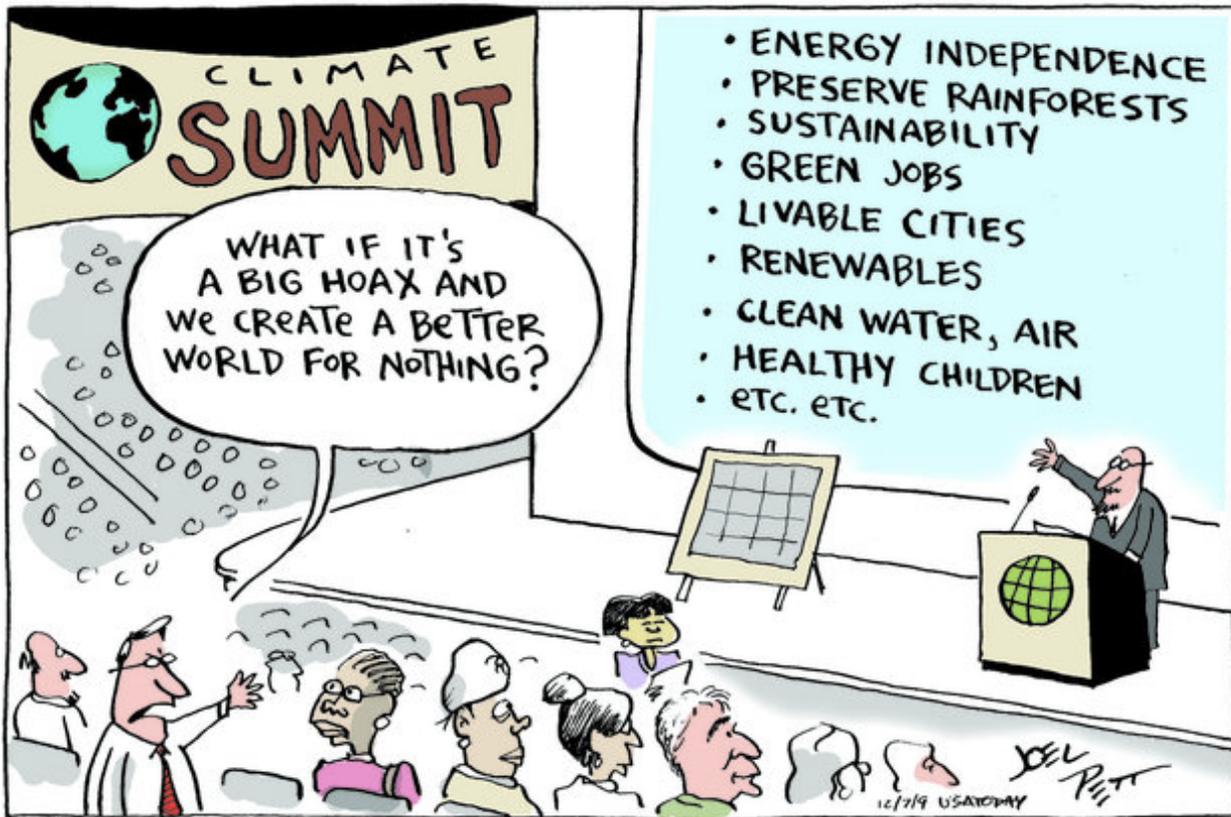


ENST 187 (FWS)  
A Prehistoric Perspective on Climate Change  
Fall 2017



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Professor: Zachary Cofran  
Meetings: Blodgett Hall 101, T-R 3:10-4:25 pm  
Email: zcofran@vassar.edu  
Office: Blodgett Hall 323  
Office hours: T 4:45-6:00 pm, W 1:00-2:15 pm, or by appointment

This course situates current climate change in the context of that which shaped the human species, from evolutionary and social perspectives. The course opens by reviewing how the Earth's climate has changed over the past century, and the ecological consequences of this. We then review the history of climate change since our species' origin, and how such instances have impacted the environments in which we evolved. We transition from this evolutionary perspective to a social one, asking, 'at what point did human intelligence and technology mitigate the evolutionary consequences of climate change? At what points was climate change more than civilizations could handle?' The latter half of the class examines archaeological and historical evidence of how human societies have handled environmental hardships resulting from climate change. We end by examining the parallels between past and present and asking what environmental, ecological and biological consequences might await our still short-lived species in the present climatic conundrum.

## Learning outcomes and objectives

### First Year Writing (from the Writing Center)

- Formulating an Argument: Participate in a scholarly conversation by crafting a paper with a clear, well-organized argument and establishing its relevance to the intended audience.
- Marshalling Evidence: Identify, evaluate, and accurately represent an understanding of primary and secondary source materials (e.g., summary, paraphrase, quotation) and show the relevance of those materials to their own arguments.
- Writing as Process: Engage various strategies for using writing to analyze and develop their ideas (free-writing, idea-mapping, reverse-outlining, revising, etc.).
- Academic Integrity: Distinguish between plagiarism and the responsible use of sources and cite according to disciplinary conventions.
- Mechanics and Usage: Formulate their ideas in clear and cogent prose while adhering to rules of grammatical correctness.

### ENST 187

- Learn to communicate scientific information and topics to non-specialist audiences
- Understand what “climate change” means
- Know the history of Earth’s climate, examining empirical data to understand its effects on human evolution & past societies
- Evaluate the evidence for/against anthropogenic climate change

## Readings

Textbook: Bender M. 2013. *Paleoclimate*. Princeton University Press.

Additional weekly readings are posted to Moodle. All readings should be completed for the week in which they are posted/assigned, before coming to class.

## Grading

### **Participation = 25%**

You will get the most out of the class if you actively participate, and there will be many instances when you will be expected to contribute to a class discussion and/or participate in small-group exercises. The assessment of Participation is as follows: missing three (3) or more class sessions = 0%; regularly present but inactive = 15%; regularly present and sporadically active = 20%; present and highly active = 25%.

### **Small Writing assignments (x3) = 50%**

You will write three small papers, each roughly five (5) double-spaced pages. The first paper is worth 10% of your overall grade, you will have the opportunity to revise and resubmit within a week of its return to make up any points lost. The other two papers are each worth 20% of your overall grade. For each of these two papers, you must work with a Writing Center consultant before submitting the final drafts.

### **Final paper = 25%**

Your final paper (roughly 10 double-spaced pages) will synthesize the material we have covered over the semester, incorporating new sources you find on your own. On 05

December you will bring a draft of the paper in to class for peer review. The final draft is due on 10 December.

### **Attendance**

If you miss class you cannot participate, which in turn can affect your grade. However, you are allowed up to two excused, penalty-free, no-questions-asked absences throughout the semester. Exceptions to this rule can only be made with appropriate documentation from Health Services or the Dean of Students.

### **Assignment submission and late work policy**

I expect you to submit your work in a timely manner, as directed on assignment prompts. Late work will be penalized with a grade reduction of 10% for each day that it is late. The only time I will accept late work without penalty is if it is accompanied by documentation from Health Services or the Dean of Students.

### **Disability accommodation**

Academic accommodations are available for students registered with the Office for Accessibility and Educational Opportunity (AEO). Students in need of disability (ADA/504) accommodations should schedule an appointment with me early in the semester to discuss any accommodations for this course that have been approved by the Office for Accessibility and Educational Opportunity, as indicated in your AEO accommodation letter.

### **Academic Integrity**

All work you submit must be your own. You may discuss assignments with colleagues, but you may not turn in the same work. When you use references, other people's ideas, and especially other people's direct words, you absolutely must cite them. For more information, see page 133 of the Vassar College Regulations (<http://bit.ly/2bMuogv>) and "Going to the Source" (<http://bit.ly/2bMuNQ8>). Plagiarism and other academic misconduct will result in a grade of 0 on the assignment and referral to the College's Academic Panel.

### **Technology**

Turn your phones off (or at least put on silent) when you come to class. I can and will confiscate phones if I find them distracting. Phones may only be used in class to access course materials (e.g., readings). You may take notes on a computer if you wish, however, if you become distracting to myself or other students I will confiscate the computer for the duration of class as well. I reserve the right to ban all technology from the classroom at any point in the semester.

## Schedule of topics, readings & assignments\*

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\* Schedule and content subject to change at professor's discretion.

### Part 1: Climate of climate discussion

#### **Week 1 (29-31 August) – What is climate?**

##### Readings

- Bender Ch. 1
- Gillis 2017. Should you trust climate science? Maybe the eclipse is a clue. *New York Times*, 18 August.

#### **Week 2 (05-07 September) – Climate in the present: Data**

Thursday – Small paper 1 prompt given

##### Readings

- Bender Ch. 4
- Steffen et al. 2011. The Anthropocene: conceptual and historical perspectives. *Philosophical Transactions: Mathematical, Physical and Engineering Sciences* 369: 842–867.
- Idso et al. 2015. Chapter 5: False Postulates. In *Why Scientists Disagree about Global Warming*. NIPCC.

#### **Week 3 (12-14 September) – Climate in the present: Denial**

##### Readings

- Jacques et al. 2008. The organisation of denial: Conservative think tanks and environmental scepticism. *Environmental Politics* 17: 349–385.
- Hansson 2017. Science denial as a form of pseudoscience. *Studies in History and Philosophy of Science Part A* 63: 39–47.

### Part 2: Palaeontology

#### **Week 4 (19-21 September) – Climate in the past: Data**

Thursday – Small paper 1 due in class

##### Readings

- Zachos et al. 2001. Trends, rhythms, and aberrations in global climate 65 Ma to present. *Science* 292: 686–693.

#### **Week 5 (26-28 September) – Paleocene-Eocene Thermal Maximum**

Thursday – Small paper 2 prompt given

##### Readings

- Bender Ch. 7
- Gingerich 2006. Environment and evolution through the Paleocene-Eocene thermal maximum. *Trends in Ecology and Evolution* 21: 246–253.

#### **Week 6 (03-05 October) – Plio-Pleistocene radiation**

##### Reading

- Potts 2012. Environmental and behavioral evidence pertaining to the evolution of Early *Homo*. *Current Anthropology* 53: S299-S317.

October Break – no classes!

**Week 7 (17-19 October) – The Ice Age 1**

By Tuesday – Small paper 2 Writing Center consultation

Readings

- Bender Ch. 9
- Dennell 2010. The colonization of “Savannahstan”: Issues of timing(s) and patterns of dispersal across Asia in the Late Pliocene and Early Pleistocene. In Norton & Braun (eds) *Asian Paleoanthropology*. New York: Springer, pp. 7–30.

**Week 8 (24-26 October) – The Ice Age 2**

Tuesday – Small paper 2 due in class

Wednesday 25 October– Amitav Ghosh, 5:30 pm

Readings

- Bender Ch. 10
- Timmermann & Friedrich 2016. Late Pleistocene climate drivers of early human migration. *Nature* 538: 92–95.
- Hodgkins et al. 2016. Climate-mediated shifts in Neandertal subsistence behaviors at Pech de l’Azé IV and Roc de Marsal (Dordogne Valley, France). *Journal of Human Evolution* 96: 1–18.

Part 3: Archaeology

**Week 9 (31 October-02 November) – The Holocene**

Readings

- Bender Ch. 11
- deMenocal and Thierney 2012. Green Sahara: African humid periods paced by Earth’s orbital changes. *Nature Education Knowledge* 3: 12.

**Week 10 (07-09 November) – Scythians**

Tuesday – Small paper 3 due in class for peer review

Readings

- d’Alpoim Guedes et al. 2016. Twenty-first century approaches to ancient problems: Climate and society. *Proceedings of the National Academy of Sciences* 113: 14483–14491.
- van Geel et al. 2004. Climate change and the expansion of the Scythian culture after 850 BC: a hypothesis. *Journal of Archaeological Science* 31: 1735–1742.

**Week 11 (14-16 November) – Cahokia**

Tuesday – Small paper 3 due in class

Reading

- Benson et al. 2009. Cahokia’s boom and bust in the context of climate change. *American Antiquity* 74: 467–483.

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- Munoz et al. 2015. Cahokia's emergence and decline coincided with shifts of flood frequency on the Mississippi River *Proceedings of the National Academy of Sciences* 112: 6319–6325.
- Baires et al. 2015. Correlation does not equal causation: Questioning the Great Cahokia flood. *Proceedings of the National Academy of Sciences* 112: E3753.

### **Week 12 (21 November) – Demise or Diaspora?**

No class Thursday (Thanksgiving)

- Lucero et al. 2015. From 'collapse' to urban diaspora: the transformation of low-density, dispersed agrarian urbanism. *Antiquity* 89: 1139–1154.

### **Week 13 (28-30 November) – The Anthropocene revisited**

Tuesday – Final paper draft to Writing Center

Readings

- Ruddiman 2013. The Anthropocene. *Annual Review of Earth and Planetary Sciences* 41: 45–68.

### **Week 14 (05 December) – The past in perspective**

Readings

- Bender Ch. 12