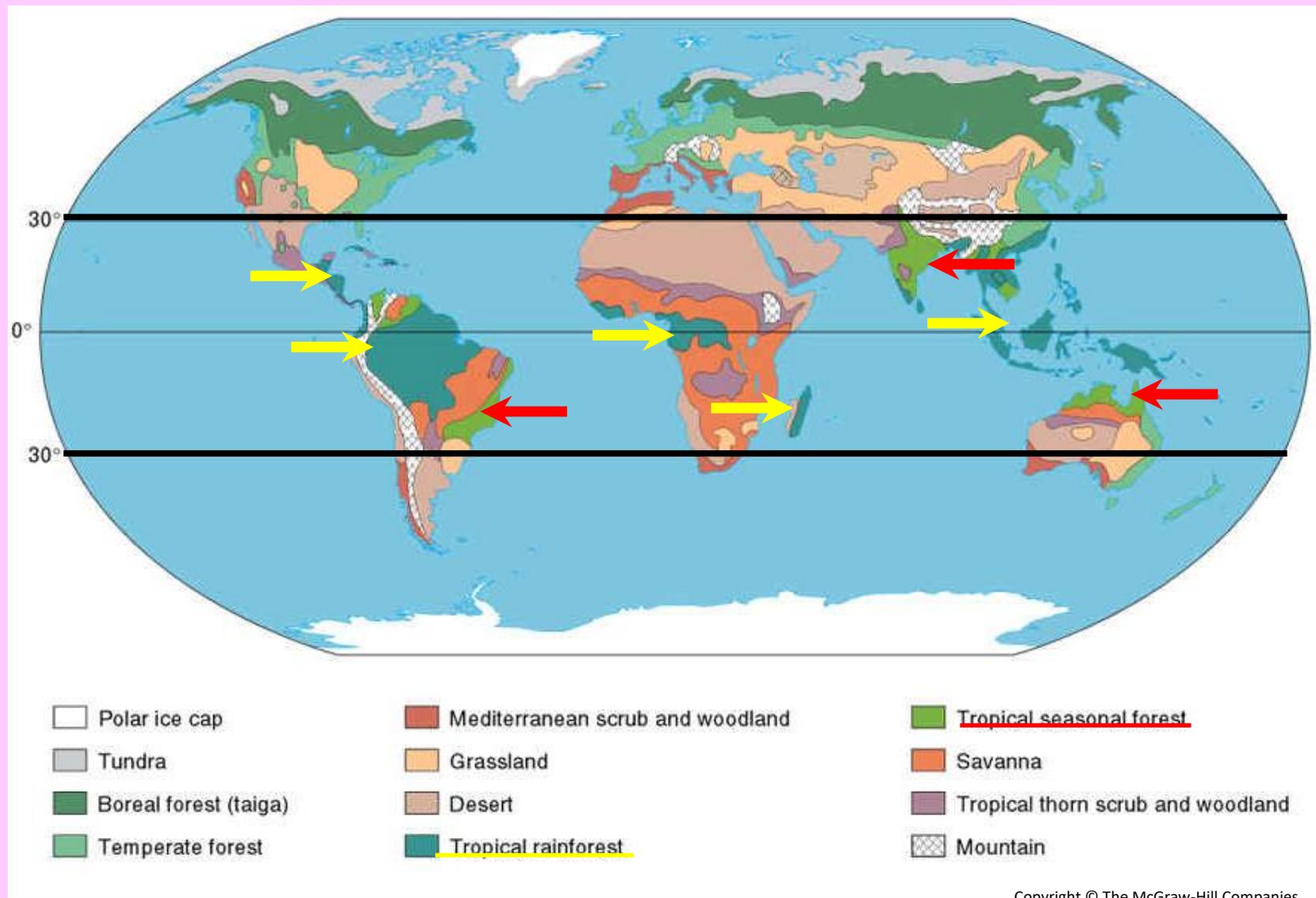


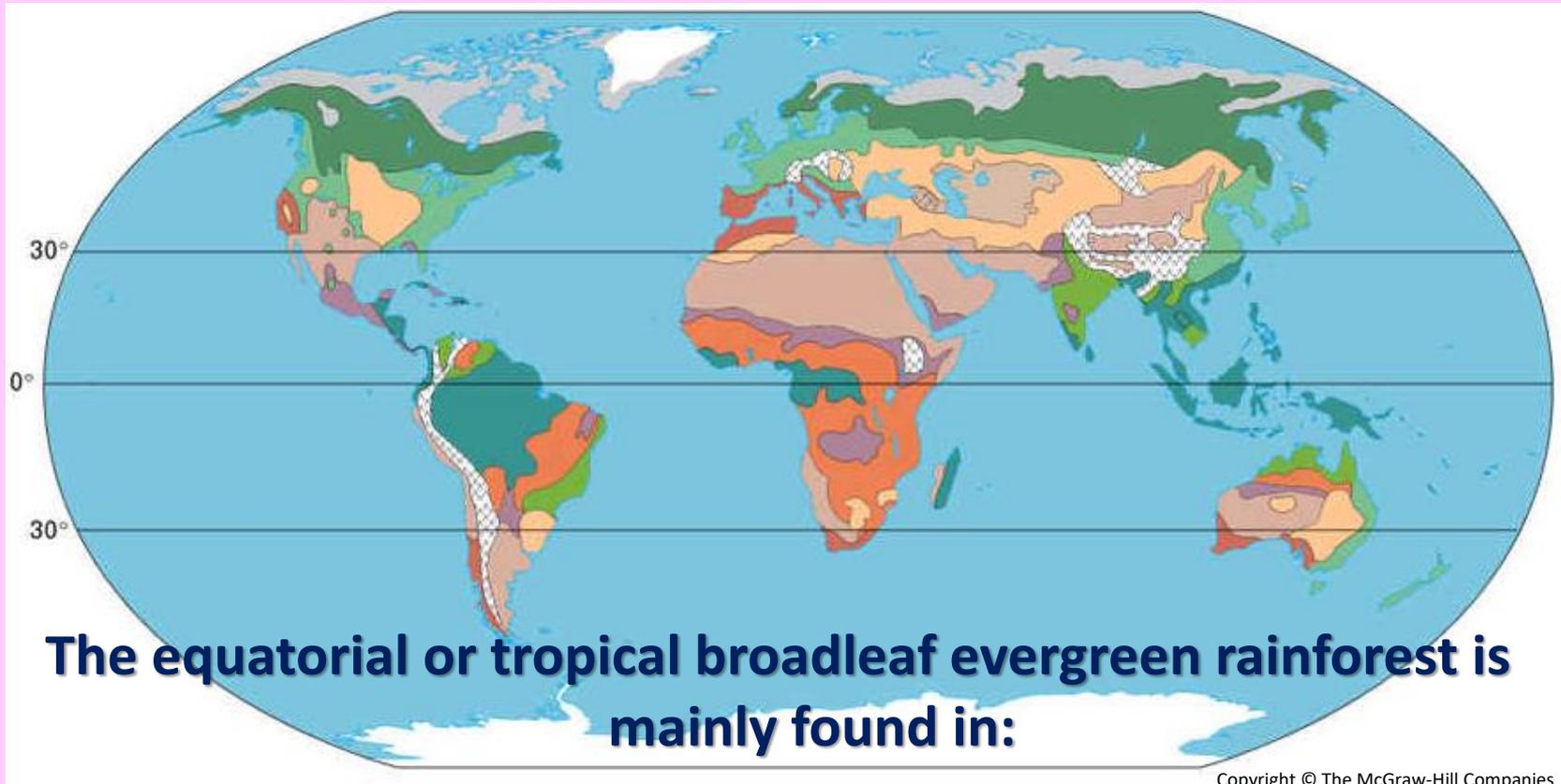
Lecture 7

Forests of the World (IV): Tropical (wet and dry)

The Worlds Major Forest Biomes



Tropical Rain Forest



- South America
- Southeast Asia
- West Africa

Cover only about 7% of the earth's
land surface

(Rainforest Foundation, 2016)

Tropical Rain Forest



- **Temperature varies little throughout the year**
 - Average annual temperature is around 20 degrees Celsius
- **Rainfall is relatively evenly distributed**
 - Annual precipitation is generally more than 2500 mm

No distinct season **—————>** **Tree growing season is year round**

Tropical Rain Forest

- The most complex biome in terms of structure and species diversity



Tropical Rain Forest

- **Very diverse biologically:**
 - **60% of all plant species**
 - **80% of all insect species**
 - **90% of all primates**
 - **hundreds of thousands, possibly millions, of species yet to identify**

Tropical Rain Forest

- Wildlife



nicolescience.weebly.com



adaptingeden.com



kidzworld.com



animals.nationalgeographic.com



rainforest-alliance.org



myrmecos.net



tropical-rainforest-facts.com



livescience.com



reference.com

Tropical Rain Forest

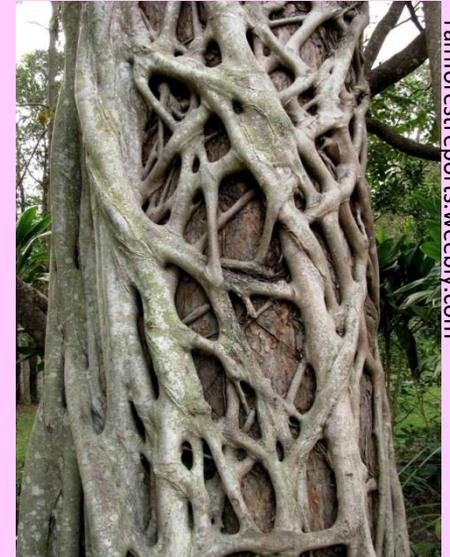
- Vegetation occupies all of the growing space vertically and horizontally.
- Growth forms include epiphytes; lianas; stranglers; parasites and saprophytes.



resources.southporthshs.eq.edu.au



shutterstock.com



rainforestreports.weebly.com



emaze.com

Tropical Rain Forest

“Forest is all aged and the vegetation is multi-layered, generally with three layers of trees a shrub layer and a ground layer.”



MAYBE!!! Not Always True.

Tropical Rain Forest

- Diversity of tropical rain forest includes tree species.
- Hundreds of genera and dozens of families are represented exhibiting very heterogeneous characteristics.



thinglink.com

Tropical Rain Forest

Characteristics of many tropical trees include:

- ✓ **buttressed trunks**
- ✓ **large leaves in the lower strata of the forest and small leaves in the upper strata**
- ✓ **thin bark**
- ✓ **large fleshy fruits**



Are tropical rainforests the lungs of the earth?

Tropical Rain Forest

- **6000 tree species in Brazilian Amazon forest. 50-100 different tree species per hectare of which only 1 or 2 may be of commercial importance.**
- **300 species per hectare have been recorded in Peruvian Amazon.**
- **700 species per hectare in Kalimantan (approximately the same number as in the whole of North America)**

Tropical Rain Forest

Tropical forests generally exhibit low commercial productivity of only 0.3-0.5 m³/ha/annum

E.g. Brazilian Amazon has over 50 billion m³ of timber but log production is only about 4 million m³/annum.

Tropical Rain Forest



Mogno (*Swietenia macrophylla*)

Tropical Rain Forest

Soils:

- generally infertile
- deeply weathered and heavily leached
- often bright red in colour due to concentrations of iron and aluminum oxides
- little accumulation of organic matter due to rapid bacterial breakdown (7-8 months)

Tropical Rain Forest

- **Tropical forests have come under increasingly heavy cultural pressures in recent decades:**
 - **logging exploitation**
 - **rapid deforestation is resulting from slash and burn, shifting cultivation that is exacerbated by rising populations**

Tropical Rain Forest

- clearing the forest, particularly in the Amazon, for large scale grazing, mining exploration and infrastructural development.



Tropical Rain Forest

- **When tropical rain forests are cleared of vegetation they do not regenerate easily and do not regain their original structure and composition.**
- **Nutrients are leached from soils that are already nutrient deficient.**
- **Soils become compacted and harden (laterization).**

Waterlogging and erosion occur

Tropical Rain Forest

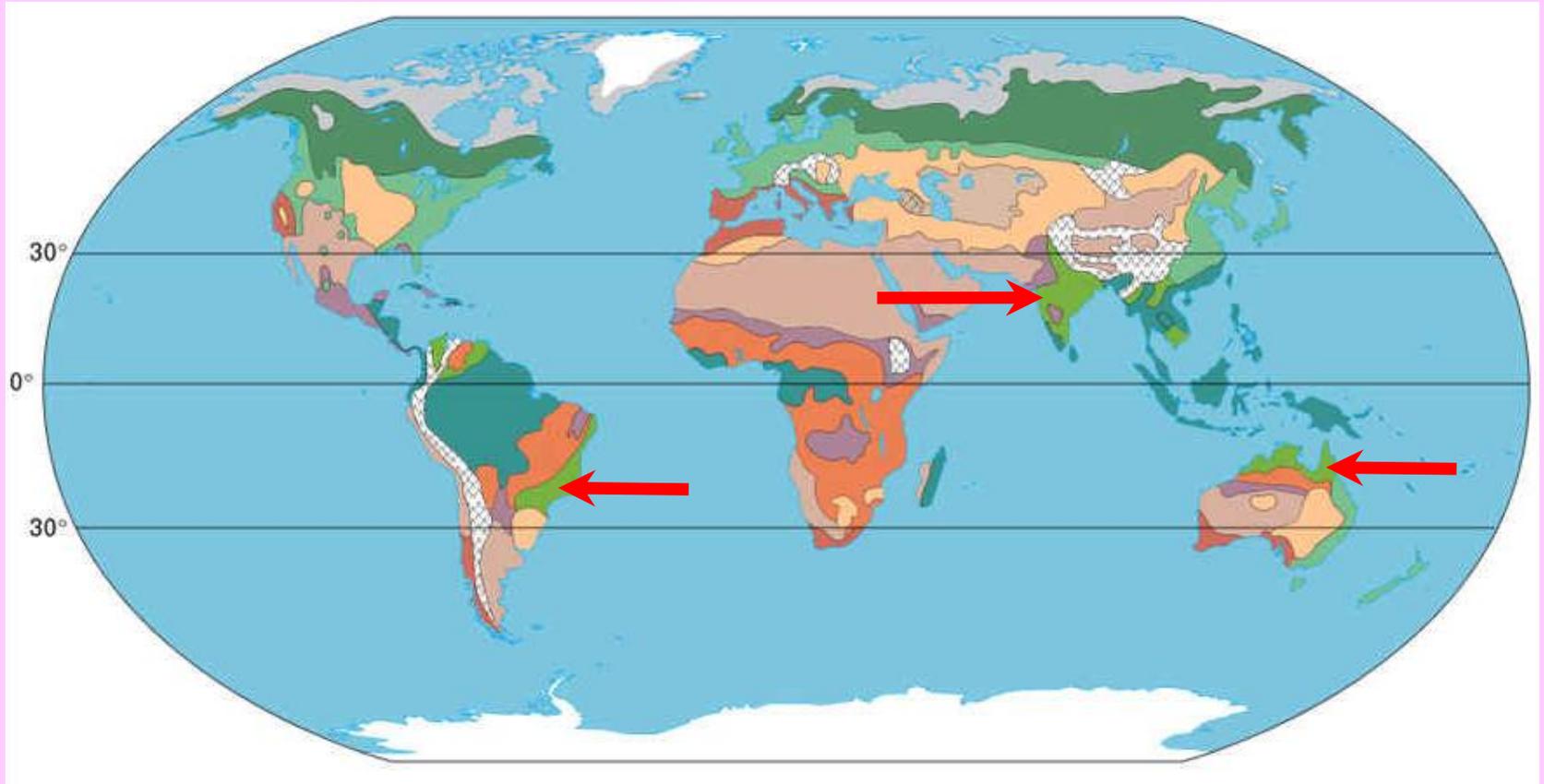
Image courtesy of Howard Harshaw



greenpeacecms.blogspot

Cleared tropical rain forests frequently revert permanently to grasslands and derived savanna typified by palm trees and shrubs.

Tropical Seasonal Forest



Tropical Seasonal Forest

- **The tropical moist deciduous (seasonal) forests are similar to the evergreen tropical rain forest in terms of temperature, growing season and diversity of species composition.**
- **However, they are typified by pronounced dry and wet (monsoon) seasons.**
- **Many species lose their leaves during the dry season.**
- **The zone is extensive in South America, South-central Africa, India and parts of S.E Asia.**

Tropical Seasonal Forest

- The tropical moist deciduous zone has been heavily exploited for commercially valuable species such as teak and sal.
- It is an area of high population densities and is heavily exploited for fuel wood.
- Much of the area has been permanently degraded.



somosverde.com.br

Tropical Seasonal Forest

- It is an increasingly important area for the establishment of fast-growing, intensively managed plantations.

Eucalyptus plantation and pulp mill in Bahia state, Brazil

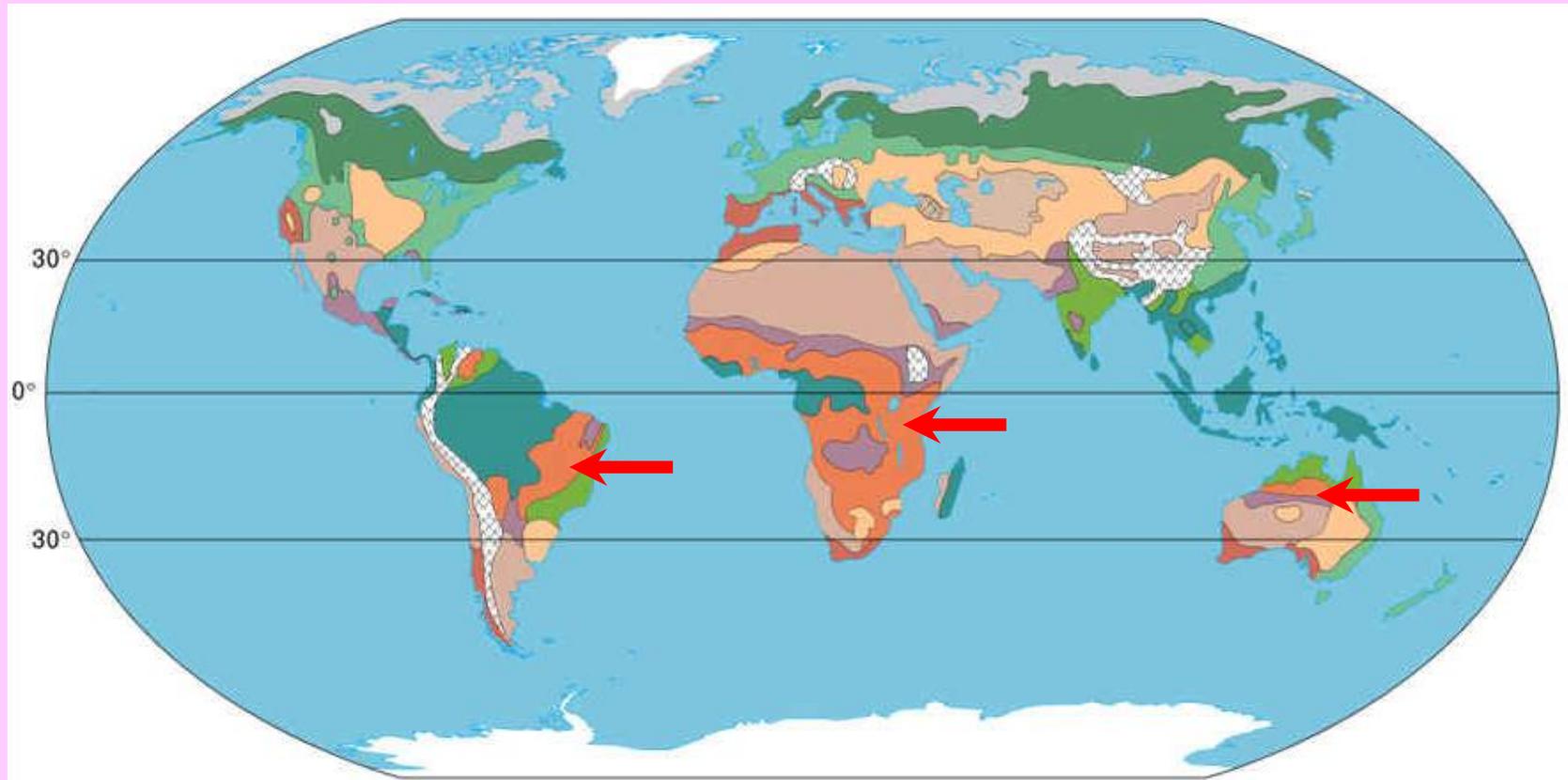


flickr.com

Productivity
39 m³/ha/annum
(IBA, 2015)

MAI
26 - 52 m³/ha/annum
(Goncalves et. al, 2012)

The Worlds Major Forest Biomes



- | | | |
|-----------------------|----------------------------------|-----------------------------------|
| Polar ice cap | Mediterranean scrub and woodland | Tropical seasonal forest |
| Tundra | Grassland | <u>Savanna</u> |
| Boreal forest (taiga) | Desert | Tropical thorn scrub and woodland |
| Temperate forest | Tropical rainforest | Mountain |

Savanna

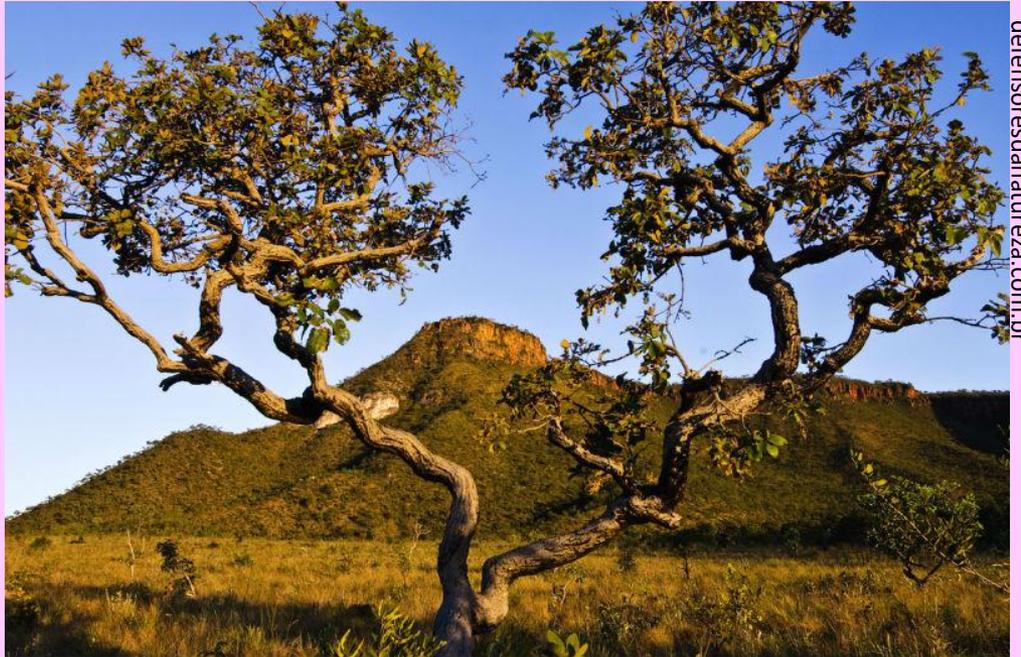


- **Savannas (dry forests) are very extensive. They are the transition between the tropical high forests and grasslands.**

Savanna

- **Monthly mean temperatures average above 20 degrees Celsius and annual rainfall varies between 700 and 1200 mm.**
- **Day time temperatures are higher than in the moist tropics and evapo-transpiration rates are higher.**
- **There is generally a pronounced dry season.**

Savanna



defensoresdanatureza.com.br

- **Great diversity of tree species but trees are slow growing, of poor form (twisted) and short.**
- **Trees are drought resistant, fire resistant and browsing resistant.**
- **Soils generally are of low fertility.**

Savanna

- **Tree cover varies from closed canopy forest in the moister areas, through open forest to open, park-like woodland.**
- **Large areas of dry forest are the result of human activity that destroys forest.**
- **Very little commercial exploitation but heavily used for fuel-wood and other domestic purposes.**



lcmbl.org.br

SUMMARY

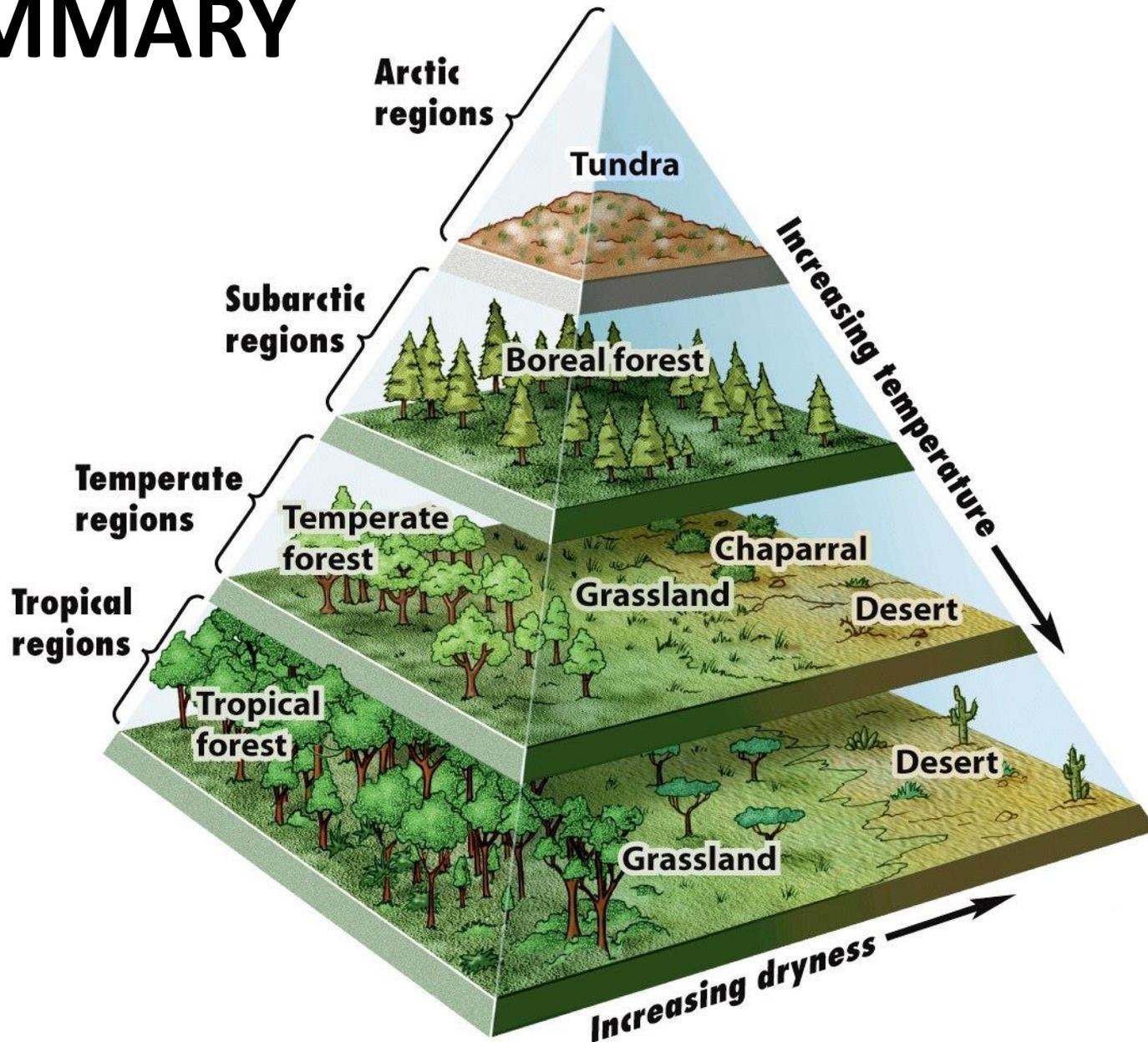


Figure 33-10 Discover Biology 3/e
© 2006 W. W. Norton & Company, Inc.