

S. Nemiah Ladd, PhD – Curriculum Vitae

NSF Earth Sciences Postdoctoral Fellow
Department of Surface Waters Research and Management
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EDUCATION

- Dec. 2014 PhD in Oceanography, University of Washington, Seattle, WA
Dissertation with Julian Sachs – Stable isotope response of mangroves to changing rainfall and salinity: modern calibration and application to late Holocene sediment
- June 2011 MS in Oceanography, University of Washington, Seattle, WA
- May 2008 MS in Education, University of Pennsylvania, Philadelphia, PA
- May 2006 BA in Geological Sciences and Slavic Studies, *Magna cum laude*, Brown University, Providence, RI.

PUBLICATIONS

- 2015 **Ladd, S.N.**, and Sachs, J.P. “Influence of salinity on hydrogen isotope fractionation in *Rhizophora* mangroves from Micronesia.” *Geochimica et Cosmochimica Acta* 168, 206-221. DOI: 10.1016/j.gca.2015.07.004
- 2015 **Ladd, S.N.**, and Sachs, J.P. “Hydrogen isotope response to changing salinity and rainfall in Australian mangroves.” *Plant, Cell & Environment*. DOI: 10.1111/pce.12579
- 2014 Myrhvold, C.L., Janny, F., Nelson, D., **Ladd S.N.**, Atwood, A., and Sachs, J.P. “Holocene Closure of Lib Pond, Marshall Islands.” *PLoS One* 9(3): e90939. DOI: 10.1371/journal.pone.0090939
- 2013 **Ladd, S.N.**, and Sachs, J.P. “Positive correlation between salinity and *n*-alkane $\delta^{13}\text{C}$ values in the mangrove *Avicennia marina*.” *Organic Geochemistry* 64: 1-8.
- 2012 **Ladd, S.N.**, and Sachs, J.P. “Inverse relationship between salinity and *n*-alkane δD values in the mangrove *Avicennia marina*.” *Organic Geochemistry* 48: 25-36.

- 2011 Dvořák, M., Michl, M., Almonasy, N., Nepraš, M., **Ladd, N.** and Fidler, V. “Fluorescence Anisotropy of Branched Molecules Containing 1-Aminopyrene Chromophores.” *Journal of Fluorescence* 21: 971-974
- 2010 Sachs, J.P. and **Ladd, S.N.** “Climate and oceanography of the Galapagos in the 21st century: expected changes and research needs.” *Galapagos Research* 67: 50-54.

FUNDING AND AWARDS

- 2015 – National Science Foundation Earth Sciences Postdoctoral Fellowship
2017 (\$184,000)
- 2015 European Association of Geochemistry Early Career Science Ambassador (€1,256)
- 2014 LacCore and Continental Scientific Drilling Coordination Office Visiting Graduate Student Travel Grant Program (\$1000)
- 2014 University of Washington Graduate School Fund for Excellence and Innovation Student Travel Award (\$300)
- 2014 University of Washington College of the Environment Student Travel Fund (\$300)
- 2010 - National Science Foundation Graduate Research Fellowship (\$135,000)
2013
- 2009 - Achievement Rewards for College Scientists (ARCS) Foundation, Graduate
2012 Fellowship (\$17,500)
- 2006 Inducted into *Phi Beta Kappa* Honor Society, Alpha Chapter of Rhode Island
- 2006 Inducted into *Sigma Xi* Honor Society
- 2006 Geological Sciences departmental honors for excellence in undergraduate research, Brown University
- 2002 National Merit Scholarship (\$2,500)

TEACHING EXPERIENCE

- 2015 Assistant Laboratory Instructor, Isotopes and Organic Tracers (Masters level), ETH Zurich

- 2015 Assistant Field Instructor, Limnogeology (upper level undergraduate) and Environmental Chemistry (introductory undergraduate), ETH Zurich
- 2014 Teaching Assistant, Chemical Oceanography, University of Washington
- 2011 Co-instructor, Conservation, Climate and Culture on Kosrae, Micronesia; University of Washington summer study abroad program
- 2010 Teaching Assistant, Conservation and Culture on Kosrae, Micronesia; University of Washington summer study abroad course
- 2006-2008 High School Chemistry and Physics Teacher, School District of Philadelphia

MENTORING AND SUPERVISION

- 2015-2016 Kathrin Bross, University of Tübingen Environmental Science Masters student, direct supervisor of Masters' research project: Influence of 20th Century Eutrophication on Algal Lipid Biomarkers in Lakes Baldegg and Lucerne.
- 2013-2014 Ariel Townsend, University of Washington Oceanography Undergraduate. Preparation of mangrove leaf lipids for isotopic analysis.
- 2013-2014 Johnny Huynh, University of Washington Oceanography and Chemistry Undergraduate. Purification of mangrove lipid biomarkers from swamp sediments for isotopic analysis.
- 2012-2013 June Landenburger, University of Washington Biology Undergraduate. Growing mangrove seedlings under controlled greenhouse conditions.
- 2011-2012 Thien-Y Li, University of Washington Biology Undergraduate. Growing mangrove seedlings under controlled greenhouse conditions.
- 2011 Jake Zaragoza, Gonzaga University Chemistry Undergraduate and University of Washington Joint Institute for Study of the Oceans and Atmosphere Summer Intern. HPLC purification of taraxerol for isotopic analysis.
- 2010-2012 Tory Johnson, University of Washington Environmental Science Undergraduate. Mangrove cultivation, mangrove lipid biomarker purification from leaves and sediment for isotopic analysis.

PRESENTATIONS

Oral Presentations

- 2015 *Invited* **Ladd, S.N.**, Wolfshorndl, M., Sachs, J.P. “Isotopic controls of rainwater and water vapor on mangrove leaf water and lipid biomarkers.” American Geophysical Union Fall Meeting. San Francisco, CA.
- 2015 **Ladd, S.N.**, Sachs, J.P. “Salinity dependent H isotope fractionation in *Bruguiera gymnorhiza* mangroves growing in brackish marine lakes of Palau.” Plant Waxes Meeting. Ascona, Switzerland.
- 2014 *Invited* **Ladd, S.N.**, Sachs, J.P. “Mangroves, mud, and rain: Reconstructing tropical paleoclimate from hydrogen isotopes of paired mangrove and algal lipid biomarkers.” ETH Geosciences Lunch Seminar. Swiss Federal Institute of Technology, Zurich, Switzerland.
- 2011 **Ladd, S.N.**, Sachs, J.P. “Salinity and δD_{water} Determinations from Paired δD & $\delta^{13}C$ in Mangrove Lipids.” American Geophysical Union Fall Meeting. San Francisco, CA.
- 2011 **Ladd, S.N.**, Sachs, J.P. “Developing a tropical paleoclimate proxy from stable isotopes of mangrove lipid biomarkers.” University of Washington Program on Climate Change Graduate Student Seminar. Seattle, WA.
- 2011 **Ladd, S.N.**, Sachs, J.P. “Salinity and δD_{water} Determinations from Paired δD & $\delta^{13}C$ in Mangrove Lipids.” Chemical Oceanography Seminar. University of Washington, Seattle, WA.
- 2010 **Ladd, S.N.**, Sachs, J.P. “Hydrogen isotopes of mangrove lipid biomarkers as a paleoclimate proxy.” Chemical Oceanography Seminar. University of Washington, Seattle, WA.

Poster Presentations

- 2015 **Ladd, S.N.**, Dubois, N., Schubert, C.J. “Effect of phosphorus concentrations on sedimentary distributions and isotopic composition of algal lipid biomarkers in lakes from central Switzerland.” American Geophysical Union Fall Meeting. San Francisco, CA.
- 2015 **Ladd, S.N.**, Dubois, N., Schubert, C.J. “Sedimentary abundance and isotopic composition of algal lipid biomarkers in lakes of variable phosphorus concentration in central Switzerland.” Swiss Geoscience Meeting. Basel, Switzerland.
- 2015 **Ladd, S.N.**, Dubois, N., Schubert, C.J. “Hydrogen isotope response of algal lipids to variable nutrient concentrations in Swiss lakes.” Goldschmidt Conference. Prague, Czech Republic.

- 2014 **Ladd, S.N.**, Sachs, J.P. “Increased Deuterium Discrimination in Micronesian Mangroves Growing at High Salinity: Insights from Leaf and Xylem Water Isotopes.” American Geophysical Union Fall Meeting. San Francisco, CA.
- 2014 **Ladd, S.N.**, Sachs, J.P. “Hydrogen isotope response to changing rainfall and salinity in Australian mangroves.” Goldschmidt Conference. Sacramento, CA.
- 2013 Maloney, A.E., **Ladd, S.N.**, Sachs, J.P. “A model for experiential learning: Coastal ecosystems of Micronesia in a changing climate.” American Geophysical Union Fall Meeting. San Francisco, CA.
- 2012 **Ladd, S.N.**, Johnson, T.E., Sachs, J.P. “Quantitative paleoclimate reconstructions from the Galapagos using hydrogen isotopes of multiple biomarkers.” Graduate Climate Conference. Pack Forest, Eatonville, WA.

Presentations by Undergraduate Mentees

- 2013 Landenburger, J., **Ladd, S.N.**, Sachs, J.P. “Photosynthetic rate, conductance, and internal carbon measurements of three mangrove species in relation to salinity and time of day.” Undergraduate Research Symposium. University of Washington, Seattle, WA.
- 2012 Johnson, T.E., **Ladd, S.N.**, Sachs, J.P. “Influence of salinity on lipid distributions of mangroves used for paleoclimate reconstructions.” Undergraduate Research Symposium. University of Washington, Seattle, WA.
- 2011 Zaragoza, J., **Ladd, S.N.**, Sachs, J.P. “Taraxerol purification for paleoclimate reconstructions: Method development and evaluation.” Murdoch Conference. Seattle University, Seattle, WA.
- 2011 Zaragoza, J., **Ladd, S.N.**, Sachs, J.P. “Taraxerol purification for paleoclimate reconstructions: Method development and evaluation.” Gonzaga Science Research Program. Gonzaga University, Spokane, WA.
- 2011 Zaragoza, J., **Ladd, S.N.**, Sachs, J.P. “Taraxerol purification for paleoclimate reconstructions: Method development and evaluation.” Joint Institute for the Study of Ocean and Atmosphere Summer Internship Research Symposium. University of Washington, Seattle, WA.
- 2011 Johnson, T.E., **Ladd, S.N.**, Sachs, J.P. “Mangrove lipids as biomarkers for paleoclimate.” Undergraduate Research Symposium. University of Washington, Seattle, WA.

OTHER PROFESSIONAL EXPERIENCE

- 2008-2009 Research Assistant, Faculty of Biomedical Engineering, Czech Technical University, Kladno, Czech Republic
- 2008-2009 Physical Science Institute Student Achievement Toolkit Author, Teach for America, Philadelphia PA
- 2008 Science Content Specialist, Teach for America Summer Institute, Philadelphia, PA
- 2003, 2004, 2005 Summer Intern, Exploration and Development Division, Kerr McGee Corporation, Denver, CO

ANALYTICAL EXPERIENCE

- Stable isotope analyses of hydrogen, oxygen, and carbon in lipids, organic material and water using a variety of gas-source and laser-based isotope ratio mass spectrometry systems (GC-IRMS, EA-IRMS, CRDS), including basic instrument maintenance
- High performance liquid chromatography-mass spectrometry (HPLC-MS) for lipid identification and purification, including method development and basic instrument maintenance
- Gas chromatography (mass spectrometry and flame ionization detection) analyses of organic matter (GC-MS, GC-FID), including basic instrument maintenance
- Cryogenic extractions of water from leaves and stems
- Infrared-gas analyzer (IRGA) for stomatal conductance, photosynthesis rates and carbon assimilation in plants
- Greenhouse cultivation of mangroves

FIELD EXPERIENCE

- 2015 Switzerland: Lake sediment coring, sediment trap deployment and recovery, suspended particle collection, in situ incubations
- 2013 Palau: Lake sediment coring, mangrove sampling, suspended particles
- 2013 Daintree Estuary, Australia: Mangrove sampling for leaf lipid, leaf water, and xylem water
- 2012 Guam and the Federated States of Micronesia: Peat coring in mangrove swamps, mangrove sampling
- 2012 Station Aloha: Research cruise on RV *Thomas G. Thompson*, ¹³C-labeled in-situ incubations, collection of suspended particles throughout water column

- 2011 Federated States of Micronesia: Peat coring in mangrove swamps, mangrove sampling, co-director of UW exploration seminar
- 2010 Federated States of Micronesia: Lake sediment coring, teaching assistant for UW exploration seminar
- 2010 Brisbane, Australia: Mangrove sampling
- 2009 Republic of the Marshall Islands and Federated States of Micronesia: Lake sediment coring, mangrove swamp coring, suspended particles

SERVICE

- 2015 Peer reviewer for *Organic Geochemistry*, *Wetlands* and *Dendrobiology*
- 2013 Oceanography presentation to the Achievement Rewards for College Scientists (ARCS) foundation open house. Seattle, WA.
- 2011-2013 Mentor for new secondary science teachers, Puget Sound Region, WA.
- 2012 Co-chair, Graduate Climate Conference, Pack Forest, Eatonville, WA.
- 2011 Guest lecturer, 10th grade Marine Science, Garfield High School, Seattle, WA.
- 2010 Research group presentation to the Achievement Rewards for College Scientists (ARCS) foundation open house. Seattle, WA.

PROFESSIONAL MEMBERSHIPS

American Geophysical Union
American Geochemical Society
European Association of Geochemistry