

Nicolas E. Gauthier

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Laboratory of Tree-Ring Research
School of Geography and Development
University of Arizona
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RESEARCH INTERESTS

Geoarchaeology, human ecology, paleoclimate modeling, social-ecological systems, network theory, land use and land cover change

EDUCATION

- 2019 **Ph.D.** in Anthropology, **Arizona State University**
Committee: C. Michael Barton (chair), John M. Anderies, Matthew Peeples
- 2015 **M.A.** in Anthropology, **Arizona State University**
Advisor: C. Michael Barton
- 2013 **B.A.** in Archaeology, **Boston University**
Advisor: Christopher H. Roosevelt

ACADEMIC EMPLOYMENT

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| <i>Current</i> | Postdoctoral Research Scientist , University of Arizona.
Employed under NSF-supported “ P2C2 : Spatiotemporal variability in western United States snowpack during the Common Era,” Kevin Anchukaitis (PI). |
| 2015-18 | Graduate Research Associate , Arizona State University.
Employed under NSF-supported “ CNH : The emergence of coupled natural and human landscapes in the western Mediterranean,” C. Michael Barton (PI). |
| 2013-19 | Graduate Research Associate , Arizona State University.
Employed under NSF-supported “Collaborative research EaSM2 : Linking human and Earth System models to assess regional impacts and adaptation in urban systems and their hinterlands,” Brian O’Neill (PI). |

PEER-REVIEWED PUBLICATIONS

- In press Khider, D., J. Emile-Geay, N.P. McKay, Y. Gil, D. Garijo, V. Ratnakar (lead authors, with 87 contributing authors including **N. Gauthier**). “PaCTS 1.0: A Crowdsourced Reporting Standard for Paleoclimate Data,” **Paleoceanography and Paleoclimatology**. 10.1029/2019PA003632
- 2019 Stephens, L., D. Fuller, N. Boivin, T. Rick, **N. Gauthier**, A. Kay, B. Marwick (lead authors, with 113 contributing authors). “Archaeological assessment reveals Earth’s early transformation through land use,” **Science**, 365 (6456). 897-902. 10.1126/science.aax1192
- 2018 Barton, C. M., E. Tortosa, O. Puchol, J. Riel-Salvatore, **N. Gauthier**, M. Conesa, G. Pothier-Bouchard. “Risk and resilience in the Late Glacial: A case study from the western Mediterranean,” **Quaternary Science Reviews**, 184. 68-84. doi:10.1016/j.quascirev.2017.09.015
- 2016 **Gauthier, N.** “The spatial pattern of climate change during the spread of farming into the Aegean,” **Journal of Archaeological Science**, 75. 1-9. doi:10.1016/j.jas.2016.09.004.
- 2012 **Gauthier, N.** “Pax Seleuciana: Archaeological approaches to ethnicity in the Hellenistic east,” **Vexillum** 2 (2012). www.vexillumjournal.org.

PREPRINTS AND WORKING PAPERS

- In prep Barton, C. M., S. Bergin, R. Robertson, **N. Gauthier**, J. Bernabeu Aubán, S Pardo-Gordó, G. Snitker. “Constructing the cultural-ecological niche of Mediterranean agriculture: Paleoclimate, crop modeling, and Anthropocene prehistory.”
- 2019 **Gauthier, N.** “Hydroclimate variability influenced social interaction in the prehistoric American Southwest,” **SocArXiv**. doi:10.31235/osf.io/shp68.
- Gauthier, N.** “Multilevel simulation of demography and food production in ancient agrarian societies: A case study from Roman North Africa,” **SocArXiv**. doi:10.31235/osf.io/5be6a.
- Gauthier, N.** “Trade, migration, and the dynamics of spatial interaction,” **SocArXiv**. doi:10.31235/osf.io/trbf8

CONFERENCE PRESENTATIONS

- 2019 | **Gauthier, N.** “Generalized Additive Mixed Models for Spatial Networks.” Poster presented at the **84th Annual Meeting of the Society for American Archaeology**, Albuquerque.
- Wissler, A., and **Gauthier, N.** “The Frailty-Mortality Paradox: Insights from the Spanish Flu Pandemic of 1918.” Poster presented at the **84th Annual Meeting of the Society for American Archaeology**, Albuquerque.
- 2018 | **Gauthier, N.** “Agent-based modeling of anthropogenic land cover change: A case study from Roman North Africa.” Paper presented at the **NCAR Land Model, Biogeochemistry, and Social Dimensions Working Group** meetings, Boulder.
- Gauthier, N.** “Agricultural niche construction in Roman North Africa: Simulating irrigation and deforestation on a desert margin.” Poster presented at the **83rd Annual Meeting of the Society for American Archaeology**, Washington, D.C.
- Gauthier, N.** “Forum: the nuts and bolts of agent-based modelling for archaeological science.” Invited discussant at the **83rd Annual Meeting of the Society for American Archaeology**, Washington, D.C.
- Barton, C. M., I. Ullah, **N. Gauthier**, N. Miller, G. Snitker, I. Esteban, J. Bernabeu Auban, A. Heimsath. “Digital Proxies for Validating Models of Past Socio-Ecological Systems in the Mediterranean Landscape Dynamics Project.” Invited paper to be presented at the **24th Annual Meeting of the European Association of Archaeologists**, Barcelona.
- 2017 | Bergin, S., S. Pardo Gordo, C. M. Barton, J. Bernabeu Auban, **N. Gauthier**. “Testing social and ecological drivers for the initial spread of agriculture on the Iberian Peninsula.” Invited paper presented at the **82nd Annual Meeting of the Society for American Archaeology**, Vancouver.
- Gauthier, N.** “Parametric uncertainty in a simple model of a social-ecological network.” Invited symposium paper presented at the **2017 Computer Applications and Quantitative Methods in Archaeology** international conference, Atlanta.
- Gauthier, N.**, M. Peeples. “Drought variability and the robustness of agrarian social networks.” Poster presented at the **82nd Annual Meeting of the Society for American Archaeology**, Vancouver.
- Gauthier N.** “Placing people in the environment: Coupling agent-based land-use and earth system models.” Invited symposium paper presented at the **CoMSES Net Virtual Conference**.

- Ullah, I., **N. Gauthier**, N. Miller, G. Snitker. "Connecting the human and the natural: Coupled human-earth systems models and the digital proxy record." Poster presented at the **Community Surface Dynamics Modeling System Annual Meeting**, Boulder.
- 2016 | Barton, C. M., E. Tortosa, O. Puchol, J. Riel-Salvatore, **N. Gauthier**, M. Conesa, and G. Pothier-Bouchard. "Risk and Resilience in the Late Glacial: a Case Study from the Western Mediterranean." Keynote presentation at **MEDINES - Late Glacial to Early Holocene Socio-ecological responses to climatic instability within the Mediterranean Basin**, Tarragona.
- Gauthier, N.** "Agricultural risk management in Mediterranean environments: a computational modeling approach." Invited symposium paper presented at the **81st Annual Meeting of the Society for American Archaeology**, Orlando.
- 2015 | **Gauthier, N.** "Creating high resolution climate reconstructions from statistically downscaled palaeoclimate simulations." Paper presented at the **21st Annual Meeting of the European Association of Archaeologists**, Glasgow.
- Gauthier, N.**, C. Luke, and C. Roosevelt. "Extreme Weather Events and 10,000 Years of Land-Use Change in the Gediz River Valley." Invited symposium poster presented at the **80th Annual Meeting of the Society for American Archaeology**, San Francisco.
- 2014 | Luke, C., C. Roosevelt, **N. Gauthier**, K. Egerer. "Water and People in the Marmara Lake Basin (Middle Gediz), Western Turkey." Paper presented at **Quick-LakeH 2014 - An International Workshop on Lakes and Human Interactions**, Ankara.
- 2013 | **Gauthier, N.** and E. Wallace. "Image Analysis, GIS, and the Microstratigraphy of Occupation Deposits from Tell es-Sweyhat, Syria." Paper presented at the **2013 Annual Meeting of the American Schools of Oriental Research**, Baltimore.
- Gauthier, N.** "Quantifying the Spatial Variability of Archaeological Sediments in Thin Section." Paper presented at the **78th Annual Meeting of the Society for American Archaeology**, Honolulu.
- 2012 | **Gauthier, N.** "Modeling Past Environmental Change and Agropastoral Land Use in the Marmara Lake Basin, Western Turkey." Poster presented at the **Boston University 15th Annual Undergraduate Research Symposium**, Boston.

GRANTS, FELLOWSHIPS, AND PRIZES

In prep	<p>“NSF CNH2: Hydroclimate variability and the persistence of coupled infrastructure systems in arid North America.” PI: Jeffrey Dean. Co-PI: Nicolas Gauthier, Laura M. Norman, Matthew Pailes, Charlotte Pearson.</p>
2018	<p>Collaborative Research Grant. A. Wissler, Co-PI. ASU Center for Bioarchaeological Research. \$4,850</p> <p>Travel Grant. ASU Graduate and Professional Student Association. \$950.</p>
2017	<p>Graduate Visitor Fellowship. National Center for Atmospheric Research, Advanced Study Program. \$6,750.</p> <p>Graduate Excellence Award. ASU College of Liberal Arts and Sciences. \$200.</p> <p>Graduate College Travel Award. ASU Graduate College. \$200.</p> <p>Travel Grant. ASU Graduate and Professional Student Association. \$950.</p> <p>Bursary. Computer Applications in Archaeology Conference. \$295.</p>
2016	<p>Group Travel Grant. ASU Graduate and Professional Student Association. \$630.</p>
2015	<p>Reynold Ruppé Prize in Archaeology for best paper in archaeology by a graduate student at ASU. ASU School of Human Evolution and Social Change. \$250.</p> <p>Travel Grant. ASU Graduate and Professional Student Association. \$950.</p>
2013	<p>Conference Travel Grant. ASU School of Human Evolution and Social Change Research Committee. \$250.</p> <p>Graduate Research Associate Fellowship. ASU. \$18,000/yr w/tuition waiver.</p> <p>Conference Participation Travel Award. Boston University Undergraduate Research Opportunities Program. \$350.</p> <p>Quantifying the Spatial Variability of Archaeological Sediments in Thin Section. Student Research Award, Renewal. Boston University Undergraduate Research Opportunities Program. \$1,600.</p>

2012 | Quantifying the Spatial Variability of Archaeological Sediments in Thin Section. **Student Research Award.** Boston University Undergraduate Research Opportunities Program. \$1,200.

Platt Fellowship. American Schools of Oriental Research. \$1,000.

Mapping Responses to Climate Change in Bronze Age Lydia. **CAS Summer Research Scholar.** Boston University. Undergraduate Research Opportunities Program. \$4,000.

2009-13 | **Dean's Scholarship.** Boston University. \$30,000/yr.

FIELDWORK

2016 | **Bova Marina Archaeological Project.** Calabria, Italy. Pedestrian survey, architectural recording, geodatabase management.

2016 | **Eastern Cibola Archaeological Project.** New Mexico, USA. Pedestrian survey, ceramic analysis.

2014 - 15 | **Kaymakçı Archaeological Project.** Manisa Province, Turkey. Stratigraphic excavation, flotation, soil-chemistry sampling, 3-d photography of excavation areas.

2014 | **US-Mexico Border Water and Environmental Sustainability Training Program.** Sonora, Mexico. Field spectrometry, micro UAV and balloon aerial photography, electrical resistivity survey, seismic refraction survey.

2012 - 14 | **Central Lydia Archaeological Survey.** Manisa Province, Turkey. Pedestrian survey, electrical resistivity survey, 3-d scanning and photogrammetry of ceramics and lithics.

TEACHING AND MENTORING

2018 | **Instructor.** "Winter School: Agent-Based Modeling of Social-Ecological Systems." Arizona State University Global Biosocial Complexity Initiative.

Guest Lecturer. "ASB 326: Human impacts on the environment: An archaeological perspective." Arizona State University, Spring semester.

2014-2016 | **Mentor,** "Undergraduate Apprenticeship Program." Arizona State University School of Human Evolution and Social Change.

COMPUTER SKILLS

Technical: Agent-based social simulation, climate modeling, GIS, remote sensing/image analysis, photogrammetry.

Software: AgiSoft Photoscan, ArcGIS, Blender, CESM, GRASS GIS, ImageJ, L^AT_EX, NetLogo, NextEngine Scanstudio, Python, R, SQL, Unix.

WORKSHOPS AND TUTORIALS

2018 | **Functionally Assembled Terrestrial Ecosystem Simulator Tutorial.** National Center for Atmospheric Research.

2017 | **Last Millennium Reanalysis Workshop and Hackathon.** National Oceanic and Atmospheric Administration, National Center for Atmospheric Research.

2016 | **Community Earth System Model Tutorial.** National Center for Atmospheric Research.

SERVICE AND PROFESSIONAL AFFILIATIONS

Reviewer: Advances in Archaeological Practice, Environmental Archaeology, Journal of Archaeological Science, Journal of Field Archaeology, Journal of Open Source Software, Network for Computational Modeling in Social and Ecological Sciences, ASU GPSA Travel Program.

Member: Society for American Archaeology, American Schools of Oriental Research, European Association of Archaeologists.