AP Environmental Systems Ch.7

**Climate and Biodiversity**

**Core Case Study: A Temperate Deciduous Forest**

* **Why do \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ grow in some areas and not others?**
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Temperate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forests
  + Globally more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than any other ecosystem

**7-1 What Factors Influence Climate?**

* Key factors that determine an area’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Incoming \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy
  + The earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Global \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of air and water movement
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the atmosphere
  + The earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ features

The Earth Has Many Different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Weather
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ speed, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cover
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Climate
  + Area’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of atmospheric conditions over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and longer
* Ocean \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ winds
  + Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Redistribution of \_\_\_\_\_\_\_\_\_\_ from the sun
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ currents and \_\_\_\_\_\_\_\_\_\_ currents
* Air circulation in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atmosphere due to
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ heating of the earth’s surface by sun
  + Rotation of the earth on its \_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of air, water, and land
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-Southern Oscillation
  + Occurs every few \_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ winds in tropical Pacific Ocean change \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Affects much of earth’s weather for \_\_\_\_\_\_\_ years
* **What is the \_\_\_\_\_\_\_\_\_\_ between air circulation, ocean currents, and biomes?**

Greenhouse Gases Warm the Lower Atmosphere

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gases
  + \_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ greenhouse effect
  + Gases keep earth \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Human-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ global warming

Earth’s Surface Features Affect \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Climates

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_interrupt flow of prevailing winds
* \_\_\_\_\_\_\_\_\_\_ shadow effect
  + Most precipitation falls on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ side of mountain ranges
  + Deserts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cities create \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**7-2 How Does Climate Affect the Nature and Locations of Biomes?**

* Differences in average annual \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lead to the formation of tropical, temperate, and cold deserts, grasslands, and forests, and largely determine their locations

Climate Helps Determine Where \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Can Live

* Major biomes
  + Large land regions with certain types of climate and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ life
    - Not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of patches
* Change with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

There Are Three Major Types of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – annual precipitation \_\_\_\_\_\_\_\_\_\_ and often scattered through the year
  + Tropical\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Temperate\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Cold\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Why are deserts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ecosystems?**

There Are Three Major Types of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occur in:
  + Interior continents too moist for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and too dry for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Three main types:
  + Tropical\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Temperate\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Cold (arctic tundra)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Tropical
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ animals
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ animals
* Temperate
  + \_\_\_\_\_\_\_\_\_\_ winters and \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ summers
  + \_\_\_\_\_\_\_\_\_\_-grass prairies
  + \_\_\_\_\_\_\_\_\_\_-grass prairies
  + Often converted to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tundra
  + Plants close to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to conserve \_\_\_\_\_\_\_\_\_\_
  + Most growth in \_\_\_\_\_\_\_\_\_\_ summer
  + Animals have \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Underground \_\_\_\_\_\_\_\_\_\_ that stays \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tundra
  + Above \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ in mountains

There Are Three Major Types of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – lands dominated by trees
  + Tropical\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Temperate\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Cold\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Northern \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Tropical \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ moisture
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of specialized plant and animal niches
  + Rapid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of scarce soil nutrients
  + **What is the impact of \_\_\_\_\_\_\_\_\_\_ activities in the rain forest?**
* Temperate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ temperature and \_\_\_\_\_\_\_\_\_\_ moisture
  + \_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_ deciduous trees
  + Slow rate of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + **What is the impact of \_\_\_\_\_\_\_\_\_\_ activities on temperate forests?**
* Evergreen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forests: \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_ winters
  + \_\_\_\_\_\_\_\_\_\_ species of \_\_\_\_\_\_\_\_\_\_-bearing trees
  + \_\_\_\_\_\_\_\_\_\_ decomposition
* \_\_\_\_\_\_\_\_\_\_ coniferous forest, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rain forests
  + Found in scattered coastal regions

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Play Important Ecological Roles

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – steep high elevation lands
  + Majority of the world’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Islands of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Habitats for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species
  + Help \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the earth’s climate
  + Major storehouses of \_\_\_\_\_\_\_\_\_\_
  + Role in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cycle

**7-3 How Have Human Activities Affected the Word’s Terrestrial Ecosystems?**

* Human activities are disrupting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ services provided by many of earth’s deserts, grasslands, forests, and mountains

Humans Have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Much of the Earth’s Land

* About \_\_\_\_\_\_\_\_\_\_ of the world’s major terrestrial ecosystems are being degraded
* The human \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is spreading across the globe
* Deserts\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Grasslands\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Forests\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Mountains\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of Biomes Can Change

* Biomes are not \_\_\_\_\_\_\_\_\_\_
  + They change as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ changes
* Human activities are likely to affect biome placement in the future

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Three Big Ideas**

* Differences in climate:
  + Based on long-term differences in average temperature and precipitation
  + Largely determine the types and locations of the earth’s deserts, grasslands, and forests
* The earth’s terrestrial systems provide important ecological and economic services
* Human activities are degrading and disrupting many of the ecological and economic services provided by the earth’s terrestrial ecosystems

**Tying It All Together: A Temperate Deciduous Forest and Sustainability**

* Climate plays a key role in determining the nature of terrestrial ecosystems
* The earth’s dynamic climate system helps distribute heat from solar energy and recycle the earth’s nutrients
* In nature, everything is connected