

Sarah Aarons
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Education

2016 University of Michigan, Ph.D., Geology
2012 University of Michigan, M.S., Earth and Environmental Sciences
2009 Stanford University, B.S., Geological and Environmental Sciences

Professional Positions

2019-present Scripps Institution of Oceanography, University of California San Diego
Assistant Professor
2017-2019 Department of Geophysical Sciences, University of Chicago
Postdoctoral Fellow
2016-2017 Department of Earth System Science, University of California, Irvine
Postdoctoral Fellow
2010-2016 Department of Earth and Environmental Sciences, University of Michigan
Graduate Student

Honors & Awards

2023 F.W. Clarke Award, Geochemical Society
2022 Scripps Institution of Oceanography Graduate Teaching Award
2021 Doris M. Curtis Outstanding Woman in Science Award, Geological Society of America
2021 American Geophysical Union Editors' Citation for Excellence in Refereeing
2019 Kavli Fellow, National Academy of Sciences
2018 National Center for American Indian Enterprise Development 40 under 40 Award
2017 Ford Foundation Postdoctoral Fellowship
2016 UC Irvine Chancellor's ADVANCE Postdoctoral Fellowship
2015 Rackham Predoctoral Fellowship, University of Michigan
2010 Rackham Merit Fellowship, University of Michigan

Funded Grants

2023 UC San Diego Academic Senate Marine Sciences Research Application "Zirconium isotopes as a potential new tracer of ocean circulation"
2021 NSF OPP Award #2035580 (lead-PI in proposal "Collaborative Research: Peripheral East Antarctic ice as a unique recorder of climate variability during the Last Interglacial")
2021 NSF STC Award #2019710 (funded collaborator in "STC: Center for OLDest Ice EXploration")
2020 NSF EAR Award #1946856 (co-PI in proposal "Collaborative research: Controls of climate and dust on soil chemical erosion and nutrient supply")
2020 UCSD, Office of Research Affairs, Office for Equity, Diversity & Inclusion, Office of the Chancellor (Innovation Grants for Inclusive Research Excellence)

†= student author

†† =primary PhD advisee

§= postdoc author

Publications—In progress

22. Huang, L. ††, Tissot, F.L.H., Ibañez-Mejia, M., Forsch, K. §, Arendt, C. Choy, C.A., **Aarons, S.M.**, High-precision zirconium isotope analysis of Pacific seawater reveals large mass-dependent fractionations in the ocean, *Geochimica et Cosmochimica Acta*, in review.

21. Zhang, Z. †, Dauphas, N., Johnson, A.C., **Aarons, S.M.**, Bennett, V.C., Nutman, A.P., MacLennan, S., Schoene, B., Titanium and iron isotopic records of granitoid crust production in diverse Archean cratons, *Earth and Planetary Science Letters*, in review.

20. Prissel, K.B., Krawczynski, M.J., Nie, N.X., Dauphas, N., **Aarons, S.M.**, Heard, A.W., Hu, M.Y., Alp, E., Zhao, J., Iron, titanium, and magnesium isotopic evidence for diffusion-limited reaction of lunar magma ocean cumulates in mare basalt source regions, *Geochimica et Cosmochimica Acta*, in review.

Publications—Peer Reviewed

19. **Aarons, S.M.**, Dauphas, N., Greber, N.D., Roskosz, M., Bouchez, J., Carley, T., Liu, X.-M., Rudnick, R.L., Gaillardet, J., Titanium transport and isotopic fractionation in the Critical Zone, *Geochimica et Cosmochimica Acta*, accepted.

18. Maltz, M.R., Carey, C.J. Freund, H., Botthoff, J., Stajich, J.E., Hart, S.C., **Aarons, S.M.**, Aciego, S.M., Blakowski, M.A., Dove, N.C., Barnes, M., Pombubpa N., Aronson E.L., Landscape topography and regional drought alters dust microbiomes in the Sierra Nevada of California, *Frontiers in Microbiology*, <https://doi.org/10.3389/fmicb.2022.856454>, 2022.

17. **Aarons, S.M.**, Johnson, A.C., Rader, S.T., Forming Earth's continental crust: A non-traditional stable isotope perspective, invited article for *Elements*, 17 (6), <https://doi.org/10.2138/gselements.17.6.413>, 2021.

16. **Aarons, S.M.**, Dauphas, N., Zeng, Z., Blanchard, M., Nie, N.X., Greber, N.D., Johnson, A.C., Clues from *ab initio* calculations on titanium isotopic fractionation in tholeiitic and calc-alkaline magma series, *ACS Earth and Space Chemistry*, <https://doi.org/10.1021/acsearthspacechem.1c00172>, 2021.

15. Nie, N.X., Dauphas, N., Alp, E.E., Zeng, H., Sio, C.K., Hu, J.Y., **Aarons, S.M.**, Zhang, Z., Tian, H.-C., Prissel, K.B., Greer, J., Bi, W., Hu, M.Y., Zhao, J. Shahar, A., Roskosz, M., Teng, F.-Z., Krawczynski, M.J., Heck, P.R., Spear, F.S., Fe, Mg, and Ti isotopic fractionations between garnet, ilmenite, fayalite, biotite, and tourmaline: comparison between NRIXS, *ab initio*, and study of mineral separates from the Moosilauke metapelite, *Geochimica et Cosmochimica Acta*, 302, 18-45, 2021.

14. Heard, A.W, **Aarons, S.M.**, Hofmann, A., He, X., Ireland, T., Bekker, A., Qin, L., Dauphas, N. Anoxic continental surface weathering conditions in the Mesoproterozoic Pongola Supergroup, South Africa, *Geochimica et Cosmochimica Acta*, 295, 1-23, 2021.

13. **Aarons, S.M.**, Reimink, J.R., Greber, N.D., Heard, A.W., Zhang, Z., and Dauphas, N., Titanium isotopes constrain a magmatic transition at the Hadean-Archean boundary in the Acasta Gneiss Complex, *Science Advances*, 6, eabc9959, 2020.
12. **Aarons, S.M.**, Arvin, L., Aciego, S.M., Riebe, C.S., Johnson, K.R., Blakowski, M.A., Koornneef, J., Hart, S.C., Barnes, M., Dove, N., Maltz, M., Botthoff, J., and Aronson, E., Competing droughts affect dust delivery to Sierra Nevada, *Aeolian Research*, 41, 100545, 2019.
11. Johnson, A.C., **Aarons, S.M.**, Dauphas, N., Nie, N.X., Zeng, H., Helz, R.T., Romaniello, S.J., Anbar, A.D., Titanium Isotopic Fractionation in Kilauea Iki Lava Lake Driven by Oxide Crystallization, *Geochimica et Cosmochimica Acta*, 264, 180-190, 2019.
10. **Aarons, S.M.**, McConnell, J., Delmonte, B., Baccolo, G., Aciego, S.M., Dust transport to the Taylor Glacier, Antarctica during the last interglacial, *Geophysical Research Letters*, doi:10.1029/2018GL081887, 2019.
9. Arendt, C.A., Aciego, S.M., Sims, K.W.W., **Aarons, S.M.**, Seasonal Progression of Uranium Series Isotopes in Subglacial Meltwater: Implications for Subglacial Storage, *Chemical Geology*, 467, 42-52, 2017.
8. **Aarons, S.M.**, Blakowski, M.A., Aciego, S.M., Stevenson, E.I., Sims, K.W.W., Scott, S., Aarons, C., Geochemical characterization of critical dust source regions in the American West, *Geochimica et Cosmochimica Acta*, 215, 141-161, 2017.
7. Chellman, N., McConnell, J., Arienzo, M., Pederson, G., **Aarons, S.M.**, Csank, A., Reassessment of the chronology of the Upper Fremont Glacier ice cores by synchronizing ice core water isotopes and tree ring widths, *Environmental Science and Technology*, 51 (8), 4230-4238, 2017.
6. **Aarons, S.M.**, Aciego, S.M., Arendt, C.A., Steigmeyer, A., Gabrielli, P., Sierra-Hernandez, R., Delmonte, B., Baccolo, G., Pratt, K., May, N., Dust composition changes from Taylor Glacier (East Antarctica) during the last glacial-interglacial transition: A multi-proxy approach, *Quaternary Science Reviews*, 162, 60-71, 2017.
5. Aciego, S.M., Riebe, C.S., Hart, S.C., Blakowski, M.A., Carey, C., **Aarons, S.M.**, Dove, N., Aronson, E., Dust outpaces bedrock in nutrient supply to montane forest ecosystems, *Nature Communications*, 8, doi:10.1038/ncomms14800, 2017.
4. **Aarons, S.M.**, Aciego, S.M., Gabrielli, P., Delmonte, B., Koornneef, J.M., Uglietti, C., Wegner, A., Blakowski, M.A., Bouman, C., Ice core record of dust sources in the western United States over the last 300 years, *Chemical Geology*, 442, 160-173, 2016.
3. **Aarons, S.M.**, Aciego, S.M., Gabrielli, P., Delmonte, B., Koornneef, J., Wegner, A., Bouman, C., Addressing the impact of the Ross ice shelf retreat on local climate: characterization of mineral dust in the Taylor Dome ice core, East Antarctica, *Earth and Planetary Science Letters*, 444, 34-44, 2016.
2. Aciego, S.M., **Aarons, S.M.**, Sims, K.W.W., Short Communication: The Uranium-isotopic composition of Saharan dust collected over the central Atlantic Ocean, *Aeolian Research*, 17, 61-66, 2015.

1. Aarons, S.M., Aciego, S.M., Gleason, J.D., Variable Hf-Sr-Nd radiogenic isotopic compositions in a Saharan dust storm over the Atlantic: Implications for dust flux to oceans, ice sheets and the terrestrial biosphere, *Chemical Geology*, 349, 18-26, 2013.

Invited Talks

- 2023 Indiana University, Department of Earth and Atmospheric Sciences
- 2022 University of New Mexico, Department of Earth and Planetary Sciences
- 2022 DUST² Workshop (NSF Critical Zone Collaborative Network) keynote speaker
- 2022 University of Texas, Austin, UTIG
- 2022 California State University, Northridge, Department of Geological Science
- 2021 University of Leeds, School of Earth and Environment
- 2021 Rutgers University, Department of Earth and Planetary Science
- 2021 Purdue University, Department of Earth Science
- 2021 Speaker & panelist at Columbia Climate School “Climate forced displacement: Indigenous Frameworks for Observing & Responding to Climate Change in Alaska”
- 2021 Interagency Arctic Research Policy Committee Public Webinar Series: Climate Change Impacts on Indigenous Peoples – A Historical Perspective
- 2021 University of Lausanne, Earth Science Institute
- 2021 University of Michigan, Department of Earth and Environmental Science
- 2021 Syracuse University, Earth and Environmental Sciences
- 2021 Virtual Seminar for Precambrian Geology
- 2021 Unlearning Racism in the Geosciences, Racism & Justice session
- 2021 Princeton University, Solid Earth seminar
- 2021 University of Alaska Fairbanks, Fisheries & Ocean Sciences
- 2021 Tulane University, Earth and Environmental Science Seminar
- 2021 Stanford University, Earth System Science Department Seminar
- 2021 Alaska World Affairs Council, “Alaska Native Perspectives of an Evolving Arctic Environment”, *Invited Panel Discussion*
- 2020 American Geophysical Union Fall Meeting, *Invited talk*
- 2020 Georgia Tech, Department of Earth and Atmospheric Sciences Seminar
- 2020 Woods Hole Oceanographic Institution, Marine Chemistry & Geochemistry Seminar
- 2020 Woods Hole Oceanographic Institution, Paleoclimate Seminar
- 2020 University of California, Riverside, Department of Earth and Planetary Sciences, Department Seminar
- 2020 University of California, Santa Barbara, Department of Earth Science Seminar
- 2020 CU Boulder Institute for Arctic and Alpine Research (INSTAAR), Department Seminar
- 2020 Lamont-Doherty Earth Observatory, Division of Biology and the Paleo Environment Seminar
- 2020 University of Washington, Department of Earth and Space Sciences, Department Seminar
- 2020 University of Southern California, Department of Earth Sciences, Department Seminar
- 2020 Goldschmidt Conference, virtual, *Invited talk*
- 2020 Ice Core Planning Workshop, *Invited talk*
- 2020 University of California, Los Angeles, Department of Earth, Planetary and Space Sciences, Department Seminar
- 2019 San Diego State University, Department of Geological Sciences, Department Seminar
- 2019 Harvard University, Department of Earth and Planetary Sciences, BISEPPS seminar

- 2019 North Carolina State University, Department of Marine, Earth, and Atmospheric Sciences, Department Seminar
- 2018 Goldschmidt Conference, Boston, MA, *Invited talk*
- 2018 Northwestern University, Department of Earth and Planetary Sciences, Department Seminar
- 2018 University of California, Los Angeles, Department of Earth, Planetary and Space Sciences, Geochemistry Seminar
- 2018 Scripps Institution of Oceanography, University of California, San Diego, Department Seminar
- 2018 University of Arizona, Department of Geosciences, Department Seminar
- 2017 University of California, Riverside, Department of Earth Sciences, Alternative Earths Astrobiology Center Seminar
- 2017 Georgia Institute of Technology, School of Earth and Atmospheric Sciences, Department Seminar
- 2016 United States Geological Survey, Anchorage, Alaska

Trainees

Postdoctoral Scholars

1. Kiefer Forsch (NSF OCE Postdoctoral Fellow *2021-present*) *Topic*: Isotopic and microbial investigations of the iron geochemistry and bioavailability of glaciogenic particles

Graduate Students

2. Linqing Huang (2019-2024 *expected*) *Topic*: Non-traditional stable isotope variability and Earth surface processes.
3. Emmet Norris (2020-2025 *expected*) *Topic*: Natural and anthropogenic influences on particulate matter composition.
4. Austin Carter (2020-2025 *expected*) *Topic*: Dust flux and compositional variations to Antarctica during the Last Interglacial and Mid-Pleistocene Transition.
5. Rain Blankenship (former REU student, *now BS/MS student*) *Topic*: Tracing sources of nutrient input to vegetation on San Jacinto Peak, California

Undergraduates Students

6. Isis Guadalupe (summer 2021 REU student) *Topic*: Tracing sources of particulate matter to Southern California
7. Anusha Goswami *Topic*: Isolating neodymium from ice core dust
8. Justin Han *Topic*: Isolating strontium from natural materials

Courses

- Winter 2021, 2022*: Environmental Systems 102, The Solid and Fluid Earth
- Spring 2021*: SIOG 249, Climate change impacts on Arctic Indigenous People
- Winter 2022*: SIOG 269, The Black Box of graduate school; Hidden curriculum
- Spring 2022*: SIOG 269, Biogeochemical applications of traditional and non-traditional stable isotopes to diverse problems in Earth Science

Academic Service

Peer review:

2014-present: Manuscript Reviewer for journals including *Journal of Geophysical Research-Atmospheres*, *Journal of Geophysical Research-Oceans*, *Geophysical Research Letters*, *Environmental Science and Pollution Research*, *Global and Planetary Change*, *Earth and Planetary*

Science Letters, Chemical Geology, Quaternary Science Reviews, Quaternary Research, Climate of the Past, Nature Communications, Atmospheric Environment, Science, Paleoceanography and Paleoclimatology, Nature Geoscience, Science Advances, ACS Earth and Space Chemistry
2022: Panelist for National Science Foundation (Geobiology and Low-Temperature Geochemistry)
2020, 2021: Ad hoc proposal reviewer for National Science Foundation
2020, 2021: Panelist for National Science Foundation (Navigating the New Arctic program)

National & International organizations:

2021-2022 Chapter Author for Climate Trends chapter of the Fifth National Climate Assessment (NCA5)
2021-2022 2022 Goldschmidt Theme Chair for Theme 10: Earth Surface Processes from Weathering to Climate Change
2021 Moderator for National Academy of Science organized “Identifying New Community-Driven Science Themes for NSF’s Support of Paleo Perspectives on Climate Change (P2C2)”
2020 Panelist, Ford Foundation Conference
2020-present Interagency Arctic Research Policy Committee (IARPC) Diversity and Inclusion Leadership team
2020 Invited participant, Geological Society of America Executive Committee meeting on Equity, Diversity, & Inclusion
2018 Session Convener, Goldschmidt Conference, Boston, MA

University Service:

2020-present Environmental Systems Program Advisory Committee, Scripps Institution of Oceanography
2019-present Ad hoc reviewer for faculty review
2019, 2020 Reviewer and panelist for University of California Presidential Postdoctoral Fellowship Program (PPFP)
2019-2020 Alternate for UCSD Representative Assembly Meetings (SIO representative)
2019-present Workshop facilitator at UC Presidential Postdoctoral Fellowship Program Fall & Spring meetings

Departmental Service:

2020-present Diversity Advisory Committee, SIO
2021-present Diversity Admissions Committee, SIO
2021-present Graduate Student admissions co-chair for Geosciences curricular group, SIO
2021-present Diversity Admissions Committee, SIO
2021-present SIO Space Committee
2021 Geosciences First Year Exam Chair, Scripps Institution of Oceanography (SIO)
2020-2021 Graduate Student Open House coordinator for Geosciences curricular group, Scripps Institution of Oceanography
2020 Tectonics Faculty Search Committee