

Course: B.A Geography

Paper code: GEOG CC-409

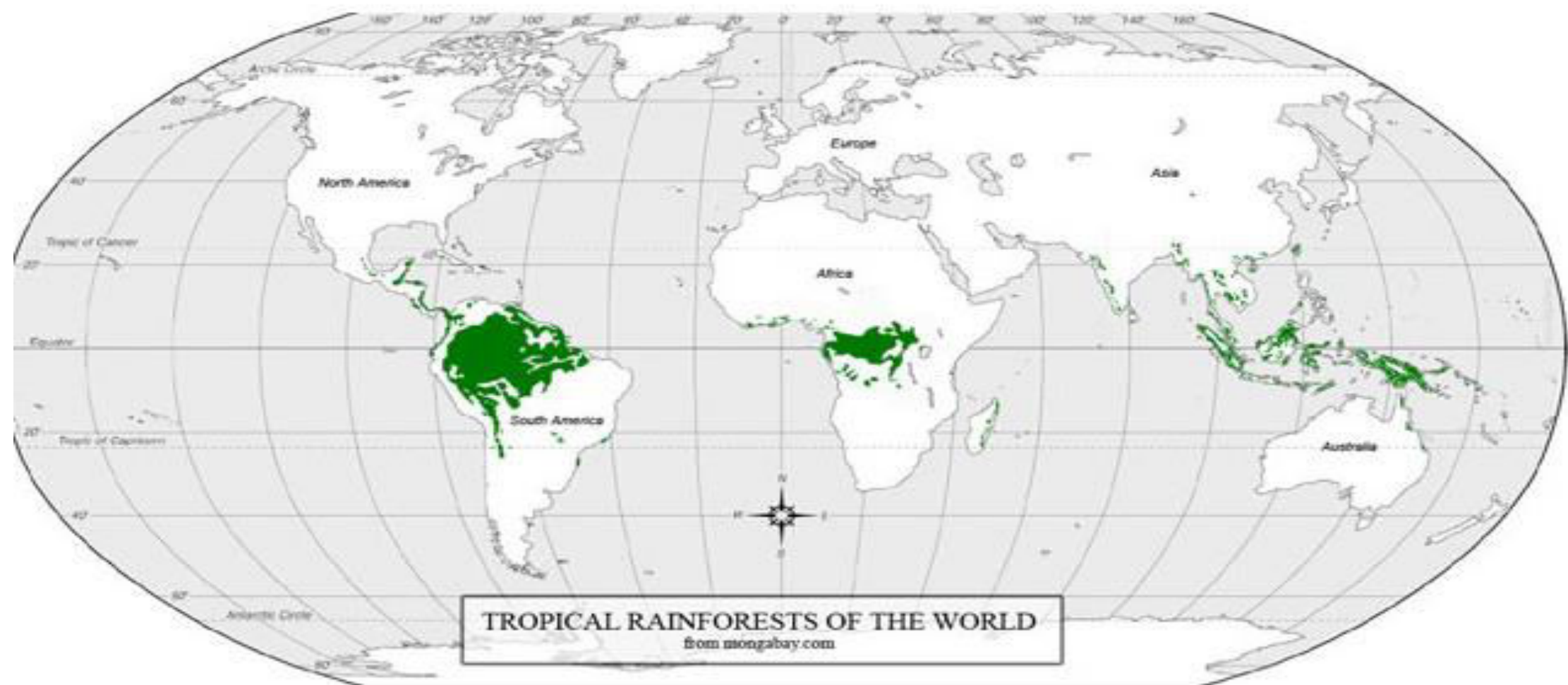
Paper Name: Environmental Geography

Semester: IV

Topic: Human Adaptation in Equatorial Biome

Faculty: Neha Singh

Email: [nehasingh22091988@gmail.com](mailto:nehasingh22091988@gmail.com)



# LOCATION

- The region stretches in more or less continuous belt 0° and 10° North and South of Equator.
- South America-Amazon lowlands (Selvas), and also occurs along the coast of Guianas.
- Africa-Part of Congo basin and Guinea coast of Africa.
- Southern Asia-Malaysia, Indonesia, New Guinea and parts of Philippines.

# CLIMATE

- The temperature is high throughout the year, sun rays fall vertically over the equatorial region. There is very slight change in range of temperature, i.e. less than 3 degrees.
- Most of the places are cloudy with high relative humidity, especially in the afternoon and the region receives heavy rainfall throughout the year.

- This region is called optimum biome because it has high temperature, high precipitation and high humidity throughout the year, and consequently have enormous species of flora and fauna.
- **NATURAL VEGETATION**
- In order to secure more sunlight trees grow tremendously high, with a canopy tier form of vegetation. The smooth slender trunks are covered with thin and buttressed by large, wall like flanks that grow out from trees to brace the trunks (M. Hussain).
- The height of top layer varies between 30-60mts.
- the height of second layer varies between 25-30 mts.
- The lower layer is composed of ferns, bamboos and seedlings.

- **Hardwood evergreen trees**- plenty of sunshine and humidity favours dense growth of broad leaved trees such as, Mahogany, Ebony, Rosewood, Greenheart, Cinchona and Rubber, which form continuous canopy and provide shade to the underlying tangled palms and creepers.
- In the marshy areas along the river mouths mangroves are found while in Guinea, Coconut palms and Oil palms are found.
- **Creepers (climbers)**- are the second important floral members of the equatorial evergreen forest biome. For example- lianas (woody climbers) and strangler figs.

- **Epiphytes-** Creepers are followed by epiphytes (plants without roots on ground) such as orchids. These are found on almost all layers of the forest in this biome.
- Wherever sunlight penetrates the dense undergrowth of climbers and epiphytes are found.
- Nearly 90% of the climbing community of plants are found in equatorial biome. Many of these plants are parasites feeding upon other host plants.
- This biome constitutes of 70% of the total plant species.





- **NATIVE FAUNA**

- Lack of sunlight in the ground level, favours the growth of arboreal animals (creatures who spend the majority of their lives on trees) and few ground animals.
- Few arboreal animals are, monkeys, apes, sloths, flying foxes (bats), tree lizards, tree frogs, flying squirrels, tree iguanas and flying lemurs. Most of these animals have additional features like claws, adhesive pads and parachute like limbs, which they expand to take prolonged leaps.
- Mammals like African elephants, chimpanzee, gorilla, bison, leopard, pigs etc with their large and sturdy bodies move through these dense forests. The large herbivores are few in number.

- Ground animal community includes most of the insectivores such as, Argus Pheasant, peacock, fowl and Guinea fowl.
- Cryptozoic- animals which live beneath the stones, litters, barks and logs of dead trees, such as pill woodlice, mites, scorpions, centipedes, etc.
- A variety of colourful birds is plenty, and most of them belong to the category of fast flying species such as Asian falconet, swifts, swiftlet, etc.

# ECONOMIC ACTIVITIES

- **HUNTING AND GATHERING**-The Semang of Malaysia live by hunting and gathering roots and fruits. The Dayaks of Borneo are head hunters and also practice shifting agriculture. The pygmies of Congo basin, hunt almost all possible living creatures in the forests for food. Similarly, the Amazon Indians depend on hunting of insects and monkeys along with few plants and roots which they grow for themselves.
- **FORESTRY**- it is very difficult to exploit trees in equatorial forests (Selvas in Amazon), because of the undergrowth and amorphous nature. The medicinal plants such as belladonna, cinchona calisaya and plantation trees such as rubber and cacao are indigenous products of these evergreen forests.

- AGRICULTURE- in many parts primitive agricultural methods (shifting agriculture) are practiced, such as *Milpa* in South America, *fang* in Africa. The forests are cleared and cultivation is done within the limits of those stumps and when the fertility deteriorates, they shift to some other place. Female are involved in the farms while the male members opt for gathering and hunting.
- The equatorial condition favours production of natural rubber in Thailand followed by Indonesia and Malaysia.
- The chocolate is made from cocoa beans which grows on cacao trees, and the highest producer of cocoa is Ivory Coast followed by Ghana and Indonesia.

- **MINING AND INDUSTRIES-** the Congo basin has tin, copper and diamonds. Tin is mined in Malay peninsula and Indonesian islands, while bauxite is mined in Guiana. These regions have been suppliers of raw materials for various industries.

# **HUMAN ACTIVITIES IN MONSOON LANDS**

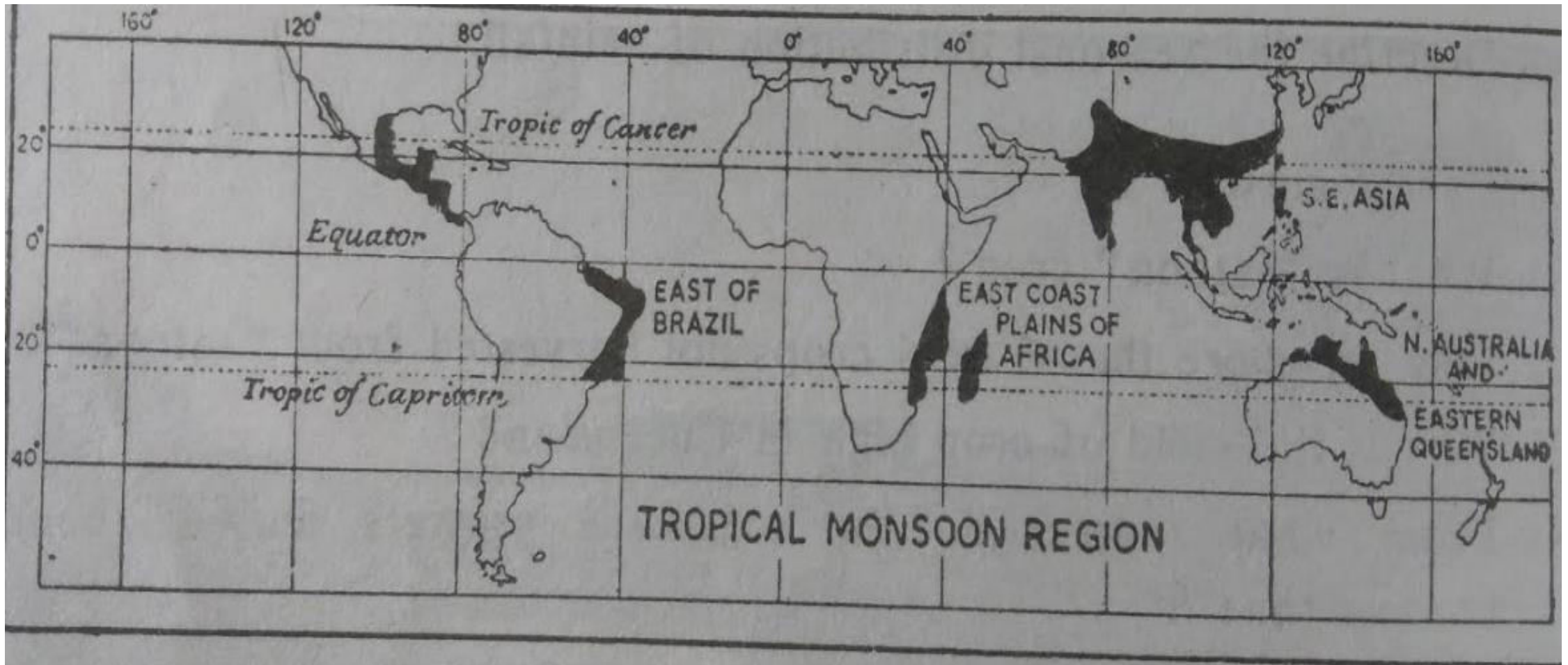


Fig. 176. THE TROPICAL MONSOON REGIONS.

Source: Charles Farro, 2001

# LOCATION

The regions lie roughly between 10° and 25 ° North and South and in the case of India and Pakistan it extends up to 30 °N.

India, Pakistan, Sri Lanka, Burma Southern China, Thailand, former Indo-China (Cambodia, Laos, Viet Nam) and the islands of Hainan, Formosa and the western Philippines.

Other regions are south-eastern U.S.A, East Africa, Malagasy and North Australia.



# CLIMATE

- As the name suggests this region experiences “*the reversal of seasonal winds*”.
- India and its adjoining countries experiences four seasons:
- The Summer/Hot season (March-June)-the average temperature in summer vary from 25° C to 32° C, but the maximum temperature ranges between 38° C to 48° C during May and June.
- The Rainy season (June-September)- it starts with onset of the southwest monsoon in June and continues till the middle of September.
- The Cool season (September-November)- the season starts with the beginning of the withdrawal of southwest monsoon in the middle of September and continues up to October. It is also called retreating monsoon.
- The Winter Season (November-March) – clear sky, pleasant weather, low temperature and humidity.
- On an average the mean annual rainfall is around 1500mm, but there are much variations in temporal and spatial distribution of rainfall.

# FLORA

- The natural vegetation varies according to the rainfall. In areas of heavy rainfall there are dense forests like in Myanmar, on the Eastern Himalayas, in Cambodia and Viet Nam.
- The number of plant species is less in the tropical deciduous forest biome than the evergreen forest biome. The deciduous trees fall their leaves just before the hot summers.
- There are four strata in the vertical structure in the tropical deciduous forests. The uppermost and next to it constitutes of trees, the third stratum is formed by shrubs and the lowest stratum comprises of herbaceous plants.
- The height of, most of the tree ranges between 12 mt to 30mt.
- Teak, sal, rosewood and deodar trees are commercially important and abundantly found in this biome.
- Dense growth of bamboo is found in areas of good rainfall.
- Lianas and epiphytes are good in number but far less than equatorial biome.

# FAUNA

- It is a significant ecological principle that more is the development of stratification of the vertical structure of the vegetation community of a biome and greater the number of plant species, the more will be the number of animal species, their total population and species diversity.
- In the case of monsoon biome the diversification of animal species is less.
- This biome represents the largest number of domesticated mammals because of development of agriculture.
- In the Australian part marsupials such as kangaroo are found.
- Leopards, monkey, elephant, lion, rhinoceros, snakes, bears are found in this biome.

# HUMAN ACTIVITIES

- GRAZING
- Rearing and domesticating animals (cattle, sheep, goats) is important occupation in many parts of the Monsoon lands. The north Australian region carries on grazing on commercial scale.
- AGRICULTURE
- Intensive subsistence agriculture is best developed in and practically confined to the monsoon lands of Asia. The high density of population on the extensive plain areas has necessitated greater intensity in the tillage of land, and maximum feasible yield from a given land is produced to feed the farmer and his family.
- Subsistence agriculture is carried out mainly in India, Pakistan, Bangladesh, Sri Lanka, Myanmar, Thailand, Laos, Cambodia and Malaysia. Two types of tillage is done in these regions i.e, with paddy and without paddy (millets and wheat).
- Monsoon forests are not difficult to clear, high temperature and good rainfall enable the people to grow variety of crops. Rice is the staple food of teeming millions while in slightly drier parts, wheat, maize, bajra, jowar, barley, pulses, oilseeds and groundnuts are grown.

- FISHING

- Fisheries is one of the most important human activity in monsoon lands. Countries with perennial rivers and monsoon fed rivers have innumerable option for pisciculture. The countries lying in between the Mekong and Irrawaddy rivers and connecting river Tonle sap (Cambodia), have rich fresh water resources for development of pisciculture. In India, there are innumerable perennial and rain fed rivers such as, Ganga, Brahmaputra, Son, Godavari, Tapi, Krishna, etc which has the world's richest fishery resources.
- In fact, fishing is one of the important occupations in coastal and deltaic regions.
- Rice-cum-fish culture (rizi-pisciculture) is practiced in rice belts of monsoon land, where rice is the sole enterprise and fishes are taken to initiate additional income. In Malayasia, Krian and Sekincan-Tanjung are the regions where it is practiced. Similarly it is practiced in different parts of India, Philippines, Vietnam, Bangladesh, China and Indonesia.

## MANUFACTURING

- India is leading country in manufacturing activities in this region, with these five industrial complexes namely, Hoogly Industrial region; Mumbai-Pune region; Madurai-Coimbatore- Bengaluru region; Ahmedabad-Vadodra region; and Chhotanagpur region.
- Sri Lanka manufactures, tea, apparel and textile, refined oils and rubber for export purpose.
- Cottage industries based upon agricultural and forest products supports the economy in Laos, Cambodia and Vietnam.
- Shanghai has Iron and steel industry, cotton textiles, ship building, oil refineries, flourmills, and also manufactures engineering and metal works.
- Canton has several industries such as iron and steel, hosiery, silk, matches, porcelain, metal goods, etc.

- MINING

- There are some important mining areas in this region. India has rich reserves of iron, coal, mica, manganese and limestone. Pakistan has coal and natural gas. The Philippines have deposits of chromite, gold, silver and iron. Thailand has tin, tungsten, manganese and lead. Myanmar has petroleum, tin, tungsten, lead, zinc, copper and gem minerals. The countries of Indo-China (Viet Nam, Cambodia, Laos) produce tin, zinc, lead, iron, and phosphate.

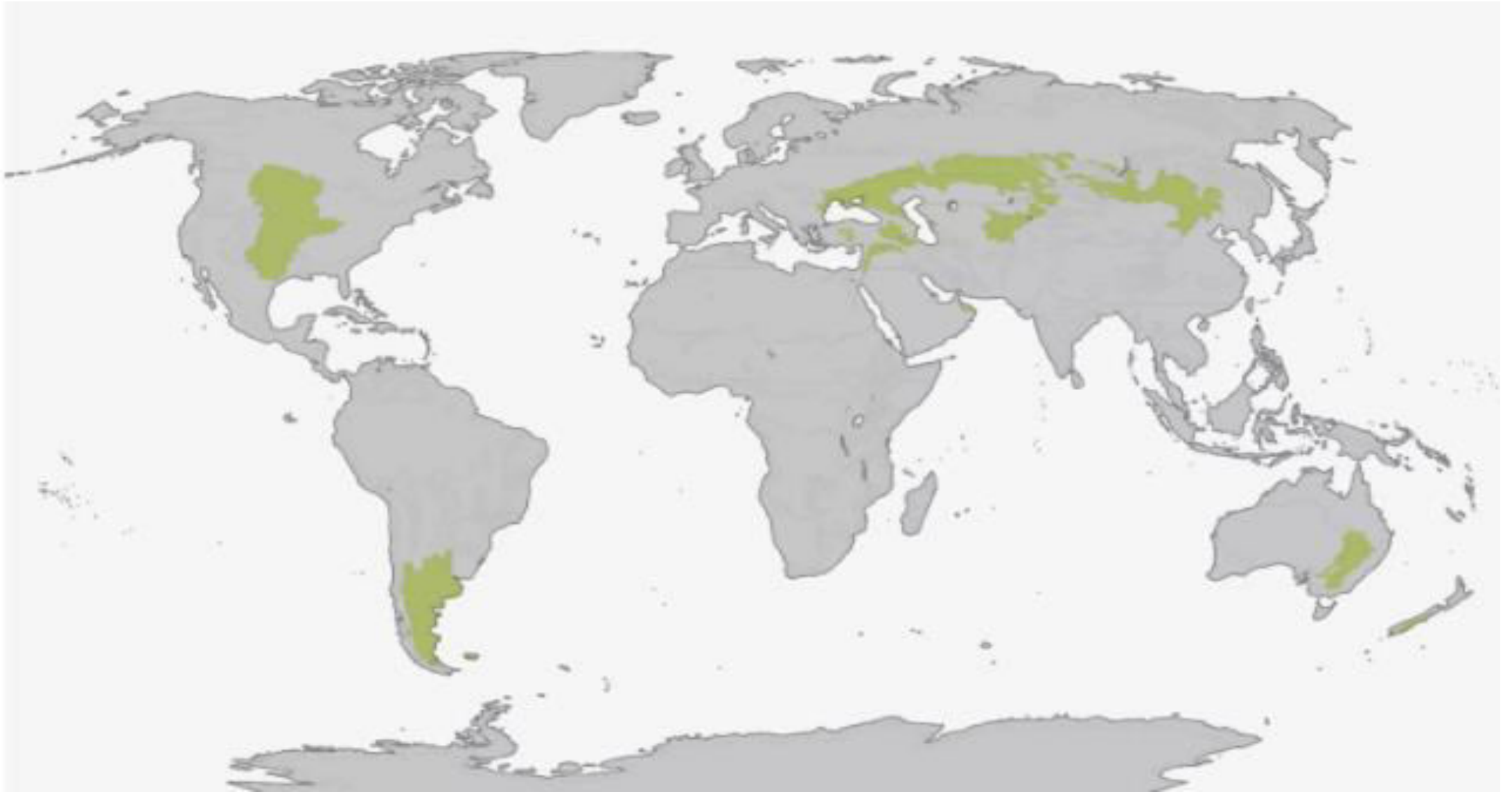
- TOURISM

- It is one the fastest growing industry in south and south-east Asia, with innumerable tourist sites such as, Kullu Manali, Gangtok, Udaipur, Jaipur, Goa, Puducherry, Kanyakumari, Rameshwaram(India), Hong Kong, Manila, Bangkok, Colombo, Nuwara Eliya, Kandy (Sri Lanka), Halong, Hanoi, Ho Chi Minh (Vietnam), Phnom Penh, Angkor Wat (Cambodia), Luang Prabang, Vang Vieng (Laos), etc.

# **HUMAN ACTIVITIES IN TEMPERATE GRASSLANDS**

**BY: NEHA SINGH**





- Source: [thoughtco.com/land-biomes-temperate-grasslands-373495](https://www.thoughtco.com/land-biomes-temperate-grasslands-373495)

# LOCATION

- The Temperate Grasslands are found between latitudes  $40^{\circ}$  and  $55^{\circ}$  North and South.
- They lie far away from the influence of the sea in the heart of the continents, and most of them are interior lowlands consisting of level, generally treeless plains.
- Those in South America and in South Africa are nearer the sea.

# AREAS

- North America (Prairies)- Southern regions in Canada and the central United States, extend from foothills of Rockies in the west to the temperate deciduous forest biome in the east.
- South America (Pampas)- the region around the River Plate from the Andes to the Atlantic Ocean.
- South Africa (Veldt)- Transvaal
- Asia- South west Siberia, Mongolia
- Australia (Downs)- the Murray-Darling basin has modifies climate of this type.
- Eurasia (Steppe)- extend for 3200km from the shores of Black sea across the Great Russian Plain to the foothills of Altai mountains. There are some isolated patches of steppe, i.e. Pustaz (Hungary) and Manchurian grasslands (in the plains of Manchuria).
- New Zealand (Canterburry)

# CLIMATE

- In the Northern Hemisphere, the Prairies and the Steppes lies in the interior part of the continent therefore experiences continental climate.
- In summer the average temperature varies from 18 °C to 24 °C. Summers are short and quite warm. There is abundant sunshine and clear sky. This provides rapid heating in day and cooling in night.
- The region falls in the zone of westerlies.
- In the winter, temperature varies between - 4 °C to 2 °C in the Northern Hemisphere and the winters are sufficiently cold for rain to be in the form of snow.
- Chinook, a hot wind that blows in the winter and raise the temperature in the prairies, making pasture land available for grazing of animals.
- Rain falls in spring and early summer and varies between 25 and 65 cm, mostly in the form of light showers.
- The southern continents are narrower in the temperate latitudes and therefore the grasslands experiences moderate climate due to proximity to the sea.

# NATURAL VEGETATION

- The temperate grassland biome is unique in the sense that it has a single layered structure of vegetation community where the upper canopy of the grasses is formed by their leaves but for a short period the flowering stalks also join the canopy and add grandeur to the top layer.
- The Eurasian steppe has following sequence of vegetation found from north to south in the region;
  - i) Forest steppe consist of trees mainly oak, elms, limes, maple, a few arboreal vegetation of Siberian Steppe such as birch with mixture of aspen and willow.
  - ii) Meadows steppe characterized by turf grasses and numerous flowering herbaceous plants.
  - iii) Grass steppe dominated by grasses.
  - iv) Semi arid xerophytic steppe dominant with fescue and feather grass species.

- North American Prairies- the entire prairies are divided into 3 sub regions; i)tall grass prairies, ii) short grass prairies, iii) mixed grass prairies.
- South American Pampas- the pampas is divided into two sub types; i)humid pampas, developed in the eastern part of Argentina and characterized by tall grasses.
- ii) sub humid pampas, developed in the western part with short grasses.
- South African Veld Biome is divided in to 3 sub types;
- i) Themeda veld ii) Sour veld and iii) Alpine veld
- And the main grasses are themeda red grass, festuca, bromus, aristida, eragrostis and hyparrhenia.

- Australian Downs has relatively warm winter season therefore grasses are found along with eucalyptus trees. Three distinct grasslands are found in Downs based on the differential mean annual precipitation and these are; i) temperate tall grasslands, ii) short grasslands, and iii) xerophytic grasslands.
- Canterbury grasslands are dominated by tall tussock grasses and short tussock grasses.

# FAUNA

- *Bisons* and *proghorns* dominate the animal community of prairies, followed by prairie dogs, hawks, eagles, rattle snakes, foxes and wolves.
- Eurasian steppes have *Saiga antelopes* and *Mongolian gazelles* (variety of wild horses) along with the rodents.
- In the pampas, pampa deer is one of the important herbivorous animal, whereas rodents such as *viscacha* and *mara* are also significant ones. *Rhea* is an important flightless bird in this region. Besides, rhea this region is enriched by seasonal migratory birds such as duck, geese and herons.
- The wild animals such as antelopes, hyaenas, jackals, lion, leopards and zebra were once dominant in Veldean grassland, but now they have been replaced by domesticated cattle.
- The Australian downs are dominated by Kangaroo (marsupials), dingo dogs and the flightless bird, *Emu*.
- The Canterbury was dominated by flightless bird, *Moas*, which have now disappeared due to hunting.



# HUMAN ACTIVITIES

- **NOMADIC HERDING-** the migratory animal grazing has almost disappeared from major grasslands. The herders were wandering tribes e.g. the Khirgiz, the Kazakhs and the Kalmuks. The wandering tribes have been made to settle down on the State and Collective farms.
- **PASTORAL FARMING-** the natural conditions suit animal farming, subsequently cattle, sheep, pigs and horses were introduced and proved to be successful.
- With the development of refrigeration ships, the temperate grasslands became major pastoral regions, exporting large quantities of beef, mutton, wool, hides, milk, butter, cheese and other dairy products.

- The farmers raise livestock as well as grow oats, barley, maize, flax and potatoes.
- Fodder crops such as alfalfa and Lucerne are grown to provide winter feed for the growing cattle's and also for their fattening purpose.
- Temperate grasslands of Australia are famous for wool production; the pampas is world's leading exporter of beef; Eurasian steppes is increasing emphasis on meat production.
- Generally sheep rearing is practiced in the drier parts of the grasslands.
- Large cattle farms are called *Ranches* which are looked after by cowboys. These ranches are known as *Estancias* in South America and *Stations* in Australia.

- **MINING-** Prairies of Canada have considerable mineral wealth. Coalfields of Alberta are among the largest in the world, petroleum and natural gas are other important energy resources while, metals such as gold, copper, zinc, nickel, and uranium are also found. Saskatchewan has large deposits of potash which is used in chemical industry.
- In prairies of USA, iron ore and coal are mined at several places. Around the Lake Superior region has very rich deposits of high grade iron ore.
- In Russian steppe, copper, iron, coal, petroleum and tin are found. The Kuznetsk Basin (Kuzbas) one of the largest coal fields of Russia.
- In South African region gold, diamonds, coal and iron are mined. Kimberley has diamonds and Witwatersrand has gold mines.

# AGRICULTURE

- The temperate grasslands are ideal for extensive wheat cultivation. The characteristic features of this type of cultivation are- i) specialization in single crop, ii) farms are large, iii) highly mechanized, iv) low yield per acre but high yield per man.
- The cool, moist spring stimulates early growth and the light showers in the ripening period help to swell the grains to ensure a good yield.
- The warm, sunny summer is not only advantageous for harvesting, but also enables the straw to be dried for farm use. In addition, the levelness of the Steppes and other temperate grasslands all over the world makes ploughing and harvesting a comparatively easy job.
- The sparsely populated temperate grasslands of the mid-latitudes produce the greatest quantity of wheat per capita amongst the world's wheat-growing nations.
- Maize is also a commercial crop in United States especially for feeding farm animals.

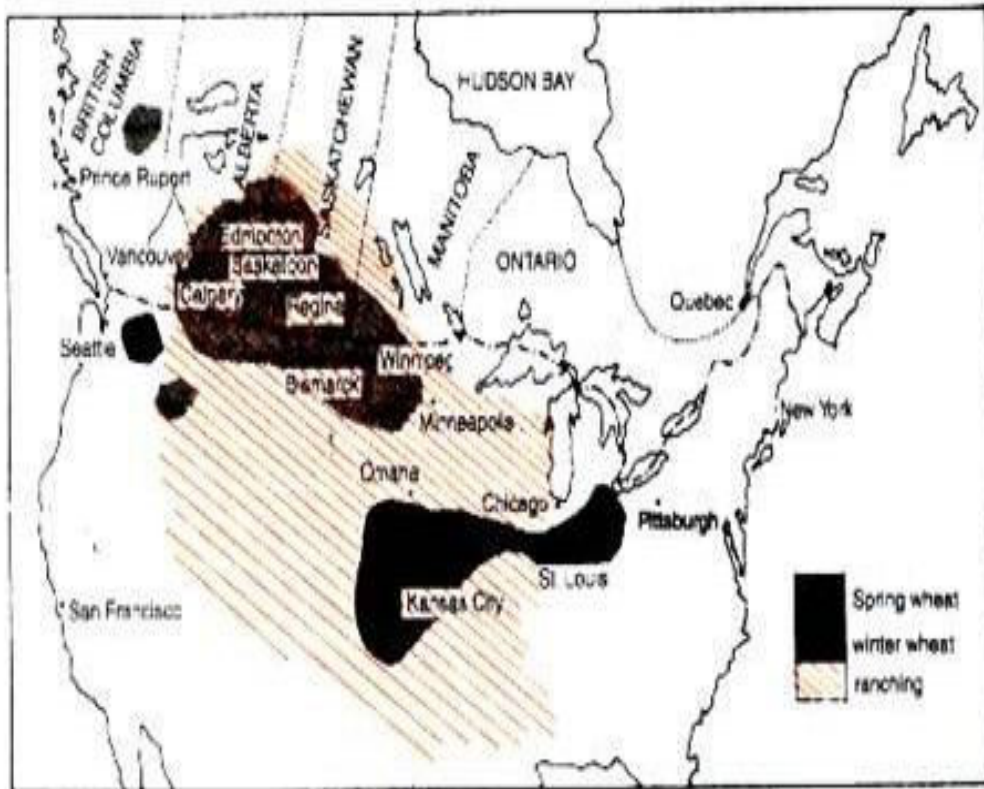


Fig. 140 Wheat and beef production in the North American grasslands

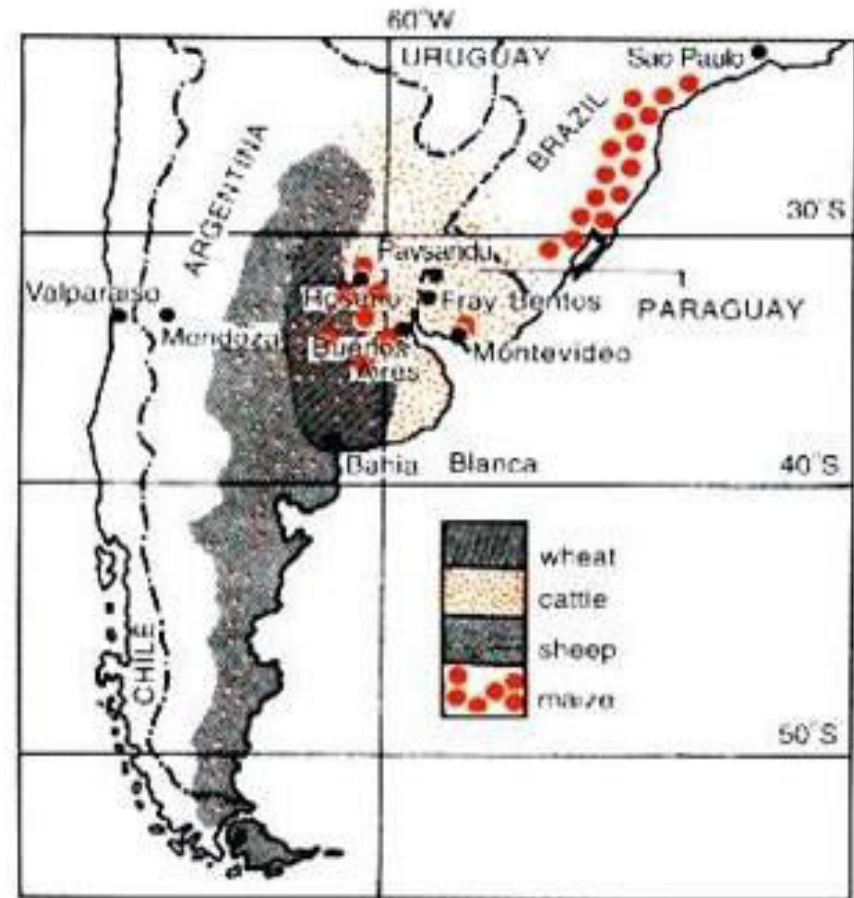


Fig. 141 Sheep, cattle, wheat and maize production in southern South America

Source: [www.yourarticlelibrary.com](http://www.yourarticlelibrary.com)

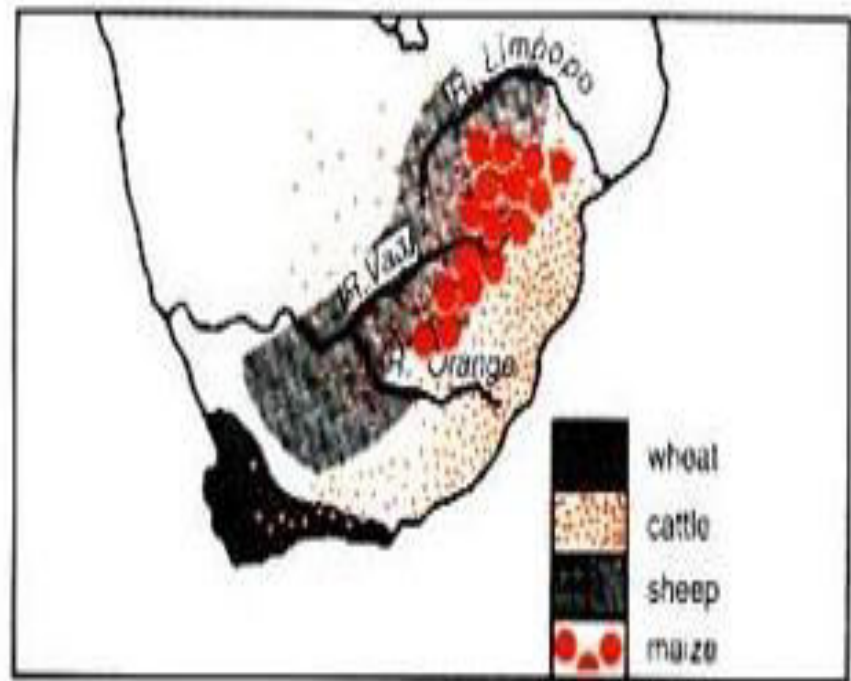


Fig. 142 Agriculture in the veld of southern Africa

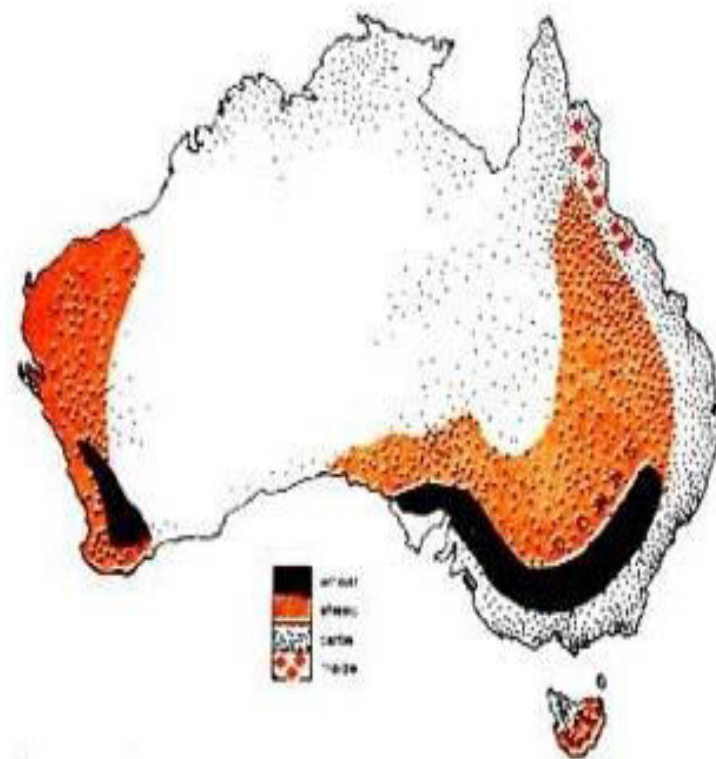


Fig. 143 The wheat, maize, cattle and sheep producing areas of Australia. Note the importance of the Downs