# Do Now

If two parts of the world have the same climax communities, what does that mean about the conditions of those two areas?

# Biomes

10-20-10

# Agenda

1. Do Now
2. Agenda
3. Objectives
4. Biomes
5. Aquatic Biomes
   a) Marine Biomes (salt water)
6. When saltwater and freshwater mix
7. The effects of tides
8. Organisms in Intertidal zones
9. Photic Zone (salt water)
10. Aphotic Zone (salt water)
11. Freshwater Biomes
12. Photic and Aphotic Interdependence
13. Terrestrial Biomes
14. Types of terrestrial biomes

# Objectives

- Content
- **SWBAT**

1. **Explain** why the photic and aphotic zones of the marine biomes are interdependent
2. **Identify** the most important abiotic factor that limits distribution of the tundra biome
3. **Describe** some common plants and animals in a rainforest and grasslands biome
4. **Describe** three changes you would see as you travel south from a taiga to a temperate forest
5. **Determine** the type of biome from specific details

- Language
- **By**

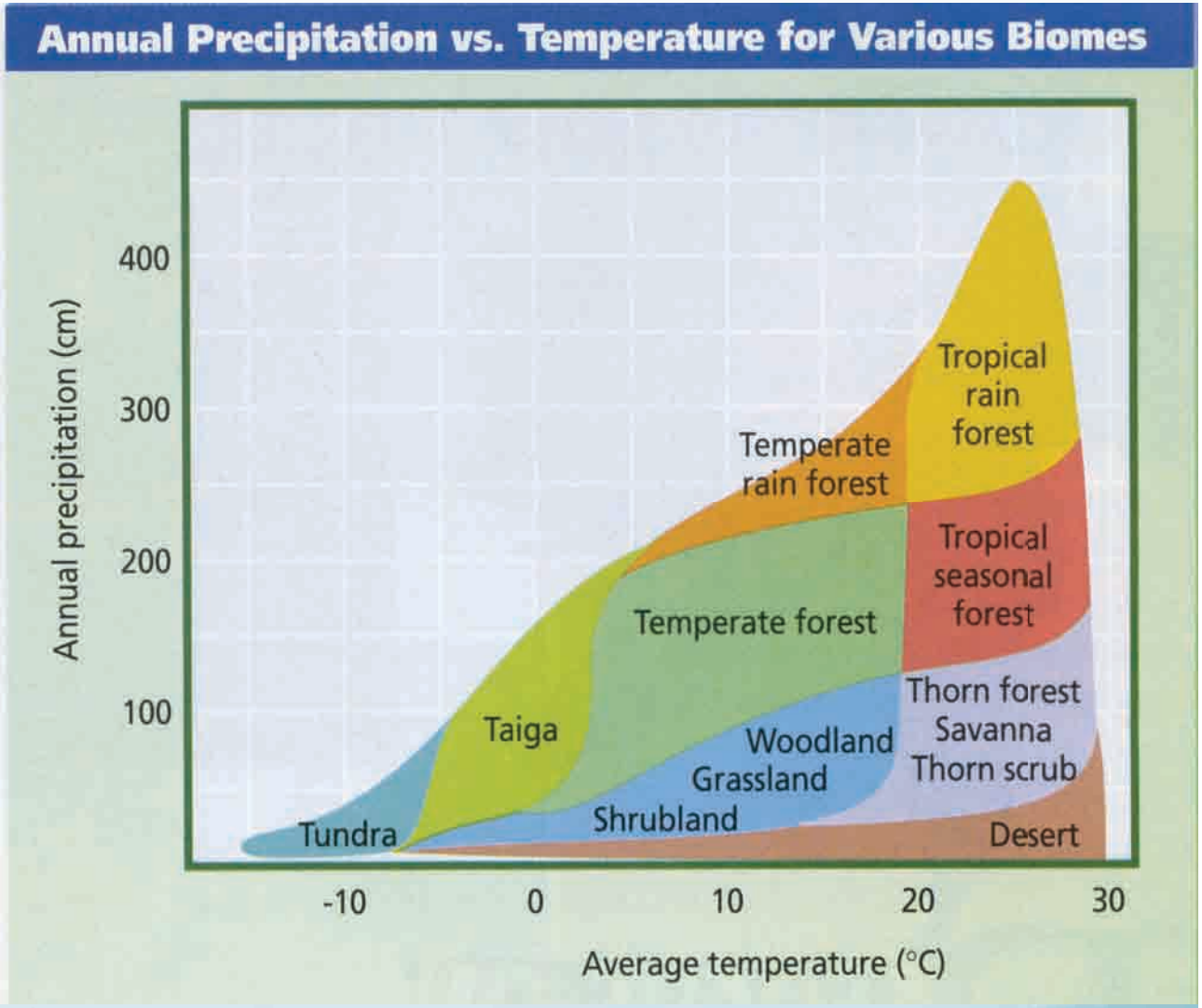
1. **Note-taking** and **writing** answers to exit-slip questions
2. **Note-taking** and **writing** answers to exit-slip questions
3. **Note-taking** and **writing** answers to exit-slip questions
4. **Note-taking** and **writing** answers to exit-slip questions
5. **Note-taking** and **writing** answers to exit-slip questions

# Biomes

**Biome:** (a large group of ecosystems that share the same climax community)

There are two broad categories of biomes

1. **Aquatic Biomes:** (biomes located in lakes, streams, rivers, oceans)
   - I. **Marine Biomes**: (salt water)
   - II. **Freshwater Biomes:** (fresh water)
2. **Terrestrial Biomes:** (biomes located on dry land)




~75% of Earth is covered in mostly salt water, so understanding marine biomes helps us understand a large part of earth.

# Aquatic Biomes: Marine Biomes (saltwater biomes)

To study marine biomes (saltwater biomes), biologists separate them in two ways:

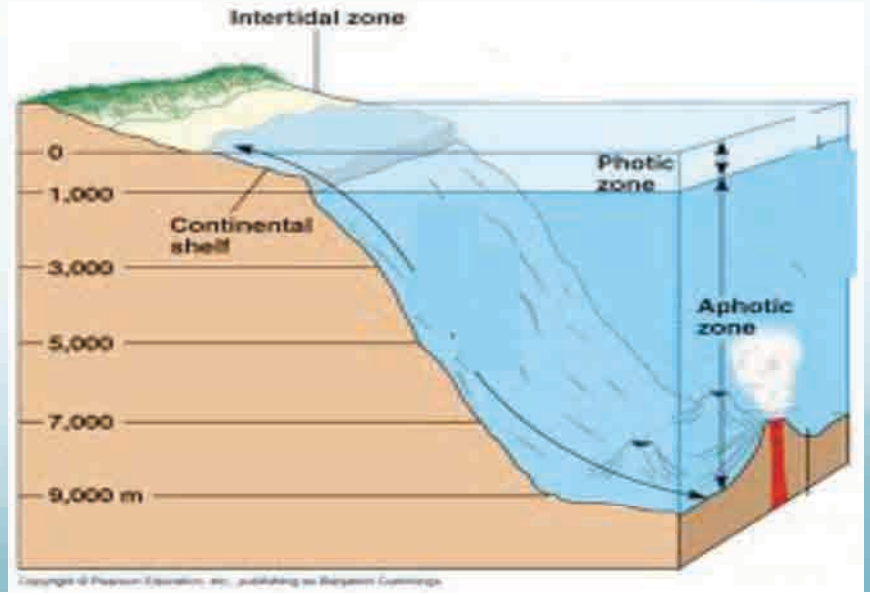
1. **Photic Zone:** (the shallow part of the ocean that receives sunlight)

   Photo = light

   - These are located along coastlines where the water is shallow and light can reach the ocean floor
   - Lots of nutrients from runoff
   - Autotrophs live here

2. **Aphotic Zone:** (the deeper part of the ocean that does not receive sunlight)

   - These are located in the center of the ocean where the water is deepest
   - Nutrients are from decomposers
   - Scavengers/decomposers live here



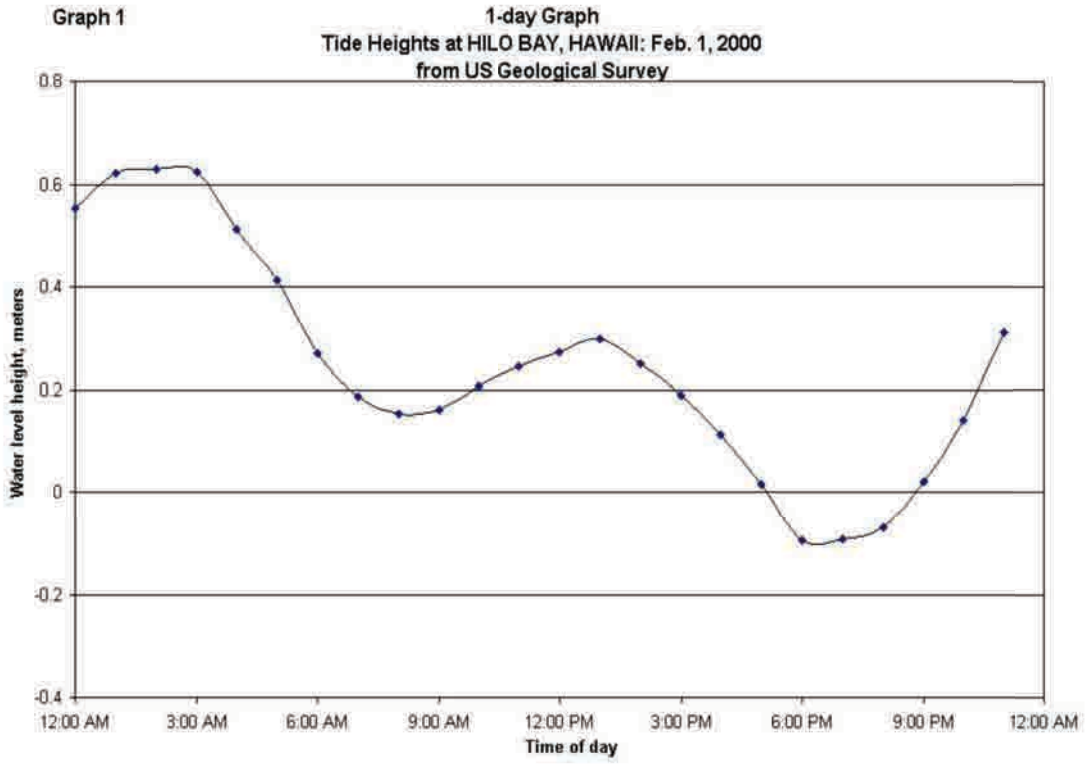
# When saltwater and fresh water mix

- All rivers (which are freshwater) eventually lead to oceans (which are salt water)
- Estuary: (the point at which freshwater mixes with salt water)
  - Located in costal areas
- Salinity: (the amount of salt in water)
- The salinity of an estuary changes with the tides
- This allows a wide range of life to live in estuaries

# The Effects of Tides

- Only oceans/seas have tides
- Each day the tides go: high→low→high→low.
- Some areas are always covered with water
- Other areas are either covered or exposed based on the tide
- **<u>Intertidal zone:</u>** (the part of the ocean that is covered or exposed based on the tide)
  - high levels of light, nutrients (from runoff), oxygen (from waves)
  - Organisms cannot reproduce easily because of waves crashing

**Think/Turn/Talk** Are intertidal zones located in the photic or aphotic part of the ocean?



# Organisms in intertidal zones

Organisms in the intertidal zone have adapted to the constant crashing of waves.

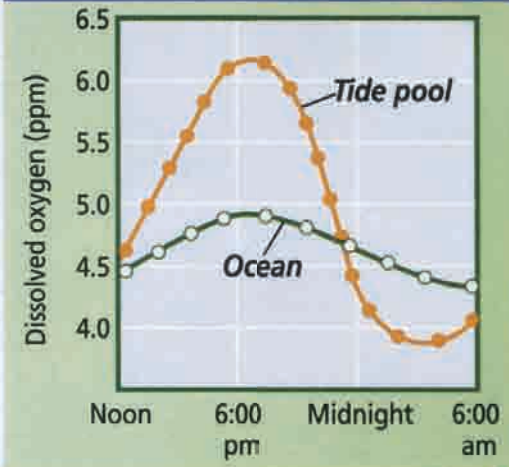
# Problem-Solving Lab 3-2

**Analyzing Information**

## What information can be learned from studying a graph?

Tide pools are depressions along rocky coasts that are covered by ocean waters during high tide. However, when oceans retreat during low tide, these tide pools are stranded and become temporarily cut off from ocean waters.

**Oxygen Levels**

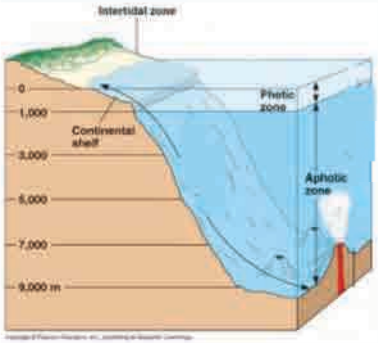



## Analysis

The graph shows results from tests of water samples taken in a tide pool and in the surrounding ocean. A scientist measured oxygen levels in ppm (parts per million). Both the ocean and tide pool have the same producer present, a green algae called Cladophora.

## Thinking Critically

1. What can you tell about how the experiment was done using only the *x*- and *y*-axis information?
2. What can you tell about how the experiment was done from studying the graph?
3. What can't you tell about the experiment from the data provided?
4. What specific information was learned as a result of the experiment?

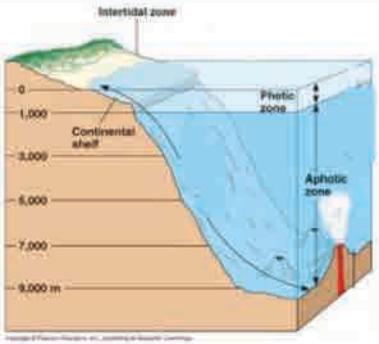



# The Photic Zone in Saltwater Biomes

- Many organism live here because many nutrients are available from runoff
- Plankton has the greatest number of organisms living in the photic zone
- Plankton is an autotroph
  - This means plankton can make their own_____ by doing _____.
- Plankton fuels all marine food chains
  - Ex: Baleen whales eat it...

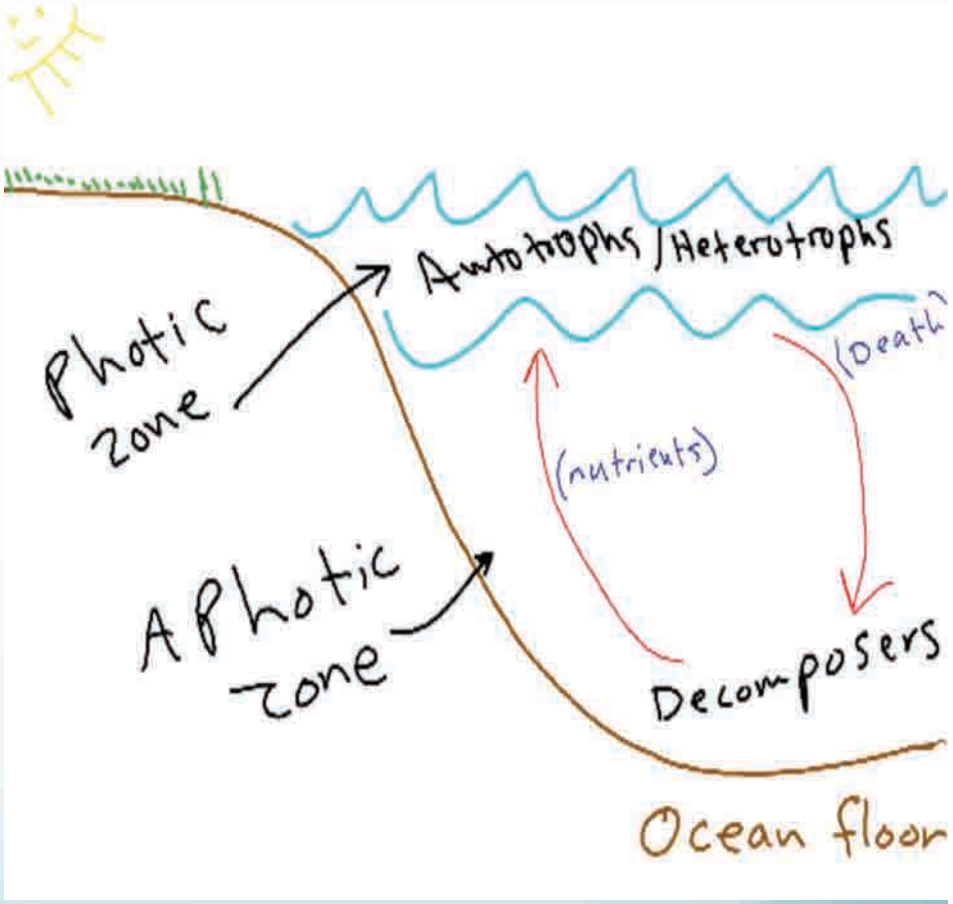
**Think/Turn/Draw** Draw a marine food chain showing plankton's involvement.

**Figure 3.8**
Plankton forms the base of all aquatic food chains, but not all organisms that eat plankton are small. Baleen whales and whale sharks, some of the largest organisms that have ever lived, consume vast amounts of plankton.




# The Aphotic Zone in Saltwater Biomes

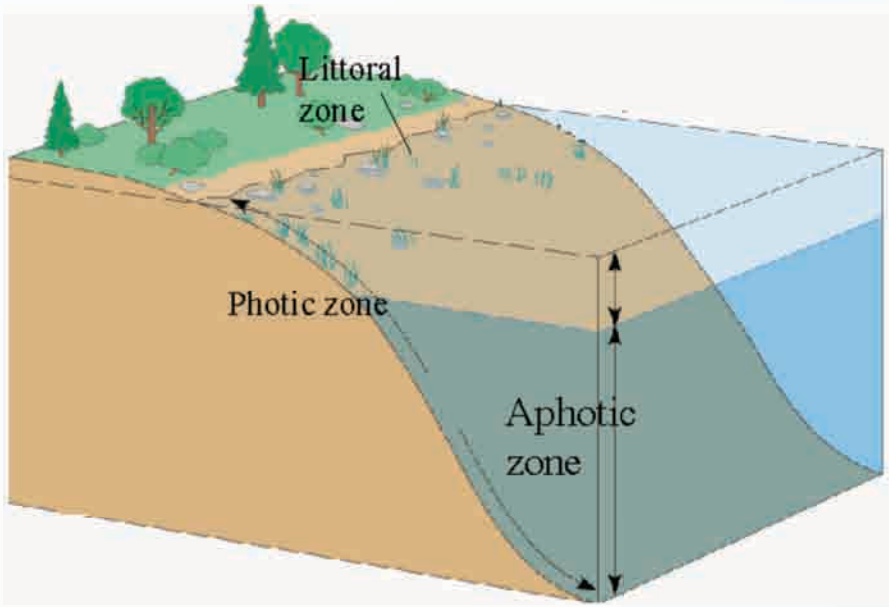
- The aphotic zone is completely dark
- Many scavengers and decomposers live here
- The photic zone provides food for the scavengers and decomposers in the aphotic zone...this creates a nutrient cycle ☺



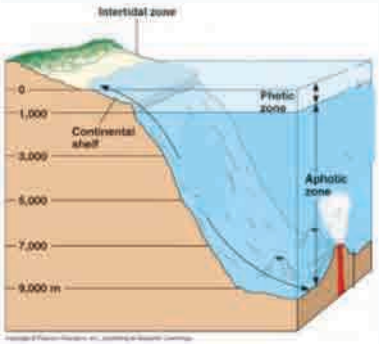

**Think/Turn/Talk**
Why is it said that the photic and aphotic parts of the ocean are interdependent?

# Freshwater Biomes

- In the photic zone there is warmth and light
- In the aphotic zone there is cold and darkness
- Marine plants cannot live in the aphotic zone




**Think/Turn/Talk**
What types of organisms do you think live in the aphotic zone of a lake? (herbivores, carnivores, omnivores, scavengers, decomposers)




# Photic and Aphotic Interdependence

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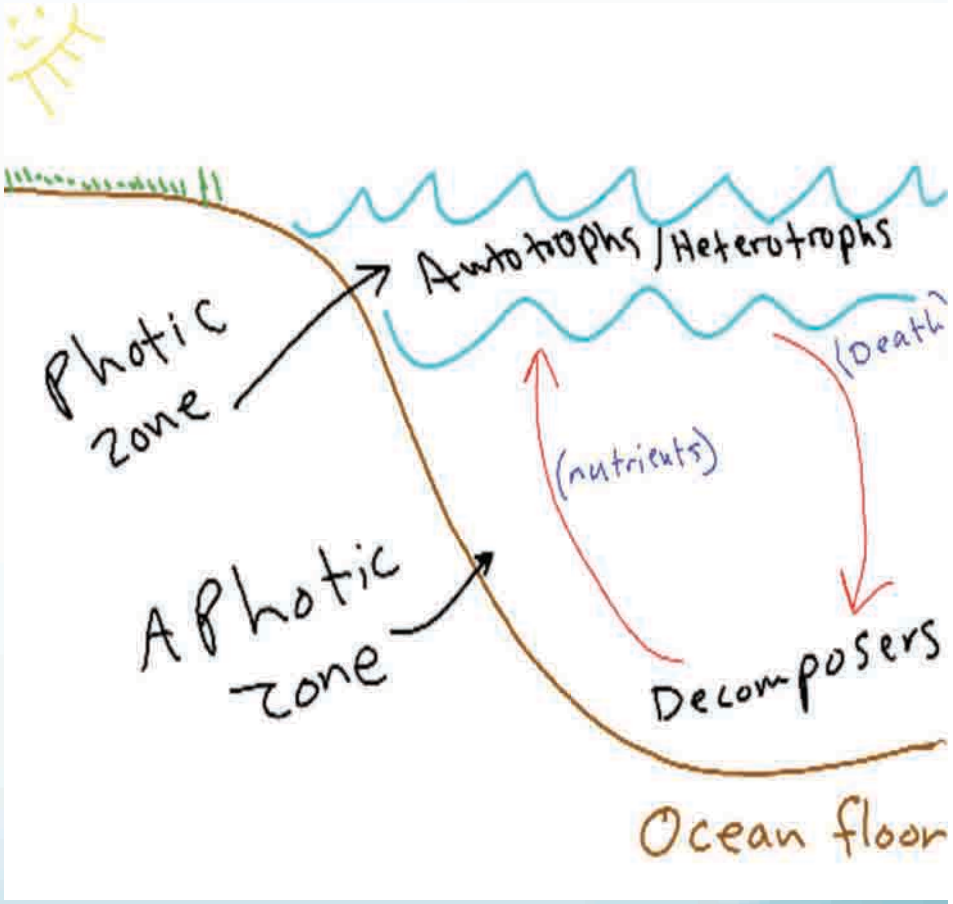



**Think/Turn/Talk**
Why is it said that the photic and aphotic parts of the ocean are interdependent?

# Terrestrial Biomes

As you move from the North to the Equator:
•the temperature drops
•you will pass through many different biomes

As you move from the Equator to the South:
•the temperature drops
•you will pass through many different biomes

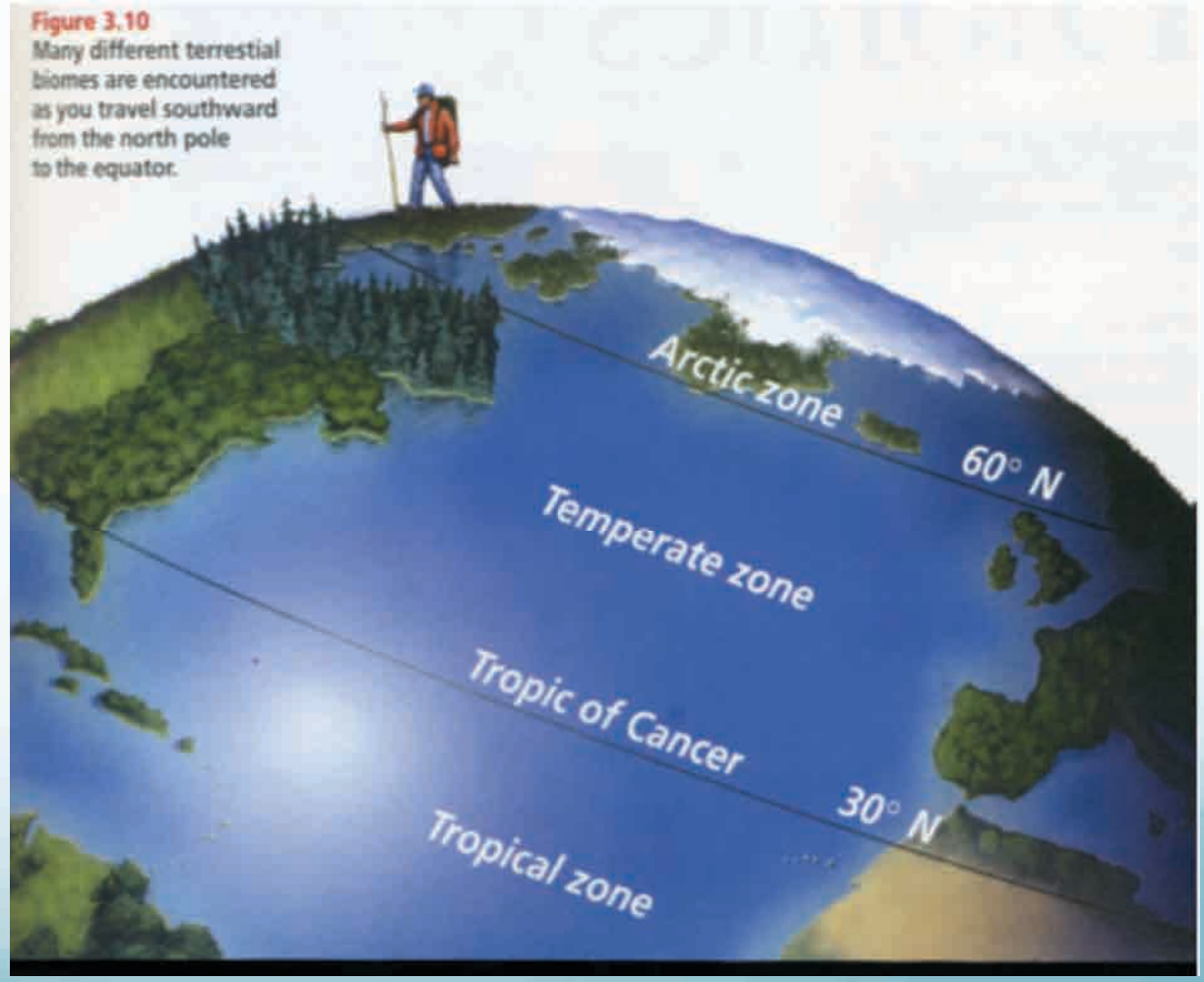
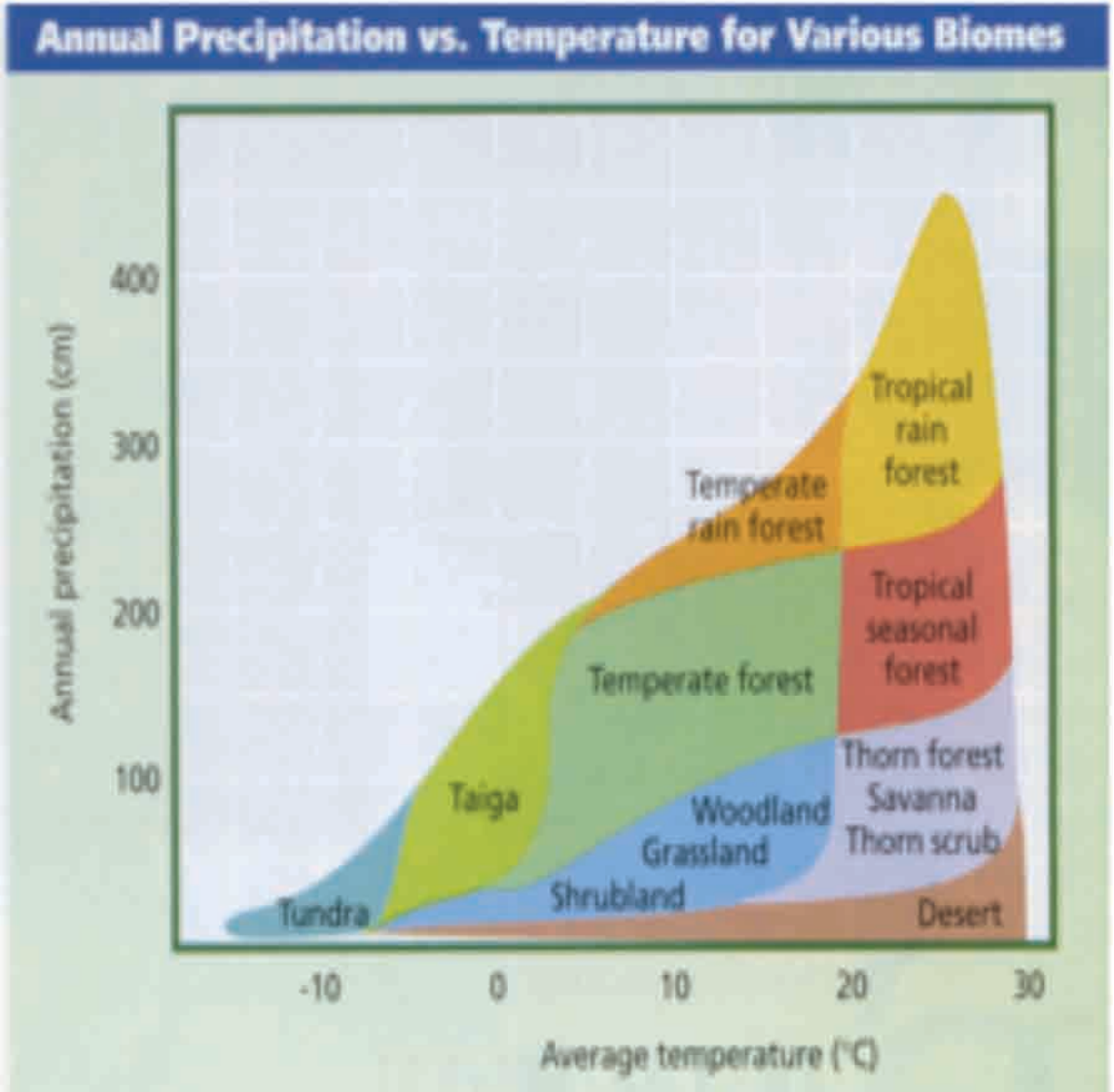



Figure 3.10
Many different terrestial biomes are encountered as you travel southward from the north pole to the equator.

# Two Factors Define Biomes: Temperature and Precipitaton

- Every climax community needs certain temperatures and annual rain fall

- A tiny change in one of these two factors can cause a completely different climax community to form



# Types of Biomes

Please read p.80-87, and take notes using a chart like the one below. **DO NOT** draw the whole chart at first. Start with Tundra, finish all of those details, and then, make a spot on your chart for Taiga, Desert, etc.

| Name of biome | Organisms in this biome | Climate/ weather in this biome | General characteristics | Important Terms |
|---|---|---|---|---|
| Tundra | | | | |
| Taiga | | | | |
| Desert | | | | |
| Grassland | | | | |
| Temperate Forest | | | | |
| Tropical Rainforest | | | | |
| | | | | |
| | | | | |

# Exit Slip

1. **Explain** why the photic and aphotic zones of the marine biomes are interdependent
2. **Identify** the most important abiotic factor that limits distribution of the tundra biome
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