

Islands

Amindivi islands

Laccadive islands

----- 9 degree channel

Minicoy

----- 8 degree channel
(aka Maliku Kandu)

Maldives

Lakshadweep (36 coral islands)

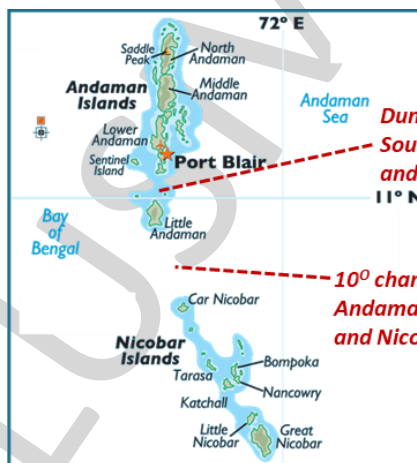
- Capital : Kavaratti
- High Court : Kerala
- Area : 32 sq km (India's smallest UT)
- Entry to Lakshadweep is restricted. One requires an entry permit issued by Lakshadweep Administration to visit these islands.

Renaming of islands in 2018

Havelock Island → Swaraj Dweep

Neil Island → Shaheed Dweep

Ross Island → Subhash Chandra Bose Dweep



Coco Islands (part of Myanmar)

To their north is Preparis Island of Myanmar

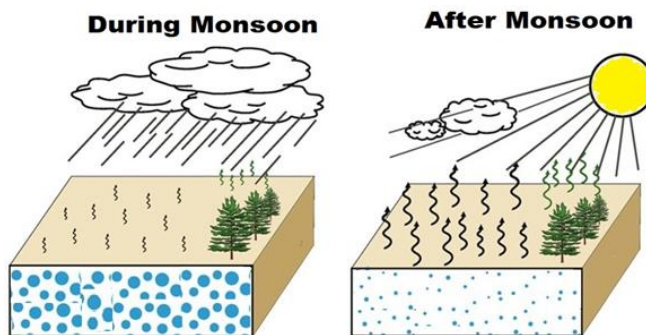
To their south is Landfall Island of India



October Heat

Warm & humid conditions during retreating monsoon

Days are warm, nights are cool



Rock cycle

Earth's crust (by weight)

- 46% Oxygen
- 28% Silicon
- 08% Aluminium

Note: elements rarely occur in pure form

Basic source of all minerals is the hot magma in the interior of the earth

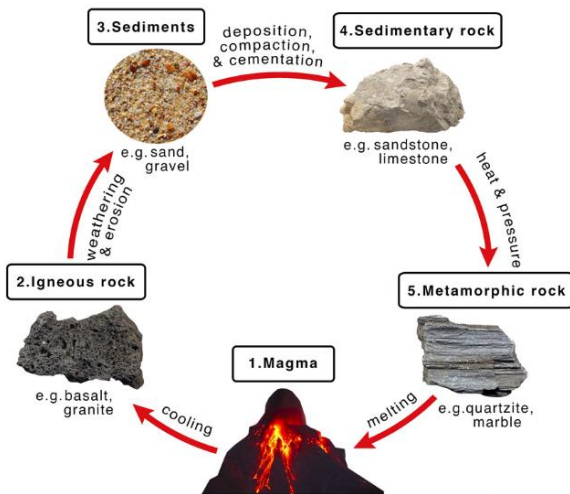
Feldspar & quartz are the most common minerals found in rocks

Feldspar

- Half of the earth's crust is composed of feldspar
- Silicon and oxygen are common in all types of feldspar

Quartz

- It is an important component of sand and granite.
- It consists of silica



Types of rocks

Igneous Rocks (primary rocks)

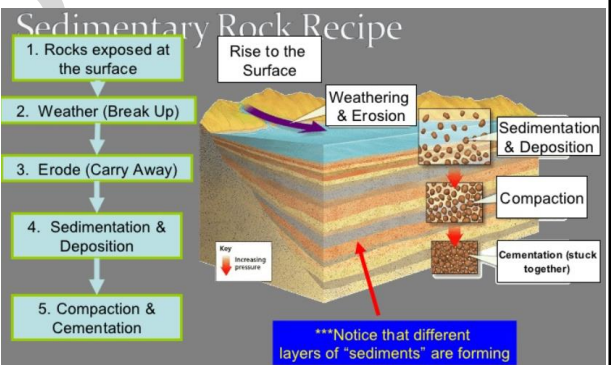
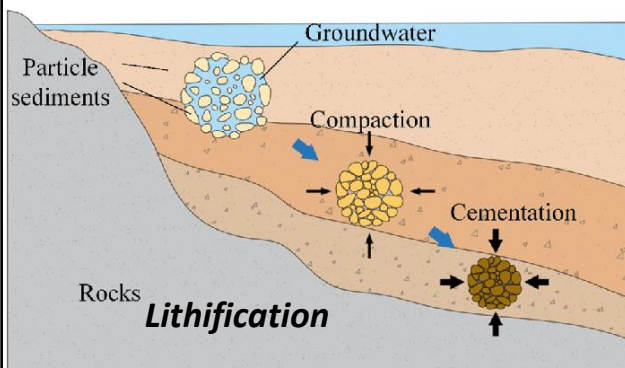
- ❑ solidified from magma and lava. e.g. Granite, Gabbro, pegmatite

Sedimentary Rocks

- ❑ layers of sediments of broken rocks convert into rock through lithification

Metamorphic Rocks

- ❑ rocks undergo recrystallisation due to change in pressure, volume, temperature



Sedimentary rocks are classified into three major groups:

- mechanically formed : sandstone, conglomerate, limestone, shale, loess etc.
- organically formed : geysirite, chalk, limestone, coal etc.
- chemically formed : chert, limestone, halite, potash etc.

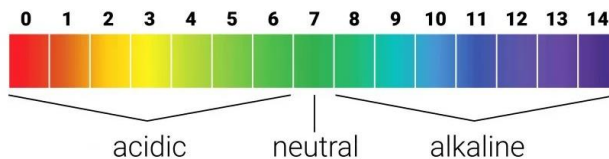
Almost all fossils are preserved in sedimentary rocks.



Metamorphism

- It is a process by which rocks undergo recrystallisation
- Foliation : layers are formed
- Banding : alternate layers are of light and dark colour
- e.g. Gneissoid, granite, syenite, slate, schist, marble, quartzite

Soil pH

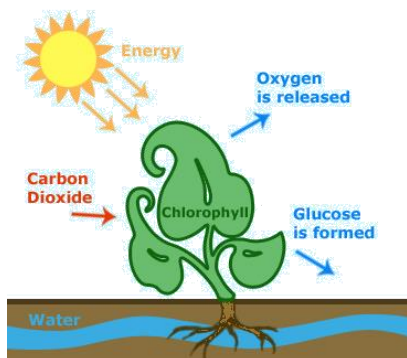


- ❑ **Acidic soils** have a pH below 7
- ❑ If soil is too much acidic, then to increase pH, add some **lime**
- ❖ Most crops want pH range 6 to 7.5
- ❖ Tea, Potatoes etc grow well at pH 5

- ❑ **Alkaline soils** have a pH above 7
- ❑ If soil is too much basic, then to decrease pH, add some **gypsum**
- ❖ Saline soil is generally alkaline.
- ❖ Saline alkaline soils are locally called as Usar, Reh, etc

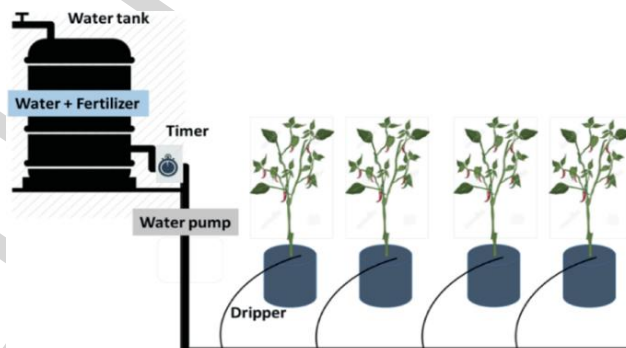
Carbon fertilization

increase in photosynthesis due to increase in CO₂ levels in atmosphere

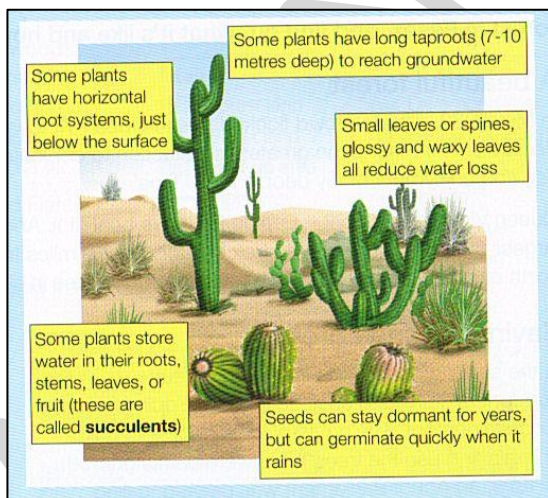


Fertigation

Mixing fertilizers in irrigation water.
Chemigation ? Mixing chemicals in irrigation water



Plant adaptation



Xerophyte
plants that grow with little liquid water
e.g. in desert and Arctic

Cryophytes
Organisms that grow on ice and snow
e.g. algae, moss, lichen

Halophyte
Plants that grow in saline water.
e.g. Mangroves

Hydrophyte
Plants that grow submerged in water.
e.g. Lotus

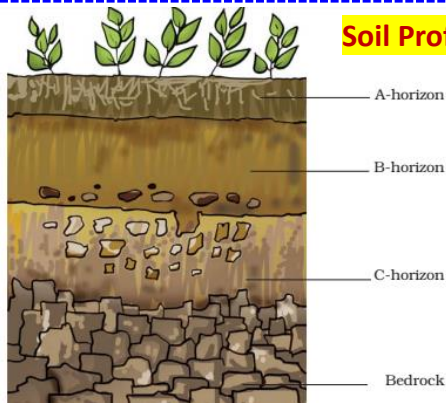
Soil

Soil & Land Use Survey of India

- est in 1958, HQ in Delhi
- under Department of Agriculture

Ancient India

- Urvara soil meant fertile soil
- Usara soil meant sterile soil



Horizon A

- ❑ organic materials have got incorporated with mineral matter, nutrients and water

Horizon B

- ❑ It has some organic matter in it, although the mineral matter is noticeably weathered.

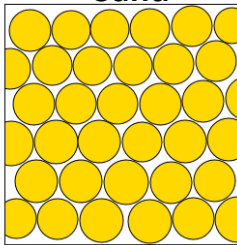
Horizon C

- ❑ It is composed of loose parent material.
- ❑ It is the first stage in soil formation process and eventually forms the above two layers.

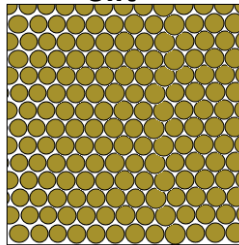
Parent Rock

- ❑ Underneath these three horizons is bed rock

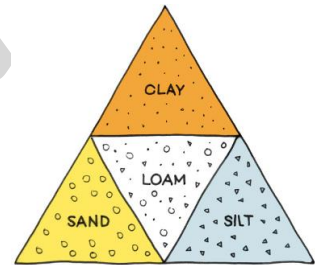
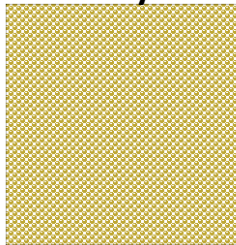
Sand



Silt



Clay



Think like this: Sand is wheat, Clay is flour

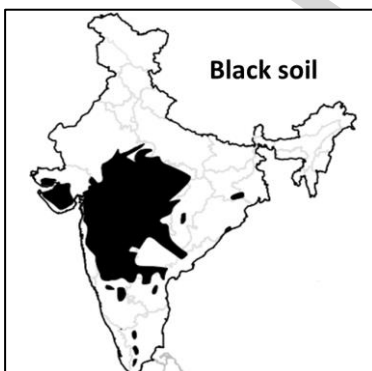
Sand

Big particles. Big space between particles. Water drains away easily. **Water holding capacity is poor.**

Clay

Small particles. Small space between particles. Water doesn't drain easily. **Water holding capacity is good.**

Black soil



Mostly in

- Maharashtra (Deccan plateau)
- MP (Malwa plateau)
- Gujarat

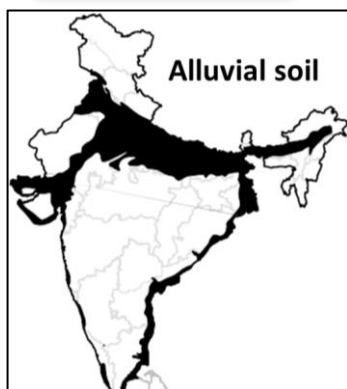
Black soil / Regur soil

- Formed by weathering of **Basalt Lava**
- Good for growing **cotton**
- Rich in : iron, alumina, magnesia, potash, lime
- Poor in : phosphors, nitrogen, humus, organic matter

- ❑ Black soil has lot of clay
 - It holds moisture, hence needs less irrigation
 - It sustains crops during dry season
 - It is suitable for rainfed crops
- ❑ In summer, it shows self-ploughing characteristics
 - It develops cracks which helps in aeration



Alluvial soil



Alluvial Soil

- Deposited by rivers
- Good for farming
- Rich in : Potash
- Poor in : Nitrogen, Phosphorous

Two types: Khadar and Bhanger

- **Khadar**: It is the new alluvium deposited by floods annually, which enriches the soil by depositing fine silts.
 - **Bhanger**: It is the older alluvium, deposited away from the flood plains
- Both Khadar and Bhanger have Kankars (calcareous concretions)*

- It covers 40% of India
- Moving from west to east, sand decreases, while clay increases
- Colour depends on depth of deposition, time taken for maturity, etc.

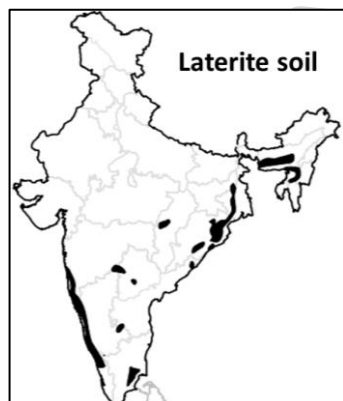
Red & Yellow soil



Red and Yellow Soil

- Formed from igneous rocks in low rainfall area
- It looks red due to iron oxides
- It looks yellow when it occurs in a hydrated form
- Fine-grained is fertile
- Coarse-grained is poor in fertility
- Rich in : Iron and potash
- Poor in : nitrogen, phosphorous, humus

Laterite soil



Laterite soil (rusty red color due to iron oxide)

- Formed by high temperature and high rainfall
- Good for growing Cashews and Cassava
- Rich in : iron oxide, Aluminium oxides, potash
- Poor in : humus, organic matter, nitrogen, phosphate, calcium

- Humus is removed fast by bacteria that thrives well in high temperature.
- Due to rain, lime and silica are leached away, but iron oxide and alumina are left behind.
- Generally not suitable for farming. Fertilizers must be added to grow tea, coffee, rubber, coconut, etc.

It is cut as bricks for use in house construction

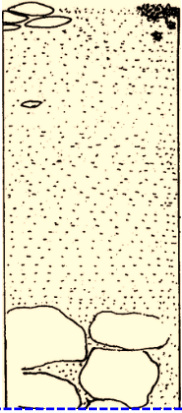


Mostly in

- higher areas of Peninsular plateau
- Karnataka, Kerala, TN
- hilly areas of Odisha & Assam

I read I forget, I see I remember

See explanation of this PDF on [YouTube](https://www.youtube.com/c/allinclusiveias) www.youtube.com/c/allinclusiveias



Arid soil

Arid soil (Red to brown in colour)

- Formed in western Rajasthan
- It is sandy and saline
- Rich in : **calcium**
- Poor in : nitrogen, humus, organic matter, moisture
- Lower horizon has 'kankar' because of high calcium content
- 'Kankar' layer in bottom horizons restricts infiltration of water
- So when irrigation is available, soil moisture helps in plant growth
- In case of heavy rain, **flash floods** occur. (Sand has poor water holding capacity. Kankar does not allow infiltration)

Forest Soil

Forest soil

- It is formed in forest areas where sufficient rainfall is available.
- In snow-bound areas of Himalayas, it is acidic with low humus content.
- In upper slopes, it is coarse-grained
- In valley, it is loamy and silty, and very fertile.

Peaty Soils (black in colour)

Peaty soil

- formed in areas of heavy rainfall and humidity, where there is a good growth of vegetation.
- Thus, large quantity of dead organic matter accumulates in these areas, and this gives a rich humus and organic content to the soil.
- Organic matter in these soils may go even up to 40-50 per cent.**
- At many places, they are alkaline also.
- Mostly in Bihar, Uttaranchal, coastal WB, Odisha, TN

Soil erosion

Rills



Gully



Ravine



In arid areas → Wind erosion is significant
 On level land → Sheet erosion by water is significant
 On slopes → gully erosion is significant
 Remember like this: Splash → Sheet → Rills → Gully → Ravines
 Soil lowers water carrying capacity of rivers which causes floods

Area with large number of ravines is called badland topography e.g. Chambal basin

Prelims 2014

In India, the problem of soil erosion is associated with which of the following?

- Terrace cultivation
- Deforestation
- Tropical climate

Select the correct answer

- (a) 1 and 2 only **(b) 2 only**
 (c) 1 and 3 only (d) 1, 2 and 3

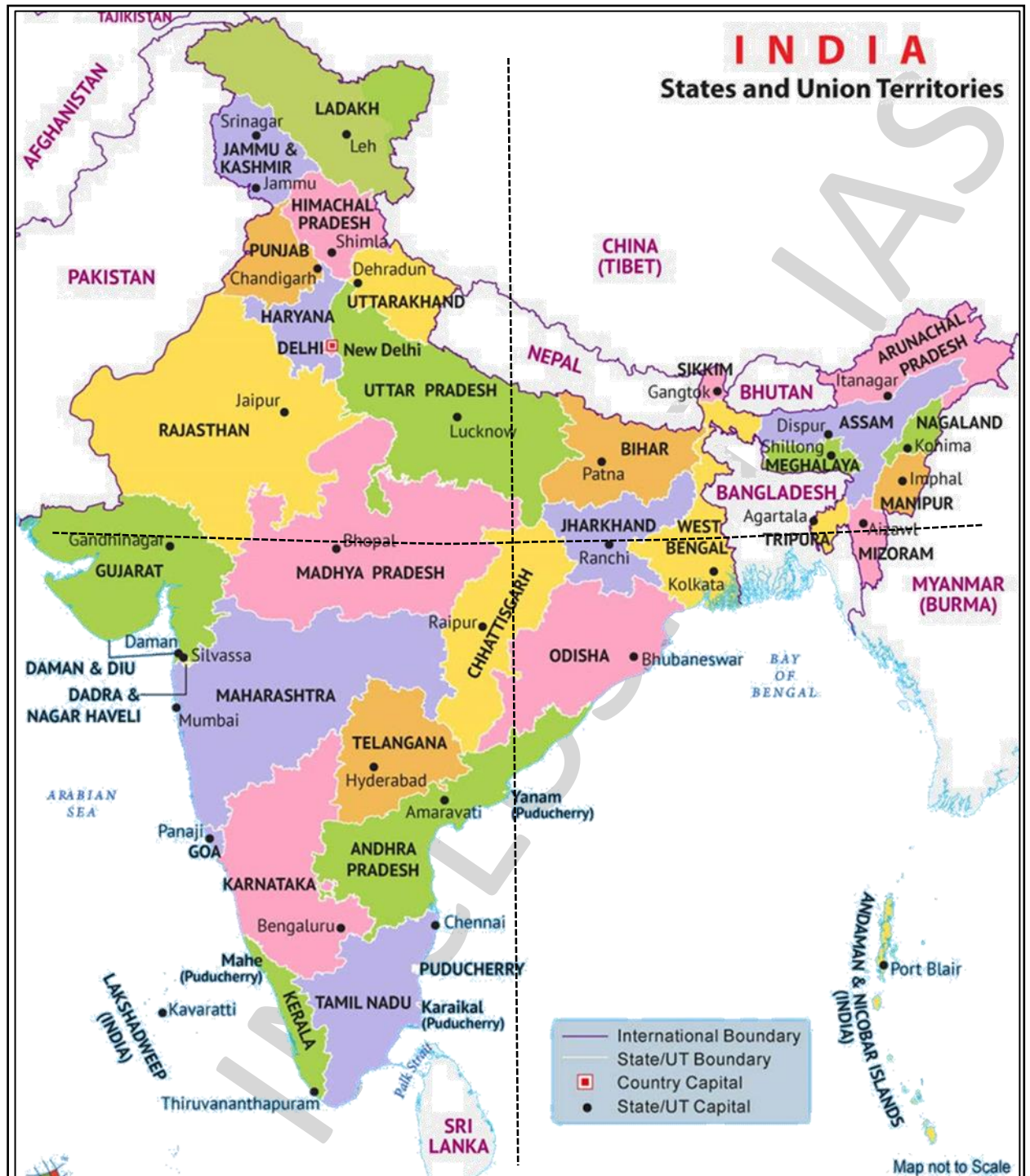
Prelims 2010

With reference to soil conservation, consider the following

- Crop rotation
- Sand fences
- Terracing
- Windbreaks

Which of the above are considered appropriate methods for soil conservation in India?

- (a) 1, 2 and 3 (b) 2 and 4
 (c) 1, 3 and 4 **(d) 1, 2, 3 and 4**



77.2°E - Longitude of Delhi

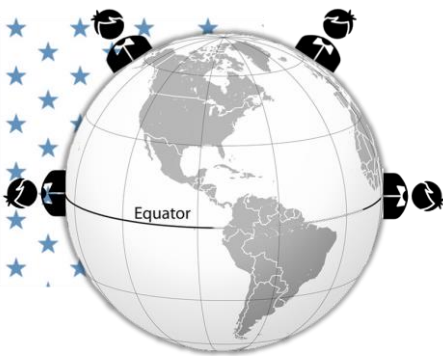
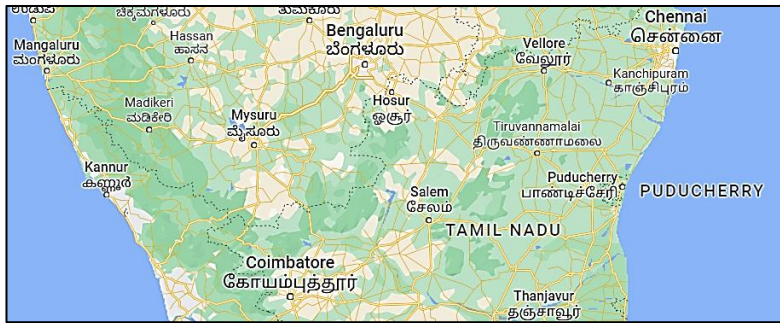
82°30'E - Standard meridian of India passes through Mirzapur (near Prayagraj) Uttar Pradesh

Prelims 2003 Consider the following statements:

1. Longitude of Jabalpur's location is between those of Indore and Bhopal.
2. Latitude of Aurangabad's location is between those of Vadodara and Pune.
3. Bengaluru is situated more southward than Chennai.

Which of these statements is/are correct?

- (a) 1 and 3 (b) Only 2 **(c) 2 and 3** (d) 1, 2 and 3



Prelims 2018 Among the following cities, which one lies on a longitude closest to that of Delhi?

- (a) Bengaluru (b) Hyderabad (c) Nagpur (d) Pune

Which of these will have maximum day length in June?

- (a) Hyderabad (b) Chennai (c) Bhopal (d) Delhi

Prelims 2001 If the stars are seen to rise perpendicular to the horizon by an observer, he is located on the

- (a) Equator (b) Tropic of Cancer
(c) South Pole (d) North Pole



Did you know?

Mahi river crosses Tropic of Cancer twice
It is one of the few west flowing rivers

Congo (Zaire) river crosses Equator twice
Congo → Atlantic ocean

Limpopo river crosses Tropic of Capricorn twice
South Africa → Mozambique → Indian Ocean



Indian peninsula is sloped to east, so most rivers flow to east.
But Narmada, Tapi, Mahi flow to west as they flow in rift valleys.
Damodar river (in east) also flows through rift valley





Border states

Country	State/UT
Bangladesh – 5	WB, Assam, Meghalaya, Tripura, Mizoram
China – 5	Ladakh, HP, Uttarakhand, Sikkim, AP
Pakistan – 5	Ladakh, J&K, Punjab, Rajasthan, Gujarat
Nepal – 5	Uttarakhand, UP, Bihar, WB, Sikkim
Myanmar – 4	AP, Nagaland, Manipur, Mizoram
Bhutan – 4	Sikkim, WB, Assam, AP
Afghanistan – 1	Ladakh

State/UT having international land border with **3 countries**:

Ladakh → Afghanistan, Pakistan, China

Sikkim → Nepal, Bhutan, China

AP → Bhutan, China, Myanmar

WB → Nepal, Bhutan, Bangladesh

Note

Haryana does not touch Pakistan
UP, Bihar, WB do not touch China

	Longest	Shortest
Land border	Bangladesh	Afghanistan
Coastline	Gujarat	Goa

Afghanistan



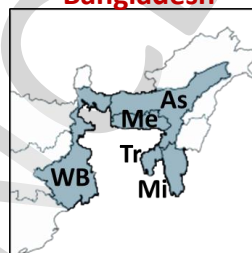
Pakistan



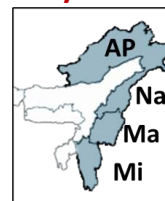
China



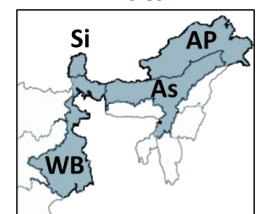
Bangladesh



Myanmar

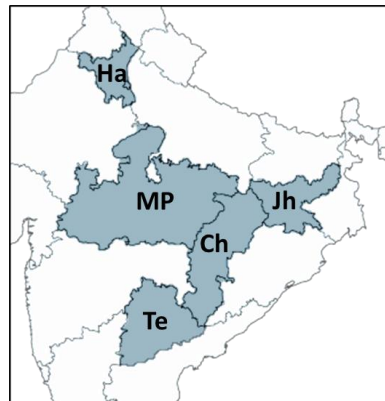


Bhutan

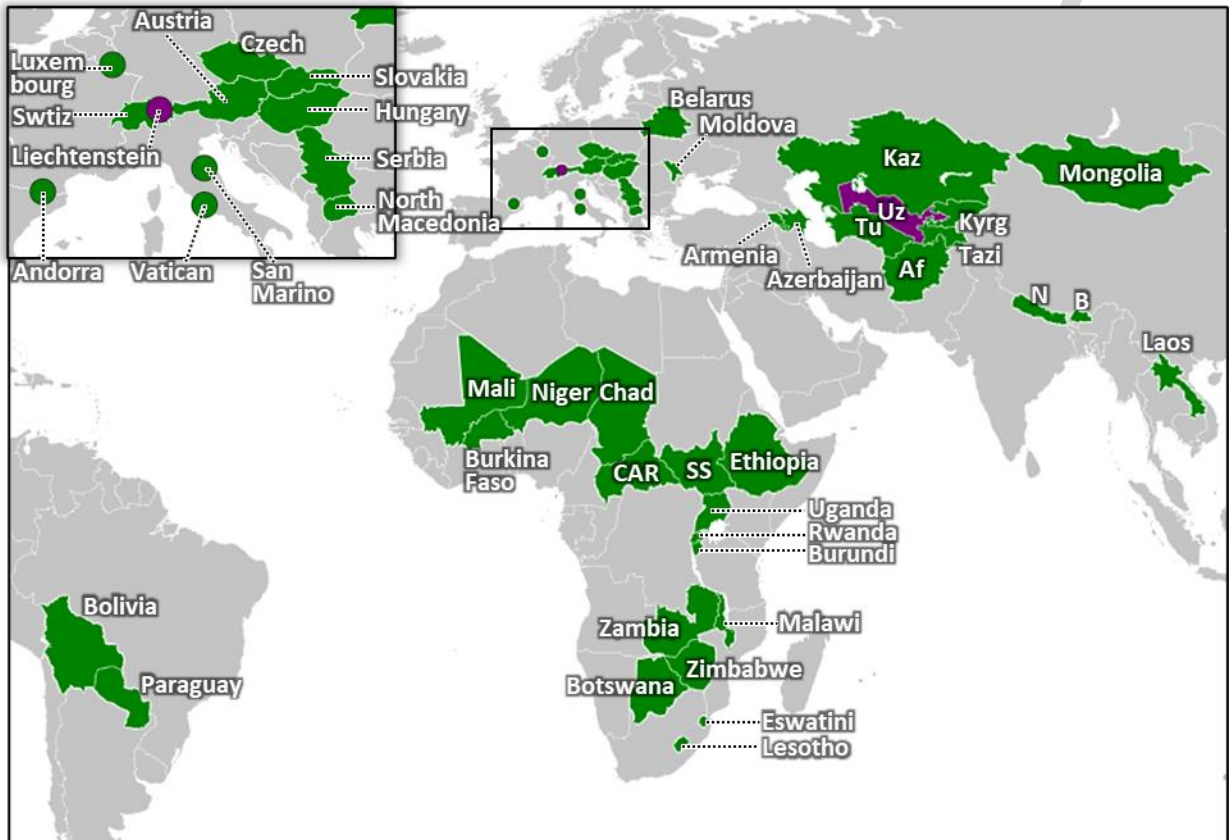


Coastal states

No coastline or international border



Landlocked countries



Landlocked country

country that is not connected to ocean or whose coastline lies on endorheic basins.

UNCLOS gives landlocked countries right to access sea, without tax on traffic.

Doubly landlocked

- Liechtenstein in Western Europe, surrounded by Austria and Switzerland.
- Uzbekistan in Central Asia, surrounded by Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan

IMPORTANT

Total : **44**

Largest: **Kazakhstan**

Most populous: **Ethiopia**

Central Asia: **all five**

South Asia: **Nepal, Bhutan, Laos**

South America: **Bolivia, Paraguay**



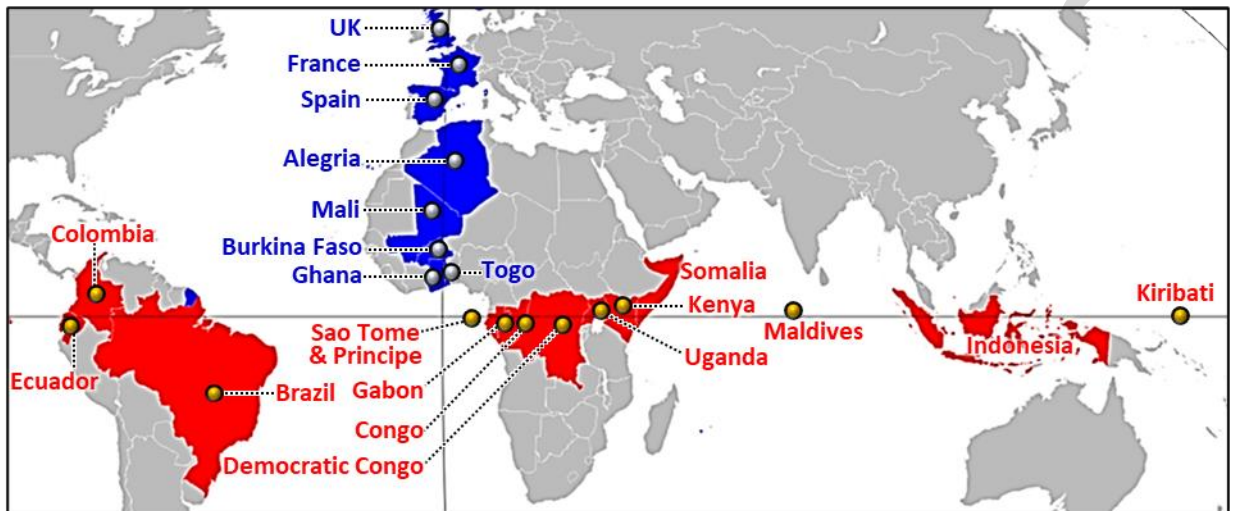
Endorheic basin

- water body that does not flow into sea/ocean
- Example: Caspian Sea world's largest inland body of water

Countries on Equator

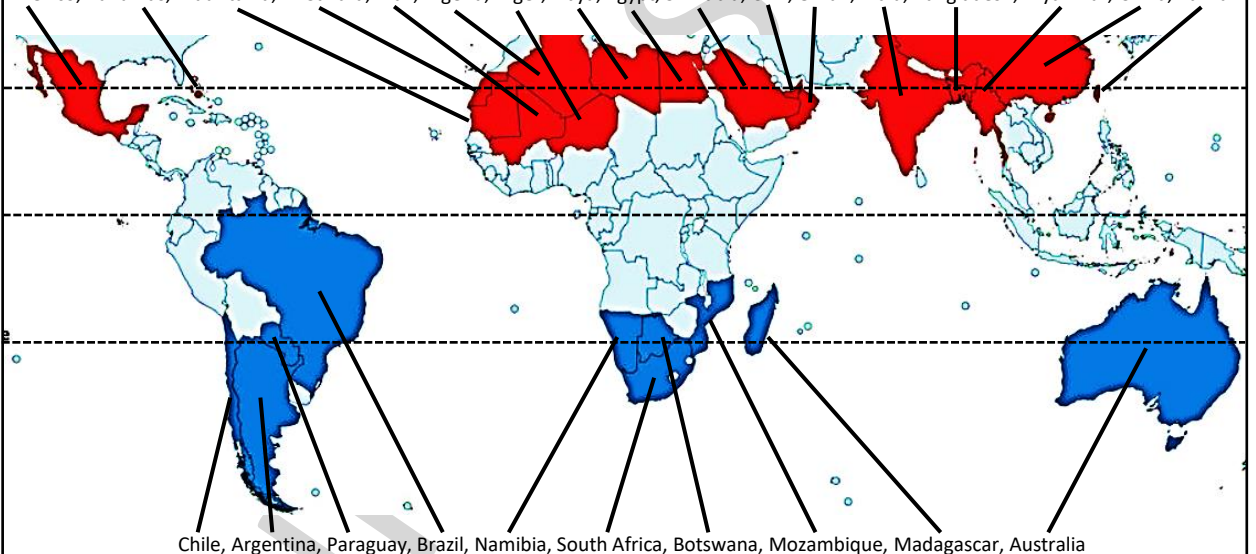
Cayambe volcano (in Andes range in Ecuador)

- It is the highest point on Equator
- It is the only point on Equator with snow cover



Africa is the only continent through which the Equator, Tropic of Cancer and Tropic of Capricorn pass. It is also the continent with most number of countries (54)

Mexico, Bahamas, Mauritania, W Sahara, Mali, Algeria, Niger, Libya, Egypt, S. Arabia, UAE, Oman, India, Bangladesh, Myanmar, China, Taiwan



Chile, Argentina, Paraguay, Brazil, Namibia, South Africa, Botswana, Mozambique, Madagascar, Australia

Correction

Environment class-11 page-134

Azores High creates extremely dry winter in "western" Mediterranean area (Iberian Peninsula)

Correction

Biodiversity Coldspots

Environment
Class-4a page-40

There are different ways in which biodiversity coldspots are defined.

❑ Some research papers say what I taught in class. Like this:

❑ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5622886/>

❑ But some say the opposite. Like this:

❑ https://www.lsu.edu/mediacenter/news/2020/12/10mns_brumfield_coldspots_science.php

For exam, better learn the following:

Coldspots are areas with low biodiversity, like deserts and mountaintops.

I read I forget, I see I remember

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Prelims 2023

Current Affairs

Miscellaneous

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