LESSON NOTES

SCHOOL: SUVA SANGAM COLLEGE **YEAR/LEVEL: YEAR 13**

SUBJECT: GEOGRAPHY

STRAND	**PHYSICAL GEOGRAPHY**
SUB STRAND	**VEGETATION**
CONTENT LEARNING OUTCOME	**Explore the factors that produce and control each biome, investigate how vegetation can be degraded and conserved for sustainability and examine and describe how climate change affects vegetation.**

WEEK 1: MONDAY 05/07/21- FRIDAY 09/07/21

ACHIEVEMENT INDICATOR

Explore the:

- ✓ types of natural vegetation
- ✓ factors influencing their growth and distribution
- ✓ impacts of climate change on vegetation

LESSON NOTES

Introduction

- ✓ **Natural vegetation** can be defined as plants that have not been grown by humans.
- ✓ The Earth's natural vegetation can be three main types – **forests, grassland and desert** vegetation.
- ✓ These three main types can be further classified into different sub-types:
  - I. The first subtype is the variety of forest vegetation such as **coniferous forest**, **deciduous forest**, **equatorial rainforest**, **tropical monsoon forest** and **mangrove forest**.
  - II. The second sub-type is the grassland vegetation that consist of two types; **temperate grassland** and **tropical grassland**.
  - III. The third sub-type is the desert vegetation type that includes **hot desert vegetation** and cold **tundra vegetation**.

Biome

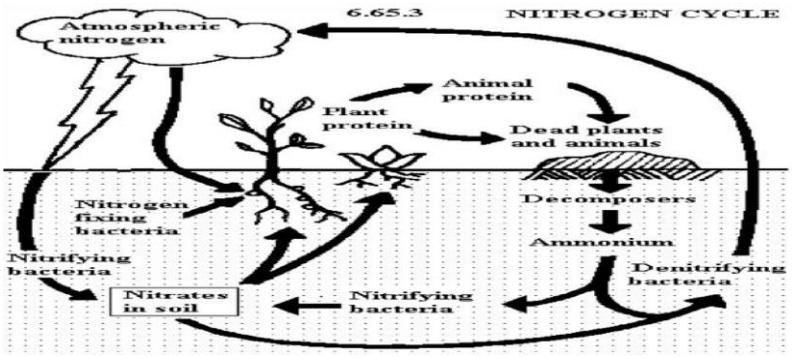
A biome is a large global ecosystem and gets its name from the document type of vegetation formed within it, (coniferous forest, temperate grassland, etc)

Ecosystem

- ✓ The whole variety of plants, animals and their environment is called an **ecosystem.**
- ✓ An **ecosystem** depends on two basic processes: the **flow of energy** and the **recycling of nutrients.**

Recycling of nutrients

The Nitrogen Cycle



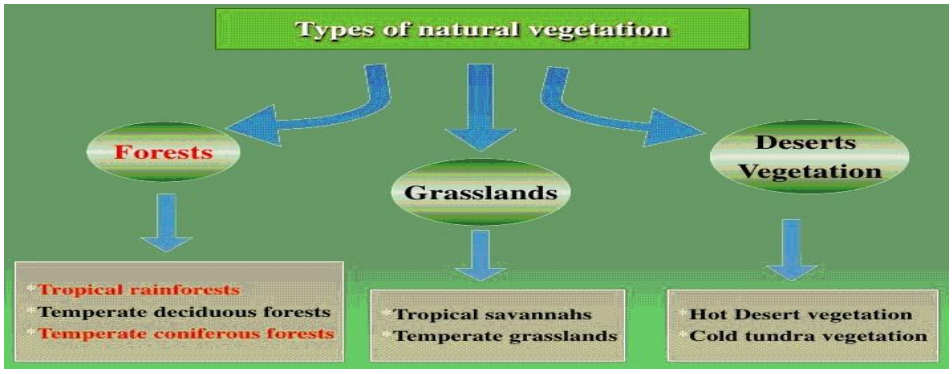
Primary Vegetation and Secondary Vegetation

- **Primary Vegetation** – refers to untouched, unspoiled forest that exists in its original condition
- **Secondary Vegetation** – refers to forest that has been disturbed in some way, naturally or unnaturally. Areas with secondary vegetation have fewer varieties of plants.

Types of Natural Vegetation

There are many types of natural vegetation and they can be grouped into three main major types:

- Forests
- Grasslands
- Deserts



ADDITIONAL INFORMATION RESOURCE

https://www.youtube.com/watch?v=o_AfNcjlOgU

https://www.youtube.com/watch?v=K5EOZenSSB8

https://www.youtube.com/watch?v=555EG8Vzs_I

LESSON ACTIVITY

Define:

1. Biome
2. Nitrogen cycle
3. Primary vegetation

WEEK 2: MONDAY 12/07/21- FRIDAY 16/07/21

ACHIEVEMENT INDICATOR:

Explore the:

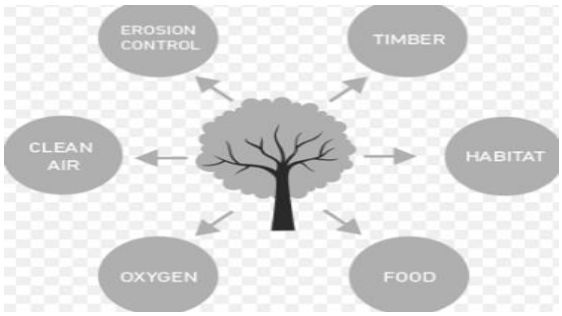
- ✓ types of natural vegetation
- ✓ factors influencing their growth and distribution
- ✓ impacts of climate change on vegetation

LESSON NOTES

FORESTS

- **Forests refer to large areas of land that consist mainly of trees and a variety of other plants**.

Benefits of forests



Factors that produce and control each biome

Climatic

- **Precipitation**
  - ✓ Areas receiving little summer rainfall, trees and shrub growing there have to be **xerophytic (drought resistant)** in order to survive.
  - ✓ Places where rainfall is limited throughout the year have either a desert biome, where **ephemerals (plants with very short life-cycles**) dominate the vegetation, or a tundra biome, where precipitation falling as snow
- **Temperature**
  - ✓ Warm temperatures (above 20degreesC) allow abundant plant growth.
- **Light intensity**
  - ✓ Where the amount of light decreases as on the floor of the tropical rainforests, or with increasing depth in the ocean, plant life decreases.
  - ✓ Quality of light affects plant growth eg. the increase in ultra violet light on mountains reduces the number of species found there.
- **Wind**
  - ✓ Trees are liable to bend if exposed to strong prevailing winds.

Natural vegetation is influenced mainly by climate.

A climate -vegetation relationship exists because rainfall and temperature determine the type of vegetation found in a place.

- High rainfall – forests
- Moderate rainfall – grassland
- Low rainfall – desert vegetation

Topographic

- Altitude - as it increases, there will be fewer species, they grow less tall and therefore less dense cover. Relief could also bring about a rain shadow effect.
- Slope angle – influence soil depth, acidity (ph) and drainage. Steeper slopes have thinner soils, are less water logged and less acidic than gentler slopes
- Aspect – is the direction in which a slope faces. Aspect affects sunlight, temperatures and moisture. South facing slopes in the northern hemisphere are more favourable to plant growth than those facing north because they are brighter, warmer and brighter.

Edaphic – variation in vegetation is due to soil and underlying parent rock. Plant growth is affected by soil texture, structure, acidity, organic content, depth, water and oxygen content, nutrients.

Biotic factors – includes the element of competition between plants for light, roots pace and water and competition – increases with density of vegetation.

(i) Competition from introduced species who can wipe out or invade an area that used to be covered by a particular species.

(ii) Natural selection is an important biotic factor. The composition of **seral communities** and the degree of reliance upon other plants and animals either for food or energy are also biotic factors

ADDITIONAL INFORMATION RESOURCE

https://www.youtube.com/watch?v=b2zglCpcGiQ

LESSON ACTIVITY

1.Define

i. Ephemerals

ii. Xerophytic

iii. Edaphic

WEEK 3: MONDAY 19/07/21- FRIDAY 23/07/21

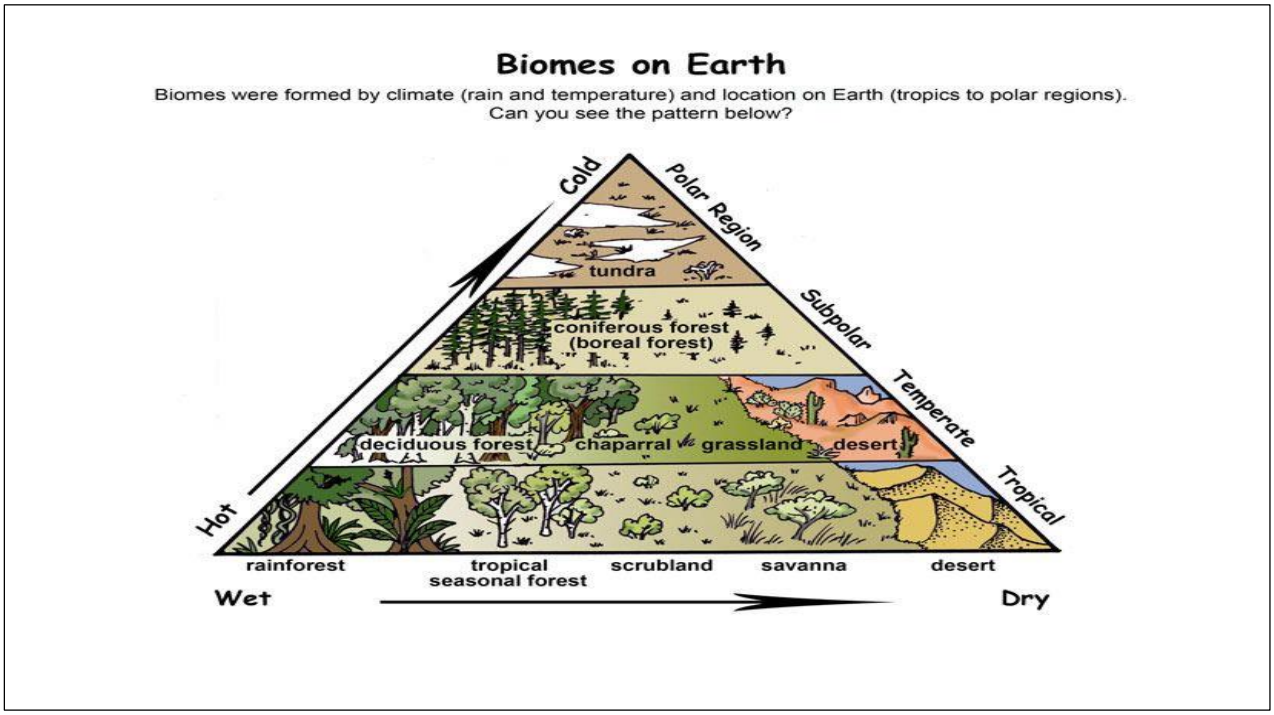
ACHIEVEMENT INDICATOR:

Explore the:

- ✓ types of biomes
- ✓ features of each biome

LESSON NOTES

Types of biomes



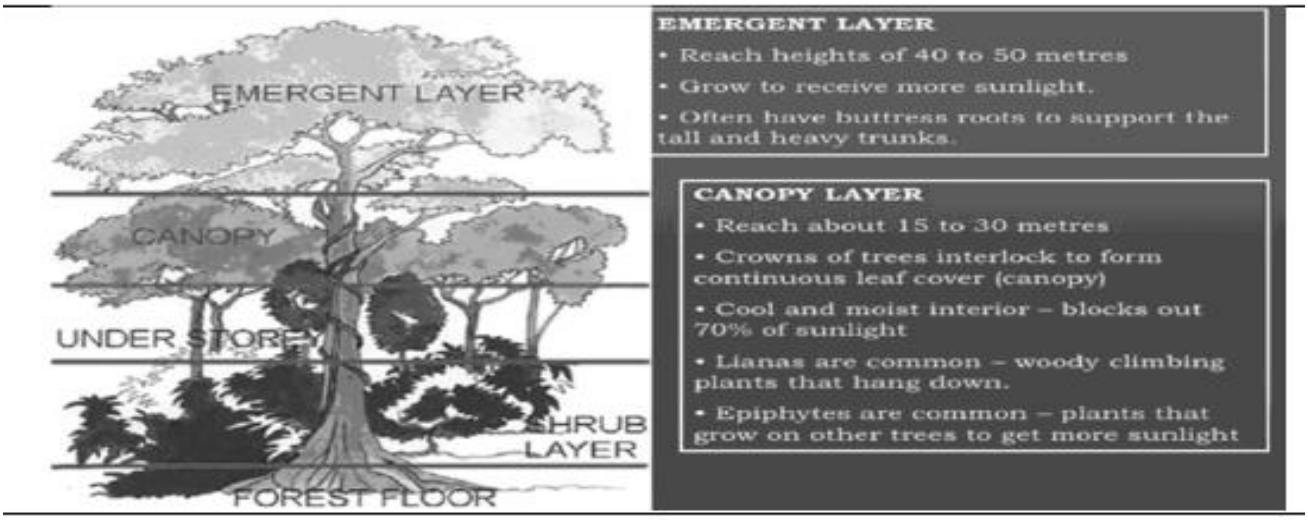
Types of Biomes

1. Tropical rainforest

Distribution	Ferralticsoils (Latosols)	Climate		Location
		Temperature °C	Rainfall (mm)	
Between latitude of 23.5°C N and 23.5°C S of the equator which has a tropical climate	Result from the high annual temperature and rainfall causing rapid chemical weathering of bedrock Red in colour because heavy rainfall causes the release of iron and aluminum from the parent material	High between 20° and 30°C and constant throughout the year Annual temperature range under 30°C Insolation evenly distributed throughout the year	High 1000 mm to 2000 mm due to the convergence of the trade winds at the ITCZ Rapid evapotranspiration from rivers, swamps and trees Violent storms with heavy rain, accompanied by thunder and lightening	Amazon Basin Malaysia and Indonesia in Southeast Asia The Congo Basin in Africa

Features

- Contain the most diverse range and highest volume of plant and animal life found anywhere on earth.
- Trees grow very close to each other, making the forest very dense
- Tropical forests trees are <u>evergreen</u> as the leaves remain green throughout the year
- Some plants called <u>epiphytes</u> overcome the shortage of sunlight by growing high up on tree branches to get sunlight (e.g. Ferns, orchids).
- Other plants known as <u>lianas</u> grow upward to get more sunlight by winding around tree trunks
- The leaves are also <u>waxy</u> and have drip tips to allow water to drain off
- The <u>bark</u> of trees in the tropical rainforest is <u>thin</u> because they are not required to protect the trees from dry or cold conditions
- <u>Branches</u> are also located in the top one-third potion of the trunks and they are <u>shaped like umbrellas</u> to capture as much sunlight as possible.
- <u>Roots</u> of tropical forest trees are <u>shallow</u> because they do not need to reach deep into the soil for water
- Some of the tallest trees have <u>buttress roots</u> to support their great weight and prevent them from falling over.
- A mature equatorial rainforest has a distinct structure of five layers: <u>Emergent layer, Canopy layer, Understory layer , Shrub layer</u>- consists of shrub and small trees which are adapted to living in the shade of their taller neighbors and the <u>Undergrowth</u>



ADDITIONAL INFORMATION RESOURCE

https://www.youtube.com/watch?v=kw6DCp9xvWw

https://www.youtube.com/watch?v=ea82OEf91C4&t=203s

LESSON ACTIVITY

1.Discuss two features of tropical rainforests.
2. Identify two characteristics of undergrowth.
3. Discuss a characteristic of an epiphytes.

WEEK 4: MONDAY 26/07/21- FRIDAY 30/07/21

ACHIEVEMENT INDICATOR:

Explore the:

- ✓ types of natural vegetation
- ✓ factors influencing their growth and distribution
- ✓ impacts of climate change on vegetation

LESSON NOTES

2. Tropical Grassland

-Examples include Llanos (Venezuela), the Campos (Brazil), central Africa surrounding the Congo Basin, parts of Mexico and northern Australia.

Tropical Continental Climate		Ferruginous soils
Temperature °C	Rainfall (mm)	
• High throughout the year • There is a short slightly cooler season • May drop slightly at the onset of the rainy season • Cloud amount is limited	Alternating wet (occurs when the sun moves overhead bringing with it the heat equator, the ITCZ and equatorial low pressure belt) and dry season (ITCZ moves, leaving the area with strong steady trade winds)	• Tend to be soft unless exposed at the surface • Harden to form a cemented crust known as laterite • Hold few nutrients

Features

- Include shrubs, grasses and occasional trees which grows near water holes, seasonal rivers or aquifers.
- The 'closed savanna' is mainly trees and grasses
- The 'open savanna' is vegetated by scattered tufts of grass
- Some trees are deciduous while others are xerophytic or drought resistant
- Leaves are small and waxy and sometimes thorn-like
- Roots are long to tap groundwater
- Bark is thick to reduce moisture loss

ADDITIONAL INFORMATION RESOURCE

https://www.youtube.com/watch?v=bnzLCKuphnM

LESSON ACTIVITY

1.Discuss two features of grasslands.

2. Identify two characteristics of xerophytic plants.

3. Discuss a characteristic of a deciduous forest.

WEEK 5: MONDAY 02/08/21- FRIDAY 06/08/21

ACHIEVEMENT INDICATOR:

Explore the:

- types of natural vegetation
- factors influencing their growth and distribution
- impacts of climate change on vegetation

LESSON NOTES

3. Desert Vegetation

-Examples. Sahara Desert in Africa is 3.5 million square miles and Atacama Desert in Chile which gets about ½ inch precipitation annually.

1. Features – very hot and dry

- Fauna – very little animal survived. Those that survived have learnt to live with very little water and food. Most are nocturnal, meaning, they sleep during the heat of the day and active during the night.
- Flora – plants that survive in the biome have learnt to survive with little water

2. Influence of soil and climate on its growth and distribution

- Soil - because of the dry weather, there is no significant weathering of bed rock or the accumulation of organic material.
- In the relatively few places where the water table is near to the surface, soil moisture is likely to be drawn upwards by capillary action.

4. **Mediterranean Vegetation**

Climate		Soils
Temperature °C	Rainfall (mm)	
• Hot, dry summers and warm, wet winters • Mediterranean areas are less warm in summer • Diurnal temperature ranges are often high because many days, even in winter, are cloudless	• The combined effects of orographic and frontal precipitation give high seasonal totals • Annual precipitation 501mm	• Are transitional between brown earths on the wetter margins and desert soils at the drier fringes • Formed under broadleaved coniferous woodland • There are often sufficient roots and decaying plant material to provide a significant humans layer

Features

- Vegetation mostly xerophytic (drought resistant) is described as 'woodland and sclerophyllous scrub'. Sclerophyllous means 'hard leveed' and is used to described those evergreen trees or shrubs that have small, hard leathery waxy or even thorn like leaves and which are efficient at reducing transpiration during the dry summer season.

- Most of the trees are evergreen, maximising the potential for photosynthesis.
- Trees such as the cork oak have thick and often gnarled bark to help reduce transpiration
- Olive and eucalyptus have long tap roots in which to reach groundwater supplies, in some cases have bulbous roots to store water.

ADDITIONAL INFORMATION RESOURCE

https://www.youtube.com/watch?v=Pu9_wAkNVNY

https://www.youtube.com/watch?v=MUuCwaA23Wo

LESSON ACTIVITY

1.Define

i. Canopy

2.

(Source : www.geolinks.com)

(i) Discuss the above concept and one benefit of it.