HIST 406: ANCIENT CLIMATE CHANGES

Lectures: Tuesdays and Thursdays, 3:30-4:15. **Office Hours:** Wednesdays, 1:00-3:00, ICC 627
Professor: Dr. Dagomar Degroot. Email: dd865@georgetown.edu. Web: DagomarDegroot.com.
Course Website: AncientClimateChanges.weebly.com

Course Description:

When you hear the words "climate change," you probably think of global warming: the recent rise in Earth's average temperature, caused by human greenhouse gas emissions. Yet for billions of years, natural forces – from volcanic eruptions to comet impacts – have also changed Earth's climate. In this course, we will explore how natural climate change shaped the fortunes of pre-industrial societies.

We will begin by learning how natural scientists and environmental historians work together to detect climate changes in the very distant past. Next, we will investigate three key moments in which natural climate changes intervened in human affairs in the Common Era (CE). First, we will consider how falling solar activity and a series of violent volcanic eruptions imperiled ancient empires in the fifth and sixth centuries CE. Second, we will examine the fate of diverse communities, from the Arctic to central America, as the warm medieval centuries yielded to volcanic cooling in the fourteenth century. Finally, third, we will explore the frigid sixteenth and seventeenth centuries, when sudden cooling provoked crisis and spurred adaptation around the globe.

Along the way, you will discover how scholars combine disciplines to look at our past in an entirely new way, one that has much to tell us about our present and future.

Course Goals:

Like other courses offered by the Department of History, this course will help you:

1. Gain a deeper appreciation of the nature and practice of history as a discipline, and as the study, based on evidence, of human experiences, interactions, and relationships as they change over time.
2. Learn that history does not consist of a simple succession of self-evident facts, and that evidence-based interpretation and analysis are central to all historical work.
3. Hone reading, writing, and oral communication skills.
4. Develop your capacity to think historically: to situate events and developments in their historical context for the purpose of critical analysis.
5. Expand your ability to engage with complex causal analysis, and to articulate arguments that integrate supporting evidence and analytical commentary.
6. View the world from perspectives other than your own.

This course in particular will also help you:

1. Understand now different academic disciplines approach the human past, and what their distinct methods and sources can tell us.
2. Gain a deep understanding of the historical context behind the defining crisis of the twenty-first century world: climate change.

Breakdown:

Participation:	30%
Historiographical Essay:	10%
Primary Source Essay Annotated Bibliography:	10%
Primary Source Essay First Draft:	10%
Primary Source Essay Final Draft:	40%

Evaluation:

Participation:

You will earn a third of your participation grade for attending class. Another third will reflect both the quantity and especially the quality of your comments. If we break into groups for debates and primary source exercises, I will evaluate your group participation. If you want top grades, I strongly encourage you to keep notes from your readings. You should aim for at around two pages of single-spaced notes per week. You will earn the last third of your grade by giving a short presentation on your primary source essay (see below).

Historiographical Essay on Climate Change and Collapse

Write a 5-page *historiographical* summary that answers the following question: "Did past climatic shocks ever provoke civilizational collapse?". Make an argument and support it by drawing from the equivalent of five scholarly books, where one book is equal to two articles. Try not to use the books required for this course.

A historiographical paper takes a side in a scholarly debate about the human past. That means that you should describe the arguments made by different authors, explain how they engage each other, and criticize the ones you don't agree with based on, for example, their persuasiveness, use of evidence, or method.

Little Ice Age Primary Source Essay:

Write a 15-page, primary-source essay on a topic that has some relation to the impact of the Little Ice Age on human history.

Annotated Bibliography:

Find a *primary source* that will help you compose an argument relevant to your topic. For a guide to reading primary sources, click here (if you've printed out this syllabus, the link is: http://users.clas.ufl.edu/sterk/junsem/reading.html). Your interpretation of your primary source, and your investigation of the history it allows you to examine, should be supported by *secondary sources* – that is, scholarship written about your topic – and, if available, online climate reconstructions (available here, for example). Be sure to place your argument in a historiographical *and* scientific context (that means, in the context of arguments made by scientists and other historians)!

Now, plan out your essay in an annotated bibliography. In your first page, list and provide a description of your primary source. Then, give me a hypothesis that will structure your approach to your primary source. Explain how you hope to answer this hypothesis using your source.

List your secondary sources and (if applicable) online reconstructions on the following pages. These sources should cover an issue relevant to the hypothesis you have presented. They should be written after 1960, unless I approve of an older source. You should use no fewer than seven books, with one book equal to two articles (in other words, you can use four books and six articles). Each secondary source citation should be accompanied by a short paragraph clearly stating its argument, the strengths and weaknesses of that argument, and how it compares to the positions taken in your other secondary sources. You should also describe how your secondary sources might frame your investigation of the primary source you selected.

Contact me at least one week before the due date to confirm your topic with me. I am happy to offer suggestions for where you might look for any source you need to find.

Rough Draft:

Once you I grade your annotated bibliography and offer my suggestions, you will start working on a rough draft of your paper. Your rough draft should represent your very best work, though of course it will not be the final iteration of your paper.

On the day you submit your rough draft, you will give a short (5-minute) presentation about your paper. Your peers will then have a chance to ask you questions about your presentation.

Final Draft:

After I return your rough draft with my grade and comments, you will have a chance to revise the draft in light of my suggestions, and your own ideas about what you could improve. Even if you received an A on your rough draft, you will need to make some revisions, because nobody's first draft is ever perfect. If you do not make any revisions, you will receive a much lower grade on the final product.

When you submit your final draft, include a brief (no more than one page) summary of the revisions you made, and add a short (200-word) abstract of your paper. If you disagree with a recommendation and therefore did not follow it, use your summary to explain your reasoning. If your explanation makes sense to me, your grade will not suffer.

With your permission, I will publish your abstract on HistoricalClimatology.com, a website on past climate change that receives roughly 500,000 hits per year.

Grading Criteria:

Each of these criteria will be worth approximately a third of your grade:

Clarity:

Are you using words that appropriately and formally express your meaning? Are your points sourced correctly? Do your sentences precisely express your meaning, and are they grammatically correct? Is there a clear thesis that presents an argument and outlines how that argument will be defended? Is there a coherent organization that culminates in a conclusion that references the thesis?

Research:

Are your secondary sources serious works of scholarship, and are they relevant to your argument? Do your primary sources illuminate the issue you are investigating, and to what extent? Are those primary sources relevant to your argument, and do you present them in the context of your secondary sources?

Ideas:

How creative and nuanced are your arguments? Are you merely repeating the claims of other scholars, or are you evaluating them in the context of other arguments and concepts? To what extent can you develop fresh ideas?

Required Course Texts:

Lieberman, Benjamin and Elizabeth Gordon, *Climate Change in Human History*. London: Bloomsbury, 2018.

Harper, Kyle. *The Fate of Rome: Climate, Disease, and the End of an Empire.* New Haven: Yale University Press, 2017.

White, Sam. *A Cold Welcome: The Little Ice Age and Europe's Encounter with North America.* Cambridge: Harvard University Press, 2017.

Important Notes:

House Rules:

You may use your laptops or tablets to take notes or to look up information in class. However, you may **not** use your phones, and you may **not** record lectures. You may not access social media in class, which is distracting both for you and for your classmates.

Do not show up late to class. This detracts from your learning and disturbs your classmates. If you are repeatedly late, I may lower your participation grade without informing you.

Submitting Assignments:

Assignments are due **at the beginning of class**, including assignments you need to email to me. Any assignment submitted after the first 15 minutes of class is late. Late assignments will receive

a 5%/day penalty. I will not grade assignments that are more than one week late, unless you have negotiated an extension with us (see below).

Extensions:

You may ask me for a **short** extension *before an assignment is due*. I am more likely to grant your request if you A) give me a convincing explanation for your tardiness; B) give me a roadmap that outlines how you will complete your assignment; and C) propose a new due date.

I will only grant requests for an extension on or after the assignment due date in truly exceptional circumstances (a death in the family, for example, or a very serious illness). In such cases, I may ask for written verification.

Be sure to contact your deans in case of absences, difficulties meeting due dates, and other problems.

Missing Assignments:

If you fail to hand in an assignment, you will receive a zero for that assignment. You may not fail the course, but your ability to pass the course will be in serious jeopardy. You will **not necessarily** receive a message from me that asks you about your missing assignment. I expect you to handle your obligations yourself.

Missing Class:

You have **one** excused absence: one class you can miss without penalty. If you think that you will need to miss several classes for significant and predictable reasons (such as religious observances, or University-sponsored athletic events), you must inform me of the specific circumstances and dates **at the start of the term**.

I will try to accommodate requests for a reasonable number of such absences. You must make sure that the details of the situation are clear to me early on, so that you may have a chance to enroll in a different class if I cannot accommodate your circumstances. Note that the short length of this module will make it hard for you to do well if you must miss more than two classes.

You receive a grade for every class you attend. If you do not attend a class and you have already had your one excused absence, you will receive a grade of **zero** for the class you missed. This will significantly lower your overall grade.

Academic Honesty:

Plagiarism is not just about copying someone else's writing. Any time you present ideas without correctly citing them, you are committing plagiarism. This is the most serious intellectual offense you can commit in academia, so your professors take it very seriously.

It is **your** responsibility to familiarize yourself with the Georgetown University Undergraduate Honor System. It is your professor's duty to refer academic misconduct - including plagiarism – to the Georgetown Honor Council. If the Council decides that you have plagiarized, you will fail this class and suffer additional penalties.

Beyond the Course:

I am committed to supporting survivors of sexual misconduct, which includes relationship violence, sexual harassment and sexual assault. However, you should know that university policy requires faculty to report any disclosures about sexual misconduct to the Georgetown Title IX Coordinator, who directs the University's response to sexual misconduct.

Georgetown has a number of fully confidential professionals who provide support and assistance to survivors of sexual assault and other forms of sexual misconduct. They include:

Jen Schweer, MA, LPC, Associate Director of Health Education Services for Sexual Assault Response and Prevention. Contact: (202) 687-0323, jls242@georgetown.edu.

Erica Shirley, Trauma Specialist, Counseling and Psychiatric Services (CAPS). Contact: (202) 687-6985, els54@georgetown.edu.

More information about campus resources and reporting sexual misconduct can be found at: http://sexualassault.georgetown.edu.

Schedule:

- *This schedule may be changed by your professor. You will usually have at least one week's notice.*
- *Complete all weekly readings by Tuesday.*

INTRODUCTION

Week 1: How Earth's climate changed.

January 10

Readings:

1. No readings for our first week.

Week 2: How we know that Earth's climate has changed.

January 15
January 17

Readings:

1. Stefan Brönnimann et al., "Archives of Nature and Archives of Societies." In *The Palgrave Handbook of Climate History*, edited by Sam White, Christian Pfister, and Franz Mauelshagen, 27-36. (London: Palgrave Macmillan, 2018). I will provide a copy.
2. Christian Pfister, "Evidence from the Archives of Societies: Documentary Evidence - Overview." In *The Palgrave Handbook of Climate History*, 37-47. I will provide a copy.
3. Kevin Anchukaitis, "Tree Rings Reveal Climate Change Past, Present, and Future 1." *Proceedings of the American Philosophical* Society 161:3 (2017): 244-263.
4. John Haldon et al., "History meets palaeoscience: Consilience and collaboration in studying past societal responses to environmental change." *Proceedings of the National Academy of Sciences* (2018): 201716912.

PART I: GLOBAL WARMING, GLOBAL COOLING, AND THE ANCIENT WORLD

Week 3: Climate collapse or complex resilience in the millennia BC?

January 22
January 24

Readings:

1. Lieberman and Gordon, *Climate Change in Human History,* pages 1-72.
2. Harvey Weiss et al., "The genesis and collapse of third millennium north Mesopotamian civilization." *Science* 261:5124 (1993): 995-1004.
3. Harvey Weiss and Raymond S. Bradley, "What drives societal collapse?". *Science* 291:5504 (2001): 609-610.
4. Paul Coombes and Keith Barber, "Environmental determinism in Holocene research: causality or coincidence?". *Area* 37:3 (2005): 303-311.
5. Joseph Manning et al., "Volcanic suppression of Nile summer flooding triggers revolt and constrains interstate conflict in ancient Egypt." *Nature Communications* 8 (2017): 900.

Week 4: Climate change, epidemic disease, and the Roman Empire at its height.

January 29
January 31: NO CLASS

Readings:

1. Harper, *The Fate of Rome,* pages 1-159.

Week 5: Fall of the (Western) Roman Empire: a story of environmental decline?

February 5
February 7

Readings:

1. Harper, *The Fate of Rome,* pages 160-293.

Week 6: Questioning the social and climatic histories of Rome's fall.

February 12: HISTORIOGRAPHICAL ESSAY DUE
February 14

Readings (note that each article is short):

1. John Haldon et al., "Plagues, climate change, and the end of an empire: A response to Kyle Harper's *The Fate of Rome* (1): Climate." *History Compass* 16:12 (2018): e12508.
2. John Haldon et al., "Plagues, climate change, and the end of an empire. A response to Kyle Harper's *The Fate of Rome* (2): Plagues and a crisis of empire." *History Compass* 16:12 (2018): e12506.
3. John Haldon et al., "Plagues, climate change, and the end of an empire: A response to Kyle Harper's *The Fate of Rome* (3): Disease, agency, and collapse." *History Compass* 16:12 (2018): e12507.
4. Kyle Harper, "Integrating the natural sciences and Roman history: Challenges and prospects." *History Compass* (2018): e12520.
5. Ulf Büntgen et al., "Cooling and societal change during the Late Antique Little Ice Age from 536 to around 660 AD." *Nature Geoscience* 9:3 (2016): 231-236.
6. Samuli Helama, Phil D. Jones, and Keith R. Briffa. "Limited late antique cooling." *Nature Geoscience* 10:4 (2017): 242.
7. Ulf Büntgen et al., "Reply to 'Limited Late Antique cooling'". *Nature Geoscience* 10:4 (2017): 243.
8. Neil Roberts et al., "Not the End of the World? Post-Classical Decline and Recovery in Rural Anatolia.' *Human Ecology* (2018): 1-18.

PART II: CLIMATIC ANOMALIES AND THE GREAT TRANSITION

Week 7: Mayans, Vikings, and the Medieval Climate Anomaly.

February 21: Complete *all* readings for this class.
February 26: ANNOTATED BIBLIOGRAPHY DUE. Guest lecture by Professor Joseph Manning, Yale University.
February 28: NO CLASS

Readings:

1. Lieberman and Gordon, *Climate Change in Human History,* pages 73-100.
2. Larry C. Peterson and Gerald H. Haug, "Climate and the collapse of Maya civilization: A series of multi-year droughts helped to doom an ancient culture." *American Scientist* 93:4 (2005): 322-329.

3. Patricia A. McAnany and Tomás Gallareta Negrón, "Bellicose rulers and climatological peril? Retrofitting Twenty-first-century woes on Eighth-century Maya society." In Patricia A. McAnany, Norman Yoffee (eds.), *Questioning Collapse: Human Resilience, Ecological Vulnerability, and the Aftermath of Empire*. 142-175. Cambridge: Cambridge University Press, 2017. I will provide a copy.
4. Billie L. Turner and Jeremy A. Sabloff, "Classic Period collapse of the Central Maya Lowlands: Insights about human–environment relationships for sustainability." *PNAS* (2012): 201210106.
5. William J. D'Andrea et al., "Abrupt Holocene climate change as an important factor for human migration in West Greenland." *Proceedings of the National Academy of Sciences* 108:24 (2011): 9765-9769.
6. L. K. Barlow et al., "Interdisciplinary Investigations of the End of the Norse Western Settlement in Greenland," *The Holocene* 7 (1997): 489–99.
7. Andrew J. Dugmore et al., "Cultural Adaptation, Compounding Vulnerabilities and Conjunctures in Norse Greenland," *Proceedings of the National Academy of Sciences* 109 (2012): 3658–63.

Week 8: The Great Famine and the Black Death.

March 12
March 14

Readings:

1. Philip Slavin, "The 1310s Event." In *The Palgrave Handbook of Climate History*, 495-515. I will provide a copy.
2. Boris V. Schmid et al., "Climate-driven introduction of the Black Death and successive plague reintroductions into Europe." *Proceedings of the National Academy of Sciences* (2015): 201412887.
3. Maria A. Spyrou et al., "Historical *Y. pestis* genomes reveal the European Black Death as the source of ancient and modern plague pandemics." *Cell Host & Microbe* 19:6 (2016): 874-881.
4. Joris Roosen and Daniel R. Curtis, "Dangers of noncritical use of historical plague data." *Emerging Infectious Diseases* 24:1 (2018): 103-110.
5. Bruce Campbell, "Panzootics, Pandemics, and Climate Anomalies in the Fourteenth Century." *Beiträge zum Göttinger Umwelthistorischen Kolloquium* 2011 (2010): 177-215. Available at: https://univerlag.uni-goettingen.de/handle/3/isbn-978-3-86395-016-3 (click on "view document" and scroll to page 177).
6. Chantal Camenisch et al., "The 1430s: A Cold Period of Extraordinary Internal Climate Variability during the Early Spörer Minimum with Social and Economic Impacts in North-Western and Central Europe." *Climate of the Past* 12 (2016): 2107–26.
7. Elena Xoplaki et al., "Modelling Climate and Societal Resilience in the Eastern Mediterranean in the Last Millennium." *Human Ecology* (2018): 1-17.

PART III: THE LITTLE ICE AGE

Week 9: The Little Ice Age: debating the case for crisis.

March 19
March 21

Readings:

1. Dagomar Degroot, "Climate Change and Society from the Fifteenth Through the Eighteenth Centuries." *WIREs Climate Change* Advanced Review, 2018. DOI:10.1002/wcc.518
2. Alexander Koch et al., "Earth system impacts of the European arrival and Great Dying in the Americas after 1492.' *Quaternary Science Reviews* 207 (2019): 13-36.
3. Heli Huhtamaa and Samuli Helama, "Distant impact: tropical volcanic eruptions and climate-driven agricultural crises in seventeenth-century Ostrobothnia, Finland." *Journal of Historical Geography* 57 (2017): 40-51.
4. Wolfgang Behringer, "Climatic Change and Witch Hunting: The Impact of the Little Ice Age on Mentalities," *Climatic Change* 43 (1999): 335–51.
5. David Zhang, David D., Harry F. Lee, Cong Wang, Baosheng Li, Qing Pei, Jane Zhang, and Yulun An. "The causality analysis of climate change and large-scale human crisis." Proceedings of the National Academy of Sciences (2011): 201104268.
6. Dagomar Degroot, "Is There a Better Way to Do Climate History? Testing a Quantitative Approach." HistoricalClimatology.com. Available from: https://www.historicalclimatology.com/blog/is-there-a-better-way-to-do-climate-history-testing-a-quantitative-approach

Week 10: Theories of climate and attempts at colonization in the Little Ice Age.

March 26: PRIMARY SOURCE ESSAY ROUGH DRAFT DUE
March 28

Readings

1. Sam White, *A Cold Welcome,* 1-131.

Week 11: Crisis and colonialism in the New World.

April 2: ROUGH DRAFT PRESENTATIONS
April 4

Readings:

1. Sam White, *A Cold Welcome,* 132-256.

Week 12: Beyond crisis: cultures of climate change adaptability and resilience.

April 9

April 11
April 16: NO CLASS

Readings:

1. Clionadh Raleigh, Andrew Linke, and John O'loughlin, "Extreme temperatures and violence." *Nature Climate Change* 4:2 (2014): 76.
2. Dagomar Degroot, "Climate Change, Whaling, and Conflict in the Seventeenth-Century Arctic." *Past and Present.* I will provide a copy.
3. Dean Phillip Bell, "The Little Ice Age and the Jews: Environmental History and the Mercurial Nature of Jewish-Christian Relations in Early Modern Germany." *AJS Review* 32:1 (2008): 1-27.
4. Dagomar Degroot, "Climate Change, Water, and the Golden Age of the Dutch Republic." *Europe Now.* Available at: https://www.europenowjournal.org/2018/12/10/climate-change-water-and-the-golden-age-of-the-dutch-republic.
5. Anya Zilberstein, "Inured to Empire: Wild Rice and Climate Change." *William & Mary Quarterly* 72:1 (2015): 127-158.
6. Jan De Vries, "The crisis of the seventeenth century: The Little Ice Age and the mystery of the 'Great Divergence'." *Journal of Interdisciplinary History* 44:3 (2013): 369-377.
7. Sean Desjardins, "Neo-Inuit strategies for ensuring food security during the Little Ice Age climate change episode, Foxe Basin, Arctic Canada." *Quaternary International* (2018).
8. Adam Izdebski, Lee Mordechai, and Sam White, "The Social Burden of Resilience: A Historical Perspective." *Human Ecology* (2018): 1-13.

PART IV: THE FUTURE

Week 13: Can the past tell us something about our warming world?

April 23
April 25: PRIMARY SOURCE ESSAY FINAL DRAFTS DUE

Readings:

1. "Global Warming of 1.5° C: Summary for Policymakers." IPCC. Available at: http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf.
2. Rowan C. Jackson, Andrew J. Dugmore, and Felix Riede, "Rediscovering lessons of adaptation from the past." *Global Environmental Change* 52 (2018): 58-65.
3. Margaret C. Nelson et al., "Climate challenges, vulnerabilities, and food security." *Proceedings of the National Academy of Sciences* 113:2 (2016): 298-303.
4. John R. McNeill, "Can History Help Us with Global Warming?" In *Climatic Cataclysm: The Foreign Policy and National Security Implications of Climate Change*, edited by Kurt M. Campbell, 26-48. Washington, DC: Brookings Institution Press, 2008. I will provide a copy.

5. Amitav Ghosh, "The Coming Climate Crisis: The Little Ice Age could offer a glimpse of our tumultuous future." *Foreign Policy*. Available at: https://foreignpolicy.com/gt-essay/the-coming-climate-crisis.
6. Mike Hulme, "Reducing the Future to Climate: A Story of Climate Determinism and Reductionism," *Osiris* 26 (2011): 245–66.

Week 14: NO CLASS