

Lesson 33

8th - NTI Day 4

Earth's Biomes

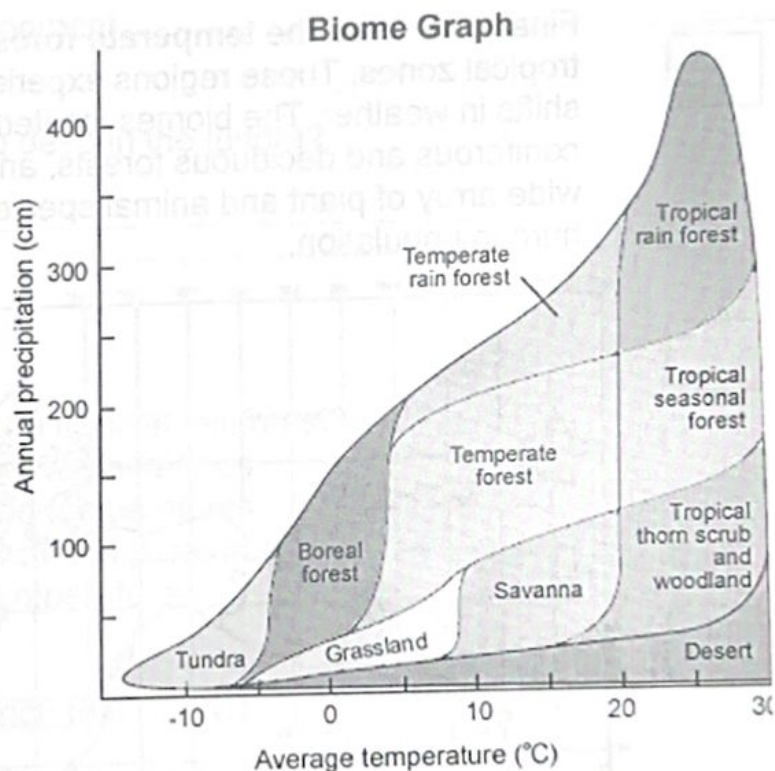
Weather patterns around the world are wonderfully diverse, creating what we call **climates**. A climate is essentially a long-term average of the weather conditions in a specific area, typically characterized by yearly temperature averages and precipitation levels. Climates greatly influence the abiotic, or non-living, elements in a given environment such as water availability, air, sunlight exposure, and soil type. The **biotic**, or living organisms, are then reliant on these **abiotic conditions** for their survival.

Our Earth is sectioned into large land areas, known as **biomes**, which are distinct in their plant and animal life as well as climate. By looking at the *Biome Graph* (below), we can understand how temperature and rainfall shape the distinct character of each biome.

Consider the frosty temperatures of the **tundra** biomes. This harsh climate leads to a layer of soil that remains eternally frozen, known as **permafrost**. The existence of permafrost prevents roots from penetrating deep into the soil, leading to sparse tree populations. In this nutrient-deficient soil, during the brief growing season, certain plants such as wildflowers, grasses, mosses, and dwarf shrubs manage to thrive.

Despite the minimal precipitation, the tundra exhibits snowy terrains and numerous swamps and bogs, a phenomenon attributed to the incredibly slow rate of evaporation.

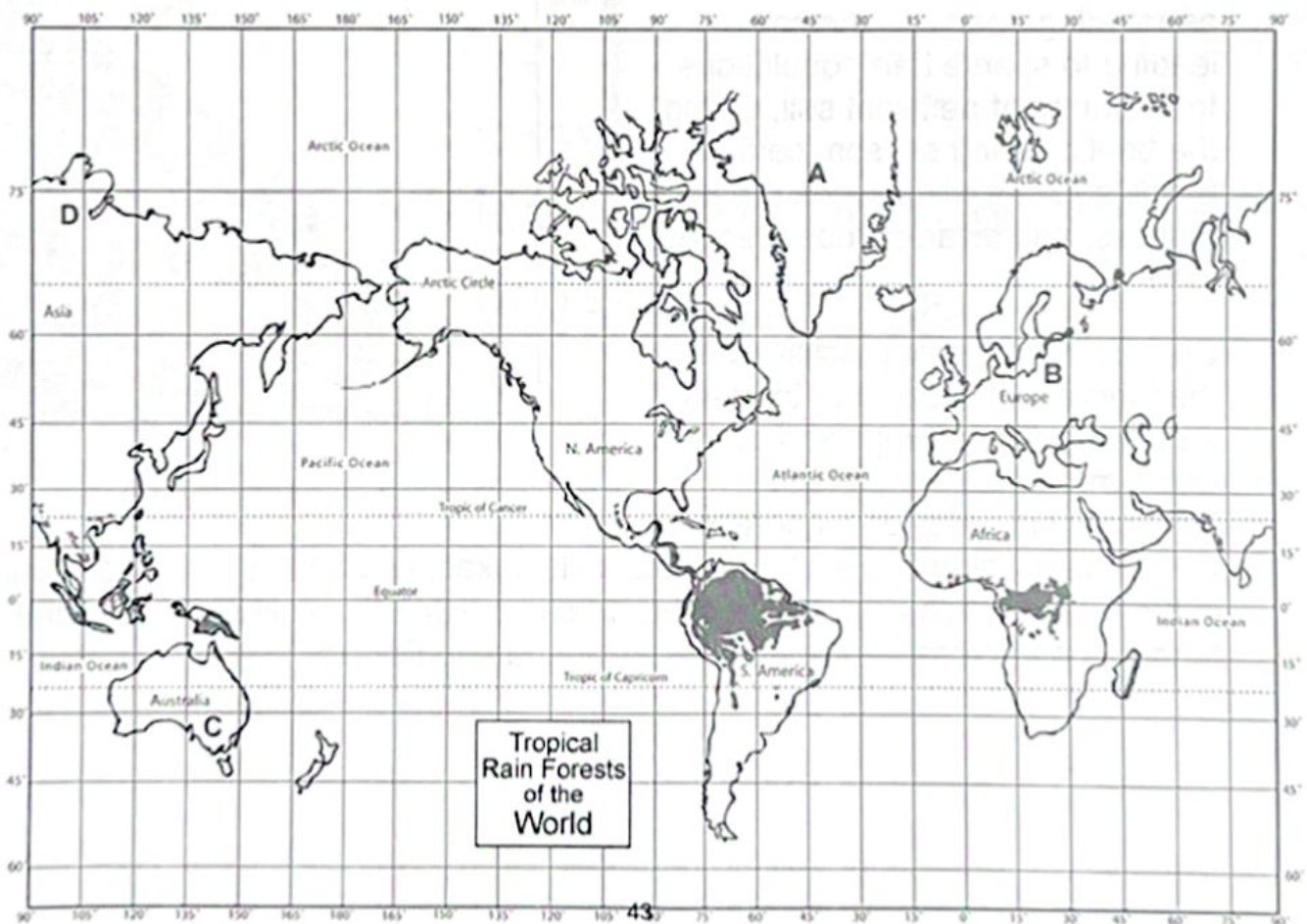
Certain resilient animals, like caribou, owls, foxes, and rabbits, adapt and survive in the tundra, often using white coats as camouflage. Extensive areas of the arctic tundra span across northern parts of Canada and Russia.



In sharp contrast to the tundra, as observed from the *Biome Graph*, is the **tropical rainforest** biome, primarily because of their geographical locations. Situated near the equator, tropical rainforests experience copious amounts of rainfall and sweltering temperatures, making them home to a whopping two-thirds of the Earth's flora and fauna.

Another distinct biome is the **desert**, marked by its extremely arid climate. Unlike the tundra, deserts can lose more moisture than they receive. This absence of moisture leads to stark temperature variations, ranging from sweltering 50°C (122°F) during the day to freezing 0°C (32°F) at night. Surprisingly, some deserts are perennially cold. Occupying a third of the Earth's land surface across all continents, desert soils are typically scant in organic material and can be sandy or rocky. Desert-adapted organisms have evolved to endure these harsh conditions. To conserve moisture, desert inhabitants such as snakes, lizards, rodents, insects, and birds, adopt a nocturnal lifestyle. Desert vegetation typically comprises sparse shrubs, cacti, and cluster-growing grasses.

Finally, we have the **temperate forests**, situated between the polar and tropical zones. These regions experience moderate climates with seasonal shifts in weather. The biomes located in these temperate zones include coniferous and deciduous forests, and grasslands. These areas house a wide array of plant and animal species, including the largest segment of the human population.



Name: _____

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1. What is a climate?

- A. The daily weather in a region
- B. The average weather conditions of a region
- C. The types of animals in a region
- D. The types of plants in a region

2. What are abiotic factors?

- A. The types of animals in a region
- B. The types of plants in a region
- C. The non-living things in an environment
- D. The living things in an environment

3. What prevents roots from growing deep in the tundra?

- A. Heavy rainfall
- B. The permafrost layer
- C. High temperatures
- D. Desert conditions

4. What are the climatic conditions of a tropical rainforest?

- A. Very high rainfall and very hot temperatures
- B. Very low rainfall and very cold temperatures
- C. Moderate rainfall and moderate temperatures
- D. High rainfall and very cold temperatures

5. Which animals typically adopt a nocturnal lifestyle?

- A. Desert animals
- B. Rainforest animals
- C. Tundra animals
- D. Temperate forest animals

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6. Where are temperate forests typically located?
- A. Between the polar zones and the tropical zones
 - B. At the equator
 - C. At the poles
 - D. In desert regions
7. What is a biome?
- A. A type of climate
 - B. A type of animal
 - C. A large land area with similar plants, animals, and climate
 - D. A type of plant
8. What is the characteristic of desert climates?
- A. They have high rainfall
 - B. They can lose more moisture than they receive
 - C. They have a consistent temperature
 - D. They have high humidity
9. What type of organisms live in deserts?
- A. Ones adapted to high humidity
 - B. Ones adapted to the arid conditions
 - C. Ones adapted to cold temperatures
 - D. Ones adapted to wet conditions
10. What is typical of the desert vegetation?
- A. Dense forests
 - B. Large trees
 - C. Sparse shrubs, cacti, and grass that grows in bunches
 - D. Water lilies and mangroves