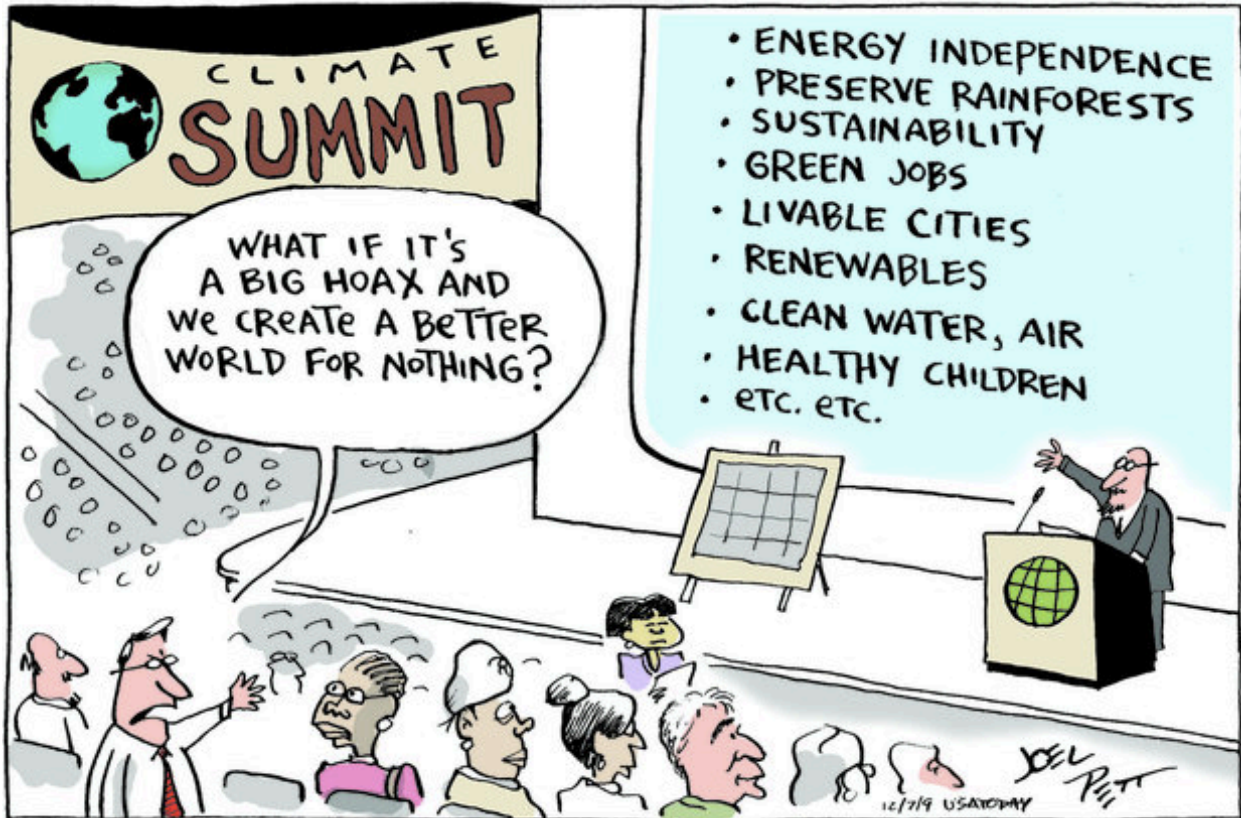


**ENST 177 (FYWS)**  
**A Prehistoric Perspective on Climate Change**  
Spring 2022



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Professor: Zachary Cofran  
Meetings: Monday & Wednesday 12:00–1:15 pm  
Location: Blodgett Hall 122  
Email: [zcofran@vassar.edu](mailto:zcofran@vassar.edu)  
Office: Blodgett Hall 323  
Student hours: Tuesday 1:00–3:30 pm by appointment

This course situates the current climate crisis in the context of climatic changes that 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 point(s) was climate change more than societies 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 177

- 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

Readings are posted to Moodle. There is no required textbook that you need to purchase. However, the textbook *Paleoclimate* (Bender, 2013) provides ample background and supplemental information, so you may download a free version\* or purchase the book if you wish.

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

\*(not required!) Bender M. 2013. *Paleoclimate*. Princeton University Press. E-book from Vassar Library (free!) [here](#).

## Assessment

### **Participation & in-class writing = 20%**

Each week there will be discussions and activities to which you are expected to contribute, as well as in-class writing assignments (‘practice makes perfect’). To earn the full 20%, you must consistently participate in class activities, and engage thoughtfully in in-class writing assignments. You completely forfeit your Participation score if you have at least four unexcused absences (see “Attendance” below), or if you rarely or never participate in class activities.

## Syllabus – ENST 177 – Spring 2022

### **Small papers (10% x 3) = 30%**

In the first half of the semester, you will write three short papers, aimed at developing various skills and covering various topics, due January 31, February 09, and February 28, respectively.

### **Term Project = 40%**

You will complete a comprehensive term project relating paleoclimate evidence to the present day. Your job is to use a specific example or incidence of climate change in the past as a way to learn about present day environments and climates. The project involves finding and engaging with primary sources such as peer-reviewed journal articles and books. The project is scaffolded, with subsequent components building on previous submissions:

- Brainstorm meeting with Dr. Cofran (Week 7) = 5%
- Draft 1 (Week 9) = 5%
  - Peer review = 5%
- Draft 2 (Week 11) = 5%
  - Peer review = 5%
- In-class presentations (Week 13) = 5%
- Final draft (Week 14) = 10%

### **Final exercise = 10%**

Prompt given last day of class (May 02), due electronically May 13

## Schedule of topics, readings & assignments

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

### **Week 1 (January 19): Climate past & present**

#### Monday

- Krajcik, 2020. Ancient Volcanoes Once Boosted Ocean Carbon, But Humans Are Now Far Outpacing Them. State of the Planet, Columbia Climate School press release. ([link](#))

### **Week 2 (January 24–26): Earth's climate system**

#### Monday

- Bender, *Paleoclimate*, Preface and Ch. 1
- [Small paper 1 prompt given](#)

#### Wednesday

- Zimmer, C. (2019). Science Writing: Guidelines & Guidance. *Medium* ([link](#))
- Franta, 2018. On its 100<sup>th</sup> birthday in 1959, Edward Teller warned the oil industry about global warming. *The Guardian* January 1. ([link](#))

### **Week 3 (January 31–February 02): Defining the Anthropocene**

#### Monday

- [Small paper 1 due Monday evening by email or Google Drive](#)
- Steffen et al. 2011. The Anthropocene: Conceptual and historical perspectives. *Philosophical Transactions: Mathematical, Physical and Engineering Sciences* 369: 842–867.

#### Wednesday

- Savage, V. and Yeh, P. (2019). Novelist Cormac McCarthy's tips on how to write a great science paper. *Nature*. ([link](#))
- [Small paper 2 prompt given](#)

### **Week 4 (February 07–09): Behind the “-cenes”**

#### Monday

- Pulido, 2018. Racism and the Anthropocene. In (Mitman et al., eds.) *The Remains of the Anthropocene*, pp. 116–128. University of Chicago Press.

#### Wednesday

- [Small paper 2 due Wednesday evening by email or Google Drive](#)
- Zachos et al. 2001. Trends, rhythms, and aberrations in global climate 65 Ma to present. *Science* 292: 686–693.
- Bender, Boxes 2–3 (pp. 86–89 and 100–103)

### **Week 5 (February 14–16): Paleocene-Eocene Thermal Maximum**

#### Monday

## Syllabus – ENST 177 – Spring 2022

- Williams (2016). Effects of climate change on primate evolution in the Cenozoic. *Nature Education Knowledge* 7:1. (<http://go.nature.com/2DNQidN>)

### Wednesday

- Library session (with Gretchen Lieb)
- **Before class: Use Google Scholar and Scopus databases to find PETM article, bring bibliographic info to Wednesday's session**
- Small paper 3 assigned

### **Week 6 (February 21–23): Planet of the Apes**

#### Monday: Dr. Daniel Green guest lecture

- Reading TBD

### Wednesday

- Bender, Box 4: “Orbital Variations & Climate” (pp. 155–158)

### **Week 7 (February 28–March 02): Ice Age 1—Hominins**

#### Monday

- **Small paper 3 due Monday evening by email or Google Drive**
- Potts 2012. Environmental and behavioral evidence pertaining to the evolution of Early Homo. *Current Anthropology* 53: S299-S317.

### Wednesday

- Individual meetings in place of regular class

**\*\*\* Spring Recess: March 04–20 \*\*\***

### **Week 8 (March 21–23): Ice Age 2—Lonely existence**

#### Monday

- Tierny et al. 2017. A climatic context for the out-of-Africa migration. *Geology*
- Ritter, 2018. Cold, dry climate shifts linked to Neanderthal disappearance. *Associated Press*, August 27 (<http://bit.ly/30NoyjY>)
- Supplemental: “Neandertals” overview from the Smithsonian

### Wednesday

No regular class: ZC @ AABA conference

### **Week 9 (March 28–30): Green Sahara**

#### Monday

- deMenocal and Thierney 2012. Green Sahara: African humid periods paced by Earth's orbital changes. *Nature Education Knowledge* 3: 12.
- Sereno et al., 2008. Lakeside cemeteries in the Sahara: 5000 years of Holocene population and environmental change. *PLoS One* 3:e2995

### Wednesday

## Syllabus – ENST 177 – Spring 2022

- Paper draft 1 due – bring to class
- Peer review workshop 1

### **Week 10 (April 04–06): Lessons from the past**

#### Monday

- 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.

#### Wednesday

- Burke et al., 2021. The archaeology of climate change: The case for cultural diversity. *Proceedings of the National Academy of Sciences* 118: e2108537118

### **Week 11 (April 11–13): Scythians**

#### Monday

- 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.

#### Wednesday

- Paper draft 2 due – bring to class
- Peer review workshop

### **Week 12 (April 18–20): Cahokia**

#### Monday

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

#### Wednesday

- 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 13 (April 25–27): Presentations & discussion**

No readings!

### **Week 14 (May 02): The past in perspective**

Final draft of term paper due Wednesday May 04

Paper in lieu of Final Exam assigned, due no later than May 13

#### Monday

- Bender Ch. 12: Anthropogenic global warming in the context of paleoclimate
- Kintisch, 2016. As the Arctic erodes, archaeologists are racing to protect ancient treasures. *Smithsonian Magazine*, January 26 (<http://bit.ly/30RjB9N>)

## Course Policies

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### **Territory Acknowledgement**

The Vassar campus exists on lands that were once home to the [Delaware](#) Nation, the Delaware [Lenape](#) Tribe, and the [Stockbridge-Munsee](#) Band of Mohican Indians. Although many sources reference the Wappingers as the indigenous peoples of our campus, they were a confederacy of Native peoples who organized at one time in response to Euro-American incursions into the area. Read Vassar College's land acknowledgment [here](#).

### **Attendance**

You are allowed up to three excused, penalty-free, no-questions-asked absences throughout the semester. The exception to this is that you must be in attendance for peer review workshops (March 30 and April 13) and project presentations (April 25–27). 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**

Assignments must be completed and submitted on time – however, you are allowed two grace days, for you to use (or not use) at your discretion, for the Small Papers and Final paper draft only. If you think you will need a little more time to complete one of these assignments, simply let me know before it is due, and you can submit it a day later. This does not apply to term paper drafts or presentations.

Barring grace days, late work will be reduced by one half letter grade (e.g., A to B+) for each day that it is late. The only other 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 requiring 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 pages 83–84 of the Vassar College Regulations ([link](#)) and "Going to the Source" ([link](#)). Plagiarism and other academic misconduct will result in a grade of 0 on the assignment and referral to the College's Academic Panel.

## Title IX Responsibilities

Vassar College is committed to providing a safe learning environment for all students that is free of all forms of discrimination and sexual harassment, including sexual assault, relationship abuse, and stalking. If you (or someone you know) has experienced or experiences any of these incidents, know that you are not alone. Vassar College has staff members trained to support you in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more.

Please be aware all Vassar faculty members are “responsible employees,” which means that if you tell me about a situation involving sexual harassment, sexual assault, relationship abuse, or stalking, I **must** share that information with the Title IX Coordinator. Although I have to make that notification, the Title IX office will only provide outreach by email. You will control how your case will be handled — you don’t have to read or respond to the email, and it is completely up to you whether to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone privately, you can contact any of the following on-campus resources:

- Counseling Service ([counselingservice.vassar.edu](https://counselingservice.vassar.edu), [845-437-5700](tel:845-437-5700))
- Health Service ([healthservice.vassar.edu](https://healthservice.vassar.edu), [845-437-5800](tel:845-437-5800))
- Nicole Wong, SAVP (Sexual Assault and Violence Prevention) director ([savp.vassar.edu](https://savp.vassar.edu), [845-437-7863](tel:845-437-7863))
- SART (Sexual Assault Response Team) advocate, available 24/7 by calling the CRC at [845-437-7333](tel:845-437-7333) and asking for SART

The SAVP website ([savp.vassar.edu](https://savp.vassar.edu)) and the Title IX section of the EOAA website ([eoaa.vassar.edu/title-ix/](https://eoaa.vassar.edu/title-ix/)) have more information, as well as links to both on- and off-campus resources.