Theories of Climate and Climate Variability

Geography 5961 Fall 2004

Tuesday: 16.00-18.50, GEOG Room 201E
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Outline

The course is designed to provide a critical review of current theories of climate and its variability. Each student will be expected to lead a class discussion of literature on 2-3 of the topics listed. Following a lecture on the topic of the day, the second hour will be student reports on a related paper. Topics will be selected at least 1 week ahead. It will be assumed that registered students have had undergraduate courses, and at least one graduate class, in climatology/meteorology, or a closely related field. Students will be expected to maintain a regular weekly reading schedule of journal articles to contribute to group discussions. The course grade will be based on two review/research papers on approved topics – one due October 28, the second on December 17.

Topics

Aug 24	Introduction: the climate system and its variability; sources of evidence.
Aug 31-Sep 20	Time/Space characteristics of climate change. (Pre-Quaternary, Quaternary, Historical, Observational)
Sep. 27	Physical parameters of the climate system
Oct. 5	Atmospheric energy budget and general circulation diagnostics (overview)
Oct. 12	Solar variability
Oct. 19	Astronomical forcing
Oct. 25	Climate Models. (T. Chase)
Nov. 2	Atmospheric composition (greenhouse gases)
Nov. 9	Atmospheric composition (aerosols)
Nov. 16	Climate feedback: radiation/clouds, water-vapor.
Nov. 23	Climate feedback: cryosphere
Nov. 30	Climate feedback: oceans and bio-/geosphere
Dec. 7	Presentations of student papers.

Text: K.D. Alverson etal. 2003. Paleoclimate Global Change and the Future (Springer). Reference texts will be placed on reserve in the Earth Library. Class notes and references to material in the current literature will be provided for each topic via the class web page (Geog 5961).