GEO 260 Global Climate Change

Robert (Bob) Allen
Office: Geology 1230

Wed 10-12
Winter 2012

Course Goal and Structure: Introduction to fundamental aspects of modern-day climate change. Each student leads a weekly discussion, based on two seminal peer-reviewed papers. Grades are determined based on class participation, and a final project using EdGCM. Below is a list of topics and tentative papers we will discuss.

Week	**Topic & Readings**
Jan 18	Introduction (Bob)
Jan 25	Natural Climate Variability: Annular Modes 1. Forced annular variations in the 20th century IPCC Fourth Assessment Report models. 2. Interpretation of recent Southern Hemisphere climate change.
Feb. 1	Hydrological Cycle 1. Global warming and weakening of the tropical circulation. 2. How much more rain will global warming bring?
Feb. 8	GHGs and the Carbon Cycle 1. Acceleration of global warming due to carbon-cycle feedbacks in a coupled climate model. 2. Irreversible climate change due to carbon dioxide emissions.
Feb. 15	Climate Modeling: EdGCM (Linda Sohl Columbia University)
Feb. 22	Atmospheric Aerosols 1. Aerosols, climate and the hydrological cycle. 2. Global and regional climate changes due to black carbon.
Feb. 29	Hurricanes 1. Changes in tropical cyclone number, duration, and intensity in a warming environment. 2. Simulated reduction in Atlantic hurricane frequency under twenty-first-century warming conditions.
Mar. 7	Tentative: Rich Minnich → Vegetation and climate change?
Mar. 14	Tropical Expansion (Bob) 1. Expansion of the Hadley cell under global warming. 2. Widening of the tropical belt in a changing climate.