

Semester IV

GEO-A-CC-4-10-TH- Soil and Biogeography

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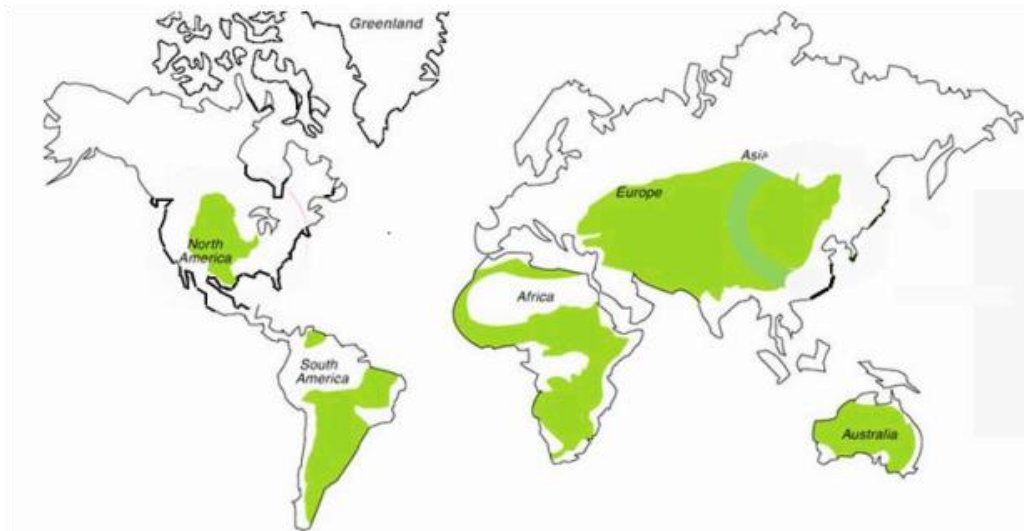
Topic: Savanna Biome-

The Savanna biome is part of a larger grassland biome and is mainly made up of flat grassland vegetation. With the exception of Antarctica, the grassland biome is present in all continents and spans over 20% of the earth's surface. From this biome comes the Savanna biome, also called tropical grassland and the temperate grassland.

Despite these different features, the two biomes have a common thing, which is grass that sustains the ecosystem, thus the name 'grassland'. The Savanna biome is characterized by dominant ground cover by grass species and scattered trees and shrubs.

Location

The Savanna biome is Tropical grassland. It is located between the two topics, Tropic of Cancer to the north and the Tropic of Capricorn to the south. The area between the tropics is what is known as the tropical grasslands. The biome covers over half of Africa, most of South America and portions of Asia such as India. For instance, in Africa, the biome has its presence mostly in the Eastern part which includes Kenya and Tanzania. Acacia savannas are mostly spread in the region. These biomes have provided habitat for various wild animals leading to the establishment of animal game parks and reserves. Notable ones are the Maasai Mara in Kenya and the Serengeti in Tanzania. These two are home to one of the most unique animal migrations of the world. One of the most famous African savannas is Serengeti National Park in Tanzania, which is known for its large wildebeest and zebra populations. The park is also home to lions, leopards, elephants, hippos, and gazelles.



Climate

The climate of this biome varies with the pre-existing season. There are two distinct seasons consisting of a wet and a dry season. The wet season comes during the summer period while the dry season comes during the winter. The climate during the dry season is disastrous to animal and plant life since most plants wither and dry up leading to no food for the animals. Most of the rain in the Savanna biome is from the wet season. With the warmth of the Savanna, there is more rainfall. Also, there is the sprouting of healthy plants owing to the presence of adequate water. Rivers flow and ponds of water fill with water.

The two seasons of the biome are the key in determining precipitation in the ecosystem. There are two major rainy seasons per annum. The dry season experiences lower rainfall of about 4 inches per annum for a period of 4 months spanning from October to January. On the other hand, the wet season with an average height of 25 inches provides a lot of rainfall for the biome. This results in the presence of constant precipitation regardless of the intensity means and consequently, adequate water for plant life and animal life all year long. Despite the presence of two dominant seasons, there are other predisposing factors preventing equal rainfall all over the Tropical grasslands. The distance from the Equator contributes a lot to precipitation fluctuations. The area that lies around the Equator is characterized by equal days and nights. This means that for areas far away from this latitude, there is either longer nights and shorter days or longer days and shorter nights. Again, due to the long spells of months without enough rainfall, there are occurrences of drought in the biome.

The Savanna biome has an average temperature of 25°C. It goes as high as 30°C during the summer and as low as 20°C during the winter, annually. Because of the slight temperature changes within the ranges of just between 20°C and 30°C in the Savanna biome, it is easy for the animals and plants to adapt.

Though there are only two seasons in the biome, the dry season can be further divided into two due to the range in temperatures. The first one is the cold dry season characterized by high mid-day temperatures of about 29°C but experiences lower temperatures of about 21°C during the night. The second dry season is the warm dry season which experiences day temperatures of 32°C to 38°C. This is caused by the nature of the rays of the sun which are close to vertical thus the high temperatures.

Vegetation

Plant life in the Savanna is vastly adapted to cope with the climate. There are a variety of plant species in this biome, both tree and grass species. Trees such as acacia, baobab, pine and palm as well as grass namely rhodes grass, red oat grass, lemon grass and star grass grow in the biome. These grasses grow to heights of as low as 80cm to as high as 350cm. In as much as the Savanna biome is grassland, there are areas in the biome with open patches devoid of grass. During the dry season, the grasses take on a brown desert like color probably due to low photosynthesis. All the same, when seasons change and it is humid again, they turn green. Plus, there are a few vast spaces that favour the scattered growth of shrubs. The trees grow to an average height of 6m.

Plants in this biome have developed long taproots constituting a hydrophilic root system that is able to extend deeper in the soil in search of water. They have large tree trunks for storage of excess water when there is adequate water in the biome to prepare for the dry seasons. Their barks are hardened and thick and are prone to wildfires in the forests. Wild fires easily spread in the Savanna biome due to the vast presence of grass.

The leaves of the plants are deciduous and fall during the winter season. Since leafy plants are at risk of losing a lot of water to the atmosphere through transpiration, they shed their leaves once in a season in an effort to conserve water.

Wildlife

The Savanna biome is one of the most diverse biomes in terms of animals. This is not only aided by the vastness of the tropical grassland but also the varying change in climate. This biome supports one of the world's most renowned species of animals such as zebras, gazelles, wildebeests, warthogs, and elephants which are herbivores. Carnivores in the biome include lions, cheetahs, hyenas and leopards. Most of these animals are found in the African Savanna. The South American Savanna has fewer mammals but has more bird species such as parrots, parakeets, kingfishers, finches and more. Also, it is only in the Australian Savanna that hosts mammals such as the kangaroos. In overall, the Savanna biome is home to thousands of insect species which attract birds for feeding and nesting.

Carnivore population grows exponentially during the rainy season. The reason being, the rainy season leads to more grass growth in the Savanna leading to more reproduction of the herbivores. As keystone species, carnivores such as lions and cheetahs have to be present in the ecosystem in order to strike a balance in the biome. They prevent incidences of overgrazing that can arise due to the overpopulation of prey species like the gazelles and zebras. In spite of the large number of animals in the biome, there is always enough food for all especially for the herbivores. Each of these animals has developed uniquely different feeding habits that reduce competition for food.

For instance, giraffes feed on the top vegetation on trees that other animals such as the zebra cannot reach. Elephants feed on leaves from shorter trees. Zebras feed on shrubs and tall grasses, while wildebeests and gazelles feed on medium and short grasses respectively. It is for this reason that these groups of animal species can be found in the same area, feeding without competing for food. The dry season leads to loss of water through evaporation and transpiration. Consequently, there is inadequate drinking water for animals and the soils are dry and cracked due to extensive loss of water. With no means of plant growth, herbivores start reducing in number. Carnivores may increase slightly due to abundant food.

Due to the fluctuation in climatic levels, animals migrate in search of food. They may migrate to very far places to search for water and pasture. The migration varies among animals. There are some that migrate only to come later when the rainy season is back while others migrate never to return. Again, there are those that move during the rainy season.

Fires

Due to the number and types of vegetation in savannas, fires can occur at different times of the year in both the dry and wet seasons. During the wet season, lightning strikes often cause natural fires in savannas. In the dry season, dry grasses can be fuel for the fires. With the advent of human settlements in some savanna areas, controlled burns may be used for land clearing and cultivation.

The climate of the Savanna is gradually changing for the worst. Human interference of the original grasslands has led to a lot of destruction of the ecosystem as well as reduction of forest cover due to deforestation. In some areas it has led to desertification thus changing the climate of the place.

Overgrazing and artificial fires have also contributed to a lot of harm to the Savanna biome.

Nonetheless, these fires do not always negate the soil or plant life. For sure they destroy habitats and scorch both animal and plant life, but they also help in the regeneration of grass every year. Also, they regulate plant life and animal population to ensure balance in the ecosystem.