

GEOGRAPHY

MODULE 3 – PHYSIOGRAPHY – Part 2

INDIAN DESERT

- ✚ The two divisions of Indian desert: **Marusthali – dead land, pure arid.**
Bagar – semi desert area, semi-arid.
- ✚ Marusthali - The proper desert with arid climate with low vegetation cover.
The eastern part is rocky while the western part is covered by shifting sand dunes.
- ✚ Bagar – west of Aravalli ranges.
Thin layer of sand.
Drained by Luni River in the south whereas the northern section has a number of salt lakes.
- ✚ Rajasthan Bagar region - number of short seasonal streams which originate from the Aravalli. Streams support agriculture in some fertile patches called **Rohi**.
- ✚ Most important river Luni is a seasonal stream.
- ✚ The Luni originates in the Pushkar valley of the Aravalli Range near the Ajmer and flows towards the south west into the Rann of Kutch.
- ✚ The region north of Luni is known as **the Thali or sandy plain.**
- ✚ There are some streams which disappear after flowing for some distance and present a typical case of inland drainage by joining a lake or **playa** e.g., the Sambhar Lake.
- ✚ The lake and the playas have brackish water which is the main source of obtaining salt.

COASTAL PLAIN

- ✚ The coastal plain of India is divided into - East coast of India and West coast of India.

East coast of India

- ✚ lies between - eastern ghats and Bay of Bengal.
- ✚ Extends from Ganga to Kanyakumari.
- ✚ Marked by deltas of river like Mahanadi, the Godavari, the Krishna, the Cauvery.
- ✚ Chilka lake and the Pulicat lake or lagoon are the important geographical features of the east coast.
- ✚ Extend from Subarnarekha River along the west Bengal – Odisha border to Kannyakumari.

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- ✚ Major part is formed – result of alluvial fillings of the **littoral zone: shore of the sea or a lake**.
- ✚ Rivers – Mahanadi, Godavari, Krishna, Cauvery.
- ✚ Average width – 120km.
- ✚ **Northern Circars** – between Mahanadi and Krishna rivers; Carnatic between the Krishna and the Cauvery Rivers.

Regional names

- ✚ **Orissa or Odisha – Utkal coast**
- ✚ From the southern limit of Utkal plain stretches the Andhra coast.
- ✚ South of Andhra plain is the Tamil Nādu coast.
- ✚ The **Tamil Nādu coast and parts of Andhra coast together – Coromandel Coast or Payan Ghat**.
- ✚ False Divi point in Andhra Pradesh or Krishna River Delta in the northern Kanyakumari in the south.

ANDHRA PLAIN	<p>South of Utkal Plain. Extends up to Pulicat Lake – long sand spit – Srihari Kota Island – ISRO launch Facility. Feature – delta formation by the rivers – Godavari and Krishna. Two deltas – merged – formed single physiographic unit. The combined delta – advance by 35km – towards the sea – during recent years. Kolleru Lake – once a lagoon at the shore but now lies far inland – coastline of emergence.</p>
TAMIL NADU PLAIN	<p>Stretches – 675km From Pulicat lake to Kannyakumari. Coast of Tamil Nadu. Average width – 100km. Feature – Cauvery delta – 130 km wide. Fertile soil and large-scale irrigation facilities - Cauvery delta – granary of South India. Kaveri River.</p>

West coast of India

- ✚ Extends from the Gulf of Cambay – gulf of Khambhat in the north to Cape Comorin in Kanyakumari.
- ✚ Starting from the North to South
- ✚ Divided into: **The Konkan Coast**
The Karnataka Coast
The Kerala Coast

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- ✚ Made up of alluvium brought down by the short streams originating from the western ghats.
- ✚ Dotted with large number of **coves - a very small bay, creeks – a narrow sheltered waterway such as an inlet in a shoreline or channel in a marsh** and a few **estuaries – marine landforms**.
- ✚ The estuaries of the Narmada and the Tapti – major.
- ✚ The Kerala coast or Malabar coast – some lakes, lagoons, backwaters.
- ✚ Largest – Vembanad lake.
- ✚ North – Rann of Kachchh; South - Kanyakumari.
- ✚ These narrow plains with average width – 65km.

KUTCH AND KATHIAWAR REGION	Extension of Peninsular plateau. Kathiawar: made of Deccan Lava and tertiary rocks in the Kutch area. Treated as integral part of Western Coastal Plain. Now levelled down.
KUTCH PENINSULA	Island Surrounded by seas and lagoons Filled by sediments brought by the Indus River which is used to flow through this area. Lack of rains turned into arid and semi-arid regions. <u>North</u> – salt soaked plain – Great Rann . <u>South</u> continuation – Little Ran – south and coast east.
KATHIAWAR PENINSULA	Lies south of the east of Kachchh. Central part – highland of Mandav Hills. Small streams radiate in all directions – Radial Drainage. Mt. Girnar – 1117m – highest point – volcanic origin. Gir Range – southern part. Covered with dense forest. Famous for – Gir Lion .
GUJARAT PLAIN	East of Kachchh and Kathiawar. Slopes towards the west and south west. Rivers – Narmada, Tapti, Mahi, Sabarmati. Plain includes – south of Gujarat and coastal areas of the Gulf of Khambhat. East – fertile: agriculture. Greater part near coast – covered by wind blown loess or heaps of sand.
KONKAN PLAIN	Extends from Daman to Goa. Marine erosion – cliffs, shoals, reefs, islands in the Arabian Sea. Thane creek – around the Mumbai – important embayment: a recess in a coastline forming a bay – provide excellent natural harbour.
KARNATAKA COASTAL PLAIN	Goa to Mangalore. Narrow plain.

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	<p>Average width – 30 to 50 km. Maximum 70 km near Mangalore. Streams originating in the Western Ghats. Steep slopes and waterfalls. The Sharavati River – descending over a steep slope make an impressive waterfall – Gersoppa or Jog Falls – 271m high. [Angel Waterfalls – Venezuela - 979m – highest in the world. Tugela Falls – South Africa – 948m – second highest.</p>
KERALA PLAIN	<p>Malabar Plain. Between Mangalore and Kanniyakumari. Wider than Karnataka Plain. Low lying plain. Existence of lakes, lagoons, backwaters or Kayals, spit: marine landforms, etc – features. Backwaters are the shallow lagoons or inlets of the sea. Lying parallel to the coastline. Largest lake – Vembanad lake – 75km long – 5 to 10 km wide – rise to 55km long spit.</p>

Significance of Coastal Plains

- ✚ Fertile soil.
- ✚ Different crops are grown.
- ✚ Rice – main crop.
- ✚ Coconut trees.
- ✚ Coast is dotted with big and small ports – help in carrying trade.
- ✚ Sedimentary rocks – large deposit of mineral oil – KG Basin.
- ✚ Sands of Kerala coast – large quantity of **Monazite** – used for nuclear power.
- ✚ Fishing – important occupation.
- ✚ Production of salt – low lying areas of Gujarat.
- ✚ Kerala backwaters – tourism.
- ✚ Goa provides good beaches – tourist destination.

HILLY RANGES OF PENINSULAR PLATEAU

EASTERN AND WESTERN GHATS

- ✚ Hill ranges are relict in type.
- ✚ Lower than Himalayan Ranges.
- ✚ Important Hills:

ARAVALLI HILLS	<p>Originate in Gujarat at Palanpur. Extend till Haryana. Terminate in the Delhi range. Maximum extend – 800 km. Old fold mountains ranges.</p>
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	<p>One of the - Oldest tectonic mountains in the world. Rocks – make up at Aravalli hills - more than two billion years ago. Average elevation – 400 to 600 only. They were subjected to weathering and erosion. Only few [peaks reach the elevation above 1000m. – Mt. Gurushikhar: 1772m – highest point of Aravalli; Mt. Abu: 1158m – part of a plateau. Geologically they are made up of – Dharwar igneous metamorphic rocks. <u>River system</u> – Banas, Luni, Sabarmati. Banas – tributary of Chambal. Luni-ephemeral River – terminates in the Rann of Kachchh - Seasonal river. <u>Passes</u> – Udaipur and Ajmer – Piplighat, Dewair, Desuri, etc. <u>Lakes</u> – Lake Sambhar (largest inland saline water body in India), Lake Dhebar (south of Aravallis), Lake Jaisamand (Jaisamand wildlife sanctuary)</p>
<p>SATPURA RANGE</p>	<p>Combination of Satpura, Mahadeo, Maikala Hills. Tectonic mountains – formed about 1.6 billion years ago – result of folding and structural uplift – Horst landforms. Distance - 900km. Lie east to Mahadeo hills. Pachmarhi – highest point of Satpura range. Dhupgarh – 1350m – highest peak of Pachmarhi. Maikala Hills - east to Mahadeo hills. Amarkantak plateau – is a part. 1127m. Plateau has – <u>drainage system - Narmada and Son – drainage into Bay of Bengal as well as Arabian Sea.</u> Situated - Madhya Pradesh, Chhattisgarh. Hills rich in - bauxite, due to the presence of Gondwana rocks. Dhuandhar waterfalls over the Narmada – Madhya Pradesh.</p>
<p>WESTERN GHATS</p>	<p>The Sahyadri. Form – western edge of the Deccan tableland. Run from the Tapti valley to a little north of Kanniyakumari – distance 1600km. Western ghats – steep sided, terraced, flat topped hills presenting a stepped topography facing the Arabian Sea Coast. <u>Horizontal bedded lava</u> – weathering – characteristics – landing stair aspect – to the relief of this mountain chain. Rise as sheer wall – average elevation – 1000m from the western coastal plain. Slope gently on eastern flank and hardly appear to be a mountain – deccan tableland.</p>

	South of Malabar, Nilgiris, Anamalai, tec – different landscapes due to different geographical structure.
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Northern Section of Western Ghats

- ✚ Deccan lava or Deccan Traps – from Tapti valley to north of Goa.
- ✚ Average height – 1200m.
- ✚ Some peaks attain more height.
- ✚ **Kalasubai 1646m near Igatpuri – Salher 1567m 90km north of Nasik – Mahabaleshwar 1438m – Harishchandragarh 1424m – important peaks.**
- ✚ Passes – Thal Ghat – Bhor Ghat.
- ✚ Provide passage by road and rail between the Konkan plain in the west and the Deccan Plateau in the east.
- ✚ **Konkan Coast** – Maharashtra Coast and Goa Coast.
- ✚ **Malabar Coast** – Kerala and Karnataka Coast.

Middle Sahyadri

- ✚ From 16 N up to Nilgiris Hills.
- ✚ Made of – granite and gneisses.
- ✚ Covered with dense forest.
- ✚ Western scarp – dissected by headwards erosion of the west flowing streams.
- ✚ Average height – 1200m.
- ✚ Many peaks exceed – 1500m.
- ✚ Important peaks – **Vavul Mala 2339m – the Kudremukh 1892m – Pashpagiri 1714m.**
- ✚ Nilgiris Hills joins the Sahyadri – trijunction of Karnataka, Kerala, Tamil Nadu – rise 2000m.
- ✚ Mark the junction - western ghats and eastern ghats.
- ✚ Important peaks - **Doda Betta 2637m and Makurti 2554m.**

Southern Section of Western Ghats

- ✚ Separated by – Sahyadri range by - **Palghat gap.**
- ✚ A rift valley.
- ✚ This gap is used by number of roads and railway lines to connect the plains of Tamil Nadu with the coastal plains of Kerala.
- ✚ Through this gap – moist bearing clouds of the south west monsoon can penetrate some distance inland bringing rain to Mysore region.
- ✚ South of Palghat gap – intricate system of steep rugged slopes on both the eastern and western sides of the Ghats.
- ✚ **Anaimudi 2695m – highest peak in the whole of the southern India.**
- ✚ Three ranges radiate in different direction from Anaimudi these ranges are the **Anamalai 1800-2000m** to the north, the **Palani 900 – 1200m** (Kodaikanal) to the north east and the **Cardamom Hills** or the **Ealaimalai** to the south.

Eastern Ghats

- ✚ Run parallel to the east coast of the India.
- ✚ Leaving broad plains between their base and the coast.
- ✚ **Chain of highly broken and detached hills** starting from the Mahanadi in Odisha to the Vagai in Tamil Nadu.
- ✚ They almost disappear between the Godavari and the Krishna.
- ✚ They neither have structural unity nor Physiographical continuity.
- ✚ These hill groups are generally treated as independent units.
- ✚ Northern part – between Mahanadi and Godavari – exhibit the true mountain character of Eastern Ghats – **Maliya and Madugula Konda ranges.**
- ✚ Peaks and ridges of the Maliya range – general elevation – 900m to 1200m.
- ✚ **Mahendra Giri 1501m – tallest peak – Maliya range.**
- ✚ Madugula Konda ranges – elevation – 1100m to 1400m. several peaks exceeds – 1600m.
- ✚ Important peaks - **Jindhgada peak 1690m – Gali Konda 1643m – Sinkram Gutta 1620m – Arma Kond 1680m.**
- ✚ Between Godavari and Konkan rivers – the eastern ghats lose their hilly character and are occupied by the Gondwana formation KG basin is here.
- ✚ Eastern ghats reappear as more or less a continuous hill range in Cuddapad and Kurnool district of Andhra Pradesh – **Nallamalai Range** – Naxalite hideout in Andhra Pradesh – general elevation – 600 to 850 m.
- ✚ **Southern part – Palkondna range.**
- ✚ To the south - the hills and plateaus attain very low altitudes only Javadi Hills (Tamil Nadu) and **Shevroy-Kalrayan Hills** – form two distinct features – 1000 elevation.

ISLANDS OF INDIA

- ✚ Number of offshore identified islands – 1382.
- ✚ Major island groups – **Andaman and Nicobar** archipelago in the Bay of Bengal
Lakshadweep Islands in the Arabian Sea.

Andaman and Nicobar

- ✚ Formed due to collision between the Indian plate and Burma Minor Plate – similar to the formation of Himalayas – Eurasian plate.
- ✚ Southward extension of the Arakan Yoma Range – Myanmar.
- ✚ Arakan Yoma Range – extension of Purvanchal hills.
- ✚ Narrow chain
- ✚ North south direction.
- ✚ 6 ° 45'N to 13° 45'N.
- ✚ Archipelago – composed around 265 big and small islands – 203 Andaman Islands + 62 Nicobar Islands.
- ✚ Distance – 590 km.
- ✚ Divided into three main islands – **north, middle, south.**

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- ✚ **Duncan passage** – separate Little Andaman from South Andaman.
- ✚ Great Andaman group of Islands in the North – separated by the **Ten Degree Channel** from the Nicobar group in the South.
- ✚ The **Great Channel** – between the Great Nicobar Islands and the Sumatra islands of the Indonesia.
- ✚ **Coco Strait** – between the North Andaman Islands and the Coco islands of Myanmar.
- ✚ **Port Blair – the capital of Andaman Nicobar Islands** lies in the south Andaman.
- ✚ Among the Nicobar Islands - the **Great Nicobar is the largest**. It is the southern most island and is very close too Sumatra islands of Indonesia.
- ✚ The Car Nicobar is the northern most.
- ✚ Islands are mostly made up of **tertiary sandstone, limestones, shale resting** on the basic and ultra-basic volcanoes.
- ✚ The **Barren and Narcondam islands** – north of Port Blair – volcanic islands – active volcanoes in India.
- ✚ Some of the islands are fringed with **coral reefs**. Many of them are covered with thick forest. Most of the islands are mountainous.
- ✚ Peaks – Saddle Peak – 737m – north Andaman – highest peak.
- ✚ Tropical marine climate – influenced by the seasonal flow of the monsoon winds.
- ✚ The region is under the dense tropical rain forests.
- ✚ The coastal region has mangrove forest.
- ✚ Coconut fruits is the staple food of the people.
- ✚ Fisheries, piggery – also followed.
- ✚ Giant Robber Crab – largest and rarest species of crab.
- ✚ Tribal inhabitants. Sparsely populated.
- ✚ Many islands are uninhabited.
- ✚ Entire region is vulnerable to earthquakes – major earthquake zone.

Ritchie's Archipelago

- ✚ Cluster of small islands.
- ✚ Lies 20km east of the Great Andaman.
- ✚ Neil Island and Havelock Islands - Ritchie's Archipelago.
- ✚ Ross Islands – renamed as Netaji Subhash Chandra Bose Dweep.
- ✚ Neil Islands as - Shaheed Dweep.
- ✚ Havelock Islands as – Swaraj Dweep
- ✚ **Ross islands** – south Andaman region - 3 km east of Port Blair.
- ✚ **Andaman and Nicobar Islands- Emerald Islands**.
- ✚ Andaman Islands – home to – palaeolithic people – **Sentinelese**.
- ✚ Sentinelese – one of the last humans on earth who remain untouched by modern civilization.

Lakshadweep Islands

- ✚ Coral islands
- ✚ Part of – Reunion Hotspot volcanism.
- ✚ Group of 36 islands.

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- ✚ Area – 32 sq.km and extending between 8 N and 12N latitude.
- ✚ Main islands – **Kavaratti – Agatti – Minicoy – Amini.**
- ✚ Earlier known as **Laccadive, Minicoy, Amindivi Islands.**
- ✚ Lakshadweep – name adopted – **1 – November – 1973.**
- ✚ Islands are separated from one another by very narrow straits.
- ✚ Lakshadweep islands group - union territory administered by the President through Lt. Governor.
- ✚ Smallest union territory of India.
- ✚ **Kavaratti - administrative capital** of the Lakshadweep islands - also the principal town of the union territory.
- ✚ Uni – district Union Territory.
- ✚ 12 atolls, three reefs, five submerged banks, ten inhabited islands.
- ✚ Lakshadweep – Malayalam; Sanskrit – a hundred thousand islands.
- ✚ Located – distance of 280 km to 480km off the Kerala coast.
- ✚ Earlier Kozhikode was the administrative capital then later on transferred to Kavarathy.
- ✚ Fishing – main occupation.
- ✚ Storm beaches – consist of – unconsolidated pebbles, shingles, cobbles, boulders.
- ✚ Lakshadweep absence of forests.

Minicoy Islands	Located – south of the nine-degree channel. Largest island among Lakshadweep group.
8 Degree Channel	North latitude. Separate Minicoy and Maldives.
9 Degree Channel	North latitude. Separates Minicoy from main Lakshadweep archipelago.

MINOR ISLANDS

Other Islands

- ✚ The other islands in the Indo Gangetic Delta – delta islands and between India and Sri Lanka – Remnants of Adams Bridge or Rama’s Bridge or Rama Setu – formed due to Sub mergence.

New Moore Islands

- ✚ **South Talpatti and Purbasha Islands.**
- ✚ Small inhabited offshore sand bar landforms – marine landforms in the Bay of Bengal, off the coast of the Ganges Brahmaputra Delta region.
- ✚ Emerged aftermath the **Bhola Cyclone in November 1970.**
- ✚ Keeps on emerging and disappearing.
- ✚ No permanent settlement.
- ✚ Both India and Bangladesh claimed sovereignty over it – because of the existence of – oil and natural gas in the region.

ENTRI

- ✚ Issues of sovereignty – part of larger dispute over the Radcliffe Award methodology of settling the maritime boundary between the two nations.

Diu Islands

- ✚ Located off the south coast of Kathiawar.
- ✚ Offshore islands on the western coast off the gulf of Cambay.
- ✚ Bordering the Junagarh district.
- ✚ Separated from the Gujarat Coast by a tidal creek.
- ✚ **Limestone cliffs – rocky coves – sandy beaches – Nagoa.**
- ✚ Famous for historical Diu fort. Massive fort built by the Portuguese dominates the skyline.
- ✚ Beautiful beaches.
- ✚ **Nagoa beach** and **Ghogla beach** – famous.

Majuli Island

- ✚ Larger river island in the Brahmaputra River – Assam.
- ✚ Formed due to – course change by river and its tributaries - Lohit.
- ✚ Originally a piece of land between Brahmaputra River – North and Burhidihing river – south.
- ✚ Due to earthquakes, there changed the course.
- ✚ Formed – Majuli Islands.

Butcher Islands

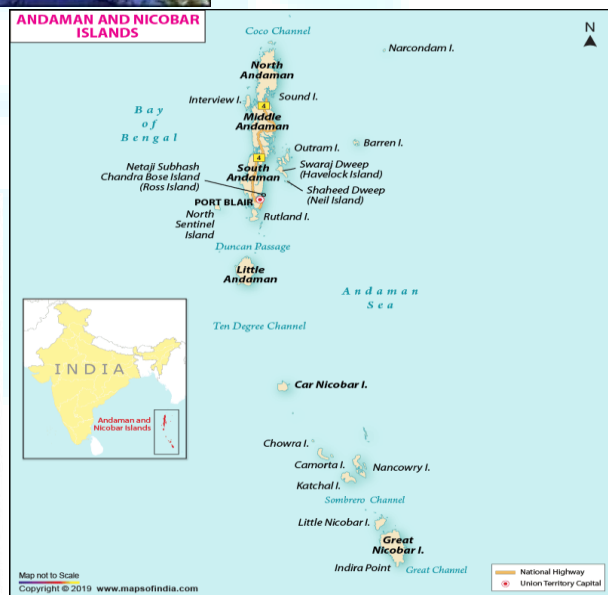
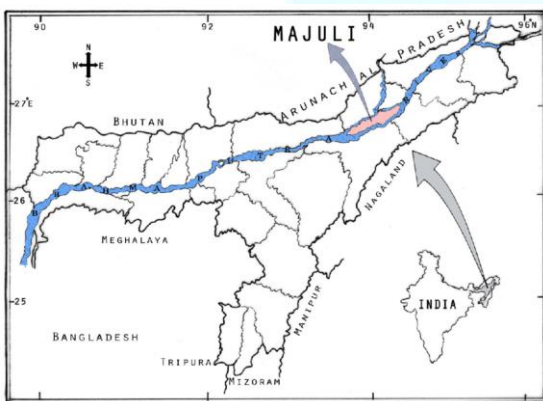
- ✚ Islands off coast of Mumbai.
- ✚ **Jawahar Dweep.**
- ✚ Oil terminal – used by port authorities to offload from the oil tankers.
- ✚ Crude oil is stored in the oil containers on the islands.
- ✚ They piped to Wadala- Mumbai – refined.
- ✚ Keeps city safe from the mishap.
- ✚ Restricted area.
- ✚ Covered with dense vegetation.
- ✚ A hillock rises from the center of the island.
- ✚ Located – 8.25 km from the Gateway of India.

Sri Harikota Islands

- ✚ Islands off Andhra Pradesh.
- ✚ **Barrier islands.**
- ✚ **India's only satellite launch center in the Satish Dhawan Space Centre – SHAR.**
- ✚ Used by – Indian Space Research Organization – to launch satellite using multi stage rockets – Polar Satellite Vehicle, Geosynchronous Satellite Launch Vehicle.
- ✚ Srihari Kota separates the Pulicat lake from the Bay of Bengal – home to the town of Pulicat.

Pamban Island

- ✚ Islands off Tamil Nadu.
- ✚ Located between India and Sri Lanka – Gulf of Myanmar – Ramnathapuram district – Tamil Nadu.
- ✚ **Rameswaram Islands.**
- ✚ Covered with white sand.
- ✚ Chain formed – the shoals of Adams Bridge – Mannar Islands of Sri Lanka – separate Palk Bay and the Palk Strait in the north east from the Gulf of Mannar in the south west.



ISLANDS

