

JORDAN T. ABELL

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PROFFESIONAL APPOINTMENTS

- Starting **Assistant Professor**, Department of Earth and Environmental Sciences, Lehigh
Fall 2024 University, Bethlehem, PA, USA
- 2021 – Present **NSF-OCE Postdoctoral Research Fellow**, Department of Geosciences, University of
Arizona, Tucson, AZ, USA
- Research Topic: *Reconstructing late Pleistocene Southern Hemisphere westerly wind
variability using organic and inorganic proxies from Tasman Sea sediments.*
Mentor: Prof. Jessica Tierney

EDUCATION

- 2016 – 2021 **Ph.D., Earth and Environmental Sciences**, Columbia University, New York City, NY
USA
- Thesis: *Earth, Wind, and Water: Plio-Pleistocene Climate Evolution in East Asia and the
North Pacific*
Thesis Advisor: Prof. Gisela Winckler
Thesis Committee: Prof. Robert F. Anderson, Prof. Maureen E. Raymo, Prof. Timothy
Herbert, Prof. Ron Miller
- 2016 – 2020 **M.Phil., Earth and Environmental Sciences**, Columbia University, New York City,
NY USA
- Thesis: *East Asian and North Pacific Climate System through the Plio-Pleistocene*
Thesis Advisor: Prof. Gisela Winckler
- 2016 – 2018 **M.A., Earth and Environmental Sciences**, Columbia University, New York City, NY
USA
- Thesis: *Reconstructing dust and productivity in the western North Pacific during the
Plio-Pleistocene: East Asian dustiness and the onset and intensification of Northern
Hemisphere Glaciation.*
Thesis Advisors: Prof. Gisela Winckler and Prof. Robert F. Anderson
- 2012 – 2016 **B.S., Geosciences (Geology Emphasis)**, University of Arizona, Tucson, AZ USA
- Thesis: *Evidence of Urine in a Neolithic Tell in Relation to Animal Domestication.*
Thesis Advisor: Prof. Jay Quade

CURRENT RESEARCH INTERESTS

- Developing records reflecting past variability in atmospheric and ocean circulation during warm intervals of Earth's history to better inform future fluctuations in these systems.
- Reconstructing hydroclimate in arid regions and its relationship to various forcings using geochemical techniques in both marine and terrestrial settings.
- Applying iron speciation of detrital material in marine sediments as a proxy for dust provenance and past glaciations.
- Understanding the effect of geomorphology on the wind and dust emission history of East Asian (and other) stony deserts.
- Using geochemical and isotopic signatures of human and animal occupations at Aşık Höyük and Balıklı in Turkey to understand Neolithic lifestyles.

PEER-REVIEWED PUBLICATIONS

*Contributed Equally/Co-First Author, ‡Mentee/Student

Manuscripts in preparation (lead author only)

[2] **Abell, J. T.*** and Osman, M. B. *, Were Winds Weird in a Warmer World? A data-model comparison of the Pliocene westerlies.

[1] **Abell, J. T.**, Crocker, A. J., Anderson, C. H., Zhang, W., and Bridges, J. D. Dust in the warmer world of the Pliocene: A critical evaluation of marine-based Pliocene dust fluxes and implications for our understanding of changes to atmospheric circulation and arid landscapes.

Manuscripts in circulation among co-authors (lead author only – available upon request)

Manuscripts in review/revision

[4] Stubbins, B., Leier, A. L., Barbeau, D. L. Jr., Pullen, A., **Abell, J. T.**, Nie, J., Zárata, M. A., and Fidler, M. K. Global climate forcing on the late Miocene establishment of the Pampean aeolian system in South America. *Nature Communications*.

[3] **Abell, J. T.**, Hawkings, J. R., Shoenfelt-Troein, E. M., Pavia, F. J., Osman, M. B., and Winckler, G. Spatial and temporal variability of marine sediment solid-phase iron speciation in the North Pacific Ocean. *Earth and Planetary Science Letters*.

[2] Pavia, F. J., **Abell, J. T.**, Middleton, J. L., Leal, A., Vivancos, S. M., Fleisher, M. Q., Winckler, G., and Anderson, R. F. Discrepant Mass Accumulation Rates of Sediments in the South Pacific Ocean from ²³⁰Th and ³He Measurements. *Geochimica et Cosmochimica Acta*.

[1] Sandoval-Castellanos, E., Hare A. J., Lin, A. T., Dimopoulos, E. D., Daly, K. G., Wiechmann, I., Mullin, V. E., Mattiangeli, V., Lükhen, G., Zinovieva, N. A., Zidarov, P., Benecke, N., Cakirlar, C., Scheu, A., Stoddart, S., Orton, D., Bulatović, J., Mashkour, M., Sauer E, W., Horwitz, L. K., Horejs, B., Atici, L., Özkaya, V., Mullville, J., Pearson, M. P., Mainland, I., Card, N., Brown, L., Sharples, N., Griffiths, D., Allen, D., Arbuckle, B., Burger, J., Georg, C., **Abell, J. T.**, Duru, G., Mentzer, S. M., Munro, N. D., Uzdurum, M., Gülçur, S., Buitenhuis, H., Stiner, M. C., Pöllath, N., Özbaşaran, M., Krebs, S., Frantz, L., Medugorac, I., Bradley, D. G., and Peters, J.

Ancient sheep mitogenomes from Neolithic Anatolia and Europe reveal dramatic demographic fluctuations over the last 12,000 years. *Science Advances*.

Published and accepted manuscripts

2023

(n=7) [18] **Abell, J. T.**, Winckler, G., Pullen, A., Kinsley, C. W., Kapp, P., Middleton, J. M., Pavia, F. J., McGee, D., Ford, H. L., and Raymo, M. E. (Accepted). Evaluating the drivers of Quaternary dust fluxes to the western North Pacific: East Asian dustiness and Northern Hemisphere gustiness. *Paleoceanography and Paleoclimatology*.

[17] **Abell, J. T.** and Winckler, G. (Accepted). Long-Term Variability in Pliocene North Pacific Ocean Export Production and Its Implications for Ocean Circulation in a Warmer World. *AGU Advances*.

[16] Zhao, Y., Fan, N., Nie, J., Abell, J. T., An, Y., Jin, Z., Wang, C., Zhang, J., Liu, X., and Nie, R. (2023). From desiccation to re-integration of the Yellow River since the last glaciation. *Geophysical Research Letters*. <https://doi.org/10.1029/2023GL103632>.

[15] Zhang, W., Zhang, E., Liu, E., **Abell, J. T.**, Sun, W., Ni, Z., Chen, R., Cai, Y., Liu, E., and Meng, X. (2023). Mongolian dust activity over the last 25 ky predominantly driven by the East Asian Winter Monsoon: Insights from the geochemistry of Lake Tuofengling sediments. *Geophysical Research Letters*. <https://doi.org/10.1029/2023GL103633>.

[14] McClymont, E. L., Ho S.-L., Ford H. L., Bailey I., Berke M. A., Bolton C. T., De Schepper S., Grant G. R., Groeneveld J., Inglis G. N., Karas C., Patterson M. O., Swann G. E. A., Thirumalai K., White S. M., Alonso-Garcia M., Anand P., Hoogakker B. A. A., Littler K., Petrick B. F., Rosebrokken B., **Abell J. T.**, Crocker A. J., de Graaf F., Feakins S. J., Hargreaves J. C., Jones C. L., Markowska M., Ratnayake A.S., Stepanek C., and Tanguan D. (2023). Climate Evolution through the onset and intensification of Northern Hemisphere Glaciation. *Reviews of Geophysics*. <https://doi.org/10.1029/2022RG000793>.

[13] Lambert, J. E., Linsley, B. K., **Abell, J. T.**, Bova, S. C., Winckler, G., Rosenthal, Y., Weiss, T. L., and Huang, W. (2023). Obliquity-driven subtropical forcing of the thermocline after 240 ka in the southern sector of the Western Pacific Warm Pool. *Palaeogeography, Palaeoclimatology, Palaeoecology*. <https://doi.org/10.1016/j.palaeo.2023.111578>.

[12] Li, M., Nie, J., Li, Z., Pullen, A., **Abell, J. T.**, Zhang, H., McMechen, C. A., and Pan, B. (2023). A middle Pleistocene to Holocene perspective on sediment sources for the Tengger Desert, China. *Catena*. <https://doi.org/10.1016/j.catena.2023.107119>.

2022

(n=2) [11] Pullen, A., Barbeau, D. L. Jr., Leier, A. L., **Abell, J. T.**, Ward, M., Bruner, A., and Fidler, M. K. (2022). A westerly wind dominated Puna Plateau during deposition of upper Pleistocene loessic sediments in the subtropical Andes, South America. *Nature Communications*. <https://doi.org/10.1038/s41467-022-31118-5>.

[10] Zhang, D., Wang, G., **Abell, J. T.**, Pullen, A., Winckler, G., Schaefer, J., and Shen, T. (2022). Climatically and geomorphologically controlled wind erosion since the late Pleistocene in the Hami Basin, Eastern Asia. *Geophysical Research Letters*.

<https://doi.org/10.1029/2021GL097495>.

2021

(n=2) [9] Liu, C., Nie, J., Li, Z., Qiao, Q., **Abell, J. T.**, Wang, F., and Xiao, W. (2021). Eccentricity forcing of monsoonal systems over the past 3 million years: *Proceedings of the National Academy of Sciences*. <https://doi.org/10.1073/pnas.2107055118>.

[8] **Abell, J. T.**, Winckler, G., Anderson, R. F., and Herbert, T. D. (2021). Poleward and weakened westerlies during Pliocene warmth. *Nature*. <https://doi.org/10.1038/s41586-020-03062-1>.

2020

(n=3) [7] **Abell, J. T.**, Rahimi, S., Pullen, A., Lebo, Z., Zhang, D., Kapp, P., Gloege, L., Ridge, S., Nie, J., and Winckler, G. (2020). A quantitative model-based assessment of stony desert landscape evolution in the Hami Basin, China: Implications for Plio-Pleistocene dust production in Eastern Asia. *Geophysical Research Letters*. <https://doi.org/10.1029/2020GL090064>.

[6] Zhang, D., Wang, G., Pullen, A., **Abell, J. T.**, Ji, J., and Shen, T. (2020). Landscape evolution and development of low albedo eolian-modified unconsolidated gravel surfaces and yardangs in the Hami Basin, NW China. *Geomorphology*. <https://doi.org/10.1016/j.geomorph.2020.107355>.

[5] **Abell, J. T.**, Pullen, A., Lebo, Z., Kapp, P., Gloege, L., Metcalf, A., Nie, J., and Winckler, G. (2020). A wind albedo-wind feedback driven by landscape evolution. *Nature Communications*. <https://doi.org/10.1038/s41467-019-13661-w>.

2019

(n=1) [4] **Abell, J. T.**, Quade, J., Duru, G., Mentzer, S. M., Stiner, M. C., Uzundurum, M., and Özbaşaran, M. (2019). Urine salts elucidate Early Neolithic animal management at Aşıklı Höyük, Turkey. *Science Advances*. <https://doi.org/10.1126/sciadv.aaw0038>.

2018

(n=1) [3] Pelletier, J. D., Kapp, P. A., **Abell, J.**, Field, J. P., Williams, Z. C., and Dorsey, R. J. (2018). Controls on yardang development and morphology I. Field observations and measurements at Ocotillo Wells, California. *Journal of Geophysical Research: Earth Surface*. <https://doi.org/10.1002/2017JF004461>.

2016

(n=2) [2] Licht, A., Dupont-Nivet, G., Pullen, A., Kapp, P., Abels, H., Lai, Z., Guo, Z., **Abell, J.**, and Giesler, N. (2016). Resilience of the Asian atmospheric circulation shown by Paleogene dust provenance. *Nature Communications*. <https://doi.org/10.1038/ncomms12390>.

[1] Licht, A., Pullen, A., Kapp, P., **Abell, J.**, and Giesler, N. (2016). Eolian cannibalism: reworked loess and fluvial sediment as the main sources of the Chinese Loess Plateau. *GSA Bulletin*. <https://doi.org/10.1130/B31375.1>.

NON-REFEREED PUBLICATIONS

[1] **Abell, J.**, Kapp, P., Pullen, A., and Licht, A., Geochronology of zircons in Loess Plateau, Ordos Basin, and central sand deserts for comparative statistical analyses: *Spirit of Inquiry*, 2015. (Local University of Arizona science outreach booklet)

GRANTS AND FUNDING

Pending

2023 – 2028 **NSF Frontier Research in Earth Sciences (FRES - #94392):** “Collaborative Research: Pliocene paleoclimate in the North American monsoon belt and implications for future climate change in the region. PIs – Andrew Cohen, Jay Quade; U. Arizona co-PIs/SPs – Diane Thomsson, Marcus Loverstrom, Kaustubh Thirumalai, Allen Schaen, Jason Kirk, Jessica Tierney, **Jordan T. Abell**, Advait Jukar, Brian Gootee, Lyne Schepartz, Bryan Black (\$2,121,479 requested)

Awarded

2023 – 2026 **NSF Marine Geology and Geophysics (MG&G - #2225830):** “Collaborative Research: Tracing Pacific Ocean circulation and ventilation during the warm Pliocene Epoch”. PI – **Jordan T. Abell**; U. Arizona co-PIs – Kaustubh Thirumalai, Diane Thompson (\$544,815).

2021 – 2023 **NSF OCE Postdoctoral Fellowship (OCE-PRF - #2126500):** “Unraveling Southern Hemisphere westerly wind variability through the last ~150 ky using Tasman Sea sediments”. PI – **Jordan T. Abell** (\$280,721).

2021 – 2024 **NSF Archaeology and Archaeometry (BCS - #2039551):** “Developing Quantitative Methods to Address Sediment Modification”. PI – Jay Quade. Co-PI – Mary Stiner. (\$182,143).

- Co-wrote proposal as a graduate student alongside the PIs. Co-lead on carrying out scientific objectives.

2021 – 2023 **NSF Past Perspectives on Climate Change (OCE - #2103037):** “Tracking the movement and strength of the Northern Hemisphere westerlies over the last glacial cycle”. PI – Gisela Winckler. (\$297,771).

- Co-wrote proposal as a graduate student alongside the PI. Co-lead on carrying out scientific objectives.

2021 – 2023 **NCAR Cheyenne:** “Quantifying the effects of landscape evolution and mountain uplift in Eastern Asia on the formation of the Chinese Loess Plateau.” PI – Zachary Lebo, Co-PIs – Stefan Rahimi, Alex Pullen, **Jordan T. Abell** (6.5 million core hours).

- Co-wrote proposal alongside the PI and other co-PIs. Co-lead on carrying out the project.

2020 – 2021 GSA Graduate Student Research Grant (\$1,295)

2018 – 2020 Climate Center Grant, Lamont-Doherty Earth Observatory (\$10,000)

2013 – 2014 Honor's College Research Grant, University of Arizona (\$1,500)

HONORS AND AWARDS

- 2021 Harry Elderfield Student Paper Award, American Geophysical Union
- 2021 – 2023 Division of Ocean Sciences Postdoctoral Fellowship, National Science Foundation
- 2019 Outstanding Student Presentation Award, American Geophysical Union Annual Meeting
- 2016 Lyle Award in Tectonics and Geodynamics, University of St. Andrews
- 2016 – 2021 Columbia Graduate School of Arts and Sciences Dean's Fellow, Columbia University
- 2016 Excellence in Undergraduate Research Department Award, College of Science, University of Arizona
- 2016 Best Undergraduate Talk, The Doug Shakel Memorial Award, GeoDaze Symposium, University of Arizona
- 2015 – 2016 UA/NASA Space Grant Undergraduate Research Internship (Research funded for 1 year)
- 2013 – 2016 Dean's List, University of Arizona
- 2015 Arizona Geological Society, Student Poster Award, Arizona State University
- 2015 Galileo Circle Scholar, College of Science, University of Arizona (\$1K)
- 2012 – 2016 Wildcat Excellence Scholarship

INVITED SEMINARS AND PRESENTATIONS

- March 2023 University of Texas at Austin, Department of Geological Sciences. *Dust in the wind: A 'dusty' perspective on East Asian climate and landscapes across the last five million years.*
- February 2023 University of California, Davis, Department of Earth and Planetary Sciences. *Dust in the wind: A 'dusty' perspective on East Asian climate and landscapes across the Plio-Pleistocene.*
- February 2023 Lehigh University, Department of Earth and Environmental Sciences. *Dust in the wind: A 'dusty' perspective on East Asian climate and landscapes across the Plio-Pleistocene.*
- August 2022 Eberhard Karls Universität Tübingen, Geoarchaeology Seminar. *Urinating in the Neolithic: Geochemistry at the Aceramic Neolithic Site of Aşıklı Höyük, Turkey.*
- April 2022 California Institute of Technology, Environmental Science and Engineering Seminar. *A "dusty" perspective on East Asian land-atmosphere interactions across the Plio-Pleistocene.*

- March 2022 University of Wyoming, Department of Atmospheric Sciences Seminar. *A "dusty" perspective on East Asian land-atmosphere interactions across the Plio-Pleistocene.*
- October 2021 Max Planck Institute for Chemistry, Climate Geochemistry Seminar. *Earth, Wind, and Water: Plio-Pleistocene Climate Evolution of the North Pacific and East Asia.*
- March 2021 Binghamton University, SUNY, Geology Department Seminar. *From Dust to Dust, or Dirt to Dirt: Applications of Sediment Geochemistry and Modeling from the Pliocene to the Pre-Pottery Neolithic.*
- May 2020 Lamont-Doherty Earth Observatory, Columbia University, Biology and Paleo-Environment Seminar. *Urinating in the Neolithic: Early Animal Domestication and a New Approach to Estimating Site Use Intensity.*
- February 2020 Clemson University, Environmental Engineering and Earth Sciences Seminar. *From Dust to Dust, or Dirt to Dirt: Applications of Sediment Geochemistry and Modeling from the Pliocene to the Pre-Pottery Neolithic.*
- July 2018 RV SONNE Scientific Cruise Meeting. *The North Pacific from Pliocene to Present: A story of windblown sediment, stardust, and paleoclimate reconstructions.*
- August 2017 Asikli Hoyuk Summer Field Campaign. *Urinating in the Neolithic: Early Animal Domestication and a New Approach to Estimating Site Use Intensity.*

CONFERENCE PROCEEDINGS/WORKSHOP PRESENTATIONS (SINCE 2019)

†Invited, ‡Mentee, *Presenting Author (if not first author)

2023

- (n=6) [19] Pullen, A., Leier, A., Barbeau, D. L., Fidler, M. K., **Abell, J. T.**, Stubbins, B., and Kroeger, E. D. L. Unlocking the provenance of the Upper Miocene to Holocene southern South American loess record through U-Pb detrital zircon geochronology. *AGU Fall Meeting, 2023.*
- [18] Tulinsky, G., Winckler, G., **Abell, J. T.**, Middleton, J. L., Schwartz, R., Fleisher, M. Q., Lembke-Jene, L., and Tiedemann, R. Did the Westerlies Move and Strengthen Over the Last Glacial Cycle? *AGU Fall Meeting, 2023.*
- [17] **Abell, J. T.**, Gilmore, L., and Tierney, J. E. What can the organic geochemistry of Tasman Sea sediments tell us about the Southern Hemisphere westerlies over the last ~150 ky? *AGU Fall Meeting, 2023.*
- [16] **Abell, J. T.** †, Winckler, G., and Thirumalai, K. Investigating the drivers of subarctic North Pacific Ocean export productivity and deep ocean oxygenation across the Pliocene and earliest Pleistocene. *AGU Fall Meeting, 2023.*
- [15] McKenley, H. ‡, Thirumalai, K., and **Abell, J. T.** Can Stable Isotopes of Individual Benthic Foraminifera Capture Deepwater Current Variability? *AGU Fall Meeting, 2023.*
- [14] Middleton, J. L., **Abell, J. T.**, and Winckler, G. Plio-Pleistocene Dust Fluxes to the Western Equatorial Pacific Constrained via Helium Isotopes and Sedimentary ¹⁰Be. *Goldschmidt, 2023.*

2022

- (n=4) [13] Thirumalai, K., and **Abell, J. T.** Biogeochemical implications for deglacial Neogloboquadrina dutertrei $\delta^{13}\text{C}$ in the Eastern Equatorial Pacific. *AGU Fall Meeting*, 2022.
- [12] **Abell, J. T.**, and Winckler, G. Pliocene Variability of North Pacific Overturning Circulation: Reevaluating North Pacific Productivity and Redox Conditions from ~2.5-6 Ma. *14th International Conference on Paleoceanography*, 2022.
- [11] **Abell, J. T.**, and Osman, M. B. Were Winds Weird in a Warmer World? A Data-Model Comparison of the Pliocene Westerlies. *The warm Pliocene: Bridging the geological data and modelling communities, Galileo Conference*, 2022.
- [10] **Abell, J. T.**[†], Quade, J., Stiner, M., Mentzer, S., and Özbaşaran, M. Urinating in the Neolithic: Geochemistry at the Aceramic Neolithic Site of Aşıklı Höyük, Turkey. *SAA Annual Meeting*, 2022.

2021

- (n=1) [9] Alejos, A.[‡], Winckler, G., **Abell, J. T.**, Middleton, J. L., Ravelo, A. C., Santos, B., DeLong, K. A., Riesselman, C. R., Malinverno, E., Saavedra, M., and IODP Expedition 383 Scientists. High-resolution records of dust and productivity from the Pacific sector of the Southern Ocean across Termination III. *AGU Fall Meeting*, 2021.

2020

- (n=3) [8] **Abell, J. T.**[†], Rahimi, S., Pullen, A., Lebo, Z., Zhang, D., Kapp, P., Gloege, L., Ridge, S., Nie, J., and Winckler, G. A modeling perspective on Pleistocene landscape evolution and dust production in the Hami Basin, China. *AGU Fall Meeting*, 2020.
- [7] **Abell, J. T.**, Winckler, G., Anderson, R. F., and Herbert, T. D. Characterization of dust and productivity fluxes in the North Pacific indicate shifts in the westerly winds during the Pliocene. *AGU Fall Meeting*, 2020.
- [6] **Abell, J. T.**, Winckler, G., Anderson, R. F., and Herbert, T. D. Reconstructing the intensity and location of Northern Hemisphere westerlies during the Plio-Pleistocene using marine sediments. *EGU General Assembly*, 2020.

2019

- (n=5) [5] Pullen, A., **Abell, J. T.**^{*}, Lebo, Z., Kapp, P., Gloege, L., Metcalf, A., Nie, J., and Winckler, G. When geology and climate collide: evolving landscapes and the wind-albedo wind feedback. *AGU Fall Meeting*, 2019.
- [4] Pavia, F. J., **Abell, J. T.**, Winckler, G., and Anderson, R. F. Reconstruction of Modern Dust Deposition in the South Pacific from Water Column and Sedimentary Methods. *AGU Fall Meeting*, 2019.
- [3] **Abell, J. T.**, Winckler, G., Anderson, R. F. East Asian Dust Fluxes and Paleoproductivity in the North Pacific during the Plio-Pleistocene. *AGU Fall Meeting*, 2019.
- [2] Garziona, C. N., Weber, T. S., Lauderdale, J. M., Nie, J., Pullen, A., An, Z., **Abell, J. T.**, Winckler, G., Anderson, R. F., Herbert, T., Lu, H., and Molnar, P. H. Asian Tectonics, the Fe Hypothesis for the North Pacific, and Late Cenozoic Cooling. *AGU Fall Meeting*, 2019.

[1] **Abell, J. T.**, Winckler, G., and Anderson, R. F., East Asian Dust Fluxes and Paleoproductivity in the North Pacific during the Plio-Pleistocene. *PIRE Dust Workshop*, 2019.

TEACHING EXPERIENCE

- 2023 **Co-Instructor**, The Application of Geochemistry to Geoarchaeological Studies of Turkey and the Southwest U.S. (Graduate Independent Study), Department of Geosciences, University of Arizona
- Co-leading a Graduate Independent Study for a University of Arizona Anthropology graduate student exploring the application of geochemistry to geoarchaeological studies, with a specific focus on the U.S. Southwest and Turkey.
- 2022 **Guest Lecturer**, Pliocene Climate of the U.S. Southwest Seminar (Graduate), Department of Geosciences, University of Arizona
- Delivered one lecture on Pliocene climate modeling.
- 2021 **Guest Lecturer**, Climate Systems (Undergraduate), Department of Earth and Environmental Sciences, Columbia University
- Delivered two lectures on chemical/biological oceanography and the carbon cycle.
- 2020 **Guest Lecturer**, Terrestrial Paleoclimate (Graduate/Undergraduate), Department of Earth and Environmental Sciences, Columbia University
- Delivered one lecture on physical oceanography and paleoceanography.
- 2020 **Co-Coordinator and Guest Lecturer**, Chemistry of Continental Waters (Graduate/Undergraduate), Department of Earth and Environmental Sciences, Columbia University
- Assisted in coordinating the second half of the Spring 2020 semester. Delivered five lectures on aerosol chemistry, weathering and soil formation, and chemistry of rivers.
- 2018 **Teaching Assistant**, Terrestrial Paleoclimate (Graduate/Undergraduate), Department of Earth and Environmental Sciences, Columbia University
- Delivered two lectures, graded problem sets, was responsible for leading 20-minute recitations at end of lectures given by instructors, and assisted in grading.
 - Mean evaluation score of 4.75 out of 5 (n = 8).
- 2018 **Teaching Assistant**, Climate Systems (Undergraduate), Department of Earth and Environmental Sciences, Columbia University
- Responsible for teaching weekly 3-hour laboratory session, which consisted of delivering introductory laboratory lectures, designing and leading laboratory assignments, and grading laboratory write-ups. In addition, I led two lecture sessions on chemical and biological oceanography.
 - Mean evaluation score of 4.86 out of 5 (n = 14).

- 2017 **Teaching Assistant**, Solid Earth Systems (Undergraduate), Department of Earth and Environmental Sciences, Columbia University
- Responsible for teaching weekly 3-hour laboratory sessions, which consisted of providing introductory laboratory lectures, designing and leading laboratory assignments, and grading laboratory write-ups.
 - Mean evaluation score of 4.7 out of 5 (n = 10).
- 2016 **Preceptor**, Igneous and Metamorphic Petrology (Undergraduate), Department of Geosciences, University of Arizona
- Assisted lead TA in leading 3-hour weekly laboratory sessions and grading lab write-ups.
- 2015 **Preceptor**, Physical Geology, Department of Geosciences, University of Arizona
- Assisted lead TA in leading 3-hour weekly laboratory sessions and grading lab write-ups.

DIVERSITY, EQUITY, AND INCLUSION EFFORTS

- 2022 – Present Along with Prof. Kaustubh Thirumalai (University of Arizona) and Erik Fleming (Tucson High Magnet School), I am in the planning phases for a program focused on providing research experiences for Tucson High Magnet School students through the University of Arizona's Department of Geosciences.
- 2022 – Present AGU LANDInG-PRFP (Leadership Academy and Network for Diversity and Inclusion in the Geosciences – Postdoctoral Research Fellowship Program)
- Participating in a professional development program that emphasizes development of mentoring skills and that coordinates the involvement of NSF-OCE Fellows in conferences and activities that are focused on increasing the engagement of underrepresented groups in STEM.
- 2021 Race, Climate Change, and Environmental Justice Seminar, Lamont-Doherty Earth Observatory
- 2021 Participant in Lamont-Doherty Pod of URGE: Unlearning Racism in Geoscience

MENTORING

Undergraduate

- 2022 – Present Lauren Gilmore, University of Arizona, Undergraduate Research Student
- Currently guiding Lauren through two individual research projects (involving design, laboratory work, and eventual presentation of results via to-be-determined mediums). One is focused on the application of various geochemical measurements to wood ash for investigating geoarchaeological questions pertaining to the Neolithic site of Aşıklı Höyük. The other relates to the application of organic and inorganic proxies for dust, vegetation, and sea surface temperatures for investigating paleoclimate questions pertaining to the late Pleistocene Southern Hemisphere westerly winds.

- 2022 – Present Caitlin Dowd, University of Arizona, Undergraduate Research Student
- Currently guiding Caitlin through an individual research project (involving design, laboratory work, and eventual presentation of results via to-be-determined mediums). The work is focused on the application of various geochemical measurements to ammonia volatilization experiments for investigating geoarchaeological questions pertaining to the Neolithic site of Aşıklı Höyük.
- 2021 Alexia Alejos, Lamont-Doherty Earth Observatory REU Summer Program
- Guided Alexia through a research project (design, laboratory work, and presentation of results via a poster and research report) looking at past dust and marine productivity using South Pacific sediments.
- 2021 Juliet Tochterman, Women in Science at Columbia Graduate/Undergraduate Mentoring Program
- Provided advice on graduate school, including selection of programs, application process, life in graduate school, and other related topics.
- 2020 Samuel Kodama, Columbia University Graduate/Undergraduate Mentoring Program
- Provided advice on graduate school, including selection of programs, application process, life in graduate school, and other related topics.

PROFESSIONAL SERVICE

- Peer-reviews* Proposals: 2023 – Present (n = 1)
National Science Foundation
- Manuscripts: 2019 – Present (n = 18)
Nature Communications; Geology; Geophysical Research Letters; Quaternary Science Reviews; Earth and Planetary Science Letters; Paleoceanography and Paleoclimatology
- 2023 Judge for University of Arizona Department of Geoscience’s GeoDaze Research Symposium
- 2022 Co-convener for an AGU Fall Meeting 2022 Paleoceanography and Paleoclimatology session “Climate reconstructions from the Pacific region: Insights into past oceanic and atmospheric circulation”.
- 2022 Judge for University of Arizona Department of Geoscience’s GeoDaze Research Symposium
- 2021 Co-convener for an AGU Fall Meeting 2021 Paleoceanography and Paleoclimatology session “Climate reconstructions from the Pacific region: Insights into past oceanic and atmospheric circulation”.
- 2021 AGU Outstanding Student Presentation Award Judge

- 2021 Served as a Reviewer for the Chevron Student Initiative Fund at Lamont-Doherty Earth Observatory/Columbia University.
- 2014 – 2016 Trained several University of Arizona undergraduates in U-Pb geochronology sample preparation and provided mentorship for the completion of their individual projects.

SCIENCE OUTREACH AND SELECTED MEDIA COVERAGE

- 2021 Grist. [Climate change could take weather patterns back to the Pliocene](#) by Nathanael Johnson
- 2021 Eos. [Dust on the Wind](#) by Nancy Averett
- 2021 Ciência na rua. [Sedimentos do fundo do mar indicam mudança nos ventos do oeste](#) by Tiago Marconi
- 2021 Columbia Climate School, Lamont-Doherty Earth Observatory. [Will Global Warming Bring a Change in the Winds? Dust from the Deep Sea Provides a Clue](#) by Marie DeNoia Aronsohn
- 2016 – 2020 Volunteer, Lamont-Doherty Earth Observatory Open House
- 2019 The Atlantic. [Why Archaeologists Are Studying 10,000-Year-Old Urine](#) by Sarah Zhang
- 2019 NewScientist. [Ancient urine reveals early prehistory of domestic sheep and goats](#) by Michael Marshall
- 2019 Scientific American. [Ancient Whiz Opens Archaeology Window](#) by Bob Hirshon
- 2019 Quirks & Quarks. [Pee-oneering archeology. A new technique uses urine to study the ancient past](#) by CBC Radio
- 2019 COSMOS. [The sands of time are soaked in urine](#) by Richard A Lovett
- 2019 State of the Planet, Columbia Climate School. [Switch From Hunting to Herding Recorded in Ancient Pee](#) by Sarah Fecht
- 2014 – 2016 Guest Coordinator, Society of Earth Science Students, University of Arizona
- 2014 – 2016 Coordinator of Kid's Corner, Tucson Gem and Mineral Show
- 2014 – 2016 Undergraduate Co-coordinator for Science Center, Tucson Festival of Books
- 2015 Local middle school science fair judge, Tucson, AZ

FIELD AND CRUISE EXPERIENCE

- 2022 Pech de l'Ave IV, France. Archaeological mapping and geochemical sampling

- 2017 – Present Aşıklı Höyük Field Site, Turkey. Archaeological mapping and geochemical sampling
- 2018 Geochemist aboard the RV SONNE: Sediment coring, core preparation and description
- 2017 Chinese Loess Plateau, Geologic mapping
- 2016 Geology Field Camp, University of St. Andrews, Scotland
- 2014 Ocotillo Wells, CA. Geologic mapping and structural analysis of ‘yardangs’
- 2013 Anza Borrega, CA. Geological mapping and sedimentological analysis

PROFESSIONAL AFFILIATIONS

- 2019 – 2022 International Society for Aeolian Research
- 2015 – Present American Geophysical Union
- 2015 – 2022 Geological Society of America
- 2013 – 2016 Arizona Geological Society