

Geography 257 (Spring 2008) – Topics in Climatology

Instructors: John Chiang and Norman Miller

Time: Wednesdays 1:30-4p, 55A McCone.

The seminar for this semester will comprise two distinct parts

Part I. General Circulation of the Atmosphere. We will devote half the class on the general circulation of the atmosphere, reading an excellent set of lecture notes written by Isaac Held for a Woods Hole GFD summer school on the topic (Held (2000) – The general circulation of the atmosphere (WHOI summer school notes)). We'll use Holton (An introduction to Dynamic Meteorology, 4th ed) as a reference, others as appropriate. You can get the Held lecture notes here: http://www.gfdl.gov/~ih/papers/woods_hole.ps

Prerequisites: Atmospheric physics and dynamics at least the level of the undergraduate upper division 'Atmospheric Physics and Dynamics' course (GeogC139/EPS181) - see <http://geography.berkeley.edu/ProgramCourses/CoursePagesFA2006/GEOGC139/geogC139.html>

Part II. The Tropics and Paleoclimate. We will explore this general question: *What is the role of the tropics in paleoclimate change (and climate change in general)?* The discussion will be oriented towards philosophical considerations rather than details, and climate dynamics rather than paleoproxy studies. Some of the subquestions to ask are:

1. What is the current view on the tropics with regards to its role in paleoclimate change scenarios?
2. How do our current conceptual ideas of tropical climate – Walker circulation, Hadley circulation, Monsoons, ENSO – fit into the scheme of tropical paleoclimate change?
3. Can the tropics drive paleoclimate change? Can the tropics be an amplifier of Milankovitch cycles?
4. What is the role of the tropics in abrupt climate change? Can it be a source of the change, or does it simply respond? Is it a globalizer of abrupt climate change?
5. What is the value of tropical paleoproxy information towards understanding climate?
6. What are the next steps in understanding the tropics in paleoclimate?

The actual agenda and readings will be determined later in the semester.

Prerequisites: you should be familiar with climate dynamics at least at the level of the undergraduate upper division 'Climate Dynamics' course (Geog 142) – see <http://geography.berkeley.edu/ProgramCourses/CoursePagesFA2005/Geog142/Geog142.html>