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