

Lesson 2 - Biomes

(watch pole to pole at end of lesson)

Warm Up

1. Define the following terms :

- abiotic - non-living
- biotic - living
- biome - area of biosphere with similar characteristics

2. List the 8 terrestrial biomes of the world .

- desert
- tropical rain forest
- boreal forest
- grasslands
- tundra
- temperate deciduous forest
- temperate rain forest
- permanent ice

3. Name the two abiotic factors that influence the characteristics of biomes.

temperature + precipitation

- The **biosphere** is the thin layer of air, land, and water at Earth's surface where living things exist.

- A **biome** is a large area of the biosphere that has characteristic **climate** (long-term weather conditions in an area, including rainfall and temperature), **plants**, and **animals**

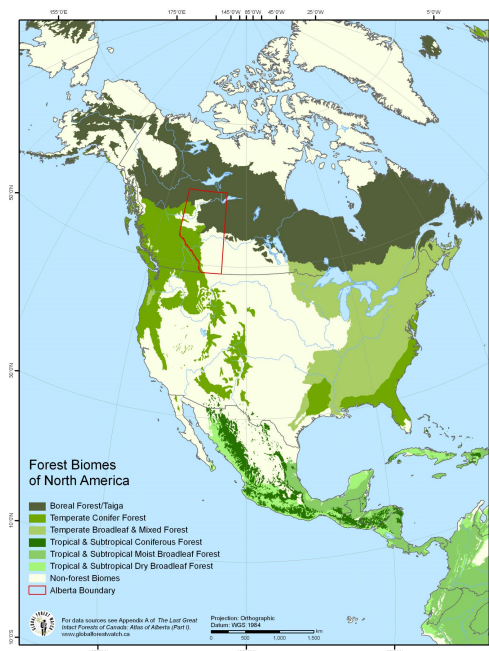
- Examples of biomes include **aquatic** (related to water) biomes, such as the tropical ocean, and **terrestrial** (related to land) biomes, such as **desert**, **tropical rainforest**, and **permanent ice**.

- Biomes are classified based on many qualities, such as **water** availability, **temperature**, and interactions between biotic and abiotic factors.

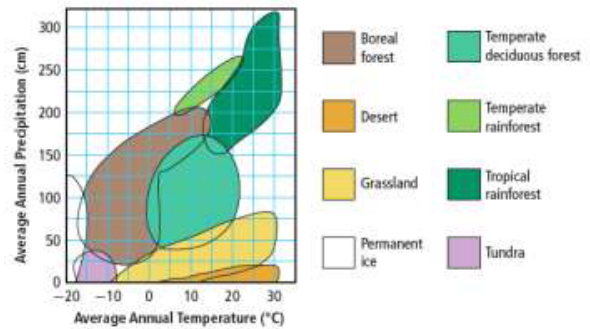
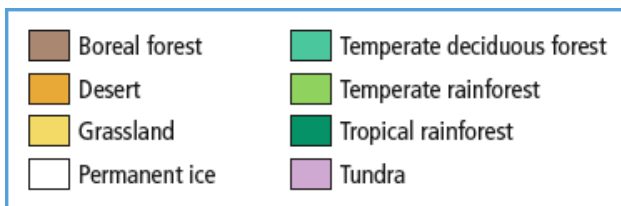
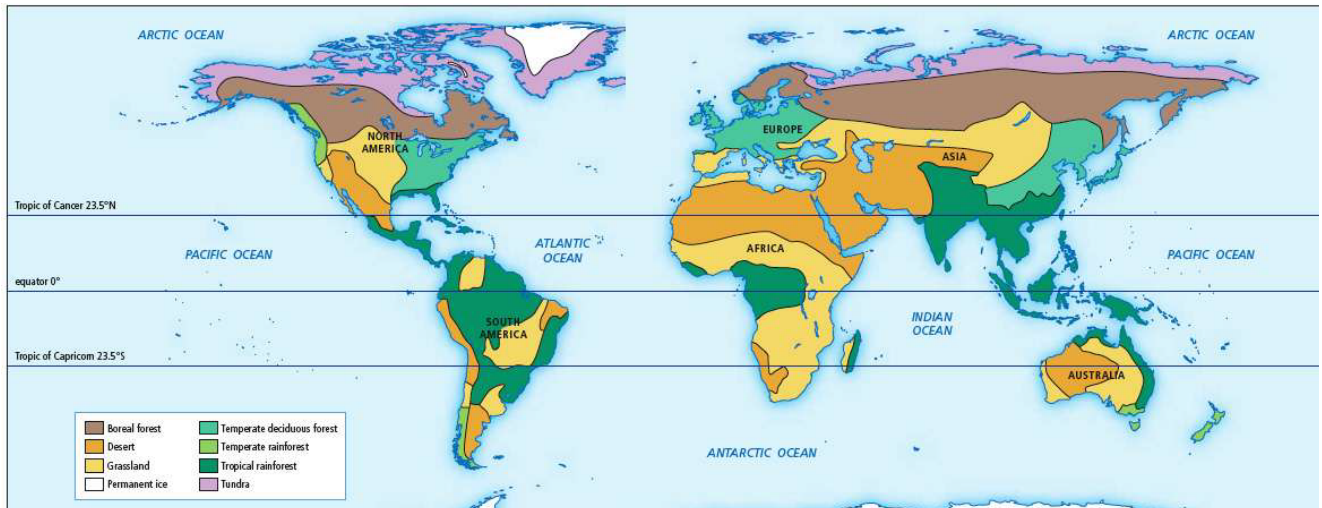
- **Biotic** factors are all organisms in the environment, including bacteria, plants, and animals.
- **Abiotic** factors are all non-living parts of the environment, such as air, water, soil, light, and temperature.

Identify each of the following as either a biotic or an abiotic factor.

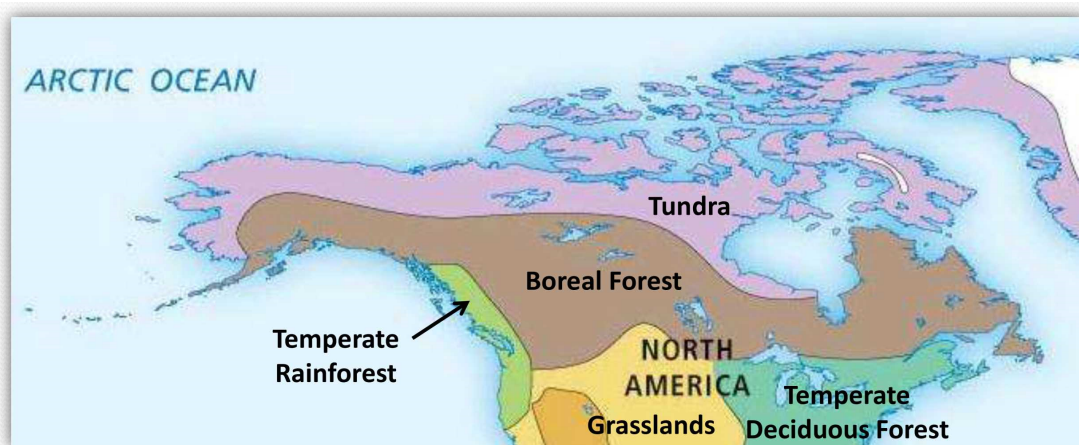
- crab
- ocean temperature
- lake water
- dissolved oxygen
- tides
- seaweed



Biomes of the World



Biomes of Canada



Biomes of the world -

Tropical Rain Forest

- found near the **equator**
- have temperatures of **20°C to 25°C** year-round, receive about **250 cm** of rainfall per year
- have a **dark forest floor that limits plant growth** there
- have plants and animals that survive in **warm, wet environments**.

Temperate Rain Forest

- Location: **38° to 61° north** latitude, along **coast of British Columbia**
- Climate: **more than 200 cm** precipitation per year
 - average temperatures **5°C to 25°C**
- Physical Features:
 - biome occurs in narrow strips along **coastlines backed by mountains** where ocean winds drop large amounts of moisture on windward side of mountains

Boreal Forest (Taiga)

- Location: **45° to 65° north** latitude
- Climate: precipitation, mostly snow, is **30 cm to 85 cm** annually;
 - temperatures are **below freezing half the year**
- Physical Features: **short** summer growing season;
 - terrain is rough, soil is wet; many marshes, **shallow lakes, and wetlands**

Temperate Deciduous Forest

- Location: eastern Canada, **above 23.5° north** latitude
- Climate: annual precipitation is **75 cm to 180 cm**
 - temperatures range from **-30°C winter to 30°C summer**
- Physical Features: **four distinct seasons**;
 - long, warm growing season; soil is enriched by fallen leaves;
 - large seasonal changes between summer and winter

Grassland (temperate grasslands or prairies)

- Location: above **23.5° north** latitude
- Climate: **25 cm to 100 cm** precipitation annually;
 - hot summers of **30°C** and cold winters below **-10°C**
- Physical Features: land is mainly flat and soil is very **rich and fertile**
 - strong winds may cause **soil erosion**

Desert

- **Hot deserts** are found on every continent at about **30° north and south latitude**
- have **hot** days with **cold** nights
- receive **less than 25 cm** of precipitation per year
- have **soil that is salty**,
- have plants and animals that are able to live there because they can **prevent water loss** through their leaves or skin.

Tundra

- Location: **60° to 70° north** latitude
- Climate: **less than 25 cm** precipitation annually
 - Summer temperatures: **3°C to 12°C**
 - Winter temperatures: **-20°C to -30°C**
- Physical Features: flat layer of **permafrost** (permanently frozen soil)
 - poor drainage
 - marshy in summer
 - 24 h daylight in brief summer; **cold and dark in long winter**

Permanent Ice

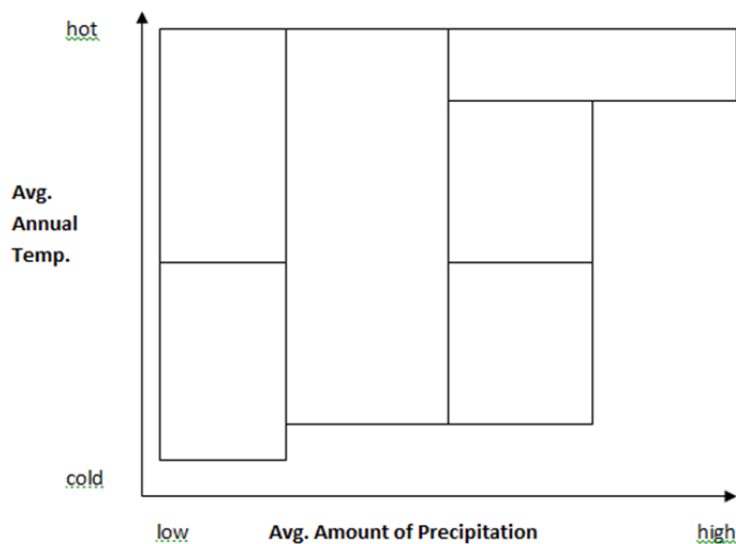
- **Permanent ice** biomes are found **near the poles**
- have very **strong winds**
- receive **less than 50 cm** of precipitation a year,
- have very **cold winter** temperatures
- have animals that have **thick coats and fat layers** for warmth.

Adaptations

- Biomes are often identified with characteristic biotic factors, such as cactus in the desert or caribou on the tundra.
- Many characteristic biotic factors have special **adaptations** for that biome.
 - An adaptation is a **characteristic** that allows an organism to **better survive and reproduce**.
- There are three types of adaptations:
 - **Structural** adaptation—a physical feature that helps an organism survive.
For example, a wolf has large paws to help it run in snow.
 - **Physiological** adaptation—a physical or chemical event **inside** the body of an organism that allows it to survive.
For example, a wolf maintains a constant body temperature.
 - **Behavioural** adaptation—a behaviour that helps an organism to survive.
For example, wolves hunt in packs to capture large prey.

Practice Questions

1. What is the most striking similarity between the tundra and the desert?
2. What do you think makes the tundra's ecology so fragile?
3. Fill in the below graph with the correct biome in the correct box.



4. Use your phone(or computer at home) to perform the following task
 - a. Research 1 plant/animal that is found predominantly in **each biome** of Canada (so you will research a total of 5 species)
(example: The polar bear is found predominantly in the tundra biome)
 - Give an adaptation that the species has to help it survive in the biome
(example: the polar bear has hollow hairs to help insulate it in the cold temperatures)
 - Identify the adaptation as structural, physiological or behavioral
(example: hollow hairs are a structural adaptation)
 - you must have at least one of each type of adaptation