

E-CONTENT PREPARED BY

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**NAAC Accredited "A" Grade College
(Recognized under Section 2(f) and 12(B) of UGC Act 1956)**

**E-Content prepared for students of
M.Sc.(Semester-I) in Conservation Biology**

**Name of Course:
Biogeography and Biological
Resources**

**Topic of the E-Content:
Vegetation and forest types**

VEGETATION
and
INDIAN FOREST TYPES

MSCCONBC101.4

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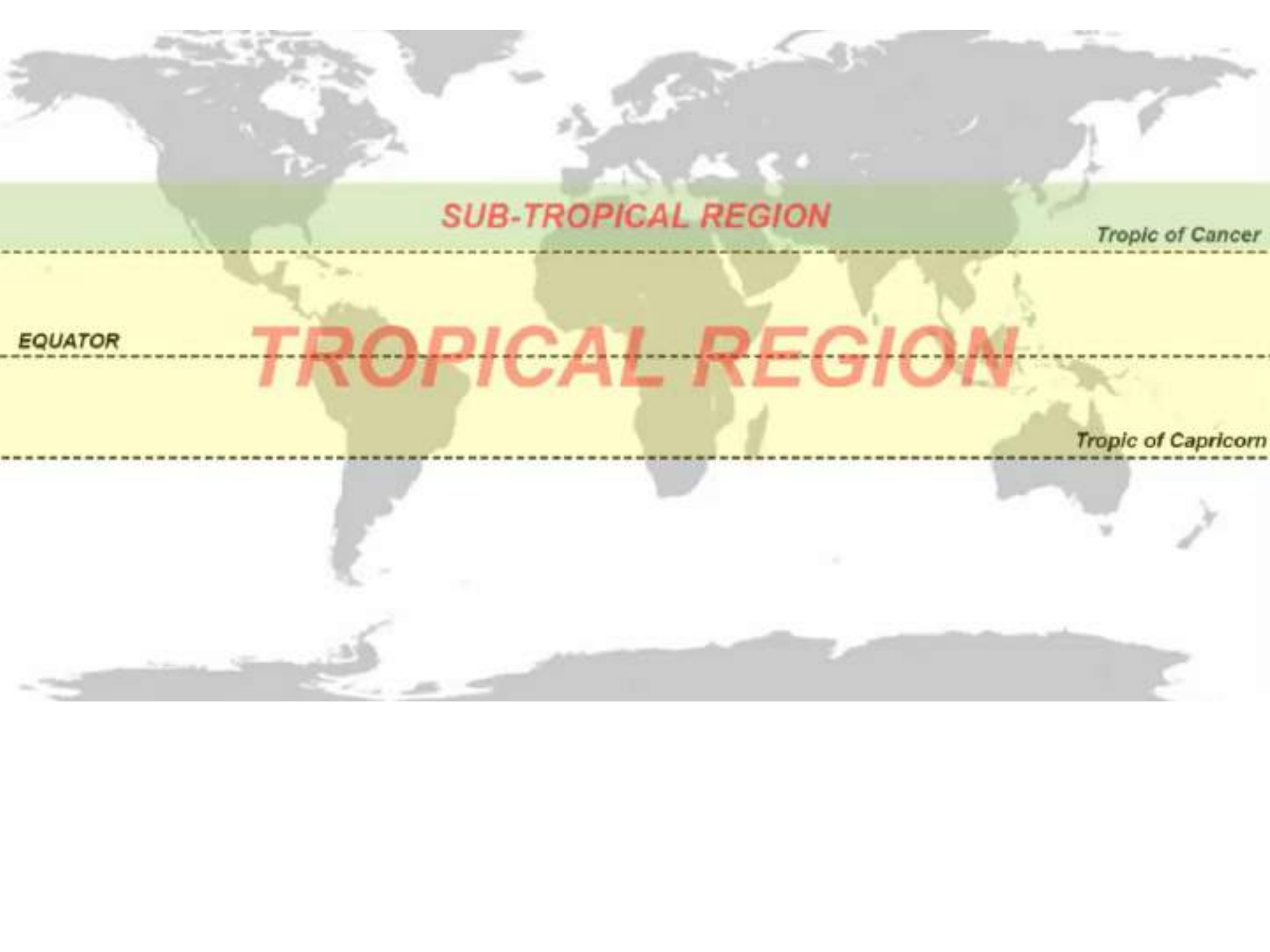


Mysterious India: various types of Diversity

- 1. Landscape diversity/ topographic diversity**
- 2. Climatic diversity**
- 3. Biodiversity**
- 4. Bio geographic diversity**
- 5. Community diversity**
- 6. Language diversity**
- 7. Cultural diversity**
- 8. Diversity of Ethnic knowledge**

***All types of diversity linked each other and
makes Indian Beauty and mystery***

**Topographic and Climatic
diversity is the key power to
makes its Biogeographic
diversity and Vegetation
diversity**



SUB-TROPICAL REGION

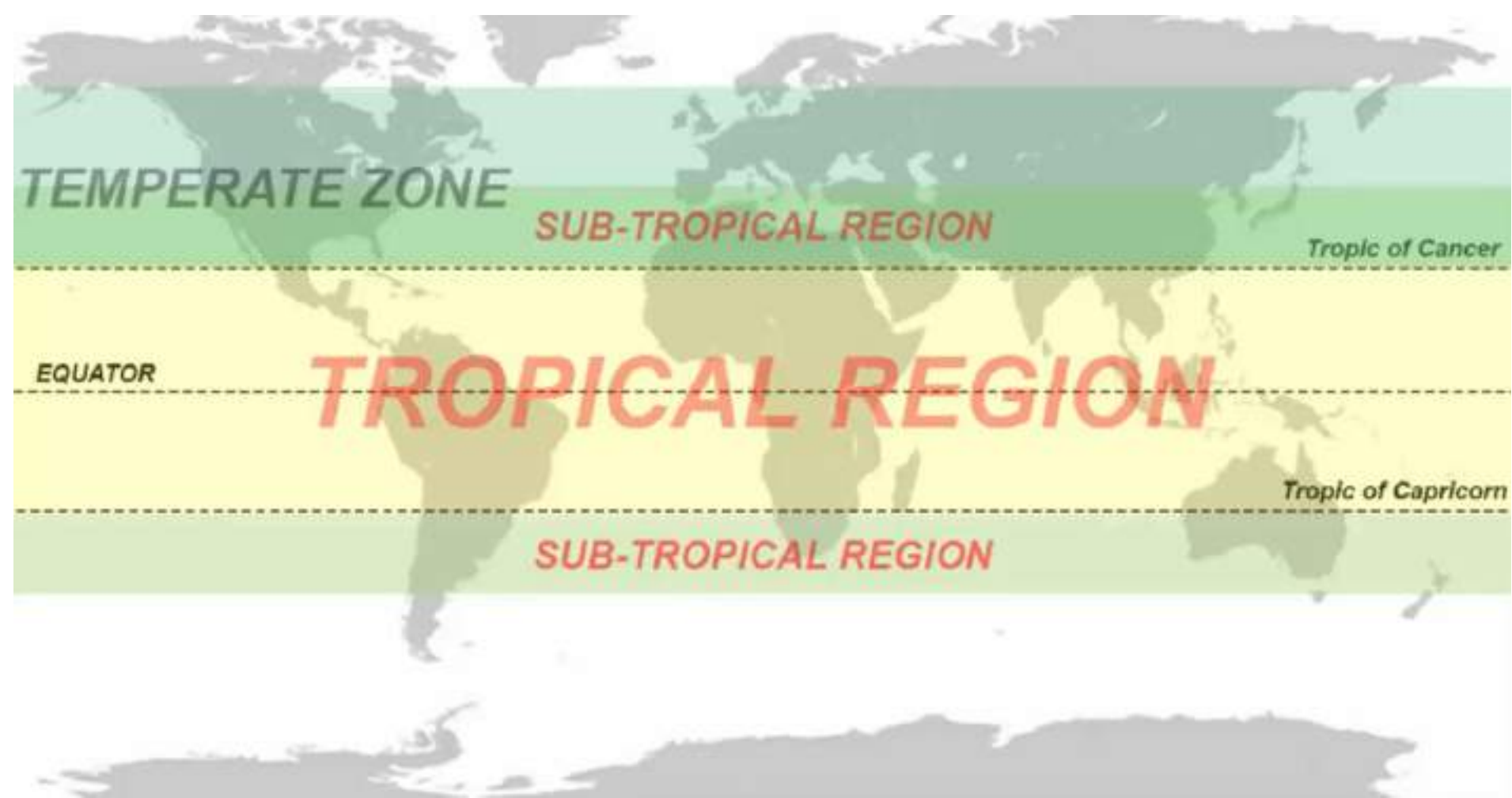
Tropic of Cancer

EQUATOR

TROPICAL REGION

Tropic of Capricorn





TEMPERATE ZONE

SUB-TROPICAL REGION

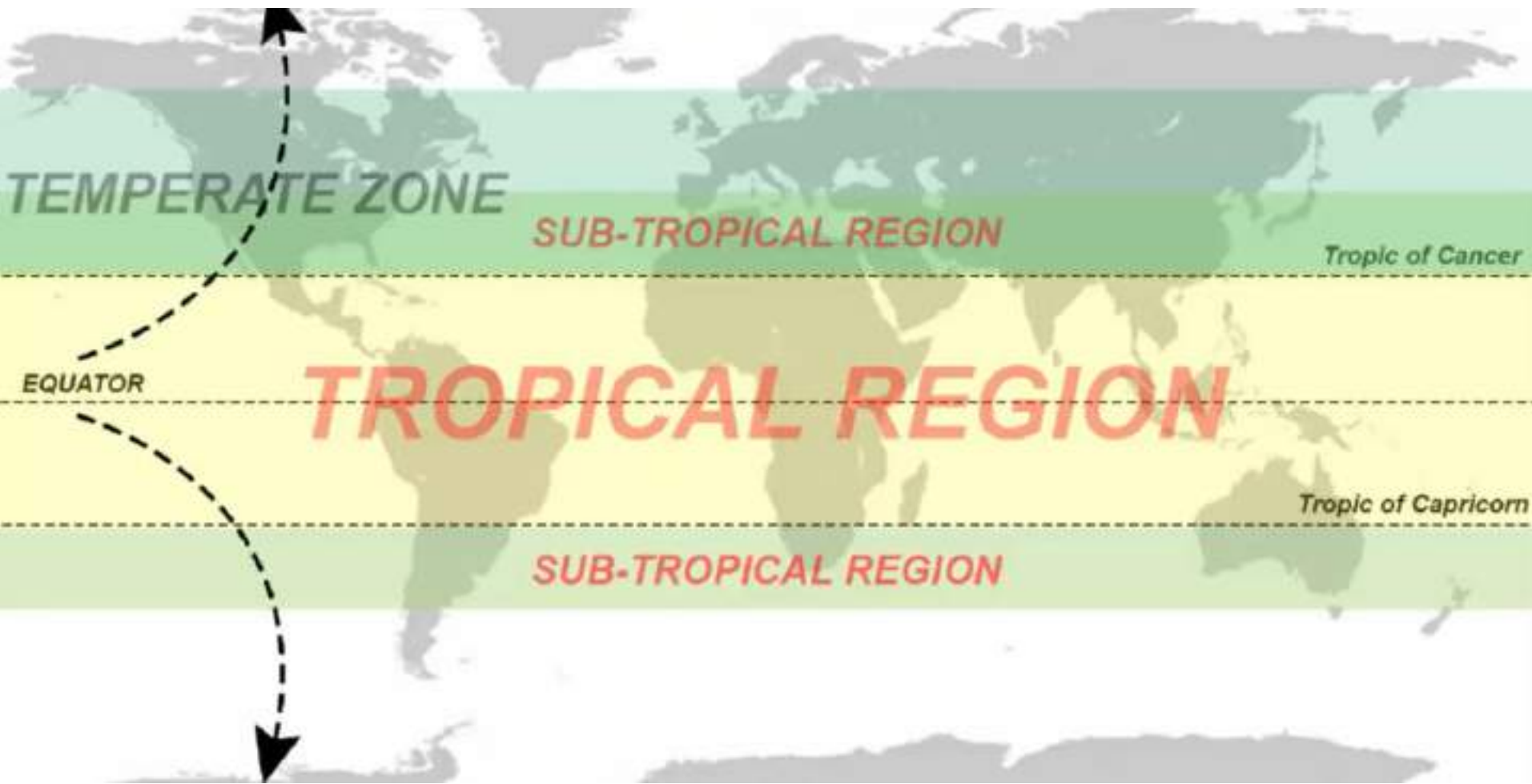
Tropic of Cancer

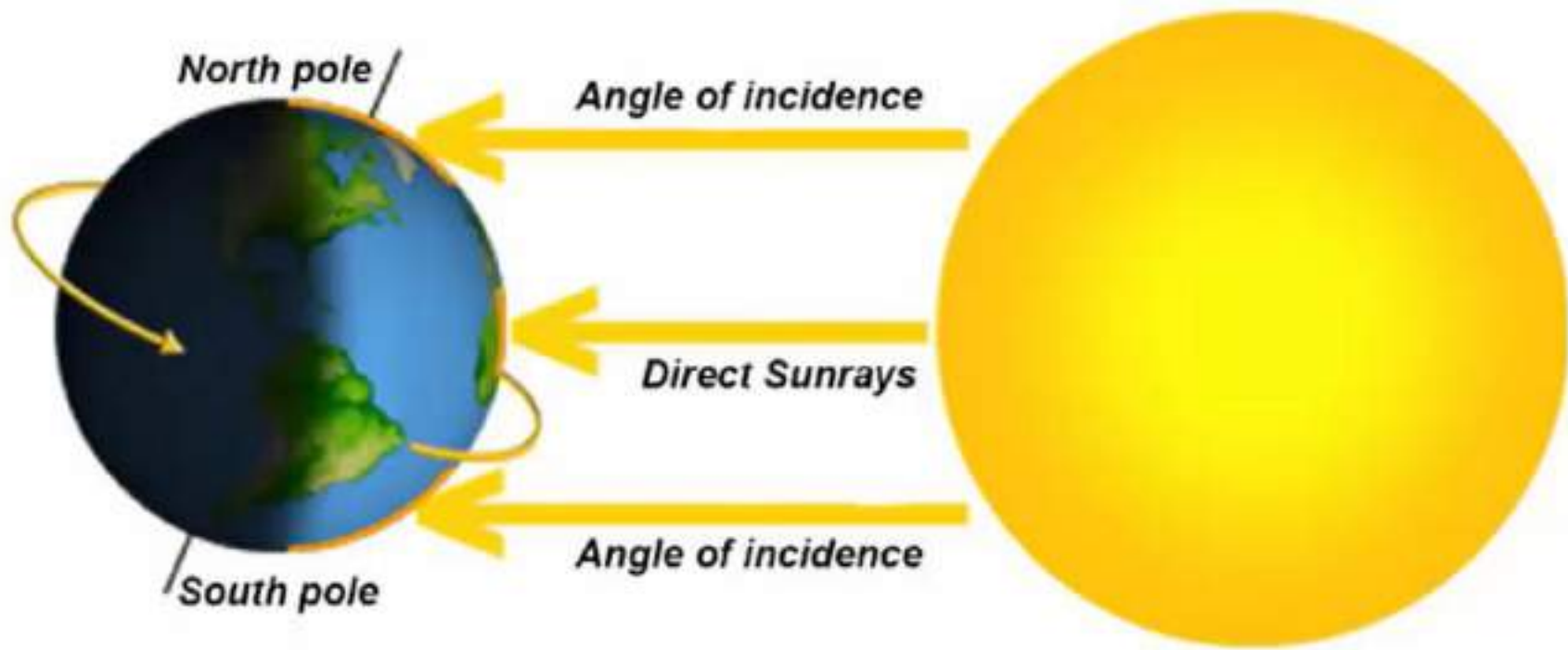
EQUATOR

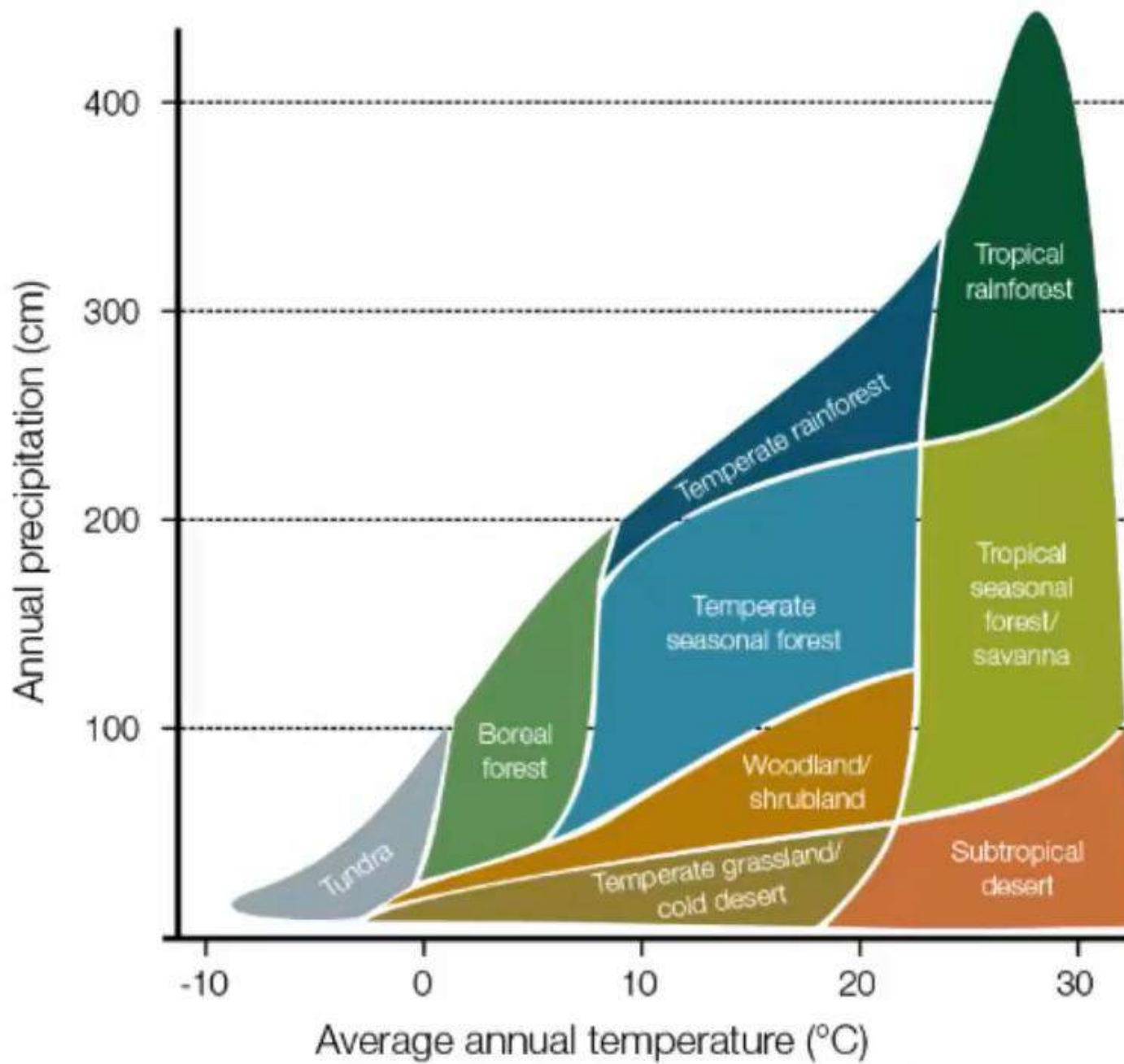
TROPICAL REGION

Tropic of Capricorn

SUB-TROPICAL REGION



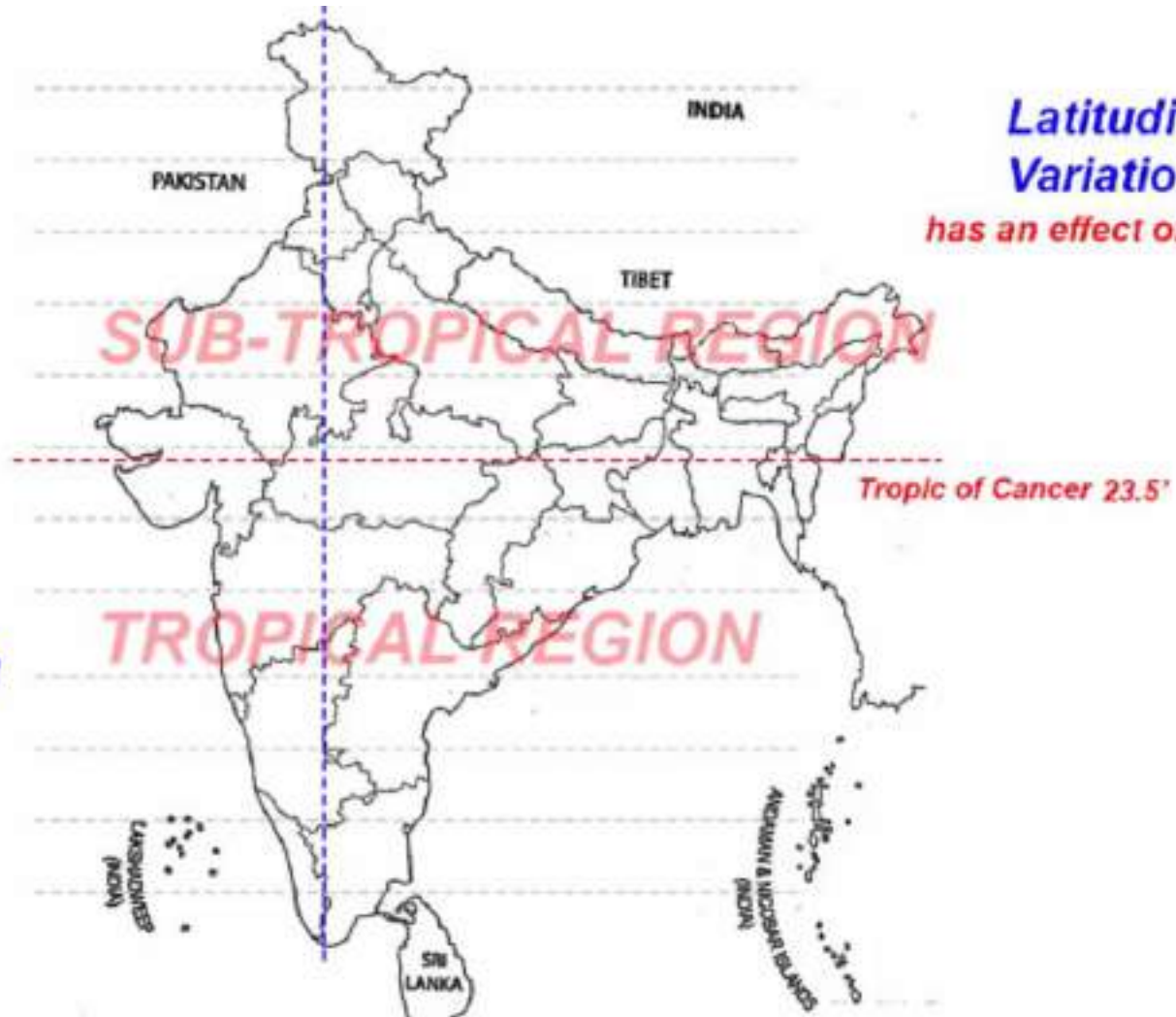




Latitudinal Variation

has an effect on climate

3,214 km



Types of Forests in India

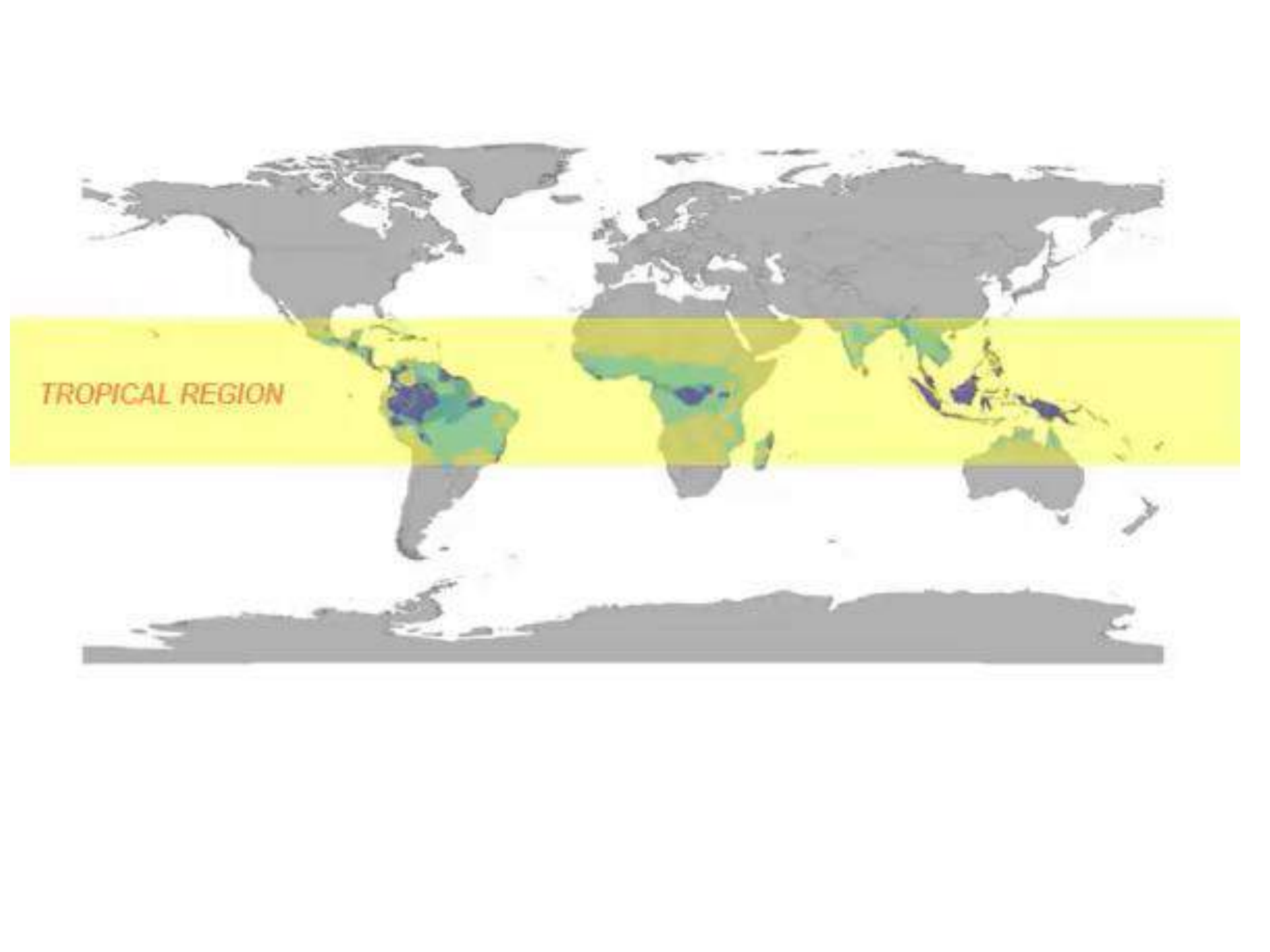
1. Tropical Evergreen and Semi Evergreen Forests
2. Tropical Deciduous Forests
3. Tropical Thorn Forests
4. Montane Forests
5. Littoral and Swamp Forests

Tropical Evergreen and Semi Evergreen Forests

1. Tropical means '*Tropical Region*', and Evergreen means '*green leaves throughout the year*'.
2. They are found in - western slope of the Western Ghats, hills of the Northeastern region and the Andaman and Nicobar Islands
3. Usually occurs in areas having an annual mean temp of 22°C and annual rainfall of over 200 cm.
4. Trees in these forests are dense, tall and very green.
5. Forest structure -
 - a. Ground level - shrubs, creeper plants
 - b. Short trees of 20 - 30 mtrs
 - c. Long trees of 60 mtrs & above
6. Leaves of the trees are large, long and have a narrow ending (drip tip).
7. Trees don't shed their leaves at once.
8. Some of the trees include - rosewood, mahogany, aini, ebony etc...



Tropical Evergreen Forests of Eastern India

A world map with a yellow horizontal band across the center, representing the tropical region. The band is labeled "TROPICAL REGION" in orange text on the left side. The map shows the continents of North America, South America, Africa, Europe, Asia, and Australia, with the tropical region highlighted in yellow. The text "TROPICAL REGION" is written in orange, uppercase letters on the left side of the yellow band.

TROPICAL REGION



INDIA

PAKISTAN

TIBET

TROPIC OF CANCER

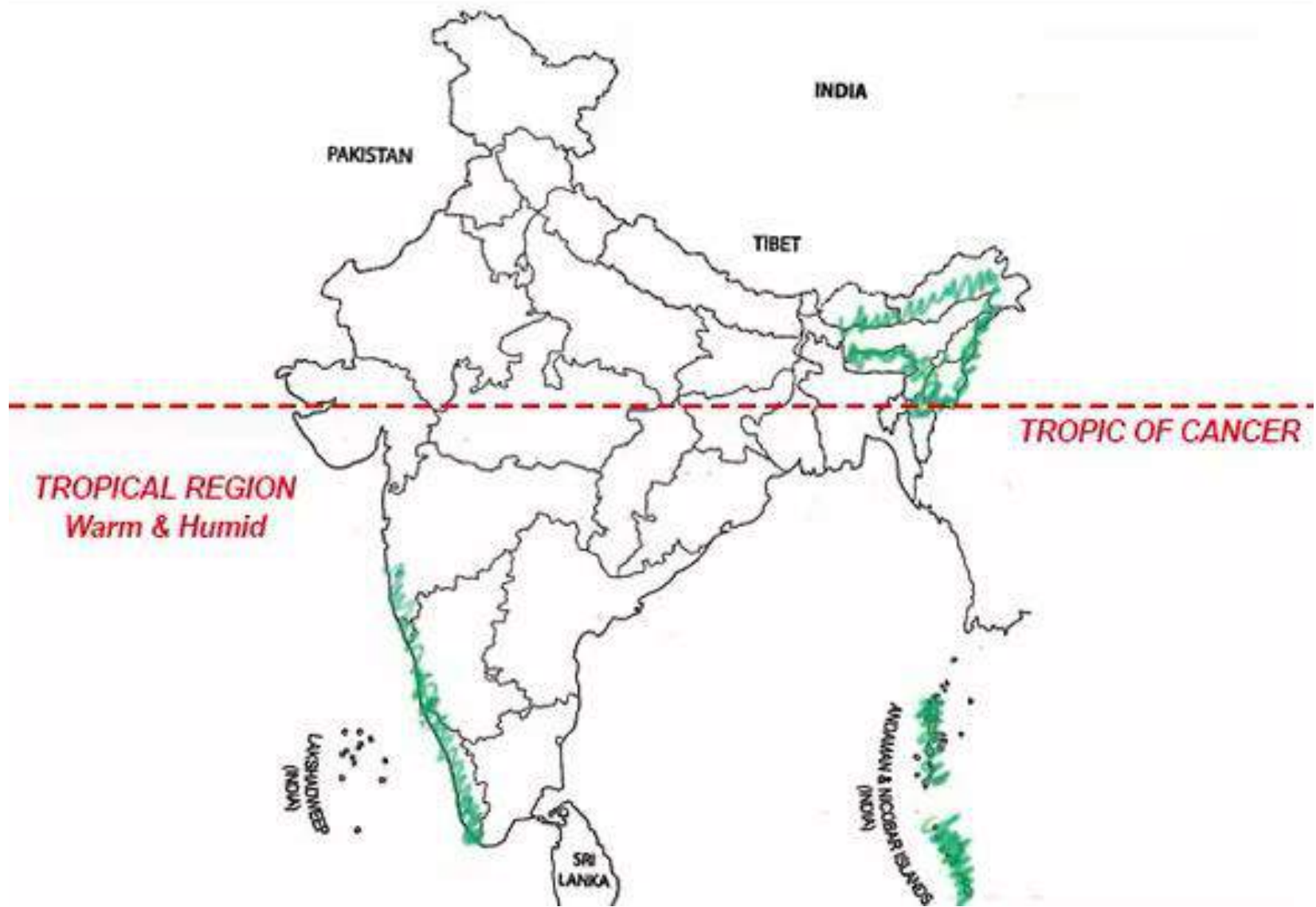
TROPICAL REGION

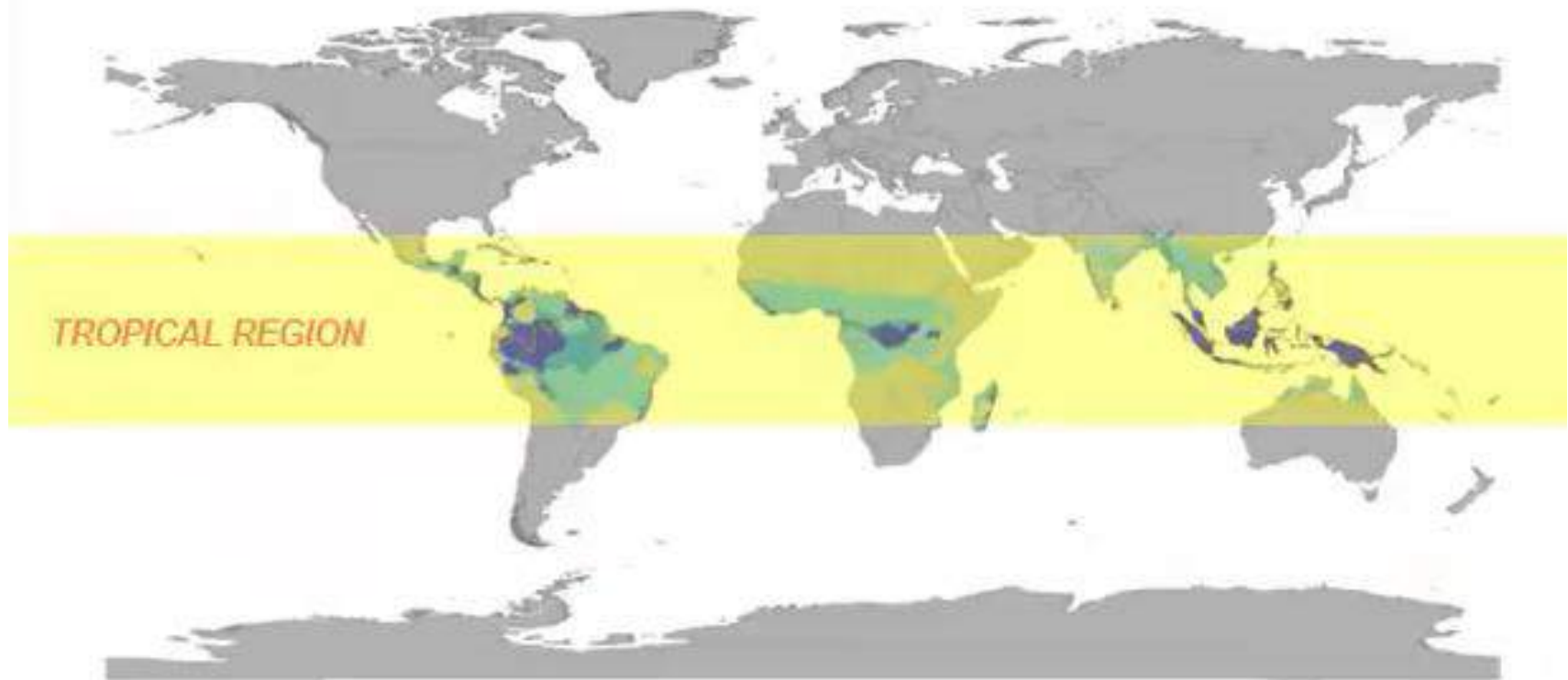
LAKSHADWEEP
(INDIA)

SRI
LANKA

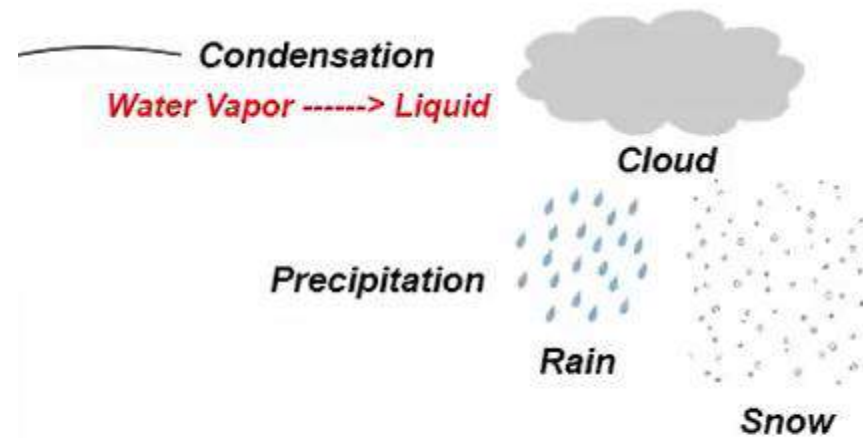
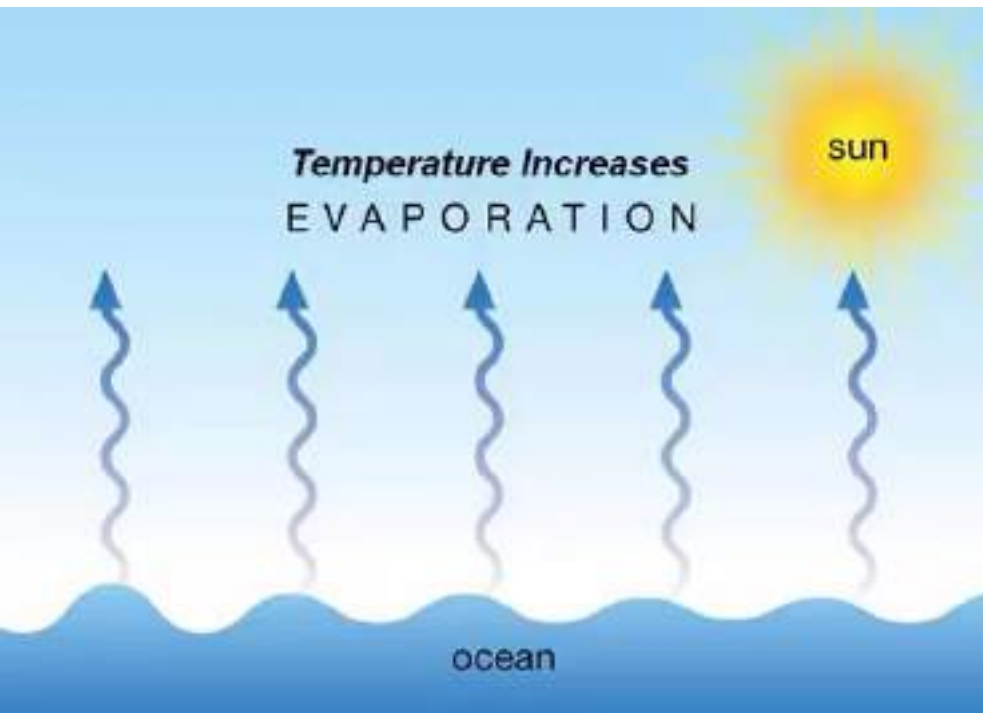
ANDAMAN & NICOBAR ISLANDS
(INDIA)







Temperature of the tropical region is comparatively higher



Forest Structure of Evergreen Forest



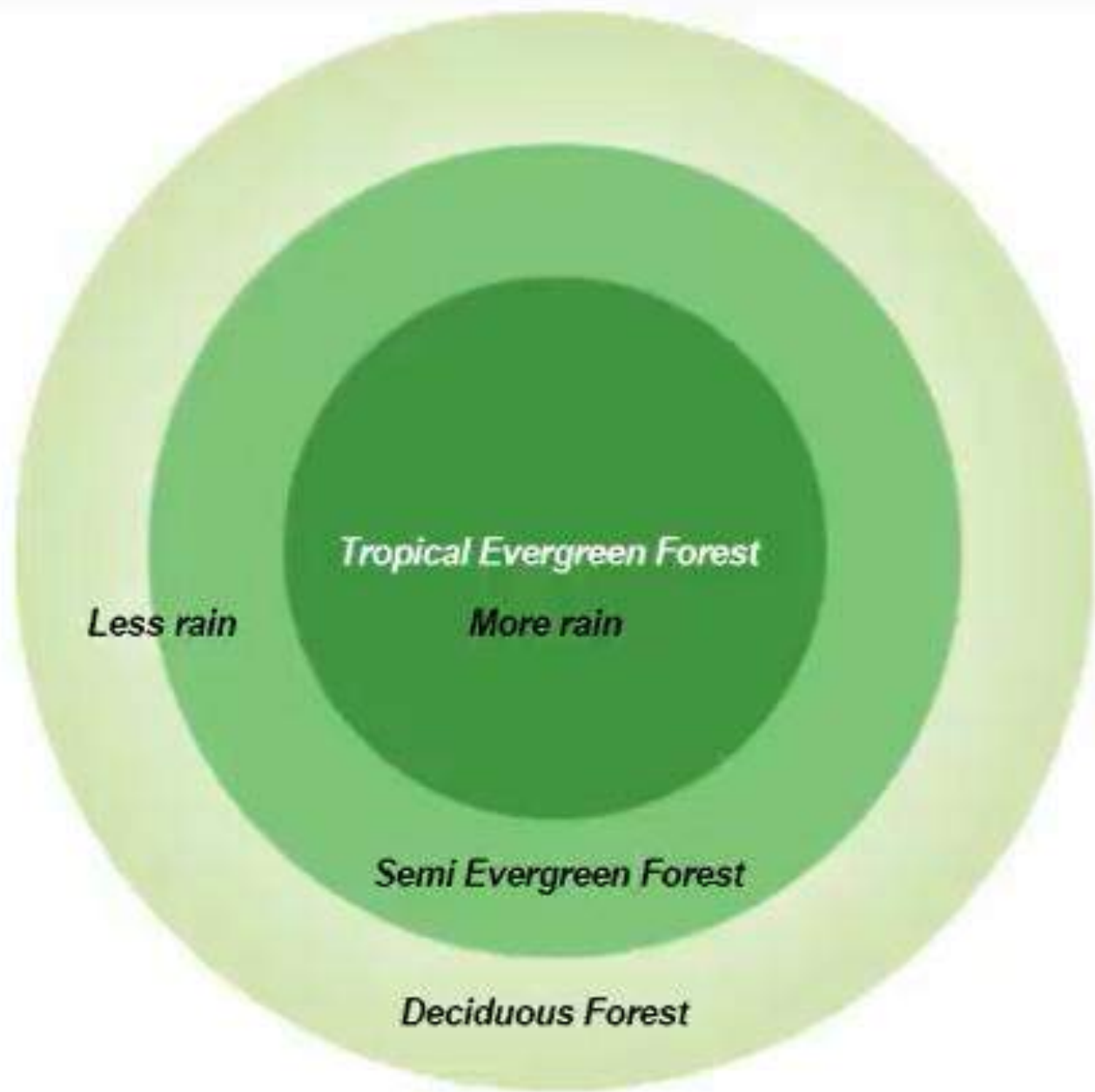


Tropical Semi Evergreen Forest of Northern West Bengal



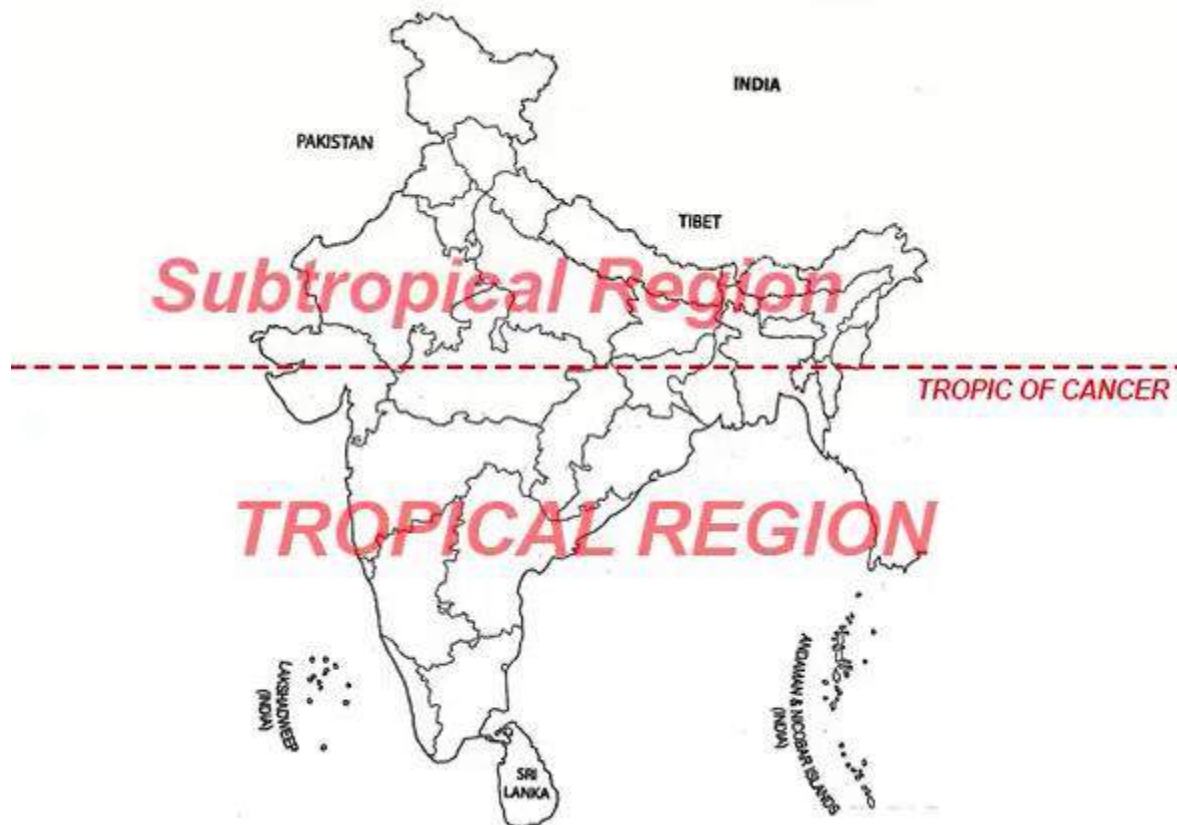
Evergreen Tree

Deciduous Tree

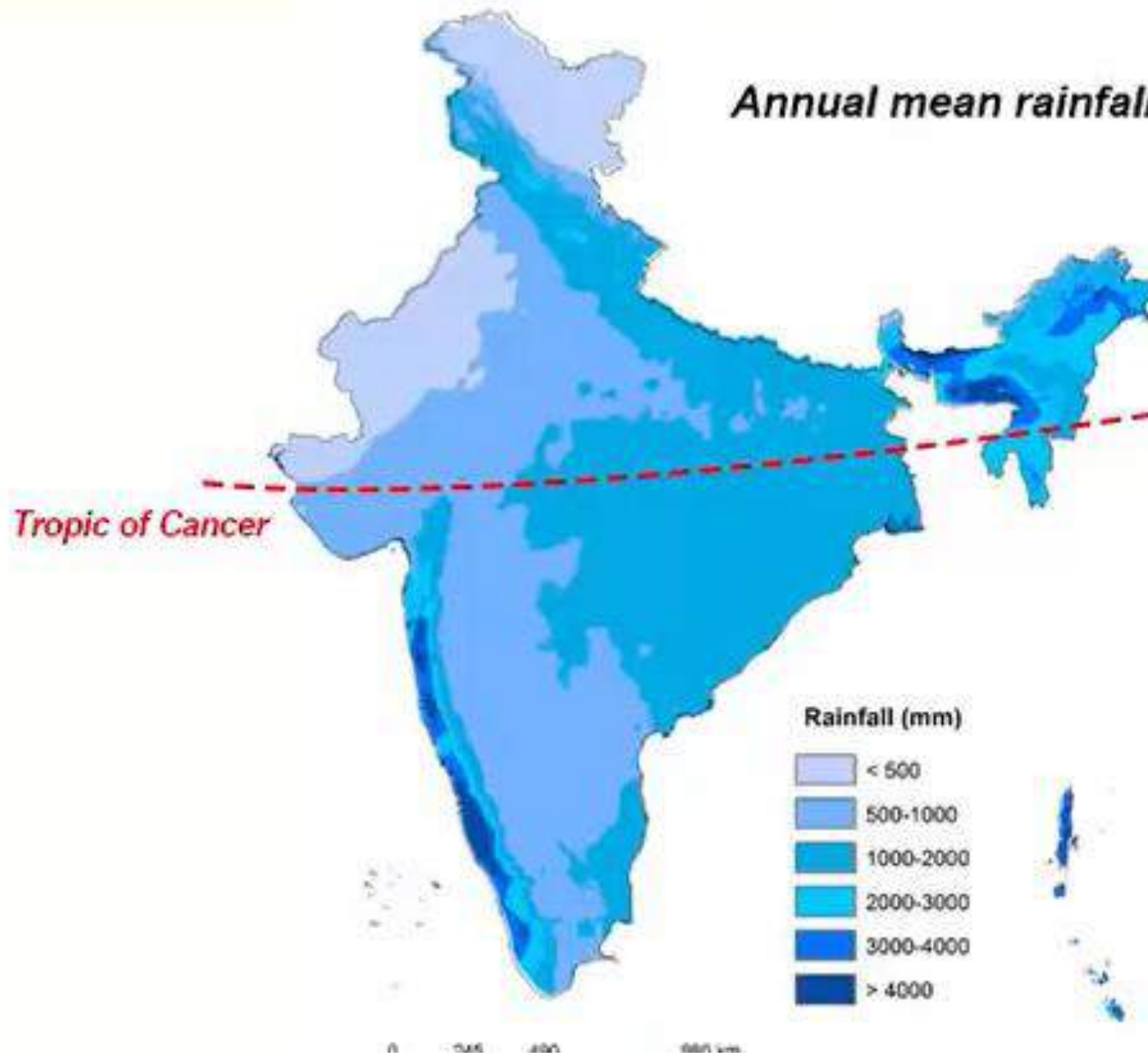


Tropical Deciduous Forests

1. Tropical means '*Tropical Region*', and Deciduous means '*plants, trees that shed their leaves each year*'.
2. They are found in both Tropical and Subtropical region.
3. They are also called Monsoon forests. Leaves regrow during monsoon and shed during summer.
4. These forests occurs in places that receive rainfall between 70 to 200 cm.
5. Based on the availability of water, Tropical Deciduous forest is subdivided into -
 - a. Moist deciduous forests
 - b. Dry deciduous forests



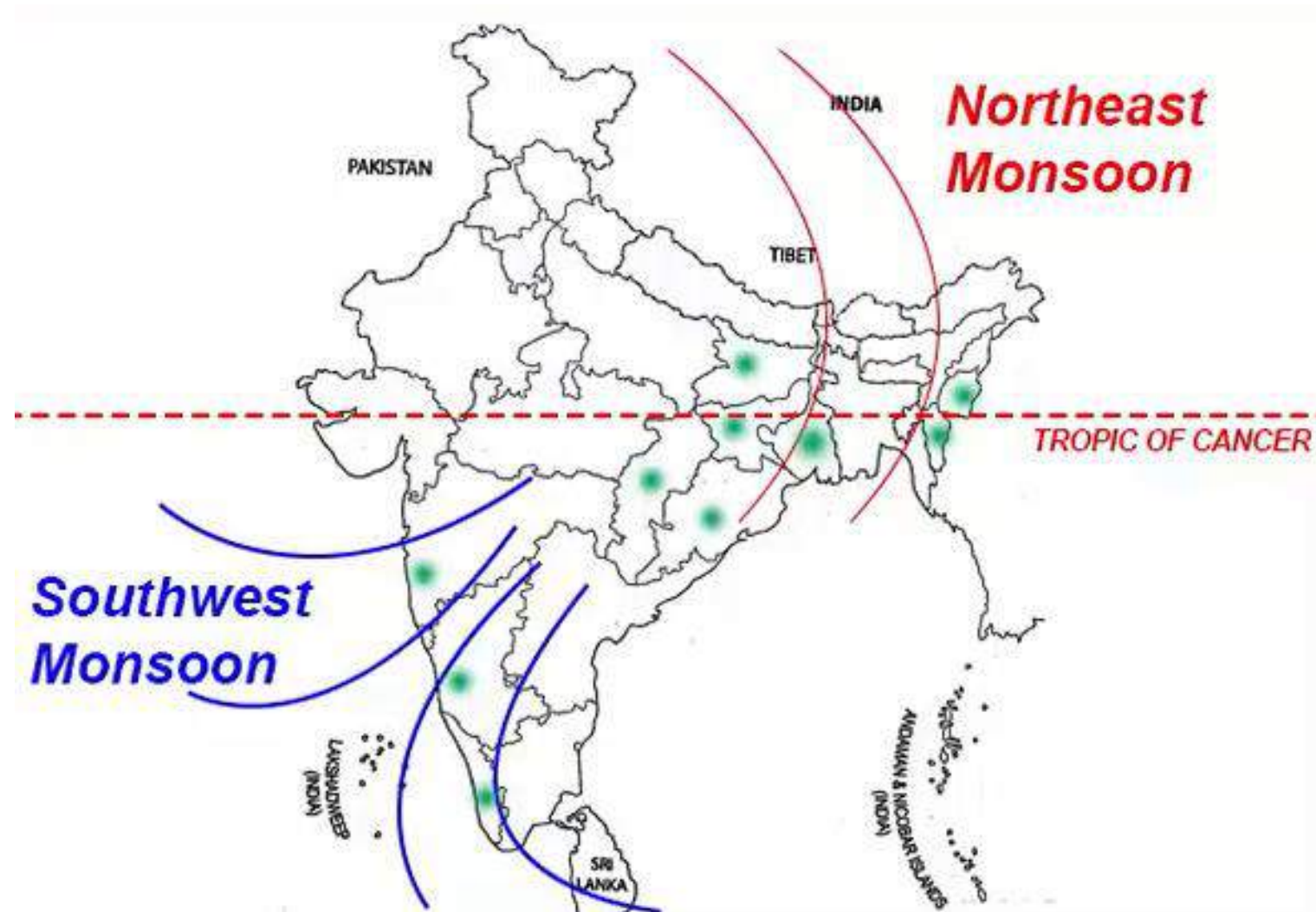
Annual mean rainfall map of India



Tropical Deciduous Forests

Moist Deciduous Forests

1. **Moist means 'moisture'.**
2. **These forests are found in regions that have rainfall between 100-200 cm.**
3. **They are found in the states of foothills of Himalaya (West Bengal, Mizoram, Manipur), Chhota Nagpur Plateau (WB, Chhattisgarh, Bihar, Jharkhand), Eastern coastal plains of Odisha, eastern foothills of western ghats (Kerala, Karnataka, and Maharashtra).**
4. **Trees shed their leaves during dry winter and dry summer due to lack of moisture.**
5. **These forests are a victim of human activities like - irrigation and agricultural activities.**
6. **Some common trees include - teak, sal, shisham, hurra, mahua, amla, semul, kusum, bamboo, and sandalwood.**





Tropical Moist Deciduous Forests

Tropical deciduous Forests

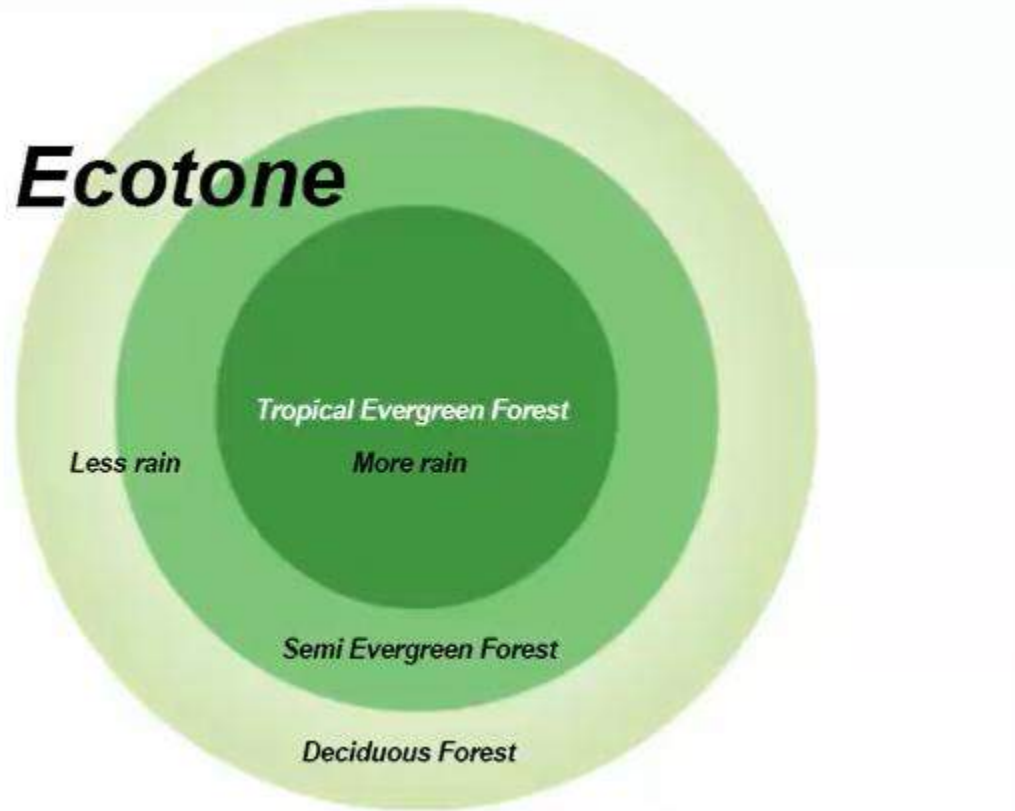
Dry Deciduous Forests

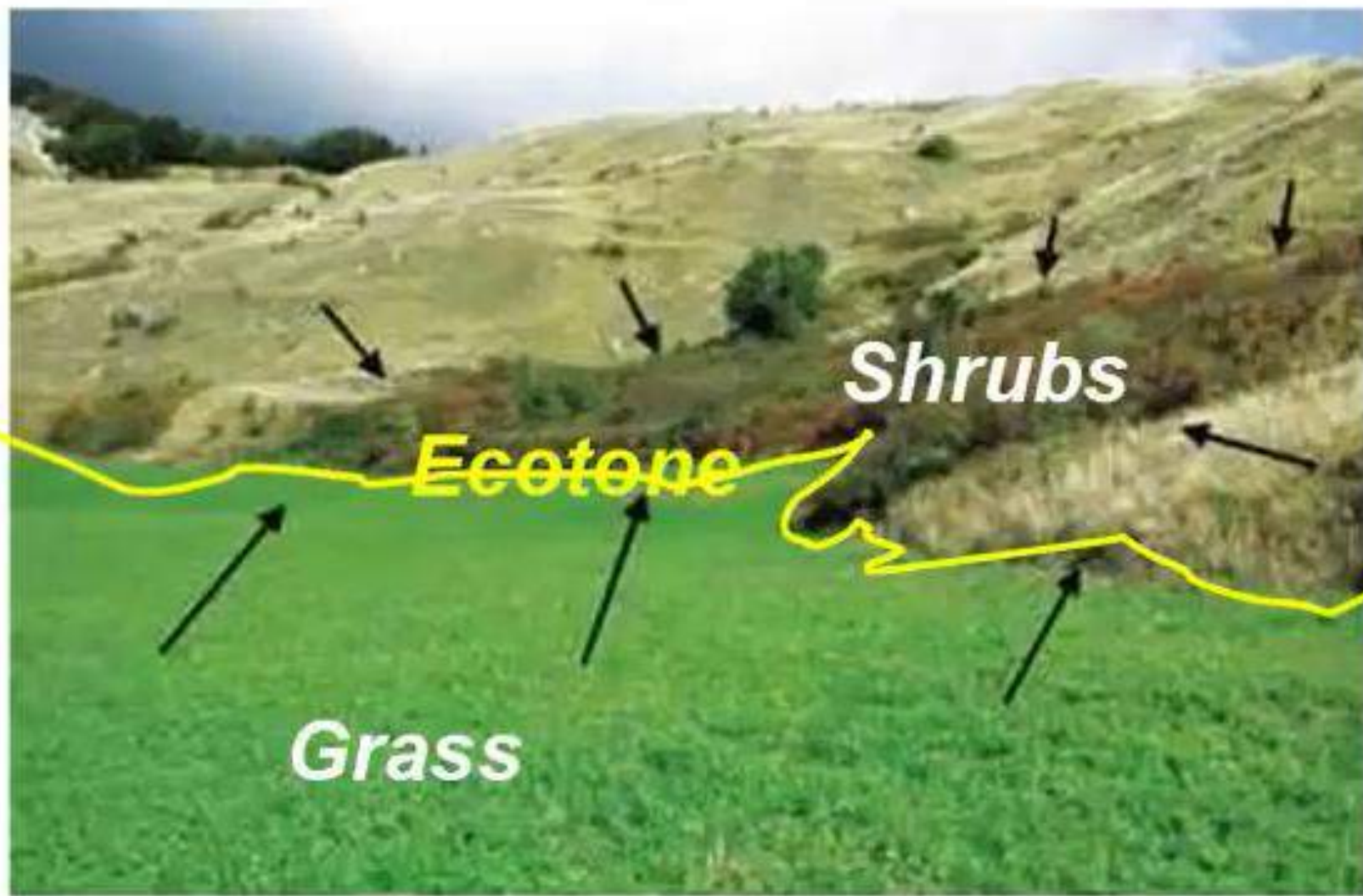
1. **Dry means the region where rainfall is lesser (between 70 to 100 cm) than Moist deciduous forests.**
2. **They are similar to Moist deciduous forest, the only difference is Dry deciduous forest can grow in areas of less rainfall.**
3. **The forest appears like a vast grassland with naked trees during dry season.**
4. **At ground level, you will find solid growth of Grass and climber plants.**
5. **They suffer from overgrazing, forest fire and vast clearance due to agricultural activities.**
6. **They are found in - Punjab, Haryana, parts of Uttar Pradesh, Madhya Pradesh and South-east of Rajasthan. Basically Central Deccan plateau.**
7. **Some common trees include - teak, sal, laurel, tendu, palas, amaltas, bel, khair, axlewood etc.**



Tropical Dry Deciduous Forests of South Deccan Plateau

Ecotone

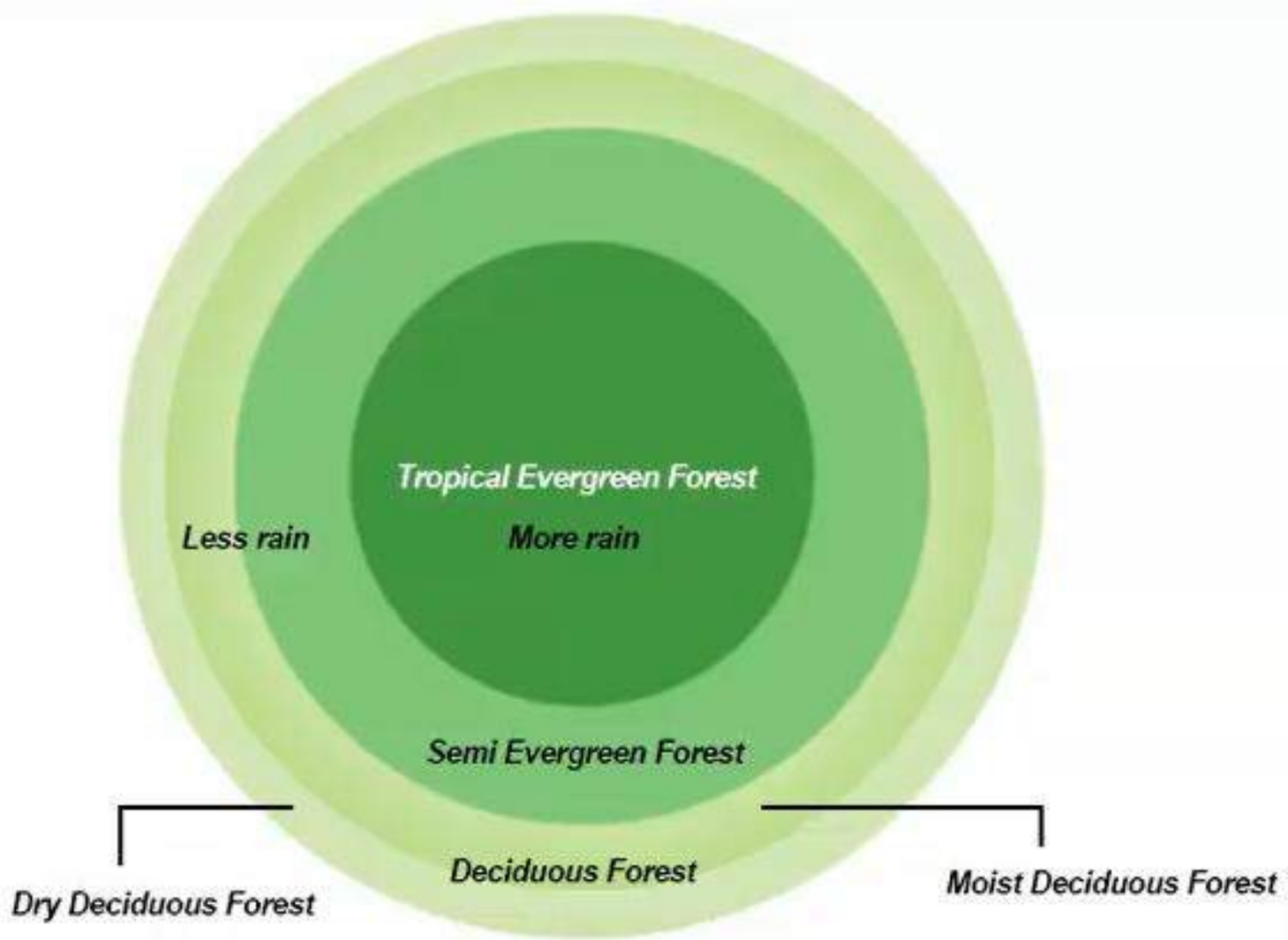


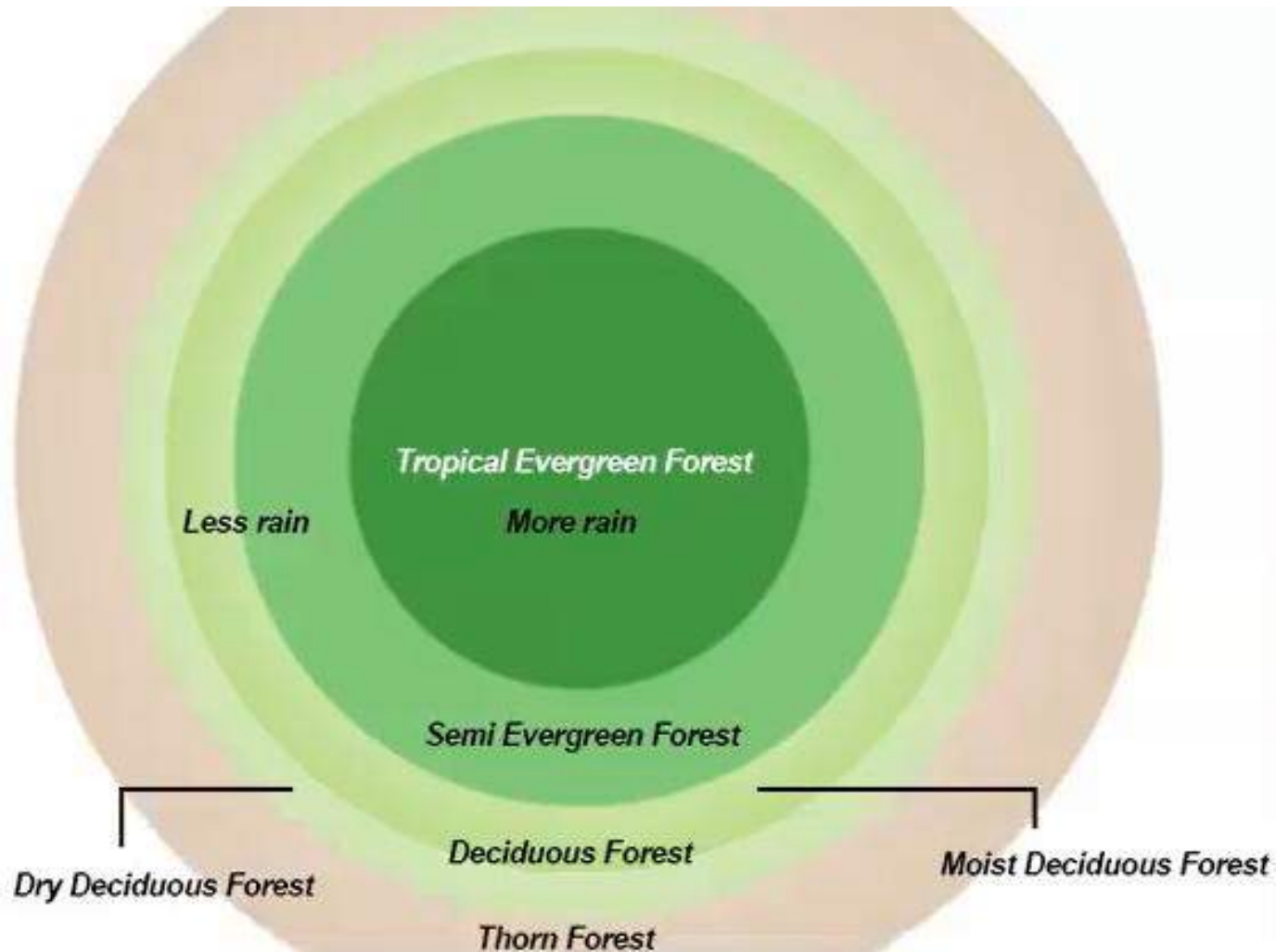


Grass

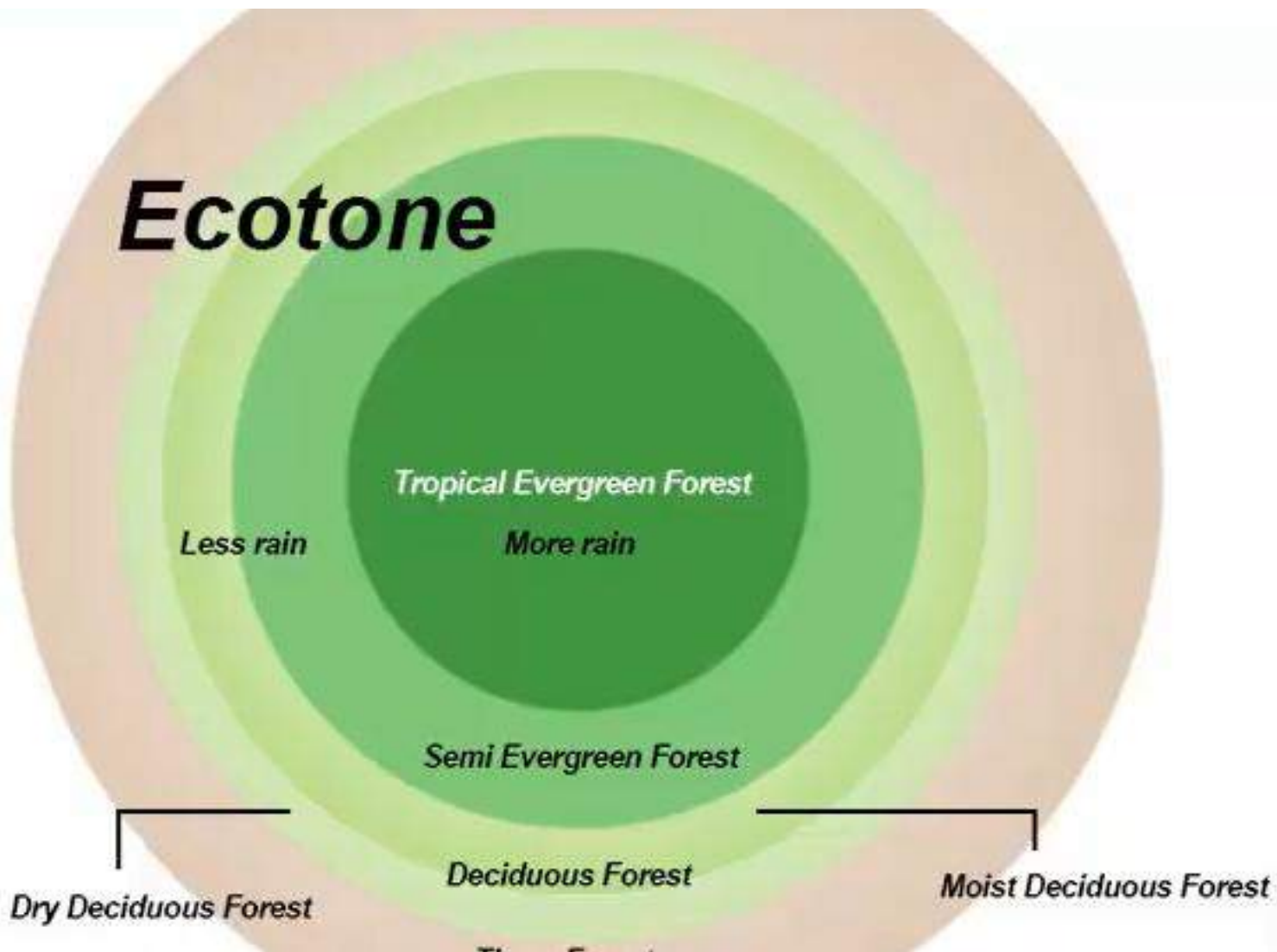
Ecotone

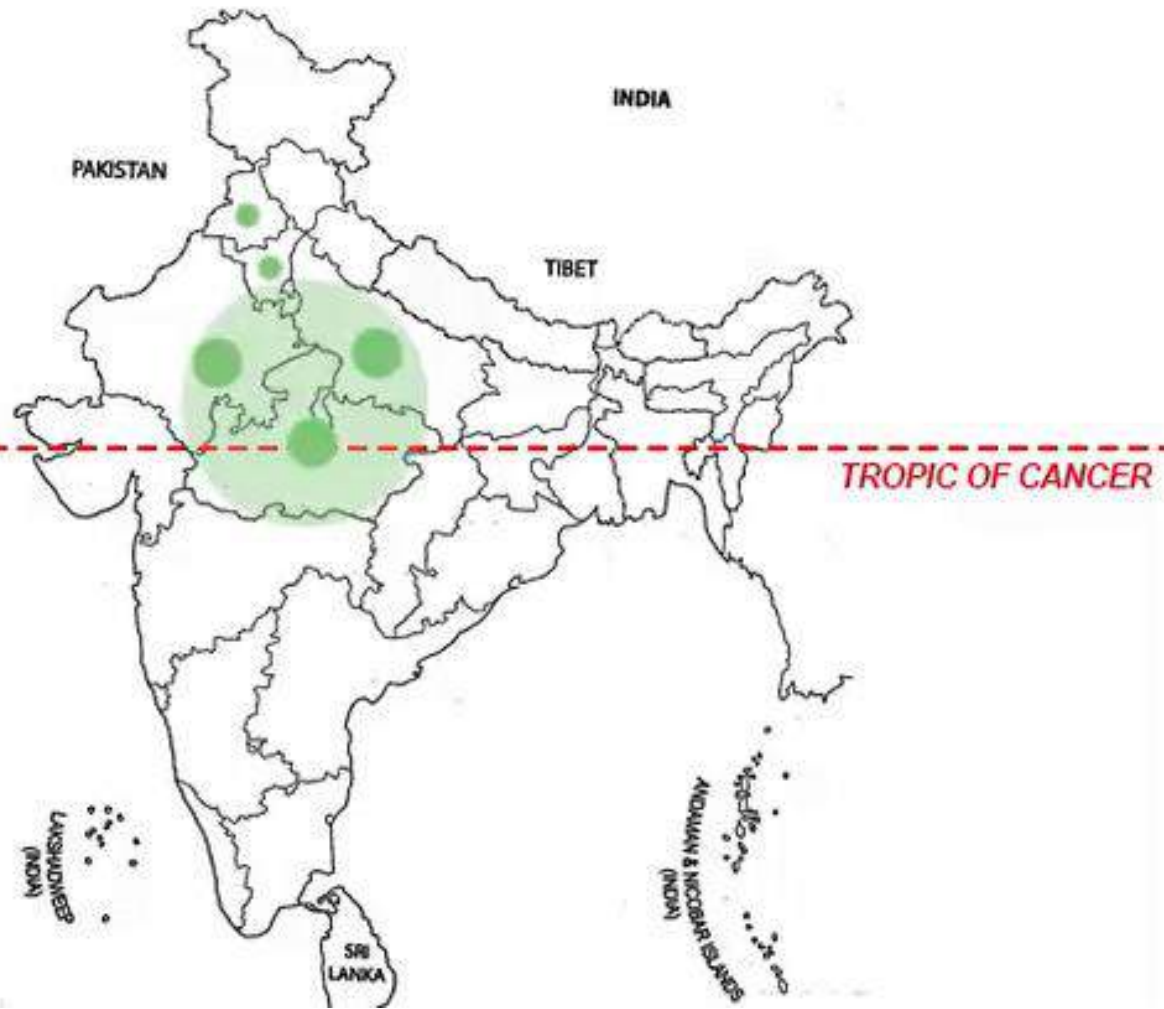
Shrubs





Ecotone





Tropical Thorn Forests

1. Tropical means '*Tropical Region*', and Thorn means '*a sharp pointed wood*'.
2. It is a dense, and scrub like vegetation.
3. They occur in areas that receive rainfall less than 50 cm (semi-arid regions).
4. Trees remain leafless for most part of the year and water is stored in stem of the trees.
5. They are found in the areas of - southwest Punjab, Haryana, Rajasthan, Gujarat, Madhya Pradesh, and Uttar Pradesh. They are also found on the lower side of the Western Ghats covering large areas of Maharashtra, Karnataka, Telangana, Andhra Pradesh, and Tamil Nadu.
6. Some common trees are - Babul, Palm, Acacia, Kokko, Khair, Khajuri, Ber, Neem, Khejri, Palas, etc.
7. Tussock species of grass is quite popular in this forest. They grow up to a height of 2m.

A landscape photograph of a tropical thorn forest. The foreground is filled with tall, dry grasses and scattered green shrubs. In the middle ground, there are several small, green trees with thorny branches. The background shows a large, rounded hill covered in dense, dark green vegetation under a clear sky.

Tropical Thorn Forests



Deccan Thorn Scrub Forests - Thorn Forest

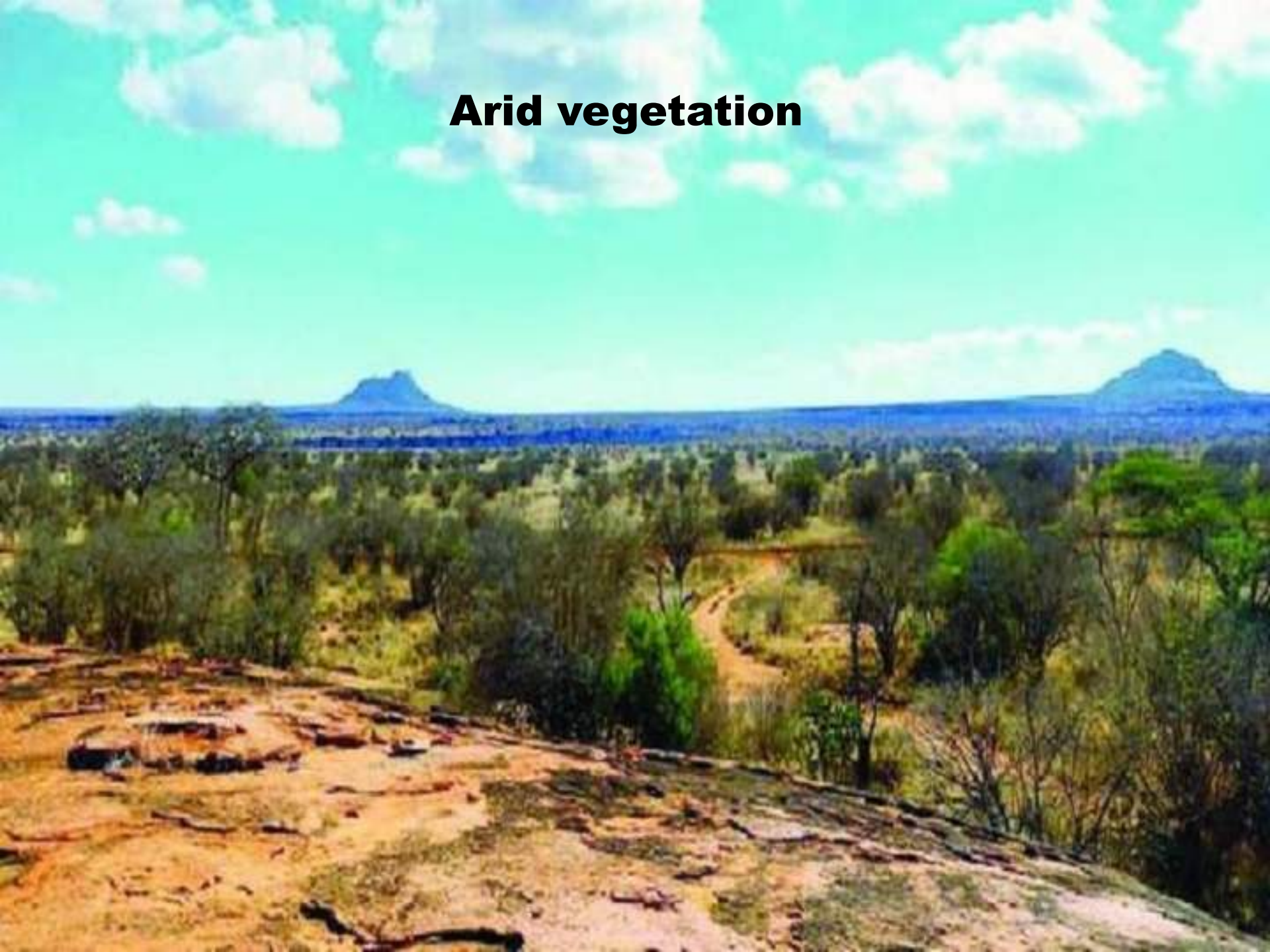


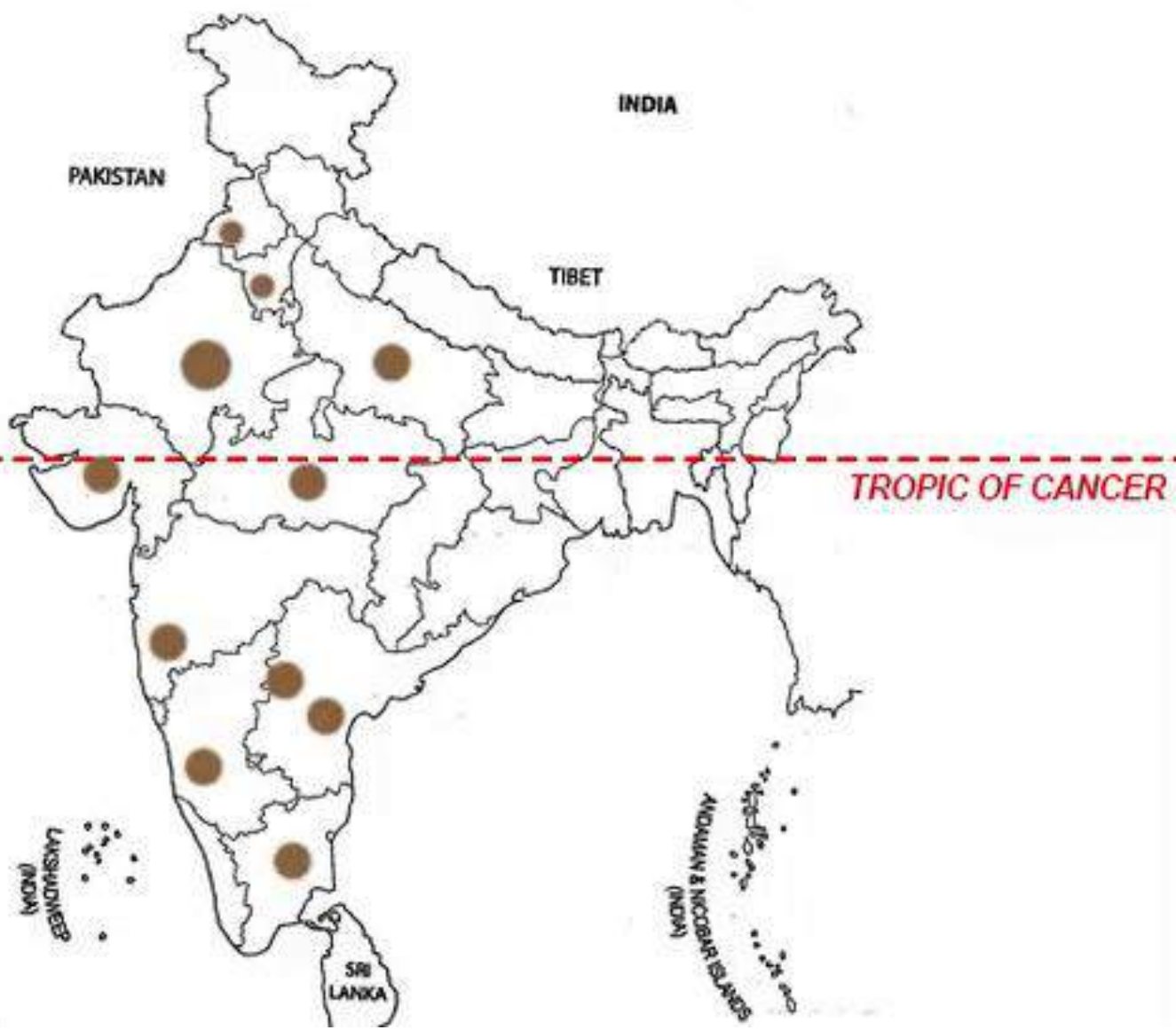
Scrab Forest of Rajaji National Park

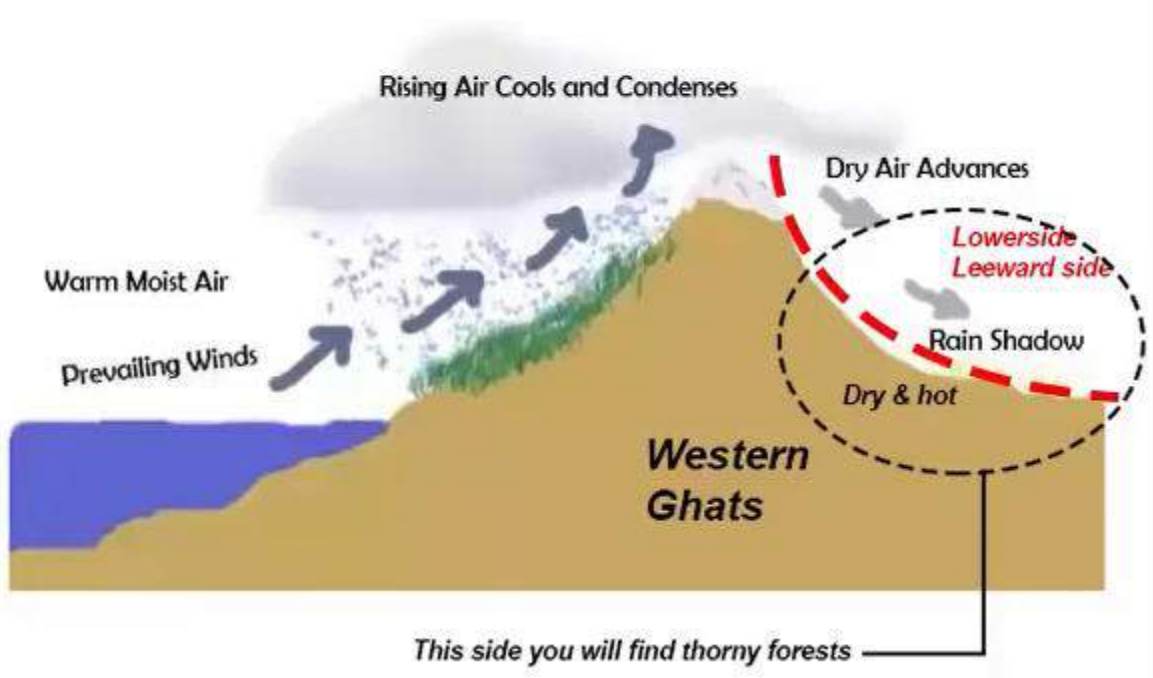


Thorny Shrub

Arid vegetation

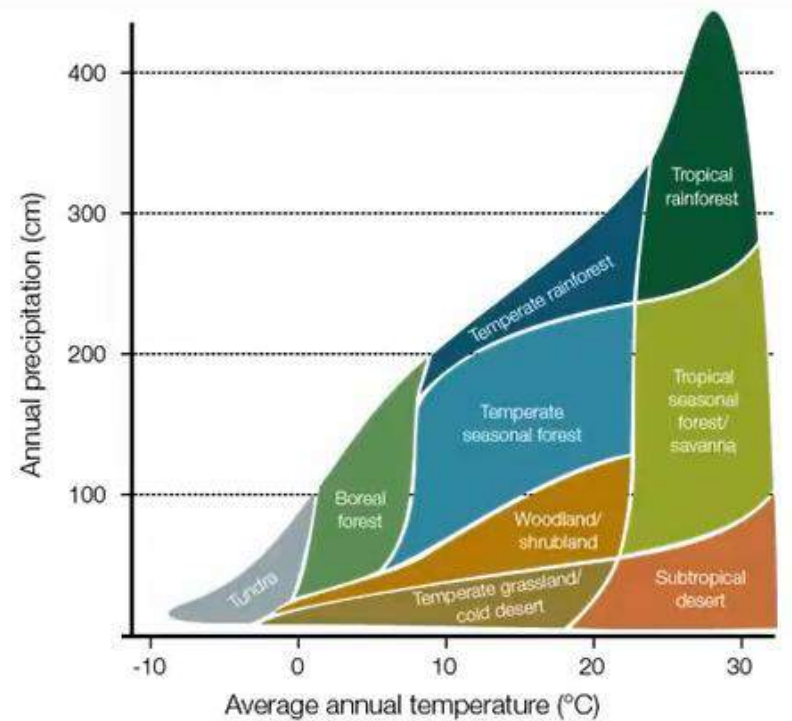
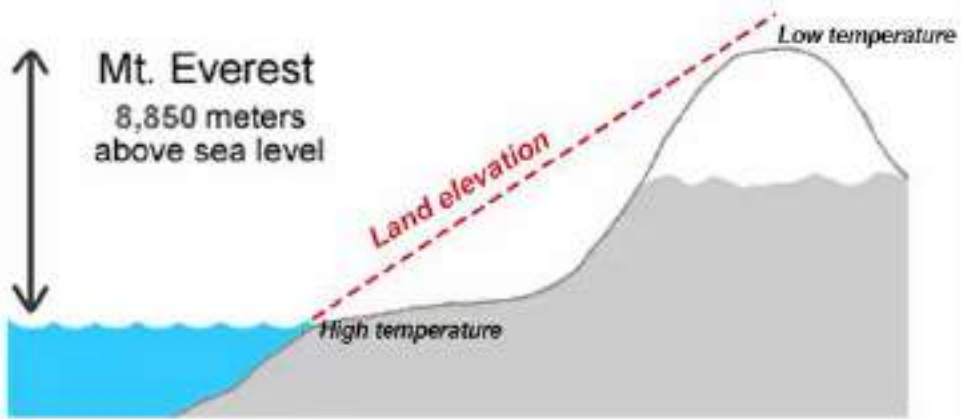






Montane Forests

1. **Montane means 'mountainous region'.**
2. **In mountainous region, with increase in altitude temperature decreases.**
3. **In India, mountains are located in -**
 - a. **North India - The Himalayan mountains from Jammu & Kashmir -**
(Sikkim, Assam, Arunachal Pradesh, Manipur, Tripura, Nagaland, Meghalaya and Mizoram) **Purvanchal mountains in the extreme east of India.**
 - b. **South India - Western Ghats, the Vindhya range and the Nilgiris.**

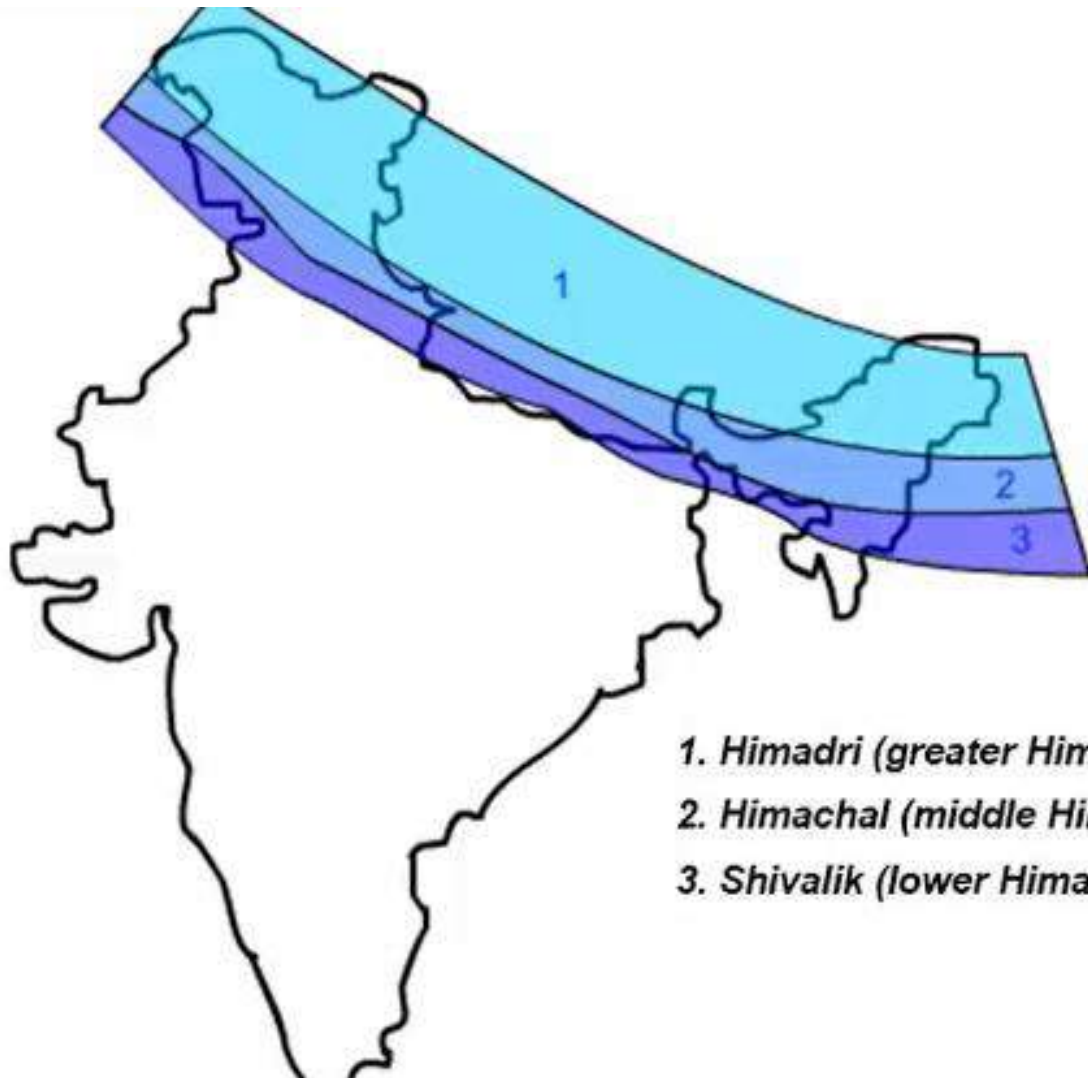




Montane Forests

Northern Mountains (Eastern Himalayas)

1. Between 4,000 - 5,300 meters - Alpine forest belt exists.
2. Trees like - Silver firs, junipers, pines, birch, willows, primroses, and rhododendrons are found here.
3. Alpine grasslands with herbaceous vegetation and short duration flowers are found at the higher region.
4. Between 2,700 - 4,000 meters - Coniferous Forest Belt exists.
5. Trees like - silver fir, blue pine, spruce, and deodar are found here.
6. Between 1,300 - 2,700 meters - Evergreen Forest Belt exists.
7. Trees like Oaks, poplar, elms, laurel, birche, alders, magnolia are found here.
8. Deciduous forests are found at the foothills of the Himalayas up to an elevation of 1300 m.
9. Trees like sal, teak, bamboo grow in abundance.



1. *Himadri (greater Himalayas)*
2. *Himachal (middle Himalayas)*
3. *Shivalik (lower Himalayas)*

Himalayan vegetation varies according to altitude and climatic conditions.

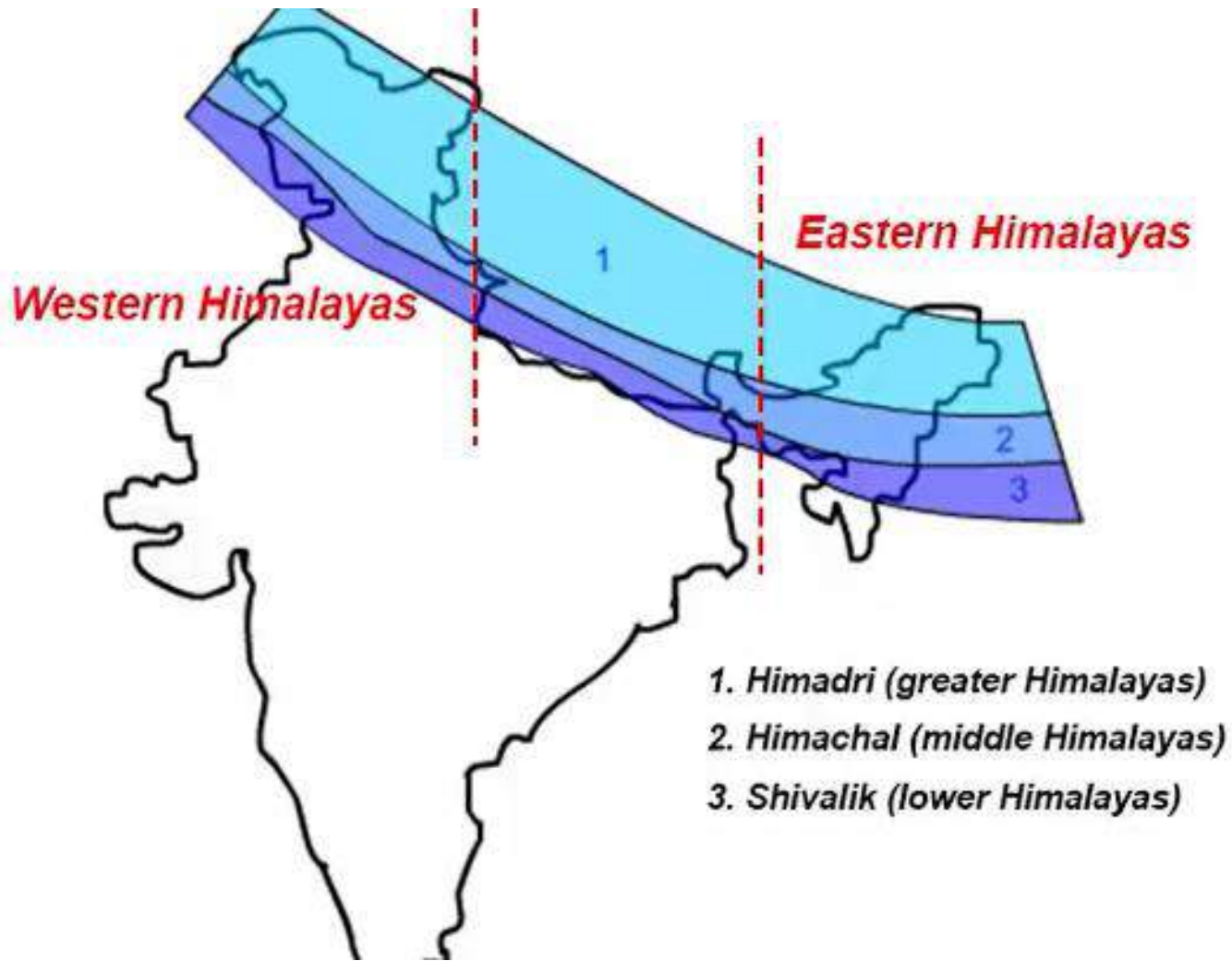
It can be classified into 4 types -

Tropical

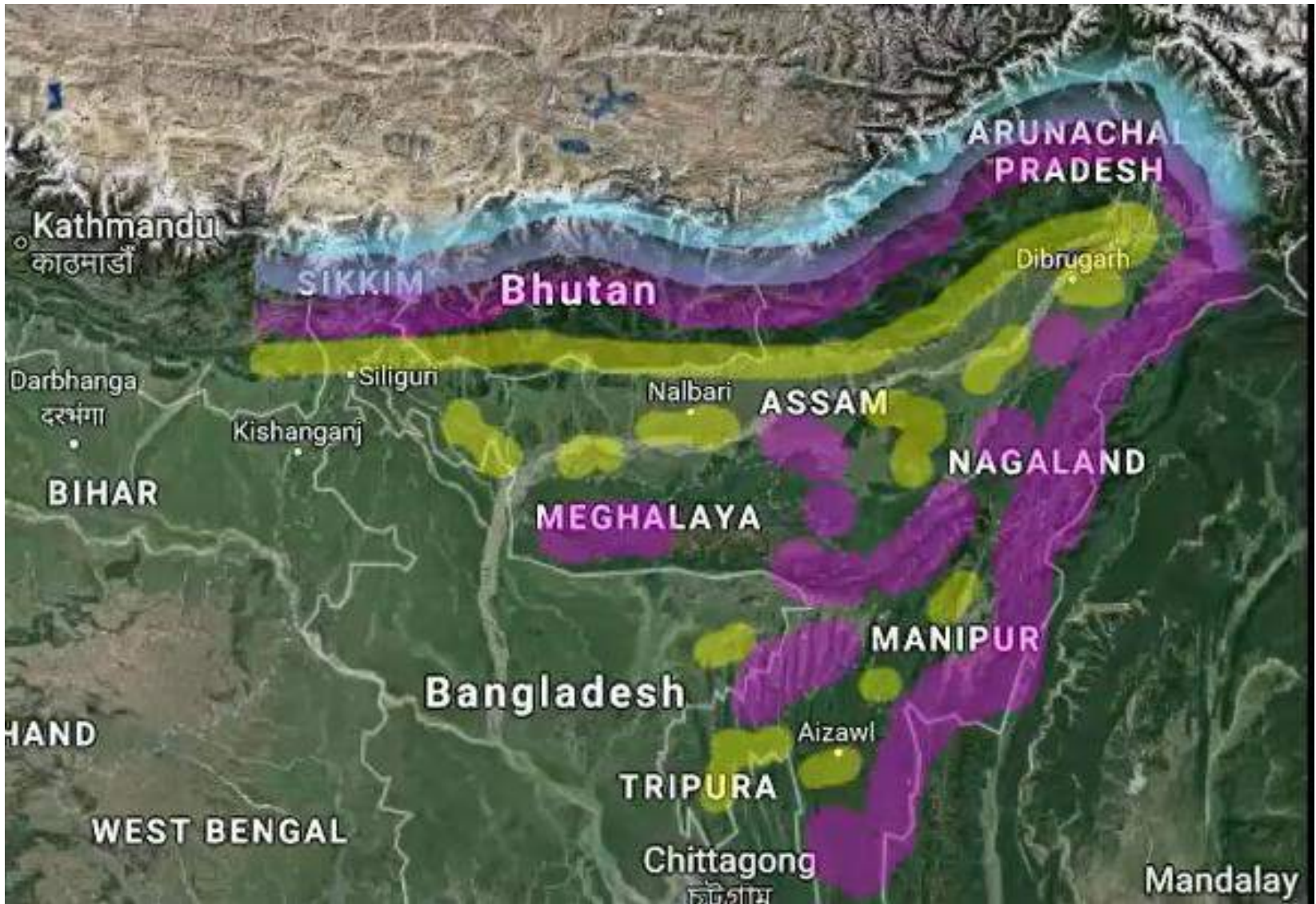
Subtropical

Temperate

Alpine



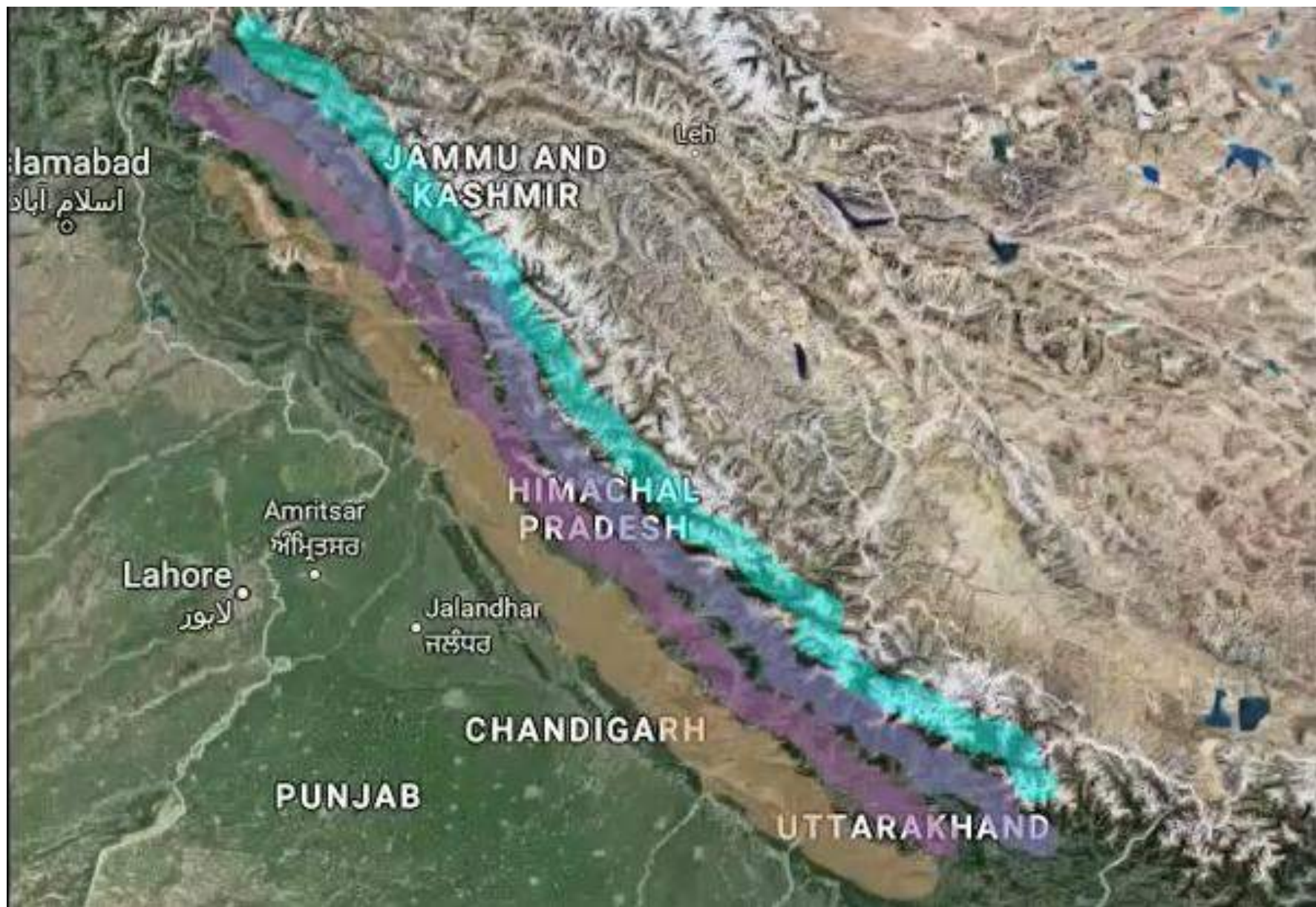




Montane Forests

Northern Mountains (Western Himalayas)

1. Between 3,300 - 5,000 meters - Alpine forest dominates.
2. Alpine plants like - rhododendrons, sweet grasses, shrubs with cushioned leaves are found here.
3. Between 2,000 - 3,300 meters - Coniferous Forest Belt exists.
4. Trees like - deodar, poplar, spruce, cedar, fir, maple, walnut are found here.
5. Between 1,000 - 2,000 meters - Chir pine Belt exists.
6. Scrub Jungles and Dry Forest Belt extends up to 1,000m.
7. Southern slope of Himalayas, thicker vegetation exist due to high rainfall.
8. With increase in altitude, rainfall >>> snow, the vegetation turns into Tundra vegetation.



Montane Forests

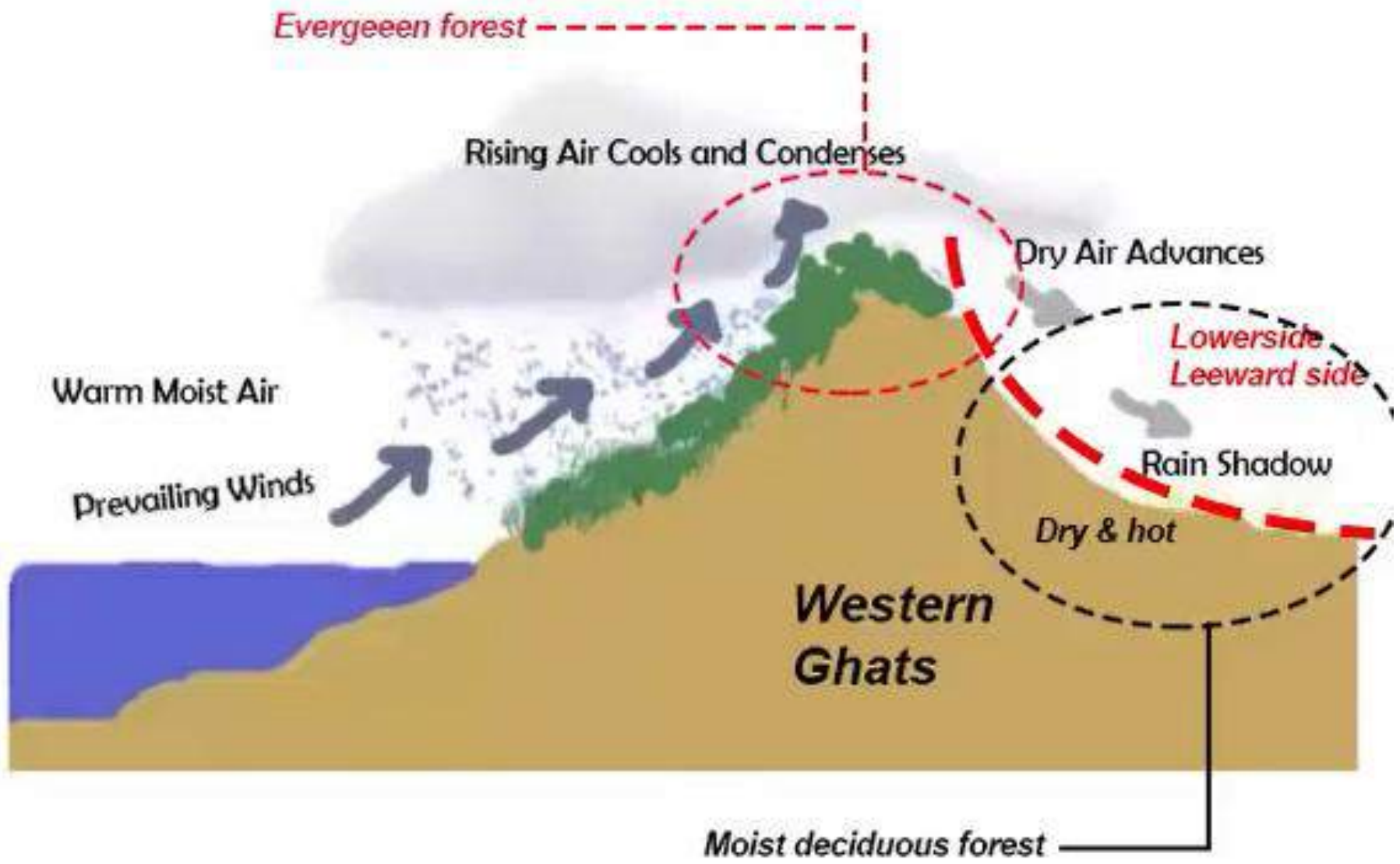
Southern Mountains of India

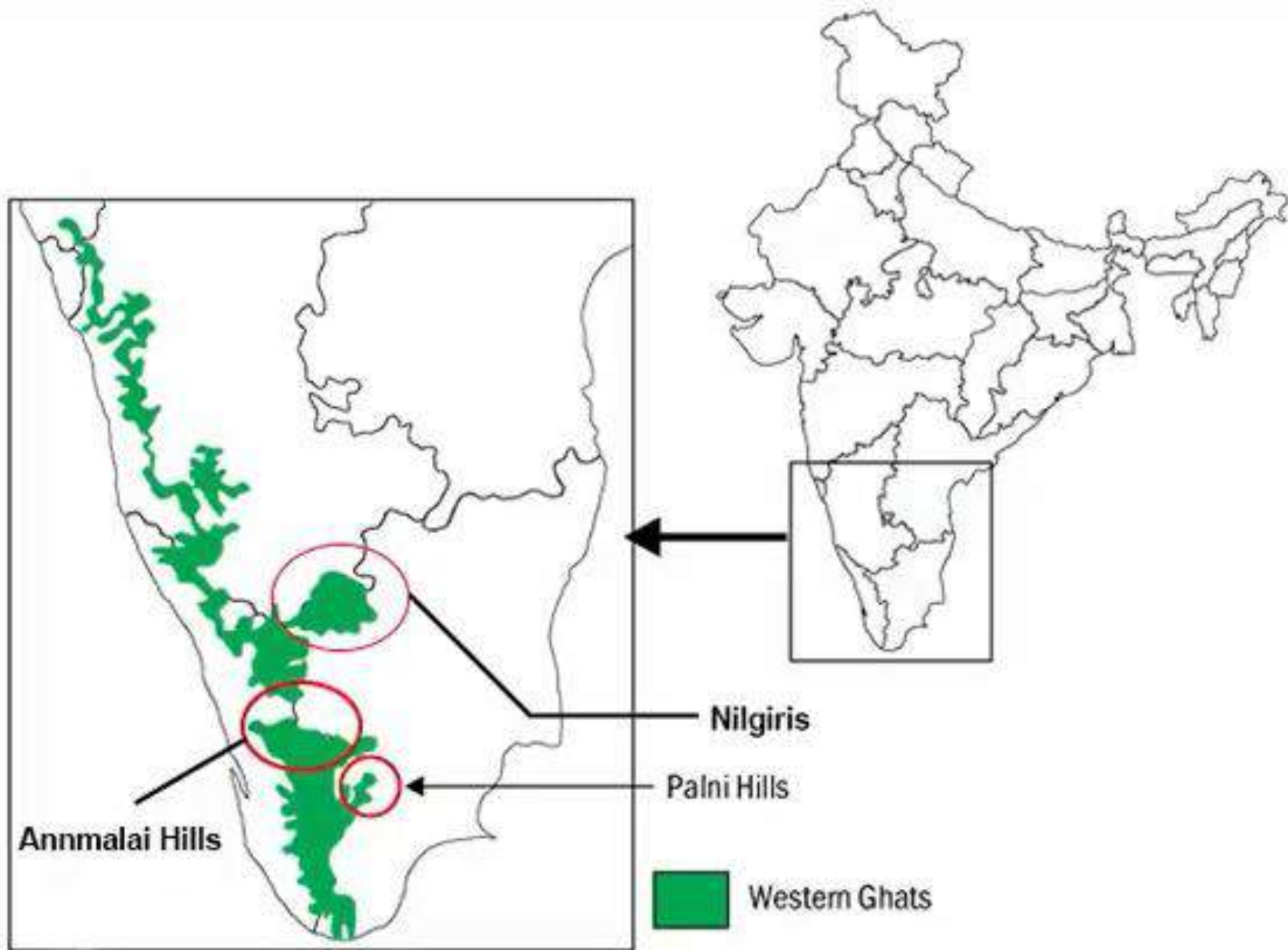
1. Mountains in South India are mainly found in the Western Ghats, the Vindhya range, and the Nilgiris.
2. They are Tropical region and their elevation is around 1500 meters above the sea level.
3. Lower regions have Subtropical vegetation or Moist & Dry deciduous forests due to less rainfall (leeward side).
4. Some trees that are found here are - Teak, sal, shisham, Mahua, Bel, Bamboos etc.
5. Higher regions of these mountains have Temperate forest or Evergreen forest vegetation due to good rainfall.
6. These Forests are called *sholas* in the Nilgiris, Anaimalai and Palani hills.
7. Some trees of these forests are - magnolia, laurel, cinchona, and wattle.





Western Ghat near Ettimadai





Littoral and Swamp Forests

1. Littoral and Swamp means '*wetlands*'.
2. In India, wetlands exists in the Himalayan region, desert, coastal plains, and near river plains.
3. These are found in - Sunderban delta, Eastern coastal plain of river Godavari, Krishna, Kaveri, Mahanadi, desert region of Rajasthan and Gujarat, Kashmir and Ladakh, Andaman & Nicobar islands, Lakshadweep islands, Western coastal plains of Malabar coast to Konkan coast.
4. There is an intergovernmental treaty for the protection and sustainable use of the wetlands, it's called the '*Ramsar Convention*'.
5. India currently has around 27 Ramsar sites.

Acknowledgement:

Maps, Graphs and vegetation of Western Ghat and Deccan Plateau are taken from open internet sources