

APES OBJECTIVES CHAPTER 4b/19 Objectives

FriRel: CHAPTER 4b Objectives - GLOBAL CLIMATES & BIOMES

KEY OBJECTIVES: The major objective of this chapter is to understand the characteristics of different terrestrial and aquatic biomes and the forces that drive the weather and climate in each biome.

10. Air Currents

- Explain how the properties of air affect the way it moves in the atmosphere.
- Identify the factors that drive atmospheric convection currents.
- Describe how the Earth's rotation affects the movement of air currents.
- Explain how the movement of air currents over mountain ranges affects climates. Describe the general effects of the following microclimates: windward and leeward sides of a mountain, forests, cities.

11. Ocean Currents

- Describe the patterns of surface ocean circulation. Describe how ocean currents generally redistribute heat.
- Explain the mixing of surface and deep ocean waters from thermohaline circulation.
- Identify the causes & consequences of El Nino-Southern Oscillation.

FriRel: CHAPTER 19 Objectives - GLOBAL CHANGE

KEY OBJECTIVES: The principle objectives of this chapter are for students to understand the concepts of global change, global climate change, and global warming. The students also need to have a firm grasp of the ways human actions affect global change and the impact of these actions on the environment.

62. Global Climate Change & the Greenhouse Effect

- Distinguish among global change, global climate change, & global warming.
- Explain the process underlying the greenhouse effect. Describe the greenhouse effect and what the Earth would be like without a greenhouse effect. Distinguish between *greenhouse effect* and *global warming*.
- List the two predominant greenhouse gases. List four greenhouse gases which have risen in the last few decades.
- Identify the natural & anthropogenic sources of greenhouse gases. Discuss human activities which contribute greenhouse gases to the atmosphere.

63. Evidence of Global Warming

- Explain how CO₂ concentrations have changed over the past 6 decades
- Explain how emissions compare among nations of the world.
- Explain how temperatures have increased since records began in 1880. Describe the pattern of the earth's average surface-temperature fluctuation throughout geologic time. List factors other than the greenhouse effect that may have contributed to the general temperature change.
- Describe the period the earth has been experiencing for the last 10,000 years. Discuss how we estimate temperatures & levels of greenhouse gases over the past 500,000 years and into the future.
- Explain the role of feedbacks on the impacts of climate change.

64. The Consequences of Global Climate Change

- State the range of temperature change which could cause real damage to ecosystems. Explain why a range so seemingly small can have such major consequences.
- Discuss how global climate change has affected the environment.
- Explain how global climate change has affected organisms.
- Summarize the projections of possible effects of global warming on food production, water supplies, forests, biodiversity, sea levels, weather extremes, human health, and environmental refugees.
- Identify the future changes predicted to occur with global climate change. Describe projections of the major climate models regarding changes in mean surface temperature and average sea level
- Explain the global climate change goals of the Kyoto Protocol.
- What Do We Do? Describe three schools of thought about global warming and how we as a human society should act. Discuss strategies which would slow potential global warming, including both prevention and cleanup approaches.

VOCABULARY TERMS

<ul style="list-style-type: none">• global change	<ul style="list-style-type: none">• global warming	<ul style="list-style-type: none">• Kyoto Protocol• Paris Climate Agreement
<ul style="list-style-type: none">• global climate change	<ul style="list-style-type: none">• greenhouse effect	<ul style="list-style-type: none">• carbon sequestration
<ul style="list-style-type: none">• weather	<ul style="list-style-type: none">• greenhouse warming potential	<ul style="list-style-type: none">• carbon sink
<ul style="list-style-type: none">• climate	<ul style="list-style-type: none">• albedo	