DYLAN S. DAVIS, M.A.

https://sites.psu.edu/ddavis/

PhD Candidate
Graduate Teaching Assistant
Office: Carpenter 303

Department of Anthropology
The Pennsylvania State University
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EDUCATION

PhD in Anthropology (*in progress*) 2018 – Present
Pennsylvania State University
Advisor: Kristina G. Douglass (chair)
Committee: Douglas Bird, Rebecca Bliege-Bird, Guangqing Chi
Dissertation Title: *Living with change: An archaeological study of human settlement patterns as environmental adaptations in Late Holocene Madagascar*

M.A. in Anthropology 2017 – 2018
Binghamton University, New York
Advisor: Carl P. Lipo

B.S. Anthropology & **B.A.** Geography 2014 – 2017
Binghamton University, New York (*summa cum laude*)
Concentrations: Archaeology, Computer Applications for Human Environmental Analysis

ACADEMIC APPOINTMENTS

2020 – Research Assistant, The Pennsylvania State University
2019 – 2020 – NASA Pennsylvania Space Grant Consortium Fellow
2018 – Present – Teaching Assistant, The Pennsylvania State University

RESEARCH INTERESTS

- remote sensing and GIS
- human-environment interactions
- climate and social organization
- statistical machine learning
- spatial analysis
- settlement distribution
- quantitative data analysis
- geophysical applications in archaeology
- environmental archaeology
- landscape archaeology
- human behavioral ecology
- island and coastal studies
- environmental modeling

EDITED WORKS

Davis, D. S., and M. C. Sanger (editors)
In Progress Ethical Practice in Remote Sensing and Geophysical Archaeology [Special Issue]. ***Archaeological Prospection***. [Expected Publication Date November 2021]

PEER REVIEWED PUBLICATIONS

Total Citations: 123 | h-index: 6 | i-10 index: 4 | Cumulative Altmetric Score: 183

Davis, D. S., K. E. Seeber, and M. C. Sanger

2020 Addressing the problem of disappearing cultural landscapes in archaeological research using multi-scalar survey. ***The Journal of Island and Coastal Archaeology***. In Press. DOI: 10.1080/15564894.2020.1803457

Davis, D. S., R. J. DiNapoli, and K. Douglass

2020 Integrating point process models, evolutionary ecology, and traditional knowledge improves landscape archaeology: A case from Southwest Madagascar. ***Geosciences.*** 10(8):267.

Davis, D. S.

2020 Defining what we study: The contribution of machine automation in archaeological research. ***Digital Applications in Archaeology and Cultural Heritage***. 18: e00152.

Davis, **D. S.**, R. J. DiNapoli, M. C. Sanger, and C. P. Lipo

2020 The integration of lidar and legacy datasets provides improved explanations for the spatial patterning of shell rings in the American Southeast. ***Advances in Archaeological Practice***. 8(4):361-375.

Davis, D. S., D. C. Buffa, and A. C. Wrobleski

2020 Assessing the utility of open-access bathymetric data for shipwreck detection in the United States. ***Heritage***. 3(2):364-383.

Davis, D. S.

2020 Geographic disparity in machine intelligence approaches for archaeological research. ***Remote Sensing***. 12(6):921.

Davis, D. S., and K. Douglass

2020 Aerial and Spaceborne Remote Sensing in African Archaeology: A Review of Current Research and Potential Future Avenues. ***African Archaeological Review***. 37(1):9-24.

Davis, D. S., V. Andriankaja, T. L. Carina, Z. M. Chrisostome, C. Colombe, F. Fenomanana, L. Hubertine, R. Justome, F. Lahiniriko, H. Léonce, G. Manahira, B. V. Pierre, R. Roi, P. Soafiavy, F. Victorian, V. Voahirana, B. Manjakahery, and K. Douglass

2020 Satellite-based remote sensing rapidly reveals extensive record of Holocene coastal settlement on Madagascar. ***Journal of Archaeological Science***. 115:105097.

Davis, D. S.

2020 Studying human responses to environmental change: Trends and trajectories of archaeological research. ***Environmental Archaeology: The Journal of Human Palaeoecology***. 25(2):367-380.

Davis, D. S.

2019 Object-based image analysis: a review of developments and future directions of automated feature detection in landscape archaeology. ***Archaeological Prospection***. 26(2):155-163.

Davis, D. S., C. P. Lipo, and M. C. Sanger

2019 A comparison of automated object extraction methods for earthwork feature identification in South Carolina. ***Journal of Archaeological Science: Reports***. 23:166-177.

Davis, D. S., M. C. Sanger, and C. P. Lipo

2019 Automated mound detection using LiDAR and object-based image analysis in Beaufort County, SC. ***Southeastern Archaeology***. 38(1):23-37.

Davis, D. S.

2017 The Applicability of Short-Wave Infrared (SWIR) Imagery for Archaeological Landscape Classification on Rapa Nui (Easter Island), Chile. ***Alpenglow*** 3(1):7.

MANUSCRIPTS IN REVIEW

Davis, D. S., D. C. Buffa, T. Rasolondrainy, E. Creswell, C. Anyanwu, A. Ibirogba, C. Randolph, A. Ouarghidi, L. N. Phelps, F. Lahiniriko, Z. M. Chrisostome, G. Manahira and K. Douglass

In Revision The aerial panopticon and the ethics of archaeological remote sensing sacred cultural spaces. Submitted to ***Archaeological Prospection***. Accepted pending minor revisions.

MANUSCRIPTS IN PREPARATION (*co-primary author)

Davis, D. S., and K. Douglass

n.d. Remote Sensing Reveals Lasting Legacies of Land-Use by Small-Scale Foraging Societies. To be submitted to ***Frontiers in Ecology and Evolution***. In Preparation.

Davis, D. S., G. Caspari, C. P. Lipo, and M. C. Sanger

n.d. Deep Learning Reveals Extent of Archaic Native American Shell Ring Building Practices [Working Title]. To be submitted to ***Science Advances***. In Preparation [submission by March 2021].

Davis, D. S., T. Rasolondrainy, G. Manahira, V. Andriankaja, L. Hubertine, R. Justome, F. Lahiniriko, H. Léonce, R. Roi, F. Victorian, C. Colombe, V. Voahirana, T. L. Carina, and K. Douglass

n.d. Evidence of extensive social networks and information transfer on Madagascar throughout the Holocene [Working Title]. Working Paper. In Preparation.

Davis, D. S.

n.d. Theoretical repositioning of automated remote sensing archaeology: Shifting from features to ephemeral landscapes. To be submitted to ***Journal of Computer Applications in Archaeology***. In Preparation

Hixon, S. W.*, **D. S. Davis***, B. J. Culleton, L. Eccles, and K. Douglass

n.d. Diagenesis affects the reliability of eggshell calcite for radiocarbon dating [Working Title]. To be submitted to ***Radiocarbon***. In Preparation.

Davis, D. S., and K. Douglass

n.d. Settlement Patterns and Human-Environmental Dynamics in Southwest Madagascar since the Late Holocene. In *The Malagasy World*, edited by Chantal Radimilahy, Zoë Crossland, and Kristina Douglass, Routledge Handbooks Online: Routledge. In Preparation.

Douglass, K., E. M. Quintana Morales, T. Rasolondrainy, G. Manahira, B. Manjakahery, Rosily, A. Ediedy, F. Mampibay, H. Rabekoto, P. Rasoafiavy, Z. C. Maharesy, D. C. Buffa, **D. S. Davis**, and E. Burkhart

n.d. The Vezo Ecological Knowledge Exchange. To be submitted to ***Journal of Ethnobiology***. In Preparation.

D.S. Davis, M. Arthursson, and J. Lundin

n.d. Halves of the same coin: Sinkhole algorithms as mound detection tools in Sweden [Working Title]. To be submitted to ***Journal of Archaeological Science***. In Preparation.

CONFERENCE PRESENTATIONS (*Invited, †Peer Reviewed)

***†Davis, Dylan S**., G. Caspari, C. P. Lipo, and M. C. Sanger

(2021) Using Deep Learning to Detect Rare Archaeological Features: A Case from Coastal South Carolina, USA." Paper to be presented at the Society of Exploration Geophysicists 91st Annual International Meeting. Session Title: Applications for Archaeology, Void, and Target Detection. Denver, CO.

Davis, D. S., V. Andriankaja, T. L. Carina, Z. M. Chrisostome, C. Colombe, F. Fenomanana, L. Hubertine, R. Justome, F. Lahiniriko, H. Léonce, G. Manahira, B. V. Pierre, R. Roi, P. Soafiavy, F. Victorian, V. Voahirana, B. Manjakahery, and K. Douglass

(2021) Remote Sensing and Spatial Analysis Reveal Coastal Settlement Strategies in Southwest Madagascar. Paper to be presented at the 25th Society of Africanist Archaeologists, Oxford, UK, August 15-20.

***Davis, D. S.**

(2021) Using machine intelligence to locate ephemeral archaeological landscape modifications: A case from Madagascar. Paper to be presented at CAA 2021: Digital Crossroads. Session title: From Artificial Intelligence to Stratigraphic Reality. Dynamics of an Inverse Process for AI Applications in Archaeology.

Davis, D. S.

(2021) Archaeology Highlights Strategies for Coping with Climate Change. To be presented at the Graduate Research Exhibition, 2021, Pennsylvania State University.

Davis, D. S.

2020 Quantifying Ancient Landscape Modifications using Machine Learning and Evolutionary Theory: A Case Study from Madagascar. Poster presented at the Center for Computational Mathematics and Applications Workshop on Mathematical Machine Learning and Application. December 14-16.

Davis, D. S., and K. Douglass

2020 Archaeological Settlement on Madagascar Revealed Using Semi-Automated Satellite Remote Sensing. Poster presented at the Institute for Computational Data Sciences (ICDS) Symposium, Pennsylvania State University. October 21-22. DOI: 10.13140/RG.2.2.19537.76648

Douglass, K., and **D. Davis**

2020 Archaeology of Adaptation and Mobility. Lightning Talk presented at Microsoft's AI for Earth Digital Summit. June 25-26.

Davis, D. S.

2020 Spatial Modeling Indicates Drivers of Settlement Behavior in Southwest Madagascar. Paper presented at Anthropology Day, Penn State University, State College, PA. March 24. (***Cancelled due to COVID-19 Pandemic***).

Davis, D. S.

2019 Developing a Predictive Model for Locating Cultural Deposits on Southwest Madagascar. Paper presented at the 14th Madagascar Workshop, University of Toronto, October 25-26.

Davis, D. S., M. C. Sanger, and C. P. Lipo

2019 Shell Rings and Settlement Organization in the Coastal American Southeast: New insights from remotely sensed data. Poster presented at the 84th Annual Meeting of the Society for American Archaeology, Albuquerque, NM, April 10-14. DOI: 10.13140/RG.2.2.16808.62726
***Also Presented at Penn State's *Anthropology Day*, April 5, 2019**

Davis, D. S.

2018 Unveiling the Past: Using LiDAR to Discover Lost Archaeological Features in the American Southeast. Poster presented at the 3rd Annual GIS Day, Binghamton University, February 16. https://orb.binghamton.edu/gisday/1.

Davis, D. S.

2018 Filling in the Map: Object-Based Image Analysis and the Identification of Shell Rings on Hilton Head Island, SC. Poster presented at the 83rd Annual Meeting of the Society for American Archaeology, Washington D. C., April 11-15. DOI: 10.13140/RG.2.2.21335.57767/1.

Davis, D. and C. Lipo

2017 The Benefits of Short-Wave Infrared Imagery for Archaeological Landscape Analysis: A Case Study from Easter Island, Chile. Poster presented at the 82nd Annual Meeting of the Society for American Archaeology. Vancouver, BC, March 29 – April 2. DOI: 10.13140/RG.2.2.24888.75527.

Davis, D. and C. Lipo

2017 Resource Scarcity and Monumental Architecture: Cost Signaling on Rapa Nui (Easter Island), Chile. Poster presented at Binghamton Research Days. Binghamton University, April 21. DOI: 10.13140/RG.2.2.29083.05928.

PUBLISHED DATASETS

Davis, D. S., G. Caspari, C. P. Lipo, and M. C. Sanger

2021 Deep Learning Reveals Extent of Archaic Native American Shell Ring Building Practices. To be posted on Penn State ScholarSphere. In Preparation.

Davis, D. S., V. Andriankaja, T. L. Carina, Z. M. Chrisostome, C. Colombe, F. Fenomanana, L. Hubertine, R. Justome, F. Lahiniriko, H. Léonce, G. Manahira, B. V. Pierre, R. Roi, P. Soafiavy, F. Victorian, V. Voahirana, B. Manjakahery, and K. Douglass

2019 Satellite-based remote sensing rapidly reveals extensive record of Holocene coastal settlement on Madagascar. Penn State ScholarSphere. https://doi.org/10.26207/1a47-pw11.

Davis, D. S., R. J. DiNapoli, M. C. Sanger, and C. P. Lipo

2019 The integration of lidar and legacy datasets provides improved explanations for the spatial patterning of shell rings in the American Southeast. Penn State ScholarSphere. https://doi.org/10.26207/7erq-3662.

Davis, D. S., C. P. Lipo, and M. C. Sanger

2018 A comparison of automated object extraction methods for mound and shell-ring identification in coastal South Carolina. Anthropology Datasets 4. https://orb.binghamton.edu/anthro_data/4/.

Lipo, C. P., M. Sanger, and **D. Davis**

2018 Automated mound detection using LiDAR and Object-Based Image Analysis in Beaufort County, SC. Anthropology Datasets 3. https://orb.binghamton.edu/anthro_data/3.

INTERNAL REPORTS

Davis, D. S.

2020 Interim Report: Studying the effects of environmental change on the prehistoric settlement of Southwest Madagascar. American Philosophical Society, Philadelphia, PA.

Davis, D. S.

2019 Concluding Report: Carbon-14 Dating of New Archaeological Sites in Southwest Madagascar. Internal Report. Environmental and Energy Sustainability Laboratories, The Pennsylvania State University, University Park, PA.

PUBLICATIONS FOR GENERAL PUBLIC

Davis, D., D. Buffa, and A. Wrobleski.

In prep. Automatic Shipwreck Detection in Bathymetry Data. *Hydro International*. Invited Submission.

Davis, D

2019 When Social Science meets Computer Science NASA's mission directives are explored in innovative ways. Blog Post for the Pennsylvania Space Grant Consortium.

CARTOGRAPHIC WORK

2020 Figure 2: "Teotihuacan and other Terminal Formative and Classic period sites mentioned in Central Mexico" in K. G. Hirth, D. Carballo, and B. Arroyo (eds.) *Teotihuacan: The World Beyond the City*. Dumbarton Oaks, Washington D.C.

2020 Figure 9-1: "Five different periodic rendezvous or trade fairs held in the western United States before European contact." In K.G. Hirth *The Organization of Ancient Economies: A Global Perspective*.

2020 Figure 9-7: "Merchant circuits between large and small markets across three different environmental zones." In K.G. Hirth *The Organization of Ancient Economies: A Global Perspective*.

FUNDING

TOTAL AWARDED TO DATE (approximate): **$201,860**

External Funding: **$156,727** | Internal Funding: **$40,029** | Travel Funding: **$4,204**

(PSU = Penn State, BU = Binghamton University)

External Research Funding

– **National Geographic Society** Enduring Impacts RFP Grant (**co-PI**, PI K. Douglass) – *Enduring Impacts of Climate and People on the Landscape of Southwest Madagascar* (Award No. NGS-77912R-21)	$79,995	2021-2022
– **National Science Foundation (NSF)** – Doctoral Dissertation Research Improvement Grant: *The Role of Mobility in Human-Environment Interactions* (Award No. BCS-2039927)	$31,556	2021-2023
– **NSF Spatial Archaeometry Research Collaborations –** Data and Analytics Grant (**PI**) – *Quantifying pastoralist niche construction on southwest Madagascar using multi-sensor remote sensing (1600 – Present)*	$12,381	2021-2022
– **NASA Pennsylvania Space Grant Consortium** – Mini-Grant (**PI**) *Satellites, settlements, and environment: studying past mobility patterns and their environmental contexts in Southwest Madagascar*	$4,995	2020-2021
– **Sigma Xi** – Grant in Aid of Research (**PI**) *Studying the effects of environmental change on human settlement Behavior in Southwest Madagascar*. Grant No. G2020031599752491.	$800	2020-2021
– **Microsoft** – AI for Earth Azure Compute Credit Grant (**co-PI**, PI Kristina Douglass): *Harnessing the power of automated archaeological remote sensing in Holocene SW Madagascar*	$15,000	2020-2021
– **Explorers Club** – Mamont Scholar Grant (**PI**) *Understanding Human-Environmental Interaction in Coastal Southwest Madagascar (ca. 10,000 - 1000 BP)*	$2,000	2020-2021
– **American Philosophical Society** – Lewis and Clark Fund for Exploration and Research (**PI**): *Studying the effects of environmental change on the prehistoric settlement of Southwest Madagascar*	$5,000	2020-2021
– **NASA Pennsylvania Space Grant Consortium** – Graduate Research	$5,000	2019-2020

Fellowship (**PI**) [Grant No. NNX15AK06H]

Internal Research Funding

– **Liberal Arts Research and Graduate Studies Office, PSU** – Dissertation Support Grant **(PI)**	$1,994	2020-2021
– **Africana Research Center, PSU** – Research Grant (**PI**): *An investigation of environmental change and its effects on settlement and mobility in Southwest Madagascar since the Late Holocene*	$1,000	2020-2021
– **African Studies Program, PSU** – Dickerson Family Fund Award (**PI**) *Evaluating Settlement Strategies in Southwest Madagascar Using Remote Sensing and Spatial Analysis*	$900	2020
– **Department of Anthropology, PSU** – Hill Fellowship Pre-Comprehensive Award (**PI**)	$1,220	2020
– **Energy and Environmental Sustainability Laboratories/Laboratory for Isotopes and Metals in the Environment, PSU** – Graduate Student Seed Grant (**PI**): *Improved Carbon-14 Dating of Ratite Eggshell fragments from East Africa and Madagascar*	$1,735	2020
– **Institute for Cyber-Science, PSU** – Seed Grant (**Co-PI**, PI: Kristina Douglass): *Machine Learning and the Preservation of Cultural Heritage on Madagascar* (I conceived of and wrote this grant largely independently, but graduate students could not serve as the PI)	$25,000	2019-2020
– **Department of Anthropology, PSU** – Hill Fellowship Graduate Training Award (**PI**)	$1,500	2019
– **Energy and Environmental Sustainability Laboratories, PSU** – Graduate Student Seed Grant, PSU (**PI**): *Carbon-14 Dating of New Archaeological Sites in Southwest Madagascar: New Insights into the Early Settlement History of the Indian Ocean*	$2,430	2019

Academic Awards

– Liberal Arts Teaching and Research Scholarship (PSU)	$1,000	2020
– Graduate Scholar Award (PSU)	$2,000	2020
– Graduate Scholar Award (PSU)	$2,000	2019
– Richard Antoun Faculty Award for Excellence in Anthropology	$250	2017

Travel Funding

– RGSO Conference Travel Award (PSU)	$400	2021
– RGSO Conference Travel Award (PSU)	$600	2019
– AGSA UPAC Travel Fund (PSU)	$604	2019
– RGSO Conference Travel Award (PSU)	$400	2019
– Graduate Student Conference Travel Reimbursement Funding (BU)	$400	2018
– Travel Grant, Department of Anthropology (BU)	$500	2018
– Travel Grant, Department of Anthropology (BU)	$500	2017
– Undergraduate Student Conference Travel Fund (BU)	$300	2017
– Harpur Edge Student Support Fund (BU)	$500	2017

NON-MONETARY AWARDS & RECOGNITION

- Top Downloaded Paper in *Archaeological Prospection* between 2018-2019 2020
- National Science Foundation Graduate Research Fellowship: Honorable Mention 2017

TEACHING INTERESTS

- archaeological research methods
- island and coastal archaeology
- North American archaeology
- geophysical applications in archaeology
- remote sensing, GIS and spatial analysis
- anthropological theory

TEACHING EXPERIENCE

ANTH 1: Understanding Humans (PSU), **Teaching Assistant** (SP-2020)

- Duties: Grading, hold office hours, and develop and present occasional lectures

ANTH 9: Rise of Civilization in the Old World (PSU), **Teaching Assistant** (FA-2018; FA-2019)

- Duties: Grading, hold office hours, lead review sessions, and present occasional lectures.

ANTH 140: Anthropology of Alcohol (PSU), **Teaching Assistant** (FA-2020, SP-2021) [online format]

- Duties: Train undergraduate TAs, logistical planning of course materials, hold office hours

ANTH 426W: Archaeological Laboratory Analysis (PSU), **Teaching Assistant** (SP-2019)

- Duties: Teach writing development skills, grade written assignments, hold office hours, assist students with lab-work

FIELDWORK

- May 2020 – November 2020 – Archaeological Survey of the Velondriake Region, Morombe, Madagascar: **Principal Investigator** [planned and organized field logistics, I was not in the field due to the COVID-19 Pandemic]
- July 2019– August 2019 – Terrestrial and Marine Archaeological Survey of the Velondriake Region, Morombe, Madagascar: **Principal Investigator**
- July 2018 – Sea Pines Archaeological Research Project, Hilton Head Island, South Carolina, USA: **Field Archaeologist** (PI: Matthew Sanger)
- October 2017 – Archaeological Survey in Beaufort County, South Carolina, USA: **Principal Investigator**
- July 2017 – August 2017 – Sea Pines Archaeological Research Project, Hilton Head Island, South Carolina, USA: **Field Archaeologist** (PI: Matthew Sanger)
- June 2015 – August 2015: The Gabii Project, Rome, Italy: **Student** (PIs: Nicola Terrenato, Marcello Mogetta)

LABWORK

- June 2020 – August 2020: **Graduate Research Assistant** in the Primate Functional Morphology Lab, Pennsylvania State University

- January 2019 – Present: **Graduate Researcher/PhD Student** in the Olo Be Taloha African Environmental Archaeology Lab, Pennsylvania State University
- September 2018 – Present: **PhD Student** in the Human Environmental Dynamics Lab, Pennsylvania State University
- March 2019 – Present: **Graduate Researcher** in the Isotope and Paleoclimatology Lab, Pennsylvania State University
- February 2017 – May 2018: **Lab Assistant** in the Archaeological Imaging, Mapping, and Morphology Lab, Binghamton University
- February 2017 – May 2018: **Graduate Researcher** in the FRI Remote Sensing Lab, Binghamton University

RESEARCH PROJECTS

June 2020 – Present: *AI and Archaeology* (**Co-Investigator**).
- I am working with CRM archaeologists from SEARCH and DIEHLUX, academic archaeologists working in southeast Asia, and an AI company, Unleash Live, to develop AI tools for archaeological studies of LiDAR near Angkor, Cambodia.

December 2019 – Present: *Automated Detection of Swedish Iron and Bronze Age Mounds*, (**Co-Investigator**)
- Develop an automated detection algorithm for locating mound and charcoal kiln sites in present-day Sweden. Particular emphasis on tools for CRM projects. Collaborative project with Julius Lundin at Arkeologerna, Statens Historiska Museer.

February 2019 – Present: *Machine Learning and the Preservation of Cultural Heritage on Madagascar*, Pennsylvania State University, PA (**Principal Investigator**)
- Developed remote sensing predictive models for archaeological prospection on Southwestern Madagascar. Algorithms will also be developed to identify coral reef locations which will be the subject of a paleoclimate reconstruction project.

March 2019 – Present: *Carbon-14 Dating of New Archaeological Sites in Southwest Madagascar: New Insights into the Early Settlement History of the Indian Ocean*, Pennsylvania State University, PA (**Co-Principal Investigator**)
- Conduct AMS analysis on elephant bird (*ratite genera Aepyornis* and *Mullerornis*) eggshell fragments from coastal archaeological sites in Southwestern Madagascar.
- Develop new ^{14}C method for dating organic fraction of eggshell.

October 2018 – June 2020: *Shells and Settlement Behavior in the American Southeast*, Pennsylvania State University, PA (**Principal Investigator**)
- Assessed various hypotheses surrounding shell ring functionality in the American Southeast. Point process modeling was used to assess shell ring distribution and its relationship with environmental variables.

January 2017 – February 2019: *Public LiDAR and Object Based Image Analysis (OBIA) for Mound Identification in South Carolina*, Binghamton University, New York (**Principal Investigator**)
- Developed OBIA methods for mound and ring identification in Beaufort County, SC. The work has resulted in the detection of almost 200 new archaeological deposits which contributes to the understanding of precontact settlement patterns in the American Southeast.

November 2017 – December 2017: *Ceramic Analysis of Sea Pines Shell Ring (38BU7)*, Binghamton University, New York (**Graduate Student**)

- Conducted a study of depositional processes and practices associated with ceramic discard. Analyzed a total of 733 sherds. Measured the size and weight of ceramic sherds, the presence of sooting and decoration on those sherds, and their spatial distribution across the site.

September 2016 – February 2017: *Test of Applicability of Cost-Signaling Model on Easter Island*, Binghamton University, New York (**Graduate Student**)

- Analyzed monumental architectural features on Easter Island and their spatial proximity towards freshwater sources and agriculturally productive land using R, ENVI, and ArcGIS. Findings support cost-signaling as an explanation for the presence of monumental architecture on Rapa Nui (Easter Island), Chile.

February 2016 – February 2017: *Analysis of Archaeological Benefits of Short-Wave Infrared Imagery*, Binghamton University, New York (**Graduate Student**)

- Demonstrated the benefits of Short-Wave Infrared Imagery for Archaeological Landscape Analysis. Study focused on "lithic mulching" activity on Easter Island (Rapa Nui), Chile. using WorldView-3 high resolution satellite imagery.

TECHNICAL TRAINING

Methods	Software/Technology
GIS, spatial analysis, remote sensing, image analysis, 3D-mesh creation, object-based image analysis, photogrammetry, geophysical survey, archaeological survey, archaeological excavation, data processing and analysis, ceramic analysis, acid hydrolysis for AMS dating preparation, Bayesian Statistics	ArcGIS, QGIS, SAGA, Whitebox GAT, ENVI, eCognition, R, Surfer, GPR, Magnetometer, Python, MeshLab LiDAR, multispectral imagery, thermal imagery

WORKSHOPS ATTENDED

- 2020: DataArc Workshop: Tool Evaluation. Center for Advanced Spatial Technologies, University of Arkansas, November 16.
- 2020: COMPASS Science Communication Training Workshop, The Pennsylvania State University
- 2017: Using R for Archaeological Data Analysis, Mapping, and Visualization Workshop. 82nd Annual Meeting of the Society for American Archaeology Meeting, Vancouver, BC.

ADDITIONAL TRAINING

2012 – Open Water Diving Certification (SSI)

2013 – Advanced Open Water Diving Certification (SSI)

- Advanced certifications: Wreck, Night/limited visibility, Deep, Drysuit, Nitrox (EAN 40%)

PROFESSIONAL MEMBERSHIPS

- Explorers Club 2020 – Present

- Society for Africanist Archaeologists 2019 – Present
- AAAS 2019 – Present
- Sigma Xi Inducted 2018
- Society for American Archaeology 2016 – Present
- Anthropology Graduate Student Organization (PSU) 2018 – Present
- Phi Beta Kappa Honor Society Inducted 2017
- Gamma Theta Upsilon, International Geographical Honor Society Inducted 2017
- Graduate Student Organization (Binghamton University) 2017 – 2018
- Graduate Anthropology Organization (Binghamton University) 2017 – 2018

ACADEMIC SERVICE

- Editorial Positions:
  - Guest Editor, Special Issue of ***Archaeological Prospection*** 2020 – Present
  - Early Career Researcher Board, ***Archaeological Prospection*** 2020 – Present
- External Reviewer: 2019 – Present
  - Grant Agencies: *NASA* (1)
  - Journals: *Journal of Archaeological Science* (1), *Archaeological Prospection* (12), *American Antiquity* (1), *PLOS ONE* (1), *Remote Sensing* (7), *Sustainability* (1), *Journal of Archaeological Science: Reports* (1), *Heritage* (1)
- Graduate-Undergraduate Mentorship Program 2020 – Present
- Anti-Racism Pedagogy Group Member (Part of an effort to design an Anthropology of Race and Racism course for undergraduate students, PSU) 2020 – 2021
- Member of Awards Committee, Department of Anthropology (PSU) 2019 – Present
- Member of Colloquium Committee, Department of Anthropology (PSU) 2019 – Present
- Member of Outreach Committee, Department of Anthropology (PSU) 2019 – Present
- Member of international effort to increase impact of student scholarship (International Journal of Student Research in Archaeology) 2019 – Present
- Mentor for 3 first-year PhD students in Anthropology Department (PSU) 2019 – 2021
- Editor for undergraduate academic journal at Binghamton University 2015

Mentorship Activities

- Undergraduate Research Assistants
  - Sydney Ernst (Penn State) Spring 2021
  - Claire Byrnes (Penn State) Spring 2021

I am training these students in geospatial technologies and their applications to archaeology and cultural heritage research. This includes satellite remote sensing and GIS analysis, basic coding in Javascript and R, predictive modeling, statistical machine learning, as well as data collection and storage practices.

MEDIA COVERAGE
(* indicates newsletter research highlight)

- January 22, 2021, Medium, "Archaeologists Use AI to 'Dig Deeper'"

- May 14, 2020, Unite.AI, "AI Is Dramatically Changing Archaeology, Discovering New Sites And Artifacts"
- May 7, 2020, Singularity Hub, The Mandarin, "The New Indiana Jones? AI. Here's How It's Overhauling Archaeology."
- February 25, 2020, Futurity, Ancient Madagascar Shows Humans Make New Places Suit Them
- February 18, 2020, Penn State News, Computers scour satellite imagery to unveil Madagascar's mysteries
- *Davis, Dylan. 2019. Locating and Protecting Cultural Heritage using Remote Sensing Survey in Madagascar. *The Current: Newsletter of the Island & Coastal Archaeology Interest Group*. 7(1):13.
- August 14, 2018, **Invited Guest Speaker** on ArchaeoTech Podcast, Using Math and Maps to find Mounds in the Southeast US – Episode 86 (https://www.archaeologypodcastnetwork.com/archaeotech/86)
- July 27, 2018, Azo Sensors, New Image Analysis Method Used by Archaeologists to Identify Old North American Mounds
- July 23, 2018, EurekAlert, Science Daily, Phys.org, Heritage Daily, ScienMag "Archaeologists identify ancient North American mounds using new image analysis technique"
- February 19, 2018, BU Pipe Dream Geography department holds third annual GIS Day
- January 22, 2018, BU Pipe Dream BU research challenges Easter Island's historical narrative
- July 14, 2017, The Island Packet, What's buried in Sea Pines and more than 4,000 years old? Find out who's digging for answers

PUBLIC OUTREACH ACTIVITIES

– Graduate School Application Preparation Workshop, Penn State, **Co-Organizer**	2020
– Talked to elementary schoolers about African Archaeology, Germantown Academy, PA, **Invited Speaker**	2020
– ENVISION Workshop, Eberly College of Science, Penn State University, **Volunteer**	2020
– Community Education Extended Learning (CEEL) Program, State College (Pennsylvania) School District, **Volunteer**	2019 – 2020
– Haunted-U (Eberly College of Science, Penn State University), **Volunteer**	2019