Mechanisms of Past Climate Change (16:107:553)

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Meeting time and location

- Mondays and Wednesdays 9:15-10:35
- ENR 223

Book

- Bender, Michael L., *Paleoclimate* (Princeton Primers in Climate series), Princeton, NJ, Princeton University Press, 306 pp.

Course objectives

- To better understand some of the mechanisms that have been involved in climate changes in the distant past (i.e., paleoclimates).
- To explore the scientific process in which hypotheses to explain past behavior of the climate system are proposed and tested.
- To develop the ability to critically examine the content of scientific papers.
- To enhance scientific communication skills.

Grading

- Class participation
  - Discussion leader: 15%
  - Open discussion: 30%
- Final project
  - Paper: 40%
  - Presentation: 20%

Final project

- Among the topics discussed in class, select a particular aspect of past climate change that interests you.
- Research possible physical mechanisms that have been proposed to explain that aspect of climate change.
- Prepare a brief presentation (15 minutes) that critically examines a particular physical mechanism.

Class schedule

Sept. 4	Introduction, organizational meeting
Sept. 9	Discussion of Chapter 1 of Paleoclimate (Bender): Earth's climate system
Sept. 11	Discussion of Chapter 2: The faint young sun
Sept. 16	Discussion of Chapter 3: Precambrian glaciations
Sept. 18	Discussion of journal article TBD
Sept. 23	Discussion of Chapter 4: Regulating CO2 and Earth's temperature
Sept. 25	Discussion of Chapter 5: The Late Paleozoic Ice Ages
Sept. 30	Discussion of journal article TBD
Oct. 2	Discussion of Chapter 6: Climates of the Mesozoic and Paleogene
Oct. 7	Discussion of Chapter 7: Paleocene-Eocene Thermal Maximum
Oct. 9	Discussion of Chapter 8: The Long Cooling of the Cenozoic
Oct. 14	Discussion of journal article TBD
Oct. 16	Discussion of journal article TBD
Oct. 21	Discussion of Chapter 9: The Origin of Northern Hemisphere Glaciation…
Oct. 23	More discussion of Chapter 9: The Origin of Northern Hemisphere Glaciation…
Oct. 28	Discussion of journal article TBD
Oct. 30	Discussion of journal article TBD
Nov. 4	Discussion of Chapter 10: Rapid Climate Change during the Last Glacial Period
Nov. 6	Discussion of journal article TBD
Nov. 11	Discussion of journal article TBD
Nov. 13	Discussion of Chapter 11: The Holocene
Nov. 18	Discussion of journal article TBD
Nov. 20	No Class (Rutgers Climate Symposium, Livingston Campus Center)
Nov. 25	Discussion of journal article TBD
Dec. 2	Discussion of Chapter 12: Global Warming in the Context of Paleoclimate
Dec. 9	Discussion of journal article TBD
Dec. 11	Final project presentations
TBD	Final project presentations
TBD	Final project presentations