

EAR 414/614: The Holocene: Climate and Environmental Change

Time/Location: T/Th 9:30-10:50 pm EST: HGL 210

Instructor: Prof. Melissa Chipman

Office Hours: Tuesdays 11-11:55 am or by appointment

Email: mlchipma@syr.edu

Course Objectives:

- This course is designed to introduce students of all disciplines to the science behind our understanding of **Earth's climate system and environmental changes** through the past 12,000 years. To accomplish this, we will focus on the geologic record to review *what we know and how we know it*.
- Because the Holocene is the period of time in which **humans began to fundamentally alter the planet**, a complete understanding of this time period requires us to also consider *anthropogenic impacts at a variety of temporal and spatial scales*.
- Thus, this is a **multidisciplinary course** and will require everyone to step beyond the bounds of their expertise to truly understand this fascinating and period of Earth's history, which is *pertinent to evaluating modern and future global change*.

Grade breakdown:

- Midterm Exam 25%
- Final Exam 25%
- Critical Reflections (CR) 30%
- Assignments/Activities 20%

Lecture attendance:

If you are motivated to learn about Holocene climate change, do the assigned readings, attend lectures each week, and take notes.

Everything in the exams will be covered in lectures and discussions.

This will be an in-person class.

Final Grade	Minimum Percentage
A	93% and above
A-	90%
B+	87%
B	83%
B-	80%
C+	77%
C	73%
C-	70%
D	60%
F	59% and below

Critical Reflections

We will discuss controversial topics regarding the relationship between humans, climate, and environmental change during the Holocene. For each topic ([highlighted in blue on the course schedule](#)), students will be assigned a paper to read to lead and/or contribute to the discussion.

- For your CR grade, there are 3 components: 1) a short reading guide QnA submitted before class, 2) three questions and/or comments submitted to me to help facilitate discussion, and 3) active engagement in the discussion during the class period. [Attendance for critical reflection discussions are mandatory to receive full credit.](#)

Assignments/Activities

There are also six short homework assignments designed to enhance your learning.

Exams:

Exams will consist of multiple choice, short answers, and essays and will be submitted online. There is no time limit for exams (although there is a due date/time), and you can consult your notes and the readings. Late exams only be given in documented, exceptional circumstances, and must be scheduled one week before the exam due date. In case of any emergency event, documentation will be required.

Textbooks:

Readings for Critical Reflections include primary literature and opinion pieces. All readings will be posted online in Blackboard in the weekly content folders. See Reading List.

Blackboard:

Note that all class assignments and readings, plus course business and other information, will be posted on Blackboard for this class. **You are responsible for checking the site regularly and getting all required assignments.** Any mailings regarding this course will be sent to your Syracuse email addresses, not to private accounts, so please be sure to check your SU account regularly

Course Schedule

Date	Day	TOPIC	Assignment/Class Activity
25-Jan	T	Introduction	
27-Jan	R	Paleoclimate Records	Paleoclimate Primer
1-Feb	T	The Holocene Interglacial	Glacial Cycles
3-Feb	R	The Younger Dryas	
8-Feb	T	Critical Reflections Megafauna Extinctions: Climate or Humans?	Jigsaw Discussion Megafauna Extinctions Review Humans and Extinctions Climate and Extinctions
10-Feb	R	Paleoecological Records	Pollen Records
15-Feb	T	Temperature Conundrum	
17-Feb	R	Critical Reflections Sea Level Rise and Human Migrations	Jigsaw Discussion Modern Sea Level Rise & Humans Holocene Case Study I: NW Europe Holocene Case Study II: Spain
22-Feb	T	Monsoons	
24-Feb	R	Holocene Biome Shifts	Climate Reanalyzer ECM
1-Mar	T	Critical Reflections African Humid Period	Jigsaw Discussion Green Sahara AHP - Review Humans Delayed End of AHP Human Drove End of AHP
3-Mar	R	Peatlands and Carbon	
8-Mar	T	Rise of Agriculture	Land Use
10-Mar	R	Critical Reflections Early Anthropocene Hypothesis	Group Discussion Early Anthropocene Hypothesis Hypothesis with Rebuttals
15,17	TR	Spring Break	
22-Mar	T	Midterm	Multiple Choice & Short Essay
24-Mar	R	Drought	
29-Mar	T	Critical Reflections Collapse vs Resilience I	Group Discussion Ancient Maya and Drought
31-Mar	R	Abrupt Climate Change	
5-Apr	T	Medieval Warmth, Little Ice Age	Climate Reanalyzer NAO/ AO
7-Apr	R	Critical Reflections Collapse vs Resilience II	Jigsaw Discussion Greenland Norse Adaptations Climate & Greenland Migrations
12-Apr	T	Guest: Dr. Chie Sakakibara Climate Resilience in the Far North	Q/A with Dr. Sakakibara
14-Apr	R	Arctic Amplification	
19-Apr	T	Fire Regimes	
21-Apr	R	Critical Reflections Humans and Fire Regimes	Group Discussion Climate and NE fire regimes Humans and NE fire regimes
26-Apr	T	Industrial Revolution	
28-Apr	R	Critical Reflections Human Impacts on Islands	Scavenger Hunt + Discussion Human Impacts on Islands Case Studies
3-May	T	Anthropocene Revisited	
12-May	R	Final Exam Due	Essay-Style Exam

Critical Reflections Reading List

Date	Day	Discussion Focus	Assigned Readings	Who Reads?
8-Feb	T	Megafauna Extinctions: Climate or Humans?		
		Megafauna Extinctions Review	Stuart 2015 <i>Geol J</i> (1,2,9)	EAR 414
		Humans and Extinctions	Surovell 2015 <i>PNAS</i>	EAR 614 Group 1
		Climate and Extinctions	Cooper 2015 <i>Science</i>	EAR 614 Group 2
17-Feb	R	Sea Level Rise and Human Migrations		
		Modern Sea Level Rise & Humans	Haeur 2020 <i>Nat Revs</i>	EAR 414
		Holocene Case Study I: NW Europe	Barnett 2020 <i>Sci Adv</i>	EAR 614 Group 1
		Holocene Case Study II: Spain	Brisset 2018 <i>Glb & Pln Chg</i>	EAR 614 Group 2
1-Mar	T	African Humid Period		
		Green Sahara AHP - Review	Pausata 2020 <i>One E</i> (235-240)	EAR 414
		Humans Delayed End of AHP	Brierley 2018 <i>Nat Comm</i>	EAR 614 Group 1
		Human Drove End of AHP	Zerboni 2019 <i>Frnt E Sci</i>	EAR 614 Group 2
10-Mar	R	Early Anthropocene Hypothesis		
		Early Anthropocene Hypothesis	Ruddiman 2013 <i>Ann Rev</i>	EAR 414
		Hypothesis with Rebuttals	Ruddiman 2020 <i>QSR</i>	EAR 614
29-Mar	T	Collapse vs Resilience I - Maya		
		Ancient Maya and Drought	Douglas 2016 <i>Ann Rev</i>	EAR 414/614
7-Apr	R	Collapse vs Resilience II - Norse		
		Greenland Norse Adaptations	Dugmore 2012 <i>PNAS</i>	EAR 414/614 Group 1
		Climate & Greenland Migrations	D'Andrea 2011 <i>PNAS</i>	EAR 414/614 Group 2
12-Apr	T	Q/A with Dr. Sakakibara	Whale Snow, Pref & Intro	EAR 414/614
21-Apr	R	Humans and Fire Regimes		
		Climate and NE fire regimes	Oswald et al 2020 <i>Nat Sust</i>	EAR 414/614
		Humans and NE fire regimes	Abrams 2020 <i>Nat Sust</i>	EAR 414/614
28-Apr	R	Human Impacts on Islands		
		Human Impacts on Islands	Rick 2013 <i>Anthro</i>	EAR 414/614
		Case Studies	*student identified papers*	EAR 414/614

ATTENDANCE POLICY

Attendance in classes is expected in all courses at Syracuse University. It is a federal requirement that faculty promptly notify the university of students who do not attend or cease to attend any class. Faculty will use Early-Semester Progress Reports and Mid-Semester Progress Reports in **Orange SSuccess** to alert the Registrar and Financial Aid Office on non-attendance. For more information visit: <http://registrar.syr.edu/students/non-attendance/>. Students may contact their home school/college Dean's Office or the Case Management staff in Dean of Students Office when they are absent from class for an extended period of time (48 hours or more). The Case Management staff will require documentation for the absence and will utilize Orange SSuccess to send notifications to faculty to verify that documentation has been received for the stated absence. Barnes Center at the Arch (Health, Counseling, etc.) staff will not provide medical excuse notes for students. When Barnes Center staff determine it is medically necessary to remove a student from classes, they will coordinate with the case management staff to provide absence notification to faculty through Orange Success. For absences lasting less than 48 hours, students are encouraged to discuss academic arrangements directly with their faculty. Additional information may be found at: Office of Student Assistance: Absence Notifications <http://studentassistance.syr.edu/our-services/absence-notifications.html>

Please see the University's Stay Safe Pledge regarding quarantine protocols if you test positive for Covid-19 or are exposed to a positive Covid-19 individual: <https://www.syracuse.edu/staysafe/about-coronavirus-staying-healthy/covid-19-response-checklists/>. In regards to this class, you will be excused for 5 days of quarantine if needed. However, you are still required to turn in all assignments. If you miss a CR discussion due to quarantine, you will be assigned an essay assignment to turn in for your assigned paper. There is no hybrid modality for this course.

SPECIAL NOTICES RELATED TO THE COVID-19 PANDEMIC:

Stay Safe Pledge

Syracuse University's Stay Safe Pledge reflects the high value that we, as a university community, place on the well-being of our community members. This pledge defines norms for behavior that will promote community health and wellbeing. Classroom expectations include the following: wearing a mask that covers the nose and mouth at all times, maintaining a distance of six feet from others, and staying away from class if you feel unwell. Students who do not follow these norms will not be allowed to continue in face-to-face classes; repeated violations will be treated as violations of the Code of Student Conduct and may result in disciplinary action.

Food and Drink in the Classroom

Eating and drinking require the lowering of the face mask, creating a potentially dangerous situation. For this reason, students are not allowed to eat or drink in class during the COVID-19 pandemic. Because this is a 90 minutes class, **we will have a 5 minute break in the middle of each class so that students leave the classroom to get a drink.**

Use of Class Materials and Recordings

Original class materials (handouts, assignments, tests, etc.) and recordings of class sessions are the **intellectual property of the course instructor**. You may download these materials for your use in this class. However, you may not provide these materials to other parties (e.g., web sites, social media, other students) without permission. Doing so is a violation of intellectual property law and of the student code of conduct.

UNIVERSITY POLICES THAT WILL BE ENFORCED IN THIS CLASS

Syracuse University Academic Integrity: Syracuse University's Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by

the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. Syracuse University students are required to read an online summary of the University's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice.

The Violation and Sanction Classification Rubric establishes recommended guidelines for the determination of grade penalties by faculty and instructors, while also giving them discretion to select the grade penalty they believe most suitable, including course failure, regardless of violation level. Any established violation in this course may result in course failure regardless of violation level.

All academic integrity expectations that apply to in-person quizzes and exams **also apply to online quizzes and exams**. In this course, all work submitted for quizzes and exams must be yours alone. Discussing quiz or exam questions with anyone during the quiz or exam period violates academic integrity expectations for this course. Using websites that charge fees or require uploading of course material (e.g. Chegg, Course Hero) to obtain exam solutions or assignments completed by others and present the work as your own violates academic integrity expectations in this course.

Disability-Related Accommodations: Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. There may be aspects of the instruction or design of this course that result in barriers to your inclusion and full participation in this course. I invite any student to meet with me to discuss strategies and/or accommodations (academic adjustments) that may be essential to your success and to collaborate with the Office of Disability Services (ODS) in this process. Students at both Syracuse University and SUNY-ESF who need academic adjustments (accommodations) for a disability can contact the Office of Disability Services (ODS) at Syracuse University, who is responsible for coordinating disability related accommodations. If you would like to discuss disability-accommodations or register with ODS, please visit their website at <http://disabilityservices.syr.edu>. Please call (315) 443-4498 or email disabilityservices@syr.edu for more detailed information. ODS is responsible for coordinating disability-related academic accommodations and will work with the student to develop an access plan. Since academic accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible to begin this process.

Discrimination or Harassment: The University does not discriminate and prohibits harassment or discrimination related to any protected category including creed, ethnicity, citizenship, sexual orientation, national origin, sex, gender, pregnancy, disability, marital status, age, race, color, veteran status, military status, religion, sexual orientation, domestic violence status, genetic information, gender identity, gender expression or perceived gender. Any complaint of discrimination or harassment related to any of these protected bases should be reported to Sheila Johnson-Willis, the University's Chief Equal Opportunity & Title IX Officer. She is responsible for coordinating compliance efforts under various laws including Titles VI, VII, IX and Section 504 of the Rehabilitation Act. She can be contacted at Equal Opportunity, Inclusion, and Resolution Services, 005 Steele Hall, Syracuse University, Syracuse, NY 13244-1120; by email: titleix@syr.edu; or by telephone: 315-443-0211.

Other Policies: Students should review Syracuse University's policies regarding: Diversity and Disability <https://www.syracuse.edu/life/accessibilitydiversity/>; the Religious Observances Notification and Policy http://supolicies.syr.edu/studs/religious_observance.htm; and Orange SUccess - <http://orangesuccess.syr.edu/getting-started-2/>