

Module VI: Regional and Economic Geography of the world

1. Major natural regions of the world and their characteristics.

- A natural region is a basic geographic unit which is characterized by its common natural features of **geography, geology and climate**.
- Climate is a basic factor upon which natural regions are divided.
- Climate is classified on factors such as **temperature, winds, pressure, humidity, rainfall, landforms, types of soil, natural vegetation and wildlife**.
- Based on these factors, the world is divided into various natural regions such as the **equatorial region, tropical grasslands, tropical deserts, tropical monsoon type of climate, Mediterranean region, China type of climate, temperate grasslands, temperate deserts and taiga and tundra regions**.

❖ Equatorial Climate

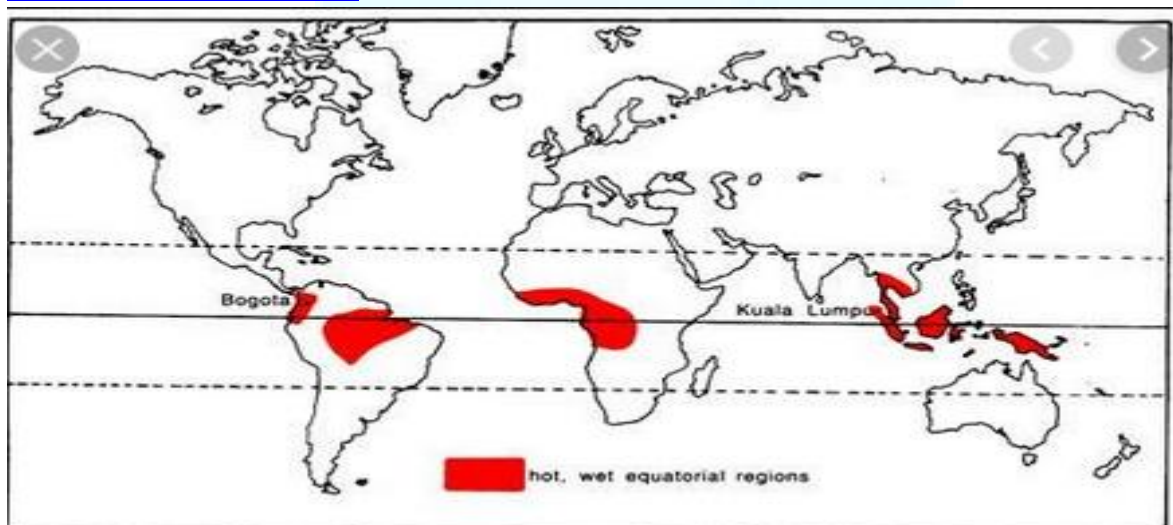


Fig. 121 The hot, wet equatorial regions

➤ Distribution

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→ Main regions are **Amazon belt, Congo-Zaire basin, South-East Asia between 10° N-S.**

→ Further away from the equator, the influence of trade winds leads to monsoonal influences.

➤ Temperature

→ Consistently high and uniform throughout the year with **annual range of less than 2 °C.**

→ Even on highlands the annual range of temperature < 2°C

→ Due to great heat in equatorial belts, **mornings are brighter and sunny.**

→ No winter, No distinct dry season.

➤ Rainfall

→ Two max rainfall: **Apr & October**, after the equinoxes.

→ Bright and sunny mornings; **Convictional rainfall** in the afternoons with towering **cumulonimbus clouds.**

→ As one goes north from the equatorial regions, the rainfall pattern starts to get disturbed by monsoon winds.

→ Not good for habitation due to hot and moist climate (**High incidents of malaria and other tropical diseases**).

➤ Vegetation

→ Dense tropical rain forests (called **selvas** in Amazon) are found

→ Distinct layer arrangement.

→ Trees compete for the sunlight

→ **Hardwood**- Lumbering is difficult (e.g. **mahogany, ebony, dyewoods** etc.)

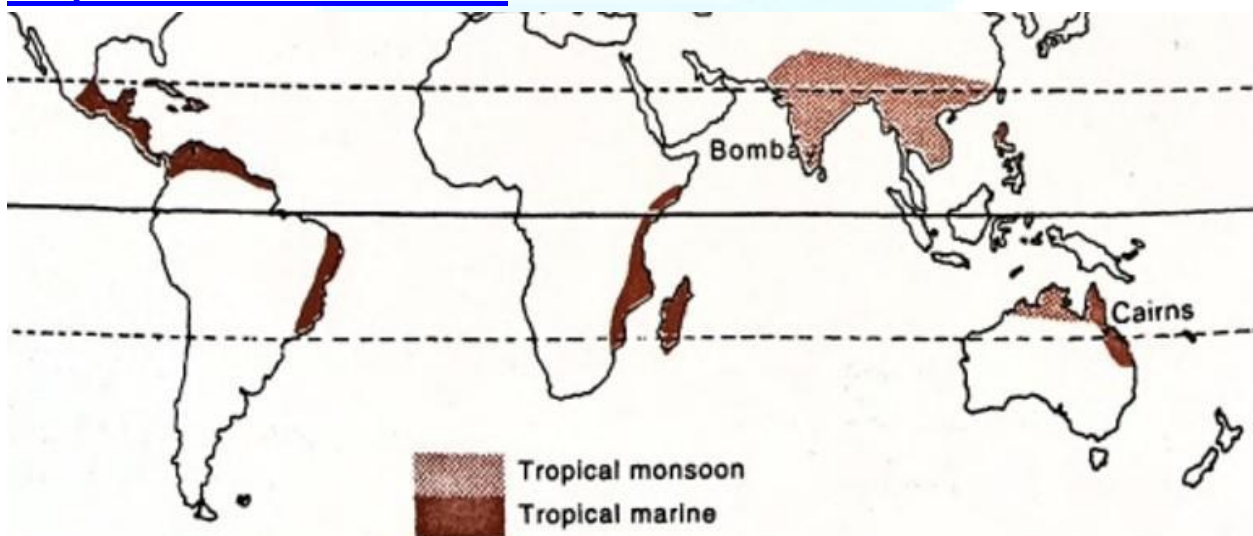
→ **Epiphytes:**

★ They are plants that grow upon other plant **non-parasitically.**

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- ★ They usually derive only physical support and not nutrition from their host.
- ★ They use photosynthesis for energy to obtain moisture from the air or from dampness on the surface of their hosts.
- In the coastal areas and brackish swamps, **mangrove forests**.
- Economic activities
 - Main crops are plantation crops like **rubber (SE Asia), cocoa (W Africa – Ghana & Nigeria), coconuts, sugar, coffee, tobacco, spices, and bananas**.
 - Livestock rearing is difficult due to the absence of **meadow grass**.
 - **Belukar** is the secondary forest growing as a result of shifting cultivation activities in **Malaysia**.
- Tribes
 - Pygmies in Congo basin,
 - Orang Asli in Malaysia

❖ Tropical Monsoon Climate



- Distribution

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→ Indian sub-continent, **Burma, Thailand, Laos, Cambodia, Parts of Vietnam South China Northern Australia.**

→ Outside this zone the climate is modified by the onshore trade winds and rainfall is distributed more evenly throughout the year (**tropical marine climate**).

➤ Temperature

→ It experiences warm to hot summers due to the region's proximity to the tropics.

→ Average monthly temperature is above **18 °C**, but in summers the maximum temperature can reach as high as **45 °C**.

→ The average temperature in the summer is around **30 °C**, with an overall temperature range of **30-45 °C**.

→ Mean temperature during winters is around **25 °C** with a temperature range of **15-30 °C**.

➤ Seasons

→ Seasons are chief characteristics of monsoon climate.

1. The cool, dry season (October to February)

★ The **North-East Monsoon** (Out blowing dry winds) brings little or no rain to the Indian subcontinent.

★ However, a small amount of rain falls in Punjab from cyclonic sources (**Western Disturbances**).

★ North-East Monsoons blowing over the Bay of Bengal acquires moisture and brings rains to the south-eastern regions of Indian peninsula during Nov-Dec of the year.

2. The hot dry season (March to mid-June)

★ The sun's northward shift to the **Tropic of Cancer** causes a sharp rise in temperature.

★ Coastal districts are a little relieved by sea breezes and little rain.

3. The rainy season (mid-June to September)

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- ★ Torrential downpours sweep across the country with the 'burst' of the **South-West**.
- ★ Almost all the rain for the year falls within this rainy season (this concentrated heavy rainfall in summer is a chief characteristic of the Tropical Monsoon Climate).

➤ Vegetation

- Deciduous due to the marked dry season during which leaves are shed.
- Forests are generally logged but the vegetation differs with the rainfall.
- **Broad-leaved hardwood trees**.
- The forests are more open and less luxuriant than the equatorial region forest and there are far fewer species
- **Lumbering** is undertaken in accessible areas, mainly in continental **South-East Asia**.
- **Teak**, of which **Burma** is the leading producer, is the most sought after.

➤ Economic activities

- The region supports high population density.
- Subsistence farming is the main occupation (crops grown with an intention to secure food for the season and not sold as the production is very low).
- Intensive cultivation is common in regions with irrigational facilities.
- Shifting cultivation is prevalent in North-East India and South-East countries.
- **Wet paddy** cultivation
- **Low land** cash crops like **sugarcane, cotton, jute**
- **Highland** plantation crops like **tea, coffee**

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→ Cattle and sheep rearing are carried out for domestic and commercial purposes, **but the livestock industry is not as profitable as in temperate regions.**

→ Shifting cultivation known as

- ★ **Jhum** in India
- ★ **Ladang** in Malaysia
- ★ **Chena** in Sri Lanka
- ★ **Milpa** in Africa

❖ Tropical Marine Climate

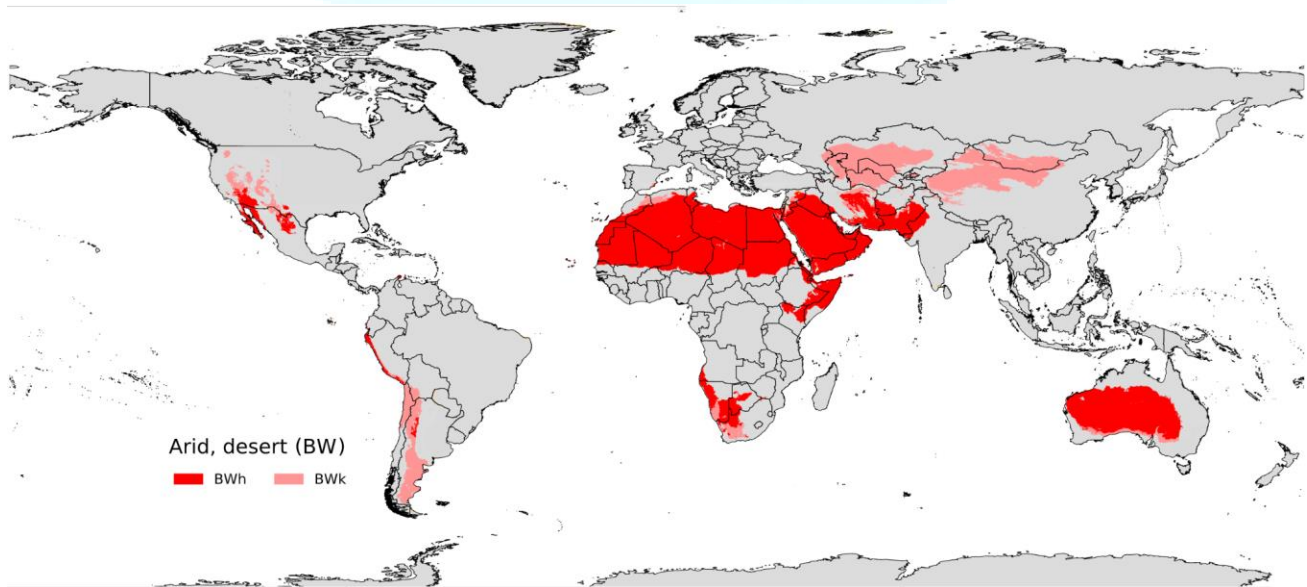
➤ Distribution

→ Occurs on the eastern coasts in tropics under the influence of trade winds. **Philippines, Central America, NE Australia, Madagascar, East Africa and East Brazil.**

➤ Rainfall

- It is both orographic and convectional. It is maximum in the summer season but without any distinct dry season.
- It is **prone to severe tropical storms and typhoons.**

❖ Desert Climate



➤ Distribution

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→ Areas having **less than 25 cm** of annual precipitation known as deserts (whether hot or cold).

→ Major hot deserts are located on the western side of tropics (i.e. on the **15°-30°** latitude range of the continent).

→ **Hot deserts**

★ Aridity of hot deserts is mainly due to **offshore trade winds**.

★ **Lie in the horse latitude belt** where the air is subsiding – a condition least favorable to precipitation. Further winds blow from cooler to hotter regions, hence the lack of water content.

★ Located on Western coasts of continents between **15 and 30 N & S**

★ Example: **Sahara, Great Australian Desert, Atacama, Namib, Mojave/Sonoran/Californian**

→ **Mid Latitude Desert**

★ Aridity of cold deserts is because of offshore westerlies or leeward side effects.

★ Cold deserts are also generally located on high plateaus.

★ Atacama/Peruvian desert (driest place on earth) is the driest of all deserts (**< 1.25 cm p.a.**).

★ Cold currents have the effect of cooling the air. When this comes in contact with the hot air on the land mass, relative humidity drops further.

★ **Turkestan, Gobi**

➤ **Rainfall**

→ Whatever occurs, occurs mostly because of convectional rainfall and with thunderstorms.

→ In cold deserts in Asia, whatever rainfall happens occurs because of occasional western disturbances and in the form of snow.

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➤ Temperature

- Temperature is high throughout the year (**due to clear cloudless sky, intense insolation, high rate of evaporation**). No winter.
- Average temperature is around **30-35°C**.
- **Diurnal and annual range is high.**
- Coastal deserts generally have less temperature than interiors due to cold currents. Ranges are also high in interiors.
- Annual range of temperature is higher in cold deserts compared to hot deserts (because they are mostly located in mid-latitudes where variation in insolation is highest and because they are located deep inside continents)
- Frost in winter nights

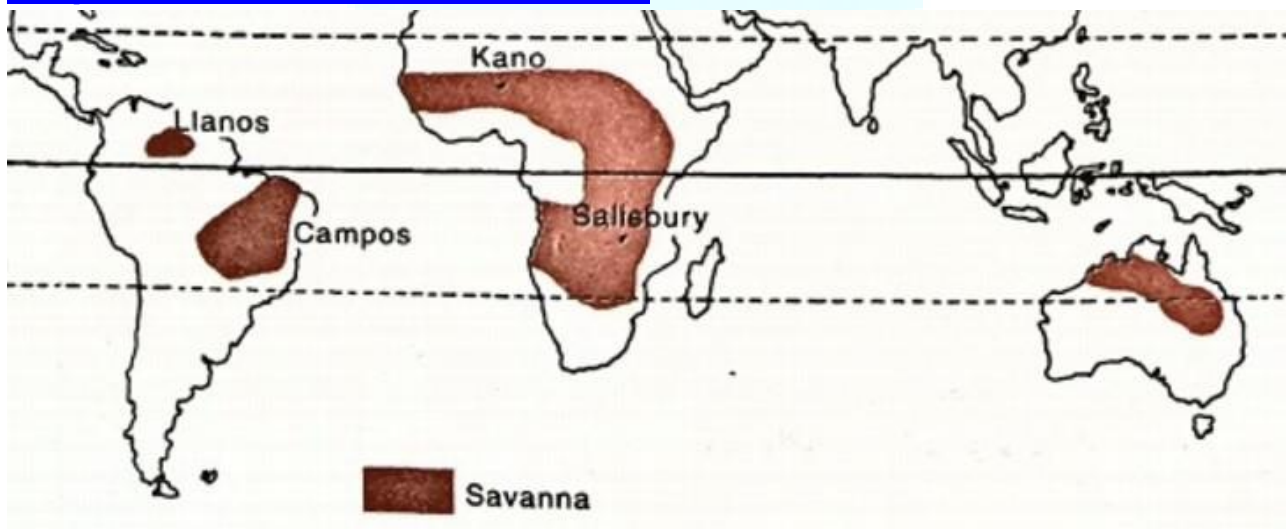
➤ Vegetation

- **Xerophytic** Vegetation

➤ Minerals

- Gold is mined in **Australia**, diamonds and copper in **Kalahari Desert**, copper and nitrates in **Atacama Desert**.

❖ Tropical Savanna / Sudan Climate



➤ Distribution

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→ It is found between equatorial forests and the trade wind hot deserts.

→ The grasses are called llanos in the Orinoco basin and **campos in Brazil.**

➤ Seasons

→ Distinct wet and dry season with extreme **diurnal range** of temperature.

→ Hot, rainy season (**May-September in Northern hemisphere, October-March in Southern hemisphere**).

→ The amount of rainfall and the length of the rainy season decreases from equator to pole-wards towards the desert fringes.

→ Trade winds bring rains to the eastern coasts but become dry by the time they reach the interiors of the continents.

→ **Cool, dry season.**

→ Annual range of temperature is about 10°C and the range increases as we move polewards.

→ Highest temperatures don't coincide with the period of highest sun but fall just below the onset of rains.

→ These conditions are best developed in Sudan hence it is called **Sudan type of climate**

➤ Local Winds

→ **Harmattan (the doctor)** are the north east trades which blow from interior **Africa to the Atlantic coast in Guinea.**

→ They come from deserts and humidity rarely exceeds 30%. It is called the doctor because it gives relief from moist sea winds.

➤ Vegetation

→ Tall grass and short trees

→ Stunted and dispersed trees

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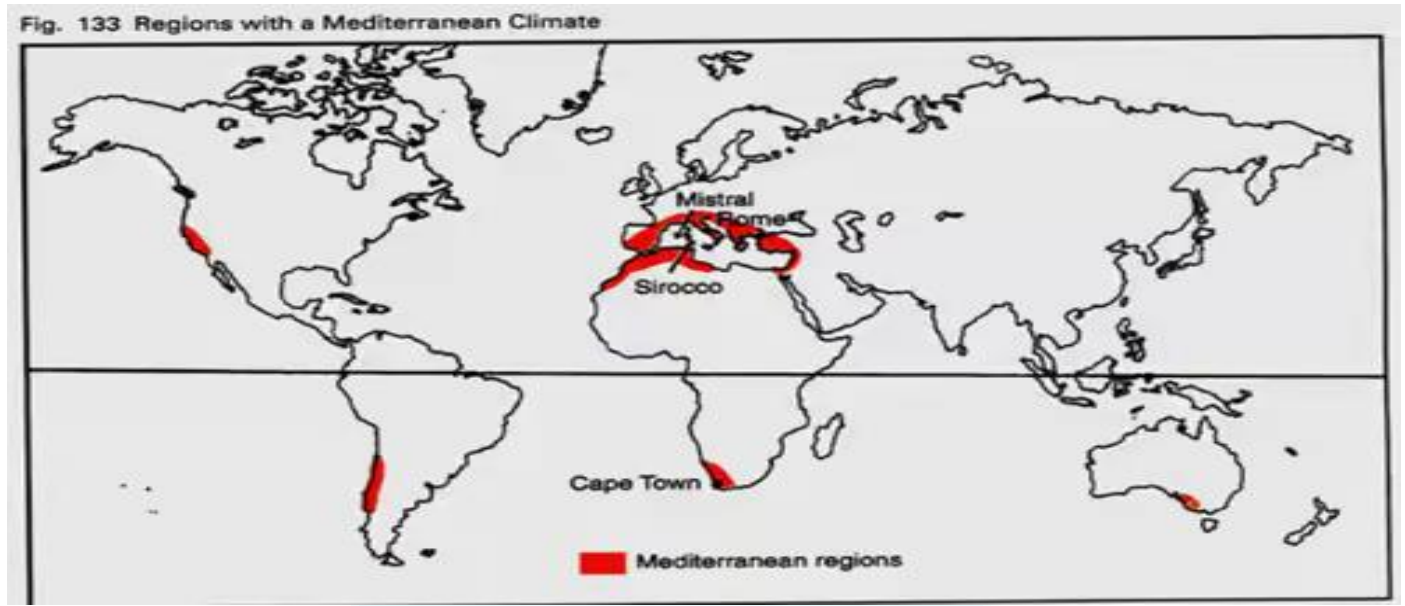
- **Trees decrease in height and density polewards.**
- Some trees have broad trunks with water storing devices (like **Acacia tree**).
- Water storing **boab and bottle trees**



- Many trees are umbrella shaped exposing only a narrow edge to the winds.
 - Domestication of animals is popular in Australia.
 - Grass fires occur during the dry season that also burn the seeds of trees which are ready to germinate.
 - **Grass fires in the dry season.**
- Animal Life of the Savanna
- The savanna is home to a large variety of animals and known as the '**big game country**' due to the prevalence of hunting.
 - There are mainly two groups of animals in the savanna, one is the grass-eating herbivorous animals and second is the fleshing-eating carnivorous animals.
 - **Herbivorous = zebra, antelope, giraffe, deer, gazelle, elephant etc.**
 - **Carnivorous = lion, tiger, leopard, hyena, panther, jaguar, jackal etc.**
- Tribes
- **Masai, cattle pastoralists of Kenya, Tanzania, Uganda.**

→ **Hausa**, settled cultivators of **Nigeria**

❖ **Warm Temperate / Mediterranean Climate**



➤ Distribution

→ It is confined between **30 – 45°** latitudes on the **western margins of the continents & south of the equator**

→ Central Chile,

→ California (around San Francisco),

→ The southwestern tip of Africa (around Cape Town),

→ Southern Australia (in southern Victoria and

→ Around Adelaide bordering St. Vincent, and Spencer Gulfs), and south-west Australia (Swanland).

➤ Temperature

→ Highest temperatures are experienced as we move **inland away from maritime influence.**

→ Climate is not extreme because of the cooling effect by water bodies.

→ Clear skies in summer and good landscapes **encourage tourism.**

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➤ Rainfall

→ **Cyclonic rainfall is prevalent from westerlies.** The rain comes as heavy showers and only on a few days with bright sunny intervening days.

→ The region experiences dry warm summers and wet cold winters.

➤ Dry, warm summers with offshore Tradewinds:

→ The sun is overhead between the **Tropic of Cancer and Tropic of Capricorn** during the summer months.

→ The belt of influence of the Westerlies is shifted a little polewards. Rain bearing winds are therefore not likely to reach the **Mediterranean lands.**

→ **Hence the regions are practically rainless in summers and remain dry.**

→ The **heat is intense, and the days are excessively warm.**

→ In the interiors, prolonged droughts are common. The relative humidity is generally low.

➤ Wet, cold winters with on-shore Westerlies:

→ The Westerlies belt shifts equator wards in the winter and the **Mediterranean regions are under the influence of on-shore Westerlies.**

→ Hence, these lands receive almost all of their **precipitation during the winter months.**

→ The rain comes in heavy downpours and causes floods in the months of **September and October in Mediterranean Europe.**

➤ Local Winds

→ **Sirocco:** They are the south-westerlies blowing from the **Sahara Desert into the Mediterranean climate.** They are hot and dry and remain dry even after passing above the

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Mediterranean Sea. It is most frequent during spring and is bad for crops.

→ **Mistral:** It is a cold wind from **north in the Alps region** which rushes down in winter into the valleys to fill the low pressure towards the sea. It is fast and may take the temperature below the freezing point.

→ **Bora:** In the **Adriatic coast**, the cold winds blowing from the continent to the sea in winters are called **Bora**. They are very fast.

➤ Vegetation

→ Mediterranean evergreen forests: They are found in regions of high rainfall. **Cork oak trees** are common in Europe while **eucalyptus** are grown in **Australia**.

→ **Evergreen coniferous forests:** They are found in highlands.

→ **Mediterranean shrubs:** They are the dominant vegetation.

→ **Orchard farming:** Fruit trees have long roots enabling them to fetch water in the hot summer season as well. The thick leathery skin of the fruits also prevents transpiration.

→ Grass which is **wiry and coarse do not support livestock**

➤ Agriculture

→ Summer is dry hence monsoon crops are not grown.

→ This region is not suitable for agriculture, but some regions are cultivated using irrigation methods.

→ **Citrus fruits (oranges, lemons, limes, citrons)** are mostly grown and viticulture (wine making) is mostly done here.

→ **Olive trees, Chestnuts, Walnuts** etc are also cultivated.

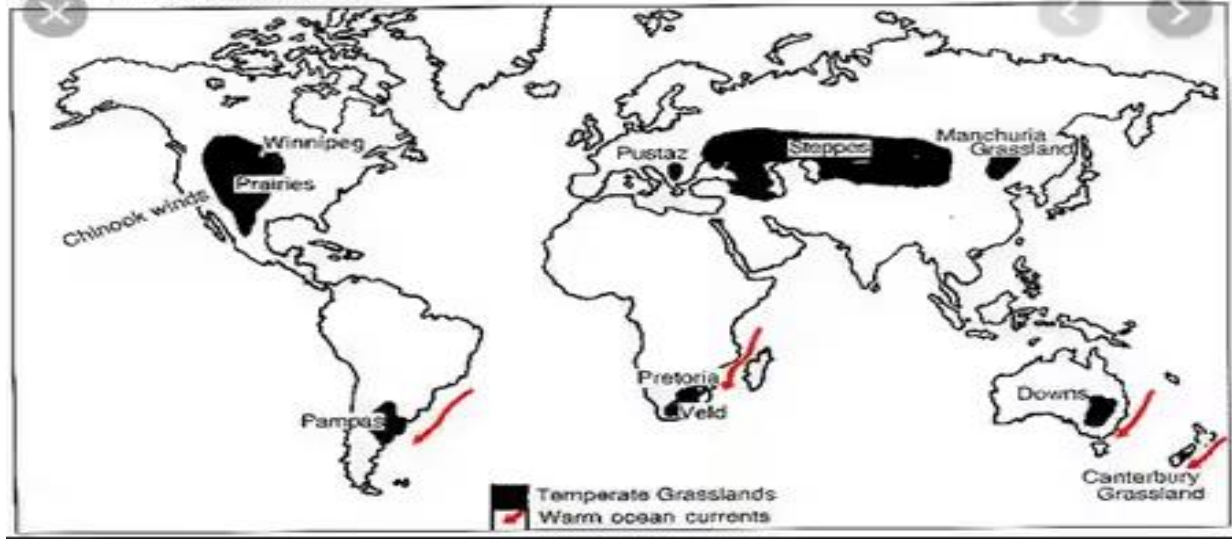
→ Regions bordering the

→ The Mediterranean Sea accounts for **three-quarters of the world's production of wine**.

★ **Sherry, Port Wine, Champagne & Bordeaux.**

❖ Temperate Continental Grasslands / Steppe Climate

Fig. 137 The Temperate Grasslands



➤ Distribution

- They border the deserts and lie in the interiors of the continents in the Northern hemisphere and near the oceans in the Southern hemisphere. Though they lie in the westerly belt, they are far removed from the maritime influence.
- Mostly they are **grassland / treeless** because of **absence of maritime influence**. They are extensive in the northern hemisphere.
- Grasslands in the Southern hemisphere are **less continental due to proximity to oceans**. They have less extreme temperatures (milder winters and less annual range) and rainfall is higher as well.

➤ Temperature

- **Warm summers and cold winters. Extreme variation of temperature.**
- **Wetter and cooler than Savannah.**
- Annual range is very high in the northern hemisphere.
- Southern hemisphere climate is never severe (effect of ocean).

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➤ Rainfall

- Annual precipitation (conventional sources) is **light with maximum rainfall in summers**. Winters get occasional rains from western disturbances and in the form of snow.
- **Annual precipitation is higher in the Southern hemisphere** due to proximity to ocean and warm ocean currents.
- The average rainfall may be taken as about **45 cm**, but **this varies according to location from 25 cm to 75 cm**

➤ Vegetation

- **Nutritious grasses (No trees)**.
- Complete grasslands are converted into agricultural lands.
- **Truck farming is done** (mostly in prairies).
- Heavily mechanized farming (Airplane used for dropping fertilizers).
- **Per person productivity is high, per acre productivity is low** (because of **absence of intensive farming**).
- The grasses lie dormant in the winters and become active in the spring when the temperature is hot enough. In summers they get scorched but in autumn they grow again.
- Polewards, an increase in precipitation gives way to coniferous trees while equatorward they merge with desert shrubs.

➤ Economic Development

- **Prairies** would have wheat, cotton, maize cultivation
- **Steppes** are one of the major producers of wheat
- **Pampas** region would have wheat cultivation, animal husbandry, livestock ranching (alfa-alfa a nutritious grass is found here).

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→ **Downs of Australia** would have sheep rearing (Merino sheep famous for wool).

→ **Veldts are famous for sheep rearing** (angora goats are famous for wool production).

❖ Warm Temperate / China Climate / Natal Type / Gulf Type



➤ Distribution

→ It is found along the eastern margins of the continents between **20 and 35 N and S latitude**.

→ The climatic features in the region are similar to the monsoonal climate with rain during the summer and dry weather during winter.

1. China type

★ East and central China.

★ **Rainfall throughout the year.**

★ Trade winds take the warm current moist air inside and cause rain in summers. **Typhoons** are carried in by the trades in late summers.

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- ★ In winters, however, there is a reversal of wind direction due to cooling of Asian landmass and temperatures plummet (rain through moisture gained by Siberian plateau wind while passing yellow). So the annual range of temperature is high.

2. Gulf type

- ★ **SE USA, Gulf of Mexico.**
- ★ The monsoonal characteristics are less here as the pressure gradient between continental North America and the Atlantic Ocean is never high enough to reverse the wind direction completely.
- ★ **Rainfall in summer is maximum.**
- ★ In the winter season this type will experience temperate cyclones while in late summers they experience tropical cyclones (**hurricane**).

3. Natal type

- ★ In the southern hemisphere like **South Africa (Natal province), Eastern Australia, Southern Brazil.**
- ★ These lands have no monsoonal climate due to thinness of the land masses which is not sufficient to cause any wind change.
- ★ More dominance of maritime climate. So the **annual range of temperature is less, rainfall is more** and distributed throughout the year.

➤ Climate

- It is typified by a warm moist summer and a cool, dry winter.
- Occasionally, the penetration of cold air from the continental interiors may bring down the temperature to the freezing point.
- The relative humidity is little high in mid-summer but for most of the time, the climate is pleasantly warm.

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- Rainfall is more than moderate and ranges between 60 cm to 150 cm and there is a uniform distribution of temperature throughout the year.
- Rain comes either from convectional sources or as orographic rain in summer, or from depressions in prolonged showers in winter.
- Local storms also occur. Example: typhoons, hurricanes.
- The rainfall is adequate for all agricultural purposes and hence the areas are densely populated.

→ **China Type**

- ★ It is the most typical of the warm temperate eastern margin climate.
- ★ In summer due to intense heating of the continental interiors of the heart of Asia including Tibet, a low-pressure system is set in which attracts the tropical Pacific air stream.
- ★ This is witnessed as the South-East monsoon in the region.
- ★ In winter, there is an intense high pressure over Siberia and the continental polar air stream flows outwards as the North-West Monsoon, bitterly cold and very dry.
- ★ There is little rain but there is considerable snow.
- ★ The region also experiences intense tropical cyclones called typhoons that originate in the Pacific Ocean and are most frequent in the late summer.

→ **The Gulf Type:**

- ★ The Gulf-Atlantic regions of the USA experience this type of climate similar to the China type but with less monsoonal characteristics.
- ★ The warm Gulf stream and the on-shore Tradewinds help bring down the range of temperatures and there is heavy annual rainfall of around 59 inches.

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- ★ The amount of rain is increased by thunderstorms in summer and by hurricanes in September and October.
- ★ Due to intense local heating, the region also experiences violent tornadoes leading to heavy destruction.

→ **Natal Type**

- ★ The narrowness of the continents and the dominance of maritime influence eliminate the monsoonal elements.
- ★ The South-East Trade Winds bring about a more even distribution of rainfall throughout the year.
- ★ The annual range of temperature is low and rain comes in prolonged showers.

➤ **Natural Vegetation**

- Due to heavier rainfall, the region supports luxurious vegetation.
- There is perennial plant growth and the conditions are well suited to a rich variety of plant life.
- The lowlands carry both evergreen broad-leaved forests and deciduous trees, similar to the tropical monsoon forests.
- In the highlands, are various species of conifers such as pines and cypresses which are important softwoods.
- Eastern Australia – Eucalyptus
- South-Eastern Brazil, eastern Paraguay, north-eastern Argentina – Parana pine, the quebracho, wild yerba mate trees.
- Natal: **palm trees**

➤ **Economic Development**

- These regions are the most productive part of the middle latitudes since there is adequate rainfall, no prolonged drought and the cold season is warm.
- This shows that the growing season is almost continuous.

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→ The temperate monsoon regions are the most intensively tilled parts of the world.

➤ Farming in Monsoon China

→ Monsoon China along with southern Japan and other parts of the eastern margin climate regions accounts for almost a third of the world population.

→ It is the world's greatest rice-growing regions and a third of the world's rice is grown in China.

→ Monsoon China has ideal conditions for paddy cultivation: a warm climate, moderately wet throughout the year, and extensive lowlands with moisture-retentive alluvial soils.

→ The Chinese practice 'wet-paddy' cultivation and calls for endless hard labor. Thus the region calls for a huge population.

→ Farming is usually on a subsistence basis. But progress has been made towards double and treble cropping which has increased the total rice production.

→ Sericulture has also been practiced in the region but is now on a decline.

➤ Agriculture in the Gulf States

→ Agriculture in the Gulf States of the USA differs from that of the Monsoon China. Rice is relatively less important and the focus is more on corn, cotton, and tobacco.

1. Corn:

★ The humid air, the sunny summer and the heavy showers suit the crop well.

★ The region accounts for more than half of the world's corn production but exports very less.

★ Corn is used for fattening animals, mostly cattle and pigs.

- ★ It gives twice as much food, mainly starch per acre, when compared to wheat and other cereals.

2. Cotton:

- ★ It is the most prominent cash crop grown in the region.
- ★ The climate is very suitable for the cotton growing with its long, hot growing season with nearly 200 days being frost free and moderately high temperatures.
- ★ Fine quality cotton also comes from well irrigated dry areas.
- ★ The fiber is most vital to the economic well-being of the southerners in the USA.
- ★ It shapes their trade, prosperity and politics.
- ★ The most dreaded enemy of the Cotton Belt is the boll-weevil. The pest multiplies rapidly. The pest is responsible for the westward migration of the Cotton Belt.

3. Tobacco:

- ★ It is another important crop of the region and incidentally is also the native crop of America.
- ★ The humid atmosphere, the warmth and well-drained soils enable the successful growth of tobacco in the Gulf States.
- ★ Around half of the tobacco in the international trade comes from this region.

➤ Crop cultivation in the eastern margins of the Southern Hemisphere

- In the coastlands of Natal, cane sugar is the dominant crop
- It is followed by cotton and tobacco in the interiors.
- Maize is also extensively cultivated for use as food and feed for cattle rearing.

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- The extensive natural pastures provide valuable forage for both cattle and sheep.
- In South America rainfall is less, cattle and sheep are reared for meat, wool and hides.
- Mild winters favor animal rearing, as they can be kept out of doors for a long time.
- In Australia, the moist Trade Winds bring heavy rainfall to the coastal districts and these are thickly wooded.
- Giant eucalyptus trees are grown in the region.
- The region is the chief source of Australia's milk, butter, cheese besides cotton, cane sugar and maize.

❖ British Type Climate



➤ Distribution

1. Northern Hemisphere

- The climatic belt stretches from **Britain into North-West Europe**, including northern and western **France, Belgium, the Netherlands, Denmark, western Norway** and also **north-western Iberia**.
- In North America, it confines mainly to the coastlands of **British Columbia**. The **Rockies in North America**, prevent the on-shore Westerlies from penetrating far inland.

2. Southern Hemisphere

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- The climate is experienced in southern **Chile, Southern Australia, Tasmania and most parts of New Zealand, particularly in the South Island.**
- The surrounding large expanses of water in these regions have increased the maritime nature of the climate.

➤ Climate

→ Characteristics

- ★ Moderately warm summers and fairly mild winters. Extremes of temperatures are not likely.
- ★ Adequate rainfall throughout the year.

→ Temperature

- ★ The mean annual temperature is usually in the range of **5 C – 15 C.**
- ★ This range is comparatively small for such high latitudes.
- ★ Summers are never very warm and winters are abnormally mild with no station recording below freezing point temperatures.
- ★ This is due to the warming effect of the North Atlantic Drift and prevalence of the South-Westerlies.
- ★ Hence, they are some of the most advanced regions of the world.

→ Precipitation

- ★ Adequate rainfall throughout the year.
- ★ There's tendency towards a slight winter or autumn maximum from cyclonic sources.
- ★ The rain-bearing winds come from the west and hence the western margins have the heaviest rainfall.
- ★ The amount of rainfall decreases as one moves away from the sea, eastwards.

→ Seasons

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- ★ There are four distinct seasons.
 - ★ Summers are long and sunny followed by autumn which is a roar of gusty winds.
 - ★ Winter is the season with cloudy skies, foggy and misty mornings and many rainy days from the passing depressions.
 - ★ This is followed by spring which is the driest and most refreshing season from the depressing winter and the cycle repeats itself.
- Natural Vegetation.
- The natural vegetation of this climatic type is the deciduous forest.
 - The trees shed their leaves in the cold season. This is an adaptation for protecting themselves against the winter snow and frost.
 - Shedding begins in autumn, the fall season and is scattered by the winds.
 - Some of the common species of temperate **hardwood include oak, elm, ash, birch, beech, hornbeam, and poplar.**
 - In the wetter areas grow willows, alder and aspen.
 - The deciduous trees occur in pure stands and have great lumbering value from the commercial point of view.
 - The sparse undergrowth is useful in logging operations.
 - The deciduous hardwoods are excellent for both fuel and industrial purposes.
 - Higher up the mountains in the Scandinavian highlands, the **Rockies, the southern Andes and the Southern Alps of New Zealand**, the deciduous trees are generally replaced by the conifers which can survive a higher altitude, a lower temperature and poorer soils.

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➤ Economic Development

- In Britain, only 4% of the original forest is left. A very large part of the deciduous hardwoods has been cleared for fuel, timber or agriculture.
- Lumbering is quite profitable in the region for the reasons mentioned above.

➤ Agriculture

- Due to the high density of population, all the cereals, fruits, and root crops grown in the region are used for home consumption and the region is a net importer of food crops.

1. Market Gardening:

- ★ Nowhere else is market gardening practised as extensively as in North West Europe.
- ★ The factors that account for this are large urban population and high densities, highly industrialised nations like Britain, France, Germany.
- ★ There is great demand for fresh vegetables, green salads, eggs, meat, milk and fruits.
- ★ Farming is carried out intensively and the yield is high due to soil fertility and there are maximum cash returns.
- ★ Since the crops are perishable, there is a good transport network and the vegetables and fruits are conveyed at high speeds to urban centres.
- ★ Hence the term “truck farming” is often used to describe this kind of agriculture.
- ★ In Australia, high-speed boats ply across the Bass Strait daily from Tasmania to rush vegetables, tomatoes, apples and beans to most of the large cities in mainland Australia.

★ It is no wonder the Australians nicknamed Tasmania the garden state

2. Mixed Farming:

- Throughout north-western Europe, farmers practice both arable farming (cultivation of crops on plowed land) and pastoral farming (keeping animals on grass meadows).
- The proportion of crops and animals in the farm at any time depends to a great extent on the type of soil, the price of the cereals and the demand for animals and animal products.
- Amongst the cereals, wheat is the most extensively grown, almost entirely for home consumption. The region is a net importer of wheat.
- The next most important **cereal is barley**.
- It is used in beer-making or whisky distilling and is raised in drier areas.
- The most important animals kept in the mixed farm are cattle.
- The climate of this region is ideal for intensive dairying.
- **New Zealand ranks as one of the world's greatest exporters of dairy products.**
- Besides dairying, some cattle are kept as beef cattle.
- **In Argentina or Australia, meat production is the primary concern.**

3. Sheep rearing:

- **Sheep** are kept both for **wool and mutton**.
- Britain is the home for some of the best-known sheep breeds.
- The principal sheep areas are in foothills, well-drained uplands, chalk and limestone scrap lands and the light and sandy coasts.
- Sheep rearing is the chief occupation of **New Zealand**, with its greatest concentration in the **Canterbury Plain**.

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→ It accounts for only **4 percent** of the world's sheep population but accounts for two-thirds of the world's mutton exports and one-sixth of world wool exports.

➤ Industrialization

→ The countries are concerned in the production of machinery, chemicals and textiles.

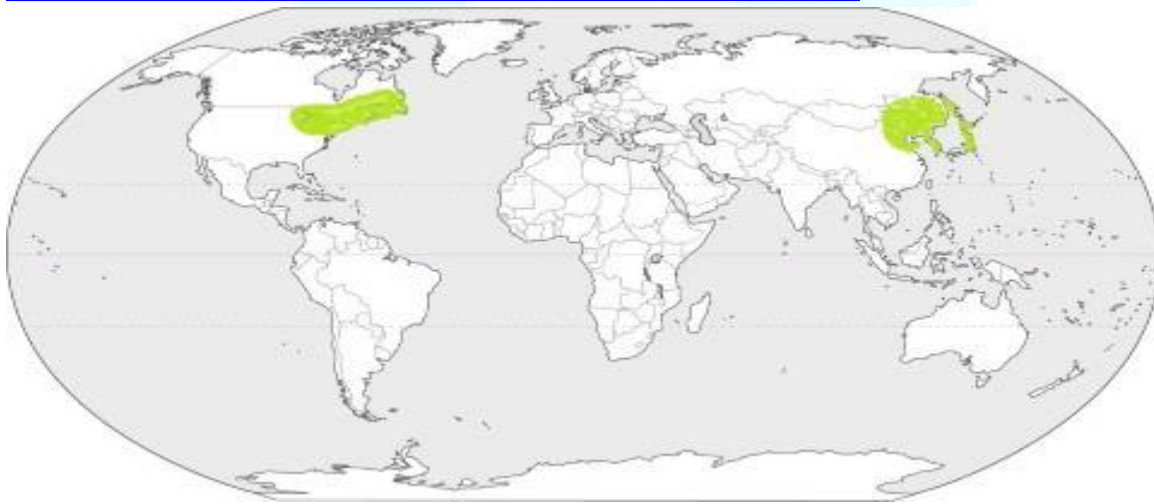
→ Industries are also based on dairy products in **Denmark, Netherlands and New Zealand.**

→ The region is highly industrialized and differs from many others in its unprecedented industrial advancement.

→ Britain, France and Germany have significant mineral resources and are heavily industrialized.

→ Ruhr region in Germany, Yorkshire, Manchester and Liverpool regions in Britain are significant for wide-ranging manufacturing industries in the region

❖ Cool Temperate Eastern / Laurentian Climate



➤ The Cool Temperate Eastern Margin climate is also known as the Laurentian climate.

➤ It is the intermediate between the British and Siberian types of climates.

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➤ Distribution

- It is found only in two regions and **only in the northern hemisphere.**
- The climate has features of both the continental and the maritime climates.
- **North American region:** One region is north-eastern North America including eastern Canada, north-east USA, and Newfoundland.
- **Asiatic region:** The other region is the eastern coastlands of Asia, including North China, eastern Siberia, Manchuria, Korea and northern Japan.
- The climate is totally absent in the southern hemisphere because only a small section of continental landmass extends south of the latitude of **40 S.**
- The only possible regions are in **eastern Patagonia.**
- But the Southern Andes blocks the Westerlies and the region is subjected to aridity rather than continentality.
- It is a rain-shadow region and its annual precipitation is not more than **10 inches.**

➤ Climate

→ Temperature

- ★ The climate of this type has cold, dry winters and warm, wet summers.
- ★ Snow falls to quite a depth and winter temperatures may be well below the freezing point.
- ★ Summers are as warm as the tropics and are moderated by the cooling effects of the off-shore cold currents from the Arctic.

→ Precipitation

- ★ **Rain falls throughout the year.**

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- ★ But there is a distinct summer maximum because the easterly winds from the oceans bring rainfall.
 - ★ Two-thirds of the annual precipitation is in summer.
 - ★ Winters are dry and cold and westerlies blow out from the continental interiors.
- The North American region
- ★ The most remarkable characteristic of this region is the uniformity in annual precipitation.
 - ★ This is due to the Atlantic influence and that of the Great Lakes.
 - ★ The warm Gulf Stream increases the moisture content of easterly winds from the open Atlantic.
 - ★ The prevailing Westerlies carry depressions over the Great Lakes towards eastern regions causing wet conditions, especially in winter.
 - ★ Convergence of the warm **Gulf Stream** and the cold **Labrador Current** near **Newfoundland produces dense mist and fog and gives rise to much precipitation.**
 - ★ It is said that Newfoundland experiences more drizzles than any other part of the world.
 - ★ In summer the Westerlies bring fewer depressions and extend their continental influence to the coast.
 - ★ **Temperatures are high in summer for that latitude and prolonged heat waves cause discomfort in crowded cities.**
- The Asiatic region
- ★ In contrast to the **North American region**, the distribution of precipitation is less uniform in the Asiatic region.
 - ★ Winters are very cold and dry while summers are warm and exceptionally wet.

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- ★ The rainfall regime resembles the tropical monsoon type in India where the rainfall is concentrated in the three summer months.
- The climate in Japan
 - ★ The climate of **Japan** is modified by its insularity and also by the meeting of warm (**Kuroshio**) and cold (**Oyashio**) ocean currents.
 - ★ It receives adequate rainfall from both the South-East Monsoon in summer and the **North-West monsoon in winter**.
 - ★ The rainfall is more evenly distributed with two maxima: the **Plum rain in June and the Typhoon Rain in September**
- Natural Vegetation
 - The predominant vegetation in this climate is cool temperate **forests**.
 - The heavy rainfall, the warm summers and the damp air from fogs all favor the growth of trees.
 - Forests tend to be coniferous north of the **50 N latitude**.
 - South of this latitude, deciduous forests are seen.
- Economic Development
 - Lumbering and its associated timber, paper and pulp industries are the most important economic activities in the region.
 - Lumbering has always been a major occupation in the sparsely populated Asiatic region and timber is the chief export item.
 - The occurrence of trees in almost pure stands and the predominance of only a handful of species greatly enhance the commercial value of the forests.
 - **Agriculture**

- ★ **Agriculture is less important due to long and severe winters.**
- ★ The maritime influence and the heavy rainfall enable the growth of some hardy crops.
- ★ In the **North American** region, arable farming is not carried out on a large scale and farmers are mostly engaged in **dairy farming and fruit growing.**

→ Fishing

1. Off Newfoundland

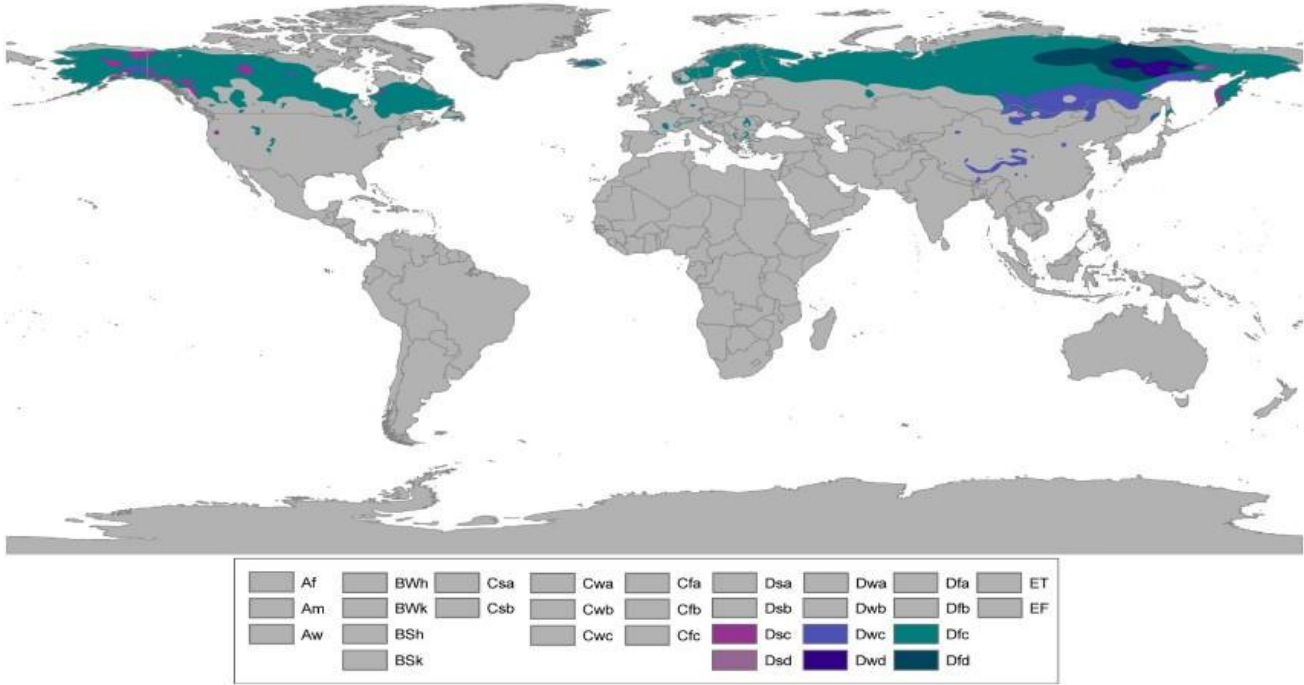
- ★ This is one of the world's largest fishing grounds, particularly on the Grand Banks.
- ★ The mixing of the warm Gulf Stream and the cold Labrador currents enable the growth of plankton and microorganisms.
- ★ Fish feed on minute marine organisms called plankton present abundantly in the continental shelves and in shallow waters adjacent to the landmasses.
- ★ Fish of all types and sizes breed here and support a thriving industry of not only **Canada and USA, but also Norway, France, Britain, Portugal, Denmark, Russia and Japan.**
- ★ Both pelagic fish (which live near the surface) and the demersal fish (which live near the bottom) of shallow seas are caught.
- ★ Overfishing is a growing problem and strict measures in fish conservation are being taken.

2. Off Japan

- ★ Another major fishing area of the world is in the North-West Pacific surrounding the islands of Japan.

- ★ The mountainous nature of Japan and parts of mainland eastern Asia have driven people towards fishing.
- ★ Hakodate and Kushiro are the major fishing ports and fish are either canned or preserved for export to neighboring countries.
- ★ The fish waste, fish meal and seaweeds are used as fertilizers in the farms.
- ★ Coastal farms submerged in water grow seaweeds for sale as fertilizers, chemical ingredient and even as food.
- ★ Another important aspect of fishing the pearl culture.
- ★ Pearl oysters are brought to the surface and the highly prized pearls are extracted for sale as ornaments.
- ★ Japan's fishing is not limited to its territorial waters but they venture far and wide into the Arctic, Antarctic and the Atlantic waters.

❖ **Boreal Climate / Taiga Climate / Siberian Climate / Cool Temperate Continental Climate / Continental Sub-Polar Climate**



- Taiga Climate is also known as **Cool Temperate Continental Climate** and is popular by various other names such as **Siberian Climate, Boreal Climate**.
- This type of Climate is mainly found in the **Northern Hemisphere** and is absent in the Southern Hemisphere due to the narrow land surface in the **Southern Hemisphere**.
- Koppen has defined Taiga Climatic region as D type in his climatic classification.
- According to Koppen’s classification, the summer months are warm with temperature more than **10 degrees C** while the winter temperature can be less than **3 degrees C**.
- Distribution
 - It stretches from **50 N to 70 N** along a continuous belt across central Canada, some parts of **Scandinavian Europe and most of central and southern Russian**.
 - On the north or polewards it merges into the Arctic tundra of Canada and Eurasia at around the **Arctic circle**. Hence this climate is also called “Subarctic climate”.

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- In the south, the climate becomes less severe and merges into the temperate **Steppe climate**.
- In the Southern Hemisphere, the Siberian climate is absent due to the narrowness of the continents in the high latitudes.
- The strong oceanic influence in the Southern Hemisphere also reduces the severity of the winter.

➤ Climate

- In the Taiga climatic region the summer may be warm or cool while the winter is bitterly cold due to the strong wind and snowstorms which flow from the continental polar and Arctic air mass.

→ Temperature

- ★ The climate of these regions is characterized by extremely cold winters of long duration, with temperatures ranging around – **30 C to – 40 C**.
- ★ The summers are cool and brief. Spring and autumn are very brief and transitional periods.
- ★ Annual range of temperature is **very high**, almost **50 C to 60 C**.
- ★ The coolest place on earth, **Verkhoyansk** is situated in this climatic region.
- ★ With extremely low temperatures for the most part of the year, heavy snowfall and frosts are common in this region.
- ★ **Lakes and rivers are frozen and northerly polar winds such as Blizzards of Canada and Buran of Eurasia blow violently.**
- ★ Conditions are so extreme that Siberian climatic regions are very sparsely populated.

→ Precipitation

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- ★ Maritime influences are nearly absent in the interiors and hence the annual precipitation is low, generally around **38cm to 63 cm**.
- ★ It is well distributed throughout the year, with a summer maximum from convectional rain when the continental interiors are heated.
- ★ In winter, the precipitation is in the form of snow

➤ Natural Vegetation

- The predominant vegetation of this region is evergreen coniferous forests.
- Conifers are very well adapted to this region to withstand such inhospitable climate.
- The greatest single band of the coniferous forest is the taiga in Siberia.
- Four major species of coniferous forests grow in the region: pine, fir, spruce, and larch.
- The coniferous forest belts of Eurasia and North America are the richest sources of softwood.
- Coniferous forests are of huge commercial value due to the following reasons:
 - ★ They occur in pure stands and there exist only a **few species**.
 - ★ Unlike the equatorial rain forests which are of high density and difficult to exploit, the coniferous forests occur in uniform heights, grow straight and tall and are of moderate density.
 - ★ **Almost all conifers are evergreen**. There is **no annual replacement of new leaves as in deciduous trees**.
 - ★ The low annual temperatures with more than half the year below the growing-point temperature is a huge advantage for the evergreens.

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- ★ **Conifers are conical in shape and with this adaptation, they survive in the subarctic climate.**
 - ★ The sloping branches prevent snow accumulation and offer little grip to the winds.
 - ★ Leaves are **small, thick, leathery and needle-shaped to check excessive transpiration.**
 - ★ The undergrowth in the region is due to poor podzolized soils which are excessively leached and acidic.
 - ★ Since the leaves of the evergreen forests do not fall, they offer little humus formation and the rate of decomposition of the leathery needles is slow due to low temperatures.
 - ★ Also, the **absence of direct sunlight and short duration of summer** are other deterrents for sparse undergrowth.
 - ★ Besides the continental interiors of high latitudes, coniferous forests are also found in regions of high altitude and reduced temperatures. Example: In the **Himalayas**.
- Economic Development
- The coniferous forests regions in the northern hemisphere are little developed.
 - Most of these forests are still untouched as they are not accessible.
 - In the more accessible areas of the forests, lumbering is the predominant occupation.
 - Few crops survive in the Siberian climates with long, cold winters and frozen winters.
 - Hence there is little agriculture in these lands.
 - Many of the natives like Samoyeds, Yakuts or Siberia and some Canadians are engaged in hunting, trapping and fishing.
 - Two major activities of the region are **trapping** and **lumbering**.
1. Trapping

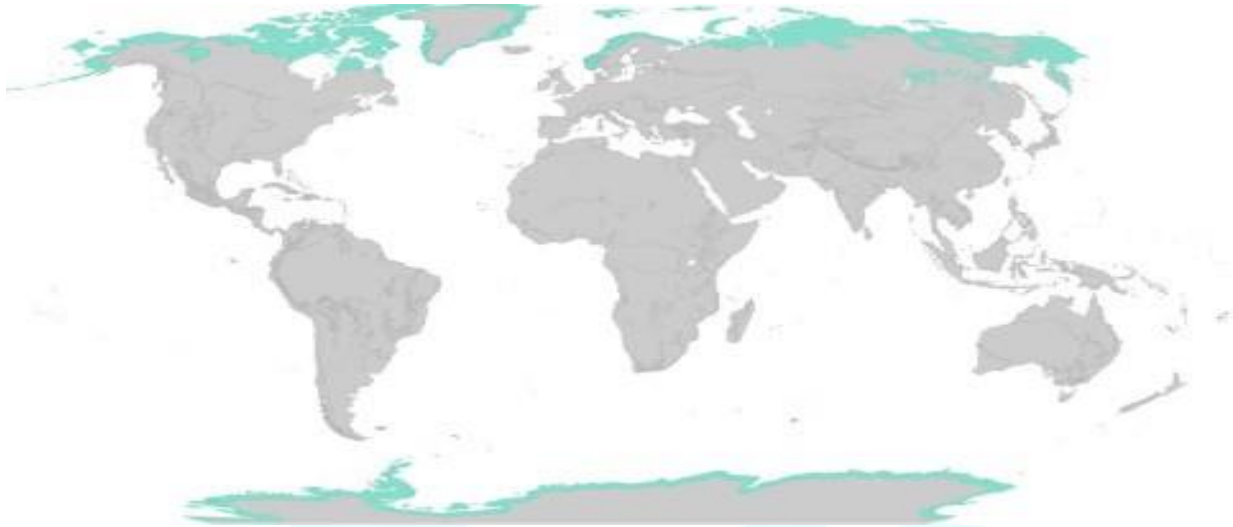
- ★ **Many fur-bearing animals inhabit the northern lands of Canada and Eurasia.**
- ★ In **Canada**, trappers and hunters armed with modern automatic rifles in the midst of coniferous forests track down these animals.
- ★ Muskrat, ermine, mink and silver fox are the most important fur-bearing animals.
- ★ Many fur farms have been established in Canada, to ensure regular supply of furs.
- ★ In **Siberia**, other fur-bearing animals like the **squirrels, otters, bears, sables, lynxes, martens and foxes are trapped.**

2. Lumbering

- ★ **This is the most important occupation of the Taiga type of climate.**
- ★ Trees are felled for many purposes such as **saw-milling, paper and pulp industry, fuel, and industrial raw material.**
- ★ **Saw-milling:** This processes logs into sawn-timber, plywood, planks, hardboard and other constructional woods.
- ★ **Paper and pulp industry:** By mechanical and chemical means, timber is pulped to make wood pulp. This is used as a raw material for papermaking and newsprint.
- ★ **Fuel:** Softwoods are not used as fuel due to its industrial uses. Hardwoods are burnt as fuel, particularly in the tropical regions. Since this region is covered with softwoods, less than a quarter of it is used as fuel.

★ **Industrial raw material:** Timber has a wide range of industrial uses. Timber is used for making furniture, matches, wood-carvings, toys, crates and packing cases.

❖ Tundra Climate / Polar Climate / Arctic Climate



- Polar climate has cold climatic conditions all through the year.
- Koppen classified Polar Climate as E type in his climatic classification.
- According to Koppen the summer temperature in this region is less than 10 degrees. He further divided the polar climate as Polar Tundra and Polar Ice Caps.

➤ Distribution

→ **Northern Hemisphere**

- ★ The polar type of climate is primarily found north of the Arctic Circle in the northern hemisphere.
- ★ The ice-caps are confined to Greenland and to the highlands of the high-latitude regions where the ground is permanently snow-covered.
- ★ The lowlands which are ice-free for a few months have tundra vegetation.

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- ★ This includes the coastal strip of Greenland, the barren grounds of northern Canada and Alaska and the Arctic seaboard of Eurasia.

→ Southern Hemisphere

- ★ In the southern hemisphere, the uninhabited land of Antarctica is the greatest single stretch of ice-cap where the layers of permanent ice are seen.

➤ Climate

→ Temperature

- ★ A very low mean annual temperature characterizes the **tundra or polar temperature**.
- ★ Only four months have a temperature above freezing point. The ground remains frozen for all but four months.
- ★ Interiors are much colder than the coastal regions.
- ★ **Winters are long and very severe, summers are cool and brief.**
- ★ Beyond the Arctic and the Antarctic circles, there are weeks of continuous darkness.
- ★ Frosts and blizzards that occur are very hazardous to the polar inhabitants.

→ Precipitation

- ★ Precipitation is mainly in the form of snow, falling in winter and being drifted by the **blizzards**.
- ★ **Convective rainfall** is generally absent because of the low rate of evaporation and the lack of moisture in the cold polar air.
- ★ In summer, there is a maximum and the precipitation is in the form of rain or sleet.
- ★ **Cyclones are felt in the coastal areas and there is a tendency towards a winter maximum.**

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➤ Natural vegetation

- In severe environments like that of **Tundra**, **few plants survive**.
- The greatest inhibiting factor is the **lack of heat and energy**.
- The growing season is for less than three months and there are **no trees in the tundra**.
- **Hence only the lowest forms of vegetation are supported like mosses, lichens, and sedges.**
- In the more sheltered spots, stunted birches, dwarf willows, and undersized alders struggle to survive.
- In the brief summers when snow melts and the days are warmer and longer, berry bushes and Arctic flowers bloom.
- They are short-lived but they brighten the monotonous polar landscape into Arctic prairies.

➤ Human Activities

- Human activities in the **polar regions are largely confined to the coast**.
- The high altitude plateaus and mountains are uninhabitable as these are permanently snow-covered.
- The people lead a **semi-nomadic life**.
- **Eskimos** live in **Greenland, northern Canada, and Alaska**.
- Earlier they lived as hunters, fishers, and food-gatherers but in recent years they have started settling in permanent huts.
- During winter, they live in compact igloos and in summer they pitch portable tents of skins by the side of streams.
- Their food is derived from **fish, seals, walruses and polar bears**.
- In **Eurasian tundra**, other nomadic tribes like Lapps of northern **Finland and Scandinavia**, the **Samoyeds of Siberia (from the Ural Mountains and the Yenisei Basin)**,

ENTRI

the Yakuts from the Lena basin, the Koryaks and **Chukchi** of **north-eastern Asia live.**

→ They wander with their herds of reindeer across the Eurasian tundra where there are pastures.

→ In the **USSR**, large farms were established for raising reindeer and for breeding fur-bearing animals.

