CALIFORNIA STATE UNIVERSITY
BAKERSFIELD™

2022

Geological Sciences

DEPARTMENT NEWS

Hello again! We are overdue to reflect on our many accomplishments in 2022. We experienced several changes and transitions, and we are eager to share news and updates. We hope to hear from you as well.

A HISTORY OF STUDENT SUCCESS

We continued our long, strong history of graduating high quality students, and as a result of our continued success, we remain a leader in the CSU system. In 2021-22 we graduated over 7% of all CSU geology students graduating in the CSU system. The CSUB Geology graduate program graduated 14% of all CSU system geology graduate students in 2021-22, graduating only 1 student fewer than the leading CSU geology graduate program. The number of CSUB geology graduates consistently ranks among the leaders of all CSU geology programs, including those that have many more geology faculty. We remain among the leaders in graduating students, graduating between 8% and 10% of all CSU geology students graduating between 2015 and 2020. These results, coupled with our excellent student employment rates clearly reflect our commitment to retaining and graduating highly qualified students. Nevertheless, we are committed to increasing the number of majors and graduate students.

THE GEOLOGY TEAM

Cecily Rink is the newest addition to the Geology Team. She is our new Administrative Support Coordinator (ASC), replacing Sue Holt, who retired (see story later in this newsletter). Cecily is doing a great job and her willingness to learn new things and help faculty and students is sincerely appreciated.

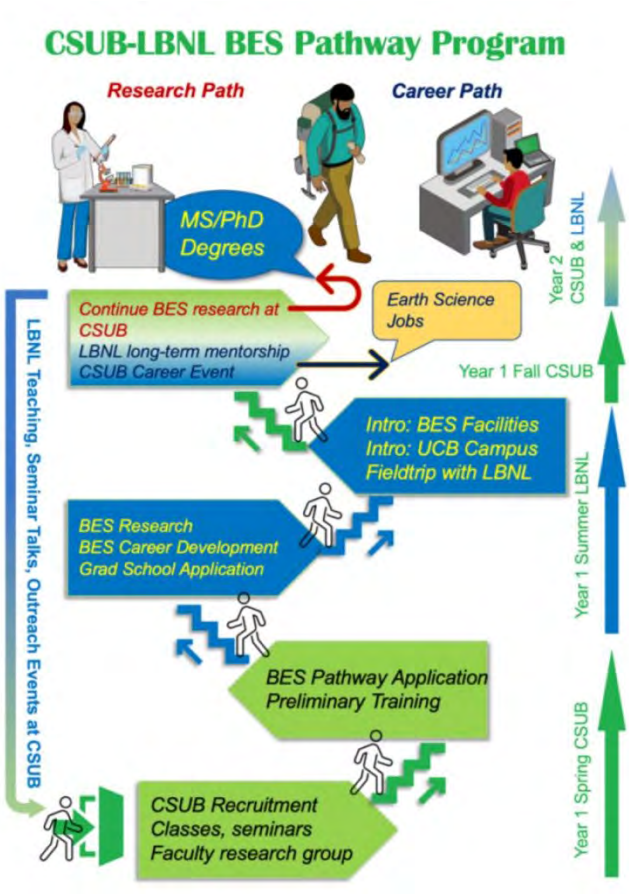
We are reviewing our curriculum, adjusting to newly hired faculty and a strong demand for Earth science courses. As we make adjustments, we are thankful for the help from part-time instructors helping to cover courses: **Jason Cotton, Bob Crewdson, Larry Drennan, Alyssa Kaess, Steve Kiouses, Pam Knight, John McCormick, Brian Pitts, Gregg Wilkerson, and John Yu**.

We continue to provide a base of operations as part of our ongoing relationship with **the United States Geological Survey (USGS).** Although they are not back to pre-pandemic operations**,** hydrologist and alumnus, **Maryanne Bobbitt** makes regular visits.

GRANTS

Extending our remarkable record of obtaining external grants, we had another very successful year in acquiring substantial research funding from sources such as the National Science Foundation (NSF), and the Department of Energy (DOE). These grants support student and faculty research and provide the means to obtain state-of-the-art research equipment.

Funding highlights include what is the final year of a $297,459 NSF grant awarded to **Tony Rathburn** (lead PI) and **Baron** (now Emeritus). This grant, in collaboration with Scripps institution of Oceanography and the University of San Diego, supports educational and research project opportunities for students, and also provides CSUB students and local high school teachers with hands-on research experiences on a research vessel at sea, in the classroom, and in the lab.



Career Pathways involving experiential learning as part of the Dept. of Energy grant awarded to Lioasha Song.

Liaosha Song (lead PI) received a $520,244 MRI grant from the National Science Foundation entitled "Acquisition of a Field Emission Scanning Electron Microscope with EDS for Interdisciplinary Research and Teaching at CSUB" to purchase a new SEM (for more details look for the new SEM story later in this newsletter). Co-PIs include **Tony Rathburn** and three others from NSME. **Liaosha Song** was also the lead PI on a $1,687,500 Department of Energy grant entitled "Nanopore Characterization for Geologic Storage of H2 and CO2" (for more details look for the DOE grant story later in this newsletter). This grant was in collaboration with researchers from Lawrence Berkeley National Lab and CSUB Co-PIs **Matt Herman, Adam Guo** and **Tony Rathburn** (CSUB Geology) and Tat Archarya (CSUB Dept of Physics and Engineering).

In collaboration with researchers from the University of Delaware (Chandranath Basak) and Woods Hole Oceanographic Institute (Sophie Hines), **Tony Rathburn** received $349,919 in research grant funding from the Marine Geology & Geophysics, and Chemical Oceanography Divisions of the National Science Foundation. The research project is entitled "A porewater perspective on benthic sources of neodymium to the North Atlantic" and will involve taking CSUB students and faculty to collect cores from the seafloor north of the Arctic Circle off the coast of Greenland in 2025. **Matt Herman** received funds from the United States Geological Survey to work with the National Earthquake Information Center.

Liaosha Song has been busy this year.

SCHOLARSHIP

Department of Geological Sciences faculty continue their excellent record of scholarship. In 2021/2022 Department of Geological Sciences (DGS) tenure-track faculty published four peer-reviewed journal articles plus four published by emeritus faculty, with several more in review. The high standard of the international journals these publications appeared in is clear evidence of quality of DGS faculty research. This review period faculty published in journals that included the Journal of Geophysical Research: Solid Earth (Impact Factor =4.39). Tenured/tenure-track faculty and their students gave research presentations, including presentations that resulted in 10 published abstracts. Many of these publications were co-authored by students. As a result of pandemic protocols, research opportunities for faculty and students were reduced for at least 50% of the year, but several CSUB geology students won research-related awards and regional and national scholarships and internships.

Lioasha Song is the lead PI for an NSF grant of over $500,000 to acquire a new Zeiss Field Emission Scanning Electron Microscope (SEM)which will be part of a new SEM facility in the Dept. of Geological Sciences.

NEW SCANNING ELECTRON MICROSCOPE

Liaosha Song, Assistant Professor (now Associate Professor) of Geology at CSUB, was awarded a National Science Foundation Major Research Instrumentation (NSF MRI) grant of $520,050 to support the acquisition of a Field Emission Scanning Electron Microscope (FE-SEM).

Lioasha, Principle Investigator (PI) along with Co-PIs **Tony Rathburn** and three other NSME professors, will use this state-of-the-art equipment as a means to support student and faculty research and teaching. "The NSF MRI grant will bring our research to a whole new level. For STEM majors, research experience is a part of learning," said Dr. Song.

The new FE-SEM is an analytical system that can image samples at a sub-nanometer-scale, while simultaneously performing qualitative and quantitative chemical analyses. This technology will facilitate observation of nano-porous rock structure and reactivity, expanding research capabilities for Lioahsa's work on CO2 and H2 geologic storage. In addition, this system includes a temperature-control stage that enables examination of frozen biological specimens.

The versatility of this instrument will enhance CSUB's research capabilities across multiple disciplines, including geology, biology, environmental studies, engineering, physics and agriculture. It will likely inspire new research directions and inter-disciplinary collaborations and facilitate new collaborative projects on campus or with researchers from other institutions.

"I am incredibly proud of our faculty who work tirelessly to enhance the learning environment to engage our students and help them grow professionally," said Dr. Jane Dong, dean of the School of Natural Sciences, Mathematics and Engineering. "The research and educational opportunities enabled by this NSF MRI grant will benefit our students, many of whom are first-generation students."

This text was adapted from a story written by Liaosha Song and Kelly Ardis which can be found at: https://www.linkedin.com/posts/csubnsme_csub-faculty-member-receives-national-science-activity-6972988002469842945-BKwK

Lioasha Song is the lead PI for two new, major grants: an NSF MRI equipment grant and a DOE grant that forges a collaborative relationship with Lawrence Berkeley National Laboratory.

Liaosha Song is awarded a $1.687 Million Dept. of Energy grant

The U.S. Department of Energy (DOE) announced Wednesday $2.25 million in support of a collaborative project between California State University, Bakersfield and the Lawrence Berkeley National Laboratory (LBNL) that has far-reaching implications for climate goals, job production and opportunities for students in our region.

As the lead institution, CSUB will receive ~$1.7 million over three years and LBNL will receive $555,000. The program will create pathways between the two institutions and allow CSUB students to access LBNL laboratory resources, research experience and long-term mentoring.

“CSUB is committed to securing a future for energy that will respect our climate, produce thousands of high-paying jobs and recruit more women and students of color to careers in science,” said CSUB President Lynnette Zelezny. “With this expression of support, the Department of Energy is putting Kern County at the forefront of energy innovation in our state and nation.”

Dr. Liaosha Song, assistant professor (now Associate Professor) of geological sciences and a key researcher with the University’s California Energy Research Center (CERC), is the lead PI of the grant from the DOE's Basic Energy Sciences division for the “Reaching a New Energy Sciences Workforce” (RENEW) initiative. The research focuses on the properties of rocks that seal fluids underground. These rocks are important for hydrogen storage, a promising practice that allows large-scale clean energy storage in the effort to achieve carbon neutrality.

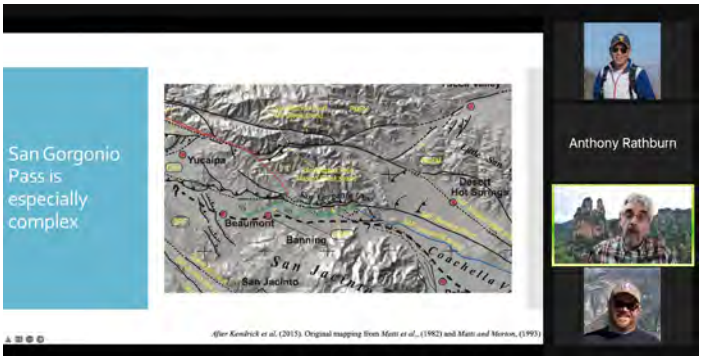
Joining Dr. Song in the CSUB project are Dr. **Tony Rathburn**, Dr. **Junhua Guo**, and Dr. **Matthew Herman** in the Dept. of Geological Sciences, and Dr. Tathagata Acharya in the Dept. of Physics and Engineering, along with undergraduate and graduate students from the School of Natural Sciences, Mathematics and Engineering.

“Of all the five proposals funded this year through DOE Basic Energy Sciences Program, this is the only one in California,” Dr. Song said.

Dr. Tony Rathburn, interim director of the California Energy Research Center at CSUB and chair of the Geological Sciences Department, said the Department of Energy grant is a major step forward for regional research. “This is the first DOE grant of its type involving the California Energy Research Center, and we appreciate the interdisciplinary synergy of the research team led by Dr. Song,” he said. “This project aligns perfectly with CSUB's focus on emerging solutions in energy and will significantly advance the research, student engagement and outreach goals of the California Energy Research Center,” Dr. Rathburn said. CERC is working with several industry partners, government leaders and the Lawrence Livermore National Laboratory on a number of projects to write the next chapter in Kern County’s strong history of energy production.

This project involves the recruitment of minority geoscientists, student internships, a new collaboratively taught course, and involvement of faculty and students in applied research. This story was excerpted from an article by Jennifer Self which can be found at: https://news.csub.edu/csub-federal-award-a-breakthrough-for-energy-research

This story was also covered by the *Bakersfield Californian*:https://www.bakersfield.com/news/biden-administration-grants-csub-1-7-million-to-help-diversify-us-geoscience-workforce/article_b8436e10-7d82-11ed-b256-6b88574dbff9.html



David Oglesby of UC Riverside gave a Geology Seminar Series talk on the likely paths of fault movements in the region.

SEMINAR SERIES

Thanks to **Liaosha Song**, our seminar series coordinator, invited speakers once again provided a diverse array of interesting and educational talks. Seminar speakers included Dr. David Oglesby of UC Riverside, who spoke about his intriguing work on the Effects of Pre-Stress Assumptions on Dynamic Rupture with Complex Fault Geometry in the San Gorgonio Pass, California, and Denise Cox**,** AAPG Distinguished Lecturer and the president of Storm Energy, who gave an enlightening talk about Sustainable Development and the Energy Transition. Dr. Qin He from Saint Francis University presented her interesting research on reservoir simulation of CO2 sequestration in shale reservoirs. **Katie O'Sullivan** organized two career-oriented panel discussions as part of the seminar series. One panel was entitled, "How I got my first geology job" and the other panel was entitled, "Grad school: What I thought it was going to be like and what it was actually like." Students were able to ask questions of alumni and faculty regarding graduate school, job hunting tips, and career choices.

Please let us know if you or someone you know might be interested in giving a presentation. Our seminar series offers something for everyone, so please plan to join us. Check out our Facebook page and get on our email list for notification of upcoming talks and events.

CERC Carbon Sequestration Symposium

CSUB Geology has a long history of community engagement, including hosting public events. In 2009 and 2010 CSUB Geology organized and hosted public workshops focusing on carbon capture/sequestration; see:

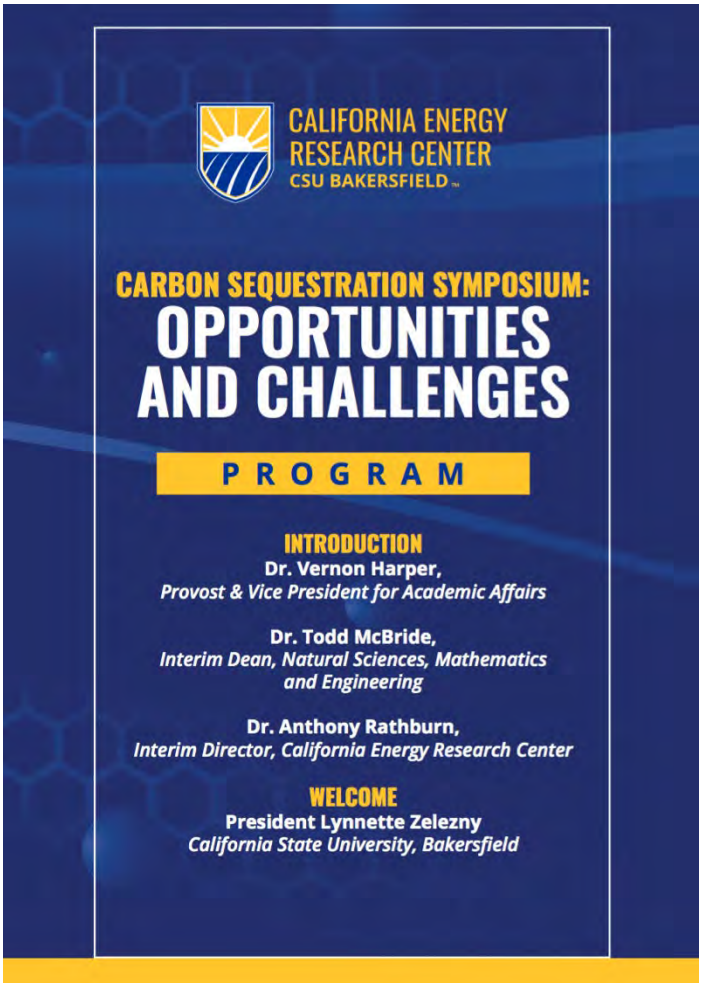
https://www.csub.edu/~dbaron/CSUB_CCS.htm
https://www.csub.edu/~dbaron/CCS-workshop.htm

In April 2022 the California Energy Research Center (CERC), founded by Rob Negrini (Geology faculty Emeritus and CSUB Faculty Hall of Famer), hosted a Carbon Sequestration Symposium on campus. The purpose of the event was to engage the community, industry, policymakers, and academia in discussions on the topic of carbon sequestration.

Dr. Kim Mayfield of LLNL was one of the speakers at the 2022 CERC Carbon Sequestration Symposium on campus.

The Symposium was organized in collaboration with Climate Now, The California Council of Science and Technology (CCST), and Lawrence Livermore National Lab (LLNL). The Symposium featured a diverse array of speakers and panels, and included a pre-event mixer, student research posters, and booths.

Kern County is a leader in solar and wind energy generation and is a prime location for the geological sequestration of carbon dioxide. The Symposium enabled stakeholders and experts to discuss how we can sustainably and safely support increased use of carbon sequestration to benefit the region. CERC and CSUB Geology will play a pivotal role in the adoption of clean energy strategies going forward.



The CERC Carbon Sequestration Symposium featured a diverse array of speakers and panelists.

For more information about the 2022 CERC Symposium, see:
https://www.csub.edu/cerc

https://news.csub.edu/inaugural-carbon-sequestration-symposium-held-at-csub

https://news.csub.edu/carbon-sequestration-symposium-brings-energy-experts-to-csub

https://www.bakersfield.com/news/symposium-highlights-local-opportunities-challenges-of-carbon-storage/article_d5c047e2-c810-11ec-ba96-971602bb27a6.html

Another CERC Symposium focusing on carbon management occurred in 2023.

For more information about the 2023 Symposium, see https://www.csub.edu/cerc (and the future 2023 newsletter)

NEW ENERGY INNOVATION BUILDING

As part of a ceremony celebrating Governor Newsom's allocation of $83 million to construct CSUB's Energy Innovation Building (EIB), President Lynette Zelezny, NSME Dean Jane Dong, Kim Budil, Director of Lawrence Livermore National Laboratory, Mayor Karen Goh, and Rudy Salas, State Assemblymember, spoke about the significance of the Building and the importance of CSUB in the region's energy transition.

CSUB President Zelezny speaks at the ceremony celebrating the funding of the new Energy Innovation Building at the future location of the Building.

The EIB, located between the Science III Building and the Health Center, will house the offices and interdisciplinary labs of the California Energy Research Center (CERC), along with a number of faculty offices, engineering labs, the Division of Extended Education and Global Outreach, and a versatile auditorium. CSUB has recently declared energy innovation as a focus for the University.

For more about the ceremony, see:
https://bakersfieldnow.com/news/local/local-leaders-raise-a-glass-to-future-energy-innovation
and
https://www.bakersfield.com/news/csub-celebrates-site-for-future-energy-capital-of-california/article_85037dae-5589-11ed-b00e-6b99ee839d94.html

For more information about CERC, see:
https://www.csub.edu/cerc

WE ARE BACK

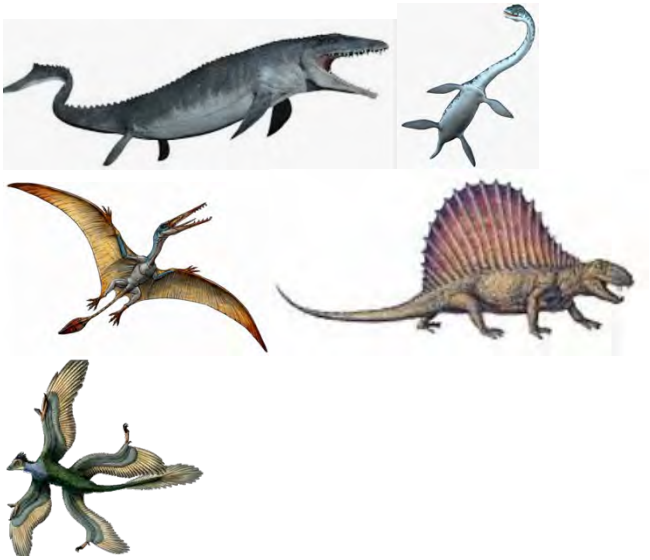
We are now back to delivering a full suite of in-person courses and field trips. After CSUB switched to virtual instruction mode in mid-March, 2020 the majority of our courses and labs have been delivered virtually through the spring of 2022. Despite the challenges, we continued our strong record of graduating students on time. We learned a lot about delivery of courses in a virtual mode but are glad to be back working with students face-to-face.

END OF AN ERROR

After a long, drawn out process that started in the fall of 2021, this year Geology ended an Era and an error by converting all of its courses with a SCI prefix to the GEOL prefix.

As best we can tell the SCI prefix was established decades ago when the name of the School was “Arts and Sciences”. The science departments wanted to be separate from the arts and have upper division General Education (GE) courses that implied rigor. As it turns out, with the current software system that has been in place for many years, no NSME Dept. has been receiving credit for any SCI prefix course it teaches. Geology teaches many sections of large enrollment courses under the SCI prefix, and although we have gone to IRPA (the group that compiles University data) each year to make sure that we received credit for teaching these courses, the next year the software system reverts back to treating SCI as a separate department in the School of natural Sciences, Mathematics and Engineering (NSME). Getting credit for these courses has to be done manually each year. For example, since 2017 356 WTUs of Upper Division GE courses in NSME have been assigned to SCI (and not the Dept/faculty that taught the course). As if this wasn’t enough, there are other negative consequences for maintaining the SCI prefix, including confusion among students, faculty, and administrators about which department is teaching which SCI course, and the idea that listing “SCI” on a student’s transcript doesn’t look as good as listing a science prefix (like “GEOL”). In addition, SCI courses can be taught by anyone, and the dept that "owns" the SCI course has no say about who teaches their course. Use of department prefixes for GE courses is consistent with all other schools at CSUB and most, if not all, other CSU campuses.

GEOL 3339 (A New General Education Course)
DINOSAURS: PALEOECOLOGY, EVOLUTION AND EXTINCTION



Only one of the extinct creatures shown above is a dinosaur. Which one?

In the fall of 2021, the Dept. of Geological Sciences submitted a new GE course (a course about dinosaurs) as a GEOL course rather than SCI. It was approved by the Curriculum Committee (CC) and forwarded to the GE Committee (GECCo) for their

review. The course was approved by GECCo, but they changed the prefix to SCI without our approval. The issue about use of the SCI prefix was discussed in both the NSME Chairs Council and the NSME CC. Both groups voted decisively that we all should have the option of using a department/program prefix for Upper Division GE courses (our lower division courses are already in our department prefix).

Because of refusals to change the SCI prefix back to GEOL, the Academic Senate got involved, and eventually an official University policy allowing programs to determine their own prefix was signed in June. Despite this new policy, a third refusal to comply with a directive from the Academic Senate prompted the Academic Senate to direct Academic Operations to list the dinosaurs course and include it in the catalog. Since the topic is a popular one, there was no problem with late enrollment and the dinosaurs course was taught as a GE course in the fall of 2022.

In the fall of 2022, the Director of GECCo asserted that Geology's Water and the West course had not been approved as a GE course in 2015. This required a request to Emeritus Professor and former Dept. Chair, Dirk Baron to search through his email archives to find the authorizing communications that were missing from GECCo's records. Persistence is the key to success, and the Department was finally able to convert all of its SCI prefix courses to GEOL. In the 2023-24 catalog all of geology's courses will be listed in one place under GEOL and we will automatically get credit for the courses we teach.

Summary of changes:
• SCI 2310 changed to GEOL 2310 Introduction to Earth Science (2)
• SCI 3310 changed to GEOL 3310 Integrated Science: Earth Science (3)
• SCI 3319 changed to GEOL 3318 California Geology and Society (3)
• SCI 3329 changed to GEOL 3328 Water and the West (3)

WE ARE LOOKING GOOD

Each year we take steps to improve the look and functionality of our space. Currently we are in the long process of renovating room 336, and we are continuing to improve other spaces as well.

The photocopier area has improved in looks and functionality.

Room 336 is in the process of being renovated.

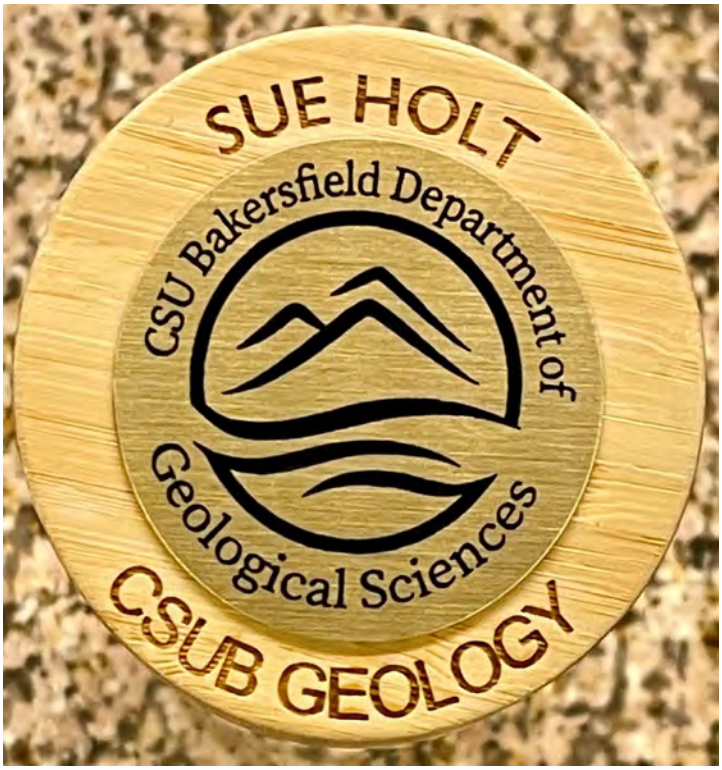
The student tutoring room has come a long way and has become a great place for students to study and interact with faculty outside of the classroom.

Sue Holt's retirement party at 1933.

SUE HOLT RETIRES!

Since 2014 Sue Holt has been the go-to person and problem-solver in the Department for faculty, students, staff, administrators and the community. She retired at the end of last summer, and we are very sad for us, but very happy for her. Sue can now spend more time with her family in Florida.

We had a retirement party for her at the Speak Easy Bar and Grill in July which was well attended by faculty, staff, students and alumni. During the bittersweet event Sue was presented with a water/tea bottle that had a stylized geologic column and a lid inscribed with her name and the new Department logo.



The lid of the water/tea bottle that was presented to Sue Holt in appreciation of her dedication.

Sue was also presented with a plaque with the following inscription:

IN SINCERE APPRECIATION OF SUE HOLT
The Department of Geological Sciences recognizes M. Sue Holt, ASC from 2014-2022, for her dedication, kindness, and ready willingness to go above and beyond to help. Her exceptional commitment to student and faculty success, as well as her ability to overcome obstacles and find solutions to a wide array of problems, make her a valued colleague and trusted resource for students, faculty, and staff. Sue's positive outlook, empathy, and wisdom have had a tremendous and lasting impact on the Department of Geological Sciences, CSUB, and the community. We wish Sue all the best in her well-deserved retirement.
July 2022

The plaque now hangs prominently in a place of honor in the student tutoring room.

Sue Holt in the student tutoring room with the plaque that was presented to her during her retirement party.

ADDED AT THE LAST MOMENT--LATE BREAKING NEWS: IN EARLY 2023 ELIZABETH POWERS TAKES A NEW POSITION.

After over 20 years with the Department of Geological Sciences, Elizabeth Powers leaves the Dept. to accept a position as the Chemical Hygiene Officer for the CSUB Office of Safety & Risk Management. We will miss her and wish her well. More in the next newsletter.

Elizabeth Powers, Monica Hinson and Elizabeth's daughter Hannah (L to R) working hard to construct pathways for the Geology Boulder Park being created in the Environmental Studies Area on campus.

FACULTY AND STAFF NEWS

Anna Cruz

We are back in person! Finally, after these two long years being virtual. It was not an easy return. Everything that we planned and reorganized (because of the pandemic), needed to be (again) rearranged/reorganized to go back to "normal". Wasn't easy, but I was ready for that!

This was my second year as an assistant professor at CSUB. During the past year I taught Geochemistry, California Geology, and Water and the West. This Spring semester I have the opportunity to teach Geological Oceanography and Applied Geochemistry. It has been a great semester so far. Being able to get in contact with students again is really rewarding. They bring joy and enthusiasm back to the classroom.

Anna with Benji and Chris.

On the research side, I continue setting up my lab and conducting my research using Nd isotopes as a proxy to reconstruct changes in ocean circulation. Recently I had an undergraduate student (Marisela Rodrigues) working with me in the lab and learning different techniques to process samples. I also collaborated on a paper, published in *Geochimica and Cosmochimica acta* in 2022, in conjunction with my colleagues from

Federal Fluminense University in Brazil and the University of Geneva and ETH Zürich in Switzerland.

On the personal side, I was able to visit my family in Brazil after 4 and a half years without seeing them in person. It was a wonderful trip. My family was able to finally meet my husband (Chris) and my son Benjamin, who by the way, behaved very well (for a one year one little boy) on the plane trip. A fun fact about this trip… I had an opportunity to take my husband to visit the Christ the Redeemer statue overlooking Rio de Janeiro. When we arrived there, the first thing that he noticed was the rock that the stairs were made out of. Geologists, right!

Anna and Chris at the Christ The Redeemer statue in Rio De Janeiro, Brazil.

Adam Guo

This year, I taught a few undergraduate and graduate courses, including Research Methods, Advanced Sedimentology, Advanced Sedimentary Petrology, Sedimentation/Stratigraphy, and a non-major general course, California Geology and Society. In the spring, I taught a couple of courses online. In the fall, I was thrilled to meet my students in the classroom back on campus. We had the first field trip to Ridge Basin since the pandemic. I enjoyed and cherished the field time with my students. In the years of Covid-19, almost all my graduate students have finished their studies and graduated, while the NSF CREST Phase II ended this past summer. I am looking for new students to work with me on the other research projects. I still actively served on some committees in the school and department, including NSME Scholarship Committee, Intercollegiate Athletics Advisory Committee, etc.

At home, Yan and all the children have been doing well. Children have safely finished their one-and-a-half year of classroom learning. In the fall, Yutong started high school life on the pathway of becoming a forensic pathologist that Yutong is committed to. Bryan enjoyed his new TK school adventure.

Adam and two of his children during a tour cruise off the coast of Long Beach, CA

Matthew Herman

I should have written this blurb weeks ago (it is February 23rd as I type this). If I had, it would have been more straightforward to write. I would have told you about finally teaching in person for the first time since I arrived at CSUB. My first in-person class was Senior Field Seminar in Spring 2022, which I led with Dr. Katie O'Sullivan. Under her expert guidance the students learned a lot about becoming capable field scientists, and I did my best to help them better contextualize their field observations. Last semester, things finally returned to "normal" and I taught all my classes face to face. My new, upper division Geodynamics course had some attrition, leaving me with one dedicated apprentice, Master's student Alex Garcia. Alex was an incredible student, and I taught her everything I know about geodynamics. I learned a lot in the process, too! My other courses – Natural Disasters and Physical Geology – were infinitely better face to face than on Zoom. Of particular note: the lab activities in Natural Disasters worked much better when students interact with each other and me; I was able to develop a hands-on, final geologic mapping project for Physical Geology, and the Physical Geology class spent a weekend at Zzyzx and Death Valley along with the Mineralogy and Petrology class. This semester, I am teaching Natural Disasters and Physical Geology again, and I am completely overhauling the Geophysics course. We are having fun in that class learning how earthquakes are located and how GPS actually works!

Stopping in Boron, CA on the way to Zzyzx for a field trip.

Matt and Evie doing important work at the beach.

If I had written this blurb a few weeks ago, I would have told you about the exciting and groundbreaking (pun intended) research my students and I have been working on, such as projects related to earthquake processes in subduction zones and how the San Andreas formed, computer models of the plate tectonics of southeast Asia and the eastern Mediterranean, and integrative studies of large and complex earthquake sequences in the Aleutian Islands and New Zealand. I presented this research at several international conferences this last year: the Seismological Society of America Meeting (Seattle), the Geological Society of America Meeting (Denver), the American Geophysical Union Fall Meeting (Chicago). In a few months, my collaborators will share our results at the European Geosciences Union (Vienna) and the International Union of Geodesy and Geophysics (Berlin). At the AGU Fall Meeting, I also convened a session on subduction zone deformation processes, which had over 100 presentations, making it one of the largest and best-attended sessions in the entire Tectonophysics section! I was also invited to join the SZ4D Modeling Collaboratory for Subduction, a team of 16 incredible scientists figuring out how to develop computational tools to support the next generation of subduction zone science. I am thrilled that my decade of work on subduction zones is being recognized around the world!

If I had written this blurb a few weeks ago, I would have told you about the presentations and talks I have given across Kern County and beyond! I was

honored to talk about earthquake science at the Buena Vista Museum in Bakersfield, the Ridge Route Communities Museum in Frazier Park, and the 60+ Club of CSUB. And I went in more depth about my research at the USGS Earthquake Science Center Seminar in Menlo Park. Apparently, my talks garner enough interest that I have been invited back to the Buena Vista Museum and Ridge Route Museum to give talks again.

But alas I did not write this blurb a few weeks ago.... On February 5th, while I was in Denver celebrating with my family the day after my sister's wedding, a devastating magnitude 7.8 earthquake struck Turkey and Syria, followed shortly by a magnitude 7.5 aftershock mere hours later. As soon as I saw the size and location of the event, I knew it would be bad and immediately set to work trying to provide some better scientific understanding of the earthquake. Within minutes, I was on the phone with my colleagues at the U.S. Geological Survey National Earthquake Information Center and Penn State discussing details of the earthquake location, magnitude, aftershocks, and the geology of the region. Since that night, I have been working with these colleagues on the event full-time, almost 8 hours every day! As more information came over the hours, days, and weeks, we learned more about the sequence, and pieced together a scientific picture of what happened, always keeping in mind the people whose lives were destroyed by the event. As the local expert, I provided scientific information for the *Bakersfield Californian* and appeared on NBC Channel 17 twice. I was invited to give a talk at the CSUB Physics Colloquium and discussed the geophysics of the sequence. This work culminated yesterday in the publication of a USGS Storymap on the sequence, which is the definitive scientific explanation of the earthquakes and the processes that caused it to occur. Whew!

Chris Krugh

Well, another academic year is nearing the end and I was quite surprised when I was notified that it is officially my 10th year at CSUB... Wow and yikes! I am very glad that classes are finally back in person, and we can fully resume class field trips. It has also been great to finally travel to see family and friends as well as just "escape" from Bakersfield every once in a while. This past year I attended the annual Geological Society of America Meeting in Denver, CO to help staff a Dept. booth in the Campus Connection area. The primary goal was to recruit undergraduate and graduate students to CSUB Geology programs; however, it was also an opportunity to highlight the research and teaching activities of CSUB faculty and students.

Our Geology Booth at the GSA Meeting in Denver, CO

Speaking of research, I finally got licensed by the FAA as a Remote Pilot and am looking forward to getting some flight time under my belt. I hope to collect aerial imagery along the Sierra Nevada Frontal Fault Zone (SNFFZ) and use structure-from-motion photogrammetry to create high-resolution digital terrain models. These datasets will help to constrain fault segmentation and hopefully highlight the degree of fault segment interaction and linkage. I am also dusting off my low temperature thermochronometry skillset to help constrain footwall exhumation along parts of the SNFFZ.

Join us on Facebook!
Geology Club@CSU Bakersfield

Benji sleeping peacefully on the flight to Brazil.

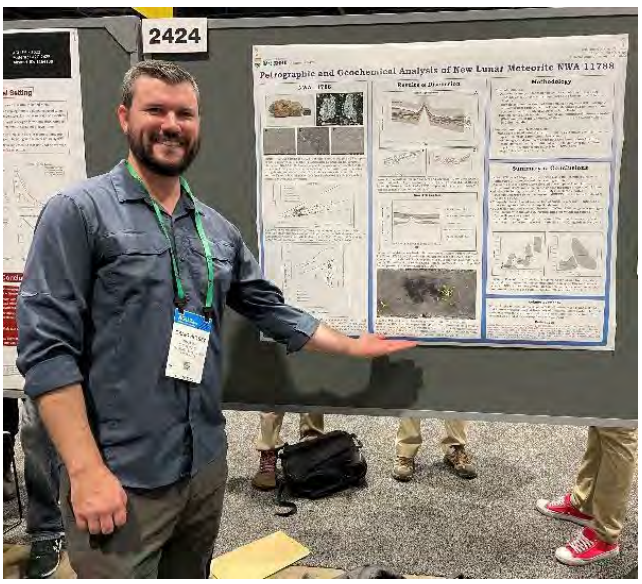
On the family side of things, Benji, Anna, and I had a truly wonderful trip to Brazil over winter break. It was Benji's first plane flight (10+ hours!) and he handled surprisingly well. Benji got baptized, I finally got to meet many new family members in person, and we visited some famous spots in Rio de Janeiro such as Ipanema beach, Corcovado Mountain and the Cristo Redentor (Christ the Redeemer) statue, and the cable car to the top of Pão de Açúcar (Sugarloaf mountain). Anna thought it was funny (or maybe annoying) that I kept pointing out the fantastic granitic gneiss with large (1-2 cm) garnet porphyroblasts that is used for steps, curbs, and walkways around Rio.

Katie O'Sullivan

2022 was an exciting year! Together with master's students Craig Hulsey and Briana Acevedo and undergraduate researchers, CSUB lunar research was presented at 6 regional and national conferences, and students won over $30,000 in scholarships and awards to conduct lunar research. Special shout out to Briana Acevedo for winning a prestigious CSU Foundation Scholarship!

Dr. O'Sullivan and Briana Acevedo coffee tasting at the Starbucks Reserve in Chicago, IL

The graduation of master's student Craig Hulsey was one of the highlights of the year. His thesis, entitled Petrographic and Geochemical analysis of new lunar meteorite NWA 11788: Insights into lunar crustal diversity and implications for the Lunar Magma Ocean, won CSUB's Distinguished Master's Thesis award in the STEM discipline.



Craig Hulsey presents his lunar research at the AGU meeting in Chicago.

Craig and Briana presented their research virtually at the Lunar and Planetary Science Conference and in person at the AGU conference in Chicago.

Even though my research focuses on the Moon, I still had opportunities to get out into the field this past year. Most notably, I fulfilled my longtime dream of teaching field camp! I was invited to co-teach the Sacramento State field camp where we mapped all over Eastern California, including the Sierra, White Mountains, and Poleta Folds. It was a dream come true!

CSUB students got to see rocks in the wild for the first time this year! The Spring 2022 seniors got to map Salt Spring Hills in southern Death Valley on a multi-day camping trip. We all learned the tearpants function of dolostone, and even though we're all familiar with Bakersfield summers, we learned what it's really like to work in the heat. The Fall 2022 Mineralogy & Petrology class also made it out to the Death Valley area on the annual Zzyzx trip. There we saw some of the oldest and youngest rocks in California.

I learned about the enigmatic granites of the Mojave Desert at a GSA field trip and got to meet some of my geology heroes! The trip was great because I felt like a student again; it reminded me that there's so much geology I don't know and it's really special to learn from experts in the field. The trip also reminded me of how special our location is here at CSUB. We have access to outcrops that people fly around the world to visit, and we can just drive to them in a few hours' time.

During the last bit of summer, I embarked on a 4-week Summer Undergraduate Research Experience (SURE) with Brian Aguilar, Tabitha Guadian, Conner Lesh, Dyanna Oregon, Jennifer Rubalcaba, and Kareley Rodriguez-Haro. We analyzed thin sections of a lunar meteorite and even travelled to UCLA to learn about the Electron Microprobe method of collecting geochemical data. During our UCLA trip we also made a stop at the Natural History Museum of LA to check out their meteorite and mineral collections. SURE students presented their findings in poster format at CSUB and at a San Joaquin Geological Society meeting.

SURE students Conner Lesh, Tabitha Guadian, Dyanna Oregon, Kareley Rodridguez-Haro and Brian Aguilar learn how to operate the UCLA electron microprobe from Brian Damiata.

Current students got to hear from alumni during two zoom panel discussions where we talked about grad school and geology jobs. Special thanks to alumni Maryanne Bobbitt, Favour Epuna, Craig Hulsey, Sade Haake, Alyssa Kaess, Valerie Patela, and Bradley Squires for giving their insights. The geology department hopes to have more events like this in the future, yet another reason to keep in touch with the department!

Happy ponders life's vicissitudes and the emplacement of granite in the Sierras.

Dr. O'Sullivan finds an exciting rock in the White Mountains.

Geology Department Zoom baby shower for one of our own.

Tony Rathburn, Department Chair

Year number six as Chair flew by as we transitioned back to face-to-face classes and reacquainted ourselves with teaching and functioning in the physical environment of the University. My job as Chair would be impossible without the teamwork, dedication, and support from everyone, including **Cecily**, **Sue, Elizabeth, Chris, Adam, Liaosha, Katie, Matt, Anna, Alyssa, Jason, Larry, Pam, John M., John Y., Bob C., Brian, Bill, Jan, Dirk, Rob, and Bob H.**

I continue to serve as the Interim Director of the California Energy Research Center until we complete a search this year for a new director.
I participated on two multi-institutional research voyages off San Diego, one in July where I was the Chief Scientist and another in October where I was Co-Chief Scientist. CSUB students, along with students and scientists from the University of San Diego, Oklahoma State University, and Scripps Institution of Oceanography, were active participants on both cruises where we collected cores of the seafloor to examine microfossils, living microfauna, sediments, and pore water geochemistry. These expeditions are part of the NSF-funded Geopaths Project whose primary objectives are to recruit geoscience majors and involve students in research.

Tony Rathburn in the Paleontology Director's Office in the Smithsonian Museum of Natural History in Washington DC (with the T. rex skull that once graced Newt Gingrich's office).

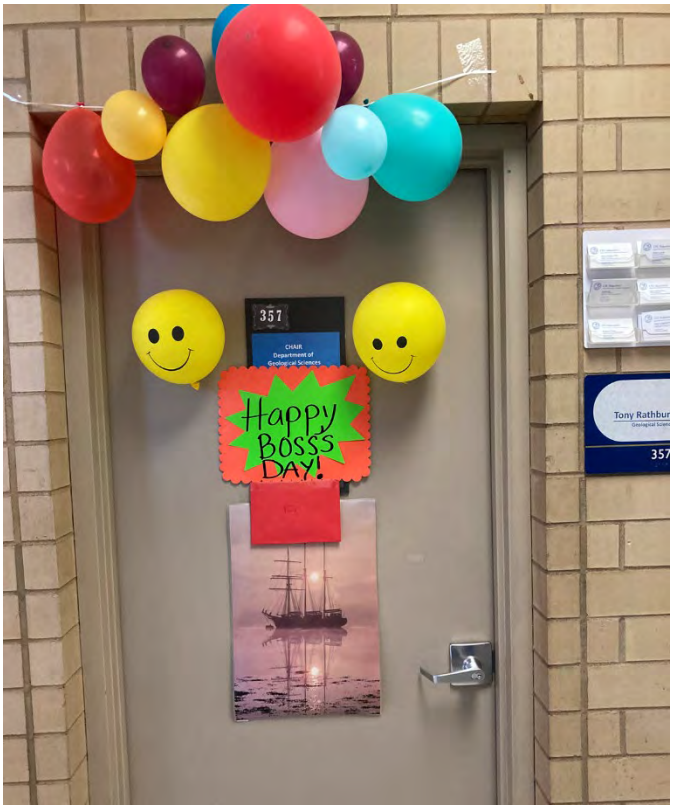
In collaboration with Ken Smith at Monterey Bay Research Institute (MBARI) and Ashley Burkett at Oklahoma State University, we also recovered research samples from seafloor experiments that were deployed at a water depth of 4000m off the coast of California three years ago. I met the MBARI ship at Moss Landing and brought the cores and experiments back to Bakersfield where CSUB students, and Ashley and her students processed the sediment cores, and using a microscope, collected foraminifera (single-celled creatures that are important for environmental change research) that had colonized the experiments. Our analyses of

these experiments will be compared with previous colonization experiments at this site which have already yielded some surprising results relevant to marine biodiversity and interpretations of microfossils used to assess the geologic history of environmental change.

Students and teachers enjoy a meal in San Diego the night before setting sail on a research voyage. Clockwise, Ellen Renick, Highland High School Geology Dual Credit teacher; CSUB geology majors Conner Lesh and Tyler Garza; CSUB geology graduate student, Blaine Whitaker; Trenity Ford, University of Oklahoma PhD student; Ashley Burkett, Assistant Professor at Oklahoma State University; CSUB geology graduate students Adrian Montoya and Briana Acevedo; and Oklahoma State University undergraduate Jessica Whitesell. The meal ended with birthday hats, fake mustaches, and a surprise birthday cake for me.

During the summer I also participated in an international workshop focused on digitizing the taxonomic information of seafloor-dwelling foraminifera. This workshop was organized by Ashley Burkett (Oklahoma State University and Brian Huber (Smithsonian Museum of Natural History) who invited foraminifera researchers from around the world to participate. The workshop was hybrid, with face-to-face attendees based at the Smithsonian. In addition to working with an international array of experts, it was amazing to work behind the scenes at the Smithsonian Museum of Natural History. To top it off we were given tours of the fossil exhibits with stories of how the exhibits were put together along with a tour of materials (such as the first *Triceratops* skull found) that the public doesn't get access to. As a 10-year-old paleontologist that never grew up, this was a dream location for a workshop! The pioneering taxonomic aspects were also exciting. The digitizing effort continues and will include CSUB students.

In 2022 my teaching duties included "Historical Geology" and a new General Education (for non-majors) course on dinosaurs. Both are very fun courses to teach.



Celebrating "Boss's Day" in October

Liaosha Song

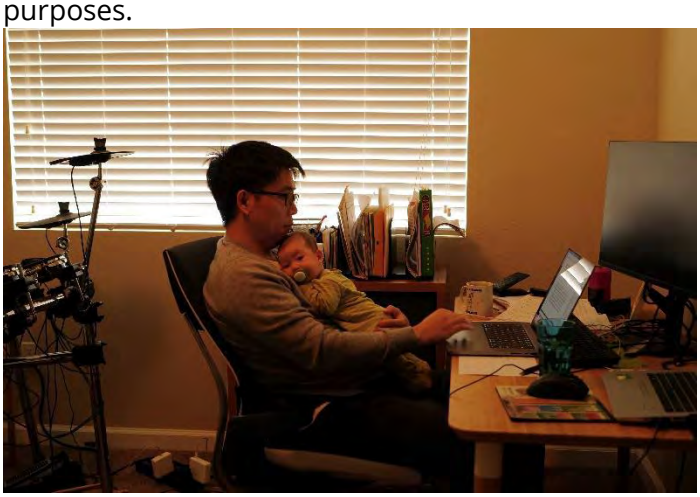
2022 has been a busy and productive year for me and my family.

My daughter Kaylee was born on October 15th. She is the first child of my wife Jennifer and I. Welcoming her to our family is the most exhilarating experience. Although taking care of her was not easy at the beginning. Kids do not come with an instruction. The feeding, diaper changes, and getting her to sleep were exhausting sometimes. But despite all of that, the joy and love we share are truly extraordinary. As time goes by, we are learning to be parents, while Kaylee is exploring an entire new world. She is curious about everything that is around her. Recently, we introduced solid foods to her, and she loved them, while some of them. Jennifer and I feel so blessed every single day.

My research work is moving forward. As PI, I received two grants from NSF and DOE this year. The NSF grant is a major research instrumentation (MRI) grant that supports the acquisition of a field emission scanning electron microscope (FE SEM). This new instrument will add significant capacity to our SEM lab, and it will enhance our research in many different fields. This FE SEM is equipped with an EDS system and a coldstage. It will allow the examination of samples under a frozen state. This is particularly important for biological specimens. I was very excited when I was notified by NSF. Yet it did not take too long until I realized that getting the grant is only the beginning. The superb capability of an FE SEM comes with stringent requirements for the lab room. Thanks to Dean Dong's and Geology Chair Rathburn's support, we are renovating the SEM Lab now. The new FE SEM will be installed in Fall of 2023.

Jennifer, Kaylee, and myself are getting ready for a trip to a park.

The DOE grant will support the study of coupled physical and chemical processes related to CO_2 and H_2 geologic storage, as well as student research and career skills development. This grant is a collaborative work between CSUB Department of Geological Sciences and Lawrence Berkeley National Laboratory. We have recruited the first cohort of student trainees. They will go to the Berkeley Lab during the 2023 summer for a 10-week research internship. They will work with scientists utilizing the synchrotron CT in Advanced Light Source. The data they are about to acquire will help us understand the reactive fluid flow in fine-grained sedimentary rocks. This work will contribute to the evaluation of caprock integrity for CO_2 and H_2 geologic storage. Their data will also be used for future teaching and training purposes.



Writing a paper with Kaylee. She loves her pacifier.

Cecily Rink

Hello! I am the new face around here in the geology department. My name is Cecily Rink, and I am the new Administrative Support Coordinator (ASC). I've got some big shoes to try and fill with the departure of Sue Holt. I was lucky enough to get some time with her before her retirement August of this year. She truly was an integral part of this department and is deeply missed.

I have been learning so much and getting to know all the faculty members and students. It is nice to see students and instructors milling around. Being back to in person learning has been a great relief to many. I am slowly putting names to faces and becoming part of the family here. I have only been here since the start of the fall semester, but I am truly thankful for the opportunity to work with such amazing people. I would like to thank everyone that has welcomed me with open arms. I look forward to the year ahead and what we can accomplish.

Cecily Rink, newest Geology family member.

STUDENT NEWS

Oh, say can you sea?

Ever wanted to sail around the world, visit exotic places, see places on the planet that no one has ever seen? Wouldn't it be great to get paid to do these things as part of your job? This dream job description portrays the career of a marine scientist.

Despite its land-locked location, the CSUB Dept. of Geological Sciences offers students research opportunities with experienced marine scientists on the open ocean. Students that participate in this program get a genuine feel for what life as a marine scientist- oceanographer is like. Last summer and again in the fall CSUB students accompanied CSUB geologist **Tony Rathburn** and scientists and graduate students from Scripps Institution of Oceanography, the University of San Diego, and Oklahoma State University on research voyages to collect seafloor samples off the coast of San Diego. These research cruises are part of the Geopaths project funded by the National Science Foundation.

Students retrieving core samples from the ocean floor.

Due to pandemic restrictions over the past couple of years, research voyages for this project were postponed. With strict masking and vaccination protocols in place research voyages resumed this year, allowing the final two voyages of the project to take place.

On each voyage students were treated the same as every other scientist on board and were engaged in hands-on research activities that included deployment and recovery of research sampling equipment, and processing seafloor samples. CSUB undergraduates worked alongside marine scientists, PhD students, technicians, and the ship's crew to conduct research at sea.

Hands-on science at sea. CSUB undergraduate, Tyler Garza (white hat, center) with CSUB grad student, Adrian Montoya (yellow hat) and Univ. of San Diego grad student, Rachel Sarner (red hat), with two Univ of San Diego undergrad team members standing at the ready, processing a seafloor sediment core on the R/V Roger Revelle, a Scripps Institution of Oceanography Vessel.

In addition to hands-on training, CSUB students were exposed to peers from other institutions and scientists at all stages of their academic career. A diverse array of career pathway templates for graduates in STEM fields was also on board, including marine technicians, research scientists, crew members, and teachers.

DEPARTMENT OF GEOLOGICAL SCIENCES
CSU BAKERSFIELD

Microscope tied down to keep it from moving with the seas while on board the ship.

CSUB students create shrunken heads on recent expeditions!

Typically, explorers have to travel to remote jungles to find shrunken heads. However, during a recent research expedition, CSUB students created their own shrunken heads (and cups).

As part of the NSF-funded Geopaths research project, students actively participated on research voyages with marine scientists off the coast of San Diego. While they are waiting for samples to be brought up from the seafloor or during transits from one site to another, students decorated heads and cups and placed them in dive bags which were then attached to sampling gear sent to the bottom of the ocean. The result—a number of colorful heads and cups that are much smaller than they started.

Styrofoam has a lot of air trapped in it, and when Styrofoam gets exposed to the pressure of deep ocean depths, the air gets squeezed out, shrinking the size of the Styrofoam.

An example of one of the shrunken heads created by students on a 2022 expedition. The shrunken head on the right started out the same size as the one on the left before it was decorated and sent to the bottom of the deep ocean (about 2000 meters deep). The artist, Hannah Warner, is shown in the background. After returning to CSUB, this shrunken head was presented to CSUB President Zelezny.

CSUB graduate student, Briana Acevedo decorating a Styrofoam cup on the Scripps research vessel, Roger Revelle during transit between sampling sites on a 2022 research expedition. Full-sized and shrunken cups can be seen in the foreground and University of San Diego students can be seen in the background.

With each expedition we add to our shrunken head collection. Along with shrunken cups, these heads have been used in classrooms with students of all ages to illustrate the effects of increasing pressure as you descend into the ocean. And you thought you were under pressure!

Full-sized Styrofoam heads decorated by students at sea and waiting to be lowered to the bottom of the ocean.

Student Internships

Connor Lesh: Interning with NASA

Conner Lesh, CSUB geology recent graduate

Conner's achievements are nothing short of remarkable. He successfully graduated from CSUB and has embarked on an exciting journey with NASA's Jet Propulsion Lab. His internship there involves working alongside Dr. Katie Stack Morgan, Deputy Project Scientist for the Mars 2020 Perseverance Rover Mission. Conner met Dr. Stack at a Geological Society of America conference that he attended. Conner's passion for astronomy and geomorphology drove him to pursue a career in planetary science, more specifically, the surface of Mars. During his undergraduate years, Conner worked with professors and contributed to various research projects ranging from cruises, lunar meteorite analysis, and analysis of sandstone composition. Recently, Conner submitted a proposal to the NSF Graduate Research Fellowship Program with the project title "A Deeper Dive into Valley Formation at the Perseverance Rover Site, Mars". This text is excerpted from a story by Kelly Ardis, which can be found at: https://news.csub.edu/to-nasa-and-beyond

Monica Hinson and Hannah Warner: Marine science internship at Scripps Institution of Oceanography

Choosing the right career path can be a daunting task and often an internship can help make the choice easier. This was at least part of the motivation for CSUB geology majors Monica Hinson and Hannah Warner when they signed up for a marine science internship this past summer. The internship was part of the Geopaths project, an NSF-funded collaboration between CSUB, Scripps Institution of Oceanography (SIO) and the University of San Diego (USD). The immersive, hands-on research internship gave Monica and Hannah a month-long idea of what it would be like to work as a geoscientist at Scripps Institution of Oceanography in La Jolla, CA.

The internship included conducting research and learning new skills at the Scripps Geoscience Facility. Under the guidance of Alexandra Hangsterfer, the Geological Collections Manager, Monica and Hannah processed and analyzed cores of seafloor sediment collected as part of Geopaths research voyages. Using state-of-the-art techniques and equipment, the students took X-rays of the cores and created a basic database for each Geopaths core collected off the coast of San Diego from water depths between 300m to over 2000m.

The experience was challenging but rewarding. As Monica explains, "I was taken out of my comfort zone and challenged mentally and academically, an experience that so few are lucky to experience as an undergraduate student."

In the middle of their internship Hannah and Monica rScripps Vessel, R/V Roger Revelle. The Revelle is

among the largest class of research vessels in the U.S. Fleet. Working alongside scientists, students, and educators from CSUB, SIO and USD, Monica and Hannah actively participated in the deployment and recovery of research equipment, and the collection and processing of deep-sea research samples. The interns operated the equipment and employed the techniques used to collect the deep-sea sediment cores they are working on. When they returned to SIO, Hannah and Monica worked on the cores they had helped collect at sea.

Scripps Institution of Oceanography's Geological Collections Manager, Alexandra "Alex" Hangsterfer (left) with CSUB geology interns Monica Hinson (center) and Hannah Warner holding one of the smaller deep seafloor sediment cores collected during an NSF Geopaths project voyage. Under Alex's guidance, Monica and Hannah analyzed core sediments as part of their internship

Dr. Tony Rathburn, CSUB Geologist and PI for the Geopaths Project, said that "Our collaborations with Scripps and the University of San Diego enabled us to provide this very unique internship opportunity for CSUB students. Monica and Hannah were completely immersed in life at Scripps, enabling these land-locked students to get a much better idea of what life as a marine scientist would be like." The internship was transformative for both Monica and Hannah. Monica said, "The Scripps internship has given me the courage to pursue higher education. I met some amazing individuals from diverse backgrounds with various struggles and they all seemed to love what they do. I hope to achieve the level of education where I am comfortable in my career and am also doing my part to contribute positively to the well-being of nature and society." Hannah proclaimed, "Altogether, it made for the best experience I have ever had." She said that "I learned so much within a month that I can use down the line in my career and in daily life as well."

Monica and Hannah at the Scripps Birch Aquarium talking with visitors about their Geopaths research in La Jolla, CA. July 2022

Hannah and Monica also had a booth at an educational outreach event at the Scripps Birch Aquarium, informing visitors about their project. As a result of their involvement with the Aquarium, the interns were able to go behind the scenes and view the new penguin exhibit before the live exhibit was opened to the general public. In addition to tours of Scripps collections and participating on a fossil-oriented field trip with a Scripps researcher, living in an apartment in La Jolla also enabled Hannah and Monica to take advantage of local activities, such as kayaking, strolling along the beach, and having lunch watching the waves break along the shore.After an internship experience that most students can only dream about, Monica and Hannah have narrowed their choices of career paths and revised their visions of a dream job. For Monica, "The internship at Scripps solidified the choice for me to pursue higher education in the field of oceanography."

"This experience gave an insight to potential careers and lifestyles that I didn't know were an option for me," said Hannah. "I am very grateful that this internship has opened doors for me. This has helped me realize that when I take advantage of opportunities and work hard, I can achieve whatever it is that I desire in life."

With newfound confidence, both Monica and Hannah signed up for overseas summer field camps. Text excerpted from [https://news.csub.edu/getting-their-feet-wet-in-marine-science.](https://news.csub.edu/getting-their-feet-wet-in-marine-science)

Monica Hinson (left), Tony Rathburn (center), and Hannah Warner (right)

THE CALIFORNIA WELL SAMPLE REPOSITORY (CWSR)

The California Well Sample Repository (CWSR) is located on the south side of the CSUB campus. The CWSR remains a very valuable resource that is sincerely appreciated by industry, government agencies and the academic community. The facility was constructed in 1975 to be a publicly accessible library of geological data. A second building was added in 1986 immediately behind the first building. The combined 12,000 sq ft are filled with geologic data including cores, well files, paleontological reports, check shot surveys and many other data that are not available elsewhere. Government agencies, industry, researchers, and students from all over the country make use of the facility.

Jack Coash, J.M Weddle, Russ Robinson, Vic Church and others in front of the California Well Sample Repository

CSUB GEOLOGY CLUB

The Geology Club started up again this fall with rousing success! The club has performed many outreach community functions as well as visited many schools.

President – Monica Hinson
Vice President – Connor Lesh and Jennifer Rubalcaba
Treasurer – Tyler Garza
Secretary – Madison Tarpley

Geology Club is back! First in person meeting since March 2020!

Find our Geology Club on Instagram at
https://www.instagram.com/geology_club_at_csub/

Kern Oil Festival, November 2022. Members from (Left to right): Monica Hinson -President, Leonardo Menchaca – Member, Madison Tarpley – Secretary, Tyler Garza – Treasurer, Conner Lesh – Vice President.

"Make Your Own Fossils" was a big hit with the kids.

Monica Hinson is awarded the LSAMP PROUD Award for Outstanding Service/Leadership

The PROUD (Program Recognizes Outstanding Undergraduate Distinction) Outstanding Service/Leadership Award was bestowed on CSUB geology major, Monica Hinson, by the California State University-LSAMP (Louis Stokes Alliance for Minority Participation) Program. Monica is a dedicated student with a helpful, can-do attitude and a pleasant personality. Her impressive record of achievement, dedication to learning new things, willingness to help others and her persistence combine to make Monica exceptional. She excelled in academics and distinguished herself in service, and the CSU-level award recognizes her substantial achievements and leadership skills.

Monica Hinson in the field.

CSUB Geology Students Honored by Professional Organizations

Field Camp Reimbursement Awards from SJGS and AAPG.
2022 Award Winners: ($1000 each)
Tara Bonas
Prabhjot Singh
Michael Hernandez
Conner Lesh
Hector Zavala
Brian Aguilar

The Pacific Coast Section of the Society of Exploration Geophysicists (PCS-SEG) Outstanding CSUB Geology Major Award: The Society of Exploration Geophysicists (PCS- SEG) presented their award to recognize an outstanding CSUB geology major and to help the student cover the costs of the required summer field camp course. The award demonstrates the commitment by PCS-SEG to encourage the educational and practical development of high- performing students in CSUB's Department of Geological Sciences.
2022 Award Winner: ($500)
Michael Hernandez

Kern County Mineral Society Field Camp Award:
Kern County Mineral Society (KCMS) presented two CSUB Geology students with awards to help cover the costs of their required summer field camp. The KCMS was established in 1935, by individuals who shared a common interest in collecting, displaying, and sharing their knowledge of rocks and minerals. Their generous award to CSUB geology students reflects the sincere interest of KCMS in helping young people pursue careers in geology.
2022 Award Winner: ($1,500 each)
Hector Zavala
Conner Lesh

CSUB Trustees Award Scholarship:
The CSU Trustees' Award is the university's highest recognition of student achievement. Each award provides a donor-funded scholarship to students who demonstrate superior academic performance, personal accomplishments, community service and inspirational goals for the future.
Briana Acevedo ($7000)

Title Vb Graduate Student-Faculty Collaborative Research Program Scholarship:
Briana Acevedo ($1500)

Student Research Scholars Scholarship
Briana Acevedo ($2000)

Department Awards

Students from the CSUB Department of Geological Sciences have also been honored with several merit-based awards established through the generosity of a number of donors with ties to CSUB and the local community. Recipients of these annual awards are selected by an award committee consisting of CSUB Geological Sciences faculty.
The following describes awards and awardees for 2022:

Herman W. Weddle Scholarship: This memorial scholarship was established by James Weddle in honor of his father, Herman Weddle, a geologist with Standard Oil Company to support CSUB students majoring in geology. Awards are for geology majors who work on well core or well samples and make use of the California Well Sample Repository.
2022 Award Winners ($1,480 each):
Monica Hinson
Hannah Warner

H. Victor and Virginia C. Church Scholarship: This scholarship was established in honor of Dr. H. Victor Church, a geologist and founding member of the Well Sample Repository at CSUB, and his wife Virginia C. Church, a former teacher, to support CSUB students majoring in Geology.
2022 Award Winner: ($1,489)
Monica Hinson

Geology majors, Conner Lesh (Left) and Hector Zavala, receive field camp awards and geology hammers from the Kern County Mineral Society.

C.E. Strange Scholarship: This scholarship was established by Mr. C. E. Strange, a local geologist, who wanted to provide financial assistance to undergraduate students majoring in Earth Science.
2022 Award Winners: ($1,220 each)
Christian Antoni Gonzalez Acevedo
Hannah Nicole Warner
Monica A. Hinson
Angel Rojelio Gonzalez Acevedo
Izeah Mateo Delgadillo
Liberty Lloyd Rasmussen

Sam Gonzalez Memorial Scholarship:
The family of Sam Gonzalez and friends have developed this scholarship to honor their son and friend by supporting geology majors in pursuit of an undergraduate degree and a career in the field of geology.
2022 Award Winner: ($1,102)
Jennifer Rubalcaba

Dr. John and Emily Coash Scholarship:
2022 Award Winner: ($693)
Jennifer Rubalcaba

CSUB Geology Students Honored with Awards from the CSUB School of Natural Sciences, Mathematics, and Engineering:

May 2022 — The School of Natural Sciences, Mathematics and Engineering Scholarships awarded the following 2021 Awards to CSUB Geology Majors:

Outstanding Geology Undergraduate Student in CSUB School of Natural Sciences, Mathematics, and Engineering by Program: Presented to the most outstanding undergraduate student in each Department.
2022 Award Winner: Tara Bonas

Outstanding Geology Graduate Student in CSUB School of Natural Sciences, Mathematics, and Engineering (NSME): Presented to the most outstanding graduate student in each department.
2022 Award Winner:
Toni Ramirez

Outstanding Published Paper in CSUB School of Natural Sciences, Mathematics, and Engineering (NSME): Presented to the student with the most outstanding publication in NSME.

2022 Award Winner: Craig Husley
"Petrographic and Geochemical Analysis of New Lunar Meteorite NWA 11788: Insights into Lunar Crustal Diversity and Implications for the Lunar Magma Ocean Model"

CLASS OF 2022 BACHELORS OF SCIENCE

Jared Hansen
Jose Trinidad
Michael Hernandez
Jasmin Gutierrez
Prabhjot Dhillon
Steven Juarez
Hector Zavala
John Cronin
Tara Bonas

CLASS OF 2022 BACHELORS OF ARTS

Danny Dorado
Mason Denning

Craig Husley with Dr O'Sullivan.

CLASS OF 2022 MASTER OF SCIENCE

Eric Glauser
Victoria Lee
Craig Hulsey
Pedro Arredondo
Travis Aragon
Toni Ramirez

ALUMNI NEWS

Please contact Cecily Rink crink@csub.edu to update your career and contact information.

TO MAKE A DONATION

We are committed to providing students with the quality of education that they need to become successful, contributing members of the community. Please consider becoming a supporter of our scholarship and field camp programs that make it possible for financially-challenged students to continue their studies and attend summer field camp. COVID has created additional financial difficulties for students and the Department. The Department has a number of outreach, field experience and educational initiatives that recruit students and enhance student learning. These programs depend on your support. Every donation makes a difference. As a result of budget cuts and changes in priorities, many geology departments across the country have reduced their standards, removed field camp requirements and reduced field and applied skills from their program. Please give back to the Department that is working hard to give current students the traditional field training and advanced technical education required to be a successful geologist. Donations from alumni and other engaged community members allow us to enrich and maintain classes and other student experiences beyond what state funding alone can provide. You can also help students with field camp expenses (thousands of out-of-pocket dollars not covered by CSUB tuition) by donating to an established scholarship, starting your own annual scholarship, or specifying what you want donated funds to the Department to be used for (see below).

In the future, if you would like to receive this newsletter via email, please contact Cecily Rink at crink@csub.edu with your email address.

Affiliation (if applicable):

Address:

City, State, Zip Code

Email:

Please indicate the amount you want to donate:
$100 $500 $1,000 $2,500 $5,000
Other _____

Please indicate if you want your donation to go to one of these specific causes:

☐ **Sam Gonzalez Memorial Scholarship** (to support students who after exploring other fields have discovered Geology as their calling)

☐ **Student Scholarships (will be added to the CE Strange Scholarship Fund)**

☐ **Field Activities (will be added to the Claude Fiddler Field Endowment)**

☐ **Undergraduate Student Research**

☐ **Unrestricted to support current needs identified by department**

THANK YOU!

Return to the address below, to the attention of W. Chris Krugh.

9001 Stockdale Highway,66 SCI
Bakersfield, CA 93311

DEPARTMENT OF
GEOLOGICAL SCIENCES
CSU BAKERSFIELD

9001 Stockdale Highway,66 SCI

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Address Service Requested

Geological Sciences Department
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