



## Class Notes

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# Chapter 3: From The Rainy Forests to The Land of Permafrost

## Simplified Table

CLIMATIC REGION	EQUATORIAL REGION	TUNDRA CLIMATIC REGION
CLIMATE	<ul style="list-style-type: none"> <li>• High temperature and High rainfall <math>\square</math> (27°C avg),</li> </ul>	<ul style="list-style-type: none"> <li>• Polar <math>\rightarrow -25^{\circ}\text{C}</math> to <math>-35^{\circ}\text{C}</math> <math>\ast</math>; short cool summer, long winter.</li> </ul>
RAINFALL/SEASONS	<ul style="list-style-type: none"> <li>• 175–250 cm (convectional + orographic + cyclonic).</li> </ul>	<ul style="list-style-type: none"> <li>• 6 months day + 6 months night <math>\bowtie</math> (Polar Day/Night).</li> </ul>
VEGETATION	<ul style="list-style-type: none"> <li>• Evergreen tropical rainforests <math>\square</math> (“Selvas”).</li> </ul>	<ul style="list-style-type: none"> <li>• No trees; mosses, lichens, dwarf willows, tundra grass.</li> </ul>

<b>WILDLIFE</b>	<ul style="list-style-type: none"> <li>• Chimps, lemurs, orangutans, parrots, reptiles.</li> </ul>	<ul style="list-style-type: none"> <li>• Reindeer, polar bears, wolves, arctic foxes, migratory birds.</li> </ul>
<b>PEOPLE</b>	<ul style="list-style-type: none"> <li>• Tribes (Pygmies, Amazon Indians, Orang Asli).</li> </ul>	<ul style="list-style-type: none"> <li>• Sparse population; tribes – Inuit/Eskimos, Lapps, Samoyeds.</li> </ul>
<b>LIVELIHOOD</b>	<ul style="list-style-type: none"> <li>• Shifting cultivation → tapioca, yam, banana, maize.</li> <li>• Rubber, cocoa, oil palm, coffee, tea.</li> </ul>	<ul style="list-style-type: none"> <li>• Hunting, fishing using kayaks, reindeer herding.</li> </ul>

### Equatorial Climatic Region

Mean monthly and annual temperature are both around 27 degrees Celsius. (No significant variation)

## Climate

- No winter
- High rate of insolation > high temperature.>does not experience winter.
- Mornings - moderate temperature
- Increases considerably. As the day goes on
- Significant rise in temperature > High rate of evaporation>Heavy downpours of convectional rain in the afternoons.
- Region where the rainfall is heavy and well-distributed throughout the year. Therefore No distinct dry season
- The annual rainfall in this region is between 175 cm and 250 cm.

Reasons for heavy rainfall:-

- High temperature
- High rate of evaporation

Rainfalls received: - Convectional rainfall, Orographic rainfall, Cyclonic rainfall. .

### Doldrums

The equatorial region receives a high rate of insolation throughout the year., a low-pressure region develops along the equator. Horizontal movement of air is minimal in this region. This region is called the doldrums. It is also where the trade winds from both hemispheres converge.

Kilimanjaro, the highest mountain peak in Africa, is snow-covered throughout the year.

- Excessive humidity, high rates of insolation and intense heat make the days in the equatorial climatic region quite oppressive.
- The moderating effect of winds blowing from the sea brings some relief along the coastal areas. Thus coastal region is more populated

## Natural vegetation

- The high temperature and abundant rainfall leads to luxuriant vegetation growth.

## tropical rainforests,

- Location: Amazon Basin in South America, West-Central Africa, Indonesia, the Malay Peninsula, and New Guinea.
- Amazon Basin rainforest - Selvas.
- No particular season for seeding, flowering, fruiting, and shedding leaves.
- Processes occur year round results evergreen throughout the year.
- Hence, these rainforests are also called equatorial evergreen forests.
- Evergreen trees - ebony, mahogany, cinchona, rosewood, and others
- Smaller palms, climbing plants like lianas, epiphytes like orchids, numerous parasitic plants, ferns, and grasses like lalang grow luxuriantly here.
- Another significant feature of these rainy forests is that multiple species co-exist in a particular area
- Estimate of 200 species of plants, found in an acre of Malaysian rainforest..
- Plants grow to varying heights depending on the availability of sunlight.
- Trees form canopies at different levels, according to their heights.
- These evergreen rainforests absorb carbon dioxide and produce oxygen at a massive rate.
- Often referred to as the 'Lungs of the World'.
- In equatorial rainforests, the forest is cleared at certain places for shifting cultivation.
- When these clearings are abandoned after cultivation, less luxuriant secondary forests spring up.
- Such secondary forests are called 'belukar' in Malaysia.
- In the coastal areas and brackish swamps, mangrove forests thrive.

## Wildlife

- Rich in the diversity of wildlife.
- Because of the climatic characteristics most of the wildlife thrive in trees.
- The animals which spend most of their lives in trees are called arboreal animals.
- Since sufficient sunlight does not penetrate to the floor in these dense forests, undergrowth is absent.
- As a result, herbivores that feed on this undergrowth are not commonly seen.
- Carnivores that prey on them are also negligible in number.
- Wildlife - lemurs, chimpanzees, orangutans, tree-dwelling reptiles, hippopotamuses, alligators
- Birds - parrots, toucan and hornbills.

## Human life

- Physical conditions prevalent results in sparsely populated regions.
- Natives -The Pygmies of Africa, the Indian tribes of the Amazon Basin, and the Orang Asli of Malaysia
- Livelihood - hunting animals, gathering nuts and fruits, and fishing.  
Cultivation method - shifting cultivation slash-and-burn agriculture.
- Clearing a forest area by cutting and burning the trees
- Continues until the land loses its fertility.

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- Once the soil becomes infertile, the tribes move to another forest area, leaving the previous clearings behind, and repeat the same process.
  - Crops - manioc (tapioca), yam, maize, bananas, and groundnuts
  - With the arrival of Europeans, plantation agriculture was started extensively.
  - The prevailing climate in this region has proven to be highly favorable for the cultivation of certain crops that are highly significant for industrial purposes.
  - Rubber is the most important plantation crop; Malaysia & Indonesia are world leaders in its production.
  - Other major plantations include cocoa, oil palm, coconuts, sugarcane, coffee, tea, bananas, and pineapples.
  - Many natives are nomads or primitive tribes, living in houses built with locally available wood and stones.
  - In contrast, there are also modern cities and tourist centers like Quito, Bogotá, Singapore, Jakarta, Manaus, Belem.
  - Countries like Malaysia, Singapore, and Eastern Brazil show development through systematic planning.
  - The hot and wet climate supports plant growth but also spreads insects, pests, and diseases.
  - Forests hinder development: road and railway construction is costly and difficult.
  - Lalang grass and undergrowth quickly take over cleared forest areas, hampering cultivation.
  - Workers face dangers from wild animals, poisonous creatures, and disease-spreading insects.
  - Remote regions like the Amazon Basin, Congo, and Borneo lack modern communication systems; rivers remain the main transport routes.
  - Commercial logging is difficult due to dense forests and heavy hardwoods that can't be floated down rivers.
  - Livestock rearing is limited, and deforestation and human activities (agriculture, mining, and urbanization) are causing serious ecological threats.

## Tundra climatic region

- The Tundra region is located to the north of the Taiga region.
- It spreads along the Arctic coasts of North America and Eurasia, and that of Greenland.
- The Tundra region can be categorized into Arctic Tundra and Alpine Tundra.
- Identify from the table below the regions to which each type of Tundra belongs.

Arctic Tundra	Alpine Tundra
<ul style="list-style-type: none"> <li>In parts located to the north of Taiga in Alaska, Northern Canada, Siberia, Greenland, Iceland, Scandinavia</li> </ul>	<ul style="list-style-type: none"> <li>In high mountainous regions</li> </ul>

- The Arctic or Polar Climate
- Short summers and long winters.
- Very low mean annual temperature.
- In mid-winter, temperature falls between -25 and -35 degrees Celsius and the temperature in the interior parts of the Tundra falls still lower.
- In short summers of a few weeks the temperature rises above 0 degrees Celsius.
- The sun never sets for weeks in the area between the Arctic Circle and the Pole.
- The sun never rises for weeks in this area either.
- During the period when the sun's apparent position is in the Northern Hemisphere, the North Pole experiences a day for around six months.
- During the period when the sun's apparent position is in the Southern Hemisphere, the North Pole experiences night for around six months.
- Precipitation in the form of snow during winter
- The coastal areas where cyclones are strong have much heavier rainfall.
- The strong snowstorms that blow over this region are called blizzards.
- They often cause heavier snowfall.

## Natural vegetation

- The natural vegetation is scanty due to insufficient sunlight and long winters.
- The diversity of fauna is also scanty here.
- Trees are normally absent due to the challenges posed by the climate.
- Mosses, lichens, sedges, and bushes are commonly found here.
- Dwarf willows and stunted birches withstand the harsh climatic conditions and survive in certain places.
- Some hardy grasses grow in the coastal lowlands where favorable conditions prevail.
- Herbivores like reindeer make survival possible here only by depending on these pastures.

## Wildlife

- This region becomes active with the onset of summer.

- In brief summer, as the snow melts, bushes start bearing berries and flowers begin to bloom.
- Birds migrate to the Tundra during this period from the south to prey on insects that come out at this time.
- Arctic foxes, wolves, polar bears, musk-oxen, and arctic hares are the other animals found here.

## Human life

- Human life in the Tundra Normally, the Tundra is a sparsely populated region.
- Human life in this region is largely confined to the coast.
- Plateaus and mountains are permanently snow-covered, making them uninhabitable.
- The Tundra is mainly inhabited by some nomadic tribes.

Greenland, North Canada, Alaska	Eskimos or Inuit
North Finland, Scandinavia	Lapps
Siberia	Samoyeds
Lena Basin	Yakuts
North- Eastern Asia	Koryaks, Chuckchi

- Hunting and fishing are the major activities for subsistence by the people of the Tundra. Whales, seals, caribou, various kinds of fish, birds, and furbearing animals provide them with everything they need for food and clothing.
- Their bones and other parts are used as weapons, tools, and even utensils.
- Polar Eskimos of Greenland still follow a primitive lifestyle, living in igloos in winter and animal-skin tents in summer, moving for hunting and fishing.
- They hunt animals including polar bears for food and survival.
- Over the last 60 years, contact with Europeans has modernized Eskimo life: coastal villagers now have modern houses and use speedboats instead of kayaks.
- Fur-bearing animals are reared commercially, and in Canada & Alaska, schools have been established for Eskimo children.
- In the Eurasian Tundra, many tribes live nomadically, moving with reindeer herds in search of pastures.
- In Siberia, large farms raise fur-bearing animals and reindeer on a commercial scale.
- Mining and limited farming (short-season cereals in southern Tundra) have led to new settlements and some agricultural development.

## The Tundra and the Climate

- The Tundra is one of the places that is adversely affected by climate change.
- Due to global warming, the permafrost in the Tundra melts considerably.
- This adversely affects the ecosystem and environmental equilibrium of the region.

