

Dr. Alexandra Phillips

University of California, Santa Barbara
Marine Chemistry and Geochemistry
July 28-29

Alexandra Atlee Phillips is an Assistant Teaching Professor at the Bren School of Environmental Science & Management at the University of California, Santa Barbara. Her teaching and research focus on environmental communication to students, scientists, policymakers, and the public. Alex is particularly focused on how diverse audiences develop their STEM identities, or their sense of belonging, in scientific fields. She joined the Bren School after a AAAS STPF Fellowship in Climate Science, where she wrote environmental policy for U.S. Senator Alex Padilla. Prior to her year in Congress, Alex ran communications for the National Center for Ecological Analysis and Synthesis (NCEAS) at UCSB. She was also a postdoc at UCSB and the Large Lakes Observatory at University of Minnesota, Duluth where she investigated carbon sequestration in Lake Superior. She holds a PhD from Caltech in geochemistry, where she studied sulfur and carbon cycling in lakes and oceans. She did her bachelor's in biology at UCSB in the College of Creative Studies.

Scheduled Talks

- July 28th, 11:30am-12:30pm: Institution-wide seminar in Clark 507. Student lunch will follow.
Diversifying STEM and ocean identities through science communication
In the absence of real-life role models, students turn to the media for cues about who scientists are—and who they can become. But traditional media reinforces narrow, exclusionary images of scientists. This talk explores how science communication can be used to create alternative media—here, in the form of social media posts, interactive apps, and science podcasts—to diversify representation and strengthen students' science and ocean identities. First, I present findings from *Women Doing Science*, a global Instagram platform that highlighted over 800 stories of diverse, international women in STEM to an audience of over 100,000 people. Ongoing work transforms this content into a Shiny app to bring diverse role models directly into K-12 classrooms. Next, I turn to undergraduate classroom interventions using the *Ocean Solutions* podcast. By featuring diverse ocean professionals and their stories, the podcast fosters a stronger sense of connection to the ocean, career awareness, and student belonging. These projects demonstrate the powerful role of media-based representation in shaping more inclusive visions of who participate in STEM and ocean science.
- July 29th, 12:15pm- 1:15: Department-wide seminar, in Clark 507
Organic sulfur from source to sink: The surprising role of sulfurization in large lakes and the global ocean
Organic sulfur is increasingly recognized as central to aquatic biogeochemistry, but key questions remain about its sources and sinks. This talk explores two such mysteries, one

in Lake Superior and one in the global ocean, revealing a surprising role for reactions between sulfide and organic matter, known as sulfurization. In the global ocean, we combine novel sulfur isotope ($\delta^{34}\text{S}$) measurements with X-ray Absorption Spectroscopy (XAS) to trace sources of sulfur in dissolved organic matter throughout the water column. In the anoxic, low-sulfate sediments of Lake Superior, we pair XAS with metagenomics to investigate the chemical and biological sinks of organic sulfur. These case studies present new models of sulfur cycling— systems centered on the dynamic transformations of organic sulfur.

Dr. Justin Mankin

Dartmouth College

Geology and Geophysics

August 4-5

Prof. Justin: Mankin is an associate professor of geography at Dartmouth and director of the Climate Modeling & Impacts Group. Beyond editorial duties with AGU and AMS (Earth's Future and Journal of Climate) he serves on a number of professional service committees including with US CLIVAR AMS CVC UCAR the National Climate Assessment and the National Academies. His previous career was as an intelligence officer working in South Asia and the Middle East and he received the 2024 American Geophysical Union Global Environmental Change Early Career Award. He holds degrees from Columbia (BA, MPA) the London School of Economics (MSc) and Stanford (PhD).

Scheduled Talks

- August 4th, 3pm: Institution-wide seminar at Redfield Auditorium. (BBQ social & networking will follow)

Documenting and projecting the human costs of climate change

How will climate change affect people and the things they value? Drawing on examples from violent conflict, economic growth, and water resources, I highlight my group's research to inform society's management of climate risks with implications for everything from emergency management to climate liability. Our work looks retrospectively, documenting and attributing the impacts that have already unfolded, and prospectively, helping to anticipate the ones to come. Across all of this work I discuss our efforts to (1) meaningfully connect geophysical changes with human consequences, (2) quantify attribute and constrain uncertainty especially given structural data inequities, and (3) inform model design and analysis choices to ensure that scientific answers about our present and future are sound, transparent, reproducible, useful, and just. Collectively, my research and that of my group

demonstrates the importance of science that spans both fundamental and applied questions of climate impacts to inform adaptations and prepare society for a warmer world.

- August 5th, 10:30am- 11:30am: Department-wide seminar at Clark 507

The future of continental water availability

Two views on future continental aridity have emerged in the literature both relatively simple: the first is that evaporative demands over land will increase with warming and that this will tend to dry the land surface. The second says that increased precipitation alongside plant responses to CO₂ will tend to wet the land surface. Which of these pictures of future is correct? Here I present an emerging body of evidence around how carbon and water interact with other thermodynamic drivers of hydroclimate change to shape water availability at the land with implications for future drought and water management.

- August 5th, 12pm-1pm: Students Pizza Lunch and informal Q&A at the Carriage House