

**ANTH 4800-008
ARCHAEOLOGY OF CLIMATE CHANGE
SPRING 2017**

Meeting Time: Monday, Wednesday, and Friday, 8:30-9:20 am
Old Main 119

Instructor: Judson Finley

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Office Hours: Monday and Wednesday 10:00-11:30, or by appointment

Course Description

Climate change is among the most critical problems that we face as a contemporary industrial society. The debate over human influences has taken a prevalent place in the national and global political arena. However, to truly understand the relationships between climate change and human society one must look deep into the past. This class provides a critical understanding of how climate scientists reconstruct past climate and have come to understand the major influences of climate change. The relationships between humans and the natural environment are presented as a series of case studies that are global in nature and span much of the last 2,000,000 years. This class examines how archaeology as an interdisciplinary science creates and uses primary climate data as part of its research agenda. Students will use the online learning platform, Top Hat, in a hybrid classroom where lectures and critical content will be made available prior to each week of class.

Learning Objectives

- Students will gain factual knowledge about the fundamentals of Earth's climate system
- Students will gain a broader understanding and appreciation of the role climate played in the evolution of the human species, the colonization of the planet, and the rise of complex societies
- Students will apply course materials to understand climate change versus climate variability
- Students will critically evaluate the role of humans in current understandings of climate change

Requirements

Grades for this class are based on four individual components: a reading journal (25%), one 8-10 page research paper (25%), a midterm exam (25%), and a final comprehensive exam (25%). Full participation in class discussions is expected, which means completing the weekly readings

prior to class (this is the purpose of the reading journal). Attendance and discussion will be included in the participation component of the class.

Top Hat

We will be using the Top Hat (www.tophat.com) classroom response system in class. You will be able to download content and submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message. You can visit the Top Hat Overview (<https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide>) within the Top Hat Success Center which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.

An email invitation will be sent to you by email, but if don't receive this email, you can register by simply visiting our course website: <https://app.tophat.com/e/800881>

Note: our Course Join Code is *****

Top Hat will require a paid subscription, and a full breakdown of all subscription options available can be found here: www.tophat.com/pricing.

Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email (support@tophat.com), the in app support button, or by calling 1-888-663-5491.

*****Final Exam: Friday May 5, 2017 7:30-9:20 am, Old Main 119**

Required Texts

Fagan, B. (2004). *The Long Summer: How Climate Changed Civilization*. Basic Books, Cambridge, Massachusetts.

Ruddiman, W.F. (2005). *Plows, Plaques, and Petroleum: How Humans Took Control of the Environment*, 2nd ed. Princteon University Press.

Woodward, J. (2014). *The Ice Age: A Very Short Introduction*. Oxford University Press.

Schedule:

Week 1 January 9-13, 2017	Introduction to Class Woodward (2014), Chapters 1-5
Week 2 January 16-20, 2017	Framework of Climate Science READING: Ruddiman (2005), Chapters 1-6 *No Class Monday January 16, 2017
Week 3 January 23-27, 2017	Proxy Records of Quaternary Climate READING: Woodward (2014), Chapters 6-Epilogue
Week 4 January 30- February 3, 2017	CASE STUDY: Plio-Pleistocene Environments and Hominid Evolution READING: Potts (1998)
Week 5 February 6-10, 2017	CASE STUDY: Out of Africa FILM: Journey of Mankind READING: Frumkin et al. (2011); Petraglia et al. (2010)
Week 6 February 13-17, 2017	CASE STUDY: Colonizing Australia READING: Ambrose (1998); O'Connell et al. (2010); Miller et al. (2005)
Week 7 February 20-24, 2017	CASE STUDY: Paleolithic Europe: <i>H. neanderthalensis</i> v. <i>H. sapiens</i> READING: Gilligan (2007); Bradtmöller et al. (2012) *No Class Monday February 20, 2017 **Monday Schedule on Tuesday February 21, 2017
Week 8 February 27-March 3, 2017	Peopling the Americas READING: Meltzer (2004); Fagan (2004), Chapters 1-3 *Midterm Exam Friday March 3, 2017
Week 9 March 6-10, 2017	SPRING BREAK—NO CLASS
Week 10 March 13-17, 2017	Agriculture and Climate Change READING: Ruddiman (2005), Chapters 7-11; Fagan (2004), Chapters 4-5
Week 11 March 20-24, 2017	The Long Drought? READING: Meltzer (1999); Fagan (2004), Chapters 6-8
Week 12 March 27-31, 2017	El Niño Southern Oscillation READING: Ruddiman (2005), Chapters 12-14; Fagan (2009) FILM: Digging for the Truth: Chavin de Huantar
Week 13 April 3-7, 2017	The Roman Drought READING: Fagan (2004), Chapters 9-10; Nash (2006); Knight et al. (2010) CASE STUDY: Dendrochronology Primer
Week 14 April 10-14, 2017	The Medieval Climate Anomaly READING: Fagan (2004), Chapters 11-12; Benson et al. (2007)
Week 15 April 17-21, 2017	Recent Climate Change READING: Fagan (2004), Epilogue; Ruddiman (2005), Chapters 15-

	19
Week 16 April 24-28, 2017	The Geopolitics of Climate Change READING: Mann et al. (1998); Mann (2012); Oreskes and Conway (2011) CASE STUDY: The Hockey Stick Debate LAST DAY OF CLASS—APRIL 28, 2017

*****Final Exam: Friday May 5, 2017 7:30-9:20 am, Old Main 119**

Readings

Ambrose, S.H. (1998). Late Pleistocene Human Population Bottlenecks, Volcanic Winter, and Differentiation of Modern Humans. *Journal of Human Evolution* 34:623-651.

Bradtmöller, M., A. Pastoors, B. Weninger, G.C. Weniger (2012). The Repeated Replacement Model—Rapid Climate Change and Population Dynamics in Late Pleistocene Europe. *Quaternary International* 247-38-49.

Frumkin, A., O. Bar-Yosef, and H.P. Schwarcz (2011). Possible Paleohydrologic and Paleoclimate Effects on Hominin Migration and Occupation of the Levantine Middle Paleolithic. *Journal of Human Evolution* 60:437-451.

Gilligan, I. (2007). Neanderthal Extinction and Modern Human Behavior: The Role of Climate Change and Clothing. *World Archaeology* 39:499-514.

Knight, T.A., D.M. Meko, and C.H. Baisan (2010). A Bimillennial-Length Tree-Ring Reconstruction of Precipitation for the Tavaputs Plateau, Northeastern Utah. *Quaternary Research* 73:107-117.

Mann, M.E. (2012). *The Hockey Stick and the Climate Wars: Dispatches from the Front Lines*. Columbia University Press, New York.

Mann, M.E., R.S. Bradley, and M.K. Hughes (1998). Global-Scale Temperature Patterns and Climate Forcing Over the Past Six Centuries. *Nature* 392:779-787.

Meltzer, D (1999). Human Responses to Middle Holocene (Altithermal) Climates on the North American Great Plains. *Quaternary Research* 52:404-416.

Meltzer, D. (2004). Peopling of North America. In *The Quaternary Period in the United States*, edited by A.R. Gillespie, S.C. Porter, and B.F. Atwater, pp. 539-563. Elsevier, New York.

Miller, G.H., M.L. Fogel, J.W. Magee, M.K. Gagan, S.J. Clarke, B.J. Johnson (2005). Ecosystem Collapse in Pleistocene Australia and a Human Role in Megafaunal Extinction. *Science* 309:287-290.

Nash, S.E. (2006). *Time, Trees, and Prehistory: Tree-Ring Dating and the Development of North American Archaeology 1914-1950*. University of Utah Press, Salt Lake City.

O'Connell, J.F., J. Allen, and K. Hawkes (2010). Pleistocene Sahul and Origins of Seafaring. In *The Global Origins and Development of Seafaring*, edited by A. Anderson, K. Barrett, and K. Boyle, pp. 57-68. McDonald Institute for Archaeological Research, Cambridge.

Oreskes, N., and E.M. Conway (2011). *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco to Global Warming*. Bloomsbury Press, New York.

Petraglia, M.D., M. Haslam, D.Q. Fuller, N. Boivin, and C. Clarkson (2010). Out of Africa: New Hypotheses and Evidence for the Dispersal of *Homo sapiens* along the Indian Ocean Rim. *Annals of Human Biology* 37:288-311.

Potts, R. (1998). Environmental Hypotheses of Hominin Evolution. *Yearbook of Physical Anthropology* 41:93-136.

IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA), qualified students with disabilities may be eligible for reasonable accommodations. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, 797-2444 voice, 797-0740 TTY, or toll free at 1-800-259-2966. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print or digital) are available with advance notice.

IN COMPLIANCE WITH THE FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA), it is the policy of the Department of Sociology, Social Work & Anthropology at Utah State University to maintain the confidentiality of students' records. When it is not feasible to distribute exams, papers, and other assignments to students individually (e.g., in large-enrollment classes), the instructor may obtain from students a signed waiver of confidentiality regarding class assignments so exams, papers, and other academic exercises may be placed out during class or during other group sessions for students to pick up. A general waiver may be sought from each student at the beginning of the academic term with the understanding that the waiver may be rescinded, in writing, during the academic term if the student chooses. If a student does not sign a waiver, then assignments must be returned to that student confidentially.