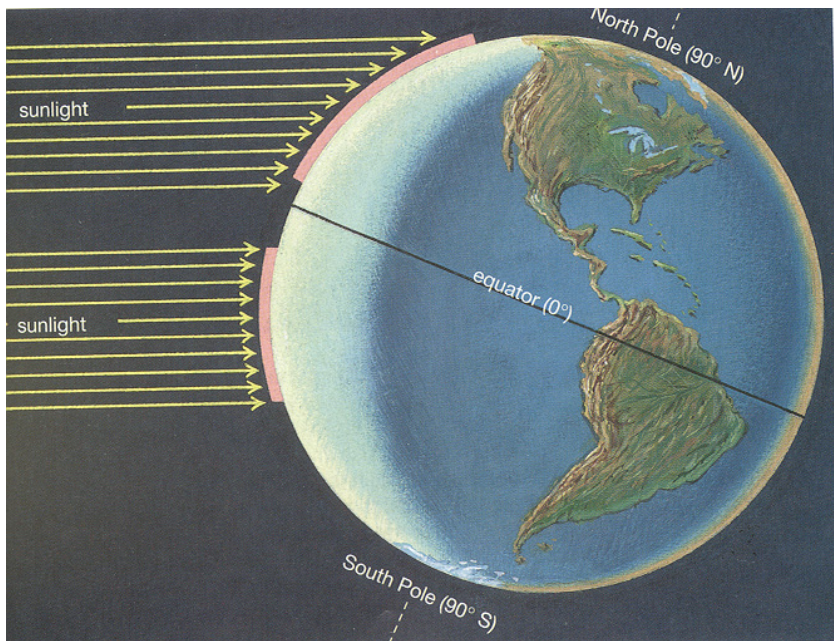


Biomes

- Large land areas
- Similar environmental conditions
- Similar plant communities
- Influenced by Rainfall and temperature

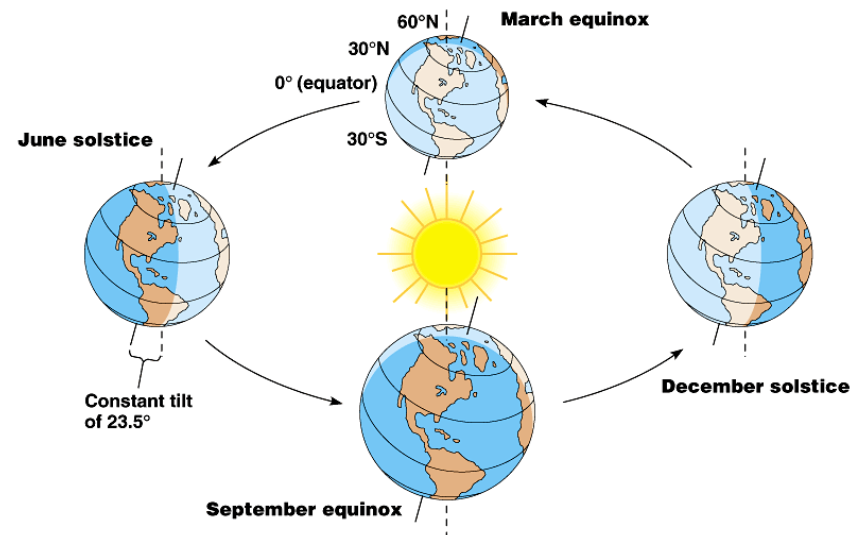
Seasons

Earth's Curvature



Amount of sunlight per area decreases as you move away from the equator.

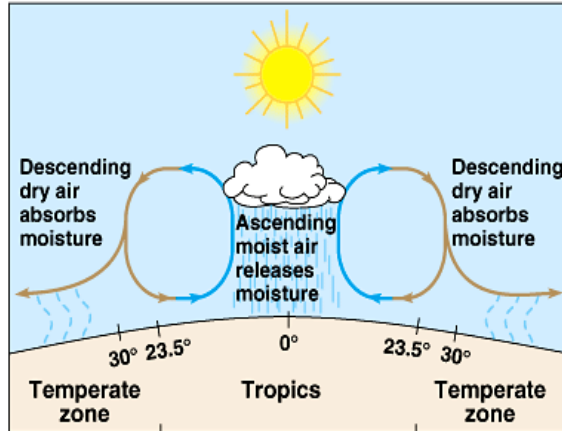
Cause of Seasons



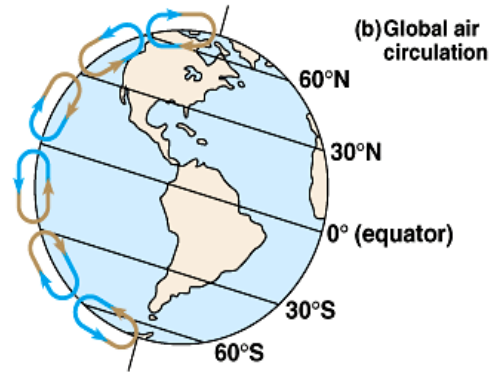
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Orbit of the earth around the sun and the tilt of the earth give rise to seasons

Air

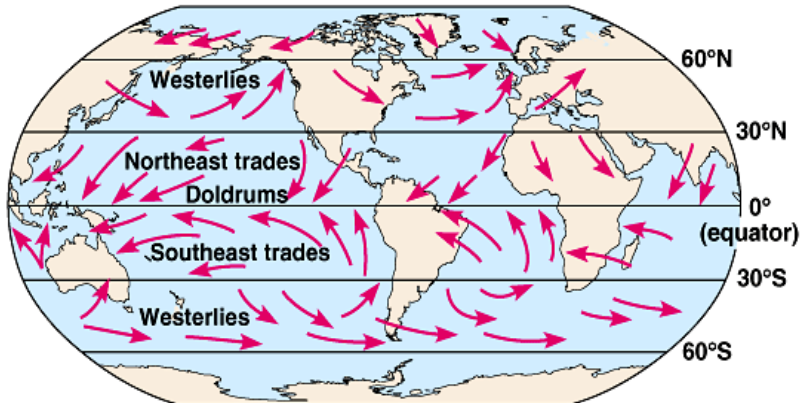


(a) Air circulation and precipitation near the equator



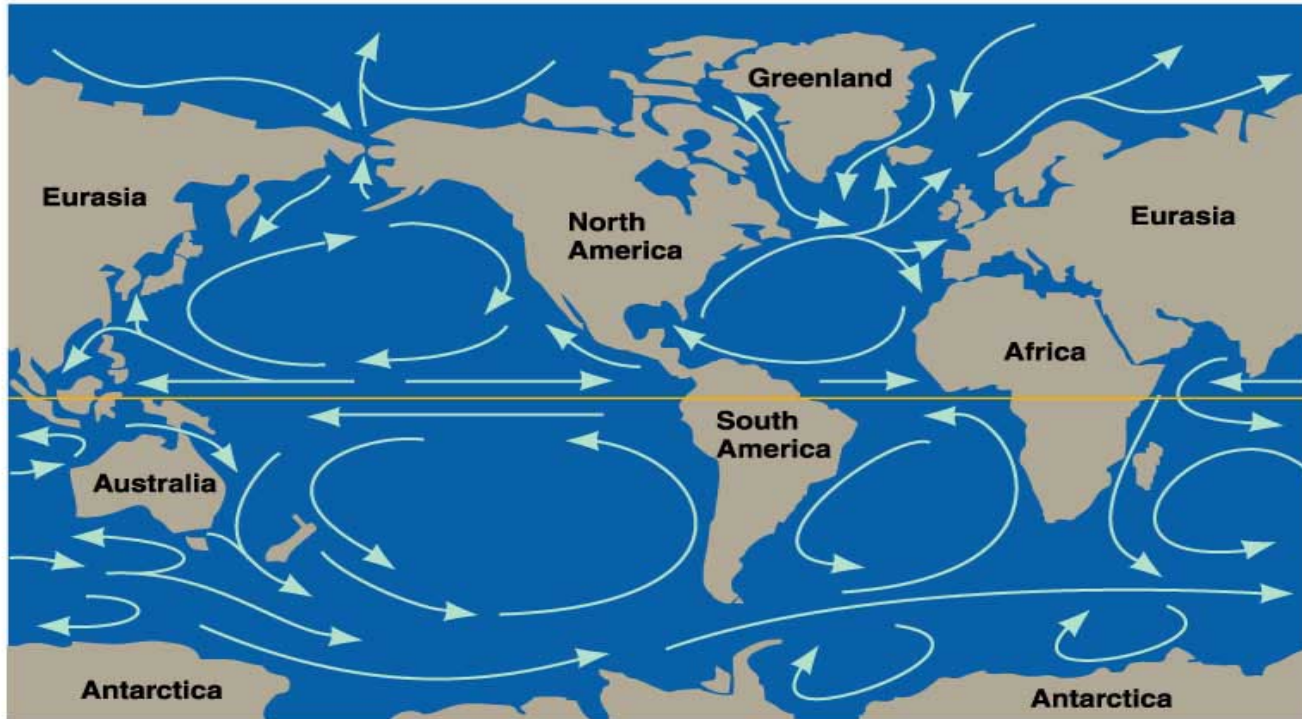
(b) Global air circulation

- Warm air rises at the equator
- cool air descends
- Moves water around the Earth
- Rotation of earth changes Wind patterns



(c) Global wind patterns

Ocean Currents



- Water moves heat
- Moderates climate

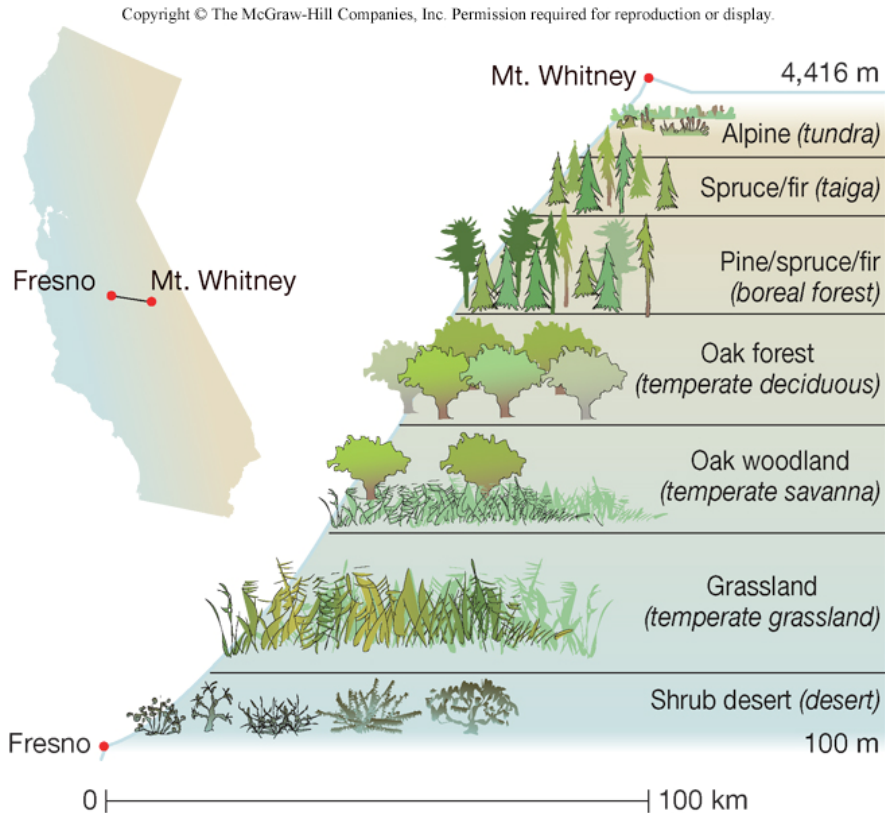
Examples:

The well-known Gulf Stream in the Atlantic and its counterpart in the Pacific, the Kuroshio Current, are strong currents that carry heat northward from the tropics.

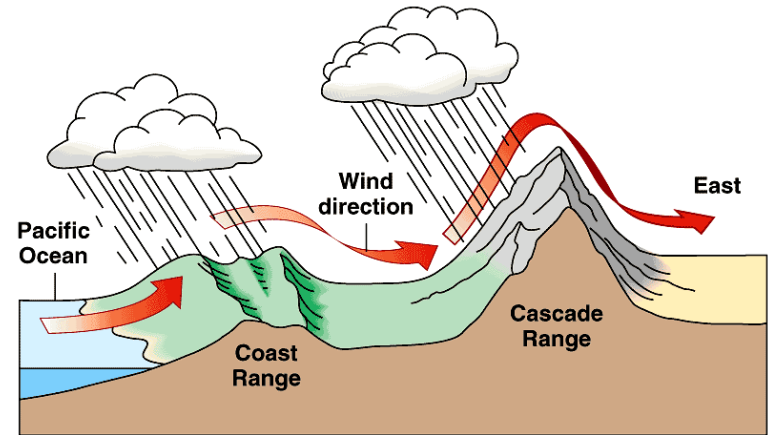
- California current along Oregon Coast (cool water)

Effect of Mountains

Effect of Altitude on biomes



Rainshadow effect



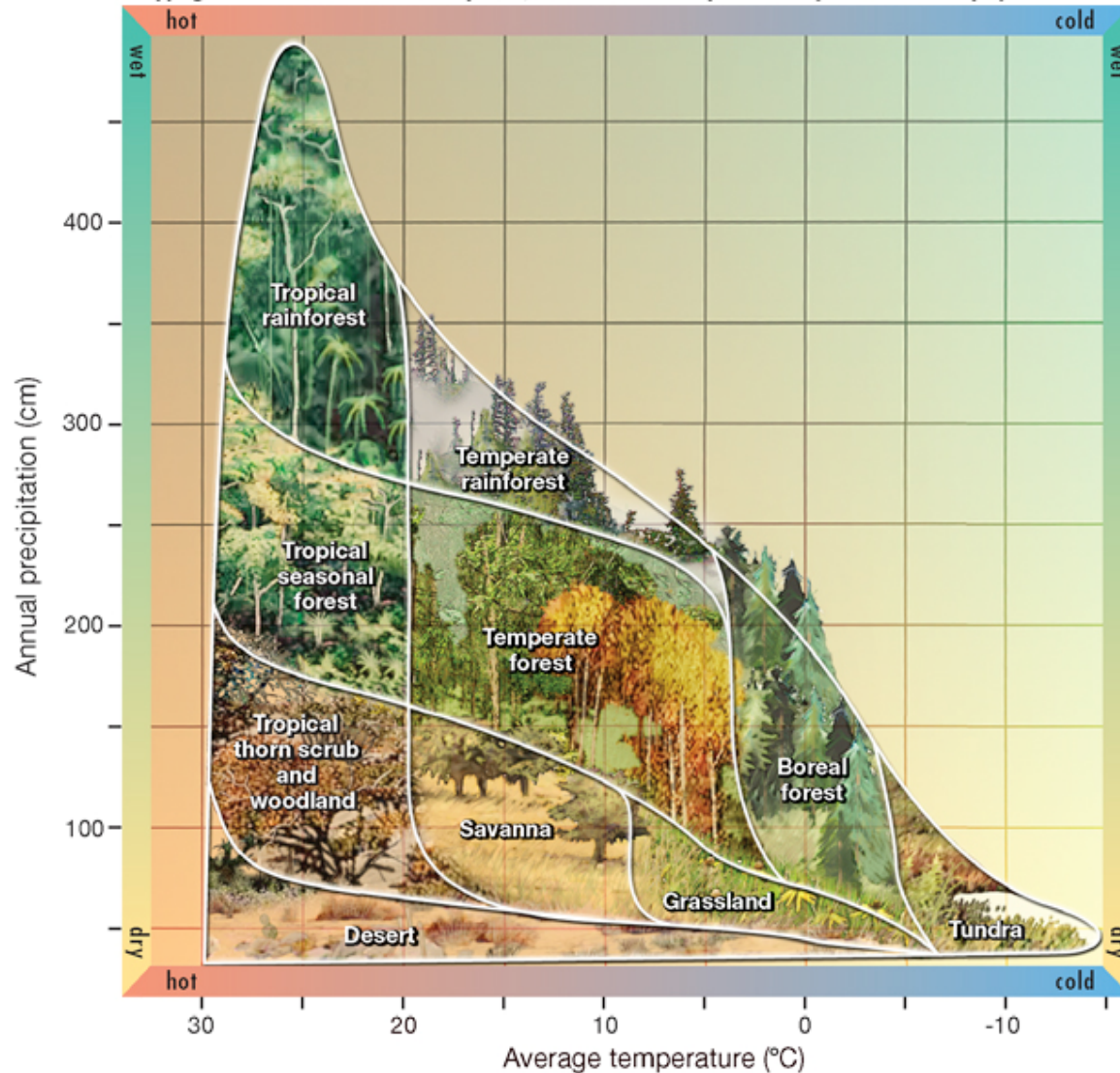
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Kamloops, British Columbia

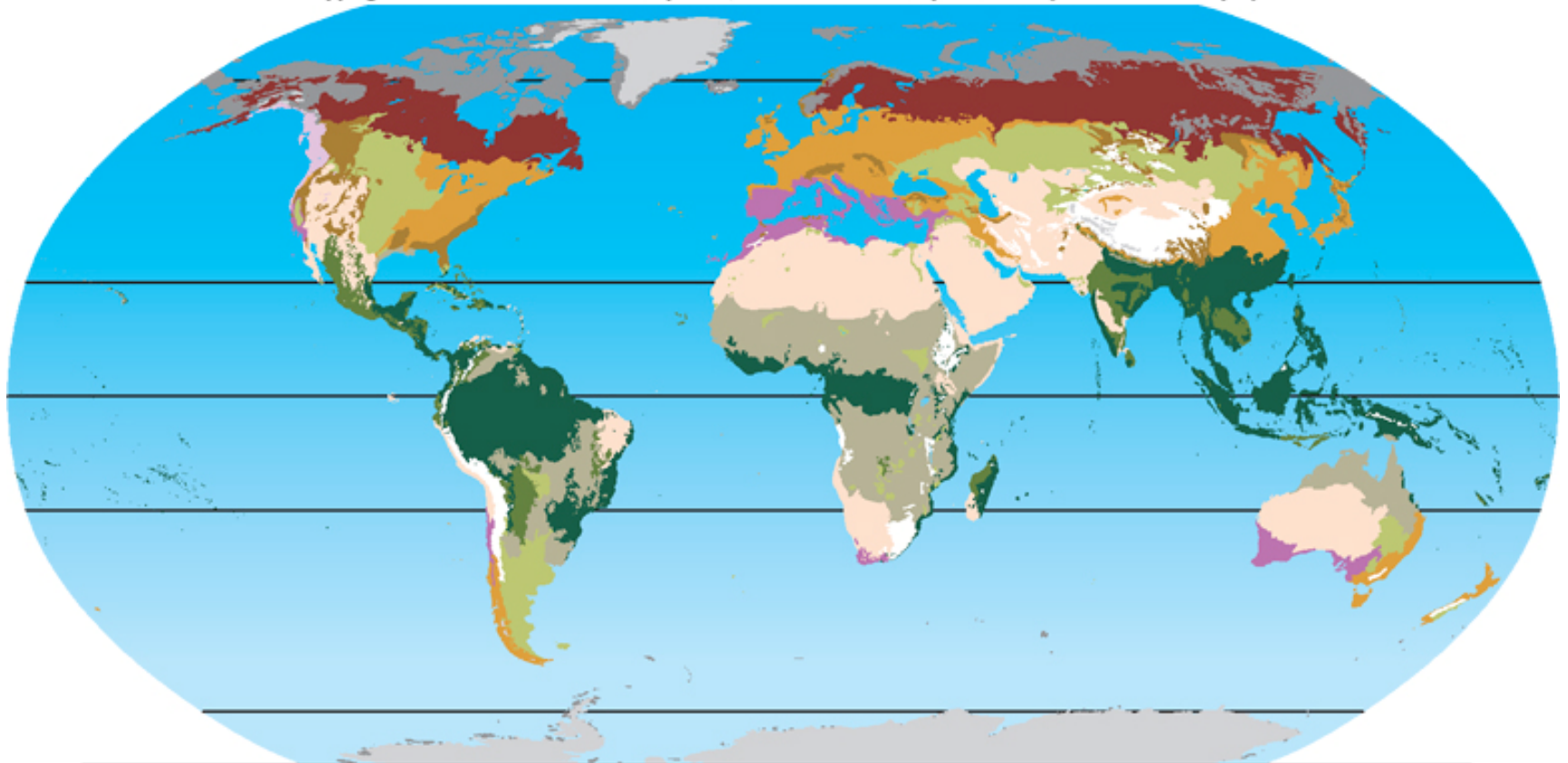
Rainfall & Temperature














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Location of Biomes

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 Tropical rainforest, subtropical moist forest	 Temperate rainforest	 Boreal forests
 Tropical and subtropical seasonal forests	 Temperate conifer forests	 Tundra
 Tropical grasslands and savannas	 Temperate broadleaf and mixed forests	 Rock and ice
 Deserts and dry shrublands	 Mediterranean woodlands and scrub	 Montane grasslands and shrublands
	 Temperate grasslands and savannas	

Terrestrial Biomes

Tundra

Alaska

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- Arctic tundra
- Layer of Permafrost (~1.5 ft below surface)
- Can have 24 h of daylight
- Avg below freezing temperatures

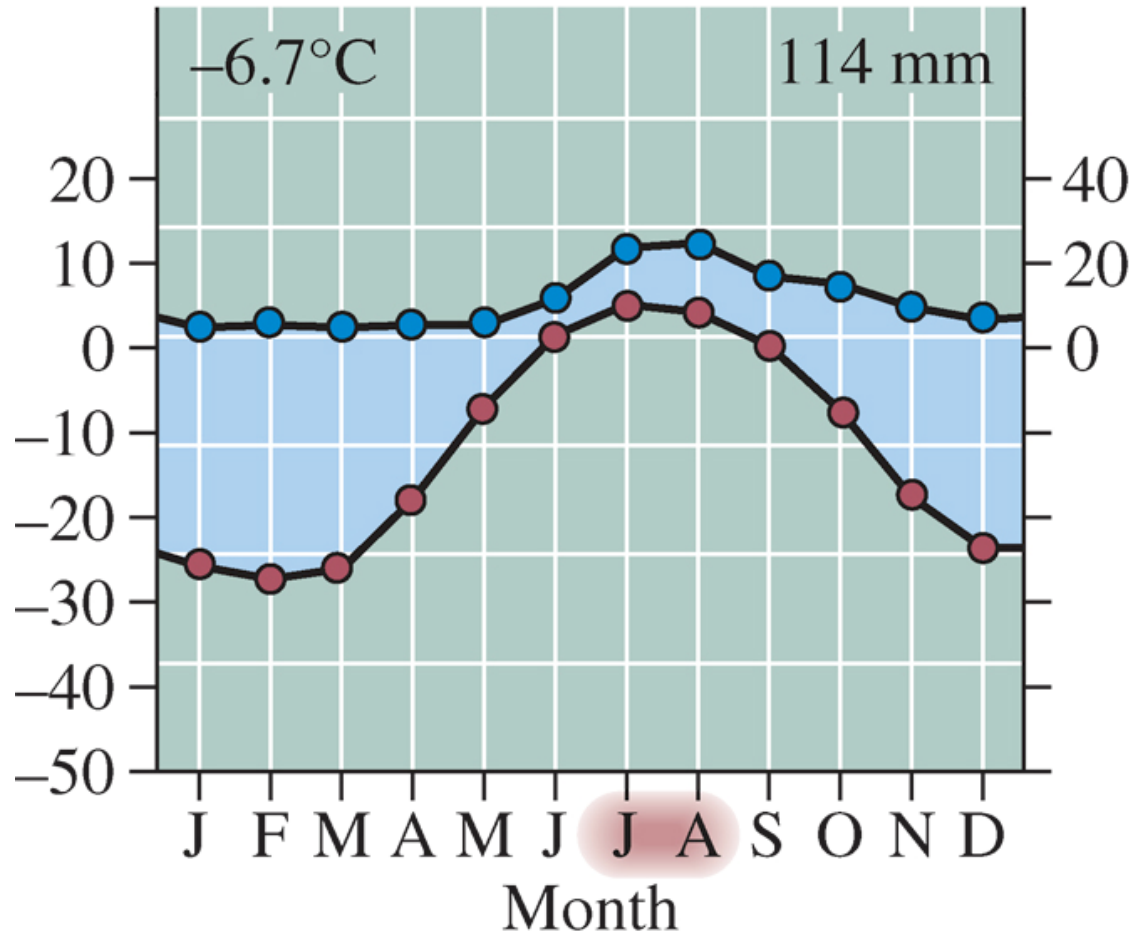
Beartooth Mtns, Montana



- Alpine tundra
- On top of Mountains
- Shorter daylengths
- Warmer summer temperatures

Tundra

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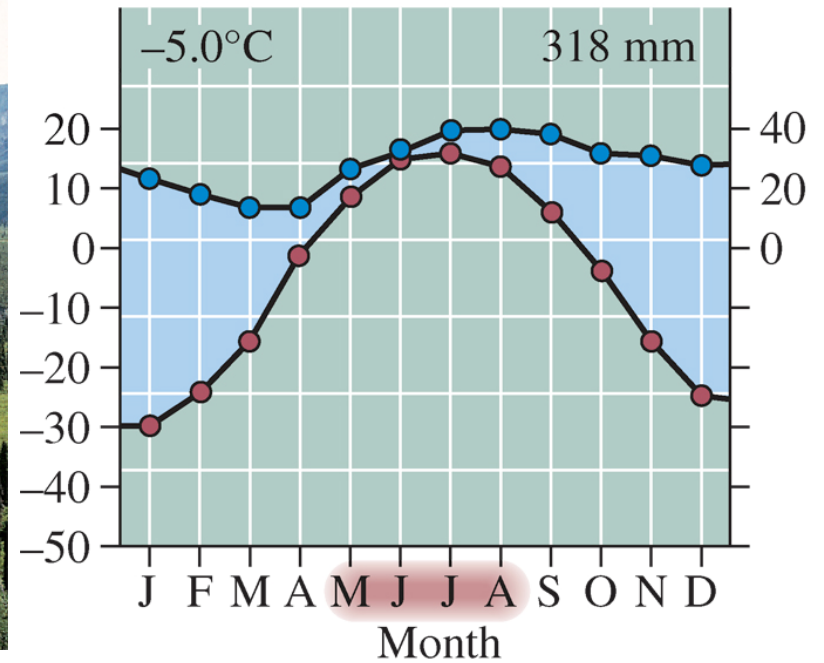
Taiga

- Scattered trees
- Short growing season
- Northern Coniferous Forest

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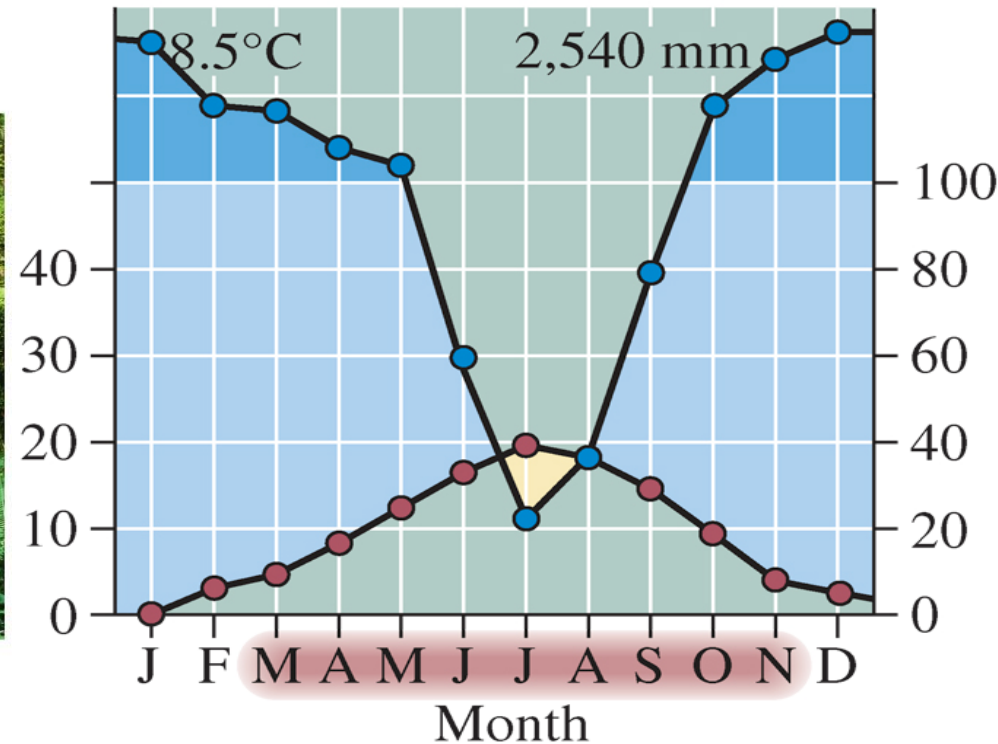


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Temperate Rain Forest

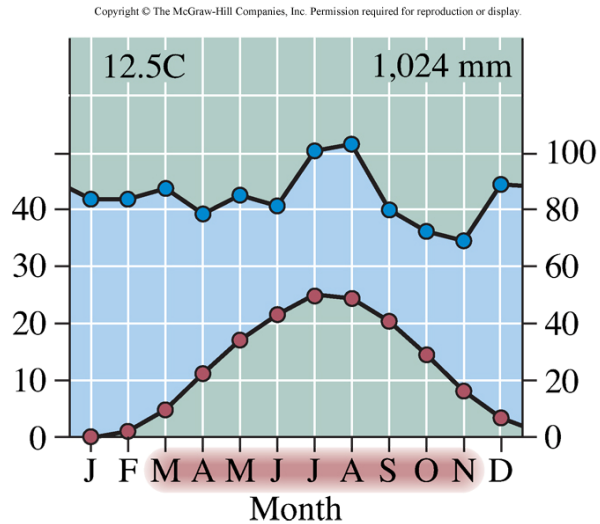
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- Hoh Rainforest, Olympic peninsula
- Receives on Avg 125 inches/yr rainfall

Temperate Deciduous Forest

Great Smokey Mtns

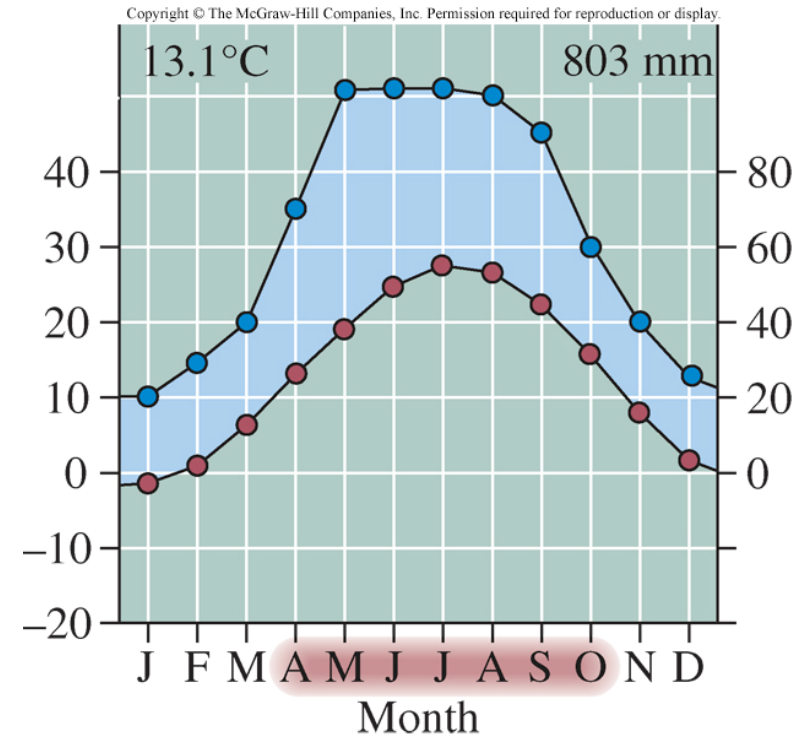


- Summer rain
- Freezing temp during winter
- Lose leaves due to freezing damage



Rocky Mtns

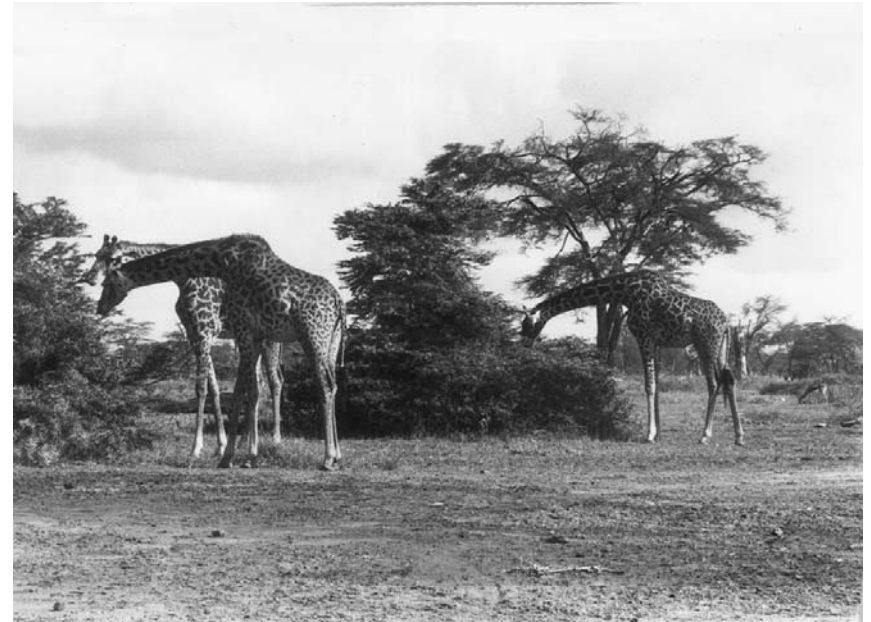
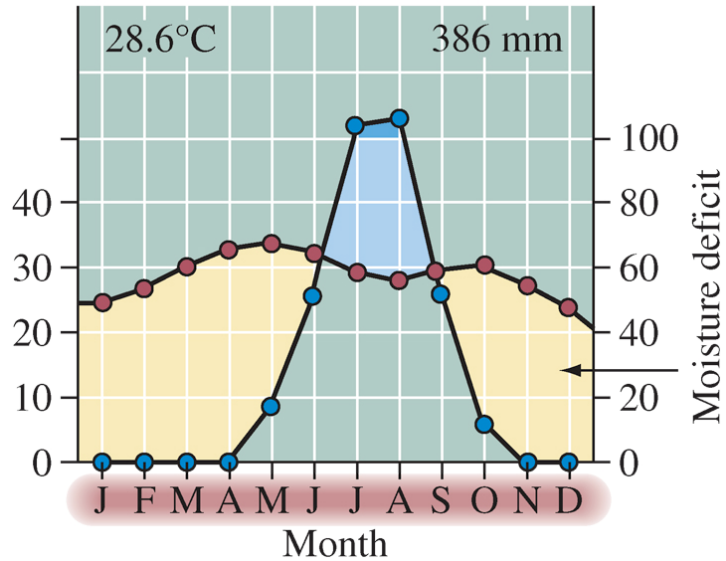
Grassland



- Low Rainfall
- Fire and herbivores play a role in maintaining grassland
- Short and Long grass prairie

Savanna

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Grassland with scattered trees
Low rainfall
Seasonal
Migrating animals

Chaparral

(Mediterranean Climate)



- Found on west coast of continents
- Hot summers
- Cool wet winters
- Usually above freezing temperatures
- Shrubs

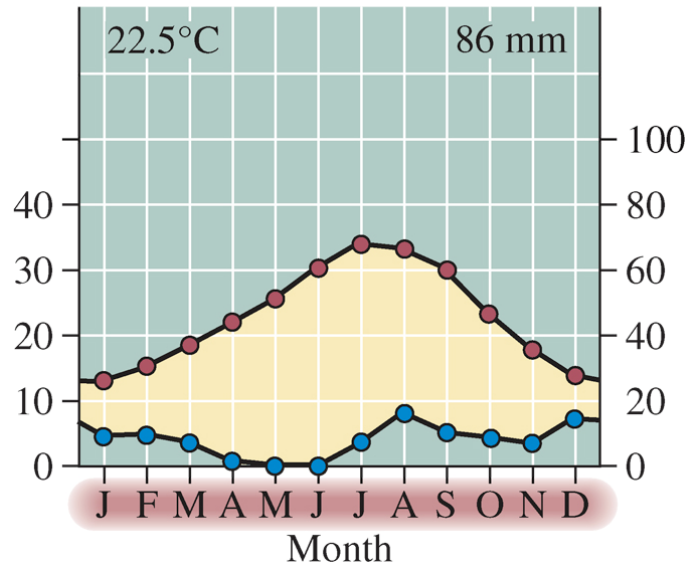
Desert

- Less than 10 inches of rainfall/yr
- Low productivity
- Cold vs warm desert

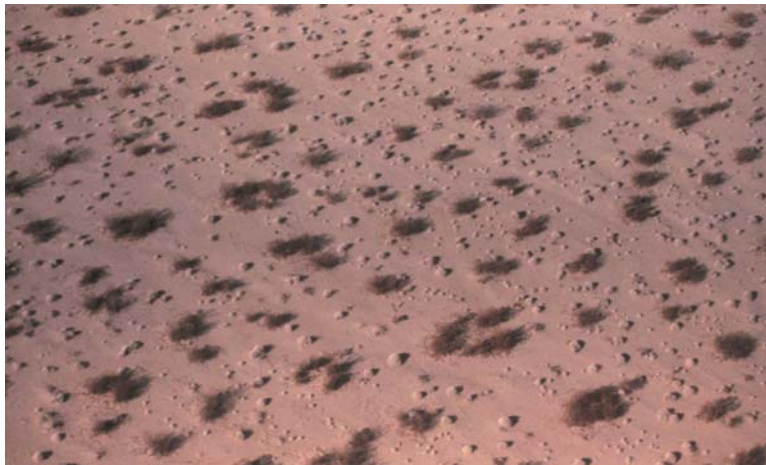
Mojave Desert-Cold Desert



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Warm Desert

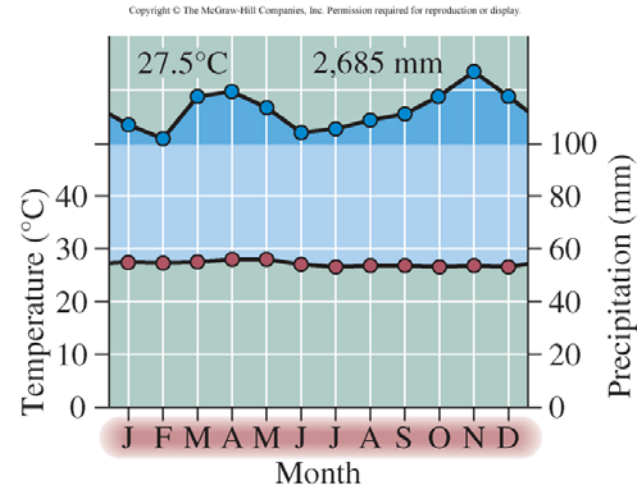


Redwood Forest



- Along California coast
- Summer fog

Tropical Rain Forests



Tropical Rain Forests

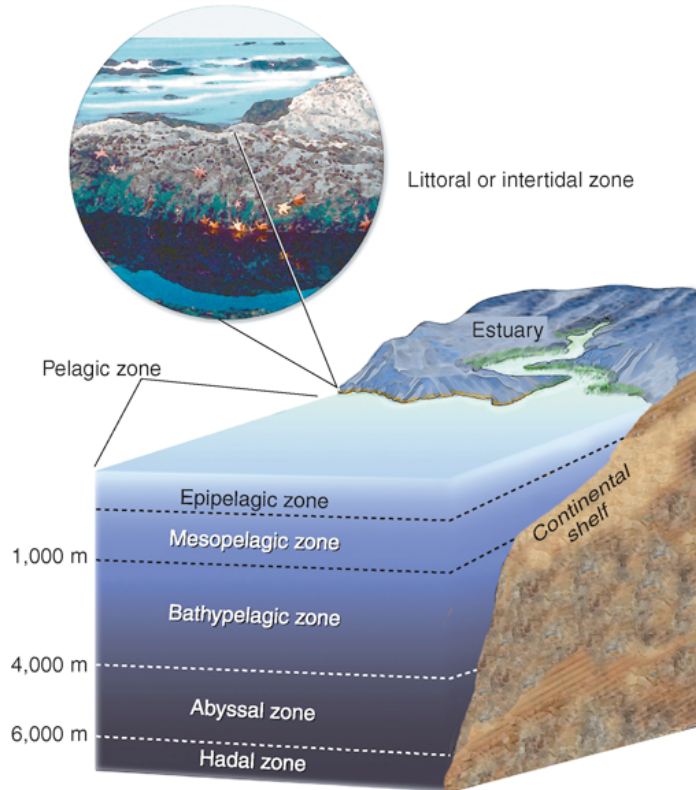


Understory

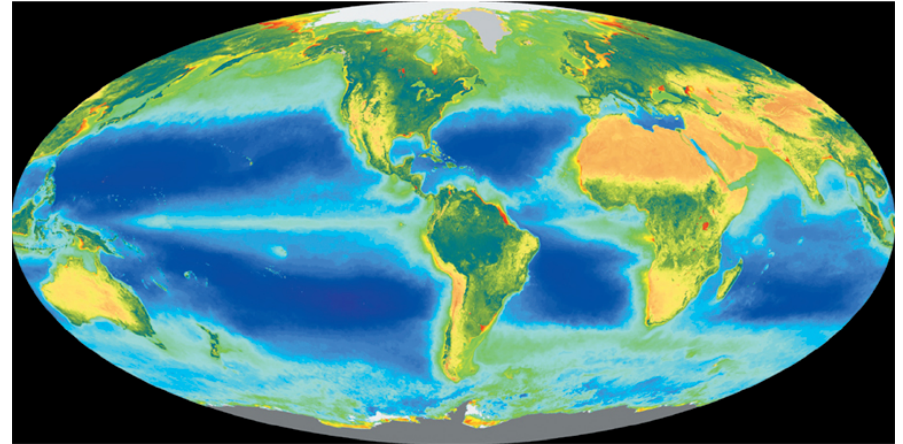


Marine biomes

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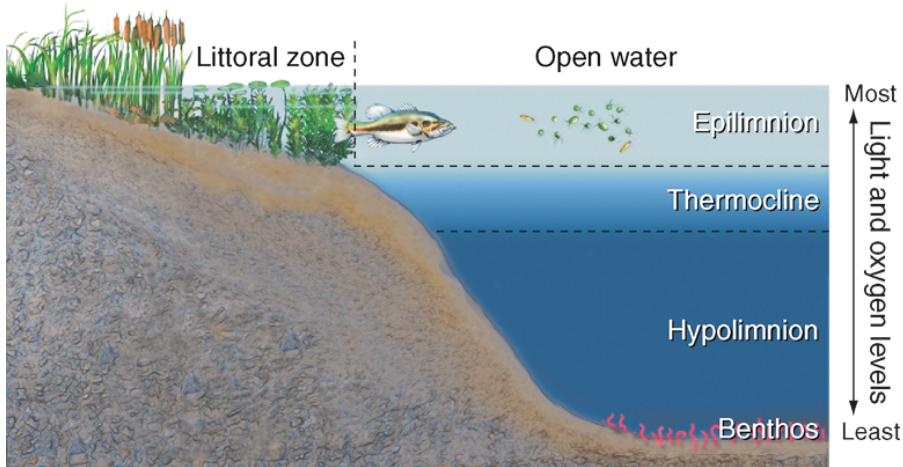


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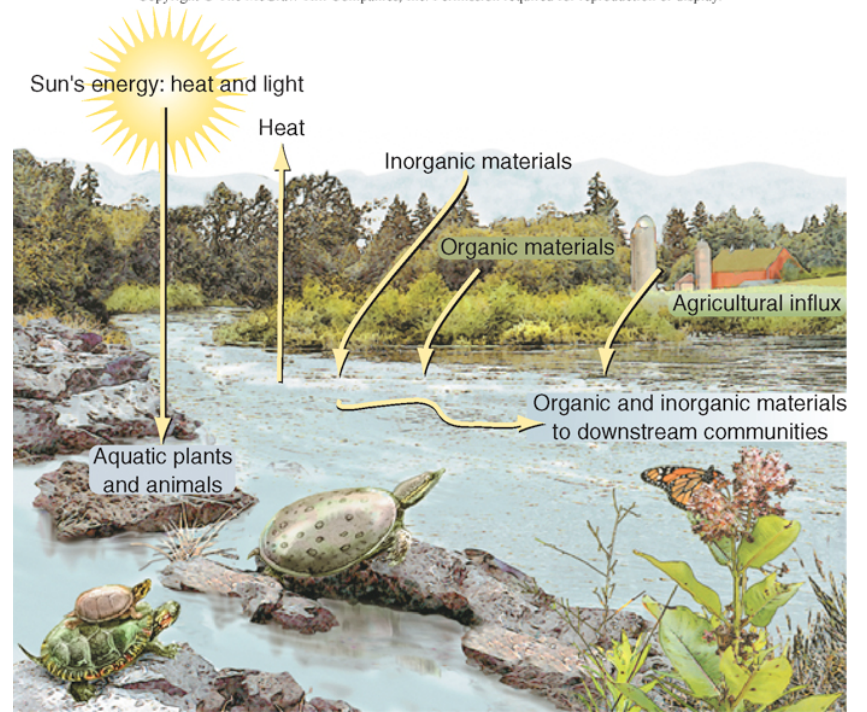


Freshwater

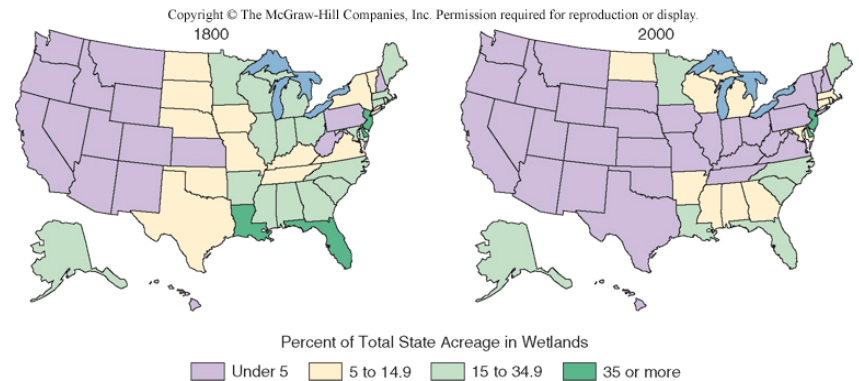
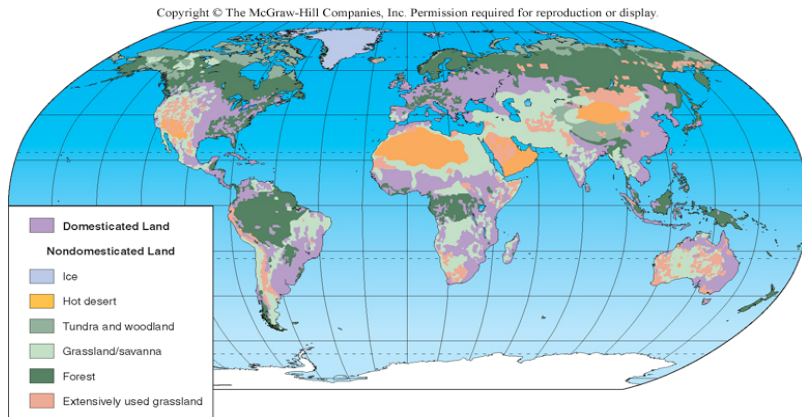
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Human Disturbance



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TABLE 5.1

Human Disturbance

Biome	Total Area (10^6 km^2)	% Undisturbed Habitat	% Human Dominated
Temperate broad-leaf forests	9.5	6.1	81.9
Chaparral	6.6	6.4	67.8
Temperate grasslands	12.1	27.6	40.4
Temperate rainforests	4.2	33.0	46.1
Tropical dry forests	19.5	30.5	45.9
Mixed mountain systems	12.1	29.3	25.6
Mixed island systems	3.2	46.6	41.8
Cold deserts/semideserts	10.9	45.4	8.5
Warm deserts/semideserts	29.2	55.8	12.2
Moist tropical forests	11.8	63.2	24.9
Tropical grasslands	4.8	74.0	4.7
Temperate coniferous forests	18.8	81.7	11.8
Tundra and arctic desert	20.6	99.3	0.3

Note: Where undisturbed and human-dominated areas do not add up to 100 percent, the difference represents partially disturbed lands.

Source: Hannah, Lee, et al., "Human Disturbance and Natural Habitat: A Biome Level Analysis of a Global Data Set," in *Biodiversity and Conservation*, 1995, Vol. 4:128-155.