

Niloufar Lilly Sarvian

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Education

- PhD Candidate**, Earth & Planetary Sciences, Northwestern University 2017 – Nov 2022
Thesis Advisors: Matthew T. Hurtgen, Andrew D. Jacobson, Magdalena R. Osburn
Research Focus: Employed the novel $\delta^{44/40}\text{Ca} - \delta^{88/86}\text{Sr}$ multi-proxy to marine carbonate rocks located within large $\delta^{13}\text{C}$ excursions the Neoproterozoic to address questions of fidelity due to diagenesis.
- Kellogg Management **Certificate** for Scientists and Engineers, Northwestern University 2021
- M.Sc.**, Earth & Planetary Sciences, Northwestern University 2019
- B.S.**, Chemistry, University of California, Santa Barbara 2011 – 2015

Publications in Preperation

Sarvian, N.L., Hurtgen, M.T., Jacobson, A.D., Chung-Swanson, T., Kitch, G.D., Osburn, M.R., Maloof, A.C. The $\delta^{44/40}\text{Ca} - \delta^{88/86}\text{Sr}$ multi-proxy applied to carbonate rocks from the Islay Excursion. *Manuscript in preparation.*

Sarvian, N.L., Hurtgen, M.T., Jacobson, A.D., Chung-Swanson, T., Osburn, M.R., Bergmann, K.D. Application of the $\delta^{44/40}\text{Ca} - \delta^{88/86}\text{Sr}$ multi-proxy to the Shuram Carbon Isotope Excursion. *Manuscript in preparation.*

Kitch G.D., **Sarvian, N.L.**, Linzmeier, B.J., Jacobson, A.D., Ankney, M.E., Masterson, A.L., Hurtgen, M.T., Sageman, B.B. Carbonate production in the Western Interior Basin during Ocean Anoxic Event 2 (OAE2). *Manuscript in preparation.*

Fellowships and Awards

- EPS Departmental Service Award (\$1,000) 2020
- Institute of Sustainability and Energy at Northwestern Cluster Fellow 2018 – 2019
- NSF Graduate Research Fellow – Honorable Mention 2018

Experience

- PhD Associate Intern** January 2022 – June 2022
Energy Capital Ventures, *Chicago, IL*
Responsibilities: Due Diligence research on climate tech/carbon sequestration technologies, specific focus on ocean carbon dioxide removal.
Outreach to startups looking for Seed-Series A funding.
- International Summer School of Sedimentology** May 2020 [postponed]
International Association of Sedimentology (IAS), *Eleuthera Island, Bahamas*
- Research Chemist** November 2015 – August 2017
Omnis Mineral Technologies LLC, *Santa Barbara, CA*
Responsibilities: Head of characterization laboratory, conducted solo and collaborative materials research projects including research on desulfurization, oxidation and purification of coal.
- Intern, Office of Radiation and Indoor Air** June 2015 – August 2015
U.S. Environmental Protection Agency, *Washington, D.C.*
Responsibilities: Analyzed and reported public comments for CFR 192 Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings.

Data Science Experience

Languages:

Python (intermediate), R (intermediate), bash/git (intermediate), HTML (intermediate), CSS (intermediate), Java Script (beginner)

Coupled Carbonate Isotope Global Ocean Model Project 2019 - ongoing

Adapted code from collaborator Dr. Ben Linzmier to include stable strontium along with radiogenic strontium, carbon, and calcium isotope global ocean modeling

Utilized differential equations, R, and R-Shiny to create model with GUI

Air Quality Visualization over 2010, 2015, and 2020 Project 2021

Utilized the US EPA website to get air quality data for all 50 states to show the spread of wildfire smoke across states

Developed an Air Quality visualization which employed Python, D3.js, HTML and CSS.

Pollution over the Pandemic Project 2021

Aggregated data from US EPA geospatial hourly sensors and sub-selected "rush hour" times to determine if pollution from driving decreased during the pandemic.

Utilized python and Py-GMT to create map of the US

NUIT workshops:

R Fundamentals Bootcamp (1 week long workshop), 2021; Git and GitHub:

Intermediate, 2020; Bash Scripting, 2020; Next Steps in Python: fstrings, 2020;

Intro to Data Science, 2020; Programming Concepts, 2020; Git and GitHub:

Introduction, 2019; R: Data Manipulation with the Tidyverse, 2019

Abstracts and Conferences

Sarvian, N.L., Jacobson, A.D., Hurtgen, M.T. Utilizing stable Ca and Sr isotopes to understand marine carbonate dynamics through time, *5th International Symposium on the Ocean in a High CO₂ World*, Lima, Peru, September 2022

ARPA-E Summit, attendee for the Student Program, Denver, CO, May 2022

Sarvian, N.L., Jacobson, A.D., Chung-Swanson, T.[†], Hurtgen, M.T., Osburn, M.R., Bergmann, K.D. Constraining the Shuram $\delta^{13}\text{C}$ Excursion with the $\delta^{44/40}\text{Ca} - \delta^{88/86}\text{Sr}$ multi proxy, abstract submitted to *Goldschmidt Conference*, Honolulu, HI, July 2022

Sarvian, N.L., Hurtgen, M.T., Jacobson, A.D., Chung-Swanson, T.[†], Osburn, M.R., Maloof, A.C. Application of the $\delta^{44/40}\text{Ca} - \delta^{88/86}\text{Sr}$ multi-proxy to the Shuram Carbon Isotope Excursion, abstract submitted to *Goldschmidt Conference*, July 2021*

Sarvian, N.L., Hurtgen, M.T., Jacobson, A.D., Chung-Swanson, T.[†], Osburn, M.R., Maloof, A.C. Stable Sr Isotopes and the Neoproterozoic Carbonate Cycle, abstract submitted to *Geologic Society of America*, October 2020*

Sarvian, N.L.[‡], Kitch, G.D.[‡], Puleo, P.J.K., Larocca, L.J., Bush, R.T., GeoEquity Initiative, abstract submitted to *Geologic Society of America*, October 2020*

Sarvian, N.L., Hurtgen, M.T., Jacobson, A.D., Chung-Swanson, T.[†], Osburn, M.R., Maloof, A.C. Radiogenic and stable Sr isotope records preceding the Sturtian snowball earth event, abstract submitted to *Goldschmidt Conference*, July 2020*

Sarvian, N.L., Hurtgen, M.T., Jacobson, A.D., Chung-Swanson, T., Osburn, M.R., Maloof, A.C. Stable strontium isotope ($\delta^{88/86}\text{Sr}$) record of pre-Sturtian carbonate rocks spanning a large $\delta^{13}\text{C}$ anomaly, abstract submitted to *Goldschmidt Conference* in Barcelona, Spain, August 2019

Sarvian, N.L., Hurtgen, M.T., Jacobson, A.D., Chung-Swanson, T., Osburn, M.R., Maloof, A.C.
Stable strontium isotope ($\delta^{88\text{Sr}}$) record of pre-Sturtian carbonate rocks spanning a large $\delta^{13}\text{C}$ anomaly, abstract submitted to *Midwest Geobiology Conference* in St. Louis, MO, September 2019

‡These authors contributed equally to this work

†Undergraduate mentee in the Jacobson Laboratory

*Online as a result of the COVID-19 pandemic

Teaching Assistantships

EARTH 101: Earth Science for the 21st Century	Spring 2022
EARTH 370: Geobiology	Spring (virtual) 2021
EARTH 373: Microbial Ecology	Spring (virtual) 2020
EARTH 106: Ocean, Atmosphere, and Climate	Fall 2019
ISEN 220: Introduction to Energy Systems for the 21st Century	Winter 2019

Extracurricular

Alliance of Evanston Minority Students – <i>President, Founder</i>	September 2020 – present
Founder of a club geared towards creating intersectional spaces for graduate students that center people of color (POC) and other marginalized racial/ethnic identities at Northwestern University.	
Northwestern Climate Technology Club – <i>Treasurer/Member</i>	January 2021 – present
Graduate student-run organization (formerly known as NETG) that provides educational and collaborative opportunities for Northwestern students in the realm of sustainability and energy technology.	
Northwestern University GeoClub – <i>Treasurer, President</i>	2018 – 2020
Member of executive board, responsible for keeping the budget, negotiating funding for the club, and organizing events. The NU GeoClub is for graduate and undergraduate students from any department to come together to participate in outdoor excursions, and discussions ranging in topics from how to get into graduate school to diversity in the sciences.	

Outreach & Diversity

Alliance of Evanston Minority Students, <i>Northwestern University</i>	September 2020 – present
Student-led club on campus geared towards creating intersectional spaces for graduate students that center people of color (POC) and other marginalized racial/ethnic identities.	
URGE Pod Member, <i>Northwestern University</i>	January 2020 – June 2022
Participating member in Unlearning Racism in Geosciences reading group.	
GeoEquity Initiative, <i>Northwestern University</i>	June 2020 – present
Co-created initiative to increase the presences of underrepresented minorities in the Earth sciences. Includes anti-racist education, policy changes, and outreach initiatives.	
Expanding Your Horizons, Workshop Presenter	December, 2019
Curated and co-hosted a one-hour workshop for middle school girls; lectured and ran an experiment to understand ocean acidification	
Adler Planetarium Earth Fest Climate Expert	April, 2019
Hosted a revolving crowd of 30+ museum goers and fielded questions about climate change.	
Earth and Learn Symposium – Workshop Presenter	May, 2019

Co-presented a workshop concerning climate science to Whitney Young high school students in honor of Earth Day.
Integrating Climate Science into STEM Courses June 2018
Workshop contributor, curated activities related to climate change that can be easily integrated into any high school chemistry or physics course, emphasis on sea ice and glaciers.

Society Memberships

The Geochemical Society	2018 - 2022
International Association of Sedimentology	2019 - 2021
Geological Society of America	2018 - 2022