

Earth & Planetary Sciences at UC Santa Cruz



Fall 2020



Chair's welcome



Greetings, alumni and friends of the department!

So, 2020...

I'm writing this note – from home, naturally – as votes are being counted in a nerve-wracking presidential election, having interacted with friends and colleagues nearly entirely through tiny boxes on my computer for the past eight months. It goes without saying that the COVID-19 pandemic has upended all of our lives, and we're wishing you all the best during these challenging times.

Here at EPS, building access is permitted only for essential research and teaching activities, and only with carefully-planned safety precautions. We have been teaching our classes remotely, at first with only a few weeks' notice in the spring, which has required huge effort by everyone to deliver a high-quality learning experience for students. Even our summer field camp was unable to run, despite herculean effort by Jeremy Hourigan to develop a COVID safety plan, marking the first time in decades that students didn't converge on the Poleta Fold Belt in June and July. On the bright side, Field Geology is one of a handful of UCSC classes with an in-person component this fall, so students are able to experience the splendor and challenge of New Idria with Hilde Schwartz.

Unfortunately, COVID also derailed our plans for connecting with you, as we were forced to delay our planned May alumni reunion. Rest assured, we're committed to holding an in-person event as soon as this is safe and practical. In the meantime, we're pleased to announce the two newest inductees to the EPS Alumni Hall of Fame: Sue Bilek (PhD 2001) and Alan Busacca (B.S. 1973) – congratulations to both! We're also working hard to develop a remote alternative to our traditional Thirsty Bear event at AGU, and we look forward to catching up with you virtually! Look for more information about the Hall of Fame and our virtual Thirsty Bear event in this issue.

As if COVID-19 wasn't enough, the CZU Complex fire in August burned within a couple miles of the edge of upper campus, creating tremendous anxiety in the community and causing widespread destruction in Bonny Doon and the surrounding area. Many UCSC faculty, staff, and students were evacuated from their homes in

Table of Contents

- p.2 Chair's Welcome
- p.5 Department News
- p.6 GEODES
- p.8 EPS Advisory Committee (AC)
- p.9 Hall of Fame
- p.11 Fifty-three Years of Earth Science
- p.14 Slugs in the Field
- p.17 Awards & Degrees
- p.20 From the Archives
- p.21 Casey Moore Memorial
- p.24 Remembrances of Casey Moore
- p.27 Commencement Address
- p.29 Show us your Baked Goods
- p.30 Development Updates
- p.33 Alumni News
- p.36 Donor Acknowledgement

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www.facebook.com/UcscEPS

Chair's welcome (cont'd)

Bonny Doon and the San Lorenzo Valley, and even from on-campus housing. Sadly, nearly 1000 homes were destroyed by the fire, and our own Rob Coe was one of those who lost their house.

And in one final piece of sad news, we lost one of the titans of the department with the passing of Casey Moore back in March. The role that Casey had in building EPS both into a center of research excellence and into a positive, collegial, and supportive community cannot be overstated. His influence continues to resonate through the generations of alumni who have taken Casey's generous spirit and intellectual rigor with them into their careers and lives.

Despite the general chaos, the past year has seen some silver linings. We were very fortunate to be able to hire Dr. Tamara Pico as a new assistant professor, an opportunity that became available because she was awarded the prestigious UC President's Postdoctoral Fellowship, a stepping-stone to a UC faculty position. Tamara is a rising star in geodynamics, focusing on numerical simulation of ice sheets, sea level, and coastal landscapes. In addition, she conducts research on historical and current scientific practices in the geoscience community, and she will be affiliated with UCSC's Science and Justice Research Center when she begins in fall 2021. We're excited to welcome Tamara to the department!



Teaching, 2020 style

The past year has also been a successful one for faculty awards. Francis Nimmo became the fourth EPS faculty member to be elected to the National Academy of Sciences, one of the highest honors awarded to scientists. Our exceptional early-career faculty continue to receive recognition for their outstanding work: Myriam Telus won a NASA Early Career Award, Xi Zhang was awarded the Ronald Greeley Early Career Award in Planetary Sciences, and Margaret Zimmer was selected as one of the Hellman Fellows here at UCSC. These and other awards continue the tradition of excellence in EPS, a marker of the tremendous work done by everyone in the department.

Our undergraduate programs continue to grow, this fall reaching nearly 400 majors between Earth Sciences and Environmental Sciences. Thanks to this growth, we conferred 75 bachelor's degrees in the past year, our highest number ever, and to a more diverse group of students than ever, with more than half of our graduates being students of color. We weren't able to hold our traditional in-person commencement ceremony, but the virtual ceremony via YouTube and Zoom was a great success thanks to the skillful work of our undergraduate advisor, Jade Loftus. We managed to retain many of the normal commencement features, including fantastic speeches from our peer-nominated student speaker Jeremy Peters and distinguished alumni speaker Judy Parrish. On the graduate side, we successfully recruited a cohort of 12 incoming students, in keeping with our normal yield, despite the uncertainties of COVID and the recruiting challenges posed by Santa Cruz's high cost of living. We have raised our stipend levels in an effort to mitigate rising housing and other costs as much as we can, but graduate student funding remains a department priority.

This year has also been a time of transition in the department. We have a new department manager, Lisa Stipanovich, who took over the reins in June. Despite having to jump on board during the work-from-home phase, she has settled in quickly and the department operations are functioning smoothly thanks to

Chair's welcome (cont'd)

her skill and efficiency. Also, Jim Zachos finished his term as department chair and is enjoying a much-deserved sabbatical after dealing with the chaos of COVID and the pivot to remote teaching, work-from-home, and the slow research ramp-up. Any hopes he had for a calm end to his term were pretty much destroyed, but we all appreciate his steady and effective leadership in face of a constantly-shifting landscape. Thanks to Jim's time at the helm over the past three years, EPS is in great shape. I stepped in as chair in July, and I'm excited to guide the department over coming years. Fortunately, the campus didn't literally burn down in August and, although UCSC faces a challenging budget situation over the next few years, I'm looking forward to working with everyone to move EPS forward.

Best wishes (and stay safe),



Matthew Clapham



Jeremy Peters giving his (virtual) graduation address. You can access the video at

<https://youtu.be/ShqdcjvzoZk>

**We hope to see you [virtually!] for our
20th Annual UCSC EPS Alumni Event during 2020 AGU!**

**Friday, December 4, 2020
from 6:00 - 8:00PM PST**

We'll have brief updates on the department, friendly competitions, and plenty of time to catch up in breakout groups!



We will email a link to join closer to the time
Pre-register [here](#) to be entered into a raffle
for some new EPS swag!

Department News



Tamara Pico

Dr. Tamara Pico (Caltech) will be joining the EPS faculty in 2021.

Prof. Myriam Telus received a NASA Early Career Award.

Prof. Margaret Zimmer was selected as a UCSC Hellman Fellow.

Prof. Francis Nimmo was elected to the US National Academy of Sciences.

Prof. Matthew Clapham received the Pikaia Award from the Geological Association of Canada.

Prof. Thorne Lay was elected a Fellow of the International Union of Geodesy and Geophysics.

Researcher **David Rubin** was elected a Fellow of the American Geophysical Union (AGU).

Prof. Andrew Fisher was selected as a Sigma Xi Distinguished Lecturer.

Alumna **Kathy Sullivan** (BS Earth Sciences 1973) became the first ever woman to get down to the deepest known point on planet Earth.

Alumna **Barbara Bekins** (PhD 1993) was elected to the National Academy of Engineering.

Alumna **Christie Rowe** (PhD 2007) was selected to give the AGU Francis Birch lecture.

Alumnus **Yingcai Zheng** (PhD 2007) was named the Robert and Margaret Sheriff Professor in Applied Geophysics at the University of Houston.



Myriam Telus



Francis Nimmo





GEODES is a student-run discussion group that aims to promote communication and diversity within the EPS Department. In 2016 GEODES received the Chancellor's Achievement Award for Diversity.

Thoughts from GEODES...

Hello everyone, and thank you for sharing yet another wonderful (albeit strange!) year with us. Especially throughout COVID-19, we appreciate the effort members of the department have given to ensure the tradition of community continues. It is with your support that GEODES is able to continue to provide avenues for meaningful conversations about issues facing our department and spaces for professional development.

In the past, GEODES has hosted events such as Research mixer events, a Queers and Allies Mixer, and workshops on Imposter Syndrome, Work-Life Balance, and Grad School as a First-Gen student. More recently, we have focused our energies on a few topics, of which we are particularly proud:

- The discussion with Dr. Ryan Emanuel of the Lumbee tribe and North Carolina State University titled "A River and its People" where Dr. Emanuel discussed his partnership with American Indian Tribes and other marginalized communities to provide information and support related to environmental issues.
- The GEODES Donation to the Anti-Police Terror Project, a Black-led, multi-racial, intergenerational coalition headquartered in Oakland that seeks to build a replicable and sustainable model to eradicate police error in communities of color. We also compiled a list of resources that people can use to educate ourselves

and take action. You can access the list of resources [here](#).

- The showing of *Picture a Scientist*, a documentary detailing the hardships and harassment faced by women and women of color in the sciences. We were very fortunate to have had Dr. Jane Willenbring (one of the women featured in the documentary) join us for an in-depth discussion of sexual harassment with the department.
- The upcoming Explicit and Implicit Bias Workshop with Dr. Teresa Maria Linda Scholz, UCSC's Chief Diversity Officer, scheduled for Winter Quarter. Dr. Scholz's workshops teach folks how to spot these biases and what we can actually do to combat these biases when we encounter them, and we look forward to having this discussion with the EPS community.





Our department, like many geoscience departments across the country, faces issues related to Diversity, Equity, and Inclusion (DEI). [AGU's 2018 demographic data](#) show that ~44% of students identified as female and ~1% chose "Prefer Not to Answer" (the lack of the term "non-binary" or other alternative options is common throughout the data). These numbers drop as experience increases (women make up ~36% of early-career, ~26% of mid-career, and 15% of experienced members). Data on race/ethnicity of minoritized AGU members are harder to come by, though it is worth noting that a [2018 study by Bernard and Cooperdock](#), published as a *Nature Geoscience* comment, found only 6% of geoscience PhDs from 1973 to 2016 were awarded to Underrepresented Minorities (URM; this includes Hispanic or Latinx, Black, and Native American individuals). Other metrics

of diversity are harder to quantify, given that religion, sexual orientation, disability status (among others) are "invisible" identities. This is all the more reason why GEODES and the DEI committee want to work with members of the department to increase awareness of issues facing minoritized groups so that we might find a solution, or at least take steps to improve the inclusiveness of our department.

We in GEODES hope to continue to provide events like these for the department, but we know we have more work to do and that we cannot do it alone. We are always open to feedback and ideas for future events!

Love,

GEODES



Workshop on first-generation students



GEODES field trip

The Earth and Planetary Sciences Advisory Committee

The EPS Advisory Committee (EPS-AC) was formed in 2012, providing a forum for accomplished alumni to help EPS achieve networking and fundraising goals. We recently welcomed new EPS-AC members, who have generously agreed to share their time, energy, and expertise on behalf of our community. Despite the pandemic, the full EPS-AC council met (virtually) in August 2020. 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 pyrolijk17@gmail.com

We thank members of the current EPS Alumni Council for help in networking and development!

Charles A. Lawson, B.S., 1973

Michael Underwood, B.S., 1976

*Peter Vrolijk, Ph.D., 1987

Laura K. Stupi, BA, 1997; M.S., 2000

Richard Gordon, B.A., 1975

Shengwen Jin, Postdoc, 2000

*Stefano Mazzoni, B.S., 2000; M.S., 2002

Kevin Biddle, B.S., 1973

Jon Erskine, M.S., 1998

Phil Teas, Ph.D., 1998

Kathy Sullivan, B.S., 1973

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

Mike McGroder, B.S., 1980

James Hein, Ph.D., 1973

Lisa White, Ph.D., 1990

* = EPS-AC Co-Chair

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Alumni Hall of Fame

The UCSC Earth and Planetary Sciences Advisory Committee created an Alumni Hall of Fame in 2018 to honor the achievements of our fellow undergraduate and graduate alumni. The members of the Advisory Committee wish to recognize our alumni colleagues annually for their contributions and achievements built off the Santa Cruz experience.

Recipients of this year's award are Susan Bilek (Ph.D 2001) and Alan Busacca (B.S. 1973). We know that many more of our alumni who are worthy of this recognition. **Suggestions for nominations in future years are welcome and should be forwarded to Peter Vrolijk (pvrolijk17@gmail.com) or Stefano Mazzoni (stefano00038@yahoo.com) for consideration in next year's award.** Following is a brief description from each recipient about how her or his Santa Cruz education influenced their subsequent careers.



Susan Bilek

Susan Bilek:
Is a Professor in Earth & Environmental Science at New Mexico Tech University

It is safe to say that my experiences at UCSC put me on my current career trajectory. The amazing group of students and faculty pushed me to learn, teach, and collaborate in ways that continue to benefit me every day. We had a great group of students, postdocs, and faculty in the seismology lab in the late 1990s, and the support and cooperation of that group helped shape how I interact with my graduate students, colleagues, and the broader seismology community. Thorne Lay certainly helped me develop the skills needed to succeed in seismology, and Susan Schwartz sent me on my very first seismology field deployment, in Costa Rica no less. Outside of the seismo lab, my interactions with other students and faculty, such as Casey Moore and Eli Silver, allowed me to better engage with a broader community of researchers involved in subduction zone science, and connections with many of these folks have persisted through the years of MARGINS, GeoPRISMS, and AGU meetings. Other friendships developed during those UCSC years have strangely enough returned to science collaborations, as I am now working with an old friend on completely new research directions in environmental seismology. Who knew that days of helping a friend (Pete Adams, Ph.D. 2004) install a seismometer on a Long Marine Lab cliff to examine wave energy on cliffs would one day lead to Pete's current PhD student helping me install seismometers to record water flow through karst conduits? Those UCSC connections are like that – strong, supportive, and enduring.

Hall of Fame (cont.)

Alan Busacca:

Is the Co-owner and manager of Windhorse Vineyard.

The Magical Mystery Tour that has been my life began, academically at least, at UC Santa Cruz. Nineteen Sixty-Nine! What a time it was! The campus was barely 3 years old and the total enrollment was about 2,900 undergrads and 150 graduate students. That was one of the reasons I was there: small size! Did I know, as I unpacked my few things from my VW Bug at College 5 (Porter College), that my winding path through my career would start with Earth Sciences and then wind through Field Geology to Soil Science (specifically Pedology) and Quaternary Geology and Geomorphology and on to Agriculture and finally to Viticulture and owning a wine-grape vineyard and making and selling fine wines? Nah, of course not. But it ALL, that whole winding path, started in the special, special place that is UC Santa Cruz and in the Earth Sciences program there.

My winding career and life path has been shaped by wonderful mentors, by allowing my curiosity and passion for scientific discovery overrule my fears of trying new directions and even whole new careers, by good fortune, and sometimes also by a bit of hard work. It was only years later that I really understood that, with faculty such as Casey Moore, Aaron Waters, Rob Coe, Othmar Tobisch, Jim Garrison, Eli Silver, Gary Griggs, and others, that I was blessed to have learned from and had my early successes nurtured by an amazing cadre of geologists of international stature and great humanity.

My graduate studies at US Davis (M.S. and Ph.D in Soil Science with plenty of grad-level Geology) led to a 25-year run on the faculty in the Soil Science, Agronomy and Geology programs at Washington State University, mentored in the early years by Henry Smith and Brian McNeal. In that time, I taught courses as diverse as Advanced Pedology, Advanced Viticulture, and World Agricultural Systems; led and shared with colleagues and generations of wonderful undergraduate and graduate students in too many field trips to count, and researched topics ranging from Ice-Age Mega Floods to ground truthing and modeling soil-landscape distribution.

And in the most recent chapter of my life, I embarked on a path, 15 years long and counting, of private consulting in soils and landscape analysis of site quality of existing and planned wine-grape vineyards (the study of *terroir*), to building and co-owning a vineyard and living in the amazing Columbia Gorge area near Hood River, Oregon, and to originating a small wine brand and marketing and selling fine wines.

All of this, *all of it*, spins back to the spirit of freedom to explore and to express myself as an individual and in science, that originated and was nurtured in the Earth Science program and in the larger community of UCSC in my time there. I moved forward from UCSC believing that anything was possible for me. I am humbled and honored to join my peers in the UCSC Earth and Planetary Sciences Hall of Fame. Thank you.

Alan Busacca B.S. 1973

COLLEGE V



BUSACCA, Alan J.
125 Old House

1674 Highland Oaks Dr.
Arcadia 91006

Fr. Science



Alan Busacca (then and now)

Fifty-three years of Earth Sciences at UCSC

by Gary Griggs

Earth Sciences got an early start at UCSC, thanks to the dedication, experience and skills of our founding chair, Aaron Waters. After having very successful careers building departments and training graduate students at Stanford, Johns Hopkins and UC Santa Barbara, he was invited to assemble a new department at Santa Cruz in 1967. He was 61 years old when he arrived and at the top of his field, having been elected to the National Academy of Sciences, awarded the Penrose Medal by the Geological Society of America, and was co-author of the most widely used introductory geology textbook.

We were very fortunate and still benefit from his insight and early decisions. He successfully got our program off the ground as he knew how to get things done in an academic environment and was an excellent judge of people. He often told us that hiring the best person was more important than the specific field of the individual. In the most recent (2018) U.S. News and World Report's ranking of graduate programs in the United States, UCSC ranked No. 10 in geophysics and seismology, and No. 19 in Earth sciences (tied with Cornell, UCSB, University of Chicago, University of Colorado-Boulder, and Rice). While many of the other leading departments have had a much longer history, UCSC achieved this level in a relatively short period of time.

Aaron and I overlapped two years at UCSB, and although I never took a class from him, his guidance and advice proved to be pivotal in my own career. I think he saw something in both Casey Moore (also at UCSB) and myself during our overlapping undergraduate years at Santa Barbara, as well as Bob Garrison who was at UCSB briefly, and managed to lure all three of us to UCSC. I had kept up communication with Aaron while working on my PhD. in oceanography at Oregon State University, and before I had even finished my 3rd year, he called and said he thought they had a position for an oceanographer at the new UCSC campus where he had been appointed



chair. I told him I was still only in my 3rd year, and in so many words he said – “Gary, you already know more about Cascadia Deep-Sea Channel than anyone else ever will, finish up and get a real job”. So in September 1968, I defended my Ph.D. dissertation after just three years, had just turned 25, and arrived at the new campus to join Aaron, Bob Garrison, Rob Coe, and Othmar Tobisch, who arrived at the same time, on an amazing adventure at the new highly experimental and innovative campus.

All of the early faculty in the 1976 photograph (below) but one have now retired, and sadly, both Aaron and Casey have passed on. This fall began my 53rd year at UCSC and I feel extremely fortunate to have been invited to join the faculty here right after graduate school.

UC Santa Cruz has gone through some major changes from the time of its initial inception and planning. I was asked by the Executive Vice-Chancellor about 15 years ago to chair a committee on the future growth of the campus, known as Strategic Futures. In that process I came across the original 1960 University Master Plan, which showed the entire campus built on the lower meadow,

Fifty-three years of Earth Sciences at UCSC (cont'd)

completely out of the redwoods, and that plan included a football stadium, a golf course, a department of military science and a school of home economics. Well, we didn't get any of those, but we did get Lick Observatory from UC Berkeley, and soon got a graduate degree program in the History of Consciousness, a farm and garden, and a Whole Earth Seminar to go along with the original Whole Earth Restaurant.

There were many long and vigorous faculty debates on the future role of the colleges and also the transition from narrative evaluations to letter grades; but now having been here through nearly the entire 55-year history of the campus, my own feeling is that we are still unique as an educational institution and have moved from what was known as the most beautiful campus in the world to one of the leading research universities in the world.

And Earth Sciences, which started on a strong foundation, has now been broadened to Earth and Planetary Sciences by virtue of recruiting a cadre of highly respected and internationally recognized planetary scientists. We also have one of the largest number of undergraduate majors in Earth and Planetary Sciences of any university in the country. I also believe, in addition to having a top ranked and highly respected faculty, that we have all gotten along well throughout our entire history, which has made for a program that continues to attract good students at both the graduate and undergraduate level.

On a personal basis, I decided two years ago after 75 graduate students that it was time to wind down my graduate program and focus on undergraduate teaching, research and writing, as well as policy involvement at the state and national level. My earliest graduate students were a few years older than I was and have all now retired. By virtue of teaching a large oceanography course for over 50 years, I have now had about 15,000 undergraduate students in my classes and I can't help but think that some of those students have gone on to fame



UCSC Earth Science faculty, 1976. The author is second from right, back row.

and fortune, or at least successful careers. And it's always a surprise to me when I run into one of those 15,000 former students, which happens quite often, and have someone who looks 60 or 70 years old say "I took your oceanography class back in....". I gave an evening talk in an old warehouse/pub two years ago in San Jose, a monthly get together for alums and others, called "A Pint and a Prof", which has recently been changed to "A Slug and a Stein". After my talk an older gentleman came up to me, explained that he took my oceanography class in 1975, and promised himself that if he ever saw me again he was going to ask me what the answer was to the last question on the final exam! I was shocked, but pleased that he actually not only remembered taking the class, but that he had remembered the last question on the final.

About 15 years ago, one of the students in oceanography came up to me after the first lecture of the quarter and told me that her mother and father had both taken my class. This set me back for a few minutes until I realized that this shouldn't be such a surprise as those first student would have been in their 50s and 60s at that time. What did surprise me was a student just a few years ago who told me her grandmother had taken my oceanography class! I now just wear this as some sort of badge of honor.

The department found a permanent home in the Earth and

Fifty-three years of Earth Sciences at UCSC (cont'd)

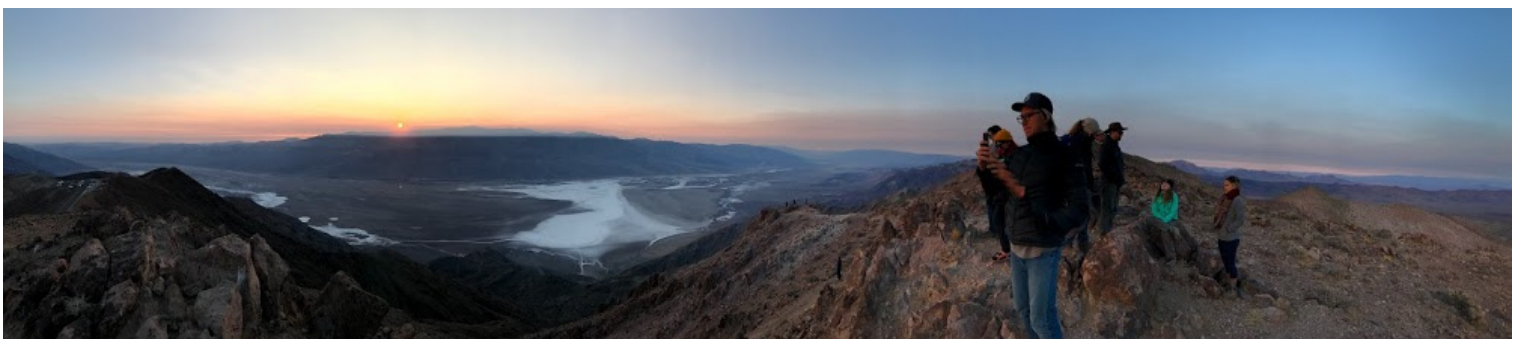
Marine Sciences Building in 1993, after starting out in Thimann Labs, then moving to Natural Sciences II, followed by Applied Sciences. In about 1990, I was asked by the Dean if I would chair an Earth and Marine Sciences Building Planning Committee. At the time I was completely unaware that there was such a building even being planned. It had been put on the list of future buildings by some thoughtful chair or Dean and it had finally risen to the top. I said OK, and that started an interesting new experience.

While I had already built two houses in Bonny Doon, I naively thought that a 130,000 sq. ft. science building couldn't be too much more complicated. It turns out not only to have been a whole lot more complicated, but I also had to work with all of the faculty in Earth Sciences, Ocean Sciences, and Ecology and Evolutionary Biology, who were all going to be in the new building and to try to keep them happy as the planning and construction moved forward. It was the largest building on campus at that time and also ended up, like Applied Sciences, having some major voids under part of the foundation. It has turned out to be a wonderful building that has been a great home for Earth and Planetary Sciences for 27 years.

My life changed in a very significant way in 1991 when I was asked if I was willing to be the Acting Director of the Institute of Marine Sciences, an organized research unit (or ORU). The director, Professor of Biology Bill Doyle, was going to take a year sabbatical that turned out to lead to his retirement the next year. This role was another new challenge and involved both on campus analytical

facilities, offices and labs, but also the Long Marine Laboratory on the coast just west of Natural Bridges State Beach. I had no idea what I was getting into but after a year of acting, I was appointed the Director in 1992. While directors of ORUs are only supposed to serve for five years, "except under extraordinary circumstances", I ended up serving for 26 years, one-third of my entire life. I saw some opportunities at the marine lab, and while it took two and a half decades, it has expanded into the Coastal Science Campus. Today the site now hosts a Center for Ocean Health, the Seymour Marine Discovery Center, a Coastal Biology Building, a California Department of Fish and Wildlife Marine Veterinary Care and Research Center, a NOAA National Marine Fisheries Service Laboratory, and just off campus, the Pacific Science Center of the USGS. While this took 26 years of patience and persistence, working with the University Office of the President, the Chancellor's office, as well as state and federal government agencies and the California Coastal Commission, it is a facility that the campus can be proud of and provides exceptional research and educational opportunities.

Looking way back, when I arrived at UCSC in 1968, Lyndon Johnson was president and Ronald Reagan was California's governor. I have now worked with all eleven of UCSC's chancellors and eleven different deans. While there have been challenging times for sure, I can say that this has been and continues to be the greatest University and best department that a 24-year old graduate student could have ever been invited to become part of 53 years ago.



Slugs in the Field (and elsewhere, pre-pandemic)



Grad student Sarah Neuhaus on instrument deployment in Antarctica.



EART109 Field Geology class; Hilde Schwartz at right.



Prof. Myriam Telus (left) and grad student Maggie Thompson preparing to "cook" a meteorite and measure the gases it releases.



EART109 (Field Geology) visiting the Hazel-Atlas quartz sand mine.

Slugs in the Field (and elsewhere, post-pandemic)



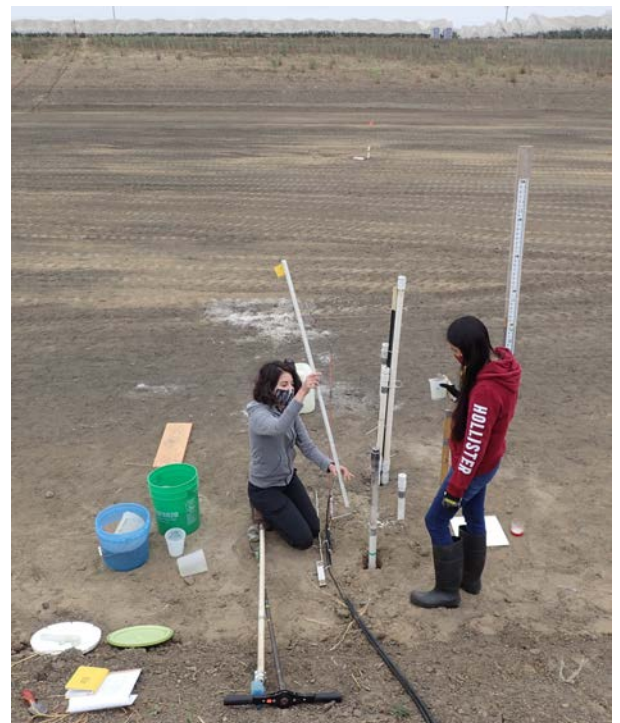
Socially-distanced field work, Paytan lab.



Post-fire soil assessment, Zimmer lab.



Grad student Mason Leandro maintaining the cloud microphysics probes aboard the NOAA hurricane hunter "Miss Piggy".



Installing piezometers in a recharge basin, Fisher lab.

Undergraduate Awards

Outstanding Earth Sciences
Senior Award
Hongyi Li

PBSCI Future Leaders in Coastal Science Award
Maya Montalvo
Loren Tolley

Outstanding Environmental Sciences
Senior Award
Anthony Mazzini

Gunderson Family Research Award in Coastal
Sustainability:
Anthony Mazzini

NSF Graduate Research Fellowship
Program (GRFP) Award
Irita Aylward

Physical and Biological Sciences
Dean's Honors
Natalie Ayla
Shawn Fitzgerald
Emily Smolgovsky
Yaman Ibrahim

Mark T. Macmillan Memorial Prize
Bruno Lopez

Holly Day Barnett Scholarship
Maya Montalvo



| | |
|--------------------------|--------------------------|
| Zachary Allen | Bethany O'Connor |
| Elsa Anaya | Noemi Ortega |
| Natalie Ayala* | Carissa Oseguera ** |
| Sean Bell | Jeremy Ott* |
| Ezra Bosworth-Ahmet* | Michael Pantoja Collasso |
| Gabriel Calderon* | Ashley Parrilla |
| Dante Capone** | Vladimir Pena |
| Christopher Causbrook | Marcos Perez Rodriguez |
| Benjamin Cohen* | Ellen Rafferty |
| Paul Colosi* | Sylvan Ransom |
| Jessica Corral | Sara Ray |
| Justine Craig | William Rodriguez |
| Zev Fellenbaum | Krystal Salas |
| Shawn Fitzgerald* | Madeline Lopez Salazar |
| Filomena Fuchs | Lauren Schenck |
| Sean Galligan* | Michael Scudder |
| James Gomez | Kent Shin |
| Logan Grady | Juliana Simon |
| Eric Griswold | Emily Smolgovsky |
| Bronwen Hardee* | Wesley Sorenson |
| Lauren Holden | Skyler Strange |
| Keanu Ho | Catherine Takata |
| Yaman Ibrahim | Brian Thomas |
| Alexander Levison | Loren Tolley-Mann |
| Hongyi Li** | Victor Tran |
| Bruno Lopez* | Alexandra Tutwiler* |
| Sofia Mack | Tyson Van |
| Josue Magallon-Hernandez | Jonathan Waian |
| Natalie Marquardt | Alex Watson* |
| Anthony Mazzini** | Emily White |
| Brodie Miller | Peter Willits** |
| Maya Montalvo* | Wendy Witte |
| Leah Munoz | Pauline Xie |
| Thanzin Naing | Mengyu Yang |
| Madeline Nease | |
| Justin Nguyen | |
| Anthony Norelli | |

**Candidate for Honors in the Major*

***Candidate for Highest Honors in the Major*

Graduate Awards

Chancellor's Dissertation Year Fellowship

Jack Conrad

Earth's Environment Fund Award

Jenny Pensky

J. Casey Moore Fund Award

Emilio Grande

Maddie Wood

UC President's Postdoctoral Fellowship

Sarah White

Delta Science Postdoctoral Fellowship

Christina Richardson

Cota Robles Fellowship

Secana Goudy

NOAA Summer Internship

Mason Leandro

National Science Foundation Graduate Research
Fellowship (NSF GRFP)

Brynna Downey

Kristina Okamoto

Hammett Fellowship

UCSC ENVIS Fellowship

Amanda Donaldson

Graduate Dean's Research Travel Grant

Christina Richardson

Norris Center Art-Science Residency Program

Amanda Donaldson

ARCS Foundations Fellowship

Graham Edwards

Aaron and Elizabeth Waters Award

Coby Abrahams

Huazhi Ge

Colleen Murphy

AGU 2020 Mineral and Rock Physics Section Awardee

Cara Vennari

AGU SEDI Graduate Research Awardee

Carver Bierson

Eli Silver Earth and Planetary Science Opportunities Fund
Graduate Award

Travis Alongi

Zhen and Ren Wu Memorial Fund Award in Geophysics

Amanda Donaldson

GSA Graduate Student Research Grant

Araceli Serrano

NASA Postdoctoral Fellowship

Jack Conrad

NSF Internship

Colleen Murphy

Winner of Campus-Wide Outstanding

TA Award - Instructor Nominated

Nick Mason

EPS Department Outstanding TA Award (student voted)

Kellen Martin - Winner

Graham Edwards- Honorable Mention

Ricky Garza Giron - Honorable Mention

Ryan Green- Honorable Mention

Nick Mason- Honorable Mention

Gavin Piccione- Honorable Mention

Graduate Degrees

Bierson, Carver

Ph.D. (Spring 2020)

The chemical structure of Venus's atmosphere and interior evolution of Kuiper belt objects.

Broach, Kyle

Ph.D. (Spring 2020)

Late Holocene Climate Variability and Coastal Change of the Yucatan Peninsula, Mexico.

Conrad, Jack

Ph.D. (Fall 2020)

Pluto and Charon's Thermal History from Topography

Foley, Neil

Ph.D. (Fall 2018)

Geophysical Identification of Subsurface Water in the McMurdo Dry Valleys Region, Antarctica.

Gorski, Galen

Ph.D. (Summer 2020)

Linking hydrologic and biogeochemical cycling across scales: Implications for nutrient and water resource management.

Greene, Andria "Andi"

M.S. (Summer 2020)

Construction of a soil core incubation method for measuring nitrogen removal in wetlands and an application in the Elkhorn Sough, CA, USA.

Mescioglu, Esra

Ph.D. (Spring 2020)

Bioaerosols: Abundance, Diversity, and Impacts on Marine Systems.

O'Brien, James "JP"

PhD (Fall 2019)

The Quantification of Co-occurring Meteorological Extremes and the Anthropogenic Contribution to Hydrometeorological Variation and Predictability.

Ott, Jason

M.S. (Spring 2020)

Metastability of Tremolite at High Pressures and Temperatures.

Richardson, Christina

Ph.D. (Spring 2020)

A multi-tracer approach to constraining hydrological and biogeochemical processes in aquatic environments of central California.

Smith, Schuyler "Sky"

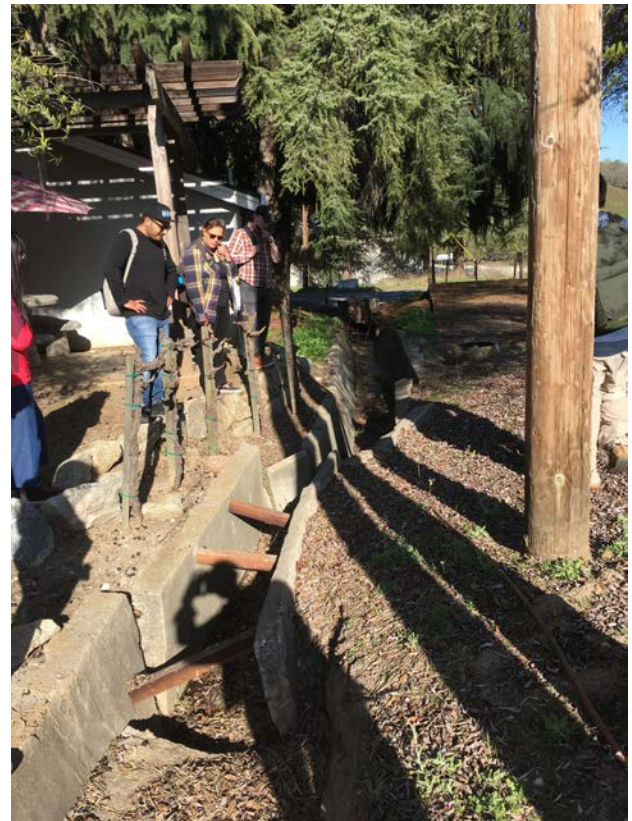
M.S. (Fall 2019)

The Impacts of the 2015/2016 El Niño on California's Sandy Beaches.

Swanson, Jonathan

M.S. (Spring 2020)

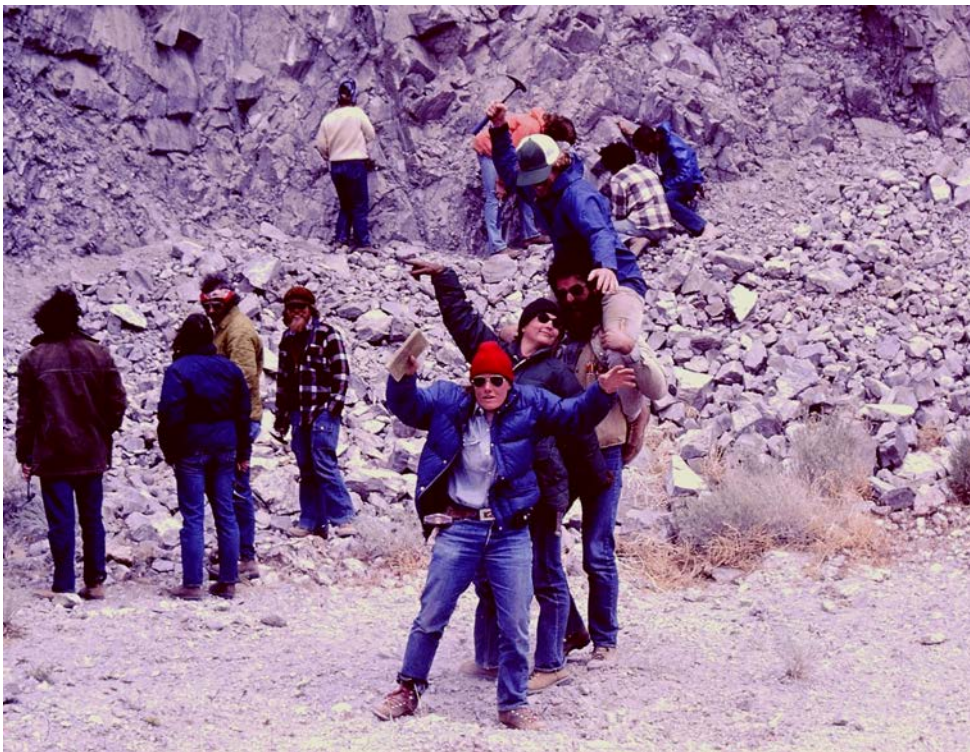
Methods to Monitor Groundwater - Surface Water Interactions and their Application to Watershed Management



From the Archives



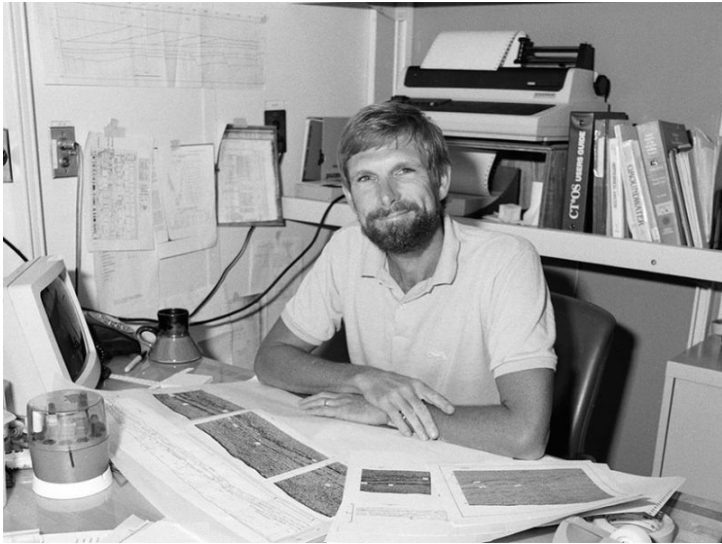
1975 Field Camp, Marin Headlands. Left to right, back row: Prof. Othmar Tobisch, Rich Gordon, Steve Lewis, Mike Clark, Carrie Carpenter, Connie Arthur, Sandy Horan, Dirk Nielson, Rich Devine. Front row: Dave Alexander, grad student/T.A. Steve Rowland, Mark Brandon, Ed Tschupp, Prof. Leo Laporte, George Tate. Supplied by Steve Rowland, PhD 1978, Professor Emeritus of Geology at the University of Nevada Las Vegas.



1977 Field Camp, Owens Valley. Sue Marshall, Lisa Wright, Jim Lateer, & Mark Mosby. Supplied by Mark Murphy.

J. Casey Moore (1945-2020)

By UCSC EPS Alumni Christie Rowe and Tim Byrne



Casey Moore aboard the drilling vessel JOIDES Resolution during the Ocean Drilling Program's Leg 110 to the Northern Barbados Ridge in the summer of 1986. Credit: IODP

Casey Moore, cocreator and leader in the field of subduction zone science, passed away in March 2020. Casey was recognized internationally for his contributions to the geology of subduction zones and in understanding the evolution of sediments as they become rocks in the seismogenic zone, where earthquakes originate. He was awarded fellowships from AGU (2013) and the Geological Society of America (1984), and he received the Francis P. Shepard Medal for Marine Geology, awarded for “excellence in marine geology,” from the Society for Sedimentary Geology in 2013. The Geological Society of Japan recognized his outstanding contributions with its International Prize in 2011.

Casey spent his youth enjoying the beaches of Southern California. He arrived at Princeton for graduate work in 1968—just as Harry Hess, Jason Morgan, and Fred Vine, all at Princeton, were developing and refining the theory of plate tectonics. He completed nearly 90 days of fieldwork in the summer of 1970 on Sanak and Shumagin Islands, which sit on the seaward edge of

Alaska's Aleutian Arc, where the Pacific plate subducts beneath the North American plate. As a result of this fieldwork, Casey confirmed that deep-sea sediments from the subducting oceanic plate had been deformed and added to the upper plate. These findings supported the hypothesis of plate tectonics and provided new insights on the growth of continents. The results were published a year after Casey graduated from Princeton in 1971, as he was starting his teaching career at the University of California, Santa Cruz (UCSC), setting the stage for 5 decades of research on modern and ancient subduction zones.

Casey distinguished himself as an exceptional field geologist as well as a major leader in ship-based research. He led or participated in dozens of field-based expeditions to exhumed accretionary prisms—wedges of sedimentary material that accumulate at the interface between two colliding tectonic plates—around the world. He was a cochief or science party member on more than 20 research cruises in Barbados, Cascadia, Sumatra, Alaska, Japan, the Indian Ocean, and the Gulf of Mexico.

His participation and leadership in ocean drilling were integral in ushering in a new era of scientific drilling to



Casey Moore (right) and Tim Byrne on Kodiak Island, Alaska, in 1983. Photo: Sarah Roeske

J. Casey Moore (cont.)

study subduction zones, beginning with Legs 25 and 31 of the Deep Sea Drilling Program in 1972 and 1973. Casey was also reportedly the first person to hold a Brunton compass with clinometer to the window of the Alvin submersible so that he could measure the dip of the thrust faults revealed in submarine canyons offshore Oregon.

Casey had the rare talent of being able to seamlessly integrate shipboard data, core descriptions, and geophysics with field observations from exhumed rocks. He contributed formative concepts on the interaction of fluids and clays during deformation; these concepts underpin our understanding of fault strength in shallow subduction zones. His research was the first to demonstrate the importance of rapid effective burial of subducting sediments in controlling pore pressure and changes in rock strength. He also developed or adapted methods of studying stress, strain, volume change, and the formation of penetrative fabrics in rocks (patterns of mineral orientation that form when the sediments or rocks are deformed) to the unexplored, water-rich settings of shallow subduction zones.

Casey even applied his interest in fault fluids and deformation in his own backyard, where he characterized the deformation of sediments saturated with water and hydrocarbons along the San Gregorio Fault in California. Combining insights from subduction and strike-slip plate boundary faults, Casey's understanding that the sedimentology and structural evolution of trench sediments were intrinsically coupled and needed to be studied as integrated processes is still influential and relevant today.

Casey's leadership was exemplified by what he did not do as much as by what he did. It was never Casey's style to promote himself or to patrol his scientific turf. He enjoyed a healthy discussion and would marshal evidence from geology, hydrogeology, geophysics, and



Casey Moore (right), Christie Rowe (left), and Francesca Meneghini on Kodiak Island, Alaska, in 2006. Photo: Asuka Yamaguchi

geochemistry to support his positions, always good-naturedly.

Throughout his career, he kept adding to his breadth of abilities. He regularly dug in deep to learn new methods and techniques so he could add new sources of data to his lifelong synthesis of subduction processes. He did so with remarkable humility, studying appendixes of methodological details and consulting experts, including graduate students astounded that he had approached them for help. He never became entrenched in his past interpretations, and he took joy in seeing them overturned by new insights from his own or others' work.

His excitement for discoveries and enthusiasm for fieldwork inspired many young scientists. He routinely turned over his best project ideas to his advisees and gave his students complete creative control. He avoided recognition until he couldn't find an escape, at which point he accepted it graciously. He always focused on the importance and fun of understanding tectonic processes through observations of all kinds.

J. Casey Moore (cont.)



Casey Moore aboard the drilling vessel Chikyu during the Integrated Ocean Drilling Program's Expedition 314 and the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) in the fall of 2007.
Photo: Harold Tobin

By example, he taught his students to value interdisciplinarity, talk to everyone, and listen carefully to all ideas. Casey's legacy shines through the successes of his advisees in a broad range of fields. His students and postdocs are found in the leadership of the International Ocean Discovery Program, heading major research institutes and geoscience departments, winning teaching awards at undergraduate-serving institutions, and starting their own companies.

Casey spent his entire academic career at UCSC, where he served as chairman of the Earth Sciences Board from 1984 to 1986. He was a distinguished lecturer for the Joint Oceanographic Institutions/U.S. Science Advisory Committee (JOI/USSAC, 1992–1993) and NSF MARGINS (2006–2008), and he served on the Chikyu +10 Steering Committee and the Chikyu IODP Board for the Integrated Ocean Drilling Program (now the International Ocean Discovery Program) and the Japanese deep-sea drilling vessel Chikyu. He served as associate editor for *Tectonics* and the *Geological Society of America Bulletin*. He was also an editorial board member for *Geology*, *Geofluids*, and *Progress in Earth and Planetary Sciences*. In 1999, he was recognized as an Outstanding Alumnus by

the Department of Geological Sciences at the University of California, Santa Barbara, his undergraduate alma mater.

Casey died of complications related to non-Alzheimer's dementia. He spent his last few weeks in the hands of Westwind Memory Care in Santa Cruz. His passing sent waves of love and sadness around the globe, as former students and colleagues reached out to each other with memories and photos. We authors, who were among his first and last Ph.D. students, appreciated the opportunity to honor Casey's contributions to science and to the community at the AGU Fall Meeting 2019 with a "Giants of Tectonophysics" presentation, attended by members of his family. Casey will be greatly missed, but his honesty and generosity, and his deep enthusiasm for geology, for science, and for understanding, will live on through his family, friends, and former students.

Christie Rowe, Department of Earth and Planetary Sciences, McGill University, Montreal; and Tim Byrne, Department of Geosciences, University of Connecticut, Storrs. Citation: Eos, 101, <https://doi.org/10.1029/2020EO147740>. Published on 05 August 2020.

Remembrances of Casey Moore



Casey was willing to work with you regarding your class schedule. He allowed me to complete the 1979 Summer Field Camp prior to completing the prerequisite field course that wouldn't be offered again until Fall. We spent 3 weeks in Bishop mapping Poleta Folds and three weeks in the Sierras around Gold Lake. One of the class mates could silk screen. I coined the phrase "GeoMasochist" and we created our own class tee shirts complete with logo.

Attending field camp early allowed me to graduate in four years and one quarter, and enabled me to get a job as a hydrogeologist logging water wells in Nevada and Utah the summer of 1980. That winter when the project slowed due to snow, I had been accepted to San Diego State, and jumped into the course work for my Master's degree that January, a week late.

There I teamed with another UCSC graduate, Joe Butterworth, completing our field work sampling volcanics in Arizona and using the paleomagnetic lab at UCSB to complete our separate master's thesis'. I defended my thesis at the AGU in San Francisco the following fall, wired from 14 Irish Coffees the night before, in front of the founders of our science, and it all started with 1979 Summer Field Camp, and Casey willing to take a chance on me!

A "Shout Out" to my class mates McGroder, Megaripple, Jack, Joe Frey and Pete, who did Field Camp the following year, from Ventura, now here 35 years! I'm still riding my bike, still getting in the water, hopefully still snowboarding! I may quit golf!

Michael Veseth
B.A E.arth Science, 1980

In the fall of 1970, I was just starting my junior year and fully engaged in my Earth Sciences major. Casey showed up as this energetic and intense young new faculty member who would work late into the evening in order to complete his Ph.D. thesis. I got to know him immediately when I took his sedimentation and stratigraphy class, spending many happy hours drawing measured sections of outcrops that the class had studied during field trips along the coast. One of the things I remember most vividly about Casey was the intensity of his gaze. Having a one-on-one conversation with him could be almost uncomfortable because his eyes seemed to bore right through you. But his demeanor was always sparkling and friendly and extremely positive. One could not help but be moved by his infectious enthusiasm. I had not seen Casey for some 40 years, so I still think of him as that energetic young man. How quickly time passes, and sometimes how sadly.

Glenn MacPherson, '72.
Dept. of Mineral Sciences
Smithsonian Institution

Remembrances of Casey Moore

Casey was my Intro to Geology instructor in 1975. I was deciding if I wanted to change my major to Earth Sciences during my sophomore year. Casey's enthusiasm and energy, and all of the fun stuff you learn during that class, helped seal the deal for me to change my major. I was lucky to have him as an instructor that quarter.

Patrick Vaughan

B.S. Earth Sciences 1978

It was my first quarter at UCSC in the Fall of 1981. I took the introductory course in Earth Sciences as a freshman because I had a love for rocks, minerals and fossils. Luckily for me, Casey Moore was teaching the course. I remember how knowledgeable and kind he was, as well as his fantastic drawings on the blackboard with colored chalk. I can still hear his lilting voice clearly conveying the dynamism of Earth's processes. It was mainly because of Casey that I decided to major in Earth Sciences.

Thank you, Casey, for a sound and inspirational introduction to the discipline, and to the department for providing a firm foundation for a rewarding career in the Earth Sciences.

Kathy Campbell

B.S. Earth Sciences,

with Honors in the Major, 1985

Director, Te Ao Mārama

– Centre for Fundamental Inquiry

Faculty of Science

The University of Auckland

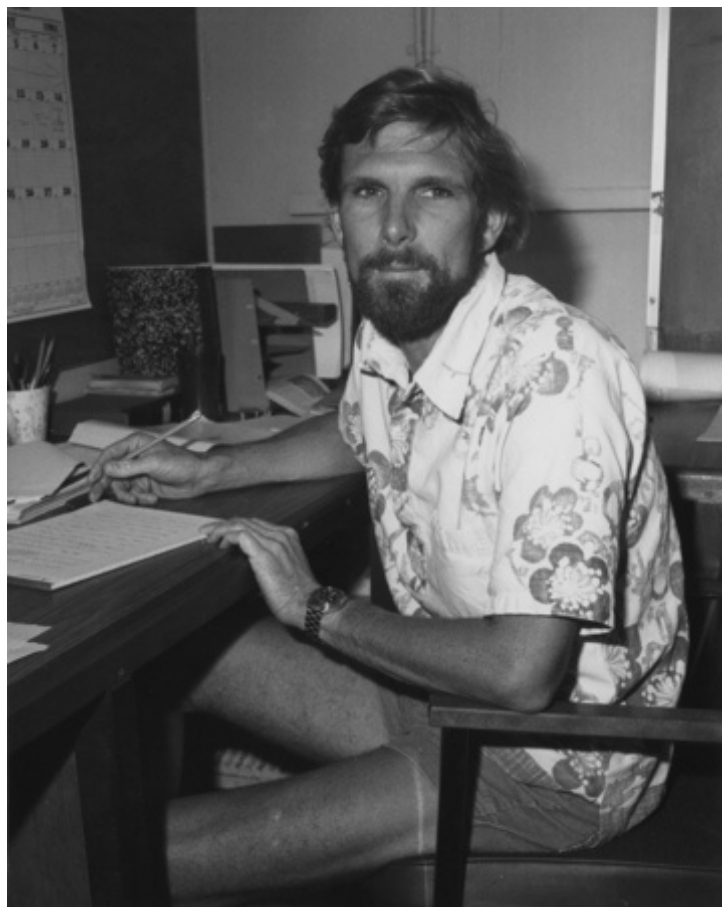
Co-Chief Scientist J. Casey Moore of the University of California, Santa Cruz on board the research vessel D/V Glomar Challenger (ship) during Leg 78A of the Deep Sea Drilling Project. 1981.

It is sad to think of Casey dying so young. I will always think of Casey as young — boyish and enthusiastic. I took his course Geologic Principles in 1972, two years after he began at UCSC. It was because of him that I became a geology major, and I have seen him as a role model ever since. I have been teaching Introductory Geology in Norway for the past 32 years.

Casey was one of the leaders in the plate-tectonic revolution. In 1972 there were no textbooks that covered plate tectonics. So he gave us offprints from Scientific American as supplements. Our textbook, published in 1969, hardly mentioned plate tectonics.

Allan Krill, professor of geology at NTNU in Trondheim Norway.

B.S. Earth Sciences 1976



Remembrances of Casey Moore

After taking a freshman year of math, chemistry, physics and humanities (I particularly remember 5 units for Woodscrap Sculpture: it WAS Santa Cruz in 1969 after all!) and reveling in my youth and freedom, I enrolled in Earth Science 10 in the Fall Quarter of 1970 taught by J. Casey Moore. And here I must pause and give thanks in memory of Casey for being my first academic inspiration and mentor.

From Eli Silver's In Memoriam for Casey from just this spring: "He [Casey] graduated from UC Santa Barbara in 1968 and got his Ph.D. from Princeton University in 1971. He joined the faculty at UC Santa Cruz as an acting assistant professor in 1970 and wrote his thesis while teaching his first year of classes. ... The success of his mentees has been legendary, and they continue to infuse the field with the same excitement and enthusiasm that Casey showed throughout his career. He was a joy to have as a colleague, and his presence never failed to bring a smile to the faces of anyone who came into contact with him. ..."

(Almost) everyone is listening
(photo courtesy of Laura Stupi)

For me who came in as an unfocussed 19-year-old, Casey, in his first quarter of teaching at UCSC and all of 26 years old, absolutely lit me up with his lectures about the scientific study of the Earth and of course, the then just emerging field of plate tectonics. Wow. By week 7 I went to my advisor and declared my major. I've never looked back and never had a second's regret. Thank you, Casey.

Alan Busacca

B.S. Earth Sciences 1973

I have nothing but great memories of Casey Moore. He was always cheerful and only expressed supportive comments. I never overlapped with Casey in the field, but he did trust me with his 14' Zodiac - for three field seasons! The only damage it experienced was when working with George Plafker in SE Alaska... Ask me if you want to hear the story. It had something to do with a shoreline exposure of vertical slate... Casey will be deeply missed by all of his past students!

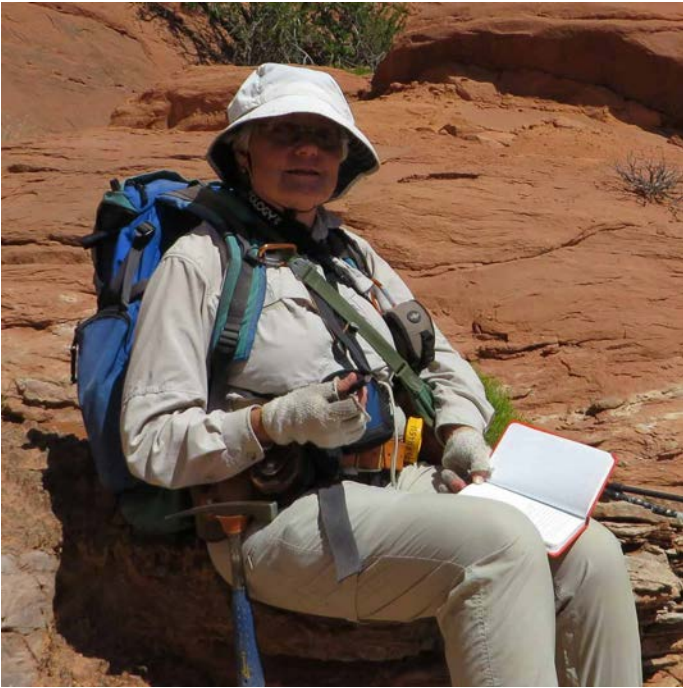
Peter Plumley

Ph.D. Earth Sciences 1984



Judy Parrish's 2020 Commencement Address

Judith Totman Parrish is a Professor and Dean Emerita at the University of Idaho. Dr. Parrish received her Ph.D. in Earth Sciences from the University of California, Santa Cruz (UCSC) in 1979. She also received her M.S. in Earth Sciences in 1977, her MS in Biology in 1976 and her B.S. in Biology in 1972 all from UCSC.



Congratulations! You are receiving a degree from one of the best Earth science departments in the country. That means, among other things, that you're pretty smart, and you have the potential to make the world better. In fact, you probably already have made the world better.

Now because you are smart, you're going to want opportunities to show just how smart you are, and you'll get them. But being smart and knowing a lot doesn't make you a better person, nor does it automatically mean you'll make the world better. So I'm going to tell you how, right away, you can not only show how smart you are, but also make the world a better place. You actually don't need a UCSC EPS degree to do this, but you will be all the more impressive for doing it because you have that degree.

This is what you can do: Listen. Listen even when it hurts to listen, perhaps especially when it hurts to listen. Now, you may think you're a pretty good listener and, if you really are, congratulations. But one of the hazards of being smart and knowing a lot is that we tend not to listen, we want to jump in. And that is particularly

hazardous nowadays, when the value of listening is on the wane. Nobody listens much nowadays, whether they are smart and knowledgeable or not. In fact, listening in the sense I mean listening seems almost to be extinct. We hear, but we hear without curiosity and understanding, and this is particularly sad among scientists, who should approach everything with curiosity and a desire to understand. Rather, we hear with prejudice. We hear with the sole purpose of formulating a response. And the result is what we see everywhere in the media and real life—people talking past each other and over each other and, worst, trying to score points off each other—just to show off how smart they are and how much they know.

Or think they know. I want you to imagine you're at Thanksgiving dinner and a distant cousin is there for the first time. Now imagine this distant cousin expresses skepticism about human influence on climate change. I imagine quite a few of you rolled your eyes. How many of you felt your blood pressure rise or your stomach clench? How many of you are already retorting to the cousin in your minds?

If you retort, it's aggressive, and the cousin will try to defend himself of course. You will listen just long enough for him to say something you can pounce on. Worse--and this is where our societal discussions have gone all too often today—you will reframe what he said and pounce on THAT, not on what he actually said. Some see this as a clever tactic in argumentation. You are signaling that you're smarter than the other person ("you don't know how to state your own opinion, so I'll state it for you"). You can almost always score points that way, but it is a profoundly lazy kind of argumentation and is also profoundly disrespectful.

In any case, the cousin probably won't get out another full sentence, and the two of you will be right where all

Judy Parrish cont.

too many discussions on TV, radio, in social media, and in real life seem to end up. You will, in your mind, assign all sorts of other perceived faults to his character, like “he voted for Trump” or “he is against a woman’s right to choose”, even though you know none of those. Believe it or not, these things often do not go together. And you, your cousin, and the world will not be better for it. Not to mention the rest of the people at the Thanksgiving table.

Now imagine you’re in the lab and you get an unexpected result, or in the field and make an unexpected discovery. This result does not fit your current working hypothesis (and I would argue that nearly all hypotheses in Earth sciences are working hypotheses, but that’s another speech). What do you do? The finding is SO odd that you might even be tempted to say “that just can’t be”, a perfectly human reaction, except that it is. Do you just throw that finding out? If you’ve got a degree in EPS from UCSC, you’d better well not! First, you check your finding and try to duplicate it in the lab or find other examples in the field. Then you learn as much as you can about this supposed anomaly and eventually examine your hypothesis. You may even revise your hypothesis. Turns out your revised hypothesis works even better. You’re even smarter and know even more. WIN! Very satisfying.

So satisfying that it’s easy to forget that being smart and knowing a lot does not make us better people. So, let’s go back to Thanksgiving dinner and start over. Your cousin expresses skepticism about human influence on climate change. You think to yourself, “This can’t be! Everyone knows humans cause climate change.” This is an odd piece of data. This time, though, you hold your tongue a bit longer and ask yourself, “I wonder why my cousin thinks this.” Instead of retorting, you say, “That’s interesting. Why are you skeptical?” Then you shut up and listen—really listen. Listen deeply, listen fully, without distracting yourself by formulating responses in your head. Keep asking questions, open-ended questions, not leading ones. Don’t try to manipulate your cousin into saying

something you can pounce on any more than you would manipulate data. In fact, get the idea of pouncing--and showing off how smart and knowledgeable you are--out of your mind entirely. You will learn a lot about this cousin. You will learn that he’s skeptical for other than scientific reasons. Or maybe there are specific things about the science that concern him. You might even find that he isn’t actually all that skeptical except about statements like, “the world is going to end in 12 years”. And you may—almost certainly will—find a specific point on which you actually do know quite a lot. Making sure you really understand what your cousin was saying, you can approach that point. Don’t restate it for him; ask him to repeat it. And answer it as he stated it. “Hm. That’s interesting. But there is another way to look at it, and it’s something I do know a bit about. Let me tell you about what I’ve learned.” And go on to do so.

When you’ve made that one point, and the person sees what you are talking about, stop there. All you have to do is get the camel’s nose under the tent, and because you have treated him and his opinions with respect by really listening, his own mind will do the rest. And you’ll have built trust, so that as his mind grinds away on the problem he might ask more. Or not, but at least you’ll have tried, you’ll have shown that you really do know something, and the rest of the people at the Thanksgiving table will be grateful for the civilized tone. Unless, of course, they’ve started talking about Trump and Biden, in which case you can at least be satisfied you didn’t contribute to the acrimony. That’s no small thing. That’s making the world better.

So, to repeat: Listen. Don’t jump to conclusions about what people believe, just because you disagree with them. Live the ideal that everyone deserves respect, even those with whom you disagree. In a world in which everything has become political, remain analytical. Understand that even the opinions and actions with which you disagree are still threads in the human tapestry and remember that a tapestry cannot stay together without both warp and woof.

Show Us Your Baked Goods - Pandemic Relief



Linzer Torte, Christine Hatch - Ph.D. 20077



Moose Turd Pie, Lisa Wright - B.S. 1977



Banana Bread, Jill Perry - M.S. 1982



Donuts, Matthew Huber
- Ph.D. 2001



Multigrain sourdough bread,
Lorie Cahn - B.S. 1979



Plum torte, Lorie Cahn - B.S. 1979

Update on Development by Andy Fisher

EPS in 2020

To prepare this message for the Fall 2020 Newsletter, I edited the update from a year ago – what a difference a year makes! It feels like opening an ancient time capsule from a distant land. Matthew Clapham, EPS Chair, gave an update on many department activities and achievements earlier in this newsletter; I'll focus on EPS community activities and development.

We were not able to hold several planned events in 2020, including an EPS Reunion and an in-person EPS Advisory Committee (EPS-AC) meeting. The EPS-AC meeting was held online in August, and we were delighted to have participation from all 15 members. We will not schedule an in-person EPS Reunion until we are confident that it is safe to travel, socialize in groups, etc. But this does not mean we can't "meet;" we just have to do so virtually. We are organizing an online event in lieu of the traditional AGU meet up at the Thirsty Bear in San Francisco. Please hold this date/time so that you can join current and past students, faculty, lecturers, researchers and other EPS network members: **Tuesday 4th December, 6-8 pm Pacific**. Details to follow – please look for an email with links.

EPS Development Recognizes Excellence

The highest development priority for EPS remains support for graduate and undergraduate students as they take courses, conduct research, and complete professional development activities. As of the end of calendar year 2019 (the last year for which complete data is available), EPS fund values grew by ~28%, with the vast majority of donations going to endowments that will generate income long into the future. "This change is because some of the fund growth was from interest on endowment. We are sincerely proud of our students' accomplishments, creativity, and grit – 2020 has been a challenging year, and EPS students have persevered and excelled. You will find a listing of student awards here, from within and outside the department: <https://eps.ucsc.edu/about/honors-awards/index.html> (scroll down for links). There are also updated listings of faculty, lecturer, and researcher awards. We are especially proud of the contributions and achievements of EPS community members beyond the UCSC campus. The

EPS-AC has named additional distinguished colleagues to the **Alumni Hall of Fame**, as described elsewhere in this newsletter (p. 9).

Please Get Involved

Your EPS-AC co-chairs are Peter Vrolijk and Stefano Mazzoni – please contact

them to get involved in networking and development, ask questions, or make suggestions (please note new email for Peter): stefano00038@yahoo.com, pvrolijk17@gmail.com. Please consider contributing to one or more EPS funds that support students, research, teaching, and outreach activities. Contributions of any size make a difference (<https://eps.ucsc.edu/support-us/index.html>). And please let me know if you have questions, concerns or ideas. We are thinking about additional online events in Winter and Spring 2021, including brief presentations featuring current and past EPS students and plenty of social time to catch up – perhaps this is the silver lining of 2020 and our enhanced online existence, having more opportunities to connect, even if from a distance.

Most of all, please stay safe and take care of each other.

Andy Fisher (afisher@ucsc.edu)





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

1156 High Street
E&MS Building, Room A232
Santa Cruz, CA 95064
<http://eps.ucsc.edu>

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

Your contribution helps to build endowments that have enduring benefits for future generations of EPS students, and provide much-needed immediate support for teaching, research and service.

On the next page we describe current high-priority EPS development goals.

(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.

This is the easiest way to support the EPS Department!

(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 the website above.

(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:

- Andy Fisher (EPS Development Coordinator): 831-459-5598, afisher@ucsc.edu
- Matthew Clapham (Department Chair): 831-459-4644, mclapham@ucsc.edu
- Lisa Stipanovitch (Department Manager): 831-459-4478, lms@ucsc.edu

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

Please mail to: UC Santa Cruz, MS: PBSci Development, 1156 High St., 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:

☐ **J. Casey Moore Fund**

The Casey Moore Fund supports current EPS graduate students as they conduct thesis-related research. *We are close to offering fellowships using interest from this endowment!*

☐ **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.

☐ **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.

☐ **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.

☐ **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.

☐ **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.

☐ **Holly Day Barnett Fund**

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

☐ **Earth and Planetary Sciences Achievement Fund**

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

Please see <http://eps.ucsc.edu/support-us> for more development options

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1977**Frank Perry**, Earth Sci, B.A.

I have been keeping very busy during the pandemic with various museum and writing projects. As curator of the Capitola Museum, I mostly devote my time to human history rather than geologic history, but it is amazing how often geology comes into play. I also continue as president of UCSC's Friends of the Cowell Lime Works Historic District and write a twice-yearly newsletter on the campus's lime-manufacturing past. I keep finding new people to interview and previously unpublished old photos documenting this fascinating mix of geology and history. On the paleontology front, I am helping a retired USGS researcher with a study on fossil mollusks.

I was very sad to learn of Casey Moore's passing. Unfortunately, he was on sabbatical when I was a student at UCSC, but we later became acquainted when he hired me to do the exhibit of the Pendleton Mineral Collection. I will always be grateful to him for getting me involved in that wonderful project.

Lisa Wright, Earth Sci. B.S.

My husband and I are now living and boating in Anacortes, Washington after 27 years in Alaska and a few years in Scotland and Florida. I co-wrote a book with my father-in-law, a Polish refugee who survived the Nazis and the Communists before emigrating to the US. It's available on amazon.com.

1978**Patrick Vaughans**, Earth Sci B.S.

What have I been doing the last six months? After 22 years I retired from California State Parks at the end of 2018 but over the last few months I have been working on a landscape analysis of a historical narrative regarding the Joseph Walker (my great-great-great uncle and namesake of Walker Lane) party's trip over the Sierras in late fall 1833. A competing route via the Stanislaus drainage rather than via the previously accepted Yosemite route was published in 2015. I examined both routes weaknesses

and strengths and just submitted a paper to the Rocky Mountain Fur Trader journal for consideration. Unfortunately, with Covid this was all arm chair geology (and history, biology), but I am pretty sure I could not do what those guys did, even if I was 30-40 years younger.

1979**Lorie Cahn**, Earth Sci and Natural History B.S.

I retired from a career as a groundwater hydrologist 5 years ago and began splitting my time between the Canadian Rockies and Jackson, Wyoming. When the pandemic hit and the National parks shut down, I was lucky to be able to continue cross country and backcountry skiing on USFS land in Wyoming. In June, I was allowed into Canada with my Canadian spouse, so we spent the summer and fall hiking in the mountains near Canmore Alberta. As an avid baker, I got creative when my oven quit and I couldn't get parts for a month. We put an oven rack on top of rebar on the BBQ and I continued making bread, pie, and cake.

1982**Ray Wells**, PhD

We are thankful to have our health and our home after so many tragic events this year. We are so sorry to hear of Casey's passing and of the fires that took so many homes in the Santa Cruz Mountains.

Sally and I have been living in Portland, Oregon since my retirement from the USGS in 2016. I rejoined the USGS this year to work part time on the geology of a Bureau of Reclamation dam situated in the Gales Creek fault zone west of Portland. This work grew out of a new geologic map of the greater Portland metro area that we released in October, after decades of work by more than a dozen coauthors: <https://www.usgs.gov/news/volcanoes-vineyards-new-geologic-map-reveals-portlands-deep-history> two companion papers on the Gales Creek fault in

Ray Wells (cont.)

Geosphere and BSSA document its structure, Holocene earthquake history, and hazard to the metro area.

The map also covers some of Oregon's well-known Pinot Noir viticultural areas, and I'm hoping to make a more careful study of those when I retire again next year!

1984

Peter Plumley, Earth. Sci. Ph.D.

Since March 15th, 2020, I've been sitting in our home office in front of my computer teaching students using Zoom! Syracuse University tried to hold in-class sessions this fall but the county couldn't keep the Covid numbers under control – so we're back to on-line lessons. My favorite topic to teach these days is Renewable and Alternate Energy Engineering. Our home energy (PlumleyFarms) is 90% solar – and an experimental ducted wind turbine is in the early planning stages.

1993

Barbara Bekins, Earth Sci. Ph.D.

I was elected to the National Academy of Engineering and thought some of my UCSC friends would like to know.

1994

Todd Greene, Earth Sci B.S.

I'm a 1994 Earth Sciences slug graduate (B.S.), now Chair of the Department of Geological and Environmental Sciences at CSU, Chico. My wife (Jeanne Buckthal Greene, B.S. 1990) and I are happily living in Chico with one child as we navigate COVID-land. We both loved our Earth Sciences days at UCSC and were very sad to hear about Casey Moore. For both of us, Casey was our first teacher in geology and I still haven't moved on 30 years later! To have such an inspiring scientist and person during your first exposure to geology was truly a gift, as was being a student during the time of the Dream Team of Garrison/Anderson/Silver/Weber/Griggs/Moore.

2002

Stefano Mazzoni, MS and Earth Sci B.S 2000

Fellow GeoSlugs,

Reflecting on the past 7-8 months of this pandemic / quarantine, I feel truly fortunate for the continued good health of myself and those around me. Despite losing a job on the day COVID-exacerbated forces drove oil price negative, I found another short-term consulting role through a close professional connection. One of my siblings (who lives in Europe) did contract COVID-19, but has thankfully recovered. School for my 2nd grader is certainly different, but she is thriving with virtual school in the mornings and an afternoon "pod" where she works with a student-teacher and two friends from a Quarantine-responsible family. Working from home is beyond fantastic – meals together as a family, quick walks when we all have a coeval breacktime, and the flexibility to spend some family time together then catch up on work in the late evening is spectacular. I knew this was possible, but it's good that this pandemic has force-taught many employers just how doable it is. The culmination of this improvement was the opportunity we had to work remotely from California for six weeks this summer. We packed up the big monitors in the car and drove to La Jolla in July, where my wife and I were able to work while our daughter played in my mom's garden. We rode bikes or went to the beach regularly in the afternoons and were able to keep the windows at home open all day/night (something that is truly unheard of in hot & humid Houston summers). We also spent a week at our condo in Mammoth where we enjoyed awesome geology hikes and visited Death Valley & the Grand Canyon on the long, depressing drive back to the Gulf Coast swamp. Regarding UCSC, another unexpected benefit of this situation was that our virtual Advisory Committee meeting had practically 100% attendance! This had never happened before, as life and schedules rarely sync up for everyone during our 1-day in-person meeting in Santa Cruz. Of course, we missed the

camaraderie of all having a beer together on the patio overlooking Monterey Bay, but it will make that next in-person meeting all the more enjoyable. I wish all the UCSC EPS community health, happiness and a virtual hug/handshake.

Peace, love and banana slugs

2012

Dee Rossiter, Earth. Sci. Ph.D.

"I'm pretty excited about my new job...Here's my title: Executive Director Science at Cal, UC Berkeley."

2016

Mikael Witte, Earth Sci. PhD

After 4 years away for a postdoc in Boulder, CO and a research scientist position at UCLA/JPL, I recently moved back to Santa Cruz for a faculty position in the meteorology department at the Naval Postgraduate

School in Monterey. My two year old is ecstatic to be so close to the beach, and I'm happy to be back near the redwoods. I look forward to seeing (masked) folks around town and getting involved with the department again soon!



Stefano Mazzoni and family, Fossil Falls.



Advising, 2020-style (note the garden tools in the background). Prof. Emily Brodsky (right) and grad student Kelian Dascher-Cousineau.



Recovering data-loggers.

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