Ioana Cristina Stefanescu

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EDUCATION

2022 **Ph.D. (Geology)** | University of Wyoming
Dissertation: "Sedimentary organic compounds as proxies for past environmental conditions in temperate North America: calibrations and applications."

2016 **Bachelor of Science** | University of Illinois at Chicago
Major: Earth and Environmental Sciences

EXPERIENCE

2022 **Postdoctoral Research Associate** | University of Wyoming

2016-2022 **Graduate Research Assistant** | University of Wyoming
Adviser: Dr. Bryan N. Shuman

Analyzed leaf-wax n-alkane distributions and measured their δ^2H ratios in plants and in sedimentary archives from across N. America. Analyzed lacustrine Branched Glycerol Dialkyl Glycerol Tetraethers (brGDGTs) distributions and their relationship to environmental conditions in mid-latitude N. America. Reconstructed Holocene temperature and precipitation regimes in the western and northeastern United States using brGDGTs, the δ^2H of leaf-wax n-alkanes and pollen preserved in sedimentary archives.

2021-2022 **Research Assistant** | University of Wyoming
Adviser: Dr. Mark T. Clementz

Sampled, extracted, and analyzed sediment samples from the Natural Trap Cave (WY) to reconstruct past climate conditions using both brGDGTs and the δ^2H and $\delta^{12}C$ of leaf-wax n-alkanes.

2017-2022 **Research Assistant** | Microbial Ecology Collaborative Project | University of Wyoming
NSF EPSCoR collaborative project focused on understanding the diversity and function of microbes in the state of WY.

Sampled, extracted, and analyzed lacustrine sediments and soils from across WY to examine brGDGT distributions and their relationships to environmental conditions
Developed an Orbitrap procedure for brGDGT analysis.
Used DNA data together with brGDGT distributions to target individual bacterial species as possible brGDGT producers.
Used various lysis procedures on pure bacterial cultures to search for brGDGT compounds.

May 2018 **Visiting graduate student**| University of Arizona
Laboratory of Dr. Jessica E. Tierney

Trained on brGDGT sample preparation for HPLC instrument, HPLC maintenance and runs and brGDGT data analysis.

2014-2016 **Undergraduate Research Assistant** | University of Illinois at Chicago
Adviser: Dr. Max Berkelhammer | Climate Science Laboratory

Extracted tree-ring cellulose. Analyzed carbon and oxygen stable isotopes of tree-ring cellulose. Analyzed water isotopes using a Picarro Analyzer. Measured OCS/CO/CO2 fluxes using a Los Gatos Laser.

2014-2016 **Undergraduate Research Assistant** | University of Illinois at Chicago
Adviser: Dr. Fabien Kenig |Organic Geochemistry Laboratory
Extracted and analyzed snakeskin lipids from various ecological niches. Analyzed samples using a GC-MS. Distilled organic solvents and provided general support.

Summer 2015 **Visiting undergraduate student**
Northwestern University (Chicago)| Stable isotope laboratory
Northern Illinois University | Stable isotope laboratory

August 2015 **Field assistant:** The Earth Institute at Columbia University & MIT-WHOI
Deployed and recovered geophones across a 100 mile transect.

July 2015 **Research assistant:** Research Cruise: EPA, Lake Guardian Vessel
Analyzed and quantified carbonyl sulfide fluxes in the Great Lakes region using laser absorption spectrometry.

AWARDS, GRANTS AND SCHOLARSHIPS

2022 Outstanding Ph.D. Dissertation Award | UWyo Dept. Geology and Geophysics
2021 Microbial Ecology Collaborative Research Grant Award | UWyo
2021 International Student Scholarship | UWyo
2021 Doctoral Augmentation Award | UWyo
2021 Diversity, Equity and Inclusion Award | UWyo Dept. Geology and Geophysics
2021 Science Service Award | The Community Foundation of Jackson Hole
2020 Outstanding Student Award | Association of Women Geoscientists
2018 Roy J. Shlemon Center for Quaternary Studies Research Grant Award
2018 Meritorious Graduate Student Field Grant Award | UWyo
2018 Hanley John R. Scholarship | UWyo
2018 Morisawa Marie Memorial Scholarship | UWyo
2017 Geology Industry Field Grant Award | UWyo
2017 Graduate Student Travel Scholarship | UWyo
2017 Anna M and Sherrill Scholarship | UWyo
2017 E Drum Fund in Geology Scholarship | UWyo
2016 Departmental Citizenship Award |Dept. Earth and Environmental Sciences, UIC
2016 Illinois Water Resources Center Grant (Co- PI)
2016 John R. Hanley Scholarship | UWyo
2015 Knourek Environmental Field Grant Award | UIC

ORGANIZATIONS AND PROFESSIONAL SERVICE

2022 American Geophysical Union Fall Meeting 2022 | Session Chair
2021 Quaternary Science Seminar Series (U. of Wyoming): *organizer*
2021 Diversity and Inclusion Committee (U. of Wyoming): *committee member*
2020- Geochemical Society | *member*
2018 AGU Pathfinder- Virtual poster showcase (spring/fall): *Judge*
2017- American Geophysical Union | *member*
2015-2016 UIC, Dept. of Earth and Environmental Sciences: *Undergraduate mentor*
2015-2016 Terra Society at UIC: *Vice-President*

TEACHING EXPERIENCE

Geochemical Cycles and Earth System Science (UWyo-GEOL 2000): Co-instructor
Quaternary Research Practicum (UWyo-GEOL 5200): Teaching Assistant

SKILLS

INSTRUMENTS: GC-IRMS, GC-MS, HPLC-MS, TC-EA-IRMS, Orbitrap, Picarro Analyzer, Los Gatos Laser, Accelerated Solvent Extractor, MSCL-S: Multi-sensor core logger, Gravity corer and Bolivia corer.

PROGRAMS: R, MATLAB, JMP, Microsoft Office

LANGUAGES: English (fluent), Romanian (native), Spanish (intermediate)

LABORATORY TRAINING EXPERIENCE († undergraduate, * graduate)

UWYO: Erin Lovell*, Louise Mallon*, Andrew Flaim*, Macy Ricketts*, Bryan Xavier Medina Rodriguez*, Lauren Elisha Schmidt*, Tessa Ray-Cozzens†, Logan James Fox†, Susannah Jean DeForest Heller†.

UIC: Jenny Bueno†, Cecilia Rus†, Justin Klein†, Becky Brice*

PEER REVIEWER

Geophysical Research-Atmospheres, Scientific Reports, Water Resources Research, Organic Geochemistry, Paleoceanography and Paleoclimatology, Chemical Geology, Nature Geoscience, Geology.

PUBLICATIONS

2022 **Stefanescu I.C.,** Shuman B. N., Grigg L. D., Bailey A., Stefanova I., Oswald W. W. Weak precipitation δ^2H response to large Holocene hydroclimate changes in eastern North America. *In review in Earth and Planetary Science Letters.*

2022 Grigg D. L., **Stefanescu I.C.,** Shuman B.N., Oswald W.W. A Holocene pollen-inferred climate reconstruction for Vermont, USA. *In review in Quaternary Research.*

2022 **Stefanescu I.C.**, Macdonald C., Cook C.S., Williams D.G., Shuman B.N. Mid- and long-chain leaf wax δ^2H values in modern plants and lake sediments from mid-latitude North America. (In Press) Geochimica et Cosmochimica Acta.

2021 Berkelhammer M., Insel N., **Stefanescu I.C.** (2021). Wetter summers mitigated temperature stress on Rocky Mountain forests during the last interglacial warm period. Geophysical Research Letters, p.e 2021GL093678.

2021 Martínez-Sosa P., Tierney J.E., **Stefanescu I.C.,** Dearing Crampton-Flood E., Shuman B.N., Routson C (2021). A global Bayesian temperature calibration for lacustrine brGDGTs. Geochimica et Cosmochimica Acta, 305, pp. 87-105.

2021 **Stefanescu I.C.,** Shuman B.N., Tierney J.E. (2021). Temperature and water depth effects on brGDGT distributions in sub-alpine lakes of mid-latitude North America. Organic Geochemistry, 152, pp. 1-15.

2017 Haas, R., **Stefanescu I.C.,** Garcia-Putnam, A., Aldenderfer, M.S., Clementz, M.T., Murphy, M.S., Llave, C.V. and Watson, J.T. (2017). Humans permanently occupied the Andean highlands by at least 7 ka. Royal Society open science, 4, pp. 170331.

2017 Berkelhammer, M., **Stefanescu I.C.,** Joiner, J. and Anderson, L. (2017). High sensitivity of gross primary production in the Rocky Mountains to summer rain. Geophysical Research Letters, 44(8), pp. 3643-3652.

2015 Plotnick, R.E., Stigall, A.L. and **Stefanescu I.C.** (2014). Evolution of paleontology: Long-term gender trends in an earth-science discipline. GSA Today, 24.

MANUSCRIPTS IN PREPARATION

Stefanescu I.C., Shuman B. N., Martinez-Sosa P., Tierney J. E., Grigg L. BrGDGT and pollen-based temperature reconstructions of the northeastern U.S. over the Holocene. *In prep for Geology.*

Shuman B.N. and **Stefanescu I.C.** Multi-century Hydroclimate Variability in the North Atlantic Basin during the Holocene and Potential Linkages to the Tropical Pacific. *Invited paper - Quaternary Science Reviews.*

Shuman B.N., **Stefanescu I.C.**, Grigg L.D., Foster D.R., Oswald W.W. A mid-Holocene millennial oscillation in North Atlantic pressure and latitudinal temperature gradients.

Flaim A., **Stefanescu I.C**., Shuman B.N. Six millennia of climate changes, plant stress, wildfire, and forest state changes in a subalpine Rocky Mountain ecosystem.

Martiinez-Sosa P., Tierney J.E., Perez-Angel L.C., Stefanescu I.C., Guod J., Kirkels F., Sepulveda J., Peterse F., Shuman B.N., Routson C., Reyes A.V. Development and application of the Branched and Isoprenoid GDGT Machine learning Classification algorithm (BIGMaC) for paleoenvironmental. In prep for Geochimica et Cosmochimica Acta.

CONFERENCES AND ABSTRACTS

2021 **Stefanescu I.C**., Shuman N. B., Laurie Grigg, Adriana Raudzens Bailey (2021). Limited sensitivity of hydrogen isotopes to large Holocene hydroclimate trends in eastern North America. American Geophysical Union Fall Meeting, New Orleans, LA.

2021 Grigg L., **Stefanescu I.C.**, Shuman B., Oswald W. (2021). The unique post-glacial climate evolution of Vermont, USA as derived from pollen-inferred climatic reconstructions. American Geophysical Union Fall Meeting, New Orleans, LA.

2021 Martínez-Sosa P., Tierney J.E., Pérez-Angel L.C., **Stefanescu I.C.**, Guo J., Kirkels F., Sepulveda J., Peterse F., Shuman B.N., Routson C. (2021). Improving terrestrial paleoenvironmental reconstructions through macro-scale associations between GDGTs and the environment. American Geophysical Union Fall Meeting, New Orleans, LA.

2020 Shuman N. B., **Stefanescu I.C**. Multi-century Hydroclimate Variability in the North Atlantic Basin during the Holocene and Potential Linkages to the Tropical Pacific (Invited). American Geophysical Union Fall Meeting, San Francisco, CA- virtual.

2020 Grigg L., **Stefanescu I.C.**, Shuman B.N. (2020). Filling the northern inland gap: Pollen-inferred, Holocene, paleoclimatic reconstructions from Vermont. The Geological Society of America Annual Meeting, Montreal, Canada - virtual.

2020 **Stefanescu I.C.**, Shuman B.N., Grigg L. A New brGDGTs-Based Temperature Calibration for Lacustrine Environments of the Continental U.S. And its Application to Reconstruct Holocene Temperatures at Twin Ponds, Vermont. Goldschmidt Conference, Honolulu, HI- virtual.

2019 **Stefanescu I.C.** & Shuman, B.N. Leaf-wax n-alkanes D/H ratios and distributions in aquatic and terrestrial plants across the continental United States. American Geophysical Union Fall Meeting, San Francisco, CA.

2019 Flaim, A., **Stefanescu I.C.**, Liefert, D.T., and Shuman, B.N. Macrofossil and brGDGT evidence of forest state changes after fires and cooling in the Snowy Range, Wyoming since 6 ka. American Geophysical Union Fall Meeting, San Francisco, CA.

2018 **Stefanescu I.C.**, Tierney, J. E., and Shuman, B. N. A new temperature calibration for brGDGTs in alpine settings of mid-latitude United States and its application during the last 14000 years. American Geophysical Union Fall Meeting, Washington D.C.

2018 Flaim, A., **Stefanescu I.C.**, Liefert, D. T., and Shuman, B. N. Macrofossil and brGDGT evidence of forest state changes after fires and cooling in the Snowy Range, Wyoming since 6 ka. American Geophysical Union Fall Meeting, Washington D.C.

2017 Haas R., **Stefanescu I.C.**, Garcia-Putnam A., Aldenderfer M.S., Clementz M.T., Murphy M.S., Viviano Llave C., and Watson J.T. Testing for verticality among Archaic foragers of the Titicaca Basin. Paper presented at the 58th Annual Meeting of the Institute of Andean Studies, Berkeley, CA.

2017 **Stefanescu I.C.** and Shuman, B.N. "Compound-Specific Hydrogen Isotopic Records of Holocene Climate Dynamics in the Northeastern U.S.". American Geophysical Union Fall Meeting, New Orleans, LA.

2017 **Stefanescu I.C.**, Haas R.l, Garcia-Putnam A., Aldenderfer M.A., Clementz M.T., Murphy M.S., Viviano Llave C., and Watson J.T. Humans permanently occupied the Andean highlands by at least 7 Ka. Front Range Isotope Day Conference, Laramie, WY.

2017 Garcia-Putnam A., Haas R., Murphy M.S. and **Stefanescu I.C**. Life up high: The first permanent inhabitants of the Peruvian Altiplano? Poster presented at the Western Bioarchaeology Group, Reno, NV.

2017 Haas R., **Stefanescu I.C.** and Garcia-Putnam A. Colonizing the Andean high plains of South America. Paper presented at the Recent Advances at High Elevation Workshop, Cody, WY.

2016 Berkelhammer, M. B., Insel, N., **Stefanescu I.C.**, Klein, J., and Anderson, L. "The ecophysiological response to interglacial warming in the Rocky Mountains". American Geophysical Union Fall Meeting, San Francisco, CA.

INVITED TALKS

2021 Mid- and long-chain leaf waxes and their δ^2H signatures in modern plants and lake sediments from mid-latitude North America. Invited talk for Dr. Sarah Feakins's lab group at the University of Southern California.

2020 A new brGDGTs-based temperature calibration for lacustrine environments of the continental U.S. and its application to reconstruct Holocene temperatures at Twin Ponds, Vermont. Microbial Ecology Collaborative (University of Wyoming).

2019 A new temperature calibration for brGDGTs in alpine settings of mid-latitude United States and its application during the last 14000 years. Shlemon Center for Quaternary Studies at the University of Wyoming.

2019 A new temperature calibration for brGDGTs in alpine settings of mid-latitude United States and its application during the last 14000 years. Microbial Ecology Collaborative Annual Meeting (University of Wyoming).

MEDIA

2021 News Story: UW Researcher Collects Sediment from Natural Trap Cave to Study Past Climate Conditions Wyoming Public Radio. University of Wyoming News.

2021 News Story: University Of Wyoming Researchers Use Bacteria To Measure Past Climate. Wyoming Public Radio.

2017 News Story: Researchers Dig In To How Early Humans Thrived At High Altitudes. Here and Now, National Public Radio.