

GESM 130 Climate Change: the Science, History, and Our Future.

Units: 4

Fall 2015

Tues/ Thurs 2-3:30pm

VHE 210

Instructors:

Prof. Joshua Goldstein

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Office Hours: Mondays and

Mondays 10am-11am and

Wednesdays 11-12 and by appointment

Thursday 1pm-2pm & by appointment

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Course Description

Climate change is probably the greatest and quite possibly the most paralyzing challenge facing us today for it poses enormous questions that we find difficult to confront ethically, personally and intellectually. Climate change is and will increasingly change all of our behaviors and life-paths; the question this course attempts to answer, or at least address intellectually is: How did we get here? How did we get to this point in human history where we need to quickly change fundamental aspects of our modern world systems so as not to destroy ourselves and much of our planet's co-inhabitants? This is a fundamental historical question of course, and like all historical inquiries it is based on the premise that understanding the past (how we got to a certain place in our history) might be able help us understand how to think about our present in order to shape a better future.

We will learn the fundamental aspect of climate change or what controls climate, study how climate has impacted society in the past and apply social scientific methods to the problem of climate change. Through these tools, we will better comprehend how and why "we"—as a species, as participants in global economic and geo-physical systems, and as individuals—find it is so difficult to shift from being passive bystanders of an unfolding planetary-scale train wreck to taking meaningful action to prevent (or, more realistically, minimize) the destruction of that ongoing wreck.

Learning Objectives

- Apply methods of social analysis from history, economics, psychology, and sociology to understand how climate change has been caused, understood and engaged with by human actors
- Teach students how to evaluate empirical evidence including scientific data and assess the usefulness of this evidence in explaining anthropogenic climate change

- Teach students to understand the interplay between human action and organizations, institutions, and technologies that have shaped and will shape the historical paths of anthropogenic climate change

Required Readings and Supplementary Materials

W.F. Ruddiman, *Earth's Climate: Past and Future*, 3rd edition.

UN IPCC: The 5th IPCC reports: Material Science, Impacts, and Mitigation

All other readings will be provided by the instructors via Blackboard. These include selections from the following:

Jared Diamond: *Collapse* (2005)

Naomi Klein: *This Changes Everything: Capitalism vs the Climate* (2014)

George Marshall: *Don't even think about it* (2014)

Elizabeth Kolbert: *The Sixth Extinction* (2014)

Timothy Mitchell: *Carbon Democracy*

Spencer Weart: *The Discovery of Global Warming* (2008)

Papers provided by the instructors:

Barlow, L.; Sadlet, J.; Ogilvie, P.; Buckland, T; Ingimundarson, J.; Skidmore, P.; Dugmore, A.; and McGovern, T., 1997. Interdisciplinary investigations of the end of the Norse Western Settlement in Greenland. *The Holocene*. Vol. 7, Issue 4, pp 489-499.

Dipesh Charabarty (2009) The climate of history: Four Theses. *Critical Inquiry* 35.

Malm, A. 2013. The origins of fossil capital: From water to steam in the British cotton industry. *Historical Materialism* 21: 15-68.

Malm, A (2012) China as the Chimney of the World: The Fossil Capital Hypothesis. *Organization and Environment*, vol. 25 no. 2 146-177.

Matthews, J. and Tan, H. 2014. Manufacture renewables to build energy security. *Nature*. Vol 513, pp 166-168.

Shearer, C.; Bistline, J.; Inman, M.; Davis, S. 2014. The effect of natural gas supply on US renewable energy and CO₂ emissions. *Environmental Research Letters*. Vol 9.

A list of recommended readings and websites are appended to the end of this syllabus.

Description and Assessment of Assignments

The course includes three mini writing assignments, each of which will be two pages long. Students will be provided readings for the assignment and asked to critically evaluate the readings and write their evaluation along with support from the readings for their stance. Papers will be exchanged in class for peer review and also discussed with the class. The major writing assignment will be ongoing; students will be tasked with looking for climate change issues in the news media. This will include major newspaper stories, social media, and online news sources (including non-traditional sources like *The Daily Show*). Each week students will write 1-2 paragraphs (1/2 page) summarizing the news story from that

week and their reaction to it. They will include the source and also be tasked with looking for the primary source and its citation each week. At the end of the semester, they will turn in the cumulative result, which will be a 7 page “timeline” of that semester’s climate change news.

Grading Breakdown

<u>Assignment</u>	<u>Percentage</u>
Timeline writing assignment	20%
Mini writing assignments	30%
Midterm	20%
Final	20%
Participation	10%

Assignment Submission Policy

All assignments will be submitted via blackboard by the dates indicated on the syllabus. Exams will require bluebooks and be written in essay format (short and long essays).

Course Schedule

Week 1	Intro to course
Aug 25	A brief primer on the physics of global warming and greenhouse gasses Readings: Selected news articles on the current state of affairs, Earth’s Climate Chp 1 (Climate Science Overview), 2 (Earth’s Climate System Today)
Aug 27	Library session- introduction to the library databases, finding sources and references from news articles <u>*** Bring your laptop to class and your first climate article for the timeline***</u>

Week 2

Sept 1 Some notes on the history of climate change science: 19th century
Readings: Weart, *The Discovery of Global Warming* pp. 1-18

Sept 3 More recent history of climate change science: 1950-present
Readings: Weart, pp. 19-37; Hansen: speeches from 1988 and 2008

Week 3

Sept 8-10 Paleoclimatology: How we know Earth’s climate has varied in the past
Readings: Earth’s Climate Chp 3 (Climate Archives, Data, and Models- read to p.69- stop at Climate Models section)

Week 4

Sept 15-17 Paleoclimatology: What drives Earth's climate?
Readings: Earth's Climate Chp 4 (CO₂ and Long-Term Climate), Chp 8 (Astronomical Control of Solar Radiation)

Sept 17 **SHORT ASSIGNMENT 1 DUE: Solar Activity vs. Anthropogenic**

Week 5

Sept 22 How did we get here? A brief history of CO₂ emissions
Notes on the industrial revolution through the history of cotton.
Reading: Packet on history of cotton

Sept 24 From Coal to Oil
Reading: From Timothy Mitchell, *Carbon Democracy*

Week 6

Sept 29 Debating responsibility for emissions, present and past
China's rise as the leading emitter of CO₂
Reading: Malm "China as the Chimney of the World"

Oct 1 Climate negotiations: Kyoto, Copenhagen, Paris...
Reading: packet of articles on climate negotiations

Week 7

Oct 6 **Midterm**

Oct 8 Learning from the past, case study: Ancient Maya
Readings: Diamond Chp 5, 14

Week 8

Oct 13- 15 Learning from the past, case study: Norse in Greenland
Readings: Diamond Chp 7, 8; Barlow, 1997.

Week 9

Oct 20 Ethical issues
Mass extinctions
Reading: Elizabeth Kolbert; Steven Hays

Oct 22 Who is to blame? The climate deniers, or the "denier" within?
Reading: George Marshall: Don't even think about it; Naomi Oreskes
Merchants of Doubt

Week 10 How the Anthropocene changes our understanding of... everything

Oct 27 What does the Anthropocene mean to historians?
Readings: Chakrabarty

Oct 29 Topic and Readings TBA (professor Goldstein tries to tie up loose ends)

Week 11

Nov 3-6 Mitigation and adaptation: What can we change and how can we cope?
Reading: 5th IPCC report: Mitigation & adaptation; press release from
Meinshausen Nature paper (2009)

Nov 6 **SHORT ASSIGNMENT 2 DUE: 2047 Divergence/ IPCC**

Week 12

Nov 10-12 The future? A dystopian view
Reading: Oreskes & Conway, *The Collapse of Western Civilization: A View
From the Future*, film: *The Age of Stupid*

Nov 10 Mock Paris meeting

Week 13

Nov 17-20 The future? Choices now to avoid disaster later
Reading: Matthews & Tan, 2014 (Nature commentary on renewables);
Shearer, *et al.* 2014, Keep it in the ground/divestment movement,

Week 14

Nov 24 Fortify vs. managed retreat case studies: Miami & San Francisco,
Reading: Selected articles on both cities covering the anticipated sea level
scenario in 50-100 yrs and the plans of the cities to fortify or retreat

Nov 26 *Thanksgiving recess- NO CLASS*

Week 15

Dec 1-3 What path should we take: embrace the other, or fight the enemy
Readings: From Naomi Klein and George Marshall

Dec 1 **SHORT ASSIGNMENT 3 DUE: Naomi Klein (fight the oil companies and
their cronies) vs. George Marshall (everyone needs to be on board)**

FINAL EXAM: THURSDAY DECEMBER 10th 2PM-4PM

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. They are located in GFS 120. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.