

INDIA PHYSICAL

INTRODUCTION

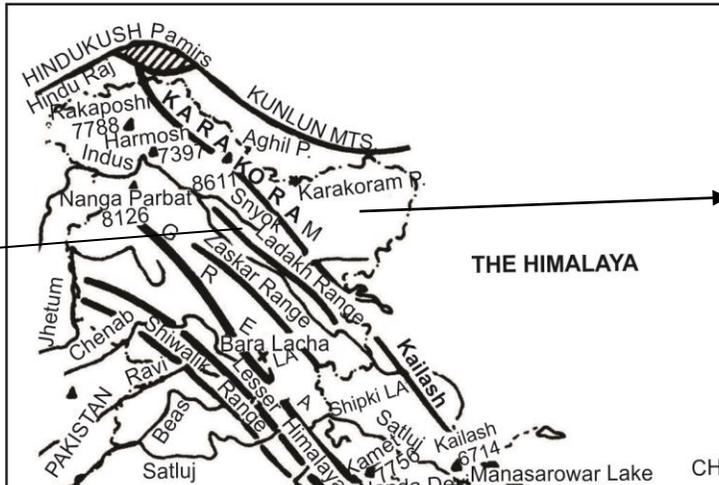
IMPORTANT MOUNTAIN RANGES

The Trans Himalaya

- The Trans Himalaya includes the Karakoram and the Ladakh range

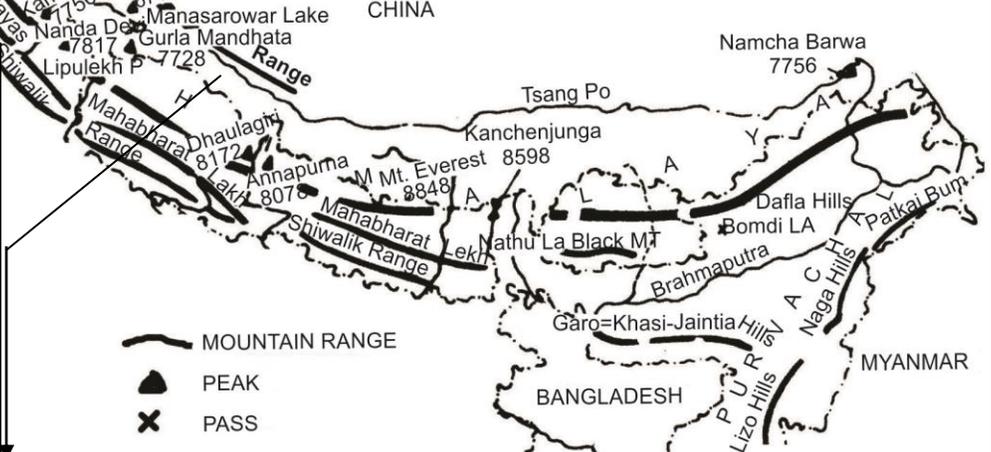
KARAKORAM RANGES

- Extend from the Pamir, east of the Gilgit River, 600 km long and the average width –120-140 km.
- Ancient name was Krishnagiri.
- Trans Himalaya, originally a part of Eurasian plate.
- Abode of largest glaciers in India.
- Siachen, Baltoro, Biafo, and Hisper glaciers.
- Highest Peak (in India): K² or Godwin Austen (8611 m).
- Other Important Peaks: Gasherbrum I or Hidden Peak, Broad Peak and Gasherbrum II.
- In the northern limit of Karakoram Range lies the Pamir, the Aghil Mountains, and the Yarkand River and in the southern limit lies the River Indus and its tributary Shyok.



LADDAKH RANGE

- Situated to the north of the Indus Tsangpo Suture Zone (ITSZ) and south of Karakoram, between River Indus and Shyok.
- Highest Peak:** Mt. Rakaposhi (steepest peak in the world).
- The Kailash Range is an offshoot of the Laddakh range. Its average elevation is 5500-6000 m. and the average width is 30km. The highest peak is Mt. Kailash (6714m).



Ranges and their highest peaks

Mountains Range	Highest Peak
Karakoram Range	Mt. K2 (Godvin Austen)
Ladakh Range	Mt. Rakaposhi (7880m)
Kailash Range	Mt. Kailash (6714m)

1. Great Himalaya or Himadri

- The Himalayas are formed of parallel fold ranges of which the oldest range is the Great Himalayan Range.
- Northern most part of the Himalayan Range is the world's highest part with an average altitude of 6100 m above sea level.
- Include the world's highest peak, Mt. Everest (8,848 m) and other high peaks-Makalu (8,481 m), Mansalu (8,156 m), Annapurna (8,078 m) and also the Indian peak Kanchenjunga (8,598 m) and Nanga Parbat (8,126 m).
- Includes some famous passes—Burzil and Zozi La in Kashmir, Shipki La and Bara Lapcha La in Himachal

Pradesh, Thaga La, Niti Pass, and Lipu Lekh in U.P., Jelep La and Nathu La in Sikkim.

ZASKAR RANGE

- Situated on the western part of the Greater Himalaya and to the south of Trans Himalaya.
- It is part of the Tethys Himalayas. It extends from Uttaranchal to Jammu and Kashmir.

Nanga Parbat (8,126 m)

- Forms the north-west part of Zaskar Range but geographically confined to Kashmir-Himachal Pradesh-Garhwal region.
- Second highest peak of the Himalayan Range in India.

Dhaulagiri (8,172 m)

- Eastern continuation of Nanga Parbat and is located in Nepal.

2. Lesser Himalaya or Himachal

- Lying to the north of Siwalik Range they are separated from the Siwalik Range by Duns—Dehradun, Kothridun and Patlidun.

(I) PIR PANJAL RANGE

- Located in Kashmir—Punjab and extends from the Jhelum River to the upper Beas River for over 300 km.
- Separated from the Zaskar Range by the valley of Kashmir.
- The Kishan ganga, Jhelum and the Chenab cut through the Pir Panjal Range.
- The Pir Panjal pass, the Banihal pass and sythen pass are the important passes of this range.

(II) DHAULADHAR RANGE

- Southern most range of the Lesser Himalaya.
- Rarely attains elevations higher than 4,000 m.
- Continue eastward into Mahabharat Range.
- It has many glacier lakes like lam Dal, Nag.
- Some of the well known peaks are Kailash (6714 m), Gaurjunda (4946m), Toral (4648m), Dromedary (4553m).
- The famous Kangra Valley in Himachal Pradesh extends from the foot of the Dhauladhar range to the south of the Beas river is a strike valley.

3. Siwalik Range

- Extends from Jammu & Kashmir (150 km wide) to Arunachal Pradesh (8-15 km) over 2400 km.
- Also known as Sub-Himalaya or Outer Himalaya.
- Northern limit—**Main Boundary Thrust** which separates Outer Himalaya from the Lesser Himalaya. Its southern limit is Indo Gangetic Plain.
- Youngest part of mountain chain, stretching from the Brahmaputra to the Indus.

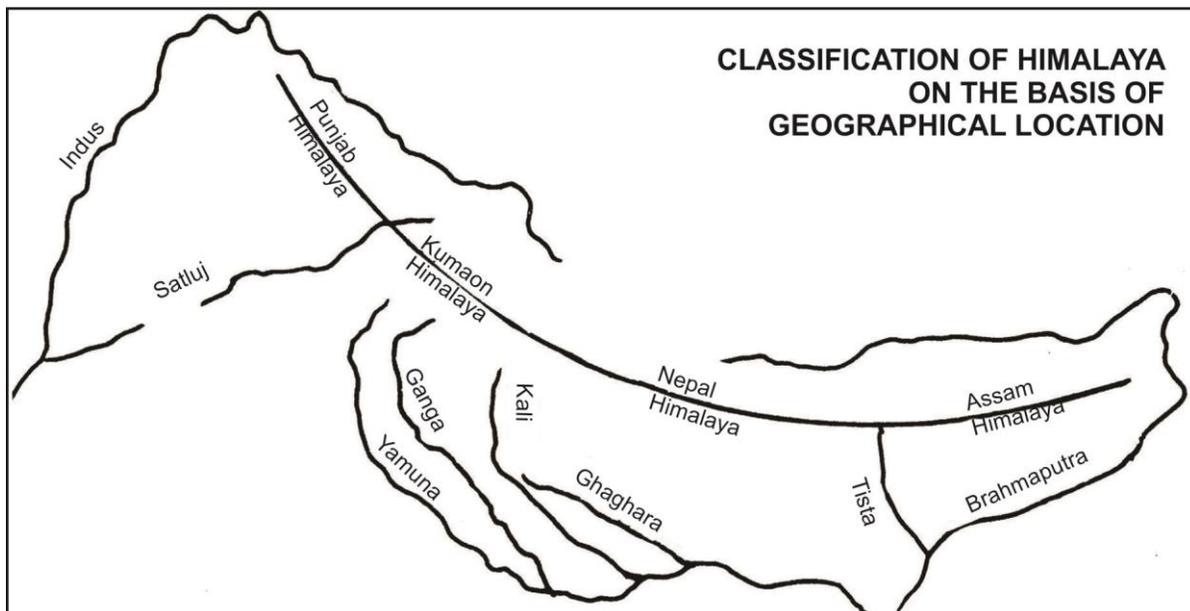
Highest Peaks of the Himalayas (in decreasing order)

MOUNTAIN PEAKS	HEIGHT	LOCATION
Mount Everest	8,848m	Nepal
Kanchenjunga	8,598m	Sikkim, India
Makalu	8,481m	Nepal
Choyu	8,201m	Nepal
Dhaulta giri	8,172m	Nepal
Manasalu	8,157m	Nepal
Nanga Parbat	8,126m	Jammu and Kashmir, India
Annapurna	8,078m	Nepal
Himalchuli	7,893m	Nepal
Nanda Devi	7,817m	Uttaranchal
Kamet	7,756m	Uttaranchal
Namcha Barwa	7,754m	Arunachal Pradesh, India

Churen Himal	7,371m	Nepal
Ganesh	7,163m	Nepal
Badarinath	7,138m	Uttaranchal, India
Gaurishankar	7,139m	Nepal
Api Himal	7,134m	Nepal
Nunkun	7,135m	Jammu and Kashmir, India
Saipal	7,040m	Nepal
Nanda Kot	6,861m	Uttaranchal, India

List of Himalayan Peaks from west to east direction.

1. Nanga Parbat 2. Nunkun 3. Kamet 4. Badarinath 5. Nanda Devi 6. Nanda Kot 7. Api Himal 8. Saipal 9. Churen Himal 10. Dhaultagiri 11. Annapurna 12. Manasalu 13. Himalchuli 14. Ganesh 15. Gaurishankar 16. Choyu 17. Mount Everest 18. Makalu 19. Kanchenjunga 20. Nancha Barwa.



CLASSIFICATION OF HIMALAYA ON THE BASIS OF GEOGRAPHICAL LOCATION

NAME	LOCATION	DISTANCE
Punjab Himalaya	Between Indus and Satluj	560 km
Kumaon Himalaya (Nanda Devi peak forms a part of Kumaon Himalayas located in Uttarakhand.)	Between Satluj and Kali	320 km
Nepal Himalaya	Between Kali and Tista	800 km
Assam Himalaya	Between Tista and Dihang	720 km

The Purvanchal

(The North Eastern Highland)

- The Himalaya Eastern Himalayas is now regarded as an 'ecological hotspot' range after crossing the Dihang gorge in the east, bends southwards, forming a series of hills in north south trend.

- They are divided into six physiographic region-Purv-NEFA (Mishmi hills, Patkai Bum), Nagaland, the Manipur Hills, North Cachar Hills, Mizo Hills and the Tripura Hills.
- The Purvanchal Himalaya is joined by the Meghalaya Plateau in the west.

PURVU NEFA

(i) Mishmi Hills

- The highest range of Purvanchal Hills which is situated in the Debang District of (north eastern part) of Arunachal Pradesh (Southern part of the Greater Himalayas.)
- The mighty Brahmaputra make gorge in these hills.
- Mishmi hills have an average elevation of 4,500m and dotted with passes such as young Gap and Kaya.

(ii) Patkai Bum

- A synclinal range extending north- south in Arunachal Pradesh (Changlang district) and Nagaland.
- The pat Kai Bum rising to 2000 – 3000m is made up of strong sandstones.

NAGA RANGES

- Naga Hills are the complex mountain barrier on the border of India and Myanmar which forms the watershed between Nagaland and Myanmar.

MANIPUR HILLS

- Characterised by ridge and valley type of topography.
- Loktak lake (centripetal drainage) is situated in this hill.
- Its eastern boundary runs along the frontier between India and Myanmar.
- Barack river originates in the Manipur hills.

NORTH CACHAR HILLS

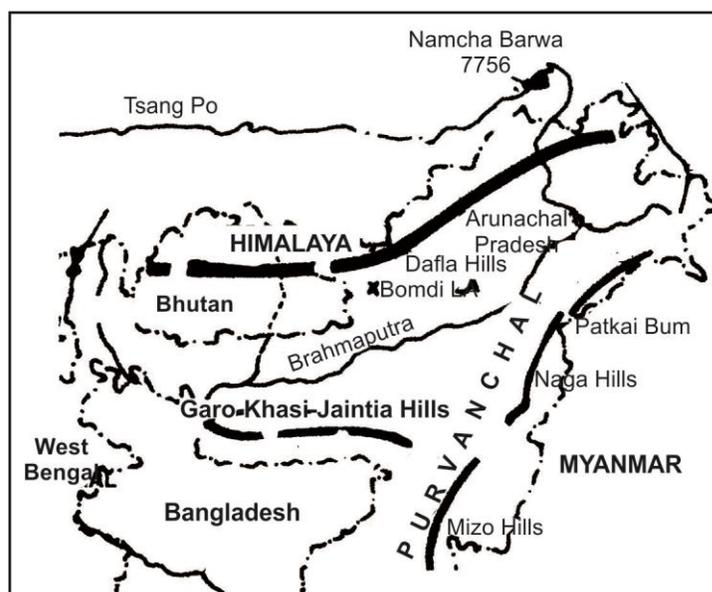
- Larger portion of hilly belt lying between Meghalaya and the North eastern ranges.

MIZO HILLS

- Previously known as Lushai Hills
- Characterised by cuesta type of topography.
- The range in southeastern Mizoram, forms a part of the north Arakan Yoma System. (Arakan Yoma is the extension of the Himalayas located in Myanmar).
- These hills are mostly covered with dense bamboo forest.
- Blue Mountain is the highest peak in Mizo hills.

TRIPURA HILLS

- Characterised by ridge and valley topography.
- The main hills ranges beginning from the east are the Jampuri, Sakkanklang, Langtarai and Athara Mura ranges.



BARAIL HILLS

- These are a part of the Purvanchal Mountain and lying along the Assam and Manipur border.
- The South-west part of these Hills separates Nagaland and the Manipur Hills.
- The Barack river originates from the Barail range. It also hosts the Barail wildlife Sanctuary.

LAIMATOL HILLS

- These Hills are situated in the Chandel district of Manipur.
- The Chakpi river originates from the Laimatol Hills.

DAFLA HILLS

- These Hills are lying in the Central west part of the Arunachal Pradesh.
- Dafla Hills is covered with dense bamboo, pine and deodar trees.

ABOR HILLS

- It is located in Arunachal Pradesh, near the border with China.
- Abor Hills are drained by the Dibang river, a tributary of the Brahmaputra.
- The Subansiri River separates it from the Miri Hills.

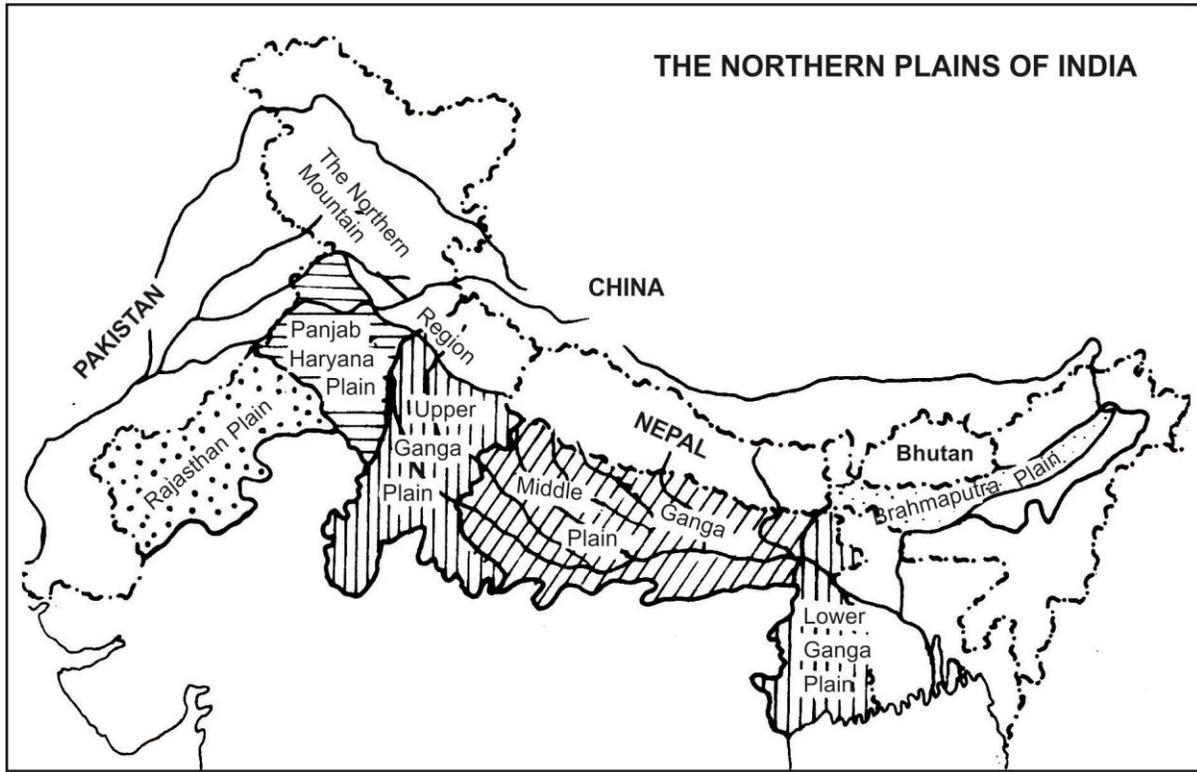
The Northern Plains of India

East-west extent

2,400 km (3,200 km if the Indus plains are included)

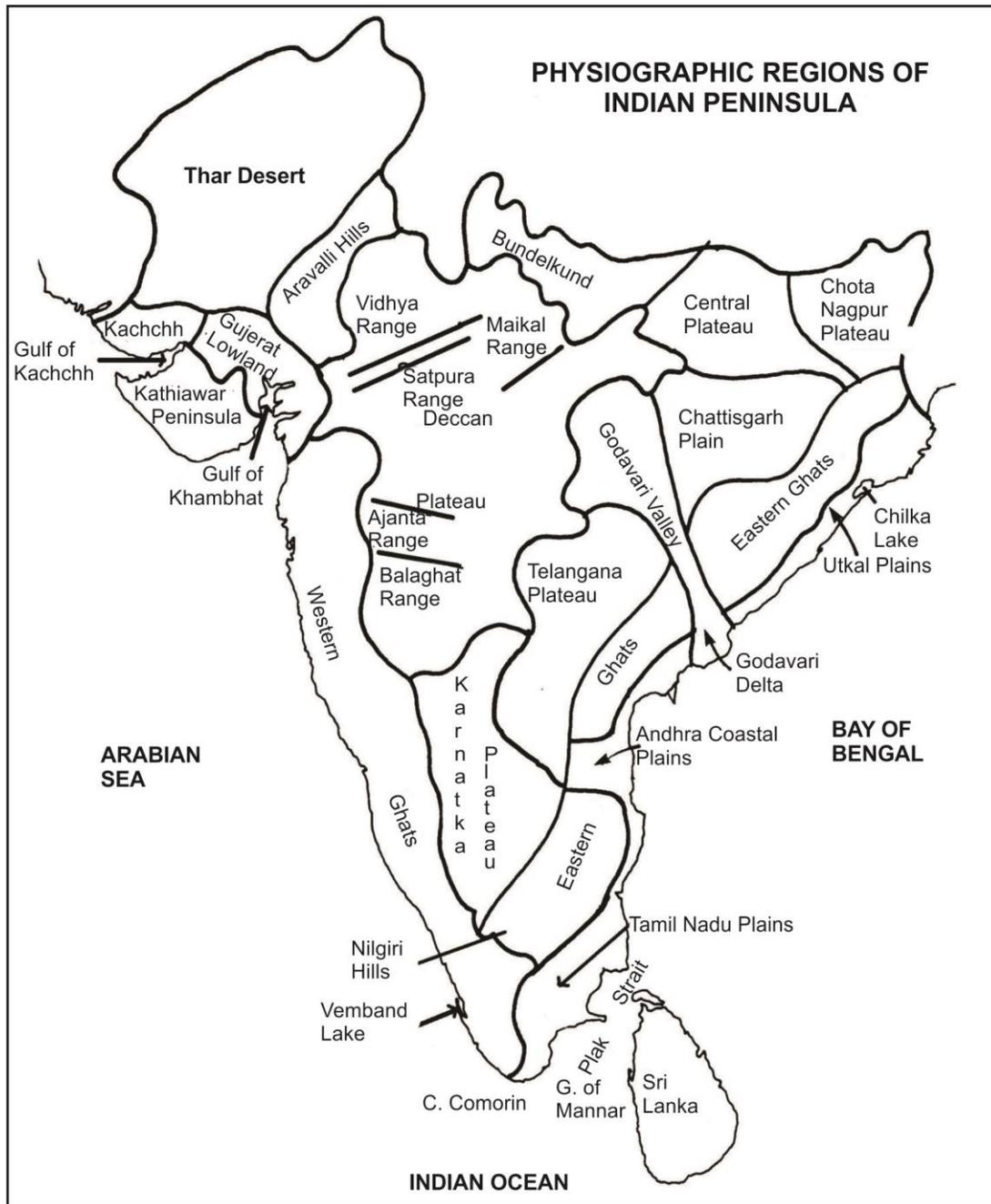
Average width: 150-300 km.

- Largest alluvial tract of the world, extending from the mouth of Indus to the mouth of Ganga between Peninsular plateau and the northern arc of the mountains.
- Alluvial in nature, and are composed of Bhangar (old alluvium), Khadar (new alluvium) in river bed, Bhabar (porous gravel ridden plains at the foot of Himalaya) and Terai (damp, thickly forest area, where bhabar stream reappears).



SUBDIVISION OF GREAT PLAINS

<p>THE RAJASTHAN PLAIN Extent: 650 km long. Average width: 250-300 km wide.</p>	<ul style="list-style-type: none"> • Thar or Great Indian Desert is the westernmost region of Great Indian Plains in the western Rajasthan. • A semi arid plain, lying to the east of Thar desert is known as Rajasthan Bagar. • The Luni is the only southwest flowing river of this region. • The Sambhar (largest), the Kuchaman, and the Didwana are important lakes situated to the north of Luni Basin.
<p>THE PUNJAB HARYANA PLAINS Extent: 640 km from northwest to southeast and 300 km in east west direction.</p>	<ul style="list-style-type: none"> • Extends from Punjab in the west to Yamuna River (Haryana) in the east. • Land of five rivers-is primary made up of 'doabs'-the land between two rivers'. • They are composed by Bets (Khadar plains) and Dhaya (Heavily gullied bluffs).
<p>THE GANGA PLAINS</p>	<ul style="list-style-type: none"> • The largest Great Plain stretching from Delhi to Kolkata across the states of Uttar Pradesh, Bihar and West Bengal. • The Ganga and its tributaries like Yamuna, Ghagra, Gomti, Kosi, Son deposit large amount of alluvium and make this extensive plain more fertile. • They comprise of Ganga-Yamuna Doab in the west, to the east of this Doab are the Rohilkhand plains which merges with Avadh plain in the east.
<p>THE BRAHMAPUTRA PLAIN</p>	<ul style="list-style-type: none"> • The low level plains formed by the Brahmaputra river system is situated between Eastern Himalaya (Arunachal Pradesh) in the north, Patkai and Naga hills in the east, Garo-Khasi-Jaintia and Mikir Hills and lower Ganga Plain and Indo-Bangladesh border in the west.



Peninsular Mountains

<p>THE ARAVALLI RANGE</p> <p>Total length: 700 km.</p> <p>Highest peak: Guru Shikhar (1,722 m) on the Abu Hills.</p>	<ul style="list-style-type: none"> • Extending from the north east to the south-west of India and separates the semi-desert regions of Rajasthan from the fertile Udaipur and Jaipur regions. • It is an example of relict mountain. <p>One of the most oldest fold mountains in the world.</p>
<p>VINDHYAN RANGE</p>	<ul style="list-style-type: none"> • A block mountain which separates northern India from the southern mainland. • Composed of sandstones, shales and quartzites. • Western part of the range is chiefly composed of Basalt.

	<ul style="list-style-type: none"> • South of it, Narmada River flows in the rift valley. • Acts as a natural watershed between north and south India.
SATPURA RANGE Highest peak: Dhupgarh (1,350 m) near Pachmarhi. Average elevation: 1,030 m above sea level.	<ul style="list-style-type: none"> • Extending in east west direction, to the south of Vindhya. • Situated between Narmada and Tapi River. • Starting from Rajpipala hills in the west through Mahadeo hills to Maikal ranges.
MAIKAL RANGE	<ul style="list-style-type: none"> • Eastern part of Satpura system is situated in Madhya Pradesh. • Mount Amarkantak is the highest peak.
AJANTA RANGE, BALAGHAT RANGE, AND HARISH CHANDRA RANGE	<ul style="list-style-type: none"> • Extending in east west direction, are all spurs of Western Ghats forming local watersheds. • Kalsubai (1,646 m), the highest peak of Western Ghat, is located in Harish Chandra Range.
NILGIRI HILLS	<ul style="list-style-type: none"> • It is the meeting point of Western and Eastern Ghats. • Doda Betta (2,637 m) is the highest peak of Nilgiri Hills. • The hills are separated from southern hills by a gap called Palghat Gap.
ANAIMALAI HILLS	<ul style="list-style-type: none"> • Anai Mudi (2,695 m) , the highest peak of South India is in Anaimalai Hills.
CARDAMOM HILLS	<ul style="list-style-type: none"> • It is situated in the extreme south of Peninsular India. • Formed of gneisses and schists.
RAJMAHAL HILLS	<ul style="list-style-type: none"> • Extends in north south direction and is situated in the northeastern edge of the Chhotanagpur Plateau.
SAHYADRI (WESTERN GHATS) Total length: about 1600 km. Average height: 1200 m. Highest Peak: Kalsubai (1646m).	<ul style="list-style-type: none"> • Runs along the western coastal plain from the south of valley of Tapi to Kanniyakumari, the southern most point of mainland India. • The northern section is made up of horizontal sheets of lava, producing a typical trappean like landscape. • The Western Ghats meet with Eastern Ghats in the Nilgiri hills. • Acts as a main watershed of Peninsular rivers.
EASTERN GHATS	<ul style="list-style-type: none"> • Runs along the eastern coast of India from northern Odisha to the Nilgiri Hills. • Characterised by unbroken hills between Mahanadi and Godavari. • Mahendragiri (1501 m) is the highest peak of Eastern Ghats. • Nallamalai Hills and Velikonda are other prominent ranges.

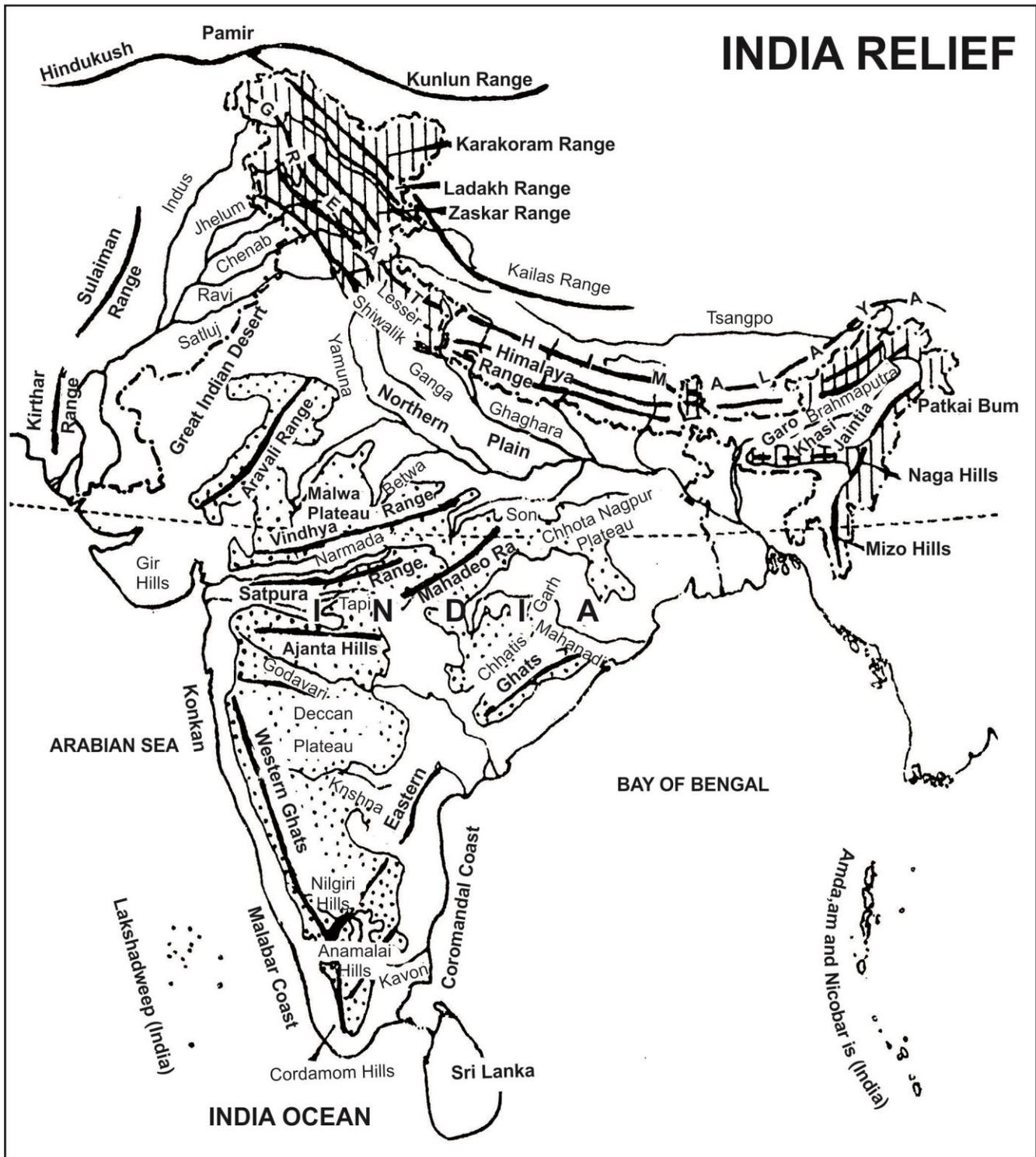
The Indian Plateau

BUNDELKHAND BHANDER, BAGHEL AND MALWA PLATEAU

- These highlands are situated to the north of Narmada rift valley.
- Bundelkhand Plateau is a part of central highlands and is composed of granite and gneisses.
- Malwa plateau is an example of dissected lava plateau, which is covered with black soil.

MEGHALAYA PLATEAU

- It comprises of Garo, Khasi and Jaintia Hills.
- Originally a part of Peninsular plateau.
- Garo-Rajmahal Gap separates it from the main block of peninsular plateau.



CHHOTANAGPUR PLATEAU

Highest Peak – Parasnath (1,366 m) in the Hazaribagh Plateau.

- Situated in the north eastern part of Indian Plateau includes the region of Jharkhand, adjoining Chhattisgarh and West Bengal.
- It consists of the Ranchi Plateau in the south, the Hazaribagh Plateau in the north, and the Rajmahal Hills in the northeast.
- Described as the "Ruhr of India"
- Pat lands are one of the chief characteristics of Chhotanagpur Plateau.

DECCAN PLATEAU

- South of the Satpura Range in the peninsula is called the Deccan Plateau.

(1) The Deccan Lava Plateau Region

- Northwestern part of Deccan Plateau is the region of basaltic lava.
- It includes the Western Ghats north of 16° north latitude, plateau of Maharashtra (except the east of Nagpur) and the adjoining parts of Madhya Pradesh, Karnataka and Andhra Pradesh.

(2) Telangana Plateau

- Part of the Deccan Plateau, comprises of the interior region of Andhra Pradesh.
- North of Krishna River is the plateau of Telangana.
- South of the Krishna River, lying in the Rayalseema plateau region.

(3) The Karnataka Plateau

- Situated to the south of Deccan Lava Region.
- Malnad and Maidan are two physiographic regions of Karnataka Plateau.

(i) Malnad

- Hilly and dissected plateau region about 35 km wide lying close to the Western Ghats. The highest hills is the Bababudan group.

(ii) Maidan

- Situated in the eastern part of Malnad, relatively large rolling plains with low granitic hills.

THE WEST COASTAL PLAIN

- Runs from Rann of Kachchh to Kanyakumari and are confined to a narrow belt about 10-15 km wide.

KATHIAWAR COAST

- Extends from Rann of Kuchchh to Daman in the south.

KONKAN COAST (Total length: 500km)

- The West Coastal Plain between Daman in the north and Goa in the south is example of coast of submergence due to vertical movements, and is consequently dissected.
- Coastal lowland is uneven and is interspersed with river valleys, creeks and ridges.

Malabar Coast

- Extends from Goa in the north to Kanyakumari in the south is a coastline of emergence.
- Southern coastal region receives more rainfall during summer monsoon season.

THE EAST COASTAL PLAIN

- Extends from the deltaic plains of the Ganga in the north to Kanyakumari in the south for 1100 km with an average width of 100 to 130 km.

(I) UTKAL COAST

- Extends for about 400 km from a little north of Subarnarekha river of the Ganga to the Mahanadi delta.

(II) ANDHRA COASTAL PLAINS

- Extends from the southern limit of Utkal plains to Pulicat lake (Andhra Pradesh).
- It has large deltas of the Krishna and the Godavari rivers.

(III) TAMIL NADU PLAINS

- Extends about 675 km, from the north of Chennai to Kanyakumari in the south.
- It has the deltaic plains of Cauvery and is popularly called, the Granary of South India.

Important Gulfs

NAME	SEPARATES	LOCATION	INFORMATION
Gulf of Kachchh	Kachchh and Kathiawar Peninsula	West of Gujarat	Region with highest potential of tidal energy generation.
Gulf of Cambay	Kathiawar Peninsula and Gujarat	Gujarat	Tapi, Narmada, Mahi and Sabarmati river drain into the Gulf.
Gulf of Mannar	Sri Lanka and Southern India	South east of Tamil Nadu	Asia's first marine biosphere reserve.

Important Lagoons and Lakes

NAME	STATE	INFORMATION
Kayals	Kerala	Popularly called backwaters in Kerala, on the Malabar coast. A chain of lakes which are connected with each other by canals. (Peaty soils of backwaters are called Kari in Kerala.)
Vemnad Lake (Largest Kayal)	Kerala	Large sized backwater of Kerala, have fertile alluvial islands. It is 75 km long and 5-10 km wide enclosed by a spit.
Chilka Lake Maximum length – 64 km Maximum breadth – 20 km Average width – 150 km	Odisha	Situated to the south west of the Mahanadi Delta. Enclosed by the sand spit, has an opening which permits sea-connection. Largest brackish water lake in Asia.
FRESH WATER LAKES		
Wullar Lake	Jammu and Kashmir	Largest fresh water lake of India.
Kolleru Lake	Andhra Pradesh	A part of the sea enclosed between the deltas of Godavari and the Krishna and has a number of islands in it.
Pulicat Lake 60 km long and 60 km in the widest part.	Andhra Pradesh	Situated on the southern border of Andhra Pradesh. Lagoon formed due to enclosure by sand spit now called Sriharikota islands.
Jaisamand Lake	Rajasthan	Largest fresh water lake of Rajasthan.
Nakki Lake	Rajasthan	A small natural lake near Mt. Abu surrounded by hills, important as tourist place.
Loktak Lake	Manipur	Site of hydroelectricity power generation. An example of centripetal drainage.
SALINE WATER LAKES		
Sambhar Lake	Rajasthan	Largest Lake of Rajasthan lies on the border of Jaipur and Nagaur District. Sodium chloride (common salt) and sodium sulphate are produced mainly by the Hindustan Salt Ltd.
Deedwana Lake	Rajasthan	Situated near Deedwana Town of Nagaur District.