

Global warming debates: the reading course spring 2010

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1st meeting: Wednesday, 27 January.

Time: Wednesday, 3-6pm.

Location: Schaler Room, 4th floor of the Geology Museum Building.

Bibliography: Papers are posted on the course web page and linked from this document.

Web: <http://isites.harvard.edu/k62501>

Announcements: Last updated September 8, 2011. Feel free to write, call or visit us with any questions.

This reading course seeks to provide an overview of the science of global change through a survey of current scientific debates. Topics are specifically chosen for their relevance, interest, and open-ended nature. No *correct answer* is likely to emerge, but we hope that you will become scientifically better informed regarding relevant climate topics. An initial list of topics are provided below, but this can be revised according to current events and student interests.

Administrative Material

Prerequisites: This broad survey course is designed to be accessible to upper level undergraduate students who have a scientific background. APM21A or equivalent, or the permission of the instructor, is required.

Presentation: Groups of 2-3 student will be responsible for preparing and making a preview and full presentation regarding a subset of the topics. The preview presentation is ~5 slides, 10 minute long, and is given the week before the subject is discussed in class. The purpose of this brief presentation is to motivate the subject, explain its importance, and especially help the other students understand the reading material by providing them some guidance and explanation about the paper(s) and the relevant background. The full presentation is ~30 slides long and is to be used during the discussion. Please provide some background for the other students and then get to the actual scientific topics within ~5 slides. The purpose of this presentation is to guide and excite discussion, rather than to lecture. Not actually covering all 30 slides during class time would be just fine. Presentations are to based upon the assigned reading and augmented with additional material.

Position paper If not part of the group making a full presentation in a given week, students are asked to bring a two-paragraph position statement to class based upon the assigned reading where the first paragraph outlines the overall issue and the second provides an initial judgement on the topic.

Grading: Based on presentations (60%), discussion and participation (30%), and positions statements (10%). If you must miss class, which obviously makes participation impossible, please notify us ahead of time.

An Evolving Syllabus

(Blue links below lead to the reading material assigned for each lecture.)

- date: [Background reading](#), to include climate of man, IPCC, and Lindzen articles.
 - date: Modern Surface Temperature: How well are these known, and what does 3/4 of a degree really mean?
 - date: Mountain Glaciers: Are mountain glaciers melting?
 - date: Arctic sea ice: Why and how quickly is the sea ice retreating?
 - date: IceSheet Mass Balance: How will the icesheets change?
 - date: *Hockeystick: Tree ring divergence, and what is the natural range of temperature variability?
 - date: Anthropocene: How early did humans begin influencing the environment?
 - date: Cosmic rays: Do cosmic rays cause climate change?
 - date: Hurricanes: Are there more Hurricanes due to global warming?
 - date: Stratospheric cooling: Why is the stratosphere cooling?
 - date: Ocean circulation failure: Could ocean circulation change rapidly?
 - date: Mid-tropospheric Warming: Expectations from climate models not supported by observations?
 - date: *Ocean circulation: Do fish mix the ocean?
 - date: *Future climate: How should we quantify the range of possible future climates?
 - date: Feeding the world: What will be the impact of global warming on agriculture?
 - date: Final Debate: Take sides! Should we act to curb global warming now or can we wait?
- Other possibilities: Carbon emissions: How to curb greenhouse gases? West Antarctica: will it go unstable? Greenhouse feedbacks: will melting tundra increase atmospheric greenhouse gases? Ice streams: will they accelerate?