Announcements:
Summer research opportunities: NSF Research Experience for Undergraduates
Rocky Mountain Biological Laboratory (rmbl.org)
Michigan State: Enhancing Linkages between Mathematics and Ecology
Summer Science Scholars
Thursday February 2. Terry Tempest Williams (7:30, Higley Auditorium)
– to be discussed next Friday!
Next time: Ch. 4 Beginning physiological ecology

Global Climate Patterns and the distribution of biomes
- Intertropical Convergence Zone (ITCZ) –
- Circulation cells – 3 from equator to pole
- Coriolis effect – because of the Earth’s rotation as the circulation cells move air N-S, winds are deflected E-W with respect to our position on the ground.

These circulation patterns then interact with ocean currents and topographic landforms (next time) to generate global patterns of climate.

Feedbacks can occur at any level of organization and at any scale.

Example: Even though biomes are “determined” by patterns of climate (next time and Molles, Ch 2), there is mounting evidence that the Earth’s vegetation feeds back to effect patterns of climate as well.

Zeng et al. (1999, Science) were only able to recreate historical precipitation patterns over the West African Sahel when they included truly interactive vegetation in their simulation model.

Cox and others (2000, Nature) show that interactively modeled vegetation affects forecasts of future global warming, actually increasing temperatures over the next two centuries.
Both of these results are from modeling studies…

Distribution of biomes – largely determined by climate.
- Temperature and precipitation
- Water Balance: precipitation - evapotranspiration

Biome identification exercise:
1) Fold paper over so location is hidden.
2) Exchange climate diagrams with your partner
3) Discuss the patterns that you see. Describe the prevailing environmental conditions at the site as well as the range of seasonal variation.
4) Based on the climatic patterns that you see, predict what biome the site is located in.
5) Don’t peek! And Don’t give hints!
Clues:
Are you in the northern or southern hemisphere?
What are the mean conditions?
How seasonal is rainfall?
How seasonal are temperatures?
Where are you?

Meanwhile back in Gambier, OH:
Examine the climate diagram for Gambier

How could the environment in Gambier change if:
Climate warms by a few degrees on average, but precipitation stays the same?
If climate warms, and becomes drier?
If climate warms in the winter, but not in the summer, and it becomes wetter?
What would it take to shift Gambier to a grassland?