

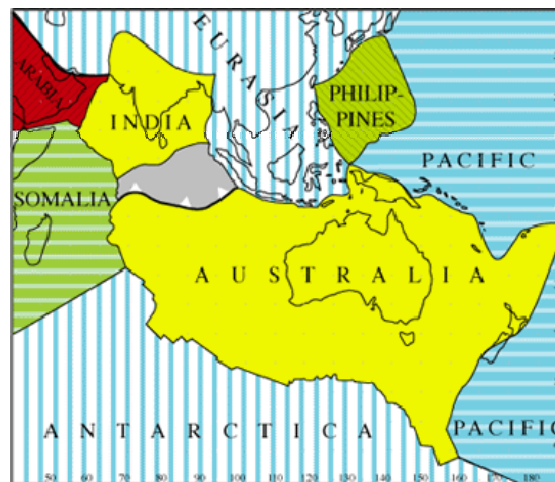
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Introduction

The major tectonic plates on our earth are African, Antarctic, Eurasian, Indo-Australian, North American, Pacific and South American tectonic plates. We begin our study of India's Geography with a major tectonic plate called **Indo-Australian plate**, which is shown by bright yellow color in the following picture:



As the figure above shows, **Indo-Australian plate** is a major tectonic plate that includes Australia and surrounding ocean and extends northwards to cover the entire Indian subcontinent and its adjacent waters. The studies show that this Indo-Australian plate may be in the process of breaking up in **two separate plates** due the stress caused by collision of the Indo-Australian Plate with Eurasia along the Himalayas. These two separate plates are known as **Indian Plate** and **Australia Plate**. Indian Plate is currently **moving northeast** at 5 cm/yr, while the **Eurasian Plate** is moving north at only 2 cm/yr. The result is that the Eurasian Plate gets deformed this leads to the **India Plate to compress** at a rate of 4 mm/yr. This is one of the reasons of earthquakes in Himalayan region.

The above figure also shows that our country lies on **Indian Plate, entirely**.

The Geological History

The above brief discussion leads us to understand that the Indian subcontinent, Australia, New Guinea, and Tasmania, New Zealand etc. have a common geological history.

- ▶ They have a common geological history by virtue of being an integral part of the **Mesozoic Gondwana** super-continent until 160 million years ago.

The super continents are single landmasses comprising the continents of today. The earliest super continent was **Vaalbara**. Here we discuss them briefly:

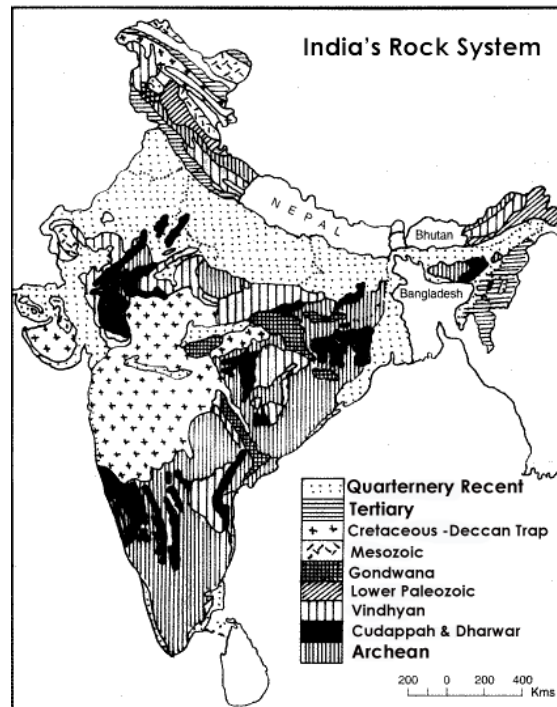
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- ⇒ The earth is 4700 million years old and Vaalbara started forming around 3600 million years ago. It took nearly 400 million years to get completed and was ready by 3100 million years ago.
- ⇒ Then, around 2500 years ago, Vaalbara started breaking. The result of this breaking was that another supercontinent **Kenorland** formed around 2700-2500 million years ago.
- ⇒ The breaking kept on and then **Columbia** formed around 1800-1500 million years ago.
- ⇒ Around 750 million years ago, a new supercontinent was formed that was called **Rodinia**.
- ⇒ In the late Paleozoic period (542 - 250 million years ago) super continent **Pangaea** was formed that existed during the Paleozoic and Mesozoic eras.
- ⇒ Pangaea started beginning to break up approximately 200 million years ago, before the component continents were separated into their current configuration.
- ⇒ It first broke into **Northern Laurasia** and **Southern Gondwana**. The Gondwana is also called to have arisen out of a precursor Gondwanaland. The Gondwanaland was in existence from the Upper Carboniferous period to the Jurassic period.
- ⇒ The continental sedimentary deposits of the Gondwana system in India belong to this Upper Carboniferous period to the Jurassic period.
- ⇒ In India, the Sandstones and Shales (Shales means sedimentary Rocks) of the panchet series of the Gondwana system belong to the Triassic period, while the shales of the Jabalpur series belong to the Jurassic period.
- ⇒ We should remind ourselves that Triassic, Jurassic & Cretaceous are 3 geologic periods of the Mesozoic era which existed 251 - 65.5 million years ago, among them Triassic is oldest, and Cretaceous is latest. The Gondwana land system broke up during the Cretaceous period. **Creation of Himalaya (Creation of Mountains is Orogeny), also began in Cretaceous period.**
- ⇒ According to some sources, the final geological suturing of Gondwanaland occurred between 570 and 510 million years ago. Laurasia separated 180-200 million years ago during the breakup of the Pangaea supercontinent.
- ⇒ **Laurasia moved further north** and **Gondwana drifted south**. Gondwana included Antarctica, South America, Africa, Madagascar, Australia-New Guinea, and New Zealand, as well as Arabia and the Indian subcontinent, which have now moved entirely into the **Northern Hemisphere**.
- ⇒ The **similarity in the geological formation** produced more or less **similar type of mineral wealth in both India and Australia**. Despite the variance in the biotic life between India and Australia, there are **certain endemic plant and animal species**, pointing to the super continent connection.



Rock Formations of India

We have different kinds of rock formations in various parts of country. These rocks belong to different geological periods. India is a large country and different kinds of rocks, superimposed on each other and having been subject to various faults and folds make the geology of India a complex one. For our exam point of view, we need to understand the basics and locations of these rock systems. Kindly read this map carefully before we study the rocks systems one by one:



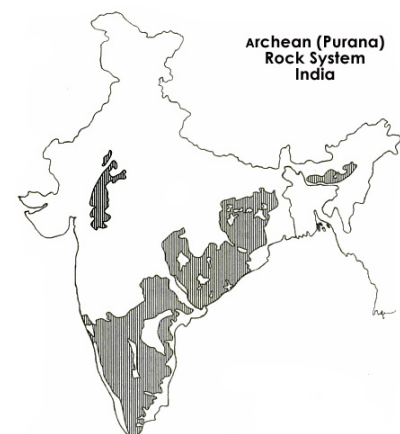
The above graphic makes it clear that India, being a large country, has diverse geology. Different regions in India contain rocks of all types belonging to different geologic periods. Some of the rocks are badly deformed and transmuted while others are recently deposited alluvium that has yet to undergo diagenesis. Mineral deposits of great variety are found in the subcontinent in huge quantity. India's geographical land area can be mainly classified into following rock formations:


Archean formations

We have studied in our modules that Archean rocks are the oldest rocks of the earth's crust. Archean rocks are also called the Pre-Cambrian rocks. The Archean period time is 86.7% of Total geological history time of earth and therefore is very significant. This period marks the development of first photosynthesis, the life support atmosphere.

- The major characteristic of the Archean rocks is that they are azoid, means that are devoid of any form of remnants of life in them. They serve as the basement complex or fundamental gneisses.

The Archean rocks in India are called **Purana Rocks** means the oldest



rocks. The Archean or Purana rock system in India is found in Aravallis mountains, 2/3rd of the deccan peninsula and some parts of north east. These rocks have abundant metallic and non-metallic minerals such as iron, copper, manganese, bauxite, lead, zinc, gold, silver, tin, tungsten, mica, asbestos, graphite, etc. 

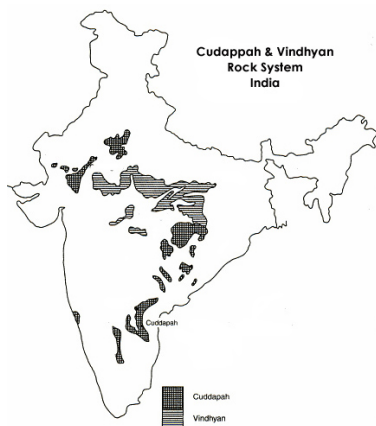
Dharwar system

Dharwar system is later than the Archean system but older than the other systems. The Dharwar period of rock formation has been largely fixed from 2500 million years ago to 1800 million years ago.



- Dharwar Rock System is special because it is the first metamorphic sedimentary rocks in India.
- They are named Dharwar system because they were first studied in Dharwar region of Karnataka. But they are also found in Aravallis, Tamil Nadu, Chotanagpur plateau, Meghalaya, Delhi, and the Himalayas region.
- The Dharwar rocks are rich in iron ore, manganese, lead, zinc, gold, silver etc.
- The **Champions series** containing gold mines lie within this system. This Champion system is named after the Champion reef in the Kolar Gold Fields. The Kolar Gold Fields contain one of the deepest gold mines of world.
- The other series of Dharwar system are as follows:
 - Champaner series that is found near Baroda. This is source of a lush green vareity of marble.
 - Closepet series that is found in Balaghat and Chhindwara of Madhya Pradesh. It is rich in Copper ores.
 - Chilpi Series that is found in and around the Closepet series in Balaghat and Chhindwara
 - Iron-Ore series that is located in Singhbhum, Mayurbhanj and Keonjhar rangaes.

The Cudappah System & Vindhyan System



Cudappah System rocks are rich in sandstone, shale, limestone, quartzite, and slate. They contain iron and other inferior quality of ores and minerals. They are mainly found in Cudappah district of Andhra Pradesh along with other places such as Chhattisgarh, Rajasthan, Delhi, and the lesser Himalayas. One of the important series of Cudappah System is Papaghani series, named after the river of same name in Andhra Pradesh. The Vindhya mountains form a dividing line between the Ganges plain and Deccan Plateau. The Vindhyan system is named after Vidhyan Mountains. This system rocks are extensively distributed in India from Chittorgarh (rajasthan) to sasaram (bihar).

1. The Vidnyan System is seperated from Aravallis by the Great Boundary Fault.
2. They are famous sources of Red Sandstone and other building material.
3. The well known panna and golconda diamonds are found in this formation.

4. The important series of this system are Bhandar series, Bijwar series and Kaimur series. All are rich sources of Building material.

The Gondwana System or Carboniferous period System or Dravidian System

As the name suggests, these are the major coal deposits of India. This system contains famous **Damuda and Panchet series** which are famous for coal deposits. The important coal bearing areas of this series are **Raniganj, Jharia, Karanpur, and Bokaro** of the Damodar basin in Odisha, and the Pench valley in Chhattisgarh and Madhya Pradesh, the jhingurda coal seam (Chhattisgarh). The Gondwana Supergroup forms a unique sequence of fluviatile rocks deposited in Permo-Carboniferous time. Damodar and Sone river valley and Rajmahal hills in the eastern India are depository of the Gondwana rocks.

The Cretaceous system or the Deccan Trap

The Deccan system is marked by a **transgression of the sea** at coromandal coast and Narmada valley and the **upwelling of huge quantity of Lava/ basalt**, so the Cretaceous system or Deccan Trap is made up of **Basalt** rocks. This system is also called **lava trap** and is 3000 meters deep. The rocks of this system are found in Maharashtra, Gujarat, Madhya Pradesh, Chhattisgarh, Jharkhand, Orissa, and Karnataka.

Deccan Trap covers almost all of Maharashtra, a part of Gujarat, Karnataka, Madhya Pradesh and Andhra Pradesh marginally. It is believed that the **Deccan Trap was formed** as result of **sub-aerial volcanic activity** associated with the continental deviation in this part of the Earth during the Mesozoic era. That is why the **rocks** found in this region are generally **igneous type**. Recently it was in news that a series of monumental volcanic eruptions in India may have killed the dinosaurs 65 million years ago, not a meteor impact in the Gulf of Mexico. **The eruptions, which created the gigantic Deccan Traps lava beds of India**, are now the prime suspect in the most famous and persistent paleontological murder mystery, say scientists who have conducted a slew of new investigations honing down eruption timing. The main phase of the Deccan eruptions spewed 80 percent of the lava which spread out for hundreds of miles. It is calculated to have released ten times more climate altering gases into the atmosphere than the nearly concurrent Chicxulub meteor impact, according to volcanologist Vincent Courtillot.

When the Indian Plate mobbed northward after breaking off from the rest of Gondwana, it passed over a geologic hotspot, the Réunion hotspot, which caused extensive melting underneath the Indian craton. The melting broke through the surface of the craton in a **massive flood basalt event**, creating what is known as the **Deccan Traps**. It is also thought that the **Reunion hotspot** caused the separation of Madagascar and India.

The Tertiary System

The Tertiary rock system belongs to Cenozoic era. The Cenozoic era has two periods' viz. **tertiary** and **quaternary**. The beginning of the tertiary period is about 66 million years back. The **final breakup of the Gondwana land occurred in this era** and the Tethys sea got lifted in the Himalayas. The most important rocks of this system are in northern plains of India, karewas of Kashmir and bhadarwah, **Bhangar**, and **Khadar** of the great plains. The terraces of Jeelum Narmada, Taptii, Godavari, Krishna, Kaveri, etc. are of this period. The rocks of this system are also found in coast of kachchh, katiawar, konkan, malabar, nilgiri, and the Eastern Ghats.

What is the difference between Bhangar Plains and Khadar Plains?

Please note that both of them are of Cenozoic origin. The Bhangar represents the upland alluvial tracts of the Great Plains of India formed by the older alluviums while the new alluvium tracts along the courses of the rivers are known as Khadar. So, historically, Bhangar is older while Khadar is new. The Bhangar soil is dark in color, rich in humus and is more productive. The Khadar is enriched by fresh deposits of silt every rainy season. Khadar consists of silt, clay and mud and is less productive in comparison to Bhangar. In India, both Bhangar and Khadar are under cultivation of many important crops.

Physiographic Features

India lies to the north of the equator between 8°4' and 37°6' north latitude and 68°7' and 97°25' east longitude, thus entirely located in northern and eastern hemispheres. India is seventh-largest country in the world, with a total land area of 3,287,263 square kilometers. It measures 3,214 km from north to south and 2,993 km from east to west. It has a land frontier of 15,200 km and a coastline of 7,517 km.

India's southernmost point is Indira Point, in the Andaman and Nicobar Islands. Sri Lanka is separated from India by the Gulf of Mannar and Palk Strait. The territorial waters of India extend into the sea to a distance of 12 nautical miles. The northern frontiers of India are defined largely by the Himalayan mountain range, where the country's political boundaries with China, Bhutan, and Nepal lie. Its western border with Pakistan lies in the Punjab Plain and the Thar Desert. In the far northeast, the Chin Hills and Kachin Hills, deeply forested mountainous regions, separate India from Burma. The Bangladesh-India border is defined by the Khasi hills and Mizo Hills, and Indo-Gangetic Plain. India can be divided into six physiographic regions. They are

- ★ The Himalayan Mountains
- ★ Northern Plains
- ★ The Great Indian Desert
- ★ The Peninsular Plateau
- ★ Coastal Plains
- ★ Islands

The Himalayan Mountains

Himalaya Range or Himalaya Mountains also includes the Karakoram, the Hindu Kush, and other, lesser, ranges that extend out from the Pamir Knot. The Himalayan mountain system is the world's highest, and home to the world's highest peaks, the Eight-thousanders, which include Mount Everest and K2.

- ★ After Himalayan peaks, it is Aconcagua, in the Andes, at 6,962 metres, known to be the highest peak outside Asia.

There are over 100 mountains in Himalaya system that exceeds 7,200 m. The main Himalayan ranges run from Indus river valley in the west to the Brahmaputra river valley in east forming an arc 2,400 km long, which varies in width from 400 km in the western Kashmir-Xinjiang region to 150 km in the eastern Tibet-Arunachal Pradesh region. In this 2400 kilometer long arc, there are three coextensive sub-ranges, with the northernmost, and highest, known as the Great or Inner Himalayas. Some other classifications divide the Himalayas into four mountain ranges viz. the Trans-Himalaya or the Tethys Himalaya, the Greater Himalaya, Lesser Himalaya and / or Shivalik Himalaya.

Himalaya system gives rise to some of world's major river systems. The combined drainage basin is home to slightly less than half of world's population. The highest peak Everest is located in Nepal. Another peak K2 is on the border of Pakistan and China. Kanchenjunga is located on the border of Nepal and India. Nanda Devi is the highest peak within India.

Origin of Himalayas

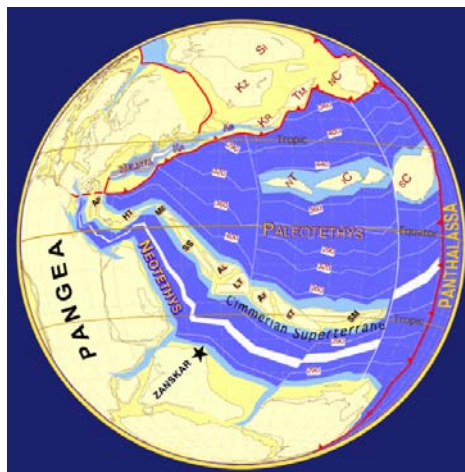
Geologically, the origin of the Himalayas is the impact of the Indian tectonic plate traveling northward at 15 cm per year to impact the Eurasian continent, about 40-50 million years ago. The formation of the Himalayan arc resulted since the lighter rock of the seabeds of that time were easily uplifted into mountains.

👉 The proof cited for this fact is that summit of Mount Everest is made of **marine limestone.**

Indian subcontinent was part of Gondwana and was separated from Eurasia by the Paleo-Tethys Ocean during Late Precambrian and the Paleozoic periods. Then, in the early Carboniferous, an early stage of rifting developed between the Indian continent and the Cimmerian Superterrane, which surrounded India in the Precambrian era towards north-eastern side.



During the Early Permian, this rift developed into the Neotethys Ocean. From that time on, the Cimmerian Superterrane drifted away from Gondwana towards the north. Nowadays, Iran, Afghanistan and Tibet are partly made up of these terranes.

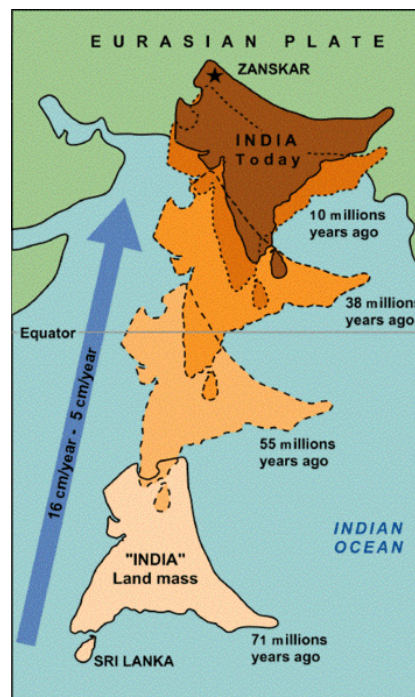


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Approximately 210 Million Years Ago, a major rifting episode split Gondwana in two parts. The Indian continent became part of East Gondwana, together with Australia and Antarctica. Later, the Indian plate broke off from Australia and Antarctica in the Early Cretaceous (130-125 Million Years Ago) with the opening of the "South Indian Ocean".



Around 85 Million Years Ago, during the Upper Cretaceous, the Indian plate began its very rapid northward drift covering a distance of about 6000 km, with the oceanic-oceanic subduction continuing until the final closure of the oceanic basin and the abduction of oceanic ophiolite onto India and the beginning of continent-continent tectonic interaction starting at about 65 Ma in the Central Himalaya.

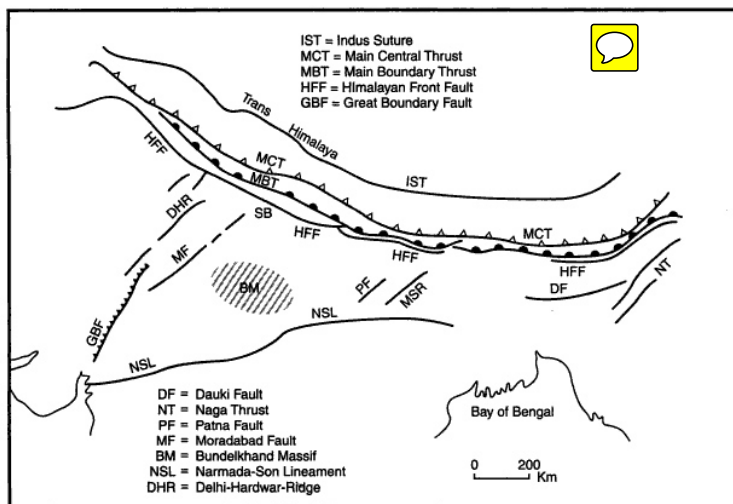


This rapid relative speed between the Indian and Asian plates was very fast (18-19.5 cm/yr), and it later became fast (4.5 cm/yr) at 55 Million Years Ago. Since then there has been about 2500 km of crustal shortening and rotating of India by 45° counterclockwise in Northwestern Himalaya to 10°-15° counterclockwise in North Central Nepal relative to Asia.

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During this process, most of the oceanic crust was "simply" subducted below the Tibetan block during the northward motion of India. But the question that where the continental crust of 2500 kilometers gone, which India traveled during this period has been largely under studies. Several theories have been put forward to explain what happened, since collision, to the 2500 km of "missing continental crust". The first mechanism says that is 2500 kilometer continental crust also got subducted below Tibet. Second is the extrusion or escape tectonics mechanism (Molnar & Tapponnier 1975) which sees the Indian plate as an indenter that squeezed the Indochina block out of its way. The third proposed mechanism is that a large part (~1000 km (Dewey, Cande & Pitman 1989) or ~800 to ~1200 km) of the 2500 km of crustal shortening was accommodated by thrusting and folding of the sediments of the passive Indian margin together with the deformation of the Tibetan crust. Out of them, it is the last mechanism which explains the creation of the high topographic relief of the Himalaya.

Different Regions of Himalaya



Himalayas can be divided into several regions along the fault lines. The fault lines of Himalayas are shown here.

These different regions have different flora and fauna also. The climate of Himalayas is diverse. The climate ranges from tropical at the base of the mountains to permanent ice and snow at the highest elevations. The amount of yearly rainfall increases generally from west to east along the front of the range.

This diversity of climate, altitude, rainfall and soil conditions generates enormous biodiversity region making it one of the Biodiversity Hotspots of the world. Himalayas can be divided into the following ecological regions:

1. The Terai belt
2. Bhabhar belt
3. Shiwalik Hills & Inner Terai
4. Lesser Himalayas
5. Midlands
6. Greater Himalaya
7. Trans-Himalaya

They have been discussed briefly:

Terai belt

- » Terai belt is the zone of sand and clay soils at the junction of northern plains and Himalayas. As the name suggests, Terai region gets higher rainfall than the plains.

- » The speed of the Himalayan rivers is slowed down in the Terai region and these rivers deposit fertile silt during the monsoons.
- » The water table in this region is high and vegetation is largely savannah in a mosaic of deciduous and evergreen forests called Terai-Duar forests.

Bhabhar belt

- » Bhabhar belt is located above the Terai belt, also sometimes known as Himalayan foothills. It is made up of porous and rocky soils that get made of the debris washed down from the higher ranges.
- » The climate here is subtropical and vegetation is Himalayan subtropical pine forests and Himalayan subtropical broadleaf forests.
- » The previous is dominated by Chir trees and later is dominated by the sal tree (*Shorea robusta*).

Shivalik Hills & Inner Terai

- » **Shivaliks or Churia or Margalla Hills** are the outermost range of foothills extending across the Himalayan region through Pakistan, India, Nepal and Bhutan. This is mainly located along a Himalayan Frontal Thrust (HFT).
- » The vegetation here is dominated by Himalayan subtropical pine and broadleaf forests.
- » The Inner Terai valleys are open valleys north of Shivalik Hills or nestled between Shivalik sub ranges. Examples include Dehra Dun in India and Chitwan in Nepal.

Lesser Himalaya

- » **Lesser Himalaya is also known as Mahabharat Zone.** The hills here range 2000 to 3000 meters and are located along the Main Boundary Thrust (MBT) fault zone.
- » This zone is home to some of the deepest canyons in the world. The vegetation here is Himalayan subtropical forests.

Midlands

- » This region is located north of the Mahabharata range or Lesser Himalaya. It is located along the Main Central Thrust fault zone, where the Greater Himalaya begin.
- » Here the vegetation is along with coniferous forests along with broadleaf forests.

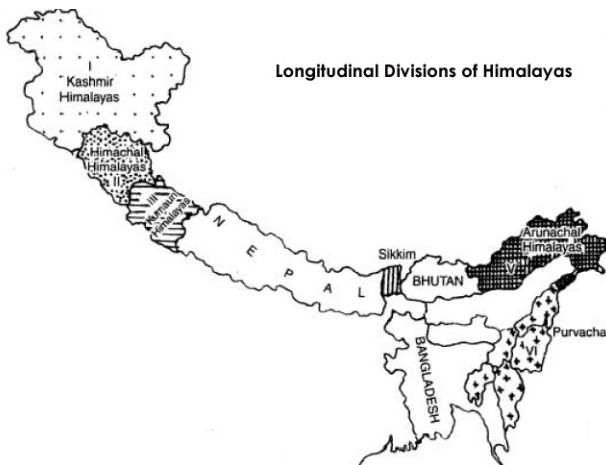
Greater Himalaya

- » Greater Himalayas is located North of the Main Central Thrust. Here the highest ranges rise abruptly as much as 4,000 meters into the realm of perpetual snow and ice. The vegetation here is Himalayan alpine shrub and meadows.
- » The shrublands are composed of junipers as well as a wide variety of rhododendrons. They also possess a remarkable variety of wildflowers:
- » Valley of Flowers National Park in the western Himalayan alpine shrub and meadows contains hundreds of species. The upper limit of the grasslands increases from west to east, rising from 3,500 meters to 5,500 meters.

Trans-Himalaya

- » The watershed between rivers flowing south into the Ganges or Indus and rivers flowing north into the Brahmaputra or mainstream Indus that flow around the ends of the entire range often follows somewhat lower, less rugged mountains tens of kilometers north of the highest ranges.
- » South-flowing rivers form valleys in this region, often semi-arid due to rain shadow effects. These valleys hold some of the highest permanent villages on earth.

Longitudinal Divisions of Himalayas



Longitudinally, the Himalayas have been divided into:

1. The Kashmir Himalayas
2. The Himachal Himalayas
3. The Kumaun Himalayas
4. The Central & Sikkim Himalayas
5. The Arunachal Himalayas and Purvachal Himalayas

The Kashmir Himalayas

- » The Kashmir Himalayas has the largest number of Glaciers in India. The Ladakh region of the Kashmir Himalayas is India's Cold Desert Biosphere reserve.
- » A special feature of the valleys of Kashmir Himalayas is the Karewa deposits which are made up of silt, clay and sand. The Karewas are known for saffron cultivation and have orchards of fruits and dry fruits such as apple, peach, almond, walnut.
- » The major characters of Kashmir Himalayas are Glaciers, snow peaks, deep valleys and High Mountain passes.
- » The important passes are Pir-Panjaj, Banihal, Zoji-La, Saser-La, Chang-La, Jara-La etc.

The Himachal Himalayas

- » Himachal Himalayas are spread in Himachal Pradesh. The Rohtang, Bara-Lacha, Shipki-La are important passes joining India and China.
- » The valleys of Kullu, Kangra, Manali, Lahaul, Spiti are known for orchards and tourist spots.

The Kumaun Himalayas

- » They are located between the satluj and Kali rivers. Kumaun Himalayas are home to India's highest peak Nanda Devi.



- » Other peaks located in Kumaun Himalayas are Kamet, Trishul, Badrinath, Kedarnath, Dunagiri, Gangotri etc. Gangotri and Pindar are important glaciers.

The Sikkim (Central) Himalayas

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- » They are located beyond the Kali river up to the Tista River. Most of them are located in Nepal and known as Central Himalayas.
- » It is home to highest peaks of Himalayas such as Everest, Kanchenjunga, Makalu, Dhaulagiri, Annapurna etc.
- » It is characterized by very few passes. Two passes viz. Nathu La and Jelep-La are important as they connect India's Sikkim to Tibet of China.

Eastern Himalayas:

- » The Eastern Himalayas occupy the Arunachal Pradesh and Bhutan. The important hills in this region are Aka Hills, Daphla Hills, Miri Hills, Mishmi Hills, Namcha Barwa etc.
- » The Dihang and Debang passes of Arunachal Pradesh are its parts.
- » Passing from Arunachal Pradesh, there is an eastward extension of the Himalayas in the north-eastern region of India. This is known as Purvanchal Hills.
- » Purvanchal Hills comprises the Patkai hills, the Manipur hills, Bairal range, the Mizo hills and the Naga hills. It is a densely forested area, mainly composed of strong sandstones.

What are the Syntaxial bends?

Himalaya is marked at the both the western and eastern ends by geological Syntaxial bends in rock structure wherein the tight, fault bounded, trapdoor or pop-up uplifts of Naga Parbat on the west and Namche Barwa at the east have occurred in past few million years. These mark the end of Himalayas at both end, more prominently at the western end.

Important Mountain passes in Himalayas

The rugged terrain makes few routes through the mountains possible. Some of these routes include:

- » **Banihal** is an important pass connecting the hill areas of Jammu to the Kashmir Valley. **The Jawahar Tunnel** (named after Pandit Jawaharlal Nehru), inaugurated in December 1956, was constructed for round-the-year surface transport
- » **Zoji La** lies between the valley of Kashmir and the Kargil district, and is the only Western entrance to the highlands of Ladakh.
- » Rohtang Pass in Himachal Pradesh, India.
- » Mohan Pass is the principal pass in the Siwalik Hills, the southernmost and geologically youngest foothills running parallel to the main Himalayas in Sikkim.
- » **Kora La** at 4,594 meters elevation on the Nepal-Tibet border at the upper end of Mustang. The Kali Gandaki Gorge transects the main Himalaya and Transhimalayan ranges. Kora La is the lowest pass through both ranges between K2 and Everest, but some 300 metres higher than Nathula and Jelep-la passes further east between Sikkim and Tibet.
- » **Aghil Pass:** Situated to the north of K2 in the Karakoram at an elevation of 5000 meters, joins Ladakh with the Xinjiang Province of China.

- » **Bara-Lacha:** Bara-lacha la also known as Bara-lacha Pass is located in the Zaskar range connecting Lahaul district in Himachal Pradesh to Ladakh in Jammu and Kashmir, situated along the **Leh-Manali** highway.
- » **Bomdi-La:** It connects Arunachal Pradesh with Lhasa, the capital of Tibet.
- » **Chang-La:** The Changla Pass or Chang La Pass (el. 5,360 m is located in Ladakh, India. It is the **third** highest **motorable** road in the world.
- » **Debsa Pass:** Debsa Pass is a 5,360-metre (17,590 ft) high mountain pass in the Himalaya mountains between the Kullu and Spiti Districts of Himachal Pradesh.
- » **Dihang-Debang:** Situated in the state of Arunachal Pradesh at an elevation of about 4000 feet this pass connects Arunachal Pradesh with Mandalay (Myanmar). The **Dihang-Debang Biosphere reserve** is located around this area.

Important Peaks of Himalayas

Peak Name	Other names and meaning	Elevation (m)
Everest	Sagarmatha (Nepali), "Head of the World",	8,848
K2	Chogo Gangri, Qogir Feng, Mount Godwin Austen, Dapsang	8,611
Kangchenjunga	Kangchen Dzö-nga, "Five Treasures of the Great Snow"	8,586
Lhotse	South Peak	8,516
Makalu	The Great Black	8,462
Cho Oyu	Qowowuyag, "Turquoise Goddess"	8,201
Dhaulagiri	White Mountain	8,167
Manaslu	Kutang, "Mountain of the Spirit"	8,156
Nanga Parbat	Diamir, "Naked Mountain"	8,126
Annapurna	Goddess of the Harvests	8,091
Gasherbrum I	Beautiful Mountain	8,080
Broad Peak	Faichan Kangri	8,047
Gasherbrum II	–	8,035
Shishapangma	Xixiabangma, "Crest Above The Grassy Plains", Gosainthan	8,013
Gyachung Kang	unknown	7,952
Gasherbrum IV	–	7,925
Masherbrum	unknown	7,821
Nanda Devi	Bliss-giving Goddess	7,817
Rakaposhi	Shining Wall	7,788
Tirich Mir	King of Shadows or "King of Tirich Valley"	7,708
Gangkhar Puensum	Gankar Punzum, "Three Mountain Siblings"	7,570
Ismoil Somoni Peak	Stalin Peak 1933–1962	7,495
Machapuchare	Fish Tail	6,993
Ama Dablam	Mother And Her Necklace	6,848
Kailash	Sanskrit: Kailāsa Parvata, Tibetan: Kang Rinpoche (Precious Snow Peak), Mandarin Chinese: Gānggrénbōqí fēng	6,638
		source wikipedia