



University of California – Santa Barbara

April 29, 2023

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Schedule

Please note we have slight variations in the timing of some of the oral sessions between geobiology and geomorphology to allow staggering of breaks. We will be doing our best to keep to these schedules!

Geobiology

9:30 - 10: Breakfast and registration
10 - 10:15: Welcome and introduction
10:15 - 11:20: Oral Session 1
11:20 - 12: Poster Session 1
12 - 1: Lunch
1 - 2:05: Oral Session 2
2:05 - 2:20: Coffee break
2:20 - 3:40: Oral Session 3
3:40 - 4: Closing remarks
4 - 5:30: Poster Session 2 & Happy Hour
5:30 - 7: Dinner

Geomorphology

9:30 - 10: Breakfast and registration
10:00 - 10:15: Welcome and introduction
10:15 - 11:20: Oral Session 1
11:20 - 12: Poster Session 1
12 - 1: Lunch
Optional: Flume lab tour
1 - 2:20: Oral Session 2
2:20 - 2:35: Coffee break

2:35 - 3:40: Oral Session 3

3:40 - 4: Closing remarks

4 - 5:30: Poster Session 2 & Happy Hour

5:30 - 7: Dinner

Oral Presentations – Geobiology

Session 1

10:15-10:35 Investigating the causes of the Ediacaran “Kotlin crisis”

Adam Hoffmann, Kelden Pehr, Anton Kuznetsov, Victor Podkovyrov, Leonid Shumlyanskyy, Tetyana Sokur, Andrey Bekker, and Gordon Love

10:35-10:55 Tonian Sterane Patterns: Complex life before Snowball Earth

Adriana I. Rizzo, Andrey Bekker, Victoria Ershova Karl E. Karlstrom, Gordon D. Love

10:55-11:15 The Role of Marine Group II Archaea in the Degradation of Cyanobacteria-Derived Alkanes

Eleanor Arrington, Joshua Qin, Sara Matsumara, Kelsey Gosselin, Connor Love, and David Valentine

Session 2

13:00-13:20 Convergence and horizontal transfer drive the evolution of anaerobic methanotrophy in ANME-3

Philip Woods, Daan Speth, Rafael Laso Pérez, Dan Utte, Ranjani Murali, Hang Yu, Gray Chadwick, Victoria Orphan

13:20-13:40 Transport of microbial assemblages via subsurface eddy activity off the Oregon coast

Alexis E. Floback, James W. Moffett

13:40-14:00 Last Glacial Maximum Deep Ocean Preformed Nitrate Reconstruction: Implications for Glacial Carbon Storage

Kira Homola, Arthur Spivack, Rebecca Robinson, Richard Murray

Session 3

14:20-14:40 Assessing climate and land use sensitivity of the California soil methane sink

Hannah Dion-Kirschner, Elin Larsson, Katie R. Huy, John S. Magyar, And Woodward W. Fischer

14:40-15:00 Investigating the impact of intra-marsh habitat variability on organic matter sulfurization and pyrite formation

Capece, L. R., Bailey, M., Phillips, A. A., Webb, S., Brenner, D., Gomes, M., Raven, M. R.

15:00-15:20 Comparing Precambrian Granular Iron Formations and Phanerozoic Oolitic Ironstones – Similar Beasts with Different Origins?

Alex Kovalick, Andrey Bekker, Andrew Heard, Maria Prokopenko, Robert Gaines

15:20-15:40 Microbial Biosignature Preservation In Ancient Evaporites From San Pedro De Atacama, Chile

Jon Lima-Zaloumis, Michael Tuite, Lucas Reynoso, Elizabeth Trembath-Reichert

Oral Presentations – Geomorphology

Session 1

10:15-10:35 Examining the influence of disequilibrium landscape on millennial-scale erosion rates in the San Bernardino Mountains, California

Marina O. Argueta, Seulgi Moon, Kimberly Blisniuk, Nathan D. Brown, Lee B. Corbett, Paul R. Bierman, Susan R. H. Zimmerman

10:35-10:55 Streams, hillslopes, and erosion rates along the San Gabriel range front, California: Evaluating the along-strike slip-rate gradient

Andre Mere, Devin McPhillips

10:55-11:15 Using Foraminifera to Identify Earthquakes Along The Northern San Andreas Fault

Claire Divola, Alex Simms

Session 2

13:00-13:20 Quantifying mercury stored in Alaskan permafrost soils in the Yukon River Basin

M. Isabel Smith, Emily Seelen, Madison Douglas, Yutian Ke, John S. Magyar, EA Mutter, Woodward W. Fischer, Michael P. Lamb, A. Joshua West

13:20-13:40 Discontinuous permafrost degradation following meandering of the Koyukuk River, Alaska

Madison M. Douglas, Gen K. Li, A. Joshua West, Yutian Ke, Joel C. Rowland, Jon Schwenk, Preston C. Kemeny, Anastasia Piliouras, Woodward W. Fischer, Michael P. Lamb

13:40-14:00 Generating risk maps for river migration using probabilistic modeling

Brayden Noh, Omar Wani, Kieran Dunne, and Michael Lamb

14:00-14:20 Runaway riverbank erosion drives multi-thread channel morphologies

Austin J. Chadwick, Evan Greenberg, and Vamsi Ganti

Session 3

14:35-14:55 Geomorphology and Sediment Transport within a Headland Bypass Dune System Restoration Project at the Jack and Laura Dangermond Preserve

Madison Heffentrager, Ian Walker

14:55-15:15 Characterizing Longshore Drift and Shoreline Dynamics to Infer Microcells of the Southern California Coast

Daniel T. Kahl, Lawrence Vulis, Jochen Schubert, Brett F. Sanders

14:15-14:35 Formation of martian hourglass landforms by groundwater seepage and overland flow in cratered and confined landscapes

Abdallah S. Zaki, Dongchen Wang, Samantha Baker, Michael P. Lamb

List of posters

Geobiology

Victoria Cassady - **Micro-elemental Analysis of Stromatolites Reveal Fe as Potential Biosignature and Remnant of a Lithification Mechanism**

Grayson Chadwick - **Isolation and characterization of a methanogenic *Archaeoglobi***

Jordan Chastain - **Metabolic exchanges between soil bacteria and a unicellular chlorophyte**

Dani Cox - **Methane and phosphorus liberation at the sea surface by macroalgal holobionts**

Molly Crotteau - **Dynamics of sulfurization and pyrite formation in Santa Barbara Basin**

Tracy Donelli - **Assessing formation conditions of turbidite-hosted carbonate concretions of Ridge Basin, CA using $^{87}\text{Sr}/^{86}\text{Sr}$, $\delta^{18}\text{C}$, and CIW**

Natalya Evans - **More than deoxygenation: linking iodate reduction to nitrogen, iron, and sulfur chemistry in reducing regimes**

Jordan Fishburn - **The Sulfurization Potential of Biopolymers: Applications for CDR**

Avi Flamholz - **Engineering microbes to learn about the Earth: biological constraints on pCO_2**

Linton Freund - **Seasonal variation in bacterial diversity throughout a hypersaline water column**

Arkadiy Garber - **Genome stasis over millions of years in bacterial isolates from subseafloor sediment**

Beatrix Heinze - **Rock-leached organic carbon drives subsurface microbiomes**

Hailie Kittner - **Marine Microbial Response to Hydrocarbon Inputs in Two Regions of Prolific Oil Seepage**

Sebastian Krause - **Cryptic methane cycling along a salinity gradient in a California coastal wetland**

Fan Liu - **Silicate weathering and organic carbon burial reconstructed from sediment records offshore of Papua New Guinea**

Jiarui Liu - **Methane clumped isotope effects of simultaneous microbial methanogenesis and anaerobic oxidation of methane**

Nathan Marshall - Assessing Early Paleozoic marine chemistry and biology from a lipid biomarker perspective

Daisy Martinez and Jennifer Rodriguez - Can Manganese Photosynthesis Support Growth?

Kento Motomura - Nitrogen bioavailability in the late Paleoproterozoic ocean

Alyssa Ng - The Purification of the Manganese Oxidizing protein, MopA-hp, found in *Erythrobacter* sp. SD-21

Melonie Nguyen - Assessing carbonate concretion formation mechanisms within the lower Miocene Rincon Shale, CA

Manuel Oscar Almacén - Chicken gut microbiome: Ceca as the nexus for microbe-bird symbiosis

Qianhui Qin - Seasonality of Water Column Methane Oxidation and Deoxygenation in a Dynamic Marine Environment

Gustavo A. Ramírez - Aerobic Bacterial Methane Cycling by the Marine Sponge Microbiome: Implications for Global Budgets of a Potent Greenhouse Gas?

Caleb Rosen - Microbial Metabolism for Greenhouse Gas Removal: Bioenergetics of Linked Methane and Nitrous Oxide Consumption

Calvin Rusley - Exploring the Limits of Anaerobic Methanotrophy in a Sub-Zero, Hypersaline Brine Spring

Shiva Sadeghpour - Proteorhodopsin Prevalence and Spectral Tuning Across Polyextreme Photic Niches in Mojave Desert Biocrust

Jacob Schmidt - Spatial distribution of DDT and related compounds in San Pedro Basin, California

Miranda Herschel Seixas - Characterization of microbial diversity in the Winter Wonderland Ice Cave, Uinta Mountains, Utah, USA

Shaelyn N. Silverman - Amino acid D/H analysis as a novel tool for interrogating marine particulate organic matter turnover

Eve S. Sindermann - Insights into Algal Diel Physiology and Biotic Interactions from Field Isolates of *Chlamydomonas reinhardtii*

Rachel So - A 220 ky biomarker record of glacial-interglacial climate at Bear Lake (UT/ID)

Priyanka Soni - **Classifying the nature of invasion: A trait-based analysis of extralimital mollusks from the Quaternary to present southern California**

Jonathan Tarn - **Polyextremophilic adaptations in sedimentary hypersaline microbes**

Christopher Tino - **Dampened nitrogen cycling can manifest as elevated ^{15}N in the sediments of shallow alkaline-hypersaline lakes**

Chenyi Tu - **Revisiting the mid-Proterozoic Marine Oxygenation Event at ~1.1 Ga**

Ginny Winters - **Redox conditions and nutrient cycling in the upwelling zone of P-rich deep-waters onto the shallow-marine, carbonate platform: the ca. 1.7 Ga Jhamarkotra Formation of the Aravalli Supergroup, India**

Geomorphology

Hussain Alqattan - **Using Repeat LiDAR Surveys to Investigate Persistent Geomorphic Patterns in Wax Lake Delta, Louisiana**

Samantha R. Baker - **Remote Sensing Spatial and Temporal Patterns of Alaskan River Temperature**

Connor Broaddus - **Satellite-based LiDAR illuminates fundamental characteristics of alluvial topography**

Debsmita Das - **Experimental investigation of the dynamics and preservation of superimposed bedforms**

Jessica V. Fayne - **Multi-Scale DEM and Image Analysis for Hydrogeomorphology Studies**

Evan Greenberg - **Area-based measurements of river mobility: Examining planform differences in floodplain erosion and channel-belt mobility**

Elizabeth Horton - **Tectonic forcings, topographic growth, and silicate weathering rates across a low-altitude uplifting margin**

Emily Huffman - **The Importance of Autogenic Processes in the Development of Beach Ridges in Areas Undergoing Uplift Due to Post-glacial Rebound**

Amanda Roeliza Hunt - **Global Patterns of Excess Topography across Seismically Active Mountain Ranges**

Yutian Ke - **Organic carbon dynamics during sediment transport and floodplain storage in the Yukon River Basin**

Boontigan Kuhasubpasin - **The relationship between stresses, faults, and rivers reveals variations in lithospheric strength**

Elisa Medri - **Subaqueous clinoforms created by sandy wave-supported gravity flows: Lessons from the Central California shelf**

Benjamin Newcomb - **Soil type and vegetation controls on the distribution of saturated hydraulic conductivity following the 2018 Woolsey Fire**

Justin A. Nghiem - **The transport properties of mud flocs in rivers and freshwater wetlands**

Ryan Owings - **Subsurface Analysis and Geologic History of UCSB Campus Lagoon, California**

Jocelyn N. Reahl - **Using Turbidity As A Proxy To Measure Suspended Sediment Concentration In The Koyukuk River (Alaska)**

Maria N. Schmeer - **Towards Producing Single-Threaded Channels in the Laboratory**

Dongchen Wang - **Mud transport, erosion, and deposition patterns in Wax Lake Delta, Louisiana**

Abstracts – Geobiology

 Geobio Abstracts - All

Abstracts – Geomorphology

[Geomorph abstracts -all](#)

Code of Conduct

The Southern California Geobiology Symposium is committed to being a welcoming, collegial, and positive environment for civil discussion and sharing of knowledge for *all* participants.

The following behaviors are expected of attendees of the 2023 SoCal Geobiology and Geomorphology Symposia (from the [Paleontological Society's code of conduct](#) and UC Riverside's 18th Annual SoCal Geobiology Symposium):

1. Attendees will treat others with dignity and respect, regardless of their own or another's race, color, national or ethnic origin, immigration status, religion, age, marital status, parental status, sex, sexual orientation, gender identity or expression, socioeconomic background, educational background, disability, or military service or veteran status.
2. Attendees will communicate with civility.
3. Attendees will give fair and equitable consideration to all students, postdoctoral scholars, faculty, professionals, and amateurs, regardless of their race, color, national or ethnic origin, immigration status, religion, age, marital status, parental status, sex, sexual orientation, gender identity or expression, socioeconomic background, educational background, disability, or military service or veteran status.
4. Attendees engaged in student mentoring will encourage all students in a respectful manner that is inclusive of diverse backgrounds and experiences and recognizes that education is fundamental for the promotion of student learning and professional development.
5. Attendees will observe the guidelines for the reporting of prohibited behavior (see section 6 in the Paleontological Society code of conduct), and recognize that such guidelines are in effect at all times during the meeting.
6. Attendees will not attempt to injure the reputation or professional opportunities of others by false, biased, or undocumented claims.
7. Attendees will not practice, incite, encourage, or condone prohibited behavior (see Prohibited Behaviors below), including but not limited to harassment in any form.

The following behaviors are prohibited during the Southern California Geobiology Symposium:

1. Harassment in any form, including sexual harassment, denigrating jokes, stereotyping, or a recurring pattern of microinvalidations, microassaults, microaggressions, and microinsults
2. Physical abuse or intimidation, including disregard for another's safety
3. Verbal or written abuse or intimidation (in-person or remotely), including but not limited to: harmful or negative comments related to race, color, national or ethnic origin, immigration status, religion, age, marital status, parental status, sex, sexual orientation, gender identity or expression, socioeconomic background, level of education, disability, or veteran status
4. Violating the previously communicated (verbally or nonverbally) physical, emotional, and sexual boundaries of others through the continuation of otherwise prohibited behaviors, or through verbal or written comments founded on any personal aspect of another individual
5. Photographing, recording, or video-taping of others and/or the dissemination or distribution of photographs, recordings, or video-tapings of others without their consent.
6. Intentional, unwelcomed physical behaviors (in-person or remotely), including but not limited to: stalking, physical contact, and aggressive or intimidating displays and/or body language
7. Threats (implied or real) of physical, emotional, professional, or financial harm
8. Any other behaviors that may reasonably be assumed to have the effect of creating, contributing to, or maintaining an environment that is hostile toward or damaging to a person or group

Consequences of prohibited behaviors:

- Anyone requested to stop prohibited behavior will be expected to immediately cease that behavior.
- Meeting organizers may institute disciplinary actions, including immediate and permanent removal from the Symposium.

Reporting prohibited behaviors:

Please report any real or reasonably perceived prohibited behaviors to the meeting organizers.

Logistics



- **Parking:** Please park in Parking Structure 10 on the top floor (there should be signs at the entrance of the parking structure saying that). To avoid paying, you will have to input this code into the paystation along with your license plate number: **042923**
 - Campus is very bike friendly! Please keep an eye out for bikers when you are driving and walking
- **Events:** Everything will be held at Bren Hall and the Marine Science Building. Food, breaks, and poster sessions will be in the courtyards. Oral sessions will be

in the lecture halls (geomorph in Bren, geobio in MSB). We will have overflow rooms set up in case there are too many people

- **Health:** Please consider wearing a mask while in the lecture halls
- **Sustainability:** Feel free to bring your own coffee cup and/or plates/tupperware if you want to be sustainable! Bring a water bottle! We have filtered water stations (we will also have water bottles available, though)
- **Contacts:** Feel free to ask any of the organizing committee members for help. If you have trouble parking or finding the building, feel free to text/call Marianna at 571-337-6546
- **Recording:** Please do not record any oral sessions or take pictures of posters without permission from the speaker/presenter

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Geography



Locations of interest nearby

Cafes/convenience stores open on campus:

- The Arbor
- Starbucks
- Vending machines nearby (outside Frank Hall)

Sunset:

- 7:42 pm
- Good places to see it
 - Goleta Beach
 - 2nd floor balcony of MSI/Bren
 - Campus Point
 - Sands Beach
 - Stearn's Wharf (downtown)

Breweries in Goleta:

- M Special
- Draughtsmen
- Hollister Brewing Co
- Captain Fatty's
- Santa Barbara Cider Co

Cocktails in Goleta:

- The Imperial
- Roof Top Bistro and Bar

Food/drink in Isla Vista (mostly populated by undergrads and sometimes chaotic on weekends, just as a warning):

- Woodstock's Pizza (and beer)
- IV Pizza Pub
- Caje (smoothies and coffee)
- Super Cucas (burritos and Mexican)
- Freebirds (burritos)
- IV Drip (coffee and ice cream)

Downtown Santa Barbara:

- The Funk Zone (section of downtown with lots of breweries, bars, restaurants, etc. Usually live music on weekends)
- State Street - closed to cars. Lots of bars/restaurants/music

- Lots of paid lots. First 75 minutes free, free after 11 pm. Check prices/restrictions on individual lots, but many are \$2.50/hr outside of those times