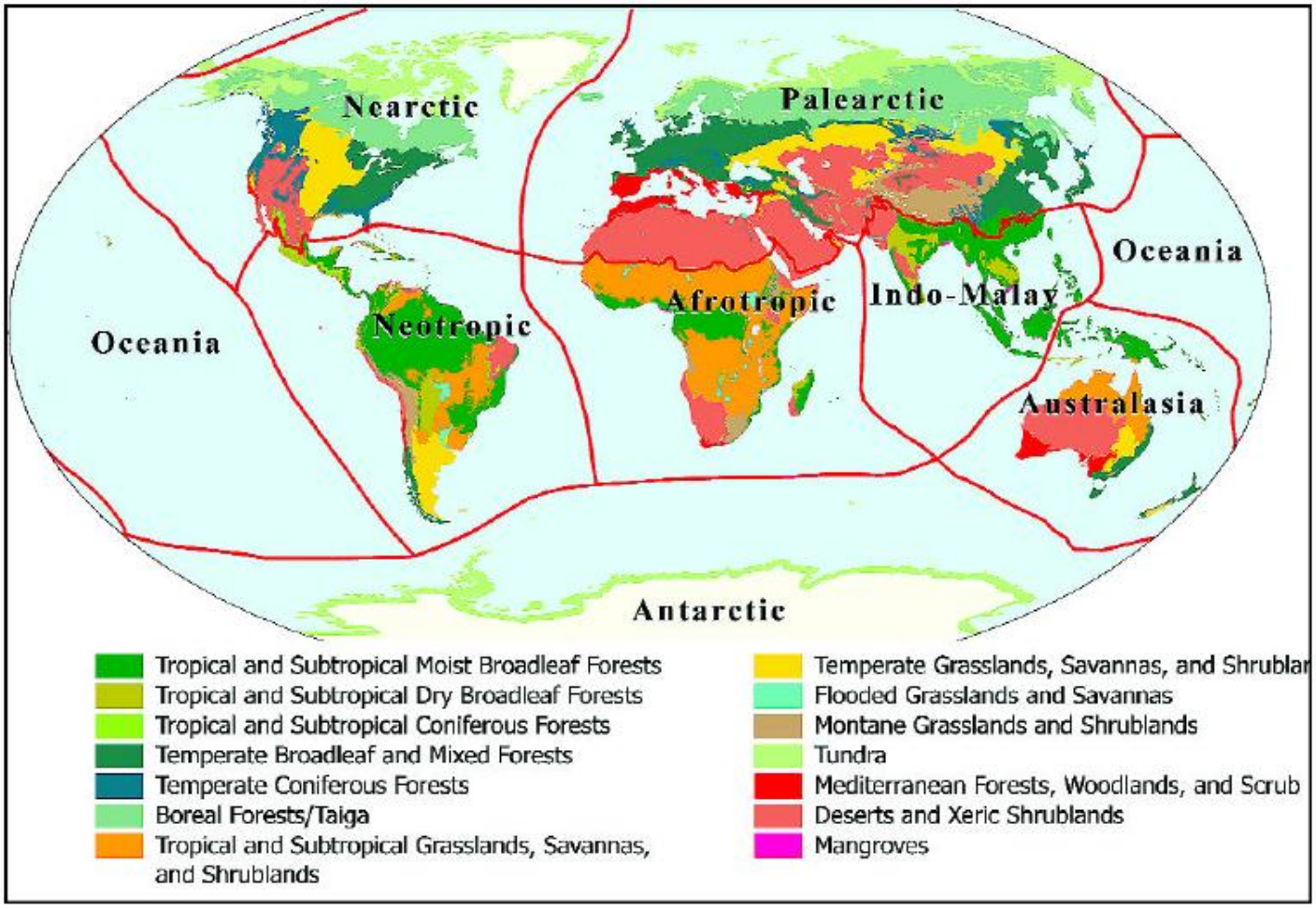
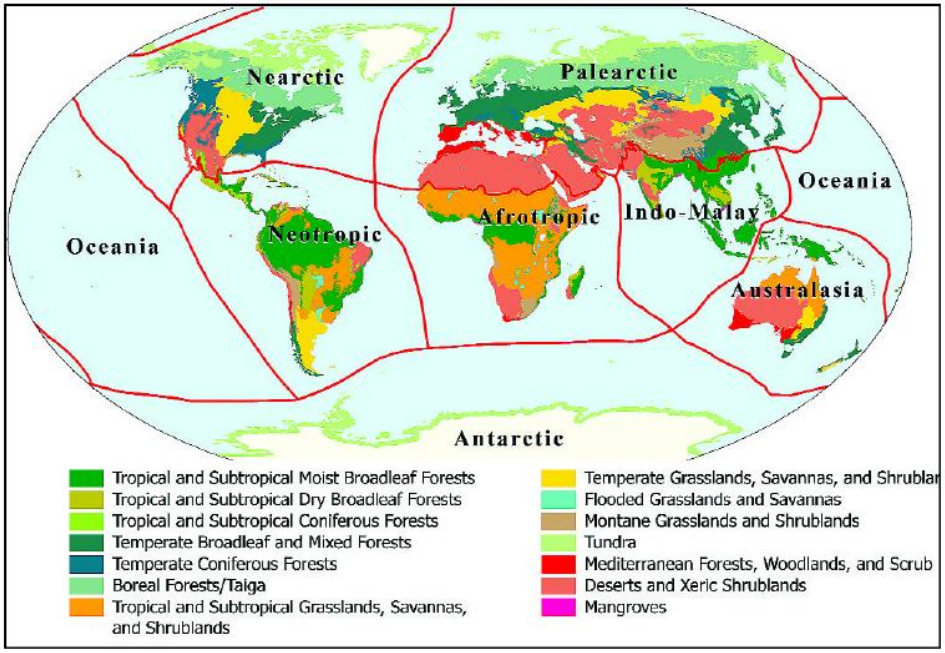
Jan 30 Terrestrial Forest Biomes of the World

World Wildlife Fund Terrestrial Biomes and Biogeographic Realms of the World



Olson et al. 2001

World Wildlife Fund Terrestrial Biomes and Biogeographic Realms of the World

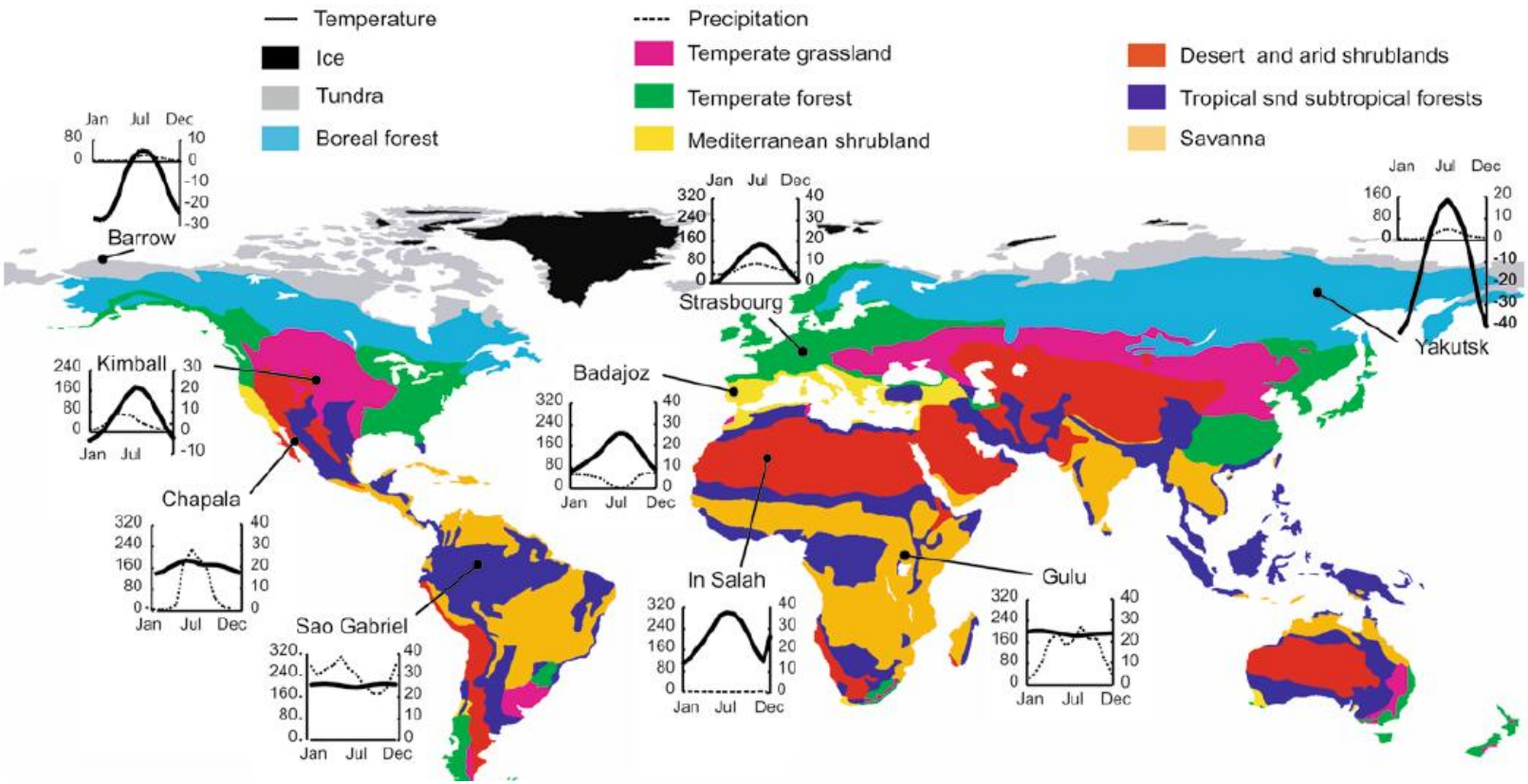


Biome - large-scale unit of vegetation defined by the physiognomy of dominant, climax vegetation.

Elements of physiognomy:

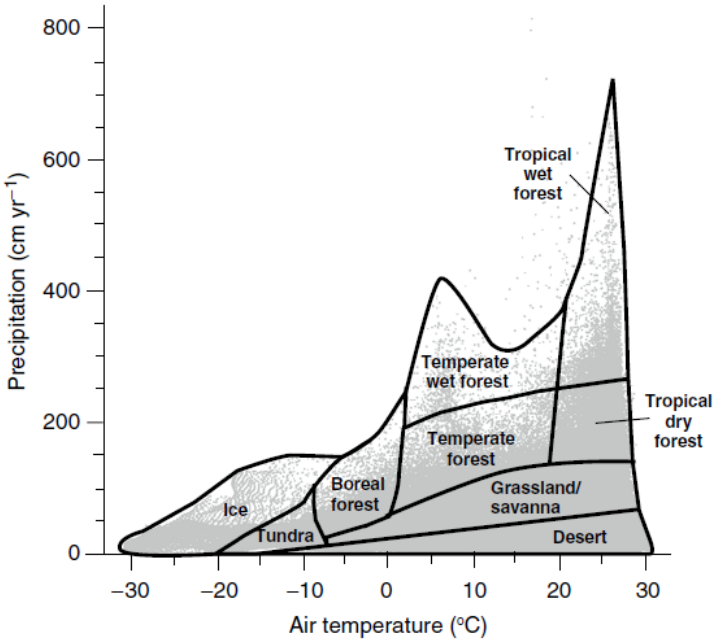
- **growth form (trees, shrubs, herbs);**
- **function (evergreen, deciduous);**
- **leaf morphology (needle-leaved, broad-leaved);**
- **plant spacing (forest, woodland, savanna).**

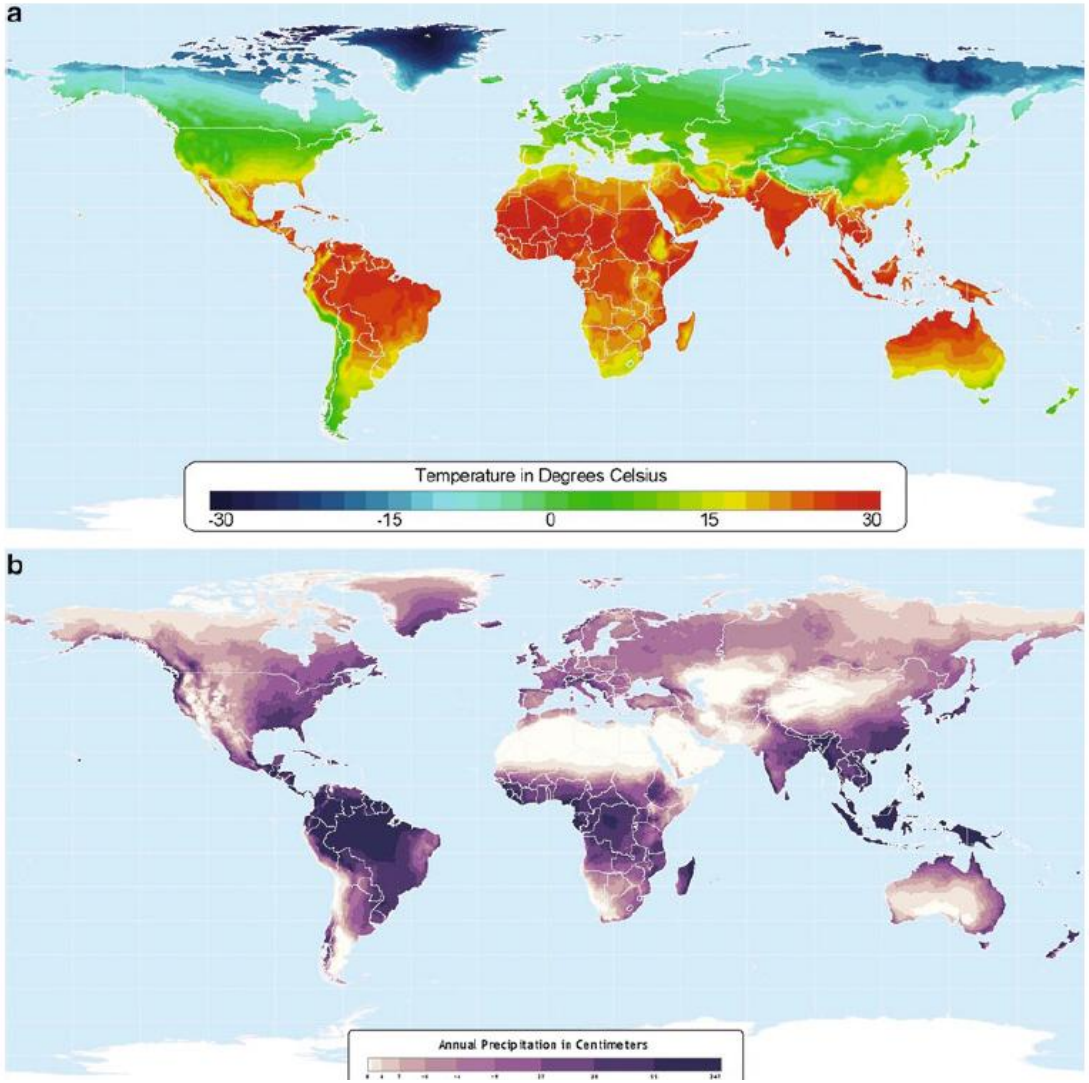
Terrestrial Forest Biomes of the World



Chapin et al. 2011. Fig 2.24

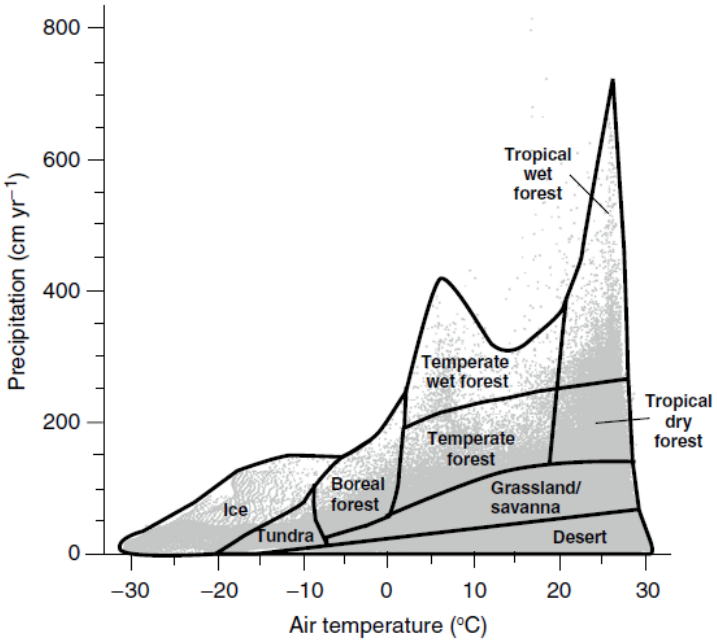
Climate Controls on Biomes

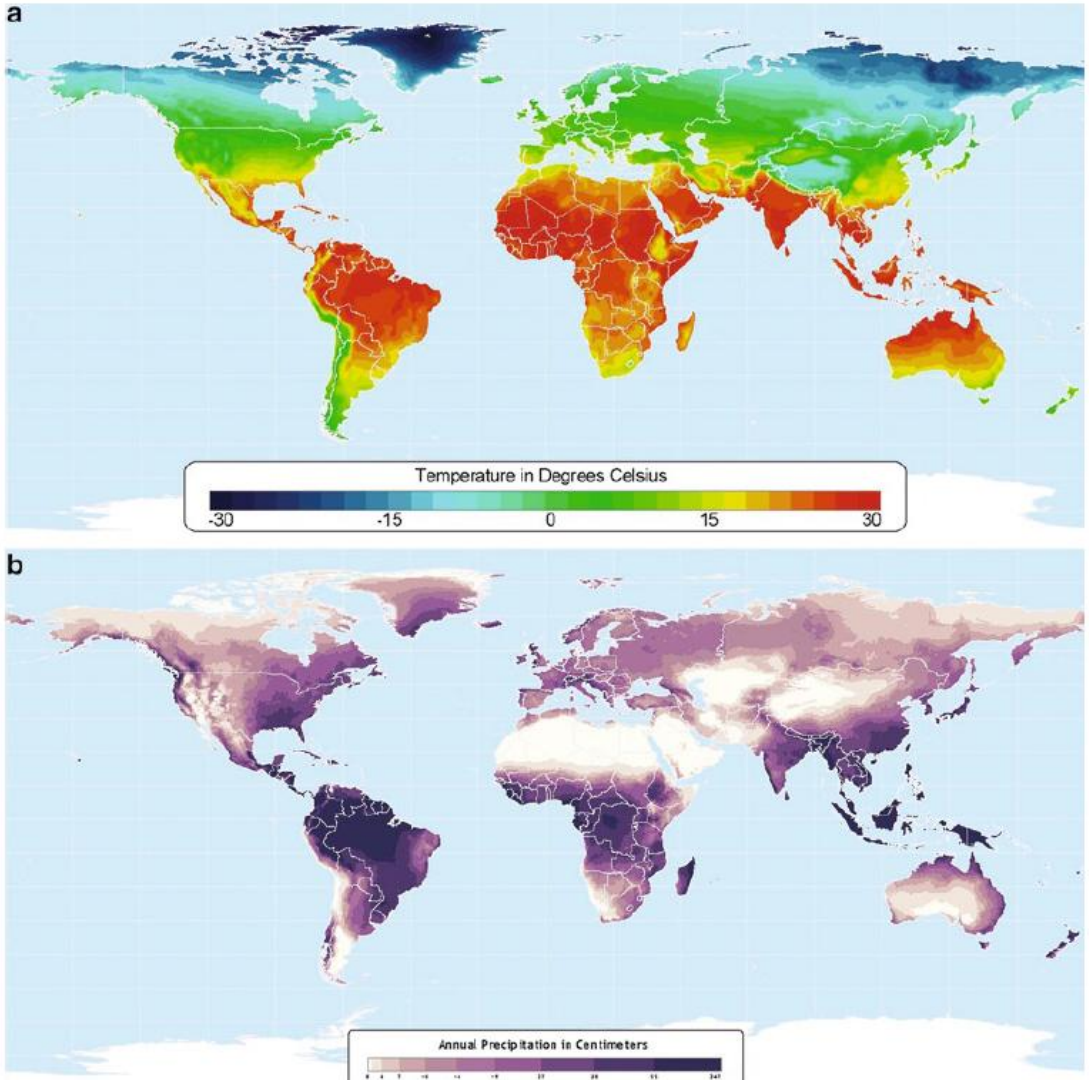




Chapin et al. 2011. Fig 2.23

Climate Controls on Biomes

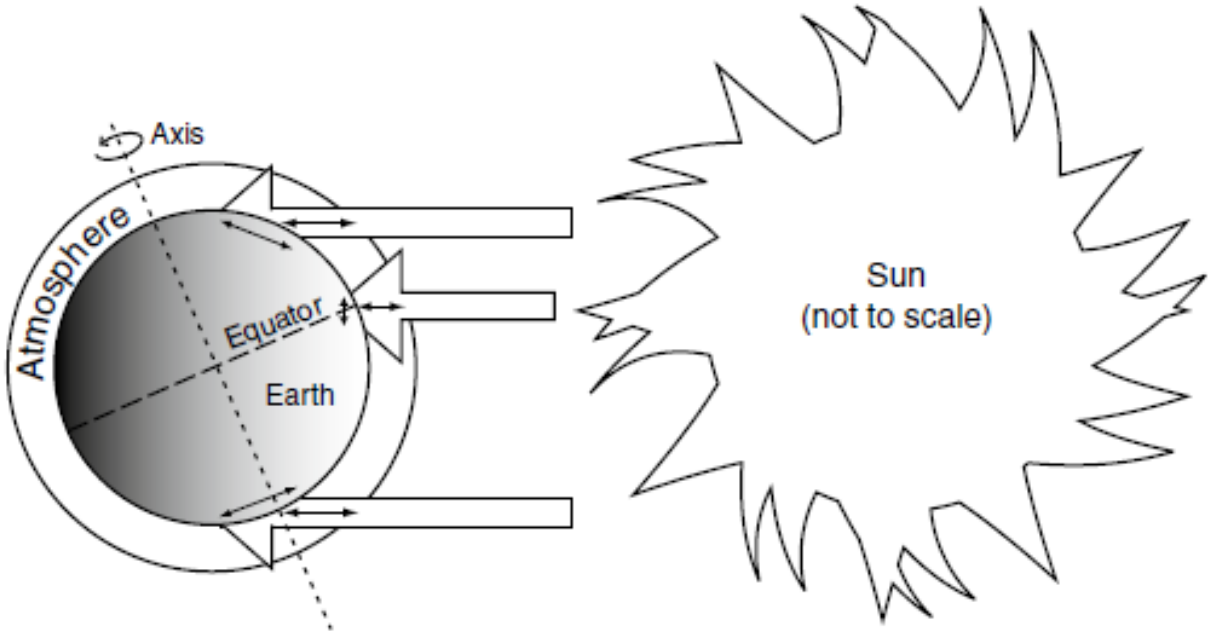




Biomes are predictable across the globe because climate varies predictably and plant lifeform, leaf type and spacing are all adaptations for coping with climate and related constraints.

Chapin et al. 2011. Fig 2.23

Climate Controls on Biomes: Atmospheric Circulation



Chapin et al. 2011. Fig 2.6

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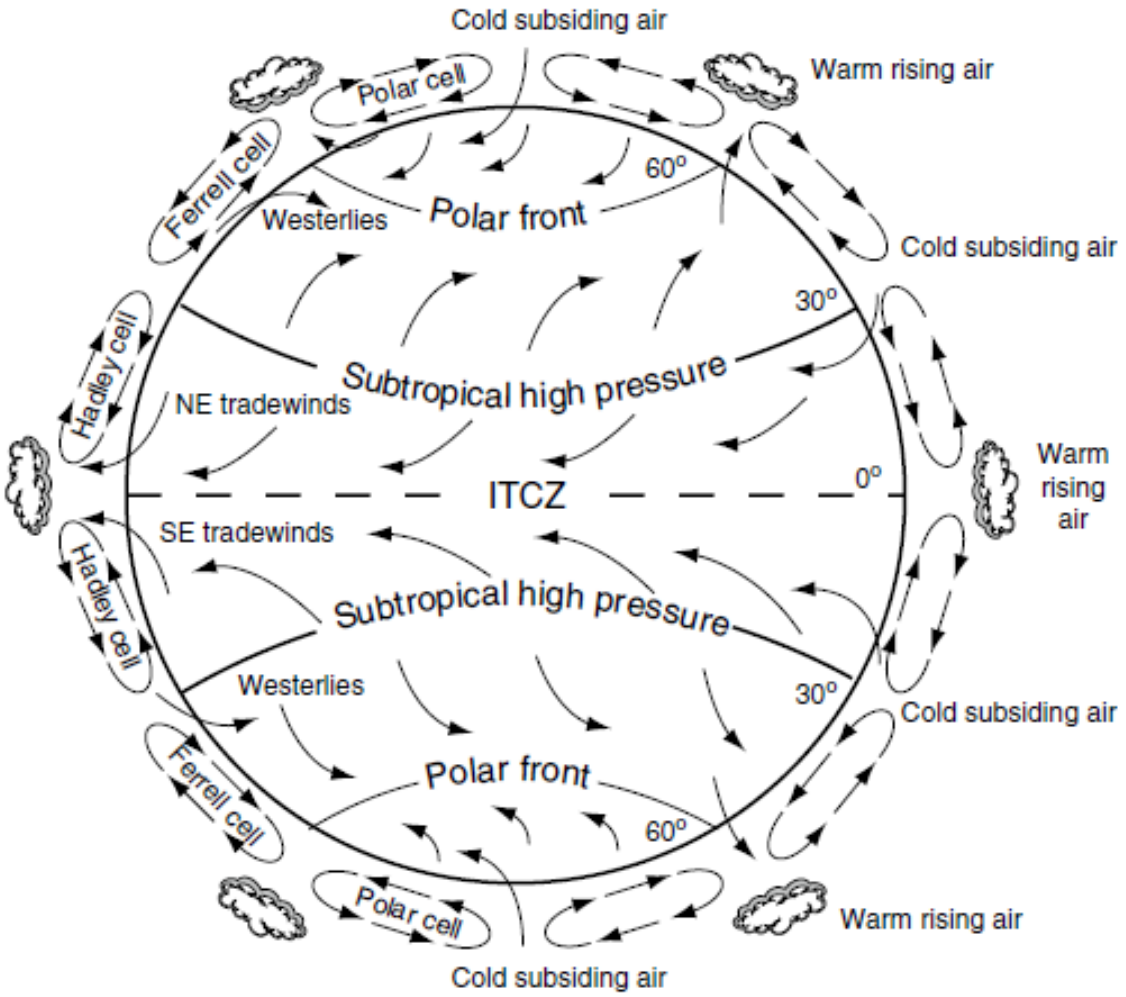
Climate Controls on Biomes: Atmospheric Circulation



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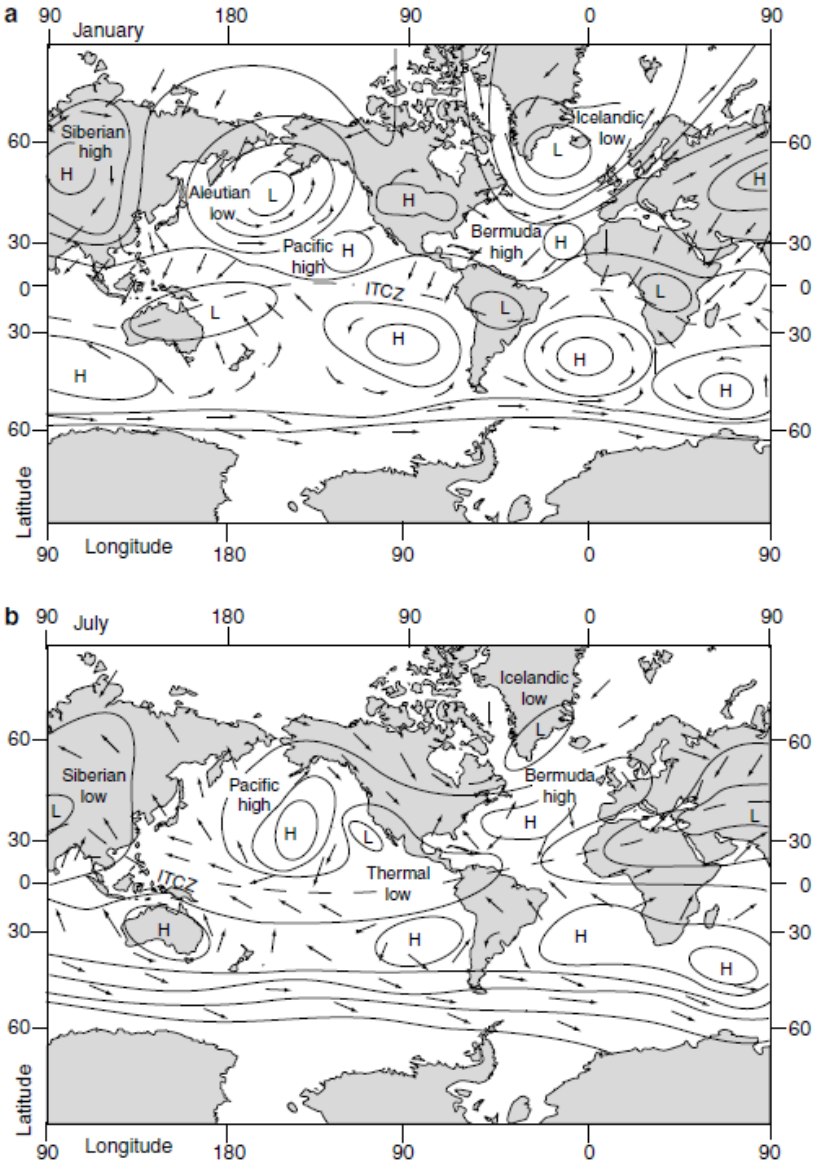
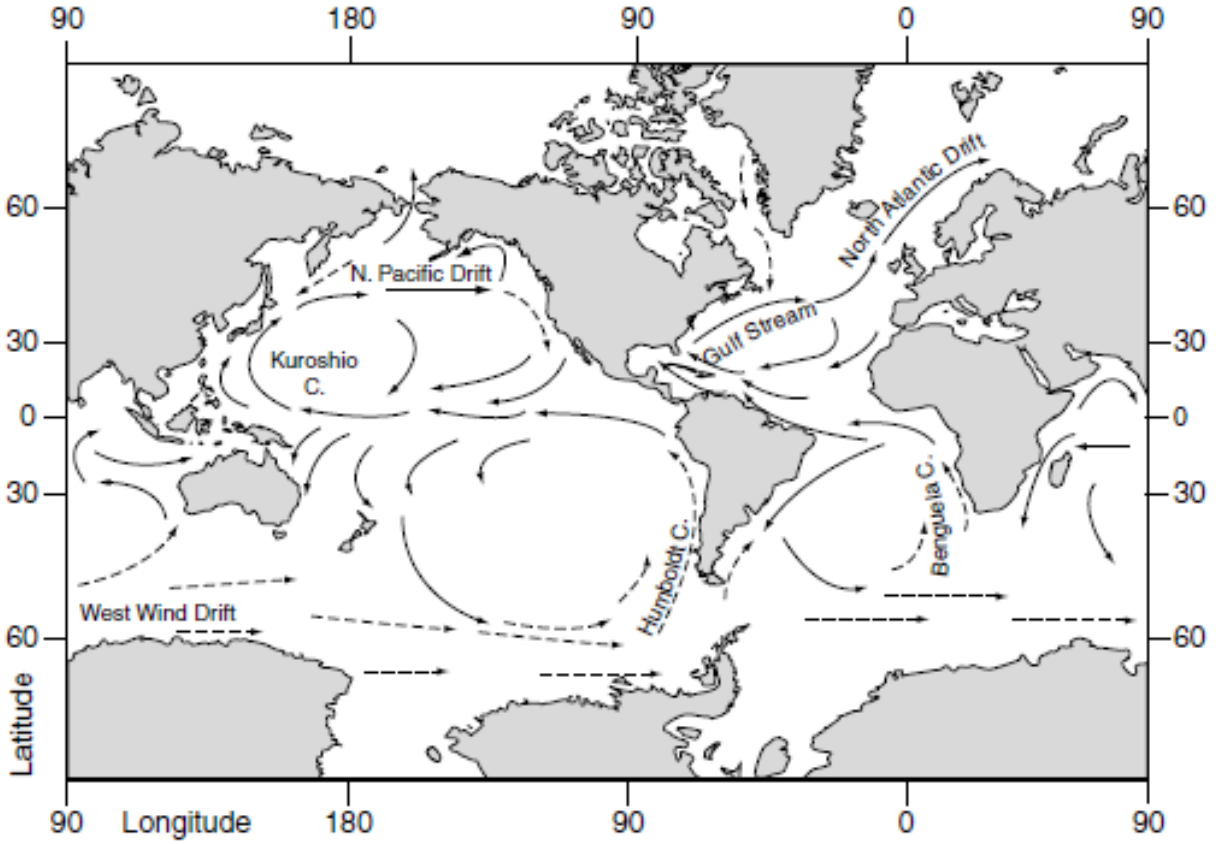
Chapin et al. 2011. Fig 2.8

Climate Controls on Biomes: Atmospheric Circulation



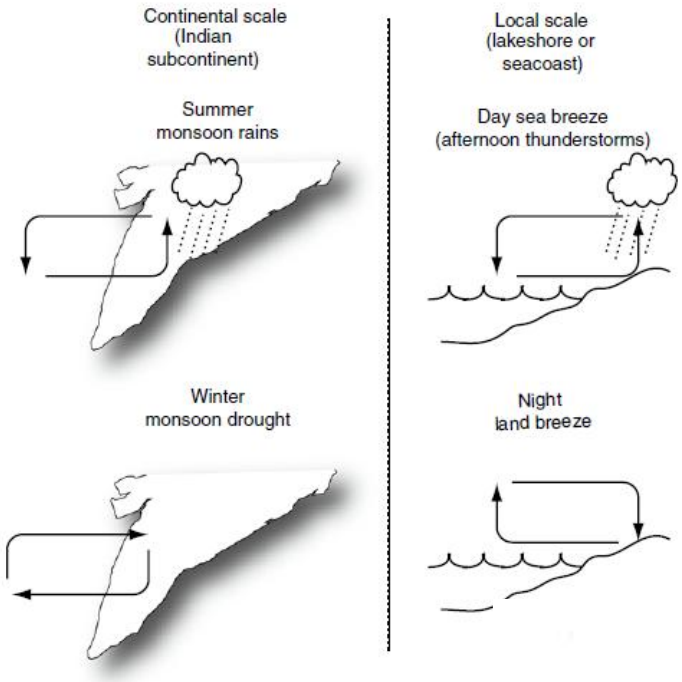
Chapin et al. 2011. Fig 2.9

Climate Controls on Biomes: Ocean Circulation



Chapin et al. 2011. Fig 2.9

Climate Controls on Biomes: Landform Effects



Chapin et al. 2011. Fig 2.9

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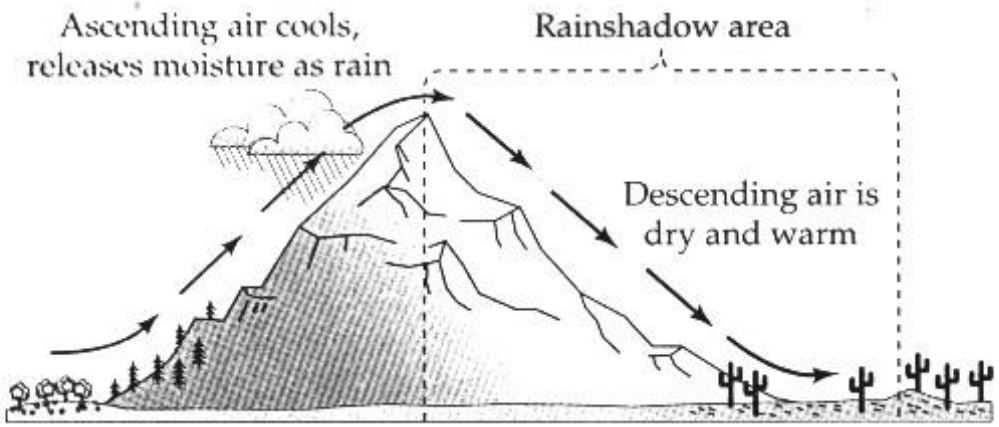
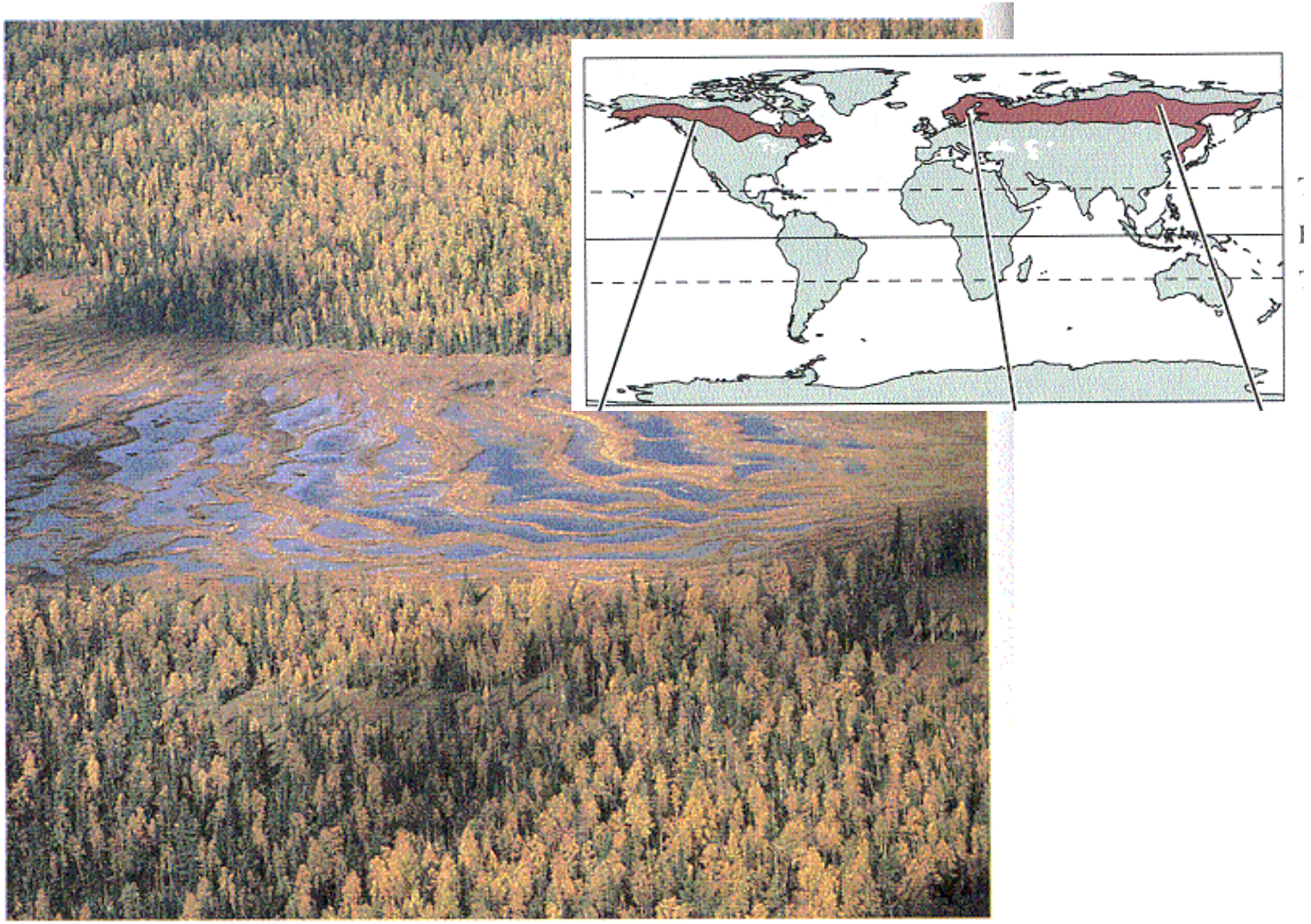
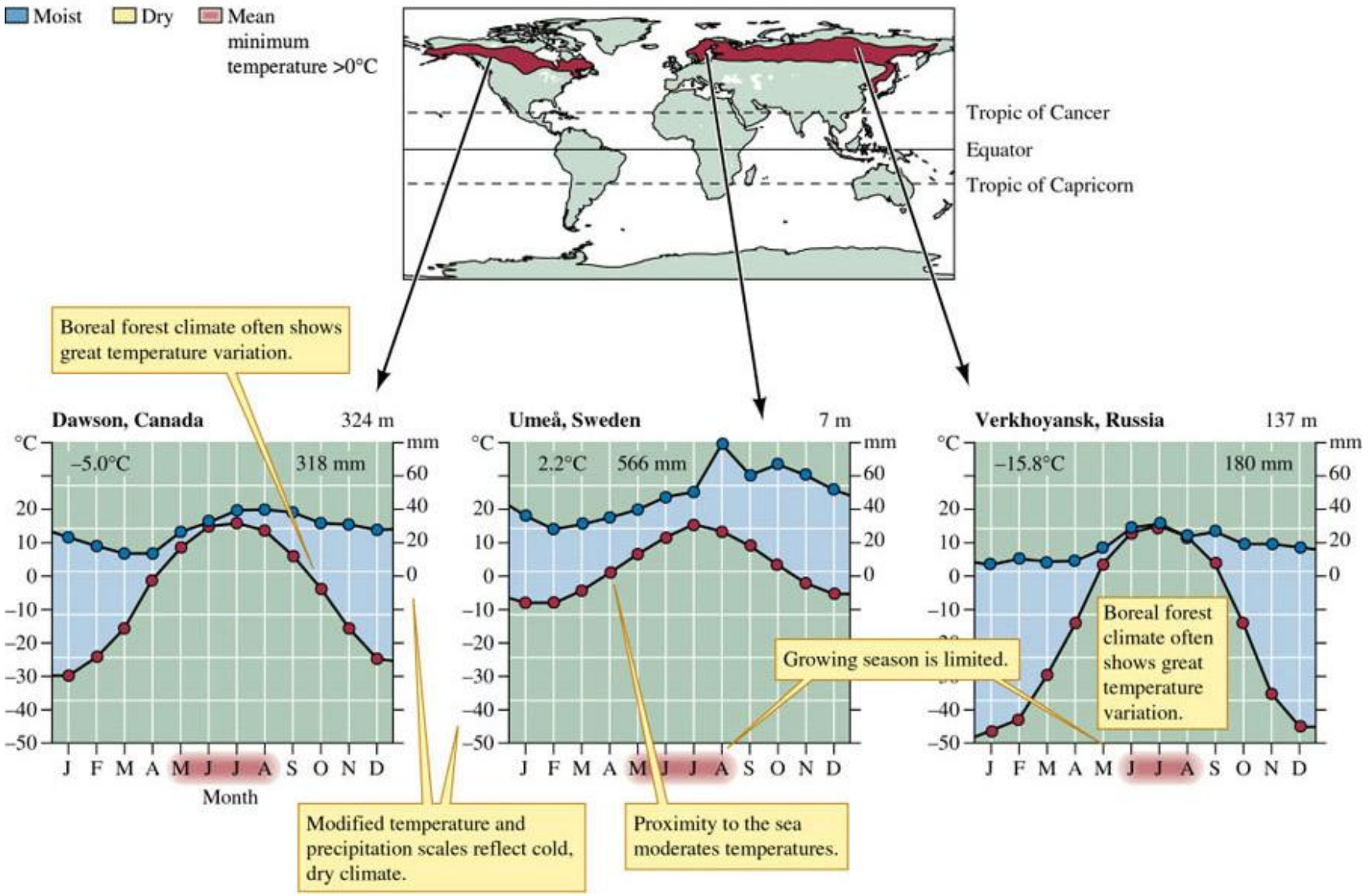
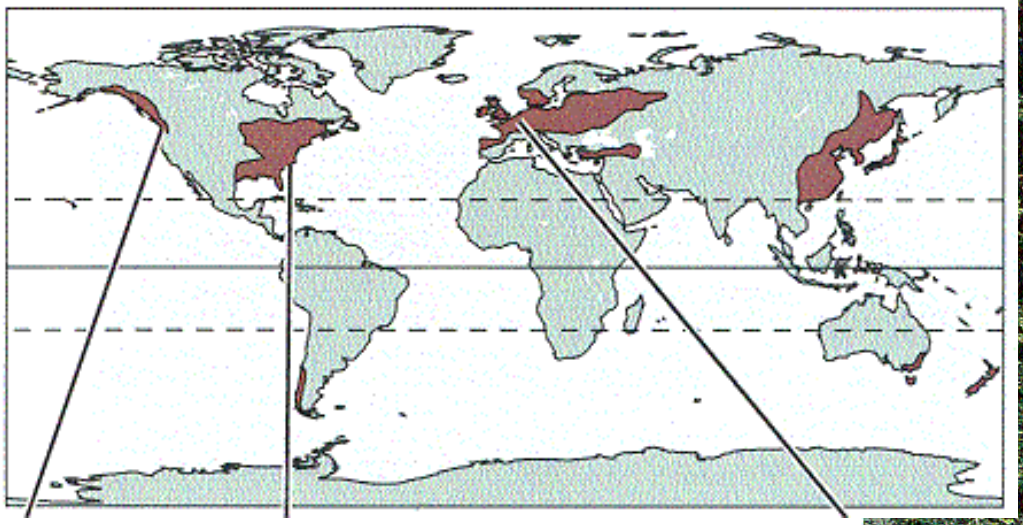




Boreal Forest

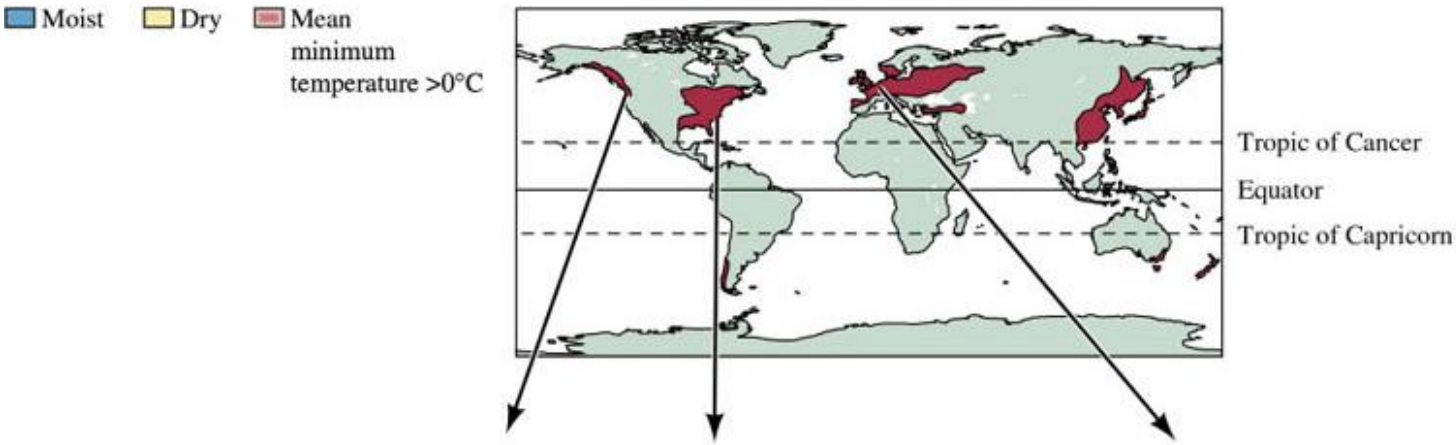
Boreal Forest (Taiga)





Temperate Forest

Temperate Forest



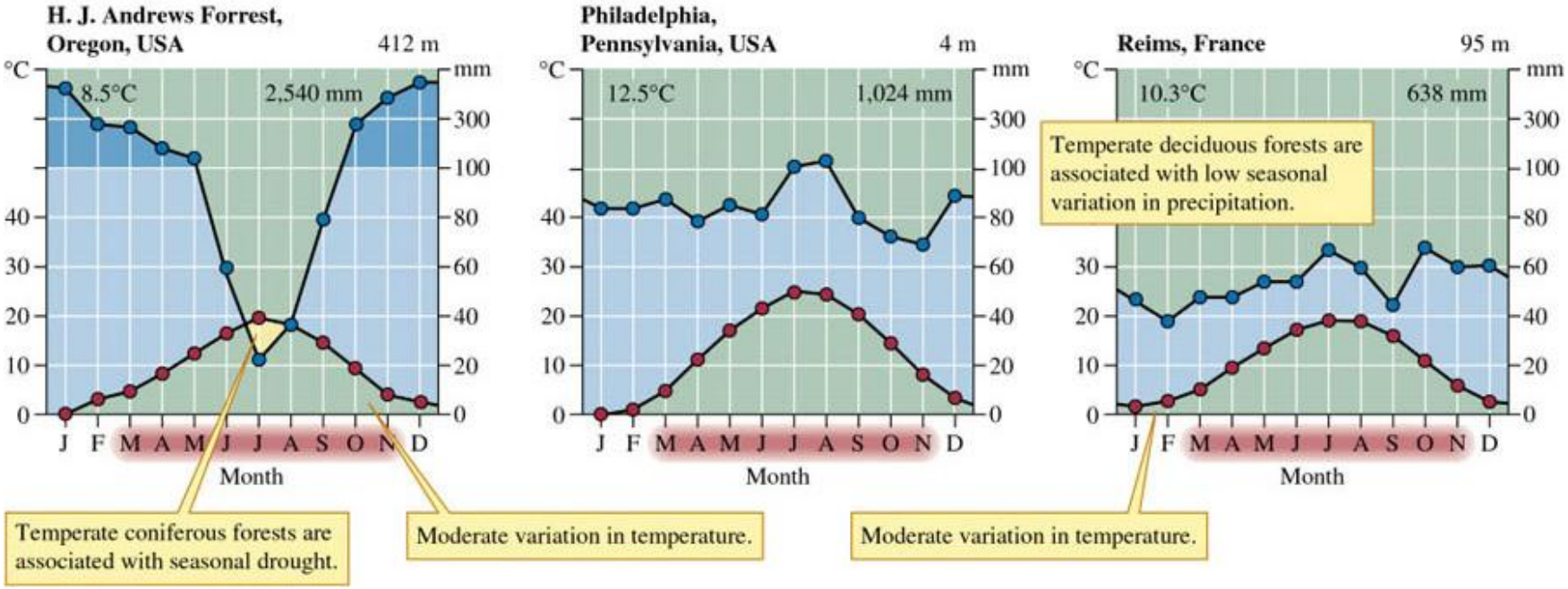
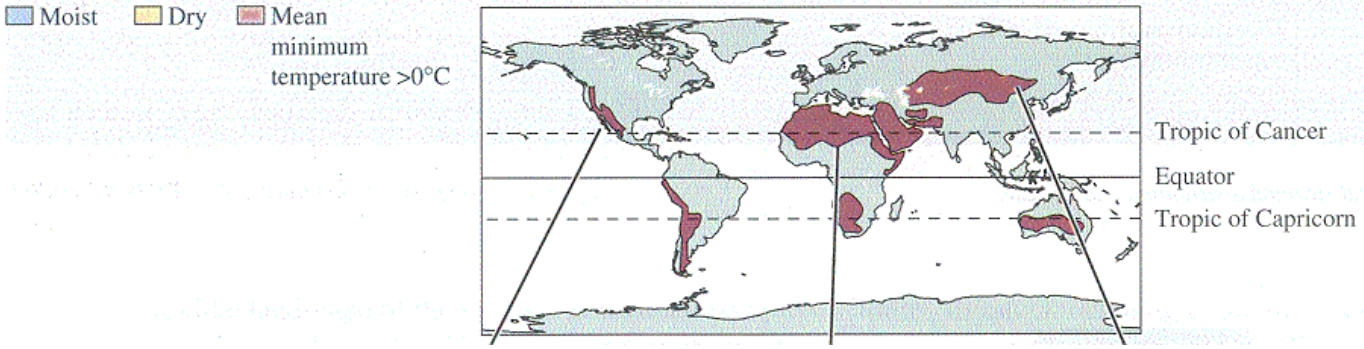
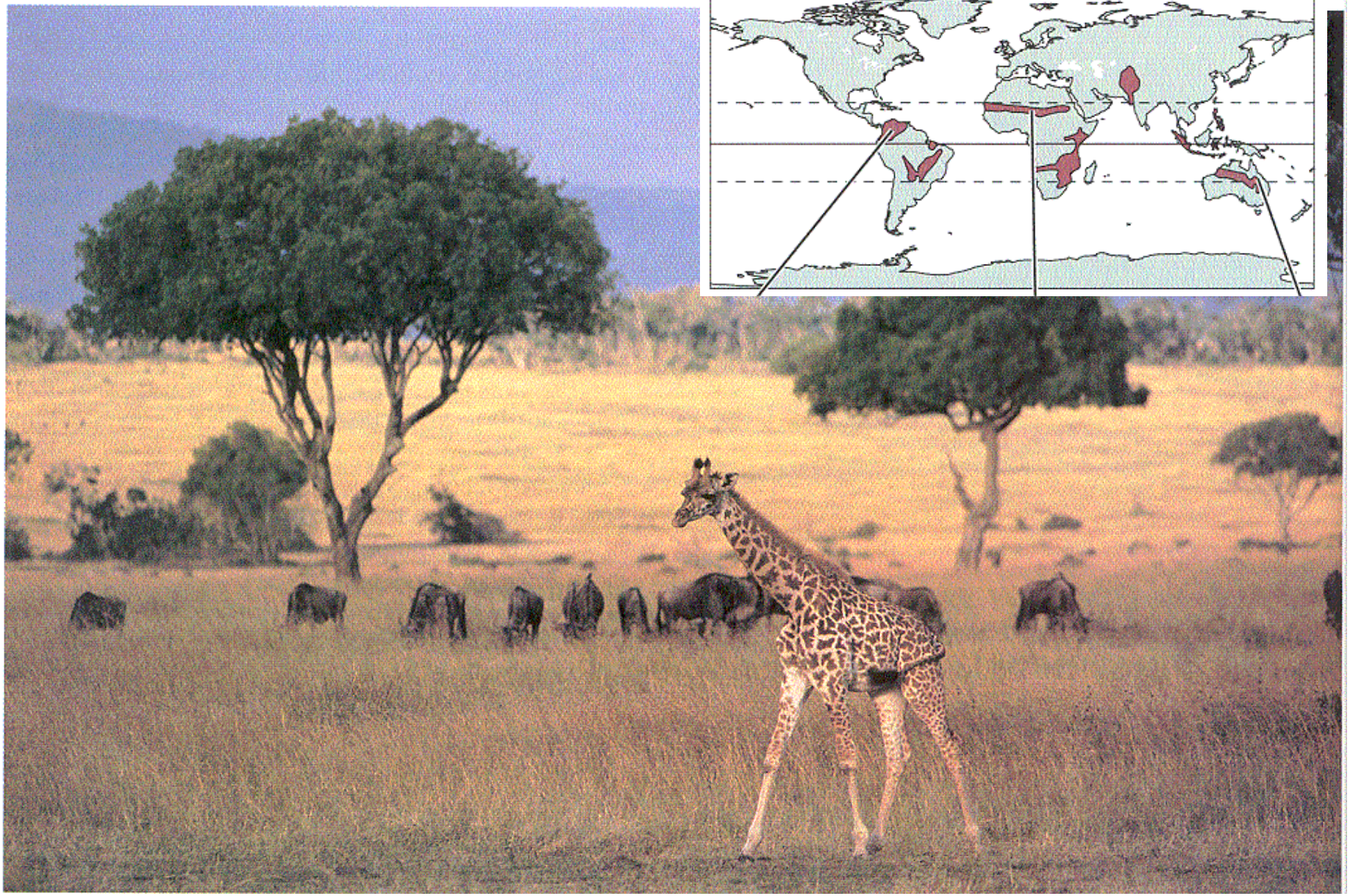


FIGURE 2.18 *Life on the edge. Two dormant acacia trees living on the boundary of a gravel plain and sand dunes in the Namib Desert of southwestern Africa.*

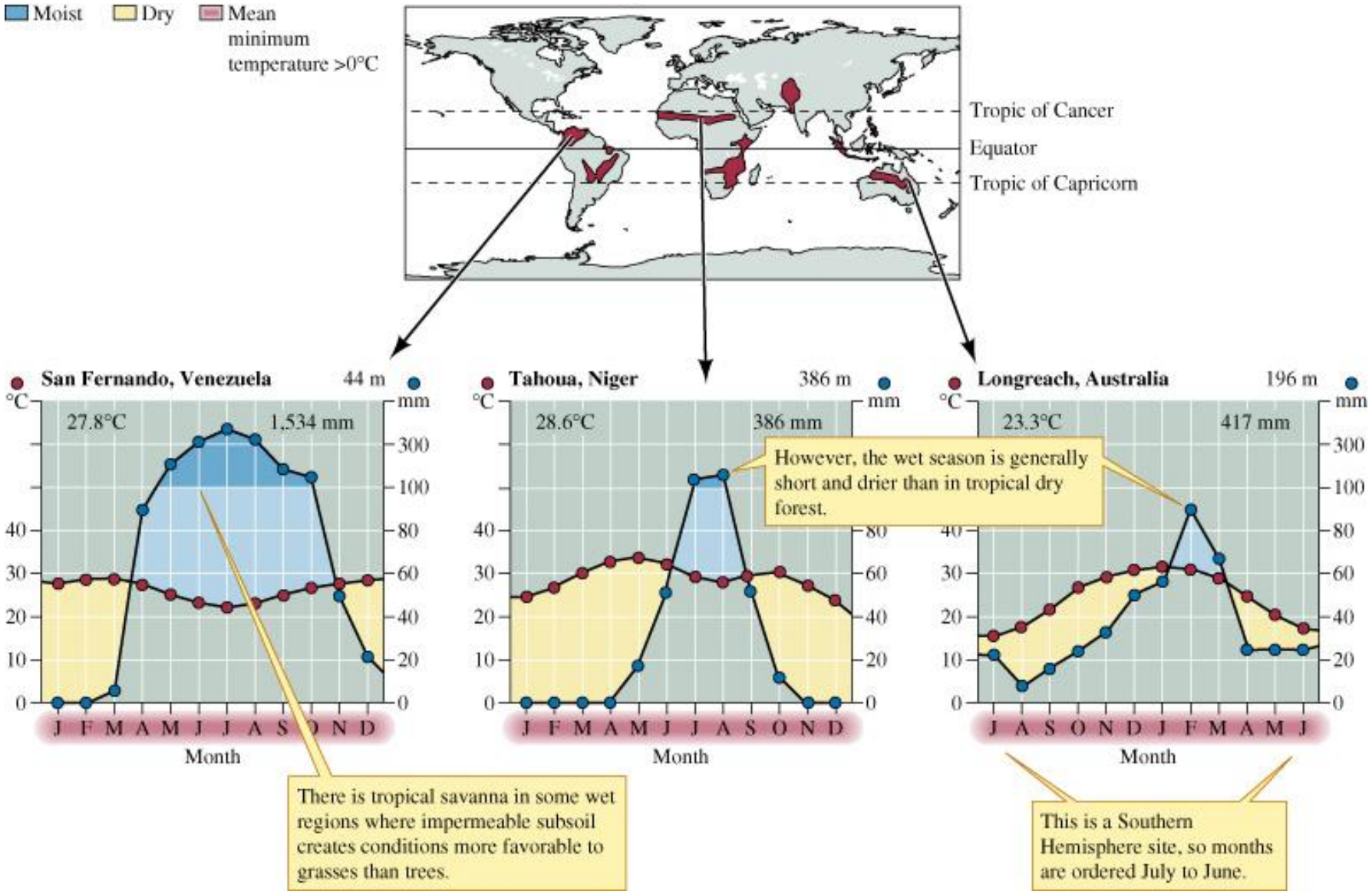


Desert

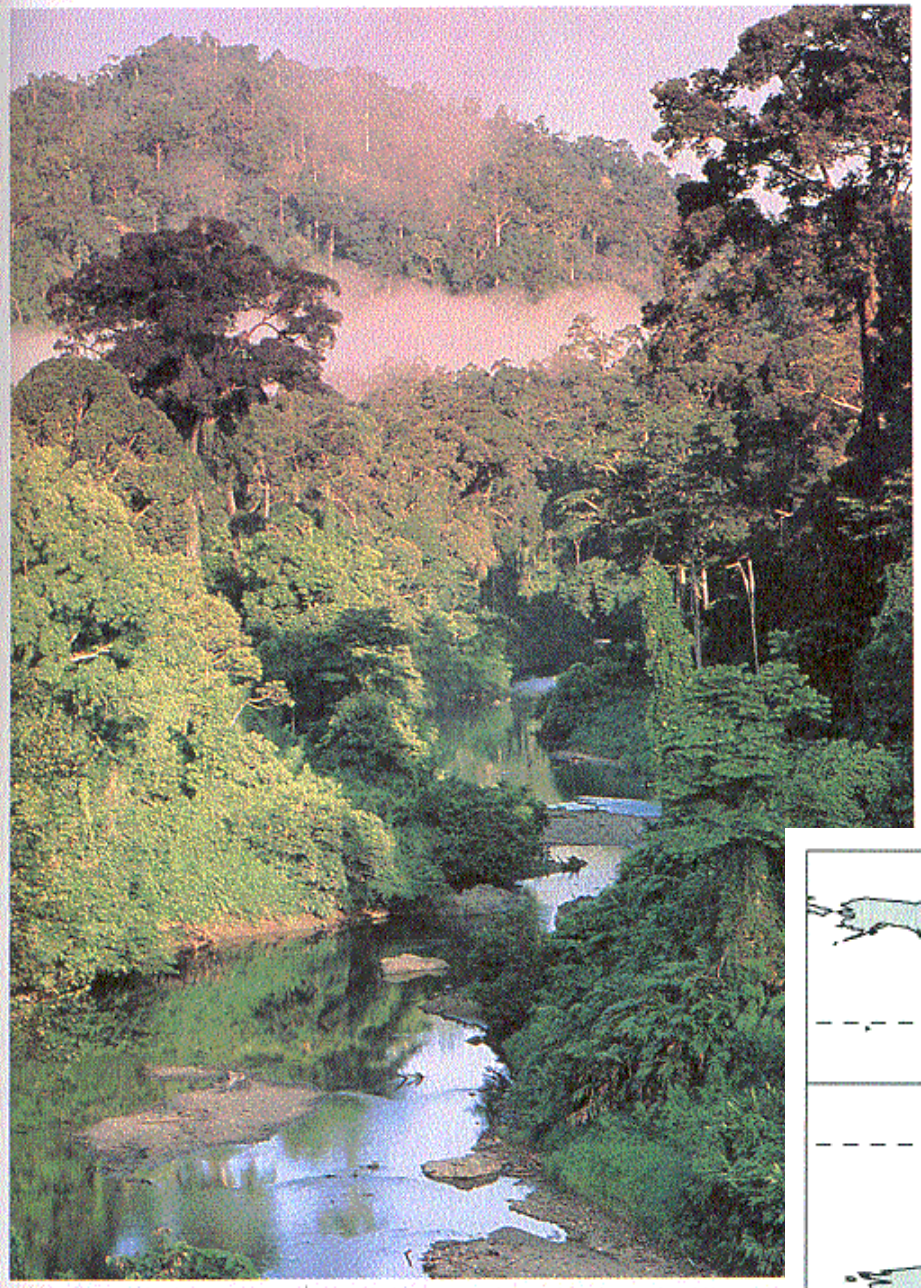


Tropical Savanna

Tropical Savanna



Tropical Rain Forest



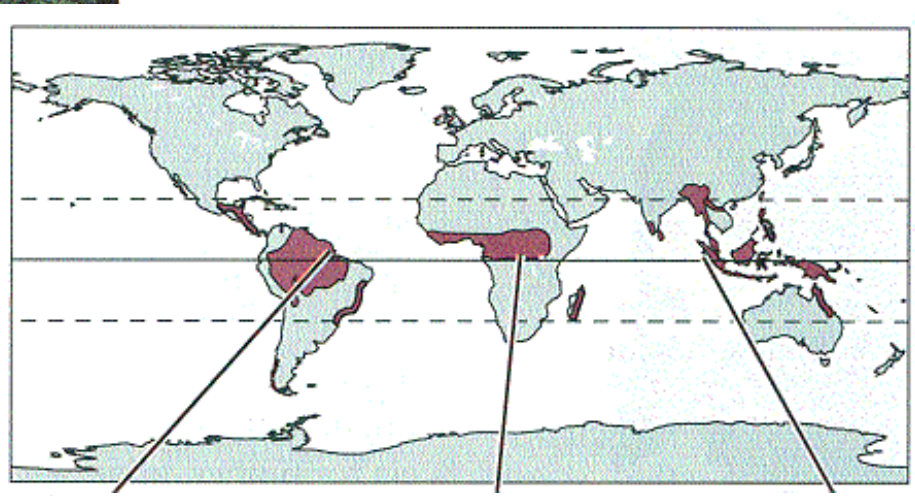
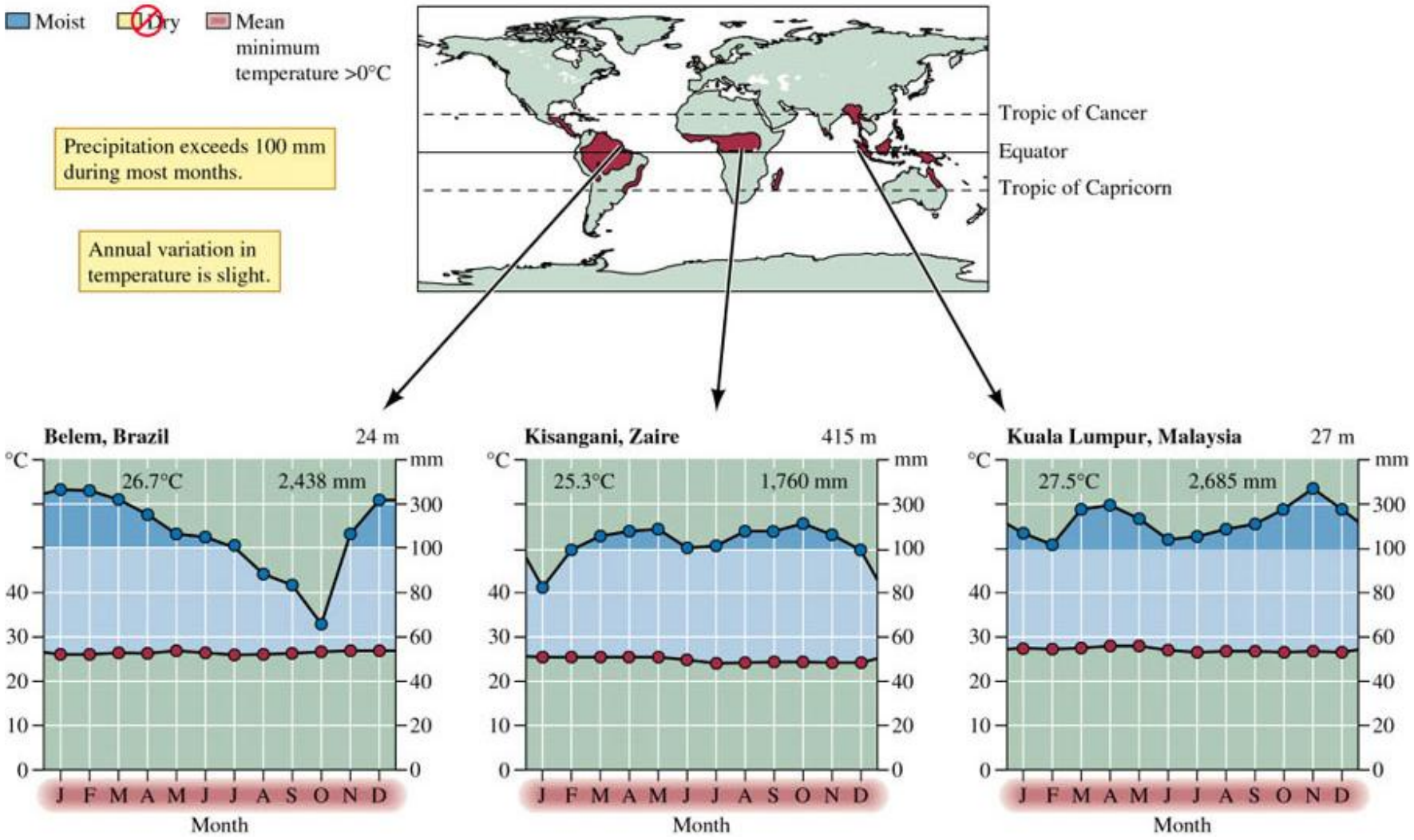
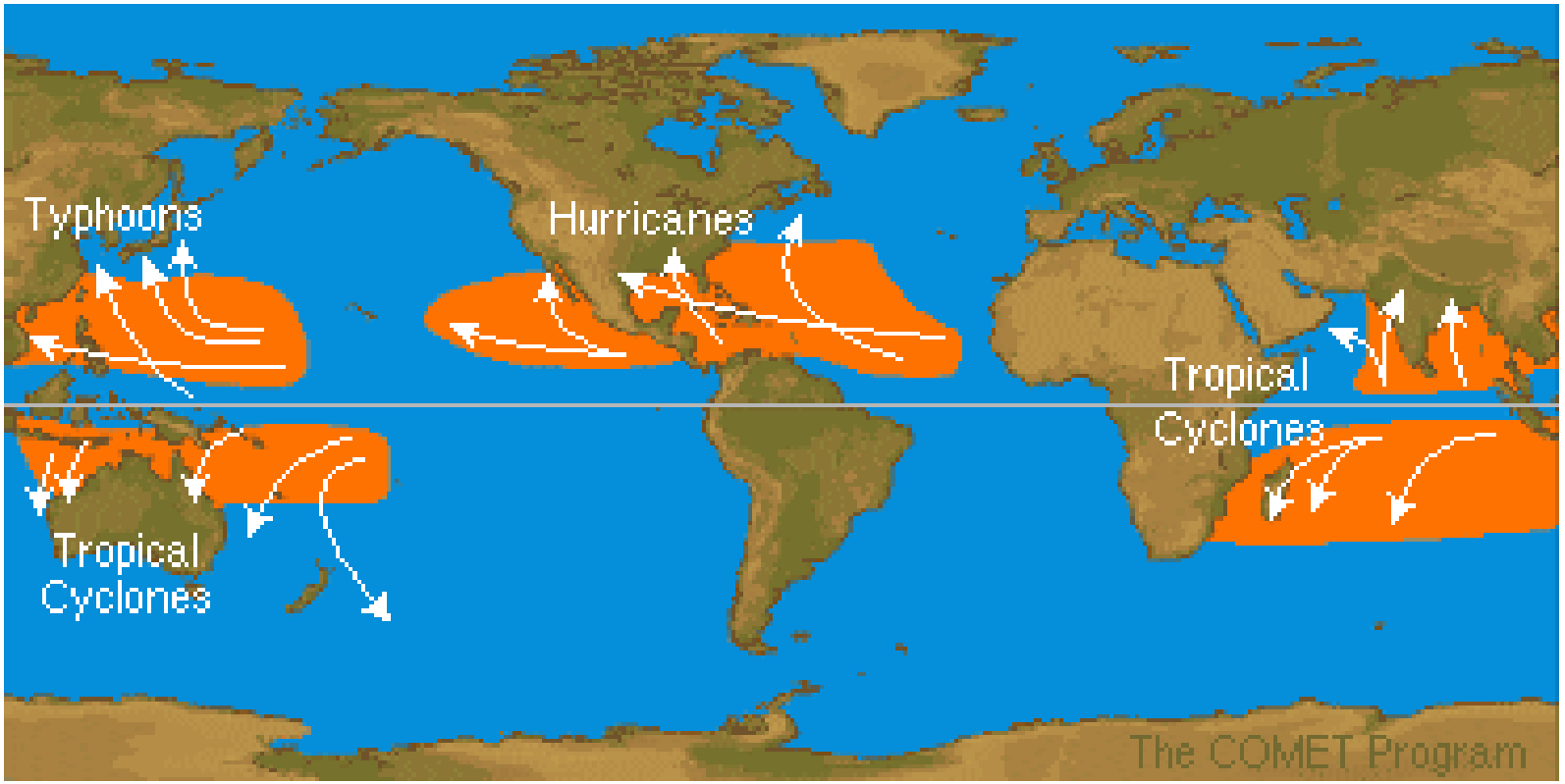


FIGURE 2.9 *Tropical rain forest in Borneo.*

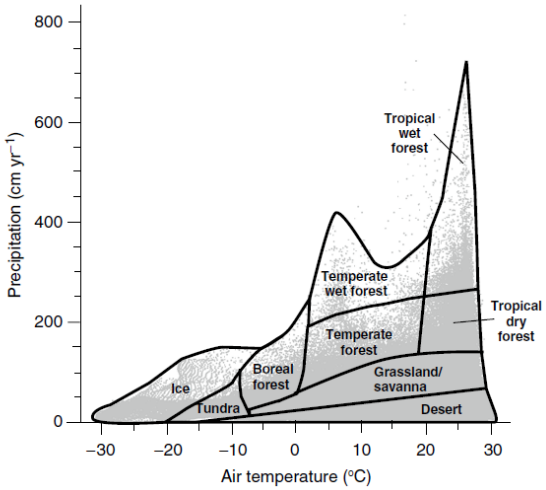
Tropical Rainforests

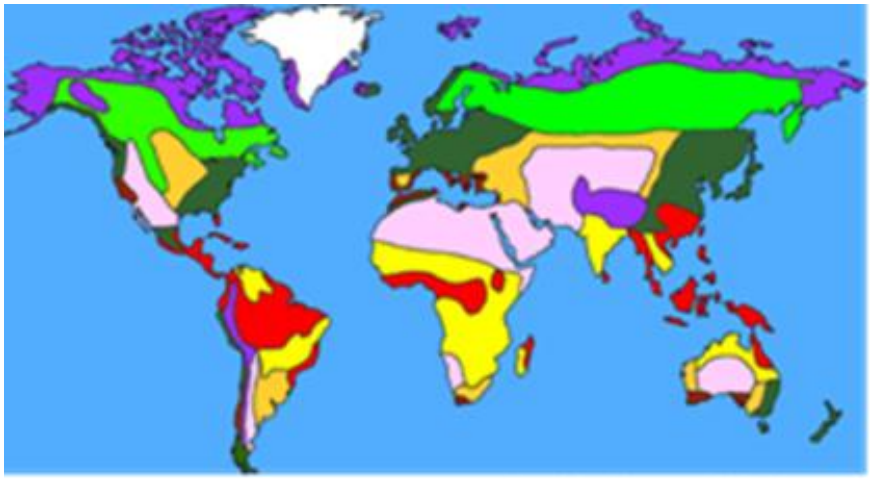


Climate Controls on Biomes: Disturbance regimes



Implications of Global Atmospheric, Ocean, and Landform Patterns





Biome physiognomy, distributions and storm disturbances are functions of global abiotic patterns filtered through plant adaptations.

Discussion Question

To what extent are ecological system structure, function, and composition predictable based on global abiotic factors alone? What ecological principles may govern such predictions?

Trait	Biome 1	Biome 2	Biome 3
Vegetation composition			
Vegetation productivity			
Vegetation structure			
Landscape composition and configuration			
Disturbance regimes			
Population dynamics			
Community structure and interactions			
Humans			

Sites for Virtual Biomes

World Wildlife Fund. http://www.worldwildlife.org/science/wildfinder/
Map of ecoregions, extensive description, list of species

Around the World: A biome Virtual Field Trip
http://www.harlingen.isd.tenet.edu/tif/hhs/biome.html#Invitation
Oriented towards K-12 groups?

MBGnet (Missouri Botanical Garden)
http://www.mbgnet.net/

Others?

References

Olson, D.M. et al. 2001. Terrestrial Ecoregions of the World: A New Map of Life on Earth. BioScience 51(11): 933-938.