometers away from the coast of Kerala. The entire chain of islands is composed of coral deposits. Among the 36 islands, 11 are inhabited. The largest among them, Minicoy, covers an area of 453 square kilometers. The 11° channel serves as a rough division for the entire collection of islands, with Amini Island to the north and Canannore Island to the south.

Northern and North-eastern Mountain

The extensive Himalayas primarily run in a northwest to southwest direction, particularly in the Northwestern region. However, in certain areas like Nagaland, Manipur, and Mizoram, they are oriented from north to south. The Himalayas play a significant role as a geographical, climatic, hydrological, and cultural divider. Let's explore the subdivisions of the Himalayas:

1. **Kashmir Himalayas:** This region encompasses ranges like the Karakoram, Ladakh, Zaskar, and Pir Panjal. The northernmost part of the Kashmir Himalayas forms a cold desert between the Greater Himalayas and the Karakoram ranges. Within the lofty Himalayas lies the Kashmir Valley, bordered by Pir Panjal and Dal Lake. The valley contains karewa formations, ideal for cultivating the saffron-producing zafran. Notable freshwater lakes include Dal and Wular, while saltwater lakes include Pangong Tso and Tso Moriri. Jhelum and Chenab rivers flow through this region.
2. **Himachal & Uttaranchal Himalayas:** Spanning between the Ravi and Kali rivers in the west and east respectively, this Himalayan region is drained by the Indus and Ganga river systems. The northern part, extending from Ladakh's cold desert, extends into the Spiti sub-division of Lahul and Spiti. From north to south, it includes the Great Himalaya, Lesser Himalayas, and the Shiwalik range, known as Dhaoladhar in Himachal Pradesh and Nagtibha in Uttarakhand. This area is marked by "Dun formations" and "Shiwalik formations." All five Prayags are located in this area.
3. **Darjiling and Sikkim Himalayas:** This segment consists of the Nepal Himalayas in the west and the Bhutan Himalayas in the

east. Despite its modest size, it holds significance. The area is traversed by the fast-flowing Tista River and features deep valleys, with the prominent Kanchenjunga peak (Kanchengiri). Lepcha tribes inhabit these high areas. Unlike other regions, Shiwalik formations are absent here, replaced by "duar formations," which aid the growth of tea gardens.

4. **Arunachal Himalayas:** Absence of Shiwalik formations characterizes this region. Extending from eastern Bhutan to Diphu Pass, the ranges run from southwest to northeast. Prominent summits include Kangtu and Namcha Barwa. The Brahmaputra crosses Namcha Barwa and continues through a narrow gorge. The area's rich biodiversity is preserved by indigenous groups. The rugged terrain hampers inter-valley transportation, with most connections occurring in the duar region along the Arunachal-Assam border.
5. **Eastern Hills and Mountains:** Running north to south, this region includes the Barak River in Manipur and Mizoram. The central Loktak Lake in Manipur is surrounded by mountains. The Molassis Basin, known as the Mizoram region, comprises soft, unconsolidated deposits. Rivers in Nagaland are Brahmaputra tributaries, while the Barak River flows into the Meghna. In Manipur's east, rivers feed into the Chindwin, which eventually enters Myanmar's Irrawaddy.

Coastal Plains

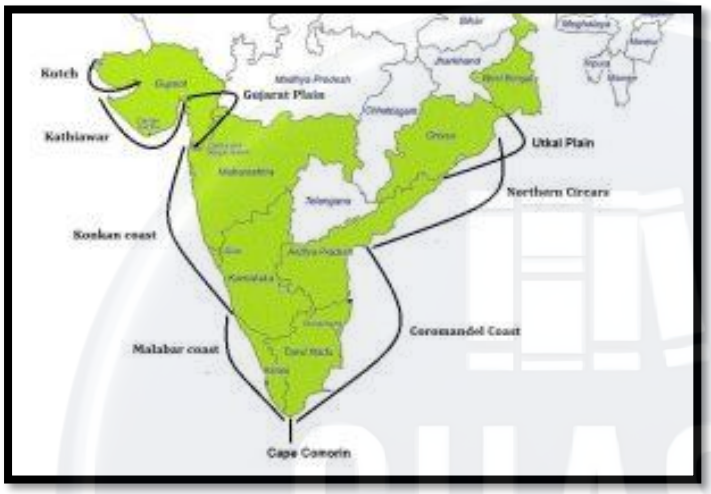
The coastal plains of India are flanked by the Arabian Sea and the Bay of Bengal, both of which run alongside the country. These coastal plains are divided into Western and Eastern Coastal Plains based on their location and ongoing geological processes.

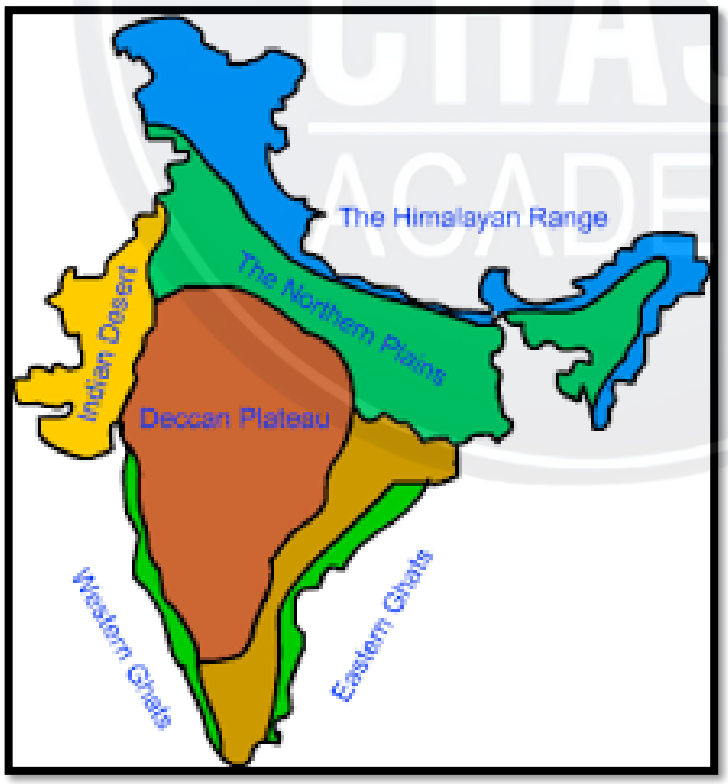
The Western Coastal Plain spans from the Rann of Kachchh to Kanyakumari and can be further categorized into four distinct sections:

1. Kachchh & Kathiawar Coast in Gujarat.
2. Konkan Coast in Maharashtra.
3. Goan Coast in Karnataka.
4. Malabar Coast in Kerala.

While the western coast widens as it moves towards the northern and southern ends, it remains narrower in its central portion. Unlike the rivers on the Western Coast, those on the Eastern Coast do not form deltas.

On the other hand, the Eastern Coastal Plain extends along the Bay of Bengal. It is relatively narrower than its western counterpart and is characterized by its developing nature, leading to a limited number of ports and harbours. Notably, well-established deltas are formed by the Mahanadi, Godavari, Krishna, and Kaveri rivers in this region. The continental shelf extends up to 500 kilometers into the sea from the coast.





Physical Features of India in Map