



**NEWS FROM THE
EARTH & PLANETARY SCIENCES
DEPARTMENT
AT UC SANTA CRUZ**

FALL 2023



Chair's welcome

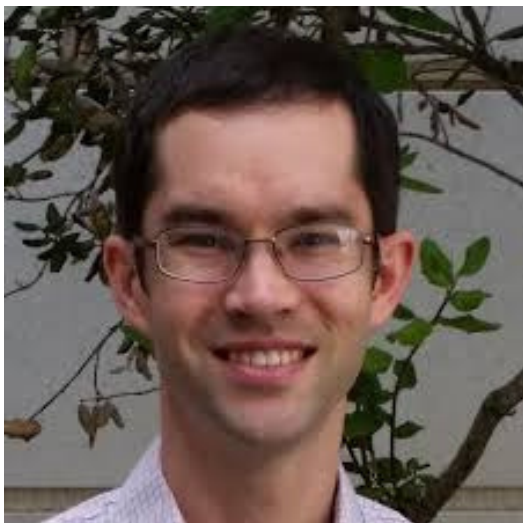


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www.facebook.com/UcscEPS

Dear Friends of EPS,

I hope you've enjoyed a happy and successful 2023! It's been another great year here at EPS – we've marked some milestones, celebrated awards, honored retiring colleagues, and welcomed some new members to the department.

Spring 2023 saw the graduation of the inaugural cohort of students who entered when the Environmental Sciences major launched in 2019. While these are not the first graduates, due to earlier students switching in to the major, it's nevertheless an exciting milestone! Over those four years, the number of students in the major has grown to more than 250, reflecting the interest in environmental issues. This growth hasn't come at the expense of Earth Sciences, which is holding strong at around 200 majors, making us one of the largest departments in the country.

EPS faculty and students continued to be recognized for their outstanding work. As always, you can read about the many accolades later in this newsletter, but I want to highlight Emily Brodsky's election to the National Academy of Sciences, one of the highest recognitions in the Earth sciences! Emily joins an illustrious group of EPS faculty in the National Academy, a tribute to her innovative work in seismology.

This year saw a flurry of departures, as Margaret Zimmer left for a job at the USGS closer to family, and Thorne Lay, Susan Schwartz, and Jim Zachos all retired. Of course, Thorne, Susan, and Jim are still active around the department, as they couldn't quit research cold turkey! We also welcomed several new faces this year. On the technical staff, Miguel Cruz started as a new instrument specialist (following Dan Sampson's retirement last year) and Erick Cano is the new manager of the stable isotope lab. Amy Kornberg moved up to be the assistant department manager, primarily responsible for Ocean Sciences, and Allison Curtis has joined the team as our new department assistant.

The AGU fall meeting is back in San Francisco this year, and we're excited to catch up at our annual alumni reunion – Tuesday December 12 from 6-8:30 PM. The Thirsty Bear has unfortunately

Chair's welcome - continued

closed, but we've lined up a great venue at The Chieftain Irish Pub, only a block from the Moscone Center at 198 5th Street!

Thanks to those of you who shared updates for this newsletter – it's fantastic to hear what you've been up to! Please stay in touch and let us know about your accomplishments. As always, we're pleased to share our latest news and updates, and I hope this newsletter rekindles some fond memories from your time at UCSC.

Best wishes,



Matthew Clapham



Credit: Hilde Schwartz

PLEASE JOIN US FOR THE

EPS ALUMNI RECEPTION
AT AGU IN
SAN FRANCISCO



TUESDAY, DECEMBER 12TH 6-8:30PM

THE CHIEFTAIN IRISH PUB & RESTAURANT

198 5TH STREET
SAN FRANCISCO, CA 94103

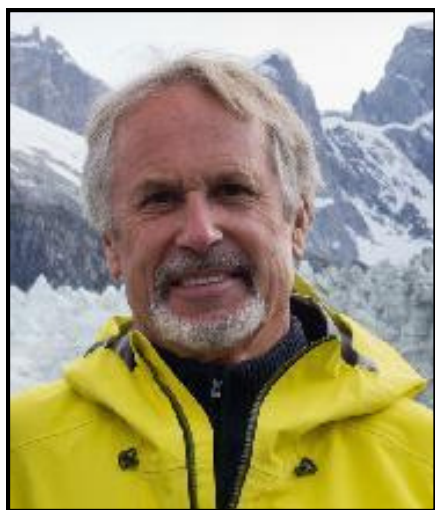
Department News



Emily Brodsky

Professor Emily Brodsky was elected to the National Academy of Sciences (NAS), which is considered one of the highest honors that a scientist can receive. The NAS is a nonprofit organization that promotes outstanding science through awards, publications, programs, etc.

Professor Garry Griggs received the Robert G. Dean Coastal Academic Award (2022) from the American Shore and Beach Preservation Association for significant contributions to coastal science.



Gary Griggs

Professor Myriam Telus received the Faculty Early Career Development (CAREER) Award from the National Science Foundation (NSF) to support her research on the atmospheres of rocky exoplanets.

Professor Thorne Lay retired on July 1, 2023 and is recalled to continue research on his National Science Foundation grant to address questions about earthquake rupture processes and deep earth structure.



Myriam Telus



Thorne Lay



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GEODES Update

Greetings from GEODES!

GEODES (Geoscientists Encouraging Openness & Diversity in the Geosciences) is a student-run organization within our department that aims to foster community, facilitate professional development, and address diversity, equity, and inclusion (DEI) issues in the Earth sciences. Our overarching goals are to develop a lively, diverse, and inclusive department community, and help champion a more diverse next generation of scientists. In this newsletter update, we wish to reflect on community efforts towards improving DEI, invite new members to join GEODES, and highlight our future goals as a department organization.

Sustainable and equitable solutions to pressing environmental issues require the collaboration with and amplification of diverse perspectives within the Geosciences. An increase in DEI efforts in recent years has begun to address the lack of diversity and equity in the sciences; however, these efforts still require increased support and focus from the field as underrepresentation of historically marginalized communities remains flagrant across all career stages* **. The Geoscience field—typically more plagued by DEI issues than other STEM disciplines—requires structural shifts in policies, practices, and cultures to achieve its vision of a more diverse and inclusive workforce.

GEODES was founded in 2015 to support our department's diverse student population ([grad](#), [undergrad](#)) through community building and professional development. Here we highlight a few specific GEODES-led initiatives from the last two academic years:

Professional development to increase students' capacity for academic success:

- Getting into Graduate School Workshop Series: In this 2-part workshop we discussed topics such as how to build a professional relationship with

a potential graduate advisor and reflect on which graduate program is right for you.

- Math Refresher Course: The objectives of this short-course are to normalize the need for additional quantitative support and provide students with a review of common mathematics techniques used in the Geosciences.

Improve student sense of belonging within the Geosciences:

- Tea Time Talks: We invite students and faculty to join GEODES and Prof. Tamara Pico for casual tea time discussions about mentorship, work-life balance, and science identity.
- Nature/Birding Hikes: We organize regular birding outings and hikes throughout Santa Cruz for all skill levels to allow students to mingle outside of the work setting.

We at GEODES are excited to continue providing events for the department that foster community and help to teach the hidden curriculum of the Geosciences***. For future events, we would love feedback from our department to see how we can best serve undergraduate and graduate students ([let us know with this survey!](#)).

Beyond GEODES, the EPS department is actively engaging in a number of DEI initiatives including the newly-implemented first-year mentorship program, EPS peer advisors, expanding the Introduction to Teaching course, and offering new courses such as Science as a Colonial Practice. We look forward to engaging in topics of diversity, equity, and inclusion as we all grow together.

Love,
GEODES



* NSF NCSES. (2023).

** Bernard, R.E. and Cooperdock, E.H.G. Nat. Geosci. (2018).

*** Pensky, J., Richardson, C., Serrano, A. et al. Nat. Geosci. (2021).

Faculty Updates

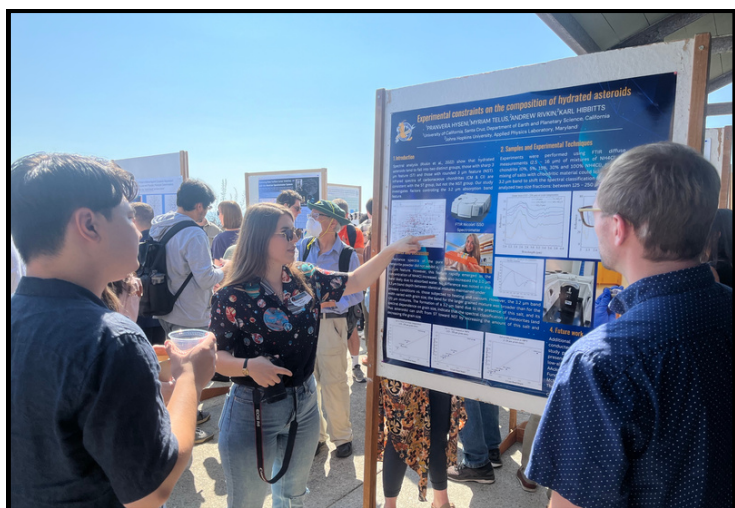
Professor Emily Brodsky's lab has launched a new series of analog earthquake experiments. We can simulate full cycles of earthquakes in the lab to analyze their predictability. We are also putting significant effort into launching SZ4D, which is an initiative currently chaired by Brodsky to determine the limits and possibilities of predicting geohazards. The goal is to place the study of earthquakes, volcanoes, and landslides on firmer footing by providing longterm, systematic instrumentation in one of the world's most active subduction zones: Chile. Simultaneously, SZ4D aims to provide the fundamental geological and physical context for the events through mapping, laboratory and modeling work.

Professor Myriam Telus and the Planetary Sciences group at UCSC hosted the annual Bay Area Planetary Sciences (BAPS) conference on September 19th. The meeting was a great success with over 80 participants from different institutions in the region, including Stanford, UC Davis, UC Berkeley, NASA Ames, LLNL and SETI. The conference took place at the Seymour Marine Discovery Center on UCSC's coastal campus. There were three talk sessions and an outdoor poster session on a broad range of planetary science topics. Participants also enjoyed the beautiful views of the ocean and cliffs and the perfect weather. The conference was funded through grants from the Heising-Simons Foundation and the Meteoritical Society. The Bay Area Planetary Science group was started in 2019 to bolster collaborations and community among planetary scientists in the San Francisco Bay Area. The meeting location rotates each year and the community works collaboratively to organize it.

Professor Noah Finnegan and PhD student Em Schnorr in collaboration with Professor Susan Schwartz, did fieldwork during the summer of 2023 to install seismic and geodetic instruments on a large landslide in Prince William Sound, Alaska that is being destabilized by retreat of the adjacent Columbia Glacier. This natural experiment provides an opportunity to better understand landslide friction by measuring the response of the slide to a change in the balance of driving and resisting stresses. The work will also help efforts to mitigate hazards associated with large, potentially tsunamigenic landslides that are triggered by rapid ice retreat in glaciated coastal regions.

The Hain lab has started to apply theory, models and lessons learned from the natural ice age CO₂ cycles to future climate solutions. They study a possible geologic analog of Ocean Alkalinity Enhancement in order to learn how we can monitor the effectiveness and environmental safety of marine Carbon Dioxide Removal strategies currently in development.

Professor Gary Griggs has finished a new book - *California Catastrophes - The Natural Disaster History of the Golden State*, to be published by the University of California Press in 2024.



Outdoor poster session at the annual BAPS conference
Credit: Myriam Telus



One of the talk sessions at the BAPS conference
Credit: Pran Hyseni

Faculty Updates - continued

Professor Terrance Blackburn and his students have continued their work developing the use of subglacial precipitates—minerals that form in sub-ice water bodies—as a climatic archive, one that records how the Antarctic ice sheet responded to past climatic change. These accumulations of mostly calcite and opal, precipitate from subglacial waters before being frozen into the base of the ice sheet and moved to the Antarctic ice margin where field collections have made them available to study. Their project has amassed dozens of samples, from over 10 sampling sites spread throughout Antarctica and utilizes geochemical, isotopic, sediment grain size analysis, water redox and geochronologic techniques to develop a record of when the precipitates form and to characterize the water provenance, velocity and environment in which they form. Their efforts have shown that these sub-ice mineral formations accumulated beneath the ice for over a hundred thousand years, recording changes in their chemical and isotopic subglacial properties that occur in response to ice dynamics and climate change.

Professor Quentin William's group spent the last year making up for lost time at Lawrence Berkeley Lab's Advanced Light Source (a marvelously intense X-ray source), probing things ranging from minerals under mantle conditions to Martian meteorites. Assisting with this is a new NSF-funded Consortium (SEES---Synchrotrons in the Earth and Environmental Sciences), on which much effort was expended over the last 18 months on a proposal; those efforts continue with tedious organizational aspects (that means lots of meetings). But, it's all worth it, since it enables assisted access to X-rays with intensities we only dreamed of a couple decades ago, and quick-and-easy (OK, not so easy, if you ask my grad students Garrett Zeff and Genesis Berlanga) data collection.



Credit: Hilde Schwartz, Field 2023

EPS Research

Carbon Dynamics in Coastal Wetlands – Understanding Controlling Processes to Assess Wetlands Nature Based Climate Mitigation Potential

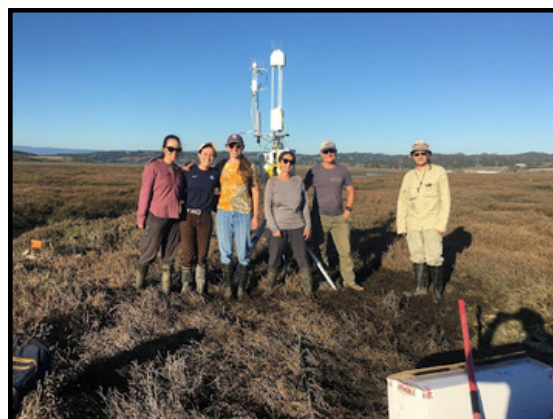


Coastal wetlands provide many valuable benefits to humans, including mitigating climate change through wetland restoration efforts. One of the most significant challenges for increasing the reliability and reducing uncertainty in global and regional carbon budgets is an insufficient understanding of the process dynamics that control net ecosystem carbon budgets in coastal wetlands and the underrepresentation of these processes in the models.



Elkhorn Slough Estuary - The largest coastal estuary outside the San Francisco Bay and Delta

To address this knowledge gap, the Paytan Biogeochemistry Lab is working to quantify the different carbon sources, sinks and transformations in coastal wetland systems and shed light on the hydro-biogeochemical processes controlling these fluxes. The project goals will be achieved by (1) field work focused on delineating the processes (physical, chemical and biological) that control carbon burial in wetland soils; (2) identifying methane production, consumption, and transport/emission processes, and drivers of heightened



Our group testing the methane and CO₂ sensors on a tripod at Yampah Marsh before building the eddy covariance tower.

methane emissions; (3) quantifying the lateral transport of carbon in these systems; and (4) providing information vital for enabling a better mechanistic representation of processes and feedbacks in ecosystem and climate models. Our study sites are at the Elkhorn Slough where we operate eddy covariance towers at five representative wetland locations with different characteristics. Eddy covariance is a biometeorological method that is currently popular to directly observe the exchanges of gas (H₂O, CO₂, CH₄), energy, and momentum between ecosystems and the atmosphere at high frequency along with a suite of micrometeorological data. Soil cores are collected seasonally at 11 sites to measure the organic carbon burial rates. Soil properties, pore-water chemistry, and

Carbon Dynamics in Coastal Wetlands - continued

Paytan Biogeochemistry Group

microbiology are investigated to better understand the complex sub-surface processes that facilitate carbon storage or transformation through chemical (redox) or microbial (methanogenesis or methane oxidation) processes. We also collect surface water and groundwater samples to assess diurnal, monthly and annual patterns in fluxes of dissolved organic and inorganic carbon and alkalinity to estimate lateral carbon exchange fluxes.

The large amount of data collected will help us understand processes controlling carbon dynamics in coastal wetlands inform process-based modeling, identify the predictors of efficient carbon burial, transport, and heightened methane emissions, and allow for upscaling and forecasting net radiative forcing of these wetlands. In addition, mechanistic understanding of the conditions that increase net carbon burial is crucial for informing wetland management and restoration that can serve as nature-based climate solutions. Be sure to stop by the Visitor Center at the Elkhorn Slough Reserve, where you can see an interactive educational display, the Paytan Lab put together about this project.



Our research displayed at the visitors center at Elkhorn Slough Reserve (Credit Gracie Pearsall)



Yampah Marsh – One of the monitored wetland locations with the eddy covariance tower built.



View of Porter Marsh from the top of the eddy covariance tower.

Field monitoring of large landslides reveals details about their climate sensitivity and deformation processes

Noah Finnegan's Research Group

Landslides cause over 5,000 fatalities per year globally, corresponding to about $\frac{1}{8}$ of the total annual loss of life from natural disasters, including earthquakes, volcanic eruptions, drought, wildfires, storms, and flooding. In terms of economic losses, landslides cause about \$20 Billion USD annually. As is the case with faults, some landslides creep steadily for years or decades. In others, the creep appears similar, then abruptly transitions to catastrophic failure. Distinguishing these two scenarios is crucial for landslide hazard mitigation. Yet there is currently no widely accepted theory for what governs slow frictional creep versus catastrophic failure styles in landslides. For this reason, considerable research is focused on the hydrological and deformational processes that control slow landslide failure.

Towards this end, since 2016 my research group at UCSC (particularly grad students Colleen Murphy, Em Schnorr, and Alex Nereson, as well as former PhD student Jon Perkins, now at USGS) has monitored a seasonally active slow landslide, Oak Ridge earthflow, in California's Diablo Range about 70 km SE of San Francisco (Figure 1) and, since the summer of 2023, a large landslide that has formed due to rapid retreat of Columbia glacier in Prince William sound, Alaska (Figure 2). In both cases, these landslides provide natural experiments that illuminate details about landslide process and reveal linkages between climate (and climate change) and landslide hazard.

Unlike landslides that are restricted to the soil, which can be triggered by individual storm events, deep bedrock landslides (sometimes called deep-seated landslides) typically have more water storage capacity than is possible to deliver during individual storm events. For this reason, large landslides integrate precipitation variability over seasonal or even



(Figure 1) Looking down onto the surface of Oak Ridge earthflow on a winter day. The pools of water and numerous springs on the surface of the landslide illustrate its extremely shallow water table, as well as the deformation of the surface that has disrupted its drainage.

interannual timescales, making forecasting failure especially challenging. Since 2016, at Oak Ridge earthflow we have monitored landslide motion and many aspects of the shallow hydrology of the landslide through a period of extraordinary rainfall variability. These extremes have allowed us to more clearly understand how large landslides respond to rainfall variability over seasonal and even interannual timescales.

For example, in California there is commonly a lag of weeks to months between when rainfall starts in the winter and when slow landslides begin to accelerate. Why? Our work at Oak Ridge shows that rainfall infiltration into dry ground at Oak Ridge at the end of California's summer and fall occurs extremely slowly. For this reason, rainfall tends to pile up near the surface. However, once this slug of wet season rainfall eventually reaches the water table there is an abrupt rise in water pressure that typically triggers landslide

Field monitoring of large landslides reveals details about their climate sensitivity and deformation processes - continued



(Figure 2) UCSC PhD student Em Schnorr (blue) and Earthscope Consortium field engineer Keith Williams work on installing a permanent GPS station and a seismometer on the surface of a landslide adjacent to the rapidly retreating Columbia glacier, whose calving face is visible in the background. Rapid ice retreat can destabilize the walls of glacial valleys, triggering large and potentially tsunamigenic landslides. The ridges that are apparent on the surface of the landslide are up hill facing normal fault scarps that reflect the initial stages of failure for many deep landslides in this setting.

motion. These dynamics are possible to model and provide us with the means to better forecast landslide motion in response to seasonal rainfall patterns. This understanding also helps us to understand landslide sensitivity to precipitation variability on interannual timescales. During wet periods rainfall exceeds available storage and excess water is diverted to runoff, whereas during droughts drainage exceeds infiltration. Crucially, this means that the cumulative impact of extremely wet years is less than that of dry years due to limited subsurface storage capacity within the landslide relative to winter rainfall. In other words, in California, large landslides like Oak Ridge earthflow may be more sensitive to droughts than extremely wet winters.

Notably our work in Alaska on a much bigger and deeper slide suggests a slide whose motion is, counter-intuitively, much more tightly coupled to individual rainfall events. We believe this reflects the extremely fractured nature of the bedrock in this setting compared to the clay rich substrate at Oak Ridge.

Our work at Oak Ridge has also revealed details about the nature of landslide friction, something that is hotly debated. Given the obvious similarities between landslides and faults, some have proposed using models of fault friction to understand and predict landslide failure. Our work at Oak Ridge shows that motion of a slow landslide that has been active for decades occurs through mm-scale stick-slip events (analogous to very small earthquakes). These results, along with the observed relationship between water pressure and sliding speed of the landslides, suggest that slow slip in landslides and episodic slow slip events observed on some faults may be similar, and that a fault mechanics treatment of landslide failure is probably the way to go.



Noah Finnegan

Undergraduate Awards

**KATHRYN D. SULLIVAN RESEARCH AWARD
FOR UNDERGRADUATE RESEARCH IN
SCIENCE AND TECHNOLOGY**

NOAH BRIGHAM
JAIDEN ZAK

**KATHRYN D. SULLIVAN RESEARCH IMPACT
AWARD IN EARTH & MARINE SCIENCES**

BROOKE SANTOS

**UC LEADERSHIP EXCELLENCE THROUGH
ADVANCED DEGREES (LEADS) SCHOLAR**

NATALIE HERMOSILLO

**INSTITUTE OF MARINE SCIENCE'S
STUDENT RESEARCH & EDUCATION
AWARD**

NESSA FAKRAI

UCSC DEAN'S HONOR LIST EACH QUARTER

RACHEL HALPERN

**UCSC'S HONORS COLLEGE SCHOLAR
PROGRAM YEARLY MERIT SCHOLARSHIP**

NESSA FAKRAI

**KORET SCHOLARSHIP FOR
UNDERGRADUATE RESEARCH PROJECTS
AT UCSC:**

NOAH BRIGHAM
JAIDEN ZAK

**CALIFORNIA NATIVE GRASSLAND
ASSOCIATE GRANT**

JENNIFER VALADEZ

**SANTA CRUZ GEM AND MINERAL
SOCIETY SCHOLARSHIP**

LUKE MELLO
MANNY ROJAS

**EARTH FUTURES FRONTIER FELLOW
PROGRAM GRANT**

JENNIFER VALADEZ

HOLLY DAY BARNETT SCHOLARSHIP

NESSA FAKRAI

EARTH'S ENVIRONMENT FUND AWARD

MANNY ROJAS

**ELI SILVER EARTH & PLANETARY
SCIENCE OPPORTUNITIES FUND
UNDERGRADUATE AWARD**

MELINDA MARTINEZ

**GARY GRIGGS ENDOWMENT FOR
STUDENT RESEARCH SUPPORT FUND
AWARD**

FRANCIS LOPEZ
ALICE VOULFSON

**SUPPORT FOR UNDERGRADUATE
RESEARCH IN GEOLOGY AND
ENVIRONMENTAL SCIENCE (SURGES)
FUND AWARD**

CAMILA CASTANEDA CALZADA
JENNIFER OVERKLIFT

UNDERGRADUATE DEGREES

Francesca Alatorre	John Carl Harris	Mike Rodriguez-Vargas
Kevin Arizmendi	Lauren Susann Hashman	Kaetlyn Arianna Rodriguez
Hayden Auble	Natalie Grace Hermosillo	Atiana Elyse Romain
Rhythm Beckett-Cook	Sage Tyler Hirsch	Robert Paul Roth
Shane Nicolas Berchtold	Josephine Anne Horst	Michelle Rose Rothman
Mia Meadows Berger	Olivia Hunter-Mcelroy	James Eduardo Salvador
Alycia Renee Bernardino	Joshua Andrew Hutton	William Jake Samet
Ry Joseph Bevington	Anya Elisabeth Cooper Hynell	Giselle Santana
Matthew Montero Botello	Claire Ruth Ivey	Grace Lorene Satterthwaite
Connor Lee Branson	Trevor Paul Jackson	Emma Frances Schibuola
Zoe Elizabeth Bravo	Max Jaramillo	Skyler Dirk Shipman
Noah Caulfield Brigham	Fatima Jorge-Chavez	Michelle Elizabeth Siewert
Haley Angela Canales	Mikayla Kalani Kauinana	Chloe Jeanna Solomua
Dawn Elizabeth Canapary	Mominah Tehreem Khan	Nancy Solorio
Laura Emily Chain	Ryan Ian Bruce Khoury	Lexi Spencer
Kiernan Clark	Rachel Victoria Kramer	Andrea Marie Sperling
Chandler Vincent Clarke	Jack Henry Larson	Eleanor Brynn Spiller
Marco Cesare Conci	Jurrien Christopher Le	Morgan Olivia St. Onge
Luis Angel Cortes	Maximilian Aston Maier	Marshall Lee Stitt
Eva Lisbeth Cruz	Stephanie Marquez	Courtney Ann Stratton
Alex J Davani	Melinda Citlally Martinez Gonzalez	Sonia Renee Talamantes
Trever Scott Dobbins	Kiana Lilly Marzo	Sung Tat Darwin Tsou
Matthew Robert Eidenberger	Amelia Elizabeth Mayer	Emerald Madrone Vanbebbber-Wiest
Nessa Salma Fakrai	Maya Margaret Meislahn	Timothy Youki Vidales
Evelyn Koy Fong	Luke Thomas Mello	Casey Lee Vigilia
Liam Bernard Galligan	Vanessa Lucia Mendoza	Ember Anastasia Vosmek-Park
Lucas Gomes Gallo	Ellissa Corin Micu	Erik Scott White
Brian Austin Garcia	Tessa S Nefouse	Brooke Danielle Whitley
Leilani Gibo	Cameron Lawrence Noren	Luke Michael Williams
Emma Rebecca Gloudeman	Emma Margaret O'Donnell	Fiona Pauline Wolf
Sofia Solana-Isabella Gonzalez	Henry J Olling	Jolie Michelle Wolff
Amanda Eulamae Green	Eduardo Rodrigo Opolencia	Keenan Yoo
Lilah Madeleine Guerra	Siena Larue Oswald	Jaiden Andrew Zak
Jerome Seth Gunzon	Alicia Elizabeth Paez	
Eileen Hails	Frida V Pensamiento	
Rachel C Halpern	Yuxuan Qi	
Luke Anthony Hamilton	Laura Ramirez	

Graduate Awards

**MICROSCOPY SOCIETY OF AMERICA
2023 M&M STUDENT SCHOLAR TRAVEL**

**AWARD
JILL KIRK**

**MYERS OCEANOGRAPHIC AND MARINE
BIOLOGY TRUST RESEARCH GRANT**

SUSAN PIT

**SCHLANGER OCEAN DRILLING
FELLOWSHIP FROM IODP**

MADDIE WOOD

**INVITED ON IODP EXPEDITION 399 TO
THE ATLANTIS MASSIF, MID-ATLANTIC
RIDGE**

KRISTIN DICKERSON

**UC PRESIDENT'S PRE-PROFESSORIAL
FELLOWSHIP (PPPF)**

AMANDA DONALDSON

**USGS MENDENHALL POSTDOCTORAL
SCHOLAR POSITION**

TRAVIS ALONGI

**ELI SILVER EARTH & PLANETARY
SCIENCE OPPORTUNITIES FUND**

GRADUATE AWARD

MADDIE WOOD

**51 PEGASI B POSTDOCTORAL
FELLOWSHIP FOR PLANETARY**

SCIENTIST

HUAZHI GE

DISSERTATION YEAR FELLOWSHIP

BRYNNA DOWNEY

**ACHIEVEMENT REWARDS FOR
COLLEGE SCIENTISTS (ARCS)**

FELLOWSHIP

RYAN GREEN

AMANDA DONALDSON

EARTH'S ENVIRONMENT FUND AWARD

LAUREN GIGGY

CASEY MOORE FUND AWARD

TERRA GANEY

PRANVERA HYSENI

SUSAN PIT

**ZHEN AND REN WU MEMORIAL FUND
AWARD IN GEOPHYSICS**

HUIYUN GUO

**AARON AND ELIZABETH WATERS
AWARD**

KRISTIN DICKERSON

**EPS DEPARTMENTAL OUTSTANDING TA
AWARD (EPS & ESCI STUDENT VOTED)**

GENESIS BERLANGA

WILL CHAPMAN

HONORABLE MENTION: EM SCHNORR

GRADUATE DEGREES

Adam Price

Ph.D. (Fall 2022)

Exploration of Low-Temperature
Hydrothermal Processes in North Pond,
Mid-Atlantic

Zachary Kaufman

Ph.D. (Fall 2022)

The Role of Sea Ice in Polar Climate
Change: Investigating Distinct Cause-
Effect Relationships in Each Hemisphere

Coby Abrahams

Ph.D. (Fall 2022)

Planetary Heat: Exploring how Planetary
Surfaces are Shaped

Rachel Maxwell

Ph.D. (Fall 2022)

Magnetism and Gravity as Clues to the
Thermal Histories of the Moon and Mars

Megan Kelley Seritan

Ph.D. (Fall 2022)

The Geologic Context of Lunar Magnetic
Anomalies

Szilard Gyalay

Ph.D. (Spring 2023)

The Crusts of Mars, Tethys, and Mimas:
Geophysical Exploration of Historic Heat
Flow

Huazhi Ge

Ph.D. (Spring 2023)

Moist Convection and Weather on Giant
Planets

Jenny Pensky

Ph.D. (Spring 2023)

Hydrologic and Biogeochemical
Dynamics of Infiltration for Managed
Aquifer Recharge and Implications for
Groundwater Management

Colleen Murphy

Ph.D. (Summer 2023)

The Influence of Vadose Zone Dynamics
on the Movement of Recurring Landslides

Mason Leandro

Ph.D. (Summer 2023)

Phase-Doppler Interferometry:
Characterization and Emerging
Applications

Gavin Piccione

Ph.D. (Summer 2023)

Paleorecords of Antarctic ice motion,
subglacial hydrology, and chemical
weathering

Emily Kam

M.S. (Summer 2023)

Influence of soil carbon amendments on
denitrification in linked field and
laboratory studies of managed aquifer
recharge

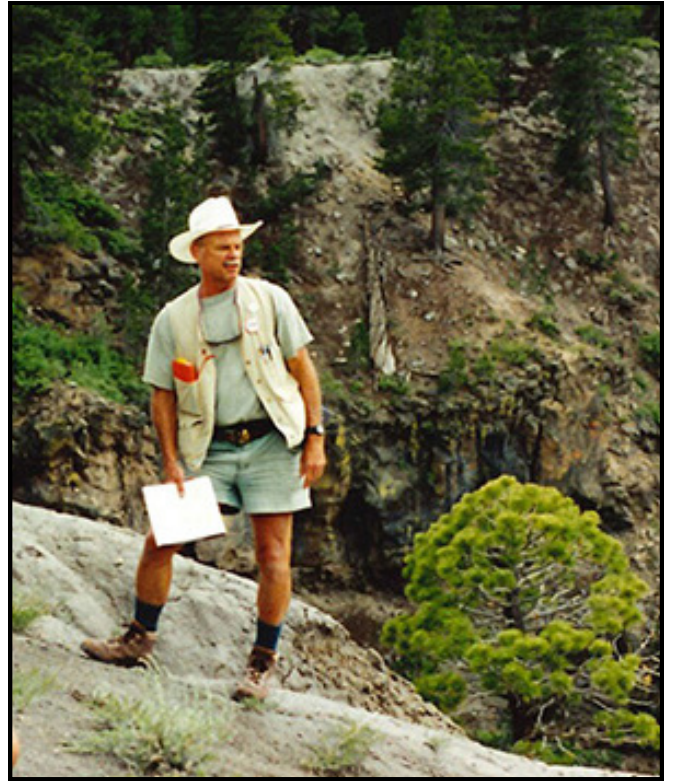
In Memoriam: Gerald E. (Jerry) Weber

We are saddened to announce the death of Dr. Gerald E. (Jerry) Weber at the age of 82. Jerry was an EPS alumnus (Ph.D., 1980) and a long-time lecturer whose field geology courses were particularly legendary. His leadership of the summer field camp introduced generations of students to the magic and complexity of the Poleta Fold Belt, a transformative experience for EPS majors for years.

For more than 30 years Jerry and his wife, Sue Holt, have provided financial support for travel and field studies to hundreds of EPS undergraduates, initially via the Earth Sciences Student Special Needs Fund and later through the Weber-Holt Fund.

Jerry passed away peacefully at home on Friday, May 19th, following a rapid health decline. His beloved Sue was by his side.

Written by Dr. Hilde Schwartz



Jerry Weber



Jerry's Memorial: Speaker: Jack Lockwood, volcanologist



Jerry's Memorial: Wonder Still

Memories of Jerry Weber

“My favorite memory of Dr. Jerry Weber was watching him fly fish on a lake in the Sierras. In the middle of field camp, he took a respite from teaching us unruly students and found some peace casting on a lake.

Watching him cast, I could almost feel his cares melt away. He had a beautiful cast. Thanks, Jerry, for not only teaching us at field camp but for sharing your love and passion for geology - a passion that I continued as a geologic hazards geologist, engineering geologist, and land development specialist.”

Darlene Batatian, class of 1987

“I went to a couple seminars taught by Jerry Weber, talked to him at some department events and could not help but constantly observe his ubiquitous legacy throughout the EPS department. His presentations and book chapter on the geology of the UCSC campus were an important resource to me when I was TAing Environmental Geology, leading campus geology tours. I also witnessed his results from surveys of the karst caverns come up repeatedly when discussing various development plans on campus as a grad rep. So I have full faith that Jerry's legacy will live long into the future of the literal bedrock of UCSC campus, which is very fitting for him, as a geologist's geologist. Cheers, Jerry!”

Dan Killam, PhD 2018

“I will always remember "Papa Duck", his great wit and especially his desire for all us undergraduates to succeed. To this day I still tell the stories of Summer Field at Poleta Folds and mapping the Bishop Tuff at June Lake Junction.”

Kent M. Screechfield, class of 1985

“Wow! It's hard to imagine a world without Jerry. He was a grad student the same time I was, but he came to grad school in an unconventional way. While most of us were completely wrapped up in our graduate studies, Jerry had already had a life and career before grad school and continued to have one outside of grad school. As fellow grad students, we looked up to him, but he was also very much one of us...except that his maturity meant he wasn't as subject to the usual stresses of grad school as we were! Jerry was fun, encouraging, humble--a wonderful colleague.”

Judy Parrish, PhD '79

“Like countless UCSC Earth Sciences students, spanning several generations, Jerry Weber changed my life. Like many of us - the field classes with Jerry were seminal times in my life that I have always cherished. Jerry was a demanding but patient teacher (most of the time). He made geology fun! The lessons I learned from Jerry would lead me to a 30-year career working for Caltrans. For a significant portion of that job, I would map landslides and rockslides throughout far Northern California. Often, I would find myself wondering what Weber would think about this geologic puzzle or just wanted to show him something cool. Of all the professors I had at UCSC, he was the one I always wanted to impress. The lessons I learned from Jerry went far beyond just geology - he taught me to think, to analyze, to question and mostly importantly to follow my passion. Sometime this summer, I will find a really cool remote place with great geology and raise a toast to Doctor Weber and to a life well lived.”

Tom Graves, class of 1985

Memories of Jerry Weber - continued

"I came to know Jerry Weber when I was a student of Earth Sciences in 1980. I don't recall when we first met but he helped me with my senior thesis. He suggested a study of the marine terraces that can be seen best when driving up the coast from SC to Davenport. He taught me how to measure the slope of the terraces and I spent the summer/fall of 1981 traipsing up and down the coast. Looking back, I was likely hiking over private property – but Jerry just said "go" so I went!

I do remember one day when Jerry and another student and I were hiking the terraces and saw a buck trotting towards us. We thought it would see us and run away but it kept coming directly towards us! We formed a circle with our backs to each other and pulled out our rock hammers to fend off the crazed buck, like geologic warriors or something! :-) It was the weirdest thing? The buck turned around and sauntered away as we all stood there for a moment then busted up laughing at ourselves. Though I have to say I was glad the buck didn't charge!

The last time I saw Jerry he was leading a tour put together by the land trust – 2018-19. His energy, frankness and humor were exactly the same as when I knew him as a student in the 80's. I'm so sad to hear of his passing. A good man done gone."

Betsy Horwath-Tyler, class of 1982

"Jerry imparted a love of geology on us in the classroom and on the river. He taught us how to row the Grand Canyon, when to work harder and when to apply cold beer. Every day he would wake up and use his Brunton to shave, presumably he wanted to look good while also styling class 10 rapids. He lead and taught by example and was respected for it; beneath the stern exterior, he loved and respected his students as well. After the trip we bought Sue's old boat, we literally shredded the boat to pieces and learned a lot of lessons along the way. I suppose that was the point. I'm sure wherever he is now it's sunny and warm, the water is cold, and the beer is colder."

Ben Melosh, class of 2005



Photo credit: Celebrating Jerry Weber

"I first met Jerry during my Freshman year (1972-73). I wandered into one of the graduate student offices, probably in search of my T.A., and he was in there with his feet (in hiking boots, of course) propped up on the desk, drinking a beer. I thought: if that's what geologists are like, then I want to be a geologist. I changed my major from Biology to Earth Sciences shortly thereafter. Jerry was an icon. He will be missed."

Mike Underwood, B.S. 1976

"It was Jerry's teaching that got me excited about becoming a geologist, which has been my career for 27 years. It was after his Field 101 class that I decided to switch my major to Geology. By being his teaching assistant for summer field for three years and having him as one of my Masters thesis advisors, I learned so much about the value of quality fieldwork, practical problem solving, and enjoying the outdoors and life in general. Thank you so much, Jerry, for helping me on the path to adulthood and being a good mentor. I feel like you taught me so much....and it just scratched the surface of all that you had to share. RIP."

Brian Thompson, BS 1992 and MS 1995

Memories of Jerry Weber - continued



Photo credit: Celebrating Jerry Weber, Summer Field 2001

“Jerry was a larger than life mentor of geology and avid outdoorsman. His postcards of pencil sketching cliffs in the Grand Canyon also showed he was an outstanding artist too. His candor and honest assessment of my class work and field mapping was always helpful to me in my own growth in Earth sciences. I learned a lot from Jerry on how to think on my feet, imagine geologic structures in my head, and appreciate both the small and big picture. After hearing of his passing I can't help but think about all the time, dedication, and joy he put into organizing field trips, summer field camps, and river rafting trips. I always felt that Jerry's classes, trips, and camps were something very unique and special. They were fun, intense, hard, amazing, and of course memorable. Those experiences helped form who I am today as a professional, and I am so grateful to him for everything he did for us Banana Slugs. I will always cherish those memories, especially when his Jerry-isms with colorful metaphors would echo across the Poleta Folds, or in New Idria, or wherever we happened to be in California.

My deepest condolences to Sue and Jerry's family.”

Jason Langley - class of 1995

“I was Jerry's student from about 1987 through 1989 when I switched my major from physics to geology. I was indebted to the field geology observation and description skills that Jerry taught, mostly as a philosophy lesson about paying attention to truth, reality, and seeing the bigger picture. This worked for me at the time in some cases (Ano Nuevo geology and his study became my bible) and not in others (I never could see the big picture during field camp due to my own immaturity). Jerry's philosophy did rub off when I paid attention to his advice to improve my pool game while drinking long-neck Budweiser in Lone Pine--this advice serves me well today. To his family, thank you for the time he had with us. I understand now what that dedication means to you as well as to his students.”

Nathaniel Plant, B.S. 1989, M.S. 1991

“Jerry Weber was a true inspiration to all of us. He had three main priorities:

- 1) Have fun
- 2) Teach geology
- 3) Drink beer

He was also one of the great field geologists of our time. His mapping skills were second to none. His work with the Ben Lomond/Love Creek landslides in 1982 was incredible. His mapping and geologic knowledge were mind blowing. I love Jerry Weber and will miss him dearly.”

Jack Collender, class of 1980

“Jerry played a really big role in motivating me to study geology and I ended up taking a career path in the field. He supported me throughout college and inspired me to keep asking questions in order to dive deeper into the field of geology. His humor and grit made for interesting classes and field trips too! He created the groundwork for me as a geologist and I will be forever grateful.”

Jessica deGrassi - class of 1999

The Earth and Planetary Sciences Advisory Council

The EPS Advisory Council (EPS-AC) was formed in 2012, providing a forum for accomplished alumni to help EPS achieve networking and fundraising goals. We are grateful to our EPS-AC members, who have generously agreed to share their time, energy, and expertise on behalf of our community. Your EPS-AC co-chairs continue to be Peter Vrolijk and Stefano Mazzoni - please let them know if you have ideas, questions or suggestions:

stefano00038@yahoo.com or pvrolijk17@gmail.com

We thank members of the current EPS Advisory Council for help in networking and development! Following are brief bios of current EPS-AC members, including backgrounds and interests.

Kevin Biddle, B.S. 1973

I received a B.S. degree in Earth Sciences from UCSC in 1973 and then, thanks to a recommendation from Jerry Weber, went to work for the USGS in Menlo Park. I stayed with the Survey for a year and a bit before moving to Rice University in Houston for graduate school. At Rice I acquired a MA degree (1976) working on modern lagoon sediments and a PhD (1979) focused on carbonates in the Dolomite Alps of northern Italy. After Rice, I went to work for Exxon in their Houston research lab in the Basin Analysis group. I stayed with Exxon (now ExxonMobil) for 36 years working in research, exploration, field development, and as an advisor at corporate headquarters. I finished my career as the Exploration Director of ExxonMobil International in London, retiring in 2014. I currently live in Houston and Taos, New Mexico, and am an adjunct professor at Rice University teaching classes that address risk and uncertainty in the subsurface. I also work with a colleague in Poland on natural-gas supply to eastern Europe.

Jon Erskine, M.S. 1998

I earned my MS in Earth Sciences from UCSC in 1998 working with Andy Fisher applying borehole geophysics and geostatistics to map a coastal aquifer system in the former Fort Ord area of Monterey, California. From there I became a California Professional Geologist and Certified Hydrogeologist in

2001 while working for Geomatrix Consultants of Oakland in the environmental industry. In 2008, I completely shifted gears and entered the mining and construction industry to work for Graniterock of Watsonville, where I have been ever since.

The move enabled me to return to live in the Santa Cruz area and learn a type of geology career that I previously knew nothing about while applying all the tools I have learned along the way. I find the geology of the Monterey Bay area fascinating and I've had the opportunity to share by leading field trips for UCSC's Geology Club and collaborating on San Andreas Fault hydrogeology research with EPS Professor Emily Brodsky and PhD student Lian Xue (2016). I've worked with numerous talented Slug geologists over the years and value the knowledge, enthusiasm, and professional camaraderie UCSC EPS has provided.

Richard Gordon, B.A. 1975

I graduated from UCSC (Stevenson College) in 1975 with a BA in geophysics, which was an individual self-designed major with Rob Coe, Eli Silver, and Bob Garrison as members of my committee. I then obtained an MS (1977) and PhD (1979) in geophysics from Stanford. After a year of post-Ph.D. teaching and research at Stanford, I joined the faculty of Geological Sciences at Northwestern University for 15 years. I have now been at Rice University for 26 years as the Keck Professor of Geophysics. My research interests are in global tectonics with my main tools being

Advisory Council Members - continued

Richard Gordon - continued

marine geophysics, space geodesy, paleomagnetism, and numerical modeling. Two of my former Ph.D. students have gone on to become fellows of the AGU. I am especially proud of my work with students and colleagues in recognizing and describing diffuse plate boundaries in the world's oceans, especially the Indian Ocean, which I believe fundamentally changed our understanding of how plate tectonics works in the oceans. My main non-science hobby in the past decade has been playing the trumpet---I perform with several bands including two Rice jazz bands. I am amazed and proud of the achievements of the UCSC EPS department and of my fellow alumni and have been delighted to serve on the Advisory Council.

James R. Hein, Ph.D. 1973

I received a Ph.D. in Earth Sciences at UCSC in 1973, as part of the first Ph.D. graduating class (three of us). I was Gary Griggs' first Ph.D. graduate and also worked with Bob Garrison. I sort of changed venues with Eli Silver as he was with the USGS before becoming a professor at UCSC. This was at the same time that I left UCSC for a position at the USGS after teaching the summer and winter quarters at UCSC post-Ph.D. Eli arranged meetings with David Scholl at USGS that resulted in my being hired. I have worked at the USGS for 45 years before retiring in December 2018, but then I was rehired the following day on a half-time appointment to mentor my replacements, write a few more papers, and see my last two Ph.D. students through completion of their work. During much of my career I studied deep-ocean mineral deposits, geochemistry, and paleoceanography, but also worked extensively on land-based deposits that were possible analogs to the marine deposits. I was scientific advisor to the DOS on issues related to deep-ocean mineral deposits and I

James R. Hein - continued

was part of their delegation to the International Seabed Authority, who I also worked with for 18 years teaching workshops and seminars. I am past president of the International Marine Minerals Society (twice), and a Fellow of GSA and the Society of Economic Geologists. I also enjoyed teaching Bob Garrison's Advanced Sedimentary Petrology class twice at UCSC through the years, when he was on sabbatical.

Shengwen Jin, Postdoc 2000

After obtaining a Ph.D in marine geology with concentration in reflection seismology from Tongji University, Shanghai, China in 1996, I came to UCSC as a postdoc and then was appointed as an assistant researcher in 1999. I moved down to Houston in 2000 and have worked in the oil and gas industry since then. I joined Halliburton Energy Services in 2008 through the acquisition of Screen Imaging Technology, Inc. which I co-founded. Throughout my career in the industry, I have been actively involved in the development of innovative seismic data processing and imaging technologies. Currently I am a Principle Advisor at Halliburton and am responsible for R&D in seismic imaging, modeling and inversion as well as applications of High Performance Computing. I hold several patents and author/co-author many technical publications.

Christy Kennedy, B.S. 2000 and M.S. 2002

Christy completed a B.S. in Earth Sciences at UCSC in 2000, is a Senior Water Resources Engineer & Hydrogeologist with Woodard & Curran, and serves as a Board Member of the Groundwater Resources Association of California.

Advisory Council Members - continued

Charles E. Lawson, B.S. 1973

I graduated with a B.S. from the department in 1973. After a year working for Bechtel, I headed to Princeton for graduate school (recommendations from Casey and Aaron helped), where I received my Ph.D. in 1982. For a couple of decades, I was not very good about keeping connections with the department, but the department (and the campus generally) still held a special place in my heart. Finally, in 1995, I got my act together and began to give back to the department, and in the years since, I have tried to increase my connections and my support for the department. My professional interests lie in water resources management. Before retiring from the federal government at the end of 2020, I served as Secretary of the U.S. Section of the International Joint Commission (IJC) for twelve and a half years. The IJC assists the United States and Canada in preventing and resolving disputes involving water bodies along the U.S.-Canada border. The two countries established the IJC under their 1909 Boundary Waters Treaty. Before serving with the IJC, I worked on Water and Environmental topics throughout the Middle East during my 21 years as science and technology advisor in the Department of State. Before my stint at State, I conducted research at the USGS and NASA. My personal interests are all over the map (so to speak).

Stefano Mazzoni, B.S. 2000 and M.S. 2002

After receiving my B.S. (2000) and M.S. (2002) working with Casey Moore on San Gregorio Fault Zone clay mineralogy, I moved to Houston and worked for four years at ExxonMobil on structural geology research, offshore West Africa, Gulf of Mexico, and offshore California. I joined Oxy in 2006 and worked Middle East projects for a year and half before moving back to California (Bakersfield) where I worked on a variety of projects in the San Joaquin and Ventura Basins. I left Oxy early 2015 when my wife (Chevron geologist) was relocated to the Bay Area. I worked for a

Stefano Mazzoni - continued

small service company called NEOS GeoSolutions on global exploration consulting projects. In the summer of 2017 my wife was relocated to Houston so we came back for our second “tour.” I have been working as a consulting geologist on a variety of projects with Sanchez Oil & Gas (Gulf Coast New Ventures), BHP (offshore Mexico), and some smaller short-term projects. My interests lie in structural geology, deepwater turbidites, California geology, coordinating field trips, and most important of all, being a father to our eight-year-old daughter.

Laura K. Stupi, B.S. 1997 and M.S. 2000

B.S. finished in 1997, MS finished 2000 with Elise Knittle. Professionally, I am interested in materials characterization and the application of scientific instruments to the Earth sciences. I have worked in electron microscopy, engineering geology, and scientific instrumentation. Within instrumentation, I have worked with the environmental, oil and gas, mining, and climate research sectors.

Kathryn Sullivan, B.S. 1973

I graduated with a B.S. from the department in 1973 and moved to Nova Scotia to pursue a PhD at Dalhousie University. My work involved bathymetric and geophysical mapping of the Newfoundland Basin (the area bounded by the Grand Banks and Flemish Cap shelf breaks, the Mid-Ocean Canyon and the Southeast Newfoundland Ridge). I also mapped, named and recovered the first rock samples from the Newfoundland Seamounts. After receiving my PhD in 1978, I joined NASA as a Mission Specialist Astronaut. I flew on three space shuttle missions over the course of my fifteen years with the agency. Two of these were multi-disciplinary Earth science missions (STS-41G in 1984 and STS-45 in 1992), and the third was the mission that deployed the Hubble Space Telescope (STS-31 in 1990). On my 1984 mission, I earned the distinction of being the first American woman to walk in space. Following STS-45, I moved to Washington DC to serve as

Advisory Council Members - continued

Kathryn Sullivan - continued

the Chief Scientist of the National Oceanic and Atmospheric Administration (NOAA). In 1996, I moved to Columbus, Ohio, to run COSI, one of the nation's premier science museums and direct the construction of its new, state-of-the-art facility. From 2006-2011, I served as the inaugural director of the Battelle Center for Science & Technology Policy at The Ohio State University. In 2010, I was asked to return to NOAA as Assistant Secretary for Environmental Observation and Prediction/Deputy Administrator, a position I assumed following Senate confirmation in 2011. I served as Acting NOAA Administrator from 2013-14 and Under Secretary for Oceans and Atmosphere/Administrator from 2014-2017. I was a Navy Reserve oceanographer from 1988 to 2006, retiring with the rank of Captain, and served on the National Science Board from 2006-2010. I'm currently on several corporate and non-profit boards, including Terra Alpha Investments, Accenture Federal Services, International Paper and the National Audubon Society.

Phil Teas, Ph.D. 1998

Received a PhD in 1998 in structural geology under Casey Moore. Went on to work for Unocal as a structural geologist supporting global exploration. Transferred to Indonesia expanding to regional geology, tectonics and sideline as a prospecting geologist. Drilled something like 7 wells for Unocal. Later worked for Chevron then became a founding partner at Black Gold Energy serving as chief geologist. Was an integral member of a team that surveyed over 1 million square kilometers of ocean floor looking for oil seeps. BGE became the largest acreage holder in Indonesia and did extensive frontier field work in support of prospecting. Drilled another 8 wells, providing structural interpretation and fluid pressure predictions. Transitioned back into pure seafloor mapping and have been integral in surveying around another 1.5 million square kilometers in the gulf of Mexico, Brazil and west Africa. Interested in 3D visualization of data, geologic field work, and structural geology.

Michael Underwood, B.S. 1976

I received a B.S. degree in Earth Sciences in 1976, after having completed a senior thesis on Franciscan rocks near Big Sur under the direction of Bob Garrison and Casey Moore. I worked for a couple of years at the USGS in Menlo Park (Branch of Pacific Marine Geology) before attending graduate school at Cornell University, where Ph.D. research brought me back to the Franciscan in Humboldt County. Beginning in 1982, I toiled as a professor at the University of Missouri-Columbia, and I've been happily retired since 2015. Research over the course of my career has focused on the sedimentology and tectonics of subduction zones, both onshore and offshore, and that work has yielded many opportunities to collaborate with a long list of UCSC graduate students, alumni, and professors. I currently enjoy Professor Adjunct status at New Mexico Tech, with a second home in Angel Fire, NM. I remain engaged in scientific ocean drilling, and I've been an active member of the EPS-AC since its inception.

Peter Vrolijk, Ph.D. 1987

PhD with Casey (1982-1987); thesis in Kodiak, Alaska; 24 years with Exxon Production Research Co./ExxonMobil Upstream Research Co. with interests in structural geology and subsurface fluid flow. Professional service to IODP (SSEP) and GSA. Hobbies include ultra-running.

Lisa White, Ph.D. 1990

Lisa joined the UC Museum of Paleontology (UC Berkeley) in July 2012 as Director of Education and Outreach. She came to the UCMP after 22 years at San Francisco State University, where she held positions of Professor of Geosciences and Associate Dean of the College of Science and Engineering. She taught undergraduate classes in paleontology, historical geology, and oceanography, and guided research projects with graduate students in Miocene diatoms of the Monterey Formation of CA, and fossil cold seep assemblages in the Franciscan Complex. Lisa completed her BS in Geology at SF State and PhD in Earth Sciences at UCSC, and worked with the USGS in Menlo Park during 1988-1995.

Update on EPS Development by Andy Fisher

Turning a Corner

On Thanksgiving this year, my wife and I went for a walk in Big Basin State Park, in the Santa Cruz Mountains. Many readers know that large patches of Big Basin burned in the 2020 fires. All that is left of the visitor's center is the stone chimney, and much of the park remains closed, including the Berry Creek Falls trail and other favorites. Sections of the park have reopened and I encourage you to visit when next in the Santa Cruz area. Access and parking are limited, so you should sign up online and reserve a space. There are no services (bring water), but with fewer visitors and the forest regenerating after a couple of normal-to-wet winters, it is remarkable to see how quickly the "moonscape" created by the fires is being replaced. As the photo on the right shows, green shoots are coming from the ground and from what previously appeared to be dead trees. This kind of resilience is inspiring and hopeful.

The scene above appeared abruptly as we turned a corner. When you turn a corner on a trail, a new and surprising view can be revealed, and the path traveled is left behind. I hope we have left behind a lot of the last few years, including fires, a pandemic, and other disruptions. The EPS Department has turned some corners recently, with a wave of retirements, new faculty, students, and staff, and broader shifts in life at UCSC. Here are some examples.

Improving Student Opportunities

The total holdings of endowed funds that support EPS students have more than doubled in the last five years - we have turned a big corner! This is a consequence of generous donations to existing funds, and creation of new funds that are focused on specific parts of the EPS mission. The Tim and Diana Lawton Endowed Fund for Earth and Planetary Sciences will support initiatives and special projects in research, education, and alumni development. The Marc and Rita Bond Scholarship Fund will provide need-based support to undergraduate students to assist with the cost of attendance at UC Santa Cruz.



The James R. Hein Blue Water Fund will support a range of research activities involving oceanographic discovery, including studies of active processes and the geologic record. And the Seismology Visitors Fund will support postdoctoral, sabbatical, and other short-term visitors who confer, collaborate, and give talks. Please consider contributing to one or more EPS funds that align with your priorities. Contributions of any size will make a difference (<https://eps.ucsc.edu/support-us/index.html>).

All of this is timely, as the landscape for student funding at UCSC is changing. Recent increases in graduate student salary levels were a necessary corrective, given the high cost of housing and other living expenses in Santa Cruz, but the funding coming from the state has not increased to compensate. Many EPS graduate students are supported with grant and contract funds, often raised by advisors (faculty and researchers), and budgets for most of those projects have not been adjusted for increased salary costs going forward.

Update on EPS Development by Andy Fisher - continued

Salaries for teaching assistants have also increased, and while the campus made a one-time shift in resources for the current year, we can expect to have fewer TA positions funded by the campus in the future. For undergraduates, costs of attendance remain high as well, and state support on a per-student basis has decreased in recent years. And there are particular needs for EPS and ESCI students who would like to complete research projects and theses, attend a summer field program, participate in technical meetings, and get other important academic and professional experiences. We are committed in EPS to secure resources that our students need to live and thrive while attending UCSC, and after they move on to the next phases of their careers.

Innovation and Appreciation

When I joined the department as a faculty member in 1995, existing faculty had recently updated and upgraded the core curriculum in Earth Sciences. They offered an innovative set of "gateway" courses that introduced students to multidisciplinary areas of study, and allowed them to consider a major or minor beginning in any quarter. The faculty had also innovated in the creation of new foundation courses, spanning studies of Earth history, chemistry, and physics. The approach was a big improvement over more traditional courses and structured sequencing (many programs at other universities subsequently followed this model), the department was known for excellent teaching, and enrollment grew. Earth Sciences became Earth and Planetary Sciences (EPS) soon thereafter, with targeted recruiting in key areas, and associated expansion in research and courses. More recently, we collaborated with colleagues in Ocean Sciences to create an Environmental Sciences (ESCI) B.S. degree program, which helped us to recruit and hire outstanding new faculty, and increased the population of EPS/ESCI majors and minors to >400. There is something to be said for critical mass, and how it helps to stimulate opportunities. At the same time, the EPS Department has retained traditional approaches that are effective and much appreciated by instructors and students, including an emphasis on hands-on field and lab experiences, training with state-of-the-art tools, and engagement of students at all levels in world class research.

With the return of the Fall AGU meeting to San Francisco this year, hopefully many of you will attend the EPS Alumni Event on Tuesday, December 12, from 6-8:30pm at The Chieftain Irish Pub & Restaurant (198 5th Street, San Francisco, CA 94103). I'll be at sea during AGU week, so can't be there, but will do best to join future gatherings. We had originally planned for a full EPS Department reunion this fall, but with changes in staffing and some lingering disruptions from the past few years, we had to postpone the event.

We are now looking ahead to 2024, and will keep you informed as reunion plans develop. There is nothing like being together to remind us of how we became connected in the first place, and we are anxious to show some appreciation for our alumni, their achievements and support. As always, we welcome suggestions and encouragement - please reach out to me or the EPS Alumni Council, led by Peter Vrolijk and Stefano Mazzoni: stefano00038@yahoo.com and pvrolijk17@gmail.com.

Please stay safe and stay in touch.



(afisher@ucsc.edu)



New EPS Funds

The Marc and Rita Bond Scholarship Fund

Purpose: The Marc and Rita Bond Scholarship Fund provides need-based support to undergraduate students in the department of Earth and Planetary Sciences to assist with the cost of attendance at UC Santa Cruz.

History: The Marc and Rita Bond Scholarship Fund was created in 2023 by UCSC alum, Marc Bond, and his wife, Rita. Marc earned his Bachelor's degrees in both Earth Sciences and Environmental Studies in 1977. Marc asserts that these degrees, combined with the enriched life experiences gained while attending UCSC, put him on a path for a fulfilling and successful career and life. He established this fund in order to "pay it forward" to other students who would like to pursue these goals. Students who receive the Marc and Rita Bond Scholarship may use the funds towards the cost of attendance, including tuition and fees, room and board, books, and supplies, transportation, personal expenses, campus health insurance, and emergency assistance.

James R. Hein Blue Water Fund

Purpose: The James R. Hein Blue Water Fund supports Earth and Planetary Sciences students who are focused on blue water (deep ocean) research.

History: The James R. Hein Blue Water Fund was created in 2023 by UCSC alum, James R. Hein. Jim was one of the first doctoral students in the department, and he earned his Ph.D. in Earth Sciences in 1973. He became internationally renowned for his work in interdisciplinary research in geology, oceanography, geochemistry, and mineral deposits. Now retired, Hein is acutely aware of the need for the next generation of scientists to continue deep-ocean exploration, as current research is influencing green energy, land resilience, and climate change. Jim established this fund to ensure that UC Santa Cruz serves as a pipeline for brilliant researchers to carry on this important work.

Seismology Visitors Fund

Purpose: The Seismology Visitors Fund supports expenses associated with bringing scientific visitors to UC Santa Cruz to discuss or collaborate on geophysics, with a preference for visitors related to seismology or earthquake physics.

History:

The seismology and earthquake physics group at UC Santa Cruz has become an intellectually vibrant and world class institution during the tenures of seismologists Thorne Lay and Susan Schwartz. Upon both of their retirements in 2023, their colleagues recognized that the research and educational enterprises are fueled by a steady flow of scientific visitors to give talks, and to collaborate and interact with students and researchers. They established this fund to promote these fruitful interactions, and funds may be used to cover travel costs, local accommodation and food, logistical support, and events designed to foster interaction between the visitors and local students and colleagues.



James Hein testifying for the ISA Council of Nations.



**Earth and Planetary Sciences Department
University of California, Santa Cruz**

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E&MS Building, Room A232
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<http://eps.ucsc.edu>

Ways to Give to the Earth and Planetary Sciences Department at UCSC

As the Earth and Planetary Sciences Department has grown in stature and numbers, we have benefitted from contributions made by our network of alumni, families, and friends. These contributions support a wide variety of teaching, research, and service activities, and are particularly important in providing academic and professional development opportunities for EPS students. Please contribute to any of the funds/endowments listed on the following page, or make a donation to the "Earth Sciences Achievement Fund" so that your gift can be put to use where it is needed most.

(1) Please Give Online

Please visit the EPS web site for information on current funds/endowments and EPS Department priorities: <http://eps.ucsc.edu/support-us/>

We recently updated this part of the EPS website. You can read about current development priorities, and after choosing the fund/endowment of your interest, you will be transferred directly to a page where you can enter the amount of your gift and credit card information.

(2) Please Give by Check or Credit Card

Please use the form on the next page to prepare your donation. We list a variety of EPS development options; more information for each of these can be found at our website

(3) Please Call or Email for Information

We are glad to discuss your interest in supporting EPS at UCSC, and to provide information that may be helpful in directing your contribution to be consistent with your goals.

Please contact:

- Matthew Clapham (Department Chair): (831) 459-1276, mclapham@ucsc.edu
- Lisa Stipanovich (Department Manager): 831-459-4478, lms@ucsc.edu
- Andy Fisher (EPS Development Coordinator): 831-459-5598, afisher@ucsc.edu

(4) Please check with your employer to see if they will match your donation!

Please mail to: UC Santa Cruz Foundation

Attn: Gift Administration

1156 High Street

Santa Cruz, CA 95064

----- Form for Giving to Earth and Planetary Sciences at UCSC -----

Donor Name(s): _____

Address: _____

Email: _____ Telephone: _____

Gift amount: \$ _____ Gift designation: _____

Please attach a check payable to the UC Santa Cruz Foundation (with fund/endowment designation written under "Memo"), or enter credit card information:

Credit Card Type: Visa ☐ MC ☐ Discover ☐ AmEx ☐

Credit Card #: _____ Expiration Date (Mo/Yr): _____

Name on Card: _____ Signature: _____

My company will match my gift (company name): _____

EPS Development Options :☐ **EPS Achievement Fund**

This unrestricted endowment generates interest that supports immediate EPS research, education, and development needs, directed flexibly as needed on short notice.

☐ **Aaron and Elizabeth Waters Fund**

The Waters Fund honors the department's founding chair and his wife, supporting excellence in graduate research with awards for thesis proposals and fellowship support.

☐ **Earth's Environment Fund**

The Earth's Environment Fund supports EPS graduate and undergraduate students conducting research involving water resources, climate change, and Earth's landscapes and aquatic systems.

☐ **Eli Silver Earth and Planetary Science Opportunities Fund**

The Eli Silver Fund supports EPS undergraduate majors and graduate students, contributing to costs for professional development, education, and living expenses.

☐ **Gary Griggs Fund**

The Gary Griggs Fund supports research and professional development for students completing degrees in Earth and Planetary Sciences and Environmental Sciences, at both the graduate and undergraduate levels.

☐ **Gerald Weber and Suzanne Holt Fund**

The Weber-Holt Fund supports EPS majors while they participate in summer field camp, an iconic experience that satisfies the "capstone course" requirement applied to all undergraduates at the University of California.

☐ **Holly Day Barnett Fund**

The Holly Day Barnett Fund supports an annual award to an outstanding EPS major with interests in Environmental Earth Sciences.

☐ **J. Casey Moore Fund**

The Casey Moore Fund supports current EPS graduate students as they conduct thesis-related research.

☐ **James R. Hein Blue Water Fund**

The James R. Hein Blue Water Fund supports Earth and Planetary Sciences students who are focused on blue water research.

☐ **Seismology Visitors Fund**

The Seismology Visitors Fund supports expenses associated with bringing scientific visitors to UC Santa Cruz to discuss or collaborate on geophysics, with a preference for visitors related to seismology or earthquake physics

☐ **Support for Undergraduate Research in Geological and Environmental Sciences Fund**

The SURGES Fund supports undergraduate students as they complete research projects, giving students a chance to consider career and graduate school options.

☐ **Tim and Diana Lawton Endowed Fund**

These unrestricted funds shall be used to support initiatives, special projects, or areas that require urgent support. This may include a variety of research, educational, or alumni development needs.

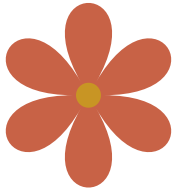
☐ **The Marc and Rita Bond Scholarship Fund**

The Marc and Rita Bond Scholarship Fund provides need-based support to undergraduate students in the department of Earth and Planetary Sciences to assist with the cost of attendance at UC Santa Cruz.

☐ **Zhen and Ren Wu Memorial Award Fund**

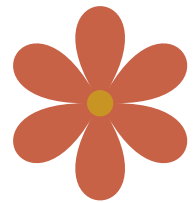
The Wu Fund supports EPS graduate students in geophysics as they conduct thesis-related research, with an emphasis on students seeking careers in exploration industries.

Please mail to: UC Santa Cruz Foundation, Attn: Gift Administration, 1156 High Street, Santa Cruz, CA 95064



ALUMNI UPDATES

1970S



John Childs, Ph.D. 1972

John Childs is still leading Childs Geoscience Inc. (CGI) in various exploration and development projects for metals and industrial minerals throughout the western US. Projects include limestone in California; graphite, copper, molybdenum, gold, PGEs, and base metals in Montana; and lithium elsewhere. John was greatly saddened by the death of Bob Garrison and more recently Jerry Weber. He was delighted to reconnect with many old friends and mentors at the memorial service in Santa Cruz for Jerry. CGI typically seeks to hire geologists for exploration projects in the spring.

Richard Gordon, B.S. 1975

I continue on the faculty at Rice University (Houston, Texas) in the department that is now named "Earth, Environmental and Planetary Sciences". In recent years I have taught our flagship non-major intro course "The Earth". I have also recently taught upper division/graduate courses in Global Tectonics and in Tectonophysics. My recent research has focused on rates of motion between hotspots, the apparent polar wander of the Pacific plate determined from the skewness of marine magnetic anomalies, the rheology and dynamics of diffuse oceanic plate boundaries, and the non-rigidity of "rigid" tectonic plates. This past spring I was fortunate to be honored by the European Geoscience Union as the recipient of the Stephan Mueller Medal for research in Tectonics and Structural Geology."

I attach a photo taken (right) at the EGU General Assembly this past spring with my citationist Gregory Houseman and with Paola Vannucchi, the President of the Division of Tectonics and Structural Geology.

Vince Matthews, Ph.D. 1973

At age 80, I re-entered the classroom for the first time in the 21st century to teach GEOL 301-- Earth Resources and Sustainability. I still serve on the Advisory Boards of the University of Georgia and the University of Wisconsin-Eau Claire.

Fraser Goff, Ph.D. 1977

After 26 years of traveling around the USA and abroad doing geothermal exploration and volcanology research, I retired in 2004 from Los Alamos National Lab, New Mexico. Since then, I've been a consultant, a geologic mapper for the New Mexico State Map Program (joint with USGS) and Adjunct Professor at University of New Mexico and New Mexico Tech. My wife Cathy (retired from USGS) and I also lead field trips for non-geologists to scenic and interesting locations in New Mexico, usually 3 to 4 trips per season. Cathy and I have 4 kids and 4 grandkids. We divide our "spare time" at houses in Los Alamos and Kona, Big Island, Hawaii. More and more, we're taking trips. This year we visited the Seychelles, Iceland, New York City, Maine, Oregon, the Annular Solar Eclipse, and of course, Hawaii. My time at UCSC was productive and enlightening. Great memories. Loved the beaches and the surf. But none of my professors or fellow graduate students are still there. Perhaps, I should visit!



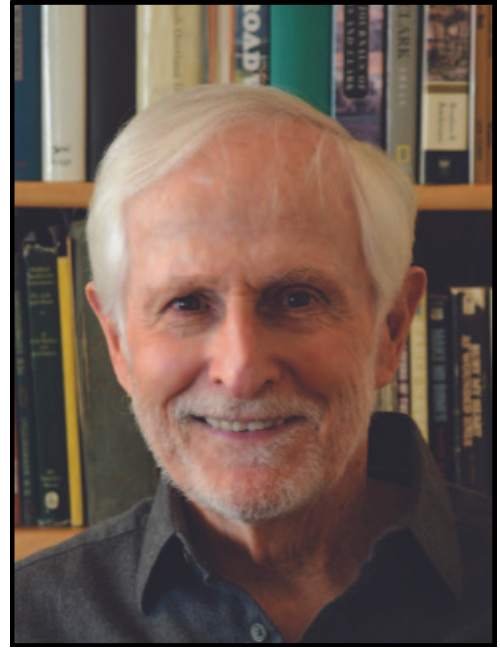
Richard Gordon at the EGU General Assembly

ALUMNI UPDATES

✿ 1970S ✿

Steve Rowland, Ph.D. 1978

I completed my PhD at UCSC in 1978, with Leo Laporte, and was fortunate to land a faculty position at the University of Nevada Las Vegas. I have been in Las Vegas ever since, enjoying the wonderful geology of this region. I'm now Professor Emeritus at UNLV, but still very active with research projects, mostly involving Cambrian stratigraphy and trace fossils of various ages. I also work part-time at the Las Vegas Natural History Museum, managing the paleontology lab and talking to kids about dinosaurs. With the help of my musically talented sons, I'm currently having an amazingly fun time writing a musical play concerning a famous archaeological/paleontological excavation that took place in 1930 near Las Vegas.



Steve Rowland

Ken Johnson, B.S. 1979

Ken is currently a senior technical principal at WSP USA in San Francisco. Ken has spent recent years leading geologic and geotechnical projects in support of infrastructure improvements and expansion, mostly in transportation and water supply sectors. He led the geotechnical design and construction of the recently opened Central Subway project in San Francisco (check out the Yerba Buena Moscone Station at 4th and Folsom during AGU along with the Union Square and Chinatown Stations!), and is currently working to design a new water supply tunnel for the East Bay Municipal Utility District to improve the resilience of its water conveyance across the Sacramento-San Joaquin River Delta. Other current projects include BART to San Jose, Link-21, and assisting Caltrans to find a permanent solution to Last Chance Grade landslide complex on US 101 in Del Norte County, CA.

Looking forward to seeing you at the Chieftain in a couple of weeks!

1990's

Tracy Hancock, M.S. 1993

Tracy Connell Hancock, UCSC EPS MS 1993, started a new role with the US Environmental Protection Agency in Washington, DC as their Senior Innovation Officer. In this role, Tracy provides vision and leadership in facilitating EPA's innovation programs, including participatory and community science and challenge and prize competitions. Check out Tracy on LinkedIn <https://www.linkedin.com/in/tracy-hancock-85a845163> and EPA's Innovation Website <https://www.epa.gov/innovation>.

ALUMNI UPDATES

1990's

David Peterson, B.S. 1992

After graduation I went to work for Applied Geosciences where I was a hazardous material consultant assessing and cleaning up contaminated soil and groundwater. In 1996, I went to graduate school at University of Southern California and received an MBA in 1998. I then worked at a private equity firm, Prometheus Partners, for 8 years buying and managing businesses. I started working for myself in 2006 where I started a water treatment company to recycle wastewater into irrigation water with a grant from the California Energy Commission. In 2015, I went to work at a civil engineering firm where we designed wastewater treatment and water recycling systems.

In 2020, I partnered with some German investors to acquire an insolvent specialty solar manufacturer where I am currently Chairman of the Board. The company, Ascent Solar Technologies, Inc. (ASTI), is now listed on Nasdaq and recently announced a 50% increase in the efficiency of its specialty thin film solar modules (<https://finance.yahoo.com/news/ascent-solar-technologies-inc-increases-123500968.html>). The company has completed a successful mission on the International Space Station (https://semiconductor-today.com/news_items/2021/oct/ascent-211021.shtml) and plans to supply its solar modules to space and aerospace companies for use on drones, satellites, and solar sails.

I live in Pacific Palisades, CA with my wife and two sons. Attached is a picture of me. I have great memories of my time at UCSC, including riding my skateboard down from the North Remote Parking Lot, surfing Natural Bridges and still miss my old friends and the amazing views of the ocean from the redwood surrounded meadows of campus. My favorite class was Coastal Geology taught by Prof. Gary Griggs.



David Peterson

John Bonsangue, PG, B.A. 1993

After field camp I moved back home to Orange County, CA and began working as an environmental consultant. I was fortunate enough to have taken Shirley Dreiss's Groundwater course. In her course I was introduced to a large groundwater injection project used to control seawater intrusion along the coast in Orange County. The project is called the Talbert Seawater Intrusion Barrier (barrier). In 2000 I joined the Orange County Water District (OCWD) as a one-year limited term contract geologist assigned to the Barrier. I'm blessed to be a member of the OCWD staff to this day. Since joining OCWD, the barrier has doubled in scale and became a driving force behind what is now the world largest recycled water program, OCWD's Groundwater Replenishment System (www.ocwd.com/gwrs/). Over the past 23 years I have learned a great deal about the science of groundwater injection. This knowledge has allowed me to help people all over the world who see groundwater injection as a viable way to protect groundwater resources or stabilize land surface subsidence.



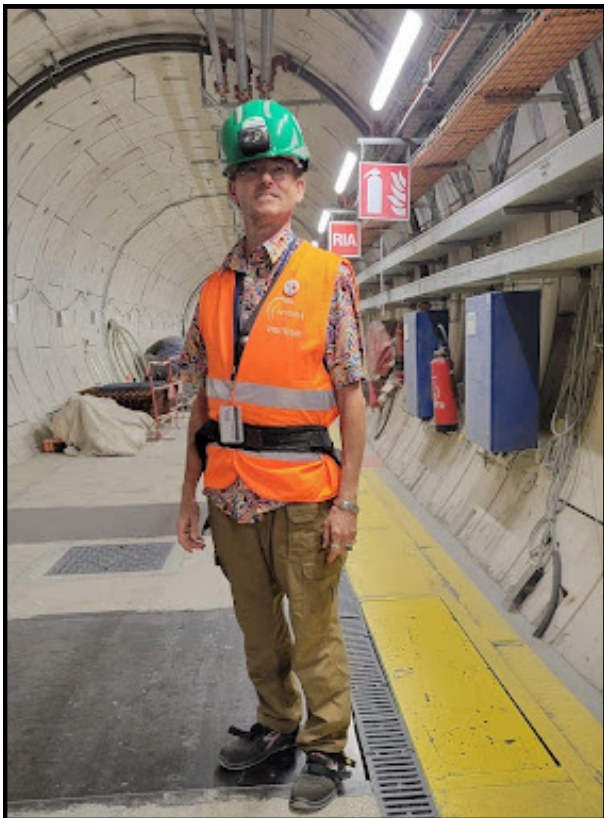
John (center) with daughters Angie (left) and Kimberly (right)

ALUMNI UPDATES

1990's

Philip Stauffer, Ph.D. 1999

Dr. Philip Stauffer recently visited the French underground research laboratory for nuclear waste repository science. The ANDRA facility is located in Bure', about an hour and a half south of Troyes, in rolling farmland. The trip included a tour of the subsurface facility, 450 m below the surface in the Callovo-Oxfordien claystones of the Paris Basin. The work is related to Phil's new position as Program Manager for Environmental Management at Los Alamos National Laboratory. Phil has worked at LANL for 32 years, living deep in the Jemez Mountains with his wife, three dogs, and two sons.



Dr. Philip Stauffer

2000's

Kevin Weberling, M.S. 2002

Hi fellow Slugs!! I hope all of the UCSC EPS Alumni and their families are all doing well this 2023 holiday season.

I attended UCSC for my Master of Science degree in the Earth and Planetary Sciences program from 2000-2002. I have many fond memories working with my advisors Casey Moore, Bob Garrison, and Hilde Schwartz, as well as all of my fellow classmates and professors during that time. I worked on one of the initial projects mapping clastic injectite orientation and provenance within the late Cretaceous Great Valley sediments outcropping along the western margin of the San Joaquin Valley in the Panoche Hills. It has been a pleasure to see follow-on work and continued research in my field area from other scientists at UCSC, the University of Aberdeen, and other institutions throughout the world.

After graduating from UCSC, I was hired by ExxonMobil as an exploration geologist primarily working offshore international properties in West Africa, Eastern Canada and Southern Mexico. I continued my career in the petroleum industry with Marathon Oil and Occidental Petroleum working various onshore properties throughout the US in the mid-continent and California until 2020.

In 2020, the COVID pandemic and remote work opportunities allowed my wife Lara and I to move back to the Pacific Northwest closer to our families. I am currently working as a Senior Hydrogeologist for the State of Oregon - Department of Environmental Quality. I work on various projects supporting aquifer and drinking water source protection, aquifer recharge and recovery projects, as well as the statewide underground injection control program. My decades-long career as a geoscientist has been super rewarding on both a personal level and helping raise a family. I have been lucky to work and study throughout the world, in large part to my education at UC Santa Cruz!

ALUMNI UPDATES

2000'S



Kevin Weberling and his wife, Lara

Eric Peterson, B.S. 2003

Eric now lives in Manhattan, NY after 16 years in Houston, TX. He will be pursuing an Executive MBA at NYU Stern starting in January 2024. Eric also has a startup company seeking to repurpose subsurface tools and technology used from his many years of work in the oil and gas industry at SLB and BHP to develop more clean and sustainable geothermal energy.

Amelia L., B.S. 2005

After leaving UCSC in 2005, I moved to New Zealand for a year to work and play, snowboard and travel the country. I took a job with an Environmental Consulting firm back in the Bay Area upon return, and then moved to Boulder, Colorado in January 2008. I enrolled in a Masters of Civil Engineering program, with an emphasis on Engineering for Developing

Amelia L., cont.

Communities. I spent two years in Colorado, traveling to Nepal every 6 months as I worked on community water systems, building latrines, and teaching kids about hygiene and handwashing. This launched my career in international development as a Water, Sanitation and Hygiene expert, starting in Gulu, Uganda drilling wells (a perfect combination of my geology and engineering backgrounds), and have since worked in Nepal, Cambodia, Ethiopia, Uganda, Nigeria, and South Sudan. I currently live in Pretoria, South Africa, working for Humanitarian OpenStreetMap Team, an open-source mapping organization promoting collection and use of geospatial data for communities, development and humanitarian workers, and local and national governments. I spend my weekends running (trail or road), biking (mountain or road), triathlon-ing, sewing clothes and traveling around the world with my family.



Amelia L.

2010'S

Sora Kim, Ph.D. 2010

I got tenure and promotion to Associate Professor in the Department of Life and Environmental Sciences at UC Merced. I had a few papers on megalodon and rode that wave for a while with an appearance on Shark Week (Jaws vs. the Meg; photo attached) and feature on Science Friday reviewing 'Meg 2'

ALUMNI UPDATES

2010'S



Jaws vs. the Meg (Sora Kim)

Lauren Schurmeier, B.S. 2011

I am currently a postdoctoral fellow at the University of Hawai'i at Mānoa, working remotely from the bay area. My current work focuses on icy satellite topography and geodynamics, and clathrate hydrates in planetary ice shells and on Earth. I am currently finishing up my Cassini Data Analysis Program (CDAP) grant to study "The Influence of Clathrates on Titan's Ice Shell." This year I am excited to share that I will be starting two new CDAPs. I am the PI of the project titled "Explaining Titan's Topography: Modeling the Influence of Crustal Clathrates and Organics" which includes co-I Douglas Hemingway (another UCSC alumni) and I am a Co-I for the project titled "Effects of Methane Clathrate on the Depth of Titan's Craters."

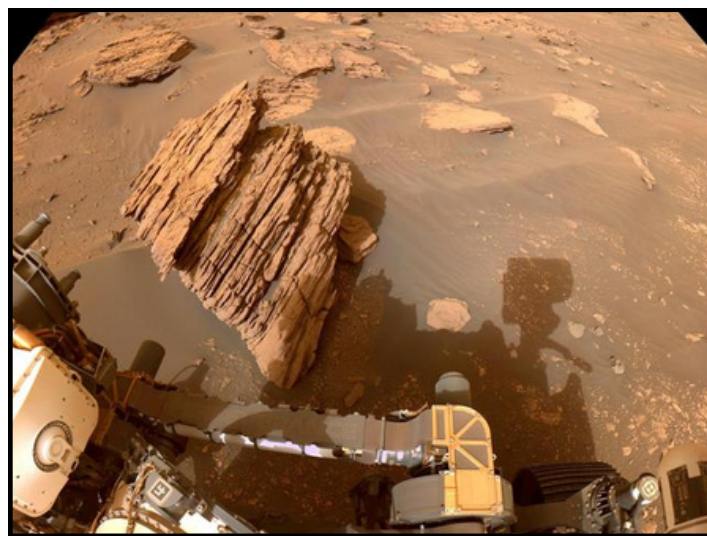
Andrew Kruger, B.S. 2016

Over the past several years since graduating from UCSC, I have been working at the NASA Jet Propulsion Laboratory. My current roles lie within the Science Operations of the Perseverance rover, where I am a part of the "Tactical Uplink" team that plans the rovers' daily activities. In this duty (called Pilot), my contribution is to determine what scientific and engineering activities we will perform tomorrow on Mars based on our priorities, available power, and data budgets. Off-shift I serve as the Pilot Role Lead, providing guidance to other team members and trainees as needed.

Andrew Kruger, cont.

Recently, I have also been involved in the ongoing development of the Mars Sample Return mission.

In all my roles, an understanding of the Earth Sciences is highly valuable and often mandatory. I was lucky enough to obtain this understanding via a wide range of EPS undergrad courses provided by UCSC, across hydrology, sedimentology, geomorphology, geophysics, and planetary science. And of course mineralogy, even though I still have nightmares about the mineral identification final exam.



From NASA: The Perseverance rover's image of Betty's Rock on Mars.

Samantha Wilson, B.S. 2011

I am currently a Geospatial Intelligence (GEOINT) Imagery Technician (Warrant Officer) for the United States Army and have been serving since March 2011. During the first decade of my military career, I was an enlisted Soldier responsible for analyzing satellite imagery and full motion video feeds (drone feeds) related to military operations. Throughout my career, I was assigned to various organizations in South Korea, Washington State, Arizona, and Texas. Now I have recently transitioned as a Warrant Officer GEOINT Imagery Technician, which is an officer who is a subject matter expert in the GEOINT field. I am responsible for exploiting remote sensing capabilities related to military operations across the globe. I also strategize and manage imagery-related collections from satellites to provide the most up-to-date visualization and analyses of areas on earth related to my organization's mission.

Samantha Wilson, cont.

At the end of this year, I am moving to Virginia where I will work my first assignment as a Warrant Officer. I hope to make impactful changes to the military intelligence community as a subject matter expert.

Michael Nayak, Ph.D. 2016

Last year I started a new job as a Program Manager at DARPA. As part of the Defense Sciences Office (DSO) and Strategic Technologies Office (STO), I've since started research programs in: building large-aperture tiltable liquid mirror telescopes ([Zenith](#)), integrating powered motors with parachutes for very long-distance flight close to the ground ([CHUTE](#)), new technologies for space superiority ([BRIDGES TA-2](#)), automatically repackable parachutes ([FLARE](#)), DARPA's first-ever lunar research program, bringing together industry leaders to build a future lunar economy ([LunA-10](#)), a consortium to design interoperability standards for future commercial services on the Moon ([LOGIC](#)), and investigating ways to extract power from mini-magnetospheres on the Moon ([YFA 2023, Univ of Washington](#)), in addition to running existing DARPA programs in atmospheric science ([AtmoSense](#)) and ionospheric modification (SMART). It's been a busy year! A solicitation for my latest effort, to investigate Beyond Line of Sight power beaming on the Moon, closes just before Christmas (YFA 2024, Topic area 16).

Tyler Paladino, B.S. 2017

I'm living in the PNW in Vancouver, WA (just across the way from Portland, OR). I'm currently a Mendenhall postdoctoral fellow at the USGS Cascades Volcano Observatory! I'm working on identifying volcanic deformation in InSAR data using machine learning techniques and having a grand ol' time doing it. Also working on some older projects and offshoots from my PhD related to explosive eruption plume modeling and atmospheric ash dispersal. Working at CVO has been great. Lots of great volcano scientists here all working on really neat volcano problems as well as plenty of opportunities to help the field crews perform maintenance on our monitoring equipment in amazing places throughout the Cascades. It's also just been interesting seeing how a volcano observatory

ALUMNI UPDATES**2010'S****Tyler Paladino, cont.**

operates on a day-to-day basis as well as how they interact with the public.

Anyways, learning lots of neat stuff in a variety of disciplines. Miss all my slugs! I have fond memories of exploring campus, department classes, and studying with all my fellow slugs at S&E. Santa Cruz will always be my happy place.

Dante Capone, B.S. 2019

I'm currently a PhD student in Biological Oceanography at Scripps Institution of Oceanography. I work in the lab of Dr. Moira Décima where I study the planktonic ecosystem of the California Current. I'm interested in how California wildfires are impacting marine plankton along our coast - a topic relevant to the many regions of California I've been able to live in. I frequently participate in scientific cruises off the coast and have come to enjoy the intense but thrilling expeditions to collect data and understand how our ocean is changing with our changing climate. Most recently I participated in the NASA S-MODE campaign working to understand submesoscale dynamics with a large, collaborative science team off the coast of San

Francisco. This February I'll be going out aboard the RV Revelle for 5 weeks with the California Current Ecosystem Long-Term Ecological Research group to examine the effects of marine heatwaves on the environment.



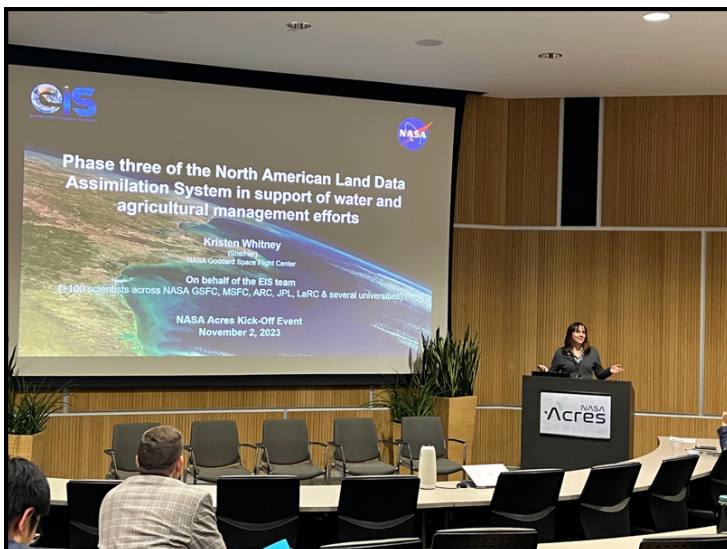
Dante Capone

ALUMNI UPDATES

2010'S

Dante Capone, cont.

The UCSC Earth Science department was transformative in my undergrad. Most of my fondest memories come from my classes in EPS, especially field trips. EART109 Field Geology may to this day be the hardest class I've ever taken relative to my knowledge and abilities at the time. There were lots of days I'd classify as type II fun but thanks to an awesome class of students and the PhD students who taught us, the gnarly field days in the Hollister heat, Point Lobos rain, and up and down extreme terrain hold a special place in my heart. Other classes including Matthew Clapham's R Data Analysis, Chris Edwards GFD, and Emily Brodsky's MATLAB geophysics have all proved invaluable to my skill set. I would frequently attend the EPS GEODES social events and be welcomed with Woodstock's pizza and Lagunitas beer even though I wasn't a graduate student. The tight-knit bonds in the EPS department are something that I miss now at a larger institution. Outside of my research I have served as co-chair of the Scripps Graduate Student Council, run competitively for San Diego Track Club Elite, enjoy making art and sourdough bread, and jumping in the ocean as often as possible.



Kristen Whitney at a recent talk

Kristen Whitney, B.S. 2011

2023 has been a year of whirlwinds! My fiancé and I graduated, married, and moved across the country, swapping the Arizona dry heat for the hustle of Washington, D.C. I started my first job as a NASA Postdoctoral Program fellow in the Hydrological Sciences Lab at NASA Goddard Space Flight Center. Here, I delve into land surface modeling and satellite data assimilation, researching the impacts of extreme hydroclimate events on water and food security. I also collaborate with the Earth Information System and Land Information System teams on developing the upcoming phase of the North American Land Data Assimilation System (NLDAS-3). Amidst the alphabet soup of NASA acronyms, I can't help but feel privileged and grateful for where life has brought me. I owe a huge debt to the inspiration, knowledge, and mentorship I received as an EPS undergrad at UCSC. Those years forever changed my life, and I'll always be proud to be a Slug. Go Slugs!

2020'S

Alex Atutwile, B.S. 2020

I graduated with a combined degree in Earth Sciences and Anthropology in 2020, and I have since obtained an MSc in Human Osteology and Funerary Archaeology from the University of Sheffield in 2021. I am currently a year into my PhD in the Laboratory for Human Osteoarchaeology at Leiden University in The Netherlands, where I am researching how child labour practices during industrialisation manifest on non-adult skeletons in the archaeological record. I'll be back in California next March to present my research on the biomechanics of spinal paleopathology in non-adults at the 93rd annual meeting of the American Association for Biological Anthropologists in Los Angeles! While I love living in The Netherlands, I'm looking forward to escaping the rain and coming home!

ALUMNI UPDATES

2020's

Jonathan Waian, B.S. 2020

I completed my undergraduate in 2020 from UCSC. I am currently living in Sydney, Australia and working with a really great startup called Earth AI. Earth AI has developed the first artificial intelligence algorithm for mineral targeting in greenfield exploration. The AI system utilizes public domain geophysical and geochemical datasets, ASTER datasets, and satellite imagery to train and predict mineralization. The company is headquartered in San Mateo, CA but all operations are currently based in Australia. I moved to Sydney a little over a year ago to work as a geologist with Earth AI. I spend multiple week long field campaigns in the Outback and in New South Wales conducting exploration fieldwork to validate AI generated targets and conduct detailed geologic mapping and geochemical sampling. With this position I frequently find myself drawing on the things I learned throughout my classes at UCSC, especially from structural and field geology.



Jonathan Waian on a recent trip

Jonathan Waian, cont.

When I'm mapping in the Outback it feels like summer field at the Poleta Fold Belt or mapping at New Idria, although nice outcropping geology isn't as easy to come by. I am very grateful for all the professors and experiences I had while studying at UCSC.

Sean Galligan, B.S. 2020

I graduated from UCSC in 2020 and it was hard to land a job at first in the midst of the pandemic. I moved home to Southern California and did odd jobs here and there to get by. Last year, I decided to take the ASBOG FG Exam and to get my career started. I studied for some months, utilizing study materials and practice tests. I reread all my notes and tests from my Earth science classes. All the while, I was sending out job applications online every week. On the exam day in March 2023, I walked in feeling confident and prepared. Later, I got a response from a job application I sent in all the way back in August. They gave me an interview and offered me the job the next week! Now I am a Staff Hydrogeologist at a private geologic consulting firm working under licensed professional Geologists. I got the FG exam results back a month or two later with a passing score! I became a certified Geologist-in-Training and am now working towards obtaining my PG! A big project I am involved with is a groundwater monitoring project at Pepperdine University.

An interesting recollection from my times at UCSC... how about an embarrassing one. I worked on campus in an Ocean Science lab. After working there for over a year I was given a new responsibility. This new task involved some different chemicals to test our samples. On the very first day I ended up spilling a good amount of highly acidic HCL in fume hood and onto the ground. My leading Professor had to clean up my mess with an acid kit and I felt horrible for my mistake. Shortly after I was told they no longer need me to help with that task. This memory pops into my head every once in a while and makes me cringe.

The Earth and Planetary Sciences Department and Institute for Geophysics and Planetary Physics proudly acknowledge their many advocates and supporters. The following people and organizations have made gifts to the department in 2023. Thank you one and all!

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