Fall 9-1-2000

GEOG 550.01: Seminar in Global Change

Eric Edlund  
*University of Montana - Missoula*

Sarah J. Halvorson  
*University of Montana - Missoula, sarah.halvorson@umontana.edu*

---

**Let us know how access to this document benefits you.**

Follow this and additional works at: [https://scholarworks.umt.edu/syllabi](https://scholarworks.umt.edu/syllabi)

---

**Recommended Citation**

[https://scholarworks.umt.edu/syllabi/5118](https://scholarworks.umt.edu/syllabi/5118)

---

This Syllabus is brought to you for free and open access by the Course Syllabi at ScholarWorks at University of Montana. It has been accepted for inclusion in Syllabi by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact [scholarworks@mso.umt.edu](mailto:scholarworks@mso.umt.edu).
GEOGRAPHY 550: Seminar in GLOBAL CHANGE

Additional Online Resources

Instructors
Eric Edlund
207 Social Sciences Building
Phone: 243-6126
E-mail: edlund@selway.umt.edu
Office Hours: Wednesday 10:00—12:00

Sarah Halvorson
204 Social Sciences Building
Phone: 243-2793
E-mail: sjhalvor@selway.umt.edu
Office Hours: Tuesday 5:00—7:00

Background and Requirements
This new seminar is open to graduate students and seniors interested in the relationships between global change and environmental systems, including natural ecosystems, socioeconomic structures, water resources, and agroecosystems.

The seminar begins with consideration of the mechanisms of global climate change and the natural range of environmental variability. We address historic and present-day human impacts on the atmosphere, including the production and cycling of greenhouse gases. Computer models (GCMs) and records of late Quaternary environments (e.g. ice cores, lake levels, pollen analysis and dendrochronology) allow us to consider the responses of ecological systems to global changes of the past, and to assess the value of those records as analogs for present and future environmental shifts.

In the second part of the semester attention is directed to climate-society interactions, including issues of vulnerability, regional and local impacts on social and economic systems, national and international policy responses and proposed mitigation strategies. We evaluate the estimated “costs” and “benefits” of projected global warming, as well as the issues associated with political decision-making in the face of scientific uncertainty. Proposed case studies will include a review of forest and fire management strategies, and a discussion of the consequences of climate change for water resources.

Students will prepare and present a seminar paper on a topic of particular interest to them. In addition, grades will reflect student participation, including leading one or more discussion sessions.

Reading lists will be distributed at least one or two weeks before each session. Readings will be on reserve at the Mansfield Library and in the Geography Department. Recommended reading throughout the semester is J. Houghton, 1997, Global Warming: The Complete Briefing (2nd edition, Cambridge University Press).

Seminar Topics/Outline
The course is organized around the following substantive questions:

I. How does the Earth’s climate work?
II. How do we reconstruct global climate changes in the past?
III. How have systems responded to global changes in the past?
IV. What are the emerging discussions and debates regarding climate-society interactions?
V. What are current responses and proposed mitigation strategies?
VI. What should we do to avert or respond to global climate change?

Geography 550: Seminar in GLOBAL CHANGE

SCHEDULE OF MEETINGS

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic and Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td></td>
<td>How does the Earth's</td>
</tr>
</tbody>
</table>

http://www.umt.edu/geograph/courses/g550gc.html

10/30/00
climate work?

1. Sept 5 Orientation and aims of the seminar
Introductions, course overview, reading materials, thematic issues

Background Reading (as Needed):

2. Sept 12 The science of climate change
Principles, evidence, measurements, uncertainties, feedback mechanisms

Readings/Resources:

Intergovernmental Panel on Climate Change (IPCC): [http://www.ipcc.ch/](http://www.ipcc.ch/)

II. How do we reconstruct global climate changes in the past?

3. Sept 19 Climate change records and historic climatological data

Readings/Resources:

EPA Global Warming Homepage: [http://www.epa.gov/globalwarming/index.html](http://www.epa.gov/globalwarming/index.html)

4. Sept 26 Modeling climate change, recognizing “natural” vs. “anthropogenic” climate change
Student-led discussions begin

Readings/Resources:

National Climatic Data Center: [http://www.ncdc.noaa.gov/](http://www.ncdc.noaa.gov/)
The Hadley Centre for Climate Prediction and Research: [http://www.metoffice.gov.uk/sec5/sec5ppl.html](http://www.metoffice.gov.uk/sec5/sec5ppl.html)

III. How have systems responded to global changes in the past?

[http://www.umt.edu/geograph/courses/g550gc.html](http://www.umt.edu/geograph/courses/g550gc.html)

10/30/00
5. Oct 3  
**Paleoecological evidence: ecosystem and human responses to prehistoric climatic changes**  
Includes presentation on late Quaternary paleoecology in Sierra Nevada & northern Rockies by Professor Edlund

**Readings/Resources:**


Illinois State Museum of Natural History: [http://www.museum.state.il.us/exhibits/ice_ages/](http://www.museum.state.il.us/exhibits/ice_ages/)


6. Oct 10  
**Documentary evidence: ecosystem responses**  
Focus on changes in fire regimes over time and space

**Readings/Resources:**


U.S. Forest Service: [http://www.fs.fed.us/](http://www.fs.fed.us/)


**IV. What are the emerging discussions and debates regarding climate-society interactions??**

7. Oct 17  
**Vulnerability and Impacts I:**  
Global and regional impacts, issues surrounding risk and vulnerability, adaptive responses, impact assessments

**Readings/Resources:**


National Center for Atmospheric Research (NCAR): [http://www.ncar.ucar.edu/](http://www.ncar.ucar.edu/)

NCAR's Environmental and Societal Impacts Group: [http://www.esig.ucar.edu/](http://www.esig.ucar.edu/)

8. Oct 24  
**Vulnerability and Impacts II:**  
Regional and local impacts on social and economic systems, agriculture, island nations, ecosystems

**Readings/Resources:**


9. **Oct 31**  
**Vulnerability and Impacts III: Western Water Case Study**

Readings/Resources:


The Pacific Institute for Studies in Development, Environment and Security:  
[http://www.pacinst.org/overview.html](http://www.pacinst.org/overview.html)

National Research Council's Water Science and Technology Board Homepage:  
[http://www4.nationalacademies.org/cger/wstb.nsf](http://www4.nationalacademies.org/cger/wstb.nsf)

V. *What are current responses and proposed mitigation strategies?*

10. **Nov 7**  
**The Economics of Climate Change:**  
Addresses “benefits” and “costs,” issues of finance  
*Election Day–Meeting time to be rescheduled if necessary*

Readings/Resources:


Western Fuels Association Global Warming: [http://www.westernfuels.org/](http://www.westernfuels.org/)

11. **Nov 14**  
**International Cooperation and Conflict:**  
The history of negotiations, Post-Kyoto Treaty perspectives, international cooperation, policy challenges

Readings/Resources:


Framework Convention on Climate Change: [http://www.unfccc.de/index.html](http://www.unfccc.de/index.html)
VI. What should we do to avert or respond to global climate change?

13 Nov 28  Equity, Sustainability, and Environmental Justice Concerns

Readings/Resources:

Union for Concerned Scientists: http://www.ucsusa.org
Global Change: http://www.globalchange.org

14 Dec 5  Student Presentations (topics and readings to be announced)

15 Dec 12  Presentations (topics and readings to be announced)

Final Dec 19  Final Meeting and Course Wrap-up, 7:40-9:40 p.m.