

Elizabeth J. Olson
CURRICULUM VITAE

Department of Earth, Atmospheric and Planetary Sciences, Purdue University, West Lafayette,
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RESEARCH INTERESTS

Geochemistry, paleoclimate, hydrology, and biogeochemical cycles. My research focuses on biogeochemical proxy applications. This includes understanding spatial and temporal variability recorded in various proxies as they respond to modern atmospheric and hydrologic conditions through the use of modeling and isotopic tracers. Broadly my academic interests include applications in sedimentology, archaeology, and biology.

POSITIONS HELD

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| 2019 – present | Postdoctoral researcher, Purdue University |
| 2018 | Lecturer, Triton College |
| 2018 | Lecturer, Harold Washington College |
| 2017 – 2013 | Teaching Assistant, Northern Illinois University |
| 2012 – 2010 | Research Assistant, University of Maine |
| 2010 – 2007 | Assistant Curator, Florida Museum of Natural History |

EDUCATION

2018 Ph.D., Geology and Environmental Geosciences, Northern Illinois University
Advisor: J.P. Dodd
Dissertation: Hydrogen, carbon and oxygen isotopes in *Prosopis* sp. trees: a new climate proxy for Holocene paleoclimate in the Atacama Desert, Chile

2012 M.S., Quaternary and Climate Studies, University of Maine, Orono, Maine (2012)
Advisor: D. Sandweiss
Thesis: Climate, Environment, Geomorphology and Settlement during the Preceramic Period at the Salinas de Chao, North Coast of Peru

2010 B.A., Geology and Anthropology, summa cum laude, University of Florida; Gainesville, Florida (2010)
Advisors: K. Emery and J. Krigbaum
Thesis: Zoometric Breed Analysis and Isotopic Paleodietary Reconstruction of the Maya Dog

ACADEMIC AWARDS

2017 Dissertation Completion Scholarship Graduate School NIU
Marie Morisawa Award Quaternary Geology and Geomorphology Division of the Geological Society of America
National Geographic Waitt Grant “Tiwanaku Pastoralism And Economy In Far Southern Peru: Creating A Strontium Baseline And Isoscape To Aid Archaeological Research” with Dr. Susan deFrance at University of Florida

2016 Inter-university Training for Continental-scale Ecology Research in Residence Grant
Project Title “Testing hypotheses about climatic and biotic controls $\delta^{18}\text{O}$, $\delta^2\text{H}$ and $\delta^{13}\text{C}$ in

- arid tree species using an isotopically enabled forest growth model (3-PG)” with Dr. Chris Still at Oregon State University
 Lewis and Clark Exploration Grant American Philosophical Society
 Carla Montgomery Scholarship Department of Geology NIU
 Outstanding Graduate Student of the Year Department of Geology NIU
 2015 Student Travel Grant from Graduate School Northern Illinois University
 2014 Student Research Grant from the Geological Society of America
 Goldich Fund Student Research Grant from Department of Geology NIU
 Tilford Field Studies Scholarship from the Association of Environmental and Engineering Geologists
 2011 Dan and Betty Churchill Exploration Fund
 2009 University Scholars Research Award, University of Florida
 2006 Florida Bright Futures Academic Scholarship

PUBLICATIONS

- 2016 Jayne, R.S., Pollyea, R.M, Dodd, J.P., **Olson, E.J.**, and Swanson, S.K., submitted Feb 19, 2016, Regional-scale groundwater flow in the Pampa del Tamarugal Basin, Atacama Desert, Chile; Hydrogeology Journal, August 2016, DOI: 10.1007/s10040-016-1454-3
- 2013 deFrance, S. and **Olson, E.**, 2013, Late Prehispanic Coquina Quarrying and Tomb Construction in Coastal Southern Peru; Journal of Island & Coastal Archaeology, Vol. 8(1), p. 3-16.

Manuscripts in Preparation

- In Revision* **Olson, E.J.**, Dodd, J.P., and Rivera, M.A., Floating stable carbon and oxygen isotope record of Holocene age Prosopis sp. tree series from the Atacama Desert, evidence for regional climate and cultural change; Paleoecology, Paleogeography and Paleoclimatology
- In Revision* **Olson, E.J.**, Dodd, J.P., Diefendorf, A. and Freimuth, E., Oxygen isotopes of Prosopis tamarugo tree ring cellulose: A new species for paleoclimate studies; Dendrochronologia

PROFESSIONAL PRESENTATIONS

Olson, E., Dodd, J., and Rivera, M., 2018 South American Monsoon Variability Over the Holocene Recorded in High-Resolution Tree Ring Oxygen Isotope Series from the Atacama Desert, American Geophysical Union Conference, Washington, D.C.

Olson, E., Dodd, J., and Rivera, M., 2018 Isotopic disequilibrium in Prosopis tree cellulose as an indicator of water stress and hydroclimate variability, Midwest Geobiology Conference, Evanston, IL

Olson, E., Dodd, J., and Rivera, M., 2017 Climate variability over the Holocene in the Atacama Desert of Chile as reconstructed from tree ring isotope series, European Geosciences Union General Assembly, Vienna, Austria

Olson, E., Dodd, J., and Rivera, M., 2016 Examining Basin-Scale Water and Climate Relations across the Pampa del Tamarugal, Atacama Desert through Spatial Analysis of Hydrogen, Carbon and Oxygen Isotopes in Tree Rings, American Geophysical Union Conference, San Francisco, CA

Olson, E. Dodd, J., Diefendorf, A., and Freimuth, E., 2016 Reconstructing $\delta^{18}\text{O}$ in groundwater from tree-ring cellulose in arid regions, Midwest Geobiology Conference, Cincinnati, OH

Olson, E. and Dodd, J., 2015 Spatial and temporal variation in tree-ring α -cellulose oxygen and hydrogen isotope values as a record of water availability in the Atacama Desert, American Geophysical Union Conference, San Francisco, CA

Olson, E., Dodd, J., and Rivera, M. 2015 Tree Ring Isotope Record of Climate Change at the site of Ramaditas in the Atacama Desert of Northern Chile, Society of American Archaeology Conference, San Francisco, CA

Dodd, J., Freimuth, E., **Olson, E.,** and Diefendorf, A., 2015 Oxygen isotope values of tree ring α -cellulose as a proxy of hydroclimate variability in arid regions, American Geophysical Union Conference, San Francisco, CA

Jayne, R., Pollyea, R., Dodd, J., **Olson, E.,** and Swanson, S, 2015 Assessing groundwater recharge mechanisms in the Pampa del Tamarugal Basin of northern Chile's Atacama Desert, American Geophysical Union Conference, San Francisco, CA

Olson, E., Dodd, J., and Rivera, M., 2014 Mid-Holocene Water Availability in the Atacama Desert, Chile Recorded in Tree Ring Oxygen Isotope Variability at the Ramaditas Archaeological Site: Evidence for Climate Change and Anthropogenic Landscape Alteration, PAGES (Past Global Changes) LOTRED-SA 3rd symposium on Climate change and human impact in Central and South America over the last 2000 years: Observations and Models Conference Abstracts with Programs, Medellín, Colombia.

Olson, E., Dodd, J., and Rivera, M., 2014 Holocene Water Availability in the Atacama Desert as Recorded by Seasonal Tree Ring Oxygen Isotope Variations, Goldschmidt Conference Abstracts with Programs, Annual Meeting, Sacramento, CA.

Olson, E., Emery, K. & Krigbaum, J., 2014 Head to Tail: Maya Dog Breeds and Diet, Midwest Mesoamericanist Meeting Abstracts with Programs, Annual Meeting, Dekalb, IL.

Olson, E., 2011, Geoarchaeology of the Salinas de Chao Paleoembayment: Northeast Conference on Andean Archaeology and Ethnohistory Abstracts with Programs, Annual Meeting, Andover, MA.

EXPERIENCE**Laboratory Research**

- 2017 Intern working on Carbon-Cycling Semantic Ontologies NSF DataOne Arctic Research Center Internship at the University of Santa Barbara California and National Center for Ecological Analysis and Synthesis
- 2016 Intern working on modeling metropolitan water-energy use relations at the Center for Energy, Environmental, and Economic Systems Analysis (CEESA) Argonne National Laboratory
- 2014 - 2015 Lab Manager Stable Isotope Geochemistry Laboratories Northern Illinois University
- 2010 - 2012 Research Assistant Sedimentology and GIS Laboratory University of Maine Climate Change Institute
- 2009 - 2010 Researcher Stable Isotope Laboratory University of Florida Geology Department
- 2009 - 2010 Researcher Bone Chemistry Laboratory University of Florida Anthropology Department
- 2008 - 2009 Lab Technician Hydrochemistry Laboratory University of Florida Geology Department
- 2007 -2010 Assistant Curator Florida Museum of Natural History Department of Archaeology

Field Research

- 2018 Collaborating Investigator, Southern Peruvian Strontium Isotope Survey, Director Dr. Susan deFrance
- 2017 Project Director, Pampa de Tamarugal Chile Tree-Ring Project
- 2013 - 2014 Field Assistant, Pampa de Tamarugal Chile Paleohydrology Project, Director Dr. Justin Dodd
- 2012 Field Supervisor, Geoarchaeology of Los Morteros Mound North Coast Peru Project, Director Dr. Cecilia Mauricio
- 2012 Field Supervisor, Pucuncho Basin Geoarchaeological Project, Director Dr. Kurt Rademaker
- 2011 Project Director, Geomorphology of the Chao Valley Pampa de Salinas
- 2010 Field Assistant, Ground Penetrating Radar Survey Los Morteros Mound, Director Dr. Dan Sandweiss
- Field Assistant, Tacahuay Tambo Archaeological Project, Director Dr. Susan deFrance
- Field Assistant, Shoreline Mapping Cape Canaveral, Director Dr. Peter Adams
- 2007 Field Assistant, Haile G7 Vertebrate Paleontology Excavation, Director Dr. Richard Hulbert

Teaching ExperienceInstructor:

- 2018 Physical Geology, Triton College, GOL101
Astronomy of the Solar System, Triton College, AST101
General Course Physical Science, Harold Washington College, PHYSCI101
- 2017 Introduction to Geology Honors, Northern Illinois University, GEOL120

2016 Introduction to Geology, Northern Illinois University, GEOL120

Teaching Assistant:

2013 Introduction to Geology Lab, Northern Illinois University, GEOL121

2013 Contisuyo Archaeological Field School, The Field Museum of Natural History and University of Illinois at Chicago, ANT 426: Laboratory Techniques in Archaeology and ANT 425 Field Techniques in Archaeology

Short-Courses

2016 LacCore Drilling and Coring Summer Institute, University of Minnesota

2016 SIMS (Secondary Ion Mass Spectrometry) Short Course, Arizona State University

2015 SPATIAL (Spatio-temporal Isotope Analytics Lab) Short Course, University of Utah

RELATED PROFESSIONAL EXPERIENCE / SERVICE

2016 – 2017 Search Committee for the Vice President for Research and Innovation Partnerships

2014 - 2016 College of Liberal Arts Graduate Student Advisory Committee Northern Illinois University

2014 - 2015 Sigma Gamma Epsilon Earth Science Honors Society Local Chapter President

2011 - 2012 Graduate Student Representative –Graduate Senate University of Maine

2009 - 2010 Lambda Alpha Anthropology Honors Society Local Chapter President

PROFESSIONAL ORGANIZATIONS

Geologic Society of America

American Geophysical Union

Association for Women Geoscientists

Society for American Archeology

Phi Kappa Phi Honors Society

