



DR. ALEXANDRA ATLEE PHILLIPS

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WEBSITE

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EDUCATION

2018 - 2021

PhD Geochemistry

Caltech | Department of Geological and Planetary Sciences

- Defended thesis "Sulfur cycling in the water columns of lakes and oceans"
- Created novel analytical methods to study nutrient cycling
- Applied new techniques to investigate climate change impacts on diverse aquatic ecosystems
- First-authored four scientific papers and wrote a successful \$295,000 NSF chemical oceanography research grant

2015 - 2018

MSc Geochemistry

Caltech | Department of Geological and Planetary Sciences

2011 - 2015

BA Biology

UCSB | College of Creative Studies

- Graduated with highest academic honors with GPA of 3.9
- Received the University Award of Distinction for service to the school (offered to ten students annually)

WORK EXPERIENCE

2022 - present

Science Communication and Policy Officer

UCSB | National Center for Ecological Analysis and Synthesis

- Managed the center's external communications, including their newsletter, press releases, social media, and website
- Developed logos, one-pagers, and infographics to translate key science messages to diverse stakeholders
- Launched \$3.5 million Gulf Ecosystem Initiative with NOAA RESTORE science team to fund climate change research
- Organized meetings with staffers from 8 California agencies to co-develop climate resiliency programs
- Received 10+ hours of formal communication training from COMPASS on risk, partisanship, and messaging

2021 - 2022

Postdoctoral Scholar

UCSB | Earth Science Department

- Led interdisciplinary project on Lake Superior nutrient cycling in collaboration with University of Minnesota Duluth
- Uncovered new pathway of sediment carbon storage by combining microbiological and chemical methods
- Managed team of four PIs, two staff, and three students

SELECTED POLICY, COMMUNICATION & OUTREACH

2018 - 2022

Founder

Women Doing Science

- Created Instagram, Twitter, and Facebook pages to promote diverse examples of international women in STEM
- Posted and edited 800+ stories to a general, non-scientific audience on social media, 30% of posts were bilingual
- Grew science communication platform to ~100k followers
- Recruited and managed 50+ international volunteers
- Led data-driven case study on Instagram post impacts

2016 - 2021

Tutor

Caltech Y RISE Program

- Tutored 20+ socioeconomically disadvantaged middle and high school students who were failing math or science
- Met with students twice a week for two hour sessions
- Led tutor workshops and trainings for 100+ new volunteers
- Founded summer program extension for free math prep

2019 - 2020

Science Policy Fellow

American Geophysical Union (AGU) Voices for Science

- Facilitated meetings between 12 Caltech scientists and staff of U.S. Rep. Judy Chu and U.S. Sen. Diane Feinstein
- Successfully gained co-sponsorship on specific legislation related to STEM education and science funding
- Co-authored peer reviewed publication on how academics can start engaging in federal science policy

2009 - 2019

Docent

Birch Aquarium | Scripps Institution of Oceanography

- Translated ocean science to general audiences of all ages, including individual interactions, aquarium tours to groups of ~10, and weekly kelp tank shows for 50+ guests
- Connected aquarium exhibits to pertinent societal issues like climate change, sea level rise, and overfishing

SELECTED AWARDS

January 2021

AGU Outstanding Presentation Award

Top 2% of conference presentations in oceanography

November 2020

Caltech GSC Mentorship Award

Awarded annually to two students for excellence in mentoring

June 2020

Caltech GPS Diversity, Equity, and Inclusion Outreach Award

Awarded once to three students for exceptional outreach

May 2020

Caltech Y Lucy Guernsey Service Award

Given annually to two students for community volunteer service

January 2020

AGU Outstanding Presentation Award

Top 2% of conference presentations in science education

June 2019

Birch Aquarium Ten Years of Service Award

Given to volunteer docents in recognition of a decade of service

SELECTED TEACHING & MENTORING

2020 - 2021

Instructor of Record

UCSB | Readings in Geoscience DEI

- Piloted new social science reading course for Earth Science Department offered to nine undergrad and grad students
- Designed inclusive curriculum around proven pedagogical techniques like serial testimony

2016 - 2021

Teaching Assistant

Caltech | Anatomy of an IRMS; Organic Geochemistry; Stable Isotope Geochemistry; Introduction to Geobiology

- Developed rubrics for transparent problem set grading
- Hosted weekly office hours and active learning review sessions before midterms and finals

2015 - present

Workshops and Trainings

NCEAS | Inclusive Language; Building Personal Science Websites; Photographing Science; Intro to Graphic Design for Scientists

- Designed a science communication curriculum with 14 hour and a half modular workshops, including learning goals, active learning activities, and expected products
- Offered workshops to groups between 5 and 50 participants of visiting and resident scientists and students

Caltech | A Ten Step Guide for Engaging in Policy; Community Outreach Opportunities; Building Relationships with Students

- Volunteered to lead various workshops across science communication, art, and policy for the Caltech community

2015 - present

Formal Mentoring

UCSB | UC LEADS Program

- Acted as a long-term (ongoing, >1 year) mentor for an undergrad to supervise research and career development
- Created mentorship plan, including pathway to authorship on conference abstracts and scientific publications

Caltech | Westridge School for Girls Research in Science Program

- Mentored three students for one year each, supervising weekly research shifts and guiding independent projects
- Collaborated with students on writing scientific papers and conference abstracts

SKILLS

Creative

Photography | *Lightroom, Photoshop*
Graphic Design | *Illustrator, Affinity Designer*

Technical

Data Analysis | *MATLAB, R, Excel*
Web Design | *HTML, CSS*

FIELDWORK

Oceanography

2020 | R/V Atlantic Explorer (BATS-372), 7 days
St Georges, Bermuda

2015 | R/V Atlantis (SEEPS-15), 18 days
St. Petersburg, FL

2013 | R/V Atlantis (SEEPS-13), 21 days
San Francisco, CA

Limnology

2021 | R/V Blue Heron (ORGS-2), 4 days
Duluth, MN

PUBLICATIONS

Marine, Earth & Climate Sciences

Capece LR, Morrison M, **Phillips AA**, Webb SM, Raven MR. Organic sulfur and pyrite formation as pathways of carbon preservation in a Southern California salt marsh. [In Preparation](#).

Crotteau M, Fishburn JS, **Phillips AA**, Webb SM, Raven MR. High resolution Santa Barbara Basin cores reveal dynamics of sulfurization and pyrite formation. [In Preparation](#).

Phillips AA, Ulloa I, Hyde E, O'Malley KG, Agnich J, Sharpnack L, Webb SM, Schreiner K, Sheik CS, Katsev S, Raven MR. Sedimentary organic sulfur from source to sink in Lake Superior. [In Preparation](#).

Phillips AA, White ME, Seidel M, Wu F, Pavia FJ, Kemeny PC, Ma AC, Aluwihare LI, Dittmar T, Sessions AL. Resolving sources of marine dissolved organic matter (DOM) via novel sulfur isotope analysis. *Proceedings of the National Academy of Sciences*. 119: 1-8. [10.1073/pnas.2209152119](https://doi.org/10.1073/pnas.2209152119)

Silverman SN, **Phillips AA**, Weiss GM, Wilkes E, Eiler J, Sessions AL. Practical considerations for amino acid isotope analysis. (2022). *Organic Geochemistry*. 164: 1-18. [10.1016/j.orggeochem.2021.104345](https://doi.org/10.1016/j.orggeochem.2021.104345)

Phillips AA, Speth DR, Miller LG, Wang XT, Wu F, Medeiros PM, Monteverde DR, Osburn MR, Berelson WW, Betts HL, Wijker RS, Mullin SW, Johnson HA, Orphan VJ, Geobiology Course 2018, Geobiology Course 2018, Sessions AL. (2021). Microbial succession and dynamics in meromictic Mono Lake, CA. *Geobiology*. 19: 376-393. [10.1111/gbi.12437](https://doi.org/10.1111/gbi.12437)

Phillips AA, Wu F, Sessions AL. Compound-specific sulfur isotope analysis of cysteine and methionine via preparatory liquid chromatography and EA-IRMS. (2021). *Rapid Communications in Mass Spectrometry*. 35: 1-13. [10.1002/rcm.9007](https://doi.org/10.1002/rcm.9007)

Policy, Outreach & Communication

Gaynor K, Azevedo A, Boyajian C, Brun J, Budden A, Cole A, Csik S, DeCesaro J, Do-Linh H, Dudney JK, García CG, Leonard S, Lyon NJ, Marks A, Parish J, **Phillips AA**, Scarborough C, Smith J, Thompson M, Poulsen CV, Fong CR. Ten simple rules to cultivate belonging in collaborative data science research teams. (2022). *PLOS Computational Biology*. [Accepted](#).

Phillips AA, Walsh CR, Grayson KA, Penney CE, Husain F, Women Doing Science Team. Diversity on social media: a case study with the Women Doing Science Instagram. (2022). *Social Media and Society*. 8: 1-17. [10.1177/20563051221113068](https://doi.org/10.1177/20563051221113068)

Hetherington ED, **Phillips AA**. A scientist's guide for engaging in policy in the United States. (2020). *Frontiers in Marine Science*. 7: 1-8. [10.3389/fmars.2020.00409](https://doi.org/10.3389/fmars.2020.00409)

SELECTED TALKS

Marine, Earth & Climate Sciences

Phillips AA, et al. (2022). Does sulfurized organic matter linger in the deep ocean's old carbon? *Ocean Sciences Meeting*.

Phillips AA, et al. (2019). Microbial succession in hypersaline, alkaline Mono Lake, CA. *AGU*.

Phillips AA, et al. (2018). Compound specific $\delta^{34}\text{S}$ measurements of the sulfur amino acids cysteine and methionine. *Organic Geochemistry Gordon Research Conference*. [Invited](#).

Phillips AA, et al. (2018). Compound specific sulfur isotopes of the amino acids cysteine and methionine. *AGU*.

Phillips AA, et al. (2017). Dynamics of biogeochemical sulfur cycling in Mono Lake. *AGU*.

Policy, Outreach & Communication

Phillips AA. (2022). Vector graphics for science illustration. *LTERR All Scientists Meeting*.

Phillips AA, De La Rosa GT. (2022). Shooting for story: Capturing more engaging science photos. *LTERR All Scientists Meeting*.

Phillips AA, et al. (2020). Science communication lessons from the Women Doing Science Instagram. *AGU Fall Meeting*. [Invited](#).

Phillips AA. (2019). How eight doctors learned to talk to policymakers. *AGU Fall Meeting*. [Invited](#).

Phillips AA, et al. (2019). Communicating science to the world from your phone:: stories from the Women Doing Science Instagram. *AGU Fall Meeting*.