

ANT4930/ANG6930 GEOARCHAEOLOGY

Course Information

Fall 2020

T 1:55p – 4:55p

Online

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Course Description

Archaeology and geology take as their primary foci the developmental trajectories of humans and the earth, respectively. While these disciplines focus on distinct timescales and have separate subject matter, both timescales and subject overlap. This course focuses on that overlap: geoarchaeology.

Colin Renfrew memorably observed that, "every archaeological problem starts as a problem in geoarchaeology." This observation, grounded in an understanding of geoarchaeology as the application of geological methods to archaeological questions, suggests that any aspiring archaeologist needs a foundation in geoarchaeology in order to understand (minimally) site formation processes and the environmental contexts of archaeological sites.

This course provides that foundation, introducing students to conceptual approaches and particular methods for examining the diverse environments that past humans occupied. This includes:

- an introduction to the basic material (sediments, soils, and stratigraphy) and tools (classification and dating) of geoarchaeology,
- attention to alluvial, aeolian, lacustrine, colluvial, and coastal environments, and
- consideration of the issues of site formation and taphonomy that structure archaeological sites and landscapes.

This course also questions Renfrew's implied definition, asking whether geoarchaeology – well-positioned as it is to examine human-environment interactions over the long term – can be more than simply an archaeological borrowing of geological expertise. How can we examine intertwined human and environmental trajectories, and what kinds of claims about both human and environmental processes can that enable us to make?

Course Objectives

In completing this course, students will:

- Understand the aims, potentials, and methods of geoarchaeology.
- Become fluent with array of analytical techniques available to geoarchaeologists to analyze sediments, soils, and stratigraphy.

- Develop the conceptual tools for analyzing archaeological sites in diverse environments and for assessing the roles of site formation processes and taphonomy in archaeological interpretation.
- Become familiar with diverse applications of geoarchaeological methods to examine long-term human-environment interactions.

Course structure

This course employs a hybrid lecture/seminar format to introduce students to key geoarchaeological concepts and approaches. This entails an alternation between weeks in which concepts and methods are introduced through a mixture of lecture and instructor-led discussion, and weeks in which case studies are examined in a seminar format, with student-led discussion. Students will be asked to apply what they learn through both lab exercises and their own projects.

Course Requirements

- 40% Four [virtual] lab exercises.
- 10% Complete weekly readings and participate in class discussions
- 15% Seminar facilitation
- 5% Project Prospectus: a one-page proposal of your final project. Due **25 Sept.**
- 10% Project data/method summary: an outline of archives and approaches. Due **30 Oct.**
- 20% Final Project. Due **14 Dec.**

Participation:

All students must participate in weekly discussions (**10%** of final grade). Participation includes attendance, active listening, and constructive contributions to discussion. We will also experiment with shared annotation of course readings; to the degree that we adopt this practice, your engagement with this discussion-in-the-margins will also constitute part of your participation in the course.

Lab Exercises:

The four virtual lab exercises will be assigned during the first class in which we discuss a particular theme, and due *before the beginning of the second class*. Leading discussion of lab results will be treated as analogous to seminar facilitation. You are encouraged to discuss these with one another as you work on them, though each student must turn in their own assignment. Each lab exercise will involve a collection of digital data from a particular site or region, which you will need to synthesize and interpret in order to address a series of research questions.

Facilitation:

All students must facilitate a proportional share of the class discussions presenting case studies and reporting on lab assignments (22 case studies + 4 labs divided among the total number of enrolled students; **15%** of final grade).

- For case studies, the facilitator will be responsible for guiding the class in detailed discussion of that paper, including producing and distributing a ½-page précis of the article *at least 24 hours ahead of time*. Discussion should focus on what the guiding research questions were, what geoarchaeological methods were involved, what data were produced, and what was done with those data. What kind(s) of environments were

involved, what samples/observations/documentation did the authors need, what analyses/synthesis did they subsequently need to do, and how did they mobilize the results into an argument? Is that argument compelling? Could the results have been achieved without geoarchaeology? Was the geoarchaeological effort worth it in terms of interpretive payoff? Where readings are not case studies but reviews or critiques, discussion should focus on identifying and assessing the key points of the argument.

- For labs, in addition to walking everyone through their solution to the assigned lab exercise, the facilitator should emphasize which particular method(s) solved the specific research problem at hand, and *how*, as well as outlining the limitations and appropriate uses of such analysis. Relating this to your own research or adding analogous examples related to your own interests is encouraged but not required.

Term Project:

The course will culminate in a final project, for which students will produce a detailed research proposal, based on a known site or region, which describes a set of specific research objectives and concrete plans for achieving them. Since conducting a field project is beyond the scope of this course, the proposal need not be constrained by reality: it should detail the deposits/archives that you would *ideally* like to find (and why you think it's reasonable to expect to find them for the site or region in question), the methods that you will use to find and/or analyze them, and an argument for *how* the results will allow you to address your research questions.

Students will submit two preliminary milestone assignments, and are expected to incorporate feedback on these into their final project. These consist of a project prospectus (due **25 Sept**, 5% of course grade) and an outline of the deposits/archives and methods that will be involved (due **30 Oct**, 10% of course grade). The final project (20% of course grade) will be due on **14 Dec**.

Attendance Policy, Class Expectations, and Late Assignments

Attendance

This course is primarily a seminar; since attendance is fundamental to the learning goals, it is required. Of course, life may sometimes intervene, in which case you are expected to notify the instructor ahead of time or as soon as practical afterwards. More than one absence will already constitute >10% of the course, and you should consult with the instructor about appropriate make-up activity. Excused absences must be consistent with university policies in the [Graduate Catalog](#) and require appropriate documentation. Additional information can be found in [Attendance Policies](#).

Zoom

A virtual seminar is more challenging than an in-person one: it's harder for everyone to get and stay engaged, it's more difficult for me to tell if you are engaged (or not), and can be exhausting to feel surveilled. At the same time, it places the burden where it belongs: it is up to you to stay engaged, rather than up to the instructor to police you. Please keep in mind that we (humans) are not good at multi-tasking, however much we think we are, and resist the temptation to check email/social media/news even though no-one will know.

Assignments

Assignments in this course comprise lab exercises, project milestones, and responsibility for facilitating seminar. Because lab exercises will form the basis of part of our seminar discussion, they *must be submitted on time* (it would be unfair for some people to get to complete the lab post-discussion). Due dates for project milestones are intended to motivate you to start those projects, and are based on the need to give you feedback with sufficient time for you to react to it. As such, they can be negotiable, as long as you ask in advance. If you are scheduled to facilitate a seminar and for any reason will not be able to, please both notify the instructor as far ahead of time as possible and attempt to find another student with whom you can swap dates.

Office hours:

You are welcome in my office hours either individually or in groups, and may use that time either to ask specific questions or simply to work with the benefit of someone available to help you through roadblocks. You are in no way required to come, but please note that this should be considered part of the education available to you, not a last resort.

Course Texts

There are two required texts, which we will supplement with several articles and book excerpts (listed below and available on Canvas).

- Waters, Michael R. 1992 *Principles of Geoarchaeology: A North American Perspective*. University of Arizona Press.
- Schumm, Stanley A. 1991 *To Interpret the Earth: Ten Ways to Be Wrong*. Cambridge University Press, Cambridge.

Course Schedule

Week	Theme	Dates	Readings	Lab Exercise
1	Intro to Geoarchaeology	1 Sept	Course Introduction	Definitions
2	Geoarchaeological Foundations	8 Sept	Waters Ch.1 Cordova 2020:Ch.1 Schumm Ch.1, 2 Arroyo-Kalin 2014	Philosophical underpinnings (goals & epistemology)
3	Building a common vocabulary	15 Sept	Waters Ch.2 Schumm Ch.3,4	Soils and Sediments; Stratigraphy; Dating
4	Building a common vocabulary II	22 Sept	Karkanias & Goldberg 2019 Ch.7 Rapp & Hill 2006 Ch.8 Stein 1993	Scale & Sampling; other geoarchaeologies

		25 Sept	Project Prospectus due	
5	Alluvial Environments - Intro	29 Sept	Waters Ch.3	Exercise 1 assigned
6	Alluvial Environments – Case Studies I	6 Oct	Boresjza et al. 2014 Frederick 2000 Maher 2011	
7	Alluvial Environments – Case Studies II	13 Oct	Casana 2008 Schuldenrein 2007 Huckleberry & Billman 2003	Exercise 1 due
8	Aeolian and Terrestrial Environments - Intro	20 Oct	Waters Ch.4, 5	Exercise 2 assigned
9	Aeolian and Terrestrial Environments - Case Studies	27 Oct	Sandor et al. 1990 Cordova & Parsons 1997 Puckett 2020 Halligan 2020	Exercise 2 due
		30 Oct	Project summary due	
10	Coastal Environments	3 Nov	Waters Ch.6	Exercise 3 assigned
11	Coastal Environments - Case Studies	10 Nov	Brückner et al. 2006 Morhange et al. 2014 Wells & Noller 1999	Exercise 3 due
12	Site Formation and Taphonomy	17 Nov	Waters Ch.7 Stein 2001	Exercise 4 assigned
13	Site Formation and Taphonomy - Case Studies	24 Nov	Bruins et al. 2020 Sherwood & Kidder 2011 Stein 2008	Exercise 4 due
14	A “human-environment” approach?	1 Dec	Butzer 2008 Butzer 2011 Cordova 2018:Ch.5	
15	Case studies in a ‘human-environment’ approach	8 Dec	Holliday & Miller 2013 Kidder & Liu 2014 Nicoll & Zerboni 2020	
		14 Dec	Final paper due	

Readings

- Arroyo-Kalin, Manuel 2014 Anthropogenic Sediments and Soils: Geoarchaeology. In *Encyclopedia of Global Archaeology*, edited by Claire Smith, Springer

- Borejsza, Aleksander, Charles D Frederick, and Luis Morett Alatorre 2014 Alluvial Stratigraphy and the Search for Preceramic Open-Air Sites in Highland Mesoamerica. *Latin American Antiquity* 25: 278–299.
- Brückner, Helmut, Marc Müllenhoff, Roland Gehrels, Alexander Herda, Maria Knipping, and Andreas Vött 2006 From archipelago to floodplain—geographical and ecological changes in Miletus and its environs during the past six millennia (Western Anatolia, Turkey). *Zeitschrift für Geomorphologie NF* 142: 63–83.
- Bruins, Hendrik J., Toine Jongmans, and Johannes van der Plicht 2020 Ancient runoff farming and soil aggradation in terraced wadi fields (Negev, Israel): Obliteration of sedimentary strata by ants, scorpions and humans. *Quaternary International* 545: 87–101.
- Butzer, Karl W 2008 Challenges for a cross-disciplinary geoarchaeology: The intersection between environmental history and geomorphology. *Geomorphology* 101: 402–411.
- Butzer, Karl W 2011 Geoarchaeology, climate change, sustainability: A Mediterranean perspective. *Geol. Soc. Am. Spec. Pap* 476: 1–14.
- Casana, Jesse 2008 Mediterranean valleys revisited: Linking soil erosion, land use and climate variability in the Northern Levant. *Geomorphology* 101: 429–442.
- Cordova, Carlos E, and Jeffrey R Parsons 1997 Geoarchaeology of an Aztec dispersed village on the Texcoco piedmont of Central Mexico. *Geoarchaeology* 12: 177–210.
- Cordova, C. 2018 "The Nature of Geoarchaeology." In *Geoarchaeology: The human-environmental approach*. Bloomsbury Publishing.
- Cordova, C. 2018 "The Human-Environmental Tradition in Geoarchaeology." In *Geoarchaeology: The human-environmental approach*. Bloomsbury Publishing.
- Frederick, Charles D 2000 Evaluating Causality of Landscape Change: Examples from Alluviation. In *Earth Sciences and Archaeology*, edited by Paul Goldberg, Vance T. Holliday, and C. Reid Ferring, pp. 55–76. Academic Press/Plenum Publishers, New York.
- Halligan, Jessi J. 2020 Crossing the waterline: Integrating terrestrial and submerged site investigations in the Aucilla River, Florida. *The Journal of Island and Coastal Archaeology* 1–18.
- Holcomb, J.A., Curtis Runnels, and Karl W. Wegmann 2020 Deposit-centered archaeological survey and the search for the Aegean Palaeolithic: A geoarchaeological perspective. *Quaternary International*
- Holliday, Vance T, and Miller, D Shane 2013 The Clovis Landscape. In *Paleoamerican Odyssey*, pp. 221–245. Texas A&M University Press, College Station
- Huckleberry, Gary, and Brian R Billman 2003 Geoarchaeological insights gained from surficial geologic mapping, middle Moche Valley, Peru. *Geoarchaeology* 18: 505–521.
- Karkanas, Panagiotis, and Paul Goldberg. 2019 *Reconstructing Archaeological Sites: understanding the geoarchaeological matrix*. John Wiley & Sons.
- Kidder, Tristram R, and Haiwang Liu 2014 Bridging theoretical gaps in geoarchaeology: archaeology, geoarchaeology, and history in the Yellow River valley, China. *Archaeological and Anthropological Sciences*
- Maher, Lisa A 2011 Reconstructing Paleolandscapes and Prehistoric Occupation of Wadi Ziqlab, Northern Jordan. *Geoarchaeology* 26: 1–44.
- Morhange, Christophe, Marriner, Nick, and Carayon, Nicolas 2014 The geoarchaeology of ancient Mediterranean harbours. In *La géoarchéologie française au xxie siècle*, pp. 245–253.
- Nicoll, Kathleen, and Andrea Zerboni 2020 Is the past key to the present? Observations of cultural continuity and resilience reconstructed from geoarchaeological records. *Quaternary International* 545: 119–127.

- Puckett, Neil N. 2020 Combining underwater and terrestrial research approaches in the Great Basin Desert, Walker Lake, Nevada. *The Journal of Island and Coastal Archaeology* 1–22.
- Rapp, G.R., Hill, C.L. and Hill, M.C.L., 2006. *Geoarchaeology: the Earth-Science Approach to Archaeological Interpretation*. Yale University Press.
- Sandor, J. A., P. L. Gersper, and J. W. Hawley 1990 Prehistoric agricultural terraces and soils in the Mimbres area, New Mexico. *World Archaeology* 22: 70–86.
- Schuldenrein, Joseph 2007 A Reassessment of the Holocene Stratigraphy of the Wadi Hasa Terrace and Hasa Formation, Jordan. *Geoarchaeology* 22: 559–588.
- Sherwood, Sarah C, and Tristram R Kidder 2011 The DaVincis of Dirt: Geoarchaeological Perspectives on Native American Mound Building in the Mississippi River Basin. *Journal of Anthropological Archaeology* 30: 69–87.
- Stein, Julie K 2001 A review of site formation processes and their relevance to geoarchaeology. In *Earth sciences and archaeology*, edited by Paul Goldberg, Vance T. Holliday, and C. Reid Ferring, pp. 37–51. Springer
- Stein, Julie K 1993 Scale in archaeology, geosciences, and geoarchaeology. In *Effects of Scale on Archaeological and Geoscientific Perspectives*, edited by Julie K Stein, and A R Linse, pp. 1–10. Geological Society of America
- Stein, Julie K 2008 Geoarchaeology and Archaeostratigraphy: View from a Northwest Coast Shell Midden. In *Case Studies in Environmental Archaeology*, pp. 61–80. Springer
- Wells, Lisa E., and Jay Stratton Noller 1999 Holocene coevolution of the physical landscape and human settlement in northern coastal Peru. *Geoarchaeology* 14: 755–789.

Additional recommended readings:

- Canti, Matthew, and Dirk Johannes Huisman 2015 Scientific advances in geoarchaeology during the last twenty years. *Journal of Archaeological Science* 56: 96–108.
- Friesem, David E. 2016 Geo-ethnoarchaeology in action. *Journal of Archaeological Science* 70: 145–157.
- Huckleberry, Gary 2000 Interdisciplinary and specialized geoarchaeology: A post–Cold War perspective. *Geoarchaeology* 15: 523–536.
- Shahack-Gross, Ruth 2017 Archaeological formation theory and geoarchaeology: State-of-the-art in 2016. *Journal of Archaeological Science* 79: 36–43.
- Shillito, Lisa-Marie 2014 Geoarchaeology at the microscale. *European Geologist* 38: 59–62.

University Policies

Grading

Information on UF grading policy may be found at: [UF Graduate Catalog](#) and [Grades and Grading Policies](#)

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Students Requiring Accommodation

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their

accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing [online evaluations](#). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students on the [Gator Evals page](#).

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: counseling.ufl.edu/cwc/, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

[E-learning technical support](#), 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

[Career Resource Center](#), Reitz Union, 392-1601. Career assistance and counseling.

[Library Support](#), Various ways to receive assistance with respect to using the libraries or finding resources.

[Teaching Center](#), Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

[Writing Studio](#), 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

[Student Complaints Campus](#)

[On-Line Students Complaints](#)