CAITLIN PAGE CASAR, PHD

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CaitlinCasar

RESEARCH INTERESTS

data science, astrobiology, geobiology, microbial ecology, bioinformatics

EDUCATION

2021 Ph.D. Earth and Planetary Sciences, Northwestern University

2018 M.S. Earth and Planetary Sciences, Northwestern University

2015 M.S. Earth and Environmental Sciences, University of Illinois at Chicago

2012 B.S. Geology, East Carolina University, Magna Cum Laude

EMPLOYMENT

2021 Data Scientist, 84.51°

TECHNICAL SKILLS

R, Python, CSS, HTML, SQL, Git, Apache Spark, Hadoop, Shiny
Adobe Illustrator, Photoshop, InDesign, Premiere Pro, After Effects
Bioinformatics
Scanning Electron Microscopy
Fluorescence Microscopy
Microbial Culturing
DNA Extraction
PCR
X-ray Energy Dispersive Spectroscopy
2015 ArcGIS Certification
2011 NAUI Master Scuba Diver Certification

PROFESSIONAL EXPERIENCE

2021 84.51° Data Science Development Program

2020 84.51° Data Science Summer Internship

2019 President, Academics for Careers in Data Science, Northwestern University

2018 Organizing Committee, Midwest Geobiology Symposium, Northwestern University

2018 International Geobiology Field Course

2018 Teaching Assistant, Communication for Geoscientists, Northwestern University

2017 President, Geoclub, Northwestern University

2016	ECOGEO Workshop, Intro to Environmental 'Omics, University of Hawaii at Mānoa
2012-2015	Teaching Assistant, University of Illinois at Chicago
	Global Environmental Change
	Earth, Energy, and Environment
	Physical Systems in Earth and Space Science
2013-2015	President, Terra Society, University of Illinois at Chicago
2011	USGS Summer Internship
2009	Manager, East Carolina University Geology Field Camp

TEACHING EXPERIENCE

2018	Teaching Assistant, Communication for Geoscientists
2012-2015	Teaching Assistant, Global Environmental Change; Earth, Energy, and the Environment; Physical Systems in Earth and Space Science

AWARDS AND FELLOWSHIPS

2019	Love Data Week Poster Contest Honorable Mention
2018	NASA Earth and Space Science Fellowship
2018	Illinois Space Grant Fellowship
2017	Northwestern Conference Travel Grant
2017	AbSciCon Travel Grant
2017	CoSURF Travel Grant
2014	UIC Departmental Citizenship Award
2014	UIC Provost Award
2013	Knourek Scholarship
2011	NAGT Fellowship

PUBLICATIONS

Casar, C. P., Momper, L. M., Kruger, B. R., Osburn, M. R. (*submitted*). "Iron-fueled life in the continental subsurface: Deep Mine Microbial Observatory, SD, USA." *Applied and Environmental Microbiology.*

Casar, C. P., Kruger, B. R., Momper, L. M., Osburn, M. R. (*submitted*). "Mineral-enhanced thiosulfate disproportionation by a novel *Sulfuricella sp.* from the continental deep subsurface." *Microbial Genomics.*

Casar, C. P. (2021). Geobiology of Biofilms in the Continental Subsurface. *Northwestern University*.

Casar, C. P., Kruger, B. R., & Osburn, M. R. (2021). "Rock-hosted subsurface biofilms: mineral selectivity drives hotspots for intraterrestrial life." *Frontiers in Microbiology*, 12, 1-14.

Rowe, Annette R., Abuyen, K., Lam, B. R., Kruger, B. R., **Casar, C. P.**, Osburn, M. El-Naggar, M. Y., and Amend, J. P. (2021) "Electrochemical evidence for in situ microbial activity at the Deep Mine Microbial Observatory (DeMMO), South Dakota, USA." *Geobiology* 19(2), 173-188.

Osburn, M. R., **Casar, C. P.**, Kruger, B., Momper, L., Flynn, T. M., & Amend, J. P. (2020). Contrasting variable and stable subsurface microbial populations: An ecological time series analysis from the deep mine microbial observatory, South Dakota, USA. *BioRxiv*.

Casar, C. P., Kruger, B. R., Flynn, T. M., Masterson, A. L., Momper, L. M., & Osburn, M. R. (2020). Mineral-hosted biofilm communities in the continental deep subsurface, Deep Mine Microbial Observatory, SD, USA. *Geobiology*, 18(4), 508-522.

Osburn, M. R., Kruger, B., Masterson, A. L., **Casar, C. P.**, & Amend, J. P. (2019). Establishment of the deep mine microbial observatory (DeMMO), South Dakota, USA, a geochemically stable portal into the deep subsurface. *Frontiers in Earth Science*, 7(196), 1-17.

D'Arcy, R., **Casar, C. P.**, Simon, A. G., Cardace, D., Schrenk, M. O., & Arcilla, C. A. (2018). Biofilm formation and potential for iron cycling in serpentinization-influenced groundwater of the Zambales and Coast Range ophiolites. *Extremophiles*, 22(3), 407-431.

Casar, C. P. (2015). Geobiology of the Zambales Ophiolite, Philippines and Coast Range Ophiolite, California. *University of Illinois at Chicago*.

ORAL PRESENTATIONS

Casar, C., Osburn, M., Flynn, T., Masterson, A., Kruger, B. Mineral-hosted biofilm communities in a deep subsurface Mars-analog system: The Deep Mine Microbial Observatory (DeMMO), SD, USA. Astrobiology Science Conference, Seattle, WA, 2019.

Casar, C., Osburn, M., Flynn, T., Masterson, A., Kruger, B. Mineral-hosted biofilm communities within the Continental Deep Subsurface. Midwest Geobiology Symposium, Northwestern University, Evanston, IL, 2018

Casar, C., Osburn, M., Flynn, T., Masterson, A., Kruger, B. Cultivating the Deep Subsurface Microbiome. CoSURF Conference, South Dakota School of Mines, SD, 2017.

Casar, C., Osburn, M., Flynn, T., Masterson, A., Kruger, B. Cultivating the Deep Subsurface Microbiome. Astrobiology Science Conference, Mesa, AZ, 2017.

POSTER PRESENTATIONS

Casar, C., Momper, L., Kruger, B., Osburn, M. Taxonomic and functional diversity in the continental deep subsurface: Do different methods change our view? Geobiology Gordon Research Conference, Galveston, TX, 2020.

Casar, C., Osburn, M. Big Data in Geobiology: Applications to DeMMO. Midwest Geobiology Symposium, St. Louis, MO, 2019.

Casar, C., Karbelkar, A., Vinnichenko, G., Chen, M., Osburn, M., Orphan, V., Fischer, W., Sessions, A., 2018 International Geobiology Course Participants. Transformation of ancient organic carbon in exposed organic-rich black shale of the Monterey Formation, Naples Beach, Ca. American Geophysical Union Fall Meeting, Washington D.C., 2018.

Casar, C., Osburn, M., Flynn, T., Masterson, A., Kruger, B. Mineralhosted biofilm communities in the Continental Deep Subsurface. North American International Society of Microbial Electrochemistry and Technology, University of Minnesota, St. Paul, MN, 2018.

Casar, C. P., Osburn, M. R., Flynn, T. M., Masterson, A., & Kruger, B. Cultivating the Deep Subsurface Microbiome. American Geophysical Union Fall Meeting, New Orleans, LA, 2017.

Casar, C. P., D. R. Meyer-Dombard, A. Simon, D. Cardace, and C. A. Arcilla. Microbially-influenced Fe-Cycling within high pH serpentinizing springs of the Zambales Ophiolite, Philippines. AGU, Chicago, IL, 2014.

Casar, C. P., D. R. Meyer-Dombard, and A. Simon. Microbially-influenced Fe-Cycling within high pH serpentinizing springs of the Zambales Ophiolite, Philippines. Midwest Geobiology Symposium, Chicago, IL, 2014.

RESEARCH EXPERIENCE

2016-2021 Geomicrobiology of deep fracture-hosted mineral-associated biofilms in the Deep Mine Microbial Observatory, Lead, South Dakota. (Advisor: Magdalena Osburn)

2012-2015	Microbially influenced iron cycling in high pH serpentinizing systems in the Zambales Ophiolite, Philippines and Coast Range Ophiolite, California (Advisor: D'Arcy Meyer-Dombard)
2012	Cultivating and characterizing deep sea hydrothermal vent archaea (Advisor: Matthew Schrenk)
2011	Community composition and connectivity of deep sea coral and cold seep ecosystems in the Gulf of Mexico. (USGS Internship through NAGT Fellowship program)

FIELD EXPERIENCE

2016-2019	Deployment of field experiments and collection of fluids, biofilms, and fluid geochemical data from the Deep Mine Microbial Observatory, South Dakota for characterization of deep subsurface geomicrobiology
2016	Northwestern Earth and Planetary Science field course on sedimentology and stratigraphy of the Western Interior Seaway
2014	Collection of fluid geochemical data from the Coast Range Ophiolite Microbial Observatory, California
2013	Collection of serpentinizing spring fluids and sediments and spring fluid geochemical data from the Zambales Ophiolite, Philippines for characterization of spring geobiology
2013	Collection of hot spring fluid samples and geochemical data from Yellowstone National Park as part of an effort to study nitrogen and carbon fixation in hot spring systems
2012	Collection of sediment cores from the Pamlico Sound, NC for X-Ray diffraction and grain size analysis with depth as part of an investigation of coastal system response to sea level rise, climate dynamics, and geomorphic change
2011	Two week research cruise on the NOAA R.V. Nancy Foster collecting water column samples along canyon transects for particulate organic matter analysis from Cape Hatteras to the Gulf of Maine as part of a deep water canyon ecology research effort
2010	Geologic mapping of northern New Mexico and Southern Colorado as part of the six week ECU Geology summer field camp course